CITY OF MARSHALLTOWN CITY COUNCIL AGENDA
CITY HALL COUNCIL CHAMBERS
10 WEST STATE STREET
DECEMBER 8, 2025, 5:30 PM

A. CALL TO ORDER

B. PLEDGE OF ALLEGIANCE

C. ROLL CALL

Fonseca, Kell, Ladehoff, Mitchell, Nichols, Schneider, Thompson

D. PUBLIC COMMENT

Members of the public may make comments on any item that was not on the agenda during this time. The speaker shall approach the microphone and state their name and address. Comments shall be limited to three (3) minutes unless a longer comment is authorized by the Mayor. The speaker shall direct comments to the Mayor and the Council as a whole.

The Mayor and Council may provide a response to a public comment, but shall not engage in discussion or debate on items raised by members of the public. No action may be taken on items raised in public comments to comply with open meeting laws.

E. MAYOR, COUNCIL AND ADMINISTRATOR COMMENTS

F. CONSENT AGENDA

1. Approve Minutes 11/24/25 Meeting and Bill List $1,248,964.54
2. Approve Alcohol Ownership Amendments - Caseys Marketing Company, Kwik Trip Inc, Fisher Governor Foundation
3. Reappoint Chris Bennett and appoint Tress David Boles and Gary Gimbel to the Parks and Recreation Advisory Board, terms 1/1/26-12/31/27
4. Approve September 2025 Financial Statements
5. Resolution Transferring Funds for Fiscal Year 2026 Through September 30, 2025

6. Resolution Adopting Supplement S-12 to the Code of Ordinances of the City of Marshalltown, Iowa, Through Ordinance 15107

7. Resolution Approving Contract Change Order #2 for the 2025 PCC Patch Repair Project, #STR23002, an Increase of $16,193.96

G. RESOLUTIONS

1. Resolution Accepting Bid and Authorizing the Award of Contract for the Marshalltown Public Library Remodel Project, No. LIB25001, in the City of Marshalltown, Iowa, in the Amount of $474,000 to Garling Construction

2. Resolution Approving Intergovernmental Agreement Confirming and Continuing the Solid Waste Management Commission of Marshall County, Iowa, as Amended

3. Resolution Approving the Marshalltown Municipal Airport Five-Year Capital Improvement Program

4. Resolution Consenting to Assignment of Development Agreement and Tax Increment Payments

H. DISCUSSION

1. FY27 Budget Schedule

2. Flock Camera Update

I. ADJOURNMENT

MISSION STATEMENT

The City of Marshalltown collaborates to provide a welcoming, safe, vibrant, and growing community.

Please visit the City's website for the complete agenda packet and to subscribe to agenda notices and department news at www.marshalltown-ia.gov.

CITY COUNCIL PROCEEDINGS
NOVEMBER 24, 2025

Mayor Pro Tem Ladehoff (in Mayor Greer's absence) called the meeting to order at 5:30 pm, November 24, 2025, at the City Hall Council Chambers, 10 W State Street, and led the pledge of allegiance. Roll call-Present: Fonseca (via Go-To-Meeting), Kell, Ladehoff, Mitchell, Nichols, Schneider, Thompson. Public comments for items not on the agenda were provided. There were no Mayor, Council, or Administrator comments provided. Years of Service for November were recognized for 10 years: Esmeralda Armas, Public Works; Diana Steiner, Finance; 15 years: Ted Smith, Streets; Rick Weitzell, Streets; Curtis Raue, Fire; Josh Warnell, Fire; 25 years: Jim Trowbridge, Sewer.

CONSENT AGENDA
Motion by Jeff Schneider, second by Barry Kell to approve the consent agenda: Approve Minutes 11/10/25 Meeting and Bill List $2,735,175.32; Approve Alcohol License Renewal - B.P.O.E. Lodge #312, 101 W Church St; Appoint Ronnie Manis to the Library Board of Trustees, term ending 06/30/28, replacing Judy Lindholm, County Seat, Marshall County Board of Supervisors approved 11/19/25; Approve July 2025 Financial Statements; Approve August 2025 Financial Statements; Civil Service Promotional List-Fire Lieutenant; Resolution Approving Engineer's Certificate of Completion and Accepting WRH, Inc (Wendler, Inc) for the WPCP Headworks and Digesters Improvement Project #WPC21001; Resolution Approving Contract Change Order #12 for the East Main Street and Center Street Reconstruction Project, #STR22002, a Decrease of $1,675.00; Resolution Approving Contract Change Order #9 for the Riverview Park Phase 1 Project, #PRK23001, a Decrease of $21,790.00. Motion carried 6-1, Mark Mitchell dissenting.

REPORTS
Sarah Rosenblum, Library Director, and Joa Laville, Youth Services Manager, presented the Library Board of Trustees Annual Report, noting the following stats: 110,821 in-person visits, 231,712 total circulation, 5,689 meeting room uses, 369 children's programs with 12,503 attendees, 1,048 total programs scheduled with 17,965 total attendees. They use Beanstack for reading challenges, which provides data on participants, including 860 kids in the summer reading challenge.

MOTIONS
Motion by Greg Nichols, second by Jeff Schneider, to move the 12/14/26 City Council Meeting to 12/7/26. Motion carried 7-0.

RESOLUTIONS
Motion by Jeff Schneider, second by Barry Kell, to approve Resolution Approving the Annual Street Financial Report for Fiscal Year Ending 2025.

Motion by Jeff Schneider, second by Barry Kell, to approve Resolution Approving the Annual Street Financial Report for Fiscal Year Ending 2025. Diana Steiner, Finance Director, advised that the report must be filed with the Iowa Department of Transportation by December 1st. In FY25, we received $3,918,738 in road use tax funds. The report outlines all activity related to road use tax to include street projects, debt payments, capital projects, and equipment purchases. Motion carried 7-0.

Motion by Barry Kell, second by Mark Mitchell, to approve Resolution Approving the Annual Financial Report for the Fiscal Year Ending June 30, 2025. Diana Steiner, Finance Director, advised that this report is due to the State Auditor by December 1st. The report reflects the final numbers for FY25 on a cash basis. The actual expenditures came in lower than the amended budget amounts for each of the function areas. The report was published in the Times-Republican on November 24, 2025. Motion carried 7- 0.

Motion by Jeff Schneider, second by Barry Kell, to approve Resolution Authorizing Certification of Code of Iowa 403.19 Tax Increment Financing (TIF) Indebtedness to the County Auditor for Each Urban Renewal Area within the City of Marshalltown for FY2027. Diana Steiner, Finance Director, advised that the report is due December 1st to the County Auditor. This certification provides TIF revenue collected by the County through property taxes for development agreements, bond payments, legal fees, and other agreements that are TIF-related. Motion carried 7-0.

Mayor Pro Tem Ladehoff opened the public hearing at 6:21 pm for the plans for the Marshalltown Public Library Remodel project. Hannah Schulz, FEH Design, 604 E Grand Ave, Des Moines, and Sarah Rosenblum, Library Director, provided an overview of the project, which will create 2800 square feet for 5 study and meeting areas. The cost estimate is $939,000 and will be funded by the Friends of the Library and other donations. No written comments were received. Public comment: Linda Clark, 306 S 2nd Avenue, was pleased to hear it was paid for by donations. The public hearing was closed at 6:33 pm. Motion by Jeff Schneider, second by Barry Kell, to approve Public Hearing and Resolution Approving Plans, Specifications, Form of Contract, and Cost for the Marshalltown Public Library Remodel Project, in the City of Marshalltown, Iowa, being Project No. LIB25001. Motion carried 7-0.

ORDINANCES

Motion by Barry Kell, second by Jeff Schneider, to adopt the third reading of Ordinance 15113 to Amend the Code of Ordinances, City of Marshalltown, Iowa, by Repealing and Replacing Chapter 72 Parking Rules, Sections 72.102(B) and 72.109. Amended motion by Gary Thompson to eliminate head-in angle parking. Heather Thomas, Public Works Director, advised that it would need to be amended in a different code section. Councilor Thompson withdrew the motion. Councilor Mitchell advised that he had a suggestion from a driving instructor to paint the lines up the curb, which will be evaluated. Public comment was provided. Motion carried 7-0, adopting the third reading. Motion by Gary Thompson to amend Chapter 72 to eliminate head-in angle parking. Carol Webb, City Administrator, advised that this could be brought back as a future item for 3 readings. Councilor Thompson withdrew the motion.

ADJOURNMENT

The meeting adjourned at 6:40 pm.

Respectfully Submitted,

Alicia Hunter

Alicia Hunter, City Clerk

CITY OF MARSHALLTOWN, IOWA

Joel Greer, Mayor

ATTEST:

Alicia Hunter, City Clerk

BILL LIST 12/08/25

Advertising	
Trending.Media/2	209.00
Buildings/Improvements	
Menards/4	141.80
Strands/1	309.99
Walsh Door & Ha/1	5,001.78
Consulting & Professional Fees	
AHLERS.COONEY/1	82.50
Bolton&Menk.Inc/1	28,026.50
FOX Strand/1	2,031.75
Iowa.One.Call/2	447.30
Lynch.Dallas.PC/6	5,826.70
Snyder & Assoc/1	8,056.70
Contracts	
Acuren Inspect/1	2,565.00
Advance.Garage./2	2,219.20
ARL/1	7,499.08
Atcher,R/1	750.00
BCI Burke Co/1	11,120.91
BDH/32	16,885.34
BG.HVAC.INC/2	489.00
Bowman, James/1	5,135.43
Chamber.Commerc/4	152,016.99
City.Laundering/1	160.02
CTI Ready Mix/1	1,296.00
Johnson Feed/5	10,252.74
Karl.Chevrolet/3	88,583.90
Mid-Iowa Enterp/1	67,067.02
Prairie Waste/1	220.00
Premier.Equip/1	74.64
Safe Building/1	6,240.00
Schendel.Pest.C/1	81.00
Union Pac RR Co/1	6,969.63
Velocity.EHS/2	3,000.00
Xerox Corp/1	30.00
Medical	
Covenant Workpl/1	419.90
HARTFORD.ACCTS/2	7,352.26
Hunter Lane LLC/1	1,318.90
McFarland.Cl/1	38.72
Payroll	
Payroll/1	394,033.76
Rents/Leases	
201 E Main MT/12	4,278.00
209 Estelle St/1	384.00
6 Pack Propert/1	371.00
A.White/1	265.00
Ackley.Housing/6	1,219.00
Arrowhead Homes/1	337.00
BJ&J.LLC/1	277.00
BLOOD,A/1	420.00
Blue Fund I/1	311.00
Borota,K/3	1,280.00
Brinkmeyer, Rob/1	305.00
Brodin,C/1	67.00
Brown, Larry/1	343.00
Brummel, Michae/1	105.00
BTG Rental LLC/1	230.00
Buckaroo.LLC/2	999.00
CIRSI/7	542.00
Clock Tower Sen/10	3,478.00
CMHC.INVEST/1	192.00
Conzalez, Renat/1	621.00
Crestview Apts/22	8,584.00
D.D.Rentals/6	2,455.00
Daters, Toni Ra/1	360.00
Douglas Ter Apt/4	2,407.00
Ealy, Carol/1	83.00
EPC LLC/2	724.00
Etter, Connie/1	650.00
Eubanks,C/1	296.00
Flores, Antonio/1	285.00
Friendly.Valley/3	337.00
Gorrell, Joseph/1	650.00
Gray,D/2	980.00
Gutierrez,Humbe/2	626.00
Hala,J/5	1,619.00
Hatch,R/2	1,643.00
HAVELKA,B/1	696.00
HESSENIUS,R/1	832.00
Hilltop.Village/2	475.00
Ho Phi Nguyen/1	550.00
House Harvester/1	299.00
HOWARD,J/1	164.00
Inman, Jeffrey/1	142.00
JBI.COOP.Assn/5	2,160.00
JDL.Rental.Coop/1	490.00
Jimenez, Luis/1	367.00
Judge, John/1	353.00
Judge,M/10	2,766.00
Kading Prop LLC/4	2,715.00
Kramer, Marcia/1	388.00
Lawthers.Prop.M/1	157.00
Linton, Tyler/2	660.00
LJWS Farms LLC/1	311.00
Lopez, Jaime/1	455.00
LUENSE,B/6	2,909.00
Manus&Michelle/1	288.00
Marion Manor I/1	260.00
MD Kruse Enter/1	90.00
Moore, Michelle/1	317.00
Mtown Lofts LLC/17	5,838.00
Mtown/Westown/20	6,196.00
Nelson FamTrust/1	210.00
North.Tama.Hsg/1	51.00
Oetker,D/2	385.00
Park.Elms,LLC/4	1,389.00
Plymat Jr, Will/1	546.00
Premier.RE.Mgmt/7	2,788.00
PremierIowaCity/6	1,580.00
Prime Property/1	267.00
Pyramid Propert/3	761.00

BILL LIST 12/08/25

RA.Rental.Prop/3	1,250.00
Reed,T/1	430.00
Rice, Quinton/1	411.00
River.Birch/3	1,895.00
River.Oaks/4	1,823.00
Rural Revival/1	335.00
SanDiegoHousing/1	2,648.00
Schmidt,M/2	1,072.00
Sweet Pea Prop/2	813.00
Swiff, Scott/1	430.00
Tallcorn.Tower/12	3,229.00
TAYLOR,M/1	359.00
TOWN.APARTMENT/2	703.00
TTLC.Hsg/3	1,832.00
Ultimate Prop M/1	449.00
Walker, Angela/1	312.00
Worsfold Farm/1	370.00
Service/Repairs	
Amazon/27	779.00
Atcher,R/2	3,120.00
Central IA Tow/1	135.00
Cert.Pwr.Inc./1	2,378.97
Cline, Troy/6	2,305.00
Electric.Supply/3	629.32
FIRSTNET.ATT/1	12.66
GPM Environment/1	840.00
Greazel, Lance/1	40.00
Grewell Lawn/1	830.00
Heart.of.Iowa/12	2,794.93
IA DIAL/1	160.00
IMON/1	134.99
Jara, Laura/1	30.00
Jordan, Darrell/1	12.00
Larson, Leslie/1	750.00
Legg,R/1	40.00
Louis, Marie/1	7.00
Macqueen.Equip/2	672.00
Marsh.Co.Treas/1	270.00
Marshall.Co.Ext/1	155.00
Mattingly, Ruth/1	40.00
McAtee.Tire/3	145.00
McFarland.Cl/2	279.04
Mtwn.Wtrwrks/3	8,869.23
Neave, Mia/1	46.00
One Source Aqu/2	38.00
Petermeier,J/1	40.00
Plumb.Supply/1	90.11
Ranson, Robert/1	40.00
Renaud, Rachell/1	35.00
Road Machinery/1	6,780.40
SanDiegoHousing/1	54.04
Squires,Chris/1	86.00
Stiegelmeier, C/1	10.00
T-Mobile/1	1,204.71
Unison.Solution/1	275.00
Wallace, Yianna/1	41.00
Wirth, Tammy/1	28.00
Ziegler/3	213.75
Supplies/Parts	
Airgas USA Inc/2	525.11
Alliant.Energy/1	1,607.86
Alpha Landscape/1	64,315.00
Arnold.Motor/8	350.30
BDH/1	91.38
Bound.Tree.Medi/2	212.56
City.Laundering/3	156.62
Cntrl.IA.Machin/1	1,140.00
Consolidated.Wa/1	2,027.29
CTI Ready Mix/2	982.00
D&S Midwest Tra/1	425.00
Electric.Supply/1	33.08
Engineered Equi/1	294.00
Fastenal Co/2	55.97
Galls.LLC/7	1,963.36
Gervich.Sons/1	386.00
Gillig.LLC/3	444.00
Kimball Midwest/1	179.00
Kreimeyer,Brian/1	312.69
Larrys Towing/1	1,050.00
Mech Sales Part/1	6,233.00
Menards/15	1,550.42
Microbac Lab/2	148.50
Midland.Scienti/3	690.16
Northern.Lights/1	302.72
Nutrien.Ag.Sol/1	415.20
SE.Jones.Indust/2	451.25
Steiner, Diana/1	60.00
Streichers Inc/1	10.00
Thiesens.Supply/25	1,891.39
Tri.State.Lock/2	375.00
Vajgrt.R/1	12.25
Vanwall Equip/1	1,188.74
Witmer.Public.S/3	629.30
Ziegler/1	425.00
Utilities	
Alliant.Energy/56	34,667.99
ConsumersEnergy/2	387.50
I.R.U.A./1	179.44
Mtwn.Wtrwrks/17	593.49
WoodRiver.Enrgy/3	2,561.08
Wage Assignment	
American.Educa./1	64.41
Collection.Svs./4	1,018.29
Colonial.Life/1	271.49
Fidelity Securi/2	464.85
I.R.S./6	111,502.62
IA.Treasurer/2	17,053.89
ICMA457Mission/11	16,796.25
TotalAdmin.Serv/4	8,165.48
Total/653	**1,248,964.54**

BILL LIST 12/08/25

Account Number	Vendor Name	Description (Item)	Amount
184.5030.5242.000	201 E Main MT LLC	Rent assistance	$ 237.00
184.5030.5242.000	201 E Main MT LLC	Rent assistance	$ 258.00
184.5030.5242.000	201 E Main MT LLC	Rent assistance	$ 315.00
184.5030.5242.000	201 E Main MT LLC	Rent assistance	$ 475.00
184.5030.5242.000	201 E Main MT LLC	Rent assistance	$ 455.00
184.5030.5242.000	201 E Main MT LLC	Rent assistance	$ 449.00
184.5030.5242.000	201 E Main MT LLC	Rent assistance	$ 447.00
184.5030.5242.000	201 E Main MT LLC	Rent assistance	$ 445.00
184.5030.5242.000	201 E Main MT LLC	Rent assistance	$ 445.00
184.5030.5242.000	201 E Main MT LLC	Rent assistance	$ 321.00
184.5030.5242.000	201 E Main MT LLC	Rent assistance	$ 158.00
184.5030.5242.000	201 E Main MT LLC	Rent assistance	$ 273.00
184.5030.5242.000	209 Estelle St LLC	Rent assistance	$ 384.00
184.5030.5242.000	6 Pack Properties LLC	Rent assistance	$ 371.00
184.5030.5242.000	Ackley Housing Inc	Rent assistance	$ 224.00
184.5030.5242.000	Ackley Housing Inc	Rent assistance	$ 164.00
184.5030.5242.000	Ackley Housing Inc	Rent assistance	$ 191.00
184.5030.5242.000	Ackley Housing Inc	Rent assistance	$ 121.00
184.5030.5242.000	Ackley Housing Inc	Rent assistance	$ 224.00
184.5030.5242.000	Ackley Housing Inc	Rent assistance	$ 295.00
610.8015.5342.000	Acuren Inspection Inc	Annual crane & hoist inspection	$ 2,565.00
001.1099.5342.000	Advance Garage Doors Inc	Fire dept garage door repairs	$ 1,081.00
110.2010.5342.000	Advance Garage Doors Inc	PW Bldg grandstand garage door repair	$ 1,138.20
690.8050.5234.000	Ahlers & Cooney	Labor relations	$ 82.50
139.4045.5607.000	Airgas USA Inc	Pleasant Hill Pool carbon dioxide	$ 227.58
610.8015.5603.000	Airgas USA Inc	LAB aragon for AA	$ 297.53
001.1030.5481.000	Alliant Energy	25 N Center St Civil Defense Sirens	$ 100.00
001.1030.5481.000	Alliant Energy	7 W State St tornado siren	$ 59.91
001.1099.5481.000	Alliant Energy	909 S 2nd St Fire & Police Bldg	$ 5,211.53
001.1099.5482.000	Alliant Energy	909 S 2nd St Fire & Police Bldg	$ 216.26
001.2020.5481.000	Alliant Energy	NE corner S 1st Ave / Church St parking lot	$ 132.41
001.2080.5481.000	Alliant Energy	2651 170th St Runway lights	$ 232.65
001.2080.5481.000	Alliant Energy	2651 170th St TEMP	$ 489.10
001.4030.5481.000	Alliant Energy	311 E Anson St Park	$ 24.05
001.4030.5481.000	Alliant Energy	802 S 3rd St Skate Park	$ 202.68
001.4030.5481.000	Alliant Energy	915 S 4th Ave Anson Park	$ 23.40
001.4030.5481.000	Alliant Energy	108 N 2nd Ave Alley - Farmers Market	$ 22.05
001.4030.5481.000	Alliant Energy	Highland Acres Rd	$ 32.89
001.4030.5481.000	Alliant Energy	Broadmore Assistance League	$ 14.48
001.4030.5481.000	Alliant Energy	220 N 13th St Rest room	$ 45.23
001.4030.5481.000	Alliant Energy	N 13th St	$ 129.23
001.4030.5481.000	Alliant Energy	Arnolds Park	$ 13.15
001.4030.5481.000	Alliant Energy	516 N 3rd St Elks Park	$ 26.60
001.4030.5481.000	Alliant Energy	500 Plaza Hts Rd	$ 45.51
001.4030.5481.000	Alliant Energy	S 3rd Ave Kiwanis Park	$ 26.04
001.4045.5481.000	Alliant Energy	212 Washington St Aquatic Center	$ 260.63
001.4065.5481.000	Alliant Energy	10 W State St COLISEUM	$ 3,812.18
001.4065.5482.000	Alliant Energy	10 W State St COLISEUM	$ 149.79
001.6050.5481.000	Alliant Energy	24 N Center St Municipal Bldg	$ 585.16
001.6051.5481.000	Alliant Energy	36 N Center St- Carnegie Bldg	$ 1,204.70
001.6051.5482.000	Alliant Energy	36 N Center St- Carnegie Bldg	$ 211.73
110.2030.5481.000	Alliant Energy	MARSHALLTOWN	$ 18,993.88
110.2030.5481.000	Alliant Energy	17 N Center St metered	$ 115.04
110.2030.5481.000	Alliant Energy	3098 Lincoln Way sign	$ 32.73
110.2030.5481.000	Alliant Energy	6 S 2nd St Alley	$ 46.42
110.2030.5481.000	Alliant Energy	36 W Main St alley	$ 37.83
110.2030.5481.000	Alliant Energy	106 S Center St metered	$ 35.53
110.2030.5481.000	Alliant Energy	220 E Main St alley	$ 54.47
110.2030.5481.000	Alliant Energy	1707 Laurel Dr Viaduct Light	$ 33.55

110.2030.5481.000	Alliant Energy	404 1/2 S Center St Viaduct	$	100.83
110.2030.5481.000	Alliant Energy	N Center St & Church St	$	36.03
110.2030.5481.000	Alliant Energy	36 E Main St Alley	$	23.44
110.2030.5481.000	Alliant Energy	120 E Main St Alley	$	63.87
110.2030.5481.000	Alliant Energy	Market St Bridge lights	$	91.28
110.2030.5481.000	Alliant Energy	N 13th Street lights	$	137.29
110.2030.5481.000	Alliant Energy	25 N 13th St	$	68.30
110.2040.5481.000	Alliant Energy	S Center St & South St	$	38.99
110.2040.5481.000	Alliant Energy	E Anson St & 3rd Ave	$	52.60
110.2040.5481.000	Alliant Energy	S Center St & Boone St	$	47.94
110.2040.5481.000	Alliant Energy	S Center St & Linn St	$	39.12
110.2040.5481.000	Alliant Energy	S Center St & Anson	$	61.60
110.2040.5481.000	Alliant Energy	W High St & S 6th St	$	26.12
110.2040.5481.000	Alliant Energy	S 1st Ave & E Anson St	$	57.48
110.2040.5481.000	Alliant Energy	S 3rd Ave & Linn St	$	107.15
110.2040.5481.000	Alliant Energy	S Center St & Olive St	$	45.92
110.2040.5481.000	Alliant Energy	S 6th St & Olive St	$	34.20
110.2040.5481.000	Alliant Energy	Westwood Dr & Center St	$	31.31
110.2040.5481.000	Alliant Energy	W Meadowlane & Center St	$	37.26
142.4030.5481.000	Alliant Energy	800 S 6th St Softball Diamonds	$	273.83
364.4030.5611.000	Alliant Energy	6th St Trailhead	$	1,607.86
610.8016.5481.000	Alliant Energy	S 2nd St & Player St	$	363.63
610.8016.5481.000	Alliant Energy	N 22nd St	$	179.22
610.8016.5481.000	Alliant Energy	N 22nd St	$	129.77
133.4030.5609.000	Alpha Landscapes LLC	Right of Way CDBG Disaster Recovery Tree planting	$	64,315.00
001.1050.5280.000	AMAZON	Prime membership fee	$	2.41
001.1071.5280.000	AMAZON	Prime membership fee	$	1.91
001.1075.5280.000	AMAZON	Prime membership fee	$	3.34
001.1099.5280.000	AMAZON	Prime membership fee	$	2.13
001.2020.5280.000	AMAZON	Prime membership fee	$	0.87
001.2080.5280.000	AMAZON	Prime membership fee	$	0.96
001.4010.5280.000	AMAZON	Prime membership fee	$	344.76
001.4030.5280.000	AMAZON	Prime membership fee	$	10.94
001.4040.5280.000	AMAZON	Prime membership fee	$	113.18
001.4065.5280.000	AMAZON	Prime membership fee	$	1.38
001.5010.5280.000	AMAZON	Prime membership fee	$	120.79
001.5010.5280.000	AMAZON	Prime membership fee	$	0.99
001.5040.5280.000	AMAZON	Prime membership fee	$	0.81
001.6020.5280.000	AMAZON	Prime membership fee	$	4.01
001.6021.5280.000	AMAZON	Prime membership fee	$	3.04
001.6025.5280.000	AMAZON	Prime membership fee	$	19.89
001.6050.5280.000	AMAZON	Prime membership fee	$	14.07
001.6051.5280.000	AMAZON	Prime membership fee	$	1.29
110.2010.5280.000	AMAZON	Prime membership fee	$	46.23
110.2030.5280.000	AMAZON	Prime membership fee	$	5.03
110.2040.5280.000	AMAZON	Prime membership fee	$	2.84
110.2060.5280.000	AMAZON	Prime membership fee	$	8.60
181.3040.5280.000	AMAZON	Prime membership fee	$	7.14
184.5030.5280.000	AMAZON	Prime membership fee	$	4.73
610.8015.5280.000	AMAZON	Prime membership fee	$	25.34
610.8016.5280.000	AMAZON	Prime membership fee	$	9.01
690.8050.5280.000	AMAZON	Prime membership fee	$	23.31
999.1121.000	American Education Services	Wage Witholding	$	64.41
001.1090.5331.000	Animal Rescue League	Decembe contract taking care of animal City Limits	$	7,499.08
001.1010.5565.000	Arnold Motor Supply	PD engine oil filter	$	9.02
110.2010.5600.000	Arnold Motor Supply	Street #36 red LED light	$	(25.59)
110.2010.5600.000	Arnold Motor Supply	Mobil 1 oil 40	$	20.34
110.2010.5600.000	Arnold Motor Supply	Street #36 red LED lights and ring terminals	$	29.74
110.2010.5600.000	Arnold Motor Supply	6" Red LED oval lights	$	195.14
110.2010.5718.000	Arnold Motor Supply	Street dept cleaning tool	$	44.09
110.2030.5565.000	Arnold Motor Supply	Utility truck tire pressure sensors	$	37.99
110.2040.5565.000	Arnold Motor Supply	Utility truck tire pressure sensors	$	39.57
184.5030.5242.000	Arrowhead Homes LLC	Rent assistance	$	337.00

001.2020.5342.000	ATCHER, ROBERT	vacant lots contract mowings	$	750.00
001.4030.5386.000	ATCHER, ROBERT	Parks contract mowings	$	1,920.00
142.4030.5386.000	ATCHER, ROBERT	Softball complex mowing	$	1,200.00
110.2010.5342.000	B&G HVAC INC	PW Bldg furnace motor & capacitor	$	244.50
690.8050.5342.000	B&G HVAC INC	PW Bldg furnace motor & capacitor	$	244.50
140.4030.5750.000	BCI Burke Company	Avec glider and ramp for ages 2-12 DEPOSIT	$	11,120.91
001.1010.5347.000	BDH INFORMATION TECHNOLOGY LLC	PD 4500 Veeam Backup & Recovery	$	54.00
001.1010.5347.000	BDH INFORMATION TECHNOLOGY LLC	PD Covert Internet service	$	79.34
001.1010.5347.000	BDH INFORMATION TECHNOLOGY LLC	Block time - 20hrs Police dept	$	1,266.25
001.4010.5347.000	BDH INFORMATION TECHNOLOGY LLC	Block time 10hrs Library	$	633.13
001.4010.5347.000	BDH INFORMATION TECHNOLOGY LLC	FortiGate protection 12/31/25-12/30/26	$	591.00
001.6070.5347.000	BDH INFORMATION TECHNOLOGY LLC	Eset Protect Entry License 275 endpoints	$	7,711.00
001.6070.5347.000	BDH INFORMATION TECHNOLOGY LLC	Standalone Advanced SPAM/ virus emailing	$	175.00
001.6070.5347.000	BDH INFORMATION TECHNOLOGY LLC	Fire dept remote monitoring & management	$	160.00
001.6070.5347.000	BDH INFORMATION TECHNOLOGY LLC	Sentinel One Singularity complete advanced EDR	$	152.00
001.6070.5347.000	BDH INFORMATION TECHNOLOGY LLC	Police remote monitoring & management	$	355.00
001.6070.5347.000	BDH INFORMATION TECHNOLOGY LLC	City Hall remote monitoring & management	$	125.00
001.6070.5347.000	BDH INFORMATION TECHNOLOGY LLC	Veeam Monthly subsc Tyler users	$	198.00
001.6070.5347.000	BDH INFORMATION TECHNOLOGY LLC	Coliseum remote monitoring & management	$	40.00
001.6070.5347.000	BDH INFORMATION TECHNOLOGY LLC	City council remote monitoring & management	$	35.00
001.6070.5347.000	BDH INFORMATION TECHNOLOGY LLC	Library remote monitoring & management	$	135.00
001.6070.5347.000	BDH INFORMATION TECHNOLOGY LLC	SIEM server device monitoring service	$	200.00
001.6070.5347.000	BDH INFORMATION TECHNOLOGY LLC	SIEM infrastructure device monitoring service	$	650.00
001.6070.5347.000	BDH INFORMATION TECHNOLOGY LLC	Block time 50hrs General Fund	$	3,165.62
001.6070.5347.000	BDH INFORMATION TECHNOLOGY LLC	Parks remote monitoring & management	$	30.00
001.6070.5347.000	BDH INFORMATION TECHNOLOGY LLC	Finance remote monitoring & management	$	25.00
001.6070.5347.000	BDH INFORMATION TECHNOLOGY LLC	Housing remote monitoring & management	$	32.50
001.6070.5347.000	BDH INFORMATION TECHNOLOGY LLC	Admin remote monitoring & management	$	20.00
001.6070.5347.000	BDH INFORMATION TECHNOLOGY LLC	Aquatic Ctr remote monitoring & management	$	20.00
030.6070.5703.000	BDH INFORMATION TECHNOLOGY LLC	cables to set up housing computers	$	91.38
110.2010.5347.000	BDH INFORMATION TECHNOLOGY LLC	Public Works remote monitoring & management	$	60.00
110.2010.5347.000	BDH INFORMATION TECHNOLOGY LLC	PW 4500 Veeam Backup & Recovery	$	18.00
110.2060.5347.000	BDH INFORMATION TECHNOLOGY LLC	Engineering remote monitoring & management	$	90.00
110.2060.5347.000	BDH INFORMATION TECHNOLOGY LLC	PW 4500 Veeam Backup & Recovery	$	18.00
184.5030.5347.000	BDH INFORMATION TECHNOLOGY LLC	Sec 8 Housing remote monitoring & management	$	32.50
610.8015.5347.000	BDH INFORMATION TECHNOLOGY LLC	WPCP 4500 Veeam Backup & Recovery	$	18.00
610.8015.5347.000	BDH INFORMATION TECHNOLOGY LLC	WPCP remote monitoring & management	$	75.00
690.8050.5347.000	BDH INFORMATION TECHNOLOGY LLC	Transit remote monitoring & management	$	20.00
913.1013.5347.000	BDH INFORMATION TECHNOLOGY LLC	Eset Protect Entry License 25 endpoints	$	701.00
184.5030.5242.000	BJ&J LLC	Rent assistance	$	277.00
184.5030.5242.000	Blood, Alex	Rent assistance	$	420.00
184.5030.5242.000	Blue Fund I	Rent assistance	$	311.00
364.2012.5233.000	Bolton & Menk Inc	Eng-Des & CA/CO - Dtwn E Main & Cent 9/27-10/24/25	$	28,026.50
184.5030.5242.000	Borota, Kent	Rent assistance	$	550.00
184.5030.5242.000	Borota, Kent	Rent assistance	$	310.00
184.5030.5242.000	Borota, Kent	Rent assistance	$	420.00
001.1050.5630.000	Bound Tree Medical LLC	Fire dept Stat Padz	$	169.98
001.1050.5630.000	Bound Tree Medical LLC	Latex gloves	$	42.58
364.2012.5331.000	Bowman, James	24 E Main St Cost Share - ROW Vault Removal	$	5,135.43
184.5030.5242.000	Brinkmeyer, Robert	Rent assistance	$	305.00
184.5030.5242.000	Brodin, Chris	Rent assistance	$	67.00
184.5030.5242.000	Brown, Larry	Rent assistance	$	343.00
184.5030.5242.000	Brummel, Michael	Rent assistance	$	105.00
184.5030.5242.000	BTG Rental LLC	Rent assistance	$	230.00
184.5030.5242.000	Buckaroo LLC	Rent assistance	$	478.00
184.5030.5242.000	Buckaroo LLC	Rent assistance	$	521.00
001.4030.5562.000	Central Iowa Machine Shop Inc	9.5' MVP3 cutting edge	$	1,140.00
184.5030.5242.000	CENTRAL IOWA RESIDENTIAL SERV INC	Rent assistance	$	70.00
184.5030.5242.000	CENTRAL IOWA RESIDENTIAL SERV INC	Rent assistance	$	72.00
184.5030.5242.000	CENTRAL IOWA RESIDENTIAL SERV INC	Rent assistance	$	90.00
184.5030.5242.000	CENTRAL IOWA RESIDENTIAL SERV INC	Rent assistance	$	64.00
184.5030.5242.000	CENTRAL IOWA RESIDENTIAL SERV INC	Rent assistance	$	122.00
184.5030.5242.000	CENTRAL IOWA RESIDENTIAL SERV INC	Rent assistance	$	14.00

184.5030.5242.000	CENTRAL IOWA RESIDENTIAL SERV INC	Rent assistance	$	110.00
001.1010.5359.000	Central Iowa Towing & Recovery Inc	PD towing	$	135.00
110.2010.5410.000	CERTIFIED POWER INC CO	Blue lift cylinder repair	$	2,378.97
110.2010.5342.000	CITY LAUNDERING COMPANY	cleaning and insurance	$	160.02
110.2010.5600.000	CITY LAUNDERING COMPANY	supplies	$	76.62
690.8050.5132.000	CITY LAUNDERING COMPANY	Transit dept - uniform cleaning	$	40.00
690.8050.5132.000	CITY LAUNDERING COMPANY	Transit dept - uniform cleaning	$	40.00
001.1075.5261.000	Cline, Troy	207 N 3rd Ave clean up	$	835.00
001.1075.5261.000	Cline, Troy	landfill	$	300.00
001.1075.5261.000	Cline, Troy	207 N 3rd Ave clean up	$	560.00
001.1075.5261.000	Cline, Troy	landfill	$	345.00
001.1075.5263.000	Cline, Troy	Hughes property clean up	$	100.00
001.1075.5263.000	Cline, Troy	603 W Main mowing	$	165.00
184.5030.5242.000	Clock Tower Senior LP	Rent assistance	$	175.00
184.5030.5242.000	Clock Tower Senior LP	Rent assistance	$	220.00
184.5030.5242.000	Clock Tower Senior LP	Rent assistance	$	244.00
184.5030.5242.000	Clock Tower Senior LP	Rent assistance	$	288.00
184.5030.5242.000	Clock Tower Senior LP	Rent assistance	$	333.00
184.5030.5242.000	Clock Tower Senior LP	Rent assistance	$	346.00
184.5030.5242.000	Clock Tower Senior LP	Rent assistance	$	392.00
184.5030.5242.000	Clock Tower Senior LP	Rent assistance	$	466.00
184.5030.5242.000	Clock Tower Senior LP	Rent assistance	$	685.00
184.5030.5242.000	Clock Tower Senior LP	Rent assistance	$	329.00
184.5030.5242.000	CMHC Investments LLC	Rent assistance	$	192.00
999.1121.000	Collection Services Center	Child Support	$	139.77
999.1121.000	Collection Services Center	Child Support	$	423.86
999.1121.000	Collection Services Center	Child Support	$	60.24
999.1121.000	Collection Services Center	Child Support	$	394.42
999.1133.000	Colonial Life	COLONIAL LIFE INSURANCE	$	271.49
610.8015.5600.000	CONSOLIDATED WATER SOLUTIONS	DAF polymer	$	2,027.29
110.2030.5481.000	Consumers Energy Coop	City of Marshalltown	$	226.63
110.2040.5481.000	Consumers Energy Coop	City of Marshalltown	$	160.87
884.7010.5337.000	Covenant Workplace Solutions	December EAP services	$	419.90
184.5030.5242.000	Crestview Apts LLC	Rent assistance	$	424.00
184.5030.5242.000	Crestview Apts LLC	Rent assistance	$	430.00
184.5030.5242.000	Crestview Apts LLC	Rent assistance	$	439.00
184.5030.5242.000	Crestview Apts LLC	Rent assistance	$	445.00
184.5030.5242.000	Crestview Apts LLC	Rent assistance	$	455.00
184.5030.5242.000	Crestview Apts LLC	Rent assistance	$	455.00
184.5030.5242.000	Crestview Apts LLC	Rent assistance	$	455.00
184.5030.5242.000	Crestview Apts LLC	Rent assistance	$	487.00
184.5030.5242.000	Crestview Apts LLC	Rent assistance	$	650.00
184.5030.5242.000	Crestview Apts LLC	Rent assistance	$	449.00
184.5030.5242.000	Crestview Apts LLC	Rent assistance	$	424.00
184.5030.5242.000	Crestview Apts LLC	Rent assistance	$	420.00
184.5030.5242.000	Crestview Apts LLC	Rent assistance	$	424.00
184.5030.5242.000	Crestview Apts LLC	Rent assistance	$	422.00
184.5030.5242.000	Crestview Apts LLC	Rent assistance	$	420.00
184.5030.5242.000	Crestview Apts LLC	Rent assistance	$	366.00
184.5030.5242.000	Crestview Apts LLC	Rent assistance	$	276.00
184.5030.5242.000	Crestview Apts LLC	Rent assistance	$	226.00
184.5030.5242.000	Crestview Apts LLC	Rent assistance	$	221.00
184.5030.5242.000	Crestview Apts LLC	Rent assistance	$	192.00
184.5030.5242.000	Crestview Apts LLC	Rent assistance	$	80.00
184.5030.5242.000	Crestview Apts LLC	Rent assistance	$	424.00
001.4030.5342.000	CTI Ready Mix Inc	Riverview Parkpool line amandonment	$	1,296.00
740.8065.5600.000	CTI Ready Mix Inc	Santa Barbra Dr storm sewer	$	376.00
740.8065.5600.000	CTI Ready Mix Inc	Santa Barbra Dr storm sewer	$	606.00
184.5030.5242.000	D & D RENTALS INC	Rent assistance	$	600.00
184.5030.5242.000	D & D RENTALS INC	Rent assistance	$	69.00
184.5030.5242.000	D & D RENTALS INC	Rent assistance	$	242.00
184.5030.5242.000	D & D RENTALS INC	Rent assistance	$	380.00
184.5030.5242.000	D & D RENTALS INC	Rent assistance	$	549.00

184.5030.5242.000	D & D RENTALS INC	Rent assistance	$	615.00
110.2010.5565.000	D & S Midwest Trailer Sales & Services LLC	complete spare tire for skid loader trailer	$	425.00
184.5030.5242.000	Daters, Toni Rae	Rent assistance	$	360.00
184.5030.5242.000	Douglas A Nelson/ Debra K Nelson Family Trust	Rent assistance	$	210.00
184.5030.5242.000	Douglas Terrace Apartments LLC	Rent assistance	$	700.00
184.5030.5242.000	Douglas Terrace Apartments LLC	Rent assistance	$	418.00
184.5030.5242.000	Douglas Terrace Apartments LLC	Rent assistance	$	685.00
184.5030.5242.000	Douglas Terrace Apartments LLC	Rent assistance	$	604.00
184.5030.5242.000	Ealy, Carol	Rent assistance	$	83.00
001.1050.5600.000	Electric Supply of Marshalltown	Fire Dept day room antenna install	$	33.08
001.4030.5410.000	Electric Supply of Marshalltown	Riverview Park ground box	$	378.42
110.2010.5410.000	Electric Supply of Marshalltown	PW Bldg exterior light	$	125.45
690.8050.5410.000	Electric Supply of Marshalltown	PW Bldg exterior light	$	125.45
610.8015.5600.000	Engineered Equipment Solutions LLC	DO sunshade kit	$	294.00
184.5030.5242.000	EPC LLC	Rent assistance	$	359.00
184.5030.5242.000	EPC LLC	Rent assistance	$	365.00
184.5030.5242.000	Etter, Connie	Rent assistance	$	650.00
184.5030.5242.000	Eubanks, Chad	Rent assistance	$	296.00
001.4030.5611.000	Fastenal Co	Ice rink supplies	$	36.97
610.8015.5600.000	Fastenal Co	WPCP - operating supplies	$	19.00
999.1125.000	Fidelity Security Life Insurance	VISION INSURANCE	$	324.01
999.1125.000	Fidelity Security Life Insurance	VISION INSURANCE	$	140.84
110.2060.5450.000	FIRSTNET-AT&T Mobility	Engineering Jet pak	$	12.66
184.5030.5242.000	Flores, Antonio	Rent assistance	$	285.00
615.8015.5233.000	FOX Strand	WPC21001 WPCP Hdwks & Dig Const Ph 10/1-10/31/25	$	2,031.75
184.5030.5242.000	FRIENDLY VALLEY APARTMENTS INC	Rent assistance	$	64.00
184.5030.5242.000	FRIENDLY VALLEY APARTMENTS INC	Rent assistance	$	172.00
184.5030.5242.000	FRIENDLY VALLEY APARTMENTS INC	Rent assistance	$	101.00
001.1010.5132.000	Galls LLC	PD employee clothing	$	282.50
001.1010.5132.000	Galls LLC	PD employee clothing	$	487.90
001.1010.5132.000	Galls LLC	PD employee clothing	$	74.05
001.1010.5132.000	Galls LLC	PD employee duty belt	$	34.28
001.1050.5132.000	Galls LLC	Fire dept employee clothing	$	287.51
001.1050.5132.000	Galls LLC	Fire dept employee clothing	$	103.38
001.1050.5132.000	Galls LLC	Fire dept shirts	$	693.74
110.2010.5600.000	GERVICH & SONS INC	Street dept stock steel	$	386.00
690.8050.5565.000	GILLIG LLC	Transit 101 horn assembly	$	68.28
690.8050.5565.000	GILLIG LLC	Transit 101 hose assembly	$	330.03
690.8050.5565.000	GILLIG LLC	Transit 101 hoses	$	45.69
184.5030.5242.000	Gonzalez, Renato	Rent assistance	$	621.00
184.5030.5242.000	Gorrell, Joseph	Rent assistance	$	650.00
610.8015.5410.000	GPM Environmental Solutions LLC	Flow meter calibration SBR 1 & 2	$	840.00
184.5030.5242.000	Gray, Dennis	Rent assistance	$	497.00
184.5030.5242.000	Gray, Dennis	Rent assistance	$	483.00
610.8015.5450.000	Greazel, Lance	Monthly cell phone stipend	$	40.00
610.8015.5386.000	Grewell Lawn & Snow Removal Services LLC	WPCP October mowings	$	830.00
184.5030.5242.000	Gutierrez, Humberto Fabian	Rent assistance	$	229.00
184.5030.5242.000	Gutierrez, Humberto Fabian	Rent assistance	$	397.00
184.5030.5242.000	Hala, Janet	Rent assistance	$	167.00
184.5030.5242.000	Hala, Janet	Rent assistance	$	168.00
184.5030.5242.000	Hala, Janet	Rent assistance	$	324.00
184.5030.5242.000	Hala, Janet	Rent assistance	$	424.00
184.5030.5242.000	Hala, Janet	Rent assistance	$	536.00
884.7010.5337.000	HARTFORD- PRIORITY ACCTS	December insurance premium	$	6,836.64
913.1013.5337.000	HARTFORD- PRIORITY ACCTS	December insurance premium	$	515.62
184.5030.5242.000	Hatch, Roger	Rent assistance	$	428.00
184.5030.5242.000	Hatch, Roger	Rent assistance	$	1,215.00
184.5030.5242.000	HAVELKA, BILL S	Rent assistance	$	696.00
001.1099.5450.000	HEART OF IOWA COMMUNICATIONS CO-OP	Police & Fire Bldg	$	2,229.09
001.4045.5450.000	HEART OF IOWA COMMUNICATIONS CO-OP	Aquatic Center	$	(53.13)
001.4065.5450.000	HEART OF IOWA COMMUNICATIONS CO-OP	incentive credit	$	(1.00)
001.4065.5450.000	HEART OF IOWA COMMUNICATIONS CO-OP	Coliseum	$	31.00
001.6025.5450.000	HEART OF IOWA COMMUNICATIONS CO-OP	Flat Rate Jill Fax 758-3399	$	0.70

001.6050.5450.000	HEART OF IOWA COMMUNICATIONS CO-OP	City Hall	$	244.09
110.2010.5450.000	HEART OF IOWA COMMUNICATIONS CO-OP	PW Bldg	$	86.04
610.8015.5450.000	HEART OF IOWA COMMUNICATIONS CO-OP	WPCP	$	86.04
610.8016.5450.000	HEART OF IOWA COMMUNICATIONS CO-OP	WPCP	$	51.63
610.8016.5450.000	HEART OF IOWA COMMUNICATIONS CO-OP	PW Bldg	$	51.63
740.8065.5450.000	HEART OF IOWA COMMUNICATIONS CO-OP	PW Bldg	$	34.42
740.8065.5450.000	HEART OF IOWA COMMUNICATIONS CO-OP	WPCP	$	34.42
184.5030.5242.000	HESSENIUS, ROBERT	Rent assistance	$	832.00
184.5030.5242.000	Hilltop Village Inc	Rent assistance	$	222.00
184.5030.5242.000	Hilltop Village Inc	Rent assistance	$	253.00
184.5030.5242.000	Historic Tallcorn Towers LLP	Rent assistance	$	251.00
184.5030.5242.000	Historic Tallcorn Towers LLP	Rent assistance	$	122.00
184.5030.5242.000	Historic Tallcorn Towers LLP	Rent assistance	$	214.00
184.5030.5242.000	Historic Tallcorn Towers LLP	Rent assistance	$	227.00
184.5030.5242.000	Historic Tallcorn Towers LLP	Rent assistance	$	237.00
184.5030.5242.000	Historic Tallcorn Towers LLP	Rent assistance	$	264.00
184.5030.5242.000	Historic Tallcorn Towers LLP	Rent assistance	$	265.00
184.5030.5242.000	Historic Tallcorn Towers LLP	Rent assistance	$	274.00
184.5030.5242.000	Historic Tallcorn Towers LLP	Rent assistance	$	278.00
184.5030.5242.000	Historic Tallcorn Towers LLP	Rent assistance	$	382.00
184.5030.5242.000	Historic Tallcorn Towers LLP	Rent assistance	$	418.00
184.5030.5242.000	Historic Tallcorn Towers LLP	Rent assistance	$	297.00
184.5030.5242.000	Ho Phi Nguyen	Rent assistance	$	550.00
184.5030.5242.000	House Harvesters LLC	Rent assistance	$	299.00
184.5030.5242.000	Howard, Jammie	Rent assistance	$	164.00
881.1050.5339.000	Hunter Lane LLC	Paid medical claims	$	1,318.90
999.1131.000	ICMA 457-Mission Square Retirement	Mission Square Retirement - Plan #303417	$	1,211.32
999.1131.000	ICMA 457-Mission Square Retirement	ICMA DEFERRED COMP	$	231.74
999.1131.000	ICMA 457-Mission Square Retirement	Mission Square Retirement - Plan #303417ICMA DEF C	$	7,498.00
999.1131.000	ICMA 457-Mission Square Retirement	ICMA DEF COMP	$	230.76
999.1131.000	ICMA 457-Mission Square Retirement	Mission Square Retirement - Plan #705230	$	1,456.69
999.1131.000	ICMA 457-Mission Square Retirement	Mission Square Retirement - Plan #705230	$	2,468.84
999.1131.000	ICMA 457-Mission Square Retirement	Mission Square Retirement - Plan #303417ICMA DEF C	$	1,325.00
999.1131.000	ICMA 457-Mission Square Retirement	ICMA DEF COMP	$	269.23
999.1131.000	ICMA 457-Mission Square Retirement	Mission Square Retirement - Plan #705230	$	156.98
999.1131.000	ICMA 457-Mission Square Retirement	Mission Square Retirement - Plan #705230	$	1,175.00
999.1131.000	ICMA 457-Mission Square Retirement	Mission Square Retirement - Plan #705230	$	772.69
001.1099.5450.000	IMON Communications LLC	Police and Fire internet	$	134.99
184.5030.5242.000	Inman, Jeffrey	Rent assistance	$	142.00
999.1101.000	INTERNAL REVENUE SERVICE	Bi-Weekly Federal Taxes	$	34,735.08
999.1101.000	INTERNAL REVENUE SERVICE	Bi-Weekly Federal Taxes	$	21,435.08
999.1103.000	INTERNAL REVENUE SERVICE	Bi-Weekly Payroll Social Security	$	31,574.04
999.1103.000	INTERNAL REVENUE SERVICE	Bi-Weekly Payroll Social Security	$	7,250.62
999.1107.000	INTERNAL REVENUE SERVICE	Bi-Weekly Payroll Medicare	$	10,778.78
999.1107.000	INTERNAL REVENUE SERVICE	Bi-Weekly Payroll Medicare	$	5,729.02
001.1099.5251.000	Iowa Dept of Inspections, Appeals, Licensing	PF Bldg annual inspection	$	160.00
610.8016.5230.000	IOWA ONE CALL	Sewer services	$	268.38
740.8065.5230.000	IOWA ONE CALL	Sewer services	$	178.92
001.2080.5483.000	Iowa Regional Utilities Association	Airport water	$	179.44
184.5030.5246.000	Jara, Laura	Rent assistance	$	30.00
184.5030.5242.000	JBI COOP ASSOCIATION	Rent assistance	$	451.00
184.5030.5242.000	JBI COOP ASSOCIATION	Rent assistance	$	419.00
184.5030.5242.000	JBI COOP ASSOCIATION	Rent assistance	$	415.00
184.5030.5242.000	JBI COOP ASSOCIATION	Rent assistance	$	355.00
184.5030.5242.000	JBI COOP ASSOCIATION	Rent assistance	$	520.00
184.5030.5242.000	JDL Rentals Cooperative	Rent assistance	$	490.00
184.5030.5242.000	Jimenez, Luis	Rent assistance	$	367.00
110.2050.5622.000	Johnson Feed Inc	Road Salt	$	2,130.23
110.2050.5622.000	Johnson Feed Inc	Road Salt	$	1,973.90
110.2050.5622.000	Johnson Feed Inc	Road Salt	$	2,075.59
110.2050.5622.000	Johnson Feed Inc	Road Salt	$	2,175.77
110.2050.5622.000	Johnson Feed Inc	Road Salt	$	1,897.25
184.5030.5246.000	Jordan, Darrell	Rent assistance	$	12.00

184.5030.5242.000	Judge, John	Rent assistance	$	353.00
184.5030.5242.000	Kading Properties LLC	Rent assistance	$	672.00
184.5030.5242.000	Kading Properties LLC	Rent assistance	$	782.00
184.5030.5242.000	Kading Properties LLC	Rent assistance	$	818.00
184.5030.5242.000	Kading Properties LLC	Rent assistance	$	443.00
610.8015.5750.000	KARL CHEVROLET	1/2 Ton Work Truck	$	42,607.60
610.8016.5750.000	KARL CHEVROLET	1/2 Ton Crew - Sewer Superintendent Truck	$	22,988.15
740.8065.5750.000	KARL CHEVROLET	1/2 Ton Crew - Sewer Superintendent Truck	$	22,988.15
110.2010.5600.000	Kimball Midwest	3/8 super prim drill bits	$	179.00
184.5030.5242.000	Kramer, Marcia	Rent assistance	$	388.00
110.2010.5132.000	Kreimeyer, Brian	Non taxable boots for work	$	312.69
110.2040.5565.000	Larrys Towing and Tire Service	Utility truck F350 tires & TPS's	$	1,050.00
181.3040.5433.000	Larson, Leslie	Lead Hazard Reduction Program	$	750.00
184.5030.5242.000	Lawthers Property Management	Rent assistance	$	157.00
110.2010.5450.000	Legg, Richard	Monthly cell phone stipend	$	40.00
184.5030.5242.000	Linton, Tyler	Rent assistance	$	368.00
184.5030.5242.000	Linton, Tyler	Rent assistance	$	292.00
184.5030.5242.000	LJWS Farms LLC	Rent assistance	$	311.00
184.5030.5242.000	Lopez, Jaime	Rent assistance	$	455.00
184.5030.5246.000	Louis, Marie	Rent assistance	$	7.00
184.5030.5242.000	Luense, Brant	Rent assistance	$	661.00
184.5030.5242.000	Luense, Brant	Rent assistance	$	727.00
184.5030.5242.000	Luense, Brant	Rent assistance	$	650.00
184.5030.5242.000	Luense, Brant	Rent assistance	$	356.00
184.5030.5242.000	Luense, Brant	Rent assistance	$	260.00
184.5030.5242.000	Luense, Brant	Rent assistance	$	255.00
001.1075.5234.000	Lynch Dallas PC	Nuisance/ enforcement 10/20-11/14	$	2,125.35
001.6040.5234.000	Lynch Dallas PC	General Matters 10/20-11/14/25	$	2,166.85
001.6040.5234.000	Lynch Dallas PC	Real Estate 10/31-11/05	$	465.00
001.6040.5234.000	Lynch Dallas PC	Animal ordinances 11/05-11/07	$	777.00
001.6040.5234.000	Lynch Dallas PC	Labor/ employment 10/20-11/04	$	92.50
355.1075.5234.000	Lynch Dallas PC	Nuisance/ enforcement 10/20-11/14	$	200.00
001.1010.5410.000	MACQUEEN EQUIPMENT	PD 506 new router, cables, antennae	$	550.00
001.1010.5410.000	MACQUEEN EQUIPMENT	PD 521 lights repair	$	122.00
184.5030.5242.000	Manus & Michelle Property Management	Rent assistance	$	288.00
184.5030.5242.000	Marion Manor I Apartments	Rent assistance	$	260.00
001.4030.5251.000	MARSHALL COUNTY EXTENSION	Lecnir/ Titus licenses	$	155.00
139.4045.5251.000	Marshall County Treasurer	Yearly pool inspection	$	270.00
001.5020.5331.000	Marshalltown Chamber of Commerce	Economic Development Consulting Services 1st qtr	$	25,000.00
001.5020.5331.000	Marshalltown Chamber of Commerce	Economic Development Consulting Services 2nd Qtr	$	25,000.00
001.5900.5331.000	Marshalltown Chamber of Commerce	Res 2025-16 Tourism & Promotional Services	$	67,190.78
001.5900.5331.000	Marshalltown Chamber of Commerce	Res 2025-26 Tourism & Promotional Services	$	34,826.21
184.5030.5242.000	Marshalltown Lofts, LLC	Rent assistance	$	685.00
184.5030.5242.000	Marshalltown Lofts, LLC	Rent assistance	$	1,067.00
184.5030.5242.000	Marshalltown Lofts, LLC	Rent assistance	$	285.00
184.5030.5242.000	Marshalltown Lofts, LLC	Rent assistance	$	539.00
184.5030.5242.000	Marshalltown Lofts, LLC	Rent assistance	$	455.00
184.5030.5242.000	Marshalltown Lofts, LLC	Rent assistance	$	302.00
184.5030.5242.000	Marshalltown Lofts, LLC	Rent assistance	$	302.00
184.5030.5242.000	Marshalltown Lofts, LLC	Rent assistance	$	259.00
184.5030.5242.000	Marshalltown Lofts, LLC	Rent assistance	$	256.00
184.5030.5242.000	Marshalltown Lofts, LLC	Rent assistance	$	5.00
184.5030.5242.000	Marshalltown Lofts, LLC	Rent assistance	$	73.00
184.5030.5242.000	Marshalltown Lofts, LLC	Rent assistance	$	175.00
184.5030.5242.000	Marshalltown Lofts, LLC	Rent assistance	$	217.00
184.5030.5242.000	Marshalltown Lofts, LLC	Rent assistance	$	206.00
184.5030.5242.000	Marshalltown Lofts, LLC	Rent assistance	$	624.00
184.5030.5242.000	Marshalltown Lofts, LLC	Rent assistance	$	190.00
184.5030.5242.000	Marshalltown Lofts, LLC	Rent assistance	$	198.00
001.1075.5485.000	Marshalltown Water Works	23 W Main St storm water	$	16.80
001.1075.5485.000	Marshalltown Water Works	704 Lee St storm water	$	8.40
001.1075.5485.000	Marshalltown Water Works	20 E Main St storm water	$	16.80
001.1075.5485.000	Marshalltown Water Works	307 N 13th Ave storm sewer	$	8.40

001.1075.5485.000	Marshalltown Water Works	908 S 9th Ave storm water	$	8.40
001.1099.5483.000	Marshalltown Water Works	Police & Fire dept water	$	29.44
001.2090.5220.000	Marshalltown Water Works	landfill bills	$	264.00
001.4030.5483.000	Marshalltown Water Works	6th St complex MFL	$	6.95
001.4030.5483.000	Marshalltown Water Works	Riverview Park water Reunion Hall	$	20.99
001.4030.5483.000	Marshalltown Water Works	City RV Dump water 1001 Woodland St	$	20.99
001.4030.5483.000	Marshalltown Water Works	water - 222 N 13th St	$	28.06
001.4030.5483.000	Marshalltown Water Works	water 402 Woodland community bldg	$	34.91
001.4030.5483.000	Marshalltown Water Works	Riverview Hydrant 1001 Woodland St	$	14.03
001.4030.5485.000	Marshalltown Water Works	107 S 7th Ave Arnolds Park	$	25.20
001.4030.5485.000	Marshalltown Water Works	Bicentenial Park	$	50.40
142.4030.5483.000	Marshalltown Water Works	water 6th St Complex - 2nd concession	$	244.84
142.4030.5483.000	Marshalltown Water Works	water - 6th St Complex MSA East Irrigation	$	29.44
142.4030.5483.000	Marshalltown Water Works	water S. 6th St. Complex	$	29.44
610.8015.5220.000	Marshalltown Water Works	WPCP Plant water usage	$	8,345.43
740.8065.5220.000	Marshalltown Water Works	Storm water Collection Services	$	259.80
184.5030.5246.000	Mattingly, Ruth	Rent assistance	$	40.00
001.1010.5410.000	MCATEE TIRE SALES & SERVICE INC	PD tire repair	$	40.00
001.1010.5410.000	MCATEE TIRE SALES & SERVICE INC	PD 513 tire repair	$	65.00
001.1010.5410.000	MCATEE TIRE SALES & SERVICE INC	PD 506 tire repair	$	40.00
001.4030.5339.000	MCFARLAND CLINIC PC	physicals and or immunizations	$	38.72
184.5030.5151.000	MCFARLAND CLINIC PC	Physicals and or immunizations	$	139.52
690.8050.5151.000	MCFARLAND CLINIC PC	Physicals and or immunizations	$	139.52
184.5030.5242.000	MD Kruse Enterprise	Rent assistance	$	90.00
610.8015.5600.000	Mechanical Sales Parts Iowa Inc	Cooling tower pump & parts	$	6,233.00
001.1010.5600.000	MENARDS	Pliers, clamps, nut driver	$	32.00
001.4030.5611.000	MENARDS	21" marking flag	$	9.99
001.4030.5611.000	MENARDS	steel trowel	$	15.98
001.4030.5611.000	MENARDS	3" mechanical test plug	$	39.92
001.4030.5611.000	MENARDS	48" reflec markers	$	24.95
110.2010.5132.000	MENARDS	Street employee clothing	$	29.99
110.2010.5600.000	MENARDS	100' green cord	$	84.99
110.2010.5600.000	MENARDS	Street dept op supplies & re-bar 100	$	555.94
110.2010.5600.000	MENARDS	marking wand	$	34.99
110.2010.5703.000	MENARDS	Computer cord	$	9.99
142.4030.5611.000	MENARDS	Parks operating supplies	$	3.99
610.8016.5600.000	MENARDS	Sewer dept operating supplies	$	6.09
610.8016.5776.000	MENARDS	Galvenized sheet, Great Stuff, rapid caulk	$	62.29
610.8016.5776.000	MENARDS	thermostat guard	$	22.79
690.8050.5565.000	MENARDS	Transit lumber, drive bit set, plycarbonate sheets	$	685.56
740.8065.5600.000	MENARDS	Sewer dept operating supplies	$	4.06
740.8065.5600.000	MENARDS	pvc tape and coupler	$	11.98
740.8065.5776.000	MENARDS	Galvenized sheet, Great Stuff, rapid caulk	$	41.53
740.8065.5776.000	MENARDS	thermostat guard	$	15.19
610.8015.5603.000	Microbac Laboratories Inc	LAB analysis Dig #3	$	87.50
610.8015.5603.000	Microbac Laboratories Inc	LAB Analysis Pre App	$	61.00
364.2010.5342.000	Mid-Iowa Enterprises LLC	HMA Crack & Joint Seal 10/6/25-11/30/25	$	67,067.02
610.8015.5603.000	MIDLAND SCIENTIFIC INC	LAB phosphate powder pillows	$	267.23
610.8015.5603.000	MIDLAND SCIENTIFIC INC	LAB 50ml low form griffin beakers red	$	102.03
610.8015.5603.000	MIDLAND SCIENTIFIC INC	LAB 50% hydrogen peroxide	$	320.90
184.5030.5242.000	Mike Judge	Rent assistance	$	321.00
184.5030.5242.000	Mike Judge	Rent assistance	$	391.00
184.5030.5242.000	Mike Judge	Rent assistance	$	403.00
184.5030.5242.000	Mike Judge	Rent assistance	$	197.00
184.5030.5242.000	Mike Judge	Rent assistance	$	198.00
184.5030.5242.000	Mike Judge	Rent assistance	$	214.00
184.5030.5242.000	Mike Judge	Rent assistance	$	289.00
184.5030.5242.000	Mike Judge	Rent assistance	$	292.00
184.5030.5242.000	Mike Judge	Rent assistance	$	336.00
184.5030.5242.000	Mike Judge	Rent assistance	$	125.00
184.5030.5242.000	Moore, Michelle	Rent assistance	$	317.00
184.5030.5242.000	Mtown/ Westown LLLP	Rent assistance	$	239.00
184.5030.5242.000	Mtown/ Westown LLLP	Rent assistance	$	390.00

184.5030.5242.000	Mtown/ Westown LLLP	Rent assistance	$	166.00
184.5030.5242.000	Mtown/ Westown LLLP	Rent assistance	$	168.00
184.5030.5242.000	Mtown/ Westown LLLP	Rent assistance	$	227.00
184.5030.5242.000	Mtown/ Westown LLLP	Rent assistance	$	390.00
184.5030.5242.000	Mtown/ Westown LLLP	Rent assistance	$	231.00
184.5030.5242.000	Mtown/ Westown LLLP	Rent assistance	$	390.00
184.5030.5242.000	Mtown/ Westown LLLP	Rent assistance	$	390.00
184.5030.5242.000	Mtown/ Westown LLLP	Rent assistance	$	385.00
184.5030.5242.000	Mtown/ Westown LLLP	Rent assistance	$	278.00
184.5030.5242.000	Mtown/ Westown LLLP	Rent assistance	$	377.00
184.5030.5242.000	Mtown/ Westown LLLP	Rent assistance	$	359.00
184.5030.5242.000	Mtown/ Westown LLLP	Rent assistance	$	346.00
184.5030.5242.000	Mtown/ Westown LLLP	Rent assistance	$	331.00
184.5030.5242.000	Mtown/ Westown LLLP	Rent assistance	$	248.00
184.5030.5242.000	Mtown/ Westown LLLP	Rent assistance	$	324.00
184.5030.5242.000	Mtown/ Westown LLLP	Rent assistance	$	289.00
184.5030.5242.000	Mtown/ Westown LLLP	Rent assistance	$	288.00
184.5030.5242.000	Mtown/ Westown LLLP	Rent assistance	$	380.00
184.5030.5246.000	Neave, Mia	Rent assistance	$	46.00
184.5030.5242.000	NORTH TAMA HOUSING, INC	Rent assistance	$	51.00
001.4066.5613.000	NORTHERN LIGHTS DISTRIBUTING	Coliseum resale products	$	302.72
001.2080.5571.000	NUTRIEN AG SOLUTIONS INC	Airport Equipment Diesel	$	415.20
184.5030.5242.000	Oetker, Debra	Rent assistance	$	330.00
184.5030.5242.000	Oetker, Debra	Rent assistance	$	55.00
001.1050.5216.000	One Source Aquisition Company LLC	applicant checks	$	19.00
690.8050.5216.000	One Source Aquisition Company LLC	applicant checks	$	19.00
184.5030.5242.000	Park Elms LLC	Rent assistance	$	385.00
184.5030.5242.000	Park Elms LLC	Rent assistance	$	107.00
184.5030.5242.000	Park Elms LLC	Rent assistance	$	405.00
184.5030.5242.000	Park Elms LLC	Rent assistance	$	492.00
Payroll	Payroll	Payroll #24 12.4.2025	$	394,033.76
001.6025.5450.000	Petermeier, Jill	Monthly cell phone stipend	$	40.00
001.1099.5410.000	Plumb Supply	PF Bldg hot water heater gaskets	$	90.11
184.5030.5242.000	Plymat Jr , William	Rent assistance	$	546.00
610.8015.5342.000	Prairie Waste Solutions	Water Pollution plant	$	220.00
184.5030.5242.000	Premier Iowa City IA LLC	Rent assistance	$	392.00
184.5030.5242.000	Premier Iowa City IA LLC	Rent assistance	$	86.00
184.5030.5242.000	Premier Iowa City IA LLC	Rent assistance	$	136.00
184.5030.5242.000	Premier Iowa City IA LLC	Rent assistance	$	655.00
184.5030.5242.000	Premier Iowa City IA LLC	Rent assistance	$	254.00
184.5030.5242.000	Premier Iowa City IA LLC	Rent assistance	$	57.00
184.5030.5344.000	Premier Office Equipment	Housing contract and copies	$	74.64
184.5030.5242.000	Premier Real Estate Mgmnt	Rent assistance	$	476.00
184.5030.5242.000	Premier Real Estate Mgmnt	Rent assistance	$	722.00
184.5030.5242.000	Premier Real Estate Mgmnt	Rent assistance	$	414.00
184.5030.5242.000	Premier Real Estate Mgmnt	Rent assistance	$	1.00
184.5030.5242.000	Premier Real Estate Mgmnt	Rent assistance	$	445.00
184.5030.5242.000	Premier Real Estate Mgmnt	Rent assistance	$	380.00
184.5030.5242.000	Premier Real Estate Mgmnt	Rent assistance	$	350.00
184.5030.5242.000	Prime Property Ventures LLC	Rent assistance	$	267.00
184.5030.5242.000	Pyramid Property Solutions Inc	Rent assistance	$	322.00
184.5030.5242.000	Pyramid Property Solutions Inc	Rent assistance	$	35.00
184.5030.5242.000	Pyramid Property Solutions Inc	Rent assistance	$	404.00
184.5030.5242.000	R & A Rental Properties LLC	Rent assistance	$	455.00
184.5030.5242.000	R & A Rental Properties LLC	Rent assistance	$	203.00
184.5030.5242.000	R & A Rental Properties LLC	Rent assistance	$	592.00
610.8015.5450.000	Ranson, Robert	monthly cell phone stipend	$	40.00
184.5030.5242.000	Reed, Tony	Rent assistance	$	430.00
184.5030.5246.000	Renaud, Rachelle	Rent assistance	$	35.00
184.5030.5242.000	Rice, Quinton	Rent assistance	$	411.00
184.5030.5242.000	River Birch Apts	Rent assistance	$	800.00
184.5030.5242.000	River Birch Apts	Rent assistance	$	315.00
184.5030.5242.000	River Birch Apts	Rent assistance	$	780.00

184.5030.5242.000	River Oaks Apartments	Rent assistance	$	155.00
184.5030.5242.000	River Oaks Apartments	Rent assistance	$	815.00
184.5030.5242.000	River Oaks Apartments	Rent assistance	$	487.00
184.5030.5242.000	River Oaks Apartments	Rent assistance	$	366.00
110.2050.5380.000	Road Machinery and Supplies	Rental portable stacking conveyor	$	6,780.40
184.5030.5242.000	Rural Revival Properties LLC	Rent assistance	$	335.00
001.1071.5342.000	Safe Building	Rental Inspection Service Agreement FY26/27	$	6,240.00
184.5030.5238.000	SanDiego Housing Commission	Admin Fee120125	$	54.04
184.5030.5242.000	SanDiego Housing Commission	Rent assistance	$	2,648.00
001.1050.5342.000	SCHENDEL PEST CONTROL INC	Fire dept Qrtly pest control	$	81.00
184.5030.5242.000	Schmidt, Michael T	Rent assistance	$	700.00
184.5030.5242.000	Schmidt, Michael T	Rent assistance	$	372.00
110.2010.5718.000	SE Jones Industries Inc	sockets and ratchet	$	52.25
110.2010.5718.000	SE Jones Industries Inc	Pliers set and relay bypass master kit	$	399.00
364.4030.5233.000	Snyder & Associates Inc	Eng fees for Linn Creek Dist Trailhead thru 10/31	$	8,056.70
184.5030.5246.000	Squires, Christina	Rent assistance	$	86.00
001.6021.5460.000	Steiner, Diana	Budget workshop Iowa League of Cities	$	60.00
184.5030.5246.000	Stiegelmeier, Curtis	Rent assistance	$	10.00
364.2012.5776.000	Strands	City Hall - Exterior Lights - Paint Materials	$	309.99
001.1010.5132.000	STREICHERS INC	PD employee name tag cloth	$	10.00
184.5030.5242.000	Sweet Pea Properties LLC	Rent assistance	$	616.00
184.5030.5242.000	Sweet Pea Properties LLC	Rent assistance	$	197.00
184.5030.5242.000	Swift, Scott	Rent assistance	$	430.00
184.5030.5242.000	Taylor, Mike	Rent assistance	$	359.00
110.2010.5132.000	THEISENS SUPPLY INC	Street dept gloves	$	16.99
110.2010.5132.000	THEISENS SUPPLY INC	Street employee clothing	$	40.19
110.2010.5600.000	THEISENS SUPPLY INC	Receiver tube	$	19.99
110.2010.5718.000	THEISENS SUPPLY INC	Street - shovel	$	59.98
110.2010.5718.000	THEISENS SUPPLY INC	2 gallon battery powered, chem resistant sprayer	$	199.00
110.2030.5132.000	THEISENS SUPPLY INC	Utility employee clothing	$	199.99
110.2030.5132.000	THEISENS SUPPLY INC	Utility employee PPE clothing	$	245.92
110.2030.5132.000	THEISENS SUPPLY INC	Utility work gloves	$	29.98
110.2040.5132.000	THEISENS SUPPLY INC	Deemer work boots	$	146.99
110.2050.5600.000	THEISENS SUPPLY INC	4' Driveway marker	$	89.70
610.8016.5132.000	THEISENS SUPPLY INC	Sewer employee boots	$	88.19
610.8016.5132.000	THEISENS SUPPLY INC	Two pack 20V batteries, charger, clothing, OP supp	$	26.99
610.8016.5132.000	THEISENS SUPPLY INC	Sewer dept employee clothing	$	65.09
610.8016.5600.000	THEISENS SUPPLY INC	Sewer employee boots	$	5.99
610.8016.5600.000	THEISENS SUPPLY INC	rigid caster	$	23.99
610.8016.5600.000	THEISENS SUPPLY INC	Two pack 20V batteries, charger, clothing, OP supp	$	29.38
610.8016.5718.000	THEISENS SUPPLY INC	Two pack 20V batteries, charger, clothing, OP supp	$	214.19
690.8050.5565.000	THEISENS SUPPLY INC	Transit employee boots	$	86.25
740.8065.5132.000	THEISENS SUPPLY INC	Sewer employee boots	$	58.80
740.8065.5132.000	THEISENS SUPPLY INC	Two pack 20V batteries, charger, clothing, OP supp	$	18.00
740.8065.5132.000	THEISENS SUPPLY INC	Sewer dept employee clothing	$	43.40
740.8065.5600.000	THEISENS SUPPLY INC	Sewer employee boots	$	4.00
740.8065.5600.000	THEISENS SUPPLY INC	rigid caster	$	16.00
740.8065.5600.000	THEISENS SUPPLY INC	Two pack 20V batteries, charger, clothing, OP supp	$	19.59
740.8065.5718.000	THEISENS SUPPLY INC	Two pack 20V batteries, charger, clothing, OP supp	$	142.80
001.1010.5450.000	T-Mobile	PD mobile services	$	1,204.71
999.1128.000	TOTAL ADMINISTRATIVE SERVICE CORP.	FLEX HEALTH BENEFITS	$	1,045.80
999.1128.000	TOTAL ADMINISTRATIVE SERVICE CORP.	FLEX HEALTH BENEFITS	$	5,611.37
999.1129.000	TOTAL ADMINISTRATIVE SERVICE CORP.	FLEX DEP CARE BENEFITS	$	416.66
999.1129.000	TOTAL ADMINISTRATIVE SERVICE CORP.	FLEX DEP CARE BENEFITS	$	1,091.65
184.5030.5242.000	Town Apartments Corporation	Rent assistance	$	284.00
184.5030.5242.000	Town Apartments Corporation	Rent assistance	$	419.00
999.1102.000	TREASURER STATE OF IOWA	Bi-Weekly Payroll SIT	$	10,987.69
999.1102.000	TREASURER STATE OF IOWA	Bi-Weekly Payroll SIT	$	6,066.20
690.8050.5210.000	Trending Media Inc	Transit advertising	$	149.00
690.8050.5210.000	Trending Media Inc	Transit advertising-KFJB	$	60.00
001.4030.5611.000	Tri State Lock Service	padlocks, keys, tags	$	195.00
001.4030.5611.000	Tri State Lock Service	Padlocks for Park and Rec	$	180.00
184.5030.5242.000	TTLC Coop Housing	Rent assistance	$	248.00

184.5030.5242.000	TTLC Coop Housing	Rent assistance	$	710.00
184.5030.5242.000	TTLC Coop Housing	Rent assistance	$	874.00
184.5030.5242.000	Ultimate Property Management LLC	Rent assistance	$	449.00
363.2012.5331.000	UNION PACIFIC RAILROAD COMPANY	PE Agreement for RRQZ 8/7/25-9/19/25	$	6,969.63
610.8015.5410.000	Unison Solutions Inc	Generator methane gas testing	$	275.00
001.1050.5600.000	Vajgrt, Roger	Fire dept spark plug	$	12.25
001.4030.5562.000	VANWALL EQUIPMENT INC	Parks now equipment supplies	$	1,188.74
110.2060.5347.000	Velocity EHS	MSDS online 1/15/26-1/14/27	$	1,500.00
610.8015.5347.000	Velocity EHS	MSDS online 1/15/26-1/14/27	$	1,500.00
184.5030.5242.000	Walker, Angela	Rent assistance	$	312.00
184.5030.5246.000	Wallace, Yianna	Rent assistance	$	41.00
121.6051.5776.000	Walsh Door & Hardware Co	Carnegie Door Security	$	5,001.78
184.5030.5242.000	White, Amalia	Rent assistance	$	265.00
184.5030.5246.000	Wirth, Tammy	Rent assistance	$	28.00
001.1050.5132.000	Witmer Public Safety Group Inc	FD Lieutenant pin	$	109.10
001.1050.5132.000	Witmer Public Safety Group Inc	Fire dept helmet shield	$	49.99
001.1050.5600.000	Witmer Public Safety Group Inc	Fire Maul Firewrap, SFT Yellow, Case of 20 Kits	$	470.21
001.1099.5482.000	WoodRiver Energy LLC	Police & Fire Bldg 11672	$	1,991.89
001.4010.5482.000	WoodRiver Energy LLC	Library gas #7078	$	531.85
001.4045.5482.000	WoodRiver Energy LLC	SWIMMING POOL 7077	$	37.34
184.5030.5242.000	Worsfold Farm LLC	Rent assistance	$	370.00
001.4030.5342.000	Xerox Corp	Parks contract and copies	$	30.00
001.4030.5410.000	Ziegler Inc	PW Bldg generator block heater	$	62.13
110.2010.5410.000	Ziegler Inc	PW Bldg generator block heater	$	75.81
110.2010.5565.000	Ziegler Inc	Street 62 elements	$	425.00
690.8050.5410.000	Ziegler Inc	PW Bldg generator block heater	$	75.81
TOTAL			**$**	**1,248,964.54**

MARSHALLTOWN
MORE THAN EVER

Joel Greer, Mayor
Carol Webb, City Administrator
24 North Center Street
Marshalltown, IA 50158
PH 641.754.5701 • FX 641.754.5717

To:	Mayor and City Council
From:	
Meeting Date:	December 8, 2025
Re:	Reappoint Chris Bennett and appoint Tress David Boles and Gary Gimbel to the Parks and Recreation Advisory Board, terms 1/1/26-12/31/27

Strategic Plan Objective:

Recommended:

Budget Impact:

Description/Background:

Attachments:

1. 2025-11-08_P&R_Chris Bennett
2. 2025-11-10_P&R_Gary Gimbel
3. 2025-11-12_P&R_Tress David Boles

Online Form Submission #34565 for Application for Appointment to Boards and Commissions

From : noreply@civicplus.com Sat, Nov 08, 2025 01:00 AM

Subject : Online Form Submission #34565 for Application for Appointment to Boards and Commissions

To : clerk@marshalltown-ia.gov

CAUTION: This email originated from outside of the City of Marshalltown. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Application for Appointment to Boards and Commissions

Date	11/8/2025
Last Name	Bennett
First name	Chris
Middle Initial	R
Home Address	501 Terry Ter
City	Marshalltown
State	Iowa
Zip Code	50158-4457
Is your primary residence with in the city limits of Marshalltown?	Yes
Day Phone	*Field not completed.*
Evening Phone	*Field not completed.*
Cell Phone	6414853822
Employer	State of Iowa
Email	bennett.c419@gmail.com
Veteran's Status	No
Organization Interest	Parks & Recreation Advisory Committee
Are you apply for reappointment?	Yes

Volunteer Civic / Community Activity:	Coaching for soccer & volleyball. Playing in volleyball league and kickball league. Civil service committee.
Please indicate why you have designated a particular Board/Commission on which you would like to serve.	Current member of p&r board. User of many p&r services.
Additional Information Upload	*Field not completed.*
Please attach a resume, if applicable, to evaluate your interests and match you with the appropriate Board/Commission vacancy.	*Field not completed.*

Attendance of Members of All Boards and Commission

To ensure the effective operation of our Boards and Commissions by promoting accountability and regular attendance among its members while aligning with the statutory provisions established by the State of Iowa law, if any commission member has three (3) unexcused absences at six (6) consecutive meetings of the Commission, such absences shall be grounds for requesting the member's resignation. An unexcused absence is an absence without prior approval or a valid, document reason. If the member does not voluntarily resign following such request, the Mayor may initiate proceedings for removal of the member in accordance with Iowa Code § 372.15.

Please list any days or times you are not available for meetings:	*Field not completed.*

The City appreciates your time and volunteer spirit. Your application will be kept on file for one year. Please subscribe to City News to receive volunteer opportunity announcements https://www.marshalltown-ia.gov/list.aspx.

Applicant's E-Signature	Christopher Bennett

Email not displaying correctly? View it in your browser.

Online Form Submission #34568 for Application for Appointment to Boards and Commissions

From : noreply@civicplus.com Mon, Nov 10, 2025 10:59 AM

Subject : Online Form Submission #34568 for Application for Appointment to Boards and Commissions

To : clerk@marshalltown-ia.gov

CAUTION: This email originated from outside of the City of Marshalltown. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Application for Appointment to Boards and Commissions

Date	11/10/2025
Last Name	Gimbel
First name	Gary
Middle Initial	*Field not completed.*
Home Address	104 E Olive Street
City	Marshalltown
State	Ia
Zip Code	50158
Is your primary residence with in the city limits of Marshalltown?	Yes
Day Phone	X
Evening Phone	X
Cell Phone	641.485.5738
Employer	last employer - owner- Taco John’s of Marshalltown Inc.
Email	gary.gimbel07@gmail.com
Veteran's Status	No
Organization Interest	Parks & Recreation Advisory Committee
Are you apply for reappointment?	No

Volunteer Civic / Community Activity:	Marshalltown Chamber Board member Marshalltown Convention and Visitors Board member Iowa Vets Home volunteer Marshalltown YMCA Heritage Club board member
Please indicate why you have designated a particular Board/Commission on which you would like to serve.	I am now retired, and an active person within our parks and trails. As a lifelong member of Marshalltown, I feel I have a good feel for our city's parks and trails, and can provide 1st hand experience and input to further enhance the city's rec opportunities. I'm an avid cyclist so I'm on our trails a lot, and frequent the dog park and Riverview quite often.
Additional Information Upload	*Field not completed.*
Please attach a resume, if applicable, to evaluate your interests and match you with the appropriate Board/Commission vacancy.	*Field not completed.*

Attendance of Members of All Boards and Commission

To ensure the effective operation of our Boards and Commissions by promoting accountability and regular attendance among its members while aligning with the statutory provisions established by the State of Iowa law, if any commission member has three (3) unexcused absences at six (6) consecutive meetings of the Commission, such absences shall be grounds for requesting the member's resignation. An unexcused absence is an absence without prior approval or a valid, document reason. If the member does not voluntarily resign following such request, the Mayor may initiate proceedings for removal of the member in accordance with Iowa Code § 372.15.

Please list any days or times you are not available for meetings:	N/A

The City appreciates your time and volunteer spirit. Your application will be kept on file for one year. Please subscribe to City News to receive volunteer opportunity announcements https://www.marshalltown-ia.gov/list.aspx.

Applicant's E-Signature	Gary Gimbel

Email not displaying correctly? View it in your browser.

Online Form Submission #34574 for Application for Appointment to Boards and Commissions

From : noreply@civicplus.com Wed, Nov 12, 2025 01:58 PM
Subject : Online Form Submission #34574 for Application for Appointment to Boards and Commissions
To : clerk@marshalltown-ia.gov

CAUTION: This email originated from outside of the City of Marshalltown. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Application for Appointment to Boards and Commissions

Date	11/12/2025
Last Name	Boles
First name	Tress David
Middle Initial	*Field not completed.*
Home Address	31 Crosby Park Dr.
City	Marshalltown
State	Iowa
Zip Code	50158
Is your primary residence with in the city limits of Marshalltown?	Yes
Day Phone	6417521834
Evening Phone	2084051938
Cell Phone	2084051938
Employer	American Legion POST #46
Email	golfproalmgc@gmail.com
Veteran's Status	Yes
Organization Interest	Parks & Recreation Advisory Committee
Are you apply for reappointment?	No

Volunteer Civic / Community Activity:	Member - Marshalltown Chamber of Commerce Marshalltown Area United Way St. Francis School Marshalltown High School Elmwood Country Club Iowa Girls High School Athletic Union Iowa Golf Association Boy's and Girl's Summer Golf Clinics - American Legion GC
Please indicate why you have designated a particular Board/Commission on which you would like to serve.	In my role as a golf professional at a public golf course, specifically the American Legion Memorial Golf Course, I have a unique opportunity to meet and interact with many organizers, leaders of organizations and schools, as well as the public in general. My incentive to be a Committee member has many very good reasons, including the following; a. I provide a motivation for inclusion, rather exclusion, for young children, grade school youth, and young adult age groups using golf clinics and golf instruction. b. I believe having local resources and opportunities available, at an affordable cost, is one of the key elements for youth and adults, at any skill level and age group, to participate as an individual, as a team member, and in a safe, social environment. c. I bring a professional sport skill level and experience into an Advisory Board with perhaps a different perspective of how to achieve desired goals and benchmarks and d. I would work with the existing Committee members in a supportive role of existing programs, but to develop, submit, and implement plans for the future of Marshalltown's Park and Recreation programs. In conclusion, my experience as a professional golfer, a collegiate coach, a basketball official of 40 years, and a multi-sport athlete in high school will provide opinions and direction as guidance for all designated youth and adult athletic programs.
Additional Information Upload	*Field not completed.*
Please attach a resume, if applicable, to evaluate your interests and match you with the appropriate Board/Commission vacancy.	*Field not completed.*

Attendance of Members of All Boards and Commission

To ensure the effective operation of our Boards and Commissions by promoting accountability and regular attendance among its members while aligning with the statutory provisions established by the State of Iowa law, if any commission member has three (3) unexcused absences at six (6) consecutive meetings of the Commission, such absences shall be grounds for requesting the member's resignation. An unexcused absence is an absence without prior approval or a valid, document reason. If the member does not voluntarily resign following such request, the Mayor may initiate proceedings for removal of the member in accordance with Iowa Code § 372.15.

Please list any days or times you are not available for meetings:	*Field not completed.*

The City appreciates your time and volunteer spirit. Your application will be kept on file for one year. Please subscribe to City News to receive volunteer opportunity announcements https://www.marshalltown-ia.gov/list.aspx.

Applicant's E-Signature	Tress David Boles

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MARSHALLTOWN
MORE THAN EVER

Joel Greer, Mayor
Carol Webb, City Administrator
24 North Center Street
Marshalltown, IA 50158
PH 641.754.5701 • FX 641.754.5717

To:	Mayor and City Council
From:	Diana Steiner, Finance Director
Meeting Date:	December 8, 2025
Re:	Approve September 2025 Financial Statements

Strategic Plan Objective:
N/A

Recommended:
Staff recommends approving the September 2025 financial statements

Budget Impact:
N/A

Description/Background:
The Finance Department has prepared and reconciled the September 2025 financial statements for your review. The budgeted amounts shown are based on the FY26 adopted budget that was approved in April 2025.

The attached reports include the following:

- Fund Balance Report, which includes the beginning balance at 6/30/25, the year-to-date revenues and expenses for 3 months and the ending fund cash balance at 9/30/25.
- Cash & Investments Report, which includes current balances and interest rates for all city investments.
- Monthly Budget Report, which reflects monthly and year-to-date revenues and expenses by each fund and then in summary. If the YTD Activity amount is less than the YTD Budget amount, it will show as unfavorable for revenues and favorable for expenses.

Items of interest this month
*Quarterly transfers have been made. See separate agenda item for the details.
*Fund 364 received a reimbursement of $345,497 for the Destination Iowa grant for the Linn Creek projects.

* Fund 364 included Water Plaza expenses of $549,557 and $695,998 for E. Main Center to 3rd Ave.

Attachments:

1. September 2025 Financial Statements

MARSHALLTOWN
IOWA

FUND BALANCE REPORT
AS OF 9/30/25

Fund	Beginning Balanc	Total Revenues	Total Expenses	Ending Balance
001 - GENERAL FUND	$ 3,687,037.61	$ 2,755,937.96	$ 5,037,706.16	$ 1,405,269.41
010 - CASH FLOW RESERVE FUND	$ 3,582,377.04	$ 38,469.23	$ -	$ 3,620,846.27
011 - INSURANCE DEDUCTIBLE RESERVE FUND	$ 262,153.76	$ 2,815.13	$ -	$ 264,968.89
030 - CAPITAL RESERVE	$ -	$ 208,921.74	$ 208,921.74	$ -
031 - CAPITAL RSRV-BLDG MAINT	$ 225,445.42	$ 2,312.39	$ 22,327.50	$ 205,430.31
032 - CIP LARGE VEHICLE/EQUIPMENT	$ 223,209.00	$ -	$ -	$ 223,209.00
110 - ROAD USE TAX	$ 12,070,509.71	$ 1,191,854.35	$ 641,945.64	$ 12,620,418.42
111 - ROAD USE TAX INSURANCE RESERVE	$ 78,411.35	$ 842.02	$ -	$ 79,253.37
112 - EMPLOYEE BENEFITS FUND	$ 3,148,567.55	$ 124,301.73	$ 844,107.81	$ 2,428,761.47
117 - POLICE/FIRE RETIREMENT	$ 599,694.98	$ 44,914.47	$ 330,691.72	$ 313,917.73
121 - LOCAL OPTION SALES TAX	$ 4,914,894.35	$ 1,168,268.50	$ 923,550.13	$ 5,159,612.72
125 - TAX INCREMENT FINANCING	$ 667,980.78	$ 48,267.14	$ 15,000.00	$ 701,247.92
126 - TIF-LMI	$ 8,887.42	$ 95.44	$ -	$ 8,982.86
130 - CITY TORT LIABILITY	$ 65,616.88	$ 90,758.18	$ 14,974.47	$ 141,400.59
132 - GRANTS-STATE/LOCAL AGENCIES	$ 4,980.86	$ 13.87	$ -	$ 4,994.73
133 - UNDESIGNATED FEDERAL GRANTS	$ (6,761.00)	$ 24,526.63	$ 273,735.63	$ (255,970.00)
140 - PARK & REC DONATION FUND	$ (129,286.78)	$ 189,595.79	$ 6,897.42	$ 53,411.59
142 - SOFTBALL ASSOCIATION FUND	$ (15,021.02)	$ 15,021.02	$ 17,618.32	$ (17,618.32)
144 - LIVE HEALTHY IOWA	$ 10,258.36	$ 110.16	$ -	$ 10,368.52
145 - TORNADO GENERAL	$ 40,000.00	$ -	$ -	$ 40,000.00
149 - FEMA - WINDS	$ 345,665.10	$ 34,308.17	$ -	$ 379,973.27
150 - LOCAL PD GRANTS	$ (5,091.86)	$ 14,845.87	$ 15,117.88	$ (5,363.87)
151 - DEPT OF JUSTICE GRANTS	$ -	$ 1,630.68	$ 1,630.68	$ -
152 - POLICE UNDESIGNATED GRANTS	$ (12,706.29)	$ 27,902.55	$ 23,941.42	$ (8,745.16)
153 - POLICE DEPT DONATION FUND	$ 88,661.56	$ 973.52	$ 3,836.85	$ 85,798.23
154 - AUTOMATED TRAFFIC ENFORCEMENT	$ 177,943.37	$ 61,652.52	$ 19,495.00	$ 220,100.89
156 - FIRE DEPT DONATION FUND	$ 51,165.68	$ 1,064.66	$ 3,691.10	$ 48,539.24
160 - ECONOMIC DEVELOPMENT GIFT	$ 60,217.74	$ 431.88	$ 20,000.00	$ 40,649.62
161 - SURETY DEPOSITS/SUBDIVIDER	$ 12,563.02	$ 134.90	$ -	$ 12,697.92
170 - LIBRARY DONATION FUND	$ 158,487.86	$ 33,706.20	$ 31,327.98	$ 160,866.08
177 - SEIZED ASSETS (POLICE)	$ 15,950.01	$ 125.22	$ -	$ 16,075.23
181 - #7 HUD LEAD GRANT	$ (319,687.39)	$ 198,607.99	$ 430,244.86	$ (551,324.26)
184 - VOUCHERS - 002, 003	$ 366,360.74	$ 405,653.13	$ 378,894.14	$ 393,119.73
189 - #6 HUD LEAD GRANT/NOW STATE FUNDS ONLY	$ 165,416.60	$ 2,032.85	$ 17.00	$ 167,432.45
200 - GO BONDS DEBT FUND	$ 180,550.86	$ 923,188.27	$ -	$ 1,103,739.13
300 - CIP COLLECTION FUND	$ 732,895.95	$ 32,310.52	$ 199,556.11	$ 565,650.36
312 - AIRPORT PROJECT FUND	$ 46,003.45	$ 84,226.49	$ 4,600.00	$ 125,629.94
320 - SPECIAL ASSESSMENT PROJECTS	$ (14,510.95)	$ -	$ -	$ (14,510.95)
340 - BIKE PATH PROJECT FUND	$ (12,485.37)	$ -	$ 61,437.15	$ (73,922.52)
341 - TREES FOREVER PROJECT	$ 12,681.09	$ 3,827.60	$ -	$ 16,508.69
355 - Dangerous & Dilapidated (included GO bonds)	$ 212,814.78	$ 17,059.88	$ 199,769.50	$ 30,105.16
363 - 2021 GO BONDS	$ 4,918,858.85	$ 52,355.86	$ 44,111.82	$ 4,927,102.89
364 - 2022 GO BONDS	$ 6,777,883.17	$ 1,026,088.97	$ 4,628,939.93	$ 3,175,032.21
365 - 2023 GO BONDS	$ 10,489,073.68	$ 112,636.59	$ -	$ 10,601,710.27
389 - AMERICAN RESCUE PLAN	$ 258,188.48	$ -	$ 13,014.55	$ 245,173.93
610 - WATER POLLUTION CONTROL	$ -	$ 916,671.21	$ 916,671.21	$ -
611 - WPCP REVENUE	$ 26,782,039.10	$ 2,289,727.12	$ 1,217,248.00	$ 27,854,518.22
614 - WPCP CAPITAL IMPROVEMENT RSRV	$ 1,227,771.41	$ 13,184.38	$ -	$ 1,240,955.79
615 - WPCP PLANT & IMPROVEMENTS	$ (5,000.00)	$ 300,576.79	$ 300,576.79	$ (5,000.00)
617 - SANITARY SEWER NEW CONSTRUCTN	$ 197,038.85	$ 33.00	$ -	$ 197,071.85
618 - WPCP INSURANCE RESERVE (WAS TORNADO)	$ 208,200.44	$ 2,235.76	$ -	$ 210,436.20
690 - TRANSIT OPERATING	$ 1,523,561.13	$ 227,181.62	$ 249,342.23	$ 1,501,400.52
691 - TRANSIT INSURANCE RESERVE	$ 26,361.23	$ 283.07	$ -	$ 26,644.30
740 - STORM SEWER UTILITY	$ 2,837,092.96	$ 391,361.36	$ 200,809.07	$ 3,027,645.25
750 - COMPOSTING FACILITY	$ 229,729.59	$ 39,829.14	$ 11,723.00	$ 257,835.73
760 - P&R CONCESSIONS ENTERPRISE	$ 2,036.37	$ 31,718.32	$ 42,303.79	$ (8,549.10)
881 - OCCUPATIONAL INSURANCE ESCROW	$ 317,839.22	$ 50,161.43	$ 4,968.43	$ 363,032.22
884 - GROUP HEALTH INSURANCE ESCROW	$ 826,474.93	$ 1,074,638.29	$ 840,263.98	$ 1,060,849.24
886 - WORKMAN'S COMP DEDUCTIBLE FUND	$ 37,706.35	$ 404.91	$ -	$ 38,111.26
913 - 911 COMMISION	$ (7,353.65)	$ 325,775.68	$ 448,651.38	$ (130,229.35)
	$ 88,349,354.33	$ 14,605,572.15	$ 18,649,660.39	$ 84,305,266.09

MARSHALLTOWN
IOWA

CASH AND INVESTMENTS
AS OF 9/30/25

Account	Name	Ending Balance	Interest Rate
BalObject: 0110 - P&R Deposits			
999.0110.100	First Interstate Bank P&R Deposits	367,925.27	3.18
	Total BalObject: 0110 - P&R Deposits :	**367,925.27**	
BalObject: 0111 - Operating			
999.0111.100	First Interstate Bank Operating	986,589.50	3.18
	Total BalObject: 0111 - Operating:	**986,589.50**	
BalObject: 0113 - Payroll			
999.0113.100	First Interstate Bank Payroll	450,000.00	3.19
	Total BalObject: 0113 - Payroll:	**450,000.00**	
BalObject: 0115 - HUD Admin			
999.0115.100	First Interstate Bank HUD Admin	382,686.88	3.19
	Total BalObject: 0115 - HUD Admin:	**382,686.88**	
BalObject: 0116 - HUD HAP			
999.0116.100	First Interstate Bank HUD HAP	25,902.92	3.19
	Total BalObject: 0116 - HUD HAP:	**25,902.92**	
BalObject: 0117 - Police			
999.0117.100	First Interstate Bank Police	15,550.23	3.19
	Total BalObject: 0117 - Police:	**15,550.23**	
BalObject: 0117 - ACH			
999.0118.100	First Interstate Bank ACH	1,000.00	3.18
	Total BalObject: 0118 -ACH	**1,000.00**	
BalObject: 0120 - PETTY CASH			
001.0120.000	PETTY CASH - RECORDS	100.00	0.00
144.0120.000	PETTY CASH-TRACK MEET	-	0.00
750.0120.000	PETTY CASH	500.00	0.00
760.0120.000	PETTY CASH	-	0.00
	Total BalObject: 0120 - PETTY CASH:	**600.00**	
BalObject: 0121 - PETTY CASH-SWIMMING POOLS			
001.0121.000	PETTY CASH-SWIMMING POOLS	-	0.00
	Total BalObject: 0121 - PETTY CASH-SWIMMING	**-**	
BalObject: 0122 - PETTY CASH-CITY CLERK			
001.0122.000	PETTY CASH-CITY CLERK	200.00	0.00
	Total BalObject: 0122 - PETTY CASH-CITY CLERK:	**200.00**	
Page 1:2			
BalObject: 0123 - PETTY CASH-LIBRARY			
001.0123.000	PETTY CASH-LIBRARY	100.00	0.00
	Total BalObject: 0123 - PETTY CASH-LIBRARY:	**100.00**	

Account	Name	Ending Balance	Interest Rate
BalObject: 0124 - PETTY CASH-LIBRARY			
001.0124.000	PETTY CASH-LIBRARY	200.00	0.00
	Total BalObject: 0124 - PETTY CASH-LIBRARY:	**200.00**	
BalObject: 0125 - PETTY CASH-PARK			
001.0125.000	PETTY CASH-PARK	225.00	0.00
	Total BalObject: 0125 - PETTY CASH-PARK:	**225.00**	
BalObject: 0126 - PETTY CASH-COLISEUM CONCESSIONS			
001.0126.000	PETTY CASH-COLISEUM CONCESSIONS	300.00	0.00
	Total BalObject: 0125 - PETTY CASH-COLISEUM:	**300.00**	
BalObject: 0130 - CASH HELD BY INSUR ADMIN			
885.0130.000	CASH HELD BY INSUR ADMI	1.00	0.00
	Total BalObject: 0130 - CASH HELD BY INSUR ADM	**1.00**	
BalObject: 0215 - IPAIT MONEY MARKET			
999.0215.000	IPAIT MONEY MARKET	27,211,443.34	4.005
	Total BalObject: 0215 - IPAIT MONEY MARKET:	**27,211,443.34**	
BalObject: 0216 - FIRST INTERSTATE BANK MM			
999.0216.000	First Interstate Bank MM	2,725,875.20	3.24
	Total BalObject: 0216 - FIRST INTERSTATE BANK M	**2,725,875.20**	
BalObject: 0243 - GNB INV			
365.0243.000	GNB CD	-	
999.0243.000	GNB CD	29,042,315.62	3.83-4.37
	Total BalObject: 0243 - GNB INV	**29,042,315.62**	
BalObject: 0246 - PINNACLE INV			
365.0246.000	PINNACLE CD	-	
999.0246.000	PINNACLE CD	23,067,068.50	3.80-4.50
	Total BalObject: 0246 - PINNACLE CD	**23,067,068.50**	
BalObject: 0265 - IPAIT CD			
999.0265.000	IPAIT CD	-	0.00
	Total BalObject: 0265 - IPAIT CD	**-**	
BalObject: 0999 - POOLED CASH			
999.0999.000	POOLED CASH - prepaid work comp and outstanding AP	27,282.63	0.00
	Total BalObject: 0999 - POOLED CASH:	**27,282.63**	
Page 2:2	**TOTAL**	**84,305,266.09**	

City of Marshalltown, IA

Monthly Budget Report - Marshalltown

Group Summary

For Fiscal: 2025-2026 Period Ending: 09/30/2025

Account Typ…	September Activity	YTD Budget	YTD Activity	Variance Favorable (Unfavorable)	Total Budget
Fund: 001 - GENERAL FUND					
Revenue	2,034,947.71	5,164,199.58	2,755,937.96	-2,408,261.62	20,657,436.00
Expense	1,438,181.02	5,162,617.86	5,037,706.16	124,911.70	20,657,436.00
Total Fund: 001 - GENERAL FUND:	**596,766.69**	**1,581.72**	**-2,281,768.20**	**-2,283,349.92**	**0.00**
Fund: 010 - CASH FLOW RESERVE FUND					
Revenue	10,055.51	73,777.47	38,469.23	-35,308.24	295,192.00
Total Fund: 010 - CASH FLOW RESERVE FUND:	**10,055.51**	**73,777.47**	**38,469.23**	**-35,308.24**	**295,192.00**
Fund: 011 - INSURANCE DEDUCTIBLE RESERVE FUND					
Revenue	735.85	24,999.99	2,815.13	-22,184.86	100,000.00
Total Fund: 011 - INSURANCE DEDUCTIBLE RESERVE FUND:	**735.85**	**24,999.99**	**2,815.13**	**-22,184.86**	**100,000.00**
Fund: 030 - CAPITAL RESERVE					
Revenue	33,211.61	167,007.48	208,921.74	41,914.26	668,030.00
Expense	33,211.61	166,993.74	208,921.74	-41,928.00	668,030.00
Total Fund: 030 - CAPITAL RESERVE:	**0.00**	**13.74**	**0.00**	**-13.74**	**0.00**
Fund: 031 - CAPITAL RSRV-BLDG MAINT					
Revenue	570.50	21,873.33	2,312.39	-19,560.94	87,528.00
Expense	10,070.00	50,041.47	22,327.50	27,713.97	200,166.00
Total Fund: 031 - CAPITAL RSRV-BLDG MAINT:	**-9,499.50**	**-28,168.14**	**-20,015.11**	**8,153.03**	**-112,638.00**
Fund: 032 - CIP LARGE VEHICLE/EQUIPMENT					
Revenue	0.00	26,238.75	0.00	-26,238.75	104,955.00
Expense	0.00	58,875.00	0.00	58,875.00	235,500.00
Total Fund: 032 - CIP LARGE VEHICLE/EQUIPMENT:	**0.00**	**-32,636.25**	**0.00**	**32,636.25**	**-130,545.00**
Fund: 110 - ROAD USE TAX					
Revenue	468,688.32	1,164,193.95	1,191,854.35	27,660.40	4,656,776.00
Expense	392,256.20	1,361,536.68	641,945.64	719,591.04	5,446,164.00
Total Fund: 110 - ROAD USE TAX:	**76,432.12**	**-197,342.73**	**549,908.71**	**747,251.44**	**-789,388.00**
Fund: 111 - ROAD USE TAX INSURANCE RESERVE					
Revenue	220.10	6,872.25	842.02	-6,030.23	27,500.00
Total Fund: 111 - ROAD USE TAX INSURANCE RESERVE:	**220.10**	**6,872.25**	**842.02**	**-6,030.23**	**27,500.00**
Fund: 112 - EMPLOYEE BENEFITS FUND					
Revenue	68,688.48	637,991.22	124,301.73	-513,689.49	2,551,965.00
Expense	844,107.81	975,458.91	844,107.81	131,351.10	3,903,397.00
Total Fund: 112 - EMPLOYEE BENEFITS FUND:	**-775,419.33**	**-337,467.69**	**-719,806.08**	**-382,338.39**	**-1,351,432.00**

Account Typ...	September Activity	YTD Budget	YTD Activity	Variance Favorable (Unfavorable)	Total Budget
Fund: 117 - POLICE/FIRE RETIREMENT					
Revenue	27,156.34	356,553.21	44,914.47	-311,638.74	1,426,213.00
Expense	330,691.72	339,582.09	330,691.72	8,890.37	1,358,872.00
Total Fund: 117 - POLICE/FIRE RETIREMENT:	**-303,535.38**	**16,971.12**	**-285,777.25**	**-302,748.37**	**67,341.00**
Fund: 121 - LOCAL OPTION SALES TAX					
Revenue	379,813.94	1,075,672.50	1,168,268.50	92,596.00	4,302,690.00
Expense	855,592.13	1,442,814.90	923,550.13	519,264.77	5,772,684.00
Total Fund: 121 - LOCAL OPTION SALES TAX:	**-475,778.19**	**-367,142.40**	**244,718.37**	**611,860.77**	**-1,469,994.00**
Fund: 125 - TAX INCREMENT FINANCING					
Revenue	17,989.69	348,310.23	48,267.14	-300,043.09	1,393,241.00
Expense	15,000.00	490,910.97	15,000.00	475,910.97	1,963,644.00
Total Fund: 125 - TAX INCREMENT FINANCING:	**2,989.69**	**-142,600.74**	**33,267.14**	**175,867.88**	**-570,403.00**
Fund: 126 - TIF-LMI					
Revenue	24.95	7,165.38	95.44	-7,069.94	28,673.00
Total Fund: 126 - TIF-LMI:	**24.95**	**7,165.38**	**95.44**	**-7,069.94**	**28,673.00**
Fund: 130 - CITY TORT LIABILITY					
Revenue	392.69	10,249.98	90,758.18	80,508.20	41,000.00
Expense	356.57	9,999.99	14,974.47	-4,974.48	40,000.00
Total Fund: 130 - CITY TORT LIABILITY:	**36.12**	**249.99**	**75,783.71**	**75,533.72**	**1,000.00**
Fund: 132 - GRANTS-STATE/LOCAL AGENCIES					
Revenue	13.87	97,500.00	13.87	-97,486.13	390,000.00
Expense	-5,412.00	149,875.23	0.00	149,875.23	599,501.00
Total Fund: 132 - GRANTS-STATE/LOCAL AGENCIES:	**5,425.87**	**-52,375.23**	**13.87**	**52,389.10**	**-209,501.00**
Fund: 133 - UNDESIGNATED FEDERAL GRANTS					
Revenue	5,753.00	105,816.72	24,526.63	-81,290.09	423,267.00
Expense	246,192.00	105,810.90	273,735.63	-167,924.73	423,267.00
Total Fund: 133 - UNDESIGNATED FEDERAL GRANTS:	**-240,439.00**	**5.82**	**-249,209.00**	**-249,214.82**	**0.00**
Fund: 140 - PARK & REC DONATION FUND					
Revenue	185,419.98	104,437.23	189,595.79	85,158.56	417,749.00
Expense	833.00	154,174.41	6,897.42	147,276.99	616,698.00
Total Fund: 140 - PARK & REC DONATION FUND:	**184,586.98**	**-49,737.18**	**182,698.37**	**232,435.55**	**-198,949.00**
Fund: 141 - MTOWN TENNIS ASSOC					
Revenue	0.00	4.98	0.00	-4.98	20.00
Total Fund: 141 - MTOWN TENNIS ASSOC:	**0.00**	**4.98**	**0.00**	**-4.98**	**20.00**
Fund: 142 - SOFTBALL ASSOCIATION FUND					
Revenue	0.00	11,421.15	15,021.02	3,599.87	45,703.00
Expense	3,829.56	11,418.57	17,618.32	-6,199.75	45,703.00
Total Fund: 142 - SOFTBALL ASSOCIATION FUND:	**-3,829.56**	**2.58**	**-2,597.30**	**-2,599.88**	**0.00**

Account Typ...	September Activity	YTD Budget	YTD Activity	Variance Favorable (Unfavorable)	Total Budget
Fund: 144 - LIVE HEALTHY IOWA					
Revenue	28.79	1,886.49	110.16	-1,776.33	7,546.00
Expense	0.00	1,885.80	0.00	1,885.80	7,544.00
Total Fund: 144 - LIVE HEALTHY IOWA :	**28.79**	**0.69**	**110.16**	**109.47**	**2.00**
Fund: 149 - FEMA - WINDS					
Revenue	206.51	0.00	34,308.17	34,308.17	0.00
Expense	-91.01	0.00	0.00	0.00	0.00
Total Fund: 149 - FEMA - WINDS:	**297.52**	**0.00**	**34,308.17**	**34,308.17**	**0.00**
Fund: 150 - LOCAL PD GRANTS					
Revenue	5,173.84	14,994.00	14,845.87	-148.13	60,000.00
Expense	5,364.04	14,994.00	15,117.88	-123.88	60,000.00
Total Fund: 150 - LOCAL PD GRANTS:	**-190.20**	**0.00**	**-272.01**	**-272.01**	**0.00**
Fund: 151 - DEPT OF JUSTICE GRANTS					
Revenue	0.00	5,228.64	1,630.68	-3,597.96	20,923.00
Expense	0.00	5,199.15	1,630.68	3,568.47	20,800.00
Total Fund: 151 - DEPT OF JUSTICE GRANTS:	**0.00**	**29.49**	**0.00**	**-29.49**	**123.00**
Fund: 152 - POLICE UNDESIGNATED GRANTS					
Revenue	17,341.68	19,251.75	27,902.55	8,650.80	77,007.00
Expense	-235.33	19,244.82	23,941.42	-4,696.60	77,007.00
Total Fund: 152 - POLICE UNDESIGNATED GRANTS:	**17,577.01**	**6.93**	**3,961.13**	**3,954.20**	**0.00**
Fund: 153 - POLICE DEPT DONATION FUND					
Revenue	238.27	799.98	973.52	173.54	3,200.00
Expense	1,127.77	3,586.29	3,836.85	-250.56	14,350.00
Total Fund: 153 - POLICE DEPT DONATION FUND:	**-889.50**	**-2,786.31**	**-2,863.33**	**-77.02**	**-11,150.00**
Fund: 154 - AUTOMATED TRAFFIC ENFORCEMENT					
Revenue	20,630.00	64,999.98	61,652.52	-3,347.46	260,000.00
Expense	0.00	93,231.78	19,495.00	73,736.78	373,000.00
Total Fund: 154 - AUTOMATED TRAFFIC ENFORCEMENT:	**20,630.00**	**-28,231.80**	**42,157.52**	**70,389.32**	**-113,000.00**
Fund: 156 - FIRE DEPT DONATION FUND					
Revenue	134.80	749.97	1,064.66	314.69	3,000.00
Expense	-100.00	6,073.47	3,691.10	2,382.37	24,298.00
Total Fund: 156 - FIRE DEPT DONATION FUND:	**234.80**	**-5,323.50**	**-2,626.44**	**2,697.06**	**-21,298.00**
Fund: 160 - ECONOMIC DEVELOPMENT GIFT					
Revenue	112.89	249.99	431.88	181.89	1,000.00
Expense	0.00	0.00	20,000.00	-20,000.00	0.00
Total Fund: 160 - ECONOMIC DEVELOPMENT GIFT:	**112.89**	**249.99**	**-19,568.12**	**-19,818.11**	**1,000.00**
Fund: 161 - SURETY DEPOSITS/SUBDIVIDER					
Revenue	35.26	46.23	134.90	88.67	185.00
Total Fund: 161 - SURETY DEPOSITS/SUBDIVIDER:	**35.26**	**46.23**	**134.90**	**88.67**	**185.00**

Account Typ…	September Activity	YTD Budget	YTD Activity	Variance Favorable (Unfavorable)	Total Budget
Fund: 170 - LIBRARY DONATION FUND					
Revenue	1,287.72	106,118.73	33,706.20	-72,412.53	424,475.00
Expense	26,668.18	208,684.89	31,327.98	177,356.91	834,740.00
Total Fund: 170 - LIBRARY DONATION FUND:	**-25,380.46**	**-102,566.16**	**2,378.22**	**104,944.38**	**-410,265.00**
Fund: 177 - SEIZED ASSETS (POLICE)					
Revenue	42.70	874.68	125.22	-749.46	3,500.00
Expense	0.00	1,499.49	0.00	1,499.49	6,000.00
Total Fund: 177 - SEIZED ASSETS (POLICE):	**42.70**	**-624.81**	**125.22**	**750.03**	**-2,500.00**
Fund: 181 - #7 HUD LEAD GRANT					
Revenue	157,382.36	601,979.85	198,607.99	-403,371.86	2,408,883.00
Expense	156,187.36	602,159.67	430,244.86	171,914.81	2,408,883.00
Total Fund: 181 - #7 HUD LEAD GRANT:	**1,195.00**	**-179.82**	**-231,636.87**	**-231,457.05**	**0.00**
Fund: 184 - VOUCHERS - 002, 003					
Revenue	135,247.66	362,107.44	405,653.13	43,545.69	1,448,431.00
Expense	118,078.10	363,903.24	378,894.14	-14,990.90	1,455,690.00
Total Fund: 184 - VOUCHERS - 002, 003:	**17,169.56**	**-1,795.80**	**26,758.99**	**28,554.79**	**-7,259.00**
Fund: 189 - #6 HUD LEAD GRANT/NOW STATE FUNDS ONLY					
Revenue	549.98	0.00	2,032.85	2,032.85	0.00
Expense	0.00	0.00	17.00	-17.00	0.00
Total Fund: 189 - #6 HUD LEAD GRANT/NOW STATE FUNDS ONLY:	**549.98**	**0.00**	**2,015.85**	**2,015.85**	**0.00**
Fund: 200 - GO BONDS DEBT FUND					
Revenue	901,514.21	1,818,242.97	923,188.27	-895,054.70	7,273,085.00
Expense	0.00	1,828,041.96	0.00	1,828,041.96	7,312,168.00
Total Fund: 200 - GO BONDS DEBT FUND:	**901,514.21**	**-9,798.99**	**923,188.27**	**932,987.26**	**-39,083.00**
Fund: 300 - CIP COLLECTION FUND					
Revenue	18,438.90	184,519.68	32,310.52	-152,209.16	738,079.00
Expense	33,211.61	193,246.23	199,556.11	-6,309.88	772,985.00
Total Fund: 300 - CIP COLLECTION FUND:	**-14,772.71**	**-8,726.55**	**-167,245.59**	**-158,519.04**	**-34,906.00**
Fund: 311 - RISE STREET GRANTS					
Revenue	0.00	85,254.72	0.00	-85,254.72	341,019.00
Expense	0.00	85,224.36	0.00	85,224.36	341,018.00
Total Fund: 311 - RISE STREET GRANTS:	**0.00**	**30.36**	**0.00**	**-30.36**	**1.00**
Fund: 312 - AIRPORT PROJECT FUND					
Revenue	348.89	256,624.98	84,226.49	-172,398.49	1,026,500.00
Expense	0.00	281,624.97	4,600.00	277,024.97	1,126,500.00
Total Fund: 312 - AIRPORT PROJECT FUND:	**348.89**	**-24,999.99**	**79,626.49**	**104,626.48**	**-100,000.00**
Fund: 340 - BIKE PATH PROJECT FUND					
Revenue	0.00	408,750.00	0.00	-408,750.00	1,635,000.00
Expense	57,423.61	408,749.97	61,437.15	347,312.82	1,635,000.00

Account Typ...	September Activity	YTD Budget	YTD Activity	Variance Favorable (Unfavorable)	Total Budget
Total Fund: 340 - BIKE PATH PROJECT FUND:	**-57,423.61**	**0.03**	**-61,437.15**	**-61,437.18**	**0.00**
Fund: 341 - TREES FOREVER PROJECT					
Revenue	171.85	8,949.96	3,827.60	-5,122.36	35,800.00
Expense	0.00	9,999.99	0.00	9,999.99	40,000.00
Total Fund: 341 - TREES FOREVER PROJECT:	**171.85**	**-1,050.03**	**3,827.60**	**4,877.63**	**-4,200.00**
Fund: 350 - GO BONDS CAPITAL PROJECTS					
Revenue	0.00	49.98	0.00	-49.98	200.00
Expense	0.00	2,541.24	0.00	2,541.24	10,165.00
Total Fund: 350 - GO BONDS CAPITAL PROJECTS:	**0.00**	**-2,491.26**	**0.00**	**2,491.26**	**-9,965.00**
Fund: 355 - Dangerous & Dilapidated (included GO bonds)					
Revenue	4,365.47	2,626.47	17,059.88	14,433.41	10,510.00
Expense	62,505.83	29,999.31	199,769.50	-169,770.19	120,000.00
Total Fund: 355 - Dangerous & Dilapidated (included GO bonds):	**-58,140.36**	**-27,372.84**	**-182,709.62**	**-155,336.78**	**-109,490.00**
Fund: 363 - 2021 GO BONDS					
Revenue	13,683.14	180,700.71	52,355.86	-128,344.85	722,803.00
Expense	1,075.00	644,696.43	44,111.82	600,584.61	2,578,786.00
Total Fund: 363 - 2021 GO BONDS:	**12,608.14**	**-463,995.72**	**8,244.04**	**472,239.76**	**-1,855,983.00**
Fund: 364 - 2022 GO BONDS					
Revenue	354,314.84	2,793,634.65	1,026,088.97	-1,767,545.68	11,174,539.00
Expense	1,465,187.24	3,714,575.43	4,628,939.93	-914,364.50	14,858,302.00
Total Fund: 364 - 2022 GO BONDS:	**-1,110,872.40**	**-920,940.78**	**-3,602,850.96**	**-2,681,910.18**	**-3,683,763.00**
Fund: 365 - 2023 GO BONDS					
Revenue	29,442.19	24,999.99	112,636.59	87,636.60	100,000.00
Expense	0.00	2,284,778.22	0.00	2,284,778.22	9,139,113.00
Total Fund: 365 - 2023 GO BONDS:	**29,442.19**	**-2,259,778.23**	**112,636.59**	**2,372,414.82**	**-9,039,113.00**
Fund: 389 - AMERICAN RESCUE PLAN					
Expense	0.00	39,000.00	13,014.55	25,985.45	156,000.00
Total Fund: 389 - AMERICAN RESCUE PLAN:	**0.00**	**39,000.00**	**13,014.55**	**25,985.45**	**156,000.00**
Fund: 610 - WATER POLLUTION CONTROL					
Revenue	299,602.51	2,107,353.00	916,671.21	-1,190,681.79	8,429,412.00
Expense	299,602.51	2,107,101.33	916,671.21	1,190,430.12	8,429,412.00
Total Fund: 610 - WATER POLLUTION CONTROL:	**0.00**	**251.67**	**0.00**	**-251.67**	**0.00**
Fund: 611 - WPCP REVENUE					
Revenue	773,921.00	2,073,124.89	2,289,727.12	216,602.23	8,292,500.00
Expense	600,179.30	3,565,342.98	1,217,248.00	2,348,094.98	14,261,412.00
Total Fund: 611 - WPCP REVENUE:	**173,741.70**	**-1,492,218.09**	**1,072,479.12**	**2,564,697.21**	**-5,968,912.00**

Account Typ...	September Activity	YTD Budget	YTD Activity	Variance Favorable (Unfavorable)	Total Budget
Fund: 614 - WPCP CAPITAL IMPROVEMENT RSRV					
Revenue	3,446.28	12,499.98	13,184.38	684.40	50,000.00
Total Fund: 614 - WPCP CAPITAL IMPROVEMENT RSRV:	**3,446.28**	**12,499.98**	**13,184.38**	**684.40**	**50,000.00**
Fund: 615 - WPCP PLANT & IMPROVEMENTS					
Revenue	300,576.79	1,158,000.00	300,576.79	-857,423.21	4,632,000.00
Expense	1,923.25	1,158,000.00	300,576.79	857,423.21	4,632,000.00
Total Fund: 615 - WPCP PLANT & IMPROVEMENTS:	**298,653.54**	**0.00**	**0.00**	**0.00**	**0.00**
Fund: 616 - SANITARY SEWER REHAB PROJECT					
Revenue	0.00	274,999.98	0.00	-274,999.98	1,100,000.00
Expense	0.00	274,999.98	0.00	274,999.98	1,100,000.00
Total Fund: 616 - SANITARY SEWER REHAB PROJECT:	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Fund: 617 - SANITARY SEWER NEW CONSTRUCTN					
Revenue	0.00	1,749.99	33.00	-1,716.99	7,000.00
Total Fund: 617 - SANITARY SEWER NEW CONSTRUCTN:	**0.00**	**1,749.99**	**33.00**	**-1,716.99**	**7,000.00**
Fund: 618 - WPCP INSURANCE RESERVE (WAS TORNADO)					
Revenue	584.41	24,990.00	2,235.76	-22,754.24	100,000.00
Total Fund: 618 - WPCP INSURANCE RESERVE (WAS TORNADO):	**584.41**	**24,990.00**	**2,235.76**	**-22,754.24**	**100,000.00**
Fund: 690 - TRANSIT OPERATING					
Revenue	140,910.34	312,535.62	227,181.62	-85,354.00	1,250,143.00
Expense	66,596.98	345,556.62	249,342.23	96,214.39	1,382,604.00
Total Fund: 690 - TRANSIT OPERATING:	**74,313.36**	**-33,021.00**	**-22,160.61**	**10,860.39**	**-132,461.00**
Fund: 691 - TRANSIT INSURANCE RESERVE					
Revenue	73.99	0.00	283.07	283.07	0.00
Total Fund: 691 - TRANSIT INSURANCE RESERVE:	**73.99**	**0.00**	**283.07**	**283.07**	**0.00**
Fund: 740 - STORM SEWER UTILITY					
Revenue	117,834.87	338,863.98	391,361.36	52,497.38	1,355,456.00
Expense	52,509.01	418,363.83	200,809.07	217,554.76	1,673,709.00
Total Fund: 740 - STORM SEWER UTILITY:	**65,325.86**	**-79,499.85**	**190,552.29**	**270,052.14**	**-318,253.00**
Fund: 750 - COMPOSTING FACILITY					
Revenue	9,996.65	17,374.92	39,829.14	22,454.22	69,500.00
Expense	6,718.86	17,989.47	11,723.00	6,266.47	71,960.00
Total Fund: 750 - COMPOSTING FACILITY:	**3,277.79**	**-614.55**	**28,106.14**	**28,720.69**	**-2,460.00**
Fund: 760 - P&R CONCESSIONS ENTERPRISE					
Revenue	0.00	12,000.00	31,718.32	19,718.32	48,000.00
Expense	2,494.79	11,378.01	42,303.79	-30,925.78	45,520.00
Total Fund: 760 - P&R CONCESSIONS ENTERPRISE:	**-2,494.79**	**621.99**	**-10,585.47**	**-11,207.46**	**2,480.00**
Fund: 881 - OCCUPATIONAL INSURANCE ESCROW					
Revenue	14,283.55	0.00	50,161.43	50,161.43	0.00
Expense	1,320.80	0.00	4,968.43	-4,968.43	0.00

Account Typ...	September Activity	YTD Budget	YTD Activity	Variance Favorable (Unfavorable)	Total Budget
Total Fund: 881 - OCCUPATIONAL INSURANCE ESCROW:	**12,962.75**	**0.00**	**45,193.00**	**45,193.00**	**0.00**
Fund: 884 - GROUP HEALTH INSURANCE ESCROW					
Revenue	368,945.30	0.00	1,074,638.29	1,074,638.29	0.00
Expense	393,390.30	0.00	840,263.98	-840,263.98	0.00
Total Fund: 884 - GROUP HEALTH INSURANCE ESCROW:	**-24,445.00**	**0.00**	**234,374.31**	**234,374.31**	**0.00**
Fund: 886 - WORKMAN'S COMP DEDUCTIBLE FUND					
Revenue	105.84	0.00	404.91	404.91	0.00
Total Fund: 886 - WORKMAN'S COMP DEDUCTIBLE FUND:	**105.84**	**0.00**	**404.91**	**404.91**	**0.00**
Fund: 913 - 911 COMMISION					
Revenue	119,092.21	0.00	325,775.68	325,775.68	0.00
Expense	123,189.15	0.00	448,651.38	-448,651.38	0.00
Total Fund: 913 - 911 COMMISION:	**-4,096.94**	**0.00**	**-122,875.70**	**-122,875.70**	**0.00**
Report Total:	**-595,488.74**	**-6,540,364.05**	**-4,044,088.24**	**2,496,275.81**	**-26,172,394.00**

Fund Summary

Fund	September Activity	YTD Budget	YTD Activity	Variance Favorable (Unfavorable)	Total Budget
001 - GENERAL FUND	596,766.69	1,581.72	-2,281,768.20	-2,283,349.92	0.00
010 - CASH FLOW RESERVE FUND	10,055.51	73,777.47	38,469.23	-35,308.24	295,192.00
011 - INSURANCE DEDUCTIBLE RE	735.85	24,999.99	2,815.13	-22,184.86	100,000.00
030 - CAPITAL RESERVE	0.00	13.74	0.00	-13.74	0.00
031 - CAPITAL RSRV-BLDG MAINT	-9,499.50	-28,168.14	-20,015.11	8,153.03	-112,638.00
032 - CIP LARGE VEHICLE/EQUIPM	0.00	-32,636.25	0.00	32,636.25	-130,545.00
110 - ROAD USE TAX	76,432.12	-197,342.73	549,908.71	747,251.44	-789,388.00
111 - ROAD USE TAX INSURANCE	220.10	6,872.25	842.02	-6,030.23	27,500.00
112 - EMPLOYEE BENEFITS FUND	-775,419.33	-337,467.69	-719,806.08	-382,338.39	-1,351,432.00
117 - POLICE/FIRE RETIREMENT	-303,535.38	16,971.12	-285,777.25	-302,748.37	67,341.00
121 - LOCAL OPTION SALES TAX	-475,778.19	-367,142.40	244,718.37	611,860.77	-1,469,994.00
125 - TAX INCREMENT FINANCIN(	2,989.69	-142,600.74	33,267.14	175,867.88	-570,403.00
126 - TIF-LMI	24.95	7,165.38	95.44	-7,069.94	28,673.00
130 - CITY TORT LIABILITY	36.12	249.99	75,783.71	75,533.72	1,000.00
132 - GRANTS-STATE/LOCAL AGE	5,425.87	-52,375.23	13.87	52,389.10	-209,501.00
133 - UNDESIGNATED FEDERAL G	-240,439.00	5.82	-249,209.00	-249,214.82	0.00
140 - PARK & REC DONATION FUI	184,586.98	-49,737.18	182,698.37	232,435.55	-198,949.00
141 - MTOWN TENNIS ASSOC	0.00	4.98	0.00	-4.98	20.00
142 - SOFTBALL ASSOCIATION FU	-3,829.56	2.58	-2,597.30	-2,599.88	0.00
144 - LIVE HEALTHY IOWA	28.79	0.69	110.16	109.47	2.00
149 - FEMA - WINDS	297.52	0.00	34,308.17	34,308.17	0.00
150 - LOCAL PD GRANTS	-190.20	0.00	-272.01	-272.01	0.00
151 - DEPT OF JUSTICE GRANTS	0.00	29.49	0.00	-29.49	123.00
152 - POLICE UNDESIGNATED GR	17,577.01	6.93	3,961.13	3,954.20	0.00
153 - POLICE DEPT DONATION FU	-889.50	-2,786.31	-2,863.33	-77.02	-11,150.00
154 - AUTOMATED TRAFFIC ENFC	20,630.00	-28,231.80	42,157.52	70,389.32	-113,000.00
156 - FIRE DEPT DONATION FUNI	234.80	-5,323.50	-2,626.44	2,697.06	-21,298.00
160 - ECONOMIC DEVELOPMENT	112.89	249.99	-19,568.12	-19,818.11	1,000.00
161 - SURETY DEPOSITS/SUBDIVI	35.26	46.23	134.90	88.67	185.00
170 - LIBRARY DONATION FUND	-25,380.46	-102,566.16	2,378.22	104,944.38	-410,265.00
177 - SEIZED ASSETS (POLICE)	42.70	-624.81	125.22	750.03	-2,500.00
181 - #7 HUD LEAD GRANT	1,195.00	-179.82	-231,636.87	-231,457.05	0.00
184 - VOUCHERS - 002, 003	17,169.56	-1,795.80	26,758.99	28,554.79	-7,259.00
189 - #6 HUD LEAD GRANT/NOW	549.98	0.00	2,015.85	2,015.85	0.00
200 - GO BONDS DEBT FUND	901,514.21	-9,798.99	923,188.27	932,987.26	-39,083.00
300 - CIP COLLECTION FUND	-14,772.71	-8,726.55	-167,245.59	-158,519.04	-34,906.00
311 - RISE STREET GRANTS	0.00	30.36	0.00	-30.36	1.00
312 - AIRPORT PROJECT FUND	348.89	-24,999.99	79,626.49	104,626.48	-100,000.00
340 - BIKE PATH PROJECT FUND	-57,423.61	0.03	-61,437.15	-61,437.18	0.00
341 - TREES FOREVER PROJECT	171.85	-1,050.03	3,827.60	4,877.63	-4,200.00

350 - GO BONDS CAPITAL PROJEC	0.00	-2,491.26	0.00	2,491.26	-9,965.00
355 - Dangerous & Dilapidated (ir	-58,140.36	-27,372.84	-182,709.62	-155,336.78	-109,490.00
363 - 2021 GO BONDS	12,608.14	-463,995.72	8,244.04	472,239.76	-1,855,983.00
364 - 2022 GO BONDS	-1,110,872.40	-920,940.78	-3,602,850.96	-2,681,910.18	-3,683,763.00
365 - 2023 GO BONDS	29,442.19	-2,259,778.23	112,636.59	2,372,414.82	-9,039,113.00
389 - AMERICAN RESCUE PLAN	0.00	-39,000.00	-13,014.55	25,985.45	-156,000.00
610 - WATER POLLUTION CONTR(	0.00	251.67	0.00	-251.67	0.00
611 - WPCP REVENUE	173,741.70	-1,492,218.09	1,072,479.12	2,564,697.21	-5,968,912.00
614 - WPCP CAPITAL IMPROVEMI	3,446.28	12,499.98	13,184.38	684.40	50,000.00
615 - WPCP PLANT & IMPROVEM	298,653.54	0.00	0.00	0.00	0.00
616 - SANITARY SEWER REHAB PI	0.00	0.00	0.00	0.00	0.00
617 - SANITARY SEWER NEW CON	0.00	1,749.99	33.00	-1,716.99	7,000.00
618 - WPCP INSURANCE RESERVE	584.41	24,990.00	2,235.76	-22,754.24	100,000.00
690 - TRANSIT OPERATING	74,313.36	-33,021.00	-22,160.61	10,860.39	-132,461.00
691 - TRANSIT INSURANCE RESER	73.99	0.00	283.07	283.07	0.00
740 - STORM SEWER UTILITY	65,325.86	-79,499.85	190,552.29	270,052.14	-318,253.00
750 - COMPOSTING FACILITY	3,277.79	-614.55	28,106.14	28,720.69	-2,460.00
760 - P&R CONCESSIONS ENTERP	-2,494.79	621.99	-10,585.47	-11,207.46	2,480.00
881 - OCCUPATIONAL INSURANCI	12,962.75	0.00	45,193.00	45,193.00	0.00
884 - GROUP HEALTH INSURANCI	-24,445.00	0.00	234,374.31	234,374.31	0.00
886 - WORKMAN'S COMP DEDUC	105.84	0.00	404.91	404.91	0.00
913 - 911 COMMISION	-4,096.94	0.00	-122,875.70	-122,875.70	0.00
Report Total:	**-595,488.74**	**-6,540,364.05**	**-4,044,088.24**	**2,496,275.81**	**-26,172,394.00**

MARSHALLTOWN
MORE THAN EVER

Joel Greer, Mayor
Carol Webb, City Administrator
24 North Center Street
Marshalltown, IA 50158
PH 641.754.5701 • FX 641.754.5717

To:	Mayor and City Council
From:	Diana Steiner, Finance Director
Meeting Date:	December 8, 2025
Re:	Resolution Transferring Funds for Fiscal Year 2026 Through September 30, 2025

Strategic Plan Objective:
N/A

Recommended:
Staff recommends Council approve transfers that were budgeted and additional transfers that are now needed for the first 3 months of fiscal year 2026.

Budget Impact:
A budget amendment is not required if actual transfers exceed the budgeted transfer amounts; however, Council approval is required to actually make the transfers if the budget is exceeded. The resolution shows the original adopted FY26 budget approved in April 2025 and the actual transfers made this fiscal year through September 30, 2025.

Description/Background:
Effective April 13, 2019, the City Finance Committee, organized under Iowa Administrative Code, approved changes to Administrative Rules Code 545-2 requiring greater disclosures for all interfund transfers. The rules require cities to provide the originating fund and receiving fund, purpose, and amount of the transfer during the budget process and also require additional resolutions any time transfers exceed the original or amended budget amounts.

Within the resolution, staff have outlined the original adopted budget transfers for the fiscal year ending June 30, 2026 and the actual transfers needed for the 3-month period ending September 30, 2025, and the difference between the budget and the actual transfer. In many instances, the revenue from property tax levies, road use tax, local option sales tax, and bond funds are shown in their originating fund and then transferred out to the fund where the expenditures are accounted for.

Explanation of why there is a transfer but no budget for a major item include:
Fund 364 (the 2022 Bond): this includes the Linn Creek District projects, which are partially

funded with bond funds, a Destination Iowa grant, and donations. The MACC playhouse also receives grant funds and donations, but no bond funds, so the payment to reimburse the MACC is established within Fund 140 (Parks & Rec Donation Fund). The City draws the grant funds down for all the projects. For the portion that is attributable to the playhouse, a transfer is made to fund 140. For this quarter, a transfer was made for $183,291.65.

Attachments:

1. 2025-12-08_2025-250_Resolution transferring funds for fiscal year 2026 through September 30 2025

RESOLUTION TRANSFERRING FUNDS FOR FISCAL YEAR 2026 THROUGH SEPTEMBER 30, 2025 2025-250

WHEREAS, the fiscal year 2026 budget provides for certain transfers between funds; and,

WHEREAS, the books should now indicate appropriate transfers;

THEREFORE, IT IS HEREBY RESOLVED BY THE CITY COUNCIL OF THE CITY OF MARSHALLTOWN, IOWA

that the Finance Director be directed to make said transfers as follows:

TRANSFERS BETWEEN FUNDS FOR FISCAL YEAR 2026

Fund	Transferred From	Fund	Transferred To	Explanation of activity	FY26 Adopted Budget	Transfers through Sept. 30,	Remaining Budget Available
001	General fund	355	D&D Fund	Landfill revenue in excess of expenses for prior fiscal year	10.00	-	10.00
001	General fund	149	FEMA-Wind	Wages posted to fund 149 after FEMA paperwork submitted.	-	206.51	(206.51)
001	General fund	151	Dept of Justice Grants	Expenditure wages exceeded available grant funds	-	277.59	(277.59)
001	General fund	690	Transit	Property taxes collected in general (as required) with the cash being transferred to the transit enterprise fund	414,638.00	13,881.34	400,756.66
030	Capital Reserve	312	Airport Project Fund	City portion of Airport Grant Project	51,500.00	-	51,500.00
110	Road use tax fund	001	General	Reimbursement to general fund for employee wages associated with the public works department	1,254,942.00	306,176.79	948,765.21
110	Road use tax fund	111	RUT Ins Reserve	Reserve for property insurance deductibles in case of a natural disaster.	25,000.00	-	25,000.00
110	Road use tax fund	363	2021 Go Bonds	Railroad quiet zone	642,803.00	-	642,803.00
112	Employee benefits fund	001	General	Reimbursement to general fund for employee benefits: FICA, IPERS, group health insurance, workman 's comp, retirees health savings contributions (non-union payout in lieu of sick and vacation based upon guidelines for payouts)	3,903,397.00	844,107.81	3,059,289.19
117	Police & fire retirement	001	General	Reimbursement to general fund for civil service retirement payments to Municipal Fire & Police Retirement System of Iowa (MFPRSI)	1,358,872.00	330,691.72	1,028,180.28
121	LOST - Council Desig	001	General	Council Designated to offset General Fund deficit	1,076,145.00	-	1,076,145.00
121	LOST - Council Desig	010	Cash Flow Reserve Fund	Transfer to have Reserve Fund at 18% fund 001 budgeted expenses	205,192.00	-	205,192.00
121	LOST - Council Desig	011	Insurance Deductible Reserve Fund	Reserve for property insurance deductibles in case of a natural disaster. General fund costs only.	100,000.00	-	100,000.00
121	LOST - Council Desig	031	Capital Reserve - Bldg. Maint.	Fund deficit in fund for capital projects needed	86,528.00	-	86,528.00
121	Local Option Sales Tax	200	Debt Service Fund	Property tax relief from local option sales tax (LOST) collected to pay for bond payments	3,350,000.00	841,780.13	2,508,219.87
121	Local Option Sales Tax	311	RISE Street Grants	Edgewood extension	80,854.00	-	80,854.00
121	Local Option Sales Tax	364	2022 GO Bonds	E. Main & Center; Crack & Joint Seals	381,465.00	-	381,465.00
125	TIF tax collection fund	001	General	MCBD, Chamber, and façade/code grant expenses paid by general fund. Cash is transferred from TIF collection fund where the property taxes are collected.	250,600.00	15,000.00	235,600.00

Fund	Transferred From	Fund	Transferred To	Explanation of activity	FY26 Adopted Budget	Transfers through Sept. 30,	Remaining Budget Available
125	TIF tax collection fund	200	Debt Service Fund	To Pay for TIF portion of GO Debt	281,451.00	-	281,451.00
132	Grants - State, Local Agencies	110	Road Use Tax	Traffic Signal Grant for Hwy 30 EB/Hwy 14	390,000.00	-	390,000.00
140	P&R Donation Fund	364	2022 GO Bonds	Fundraised donations to be unsed at Linn Creek Project	391,749.00	-	391,749.00
300	CIP Tax Collection Fund	030	Capital Improvement Reserve Fund	Capital expenditures paid from governmental capital reserve fund. Cash is transferred from the capital improvement levy funds where the property taxes were receipted.	668,030.00	199,556.11	468,473.89
300	CIP Tax Collection Fund	32	CIP Large Equipment	Capital expenditures paid from governmental capital reserve fund. Cash is transferred from the capital improvement levy funds where the property taxes were receipted. For future fire truck purchase.	104,955.00	-	104,955.00
350	GO Bonds Capital	311	RISE Street Grants	Close out fund	10,165.00	-	10,165.00
363	2021 GO Bonds	364	2022 GO Bonds	E MainSt/Center St Reconstruction	35,000.00	-	35,000.00
364	2022 GO Bonds & Projects	140	Parks & Rec Donation Fund	The Destination Iowa grant expenditures for the Linn Creek District playhouse project is in fund. All grant funds are deposited in fund 364 and then a transfer is made for the playhouse project portion.		183,291.65	(183,291.65)
364	2022 GO Bonds & Projects	311	RISE Street Grants	Engineering for Highland Acres Road	250,000.00	-	250,000.00
365	2023 GO Bonds	364	2022 GO Bonds & Projects	Downtown Phase 2 for E Main	7,073,863.00	-	7,073,863.00
610	WPCP	200	Debt Service Fund	Fund WPCP GO Bond Payments	505,118.00	-	505,118.00
740	Storm Sewer Utility	200	Debt Service Fund	Fund Storm Sewer GO Bond Payments	548,660.00	-	548,660.00
				TOTAL FOR BUDGET	**$ 23,440,937.00**	**$ 2,734,969.65**	**$ 20,705,967.35**
610/611/615	WPCP funds	610, 612,615, 616, 617	WPCP funds	Cover consolidation of project funds within WPCP series and move dollars from WPCP revenue fund to WPCP expenditure fund	14,261,412.00	1,217,248.00	13,044,164.00
				TOTALS INCLUDING INTERFUND TRANSFERS	**37,702,349.00**	**3,952,217.65**	**33,750,131.35**

Passed this 8th day of December 2025

Attest:_____

Mayor

Attest:_____

City Clerk

2025-250

RESOLUTION ADOPTING SUPPLEMENT S-12 TO THE CODE OF ORDINANCES OF THE CITY OF MARSHALLTOWN, IOWA, THROUGH ORDINANCE 15107

WHEREAS, on June, 10, 2019, the City Council, pursuant to Ordinance No. 14983, readopted the Code of Ordinances of the City of Marshalltown, Iowa, in its entirety; and

WHEREAS, since the Adoption of Ordinance 14983, the City Council of the City of Marshalltown, Iowa, has adopted certain ordinances amending the Code of Ordinances and said amendments have been printed as supplements to the Code of Ordinances; and

WHEREAS, Supplement 2019-S1, includes Ordinances through No. 14985; Supplement 2020-S2 includes Ordinances through No. 14995; Supplement 2020-S3 includes Ordinances through 14996; Supplement 2021-S4 includes Ordinances through 15020; Supplement 2022-S5 includes Ordinances through No. 15044; Supplement 2023-S6 includes Ordinances through No. 15057; Supplement 2023-S7 includes Ordinances through No. 15069; Supplement 2023-S8 includes Ordinances through No. 15078; Supplement 2024-S9 includes Ordinances through No. 15084; Supplement 2024-S10 includes Ordinances through No. 15087; Supplement 2024-S11 includes Ordinances through No. 15094; Supplement 2025-S12 includes Ordinances through No. 15107; and

WHEREAS, Section 380.8 of the Code of Iowa provides that supplements, by resolution, become part of the Code of Ordinances.

NOW THEREFORE BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF MARSHALLTOWN, IOWA:

Section 1. That Supplement No. S-12, dated June 23, 2025, of the Code of Ordinances filed in the Office of the City Clerk of the City of Marshalltown, Iowa is hereby adopted and becomes part of the Code of Ordinances of the City of Marshalltown, Iowa.

Passed this 8th day of December 2025, and signed this _____ day of December 2025.

CITY OF MARSHALLTOWN, IOWA

_____

Joel Greer, Mayor

ATTEST:

_____

Alicia Hunter, CMC, City Clerk

MARSHALLTOWN
MORE THAN EVER

Joel Greer, Mayor
Carol Webb, City Administrator
24 North Center Street
Marshalltown, IA 50158
PH 641.754.5701 • FX 641.754.5717

To:	Mayor and City Council
From:	Heather Thomas, Public Works Director
Meeting Date:	December 8, 2025
Re:	Resolution Approving Contract Change Order #2 for the 2025 PCC Patch Repair Project, #STR23002, an Increase of $16,193.96

Strategic Plan Objective:
This project addresses street improvements and spends bond funds. Strategy 3: Continually improve and sustain the City's infrastructure, organization, and services – Year One "Create street/road improvement plan and spend down bond funds".

Recommended:
Staff recommends approval of Change Order #2, an increase of $16,193.96.

Budget Impact:
This project is to be funded through bond funds set aside for the Street Improvement Program, which based on timing will likely come from a combination of the 2021 GO Bond (Fund 363) and 2022 GO Bond (Fund 364). Within our CIP, we had set aside a budget of $2.6 M for several street maintenance projects that included: PCC Patching, HMA Crack/Joint Sealing, and PCC Crack/Joint Sealing. Sufficient funds are available for this project. The following numbers are shown as a FYI to understand project costs:

Expenses		
Construction - Base Bid	$ 305,476.00	*Cedar Falls Construction*
Construction – Change Order #1	$ 150,977.74	*Cedar Falls Construction*
Construction – Change Order #2	$ 16,193.96	*Cedar Falls Construction*
TOTAL	**$ 472,647.70**	

Description/Background:
This change order accounts for:

- Field quantity adjustments for the limits of R&R on the patches.
- There was also an intake on E Main St that was identified as needing to be replaced to address the throat, that was included in their scope.

- Extension in original substantial completion date from 10/24 to 11/1. Extension is justified due to the increase in scope added through Change Order #1 & #2.

Design and Construction Engineering services for this work is being performed in-house. Substantial completion was achieved November 1st, 2025. Seeding work remains, which will be completed in the Spring. This project extended the final completion to April 1, 2026 to allow spring seeding in March.

FOR REFERENCE PROJECT BACKGROUND:
Several of our arterial and collector streets, including truck routes, have some pavement failure and deterioration that we are proposing to address through full-depth PCC patching. These include select areas on the following streets:

S. 18th Ave
E. Main St
S. 12th Ave
W. Lincoln Way

These routes are higher traffic and we are proposing several temporary traffic control measures such as lane closures and temporary traffic signals to allow alternating traffic to best keep traffic able to navigate construction. There will be one patch that will require a road closure, a patch located at a pavement transition on W Lincoln Way, just west of Lincoln Tower Circle/Brentwood Drive. During that closure, a detour will be set up requiring trucks to use an alternate route with signage to direct traffic on Highland Acres Road, Iowa Ave, and 18th Ave.

Attachments:

1. Resolution Approving CO2 PCC Patch STR23002
2. STR23002 Change Order 2

2025-252

RESOLUTION APPROVING CONTRACT CHANGE ORDER #2 FOR THE 2025 PCC PATCH REPAIR, PROJECT NO. STR23002, AN INCREASE OF $16,193.96

WHEREAS, the City of Marshalltown, Iowa, has heretofore entered into a contract with Cedar Falls Construction Co., Inc. for the 2025 PCC Patch Repair Project #STR23002; and

WHEREAS, a change that results in an increase is requested for items to complete the project.

NOW, THEREFORE, BE IT RESOLVED BY THE COUNCIL OF THE CITY OF MARSHALLTOWN, IOWA:

Section 1. That the contract Change Order #2 for the 2025 PCC Patch Repair Project #STR23002, in the increased amount of $16,193.96 is hereby accepted and approved.

Passed this 8th day of December 2025, and signed this _____ day of December 2025.

CITY OF MARSHALLTOWN, IOWA

_____

Joel Greer, Mayor

ATTEST:

_____

Alicia Hunter, CMC, City Clerk

CONSTRUCTION CHANGE ORDER

Owner:	City of Marshalltown	*Change Order:*	#2
Project Number:	STR23002	*Change Order Recommended:*	11/17/2025
Project Description:	2025 PCC Patch Repair Project	*Effective Date of Change Order:*	11/24/2025
Date of Contract:	May 27, 2025		
Contractor:	Cedar Falls Construction Co., Inc. Cedar Falls, Iowa		

Reason / Justification for Change Order:
Final quantity adjustments to account for field authorized changes. Recommend an increase in substantial completion to account for project increase. Recommend increase in Final Completion to account for seeding window in Spring 2026.

Awarded Contract Price	$305,476.00	Original Substantial Completion Date:	10/24/2025
		Current Substantial Completion Date:	10/24/2025
Change Order #1	$ 150,977.74	**Proposed Substantial Completion Date:**	11/1/2025
		Original Final Completion Date:	11/28/2025
		Current Final Completion Date:	11/28/2025
		Proposed Final Completion Date:	4/1/2026
Total Current Contract Amount	$456,453.74	Original Working Days:	n/a
		Current Working Days:	n/a
Proposed Work Changes (*See Attached Tab*)	**$16,193.96**	Proposed Working Days:	n/a
Total Proposed Contract Amount	$472,647.70		

Recommended by Engineer:

Heather Thomas Heather Thomas, PE City of Marshalltown	City Engineer Title	12/02/2025 Date

Accepted by Contractor:

Pat Burbach Cedar Falls Construction Co., Inc.	President Title	12/2/25 Date

Authorized by Owner:

City of Marshalltown	Title	Date

CONSTRUCTION CHANGE ORDER - TABULATION OF CHANGES

STR23002 **Change Order:** #2

2025 PCC Patch Repair Project

Contract Quantities include quantities adjusted by Change Order #1

		(A)				(B) = $(D)_{previous}$		(C)		(D) = (B) + (C)	
Bid Item Number	**Item Description**	**Original Contract**				**Previous Contract Adjustment**		**Proposed Contract Adjustment**		**Proposed Contract**	
		Quantity	***Unit***	***Unit Price***	***Value***	***Quantity***	***Value***	***Quantity***	***Value***	***Quantity***	***Value***
1	Subgrade Treatment, Geogrid	1,854.5	SY	$2.00	$3,709.00	2,991.3	$5,982.60	23.5	$ 47.00	3,014.8	$6,029.60
2	Subbase, Modified, 8"	1,854.5	SY	$18.00	$33,381.00	2,991.3	$53,843.40	23.5	$ 423.00	3,014.8	$54,266.40
3	Intake, Type SW-507	1.0	EA	$5,000.00	$5,000.00	-	$0.00	1.0	$ 5,000.00	1.0	$5,000.00
4	Intake, Type SW-501	1.0	EA	$4,000.00	$4,000.00	-	$0.00	-	$ -	-	$0.00
5	Removal, Intake	2.0	EA	$800.00	$1,600.00	-	$0.00	1.0	$ 800.00	1.0	$800.00
6	Remove and Replacement, Intake Lid w/Manhole	2.0	EA	$3,000.00	$6,000.00	2.0	$6,000.00	1.0	$ 3,000.00	3.0	$9,000.00
7	Full Depth Patches, PCC, 8"	1,689.2	SY	$106.00	$179,055.20	2,078.9	$220,363.40	(8.4)	$ (890.40)	2,070.5	$219,473.00
8	Full Depth Patches, PCC, 8", Reinforced	27.3	SY	$116.00	$3,166.80	45.3	$5,254.80	(2.3)	$ (266.80)	43.0	$4,988.00
9	Removal, Pavement	1,716.4	SY	$10.00	$17,164.00	2,755.7	$27,557.00	53.7	$ 537.00	2,809.4	$28,094.00
10	Temporary Traffic Control	1.0	LS	$43,900.00	$43,900.00	1.0	$43,900.00	-	$ -	1.0	$43,900.00
11	Seeding, Fertilizing, and Mulching	1.0	LS	$3,000.00	$3,000.00	1.0	$3,000.00	-	$ -	1.0	$3,000.00
12	Mobilization	1.0	LS	$5,500.00	$5,500.00	1.0	$5,500.00	-	$ -	1.0	$5,500.00
CO1-1	Full Depth Patches, PCC, 9"	-	SY	$116.60	$0.00	1.0	$116.60	58.7	$ 6,844.42	59.7	$6,961.02
CO1-2	Full Depth Patches, PCC, 9", Reinforced	-	SY	$127.60	$0.00	1.0	$127.60	(1.0)	$ (127.60)	-	$0.00
CO1-3	Full Depth Patches, PCC, 10"	-	SY	$121.90	$0.00	591.0	$72,042.90	3.0	$ 365.70	594.0	$72,408.60
CO1-4	Full Depth Patches, PCC, 10", Reinforced	-	SY	$133.40	$0.00	21.6	$2,881.44	0.6	$ 80.04	22.2	$2,961.48
CO1-5	Full Depth Patches, PCC, 12"	-	SY	$159.00	$0.00	26.0	$4,134.00	2.4	$ 381.60	28.4	$4,515.60
CO1-6	EF Joint	-	EA	$750.00	$0.00	1.0	$750.00	-	$ -	1.0	$750.00
CO1-7	Traffic Control - Adder 1	-	LS	$5,000.00	$0.00	1.0	$5,000.00	-	$ -	1.0	$5,000.00
	TOTALS:				**$305,476.00**		**$456,453.74**		**$16,193.96**		**$472,647.70**

MARSHALLTOWN
MORE THAN EVER

Joel Greer, Mayor
Carol Webb, City Administrator
24 North Center Street
Marshalltown, IA 50158
PH 641.754.5701 • FX 641.754.5717

To:	Mayor and City Council
From:	Sarah Rosenblum, Library Director
Meeting Date:	December 8, 2025
Re:	Resolution Accepting Bid and Authorizing the Award of Contract for the Marshalltown Public Library Remodel Project, No. LIB25001, in the City of Marshalltown, Iowa, in the Amount of $474,000 to Garling Construction

Strategic Plan Objective:
To continually improve and sustain the City's infrastructure, organization and services.

Recommended:
Accept the bid and authorize the award of the contract to the low bidder Garling Construction for the Marshalltown Public Library remodel project.

Budget Impact:
There is no budget impact to the City. This project is being totally funded by donors to the Friends of the Marshalltown Public Library. There will only be minimal impact to the operating budget.

Description/Background:
One of the main drivers in building the new Library in 2008 was the need for additional public meeting spaces. Even with new spaces such as the Coliseum, we still have a great need for meeting spaces both large and small. Eric Klinenberg wrote in his book, " Palaces for the People" that he views libraries as crucial "third places" and vital "social infrastructure" because they are public gathering spaces separate from home and work, fostering community connection, civic life, and individual well-being. Libraries are dynamic community centers with diverse programs that combat inequality and social isolation. This is certainly true of our Library.

These new spaces, which include a new "boardroom" space, will take pressure off the Community Meeting room by allowing meetings of more then 10 but less then 18 individuals to meet there. The three new study rooms include two rooms for up to four users. The larger study room along with "boardroom" will offer technology for online meetings. The Podcasting room will offer a new service to our community.

The Library is working with FEH, our original architects who designed the Library in 2008. Bids were opened on December 2, 2025 at 10:00 am. There were 8 bids submitted. FEH recommends awarding the contract to the low bidder Garling Construction for $474,000. There is a planned 10% contingency. The substantial completion date is 06/01/26.

Attachments:

1. Resolution Accepting Bid Library Remodel
2. Marshalltown Public Library - Bid Tabulation
3. AIA A101-2017 DRAFT Agreement_Combined_Reduced
4. AIA A201-2017 DRAFT General Conditions
5. Marshalltown Public Library_Interior Remodel Plans
6. Project Manual_Specs Vol 1
7. Project Manual_Specs Vol 2
8. Opinion of Probable Cost_Marshalltown Public Library Interior Remodel

2025-

RESOLUTION ACCEPTING BID AND AUTHORIZING THE AWARD OF CONTRACT FOR THE 2020 DERECHO CDBG-DR TREE REPLANTING, PROJECT NO. PRK24-002 IN THE CITY OF MARSHALLTOWN, IOWA IN THE AMOUNT OF $XXX TO XXX

WHEREAS, notice to bidders has been duly given as required by law publication in the Marshalltown Times-Republican for the 2020 Derecho CDBG-DR Tree Replanting Project, in the City of Marshalltown, as described in the plans and specifications therefore; and

WHEREAS, there has been filed with the City Clerk in response to the published notice to the bidders referred to above, certain proposals for the construction of the above designated improvement with the required certified checks or bid bond accompanying each proposal from the following bidders, to-wit;

Name and Address of Bidders	Amount of Bid
Cedar Falls Construction Co., Inc (Cedar Falls, IA)	$ 305,476.00
Con-Struct, Inc (Marshalltown, IA)	$ 334,030.40

After consideration of all bids filed, there was determined that the bid from XXX is the best and lowest responsible bid for the public improvement as is herein outlined.

WHEREAS, it is intended that the cost of said improvement shall be paid from Iowa Economic Development Authority 2020 Derecho CDBG-DR Award (20-DRI-023).

NOW, THEREFORE, BE IT RESOLVED BY THE COUNCIL OF THE CITY OF MARSHALLTOWN, IOWA:

Section 1. That the bid of and the same is hereby accepted for the public improvement as described in the plans and specifications therefore, as previously ordered by the Council, and that the contract for the construction of same is now awarded to said contractor in the total amount Three Hundred Five Thousand, Four Hundred Seventy-Six and 00/100 ($305,476.00) Dollars.

Section 2. Pursuant to Iowa Code section 26.10, the City Council authorizes staff to retain the bid security furnished by the successful bidder until the approved contract form has been executed, a bond has been filed by the bidder guaranteeing the performance of the contract, and to approve the properly executed contract and bond. Checks or bidder's bonds of unsuccessful bidders shall be returned to the bidders as soon as the successful bidder is determined or within thirty days, whichever is sooner.

Section 3. The final settlement upon the contract, as referred to herein with said contractor, shall be upon the basis of the unit prices as are set forth in the bid of said contractor and for the actual quantities for each item of materials furnished or work performed in the construction of this public improvement. The said contract is subject to all of the conditions as are contained in the resolution ordering construction of this improvement, the notice to bidders as published, the terms of the bidder's written proposal, the plans and specifications as are provided therefore, all of which are made a part of this resolution and the said bidders contract by reference as though the same were set out herein verbatim and in specific detail.

Section 4. This resolution as now adopted shall be in full force and binding effect upon the City of Marshalltown, Iowa, upon the final approval of the completed contract with the successful bidder and the approval of the contractor's surety bond by resolution of this Council.

Passed this 11th day of August 2025, and signed this _____ day of August 2025.

CITY OF MARSHALLTOWN, IOWA

_____

Joel Greer, Mayor

ATTEST:

_____

Alicia Hunter, CMC, City Clerk

Marshalltown Public Library - Interior Remodel

FEH Job #: 2022226
Bid Date: 12/02/2025 @ 10:00 am local time

FEH DESIGN

BID TABULATION FORM					
	Trinity Construction Group LTD	**Story Construction**	**Hay Construction**	**Graphite Construction Group Inc.**	**GTG Construction LLC**
BID BOND 5%	X	X	X	X	X
ADDENDA NO. 1	X	X	X	X	X
ADDENDA NO. 2	X	X	X	X	X
BASE BID	$ 599,900.00	$ 551,455.00	$ 579,400.00	$ 512,000.00	$ 515,000.00
TOTAL BID	**$ 599,900.00**	**$ 551,455.00**	**$ 579,400.00**	**$ 512,000.00**	**$ 515,000.00**
BASE BID SUBSTANTIAL COMPLETION DATE: (06/01/2026)	06/01/26	06/01/26	06/01/26	06/01/26	05/01/26
ALTERNATIVE COMPLETION DATE:					
Other Remarks:					

Marshalltown Public Library - Interior Remodel

FEH Job #: 2022226
Bid Date: 12/02/2025 @ 10:00 am local time

FEH DESIGN

BID TABULATION FORM

	Giardino Construction	R.H. Grabau Construction Inc.	Garling Construction		
BID BOND 5%	X	X	X		
ADDENDA NO. 1	X	X	X		
ADDENDA NO. 2	X	X	X		
BASE BID	$ 518,600.00	$ 496,000.00	$ 474,000.00		
TOTAL BID	**$ 518,600.00**	**$ 496,000.00**	**$ 474,000.00**		
BASE BID SUBSTANTIAL COMPLETION DATE: (06/01/2026)	06/01/26	06/01/26	06/01/26		
ALTERNATIVE COMPLETION DATE:					
Other Remarks:					

AIA® Document A101® – 2017

Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum

AGREEMENT made as of the Second day of December in the year Two Thousand Twenty-Five
(In words, indicate day, month and year.)

BETWEEN the Owner:
(Name, legal status, address and other information)

City of Marshalltown
24 North Center Street
Marshalltown, IA 50158
641-754-5799

and the Contractor:
(Name, legal status, address and other information)

Garling Construction, Inc.
1120 11th Street
Belle Plaine, IA 52208

319-444-3409

for the following Project:
(Name, location and detailed description)

Marshalltown Public Library Remodel
105 W Boone St
Marshalltown, IA 50158
Remodeling of a portion of the existing SW corner of the building to create new meeting room spaces and associated HVAC upgrades.

The Architect:
(Name, legal status, address and other information)

FEH DESIGN
604 E. Grand Ave.
Des Moines, IA 50309
515-288-2000

The Owner and Contractor agree as follows.

ADDITIONS AND DELETIONS: The author of this document may have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

The parties should complete A101®–2017, Exhibit A, Insurance and Bonds, contemporaneously with this Agreement. AIA Document A201®–2017, General Conditions of the Contract for Construction, is adopted in this document by reference. Do not use with other general conditions unless this document is modified.

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TABLE OF ARTICLES

1 THE CONTRACT DOCUMENTS

2 THE WORK OF THIS CONTRACT

3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

4 CONTRACT SUM

5 PAYMENTS

6 DISPUTE RESOLUTION

7 TERMINATION OR SUSPENSION

8 MISCELLANEOUS PROVISIONS

9 ENUMERATION OF CONTRACT DOCUMENTS

EXHIBIT A INSURANCE AND BONDS

ARTICLE 1 THE CONTRACT DOCUMENTS

The Contract Documents consist of this Agreement, Conditions of the Contract (General, Supplementary, and other Conditions), Drawings, Specifications, Addenda issued prior to execution of this Agreement, other documents listed in this Agreement, and Modifications issued after execution of this Agreement, all of which form the Contract, and are as fully a part of the Contract as if attached to this Agreement or repeated herein. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. An enumeration of the Contract Documents, other than a Modification, appears in Article 9.

ARTICLE 2 THE WORK OF THIS CONTRACT

The Contractor shall fully execute the Work described in the Contract Documents, except as specifically indicated in the Contract Documents to be the responsibility of others.

ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

§ 3.1 The date of commencement of the Work shall be:
(Check one of the following boxes.)

[ ] The date of this Agreement.

[X] A date set forth in a notice to proceed issued by the Owner.

[ ] Established as follows:
(Insert a date or a means to determine the date of commencement of the Work.)

If a date of commencement of the Work is not selected, then the date of commencement shall be the date of this Agreement.

§ 3.2 The Contract Time shall be measured from the date of commencement of the Work.

§ 3.3 Substantial Completion

§ 3.3.1 Subject to adjustments of the Contract Time as provided in the Contract Documents, the Contractor shall achieve Substantial Completion of the entire Work:
(Check one of the following boxes and complete the necessary information.)

[ ] Not later than ( ) calendar days from the date of commencement of the Work.

[X] By the following date: 06-01-2026

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§ 3.3.2 Subject to adjustments of the Contract Time as provided in the Contract Documents, if portions of the Work are to be completed prior to Substantial Completion of the entire Work, the Contractor shall achieve Substantial Completion of such portions by the following dates:

Portion of Work	Substantial Completion Date

§ 3.3.3 If the Contractor fails to achieve Substantial Completion as provided in this Section 3.3, liquidated damages, if any, shall be assessed as set forth in Section 4.5.

ARTICLE 4 CONTRACT SUM

§ 4.1 The Owner shall pay the Contractor the Contract Sum in current funds for the Contractor's performance of the Contract. The Contract Sum shall be Four Hundred and Seventy-Four Thousand Dollars and Zero Cents ($ 474,000.00), subject to additions and deductions as provided in the Contract Documents.

§ 4.2 Alternates

§ 4.2.1 Alternates, if any, included in the Contract Sum:

Item	Price

§ 4.2.2 Subject to the conditions noted below, the following alternates may be accepted by the Owner following execution of this Agreement. Upon acceptance, the Owner shall issue a Modification to this Agreement.
(Insert below each alternate and the conditions that must be met for the Owner to accept the alternate.)

Item	Price	Conditions for Acceptance

§ 4.3 Allowances, if any, included in the Contract Sum:
(Identify each allowance.)

Item	Price

§ 4.4 Unit prices, if any:
(Identify the item and state the unit price and quantity limitations, if any, to which the unit price will be applicable.)

Item	Units and Limitations	Price per Unit ($0.00)

§ 4.5 Liquidated damages, if any:
(Insert terms and conditions for liquidated damages, if any.)

N/A

§ 4.6 Other:
(Insert provisions for bonus or other incentives, if any, that might result in a change to the Contract Sum.)

ARTICLE 5 PAYMENTS

§ 5.1 Progress Payments

§ 5.1.1 Based upon Applications for Payment submitted to the Architect by the Contractor and Certificates for Payment issued by the Architect, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents.

§ 5.1.2 The period covered by each Application for Payment shall be one calendar month ending on the last day of the

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month, or as follows:

§ 5.1.3 Provided that an Application for Payment is received by the Architect not later than the Third day of a month, the Owner shall make payment of the amount certified to the Contractor not later than the Third day of the following month. If an Application for Payment is received by the Architect after the application date fixed above, payment of the amount certified shall be made by the Owner not later than Thirty (30) days after the Architect receives the Application for Payment.
(Federal, state or local laws may require payment within a certain period of time.)

§ 5.1.4 Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor in accordance with the Contract Documents. The schedule of values shall allocate the entire Contract Sum among the various portions of the Work. The schedule of values shall be prepared in such form, and supported by such data to substantiate its accuracy, as the Architect may require. This schedule of values shall be used as a basis for reviewing the Contractor's Applications for Payment.

§ 5.1.5 Applications for Payment shall show the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment.

§ 5.1.6 In accordance with AIA Document A201™–2017, General Conditions of the Contract for Construction, and subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

§ 5.1.6.1 The amount of each progress payment shall first include:

.1 That portion of the Contract Sum properly allocable to completed Work;

.2 That portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction, or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing; and

.3 That portion of Construction Change Directives that the Architect determines, in the Architect's professional judgment, to be reasonably justified.

§ 5.1.6.2 The amount of each progress payment shall then be reduced by:

.1 The aggregate of any amounts previously paid by the Owner;

.2 The amount, if any, for Work that remains uncorrected and for which the Architect has previously withheld a Certificate for Payment as provided in Article 9 of AIA Document A201–2017;

.3 Any amount for which the Contractor does not intend to pay a Subcontractor or material supplier, unless the Work has been performed by others the Contractor intends to pay;

.4 For Work performed or defects discovered since the last payment application, any amount for which the Architect may withhold payment, or nullify a Certificate of Payment in whole or in part, as provided in Article 9 of AIA Document A201–2017; and

.5 Retainage withheld pursuant to Section 5.1.7.

§ 5.1.7 Retainage

§ 5.1.7.1 For each progress payment made prior to Substantial Completion of the Work, the Owner may withhold the following amount, as retainage, from the payment otherwise due:
(Insert a percentage or amount to be withheld as retainage from each Application for Payment. The amount of retainage may be limited by governing law.)

Three percent (3%)

§ 5.1.7.1.1 The following items are not subject to retainage:
(Insert any items not subject to the withholding of retainage, such as general conditions, insurance, etc.)

§ 5.1.7.2 Reduction or limitation of retainage, if any, shall be as follows:
(If the retainage established in Section 5.1.7.1 is to be modified prior to Substantial Completion of the entire Work, including modifications for Substantial Completion of portions of the Work as provided in Section 3.3.2, insert provisions for such modifications.)

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§ 5.1.7.3 Except as set forth in this Section 5.1.7.3, upon Substantial Completion of the Work, the Contractor may submit an Application for Payment that includes the retainage withheld from prior Applications for Payment pursuant to this Section 5.1.7. The Application for Payment submitted at Substantial Completion shall not include retainage as follows:
(Insert any other conditions for release of retainage upon Substantial Completion.)

§ 5.1.8 If final completion of the Work is materially delayed through no fault of the Contractor, the Owner shall pay the Contractor any additional amounts in accordance with Article 9 of AIA Document A201–2017.

§ 5.1.9 Except with the Owner's prior approval, the Contractor shall not make advance payments to suppliers for materials or equipment which have not been delivered and stored at the site.

§ 5.2 Final Payment

§ 5.2.1 Final payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the Owner to the Contractor when

.1 the Contractor has fully performed the Contract except for the Contractor's responsibility to correct Work as provided in Article 12 of AIA Document A201–2017, and to satisfy other requirements, if any, which extend beyond final payment; and

.2 a final Certificate for Payment has been issued by the Architect.

§ 5.2.2 The Owner's final payment to the Contractor shall be made no later than 30 days after the issuance of the Architect's final Certificate for Payment, or as follows:

§ 5.3 Interest

Payments due and unpaid under the Contract shall bear interest from the date payment is due at the rate stated below, or in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.
(Insert rate of interest agreed upon, if any.)

%

ARTICLE 6 DISPUTE RESOLUTION

§ 6.1 Initial Decision Maker

The Architect will serve as the Initial Decision Maker pursuant to Article 15 of AIA Document A201–2017, unless the parties appoint below another individual, not a party to this Agreement, to serve as the Initial Decision Maker.
(If the parties mutually agree, insert the name, address and other contact information of the Initial Decision Maker, if other than the Architect.)

§ 6.2 Binding Dispute Resolution

For any Claim subject to, but not resolved by, mediation pursuant to Article 15 of AIA Document A201–2017, the method of binding dispute resolution shall be as follows:
(Check the appropriate box.)

[ ] Arbitration pursuant to Section 15.4 of AIA Document A201–2017

[X] Litigation in a court of competent jurisdiction

[ ] Other *(Specify)*

If the Owner and Contractor do not select a method of binding dispute resolution, or do not subsequently agree in writing to a binding dispute resolution method other than litigation, Claims will be resolved by litigation in a court of competent jurisdiction.

ARTICLE 7 TERMINATION OR SUSPENSION

§ 7.1 The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A201–2017.

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§ 7.1.1 If the Contract is terminated for the Owner's convenience in accordance with Article 14 of AIA Document A201–2017, then the Owner shall pay the Contractor a termination fee as follows:
(Insert the amount of, or method for determining, the fee, if any, payable to the Contractor following a termination for the Owner's convenience.)

§ 7.2 The Work may be suspended by the Owner as provided in Article 14 of AIA Document A201–2017.

ARTICLE 8 MISCELLANEOUS PROVISIONS

§ 8.1 Where reference is made in this Agreement to a provision of AIA Document A201–2017 or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

§ 8.2 The Owner's representative:
(Name, address, email address, and other information)

Carol Webb
24 North Center Street
Marshalltown, IA 50158
641-754-5799
cwebb@marshalltown-ia.gov

§ 8.3 The Contractor's representative:
(Name, address, email address, and other information)

Doug DeMeulenaere
5607 4th Street
Cedar Rapids, IA 52404
319-444-3409

§ 8.4 Neither the Owner's nor the Contractor's representative shall be changed without ten days' prior notice to the other party.

§ 8.5 Insurance and Bonds

§ 8.5.1 The Owner and the Contractor shall purchase and maintain insurance as set forth in AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum, Exhibit A, Insurance and Bonds, and elsewhere in the Contract Documents.

§ 8.5.2 The Contractor shall provide bonds as set forth in AIA Document A101™–2017 Exhibit A, and elsewhere in the Contract Documents.

§ 8.6 Notice in electronic format, pursuant to Article 1 of AIA Document A201–2017, may be given in accordance with a building information modeling exhibit, if completed, or as otherwise set forth below:
(If other than in accordance with a building information modeling exhibit, insert requirements for delivering notice in electronic format such as name, title, and email address of the recipient and whether and how the system will be required to generate a read receipt for the transmission.)

§ 8.7 Other provisions:

ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS

§ 9.1 This Agreement is comprised of the following documents:

.1 AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor
.2 AIA Document A101™–2017, Exhibit A, Insurance and Bonds
.3 AIA Document A201™–2017, General Conditions of the Contract for Construction

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.5 Drawings

Number	Title	Date
See attached Appendix B - Drawing Sheet Index		

.6 Specifications

Section	Title	Date	Pages
See attached Appendix C - Project Manual Table of Contents			

.7 Addenda, if any:

Number	Date	Pages
Addendum 1	11-20-2025	
Addendum 2	11-26-2025	

Portions of Addenda relating to bidding or proposal requirements are not part of the Contract Documents unless the bidding or proposal requirements are also enumerated in this Article 9.

.8 Other Exhibits:
(Check all boxes that apply and include appropriate information identifying the exhibit where required.)

[ ] AIA Document E204™–2017, Sustainable Projects Exhibit, dated as indicated below:
(Insert the date of the E204-2017 incorporated into this Agreement.)

[ ] The Sustainability Plan:

Title	Date	Pages

[X] Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages
PROJECT MANUAL	SECTION 0073 00 Supplementary Conditions	12-02-2025	34

.9 Other documents, if any, listed below:
(List here any additional documents that are intended to form part of the Contract Documents. AIA Document A201™–2017 provides that the advertisement or invitation to bid, Instructions to Bidders, sample forms, the Contractor's bid or proposal, portions of Addenda relating to bidding or proposal requirements, and other information furnished by the Owner in anticipation of receiving bids or proposals, are not part of the Contract Documents unless enumerated in this Agreement. Any such documents should be listed here only if intended to be part of the Contract Documents.)

This Agreement entered into as of the day and year first written above.

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OWNER *(Signature)*	**CONTRACTOR** *(Signature)*
BY: Carol Webb, City Administrator	BY: ~~Doug DeMeulenaere, CEO~~ Troy Pins
(Printed name and title)	*(Printed name and title)*

DRAFT

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EXHIBIT A - City of Marshalltown

MINIMUM INSURANCE REQUIREMENTS:

COMMERCIAL GENERAL LIABILITY:

General Aggregate Limit	$2,000,000
Products - Completed Operation Aggregate Limit	$2,000,000
Personal and Advertising Injury Limit	$1,000,000
Each Occurrence Limit	$1,000,000
Damage to a Premises Rented to You Limit	$ 100,000
Medical Payments	$ 5,000

Commercial General Liability policy shall be written on an occurrence form using ISO form CG 00 01 or equivalent form.

Policy shall include the following endorsements:

ISO endorsement CG 20 10 or equivalent endorsement naming the City of Marshalltown , its board members, employees and agents as an additional insured.

ISO endorsement CG 20 32 or equivalent endorsement naming Project Engineers, Architects and Surveyors as an additional insured.

ISO endorsement CG 20 37 or equivalent endorsement naming the City of Marshalltown , its board members, employees and agents as an additional insured for completed operations. This endorsement shall be maintained for a minimum of two years after completion and acceptance of the project by the City of Marshalltown .

ISO Endorsement CG 20 01 or equivalent endorsement indicating additional insured status for the City of Marshalltown , its board members, employees and agents is primary and non-contributory.

ISO endorsement CG 25 03 or equivalent endorsement, Designated Construction Project(s) General Aggregate Limit.

ISO endorsement CG 24 04 or equivalent endorsement, Waiver of Transfer of Rights of Recovery Against Others to Us, naming the City of Marshalltown .

Governmental Immunities Endorsement (see attached specimen).

BUSINESS AUTOMOBILE LIABILITY:

Combined single limit of	$1,000,000
Or	

Bodily Injury (per person)	$1,000,000
Bodily Injury (per accident)	$1,000,000
Property Damage	$1,000,000

Business auto liability shall be written on ISO form CA 00 01 or equivalent form.

Policy shall include Symbol 1 (Any Auto). If no owned autos, hired and non-owned auto liability is acceptable.

Include ISO endorsement CA 04 44 or equivalent endorsement, Waiver of Transfer of Rights of Recovery Against Others to Us, naming the City of Marshalltown .

Include ISO endorsement CA 99 48, Pollution Liability - Broadened Coverage for Covered Autos, or equivalent endorsement if the Contractor has vehicles that transport fuel onto City of Marshalltown property.

WORKERS COMPENSATION & EMPLOYERS LIABILITY:

Workers Compensation - Statutory - State of Iowa

Employers Liability

Bodily Injury Limit Each Accident	$500,000
Bodily Injury Disease - Policy Limit	$500,000
Bodily Injury Disease - Limit Each Employee	$500,000

Workers Compensation shall include the following endorsement: WC 0003 13, Waiver of Our Right to Recover from Others, in favor of the City of Marshalltown .

Sole Proprietors, Partners and Members must be included for coverage. Executive Officers may not be excluded from coverage.

UMBRELLA OR EXCESS LIABILITY:

Limit Each Occurrence	$5,000,000
Aggregate Limit	

Umbrella or Excess liability policy shall provide excess coverage and be at least as broad in coverage as the following required policies and endorsements: Commercial General Liability, Business Auto and Employer's Liability.

City of Marshalltown

GOVERNMENTAL IMMUNITIES ENDORSEMENT

Nonwaiver of Governmental Immunity. The insurance carrier expressly agrees and states that the purchase of this policy and the including of City of Marshalltown as an Additional Insured does not waive any of the defenses of governmental immunity available to the City of Marshalltown under Code of Iowa Section 670.4 as it now exists and as it may be amended from time to time.

Claims Coverage. The insurance carrier further agrees that this policy of insurance shall cover only those claims not subject to the defense of governmental immunity under the Code of Iowa Section 670.4 as it now exists and as it may be amended from time to time. Those claims not subject to Code of Iowa Section 670.4 shall be covered by the terms and conditions of this insurance policy.

Assertion of Governmental Immunity. The City of Marshalltown shall be responsible for asserting any defense of governmental immunity, and may do so at any time and shall do so upon the timely written request of the insurance carrier.

Non-Denial of Coverage. The insurance carrier shall not deny coverage under this policy and the insurance carrier shall not deny any of the rights and benefits accruing to the City of Marshalltown under this policy for reasons of governmental immunity unless and until a court of competent jurisdiction has ruled in favor of the defense(s) of governmental immunity asserted by the City of Marshalltown .

No Other Change in Policy. The above preservation of governmental immunities shall not otherwise change or alter the coverage available under the policy.

ACKNOWLEDGMENT AND CERTIFICATION

("Company") is providing services to the City of Marshalltown ("Owner ") as a vendor, supplier, or contractor or is operating or managing the operations of a vendor, supplier or contractor. The services provided by the Company may involve the presence of the Company's employees upon the real property of the Owner .

The Company acknowledges that Iowa law prohibits a sex offender who has been convicted of a sex offense against a minor from being present upon the real property of the Owner . The Company further acknowledges that, pursuant to law, a sex offender who has been convicted of a sex offense against a minor may not operate, manage, be employed by, or act as a contractor, vendor or supplier of services or volunteer at the Owner .

The Company hereby certifies that no one who is an owner, operator or manager of the Company has been convicted of a sex offense against a minor. The Company further agrees that it shall not permit any person who is a sex offender convicted of a sex offense against a minor to provide any services to the Owner in accordance with the prohibitions set forth above.

This Acknowledgment and Certification is to be construed under the laws of the State of Iowa. If any portion hereof is held invalid, the balance of the document shall, notwithstanding, continue in full legal force and effect.

In signing this Acknowledgment and Certification, the person signing on behalf of the Company hereby acknowledges that he/she has read this entire document that he/she understands its terms, and that he/she not only has the authority to sign the document on behalf of the Company, but has signed it knowingly and voluntarily.

Dated:_____

By: _____
(name of vendor/supplier/contractor/sub-contractor)
a.
Printed Name: _____

Title: _____

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A2.1	ROOF PLAN
A3.1	DOOR SCHEDULE AND DETAILS, WALL TYPES, DETAILS
A4.1	INTERIOR ELEVATIONS
A5.1	REFLECTED CEILING PLANS
A6.1	FLOOR FINISH PLAN AND FURNITURE PLAN

FIRE PROTECTION

F0.0	FIRE PROTECTION COVERSHEET
F0.1	FIRST FLOOR DEMOLITION PLAN – FIRE PROTECTION
F1.1	FIRST FLOOR PLAN – FIRE PROTECTION
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VENTILATION

V0.0	VENTILATION COVERSHEET
V0.1	FIRST FLOOR DEMOLITION PLAN – VENTILATION
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V4.1	VENTILATION DETAILS
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00 01 10 - Table of Contents

00 01 15 - List of Drawing Sheets

00 11 13 - Advertisement for Bids

00 11 14 - Notice of Hearing

00 21 13 - Instructions to Bidders

00 22 13 - Supplemental Instructions to Bidders

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01 40 00 - Quality Requirements

01 50 00 - Temporary Facilities and Controls

01 60 00 - Product Requirements

01 70 00 - Execution and Closeout Requirements

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DIVISION 04 -- MASONRY

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END OF SECTION 00 01 10

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General Conditions of the Contract for Construction

for the following PROJECT:
(Name and location or address)

Marshalltown Public Library Remodel
105 W Boone St
Marshalltown, IA 50158

THE OWNER:
(Name, legal status and address)

City of Marshalltown
24 North Center Street
Marshalltown, IA 50158

THE ARCHITECT:
(Name, legal status and address)

FEH DESIGN
604 E. Grand Ave.
Des Moines, IA 50309

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ARTICLE 1 GENERAL PROVISIONS

§ 1.1 Basic Definitions

§ 1.1.1 The Contract Documents

The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement, and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive, or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of Addenda relating to bidding or proposal requirements.

§ 1.1.2 The Contract

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Architect or the Architect's consultants, or (4) between any persons or entities other than the Owner and the Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties.

§ 1.1.3 The Work

The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment, and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

§ 1.1.4 The Project

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner and by Separate Contractors.

§ 1.1.5 The Drawings

The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules, and diagrams.

§ 1.1.6 The Specifications

The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

§ 1.1.7 Instruments of Service

Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Architect and the Architect's consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

§ 1.1.8 Initial Decision Maker

The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2. The Initial Decision Maker shall not show partiality to the Owner or Contractor and shall not be liable for results of interpretations or decisions rendered in good faith.

§ 1.2 Correlation and Intent of the Contract Documents

§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

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§ 1.2.1.1 The invalidity of any provision of the Contract Documents shall not invalidate the Contract or its remaining provisions. If it is determined that any provision of the Contract Documents violates any law, or is otherwise invalid or unenforceable, then that provision shall be revised to the extent necessary to make that provision legal and enforceable. In such case the Contract Documents shall be construed, to the fullest extent permitted by law, to give effect to the parties' intentions and purposes in executing the Contract.

§ 1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

§ 1.2.3 Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

§ 1.3 Capitalization

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles, or (3) the titles of other documents published by the American Institute of Architects.

§ 1.4 Interpretation

In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

§ 1.5 Ownership and Use of Drawings, Specifications, and Other Instruments of Service

§ 1.5.1 The Architect and the Architect's consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and retain all common law, statutory, and other reserved rights in their Instruments of Service, including copyrights. The Contractor, Subcontractors, Sub-subcontractors, and suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with the Project is not to be construed as publication in derogation of the Architect's or Architect's consultants' reserved rights.

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors, and suppliers are authorized to use and reproduce the Instruments of Service provided to them, subject to any protocols established pursuant to Sections 1.7 and 1.8, solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and suppliers may not use the Instruments of Service on other projects or for additions to the Project outside the scope of the Work without the specific written consent of the Owner, Architect, and the Architect's consultants.

§ 1.6 Notice

§ 1.6.1 Except as otherwise provided in Section 1.6.2, where the Contract Documents require one party to notify or give notice to the other party, such notice shall be provided in writing to the designated representative of the party to whom the notice is addressed and shall be deemed to have been duly served if delivered in person, by mail, by courier, or by electronic transmission if a method for electronic transmission is set forth in the Agreement.

§ 1.6.2 Notice of Claims as provided in Section 15.1.3 shall be provided in writing and shall be deemed to have been duly served only if delivered to the designated representative of the party to whom the notice is addressed by certified or registered mail, or by courier providing proof of delivery.

§ 1.7 Digital Data Use and Transmission

The parties shall agree upon written protocols governing the transmission and use of, and reliance on, Instruments of Service or any other information or documentation in digital form.

§ 1.8 Building Information Models Use and Reliance

Any use of, or reliance on, all or a portion of a building information model without agreement to written protocols governing the use of, and reliance on, the information contained in the model shall be at the using or relying party's sole risk and without liability to the other party and its contractors or consultants, the authors of, or contributors to, the building information model, and each of their agents and employees.

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ARTICLE 2 OWNER

§ 2.1 General

§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the Architect does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

§ 2.1.2 The Owner shall furnish to the Contractor, within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of, or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein.

§ 2.2 Evidence of the Owner's Financial Arrangements

§ 2.2.1 Prior to commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. The Contractor shall have no obligation to commence the Work until the Owner provides such evidence. If commencement of the Work is delayed under this Section 2.2.1, the Contract Time shall be extended appropriately.

§ 2.2.2 Following commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract only if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) the Contractor identifies in writing a reasonable concern regarding the Owner's ability to make payment when due; or (3) a change in the Work materially changes the Contract Sum. If the Owner fails to provide such evidence, as required, within fourteen days of the Contractor's request, the Contractor may immediately stop the Work and, in that event, shall notify the Owner that the Work has stopped. However, if the request is made because a change in the Work materially changes the Contract Sum under (3) above, the Contractor may immediately stop only that portion of the Work affected by the change until reasonable evidence is provided. If the Work is stopped under this Section 2.2.2, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided in the Contract Documents.

§ 2.2.3 After the Owner furnishes evidence of financial arrangements under this Section 2.2, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.

§ 2.2.4 Where the Owner has designated information furnished under this Section 2.2 as "confidential," the Contractor shall keep the information confidential and shall not disclose it to any other person. However, the Contractor may disclose "confidential" information, after seven (7) days' notice to the Owner, where disclosure is required by law, including a subpoena or other form of compulsory legal process issued by a court or governmental entity, or by court or arbitrator(s) order. The Contractor may also disclose "confidential" information to its employees, consultants, sureties, Subcontractors and their employees, Sub-subcontractors, and others who need to know the content of such information solely and exclusively for the Project and who agree to maintain the confidentiality of such information.

§ 2.3 Information and Services Required of the Owner

§ 2.3.1 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

§ 2.3.2 The Owner shall retain an architect lawfully licensed to practice architecture, or an entity lawfully practicing architecture, in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number.

§ 2.3.3 If the employment of the Architect terminates, the Owner shall employ a successor to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the Architect.

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§ 2.3.4 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

§ 2.3.5 The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Contractor's performance of the Work with reasonable promptness after receiving the Contractor's written request for such information or services.

§ 2.3.6 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.

§ 2.4 Owner's Right to Stop the Work

If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or repeatedly fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3.

§ 2.5 Owner's Right to Carry Out the Work

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such default or neglect. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect and the Architect may, pursuant to Section 9.5.1, withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect, or failure. If current and future payments are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. If the Contractor disagrees with the actions of the Owner or the Architect, or the amounts claimed as costs to the Owner, the Contractor may file a Claim pursuant to Article 15.

ARTICLE 3 CONTRACTOR

§ 3.1 General

§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative.

§ 3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.

§ 3.1.3 The Contractor shall not be relieved of its obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect in the Architect's administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

§ 3.2 Review of Contract Documents and Field Conditions by Contractor

§ 3.2.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed, and correlated personal observations with requirements of the Contract Documents.

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.3.4, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the

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purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the Architect may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

§ 3.2.3 The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Architect any nonconformity discovered by or made known to the Contractor as a request for information in such form as the Architect may require.

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall submit Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner, subject to Section 15.1.7, as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities.

§ 3.3 Supervision and Construction Procedures

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work under the Contract. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences, or procedures, the Contractor shall evaluate the jobsite safety thereof and shall be solely responsible for the jobsite safety of such means, methods, techniques, sequences, or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely notice to the Owner and Architect, and shall propose alternative means, methods, techniques, sequences, or procedures. The Architect shall evaluate the proposed alternative solely for conformance with the design intent for the completed construction. Unless the Architect objects to the Contractor's proposed alternative, the Contractor shall perform the Work using its alternative means, methods, techniques, sequences, or procedures.

§ 3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors.

§ 3.3.3 The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work.

§ 3.4 Labor and Materials

§ 3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

§ 3.4.2 Except in the case of minor changes in the Work approved by the Architect in accordance with Section 3.12.8 or ordered by the Architect in accordance with Section 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order or Construction Change Directive.

§ 3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them.

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§ 3.5 Warranty

§ 3.5.1 The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

§ 3.5.2 All material, equipment, or other special warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with Section 9.8.4.

§ 3.6 Taxes

The Contractor shall pay sales, consumer, use and similar taxes for the Work provided by the Contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

§ 3.7 Permits, Fees, Notices and Compliance with Laws

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit as well as for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded.

§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work.

§ 3.7.3 If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

§ 3.7.4 Concealed or Unknown Conditions

If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed and in no event later than 14 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the Architect determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend that an equitable adjustment be made in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner and Contractor, stating the reasons. If either party disputes the Architect's determination or recommendation, that party may submit a Claim as provided in Article 15.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15.

§ 3.8 Allowances

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct,

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but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

§ 3.8.2 Unless otherwise provided in the Contract Documents,

.1 allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;

.2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and

.3 whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness.

§ 3.9 Superintendent

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the name and qualifications of a proposed superintendent. Within 14 days of receipt of the information, the Architect may notify the Contractor, stating whether the Owner or the Architect (1) has reasonable objection to the proposed superintendent or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed.

§ 3.10 Contractor's Construction and Submittal Schedules

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall contain detail appropriate for the Project, including (1) the date of commencement of the Work, interim schedule milestone dates, and the date of Substantial Completion; (2) an apportionment of the Work by construction activity; and (3) the time required for completion of each portion of the Work. The schedule shall provide for the orderly progression of the Work to completion and shall not exceed time limits current under the Contract Documents. The schedule shall be revised at appropriate intervals as required by the conditions of the Work and Project.

§ 3.10.2 The Contractor, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, shall submit a submittal schedule for the Architect's approval. The Architect's approval shall not be unreasonably delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, or fails to provide submittals in accordance with the approved submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

§ 3.10.3 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner and Architect.

§ 3.11 Documents and Samples at the Site

The Contractor shall make available, at the Project site, the Contract Documents, including Change Orders, Construction Change Directives, and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples, and similar required submittals. These shall be in electronic form or paper copy, available to the Architect and Owner, and delivered to the Architect for submittal to the Owner upon completion of the Work as a record of the Work as

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constructed.

§ 3.12 Shop Drawings, Product Data and Samples

§ 3.12.1 Shop Drawings are drawings, diagrams, schedules, and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier, or distributor to illustrate some portion of the Work.

§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

§ 3.12.3 Samples are physical examples that illustrate materials, equipment, or workmanship, and establish standards by which the Work will be judged.

§ 3.12.4 Shop Drawings, Product Data, Samples, and similar submittals are not Contract Documents. Their purpose is to demonstrate how the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect is subject to the limitations of Section 4.2.7. Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Architect without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve, and submit to the Architect, Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents, in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of Separate Contractors.

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples, and similar submittals, the Contractor represents to the Owner and Architect that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

§ 3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples, or similar submittals, until the respective submittal has been approved by the Architect.

§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from the requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples, or similar submittals, unless the Contractor has specifically notified the Architect of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals, by the Architect's approval thereof.

§ 3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples, or similar submittals, to revisions other than those requested by the Architect on previous submittals. In the absence of such notice, the Architect's approval of a resubmission shall not apply to such revisions.

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures. The Contractor shall not be required to provide professional services in violation of applicable law.

§ 3.12.10.1 If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall be entitled to rely upon the adequacy and accuracy of the performance and design criteria provided in the Contract Documents. The

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Contractor shall cause such services or certifications to be provided by an appropriately licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings, and other submittals prepared by such professional. Shop Drawings, and other submittals related to the Work, designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy and accuracy of the services, certifications, and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor the performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review and approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.

§ 3.12.10.2 If the Contract Documents require the Contractor's design professional to certify that the Work has been performed in accordance with the design criteria, the Contractor shall furnish such certifications to the Architect at the time and in the form specified by the Architect.

§ 3.13 Use of Site

The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, lawful orders of public authorities, and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

§ 3.14 Cutting and Patching

§ 3.14.1 The Contractor shall be responsible for cutting, fitting, or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting, or patching shall be restored to the condition existing prior to the cutting, fitting, or patching, unless otherwise required by the Contract Documents.

§ 3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or Separate Contractors by cutting, patching, or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter construction by the Owner or a Separate Contractor except with written consent of the Owner and of the Separate Contractor. Consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold, from the Owner or a Separate Contractor, its consent to cutting or otherwise altering the Work.

§ 3.15 Cleaning Up

§ 3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials and rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery, and surplus materials from and about the Project.

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the Owner shall be entitled to reimbursement from the Contractor.

§ 3.16 Access to Work

The Contractor shall provide the Owner and Architect with access to the Work in preparation and progress wherever located.

§ 3.17 Royalties, Patents and Copyrights

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and Architect harmless from loss on account thereof, but shall not be responsible for defense or loss when a particular design, process, or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings, Specifications, or other documents prepared by the Owner or Architect. However, if an infringement of a copyright or patent is discovered by, or made known to, the Contractor, the Contractor shall be responsible for the loss unless the information is promptly furnished to the Architect.

§ 3.18 Indemnification

§ 3.18.1 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the

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Work, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss, or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 3.18.

§ 3.18.2 In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, the indemnification obligation under Section 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation, or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts, or other employee benefit acts.

ARTICLE 4 ARCHITECT

§ 4.1 General

§ 4.1.1 The Architect is the person or entity retained by the Owner pursuant to Section 2.3.2 and identified as such in the Agreement.

§ 4.1.2 Duties, responsibilities, and limitations of authority of the Architect as set forth in the Contract Documents shall not be restricted, modified, or extended without written consent of the Owner, Contractor, and Architect. Consent shall not be unreasonably withheld.

§ 4.2 Administration of the Contract

§ 4.2.1 The Architect will provide administration of the Contract as described in the Contract Documents and will be an Owner's representative during construction until the date the Architect issues the final Certificate for Payment. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 4.2.2 The Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect will not have control over, charge of, or responsibility for the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents.

§ 4.2.3 On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and promptly report to the Owner (1) known deviations from the Contract Documents, (2) known deviations from the most recent construction schedule submitted by the Contractor, and (3) defects and deficiencies observed in the Work. The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of, and will not be responsible for acts or omissions of, the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

§ 4.2.4 Communications

The Owner and Contractor shall include the Architect in all communications that relate to or affect the Architect's services or professional responsibilities. The Owner shall promptly notify the Architect of the substance of any direct communications between the Owner and the Contractor otherwise relating to the Project. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and suppliers shall be through the Contractor. Communications by and with Separate Contractors shall be through the Owner. The Contract Documents may specify other communication protocols.

§ 4.2.5 Based on the Architect's evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

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§ 4.2.6 The Architect has authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the Work in accordance with Sections 13.4.2 and 13.4.3, whether or not the Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, suppliers, their agents or employees, or other persons or entities performing portions of the Work.

§ 4.2.7 The Architect will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data, and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5, and 3.12. The Architect's review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences, or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 4.2.8 The Architect will prepare Change Orders and Construction Change Directives, and may order minor changes in the Work as provided in Section 7.4. The Architect will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.9 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion pursuant to Section 9.8; receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10; and issue a final Certificate for Payment pursuant to Section 9.10.

§ 4.2.10 If the Owner and Architect agree, the Architect will provide one or more Project representatives to assist in carrying out the Architect's responsibilities at the site. The Owner shall notify the Contractor of any change in the duties, responsibilities and limitations of authority of the Project representatives.

§ 4.2.11 The Architect will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

§ 4.2.12 Interpretations and decisions of the Architect will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either, and will not be liable for results of interpretations or decisions rendered in good faith.

§ 4.2.13 The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

§ 4.2.14 The Architect will review and respond to requests for information about the Contract Documents. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

ARTICLE 5 SUBCONTRACTORS

§ 5.1 Definitions

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a Separate Contractor or the subcontractors of a Separate Contractor.

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§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

§ 5.2 Award of Subcontracts and Other Contracts for Portions of the Work

§ 5.2.1 Unless otherwise stated in the Contract Documents, the Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the persons or entities proposed for each principal portion of the Work, including those who are to furnish materials or equipment fabricated to a special design. Within 14 days of receipt of the information, the Architect may notify the Contractor whether the Owner or the Architect (1) has reasonable objection to any such proposed person or entity or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person, or entity for one previously selected if the Owner or Architect makes reasonable objection to such substitution.

§ 5.3 Subcontractual Relations

By appropriate written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work that the Contractor, by these Contract Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies, and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

§ 5.4 Contingent Assignment of Subcontracts

§ 5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner, provided that

.1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor; and

.2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract.

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§ 5.4.2 Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension.

§ 5.4.3 Upon assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor contractor or other entity. If the Owner assigns the subcontract to a successor contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor contractor's obligations under the subcontract.

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

§ 6.1 Owner's Right to Perform Construction and to Award Separate Contracts

§ 6.1.1 The term "Separate Contractor(s)" shall mean other contractors retained by the Owner under separate agreements. The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and with Separate Contractors retained under Conditions of the Contract substantially similar to those of this Contract, including those provisions of the Conditions of the Contract related to insurance and waiver of subrogation.

§ 6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

§ 6.1.3 The Owner shall provide for coordination of the activities of the Owner's own forces and of each Separate Contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with any Separate Contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to its construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, Separate Contractors, and the Owner until subsequently revised.

§ 6.1.4 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces or with Separate Contractors, the Owner or its Separate Contractors shall have the same obligations and rights that the Contractor has under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6, and Articles 10, 11, and 12.

§ 6.2 Mutual Responsibility

§ 6.2.1 The Contractor shall afford the Owner and Separate Contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a Separate Contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly notify the Architect of apparent discrepancies or defects in the construction or operations by the Owner or Separate Contractor that would render it unsuitable for proper execution and results of the Contractor's Work. Failure of the Contractor to notify the Architect of apparent discrepancies or defects prior to proceeding with the Work shall constitute an acknowledgment that the Owner's or Separate Contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work. The Contractor shall not be responsible for discrepancies or defects in the construction or operations by the Owner or Separate Contractor that are not apparent.

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs that are payable to a Separate Contractor because of the Contractor's delays, improperly timed activities or defective construction. The Owner shall be responsible to the Contractor for costs the Contractor incurs because of a Separate Contractor's delays, improperly timed activities, damage to the Work or defective construction.

§ 6.2.4 The Contractor shall promptly remedy damage that the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner or Separate Contractor as provided in Section 10.2.5.

§ 6.2.5 The Owner and each Separate Contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

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§ 6.3 Owner's Right to Clean Up

If a dispute arises among the Contractor, Separate Contractors, and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Architect will allocate the cost among those responsible.

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 General

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor, and Architect. A Construction Change Directive requires agreement by the Owner and Architect and may or may not be agreed to by the Contractor. An order for a minor change in the Work may be issued by the Architect alone.

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents. The Contractor shall proceed promptly with changes in the Work, unless otherwise provided in the Change Order, Construction Change Directive, or order for a minor change in the Work.

§ 7.2 Change Orders

§ 7.2.1 A Change Order is a written instrument prepared by the Architect and signed by the Owner, Contractor, and Architect stating their agreement upon all of the following:

.1 The change in the Work;

.2 The amount of the adjustment, if any, in the Contract Sum; and

.3 The extent of the adjustment, if any, in the Contract Time.

§ 7.3 Construction Change Directives

§ 7.3.1 A Construction Change Directive is a written order prepared by the Architect and signed by the Owner and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

§ 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

§ 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

.1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;

.2 Unit prices stated in the Contract Documents or subsequently agreed upon;

.3 Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or

.4 As provided in Section 7.3.4.

§ 7.3.4 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.4 shall be limited to the following:

.1 Costs of labor, including applicable payroll taxes, fringe benefits required by agreement or custom, workers' compensation insurance, and other employee costs approved by the Architect;

.2 Costs of materials, supplies, and equipment, including cost of transportation, whether incorporated or consumed;

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.3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;

.4 Costs of premiums for all bonds and insurance, permit fees, and sales, use, or similar taxes, directly related to the change; and

.5 Costs of supervision and field office personnel directly attributable to the change.

§ 7.3.5 If the Contractor disagrees with the adjustment in the Contract Time, the Contractor may make a Claim in accordance with applicable provisions of Article 15.

§ 7.3.6 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

§ 7.3.7 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Architect determines, in the Architect's professional judgment, to be reasonably justified. The Architect's interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.

§ 7.3.10 When the Owner and Contractor agree with a determination made by the Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Architect will prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

§ 7.4 Minor Changes in the Work

The Architect may order minor changes in the Work that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum or an extension of the Contract Time. The Architect's order for minor changes shall be in writing. If the Contractor believes that the proposed minor change in the Work will affect the Contract Sum or Contract Time, the Contractor shall notify the Architect and shall not proceed to implement the change in the Work. If the Contractor performs the Work set forth in the Architect's order for a minor change without prior notice to the Architect that such change will affect the Contract Sum or Contract Time, the Contractor waives any adjustment to the Contract Sum or extension of the Contract Time.

ARTICLE 8 TIME

§ 8.1 Definitions

§ 8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

§ 8.1.2 The date of commencement of the Work is the date established in the Agreement.

§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8.

§ 8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

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§ 8.2 Progress and Completion

§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, commence the Work prior to the effective date of insurance required to be furnished by the Contractor and Owner.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

§ 8.3 Delays and Extensions of Time

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by (1) an act or neglect of the Owner or Architect, of an employee of either, or of a Separate Contractor; (2) by changes ordered in the Work; (3) by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, adverse weather conditions documented in accordance with Section 15.1.6.2, or other causes beyond the Contractor's control; (4) by delay authorized by the Owner pending mediation and binding dispute resolution; or (5) by other causes that the Contractor asserts, and the Architect determines, justify delay, then the Contract Time shall be extended for such reasonable time as the Architect may determine.

§ 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15.

§ 8.3.3 This Section 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 Contract Sum

§ 9.1.1 The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

§ 9.1.2 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed so that application of such unit prices to the actual quantities causes substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

§ 9.2 Schedule of Values

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit a schedule of values to the Architect before the first Application for Payment, allocating the entire Contract Sum to the various portions of the Work. The schedule of values shall be prepared in the form, and supported by the data to substantiate its accuracy, required by the Architect. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment. Any changes to the schedule of values shall be submitted to the Architect and supported by such data to substantiate its accuracy as the Architect may require, and unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's subsequent Applications for Payment.

§ 9.3 Applications for Payment

§ 9.3.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. The application shall be notarized, if required, and supported by all data substantiating the Contractor's right to payment that the Owner or Architect require, such as copies of requisitions, and releases and waivers of liens from Subcontractors and suppliers, and shall reflect retainage if provided for in the Contract Documents.

§ 9.3.1.1 As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Architect, but not yet included in Change Orders.

§ 9.3.1.2 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or supplier, unless such Work has been performed by others

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whom the Contractor intends to pay.

§ 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage, and transportation to the site, for such materials and equipment stored off the site.

§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information, and belief, be free and clear of liens, claims, security interests, or encumbrances, in favor of the Contractor, Subcontractors, suppliers, or other persons or entities that provided labor, materials, and equipment relating to the Work.

§ 9.4 Certificates for Payment

§ 9.4.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, either (1) issue to the Owner a Certificate for Payment in the full amount of the Application for Payment, with a copy to the Contractor; or (2) issue to the Owner a Certificate for Payment for such amount as the Architect determines is properly due, and notify the Contractor and Owner of the Architect's reasons for withholding certification in part as provided in Section 9.5.1; or (3) withhold certification of the entire Application for Payment, and notify the Contractor and Owner of the Architect's reason for withholding certification in whole as provided in Section 9.5.1.

§ 9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluation of the Work and the data in the Application for Payment, that, to the best of the Architect's knowledge, information, and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and that the Contractor is entitled to payment in the amount certified. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion, and to specific qualifications expressed by the Architect. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work; (2) reviewed construction means, methods, techniques, sequences, or procedures; (3) reviewed copies of requisitions received from Subcontractors and suppliers and other data requested by the Owner to substantiate the Contractor's right to payment; or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 9.5 Decisions to Withhold Certification

§ 9.5.1 The Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect's opinion the representations to the Owner required by Section 9.4.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 3.3.2, because of

- **.1** defective Work not remedied;
- **.2** third party claims filed or reasonable evidence indicating probable filing of such claims, unless security acceptable to the Owner is provided by the Contractor;
- **.3** failure of the Contractor to make payments properly to Subcontractors or suppliers for labor, materials or equipment;
- **.4** reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- **.5** damage to the Owner or a Separate Contractor;
- **.6** reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay;

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or

.7 repeated failure to carry out the Work in accordance with the Contract Documents.

§ 9.5.2 When either party disputes the Architect's decision regarding a Certificate for Payment under Section 9.5.1, in whole or in part, that party may submit a Claim in accordance with Article 15.

§ 9.5.3 When the reasons for withholding certification are removed, certification will be made for amounts previously withheld.

§ 9.5.4 If the Architect withholds certification for payment under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or supplier to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Contractor shall reflect such payment on its next Application for Payment.

§ 9.6 Progress Payments

§ 9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Architect.

§ 9.6.2 The Contractor shall pay each Subcontractor, no later than seven days after receipt of payment from the Owner, the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

§ 9.6.3 The Architect will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Architect and Owner on account of portions of the Work done by such Subcontractor.

§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors and suppliers to ascertain whether they have been properly paid. Neither the Owner nor Architect shall have an obligation to pay, or to see to the payment of money to, a Subcontractor or supplier, except as may otherwise be required by law.

§ 9.6.5 The Contractor's payments to suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

§ 9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

§ 9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors or provided by suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, create any fiduciary liability or tort liability on the part of the Contractor for breach of trust, or entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

§ 9.6.8 Provided the Owner has fulfilled its payment obligations under the Contract Documents, the Contractor shall defend and indemnify the Owner from all loss, liability, damage or expense, including reasonable attorney's fees and litigation expenses, arising out of any lien claim or other claim for payment by any Subcontractor or supplier of any tier. Upon receipt of notice of a lien claim or other claim for payment, the Owner shall notify the Contractor. If approved by the applicable court, when required, the Contractor may substitute a surety bond for the property against which the lien or other claim for payment has been asserted.

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§ 9.7 Failure of Payment
If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents, the amount certified by the Architect or awarded by binding dispute resolution, then the Contractor may, upon seven additional days' notice to the Owner and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided for in the Contract Documents.

§ 9.8 Substantial Completion
§ 9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use.

§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

§ 9.8.3 Upon receipt of the Contractor's list, the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion.

§ 9.8.4 When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion; establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance; and fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in the Certificate. Upon such acceptance, and consent of surety if any, the Owner shall make payment of retainage applying to the Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

§ 9.9 Partial Occupancy or Use
§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect.

§ 9.9.2 Immediately prior to such partial occupancy or use, the Owner, Contractor, and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

§ 9.9.3 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

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§ 9.10 Final Completion and Final Payment

§ 9.10.1 Upon receipt of the Contractor's notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection. When the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's on-site visits and inspections, the Work has been completed in accordance with the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect, (3) a written statement that the Contractor knows of no reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment, (5) documentation of any special warranties, such as manufacturers' warranties or specific Subcontractor warranties, and (6) if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts and releases and waivers of liens, claims, security interests, or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien, claim, security interest, or encumbrance. If a lien, claim, security interest, or encumbrance remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging the lien, claim, security interest, or encumbrance, including all costs and reasonable attorneys' fees.

§ 9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Architect so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed, corrected, and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of the surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

§ 9.10.4 The making of final payment shall constitute a waiver of Claims by the Owner except those arising from

- **.1** liens, Claims, security interests, or encumbrances arising out of the Contract and unsettled;
- **.2** failure of the Work to comply with the requirements of the Contract Documents;
- **.3** terms of special warranties required by the Contract Documents; or
- **.4** audits performed by the Owner, if permitted by the Contract Documents, after final payment.

§ 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor, or a supplier, shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 Safety Precautions and Programs

The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Contract.

§ 10.2 Safety of Persons and Property

§ 10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury, or loss to

- **.1** employees on the Work and other persons who may be affected thereby;

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.2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody, or control of the Contractor, a Subcontractor, or a Sub-subcontractor; and

.3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

§ 10.2.2 The Contractor shall comply with, and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities, bearing on safety of persons or property or their protection from damage, injury, or loss.

§ 10.2.3 The Contractor shall implement, erect, and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards; promulgating safety regulations; and notifying the owners and users of adjacent sites and utilities of the safeguards.

§ 10.2.4 When use or storage of explosives or other hazardous materials or equipment, or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2 and 10.2.1.3. The Contractor may make a Claim for the cost to remedy the damage or loss to the extent such damage or loss is attributable to acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.

§ 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and Architect.

§ 10.2.7 The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

§ 10.2.8 Injury or Damage to Person or Property

If either party suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, notice of the injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

§ 10.3 Hazardous Materials and Substances

§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials or substances. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and notify the Owner and Architect of the condition.

§ 10.3.2 Upon receipt of the Contractor's notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of the material or substance or who are to perform the task of removal or safe containment of the material or substance. The Contractor and the Architect will promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or Architect has an objection to a person or entity proposed

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by the Owner, the Owner shall propose another to whom the Contractor and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable additional costs of shutdown, delay, and start-up.

§ 10.3.3 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss, or expense is due to the fault or negligence of the party seeking indemnity.

§ 10.3.4 The Owner shall not be responsible under this Section 10.3 for hazardous materials or substances the Contractor brings to the site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for hazardous materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.

§ 10.3.5 The Contractor shall reimburse the Owner for the cost and expense the Owner incurs (1) for remediation of hazardous materials or substances the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

§ 10.3.6 If, without negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall reimburse the Contractor for all cost and expense thereby incurred.

§ 10.4 Emergencies

In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury, or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 Contractor's Insurance and Bonds

§ 11.1.1 The Contractor shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Contractor shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Owner, Architect, and Architect's consultants shall be named as additional insureds under the Contractor's commercial general liability policy or as otherwise described in the Contract Documents.

§ 11.1.2 The Contractor shall provide surety bonds of the types, for such penal sums, and subject to such terms and conditions as required by the Contract Documents. The Contractor shall purchase and maintain the required bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

§ 11.1.3 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

§ 11.1.4 Notice of Cancellation or Expiration of Contractor's Required Insurance. Within three (3) business days of the date the Contractor becomes aware of an impending or actual cancellation or expiration of any insurance required by the Contract Documents, the Contractor shall provide notice to the Owner of such impending or actual cancellation or expiration. Upon receipt of notice from the Contractor, the Owner shall, unless the lapse in coverage arises from an act or omission of the Owner, have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by the Contractor. The furnishing of notice by the Contractor shall not relieve

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the Contractor of any contractual obligation to provide any required coverage.

§ 11.2 Owner's Insurance

§ 11.2.1 The Owner shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Owner shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located.

§ 11.2.2 Failure to Purchase Required Property Insurance. If the Owner fails to purchase and maintain the required property insurance, with all of the coverages and in the amounts described in the Agreement or elsewhere in the Contract Documents, the Owner shall inform the Contractor in writing prior to commencement of the Work. Upon receipt of notice from the Owner, the Contractor may delay commencement of the Work and may obtain insurance that will protect the interests of the Contractor, Subcontractors, and Sub-Subcontractors in the Work. When the failure to provide coverage has been cured or resolved, the Contract Sum and Contract Time shall be equitably adjusted. In the event the Owner fails to procure coverage, the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent the loss to the Owner would have been covered by the insurance to have been procured by the Owner. The cost of the insurance shall be charged to the Owner by a Change Order. If the Owner does not provide written notice, and the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain the required insurance, the Owner shall reimburse the Contractor for all reasonable costs and damages attributable thereto.

§ 11.2.3 Notice of Cancellation or Expiration of Owner's Required Property Insurance. Within three (3) business days of the date the Owner becomes aware of an impending or actual cancellation or expiration of any property insurance required by the Contract Documents, the Owner shall provide notice to the Contractor of such impending or actual cancellation or expiration. Unless the lapse in coverage arises from an act or omission of the Contractor: (1) the Contractor, upon receipt of notice from the Owner, shall have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by either the Owner or the Contractor; (2) the Contract Time and Contract Sum shall be equitably adjusted; and (3) the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent any loss to the Owner would have been covered by the insurance had it not expired or been cancelled. If the Contractor purchases replacement coverage, the cost of the insurance shall be charged to the Owner by an appropriate Change Order. The furnishing of notice by the Owner shall not relieve the Owner of any contractual obligation to provide required insurance.

§ 11.3 Waivers of Subrogation

§ 11.3.1 The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents, and employees, each of the other; (2) the Architect and Architect's consultants; and (3) Separate Contractors, if any, and any of their subcontractors, sub-subcontractors, agents, and employees, for damages caused by fire, or other causes of loss, to the extent those losses are covered by property insurance required by the Agreement or other property insurance applicable to the Project, except such rights as they have to proceeds of such insurance. The Owner or Contractor, as appropriate, shall require similar written waivers in favor of the individuals and entities identified above from the Architect, Architect's consultants, Separate Contractors, subcontractors, and sub-subcontractors. The policies of insurance purchased and maintained by each person or entity agreeing to waive claims pursuant to this section 11.3.1 shall not prohibit this waiver of subrogation. This waiver of subrogation shall be effective as to a person or entity (1) even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, (2) even though that person or entity did not pay the insurance premium directly or indirectly, or (3) whether or not the person or entity had an insurable interest in the damaged property.

§ 11.3.2 If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, to the extent permissible by such policies, the Owner waives all rights in accordance with the terms of Section 11.3.1 for damages caused by fire or other causes of loss covered by this separate property insurance.

§ 11.4 Loss of Use, Business Interruption, and Delay in Completion Insurance

The Owner, at the Owner's option, may purchase and maintain insurance that will protect the Owner against loss of use of the Owner's property, or the inability to conduct normal operations, due to fire or other causes of loss. The Owner waives all rights of action against the Contractor and Architect for loss of use of the Owner's property, due to

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fire or other hazards however caused.

§11.5 Adjustment and Settlement of Insured Loss

§ 11.5.1 A loss insured under the property insurance required by the Agreement shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.5.2. The Owner shall pay the Architect and Contractor their just shares of insurance proceeds received by the Owner, and by appropriate agreements the Architect and Contractor shall make payments to their consultants and Subcontractors in similar manner.

§ 11.5.2 Prior to settlement of an insured loss, the Owner shall notify the Contractor of the terms of the proposed settlement as well as the proposed allocation of the insurance proceeds. The Contractor shall have 14 days from receipt of notice to object to the proposed settlement or allocation of the proceeds. If the Contractor does not object, the Owner shall settle the loss and the Contractor shall be bound by the settlement and allocation. Upon receipt, the Owner shall deposit the insurance proceeds in a separate account and make the appropriate distributions. Thereafter, if no other agreement is made or the Owner does not terminate the Contract for convenience, the Owner and Contractor shall execute a Change Order for reconstruction of the damaged or destroyed Work in the amount allocated for that purpose. If the Contractor timely objects to either the terms of the proposed settlement or the allocation of the proceeds, the Owner may proceed to settle the insured loss, and any dispute between the Owner and Contractor arising out of the settlement or allocation of the proceeds shall be resolved pursuant to Article 15. Pending resolution of any dispute, the Owner may issue a Construction Change Directive for the reconstruction of the damaged or destroyed Work.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 Uncovering of Work

§ 12.1.1 If a portion of the Work is covered contrary to the Architect's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the Architect, be uncovered for the Architect's examination and be replaced at the Contractor's expense without change in the Contract Time.

§ 12.1.2 If a portion of the Work has been covered that the Architect has not specifically requested to examine prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, the Contractor shall be entitled to an equitable adjustment to the Contract Sum and Contract Time as may be appropriate. If such Work is not in accordance with the Contract Documents, the costs of uncovering the Work, and the cost of correction, shall be at the Contractor's expense.

§ 12.2 Correction of Work

§ 12.2.1 Before Substantial Completion

The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, discovered before Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Architect's services and expenses made necessary thereby, shall be at the Contractor's expense.

§ 12.2.2 After Substantial Completion

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of notice from the Owner to do so, unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.5.

§ 12.2.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

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§ 12.2.2.3 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.

§ 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction of the Owner or Separate Contractors, whether completed or partially completed, caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

§ 12.3 Acceptance of Nonconforming Work

If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 Governing Law

The Contract shall be governed by the law of the place where the Project is located, excluding that jurisdiction's choice of law rules. If the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.

§ 13.2 Successors and Assigns

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to covenants, agreements, and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 13.2.2 The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate the assignment.

§ 13.3 Rights and Remedies

§ 13.3.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights, and remedies otherwise imposed or available by law.

§ 13.3.2 No action or failure to act by the Owner, Architect, or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed upon in writing.

§ 13.4 Tests and Inspections

§ 13.4.1 Tests, inspections, and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules, and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections, and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections, and approvals. The Contractor shall give the Architect timely notice of when and where tests and inspections are to be made so that the Architect may be present for such procedures. The Owner shall bear costs of tests, inspections, or approvals that do not become requirements until after bids are received or negotiations concluded. The Owner shall directly arrange and pay for tests, inspections, or

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approvals where building codes or applicable laws or regulations so require.

§ 13.4.2 If the Architect, Owner, or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection, or approval not included under Section 13.4.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection, or approval, by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Architect of when and where tests and inspections are to be made so that the Architect may be present for such procedures. Such costs, except as provided in Section 13.4.3, shall be at the Owner's expense.

§ 13.4.3 If procedures for testing, inspection, or approval under Sections 13.4.1 and 13.4.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including those of repeated procedures and compensation for the Architect's services and expenses, shall be at the Contractor's expense.

§ 13.4.4 Required certificates of testing, inspection, or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect.

§ 13.4.5 If the Architect is to observe tests, inspections, or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

§ 13.4.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

§ 13.5 Interest

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at the rate the parties agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 Termination by the Contractor

§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, for any of the following reasons:

- **.1** Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;
- **.2** An act of government, such as a declaration of national emergency, that requires all Work to be stopped;
- **.3** Because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or
- **.4** The Owner has failed to furnish to the Contractor reasonable evidence as required by Section 2.2.

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, repeated suspensions, delays, or interruptions of the entire Work by the Owner as described in Section 14.3, constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, as well as reasonable overhead and profit on Work not executed, and costs incurred by reason of such termination.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, or their agents or employees or any other persons or entities performing portions of the Work because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in

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Section 14.1.3.

§ 14.2 Termination by the Owner for Cause

§ 14.2.1 The Owner may terminate the Contract if the Contractor

.1 repeatedly refuses or fails to supply enough properly skilled workers or proper materials;

.2 fails to make payment to Subcontractors or suppliers in accordance with the respective agreements between the Contractor and the Subcontractors or suppliers;

.3 repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or

.4 otherwise is guilty of substantial breach of a provision of the Contract Documents.

§ 14.2.2 When any of the reasons described in Section 14.2.1 exist, and upon certification by the Architect that sufficient cause exists to justify such action, the Owner may, without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

.1 Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;

.2 Accept assignment of subcontracts pursuant to Section 5.4; and

.3 Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Initial Decision Maker, upon application, and this obligation for payment shall survive termination of the Contract.

§ 14.3 Suspension by the Owner for Convenience

§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work, in whole or in part for such period of time as the Owner may determine.

§ 14.3.2 The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay, or interruption under Section 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent

.1 that performance is, was, or would have been, so suspended, delayed, or interrupted, by another cause for which the Contractor is responsible; or

.2 that an equitable adjustment is made or denied under another provision of the Contract.

§ 14.4 Termination by the Owner for Convenience

§ 14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

§ 14.4.2 Upon receipt of notice from the Owner of such termination for the Owner's convenience, the Contractor shall

.1 cease operations as directed by the Owner in the notice;

.2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and

.3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

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§ 14.4.3 In case of such termination for the Owner's convenience, the Owner shall pay the Contractor for Work properly executed; costs incurred by reason of the termination, including costs attributable to termination of Subcontracts; and the termination fee, if any, set forth in the Agreement.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 Claims

§ 15.1.1 Definition

A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, a change in the Contract Time, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim. This Section 15.1.1 does not require the Owner to file a Claim in order to impose liquidated damages in accordance with the Contract Documents.

§ 15.1.2 Time Limits on Claims

The Owner and Contractor shall commence all Claims and causes of action against the other and arising out of or related to the Contract, whether in contract, tort, breach of warranty or otherwise, in accordance with the requirements of the binding dispute resolution method selected in the Agreement and within the period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all Claims and causes of action not commenced in accordance with this Section 15.1.2.

§ 15.1.3 Notice of Claims

§ 15.1.3.1 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered prior to expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party and to the Initial Decision Maker with a copy sent to the Architect, if the Architect is not serving as the Initial Decision Maker. Claims by either party under this Section 15.1.3.1 shall be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.

§ 15.1.3.2 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party. In such event, no decision by the Initial Decision Maker is required.

§ 15.1.4 Continuing Contract Performance

§ 15.1.4.1 Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

§ 15.1.4.2 The Contract Sum and Contract Time shall be adjusted in accordance with the Initial Decision Maker's decision, subject to the right of either party to proceed in accordance with this Article 15. The Architect will issue Certificates for Payment in accordance with the decision of the Initial Decision Maker.

§ 15.1.5 Claims for Additional Cost

If the Contractor wishes to make a Claim for an increase in the Contract Sum, notice as provided in Section 15.1.3 shall be given before proceeding to execute the portion of the Work that is the subject of the Claim. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

§ 15.1.6 Claims for Additional Time

§ 15.1.6.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, notice as provided in Section 15.1.3 shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary.

§ 15.1.6.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated, and had an adverse effect on the scheduled construction.

§ 15.1.7 Waiver of Claims for Consequential Damages

The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes

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.1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and

.2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit, except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.7 shall be deemed to preclude assessment of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

§ 15.2 Initial Decision

§ 15.2.1 Claims, excluding those where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2 or arising under Sections 10.3, 10.4, and 11.5, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim. If an initial decision has not been rendered within 30 days after the Claim has been referred to the Initial Decision Maker, the party asserting the Claim may demand mediation and binding dispute resolution without a decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

§ 15.2.2 The Initial Decision Maker will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

§ 15.2.3 In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.

§ 15.2.4 If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of the request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished, or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.

§ 15.2.5 The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the Architect, if the Architect is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.

§ 15.2.6 Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.

§ 15.2.6.1 Either party may, within 30 days from the date of receipt of an initial decision, demand in writing that the other party file for mediation. If such a demand is made and the party receiving the demand fails to file for mediation within 30 days after receipt thereof, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.

§ 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner

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may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 15.2.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

§ 15.3 Mediation

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract, except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.7, shall be subject to mediation as a condition precedent to binding dispute resolution.

§ 15.3.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.

§ 15.3.3 Either party may, within 30 days from the date that mediation has been concluded without resolution of the dispute or 60 days after mediation has been demanded without resolution of the dispute, demand in writing that the other party file for binding dispute resolution. If such a demand is made and the party receiving the demand fails to file for binding dispute resolution within 60 days after receipt thereof, then both parties waive their rights to binding dispute resolution proceedings with respect to the initial decision.

§ 15.3.4 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

§ 15.4 Arbitration

§ 15.4.1 If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any Claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. The Arbitration shall be conducted in the place where the Project is located, unless another location is mutually agreed upon. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.

§ 15.4.1.1 A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.

§ 15.4.2 The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

§ 15.4.3 The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement, shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

§ 15.4.4 Consolidation or Joinder

§ 15.4.4.1 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration permits consolidation, (2) the arbitrations to be consolidated substantially involve common questions of law or fact, and (3) the arbitrations employ materially

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similar procedural rules and methods for selecting arbitrator(s).

§ 15.4.4.2 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent.

§ 15.4.4.3 The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as those of the Owner and Contractor under this Agreement.

DRAFT

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VICINITY MAP
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ARCHITECTURAL GENERAL NOTES

1. THESE CONSTRUCTION DRAWING SHEETS ARE TO BE READ IN CONJUNCTION WITH THE PROJECT MANUAL.
2. WHEN DRAWINGS AND PROJECT MANUAL CONFLICT, BIDDER SHALL REQUEST WRITTEN CLARIFICATION FROM THE ARCHITECT PRIOR TO BIDDING. IF CLARIFICATION IS NOT OBTAINED PRIOR TO BIDDING, THE FOLLOWING SHALL BE USED TO DETERMINE SCOPE OF BID: MATERIAL SIZE AND QUANTITY SHALL BE DETERMINED BY DRAWINGS, QUALITY IS DETERMINED BY PROJECT MANUAL. FINAL DETERMINATION SHALL BE BY THE ARCHITECT OR ENGINEER PRIOR TO CONSTRUCTION OR FABRICATION.
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7. DO NOT SCALE DRAWINGS. NOTIFY ARCHITECT / ENGINEER IF ADDITIONAL DIMENSIONS ARE REQUIRED OR DISCREPANCIES DISCOVERED.
8. ALL EXISTING FACILITY DIMENSIONS ARE TO BE VERIFIED ON SITE.
9. CONTRACTOR TO VERIFY EXISTING CONDITIONS AND DIMENSIONS PRIOR TO SHOP DRAWING APPROVAL AND CONSTRUCTION. SEE PROJECT MANUAL WHERE FIELD VERIFICATION CANNOT BE OBTAINED PRIOR TO SHOP DRAWING APPROVAL.
10. DIMENSIONS ARE ACTUAL. DIMENSIONS FOR MASONRY WALLS ARE GIVEN FROM FACE TO FACE OF WALL. DIMENSIONS FOR STUD WALL IS TO FACE OF FINISH WALL OR TO CENTER OF WALL, NOT CENTER OF STUD.
11. ABBREVIATIONS AND MATERIAL REPRESENTATIONS ON ARCHITECTURAL DRAWINGS ARE SHOWN ON 'ABBREVIATIONS' AND 'MATERIAL LEGEND' TABLES - THIS SHEET.
12. FOR ADDITIONAL PLAN INFORMATION REFER TO PARTIAL ENLARGED PLANS OR DETAILS AS NOTED ON THE DRAWINGS.
13. PROVIDE FINISHED END OR FRONT PANELS ON ALL SURFACES OF CASEWORK THAT ARE EXPOSED TO VIEW.

OCCUPANCY LOAD SCHEDULE

NUMBER	NAME	FUNCTION OF SPACE	AREA	OCCUPANT LOAD FACTOR	OCCUPANT LOAD
10	EXISTING SEATING AREA	EXISTING SEATING AREA	479 SF	100	5
11	REFERENCE AREA	STACKS, READING	959 SF	100	10
12	LOUNGE	LOUNGE	345 SF	15	23
13	MEETING	MEETING ROOM	296 SF	15	20
14	CONFERENCE	CONFERENCE ROOM	530 SF	15	36
15	PODCAST ROOM	PODCAST	57 SF	50	2
16	STUDY ROOM	STUDY ROOM	73 SF	50	2
17	STUDY ROOM	STUDY ROOM	73 SF	50	2
			2810 SF		100

NOTE: CONFERENCE 14 - OCCUPANCY LOAD IS 36. ONE EXIT IS REQUIRED IF OCCUPANCY IS LESS THAN 49 PER IBC 2021.

SHEET INDEX

GENERAL			
TS	00	GENERAL	TITLE SHEET
AG1.1	00	GENERAL	GENERAL NOTES AND LEGENDS
ARCHITECTURAL			
AD1.0	02	ARCHITECTURAL	DEMOLITION PLANS
A1.1	02	ARCHITECTURAL	FLOOR PLAN
A2.1	02	ARCHITECTURAL	ROOF PLAN
A3.1	02	ARCHITECTURAL	DOOR SCHEDULE AND DETAILS, WALL TYPES, DETAILS
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A5.1	02	ARCHITECTURAL	REFLECTED CEILING PLANS
A6.1	02	ARCHITECTURAL	FLOOR FINISH PLAN AND FURNITURE PLAN
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V5.0	05	VENTILATION	VENTILATION DIAGRAMS
V5.1	05	VENTILATION	VENTILATION DIAGRAMS
V6.0	05	VENTILATION	VENTILATION SCHEDULES
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E0.2	06	ELECTRICAL	ROOF DEMOLITION PLAN - ELECTRICAL
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E2.0	06	ELECTRICAL	OVERALL FIRST FLOOR PLAN - POWER
E2.1	06	ELECTRICAL	FIRST FLOOR PLAN - POWER
E2.2	06	ELECTRICAL	ROOF PLAN - POWER
E3.1	06	ELECTRICAL	FIRST FLOOR PLAN - SYSTEMS
E4.0	06	ELECTRICAL	ELECTRICAL DETAILS
E6.0	06	ELECTRICAL	ELECTRICAL SCHEDULES

CONTACT INFORMATION

MECHANICAL
IMEG
2882 106th Street
Des Moines, IA 50322

PH: (515) 334-9906

LICENSED PROFESSIONAL ENGINEER 12567 ☆IOWA☆

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Signature Date
Printed or typed name: DAVE INGHRAM, P.E.
License number 12567
My license renewal date is December 31, 2026
Pages or sheets covered by this seal: V & F SHEETS

ELECTRICAL
IMEG
2882 106th Street
Des Moines, IA 50322

PH: (515) 334-9906

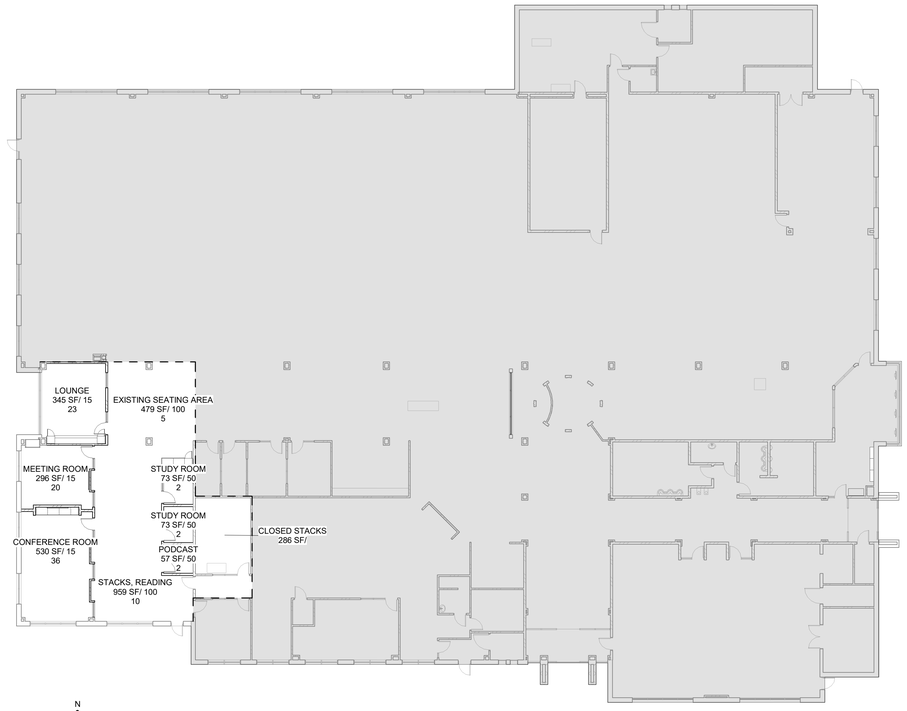
LICENSED PROFESSIONAL ENGINEER 23167 ☆IOWA☆

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Signature Date
Printed or typed name: TONY DELOUIS, P.E.
License number 23167
My license renewal date is December 31, 2026
Pages or sheets covered by this seal: E SHEETS

CODE INFORMATION

CODE USED:	2021 INTERNATIONAL BUILDING CODE (IBC) 2021 INTERNATIONAL FIRE CODE (IFC) 2021 INTERNATIONAL EXISTING BUILDING CODE 2021 UNIFORM PLUMBING CODE (UPC) 2021 INTERNATIONAL MECHANICAL CODE (IMC) 2020 NATIONAL ELECTRIC CODE (NFPA 70) 2009 INTERNATIONAL ENERGY CONSERVATION CODE (IECC) 2010 AMERICAN WITH DISABILITIES ACT (ADA)
GROSS AREA:	RENOVATION AREA = 3,042 SQ. FT.
OCCUPANCY:	E: EDUCATIONAL
OCCUPANCY LOAD:	**1,183**
NUMBER OF STORIES:	**2**
CONSTRUCTION TYPE:	**TYPE II-B**
ALLOWABLE AREA:	**14,500 SF**
FIRE SPRINKLER SYSTEM:	EXISTING - ADJUSTED TO NEW CONFIGURATION



N

3 BUILDING CODE PLAN - MAIN LEVEL
SCALE: 1/16" = 1'-0"

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TITLE SHEET

PROJECT TITLE
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DATE ISSUED 11-04-2025
REV. NO. DATE

PROJECT NUMBER
2022226

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8. ALL EXISTING FACILITY DIMENSIONS ARE TO BE VERIFIED ON SITE.
9. CONTRACTOR TO VERIFY EXISTING CONDITIONS AND DIMENSIONS PRIOR TO SHOP DRAWING APPROVAL AND CONSTRUCTION. SEE PROJECT MANUAL WHERE FIELD VERIFICATION CANNOT BE OBTAINED PRIOR TO SHOP DRAWING APPROVAL.
10. DIMENSIONS ARE ACTUAL. DIMENSIONS FOR MASONRY WALLS ARE GIVEN FROM FACE TO FACE OF WALL. DIMENSIONS FOR STUD WALL IS TO FACE OF FINISH WALL OR TO CENTER OF WALL, NOT CENTER OF STUD.
11. ABBREVIATIONS AND MATERIAL REPRESENTATIONS ON ARCHITECTURAL DRAWINGS ARE SHOWN ON 'ABBREVIATIONS' AND 'MATERIAL LEGEND' TABLES - THIS SHEET.
12. FOR ADDITIONAL PLAN INFORMATION REFER TO PARTIAL ENLARGED PLANS OR DETAILS AS NOTED ON THE DRAWINGS.
13. PROVIDE FINISHED END OR FRONT PANELS ON ALL SURFACES OF CASEWORK THAT ARE EXPOSED TO VIEW.

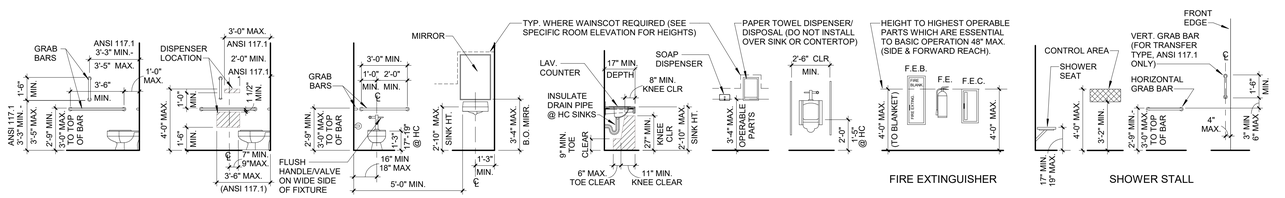
MATERIAL LEGEND

BATT INSULATION
BRICK
CONCRETE BLOCK
GRANULAR FILL
CONCRETE
EARTH
EIFS
GYPSUM WALLBOARD
METAL STUDS
PLYWOOD
RIGID INSULATION
GROUT
STEEL
STONE
WOOD

ABBREVIATIONS: ARCHITECTURAL DRAWING LIST, SOME DESIGNATIONS MAY NOT BE APPLICABLE

A	AB	ANCHOR BOLT
	A/C	AIR CONDITIONING
	ACT	ACOUSTICAL CEILING TILE
	ADA	AMERICANS WITH DISABILITIES ACT
	ADJ	ADJACENT
	AFF	ABOVE FINISHED FLOOR
	AFG	ABOVE FINISHED GRADE
	AGG	AGGREGATE
	AHU	AIR HANDLING UNIT
	ALT	ALTERNATE
	AL	ALUMINUM
	ANC	ANCHOR
	ANOD	ANODIZED
	ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
	APC	ACOUSTICAL PANEL CEILING
	APPROX	APPROXIMATELY
	ARCH	ARCHITECT
	AS REQ'D	AS REQUIRED
	ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
	ATTEN	ATTENUATION
B	BD	BOARD
	BIT	BITUMINOUS
	BLDG	BUILDING
	BLK	BLOCK
	BLKG	BLOCKING
	BM	BEAM
	BN	BULLNOSE
	BO	BOTTOM OF
	BOC	BOTTOM OF CONCRETE
	BOT	BOTTOM
	BRG	BEARING
	BUR	BUILT-UP ROOFING
C	CAB	CABINET
	CB	CEMENT BOARD
	CFCI	CONTRACTOR FURNISHED, CONTRACTOR INSTALLED
	CG	CORNER GUARD
	CH BD	CHALK BOARD
	CI	CAST IRON
	CIP	CAST-IN-PLACE
	CJ	CONTROL JOINT
	CLG	CEILING
	CLR	CLEAR
	CMT	CERAMIC MOSAIC TILE
	CMU	CONCRETE MASONRY UNIT
	CNTR	COUNTER
	CO	CLEAN OUT
	COL	COLUMN
	CONC	CONCRETE
	CONST	CONSTRUCTION
	CONT	CONTINUOUS
	COORD	COORDINATE
	CORR	CORRIDOR
	CP	COMPOSITE PANEL
	CPT	CARPET
	CS	CONCRETE SEALED
	CSK	COUNTERSINK
	CT	CERAMIC TILE
	CTR	CENTER, CENTERED
	CUH	CABINET UNIT HEATER
	CW	CURTAIN WALL
D	DBL	DOUBLE
	DEMO	DEMOLITION
	DEPT	DEPARTMENT
	DF	DRINKING FOUNTAIN
	DIA	DIAMETER
	DIAG	DIAGONAL
	DIM	DIMENSION
	DISP	DISPENSER
	DN	DOWN
	DP	DEEP
	DR	DOOR
	DS	DOWNSPOUT
	DTL	DETAIL
	DW	DISHWASHER
	DWG	DRAWING
	DWL	DOWEL
E	(E)	EXISTING
	EA	EACH
	EC	ELECTRICAL CONTRACTOR
	EIFS	EXTERIOR INSULATION AND FINISH SYSTEM
	EJ	EXPANSION JOINT
	ELEV	ELEVATION
	ELEC	ELECTRICAL
	EMERG	EMERGENCY
	ENAM	ENAMEL
	ENCL	ENCLOSURE
	EQ	EQUAL
	EQUIP	EQUIPMENT
	EVTR	ELEVATOR
	EXH	EXHAUST
	EXST	EXISTING
	EXP	EXPOSED
	EXT	EXTERIOR
F	F	FILLER
	FA	FIRE ALARM
	FCU	FAN COIL UNIT
	FD	FLOOR DRAIN
	FDN	FOUNDATION
	FE	FIRE EXTINGUISHER
	FEC	FIRE EXTINGUISHER CABINET
	FF	FACTORY FINISH
	FHC	FIRE HOSE CABINET
	FHMS	FLAT HEAD MACHINE SCREW
	FIN	FINISH
	FIXT	FIXTURE
	FLASH	FLASHING
	FLEX	FLEXIBLE
	FLUOR	FLUORESCENT
	FLR	FLOOR
	FOF	FACE OF FINISH
	FR	FRAME
	FRP	FIBERGLASS REINFORCED POLYESTER
	FT	FOOT
	FTG	FOOTING
	FURR	FURRING
	F.V.	FIELD VERIFY
G	G, GND	GROUND
	GA	GAUGE
	GALV	GALVANIZED
	GB	GYPSUM BOARD
	GB	GRAB BAR
	GC	GENERAL CONTRACTOR
	GFCI	GROUND FAULT CIRCUIT INTERRUPTER
	GHM	GALVANIZED HOLLOW METAL
	GL	GLASS
	GWB	GYPSUM WALL BOARD
	GYP	GYPSUM
	GYP BD	GYPSUM BOARD
H	HB	HOSE BIB
	HC	HOLLOW CORE
	HDWD	HARDWOOD
	HDWR	HARDWARE
	HM	HOLLOW METAL
	HORIZ	HORIZONTAL
	HR	HOUR
	HSS	HOLLOW STRUCTURAL STEEL
	HT	HEIGHT
	HTG	HEATING
	HTR	HEATER
	HVAC	HEATING, VENTILATION, & AIR CONDITIONING
	HW	HOT WATER
I	ID	INSIDE DIAMETER
	IG	INSULATED GLASS
	IGHM	INSULATED GALVANIZED HOLLOW METAL
	IN	INCH
	INC	INCANDESCENT
	INSUL	INSULATED, INSULATION, INSULATING
	INT	INTERIOR
J	JAN	JANITOR
	JB	JUNCTION BOX
	JST	JOIST
	JT	JOINT
L	LAM	LAMINATE
	LAV	LAVATORY
	LGMF	LIGHT GAUGE METAL FRAMING
	LLV	LONG LEG VERTICAL
	LTG	LIGHTING
	LVL	LAMINATED VENEER LUMBER
	LVR	LOUVER
M	MACH	MACHINE
	MAH	MAXIMUM ATTAINABLE HEIGHT
	MAN	MANUAL
	MANUF	MANUFACTURER
	MAX	MAXIMUM
	MB	MARKER BOARD
	MC	MECHANICAL CONTRACTOR
	MECH	MECHANICAL
	MEMB	MEMBRANE
	MEZZ	MEZZANINE
	MFG	MANUFACTURER
	MH	MANHOLE
	MIL	MILLIMETER
	MIN	MINIMUM
	MISC	MISCELLANEOUS
	MO	MASONRY OPENING
	MRGB	MOISTURE RESISTANT GYPSUM BOARD
	MTC	EMPTY CONDUIT
	MTD	MOUNTED
	MTL	METAL
	MUL	MULLION
N	(N)	NEW
	N/A	NOT APPLICABLE
	NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
	NIC	NOT IN CONTRACT
	NOM	NOMINAL
	NTS	NOT TO SCALE
	NUM	NUMBER
O	OC	ON CENTER
	OD	OVERFLOW DRAIN, OUTSIDE DIAMETER
	OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
	OFOI	OWNER FURNISHED, OWNER INSTALLED
	OH	OVERHEAD
	OPNG	OPENING
	OPP	OPPOSITE
	OTS	OPEN TO STRUCTURE
P	P BD	PARTICLE BOARD
	PA	PUBLIC ADDRESS
	PART	PARTIAL
	PC	PRE-CAST
	PCLN	PORCELAIN
	PJ	PANEL JOINT
	PL	PROPERTY LINE
	PLAM	PLASTIC LAMINATE
	PLAS	PLASTER
	PLT	PLATE
	PLYWD	PLYWOOD
	PNL	PANEL
	PNT	PAINT
	PR	PAIR
	PREFIN	PREFINISHED
	PRI	PRIMARY
	PSF	POUNDS PER SQUARE FOOT
	PSI	POUNDS PER SQUARE INCH
	PT	POINT
	PTN	PARTITION
	PVC	POLYVINYL CHLORIDE
	PWR	POWER
Q	QT	QUARRY TILE
R	R, RAD	RADIUS
	RA	RETURN AIR
	RB	RUBBER BASE
	RCP	REFLECTED CEILING PLAN
	RD	ROOF DRAIN
	REBAR	REINFORCING BAR
	REC	RECEPTACLE
	REF	REFRIGERATOR
	REFL	REFLECTED
	REFR	REFERENCE, REFER
	REINF	REINFORCING
	REQ'D	REQUIRED
	RESIL	RESILIENT
	RH	RANGE HOOD
	RJ	REVEAL JOINT
	RM	ROOM
	RND	ROUND
	RO	ROUGH OPENING
	RTU	ROOF TOP UNIT
	RV	ROOF VENT
S	SA	SUPPLY AIR
	SB	SPLASH BLOCK
	SC	SOLID CORE
	SCHED	SCHEDULE
	SD	SOAP DISPENSER
	SECT	SECTION
	SH V	SHEET VINYL
	SHR	SHOWER
	SHT	SHEET
	SHTG	SHEETING
	SIM	SIMILAR
	SQ	SQUARE
	SS	STAINLESS STEEL
	STD	STANDARD
	STL	STEEL
	STN	STAIN
	STOR	STORAGE
	STRUC	STRUCTURAL
	SURF	SURFACE
	SUSP	SUSPENDED
	SYM	SYMMETRICAL
T	T	TEMPERED
	T & G	TONGUE & GROOVE
	TB	TACK BOARD
	TEL	TELEPHONE
	TELECOM	TELECOMMUNICATIONS
	TERR	TERRAZZO
	TF	TOP FLANGE
	THRU	THROUGH
	TO	TOP OF
	TOB	TOP OF BEAM
	TOC	TOP OF CONCRETE
	TOF	TOP OF FOOTING
	TOS	TOP OF STEEL
	TPD	TOILET PAPER DISPENSER
	TRN	TRANSPARENT
	TS	TUBE STEEL
	T'STAT	THERMOSTAT
	TV	TELEVISION
	TYP	TYPICAL
U	UNF	UNIFORM
	UNO	UNLESS NOTED OTHERWISE
	UON	UNLESS OTHERWISE NOTED
	UPS	UNINTERRUPTIBLE POWER SUPPLY
	UR	URINAL
V	V	VOLTS
	VAV	VARIABLE AIR SUPPLY VOLUME
	VB	VINYL BASE
	VCT	VINYL COMPOSITION TILE
	VER	VERIFY
	VERT	VERTICAL
	VEST	VESTIBULE
	VSF	VINYL SHEET FLOORING
	VTR	VENT THROUGH ROOF
	VWC	VINYL WALL COVERING
W	W/	WITH
	W	WATTS
	W/O	WITHOUT
	WC	WATER CLOSET
	WD	WOOD
	WH	WATER HEATER
	WP	WATERPROOF
	WR	WATER RESISTANT
	WT	WEIGHT
	WW	WINDOW WALL
	WWF	WELDED WIRE FABRIC

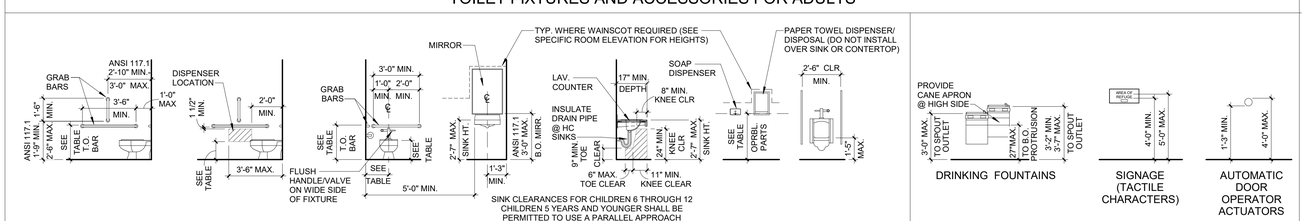
ACCESSIBLE & STANDARD MOUNTING HEIGHTS - FED. REG. 2010 ADA



TOILET FIXTURES AND ACCESSORIES FOR ADULTS

FIRE EXTINGUISHER

SHOWER STALL



SINK CLEARANCES FOR CHILDREN 6 THROUGH 12
CHILDREN 5 YEARS AND YOUNGER SHALL BE PERMITTED TO USE A PARALLEL APPROACH

DRINKING FOUNTAINS

SIGNAGE (TACTILE CHARACTERS)

AUTOMATIC DOOR OPERATOR ACTUATORS

2010 ADA STANDARDS FOR ACCESSIBLE DESIGN - SECTION 604.9
ADVISORY SPECIFICATIONS FOR WATER CLOSETS SERVING CHILDREN AGES 3 THROUGH 12

	AGES 3 AND 4	AGES 5 THROUGH 8	AGES 9 THROUGH 12
WATER CLOSET CENTERLINE	12 INCHES	12 TO 15 INCHES	15 TO 18 INCHES
TOILET SEAT HEIGHT	11 TO 12 INCHES	12 TO 15 INCHES	15 TO 17 INCHES
GRAB BAR HEIGHT	18 TO 20 INCHES	20 TO 25 INCHES	25 TO 27 INCHES
DISPENSOR HEIGHT	14 INCHES	14 TO 17 INCHES	17 TO 19 INCHES

2010 ADA STANDARDS FOR ACCESSIBLE DESIGN - SECTION 308.1
ADVISORY SPECIFICATIONS FOR REACH RANGES SERVING CHILDREN AGES 3 THROUGH 12

FORWARD OR SIDE REACH	**AGES 3 AND 4**	**AGES 5 THROUGH 8**	**AGES 9 THROUGH 12**
HIGH (MAXIMUM)	36 INCHES	40 INCHES	44 INCHES
LOW (MINIMUM)	20 INCHES	18 INCHES	16 INCHES

REACH RANGES FOR CHILDREN

TOILET FIXTURES AND ACCESSORIES FOR CHILDREN

NOTE:

REFERENCE ADA 2010 STANDARDS FOR FURTHER INFORMATION

ELEVATIONS SHOWN ARE FOR MOUNTING LOCATIONS ONLY AND NOT FOR SPECIFIC ROOMS. SEE ELEVATIONS ELSEWHERE FOR SPECIFIC ROOM ELEVATIONS.

ALL DIMENSIONS ARE FROM FINISHED SURFACE.

CONSULT ARCHITECT IF DISCREPANCIES ARE DISCOVERED BETWEEN THESE DIMENSIONS AND DETAIL DIMENSIONS.

REFER TO PROJECT MANUAL FOR ACCESSORY MODEL NUMBERS.

REFER TO SECTION 22 & 26 OF THE PROJECT MANUAL FOR FURTHER REQUIREMENTS.

NOT ALL ITEMS SHOWN MAY BE APPLICABLE.

PRELIMINARY
NOT FOR CONSTRUCTION

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SHEET TITLE
GENERAL NOTES AND LEGENDS

PROJECT TITLE
CITY OF MARSHALLTOWN
MARSHALLTOWN PUBLIC LIBRARY
INTERIOR REMODEL
105 W BOONE ST, MARSHALLTOWN, IA 50158

DATE ISSUED 11-04-2025
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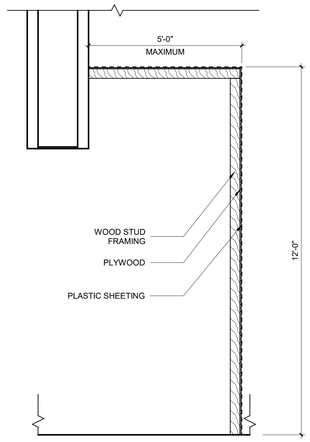


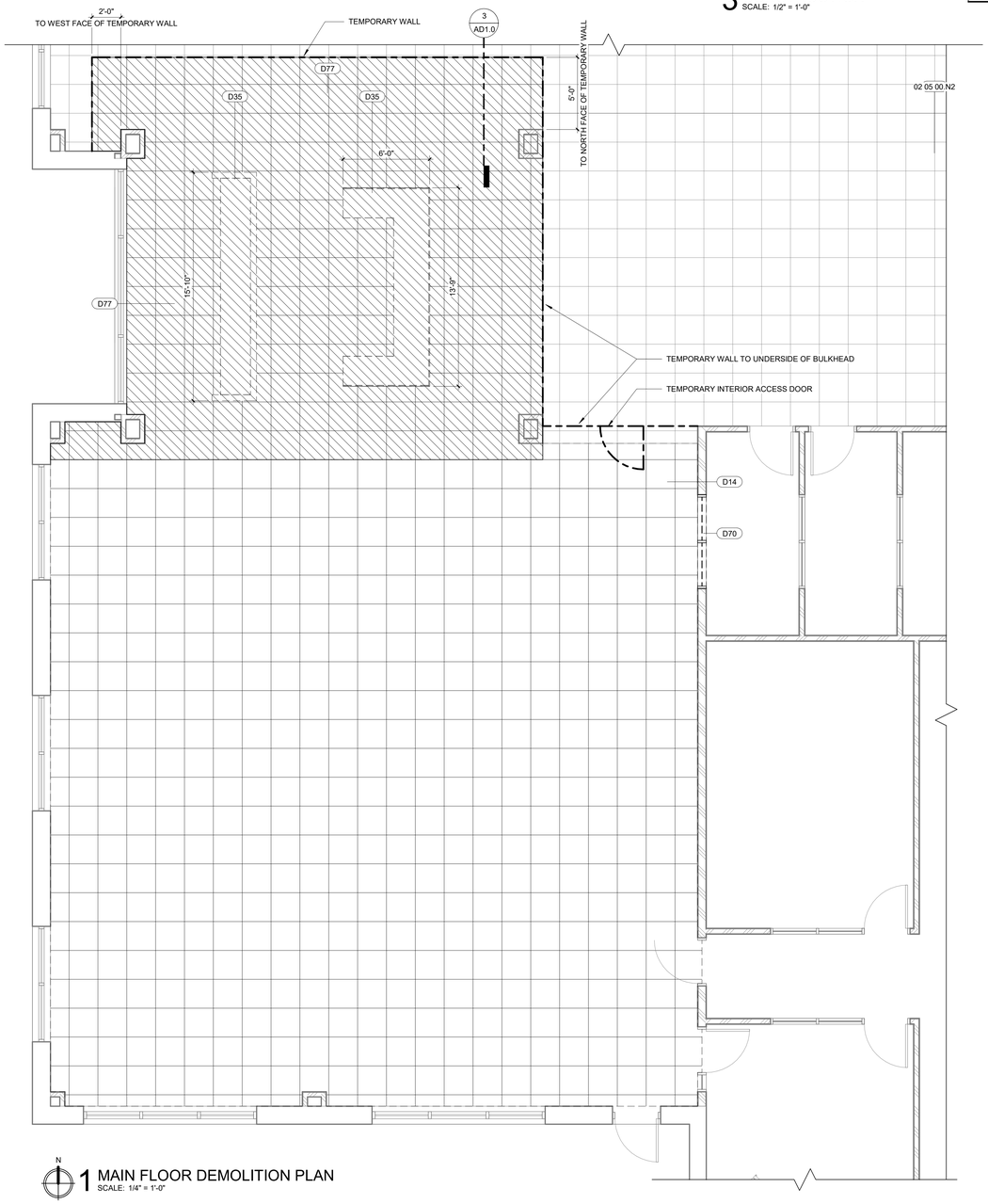
3 TEMPORARY WALL CONSTRUCTION
SCALE: 1/2" = 1'-0"

ARCHITECTURAL DEMOLITION NOTES

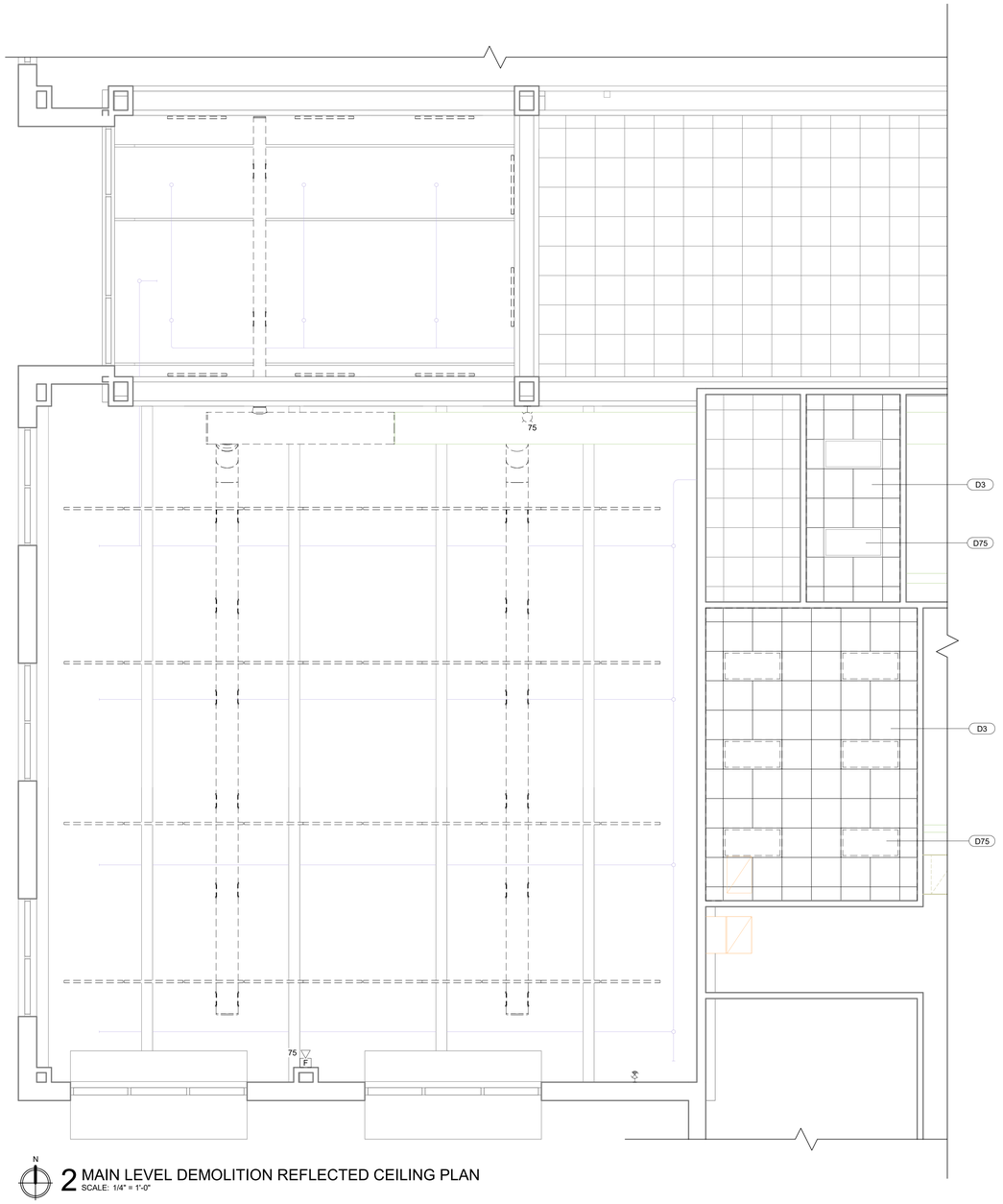
1. THE CONTRACTOR SHALL EXAMINE SITE AND PORTIONS THEREOF TO ASCERTAIN AND CHECK ALL EXISTING CONDITIONS AND DIMENSIONS WHICH MAY AFFECT THE CONTRACTOR'S WORK. NO ALLOWANCE SHALL SUBSEQUENTLY BE MADE IN THE CONTRACTOR'S BEHALF FOR ANY EXPENSE TO WHICH THE CONTRACTOR MAY PAY DUE TO FAILURE OR NEGLECT ON ONE'S PART TO MAKE AN EXAMINATION. ANY CONFLICTS OR OMISSIONS, ETC. SHALL BE REPORTED TO THE ARCHITECT PRIOR TO BID SUBMISSION.
2. CONTRACTOR SHALL MAKE EVERY EFFORT TO MINIMIZE DUST AND NOISE TO SURROUNDING PROPERTIES. SITE ACCESS SHALL BE LIMITED TO LOCATIONS SHOWN OR COORDINATIED WITH OWNER.
3. PROVIDE TEMPORARY WALL WITH PLYWOOD, PLASTIC SHEETS AND TEMPORARY DOOR FOR SAFETY AND PROTECTION FROM NOISE, DUST, ETC. OF OCCUPIED AREAS DURING CONSTRUCTION AND DEMOLITION. PROVIDE RATED SEPARATION WHERE REQUIRED.
4. REMOVE PORTIONS OF EXISTING CONSTRUCTION AS NOTED ON THE DRAWINGS AND AS NECESSARY TO ACCOMMODATE THE NEW CONSTRUCTION AND REPLACE OR REPAIR AS NEEDED.
5. CONTRACTOR NOTE: SOME ANCILLARY/MINOR DEMOLITION AND PATCH/REPAIR MAY NOT BE SHOWN SPECIFICALLY. CONTRACTOR SHALL PROVIDE AND COORDINATE ALL ANCILLARY/MINOR WORK REQUIRED TO COMPLETE NEW WORK AS DESIGNED. VERIFY CONDITIONS WITH OWNER'S REPRESENTATIVE PRIOR TO BEGINNING WORK.
6. THE CONTRACTOR IS CAUTIONED THAT THIS PROJECT INVOLVES ALTERATION TO EXISTING FACILITIES. WORK WHICH IS REQUIRED TO BE PERFORMED TO PROVIDE A COMPLETELY OPERABLE INSTALLATION WITHIN THE SCOPE OF THE WORK, BUT WHICH IS NOT SPECIFICALLY INCLUDED ON THE PLANS, SHALL BE PERFORMED AS PART OF THE CONTRACT AND INCLUDED IN THE BID.
7. THE CONTRACTOR SHALL NOTIFY THE ARCHITECT AND CONSTRUCTION REPRESENTATIVE IMMEDIATELY OF ANY UTILITIES NOT IDENTIFIED FOUND IN CONSTRUCTION TO BE REMOVED.
8. ANY ITEMS DESCRIBED IN THESE DRAWINGS WITHOUT A "NEW" (N) OR "EXISTING" (E) DESIGNATION SHALL BE CONSIDERED NEW.
9. EXISTING BUILDING DIMENSIONS AS SHOWN ON THE PLANS MAY DIFFER PLUS OR MINUS; FIELD VERIFY.
10. WHERE INDICATED ON THE PLANS, ALIGN NEW WALLS WITH THE FACE OF EXISTING WALLS, COLUMNS AND FURRING FOR A FLUSH CONDITION. REPAIR, PATCH AND FINISH EXISTING WALLS WHICH ABUTS NEW WALLS.
11. WHERE NEW OPENINGS OCCUR AT EXISTING FRAMED WALLS, FIELD VERIFY EXISTING WALL THICKNESS. NEW WALL TO BE FURRED AS NEEDED TO MATCH EXISTING WALL CONSTRUCTION THICKNESS.
12. PREPARE SURFACES TO RECEIVE FINISHES. PATCH ALL EXISTING WORK ALTERED BY NEW WORK. ALL NEW AND PATCHED SURFACES SHALL BE SMOOTH, CONTINUOUSLY FREE OF IMPERFECTIONS AND IN PROPER CONDITION TO RECEIVE THE FINISH PER THE PROJECT MANUAL. IN PATCHED AREAS OR ANY AREA WHERE A FINISH IS NOT IDENTIFIED, THE AREA SHALL MATCH ADJACENT MATERIAL IN CONSTRUCTION, COLOR, TEXTURE, AND MANUFACTURE. ANY EXISTING WORK, I.E. FLOOR TILES, WALL TILES, ETC. WHICH ARE DAMAGED OR STAINED, ETC. SHALL BE REPAIRED OR REPLACED AS NECESSARY WITH NEW MATCHING MATERIAL.
13. FASTENER ATTACHMENTS ONTO EXISTING CONCRETE SURFACES: DO NOT DAMAGE EXISTING EMBEDDED REINFORCEMENT BARS.LOCATE EXISTING REINFORCEMENT BARS WITH A PACHOMETER PRIOR TO INSTALLING FASTENERS TO AVOID DAMAGING EXISTING REINFORCING BARS.
14. THE EXISTING OCCUPANTS INTEND TO OCCUPY A DESIGNATED PORTION OF THE BUILDING AND MAINTAIN OPERATIONS. SUBMIT A DEMOLITION PLAN INDICATING PROCEDURES AND OPERATIONAL SEQUENCING FOR REVIEW AND ACCEPTANCE BY THE OWNER AND ARCHITECT.

KEYNOTES

02 05 00.N2	EXISTING CARPET TILE TO REMAIN
D3	REMOVE EXISTING CEILING TILE AND GRID
D14	REMOVE EXISTING CARPET. PROTECT CONCRETE FLOOR. PREPARE SURFACE FOR NEW FINISH
D35	REMOVE EXISTING CASEWORK
D70	REMOVE EXISTING WINDOW AND FRAME, PREP OPENING TO BE INFILLED
D75	REMOVE AND SALVAGE EXISTING LIGHT FIXTURES, TO BE REINSTALLED
D77	SALVAGE CARPET TILE TO RE-USE IN REMODELING.



N
1 MAIN FLOOR DEMOLITION PLAN
SCALE: 1/4" = 1'-0"



N
2 MAIN LEVEL DEMOLITION REFLECTED CEILING PLAN
SCALE: 1/4" = 1'-0"

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DEMOLITION PLANS

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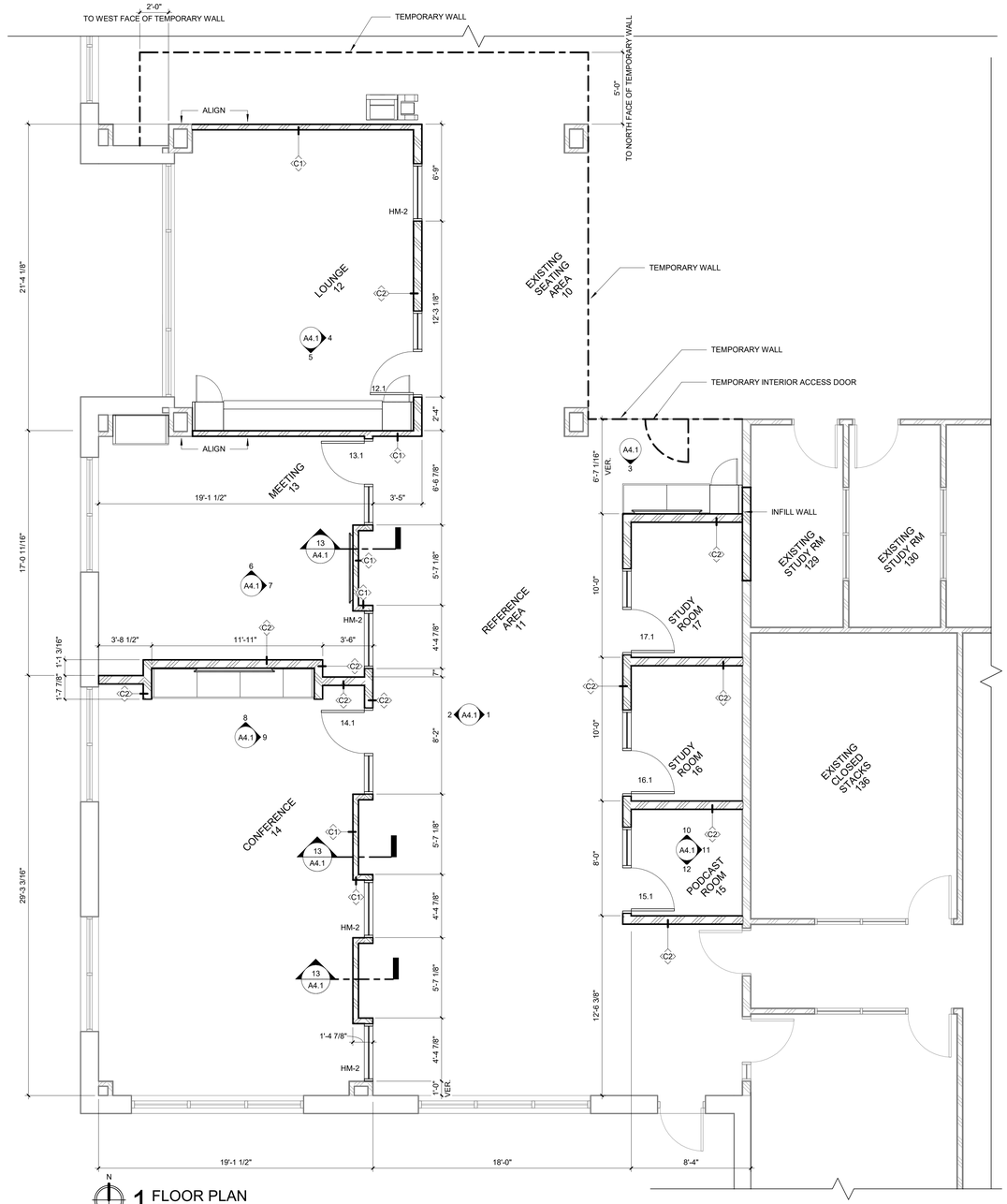
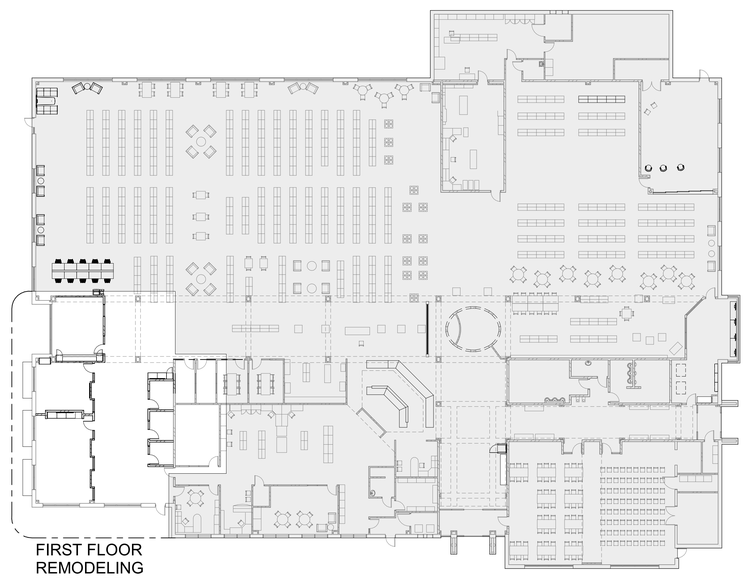


1 FLOOR PLAN
SCALE: 1/4" = 1'-0"



2 FIRST FLOOR KEY PLAN
SCALE: 1" = 20'-0"

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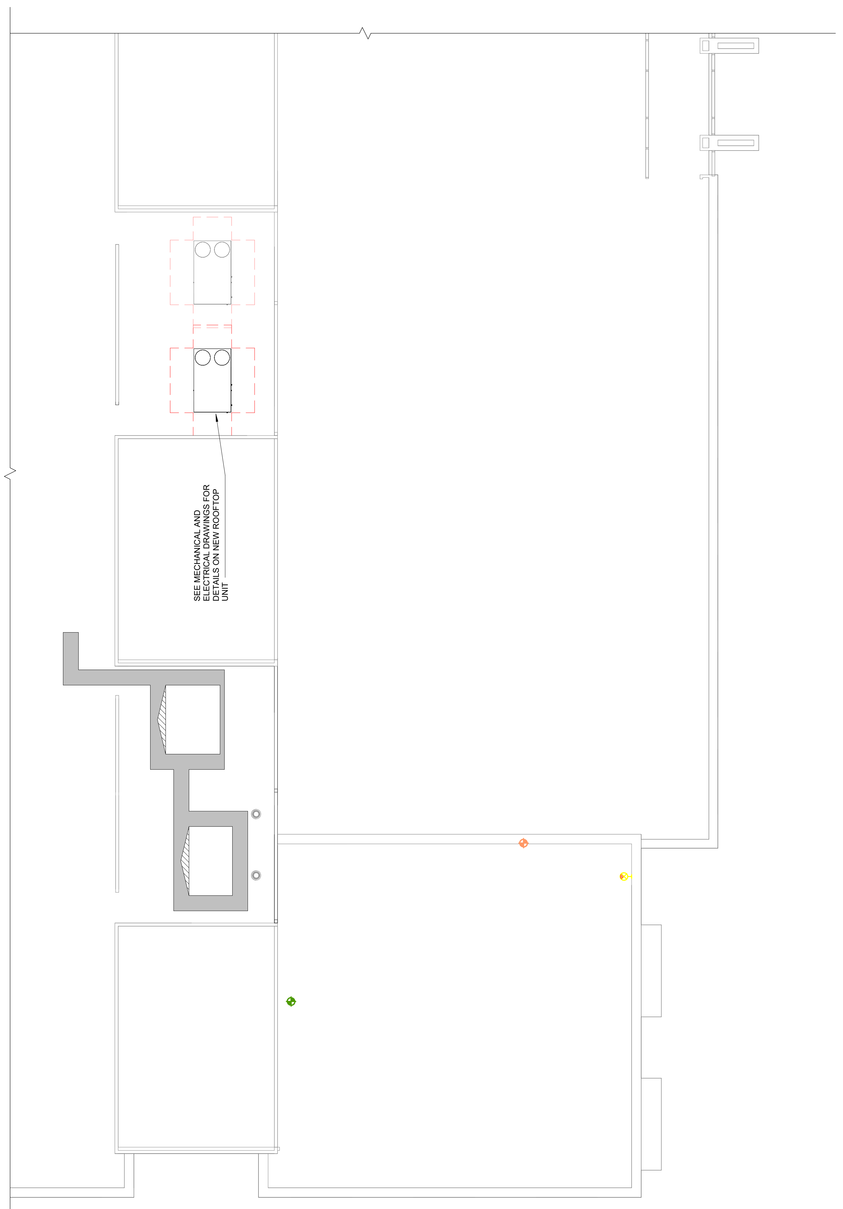
1 ROOF PLAN
SCALE: 1/8" = 1'-0"



ROOF PLAN LEGEND

AVTR	-	ADD VENT THRU ROOF
CU	-	CONDENSING UNIT
DS	-	DOWN SPOUT
GWH	-	GAS WATER HEATER
MAU	-	MAKE UP AIR UNIT
OD	-	OVERFLOW DRAIN
OS	-	OVERFLOW SCUPPER
PRV	-	POWER ROOF VENTILATOR
RAHU	-	ROOF TOP AIR HANDLING UNIT
RD	-	ROOF DRAIN
SD	-	SCUPPER DRAIN
TI	-	TAPERED INSULATION
VTR	-	VENT THRU ROOF

ROOF PAD

NO ROOF PENETRATION IN THIS AREA (4 FEET FROM FACE OF 2 HOUR FIRE WALL BELOW)

TAPERED INSULATION

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SHEET TITLE ROOF PLAN

SHEET A2.1

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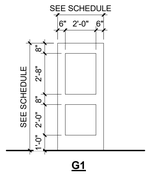
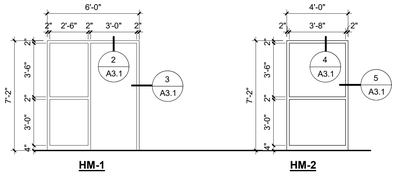


G1

DOOR TYPE ELEVATIONS
SCALE: 1/4" = 1'-0"



HM-1 HM-2

FRAME TYPE ELEVATIONS - HM
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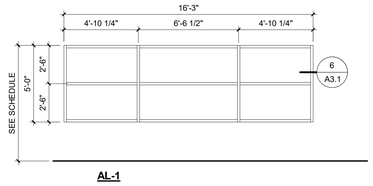


AL-1

FRAME TYPE ELEVATIONS - AL
SCALE: 1/4" = 1'-0"

DOOR SCHEDULE

NUMBER	DOOR SIZE WIDTH	DOOR SIZE HEIGHT	DOOR TYPE	DOOR MATERIAL	GLAZING	FRAME SIZE FRAME WIDTH	FRAME SIZE FRAME HEIGHT	FRAME TYPE	FRAME DETAILS HEAD	FRAME DETAILS JAMB	FRAME DETAILS SILL	COMMENTS
12.1	3'-0"	7'-0"	G1	WD	TG	6'-0"	7'-2"	HM-1	2/A3.1	3/A3.1	-	
13.1	3'-0"	7'-0"	G1	WD	TG	6'-0"	7'-2"	HM-1	2/A3.1	3/A3.1	-	
14.1	3'-0"	7'-0"	G1	WD	TG	6'-0"	7'-2"	HM-1	2/A3.1	3/A3.1	-	
15.1	3'-0"	7'-0"	G1	WD	TG	6'-0"	7'-2"	HM-1	2/A3.1	3/A3.1	-	
16.1	3'-0"	7'-0"	G1	WD	TG	6'-0"	7'-2"	HM-1	2/A3.1	3/A3.1	-	
17.1	3'-0"	7'-0"	G1	WD	TG	6'-0"	7'-2"	HM-1	2/A3.1	3/A3.1	-	

DOOR / WINDOW SCHEDULE LEGEND

COMMENTS

A. VERIFY FRAME HEIGHT WITH MANUFACTURER, COORDINATE WITH HEAD DETAIL.
B. CONTRACTOR TO FIELD VERIFY ALL MEASUREMENTS.
C. ADJUST DOOR CLOSURES SO THAT MAXIMUM EFFORTS TO OPERATE DOORS SHALL NOT EXCEED 5 LBS. FOR INTERIOR DOORS AS PER STATE HANDICAP REQUIREMENTS.
D. GLASS AND GLAZING SHALL COMPLY WITH THE CURRENT INTERNATIONAL BUILDING CODE (IBC) FOR HUMAN IMPACT. GLASS DOORS, ADJACENT PANELS, AND ALL GLAZED OPENINGS WITHIN 18" OF ADJACENT FLOOR SHALL BE OF GLASS APPROVED FOR IMPACT HAZARD.

MATERIAL

AL	ALUMINUM
HM	HOLLOW METAL
WD	WOOD

GLAZING

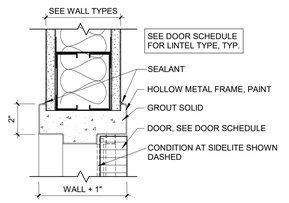
IG	INSULATED GLAZING
IG-D	INSULATED GLAZING - DECORATIVE
IG-O	INSULATED GLAZING - OPAQUE
LG	LAMINATED GLAZING
TG	TEMPERED GLAZING
TP	TRANSLUCENT PANEL

DOOR NOTES

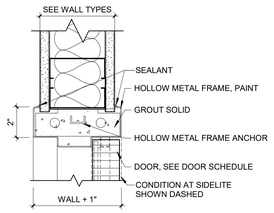
1. ALL DOORS TO BE 1-3/4" THICK U.O.N.
2. ADJUST DOOR CLOSURES SO THAT MAXIMUM EFFORTS TO OPERATE DOORS SHALL NOT EXCEED 5 LBS. FOR INTERIOR DOORS (EXCEPT FIRE DOORS) AS PER STATE HANDICAP REQUIREMENTS.
3. RATED DOORS ARE TO BE SELF-CLOSING AND POSITIVE LATCHING.
4. ALL FIRE-RATED ASSEMBLIES SHALL BE PROVIDED WITH APPROVED GASKETING MATERIAL INSTALLED TO PROVIDE A SEAL WHERE THE DOOR MEETS THE STOP ON BOTH SIDES AND AT THE TOP.
5. GLASS AND GLAZING SHALL COMPLY WITH THE CURRENT INTERNATIONAL BUILDING CODE (IBC) FOR HUMAN IMPACT. GLASS DOORS, ADJACENT PANELS, AND ALL GLAZED OPENINGS WITHIN 18" OF ADJACENT FLOOR SHALL BE OF GLASS APPROVED FOR IMPACT HAZARD.
6. DIMENSIONS FOR DOORS, WINDOWS, AND LOUVERS IN CONCRETE MASONRY AND PRECAST WALLS ARE NOMINAL FRAME SIZES. COORDINATE MANUFACTURER'S REQUIREMENTS WITH ACTUAL ROUGH OPENING DIMENSIONS.
7. WHERE METAL THRESHOLDS ARE CUT TO FIT DOOR JAMBS, PROVIDE SEALANT ALONG EDGES OF THRESHOLD AT JAMB.
8. MANUFACTURER'S INSTALLATION INSTRUCTIONS SHALL BE AVAILABLE ON THE JOB SITE FOR ALL RATED DOOR ASSEMBLIES.
9. HARDWARE KEYING TO MATCH EXISTING KEYING SYSTEM IN LIBRARY.
10. HOLLOW METAL FRAMES TO BE PAINTED, TO MATCH EXISTING FRAMES.

WALL AND PARTITION NOTES

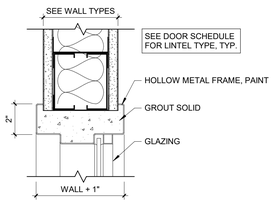
1. ALL WALL PARTITIONS ARE FULL HEIGHT U.O.N. SEE TYPICAL WALL TYPES.
2. AT TOP AND BOTTOM OF WALL, PROVIDE ACOUSTIC SEALANT AT WALLS WITH SOUND INSULATION AND FIRE-RATED SEALANT AT FIRE RATED WALLS.
3. HOLD GYPSUM BOARD 1/2" OFF ALL SLABS AND STRUCTURE.
4. FIRE & SMOKE RATED PARTITIONS ARE SHOWN ON THE CODE PLANS AND/OR FLOOR PLANS. SEE TYPICAL WALL TYPES.
5. FILL CONCRETE MASONRY UNIT CORES WITH SAND AT ALL MECHANICAL ROOMS.
6. PROVIDE SOLID BLOCKING BEHIND WALL MOUNTED GRAB BARS, RESTROOM ACCESSORIES, EQUIPMENT, CABINETS, SHELVES AND SIMILAR ITEMS ON GYPSUM BOARD PARTITIONS.
7. IN 1-HOUR RATED MASONRY WALLS, PROVIDE MINIMUM 4" SOLID MASONRY BEHIND RECESSED FIRE EXTINGUISHER CABINETS AND/OR ELECTRICAL CABINETS. IN RATED GYPSUM BOARD WALLS, PROVIDE RATED RECESSED FIRE EXTINGUISHER CABINETS.
8. CONTROL JOINTS NOT TO EXCEED 30' SPACING IN ANY DIRECTION FOR GYPSUM BOARD WALLS. WHERE CONTROL JOINTS ARE NOT DIMENSIONED, LOCATE JOINTS AT INTERSECTIONS OF INTERIOR WALLS AND COORDINATE WITH ARCHITECT. IF CONTROL JOINTS ARE NOT INDICATED ON THE FLOOR PLANS, CEILING PLANS, EXTERIOR ELEVATIONS, OR INTERIOR ELEVATIONS, OBTAIN APPROVAL OF LOCATIONS FROM THE ARCHITECT PRIOR TO CONSTRUCTION. SEE TYPICAL CONTROL JOINT DETAILS.



2 HEAD
SCALE: 3" = 1'-0"



3 JAMB
SCALE: 3" = 1'-0"



4 HEAD
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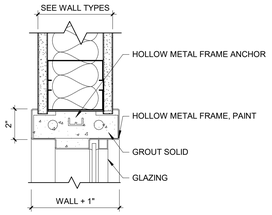
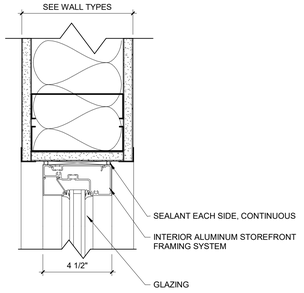
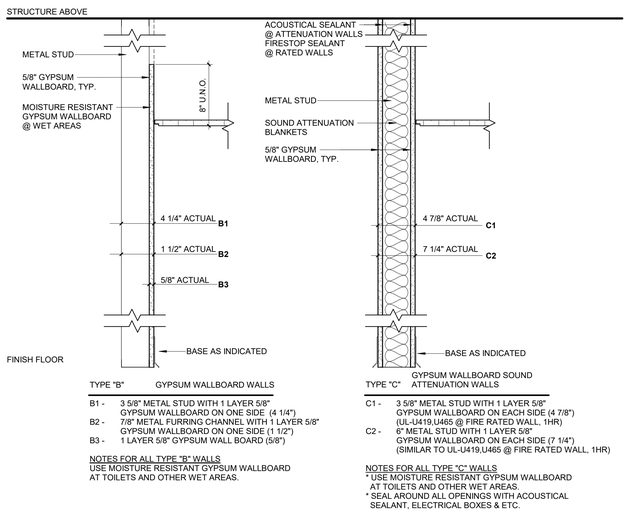


5 JAMB
SCALE: 3" = 1'-0"



6 JAMB (HEAD SIM.)
SCALE: 3" = 1'-0"



TYPE "B" GYPSUM WALLBOARD WALLS

B1 - 3 5/8" METAL STUD WITH 1 LAYER 5/8" GYPSUM WALLBOARD ON ONE SIDE (4 1/4")
B2 - 7/8" METAL FURRING CHANNEL WITH 1 LAYER 5/8" GYPSUM WALLBOARD ON ONE SIDE (1 1/2")
B3 - 1 LAYER 5/8" GYPSUM WALL BOARD (5/8")

NOTES FOR ALL TYPE "B" WALLS
USE MOISTURE RESISTANT GYPSUM WALLBOARD AT TOILETS AND OTHER WET AREAS.

TYPE "C" GYPSUM WALLBOARD SOUND ATTENUATION WALLS

C1 - 3 5/8" METAL STUD WITH 1 LAYER 5/8" GYPSUM WALLBOARD ON EACH SIDE (4 7/8") (UL-U419,U465 @ FIRE RATED WALL, 1HR)
C2 - 6" METAL STUD WITH 1 LAYER 5/8" GYPSUM WALLBOARD ON EACH SIDE (7 1/4") (SIMILAR TO UL-U419,U465 @ FIRE RATED WALL, 1HR)

NOTES FOR ALL TYPE "C" WALLS
* USE MOISTURE RESISTANT GYPSUM WALLBOARD AT TOILETS AND OTHER WET AREAS.
* SEAL AROUND ALL OPENINGS WITH ACOUSTICAL SEALANT, ELECTRICAL BOXES & ETC.

WALL TYPES

SCALE: 1 1/2" = 1'-0" NOTE: REFER TO UL FIRE-RESISTANCE DESIGN FOR ADDITIONAL INFORMATION @ FIRE RATED WALLS

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SHEET TITLE: DOOR SCHEDULE AND DETAILS, WALL TYPES,
DOOR SCHEDULE AND DETAILS

PROJECT TITLE: CITY OF MARSHALLTOWN
MARSHALLTOWN PUBLIC LIBRARY
INTERIOR REMODEL
105 W BOONE ST, MARSHALLTOWN, IA 50158

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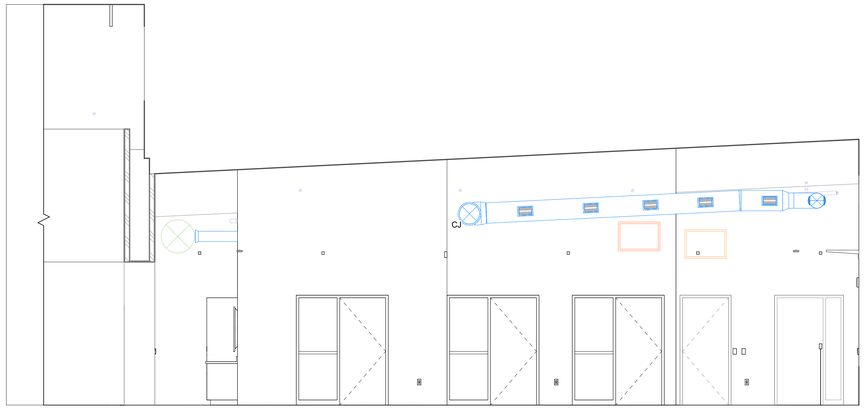
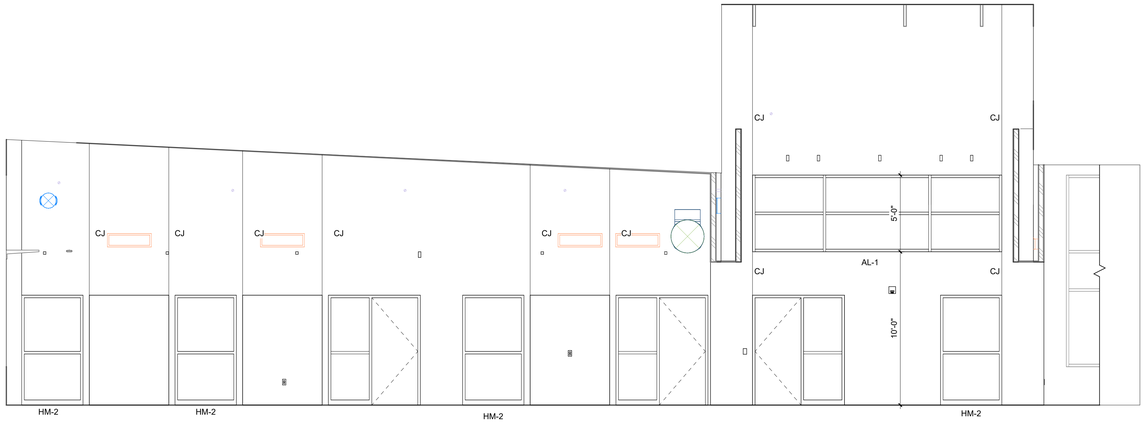
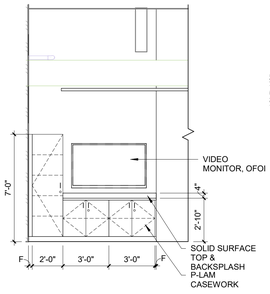


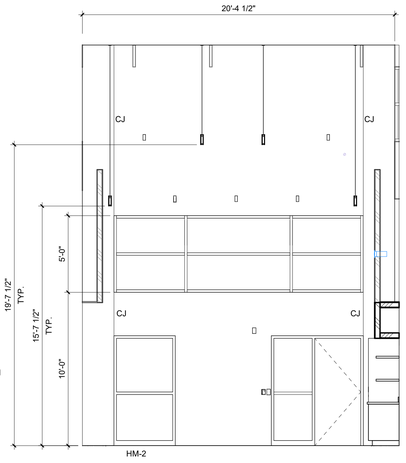
1 REFERENCE AREA 11 - EAST ELEVATION
SCALE: 1/4" = 1'-0"



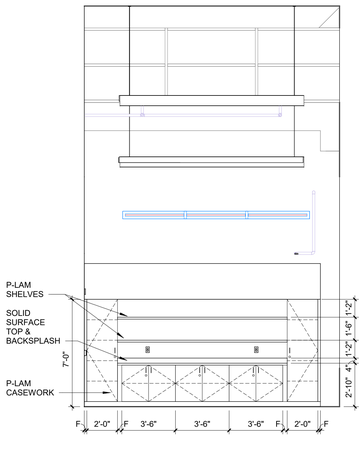
2 REFERENCE AREA 11 - WEST ELEVATION
SCALE: 1/4" = 1'-0"



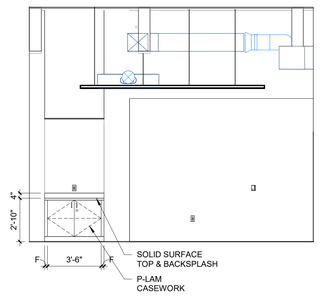
3 REFERENCE AREA 11 - SOUTH
SCALE: 1/4" = 1'-0"



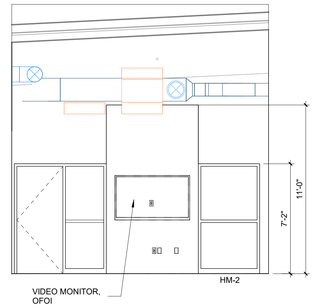
4 LOUNGE 12- EAST
SCALE: 1/4" = 1'-0"



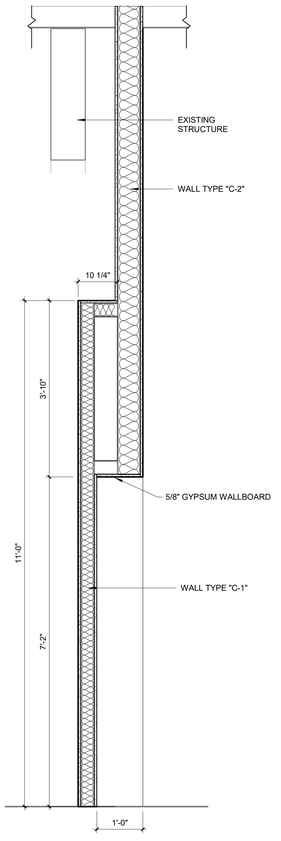
5 LOUNGE 12 - SOUTH
SCALE: 1/4" = 1'-0"



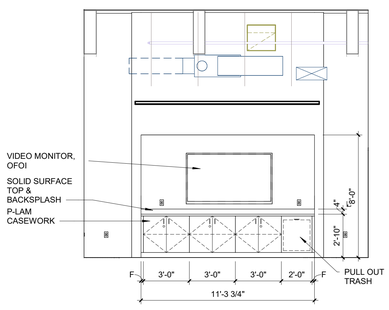
6 MEETING ROOM 13 - NORTH
SCALE: 1/4" = 1'-0"



7 MEETING ROOM 13 - EAST
SCALE: 1/4" = 1'-0"

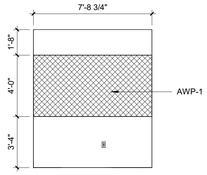


13 SECTION @ WALL INSET
SCALE: 3/4" = 1'-0"

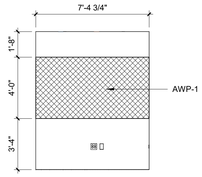


8 CONFERENCE 14 - NORTH
SCALE: 1/4" = 1'-0"

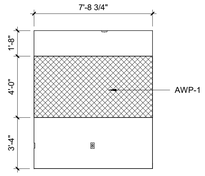
9 CONFERENCE 14 - EAST
SCALE: 1/4" = 1'-0"



10 PODCAST RM 15 - NORTH
SCALE: 1/4" = 1'-0"



11 PODCAST RM 15 - EAST
SCALE: 1/4" = 1'-0"



12 PODCAST RM 15 - SOUTH
SCALE: 1/4" = 1'-0"

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MARSHALLTOWN PUBLIC LIBRARY
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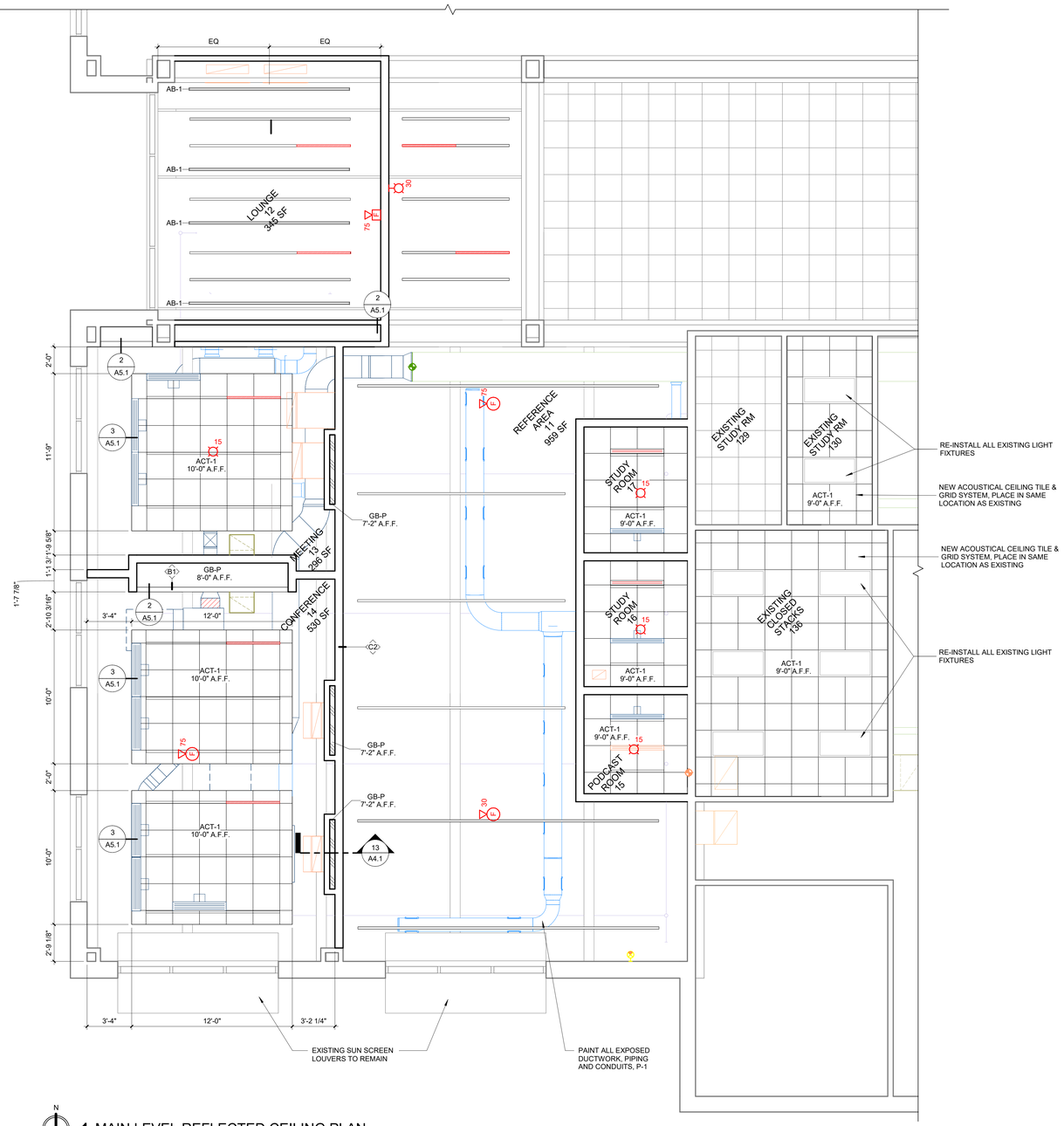
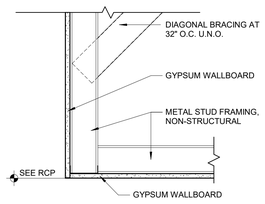
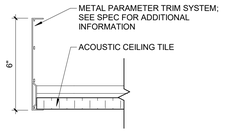


1 MAIN LEVEL REFLECTED CEILING PLAN
SCALE: 1/4" = 1'-0"



2 TYPICAL GYPSUM BOARD BULKHEAD
SCALE: 1 1/2" = 1'-0"



3 ACT EDGE WITH PERIMETER TRIM
SCALE: 3" = 1'-0"

REFLECTED CEILING PLAN LEGEND

	ACOUSTIC TILE CEILING		LIGHT FIXTURES, SEE ELECTRICAL
	GYPSUM WALL BOARD		HEIGHT OF WALL SHALL BE ADJACENT CEILING HEIGHT +8"*
		109'-0"	CEILING HEIGHT
		8'-0"	CEILING HEIGHT (A.F.F.)
		CJ	CONTROL JOINT
		AB	ACOUSTICAL BAFFLE

NOTES:

* ALL WALLS TO STRUCTURE UNLESS NOTED OTHERWISE.

**AT FIRE RATED WALLS, SEAL TO STRUCTURE WITH FIRESAFING INSULATION / MASTIC AT GYP BOARD WALLS OR FIRE CAULK AT MASONRY WALLS.

REFLECTED CEILING PLAN NOTES

1. CEILING GRID TO BE CENTERED EACH WAY WITHIN ROOMS AND ARE AS SHOWN ON THE REFLECTED CEILING PLAN, U.N.O.
2. ALL ELECTRICAL, MECHANICAL, PLUMBING AND FIRE PROTECTION DEVISED TO BE CENTERED WITHIN CEILING TILES, U.N.O.
3. REFER TO MECHANICAL, ELECTRICAL, PLUMBING, AND FIRE PROTECTION (IF APPLICABLE) DRAWINGS FOR DUCTWORK, DEVICES, EQUIPMENT, & FIXTURES NOT SHOWN ON THE REFLECTED CEILING PLANS. COORDINATE LOCATION OF THESE ITEMS WITH THOSE SHOWN.
4. IN ROOMS AND/OR AREAS SCHEDULED TO HAVE EXPOSED STRUCTURE, ALL WALL MATERIALS AND FINISHES TO EXTEND TO UNDERSIDE OF ROOF OR FLOOR DECK, U.N.O.
5. CEMENT BOARD AND GYPSUM BOARD CEILINGS TO BE INSTALLED ON SUSPENSION SYSTEM PER PROJECT MANUAL, U.N.O.
6. WALL GYPSUM BOARD SHALL EXTEND 6" MINIMUM ABOVE HIGHEST ADJACENT CEILING AT PARTITIONS NOT IDENTIFIED TO BE FULL-HEIGHT. BRACE TOP OF WALL TO STRUCTURE ABOVE WITH METAL FRAMING AT 48" O.C. EACH WAY.
7. GYPSUM BOARD VERTICAL RETURNS ON SOFFITS AND BULKHEADS TO EXTEND 6" MINIMUM ABOVE HIGHEST ADJACENT CEILING HEIGHT, U.N.O.
8. REFER TO MECHANICAL DRAWINGS & PROJECT MANUAL FOR REQUIRED LOCATIONS OF ACCESS PANELS IN GYPSUM BOARD OR CEMENT BOARD CEILINGS NOT SHOWN ON THE REFLECTED CEILING PLANS. COORDINATE PANEL LOCATION WITH ARCHITECT.
9. PAINT ALL EXPOSED STEEL, CONDUIT, DUCTWORK, PIPING, ETC. IN ROOMS AND/OR AREAS NOTED OR SCHEDULED TO RECEIVED PAINTED FINISHES.
10. PROVIDE SUPPORT WIRE ABOVE THE CEILING AT 2'-0" O.C. ON CEILING GRID MEMBERS AROUND ALL CEILING MOUNTED PROJECTION SCREEN LOCATIONS NOTED ON THE DRAWINGS.
11. PROVIDE ESCUTCHEONS AT ALL CEILING PENETRATIONS, U.N.O.
12. HOLD GYPSUM BOARD AND/OR CEMENT BOARD 1/2" OFF STRUCTURE.
13. SEE TYPICAL WALL TYPES FOR TOP OF WALL CONSTRUCTION.
14. COORDINATE CEILING CLOUD SUPPORT MEMBERS WITH MECHANICAL AND FIRE PROTECTION IN THE FIELD.
15. TOUCH UP PAINT AS NEEDED AT NEW CONSTRUCTION LOCATIONS.

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ROOM FINISH SCHEDULE									
				WALL					
NUMBER	NAME	FLOOR FINISH	BASE FINISH	NORTH	SOUTH	EAST	WEST	CEILING FINISH	COMMENTS
10	EXISTING SEATING AREA	EXISTING	VB-1	-	-	-	PNT-1	EXP-P	REINSTALL SALVAGED CARPET AS SHOWN ON PLANS.
11	REFERENCE AREA	CPT-1	VB-1	PNT-1	PNT-1	PNT-1	PNT-2	EXP-P	SEE FINISH PLAN FOR PNT-2 LOCATIONS
12	LOUNGE	CPT-1	VB-1	PNT-1	PNT-1	PNT-1	PNT-1	EXP-P	SEE REFLECTED CEILING PLAN FOR CEILING BAFFLES.
13	MEETING	CPT-1	VB-1	PNT-1	PNT-1	PNT-1	PNT-1	ACT-1 / EXP-P	
14	CONFERENCE	CPT-1	VB-1	PNT-1	PNT-1	PNT-1	PNT-1	ACT-1 / EXP-P	
15	PODCAST ROOM	CPT-1	VB-1	PNT-1/ AWP-1	PNT-1/ AWP-1	PNT-1/ AWP-1	PNT-1	ACT-1	
16	STUDY ROOM	CPT-1	VB-1	PNT-1	PNT-1	PNT-1	PNT-1	ACT-1	
17	STUDY ROOM	CPT-1	VB-1	PNT-1	PNT-1	PNT-1	PNT-1	ACT-1	

ROOM FINISH SCHEDULE LEGEND

FLOORS
CPT-1 CARPET TILE-1
EXISTING CARPET TILE

BASE
VB-1 VINYL BASE

WALL
PNT-1 PAINT-1
PNT-2 PAINT-2
AWP-1 ACOUSTICAL WALL PANEL

CEILING
ACT-1 ACOUSTICAL CEILING TILE, TYPE 1
EXP-P EXPOSED CEILING PAINT

FLOOR FINISH LEGEND

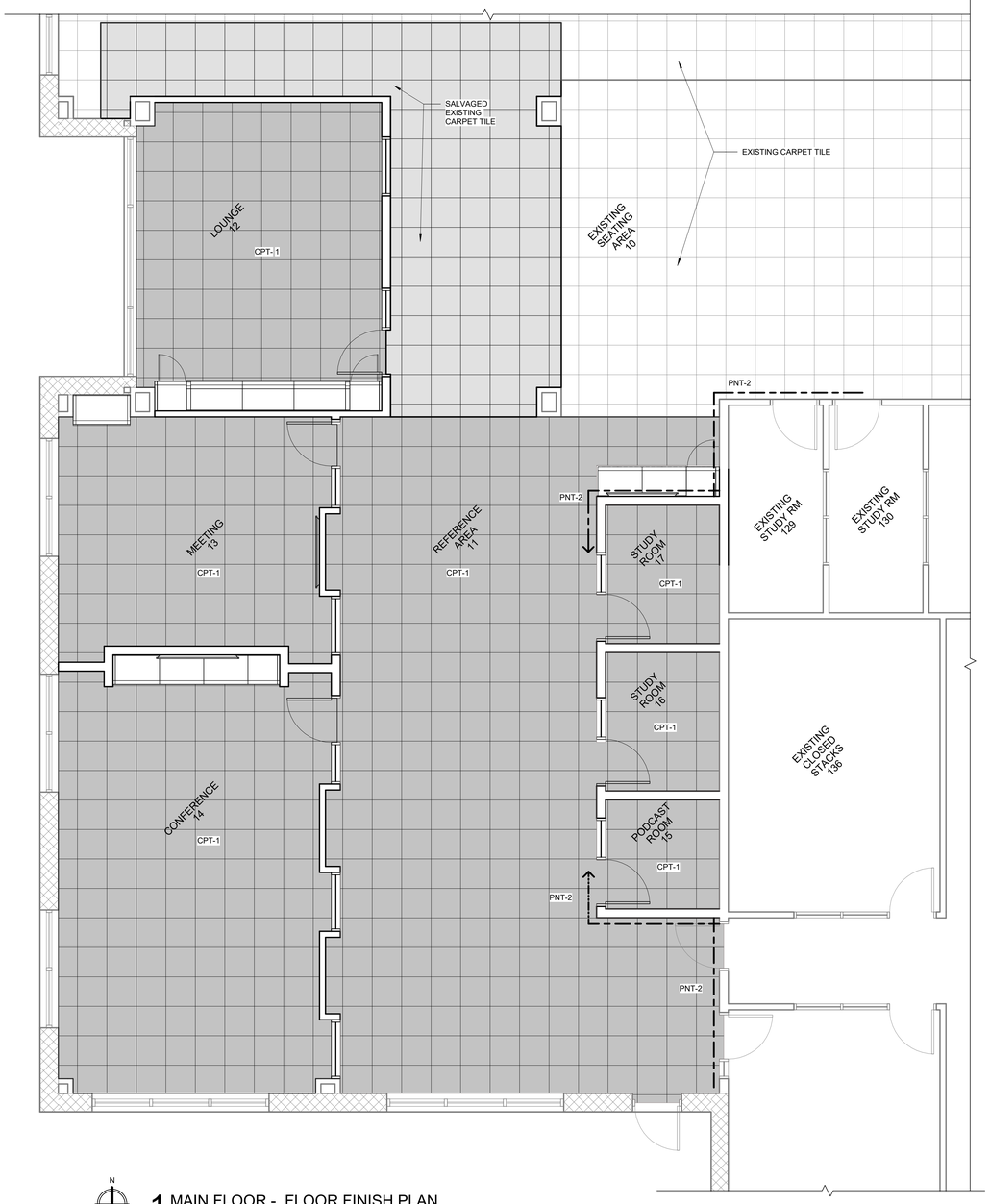
CPT-1 : CARPET TILE- 1

EXISTING CARPET TILE

REINSTALLED SALVAGED CARPET

ROOM FINISH NOTES

1. FINISHES FOR CLOSETS AND AREAS NOT SHOWN SHALL RECEIVE THE SAME FINISH TO THAT OF THE ADJACENT ROOM.
2. ELECTRICAL PANELS AND ACCESS DOOR PANELS SHALL BE PRIMED AND PAINTED TO MATCH ADJACENT WALLS (VERIFY WITH OWNER).
3. CONCRETE FLOORS THAT ARE NOT SCHEDULED FOR A FINISH FLOOR MATERIAL SHALL RECEIVE SEALER PER THE PROJECT MANUAL. CONCRETE FLOORS ARE TO BE CLEANED OF ALL FOREIGN MATERIAL PRIOR TO THE APPLICATION OF THE SEALER.
4. PROVIDE EXPANSION JOINTS AT ALL SLAB EDGES AGAINST EXTERIOR WALLS. REFER TO STRUCTURAL.
5. SLOPE INTERIOR FLOOR SLAB TO DRAIN AT 1/8" PER FOOT WHERE SLOPED SLABS ARE INDICATED, U.N.O.
6. FLOOR SLAB TO BE SLOPED DOWN AROUND DRAINS WHERE FLOOR SLAB IS NOT INDICATED TO BE SLOPED, EXCEPT IN RESTROOMS WITH TILE. IN RESTROOMS WITH TILE, INSTALL DRAIN TO BE FLUSH WITH ADJACENT FLOOR TILE. REFER TO MECHANICAL DRAWINGS FOR ALL FLOOR DRAINS.
7. FLOOR DRAINS AND TRENCH DRAINS INDICATED FOR LOCATION AND CONFIGURATION ONLY, REFER TO MECHANICAL DRAWINGS FOR PRODUCT AND PIPING INFORMATION.
8. JOINT LAYOUT LOCATIONS SHOWN ARE FOR BIDDING PURPOSES ONLY. VERIFY LAYOUT / LOCATIONS WITH ARCHITECT PRIOR TO BEGINNING WORK AND SUBMIT JOINT LAYOUT DRAWING FOR APPROVAL.
9. VERIFY WALL AND FLOOR TILE PATTERN LAYOUT WITH ARCHITECT PRIOR TO BEGINNING WORK.
10. 4X4, 8X8 TILE JOINTS (BOTH USE WALL AND FLOOR) ARE TO ALIGN WITH MASONRY JOINTS ON WALL. WHERE TILE JOINTS DO NOT ALIGN WITH THAT OF CMU, CUT TILES AT MIDDLE OF THE RUN OR AT THE DOOR, OR AS SHOWN ON FLOOR FINISH PLANS. IF DISCREPANCY IS FOUND, CONTACT ARCHITECT BEFORE LAYING TILE.
11. DEPRESS CONCRETE SLABS FOR FLOOR FINISHES OVER 1/2" DEPTH. VERIFY DEPTH REQUIRED.
12. ALL FLOOR FINISH TRANSITIONS TO BE LOCATED UNDER DOOR CENTERLINES, U.N.O.
13. USE SALVAGED CARPET FROM DEMOLITION TO INFILL CARPET IN EXISTING SEATING AREA. GIVE EXCESS CARPET TILES TO THE LIBARY FOR ATTIC STOCK.
14. DOOR FRAMES TO BE PAINTED P-3 TO MATCH EXISTING.
15. CEILINGS TO BE PAINTED P-4 TO MATCH EXISTING.
16. TOUCH UP PAINT AS NEEDED ONCE TEMPORARY WALL IS REMOVED.



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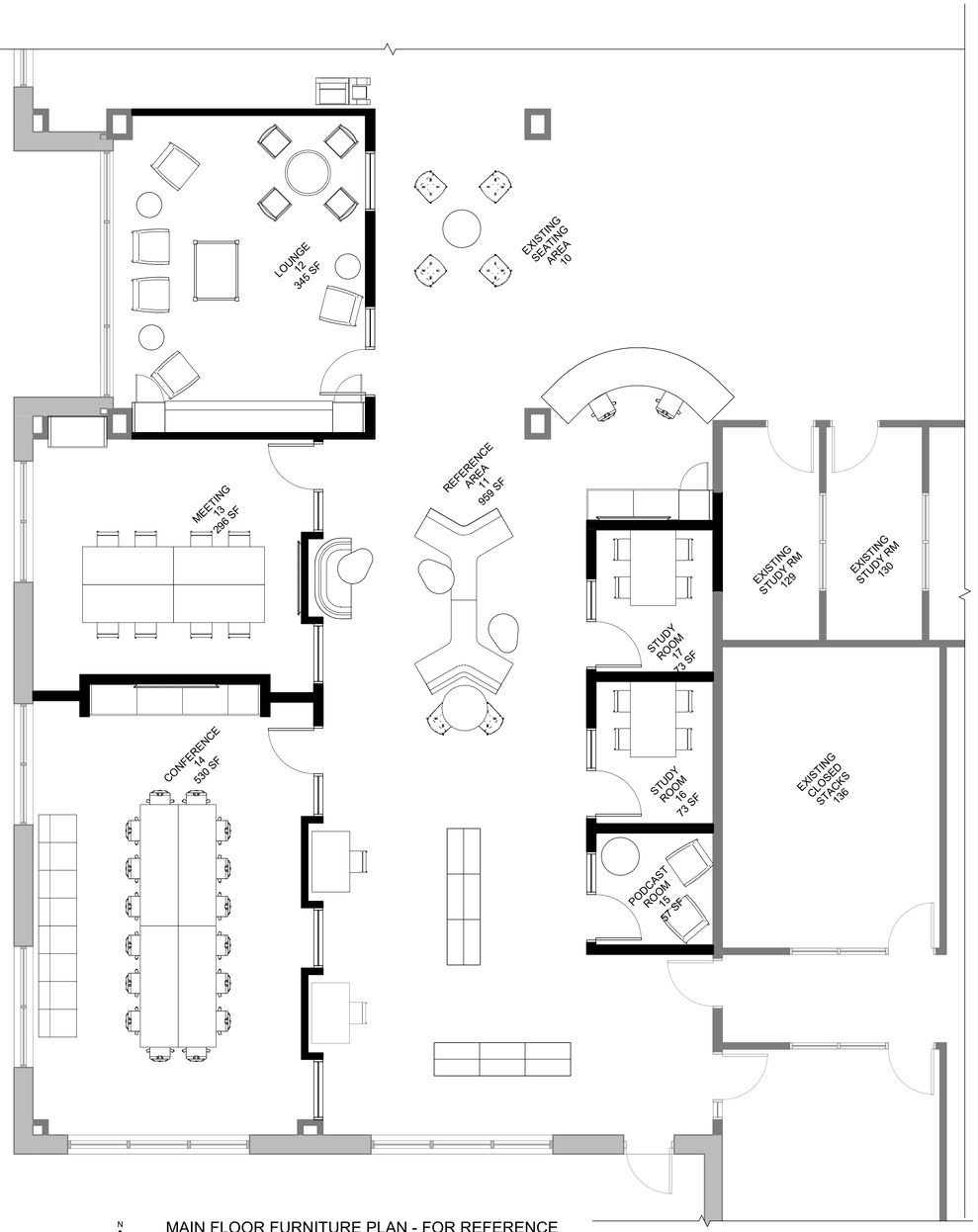
1 MAIN FLOOR - FLOOR FINISH PLAN
SCALE: 1/4" = 1'-0"



N

2 MAIN FLOOR FURNITURE PLAN - FOR REFERENCE ONLY
SCALE: 1/4" = 1'-0"

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SHEET TITLE
FLOOR FINISH PLAN AND FURNITURE PLAN

PROJECT TITLE
CITY OF MARSHALLTOWN
MARSHALLTOWN PUBLIC LIBRARY
INTERIOR REMODEL
105 W BOONE ST, MARSHALLTOWN, IA 50158

DATE ISSUED 11-04-2025
REV. NO. DATE

PROJECT NUMBER
2022226

SHEET
A6.1

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VIEW KEY

NAME — LEVEL NAME
10'-0" — HEIGHT ABOVE PROJECT 0'-0"

1 — KEYNOTE: INDICATES NOTE USED TO DESCRIBE ADDITIONAL INFORMATION ABOUT WORK REQUIRED, SPECIFIC TO THE SHEET AND/OR DETAIL

LINE TYPE AND TAG KEY:

NEW WORK BY THIS CONTRACTOR (WIDE LINE)
———— NEW
- - - - - - - - EXISTING TO BE REMOVED (SHORT DASHED PATTERN)
— — — — NEW UNDERFLOOR OR UNDERGROUND (LONG DASHED PATTERN)

EXISTING TO REMAIN OR WORK BY OTHERS (NARROW LINE)
———— EXISTING
- - - - - - - - EXISTING TO BE REMOVED BY OTHERS (SHORT DASHED PATTERN)
— — — — EXISTING UNDERFLOOR OR UNDERGROUND (LONG DASHED PATTERN)

HALFTONING DOES NOT MODIFY SCOPE.

'TAG'-E — TAGS WITH DASH 'E' INDICATES THE REFERENCED OBJECT IS EXISTING

TAG-1 — UNDERLINED TAG INDICATES OBJECT IS IN-SCOPE. IF NEW, ADDITIONAL INFORMATION IS AVAILABLE IN A SCHEDULE, MATERIAL LIST, OR SYMBOL LIST

INDICATES AN EXISTING SYSTEM'S POINT OF CONNECTION/REMOVAL

FIRE / SMOKE BARRIER DESIGNATIONS

FIRE AND SMOKE SEPARATIONS ARE NOT SHOWN ON THESE DOCUMENTS. CONTRACTOR SHALL REVIEW THE ARCHITECTURAL PLANS AND DETERMINE THE LOCATIONS OF ALL FIRE AND SMOKE PARTITIONS, BARRIERS, AND WALLS. THIS INCLUDES FLOOR RATINGS. PRICING SHALL INCLUDE ALL MATERIALS AND LABOR REQUIRED TO MAINTAIN THE RATINGS OF ALL RATED SEPARATIONS, WHETHER SHOWN ON THE ENGINEERING PLANS OR NOT.

APPLICABLE CODES

CONTRACTOR SHALL COMPLY WITH APPLICABLE CODES AND LOCAL AMENDMENTS INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING:

BUILDING CODE:	IBC 2021 EDITION
FIRE CODE:	IFC 2021 EDITION
PLUMBING CODE:	UPC 2021 EDITION
MECHANICAL CODE:	IMC 2021 EDITION
ELECTRICAL CODE:	NFPA 70 (NEC) 2020 EDITION
LIFE SAFETY CODE:	NFPA 101 2021 EDITION
ENERGY CONSERVATION CODE:	IECC 2012
HEALTH DEPARTMENT CODE:	CURRENT EDITION
LOCAL BUILDING CODE:	CURRENT EDITION

CONTRACTOR ABBREVIATION KEY

ABBR:	DESCRIPTION:
A.V.C.	AUDIO/VISUAL CONTRACTOR
C.M.	CONSTRUCTION MANAGER
E.C.	ELECTRICAL CONTRACTOR
F.P.C.	FIRE PROTECTION CONTRACTOR
G.C.	GENERAL CONTRACTOR
M.C.	MECHANICAL CONTRACTOR
P.C.	PLUMBING CONTRACTOR
S.C.	SECURITY CONTRACTOR
T.C.	TECHNOLOGY CONTRACTOR
T.C.C.	TEMPERATURE CONTROLS CONTRACTOR

CONTACT PERSONS:

DESCRIPTION:	PERSON:
PROJECT MANAGER	DAVE INGHRAM
MECHANICAL	LUCAS HEITZ
ELECTRICAL	KY HILL

FIRE PROTECTION SHEET INDEX

F0.0	FIRE PROTECTION COVERSHEET
F0.1	FIRST FLOOR DEMOLITION PLAN - FIRE PROTECTION
F1.1	FIRST FLOOR PLAN - FIRE PROTECTION
F4.0	FIRE PROTECTION DETAILS
GRAND TOTAL: 4	

MECHANICAL RENOVATION NOTES:

THESE NOTES APPLY TO ALL MECHANICAL SHEETS AND TRADES, INCLUDING BUT NOT LIMITED TO, FIRE PROTECTION, VENTILATION, AND TEMPERATURE CONTROL.

1. EXISTING CONDITIONS ARE SHOWN BASED ON INFORMATION OBTAINED FROM FIELD SURVEYS, EXISTING BUILDING DOCUMENTS, AND STAFF. VERIFY EXISTING CONDITIONS AND REPORT ANY CONFLICTS BEFORE PROCEEDING.
2. NOT ALL EXISTING DUCTWORK AND PIPING IS SHOWN. VERIFY EXISTING CONDITIONS BEFORE STARTING WORK. NOTIFY ENGINEER OF ANY CONFLICTS WITH NEW WORK.
3. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR CUTTING, REMOVAL AND PATCHING OF ROOFS, WALLS, AND FLOORS ASSOCIATED WITH WORK BY ALL CONTRACTORS. CONTRACTORS SHALL NOTIFY THE GC OF AFFECTED AREAS PRIOR TO BIDDING.
4. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR REMOVAL AND REPLACEMENT OF CEILINGS, CEILING TILES, AND CEILING GRIDS ASSOCIATED WITH AREAS OF WORK BY ALL CONTRACTORS. NOTIFY THE GENERAL CONTRACTOR OF AFFECTED AREAS PRIOR TO BIDDING.
5. WHERE EXISTING MECHANICAL SYSTEMS ARE LOCATED IN AREAS THAT CONFLICT WITH NEW EQUIPMENT, PIPING, OR DUCTWORK TO BE INSTALLED, EACH CONTRACTOR SHALL EITHER ARRANGE NEW EQUIPMENT, PIPING, OR DUCTWORK IN SUCH A FASHION THAT IT DOES NOT CONFLICT WITH EXISTING SYSTEMS, OR REWORK EXISTING MECHANICAL SYSTEMS TO ALLOW FOR INSTALLATION OF NEW EQUIPMENT, PIPING, OR DUCTWORK.
6. PROVIDE TEMPORARY CONNECTIONS TO MAINTAIN EXISTING SYSTEMS IN SERVICE DURING CONSTRUCTION. MAINTAIN ACCESS TO EXISTING MECHANICAL INSTALLATIONS THAT REMAIN ACTIVE.
7. OBTAIN PERMISSION FROM OWNER BEFORE SHUTTING DOWN ANY SYSTEM FOR ANY REASON. MAINTAIN SERVICE TO ALL COMPONENTS THAT ARE TO REMAIN UNTIL NEW SYSTEMS ARE INSTALLED.
8. MAINTAIN EXISTING SYSTEM IN SERVICE UNTIL NEW SYSTEM IS COMPLETE AND READY FOR TIE IN AND SWITCHOVER. DRAIN SYSTEM ONLY TO MAKE SWITCHOVERS AND CONNECTIONS. OBTAIN PERMISSION FROM OWNER BEFORE PARTIALLY OR COMPLETELY DRAINING SYSTEM. MAKE CHANGEOVER TO NEW SYSTEMS WITH MINIMUM OUTAGE.
9. DISCONNECT AND REMOVE MECHANICAL DEVICES AND EQUIPMENT SERVING EQUIPMENT THAT HAS BEEN REMOVED.
10. PROPERLY RECLAIM AND DISPOSE OF ALL REFRIGERANT IN REMOVED EQUIPMENT/ REFRIGERANT PIPING. RECLAIMED REFRIGERANT SHALL HAVE DOCUMENTATION AS REQUIRED BY THE AUTHORITY HAVING JURISDICTION (AHJ).

FIRE PROTECTION ABBREVIATION KEY

ABBR:	DESCRIPTION:
AFF	ABOVE FINISHED FLOOR
BFP	BACKFLOW PREVENTER
N.C.	NORMALLY CLOSED
N.O.	NORMALLY OPEN
SCCR	SHORT CIRCUIT CURRENT RATING
TYP	TYPICAL

FIRE PROTECTION SYMBOL LIST

NOT ALL SYMBOLS MAY APPLY.

SYMBOL:	DESCRIPTION:
—DFP—	DRAIN
—FP—	FIRE PROTECTION
	PIPE CAP
	PIPE DOWN
	PIPE UP OR UP/DOWN
	AREA BOUNDARY
NO HATCH	LIGHT HAZARD
	ORDINARY GROUP 1
	ORDINARY GROUP 2
	DEMOLITION

FIRE HYDRANT FLOW TEST DATA

TEST DATE:	09/26/2025
RESIDUAL HYDRANT LOCATION:	S 2ND ST. AND W LYNN ST.
STATIC PRESSURE:	70 PSI
RESIDUAL PRESSURE:	50 PSI
FLOW HYDRANT LOCATION:	S 1ST ST. AND W LINN ST.
TOTAL FLOW:	1150 GPM

FIRE PROTECTION GENERAL NOTES:

1. THE SYMBOLS AND THE MATERIAL LIST ARE FOR THE CONVENIENCE OF THE CONTRACTOR. CONTRACTOR SHALL VERIFY QUANTITIES AND FURNISH ALL MATERIALS REQUIRED FOR FULLY OPERATIONAL SYSTEMS, WHETHER SPECIFIED OR NOT.
2. CATALOG NUMBERS SHALL NOT BE CONSIDERED COMPLETE, BUT ARE GIVEN AS AN AID TO THE CONTRACTOR AND TO INDICATE THE QUALITY REQUIRED. CONTRACTOR IS RESPONSIBLE FOR COMPLETE DESCRIPTION OF MATERIAL ON THESE DRAWINGS AND IN THE SPECIFICATIONS BEFORE ORDERING. THE DESCRIPTION OF THE MATERIAL TAKES PRECEDENCE OVER THE CATALOG NUMBER. THE FIRST MANUFACTURER IS THE BASIS OF DESIGN.
3. CENTER SPRINKLERS IN CEILING TILES IN BOTH DIRECTIONS IN ALL AREAS. IN AREAS WITH 2'X4' CEILING TILES CENTERING USING A 2'X2' CEILING PATTERN IS ACCEPTABLE. SPRINKLER HEADS SHALL BE ALIGNED WITH OTHER SPRINKLER HEADS, LIGHTING, DIFFUSERS, AND ANY OTHER FEATURES IN THE CEILING.
4. NEW SPRINKLERS SHALL BE QUICK RESPONSE TYPE, UNLESS OTHERWISE NOTED. CONTRACTOR SHALL NOT MIX STANDARD RESPONSE SPRINKLERS WITH QUICK RESPONSE SPRINKLERS IN UNPARTITIONED SPACES.
5. PROVIDE COVERAGE ABOVE (IF APPLICABLE) AND BELOW FLOATING CEILINGS, REFER TO ARCHITECTURAL PLANS.
6. FIRE PROTECTION PIPE ROUTING IS SHOWN FOR GENERAL LAYOUT. DETERMINE EXACT NUMBER OF SPRINKLERS, PIPE SIZING, AND PIPE ROUTING.
7. THE FIRE PROTECTION SYSTEM SHALL BE DESIGNED TO MEET OWNER'S INSURANCE COMPANY STANDARDS WHERE APPLICABLE. THE MORE STRINGENT OF THE OWNER'S INSURANCE UNDERWRITER'S DESIGN CRITERIA AND THE NFPA STANDARDS SHALL BE USED.
8. ALL BUILDING AREA SHALL BE FULLY SPRINKLERED INCLUDING WALKWAYS, OVERHANGS, SOFFITS, AND BUILDING PROJECTIONS. ALL ACCESSIBLE COMBUSTIBLE CONCEALED SPACES SHALL BE FULLY PROTECTED BY SPRINKLER SYSTEM.
9. WHERE FEASIBLE INSTALL PIPES HIGH AS POSSIBLE TO AVOID CONFLICT WITH OTHER DISCIPLINES, AND TO REDUCE THE AMOUNT OF REQUIRED ROD STIFFENER SUPPORTS.
10. INSTALL SYSTEM DRAINS AT LOW POCKET AREAS CONTAINING FIVE GALLONS OF WATER OR MORE, PROVIDE WITH ISOLATION VALVE AND THREADED HOSE CONNECTION.
11. MAIN PIPING PASSING BELOW SKYLIGHTS OR CLERESTORIES ARE NOT PERMITTED.
12. PROVIDE INTERMEDIATE TEMPERATURE SPRINKLER HEADS WHERE REQUIRED BY NFPA 13 UNLESS OTHERWISE NOTED.
13. FINAL HEAD LOCATION, TYPE AND FINISH SHALL BE REVIEWED AND APPROVED BY THE ARCHITECT.
14. EXACT LOCATION OF THE ALL PANELS SHALL BE VERIFIED ON SITE AND COORDINATED WITH THE ELECTRICAL CONTRACTOR.
15. PAINT ALL EXPOSED PIPING TO MATCH BACKGROUND OR AS DIRECTED BY THE ARCHITECT.
16. THE OWNER MUST BE NOTIFIED PRIOR TO EACH AND EVERY DRAINING OR RECHARGING OF THE SPRINKLER SYSTEM.
17. THE CONTRACTOR SHALL PREPARE A COORDINATED SET OF SHOP DRAWINGS AND SHALL OBTAIN APPROVAL FROM THE AUTHORITIES HAVING JURISDICTION AND THE LOCAL FIRE DEPARTMENT PRIOR TO ANY INSTALLATION.
18. DRAWINGS SHOW LOCATIONS OF EQUIPMENT, DUCTWORK, PIPING, ETC. ARE DIAGRAMMATIC AND MAY NOT ALWAYS REFLECT EXACT INSTALLATION CONDITIONS. DRAWINGS SHOW THE GENERAL ARRANGEMENT OF DUCTWORK, PIPING, EQUIPMENT, ETC. AND MAY NOT INCLUDE ALL OFFSETS AND FITTINGS REQUIRED FOR COMPLETE INSTALLATION. THE DRAWINGS SHALL BE FOLLOWED AS CLOSELY AS ACTUAL BUILDING CONSTRUCTION AND THE WORK OF OTHERS WILL PERMIT.
19. VERIFY ALL DIMENSIONS AND CLEARANCES FROM ARCHITECTURAL, STRUCTURAL, SUBMITTALS, AND OTHER APPROPRIATE DRAWINGS OR PHYSICALLY AT SITE. REVIEW ALL DRAWINGS, INCLUDING THOSE OF OTHER TRADES.

MECHANICAL GENERAL NOTES:

THESE NOTES APPLY TO ALL MECHANICAL SHEETS AND TRADES, INCLUDING BUT NOT LIMITED TO, FIRE PROTECTION, VENTILATION, AND TEMPERATURE CONTROL.

1. DRAWINGS SHOWING LOCATIONS OF EQUIPMENT, DUCTWORK, PIPING, ETC. ARE DIAGRAMMATIC AND MAY NOT ALWAYS REFLECT EXACT INSTALLATION CONDITIONS. DRAWINGS SHOW THE GENERAL ARRANGEMENT OF DUCTWORK, PIPING, EQUIPMENT, ETC., AND MAY NOT INCLUDE ALL OFFSETS AND FITTINGS REQUIRED FOR COMPLETE INSTALLATION. THE DRAWINGS SHALL BE FOLLOWED AS CLOSELY AS ACTUAL BUILDING CONSTRUCTION AND THE WORK OF OTHERS WILL PERMIT.
2. CATALOG AND MODEL NUMBERS SHALL NOT BE CONSIDERED COMPLETE, BUT ARE GIVEN AS AN AID TO THE CONTRACTOR AND TO INDICATE THE QUALITY REQUIRED. CONTRACTOR IS RESPONSIBLE FOR THE COMPLETE DESCRIPTION OF MATERIAL SCHEDULED ON THESE DRAWINGS AND IN THE SPECIFICATIONS BEFORE ORDERING. THE DESCRIPTION OF THE MATERIAL AND SCHEDULED PERFORMANCE TAKES PRECEDENCE OVER THE MODEL NUMBER. THE FIRST MANUFACTURER SCHEDULED IS THE BASIS OF DESIGN.
3. DETERMINATION OF QUANTITIES OF MATERIAL AND EQUIPMENT REQUIRED SHALL BE MADE BY THE CONTRACTOR FROM THE DOCUMENTS. WHERE MATERIAL AND/OR QUANTITY DISCREPANCIES ARISE BETWEEN DRAWINGS, SCHEDULES AND/OR SPECIFICATIONS, THE HIGHER QUALITY/ GREATER NUMBER SHALL GOVERN.
4. DO NOT SCALE DRAWINGS. VERIFY ALL DIMENSIONS AND CLEARANCES FROM ARCHITECTURAL, STRUCTURAL, SUBMITTALS, AND OTHER APPROPRIATE DRAWINGS OR PHYSICALLY AT SITE. REVIEW ALL DRAWINGS, INCLUDING THOSE OF OTHER TRADES.
5. COORDINATE ALL WORK WITH ALL OTHER TRADES PRIOR TO INSTALLATION TO PROVIDE CLEARANCES REQUIRED FOR OPERATION, MAINTENANCE, CODE COMPLIANCE, AND TO VERIFY NON-INTERFERENCE WITH OTHER WORK. DO NOT FABRICATE PRIOR TO VERIFICATION OF NECESSARY CLEARANCES FOR ALL TRADES. BRING ANY INTERFERENCES OR CONFLICTS TO THE ATTENTION OF THE ARCHITECT/ENGINEER BEFORE PROCEEDING WITH FABRICATION OR EQUIPMENT ORDERS.
6. REVIEW SPACE REQUIREMENTS OF EQUIPMENT SPECIFIED OR SUBSTITUTED AND MAKE REASONABLE ACCOMMODATIONS IN LAYOUT AND POSITIONING TO PROVIDE PROPER ACCESS.
7. ANY CHANGES REQUIRED TO ELIMINATE CONFLICTS OR THAT RESULT FROM A FAILURE TO COORDINATE SHALL BE MADE BY THE CONTRACTOR WITHOUT ADDITIONAL COST OR EXPENSE TO OTHERS.
8. EACH CONTRACTOR IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH ELECTRICAL CHANGES REQUIRED FOR EQUIPMENT PROPOSED THAT DIFFERS FROM THE BASIS OF DESIGN.
9. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN, ELECTRICAL, TECHNOLOGY, AND OTHER MECHANICAL PLANS FOR EXACT LOCATIONS OF ALL CEILING MOUNTED DEVICES, OTHER THAN SPRINKLERS.
10. EACH CONTRACTOR IS RESPONSIBLE FOR DAMAGE CAUSED BY THEIR ACTIONS TO WALLS, CEILINGS, AND ROOFS. THE CONTRACTOR WHOSE WORK CAUSES DAMAGE IS RESPONSIBLE FOR PATCHING TO MATCH ORIGINAL CONSTRUCTION, FIRE RATING, AND FINISH.
11. SEAL ALL WALL AND ROOF PENETRATIONS AIRTIGHT WHERE CONDUITS AND DUCTS PENETRATE. PENETRATIONS THROUGH EXTERIOR WALLS AND ROOF SHALL BE SEALED AIRTIGHT WITH WATERPROOFING MATERIALS RECOMMENDED BY MANUFACTURER FOR OUTDOOR USE.
12. CAULK ALL DUCT PENETRATIONS OF FULL HEIGHT NON-FIRE RATED WALL, PARTITION, FLOOR, AND ROOF ASSEMBLIES. THIS IS ESSENTIAL TO PREVENT NOISE TRANSMISSION FROM ONE ROOM TO ANOTHER AND TO PROVIDE THE DESIRED NC LEVELS WITHIN ROOMS.
13. EQUIPMENT SIZES AND SERVICE CLEARANCE REQUIREMENTS VARY AMONG DIFFERENT MANUFACTURERS. CONSULT APPROVED SHOP DRAWINGS FOR EQUIPMENT SIZES AND REQUIRED SERVICE CLEARANCES. COORDINATE WITH LAYOUT OF EQUIPMENT PADS, DUCTWORK, ETC.
14. DO NOT BLOCK TUBE PULL OR EQUIPMENT SERVICE CLEARANCES.
15. MAINTAIN A MINIMUM WORKING CLEARANCE OF 3'-6" IN FRONT OF ALL ELECTRICAL EQUIPMENT REQUIRING MAINTENANCE, INSPECTION, AND TESTING INCLUDING BUT NOT LIMITED TO PANELS, DISTRIBUTION PANELS, SWITCHBOARDS, MOTOR CONTROL CENTERS, TRANSFORMERS, EQUIPMENT DISCONNECTS AND STARTERS.
16. MAINTAIN THE DEDICATED ELECTRICAL EQUIPMENT SPACE DEFINED BY THE WIDTH / DEPTH OF ELECTRICAL EQUIPMENT MEASURED FROM THE FLOOR TO A HEIGHT 6'-0" ABOVE THE EQUIPMENT OR THE STRUCTURAL CEILING, WHICHEVER IS LOWER. SYSTEMS FOREIGN TO THE ELECTRICAL DISTRIBUTION SYSTEM ARE NOT ALLOWED IN THE DEDICATED ELECTRICAL SPACE INCLUDING: DUCTWORK, PIPING, ETC.
17. DO NOT EXCEED 25 LBS PER HANGER AND A MINIMUM SPACING OF 2'-0" ON CENTER WHEN ATTACHING TO METAL ROOF DECKING (LIMITATION NOT REQUIRED WITH CONCRETE ON METAL DECK). THIS 25 LBS. LOAD AND 2'-0" SPACING INCLUDE ADJACENT ELECTRICAL AND ARCHITECTURAL ITEMS HANGING FROM DECK. IF THE HANGER RESTRICTIONS CANNOT BE ACHIEVED, SUPPLEMENTAL FRAMING OFF STEEL FRAMING SHALL BE ADDED. ANCHORS EMBEDDED IN CONCRETE SHALL BE CRACKED CONCRETE APPROVED IN ACCORDANCE WITH SPECIFICATIONS.

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PROJECT #2025037230

REF. SCALE IN INCHES: 0 1 2 3

SHEET TITLE: FIRE PROTECTION COVERSHEET

PROJECT TITLE: City of Marshalltown
MARSHALLTOWN PUBLIC LIBRARY
INTERIOR REMODEL
105 W BOONE ST, MARSHALLTOWN, IA 50158

DATE ISSUED 11-04-2025
REV. NO. DATE

PROJECT NUMBER
2022226

SHEET
F0.0

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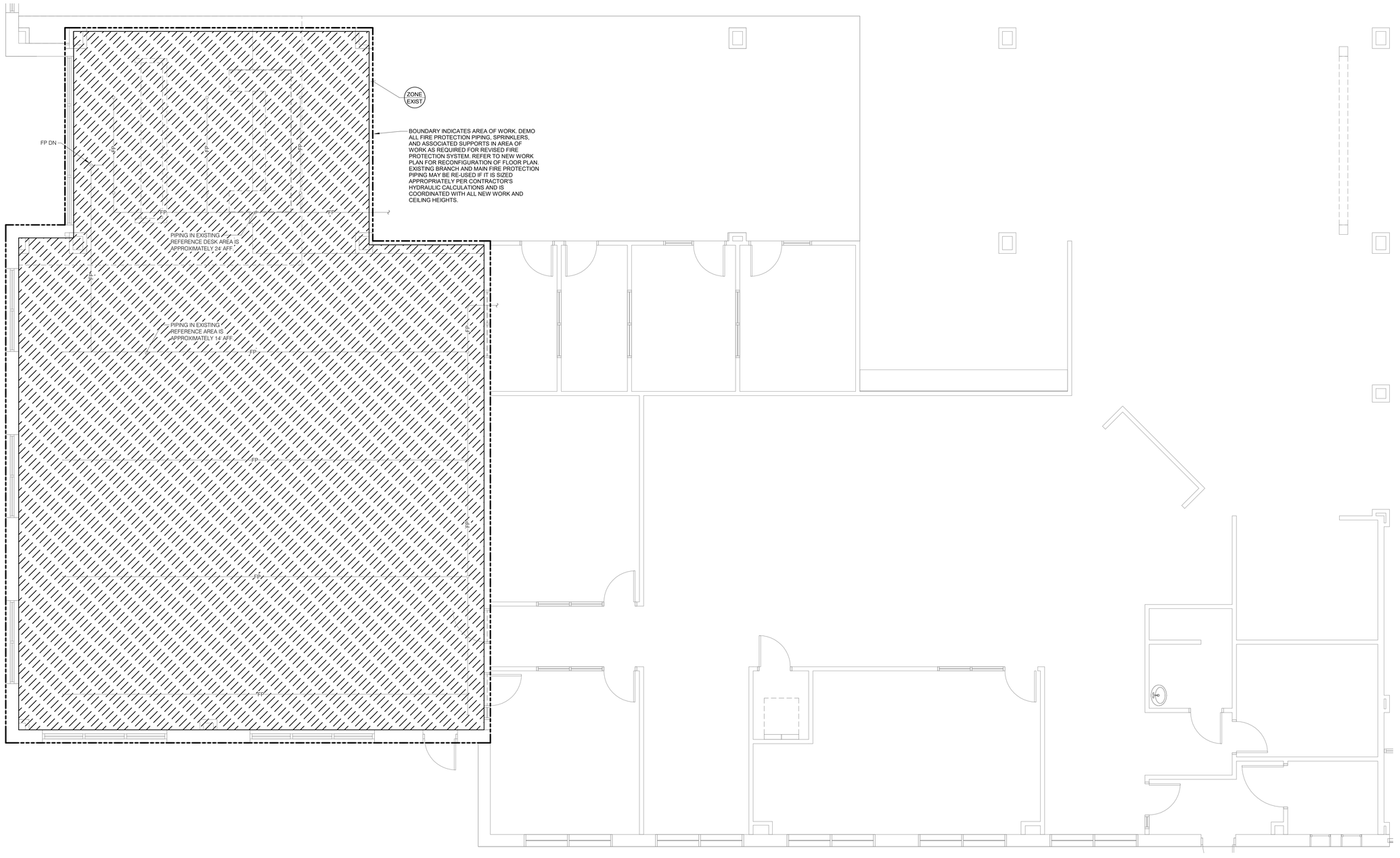
SHEET NOTES:

1. FIRE RISER ROOM IS IN NORTHEAST CORNER OF BUILDING.



1 FIRST FLOOR DEMOLITION PLAN - FIRE PROTECTION

1/4" = 1'-0"

NORTH

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PROJECT #2503572.00

SHEET TITLE
FIRST FLOOR DEMOLITION PLAN - FIRE PROTECTION

PROJECT TITLE
City of Marshalltown
MARSHALLTOWN PUBLIC LIBRARY
INTERIOR REMODEL
105 W BOONE ST, MARSHALLTOWN, IA 50158

DATE ISSUED 11-04-2025
REV. NO. DATE

PROJECT NUMBER
2022226

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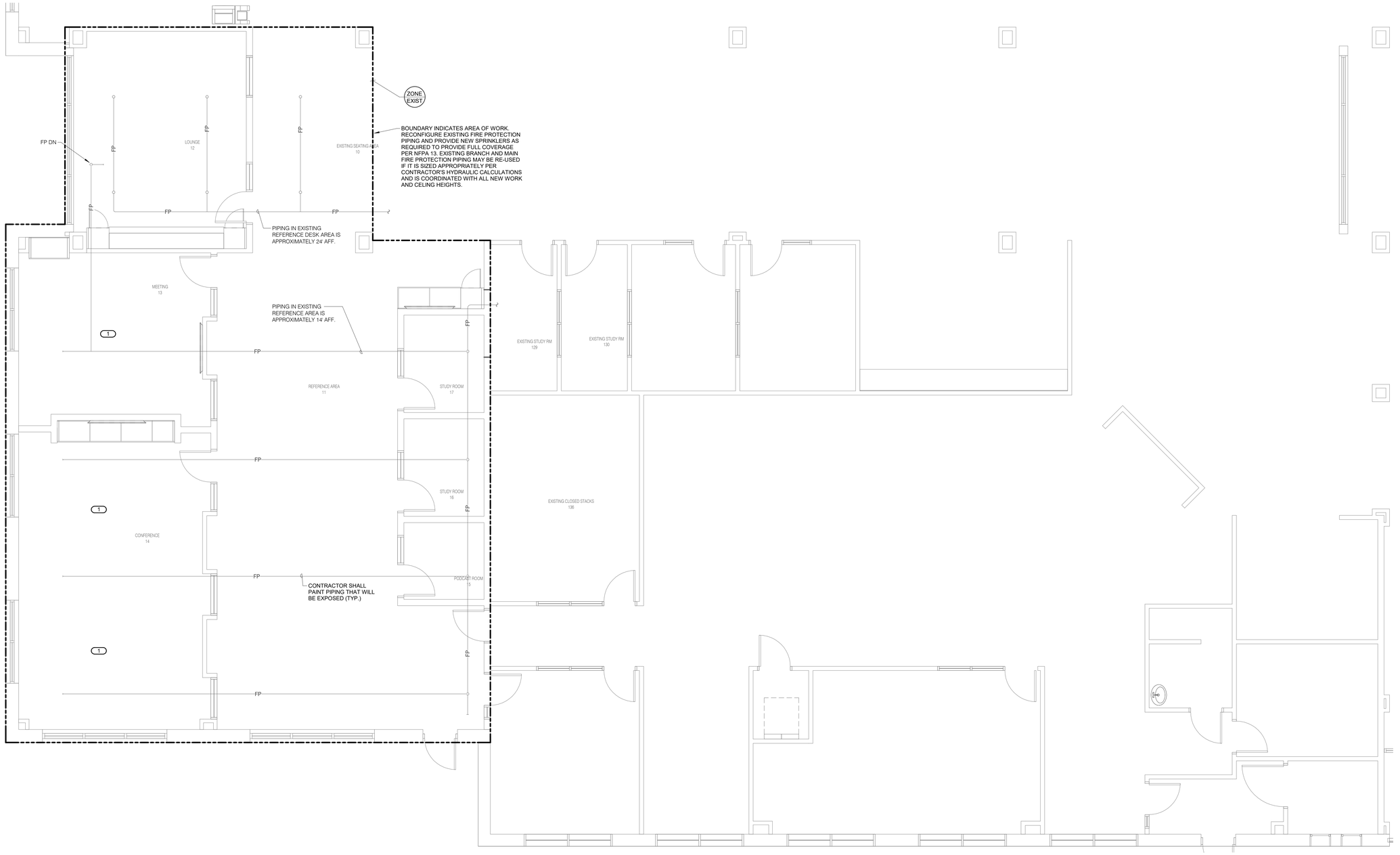
SHEET NOTES:

1. FIRE RISER ROOM IS IN NORTHEAST CORNER OF BUILDING.
2. REFER TO 1/F4.0 FOR CONCEALED SPRINKLER PIPE FLEX HOSE/ARMOVER HANGER DETAIL.
3. REFER TO 2/F4.0 FOR WALL PENETRATION - NON-FIRE RATED DETAIL.
4. REFER TO 4/F4.0 FOR SPRINKLER TILE LOCATION DETAIL.
5. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.

KEYNOTES:

1. F.P.C. SHALL PROVIDE SPRINKLER COVERAGE ABOVE AND BELOW CLOUD CEILING IN THIS AREA. REFER TO ARCHITECTURAL DRAWINGS FOR MORE DETAILS. REFER TO 3/F4.0 FOR CLOUD CEILING SPRINKLER DETAIL.



NORTH

1 FIRST FLOOR PLAN - FIRE PROTECTION

1/4" = 1'-0"

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SHEET TITLE
FIRST FLOOR PLAN - FIRE PROTECTION

PROJECT TITLE
City of Marshalltown
MARSHALLTOWN PUBLIC LIBRARY
INTERIOR REMODEL
105 W BOONE ST, MARSHALLTOWN, IA 50158

DATE ISSUED 11-04-2025
REV. NO. DATE

PROJECT NUMBER
2022226

SHEET
F1.1

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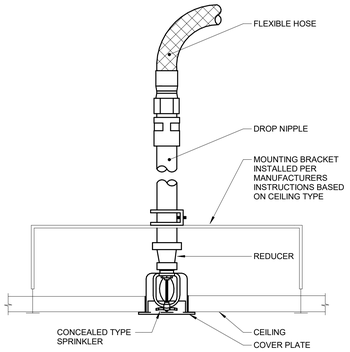
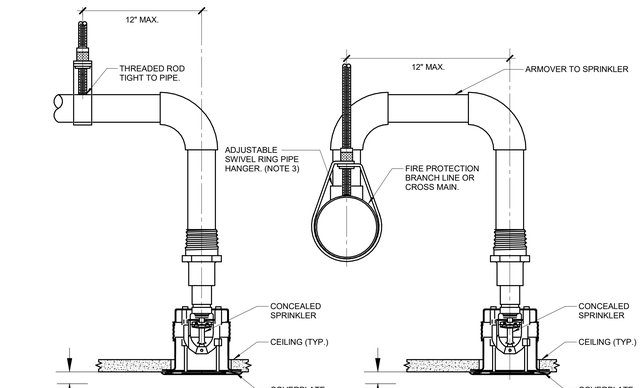


FLEX HOSE



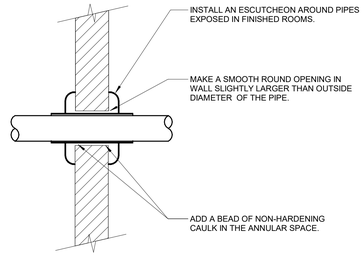
ARMOVER (>12" IN LENGTH) (NOTE 2)

ARMOVER (<12" IN LENGTH)

NOTES:

1. THIS DETAIL APPLIES TO SPRINKLER PIPES ABOVE CEILING THAT SUPPLY CONCEALED SPRINKLERS BELOW CEILINGS WHERE THE WATER PRESSURE EXCEEDS 100 PSIG (STATIC OR RESIDUAL).
2. ALSO APPLIES TO ARMOVER WHERE CUMULATIVE HORIZONTAL LENGTH IS GREATER THAN 12"
3. CLEVIS HANGERS AND ADJUSTABLE SWIVEL RING HANGERS WITH SURGE SUPPRESSOR OR RESTRAINING CLIP ARE ALSO ACCEPTABLE, SEE NFPA 13.
4. END-OF-LINE SPRINKLER CONNECTIONS ARE NOT ALLOWED. THE END OF A HORIZONTAL SPRINKLER BRANCH MUST BE CAPPED. ALL CONNECTIONS TO A SPRINKLER BRANCH MUST BE ARMOVER CONNECTIONS.

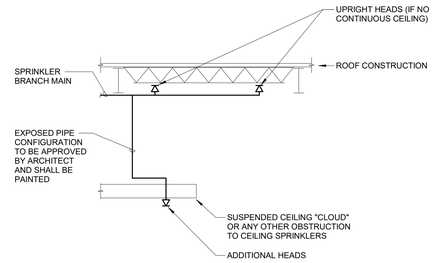
1 CONCEALED SPRINKLER PIPE FLEX HOSE/ARMOVER HANGER
NO SCALE



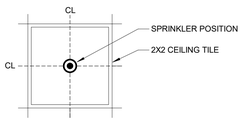
NOTES:

1. THIS DETAIL APPLIES TO ALL PIPES. THE INTENTION IS TO CONTINUE THE INSULATION AND VAPOR BARRIER THROUGH ALL PENETRATIONS. PERMIT THERMAL EXPANSION AND TO SEAL AIRTIGHT AROUND PIPES FOR NOISE TRANSMISSION CONTROL.
2. SEE SPECIFICATION SECTION 23 05 29 FOR ADDITIONAL INFORMATION.

2 WALL PENETRATION - NON-FIRE RATED
NO SCALE



3 CLOUD CEILING SPRINKLER
NO SCALE



4 SPRINKLER TILE LOCATION
NO SCALE

FIRE SPRINKLER USAGE SCHEDULE (SPR)

NOTES:
1. SEE FLOOR PLANS FOR ZONING REQUIREMENTS.
2. SPRINKLER SHALL HAVE COLOR CODED BULB THERMAL ELEMENT.
3. ALL SPRINKLERS SHALL BE UL LISTED.
4. CONTRACTOR TO VERIFY SPRINKLER REQUIREMENTS BASED ON ACTUAL INSTALLATION, USAGE, ARCHITECTURAL CEILING PLAN AND NFPA 13 REQUIREMENTS.
5. TAG NAME IS PRIMARILY FOR IDENTIFYING SPRINKLERS IN SUBMITTALS. IT MAY OR MAY NOT BE FOUND ELSEWHERE ON THE DRAWINGS. CONTRACTOR TO SUBMIT ALL SPRINKLER TYPES TO BE USED.
6. AREAS ARE GENERAL IN NATURE. CONTRACTOR TO MATCH UNSCHEDULED AREAS TO SIMILAR SPACES.
7. SPRINKLERS SHALL HAVE A 3mm QUICK RESPONSE BULB.
8. SPRINKLERS SPECIFIED WITHIN FIRE SPRINKLER USAGE SCHEDULE ARE STANDARD COVERAGE TYPE. EXTENDED COVERAGE SPRINKLERS ARE PERMITTED PROVIDED SPRINKLERS MEET THE REQUIREMENTS OF UL.

AREA (NOTE 1 & 6)		SPRINKLER (NOTE 4 & 5)						
DESCRIPTION	HAZARD	TAG NAME	TYPE	FINISH	RESPONSE	TEMP RATING	MANUFACTURER & MODEL	NOTES
AREAS WITH NO CEILING	SEE PLANS	SPR-1	UPRIGHT	ROUGH BRASS	QUICK	PER NFPA	VIKING, RELIABLE, TYCO, VICTAULIC	NOTES 2, 3, 7, & 8
AREAS WITH A CEILING	SEE PLANS	SPR-2	CONCEALED	WHITE	QUICK	PER NFPA	VIKING, RELIABLE, TYCO, VICTAULIC	NOTES 2, 3, 7, & 8

FEH DESIGN
DES MOINES, IA (515) 288-2000
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OCONOMOWOC, WI (262) 968-2055
SIOUX CITY, IA (712) 252-3889
IN ASSOCIATION WITH
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REF. SCALE IN INCHES 0 1 2 3 PROJECT #2503572.00

SHEET TITLE
FIRE PROTECTION DETAILS

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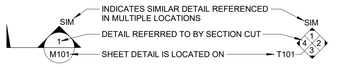
VIEW KEY

NAME — LEVEL NAME
10'-0" — HEIGHT ABOVE PROJECT 0'-0"

1 — KEYNOTE: INDICATES NOTE USED TO DESCRIBE ADDITIONAL INFORMATION ABOUT WORK REQUIRED, SPECIFIC TO THE SHEET AND/OR DETAIL



LINE TYPE AND TAG KEY:

NEW WORK BY THIS CONTRACTOR (WIDE LINE)
——— NEW
- - - - - - - - EXISTING TO BE REMOVED (SHORT DASHED PATTERN)
— — — — NEW UNDERFLOOR OR UNDERGROUND (LONG DASHED PATTERN)

EXISTING TO REMAIN OR WORK BY OTHERS (NARROW LINE)
——— EXISTING
- - - - - - - - EXISTING TO BE REMOVED BY OTHERS (SHORT DASHED PATTERN)
— — — — EXISTING UNDERFLOOR OR UNDERGROUND (LONG DASHED PATTERN)

HALFTONING DOES NOT MODIFY SCOPE.

'TAG'-E — TAGS WITH DASH 'E' INDICATES THE REFERENCED OBJECT IS EXISTING

TAG-1 — UNDERLINED TAG INDICATES OBJECT IS IN-SCOPE. IF NEW, ADDITIONAL INFORMATION IS AVAILABLE IN A SCHEDULE, MATERIAL LIST, OR SYMBOL LIST

INDICATES AN EXISTING SYSTEM'S POINT OF CONNECTION/REMOVAL

FIRE / SMOKE BARRIER DESIGNATIONS

FIRE AND SMOKE SEPARATIONS ARE NOT SHOWN ON THESE DOCUMENTS. CONTRACTOR SHALL REVIEW THE ARCHITECTURAL PLANS AND DETERMINE THE LOCATIONS OF ALL FIRE AND SMOKE PARTITIONS, BARRIERS, AND WALLS. THIS INCLUDES FLOOR RATINGS. PRICING SHALL INCLUDE ALL MATERIALS AND LABOR REQUIRED TO MAINTAIN THE RATINGS OF ALL RATED SEPARATIONS, WHETHER SHOWN ON THE ENGINEERING PLANS OR NOT.

APPLICABLE CODES

CONTRACTOR SHALL COMPLY WITH APPLICABLE CODES AND LOCAL AMENDMENTS INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING:

BUILDING CODE:	IBC 2021 EDITION
FIRE CODE:	IFC 2021 EDITION
PLUMBING CODE:	UPC 2021 EDITION
MECHANICAL CODE:	IMC 2021 EDITION
ELECTRICAL CODE:	NFPA 70 (NEC) 2020 EDITION
LIFE SAFETY CODE:	NFPA 101 2021 EDITION
ENERGY CONSERVATION CODE:	IECC 2012
HEALTH DEPARTMENT CODE:	CURRENT EDITION
LOCAL BUILDING CODE:	CURRENT EDITION

CONTRACTOR ABBREVIATION KEY

ABBR:	DESCRIPTION:
A.V.C.	AUDIO/VISUAL CONTRACTOR
C.M.	CONSTRUCTION MANAGER
E.C.	ELECTRICAL CONTRACTOR
F.P.C.	FIRE PROTECTION CONTRACTOR
G.C.	GENERAL CONTRACTOR
M.C.	MECHANICAL CONTRACTOR
P.C.	PLUMBING CONTRACTOR
S.C.	SECURITY CONTRACTOR
T.C.	TECHNOLOGY CONTRACTOR
T.C.C.	TEMPERATURE CONTROLS CONTRACTOR

CONTACT PERSONS:

DESCRIPTION:	PERSON:
PROJECT MANAGER	DAVE INGHRAM
MECHANICAL	LUCAS HEITZ
ELECTRICAL	KY HILL

MECHANICAL DESIGN CONDITIONS:

DESIGN CONDITIONS: **BASED ON WEATHER DATA FOR: MARSHALLTOWN, IOWA**

SUMMER: 95°F DRY BULB, 78°F WET BULB
WINTER: -15°F DRY BULB

TYPICAL ROOM SETPOINTS:

SUMMER DESIGN: 74°F DRY BULB, 50% RELATIVE HUMIDITY
WINTER DESIGN: 72°F DRY BULB, 30% RELATIVE HUMIDITY

REFER TO CONTROL DIAGRAMS FOR ROOM SPECIFICS.

HVAC SHEET INDEX

V0.0	VENTILATION COVERSHEET
V0.1	FIRST FLOOR DEMOLITION PLAN - VENTILATION
V0.2	ROOF DEMOLITION PLAN - VENTILATION
V1.1	FIRST FLOOR PLAN - VENTILATION
V1.2	ROOF PLAN - VENTILATION
V4.0	VENTILATION DETAILS
V4.1	VENTILATION DETAILS
V5.0	VENTILATION DIAGRAMS
V5.1	VENTILATION DIAGRAMS
V6.0	VENTILATION SCHEDULES
GRAND TOTAL: 10	

HVAC SYMBOL LIST

NOT ALL SYMBOLS MAY APPLY.

SYMBOL:	DESCRIPTION:
DPP	DRAIN
G	NATURAL GAS
	PIPE CAP
	PIPE DOWN
	PIPE UP OR UP/DOWN
	ROUTE TO DRAIN
	DIRECTION OF AIR FLOW
	FLEXIBLE DUCT
	MANUAL VOLUME DAMPER
R	RISE IN DIRECTION OF AIR FLOW
D	DROP IN DIRECTION OF AIR FLOW
	DUCT CAP
	DUCT DOWN
	DUCT UP
	SUPPLY/OUTSIDE AIR DUCT SECTION
	RETURN AIR DUCT SECTION
SD-1 6/115	AIR TERMINAL PROPERTIES SYMBOL NECK SIZE/CFM
###	TERMINAL AIR BOX w/REHEAT COIL (REFER TO SCHEDULE)
	FAN POWERED TERMINAL AIR BOX w/REHEAT COIL (REFER TO SCHEDULE)
	OPPOSED BLADE DAMPER (REFER TO SCHEDULE)
	PARALLEL BLADE DAMPER (REFER TO SCHEDULE)
ACT	ACTUATOR
DP	DIFFERENTIAL PRESSURE SWITCH
CS	CURRENT SWITCH
	FAN
AI	ANALOG INPUT
AO	ANALOG OUTPUT
DI	DIGITAL INPUT
DO	DIGITAL OUTPUT
FM	DUCT FLOW METER
P	PRESSURE SENSOR (DUCT MOUNTED)
SP	STATIC SWITCH
T	THERMOSTAT
T	TEMPERATURE SENSOR (DUCT MOUNTED)
T	PROBE TEMPERATURE SENSOR
	FILTER
DSD	DUCT SMOKE DETECTOR
	HEATING/ COOLING COIL

HVAC ABBREVIATION KEY

ABBR:	DESCRIPTION:
AFF	ABOVE FINISHED FLOOR
DN	DOWN
DPS	DIFFERENTIAL PRESSURE SWITCH
FMCS	FACILITY MANAGEMENT AND CONTROL SYSTEM
FPTAB	FAN POWERED TERMINAL AIR BOX
PS	PRESSURE SWITCH
SCCR	SHORT CIRCUIT CURRENT RATING
TAB	TERMINAL AIR BOX
TD	TRANSFER DUCT
TYP	TYPICAL

MECHANICAL RENOVATION NOTES:

THESE NOTES APPLY TO ALL MECHANICAL SHEETS AND TRADES, INCLUDING BUT NOT LIMITED TO, FIRE PROTECTION, VENTILATION, AND TEMPERATURE CONTROL.

1. EXISTING CONDITIONS ARE SHOWN BASED ON INFORMATION OBTAINED FROM FIELD SURVEYS, EXISTING BUILDING DOCUMENTS, AND STAFF. VERIFY EXISTING CONDITIONS AND REPORT ANY CONFLICTS BEFORE PROCEEDING.
2. NOT ALL EXISTING DUCTWORK AND PIPING IS SHOWN. VERIFY EXISTING CONDITIONS BEFORE STARTING WORK. NOTIFY ENGINEER OF ANY CONFLICTS WITH NEW WORK.
3. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR CUTTING, REMOVAL AND PATCHING OF ROOFS, WALLS, AND FLOORS ASSOCIATED WITH WORK BY ALL CONTRACTORS. CONTRACTORS SHALL NOTIFY THE GC OF AFFECTED AREAS PRIOR TO BIDDING.
4. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR REMOVAL AND REPLACEMENT OF CEILINGS, CEILING TILES, AND CEILING GRIDS ASSOCIATED WITH AREAS OF WORK BY ALL CONTRACTORS. NOTIFY THE GENERAL CONTRACTOR OF AFFECTED AREAS PRIOR TO BIDDING.
5. WHERE EXISTING MECHANICAL SYSTEMS ARE LOCATED IN AREAS THAT CONFLICT WITH NEW EQUIPMENT, PIPING, OR DUCTWORK TO BE INSTALLED, EACH CONTRACTOR SHALL EITHER ARRANGE NEW EQUIPMENT, PIPING, OR DUCTWORK IN SUCH A FASHION THAT IT DOES NOT CONFLICT WITH EXISTING SYSTEMS, OR REWORK EXISTING MECHANICAL SYSTEMS TO ALLOW FOR INSTALLATION OF NEW EQUIPMENT, PIPING, OR DUCTWORK.
6. PROVIDE TEMPORARY CONNECTIONS TO MAINTAIN EXISTING SYSTEMS IN SERVICE DURING CONSTRUCTION. MAINTAIN ACCESS TO EXISTING MECHANICAL INSTALLATIONS THAT REMAIN ACTIVE.
7. OBTAIN PERMISSION FROM OWNER BEFORE SHUTTING DOWN ANY SYSTEM FOR ANY REASON. MAINTAIN SERVICE TO ALL COMPONENTS THAT ARE TO REMAIN UNTIL NEW SYSTEMS ARE INSTALLED.
8. MAINTAIN EXISTING SYSTEM IN SERVICE UNTIL NEW SYSTEM IS COMPLETE AND READY FOR TIE IN AND SWITCHOVER. DRAIN SYSTEM ONLY TO MAKE SWITCHOVERS AND CONNECTIONS. OBTAIN PERMISSION FROM OWNER BEFORE PARTIALLY OR COMPLETELY DRAINING SYSTEM. MAKE CHANGEOVER TO NEW SYSTEMS WITH MINIMUM OUTAGE.
9. DISCONNECT AND REMOVE MECHANICAL DEVICES AND EQUIPMENT SERVING EQUIPMENT THAT HAS BEEN REMOVED.
10. PROPERLY RECLAIM AND DISPOSE OF ALL REFRIGERANT IN REMOVED EQUIPMENT/ REFRIGERANT PIPING. RECLAIMED REFRIGERANT SHALL HAVE DOCUMENTATION AS REQUIRED BY THE AUTHORITY HAVING JURISDICTION (AHJ).

MECHANICAL GENERAL NOTES:

THESE NOTES APPLY TO ALL MECHANICAL SHEETS AND TRADES, INCLUDING BUT NOT LIMITED TO, FIRE PROTECTION, VENTILATION, AND TEMPERATURE CONTROL.

1. DRAWINGS SHOWING LOCATIONS OF EQUIPMENT, DUCTWORK, PIPING, ETC. ARE DIAGRAMMATIC AND MAY NOT ALWAYS REFLECT EXACT INSTALLATION CONDITIONS. DRAWINGS SHOW THE GENERAL ARRANGEMENT OF DUCTWORK, PIPING, EQUIPMENT, ETC., AND MAY NOT INCLUDE ALL OFFSETS AND FITTINGS REQUIRED FOR COMPLETE INSTALLATION. THE DRAWINGS SHALL BE FOLLOWED AS CLOSELY AS ACTUAL BUILDING CONSTRUCTION AND THE WORK OF OTHERS WILL PERMIT.
2. CATALOG AND MODEL NUMBERS SHALL NOT BE CONSIDERED COMPLETE, BUT ARE GIVEN AS AN AID TO THE CONTRACTOR AND TO INDICATE THE QUALITY REQUIRED. CONTRACTOR IS RESPONSIBLE FOR THE COMPLETE DESCRIPTION OF MATERIAL SCHEDULED ON THESE DRAWINGS AND IN THE SPECIFICATIONS BEFORE ORDERING. THE DESCRIPTION OF THE MATERIAL AND SCHEDULED PERFORMANCE TAKES PRECEDENCE OVER THE MODEL NUMBER. THE FIRST MANUFACTURER SCHEDULED IS THE BASIS OF DESIGN.
3. DETERMINATION OF QUANTITIES OF MATERIAL AND EQUIPMENT SHALL BE MADE BY THE CONTRACTOR FROM THE DOCUMENTS. WHERE MATERIAL AND/OR QUANTITY DISCREPANCIES ARISE BETWEEN DRAWINGS, SCHEDULES AND/OR SPECIFICATIONS, THE HIGHER QUALITY/ GREATER NUMBER SHALL GOVERN.
4. DO NOT SCALE DRAWINGS. VERIFY ALL DIMENSIONS AND CLEARANCES FROM ARCHITECTURAL, STRUCTURAL, SUBMITTALS, AND OTHER APPROPRIATE DRAWINGS OR PHYSICALLY AT SITE. REVIEW ALL DRAWINGS, INCLUDING THOSE OF OTHER TRADES.
5. COORDINATE ALL WORK WITH ALL OTHER TRADES PRIOR TO INSTALLATION TO PROVIDE CLEARANCES REQUIRED FOR OPERATION, MAINTENANCE, CODE COMPLIANCE, AND TO VERIFY NON-INTERFERENCE WITH OTHER WORK. DO NOT FABRICATE PRIOR TO VERIFICATION OF NECESSARY CLEARANCES FOR ALL TRADES. BRING ANY INTERFERENCES OR CONFLICTS TO THE ATTENTION OF THE ARCHITECT/ENGINEER BEFORE PROCEEDING WITH FABRICATION OR EQUIPMENT ORDERS.
6. REVIEW SPACE REQUIREMENTS OF EQUIPMENT SPECIFIED OR SUBSTITUTED AND MAKE REASONABLE ACCOMMODATIONS IN LAYOUT AND POSITIONING TO PROVIDE PROPER ACCESS.
7. ANY CHANGES REQUIRED TO ELIMINATE CONFLICTS OR THAT RESULT FROM A FAILURE TO COORDINATE SHALL BE MADE BY THE CONTRACTOR WITHOUT ADDITIONAL COST OR EXPENSE TO OTHERS.
8. EACH CONTRACTOR IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH ELECTRICAL CHANGES REQUIRED FOR EQUIPMENT PROPOSED THAT DIFFERS FROM THE BASIS OF DESIGN.
9. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN, ELECTRICAL, TECHNOLOGY, AND OTHER MECHANICAL PLANS FOR EXACT LOCATIONS OF ALL CEILING MOUNTED DEVICES, OTHER THAN SPRINKLERS.
10. EACH CONTRACTOR IS RESPONSIBLE FOR DAMAGE CAUSED BY THEIR ACTIONS TO WALLS, CEILINGS, AND ROOFS. THE CONTRACTOR WHOSE WORK CAUSES DAMAGE IS RESPONSIBLE FOR PATCHING TO MATCH ORIGINAL CONSTRUCTION, FIRE RATING, AND FINISH.
11. SEAL ALL WALL AND ROOF PENETRATIONS AIRTIGHT WHERE CONDUITS AND DUCTS PENETRATE. PENETRATIONS THROUGH EXTERIOR WALLS AND ROOF SHALL BE SEALED AIRTIGHT WITH WATERPROOFING MATERIALS RECOMMENDED BY MANUFACTURER FOR OUTDOOR USE.
12. CAULK ALL DUCT PENETRATIONS OF FULL HEIGHT NON-FIRE RATED WALL, PARTITION, FLOOR, AND ROOF ASSEMBLIES. THIS IS ESSENTIAL TO PREVENT NOISE TRANSMISSION FROM ONE ROOM TO ANOTHER AND TO PROVIDE THE DESIRED NC LEVELS WITHIN ROOMS.
13. EQUIPMENT SIZES AND SERVICE CLEARANCE REQUIREMENTS VARY AMONG DIFFERENT MANUFACTURERS. CONSULT APPROVED SHOP DRAWINGS FOR EQUIPMENT SIZES AND REQUIRED SERVICE CLEARANCES. COORDINATE WITH LAYOUT OF EQUIPMENT PADS, DUCTWORK, ETC.
14. DO NOT BLOCK TUBE PULL OR EQUIPMENT SERVICE CLEARANCES.
15. MAINTAIN A MINIMUM WORKING CLEARANCE OF 3'-6" IN FRONT OF ALL ELECTRICAL EQUIPMENT REQUIRING MAINTENANCE, INSPECTION, AND TESTING INCLUDING BUT NOT LIMITED TO PANELS, DISTRIBUTION PANELS, SWITCHBOARDS, MOTOR CONTROL CENTERS, TRANSFORMERS, EQUIPMENT DISCONNECTS AND STARTERS.
16. MAINTAIN THE DEDICATED ELECTRICAL EQUIPMENT SPACE DEFINED BY THE WIDTH / DEPTH OF ELECTRICAL EQUIPMENT MEASURED FROM THE FLOOR TO A HEIGHT 6'-0" ABOVE THE EQUIPMENT OR THE STRUCTURAL CEILING, WHICHEVER IS LOWER. SYSTEMS FOREIGN TO THE ELECTRICAL DISTRIBUTION SYSTEM ARE NOT ALLOWED IN THE DEDICATED ELECTRICAL SPACE INCLUDING: DUCTWORK, PIPING, ETC.
17. DO NOT EXCEED 25 LBS PER HANGER AND A MINIMUM SPACING OF 2'-0" ON CENTER WHEN ATTACHING TO METAL ROOF DECKING (LIMITATION NOT REQUIRED WITH CONCRETE ON METAL DECK). THIS 25 LBS. LOAD AND 2'-0" SPACING INCLUDE ADJACENT ELECTRICAL AND ARCHITECTURAL ITEMS HANGING FROM DECK. IF THE HANGER RESTRICTIONS CANNOT BE ACHIEVED, SUPPLEMENTAL FRAMING OFF STEEL FRAMING SHALL BE ADDED. ANCHORS EMBEDDED IN CONCRETE SHALL BE CRACKED CONCRETE APPROVED IN ACCORDANCE WITH SPECIFICATIONS.

VENTILATION GENERAL NOTES:

1. UNLESS NOTED OTHERWISE, THE SIZE OF EACH BRANCH DUCT TO A TERMINAL AIR BOX (TAB) SHALL MATCH THE INLET SIZE UNLESS THE BRANCH IS GREATER THAN 6 FEET IN LENGTH, IN WHICH CASE THE BRANCH DUCT SHALL BE SIZED AT A PRESSURE DROP OF 0.07" W.C. PER 100' OF DUCTWORK.
2. UNLESS NOTED OTHERWISE, THE SIZE OF EACH BRANCH DUCT TO AN AIR TERMINAL SHALL MATCH THE INLET SIZE.
3. ALIGN TEMPERATURE SENSORS WITH LIGHT SWITCHES AND WHEN IN CLOSE PROXIMITY TO EACH OTHER.
4. PROVIDE ACCESS DOORS AT ALL DUCT MOUNTED EQUIPMENT.
5. EXISTING AIR INLET AND OUTLET CFM SHOWN ON DRAWINGS ARE FROM EXISTING DRAWINGS, AND ARE FOR REFERENCE ONLY.
6. CONTRACTOR MAY REUSE PORTIONS OF EXISTING DUCT PROVIDED SIZES AND PRESSURE CLASSES ARE CORRECT, DUCT IS THOROUGHLY CLEANED AND FREE OF DEFECTS, AND ALL TRANSVERSE JOINTS, LONGITUDINAL SEAMS, AND DUCT WALL PENETRATIONS ARE SEALED AS SPECIFIED FOR NEW DUCTWORK.

TEMPERATURE CONTROL GENERAL NOTES:

1. REFER TO EQUIPMENT SCHEDULES TO CROSS REFERENCE WHICH CONTROL DIAGRAMS APPLY TO WHICH ITEMS OF EQUIPMENT. REFER TO TERMINAL AIR BOX (TAB) SCHEDULES FOR TEMP SENSOR REQUIREMENTS FOR EACH TAB.
2. EACH D.I., D.O., A.I. AND A.O. POINT SHOWN FOR ALL CONTROL DIAGRAMS SHALL BE DISCRETE FROM ALL OTHER POINTS EXCEPT AS SPECIFICALLY NOTED.
3. ALL WIRING, CONTROL COMPONENTS, DEVICES AND PROGRAMMING SHOWN ON THESE CONTROL DRAWINGS SHALL BE PROVIDED BY THE TCC UNLESS SPECIFICALLY NOTED OTHERWISE.
4. TEMPERATURE CONTROL CABLING, CONDUIT, BOXES, IDENTIFICATION: REFER TO THE SPECIFICATIONS FOR A COMPLETE LIST OF REQUIREMENTS. THE FOLLOWING SCHEDULE IS PROVIDED AS A CONVENIENCE. REFER TO SECTION 23 09 00 AND DIV 26 FOR ADDITIONAL DETAILED REQUIREMENTS.
   A. CABLE/WIRE JACKET COLOR: BLUE
   B. CONDUIT BOX COLOR ABOVE FINISHED CEILINGS AND UNFINISHED SPACES WITHOUT CEILINGS: BLUE
   C. CONDUIT BOX COLOR IN SPACES WITH EXPOSED FINISHED STRUCTURE: BLUE
   D. CABLE/WIRE INSTALLATION: IN CONDUIT WHEN CONCEALED IN WALLS AND OTHER ASSEMBLIES. PLENUM-RATED CABLE SHALL BE USED ABOVE FINISHED ACCESSIBLE CEILINGS, INDEPENDENTLY SUPPORTED FROM OTHER SYSTEM CABLING/WIRE EVERY 4 FT WITH BRIDAL RINGS AND CABLE SADDLES. ALL CABLING SHALL BE IN CONDUIT IN SPACES WITH EXPOSED FINISHED STRUCTURE.
5. ALL ACTUATORS SHALL BE OF THE ELECTRICAL TYPE FOR THIS PROJECT UNLESS AN ACTUATOR IS SPECIFICALLY INDICATED ON THE DRAWINGS OR SPECIFICATIONS TO BE PNEUMATIC.
6. ALL MODULATING DAMPER AND VALVE ACTUATORS SHOWN WITH POSITION FEEDBACK SHALL HAVE THE VALVE POSITION DISPLAYED ON GRAPHICAL SCREEN ADJACENT TO THE DAMPER/VALVE COMMAND SIGNAL. DISPLAYED VALVE POSITION SHALL BE FROM THE FEEDBACK DEVICE/CIRCUIT (OUTPUT SIGNAL FROM THE FMCS TO THE ACTUATOR IS NOT ACCEPTABLE)
7. MODULATING SIGNALS SHALL BE DISPLAYED AS % OPEN (SIGNALS DISPLAYED AS % CLOSED ARE NOT ACCEPTABLE).
8. PRESSURE TRANSMITTERS WHOSE SIGNAL IS UTILIZED FOR MAINTAINING DUCT STATIC PRESSURE SHALL BE WIRED DIRECTLY TO THE CONTROLLER THAT MODULATES FAN SPEED. SIGNAL SHALL BE COMPLETELY INDEPENDENT OF THE FMCS NETWORK.
9. ALL CONTROL COMPONENTS SUCH AS RELAYS, SWITCHES, DDC CONTROLLERS, ETC. SHALL BE MOUNTED IN STEEL ENCLOSURES WITH STEEL MOUNTING BACKPLATES PER SPECIFICATION 23 09 00.
10. EACH CONTROL PANEL SHALL HAVE A LAMINATED COPY OF THE APPLICABLE SEQUENCE OF OPERATION AND CONTROL DIAGRAM INDICATING THE POINTS, COMPONENTS AND OPERATION OF EQUIPMENT ASSOCIATED WITH EACH PANEL. REFER TO SECTION 23 09 00 FOR ADDITIONAL REQUIREMENTS.
11. TCC SHALL EXTEND CONTROL SIGNAL FROM ADDRESSABLE RELAY DEVICE SERVING EACH AIR HANDLING UNIT. REFER TO ELECTRICAL DRAWINGS FOR LOCATIONS. TCC SHALL EXTEND AND TERMINATE WIRING AS REQUIRED FOR EQUIPMENT SHUTDOWN.
12. TCC SHALL PROVIDE POWER SUPPLIES FOR ALL 24VAC POWER REQUIREMENTS TO INCLUDE, BUT NOT LIMITED TO, TERMINAL AIR BOX CONTROLLERS, DAMPER AND VALVE ACTUATORS, BUILDING PRESSURE SENSORS, AND OTHER CONTROL COMPONENTS AND DEVICES. REFER TO CONTROLS SPECIFICATIONS FOR POWER SUPPLY REQUIREMENTS. PROVIDE LOW VOLTAGE WIRING FROM POWER SUPPLIES TO ALL CONTROLLERS, MONITORS, COMPONENTS AND DEVICES REQUIRING 24 VAC POWER. ADDITIONAL POWER SUPPLIES NOT SHOWN AND REQUIRED FOR A COMPLETE AND OPERATIONAL SYSTEM SHALL BE PROVIDED BY THE TEMPERATURE CONTROL CONTRACTOR. THE TEMPERATURE CONTROL CONTRACTOR SHALL PROVIDE FINANCIAL PROVISIONS WITHIN THEIR BID FOR THE ELECTRICAL CONTRACTOR TO PROVIDE BRANCH POWER TO THE ADDITIONAL POWER SUPPLIES. COORDINATE THE LOCATION OF ADDITIONAL POWER SUPPLY CABINET WITH THE ELECTRICAL CONTRACTOR.
13. ELEMENT LENGTHS FOR BOTH MIXED AIR TEMP SENSORS AND LOW LIMIT TEMP SWITCHES SHALL BE MINIMUM 1 LINEAR FOOT PER SQUARE FOOT OF COIL SURFACE AREA. PROVIDE MULTIPLE SENSORS AND SWITCHES AS NEEDED TO ACHIEVE REQUIRED ELEMENT LENGTHS. LOCATE RESET SWITCHES MAX. 6'-6" ABOVE ADJACENT STANDING SURFACE (E.G. ROOF, PLATFORM OR FLOOR) SO THE RESET SWITCH CAN BE CYCLED WITHOUT THE NEED FOR A LADDER.
14. CONTROL DIAGRAMS ARE SCHEMATIC IN NATURE AND DO NOT SHOW ALL REQUIRED CONTROL DEVICES AND COMPONENTS. REFER TO FLOOR PLANS AND DETAILS FOR ADDITIONAL CONTROL DEVICES, COMPONENTS AND REQUIREMENTS NOT SHOWN ON THESE CONTROL DRAWINGS.
15. TCC SHALL PROVIDE ALL CONTROL COMPONENTS AND ACCESSORIES AS REQUIRED FOR EQUIPMENT TO BE CONTROLLED AS DESCRIBED IN THE SEQUENCE OF OPERATION REGARDLESS OF WHETHER ALL CONTROL COMPONENTS OR POINTS ARE SHOWN IN THE ASSOCIATED CONTROL DIAGRAM.
16. NETWORK CONNECTIVITY: BAS CONTRACTOR SHALL PROVIDE THEIR OWN ETHERNET COMMUNICATIONS NETWORK INCLUDING ALL NECESSARY ETHERNET HUBS, SWITCHES, ROUTERS, WIRING/CABLING, CONDUIT ETC. REQUIRED TO ENABLE ELCN COMMUNICATIONS BETWEEN THE BAS EQUIPMENT WITHIN THE BUILDING. PROVIDE AN ETHERNET SWITCH AS THE POINT OF CONNECTION TO THE OWNER'S IT NETWORK TO ALLOW FOR BAS WEB ACCESS FROM THE OWNERS NETWORK.
17. NETWORK CONNECTIVITY: THE BAS SYSTEM MAY UTILIZE THE OWNER'S IT INFRASTRUCTURE WITHIN THE FACILITY FOR THE ELCN PROVIDED THE BANDWIDTH CONSUMPTION IS LESS THAN 5% OF THE TOTAL NETWORK BANDWIDTH. UNDER NO CIRCUMSTANCES, SHALL THE OWNER'S NETWORK BE SUBJECT TO FAILURE AND/OR ABUSE. THE BAS CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH THE OWNER'S IT STAFF TO ENSURE THAT THE BAS WILL PERFORM IN THE OWNER'S ENVIRONMENT WITHOUT DISRUPTION TO ANY OTHER ACTIVITIES TAKING PLACE ON THE INFRASTRUCTURE. IF PERMISSION IS GRANTED TO USE THE OWNER'S IT NETWORK: A.) THE BAS CONTRACTOR SHALL COORDINATE WITH THE OWNER'S IT STAFF TO ESTABLISH A DEDICATED VLAN ON THE OWNER'S IT NETWORK. B.) THE OWNER SHALL PROVIDE THE IP ADDRESS(ES) FOR THE CONTROL SYSTEM TO UTILIZE THE OWNERS IT INFRASTRUCTURE. C.) THE BAS CONTRACTOR IS STILL RESPONSIBLE FOR THE COMMUNICATIONS WIRING BETWEEN THE BAS EQUIPMENT AND THE OWNER DESIGNATED CONNECTION LOCATIONS. FINAL CONNECTIONS SHALL BE COORDINATED WITH THE OWNER'S IT STAFF. D.) THE BAS CONTRACTOR SHALL CONFORM TO THE OWNER'S IT STANDARDS FOR ALL WIRING/CABLING AND CONNECTION DETAILS. E.) BAS CONTRACTOR SHALL NOT USE ANY BAS PANEL MOUNTED SWITCHES UNLESS AUTHORIZED BY THE OWNER.

TAB POST-CONSTRUCTION NOTES:

1. AFTER CONSTRUCTION ACTIVITIES ARE COMPLETE, TESTING, ADJUSTING (TAB) AND BALANCING CONTRACTOR SHALL BALANCE AIR HANDLING UNIT AS REQUIRED TO ACHIEVE THE NEW AIRFLOW VALUES SHOWN ON THE CONSTRUCTION DRAWINGS.
2. TAB CONTRACTOR SHALL COMPILE AND SUBMIT COPIES OF THE FINAL POST-CONSTRUCTION TAB REPORT AS REQUIRED BY SECTION 23 05 93.
3. THE FINAL POST CONSTRUCTION REPORT SHALL INCLUDE ALL ITEMS REQUIRED IN THE SPECIFICATIONS.

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SHEET TITLE
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PROJECT TITLE
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INTERIOR REMODEL
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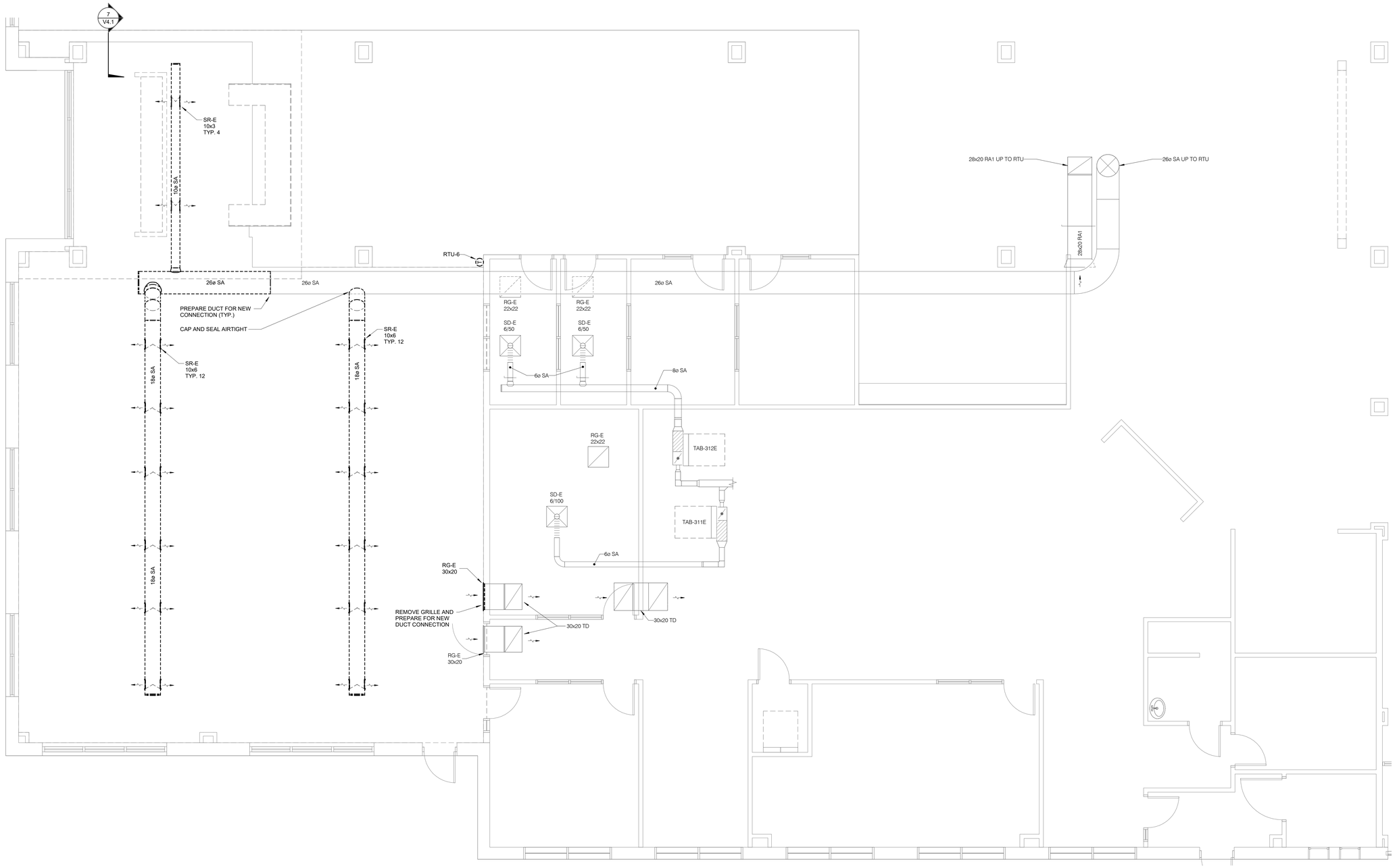

1 FIRST FLOOR DEMOLITION PLAN - VENTILATION

1/4" = 1'-0"

NORTH

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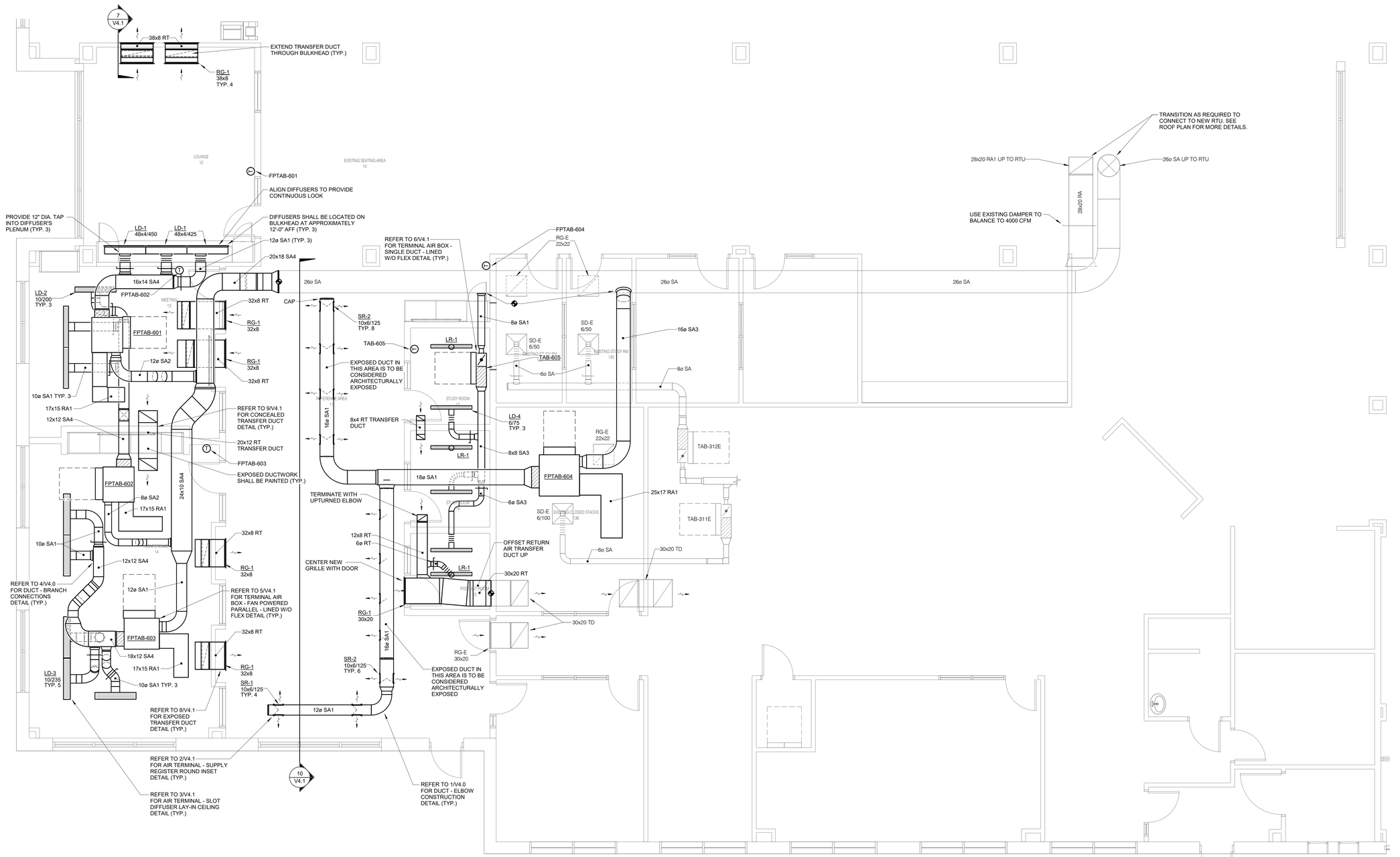
1 ROOF DEMOLITION PLAN - VENTILATION
1/4" = 1'-0"

SHEET NOTES:

1. MOUNT TERMINAL AIR BOX A MAXIMUM OF 2' - 6" ABOVE THE CEILING FOR ACCESSIBILITY.
2. REFER TO 2/V4.0 FOR DUCT - TRANSVERSE REINFORCEMENT DETAIL.
3. REFER TO 3/V4.0 FOR DUCT - LONGITUDINAL SEAMS DETAIL.
4. REFER TO 5/V4.0 FOR DUCT - HANGERS WRAPPES DETAIL.
5. REFER TO 6/V4.0 FOR DUCT - HANGERS EXPOSED SPACES DETAIL.



1 FIRST FLOOR PLAN - VENTILATION

1/4" = 1'-0"

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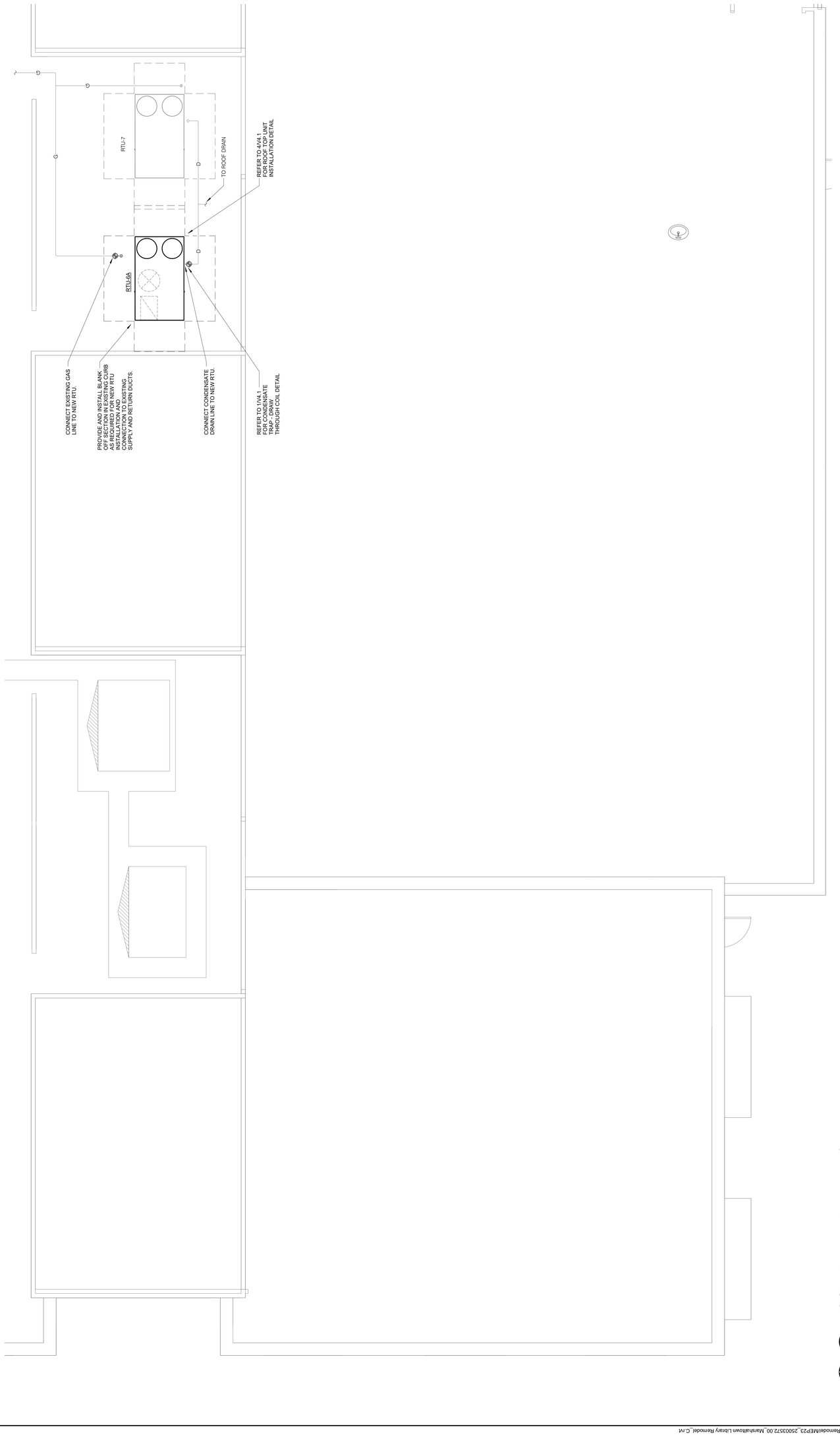
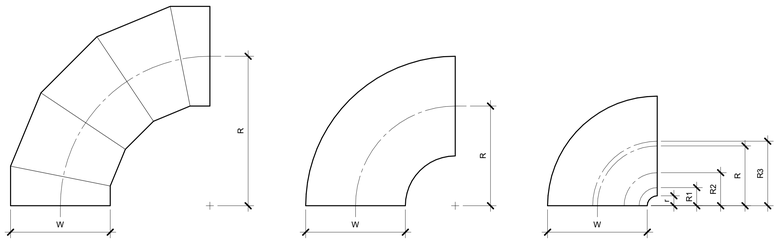


1 ROOF PLAN - VENTILATION
1/4" = 1'-0"

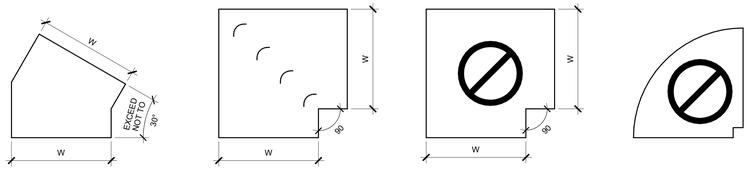


OVAL / ROUND RADIUS ELBOW SMOOTH OR 5 GORE (MINIMUM)
R/W = 1.5 (MINIMUM)

RECTANGULAR RADIUS ELBOW TYPE RE1
R/W = 1.0 (MINIMUM)
R/W < 1.0 SHALL BE TYPE RE3

RECTANGULAR RADIUS ELBOW WITH VANES TYPE RE3

REFER TO SMACNA HVAC SYSTEMS DUCT DESIGN MANUAL, FOURTH EDITION, SECTION 5.14 "SPLITTER VANES" AND SMACNA HVAC DUCT CONSTRUCTION STANDARDS, THIRD EDITION, FIGURES 4-2 AND 4-9 AND CHARTS 4-1 AND 4-1M. ELBOW SHALL HAVE THREE SPLITTER VANES AND r/W = 0.10 (R/W = 0.60) UNLESS NOTED OTHERWISE.



RECTANGULAR MITERED ELBOW TYPE RE6

USE ONLY AS PART OF OFFSETS AND TRANSITIONS PER FIGURE 4-7 TYPE 2 OR AS SHOWN ON DRAWINGS. OFFSETS ABOVE 30° SHALL BE TYPE RE1.

RECTANGULAR MITERED ELBOW WITH VANES TYPE RE2

RECTANGULAR / OVAL / ROUND MITERED ELBOW WITHOUT VANES TYPE RE4

NOT ALLOWED

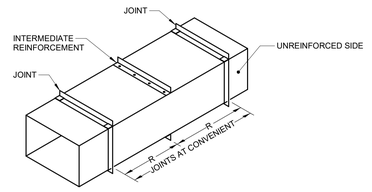
RECTANGULAR RADIUS ELBOW WITH SQUARE THROAT

NOT ALLOWED

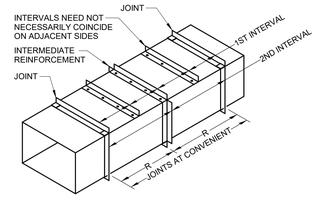
NOTES:

1. BEAD, CROSSBREAK, AND REINFORCE FLAT SURFACES AS IN STRAIGHT DUCT.
2. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.
3. DEFAULT ELBOW SHALL BE TYPE "RE1".
4. ELBOW TYPES SHALL BE INSTALLED AS SHOWN AND NOT BE SUBSTITUTED WITHOUT PERMISSION. EXCEPTION: RE1 OR RE3 MAY BE SUBSTITUTED FOR RE2.

1 DUCT - ELBOW CONSTRUCTION
NO SCALE



DUCT REINFORCED ON TWO SIDES

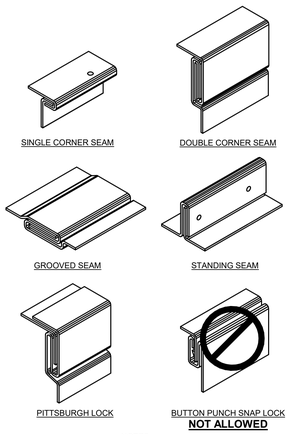


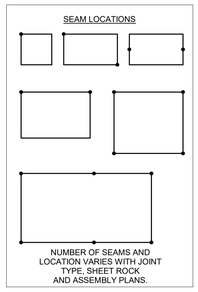
DUCT REINFORCED ON ALL SIDES

NOTES:

1. 'R' IS AN ALLOWABLE REINFORCEMENT INTERVAL.
2. TOP AND BOTTOM JOINTS MUST QUALIFY AS REINFORCEMENT
3. DUCT SIZES THAT ARE 19 INCHES (483 mm) AND OVER ARE 20 GAGE (1.00 mm) OR LESS, WITH MORE THAN 10 SQUARE FEET (0.93 SQUARE METER) OF UNBRACED PANEL AREA, SHALL BE CROSSBROKEN OR BEADED UNLESS THEY ARE LINED OR EXTERNALLY INSULATED. DUCTS THAT ARE OF HEAVIER GAGE, SMALLER DIMENSIONS, AND SMALLER PANEL AREA AND THOSE THAT ARE LINED OR EXTERNALLY INSULATED ARE NOT REQUIRED TO HAVE CROSSBREAKING OR BEADING.
4. SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION.

2 DUCT - TRANSVERSE REINFORCEMENT
NO SCALE

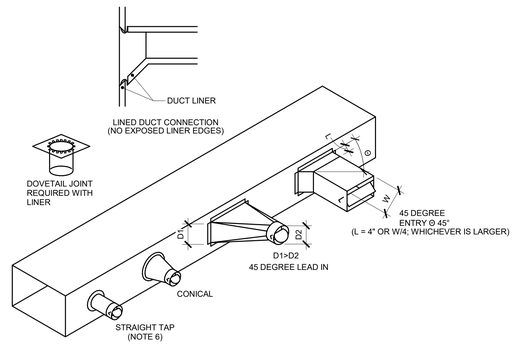




NOTES:

1. SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION.

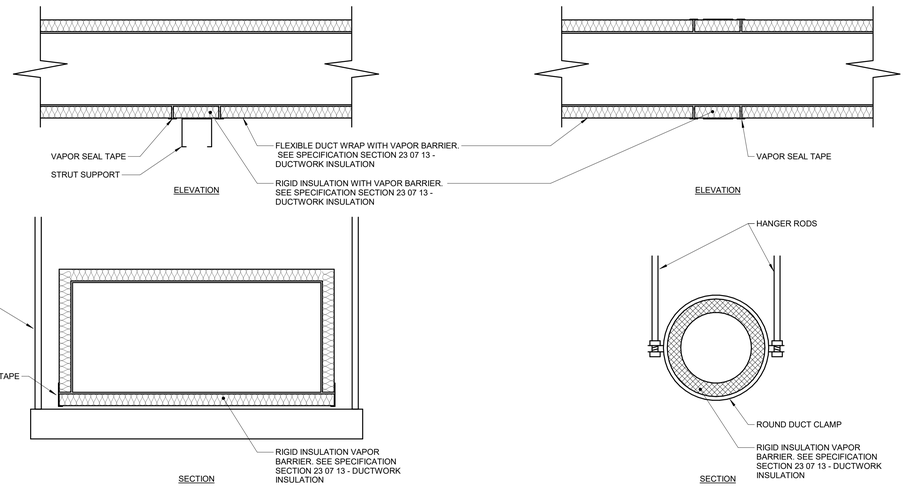
3 DUCT - LONGITUDINAL SEAMS
NO SCALE



NOTES:

1. DO NOT USE CONNECTIONS WITH SCOOPS.
2. FIT ALL CONNECTIONS TO AVOID VISIBLE OPENINGS AND SEAL SUITABLY FOR THE PRESSURE CLASS.
3. ADDITIONAL MECHANICAL FASTENERS ARE REQUIRED FOR 4" W.G. AND OVER.
4. REFER TO SPECIFICATIONS FOR VOLUME DAMPER REQUIREMENTS.
5. OPENINGS SHALL BE CUT ACCURATELY (SHAPE AND SIZE).
6. STRAIGHT TAPS ONLY ALLOWED DOWNSTREAM OF TERMINAL AIR BOX OR LOW PRESSURE (<2"W.C. PRESSURE CLASS)

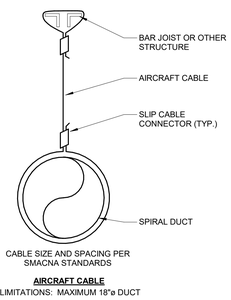
4 DUCT - BRANCH CONNECTIONS
NO SCALE



NOTES:

1. DETAIL FOR USE WHERE DUCTS REQUIRE TRAPEZE OR DOUBLE ROD HANGERS (36" DIA. OR EQUIVALENT)

5 DUCT - HANGERS WRAPPED
NO SCALE



CABLE SIZE AND SPACING PER SMACNA STANDARDS

AIRCRAFT CABLE
LIMITATIONS: MAXIMUM 18"ø DUCT

6 DUCT - HANGERS EXPOSED SPACES
NO SCALE

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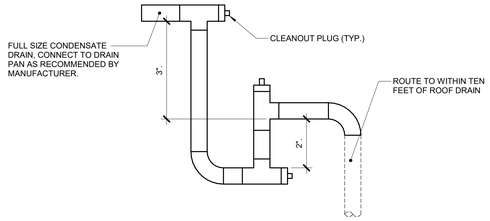
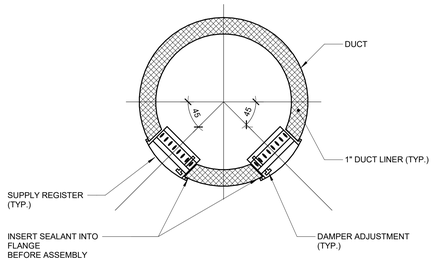
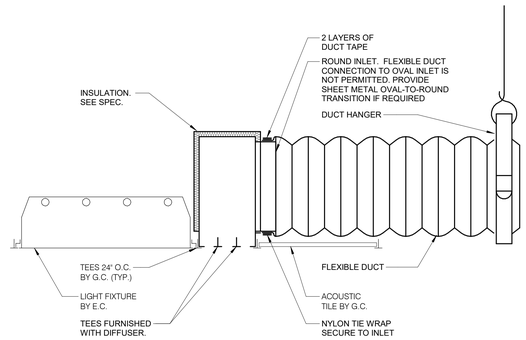


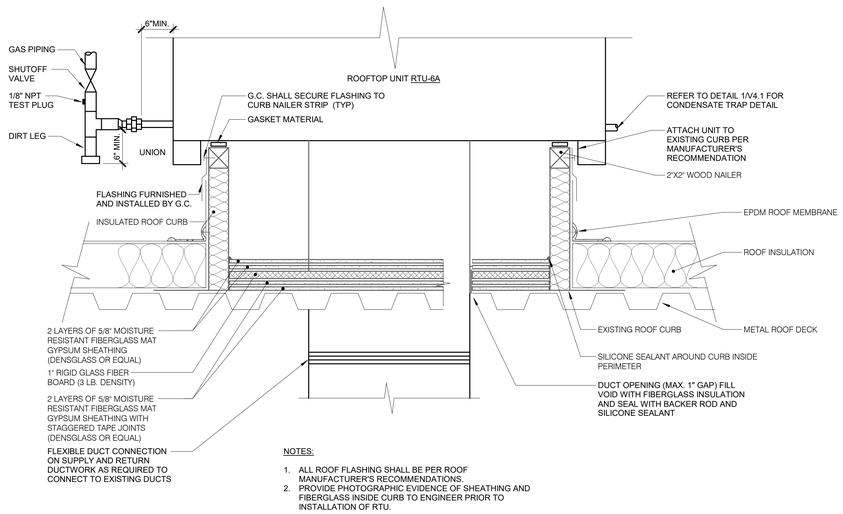
1 CONDENSATE TRAP - DRAW THROUGH COIL
NO SCALE



2 AIR TERMINAL - SUPPLY REGISTER ROUND INSET
NO SCALE

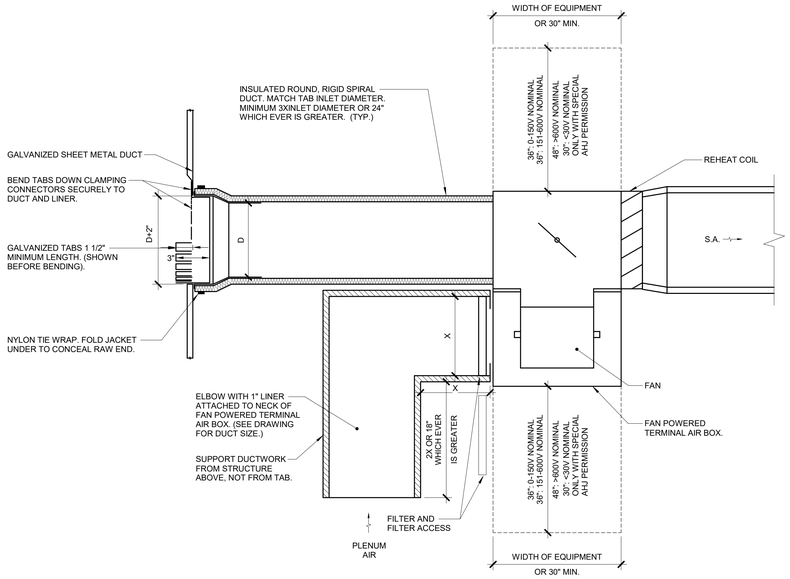


3 AIR TERMINAL - SLOT DIFFUSER LAY-IN CEILING
NO SCALE

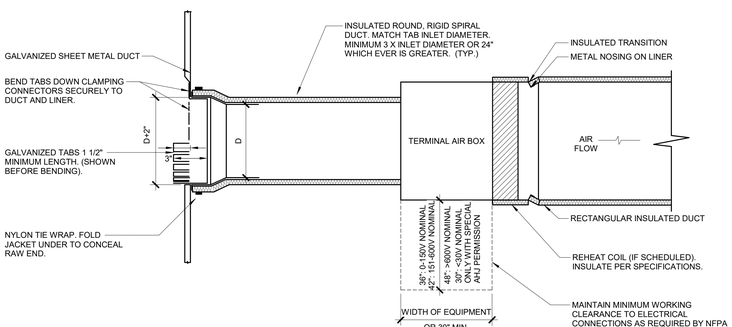


NOTES:
1. ALL ROOF FLASHING SHALL BE PER ROOF MANUFACTURER'S RECOMMENDATIONS.
2. PROVIDE PHOTOGRAPHIC EVIDENCE OF SHEATHING AND FIBERGLASS INSIDE CURB TO ENGINEER PRIOR TO INSTALLATION OF RTU.

4 ROOF TOP UNIT INSTALLATION DETAIL
NO SCALE

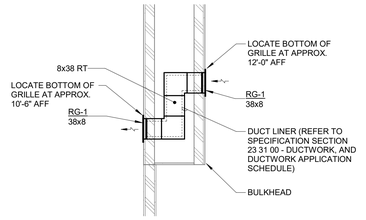


5 TERMINAL AIR BOX - FAN POWERED PARALLEL - LINED W/O FLEX
NO SCALE

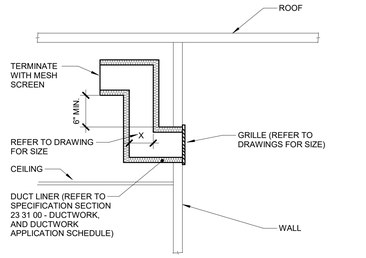


NOTES:
1. THIS DETAIL APPLIES ONLY TO TAPS OFF LINED DUCTS.
2. THIS DETAIL APPLIES TO TERMINAL AIR BOXES WITH ROUND INLETS AND RECTANGULAR OUTLETS.
3. DUCT LEADING TO TAB INLET MUST BE STRAIGHT FOR 3.0 DIAMETERS UPSTREAM.

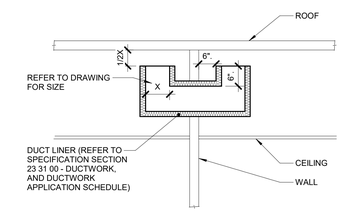
6 TERMINAL AIR BOX - SINGLE DUCT - LINED W/O FLEX
NO SCALE



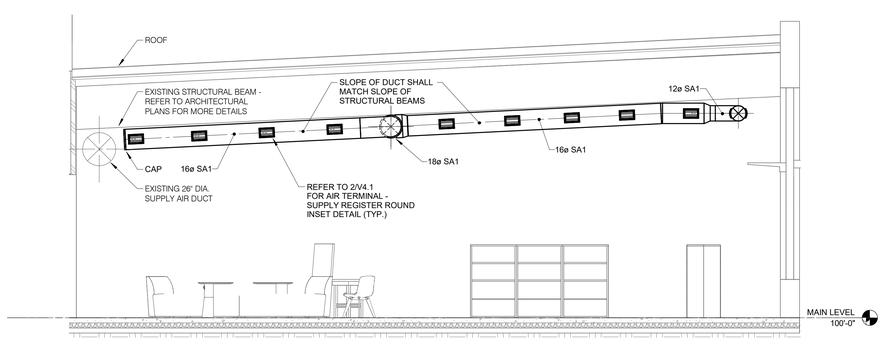
7 SOCIAL LOUNGE TRANSFER DUCT
NO SCALE



8 EXPOSED TRANSFER DUCT
NO SCALE



9 CONCEALED TRANSFER DUCT
NO SCALE



10 EXPOSED DUCT SECTION VIEW
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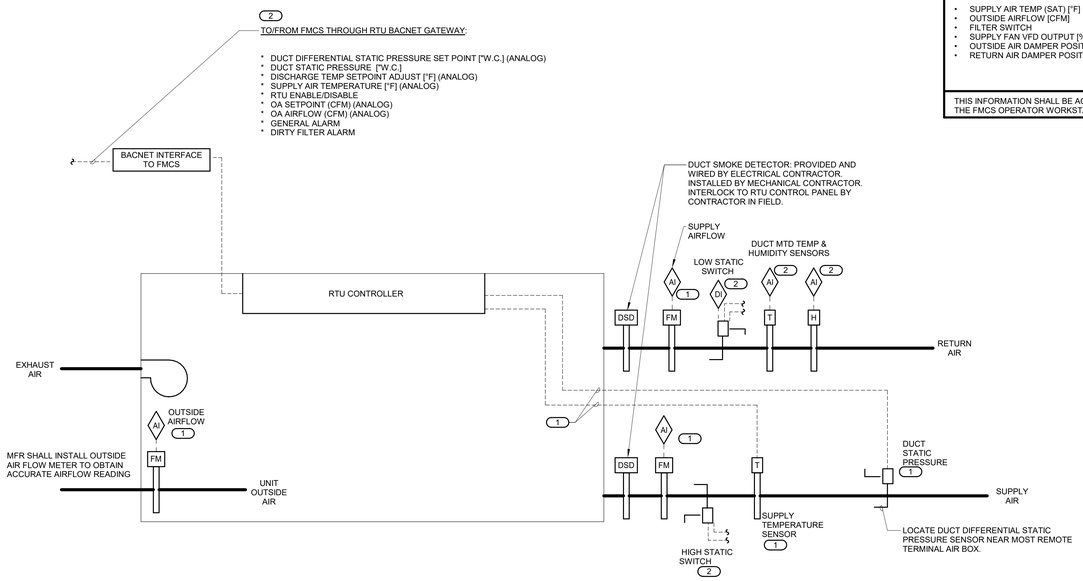

AHU REPORT GENERATION: DDC FMCS SHALL MONITOR THE FOLLOWING POINTS ON 10 MINUTE (ADJ.) INTERVALS WITHIN A SINGLE TREND. THE TREND SHALL RUN FOR 365 DAY (ADJ.) DURATION AT WHICH POINT THE NEWEST VALUES SHALL AUTOMATICALLY OVERWRITE THE OLDEST VALUES.	
PROVIDED BY PACKAGED MANUFACTURER THROUGH GATEWAY TO FMCS:	POINTS PROVIDED BY FMCS AND SYSTEM:
• SUPPLY AIR TEMP (SAT) [°F] • OUTSIDE AIRFLOW [CFM] • FILTER SWITCH • SUPPLY FAN VFD OUTPUT [% FULL SPEED] • OUTSIDE AIR DAMPER POSITION [% OPEN] • RETURN AIR DAMPER POSITION [% OPEN]	• DATE • TIME • GLOBAL OUTSIDE AIR TEMP [°F] • GLOBAL OUTSIDE AIR DEWPOINT [°F] GLOBAL OUTSIDE AIR HUMIDITY [%RH] • ROOM AIR TEMP SETPOINT [°F] • RETURN AIR TEMP (RAT) [°F] • RETURN AIR RELATIVE HUMIDITY [%] • SUPPLY AIRFLOW [CFM]
THIS INFORMATION SHALL BE ACCESSIBLE TO VIEW IN EITHER TABULAR OR GRAPHICAL FORM ON THE FMCS OPERATOR WORKSTATION.	

KEYNOTES:
1. SENSOR PROVIDED BY RTU MANUFACTURER. SENSOR FEEDER/RACEWAY AND CONNECTION SHALL BE INSTALLED BY CONTRACTOR IN THE FIELD.
2. POINT, SENSOR AND FEEDER/RACEWAY PROVIDED BY TCC. EXTERNAL CONTROLS PROVIDED BY CONTROLS CONTRACTOR AND WIRED TO FMCS:
   A. STATIC SWITCH
   B. RETURN TEMPERATURE SENSOR
   C. HUMIDITY SENSOR
   D. DUCT SMOKE DETECTOR
   E. DUCT SMOKE DETECTOR INTERLOCK

CONTROLS SEQUENCE PROVIDED BY CONTRACTOR IN FIELD:

SEQUENCE OF OPERATION:
THE TCC SHALL EXTEND THE FMCS NETWORK TO THE RTU BACNET INTERFACE PER THE PROTOCOL SPECIFIED IN SECTION 23 09 00.

WHEN RTU IS INDEXED TO RUN, THE FOLLOWING SHALL OCCUR:
• SUPPLY FAN SHALL BE ENABLED TO RUN.

BUILDING OCCUPANCY SCHEDULING:
ENABLE RTU TO RUN BASED ON THE FOLLOWING OCCUPANCY SCHEDULE WITH ALLOWANCE FOR ENERGY CODE OPTIMAL START.

• OCCUPIED MODE:	MONDAY THROUGH FRIDAY	8:00AM-7:00PM (ADJ.)
	SATURDAY THROUGH SUNDAY	12:00PM-5:00PM (ADJ.)
• UNOCCUPIED MODE:	MONDAY THROUGH FRIDAY	7:00PM-8:00AM (ADJ.)
	SATURDAY THROUGH SUNDAY	5:00PM-12:00PM (ADJ.)

CONTRACTOR SHALL FIELD INSTALL THE FOLLOWING MANUFACTURER PROVIDED EXTERNAL SENSORS AND WIRE BACK TO RTU CONTROLLER:
• DUCT STATIC PRESSURE SENSOR IN SUPPLY DUCT.
• BUILDING PRESSURE SENSOR.
• SUPPLY AIR TEMPERATURE IN SUPPLY DUCT.

ALARMS, INTERLOCKS AND SAFETIES:
THE FOLLOWING SAFETIES SHALL BE INSTALLED AND WIRED IN THE FIELD.
• HIGH STATIC SWITCH (WIRED TO UNIT ENABLE/DISABLE TO TURN FANS OFF)
• LOW STATIC SWITCH (WIRED TO UNIT ENABLE/DISABLE TO TURN FANS OFF)
• FIRE ALARM RELAY (WIRED TO UNIT ENABLE/DISABLE TO TURN FANS OFF)

CONTROLS PROVIDED BY PACKAGED EQUIPMENT MANUFACTURER:

PACKAGE ROOFTOP UNIT SYSTEM DESCRIPTION:
REFER TO SECTION 23 74 11 FOR A DESCRIPTION OF THE RTU AND THE CONTROLS PROVIDED BY THE RTU MANUFACTURER.

SUPPLY FAN CONTROL:
RTU CONTROLLER SHALL MODULATE SIGNAL TO SUPPLY FAN VFD AS REQUIRED TO MAINTAIN DUCT STATIC PRESSURE SETPOINT AS MEASURED BY STATIC PRESSURE TRANSMITTER.

STATIC PRESSURE RESET:
FMCS SHALL RESET SUPPLY DUCT STATIC PRESSURE SETPOINT BELOW THE MAXIMUM SETPOINT AS REQUIRED TO MAINTAIN AT LEAST ONE SUPPLY TAB DAMPER 90% (ADJ.) OPEN. FMCS SHALL MONITOR ALL SUPPLY TERMINAL AIR BOX POSITIONS TO RESET THE SUPPLY DUCT DIFFERENTIAL STATIC PRESSURE.

EXHAUST FAN CONTROL:
RTU EXHAUST FAN SHALL ENERGIZE WHEN RTU IS IN ECONOMIZER MODE. RTU EXHAUST FAN SHALL DE-ENERGIZE WHEN RTU IS NOT IN ECONOMIZER MODE.

VENTILATION CONTROL:
WHENEVER THE UNIT IS IN OCCUPIED MODE THE OUTSIDE AIR DAMPER SHALL MODULATE TO MAINTAIN MINIMUM OUTSIDE AIR CFM BASED ON QUANTITY OF AIR FROM UNIT MOUNTED AIRFLOW MEASURING STATION.

SUPPLY AIR TEMPERATURE CONTROL:
DISCHARGE AIR TEMPERATURE SHALL BE 55°F (ADJ.). WHENEVER THE SUPPLY AIR TEMPERATURE IS ABOVE SETPOINT, THE FOLLOWING SHALL OCCUR IN SEQUENCE:
• MODULATE GAS BURNER OFF.
• MODULATE OA DAMPER AS REQUIRED UNTIL SET POINT IS REACHED.
• IF SET POINT CANNOT BE MAINTAINED BY OA DAMPER CONTROL, THE COMPRESSORS SHALL BE ENABLED AND MFR SHALL MODULATE COMPRESSOR CAPACITY AS REQUIRED TO MAINTAIN SET POINT.

WHENEVER THE DISCHARGE AIR TEMPERATURE IS BELOW SETPOINT, THE FOLLOWING SHALL OCCUR IN SEQUENCE:
• IF THE DISCHARGE AIR TEMPERATURE IS MORE THAN 5°F (ADJ) BELOW SETPOINT. MFR SHALL MODULATE COMPRESSORS OFF.
• MODULATE OA DAMPER AS REQUIRED UNTIL SET POINT IS REACHED.
• IF SET POINT CANNOT BE MAINTAINED BY OA DAMPER CONTROL, MODULATE GAS BURNER AS REQUIRED TO MAINTAIN SET POINT.

SEND AN ALARM TO THE CONTOLLER INTERFACE [FMCS] FOR THE FOLLOWING:
• SUPPLY FAN FAULT (AIRFLOW, CURRENT OR VFD)
• EXHAUST FAN FAULT (AIRFLOW, CURRENT OR VFD)
• DIRTY FILTERS (WHEN FILTER PRESSURE DROP EXCEEDS 0.6" W.C. (ADJ.)
• IF DISCHARGE AIR TEMPERATURE IS MORE THAN 10°F (ADJ.) ABOVE OR BELOW SETPOINT.
• EMERGENCY STOP

ECONOMIZER OPERATION:
WHEN O.A. TEMP DROPS BELOW 65°F (ADJ.) AND THE OUTSIDE AIR ENTHLAPY IS LESS THAN THE RETURN AIR ENTHLAPY, THE FMCS SHALL ENABLE ECONOMIZER CONTROLS. WHEN O.A. TEMP RISES ABOVE 70°F (ADJ.) OR WHEN O.A. ENTHLAPY IS GREATER THAN RETURN AIR ENTHLAPY FOR 10 MINUTES (ADJ.), THE FMCS SHALL DISABLE ECONOMIZER CONTROLS AND SHALL RETURN THE UNIT TO MIN. O.A. MODE.

RTU EXHAUST FAN SHALL OPERATE WHEN RTU IS IN ECONOMIZER MODE.

ONCE ECONOMIZER CONTROLS HAVE BEEN ENABLED OR DISABLED FROM OPERATION, THE UNIT SHALL CONTINUE TO OPERATE IN THAT MODE FOR A MIN. OF 10 MINUTES (ADJ.) BEFORE BEING ALLOWED TO SWITCHED BACK (TO PREVENT SHORT CYCLING).

IN ECONOMIZER MODE THE DDC FMCS SHALL MODULATE THE RETURN AND RELIEF DAMPERS AS REQUIRED TO MAINTAIN "M.A. TEMP" 3°F (ADJ.) BELOW RTU DISCHARGE AIR TEMPERATURE SETPOINT.

MIXED AIR TEMP SENSOR SHALL OVERRIDE ECONOMIZER DAMPER OPERATION THROUGH THE DDC FMCS TO PREVENT MIXED AIR TEMP FROM DROPPING BELOW 42°F (ADJ.).

WHENEVER RTU IS SHUTDOWN THE RTU CONTROLLER SHALL COMMAND THE FOLLOWING TO OCCUR:
• SUPPLY FAN AND EXHAUST FAN SHALL STOP.
• OUTSIDE AIR AND EXHAUST AIR DAMPERS SHALL FULLY CLOSE. THE RETURN AIR DAMPER SHALL FULLY OPEN.
• HEATING AND COOLING SHALL BE DISABLED
• OUTSIDE AIR AND RELIEF AIR DAMPER SHALL REMAIN CLOSED. RETURN AIR DAMPER SHALL BE 100% OPEN

UN-OCCUPIED MODE OPERATION:
• OUTSIDE AIR AND RELIEF AIR DAMPER SHALL REMAIN CLOSED. RETURN AIR DAMPER SHALL BE 100% OPEN.

1 AIR HANDLING UNIT - PACKAGED ROOFTOP UNIT WITH EXHAUST FAN
NO SCALE

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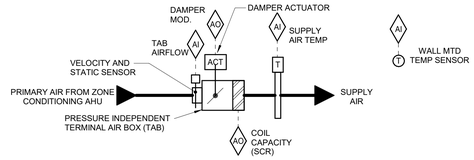


SEQUENCE OF OPERATION:

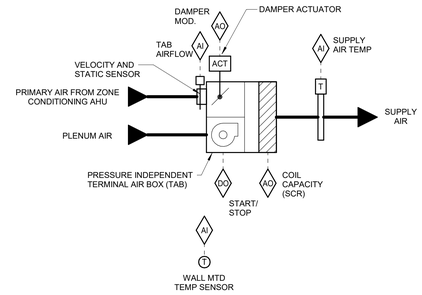
- FMCS TAB CONTROLLER SHALL MODULATE THE TAB DAMPER AND TAB ELECTRIC REHEAT COIL TO MAINTAIN SPACE TEMPERATURE OF 72°F (ADJ.) WITH 5°F (ADJ.) DEAD BAND BASED ON A SIGNAL FROM A WALL MOUNTED TEMPERATURE SENSOR. SEE DRAWINGS FOR TEMPERATURE SENSOR REQUIREMENTS. SPACES WITH ADJUSTABLE THERMOSTATS WILL ALLOW A +/- 3°F (ADJ.) OFFSET FROM THE DDC SETPOINT.
- AT FULL COOLING, THE TAB SHALL BE OPEN TO MAXIMUM CFM POSITION. THE REHEAT COIL SHALL BE DE-ENERGIZED.
- UPON A FALL IN SPACE TEMPERATURE, THE TAB SHALL MODULATE CLOSED UNTIL SPACE SETPOINT IS MAINTAINED, OR UNTIL IT REACHES ITS MINIMUM SCHEDULED CFM POSITION PER THE TAB SCHEDULE. THE REHEAT COIL SHALL REMAIN DE-ENERGIZED.
- UPON A FURTHER FALL IN SPACE TEMPERATURE, THE ELECTRIC REHEAT COIL AND TAB SHALL MODULATE OPEN IN UNISON TO MAINTAIN SPACE SETPOINT UNTIL TAB AIR FLOW REACHES ITS MAXIMUM HEATING SETTING.
- THE FMCS SHALL UTILIZE OUTPUT FROM ALL TERMINAL AIR BOX POSITIONS TO RESET THE SUPPLY DUCT DIFFERENTIAL STATIC PRESSURE.

ALARMS, INTERLOCKS & SAFETIES:

- SEND AN ALARM TO THE FMCS OPERATOR INTERFACE IF THE SPACE TEMPERATURE IS MORE THAN 10°F (ADJ.) ABOVE OR BELOW SETPOINT.
- IF THE HIGH TEMPERATURE SAFETY DEVICE EXCEEDS MANUFACTURER'S SETPOINT, AN ALARM SHALL BE SENT TO THE OPERATOR INTERFACE.

1 TAB CONTROL W/ ELECTRIC REHEAT

NO SCALE



SEQUENCE OF OPERATION:

- FMCS TAB CONTROLLER SHALL MODULATE THE TAB DAMPER, TAB ELECTRIC REHEAT COIL, AND FAN TO MAINTAIN SPACE TEMPERATURE OF 72°F (ADJ.) WITH 5°F (ADJ.) DEAD BAND BASED ON A SIGNAL FROM A WALL MOUNTED TEMPERATURE SENSOR. SEE DRAWINGS FOR TEMPERATURE SENSOR REQUIREMENTS. SPACES WITH ADJUSTABLE THERMOSTATS WILL ALLOW A +/- 3°F (ADJ.) OFFSET FROM THE DDC SETPOINT.
- AT FULL COOLING, THE TAB SHALL BE OPEN TO MAXIMUM CFM POSITION. THE REHEAT COIL SHALL BE DE-ENERGIZED AND THE SUPPLY FAN SHALL BE OFF.
- UPON A FALL IN SPACE TEMPERATURE, THE TAB SHALL MODULATE CLOSED UNTIL SPACE SETPOINT IS MAINTAINED, OR UNTIL IT REACHES ITS MINIMUM SCHEDULED CFM POSITION PER THE TAB SCHEDULE. THE REHEAT COIL SHALL BE DE-ENERGIZED AND THE SUPPLY FAN SHALL BE OFF.
- UPON A FURTHER FALL IN SPACE TEMPERATURE THE SUPPLY FAN SHALL BE ENERGIZED. THE REHEAT COIL SHALL REMAIN DE-ENERGIZED AND THE TAB DAMPER SHALL REMAIN AT MINIMUM SCHEDULED CFM POSITION PER THE TAB SCHEDULE.
- ON A FURTHER REDUCTION THE REHEAT COIL SHALL BE ENERGIZED AND MODULATE TO MAINTAIN SPACE SETPOINT.
- THE FMCS SHALL UTILIZE OUTPUT FROM ALL TERMINAL AIR BOX POSITIONS TO RESET THE SUPPLY DUCT DIFFERENTIAL STATIC PRESSURE.

UNOCCUPIED MODE:

UPON A FALL IN SPACE TEMPERATURE BELOW UNOCCUPIED SETPOINT, THE PARALLEL FAN MOTOR SHALL BE ENERGIZED AND THE ELECTRIC REHEAT SHALL MODULATE TO MAINTAIN SPACE TEMPERATURE.

ALARMS, INTERLOCKS & SAFETIES:

- SEND AN ALARM TO THE FMCS OPERATOR INTERFACE IF THE SPACE TEMPERATURE IS MORE THAN 10°F (ADJ.) ABOVE OR BELOW SETPOINT.
- IF THE AIR FLOW SENSOR DOES NOT PROVE OPERATION, AN ALARM SHALL BE SENT TO THE OPERATOR INTERFACE.
- IF THE HIGH TEMPERATURE SAFETY DEVICE EXCEEDS MANUFACTURER'S SETPOINT, AN ALARM SHALL BE SENT TO THE OPERATOR INTERFACE.
- WHEN FIRE ALARM CONTROL PANEL INDICATES AN ALARM CONDITION AT THE AHU SERVING FAN POWERED BOXES, ALL FAN POWERED BOX SUPPLY FANS SHALL STOP.

2 TAB CONTROL PARALLEL FAN POWERED - W/ ELECTRIC REHEAT

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PACKAGED ROOFTOP UNIT SCHEDULE (SUMMARY) (RTU)

REFER TO "PACKAGED ROOFTOP UNIT COMPONENT SCHEDULES" FOR ADDITIONAL INFORMATION

NOTES:
1. OPERATING WEIGHT INCLUDES UNIT, CURB, ACCESSORIES AND UNIT MOUNTED POWER EXHAUST. DUCT MOUNTED ACCESSORIES AND EQUIPMENT ARE NOT INCLUDED. CONTRACTOR IS RESPONSIBLE FOR ALL CHANGES REQUIRED DUE TO ROOFTOP UNIT HEAVIER THAN THE BASIS OF DESIGN AT NO ADDITIONAL COST.
2. UNIT SHALL BE PROVIDED WITH POWERED EXHAUST.

		FAN 1		OUTSIDE AIR	REFRIGERATION		COIL 1	COIL 2	FILTER 1	ELECTRICAL									CONTROL		CURB	VIBRATION ISO		MAXIMUM DIMENSIONS			WEIGHT LBS			
															DISCONNECT		CNTLR/STARTER													
TAG NAME	SERVICE	SERVICE	CFM DESIGN	MIN	TYPE	CHARGE LBS	SERVICE	SERVICE	SERVICE	VOLTS	PH	FLA	MCA	MOCP	BY [A]	TYPE [B]	BY [A]	TYPE [C]	SCCR	TYPE [H]	DIAGRAM	TYPE / BY [G]	TYPE	DEFL	LENGTH	HEIGHT	WIDTH	OPERATING (NOTE 1)	MANUFACTURER	MODEL	NOTES
RTU-6A	ALL ROOMS	SUPPLY AIR	4,000	900	R-454B	12	COOLING	HEATING	RTU-6A	480	3	25.5	28	35	MFR	NF	MFR	VFD	5,000	TYPE 2	1/V5.0	EXISTING	H2	3/4"	10'-3"	3'-11"	5'-1"	1,301	Lennox	LGT150H5P	NOTES 1 & 2

PACKAGED ROOFTOP UNIT COMPONENT SCHEDULE - FANS

REFER TO "PACKAGED ROOFTOP UNIT SCHEDULE (SUMMARY)" FOR ADDITIONAL INFORMATION

NOTES:
1. SUPPLY FAN SELECTION SHALL ACCOUNT FOR 0.53" OF EXTERNAL STATIC PRESSURE FROM THE FILTER.

	FAN 1 (NOTE 1)									FAN 2				
				CFM			MOTOR					CFM		MOTOR
TAG NAME	SERVICE	TYPE	QTY	DESIGN	EXT S.P. IN. WC	TOTAL S.P. IN. WC	QTY	MHP EA [E]	BHP EA [E]	SERVICE	QTY	DESIGN	EXT S.P. IN. WC	MHP EA [E]
RTU-6A	SUPPLY AIR	DIRECT DRIVE	1	4,000	1.95	2.59	1	3.75	3.77	POWERED EXHAUST	1	4,000	0.5	0.8

PACKAGED ROOFTOP UNIT COMPONENT SCHEDULE - REFRIGERATION

REFER TO "PACKAGED ROOFTOP UNIT SCHEDULE (SUMMARY)" FOR ADDITIONAL INFORMATION

NOTES:
1.STAGES: DIG = DIGITAL SCROLLS, VFD = INVERTER, # = NUMBER OF COMPRESSOR STAGES.

	AMBIENT TEMP °F		REFRIGERATION					
							COMPRESSOR	
TAG NAME	SUMMER DRY BULB	WINTER DRY BULB	TYPE	CHARGE LBS	STAGES (NOTE 1)	EFFICIENCY CLG EER	QTY	MHP EA
RTU-6A	95	-15	R-454B	12	DIG	10.8	2	0

PACKAGED ROOFTOP UNIT COMPONENT SCHEDULE - COILS

REFER TO "PACKAGED ROOFTOP UNIT SCHEDULE (SUMMARY)" FOR ADDITIONAL INFORMATION

NOTES:
1. LAT LISTED IS AT DISCHARGE OF COIL.

	COIL 1							COIL 2							
			MBH		EAT		LAT			EAT	LAT	FUEL			
TAG NAME	SERVICE	FLUID TYPE	TOTAL	SENSIBLE	DB °F	WB °F	DB °F	WB °F	SERVICE	FLUID TYPE	DB °F	DB °F	MBH INPUT	MBH OUTPUT	TURN DOWN (STAGES)	MIN AFUE (%)	INLET PSIG
RTU-6A	COOLING	REFRIGERANT	137.5	96.2	80	66.4	51.9	50.5	HEATING	NATURAL GAS	-15	44.9	240	194	2	80	7

PACKAGED ROOFTOP UNIT COMPONENT SCHEDULE - FILTERS

REFER TO "PACKAGED ROOFTOP UNIT SCHEDULE (SUMMARY)" FOR ADDITIONAL INFORMATION

NOTES:
1. SUPPLY FAN SELECTION SHALL ACCOUNT FOR 0.53" OF EXTERNAL STATIC PRESSURE FROM THE FILTER.

	FILTER 1 (NOTE 1)					
TAG NAME	SERVICE	TYPE	MERV	FACE FPM	INITIAL A.P.D. IN. W.C.	FINAL A.P.D. IN. W.C.
RTU-6A	RTU-6A	2"	13	1,152	0.08	0.53

TERMINAL AIR BOX SCHEDULE - ELECTRIC REHEAT (TAB)

NOTES:
1.NEITHER RADIATED NOR DISCHARGE SOUND LEVELS SHALL EXCEED NC 35 AT 1.5" INLET STATIC PRESSURE WHEN TESTED PER AHRI STANDARD 885-2008 USING 5/8" 20-LB DENSITY MINERAL FIBER CEILING TILE.
2.TOTAL AIR PRESSURE DROP OF TAB AND REHEAT COIL SHALL NOT EXCEED 0.50" WC.

			INLET	COOLING		HEATING		ELECTRIC ELEMENT				MAX NC VALUES		ELECTRICAL						CONTROL				
				CFM		CFM										DISCONNECT		CNTLR/STARTER						
TAG NAME	SERVICE	ARRANGEMENT	DIA	MAX	MIN	MAX	MIN	EAT DB °F	LAT DB °F	NO. OF STAGES	TOTAL KW (QTY * KW) QTY	KW	DISCH	RAD	VOLTS	PH	BY [A]	TYPE [B]	BY [A]	SCCR	TYPE [H]	DIAGRAM	MANUFACTURER	MODEL	NOTES
TAB-605	PODCAST ROOM AND STUDY ROOMS	SINGLE INLET	5"	225	150	150	150	55	86.6	SCR	1	1.5	29	21	208	1	MFR	F	MFR	5,000	4	1/V5.01	TITUS	DESV	NOTES 1 & 2

TERMINAL AIR BOX SCHEDULE - FAN POWERED WITH ELECTRIC REHEAT (FPTAB)

NOTES:
1.NEITHER RADIATED NOR DISCHARGE SOUND LEVELS SHALL EXCEED NC 35 AT 1.5" INLET STATIC PRESSURE WHEN TESTED PER AHRI STANDARD 885-2008 USING 5/8" 20-LB DENSITY MINERAL FIBER CEILING TILE.
2.TOTAL AIR PRESSURE DROP OF TAB AND REHEAT COIL SHALL NOT EXCEED 0.50" WC.

			INLET	COOLING CFM		HEATING CFM		FAN			ELECTRIC ELEMENT				MAX NC VALUES		ELECTRICAL							CONTROL		WEIGHT LBS			
								CFM	EXT S.P.	MOTOR									DISCONNECT		CNTLR/STARTER									
TAG NAME	SERVICE	ARRANGEMENT	DIA	MAX	MIN	MAX	MIN	DESIGN	IN. WC	MHP	EAT DB °F	LAT DB °F	NO. OF STAGES	TOTAL KW (QTY * KW) QTY	KW	DISCH	RAD	VOLTS	PH	BY [A]	TYPE [B]	BY [A]	SCCR	TYPE [H]	DIAGRAM	OPERATING	MANUFACTURER	MODEL	NOTES
FPTAB-601	SOCIAL LOUNGE	PARALLEL	10"	900	125	125	125	1,200	0.25	0.25	73.1	85	SCR	1	5	28	41	277	1	MFR	F	MFR	5,000	4	2/V5.1	200	TITUS	DTQP	NOTES 1 & 2
FPTAB-602	MEETING ROOM	PARALLEL	8"	500	100	100	100	500	0.25	0.17	71.7	84.8	SCR	1	2.5	31	40	208	1	MFR	F	MFR	5,000	4	2/V5.1	200	TITUS	DTQP	NOTES 1 & 2
FPTAB-603	CONFERENCE ROOM	PARALLEL	12"	1,175	225	225	225	925	0.25	0.25	74.3	84.8	SCR	1	5	25	39	277	1	MFR	F	MFR	5,000	4	2/V5.1	200	TITUS	DTQP	NOTES 1 & 2
FPTAB-604	REFERENCE DESK AND OPEN AREA	PARALLEL	12"	1,200	300	300	300	1,950	0.25	0.75	72.3	85	SCR	1	9	29	43	480	3	MFR	F	MFR	5,000	4	3/V5.1	200	TITUS	DTQP	NOTES 1 & 2

SCHEDULE GENERAL KEY

[A] DISCONNECT AND CNTLR/STARTER FURNISHED AND INSTALLED BY:
MFR = MANUFACTURER
EC = ELECTRICAL CONTRACTOR.

[B] DISCONNECT TYPE:
F = FUSED
NF = NON-FUSED

[C] CONTROLLER STARTER TYPE:
FV = FULL VOLTAGE
VFD = VARIABLE FREQUENCY DRIVE
ECM = ELECTRONICALLY COMMUTATED MOTOR

NOTE: PROVIDE SHAFT GROUNDING ON MOTORS DRIVEN BY A VFD AS REQUIRED PER SPECIFICATIONS 22 05 13 AND 23 05 13.

[D] RPM LIMITATION
FAN RPM SHALL NOT EXCEED 110% OF SCHEDULED VALUE, WITH THE SCHEDULED WHEEL TYPE. SUBSTITUTION OF BI OR BIA FANS FOR FC IS ACCEPTABLE IF EFFICIENCY IS NOT LOWER.

[E] HORSEPOWER LIMITATION
NO EQUIPMENT SHALL BE SELECTED ABOVE 90% OF MOTOR NAME PLATE RATING.

[F] RPM DEVIATION
MUST BE WITHIN +/- 10% OF SCHEDULED RPM.

[G] CURB / PAD TYPE:
STD = STANDARD CURB
SAC = SOUND ATTENUATOR CURB

[G] CURB / PAD BY:
MFR = MANUFACTURER
MC = MECHANICAL CONTRACTOR
GC = BY GENERAL CONTRACTOR

[H] CONTROL / SENSOR TYPE
1 = SENSOR ONLY
2 = SENSOR WITH ADJUSTMENT
3 = SENSOR WITH OVERRIDE
4 = SENSOR WITH ADJUSTMENT AND OVERRIDE.

AIR TERMINAL SCHEDULE (EG, RG, SD, etc.)

NOTES:
1. REFER TO DRAWINGS FOR NECK SIZE. ALL BRANCH DUCTWORK TO AIR TERMINALS SHALL BE NECK SIZE UNLESS NOTED OTHERWISE.
2. REFER TO DRAWINGS FOR FACE SIZES NOTED AS SEE DWG.
3. CONTRACTOR SHALL DETERMINE PROPER BORDER TYPE TO MATCH CEILING CONSTRUCTION.
4. DIFFUSERS WITH MULTIPLE SLOTS SHALL HAVE THE INNER MOST SLOT DIRECTED TOWARDS THE INTERIOR OF THE BUILDING, THE REMAINING SHALL BE DIRECTED TOWARDS THE EXTERIOR UNLESS NOTED OTHERWISE.
5. REGISTER WILL BE MOUNTED ON 12" DIAMETER ROUND DUCT.
6. REGISTER WILL BE MOUNTED ON 16" DIAMETER ROUND DUCT.
7. PROVIDE REGISTER WITH AIR SCOOP.

				FACE SIZE (NOTE 1, 2)			LINEAR SLOTS						
							SLOTS (NOTE 4)		PLENUM				
TAG NAME	TYPE	MATERIAL	FINISH	WIDTH	HEIGHT	BORDER (NOTE 3)	WIDTH	QTY	YES / NO	INSUL	MANUFACTURER	MODEL	NOTES
LD-1	LINEAR	STEEL	WHITE	48"	4"	SURFACE MOUNT	1/4"	NA	YES	YES	TITUS	CT-481	
LD-2	LINEAR	STEEL	WHITE	48"	6"	LAY-IN	1"	3	YES	YES	TITUS	TBD-80	
LD-3	LINEAR	STEEL	WHITE	48"	8"	LAY-IN	1"	4	YES	YES	TITUS	TBD-80	
LD-4	LINEAR	STEEL	WHITE	48"	4"	LAY-IN	1"	2	YES	YES	TITUS	TBD-10	
LR-1	LINEAR	STEEL	WHITE	48"	4"	LAY-IN	1"	2	YES	YES	TITUS	TBR-80	
RG-1	SINGLE DEFLECTION	STEEL	WHITE	SEE DWG	SEE DWG	SURFACE MOUNT	NA	NA	NA	NA	TITUS	350	
SR-1	DOUBLE DEFLECTION	STEEL	WHITE	10"	6"	DUCT MOUNT	NA	NA	NA	NA	TITUS	S300FL	NOTES 5 & 7
SR-2	DOUBLE DEFLECTION	STEEL	WHITE	10"	6"	DUCT MOUNT	NA	NA	NA	NA	TITUS	S300FL	NOTES 6 & 7

DUCTWORK APPLICATION SCHEDULE

NOTES:
1. REFER TO THE SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
2. REFER TO DRAWINGS FOR THE SHAPE OF DUCTWORK.
3. THE APPLICATION COLUMN, AS NOTED BELOW, SHALL TAKE PRECEDENCE OVER THE DRAWINGS UNLESS OTHERWISE NOTED.

							INSULATION			
ABBR.	SYSTEM	APPLICATION	MATERIAL	PRESS. CLASS	SEAL CLASS	ADDITIONAL REQUIREMENTS	TYPE	THICK	PLACE	NOTES
RA1	RETURN AIR Type 1	FROM AIR TERMINAL TO RTU	SINGLE WALL, GALVANIZED STEEL	NEG. 2"	A	NONE	C (FibGla)	1"	LINER	EXPOSED DUCTWORK SHALL BE PAINTED
RT	RETURN TRANSFER AIR	TRANSFER DUCTS BETWEEN SPACES	SINGLE WALL, GALVANIZED STEEL	NEG. 1/2"	A	NONE	C (FibGla)	1"	LINER	
SA1	SUPPLY AIR Type 1	EXPOSED ROUND SUPPLY DUCT	DOUBLE WALL, GALVANIZED STEEL	POS. 2"	A	NONE	A (FibGla)	1 1/2"	WRAP	EXPOSED DUCTWORK SHALL BE PAINTED
SA2	SUPPLY AIR Type 2	CONCEALED ROUND DUCT IN CONDITIONED SPACE	SINGLE WALL, GALVANIZED STEEL	POS. 2"	A	NONE	A (FibGla)	1 1/2"	WRAP	
SA3	SUPPLY AIR Type 3	CONCEALED DUCT IN PLENUM	SINGLE WALL, GALVANIZED STEEL	POS. 2"	A	NONE	A (FibGla)	1 1/2"	WRAP	
SA4	SUPPLY AIR Type 4	EXPOSED RECTANGULAR DUCT	SINGLE WALL, GALVANIZED STEEL	POS. 2"	A	NONE	C (FibGla)		LINER	EXPOSED DUCTWORK SHALL BE PAINTED

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REF. SCALE IN INCHES

SHEET TITLE
VENTILATION SCHEDULES

PROJECT TITLE
City of Marshalltown
MARSHALLTOWN PUBLIC LIBRARY
INTERIOR REMODEL
105 W BOONE ST, MARSHALLTOWN, IA 50158

DATE ISSUED 11-04-2025
REV. NO. DATE

PROJECT NUMBER
2022226

SHEET
V6.0

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SYSTEM INPUTS / SEQUENCE OF OPERATION		PANEL/ANNUNCIATOR ALARM INDICATION	PANEL/ANNUNCIATOR SUPERVISORY INDICATION	PANEL/ANNUNCIATOR TROUBLE INDICATION	AUDIBLE ALARMS SEQUENCE	VISUAL ALARMS SEQUENCE	CM AHU & MECHANICAL FAN SHUTDOWN SEQUENCE	CM LIGHTING CONTROL OVERRIDE SEQUENCE
MANUAL PULL STATION	FT	X			X	X	X	X
SMOKE DETECTOR	S #/_	X			X	X	X	X
HEAT DETECTOR	H #/_	X			X	X	X	X
SMOKE DETECTOR FOR HVAC CONTROL	1 S	X	X	X			X	

1 FIRE ALARM OPERATION MATRIX
NO SCALE

ELECTRICAL SYMBOL LIST

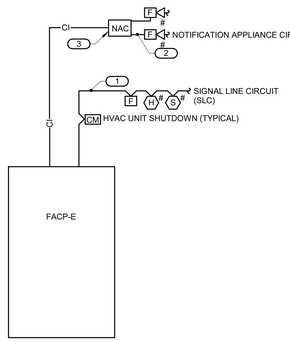
SYMBOL:	TAG:	SPEC SECTION:	DESCRIPTION:
E	ECONN	26 05 33	ELECTRICAL CONNECTION
FB-# or PT-#	FB-# or PT-#	26 27 26	FLOOR BOX or POKE THROUGH
RI	RI-TECH	26 05 33	TECHNOLOGY OUTLET ROUGH-IN
RI	RI-TECH-C	26 05 33	TECHNOLOGY ROUGH-IN, CEILING
	PANEL '###'	EXISTING	PANELBOARD - SURFACE MOUNT

ELECTRICAL SYMBOL LIST

SYMBOL:	TAG:	SPEC SECTION:	DESCRIPTION:
	REC-DUP	26 27 26	DUPLEX RECEPTACLE, 125V
W	REC-DUP-WP	26 27 26	DUPLEX GFI WEATHERPROOF RECEPTACLE 125V
	REC-TAMP	26 27 26	DUPLEX RECEPTACLE, TAMPER RESISTANT, 125V
	REC-TAMP-QUAD	26 27 26	QUAD RECEPTACLE, TAMPER RESISTANT, 125V

CONTACT PERSONS:

DESCRIPTION:	PERSON:
PROJECT MANAGER	DAVE INGHRAM
MECHANICAL	LUCAS HEITZ
ELECTRICAL	KY HILL



NOTES:

1. THE RISER DIAGRAM IS INTENDED TO CONVEY THE TYPES OF FIRE ALARM CONNECTIONS AND SPECIFICALLY DOES NOT INDICATE QUANTITIES, NUMBER OF CIRCUITS REQUIRED OR DISTANCES.
2. THE COMPLETE FIRE ALARM SYSTEM SHALL MEET ALL APPLICABLE CODES AND MANUFACTURER'S RECOMMENDATIONS.
3. CONTRACTOR SHALL COORDINATE ALL WIRE SIZES, TYPES AND REQUIREMENTS WITH THE VENDOR PRIOR TO BID. REFER TO SPECIFICATIONS TO DETERMINE CIRCUIT STYLES AND IF CONDUIT IS REQUIRED OR PLENUM RATED CABLE IS ACCEPTABLE.
4. ALL +120VAC WIRING REQUIRED FOR OPERATION OF THE SYSTEM AS DESCRIBED IN THE CONSTRUCTION DOCUMENTS SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR.
5. ALL NECESSARY RELAYS MAY NOT BE SHOWN ON THIS PLAN, BUT WHERE REQUIRED FOR PROPER OPERATION OF THE SYSTEM THEY SHALL BE PROVIDED BY THE CONTRACTOR.

KEYNOTES: (#)

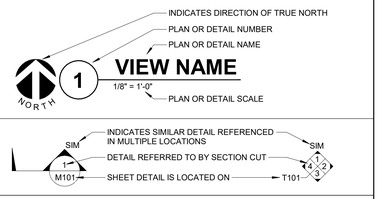
1. REFER TO SPECIFICATION FOR REQUIREMENTS OF EACH INITIATION LOOP AND WIRING STYLE. REFER TO FLOOR PLANS FOR DEVICES AND THEIR LOCATIONS.
2. REFER TO SPECIFICATION FOR REQUIREMENTS OF EACH NOTIFICATION APPLIANCE CIRCUIT AND WIRING STYLE. REFER TO FLOOR PLANS FOR DEVICES AND THEIR LOCATIONS.
3. PROVIDE NOTIFICATION APPLIANCE EXTENDER PANELS AS REQUIRED. DETERMINATION OF NEED TO BE MADE BY FIRE ALARM VENDOR. REFER TO SPECIFICATIONS FOR REQUIREMENTS AND ACCEPTABLE MOUNTING LOCATIONS.

2 FIRE ALARM RISER
NO SCALE

VIEW KEY

NAME — LEVEL NAME
10'-0" — HEIGHT ABOVE PROJECT 0'-0"

1 — KEYNOTE: INDICATES NOTE USED TO DESCRIBE ADDITIONAL INFORMATION ABOUT WORK REQUIRED, SPECIFIC TO THE SHEET AND/OR DETAIL



LINE TYPE AND TAG KEY:

NEW WORK BY THIS CONTRACTOR (WIDE LINE)
——— NEW
– – – – EXISTING TO BE REMOVED (SHORT DASHED PATTERN)
— — — NEW UNDERFLOOR OR UNDERGROUND (LONG DASHED PATTERN)

EXISTING TO REMAIN OR WORK BY OTHERS (NARROW LINE)
——— EXISTING
– – – – EXISTING TO BE REMOVED BY OTHERS (SHORT DASHED PATTERN)
— — — EXISTING UNDERFLOOR OR UNDERGROUND (LONG DASHED PATTERN)

HALFTONING DOES NOT MODIFY SCOPE.

'TAG'-E — TAGS WITH DASH 'E' INDICATES THE REFERENCED OBJECT IS EXISTING

TAG-1 — UNDERLINED TAG INDICATES OBJECT IS IN-SCOPE. IF NEW, ADDITIONAL INFORMATION IS AVAILABLE IN A SCHEDULE, MATERIAL LIST, OR SYMBOL LIST

INDICATES AN EXISTING SYSTEM'S POINT OF CONNECTION/REMOVAL

ELECTRICAL SYMBOL LIST

SYMBOL:	TAG:	SPEC SECTION:	DESCRIPTION:
COMMON AND SEQUENCE OF OPERATION SUBSCRIPTS			SUBSCRIPTS: TYPE / PROGRAMMING # = 15, 30, 75, 110, 177 CANDELA RATING
	--	EXISTING	FIRE ALARM CONTROL PANEL
S #	FA-120	28 31 00	FIRE ALARM SMOKE DETECTOR, CEILING OR WALL MOUNT BLANK - PHOTOELECTRIC
S	FA-122	28 31 00	FIRE ALARM DUCT SMOKE DETECTOR # = EQUIP OR SYSTEM
FT	FA-131	28 31 00	FIRE ALARM MANUAL PULL STATION W/ COVER
	FA-200	28 31 00	FIRE ALARM VISUAL ALARM DEVICE, CEILING OR WALL MOUNT # = CANDELA RATING.
F # F #	FA-210	28 31 00	AUDIO HORN/CHIME ALARM DEVICE, CEILING OR WALL MOUNTED
	FA-211	28 31 00	COMBINATION AUDIO HORN/CHIME AND VISUAL ALARM DEVICE, CEILING OR WALL MOUNTED # = CANDELA RATING
CM	FA-161	28 31 00	FIRE ALARM ADDRESSABLE CONTROL MODULE BLANK = REFER TO PLANS LC = LIGHTING CONTROL OVERRIDE
RI	RI-TECH	26 05 33	TECHNOLOGY OUTLET ROUGH-IN

APPLICABLE CODES

CONTRACTOR SHALL COMPLY WITH APPLICABLE CODES AND LOCAL AMENDMENTS INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING:

BUILDING CODE:	IBC 2021 EDITION
FIRE CODE:	IFC 2021 EDITION
PLUMBING CODE:	UPC 2021 EDITION
MECHANICAL CODE:	IMC 2021 EDITION
ELECTRICAL CODE:	NFPA 70 (NEC) 2020 EDITION
LIFE SAFETY CODE:	NFPA 101 2021 EDITION
ENERGY CONSERVATION CODE:	IECC 2012
HEALTH DEPARTMENT CODE:	CURRENT EDITION
LOCAL BUILDING CODE:	CURRENT EDITION

CONTRACTOR ABBREVIATION KEY

ABBR:	DESCRIPTION:
A.V.C.	AUDIO/VISUAL CONTRACTOR
C.M.	CONSTRUCTION MANAGER
E.C.	ELECTRICAL CONTRACTOR
F.P.C.	FIRE PROTECTION CONTRACTOR
G.C.	GENERAL CONTRACTOR
M.C.	MECHANICAL CONTRACTOR
P.C.	PLUMBING CONTRACTOR
S.C.	SECURITY CONTRACTOR
T.C.	TECHNOLOGY CONTRACTOR
T.C.C.	TEMPERATURE CONTROLS CONTRACTOR

ELECTRICAL SYMBOL LIST

SYMBOL:	TAG:	SPEC SECTION:	DESCRIPTION:
S ##	SW-1P	26 09 34	SWITCH SUBSCRIPTS: BLANK = SINGLE POLE
LS ##	SW-LS	26 09 34	DAYLIGHT LEVEL SENSOR - CEILING MOUNTED SUBSCRIPTS: BLANK = DIMMING CONTROL # = SPECIAL FUNCTION
OC ##	SW-OC-D	26 09 34	OCCUPANCY SENSOR - CEILING MOUNTED SUBSCRIPTS: BLANK = DUAL TECHNOLOGY
#B ##	SW-#B	26 09 34	LIGHTING CONTROL STATION - DEFAULT DIMMED CONTROL - # DEFINES MINIMUM QUANTITY OF CONTROL SCENES, PLUS OFF, REFER TO LIGHTING SEQUENCE OF OPERATIONS WHEN NOT DEFINED. SUBSCRIPTS: BLANK = DIMMING CONTROL S = SWITCHED CONTROL # = UNIQUE ID WHEN APPLICABLE

LIGHTING SYSTEM DESCRIPTION KEY:

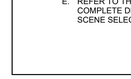
THE DESIGN DOCUMENTS DESCRIBE THE OPERATIONAL PERFORMANCE REQUIREMENTS OF THE LIGHTING CONTROL SYSTEM. THE PROJECT MAY REQUIRE ONE OR MORE LIGHTING CONTROL STRATEGIES FOR THE PROJECT. REFER TO THE ELECTRICAL SYMBOL KEY, SPECIFICATION SECTION 26 09 33 LIGHTING CONTROL SYSTEMS, AND THE DRAWINGS TO DETERMINE THE DESIGN APPLICATION FOR EACH SPACE. THE POTENTIAL STRATEGIES ARE AS FOLLOWS:

1. STANDALONE LIGHTING CONTROL DEVICES: INDEPENDENT (STANDALONE) DEVICES TRADITIONALLY OPERATING AT LINE OR LOW VOLTAGE, FIELD CONFIGURABLE WITH OTHER STANDALONE DEVICES TO PROVIDE AN OVERALL LIGHTING CONTROL SYSTEM.
2. ROOM BASED LIGHTING CONTROLS: INTEGRATED SYSTEM COMPRISED OF SWITCH STATIONS, SENSORS, ROOM CONTROLLERS, CONTROL PANELS, AND ACCESSORIES, OPERATING AT LINE AND/OR LOW VOLTAGE, CONFIGURED AS AN INTEGRATED OVERALL 'INTELLIGENT' LIGHTING CONTROL SYSTEM. LIGHTING CONTROL ZONES AND POWER CIRCUITS COMMONLY ALIGN.

LIGHTING CONTROL SYSTEM DESIGNATION: THE FOLLOWING KEY MAY BE USED AS AN EXAMPLE TO DETERMINE THE DESIGNATED LIGHTING CONTROL SYSTEM FOR EACH SPACE. REFER TO ELECTRICAL COVERSHEET FOR ELECTRICAL SYMBOLS LIST AND DEVICE SPECIFICATION TAG. REFER TO THE SPECIFICATIONS FOR ADDITIONAL INFORMATION.

1. STANDALONE LIGHTING CONTROL DEVICES: CONTROL STATION COMMONLY DEFINED BY AN ALPHA CHARACTER WITH SUBSCRIPTS.
   A. EXAMPLE SYMBOL "S", SPECIFICATION TAG "SW-1P", DESCRIPTION "SWITCH-SINGLE POLE SWITCH".
   B. EXAMPLE CONTROL DESIGNATION: a, b, c (WHEN REQUIRED TO CLARIFY DESIGN INTENT).
   C. SINGLE POLE LIGHT SWITCH "SA" CONTROLS LUMINAIRES WITH THE SUBSCRIPT "a" WITHIN THE SAME SPACE.
   D. REFER TO THE LIGHT CONTROL SEQUENCE OF OPERATION TAG (L#-##) FOR A COMPLETE DESCRIPTION OF THE LIGHTING CONTROL REQUIREMENTS.

2. ROOM BASED LIGHTING CONTROLS: CONTROL STATION COMMONLY DEFINED BY A RECTANGLE SYMBOL.
   A. EXAMPLE CONTROL STATION: SYMBOL "#B", TAGGED "SW-#B", DESCRIPTION "LIGHTING CONTROL STATION".
   B. EXAMPLE PANEL/RACK/CABINET: TAGGED "LCPR#", DESCRIPTION "ROOM BASED LIGHTING CONTROL PANEL/RACK/CABINET.
   C. EXAMPLE CONTROL DESIGNATIONS: a, b, c
   D. LIGHTING CONTROL STATION "#B" a,b CONTROLS LUMINAIRES WITH THE SUBSCRIPT "a" AND "b" WITHIN THE SAME SPACE
   E. REFER TO THE LIGHT CONTROL SEQUENCE OF OPERATION TAG (L#-##) FOR A COMPLETE DESCRIPTION OF THE LIGHTING CONTROL AND PRE-PROGRAMMED SCENE SELECTION REQUIREMENTS.



LIGHTING CONTROL NOTES:

LIGHTING CONTROL NOTES:

(L#-##) INDICATES THE LIGHTING SEQUENCE OF OPERATION FOR THE SPACE. REFER TO THE LIGHTING SEQUENCE OF OPERATION MATRIX ON SHEET E/6.0.

(#B) LIGHTING CONTROL STATION. THE "#" INDICATES THE MINIMUM QUANTITY OF ZONES/SCENES AS DEFINED IN THE LIGHTING SEQUENCE OF OPERATIONS. THE LIGHTING CONTROL STATION SHALL PROVIDE SEPARATE ON AND OFF AS WELL AS RAISE AND LOWER BUTTON(S). PRESS AND HOLD BUTTONS FOR DIMMING ARE NOT ACCEPTABLE. CONTROL SHALL BE CAPABLE OF DIMMING UP/DOWN AND SWITCHING AS DEFINED IN THE LIGHTING SEQUENCE OF OPERATIONS. REFER TO DRAWINGS AND LUMINAIRE SUBSCRIPTS TO DETERMINE IF A ROOM BASED CONTROLLER (a, b, c SUBSCRIPTS) IS REQUIRED.

LIGHTING CONTROL SUBSCRIPTS:
1. LOWER CASE ALPHA SUBSCRIPTS "a, b, c" INDICATE LINE VOLTAGE OR ROOM BASED LIGHTING CONTROL SYSTEMS. REFER TO DRAWINGS TO DETERMINE IF LINE VOLTAGE CONTROL (S, S3, S4, ETC) OR (#B) ROOM BASED CONTROLLER SYSTEM (#B) IS REQUIRED.

EMERGENCY LIGHTING OVERRIDE CONTROL (UL924 AND UL1008): LIGHTING CONTROL EQUIPMENT COUPLED WITH REMOTE EMERGENCY POWER SOURCES (EXTERNAL TO THE LUMINAIRE) REQUIRE ALCR (UL924) OR BCELTS (UL1008) DEVICES FOR EMERGENCY (LIFE SAFETY) COMPLIANCE. AN EMERGENCY LIGHTING CONTROL BYPASS IS REQUIRED FOR EVERY INDIVIDUAL LIGHTING CONTROL ZONE-CIRCUIT BUT NOT SHOWN ON THE PLANS. REFER TO THIS SPECIFICATION FOR ALCR AND BCELTS DESCRIPTIONS. REFER TO THE SEQUENCE OF OPERATION LIGHTING CONTROL DESCRIPTIONS ON THE PLANS FOR ADDITIONAL REQUIREMENTS.

REFER TO SHEET E-6.0 FOR LUMINAIRE SCHEDULE

LUMINAIRE CIRCUIT AND CONTROL KEY

E1 = FIXTURE TAG
1 = CIRCUIT NUMBER
a = SWITCH DESIGNATION
NL INDICATES LUMINAIRE IS UNSWITCHED FOR NIGHT LIGHT.
"SE" INDICATES LUMINAIRE IS SWITCHED/CONTROLLED DURING NORMAL OPERATION AND OPERATES FROM EMERGENCY BATTERY (EXTEND UNSWITCHED CIRCUIT LEG TO BATTERY) UPON LOSS OF POWER.

*IF LABEL IS ORIENTED HORIZONTALLY A SLASH WILL SEPARATE THIS INFORMATION. EX: F1 / 1 / a / NL

LUMINAIRE SHADING KEY

NORMAL BRANCH LUMINAIRE

EMERGENCY BATTERY BACK-UP LUMINAIRE

SHADED LUMINAIRE INDICATES LUMINAIRE IS CONNECTED TO AN EMERGENCY CIRCUIT.

ELECTRICAL RENOVATION NOTES:

THESE NOTES APPLY TO ALL ELECTRICAL SHEETS AND TRADES, INCLUDING BUT NOT LIMITED TO, LIGHTING, POWER, FIRE ALARM, AND OTHER LOW VOLTAGE SYSTEMS.

1. EXISTING CONDITIONS ARE SHOWN BASED ON INFORMATION OBTAINED FROM FIELD SURVEYS, EXISTING BUILDING DOCUMENTS. CONTRACTOR SHALL REVIEW EXISTING CONDITIONS AND REPORT CONFLICTS.
2. NOT ALL EXISTING EQUIPMENT, LUMINAIRES, AND CONDUIT ARE SHOWN. CONTRACTOR SHALL REVIEW EXISTING CONDITIONS AND REPORT CONFLICTS.
3. CONTRACTOR SHALL REVIEW EXISTING CONDITIONS PRIOR TO FABRICATION OF CABLE TRAY, BUSWAY, CONDUIT RACKS, AND OTHER SYSTEMS. RISES AND DROPS MAY BE NECESSARY BECAUSE OF EXISTING FIELD CONDITIONS.
4. ELECTRICAL CONTRACTOR SHALL REVIEW EXISTING CONDITIONS TO VERIFY ACCESSIBILITY TO THE AREAS OF THEIR WORK INCLUDING WALLS, FLOOR, CEILINGS, CEILING TILES/GRID, AND ROOF. ELECTRICAL CONTRACTOR IS RESPONSIBLE TO PROVIDE CUTTING, REMOVAL, PATCHING, AND REINSTALLATION OF AFFECTED AREAS ASSOCIATED WITH THEIR WORK BY COORDINATING WITH THE GENERAL CONTRACTOR OR QUALIFIED CONTRACTOR. CONTRACTOR SHALL NOTIFY THE PRIME CONTRACTOR OF AFFECTED AREAS PRIOR TO BIDDING.
5. WHERE EXISTING ELECTRICAL SYSTEMS ARE LOCATED IN AREAS THAT CONFLICT WITH NEW EQUIPMENT, PIPING, OR DUCTWORK TO BE INSTALLED, EACH CONTRACTOR SHALL EITHER ARRANGE NEW EQUIPMENT, CONDUIT, OR DUCTWORK IN SUCH A FASHION THAT IT DOES NOT CONFLICT WITH EXISTING SYSTEMS, OR REWORK EXISTING ELECTRICAL SYSTEMS TO ALLOW FOR INSTALLATION OF NEW EQUIPMENT, PIPING, OR DUCTWORK.

ELECTRICAL PHASING NOTES:

THESE NOTES APPLY TO ALL ELECTRICAL SHEETS AND TRADES, INCLUDING BUT NOT LIMITED TO, LIGHTING, POWER, FIRE ALARM, AND OTHER LOW VOLTAGE SYSTEMS.

1. REFER TO ARCHITECTURAL DRAWINGS FOR GENERAL DESCRIPTION OF PHASES.
2. REFER TO CONSTRUCTION MANAGER'S INSTRUCTIONS FOR MORE DETAILS AND PHASING SCHEDULES AND FOR CONCURRENT WORK. MECHANICAL, ELECTRICAL AND TECHNOLOGY DRAWINGS DEPICT THE INTENT OF THE FINAL DESIGN. THE MECHANICAL, ELECTRICAL, AND TECHNOLOGY DRAWINGS DO NOT DEPICT THE MEANS AND METHODS TO MEET THE REQUIREMENTS OF THE PHASING CRITERIA.
3. REVIEW PROJECT PHASING PLANS TO COORDINATE DEMOLITION WORK, OUTAGES, ETC. WITH AFFECTED ADJACENT AREAS.
4. PROVIDE TEMPORARY LIGHTING, POWER, FIRE ALARM, AND OTHER LOW VOLTAGE SYSTEMS, ETC. AS NEEDED TO MAINTAIN SERVICE TO ALL AREAS DURING ALL PHASES OF PROJECT.

EQUIPMENT ABBREVIATION KEY

ABBR:	DESCRIPTION:
AD	AUTOMATIC DOOR OPERATOR WITH SENSOR
COPY	COPIER
DB	DOOR BELL
DOOR	DOOR OPERATOR, ELECTRIC
EWC	ELECTRIC WATER COOLER
EWCC	ELECTRIC WATER COOLER CONDENSER
FAN	CEILING FAN
FDO	FIRE DOOR OPERATOR
FFE	OWNER FURNISHED FIXTURES, FURNITURE, AND EQUIPMENT
FURN	OWNER FURNITURE
HD	HAND DRYER
MS	MOTORIZED SHADE
PFR	PLUMB FIXTURE RECEPT FOR LV VALVE POWER
PP	PUSH PAD AUTOMATIC DOOR OPERATOR (REFER TO ARCHITECTURAL PLANS FOR FINAL LOCATION)
TCP	TEMPERATURE CONTROLS PANEL
TV	TELEVISION - MONITOR - DISPLAY

ELECTRICAL SHEET INDEX

E0.0	ELECTRICAL COVERSHEET
E0.1	FIRST FLOOR DEMOLITION PLAN - ELECTRICAL
E0.2	ROOF DEMOLITION PLAN - ELECTRICAL
E1.1	FIRST FLOOR PLAN - LIGHTING
E2.0	OVERALL FIRST FLOOR PLAN - POWER
E2.1	FIRST FLOOR PLAN - POWER
E2.2	ROOF PLAN - POWER
E3.1	FIRST FLOOR PLAN - SYSTEMS
E4.0	ELECTRICAL DETAILS
E6.0	ELECTRICAL SCHEDULES
GRAND TOTAL: 10	

CONDUIT INSTALLATION SCHEDULE

THE FOLLOWING SCHEDULE SHALL BE ADHERED TO UNLESS THEY CONSTITUTE A VIOLATION OF APPLICABLE CODES OR ARE NOTED OTHERWISE ON THE DRAWINGS. THE INSTALLATION OF RMC CONDUIT WILL BE PERMITTED IN PLACE OF ALL CONDUIT SPECIFIED IN THIS SCHEDULE. REFER TO CONDUIT AND BOXES SPECIFICATION 26 05 33 FOR ADDITIONAL INFORMATION.

INSTALLATION TYPE	RMC	EMT
BRANCH CIRCUITS: LIGHTING, RECEPTACLES, CONTROLS, ETC.		X
MECHANICAL EQUIPMENT FEEDERS: PUMPS, CHILLERS, AIR HANDLING UNITS, ETC.		X
CONTROLS (LIGHTING, POWER, BUILDING AUTOMATION, ETC.)		X
WET AND DAMP LOCATIONS: (CONDUIT, BOXES, FITTINGS, INSTALLED AND EQUIPPED TO PREVENT WATER ENTRY)	X	
INTERIOR LOCATIONS WITH FINISHED CEILING AND WALLS: CONCEALED IN WALLS AND ABOVE FINISHED CEILINGS		X
INTERIOR LOCATIONS WITHOUT FINISHED CEILINGS: CONCEALED IN WALL, EXPOSED ABOVE CEILINGS		X
EXISTING INTERIOR LOCATIONS WITH FINISHED CEILINGS AND WALLS: CONCEALED IN WALLS AND ABOVE FINISHED CEILING UNLESS OTHERWISE NOTED		X

ELECTRICAL ABBREVIATION KEY

ABBR:	DESCRIPTION:
ABV	ABOVE
AFC	ABOVE FINISHED CEILING
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
ASR	ARCHITECTURAL SURFACE RACEWAY
BC	BELOW COUNTER
C	CONDUIT (BRANCH CIRCUIT OR FEEDER CONTEXT)
CO	CONDUIT AND BOX ROUGH-IN ONLY (ROUGH-IN ONLY)
EG	EQUIPMENT GROUND
EGC	EQUIPMENT GROUNDING CONDUCTOR
EOL	END OF LINE
EPO	EMERGENCY POWER OFF
GFR	GROUND FAULT REMOTE
HOA	HAND/OFF/AUTO
ITR	IT RACK MOUNTED RECEPTACLE
NC	NORMALLY CLOSED
NEMA #	NEMA RATING
NIC	NOT IN CONTRACTED SCOPE
NO	NORMALLY OPEN
ROOF	EQUIPMENT LOCATED ON ROOF ABOVE
SM	SURFACE MOUNTED
TYP	TYPICAL
UG	UNDERGROUND
UON	UNLESS OTHERWISE NOTED

ELECTRICAL INSTALLATION NOTES:

1. THE COMPLETE INSTALLATION SHALL BE IN ACCORDANCE WITH THE 2010 (LATEST PUBLISHED) ADA STANDARDS FOR ACCESSIBLE DESIGN. CIRCUIT NUMBERS ARE SHOWN FOR CIRCUIT IDENTIFICATION. CIRCUITING SHALL AGREE WITH NUMBERING ON THE PANEL PROVIDED. COMMON NEUTRALS MAY NOT BE USED FOR BRANCH CIRCUITS. BALANCE THE LOAD ON PANEL AS EVENLY AS POSSIBLE BETWEEN EACH PHASE.
2. EMERGENCY BRANCH WIRING FOR FEEDERS AND BRANCH CIRCUITS SHALL BE ROUTED IN SEPARATE RACEWAY, JUNCTION BOXES, PULL BOXES, AND CABINETS. WIRING FOR EACH BRANCH SHALL BE INDEPENDENT FROM OTHER BRANCHES, INCLUDING THE NORMAL BRANCH.
3. FLUSH MOUNT ALL LIGHTING CONTROL DEVICES AT +42" FROM FLOOR (CENTERLINE DIMENSION), EXCEPT WHERE OTHERWISE NOTED.
4. FLUSH MOUNT ALL DUPLEX RECEPTACLES AND TECHNOLOGY OUTLETS AT +18" FROM FLOOR (CENTERLINE DIMENSION), EXCEPT WHERE OTHERWISE NOTED. RECEPTACLES AND OUTLETS MAY BE SURFACE MOUNTED WHEN CONDUIT IS SPECIFIED EXPOSED. MOUNT EXTERIOR LOCATED RECEPTACLES WITH WHILE-IN-USE COVERS AT +20" FROM FINISHED GRADE (CENTER DIMENSIONS) TO MAINTAIN INSTALLATION ADA COMPLIANCE.
5. ALL MATERIALS USED TO SEAL PENETRATIONS OF FIRE RATED WALLS AND FLOORS SHALL BE TESTED AND CERTIFIED AS A SYSTEM PER ASTM E814 STANDARDS FOR FIRE TESTS OF THROUGH-PENETRATION FIRESTOPS. REFER TO 26 05 03 FOR ADDITIONAL INFORMATION AND REQUIREMENTS SPECIFIC TO FIRESTOPPING.
6. CONNECTION FOR ELECTRIC WATER COOLERS (EWC) SHALL BE A JUNCTION BOX CONCEALED BEHIND WATER COOLER ACCESS PLATE OR BE A GFI RECEPTACLE LOCATED DIRECTLY BELOW AND CENTERED ON EWC. CONTRACTOR SHALL VERIFY TYPE OF EWC TO BE INSTALLED.
7. MOUNT ALL FIRE ALARM PULL STATIONS AT +42" FROM FLOOR (CENTERLINE DIMENSION) EXCEPT WHERE OTHERWISE NOTED.
8. INSTALL ALL WALL MOUNTED FIRE ALARM NOTIFICATION DEVICES AT 90" ABOVE FINISHED FLOOR OR 8" BELOW THE CEILING, WHICHEVER IS LOWER, EXCEPT WHERE OTHERWISE NOTED. HEIGHT SHALL BE MEASURED TO THE TOP OF THE DEVICE.
9. CONTRACTOR SHALL COORDINATE THE LOCATION OF ALL CEILING MOUNTED DEVICES AND EQUIPMENT WITH LUMINAIRES, SPRINKLER, AND CEILING DIFFUSERS. CENTER ALL DEVICES IN CEILING TILE PATTERN. SMOKE DETECTORS,CARBON MONOXIDE DETECTORS, AND OCCUPANCY/VACANCY SENSORS SHALL BE LOCATED NO CLOSER THAN 3 FEET TO AN AIR SUPPLY DIFFUSER OR RETURN GRILLE. CARBON MONOXIDE DETECTORS SHALL BE LOCATED 10 PLUS FT FROM FIRE PLACES, COOKING, AND SIMILAR FUEL-BURNING APPLIANCES
10. CONTRACTOR SHALL VERIFY ALL FURNITURE, MODULAR FURNITURE, AND EQUIPMENT LOCATIONS WITH ARCHITECTURAL PLANS, ELEVATIONS, AND REVIEWED SHOP DRAWINGS. PRIOR TO MAKING THE ACTUAL ELECTRICAL INSTALLATION, THIS CONTRACTOR SHALL ADJUST RECEPTACLES, OUTLETS, OR CONNECTION LOCATIONS TO ACCOMMODATE FURNITURE AND/OR EQUIPMENT.
11. ELECTRICAL AND TECHNOLOGY EQUIPMENT SHALL BE MOUNTED TO AVOID IMPEDANCE OF, OPERATION OF, AND/OR ACCESS TO ELECTRICAL AND MECHANICAL EQUIPMENT. ALL MOUNTING OF ELECTRICAL AND TELECOMMUNICATIONS EQUIPMENT, ON EQUIPMENT SUPPLIED BY ANOTHER CONTRACTOR, SHALL BE APPROVED IN ADVANCE BY THE OTHER CONTRACTOR.
12. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN, ELECTRICAL, TECHNOLOGY AUDIO/VISUAL, AND OTHER ELECTRICAL PLANS FOR EXACT LOCATIONS OF ALL CEILING MOUNTED DEVICES, OTHER THAN SPRINKLERS.
13. ELECTRICAL IDENTIFICATION. REFER TO SPECIFICATION SECTION 26 05 53 FOR COLOR/LABEL REQUIREMENTS FOR CONDUIT, BOX, CABLE/WIRE, AND EQUIPMENT.

RECEPTACLE SUBSCRIPT KEY:

DEVICE KEY:

DEVICE (#) — # = MOUNTING (IF APPLICABLE)
1 = CIRCUIT NUMBER

*IF LABEL IS ORIENTED HORIZONTALLY A SLASH WILL SEPARATE THIS INFORMATION. EX: A / 1

ELECTRICAL MOUNTING SUBSCRIPT KEY:

A	MOUNT AT +6" TO CENTERLINE ABOVE COUNTER OR BACKSPLASH
C	MOUNT AT CEILING (DEVICE OR ROUGH-IN CONTEXT)
H	MOUNT ORIENTED HORIZONTALLY
I	MOUNT IN CASEWORK
M	MOUNT IN MODULAR FURNITURE
R	MOUNT IN SURFACE RACEWAY
S	SURFACE MOUNTED
W	WEATHERPROOF WIRING DEVICE, NEMA 3R WHILE-IN-USE COVER, WR LISTED
WG	WIRE GUARD
WP	WEATHERPROOF

SHADED DEVICE INDICATES DEVICE IS CONNECTED TO AN EMERGENCY CIRCUIT.

DEVICE (E)

ELECTRICAL SYMBOL LIST

SYMBOL:	TAG:	SPEC SECTION:	DESCRIPTION:
	REFER TO LUMINAIRE SCHEDULE		LINEAR LUMINAIRES
			TROFFER
			DOWNLIGHT LUMINAIRE
			INDUSTRIAL LUMINAIRE
			WALL BRACKET LUMINAIRE
			SINGLE FACE EXIT SIGN
			DOUBLE FACE EXIT SIGN
			EMERGENCY UNIT

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ELECTRICAL COVERSHEET

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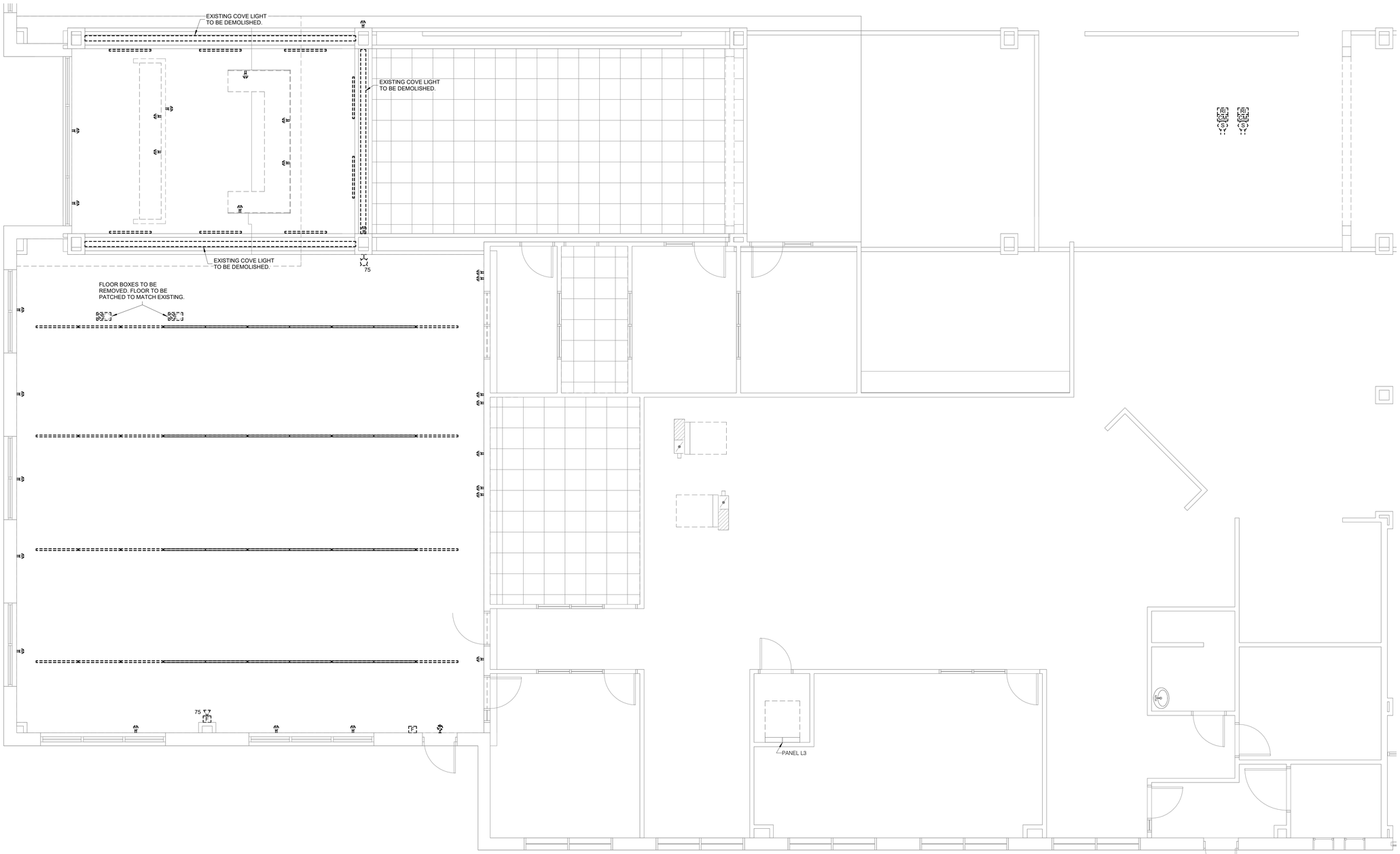

1 FIRST FLOOR DEMOLITION PLAN - ELECTRICAL

1/4" = 1'-0"

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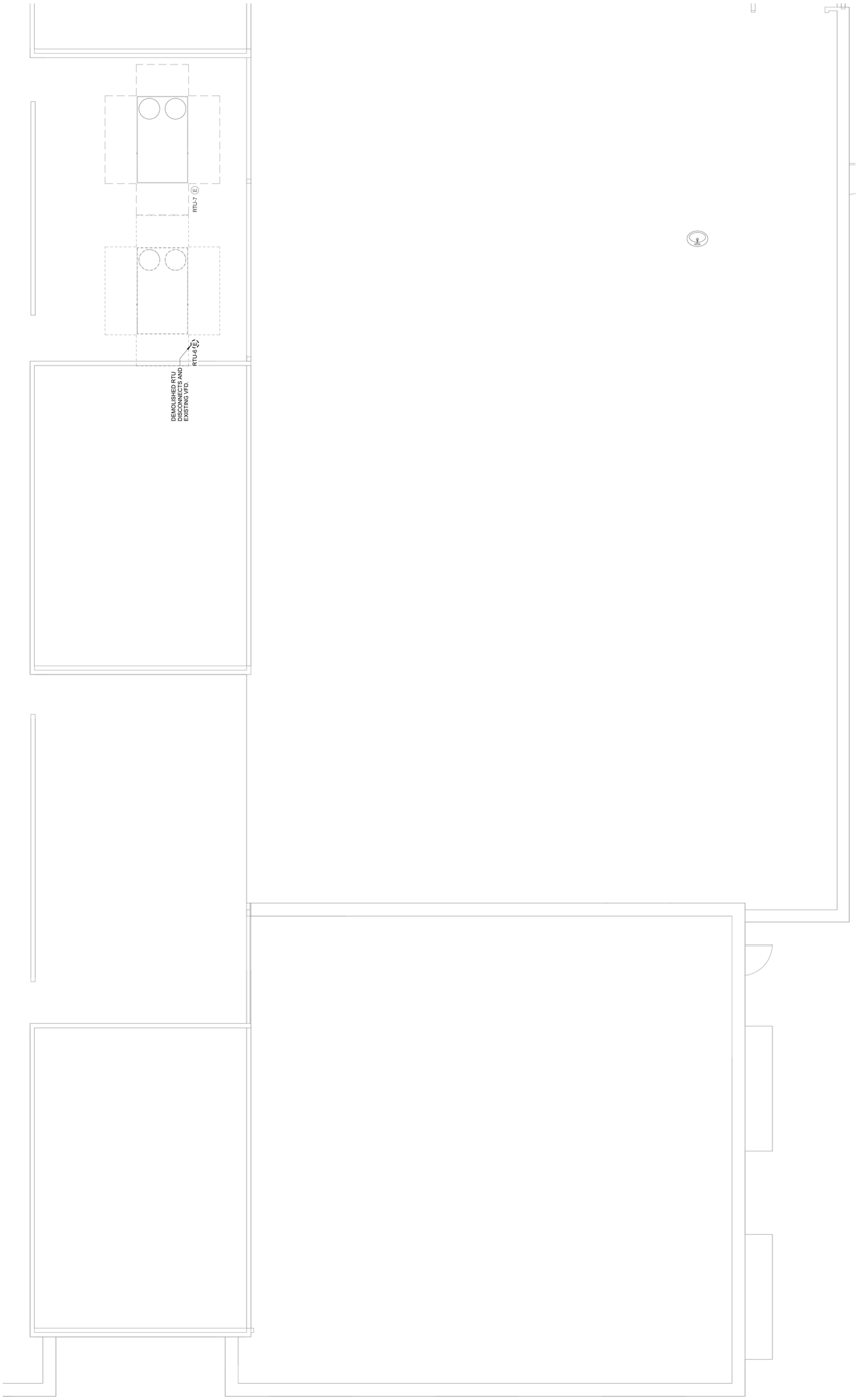
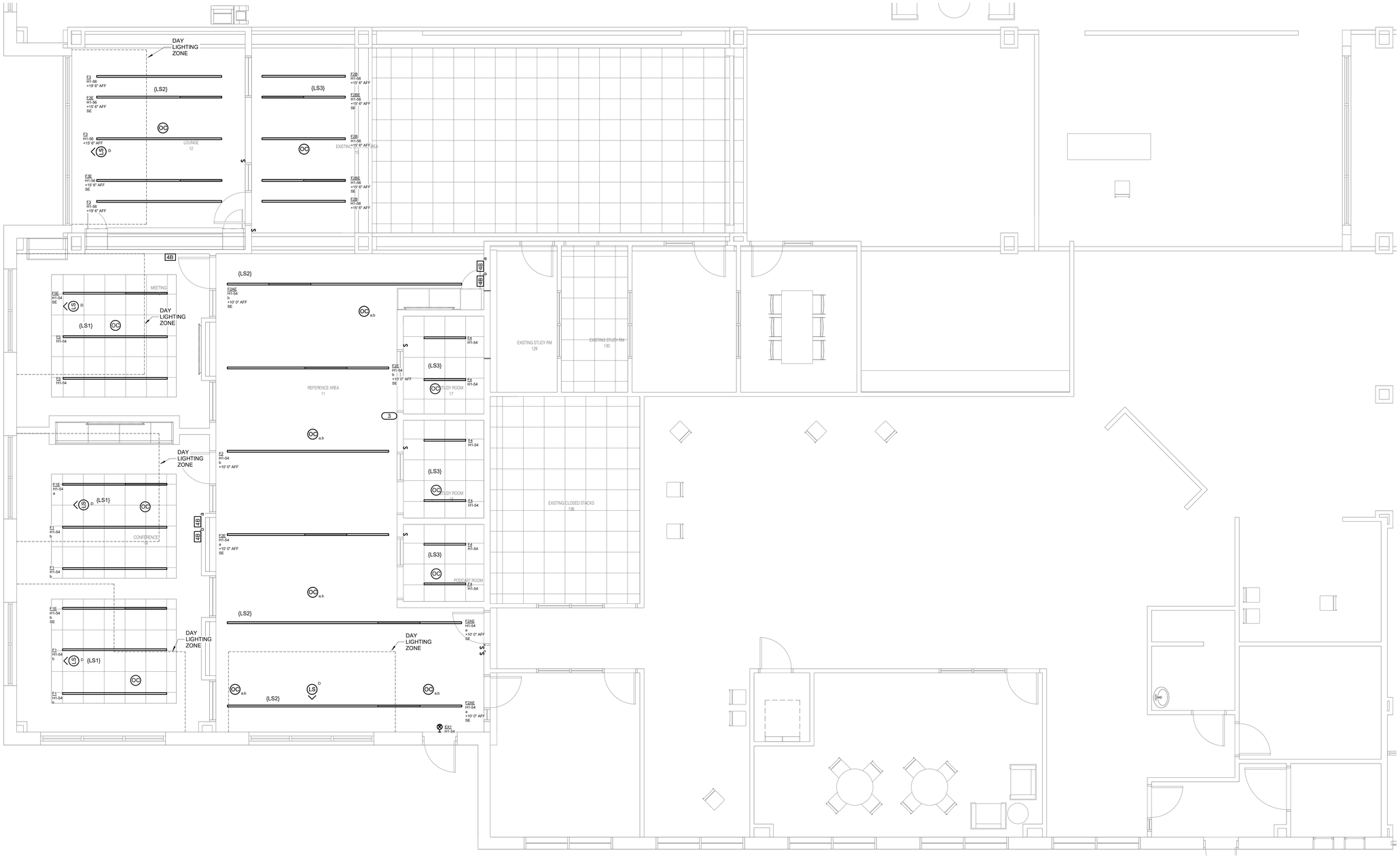


1 ROOF DEMOLITION PLAN - ELECTRICAL
1/4" = 1'-0"

KEYNOTES:

1. PROVIDE NEW 1P/20A CIRCUIT FROM EXISTING PANEL L3.
2. CONNECT LIGHTING CIRCUIT TO EXISTING 1P/20A CIRCUIT BREAKER IN PANEL E.L.



1 FIRST FLOOR PLAN - LIGHTING

1/4" = 1'-0"

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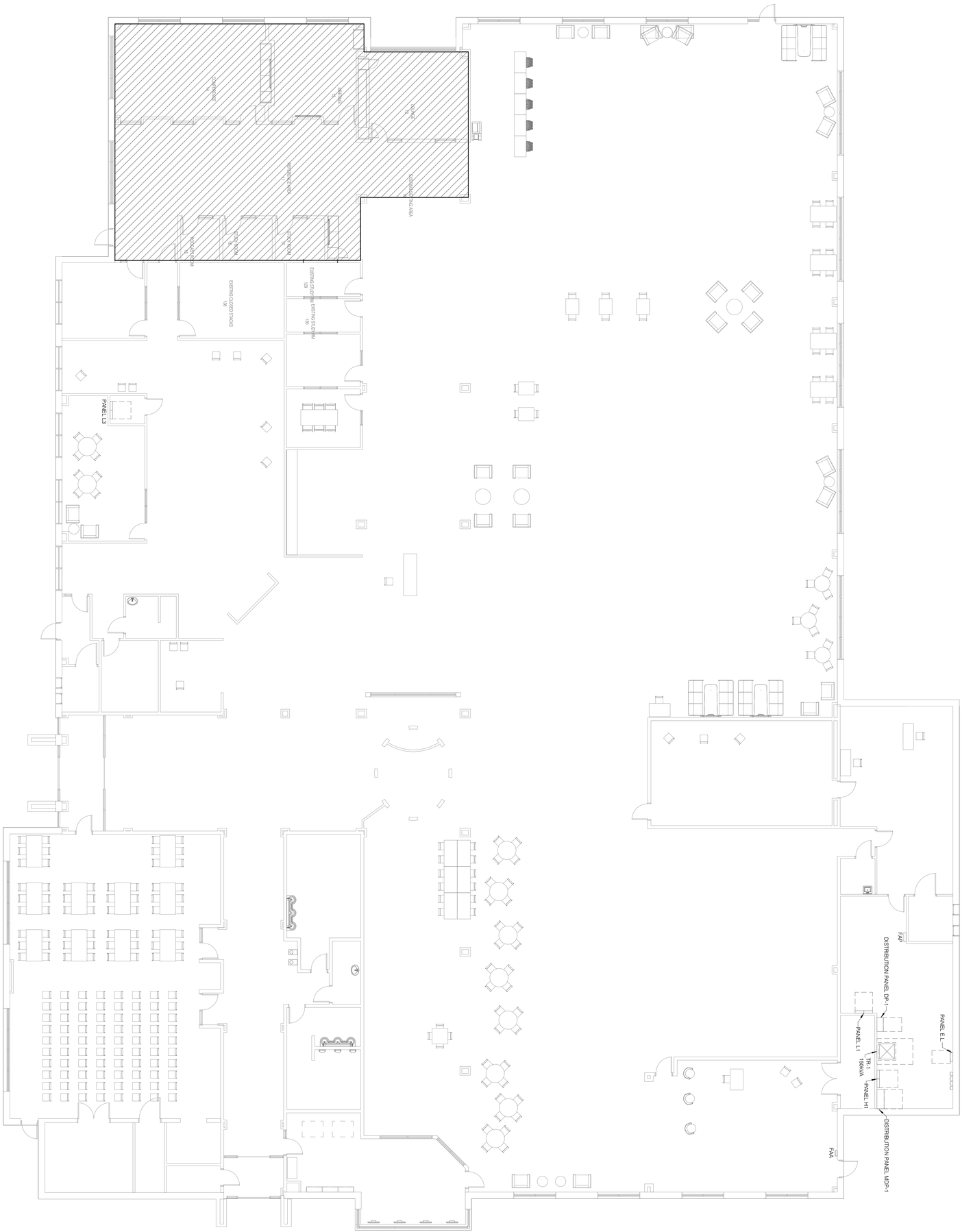
NORTH

1

1/8" = 1'-0"

OVERALL FIRST FLOOR PLAN - POWER (REFERENCE ONLY)



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OVERALL FIRST FLOOR PLAN - POWER

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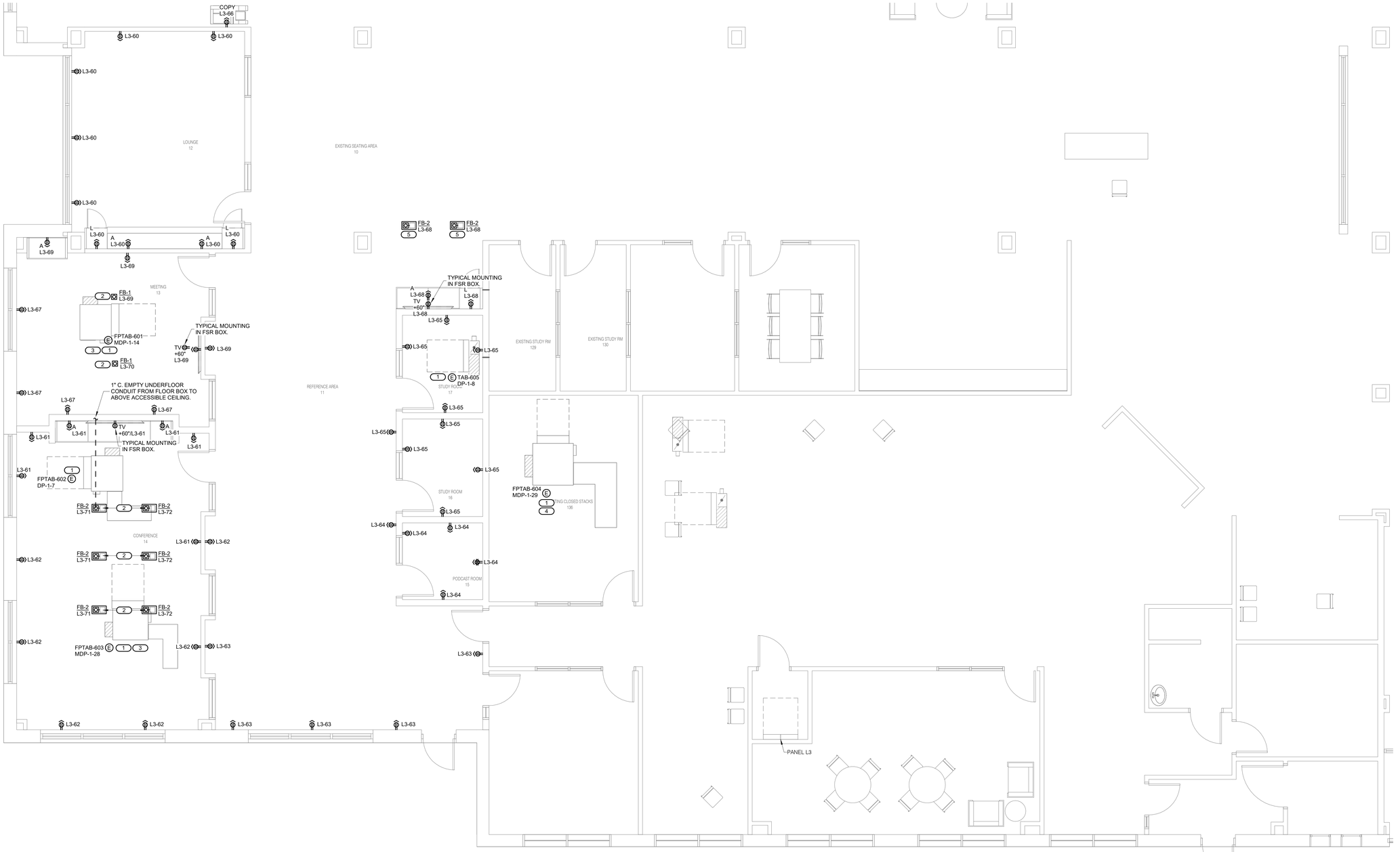
SHEET NOTES:

1. PROVIDE (13) NEW 20A/1P CIRCUIT BREAKER IN EXISTING PANEL L3 FOR ALL NEW 120V CIRCUITS

KEYNOTES:

1. DISCONNECT AND STARTER PROVIDED BY MECHANICAL EQUIPMENT MANUFACTURER. INSTALLED AND WIRED BY E.C.
2. SAW CUTTING OF THE FLOOR WILL BE REQUIRED FOR INSTALL. COORDINATE EXACT LOCATIONS WITH ARCHITECT/OWNER BEFORE INSTALLATION.
3. PROVIDE A NEW 1P/25A CIRCUIT BREAKER IN EXISTING PANEL MDP-1.
4. PROVIDE A NEW 3P/15A CIRCUIT BREAKER IN EXISTING PANEL MDP-1.
5. COORDINATE EXACT LOCATION WITH ARCHITECT/OWNER.



1 FIRST FLOOR PLAN - POWER

1/4" = 1'-0"

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SHEET TITLE
FIRST FLOOR PLAN - POWER

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ROOF PLAN - POWER

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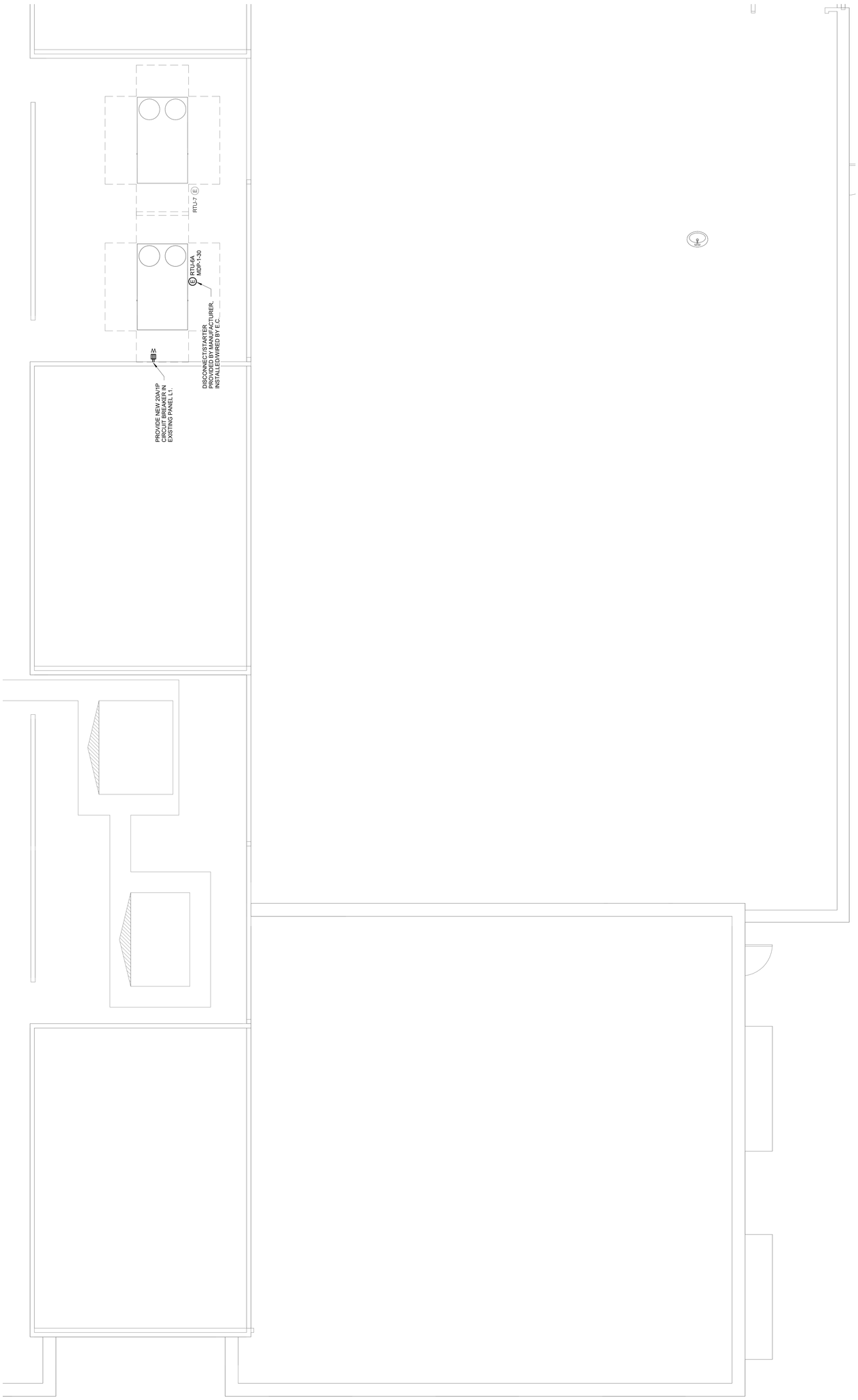
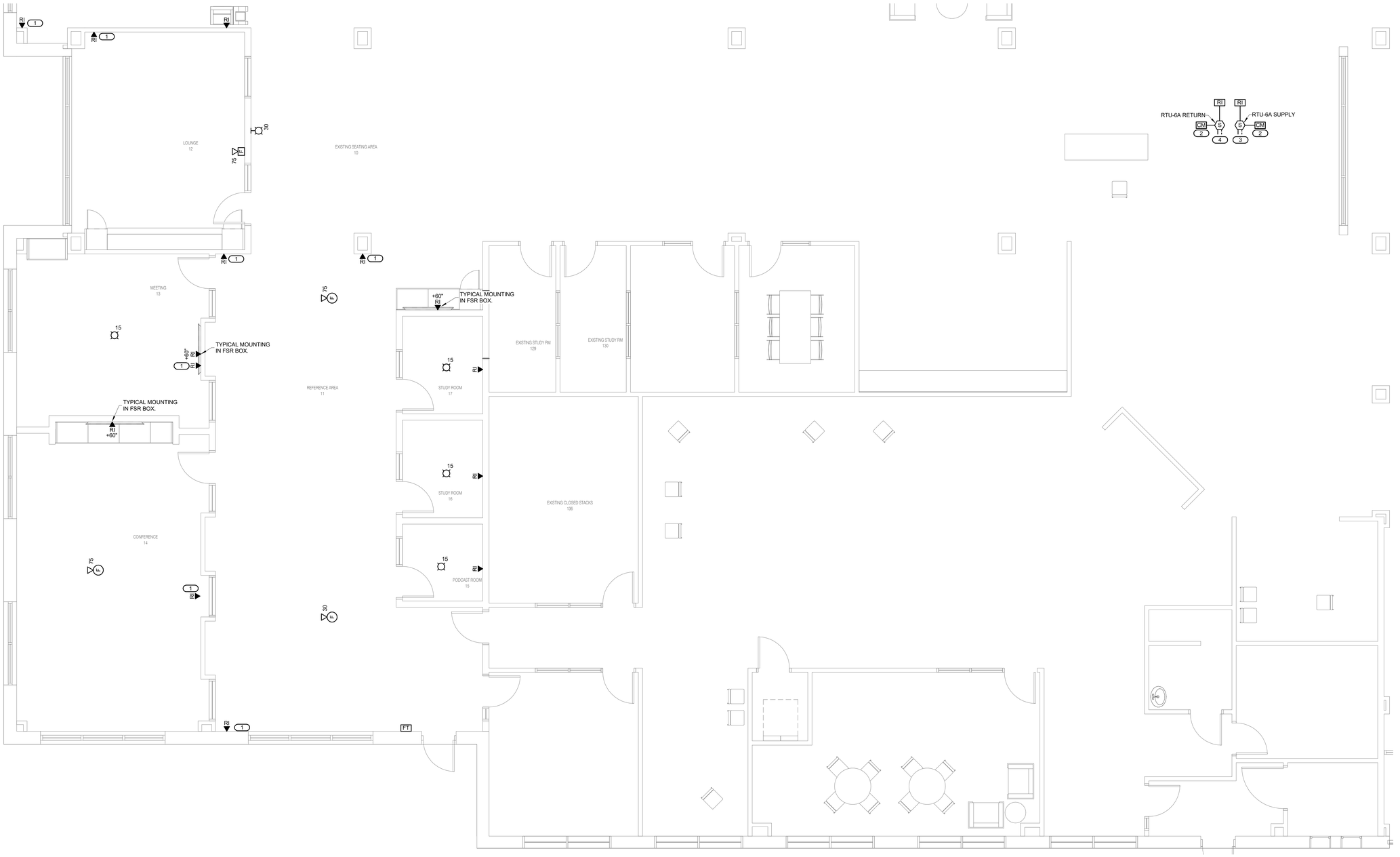


1 ROOF PLAN - POWER
1/4" = 1'-0"

KEYNOTES:

1. COORDINATE EXACT HEIGHT AND EXACT LOCATION OF SECURITY CAMERA ROUGH-IN WITH ARCHITECT/OWNER BEFORE INSTALLATION.
2. CONTROL MODULE FOR AHU SHUTDOWN. MOUNT WITHIN (3) FEET OF AHU CONTROLLER.
3. HVAC DUCT TYPE SMOKE DETECTOR FOR SUPPLY DUCT. SMOKE DETECTOR SHALL BE INSTALLED IN THE INTERIOR OF BUILDING, ABOVE ACCESSIBLE CEILING ON THE SUPPLY DUCT PRIOR TO FIRST DUCT TAP. PROVIDE A REMOTE INDICATOR IN AN ACCESSIBLE LOCATION. REFER TO SPEC SECTION 28 31 00 FOR MORE INFORMATION.
4. HVAC DUCT TYPE SMOKE DETECTOR FOR RETURN DUCT. SMOKE DETECTOR SHALL BE INSTALLED IN THE INTERIOR OF BUILDING, ABOVE ACCESSIBLE CEILING ON THE SUPPLY DUCT PRIOR TO FIRST DUCT TAP. PROVIDE A REMOTE INDICATOR IN AN ACCESSIBLE LOCATION. REFER TO SPEC SECTION 28 31 00 FOR MORE INFORMATION.



1 FIRST FLOOR PLAN - SYSTEMS

1/4" = 1'-0"

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SHEET TITLE
FIRST FLOOR PLAN - SYSTEMS

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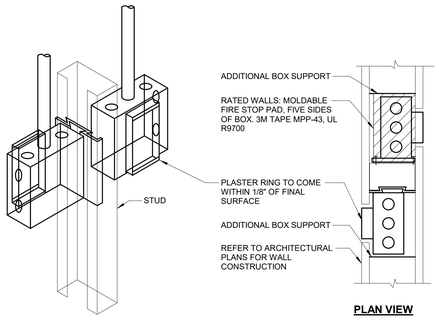


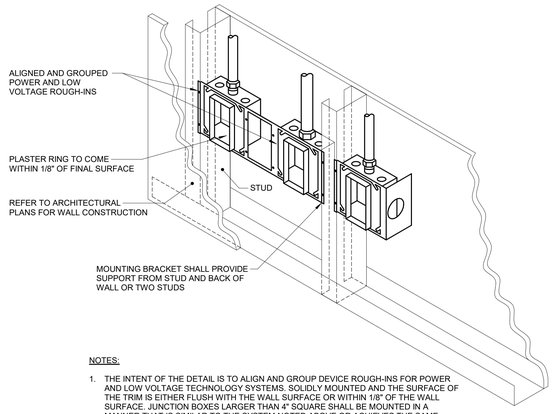
PLAN VIEW

NOTES:

1. HORIZONTAL CONDUIT CONNECTION BETWEEN BOXES LESS THAN 2'-0" NOT PERMITTED. SEE SPECIFICATIONS AND DRAWING NOTES FOR ADDITIONAL SPACE REQUIREMENTS BETWEEN DEVICES.

1 SIDE BY SIDE DEVICE OPENINGS

NO SCALE

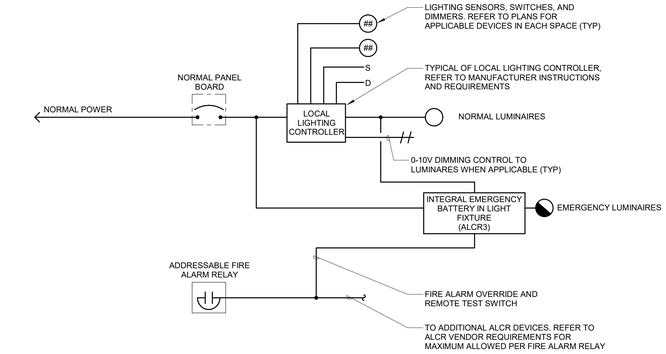


NOTES:

1. THE INTENT OF THE DETAIL IS TO ALIGN AND GROUP DEVICE ROUGH-INS FOR POWER AND LOW VOLTAGE TECHNOLOGY SYSTEMS. SOLIDLY MOUNTED AND THE SURFACE OF THE TRIM IS EITHER FLUSH WITH THE WALL SURFACE OR WITHIN 1/8" OF THE WALL SURFACE. JUNCTION BOXES LARGER THAN 4" SQUARE SHALL BE MOUNTED IN A MANNER THAT IS SIMILAR TO THE SYSTEM NOTED ABOVE OR ACHIEVES THE SAME RESULTS.
2. PLASTER RINGS DEPTH SHALL BE 1/8" DEEPER THAN THE GYP BOARD APPLIED TO THE WALL. PLASTER RING SHALL BE 3/4" FOR USE WITH 5/8" GYP BOARD.
3. METAL STUD-TO-STUD MOUNTING BRACKETS FOR MULTIPLE BOXES BETWEEN STUD. ERICO CADDY RBS## SERIES, EATON B-LINE BB SERIES, OR EQUAL
4. MOUNTING SUPPORT BRACKETS SIZES FOR SINGLE BOXES IN A STUD CAVITY SHALL MATCH THE STUD DEPTH. ERICO CADDY H## SERIES, EATON B-LINE BB## SERIES, OR EQUAL
5. WHERE RECEPTACLE AND TECHNOLOGY DEVICES ARE SHOWN SERVING A COMMON COMPUTER OR EQUIPMENT, OR SHOWN IN SIMILAR LOCATIONS ON THE DRAWINGS THE DEVICES SHALL BE INSTALLED IN THE SAME STUD CAVITY WITH MOUNTING BRACKETS OR ALIGNED ON OPPOSITE SIDES OF A COMMON STUD WITH SEPARATE SUPPORT.

3 BACKBOX MOUNTING DETAIL

NO SCALE

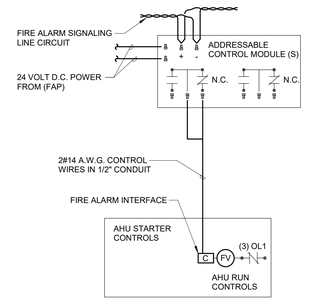


NOTES:

1. THE ALCR RELAY DIAGRAM IS INTENDED TO CONVEY INTENDED OPERATION AND SPECIFICALLY DOES NOT INDICATE QUANTITIES, ALL DEVICES, WIRING, AND CONNECTIONS REQUIRED. REFER TO MANUFACTURER'S INSTALLATION INSTRUCTIONS AND REQUIREMENTS.
2. MOUNT LOCAL LIGHTING CONTROLLERS ABOVE FINISHED CEILING NEAR ROOM ENTRANCE. IN A CORRIDOR, MOUNT NEAR ONE END OF CORRIDOR AND ADJACENT TO FIRST SENSOR OR CONTROL DEVICE.
3. MOUNT ALCR ADJACENT TO LIGHTING CONTROLLER ABOVE ACCESSIBLE FINISHED CEILING.
4. FIRE ALARM ADDRESSABLE RELAY SHALL OVERRIDE LOCAL LIGHTING CONTROLS UPON FIRE ALARM OR TEST.

2 AUTOMATIC LOAD CONTROL RELAY DIAGRAM (ALCR3)

NO SCALE



NOTES:

1. SEQUENCE OF OPERATION:
   ADDRESSABLE CONTROL MODULE PROGRAMMED NORMALLY CLOSED FOR NORMAL OPERATION UPON ACTIVATION OF A SMOKE DETECTOR IN THE AREA SERVED BY THE AHU, THE CONTROL MODULE WILL OPEN SHUTTING DOWN THE AHU AND CLOSING THE SMOKE DAMPERS.

4 AHU & SMOKE DAMPER SHUT DOWN - ADDRESSABLE

NO SCALE

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PROJECT #2003972120

REF. SCALE IN INCHES
0 1 2 3

SHEET TITLE
ELECTRICAL DETAILS

PROJECT TITLE
City of Marshalltown
MARSHALLTOWN PUBLIC LIBRARY
INTERIOR REMODEL
105 W BOONE ST, MARSHALLTOWN, IA 50158

DATE ISSUED 11-04-2025
REV. NO. DATE

PROJECT NUMBER
2022226

SHEET
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Autodesk Docs://25003572.00 - Marshalltown Library Remodel/MEP23_25003572.00_Marshalltown Library Remodel_C.rvt
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PANEL L3

MOUNTING: SURFACE
ENCLOSURE: NEMA 1
FED FROM: 225/3P @ DP-1
LOCATION:

DOUBLE TUB
SOLID NEUTRAL
GROUND BUS

MAIN: 225 MCB
VOLTS: 120/208 Wye
PHASE: 3
WIRE: 4
SCCR: 65 kA
ISC UNKNOWN .

NOTES:

KEY	CKT NO.	LOAD DESCRIPTION	OCPD AMPS	P	WIRE SIZE H	N	G	VD %	A	B	C	VD %	WIRE SIZE G	N	H	P	OCPD AMPS	LOAD DESCRIPTION	CKT NO.	KEY
--	1	RECEPTACLES	20	1	--	--	--		1.2	1.2			--	--	--	1	20	RECEPTACLES	2	--
--	3	RECEPTACLES	20	1	--	--	--			0.8	0.8		--	--	--	1	20	RECEPTACLES	4	--
--	5	RECEPTACLE (FB-F)	20	1	--	--	--				0.8	0.8	--	--	--	1	20	RECEPTACLES	6	--
--	7	RECEPTACLE (FB-2)	20	1	--	--	--		0.6	0.8			--	--	--	1	20	RECEPTACLES	8	--
--	9	RECEPTACLE COPIER	20	1	--	--	--			1	0.4		--	--	--	1	20	RECEPTACLES	10	--
--	11	RECEPTACLES	20	1	--	--	--				0.8	0.4	--	--	--	1	20	RECEPTACLES	12	--
--	13	RECEPTACLES (VEND. MACH.)	20	1	--	--	--		0.8	1			--	--	--	1	20	RECEPTACLES (VEND. MACH.)	14	--
--	15	RECEPTACLE (FB-2)	20	1	--	--	--			0.6	1		--	--	--	1	20	RECEPTACLES (VEND. MACH.)	16	--
--	17	RECEPTACLE (FB-2)	20	1	--	--	--					0.6	1.2	--	--	--	1	20	RECEPTACLES	18	--
--	19	RECEPTACLES	20	1	--	--	--		0.8	0.8			--	--	--	1	20	RECEPTACLES	20	--
--	21	RECEPTACLES	20	1	--	--	--			0.8	0.8		--	--	--	1	20	RECEPTACLES	22	--
--	23	RECEPTACLES	20	1	--	--	--					1	0.4	--	--	--	1	20	RECEPTACLES	24	--
--	25	RECEPTACLES	20	1	--	--	--		1	1			--	--	--	1	20	RECEPTACLES (COPIER)	26	--
--	27	RECEPTACLES	20	1	--	--	--				1.2	1.4	--	--	--	1	20	RECEPTACLES	28	--
--	29	RECEPTACLES	20	1	--	--	--					0.8	0.8	--	--	--	1	20	RECEPTACLES	30	--
--	31	RECEPTACLES (COPIER)	20	1	--	--	--		1	1.2			--	--	--	1	20	RECEPTACLES	32	--
--	33	RECEPTACLES	20	1	--	--	--			0.8	0.8		--	--	--	1	20	RECEPTACLES	34	--
--	35	COPIER	20	1	--	--	--					0.8	0.8	--	--	--	1	20	RECEPTACLES	36	--
--	37	COPIER	20	1	--	--	--		0.8	0.4			--	--	--	1	20	RECEPTACLES	38	--
--	39	SPARE	20	1	--	--	--				0	0	--	--	--	1	20	SPARE	40	--
--	41	SPARE	20	1	--	--	--					0	1.8	--	--	--	1	20	EXHAUST FAN	42	--
--	43	CAB UNIT HEATER #1	20	1	--	--	--		0.5	1			--	--	--	1	20	CAB UNIT HEATER #5	44	--
--	45	CAB UNIT HEATER #1	20	1	--	--	--				0.5	1	--	--	--	1	20	CAB UNIT HEATER #5	46	--
--	47	TAB 301, 302, 303	20	1	--	--	--					1.8	1.8	--	--	--	1	20	TAB 307, 308, 305	48	--
--	49	TAB 301, 302, 303	20	1	--	--	--		1.8	1.8			--	--	--	1	20	TAB 307, 308, 305	50	--
--	51	TAB 310, 311	20	1	--	--	--				1.9	0.8	--	--	--	1	20	BOOK SECURITY	52	--
--	53	TAB 312, 309	20	1	--	--	--					1.9	0.18	--	--	--	1	20	FLOOR BOX RECEPT.	54	--
--	55	COILING DOOR	20	1	--	--	--		1	0			--	--	--	1	20	SPARE	56	--
--	57	SPARE	20	1	--	--	--				0	0	--	--	--	1	20	SPARE	58	--
--	59	FRIDGE	20	1	--	--	--					0.18	**1.62**	**2.9**	**10**	**10**	**10**	**1**	**20**	**SOCIAL LOUNGE RECEPTS.**	**60**	
	61	**BOARD ROOM RECEPTACLES**	**20**	**1**	**12**	**12**	**12**	**2.65**	**1.26**	**1.08**				**2.48**	**12**	**12**	**12**	**1**	**20**	**BOARD ROOM RECEPTACLES**	**62**	
	63	**RECEPTACLES**	**20**	**1**	**12**	**12**	**12**	**1.73**			**0.9**	**1.08**		**1.32**	**12**	**12**	**12**	**1**	**20**	**STUDY ROOM RECEPTACLES**	**64**	
	65	**RECEPTACLES**	**20**	**1**	**10**	**10**	**10**	**1.94**					**1.62**	**0.18**	**0.47**	**12**	**12**	**12**	**1**	**20**	**COPIER**	**66**	
	67	**MEETING ROOM RECEPTACLES**	**20**	**1**	**8**	**8**	**8**	**2.06**	**0.72**	**0.9**				**1.59**	**12**	**12**	**12**	**1**	**20**	**REFERENCE DESK FLOOR BOXES**	**68**	
	69	**RECEPTACLES**	**20**	**1**	**10**	**10**	**10**	**1.83**			**1.08**	**0.18**		**0.94**	**12**	**12**	**12**	**1**	**20**	**MEETING ROOM FLOOR BOXES**	**70**	
	71	**CONFERENCE ROOM FLOOR BOXES**	**20**	**1**	**12**	**12**	**12**	**1.13**					**0.54**	**0.54**	**1.06**	**12**	**12**	**12**	**1**	**20**	**CONFERENCE ROOM FLOOR BOXES**	**72**	
--	73	SPACE	--	1	--	--	--		--	--						--	--	--	1	--	SPACE	74	--
--	75	SPACE	--	1	--	--	--				--	--				--	--	--	1	--	SPACE	76	--
--	77	SPACE	--	1	--	--	--						--	--		--	--	--	1	--	SPACE	78	--
--	79	SPACE	--	1	--	--	--		--	--						--	--	--	1	--	SPACE	80	--
--	81	SPACE	--	1	--	--	--				--	--				--	--	--	1	--	SPACE	82	--
--	83	SPACE	--	1	--	--	--						--	--		--	--	--	1	--	SPACE	84	--
							Total Load:		22.66 kVA		17.84 kVA		21.36 kVA									
							Total Amps:		193.35		148.67		182.51									

LOAD SUMMARY

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND
Receptacles	11.7 kVA	92.74%	10.85 kVA
Spare	50.16 kVA	80.00%	40.128 kVA

TOTALS*	
TOTAL CONNECTED LOAD:	61.86 kVA
TOTAL ESTIMATED DEMAND LOAD:	50.978 kVA
TOTAL CONNECTED AMPS:	171.71 A
TOTAL ESTIMATED DEMAND AMPS:	141.5

*TOTAL DEMAND CALCS SUBTRACT ANY REDUNDANT LOAD AND THE SMALLER OF ANY NONCOINCIDENT HVAC LOADS. THIS CALC IS DONE AT EACH PANEL.

CIRCUIT KEY NOTES: NEW CIRCUITS SHOWN IN BOLD.

DISTRIBUTION PANEL MDP-1

ENCLOSURE: NEMA 1
FED FROM: 0/0P @
LOCATION:

SOLID NEUTRAL
GROUND BUS

MAIN: 1,000 MCB
VOLTS: 480/277 Wye
PHASE: 3
WIRE: 4
SCCR: 65 kA
ISC UNKNOWN .

NOTES: **NEW CIRCUITS SHOWN AS BOLD.**

CKT	LOAD DESCRIPTION	Load	POLES	FRAME	TRIP	TYPE	ACC.	WIRE AND RACEWAY	CIRCUIT KEY
1	PANEL- H1	315 kVA	3	400	400	--	--	--	--
2	SPACE	--	1	--	--	--	--	--	--
3	SPACE	--	1	--	--	--	--	--	--
4	SPACE	--	1	--	--	--	--	--	--
5	INVERT-2	6 kVA	1	100	25	--	--	--	--
6	INVERT-1	6 kVA	1	100	25	--	--	--	--
7	RTU #6	20 kVA	3	100	35	--	--	--	--
8	RTU #2	20 kVA	3	100	35	--	--	--	--
9	RTU#1	20 kVA	3	100	35	--	--	--	--
10	WH-4/12	45 kVA	3	100	60	--	--	--	--
11	SPACE	--	1	--	--	--	--	--	--
12	SPACE	--	1	--	--	--	--	--	--
13	SPACE	--	1	--	--	--	--	--	--
14	**FPTAB-601**	**5 kVA**	**1**	**100**	**25**			**2#6 & 1#6 EGC IN 3/4" C.**	
15	SPACE	--	1	--	--	--	--	--	--
16	SPACE	--	1	--	--	--	--	--	--
17	SPACE	--	1	--	--	--	--	--	--
18	SURGE PROTECTOR	25 kVA	3	100	35	--	--	--	--
19	INVERT-3	16 kVA	1	100	25	--	--	--	--
20	WH-1/6	25 kVA	3	100	35	--	--	--	--
21	WH-1/8	25 kVA	3	100	35	--	--	--	--
22	WH-1/9	25 kVA	3	100	35	--	--	--	--
23	WH-1/10	25 kVA	3	100	35	--	--	--	--
24	E.L. PANEL	40 kVA	3	100	50	--	--	--	--
25	WH-5/13	45 kVA	3	100	60	--	--	--	--
26	WH-4/11	45 kVA	3	100	60	--	--	--	--
27	TR-1	50 kVA	3	250	250	--	--	--	--
28	**FPTAB-603**	**5 kVA**	**1**	**100**	**25**			**2#6 & 1#6 EGC IN 3/4" C.**	
29	**FPTAB-604**	**9 kVA**	**3**	**100**	**15**			**3#12 & 1#12 EGC IN 3/4" C.**	
30	**RTU-6A**	**21.2 kVA**	**3**	**100**	**35**			**3#10 & 1#10 EGC IN 3/4" C.**	
31									
32									

LOAD SUMMARY (INCLUDES ALL TUBS IN THIS PANEL)

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND
HVAC	21.2 kVA	100.00%	21.2 kVA
HVAC Heating Only	10 kVA	100.00%	10 kVA
Power	9 kVA	100.00%	9 kVA
Spare	753 kVA	80.00%	602.4 kVA

TOTALS*	
TOTAL CONNECTED LOAD:	793.20 kVA
TOTAL ESTIMATED DEMAND LOAD:	642.6 kVA
TOTAL CONNECTED AMPS:	954.07 A
TOTAL ESTIMATED DEMAND AMPS:	772.9

*TOTAL DEMAND CALCS SUBTRACT ANY REDUNDANT LOAD AND THE SMALLER OF ANY NONCOINCIDENT HVAC LOADS. THIS CALC IS DONE AT EACH PANEL.

CIRCUIT KEY NOTES:

PANEL L1

MOUNTING: SURFACE
ENCLOSURE: NEMA 1
FED FROM: 100/3P @
LOCATION:

DOUBLE TUB
SOLID NEUTRAL
GROUND BUS

MAIN: 100 MCB
VOLTS: 120/208 Wye
PHASE: 3
WIRE: 4
SCCR: 65 kA
ISC UNKNOWN .

NOTES:

KEY	CKT NO.	LOAD DESCRIPTION	OCPD AMPS	P	WIRE SIZE H	N	G	VD %	A	B	C	VD %	WIRE SIZE G	N	H	P	OCPD AMPS	LOAD DESCRIPTION	CKT NO.	KEY
--	1	FLOOR BOX REC.	20	1	--	--	--		0.18	0.18			--	--	--	1	20	REC.	2	--
--	3	FLOOR BOX REC.	20	1	--	--	--				0.18	1.9	--	--	--	1	20	DDC PANEL	4	--
--	5	FLOOR BOX REC.	20	1	--	--	--					0.18	0.3	--	--	1	20	FIRE ALARM BELL	6	--
--	7	FLOOR BOX REC.	20	1	--	--	--		0.18	0.18				--	--	1	20	REC.	8	--
--	9	FLOOR BOX REC.	20	1	--	--	--				0.18	0.18		--	--	1	20	REC.	10	--
--	11	FLOOR BOX REC.	20	1	--	--	--						0.18	0.18		--	--	--	1	20	REC.	12	--
--	13	FLOOR BOX REC.	20	1	--	--	--		0.18	0.18						--	--	--	1	20	REC.	14	--
--	15	FLOOR BOX REC.	20	1	--	--	--				0.18	0.18				--	--	--	1	20	SPARE	16	--
--	17	FLOOR BOX REC.	20	1	--	--	--						0.18	0.5		--	--	--	1	20	WASHER REC.	18	--
--	19	FLOOR BOX REC.	20	1	--	--	--		0.18	0.18						--	--	--	1	20	REC.	20	--
--	21	SPARE	20	1	--	--	--				0	0.5				--	--	--	1	20	RANGE REC.	22	--
--	23	FLOOR BOX REC.	20	1	--	--	--						0.18	0.5		--	--	--	1	20	RANGE REC.	24	--
--	25	REC.	20	1	--	--	--		0.18	0.18						--	--	--	1	20	REC.	26	--
--	27	REC.	20	1	--	--	--				0.18	0.18				--	--	--	1	20	REC.	28	--
--	29	CAB UNIT HEATER #8	20	1	--	--	--						1.2	1		--	--	--	1	20	EXHAUST FAN	30	--
--	31	CAB UNIT HEATER #8	20	1	--	--	--		1.2	0.8						--	--	--	1	20	HAND DRYER	32	--
--	33	SPARE	20	1	--	--	--				0	0.2				--	--	--	1	20	DRYER REC.	34	--
--	35	SPARE	20	1	--	--	--						0	0.2		--	--	--	1	20	DRYER REC.	36	--
--	37	SPARE	20	1	--	--	--		0	0						--	--	--	1	20	SPARE	38	--
--	39	SPARE	20	1	--	--	--				0	0				--	--	--	1	20	SPARE	40	--
--	41	SPARE	20	1	--	--	--						0	1		--	--	--	1	20	SPLIT AIR SYSTEM	42	--
--	43	SPARE	20	1	--	--	--		0	1						--	--	--	1	20	SPLIT AIR SYSTEM	44	--
--	45	SPARE	20	1	--	--	--				0	**0.18**			**0.89**	**12**	**12**	**12**	**1**	**20**	**ROOF REC.**	**46**	
--	47	SPACE	--	1	--	--	--						--	--		--	--	--	1	--	SPACE	48	--
--	49	SPACE	--	1	--	--	--		--	--						--	--	--	1	--	SPACE	50	--
--	51	SPACE	--	1	--	--	--				--	--				--	--	--	1	--	SPACE	52	--
--	53	SPACE	--	1	--	--	--						--	--		--	--	--	1	--	SPACE	54	--
--	55	SPACE	--	1	--	--	--		--	--						--	--	--	1	--	SPACE	56	--
--	57	SPACE	--	1	--	--	--				--	--				--	--	--	1	--	SPACE	58	--
--	59	SPACE	--	1	--	--	--						--	--		--	--	--	1	--	SPACE	60	--
							Total Load:		4.80 kVA		4.04 kVA		5.60 kVA									
							Total Amps:		40.97		33.67		47.64									

LOAD SUMMARY

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND
Receptacles	0.18 kVA	100.00%	0.18 kVA
Spare	14.26 kVA	80.00%	11.408 kVA

TOTALS*	
TOTAL CONNECTED LOAD:	14.44 kVA
TOTAL ESTIMATED DEMAND LOAD:	11.588 kVA
TOTAL CONNECTED AMPS:	40.08 A
TOTAL ESTIMATED DEMAND AMPS:	32.2

*TOTAL DEMAND CALCS SUBTRACT ANY REDUNDANT LOAD AND THE SMALLER OF ANY NONCOINCIDENT HVAC LOADS. THIS CALC IS DONE AT EACH PANEL.

CIRCUIT KEY NOTES:

LUMINAIRE SCHEDULE

TAG	DESCRIPTION	OPTICS	MTG	DIMENSIONS	DELIVERED LUMENS PER FOOT	WATTS	POWER SUPPLY	MANUFACTURER - SERIES	NOTES
EX1	SINGLE-FACE EXIT SIGN, WHITE THERMOPLASTIC BODY, RED LETTERS, EMERGENCY NI-CAD BATTERY INSIDE OF SIG, UNIVERSAL ARROW/SMOUNTING, SELF TEST & DIAGNOSTICS OF INVERTER AND LAMPS, VERIFY RECESSED END, BACK MOUNTING AND ARROWS WITH PLANS.		WL	12"L X 2"W X 10"H	0 lm	3 / F/X	277	COOPER LIGHTING APXR CURRENT LIGHTING DUAL-LITE EVE ACUITY LITHONIA LQMS	
F1	CONTINUOUS RECESSED LINEAR, ALUMINUM HOUSING, CONTINUOUS FROSTED ACRYLIC FLUSH LENS. ARCHITECT TO SELECT FINISH. SEE DRAWINGS FOR TOTAL REQUIRED LENGTH.		RE	120"L X 2"W X 2"H	350 lm	7 / FT	277	LUMENWERX VIA2R D HLO FH SW 90CRI 350LMF 40K 277V D1 1C NA FOCAL POINT SEAM 2 ALW LIGHTPLANE LPX 4 OR APPROVED EQUAL	
F1E	SIMILAR TO TYPE 'F1' WITH BACKUP BATTERY SECTION.		RE	120"L X 2"W X 2"H	350 lm	7 / FT	277	LUMENWERX VIA2R D HLO FH SW 90CRI 350LMF 40K 277V D1 1C NA FOCAL POINT SEAM 2 ALW LIGHTPLANE LPX 4 OR APPROVED EQUAL	4' EMERGENCY SECTION TO BE POWERED BY BACKUP BATTERY.
F2	DIRECT/INDIRECT CONTINUOUS LINEAR PENDENT, EXTRUDED ALUMINUM HOUSING,CONTINUOUS FLUSH FROSTED ACRYLIC LENS, LAMBERTIAN OPTIC, STEM MOUNTING. SEE DRAWINGS FOR TOTAL REQUIRED LENGTH.		SP	186"L X 2"W X 4 1/2"H	500/350 lm	8 / FT	277	LUMENWERX VIA2PDI-WDO-WIO2-SW-90-500-350-40 FOCALPOINT SEEM 2 FSM2BW ALW SUPERPLANE 2 SP2W OR APPROVED EQUAL	
F2AE	SIMILAR TO TYPE 'F2' WITH BACKUP BATTERY SECTION.		SP	270"L X 2"W X 2"H	500/350 lm	9 / FT	277	LUMENWERX VIA2PDI-WDO-WIO2-SW-90-500-350-40 FOCALPOINT SEEM 2 FSM2BW ALW SUPERPLANE 2 SP2W OR APPROVED EQUAL	4' EMERGENCY SECTION TO BE POWERED BY BACKUP BATTERY.
F2B	DIRECT/INDIRECT CONTINUOUS LINEAR PENDENT, EXTRUDED ALUMINUM HOUSING,CONTINUOUS FLUSH FROSTED ACRYLIC LENS, LAMBERTIAN OPTIC, STEM MOUNTING. SEE DRAWINGS FOR TOTAL REQUIRED LENGTH		SP	96"L X 2"W X 4 1/2"H	500/350 lm	8 / FT	277	LUMENWERX VIA2PD1-WDO-WIO2-SW-90-500-350-40 FOCAL POINT SEEM 2 FSM2BW ALW SUPERPLANE 2 SP2W OR APPROVED EQUAL	
F2BE	SIMILAR TO TYPE 'F3' WITH BACKUP BATTERY SECTION.		SP	96"L X 2"W X 4 1/2"H	500/350 lm	8 / FT	277	LUMENWERX VIA2PD1-WDO-WIO2-SW-90-500-350-40 FOCALPOINT SEEM 2 FSM2BW ALW SUPERPLANE 2 SP2W OR APPROVED EQUAL	4' EMERGENCY SECTION TO BE POWERED BY BACKUP BATTERY.
F2E	SIMILAR TO TYPE 'F2' WITH BACKUP BATTERY SECTION.		SP	186"L X 2"W X 2"H	500/350 lm	10 / FT	277	LUMENWERX VIA2PDI-WDO-WIO2-SW-90-500-350-40 FOCALPOINT SEEM 2 FSM2BW ALW SUPERPLANE 2 SP2W OR APPROVED EQUAL LUMENWERX VIA4W FOCALPOINT SEEM 4 FSM4BW ALW SUPERPLANE 4 SP4W	4' EMERGENCY SECTION TO BE POWERED BY BACKUP BATTERY.
F3	DIRECT/INDIRECT CONTINUOUS LINEAR PENDENT, WITH FELT SOUND MASKING FINISH. COLOR SELECTION BY ARCHITECT. CONTINUOUS FLUSH FROSTED ACRYLIC LENS, LAMBERTIAN OPTIC, STEM MOUNTING. SEE DRAWINGS FOR TOTAL REQUIRED LENGTH		SP	144"L X 2"W X 4 1/2"H	500/350 lm	8 / FT	277	LUMENWERX VIA2ACOP-HLO-WIO2-SW-90-500-350-40 FOCAL POINT SEEM 2 FSM2BW ALW SUPERPLANE 2 SP2W OR APPROVED EQUAL	
F3E	SIMILAR TO TYPE 'F3' WITH BACKUP BATTERY SECTION.		SP	144"L X 2"W X 4 1/2"H	500/350 lm	8 / FT	277	LUMENWERX VIA2ACOP-HLO-WIO2-SW-90-500-350-40 FOCALPOINT SEEM 2 FSM2BW ALW SUPERPLANE 2 SP2W OR APPROVED EQUAL	4' EMERGENCY SECTION TO BE POWERED BY BACKUP BATTERY.
F4	CONTINUOUS RECESSED LINEAR, ALUMINUM HOUSING, CONTINUOUS FROSTED ACRYLIC FLUSH LENS. ARCHITECT TO SELECT FINISH. SEE DRAWINGS FOR TOTAL REQUIRED LENGTH.		RE	48"L X 2"W X 2"H	1,200 lm	13 / FT	277	LUMENWERX VIA2PD-HLO-FH-SW-90-1200-40 ALW LIGHTPLANE LPX 2 FOCAL POINT SEEM 2 FSM2L OR APPROVED EQUAL	
F5	CONTINUOUS RECESSED LINEAR, ALUMINUM HOUSING, CONTINUOUS FROSTED ACRYLIC FLUSH LENS. ARCHITECT TO SELECT FINISH. SEE DRAWINGS FOR TOTAL REQUIRED LENGTH.		RE	120"L X 2"W X 2"H	500 lm	10 / FT	277	LUMENWERX VIA2R D HLO FH SW 90CRI 500LMF 40K 277V D1 1C NA FOCAL POINT SEAM 2 ALW LIGHTPLANE LPX 4 OR APPROVED EQUAL	
F5E	SIMILAR TO TYPE 'F1' WITH BACKUP BATTERY SECTION.		RE	120"L X 2"W X 2"H	500 lm	7 / FT	277	LUMENWERX VIA2R D HLO FH SW 90CRI 500LMF 40K 277V D1 1C NA FOCAL POINT SEAM 2 ALW LIGHTPLANE LPX 4 OR APPROVED EQUAL	4' EMERGENCY SECTION TO BE POWERED BY BACKUP BATTERY.

DISTRIBUTION PANEL DP-1

ENCLOSURE: NEMA 1
FED FROM: 0/0P @
LOCATION:

SOLID NEUTRAL
GROUND BUS

MAIN: 400 MCB
VOLTS: 120/208 Wye
PHASE: 3
WIRE: 4
SCCR: 65 kA
ISC UNKNOWN .

NOTES: **NEW CIRCUITS SHOWN IN BOLD.**

CKT	LOAD DESCRIPTION	Load	POLES	FRAME	TRIP	TYPE	ACC.	WIRE AND RACEWAY	CIRCUIT KEY
1	SPACE	--	3	--	--	--	--	--	--
2	SPACE	--	3	--	--	--	--	--	--
3	SPACE	--	3	--	--	--	--	--	--
4	PANEL-L1	0 kVA	1	150	150	--	--	--	--
5	PANEL-L2	0 kVA	1	175	175	--	--	--	--
6	PANEL-L3	61.86 kVA	3	250	225			4#350 & 1#1 EGC IN 2 1/2" C.	
7	**FPTAB-602**	**2.5 kVA**	**2**	**150**	**15**			**2#8 & 1#8 EGC IN 3/4" C.**	
8	**TAB-605**	**1.5 kVA**	**2**	**150**	**15**			**2#10 & 1#10 EGC IN 3/4" C.**	
9									
10									

LOAD SUMMARY (INCLUDES ALL TUBS IN THIS PANEL)

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND
HVAC Heating Only	4 kVA	100.00%	4 kVA
Receptacles	11.7 kVA	92.74%	10.85 kVA
Spare	50.16 kVA	80.00%	40.128 kVA

TOTALS*	
TOTAL CONNECTED LOAD:	65.86 kVA
TOTAL ESTIMATED DEMAND LOAD:	54.978 kVA
TOTAL CONNECTED AMPS:	182.81 A
TOTAL ESTIMATED DEMAND AMPS:	152.6

*TOTAL DEMAND CALCS SUBTRACT ANY REDUNDANT LOAD AND THE SMALLER OF ANY NONCOINCIDENT HVAC LOADS. THIS CALC IS DONE AT EACH PANEL.

CIRCUIT KEY NOTES:

PANEL H1

MOUNTING: SURFACE
ENCLOSURE: NEMA 1
FED FROM: 0/0P @
LOCATION:

DOUBLE TUB
SOLID NEUTRAL
GROUND BUS

MAIN: 400 MCB
VOLTS: 480/277 Wye
PHASE: 3
WIRE: 4
SCCR: 65 kA
ISC UNKNOWN .

NOTES: NEW CIRCUITS SHOWN IN BOLD.

KEY	CKT NO.	LOAD DESCRIPTION	OCPD AMPS	P	WIRE SIZE H	N	G	VD %	A	B	C	VD %	WIRE SIZE G	N	H	P	OCPD AMPS	LOAD DESCRIPTION	CKT NO.	KEY
--	1	LIGHTS F1D, F1	20	1	--	--	--		4.43	4.43			--	--	--	1	20	LIGHTS F1D, F1	2	--
--	3	LIGHTS F1D, F21	20	1	--	--	--				4.43	4.43	--	--	--	1	20	LIGHTS F9, F11, F14, F21, F1, F2, F3	4	--
--	5	LIGHTS F1D, F1, F9D, F10, F21	20	1	--	--	--					4.43	4.43	--	--	1	20	LIGHTS F2, F3, F9D, F18, F21	6	--
--	7	LIGHTS F2, F3, F5, F6, F7, F18, F20	20	1	--	--	--		4.43	4.43				--	--	1	20	LIGHTS F7, F9, F10, F12	8	--
--	9	LIGHTS F5, F6, F7, F8, F10, F13	20	1	--	--	--				4.43	4.43		--	--	1	20	EXTERIOR LIGHTING	10	--
--	11	SPARE	20	1	--	--	--						0	4.43		--	--	--	1	20	EXTERIOR LIGHTING	12	--
	13								3.33	4.43												14	
--	15	TAB 304	15	3	--	--	--				3.33	4.43				--	--	--	3	20	ERV	16	--
	17												3.33	4.43								18	
	19								4.43	4.43												20	
--	21	RTU-4	25	3	--	--	--				4.43	4.43				--	--	--	3	25	RTU-5	22	--
	23												4.43	4.43								24	
	25								6.65	4.43												26	
--	27	RTU-7	30	3	--	--	--				6.65	4.43				--	--	--	3	25	RTU-8	28	--
	29												6.65	4.43								30	
	31								4.43	6.65												32	
--	33	RTU-9	25	3	--	--	--				4.43	6.65				--	--	--	3	30	RTU-10	34	--
	35												4.43	6.65								36	
--	37	WATER HEATER #2	30	1	--	--	--		6.65	5.4						--	--	--	1	45	WATER HEATER #3	38	--
--	39	W

PROJECT MANUAL - VOL 1

Construction Documents

FEH Project No. 2022226

Volume 1 of 2
Divisions 01 - 13

Construction of a
Marshalltown Public Library Remodel

105 W Boone St
Marshalltown , Iowa 50158

12-02-2025

FEH DESIGN
ARCHITECTURE / ENGINEERING / INTERIORS

SIOUX CITY, IA 712 252 3889 / DES MOINES, IA 515 288 2000 / DUBUQUE, IA 563 583 4900 / MILWAUKEE, WI 414 200 9660

SECTION 00 01 02
PROJECT INFORMATION

PART 1 GENERAL

1.01 PROJECT IDENTIFICATION

A. Project Name: Marshalltown Public Library Remodel, located at:

105 W Boone Street, Marshalltown, Iowa 50158.

B. The Owner, hereinafter referred to as Owner : City of Marshalltown

1.02 NOTICE TO PROSPECTIVE BIDDERS

A. These documents constitute an Invitation to Bid to General Contractors for the construction of the project described below.

1.03 PROJECT DESCRIPTION

A. Summary Project Description: PROJECT INCLUDES SELECTIVE BUILDING DEMOLITION, AND RENOVATION OF THE EXISTING PUBLIC LIBRARY TO CREATE NEW MEETING SPACES..

1.04 PROJECT CONSULTANTS

A. The Project Manager, hereinafter referred to as Architect: .
   1. Company: FEH DESIGN
   2. Address: 604 E. Grand Ave.
   3. City, State, Zip: Des Moines , IA 50309 .
   4. Contact: Hannah Schulz
   5. Phone/Fax: (515) 288-2000.
   6. Direct Phone: (515) 288-2000
   7. E-mail: Hannahs@fehdesign.com.

B. Mechanical Engineer
   1. Company: IMEG Corporation
   2. Address: 2882 106th Street
   3. City, State, Zip: Des Moines , IA 50322
   4. Contact: David Inghram
   5. Phone/Fax: (515) 334-9906
   6. E-mail: david.c.inghram@imegcorp.com

C. Electrical Engineer
   1. Company: IMEG
   2. Address: 2882 106th St
   3. City, State, Zip: Des Moines , IA 50322
   4. Contact: Tony DeLouis
   5. Phone/Fax: (515) 334-9906
   6. E-mail: tony.e.delouis@imegcorp.com

1.05 PROCUREMENT TIMETABLE

A. Pre-Bid Meeting/Tour: 11-18-2025 at 10:00 AM

B. Last Request for Substitution Due: 7 days prior to due date of bids.

C. Last Request for Information Due: 7 days prior to due date of bids.

D. Bid Date: 12-02-2025

E. Bid Opening: Same day, 10:00 AM local time.

F. Bids May Not Be Withdrawn Until: 30 days after due date.

G. Desired Substantial Completion Date: 06-01-2026

H. Desired Final Completion Date: Not later than 60 calendar days past Substantial Completion.

I. The Owner reserves the right to change the schedule or terminate the entire procurement process at any time.

1.06 PROCUREMENT DOCUMENTS

A. Availability of Documents: Complete sets of procurement documents may be obtained:
   1. At the following address:
      a. Beeline and Blue
      b. 2507 Ingersoll Ave
      c. Des Moines , IA 50312
      d. (515) 244-1611
   2. For the deposit sum of $100 per set, which will be refunded upon return of documents in accordance with the requirements of the Instructions to Bidders.
      a. Prime Contractors can obtain sets of printed bidding documents, and Sub-Contractors can obtain sets of printed bidding documents.

B. Documents are on display at the offices of the following construction plan rooms:
   1. Builders Association of Missouri, 720 Oak Street, Kansas City, Missouri 64106
   2. Builders Exchange of Rochester, 108 Elton Hills Lane NW, Rochester, MN 55901
   3. Central Illinois Plan Room, 1620 S. 5th Street, Springfield, IL 62703
   4. Construct Connect, 28 N. Clark Street, Suite 450, Chicago, IL 60602
   5. Greater Fort Dodge Growth Alliance, 24 North 9th Street, Suite A, Ft. Dodge, IA, 50501
   6. LaCrosse Builders Exchange, 427 Gillette Street, La Crosse, WI 54603
   7. Lincoln Builder's Bureau, 5910 S. 58th St., Suite C, Lincoln, NE 68516
   8. Master Builders of Iowa, 221 Park St., Des Moines, IA 50303
   9. Minnesota Builders Exchange, 1123 Glenwood Ave., Minneapolis, MN 55405
   10. North Iowa Builders Exchange, 15 W. State St, P. O. Box 1128, Mason City, IA 50401
   11. Omaha Builders Exchange, 4159 South 94th Street, Omaha, NE 68127
   12. Plains Builders Exchange, 220 N. Kiwanis Ave, Sioux Falls, SD 57101
   13. Sioux City Construction League, 3900 Stadium Dr., Sioux City, IA 51106
   14. Sioux Falls Builders Exchange, 1418 North C Avenue, Sioux Falls, SD 57104
   15. Springfield Blueprint, 1620 S Fifth Street, Springfield, IL 62703

1.07 BID SECURITY

A. Bids shall be accompanied by a security deposit as follows:
   1. Bid Bond of a sum no less than 5 percent of the Bid Amount on AIA A310 Bid Bond Form. Or
   2. Certified check in the amount of no less than 5 percernt of the Bid Amount.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 00 01 02

SECTION 00 01 07
SEALS PAGE

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Signature Date

Printed or typed name: DAVE INGHRAM, P.E.

License number 12567

My license renewal date is December 31, 2026

Pages or sheets covered by this seal: V & F SHEETS

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Signature Date

Printed or typed name: TONY DELOUIS, P.E.

License number 23167

My license renewal date is December 31, 2026

Pages or sheets covered by this seal: E SHEETS

END OF SECTION 00 01 07

SECTION 00 01 10
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E6.2 ELECTRICAL SCHEDULES

END OF SECTION 00 01 15

SECTION 00 11 13
ADVERTISEMENT FOR BIDS

FROM:

1.01 THE OWNER (HEREINAFTER REFERRED TO AS OWNER):

A. City of Marshalltown
24 N Center Street
Marshalltown, IA50158

B. Project Address:
105 W Boone St
Marshalltown, Iowa50158

1.02 AND THE ARCHITECT (HEREINAFTER REFERRED TO AS ARCHITECT):

A. FEH DESIGN

604 E. Grand Ave

Des Moines , IA 50309

B. Architect's Project Number: 2022226

1.03 BIDS DUE

A. Date: 12-02-2025

B. Time: Until 10:00 AM local time

C. Location:
1. Marshalltown City Hall
2. 10 W State Street
3. Marshalltown , IA 50158

1.04 NOTICE IS HEREBY GIVEN:

A. Sealed bids for the Marshalltown Public Library Remodel will be received by the City of Marshalltown .

B. Bids will be publicly opened by the Owner and publicly read by the Owner or designee, on said date and will be acted upon by the Owner at such later time and place as may then be fixed. Award of the Contract shall be to the lowest responsive, responsible bidder determined on the basis of a combination of the Base Bid and selected Alternates. Neither the Owner nor its agents will assume liability for the inability of the bidder to submit a bid in a timely manner. Bids received after the deadline will be rejected. Bidders bear full and complete responsibility for the timely submission of such bid. Time of receipt shall be the time recorded and determined by the District or designee.

1.05 TO: POTENTIAL BIDDERS

A. Project: Marshalltown Public Library Remodel

B. Project Scope: The Work of the Project is defined by the Contract Documents and consists of the following:
1. PROJECT INCLUDES SELECTIVE BUILDING DEMOLITION, AND RENOVATION OF THE EXISTING PUBLIC LIBRARY TO CREATE NEW MEETING SPACES.

C. Bids will be received for the following:
1. General Contract, including Architectural, Structural, Mechanical, Electrical, Technology, Civil, and Landscaping .

D. All bids shall be in accordance with Contract Documents prepared by FEH DESIGN , Which Contract Documents are made a part of this Advertisement by reference thereto.

E. Prime Contracts can obtain sets of printed bidding documents, and Sub-Contractors can obtain sets of printed bidding documents from Beeline and Blue , 2507 Ingersoll Ave , Des Moines , IA 50312 . Phone: (515) 244-1611 for a plan deposit of $100 per set. Deposit will be refunced

to bidders upon return of their complete set(s) of Bidding Documents, including any Addenda, properly bound and in good condition to FEH DESIGN within 14 calendar days after opening bids. Cash deposits will not be accepted. MBI plan deposit cards are also an acceptable method for deposit for documents. When shipping/postage is required, there will be a $20 non-refundable fee for each set of Bid Documents shipped.

F. Deposit checks shall be made payable to FEH DESIGN .

G. Postage checks shall be made payable to Beeline and Blue .

H. **Send all checks to Beeline and Blue .**

I. Bidding documents will be available for pickup/ordering on 11-10-2025 .

J. Bidding documents are on file at the Architect 's Office, 604 E. Grand Ave , Des Moines , IA 50309 ; at at the following Plan Centers:

1. Builders Association of Missouri, 720 Oak Street, Kansas City, Missouri 64106
2. Builders Exchange of Rochester, 108 Elton Hills Lane NW, Rochester, MN 55901
3. Central Illinois Plan Room, 1620 S. 5th Street, Springfield, IL 62703
4. Construct Connect, 28 N. Clark Street, Suite 450, Chicago, IL 60602
5. Greater Fort Dodge Growth Alliance, 24 North 9th Street, Suite A, Ft. Dodge, IA, 50501
6. LaCrosse Builders Exchange, 427 Gillette Street, La Crosse, WI 54603
7. Lincoln Builder's Bureau, 5910 S. 58th St., Suite C, Lincoln, NE 68516
8. Master Builders of Iowa, 221 Park St., Des Moines, IA 50303
9. Minnesota Builders Exchange, 1123 Glenwood Ave., Minneapolis, MN 55405
10. North Iowa Builders Exchange, 15 W. State St, P. O. Box 1128, Mason City, IA 50401
11. Omaha Builders Exchange, 4159 South 94th Street, Omaha, NE 68127
12. Plains Builders Exchange, 220 N. Kiwanis Ave, Sioux Falls, SD 57101
13. Sioux City Construction League, 3900 Stadium Dr., Sioux City, IA 51106
14. Sioux Falls Builders Exchange, 1418 North C Avenue, Sioux Falls, SD 57104
15. Springfield Blueprint, 1620 S Fifth Street, Springfield, IL 62703

The Planholder's List may be viewed on-line at www.beelineandblue.com .

Some plan centers may include the documents on their respective electronic sites, including iSQFT. Check with the individual plan centers to verify.

K. BIDDING REQUIREMENTS

1. Each Bid shall be made on a form furnished by the Architect , and must be accompanied by a certified check or cashier's check drawn on an Iowa bank, or Bid Bond to be executed by corporation authorized to contract as a surety in the State of Iowa , in the amount equal to five percent (5%) of the amount of the Bid, made payable to the City of Marshalltown , Marshalltown , IA and may be cashed by the Owner as liquidated damages in the event that the successful bidder fails to enter into a Contract and file a bond satisfactory to the Owner assuring the faithful fulfillment of the Contract and maintenance of said improvements as required by the law, the provisions of this Notice and Contract Documents within (10) days after acceptance of the lowest responsive, responsible bid. All bids shall be sealed and plainly marked. Any alteration of the Bid Form may be cause for rejection of the bid.
2. **State Sales Tax:** This project is tax exempt. **Do Not** include State Sales Tax in any calculation of Bid totals. Contractor will be provided with IA sales tax exemption number for this project.

L. BASIS OF BIDS

1. The successful Bidder will be required to furnish a Performance Bond and Labor and Material Payment Bond in an amount equal to one hundred percent (100%) of the Contract Sum, issued by a responsible Surety approved by the Owner and shall guarantee the faithful performance of the Contract and terms and conditions therein contained and the maintenance of said improvements pursuant to the provisions of the

Contract Document. Bid Security shall be made payable to City of Marshalltown , Marshalltown , IA .

2. Bid Security of two lowest Bidders will be retained until a contract has been awarded and executed, but no longer than 45 days. No Bidder may withdraw their bid within 30 days after opening of bids.
3. City of Marshalltown , reserves the right to reject any and all bids, re-advertise for new bids, and to waive informalities that may be in the best interest of City of Marshalltown .
4. Payment will be made by City of Marshalltown from cash-on-hand from such sources as may be legally available.
5. Monthly estimates will be paid to the Contractor as the work progresses in amounts equal to ninety-sevenpercent (97%) of the Contract value of the work completed during the preceding calendar month, including the actual cost (exclusive of overhead or profit to the Contractor) of materials and equipment of a permanent nature to be incorporated in the work and delivered to and stored at the job site. Such monthly payments shall in no way be construed as an act of acceptance for any part of the work, partially or totally completed. Final payment of the three percent (3%) due each Contractor will be made upon final acceptance of the work under the respective Contract by the Owner , and after receipt of satisfactory evidence that all claims pertaining to such Contract have been paid in full as provided in the Contract Document for said work.
6. The work under the Contract shall be commenced on or before a date to be specified in the Contract or written Notice to Proceed of the Owner, and shall achieve Substantial Completion by 07-16-2025 .
7. All bids will be governed by applicable provisions in the IA Code and District Policies.

M. PRE-BID MEETING/TOUR:

1. A Pre-Bid Meeting/Tour for interested bidders will be on 11-18-2025 at 10:00 AM local time at 105 W Boone St , Marshalltown , IA 50158 in the - . All prospective bidders are encouraged to be present at this Pre-Bid Meeting/Tour. A walk through tour will follow.
2. Each bidder shall visit the site to familiarize themselves with conditions under which they will operate. All interested parties in attendance at the pre-bid meeting will sign the attendance form. There are no provisions for any additional dates for site visits.

N. REJECTIONS

1. The Owner reserves the right to accept or reject any or all offers.

END OF SECTION 00 11 13

SECTION 00 11 14
NOTICE OF HEARING

HEARING: 11-24-2025

PROJECT: Marshalltown Public Library Remodel

For the

City of Marshalltown

24 N Center Street

Marshalltown , IA 50158

NOTICE OF PUBLIC HEARING: On 11-24-2025 at the Marshalltown City Hall , 10 W State Street , Marshalltown , IA 50158 , at 5:30 PM the City of Marshalltown shall hold a public hearing on the proposed plans, specifications, proposed form of contract and the estimated cost of said improvements. At said hearing any interested person may appear and file objections to the proposed plans, specifications, form of contract, or estimated cost of said improvements.

Published upon order of the City of Marshalltown , Marshalltown , IA .

END OF SECTION 00 11 14

SECTION 00 21 13
INSTRUCTIONS TO BIDDERS

SUMMARY

1.01 SEE AIA A701, INSTRUCTIONS TO BIDDERS AVAILABLE AT AIA DES MOINES OFFICE.

END OF SECTION 00 21 13

SECTION 00 22 13
SUPPLEMENTAL INSTRUCTIONS TO BIDDERS

1.01 INSTRUCTIONS TO BIDDERS

A. The "Instructions to Bidders" AIA Document A701, 2018 Edition, Articles 1 through 8 inclusive, is a part of this Contract, a copy is included in this Project Manual.

1.02 SUPPLEMENTARY INSTRUCTIONS TO BIDDERS

A. The following supplements modify or add to the AIA Instructions to Bidders. Where any part of the Instructions to Bidders is modified, the unaltered provisions of that part shall remain in effect.

1.03 MODIFIED INSTRUCTIONS

A. Article 1: Definitions
   1. Modify paragraph 1.1 to include the Notice of Hearing and the Notice of Bid Letting as part of the Bidding Documents.

B. Article 2: Bidder's Representations
   1. Add the following clause 2.1.3.1
      a. 2.1.3.1 The Bidder has investigated all the required fees, permits, and regulatory requirements of authorities having jurisdiction and has properly included in the submitted Bid, the cost of such fees, permits and requirements not otherwise indicated as provided by Owner.
   2. Add the following subparagraph 2.1.5
      a. 2.1.5 The Bidder is a properly licensed Contractor according to the laws and regulations of "Iowa's Contractor Law Registration and Bonding". and meets qualifications indicated in the Procurement and Contracting Documents.
   3. Add the following subparagraph 2.1.6
      a. 2.1.6 The Bidder has incorporated into the Bid adequate sums for work performed by installers whose qualifications meet those indicated in the Procurement and Contracting Documents.

C. Article 3: Bidding Documents
   1. 3.2 Interpretation or Correction of Bidding Documents - Add the following subparagraphs:
      a. 3.2.4 in the case of errors, inconsistencies, or ambiguities in the Bidding documents not interpreted or clarified by addendum or discovered too late for an addendum, the following applies:
         1) The better quality or greater quantity of Work shall be provided.
         2) To the best of their ability, the Bidders shall determine the proper methods or materials to fulfill the design intent of the Bidding Documents and include the cost of providing such methods in the Bid.
         3) Failure to request clarification will not waive the responsibility of comprehension of the documents and performance of the Work in accordance with the intent of the documents. Signing the Agreement will be considered as thorough comprehension of intent of the Bidding Documents.
      b. 3.2.5 The following consultants to the Architect were involved or responsible for the indicated phases or divisions of the Work, and are listed herein as a convenience to the Bidders.

1) Mechanical Engineering:
   (a) IMEG Corporation
   (b) 2882 106th Street
   (c) Des Moines , IA 50322
   (d) (515) 334-9906
   (e) Attention: David Inghram

2) Electrical Engineering:
   (a) IMEG
   (b) 2882 106th St
   (c) Des Moines , IA 50322
   (d) (515) 334-9906
   (e) Attention: Tony DeLouis

2. Add the following paragraph:
   a. 3.5 Contracts
      1) 3.5.1 The Owner invites the following Bids: Single Prime Contract

D. Article 4: Bidding Procedures
   1. 4.1
      a. Delete the first sentence in Subparagraph 4.1.6.
      b. Delete the word “additional” in the second sentence of 4.1.6.
   2. 4.2 Bid Security
      a. Add the following to Subparagraph 4.2.1:
         1) Each Bid shall be accompanied by a certified check, cashier's check, certified share draft or Bid Bond in the amount equal to five percent (5%) of the amount of the Bid as a guarantee that the Bidder will furnish a one hundred percent (100%) Performance Bond and a Labor and Material Payment Bond, and will enter into a Contract with the Owner in accordance with the terms of the Bid within (7) calendar days after receipt of the notice of award. Bid security shall be made payable to the City of Marshalltown . Bidders shall use AIA Document A310 - Bid Bond, or another corporate form approvable to the City of Marshalltown
      b. Add the following to Subparagraph 4.2.2:
         1) As soon as the Bids have been checked and compared, the Owner may, at itsdiscretion, return the bid security accompanying those Bids that in Owner’s judgment would not be considered in making the award. When award is made, the Bid security of the two (2) lowest responsive, responsible Bidders will be retained until the Contract and Bonds have been executed and the Contract approved by the Owner. Should the award be delayed more than thirty (30) days after opening of the Bids, all Bid security will be returned, unless such delay is from cause beyond the control of the Owner.
   3. 4.3 Submission of Bids
      a. Add the following to Subparagraph 4.3.1:
         1) Submit Bid and Bid security in separate opaque, sealed envelopes with: (1) Project name and (2) name of Bidder. Label one envelope "Bid Form" and the other envelope "Bid Security."
      b. ADDRESS BIDS TO:
         1) City of Marshalltown
         2) 24 N Center Street
         3) -

4) Marshalltown , IA 50035
5) BIDS DUE: 12-02-2025 at 10:00 AM local time

c. MAILED BIDS: Sent to address indicated above.
d. HAND CARRIED BIDS: Deliver to address indicated above.
e. Bids will be publicly opened and read immediately at the designated time by the City of Marshalltown.
f. Add the following Subparagraph 4.3.6
1) Bidders are hereby given notice to check carefully the accuracy and arithmetic of their bids before submission. Errors in bids may result in rejection of that bid and award to the next low bidder and disposition of bid security is at the discretion of the Owner.

4. 4.4 Modification or Withdrawal of Bid
a. Add the following to Subparagraph 4.4.1:
1) No Bid may be withdrawn within thirty (30) days from the scheduled date for receipt of Bids.

E. Article 5: Consideration of Bids
1. Delete the words “Advertisement or Invitation to Bid” and replace with “Notice of Bid Letting.”
2. Acceptance of Bid (Award)
a. Amend the first sentence to read as follows: “It is the intent of the Owner to award a Contract to the lowest responsive, responsible Bidder determined on the basis of a combination of the base bid and selected alternates provided the Bid has been submitted in accordance with the requirements of the Bidding Documents and does not exceed the funds available.”

F. Article 6: Post Bid Information
1. 6.3 Submittals
a. 6.3.1 Delete the words "as soon as practicable after" (in the first line) and substitute the words "within seven (7) days of".

G. Article 7: Performance Bond and Labor and Material Payment Bond
1. Modify Subparagraph 7.1.1 as follows:
a. 7.1.1 The Contractor shall furnish in duplicate a Performance Bond, Maintenance Bond and Labor and Material Payment Bond, each in the amount of one hundred percent (100%) of the Contract Sum, issued by a responsible surety approved by the Owner. Bidders shall use bid bond forms included in the specifications or of a corporate form approvable to the City of Marshalltown . Performance Bond and Payment Bond AIA Document A312.
b. Modify the first sentence of Subparagraph 7.2.1 as follows:
1) .1 The Bidder shall deliver the required bonds to the Owner, together with the executed Owner-Contractor Agreements, not later than seven (7) days following the date of the Contract award.

1.04

1.05 ADDITIONAL PROVISIONS

A. Add the following provisions, as indicated:
1. Article 9: Additional Instructions
a. 9.1 Preparation of Bids
1) 9.1.1 Bids shall be submitted on the prescribed form and shall be subject to all requirements of the Contract Documents and these INSTRUCTION TO BIDDERS. The Bidder must bid all of the Alternates, if any are listed. Special

care shall be exercised in the preparation of Bids. All Bids must be regular in every respect and no interlineations, excisions, or special conditions shall be made or included in the bid form of the Bidder.

2) 9.1.2 Each Bid shall furnish the full business name, business address, and treasury member of the person, firm, or corporation submitting the Bid. The signature of the person signing a Bid shall be the usual signature of that person, and the name of each person signing a Bid shall be typed or printed below the signature.
3) 9.1.3 A Bid by an Individual shall furnish their full name and complete address.
4) 9.1.4 A bid by a Partnership shall furnish the full name and complete home address of each partner. A Bid by a partnership shall be signed with the partnership's name by one of the members of the partnership or by an authorized representative, followed by the signature and designation of the person signing the Bid.
5) 9.1.5 A Bid by a Corporation shall be signed with the legal name of the corporation, followed by the State of Incorporation and by the signature of the president, secretary, or other person authorized to bind it in the matter. When requested by the Owner, satisfactory evidence of authority of the officer signing on behalf of a corporation shall be furnished. Attached to a Bid by a corporation shall be a list containing the name and complete home address of each principal officer of the corporation.
6) 9.1.6 The Owner may consider as irregular any Bid on which there is an alteration of or departure from the Bid Form hereto attached and at its option may reject the same.
7) 9.1.7 Bidders shall carefully examine the Bidding Documents and construction site to obtain firsthand knowledge of existing conditions. The Contractors will not be given extra payments for conditions which can be determined by examining the site and Bidding Documents.

b. 9.2 Errors In Bid
1) 9.2.1 Bidders or their authorized agents are expected to examine all Contract Documents, Drawings, Specifications, circulars, schedules, and other instructions pertaining to the Work. Failure to do so will be at the Bidder's own risk and he cannot secure relief on the plea of error in the Bid.

c. 9.3 Disqualification of Bidder
1) 9.3.1 Any one or more of the following causes may be considered as sufficient for the disqualification of a Bidder and the rejection of his Bid:
2) 9.3.1.1 More than one bid for the same work from an individual, firm, partnership, or corporation under the same or different names.
3) 9.3.1.2 Evidence of collusion among Bidders. (Participants in such collusion may receive no recognition as Bidders for any future work.)
4) 9.3.1.3 Lack of responsibility as evidenced by poor workmanship and progress of past work.
5) 9.3.1.4 Incomplete work that in the judgment of the Owner might hinder or prevent the prompt completion of additional work if awarded.
6) 9.3.1.5 For being in arrears on existing contracts, in litigation with the Owner, or having defaulted on a previous contract.

d. 9.4 Approval of Contract
1) 9.4.1 No contract is binding upon the Owner until it has been executed by and approved by the Owner and delivered to the Contractor and the Contract Bond has been filed with the City of Marshalltown , and approved.

e. 9.5 Award
1) 9.5.1 The Owner will select the Bid that it deems most reasonable and in its best interest in terms of cost, quality, appearance, performance of the Contractor and

the Contractor's proximity to the site and his ability to service the Project after it has been completed.

2) 9.5.2 The Contract will be awarded based on the above qualifications to the lowest responsive, responsible Bidder for the lowest combination of Base Bid and selected Alternates.

3) 9.5.3 The City of Marshalltown , Marshalltown , IA , reserves the right to reject any and/or all Bids and waive any or all informalities, as authorized by law, in connection therewith and shall award the Bid based on the best interests of the Owner.

f. 9.6 Contract Time

1) 9.6.1 Bidder agrees to commence Work as soon as possible on or before 10 days after receiving a written "Notice to Proceed" from the Owner, and to substantially complete the Project as soon as possible. The dates of substantial completion shall be so stated by the Construction Bidder in the space provided on the BID FORM and in compliance with project schedule.

g. Sales and Use Tax

1) 9.7 The Bidder shall not include in the bid State of Iowa and Local Option Sales and Use Tax for building materials that will be incorporated into real property for this project. Each Contractor shall provide a list of subcontractors and sub-sub contractors with their Federal Identification Number to the Owner, The Owner will issue exemption certificates to contractors, subcontractors, sub-sub contractors and suppliers in order to eliminate tax from the construction materials following award of contracts. If material is purchased outside the state of Iowa and the other State requires that the contractors, subcontractors, and sub-sub contractors and suppliers pay sales tax they are recommended to include this price in their Bid unless they are able to obtain a sales tax refund from said State.

h. Law and Regulations

1) 9.8 The Bidder’s attention is directed to the fact that all applicable state laws, municipal ordinances and the rules and regulations of all authorities having jurisdiction over construction of the Contract are applicable the same as though herein written out in full.

END OF SECTION 00 22 13

SECTION 00 31 00
AVAILABLE PROJECT INFORMATION

PART 1 GENERAL

1.01 EXISTING CONDITIONS

A. Certain information relating to existing surface and subsurface conditions and structures is available to bidders but will not be part of Contract Documents, as follows:

B. Existing Building Drawings, included as linked files: Click Here For Drawings
   1. Original Construction Drawings

C. Geotechnical Report: Unavailable.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 00 31 00

SECTION 00 41 00
BID FORM

THE PROJECT AND THE PARTIES

1.01 TO:

A. City of Marshalltown (Owner)
24 N Center Street
-
Marshalltown , IA 50035

1.02 FOR:

A. Project: Marshalltown Public Library Remodel

B. Project Number: 2022226

C. BIDS DUE: 12-02-2025 at 10:00 AM local time.

D. BID LOCATION:
1. Marshalltown City Hall
2. 10 W State Street
3. Marshalltown , IA 50158

1.03 SUBMITTED BY: (BIDDER TO ENTER NAME AND ADDRESS)

A. Bidder's Full Name _____
1. Address _____
2. City, State, Zip_____
3. Date_____
4. Phone_____

1.04 OFFER

A. The Bidder, in compliance with Advertisement for Bid for the Marshalltown Public Library Remodel , having examined the drawings and specifications with related documents and the site of the proposed work, and being familiar with all of the conditions surrounding the construction of the proposed Project, including the availability of materials and labor, hereby proposes to furnish all labor, materials, equipment and supplies and to construct the Project in accordance with the Contract Documents, within the time set forth therein, and at the prices stated below.

B. Bidder agrees to perform all of the Contract Work, including architectural, mechanical, and electrical work, described in the Specifications and shown on the Drawings for the sum of:

1. _____Dollars
(Bidder to write out amount in text)

2. $_____
(Bidder to write out amount in numbers)

In the case the sums listed above differ, the lowest amount listed will be used.

C. Accompanying this Bid is a certified check, cashier's check, or Bid Bond as Bid Security, as required by the Bidding Documents.

1.05 ACCEPTANCE

A. This offer shall be open to acceptance and is irrevocable for forty-five days from the bid closing date.

B. If this bid is accepted by Owner within the time period stated above, we will:
1. Execute the Agreement within seven days of receipt of Notice of Award.
2. Furnish the required bonds within seven days of receipt of Notice of Award.

C. If this bid is accepted within the time stated, and we fail to commence the Work or we fail to provide the required Bond(s), the security deposit shall be forfeited as damages to Owner by reason of our failure, limited in amount to the lesser of the face value of the security deposit or the difference between this bid and the bid upon which a Contract is signed.

D. In the event our bid is not accepted within the time stated above, the required security deposit shall be returned to the undersigned, in accordance with the provisions of the Instructions to Bidders; unless a mutually satisfactory arrangement is made for its retention and validity for an extended period of time.

E. The Owner reserves the right to reject any or all bids submitted, re-advertise for new bids, and to waive any informalities therein in the best interest of City of Marshalltown .

1.06 CONTRACT TIME

A. Substantial Completion:
   1. All work required by the Contract Documents for Marshalltown Public Library Remodel shall achieve Substantial Completion by 06-01-2026.

B. In lieu of date indicated above, Bidder proposes that all work required by the Contract Documents shall achieve Substantial Completion by the date indicated below.
   1. Bidder Proposed Substantial Completion Date:_____

1.07 ADDENDA

A. The following Addenda have been received. The modifications to the Bid Documents noted below have been considered and all costs are included in the Bid Sum.
   1. Addendum # _____ Dated _____.
   2. Addendum # _____ Dated _____.
   3. Addendum # _____ Dated _____.
   4. Addendum # _____ Dated _____.

1.08 INSURANCE

A. The undersigned agrees to provide Liability Insurance, Workmen's Compensation Insurance, Employer's Liability, as required by applicable Federal, State, and Local Laws, and in the amounts specified. Certificates shall be filed with the Owner prior to commencement of the Work.

1.09 TAXES

A. The undersigned certifies that all of the prices stated above do not include Iowa State Sales and Use Tax.

1.10 BID FORM SIGNATURE(S)

A. The Corporate Seal of

B. _____

C. (Bidder - print the full name of your firm)

D. was hereunto affixed in the presence of:

E. _____

F. (Authorized signing officer, Title)

G. Signed and sealed this _____day of _____, 2025 .

H. Legal Classifiation: The undersigned does hereby declare that the Proposer has the legal status checked below.
   1. _____ Individual
   2. _____ Co-Partnership
   3. _____ Corporation Incorporated under the Laws of the State of Iowa .

END OF SECTION 00 41 00

SECTION 00 50 00
CONTRACTING FORMS AND SUPPLEMENTS

PART 1 GENERAL

1.01 CONTRACTOR IS RESPONSIBLE FOR OBTAINING A VALID LICENSE TO USE ALL COPYRIGHTED DOCUMENTS SPECIFIED BUT NOT INCLUDED IN THE PROJECT MANUAL.

A. AIA Forms can be purchased from the American Institute of Architect's State office at cost.
   1. American Institute of Architects - Iowa
   2. 400 Locust STreet, Suite 100, Des Moines, IA 50309
   3. Phone: 515-244-7502

1.02 AGREEMENT AND CONDITIONS OF THE CONTRACT

A. See Section 00 52 00 - Agreement Form for the Agreement form to be executed.

B. See Section 00 72 00 - General Conditions for the General Conditions.

C. See Section 00 73 00 - Supplementary Conditions for the Supplementary Conditions.

D. The Agreement is based on AIA A101.
   1. See the modified AIA A101 included in this Project Manual.

E. The General Conditions are based on AIA A201.

1.03 FORMS

A. Use the following forms for the specified purposes unless otherwise indicated elsewhere in Contract Documents.

B. Bond Forms:
   1. Bid Bond Form: AIA A310.
   2. Performance and Payment Bond Form: AIA A312.

C. Post-Award Certificates and Other Forms:
   1. Certificate of Insurance Form: ACORD Certificate of Insurance 25.
      a. Supplemental Attachment: AIA G715
   2. Schedule of Values Form: AIA G703.
   3. Application for Payment Forms: AIA G702 with AIA G703 (for Contractors).

D. Clarification and Modification Forms:
   1. Architect's Supplemental Instructions Form: AIA G710.
   2. Construction Change Directive Form: AIA G714.
   3. Change Order Form: AIA G701.

E. Closeout Forms:
   1. Certificate of Substantial Completion Form: AIA G704.
   2. Closeout Form: See Section 01 77 10 included in this Project Manual.
   3. Consent of Surety to Final Payment Form: AIA G707.

1.04 REFERENCE STANDARDS

A. AIA A101 - Standard Form of Agreement Between Owner and Contractor where the basis of Payment is a Stipulated Sum; 2017.

B. AIA A201 - General Conditions of the Contract for Construction; 2017.

C. AIA A310 - Bid Bond; 2010.

D. AIA A312 - Performance Bond and Payment Bond; 2010.

E. AIA G701 - Change Order; 2017.

F. AIA G702 - Application and Certificate for Payment; 1992.

G. AIA G703 - Continuation Sheet; 1992.

H. AIA G704 - Certificate of Substantial Completion; 2017.

I. AIA G707 - Consent of Surety to Final Payment; 1994.

J. AIA G715 - Supplemental Attachment for ACORD Certificate of Insurance 25; 2017.

K. AIA G710 - Architect's Supplemental Instructions; 2017.

L. AIA G714 - Construction Change Directive; 2017.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION 00 50 00

SECTION 00 72 00
GENERAL CONDITIONS

FORM OF GENERAL CONDITIONS

THE GENERAL CONDITIONS APPLICABLE TO THIS CONTRACT IS ATTACHED FOLLOWING THIS PAGE.

INCLUDED AS PART OF THE CONTRACT BY REFERENCE.

GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION

STANDARD AMERICAN INSTITUTE OF ARCHITECT'S FORMS TO BE INCLUDED BY REFERENCE.

THE FOLLOWING STANDARD FORMS PRODUCED BY THE AMERICAN INSTITUTE OF ARCHITES ARE A PART OF THESE BID DOCUMENTS AND WILL BE INCLUDED AS PART OF THE SIGNED CONTRACT.

NOTE: THIS FORM IS THE 2017 EDITION

GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION

AMERICAN INSTITUTE OF ARCHITECTS - AIA FORM A201

THIS FORM CAN BE PURCHASED FROM THE AMERICAN INSTITUTE OF ARCHITECT'S STATE OFFICE AT COST.

AMERICAN INSTITUTE OF ARCHITECTS

AIA IOWA

END OF SECTION 00 72 00

SECTION 00 73 00
SUPPLEMENTARY CONDITIONS

PART 1 GENERAL

1.01 SUMMARY

A. These Supplementary Conditions amend and supplement the General Conditions defined in Document 00 72 00 - General Conditions and other provisions of the Contract Documents as indicated below. Provisions that are not so amended or supplemented remain in full force and effect.

B. The terms used in these Supplementary Conditions that are defined in the General Conditions have the meanings assigned to them in the General Conditions.

1.02 RELATED SECTIONS

A. Section 00 50 00 - Contracting Forms and Supplements.

B. Section 01 42 16 - Definitions.

1.03 MODIFICATIONS TO GENERAL CONDITIONS

A. Article 1: General Provisions
   1. Change Paragraph 1.1 as follows:
      a. 1.1.1 The Contract Documents
         1) Delete the last sentence of Paragraph 1.1.1 and replace with the following:
            (a) The Contract Documents also include the bidding requirements (Notice to Bidders and Instruction to Bidders). Unless specifically enumerated in the agreements, the Contract Documents do not include sample forms and the Contractor's Bid Form. The Contract Documents executed or identified in accordance with Subparagraph 1.5.1 shall prevail in case of an inconsistency with subsequent versions made through manipulatable electronic operations involving computers.
      b. 1.1.2 The Contract
         1) Create subparagraph 1.1.2.1
            (a) The Contract Documents shall be signed by the Owner and Contractor. If either the Owner or Contractor or both do not sign all the Contract Documents, the Architect shall identify such unsigned Documents. No Contract shall be formed between parties until all Contract Documents are executed by both parties.
      c. Modify the second sentence in Section 1.1.8 to read as follows:
         1) "The Initial Decision Maker shall not be liable for results of interpretations or decisions rendered in good faith."
      d. Add Section 1.1.9:
         1) Terms: The terms indicated below shall be defined as having the meanings assigned to them as follows:
            (a) .1 Products: Means new material, machinery, components, equipment, fixtures, and systems forming the Work, but does not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work. Products may also include existing materials or components required for reuse.
            (b) .2 Furnish: To supply and deliver, unload, inspect for damage.
            (c) .3 Install: To unpack, assemble, erect, apply, place, finish, cure, protect, clean, and make ready for use.
            (d) .4 Provide: To furnish and install.
            (e) .5 Substitute the word >Architect/Engineer= for >Architect= each time the latter word appears.
   2. Add the following sentences to the end of Section 1.2.1:

a. In the case of an inconsistency between Drawings and Specifications, or within either Document itself, not clarified by Addendum, the better quality or greater quantity of Work shall be provided in accordance with the Architect's interpretation. In any case of discrepancy, the facts are to be brought to the attention of the Architect for a decision or interpretation.

3. Add Section 1.2.4
   a. Sections of Division 1 - General Requirements govern the execution of the Work of all sections of the specifications.
4. Add Paragraph 1.4.1 to Paragraph 1.4:
   a. 1.4.1 In the event of conflict among the various provisions of the Contract Documents, the terms shall be interpreted in the following order of propriety:
      1) Modifications to the Contract
      2) The Contract
      3) Special Conditions
      4) General Conditions
5. Section 1.5 Ownership and Use of Drawings, Specifications, and Other Instruments of Service
   a. Delete Section 1.5.1 and substitute the following:
      1) Design Documents or other Instruments of Service are Owner's exclusive property. Owner retains all common law, statutory and other reserved rights in the Design Documents or other Instruments of Service, including all copyrights in and to Design Documents and other Instruments of Service. Contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers shall not own or claim copyright in Design Documents or other Instruments of Service. Submittal or distribution to meet official regulatory requirements, or for other purposes in connection with Project are not to be construed as publication in derogation of Owner's reserved rights.
6. 1.7 Digital Data Use and Transmission
   a. Delete Section 1.7.1 and substitute the following:
      1) The Architect/Engineer may, with the concurrence of the Owner, furnish to the Contractor versions of Instruments of Service in electronic form. The Contract Documents executed or identified in accordance with Subparagraph 1.5.1 shall prevail in case of an inconsistency with subsequent versions made through manipulatable electronic operations involving computers.

B. Article 2: Owner
   1. Delete Sections 2.1.2 and 2.2.
   2. 2.3 Information and Services Required Of The Owner
      a. Modify Section 2.3.3 to read as follows:
         1) If the employment of the Architect terminates, the Owner shall employ a successor whose status under the Contract Documents shall be that of the Architect.
      b. Add the following language to the end of Paragraph 2.3.4:
         1) The Contractor shall compare information furnished by the Owner (including surveys and soil tests with observable physical conditions) and the Contract Documents and on the basis of such review, shall report to the Owner and Architect any conflicts, errors or omissions. Contractor shall be responsible for any additional costs, delays and damages resulting from the Contractor's failure to immediately report any such errors, inconsistencies or omissions.
      c. Delete Section 2.3.6 and substitute the following:
         1) The Owner will furnish the Contractor, free of charge, as many copies of Contract Documents as can be allocated for this use from quantities returned by Bidders. Contractor may purchase additional copies at the cost of reproduction, postage, and handling.
   3. Change Paragraph 2.5 by deleting the current language and replacing with the following:

a. Create subparagraph 2.5.1
    1) If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents, and fails within a seven (7) day period, or such shorter time period as may be reasonable under circumstances, after receipt of written notice from the Owner to the Contractor, to commence and continue correction of such default or neglect with diligence and promptness, the Owner may notify the Surety and request it to assume the obligations of the Contractor within seven (7) days following receipt by Contractor and Surety of written notice or the Owner may, without prejudice to any other remedies the Owner may have, correct such deficiencies. In such case an appropriate Change Order or Construction Change Directive shall be issued deducting from the payments then or thereafter due the Contractor, the cost of correction of such deficiencies, including reasonable attorney's fees and compensation for the Architect/Engineer's additional services incurred as result of such default, neglect or failure. Such action by Owner, and amounts charged to the Contractor are both subject to prior concurrence with Architect/Engineer. If current or future payments thereafter due Contractor are not sufficient to cover such amounts, Contractor, or Surety, shall pay difference to Owner.

C. Article 3: Contractor
1. Add the following at the end of Paragraph 3.1.1:
    a. Contractor shall at request of Owner prior to execution of Agreement and promptly from time to time as requested by the Owner, thereafter furnish Owner an update and current financial statement and/or Contractor Qualification Statement on AIA Document A305.
2. Add Sub-paragraph 3.1.2.1 as follows:
    a. 3.1.2.1 The Contractor shall supervise and direct Work in excellent and workmanlike manner, complete the work and everything properly incidental thereto as stated in the Project Manual and Drawings or reasonably implied therefrom and otherwise in accordance with Contract Documents.
3. Add at the end of Paragraph 3.1.3 as follows:
    a. The Contractor shall not be relieved of its obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect in the Architect's administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor. To the extent permitted by law, the Contractor waives any rights, claims, or causes of action against Owner as a result of activities or duties or intentional or negligent misconduct by the Architect in the Architect's administration of the Contract, or representations made by Architect/Engineer in Instruments of Service.
4. 3.2 Review Of Contract Documents and Field Conditions By Contractor
    a. Add the following new language to the end of Paragraph 3.2.1:
        1) The Contractor also represents that all Contract Documents for the Project have been examined; including those intended for work of trades not normally performed by the Contractor's own forces, and that it has become thoroughly familiar with all conditions which may pertain to or affect the Work under the Contract.
    b. Add the following language to Paragraph 3.2.2.:
        1) Modify Section 3.2.2 to add the words:
            (a) including any ordering of materials' in line two after the word "Work".
        2) Any costs associated with Contractor's failure to immediately notify the Architect and the Owner of items listed above shall be borne by the Contractor.
    c. Add to the end of Section 3.2.3 the following:
        1) 3.2.3 The Contractor must take field measurements and verify Site conditions, and must carefully compare such field measurements and Site conditions and

other information known to the Contractor with the Contract Documents, before ordering any material or doing any Work at the Site.

d. Delete Section 3.2.4 and substitute the following:
    1) Contractor shall make frequent inspections during progress of Work to confirm that Work previously performed by Contractor is in compliance with Contract Documents and applicable laws and regulations bearing on performance of Work and Referenced Standards and that portion of Work previously performed by Contractor or by others are in proper condition to receive subsequent Work.
e. Add the following Paragraphs 3.2.5 - 3.2.8 to Section3.2:
    1) 3.2.5 If the Contractor believes that any portions of the Contract Documents do not comply with applicable laws, statutes, ordinances, building codes, and rules and regulations, or any orders by code enforcement officials or the Owner or its designee acting in the capacity of building code inspectors or Referenced Standards, the Contractor must promptly notify the Owner and the Architect of the non-compliance as provided in Section 3.2.6 and request direction before proceeding with the affected Work.
    2) 3.2.6 Contractor shall promptly notify Owner and Architect/Engineer in writing of any apparent errors, inconsistencies, omission, ambiguities, construction impracticalities or code violations discovered as result of Contractor's review of Contract Documents including any differences between actual and indicated dimensions, locations and descriptions, and shall give Owner and Architect/ Engineer timely notice in writing of same and any corrections, clarifications, additional Drawings or Specifications, or other information required to define Work in greater detail or to permit proper progress of Work. Contractor shall provide similar notice with respect to any variance between its review of Site and physical data and Site conditions observed.
    3) 3.2.7 If Contractor performs any Work involving an apparent error, inconsistency, ambiguity, construction impracticality, omission or code violation in Contract Documents of which Contractor is aware, or which could reasonably have been discovered by review required by Section 3.2, without promptly written notice to Owner and Architect/Engineer and request for correction, clarification or additional information, as appropriate, Contractor does so at its own risk and expense and all claims relating thereafter are specifically waived.
    4) 3.2.8 The Owner is entitled to reimbursement from the Contractor for amounts paid to the Architect/Engineer for evaluating and responding to the Contractor's requests for information that are not prepared in accordance with the Contract Documents or where the requested information is available to the Contractor from a careful study and comparison of the Contract Documents, field conditions, or other Owner-provided information, Contractor-prepared coordination drawings, or prior Project correspondence or documentation.

5. Change Section 3.3.1 to add the word "written" between the words "timely" and "notice" in line 7.
6. Add Section 3.3.4 as follows:
    a. The Contractor acknowledges that it is Contractor's responsibility to hire all personnel for the proper and diligent prosecution of the Work and the Contractor shall use its best efforts to maintain labor peace for the duration of the Project. In the event of a labor dispute, the Contractor shall not be entitled to any increase in the Contract Sum.
7. Change Paragraph 3.4.1 to read as follows:
    a. 3.4: Labor and Materials
        1) Add the following new language to the end of Paragraph 3.4.1:
        2) Work required by the Contract Documents to be performed after working hours or work the Contractor elects to perform after hours shall be completed at no additional cost to the Owner.
8. Add Section 3.4.2 as follows:

a. Except in the case of minor changes in the Work approved by the Architect in accordance with Section 3.12.8 or ordered by the Architect in accordance with Section 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order or Construction Change Directive.
b. Add Sections 3.4.2.1, 3.4.2.2 and 3.4.2.3 to Section 3.4.2:
    1) 3.4.2.1 After the Contract has been executed, the Architect, Owner, and Contractor shall function as a team to evaluate, review and consider substitution of products in place of those specified under the conditions set forth by the Architect.
    2) 3.4.2.2 After the Contract has been executed, the Owner and Architect/ Engineer may consider requests for the substitution of products in place of those specified. The Owner and Architect/Engineer may, but are not obligated to, consider only those substitution requests that are in full compliance with the conditions set forth in the General Requirements (Division 1 of the Specifications). By making requests for substitutions, the Contractor:
        (a) .1 represents that it has personally investigated the proposed substitute product and determined that it is equal or superior in all respects to that specified;
        (b) .2 represents that it will provide the same warranty for the substitution as it would have provided for the product specified;
        (c) .3 certifies that the cost data presented is complete and includes all related costs for the substituted product and for Work that must be changed as a result of the substitution, except for the Architect/ Engineer=s redesign costs, and waives all claims for additional costs related to the substitution that subsequently become apparent; and
        (d) .4 Agrees that it shall, if the substitution is approved, coordinate the installation of the accepted substitute, making such changes as may be required for the Work to be complete in all respects.
    3) 3.4.2.3 The Owner shall be entitled to reimbursement from the Contractor for amounts paid to the Architect/Engineer for reviewing the Contractor=s proposed substitutions and making agreed-upon changes in the Drawings and Specifications resulting from such substitutions.

9. Add the following to the end of Section 3.4.3:
    a. Persons permitted to perform Work under Contractor or any Subcontractor or Sub-Subcontractor shall meet all employment eligibility, safety training, security or drug/alcohol testing requirements required by law or by Owner. Any person not complying with all such requirements shall be immediately removed from the site.
    b. Add Section 3.4.3.1 to Section 3.4.3:
        1) The Contractor or its Subcontractors shall not be owned, operated, or managed by a registered sex offender who has been convicted of a sex offense against a minor in accordance with Iowa Code 692A.113. In addition, the Contractor or their Subcontractors shall not permit an employee who is a registered sex offender convicted of a sex offense against a minor on real property of the Owner in accordance with Iowa Code 692A.113. The Contractor and its Subcontractors shall further acknowledge and certify services provided under this Contract comply with Iowa Code 692A.113, and shall fully execute and deliver copies of Acknowledgment and Certification to the Owner prior to execution of Agreement.
10. Strike existing Paragraph 3.5.1 and replace with the following:
    a. 3.5.1 Contractor shall warrant to Owner that materials and equipment furnished under Contract will be of good quality and new unless otherwise required or permitted by Contract Documents, that workmanship will be free from defects not inherent in quality required or permitted, that workmanship will comply with all applicable laws,

building codes, rules and regulations, and that workmanship will conform to requirements of Contract Documents.

11. Add the following Paragraphs to 3.5:
    a. 3.5.3 The Contractor's general warranty and any additional or special warranties are not limited by the Contractor's obligations to specifically correct defective or nonconforming Work as provided in Article 12, or are they limited by any other remedies provided in the Contract Documents. The Contractor shall also be liable for any damage to property or persons (including death) including consequential and direct damages relating to any breach of the Contractor's general warranty or any additional or special warranties required by the Contract Documents.
    b. 3.5.4 The Contractor shall furnish all special warranties required by the Contract Documents to the Owner no later than Substantial Completion. The Owner may require additional special warranties in connection with the approval of "Or-Equals" or Substitutions, Allowance items, Work that is defective or nonconforming, or the acceptance of nonconforming Work pursuant to Article 12.
    c. 3.5.5 In case of work performed by Subcontractors and where warranties are required, secure warranties from said Subcontractors addressed to and in favor of the Owner. Deliver copies of same to Architect upon completion of work. Delivery of said warranties shall not relieve the Contractor from any obligations assumed under any other provision of contract.
12. Delete Section 3.6 text and add Sections 3.6.1 through 3.6.7 to Section 3.6:
    a. 3.6.1 Iowa Use Taxes shall be paid on all supplies and materials used in, and made component parts of, the Project.
    b. 3.6.2 Iowa Sales Taxes shall not be paid on qualified building materials purchased, or withdrawn from inventory, which will be incorporated into real property for Project.
    c. 3.6.3 The Owner is a designated exempt entity and will complete an online application to register this Contract with the Iowa Department of Revenue and Finance. The Owner will distribute Tax Exemption Certificates and Authorization Letters to the Contractor and all Subcontractors who have been identified at, or before filing of the Performance Bond. Refer to Iowa Department of Revenue and Finance publications available at http://www.state.ia.us/tax/business/Contr-ExEnt-Index.html.
    d. 3.6.4 At or before the time the Performance Bond is filed, Contractor shall provide a listing to the Owner identifying all Subcontractors. Listing shall indicate company name, address, telephone number, fax number, contact name, and Employer ID # for Contractor and each Subcontractor. Contractor and Subcontractors shall make copies of the Tax Exemption Certificate and provide to each supplier providing construction material, a copy of the Tax Exemption Certificate. This Certificate will allow the Contractor and Subcontractors to purchase qualified building materials free from sales tax for the Project. The Tax Exemption Certificate and Authorization Letter have been developed exclusively for this purpose and are applicable only for the specific Project under this Contract.
    e. 3.6.5 Contractor shall be responsible for informing themselves of tax laws, requirements, regulations, and interpretations as they apply to this Project.
    f. 3.6.6 Contractor shall maintain all records, invoices, receipts, or other accounting data regarding material purchases and shall allow, upon written request of Owner, and within reasonable time frame after receipt of such request, Owner to audit such records to verify tax savings. If audit reveals taxes paid or savings not transferred to Owner, Contractor shall be liable to Owner for those amounts and Owner may back charge Contractor for those amounts if balance of funds due and payable remains at time of such discovery.
        1) .1 Contractor shall require all Subcontractors of any tier to maintain all records, invoices, receipts, or other account data regarding material purchases. Contractor shall collect such records with each application for payment if

receives from its Subcontractors and shall maintain such records in same manner and location as Contractor's records.

2) .2 Contractor shall ensure its Subcontractors and any lower-tier Subcontractors including these obligations in their contracts and bind themselves in same manner as Contractor is bound to Owner.

13. Change Section 3.7 as follows:
    a. Delete Section 3.7.1 and substitute the following:
        1) 3.7.1 Unless otherwise specified in the Contract Documents, the Contractor shall secure and pay for the building permit and other permits and governmental fees, licenses, and inspections, including storm water permits, necessary for proper execution and completion of the Work which are legally required when bids are received or negotiations concluded. If applicable, Contractor shall file Notice of Intent for NPDES Coverage Under General Permit, file and implement Storm Water Pollution Prevention Plan (SWPPP), maintain pollution prevention devices, and file Notice of Discontinuation upon stabilization of site for storm water run-off associated with Project. Refer to Iowa Department of Natural Resources publications regarding storm water management; available at http://www.iowadnr.com/water/stormwater/forms.html or call 515-281-7017 for filing requirements. Contractor shall also pay for governmental inspection fees associated with Storm Water Pollution Prevention Plan.
    b. Delete Paragraph 3.7.3 and replace as follows:
        1) 3.7.3 If the Contractor, or any of its Subcontractors, performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.ity for such Work and shall bear the costs attributable to correction.
    c. Modify Section 3.7.4 as follows:
        1) Add the words ", in writing," in line 11 after the word "Contractor."
        2) Add the following before the last line: "Failure to properly register a claim within the 21 day period shall be grounds for denial of the claim."
    d. Modify subparagraph 3.7.5 to read as follows:
        1) Add the words "knowingly" and "and recognizes" on each side of the word "encounters" in the first sentence and add the words "or good faith belief of such existence" between the words "existence" and "of" in the last sentence.
    e. Add the following new Paragraph 3.7.6:
        1) The Contractor is responsible for scheduling inspections related to the performance of its Work and ensuring Work is complete for inspections. Any costs associated with reinspections caused by irregularities, deficiencies or non-conforming Work will be borne by the responsible contractor including all Architectural and Engineering Services related to evaluation of the problem and development of an acceptable solution.
    f. Add the following new Paragraph 3.7.7:
        1) The Contractor shall take note and comply with all governing laws, rules, and regulations affecting the Work. This may include, but is not limited to, such laws, rules, and regulations as:
            (a) .1 Licensing of Contractors for special requirements, eg hazardous waste removal.
            (b) .2 Requirements for special construction permits.
            (c) .3 Exemption from sales tax, if applicable.
            (d) .4 Wage rates and employment requirements when required by law or by Owner.
            (e) .5 Local labor requirements.
            (f) .6 Non-discriminatory hiring practices.
    g. Add the following new Paragraph 3.7.8:

1) State of Iowa, its agencies, and its political subdivisions, including cities, school districts and public utilities are required by Iowa Code 73A.21 to require reciprocal resident bidder and resident labor force preference.
2) Add the following new Paragraph 3.7.8.1:
(a) Resident Bidder: means person or entity authorized to transact business in State of Iowa and having place of business for transacting business with state at which it is conducting and has conducted business for at least three (3) years prior to date of first advertisement for public improvement. If another state or foreign country has more stringent definition of Resident Bidder, more stringent definition shall be applicable as to bidders from that state or foreign country.

14. Change Paragraph 3.9 to read as follows:
a. Delete subparagraph 3.9.1 and replace with the following:
1) The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site at all times during performance of the Work, including work of the Contractor's subcontractors. Any change in superintendent personnel must be approved by the Owner. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor. Other communications shall be similarly confirmed on written request in each case. This individual shall be fluent in all languages necessary to communicate with Contractor's employees. Owner shall be furnished with the e-mail address and cell phone numbers for the Superintendent. The approved superintendent will work in this position until completion of the Work unless the superintendent shall no longer be in the Contractor’s employ, or shall be released at the request of the Architect and/or Owner.
b. Delete subparagraph 3.9.2 and replace with the following:
1) The Contractor shall, within three (3) business days of the Owner's notification of an intent to award the Contract, submit to the Owner, and Architect/Engineer, the name and qualifications of the proposed superintendent(s) for review and approval. Within fourteen (14) days of receipt of the information, the Architect shall notify the Contractor whether the Owner or Architect has reasonable objection to the proposed superintendent. When the superintendent(s) are approved, they shall not be removed without the Owner's written approval which will not be unreasonable withheld. The responsibility of the superintendent is to supervise, schedule, coordinate, and manage field operations.
c. Add subparagraph 3.9.3.1 as follows:
1) The Superintendent or Superintendents shall be thoroughly competent with full experience in all phases of the Work to be performed under this Contract. Anyone not deemed capable of directing all trades involved in the Work shall be replaced or supplemented immediately upon request, by someone who is satisfactory. After a satisfactory superintendent has been assigned, they shall not be withdrawn without the consent of the Architect and/or Owner.

15. Change Paragraph 3.10 as follows:
a. 3.10: Contractor’s Construction Schedules
1) Delete Sections 3.10.1 and 3.10.2 and substitute the following:
(a) Section 3.10.1:
(1) The Contractor, within ten (10) days of award of Contract, shall prepare and submit in its native electronic and graphic format, Owner's and Architect/ Engineer's approval Contractor's baseline construction schedule for Work. Schedule shall not exceed time limits current under Contract Documents, shall be revised at appropriate intervals as required by conditions of Work and Project, shall be related to entire Project to extent required by Contract Documents, or as requested by Owner or Architect/Engineer, and shall provide for expeditious and

practicable execution of Work. Schedule at minimum shall demonstrate rate of work (ROW), availability dates, permits, submittals, working drawings, procurement, fabrication, delivery of materials, construction, and other activities necessary to complete Work. Thereafter, Contractor shall prepare and update construction schedule on at least a monthly basis a current Construction Schedule, if not more frequently at Owner's or Architect's request, to be submitted to Owner in graphic and native electronic format with each Application for Payment. Each update shall include narrative including:

(2) .1 Description of status of schedule.
(3) .2 Discussion of current and anticipated delays.
(4) .3 Discussion of progress of critical path activities.
(5) .4 Discussion of critical path for remainder of project.
(6) .5 Listing and discussion of logic changes and duration changes.

(b) Section 3.10.2:

(1) Contractor shall prepare submittal schedule within fourteen (14) days after being awarded Contract and thereafter as necessary to maintain current submittal schedule. The Contractor shall submit schedule(s) for Architect/Engineer's approval. Architect/Engineer's approval shall not unreasonably be delayed or withheld. If the Contractor fails to submit a submittal schedule, or fails to provide submittals in accordance with the approved submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals. Submittal schedule shall:

(2) .1 be coordinated with Contractor's construction schedule, and;
(3) .2 allow Architect/Engineer reasonable time to review submittals.

2) Add subparagraph 3.10.4 as follows:

(a) The Contractor shall furnish information concerning the Work. This information will include, but not be limited to the following:

(1) Daily: Manpower by craft.
(2) Weekly: Two week look ahead schedule update. Delivery requirements and status of materials.
(3) Monthly: Written report including schedule update as outlined above and cost information.

16. Delete Section 3.11 text and substitute the following:
    a. Contractor shall maintain at site for Owner one copy of Drawings, Specifications, Addenda, Current Construction Schedule, Change Orders and other Modifications, in good order and marked currently to indicate field and similar required submittals. Contractor shall display current Construction Schedule at site for reference and reliance by Owner and Architect/Engineer. These shall be available to Architect/Engineer and shall be delivered to Architect/Engineer for submittal to Owner upon completion of Work as record of Work as constructed.
17. Change Paragraph 3.12 as follows:
    a. Add the following to the end of Paragraph 3.12.5: "The Contractor shall provide the Owner and the Architect with copies of all submittals made to regulatory agencies.
    b. Add the following at end of Section 3.12.7:
        1) Contractor shall correct at their cost, and without any adjustment in Contract time, any Work the correction of which is required due to Contractor's failure to obtain approval of submittal required to have been obtained prior to proceeding with Work, including, but not limited to, correction of any conflicts in Work resulting from such failure.
    c. Delete subparagraph 3.12.8 and replace with the following:

1) The Work shall be in accordance with reviewed submittals except that the Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Architect's review of Shop Drawings, Product Data, Samples or similar submittals unless the Contractor has specifically informed the Architect in writing of such deviation at the time of submittal and (1) the Architect has taken appropriate action relative to the specific deviation as a minor change in the work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omission in Shop Drawings, Product Data, Samples or similar submittals by the Architect's review thereof.

d. Modify Section 3.12.10.1 by adding the word “reasonably” before the word “rely” in line 4.

e. Add Section 3.12.11 to Section 3.12:

1) The Architect/Engineer’s and Consultant’s review of Contractor’s submittals will be limited to examination of an initial submittal and 1 resubmittal. Architect will notify the Contractor before beginning a further review that such review will result in additional cost to the Owner which can be charged back to Contractor. The Contractor shall reimburse the Owner for amounts paid to the Architect/Engineer for evaluation of additional resubmittals.

18. Change Paragraph 3.13 to read as follows:

a. 3.13: Use Of Site

1) Add the following new Paragraph 3.13.2:

(a) Contractor shall perform the Work so as to cause a minimum of inconvenience to and interruption of the Owner’s operations. Any and all interruptions of the operations of the Owner necessary for the performance of the Work shall be noted in the progress schedule and the Contractor shall additionally give the Owner sufficient advance notice of such interruption as to allow the Owner to adjust operations accordingly. Contractor’s failure to give the Owner timely notice of such intentions shall place the responsibility of any resulting delays or additional costs solely with the Contractor.

2) Add the following new Paragraph 3.13.3:

(a) Except as may be specifically provided in the Contract Documents, the Contractor shall provide all necessary temporary facilities, including power, water, sanitation, scaffolding, storage, and security. If Owner makes any such facilities available to Contractor, it is without representation or warranty as to their adequacy for Contractor’s use, and Contractor shall indemnify, defend, and hold Owner harmless from and against any claims arising out of Contractor’s use of such facilities.

3) Add the following new Paragraph 3.13.4:

(a) The Contractor shall not bring or permit any subcontractor, supplier or anyone else for whom the Contractor is responsible, to bring on the site any asbestos, PCB’s petroleum, hazardous waste or radioactive materials (except for proper use in performing the Work)

19. Strike Paragraph 3.15.1 and 3.15.2 and replace with the following:

a. 3.15 CLEANING UP, WORKING HOURS AND NOISE ORDINANCE

1) 3.15.1 Work will be performed in accordance with the Contract Documents, the Applicable Building Code, and other applicable law governing the Contractor’s performance of the Work. No delays resulting from compliance with applicable laws or regulations may form the basis for any claim by the Contractor for delay damages or additional compensation or for any extensions of the Contract Time. The Contractor must not permit work outside of hours established in the Contract Documents on a Saturday, Sunday or State or federal holiday without the written consent of the Owner, given after prior written notice to the Architect and any other applicable consultants; such consent, if given, may be conditioned

upon payment by the Contractor of the Owner's, Architect's and any other applicable consultants' additional costs and fees, testing or regulatory agency costs incurred in monitoring such off-hours Work. The Contractor must notify the Owner as soon as possible if Work must be performed outside such times in the interest of the safety and protection of persons or property at the Site or adjacent thereto, or in the event of an emergency. In no event shall the Contractor permit Work to be performed at the Site without the presence of the Contractor's superintendent and person responsible for the protection of persons and property at the Site and compliance with all applicable laws and regulations, if different from the superintendent.

2) 3.15.2 The Contractor must comply with any applicable Noise Ordinances and any successor or substitute provisions covering the regulation of noise levels. It is the duty of the Contractor to familiarize itself with those provisions and perform the Work in compliance with those provisions.

3) 3.15.3 The Contractor must keep the Site and adjacent areas free from accumulation of waste materials or rubbish caused by operations under the Contract, and must keep tools, construction equipment, machinery and surplus materials suitably stored when not in use. If the Contractor fails to do so in a manner reasonably satisfactory to the Owner or the Architect within forty-eight (48) hours after notice or as otherwise required by the Contract Documents, the Owner may clean the Site and back charge the Contractor for all costs associated with the cleaning. The Contractor shall keep the premises and surrounding area free from accumulation of waste materials or rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery and surplus materials from and about the Project.

20. Change Paragraph 3.18 to read as follows:

a. 3.18 Indemnification

1) Delete 3.18.1 in its entirety and replace with the following:

(a) 3.18.1 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, and its agents, representatives, employees, and consultants from and against all claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from or in connection with the performance of the Work, provided that any such claim, damages, loss, or expense is caused in whole or in part by any negligent act or omission of the Contractor, anyone directly or indirectly employed by it or anyone for whose acts it may be liable, regardless of whether or not it is caused in part by the negligence or fault of a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or otherwise reduce any other right or obligation of indemnity what would otherwise exist as to any party or person described in the Agreement.

2) Delete 3.18.2 in its entirety and replace with the following:

(a) 3.18.2 In any and all Claims against the Owner or any of its agents, representatives, employees, and consultants by any employee of the Contractor, or anyone directly or indirectly employed by any of them or anyone for whose acts it may be liable, the indemnification obligation under this Section shall not be limited in any way by any limitations on the amount or types of damages, compensation or benefits payable by or for the Contractor under the workers' or workmen's compensation acts, disability benefit acts, or other employee benefit acts.

b. Add the following subparagraphs to 3.18;

1) 3.18.3 "Claims, damages, losses, and expenses" as these words are used in this agreement shall include claims, damages, losses, or expenses of any sort whatsoever and shall also include, but not be limited to (1) injury or damage

consequent upon the failure of or use or misuses by Contractor, its Subcontractors, agents, servants, or employees, of any kind of equipment, whether or not the same be owned, furnished, or loaned by Owner; (2) all attorneys fees and costs incurred in bringing an action to enforce the provisions of this indemnity or any other indemnity contained in the General Conditions, as modified by the Supplementary General Conditions; and (3) time expended by the parties being indemnified and employees, at their usual rates plus cost of travel, long distance telephone, and reproduction of documents.

2) 3.18.4 Contractor's indemnity obligations under this Paragraph 3.18 shall also specifically include, without limitation, all fines, penalties, damages, liability, costs, expenses (including, without limitation, reasonable attorneys' fees), and punitive damages (if any) arising out of, or in connection with, any (i) violation of or failure to comply with any law, statute, ordinance, rule, regulation, code, or requirement of a public authority that bears upon the performance of the Work by Contractor, Subcontractors, or any person or entity for whom either is responsible, (ii) means, methods, procedures, techniques, or sequences of execution or performance of the Work, and (iii) failure to secure and pay for permits, fees, approvals, licenses, and inspections as required under the Contract Documents, or any violation of any permit or other approval of a public authority applicable to the Work, by Contractor, Subcontractors, or any person or entity for whom either is responsible, but only to the extent caused by the negligent acts or omissions of Contractor, Design Consultants, Subcontractor, or any person or entity for whom either is responsible.

3) 3.18.5 In the event the Owner should prevail in any legal action arising out of the performance or non-performance of this Agreement, the Contractor shall pay, in addition to any damages, all expenses of such action including reasonable attorney's fees, all expert witness fees, costs, and litigation expenses incurred by the Owner, including those incurred on appeal. The term "legal action" shall be deemed to include any arbitration, administrative proceedings, and all actions at law or in equity, including appeals.

21. Article 4: Administration Of The Contract
    a. Delete Section 4.1.1 and substitute the following:
        1) The "Architect" is defined in this Contract as the Engineer or Architect lawfully licensed by the State to practice architecture or engineering or an entity, licensed by the State to lawfully practice architecture or engineering identified as such in this Contract and as is referred to throughout the Contract documents as if singular in number. The term "Engineer," "Architect/Engineer," "Engineer/Architect," "Architect's authorized representative," "Engineer's authorized representative," or "Architect/Engineer's authorized representative" shall mean "Architect" as defined in this paragraph.
    b. Delete Paragraph 4.2.2. and replace with the following:
        1) The Architect, as a representative of the Owner, shall attend construction meetings and visit the site while Work is in progress not less often than as outlined in the Contract between Owner and Architect, or as otherwise mutually agreed to by the parties, to observe and evaluate the site and the Work; to become familiar with the progress and quality of the Work; and to determine whether the Work evaluated and observed is proceeding in accordance with the Contract Documents and construction schedule and whether there are defects or deficiencies in the Work evaluated and observed. On the basis of on-site observations and evaluations, the Architect shall keep the Owner reasonably informed of the progress and quality of the Work and its conformance with the Construction Documents and the construction schedule. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect will not have control over, charge of, or responsibility for, the construction means, methods,

techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents, except as provided in Section 3.3.1.

c. Add Section 4.2.2.1 to Section 4.2.2:
   1) The Owner is entitled to reimbursement from the Contractor for amounts paid to the Architect/Engineer for site visits made necessary by the fault of the Contractor or by defects and deficiencies of the Work.

d. Delete Section 4.2.4 and substitute with the following:
   1) Except as otherwise provided in the Contract Documents or when direct communications have been specially authorized, the Owner and Contractor shall include the Architect in communications that relate to or affect the Architect's services or professional responsibilities. The Owner shall promptly notify the Architect of the substance of any relevant direct communications between the Owner and the Contractor otherwise relating to the Project. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and suppliers shall be through the Contractor. Communications by and with Separate Contractors shall be through the Owner. The Contract Documents may specify other communication protocols.
   2) Add the following subparagraphs:
      (a) 4.2.4.1 All notices, demands, requests, instructions, approvals, proposals and claims must be in writing. Any notice or demand upon the Contractor shall be sufficiently given if delivered at the office of the Contractor stated on the signature page of the agreement (or at such other office as the contractor may from time to time designate in writing to the Owner), or if deposited in the United States mail in a sealed, postage-paid envelope or delivered with charges prepaid to any telegraph company for transportation, in each case addressed to such office.
      (b) 4.2.4.2 All papers required to be delivered to the Owner shall, unless otherwise specified in writing to the Contractor, be delivered to the office of FEH DESIGN, 604 E. Grand Avenue, Des Moines, IA 50309 and any notice to or demand upon the Owner shall be sufficiently given if so delivered, or if deposited in the United States mail in a sealed, postage prepaid envelope, or delivered with charges prepaid to any telegraph company for transmission to said Owner at such address, or to such other representatives of the Owner may subsequently specify in writing to the Contractor for such purpose.
      (c) 4.2.4.3 Any such notice shall be deemed to have been given as of the time of actual delivery of (in the case of mailing) when the same should have been received in due course of post, or in the case of telegrams, at the time of actual receipt, as the case may be.
   3) Add Section 4.2.7.1 to Section 4.2.7:
      (a) In no case will the Architect/Engineer's review period on any submittal be less than fifteen (15) calendar days after receipt of the submittal from the Contractor.
   4) Add Section 4.2.14.1 to Section 4.2.14:
      (a) Contractor's requests for information shall be prepared and submitted in accordance with Division1 General Requirements sections on a form acceptable to Architect/Engineer. The Architect/Engineer will return without action requests for information that does not conform to requirements of the Contract Documents.

22. Article 5: Subcontractors
   a. 5.2 Award of Subcontracts and other Contracts for Portions of the Work
      1) Make the following changes to paragraph 5.2.1:

(a) Replace the words "as soon as practicable" (line 1) with the words "within 10 days".
(b) Add to the end of paragraph 5.2.1:
(1) A list of Subcontractors shall be submitted in duplicate on AIA Document G805, 2001 Edition. Contractor shall update this list throughout Project and keep Owner and Architect/Engineer advised of any new subcontractors employed.

2) 5.2.3 Add the following language to the end of subparagraph:
(a) Acceptance or rejection of any subcontractor shall not relieve the Contractor of performance of Work as called for under the Contract Documents, nor shall acceptance of a particular subcontractor be construed as acceptance of any particular purpose or material.

3) Add Paragraph 5.2.5 Manufacturers and Fabricators:
(a) Add subparagraph 5.2.5.1:
(1) Not later than thirty (30) days after the date of commencement of the Work, the Contractor shall furnish in writing to the Owner through the Architect/ Engineer the names of persons or entities proposed as manufacturers or fabricators for certain products, equipment and systems identified in the General Requirements (Division 1 of the Specifications) and, where applicable the name of the installing Subcontractor. The Architect/Engineer may reply within fourteen (14) days to the Contractor in writing stating 1) whether the Owner or the Architect/ Engineer has reasonable objection to any such proposed person or entity or 2) that the Architect/Engineer requires additional time to review. Failure of the Owner or Architect/Engineer to reply within the fourteen (14) day period shall constitute notice of no reasonable objection.
(b) Add subparagraph 5.2.5.2:
(1) The Contractor shall not contract with a proposed person or entity to whom the Owner or Architect/Engineer has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.
(c) Add subparagraph 5.2.5.3:
(1) If the Owner or Architect/Engineer has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect/Engineer has no reasonable objection. If the proposed but rejected manufacturer or fabricator was reasonable capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute manufacturer's or fabricator's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.
(d) Add subparagraph 5.2.5.4:
(1) The Contractor shall not substitute a person or entity previously selected if the Owner or Architect/Engineer makes reasonable objection to such substitution.

4) 5.4 Contingent Assignment of subcontractors:
(a) Delete Paragraph 5.4.2 in its entirety.

23. Article 6: Construction by Owner or by Separate Contract
a. Add the following to the end of Paragraph 6.1.1:
1) The Contractor shall give notification of the potential of a claim in writing to Owner and/or Separate Contractor within forty-eight (48) hours of the

occurrence or discovery of the potential of an occurrence of the delay or action that will result in making a claim.

b. Delete the last sentence of Section 6.2.2 and insert the following to the end of section:
   1) , except as to defects not then reasonably discoverable.'

24. Article 7: Changes in the Work
   a. Add the following to the end of Paragraph 7.1.1:
      1) No claim for an addition to the maximum Contract sum shall be considered a valid claim unless a written change order procedure is followed as outlined in this Section. Verbal authorization for changes must be supported by written approval before being considered valid.
   b. Add the following Clauses to 7.1.2:
      1) 7.1.2.1 All changes in Material or Methods as described in the Plans and Specifications must have written approval by the Owner and Architect prior to incorporation in the Project.
      2) 7.1.2.2 All changes in the Plans and Specifications must be documented by a Change Order Form issued by the Architect & approved by the Owner.
      3) 7.1.2.3 Total adjustments in Contract Amount are to reflect a reasonable markup to reflect overhead and profit, not to exceed as follows:
      4) 7.1.2.3.1 Change executed by Subcontractor: 10% by Subcontractor for overhead and profit and 5% by Contractor for coordination and profit. Subcontractor and Sub-subcontractor's total aggregate shall not exceed ten percent (10%) percent of the cost.
      5) 7.1.2.3.2 Change executed by Contractor without subcontractor involvement: 10% for overhead and profit.
      6) On Work deleted from the Contract, credit to the Owner shall be the Architect/Engineer approved net cost plus one-half (½) of the overhead and profit percentage noted above.
      7) 7.1.2.3.3 Contractor and Sub-contractors shall provide written detailed documentation for each (sub) contractor showing their time and materials on all changes submitted for review by the Architect unless pre-approved at a fixed amount. In order to facilitate checking of quotations for extras or credits, all proposals, except those so minor that their propriety can be seen by inspection, shall be accompanied by a complete itemization of costs including labor, materials and Subcontracts. Labor and materials shall be itemized in the manner described above. Where major cost items are Subcontracts, they shall be itemized also. In no case will a change involving over $500.00 be approved without such itemization.
   c. Add the following subparagraph 7.2.2:
      1) 7.2.2 The forms used to process a Change Order will include AIA Document G701, Change Order
   d. Add the following subparagraph 7.2.3:
      1) Contractor shall submit change proposals covering contemplated Change Order within ten (10) days after request of Owner, or Architect/Engineer or within ten (10) days after event giving rise to Contractor's claim for change in Contract Sum or Contract Time. No increase in Contract Sum or extension of Contract Time will be allowed Contractor for cost or time involved in making change proposals. Change proposals shall define or confirm in detail Work which is proposed to be added, deleted, or changed and shall include any adjustment which Contractor believes to be necessary in (i) Contract Sum, (ii) Contract time. Any proposed adjustment shall include detailed documentation including, but not limited to; cost, properly itemized and supported by sufficient substantiating data to permit evaluation including cost of labor, materials, supplies and equipment, rental cost of machinery and equipment, additional bond cost, plus fixed fee for profit and overhead (which includes office overhead and site-specific overhead

and general conditions) of ten percent (10%) if Work is performed by Contractor, or five percent (5%) if Work is performed by Subcontractor or Sub-subcontractor. Subcontractors and Sub-subcontractors overhead and profit in turn shall not exceed total aggregate of ten percent (10%). Change proposals shall be binding upon Contractor and may be accepted or rejected by Owner at their discretion. Owner may, at their option, instruct Contractor to proceed with Work involved in change proposal in accordance with this section without accepting change proposal in its entirety.

e. Add the following subparagraph 7.2.4
   1) If the Owner determines that a change proposal is appropriate, the Architect will prepare and submit a request for a Change Order or Contract Amendment providing for an appropriate adjustment in the Contract Sum or Contract Time, or both, for further action by the Owner. No such change is effective until the Owner and Architect sign the Change Order.

f. Add the following to subparagraph 7.3.2:
   1) ,upon prior written approval of the Owner:"

25. Article 8: Time
   a. Add the following new Clause to 8.1.1:
      1) 8.1.1.1 The project shall be substantially complete by 07-16-2025.
      2) Contractor may, at Contractor's option, complete the project at an earlier date to be indicated on the Bid Form.
   b. Add the following to the end of 8.1.2:
      1) or the date of the Notice To Proceed, whichever occurs later."
   c. Add the following paragraphs to 8.2:
      1) Add the following at end of 1st sentence of Section 8.2.2:
         (a) or prior to approval of Certificates of Insurance, and Additional Insured Endorsement and Notice of Cancellation Endorsement required to be submitted to Owner under Contract.
      2) 8.2.3 Add the following to the end of paragraph 8.2.3, "If Contractor's Work shall fall behind schedule for reasons that are not excused under the terms of the Contract, Contractor shall add additional workers or shifts, and/or work overtime as necessary to maintain the Construction Schedule."
      3) 8.2.4 The Contractor must conform to the most recently approved Construction Schedule. The Contractor must complete the indicated Work or achieve the required percentage of completion, as applicable, within any interim completion dates established in the most recently approved Construction Schedule.
      4) 8.2.5 The Contractor must maintain at the Site, available to the Owner and the Architect for their reference during the progress of the Work, a copy of the approved Construction Schedule and any approved revisions thereto. The Contractor must keep current records of and mark on a copy of the approved Construction Schedule the actual commencement date, progress, and completion date of each scheduled activity indicated on the Construction Schedule.
      5) 8.2.6 The Contractor represents that its bid includes all costs, overhead and profit which may be incurred throughout the Contract Time and the period between Substantial and final Completion. Accordingly, the Contractor may not make any claim for delay damages based in whole or in part of the premise that the Contractor would have completed the Work prior to the expiration of the Contract time but for any claimed delay.
      6) 8.2.7 If the Contractor's progress is not maintained in accordance with the approved Construction Schedule, or the Owner determines that the Contractor is not diligently proceeding with the Work or has evidence reasonably indicating that the Contractor will not be able to conform to the most recently approved Construction Schedule, the Contractor must, promptly and at no additional cost to the Owner, take all measures necessary to accelerate its progress to

overcome the delay and ensure that there will be no further delay in the progress of the Work and notify the Owner.

7) 8.2.8 The Owner reserves the right to issue a written directive to accelerate the Work that may be subject to an appropriate adjustment, if any, in the Contract Sum. If the Owner requires an acceleration of the Construction Schedule and no adjustment is made in the Contract Sum, or if the Contractor disagrees with any adjustment made, the Contractor must file a claim as provided in Article 15 or the same will be deemed to be conclusively waived.

d. Change paragraph 8.3.1 as follows:
   1) Delete the words “labor dispute” and add the words "excusable weather delays as defined in Section 15.1.5.2", between the words "fire" and "unusual" in 3rd line of section 8.3.1.

e. Add the following language to the end of Paragraph 8.3.1:
   1) A time extension shall be Contractor’s sole remedy and compensation for all such delays other than those resulting from the acts or negligence of the Owner, the Architect, or the Owner’s separate contractors (collectively “Owner Caused Delays”). For proven Owner Caused Delays, the Contractor may recoup the actual costs resulting from such delays, but not for any additional profit or fee.

26. Article 9: Payments And Completion
   a. 9.2 Schedule of Values:
      1) Add to Paragraph 9.2 :
         (a) In the 1st sentence, add the words “thirty (30) days” between the words “Architect,” and “before.”
   b. 9.3 Application for Payment
      1) Delete Paragraph 9.3.1 and replace as follows:
         (a) 9.3.1 At least thirty (30) days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment for operations completed in accordance with the schedule of values. Such application shall be notarized, if required, and supported by such data substantiating the Contractor's right to payment as the Owner or Architect may require, such as copies of requisitions from Subcontractors and material suppliers. If the Contract Documents required the Owner to retain a portion of the payments until some future time, the Applications for Payment shall clearly state the percentage and the amount to be retained. Once the Application is approved by the Architect, the Application for Payment must be submitted for approval to the City of Marshalltown at their next regularly scheduled meeting. The application must be received at the Owner office at least one week prior to the scheduled meeting for it to be included in that meeting's scheduled business. The form of Application for Payment shall be a notarized AIA Document G702, APPLICATION AND CERTIFICATE FOR PAYMENT, supported by AIA Documents G703, CONTINUATION SHEET. Contractor shall furnish forms.
      2) Modify Section 9.3.1.2 by inserting the following the word “Payments” in line 1: ‘must be consistent with the approved Schedule of Values and’.
      3) Add the following new Clauses to 9.3.1:
         (a) 9.3.1.3 Until Substantial Completion the Owner shall pay 97% of the amount due the Contractor on account of progress payments.
         (b) 9.3.1.4 The Owner's release of retained funds and final payment to the Contractor shall be made in accordance with Iowa Code Chapters 26 and 573 provisions.
         (c) 9.3.1.3 Progress payments shall be made monthly upon application. Monthly estimates will be paid to the Contractor as the work progresses in the amounts equal to ninety-seven percent (97%) of the Contract Value of the work completed, including materials and equipment delivered and

properly stored at the Project site, during the preceding calendar month, and will be based upon an Application prepared by the Contractor and subject to the approval of the Architect. The Contractor shall submit the Application for Payment to the Architect not later than the first day of the following month. The Owner shall make payment to the Contractor by the last day of the month. Such monthly payments shall in no way be construed as an act of acceptance for any part of the work, partially or totally completed. The remaining balance of threepercent (3%) of the Contract Sum, shall be paid by the Owner to the Contractor no earlier than thirty-one (31) days after the date of final acceptance of said Work by the Owner, subject to the conditions and in accordance with the provisions of Chapters 26 and 573 of the Code of Iowa. No such partial of final payment will be due until the Contractor has certified to the Owner that the materials, labor and services involved in each estimate have been paid for in accordance with the requirements stated in the Specifications.

c. Modify Paragraph 9.5 Decisions to Withhold Certification:
   1) Add the following to the end of Paragraph 9.5.1:
      (a) Service work not attended to.
      (b) Evidence of lack of careful workmanship.
      (c) Unworkmanlike or over expeditious construction.
      (d) Lack of attention to the special field duties specified.
   2) Delete subparagraph 9.5.4 in its entirety.
d. 9.6 Progress Payments
   1) Add the words "following Board approval" between the words "payment" and "in" in 1st line of Section 9.6.1.
   2) Add the following language to the end of Paragraph 9.6.1:
      (a) Owner will, within thirty (30) days of presentation to them of Notarized Certificate for Payment, pay Contractor progress payment on basis of approved Application for Payment. Laws of State of Iowa shall be followed regarding Contractor Payment, with a threepercent (3%) retainage held from each progress payment. Final payment shall be made no sooner than thirty-one (31) days following final approval and acceptance of completed Project. Until Substantial Completion, the Owner will pay ninety-sevenpercent (97%) of the amount due the Contractor on account of Progress Payments, (3%) retainage.
   3) Delete Paragraph 9.6.4 and substitute the following:
      (a) The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and material and equipment suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven (7) days, the Owner shall have the right to contact Subcontractors to ascertain whether they have been properly paid. Regardless of any requests made pursuant to this section, neither the Owner nor Architect/Engineer shall have an obligation to pay or to see to the payment of money to a Subcontractor, except as may otherwise be required by law.
   4) Modify Section 9.6.8 by deleting the word ‘lien’ throughout and replacing it with the words ‘Iowa Code Chapter 573.’
   5) Add new paragraph 9.6.9:
      (a) Payment to the Contractor will be made by the Owner from cash on hand from such sources as may be legally available.
      (b) Add subparagraph 9.6.8.1 as follows:
         (1) Payment to Contractor will be made by Owner from cash on hand from such sources as may be legally available.
   6) Delete Section 9.7 and substitute the following:

(a) If Owner does not pay the Contractor within sixty (60) days after the Contractor submits an Application for Payment to the Architect, the Contractor may file a claim in accordance with Article 15 of this Contract.

e. 9.8 Substantial Completion
   1) Add the following language to the end of Paragraph 9.8.1:
      (a) , subject only to completion of minor punch list items, the absence of completion of which does not interfere with Owner's intended use of Project. The Contractor assumes the responsibility for notifying the Architect in writing when the Project is complete and ready for inspection and review by Architect. This letter to the Architect shall include the date after which the Contractor will be ready for final review and inspection.
   2) Add new Paragraph 9.8.6:
      (a) The Contractor shall reimburse the Owner for any Architect/Engineer's Additional Services and/or attorneys' fees incurred as a result of Contractor's failure to finally complete the Work within sixty (60) days after date specified in the Contract Documents for Project Substantial Completion, or subsequently modified by Change Orders or dates established in the Certificate of Substantial Completion, whichever occurs earlier. Reimbursement for these additional services will be deducted by the Owner from the amounts due the Contractor and paid directly to the Architect/Engineer. For purposes of this paragraph "incurred as a result of" includes any architectural fees charged to Owner as Additional Fees under the contract due to the fact that the services were performed sixty (60) days (or some other amount of time specified in the Owner/Architect Agreement) after Substantial Completion. The nature of the services performed (and whether they would have otherwise been performed as normal services at some point under Basic Services) is not relevant to the Contractor's obligations for reimbursement under this section if the contract between the Owner and Architect states that any and all services and related fees are defined as Additional Services solely because they were performed more than sixty (60) days (or some other amount of time specified in the Owner/Architect Agreement) after earliest Substantial Completion date.

f. Add new subparagraph 9.8.7:
   1) 9.8.7.1 Request for Early Release of Retainage Funds:
      (a) 9.8.7.1.1 Upon achieving Substantial Completion, as defined by Iowa Code Chapter 26, the Contractor may formally request the release of all or part of the retainage funds being held on the Project. The Contractors' request for Release of the Retainage Funds shall be accompanied by a sworn statement that ten (10) calendar days prior to filing the Request for Release of the Funds a notice was given to all known subcontractors, sub-subcontractors and suppliers that the Contractor is requesting the early release of retainage funds. If proper documentation is received from the Contractor, the Owner will release all retainage funds at the next monthly Owner meeting or within thirty (30) days, whichever is less, except it may retain the following:
      (b) 9.8.7.1.2 An amount equal to 200% of the value of labor or materials yet to be provided on the Project as determined by the Owner and its authorized contract representative. For purposes of this section, "authorized contract representative" means the Architect of record on the Project, unless otherwise specified.
      (c) 9.8.7.1.3 An amount equal to 200% of the value of any Chapter 573 claims currently on file at the time the Request for Release of Retainage is approved.
      (d) 9.8.7.1.4 If the Owner withholds an amount from the retainage payment to the Contractor, the Owner will provide a reason the request is being denied

to the Contractor within thirty (30) calendar days of the receipt of the request.

(e) 9.8.7.1.5 Operation, Maintenance, and Warranty Manuals and Record Drawings and Specifications.

g. Add Paragraph 9.8.8

1) If proper documentation requested in Subparagraph 9.8.7 is received from Contractor, Owner shall make payment due Contractor at Owner's next monthly board meeting or within thirty (30) days, whichever is less, except the Owner may retain the following to the extent authorized by law:

(a) .1 An amount equal to two hundred percent (200%) of the value of labor and materials yet to be provided on the Project as determined by the Owner and its authorized contract representative. For purposes of this Section, “authorized contract representative” means the Architect. Final values to be withheld shall be determined by the Architect/Engineer based on initial estimates provided by Contractor and Architect/Engineer's on-site visits and observations.

(b) .2 Double the amount of any Iowa Code Chapter 573 claims currently on file.

(c) .3 An amount equal to one-half percent (½) of the total value of the Project for Operation, Maintenance, and Warranty Manuals and Record Drawings and Specifications not submitted ten (10) days prior to Substantial Completion inspection.

h. Add Paragraph 9.8.9

1) If the Owner withholds any amounts of retained funds, the Architect/ Engineer, on behalf of the Owner, shall provide an itemization and list of reasons why amounts are being withheld within thirty (30) calendar days of receipt of request.

i. Add the Sections 9.8.10 through 9.8.14 as follows:

1) 9.8.10 Warranties required by the Contract Documents will commence on the Date of Substantial Completion of the Work unless otherwise provided in the Certificate of Substantial Completion or the Contract Documents.

2) 9.8.11 Upon execution of the Certificate of Substantial Completion, the Contractor will deliver custody and control of such Work to the Owner. The Owner will thereafter provide the Contractor reasonable access to such Work to permit the Contractor to fulfill the correction, completion and other responsibilities remaining under the Contract and the Certificate of Substantial Completion.

3) 9.8.12 Unless otherwise provided in the Certificate of Substantial Completion, the Contractor must complete or correct all items included in the final Punch List within sixty (60) days, subject to the availability of special order parts and materials, after the Date of Substantial Completion.

4) 9.8.13 Not later than ten (10) days after the date of Substantial Completion, the Contractor shall furnish to the Architect/Engineer all Closeout Documentation identified in General Requirements (Division 1 of the Specifications). Except with the consent of the Owner, the Architect/Engineer will perform Closeout Documentation review only during the sixty (60) day period following Substantial Completion. The Owner shall be entitled to deduct from the Contract Sum amounts paid to the Architect/Engineer for additional reviews beyond the 60 day time period identified.

5) 9.8.14 At the time of Substantial Completion, in addition to removing rubbish and leaving the building “broom clean,” the Contractor must replace any broken or damaged materials, remove stains, spots, marks and dirt from decorated Work, clean all fixtures, vacuum all carpets and wet mop all other floors, replace HVAC filters, clean HVAC coils, and comply with such additional requirements, if any, which may be specified in the Contract Documents.

j. 9.10 Final Completion And Final Payment

1) Delete Paragraphs 9.10.1 through 9.10.5 and add the following:
   (a) 9.10.1 When the Contractor has completed or corrected all items on the final Punch List and considers that the Work is complete and ready for final acceptance, the Contractor must give written notice to the Owner and the Architect and request a final inspection of the Work as provided in Section 9.10.2. The Contractor's notice and request for a final inspection must be accompanied by a final Application for Payment and the Submittals required by Section 9.10.3.
      (1) 9.10.1.1 The Architect/Engineer will perform no more than one (1) inspection to determine whether the Work or a designated portion thereof has attained Final Completion in accordance with the Contract Documents. The Owner is entitled to reimbursement from the Contractor for amounts paid to the Architect/Engineer for any additional inspections.
   (b) 9.10.2 Upon receipt of the Contractor's notice and request for final inspection, the Owner and the Architect will promptly make such inspection and, when the Owner and the Architect concur that the Work has been fully completed and is acceptable under the Contract Documents, the Architect will issue a Certificate of Final Completion to the Owner. The Contractor's notice and request for final inspection constitutes a representation by the Contractor to the Owner and the Work has been completed in full and strict accordance with terms and conditions of the Contract Documents. The Architect will promptly notify the Contractor if the Owner or the Architect do not concur that the Work is finally complete. In such case, the Contractor must bear the cost of any additional services of the Owner or the Architect until the Work is determined to be finally complete.
   (c) 9.10.2.1 The Contractor shall provide Project Record Documents, Operation and Maintenance Manuals, Instruction to Owner's personnel, Final Cleaning and other closeout procedures specified elsewhere.
   (d) 9.10.3 Final Payment will be made no earlier than thirty-one (31) days following approval by the Owner at a regularly scheduled meeting, receipt of all Chapter 573 Claim Releases, Sales Tax information, and all other required closeout documents, and subject to the conditions of and in accordance with the provisions of Iowa Code Chapter 573 and Iowa Code Chapter 26. Owner may withhold from final payment any and all amounts required to reimburse the Owner for all costs, fees (including reasonable attorney's fees) it incurred as a result of any Chapter 573 Claims filed on the project. Neither final payment nor any remaining retained percentage will become due until the Contractor submits the following documents to the Architect.
      (1) 9.10.3.1 An Affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner), have been paid or otherwise satisfied, submitted on AIA Document G706, Affidavit of Payment of Debts and Claims (latest edition) or such other form as may be prescribed by the Owner.
      (2) 9.10.3.2 A certificate evidencing that the Contractor's liability insurance and Performance Bond remain in effect during the one-year correction period following Substantial Completion as set forth in Section 12.2.2.1 and 12.2.2.2;
      (3) 9.10.3.3 A written statement that the Contractor knows of no substantial reason that the insurance will not be renewable to cover the period required by the Contract Documents;

(4) 9.10.3.4 Consent of surety to final payment, submitted on AIA Document G707 (latest edition) or other form prescribed by the Owner;
(5) 9.10.3.5 Other data required by the Owner establishing payment or satisfaction of obligations, such as receipts, claims, security interests or encumbrances arising out of the Contract, to the extent and in such form as may be prescribed by the Owner;
(6) 9.10.3.6 A certified building location survey and as-built site plan in the form and number required by the Contract Documents.
(7) 9.10.3.7 All warranties and bonds required by the contract Documents; and
(8) 9.10.3.8 Record Documents as provided in Section 3.2.2 and return of Contract Documents as provided therein.
(9) 9.10.3.9 Release or waiver of liens and Iowa Code Chapter 573 claims on behalf of Contractor and similar release or waiver on behalf of each Subcontractor and supplier, accompanied by AIA Document G706A, Affidavit of Release of Liens (latest edition) or such other form as may be prescribed by Owner;

k. Add new paragraph 9.11:
1) The Contractor and the Contractor's surety, if any, shall be liable for and shall pay the Owner for any extra costs for engineering or architectural services, construction observation services and related expenses necessitated by the delayed prosecution of the work by the Contractor beyond the date of Final Completion required by the Agreement. Such costs are in no way a penalty, but represent additional expenses to the Owner caused by the Contractor's delay in completing the Work.

l. Add paragraph 9.12:
1) No assignment by the Contractor of any principal contract or any part thereof, or of the funds to be received thereunder by the Contractor, will be recognized unless such assignment has had the written approval of the Owner and the Surety has been given due notice of such assignment and has furnished written consent thereto. In addition to the usual recitals in the Assignment Contract, the following language must be set forth: “It is agreed that the funds to be paid to the Assignee under this Assignment are subject to prior lien/Iowa Code Chapter 573 claims for services rendered on materials supplied for the performance of all work called for in said Contract, in favor of all persons, firms or corporations rendering such services supplying such materials.”

27. Article 10: Protection of Persons and Property
a. Add sub-paragraph 10.1.1 as follows:
1) Contractor shall take all necessary precautions to keep the site and work in compliance with the safety and health regulations for construction issued by the Bureau of Labor Standards of the U.S. Department of Labor as well as the Occupational Safety and Health Standards parts 1910 and 1926 as amended and as enforced by the State of Iowa.

b. Modify subparagraph 10.2.2 as follows:
1) Add a new subpargraph 10.2.2.1 as follows:
(a) Contractors shall comply with the Iowa Smoke Free Air Act while on Owner property and shall not smoke or use any tobacco while on Owner property. Owner property shall include, but not be limited to, inside private Contractor or employee owned vehicles while parked on Owner property.

c. Add Section 10.2.4.1 to Section 10.2.4:
1) When use or storage of explosives, or other hazardous materials, substances or equipment, or unusual methods are necessary for execution of the Work, the Contractor shall give the Owner reasonable advance notice.

d. Add Section 10.2.5.1 to Section 10.2.5:

1) Contractors required remedial action for damage and loss to property referred to in Sections 10.2.1.2 and 10.2.1.3 shall repair the damaged materials and surfaces to their original condition, or better, to the satisfaction of the Owner. All such repairs are the responsibility of the Contractor and shall be accomplished at no additional cost to the Owner.

e. Add subparagraph 10.2.9 to paragraph 10.2:
   1) 10.2.9 At the end of the day's work, all new work likely to be damaged shall be covered. During cold weather protect all work from damage. If low temperatures make it impossible to continue operations safely in spite of cold weather precautions, work shall cease after notifying Architect/Engineer. All other protective measures not mentioned above which may be required shall be furnished by the particular contractor responsible for such protection.

f. Add subparagraph 10.2.10 to paragraph 10.2:
   1) 10.2.10 Contractor shall construct and maintain all necessary temporary drainage and do all pumping necessary to keep excavations free of water.

g. Add subparagraph 10.2.11 to paragraph 10.2:
   1) 10.2.11 Contractor shall at all times, protect the excavation, trenches and/or the buildings from damage or rain water, spring water, ground water, backing up of drains, or sewers, etc. Provide all pumps, equipment, and enclosures to give this protection.

h. Add subparagraph 10.2.12 to paragraph 10.2:
   1) 10.2.12 Contractor shall provide all shoring, bracing, and sheeting as required for safety and for the proper execution of the Work. Remove when work is completed.

i. Modify Section 10.3.1 by deleting the word "notify" in line six and replacing it with the words "report the condition in writing to".

j. Delete Section 10.4 and substitute the following:
   1) In an emergency affecting safety of persons or property, the Contractor must take all necessary action, without the necessity for any special instruction or authorization from the Owner or Architect, to prevent threatened damage, injury or loss. The Contractor must promptly, but in all events with twenty-four (24) hours of the emergency, report such action in writing to the Owner and Architect. If the Contractor incurs additional costs on account of or is delayed by such emergency, the Contractor may request a change in the Contract Sum or Contract Time to account for such additional costs or delay in accord with Articles 7, 8 and 15. The Contractor must file any such request within ten (10) days of the emergency or it is deemed waived. Any adjustment in the Contract Sum or Contract time shall be limited to the extent that the emergency work is not attributable to the fault or neglect of the Contractor or otherwise the responsibility of the Contractor under the Contract Documents.

28. Article 11: Insurance and Bonds
    a. Section 11.1.1 shall be deleted and replaced with Exhibit A to these Supplementary Conditions, which is attached hereto and incorporated by reference herein.
    b. Section 11.1.2 shall be deleted and replaced with the following:
       1) The Contractor shall furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder. Bonds may be obtained through the Contractor's usual source and the cost thereof shall be included in the Contract Sum. The amount of each bond shall be equal to one hundred percent (100%) of the Contract Sum.
          (a) .1 The Contractor shall deliver the required bonds to the Owner not later than ten (10) days following the date the Agreement is entered into, or, if the Work is to be commenced prior thereto in response to a letter of intent, the Contractor shall, prior to the commencement of the Work, submit evidence satisfactory to the Owner that such bonds will be furnished.

(b) .2 The Contractor shall require the attorney-in-fact who executes the required bonds on behalf of the surety to affix thereto a certified and current copy of the power of attorney.

(c) .3 The Contractor shall require the bonding company to be registered with authority to transact business in State of Iowa.

29. Add the following subparagraphs:
    a. 11.1.4 Off Site Storage
        1) The Contractor shall provide insurance coverage for portions of the Work stored off the site after written approval of the Owner at the value established in the approval, and also for portions of the Work in transit.
30. 11.2 Owner’s Insurance
    a. Add the following to the last sentence of Subparagraph 11.2.1:
        1) Owner's all risk insurance will be provided by Owner with customary exclusions of certain perils.
    b. Add the following subparagraph:
        1) 11.2.1.1 This property insurance is written with a deductible of $1000.00 per occurrence. In the event of a paid claim, the Claimant, including subcontractors, shall be responsible for the deductible amount. Vandalism insurance shall not cover glass breakage. Should the Contractor desire this coverage, Contractor shall carry it at Contractor’s cost. Payments of any insurance deductibles will be at the expense of the party claiming loss under the policy.
31. Article 12 UNCOVERING AND CORRECTION OF WORK
    a. Add the words "upon written authorization from Owner" between the words "Architect" and "be uncovered" in 2nd line of Section 12.1.1.
    b. Add the words "upon written authorization from Owner" between the words "any request" and "to see" in 2nd line of Section 12.1.2.
    c. Delete Section 12.2.1 and substitute the following:
        1) The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, discovered before Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Architect’s services and expenses made necessary thereby, shall be at the Contractor’s expense.
    d. Delete Section 12.2.2.1 and substitute the following:
        1) In addition to Contractor's obligations under Section 3.5, if, within one (1) year after date of Substantial Completion of Work or designated portion thereof or after date of commencement of warranties established under any other provision of Contract Documents, or by terms of an applicable special warranty required by Contract Documents, any of Work is found not to be in accordance with requirements of Contract Documents, Contractor shall correct it promptly after receipt of written notice from Owner to do so. Owner shall give such notice promptly after discovery of condition. Before commencing correction of Work, Contractor shall submit to Owner written description of their proposed repairs. This proposal shall be approved by Design Professional before Contractor commences repair. Once Contractor has completed repair work, they shall notify Owner and Design Professional who shall promptly review corrected work. If Design Professional or Owner rejects corrected Work, Contractor shall continue with repairs until such time as Design Professional and Owner accept corrected Work. Where Contractor corrects defective Work during initial two (2) year period after Substantial Completion, if Owner discovers defects in corrected Work within one (1) year after repairs are made, then Contractor shall be obligated, upon written notice from Owner, to correct such defects within one (1) year from date that repairs were made.
    e. Add Section 12.2.6 to Section 12.2 as follows:

1) If Contractor fails or refuses to correct Work in accordance with their obligations under Contract Documents after written notice from Owner, then Owner may correct Work and Contractor shall be liable for costs to correct Work, any related architectural, engineering or other consulting costs, attorney's fees and expenses, and fines or penalties, if any. Any amounts due to Owner from Contractor under this Section may be withheld from balance of Contract Sum not yet paid.

32. Article 13 Miscellaneous Provisions
    a. Delete Paragraph 13.1 and substitute the following Subparagraph:
        1) The Contract shall be governed by the laws of the State of Iowa.
    b. Add Subparagraph 13.1.1 to Paragraph 13.1 as follows:
        1) Compliance with Law Provision: the Contractor agrees that it will comply with all applicable Federal, State and local laws, statutes, codes, rules, and regulations having jurisdiction over the Project. Contractor shall take all necessary precautions to keep the site and work in compliance with the safety and health regulations for construction issued by the Bureau of Labor Standards of the U.S. Department of Labor as well as the Occupational Safety and Health Standards, as amended and as enforced by the State of Iowa.
    c. Delete Subparagraph 13.2.2 in its entirety.
    d. Add the following after the 2nd sentence in Section 13.4.1:
        1) Contractor shall schedule all tests, inspections, or specific approvals required by law or Contract Documents so as to avoid any delay in Work.
    e. Add Section 13.4.7 to Section 13.4.
        1) In addition to tests required by Section 13.5, Owner may at any time arrange for other tests, inspections and specific approvals to be performed by others selected by Owner, at Owner's expense. Contractor shall cooperate with Owner and provide access to Work for such tests, inspections and approvals.
    f. Delete Paragraph 13.5 and substitute the following Paragraph:
        1) Payments due and unpaid under the Contract Documents shall bear interest from the date the payment is due and shall bear interest at the rate established by Iowa Code Section 74A.2 or Iowa Code Section 573.14, whichever is less.
33. Add Sections 13.6 through 13.9 to Article 13:
    a. 13.6 Owner’s Right to Occupy
        1) Owner shall have the right to occupy, without prejudice to rights of either party, any completed or largely completed portion of structure or Work, notwithstanding the fact that time for completing entire Work, or such portion thereof, may not have expired. Such occupancy and use shall not be an acceptance of Work taken or used.
    b. 13.7 Rebates
        1) Owner shall have the right to apply for, and secure all rebates which are available when Bids are received. Contractor shall provide invoices, itemizations, and cooperation to the Owner in this regard.
    c. 13.8 Conformance with Laws
        1) The Contractor shall conform with provisions of Federal Civil Rights Act, the Code of Iowa, Chapter 216 Civil Rights Commission and rules and regulations adopted thereto by the Iowa Civil Rights Commission. The Contractor shall comply with applicable federal, state, and local laws, rules, regulations, ordinances, policies and procedures, including Owner's policies and procedures, and Iowa Smoke Free Air Act. The Contractor shall require similar clauses in all of their subcontracts for service or materials.
    d. 13.9 Equal Opportunity
        1) 13.9.1 The Contractor shall maintain policies of employment as follows:
            (a) 13.9.1.1 The Contractor and the Contractor's Subcontractors shall not discriminate against any employee or applicant for employment because of

race, creed, religion, color, sex, national origin, ancestry, familial status, age, mental or physical disability, sexual orientation, gender identity, genetic information or any other protected class under state or federal law. The Contractor shall take affirmative action to insure that applicants are employed, and that employees are treated during employment without regard to their race, creed, religion, color, sex or national origin, ancestry, familial status, age, mental or physical disability, sexual orientation, gender identity, genetic information or any other protected class under state or federal law. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the policies of non-discrimination.

(b) 13.9.1.2 The Contractor and the Contractor's Subcontractors shall, in all solicitations or advertisements for employees placed by them or on their behalf, state that all qualified applicants will receive consideration for employment without regard to race, creed, religion, color, sex, national origin, ancestry, familial status, age, mental or physical disability, sexual orientation, gender identify, genetic information or any other protected class under state or federal law.

34. Modify Article 14 as follows:
    a. 14.1.1 Delete subparagraph 14.1.1 in its entirety and replace with the following:
        1) Contractor has no right to stop Work as consequence of non-payment. In event of any disagreement between Contractor and Owner involving Contractor's entitlement to payment, Contractor's only remedy is to file Claim in accordance with Article 15. Contractor shall diligently proceed with Work pending resolution of Claim.
            (a) .1 If, however, an Application for Payment has been approved for payment by Owner, and Owner fails to make payment within sixty (60) days of approval of payment by Owner, Contractor may upon ten (10) day written notice to Owner, stop work if payment is not made by Owner within ten (10) days following notice.
    b. Delete subparagraphs 14.1.2 through 14.1.4 in their entirety.
    c. Delete Sections 14.2.1 through 14.2.4 and substitute the following:
        1) 14.2.1 Delete the section in its entirety and replace with the following:
            (a) 14.2.1 The Owner may terminate the Contract for cause if the Contractor:
                (1) Fails to supply adequate properly skilled workers or proper materials;
                (2) Fails to make payment to Subcontractors or Suppliers for materials or labor in accordance with the respective agreements between the Contractor and the Subcontractors or Suppliers;
                (3) Fails to comply with any laws, ordinances, or rules, regulations or orders of a public authority having jurisdiction;
                (4) Fails to perform the Work in accordance with the Contract Documents or otherwise breaches any provision of the Contract Documents;
                (5) Anticipatory breaches or repudiates the Contract;
                (6) Fails to make satisfactory progress in the prosecution of the Work required by the Contract; or
                (7) Endangers the performance of this Contract.
        2) 14.2.2 Delete the section in its entirety and replace with the following:
            (a) 14.2.2 Owner may terminate Contract, in whole or in part, whenever Owner determines that sufficient grounds for termination exist as provided in Section 14.2.1. Owner will provide Contractor with written notice to cure default. If default is not cured, termination for default is effective on date

specified in Owner's written notice. However, if Owner determines that default contributes to curtailment of an essential service or poses an immediate threat to life, health, or property, Owner may terminate Contract immediately upon issuing oral or written notice to Contractor without any prior notice or opportunity to cure. In addition to any other remedies provided by law or Contract, Contractor shall compensate Owner for additional costs that foreseeably would be incurred by Owner, whether costs are actually incurred or not, to obtain substitute performance. Termination for default is termination for convenience if termination for default is later found to be without justification.

3) 14.2.3 Upon receipt of written notice from the Owner of termination, the Contractor must:
   (a) .1 Cease operations as directed by the Owner in the notice and, if required by the Owner and County, participate in an inspection of the Work with the Owner, County and the Architect to record the extent of completion thereof to identify the Work remaining to be completed or corrected, and to determine what temporary facilities, tools, equipment and construction machinery are to remain at the Site pending completion of the Work;
   (b) .2 Complete or correct the items directed by the Owner, and take actions necessary, or that the Owner may direct, for the protection and preservation of any stored materials and equipment and completed Work;
   (c) .3 Unless otherwise directed by the Owner, remove its tools, equipment and construction machinery from the Site; and
   (d) .4 Except as directed by the Owner, terminate all existing subcontracts and purchase orders and enter into further subcontracts or purchase orders.
4) 14.2.4 Following written notice from the Owner of termination, the Owner may:
   (a) Take possession of the Site and of all materials and equipment thereon, and at the Owner's option, such temporary facilities, tools, construction equipment and machinery thereon owned or rented by the Contractor that the Owner elects to utilize in completing the Work;
      (1) Accept assignment of subcontracts and purchase orders, and
      (2) Complete the Work by whatever reasonable method the Owner may deem expedient.

d. Add Sections 14.2.5 through 14.2.9 to Section 14.2:
1) 14.2.5 Upon termination for cause, the Contractor must take those actions described in Section 14.2.3, and the Owner may take those actions described in Section 14.2.4, subject to the prior rights of the Contractor's Surety.
2) 14.2.6 When the Owner terminates the Contract for cause, the Contractor is not entitled to receive further payment until the Work is completed and the costs of completion have been established.
3) 14.2.7 If the unpaid balance of the Contract Sum less amounts which the Owner is entitled to offset from the unpaid Contract balance, including actual or Liquidated Damages, compensation for the Architect's services and expenses made necessary thereby, and other damages and expenses incurred by the Owner, including reasonable attorney's fees, exceeds the costs of completing the Work, including compensation for the Owner's and the Architect's services made necessary thereby, such excess will be paid to the Contractor or Surety, as directed by the Surety. If such costs exceed the unpaid Contract balance, the Contractor must pay the difference to the Owner upon written demand. This obligation for payment survives termination of the Contract.
4) 14.2.8 In completing the Work following termination for cause, the Owner is not required to solicit competitive bids or to award completion work to the lowest bidder, but may obtain such completion work and related services on the basis of sole source procurement and negotiated compensation.

5) 14.2.9 If the Contractor files for protection, or a petition is filed against it, under the Bankruptcy laws, and Contractor wishes to affirm the Contract, Contractor shall immediately file with the Bankruptcy Court a motion to affirm the Contract and shall provide satisfactory evidence to Owner and to the Court of its ability to cure all present defaults and its ability to timely and successfully complete the Work. If Contractor does not make such an immediate filing, Contractor accepts that Owner shall petition the Bankruptcy Court to lift the Automatic Stay and permit Owner to terminate the Contract.

35. Delete subparagraphs 14.4.1 through 14.4.3 in their entirety and replace with the following:
    a. 14.4.1 The Owner may, at any time, terminate the Contract or any portion thereof or the Work for the Owner's convenience and without cause.
    b. 14.4.2 Upon receipt of the written notice from the Owner of termination, the Contractor must:
        1) .1 Cease operations as directed by the Owner in the notice and, if required by the Owner, participate in an inspection of the Work with the Owner and the Architect/Engineer to record the extent of completion thereof, to identify the Work remaining to be completed or corrected, and to determine what temporary facilities, tools, equipment and construction machinery are to remain at the Site pending completion of the Work;
        2) .2 Complete or correct the items directed by the Owner, and take actions necessary, or that the Owner may direct, for the protection and preservation of any stored materials and equipment and completed Work;
        3) .3 Unless otherwise directed by the Owner, remove its tools, equipment and construction machinery from the Site, and
        4) .4 Except as directed by the Owner, terminate all existing subcontracts and purchase orders related to the Work and enter into no further subcontracts or purchase orders therefor.
    c. 14.4.3 Following written notice from the Owner of termination, the Owner may:
        1) .1 Take possession of the Site and of all materials and equipment thereon, and at the Owner's option, such temporary facilities, tools, construction equipment and machinery thereon owned or rented by the Contractor that the Owner elects to utilize in completing the Work;
        2) .2 Accept assignment of subcontracts and purchase orders; and
        3) .3 Complete the Work by whatever reasonable method the Owner may deem expedient.
    d. 14.4.4 In case of termination for the Owner's convenience, the Contractor will be entitled to compensation only for the following items:
        1) Payment for acceptable Work performed up to the date of termination;
        2) The costs of preservation and protection of the Work if requested to do so by the Owner;
        3) The cost of terminating the following contracts including:
            (a) .1 Purchased materials but only if not returnable and provided to the Owner, or the restocking or return charge, if any, if returnable at the Owner's written election;
            (b) .2 Equipment rental contracts if not terminable at no cost but not to exceed an amount equal to thirty (30) days rental;
            (c) .3 Documented transportation costs associated with removing Contractor-owned equipment.
            (d) .4 Documents demobilization and close-out costs; and
            (e) .5 Overhead and profit on the foregoing not to exceed ten percent (10%).
        4) The Contractor will not be compensated for the cost of terminating subcontracts, which must be terminable at no cost to the Owner if the Contract is terminated.

5) The Contractor will not be compensated for the cost of any idled employees unless the employee is under a written employment contract entitling the employee to continued employment after termination of the Contract and the employee cannot be assigned to other work provided that in all events the Contractor's costs must be limited to thirty (30) days of employment costs from the date of the notice of termination. The Contractor is not entitled to any other costs or compensation (including lost or expected profit, uncompensated overhead or related expenses, or the cost of preparing and documenting its compensable expenses under this Subsection 14.4.4 as a consequence of the Owner's termination of the Contract for convenience). The Contractor conclusively and irrevocably waives its right to any other compensation or damages (compensatory or punitive) arising from termination of the Contract. If the Owner and the Contractor are unable to agree upon the amounts specified in this subsection, the Contractor may submit a Claim as provided in Article 15. The Claim must be limited to resolution of the amounts specified in Subsections14.4.4.1, 14.4.4.2, 14.4.4.3 and 14.4.4.4 of this Subsection 14.4.4. No other cost, damages or expenses may be claimed or paid to the Contractor or considered as part of the Claim, the same being hereby conclusively and irrevocably waived by the Contractor. Any such Claim must be delivered to the Owner within thirty (30) days of the termination of the Contract and must contain a written statement setting forth the specific reasons and supporting calculations and documentation as to the amounts the Contractor claims to be entitled to under this Subsection as a result of the termination of the Contract.

e. 14.4.5 The Contractor's obligations surviving final payment under the Contract, including without limitation those with respect to insurance, indemnification, and correction of Work that has been completed at the time of termination, remains effective notwithstanding termination for convenience of the Owner.

36. Delete Section 15.1.1 text and substitute the following:
    a. A Claim is a written demand or assertion by Contractor seeking, as matter of right, payment of money, a change in the Contract Time, or other relief with respect to terms of Contract. Responsibility to substantiate Claims shall rest with Contractor. Nothing contained in this section is intended to apply to or in any way limit Owner's right to make claims related to or arising out of Contract.
37. Delete the words "Substantial Completion" in line 4 of Section 15.1.2 and replace it with "Final Acceptance."
38. Delete the last sentence of Section 15.1.2.
39. Delete Section 15.1.3.1 and substitute the following:
    a. Claims by Contractor shall be initiated by written notice to Owner and to Initial Decision Maker with copy sent to Architect/Engineer, if Architect/Engineer is not serving as Initial Decision Maker. Claims by Contractor shall be initiated within ten (10) days after occurrence of event giving rise to such Claim or within ten (10) days after Contractor first recognizes condition giving rise to Claim, whichever is later. As condition of making claim for additional costs, Contractor shall maintain and produce accurate records to substantiate all additional costs actually incurred. If Claim for actual cost is approved, Owner shall pay Contractor actual costs incurred plus either (a) ten percent (10%) for overhead and profit for work performed by Contractor, or (b) five percent (5%) overhead and profit for work performed by subcontractor, as applicable.
40. Delete Section 15.1.4.1 and substitute the following:
    a. Pending final resolution of Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, Contractor shall proceed diligently with performance of Contract and Owner shall continue to make payments as may be required in accordance with Contract Documents.
41. Delete Section 15.1.6.2 and substitute the following:

a. If adverse weather conditions are the basis of a Claim for additional time, the Claim shall be documented by data substantiating that the weather conditions upon which the Claim is based (1) were abnormal when compared to the previous 5-year period, during the same time frame and at the location of the Work, (2) could not have been reasonably anticipated, and (3) had an adverse effect on the date of substantial completion of the Work.

42. Add Subparagraph 15.1.6.3 and 15.1.6.4 to Subparagraph 15.1.6:
    a. 15.1.6.3 Claims for increase in the Contract Time shall set forth in detail the circumstances that form the basis for the Claim, the date upon which each cause of delay began to affect the progress of the Work, the date upon which each cause of delay ceased to affect the progress of the Work and the number of days' increase in the Contract Time claimed as a consequence of each such cause of delay. The Contractor shall provide such supporting documentation as the Owner may require including, where appropriate, a revised construction schedule indicating all the activities affected by the circumstances forming the basis of the Claim.
    b. 15.1.6.4 The Contractor shall not be entitled to a separate increase in the Contract Time for each one of the number of causes of delay which may have concurrent or interrelated effects on the progress of the Work, or for concurrent delays due to the fault of the Contractor.
43. Delete Subparagraph 15.1.7 in its entirety.
44. Modify the first sentence of Section 15.2.1 to read as follows:
    a. Claims, excluding those arising under Sections 10.3, 10.4 and 11.5 shall be referred to the Initial Decision Maker for initial decision.
45. Delete Subparagraph 15.2.6 and substitute the following:
    a. The parties may file for mediation of an initial decision at any time, upon mutual agreement of the parties.
46. Delete Subparagraphs 15.2.6.1 and 15.2.8 in their entirety.
47. Delete Subparagraph 15.3.1 in its entirety.
48. Delete Section 15.3.2 and substitute the following:
    a. The parties shall endeavor in good faith to resolve claims, disputes and other matters in question between them by mutual agreement and may, by mutual agreement and in their discretion, submit same to non-binding mediation which shall be in accordance with Iowa Code Chapter 679C, unless otherwise mutually agreed upon by the parties. Requests for mediation shall be given in writing to the other Party to this Agreement. If the Owner and Contractor are unable to mutually agree upon mediator in writing within sixty (60) days of receiving written request for mediation, either party may then institute legal or equitable proceedings. Mediation shall be voluntary only and shall not be a prerequisite to litigation or other means of dispute resolution.
49. Delete Section 15.3.3.
50. Delete Subparagraph 15.4 and replace with the following:
    a. Any legal claim brought under this Agreement shall be filed in the Iowa District Court in and for Marshall, unless otherwise mutually agreed to by the parties.
51. Add Article 16 as follows:
    a. Smoking will not be allowed on Owner's property, which shall include inside private vehicles parked on Owner's property. In addition, employees of Contractor, Subcontractors, and materials suppliers shall not wear apparel that advertises tobacco, alcohol, or illicit drugs, nor has profane language or images on them.

EXHIBIT A - City of Marshalltown

MINIMUM INSURANCE REQUIREMENTS:

COMMERCIAL GENERAL LIABILITY:

General Aggregate Limit	$2,000,000
Products - Completed Operation Aggregate Limit	$2,000,000
Personal and Advertising Injury Limit	$1,000,000
Each Occurrence Limit	$1,000,000
Damage to a Premises Rented to You Limit	$ 100,000
Medical Payments	$ 5,000

Commercial General Liability policy shall be written on an occurrence form using ISO form CG 00 01 or equivalent form.

Policy shall include the following endorsements:

ISO endorsement CG 20 10 or equivalent endorsement naming the City of Marshalltown , its board members, employees and agents as an additional insured.

ISO endorsement CG 20 32 or equivalent endorsement naming Project Engineers, Architects and Surveyors as an additional insured.

ISO endorsement CG 20 37 or equivalent endorsement naming the City of Marshalltown , its board members, employees and agents as an additional insured for completed operations. This endorsement shall be maintained for a minimum of two years after completion and acceptance of the project by the City of Marshalltown .

ISO Endorsement CG 20 01 or equivalent endorsement indicating additional insured status for the City of Marshalltown , its board members, employees and agents is primary and non-contributory.

ISO endorsement CG 25 03 or equivalent endorsement, Designated Construction Project(s) General Aggregate Limit.

ISO endorsement CG 24 04 or equivalent endorsement, Waiver of Transfer of Rights of Recovery Against Others to Us, naming the City of Marshalltown .

Governmental Immunities Endorsement (see attached specimen).

BUSINESS AUTOMOBILE LIABILITY:

Combined single limit of	$1,000,000
Or	

Bodily Injury (per person)	$1,000,000
Bodily Injury (per accident)	$1,000,000
Property Damage	$1,000,000

Business auto liability shall be written on ISO form CA 00 01 or equivalent form.

Policy shall include Symbol 1 (Any Auto). If no owned autos, hired and non-owned auto liability is acceptable.

Include ISO endorsement CA 04 44 or equivalent endorsement, Waiver of Transfer of Rights of Recovery Against Others to Us, naming the City of Marshalltown .

Include ISO endorsement CA 99 48, Pollution Liability - Broadened Coverage for Covered Autos, or equivalent endorsement if the Contractor has vehicles that transport fuel onto City of Marshalltown property.

WORKERS COMPENSATION & EMPLOYERS LIABILITY:

Workers Compensation - Statutory - State of Iowa

Employers Liability

Bodily Injury Limit Each Accident	$500,000
Bodily Injury Disease - Policy Limit	$500,000
Bodily Injury Disease - Limit Each Employee	$500,000

Workers Compensation shall include the following endorsement: WC 0003 13, Waiver of Our Right to Recover from Others, in favor of the City of Marshalltown .

Sole Proprietors, Partners and Members must be included for coverage. Executive Officers may not be excluded from coverage.

UMBRELLA OR EXCESS LIABILITY:

Limit Each Occurrence	$5,000,000
Aggregate Limit	

Umbrella or Excess liability policy shall provide excess coverage and be at least as broad in coverage as the following required policies and endorsements: Commercial General Liability, Business Auto and Employer's Liability.

City of Marshalltown

GOVERNMENTAL IMMUNITIES ENDORSEMENT

Nonwaiver of Governmental Immunity. The insurance carrier expressly agrees and states that the purchase of this policy and the including of City of Marshalltown as an Additional Insured does not waive any of the defenses of governmental immunity available to the City of Marshalltown under Code of Iowa Section 670.4 as it now exists and as it may be amended from time to time.

Claims Coverage. The insurance carrier further agrees that this policy of insurance shall cover only those claims not subject to the defense of governmental immunity under the Code of Iowa Section 670.4 as it now exists and as it may be amended from time to time. Those claims not subject to Code of Iowa Section 670.4 shall be covered by the terms and conditions of this insurance policy.

Assertion of Governmental Immunity. The City of Marshalltown shall be responsible for asserting any defense of governmental immunity, and may do so at any time and shall do so upon the timely written request of the insurance carrier.

Non-Denial of Coverage. The insurance carrier shall not deny coverage under this policy and the insurance carrier shall not deny any of the rights and benefits accruing to the City of Marshalltown under this policy for reasons of governmental immunity unless and until a court of competent jurisdiction has ruled in favor of the defense(s) of governmental immunity asserted by the City of Marshalltown .

No Other Change in Policy. The above preservation of governmental immunities shall not otherwise change or alter the coverage available under the policy.

ACKNOWLEDGMENT AND CERTIFICATION

("Company") is providing services to the City of Marshalltown ("Owner ") as a vendor, supplier, or contractor or is operating or managing the operations of a vendor, supplier or contractor. The services provided by the Company may involve the presence of the Company's employees upon the real property of the Owner .

The Company acknowledges that Iowa law prohibits a sex offender who has been convicted of a sex offense against a minor from being present upon the real property of the Owner . The Company further acknowledges that, pursuant to law, a sex offender who has been convicted of a sex offense against a minor may not operate, manage, be employed by, or act as a contractor, vendor or supplier of services or volunteer at the Owner .

The Company hereby certifies that no one who is an owner, operator or manager of the Company has been convicted of a sex offense against a minor. The Company further agrees that it shall not permit any person who is a sex offender convicted of a sex offense against a minor to provide any services to the Owner in accordance with the prohibitions set forth above.

This Acknowledgment and Certification is to be construed under the laws of the State of Iowa. If any portion hereof is held invalid, the balance of the document shall, notwithstanding, continue in full legal force and effect.

In signing this Acknowledgment and Certification, the person signing on behalf of the Company hereby acknowledges that he/she has read this entire document that he/she understands its terms, and that he/she not only has the authority to sign the document on behalf of the Company, but has signed it knowingly and voluntarily.

Dated:_____

By: _____
(name of vendor/supplier/contractor/sub-contractor)
a.
Printed Name: _____

Title: _____

END OF SECTION 00 73 00

SECTION 01 10 00
SUMMARY

PART 1 GENERAL

1.01 PROJECT

A. Project Name: Marshalltown Public Library Remodel

B. Owner 's Name: City of Marshalltown.

C. Architect's Name: FEH DESIGN.

D. The Project consists of the alteration of the south-west interior portion of the existing public library..

1.02 CONTRACT DESCRIPTION

A. Contract Type: A single prime contract based on a Stipulated Price as described in Document 00 52 00 - Agreement Form.

1.03 DESCRIPTION OF ALTERATIONS WORK

A. Scope of demolition and removal work is indicated on drawings and specified in Section 02 41 00.

B. Scope of alterations work is indicated on drawings.

C. Owner will remove the following items before start of work:

D. Existing furniture and shelving.

E. Contractor is required to remove and store the following prior to start of work, for later reinstallation by Contractor:
   1. Lighting fixtures in Closed Stacks - 136, and Study - 130..
   2. Existing Carpet as noted on the demolition plans.

1.04 WORK BY OWNER

A. Items noted NIC (Not in Contract) will be supplied and installed by Owner after Substantial Completion. Some items include:
   1. Furnishings
   2. Small equipment

B. Items noted NIC (Not in Contract will be supplied and installed by Owner before Substantial Completion include the following:
   1. Room Signage

C. Owner will supply and install the following:
   1. Security Cameras.
   2. Technology equipment.
   3. Furniture.

1.05 OWNER OCCUPANCY

A. Owner intends to continue to occupy adjacent portions of the existing building during the entire construction period.

B. Cooperate with Owner to minimize conflict and to facilitate Owner 's operations.

C. Schedule the Work to accommodate Owner occupancy.

1.06 CONTRACTOR USE OF SITE AND PREMISES

A. Construction Operations: Limited to areas noted on Drawings.
   1. Locate and conduct construction activities in ways that will limit disturbance to site.

B. Arrange use of site and premises to allow:
   1. Owner occupancy.
   2. Work by Owner .

C. Provide access to and from site as required by law and by Owner :
   1. Emergency Building Exits During Construction: Keep all exits required by code open during construction period; provide temporary exit signs if exit routes are temporarily altered.
   2. Do not obstruct roadways, sidewalks, or other public ways without permit.

D. Time Restrictions:
   1. Limit conduct of especially noisy exterior work to the hours of 7am-5pm.
   2. Limit conduct of the hours of 7am-5pm, Monday-Friday.

E. Utility Outages and Shutdown:
   1. Limit disruption of utility services to hours the building is unoccupied.
   2. Do not disrupt or shut down life safety systems, including but not limited to fire sprinklers and fire alarm system, without 7 days notice to Owner and authorities having jurisdiction.
   3. Prevent accidental disruption of utility services to other facilities.

END OF SECTION 01 10 00

SECTION 01 20 00
PRICE AND PAYMENT PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Procedures for preparation and submittal of applications for progress payments.

B. Documentation of changes in Contract Sum and Contract Time.

C. Change procedures.

D. Procedures for preparation and submittal of application for final payment.

1.02 RELATED REQUIREMENTS

A. Section 00 50 00 - Contracting Forms and Supplements: Forms to be used.

B. Section 00 73 00 - Supplementary Conditions: Percentage allowances for Contractor's overhead and profit.

C. Section 01 78 00 - Closeout Submittals: Project record documents.

1.03 SCHEDULE OF VALUES

A. Use Schedule of Values Form: AIA G703, edition stipulated in the Agreement.

B. Coordination: Coordinate preparation of the schedule of values with preparation of Contract's construction schedule.

1. Correlate line items in the schedule of values with other required administrative forms and schedules, including the following:
    a. Application for Payment forms with continuation sheets.
    b. Submittal Schedule
    c. Items required to be indicated as separate activities in Contractor's construction schedule.
    d. Contractor's construction schedule.

C. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit draft to Architect for approval.

D. Forms filled out by hand will not be accepted.

E. Submit Schedule of Values in duplicate within 15 days after date of Owner-Contractor Agreement.

F. Achitect will review the Initial Schedule of Values and make marks to indicate corrections or modifications required. Architect will not review or approve the Initial Application for Payment until the Initial Schedule of Values has been approved.

G. Format: Utilize the Table of Contents of this Project Manual. Identify each line item with number and title of the specification section.

H. Provide a breakdown of major cost items in the General Conditions as separate line items. Include the following line items, applicable to the Project, as part of the contractor's normal breakdown.

1. General Conditions
2. Bond, Insurance
3. Supervision
4. Mobilization
5. Demobilization
6. Permits and fees
7. Shop Drawings / Engineering (included here in General Conditions or as part of individual products in subsequent sections).
8. Record Documents
9. Temporary Facilities: refer to paragraph below.

I. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual Table of Contents. Provide multiple line items for principal subcontract amounts in excess of five percent of Contract Sum.

J. Round amounts to nearest whole dollar; total shall equal the Contract Sum.

K. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
   1. Differentiate between items stored on-site and items stored off-site. For any materials stored offsite, include evidence of insurance and provide standard ACCORD insurance form.

L. Provide separate line items in the schedule of values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.

M. Each item in the schedule of values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.
   1. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the schedule of values or distributed as general overhead expense, at Contractor's option.

N. Schedule Updating: Update and resubmit the schedule of values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

O. Revise schedule to list approved Change Orders, with each Application For Payment.

1.04 APPLICATIONS FOR PROGRESS PAYMENTS

A. Payment Period: Submit at intervals stipulated in the Agreement.

B. Each Application for Payment shall be consistent with previous applications and payments as certified by Architect, and paid for by Owner.
   1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.

C. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit sample to Architect for approval.

D. Forms filled out by hand will not be accepted.

E. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.
   1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.
   2. Include amounts for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.
   3. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.

F. Stored Materials: Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored on-site and items stored off-site.
   1. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment, for stored materials.
   2. Provide supporting documentation that verifies amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation; do not include overhead and profit on stored materials.
   3. Provide summary documentation for stored materials indicating the following:

a. Materials previously stored and included in previous Applications for Payment.
b. Work completed for this Application utilizing previously stored materials.
c. Additional materials stored with this Application.
d. Total materials remaining stored, including materials with this Application.

G. Retainage: Deduct 3% from the completed work covered by each Application for Payment until the project is Substantially Completed, as determined by the Architect, at which time an application for 97% of the total net amount earned can be submitted.

H. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
1. List of subcontractors with address and telephone number.
2. Schedule of values.
3. Contractor's construction schedule (preliminary if not final).
4. Submittal schedule (preliminary if not final). Electronic Submittal Website may be used if timeline for submittals is utilized.
5. List of Contractor's staff assignments.
6. Copies of building permits.
7. Report of preconstruction conference.
8. Certificates of insurance and insurance policies.
9. Performance and payment bonds.

I. For each item, provide a column for listing each of the following:
1. Item Number.
2. Description of work.
3. Scheduled Values.
4. Previous Applications.
5. Work in Place and Stored Materials under this Application.
6. Authorized Change Orders.
7. Total Completed and Stored to Date of Application.
8. Percentage of Completion.
9. Balance to Finish.
10. Retainage.

J. Execute certification by signature of authorized officer.

K. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed and for stored products.

L. List each authorized Change Order as a separate line item, listing Change Order number and dollar amount as for an original item of work.

M. Submit digital copies of each Application for Payment.

N. Include the following with the application:
1. Transmittal letter as specified for submittals in Section 01 30 00.
2. Construction progress schedule, revised and current as specified in Section 01 30 00.

O. When Architect requires substantiating information, submit data justifying dollar amounts in question. Provide one copy of data with cover letter for each copy of submittal. Show application number and date, and line item by number and description.

1.05 MODIFICATION PROCEDURES

A. For minor changes not involving an adjustment to the Contract Sum or Contract Time, Architect will issue instructions directly to Contractor.
1. Architect will use AIA Document G710, "Architect's Supplemental Instructions."
2. The Contractor will review and sign the ASI, if in agreement with it, and return to Architect. Contractor will have 5 business days to review distributed ASI and comment and sign. If the Contractor has an objection, clarifications, or modifications to the ASI, the Contractor

must respond within 5 business days. After 5 business days, or with no comments, the ASI will become final and part of the Contract Documents.

B. Owner-Initiated Proposal Requests: Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
   1. Proposal Requests issued by Architect are not instructions either to stop work in progress or to execute the proposed change.
   2. Within time specified in Proposal Request or 14 calendar days, when not otherwise specified, after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
      a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
      b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
      c. Include costs of labor, equipment, subcontracted work, and supervision directly attributable to the change. Furnish itemized data to substantiate costs of material, taxes, freight, equipment, and labor.
      d. Quotation Form: Use forms acceptable to Architect.

C. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Architect.
   1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
   2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
   3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
   4. Include costs of labor, equipment, subcontracted work, and supervision directly attributable to the change. Furnish itemized data to substantiate costs of material, taxes, freight, equipment, and labor.
   5. Proposal Request Form: Use AIA Document G709 or form acceptable to Architect

D. For other required changes, Architect will issue a document signed by Owner instructing Contractor to proceed with the change, for subsequent inclusion in a Change Order.
   1. The document will describe the required changes and will designate method of determining any change in Contract Sum or Contract Time.
   2. Promptly execute the change.
   3. Construction Change Directive: Architect may issue a Construction Change Directive on AIA Document G714. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
      a. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.
      b. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.
      c. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.
      d. The document will describe the required changes and will designate method of determining any change in Contract Sum or Contract Time.
      e. Promptly execute the change.

E. For changes for which advance pricing is desired, Architect will issue a document that includes a detailed description of a proposed change with supplementary or revised drawings and

specifications, a change in Contract Time for executing the change with a stipulation of any overtime work required and the period of time during which the requested price will be considered valid. Contractor shall prepare and submit a fixed price quotation within 14 calendar days.

F. Computation of Change in Contract Amount: As specified in the Agreement and Conditions of the Contract.
   1. For pre-determined unit prices and quantities, the amount will based on the fixed unit prices.
   2. For change ordered by Architect without a quotation from Contractor, the amount will be determined by Architect based on the Contractor's substantiation of costs as specified for Time and Material work.

G. Substantiation of Costs: Provide full information required for evaluation.
   1. On request, provide the following data:
      a. Quantities of products, labor, and equipment.
      b. Taxes, insurance, and bonds.
      c. Overhead and profit.
      d. Justification for any change in Contract Time.
      e. Credit for deletions from Contract, similarly documented.
   2. Support each claim for additional costs with additional information:
      a. Dates and times work was performed, and by whom.
      b. Time records and wage rates paid.
      c. Invoices and receipts for products, equipment, and subcontracts, similarly documented.
   3. For Time and Material work, submit itemized account and supporting data after completion of change, within time limits indicated in the Conditions of the Contract.

H. Execution of Change Orders: Architect will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.
   1. On Owner's approval of a Proposal Request, Architect will issue a Change Order for signatures of Owner and Contractor on AIA Document G701.

I. A change order may include Contractor responses to one or more Proposal Requests (and / or Construction Change Directives) that have been approved.

J. After execution of Change Order, promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Sum.

K. Promptly revise progress schedules to reflect any change in Contract Time, revise sub-schedules to adjust times for other items of work affected by the change, and resubmit.

L. Promptly enter changes in Project Record Documents.

M. The Contractor shall include all adjustments to the Contract Sum in all subsequent Applications for Payment only after receipt of a fully executed copy of each Change Order.

1.06 APPLICATION FOR SUBSTANTIAL COMPLETION PAYMENT

A. After issuance of the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
   1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
   2. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
   3. Submit the "Certificate of Substantial Completion Request Form" included in this Project Manual. Review of project will not take place until receipt of this signed form.

1.07 APPLICATION FOR FINAL PAYMENT

A. Prepare Application for Final Payment as specified for progress payments, identifying total adjusted Contract Sum, previous payments, and sum remaining due.

B. Application for Final Payment will not be considered until the following have been accomplished:
   1. All closeout procedures specified in Section 01 70 00.
   2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
   3. Updated final statement, accounting for final changes to the Contract Sum.
   4. AIA Document G707, "Consent of Surety to Final Payment."
   5. Evidence that claims have been settled.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION 01 20 00

SECTION 01 25 00
SUBSTITUTION PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Procedural requirements for proposed substitutions.

1.02 RELATED REQUIREMENTS

A. Section 00 21 13 - Instructions to Bidders: Restrictions on timing of substitution requests.

B. Section 01 2500.01 - CSI Substitution Request Form During Bidding

C. Section 01 30 00 - Administrative Requirements: Submittal procedures, coordination.

D. Section 01 60 00 - Product Requirements: Fundamental product requirements, product options, delivery, storage, and handling.

1.03 DEFINITIONS

A. Substitutions: Changes from Contract Documents requirements proposed by Contractor to materials, products, assemblies, and equipment.

1.04 REFERENCE STANDARDS

A. CSI/CSC Form 1.5C - Substitution Request (During the Bidding/Negotiating Stage); Current Edition.

B. CSI/CSC Form 13.1A - Substitution Request (After the Bidding/Negotiating Phase); Current Edition.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS

A. For proposed substitutions for review, provide requests utilizing Forms referenced above.

B. A Substitution Request for products, assemblies, materials, and equipment constitutes a representation that the submitter:
   1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product, equipment, assembly, or system.
   2. Agrees to provide the same warranty for the substitution as for the specified product.
   3. Agrees to coordinate installation and make changes to other work that may be required for the work to be complete, with no additional cost to Owner .
   4. Waives claims for additional costs or time extension that may subsequently become apparent.

C. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents. Burden of proof is on proposer.

D. Content: Include information necessary for tracking the status of each Substitution Request, and information necessary to provide an actionable response.
   1. Forms indicated in the Project Manual are adequate for this purpose, and must be used.

E. Limit each request to a single proposed substitution item.

3.02 SUBSTITUTION PROCEDURES DURING PROCUREMENT

A. Submittal Time Restrictions:
   1. Instructions to Bidders specifies time restrictions and the documents required for submitting substitution requests during the bidding period.

B. Submittal Form (before award of contract):
   1. Submit substitution requests by completing CSI/CSC Form 1.5C - Substitution Request. See this form for additional information and instructions. Use only this form; other forms of submission are unacceptable.

3.03 SUBSTITUTION PROCEDURES DURING CONSTRUCTION

A. Submittal Form (after award of contract):
   1. Submit substitution requests by completing CSI/CSC Form 13.1A - Substitution Request (After Bidding/Negotiating). See this form for additional information and instructions. Use only this form; other forms of submission are unacceptable.

B. Substitutions will not be considered under one or more of the following circumstances:
   1. When they are indicated or implied on shop drawing or product data submittals, without having received prior approval.
   2. Without a separate written request.
   3. When acceptance will require revisions to Contract Documents without equal or greater value/savings to the cost of making said revisions.

3.04 RESOLUTION

A. Architect may request additional information and documentation prior to rendering a decision. Provide this data in an expeditious manner.

B. Architect will notify Contractor in writing of decision to accept or reject request.

3.05 ACCEPTANCE

A. Accepted substitutions change the work of the Project. They will be documented and incorporated into work of the project by Change Order, Construction Change Directive, Architectural Supplementary Instructions, or similar instruments provided for in the Conditions of the Contract.

3.06 CLOSEOUT ACTIVITIES

A. See Section 01 78 00 - Closeout Submittals, for closeout submittals.

B. Include completed Substitution Request Forms as part of the Project record. Include both approved and rejected Requests.

END OF SECTION 01 25 00

SECTION 01 30 00
ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. General administrative requirements.

B. Electronic document submittal service.

C. Preconstruction meeting.

D. Site mobilization meeting.

E. Progress meetings.

F. Construction progress schedule.

G. Contractor's daily reports.

H. Progress photographs.

I. Coordination drawings.

J. Submittals for review, information, and project closeout.

K. Number of copies of submittals.

L. Requests for Information (RFI) procedures.

M. Submittal procedures.

1.02 RELATED REQUIREMENTS

A. Section 00 72 00 - General Conditions: Dates for applications for payment.

B. Section 01 32 16 - Construction Progress Schedule: Form, content, and administration of schedules.

C. Section 01 60 00 - Product Requirements: General product requirements.

D. Section 01 70 00 - Execution and Closeout Requirements: Additional coordination requirements.

E. Section 01 78 00 - Closeout Submittals: Project record documents; operation and maintenance data; warranties and bonds.

1.03 GENERAL ADMINISTRATIVE REQUIREMENTS

A. Comply with requirements of Section 01 70 00 - Execution and Closeout Requirements for coordination of execution of administrative tasks with timing of construction activities.

B. Make the following types of submittals to Architect:
   1. Requests for Information (RFI).
   2. Shop drawings, product data, and samples.
   3. Test and inspection reports.
   4. Design data.
   5. Manufacturer's instructions and field reports.
   6. Applications for payment and change order requests.
   7. Progress schedules.
   8. Coordination drawings.
   9. Correction Punch List and Final Correction Punch List for Substantial Completion.
   10. Closeout submittals.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 ELECTRONIC DOCUMENT SUBMITTAL SERVICE

A. All documents transmitted for purposes of administration of the contract are to be in electronic (PDF, MS Word, or MS Excel) format, as appropriate to the document, and transmitted via an Internet-based submittal service that receives, logs and stores documents, provides electronic stamping and signatures, and notifies addressees via email.
   1. Besides submittals for review, information, and closeout, this procedure applies to Requests for Information (RFIs), progress documentation, contract modification documents (e.g. supplementary instructions, change proposals, change orders), applications for payment, field reports and meeting minutes, Contractor's correction punchlist, and any other document any participant wishes to make part of the project record.
   2. Contractor and Architect are required to use this service.
   3. It is Contractor's responsibility to submit documents in allowable format.
   4. Subcontractors, suppliers, and Architect's consultants are to be permitted to use the service at no extra charge.
   5. Users of the service need an email address, internet access, and PDF review software that includes ability to mark up and apply electronic stamps (such as Adobe Acrobat, www.adobe.com, or Bluebeam PDF Revu, www.bluebeam.com), unless such software capability is provided by the service provider.
   6. Paper document transmittals will not be reviewed; emailed electronic documents will not be reviewed.
   7. All other specified submittal and document transmission procedures apply, except that electronic document requirements do not apply to samples or color selection charts.

B. Cost: The cost of the service is to be paid by Contractor; include the cost of the service in the Contract Sum.

C. Submittal Service: The selected service is:
   1. Submittal Exchange
      OR
   2. Procore

D. Training: If requested by Owner, One, one-hour, web-based training session will be arranged for all participants, with representatives of Architect and Contractor participating; further training is the responsibility of the user of the service.
   1. Representatives of Owner are scheduled and included in this training.

E. Project Closeout: Architect will determine when to terminate the service for the project and is responsible for obtaining archive copies of files for Owner .

3.02 PRECONSTRUCTION MEETING

A. Schedule meeting after Notice of Award.

B. Attendance Required:
   1. Owner .
   2. Architect.
   3. Contractor.
   4. Sub-contractors.
   5. Architect's consultants.

C. Agenda:
   1. Execution of Owner - Contractor Agreement
   2. Submission of executed bonds and insurance certificates.
   3. Distribution of Contract Documents.

4. Submission of list of subcontractors, list of products, schedule of values, and progress schedule.
5. Designation of personnel representing the parties to Contract and Architect.
6. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
7. Scheduling.

D. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner , participants, and those affected by decisions made.

3.03 PROGRESS MEETINGS

A. Schedule and administer meetings throughout progress of the work at maximum bi-monthly intervals.

B. Make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.

C. Attendance Required:
1. Contractor.
2. Owner .
3. Architect.
4. Contractor's superintendent.
5. Major subcontractors.

D. Agenda:
1. Review minutes of previous meetings.
2. Review of work progress.
3. Field observations, problems, and decisions.
4. Identification of problems that impede, or will impede, planned progress.
5. Review of submittals schedule and status of submittals.
6. Review of RFIs log and status of responses.
7. Review of off-site fabrication and delivery schedules.
8. Maintenance of progress schedule.
9. Corrective measures to regain projected schedules.
10. Planned progress during succeeding work period.
11. Coordination of projected progress.
12. Maintenance of quality and work standards.
13. Effect of proposed changes on progress schedule and coordination.
14. Other business relating to work.

E. Record minutes and distribute copies within two days after meeting to participants, with copies to Architect, Owner , participants, and those affected by decisions made.

F. Contractor's Coordination Meeting:
1. Conduct Project Coordination Meeting at weekly intervals or as needed. Project coordination meetings are in addition to specific meetings held for other purposes, such as progress meetings and Pre-Construction conferences.

3.04 CONSTRUCTION PROGRESS SCHEDULE

A. Within 10 days after date of the Agreement, submit preliminary schedule defining planned operations for the first 60 days of work, with a general outline for remainder of work.

B. If preliminary schedule requires revision after review, submit revised schedule within 10 days.

C. Within 20 days after review of preliminary schedule, submit draft of proposed complete schedule for review.
1. Include written certification that major contractors have reviewed and accepted proposed schedule.

D. Within 10 days after joint review, submit complete schedule.

E. Submit updated schedule with each Application for Payment.

F. Schedule Updating: Revise Contractor's Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

3.05 DAILY CONSTRUCTION REPORTS

A. Prepare a daily construction report recording the following information concerning events at Project site and project progress:
   1. Date.
   2. List of subcontractors at Project site.
   3. List of separate contractors at Project site.
   4. Safety, environmental, or industrial relations incidents.
   5. Meetings and significant decisions.
   6. Stoppages, delays, shortages, and losses. Include comparison between scheduled work activities (in Contractor's most recently updated and published schedule) and actual activities. Explain differences, if any. Note days or periods when no work was in progress and explain the reasons why.
   7. Testing and/or inspections performed.
   8. List of verbal instruction given by Owner and/or Architect.
   9. Signature of Contractor's authorized representative.

3.06 PROGRESS PHOTOGRAPHS

A. Submit new photographs at least once a month, within 3 days after being taken.

B. Photography Type: Digital; electronic files.

C. Provide photographs of site and construction throughout progress of work produced by an experienced photographer, acceptable to Architect.

D. In addition to periodic, recurring views, take photographs of each of the following events:
   1. Completion of site clearing.
   2. Excavations in progress.
   3. Foundations in progress and upon completion.
   4. Enclosure of building, upon completion.
   5. Final completion, minimum of ten (10) photos.

E. Views:
   1. Provide non-aerial photographs from four cardinal views at each specified time, until date of Substantial Completion.
   2. Consult with Architect for instructions on views required.
   3. Provide factual presentation.
   4. Provide correct exposure and focus, high resolution and sharpness, maximum depth of field, and minimum distortion.

F. Digital Photographs: minimum resolution of 1024 by 768, in JPG format; provide files unaltered by photo editing software.
   1. Delivery Medium: Via email.
   2. File Naming: Include project identification, date and time of view, and view identification.
   3. PDF File: Assemble all photos into printable pages in PDF format, with 2 to 3 photos per page, each photo labeled with file name; one PDF file per submittal.

3.07 GENERAL COORDINATION PROCEDURES

A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly demolition of each part of the Work. Coordinate construction operations, included in different Sections that depend on each other for proper installation, connection, and operation.

B. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.

C. Make adequate provisions to accommodate items scheduled for later installation.

D. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.

E. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities, and activities of other contractors, to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
   1. Preparation of Contractor's construction schedule.
   2. Preparation of the schedule of values.
   3. Installation and removal of temporary facilities and controls.
   4. Delivery and processing of submittals.
   5. Progress meetings.
   6. Preinstallation conferences.
   7. Project closeout activities.
   8. Startup and adjustment of systems.

3.08 COORDINATION DRAWINGS

A. Review drawings prior to submission to Architect.

B. Coordination Drawings, General: Prepare coordination drawings according to requirements in individual Sections, and additionally where items are not completely shown on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity.
   1. Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Do not base coordination drawings on standard printed data. Include the following information, as applicable:
      a. Use applicable Drawings as a basis for preparation of coordination drawings. Prepare sections, elevations, and details as needed to describe relationship of various systems and components.
      b. Indicate required demolition sequences.

C. Coordination Drawing Organization: Organize coordination drawings as follows:
   1. Review: Architect will review coordination drawings to confirm that the Work is being coordinated, but not for the details of the coordination, which are Contractor's responsibility. If Architect determines that coordination drawings are not being prepared in sufficient scope or detail, or are otherwise deficient, Architect will so inform Contractor, who shall make changes as directed and resubmit.

3.09 REQUESTS FOR INFORMATION (RFI)

A. Definition: A request seeking one of the following:
   1. An interpretation, amplification, or clarification of some requirement of Contract Documents arising from inability to determine from them the exact material, process, or system to be installed; or when the elements of construction are required to occupy the same space (interference); or when an item of work is described differently at more than one place in Contract Documents.

B. Whenever possible, request clarifications at the next appropriate project progress meeting, with response entered into meeting minutes, rendering unnecessary the issuance of a formal RFI.

C. General: Immediately on discovery of the need for additional information or interpretation of the Contract Documents and if not possible to request interpretation at the next Project Meeting, the **Contractor is to call the Architect** to review and determine if an RFI is required. If so determined by the Contractor and Architect, the Contractor shall prepare and submit an RFI in the form specified.
   1. For any RFIs submitted to Architect by other entities controlled by Contractor, Architect will return with no response.

2. For any RFIs submitted to Architect by the General Contractor, prior to calling the Architect, Architect will return with no response.
3. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.

D. Preparation: Prepare an RFI, after reviewing with the Architect, upon discovery of a need for interpretation of Contract Documents. Failure to submit a RFI in a timely manner is not a legitimate cause for claiming additional costs or delays in execution of the work.
1. Prepare a separate RFI for each specific item.
   a. Review, coordinate, and comment on requests originating with subcontractors and/or materials suppliers.
   b. Do not forward requests which solely require internal coordination between subcontractors.
2. Prepare in a format and with content acceptable to Owner .
3. Prepare using software provided by the Electronic Document Submittal Service.
4. Combine RFI and its attachments into a single electronic file. PDF format is preferred.

E. Reason for the RFI: Prior to initiation of an RFI, carefully study all Contract Documents to confirm that information sufficient for their interpretation is definitely not included.
1. Include in each request Contractor's signature attesting to good faith effort to determine from Contract Documents information requiring interpretation.
2. Unacceptable Uses for RFIs: Do not use RFIs to request the following::
   a. Approval of submittals (use procedures specified elsewhere in this section).
   b. Changes that entail change in Contract Time and Contract Sum (comply with provisions of the Conditions of the Contract).
   c. Different methods of performing work than those indicated in the Contract Drawings and Specifications (comply with provisions of the Conditions of the Contract).
3. Improper RFIs: Requests not prepared in compliance with requirements of this section, and/or missing key information required to render an actionable response. They will be returned without a response.
4. Frivolous RFIs: Requests regarding information that is clearly indicated on, or reasonably inferable from, Contract Documents, with no additional input required to clarify the question. They will be returned without a response, with an explanatory notation.
   a. The Owner reserves the right to assess the Contractor for the costs (on time-and-materials basis) incurred by the Architect, and any of its consultants, due to processing of such RFIs.

F. Content: Include identifiers necessary for tracking the status of each RFI, and information necessary to provide an actionable response.
1. Official Project name and number, and any additional required identifiers established in Contract Documents.
2. Owner 's, Architect's, and Contractor's names.
3. Discrete and consecutive RFI number, and descriptive subject/title.
4. Issue date, and requested reply date.
5. Reference to particular Contract Document(s) requiring additional information/interpretation. Identify pertinent drawing and detail number and/or specification section number, title, and paragraph(s).
6. Annotations: Field dimensions and/or description of conditions which have engendered the request.
7. Contractor's suggested resolution: A written and/or a graphic solution, to scale, is required in cases where clarification of coordination issues is involved, for example; routing, clearances, and/or specific locations of work shown diagrammatically in Contract Documents. If applicable, state the likely impact of the suggested resolution on Contract Time or the Contract Sum.
8. Contractor's signature.

G. Attachments: Include sketches, coordination drawings, descriptions, photos, submittals, and other information necessary to substantiate the reason for the request.
   1. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.

H. RFI Forms: AIA Document G716 or a Software-generated form with substantially the same content as indicated above, acceptable to Architect.
   1. Attachments shall be electronic files in Adobe Acrobat PDF format.

I. Review Time: Architect will respond and return RFIs to Contractor within seven calendar days of receipt. For the purpose of establishing the start of the mandated response period, RFIs received after 12:00 noon will be considered as having been received on the following regular working day.
   1. Response period may be shortened or lengthened for specific items, subject to mutual agreement, and recorded in a timely manner in progress meeting minutes.

J. Responses: Content of answered RFIs will not constitute in any manner a directive or authorization to perform extra work or delay the project. If in Contractor's belief it is likely to lead to a change to Contract Sum or Contract Time, promptly issue a notice to this effect, and follow up with an appropriate Change Order request to Owner .
   1. Response may include a request for additional information, in which case the original RFI will be deemed as having been answered, and an amended one is to be issued forthwith. Identify the amended RFI with an R suffix to the original number.
   2. Do not extend applicability of a response to specific item to encompass other similar conditions, unless specifically so noted in the response.
   3. Upon receipt of a response, promptly review and distribute it to all affected parties, and update the RFI Log.
   4. Notify Architect within seven calendar days if an additional or corrected response is required by submitting an amended version of the original RFI, identified as specified above.

K. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow seven working days for Architect's response for each RFI. RFIs received by Architect after 1:00 p.m. will be considered as received the following working day.
   1. The following Contractor-generated RFIs will be returned without action:
      a. Requests for approval of submittals.
      b. Requests for approval of Contractor's means and methods.
      c. Requests for coordination information already indicated in the Contract Documents.
      d. Requests for adjustments in the Contract Time or the Contract Sum.
      e. Requests for interpretation of Architect's actions on submittals.
      f. Incomplete RFIs or inaccurately prepared RFIs.
   2. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt of additional information.
   3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Proposal Request according to Section 01 2000 "Contract Modification Procedures."
      a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within 7 days of receipt of the RFI response.
      b. After 7 calendar days, with no response from contractor, the RFI is considered acceptable with no changes to Contract Time or Contract Sum. No additional compensation will be considered after the 7 days.

3.10 SUBMITTAL SCHEDULE

A. Submit to Architect for review a schedule for submittals in tabular format.
   1. Submit at the same time as the preliminary schedule specified in Section - 01 32 16 - Construction Progress Schedule.
   2. Coordinate with Contractor's construction schedule and schedule of values.

3. Format schedule to allow tracking of status of submittals throughout duration of construction.
4. Arrange information to include scheduled date for initial submittal, specification number and title, submittal category (for review or for information), description of item of work covered, and role and name of subcontractor.
5. Account for time required for preparation, review, manufacturing, fabrication and delivery when establishing submittal delivery and review deadline dates.
    a. For assemblies, equipment, systems comprised of multiple components and/or requiring detailed coordination with other work, allow for additional time to make corrections or revisions to initial submittals, and time for their review.

3.11 NUMBER OF COPIES OF SUBMITTALS

A. Electronic Documents: Submit one electronic copy in PDF format; an electronically-marked up file will be returned. Create PDFs at native size and right-side up; illegible files will be rejected.

3.12 SUBMITTAL PROCEDURES

A. General Requirements:
1. Identification and Information: Identify and incorporate information in each electronic submittal file as follows:
2. Assemble complete submittal package into a single file for each submittal required. Submit each required submittal at the same time for the whole division.
3. Name file with submittal number or other unique identifier, including revision identifier.
4. Provide means for electronic insertion to permanently record Contractor's review and approval markings and action taken by Architect.
5. Include the following information on a sheet:
    a. Project name.
    b. Date
    c. Name and address of Architect
    d. Name of Contractor
    e. Name of firm or entity that prepared submittal.
    f. Name of subcontractor.
    g. Name of supplier
    h. Name of manufacturer
    i. Number and title of appropriate Specification Section
    j. Drawing number and detail references, as appropriate
    k. Location(s) where product is to be installed, as appropriate
    l. Related physical samples submitted directly
    m. Other necessary identification
6. Include the following information as keywords in the electronic file metadata
    a. Project name
    b. Number and title of appropriate Specification Section
    c. Product name
7. Options: Identify options requiring selection by the Architect
8. Deviations: Identify deviations from the Contract Documents on submittals
    a. Submittals not reviewed by the Contractor and stamped such will be rejected and sent back to the Contractor for review. Contractor to provide enough evidence of review, prior to submitting to the Architect for review. If upon review by the Architect, it is so deemed that the Contractor did not review the submittal based on the amount of corrections that the Architect identifies, the Architect will cease review of the submittal and stamp as Revise and Resubmit without further review.
9. Re-submittals: Make re-submittals in same form and number of copies as initial submittal.
    a. Note date and content of previous submittal
    b. Note date and content of revision in label or title block and clearly indicate extent of revision

c. Resubmit submittals until they are marked with approval notation from Architect's action stamp

10. Distribution: Furnish electronic copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities.
11. Use for Construction: Use only final submittals that are marked with approval notation from Architect's action stamp.
12. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of Products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with the requirements of the Work and Contract Documents.
    a. Architect will not review submittals that do not bear Contractor's approval stamp and will return the submittals without action.
13. For each submittal for review, allow 14 days excluding delivery time to and from the Contractor.
    a. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including re-submittals.
    b. Re-submittal Review: Allow 14 days for review of each re-submittal.
14. Architect's Digital Data Files: Electronic copies of PDF versions of “PLAN” Drawings of the Contract Drawings may be provided by Architect, upon request, for Contractor's use in preparing submittals. Electronic copies of CAD Drawings of the Contract Drawings will not be provided by Architect for Contractor's use in preparing submittals except as note elsewhere.
    a. Architect will furnish Contractor digital data drawing PDF files of the Contract Drawings for use in preparing Shop Drawings. Copies of Architect’s digital files submitted as a required submittal without additional contractor specified information will be returned to the Contractor.
        1) Architect makes no representations as to the accuracy or completeness of digital data drawing files as they relate to the Contract Drawings.
        2) The following PDF files will by furnished for each appropriate discipline:
            (a) Plan type drawings
            (b) Building detail drawings will not be provided
15. Identify: Project; Contractor; subcontractor or supplier; pertinent drawing and detail number; and specification section number and article/paragraph, as appropriate on each copy.
16. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of products required, field dimensions, adjacent construction work, and coordination of information is in accordance with the requirements of the work and Contract Documents.
    a. Submittals from sources other than the Contractor, or without Contractor's stamp will not be acknowledged, reviewed, or returned.

3.13 CONTRACTOR'S USE OF ARCHITECT'S CAD FILES

A. General: At Contractor's written request, copies of Architect's CAD or REVIT files may be provided to Contractor for Contractor's use in connection with the Project, subject to the following conditions:
    1. Electronic copies of Architectural and Structural CAD plan-type drawings will be made for each requested drawing.
    2. Electronic copies of Architectural and Structural REVIT files will not be provided.
    3. Electronic files will be distributed upon receipt of signed agreement.
    4. Contractor making request shall not distribute files to other parties.

B. Contractor making request shall provide a signed copy of the CAD FILE TRANSFER TO CONTRACTOR form.

END OF SECTION 01 30 00

SECTION 01 30 01
CAD FILE TRANSFER AGREEMENT

CAD FILE TRANSFER TO CONTRACTOR AGREEMENT

Dear *Contractor requesting Files*:

At your request, FEH DESIGN may provide electronic files for your convenience and use in the preparation of shop drawings related to **Marshalltown Public Library Remodel**, subject to the following terms and conditions:

Our electronic files are generated with **AutoDesk** software. FEH DESIGN makes no representation as to the compatibility of these files with your hardware or your software. Please advise FEH DESIGN of the desired AutoCAD version you are requesting.

Data contained on these electronic files are part of our instruments of service and shall not be used by you for any purpose other than as a convenience in the preparation of the shop drawings for the referenced project. Any other use or reuse by you or by others will be at your sole risk and without liability or legal exposure to FEH DESIGN. You agree to make no claim and hereby waive, to the fullest extent permitted by law, any claim or cause of action of any nature against FEH DESIGN, our officers, directors, employees, agents or sub-consultants that may arise out of or in connection with your use of these electronic files.

Furthermore, you shall, to the fullest extent permitted by law, indemnify and hold FEH DESIGN harmless against all damages, liabilities or costs, including reasonable attorney's fees and defense costs arising out of or resulting from your use of these electronic files.

These electronic files are not construction documents. Differences may exist between these electronic files and corresponding hard-copy construction documents. FEH DESIGN makes no representation regarding the accuracy or completeness of the electronic files you receive. In the event that a conflict arises between the signed or sealed hard-copy construction documents, the signed or sealed hard-copy shall govern. You are responsible for determining if any conflict exists. By your use of these electronic files, you are not relieved of your duty to fully comply with the contract documents, including, and without limitation, the need to check, confirm and coordinate all dimensions and details, take field measurements, verify field conditions and coordinate your work with that of other contractors for the project.

1. Please note that FEH DESIGN does not assure that the electronic model represents all the following changes:
    a. Addendum Items
    b. Architectural Supplemental Information (ASI)
    c. Request For Information (RFI)
    d. Change Orders
    e. Alternate Bid Items
    f. Other post Bidding Constractual Modifications that alter, change or clarify the scope of work.
2. Only the following CAD files are available through FEH DESIGN.
    a. Architectural
    b. Structural
3. Civil, Electrical, Fire Protection, Landscaping, Mechanical, Plumbing, and Technology files must be obtained directly from the engineer of record.

Because information presented on the electronic files can be modified, unintentionally or otherwise, FEH DESIGN reserves the right to remove all indicia of ownership and/or involvement from each electronic display.

FEH DESIGN will furnish you electronic files of the following drawing sheets:

List of Contractor Requested Drawings _____ _____ _____

AutoCAD version (ie. AutoCAD 2013, etc.) _____ _____ _____

A service fee of $**150.00** (**one** hundred fifty dollars) per sheet shall be remitted to FEH DESIGN prior to delivery of the electronic files.

Under no circumstances shall delivery of the electronic files for use by you be deemed a sale by FEH DESIGN, and we make no warranties, either express or implied, of merchantability and fitness for any particular purpose. In no event shall FEH DESIGN be liable for any loss of profit or any consequential damages as a result of your use or reuse of these electronic files.

(*Contractor name and title)*	*(Officer or Legally Responsible Party)*
(Company)	*(Title)*
(Address)	*(Date)*
(Email Address)	

END OF SECTION 01 30 01

SECTION 01 40 00
QUALITY REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Submittals.

B. References and standards.

C. Testing and inspection agencies and services.

D. Contractor's construction-related professional design services.

E. Control of installation.

F. Mock-ups.

G. Tolerances.

H. Manufacturers' field services.

I. Defect Assessment.

1.02 RELATED REQUIREMENTS

A. Document 00 72 00 - General Conditions: Inspections and approvals required by public authorities.

B. Section 01 30 00 - Administrative Requirements: Submittal procedures.

C. Section 01 42 16 - Definitions.

D. Section 01 42 19 - Reference Standards.

E. Section 01 45 33 - Code Special Inspections for Owner provided inspections.

F. Section 01 60 00 - Product Requirements: Requirements for material and product quality.

1.03 DEFINITIONS

A. Experienced: When used with an entity or individual, "experienced" means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

B. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

C. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Architect.

1.04 CONTRACTOR'S CONSTRUCTION-RELATED PROFESSIONAL DESIGN SERVICES

A. Coordination: Contractor's professional design services are subject to requirements of project's Conditions for Construction Contract.

B. Provide such engineering design services as may be necessary to plan and safely conduct certain construction operations, pertaining to, but not limited to the following:

1. Temporary sheeting, shoring, or supports.
2. Temporary scaffolding.
3. Temporary bracing.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Certificates: When specified in individual specification sections, submit certification by the manufacturer and Contractor or installation/application subcontractor to Architect, in quantities specified for Product Data.
   1. Indicate material or product complies with or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
   2. Certificates may be recent or previous test results on material or product, but must be acceptable to Architect.

C. Manufacturer's Instructions: When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, for the Owner 's information. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

D. Manufacturer's Field Reports: Submit reports for Architect's benefit as contract administrator or for Owner .
   1. Submit for information for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents.

1.06 REFERENCES AND STANDARDS

A. For products and workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

B. Comply with reference standard of date of issue current on date of Contract Documents, except where a specific date is established by applicable code.

C. Obtain copies of standards where required by product specification sections.

D. Maintain copy at project site during submittals, planning, and progress of the specific work, until Substantial Completion.

E. Should specified reference standards conflict with Contract Documents, request clarification from Architect before proceeding.

F. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of Architect shall be altered from Contract Documents by mention or inference otherwise in any reference document.

1.07 QUALITY CONTROL

A. Maintain quality control over suppliers, manufacturer’s products, services, site conditions, and workmanship, to produce Work of specified quality. Quality control is the Contractor’s primary responsibility.

B. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
   1. Owner will furnish Contractor with names, addresses, and telephone numbers of special inspection testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.
   2. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Sum will be adjusted by Change Order.

C. The Contractor shall schedule and coordinate all Pre-deconstruction, Pre-Installation, and Construction Testing and Inspection Operations. The Contractor shall provide a minimum of five (5) working days’ notice to the owner, and the appropriate firms and/or agencies before starting Work requiring inspection or testing. The Contractor shall provide a minimum of three (3) working days’ notice thereafter for each testing or inspection for the continuation of that item with reasonable date and time fixed for such inspections and tests. If the Work is covered up prior to any required testing or observation, it shall be uncovered for review at the Contractor's expense.

D. Contractors shall furnish incidental labor and facilities as necessary.

E. Provide access to the Work to be tested

F. Contractors shall make arrangements with the owner and pay for additional samples and tests taken for Contractor's convenience.

G. Inspection and testing shall in no way relieve the Contractor or supplier from responsibility for furnishing materials and workmanship in accordance with the Contract Documents.

H. Contractors shall comply with other instructions from the Architect regarding testing

I. The Contractor shall pay for all retesting, re-inspection and re-observation costs.

J. Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.

K. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.

L. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
   1. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.

PART 3 EXECUTION

2.01 CONTROL OF INSTALLATION

A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.

B. Comply with manufacturers' instructions, including each step in sequence.

C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.

D. Comply with specified standards as minimum quality for the work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

E. Have work performed by persons qualified to produce required and specified quality.

F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.

G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

2.02 TOLERANCES

A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.

B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Architect before proceeding.

C. Adjust products to appropriate dimensions; position before securing products in place.

2.03 TESTING AND INSPECTION

A. See individual specification sections for testing and inspection required.

B. Testing Agency Duties:
   1. Provide qualified personnel at site. Cooperate with Architect and Contractor in performance of services.
   2. Perform specified sampling and testing of products in accordance with specified standards.
   3. Ascertain compliance of materials and mixes with requirements of Contract Documents.

4. Promptly notify Architect and Contractor of observed irregularities or non-compliance of Work or products.
5. Perform additional tests and inspections required by Architect.
6. Submit reports of all tests/inspections specified.

C. Limits on Testing/Inspection Agency Authority:
1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
2. Agency may not approve or accept any portion of the Work.
3. Agency may not assume any duties of Contractor.
4. Agency has no authority to stop the Work.

D. Contractor Responsibilities:
1. Deliver to agency at designated location, adequate samples of materials proposed to be used that require testing, along with proposed mix designs.
2. Cooperate with laboratory personnel, and provide access to the Work and to manufacturers' facilities.
3. Provide incidental labor and facilities:
a. To provide access to Work to be tested/inspected.
b. To obtain and handle samples at the site or at source of Products to be tested/inspected.
c. To facilitate tests/inspections.
d. To provide storage and curing of test samples.
4. Notify Architect and laboratory 24 hours prior to expected time for operations requiring testing/inspection services.
5. Employ services of an independent qualified testing laboratory and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
6. Arrange with Owner 's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.

E. Re-testing required because of non-compliance with specified requirements shall be performed by the same agency on instructions by Architect.

F. Re-testing required because of non-compliance with specified requirements shall be paid for by Contractor.

2.04 MANUFACTURERS' FIELD SERVICES

A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust, and balance equipment as applicable, and to initiate instructions when necessary.

B. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

2.05 DEFECT ASSESSMENT

A. Replace Work or portions of the Work not complying with specified requirements.

B. If, in the opinion of Architect, it is not practical to remove and replace the work, Architect will direct an appropriate remedy or adjust payment.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 01 40 00

SECTION 01 50 00
TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Temporary sanitary facilities.

B. Temporary Controls: Barriers, enclosures, and fencing.

C. Security requirements.

D. Vehicular access and parking.

E. Waste removal facilities and services.

1.02 RELATED REQUIREMENTS

A. Section 01 51 00 - Temporary Utilities.

B. Section 01 52 13 - Field Offices and Sheds.

C. Section 01 55 00 - Vehicular Access and Parking.

D. Section 01 58 13 - Temporary Project Signage.

1.03 TEMPORARY UTILITIES - SEE SECTION 01 51 00

A. Owner will provide the following:
   1. Electrical power and metering, consisting of connection to existing facilities.
   2. Water supply, consisting of connection to existing facilities.
   3. During periods without existing power, Contractor shall provide and pay for required temporary power.

B. New permanent facilities may not be used.

C. Use trigger-operated nozzles for water hoses, to avoid waste of water.

1.04 TEMPORARY SANITARY FACILITIES

A. Provide and maintain required facilities and enclosures. Provide at time of project mobilization.

B. Use of existing facilities is not permitted.

C. New permanent facilities may not be used during construction operations.

D. Maintain daily in clean and sanitary condition.

E. At end of construction, return facilities to same or better condition as originally found.

1.05 BARRIERS

A. Provide barriers to prevent unauthorized entry to construction areas, to prevent access to areas that could be hazardous to workers or the public, to allow for owner's use of site and to protect existing facilities and adjacent properties from damage from construction operations and demolition.

B. Provide barricades and covered walkways required by governing authorities for public rights-of-way and for public access to existing building.

C. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

1.06 INTERIOR ENCLOSURES

A. Provide temporary partitions and ceilings as indicated to separate work areas from Owner - occupied areas, to prevent penetration of dust and moisture into Owner -occupied areas, and to prevent damage to existing materials and equipment.

B. Construction: Framing, plywood and reinforced polyethylene sheet materials with closed joints and sealed edges at intersections with existing surfaces:

1.07 SECURITY - SEE SECTION 01 35 53

A. Provide security and facilities to protect Work, existing facilities, and Owner 's operations from unauthorized entry, vandalism, or theft.

1.08 VEHICULAR ACCESS AND PARKING - SEE SECTION 01 55 00

A. Comply with regulations relating to use of streets and sidewalks, access to emergency facilities, and access for emergency vehicles.

B. Coordinate access and haul routes with governing authorities and Owner .

C. Provide and maintain access to fire hydrants, free of obstructions.

D. Provide means of removing mud from vehicle wheels before entering streets.

E. Provide temporary parking areas to accommodate construction personnel. When site space is not adequate, provide additional off-site parking.

1.09 WASTE REMOVAL

A. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.

B. Provide containers with lids. Remove trash from site periodically.

C. If materials to be recycled or re-used on the project must be stored on-site, provide suitable non-combustible containers; locate containers holding flammable material outside the structure unless otherwise approved by the authorities having jurisdiction.

D. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

1.10 PROJECT SIGNS - SEE SECTION 01 58 13

1.11 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

A. Remove temporary utilities, equipment, facilities, materials, prior to Date of Substantial Completion inspection.

B. Clean and repair damage caused by installation or use of temporary work.

C. Restore existing facilities used during construction to original condition.

D. Restore new permanent facilities used during construction to specified condition.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION 01 50 00

SECTION 01 60 00
PRODUCT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. General product requirements.

B. Re-use of existing products.

C. Transportation, handling, storage and protection.

D. Product option requirements.

E. Substitution limitations.

F. Procedures for Owner -supplied products.

G. Maintenance materials, including extra materials, spare parts, tools, and software.

1.02 SUBMITTALS

A. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.

B. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

C. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
   1. For selection from standard finishes, submit samples of the full range of the manufacturer's standard colors, textures, and patterns.

PART 2 PRODUCTS

2.01 EXISTING PRODUCTS

A. Do not use materials and equipment removed from existing premises unless specifically required or permitted by Contract Documents.

B. Unforeseen historic items encountered remain the property of the Owner ; notify Owner promptly upon discovery; protect, remove, handle, and store as directed by Owner .

C. Existing materials and equipment indicated to be removed, but not to be re-used, relocated, reinstalled, delivered to the Owner , or otherwise indicated as to remain the property of the Owner , become the property of the Contractor; remove from site.

D. Specific Products to be Reused: The reuse of certain materials and equipment already existing on the project site is required.
   1. See Section 01 10 00 for list of items required to be salvaged for reuse and relocation.

2.02 NEW PRODUCTS

A. Provide new products unless specifically required or permitted by Contract Documents.

B. Use of products having any of the following characteristics is not permitted:
   1. Containing lead, cadmium, or asbestos.

2.03 PRODUCT OPTIONS

A. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.

B. Products Specified by Naming One or More Manufacturers: Use a product of one of the manufacturers named and meeting specifications, no options or substitutions allowed.

C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.

2.04 MAINTENANCE MATERIALS

A. Furnish extra materials, spare parts, tools, and software of types and in quantities specified in individual specification sections.

B. Deliver to Project site; obtain receipt prior to final payment.

PART 3 EXECUTION

3.01 SUBSTITUTION LIMITATIONS

A. See Section 01 25 00 - Substitution Procedures.

3.02 OWNER-SUPPLIED PRODUCTS

A. See Section 01 10 00 - Summary for identification of Owner -supplied products.

B. Owner 's Responsibilities:
   1. Arrange for and deliver Owner reviewed shop drawings, product data, and samples, to Contractor.
   2. Arrange and pay for product delivery to site.
   3. On delivery, inspect products jointly with Contractor.
   4. Submit claims for transportation damage and replace damaged, defective, or deficient items.
   5. Arrange for manufacturers' warranties, inspections, and service.

C. Contractor's Responsibilities:
   1. Review Owner reviewed shop drawings, product data, and samples.
   2. Receive and unload products at site; inspect for completeness or damage jointly with Owner .
   3. Handle, store, install and finish products.
   4. Repair or replace items damaged after receipt.

3.03 TRANSPORTATION AND HANDLING

A. Package products for shipment in manner to prevent damage; for equipment, package to avoid loss of factory calibration.

B. If special precautions are required, attach instructions prominently and legibly on outside of packaging.

C. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.

D. Transport and handle products in accordance with manufacturer's instructions.

E. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.

F. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.

G. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage, and to minimize handling.

H. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

3.04 STORAGE AND PROTECTION

A. Provide protection of stored materials and products against theft, casualty, or deterioration.

B. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication. See Section 01 74 19.

C. Store and protect products in accordance with manufacturers' instructions.

D. Store with seals and labels intact and legible.

E. Arrange storage of materials and products to allow for visual inspection for the purpose of determination of quantities, amounts, and unit counts.

F. Store sensitive products in weathertight, climate-controlled enclosures in an environment favorable to product.

G. For exterior storage of fabricated products, place on sloped supports above ground.

H. Provide off-site storage and protection when site does not permit on-site storage or protection.

I. Protect products from damage or deterioration due to construction operations, weather, precipitation, humidity, temperature, sunlight and ultraviolet light, dirt, dust, and other contaminants.

J. Comply with manufacturer's warranty conditions, if any.

K. Do not store products directly on the ground.

L. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.

M. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.

N. Prevent contact with material that may cause corrosion, discoloration, or staining.

O. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.

P. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

END OF SECTION 01 60 00

SECTION 01 70 00
EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Examination, preparation, and general installation procedures.

B. Requirements for alterations work, including selective demolition.

C. Pre-installation meetings.

D. Cutting and patching.

E. Surveying for laying out the work.

F. Cleaning and protection.

G. Starting of systems and equipment.

H. Demonstration and instruction of Owner personnel.

I. Closeout procedures, including Contractor's Correction Punch List, except payment procedures.

J. General requirements for maintenance service.

1.02 RELATED REQUIREMENTS

A. Section 01 10 00 - Summary: Limitations on working in existing building; continued occupancy; work sequence; identification of salvaged and relocated materials.

B. Section 01 30 00 - Administrative Requirements: Submittals procedures, Electronic document submittal service.

C. Section 01 40 00 - Quality Requirements: Testing and inspection procedures.

D. Section 01 50 00 - Temporary Facilities and Controls: Temporary exterior enclosures.

E. Section 01 50 00 - Temporary Facilities and Controls: Temporary interior partitions.

F. Section 01 51 00 - Temporary Utilities: Temporary heating, cooling, and ventilating facilities.

G. Section 01 78 00 - Closeout Submittals: Project record documents, operation and maintenance data, warranties, and bonds.

H. Section 07 84 00 - Firestopping.

1.03 REFERENCE STANDARDS

A. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2022, with Errata (2021).

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Cutting and Patching: Submit written request in advance of cutting or alteration that affects:
   1. Structural integrity of any element of Project.
   2. Integrity of weather exposed or moisture resistant element.
   3. Efficiency, maintenance, or safety of any operational element.
   4. Visual qualities of sight exposed elements.
   5. Work of Owner or separate Contractor.
   6. Include in request:
      a. Identification of Project.
      b. Location and description of affected work.
      c. Necessity for cutting or alteration.
      d. Description of proposed work and products to be used.
      e. Effect on work of Owner or separate Contractor.
      f. Written permission of affected separate Contractor.

g. Date and time work will be executed.

C. Project Record Documents: Accurately record actual locations of capped and active utilities.

1.05 PROJECT CONDITIONS

A. Use of explosives is not permitted.

B. Grade site to drain. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.

C. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion.

D. Perform dewatering activities, as required, for the duration of the project.

E. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.

F. Dust Control: Execute work by methods to minimize raising dust from construction operations. Provide positive means to prevent air-borne dust from dispersing into atmosphere and over adjacent property.
   1. Provide dust-proof enclosures to prevent entry of dust generated outdoors.
   2. Provide dust-proof barriers between construction areas and areas continuing to be occupied by Owner .

G. Erosion and Sediment Control: Plan and execute work by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and sedimentation.
   1. Minimize amount of bare soil exposed at one time.
   2. Provide temporary measures such as berms, dikes, and drains, to prevent water flow.
   3. Construct fill and waste areas by selective placement to avoid erosive surface silts or clays.
   4. Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.

H. Noise Control: Provide methods, means, and facilities to minimize noise produced by construction operations.
   1. Outdoors: Limit conduct of especially noisy exterior work to the hours of 8 am to 5 pm.

I. Pest and Rodent Control: Provide methods, means, and facilities to prevent pests and insects from damaging the work.

J. Rodent Control: Provide methods, means, and facilities to prevent rodents from accessing or invading premises.

K. Pollution Control: Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations. Comply with federal, state, and local regulations.

1.06 COORDINATION

A. Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.

B. Notify affected utility companies and comply with their requirements.

C. Verify that utility requirements and characteristics of new operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.

D. Coordinate space requirements, supports, and installation of mechanical and electrical work that are indicated diagrammatically on drawings. Follow routing indicated for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.

E. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.

F. Coordinate completion and clean-up of work of separate sections.

G. After Owner occupancy of premises, coordinate access to site for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Owner 's activities.

PART 2 PRODUCTS

2.01 PATCHING MATERIALS

A. New Materials: As specified in product sections; match existing products and work for patching and extending work.

B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.

B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.

C. Examine and verify specific conditions described in individual specification sections.

D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.

E. Verify that utility services are available, of the correct characteristics, and in the correct locations.

F. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

G. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities, mechanical and electrical systems, and other construction affecting the Work.

1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; underground electrical services, and other utilities.

3.02 PREPARATION

A. Clean substrate surfaces prior to applying next material or substance.

B. Seal cracks or openings of substrate prior to applying next material or substance.

C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

D. Existing Utility Information: Furnish information to local utility that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by deconstruction. Coordinate with authorities having jurisdiction.

3.03 PREINSTALLATION MEETINGS

A. When required in individual specification sections, convene a preinstallation meeting at the site prior to commencing work of the section.

B. Require attendance of parties directly affecting, or affected by, work of the specific section.

C. Prepare agenda and preside at meeting:
   1. Review conditions of examination, preparation and installation procedures.
   2. Review coordination with related work.

D. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner , participants, and those affected by decisions made.

3.04 GENERAL INSTALLATION REQUIREMENTS

A. In addition to compliance with regulatory requirements, conduct construction operations in compliance with NFPA 241, including applicable recommendations in Appendix A.

B. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.

C. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.

D. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.

E. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.

F. Make neat transitions between different surfaces, maintaining texture and appearance.

3.05 ALTERATIONS

A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
   1. Verify that construction and utility arrangements are as indicated.
   2. Report discrepancies to Architect before disturbing existing installation.
   3. Beginning of alterations work constitutes acceptance of existing conditions.

B. Keep areas in which alterations are being conducted separated from other areas that are still occupied.
   1. Provide, erect, and maintain temporary dustproof partitions of construction specified in Section 01 50 00 in locations indicated on drawings.

C. Maintain weatherproof exterior building enclosure except for interruptions required for replacement or modifications; take care to prevent water and humidity damage.
   1. Where openings in exterior enclosure exist, provide construction to make exterior enclosure weatherproof.
   2. Insulate existing ducts or pipes that are exposed to outdoor ambient temperatures by alterations work.

D. Remove existing work as indicated and as required to accomplish new work.
   1. Remove items indicated on drawings.
   2. Relocate items indicated on drawings.
   3. Where new surface finishes are to be applied to existing work, perform removals, patch, and prepare existing surfaces as required to receive new finish; remove existing finish if necessary for successful application of new finish.
   4. Where new surface finishes are not specified or indicated, patch holes and damaged surfaces to match adjacent finished surfaces as closely as possible.

E. Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, and Telecommunications): Remove, relocate, and extend existing systems to accommodate new construction.
   1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components; if necessary, modify installation to allow access or provide access panel.
   2. Where existing systems or equipment are not active and Contract Documents require reactivation, put back into operational condition; repair supply, distribution, and equipment as required.

3. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
    a. Disable existing systems only to make switchovers and connections; minimize duration of outages.
    b. See Section 01 10 00 for other limitations on outages and required notifications.
    c. Provide temporary connections as required to maintain existing systems in service.
4. Verify that abandoned services serve only abandoned facilities.
5. Remove abandoned pipe, ducts, conduits, and equipment , including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification; patch holes left by removal using materials specified for new construction.

F. Protect existing work to remain.
1. Prevent movement of structure; provide shoring and bracing if necessary.
2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
3. Repair adjacent construction and finishes damaged during removal work.

G. Adapt existing work to fit new work: Make as neat and smooth transition as possible.
1. When existing finished surfaces are cut so that a smooth transition with new work is not possible, terminate existing surface along a straight line at a natural line of division and make recommendation to Architect.
2. Where removal of partitions or walls results in adjacent spaces becoming one, rework floors, walls, and ceilings to a smooth plane without breaks, steps, or bulkheads.
3. Where a change of plane of 1/4 inch or more occurs in existing work, submit recommendation for providing a smooth transition for Architect review and request instructions.

H. Patching: Where the existing surface is not indicated to be refinished, patch to match the surface finish that existed prior to cutting. Where the surface is indicated to be refinished, patch so that the substrate is ready for the new finish.

I. Refinish existing surfaces as indicated:
1. Where rooms or spaces are indicated to be refinished, refinish all visible existing surfaces to remain to the specified condition for each material, with a neat transition to adjacent finishes.
2. If mechanical or electrical work is exposed accidentally during the work, re-cover and refinish to match.

J. Clean existing systems and equipment.

K. Remove demolition debris and abandoned items from alterations areas and dispose of off-site; do not burn or bury.

L. Do not begin new construction in alterations areas before demolition is complete.

M. Comply with all other applicable requirements of this section.

3.06 CUTTING AND PATCHING

A. Whenever possible, execute the work by methods that avoid cutting or patching.

B. See Alterations article above for additional requirements.

C. Perform whatever cutting and patching is necessary to:
1. Complete the work.
2. Fit products together to integrate with other work.
3. Provide openings for penetration of mechanical, electrical, and other services.
4. Match work that has been cut to adjacent work.
5. Repair areas adjacent to cuts to required condition.
6. Repair new work damaged by subsequent work.
7. Remove samples of installed work for testing when requested.

8. Remove and replace defective and non-complying work.

D. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.

E. Employ original installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.

F. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.

G. Restore work with new products in accordance with requirements of Contract Documents.

H. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

I. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material in accordance with Section 07 84 00, to full thickness of the penetrated element.

J. Patching:
   1. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
   2. Match color, texture, and appearance.
   3. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate prior to repairing finish.

3.07 PROGRESS CLEANING

A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.

B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.

C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.

D. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.

3.08 PROTECTION OF INSTALLED WORK

A. Protect installed work from damage by construction operations.

B. Provide special protection where specified in individual specification sections.

C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.

D. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.

E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.

F. Protect work from spilled liquids. If work is exposed to spilled liquids, immediately remove protective coverings, dry out work, and replace protective coverings.

G. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.

H. Remove protective coverings when no longer needed; reuse or recycle coverings if possible.

3.09 SYSTEM STARTUP

A. Coordinate schedule for start-up of various equipment and systems.

B. Notify Architect and Owner seven days prior to start-up of each item.

C. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions that may cause damage.

D. Verify tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.

E. Verify that wiring and support components for equipment are complete and tested.

F. Execute start-up under supervision of applicable Contractor personnel and manufacturer's representative in accordance with manufacturers' instructions.

G. When specified in individual specification Sections, require manufacturer to provide authorized representative to be present at site to inspect, check, and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.

H. Submit a written report that equipment or system has been properly installed and is functioning correctly.

3.10 DEMONSTRATION AND INSTRUCTION

A. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at scheduled time, at equipment location.

B. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.

C. Provide a qualified person who is knowledgeable about the Project to perform demonstration and instruction of Owner's personnel.

D. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owner 's personnel in detail to explain all aspects of operation and maintenance.

E. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.

3.11 ADJUSTING

A. Adjust operating products and equipment to ensure smooth and unhindered operation.

B. Testing, adjusting, and balancing HVAC systems: See Section 23 05 93 - Testing, Adjusting, and Balancing for HVAC.

3.12 FINAL CLEANING

A. Execute final cleaning after Substantial Completion but before making final application for payment.
   1. Clean areas to be occupied by Owner prior to final completion before Owner occupancy.

B. Use cleaning materials that are nonhazardous.

C. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.

D. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.

E. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.

F. Replace filters of operating equipment.

G. Clean debris from roofs, gutters, downspouts, scuppers, overflow drains, area drains, and drainage systems.

H. Clean site; sweep paved areas, rake clean landscaped surfaces.

I. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

J. Clean Owner -occupied areas of work.

3.13 CLOSEOUT PROCEDURES

A. Make submittals that are required by governing or other authorities.
   1. Provide copies to Architect and Owner .

B. When the Work is approaching Substantial Completion, the Contractor shall submit a written request stating that they have inspected the Work and that it is ready for an inspection for Substantial Completion by the Architect, together with a list of items to be completed or corrected. If the Architect considers the Work to be sufficiently complete, the Architect will establish a date for the Pre-Closeout Meeting and an inspection for Substantial Completion.
   1. The Architect shall schedule and conduct a Pre-Closeout Meeting. This will be held in conjunction with a progress meeting.
   2. The Pre-Closeout Meeting shall be conducted at the site before any observations for Substantial Completion. The Architect, Contractor, Subcontractors, Owner's Representative, and representatives of the Owner shall attend. The Architect shall review all aspects of the Project Closeout, a Project Closeout Checklist and time schedule and clarify all requirements of the Contract Documents.
   3. The Architect shall administrate the Project Pre-Closeout Meeting in accordance with Specifications Section 01 3100

C. Notify Architect when work is considered ready for Architect's Substantial Completion inspection.

D. Submit written certification containing Contractor's Correction Punch List, that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for Architect's Substantial Completion inspection.
   1. Submit signed Substantial Completion Request Form
   2. **SUBSTANTIAL COMPLETION**
      a. Preliminary Procedures: Before requesting final observation for determining date of Substantial Completion, complete the following. List items below that are incomplete with request.
         1) Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
         2) Advise Owner of pending insurance changeover requirements.
         3) Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
         4) Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
         5) Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
         6) Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
         7) Complete startup testing of systems.
         8) Submit test/adjust/balance records.
         9) Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
         10) Advise Owner of changeover in heat and other utilities.
         11) Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
         12) Complete final cleaning requirements, including touchup painting.
         13) Complete final cleaning requirements, including seeding if required.

14) Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

3. On receipt of request, Architect will either proceed with the review or notify Contractors of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after the review or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued. Certificate will not be prepared if items above under Preliminary Procedures have not been fully completed.
   a. Re-Observation: Request a follow up review when the Work identified in previous observations as “incomplete”, are completed or corrected.
   b. Results of completed reviews will form the basis of requirements for final completion.
4. Architect/Engineers will provide for ***one*** Review for Substantial Completion, for the entire project. If additional reviews are required due to incomplete or incorrect work by the Contractors or their Sub-Contractors, the Contractor will be responsible for paying for the Architect’s/Engineer's time to perform subsequent re-observations and reviews.
   a. Substantial Completion Review
      1) Shall take a maximum of 6 hours for one person from FEH DESIGN on one day.
      2) Shall take a maximum of 6 hours for each for two persons from IMEG Corporation on one day.
      3) Any additional time required for Substantial Completion Review will be the Contractors' responsibility for paying for the Architect's/Engineer's time. Time is not cumulative with Final Review.
5. Conduct Substantial Completion inspection and create Final Correction Punch List containing Architect's and Contractor's comprehensive list of items identified to be completed or corrected and submit to Architect.
6. Correct items of work listed in Final Correction Punch List and comply with requirements for access to Owner-occupied areas.
7. Notify Architect when work is considered finally complete and ready for Architect's Substantial Completion final inspection.
8. Complete items of work determined by Architect listed in executed Certificate of Substantial Completion.
9. FINAL COMPLETION
   a. Preliminary Procedures: Before requesting final review for determining final completion, complete the following:
      1) Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
      2) Submit evidence of final, continuing insurance coverage complying with insurance requirements.
      3) Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.
      4) Prepare and submit Project Record Documents, operation and maintenance manuals, final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record information.
      5) Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
   b. Observation: Submit a written request for final review for acceptance. On receipt of request, Architect will either proceed with review or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after observation or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
      1) Re-Observation: Request review when the Work identified in previous observations as “incomplete”, are completed or corrected.

c. Architect/Engineers will provide for ***one*** Final Review, for the entire project. If additional reviews are required due to incomplete or incorrect work by the Contractors or their Sub-Contractors, the Contractor will be responsible for paying for the Architect's/Engineer's time to perform subsequent re-observations and reviews.

d. Final Completion Review
   1) Shall take a maximum of 4 hours for one person from FEH DESIGN on one day.
   2) Shall take a maximum of 2 hours for one person from IMEG Corporation on one day.
   3) Any additional time required for Final Review will be the Contractors' responsibility for paying for the Architect's/Engineer's time. Time is not cumulative with Substantial Completion Review.

3.14 MAINTENANCE

A. Provide service and maintenance of components indicated in specification sections.

B. Maintenance Period: As indicated in specification sections or, if not indicated, not less than one year from the Date of Substantial Completion or the length of the specified warranty, whichever is longer.

C. Examine system components at a frequency consistent with reliable operation. Clean, adjust, and lubricate as required.

D. Include systematic examination, adjustment, and lubrication of components. Repair or replace parts whenever required. Use parts produced by the manufacturer of the original component.

E. Maintenance service shall not be assigned or transferred to any agent or subcontractor without prior written consent of the Owner .

END OF SECTION 01 70 00

SECTION 01 74 19
CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 GENERAL

1.01 WASTE MANAGEMENT REQUIREMENTS

A. Owner requires that this project generate the least amount of trash and waste possible.

B. Employ processes that ensure the generation of as little waste as possible due to error, poor planning, breakage, mishandling, contamination, or other factors.

C. Minimize trash/waste disposal in landfills; reuse, salvage, or recycle as much waste as economically feasible.

D. Methods of trash/waste disposal that are not acceptable are:
   1. Burning on the project site.
   2. Burying on the project site.
   3. Dumping or burying on other property, public or private.
   4. Other illegal dumping or burying.

E. Regulatory Requirements: Contractor is responsible for knowing and complying with regulatory requirements, including but not limited to Federal, state and local requirements, pertaining to legal disposal of all construction and demolition waste materials.

1.02 RELATED REQUIREMENTS

A. Section 01 10 00 - Summary: List of items to be salvaged from the existing building for relocation in project or for Owner .

B. Section 01 30 00 - Administrative Requirements: Additional requirements for project meetings, reports, submittal procedures, and project documentation.

C. Section 01 50 00 - Temporary Facilities and Controls: Additional requirements related to trash/waste collection and removal facilities and services.

D. Section 01 60 00 - Product Requirements: Waste prevention requirements related to delivery, storage, and handling.

E. Section 01 70 00 - Execution and Closeout Requirements: Trash/waste prevention procedures related to demolition, cutting and patching, installation, protection, and cleaning.

1.03 DEFINITIONS

A. Clean: Untreated and unpainted; not contaminated with oils, solvents, caulk, or the like.

B. Construction and Demolition Waste: Solid wastes typically including building materials, packaging, trash, debris, and rubble resulting from construction, remodeling, repair and demolition operations.

C. Hazardous: Exhibiting the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity or reactivity.

D. Nonhazardous: Exhibiting none of the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity, or reactivity.

E. Nontoxic: Neither immediately poisonous to humans nor poisonous after a long period of exposure.

F. Recyclable: The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product for reuse by others.

G. Recycle: To remove a waste material from the project site to another site for remanufacture into a new product for reuse by others.

H. Recycling: The process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for the purpose of using the altered form. Recycling does not include burning, incinerating, or thermally destroying waste.

I. Return: To give back reusable items or unused products to vendors for credit.

J. Reuse: To reuse a construction waste material in some manner on the project site.

K. Salvage: To remove a waste material from the project site to another site for resale or reuse by others.

L. Sediment: Soil and other debris that has been eroded and transported by storm or well production run-off water.

M. Source Separation: The act of keeping different types of waste materials separate beginning from the first time they become waste.

N. Toxic: Poisonous to humans either immediately or after a long period of exposure.

O. Trash: Any product or material unable to be reused, returned, recycled, or salvaged.

P. Waste: Extra material or material that has reached the end of its useful life in its intended use. Waste includes salvageable, returnable, recyclable, and reusable material.

PART 3 EXECUTION

2.01 WASTE MANAGEMENT PROCEDURES

A. See Section 01 30 00 for additional requirements for project meetings, reports, submittal procedures, and project documentation.

B. See Section 01 50 00 for additional requirements related to trash/waste collection and removal facilities and services.

C. See Section 01 60 00 for waste prevention requirements related to delivery, storage, and handling.

D. See Section 01 70 00 for trash/waste prevention procedures related to demolition, cutting and patching, installation, protection, and cleaning.

2.02 WASTE MANAGEMENT PLAN IMPLEMENTATION

A. Manager: Designate an on-site person or persons responsible for instructing workers and overseeing and documenting results of the Waste Management Plan.

B. Communication: Distribute copies of the Waste Management Plan to job site foreman, each subcontractor, Owner , and Architect.

C. Instruction: Provide on-site instruction of appropriate separation, handling, and recycling, salvage, reuse, and return methods to be used by all parties at the appropriate stages of the project.

D. Meetings: Discuss trash/waste management goals and issues at project meetings.
   1. Prebid meeting.
   2. Preconstruction meeting.
   3. Regular job-site meetings.

E. Facilities: Provide specific facilities for separation and storage of materials for recycling, salvage, reuse, return, and trash disposal, for use by all contractors and installers.
   1. Provide containers as required.
   2. Provide adequate space for pick-up and delivery and convenience to subcontractors.
   3. Keep recycling and trash/waste bin areas neat and clean and clearly marked in order to avoid contamination of materials.

F. Hazardous Wastes: Separate, store, and dispose of hazardous wastes according to applicable regulations.

G. Recycling: Separate, store, protect, and handle at the site identified recyclable waste products in order to prevent contamination of materials and to maximize recyclability of identified materials. Arrange for timely pickups from the site or deliveries to recycling facility in order to prevent contamination of recyclable materials.

H. Reuse of Materials On-Site: Set aside, sort, and protect separated products in preparation for reuse.

I. Salvage: Set aside, sort, and protect products to be salvaged for reuse off-site.

END OF SECTION 01 74 19

SECTION 01 77 10
CLOSEOUT FORM

This Certificate is to be signed by the General Contractor and transmitted to the Architect as the request for review of Substantial completion. The intent of this certificate is to expedite closeout of the project and to help assure the Owner that the portion of the work described below is complete, complies with all regulatory requirements and can be occupied for its intended purpose.

I _____ HEREBY CERTIFY THE FOLLOWING:

(Insert Contractor Name / Company)

A. I have reviewed the Contract Documents including all modifications.
B. I have inspected the Work.
C. The Work is completed in accordance with the Contract Documents and all approved contract modifications.
D. An Occupancy Permit has been issued for this part of the project.
E. The portion of the Work ready for review for Substantial Completion is identified as follows
___The Entire Project (put a checkmark or X in the blank)

Contractor understands and agrees that if the Architect and/or the Engineers determine that the Work is insufficiently complete to perform the Observations, the Owner may assess the Contractor for the cost of the additional time and expense incurred by the Architect, Engineers and the Owner for additional site visits, observations and expenses. These costs will be deducted from the Contract Amount through the change order process.

_____

(Contractor Name / Company Name)

_____

(Signature)

_____

(Date)

END OF SECTION 01 77 10

SECTION 01 78 00
CLOSEOUT SUBMITTALS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Project record documents.

B. Operation and maintenance data.

C. Warranties and bonds.

1.02 RELATED REQUIREMENTS

A. Section 00 72 00 - General Conditions and 00 73 00 - Supplementary Conditions: Performance bond and labor and material payment bonds, warranty, and correction of work.

B. Section 01 30 00 - Administrative Requirements: Submittals procedures, shop drawings, product data, and samples.

C. Section 01 70 00 - Execution and Closeout Requirements: Contract closeout procedures.

D. Individual Product Sections: Specific requirements for operation and maintenance data.

E. Individual Product Sections: Warranties required for specific products or Work.

1.03 SUBMITTALS

A. Project Record Documents: Submit documents to Architect within 14 calendar days after Date of Substantial Completion.

B. Operation and Maintenance Data:
   1. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Architect will review draft and return one copy with comments.
   2. For equipment, or component parts of equipment put into service during construction and operated by Owner , submit completed documents within ten days after acceptance.
   3. Submit one copy of completed documents 14 calendar days before Substantial Completion. This copy will be reviewed and returned, with Architect comments. Revise content of all document sets as required prior to final submission.
   4. Submit two sets of revised final documents in final form within 14 calendar days after Architect comments.

C. Warranties and Bonds:
   1. For equipment or component parts of equipment put into service during construction with Owner 's permission, submit documents within 10 days after acceptance.
   2. Make other submittals within 14 calendar days after Date of Substantial Completion, prior to final Application for Payment.
   3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty period.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PROJECT RECORD DOCUMENTS

A. Maintain on site one set of the following record documents; record actual revisions to the Work:
   1. Drawings.
   2. Specifications.
   3. Addenda.
   4. Change Orders and other modifications to the Contract.
   5. Reviewed shop drawings, product data, and samples.

B. Ensure entries are complete and accurate, enabling future reference by Owner .

C. Store record documents separate from documents used for construction.

D. Record information concurrent with construction progress.

E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
   1. Manufacturer's name and product model and number.
   2. Product substitutions or alternates utilized.
   3. Changes made by Addenda and modifications.

F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
   1. Measured depths of foundations in relation to finish first floor datum.
   2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
   3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
   4. Field changes of dimension and detail.
   5. Details not on original Contract drawings.

3.02 OPERATION AND MAINTENANCE DATA

A. Source Data: For each product or system, list names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.

B. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.

C. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.

D. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

3.03 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES

A. For Each Product, Applied Material, and Finish:
   1. Product data, with catalog number, size, composition, and color and texture designations.
   2. Information for re-ordering custom manufactured products.

B. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.

C. Moisture protection and weather-exposed products: Include product data listing applicable reference standards, chemical composition, and details of installation. Provide recommendations for inspections, maintenance, and repair.

D. Additional information as specified in individual product specification sections.

E. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.

3.04 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS

A. For Each Item of Equipment and Each System:
   1. Description of unit or system, and component parts.
   2. Identify function, normal operating characteristics, and limiting conditions.
   3. Include performance curves, with engineering data and tests.
   4. Complete nomenclature and model number of replaceable parts.

B. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.

C. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications; typed.

D. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.

E. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and trouble shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.

F. Provide servicing and lubrication schedule, and list of lubricants required.

G. Include manufacturer's printed operation and maintenance instructions.

H. Include sequence of operation by controls manufacturer.

I. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.

J. Provide control diagrams by controls manufacturer as installed.

K. Provide Contractor's coordination drawings, with color coded piping diagrams as installed.

L. Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.

M. Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.

N. Include test and balancing reports.

O. Additional Requirements: As specified in individual product specification sections.

3.05 ASSEMBLY OF OPERATION AND MAINTENANCE MANUALS

A. Assemble operation and maintenance data into durable manuals for Owner 's personnel use, with data arranged in the same sequence as, and identified by, the specification sections.

B. Where systems involve more than one specification section, provide separate tabbed divider for each system.

C. Binders: Commercial quality, 8-1/2 by 11 inch three D side ring binders with durable plastic covers; 2 inch maximum ring size. When multiple binders are used, correlate data into related consistent groupings.

D. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.

E. Project Directory: Title and address of Project; names, addresses, and telephone numbers of Architect, Consultants, Contractor and subcontractors, with names of responsible parties.

F. Tables of Contents: List every item separated by a divider, using the same identification as on the divider tab; where multiple volumes are required, include all volumes Tables of Contents in each volume, with the current volume clearly identified.

G. Dividers: Provide tabbed dividers for each separate product and system; identify the contents on the divider tab; immediately following the divider tab include a description of product and major component parts of equipment.

H. Text: Manufacturer's printed data, or typewritten data on 20 pound paper.

I. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

J. Arrangement of Contents: Organize each volume in parts as follows:
   1. Project Directory.
   2. Table of Contents, of all volumes, and of this volume.
   3. Operation and Maintenance Data: Arranged by system, then by product category.
      a. Source data.

b. Product data, shop drawings, and other submittals.
c. Operation and maintenance data.
d. Field quality control data.
e. Photocopies of warranties and bonds.

3.06 WARRANTIES AND BONDS

A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with Owner 's permission, leave date of beginning of time of warranty until Date of Substantial completion is determined.

B. Verify that documents are in proper form, contain full information, and are notarized.

C. Co-execute submittals when required.

D. Retain warranties and bonds until time specified for submittal.

E. Manual: Bind in commercial quality 8-1/2 by 11 inch three D side ring binders with durable plastic covers.

F. Cover: Identify each binder with typed or printed title WARRANTIES AND BONDS, with title of Project; name, address and telephone number of Contractor and equipment supplier; and name of responsible company principal.

G. Table of Contents: Neatly typed, in the sequence of the Table of Contents of the Project Manual, with each item identified with the number and title of the specification section in which specified, and the name of product or work item.

H. Separate each warranty or bond with index tab sheets keyed to the Table of Contents listing. Provide full information, using separate typed sheets as necessary. List Subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

END OF SECTION 01 78 00

SECTION 02 41 00
DEMOLITION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Selective demolition of building elements for alteration purposes.

1.02 RELATED REQUIREMENTS

A. Section 01 10 00 - Summary: Limitations on Contractor's use of site and premises.

B. Section 01 50 00 - Temporary Facilities and Controls: Site fences, security, protective barriers, and waste removal.

C. Section 01 60 00 - Product Requirements: Handling and storage of items removed for salvage and relocation.

D. Section 01 70 00 - Execution and Closeout Requirements: Project conditions; protection of bench marks, survey control points, and existing construction to remain; reinstallation of removed products; temporary bracing and shoring.

E. Section 01 74 19 - Construction Waste Management and Disposal: Limitations on disposal of removed materials; requirements for recycling.

F. Section 02 65 00 - Underground Storage Tank Removal.

G. Section 31 23 23 - Fill: Fill material for filling holes, pits, and excavations generated as a result of removal operations.

1.03 DEFINITIONS

A. Demolition: Dismantle, raze, destroy or wreck any building or structure or any part thereof.

B. Remove: Detach or dismantle items from existing construction and dispose of them off site, unless items are indicated to be salvaged or reinstalled.

C. Remove and Salvage: Detach or dismantle items from existing construction in a manner to prevent damage. Clean, package, label and deliver salvaged items to Owner in ready-for-reuse condition.

D. Remove and Reinstall: Detach or dismantle items from existing construction in a manner to prevent damage. Clean and prepare for reuse and reinstall where indicated.

E. Existing to Remain: Designation for existing items that are not to be removed and that are not otherwise indicated to be salvaged or reinstalled.

1.04 REFERENCE STANDARDS

A. 29 CFR 1926 - Safety and Health Regulations for Construction; Current Edition.

B. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2022, with Errata (2021).

PART 3 EXECUTION

2.01 DEMOLITION

A. Remove items indicated, for salvage, relocation, recycling, and waste as indicated in drawings.
.

B. Fill excavations, open pits, and holes in ground areas generated as result of removals, using specified fill; compact fill as specified in Section 31 22 00.

2.02 GENERAL PROCEDURES AND PROJECT CONDITIONS

A. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
   1. Obtain required permits.

2. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.
3. Provide, erect, and maintain temporary barriers and security devices.
4. Use physical barriers to prevent access to areas that could be hazardous to workers or the public.
5. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
6. Do not close or obstruct roadways or sidewalks without permits from authority having jurisdiction.
7. Conduct operations to minimize obstruction of public and private entrances and exits. Do not obstruct required exits at any time. Protect persons using entrances and exits from removal operations.

B. Do not begin removal until receipt of notification to proceed from Owner .

C. Do not begin removal until built elements to be salvaged or relocated have been removed.

D. Do not begin removal until vegetation to be relocated has been removed and vegetation to remain has been protected from damage.

E. Protect existing structures and other elements to remain in place and not removed.
1. Provide bracing and shoring.
2. Prevent movement or settlement of adjacent structures.
3. Stop work immediately if adjacent structures appear to be in danger.

F. Minimize production of dust due to demolition operations. Do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.

G. Hazardous Materials:
1. If hazardous materials are discovered during removal operations, stop work and notify Architect and Owner ; hazardous materials include regulated asbestos containing materials, lead, PCBs, and mercury.

H. Partial Removal of Paving and Curbs: Neatly saw cut at right angle to surface.

I. Underground Storage Tanks: Remove and dispose of as specified in Section 02 65 00.

2.03 EXISTING UTILITIES

A. Coordinate work with utility companies. Notify utilities before starting work, comply with their requirements, and obtain required permits.

B. Protect existing utilities to remain from damage.

C. Do not disrupt public utilities without permit from authority having jurisdiction.

D. Do not close, shut off, or disrupt existing life safety systems that are in use without at least 7 days prior written notification to Owner .

E. Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without at least 3 days prior written notification to Owner .

F. Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.

G. Remove exposed piping, valves, meters, equipment, supports, and foundations of disconnected and abandoned utilities.

H. Prepare building demolition areas by disconnecting and capping utilities outside the demolition zone. Identify and mark, in same manner as other utilities to remain, utilities to be reconnected.

2.04 SELECTIVE DEMOLITION FOR ALTERATIONS

A. Existing construction and utilities indicated on drawings are based on casual field observation and existing record documents only.

1. Verify construction and utility arrangements are as indicated.
2. Report discrepancies to Architect before disturbing existing installation.
3. Beginning of demolition work constitutes acceptance of existing conditions that would be apparent upon examination prior to starting demolition.

B. Separate areas in which demolition is being conducted from areas that remain occupied.
1. Provide, erect, and maintain temporary dustproof partitions of construction specified in Section 01 50 00 in locations indicated on drawings.

C. Maintain weatherproof exterior building enclosure, except for interruptions required for replacement or modifications; prevent water and humidity damage.

D. Remove existing work as indicated and required to accomplish new work.
1. Remove rotted wood, corroded metals, and deteriorated masonry and concrete; replace with new construction indicated.
2. Remove items indicated on drawings.
3. Not all items intended to be removed or altered have been called out specifically in the Drawings. Documents provide intent of what is to remain, to be salvaged, and to be demolished. Contractor shall inspect all existing conditions and coordinate necessary clarifications prior to demolition work. Some existing work may need to be altered, remedied or prepared in a way for new work which is not specifically expressed in the Drawings.

E. Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, and Telecommunications): Remove existing systems and equipment as indicated.
1. Maintain existing active systems to remain in operation, and maintain access to equipment and operational components.
2. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
3. Verify that abandoned services serve only abandoned facilities before removal.
4. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings. Remove back to source of supply where possible, otherwise cap stub and tag with identification.

F. Protect existing work to remain.
1. Prevent movement of structure. Provide shoring and bracing as required.
2. Perform cutting to accomplish removal work neatly and as specified for cutting new work.
3. Repair adjacent construction and finishes damaged during removal work.
4. Patch to match new work.

2.05 DEBRIS AND WASTE REMOVAL

A. Remove debris, junk, and trash from site.

B. Remove materials not to be reused on site; comply with requirements of Section 01 74 19 - Waste Management.

C. Leave site in clean condition, ready for subsequent work.

D. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION 02 41 00

SECTION 06 10 00
ROUGH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Nonstructural dimension lumber framing.

B. Rough opening framing for doors, windows, and roof openings.

C. Preservative treated wood materials.

D. Fire retardant treated wood materials.

E. Miscellaneous framing and sheathing.

F. Communications and electrical room mounting boards.

G. Concealed wood blocking, nailers, and supports.

H. Miscellaneous wood nailers and furring.

1.02 RELATED REQUIREMENTS

A. Section 09 21 16 - Gypsum Board Assemblies: Gypsum-based sheathing.

1.03 REFERENCE STANDARDS

A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.

B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2023.

C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023d.

D. AWC (WFCM) - Wood Frame Construction Manual for One- and Two-Family Dwellings; 2024, with Errata.

E. AWPA U1 - Use Category System: User Specification for Treated Wood; 2022.

F. PS 1 - Structural Plywood; 2023.

G. PS 20 - American Softwood Lumber Standard; 2021.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Provide technical data on insulated sheathing, wood preservative materials, and application instructions.

1.05 DELIVERY, STORAGE, AND HANDLING

A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.

B. Fire Retardant Treated Wood: Prevent exposure to precipitation during shipping, storage, and installation.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.

1. If no species is specified, provide species graded by the agency specified; if no grading agency is specified, provide lumber graded by grading agency meeting the specified requirements.
2. Grading Agency: Grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee at www.alsc.org, and who provides grading

service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.

2.02 DIMENSION LUMBER FOR CONCEALED APPLICATIONS

A. Sizes: Nominal sizes as indicated on drawings, S4S.

B. Moisture Content: S-dry or MC19.

C. Stud Framing (2 by 2 through 2 by 10):
   1. Species: Allowed under referenced grading rules.
   2. Grade: No. 2.

D. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
   1. Lumber: S4S, No. 2 or Standard Grade.
   2. Boards: Standard or No. 3.

E. Alternative blocking for interior wall supports for items listed in subparagraph 3.03:
   1. ClarkDietrich: Danback Flexible Wood Backing
   2. Or approved equal.

2.03 CONSTRUCTION PANELS

A. Wall Sheathing: Plywood, PS 1, Grade C-D, Exposure I.
   1. Type and thickness to match existing conditions. Assumed conditions may be found in existing drawings provided separately.

B. Communications and Electrical Room Mounting Boards: PS 1 A-D plywood, 3/4 inch thick; flame spread index of 25 or less, smoke developed index of 450 or less, when tested in accordance with ASTM E84.

C. Other Applications:
   1. Plywood Concealed From View But Located Within Exterior Enclosure: PS 1, C-C Plugged or better, Exterior grade.
   2. Plywood Exposed to View But Not Exposed to Weather: PS 1, A-D, or better.
   3. Other Locations: PS 1, C-D Plugged or better.

2.04 ACCESSORIES

A. Fasteners and Anchors:
   1. Metal and Finish: Hot-dipped galvanized steel complying with ASTM A153/A153M for high humidity and preservative-treated wood locations, unfinished steel elsewhere.
   2. Drywall Screws: Bugle head, hardened steel, power driven type, length three times thickness of sheathing.

B. Die-Stamped Connectors: Hot dipped galvanized steel, sized to suit framing conditions.
   1. For contact with preservative treated wood in exposed locations, provide minimum G185 galvanizing complying with ASTM A653/A653M.

2.05 FACTORY WOOD TREATMENT

A. Treated Lumber and Plywood: Comply with requirements of AWPA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.
   1. Preservative-Treated Wood: Provide lumber and plywood marked or stamped by an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWPA standards.

B. Preservative Treatment:
   1. Preservative Pressure Treatment of Lumber Above Grade: AWPA U1, Use Category UC3B, Commodity Specification A using waterborne preservative.
      a. Kiln dry lumber after treatment to maximum moisture content of 19 percent.
      b. Treat lumber exposed to weather.
      c. Treat lumber in contact with masonry or concrete.
      d. Treat lumber less than 18 inches above grade.

e. Treat lumber in other locations as indicated.

PART 3 EXECUTION

3.01 PREPARATION

A. Where wood framing bears on cementitious foundations, install full width sill flashing continuous over top of foundation, lap ends of flashing minimum of 4 inches and seal.

B. Install sill gasket under sill plate of framed walls bearing on foundations or curbs; puncture gasket cleanly to fit tightly around protruding anchor bolts.

C. Coordinate installation of rough carpentry members specified in other sections.

3.02 INSTALLATION - GENERAL

A. Select material sizes to minimize waste.

B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.

C. Where treated wood is used on interior, provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.

3.03 FRAMING INSTALLATION

A. Set structural members level, plumb, and true to line. Discard pieces with defects that would lower required strength or result in unacceptable appearance of exposed members.

B. Make provisions for temporary construction loads, and provide temporary bracing sufficient to maintain structure in true alignment and safe condition until completion of erection and installation of permanent bracing.

C. Install structural members full length without splices unless otherwise specifically detailed.

D. Comply with member sizes, spacing, and configurations indicated, and fastener size and spacing indicated, but not less than required by applicable codes and AWC (WFCM) Wood Frame Construction Manual.

E. Frame wall openings with two or more studs at each jamb; support headers on cripple studs.

3.04 BLOCKING, NAILERS, AND SUPPORTS

A. Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim.

B. In framed assemblies that have concealed spaces, provide solid wood fireblocking as required by applicable local code, to close concealed draft openings between floors and between top story and roof/attic space; other material acceptable to authorities having jurisdiction may be used in lieu of solid wood blocking.

C. In metal stud walls, provide continuous blocking around door and window openings for anchorage of frames, securely attached to stud framing.

D. In walls, provide blocking attached to studs as backing and support for wall-mounted items, unless item can be securely fastened to two or more studs or other method of support is explicitly indicated.

E. Where ceiling-mounting is indicated, provide blocking and supplementary supports above ceiling, unless other method of support is explicitly indicated.

F. Provide the following specific nonstructural framing and blocking:
   1. Cabinets and shelf supports.
   2. Wall brackets.
   3. Wall-mounted door stops.

3.05 ROOF-RELATED CARPENTRY

A. Coordinate installation of roofing carpentry with deck construction, framing of roof openings, and roofing assembly installation.

3.06 INSTALLATION OF CONSTRUCTION PANELS

A. Wall Sheathing: Secure with long dimension perpendicular to wall studs, with ends over firm bearing and staggered, using nails, screws, or staples.
   1. Place water-resistive barrier horizontally over wall sheathing, weather lapping edges and ends.

B. Communications and Electrical Room Mounting Boards: Secure with screws to studs with edges over firm bearing; space fasteners at maximum 24 inches on center on all edges and into studs in field of board.
   1. At fire-rated walls, install board over wall board indicated as part of the fire-rated assembly.
   2. Where boards are indicated as full floor-to-ceiling height, install with long edge of board parallel to studs.
   3. Install adjacent boards without gaps.
   4. Size and Location: As indicated on drawings.

3.07 TOLERANCES

A. Framing Members: 1/4 inch from true position, maximum.

B. Variation from Plane, Other than Floors: 1/4 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.

3.08 CLEANING

A. Waste Disposal: See Section 01 74 19 - Construction Waste Management and Disposal.
   1. Comply with applicable regulations.
   2. Do not burn scrap on project site.
   3. Do not burn scraps that have been pressure treated.
   4. Do not send materials treated with pentachlorophenol, CCA, or ACA to co-generation facilities or “waste-to-energy” facilities.

B. Do not leave wood, shavings, sawdust, etc. on the ground or buried in fill.

C. Prevent sawdust and wood shavings from entering the storm drainage system.

END OF SECTION 06 10 00

SECTION 06 41 00
ARCHITECTURAL WOOD CASEWORK

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Plastic-laminate-faced architectural cabinets.

B. Hardware.

1.02 RELATED REQUIREMENTS

A. Section 06 10 00 - Rough Carpentry: Support framing, grounds, and concealed blocking.

B. Section 12 36 00 - Countertops.

1.03 REFERENCE STANDARDS

A. ANSI A208.2 - Medium Density Fiberboard (MDF) for Interior Applications; 2022.

B. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition; 2014, with Errata (2016).

C. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards; 2021, with Errata.

D. BHMA A156.9 - Cabinet Hardware; 2020.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.
   1. Scale of Drawings: 1-1/2 inch to 1 foot, minimum.

C. Product Data: Provide data for hardware accessories.

D. Samples: Submit actual samples of proposed cabinet, countertop, and shelf unit substrate and finish.

E. Samples: Submit actual sample items of proposed pulls, hinges, shelf standards, and locksets, demonstrating hardware design, quality, and finish.

1.05 QUALITY ASSURANCE

A. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum five years of documented experience.
   1. Single Source Responsibility: Provide and install this work from single fabricator.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Protect units from moisture damage. Store in a temperature and humidity controlled environment. Do not deliver to site until these conditions can be met.

1.07 FIELD CONDITIONS

A. During and after installation of custom cabinets, maintain temperature and humidity conditions in building spaces at same levels planned for occupancy.

PART 2 PRODUCTS

2.01 PLASTIC-LAMINATE-FACED ARCHITECTURAL CABINETS

A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.

B. Plastic Laminate Faced Cabinets: Custom grade.

C. Laminate Cladding for Exposed Surfaces:
   1. Horizontal Surfaces: Grade HGS.
   2. Vertical Surfaces: Grades HGS.

3. Pattern Direction: Vertically for drawer fronts, doors, and fixed panels unless noted otherwise.

D. Materials for Semi-Exposed Surfaces:
   1. Drawer Construction: Fabricate with exposed fronts fastened to subfront with mounting screws from interior of body.
      a. Join subfronts, backs, and sides with glued rabbeted joints supplemented by mechanical fasteners or glued dovetail joints.

E. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements:
   1. **Color: Wilsonart, New Age Oak 7938-38**
   2. Finish - Exposed Interior Surfaces: Decorative Laminate, White unless noted otherwise.
   3. Door and Drawer Front Edge Profiles: Square edge with thin applied band.
   4. Casework Construction Type: Type A - Frameless.
   5. Grained Face Layout for Cabinet and Door Fronts: Flush panel.
      a. Custom Grade: Doors, drawer fronts and false fronts wood grain to run and match vertically within each cabinet unit.
   6. Cabinet Doors and Drawer Fronts: Flush style.
   7. Drawer Construction Technique: Dovetail joints.
   8. Cabinet Nominal Dimensions: Unless otherwise indicated, provide cabinets of widths and heights indicated on drawings, and with following front-to-back dimensions:
      a. Base Cabinets: 24 inches.
      b. Tall Cabinets: 24 inches.
      c. Wall Cabinets: 14 inches.

2.02 WOOD-BASED COMPONENTS

A. Wood fabricated from old growth timber is not permitted.

2.03 PANEL CORE MATERIALS

A. Medium Density Fiberboard (MDF): Composite panel composed of cellulosic fibers, additives, and bonding system; cured under heat and pressure; comply with ANSI A208.2.
   1. Grade: 115; moisture resistance: MR10.
   2. Panel Thickness: 3/4 inch.

2.04 COUNTERTOPS

A. Countertops: See Section 12 36 00.

2.05 ACCESSORIES

A. Adhesive: Type recommended by fabricator to suit application.

B. General: Provide cabinet hardware and accessory materials associated with architectural cabinets.

C. Frameless Concealed Soft Close Hinges (European Tyle): BHMA A156.0, B01602, 135 degrees of opening. Color: Black

D. Door & Drawer Pulls: Steel wire pulls, 4 inches wide.
   1. Fastened from back with two screws.
   2. Color: To be selected by manufacturer's full line.
   3. Mounting:
      a. Drawers: Horizontal
      b. Doors: Vertical

E. Shelf Rests: Knape and Vogt 7/32" Shelf Supports, 333 Series. Color: Bright Zinc.

F. Drawer Slides: Blum TANDEM plus BLUEMOTION, full extension runner system.
   1. Grade 1 and Grade 2: Concealed mounting and extending under bottom edge of drawer; full-extension type; zinc-plated steel with polymer rollers.

2. For drawers not more than 3 inches high but not more than 6 inches high and not more than 24 inches wide, provide Grade 1
3. For drawers more than 6 inches high or more than 24 inches wide, provide Grade 1HD-100.

G. Door and Drawer Silencers: BHMA A156.16, L03011.

H. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with BHMA A156.18 for BHMA finish number indicated.

I. For concealed hardware, provide manufacturer's standard finish that complies with product class requirements in BHMA A156.9.

J. Plastic Edge Banding: Extruded PVC, convex shaped; smooth finish; self locking serrated tongue; of width to match component thickness.
1. Color: to match laminate color..
2. Use at all door and drawer edges.

2.06 HARDWARE

A. Hardware: BHMA A156.9, types as recommended by fabricator for quality grade specified.

B. Adjustable Shelf Supports: Standard side-mounted system using recessed metal shelf standards or multiple holes for pin supports and coordinated self rests, polished chrome finish, for nominal 1 inch spacing adjustments.

C. Countertop Support Brackets: Fixed, L-shaped, face-of-wall mounting.
1. Materials: Steel; L-shaped cross-section.
a. Finish: Manufacturer's standard, factory-applied, powder coat.
b. Support Length: 12 inches.
c. Width: 1-1/2 inches.
2. Products:
a. A&M Hardware, Inc; Floating Shelf Brackets: www.aandmhardware.com/#sle.
b. Substitutions: See Section 01 60 00 - Product Requirements.

D. Drawer Slides:
1. Type: Extension types as indicated.
2. Static Load Capacity: Commercial grade.
3. Mounting: Bottom mounted.
4. Stops: Integral type.
5. Features: Provide self closing/stay closed type.
6. Manufacturers:
a. Accuride International, Inc; Light-Duty Drawer Slides: www.accuride.com/#sle.
b. Accuride International, Inc; Heavy-Duty Drawer Slides: www.accuride.com/#sle.
c. Blum, Inc; MOVENTO: www.blum.com/#sle.
d. Blum, Inc; TANDEM: www.blum.com/#sle.
e. Knape & Vogt Manufacturing Company; Light-Duty Drawer Slides: www.knapeandvogt.com/#sle.
f. Knape & Vogt Manufacturing Company; Heavy-Duty Drawer Slides: www.knapeandvogt.com/#sle.

E. Hinges: European style concealed self-closing, soft close type, steel with nickel-plated finish.
1. Manufacturers:
a. Blum, Inc; CLIP top BLUMOTION: www.blum.com/#sle.
b. Or other approved manufacturer..
c. Substitutions: See Section 01 60 00 - Product Requirements.

F. Soft Close Adapter: Concealed, frame-mounted, screw-adjustable damper; steel with black finish.

G. Pull-Out trash/recycling Containers
1. Manufacturer: Rev-A Shelf or approved equal

2. Model: 35WC, 35 Quart, Double Waste Pull-Out, Undermount Slide, Cabinet Floor Mounted
3. Color: Silver Metallic
4. Size: Minimum Cabinet Opening- 15" Width x 22-1/4" Depth x 19-1/2" Height
5. Provide pull-out slide with compatible waste containers

2.07 FABRICATION

A. Assembly: Shop assemble cabinets for delivery to site in units easily handled and to permit passage through building openings.

B. Fitting: When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide matching trim for scribing and site cutting.

C. Plastic Laminate: Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes. Fit corners and joints hairline; secure with concealed fasteners. Slightly bevel arises. Locate counter butt joints minimum 2 feet from sink cut-outs.
   1. Cap exposed plastic laminate finish edges with material of same finish and pattern.

D. Provide cutouts for plumbing fixtures. Verify locations of cutouts from on-site dimensions. Prime paint cut edges.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify adequacy of backing and support framing.

B. Verify location and sizes of utility rough-in associated with work of this section.

3.02 INSTALLATION

A. Install work in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade indicated.

B. Set and secure custom cabinets in place, assuring that they are rigid, plumb, and level.

C. Use fixture attachments in concealed locations for wall mounted components.

D. Use concealed joint fasteners to align and secure adjoining cabinet units.

E. Carefully scribe casework abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim for this purpose.

F. Secure cabinets to floor using appropriate angles and anchorages.

3.03 ADJUSTING

A. Adjust installed work.

B. Adjust moving or operating parts to function smoothly and correctly.

3.04 CLEANING

A. Clean casework, counters, shelves, hardware, fittings, and fixtures.

END OF SECTION 06 41 00

SECTION 07 92 00
JOINT SEALANTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Nonsag gunnable joint sealants.

B. Self-leveling pourable joint sealants.

C. Joint backings and accessories.

1.02 REFERENCE STANDARDS

A. ASTM C661 - Standard Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer; 2015 (Reapproved 2022).

B. ASTM C834 - Standard Specification for Latex Sealants; 2017 (Reapproved 2023).

C. ASTM C919 - Standard Practice for Use of Sealants in Acoustical Applications; 2024.

D. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018.

E. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2016.

F. ASTM C1311 - Standard Specification for Solvent Release Sealants; 2022.

G. ASTM C1330 - Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants; 2023.

H. ASTM C1521 - Standard Practice for Evaluating Adhesion of Installed Weatherproofing Sealant Joints; 2019 (Reapproved 2025).

I. ASTM D2240 - Standard Test Method for Rubber Property--Durometer Hardness; 2015 (Reapproved 2021).

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Submit manufacturer's technical datasheets for each product to be used; include the following:
   1. Physical characteristics, including movement capability, VOC content, hardness, cure time, and color availability.
   2. List of backing materials approved for use with the specific product.
   3. Backing material recommended by sealant manufacturer.
   4. Substrates that product is known to satisfactorily adhere to and with which it is compatible.
   5. Substrates the product should not be used on.
   6. Substrates for which use of primer is required.
   7. Sample product warranty.

C. Product Data for Accessory Products: Submit manufacturer's technical data sheet for each product to be used, including physical characteristics, installation instructions, and recommended tools.

D. Color Cards for Selection: Where sealant color is not specified, submit manufacturer's color cards showing standard colors available for selection.

E. Installation Plan: Submit at least four weeks prior to start of installation.

F. Field Quality Control Plan: Submit at least two weeks prior to start of installation.

G. Installation Log: Submit filled-out log for each length or instance of sealant installed.
   1. Joint-Sealant Schedule: Include the following information:
      a. Joint-sealant application, joint location, and designation.
      b. Joint-sealant manufacturer and product name.
      c. Joint-sealant color.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum 10 years documented experience.

B. Installer Qualifications: Company specializing in performing the work of this section and with at least 3 years of documented experience.

1.05 FIELD CONDITIONS

A. Maintain temperature and humidity recommended by the sealant manufacturer during and after installation.

1.06 WARRANTY

A. See Section 01 78 00-Closeout Submittals for additional warranty requirements.

B. Correct defective work within a 5 year period after Date of Substantial Completion.

C. Warranty: Include coverage for installed sealants and accessories that fail to achieve watertight seal, exhibit loss of adhesion or cohesion, or do not cure.

D. Special Manufacturer's Warranty: Manufacturer's standard form in which joint-sealant manufacturer agrees to furnish joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.
   1. Warranty Period: 20 years from Date of Substantial Completion for weatherseal and non-staining of silicone sealants.

E. Special warranties specified in this article exclude deterioration or failure of joint sealants from the following:
   1. Movement of the structure caused by structural settlement or errors attributable to design or construction resulting in stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression.
   2. Disintegration of joint substrates from natural causes exceeding design specifications.
   3. Mechanical damage caused by individuals, tools, or other outside agents.
   4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

F. Warranty: Include coverage for installed sealants and accessories that fail to achieve watertight seal, exhibit loss of adhesion or cohesion, or do not cure.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Nonsag Sealants:
   1. Bostik Inc: www.bostik-us.com/#sle.
   2. Dow Chemical Company: consumer.dow.com/en-us/industry/ind-building-construction.html/#sle.
   3. Hilti, Inc: www.us.hilti.com/#sle.
   4. Master Builders Solutions: www.master-builders-solutions.com/en-us/#sle.
   5. Pecora Corporation: www.pecora.com/#sle.
   6. Sika Corporation: www.usa-sika.com/#sle.
   7. Tremco Commercial Sealants & Waterproofing: www.tremcosealants.com/#sle.
   8. W.R. Meadows, Inc: www.wrmeadows.com/#sle.
   9. Substitutions: See Section 01 60 00 - Product Requirements.

B. Self-Leveling Sealants:
   1. Bostik Inc: www.bostik-us.com/#sle.
   2. Dow: www.dow.com/#sle.
   3. Master Builders Solutions: www.master-builders-solutions.com/en-us/#sle.
   4. Pecora Corporation: www.pecora.com/#sle.
   5. Sika Corporation: www.usa-sika.com/#sle.
   6. Tremco Commercial Sealants & Waterproofing: www.tremcosealants.com/#sle.

7. W.R. Meadows, Inc: www.wrmeadows.com/#sle.
8. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 JOINT SEALANT APPLICATIONS

A. Scope:
   1. Interior Joints:
      a. Do not seal interior joints unless specifically indicated to be dealed. Interior joints to be sealed include, but are not limited to the following items:
      b. Seal the following joints:
         1) Joints between door frames and window frames and adjacent construction.
         2) Joints between countertops and walls
         3) Joints between gypsum wallboard assemblies and steel framing members as indicated in Construction Drawings.
         4) In sound-rated wall and ceiling assemblies, gaps at electrical outlets, wiring devices, and piping penetrations.
         5) In sound-rated wall and ceiling assemblies, seal joints between wall assemblies and ceiling assemblies; between wall assemblies and other construction; between ceiling assemblies and other construction.
   2. Do Not Seal:
      a. Intentional weep holes in masonry.
      b. Joints indicated to be covered with manufactured expansion joint cover assemblies or other sealing devices.
      c. Joints where sealant is specified to be furnished and installed by manufacturer of product to be sealed.
      d. Joints where sealant installation is specified in other sections.
      e. Joints between suspended ceilings and walls.

B. Interior Joints: Use non-sag polyurethane sealant, unless otherwise indicated.
   1. Wall and Ceiling Joints in Non-Wet Areas: Acrylic emulsion latex sealant.
   2. Wall and Ceiling Joints in Wet Areas: Non-sag polyurethane sealant for continuous liquid immersion.
   3. Joints between Tile in Wet Areas and Floors, Walls, and Ceilings: Mildew-resistant silicone sealant.
   4. In Sound-Rated Assemblies: Acrylic emulsion latex sealant.
   5. Narrow Control Joints in Interior Concrete Slabs: Self-leveling epoxy sealant.
   6. Other Floor Joints: Self-leveling polyurethane "traffic-grade" sealant.

C. Sound-Rated Assemblies: Walls and ceilings identified as STC-rated, sound-rated, or acoustical.

2.03 JOINT SEALANTS - GENERAL

A. Sealants and Primers: Provide products with acceptable levels of volatile organic compound (VOC) content; see Section 01 61 16.

2.04 NONSAG JOINT SEALANTS

A. Type JS-1 - Non-Staining Silicone Sealant: ASTM C920, Grade NS, Uses M and A; not expected to withstand continuous water immersion or traffic.
   1. Movement Capability: Plus and minus 50 percent, minimum.
   2. Color: To be selected by Architect from manufacturer's standard range.
   3. Cure Type: Single-component, neutral moisture curing..
   4. Service Temperature Range: 65 to 180 degrees F.
   5. Locations:
      a. Perimeter joints between materials listed below and frames of doors, windows and louvers.
         1) Aluminum window frames to gypsum

B. Type JS-3 - Acoustical Sealant - Acrylic-Urethane Sealant: Water based ;ASTM C920, Grade NS, Uses M and A; single component; paintable; not expected to withstand continuous water immersion or traffic.
   1. Movement Capability: Plus and minus 12-1/2 percent, minimum.
   2. Hardness Range: 15 to 40, Shore A, when tested in accordance with ASTM C661.
   3. Color: White.
   4. Applications:
      a. In sound-rated wall assemblies, and where not indicated as fire-rated:
         1) gaps between top stud and structure, between bottom plate stud and floor, between gypsum wall board and floor, and between gypsum wall board and structure.
         2) gaps at electrical outlets, wiring devices, piping, and other openings; between wall/ceiling and other construction; and other flanking sound paths.

C. Type JS-4 - General Purpose Interior Sealant - Acrylic Emulsion Latex: Water-based; ASTM C834, single component, nonstaining, nonbleeding, nonsagging; not intended for exterior use.
   1. Color: To be selected by Architect from manufacturer's standard range.
   2. Grade: ASTM C834; Grade NF.
   3. Applications:
      a. Interior wall and ceiling control joints in non-wet areas.
      b. Joints between door, window, and other frames and adjacent construction.
      c. Other interior joints for which no other type of sealant is indicated.

2.05 SELF-LEVELING JOINT SEALANTS

A. Type JS-7 - Interior Slabs - Semi-Rigid Self-Leveling Epoxy Joint Filler: Epoxy or epoxy/polyurethane copolymer; intended for filling cracks and control joints not subject to significant movement; rigid enough to support concrete edges under traffic.
   1. Composition: Multicomponent, 100 percent solids by weight.
   2. Durometer Hardness: Minimum of 85 for Type A or 35 for Type D, after seven days when tested in accordance with ASTM D2240.
   3. Color: Concrete gray.
   4. Joint Width, Minimum: 1/8 inch.
   5. Joint Width, Maximum: 1/4 inch.
   6. Joint Depth: Provide product suitable for joints from 1/8 inch to 2 inches in depth including space for backer rod.

2.06 ACCESSORIES

A. Sealant Backing Materials, General: Materials placed in joint before applying sealants; assists sealant performance and service life by developing optimum sealant profile and preventing three-sided adhesion; type and size recommended by sealant manufacturer for compatibility with sealant, substrate, and application.

B. Backer Rod: Cylindrical cellular foam rod with surface that sealant will not adhere to, compatible with specific sealant used, and recommended by backing and sealant manufacturers for specific application.
   1. 25 to 33 percent larger in diameter than joint width.
   2. Open Cell Backer Rods
      a. Open Cell: 40 to 50 percent larger in diameter than joint width.
      b. Locations:
         1) Around door and window openings
         2) Interior joints other than in areas listed above
      c. Bi-cellular backer rods are acceptable in lieu of open cell backer rods.

C. Backing Tape: Self-adhesive polyethylene tape with surface that sealant will not adhere to and recommended by tape and sealant manufacturers for specific application.

D. Masking Tape: Self-adhesive, nonabsorbent, nonstaining, removable without adhesive residue, and compatible with surfaces adjacent to joints and sealants.

E. Joint Cleaner: Noncorrosive and nonstaining type, type recommended by sealant manufacturer; compatible with joint forming materials.

F. Primers: Type recommended by sealant manufacturer to suit application; nonstaining.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that joints are ready to receive work.

B. Verify that backing materials are compatible with sealants.

3.02 PREPARATION

A. Remove loose materials and foreign matter that could impair adhesion of sealant.

B. Clean joints, and prime as necessary, in accordance with manufacturer's instructions.

C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.

D. Mask elements and surfaces adjacent to joints from damage and disfigurement due to sealant work; be aware that sealant drips and smears may not be completely removable.

E. Concrete Floor Joints That Will Be Exposed in Completed Work: Test joint filler in an inconspicuous area to verify that it does not stain or discolor slab.

3.03 INSTALLATION

A. Install this work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.

B. Provide joint sealant installations complying with ASTM C1193.

C. Install acoustical sealant application work in accordance with ASTM C919.

D. Measure joint dimensions and size joint backers to achieve width-to-depth ratio, neck dimension, and surface bond area as recommended by manufacturer, except where specific dimensions are indicated.
   1. Do not leave gaps between ends of sealant backings.
   2. Do not stretch, twist, puncture, or tear sealant backings.
   3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.
   4. Roll backer rods into joints with adjustable backer rod insertion roller tool. Do not use sharp tools such as screwdrivers, putty knives, etc.

E. Install bond breaker backing tape where backer rod cannot be used.

F. Install sealant free of air pockets, foreign embedded matter, ridges, and sags, and without getting sealant on adjacent surfaces.

G. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
   1. Remove excess sealant from surfaces adjacent to joints.
   2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
   3. Provide concave joint profile per Figure 8A in ASTM C 1193, unless otherwise indicated.

H. Do not install sealant when ambient temperature is outside manufacturer's recommended temperature range, or will be outside that range during the entire curing period, unless manufacturer's approval is obtained and instructions are followed.

I. Nonsag Sealants: Tool surface concave, unless otherwise indicated; remove masking tape immediately after tooling sealant surface.

J. Concrete Floor Joint Filler: After full cure, shave joint filler flush with top of concrete slab.

3.04 CLEANING

A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.05 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

END OF SECTION 07 92 00

SECTION 08 11 13
HOLLOW METAL DOORS AND FRAMES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Non-fire-rated hollow metal doors and frames.

B. Hollow metal frames for wood doors.

C. Hollow metal borrowed lites glazing frames.

1.02 RELATED REQUIREMENTS

A. Section 08 71 00 - Door Hardware.

B. Section 08 80 00 - Glazing: Glass for doors and borrowed lites.

C. Section 09 91 23 - Interior Painting: Field painting.

D. Section 09 96 00 - High-Performance Coatings: Field Painting

1.03 ABBREVIATIONS AND ACRONYMS

A. ANSI: American National Standards Institute.

B. HMMA: Hollow Metal Manufacturers Association.

C. NFPA: National Fire Protection Association.

D. SDI: Steel Door Institute.

E. UL: Underwriters Laboratories.

1.04 REFERENCE STANDARDS

A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.

B. ANSI/SDI A250.6 - Recommended Practice for Hardware Reinforcing on Standard Steel Doors and Frames; 2020.

C. ANSI/SDI A250.8 - Specifications for Standard Steel Doors and Frames (SDI-100); 2017.

D. ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames; 2020.

E. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2023.

F. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Required Hardness, Solution Hardened, and Bake Hardenable; 2023, with Editorial Revision.

G. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2018a.

H. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic-Cement Concrete; 2020.

I. ASTM C476 - Standard Specification for Grout for Masonry; 2023.

J. BHMA A156.115 - Hardware Preparation in Steel Doors and Steel Frames; 2016.

K. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.

L. NAAMM HMMA 830 - Hardware Selection for Hollow Metal Doors and Frames; 2002.

M. NAAMM HMMA 831 - Hardware Locations for Hollow Metal Doors and Frames; 2011.

N. NAAMM HMMA 840 - Guide Specifications For Receipt, Storage and Installation of Hollow Metal Doors and Frames; 2017.

O. NAAMM HMMA 861 - Guide Specifications for Commercial Hollow Metal Doors and Frames; 2014.

P. SDI 117 - Manufacturing Tolerances for Standard Steel Doors and Frames; 2019.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Materials and details of design and construction, hardware locations, reinforcement type and locations, anchorage and fastening methods, and finishes.

C. Shop Drawings: Details of each opening, showing elevations, glazing, frame profiles, and any indicated finish requirements.

D. Manufacturer's Certificate: Certification that products meet or exceed specified requirements.

E. Manufacturer's Qualification Statement.

F. Installer's Qualification Statement.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than five years documented experience.

B. Installer Qualifications: Company specializing in performing work of the type specified and with at least five years of documented experience.

C. Maintain at project site copies of reference standards relating to installation of products specified.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Comply with NAAMM HMMA 840 or ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.

B. Protect with resilient packaging; avoid humidity build-up under coverings; prevent corrosion and adverse effects on factory applied painted finish.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Hollow Metal Doors and Frames:
   1. Ceco Door, an Assa Abloy Group company: www.assaabloydss.com/#sle.
   2. Curries, an Assa Abloy Group company: www.assaabloydss.com/#sle.
   3. Republic Doors, an Allegion brand: www.republicdoor.com/#sle.
   4. Steelcraft, an Allegion brand: www.allegion.com/#sle.
   5. Or approved equal.

2.02 PERFORMANCE REQUIREMENTS

A. Requirements for Hollow Metal Doors and Frames:
   1. Steel Sheet: Comply with one or more of the following requirements; galvannealed steel complying with ASTM A653/A653M, cold-rolled steel complying with ASTM A1008/A1008M, or hot-rolled pickled and oiled (HRPO) steel complying with ASTM A1011/A1011M, commercial steel (CS) Type B, for each.
   2. Accessibility: Comply with ICC A117.1 and ADA Standards.
   3. Glazed Lights: Non-removable stops on non-secure side; sizes and configurations as indicated on drawings. Style: Manufacturer's standard.
   4. Hardware Preparations, Selections and Locations: Comply with NAAMM HMMA 830 and NAAMM HMMA 831 or BHMA A156.115 and ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.
   5. Zinc Coating for Typical Interior and/or Exterior Locations: Provide metal components zinc-coated (galvanized) and/or zinc-iron alloy-coated (galvannealed) by the hot-dip process in accordance with ASTM A653/A653M, with manufacturer's standard coating thickness, unless noted otherwise for specific hollow metal doors and frames.

a. Based on SDI Standards: Provide at least A40/ZF120 (galvannealed) when necessary, coating not required for typical interior door applications, and at least A60/ZF180 (galvannealed) for corrosive locations.

B. Hollow Metal Panels: Same construction, performance, and finish as frames.

C. Combined Requirements: If a particular frame unit is indicated to comply with more than one type of requirement, comply with the specified requirements for each type; for instance, an exterior door that is also indicated as being sound-rated must comply with the requirements specified for exterior doors and for sound-rated doors; where two requirements conflict, comply with the most stringent.

2.03 HOLLOW METAL FRAMES

A. Comply with standards and/or custom guidelines as indicated for corresponding door in accordance with applicable door frame requirements.

B. Frame Finish: Factory primed and field finished.

C. Full profile/continuously welded type: Full profile welded joints continuous; grind, fill, dress and make smooth, flush and invisible.

D. Interior Door Frames, Non-Fire Rated: Full profile/continuously welded type.
1. Frame Metal Thickness: 16 gage, 0.053 inch, minimum.
2. Frame Finish: Factory primed and field finished.
3. See below for requirements of insulating frames for sound deadening.

E. Borrowed Lites Glazing Frames: Construction and face dimensions to match door frames, and as indicated on drawings.

F. Transom Bars: Fixed, of profile same as jamb and head.

G. Frames Wider than 48 inches: Reinforce with steel channel fitted tightly into frame head, flush with top.

H. Jamb Anchors: Provide number and spacing of anchors as follows:
1. Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:
a. Stud-Wall Type:
1) Four anchors per jamb from 60 to 90 inches high.
2) Five anchors per jamb from 90 to 96 inches high.
3) Two anchors per head for frames more than 42 inches wide.

2.04 FINISHES

A. Primer: Rust-inhibiting, complying with ANSI/SDI A250.10, door manufacturer's standard.

B. Bituminous Coating: Cold-applied asphalt mastic, compounded for 15 mil, 0.015 inch dry film thickness (DFT) per coat; provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

2.05 ACCESSORIES

A. Glazing: As specified in Section 08 80 00, factory installed.

B. Grout for Frames: Mortar grout complying with ASTM C476 with maximum slump of 4 inches as measured in accordance with ASTM C143/C143M for hand troweling in place; plaster grout and thinner pumpable grout are prohibited.

C. Silencers: Resilient rubber, fitted into drilled hole; provide three on strike side of single door, three on center mullion of pairs, and two on head of pairs without center mullions.
1. Installed on all doors except on weather/gasketed stripped frames.
a. Exterior doors and frames.
b. Fire rated doors and frames.
c. See 08 71 00 Door Hardware for additional locations for gasket seals.

D. Temporary Frame Spreaders: Provide for factory- or shop-assembled frames.

E. Batt insulation: Install mineral wool insulationfor sound deadening in all interior door and window frames within gypsum walls.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that opening sizes and tolerances are acceptable.

C. Verify that finished walls are in plane to ensure proper door alignment.

3.02 PREPARATION

3.03 INSTALLATION

A. Install doors and frames in accordance with manufacturer's instructions and related requirements of specified door and frame standards or custom guidelines indicated.

B. Coordinate frame anchor placement with wall construction. In areas where exposed frame anchors are used, provide bondo fill, sand, and prep for paint so as to conceal any fasteners leaving a clean, smooth finish.

C. Grout frames in masonry construction, using hand trowel methods; brace frames so that pressure of grout before setting will not deform frames.

D. Install door hardware as specified in Section 08 71 00.
   1. Comply with recommended practice for hardware placement of doors and frames in accordance with ANSI/SDI A250.6 or NAAMM HMMA 861.

E. Comply with glazing installation requirements of Section 08 80 00.

F. Coordinate installation of electrical connections to electrical hardware items.

G. Touch up damaged factory finishes or frames prior to applying paint finish.

3.04 TOLERANCES

A. Clearances Between Door and Frame: Comply with related requirements of specified frame standards or custom guidelines indicated in accordance with SDI 117 or NAAMM HMMA 861.

B. Maximum Diagonal Distortion: 1/16 inch measured with straight edge, corner to corner.

3.05 ADJUSTING

A. Adjust for smooth and balanced door movement.

B. Adjust sound control doors so that seals are fully engaged when door is closed.

END OF SECTION 08 11 13

SECTION 08 14 16
FLUSH WOOD DOORS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Flush wood doors; flush and flush glazed configuration; non-rated.

1.02 RELATED REQUIREMENTS

A. Section 08 11 13 - Hollow Metal Doors and Frames.

B. Section 08 71 00 - Door Hardware.

C. Section 08 80 00 - Glazing.

D. Section 09 91 23 - Interior Painting: Field finishing of door frames.

1.03 REFERENCE STANDARDS

A. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2018.

B. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition; 2014, with Errata (2016).

C. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards; 2021, with Errata.

D. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Indicate door core materials and construction; veneer species, type and characteristics.

C. Shop Drawings: Show doors and frames, elevations, sizes, types, swings, undercuts, beveling, blocking for hardware, factory machining, factory finishing, cutouts for glazing and other details.

D. Samples: Submit two samples of door construction, 6 by 6 inches in size cut from top corner of door.

E. Samples: Submit two samples of door finish, 6 by 6 inches in size illustrating wood grain, stain color, and sheen.

F. Manufacturer's Qualification Statement.

G. Installer's Qualification Statement.

H. Warranty, executed in Owner 's name.

1.05 QUALITY ASSURANCE

A. Maintain one copy of the specified door quality standard on site for review during installation and finishing.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section, with not less than ten years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Package, deliver and store doors in accordance with specified quality standard.

B. Accept doors on site in manufacturer's packaging, and inspect for damage.

C. Protect doors with resilient packaging sealed with heat shrunk plastic; do not store in damp or wet areas or areas where sunlight might bleach veneer; seal top and bottom edges with tinted sealer if stored more than one week, and break seal on site to permit ventilation.

1.07 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

B. Interior Doors: Provide manufacturer's warranty for the life of the installation.

C. Include coverage for delamination of veneer, warping beyond specified installation tolerances, defective materials, and telegraphing core construction.

D. Include installation that may be required due to repair or replacement of defective doors.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Wood Veneer Faced Doors:
   1. Masonite Architectural; Aspiro Select Wood Veneer Doors: www.architectural.masonite.com/#sle.
   2. VT Industries, Inc; ____: www.vtindustries.com/#sle.
   3. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 DOORS

A. Doors: See drawings for locations and additional requirements.
   1. Quality Standard: Custom Grade, Heavy Duty performance, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.
   2. Wood Veneer Faced Doors: 5-ply unless otherwise indicated.

B. Interior Doors: 1-3/4 inches thick unless otherwise indicated; flush construction.
   1. Provide solid core doors at each location.

2.03 DOOR AND PANEL CORES

A. Non-Rated Solid Core and 20 Minute Rated Doors: Type particleboard core (PC), plies and faces as indicated.

2.04 DOOR FACINGS

A. Veneer Facing for Transparent Finish: Red oak, veneer grade in accordance with quality standard indicated, plain sliced (flat cut), with book match between leaves of veneer, running match of spliced veneer leaves assembled on door or panel face.

2.05 DOOR CONSTRUCTION

A. Fabricate doors in accordance with door quality standard specified.

B. Cores Constructed with stiles and rails:
   1. Provide solid blocks at lock edge for hardware reinforcement.
   2. Provide solid blocking for other throughbolted hardware.
   3. All blocking to be bonded to core, then entire unit abrasive planed/sanded before veneering.

C. Glazed Openings: Non-removable stops on non-secure side; sizes and configurations as indicated on drawings.

D. Factory machine doors for hardware other than surface-mounted hardware, in accordance with hardware requirements and dimensions.

E. Factory fit doors for frame opening dimensions identified on shop drawings, with edge clearances in accordance with specified quality standard.

F. Provide edge clearances in accordance with the quality standard specified.

G. Edge Construction: At hinge stiles, provide laminated-edge construction with improved screw-holding capability and split resistance. Comply with specified requirements for exposed edges.

2.06 FINISHES - WOOD VENEER DOORS

A. Finish work in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), Section 5 - Finishing for grade specified and as follows:
   1. Transparent:
      a. System - 1, Lacquer, Nitrocellulose.
      b. Stain: To match existing.

c. Sheen: To match existing.

2.07 ACCESSORIES

A. Hollow Metal Door Frames: See Section 08 11 13.

B. Glazed Openings:
   1. Heat-Strengthened and Fully Tempered Glass: ASTM C1048.
   2. Glazing: Single vision units, 1/4 inch thick glass.
   3. Tint: Clear.

C. Glazing: See Section 08 80 00.

D. Glazing Stops: Wood, of same species as door facing, mitered corners; prepared for countersink style tamper proof screws.

E. Door Hardware: See Section 08 71 00.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that opening sizes and tolerances are acceptable.

C. Do not install doors in frame openings that are not plumb or are out-of-tolerance for size or alignment.

3.02 INSTALLATION

A. Install doors in accordance with manufacturer's instructions and specified quality standard.

B. Factory-Finished Doors: Do not field cut or trim; if fit or clearance is not correct, replace door.

C. Use machine tools to cut or drill for hardware.

D. Coordinate installation of doors with installation of frames and hardware.

E. Coordinate installation of glazing.

F. Install door louvers plumb and level.

3.03 TOLERANCES

A. Comply with specified quality standard for fit and clearance tolerances.

B. Comply with specified quality standard for telegraphing, warp, and squareness.

3.04 ADJUSTING

A. Adjust doors for smooth and balanced door movement.

B. Adjust closers for full closure.

END OF SECTION 08 14 16

SECTION 08 43 13
ALUMINUM-FRAMED STOREFRONTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Aluminum-framed storefront, with vision glass.

1.02 RELATED REQUIREMENTS

A. Section 07 92 00 - Joint Sealants: Sealing joints between frames and adjacent construction.

B. Section 08 80 00 - Glazing: Glass and glazing accessories.

1.03 REFERENCE STANDARDS

A. AAMA CW-10 - Care and Handling of Architectural Aluminum from Shop to Site; 2015.

B. AAMA 609 & 610 - Cleaning and Maintenance Guide for Architecturally Finished Aluminum; 2025.

C. AAMA 611 - Specification for Anodized Architectural Aluminum; 2024.

D. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.

E. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.

F. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2021.

G. ASTM E283/E283M - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2019.

H. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; 2014 (Reapproved 2021).

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Provide component dimensions, describe components within assembly, anchorage and fasteners, glass and infill, door hardware, and internal drainage details.

C. Shop Drawings: Indicate system dimensions, framed opening requirements and tolerances, affected related work, expansion and contraction joint location and details, and field welding required.

D. Samples: Submit two samples illustrating finished aluminum surface materials.

E. Manufacturer's Certificate: Certify that the products supplied meet or exceed the specified requirements.

F. Design Data: Provide framing member structural and physical characteristics, engineering calculations, and dimensional limitations.

G. Hardware Schedule: Complete itemization of each item of hardware to be provided for each door, cross-referenced to door identification numbers in Contract Documents.

H. Manufacturer's qualification statement.

I. Installer's qualification statement.

J. Specimen warranty.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in performing work of type specified and with at least three years of documented experience.

B. Installer Qualifications: Company specializing in performing work of type specified and with at least three years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Handle products of this section in accordance with AAMA CW-10.

B. Protect finished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings that bond to aluminum when exposed to sunlight or weather.

1.07 FIELD CONDITIONS

A. Do not install sealants when ambient temperature is less than 40 degrees F. Maintain this minimum temperature during and 48 hours after installation.

1.08 WARRANTY

A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.

B. Correct defective Work within a two year period after Date of Substantial Completion.

C. Provide ten year manufacturer warranty against failure of glass seal on insulating glass units, including interpane dusting or misting. Include provision for replacement of failed units.

D. Provide ten year manufacturer warranty against excessive degradation of exterior finish. Include provision for replacement of units with excessive fading, chalking, or flaking.

PART 2 PRODUCTS

2.01 ALUMINUM-FRAMED STOREFRONTS MANUFACTURERS:

A. **Basis of Design: Kawneer North America; Model Series 6400: www.kawneer.com/#sle.**

B. Manko Window Systems, Inc: www.mankowindows.com/#sle.

C. Oldcastle BuildingEnvelope: www.oldcastlebe.com/#sle.

D. Or approved equal.

E. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 BASIS OF DESIGN -- FRAMING FOR INSULATING GLAZING

A. Front-Set Style, Not Thermally-Broken:
   1. Vertical Mullion Dimensions: 2 inches wide by 4-1/2 inches deep.

2.03 ALUMINUM-FRAMED STOREFRONT

A. Aluminum-Framed Storefront: Factory fabricated, factory finished aluminum framing members with infill, and related flashings, anchorage and attachment devices.
   1. Vertical Mullion Dimensions: 2 inches wide by 4-1/2 inches deep.
   2. Finish: Class I natural anodized.
      a. Factory finish all surfaces that will be exposed in completed assemblies.
   3. Finish Color: As selected by Architect from manufacturer's standard line.
   4. Fabrication: Joints and corners flush, hairline, and weatherproof, accurately fitted and secured; prepared to receive anchors and hardware; fasteners and attachments concealed from view; reinforced as required for imposed loads.
   5. Construction: Eliminate noises caused by wind and thermal movement, prevent vibration harmonics, and prevent "stack effect" in internal spaces.
   6. System Internal Drainage: Drain to the exterior by means of a weep drainage network any water entering joints, condensation occurring in glazing channel, and migrating moisture occurring within system.
   7. Expansion/Contraction: Provide for expansion and contraction within system components caused by cycling temperature range of 170 degrees F over a 12 hour period without causing detrimental effect to system components, anchorages, and other building elements.
   8. Movement: Allow for movement between storefront and adjacent construction, without damage to components or deterioration of seals.

9. Perimeter Clearance: Minimize space between framing members and adjacent construction while allowing expected movement.
10. Maintain continuous air barrier and/or vapor retarder seal throughout assembly, primarily in line with inside pane of glazing and inner sheet of infill panel, and heel bead of glazing compound.

B. Performance Requirements
1. Wind Loads: Design and size components to withstand the specified load requirements without damage or permanent set, when tested in accordance with ASTM E330/E330M, using loads 1.5 times the design wind loads and 10 second duration of maximum load.
a. Design Wind Loads: Comply with requirements of ASCE 7.
b. Member Deflection: Limit member deflection to flexure limit of glass in any direction, with full recovery of glazing materials.
2. Air Leakage: 0.06 cfm/sq ft maximum leakage of storefront wall area when tested in accordance with ASTM E283/E283M at 1.57 psf pressure difference.

2.04 COMPONENTS

A. Aluminum Framing Members: Tubular aluminum sections, drainage holes and internal weep drainage system.
1. Framing members for interior applications need not be thermally broken.
2. Glazing Stops: Flush.

B. Glazing: See Section 08 80 00.

2.05 MATERIALS

A. Extruded Aluminum: ASTM B221 (ASTM B221M).

B. Fasteners: Stainless steel.

C. Exposed Flashings: Aluminum sheet, 20 gauge, 0.032 inch minimum thickness; finish to match framing members.

D. Concealed Flashings: Galvanized steel, 26 gauge, 0.0179 inch minimum base metal thickness.

E. Sealant for Setting Thresholds: Non-curing butyl type.

F. Glazing Gaskets: Type to suit application to achieve weather, moisture, and air infiltration requirements.

G. Glazing Accessories: See Section 08 80 00.

2.06 FINISHES

A. Class I Natural Anodized Finish: AAMA 611 AA-M12C22A41 Clear anodic coating not less than 0.7 mils thick.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify dimensions, tolerances, and method of attachment with other work.

B. Verify that storefront wall openings and adjoining water-resistive and/or air barrier seal materials are ready to receive work of this section.

3.02 INSTALLATION

A. Install wall system in accordance with manufacturer's instructions.

B. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.

C. Provide alignment attachments and shims to permanently fasten system to building structure.

D. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances, aligning with adjacent work.

E. Provide thermal isolation where components penetrate or disrupt building insulation.

F. Install sill flashings. Turn up ends and edges; seal to adjacent work to form water tight dam.

G. Where fasteners penetrate sill flashings, make watertight by seating and sealing fastener heads to sill flashing.

H. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.

I. Touch-up minor damage to factory applied finish; replace components that cannot be satisfactorily repaired.

3.03 TOLERANCES

A. Maximum Variation from Plumb: 0.06 inch per 3 feet non-cumulative or 0.06 inch per 10 feet, whichever is less.

B. Maximum Misalignment of Two Adjoining Members Abutting in Plane: 1/32 inch.

3.04 CLEANING

A. Remove protective material from pre-finished aluminum surfaces.

B. Wash down surfaces with a solution of mild detergent in warm water, applied with soft, clean wiping cloths, and take care to remove dirt from corners and to wipe surfaces clean.

C. Upon completion of installation, thoroughly clean aluminum surfaces in accordance with AAMA 609 & 610.

3.05 PROTECTION

A. Protect installed products from damage until Date of Substantial Completion.

END OF SECTION 08 43 13

SECTION 08 71 00
DOOR HARDWARE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Hardware for wood doors.

1.02 RELATED REQUIREMENTS

A. Section 08 06 71 - Door Hardware Schedule: Schedule of door hardware sets.

B. Section 08 11 13 - Hollow Metal Doors and Frames.

1.03 REFERENCE STANDARDS

A. BHMA A156.13 - Mortise Locks & Latches Series 1000; 2017.

B. BHMA A156.16 - Auxiliary Hardware; 2018.

C. DHI (H&S) - Sequence and Format for the Hardware Schedule; 2019.

D. DHI (LOCS) - Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames; 2004.

E. DHI WDHS.3 - Recommended Locations for Architectural Hardware for Flush Wood Doors; 1993; also in WDHS-1/WDHS-5 Series, 1996.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate the manufacture, fabrication, and installation of products that door hardware is installed on.

B. Furnish templates for door and frame preparation to manufacturers and fabricators of products requiring internal reinforcement for door hardware.

C. Keying Requirements Meeting:
   1. Attendance Required:
      a. Contractor.
      b. Owner .
   2. Agenda:
      a. Establish keying requirements.
      b. Establish keying submittal schedule and update requirements.
   3. Incorporate "Keying Requirements Meeting" decisions into keying submittal upon review of door hardware keying system including, but not limited to, the following:
   4. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner , participants, and those affected by decisions made.
   5. Deliver established keying requirements to manufacturers.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Manufacturer's catalog literature for each type of hardware, marked to clearly show products to be furnished for this project, and includes construction details, material descriptions, finishes, and dimensions and profiles of individual components.

C. Shop Drawings - Door Hardware Schedule: Submit detailed listing that includes each item of hardware to be installed on each door. Use door numbering scheme as included in Contract Documents.
   1. Prepared by or under supervision of Architectural Hardware Consultant (AHC).
   2. Comply with DHI (H&S) using door numbers and hardware set numbers as indicated in construction documents.
   3. List groups and suffixes in proper sequence.
   4. Provide complete description for each door listed.

5. Provide manufacturer name, product names, and catalog numbers; include functions, types, styles, sizes and finishes of each item.

D. Maintenance Data: Include data on operating hardware, lubrication requirements, and inspection procedures related to preventative maintenance.

E. Keying Schedule:
   1. Submit three (3) copies of Keying Schedule in compliance with requirements established during Keying Requirements Meeting unless otherwise indicated.

F. Maintenance Materials and Tools: Furnish the following for Owner 's use in maintenance of project.
   1. See Section 01 60 00 - Product Requirements, for additional provisions.
   2. Lock Cylinders: Ten for each master keyed group.
   3. Tools: One set of each special wrench or tool applicable for each different or special hardware component, whether supplied by hardware component manufacturer or not.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum three years of documented experience.

B. Installer Qualifications: Company specializing in performing work of the type specified for commercial door hardware with at least three years of documented experience.

C. Supplier Qualifications: Company with certified Architectural Hardware Consultant (AHC) to assist in work of this section.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Package hardware items individually; label and identify each package with door opening code to match door hardware schedule.

1.08 WARRANTY

A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.

B. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents

C. Warranty Period: Written warranty, executed by manufacturer(s), agreeing to repair or replace components of standard and electrified door hardware that fails in materials or workmanship within specified warranty period after final acceptance by the Owner. Failures include, but are not limited to, the following:
   1. Structural failures including excessive deflection, cracking, or breakage.
   2. Faulty operation of the hardware.
   3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
   4. Electrical component defects and failures within the systems operation.

D. Standard Warranty Period: One year from date of Substantial Completion, unless otherwise indicated.

E. Warranty against defects in material and workmanship for period indicated, from Date of Substantial Completion.
   1. Mortise Locks and Latches: Ten years, minimum
   2. Manual Surface Door Closer Bodies: Twenty-five years, minimum
   3. Closers: Five years, minimum.
   4. Exit Devices: Five years, minimum.
   5. Locksets and Cylinders: Seven years, minimum.
   6. Other Hardware: Two years, minimum.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

A. Provide specified door hardware as required to make doors fully functional, compliant with applicable codes, and secure to extent indicated.

B. Provide individual items of single type, of same model, and by same manufacturer.

C. Provide door hardware products that comply with the following requirements:
   1. Applicable provisions of federal, state, and local codes.

D. Provide door hardware products to match existing door hardware.

2.02 HINGES

A. Manufacturers:
   1. McKinney; an Assa Abloy Group company; MK: www.assaabloydss.com/#sle.
   2. Hager Companies; HA: www.hagerco.com/#sle.
   3. Ives Companyies; IV: www.us.allegion.com/#sle
   4. Stanley, dormakaba Group; ST: www.stanleyhardwarefordoors.com/#sle.
   5. Substitutions: See Section 01 60 00 - Product Requirements.

B. Hinges: ANSI/BHMA A156.1 certified butt hinges with number of hinge knuckles and other options as specified in the Door Hardware Sets.
   1. Quantity: Provide the following hinge quantity:
      a. Three hinges: For doors with heights 61 to 90 inches.
      b. Four Hinges: For doors with heights 91 to 120 inches.
   2. Hinge Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:
      a. Widths up to 3’0”: 4-1/2” standard or heavy weight as specified.
      b. Sizes from 3’1” to 4’0”: 5” standard or heavy weight as specified.
   3. Hinge Weight and Base Material: Unless otherwise indicated, provide the following:
      a. Exterior Doors: Heavy weight, non-ferrous, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate standard weight.
      b. Interior Doors: Standard weight, steel, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate heavy weight.
   4. Hinge Options: Comply with the following:
      a. Non-removable Pins: Provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for all out-swinging lockable doors.

2.03 LOCK CYLINDERS

A. General: Cylinder manufacturer to have minimum (10) years experience designing secured master key systems and have on record a published security keying system policy.

B. Source Limitations: Obtain each type of keyed cylinder and keys from the same source manufacturer as locksets and exit devices, unless otherwise indicated.
   1. Manufacturers:
      a. Schlage LFIC (SC).
      b. No Substitution.

C. Cylinders: Original manufacturer cylinders complying with the following:
   1. Mortise Type: Threaded cylinders with rings and cams to suit hardware application.
   2. Rim Type: Cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
   3. Bored-Lock Type: Cylinders with tailpieces to suit locks.
   4. Mortise and rim cylinder collars to be solid and recessed to allow the cylinder face to be flush and be free spinning with matching finishes.
   5. Keyway: Match Facility Standard - contact owner representative for keyway.

6. Schlage cores and cylinders to be provided by this specification section. These are not owner supplied or installed.

D. Permanent Cores: Manufacturer's standard; finish face to match lockset; complying with the following:
   1. Interchangeable Cores: Core insert, removable by use of a special key; usable with other manufacturers' cylinders.

E. Keying System: Each type of lock and cylinders to be factory keyed.
   1. Conduct specified "Keying Conference" to define and document keying system instructions and requirements. David Deemer - Electrical and Facilities Superintendent for the City of Marshalltown to be part of the keying meeting.
   2. Furnish factory cut, nickel-silver large bow permanently inscribed with a visual key control number as directed by Owner.
   3. Existing System: Keying of cylinders and cores. Permanent, keyed cylinders and cores to be installed by the hardware supplier.

F. Key Quantity: Provide the following minimum number of keys:
   1. Change Keys per Cylinder: Two (2).
   2. Master Keys (per Master Key Level/Group): Five (5).
   3. Construction Keys (where required): Ten (10).
   4. Control Keys: Two (2).

G. Construction Keying: Provide construction master keyed cylinders.

H. Key Control Cabinet: Provide a key control system including envelopes, labels, and tags with self-locking key clips, receipt forms, 3-way visible card index, temporary markers, permanent markers, and standard metal cabinet. Key control cabinet shall have expansion capacity of 150% of the number of locks required for the project.
   1. Manufacturers:
   2. Lund Equipment (LU).
   3. MMF Industries (MM).
   4. Telkee (TK).

2.04 LOCK AND LATCH STRIKES

A. Strikes: Provide manufacturer's standard strike with strike box for each latch or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, unless otherwise indicated, and as follows:
   1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.
   2. Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.
   3. Double-lipped strikes: For locks at double acting doors. Furnish with retractable stop for rescue hardware applications.

B. Standards: Comply with the following:
   1. Strikes for Mortise Locks and Latches: BHMA A156.13.
   2. Strikes for Bored Locks and Latches: BHMA A156.2.
   3. Strikes for Auxiliary Deadlocks: BHMA A156.36.
   4. Dustproof Strikes: BHMA A156.16.

2.05 MORTISE LOCKS

A. Mortise Locksets, Grade 1 (Heavy Duty): ANSI/BHMA A156.13, Series 1000, Operational Grade 1 certified. Locksets are to be manufactured with a corrosion resistant steel case and be field-reversible for handing without disassembly of the lock body.
   1. Extended cycle test: Locks to have been cycle tested in ordinance with ANSI/BHMA 156.13 requirements to 10 million cycles.
   2. Manufacturers:
      a. Corbin Russwin Hardware (RU) - ML2000 Series.
      b. Sargent Manufacturing (SA) - 8200 Series

c. Schlage (SC) - L9000 Series

B. Multi-Point Locksets: Vertical rod locking devices designed for openings requiring multiple latching points within one locking mechanism. Rods are retracted by dual mounted outside lever trim controls available in a variety of ANSI/BHMA operational functions. Option for single top latching only eliminates the need for bottom strikes.
   1. Manufacturers:
      a. Corbin Russwin Hardware (RU) - MP9800 Series.
      b. Sargent Manufacturing (SA) - 7000 Series.

C. Cylindrical Locksets, Grade 1 (Heavy Duty): ANSI/BHMA A156.2, Series 4000, Grade 1 certified.
   1. Furnish with solid cast levers, standard 2 3/4” backset, and 1/2" (3/4" at rated paired openings) throw brass or stainless steel latchbolt.
   2. Locks are to be non-handed and fully field reversible.
   3. Extended cycle test: Locks to have been cycle tested in ordinance with ANSI/BHMA 156.2 requirements to 2 million cycles.
   4. Manufacturers:
      a. Corbin Russwin Hardware (RU) - CL3300 Series.
      b. Sargent Manufacturing (SA) - 10 Line.
      c. Schlage (SC) - ND Series.

D. Mortise Locks: Comply with BHMA A156.13, Grade 1, Security, 1000 Series.
   1. Latchbolt Throw: 3/4 inch, minimum.
   2. Deadbolt Throw: 1 inch, minimum.
   3. Backset: 2-3/4 inch unless otherwise indicated.
   4. Strikes: Provide manufacturer's standard strike for each latchset or lockset with strike box and curved lip extending to protect frame in compliance with indicated requirements.
      a. Finish: To match lock or latch.

2.06 WALL STOPS

A. Wall Stops: Comply with BHMA A156.16, Grade 1 and Resilient Material Retention Test as described in this standard.
   1. Type: Bumper, concave, wall stop.
   2. Material: Aluminum housing with rubber insert.

2.07 WEATHERSTRIPPING AND GASKETING

A. General: Thresholds, weatherstripping, and gasket seals to be of type and design as specified below or in the Hardware Sets. Provide continuous weatherstrip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated. At exterior applications provide non-corrosive fasteners and elsewhere where indicated.

B. Smoke Labeled Gasketing: Assemblies complying with NFPA 105 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for smoke control ratings indicated, based on testing according to UL 1784.
   1. Provide smoke labeled perimeter gasketing at all smoke labeled openings.

C. Fire Labeled Gasketing: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to UL-10C.
   1. Provide intumescent seals as indicated to meet UL10C Standard for Positive Pressure Fire Tests of Door Assemblies, and NPFA 252, Standard Methods of Fire Tests of Door Assemblies.

D. Sound-Rated Gasketing: Assemblies that are listed and labeled by a testing and inspecting agency, for sound ratings indicated.

E. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.

F. Hurricane and Tornado Resistance Compliance: Architectural seals to be U.L. listed for windstorm assemblies where applicable. Provide the appropriate hurricane or tornado resistant products that have been independent third party tested, certified, and labeled to meet state and local windstorm building codes applicable to project.

G. Manufacturers:
   1. National Guard Products (NG).
   2. Pemko Products; ASSA ABLOY Architectural Door Accessories (PE).
   3. Reese Enterprises, Inc. (RE).

2.08 SILENCERS

A. Silencers: Provide at equal locations on door frame to mute sound of door's impact upon closing.
   1. Single Door: Provide three on strike jamb of frame.
   2. Pair of Doors: Provide two on head of frame, one for each door at latch side.
   3. Material: Rubber, black color.

2.09 FINISHES

A. Finishes: To match existing door hardware.

B. Standard: Designations used in the Hardware Sets and elsewhere indicate hardware finishes complying with ANSI/BHMA A156.18, including coordination with traditional U.S. finishes indicated by certain manufacturers for their products.

C. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware

D. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that doors and frames are ready to receive this work; labeled, fire-rated doors and frames are properly installed, and dimensions are as indicated on shop drawings.

3.02 INSTALLATION

A. Install hardware in accordance with manufacturer's instructions and applicable codes.

B. Install each item of mechanical and electromechanical hardware and access control equipment to comply with manufacturer's written instructions and according to specifications.

C. Installers are to be trained and certified by the manufacturer on the proper installation and adjustment of fire, life safety, and security products including: hanging devices; locking devices; closing devices; and seals.

D. Use templates provided by hardware item manufacturer.

E. Door Hardware Mounting Heights: Distance from finished floor to center line of hardware item. As indicated in following list; unless noted otherwise in Door Hardware Schedule or on drawings.
   1. For Steel Doors and Frames: Install in compliance with DHI (LOCS) recommendations.
   2. For Wood Doors: Install in compliance with DHI WDHS.3 recommendations.

F. Set exterior door thresholds with full-width bead of elastomeric sealant at each point of contact with floor providing a continuous weather seal; anchor thresholds with stainless steel countersunk screws.

G. Provide blocking in drywall partitions where wall stops or other wall mounted hardware is located.

H. Retrofitting: Install door hardware to comply with manufacturer's published templates and written instructions. Where cutting and fitting are required to install door hardware onto or into

surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.

I. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."

J. Storage: Provide a secure lock up for hardware delivered to the project but not yet installed. Control the handling and installation of hardware items so that the completion of the work will not be delayed by hardware losses before and after installation.

3.03 FIELD QUALITY CONTROL

A. Perform field inspection and testing under provisions of Section 01 40 00 - Quality Requirements.

B. Provide an Architectural Hardware Consultant (AHC) to inspect installation and certify that hardware and installation has been furnished and installed in accordance with manufacturer's instructions and as specified.

3.04 ADJUSTING

A. Adjust work under provisions of Section 01 70 00 - Execution and Closeout Requirements.

B. Adjust hardware for smooth operation.

C. Adjust gasketing for complete, continuous seal; replace if unable to make complete seal.

D. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

3.05 CLEANING

A. Clean finished hardware in accordance with manufacturer's written instructions after final adjustments have been made.

B. Clean adjacent surfaces soiled by hardware installation.

C. Replace items that cannot be cleaned to manufacturer's level of finish quality at no additional cost.

D. Protect all hardware stored on construction site in a covered and dry place. Protect exposed hardware installed on doors during the construction phase. Install any and all hardware at the latest possible time frame.

E. Clean operating items as necessary to restore proper finish. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of owner occupancy.

3.06 DEMONSTRATION

A. Instruct Owner's maintenance personnel to adjust, operate, and maintain mechanical and electromechanical door hardware.

END OF SECTION 08 71 00

SECTION 08 80 00
GLAZING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Glazing units.

1.02 RELATED REQUIREMENTS

A. Section 07 92 00 - Joint Sealants: Sealants for other than glazing purposes.

B. Section 08 11 13 - Hollow Metal Doors and Frames: Glazed lites in doors and borrowed lites.

C. Section 08 14 16 - Flush Wood Doors: Glazed lites in doors.

D. Section 08 43 13 - Aluminum-Framed Storefronts: Glazing provided as part of storefront assembly.

1.03 REFERENCE STANDARDS

A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; Current Edition.

B. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test; 2015 (Reaffirmed 2020).

C. ASTM C864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers; 2005 (Reapproved 2019).

D. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2018.

E. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2016.

F. GANA (SM) - GANA Sealant Manual; 2008.

G. NFRC 100 - Procedure for Determining Fenestration Product U-factors; 2023.

H. NFRC 200 - Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence; 2023.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data on Insulating Glass Unit and Glazing Unit Glazing Types: Provide structural, physical and environmental characteristics, size limitations, special handling and installation requirements.

C. Product Data on Glazing Compounds and Accessories: Provide chemical, functional, and environmental characteristics, limitations, special application requirements, and identify available colors.

D. Samples: Submit two samples 12 by 12 inch in size, showing coloration and design.
   1. Float Glass

E. Certificate: Certify that products of this section meet or exceed specified requirements.

F. Manufacturer's qualification statement.

G. Installer's qualification statement.

H. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner 's name and registered with manufacturer.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum five years of documented experience.

B. Installer Qualifications: Company specializing in performing work of the type specified and with at least five years documented experience.

1.06 FIELD CONDITIONS

A. Do not install glazing when ambient temperature is less than 40 degrees F.

1.07 WARRANTY

A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.

B. Insulating Glass Units: Provide a five (5) year manufacturer warranty to include coverage for seal failure, interpane dusting or misting, including providing products to replace failed units.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Float Glass Manufacturers:
   1. Cardinal Glass Industries: www.cardinalcorp.com/#sle.
   2. Guardian Glass, LLC: www.guardianglass.com/#sle.
   3. Pilkington North America Inc: www.pilkington.com/na/#sle.
   4. Vitro Architectural Glass: www.vitroglazings.com/#sle.
   5. Or Approved equal.

2.02 GLASS MATERIALS

A. Type TG - Float Glass: Provide float glass based glazing unless otherwise indicated.
   1. Kind FT - Fully Tempered Type: Complies with ASTM C1048.
   2. Fully Tempered Safety Glass: Complies with ANSI Z97.1 or 16 CFR 1201 criteria for safety glazing used in hazardous locations.

2.03 GLAZING UNITS

A. Type TG - Monolithic Safety Glazing: Non-fire-rated.
   1. Applications:
      a. Glazed lites in doors, except fire doors.
      b. Glazed sidelights to doors, except in fire-rated walls and partitions.
      c. Other locations required by applicable federal, state, and local codes and regulations.
      d. Other locations indicated on drawings.
   2. Glass Type: Fully tempered safety glass as specified.
   3. Tint: Clear.
   4. Thickness: 1/4 inch, nominal.

2.04 ACCESSORIES

A. Setting Blocks: EPDM, with 80 to 90 Shore A durometer hardness; ASTM C864 Option II. Length of 0.1 inch for each square foot of glazing or minimum 4 inch by width of glazing rabbet space minus 1/16 inch by height to suit glazing method and pane weight and area.

B. Spacer Shims: EPDM, 50 to 60 Shore A durometer hardness; ASTM C864 Option II. Minimum 3 inch long by one half the height of the glazing stop by thickness to suit application, self adhesive on one face.

C. Glazing Gaskets: Resilient silicone extruded shape to suit glazing channel retaining slot; ASTM C864 Option II; color black.

D. Glazing Clips: Manufacturer's standard type.

PART 3 EXECUTION

3.01 VERIFICATION OF CONDITIONS

A. Verify that openings for glazing are correctly sized and within tolerances, including those for size, squareness, and offsets at corners.

B. Verify that the minimum required face and edge clearances are being provided.

C. Verify that surfaces of glazing channels or recesses are clean, free of obstructions that may impede moisture movement, weeps are clear, and support framing is ready to receive glazing system.

D. Verify that sealing between joints of glass framing members has been completed effectively.

E. Proceed with glazing system installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Clean contact surfaces with appropriate solvent and wipe dry within maximum of 24 hours before glazing. Remove coatings that are not tightly bonded to substrates.

B. Seal porous glazing channels or recesses with substrate compatible primer or sealer.

C. Prime surfaces scheduled to receive sealant where required for proper sealant adhesion.

3.03 INSTALLATION, GENERAL

A. Install glazing in compliance with written instructions of glass, gaskets, and other glazing material manufacturers, unless more stringent requirements are indicated, including those in glazing referenced standards.

B. Install glazing sealants in accordance with ASTM C1193, GANA (SM), and manufacturer's instructions.

C. Do not exceed edge pressures around perimeter of glass lites as stipulated by glass manufacturer.

D. Set glass lites of system with uniform pattern, draw, bow, and similar characteristics.

E. Set glass lites in proper orientation so that coatings face exterior or interior as indicated.

F. Prevent glass from contact with any contaminating substances that may be the result of construction operations such as, and not limited to the following; weld splatter, fire-safing, plastering, mortar droppings, etc.

3.04 INSTALLATION - DRY GLAZING METHOD (GASKET GLAZING)

A. Application - Exterior and/or Interior Glazed: Set glazing infills from either the exterior or the interior of the building.

B. Place setting blocks at 1/4 points with edge block no more than 6 inch from corners.

C. Rest glazing on setting blocks and push against fixed stop with sufficient pressure on gasket to attain full contact.

D. Install removable stops without displacing glazing gasket; exert pressure for full continuous contact.

3.05 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements for additional requirements.

B. Glass and Glazing product manufacturers to provide field surveillance of the installation of their products.

C. Monitor and report installation procedures and unacceptable conditions.

3.06 CLEANING

A. Remove excess glazing materials from finish surfaces immediately after application using solvents or cleaners recommended by manufacturers.

B. Remove nonpermanent labels immediately after glazing installation is complete.

C. Clean glass and adjacent surfaces after sealants are fully cured.

D. Clean glass on both exposed surfaces not more than 4 days prior to Date of Substantial Completion in accordance with glass manufacturer's written recommendations.

3.07 PROTECTION

A. Remove and replace glass that is damaged during construction period prior to Date of Substantial Completion.

END OF SECTION 08 80 00

SECTION 09 21 16
GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Performance criteria for gypsum board assemblies.

B. Acoustic insulation.

C. Gypsum sheathing.

D. Gypsum wallboard.

E. Joint treatment and accessories.

F. Textured finish system.

1.02 RELATED REQUIREMENTS

A. Section 06 10 00 - Rough Carpentry: Wood blocking product and execution requirements.

B. Section 07 21 00 - Thermal Insulation: Acoustic insulation.

C. Section 07 84 00 - Firestopping: Top-of-wall assemblies at fire-resistance-rated walls.

D. Section 07 92 00 - Joint Sealants: Sealing acoustical gaps in construction other than gypsum board or plaster work.

E. Section 09 22 16 - Non-Structural Metal Framing.

F. Section 09 30 00 - Tiling: Tile backing board.

1.03 REFERENCE STANDARDS

A. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board; 2017 (Reapproved 2022).

B. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2023.

C. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board; 2023.

D. ASTM C954 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness; 2022.

E. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs; 2022.

F. ASTM C1047 - Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base; 2019.

G. ASTM C1396/C1396M - Standard Specification for Gypsum Board; 2017.

H. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2021.

I. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2023.

J. ASTM E413 - Classification for Rating Sound Insulation; 2022.

K. GA-216 - Application and Finishing of Gypsum Panel Products; 2024.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data on gypsum board, glass mat faced gypsum board, accessories, and joint finishing system.

PART 2 PRODUCTS

2.01 GYPSUM BOARD ASSEMBLIES

A. Provide completed assemblies complying with ASTM C840 and GA-216.

B. Interior Partitions, Indicated as Acoustic: Provide completed assemblies with the following characteristics:
   1. Acoustic Attenuation: STC of 55-59 calculated in accordance with ASTM E413, based on tests conducted in accordance with ASTM E90.

2.02 BOARD MATERIALS

A. Manufacturers - Gypsum-Based Board:
   1. American Gypsum Company: www.americangypsum.com/#sle.
   2. CertainTeed Corporation: www.certainteed.com/#sle.
   3. Georgia-Pacific Gypsum: www.gpgypsum.com/#sle.
   4. National Gypsum Company: www.nationalgypsum.com/#sle.
   5. USG Corporation: www.usg.com/#sle.
   6. Or approved equal.

B. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
   1. Application: Use for vertical surfaces and ceilings, unless otherwise indicated.
   2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
      a. Mold resistant board is required at wet locations, including:
         1) Janitor
         2) Sprinkler
         3) Family Restroom
         4) Wall behind sink in Kitchen
         5) Break
         6) Wall behind sink in Personal Care Room
   3. At Assemblies Indicated with Fire-Resistance Rating: Use type required by indicated tested assembly; if no tested assembly is indicated, use Type X board, UL or WH listed.
   4. Thickness:
      a. Vertical Surfaces: 5/8 inch.
      b. Ceilings: 5/8 inch.

2.03 GYPSUM BOARD ACCESSORIES

A. Acoustic Insulation: ASTM C665; preformed glass or mineral wool fiber, friction fit type, unfaced. Thickness: 4 & 6 inch.

B. Acoustic Sealant: Acrylic emulsion latex or water-based elastomeric sealant; do not use solvent-based non-curing butyl sealant.
   1. Products:
      a. Franklin International, Inc; Titebond Acoustical Smoke & Sound Sealant: www.titebond.com/#sle.
      b. Grabber Construction Products; Acoustic Sealant GSC
      c. Liquid Nails, a brand of PPG Architectural Coatings; _____: www.liquidnails.com/#sle.
      d. Pecora Corporation; AIS-919
      e. Specified Technologies Inc; Smoke N Sound Acoustical Sealant: www.stifirestop.com/#sle.
      f. USG Corporation: SHEETROCK Acoustical Sealant
      g. Or approved equal.

C. Finishing Accessories: ASTM C1047, extruded aluminum alloy (6063 T5) or galvanized steel sheet ASTM A924/A924M G90, unless noted otherwise.
   1. Types: As detailed or required for finished appearance.

2. Special Shapes: In addition to conventional corner bead and control joints, provide U-bead at exposed panel edges.

D. Beads, Joint Accessories, and Other Trim: ASTM C1047, galvanized steel or rolled zinc, unless noted otherwise.
   1. Corner Beads: Low profile, for 90 degree outside corners.
   2. L-Trim with Tear-Away Strip: Sized to fit 5/8 inch thick gypsum wallboard.
   3. Expansion Joints:
      a. Type: V-shaped metal with factory-installed protective tape.

E. Joint Materials: ASTM C475/C475M and as recommended by gypsum board manufacturer for project conditions.
   1. Fiberglass Tape: 2 inch wide, coated glass fiber tape for joints and corners, except as otherwise indicated.
   2. Paper Tape: 2 inch wide, creased paper tape for joints and corners, except as otherwise indicated.
   3. Joint Compound: Drying type, vinyl-based, ready-mixed.
   4. Joint Compound: Setting type, field-mixed.

F. Finishing Compound: Surface coat and primer, takes the place of skim coating.

G. High Build Drywall Surfacer: Vinyl acrylic latex-based coating for spray application, designed to take the place of skim coating and separate paint primer in achieving Level 5 finish.
   1. Products:
      a. CertainTeed Corporation; Level V Wall and Ceiling Primer/Surfacer with M2Tech: www.certainteed.com/#sle.
      b. USG Corporation; USG Sheetrock Brand Tuff-Hide Primer-Surfacer: www.usg.com/#sle.
      c. Or approved equal.

H. Screws for Fastening of Gypsum Panel Products to Cold-Formed Steel Studs Less than 0.033 inches in Thickness and Wood Members: ASTM C1002; self-piercing tapping screws, corrosion-resistant.

I. Screws for Fastening of Gypsum Panel Products to Steel Members from 0.033 to 0.112 inch in Thickness: ASTM C954; steel drill screws, corrosion-resistant.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that project conditions are appropriate for work of this section to commence.

3.02 ACOUSTIC ACCESSORIES INSTALLATION

A. Acoustic Insulation: Place tightly within spaces, around cut openings, behind and around electrical and mechanical items within partitions, and tight to items passing through partitions.

B. Acoustic Sealant: Install in accordance with manufacturer's instructions.
   1. Place two beads continuously on substrate before installation of perimeter framing members.
   2. Place continuous bead at perimeter of each layer of gypsum board.
   3. Seal around all penetrations by conduit, pipe, ducts, and rough-in boxes, except where firestopping is provided.

3.03 BOARD INSTALLATION

A. Comply with ASTM C840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.

B. Single-Layer Nonrated: Install gypsum board in most economical direction, with ends and edges occurring over firm bearing.

3.04 INSTALLATION OF TRIM AND ACCESSORIES

A. Control Joints: Place control joints consistent with lines of building spaces and as indicated.

B. Corner Beads: Install at external corners, using longest practical lengths.

C. Edge Trim: Install at locations where gypsum board abuts dissimilar materials.

3.05 JOINT TREATMENT

A. Paper Faced Gypsum Board: Use paper joint tape, embed with drying type joint compound and finish with drying type joint compound.

B. Finish gypsum board in accordance with levels defined in ASTM C840, as follows:
   1. Level 4: Walls and ceilings to receive paint finish or wall coverings, unless otherwise indicated.
   2. Level 2: In utility areas, behind cabinetry, and on backing board to receive tile finish.
   3. Level 1: Fire-resistance-rated wall areas above finished ceilings, whether or not accessible in the completed construction.

C. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
   1. Feather coats of joint compound so that camber is maximum 1/32 inch.

D. Where existing-to-new joints are indicated, apply high build drywall surfacer over entire surface after joints have been properly treated; achieve a flat, consistent and tool mark-free finish.

3.06 TEXTURE FINISH

A. **At contractor's option, provide wall finish for all walls which either match existing wall texture, or provide wall finish which all match new wall texture. All walls shall be finished similarly.**

3.07 TOLERANCES

A. Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8 inch in 10 feet in any direction.

3.08 PROTECTION

A. Protect installed gypsum board assemblies from subsequent construction operations.

END OF SECTION 09 21 16

SECTION 09 22 16
NON-STRUCTURAL METAL FRAMING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Metal partition, ceiling, and soffit framing.

B. Framing accessories.

1.02 RELATED REQUIREMENTS

A. Section 06 10 00 - Rough Carpentry: Wood blocking within stud framing.

B. Section 06 10 00 - Rough Carpentry: Wall sheathing.

C. Section 07 21 00 - Thermal Insulation: Acoustic insulation.

D. Section 07 25 00 - Weather Barriers.

E. Section 07 62 00 - Sheet Metal Flashing and Trim: Head and sill flashings.

F. Section 07 84 00 - Firestopping: Sealing top-of-wall assemblies at fire-resistance-rated walls.

G. Section 08 31 00 - Access Doors and Panels.

H. Section 09 21 16 - Gypsum Board Assemblies: Metal studs for gypsum board partition framing.

1.03 REFERENCE STANDARDS

A. AISI S100 - North American Specification for the Design of Cold-Formed Steel Structural Members; 2016, with Supplement (2020).

B. AISI S220 - North American Standard for Cold-Formed Steel Nonstructural Framing; 2020.

C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2023.

D. ASTM C1007 - Standard Specification for Installation of Load Bearing (Transverse and Axial) Steel Studs and Related Accessories; 2020.

E. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products; 2020.

F. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs; 2022.

G. GA-600 - Fire Resistance and Sound Control Design Manual; 2024.

H. SSPC-Paint 20 - Zinc-Rich Coating (Type I - Inorganic, and Type II - Organic); 2019.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data describing framing member materials and finish, product criteria, load charts, and limitations.

C. Product Data: Provide manufacturer's data on partition head to structure connectors, showing compliance with requirements.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing the work of this section with minimum five years documented experience and approved by manufacturer.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Metal Framing, Connectors, and Accessories:
   1. CEMCO: www.cemcosteel.com/#sle.
   2. ClarkDietrich: www.clarkdietrich.com/#sle.
   3. Marino: www.marinoware.com/#sle.

4. SCAFCO Corporation: www.scafco.com/#sle.
5. Simpson Strong Tie: www.strongtie.com/#sle.
6. Steel Construction Systems: www.steelconsystems.com/#sle.
7. Super Stud Building Products, Inc: www.buysuperstud.com/#sle.
8. The Steel Network, Inc: www.SteelNetwork.com/#sle.
9. Or approved equal.

2.02 FRAMING MATERIALS

A. Non-Loadbearing Framing System Components: AISI S220; sheet steel, of size and properties necessary for the spacing indicated, with maximum deflection of wall framing of L/240 at 5 psf. **All non-structural framing shall be A60 coated, minimum.**
   1. Studs: C-shaped with flat faces or knurled/embossed/ribbed faces as required to meet legth and strength/rigidity/deflection requirements.
   2. Runners: U-shaped, sized to match studs.
   3. Furring: Hat-shaped sections, minimum depth of 7/8 inch.

B. Partition Head to Structure Connections: Provide mechanical anchorage devices that accommodate deflection using slotted holes, screws, and anti-friction bushings, preventing rotation of studs while maintaining structural performance of partition.
   1. Structural Performance: Maintain lateral load resistance and vertical movement capacity required by applicable code when evaluated in accordance with AISI S100.
   2. Material: ASTM A653/A653M steel sheet, SS Grade 50.
   3. Provide components UL-listed for use in UL-listed fire-resistance-rated head of partition joint systems indicated on drawings.

C. Non-Loadbearing Framing Accessories:
   1. Ceiling Hangers: Type and size as specified in ASTM C754 for spacing required.
   2. Bracing and Bridging: ASTM A653/A653M G90 galvanized steel; for lateral bracing of wall studs with slots for engaging on-module studs.
   3. Gusset Plates: ASTM A653/A653M G90 galvanized steel; for reinforcing framing members modified or field cut with oversized openings on web of member.
   4. Framing Connectors: ASTM A653/A653M steel clips; secures cold rolled channel to wall studs for lateral bracing.
   5. Flexible Wood Backing: Fire-retardant-treated wood with sheet steel connectors.
   6. Fasteners: ASTM C1002 self-piercing self-tapping screws.
   7. Acoustic Insulation: See Section 09 21 16.
   8. Touch-Up Primer for Corrosion Protected Surfaces: SSPC-Paint 20 Type I - Inorganic.

2.03 FABRICATION

A. Fabricate assemblies of framed sections to sizes and profiles required.

B. Fit, reinforce, and brace framing members to suit design requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that rough-in utilities are in proper location.

3.02 INSTALLATION OF STUD FRAMING

A. Install non-structural members in accordance with ASTM C754.

B. Extend partition framing to structure where indicated and to ceiling in other locations.

C. Partitions Terminating at Ceiling: Attach ceiling runner securely to ceiling track in accordance with manufacturer's instructions.

D. Partitions Terminating at Structure: Attach top runner to structure, maintain clearance between top of studs and structure, and connect studs to track using specified mechanical devices in

accordance with manufacturer's instructions; verify free movement of top of stud connections; do not leave studs unattached to track.

E. Fire-Resistance-Rated Construction: Install framing and accessories in accordance with requirements of fire-resistance-rated assembly.

F. Align and secure top and bottom runners at 24 inches on center.

G. At partitions indicated with an acoustic rating:
   1. Place two beads of acoustic sealant between runners and substrate , studs and adjacent construction.
   2. Place two beads of acoustic sealant between studs and adjacent vertical surfaces.

H. Fit runners under and above openings; secure intermediate studs to same spacing as wall studs.

I. Install studs vertically at 16 inches on center.

J. Align stud web openings horizontally.

K. Secure studs to tracks using crimping method. Do not weld.

L. Stud splicing is not permissible.

M. Fabricate corners using a minimum of three studs.

N. Install double studs at wall openings, door and window jambs, not more than 2 inches from each side of openings.

O. Brace stud framing system rigid.

P. Coordinate erection of studs with requirements of door frames; install supports and attachments.

Q. Coordinate installation of bucks, anchors, and blocking with electrical, mechanical, and other work to be placed within or behind stud framing.

R. Blocking: Use wood blocking secured to studs. Provide blocking for support of plumbing fixtures, toilet partitions, wall cabinets, toilet accessories, hardware, and opening frames.

S. Furring: Install at spacing and locations shown on drawings. Lap splices a minimum of 6 inches.

3.03 CEILING AND SOFFIT FRAMING

A. Comply with requirements of ASTM C754.

B. Install furring after work above ceiling or soffit is complete. Coordinate the location of hangers with other work.

C. Install furring independent of walls, columns, and above-ceiling work.

D. Securely anchor hangers to structural members or embed them in structural slab. Space hangers as required to limit deflection to criteria indicated. Use rigid hangers at exterior soffits.

E. Space main carrying channels at maximum 72 inches on center, and not more than 6 inches from wall surfaces. Lap splice securely.

F. Securely fix carrying channels to hangers to prevent turning or twisting and to transmit full load to hangers.

G. Place furring channels perpendicular to carrying channels, not more than 2 inches from perimeter walls, and rigidly secure. Lap splices securely.

H. Reinforce openings in suspension system that interrupt main carrying channels or furring channels with lateral channel bracing. Extend bracing minimum 24 inches past each opening.

I. Laterally brace suspension system.

3.04 TOLERANCES

A. Maximum Variation From True Position: 1/8 inch in 10 feet.

B. Maximum Variation From Plumb: 1/8 inch in 10 feet.

END OF SECTION 09 22 16

SECTION 09 51 00
ACOUSTICAL CEILINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Suspended metal grid ceiling system.

B. Acoustical units.

1.02 RELATED REQUIREMENTS

1.03 REFERENCE STANDARDS

A. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2023.

B. ASTM C635/C635M - Standard Specification for Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings; 2022.

C. ASTM C636/C636M - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels; 2019 (Reapproved 2025).

D. ASTM E580/E580M - Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions; 2024a.

E. ASTM E1264 - Standard Classification for Acoustical Ceiling Products; 2023.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Sequence work to ensure acoustical ceilings are not installed until building is enclosed, sufficient heat is provided, dust generating activities have terminated, and overhead work is completed, tested, and approved.

B. Do not install acoustical units until after interior wet work is dry.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data on suspension system components and acoustical units.

C. Samples: Submit two samples 6 by 6 inch in size illustrating material and finish of acoustical units.

D. Maintenance Materials: Furnish the following for Owner 's use in maintenance of project.
   1. See Section 01 60 00 - Product Requirements, for additional provisions.
   2. Extra Acoustical Units: Quantity equal to 5 percent of total installed.

1.06 FIELD CONDITIONS

A. Maintain uniform temperature of minimum 60 degrees F, and maximum humidity of 40 percent prior to, during, and after acoustical unit installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Acoustic Tiles/Panels (ACT-1):
   1. Armstrong World Industries, Inc; ____: www.armstrongceilings.com/#sle.
   2. Or approved equal.

B. Suspension Systems:
   1. Same as for acoustical units.

2.02 ACOUSTICAL UNITS

A. Acoustical Panels, Type ____: Painted mineral fiber, with the following characteristics:
   1. Classification: ASTM E1264 Type III.
   2. Size: 24 by 24 inches.
   3. Thickness: 3/4 inch.

4. NRC Range: Up to 0.75, determined in accordance with ASTM E1264.
5. Ceiling Attenuation Class (CAC): Minimum of 35, determined in accordance with ASTM E1264.
6. Mold and Mildew Resistance properties.
7. Panel Edge: Square.
8. Tile Edge: Square.
9. Color: White.
10. Suspension System: Exposed grid.
11. Products:
    a. Armstrong World Industries, Inc; Cirrus: www.armstrongceilings.com/#sle.

2.03 SUSPENSION SYSTEM(S)

A. Metal Suspension Systems - General: Complying with ASTM C635/C635M; die cut and interlocking components, with perimeter moldings, stabilizer bars, clips, and splices as required.
   1. Materials:
      a. Steel Grid: ASTM A653/A653M, G30 coating, unless otherwise indicated.

B. Exposed Suspension System: Hot-dipped galvanized steel grid and cap.
   1. Structural Classification: Intermediate-duty, when tested in accordance with ASTM C635/C635M.
   2. Profile: Tee; 15/16 inch face width.
   3. Finish: Baked enamel.
   4. Color: White

2.04 ACCESSORIES

A. Support Channels and Hangers: Galvanized steel; size and type to suit application, seismic requirements, and ceiling system flatness requirement specified.

B. Hanger Wire: 12 gauge, 0.08 inch galvanized steel wire.

C. Perimeter Moldings: Same metal and finish as grid.

D. Metal Edge Trim for "Cloud" Suspension Systems: Steel or extruded aluminum; provide attachment clips, splice plates, and preformed corner pieces for complete trim system.
   1. Trim Height: 6 inch.
   2. Finish: Baked enamel.
   3. Color: White.

E. Touch-up Paint: Type and color to match acoustical and grid units.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that layout of hangers will not interfere with other work.

3.02 PREPARATION

A. Install after major above-ceiling work is complete.

B. Coordinate the location of hangers with other work.

3.03 INSTALLATION - SUSPENSION SYSTEM

A. Install suspension system in accordance with ASTM C636/C636M, ASTM E580/E580M, and manufacturer's instructions and as supplemented in this section.

B. Suspend ceiling hangers from building's structural members and as follows:
   1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structure or of ceiling suspension system.
   2. Splay hangers only where required to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.

3. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support standard suspension system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices.
4. Secure wire hangers to ceiling suspension members and to supports above with a minimum of three tight turns. Connect hangers directly to structures that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.
    a. When steel framing does not permit installation of hanger wires at spacing required, install carrying channels or other supplemental support for attachment of hanger wires.
    b. Do not attach hangers to steel deck tabs.
    c. Do not attach hangers to steel roof deck. Attach hangers to structural members.
    d. Space hangers not more than 48 inches o.c. along each member supported directly from hangers, unless otherwise indicated; provide hangers not more than 8 inches from ends of each member.
    e. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards and publications.
    f. Install minimum of four (4) wire hangers at light fixtures, within 6-inches from each corner of the light fixture.
5. Secure bracing wires to ceiling suspension members and to supports with a minimum of four tight turns. Suspend bracing from building's structural members as required for hangers, without attaching to permanent metal forms, steel deck, or steel deck tabs.

C. Support for Recessed and Semi-recessed Grid-Type Light Fixtures: Units may be supported from suspended ceiling support system. Install ceiling support system rods or wires at a minimum of 4 rods or wires for each fixtures, located not more than 6 inches from fixture corners.
1. Install support clips for recessed fixtures, securely fastened to ceiling grid members, at or near each fixture corner.
2. Fixtures of Sizes less than Ceiling Grid: Center in acoustical panel. Support fixtures independently with at least two ¾-inch metal channels spanning and secured to ceiling tees.

D. Install suspension system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.

E. Install acoustical panels with undamaged edges and fit accurately into suspension system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide a neat, precise fit.
1. For reveal-edged panels on suspension system runners, install panels with bottom of reveal in firm contact with top surface of runner flanges.
2. Paint cut edges of panel remaining exposed after installation; match color of exposed panel surfaces using coating recommended in writing for this purpose by acoustical panel manufacturer.

F. Rigidly secure system, including integral mechanical and electrical components, for maximum deflection of 1:360.

G. Lay out system to a balanced grid design with edge units no less than 50 percent of acoustical unit size.

H. Locate system on room axis according to reflected plan.

I. Perimeter Molding: Install at intersection of ceiling and vertical surfaces and at junctions with other interruptions.
1. Use longest practical lengths.
2. Overlap and rivet corners.

J. Suspension System, Non-Seismic: Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.

K. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers and related carrying channels to span the extra distance.

L. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability.

M. Support fixture loads using supplementary hangers located within 6 inches of each corner, or support components independently.

N. Do not eccentrically load system or induce rotation of runners.

3.04 INSTALLATION - ACOUSTICAL UNITS

A. Install acoustical units in accordance with manufacturer's instructions.

B. Fit acoustical units in place, free from damaged edges or other defects detrimental to appearance and function.

C. Lay directional patterned units with pattern parallel to longest room axis.

D. Fit border trim neatly against abutting surfaces.

E. Install units after above-ceiling work is complete.

F. Install acoustical units level, in uniform plane, and free from twist, warp, and dents.

G. Cutting Acoustical Units:
   1. Cut to fit irregular grid and perimeter edge trim.
   2. Make field cut edges of same profile as factory edges.

H. Where round obstructions occur, provide preformed closures to match perimeter molding.

3.05 TOLERANCES

A. Maximum Variation from Flat and Level Surface: 1/8 inch in 10 feet.

B. Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: 2 degrees.

END OF SECTION 09 51 00

SECTION 09 68 13
TILE CARPETING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Carpet tile, fully adhered.

1.02 RELATED REQUIREMENTS

A. Section 03 30 00 - Cast-in-Place Concrete: Restrictions on curing compounds for concrete slabs and floors to receive adhesive-applied flooring.

B. Section 09 05 61 - Common Work Results for Flooring Preparation: Removal of existing floor coverings, cleaning, and preparation.

C. Section 26 05 19.13 - Undercarpet Electrical Power Cables: Undercarpet flat wiring.

1.03 REFERENCE STANDARDS

A. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2021.

B. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride; 2022.

C. ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes; 2019a.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on specified products, describing physical and performance characteristics; sizes, patterns, colors available, and method of installation.

C. Samples: Submit two carpet tiles illustrating color and pattern design for each carpet color selected.

D. Concrete Subfloor Test Report: Submit a copy of the moisture and alkalinity (pH) test reports.

E. Installer's Qualification Statement.

F. Operation and Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning.

G. Maintenance Materials: Furnish the following for Owner 's use in maintenance of project.
   1. See Section 01 60 00 - Product Requirements, for additional provisions.
   2. Extra Carpet Tiles: Two (2) boxes of each color and pattern installed.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing specified carpet tile with minimum three years documented experience.

B. Installer Qualifications: Company specializing in installing carpet tile with minimum three years documented experience and approved by carpet tile manufacturer.

1.06 FIELD CONDITIONS

A. Store materials in area of installation for minimum period of 24 hours prior to installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Tile Carpeting:
   1. Tarkett: www.commercial.tarkett.com/#sle..
   2. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 MATERIALS

A. Tile Carpeting, Type CPT-1: Tufted, manufactured in one color dye lot.
   1. Tile Size: 24 by 24 inch, nominal.
   2. Color: Ground Tumeric.
   3. Style: Thread Craft.
   4. Manufacturers Representative:
      a. Name: Sam Riedl
      b. Territory: Iowa & Nebraska
      c. Email: samantha.riedl@tarkett.com
      d. Phone: 515-513-9823

2.03 ACCESSORIES

A. Subfloor Filler: White premix latex; type recommended by flooring material manufacturer.

B. Carpet Tile Adhesive: Recommended by carpet tile manufacturer; releasable type.

C. Provide carpet accessories, as needed, for a complete installation.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that subfloor surfaces are smooth and flat within tolerances specified for that type of work and are ready to receive carpet tile.

B. Verify that subfloor surfaces are dust-free and free of substances that could impair bonding of adhesive materials to subfloor surfaces.

C. Cementitious Subfloor Surfaces: Verify that substrates are ready for flooring installation by testing for moisture and alkalinity (pH).
   1. Test as Follows:
      a. Alkalinity (pH): ASTM F710.
      b. Internal Relative Humidity: ASTM F2170.
      c. Moisture Vapor Emission: ASTM F1869.
   2. Obtain instructions if test results are not within limits recommended by flooring material manufacturer and adhesive materials manufacturer.

3.02 PREPARATION

A. Prepare floor substrates as recommended by flooring and adhesive manufacturers.

B. Remove subfloor ridges and bumps. Fill minor or local low spots, cracks, joints, holes, and other defects with subfloor filler.

C. Apply, trowel, and float filler to achieve smooth, flat, hard surface. Prohibit traffic until filler is cured.

D. Vacuum clean substrate.

3.03 INSTALLATION

A. Starting installation constitutes acceptance of subfloor conditions.

B. Install carpet tile in accordance with manufacturer's instructions.

C. Blend carpet from different cartons to ensure minimal variation in color match.

D. Cut carpet tile clean. Fit carpet tight to intersection with vertical surfaces without gaps.

E. Lay carpet tile in square pattern, with pile direction parallel to next unit, set parallel to building lines.

F. Locate change of color or pattern between rooms under door centerline.

G. Fully adhere carpet tile to substrate.

H. Trim carpet tile neatly at walls and around interruptions.

I. Complete installation of edge strips, concealing exposed edges.

3.04 CLEANING

A. Remove excess adhesive without damage, from floor, base, and wall surfaces.

B. Clean and vacuum carpet surfaces.

END OF SECTION 09 68 13

SECTION 09 84 30
SOUND-ABSORBING WALL AND CEILING UNITS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Sound-absorbing ceiling units.

1.02 REFERENCE STANDARDS

A. ASTM C423 - Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method; 2023.

B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023d.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Manufacturer's printed data sheets for products specified.

C. Shop Drawings: Fabrication and installation details, panel layout.

D. Verification Samples: Fabricated samples of each type of panel specified; showing construction, edge details, and fabric covering.

E. Maintenance Materials: Furnish the following for Owner 's use in maintenance of project.
   1. See Section 01 60 00 - Product Requirements, for additional provisions.
   2. Extra Panels: Quantity equal to 5 percent of total installed, but not less than one of each type.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products of the type specified in this section, with at least three years of documented experience.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Protect acoustical units from moisture during shipment, storage, and handling. Deliver in factory-wrapped bundles; do not open bundles until units are needed for installation.

B. Store units flat, in dry, well-ventilated space; do not stand on end.

C. Protect edges from damage.

PART 2 PRODUCTS

2.01 SOUND ABSORBING CEILING UNITS

A. Unlit Acoustic Baffles:
   1. Manufacturers:
      a. Basis of Design: Focal Point; Seem 2: www.focalpointlights.com/#sle.
      b. Or approved equal.
   2. Sound Absorbing Units: Prefinished, factory formed panels.
      a. Surface Burning Characteristics: Flame spread index of 25 or less and smoke developed index of 300 or less, when tested in accordance with ASTM E84.
   3. Baffles (AB-1):
      a. Length: 6' - 0"
      b. Height: 0' - 8"
      c. Thickness: 9 MM
      d. Color: Limestone
   4. Installation Method: Suspended. See drawings for installation heights.
   5. Hardware: As recommended by manufacturer.

2.02 SOUND ABSORBING WALL UNITS

A. Acoustic Wall Panels:

1. Manufacturers:
    a. Basis of Design: Acoufelt: www.acoufelt.com/#sle.
    b. Or approved equal.
2. Sound Absorbing Units: Prefinished, factory formed panels.
    a. Surface Burning Characteristics: Flame spread index of 25 or less and smoke developed index of 300 or less, when tested in accordance with ASTM E84.
3. Panels (AWP-1):
    a. Collection: Fracture Two-Tone
    b. Style: Raindrop
    c. Face Color: Denim DE09
    d. Back Color: Stonewash ST72
    e. Length: See Drawings
    f. Thickness: 14 MM
4. Installation Method: Z-clip wall mount See drawings for installation heights.
5. Manufacturers Representative:
    a. Name: Kyla Peterson
    b. Email: kyla.peterson@acoufelt.com
    c. Phone: 248-429-5938

2.03 ACCESSORIES

A. Back-Mounting Accessories: Manufacturer's standard accessories for concealed support, designed to allow panel removal:

B. Ceiling-Suspended Accessories: Manufacturer's standard accessories at locations as indicated on each acoustical unit, sized appropriately for weight of acoustical unit.
    1. Cable to deck mounting
    2. Provide galvanized wire for suspension from ceiling at heights as indicated.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine substrates for conditions detrimental to installation of acoustical units. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. Install acoustical units in locations as indicated, following manufacturer's cable to deck installation instructions.

B. Install mounting accessories and supports in accordance with shop drawings.

C. Align panels accurately, with edges plumb and top edges level.

D. Suspend ceiling baffles at locations and heights as indicated.

E. Install acoustical units to construction tolerances of plus or minus 1/16 inch for the following:
    1. Plumb and level.
    2. Flatness.

3.03 CLEANING

A. Clean sound-absorptive panels upon completion of installation from dust and other foreign materials, following manufacturer's instructions.

3.04 PROTECTION

A. Provide protection of installed acoustical panels until Date of Substantial Completion.

B. Replace panels that cannot be cleaned and repaired to satisfaction of the Architect.

END OF SECTION 09 84 30

SECTION 09 91 23
INTERIOR PAINTING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Surface preparation.

B. Field application of paints.

C. Scope: Finish interior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated.
   1. Mechanical and Electrical:
      a. In finished areas, paint insulated and exposed pipes, conduit, boxes, insulated and exposed ducts, hangers, brackets, collars and supports, mechanical equipment, and electrical equipment, unless otherwise indicated.

D. Do Not Paint or Finish the Following Items:
   1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
   2. Items indicated to receive other finishes.
   3. Items indicated to remain unfinished.
   4. Fire rating labels, equipment serial number and capacity labels, bar code labels, and operating parts of equipment.
   5. Floors, unless specifically indicated.
   6. Glass.
   7. Concealed pipes, ducts, and conduits.

1.02 RELATED REQUIREMENTS

A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.

1.03 REFERENCE STANDARDS

A. ASTM D4258 - Standard Practice for Surface Cleaning Concrete for Coating; 2023.

B. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Based Materials; 2020.

C. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition.

D. SSPC-SP 1 - Solvent Cleaning; 2015, with Editorial Revision (2016).

E. SSPC-SP 6/NACE No.3 - Commercial Blast Cleaning; 2006.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide complete list of products to be used, with the following information for each:
   1. Manufacturer's name, product name and/or catalog number, and general product category (e.g., "alkyd enamel").
   2. MPI product number (e.g., MPI #47).
   3. Cross-reference to specified paint system products to be used in project; include description of each system.
   4. Manufacturer's installation instructions.

C. Samples: Submit three paper "draw down" samples, 8-1/2 by 11 inches in size, illustrating range of colors available for each finishing product specified.
   1. Where sheen is specified, submit samples in only that sheen.
   2. Allow 30 days for approval process, after receipt of complete samples by Architect.

3. Paint color submittals will not be considered until color submittals for major materials not to be painted, such as factory finished metals, wood cabinets, and wood doors, have been approved.
4. Provide paper 'draw down' samples with specified coats cascaded on each sample.

D. Maintenance Data: Submit data including finish schedule showing where each product/color/finish was used, product technical data sheets, material safety data sheets (MSDS), care and cleaning instructions, touch-up procedures, repair of painted and finished surfaces, and color samples of each color and finish used.

E. Maintenance Materials: Furnish the following for Owner 's use in maintenance of project.
1. See Section 01 60 00 - Product Requirements, for additional provisions.
2. Extra Paint and Finish Materials: 1 gal of each color; from the same product run, store where directed.
3. Label each container with color in addition to the manufacturer's label.

1.05 QUALITY ASSURANCE

A. Applicator Qualifications: Company specializing in performing the type of work specified with minimum 3 years experience and approved by manufacturer.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

C. Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

1.07 FIELD CONDITIONS

A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.

B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.

C. Do not apply materials when relative humidity exceeds 85 percent, at temperatures less than 5 degrees F above the dew point, or to damp or wet surfaces.

D. Minimum Application Temperatures for Paints: 50 degrees F for interiors unless required otherwise by manufacturer's instructions.

E. Provide lighting level of 80 fc measured mid-height at substrate surface.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Provide paints and finishes used in any individual system from the same manufacturer; no exceptions.

B. Paints:
1. Benjamin Moore & Co.: www.benjaminmoore.com
2. Diamond Vogel Paints: www.diamondvogel.com/#sle.
3. Pittsburgh Paints: www.ppgpaints.com/#sle.
4. **Basis of Design: Sherwin-Williams Company: www.sherwin-williams.com/#sle.**

C. Primer Sealers: Same manufacturer as top coats.

D. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 PAINTS AND FINISHES - GENERAL

A. Paints and Finishes: Ready-mixed, unless intended to be a field-catalyzed paint.

1. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
2. Supply each paint material in quantity required to complete entire project's work from a single production run.
3. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.

B. Volatile Organic Compound (VOC) Content: See Section 01 61 16.

C. Sheens: Provide the sheens specified; where sheen is not specified, sheen will be selected later by Architect from the manufacturer's full line.

D. Colors: To be selected from manufacturer's full range of available colors.
1. Selection to be made by Architect after award of contract.
2. In finished areas, finish pipes, ducts, conduit, and equipment the same color as the wall/ceiling under which they are mounted.

2.03 PAINT SYSTEMS - INTERIOR

A. Paint I-OP - Interior Surfaces to be Painted, Unless Otherwise Indicated: Including gypsum board, concrete, wood, plaster, uncoated steel, shop primed steel, galvanized steel, and aluminum.
1. Two top coats and one coat primer.
2. Top Coat(s): Institutional Low Odor/VOC Interior Latex.
   a. Products:
      1) Sherwin-Williams ProMar 200 Zero VOC Interior Latex.
3. Top Coat Sheen:
   a. Eggshell: MPI gloss level 3; use this sheen at all locations.
4. Primer: As recommended by top coat manufacturer for specific substrate.

B. Paint I-OP-MD-WC - Medium Duty Vertical and Overhead: Including gypsum board, plaster, concrete, shop primed steel, galvanized steel, aluminum, and door frames.
1. Two top coats and one coat primer.
2. Top Coat(s): Institutional Low Odor/VOC Interior Latex.
   a. Products:
      1) Sherwin-Williams ProMar 200 Zero VOC Interior Latex.
      2) Or similar from approved manufacturer
3. Top Coat Sheen:
   a. Eggshell: MPI gloss level 3; use this sheen at all locations.
4. Primer: As recommended by top coat manufacturer for specific substrate.

C. Paint I-OP-DF - Dry Fall: Metals; exposed structure and overhead-mounted services in utilitarian spaces, including shop primed steel deck, structural steel, metal fabrications, galvanized ducts, galvanized conduit, galvanized piping, and _____.
1. Two top coats and one coat primer.
2. Top Coat: Latex Dry Fall; MPI #118, 155, or 226.
   a. Products:
      1) Sherwin-Williams Waterborne Acrylic Dryfall, Eg-Shel. (MPI #155, 226)
3. Top Coat Sheen:
   a. Eggshell: MPI gloss level 3; use this sheen at all locations.
4. Primer: As recommended by top coat manufacturer for specific substrate.

2.04 PRIMERS

A. Primers: Provide the following unless other primer is required or recommended by manufacturer of top coats.
1. Interior Drywall Primer Sealer.
   a. Products:
      1) Sherwin Williams High Build Primer

2) Or similar from approved manufacturer

b. Locations:

1) All walls unless noted otherwise.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces are ready to receive work as instructed by the product manufacturer.

B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.

C. Test shop-applied primer for compatibility with subsequent cover materials.

D. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces is below the following maximums:

1. Gypsum Wallboard: 12 percent.
2. Interior Wood: 15 percent, measured in accordance with ASTM D4442.

3.02 PREPARATION

A. Clean surfaces thoroughly and correct defects prior to application.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.

D. Seal surfaces that might cause bleed through or staining of topcoat.

E. Concrete:

1. Remove release agents, curing compounds, efflorescence, and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.
2. Clean concrete according to ASTM D4258. Allow to dry.

F. Gypsum Board: Fill minor defects with filler compound. Spot prime defects after repair.

G. Plaster: Fill hairline cracks, small holes, and imperfections with latex patching plaster. Make smooth and flush with adjacent surfaces. Wash and neutralize high-alkali surfaces.

H. Aluminum: Remove surface contamination and oils and wash with solvent according to SSPC-SP 1.

I. Galvanized Surfaces:

J. Ferrous Metal:

1. Solvent clean according to SSPC-SP 1.
2. Shop-Primed Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces. Re-prime entire shop-primed item.
3. Remove rust, loose mill scale, and other foreign substances using methods recommended in writing by paint manufacturer and blast cleaning in accordance with SSPC-SP 6/NACE No.3. Protect from corrosion until coated.

K. Wood Surfaces to Receive Opaque Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats. Back prime concealed surfaces before installation.

3.03 APPLICATION

A. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.

B. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".

C. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

D. Apply each coat to uniform appearance in thicknesses specified by manufacturer.

E. Sand wood and metal surfaces lightly between coats to achieve required finish.

F. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

G. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.04 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for general requirements for field inspection.

3.05 CLEANING

A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.06 PROTECTION

A. Protect finishes until completion of project.

B. Touch-up damaged finishes after Substantial Completion.

3.07 SCHEDULE - PAINT SYSTEMS

A. Gypsum Board: Finish surfaces exposed to view. Verify paint locations with Room Finish Schedule.
   1. Typical Walls: P-1, Match existing field paint.
   2. Accent Walls: P-2, SW 6495 Great Falls, eggshell.
   3. Exposed Ceilings: P-3, SW 7006 Extra White, flat.

B. Steel: Finish Surfaces exposed to view.
   1. Exposed steel deck: P-3, SW 7006 Extra White, Flat

C. Hollow Metal Doors & Frames:
   1. Interior Hollow Metal Frames: Match existing frames.

END OF SECTION 09 91 23

SECTION 10 26 00
WALL AND DOOR PROTECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Corner guards.

1.02 RELATED REQUIREMENTS

A. Section 06 10 00 - Rough Carpentry: Blocking for wall and corner guard anchors.

B. Section 08 71 00 - Door Hardware: Standard protection plates and trim.

C. Section 09 21 16 - Gypsum Board Assemblies: Placement of supports in stud wall construction.

1.03 REFERENCE STANDARDS

A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023d.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Indicate physical dimensions, features, wall mounting brackets with mounted measurements, anchorage details, and rough-in measurements.

C. Samples: Submit samples illustrating component design, configurations, joinery, color and finish.
   1. Submit two sections of corner guards, 24 inches long.

D. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner 's name and registered with manufacturer.

E. Maintenance Data: Manufacturer's instructions for care and cleaning of each type of product. Include information about both recommended and potentially detrimental cleaning materials and methods.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver wall and door protection items in original, undamaged protective packaging. Label items to designate installation locations.

B. Protect work from moisture damage.

C. Protect work from UV light damage.

1.06 WARRANTY

A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.

B. Manufacturer Warranty: Provide 5-year manufacturer warranty for corner guards. Complete forms in Owner 's name and register with manufacturer.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Corner Guards:
   1. Construction Specialties, Inc; Heavy Duty Corner Guards: www.c-sgroup.com/#sle.
   2. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 PRODUCT TYPES

A. Corner Guards - Surface Mounted:
   1. Material: High impact vinyl with full height extruded aluminum retainer.
   2. Width of Wings: 2 inches.
   3. Corner: Square.
   4. Color: #262 Driftwood, Pebblette Texture.

5. Length: One piece.
6. Preformed end caps.

B. Adhesives and Primers: As recommended by manufacturer.

C. Mounting Brackets and Attachment Hardware: Appropriate to component and substrate.

2.03 FABRICATION

A. Fabricate components with tight joints, corners and seams.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate surfaces for adhered items are clean and smooth.
   1. Test painted or wall covering surfaces for adhesion in inconspicuous area, as recommended by manufacturer. Follow adhesive manufacturer's recommendations for remedial measures at locations and/or application conditions where adhesion test's results are unsatisfactory.

B. Start of installation constitutes acceptance of project conditions.

3.02 INSTALLATION

A. Position corner guard directly above the wall base.

3.03 TOLERANCES

A. Maximum Variation From Required Height: 1/4 inch.

3.04 CLEANING

A. Clean wall and door protection items of excess adhesive, dust, dirt, and other contaminants.

END OF SECTION 10 26 00

SECTION 12 36 00
COUNTERTOPS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Countertops for architectural cabinet work.

1.02 RELATED REQUIREMENTS

A. Section 06 41 00 - Architectural Wood Casework

1.03 REFERENCE STANDARDS

A. ANSI A208.2 - Medium Density Fiberboard (MDF) for Interior Applications; 2022.

B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023d.

C. ISFA 2-01 - Classification and Standards for Solid Surfacing Material; 2013.

D. PS 1 - Structural Plywood; 2023.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Specimen warranty.

C. Shop Drawings: Complete details of materials and installation ; combine with shop drawings of cabinets and casework specified in other sections.

D. Selection Samples: For each finish product specified, color chips representing manufacturer's full range of available colors and patterns.

E. Verification Samples: For each finish product specified, minimum size 6 inches square, representing actual product, color, and patterns.

F. Test Reports: Chemical resistance testing, showing compliance with specified requirements.

G. Maintenance Data: Manufacturer's instructions and recommendations for maintenance and repair of countertop surfaces.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing work of the type specified in this section, with not less than three years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.07 FIELD CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

PART 2 PRODUCTS

2.01 COUNTERTOPS

A. Solid Surfacing Countertops: Solid surfacing sheet or plastic resin casting over continuous substrate.
   1. Flat Sheet Thickness: 1/2 inch, minimum.

2. Solid Surfacing Sheet and Plastic Resin Castings: Complying with ISFA 2-01 and NEMA LD 3; acrylic or polyester resin, mineral filler, and pigments; homogenous, non-porous and capable of being worked and repaired using standard woodworking tools; no surface coating; color and pattern consistent throughout thickness.
    a. Manufacturers:
        1) **Basis of Design:** Wilsonart; Tumbled Stone 9220CE: www.wilsonart.com/#sle.
        2) Substitutions: See Section 01 60 00 - Product Requirements.
    b. Surface Burning Characteristics: Flame spread index of 25, maximum; smoke developed index of 450, maximum; when tested in accordance with ASTM E84.
    c. Finish on Exposed Surfaces: Matte, gloss rating of 5 to 20.
3. Other Components Thickness: 1/2 inch, minimum.
4. Exposed Edge Treatment: Built up to minimum 1 inch thick; Mitered.
5. Back and End Splashes: Same sheet material, square top; minimum 4 inches high.
    a. Fabricate tops with loose backsplashes for field application.
6. Fabricate in accordance with manufacturer's standard requirements.

2.02 MATERIALS

A. Plywood for Supporting Substrate: PS 1 Exterior Grade, A-C veneer grade, minimum 5-ply; minimum 3/4 inch thick; join lengths using metal splines.

B. Medium Density Fiberboard for Supporting Substrate: ANSI A208.2.

C. Adhesives: Chemical resistant waterproof adhesive as recommended by manufacturer of materials being joined.

D. Joint Sealant: Mildew-resistant silicone sealant, clear.

2.03 ACCESSORIES

A. See Section 06 41 00 - Architectural Wood Casework.

2.04 FABRICATION

A. Fabricate tops and splashes in the largest sections practicable, with top surface of joints flush.
    1. Join lengths of tops using best method recommended by manufacturer.
    2. Fabricate to overhang fronts and ends of cabinets 1 inch except where top butts against cabinet or wall.
    3. Prepare all cutouts accurately to size; replace tops having improperly dimensioned or unnecessary cutouts or fixture holes.

B. Provide back/end splash wherever counter edge abuts vertical surface unless otherwise indicated.
    1. Secure to countertop with concealed fasteners and with contact surfaces set in waterproof glue.
    2. Height: 4 inches, unless otherwise indicated.

C. Solid Surfacing: Fabricate tops and wall panels up to 144 inches long in one piece; join pieces with adhesive sealant in accordance with manufacturer's recommendations and instructions.

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

C. Verify that wall surfaces have been finished and mechanical and electrical services and outlets are installed in proper locations.

3.02 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.03 INSTALLATION

A. Securely attach countertops to cabinets using concealed fasteners. Make flat surfaces level; shim where required.

B. Seal joint between back/end splashes and vertical surfaces.

3.04 TOLERANCES

A. Variation From Horizontal: 1/8 inch in 10 feet, maximum.

B. Offset From Wall, Countertops: 1/8 inch maximum; 1/16 inch minimum.

C. Field Joints: 1/8 inch wide, maximum.

3.05 CLEANING

A. Clean countertops surfaces thoroughly.

3.06 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Date of Substantial Completion.

END OF SECTION 12 36 00

PROJECT MANUAL - VOL 2

Construction Documents

FEH Project No. 2022226

Volume 2 of 2
Divisions 21 - 32

Construction of a
Marshalltown Public Library Remodel

Marshalltown Public Library Remodel
105 W Boone St
Marshalltown , Iowa 50158

12-02-2025

SECTION 21 05 00

BASIC FIRE SUPPRESSION REQUIREMENTS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Requirements applicable to all Division 21 Sections. Also refer to Division 01 - General Requirements.

B. All materials and installation methods shall conform to the applicable standards, guidelines and codes referenced herein and within each specification section.

1.02 SCOPE OF WORK

A. This Specification and the associated drawings govern the furnishing, installing, testing and placing into satisfactory operation the Fire Suppression Systems.

B. Each Contractor shall provide all new materials indicated on the drawings and/or in these specifications, and all items required to make the portion of the Fire Suppression Work a finished and working system.

C. All work will be awarded under a single General Contract. The division of work listed below is for the Contractor's convenience and lists normal breakdown of the work.

D. Scope of Work:

1. Heating, Air Conditioning and Ventilating Work: Refer to Section 23 05 00 "Basic HVAC Requirements".
2. Temperature Control Work: Refer to Section 23 05 00 "Basic HVAC Requirements".
3. Fire Protection Work shall include, but is not necessarily limited to:
    a. Extend existing automatic wet pipe sprinkler system for areas noted on the drawings.
    b. Furnish and install all items listed on the Fire Protection Material List.
    c. Furnish all temporary fire protection systems.
    d. Furnish all hydraulic calculations and working sprinkler drawings.
    e. Complete all applicable tests, certifications, forms, and matrices.
4. Testing, Adjusting, and Balancing Work: Refer to Section 23 05 00 "Basic HVAC Requirements".

1.03 WORK SEQUENCE

A. All work that will produce excessive noise or interference with normal building operations, as determined by the Owner, shall be scheduled with the Owner. It may be necessary to schedule such work during unoccupied hours. The Owner reserves the right to determine when restricted construction hours will be required.

B. Itemize all work and list associated hours and pay scale for each item.

1.04 DIVISION OF WORK BETWEEN MECHANICAL, ELECTRICAL & CONTROL CONTRACTORS

A. Definitions:

1. "Mechanical Contractors" refers to the following:
    a. Air Conditioning and Ventilating Contractor.
    b. Temperature Control Contractor.
    c. Fire Protection Contractor.
    d. Testing, Adjusting, and Balancing Contractor.

2. Motor Control Wiring: The wiring associated with the remote operation of the magnetic coils of magnetic motor starters or relays, or the wiring that permits direct cycling of motors by means of devices in series with the motor power wiring. In the latter case the devices are usually single phase and are usually connected to the motor power wiring through a manual motor starter having "Manual-Off-Auto" provisions.
3. Control devices such as start-stop push buttons, thermostats, pressure switches, flow switches, relays, etc., generally represent the types of equipment associated with motor control wiring.
4. Motor control wiring is single phase and usually 120 volts. In some instances, the voltage will be the same as the motor power wiring. Generally, where the motor power wiring exceeds 120 volts, a control transformer is used to give a control voltage of 120 volts.
5. Temperature Control Wiring: The wiring associated with the operation of a motorized damper, solenoid valve or motorized valve, etc., either modulating or two-position, as opposed to wiring which directly powers or controls a motor used to drive equipment such as fans, pumps, etc.
    a. This wiring will be from a 120 volt source and may continue as 120 volt, or be reduced in voltage (24 volt) in which case a control transformer shall be furnished as part of the temperature control wiring.
6. Control Motor: An electric device used to operate dampers, valves, etc. It may be two-position or modulating. Conventional characteristics of such a motor are 24 volts, 60 cycles, 1 phase, although other voltages may be encountered.
7. Voltage is generally specified and scheduled as distribution voltage. Motor submittals may be based on utilization voltage if it corresponds to the correct distribution voltage.

Distribution/Nominal Voltage	Utilization Voltage
120	115
208	200
240	230
277	265
480	460

B. General:
1. The purpose of these Specifications is to outline the Electrical and Mechanical Contractor's responsibilities related to electrical work required for items such as temperature controls, mechanical equipment, fans, chillers, compressors and the like. The exact wiring requirements for much of the equipment cannot be determined until the systems have been selected and submittals reviewed. Therefore, the electrical drawings show only known wiring related to such items. All wiring not shown on the electrical drawings, but required for mechanical systems, is the responsibility of the Mechanical Contractor.
2. Where the drawings require the Electrical Contractor to wire between equipment furnished by the Mechanical Contractor, such wiring shall terminate at terminals provided in the equipment. The Mechanical Contractor shall provide complete electrical power/controls wiring diagrams and supervision to the Electrical Contractor and designate the terminal numbers for correct wiring.
3. All electrical work shall conform to the National Electrical Code. All provisions of the Electrical Specifications concerning wiring, protection, etc., apply to wiring provided by the Mechanical Contractor unless noted otherwise.

4. Control low (24V) and control line (120V) voltage wiring, conduit, and related switches and relays required for the automatic control and/or interlock of motors and equipment, including final connection, are to be furnished and installed under Divisions 21 and 23. Materials and installation to conform to Class 1 or 2 requirements.
5. All Contractors shall establish utility elevations prior to fabrication and shall coordinate their material and equipment with other trades. When a conflict arises, priority is as follows:
    a. Light fixtures.
    b. Electrical busduct.
    c. Sheet metal.
    d. Electrical cable trays, including access space.
    e. Sprinkler piping and other piping.
    f. Electrical conduits and wireway.

C. Mechanical Contractor's Responsibility:
1. Assumes responsibility for internal wiring of all equipment provided by the Mechanical Contractor, for example:
    a. Packaged Rooftop Unit.
2. Shall verify all existing equipment sizes and capacities where units are to be modified, moved or replaced. Contractor shall notify Architect/Engineer of any discrepancies prior to ordering new units or replacement parts, including replacements of equipment motors.
3. Wiring of all devices needed to make the fire protection systems functional, for example: pump control wiring, sensor wiring, pre-action device wiring, and clean agent system wiring, unless control wiring is part of the fire alarm scope. Fire Protection Contractor shall verify any control wiring on the electrical drawings as being by the Electrical Contractor. All wiring required for a complete system, but not shown on the electrical drawings, is the responsibility of the Fire Protection Contractor.

D. Electrical Contractor's Responsibility:
1. Provides all combination starters, manual starters and disconnect devices shown on the Electrical Drawings or indicated to be by the Electrical Contractor on the Mechanical Drawings or Specifications.
2. Installs and wires all remote control devices furnished by the Mechanical Contractor when so noted on the Electrical Drawings.
3. Provides motor control wiring, where so noted on the drawings.
4. Coordinate with the Mechanical Contractor for size of motors and/or other electrical devices involved with repair or replacement of existing equipment.
5. Furnishes, installs and connects all relays, etc., for automatic shutdown of certain fans upon actuation of the Fire Alarm System as indicated and specified in Division 28.
6. This Contractor is responsible for coordination of utilities with all other Contractors. If any field coordination conflicts are found, the Contractor shall coordinate with other Contractors to determine a viable layout.

1.05 COORDINATION DRAWINGS

A. Definitions:

1. Coordination Drawings: A compilation of the pertinent layout and system drawings that show the sizes and locations, including elevations, of system components and required access areas to ensure that no two objects will occupy the same space.
    a. Mechanical trades shall include, but are not limited to, mechanical equipment, ductwork, fire protection systems, and any item that may impact coordination with other disciplines.
    b. Electrical trades shall include, but are not limited to, electrical equipment, conduit 1.5" and larger, conduit racks, cable trays, pull boxes, transformers, raceway, busway, lighting, ceiling-mounted devices, and any item that may impact coordination with other disciplines.
    c. Technology trades shall include, but are not limited to, technology equipment, racks, conduit 1.5" and larger, conduit racks, cable trays, ladder rack, pull boxes, raceway, ceiling-mounted devices, and any item that may impact coordination with other disciplines.
    d. Maintenance clearances and code-required dedicated space shall be included.
2. Spaces with open/cloud ceiling architecture shall indicate the overhead utilities and locate equipment as required to maintain clearance above lights. The intent for the installation is to maintain a maximum allowable vertical clearance and an organized/clean manner in the horizontal. Notify Architect/Engineer of the maximum clearance which can be maintained. Failure to comply will result in modifications with no cost to Owner.
    a. In cloud ceiling architecture, when open cabling/wire and/or cable tray crosses gaps between ceiling clouds and/or walls, cabling is to transition to conduits to span the gaps in order to conceal cabling from below.
3. The contractors shall use the coordination process to identify the proper sequence of installation of all utilities above ceilings and in other congested areas, to ensure an orderly and coordinated end result, and to provide adequate access for service and maintenance.

B. Participation:

1. The contractors and subcontractors responsible for work defined above shall participate in the coordination drawing process.
2. One contractor shall be designated as the Coordinating Contractor for purposes of preparing a complete set of composite electronic CAD coordination drawings that include all applicable trades, and for coordinating the activities related to this process. The Coordinating Contractor for this project shall be the Mechanical Contractor.
    a. The Coordinating Contractor shall utilize personnel familiar with requirements of this project and skilled as draftspersons/CAD operators, competent to prepare the required coordination drawings.
3. Electronic CAD drawings shall be submitted to the Coordinating Contractor for addition of work by other trades. IMEG will provide electronic file copies of applicable drawings for contractor's use if the contractor signs and returns an "Electronic File Transfer" waiver provided by IMEG. IMEG will not consider blatant reproductions of original file copies an acceptable alternative for coordination drawings.

C. Drawing Requirements:

1. The file format and file naming convention shall be coordinated with and agreed to by all contractors participating in the coordination process and the Owner.
    a. Scale of drawings:
        1) General plans: 1/4 Inch = 1 '-0" (minimum).
        2) Mechanical, electrical, communication rooms, and including the surrounding areas within 10 feet: 1/2 Inch = 1'-0" (minimum).
        3) Shafts and risers: 1/2 Inch = 1'-0" (minimum).
        4) Sections of shafts and mechanical and electrical equipment rooms: 1/4 Inch = 1 '-0" (minimum).
        5) Sections of congested areas: 1/2 Inch = 1'-0" (minimum).
2. Ductwork layout drawings shall be the baseline system for other components. Ductwork layout drawings shall be modified to accommodate other components as the coordination process progresses.
3. There may be more drawings required for risers, top and bottom levels of mechanical rooms, and shafts.
4. The minimum quantity of drawings will be established at the first coordination meeting and sent to the Architect/Engineer for review. Additional drawings may be required if other areas of congestion are discovered during the coordination process.

D. General:

1. Coordination drawing files shall be made available to the Architect/Engineer and Owner's Representative. The Architect/Engineer will only review identified conflicts and give an opinion, but will not perform as a coordinator.
2. A plotted set of coordination drawings shall be available at the project site.
3. Coordination drawings are not shop drawings and shall not be submitted as such.
4. The contract drawings are schematic in nature and do not show every fitting and appurtenance for each utility. Each contractor is expected to have included in the bid sufficient fittings, material, and labor to allow for adjustments in routing of utilities made necessary by the coordination process and to provide a complete and functional system.
5. The contractors will not be allowed additional costs or time extensions due to participation in the coordination process.
6. The contractors will not be allowed additional costs or time extensions for additional fittings, reroutings or changes of duct size, that are essentially equivalent sizes to those shown on the drawings and determined necessary through the coordination process.
7. The Architect/Engineer reserves the right to determine space priority of equipment in the event of spatial conflicts or interference between equipment, piping, conduit, ducts, and equipment provided by the trades.
8. Changes to the contract documents that are necessary for systems installation and coordination shall be brought to the attention of the Architect/Engineer.
9. Access panels shall preferably occur only in gypsum board walls or plaster ceilings where indicated on the drawings.
    a. Access to mechanical, electrical, technology, and other items located above the ceiling shall be through accessible lay-in ceiling tile areas.
    b. Potential layout changes shall be made to avoid additional access panels.
    c. Additional access panels shall not be allowed without written approval from the Architect/Engineer at the coordination drawing stage.

d. Providing additional access panels shall be considered after other alternatives are reviewed and discarded by the Architect/Engineer and the Owner's Representative.

e. When additional access panels are required, they shall be provided without additional cost to the Owner.

10. Complete the coordination drawing process and obtain sign off of the drawings by all contractors prior to installing any of the components.

11. Conflicts that result after the coordination drawings are signed off shall be the responsibility of the contractor or subcontractor who did not properly identify their work requirements, or installed their work without proper coordination.

12. Updated coordination drawings that reflect as-built conditions may be used as record documents.

1.06 QUALITY ASSURANCE

A. Contractor's Responsibility Prior to Submitting Pricing Data:

1. The Contractor is responsible for constructing complete and operating systems. The Contractor acknowledges and understands that the Contract Documents are a two-dimensional representation of a three-dimensional object, subject to human interpretation. This representation may include imperfect data, interpreted codes, utility guidelines, three-dimensional conflicts, and required field coordination items. Such deficiencies can be corrected when identified prior to ordering material and starting installation. The Contractor agrees to carefully study and compare the individual Contract Documents and report at once in writing to the Design Team any deficiencies the Contractor may discover. The Contractor further agrees to require each subcontractor to likewise study the documents and report at once any deficiencies discovered.

2. The Contractor shall resolve all reported deficiencies with the Architect/Engineer prior to awarding any subcontracts, ordering material, or starting any work with the Contractor's own employees. Any work performed prior to receipt of instructions from the Design Team will be done at the Contractor's risk.

B. Qualifications:

1. Only products of reputable manufacturers are acceptable.

2. All Contractors and subcontractors shall employ only workers skilled in their trades.

C. Compliance with Codes, Laws, Ordinances:

1. Conform to all requirements of the City of Marshalltown, Iowa's Codes, Laws, Ordinances and other regulations having jurisdiction.

2. Conform to all State Codes.

3. If there is a discrepancy between the codes and regulations and these specifications, the Architect/Engineer shall determine the method or equipment used.

4. If the Contractor notes, at the time of bidding, that any parts of the drawings or specifications do not comply with the codes or regulations, Contractor shall inform the Architect/Engineer in writing, requesting a clarification. If there is insufficient time for this procedure, Contractor shall submit with the proposal a separate price to make the system comply with the codes and regulations.

5. All changes to the system made after letting of the contract, to comply with codes or requirements of Inspectors, shall be made by the Contractor without cost to the Owner.

6. If there is a discrepancy between manufacturer's recommendations and these specifications, the manufacturer's recommendations shall govern.

7. All rotating shafts and/or equipment shall be completely guarded from all contact. Partial guards and/or guards that do not meet all applicable OSHA standards are not acceptable. Contractor is responsible for providing this guarding if it is not provided with the equipment supplied.

D. Permits, Fees, Taxes, Inspections:

1. Procure all applicable permits and licenses.
2. Abide by all laws, regulations, ordinances, and other rules of the State or Political Subdivision where the work is done, or as required by any duly constituted public authority.
3. Pay all charges for permits or licenses.
4. Pay all fees and taxes imposed by the State, Municipal and/or other regulatory bodies.
5. Pay all charges arising out of required inspections by an authorized body.
6. Pay all charges arising out of required contract document reviews associated with the project and as initiated by the Owner or authorized agency/consultant.
7. Where applicable, all fixtures, equipment and materials shall be approved or listed by Underwriter's Laboratories, Inc.

E. Utility Company Requirements:

1. Secure from the appropriate private or public utility company all applicable requirements.
2. Comply with all utility company requirements.
3. Make application for and pay for fire protection water service connection.

F. Examination of Drawings:

1. The drawings for the fire protection work are completely diagrammatic, intended to convey the scope of the work and to indicate the general arrangements and locations of equipment, outlets, etc., and the approximate sizes of equipment.
2. Contractor shall determine the exact locations of equipment and rough-ins, and the exact routing of pipes and ducts to best fit the layout of the job.
3. Scaling of the drawings is not sufficient or accurate for determining these locations.
4. Where job conditions require reasonable changes in indicated arrangements and locations, such changes shall be made by the Contractor at no additional cost to the Owner.
5. Because of the scale of the drawings, certain basic items, such as fittings, boxes, valves, unions, etc., may not be shown, but where required by other sections of the specifications or required for proper installation of the work, such items shall be furnished and installed.
6. If an item is either on the drawings or in the specifications, it shall be included in this contract.
7. Determination of quantities of material and equipment required shall be made by the Contractor from the documents. Where discrepancies arise between drawings, schedules and/or specifications, the greater number shall govern.
8. Where used in fire protection documents, the word "furnish" shall mean supply for use, the word "install" shall mean connect complete and ready for operation, and the word "provide" shall mean to supply for use and connect complete and ready for operation.
    a. Any item listed as furnished shall also be installed, unless otherwise noted.
    b. Any item listed as installed shall also be furnished, unless otherwise noted.

G. Field Measurements:

1. Verify all pertinent dimensions at the job site before ordering any materials or fabricating any supports, pipes or ducts.

H. Electronic Media/Files:

1. Construction drawings for this project have been prepared utilizing Revit.
2. Contractors and Subcontractors may request electronic media files of the contract drawings and/or copies of the specifications. Specifications will be provided in PDF format.
3. Upon request for electronic media, the Contractor shall complete and return a signed "Electronic File Transmittal" form provided by IMEG.
4. If the information requested includes floor plans prepared by others, the Contractor will be responsible for obtaining approval from the appropriate Design Professional for use of that part of the document.
5. The electronic contract documents can be used for preparation of shop drawings and as-built drawings only. The information may not be used in whole or in part for any other project.
6. The drawings prepared by IMEG for bidding purposes may not be used directly for ductwork layout drawings or coordination drawings.
7. The use of these CAD documents by the Contractor does not relieve them from their responsibility for coordination of work with other trades and verification of space available for the installation.
8. The information is provided to expedite the project and assist the Contractor with no guarantee by IMEG as to the accuracy or correctness of the information provided. IMEG accepts no responsibility or liability for the Contractor's use of these documents.

1.07 WEB-BASED PROJECT SOFTWARE

A. The General Contractor shall provide a web-based project software site for the purpose of hosting and managing project communication and documentation until completion of the warranty phase.

B. The web-based project software shall include, at a minimum, the following features: construction schedule, submittals, RFIs, ASIs, construction change directives, change orders, drawing management, specification management, payment applications, contract modifications, meeting minutes, construction progress photos.

C. Provide web-based project software user licenses for use by the Architect/Engineer. Access will be provided from the start of the project through the completion of the warranty phase.

D. At project completion, provide digital archive of entire project in format that is readable by common desktop software applications in format acceptable to Architect/Engineer. Provide data in locked format to prevent further changes.

1.08 SUBMITTALS

A. Submittals shall be required for the following items, and for additional items where required elsewhere in the specifications or on the drawings.

1. Submittals list:

Referenced Specification Section	Submittal Item
21 05 29	Hangers and Supports
21 05 53	Mechanical Identification
21 13 00	Sprinkler Systems

B. General Submittal Procedures: In addition to the provisions of Division 01, the following are required:

1. Transmittal: Each transmittal shall include the following:
    a. Date
    b. Project title and number
    c. Contractor's name and address
    d. Division of work (e.g., plumbing, heating, ventilating, etc.)
    e. Description of items submitted and relevant specification number
    f. Notations of deviations from the contract documents
    g. Other pertinent data
2. Submittal Cover Sheet: Each submittal shall include a cover sheet containing:
    a. Date
    b. Project title and number
    c. Architect/Engineer
    d. Contractor and subcontractors' names and addresses
    e. Supplier and manufacturer's names and addresses
    f. Division of work (e.g., plumbing, heating, ventilating, etc.)
    g. Description of item submitted (using project nomenclature) and relevant specification number
    h. Notations of deviations from the contract documents
    i. Other pertinent data
    j. Provide space for Contractor's review stamps
3. Composition:
    a. Submittals shall be submitted using specification sections and the project nomenclature for each item.
    b. Individual submittal packages shall be prepared for items in each specification section. All items within a single specification section shall be packaged together where possible. An individual submittal may contain items from multiple specifications sections if the items are intimately linked (e.g., pumps and motors).
    c. All sets shall contain an index of the items enclosed with a general topic description on the cover.
4. Content: Submittals shall include all fabrication, erection, layout, and setting drawings; manufacturers' standard drawings; schedules; descriptive literature, catalogs and brochures; performance and test data; electrical power criteria (e.g., voltage, phase, amps, horsepower, kW, etc.) wiring and control diagrams; Short Circuit Current Rating (SCCR); dimensions; shipping and operating weights; shipping splits; service clearances; and all other drawings and descriptive data of materials of construction as may be required to show that the materials, equipment or systems and the location thereof conform to the requirements of the contract documents.
5. Contractor's Approval Stamp:
    a. The Contractor shall thoroughly review and approve all shop drawings before submitting them to the Architect/Engineer. The Contractor shall stamp, date and sign each submittal certifying it has been reviewed.
    b. Unstamped submittals will be rejected.

c. The Contractor's review shall include, but not be limited to, verification of the following:
    1) Only approved manufacturers are used.
    2) Addenda items have been incorporated.
    3) Catalog numbers and options match those specified.
    4) Performance data matches that specified.
    5) Electrical characteristics and loads match those specified.
    6) Equipment connection locations, sizes, capacities, etc. have been coordinated with other affected trades.
    7) Dimensions and service clearances are suitable for the intended location.
    8) Equipment dimensions are coordinated with support steel, housekeeping pads, openings, etc.
    9) Constructability issues are resolved (e.g., weights and dimensions are suitable for getting the item into the building and into place, sinks fit into countertops, etc.).

d. The Contractor shall review, stamp and approve all subcontractors' submittals as described above.

e. The Contractor's approval stamp is required on all submittals. Approval will indicate the Contractor's review of all material and a complete understanding of exactly what is to be furnished. Contractor shall clearly mark all deviations from the contract documents on all submittals. If deviations are not marked by the Contractor, then the item shall be required to meet all drawing and specification requirements.

6. Submittal Identification and Markings:
    a. The Contractor shall clearly mark each item with the same nomenclature applied on the drawings or in the specifications.
    b. The Contractor shall clearly indicate the size, finish, material, etc.
    c. Where more than one model is shown on a manufacturer's sheet, the Contractor shall clearly indicate exactly which item and which data is intended.
    d. All marks and identifications on the submittals shall be unambiguous.
7. Schedule submittals to expedite the project. Coordinate submission of related items.
8. Identify variations from the contract documents and product or system limitations that may be detrimental to the successful performance of the completed work.
9. Reproduction of contract documents alone is not acceptable for submittals.
10. Incomplete submittals will be rejected without review. Partial submittals will only be reviewed with prior approval from the Architect/Engineer.
11. Submittals not required by the contract documents may be returned without review.
12. The Architect/Engineer's responsibility shall be to review one set of shop drawing submittals for each product. If the first submittal is incomplete or does not comply with the drawings and/or specifications, the Contractor shall be responsible to bear the cost for the Architect/Engineer to recheck and handle the additional shop drawing submittals.
13. Submittals shall be reviewed and approved by the Architect/Engineer **before** releasing any equipment for manufacture or shipment.
14. Contractor's responsibility for errors, omissions. or deviation from the contract documents in submittals is not relieved by the Architect/Engineer's approval.

15. Schedule shall allow for adequate time to perform orderly and proper review of submittals, including time for consultants and Owner if required, and resubmittals by Contractor if necessary, and to cause no delay in Work or in activities of Owner or other contractors.
    a. Allow at least two weeks for Architect's/Engineer's review and processing of each submittal.
16. Architect/Engineer reserves the right to withhold action on a submittal which, in the Architect/Engineer's opinion, requires coordination with other submittals until related submittals are received. The Architect/Engineer will notify the Contractor, in writing, when they exercise this right.

C. Electronic Submittal Procedures:
1. Distribution: Email submittals as attachments to all parties designated by the Architect/Engineer, unless a web-based submittal program is used.
2. Transmittals: Each submittal shall include an individual electronic letter of transmittal.
3. Format: Electronic submittals shall be in PDF format only. Scanned copies, in PDF format, of paper originals are acceptable. Submittals that are not legible will be rejected. Do not set any permission restrictions on files; protected, locked, or secured documents will be rejected.
4. File Names: Electronic submittal file names shall include the relevant specification section number followed by a description of the item submitted, as follows. Where possible, include the transmittal as the first page of the PDF instead of using multiple electronic files.
    a. Submittal file name: 21 XX XX.description.YYYYMMDD
    b. Transmittal file name: 21 XX XX.description.YYYYMMDD
5. File Size: Files shall be transmitted via a pre-approved method. Larger files may require an alternative transfer method, which shall also be pre-approved.

1.09 SCHEDULE OF VALUES

A. The requirements herein are in addition to the provisions of Division 01.

B. Format:
1. Use AIA Document Continuation Sheets G703 or another similar form approved by the Owner and Architect/Engineer.
2. Submit in Excel format.
3. Support values given with substantiating data.

C. Preparation:
1. Itemize work required by each specification section and list all providers. All work provided by subcontractors and major suppliers shall be listed on the Schedule of Values. List each subcontractor and supplier by company name.
2. Break down all costs into:
    a. Material: Delivered cost of product with taxes paid.
    b. Labor: Labor cost, excluding overhead and profit.

D. Update Schedule of Values when:
1. Indicated by Architect/Engineer.
2. Change of subcontractor or supplier occurs.
3. Change of product or equipment occurs.

1.10 CHANGE ORDERS

A. A detailed material and labor takeoff shall be prepared for each change order, along with labor rates and markup percentages. Change orders shall be broken down by sheet or associated individual line item indicated in the change associated narrative, whichever provides the most detailed breakdown. Change orders with inadequate breakdown will be rejected.

B. Itemized pricing with unit cost shall be provided from all distributors and associated subcontractors.

C. Change order work shall not proceed until authorized.

1.11 PRODUCT DELIVERY, STORAGE, HANDLING & MAINTENANCE

A. Exercise care in transporting and handling to avoid damage to materials. Store materials on the site to prevent damage. Keep materials clean, dry and free from harmful conditions. Immediately remove any materials that become wet or that are suspected of becoming contaminated with mold or other organisms.

B. Protect equipment, components, and openings with airtight covers and exercise care at every stage of storage, handling, and installation of equipment to prevent airborne dust and dirt from entering or fouling equipment to include, but not limited to:

1. Motor windings and ventilation openings.
2. Bearings.
3. Equipment Pipe and Accessories connection openings.
4. Starter and control cabinets.

C. Equipment and components that are visibly damaged or have been subject to environmental conditions prior to building turnover to Owner that could shorten the life of the component (for example, water damage, humidity, dust and debris, excessive hot or cold storage location, etc.) shall be repaired or replaced with new equipment or components without additional cost to the building owner.

D. Keep all bearings properly lubricated and all belts properly tensioned and aligned.

E. Coordinate the installation of heavy and large equipment with the General Contractor and/or Owner. If the Mechanical Contractor does not have prior documented experience in rigging and lifting similar equipment, he/she shall contract with a qualified lifting and rigging service that has similar documented experience. Follow all equipment lifting and support guidelines for handling and moving.

F. Contractor is responsible for moving equipment into the building and/or site. Contractor shall review site prior to bid for path locations and any required building modifications to allow movement of equipment. Contractor shall coordinate the work with other trades.

1.12 NETWORK / INTERNET CONNECTED EQUIPMENT

A. These specifications may require certain equipment or systems to have network, Internet and/or remote access capability ("Network Capability"). Any requirement for Network Capability shall be interpreted only as a functional capability and is not to be construed as authority to connect or enable any Network Capability. Network Capability may only be connected or enabled with the express written consent of the Owner.

1.13 WARRANTY

A. Provide one-year warranty, unless otherwise noted, to the Owner for all fixtures, equipment, materials, and workmanship.

B. The warranty period for all work in this Division of the specifications shall commence on the date of final acceptance, unless a whole or partial system or any separate piece of equipment or component is put into use for the benefit of any party other than the installing contractor with prior written authorization. In this instance, the warranty period shall commence on the date

when such whole system, partial system or separate piece of equipment or component is placed in operation and accepted in writing by the Owner.

C. Warranty requirements shall extend to correction, without cost to the Owner, of all Work found to be defective or nonconforming to the contract documents. The Contractor shall bear the cost of correcting all damage resulting from defects or nonconformance with contract documents.

1.14 INSURANCE

A. Contractor shall maintain insurance coverage as set forth in Division 0 of these specifications.

1.15 MATERIAL SUBSTITUTION

A. Where several manufacturers' names are given, the scheduled manufacturer is the basis for job design and establishes the quality required.

B. Equivalent equipment manufactured by the other listed manufacturers may be used. Contractor shall ensure that all items submitted by these other manufacturers meet all requirements of the drawings and specifications and fits in the allocated space. When using other listed manufacturers, the Contractor shall assume responsibility for any and all modifications necessary (including, but not limited to structural supports, electrical connections, piping and ductwork connections and arrangement, plumbing connections and rough-in, and regulatory agency approval, etc.) and coordinate such with other contractors.

C. Any material, article or equipment of other unnamed manufacturers which will adequately perform the services and duties imposed by the design and is of a quality equal to or better than the material, article or equipment identified by the drawings and specifications may be used if approval is secured in writing from the Architect/Engineer not later than ten days prior to the bid opening.

D. This Contractor assumes all costs incurred as a result of using the offered material, article or equipment, on the Contractors part or on the part of other Contractors whose work is affected.

E. This Contractor may list voluntary add or deduct prices for alternate materials on the bid form. These items will not be used in determining the low bidder.

F. All material substitutions requested later than ten (10) days prior to bid opening must be listed as voluntary changes on the bid form.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 JOBSITE SAFETY

A. Neither the professional activities of the Architect/Engineer, nor the presence of the Architect/Engineer or the employees and subconsultants at a construction site, shall relieve the Contractor and other entity of their obligations, duties and responsibilities including, but not limited to, construction means, methods, sequence, techniques or procedures necessary for performing, superintending or coordinating all portions of the work of construction in accordance with the contract documents and any health or safety precautions required by any regulatory agencies. The Architect/Engineer and personnel have no authority to exercise any control over any construction contractor or other entity or their employees in connection with their work or any health or safety precautions. The Contractor is solely responsible for jobsite safety. The Architect/Engineer and the Architect/Engineer's consultants shall be indemnified and shall be made additional insureds under the Contractor's general liability insurance policy.

3.02 ARCHITECT/ENGINEER OBSERVATION OF WORK

A. The Contractor shall provide seven (7) calendar days' notice to the Architect/Engineer prior to:

1. Covering exterior walls, interior partitions and chases.
2. Installing hard or suspended ceilings and soffits.

B. The Architect/Engineer will have the opportunity to review the installation and provide a written report noting deficiencies requiring correction. The Contractor's schedule shall account for these reviews and show them as line items in the approved schedule.

C. Above-Ceiling Final Observation

1. All work above the ceilings must be complete prior to the Architect/Engineer's review. This includes, but is not limited to:
   a. Pipe wall penetrations are sealed.
   b. Pipe identification is installed.
   c. Branch piping in the location of sprinklers shall be dropped to the ceiling.
2. In order to prevent the Above-Ceiling Final Observation from occurring too early, the Contractor shall review the status of the work and certify, in writing, that the work is ready for the Above-Ceiling Final Observation.
3. It is understood that if the Architect/Engineer finds the ceilings have been installed prior to this review and prior to 7 days elapsing, the Architect/Engineer may not recommend further payments to the contractor until such time as full access has been provided.

3.03 PROJECT CLOSEOUT

A. The following paragraphs supplement the requirements of Division 01.

B. Final Jobsite Observation:

1. In order to prevent the Final Jobsite Observation from occurring too early, the Contractor is required to review the completion status of the project and certify that the job is ready for the final jobsite observation.
2. Attached to the end of this section is a typical list of items that represent the degree of job completeness expected prior to requesting a review.
3. Upon Contractor certification that the project is complete and ready for a final observation, the Contractor shall sign the attached certification and return it to the Architect/Engineer so that the final observation can be scheduled.
4. It is understood that if the Architect/Engineer finds the job not ready for the final observation and that additional trips and observations are required to bring the project to completion, the costs incurred by the Architect/Engineer's additional time and expenses will be deducted from the Contractor's contract retainage prior to final payment at the completion of the job.

C. Before final payment is authorized, this Contractor must submit the following:

1. Operation and maintenance manuals with copies of approved shop drawings.
2. Record documents including marked-up or reproducible drawings and specifications.
3. A report documenting the instructions given to the Owner's representatives complete with the number of hours spent in the instruction. The report shall bear the signature of an authorized agent of This Contractor and shall be signed by the Owner's representatives.
4. Inspection report by the State Fire Marshal of the fire protection system.
5. Start-up reports on all equipment requiring a factory installation inspection or start-up.
6. Provide spare parts, maintenance, and extra materials in quantities specified in individual specification sections. Deliver to project site; receipt by Architect/Engineer required prior to final payment approval.

3.04 OPERATION AND MAINTENANCE MANUALS

A. General:

1. Provide an electronic copy of the O&M manuals as described below for Architect/Engineer's review and approval. The electronic copy shall be corrected as required to address the Architect/Engineer's comments. Once corrected, electronic copies and paper copies shall be distributed as directed by the Architect/Engineer.
2. Approved O&M manuals shall be completed and in the Owner's possession prior to Owner's acceptance and at least 10 days prior to instruction of operating personnel.

B. Electronic Submittal Procedures:

1. Distribution: Email the O&M manual as attachments to all parties designated by the Architect/Engineer.
2. Transmittals: Each submittal shall include an individual electronic letter of transmittal.
3. Format: Electronic submittals shall be in PDF format only. Scanned copies, in PDF format, of paper originals are acceptable. Submittals that are not legible will be rejected. Do not set any permission restrictions on files; protected, locked, or secured documents will be rejected.
4. File Names: Electronic submittal file names shall include the relevant specification section number followed by a description of the item submitted, as follows. Where possible, include the transmittal as the first page of the PDF instead of using multiple electronic files.
    a. O&M file name: O&M.div21.contractor.YYYYMMDD
    b. Transmittal file name: O&Mtransmittal.div21.contractor.YYYYMMDD
5. File Size: Files shall be transmitted via a pre-approved method. Larger files may require an alternative transfer method, which shall also be pre-approved.
6. Provide the Owner with an approved copy of the O&M manual on compact discs (CD), digital video discs (DVD), or flash drives with a permanently affixed label, printed with the title "Operation and Maintenance Instructions", title of the project and subject matter of disc/flash drive when multiple disc/flash drives are required.
7. All text shall be searchable.
8. Bookmarks shall be used, dividing information first by specification section, then systems, major equipment and finally individual items. All bookmark titles shall include the nomenclature used in the construction documents and shall be an active link to the first page of the section being referenced.

C. Operation and Maintenance Instructions shall include:

1. Title Page: Include title page with project title, Architect, Engineer, Contractor, all subcontractors, and major equipment suppliers, with addresses, telephone numbers, website addresses, email addresses and point of contacts. Website URLs and email addresses shall be active links in the electronic submittal.
2. Table of Contents: Include a table of contents describing specification section, systems, major equipment, and individual items.
3. Copies of all final approved shop drawings and submittals. Include Architect's/Engineer's shop drawing review comments. Insert the individual shop drawing directly after the Operation and Maintenance information for the item(s) in the review form.
4. Copy of final approved test and balance reports.
5. Copies of all factory inspections and/or equipment startup reports.
6. Copies of warranties.

7. Schematic electrical power/controls wiring diagrams of the equipment that have been updated for field conditions. Field wiring shall have label numbers to match drawings.
8. Dimensional drawings of equipment.
9. Capacities and utility consumption of equipment.
10. Detailed parts lists with lists of suppliers.
11. Operating procedures for each system.
12. Maintenance schedule and procedures. Include a chart listing maintenance requirements and frequency.
13. Repair procedures for major components.
14. List of lubricants in all equipment and recommended frequency of lubrication.
15. Instruction books, cards, and manuals furnished with the equipment.

3.05 INSTRUCTING THE OWNER'S REPRESENTATIVES

A. Adequately instruct the Owner's designated representatives in the maintenance, care, and operation of all systems installed under this contract.

B. Provide verbal and written instructions to the Owner's representatives by FACTORY PERSONNEL in the care, maintenance, and operation of the equipment and systems.

C. The Owner has the option to make a video recording of all instructions. Coordinate schedule of instructions to facilitate this recording.

D. The instructions shall include:
1. Explanation of all system flow diagrams.
2. Maintenance of equipment.
3. Start-up procedures for all major equipment.
4. Explanation of seasonal system changes.
5. Description of emergency system operation.

E. Notify the Architect/Engineer of the time and place for the verbal instructions to be given to the Owner's representative so a representative can attend if desired.

F. Minimum hours of instruction for each item shall be:
1. Sprinkler System(s) - 2 hours.

G. The Contractor shall prepare a detailed, written training agenda and submit it to the Architect/Engineer a minimum of two weeks prior to the formal training for approval. The written agenda shall include specific training points within the items described above. For example: how to adjust setpoints, troubleshooting, proper start-up, proper shut-down, seasonal changes, draining, venting, changing filters, changing belts, etc. Failure to provide and follow an approved training agenda may result in additional training required at the expense of the Contractor.

H. Operating Instructions:
1. Contractor is responsible for all instructions to the Owner's representatives for the fire protection and control systems.
2. If the Contractor does not have staff that can adequately provide the required instructions the Contractor shall include in the bid an adequate amount to reimburse the Owner for the Architect/Engineer to perform these services.

3.06 SYSTEM STARTING AND ADJUSTING

A. The fire protection systems shall be complete and operating. System startup, testing, adjusting, and balancing to obtain satisfactory system performance is the responsibility of the Contractor. This includes calibration and adjustments of all controls, noise level adjustments and final comfort adjustments as required.

B. Complete all manufacturer-recommended startup procedures and checklists to verify proper motor rotation, electrical power voltage is within equipment limitations, equipment controls maintain pressures and temperatures within acceptable ranges, all filters and protective guards are in-place, acceptable access is provided for maintenance and servicing, and equipment operation does not pose a danger to personnel or property.

C. All operating conditions and control sequences shall be tested during the start-up period. Test all interlocks, safety shutdowns, controls, and alarms.

D. The Contractor, subcontractors, and equipment suppliers shall have skilled technicians to ensure that all systems perform properly. If the Architect/Engineer is requested to visit the job site for trouble shooting, assisting in start-up, obtaining satisfactory equipment operation, resolving installation and/or workmanship problems, equipment substitution issues or unsatisfactory system performance, including call backs during the warranty period, through no fault of the design; the Contractor shall reimburse the Owner on a time and materials basis for services rendered at the Architect/Engineer's standard hourly rates in effect when the services are requested. The Contractor shall pay the Owner for services required that are product, installation or workmanship related. Payment is due within 30 days after services are rendered.

3.07 RECORD DOCUMENTS

A. The following paragraphs supplement Division 01 requirements.

B. Maintain at the job site a separate and complete set of fire protection drawings and specifications with all changes made to the systems clearly and permanently marked in complete detail.

C. Mark drawings to indicate revisions to piping size and location, both exterior and interior; including locations of other control devices, and other units requiring periodic maintenance or repair; actual equipment locations, dimensioned from column lines; actual inverts and locations of underground piping; concealed equipment, dimensioned from column lines; mains and branches of piping systems, with valves and control devices located and numbered, concealed unions located, and with items requiring maintenance located; Change Orders; concealed control system devices.

D. Mark specifications to show approved substitutions; Change Orders, and actual equipment and materials used.

E. Record changes daily and keep the marked drawings available for the Architect/Engineer's examination at any normal work time.

F. Upon completing the job, and before final payment is made, give the marked-up drawings to the Architect/Engineer.

3.08 PAINTING

A. This Contractor shall paint the following items:

1. All exposed piping
2. Piping exposed between cloud ceilings

B. Paint all equipment that is marred or damaged prior to the Owner's acceptance. Paint and color shall match original equipment paint and shall be obtained from the equipment supplier if available.

C. Equipment in finished areas that will be painted to match the room decor will be painted by others. Should this Contractor install equipment in a finished area after the area has been painted, the Contractor shall have the equipment and all its supports, hangers, etc., painted to match the room decor.

D. Equipment in occupied spaces, or if standard to the unit, shall have a baked primer with baked enamel finish coat free from scratches, abrasions, chips, etc. If color option is specified or is standard to the unit, this Contractor shall, before ordering, verify with the Architect/Engineer the color preference and furnish this color.

E. After surfaces have been thoroughly cleaned and are free of oil, dirt, and other foreign matter, paint all pipes and equipment with the following:

1. Bare Metal Surfaces: Apply one coat of primer suitable for the metal being painted. Finish with two coats of Alkyd base enamel paint.

3.09 ADJUST AND CLEAN

A. Thoroughly clean all equipment and systems prior to the Owner's final acceptance of the project. Clean all foreign paint, grease, oil, dirt, labels, stickers, and other foreign material from all equipment.

B. Clean all areas where moisture is present. Immediately report any mold, biological growth, or water damage.

C. Remove all rust, scale, dirt, oils, stickers and thoroughly clean exterior of all exposed piping, hangers, and accessories.

D. Remove all rubbish, debris, etc., accumulated during construction from the premises.

3.10 SPECIAL REQUIREMENTS

A. Contractor shall coordinate the installation of all equipment, valves, etc., with other trades to maintain clear access area for servicing.

B. All equipment shall be installed in such a way to maximize access to parts needing service or maintenance. Review the final field location, placement, and orientation of equipment with the Owner's designated representative prior to setting equipment.

C. Installation of equipment or devices without regard to coordination of access requirements and confirmation with the Owner's designated representative will result in removal and reinstallation of the equipment at the Contractor's expense.

3.11 IAQ MAINTENANCE FOR OCCUPIED FACILITIES UNDER CONSTRUCTION

A. Contractors shall make all reasonable efforts to prevent construction activities from affecting the air quality of the occupied areas of the building or outdoor areas near the building. These measures shall include, but not be limited to:

1. All contractors shall endeavor to minimize the amount of contaminants generated during construction. Methods to be employed shall include, but not be limited to:
    a. Minimizing the amount of dust generated.
    b. Reducing solvent fumes and VOC emissions.
    c. Maintain good housekeeping practices, including sweeping and periodic dust and debris removal. There should be no visible haze in the air.
2. Request that the Owner designate an IAQ representative.
3. Review and receive approval from the Owner's IAQ representative for all IAQ-related construction activities and negative pressure containment plans.
4. Inform the IAQ representative of all conditions that could adversely impact IAQ, including operations that will produce higher than normal dust production or odors.
5. Schedule activities that may cause IAQ conditions that are not acceptable to the Owner's IAQ representative during unoccupied periods.

6. Request copies of and follow all of the Owner's IAQ and infection control policies.
7. Unless no other access is possible, the entrance to construction site shall not be through the existing facility.
8. To minimize growth of infectious organisms, do not permit damp areas in or near the construction area to remain for over 24 hours.
9. In addition to the criteria above, provide measures as recommended in the SMACNA "IAQ Guidelines for Occupied Buildings Under Construction".

READINESS CERTIFICATION PRIOR TO FINAL JOBSITE OBSERVATION

To prevent the final job observation from occurring too early, we require that the Contractor review the completion status of the project and, by copy of this document, certify that the job is indeed ready for the final job observation. The following is a typical list of items that represent the degree of job completeness expected prior to requesting a final job observation.

1. Penetrations fire sealed and labeled in accordance with specifications.
2. Fire protection system operational.
3. Pipes labeled.

Accepted by:

Prime Contractor _____

By _____ Date _____

Upon Contractor certification that the project is complete and ready for a final job observation, we require the Contractor to sign this agreement and return it to the Architect/Engineer so that the final observation can be scheduled.

It is understood that if the Architect/Engineer finds the job not ready for the final observation and that additional trips and observations are required to bring the project to completion, the costs incurred by the Architect/Engineers for additional time and expenses will be deducted from the Contractor's contract retainage prior to final payment at the completion of the job.

END OF SECTION 21 05 00

SECTION 21 05 29
FIRE SUPPRESSION SUPPORTS AND ANCHORS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Hangers, Supports, and Associated Anchors.

B. Sleeves and Seals.

C. Cutting of Openings.

D. Escutcheon Plates and Trim.

1.02 QUALITY ASSURANCE

A. Support Sprinkler and Standpipe Piping in conformance with NFPA 13.

B. All components shall be UL listed and approved for fire protection systems.

1.03 REFERENCES

A. MSS SP-58 - Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation.

B. MSS SP-69 - Pipe Hangers and Supports - Selection and Application.

C. MSS SP-89 - Pipe Hangers and Supports - Fabrication and Installation Practices.

D. NFPA 13 - Standard for the Installation of Sprinkler Systems.

1.04 SUBMITTALS

A. Submit shop drawings and product data under provisions of Section 21 05 00.

PART 2 - PRODUCTS

2.01 HANGER RODS

A. Hanger rods for single rod hangers supporting steel, copper, and CPVC piping shall conform to the following:

1. Hanger Rod Diameter:

a. 4" and smaller: 3/8"

b. 5", 6", and 8": 1/2"

2.02 PIPE HANGERS AND SUPPORTS

A. General:

1. All pipe hangers, clamps, and supports shall conform to Manufacturers Standardization Society MSS-SP-58, -69, and -89 (where applicable).

B. Hangers and Clamps:

1. Hangers in direct contact with bare copper pipe shall include plastic pipe insert similar to Unistrut Cush-A-Clamp, Hydra-Zorb, nVent Cushion Clamp or Eaton Vibra-Clamp.

2. Unless otherwise indicated, hangers shall be as follows:

a. Clevis Type: Service: Bare Metal Pipe, Rigid Plastic Pipe

1) Products: Bare Steel, Plastic or Insulated Pipe

a) Anvil Fig. 260

b) Eaton Fig. 3100

c) nVent Model 400

b. Adjustable Swivel Ring Type: Service: Bare Metal Pipe - 4 inches and Smaller
    1) Products: Bare Steel Pipe
        a) Anvil Fig. 69
        b) Eaton Fig. B3170NF
        c) nVent Model 115
    2) Products: Bare Copper Pipe
        a) Eaton Fig. B3170CTC
        b) Anvil Fig. CT-69

3. Support may be fabricated from U-channel strut or similar shapes. Piping less than 4" in diameter shall be secured to strut with clamps of proper design and capacity as required to maintain spacing and alignment. Strut shall be independently supported from hanger drops or building structure. Size and support shall be per manufacturer's installation requirements for structural support of piping.
4. Strut used in mechanical spaces or otherwise dry areas shall have ASTM B633 electro-plated zinc finish.
5. Strut used in damp areas listed in hanger rods shall have ASTM A123 hot-dip galvanized finish applied after fabrication.
6. Unless otherwise indicated, pipe supports for use with struts shall be as follows:
    a. Clamp Type: Service: Bare Metal Pipe
        1) Clamps in direct contact with copper pipe shall include plastic pipe insert similar to Unistrut Cush-A-Clamp, Hydra-Zorb, nVent Cushion Clamp or Eaton Vibra-Clamp.
        2) Pipes subject to expansion and contraction shall have clamps slightly oversized to allow limited pipe movement.
        3) Products: Bare Steel Pipe
            a) Unistrut Fig. P1100 or P2500

C. Upper (Structural) Attachments:
1. Unless otherwise shown, upper attachments for hanger rods or support struts shall be as follows:
    a. Steel Structure Clamps: C-Type Wide Flange Beam Clamps (for use on top and/or bottom of wide flanges. Not permitted for use with bar-joists.)
        1) Products:
            a) Anvil Fig. 86/92/93
            b) Eaton Fig. B3033/B3034
            c) nVent Model 300/310/315
    b. Scissor Type Beam Clamps (for use with bar-joists and wide flange):
        1) Products:
            a) Anvil Fig. 218
            b) Eaton Fig. B3054 (UL listed only, not FM)
    c. Concentrically Loaded Open Web Joist Hangers (for use with bar joists):
        1) Products:
            a) nVent Model Truss-T Bar Joist Hanger (UL listed only, not FM)(UL listed only, not FM)
            b) MCL Model M1, M2 or M3 (UL listed only, not FM)

d. Unless otherwise noted, hangers, clips, and auxiliary support steel may be welded in lieu of bolting, clamping, or riveting to the building structural frame. Take adequate precautions during all welding operations for fire prevention and for protecting walls and ceilings from being damaged by smoke.

2.03 OPENINGS IN FLOORS, WALLS AND CEILINGS

A. Exact locations of all openings for the installation of materials shall be determined by the Contractor and given to the General Contractor for installation or construction as the structure is built.

B. Coordinate all openings with other Contractors.

C. Hire the proper tradesman and furnish all labor, material and equipment to cut openings in or through existing structures, or openings in new structures that were not installed, or additional openings. Repair all spalling and damage to the satisfaction of the Architect/Engineer. Make saw cuts before breaking out concrete to ensure even and uniform opening edges.

D. Said cutting shall be at the complete expense of each Contractor. Failure to coordinate openings with other Contractors shall not exempt the Contractor from providing openings at Contractor's expense.

E. Do not cut structural members without written approval of the Architect or Structural Engineer.

2.04 ESCUTCHEON PLATES AND TRIM

A. Fit escutcheons to all insulated or uninsulated exposed pipes passing through walls, floors, or ceilings of finished rooms.

B. Escutcheons shall be heavy gauge, cold rolled steel, copper coated under a chromium plated finish, heavy spring clip, rigid hinge and latch.

C. Install galvanized steel (unless otherwise indicated) trim strip to cover vacant space and raw construction edges of all rectangular openings in finished rooms. This includes duct and pipe openings.

2.05 PIPE PENETRATIONS

A. Seal all pipe penetrations. Seal non-rated walls and floor penetrations with grout or caulk. Backing material may be used.

B. Seal fire rated wall and floor penetrations with fire seal system as specified.

2.06 PIPE ANCHORS

A. Provide all items needed to allow adequate expansion and contraction of all piping. All piping shall be supported, guided, aligned, and anchored as required.

B. Repair all piping leaks and associated damage. Pipes shall not rub on any part of the building.

2.07 FINISH

A. Prime coat exposed steel hangers and supports. Hangers and supports in crawl spaces, pipe shafts, and suspended ceiling spaces are not considered exposed.

PART 3 - EXECUTION

3.01 FIRE SUPPRESSION SUPPORTS AND ANCHORS

A. General Installation Requirements:

1. Install all items per manufacturer's instructions.
2. Coordinate the location and method of support of piping systems with all installations under other Divisions and Sections of the Specifications.
3. Where pipe support members are welded to structural building framing, scrape, brush clean, and apply one coat of zinc rich primer to welding.
4. Supports shall extend directly to building structure. Do not support piping from duct hangers. Do not allow lighting or ceiling supports to be hung from piping supports.

B. Supports Requirements:

1. Where building structural steel is fireproofed, all hangers, clamps, auxiliary steel, etc., which attach to it shall be installed prior to application of fireproofing. Repair all fireproofing damaged during pipe installation.
2. Set all concrete inserts in place before pouring concrete.
3. Furnish, install and prime all auxiliary structural steel for support of piping systems that are not shown on the Drawings as being by others.
4. Install hangers and supports complete with lock nuts, clamps, rods, bolts, couplings, swivels, inserts and required accessories.
5. Hangers for horizontal piping shall have adequate means of vertical adjustment for alignment.

C. Pipe Requirements:

1. Support all piping and equipment, including valves, strainers, and other specialties and accessories to avoid objectionable or excessive stress, deflection, swaying, sagging or vibration in the piping or building structure during erection, cleaning, testing and normal operation of the systems.
2. Do not, however, restrain piping to cause it to snake or buckle between supports or to prevent proper movement due to expansion and contraction.
3. Support piping at equipment and valves so they can be disconnected and removed without further supporting the piping.
4. Piping shall not introduce strains or distortion to connected equipment.
5. Parallel horizontal pipes may be supported on trapeze hangers made of structural shapes and hanger rods; otherwise, pipes shall be supported with individual hangers.
6. Trapeze hangers may be used where ducts interfere with normal pipe hanging.
7. Provide additional supports where pipe changes direction, adjacent to flanged valves and strainers, at equipment connections and heavy fittings.
8. Provide at least one hanger adjacent to each joint in grooved end steel pipe with mechanical couplings.

D. Provided the installation complies with all loading requirements of truss and joist manufacturers, the following practices are acceptable:

1. Loads of 100 lbs. or less may be attached anywhere along the top or bottom chords of trusses or joists with a minimum 3' spacing between loads.
2. Loads greater than 100 lbs. must be hung concentrically and may be hung from top or bottom chord, provided one of the following conditions is met:
    a. The hanger is attached within 6" from a web/chord joint.
    b. Additional L2x2x1/4 web reinforcement is installed per manufacturer's requirements.
3. It is prohibited to cantilever a load using an angle or other structural component that is attached to a truss or joist in such a fashion that a torsional force is applied to that structural member.
4. If conditions cannot be met, coordinate installation with truss or joist manufacturer and contact Architect/Engineer.

E. After piping and insulation installation are complete, cut hanger rods back at trapeze supports so they do not extend more than 3/4" below bottom face of lowest fastener and blunt any sharp edges.

F. Do not exceed 25 lbs. per hanger and a minimum spacing of 2'-0" on center when attaching to metal roof decking (limitation not required with concrete on metal deck). This 25 lbs. load and 2'-0" spacing include adjacent electrical and architectural items hanging from deck. If the hanger restrictions cannot be achieved, supplemental framing off steel framing will need to be added.

G. Do not exceed the manufacturer's recommended maximum load for any hanger or support.

H. Spacing of hangers shall in no case exceed the following:

1. Steel (All steel pipe unless otherwise noted):
    a. Maximum Spacing:
        1) 1-1/4" & under: 12'-0"
        2) 1-1/2" & larger: 15'-0"
2. Steel (Schedule 40 lightweight alternative):
    a. Maximum Spacing:
        1) 3" & under: 12'-0"

I. Installation of hangers shall conform to MSS SP-58, -69, -89, and applicable NFPA standards.

END OF SECTION 21 05 29

SECTION 21 05 53
FIRE SUPPRESSION IDENTIFICATION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Identification of products installed under Division 21.

1.02 REFERENCES

A. ANSI/ASME A13.1 - Scheme for the Identification of Piping Systems.

1.03 SUBMITTALS

A. Submit shop drawings under provisions of Section 21 05 00. Include list of items identified, wording, letter sizes, and color coding.

B. Include valve chart and schedule listing valve tag number, location, function, and valve manufacturer's name and model number.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. 3M

B. Bunting

C. Calpico

D. Craftmark

E. Emedco

F. Kolbi Industries

G. Seton

H. W. H. Brady

I. Marking Services.

2.02 MATERIALS

A. All pipe markers shall conform to ANSI A13.1. Marker lengths and letter sizes shall be at least the following:

OD of Pipe or Insulation	Marker Length	Size of Letters
Up to and including 1-1/4"	8"	1/2"
1-1/2" to 2"	8"	3/4"
2-1/2" to 6"	12"	1-1/4"
Plastic tags may be used for outside diameters under 3/4"		

B. Plastic Nameplates: Laminated three-layer phenolic with engraved black, 1/4" minimum letters on light contrasting background.

C. Plastic Tags: Minimum 1-1/2" square or round laminated three-layer phenolic with engraved, 1/4" minimum black letters on light contrasting background.

D. Brass Tags: Brass background with engraved black letters. Tag size minimum 1-1/2" square or 1-1/2" round.

E. Vinyl Pipe Markers: Colored vinyl with permanent pressure sensitive adhesive backing.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install all products per manufacturer's recommendations.

B. Degrease and clean surfaces to receive adhesive for identification materials.

C. Valves:

1. All valves (except shutoff valves at equipment) shall have numbered tags.
2. Provide or replace numbered tags on all existing valves that are connected to new systems or that have been revised.
3. Provide all existing valves used to extend utilities to this project with numbered tags. Review tag numbering sequence with the Owner prior to ordering tags.
4. Secure tags with heavy duty key chain and brass "S" link or with mechanically fastened plastic straps.
5. Attach to handwheel or around valve stem.
6. Number all tags and show the service of the pipe.
7. Provide two sets of laminated 8-1/2" x 11" (letter size) copies of a valve directory listing all valves, with respective tag numbers, uses, and locations. The directory shall be reviewed by the Owner and Architect/Engineer prior to laminating final copies. Laminated copies shall have brass eyelet in at least one corner for easy hanging.

D. Pipe Markers:

1. Adhesive Backed Markers: Use Brady Style 1, 2, or 3 on pipes 3" diameter and larger. Use Brady Style 4, 6, or 8 on pipes under 3" diameter. Similar styles by other listed manufacturers are acceptable. Secure all markers at both ends with a wrap of pressure sensitive tape completely around the pipe.
2. Apply markers and arrows in the following locations where clearly visible:
   a. At each valve.
   b. On both sides of walls that pipes penetrate.
   c. At least every 20 feet along all pipes.
   d. On each riser and each leg of each "T" joint.
   e. At least once in every room and each story traversed.

E. Equipment:

1. All equipment not easily identifiable such as controls, relays, gauges, etc.; and all equipment in an area remote from its function shall have nameplates or plastic tags listing name, function, and drawing symbol. Do not label exposed equipment in public areas.
2. Fasten nameplates or plastic tags with stainless steel self-tapping screws or permanently bonding cement.
3. Mechanical equipment that is not covered by the U.S. National Appliance Energy Conservation Act (NAECA) of 1987 shall carry a permanent label installed by the manufacturer stating that the equipment complies with the requirements of ASHRAE 90.1.

3.02 SCHEDULE

A. Pipes to be marked shall be labeled with text shown as follows, regardless of which method or material is used:

1. SPRINKLER WATER: White lettering; red background

END OF SECTION 21 05 53

SECTION 21 13 00
FIRE PROTECTION SYSTEMS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Pipe, Fittings, Valves, and Connections for Fire Protection System.

B. Wet-Pipe Sprinkler System.

1.02 QUALITY ASSURANCE

A. Equipment and Components: Bear UL label or marking.

B. Valves: Bear UL label or marking. Provide manufacturer's name and pressure rating marked on valve body. Pressure rating shall match specified pipe system pressure rating. Remanufactured valves are not acceptable.

C. Specialist Firm: Company specializing in sprinkler systems with minimum three years' experience.

D. Sprinkler design drawings submitted by the Contractor shall be prepared by a NICET Water-Based Fire Protection Systems Layout Level III or Level IV designer or PE.

1.03 REFERENCES

A. ANSI/ASME B16.1 - Cast Iron Pipe Flanges and Flanged Fittings, Class 25, 125, 250, and 800.

B. ANSI/ASME B16.3 - Malleable Iron Threaded Fittings, Class 150 and 300.

C. ANSI/ASME B16.4 - Cast Iron Threaded Fittings, Class 125 and 250.

D. ANSI/ASME B16.5 - Pipe Flanges and Flanged Fittings.

E. ANSI/ASTM A47 - Malleable Iron Castings.

F. ASTM A153 - Pipe, Steel, Black and Hot-Dipped, Zinc-coated Welded and Seamless.

G. BOCA National Building Code.

H. IBC - International Building Code.

I. MSS SP-73 - Brazing Joints for Wrought and Cast Copper Alloy Solder Joint and Pressure Fittings.

J. NFPA 101 - Life Safety Code,

K. NFPA 13 - Standard for the Installation of Sprinkler Systems.

L. NFPA 25 - Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems.

M. UL - Underwriter's Laboratory Fire Protection Equipment Directory.

1.04 SUBMITTALS

A. Submit shop drawings per Section 21 05 00. Indicate pipe materials, joining methods, supports, floor and wall penetration seals, sprinklers, equipment data and ratings, and hydraulic calculations.

B. Submit detailed pipe and sprinkler layout and other calculations and forms as described in NFPA 13.

C. Submit detailed working drawings and obtain review of them in the following order:

1. Engineer/ArchitectState Fire Marshal/Authority Having Jurisdiction
2. Owner's Insurance Company
3. Architect/Engineer
4. Local Fire Department
5. Owner's Insurance Company
6. Architect/Engineer

D. Working drawings shall include piping and sprinkler layout, sprinkler types and ratings, sections and elevations at critical points. Show coordination with lighting, ductwork, and diffusers, and indicate basic flow and hydraulic design information, including main location and date that the test was taken.

E. Submit electrical power/controls wiring diagrams and product data indicating general assembly, components, safety controls, and service connections.

F. Provide the Owner with one copy of NFPA 25. Standard for the Inspection Testing and Maintenance of Water-based Fire Protection Systems.

1.05 EXTRA STOCK

A. Provide metal storage cabinet, wrenches for each sprinkler type, and extra sprinklers per NFPA 13 and applicable building code.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Store valves and sprinklers in shipping containers, with labels in place.

B. Provide temporary protective coating on iron and steel valves.

C. Maintain temporary end caps and closures in place until installation.

1.07 WORK FURNISHED BUT INSTALLED UNDER OTHER SECTIONS

A. Furnish sleeves to General Contractor for placement in walls and floors. Sleeve location to be determined by the Fire Protection Contractor prior to construction. If additional sleeves are required, they shall be core drilled by the Fire Protection Contractor.

1.08 SYSTEM DESCRIPTION

A. Contractor shall design and install the following water-based fire protection systems for the areas noted on the contract documents:

1. Wet pipe sprinkler system(s)

B. Sprinkler systems shall be designed and installed according to the following standard(s):

1. NFPA 13 - Standard for the Installation of Sprinkler Systems

C. System design and installation shall include all requirements by the Authority Having Jurisdiction, local and state building codes, and Owner's insurance company in addition to the previously listed design standard(s). Those requirements shall take precedence over the contract documents in the case of discrepancies.

D. Systems shall be hydraulically calculated in accordance with the applicable design standard(s). Contractor is responsible for final pipe sizing based on results from hydraulic calculations. Pipe sizing shown on drawings for service entrance and main risers is preliminary and for coordination purposes only.

E. The water supply source for this project is the following:

1. Public waterworks system.

2. The system design shall be based on water supply information provided on the contract drawings. Supply shall be presumed to be at the point of connection to existing water supply infrastructure unless noted otherwise. The Fire Protection Contractor is responsible to verify this information and conduct all tests required. Base all pipe sizing and hydraulic calculations on flow test data no older than 12 months.

1.09 COORDINATION DRAWINGS

A. Reference Coordination Drawings article in Section 21 05 00 for required fire protection systems electronic CAD drawings to be provided to Coordinating Contractor for inclusion into composite coordination drawings.

1.10 OPERATION AND MAINTENANCE DATA

A. Submit manufacturers' operation and maintenance data. Include written maintenance data on components of system, servicing requirements, and record drawings.

PART 2 - PRODUCTS

2.01 PIPE AND FITTINGS - WET PIPE SPRINKLER SYSTEMS

A. Piping - 2" and Under (Steel Pipe):

1. Design Pressure: 175 psig
2. Pipe: Schedule 40, black steel, ASTM A53, ASTM A795, UL. Inner wall shall be coated with an anti-MIC (microbiologically influenced corrosion) coating.
3. Schedule 40 Joints: Threaded or roll grooved (2" and 1.5" only).
4. Lightweight Schedule 40 (Schedule 20) Joints: Threaded or roll grooved (2" and 1.5" only).
5. Fittings:
    a. Threaded:
        1) Cast iron, Class 125, black, UL, ANSI/ASME B16.4ASTM A153.
        2) Malleable iron, Class 150, black, UL, ANSI/ASME B16.3ASTM A153.
        3) Ductile iron, Class 150, black, UL, ANSI/ASME B16.3ASTM A153.
    b. Grooved:
        1) Ductile iron housing ASTM A-536, Grade 65-45-12, UL, enamel coating, Grade E (Type A) EPDM molded pressure-responsive gaskets suited for 40F to 150F. Stainless steel bolts and nuts.
6. Unions: Class 150 malleable iron, ANSI B16.39, ground joint with copper or copper alloy-to-iron seat.

B. Piping - 2-1/2" and Above (Steel Pipe):

1. Design Pressure: 175 psig
2. Pipe: Schedule 10, black steel, ASTM A135, ASTM A795, UL. Inner wall shall be coated with an anti-MIC (microbiologically influenced corrosion) coating.
3. Joints: Roll Grooved.
4. Fittings:
    a. Grooved:
        1) Ductile iron housing ASTM A-536, Grade 65-45-12, UL, enamel coating, Grade E (Type A) EPDM molded pressure-responsive gaskets suited for 40F to 150F. Stainless steel bolts and nuts.
    b. Saddle Branch Fittings:
        1) In lieu of a TEE fitting for systems using steel piping where connecting a branch line to a main, saddle branch connections utilizing a bolted clamp or a U-bolt support around the main pipe with a ductile iron sealing surface and gasket are permitted based on these size limitations:
            a) Up to 6" Mains: Branch pipe maximum size is nominally one pipe size smaller than main.
            b) 8" and Larger Mains: Branch pipe maximum size is nominally two pipe sizes smaller than main.

2.02 FLEXIBLE FIRE SPRINKLER CONNECTIONS

A. Flexible Connection: Stainless steel hose, 175 psig max working pressure, fully welded non-mechanical fittings, stainless steel braid, maximum of 6' hose length, leak-tested with a minimum 7/8" internal corrugated hose diameter made of 304 stainless steel, end fittings made of carbon or stainless steel. Outlet of end fittings shall be 1/2" or 3/4" to match sprinkler connection. UL.

B. Ceiling Bracket: G90 galvanized steel, direct attachment type, integrated snap-on clip ends, tamper resistance screws, removable attachment hub with set screw for attachment and adjustment of stainless steel hose.

1. Manufacturers:
    a. Flexhead Industries
    b. Victaulic VicFlex,
    c. Sprinkflex
    d. or approved equal.

2.03 VALVES

A. Provide handwheels for gate valves. Provide gear operators for butterfly valves.

B. Provide all connections to match pipe joints. Valves shall be same size as pipe.

2.04 EQUIPMENT

A. Equipment shall be as scheduled on the drawings.

2.05 PIPE LABELING AND IDENTIFICATION

A. Provide additional identification as described in Section 21 05 53.

PART 3 - EXECUTION

3.01 INSTALLATION - PIPING

A. General Installation Requirements:

1. Coordinate piping and sprinkler locations with all other trades. Ductwork, diffusers and light fixture locations shall have priority over sprinkler piping and sprinklers.
2. Ream pipe and tube ends to full inside diameter. Remove burrs. Remove scale and foreign material, inside and outside, before assembly.
3. Die cut screw joints with full cut standard taper pipe threads.
4. Coat threads with pipe joint compound or wrap with Teflon tape.
5. Locate piping to minimize obstruction of other work.
6. Route piping in concealed spaces above finished ceiling.
7. Use full and double lengths of pipe wherever possible.
8. Slope all piping for complete drainage. Install auxiliary drains for all trapped piping per NFPA 13.
9. Reducers are generally not shown. Where pipe sizes change at tee, the tee shall be the size of the largest pipe shown connecting to it.
10. Comply with manufacturer's installation instructions.

B. Wall Penetration:

1. Provide sleeves when penetrating walls.
2. Fire seal all pipe and sleeve penetrations to maintain fire separation required without restraining pipe.

C. Installation Requirements in Electrical Rooms:

1. Do not install piping or other equipment above electrical switchboards or panelboards. This includes a dedicated space extending 25 feet from the floor to the structural ceiling with width and depth equal to the equipment. Fire protection equipment dedicated to the electrical equipment room or space may be installed above equipment if other alternatives are not available.

D. Hangers and Supports:

1. Provide hangers and supports as required by NFPA 13 and UL, with the following exceptions:

a. Do not use powder driven devices, explosive devices, wooden plugs, or plastic inserts.

b. Do not install fasteners to carry the load in tension, unless absolutely necessary.

E. Exposed Piping:

1. Install chrome plated steel escutcheons where exposed pipes penetrate walls or floors.

2. Remove all scale, rust, dirt, oils, stickers and thoroughly clean exterior of all bare metal exposed piping, hangers, and accessories in preparation to be painted.

3.02 INSTALLATION - VALVES

A. Install gate valves with stems upright or horizontal, not inverted.

B. Shutoff Valve:

1. Provide drain valves at main shutoff valves, low points of piping and apparatus.

2. Provide monitor switches on all shutoff valves.

3.03 INSTALLATION - EQUIPMENT

A. Coordinate piping and sprinkler locations with all other trades. Ductwork, diffusers and light fixture locations shall have priority over system equipment and sprinklers.

B. Test Valves:

1. Install test valves where required. Pipe to outdoors or drain. Test connection shall have flow equivalent to the smallest K-factor sprinkler.

C. Sprinklers:

1. Locate sprinklers to clear lights, ducts and diffusers. Do not run sprinkler pipes through ducts. Ductwork has priority over sprinkler pipes. Offset pipes as needed.

2. Center sprinklers in two directions in ceiling tiles and provide offsets as required.

3. Do not allow concealed sprinkler cover plates to be painted. Sprinkler cover plates are to be factory painted only. Do not field paint.

4. Apply strippable or paper covers so concealed sprinkler cover plates do not receive field paint finish.

3.04 SYSTEMS CLEANING AND TESTING

A. General Requirement:

1. All water used for testing and remaining in the piping system shall be obtained from a potable water source.

B. Interior Piping:

1. Verify adequate water flow at the inspector's test connection.

2. Flush all interior piping to remove scale and other foreign material before placing system into service.

3. Hydrostatically test the entire interior piping system at a minimum of 200 psig or 50 psig more than the normal system working pressure for systems subjected to pressures more than 150 psig. Maintain test pressure for 2 hours without loss of pressure..

C. Fire Alarm System:

1. Test the alarm system by operating the inspector's test connection or the alarm test valves. Verify that the building fire alarm system activates.
2. Adjust all monitor switches for proper operation.

END OF SECTION 21 13 00

SECTION 23 05 00
BASIC HVAC REQUIREMENTS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Requirements applicable to all Division 23 Sections. Also refer to Division 01 - General Requirements.

B. All materials and installation methods shall conform to the applicable standards, guidelines and codes referenced herein and within each specification section.

1.02 SCOPE OF WORK

A. This Specification and the associated drawings govern the furnishing, installing, testing and placing into satisfactory operation the Mechanical Systems.

B. Each Contractor shall provide all new materials indicated on the drawings and/or in these specifications, and all items required to make the portion of the Mechanical Work a finished and working system.

C. All work will be awarded under a single General Contract. The division of work listed below is for the Contractor's convenience and lists normal breakdown of the work.

D. Scope of Work:

1. Heating Work shall include, but is not necessarily limited to:
    a. Extend existing gas piping system including all meter requirements.
    b. Furnish and install condensate drain piping from cooling related equipment such as air handlers and cooling coil drain pans.
    c. Complete all applicable tests, certifications, forms, and matrices.
2. Air Conditioning and Ventilating Work shall include, but is not necessarily limited to:
    a. Furnish and install package rooftop air handling unit.
    b. Furnish and install complete supply air ductwork systems including all fittings, insulation, and outlets.
    c. Furnish and install complete return air ductwork systems including all fittings, insulation, and inlets.
    d. Furnish and install all terminal air boxes and reheat coils.
    e. Furnish and install all temperature control systems.
    f. Complete all applicable tests, certifications, forms, and matrices.
3. Temperature Control Work shall include, but is not necessarily limited to:
    a. Furnish and install a complete temperature control system as specified in Section 23 09 00.
    b. Temperature control system shall consist of a full Direct Digital Control (DDC) system including all accessories, sensors, and programming.
    c. Furnish automatic control valves and dampers for installation by others.
4. Fire Protection Work: Refer to Section 21 05 00 "Basic Fire Suppression Requirements".
5. Testing, Adjusting, and Balancing Work shall include, but is not necessarily limited to:
    a. Furnish complete testing, adjusting, and balancing as specified in Section 23 05 93, including, but not limited to, air systems, hydronic systems, plumbing systems, and verification of control systems.
    b. Complete all applicable tests, certifications, forms, and matrices

1.03 WORK SEQUENCE

A. All work that will produce excessive noise or interference with normal building operations, as determined by the Owner, shall be scheduled with the Owner. It may be necessary to schedule such work during unoccupied hours. The Owner reserves the right to determine when restricted construction hours will be required.

B. Itemize all work and list associated hours and pay scale for each item.

1.04 DIVISION OF WORK BETWEEN MECHANICAL, ELECTRICAL & CONTROL CONTRACTORS

A. Definitions:

1. "Mechanical Contractors" refers to the following:
    a. Heating Contractor.
    b. Air Conditioning and Ventilating Contractor.
    c. Temperature Control Contractor.
    d. Fire Protection Contractor.
    e. Testing, Adjusting, and Balancing Contractor.
2. Motor Control Wiring: The wiring associated with the remote operation of the magnetic coils of magnetic motor starters or relays, or the wiring that permits direct cycling of motors by means of devices in series with the motor power wiring. In the latter case the devices are usually single phase and are usually connected to the motor power wiring through a manual motor starter having "Manual-Off-Auto" provisions.
3. Control devices such as start-stop push buttons, thermostats, pressure switches, flow switches, relays, etc., generally represent the types of equipment associated with motor control wiring.
4. Motor control wiring is single phase and usually 120 volts. In some instances, the voltage will be the same as the motor power wiring. Generally, where the motor power wiring exceeds 120 volts, a control transformer is used to give a control voltage of 120 volts.
5. Temperature Control Wiring: The wiring associated with the operation of a motorized damper, solenoid valve or motorized valve, etc., either modulating or two-position, as opposed to wiring which directly powers or controls a motor used to drive equipment such as fans, pumps, etc.
    a. This wiring will be from a 120 volt source and may continue as 120 volt, or be reduced in voltage (24 volt) in which case a control transformer shall be furnished as part of the temperature control wiring.
6. Control Motor: An electric device used to operate dampers, valves, etc. It may be two-position or modulating. Conventional characteristics of such a motor are 24 volts, 60 cycles, 1 phase, although other voltages may be encountered.
7. Voltage is generally specified and scheduled as distribution voltage. Motor submittals may be based on utilization voltage if it corresponds to the correct distribution voltage.

Distribution/Nominal Voltage	Utilization Voltage
120	115
208	200
240	230
277	265
480	460

B. General:

1. The purpose of these Specifications is to outline the Electrical and Mechanical Contractor's responsibilities related to electrical work required for items such as temperature controls, mechanical equipment, fans, chillers, compressors and the like. The exact wiring requirements for much of the equipment cannot be determined until the systems have been selected and submittals reviewed. Therefore, the electrical drawings show only known wiring related to such items. All wiring not shown on the electrical drawings, but required for mechanical systems, is the responsibility of the Mechanical Contractor.
2. Where the drawings require the Electrical Contractor to wire between equipment furnished by the Mechanical Contractor, such wiring shall terminate at terminals provided in the equipment. The Mechanical Contractor shall provide complete electrical power/controls wiring diagrams and supervision to the Electrical Contractor and designate the terminal numbers for correct wiring.
3. All electrical work shall conform to the National Electrical Code. All provisions of the Electrical Specifications concerning wiring, protection, etc., apply to wiring provided by the Mechanical Contractor unless noted otherwise.
4. Control low (24V) and control line (120V) voltage wiring, conduit, and related switches and relays required for the automatic control and/or interlock of motors and equipment, including final connection, are to be furnished and installed under Divisions 21, 22 and 23. Materials and installation to conform to Class 1 or 2 requirements.
5. All Contractors shall establish utility elevations prior to fabrication and shall coordinate their material and equipment with other trades. When a conflict arises, priority is as follows:
    a. Light fixtures.
    b. Electrical busduct.
    c. Sheet metal.
    d. Electrical cable trays, including access space.
    e. Sprinkler piping and other piping.
    f. Electrical conduits and wireway.

C. Mechanical Contractor's Responsibility:

1. Assumes responsibility for internal wiring of all equipment provided by the Mechanical Contractor, for example:
    a. Gas Trains.
    b. Packaged Rooftop Units.
2. Assumes all responsibility for the Temperature Control wiring, when the Temperature Control Contractor is a Subcontractor to the Mechanical Contractor.
3. Shall verify all existing equipment sizes and capacities where units are to be modified, moved or replaced. Contractor shall notify Architect/Engineer of any discrepancies prior to ordering new units or replacement parts, including replacements of equipment motors.
4. Temperature Control Contractor's Responsibility:
    a. Wiring of all devices needed to make the Temperature Control System functional.
    b. Verifying any control wiring on the electrical drawings as being by the Electrical Contractor. All wiring required for the Control System, but not shown on the electrical drawings, is the responsibility of the Temperature Control Contractor.
    c. Coordinating equipment locations (such as relays, transformers, etc.) with the Electrical Contractor, where wiring of the equipment is by the Electrical Contractor.

5. This Contractor is responsible for coordination of utilities with all other Contractors. If any field coordination conflicts are found, the Contractor shall coordinate with other Contractors to determine a viable layout.

D. Electrical Contractor's Responsibility:

1. Provides all combination starters, manual starters and disconnect devices shown on the Electrical Drawings or indicated to be by the Electrical Contractor on the Mechanical Drawings or Specifications.
2. Installs and wires all remote control devices furnished by the Mechanical Contractor or Temperature Control Contractor when so noted on the Electrical Drawings.
3. Provides motor control and temperature control wiring, where so noted on the drawings.
4. Coordinate with the Mechanical Contractor for size of motors and/or other electrical devices involved with repair or replacement of existing equipment.
5. Furnishes, installs and connects all relays, etc., for automatic shutdown of certain fans upon actuation of the Fire Alarm System as indicated and specified in Division 28.
6. This Contractor is responsible for coordination of utilities with all other Contractors. If any field coordination conflicts are found, the Contractor shall coordinate with other Contractors to determine a viable layout.

1.05 COORDINATION DRAWINGS

A. Definitions:

1. Coordination Drawings: A compilation of the pertinent layout and system drawings that show the sizes and locations, including elevations, of system components and required access areas to ensure that no two objects will occupy the same space.
    a. Mechanical trades shall include, but are not limited to, mechanical equipment, ductwork, fire protection systems, plumbing piping, medical gas systems, hydronic piping, steam and steam condensate piping, and any item that may impact coordination with other disciplines.
    b. Electrical trades shall include, but are not limited to, electrical equipment, conduit 1.5" and larger, conduit racks, cable trays, pull boxes, transformers, raceway, busway, lighting, ceiling-mounted devices, and any item that may impact coordination with other disciplines.
    c. Technology trades shall include, but are not limited to, technology equipment, racks, conduit 1.5" and larger, conduit racks, cable trays, ladder rack, pull boxes, raceway, ceiling-mounted devices, and any item that may impact coordination with other disciplines.
    d. Maintenance clearances and code-required dedicated space shall be included.
2. Spaces with open/cloud ceiling architecture shall indicate the overhead utilities and locate equipment as required to maintain clearance above lights. The intent for the installation is to maintain a maximum allowable vertical clearance and an organized/clean manner in the horizontal. Notify Architect/Engineer of the maximum clearance which can be maintained. Failure to comply will result in modifications with no cost to Owner.
    a. In cloud ceiling architecture, when open cabling/wire and/or cable tray crosses gaps between ceiling clouds and/or walls, cabling is to transition to conduits to span the gaps in order to conceal cabling from below.
3. The contractors shall use the coordination process to identify the proper sequence of installation of all utilities above ceilings and in other congested areas, to ensure an orderly and coordinated end result, and to provide adequate access for service and maintenance.

B. Participation:

1. The contractors and subcontractors responsible for work defined above shall participate in the coordination drawing process.
2. One contractor shall be designated as the Coordinating Contractor for purposes of preparing a complete set of composite electronic CAD coordination drawings that include all applicable trades, and for coordinating the activities related to this process. The Coordinating Contractor for this project shall be the Mechanical Contractor.
    a. The Coordinating Contractor shall utilize personnel familiar with requirements of this project and skilled as draftspersons/CAD operators, competent to prepare the required coordination drawings.
3. Electronic CAD drawings shall be submitted to the Coordinating Contractor for addition of work by other trades. IMEG will provide electronic file copies of applicable drawings for contractor's use if the contractor signs and returns an "Electronic File Transfer" waiver provided by IMEG. IMEG will not consider blatant reproductions of original file copies an acceptable alternative for coordination drawings.

C. Drawing Requirements:

1. The file format and file naming convention shall be coordinated with and agreed to by all contractors participating in the coordination process and the Owner.
    a. Scale of drawings:
        1) General plans: 1/4 Inch = 1'-0" (minimum).
        2) Mechanical, electrical, communication rooms, and including the surrounding areas within 10 feet: 1/2 Inch = 1'-0" (minimum).
        3) Shafts and risers: 1/2 Inch = 1'-0" (minimum).
        4) Sections of shafts and mechanical and electrical equipment rooms: 1/4 Inch = 1'-0" (minimum).
        5) Sections of congested areas: 1/2 Inch = 1'-0" (minimum).
2. Ductwork layout drawings shall be the baseline system for other components. Ductwork layout drawings shall be modified to accommodate other components as the coordination process progresses.
3. There may be more drawings required for risers, top and bottom levels of mechanical rooms, and shafts.
4. The minimum quantity of drawings will be established at the first coordination meeting and sent to the Architect/Engineer for review. Additional drawings may be required if other areas of congestion are discovered during the coordination process.

D. General:

1. Coordination drawing files shall be made available to the Architect/Engineer and Owner's Representative. The Architect/Engineer will only review identified conflicts and give an opinion, but will not perform as a coordinator.
2. A plotted set of coordination drawings shall be available at the project site.
3. Coordination drawings are not shop drawings and shall not be submitted as such.
4. The contract drawings are schematic in nature and do not show every fitting and appurtenance for each utility. Each contractor is expected to have included in the bid sufficient fittings, material, and labor to allow for adjustments in routing of utilities made necessary by the coordination process and to provide a complete and functional system.
5. The contractors will not be allowed additional costs or time extensions due to participation in the coordination process.

6. The contractors will not be allowed additional costs or time extensions for additional fittings, reroutings or changes of duct size, that are essentially equivalent sizes to those shown on the drawings and determined necessary through the coordination process.
7. The Architect/Engineer reserves the right to determine space priority of equipment in the event of spatial conflicts or interference between equipment, piping, conduit, ducts, and equipment provided by the trades.
8. Changes to the contract documents that are necessary for systems installation and coordination shall be brought to the attention of the Architect/Engineer.
9. Access panels shall preferably occur only in gypsum board walls or plaster ceilings where indicated on the drawings.
    a. Access to mechanical, electrical, technology, and other items located above the ceiling shall be through accessible lay-in ceiling tile areas.
    b. Potential layout changes shall be made to avoid additional access panels.
    c. Additional access panels shall not be allowed without written approval from the Architect/Engineer at the coordination drawing stage.
    d. Providing additional access panels shall be considered after other alternatives are reviewed and discarded by the Architect/Engineer and the Owner's Representative.
    e. When additional access panels are required, they shall be provided without additional cost to the Owner.
10. Complete the coordination drawing process and obtain sign off of the drawings by all contractors prior to installing any of the components.
11. Conflicts that result after the coordination drawings are signed off shall be the responsibility of the contractor or subcontractor who did not properly identify their work requirements, or installed their work without proper coordination.
12. Updated coordination drawings that reflect as-built conditions may be used as record documents.

1.06 QUALITY ASSURANCE

A. Contractor's Responsibility Prior to Submitting Pricing Data:
1. The Contractor is responsible for constructing complete and operating systems. The Contractor acknowledges and understands that the Contract Documents are a two-dimensional representation of a three-dimensional object, subject to human interpretation. This representation may include imperfect data, interpreted codes, utility guidelines, three-dimensional conflicts, and required field coordination items. Such deficiencies can be corrected when identified prior to ordering material and starting installation. The Contractor agrees to carefully study and compare the individual Contract Documents and report at once in writing to the Design Team any deficiencies the Contractor may discover. The Contractor further agrees to require each subcontractor to likewise study the documents and report at once any deficiencies discovered.
2. The Contractor shall resolve all reported deficiencies with the Architect/Engineer prior to awarding any subcontracts, ordering material, or starting any work with the Contractor's own employees. Any work performed prior to receipt of instructions from the Design Team will be done at the Contractor's risk.

B. Qualifications:
1. Only products of reputable manufacturers are acceptable.
2. All Contractors and subcontractors shall employ only workers skilled in their trades.

C. Compliance with Codes, Laws, Ordinances:
1. Conform to all requirements of the City of Marshalltown, Iowa's Codes, Laws, Ordinances and other regulations having jurisdiction.
2. Conform to all State Codes.

3. If there is a discrepancy between the codes and regulations and these specifications, the Architect/Engineer shall determine the method or equipment used.
4. If the Contractor notes, at the time of bidding, that any parts of the drawings or specifications do not comply with the codes or regulations, Contractor shall inform the Architect/Engineer in writing, requesting a clarification. If there is insufficient time for this procedure, Contractor shall submit with the proposal a separate price to make the system comply with the codes and regulations.
5. All changes to the system made after letting of the contract, to comply with codes or requirements of Inspectors, shall be made by the Contractor without cost to the Owner.
6. If there is a discrepancy between manufacturer's recommendations and these specifications, the manufacturer's recommendations shall govern.
7. All rotating shafts and/or equipment shall be completely guarded from all contact. Partial guards and/or guards that do not meet all applicable OSHA standards are not acceptable. Contractor is responsible for providing this guarding if it is not provided with the equipment supplied.

D. Permits, Fees, Taxes, Inspections:
1. Procure all applicable permits and licenses.
2. Abide by all laws, regulations, ordinances, and other rules of the State or Political Subdivision where the work is done, or as required by any duly constituted public authority.
3. Pay all charges for permits or licenses.
4. Pay all fees and taxes imposed by the State, Municipal and/or other regulatory bodies.
5. Pay all charges arising out of required inspections by an authorized body.
6. Pay all charges arising out of required contract document reviews associated with the project and as initiated by the Owner or authorized agency/consultant.
7. Where applicable, all fixtures, equipment and materials shall be approved or listed by Underwriter's Laboratories, Inc.

E. Utility Company Requirements:
1. Secure from the appropriate private or public utility company all applicable requirements.
2. Comply with all utility company requirements.
3. Make application for and pay for service connections, such as gas.
4. Make application for and pay for all meters and metering systems required by the utility company.

F. Examination of Drawings:
1. The drawings for the mechanical work are completely diagrammatic, intended to convey the scope of the work and to indicate the general arrangements and locations of equipment, outlets, etc., and the approximate sizes of equipment.
2. Contractor shall determine the exact locations of equipment and rough-ins, and the exact routing of pipes and ducts to best fit the layout of the job.
3. Scaling of the drawings is not sufficient or accurate for determining these locations.
4. Where job conditions require reasonable changes in indicated arrangements and locations, such changes shall be made by the Contractor at no additional cost to the Owner.
5. Because of the scale of the drawings, certain basic items, such as fittings, boxes, valves, unions, etc., may not be shown, but where required by other sections of the specifications or required for proper installation of the work, such items shall be furnished and installed.
6. If an item is either on the drawings or in the specifications, it shall be included in this contract.

7. Determination of quantities of material and equipment required shall be made by the Contractor from the documents. Where discrepancies arise between drawings, schedules and/or specifications, the greater number shall govern.
8. Where used in mechanical documents, the word "furnish" shall mean supply for use, the word "install" shall mean connect complete and ready for operation, and the word "provide" shall mean to supply for use and connect complete and ready for operation.
    a. Any item listed as furnished shall also be installed, unless otherwise noted.
    b. Any item listed as installed shall also be furnished, unless otherwise noted.

G. Field Measurements:
1. Verify all pertinent dimensions at the job site before ordering any materials or fabricating any supports, pipes or ducts.

H. Electronic Media/Files:
1. Construction drawings for this project have been prepared utilizing Revit.
2. Contractors and Subcontractors may request electronic media files of the contract drawings and/or copies of the specifications. Specifications will be provided in PDF format.
3. Upon request for electronic media, the Contractor shall complete and return a signed "Electronic File Transmittal" form provided by IMEG.
4. If the information requested includes floor plans prepared by others, the Contractor will be responsible for obtaining approval from the appropriate Design Professional for use of that part of the document.
5. The electronic contract documents can be used for preparation of shop drawings and as-built drawings only. The information may not be used in whole or in part for any other project.
6. The drawings prepared by IMEG for bidding purposes may not be used directly for ductwork layout drawings or coordination drawings.
7. The use of these CAD documents by the Contractor does not relieve them from their responsibility for coordination of work with other trades and verification of space available for the installation.
8. The information is provided to expedite the project and assist the Contractor with no guarantee by IMEG as to the accuracy or correctness of the information provided. IMEG accepts no responsibility or liability for the Contractor's use of these documents.

1.07 WEB-BASED PROJECT SOFTWARE

A. The General Contractor shall provide a web-based project software site for the purpose of hosting and managing project communication and documentation until completion of the warranty phase.

B. The web-based project software shall include, at a minimum, the following features: construction schedule, submittals, RFIs, ASIs, construction change directives, change orders, drawing management, specification management, payment applications, contract modifications, meeting minutes, construction progress photos.

C. Provide web-based project software user licenses for use by the Architect/Engineer. Access will be provided from the start of the project through the completion of the warranty phase.

D. At project completion, provide digital archive of entire project in format that is readable by common desktop software applications in format acceptable to Architect/Engineer. Provide data in locked format to prevent further changes.

1.08 SUBMITTALS

A. Submittals shall be required for the following items, and for additional items where required elsewhere in the specifications or on the drawings.

1. Submittals List:

Referenced Specification Section	Submittal Item
23 05 29	Hangers and Supports
23 05 53	HVAC Identification
23 05 93	Testing, Adjusting, and Balancing
23 07 13	Duct Insulation
23 09 00	Controls
23 11 23	Natural Gas Piping Systems
23 31 00	Ductwork
23 31 00	Ductwork Layout Drawings
23 34 23	Prefabricated Curbs
23 36 00	Terminal Air Boxes
23 37 00	Grilles, Registers, and Diffusers
23 74 16.12	Packaged Rooftop Air Conditioning Units - 25T and Below

B. General Submittal Procedures: In addition to the provisions of Division 01, the following are required:

1. Transmittal: Each transmittal shall include the following:
    a. Date
    b. Project title and number
    c. Contractor's name and address
    d. Division of work (e.g., heating, ventilating, etc.)
    e. Description of items submitted and relevant specification number
    f. Notations of deviations from the contract documents
    g. Other pertinent data
2. Submittal Cover Sheet: Each submittal shall include a cover sheet containing:
    a. Date
    b. Project title and number
    c. Architect/Engineer
    d. Contractor and subcontractors' names and addresses
    e. Supplier and manufacturer's names and addresses
    f. Division of work (e.g., plumbing, heating, ventilating, etc.)
    g. Description of item submitted (using project nomenclature) and relevant specification number
    h. Notations of deviations from the contract documents
    i. Other pertinent data
    j. Provide space for Contractor's review stamps

3. Composition:
    a. Submittals shall be submitted using specification sections and the project nomenclature for each item.
    b. Individual submittal packages shall be prepared for items in each specification section. All items within a single specification section shall be packaged together where possible. An individual submittal may contain items from multiple specifications sections if the items are intimately linked (e.g., pumps and motors).
    c. All sets shall contain an index of the items enclosed with a general topic description on the cover.
4. Content: Submittals shall include all fabrication, erection, layout, and setting drawings; manufacturers' standard drawings; schedules; descriptive literature, catalogs and brochures; performance and test data; electrical power criteria (e.g., voltage, phase, amps, horsepower, kW, etc.) wiring and control diagrams; Short Circuit Current Rating (SCCR); dimensions; shipping and operating weights; shipping splits; service clearances; and all other drawings and descriptive data of materials of construction as may be required to show that the materials, equipment or systems and the location thereof conform to the requirements of the contract documents.
5. Contractor's Approval Stamp:
    a. The Contractor shall thoroughly review and approve all shop drawings before submitting them to the Architect/Engineer. The Contractor shall stamp, date and sign each submittal certifying it has been reviewed.
    b. Unstamped submittals will be rejected.
    c. The Contractor's review shall include, but not be limited to, verification of the following:
        1) Only approved manufacturers are used.
        2) Addenda items have been incorporated.
        3) Catalog numbers and options match those specified.
        4) Performance data matches that specified.
        5) Electrical characteristics and loads match those specified.
        6) Equipment connection locations, sizes, capacities, etc. have been coordinated with other affected trades.
        7) Dimensions and service clearances are suitable for the intended location.
        8) Equipment dimensions are coordinated with support steel, housekeeping pads, openings, etc.
        9) Constructability issues are resolved (e.g., weights and dimensions are suitable for getting the item into the building and into place, sinks fit into countertops, etc.).
    d. The Contractor shall review, stamp and approve all subcontractors' submittals as described above.
    e. The Contractor's approval stamp is required on all submittals. Approval will indicate the Contractor's review of all material and a complete understanding of exactly what is to be furnished. Contractor shall clearly mark all deviations from the contract documents on all submittals. If deviations are not marked by the Contractor, then the item shall be required to meet all drawing and specification requirements.

6. Submittal Identification and Markings:
    a. The Contractor shall clearly mark each item with the same nomenclature applied on the drawings or in the specifications.
    b. The Contractor shall clearly indicate the size, finish, material, etc.
    c. Where more than one model is shown on a manufacturer's sheet, the Contractor shall clearly indicate exactly which item and which data is intended.
    d. All marks and identifications on the submittals shall be unambiguous.
7. Schedule submittals to expedite the project. Coordinate submission of related items.
8. Identify variations from the contract documents and product or system limitations that may be detrimental to the successful performance of the completed work.
9. Reproduction of contract documents alone is not acceptable for submittals.
10. Incomplete submittals will be rejected without review. Partial submittals will only be reviewed with prior approval from the Architect/Engineer.
11. Submittals not required by the contract documents may be returned without review.
12. The Architect/Engineer's responsibility shall be to review one set of shop drawing submittals for each product. If the first submittal is incomplete or does not comply with the drawings and/or specifications, the Contractor shall be responsible to bear the cost for the Architect/Engineer to recheck and handle the additional shop drawing submittals.
13. Submittals shall be reviewed and approved by the Architect/Engineer before releasing any equipment for manufacture or shipment.
14. Contractor's responsibility for errors, omissions. or deviation from the contract documents in submittals is not relieved by the Architect/Engineer's approval.
15. Schedule shall allow for adequate time to perform orderly and proper review of submittals, including time for consultants and Owner if required, and resubmittals by Contractor if necessary, and to cause no delay in Work or in activities of Owner or other contractors.
    a. Allow at least two weeks for Architect's/Engineer's review and processing of each submittal.
16. Architect/Engineer reserves the right to withhold action on a submittal which, in the Architect/Engineer's opinion, requires coordination with other submittals until related submittals are received. The Architect/Engineer will notify the Contractor, in writing, when they exercise this right.

C. Electronic Submittal Procedures:
1. Distribution: Email submittals as attachments to all parties designated by the Architect/Engineer, unless a web-based submittal program is used.
2. Transmittals: Each submittal shall include an individual electronic letter of transmittal.
3. Format: Electronic submittals shall be in PDF format only. Scanned copies, in PDF format, of paper originals are acceptable. Submittals that are not legible will be rejected. Do not set any permission restrictions on files; protected, locked, or secured documents will be rejected.
4. File Names: Electronic submittal file names shall include the relevant specification section number followed by a description of the item submitted, as follows. Where possible, include the transmittal as the first page of the PDF instead of using multiple electronic files.
    a. Submittal file name: 23 XX XX.description.YYYYMMDD
    b. Transmittal file name: 23 XX XX.description.YYYYMMDD
5. File Size: Files shall be transmitted via a pre-approved method. Larger files may require an alternative transfer method, which shall also be pre-approved.

1.09 SCHEDULE OF VALUES

A. The requirements herein are in addition to the provisions of Division 01.

B. Format:

1. Use AIA Document Continuation Sheets G703 or another similar form approved by the Owner and Architect/Engineer.
2. Submit in Excel format.
3. Support values given with substantiating data.

C. Preparation:

1. Itemize work required by each specification section and list all providers. All work provided by subcontractors and major suppliers shall be listed on the Schedule of Values. List each subcontractor and supplier by company name.
2. Break down all costs into:
   a. Material: Delivered cost of product with taxes paid.
   b. Labor: Labor cost, excluding overhead and profit.

D. Update Schedule of Values when:

1. Indicated by Architect/Engineer.
2. Change of subcontractor or supplier occurs.
3. Change of product or equipment occurs.

1.10 CHANGE ORDERS

A. A detailed material and labor takeoff shall be prepared for each change order, along with labor rates and markup percentages. Change orders shall be broken down by sheet or associated individual line item indicated in the change associated narrative, whichever provides the most detailed breakdown. Change orders with inadequate breakdown will be rejected.

B. Itemized pricing with unit cost shall be provided from all distributors and associated subcontractors.

C. Change order work shall not proceed until authorized.

1.11 PRODUCT DELIVERY, STORAGE, HANDLING & MAINTENANCE

A. Exercise care in transporting and handling to avoid damage to materials. Store materials on the site to prevent damage. Keep materials clean, dry and free from harmful conditions. Immediately remove any materials that become wet or that are suspected of becoming contaminated with mold or other organisms.

B. Protect equipment, components, and openings with airtight covers and exercise care at every stage of storage, handling, and installation of equipment to prevent airborne dust and dirt from entering or fouling equipment to include, but not limited to:

1. Motor windings and ventilation openings.
2. Bearings.
3. Equipment Pipe and Accessories connections openings. (e.g. boiler connections, coil connections, etc.)
4. Equipment Duct and Accessories connections openings. (e.g. AHU/RTU duct connections; Terminal Air Boxes, etc.)
5. Starter and control cabinets.
6. Heat transfer coils.
7. Pump Seals.
8. Combustion burner and blower equipment (e.g. combustion air intake, combustion vent/flue, etc.)

C. Equipment and components that are visibly damaged or have been subject to environmental conditions prior to building turnover to Owner that could shorten the life of the component (for example, water damage, humidity, dust and debris, excessive hot or cold storage location, etc.) shall be repaired or replaced with new equipment or components without additional cost to the building owner.

D. Keep all bearings properly lubricated and all belts properly tensioned and aligned.

E. Coordinate the installation of heavy and large equipment with the General Contractor and/or Owner. If the Mechanical Contractor does not have prior documented experience in rigging and lifting similar equipment, they shall contract with a qualified lifting and rigging service that has similar documented experience. Follow all equipment lifting and support guidelines for handling and moving.

F. Contractor is responsible for moving equipment into the building and/or site. Contractor shall review site prior to bid for path locations and any required building modifications to allow movement of equipment. Contractor shall coordinate the work with other trades.

1.12 NETWORK / INTERNET CONNECTED EQUIPMENT

A. These specifications may require certain equipment or systems to have network, Internet and/or remote access capability ("Network Capability"). Any requirement for Network Capability shall be interpreted only as a functional capability and is not to be construed as authority to connect or enable any Network Capability. Network Capability may only be connected or enabled with the express written consent of the Owner.

1.13 WARRANTY

A. Provide one-year warranty, unless otherwise noted, to the Owner for all fixtures, equipment, materials, and workmanship.

B. The warranty period for all work in this Division of the specifications shall commence on the date of final acceptance, unless a whole or partial system or any separate piece of equipment or component is put into use for the benefit of any party other than the installing contractor with prior written authorization. In this instance, the warranty period shall commence on the date when such whole system, partial system or separate piece of equipment or component is placed in operation and accepted in writing by the Owner.

C. Warranty requirements shall extend to correction, without cost to the Owner, of all Work found to be defective or nonconforming to the contract documents. The Contractor shall bear the cost of correcting all damage resulting from defects or nonconformance with contract documents.

1.14 INSURANCE

A. Contractor shall maintain insurance coverage as set forth in Division 0 of these specifications.

1.15 MATERIAL SUBSTITUTION

A. Where several manufacturers' names are given, the scheduled manufacturer is the basis for job design and establishes the quality required.

B. Equivalent equipment manufactured by the other listed manufacturers may be used. Contractor shall ensure that all items submitted by these other manufacturers meet all requirements of the drawings and specifications and fits in the allocated space. When using other listed manufacturers, the Contractor shall assume responsibility for any and all modifications necessary (including, but not limited to structural supports, electrical connections, piping and ductwork connections and arrangement, plumbing connections and rough-in, and regulatory agency approval, etc.) and coordinate such with other contractors.

C. Any material, article or equipment of other unnamed manufacturers which will adequately perform the services and duties imposed by the design and is of a quality equal to or better than the material, article or equipment identified by the drawings and specifications may be used if approval is secured in writing from the Architect/Engineer not later than ten days prior to the bid opening.

D. This Contractor assumes all costs incurred as a result of using the offered material, article or equipment, on the Contractors part or on the part of other Contractors whose work is affected.

E. This Contractor may list voluntary add or deduct prices for alternate materials on the bid form. These items will not be used in determining the low bidder.

F. All material substitutions requested later than ten (10) days prior to bid opening must be listed as voluntary changes on the bid form.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 JOBSITE SAFETY

A. Neither the professional activities of the Architect/Engineer, nor the presence of the Architect/Engineer or the employees and subconsultants at a construction site, shall relieve the Contractor and other entity of their obligations, duties and responsibilities including, but not limited to, construction means, methods, sequence, techniques or procedures necessary for performing, superintending or coordinating all portions of the work of construction in accordance with the contract documents and any health or safety precautions required by any regulatory agencies. The Architect/Engineer and personnel have no authority to exercise any control over any construction contractor or other entity or their employees in connection with their work or any health or safety precautions. The Contractor is solely responsible for jobsite safety. The Architect/Engineer and the Architect/Engineer's consultants shall be indemnified and shall be made additional insureds under the Contractor's general liability insurance policy.

3.02 ARCHITECT/ENGINEER OBSERVATION OF WORK

A. The Contractor shall provide seven (7) calendar days' notice to the Architect/Engineer prior to:

1. Covering exterior walls, interior partitions and chases.
2. Installing hard or suspended ceilings and soffits.

B. The Architect/Engineer will have the opportunity to review the installation and provide a written report noting deficiencies requiring correction. The Contractor's schedule shall account for these reviews and show them as line items in the approved schedule.

C. Above-Ceiling Final Observation

1. All work above the ceilings must be complete prior to the Architect/Engineer's review. This includes, but is not limited to:
   a. Pipe insulation is installed and fully sealed.
   b. Pipe and duct wall penetrations are sealed.
   c. Pipe identification and valve tags are installed.
   d. Main, branch and flexible ducts are installed.
   e. Diffusers, registers and grilles are installed and connected to ductwork.
   f. Terminal air box reheat coil piping or wiring is complete.
   g. Terminal air box control wiring is complete and all control boxes are closed.
2. In order to prevent the Above-Ceiling Final Observation from occurring too early, the Contractor shall review the status of the work and certify, in writing, that the work is ready for the Above-Ceiling Final Observation.
3. It is understood that if the Architect/Engineer finds the ceilings have been installed prior to this review and prior to 7 days elapsing, the Architect/Engineer may not recommend further payments to the contractor until such time as full access has been provided.

3.03 PROJECT CLOSEOUT

A. The following paragraphs supplement the requirements of Division 01.

B. Final Jobsite Observation:

1. In order to prevent the Final Jobsite Observation from occurring too early, the Contractor is required to review the completion status of the project and certify that the job is ready for the final jobsite observation.
2. Attached to the end of this section is a typical list of items that represent the degree of job completeness expected prior to requesting a review.
3. Upon Contractor certification that the project is complete and ready for a final observation, the Contractor shall sign the attached certification and return it to the Architect/Engineer so that the final observation can be scheduled.
4. It is understood that if the Architect/Engineer finds the job not ready for the final observation and that additional trips and observations are required to bring the project to completion, the costs incurred by the Architect/Engineer's additional time and expenses will be deducted from the Contractor's contract retainage prior to final payment at the completion of the job.

C. Before final payment is authorized, this Contractor must submit the following:

1. Operation and maintenance manuals with copies of approved shop drawings.
2. Record documents including marked-up or reproducible drawings and specifications.
3. A report documenting the instructions given to the Owner's representatives complete with the number of hours spent in the instruction. The report shall bear the signature of an authorized agent of This Contractor and shall be signed by the Owner's representatives.
4. Start-up reports on all equipment requiring a factory installation inspection or start-up.
5. Provide spare parts, maintenance, and extra materials in quantities specified in individual specification sections. Deliver to project site; receipt by Architect/Engineer required prior to final payment approval.

3.04 OPERATION AND MAINTENANCE MANUALS

A. General:

1. Provide an electronic copy of the O&M manuals as described below for Architect/Engineer's review and approval. The electronic copy shall be corrected as required to address the Architect/Engineer's comments. Once corrected, electronic copies and paper copies shall be distributed as directed by the Architect/Engineer.
2. Approved O&M manuals shall be completed and in the Owner's possession prior to Owner's acceptance and at least 10 days prior to instruction of operating personnel.

B. Electronic Submittal Procedures:

1. Distribution: Email the O&M manual as attachments to all parties designated by the Architect/Engineer.
2. Transmittals: Each submittal shall include an individual electronic letter of transmittal.
3. Format: Electronic submittals shall be in PDF format only. Scanned copies, in PDF format, of paper originals are acceptable. Submittals that are not legible will be rejected. Do not set any permission restrictions on files; protected, locked, or secured documents will be rejected.
4. File Names: Electronic submittal file names shall include the relevant specification section number followed by a description of the item submitted, as follows. Where possible, include the transmittal as the first page of the PDF instead of using multiple electronic files.
    a. O&M file name: O&M.div23.contractor.YYYYMMDD
    b. Transmittal file name: O&Mtransmittal.div23.contractor.YYYYMMDD

5. File Size: Files shall be transmitted via a pre-approved method. Larger files may require an alternative transfer method, which shall also be pre-approved.
6. Provide the Owner with an approved copy of the O&M manual on compact discs (CD), digital video discs (DVD), or flash drives with a permanently affixed label, printed with the title "Operation and Maintenance Instructions", title of the project and subject matter of disc/flash drive when multiple disc/flash drives are required.
7. All text shall be searchable.
8. Bookmarks shall be used, dividing information first by specification section, then systems, major equipment and finally individual items. All bookmark titles shall include the nomenclature used in the construction documents and shall be an active link to the first page of the section being referenced.

C. Operation and Maintenance Instructions shall include:

1. Title Page: Include title page with project title, Architect, Engineer, Contractor, all subcontractors, and major equipment suppliers, with addresses, telephone numbers, website addresses, email addresses and point of contacts. Website URLs and email addresses shall be active links in the electronic submittal.
2. Table of Contents: Include a table of contents describing specification section, systems, major equipment, and individual items.
3. Copies of all final approved shop drawings and submittals. Include Architect's/Engineer's shop drawing review comments. Insert the individual shop drawing directly after the Operation and Maintenance information for the item(s) in the review form.
4. Refer to Section 23 09 00 for additional requirements for Temperature Control submittals.
5. Copy of final approved test and balance reports.
6. Copies of all factory inspections and/or equipment startup reports.
7. Copies of warranties.
8. Schematic electrical power/controls wiring diagrams of the equipment that have been updated for field conditions. Field wiring shall have label numbers to match drawings.
9. Dimensional drawings of equipment.
10. Capacities and utility consumption of equipment.
11. Detailed parts lists with lists of suppliers.
12. Operating procedures for each system.
13. Maintenance schedule and procedures. Include a chart listing maintenance requirements and frequency.
14. Repair procedures for major components.
15. List of lubricants in all equipment and recommended frequency of lubrication.
16. Instruction books, cards, and manuals furnished with the equipment.

3.05 INSTRUCTING THE OWNER'S REPRESENTATIVES

A. Adequately instruct the Owner's designated representatives in the maintenance, care, and operation of all systems installed under this contract.

B. Provide verbal and written instructions to the Owner's representatives by FACTORY PERSONNEL in the care, maintenance, and operation of the equipment and systems.

C. The Owner has the option to make a video recording of all instructions. Coordinate schedule of instructions to facilitate this recording.

D. The instructions shall include:
   1. Explanation of all system flow diagrams.
   2. Explanation of all air handling systems.
   3. Temperature control system operation including calibration, adjustment and proper operating conditions of all sensors.
   4. Maintenance of equipment.
   5. Start-up procedures for all major equipment.
   6. Explanation of seasonal system changes.
   7. Description of emergency system operation.

E. Notify the Architect/Engineer of the time and place for the verbal instructions to be given to the Owner's representative so a representative can attend if desired.

F. Minimum hours of instruction for each item shall be:
   1. Refrigeration System - 2 hours.
   2. Air Handling System(s) - 2 hours.
   3. Temperature Controls - As defined in Section 23 09 00.

G. The Contractor shall prepare a detailed, written training agenda and submit it to the Architect/Engineer a minimum of two weeks prior to the formal training for approval. The written agenda shall include specific training points within the items described above. For example: how to adjust setpoints, troubleshooting, proper start-up, proper shut-down, seasonal changes, draining, venting, changing filters, changing belts, etc. Failure to provide and follow an approved training agenda may result in additional training required at the expense of the Contractor.

H. Operating Instructions:
   1. Contractor is responsible for all instructions to the Owner's representatives for the mechanical and control systems.
   2. If the Contractor does not have staff that can adequately provide the required instructions the Contractor shall include in the bid an adequate amount to reimburse the Owner for the Architect/Engineer to perform these services.

3.06 SYSTEM STARTING AND ADJUSTING

A. The mechanical systems shall be complete and operating. System startup, testing, adjusting, and balancing to obtain satisfactory system performance is the responsibility of the Contractor. This includes calibration and adjustments of all controls, noise level adjustments and final comfort adjustments as required.

B. Complete all manufacturer-recommended startup procedures and checklists to verify proper motor rotation, electrical power voltage is within equipment limitations, equipment controls maintain pressures and temperatures within acceptable ranges, all filters and protective guards are in-place, acceptable access is provided for maintenance and servicing, and equipment operation does not pose a danger to personnel or property.

C. Operate all HVAC systems continuously for at least one week prior to occupancy to bring construction materials to suitable moisture levels. Areas with mechanical cooling shall be maintained below 60% RH.

D. Contractor shall adjust the mechanical systems and controls at season changes during the one year warranty period, as required, to provide satisfactory operation and to prove performance of all systems in all seasons.

E. All operating conditions and control sequences shall be tested during the start-up period. Test all interlocks, safety shutdowns, controls, and alarms.

F. The Contractor, subcontractors, and equipment suppliers shall have skilled technicians to ensure that all systems perform properly. If the Architect/Engineer is requested to visit the job site for trouble shooting, assisting in start-up, obtaining satisfactory equipment operation, resolving installation and/or workmanship problems, equipment substitution issues or unsatisfactory system performance, including call backs during the warranty period, through no fault of the design; the Contractor shall reimburse the Owner on a time and materials basis for services rendered at the Architect/Engineer's standard hourly rates in effect when the services are requested. The Contractor shall pay the Owner for services required that are product, installation or workmanship related. Payment is due within 30 days after services are rendered.

3.07 RECORD DOCUMENTS

A. The following paragraphs supplement Division 01 requirements.

B. Maintain at the job site a separate and complete set of mechanical drawings and specifications with all changes made to the systems clearly and permanently marked in complete detail.

C. Mark drawings to indicate revisions to piping and ductwork, size and location, both exterior and interior; including locations of coils, dampers, other control devices, filters, and other units requiring periodic maintenance or repair; actual equipment locations, dimensioned from column lines; actual inverts and locations of underground piping; concealed equipment, dimensioned from column lines; mains and branches of piping systems, with valves and control devices located and numbered, concealed unions located, and with items requiring maintenance located (e.g., traps, strainers, expansion compensators, tanks, etc.); Change Orders; concealed control system devices.

D. Refer to Section 23 09 00 for additional requirements for Temperature Control documents.

E. Mark specifications to show approved substitutions; Change Orders, and actual equipment and materials used.

F. Record changes daily and keep the marked drawings available for the Architect/Engineer's examination at any normal work time.

G. Upon completing the job, and before final payment is made, give the marked-up drawings to the Architect/Engineer.

3.08 PAINTING

A. This Contractor shall paint the following items:

1. Piping and ductwork that is exposed.

B. Paint all equipment that is marred or damaged prior to the Owner's acceptance. Paint and color shall match original equipment paint and shall be obtained from the equipment supplier if available.

C. Equipment in finished areas that will be painted to match the room decor will be painted by others. Should this Contractor install equipment in a finished area after the area has been painted, the Contractor shall have the equipment and all its supports, hangers, etc., painted to match the room decor.

D. Equipment cabinets, casings, covers, metal jackets, etc., in equipment rooms or concealed spaces, shall be furnished in standard or prime finish, free from scratches, abrasions, chips, etc.

E. Equipment in occupied spaces, or if standard to the unit, shall have a baked primer with baked enamel finish coat free from scratches, abrasions, chips, etc. If color option is specified or is standard to the unit, this Contractor shall, before ordering, verify with the Architect/Engineer the color preference and furnish this color.

F. Paint all equipment in unfinished areas such as boiler room, mechanical spaces, storage room, etc., furnished by this Contractor. Equipment furnished with a factory coat of paint and enamel need not be painted, provided the factory applied finish is not marred or spattered. If so, equipment shall be refinished with the same paint as was factory applied.

G. Paint all outdoor exposed natural gas piping the color selected by Owner or Architect/Engineer.

3.09 ADJUST AND CLEAN

A. Thoroughly clean all equipment and systems prior to the Owner's final acceptance of the project. Clean all foreign paint, grease, oil, dirt, labels, stickers, and other foreign material from all equipment.

B. Clean all drain pans and areas where moisture is present. Immediately report any mold, biological growth, or water damage.

C. Remove all rust, scale, dirt, oils, stickers and thoroughly clean exterior of all exposed bare metal ductwork, piping, hangers, and accessories.

D. Remove all rubbish, debris, etc., accumulated during construction from the premises.

3.10 SPECIAL REQUIREMENTS

A. Contractor shall coordinate the installation of all equipment, valves, dampers, operators, etc., with other trades to maintain clear access area for servicing.

B. All equipment shall be installed in such a way to maximize access to parts needing service or maintenance. Review the final field location, placement, and orientation of equipment with the Owner's designated representative prior to setting equipment.

C. Installation of equipment or devices without regard to coordination of access requirements and confirmation with the Owner's designated representative will result in removal and reinstallation of the equipment at the Contractor's expense.

3.11 IAQ MAINTENANCE FOR OCCUPIED FACILITIES UNDER CONSTRUCTION

A. Contractors shall make all reasonable efforts to prevent construction activities from affecting the air quality of the occupied areas of the building or outdoor areas near the building. These measures shall include, but not be limited to:

1. All contractors shall endeavor to minimize the amount of contaminants generated during construction. Methods to be employed shall include, but not be limited to:
    a. Minimizing the amount of dust generated.
    b. Reducing solvent fumes and VOC emissions.
    c. Maintain good housekeeping practices, including sweeping and periodic dust and debris removal. There should be no visible haze in the air.
    d. Protect stored on-site and installed absorptive materials from moisture damage.
2. Request that the Owner designate an IAQ representative.
3. Review and receive approval from the Owner's IAQ representative for all IAQ-related construction activities and negative pressure containment plans.
4. Inform the IAQ representative of all conditions that could adversely impact IAQ, including operations that will produce higher than normal dust production or odors.
5. Schedule activities that may cause IAQ conditions that are not acceptable to the Owner's IAQ representative during unoccupied periods.
6. Request copies of and follow all of the Owner's IAQ and infection control policies.
7. Unless no other access is possible, the entrance to construction site shall not be through the existing facility.
8. To minimize growth of infectious organisms, do not permit damp areas in or near the construction area to remain for over 24 hours.
9. In addition to the criteria above, provide measures as recommended in the SMACNA "IAQ Guidelines for Occupied Buildings Under Construction".
10. If permanently installed air handlers are used to serve both construction and occupied areas, all return grilles throughout construction areas shall be sealed to prevent air from construction areas being supplied to occupied areas.

11. If permanently installed air handlers are used during construction to serve only construction areas and do not supply air to adjacent occupied areas, MERV 8 filtration media shall be used to protect each return air grille or opening. The intent of this will be to prevent construction dust and debris from entering any return or supply air ductwork in the facility. All filtration media shall be replaced immediately prior to occupancy.

3.12 MAINTAINING CLEAN DUCTWORK THROUGHOUT CONSTRUCTION

A. Throughout the duration of construction, all ductwork shall be capped or sealed with sheet metal caps, polyethylene film, or other airtight protective to keep dust, dirt, and construction debris out of ducts. Similar means shall be used to seal air-side connections of HVAC equipment to include, but not limited to, air handling units, fans, terminal air boxes, fan coil units, cabinet heaters, blower coils, and the like.

B. When air terminal devices are installed, contractors shall seal all supply, return, and exhaust grilles with polyethylene film or other airtight protective to keep dust, dirt, and construction debris out of ducts.

C. Should HVAC equipment be started during construction, Contractor shall remove airtight protectives and shall install one-inch thick MERV 8 filter media over all return and exhaust grilles to prevent dust, dirt, and construction debris from entering ductwork. Filter media shall cover the entire grille face and shall be secured such that air cannot bypass filter media.

D. Should filter media become laden with dust and dirt, Contractor shall replace filter media with new media to prevent damage to air distribution system and equipment.

E. The following steps shall be taken during testing, adjusting, and balancing of each air system:

1. All construction activities in all spaces served by the air system shall stop.
2. All airtight protectives and temporary filter media shall be removed from all portions of the air system.
3. Testing, adjusting, and balancing work shall not commence until all construction activity is stopped and all airtight protectives and temporary filter media is removed.
4. Once testing, adjusting, and balancing work is complete for the air system, airtight protectives or temporary filter media shall be installed over all ductwork openings and air terminals on the air system prior to resuming construction activities in any spaces served by the air system.

F. The Owner shall agree the building is sufficiently clean prior to the removal of any filtration media and airtight protectives from air terminal devices.

READINESS CERTIFICATION PRIOR TO FINAL JOBSITE OBSERVATION

To prevent the final job observation from occurring too early, we require that the Contractor review the completion status of the project and, by copy of this document, certify that the job is indeed ready for the final job observation. The following is a typical list of items that represent the degree of job completeness expected prior to requesting a final job observation.

1. Penetrations fire sealed and labeled in accordance with specifications.
2. All air handling units operating and balanced.
3. All fans shall be operating and balanced.
4. All temperature control systems operating, programmed and calibrated.
5. Pipe insulation complete, pipes labeled and valves tagged.

Accepted by:

Prime Contractor _____

By _____ Date _____

Upon Contractor certification that the project is complete and ready for a final job observation, we require the Contractor to sign this agreement and return it to the Architect/Engineer so that the final observation can be scheduled.

It is understood that if the Architect/Engineer finds the job not ready for the final observation and that additional trips and observations are required to bring the project to completion, the costs incurred by the Architect/Engineers for additional time and expenses will be deducted from the Contractor's contract retainage prior to final payment at the completion of the job.

END OF SECTION 23 05 00

SECTION 23 05 13
MOTORS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Single Phase and Three Phase Electric Motors.

1.02 REFERENCES

A. AFBMA 9 - Load Ratings and Fatigue Life for Ball Bearings.

B. AFBMA 11 - Load Ratings and Fatigue Life for Roller Bearings.

C. ANSI/ASHRAE/IES Standard 90.1 (latest published edition) - Energy Standard for Buildings Except Low-Rise Residential Buildings.

D. ANSI/IEEE 112 - Test Procedure for Polyphase Induction Motors and Generators.

E. ANSI/NEMA MG 1 - Motors and Generators.

F. ANSI/NFPA 70 - National Electrical Code.

G. Energy Independence and Security Act of 2007.

1.03 DELIVERY, STORAGE, AND HANDLING

A. Protect motors stored on site from weather and moisture by maintaining factory covers and suitable weatherproof coverings. For extended outdoor storage, follow manufacturer's recommendations for equipment and motor.

1.04 OPERATION AND MAINTENANCE DATA

A. Submit operation and maintenance data including assembly drawings, bearing data including replacement sizes, and lubrication instructions.

1.05 QUALIFICATIONS

A. Manufacturer: Company specializing in the manufacture of commercial and industrial motors and accessories, with a minimum of three years documented manufacturing experience.

PART 2 - PRODUCTS

2.01 MOTORS - GENERAL CONSTRUCTION AND REQUIREMENTS

A. Refer to the drawings for required electrical characteristics. Voltage is generally specified and scheduled as distribution voltage. Motor submittals may be based on utilization voltage if it corresponds to the correct distribution voltage.

Distribution/Nominal Voltage	Utilization Voltage
120	115
208	200
240	230
277	265
480	460

B. Design motors for continuous operation in 40ºC environment, and for temperature rise in accordance with ANSI/NEMA MG 1 limits for insulation class, service factor, and motor enclosure type.

C. Visible Nameplate: Indicating horsepower, voltage, phase, hertz, RPM, full load amps, locked rotor amps, frame size, manufacturer's name and model number, service factor, power factor, insulation class.

D. Electrical Connection: Boxes, threaded for conduit. For fractional horsepower motors where connection is made directly, provide conduit connection in end frame.

E. Unless otherwise indicated, motors 3/4 HP and smaller shall be single phase, 60 hertz, open drip-proof or totally enclosed fan-cooled type.

F. Unless otherwise indicated, motors 1 HP and larger shall be three phase, 60 hertz, squirrel cage type, NEMA Design Code B (low current in-rush, normal starting torque), open drip-proof or totally enclosed fan-cooled type.

G. Each contractor shall set all motors furnished by him.

H. All motors shall have a minimum service factor of 1.15.

I. All motors shall have ball or roller bearings with a minimum L-10 fatigue life of 150,000 hours in direct-coupled applications and 50,000 hours for belted applications. Belted rating shall be based on radial loads and pulley sizes called out in NEMA MG1-14.43.

J. Bearings shall be sealed type for 10 HP and smaller motors. Bearings shall be regreasable type for larger motors.

K. Motor Driven Equipment:

1. No equipment shall be selected or operate above 90% of its motor nameplate rating. Motor size may not be increased to compensate for equipment with efficiency lower than that specified.

2. If a larger motor than specified is required on equipment, the contractor supplying the equipment is responsible for all additional costs due to larger starters, wiring, etc.

L. Provide all belted motors with a means of moving and securing the motor to tighten belts. Motors over 2 HP shall have screw type tension adjustment. Slide bases shall conform to NEMA standards.

M. Motors for fans 1/12 HP or greater and less than 1 HP shall be electronically-commutated motors or shall have a minimum motor efficiency of 70% when rated in accordance with DOE 10 CFR 431. These motors shall also have the means to adjust motor speed for either balancing or remote control. Belt-driven fans may use sheave adjustments for airflow balancing in lieu of varying motor speed.

2.02 ELECTRONICALLY COMMUTATED MOTORS (ECM)

A. Motor shall be variable speed, constant torque, brushless DC motor for direct-drive applications. Electronics shall be encapsulated for moisture protection and shall integral surge protection. Motor shall be pre-wired for specific voltage and phase.

B. Motor frame shall be NEMA 48; UL recognized components shall be provided for the motor construction.

C. All EC motors shall be a minimum of 85% efficient at all speeds.

D. Motors shall be permanently lubricated; utilize ball bearings to match with the connected driven equipment.

E. Provide motor with on-board motor control module. Motor speed shall be limited to provide electronic over current protection. Starter shall provide soft start to reduce inrush current and shall be controllable from 20% to 100% of full rated speed.

F. Operational mode shall be as scheduled and shall be one of the following:

1. Constant Flow

2. Constant Temperature

3. Constant Pressure

2.03 PREMIUM EFFICIENCY MOTORS (INCLUDING MOST 3-PHASE GENERAL PURPOSE MOTORS)

A. All motors, unless exempted by EPAct legislation that became federal law on December 19, 2010, shall comply with the efficiencies listed in that standard, which are reprinted below. These match the 2010 NEMA premium efficiency ratings. All ratings listed are nominal full load efficiencies, verified in accordance with IEEE Standard 112, Test Method B. Average expected (not guaranteed minimum) power factors shall also be at least the following:

	Full-Load Efficiencies %					
	Open Drip-Proof			Totally Enclosed Fan Cooled		
HP	1200 rpm	1800 rpm	3600 rpm	1200 rpm	1800 rpm	3600 rpm
1.0	82.5	85.5	77.0	82.5	85.5	77.0
1.5	86.5	86.5	84.0	87.5	86.5	84.0
2.0	87.5	86.5	85.5	88.5	86.5	85.5
3.0	88.5	89.5	85.5	89.5	89.5	86.5
5.0	89.5	89.5	86.5	89.5	89.5	88.5
7.5	90.2	91.0	88.5	91.0	91.7	89.5
10.0	91.7	91.7	89.5	91.0	91.7	90.2

B. Motor nameplate shall be noted with the above ratings.

2.04 MOTORS ON VARIABLE FREQUENCY DRIVES

A. All motors driven by VFDs shall be premium efficiency type.

B. Motors shall be designed for use with VFDs in variable torque applications with 1.15 service factor. Motors shall not be equipped with auxiliary blowers.

C. Motors driven by VFDs shall have Class F or H insulation and be designated by the motor manufacturer to be suitable for inverter duty service in accordance with NEMA MG 1 Section IV, "Performance Standards Applying to All Machines," Part 31 "Definite-Purpose Inverter-Fed Polyphase Motors.

D. All 480 volt motors driven by VFDs shall be provided with shaft grounding rings or grounding brushes as a means to protect bearings from adverse shaft currents.

1. Providing grounding rings internal to the motor housing is an acceptable solution, provided the motor is affixed with a label clearly indicating the presence of a grounding assembly. The grounding ring shall be listed for 40,000 hours of motor service and shall be accessible via the drive endplate.
2. Motor shafts 2" and larger require shaft grounding on the drive end and the non-drive end. This Contractor shall ensure (via field observation and measurement) that the shaft is effectively grounded upon startup.

PART 3 - EXECUTION

3.01 INSTALLATION

A. All rotating shafts and/or equipment shall be completely guarded from all contact. Partial guards and/or guards that do not meet all applicable OSHA standards are not acceptable. Contractor is responsible for providing this guarding if it is not provided with the equipment supplied.

B. For flexible coupled drive motors, mount coupling to the shafts in accordance with the coupling manufacturer's recommendations. Align shafts to manufacturer's requirements or within 0.002 inch per inch diameter of coupling hub.

C. For belt drive motors, mount sheaves on the appropriate shafts per manufacturer's instructions. Use a straight edge to check alignment of the sheaves. Reposition sheaves as necessary so the straight edge contacts both sheave faces squarely. After sheaves are aligned, loosen the adjustable motor base so the belt(s) can be added, and tighten the base so the belt tension is in accordance with the drive manufacturer's recommendations. Frequently check belt tension and adjust, if necessary, during the first day of operation and again after 80 hours of operation.

END OF SECTION 23 05 13

SECTION 23 05 48
HVAC VIBRATION ISOLATION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Vibration Isolation.

1.02 SUBMITTALS

A. Submit shop drawings per Section 23 05 00 and the Vibration Isolation Submittal Form at the end of this section.

B. Vibration isolation submittals may be included with equipment being isolated, but must comply with this section.

C. Base submittals shall include equipment served, construction, coatings, weights, and dimensions.

D. Isolator submittals shall include:

1. Equipment served
2. Type of Isolator
3. Load in Pounds per Isolator
4. Recommended Maximum Load for Isolator
5. Spring Constants of Isolators (for Spring Isolators)
6. Load vs. Deflection Curves (for Neoprene Isolators)
7. Specified Deflection
8. Deflection to Solid (at least 150% of calculated deflection)
9. Loaded (Operating) Deflection
10. Free Height
11. Loaded Height
12. Kx/Ky (horizontal to vertical stiffness ratio - for spring isolators)
13. Materials and Coatings
14. Spring Diameters

E. Make separate calculations for each isolator on equipment where the load is not equally distributed.

F. Flexible connector shop drawings shall include overall face-to-face length and all specified properties.

PART 2 - PRODUCTS

2.01 BASIC CONSTRUCTION AND REQUIREMENT

A. Vibration isolators shall have either known undeflected heights or other markings so deflection under load can be verified.

B. All isolators shall operate in the linear portion of their load versus deflection curve. The linear portion of the deflection curve of all spring isolators shall extend 50% beyond the calculated operating deflection (e.g., 3" for 2" calculated deflection). The point of 50% additional deflection shall not exceed the recommended load rating of the isolator.

C. The lateral to vertical stiffness ratio (Kx/Ky) of spring isolators shall be between 0.8 and 2.0.

D. All neoprene shall have UV resistance sufficient for 20 years of outdoor service.

E. All isolators shall be designed or treated for corrosion resistance. Steel bases shall be cleaned of welding slag and primed for interior use, and hot dip galvanized after fabrication for exterior use. All bolts and washers over 3/8" diameter located outdoors shall be hot dip galvanized per ASTM A153. All other bolts, nuts and washers shall be zinc electroplated. All ferrous portions of isolators, other than springs, for exterior use shall be hot dip galvanized after fabrication. Outdoor springs shall be neoprene dipped or hot dip galvanized. All damage to coatings shall be field repaired with two coats of zinc rich coating.

F. Equip all mountings used with structural steel bases with height-saving brackets. Bottoms of the brackets shall be 1-1/2" to 2-1/2" above the floor or housekeeping pad, unless shown otherwise on the drawings. Steel bases shall have at least four points of support.

G. Provide motor slide rails for belt-driven equipment per Section 23 05 13.

H. All isolators, shall have provision for leveling.

2.02 MOUNTINGS

A. Type M3:

1. Free standing, laterally stable spring isolators without housings and complete with 1/4" neoprene friction pads.
2. Units shall have bolt holes but need not be bolted down unless called for or needed to prevent movement. If bolted down, prevent short circuiting with neoprene bushings and washers between bolts and isolators. Bolt holes shall not be within the springs.
3. All mountings shall have leveling bolts.
4. Manufacturers:
    a. Mason "SLFH"
    b. Kinetics "FDS"
    c. VMC/Amber-Booth SW-3 4", 5", or 6"
    d. Vibration Eliminator Co. "OST"

2.03 HANGERS

A. Type H2:

1. Vibration hangers shall contain a steel spring in a neoprene cup with a grommet to prevent short circuiting the hanger rod.
2. The cup shall have a steel washer to distribute load on the neoprene and prevent its extrusion.
3. Spring diameters and hanger box lower hole sizes shall be large enough to permit the hanger rod to swing through a 30-degree arc before contacting the grommet and short circuiting the spring.
4. Provide end connections for hanging ductwork or piping.
5. Manufacturers:
    a. Mason "30"
    b. Kinetics "SRH"
    c. VMC/Amber-Booth "BSRA"
    d. Aeroflex "RSH"
    e. Vibration Eliminator Co. "SNC"
    f. Vibro Acoustics "SH/SHC"

B. Type H3:

1. Vibration hangers shall have a steel spring in a neoprene cup with a grommet to prevent short circuiting of the hanger rod.
2. The cup shall have a steel washer to distribute load on the neoprene and prevent its extrusion.
3. Spring diameters and hanger box lower hole sizes shall be large enough to permit the hanger rod to swing through a 30-degree arc before contacting the grommet and short circuiting the spring.
4. Provide end connections for hanging ductwork or piping.
5. Hangers shall be capable of holding the load at a fixed elevation during installation. They shall have a secondary adjustment to transfer the load to the spring and maintain the same position.
6. Deflection shall be indicated by a pointer and scale.
7. Manufacturer:
    a. Mason "30N"
    b. Kinetics "SFH"
    c. VMC/Amber-Booth "BSW"
    d. Vibration Eliminator Co. "SNRC"
    e. Vibro Acoustics "SHR"

PART 3 - EXECUTION

3.01 GENERAL INSTALLATION

A. Install all products per manufacturer's recommendations.

B. Provide vibration isolation as indicated on the drawings and as described herein.

C. Clean the surface below all mountings that are not bolted down and apply adhesive cement equal to Mason Type WG between mounting and floor. If movement occurs, bolt mountings down. Isolate bolts from baseplates with neoprene washers and bushings.

D. All static deflections listed in the drawings and specifications are the minimum acceptable actual deflection of the isolator under the weight of the installed equipment - not the maximum rated deflection of the isolator.

E. Support equipment to be mounted on structural steel frames with isolators under the frames or under brackets welded to the frames. Where frames are not needed, fasten isolators directly to the equipment.

F. Where a specific quantity of hangers is noted in these specifications, it shall mean hanger pairs for support points that require multiple hangers, such as rectangular ducts or pipes supported on a strut rack.

3.02 VIBRATION ISOLATION OF DUCTWORK

A. Provide flexible duct connections as described in Section 23 33 00 at all fan inlets and outlets and on the mechanical room side of all locations where ducts penetrate mechanical room walls.

3.03 VIBRATION ISOLATION SCHEDULE

A. Packaged HVAC Unit (less than 10 HP):

1. Base Type: NA
2. Isolator Type: M3 or H2 or H3
3. Static Deflection: 0.75"
4. Flexible Connections: Per Section 23 33 00

END OF SECTION 23 05 48

SECTION 23 05 53
HVAC IDENTIFICATION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Identification of products installed under Division 23.

1.02 REFERENCES

A. ANSI/ASME A13.1 - Scheme for the Identification of Piping Systems.

B. ASTM B-1, B-3, and B-8 for copper conductors.

C. ASTM D-1248 for Polyethylene Extrusion Materials, ICEA S-70-547 Weatherproof Resistant Polyethylene Conductors, ICEA S-61-402/NEMA WC5 Thermoplastic Insulated Wire & Cable, ICEA S-95-658/NEMA WC70 Non-Shielded 0 - 2kV Cables.

D. UL 1581 Standard for Electrical Wires, Cables, and Flexible Cords.

1.03 SUBMITTALS

A. Submit shop drawings under provisions of Section 23 05 00. Include list of items identified, wording, letter sizes, and color coding.

B. Include valve chart and schedule listing valve tag number, location, function, and valve manufacturer's name and model number.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. 3M

B. Bunting

C. Calpico

D. Craftmark

E. Emedco

F. Kolbi Industries

G. Seton

H. W. H. Brady

I. Marking Services.

2.02 MATERIALS

A. General:

1. Plastic Nameplates: Laminated three-layer phenolic with engraved black, 1/4" minimum letters on light contrasting background.
2. Aluminum Nameplates: Black enamel background with natural aluminum border and engraved letters furnished with two mounting holes and screws.
3. Plastic Tags: Minimum 1-1/2" square or round laminated three-layer phenolic with engraved, 1/4" minimum black letters on light contrasting background.
4. Brass Tags: Brass background with engraved black letters. Tag size minimum 1-1/2" square or 1-1/2" round.

B. Pipe Markers:

1. All pipe markers shall conform to ANSI A13.1. Marker lengths and letter sizes shall be at least the following:

OD of Pipe or Insulation	Marker Length	Size of Letters
Up to and including 1-1/4"	8"	1/2"
1-1/2" to 2"	8"	3/4"

Plastic tags may be used for outside diameters under 3/4"

2. Plastic Pipe Markers: Semi-rigid plastic, preformed to fit around pipe or pipe covering; indicating flow direction and fluid conveyed.
3. Vinyl Pipe Markers: Colored vinyl with permanent pressure sensitive adhesive backing.

C. Ductwork Markers:

1. Ductwork systems shall be provided with preprinted, color-coded lettering indicating service, equipment serving, and arrow showing flow direction. Refer to Part 3 for installation information.
2. Self-Adhesive Vinyl Duct Labels: Colored vinyl with permanent Contact-type permanent pressure-sensitive adhesive backing suitable for indoor and outdoor application compatible with label and with substrate. Stencil painted markers are not permitted on ductwork systems.
3. Maximum Temperature: Able to withstand temperatures up to 160F.
4. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 inch by 3/4 inch.
5. Minimum Letter Size: 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances up to 72 inches, and 1-1/2 inches high beyond 72 inches viewing distance. Include secondary lettering two-thirds to three-fourths the size of principal lettering.
6. Flow-Direction Arrows: Integral with duct system service lettering to accommodate both directions or as separate unit on each duct label to indicate flow direction.

D. Ceiling Markers:

1. Label Style:
   a. The intent is for the ceiling labels to be inconspicuous but easy to find and read while standing underneath. The labels shall be located on the grid T-bar nearest the ceiling tile that can be removed to provide the best access to the serviceable side of equipment or to valves. An arrow can be used to point to the tile needing removal.
   b. The label tape shall be approximately 1/2" wide with all capitalized letters approximately 3/16” tall.
   c. Ceiling grid labels shall be made with a label maker with durable adhesive labels having a clear background and black letters.
   d. Equipment labels shall be as designated on the drawings (e.g., FCU-606B, etc.).
2. "Dot" Style:
   a. The intent is for the ceiling labels to be inconspicuous but easy to find and read while standing underneath. The labels shall be located on the grid T-bar nearest the ceiling tile that can be removed to provide the best access to the serviceable side of equipment or to valves.

b. The marker shall be a self-adhesive color dot approximately 1/2" in diameter.

c. The equipment and accessories to be marked and dot color shall be coordinated with the Architect/Engineer and Owner.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install all products per manufacturer's recommendations.

B. Degrease and clean surfaces to receive adhesive for identification materials.

C. Pipe Markers:

1. Adhesive Backed Markers: Use Brady Style 1, 2, or 3 on pipes 3" diameter and larger. Use Brady Style 4, 6, or 8 on pipes under 3" diameter. Similar styles by other listed manufacturers are acceptable. Secure all markers at both ends with a wrap of pressure sensitive tape completely around the pipe.

2. Snap-on Markers: Use Seton "Setmark" on pipes up to 5-7/8" OD. Use Seton "Setmark" with nylon or Velcro ties for pipes 6" OD and over. Similar styles by other listed manufacturers are acceptable.

3. Apply markers and arrows in the following locations where clearly visible:

a. At each valve.

b. On both sides of walls that pipes penetrate.

c. At least every 20 feet along all pipes.

d. On each riser and each leg of each "T" joint.

e. At least once in every room and each story traversed.

D. Ductwork Markers:

1. Apply ductwork markers on ductwork systems in the following locations where clearly visible:

a. On both sides of walls that ducts penetrate.

b. At least every 20 feet along all ducts.

c. On each riser and each leg of each branch connection.

d. At least once in every room and each story traversed.

e. At all ductwork access doors.

f. At all fans and equipment serving ductwork system. Markers shall be clearly visible from the normal maintenance access path to the equipment. Coordinate placement location with Owner.

E. Equipment:

1. All equipment not easily identifiable such as controls, relays, gauges, etc.; and all equipment in an area remote from its function such as air handling units, exhaust fans, filters, reheat coils, dampers, etc.; shall have nameplates or plastic tags listing name, function, and drawing symbol. Do not label exposed equipment in public areas.

2. Fasten nameplates or plastic tags with stainless steel self-tapping screws or permanently bonding cement.

3. Mechanical equipment that is not covered by the U.S. National Appliance Energy Conservation Act (NAECA) of 1987 shall carry a permanent label installed by the manufacturer stating that the equipment complies with the requirements of ASHRAE 90.1.

3.02 SCHEDULE

A. Pipes to be marked shall be labeled with text as follows, regardless of which method or material is used:

1. CONDENSATE DRAIN: White lettering; green background
2. NATURAL GAS: Black lettering; yellow background

B. Ductwork and Fan Systems: All fans, filters housings, and access doors shall be labeled with text as follows:

1. SUPPLY AIR: White lettering; green background
2. RETURN AIR: White lettering; green background

C. Ceiling Markers:

1. TAB-##

END OF SECTION 23 05 53

SECTION 23 05 93
TESTING, ADJUSTING, AND BALANCING

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Testing, adjusting, and balancing of air systems.

B. Measurement of final operating condition of HVAC systems.

1.02 QUALITY ASSURANCE

A. Agency shall be a company specializing in the adjusting and balancing of systems specified in this section with minimum three years' experience. Perform work under supervision of AABC Certified Test and Balance Engineer, NEBB Certified Testing, Balancing and Adjusting Supervisor, or TABB Certified Supervisor.

B. Work shall be performed in accordance with the requirements of the references listed at the start of this section.

1.03 REFERENCES

A. AABC - National Standards for Total System Balance, Seventh Edition.

B. ADC - Test Code for Grilles, Registers, and Diffusers.

C. AMCA - Publication 203-90; Field Performance Measurement of Fan Systems.

D. ASHRAE - 2019 HVAC Applications Handbook; Chapter 39, Testing, Adjusting and Balancing.

E. ASHRAE/ANSI - Standard 111-2008; Practices for Measurement, Testing, Adjusting and Balancing of Building HVAC&R Systems.

F. NEBB - Procedural Standards for Testing, Adjusting and Balancing of Environmental Systems, Ninth Edition, 2019.

G. SMACNA - HVAC Systems; Testing, Adjusting and Balancing (latest edition).

H. TABB - International Standards for Environmental Systems Balance.

1.04 SUBMITTALS

A. Submit copies of report forms, balancing procedures, and the name and qualifications of testing and balancing agency for approval within 30 days after award of Contract.

B. Electronic Copies:

1. Submit a certified copy of test reports to the Architect/Engineer for approval. Electronic copies shall be in PDF format only. Scanned copies, in PDF format, of paper originals are acceptable. Copies that are not legible will be returned to the Contractor for resubmittal. Do not set any permission restrictions on files; protected, locked, or secured documents will be rejected.
2. Electronic file size shall be limited to a maximum of 10MB. Larger files shall be divided into files that are clearly labeled as "1 of 2", "2 of 2", etc.
3. All text shall be searchable.
4. Bookmarks shall be used. All bookmark titles shall be an active link to the index page and index tabs.

1.05 REPORT FORMS

A. Submit reports on AABC, SMACNA or NEBB forms. Use custom forms approved by the Architect/Engineer when needed to supply specified information.

B. Include in the final report a schematic drawing showing each system component, including balancing devices, for each system. Each drawing shall be included with the test reports required for that system. The schematic drawings shall identify all testing points and cross-reference these points to the report forms and procedures.

C. Refer to PART 4 for required reports.

1.06 WARRANTY/GUARANTEE

A. The TAB Contractor shall include an extended warranty of 90 days after owner receipt of a completed balancing report, during which time the Owner may request a recheck of terminals, or resetting of any outlet, coil, or device listed in the test report. This warranty shall provide a minimum of 24 manhours of onsite service time. If it is determined that the new test results are not within the design criteria, the balancer shall rebalance the system according to design criteria.

B. Warranty/Guarantee must meet one of the following programs: TABB International Quality Assurance Program, AABC National Project Performance Guarantee, NEBB's Conformance Certification.

1.07 SCHEDULING

A. Coordinate schedule with other trades. Provide a minimum of seven days' notice to all trades and the Architect/Engineer prior to performing each test.

B. Project will be constructed in phases. Provide balancing report after each phase is complete.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 GENERAL REQUIREMENTS

A. All procedures must conform to a published standard listed in the References article of this section. All equipment shall be adjusted in accordance with the manufacturer's recommendations. Any system not listed in this specification but installed under the contract documents shall be balanced using a procedure from a published standard listed in the References article.

B. The Balancing Contractor shall incorporate all pertinent documented construction changes (e.g. submittals/shop drawings, change orders, RFIs, ASIs, etc.) and include in the balancing report.

C. Recorded data shall represent actual measured or observed conditions.

D. Cut insulation, ducts, pipes, and equipment cabinets for installation of test probes to the minimum extent necessary to allow adequate performance of procedures. After testing and balancing is complete, close probe holes and patch insulation with new materials as specified. Restore vapor barrier and finish as specified.

E. Permanently mark setting of valves, dampers, and other adjustment devices allowing for settings to be restored. Set and lock memory stops.

F. Leave systems in proper working order, replacing belt guards, closing access doors, closing doors to electrical switch boxes, plugging test holes, and restoring thermostats to specified settings.

G. The Balancing Contractor shall measure terminal air box air flow, and the TCC shall adjust DDC readout to match. Refer to Section 23 09 00 for additional information.

H. Installations with systems consisting of multiple components shall be balanced with all system components operating.

3.02 EXAMINATION

A. Before beginning work, verify that systems are complete and operable. Ensure the following:

1. General Equipment Requirements:
    a. Equipment is safe to operate and in normal condition.
    b. Equipment with moving parts is properly lubricated.
    c. Temperature control systems are complete and operable.
    d. Proper thermal overload protection is in place for electrical equipment.

e. Direction of rotation of all fans is correct.

f. Access doors are closed and end caps are in place.

2. Duct System Requirements:

a. All filters are clean and in place. If required, install temporary media.

b. Duct systems are clean and free of debris.

c. Fire/smoke and manual volume dampers are in place, functional and open.

d. Air outlets are installed and connected.

e. Duct system leakage has been minimized.

B. Report any defects or deficiencies to Architect/Engineer.

C. Promptly report items that are abnormal or prevent proper balancing.

D. If, for design reasons, system cannot be properly balanced, report as soon as observed.

E. Beginning of work means acceptance of existing conditions.

3.03 PREPARATION

A. Provide instruments required for testing, adjusting, and balancing operations. Make instruments available to the Architect/Engineer for spot checks during testing.

B. Instruments shall be calibrated within six months of testing performed for project, or more recently if recommended by the instrument manufacturer.

3.04 INSTALLATION TOLERANCES

A. ± 10% of scheduled values:

1. Adjust air inlets and outlets to ± 10% of scheduled values.

B. ± 5% of scheduled values

1. Adjust outdoor air intakes to within + 5% of scheduled values.

3.05 ADJUSTING

A. After adjustment, take measurements to verify balance has not been disrupted or that disruption has been rectified.

B. Once balancing of systems is complete, at least one damper or valve must be 100% open.

C. After testing, adjusting and balancing are complete, operate each system and randomly check measurements to verify system is operating as reported in the report. Document any discrepancies.

D. Contractor responsible for each motor shall also be responsible for replacement sheaves. Coordinate with contractor.

3.06 SUBMISSION OF REPORTS

A. Fill in test results on appropriate forms.

PART 4 - SYSTEMS TO BE TESTED, ADJUSTED AND BALANCED

4.01 GENERAL REQUIREMENTS

A. Title Page:

1. Project name.

2. Project location.

3. Project Architect.

4. Project Engineer (IMEG Corp.).

5. Project General Contractor.

6. TAB Company name, address, phone number.

7. TAB Supervisor's name and certification number.
8. TAB Supervisor's signature and date.
9. Report date.

B. Report Index

C. General Information:
1. Test conditions.
2. Nomenclature used throughout report.
3. Notable system characteristics/discrepancies from design.
4. Test standards followed.
5. Any deficiencies noted.
6. Quality assurance statement.

D. Instrument List:
1. Instrument.
2. Manufacturer, model, and serial number.
3. Range.
4. Calibration date.

4.02 AIR SYSTEMS

A. Duct Leakage Test:
1. Air system and fan.
2. Leakage class.
3. Test pressure.
4. Construction pressure.
5. Flow rate (cfm): specified and actual.
6. Leakage (refer to Section 23 31 00 in the specifications): specified and actual.
7. Statement that fire dampers, reheat coils and other accessories were included in the test.
8. Pass or Fail.
9. Test performed by.
10. Test witnessed by.

B. Air Moving Equipment:
1. General Requirements:
a. Drawing symbol.
b. Location.
c. Manufacturer, model, arrangement, class, discharge.
d. Fan RPM.
e. Multiple RPM fan curve with operating point marked. (Obtain from equipment supplier).
f. Final frequency of motor at maximum flow rate (on fans driven by VFD).
2. Flow Rate:
a. Supply flow rate (cfm): specified and actual.
b. Return flow rate (cfm): specified and actual.

c. Outside flow rate (cfm): specified and actual.
d. Exhaust flow rate (cfm): specified and actual.

3. Pressure Drop and Pressure:
a. Filter pressure drop: specified and actual.
b. Total static pressure: specified and actual. (Indicate if across fan or external to unit).
c. Inlet pressure.
d. Discharge pressure.

C. Fan Data:
1. Drawing symbol.
2. Location.
3. Manufacturer and model.
4. Flow rate (cfm): specified and actual.
5. Total static pressure: specified and actual. (Indicate measurement locations).
6. Inlet pressure.
7. Discharge pressure.
8. Fan RPM.

D. Electric Motors:
1. Drawing symbol of equipment served.
2. Manufacturer, Model, Frame.
3. Nameplate: HP, phase, service factor, RPM, operating amps, efficiency.
4. Measured: Amps in each phase.

E. Air Terminal (Inlet or Outlet):
1. Drawing symbol.
2. Room number/location.
3. Terminal type and size.
4. Velocity: specified and actual.
5. Flow rate (cfm): specified and actual.
6. Percent of design flow rate.

F. Air Terminal Unit (Terminal Air Box) Data:
1. General Requirements:
a. Drawing symbol.
b. Location.
c. Manufacturer and model.
d. Size.
e. Type: constant, variable, single, dual duct.

2. Flow Rate:
a. Cooling maximum flow rate (cfm): specified and actual.
b. Heating maximum flow rate (cfm): specified and actual.
c. Minimum flow rate (cfm): specified and actual.

3. Temperature:
    a. Entering air temperature: specified and actual.
    b. Leaving air temperature (in minimum airflow/heating mode): specified and actual.
4. Pressure Drop and Pressure:
    a. Inlet static pressure during testing cooling maximum airflow rate (maximum and minimum).

G. Air Flow Measuring Station:
1. Drawing symbol.
2. Service.
3. Location.
4. Manufacturer and model.
5. Size.
6. Flow rate (cfm): specified and actual.
7. Pressure drop: specified and actual.

H. Positive Air Flow Test:
1. Occupied Supply Air (Max./Min.) Flow rate (cfm): specified and actual.
2. Occupied Return Air (Max./Min.) Flow rate (cfm): specified and actual.
3. Unoccupied Supply Air (Max./Min.) Flow rate (cfm): specified and actual.
4. Unoccupied Return Air (Min./Max.) Flow rate (cfm): specified and actual.

END OF SECTION 23 05 93

SECTION 23 07 13
DUCTWORK INSULATION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Ductwork Insulation.

B. Insulation Jackets.

1.02 QUALITY ASSURANCE

A. Applicator: Company specializing in ductwork insulation application with five years minimum experience. When requested, installer shall submit manufacturer's certificate indicating qualifications.

B. Materials:

1. Listed and labeled for flame spread/smoke developed rating of no more than 25/50 when tested per ASTM E84 or UL 723 as required by code.
2. Fungal Resistance: No growth when tested in accordance with ASTM G21 (antifungal test).
3. Rated velocity on coated air side for air erosion in accordance with UL 181 at 5,000 fpm minimum.
4. UL listed in Category HNKT.

C. Adhesives: UL listed, meeting NFPA 90A/90B requirements.

1.03 REFERENCES

A. ANSI/ASHRAE/IES Standard 90.1 (latest published edition) - Energy Standard for Buildings Except Low-Rise Residential Buildings.

B. ANSI/ASTM C553 - Mineral Fiber Blanket and Felt Insulation.

C. ANSI/ASTM C612 - Mineral Fiber Block and Board Thermal Insulation.

D. ASTM E84 - Surface Burning Characteristics of Building Materials.

E. ASTM E136 - Standard Test Method for the Behavior of Materials in a Vertical Tube Furnace at 750C.

F. ASTM E814 - Fire Tests of Through Penetrations Firestops.

G. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.

H. National Commercial & Industrial Insulation Standards - 1999 Edition - as published by Midwest Insulation Contractors Association and endorsed by National Insulation Contractors Association.

I. NFPA 255 - Surface Burning Characteristics of Building Materials.

J. UL - XHEZ - Through Penetration Firestop Systems.

K. UL 181 - Standard for Factory-Made Air Ducts and Air Connectors.

L. UL 263 - Full Scale External Fire Tests with Hose Stream.

M. UL 723 - Surface Burning Characteristics of Building Materials.

N. UL 1479 - Fire Tests of Through Penetrations Firestops.

1.04 SUBMITTALS

A. Submit shop drawings per Section 23 05 00. Include product description, list of materials and thickness for each service, and location.

B. Submit manufacturer's installation instructions.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Type A: Flexible Fiberglass - Outside Wrap; ANSI/ASTM C553; commercial grade; 0.28 / 0.26 (Out-Of-Package/Installed-Compressed 25%) maximum 'K' value at 75F; foil scrim Kraft facing, 1.0 lb./cu. ft. density. Submit both "Out of Package" and "Installed-Compressed 25%" K and R-values.

B. Type C: Flexible Fiberglass Liner; ANSI/ASTM C1071; 0.28 maximum 'K' value at 75F; 1.5 lb/cu ft minimum density; coated air side for 5000 fpm air velocity.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install materials in accordance with manufacturer's instructions, codes, and industry standards.

B. Install materials after ductwork has been tested.

C. Clean surfaces for adhesives.

D. Provide insulation with vapor barrier when air conveyed may be below ambient temperature.

E. Exterior Duct Wrap - Flexible, Type A:

1. Apply with edges tightly butted.
2. Cut slightly longer than perimeter of duct to insure full thickness at corners. Do not wrap excessively tight.
3. Seal joints with adhesive backed tape.
4. Apply so insulation conforms uniformly and firmly to duct.
5. Seal all penetrations of the vapor barrier by strap hangers or slip cable hangers with adhesive backed tape.
6. Provide high-density insulation inserts on rectangular ducts at trapeze duct hangers to prevent crushing of insulation. Provide high-density insulation inserts with clamp-on round ducts requiring two (2) rods or straps to prevent crushing of insulation. Maintain continuous vapor barrier through the hanger.
7. Tape all joints with Royal Tapes #RT 350 (216-439-7229), Venture Tape 1525CW, or Compac Type FSK. No substitutions will be accepted without written permission from the Architect/Engineer.
8. Press tape tightly to the duct covering with a squeegee for a tight continuous seal. Fish mouths and loose tape edges are not acceptable.
9. Staples may be used, but must be covered with tape.
10. Vapor barrier must be continuous.
11. Mechanically fasten on 12" centers at bottom of ducts over 24" wide and on all sides of vertical ducts.

F. Interior Insulation - Flexible Duct Liner, Type C:

1. Observation of Duct Lining:
    a. After installation of ductwork, Architect/Engineer may select random observation points in each system.
        1) At each observation point, cut and remove an 18" x 18" section of ductwork and liner for verification of installation.
        2) Random observation points based on one opening per 75 lineal ft. of total duct run.
    b. When any of the observation points shows non-compliance, additional points will be designated by the Architect/Engineer, and observation repeated.

c. If 20% of points observed do not comply, remove and replace all lined ducts and repeat tests. Where replacement is not required, correct all non-compliances.

d. At end of observation, repair all duct lining and observation holes by installing standard, insulated, hinged access doors per Section 23 33 00.

e. Paint or finish to match adjacent duct surfaces.

2. Impale on spindle anchors welded or mechanically fastened to the duct. Adhesive or glue fastened anchors are not acceptable. Maximum anchor spacing per SMACNA Duct Construction Standards or manufacturer's recommendations, whichever is more restrictive. Locate pins less than 3" from corners and at intervals not over 6" around the perimeter at leading and trailing edges. Locate pins within 3" of transverse joints and at intervals not over 16" long the length of the duct. Pins must be long enough to prevent compressing the insulation.

3. In addition to anchors, secure liner with UL listed adhesive covering over 90% of the duct surface.

4. Install per the latest edition of the SMACNA Manual.

5. Leading edges shall be covered as follows:

a. For duct velocities below 3000 fpm, coat leading edges with adhesive. Neatly butt liner without gaps at transverse joints. Cut liner flush with end of the duct section for tight joints with no exposed duct. If adhesive is shop installed, field apply additional adhesive to the end of each duct section for complete adhesion of the liner. Protect edges from dirt and debris.

b. For duct velocities above 3000 fpm, cover leading edges with metal nosing. Use nosing on upstream edges of each section of duct. If the duct can be installed in either direction, provide nosing on each end or clearly mark the duct to allow visual verification after installation. Verify duct velocities based on the scheduled air flow rates and determine where metal nosing is required.

c. Install metal nosing in the following locations (regardless of velocity):

1) The first three fittings downstream of all fans.

2) At all duct liner interruptions. This includes fire dampers, access doors, branch connections, and all other locations where the edge of the liner is exposed.

3) Trailing edges of transverse joints do not require metal nosings.

6. Overlap liner at longitudinal joints. Make longitudinal joints at corners of the duct unless the duct size does not allow this. Coat longitudinal joints with adhesive at velocities over 2500 fpm.

7. Seal all damaged duct liner with adhesive and glass cloth. Do not damage duct liner surface coatings.

8. Duct dimensions given are net inside dimensions. Increase sheet metal to allow for insulation thickness.

G. Continue insulation with vapor barrier through penetrations unless code prohibits.

H. Provide 2" wide, 24" high, 26 gauge, galvanized sheet metal corner protection angles for all externally insulated ductwork extending to a floor or curb.

3.02 SCHEDULE

A. Refer to Ductwork Application Schedule on Drawings for scheduling of insulation.

END OF SECTION 23 07 13

SECTION 23 09 00

CONTROLS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Complete System of Automatic Controls.

B. Control Devices, Components, Wiring and Material.

C. Instructions for Owners.

D. Remodeling.

1.02 QUALITY ASSURANCE

A. Manufacturer: Company specializing in manufacturing the products specified in this Section with minimum five years' experience.

B. TCC: Company specializing in the work of this section with minimum five years temperature control experience.

C. Technician: Minimum five years' experience installing commercial temperature control systems.

D. TCCs are limited to firms regularly employing a minimum of five full-time temperature control technicians within 100 miles of the job site.

1.03 REFERENCES

A. AMCA 500 - Test Methods for Louvers, Dampers and Shutters.

B. ANSI/ASHRAE/IES Standard 90.1 (latest published edition) - Energy Standard for Buildings Except Low-Rise Residential Buildings.

C. ANSI/ASHRAE Standard 135-2020: BACnet® - A Data Communication Protocol for Building Automation and Control Networks, including all amendments.

D. ANSI/NEMA 250 - Enclosures for Electrical Equipment (1000 volts Maximum).

E. ANSI/NFPA 70 - National Electrical Code.

F. ANSI/NFPA 90A - Installation of Air-Conditioning and Ventilation Systems.

G. ASHRAE 62.1 - Ventilation for Acceptable Indoor Air Quality.

H. ASHRAE 85 - Automatic Control Terminology for Heating, Ventilating, Air Conditioning.

I. ANSI/ASME B16.22 - Wrought Copper and Copper Alloy Solder Joint Pressure Fittings.

J. ANSI/ASTM B32 - Solder Metal.

K. ASTM B280 - Seamless Copper Tube for Air Conditioning & Refrigeration Field Service.

L. ASTM D1693 - Environmental Stress - Cracking of Ethylene Plastics.

1.04 SUBMITTALS

A. Equipment Coordination:

1. The Controls Contractor shall obtain approved equipment submittals from other contractors to determine equipment wiring connections, to choose appropriate controllers, and to provide programming.
2. Control valve selections shall be based on flow rates shown in approved shop drawings.
3. Coordinate the control interface of all equipment with the equipment manufacturers prior to submittal submission.

B. Shop Drawings:

1. Submit shop drawings per Section 23 05 00. In addition, submit an electronic copy of the shop drawings in Adobe Acrobat (.pdf) format to the Owner for review.
2. Cross-reference all control components and point names in a single table located at the beginning of the submittal with the identical nomenclature used in this section.

3. Submittal shall also include a trunk cable schematic diagram depicting operator workstations, control panel locations and a description of the communication type, media and protocol.
4. System Architecture: Provide riser diagrams of wiring between central control unit and all control panels. This shall include specific protocols associated with each level within the architecture. Identify all interface equipment between CPU and control panels. The architecture shall include interface requirements with other systems including, but not limited to, security systems, lighting control, fire alarm, elevator status, and power monitoring system.
5. Diagrams shall include:
    a. Wiring diagrams and layouts for each control panel showing all termination numbers.
    b. Schematic diagrams for all control, communication, and power wiring. Provide a schematic drawing of the central system installation. Label all cables and ports with computer manufacturers' model numbers and functions. Show all interface wiring to the control system.
    c. Identification of all control components connected to emergency power.
    d. Schematic diagrams for all field sensors and controllers.
    e. A schematic diagram of each controlled system. The schematics shall have all control points labeled. The schematics shall graphically show the location of all control elements in the system.
    f. A schematic wiring diagram for each controlled system. Each schematic shall have all elements labeled. Where a control element is the same as that shown on the control system schematic, label it with the same name. Label all terminals.
    g. A tabular instrumentation list for each controlled system. The table shall show element name, type of device, manufacturer, model number and product data sheet number.
    h. All installation details and any other details required to demonstrate that the system will function properly.
    i. All interface requirements with other systems.
6. The network infrastructure shall conform to the published guidelines for wire type, length, number of nodes per channel, termination, and other relevant wiring and infrastructure criteria as published. The number of nodes per channel shall be no more than 80% of the defined segment (logical or physical) limit in order to provide future system enhancement with minimal infrastructure modifications.
7. Sequences: Submit a complete description of the operation of the control system, including sequences of operation. The description shall include and reference a schematic diagram of the controlled system. The wording of the control sequences in the submittal shall match verbatim that included in the construction documents to ensure there are no sequence deviations from that intended by the Architect/Engineer. Clearly highlight any deviations from the specified sequences on the submittals.
8. Points List Schedule: Submit a complete points list of all points to be connected to the TCS and FMCS. The points list for each system controller shall include both inputs and outputs (I/O), point number, the controlled device associated with the I/O point, the location of the I/O device, and reference drawings. Where a control point is the same as that shown on the control system schematic, label it with the same name. Points list shall specifically identify alarms, trends, event history, archive, totalization, graphic points, and all mapped points from other systems (security systems, lighting control, fire alarm, etc.). Provide points lists, point naming convention, and factory support information for systems provided and integrated into the FMCS.

9. Damper Schedule: Schedule shall include a separate line for each damper and a column for each of the damper attributes:
    a. Damper Identification Tag.
    b. Location.
    c. Damper Type.
    d. Damper Size.
    e. Duct Size.
    f. Arrangement.
    g. Blade Type.
    h. Velocity.
    i. Pressure Drop.
    j. Fail Position.
    k. Actuator Identification Tag.
    l. Actuator Type.
    m. Mounting.
10. Product Data Sheets: Required for each component that includes: unique identification tag that is consistent throughout the submittal, manufacturer's description, technical data, performance curves, installation/maintenance instructions, and other relevant items. When manufacturer's literature applies to a product series rather than a specific product, the data specifically applicable to the project shall be highlighted or clearly indicated by other means. Each submitted piece of literature and drawings shall clearly reference the specification and/or drawing that the submittal is to cover. General catalogs shall not be accepted as cutsheets to fulfill submittal requirements.
11. Provide PICS files indicating the BACnet functionality and configuration of each device.
12. Provide documentation of submitted products that have been tested and listed by the BACnet Testing Laboratory (BTL), or provide a letter on the manufacturer's company letterhead indicating the anticipated date by which testing is expected to be completed. If, for any reason, BTL testing and listing has not been completed, a written commitment to upgrade installed controls to a version that meets BTL testing and listing requirements if problems are found during BTL testing is required.
13. Graphic Display: Include a sample graphic of each system and component identified in the points list with a flowchart (site map) indicating how the graphics are to be linked to each other for system navigation.
14. Control System Demonstration and Acceptance: Provide a description of the proposed process, along with all reports and checklists to be used.
15. Clearly identify work by others in the submittal.
16. Quantities of items submitted may be reviewed but are the responsibility of the Contractor to verify.

C. Operation and Maintenance Manual:
1. In addition to the requirements of Section 23 05 00, submit an electronic copy of the O&M manuals in PDF format.
2. Provide three complete sets of manuals.
3. Each O&M manual shall include:
    a. Table of contents with indexed tabs dividing information as outlined below.
    b. Definitions: List of all abbreviations and technical terms with definitions.

c. Warranty Contacts: Names, addresses, and 24-hour telephone numbers of contractors installing equipment and controls and service representatives of each.

d. Licenses, Guarantees, and Warranties: Provide documentation for all equipment and systems.

e. System Components: Alphabetical list of all system components, with the name, address, and telephone number of the vendor.

f. Operating Procedures: Include procedures for operating the control systems; logging on/off; enabling, assigning, and reporting alarms; generating reports; collection, displaying, and archiving of trended data; overriding computer control; event scheduling; backing up software and data files; and changing setpoints and other variables.

g. Programming: Description of the programming language (including syntax), statement descriptions (including algorithms and calculations used), point database creation and modification, program creation and modification, and use of the editor.

h. Engineering, Installation, and Maintenance: Explain how to design and install new points, panels, and other hardware; recommended preventive maintenance procedures for all system components, including a schedule of tasks (inspection, cleaning, calibration, etc.), time between tasks, and task descriptions; how to debug hardware problems; and how to repair or replace hardware. A list of recommended spare parts.

i. Software: One set of CDs containing an executable copy of all custom software created using the programming language, including the setpoints, tuning parameters, and object database.

j. Graphics: A glossary or icon symbol library detailing the function of each graphic icon and graphics creation and modification. One set of CDs containing files of all color graphic screens created for the project.

D. Training Manual:

1. Provide a course outline and training manuals for each training class.

E. Record Documents:

1. Submit record documentation per Section 23 05 00.

2. Provide a complete set of "as-built" drawings and application software on CDs. Provide drawings as AutoCAD™ or Visio™ compatible files. Provide two copies of the "as-built" drawings with revisions clearly indicated in addition to the documents on compact disk. All as-built drawings shall also be installed on the FMCS server in a dedicated directory. Provide all product data sheets in PDF format.

3. Submit two hard copies and one electronic copy of as-built versions of the shop drawings, including product data and record drawings with revisions clearly indicated. Provide floor plans showing actual locations of control components including panels, thermostats, sensors, and hardware.

4. Provide all completed testing and commissioning reports and checklists, along with all trend logs for each system identified in the points lists.

5. Submit printouts of all graphic screens with current values (temperatures, pressures, etc.) to the Architect/Engineer verifying completion and proper operation of all points.

1.05 DELIVERY, STORAGE AND HANDLING

A. Provide factory-shipping cartons for each piece of equipment and control device. Maintain cartons through shipping, storage, and handling as required to prevent equipment damage. Store equipment and materials inside and protected from weather.

B. Factory-Mounted Components: Where control devices specified in this section are indicated to be factory mounted on equipment, arrange for shipping control devices to unit manufacturer.

1.06 PRODUCTS FURNISHED BUT NOT INSTALLED UNDER THIS SECTION

A. Flow Switches.

B. Temperature Sensor Sockets.

C. Gauge Taps.

D. Automatic Dampers.

1.07 AGENCY AND CODE APPROVALS

A. All products shall have the following agency approvals. Provide verification that the approvals exist for all submitted products with the submittal package.

1. UL-916; Energy Management Systems.
2. C-UL listed to Canadian Standards Association C22.2 No. 205-M1983 "Signal Equipment."
3. EMC Directive 89/336/EEC (European CE Mark).
4. FCC, Part 15, Subpart J, Class A Computing Devices.

1.08 ACRONYMS

A. Acronyms used in this specification are as follows:

1. B-AAC BACnet Advanced Application Controller
2. B-ASC BACnet Application Specific Controller
3. BTL BACnet Testing Laboratories
4. DDC Direct Digital Controls
5. FMCS Facility Management and Control System
6. GUI Graphic User Interface
7. IBC Interoperable BACnet Controller
8. IDC Interoperable Digital Controller
9. LAN Local Area Network
10. NAC Network Area Controller
11. ODBC Open DataBase Connectivity
12. OOT Object Oriented Technology
13. OPC Open Connectivity via Open Standards
14. PICS Product Interoperability Compliance Statement
15. PMI Power Measurement Interface
16. POT Portable Operator's Terminal
17. TCC Temperature Control Contractor
18. TCS Temperature Control System
19. WAN Wide Area Network
20. WBI Web Browser Interface

1.09 SUMMARY

A. Extend Existing System:

1. Extend the existing FMCS for this project.
2. All controllers and accessories shall interface with the existing FMCS.

B. TCC shall furnish all labor, materials, equipment, and service necessary for a complete and operating Temperature Control System (TCS) and Facility Management and Control System (FMCS) using Direct Digital Controls as shown on the drawings and as described herein.

C. All labor, material, equipment and software not specifically referred to herein or on the plans that is required to meet the intent of this specification shall be provided without additional cost to the Owner.

D. The Owner shall be the named license holder of all software associated with any and all incremental work on the project.

1.10 SYSTEM DESCRIPTION

A. The entire TCS shall be comprised of a network of interoperable, standalone digital controllers communicating via the following protocol to an NAC. Temperature Control System products shall be as specified below.

B. The FMCS shall include Network Area Controller or Controllers (NAC) within each facility. The NAC shall connect to the Owner's local or wide area network, depending on configuration. Provide access to the system, either locally in each building or remotely from a central site or sites, through standard Web browsers, via the Internet, and/or via local area network.

C. Provide materials and labor necessary to connect factory supplied control components.

D. Provide central and remote hardware, software, and interconnecting wire and conduit.

E. The FMCS shall include automated alarming software capable of calling e-mail compatible cellular telephones and pagers. The e-mail alarm paging system shall be able to segregate users, time schedules, and equipment and be capable of being programmed by the Owner.

F. For the dedicated configuration tool provided, it is preferable that it be launched from within the applicable Network Management Software. If not, include any software required for controller configuration as a leave-behind tool with enough license capability to support the installation.

G. For each operator workstation provided, furnish one legal copy of all software tools, configuration tools, management tools, and utilities used during system commissioning and installation. All tools shall be readily available in the market. Contractor shall convey to the Owner all software tools and their legal licenses at project closeout.

H. Connection:

1. System shall be a complete hard-wired system. Wireless control systems/functions are NOT acceptable.

1.11 SOFTWARE LICENSE AGREEMENT

A. The Owner shall be the named license holder of all software associated with any and all incremental work on the project(s). In addition, the Owner shall receive ownership of all job-specific configuration documentation, data files, configuration tools, and application-level software developed for the project. This shall include, but is not limited to, all custom, job-specific software code and documentation for all configuration and programming that is generated for a given project and/or configured for use with the NAC, FMCS Server(s), and any related LAN/WAN/intranet and/or Internet connected routers and devices. Provide the Owner with all required IDs and passwords for access to any component or software program. The Owner shall determine which organizations shall be named in the SI organization ID ("orgid") of all software licenses. Owner shall be free to direct the modification of the "orgid" in any software license, regardless of supplier.

1.12 JOB CONDITIONS

A. Cooperation with Other Trades: Coordinate the Work of this section with that of other sections to ensure that the Work will be carried out in an orderly fashion. It is this Contractor's responsibility to check the Contract Documents for possible conflicts between the Work of this section and that of other crafts in equipment location; pipe, duct and conduit runs; electrical outlets and fixtures; air diffusers; and structural and architectural features.

1.13 WARRANTY

A. Refer to Section 23 05 00 for warranty requirements.

B. Within the warranty period, any defects in the work provided under this section due to faulty materials, methods of installation or workmanship shall be promptly (within 48 hours after receipt of notice) repaired or replaced by this Contractor at no expense to the Owner.

C. Warranty requirements include furnishing and installing all FMCS software upgrades issued by the manufacturer during the one-year warranty period.

D. Update all software and back-ups during warranty period and all user documentation on the Owner's archived software disks.

1.14 WARRANTY ACCESS

A. The Owner shall grant to this Contractor reasonable access to the TCS and FMCS during the warranty period.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. BACnet Protocol:

1. Distech by Woodman Controls

2.02 SYSTEM ARCHITECTURE

A. General:

1. The Temperature Control System (TCS) and Facility Management Control System (FMCS) shall consist of a network of interoperable, standalone digital controllers, a computer system, graphic user interface software, printers, network devices, valves, dampers, sensors, and other devices as specified herein.
2. The installed system shall provide secure password access to all features, functions and data contained in the overall FMCS.

B. Open, Interoperable, Integrated Architectures:

1. All components and controllers supplied under this Division shall be true "peer-to-peer" communicating devices. Components or controllers requiring "polling" by a host to pass data are not acceptable.
2. The supplied system must be able to access all data using standard Web browsers without requiring proprietary operator interface and configuration programs. An Open DataBase Connectivity (ODBC) or Structured Query Language (SQL) compliant server database is required for all system database parameter storage. This data shall reside on a supplier-installed server for all database access. Systems requiring proprietary database and user interface programs are not acceptable.
3. Hierarchical or "flat" topologies are required to have system response times as indicated below and to manage the flow and sharing of data without unduly burdening the customer's internal intranet network.
    a. Maximum acceptable response time from any alarm occurrence (at the point of origin) to the point of annunciation shall not exceed 5 seconds for network connected user interfaces.
    b. Maximum acceptable response time from any alarm occurrence (at the point of origin) to the point of annunciation shall not exceed 60 seconds for remote or dial-up connected user interfaces.

2.03 NETWORKS

A. The Local Area Network (LAN) shall be a 100 megabits/sec Ethernet network supporting BACnet, Java, XML, HTTP, and SOAP. Provide support for multiple Network Area Controllers (NACs), user workstations and, if specified, a local server.

B. Local area network minimum physical and media access requirements:

1. Ethernet; IEEE Standard 802.3.
2. Cable; 100 Base-T, UTP-8 wire, Category 6.
3. Minimum throughput; 100 Mbps.

C. Communication conduits shall not be installed closer than six feet from 110VAC or higher transformers or run parallel within six feet of electrical high-power cables. Route the cable as far from interference generating devices as possible. Where communication wire must cross 110VAC or higher wire, it must do so at right angles.

D. Ground all shields (earth ground) at one point only to eliminate ground loops. Provide all shield grounding at the controller location, with the shield at the sensor/device end of the applicable wire being left long and "safed" off in an appropriate manner.

E. There shall be no power wiring more than 30 VAC rms run in conduit with communications wiring. In cases where signal wiring is run in conduit with communication wiring, run all communication wiring and signal wiring using separate twisted pairs (24awg) in accordance with the manufacturer's wiring practices.

2.04 NETWORK AREA CONTROLLER (NAC)

A. The TCC shall supply one or more Network Area Controllers (NAC) as part of this contract. Number of NACs required depends on the type and quantity of devices provided under Divisions 23 and 26. The TCC shall determine the quantity and type of devices.

B. NAC shall be provided with open connectivity to any manufacturer's BACnet programmable or application specific direct digital controllers. These controllers shall be JACE 8000 Series models or the identical hardware private label equivalent. The programmable controllers and application specific controllers provided under this section shall be able to be programmed by their respective engineering software application tools through the Niagara-based supervisory controllers from the Ethernet level network. The engineering software application tools shall be able to be loaded on a personal computer with Ethernet connectivity, and no additional hardware shall be required to connect to and download any programmable or application specific controller.

C. Each NAC shall provide the interface between the LAN or WAN and the field control devices and shall provide global supervisory control functions over the control devices connected to the NAC. It shall execute application control programs to provide:

1. Calendar functions.
2. Scheduling.
3. Trending.
4. Alarm monitoring and routing.
5. Time synchronization.
6. Integration of all controller data.
7. Network Management functions.

D. The Network Area Controller shall provide the following hardware features as a minimum:

1. One Ethernet Port - 10/100 Mbps.
2. One RS-232 port.
3. One LonWorks Interface Port - 78KB FTT-10A (for LonWorks systems only).
4. One RS-485 port.

5. Battery backup.
6. Flash memory for long-term data backup. (If battery backup or flash memory is not supplied, the controller shall contain a hard disk with at least 1 gigabyte storage capacity.)
7. The NAC must be capable of operation over a temperature range of 32F to 122F.
8. The NAC must be capable of withstanding storage temperatures of between 0F and 158F.
9. The NAC must be capable of operation over a humidity range of 5% RH to 95% RH, non-condensing.

E. The NAC shall provide multiple user access to the system and support for ODBC or SQL. Databases resident on the NAC shall be ODBC-compliant or must provide an ODBC data access mechanism to read and write data stored within it.

F. The NAC shall support standard Web browser access via the Internet or an intranet and a minimum of five (5) simultaneous users.

G. Event Alarm Notification and Actions:
1. The NAC shall provide alarm recognition, storage; routing, management, and analysis to supplement distributed capabilities of equipment or application specific controllers.
2. The NAC shall be able to route any alarm condition to any defined user location whether connected to a LAN, remote via dial-up telephone connection, or WAN.
3. Alarm generation shall be selectable for annunciation type and acknowledgement requirements including, but not limited to:
   a. Alarm
   b. Normal
4. Provide for the creation of a minimum of eight alarm classes with different routing and acknowledgement properties, e.g. security, HVAC, Fire, etc.
5. Provide timed (scheduled) routing of alarms by class, object, group, or node.
6. Provide alarm generation from binary object "runtime" and/or event counts for equipment maintenance. The user shall be able to reset runtime or event count values with appropriate password control.

H. Treat control equipment and network failures as alarms and annunciated.

I. Annunciate alarms in any of the following manners as defined by the user:
1. Screen message text.
2. E-mail of the complete alarm message to multiple recipients. Provide the ability to route and e-mail alarms based on:
   a. Day of week.
   b. Time of day.
   c. Recipient.
3. Pagers via paging services that initiate a page on receipt of e-mail message.
4. Graphic with flashing alarm object(s).
5. Printed message, routed directly to a dedicated alarm printer.

J. The FMCS shall record the following for each alarm:
1. Time and date.
2. Location (building, floor, zone, office number, etc.).
3. Equipment tag.

4. Acknowledge time, date, and user who issued acknowledgement.
5. Number of occurrences since last acknowledgement.

K. Give defined users proper access to acknowledge any alarm.

L. A log of all alarms shall be maintained by the NAC and/or a server (if configured in the system) and shall be available for review by the user.

M. Provide a "query" feature to allow review of specific alarms by user-defined parameters.

N. A separate log for system alerts (controller failures, network failures, etc.) shall be provided and available for review by the user.

O. An error log to record invalid property changes or commands shall be provided and available for review by the user.

2.05 BACNET FMCS

A. The intent of this specification is to provide a peer-to-peer networked, standalone, distributed control system with the capability to integrate ANSI/ASHRAE Standard 135-2001 BACnet, MODBUS, OPC, and other open and proprietary communication protocols in one open, interoperable system.

B. The supplied computer software shall employ object-oriented technology (OOT) for representation of all data and control devices in the system. Adherence to industry standards including the latest ANSI/ASHRAE Standard 135 (BACnet) to assure interoperability between all system components is required. For each BACnet device, the device supplier must provide a PICS document showing the installed device's compliance level. Minimum compliance is Level 3; with the ability to support data read and write functionality. Physical connection of BACnet devices shall be via Ethernet (BACnet Ethernet/IP) and/or RS-485 (BACnet MSTP).

C. Interoperable BACnet Controller (IBC):

1. Controls shall be microprocessor based Interoperable BACnet Controllers (IBC) in accordance with the latest ANSI/ASHRAE Standard 135. Provide IBCs for unit ventilators, fan coils, heat pumps, terminal air boxes (TAB) and other applications. The application control program shall reside in the same enclosure as the input/output circuitry that translates the sensor signals. Provide a PICS document showing the installed system's compliance level to ANSI/ASHRAE Standard 135. Minimum compliance is Level 3.
2. The IBCs shall be listed by the BACnet Testing Laboratory (BTL) as follows:
   a. BACnet Building Controller(s) (B-BC).
   b. BACnet Advanced Application Controller(s) (B-AAC).
   c. BACnet Application Specific Controller(s) (B-ASC).
3. The IBCs shall communicate with the NAC.
4. Each IBC sensor shall connect directly to the IBC and shall not use any of the I/O points of the controller. The IBC Sensor shall provide a two-wire connection to the controller that is polarity and wire type insensitive. The IBC sensor shall provide a communications jack for connection to the BACnet communication trunk to which the IBC controller is connected. The IBC sensor, the connected controller, and all other devices on the BACnet bus shall be accessible by the POT.
5. All IBCs shall be fully application programmable and shall at all times maintain their BACnet Level 3 compliance. Controllers offering application selection only (non-programmable) require a 10% spare point capacity to be provided for all applications. Store all control sequences within or programmed into the IBC in non-volatile memory that does not depend on a battery to be retained.

6. The Contractor supplying the IBCs shall provide documentation for each device, with the following information at a minimum:
    a. BACnet Device; MAC address, name, type and instance number.
    b. BACnet Objects; name, type and instance number.
7. It is the responsibility of the Contractor to ensure that the proper BACnet objects are provided in each IBC.

D. Object Libraries:
1. A standard library of objects shall be included for development and setup of application logic, user interface displays, system services, and communication networks.
2. The objects in this library shall be capable of being copied and pasted into the user's database and shall be organized according to their function. In addition, the user shall have the capability to group objects created in their application and store the new instances of these objects in a user-defined library.
3. In addition to the standard libraries specified here, the system supplier shall maintain an on-line accessible (over the Internet) library, available to all registered users, to provide new or updated objects and applications as they are developed.
4. All control objects shall conform to the control objects specified in the BACnet specification.
5. The library shall include applications or objects for the following functions, at a minimum:
    a. Scheduling Object: The schedule must conform to the schedule object as defined in the BACnet specification, providing seven-day plus holiday and temporary scheduling features and a minimum of 10 on/off events per day. Data entry to be by graphic sliders to speed creation and selection of on-off events.
    b. Calendar Object: The calendar must conform to the calendar object as defined in the BACnet specification, providing 12-month calendar features to allow for holiday or special event data entry. Data entry to be by graphic "point-and-click" selection. This object must be "linkable" to any or all scheduling objects for effective event control.
    c. Override Object: Provide override object that is capable of restarting equipment turned off by other energy saving programs to maintain occupant comfort or for equipment protection.
    d. Start-Stop Time Optimization Object: Provide a start-stop time optimization object to start equipment just early enough to bring space conditions to desired conditions by the scheduled occupancy time. Also, allow equipment to be stopped before the scheduled unoccupied time just far enough ahead to take advantage of the building's "flywheel" effect for energy savings. Provide automatic tuning of all start-stop time object properties based on historical performance.
    e. Demand Limiting Object: Provide a demand-limiting object that is capable of controlling demand for any selected energy utility (electric, oil, gas, etc.). The object shall be able to monitor a demand value and predict (using a sliding window prediction algorithm) the demand at the end of the user-defined interval period (1 to 60 minutes). This object shall also accommodate a utility meter time sync pulse for fixed interval demand control. Upon a prediction that will exceed the user-defined demand limit (supply a minimum of 6 per day), the demand limiting object shall issue shed commands to either turn off user specified loads or modify equipment setpoints to provide the desired energy reduction. If the list of sheddable equipment is not enough to reduce the demand to below the setpoint, display a message on the user's screen (as an alarm) instructing the user to take manual actions to maintain the desired demand. The shed lists are specified by the user and shall be selectable to be shed in either a fixed or rotating order to control which equipment is shed the most often. Upon suitable reductions in demand, the demand-limiting

object shall restore the equipment that was shed in the reverse order in which it was shed. Each sheddable object shall have a minimum and maximum shed time property to provide both equipment protection and occupant comfort.

6. The library shall include control objects for the following functions:
   a. Analog Input Object: Minimum requirement is to comply with the BACnet standard for data sharing. Allow high, low and failure limits to be assigned for alarming. Also, provide a time delay filter property to prevent nuisance alarms caused by temporary excursions above or below the user defined alarm limits.
   b. Analog Output Object: Minimum requirement is to comply with the BACnet standard for data sharing.
   c. Binary Input Object: Minimum requirement is to comply with the BACnet standard for data sharing. The user must be able to specify either input condition for alarming. This object must also include the capability to record equipment runtime by counting the amount of time the hardware input is in an "on" condition. The user must be able to specify either input condition as the "on" condition.
   d. Binary Output Object: Minimum requirement is to comply with the BACnet standard for data sharing. Properties to enable minimum on and off times for equipment protection as well as start-to-start delay must be provided. Incorporate the BACnet Command Prioritization priority scheme to allow multiple control applications to execute commands on this object with the highest priority command being invoked. Provide 16 levels of priority as a minimum. Systems not employing the BACnet method of contention resolution are not acceptable.
   e. PID Control Loop Object: Minimum requirement is to comply with the BACnet standard for data sharing. Each individual property must be adjustable to allow proportional control only, or proportional with integral control, or proportional, integral and derivative control.
   f. Comparison Object: Allow a minimum of two analog objects to be compared to select either the highest, lowest, or equality between the two linked inputs. Also, allow limits to be applied to the output value for alarm generation.
   g. Math Object: Allow a minimum of four analog objects to be tested for the minimum or maximum, or the sum, difference, or average of linked objects. Also, allow limits to be applied to the output value for alarm generation.
   h. Custom Programming Objects: Provide a blank object template for the creation of new custom objects to meet specific user application requirements. This object must provide a simple BASIC-like programming language that is used to define object behavior. Provide a library of functions including, but not limited to, math and logic functions and string manipulation. Also, provide a comprehensive on-line debug tool to allow complete testing of the new object. Allow new objects to be stored in the library for reuse.
   i. Interlock Object: Provide an interlock object that provides a means of coordination of objects within a piece of equipment, such as an air handler or other similar types of equipment. An example is to link the return fan to the supply fan such that, when the supply fan is started, the return fan object is also started automatically without the user having to issue separate commands or to link each object to a schedule object. In addition, the control loops, damper objects, and alarm monitoring (such as return air, supply air, and mixed air temperature objects) will be inhibited from alarming during a user-defined period after startup to allow for stabilization. When the air handler is stopped, the interlocked return fan is also stopped, the outside air damper is closed, and other related objects within the air handler unit are inhibited from alarming, thereby eliminating nuisance alarms during the off period.

j. Temperature Override Object: Provide an object whose purpose is to override a binary output to an "on" state in the event a user-specified high or low limit value is exceeded. Link this object to the desired binary output object as well as to an analog object for temperature monitoring to cause the override to be enabled. This object will execute a start command at the Temperature Override level of start/stop command priority, unless changed by the user.

k. Composite Object: Provide a container object that allows a collection of objects representing an application to be encapsulated to protect the application from tampering or to more easily represent large applications. This object must have the ability to allow the user to select the appropriate parameters of the "contained" application that are represented on the graphic shell of this container.

7. The object library shall include objects to support the integration of devices connected to the Network Area Controller (NAC). Provide the following as part of the standard library included with the programming software:

   a. LonMark/LonWorks Devices: These devices shall include, but not be limited to, devices for control of HVAC, lighting, access, and metering. Provide LonMark manufacturer-specific objects to facilitate simple integration of these devices. Support all network variables defined in the LonMark profile. The device manufacturer shall provide information (type and function) regarding network variables not defined in the LonMark profile.

   b. For devices not conforming to the LonMark standard, provide a dynamic object that can be assigned to the device based on network variable information provided by the device manufacturer. Device manufacturer shall provide an XIF file, resource file, and documentation for the device to facilitate device integration.

   c. For BACnet devices, provide the following objects:

      1) Analog In.
      2) Analog Out.
      3) Analog Value.
      4) Binary.
      5) Binary In.
      6) Binary Out.
      7) Binary Value.
      8) Multi-State In.
      9) Multi-State Out.
      10) Multi-State Value.
      11) Schedule Export.
      12) Calendar Export.
      13) Trend Export.
      14) Device.

   d. For each BACnet object, provide the ability to assign the object a BACnet device and object instance number.

   e. For BACnet devices, provide the following support at a minimum:

      1) Segmentation.
      2) Segmented Request.
      3) Segmented Response.
      4) Application Services.
      5) Read Property.

6) Read Property Multiple.
7) Write Property.
8) Write Property Multiple.
9) Confirmed Event Notification.
10) Unconfirmed Event Notification.
11) Acknowledge Alarm.
12) Get Alarm Summary.
13) Who-has.
14) I-have.
15) Who-is.
16) I-am.
17) Subscribe COV.
18) Confirmed COV notification.
19) Unconfirmed COV notification.
20) Media Types.
21) Ethernet.
22) BACnet IP Annex J.
23) MSTP.
24) BACnet Broadcast Management Device (BBMD) function.
25) Routing.

2.06 TERMINAL AIR BOX (TAB) CONTROLLERS

A. FMCS Volume Controller: Electronic, furnished and installed by TCC. Boxes shall have pressure independent control to maintain constant air volume regardless of duct pressure changes up to 6 inches w.c. and shall be accurate down to 0.004" velocity pressure. Provide velocity and static sensor at box inlet for use by unit controller. Set boxes for maximum and minimum settings shown on the drawings. Refer to Section 23 36 00 for additional information.

B. The controller shall support various digital and analog inputs and outputs as needed for damper control, control valves, electric coils, airflow sensors, remote heating, occupancy sensors, etc. and shall be capable of independent occupancy scheduling.

C. Controller shall provide continuous zone temperature histories internal to device for up to 24 hours and perform its own limit and status monitoring and alarms to limit unnecessary communications.

D. Operator interface to any ASC point data or programs shall be through network resident programs or portable operator's terminal connected to the specific controller.

E. Store all system setpoints, proportional bands, control algorithms, and other programmable parameters such that a power failure of any duration does not necessitate reprogramming of the controller.

F. BACnet TAB controllers shall either be B-AAC devices or B-ASC devices as required to meet the performance and BTL listing.

2.07 DATA COLLECTION AND STORAGE (TRENDING REQUIREMENTS)

A. The NAC shall be able to collect data for any property of any object and store resident in the NAC that shall have, at a minimum, the following configurable properties:

1. Designating the log as interval or deviation.
2. For interval logs, configure the object for time of day, day of week and the sample collection interval.

3. For deviation logs, configure the object for the deviation of a variable to a fixed value. This value, when reached, will initiate logging of the object.
4. For all logs, provide the ability to set the maximum number of data stores for the log and to set whether the log will stop collecting when full or rollover the data on a first-in, first-out basis.
5. Each log shall have the ability to have its data cleared on a time-based event or by a user-defined event or action.

B. Store all log data in a relational database in the NAC that is accessible from a server (if the system is so configured) or a standard Web browser.

C. All log data, when accessed from a server, shall be capable of being manipulated using standard SQL statements.

D. All log data shall be available to the user in ALL the following data formats:
1. HTML.
2. XML.
3. Plain text.
4. Comma or tab separated values.

E. The NAC shall archive its log data either locally (to itself) or remotely to a server or other NAC on the network. Provide the ability to configure the following archiving properties:
1. Archive on time of day.
2. Archive on user-defined number of data stores in the log (buffer size).
3. Archive when log has reached its user-defined capacity of data stores.
4. Provide ability to clear logs once archived.

2.08 AUDIT LOG

A. Provide and maintain an audit log that tracks all activities performed on the NAC. Provide the ability to specify a buffer size for the log and the ability to archive log based on time or when the log has reached its user-defined buffer size. Provide the ability to archive the log locally (to the NAC), to another NAC on the network, or to a server. For each log entry, provide the following data:
1. Time and date.
2. User ID.
3. Change or activity: i.e., change setpoint, add or delete objects, commands, etc.

2.09 DATABASE BACKUP AND STORAGE

A. The NAC shall automatically backup its database on a user-defined time interval.

B. Store copies of the current database and, at the most, the recently saved database in the NAC. The age of the most recently saved database shall depend on the user-defined database save interval.

C. Store the NAC database in XML format to allow viewing and editing. Other formats are acceptable as long as XML format is supported.

2.10 SYSTEM PROGRAMMING

A. The GUI software shall perform system programming and graphic display engineering. Access to the GUI software shall be through password access as assigned by the system administrator.

B. Provide a library of control, application, and graphic objects to enable creation of all applications and user interface screens. Applications shall be created by selecting the control objects from the library, dragging or pasting them on the screen, and linking them together using a built-in graphic connection tool. Completed applications may be stored in the library for future use. GUI screens shall be created in the same fashion. Data for the user displays shall

be obtained by graphically linking the user display objects to the application objects to provide "real-time" data updates. Any real-time data value or object property may be connected to display its current value on a user display. Provide all software tools or processes to create applications and user interface displays.

C. Programming Methods:

1. Provide the capability to copy objects from the supplied libraries or from a user-defined library to the user's application. Link objects with a graphic linking scheme by dragging a link from one object to another. Object links will support one-to-one, many-to-one, or one-to-many relationships. Linked objects shall maintain their connections to other objects regardless of where they are positioned on the page and shall show link identification for links to objects on other pages for easy identification. Links will vary in color depending on the type of link; e.g., internal, external, hardware, etc.
2. Configuration of each object shall be done through the object's property sheet using fill-in-the-blank fields, list boxes, and selection buttons. Use of custom programming, scripting language, or a manufacturer-specific procedural language for configuration is not acceptable.
3. The software shall provide the ability to view the logic in a monitor mode. When on-line, the monitor mode shall provide the ability to view the logic in real time for easy diagnosis of the logic execution. When off-line (debug), the monitor mode shall allow the user to set values to inputs and monitor the logic for diagnosing execution before it is applied to the system.
4. All programming shall be done in real time. Systems requiring the uploading, editing, and downloading of database objects are not allowed.
5. The system shall support object duplication in a customer's database. An application, once configured, can be copied and pasted for easy reuse and duplication. All links, other than to the hardware, shall be maintained during duplication.

2.11 DDE DEVICE INTEGRATION

A. The NAC shall support the integration of device data via Dynamic Data Exchange (DDE) over the Ethernet network. The NAC shall act as a DDE client to another software application that functions as a DDE server.

B. Provide the required objects in the library included with the Graphic User Interface programming software to support the integration of these devices into the FMCS. Objects provided shall include, at a minimum:

1. DDE Generic AI Object.
2. DDE Generic AO Object.
3. DDE Generic BO Object.
4. DDE Generic BI Object.

2.12 MODBUS SYSTEM INTEGRATION

A. The NAC shall support integration of device data from Modbus RTU, ASCII, and TCP control system devices. Connect to the Modbus system via an RS-232, RS485, or Ethernet IP as required by the device.

B. Provide the required objects in the library included with the GUI programming software to support the integration of the Modbus system data into the FMCS. Objects provided shall include, at a minimum:

1. Read/Write Modbus AI Registers.
2. Read/Write Modbus AO Registers.
3. Read/Write Modbus BI Registers.
4. Read/Write Modbus BO Registers.

C. The NAC shall perform all scheduling, alarming, logging and global supervisory control functions of the Modbus system devices.

D. The FMCS supplier shall provide a Modbus system communications driver. The equipment system vendor that provided the equipment using Modbus shall provide documentation of the system's Modbus interface and shall provide factory support at no charge during system commissioning.

2.13 CONTROL DAMPERS

A. Rectangular Control Dampers - Standard Construction:

1. Shall be licensed to bear the AMCA Certified Rating Seal.
2. Test leakage and pressure drop per AMCA 500.
3. Frame: Hat-shaped channel, minimum 12 gauge extruded aluminum, and minimum 4" deep. Caulk or weld seams to prevent leakage.
4. Blades: Minimum 12 gauge extruded aluminum airfoil design, minimum 6" wide, and overlapping blades and blade seals (overlapping blade seals only is unacceptable).
5. Shaft: Non-cylindrical, solid stainless steel with opening in blade to match profile of shaft. Shaft shall be securely fastened to the blade and of sufficient length to mount direct-coupled actuator. Damper manufacturer shall provide drive pin extensions and outboard bearing support brackets as required.
6. Bearings: Acetal (Delrin/Celcon) inner bearing fixed to an aluminum shaft, rotating within a polycarbonate outer bearing inserted in the frame. Provide thrust bearings for vertical damper applications.
7. Blade Seals: Extruded silicone gaskets secured in an integral slot within the blade.
8. Side Seals: Stainless steel compression type or extruded silicone gasket secured in an integral slot within the frame.
9. Linkage: Shall be concealed in the frame, constructed of aluminum or corrosion-resistant zinc plated steel, and securely fastened to shaft. Blades linked for opposed operation, unless noted otherwise on the drawings. Blades shall close evenly. Use one direct-coupled actuator per damper section. Jack-shafting is not acceptable.
10. Size Limits: 48" maximum horizontal blade length, 24 square foot maximum area per damper. Total cross-sectional area of dampers in ducts shall be at least as large as the duct without the use of blank-off sections.
11. Maximum Leakage: Class 1A at 1" w.c. pressure differential for a 24" x 24" damper.
12. Maximum Pressure Drop for Opposed Blade Damper: 0.15" for 8000 CFM through a 24" x 24" damper (2000 fpm).
13. Maximum Pressure Drop for Parallel Blade Damper: 0.08" for 8000 CFM through a 24" x 24" damper (2000 fpm).

2.14 DAMPER ACTUATORS

A. Damper Actuators - Electronic:

1. Actuator shall be UL 873 or 60730 listed and provided with NEMA housing for applicable environment, electronic overload protection to prevent actuator damage due to over-rotation. Mount actuator by means of a V-bolt dual nut clamp with a V-shaped toothed cradle, directly couple and mount to the valve bonnet stem, or ISO-style direct-coupled mounting pad. Actuators shall be capable of being mechanically and electrically paralleled to increase torque, if required.
2. Actuators shall be warranted for a period of five (5) years from the date of production, with the first two (2) years unconditional.
3. Proportional actuator position shall be proportional to analog or pulse width modulating signal from electronic control system.

4. Fail-Safe Dampers: Where shown on the drawings or sequences, fail-safe mechanism shall operate the damper to the fail position following power interruption.
    a. Mechanical/Spring: Mechanical spring return mechanism to drive controlled drive to an end position (open or close) on loss of power.
    b. Electronic: Electronic fail-safe shall incorporate an active balancing circuit to maintain equal charging rates among the capacitors. The power fail position shall be proportionally adjustable between 0% and 100% in 10 percent increments with a 2 second operational delay.
5. Feedback: Where shown on drawings or sequences, provide analog feedback signal for positive position indication.
6. Damper End Switches: Where shown on the drawings or sequences, provide end switches to prove damper reaches open/closed position.

2.15 CONTROL INSTRUMENTATION

A. Temperature Measuring Devices:
1. Electric Thermostats:
    a. Single Temperature - Line Voltage Electric: Integral manual ON/OFF/AUTO selector switch, minimum dead band of 5F, concealed temperature adjustment, locking cover, rated for load, single or double pole as required.
    b. Single Temperature - Low Voltage Electric: Integral manual ON/OFF/AUTO selector switch, minimum dead band of 5F, anticipator circuits, concealed temperature adjustment, locking cover, 24 V control transformer (if not included with unit under control), single or double pole as required.
2. Low Limit Switch:
    a. Provide one foot of sensing element for each one square foot of coil area, maximum element length 25 feet, of the vapor tension type, so that any point along the entire length of measuring element can trigger the switch.
    b. Provide 3" minimum radius capillary support clips at each turn.
    c. Furnish each thermostat with one single pole, single throw normally-opened switch and one single pole, single throw normally-closed auxiliary switch.
    d. Setpoint range shall be 15F to 55F, with a permanent stop at 35F.
    e. Differential shall be fixed at approximately 5F and supplied with manual reset.

B. Temperature Sensors:
1. Room Temperature Sensor:
    a. Sensor Only: Two-piece construction, ventilated plastic enclosure, off-white color, thermistor sensing element or resistance temperature device (RTD), 45F to 90F operating range, ± 0.50F accuracy, no setpoint adjustment or override button.
    b. Sensor with Setpoint Adjustment: Two-piece construction, ventilated plastic enclosure, off-white color, thermistor sensing element or resistance temperature device (RTD), 45F to 90F operating range, ± 0.50F accuracy, with exposed single setpoint adjustment (no numeric temperature scale - provide with a single warmer/cooler or red/blue visual scale), no override button.
    c. Sensor with Override: Two-piece construction, ventilated plastic enclosure, off-white color, thermistor sensing element or resistance temperature device (RTD), 45F to 90F operating range, ± 0.50F accuracy, occupied/unoccupied override button with LED, no setpoint adjustment.

d. Sensor with Setpoint Adjustment and Override: Two-piece construction, ventilated plastic enclosure, off-white color, thermistor sensing element or resistance temperature device (RTD), 45F to 90F operating range, ± 0.50F accuracy, with exposed single setpoint adjustment (no numeric temperature scale - provide with a warmer/cooler or red/blue visual scale), occupied/unoccupied override button with LED.

2. Duct Temperature Sensor:

a. RTD type averaging sensor. 1000 ohm platinum RTD; accuracy: minimum ± 1.2F; range -40F to 220F.

b. Sensing element shall have a minimum of 1 foot of sensor length for each 2 square feet of duct or coil area. Sensor shall be arranged evenly across the duct or coil such that no point in the duct or coil is more than 1 foot away from the sensor.

c. Probe type thermistors are acceptable in VAV box duct applications downstream of reheat coils.

C. Pressure Measuring Devices

1. Differential Pressure Switches:

a. Standard Pressure Switches:

1) Diaphragm-activated gauge with 4-3/4" dial, cast aluminum case, sealed interior, designed to resist shock and vibration, and rated for 15 psig.

2) Accuracy shall be ± 3% of full scale maximum throughout entire range at 70F.

3) Provide mounting brackets, probes, and shutoff valves required for proper installation.

4) The range and service shall be as required for application or as noted on the drawings.

5) Provide two (2) photo-transistor-activated circuits and two (2) DPDT relays for both high or low limit alarms or controls.

6) Provide latching relays that require manual reset once activated.

7) Acceptable Manufacturer: Dwyer Photohelic Series 3000.

D. Miscellaneous Devices:

1. Control Relays:

a. Form "C" contacts rated for the application with "push-to-test" contact transfer feature and an integral LED to indicate coil energization.

b. Mount all relays and power supplies in a NEMA 1 enclosure beside the FMCS panel or controlled device and clearly label their functions.

2. Drain Pan Condensate Overflow Switch: Float with integral magnet overflow switch conforming to UL508. No standby power required.

2.16 CONDUIT AND BOXES

A. Conduit and Boxes: Refer to Electrical Section 26 05 33 for materials, sizing, and other requirements

B. Conduit and Box Identification (Color and Labeling):

1. Refer to the Temperature Control Contractor notes located on the mechanical cover sheet for raceway and box color requirements.

2. Refer to Electrical Section 26 05 53 for raceway and box labeling requirements.

2.17 WIRE AND CABLE

A. Wire and Cable: Refer to Electrical Section 26 05 13 for wire and cable materials.

1. Wire and Cable Color: Refer to the Temperature Control Contractor notes located on the mechanical cover sheet for wire and cable color requirements.

PART 3 - EXECUTION

3.01 GENERAL INSTALLATION

A. Verify that systems are ready to receive work. Beginning of installation means installer accepts existing conditions.

B. Install system and materials in accordance with manufacturer's instructions.

C. Drawings of the TCS and FMCS network are diagrammatic only. Any apparatus not shown but required to meet the intent of the project documents shall be furnished and installed without additional cost.

D. Install all operators, sensors, and control devices where accessible for service, adjustment, calibration, and repair. Do not install devices where blocked by piping or ductwork. Devices with manual reset or limit adjustments shall be installed below 6'-0" if practical to allow inspection without using a ladder.

E. Verify locations of wall-mounted devices (such as thermostats, temperature and humidity sensors, and other exposed sensors) with drawings and room details before installation. Coordinate mounting heights to be consistent with other wall-mounted devices. Maximum height above finished floor shall not exceed ADA mounting requirements.

F. Mount control panels adjacent to associated equipment on vibration-free walls or freestanding angle iron supports. One cabinet may accommodate more than one system in same equipment room.

G. After completion of installation, test and adjust control equipment.

H. Check calibration of instruments. Recalibrate or replace.

I. Furnish and install conduit, wire, and cable per the National Electric Code, unless noted otherwise in this section.

J. All hardware, software, equipment, accessories, wiring (power and sensor), piping, relays, sensors, power supplies, transformers, and instrumentation required for a complete and operational FMCS system, but not shown on the electrical drawings, are the responsibility of the TCC.

K. Remodeling:

1. All room devices as indicated on the drawings shall be removed by this Contractor. The Contractor shall also prepare the wall for finishes. Preparing the wall shall include patching old anchor holes (after the anchoring device has been removed) and sanding the wall to remove old paint outlines remaining from original devices. The wall shall be painted to match the existing wall prior to the installation of the new room device. If wall covering requires patching, the Contractor shall furnish new wall covering to match existing. If new wall covering is not available to match existing, the Contractor shall furnish a white acrylic or Plexiglas plate, 1/4" thick and sized to cover the void.

L. Labels For Control Devices:

1. Provide labels indicating service of all control devices in panels and other locations.
2. Labels may be made with permanent marking pen in the control panels if clearly legible.
3. Use engraved labels for items outside panel such as outside air thermostats.
4. Labels are not required for room thermostats, damper actuators and other items where their function is obvious.

M. VFDs:

1. This project includes several variable frequency drives to control the flow of fans based on a control variable.
2. Verify output signal required, 4-20 mA or 0-10V dc, with the EC.
3. If VFD has a bypass feature, auxiliary contacts on the drive may not be used for motor status. A separate relay must be used to indicate motor rotation in either hand or auto positions.
4. If a separate current transmitter or switch is indicated for status, install this device between the VFD and the motor. In this case, the drive status may be connected to the auxiliary contacts in the VFD.
5. Some devices, such as low limits and fire alarm shutdown relays, must be hardwired to the fan motor. Make connections such that fan will shut down whether in hand or auto position if the unit has a bypass feature.

3.02 GRAPHIC DISPLAY

A. Create a customized graphic for each piece of equipment indicated on the itemized points list.

B. Components shall be arranged on graphic as installed in the field.

C. Include each graphic point listed in the itemized points list using real time data.

D. Provide a graphic representation of the following:

1. Where there are multiple buildings, color code the campus map by the systems serving that building. The building graphic shall be linked to the graphic for that building's systems.
2. Where there are multiple floors, provide color codes/designations for the areas served by each AHU and TAB by floor.
3. Where multiple AHUs serve one floor, color code the areas served by each AHU. The area shall be linked to the graphic for that area's AHU.
4. Provide an overall floor plan of each floor of the building color coded by zone linked to the TAB for that zone. The zone shall be linked to the graphic for that zone's TAB graphic.
5. Show the location of each thermostat on the floor plan.

E. The FMCS shall include full graphic operator interface to display the following graphics as a minimum:

1. Home page to include a minimum of six critical points: Outside Air Temperature, Outside Air Relative Humidity, Enthalpy, KWH, KW, etc.
2. Graphic floor plans accurately depicting rooms, walls, hallways, and showing accurate locations of space sensors and major mechanical equipment.
3. Detailed graphics for each mechanical system including AHUs as a minimum.
4. Access corresponding system drawings, technical literature, and sequences of operations directly from each system graphic.

F. The FMCS shall include individual graphical buttons to access the following data stored in PDF format:

1. Project control as-built documentation including all TCS drawings, diagrams and sequences of operation.
2. TCS Bill of Material for each system, e.g. AHU, RTU, etc.
3. Technical literature specification data sheets for all components listed in the TCS Bill of Material.

3.03 CONDUIT AND BOXES INSTALLATION

A. Conduit and Box Installation: Refer to Electrical Section 26 05 33 for execution and installation.

B. Conduit and Box Identification (color and labeling) installation. Refer to Electrical Section 26 05 53 for raceway and box identification installation.

C. Outlet Box Schedule: Thermostat/temperature sensor:

1. Dry Interior Locations: Provide 4" square galvanized steel with raised cover to fit flush with finished wall line. When located in concrete block walls, provide square edge title cover of sufficient depth to extend out to face of block or masonry boxes.
2. Other Conditions: Refer to Electrical Section 26 05 33 for requirements.

3.04 WIRE AND CABLE INSTALLATION

A. Wire and Cable Installation: Refer to Electrical Section 26 05 13 for execution and installation.

B. Field Quality Control:

1. Inspect wire and cable for physical damage and proper connection.
2. Torque test conductor connections and terminations to manufacturer's recommended values.
3. Perform continuity test on all conductors.
4. Protection of cable from foreign materials:
    a. It is the Contractor's responsibility to provide adequate physical protection to prevent foreign material application or contact with any cable type. Foreign material is defined as any material that would negatively impact the validity of the manufacturer's performance warranty. This includes, but is not limited, to overspray of paint (accidental or otherwise), drywall compound, or any other surface chemical, liquid or compound that could come in contact with the cable, cable jacket or cable termination components.
    b. Overspray of paint on any cable, cable jacket or cable termination component will not be accepted. It shall be the Contractor's responsibility to replace any component containing overspray, in its entirety, at no additional cost to the project. Cleaning of the cables with harsh chemicals is not allowed. This requirement is regardless of the PASS/FAIL test results of the cable containing overspray. Should the manufacturer and warrantor of the structured cabling system desire to physically inspect the installed condition and certify the validity of the structured cabling system (via a signed and dated statement by an authorized representative of the structured cabling manufacturer), the Owner may, at their sole discretion, agree to accept said warranty in lieu of having the affected cables replaced. In the case of plenum cabling, in addition to the statement from the manufacturer, the Contractor shall also present to the Owner a letter from the local Authority Having Jurisdiction stating that they consider the plenum rating of the cable to be intact and acceptable.

C. Installation Schedule:

1. Conduit terminations to all devices installed in applications with rotating equipment, expansion/contraction or vibration shall be made with flexible metallic conduit, unless noted otherwise. Final terminations to exterior devices installed in damp or wet locations shall be made with liquidtight flexible metallic conduit. Terminations in hazardous areas, as defined in the National Electrical Code, shall be made with flexible conduit rated for the environment.

3.05 FMCS INSTALLATION

A. Coordinate voltage and ampacity of all contacts, relays, and terminal connections of equipment being monitored or controlled. Voltage and ampacity shall be compatible with equipment voltage and be rated for full ampacity of wiring or overcurrent protection of circuit controlled.

B. Naming Conventions: Coordinate all point naming conventions with Owner standards. In the absence of Owner standards, naming conventions shall use equipment designations shown on plans.

3.06 PREPARATION FOR BALANCING

A. Verify that all dampers are in the position indicated by the controller (e.g., open, closed or modulating).

B. Check the calibration and setpoints of all controllers.

C. Check the locations of all thermostats and humidistats for potential erratic operation from outside influences such as sunlight, drafts, or cold walls.

D. Check that all sequences operate as specified. Verify that no simultaneous heating and cooling occurs, unless specified. Observe that heating cannot begin at TAB reheat terminals until the unit is at the minimum CFM.

E. Verify the operation of all interlock systems.

3.07 TEST AND BALANCE COORDINATION

A. The Contractor shall furnish a single set of all tools necessary to interface to the control system for test and balance purposes.

B. The Contractor shall provide a minimum of four (4) hours training for the Balancing Contractor in the use of these tools.

C. In addition, the Contractor shall provide a qualified technician to assist in the test and balance process until the first 20 terminal units are balanced.

D. The tools used during the test and balance process shall be returned at the completion of the testing and balancing.

3.08 DEMONSTRATION AND ACCEPTANCE

A. At completion of installation, provide two days minimum instruction for operators. Demonstrate operation of all controls and systems. Describe the normal operation of all equipment.

3.09 TRAINING

A. On-Site:

1. After completion of commissioning, the manufacturer shall provide 8 hours of training on consecutive days for 4 Owner's representatives. The training course shall enable the Owner's representatives to perform Day-to-Day Operations as defined herein. A factory-trained instructor with experience in presenting the training material and the system programmer for this project shall perform the training.

B. Day-to-Day Operations - Training Description:

1. Proficiently operate the system.
2. Understand control system architecture and configuration.
3. Understand FMCS systems components.
4. Understand system operation, including FMCS system control and optimizing routines (algorithms).
5. Operate the workstation and peripherals.
6. Log-on and off the system.
7. Access graphics, point reports, and logs.
8. Adjust and change system setpoints, time schedules, and holiday schedules.

9. Recognize malfunctions of the system by observation of the printed copy and graphic visual signals.
10. Understand system drawings and Operation and Maintenance manual.
11. Understand the job layout and location of control components.
12. Access data from FMCS controllers and ASCs.
13. Operate portable operator's terminals.

C. Advanced Operations - Training Description:
1. Make and change graphics on the workstation.
2. Create, delete, and modify alarms, including annunciation and routing of these.
3. Create, delete and modify point trend logs and graph or print these both on and ad-hoc basis and at user-definable time intervals.
4. Create, delete, and modify reports.
5. Add, remove, and modify system's physical points.
6. Create, modify and delete programming.
7. Add panels when required.
8. Add operator interface stations.
9. Create, delete, and modify system displays, both graphic and others.
10. Perform FMCS system field checkout procedures.
11. Perform FMCS controller unit operation and maintenance procedures.
12. Perform workstation and peripheral operation and maintenance procedures.
13. Perform FMCS system diagnostic procedures.
14. Configure hardware including PC boards, switches, communication, and I/O points.
15. Maintain, calibrate, troubleshoot, diagnose, and repair hardware.
16. Adjust, calibrate, and replace system components.

D. System Management - Training Description:
1. Maintain software and prepare backups.
2. Interface with job-specific, third-party operator software.
3. Add new users and understand password security procedures.

E. Provide course outline and materials in accordance with the "SUBMITTALS" article in Part 1 of this section. The instructor(s) shall provide one copy of training material per student.

3.10 INSTALLATION OF SENSORS

A. Install sensors in accordance with the manufacturer's recommendations.

B. Mount sensors rigidly and adequately for the environment within which the sensor operates.

C. Room temperature sensors shall be installed on concealed junction boxes properly supported by the wall framing.

D. All wires attached to sensors shall be air sealed in their raceways or in the wall to stop air transmitted from other areas affecting sensor readings.

E. Averaging sensors and low limits shall be installed at the top of the assembly with the element on a slight downward incline away from the sensor making a serpentine pattern over the cross-sectional area with elements spaced not over 12" apart and within 6" of the top and bottom of the area.

F. Install outdoor air temperature sensors on exterior of north RTU screen wall, complete with sun shield at designated location approved by Architect/Engineer. TCC shall prime and paint the device enclosure. Color selection by Architect.

END OF SECTION 23 09 00

SECTION 23 11 23
NATURAL GAS PIPING

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Pipe and Pipe Fittings.

B. Valves.

C. Natural Gas Piping System.

1.02 QUALITY ASSURANCE

A. Valves: Manufacturer's name and pressure rating marked on valve body. Remanufactured valves are not acceptable.

1.03 REFERENCES

A. ASME - Boiler and Pressure Vessel Code - Section 9.

B. ASME B1.20.1 - Pipe Threads, General Purpose.

C. ASME B16.3 - Malleable Iron Threaded Fittings Class 150 and 300.

D. ASME B16.5 - Pipe Flanges and Flanged Fittings.

E. ASME B16.9 - Factory-Made Wrought Steel Butt Welding Fittings.

F. ASME B16.11 - Forged Steel Fittings, Socket-Welding and Threaded.

G. ASME B16.21 - Nonmetallic Flat Gaskets for Pipes Flanges.

H. ASME B16.39 - Malleable Iron Threaded Pipe Unions.

I. ASME B18.2.1 - Square and Hex Bolts and Screws, Inch Series.

J. ASME B18.2.2 - Square and Hex Nuts, Inch Series.

K. ASTM A53 - Pipe, Steel, Black and Hot-Dipped Zinc Coated, Welded and Seamless.

L. ASTM A105 - Standard Specification for Carbon Steel Forgings for Piping Applications.

M. ASTM A181 - Forgings, Carbon Steel for General Purpose Piping.

N. ASTM A197 - Standard Specification for Cupola Malleable Iron.

O. ASTM A234 - Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service.

P. ASTM A240 - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.

Q. ASTM A307 - Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.

R. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

S. NFPA 54 - National Fuel Gas Code.

1.04 SUBMITTALS

A. Submit product data under provisions of Section 23 05 00. Include data on pipe materials, fittings, valves, and accessories.

B. Test Reports: Provide results of piping system pressure test.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Store and protect piping to prevent entrance of foreign matter into pipe and to prevent exterior corrosion.

B. Deliver and store valves in shipping containers with labeling in place.

1.06 COORDINATION DRAWINGS

A. Reference Coordination Drawings article in Section 23 05 00 for the required natural gas piping system electronic CAD drawings to be provided to Coordinating Contractor for inclusion into composite coordination drawings.

PART 2 - PRODUCTS

2.01 NATURAL GAS (0 TO 125 PSI)

A. Design Pressure: 125 psi.
   1. Maximum Design Temperature: 350F

B. Piping - 2" and Under:
   1. Pipe: Standard weight black steel, threaded and coupled, ASTM A53.
   2. Joints: Screwed.
   3. Fittings: 150# steam - 300# CWP, black malleable iron, banded, ASTM A197, ANSI B16.3.
   4. Unions: 250# - 500# CWP, black malleable iron, ANSI B16.39, ground joint with brass seat.

C. Shutoff Valves/Throttling Valves:
   1. BA-13: 2" and under, threaded 600 psi CWP; UL listed for 250# LP, flammable liquid, heating oil, natural and manufactured gases, 150 psi steam, bronze body and chrome plated brass ball, Teflon seats and packing.
      a. Body: Bronze.
         1) Manufacturers:
            a) Apollo #80-100
            b) Nibco #T580-70-UL or #T585-70-UL
      b. Body: Dezincification resistant brass alloy. Jomar T-100NE.

D. Check Valves:
   1. CK-1: 2" and under, 125# steam at 406F, 200# CWP at 150F, screwed, bronze, horizontal swing.
      a. Manufacturers:
         1) Crane #37
         2) Hammond #IB904
         3) Stockham #B319-Y
         4) Walworth #3406
         5) Milwaukee #509
         6) Watts #B-5000
         7) Nibco Y-413B

PART 3 - EXECUTION

3.01 PREPARATION

A. Ream pipe and tube ends, remove burrs, bevel plain end ferrous pipe.

B. Remove scale and dirt on inside and outside before assembly.

C. Remove all scale, rust, dirt, oils, stickers and thoroughly clean exterior of all bare metal exposed piping, hangers, and accessories in preparation to be painted.

D. Connect to all equipment with flanges or unions.

3.02 TESTING PIPING

A. Low Pressure - Up to 1 psi:

1. Test piping with 20 psi air pressure. System must hold this pressure without adding air for two hours.

B. High Pressure - Above 1 psi:

1. Test piping with compressed air at twice the operating gas pressure, but at least 20 psi. System must hold this pressure without adding air for two hours.

C. A non-combustible odorant, such as oil of wintergreen, may be added to help locate leaks.

3.03 CLEANING PIPING

A. Assembly:

1. Prior to assembly of pipe and piping components, remove all loose dirt, scale, oil and other foreign matter on internal or external surfaces by means consistent with good piping practice subject to approval of the Architect/Engineer. Blow chips and burrs out of pipe before assembly. Wipe cutting oil from internal and external surfaces.
2. During fabrication and assembly, remove slag and weld spatter from both internal and external joints by peening, chipping and wire brushing to the degree consistent with good piping practices.
3. Notify the Architect/Engineer prior to starting any post erection cleaning operation in time to allow witnessing the operation. Properly dispose of cleaning and flushing fluids.
4. Prior to blowing or flushing erected piping systems, disconnect all instrumentation and equipment, open wide all valves, control valves, and balance valves, and verify all strainer screens are in place.

3.04 INSTALLATION

A. Route piping in orderly manner, straight, plumb, with consistent pitch, parallel to building structure, with minimum use of offsets and couplings. Provide only offsets required for needed headroom or clearance and needed flexibility in pipe system.

B. Install piping to conserve building space, and not interfere with other work.

C. Do not install piping or other equipment above electrical switchboards or panelboards. This includes a dedicated space extending 25 feet from the floor to the structural ceiling with width and depth equal to the equipment.

D. Group piping whenever practical at common elevations.

E. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.

F. Provide clearance for access to valves and fittings.

G. Provide access doors where valves are not exposed.

H. Prepare pipe, fittings, supports, and accessories for finish painting.

I. Install valves with stems upright or horizontal, not inverted.

J. Provide shutoff valves and flanges or unions at all connections to equipment, traps, and items that require servicing.

K. Provide shutoff valves to isolate part of systems and vertical risers.

L. Arrange piping and piping connections so equipment may be serviced or totally removed without disturbing piping beyond final connections and associated shutoff valves.

M. Reducers are generally not shown. Where pipe sizes are not shown, the larger size in either direction shall continue through the fitting nearest to the indication of a smaller pipe size.

3.05 BONDING AND GROUNDING

A. Each above ground portion of a gas piping system, other than corrugated stainless steel tubing systems, that is likely to become energized shall be electrically continuous and bonded to an effective ground-fault current path. Gas piping, other than corrugated stainless steel tubing, shall be considered to be bonded when it is connected to appliances that are connected to the appliance grounding conductor of the circuit supplying that appliance.

B. Gas piping shall not be used as a grounding conductor or electrode.

C. Where a lightning protection system is installed, the bonding of the gas piping shall be in accordance with NFPA 780, Standard for the Installation of Lightning Protection Systems.

3.06 PIPE ERECTION AND LAYING

A. Carefully inspect all pipe, fittings, valves, equipment and accessories prior to installation. Immediately reject and remove from the job any items which are unsuitable, cracked or otherwise defective.

B. All pipe, fittings, valves, equipment and accessories shall have factory-applied markings, stampings, or nameplates sufficient to determine their conformance with specified requirements.

C. Exercise care at every stage of storage, handling, laying and erecting to prevent entry of foreign matter into piping, fittings, valves, equipment and accessories. Do not erect or install any unclean item.

D. During construction, until system is fully operational, keep all openings in piping and equipment closed at all times except when actual work is being performed on that item. Closures shall be plugs, caps, blind flanges or other items designed for this purpose.

E. Change direction of pipes only with fittings or pipe bends. Change size only with fittings. Do not use miter fittings, face or flush bushings, or street elbows. All fittings shall be long radius type, unless otherwise shown on the drawings or specified. Construct welded elbows of angles not available as standard fittings by cutting and welding standard elbows to form smooth, long radius fittings.

F. Use full and double lengths of pipe wherever possible.

G. Cut all pipe to exact measurement and install without springing or forcing.

H. Do not create, even temporarily, undue loads, forces or strains on valves, equipment or building elements.

3.07 DRAINING AND VENTING

A. Unless otherwise indicated on the drawings, all horizontal pipes, including branches, shall pitch 1" in 40 feet to low points for complete drainage.

B. Use eccentric reducing fittings on horizontal runs when changing size for proper drainage and venting. Install gas pipes with bottom of pipe and eccentric reducers in a continuous line.

C. Provide drip legs at low points and at the base of all risers in gas pipes. Drip legs shall be full line size on pipes through 4" and at least 4", but not less than half line size over 4". Drip legs shall be 12" minimum length, capped with a reducer to a drain valve.

3.08 BRANCH CONNECTIONS

A. Make branch connections with standard tee or cross fittings of the type required for the service unless otherwise specified herein or detailed on the drawings.

B. At the option of the Contractor, branch connections from headers and mains may be cut into black steel pipe using forged weld-on fittings.

C. Use of forged weld-on fittings is also limited as follows:

1. Must have at least same pressure rating as the main.
2. Header or main must be 2-1/2" or over.
3. Branch line is at least two pipe sizes under header or main size.

D. Reducers are generally not shown. Where pipe sizes change at tee, the tee shall be the size of the largest pipe shown connecting to it.

E. All branch piping connections for natural gas shall take off on the top or on the side of the main.

3.09 JOINING OF PIPE

A. Threaded Joints:

1. Ream pipe ends and remove all burrs and chips.
2. Protect plated pipe and valve bodies from wrench marks when making up joints.
3. Apply gas-rated Teflon tape or thread compound to male threads.

3.10 PAINTING EXPOSED PIPE

A. Paint all outdoor exposed natural gas piping the color selected by Owner or Architect/Engineer.

END OF SECTION 23 11 23

SECTION 23 31 00
DUCTWORK

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Galvanized Ductwork
B. Ductwork Reinforcement
C. Ductwork Sealants
D. Rectangular Ductwork
E. Round Ductwork
F. Exposed Ductwork (Rectangular or Round)
G. Flexible Duct
H. Leakage Testing
I. Ductwork Penetrations
J. Painting

1.02 REFERENCES: Conform to all applicable requirements of the following publications:

A. ADC Flexible Duct Performance and Installation Standards, 3rd Edition 1996.
B. ANSI/ASHRAE/IES Standard 90.1 (latest published edition) - Energy Standard for Buildings Except Low-Rise Residential Buildings.
C. ASHRAE - Handbook 2020 Systems and Equipment; Chapter 19 - Duct Construction.
D. ASHRAE - Handbook 2021 Fundamentals; Chapter 21 - Duct Design.
E. ASTM A90 - Standard Test Method for Weight (Mass) of Coating on Iron and Steel Articles with Zinc or Zinc-Alloy Coatings.
F. ASTM A167- Stainless & Heat-Resisting Chromium-Nickel Steel Plate, Sheet, & Strip.
G. ASTM A653 - Steel Sheet, Zinc-Coated (Galvanized) or zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
H. ASTM A924 - Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.
I. ASTM B209 - Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
J. ASTM E90-02 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions.
K. ASTM E413-87 - Classification for Rating Sound Insulation.
L. AWS D9.1M/D9.1 - Sheet Metal Welding Code.
M. IECC - International Energy Conservation Code (latest published edition)
N. NFPA 90A - Installation of Air-Conditioning and Ventilating Systems.
O. NFPA 90B - Installation of Warm Air Heating and Air- Conditioning Systems.
P. NFPA 96 - Ventilation Control and Fire Protection of Commercial Cooking Equipment.
Q. SMACNA - Air Duct Leakage Test Manual.
R. SMACNA - HVAC Duct Construction Standards.
S. SMACNA - Round Industrial Duct Construction Standards - 1999 Edition.
T. UL 181 - Factory-Made Air Ducts and Air Connectors.
U. UL 181A - Closure Systems for Use with Rigid Air Ducts and Air Connectors
V. UL 181B - Closure Systems for Use with Flexible Air Ducts and Air Connectors.

1.03 SUBMITTALS

A. Submit shop drawings per Section 23 05 00.

B. Submit duct fabrication standards in compliance with SMACNA and these specifications. Clearly indicate metal gauges, reinforcement, and joining methods intended for use for each pressure classification. Furnish details of all common duct fittings and joint connections to be used on this project.

C. The Architect/Engineer may require field verification of sheet metal gauges and reinforcing to verify compliance with these specifications. At the request of the Architect/Engineer, the contractor shall remove a sample of the duct for verification. The contractor shall repair as needed.

D. Duct Layout Drawings: Submit detailed duct layout drawings at 1/4" minimum scale complete with the following information:

1. Actual duct routing, ductwork fittings, actual sheet metal dimensions including insulation liner and wrap, duct hanger and support types, ductwork accessories, etc. with lengths and weights noted.
2. Differentiate ducts that are wrapped. Include insulation thickness, type of insulation, and acoustical lagging.
3. Room names and numbers, ceiling types, and ceiling heights.
4. Indicate location of all beams, bar joists, etc. along with bottom of steel elevations for each member.
5. Verify clearances and interferences with other trades prior to preparing drawings. IMEG will provide electronic copies of ventilation drawings for contractor's use if the contractor signs and returns the "Electronic File Transfer" waiver. IMEG will not consider blatant reproductions of original file copies an acceptable alternative for this submittal. Refer also to Section 23 05 00.

E. Duct Leakage Test Summary Report: Upon completion of the pressure test described in Part 3, the Contractor shall submit an air duct leakage test summary report as outlined in the SMACNA HVAC Duct Leakage Test Manual.

1.04 DEFINITIONS

A. Duct Sizes shown on drawings are inside clear dimensions. Maintain clear dimensions inside any lining.

B. Transitions are generally not shown in single-line ductwork. Where sizes change at a divided flow fitting, the larger size shall continue through the fitting.

C. Interior Duct: Ductwork located within the conditioned envelope including return air plenums and indirectly conditioned spaces.

1.05 COORDINATION DRAWINGS

A. Reference Coordination Drawings article in Section 23 05 00 for required duct systems electronic CAD drawings to be provided to Coordinating Contractor for inclusion into composite coordination drawings.

B. Duct drawings shall be at 1/4" minimum scale complete with the following information:

1. Actual duct routing, ductwork fittings, actual sheet metal dimensions including insulation liner and wrap, duct hanger and support types, ductwork accessories, etc. with lengths and weights noted.
2. Differentiate ducts that are lined or wrapped. Include insulation thickness, type of insulation, and acoustical lagging.
3. Location and size of all duct access doors.
4. Room names and numbers, ceiling types, and ceiling heights.

5. Indicate location of all beams, bar joists, etc. along with bottom of steel elevations for each member.
6. IMEG will provide electronic file copies of ventilation drawings for contractor's use if the contractor signs and returns an "Electronic File Transfer" waiver provided by IMEG. IMEG will not consider blatant reproductions of original file copies an acceptable alternative for coordination drawings. Architectural plans will need to be obtained from the Architect.

PART 2 - PRODUCTS

2.01 GENERAL REQUIREMENTS AND SUPPORTS

A. Rectangular Duct - Single Wall:

1. General Requirements:
   a. All ductwork gauges and reinforcements shall be as listed in SMACNA Duct Construction Standards Chapter 2. Where necessary to fit in confined spaces, furnish heaviest duct gauge and least space consuming reinforcement.
   b. Transitions shall not exceed the angles in Figure 4-7.
2. Exceptions and modifications to the 2005 HVAC Duct Construction Standards are:
   a. All ducts shall be cross-broken or beaded.
   b. Snap lock seams are not permitted.
   c. Turning vanes shall be used in all 90-degree mitered elbows, unless clearly noted otherwise on the drawings. Vanes shall be as follows:
      1) Type 1:
         a) Description: Single wall type with 22-gauge (0.029") or heavier vanes, 3-1/4" blade spacing, and 4" to 4-1/2" radius. Vanes hemmed if recommended by runner manufacturer. Runners shall have extra-long locking tabs. C-value independently tested at below 0.26. EZ Rail II by Sheet Metal Connectors or equal.
         b) Usage: Limited to 3,000 fpm and vane lengths 36" and under.
      2) Turning vanes shall operate quietly. Repair or replace vanes that rattle or flutter.
      3) Runners must be installed at a 45-degree angle. Elbows with different size inlet and outlet must be radius type.
      4) Omitting every other vane is prohibited.
   d. Where smooth radius rectangular elbows are shown, they shall be constructed per SMACNA Figure 4-2. Type RE1 shall be constructed with a centerline duct radius R/W of 1.0. Where shown on drawings, Type RE3 elbows with 3 vanes shall be used with centerline duct radius R/W of 0.6 (SMACNA r/W=0.1). RE1 or RE3 elbows may be used where mitered elbows are shown if space permits. Mitered elbows (with or without turning vanes) may not be substituted for radius elbows. Do not make branch takeoffs within 4 duct diameters on the side of the duct downstream from the inside radius of radius elbows.
   e. Rectangular branch and tee connections in ducts over 1" pressure class shall be 45-degree entry type per Figs. 4-5 and 4-6. Rectangular straight taps are not acceptable above 1" pressure class.
   f. Bellmouth fittings shown on return duct inlets shall expand at a 60-degree total angle horizontally and vertically (space permitting) and have length of at least 25% of the smallest duct dimension.

g. Round taps off rectangular unlined ducts shall be flanged conical or bellmouth type (equal to Buckley Bellmouth or Sheet Metal Connectors E-Z Tap), or 45-degree rectangular with transition to round (equal to Sheet Metal Connectors Inc. High Efficiency Takeoff). Straight taps are acceptable if pressure class is 1" or less, round duct is 12" diameter or less, and the tap is not located between fans and TAB devices.

h. Duct offsets shall be constructed as shown on drawings. Additional offsets required in the field shall be formed of mitered elbows without turning vanes for offsets up to 30-degree maximum angle in accordance with SMACNA offset Type 2. Offsets of greater than 30-degree angle shall be formed of radius elbows with centerline radius R/W=1.0 or greater. SMACNA Type 1 offsets are not permitted.

i. All lined duct shall utilize dovetail joints where round or conical taps occur. The dovetail joints shall extend past the liner before being folded over.

j. Cushion heads are acceptable only downstream of TAB devices in ducts up to ± 2" pressure class, and must be less than 6" in length.

k. Formed-on flanged transverse joint systems are acceptable provided they are a manufactured product that has been tested for conformance with Chapter 2 of the SMACNA HVAC Duct Construction Standards for sheet and joint deflection at the specified pressure class.

1) Apply sealant to all inside corners. Holes at corners are not acceptable.

2) Flanges shall be 24-gauge minimum (not 26 gauge).

3) Manufacturers:

a) Lockformer TDC

b) TDF

c) United McGill

d) Sheet Metal Connectors

e) Other manufacturers must submit test data and fabrication standards and receive Architect/Engineer's approval before any fabrication begins.

B. Round Spiral Seam Ductwork - Single Wall:

1. Conform to applicable portions of Rectangular Duct Section. Round or flat oval ductwork may be substituted for rectangular ductwork where approved by the Architect/Engineer. The spiral seam ductwork shall meet the standards set forth in this specification. The ductwork shall meet or exceed the specified cross-sectional area and insulation requirements. The substitution shall be coordinated with all other trades prior to installation.

2. 90-degree elbows shall be smooth radius or have a minimum of five sections with mitered joints and R/D of at least 1.5.

3. Duct and fittings shall meet the required minimum gauges listed in chapter 3 of the SMACNA requirements for the specified pressure class. Ribbed and lightweight duct are not permitted.

4. Ductwork shall be suitable for velocities up to 5,000 fpm.

5. Divided flow fittings may be made as separate fittings or factory installed taps with sound, airtight, continuous welds at intersection of fitting body and tap.

6. Spot weld and bond all fitting seams in the pressure shell. Coat galvanizing damaged by welding with corrosion resistant paint to match galvanized duct color.

7. Ducts with minor axis less than 22" shall be spiral seam type. Larger ducts may be rolled, longitudinal welded seam type. SMACNA seams RL-2 and RL-3 are not permitted.

8. Reinforce flat oval ducts with external angles. Internal tie rods are permitted only as indicated for rectangular ductwork.
9. Transverse Joint Connections:
    a. Crimped joints are not permitted.
    b. Ducts and fittings 36" in diameter and smaller shall have slip joint connections. Size fitting ends to slip inside mating duct sections with minimum 2-inch insertion length and a stop bead. Use inside slip couplings for duct-to-duct joints, and outside slip couplings for fitting-to-fitting joints.
    c. Ducts and fittings larger than 36" shall have flanged connections.
    d. Secure all joints with at least 3 sheet metal screws before sealing.
    e. Manufacturers, Slide-on Flanges:
        1) Ductmate Industries - SpiralMate
        2) Accuflange
        3) Sheet Metal Connectors are acceptable.
    f. Manufacturers, Self-Sealing Duct Systems:
        1) Lindab
        2) Ward "Keating Coupling"

C. Round Spiral Seam Ductwork - Double Wall:
1. Conform to applicable portions of Rectangular Duct Section. Spiral seam round or flat oval double wall ductwork may be substituted for double wall rectangular ductwork where approved by the Architect/Engineer. Double wall spiral seam ductwork shall meet the standards set forth in this specification. Ductwork shall meet or exceed the specified cross-sectional area and insulation requirements. The substitution shall be coordinated with all other trades prior to installation.
2. Interior ducts shall have an airtight outer pressure shell, a 1" insulation layer, and a perforated inner wall that completely covers the insulation.
3. Insulation shall have flame spread/smoke developed ratings of under 25/50 per ASTM E84, NFPA 255, or UL 723.
4. 90-degree elbows shall be smooth radius or have a minimum of 5 mitered joints, and R/D of at least 1.5.
5. Duct and Fittings shall meet the required minimum gauges listed in chapter 3 of the SMACNA standards for the specified pressure class. Ribbed and lightweight duct are not permitted.
6. Ductwork shall be suitable for up to 5,000 fpm velocity.
7. Divided flow fittings may be separate fittings or factory installed taps with the following construction requirements:
    a. Sound airtight, continuous welds at intersection of fitting body and tap.
    b. Tap liner welded to inner liner with weld spacing not over 3".
    c. Insulation packed around the tap area for complete cavity filling.
    d. Carefully fit branch connections to cut-out openings in inner liner without spaces for air erosion of insulation or sharp projections for noise and airflow disturbance.
8. Spot weld and bond all fitting seams in the pressure shell. Coat galvanizing damaged by welding with corrosion resistant paint to match galvanized duct color.
9. Support inner liner of ducts and fittings with metal spacers welded to maintain spacing and concentricity.

10. Ducts with minor axis under 22" shall be spiral seam type. Larger ducts may be rolled, longitudinal welded seam type. SMACNA seams RL-2 and RL-3 are not permitted.
11. Transverse Joint Connections:
    a. Crimped joints are not permitted.
    b. Provide couplings to align the inner liners. Butt joints are not permitted for inner liners. Make alignment by extending the liner of the fitting into the duct or by using a double concentric coupling with the two couplings held by spacers for rigidity and wall spacing.
    c. Above 34" ID provide a separate coupling for inner alignment with the pressure shells joined by angle ring flanged connections.
    d. Use outside slip couplings for fitting-to-fitting joints.
    e. Secure all joints with at least 3 sheet metal screws before sealing.
    f. Manufacturers, Slide-on Flanges:
        1) Ductmate Industries - SpiralMate
        2) Accuflange
        3) Sheet Metal Connectors
    g. Manufacturers, Self-Sealing Duct System:
        1) Lindab
        2) Ward "Keating Coupling"

D. Hangers and Supports General Requirements:
1. Hanger and support materials shall be as defined within Materials and Application Specific section below.
2. Strap Hangers: Strap hanger shall be a minimum of 1 inch, 18 gauge attached to the bottom of ducts.
3. Cable Hangers:
    a. Aircraft cable and slip cable hangers are acceptable for ducts up to 18" diameter. Protective sleeve tubing shall be used on the cable when supporting duct with exterior insulation. Corner saddles are required when supporting rectangular ductwork.
    b. Manufacturers; Supports:
        1) Gripple
        2) Ductmate
        3) Duro Dyne
        4) Architect/Engineer approved
4. Integral Corner Connector Hanger: Integral hanger and corner assembly for use with TDC/TDF style duct flanges. Die stamped offset hanger connects to the flanged corner assembly. For use with aircraft cable or 1/4" or 3/8" diameter threaded rods. Tested to hold up to 1,400 lbs. Install per manufacturer’s ratings and instructions.
    a. Manufacturers; Supports:
        1) EZ Hanger

2.02 MATERIAL AND APPLICATION SPECIFIC

A. Galvanized Steel:

1. General Requirements:
    a. Duct and reinforcement materials shall conform to ASTM A653 and A924.
    b. Interior Ductwork and reinforcements: G60 galvanized (0.60 ounces per square foot total zinc coating for two sides per ASTM A90) unless noted otherwise.
    c. Exterior Ductwork: G90 galvanized (0.90 ounces per square foot total zinc coating for two sides per ASTM A90) unless noted otherwise. G60 is not acceptable for exterior use.
    d. Ductwork reinforcement shall be of galvanized steel.
2. Duct Hangers and Support Material:
    a. Ductwork hangers and supports shall be of galvanized or painted steel.
    b. All fasteners shall be galvanized or cadmium plated.

B. Duct Hangers and Support Material:

1. Ductwork hangers and supports shall be of galvanized or painted steel.
2. All fasteners shall be galvanized or cadmium plated.

C. Exposed Ductwork (Rectangular or Round):

1. The following applies to all ductwork exposed in finished areas in addition to requirements noted above:
    a. Provide extra shipping protection. Use Cardboard or other protective means to prevent dents and deformed ends.
    b. Provide cardboard or other means of protection during field fabrication. Protect from scratches. Provide stiffeners to retain shape during fabrication.
    c. Remove all identification stickers and thoroughly clean exterior of all ducts.
    d. Locate fitting seams on least visible side of duct.
    e. Provide exterior finish suitable for field painting without further oil removal.
    f. Provide ramp-type internal joint couplings. Provide bead of sealant around the inside of the duct about 1/2" from the end of the duct.
    g. Manufacturers, Slide-on Flanges:
        1) Ductmate Industries
        2) Accuflange
        3) Sheet Metal Connectors
    h. Manufacturers, Self-Sealing Duct System:
        1) Lindab
        2) Ward "Keating Koupling"
    i. The system shall be free of visible dents and scratches when viewed from normal occupancy.
    j. All insulation shall be internal, except at reheat coils.
2. In addition to the paragraphs above, this section applies to all ductwork specified or shown as "Architecturally Exposed":
    a. All spiral ductwork fittings shall be carbon arc welded.
    b. Grind all welds to remove irregularities.
    c. Conical taps shall be one piece. Taps for grilles and takeoffs shall be factory installed with a continuous weld and ground smooth.

d. Welds shall be ground smooth and painted.

e. All architecturally exposed ducts shall be round except where not possible (grilles, reheat coils, etc.).

3. Alternate manufacturers, including shop fabricated duct, must be reviewed before installation. The following information is required:

a. Metal gauge of duct and fittings.

b. Fitting type and construction.

c. Type and size of reinforcement.

4. Hangers for Exposed Ductwork:

a. Round Ducts:

1) Threaded rod with duct fixing bracket and metal strap. Provide single threaded rod centered on the duct. Strap hanger shall be a minimum of 1 inch, 18 gauge galvanized steel wrapping the circumference of the duct. Spacing as required by SMACNA guidelines.

2) Aircraft cable with 2-point support in standard horseshoe arrangement. Spacing and cable size as required by SMACNA guidelines.

b. Rectangular Ducts:

1) Aircraft cable and slip cable hangers are acceptable for ducts up to 18" in maximum dimension. Corner saddles are required when supporting rectangular ductwork. Spacing and cable size as required by SMACNA guidelines.

a) Manufacturers, Supports: Gripple, Ductmate, Duro Dyne, Architect/Engineer approved.

2) Aircraft cable with 2-point support in standard horseshoe arrangement. Corner saddles are required when supporting rectangular ductwork. Spacing and cable size as required by SMACNA guidelines.

c. Strut-channel and all-thread rod is not acceptable for exposed ductwork.

d. All fasteners shall be galvanized or cadmium plated.

2.03 DUCTWORK REINFORCEMENT

A. All reinforcement shall be external to the duct except that tie rods may be used with the following limitations.

1. Ducts must be over 18" wide.

2. Duct dimensions must be increased 2" in one dimension (h or w) for each row of tie rods installed.

3. Tie rods must not exceed 1/2" diameter.

4. Manufacturer of tie rod system must certify pressure classifications of various arrangements, and this must be in the shop drawings.

2.04 DUCTWORK SEALANTS

A. One-part joint sealers shall be water-based mastic systems that meet the following requirements: maximum 48-hour cure time, service temperature of -20F to +175F, resistant to mold, mildew and water, flame spread rating below 25 and smoke-developed rating below 50 when tested in accordance with ASTM E84, suitable for all SMACNA seal classes and pressure classes. Mastic used to seal flexible ductwork shall be marked UL 181B-M.

B. Two-part joint sealers shall consist of a minimum 3" wide mineral-gypsum compound impregnated fiber tape and a liquid sealant. Sealant system shall meet the following requirements: maximum 48-hour cure time, service temperature of 0F to 200F, resistant to mold, mildew, and water, flame spread rating below 25 and smoke developed rating below 50

when tested in accordance with ASTM E84, suitable for all SMACNA seal classes and pressure classes.

C. Pressure sensitive tape used for sealing ductwork shall be minimum 2.5-inch wide, listed and marked UL 181A-P, having minimum 60 oz/inch peel adhesion to steel, and service temperature range from -20F to +250F.

D. Where pressure sensitive tape is called for on drawings and specifications for sealing flexible ductwork, tape shall be minimum 2.5-inch wide, UL 181 B-FX listed, and marked tape having minimum 60 oz/inch peel adhesion to steel and service temperature range from -20F to +250F.

1. Manufacturers, Pressure-Sensitive Tape:
    a. Venture Tape 1581A
    b. Compac #340
    c. Scotch Foil Tape 3326
    d. Polyken 339

2.05 FLEXIBLE DUCT

A. Flexible duct shall be listed and labeled as UL 181 Class 1 Air Duct Material, and shall comply with NFPA 90A and 90B, and meet GSA, FHA and other U.S. Government agency standards. Flexible duct shall bear the ADC Seal of Certification.

B. Flame Spread/Smoke Developed: Not over 25/50.

C. Stretch all flexible duct to prevent sags and reduce air friction. Shorten and reinstall all sagging or loose flexible duct. Avoid sharp elbows. Elbows shall maintain 1.5 diameter centerline turning radius.

D. Install per the SMACNA Flexible Duct Manual. Secure inner layer with draw band. Wrap with pressure sensitive tape for protection prior to installing draw band. Pressure sensitive tape alone is not acceptable.

E. Acoustic:

1. Flexible duct shall be acoustic rated in accordance with ASTM E477 and ADC Test Code FD 72-RI by ETL. Insertion loss values noted below are for flow velocities less than 2,500 fpm. Submittals shall include insertion losses ratings per sizes and lengths listed below regardless of sizes shown on the drawings.

2. Flexible have corrosion-resistant wire helix, bonded to a nylon fabric core inner liner that prevents air from contacting the insulation, covered with minimum 1-1/2", 3/4 lb/cf density fiberglass insulation blanket, sheathed in a vapor barrier of metalized polyester film laminated to glass mesh. Usage: All areas unless noted otherwise.

3. Inner liner shall be airtight and suitable for 6" WC static pressure through 16" diameter. Outer jacket shall act as a vapor barrier only with permeance not over 0.1 perm per ASTM E96, Procedure A. "R" value shall not be less than 4.0 ft2*F*hr/Btuh. Temperature range of at least 0 to 180F. Maximum velocity of 4,000 fpm. "R" value shall not be less than 4.0 ft2*F*hr/Btuh.

4. Minimum Acoustic Insertion Losses per octave band:
    a. Straight Duct:

Diameter	Length	63hz	125hz	250hz	500hz	1000hz	2000hz	4000hz
6" ø	6 ft	4.0	13	15	15	16	17	16
6" ø	3 ft	2.3	4.9	5.3	5.3	5.5	5.8	5.4
8" ø	6 ft	5.7	14	13	15	16	18	16
8" ø	3 ft	2.9	5.0	4.9	5.7	5.6	5.8	5.6
12" ø	6 ft	5.5	13	12	15	15	18	13
12" ø	3 ft	2.8	4.8	4.7	5.3	5.3	5.8	4.9

    b. 90 Degree Elbow:

Diameter	Length	63hz	125hz	250hz	500hz	1000hz	2000hz	4000hz
6" ø	6 ft	10	15	16	17	18	17	18
6" ø	3 ft	3.8	5.4	5.5	5.7	5.9	5.8	5.9
8" ø	6 ft	10	15	16	17	16	18	18
8" ø	3 ft	2.4	5.3	5.6	5.8	5.6	5.9	6.0
12" ø	6 ft	11	14	15	16	15	16	15
12" ø	3 ft	4.4	5.1	5.3	5.5	5.4	5.6	5.3

5. Usage:
    a. Take-offs from supply ducts to inlets of terminal air boxes. Do not exceed 36" in length.
    b. Connections to air inlets and outlets. Do not exceed 5'-0" in length.
    c. Acceptable Manufacturers:
        1) Flexmaster USA - Type 6
        2) Thermaflex M-Ke

F. Radius Forming Elbows:
1. Flexible plastic radius forming elbow for use with flexible ducts to create 90deg elbow. One size for 6" to 16" diameter ducts. UL listed for return plenum spaces.
2. Usage: All supply air terminals with flexible ductwork connection.
3. Installation: Attach to flex duct and secure draw bands without crushing flex duct to form smooth radius elbow. Suspend radius forming elbow to structure. Install per manufacturer's instructions.
4. Acceptable Manufacturers:
    a. Hart & Cooley - Smartflow
    b. Thermaflex - Flexflow
    c. Titus - Flexright

PART 3 - EXECUTION

3.01 INSTALLATION

A. Provide openings in ducts for thermometers and controllers.

B. Locate ducts with space around equipment for normal operation and maintenance.

C. Do not install ducts or other equipment above electrical switchboards or panelboards. This includes a dedicated space extending 25 feet from the floor to the structural ceiling with width and depth equal to the electrical equipment. Unless intended to serve these rooms, do not install any ductwork or equipment in electrical rooms, transformer rooms, electrical closets, telephone rooms or elevator machine rooms.

D. Provide temporary closures of metal or taped polyethylene on open ducts to prevent dust from entering ductwork.

E. Supply ductwork shall be free of construction debris, and shall comply with Level "B" of the SMACNA Duct Cleanliness for New Construction Guidelines.

F. Repair all duct insulation and liner tears.

G. Install manual volume dampers in branch supply ducts so all outlets can be adjusted. Do not install dampers at air terminal device or in outlets, unless specifically shown.

H. Insulate terminal air box reheat coils. Seal insulation tight to form a tight vapor barrier.

I. Install flexible duct in accordance with the ADC Flexible Duct Performance and Installation Standards.

J. Flexible duct shall NOT be joined to flat-oval connections. Provide sheet metal oval-to-round transitions where required, to include, but not limited to, all connections to air inlets, air outlets, and terminal air boxes.

K. Adhesives, sealants, tapes, vapor retarders, films, and other supplementary materials added to ducts, plenums, housing panels, silencers, etc. shall have flame spread/smoke developed ratings of under 25/50 per ASTM E84, NFPA 255, or UL 723.

L. All duct support shall extend directly to building structure. Do not support ductwork from pipe hangers unless coordinated with piping contractor prior to installation. Do not allow lighting or ceiling supports to be hung from ductwork or ductwork supports.

3.02 DUCTWORK APPLICATION SCHEDULE

A. Refer to Ductwork Application Schedule on drawings for specific requirements for system, material, shape, pressure class, seal class and insulation application.

3.03 SPECIAL INSULATION REQUIREMENTS

A. Ductwork Accessories (Fabric Flex Connectors, Equipment Flanges, etc.):

1. Insulation:
    a. ASHRAE 90.1-2022: 1-1/2" thick Type A (R=4.5)
    b. IECC-2021: 1-1/2" thick Type A (R=4.5)

B. Linear Diffuser Supply Plenum:

1. Insulation:
    a. ASHRAE 90.1-2022: 1-1/2" thick Type A (R=4.5)
    b. IECC-2021: 1-1/2" thick Type A (R=4.5)

3.04 DUCTWORK SEALING

A. General Requirements:

1. Openings, such as rotating shafts, shall be sealed with bushings or similar.
2. Pressure sensitive tape shall not be used as the primary sealant unless it has been certified to comply with UL-181A or UL-181B by an independent testing laboratory and the tape is used in accordance with that certification.

3. All connections shall be sealed including, but not limited to, taps, other branch connections, access doors, access panels, and duct connections to equipment. Sealing that would void product listings is not required. Spiral lock seams need not be sealed.

4. Mastic-based duct sealants shall be applied to joints and seams in minimum 3 inch wide by 20 mil thick bands using brush, putty knife, trowel, or spray, unless manufacturer's data sheet specifies other application methods or requirements.

B. All ducts systems, regardless of pressure class, shall be Seal Class A as defined by Section 5-1 of SMACNA HVAC Air Duct Leakage Test Manual per the Energy Code, unless specifically noted otherwise. Seal Class A shall include sealing of all transverse joints, longitudinal seams, and duct wall penetrations with welds, gaskets, mastics, or fabric-embedded mastic system. Joints are inclusive of, but not limited to, girth joints, branch and sub-branch intersections, duct collar tap-ins, fitting subsections, louver and air terminal connections to ducts, access door and access panel frames and jambs, duct, plenum, and casing abutments to building structures.

3.05 TESTING

A. Interior Duct - Less than 3" WG (positive or negative):

1. Leak testing of these pressure classes is not normally required for interior ductwork (inside the building envelope). However, leak tests will be required if, in the opinion of the Architect/Engineer, the leakage appears excessive. All exterior ductwork shall be tested. If duct has outside wrap, testing shall be done before it is applied.

2. Leak test shall be at the Contractor's expense and shall require capping and sealing all openings.

3. Seal ducts to bring the air leakage into compliance.

4. Contractor shall notify the Architect/Engineer five business days prior to pressurizing ductwork for testing.

B. Pressure Test Procedure:

1. Testing shall be as listed in the latest edition of the SMACNA HVAC Duct Leakage Manual, with the following additional requirements:

a. The required leakage class for Seal Class A, rectangular ducts, shall be 4; round shall be 2.

b. Test pressure shall be the specified duct pressure class. Testing at reduced pressures and converting the results mathematically is not acceptable. This is required to test the structural integrity of the duct system.

c. If any leak causes discernible noise at a distance of 3 feet, that leak shall be eliminated, regardless of whether that section of duct passed the leakage test.

d. All joints shall be felt by hand, and all discernible leaks shall be sealed.

e. Totaling leakage from several tested sections and comparing them to the allowable leakage for the entire system is not acceptable. Each section must pass the test individually.

f. Contractor shall notify the Architect/Engineer five business days prior to pressurizing ductwork for testing. Failure to notify the Architect/Engineer of pressure testing may require the contractor to repeat the duct pressure test after proper notification.

g. Upon completion of the pressure test, the contractor shall submit an air duct leakage test summary report as outlined in the SMACNA HVAC Duct Leakage Test Manual.

h. All access doors, taps to terminal air boxes, and other accessories and penetrations must be installed prior to testing. Including terminal air boxes in the test is not required.

i. Positive pressure leakage testing is acceptable for negative pressure ductwork.

3.06 DUCTWORK PENETRATIONS

A. Seal all duct penetrations of walls that are not fire rated by caulking or packing with fiberglass. Install trim strip to cover vacant space and raw construction edges of all openings in finished rooms. Install escutcheon ring at all round duct openings in finished rooms. Trim strips and rings shall be same material and finish as exposed duct.

END OF SECTION 23 31 00

SECTION 23 33 00
DUCTWORK ACCESSORIES

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Manual Volume Dampers.

B. Fabric Connectors.

C. Duct Access Doors.

D. Duct Test Holes.

E. Temperature Control Dampers.

1.02 REFERENCES

A. AMCA Guide for Commissioning and Periodic Performance Testing of Fire, Smoke and Other Life Safety Related Dampers.

B. ASTM E477-20 - Standard Test Method for Measuring Acoustical and Airflow Performance of Duct Liner Materials and Prefabricated Silencers.

C. NFPA 72 - National Fire Alarm and Signaling Code

D. NFPA 80 - Standard for Fire Doors and Other Opening Protectives.

E. NFPA 90A - Installation of Air-Conditioning and Ventilating Systems.

F. NFPA 105 - Standard for Smoke Door Assemblies and Other Opening Protectives.

G. SMACNA - HVAC Duct Construction Standards (latest edition).

H. UL 33 - Heat Responsive Links for Fire-Protection Service.

I. UL 2043 - Fire Test for Heat and Visible Smoke Release for Discrete Products and Their Accessories Installed in Air-Handling Spaces.

1.03 SUBMITTALS

A. Submit shop drawings under provisions of Section 23 05 00.

B. Submit manufacturer's installation instructions.

PART 2 - PRODUCTS

2.01 MANUAL VOLUME DAMPERS

A. Fabricate in accordance with SMACNA Duct Construction Standards, and as indicated.

B. Fabricate single blade dampers for duct sizes to 9-1/2 x 30 inches.

C. Fabricate multi-blade damper of opposed blade pattern with maximum blade sizes 12" x 72". Assemble center and edge crimped blades in prime coated or galvanized channel frame with suitable hardware.

D. Except in round ductwork 12 inches and smaller, provide end bearings. On multiple blade dampers, provide molded synthetic or oil-impregnated nylon or sintered bronze bearings.

E. Provide locking quadrant regulators on single and multi-blade dampers.

F. On insulated ducts, mount quadrant regulators on stand-off mounting brackets, bases, or adapters.

G. If blades are in open position and extend into the main duct, mount damper so blades are parallel to airflow.

H. Contractor assembled modular manual dampers are acceptable as long as it contains the components listed above.

2.02 FABRIC CONNECTORS

A. Fabric connectors shall be installed between all fans or fan units and metal ducts or casings to prevent transfer of fan or motor vibration.

B. The fabric connectors shall be completely flexible material which shall be in folds and not drawn tight.

C. Fabric connectors shall be of glass fabric double coated with neoprene, with UL approval. Weight = 30 oz. per square yard minimum. Fabric shall not be affected by mildew and shall be absolutely waterproof, airtight and resistant to acids, alkalis, grease and gasoline, and shall be noncombustible.

D. Fabric connections shall not exceed 6" in length on ductwork that has a positive pressure. On ductwork that has a negative pressure, the length shall not exceed 2" in length.

E. All corners shall be folded, sealed with mastic and stapled on 1" centers.

F. Fabric connectors shall not be painted.

G. Unless otherwise shown on the drawings, the fabric connection at the inlet to centrifugal fans shall be at least one duct diameter from the fan to prevent inlet turbulence.

H. Fabric connectors exposed to sunlight and weather shall be as described above, except the coating shall be hypalon in lieu of neoprene.

I. Materials:

1. Durodyne "Duralon MFD-4-100"
2. Vent Fabrics, Inc.
3. "Ventlon"
4. Proflex PFC3HGA

2.03 DUCT ACCESS DOORS

A. Fabricate per Fig. 7-2 and 7-3 of the SMACNA HVAC Duct Construction Standards and as indicated.

B. Review locations prior to fabrication. Install access doors at fire dampers, smoke dampers, motorized dampers, fan bearings, filters, automatic controls, humidifiers, louvers, duct coils and other equipment requiring service inside the duct.

C. Construction shall be suitable for the pressure class of the duct. Fabricate rigid, airtight, and close-fitting doors of materials identical to adjacent ductwork with sealing gaskets butt or piano hinges, and quick fastening locking devices. For insulated ductwork, install minimum one inch thick insulation with sheet metal cover.

D. Access doors with sheet metal screw fasteners are not acceptable.

E. Minimum size for access doors shall be 24" x 16" or full duct size, whichever is less.

2.04 DUCT TEST HOLES

A. Cut or drill temporary test holes in ducts as required. Cap with neat patches, neoprene plugs, threaded plugs, or threaded or twist-on metal caps.

2.05 DUCTWORK ACCESSORY SEALANTS

A. Ductwork accessory sealants and adhesives shall conform to Section 23 31 00.

2.06 CONTROL DAMPERS AND DAMPER ACTUATORS

A. Control dampers and damper actuators shall be furnished by the Temperature Control Contractor (Section 23 0 900) and shall be installed by this Contractor.

B. Coordinate exact sizes, locations, and installation requirements with the Temperature Control Contractor.

PART 3 - EXECUTION

3.01 INSTALLATION

A. General Installation Requirements:

1. Install accessories in accordance with manufacturer's instructions.
2. Where duct access doors are located above inaccessible ceilings, provide ceiling access doors. Coordinate location with the Architect/Engineer.
3. Coordinate and install access doors provided by others.
4. Provide access doors for all equipment requiring maintenance or adjustment above an inaccessible ceiling. Minimum size shall be 24" x 24".
5. Provide duct test holes where indicated and as required for testing and balancing purposes.

B. Manual Volume Damper:

1. Provide manual volume dampers at points on low pressure supply, return, and exhaust systems where branches are taken from larger ducts where indicated on drawings and as required for air balancing. Use splitter dampers only where indicated.
2. Provide ceiling access doors for manual volume dampers. When manual volume dampers are located above an inaccessible ceiling and an access door cannot be installed, provide a remote-controlled volume control device for operation of the damper. Coordinate location with the Architect/Engineer.

C. Control Dampers and Damper Actuators:

1. Install control dampers and damper actuators in accordance with manufacturer's instructions and in coordination with the Temperature Control Contractor.
2. Seal around damper frame inside ductwork with duct sealant to prevent bypass around damper.
3. Provide duct access door at each control damper.

END OF SECTION 23 33 00

SECTION 23 36 00
AIR TERMINAL UNITS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Single Duct Variable Air Volume Terminal Box.

B. Fan Powered Variable Air Volume Terminal Box.

1.02 REFERENCES

A. NFPA 70 - National Electrical Code.

B. NFPA 90A - Installation of Air-Conditioning and Ventilation Systems.

C. UL 181 - Factory-Made Air Ducts and Connectors.

1.03 SUBMITTALS

A. Submit shop drawings under provisions of Section 23 05 00.

B. Submit shop drawings indicating configuration, general assembly, and materials used in fabrication.

C. Submit product data indicating configuration, general assembly, and materials used in fabrication. Include catalog performance ratings which indicate airflow, static pressure, and NC designation.

D. Include schedules listing discharge and radiated sound power level for each of second through sixth octave bands at inlet static pressures of one to 4 inch WG.

E. Submit electrical power/controls wiring diagrams and product data indicating general assembly, components, safety controls, and service connections.

F. Submit manufacturer's installation instructions.

1.04 OPERATION AND MAINTENANCE DATA

A. Submit operation and maintenance data.

B. Include manufacturer's descriptive literature, operating instructions, maintenance and repair data, and parts lists.

C. Include directions for resetting constant volume regulators.

PART 2 - PRODUCTS

2.01 ACOUSTICAL CONSIDERATIONS (THIS APPLIES TO ALL UNITS)

A. All units shall have noise data certified in accordance with AHRI Standard 885-98 with 5/8" 20-lb. density mineral fiber ceiling tile and shall not produce space noise values over NC-35 due to radiated and airborne noise combined. Acoustical considerations shall take priority over sizes noted in schedule. It is the manufacturer's responsibility to increase inlet size to meet acoustic levels scheduled.

2.02 SINGLE DUCT VARIABLE AIR VOLUME TERMINAL BOX

A. Casing: Minimum 22 gauge galvanized steel.

1. Insulation: Insulation shall be UL listed and meet NFPA 90A requirements. Fully insulated with:

   a. Minimum 1/2" foil faced liner, minimum 1-1/2 pound density fiberglass insulation.

   b. Usage: All supply air systems.

B. Damper Blade: Extruded aluminum or minimum 18 gauge galvanized steel. Nylon or bronze bushings on damper shafts. Dampers shall seal against gasketed stops. Leakage shall not exceed 4% of unit nominal cfm at 3.0 inches WG inlet static pressure.

C. Inlet Flow Sensor: Provide "cross" or "ring " style velocity and static sensor at inlet to box for use by unit controller.

D. Damper Operators: Furnish all mounting brackets, relays, and linkages. Damper operator shall be provided as follows:

1. Electronic: Provided and installed by the TCC in the field.

E. Electronic Volume Regulator/Controller: Set boxes for maximum and minimum settings shown on the drawings. Electronic volume regulator/controller shall be provided as follows:

1. Provided and installed by the TCC in the field.

F. Electric Heating Coil: Open nichrome type electric resistance coils, automatic reset thermal cutout primary safety device, manual reset thermal cutout secondary safety device, airflow switch interlock, disconnect switch on face of integral control panel, magnetic mercury contactors, 24-volt control, control voltage transformer and fusing. Capacity and voltage shall be as scheduled on the drawings. Capacity control shall be as follows:

1. Modulating SCR electric control

G. Boxes shall not exceed the static pressure drop and N.C. level scheduled on the drawings. It is the manufacturer's responsibility to increase inlet size to meet pressure drop and N.C. levels scheduled.

H. Refer to control diagrams and notes on control drawings for complete sequence of control.

I. Manufacturers:

1. Carrier
2. Titus
3. Trane
4. Krueger
5. Carnes
6. E.H. Price
7. Tuttle & Bailey
8. Nailor
9. Enviro-Tec
10. Johnson Controls Inc.
11. Metalaire.
12. Anemostat.

2.03 FAN POWERED VARIABLE AIR VOLUME TERMINAL BOX

A. Casing: Parallel minimum 22 gauge galvanized steel. Factory mounted access panel to provide access to air valve and fan.

1. Insulation: Insulation shall be UL listed and meet NFPA 90A requirements. Fully insulated with:
   a. Minimum 1/2" foil faced liner, minimum 1-1/2 pound density fiberglass insulation.
   b. Usage: All supply air systems.

B. Fan: FC style, galvanized steel fan wheel. Fan housing shall be 22 gauge steel and fan board shall be 18 gauge steel. Maximum motor temperature rise on all speeds of 50°F (10°C). Fan motor voltage shall be as scheduled on the drawings. Motors shall be permanently lubricated, direct drive.

1. ECM modulating control using 0-10Vdc modulating signal.
2. .

C. Damper Blades: Extruded aluminum or minimum 18 gauge galvanized steel. Nylon or bronze bushings on damper shafts. Dampers shall seal against gasketed stops. Leakage shall not exceed 4% of unit nominal cfm at 3.0 inches WG inlet static pressure.

D. Inlet Flow Sensor: Provide "cross" or "ring" style velocity and static sensor at inlet to box for use by unit controller.

E. Damper Operators: Furnish all mounting brackets, relays, and linkages. Damper operator shall be provided as follows:

1. Electronic: Provided and installed by the TCC in the field.

F. Electronic Volume Regulator/Controller: Set boxes for maximum and minimum settings shown on the drawings. Electronic volume regulator/controller shall be provided as follows:

1. Provided and installed by the TCC in the field.

G. Electric Heating Coil: Open nichrome type electric resistance coils, automatic reset thermal cut-out primary safety device, manual reset thermal cut-out secondary safety device, airflow switch interlock, disconnect switch on face of integral control panel, magnetic mercury contactors, 24-volt control, control voltage transformer and fusing. Capacity and voltage shall be as scheduled on the drawings. Coil position in the discharge air position. Capacity control shall be as follows:

1. Modulating SCR electric control.

H. Fan Inlet:

1. Flanged inlet for field installed elbow and filter.

I. Boxes shall not exceed the static pressure drop and N.C. level scheduled on the drawings. It is the manufacturer's responsibility to increase inlet size to meet pressure drop and N.C. levels scheduled.

J. Refer to control diagrams and notes on control drawings for complete sequence of control.

K. Manufacturers:

1. Carrier
2. Titus
3. Trane
4. Krueger
5. Carnes
6. E.H. Price
7. Nailor
8. Enviro-Tec
9. Johnson Controls Inc.
10. Anemostat
11. Metalaire

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Maintain minimum working clear space for all electrical connections in accordance with NFPA 70, National Electrical Code.

C. Provide ceiling access doors or locate units above easily removable ceiling components.

D. Support units individually from structure. Do not support from adjacent ductwork.

E. Where boxes are located adjacent to a wall or joist, the damper motors and control valves shall be located on the side of the box away from the wall or joist to permit easy access.

F. Comb fins on coils to repair bent fins.

3.02 ADJUSTING

A. All boxes shall be set to the cfm shown on the drawings. TCC shall be responsible to field recalibrate all boxes that are not set correctly.

END OF SECTION 23 36 00

SECTION 23 37 00
AIR INLETS AND OUTLETS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Grilles And Registers.

B. Linear Diffusers.

C. Linear Diffuser Supply Plenum.

1.02 QUALITY ASSURANCE

A. Test and rate performance of air inlets and outlets per ASHRAE 70.

B. Test and rate performance of louvers per AMCA 500L-99.

1.03 REFERENCES

A. AMCA 500-L-12 - Laboratory Methods of Testing Louvers for Rating.

B. ANSI/ASHRAE 70 - Method of Testing for Rating the Air Flow Performance of Inlets and Outlets.

C. ANSI/ASHRAE/IES Standard 90.1 (latest published edition) - Energy Standard for Buildings Except Low-Rise Residential Buildings.

D. SMACNA - Duct Construction Standards.

1.04 SUBMITTALS

A. Submit product data under provisions of Section 23 05 00.

B. Submit schedule of inlets and outlets indicating type, size, location, application, and noise level.

C. Review requirements of inlets and outlets as to size, finish, and type of mounting prior to submitting product data and schedules of inlets and outlets.

D. Submit manufacturer's installation instructions.

E. Where color selection by Architect is necessary, provide physical color chips for color selection directly to the Architect. Electronic color charts are not acceptable.

1.05 REGULATORY REQUIREMENTS

A. Conform to ANSI/NFPA 90A.

B. Conform to ASHRAE 90.1.

PART 2 - PRODUCTS

2.01 AIR TERMINALS - GRILLES AND REGISTERS

A. Reference to a grille means an air supply, exhaust or transfer device without a damper.

B. Reference to a register means an air supply, exhaust or transfer device with a damper.

C. The type of unit, margin, material, finish, etc., shall be as shown on the drawing schedule and suitable for the intended use.

D. All margins shall be compatible with ceiling types specified (including 'Thin-Line' T-bar lay-in grid system). Any discrepancies in contract documents shall be brought to the attention of the Architect/Engineer, in writing, prior to Bid Date. Submission of Bid indicates ceiling and air inlet and outlet types have been coordinated.

E. The capacity and size of the unit shall be as shown on the drawings.

F. All units shall handle the indicated cfm as shown on the drawings while not exceeding an NC level of 25, referenced to 10^{-12} watts with a 10 dB room effect. .

G. Refer to the drawings for construction material, color and finish, margin style, deflection, and sizes of grilles and registers.

H. Provide with 3/4" blade spacing. Blades shall have steel friction pivots to allow for blade adjustment, plastic pivots are not acceptable.

I. Corners of steel grilles and registers shall be welded and ground smooth before painting. Aluminum grilles and registers shall have staked corners.

J. Where specified to serve registers, provide opposed blade volume dampers operable from the face of the register.

K. Screw holes for surface fasteners shall be countersunk for a neat appearance. Provide concealed fasteners for installation in lay-in ceilings and as specified on the drawings.

L. Manufacturers:

1. Tuttle & Bailey
2. Titus
3. Price
4. Nailor
5. Carnes
6. Metalaire
7. Krueger
8. Anemostat
9. Raymon Donco

2.02 AIR TERMINALS - LINEAR DIFFUSERS

A. Plenum Slot Diffusers (Lay-In):

1. The type of unit, margin size, material, finish, etc., shall be as shown on the Drawing Schedule. Flat-oval inlets are NOT acceptable for connection to flexible ducts. Provide sheet metal oval-to-round transition if required.
2. The capacity and size of the unit shall be as shown on the drawings.
3. All units shall handle the indicated cfm as shown on the drawings while not exceeding an NC level of 25, referenced to 10^{-12} watts with a 10 dB room effect. .
4. Install T-bars on both sides of diffusers for lay-in ceiling system, install manufacturer frame for sheetrock or plaster ceiling system. Diffuser margins system shall be compatible with ceiling types specified, color to match ceiling system. Contractor shall coordinate margin types with ceilings prior to submitting shop drawings.
5. Linear diffusers and mounting frames shall be furnished as one piece up to 5' in length.
6. Diffusers shall be furnished with factory installed adjustable gasket edged blade deflector.
7. A manual volume damper shall be furnished and installed by the Contractor in branch ductwork to each slot diffuser. Balancing dampers shall not be installed in supply plenum or at air outlet unless otherwise indicated on the drawings.
8. Number and width of slots shall be as shown on the drawings.
9. Provide integral insulated plenum for each linear diffuser. Refer to linear diffuser supply plenum specification section for details.
10. Manufacturers:
    a. Tuttle & Bailey ITPS
    b. Carnes DA
    c. Price TBD
    d. Krueger PTBS
    e. Nailor 5800
    f. Titus TBD

g. Metalaire

h. Anemostat API

i. Raymon Donco SAT

B. Linear Bar Grille Diffusers:

1. The type of unit, margin size, material, finish, etc., shall be as shown on the Drawing Schedule. Flat-oval inlets are NOT acceptable for connection to flexible ducts. Provide sheet metal oval-to-round transition if required.

2. The capacity and size of the unit shall be as shown on the drawings.

3. All units shall handle the indicated cfm as shown on the drawings while not exceeding an NC level of 25, referenced to 10^{-12} watts with a 10 dB room effect per ANSI/ASHRAE 70.

4. Install T-bars on both sides of diffusers for lay-in ceiling system, install manufacturer frame for sheetrock or plaster ceiling system. Diffuser margins system shall be compatible with ceiling types specified, color to match ceiling system. Contractor shall coordinate margin types with ceilings prior to submitting shop drawings.

5. Provide with concealed fasteners for installation in the field.

6. Linear bar diffusers and mounting frames shall be furnished as one piece up to 6' in length. Provide auxiliary support per manufacturer's recommendations for slot diffusers greater than 4' in length.

7. A manual volume damper shall be furnished and installed by the Contractor in branch ductwork to each bar grille. Balancing dampers shall not be installed in supply plenum or at air outlet unless otherwise indicated on the drawings.

8. Diffuser length and width, bar width, and spacing between bars shall be as shown on the drawings.

9. Provide insulated plenum for each linear diffuser. Refer to linear diffuser supply plenum section for details.

10. Manufacturers:

a. Tuttle & Bailey 4000

b. Carnes CC;CT;CW

c. Krueger 1500/1600

d. Price LB

e. Nailor 4900

f. Titus CT

g. Metalaire 2000

h. Anemostat AL/TL

i. Raymon Donco DGB

2.03 AIR TERMINALS - LINEAR DIFFUSER SUPPLY PLENUM

A. Linear diffusers shall be provided with field fabricated or prefabricated supply plenums. Plenum shall be a minimum of 2-1/2" wider than total slot width, minimum length of slot, and minimum height of 10". Plenums with end fed duct connections shall not exceed 8' in length. The cross sectional area of the plenum shall be designed for a maximum velocity of 500 fpm and the aspect ratio shall be limited to a width-to-height ratio of less than 1.5. Plenums with side outlets shall be designed for a maximum velocity of 600 fpm and inlet ducts to plenum shall be spaced 5' on center maximum. Inlet ducts to plenums shall have a maximum velocity of 900 fpm. Flat-oval inlets are NOT acceptable for connection to flexible ducts. Provide sheet metal oval-to-round transition if required.

B. Plenum shall be constructed with 24 gauge galvanized steel and shall have side inlets unless shown otherwise on the drawings. Refer to Ductwork Application Schedule in Section 23 31 00 for insulation requirements.

C. End caps and required accessories shall be integral with the plenum or furnished and installed by the Mechanical Contractor.

D. A manual volume damper shall be furnished and installed by the Mechanical Contractor in branch ductwork to each slot diffuser. Balancing dampers shall not be installed in supply plenum or at air outlet unless otherwise indicated on the drawings

E. Prefabricated plenums shall be by the same manufacturer as the linear diffuser or Kees Inc.

PART 3 - EXECUTION

3.01 INSTALLATION

A. General Installation Requirements:

1. Install items in accordance with manufacturers' instructions.
2. Check location of inlets and outlets and make necessary adjustments in position to conform to architectural features, symmetry, and lighting arrangement.
3. Install diffusers to ductwork with air tight connections.
4. Flexible ducts shall NOT be joined to flat-oval connections. Provide sheet metal oval-to-round transitions where required.
5. Supply grille and register blades shall be aimed in the field to provide adequate air distribution in the space. All return grilles and registers blades shall be oriented to minimize sight distance beyond installed device.

B. Volume Damper:

1. Provide manual volume dampers on duct take-off to diffusers when there are multiple connections to a common duct. Locate volume dampers as far as possible from the air inlet or outlet.

C. Maintaining Duct Cleanliness:

1. When grilles, registers, and diffusers are installed, Contractor shall prevent construction dust, dirt, and debris from entering ductwork as required by Section 23 05 00.

END OF SECTION 23 37 00

SECTION 23 74 16.12

PACKAGED ROOFTOP AIR CONDITIONING UNITS 25 TON AND BELOW

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Packaged Rooftop Unit.

B. Unit Controls.

1.02 QUALITY ASSURANCE

A. All insulation inside the unit and in the air stream must comply with the requirement of NFPA 90A (maximum flame spread of 25 and maximum smoke developed of 50).

B. All units must be UL or ETL listed and must contain UL labeled components.

C. Fans shall be tested and rated in cabinet in accordance with AMCA Standard 210. All fan assemblies shall be dynamically balanced in cabinet at final assembly.

D. Conform to ASHRAE 90.1.

E. All air handling and distribution equipment mounted outdoors shall be designed to prevent rain intrusion into the airstream when tested at design airflow and with no airflow, using the rain test apparatus described in Section 58 of UL 1995.

1.03 REFERENCES

A. AHRI 210 - Unitary Air Conditioning Equipment.

B. AHRI 270 - Sound Rating of Outdoor Unitary Equipment.

C. ASHRAE 37 - Methods of Testing for Rating Unitary Air Conditioning and Heat Pump Equipment.

D. ANSI/ASHRAE/IES Standard 90.1 (latest published edition) - Energy Standard for Buildings Except Low-Rise Residential Buildings.

E. NFPA 70 - National Electrical Code.

F. NFPA 90A - Installation of Air Conditioning and Ventilating System.

G. UL - Underwriters' Laboratory.

1.04 SUBMITTALS

A. Submit shop drawings and product data under provisions of Section 23 05 00.

B. Indicate electrical service and duct connections on shop drawings or product data.

C. Submit manufacturer's installation instructions.

D. Submit electrical power/controls wiring diagrams and product data indicating general assembly, components, safety controls, and service connections.

E. Submit fan curves, including minimum and maximum fan speed, with specified operating points clearly plotted.

F. Provide 8 octave maximum sound power levels at unit discharge and return connection.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Protect units from physical damage by storing off site until ready for immediate installation of units.

1.06 OPERATION AND MAINTENANCE DATA

A. Submit operation and maintenance data.

B. Include manufacturer's descriptive literature, installation instructions, maintenance and repair data, and parts listing.

1.07 WARRANTY

A. Provide five (5) year manufacturer's warranty for compressors.

B. Provide five (5) year manufacturer's warranty for heat exchanger.

C. Provide three (3) year manufacturer's warranty for controls and electrical components (thermostats, VFD, etc.).

1.08 MAINTENANCE SERVICE

A. Contractor shall furnish complete service and maintenance of packaged roof top units for one year from Date of Substantial Completion.

B. Provide maintenance service with a two-month interval as maximum time period between calls. Provide 24-hour emergency service on breakdowns and malfunctions.

C. Include maintenance items as outlined in manufacturer's operating and maintenance data, including minimum of four (quarterly) filter replacements, minimum of one fan belt replacement, and controls checkout, seasonal adjustments, and recalibrations.

D. Submit copy of service call work order or report and include description of work performed to Owner and Architect/Engineer.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Lennox

2.02 MANUFACTURED UNITS

A. Provide roof-mounted units having gas burner and electric refrigeration.

B. Unit shall be self-contained, packaged, factory assembled, pre-wired and tested, consisting of cabinet and frame, supply fan, heat exchanger and burner, controls, air filters, refrigerant cooling coil and compressor, condenser coil, condenser fan, and a full refrigerant charge.

C. Unit shall be furnished with non-fused disconnect switch, short fuse protection of all internal electrical components, and all necessary motor starters, contactors, and over-current protection.

D. AHRI rated for direct expansion use with R-32 or R-454B.

E. Refrigerant Detection System (RDS)

1. Units manufactured using A2L refrigerants (e.g. R-32, R-454B) shall include a Refrigerant Detection System (RDS) with one or more refrigerant detection sensors to detect leaked refrigerant within the conditioned air stream in compliance with UL 60335-2-40. Minimum Safety Measures Activation shall include: Activating ventilation systems or fans to disperse refrigerant, disabling electrical ignition sources and issuing alarms or notifications.

2.03 FABRICATION

A. Cabinet: Galvanized steel with baked enamel finish, access doors with quick fasteners locking door handle type with piano hinges**.** Access doors shall be provided at each section (e.g., filter section, supply fan section, etc.). All exterior access must be permanently labeled on the outside indicating what is behind the panel. Structural members shall be minimum 18 gauge, with access doors of minimum 20 gauge.

B. Outside Air Intakes: The outside air intakes shall be located a minimum of 15 inches above the roof mounting curb to minimize the effect of heat pickup from the roof during the natural cooling cycle and the effects of snow on the roof during winter operation. Each air intake shall be furnished with rain eliminators.

C. Insulation: Minimum of 1/2" thick, 1.5 lb./cu. ft. density coated glass fiber insulation on surfaces where conditioned air is handled. Protect edges from erosion.

D. Heat Exchangers: Aluminized steel, of welded construction.

E. Air Filters: Two inch thick glass fiber disposable media in metal frames.

2.04 FANS/MOTORS

A. Fans:

1. Supply Fans: centrifugal; SWSI plenum or vane axial fan.
2. All fans shall be aluminum or composite construction with fan shaft: turned, ground and polished steel; keyed to wheel hub.
3. Fan and motor assemblies shall be resiliently mounted.
4. Direct drive motor.
5. All fan bearings must be capable of being lubricated by easily accessible grease fittings.
6. All fans must be statically and dynamically balanced.

B. Motors:

1. Motors shall be open drip-proof with grease lubricated bearings.
2. No equipment shall be selected or operate above 90% of its motor nameplate rating.
3. Motor shall have 1.15 service factor.

2.05 BURNER

A. Gas Burner: Atmospheric type burner with adjustable combustion air supply, pressure regulator, gas valves, manual shutoff, intermittent spark or glow coil ignition, flame sensing device, and automatic 100 percent shutoff pilot. Two stage

B. Gas Burner Safety Controls: Energize ignition, limit time for establishment of flame, prevent opening of gas valve until pilot flame is proven, stop gas flow on ignition failure, energize blower motor, and after airflow proven and slight delay, allow gas valve to open.

C. High Limit Control: Temperature sensor with fixed stop at maximum permissible setting, de-energize burner on excessive bonnet temperature and energize burner when temperature drops to lower safe value.

D. Supply Fan Control: Temperature sensor sensing bonnet temperatures and independent of burner controls, or adjustable time delay relays with switch for continuous fan operation.

2.06 EVAPORATOR COIL

A. Provide copper tube with aluminum fin coil assembly.

B. Install a drain pan under each cooling coil meeting requirements as outlined in ASHRAE 62.1. The drain pans shall extend the entire width of each coil, including piping and header if in the air stream. The length shall be as necessary to limit water droplet carryover beyond the drain pan to 0.0044oz per ft2 of face area per hour under peak sensible and peak dew point design conditions, considering both latent load and coil face velocity. Pitch drain pans in two directions towards the outlet, with a slope of at least 1/8" per foot.

C. Provide capillary tubes or thermostatic expansion valves for units of 6 tons capacity and less, and thermostatic expansion valves and alternate row circuiting for units 7.5 tons cooling capacity and larger.

D. Provide insulation on liquid refrigerant and suction piping between compressor and evaporator coil where not protected by drain pans. Insulation shall be elastomeric cellular foam; ANSI/ASTM C534; flexible plastic; 0.27 maximum 'K' value at 75°F, 25/50 flame spread/smoke developed rating when tested in accordance with ASTM E84 (UL 723). Maximum 1" thick per layer where multiple layers are specified.

E. Drain Pan Condensate Overflow Switch: Float with integral magnet overflow switch conforming to UL508. Factory installed in drain pan and wired to shut the rooftop unit down with a fault alarm. No standby power required.

2.07 COMPRESSOR

A. Provide hermetic or semi-hermetic compressors (quantity as scheduled on drawings), 3600 rev/min maximum, resiliently mounted with positive lubrication, high and low pressure safety controls, motor overload protection, suction and discharge service valves and gauge ports, and filter drier.

B. Provide capacity control by staging multiple compressors, digital scrolls, inverter duty scroll compressors.

C. Five minute timed off circuit shall delay compressor start.

D. The use of hydrochlorofluorocarbon (HCFC) or chlorofluorocarbon (CFC) based refrigerants is prohibited.

2.08 CONDENSER

A. Condenser shall provide design capacity between the minimum and maximum ambient conditions scheduled on the drawings.

B. Condenser Coil:

1. Round Copper Tube and Aluminum Fins: Construct condenser coils of aluminum fins mechanically bonded to seamless copper tubing. Air test under water to 450 psig.

C. Condenser Fans: Provide direct drive propeller fans, resiliently mounted with fan guard, motor overload protection, wired to operate with compressor. Fan blade design shall be a dynamic profile for low tip speed. Fan blade shall be aluminum or composite material.

D. Condenser Motors: Fan motors shall be an ECM type motor for proportional control. The motor shall include thermal overload protection and protect the motor in the case of excessive motor temperatures. The motor shall have phase failure protection and prevent the motor from operation in the event of a loss of phase.

E. Entire fan assembly shall be statically and dynamically balanced.

F. Provide refrigerant pressure switches to cycle condenser fans.

G. Provide hail guards on all condenser coils.

H. Liquid and discharge isolation valves with staged and digital scrolls.

2.09 ECONOMIZERS

A. Factory installed by approved rooftop unit manufacturer with fully modulating motorized outside air and return air dampers.

B. To be controlled by fixed enthalpy and fixed dry-bulb controller with minimum position setting.

C. Shall be equipped with 100% capable relief barometric damper relieving up to 100% return air and sealed to meet ASHRAE 90.1 requirements.

D. Shall be capable of introducing up to 100% outside air.

E. Shall maintain minimum airflow into the building during occupied period and provide design ventilation rate for full occupancy.

F. Dampers shall be capable of completely closing when unit is in unoccupied mode.

G. Outside air damper normally closed and return air damper normally open.

H. Provide factory installed and tested, outdoor air monitor that controls outdoor air ± 15% accuracy down to 40 CFM per ton.

2.10 ELECTRICAL

A. Provide with single point power connection to service all controls, dampers, outlet, and fans, complete with non-fused disconnect switch, short circuit protection of all internal electrical components, and all necessary motor starters, contactors, and over-current protection, transformer.

B. All units must be so constructed that when the electrical section access panel is opened, all electrical power to the unit (with the exception of the 120 volt duplex convenience outlet) is disconnected by means of a single disconnect**.**

C. All wiring must be labeled, numbered, and terminate in "spade clips". All terminal strips must be keyed to the wiring numbers. Each control device must be permanently labeled to indicate its function.

D. Wiring diagrams for all circuits must be permanently affixed to the inside of the electrical section access panel. The markings of terminal strips and wiring must agree with the numbering on the wiring diagrams.

E. All units shall include a transformer for controls and convenience outlet.

F. Only one power cable connection to the unit shall be necessary.

G. Motor shall include phase failure protection and prevent the motor from operation in the event of phase loss.

2.11 OPERATING CONTROLS - VARIABLE VOLUME UNITS

A. Temperature transmitter located in supply air shall signal electronic logic panel to control mixing dampers and cooling in sequence to maintain 55°F(adj.).

B. Control cooling by modulating compressors.

C. Control logic shall allow adjustable supply air reset under low load or airflow conditions.

D. Seven-day timeclock with spring carry over (or electronic clock with battery backup) shall control unit on occupied/unoccupied schedule. At night, unit shall be off. Locate clock in remote control panel with status lights. Each unit shall also have the ability to accept a time schedule via BAS network communications.

E. Supply, Return, and Outdoor Air Sensor Input: Sensors shall be factory installed for supply, return, and outdoor airflows.

F. System Control: The central control panel scans the unit control modules to determine the deviations from temperature setpoint, time of deviation, time from last changeover, and number of UCMs requiring heating or cooling. Based upon this information, the system heat/cool mode and stage of capacity is selected. The central control panel also monitors the system air temperature to ensure that high and low temperature limits are maintained.

2.12 DDC TEMPERATURE CONTROLS

A. Install standalone control module providing communication between unit controls and packaged DDC temperature control system.

B. Control module shall be compatible with temperature control system specified in Section 23 09 00. Provide BACnet gateway for communication.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify that roof is ready to receive work and opening dimensions are as indicated on shop drawings and illustrated by the manufacturer.

B. Verify that proper power supply is available.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Mount units on factory built roof mounting curb and provide watertight enclosure to protect ductwork and utility services. Install unit level.

C. All field wiring shall be in accordance with the National Electrical Code.

D. P-traps must be provided for all drain pans.

E. Comb all coils to repair bent fins.

3.03 MANUFACTURER'S FIELD SERVICES

A. Provide initial start-up and shutdown during first year of operation.

END OF SECTION 23 74 16.12

SECTION 26 05 00
BASIC ELECTRICAL REQUIREMENTS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Requirements applicable to all Division 26 Sections. Also refer to Division 1 - General Requirements. This section is also applicable to Fire Alarm and Detection Systems Section 28 31 00.

B. All materials and installation methods shall conform to the applicable standards, guidelines and codes referenced herein and within each specification section.

1.02 REFERENCES

A. NFPA 70 - National Electrical Code (NEC)

1.03 SCOPE OF WORK

A. This Specification and the associated drawings govern furnishing, installing, testing and placing into satisfactory operation the Electrical Systems.

B. The Contractor shall furnish and install all new materials as indicated on the drawings, and/or in these specifications, and all items required to make the portion of the Electrical Work a finished and working system.

C. All work will be awarded under a single General Contract. The division of work listed below is for the Contractor's convenience and lists normal breakdown of the work.

D. Description of Systems shall be as follows:

1. Electrical power system to and including luminaires, equipment, motors, devices, etc.
2. Fire alarm system.
3. Removal work and/or relocation and reuse of existing systems and equipment.

E. Work Not Included:

1. Telecommunications cabling will be by others, in raceways and conduits furnished and installed as part of the Electrical work.
2. Temperature control wiring for plumbing and HVAC equipment (unless otherwise indicated) will be by other Contractors.

1.04 DIVISION OF WORK BETWEEN MECHANICAL, ELECTRICAL, and CONTROL CONTRACTORS

A. Division of work is the responsibility of the Prime Contractor. Any scope of work described at any location on the contract document shall be sufficient for including said requirement in the project. The Prime Contractor shall be solely responsible for determining the appropriate subcontractor for the described scope. In no case shall the project be assessed an additional cost for scope that is described on the contract documents on bid day. The following division of responsibility is a guideline based on typical industry practice.

B. Definitions:

1. "Mechanical Contractors" refers to the Contractors listed in Division 21/22/23 of this Specification.
2. Motor Power Wiring: The single phase or 3 phase wiring extending from the power source (transformer, panelboard, feeder circuits, etc.) through disconnect switches and motor controllers to and including the connections to the terminals of the motor.
3. Motor Control Wiring: The wiring associated with the remote operation of the magnetic coils of magnetic motor starters or relays, or the wiring that permits direct cycling of motors by means of devices in series with the motor power wiring. In the latter case, the devices are usually single phase, have "Manual-Off-Auto" provisions, and are usually connected into the motor power wiring through a manual motor starter.

4. Control devices such as start-stop push buttons, thermostats, pressure switches, flow switches, relays, etc., generally represent the types of equipment associated with motor control wiring.
5. Motor control wiring is single phase and usually 120 volts. In some instances, the voltage will be the same as the motor power wiring. When the motor power wiring exceeds 120 volts, a control transformer is usually used to give a control voltage of 120 volts.
6. Temperature Control Wiring: The wiring associated with the operation of a motorized damper, solenoid valve or motorized valve, etc., either modulating or two-position, as opposed to wiring that directly powers or controls a motor used to drive equipment such as fans, pumps, etc. This wiring will be from a 120-volt source and may continue as 120 volt, or be reduced in voltage (24 volt), in which case a control transformer shall be furnished as part of the temperature control wiring.
7. Control Motor: An electric device used to operate dampers, valves, etc. It may be two-position or modulating. Conventional characteristics of such a motor are 24 volts, 60 cycles, 1 phase, although other voltages may be encountered.
8. Low Voltage Technology Wiring: The wiring associated with the technology systems, used for analog or digital signals between equipment.
9. Telecommunications/Technology Rough-in: Relates specifically to the backboxes, necessary plaster rings and other miscellaneous hardware required for the installation or mounting of telecommunications/technology information outlets.

C. General:
1. The purpose of these Specifications is to outline the Electrical and Mechanical Contractors' responsibilities related to electrical work required for items such as temperature controls, mechanical equipment, fans, chillers, compressors, etc. The exact wiring requirements for much of the equipment cannot be determined until the systems have been selected and submittals approved. Therefore, the electrical drawings show only known wiring related to such items. All wiring not shown on the electrical drawings, but required for mechanical systems, is the responsibility of the Mechanical Contractor.
2. Where the drawings require the Electrical Contractor to wire between equipment furnished by the Mechanical Contractor, such wiring shall terminate at terminals provided in the equipment. The Mechanical Contractor shall furnish complete wiring diagrams and supervision to the Electrical Contractor and designate the terminal numbers for correct wiring.
3. The Electrical Contractor shall establish electrical utility elevations prior to fabrication and installation. The Electrical Contractor shall coordinate utility elevations with other trades. When a conflict arises, priority shall be as follows:
    a. Luminaires.
    b. Gravity flow piping, including steam and condensate.
    c. Electrical bus duct.
    d. Sheet metal.
    e. Cable trays, including access space.
    f. Other piping.
    g. Conduits and wireway.

D. Mechanical Contractor's Responsibility:
1. Assumes responsibility for internal wiring of all equipment furnished by the Mechanical Contractor.

2. Assumes all responsibility for miscellaneous items furnished by the Mechanical Contractor that require wiring but are not shown on the electrical drawings or specified in the Electrical Specification. If items such as relays, flow switches, or interlocks are required to make the mechanical system function correctly or are required by the manufacturer, they are the responsibility of the Mechanical Contractor.
3. Assumes all responsibility for Temperature Control wiring, if the Temperature Control Contractor is a Subcontractor to the Mechanical Contractor.
4. This Contractor is responsible for coordination of utilities with all other Contractors. If any field coordination conflicts are found, the Contractor shall coordinate with other Contractors to determine a viable layout.

E. Temperature Control Contractor's or Subcontractor's Responsibility:
1. Wiring of all devices needed to make the Temperature Control System functional.
2. Verifying any control wiring on the electrical drawings as being by the Electrical Contractor. All wiring required for the Control System, but not shown on the electrical drawings, is the responsibility of the Temperature Control Contractor or Subcontractor.
3. Coordinating equipment locations (such as PE's, EP's, relays, transformers, etc.) with the Electrical Contractor, where wiring of the equipment is by the Electrical Contractor.

F. Electrical Contractor's Responsibility:
1. Furnishes and installs all combination starters, manual starters and disconnect devices shown on the Electrical Drawings or indicated to be by the Electrical Contractor in the Mechanical Drawings or Specifications.
2. Installs and wires all remote-control devices furnished by the Mechanical Contractor or Temperature Control Contractor when so noted on the Electrical Drawings.
3. Furnishes and installs motor control and temperature control wiring, when noted on the drawings.
4. Furnishes, installs, and connects all relays, etc., for automatic shutdown of certain mechanical equipment (supply fans, exhaust fans, etc.) upon actuation of the Fire Alarm System.
5. This Contractor is responsible for coordination of utilities with all other Contractors. If any field coordination conflicts are found, the Contractor shall coordinate with other Contractors to determine a viable layout.

G. General (Electrical/Technology):
1. The purpose of these Specifications is to outline the Electrical and Technology Contractor's work responsibilities as related to Telecommunications Rough-in, conduit, cable tray, power wiring and Low Voltage Technology Wiring.
2. The exact wiring requirements for much of the equipment cannot be determined until the systems have been purchased and submittals approved. Therefore, only known wiring, conduits, raceways and electrical power related to such items is shown on the Technology drawings. Other wiring, conduits, raceways, junction boxes and electrical power not shown on the Technology Drawings but required for operation of the systems is the responsibility of the Technology Contractor and included in said Contractor's bid.
3. Where the Electrical Contractor is required to install conduit, conduit sleeves and/or power connections in support of Technology systems, the final installation shall not be until a coordination meeting between the Electrical Contractor and the Technology Contractor has convened to determine the exact location and requirements of the installation.
4. Where the Electrical Contractor is required to install cable tray that will contain Low Voltage Technology Wiring, installation shall not begin prior to a coordination review of the cable tray shop drawings by the Technology Contractor.

H. Technology Contractor's Responsibility:

1. Assumes all responsibility for the low voltage technology wiring of all systems, including cable support where open cable is specified.
2. Assumes all responsibility for providing and installing all ladder rack and other cable management hardware (as defined herein).
3. Responsible for providing the Electrical Contractor with the required grounding lugs or other hardware for each piece of technology equipment which is required to be bonded to the telecommunications ground bar.
4. This Contractor is responsible for coordination of utilities with all other Contractors. If any field coordination conflicts are found, the Contractor shall coordinate with other Contractors to determine a viable layout.

1.05 QUALITY ASSURANCE

A. Contractor's Responsibility Prior to Submitting Pricing/Bid Data:

1. The Contractor is responsible for constructing complete and operating systems. The Contractor acknowledges and understands that the Contract Documents are a two-dimensional representation of a three-dimensional object, subject to human interpretation. This representation may include imperfect data, interpreted codes, utility guides, three-dimensional conflicts, and required field coordination items. Such deficiencies can be corrected when identified prior to ordering material and starting installation. The Contractor agrees to carefully study and compare the individual Contract Documents and report at once in writing to the Architect/Engineer any deficiencies the Contractor may discover. The Contractor further agrees to require each subcontractor to likewise study the documents and report at once any deficiencies discovered.
2. The Contractor shall resolve all reported deficiencies with the Architect/Engineer prior to awarding any subcontracts, ordering material, or starting any work with the Contractor's own employees. Any work performed prior to receipt of instructions from the Architect/Engineer will be done at the Contractor's risk.

B. Qualifications:

1. Only products of reputable manufacturers as determined by the Architect/Engineer are acceptable.
2. All Contractors and subcontractors shall employ only workmen who are skilled in their trades. At all times, the number of apprentices at the job site shall be less than or equal to the number of journeymen at the job site.

C. Compliance with Codes, Laws, Ordinances:

1. Conform to all requirements of the City of Marshalltown, Iowa's Codes, Laws, Ordinances and other regulations having jurisdiction.
2. If there is a discrepancy between the codes and regulations and these specifications, the Architect/Engineer shall determine the method or equipment used.
3. If the Contractor notes, at the time of bidding, that any parts of the drawings or specifications do not comply with the codes or regulations, Contractor shall inform the Architect/Engineer in writing, requesting a clarification. If there is insufficient time for this procedure, Contractor shall submit with the proposal a separate price to make the system comply with the codes and regulations.
4. All changes to the system made after the letting of the contract to comply with codes or the requirements of the Inspector, shall be made by the Contractor without cost to the Owner.
5. If there is a discrepancy between manufacturer's recommendations and these specifications, the manufacturer's recommendations shall govern.
6. If there are no local codes having jurisdiction, the current issue of the National Electrical Code shall be followed.

D. Permits, Fees, Taxes, Inspections:

1. Procure all applicable permits and licenses.
2. Abide by all laws, regulations, ordinances, and other rules of the State or Political Subdivision where the work is done, or as required by any duly constituted public authority.
3. Pay all charges for permits or licenses.
4. Pay all fees and taxes imposed by State, Municipal, and other regulatory bodies.
5. Pay all charges arising out of required inspections by an authorized body.
6. Pay all charges arising out of required contract document reviews associated with the project and as initiated by the Owner or authorized agency/consultant.
7. Where applicable, all fixtures, equipment and materials shall be listed by Underwriter's Laboratories, Inc. or a nationally recognized testing organization.
8. Pay all telephone company charges related to the service or change in service.

E. Examination of Drawings:

1. The drawings for the electrical work are completely diagrammatic, intended to convey the scope of the work and to indicate the general arrangements and locations of equipment, outlets, etc., and the approximate sizes of equipment.
2. Contractor shall determine the exact locations of equipment and rough-ins, and the exact routing of raceways to best fit the layout of the job. Conduit entry points for electrical equipment including, but not limited to, panelboards, switchboards, switchgear and unit substations, shall be determined by the Contractor unless noted in the contract documents.
3. Scaling of the drawings will not be sufficient or accurate for determining these locations.
4. Where job conditions require reasonable changes in arrangements and locations, such changes shall be made by the Contractor at no additional cost to the Owner.
5. Because of the scale of the drawings, certain basic items, such as junction boxes, pull boxes, conduit fittings, etc., may not be shown, but where required by other sections of the specifications or required for proper installation of the work, such items shall be furnished and installed.
6. If an item is either shown on the drawings or called for in the specifications, it shall be included in this contract.
7. The Contractor shall determine quantities and quality of material and equipment required from the documents. Where discrepancies arise between drawings, schedules and/or specifications, the greater and better-quality number shall govern.
8. Where used in electrical documents the word "furnish" shall mean supply for use, the word "install" shall mean connect up complete and ready for operation, and the word "provide" shall mean to supply for use and connect up complete and ready for operation.
9. Any item listed as furnished shall also be installed unless otherwise noted.
10. Any item listed as installed shall also be furnished unless otherwise noted.

F. Electronic Media/Files:

1. Construction drawings for this project have been prepared utilizing Revit.
2. Contractors and Subcontractors may request electronic media files of the contract drawings and/or copies of the specifications. Specifications will be provided in PDF format.
3. Upon request for electronic media, the Contractor shall complete and return a signed "Electronic File Transmittal" form provided by IMEG.

4. If the information requested includes floor plans prepared by others, the Contractor will be responsible for obtaining approval from the appropriate Design Professional for use of that part of the document.
5. The electronic contract documents can be used for preparation of shop drawings and as-built drawings only. The information may not be used in whole or in part for any other project.
6. The drawings prepared by IMEG for bidding purposes may not be used directly for ductwork layout drawings or coordination drawings.
7. The use of these CAD documents by the Contractor does not relieve them from their responsibility for coordination of work with other trades and verification of space available for the installation.
8. The information is provided to expedite the project and assist the Contractor with no guarantee by IMEG as to the accuracy or correctness of the information provided. IMEG accepts no responsibility or liability for the Contractor's use of these documents.

G. Field Measurements:
1. Verify all pertinent dimensions at the job site before ordering any conduit, conductors, wireways, bus duct, fittings, etc.

1.06 WEB-BASED PROJECT SOFTWARE

A. The General Contractor shall provide a web-based project software site for the purpose of hosting and managing project communication and documentation until completion of the warranty phase.

B. The web-based project software shall include, at a minimum, the following features: construction schedule, submittals, RFIs, ASIs, construction change directives, change orders, drawing management, specification management, payment applications, contract modifications, meeting minutes, construction progress photos.

C. Provide web-based project software user licenses for use by the Architect/Engineer. Access will be provided from the start of the project through the completion of the warranty phase.

D. At project completion, provide digital archive of entire project in format that is readable by common desktop software applications in format acceptable to Architect/Engineer. Provide data in locked format to prevent further changes.

1.07 SUBMITTALS

A. Submittals shall be required for the following items, and for additional items where required elsewhere in the specifications or on the drawings.
1. Submittals list:

Referenced Specification Section	Submittal Item
26 09 33	Lighting Control System
26 27 26	Wiring Devices
26 51 19	LED Lighting
28 31 00	Fire Alarm and Detection Systems

B. General Submittal Procedures: In addition to the provisions of Division 1, the following are required:

1. Transmittal: Each transmittal shall include the following:
    a. Date
    b. Project title and number
    c. Contractor's name and address
    d. Division of work (e.g., electrical, plumbing, heating, ventilating, etc.)
    e. Description of items submitted and relevant specification number
    f. Notations of deviations from the contract documents
    g. Other pertinent data
2. Submittal Cover Sheet: Each submittal shall include a cover sheet containing:
    a. Date
    b. Project title and number
    c. Architect/Engineer
    d. Contractor and subcontractors' names and addresses
    e. Supplier and manufacturer's names and addresses
    f. Division of work (e.g., electrical, plumbing, heating, ventilating, etc.)
    g. Description of item submitted (using project nomenclature) and relevant specification number
    h. Notations of deviations from the contract documents
    i. Other pertinent data
    j. Provide space for Contractor's review stamps
3. Composition:
    a. Submittals shall be submitted using specification sections and the project nomenclature for each item.
    b. Individual submittal packages shall be prepared for items in each specification section. All items within a single specification section shall be packaged together where possible. An individual submittal may contain items from multiple specifications sections if the items are intimately linked (e.g., pumps and motors).
    c. All sets shall contain an index of the items enclosed with a general topic description on the cover.
4. Content: Submittals shall include all fabrication, erection, layout, and setting drawings; manufacturers' standard drawings; schedules; descriptive literature, catalogs and brochures; performance and test data; wiring and control diagrams; dimensions; shipping and operating weights; shipping splits; service clearances; and all other drawings and descriptive data of materials of construction as may be required to show that the materials, equipment or systems and the location thereof conform to the requirements of the contract documents.
5. Contractor's Approval Stamp:
    a. The Contractor shall thoroughly review and approve all shop drawings before submitting them to the Architect/Engineer. The Contractor shall stamp, date and sign each submittal certifying it has been reviewed.
    b. Unstamped submittals will be rejected.

c. The Contractor's review shall include, but not be limited to, verification of the following:
    1) Only approved manufacturers are used.
    2) Addenda items have been incorporated.
    3) Catalog numbers and options match those specified.
    4) Performance data matches that specified.
    5) Electrical characteristics and loads match those specified.
    6) Equipment connection locations, sizes, capacities, etc. have been coordinated with other affected trades.
    7) Dimensions and service clearances are suitable for the intended location.
    8) Equipment dimensions are coordinated with support steel, housekeeping pads, openings, etc.
    9) Constructability issues are resolved (e.g., weights and dimensions are suitable for getting the item into the building and into place, sinks fit into countertops, etc.).

d. The Contractor shall review, stamp and approve all subcontractors' submittals as described above.

e. The Contractor's approval stamp is required on all submittals. Approval will indicate the Contractor's review of all material and a complete understanding of exactly what is to be furnished. Contractor shall clearly mark all deviations from the contract documents on all submittals. If deviations are not marked by the Contractor, then the item shall be required to meet all drawing and specification requirements.

6. Submittal Identification and Markings:
    a. The Contractor shall clearly mark each item with the same nomenclature applied on the drawings or in the specifications.
    b. The Contractor shall clearly indicate the size, finish, material, etc.
    c. Where more than one model is shown on a manufacturer's sheet, the Contractor shall clearly indicate exactly which item and which data is intended.
    d. All marks and identifications on the submittals shall be unambiguous.
7. Schedule submittals to expedite the project. Coordinate submission of related items.
8. Identify variations from the contract documents and product or system limitations that may be detrimental to the successful performance of the completed work.
9. Reproduction of contract documents alone is not acceptable for submittals.
10. Incomplete submittals will be rejected without review. Partial submittals will only be reviewed with prior approval from the Architect/Engineer.
11. Submittals not required by the contract documents may be returned without review.
12. The Architect/Engineer's responsibility shall be to review one set of shop drawing submittals for each product. If the first submittal is incomplete or does not comply with the drawings and/or specifications, the Contractor shall be responsible to bear the cost for the Architect/Engineer to recheck and handle the additional shop drawing submittals.
13. Submittals shall be reviewed and approved by the Architect/Engineer before releasing any equipment for manufacture or shipment.
14. Contractor's responsibility for errors, omissions or deviation from the contract documents in submittals is not relieved by the Architect/Engineer's approval.

15. Schedule shall allow for adequate time to perform orderly and proper review of submittals, including time for consultants and Owner if required, and resubmittals by Contractor if necessary, and to cause no delay in Work or in activities of Owner or other contractors.
    a. Allow at least two weeks for Architect's/Engineer's review and processing of each submittal, excluding mailing.
16. Architect/Engineer reserves the right to withhold action on a submittal which, in the Architect/Engineer's opinion, requires coordination with other submittals until related submittals are received. The Architect/Engineer will notify the Contractor, in writing, when they exercise this right.

C. Electronic Submittal Procedures:
1. Distribution: Email submittals as attachments to all parties designated by the Architect/Engineer, unless a web-based submittal program is used.
2. Transmittals: Each submittal shall include an individual electronic letter of transmittal.
3. Format: Electronic submittals shall be in PDF format only. Scanned copies, in PDF format, of paper originals are acceptable. Submittals that are not legible will be rejected. Do not set any permission restrictions on files; protected, locked, or secured documents will be rejected.
4. File Names: Electronic submittal file names shall include the relevant specification section number followed by a description of the item submitted, as follows. Where possible, include the transmittal as the first page of the PDF instead of using multiple electronic files.
    a. Submittal file name: 26 XX XX.description.YYYYMMDD
    b. Transmittal file name: 26 XX XX.description.YYYYMMDD
5. File Size: Files shall be transmitted via a pre-approved method. Larger files may require an alternative transfer method, which shall also be pre-approved.

1.08 CHANGE ORDERS

A. A detailed material and labor takeoff shall be prepared for each change order, along with labor rates and markup percentages. Change orders shall be broken down by sheet or associated individual line item indicated in the change associated narrative, whichever provides the most detailed breakdown. Change orders with inadequate breakdown will be rejected.

B. Itemized pricing with unit cost shall be provided from all distributors and associated subcontractors.

C. Change order work shall not proceed until authorized.

1.09 PRODUCT DELIVERY, STORAGE, HANDLING and MAINTENANCE

A. Exercise care in transporting and handling to avoid damage to materials. Store materials on the site to prevent damage.

B. Protect equipment, components, and openings with airtight covers and exercise care at every stage of storage, handling, and installation of equipment to prevent airborne dust and dirt from entering or fouling equipment to include, but not limited to:
1. Variable frequency drives.
2. Lighting luminaires and lighting control systems.

C. Equipment and components that are visibly damaged or have been subject to environmental conditions prior to building turnover to Owner that could shorten the life of the component (for example, water damage, humidity, dust and debris, excessive hot or cold storage location, etc.) shall be repaired or replaced with new equipment or components without additional cost to the building owner.

D. Keep all materials clean, dry and free from damaging environments.

E. Coordinate the installation of heavy and large equipment with the General Contractor and/or Owner. If the Electrical Contractor does not have prior documented experience in rigging and lifting similar equipment, they shall contract with a qualified lifting and rigging service that has similar documented experience. Follow all equipment lifting and support guidelines for handling and moving.

F. Contractor is responsible for moving equipment into the building and/or site. Contractor shall review site prior to bid for path locations and any required building modifications to allow movement of equipment. Contractor shall coordinate the work with other trades.

1.10 NETWORK / INTERNET CONNECTED EQUIPMENT

A. These specifications may require certain equipment or systems to have network, Internet and/or remote access capability ("Network Capability"). Any requirement for Network Capability shall be interpreted only as a functional capability and is not to be construed as authority to connect or enable any Network Capability. Network Capability may only be connected or enabled with the express written consent of the Owner.

B. The following network connected equipment shall be equipped with restricted access protocols:

1. Adjustable trip overcurrent protection devices
2. Power monitoring and control
3. Electrical controls
4. Lighting control system
5. Variable frequency drives
6. Package engine generator and remote annunciator
7. Transfer switch and remote annunciator
8. Static uninterruptible power supply (UPS)
9. Fire alarm and automatic detection

1.11 WARRANTY

A. Provide one-year warranty for all fixtures, equipment, materials, and workmanship.

B. The warranty period for all work in this specification Division shall commence on the date of Substantial Completion or successful system performance whichever occurs later. The warranty may also commence if a whole or partial system or any separate piece of equipment or component is put into use for the benefit of any party other than the installing contractor with prior written authorization of the Owner. In this instance, the warranty period shall commence on the date when such whole system, partial system or separate piece of equipment or component is placed in operation and accepted in writing by the Owner.

C. Warranty requirements extend to correction, without cost to the Owner, of all work found to be defective or nonconforming to the contract documents. The Contractor shall bear the cost of correcting all damage due to defects or nonconformance with contract documents excluding repairs required as a result of improper maintenance or operation, or of normal wear as determined by the Architect/Engineer.

1.12 INSURANCE

A. This Contractor shall maintain insurance coverage as set forth in Division 1 of these specifications.

1.13 MATERIAL SUBSTITUTION

A. Where several manufacturers' names are given, the manufacturer for which a catalog number is given is the basis for job design and establishes the quality.

B. Equivalent equipment manufactured by the other listed manufacturers may be used. Contractor shall ensure that all items submitted by these other manufacturers meet all requirements of the drawings and specifications and fits in the allocated space. When using other listed manufacturers, the Contractor shall assume responsibility for any and all modifications necessary (including, but not limited to structural supports, electrical connections and rough-in, and regulatory agency approval, etc.) and coordinate such with other contractors. The Architect/Engineer shall make the final determination of whether a product is equivalent.

C. Any material, article or equipment of other unnamed manufacturers which will adequately perform the services and duties imposed by the design and is of a quality equal to or better than the material, article or equipment identified by the drawings and specifications may be used if approval is secured in writing from the Architect/Engineer via addendum. The Contractor assumes all costs incurred as a result of using the offered material, article or equipment, on the Contractors part or on the part of other Contractors whose work is affected.

D. Voluntary add or deduct prices for alternate materials may be listed on the bid form. These items will not be used in determining the low bidder. This Contractor assumes all costs incurred as a result of using the offered material or equipment on the Contractors part or on the part of other Contractors whose work is affected.

E. All material substitutions requested after the final addendum must be listed as voluntary changes on the bid form.

1.14 PROJECT COMMISSIONING

A. The Contractor shall work with the Commissioning Agent (CxA) as described in Section 01 91 00 and provide all services as described in the Commissioning Plan.

PART 2 - PRODUCTS

2.01 GENERAL

A. All items of material having a similar function (e.g., safety switches, panelboards, switchboards, contactors, motor starters, dry type transformers) shall be of the same manufacturer unless specifically stated otherwise on drawings or elsewhere in specifications.

PART 3 - EXECUTION

3.01 JOBSITE SAFETY

A. Neither the professional activities of the Architect/Engineer, nor the presence of the Architect/Engineer or the employees and subconsultants at a construction site, shall relieve the Contractor and any other entity of their obligations, duties and responsibilities including, but not limited to, construction means, methods, sequence, techniques or procedures necessary for performing, superintending or coordinating all portions of the work of construction in accordance with the contract documents and any health or safety precautions required by any regulatory agencies. The Architect/Engineer and personnel have no authority to exercise any control over any construction contractor or other entity or their employees in connection with their work or any health or safety precautions. The Contractor is solely responsible for jobsite safety. The Architect/Engineer and the Architect/Engineer's consultants shall be indemnified and shall be made additional insureds under the Contractor's general liability insurance policy.

3.02 ARCHITECT/ENGINEER OBSERVATION OF WORK

A. The contractor shall provide seven (7) calendar days' notice to the Architect/Engineer prior to:

1. Placing fill over underground and underslab utilities.
2. Covering exterior walls, interior partitions and chases.
3. Installing hard or suspended ceilings and soffits.

B. The Architect/Engineer will review the installation and provide a written report noting deficiencies requiring correction. The contractor's schedule shall account for these reviews and show them as line items in the approved schedule.

C. Above-Ceiling Final Observation:

1. All work above the ceilings must be complete prior to the Architect/Engineer's review. This includes, but is not limited to:
    a. All junction boxes are closed and identified in accordance with Section 26 05 53 Electrical Identification.
    b. Luminaires, including ceiling-mounted exit and emergency lights, are installed and operational.
    c. Luminaire whips are supported above the ceiling.
    d. Conduit identification is installed in accordance with Section 26 05 53 Electrical Identification.
    e. Luminaires are suspended independently of the ceiling system when required by these contract documents.
    f. All wall penetrations have been sealed.
2. To prevent the Above-Ceiling Final Observation from occurring too early, the Contractor shall review the status of the work and certify, in writing, that the work is ready for the Above-Ceiling Final Observation.
3. It is understood that if the Architect/Engineer finds the ceilings have been installed prior to this review and prior to seven days elapsing, the Architect/Engineer may not recommend further payments to the contractor until full access has been provided.

3.03 PROJECT CLOSEOUT

A. The following paragraphs supplement the requirements of Division 1.

B. IDPH Pre-Occupancy Requirements:

1. Each Contractor must submit all forms and certifications required by IDPH relating to their work at 85% completion of the project or when directed by the Owner/Architect/Engineer.

C. Final Jobsite Observation:

1. To prevent the Final Jobsite Observation from occurring too early, the Contractor shall review the completion status of the project and certify that the job is ready for the final jobsite observation.
2. Attached to the end of this section is a typical list of items that represent the degree of job completeness expected prior to requesting a review. The Contractor shall sign the attached certification and return it to the Architect/Engineer so that the final observation can be scheduled.
3. It is understood that if the Architect/Engineer finds the job not ready for the final observation and additional trips and observations are required to bring the project to completion, the cost of the additional time and expenses incurred by the Architect/Engineer will be deducted from the Contractor's final payment.
4. Contractor shall notify Architect/Engineer 48 hours prior to installation of ceilings or lay-in ceiling tiles.

D. The following must be submitted before Architect/Engineer recommends final payment:

1. Operation and maintenance manuals with copies of approved shop drawings.
2. Record documents including marked-up or reproducible drawings and specifications.
3. A report documenting the instructions given to the Owner's representatives complete with the number of hours spent in the instruction. The report shall bear the signature of an authorized agent of this Contractor and shall be signed by the Owner's representatives.
4. Provide spare parts, maintenance, and extra materials in quantities specified in individual specification sections. Deliver to project site and place in location as directed and submit receipt to Architect/Engineer.

5. Inspection and testing report by the fire alarm system manufacturer.
6. Start-up reports on all equipment requiring a factory installation or start-up.

E. Circuit Directories:

1. Provide custom typed circuit directory for each branch circuit panelboard. Provide updated custom typed circuit directory for each existing branch circuit panelboard with new or revised circuits per the scope of work. Label shall include equipment name or final approved room name, room number, and load type for each circuit (examples: SUMP SP-1 or ROOM 101 RECEPT). Revise directory to reflect circuit changes required to balance phase loads. Printed copies of the bid document panel schedules are not acceptable as circuit directories.

3.04 OPERATION AND MAINTENANCE MANUALS

A. General:

1. Provide an electronic copy of the O&M manuals as described below for Architect/Engineer's review and approval. The electronic copy shall be corrected as required to address the Architect/Engineer's comments. Once corrected, electronic copies and paper copies shall be distributed as directed by the Architect/Engineer.
2. Approved O&M manuals shall be completed and in the Owner's possession prior to Owner's acceptance and at least 10 days prior to instruction of operating personnel.

B. Electronic Submittal Procedures:

1. Distribution: Email the O&M manual as attachments to all parties designated by the Architect/Engineer.
2. Transmittals: Each submittal shall include an individual electronic letter of transmittal.
3. Format: Electronic submittals shall be in PDF format only. Scanned copies, in PDF format, of paper originals are acceptable. Submittals that are not legible will be rejected. Do not set any permission restrictions on files; protected, locked, or secured documents will be rejected.
4. File Names: Electronic submittal file names shall include the relevant specification section number followed by a description of the item submitted, as follows. Where possible, include the transmittal as the first page of the PDF instead of using multiple electronic files.
    a. O&M file name: O&M.div26.contractor.YYYYMMDD
    b. Transmittal file name: O&Mtransmittal.div26.contractor.YYYYMMDD
5. File Size: Files shall be transmitted via a pre-approved method. Larger files may require an alternative transfer method, which shall also be pre-approved.
6. Provide the Owner with an approved copy of the O&M manual on compact discs (CD), digital video discs (DVD), or flash drives with a permanently affixed label, printed with the title "Operation and Maintenance Instructions", title of the project and subject matter of disc/flash drive when multiple disc/flash drives are required.
7. All text shall be searchable.
8. Bookmarks shall be used, dividing information first by specification section, then systems, major equipment and finally individual items. All bookmark titles shall include the nomenclature used in the construction documents and shall be an active link to the first page of the section being referenced.

C. Operation and Maintenance Instructions shall include:

1. Title Page: Include title page with project title, Architect, Engineer, Contractor, all subcontractors, and major equipment suppliers, with addresses, telephone numbers, website addresses, email addresses and point of contacts. Website URLs and email addresses shall be active links in the electronic submittal.

2. Table of Contents: Include a table of contents describing specification section, systems, major equipment, and individual items.
3. Copies of all final approved shop drawings and submittals. Include Architect's/Engineer's shop drawing review comments. Insert the individual shop drawing directly after the Operation and Maintenance information for the item(s) in the review form.
4. Copies of all factory inspections and/or equipment startup reports.
5. Copies of warranties.
6. Schematic wiring diagrams of the equipment that have been updated for field conditions. Field wiring shall have label numbers to match drawings.
7. Dimensional drawings of equipment.
8. Detailed parts lists with lists of suppliers.
9. Operating procedures for each system.
10. Maintenance schedule and procedures. Include a chart listing maintenance requirements and frequency.
11. Repair procedures for major components.
12. Replacement parts and service material requirements for each system and the frequency of service required.
13. Instruction books, cards, and manuals furnished with the equipment.
14. Include record drawings of the one-line diagrams for each major system. The graphic for each piece of equipment shown on the one-line diagram shall be an active link to its associated Operation & Maintenance data.
15. Copies of all panel schedules in electronic Microsoft Excel spreadsheet (.xlsx) file. Each panelboard shall be a separate tab in the workbook.

3.05 INSTRUCTING THE OWNER'S REPRESENTATIVE

A. Adequately instruct the Owner's designated representatives in the maintenance, care, and operation of the complete systems installed under this contract.

B. Provide verbal and written instructions to the Owner's representatives by FACTORY PERSONNEL in the care, maintenance, and operation of the equipment and systems.

C. The instructions shall include:
1. Maintenance of equipment.
2. Start-up procedures for all major equipment.
3. Description of emergency system operation.

D. Notify the Architect/Engineer of the time and place for the verbal instructions to be given to the Owner's representative so a representative can be present if desired.

E. Minimum hours of instruction time for each item and/or system shall be as indicated in each individual specification section.

F. Operating Instructions:
1. Contractor is responsible for all instructions to the Owner's representatives for the electrical and specialized systems.
2. If the Contractor does not have staff that can adequately provide the required instructions, the Contractor shall include in the bid an adequate amount to reimburse the Owner for the Architect/Engineer to perform these services.

3.06 RECORD DOCUMENTS

A. The following paragraphs supplement Division 1 requirements.

B. Maintain at the job site a separate and complete set of electrical drawings and specifications with all changes made to the systems clearly and permanently marked in complete detail.

C. Mark drawings and specifications to indicate approved substitutions; Change Orders, and actual equipment and materials used. All Change Orders, RFI responses, Clarifications and other supplemental instructions shall be marked on the documents. Record documents that merely reference the existence of the above items are not acceptable. Should this Contractor fail to complete Record Documents as required by this contract, this Contractor shall reimburse Architect/Engineer for all costs to develop record documents that comply with this requirement. Reimbursement shall be made at the Architect/Engineer's hourly rates in effect at the time of work.

D. Record changes daily and keep the marked drawings available for the Architect/Engineer's examination at any normal work time.

E. Upon completing the job, and before final payment is made, give the marked-up drawings to the Architect/Engineer.

F. Record actual routing of conduits exceeding 2 inches.

3.07 PAINTING

A. Paint all equipment that is marred or damaged prior to the Owner's acceptance. Paint and color shall match original equipment paint and shall be obtained from the equipment supplier if available. All equipment shall have a finished coat of paint applied unless specifically allowed to be provided with a prime coat only.

B. Equipment in finished areas that will be painted to match the room decor will be painted by others. Should this Contractor install equipment in a finished area after the area has been painted, the Contractor shall have the equipment and all its supports, hangers, etc., painted to match the room decor. Painting shall be performed as described in project specifications.

C. Equipment cabinets, casings, covers, metal jackets, etc., located in equipment rooms or concealed spaces, shall be furnished in standard finish, free from scratches, abrasions, chippings, etc.

D. Equipment in occupied spaces, or if standard to the unit, shall have a baked primer with baked enamel finish coat free from scratches, abrasions, chipping, etc. If color option is specified or is standard to the unit, verify with the Architect the color preference before ordering.

E. Paint all equipment in unfinished areas such as boiler room, mechanical spaces, and storage rooms. Equipment furnished with a suitable factory finish need not be painted; provided the factory applied finish is not marred or spattered. If so, equipment shall be refinished with the same paint as was factory applied.

F. All electrical conduit and equipment, fittings, hangers, structural supports, etc., in unfinished areas, such as equipment and storage room area, shall be painted two (2) coats of oil paint of colors selected by the Architect.

G. Do NOT paint electric conduits in crawl spaces, tunnels, or spaces above suspended ceilings except that where conduit is in a damp location give exposed threads at joints two coats of sealer after joint is made up.

H. After surfaces have been thoroughly cleaned and are free of oil, dirt or other foreign matter, paint all raceway and equipment with the following:

1. Bare Metal Surfaces - Apply one coat of metal primer suitable for the metal being painted. Finish with two coats of Alkyd base enamel paint.
2. Plastic Surfaces - Paint plastic surfaces with two coats of semi-gloss acrylic latex paint.

3.08 ADJUST AND CLEAN

A. Thoroughly clean all equipment and systems prior to the Owner's final acceptance of the project.

B. Clean all foreign paint, grease, oil, dirt, labels, stickers, etc. from all equipment.

C. Remove all rubbish, debris, etc., accumulated during construction from the premises.

3.09 SPECIAL REQUIREMENTS

A. Coordinate the installation of all equipment, controls, devices, etc., with other trades to maintain clear access area for servicing.

B. Install all equipment to maximize access to parts needing service or maintenance. Review the final location, placement, and orientation of equipment with the Owner's representative prior to setting equipment.

C. Installation of equipment or devices without regard to coordination of access requirements and confirmation with the Owner's representative will result in removal and reinstallation of the equipment at the Contractor's expense.

D. Raceway and Cable Routing Restrictions: Raceways and cable are restricted from being routed in the following locations, unless serving the space or permitted by the authority having jurisdiction.

1. Elevator machine rooms and hoistways.
2. Exit enclosures.
3. Other areas restricted by code.
4. Technology, data, server rooms.
5. Fire pump and sprinkler rooms.
6. Normal power in emergency power equipment rooms: Limited to feeders and branch circuits serving the emergency power equipment located in the room.
7. Emergency power in normal power equipment rooms: Limited to feeders and branch circuits serving the normal power equipment located in the room.

3.10 INDOOR AIR QUALITY (IAQ) MAINTENANCE FOR OCCUPIED FACILITIES UNDER CONSTRUCTION

A. Within the Limits of Construction:

1. The Electrical Contractor shall coordinate all work with the contractor responsible for IAQ.
2. The means, methods and materials used by the Electrical Contractor shall be coordinated with the contractor responsible for IAQ and shall comply with the IAQ requirements set forth in Division 1 and Division 21/22/23 of these specifications.

B. Outside the Limits of Construction:

1. IAQ shall be the responsibility of the electrical contractor for work that is required outside the limits of construction.
2. The Electrical Contractor is responsible for the IAQ set forth in Division 1 and Division 21/22/23 of these specifications.
3. The Electrical Contractor shall review and coordinate all IAQ plans and procedures with the owner's IAQ representative.

3.11 SYSTEM STARTING AND ADJUSTING

A. The electrical systems shall be complete and operating. System startup, testing, adjusting, and balancing to obtain satisfactory system performance is the responsibility of the Contractor. This includes all calibration and adjustment of electrical controls, balancing of loads, troubleshooting and verification of software, and final adjustments that may be needed.

B. Complete all manufacturer-recommended startup procedures and checklists to verify proper equipment operation and does not pose a danger to personnel or property.

C. All operating conditions and control sequences shall be tested during the start-up period. Testing all interlocks, safety shut-downs, controls, and alarms.

D. The Contractor, subcontractors, and equipment suppliers shall have skilled technicians to ensure that all systems perform properly. If the Architect/Engineer is requested to visit the job site for trouble shooting, assisting in start-up, obtaining satisfactory equipment operation, resolving installation and/or workmanship problems, equipment substitution issues or unsatisfactory system performance, including call backs during the warranty period, through no fault of the design; the Contractor shall reimburse the Owner on a time and materials basis for services rendered at the Architect/Engineer's standard hourly rates in effect when the services are requested. The Contractor shall pay the Owner for services required that are product, installation or workmanship related. Payment is due within 30 days after services are rendered.

3.12 FIELD QUALITY CONTROL

A. General:

1. Conduct all tests required during and after construction. Submit test results in NETA format, or equivalent form, that shows the test equipment used, calibration date, tester's name, ambient test conditions, humidity, conductor length, and results corrected to 40°C.
2. Supply necessary instruments, meters, etc., for the tests. Supply competent technicians with training in the proper testing techniques.
3. All cables and wires shall be tested for shorts and grounds following installation and connection to devices. Replace shorted or grounded wires and cables.
4. Any wiring device, electrical apparatus or luminaire, if grounded or shorted on any integral "live" part, shall have all defective parts or materials replaced.
5. Test cable insulation of service and panel feeder conductors for proper insulation values. Tests shall include the cable, all splices, and all terminations. Each conductor shall be tested and shall test free of short circuits and grounds and have an insulation value not less than Electrical Code Standards. Take readings between conductors, and between conductors and ground.
6. If the results obtained in the tests are not satisfactory, make adjustments, replacements, and changes as needed. Then repeat the tests, and make additional tests, as the Architect/Engineer or authority having jurisdiction deems necessary.

B. Ground-Fault Equipment Performance Testing:

1. Test: Perform ground-fault performance testing when system is installed. The test process shall use primary current injection per manufacturer instruction and procedures. Perform test for the following:
   a. Outside branch circuits and feeders.
   b. Code required.
2. Report: Provide copy of test result report with Operation and Maintenance manuals. Provide report to Authority Having Jurisdiction when requested.

C. Other Equipment:

1. Give other equipment furnished and installed by the Contractor all standard tests normally made to assure that the equipment is electrically sound, all connections properly made, phase rotation correct, fuses and thermal elements suitable for protection against overloads, voltage complies with equipment nameplate rating, and full load amperes are within equipment rating.

D. If any test results are not satisfactory, make adjustments, replacements and changes as needed and repeat the tests and make additional tests as the Architect/Engineer or authority having jurisdiction deem necessary.

E. Contractor shall thermographic study all electrical gear, switchboard, panelboards, etc. at the end of construction to identify any unusual conditions/heating within the equipment. Coordinate with Owner/Architect/Engineer to have an Owner/Architect/Engineer representative present during testing.

F. Report shall include color printouts, in binder, of pictures taken to use as a baseline reading after building is occupied.

3.13 UTILITY REBATE

A. Submit utility rebate forms, where offered at project location, with rebate items completed. Rebate may include lighting, lighting controls, variable speed drives, heat pumps, package terminal A/C, air conditioners, chillers, water heaters, programmable thermostats, and motors.

B. Contractor must submit notification of any value engineering or product substitution that will affect the utility rebate amount prior to approval.

READINESS CERTIFICATION PRIOR TO FINAL JOBSITE OBSERVATION

To prevent the final job observation from occurring too early, we require that the Contractor review the completion status of the project and, by copy of this document, certify that the job is indeed ready for the final job observation. The following is a typical list of items that represent the degree of job completeness expected prior to requesting a final job observation.

1. Penetrations of fire-rated construction fire sealed in accordance with specifications.
2. Electrical panels have typed circuit identification.
3. Per Section 26 05 00, cable insulation test results have been submitted.
4. Operation and Maintenance manuals have been submitted as per Section 26 05 00.
5. Bound copies of approved shop drawings have been submitted as per Section 26 05 00.
6. Report of instruction of Owner's representative has been submitted as per Section 26 05 00.
7. Fire alarm inspection and testing report has been submitted as per Sections 26 05 00 and 28 31 00.
8. Start-up reports from factory representative have been submitted as per Section 26 05 00.

Accepted by:

Prime Contractor _____

By _____ Date _____

Upon Contractor certification that the project is complete and ready for a final job observation, we require the Contractor to sign this agreement and return it to the Architect/Engineer so that the final observation can be scheduled.

It is understood that if the Architect/Engineer finds the job not ready for the final observation and that additional trips and observations are required to bring the project to completion, the costs incurred by the Architect/Engineers for additional time and expenses will be deducted from the Contractor's contract retainage prior to final payment at the completion of the job.

END OF SECTION 26 05 00

SECTION 26 05 05
ELECTRICAL DEMOLITION FOR REMODELING

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Electrical demolition

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. Materials and equipment for patching and extending work shall be as specified in individual Sections.

PART 3 - EXECUTION

3.01 EXAMINATION

A. THE DRAWINGS ARE INTENDED TO INDICATE THE SCOPE OF WORK REQUIRED AND DO NOT INDICATE EVERY BOX, CONDUIT, OR WIRE THAT MUST BE REMOVED. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO SUBMITTING A BID AND VERIFY EXISTING CONDITIONS.

B. Where walls, ceilings, structures, etc., are indicated as being removed on general or electrical drawings, the Contractor shall be responsible for the removal of all electrical equipment, devices, fixtures, raceways, wiring, systems, etc., from the removed area.

C. Where ceilings, walls, structures, etc., are temporarily removed and replaced by others, this Contractor shall be responsible for the removal, storage, and replacement of equipment, devices, fixtures, raceways, wiring, systems, etc.

D. Where mechanical or technology equipment is indicated as being removed on electrical, mechanical, or technology drawings, the Contractor shall be responsible for disconnecting the equipment and removing all starters, VFD, controllers, electrical equipment, raceways, wiring, etc. associated with the device.

E. Verify that abandoned wiring and equipment serve only abandoned equipment or facilities. Extend conduit and wire to facilities and equipment that will remain in operation following demolition. Extension of conduit and wire to equipment shall be compatible with the surrounding area. Extended conduit and conductors to match existing size and material.

F. Coordinate scope of work with all other Contractors and the Owner at the project site. Schedule removal of equipment and electrical service to avoid conflicts.

G. Bid submittal shall mean the Contractor has visited the project site and has verified existing conditions and scope of work.

3.02 PREPARATION

A. The Contractor shall obtain approval from the Owner before turning off power to circuits, feeders, panels, etc. Coordinate all outages with Owner.

B. Provide temporary wiring and connections to maintain existing systems in service during construction. When work must be performed on energized equipment or circuits, use personnel experienced in such operations. Assume all equipment and systems must remain operational unless specifically noted otherwise on drawings.

C. Disconnect electrical systems in walls, floors, structures, and ceilings scheduled for removal.

D. Existing Electrical Service: Maintain existing system in service until new system is complete and ready for service. Disable system only to make switchovers and connections. Obtain permission from Owner at least 48 hours before partially or completely disabling system. Minimize outage duration. Make temporary connections to maintain service in areas adjacent to work area. Service changeover shall be completed on an overtime basis.

E. Existing Fire Alarm System: Maintain existing system in service until new system is accepted. Disable system only to make switchovers and connections. Obtain permission from Owner at least 48 hours before partially or completely disabling system. Minimize outage duration. Make temporary connections to maintain service in areas adjacent to work area. Provide a watchman to make required premise observations during all outages, requirements as dictated by codes and Owner's insurance carrier.

3.03 DEMOLITION AND EXTENSION OF EXISTING ELECTRICAL WORK

A. Demolish and extend existing electrical work under provisions of Division 1 of Specifications and this Section.

B. Remove, relocate, and extend existing installations to accommodate new construction.

C. Remove abandoned wiring and raceway to source of supply. Existing conduit in good condition may be reused in place by including an equipment ground conductor in reused conduit. Reused conduit and boxes shall have supports revised to meet current codes. Relocating conduit shall not be allowed.

D. Remove exposed abandoned raceway, including abandoned raceway above accessible ceiling finishes. Cut raceway flush with walls and floors and patch surfaces. Remove all associated clamps, hangers, supports, etc. associated with raceway removal.

E. Disconnect and remove outlets and devices that are to be demolished. Remove outlet or devices' associated back box, supports, and conduit and conductors back to source. Patch opening created from removal of device to match surrounding finishes.

F. Disconnect and remove electrical devices and equipment serving utilization equipment that has been removed.

G. Disconnect and remove abandoned luminaires. Remove brackets, stems, hangers, and other accessories. Ballasts in light fixtures installed prior to 1980 shall be incinerated in EPA approved incinerator or disposed of in EPA certified containers and deposited in an EPA landfill certified for PCB disposal or recycled by permitted ballast recycler. Punctured or leaking ballasts must be disposed of according to Federal Regulations under the Toxic Substance Control Act. Provide Owner and Architect/Engineer with a Certificate of Destruction to verify proper disposal.

H. Maintain access to existing electrical installations that remain active. Modify installation or provide junction boxes and access panel as appropriate.

I. Extend existing installations using materials and methods compatible with existing electrical installations, or as specified. Extended conduit and conductors to match existing size and material.

J. Regulatory Requirements: Comply with governing EPA notification regulations before beginning demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

K. Floor slabs may contain conduit systems. This Contractor is responsible for taking any measures required to ensure no conduits or other services are damaged. This includes X-ray or similar non-destructive means. Where conduit is in concrete slab, cut conduit flush with floor, pull out conductors, and plug conduit ends.

L. This Contractor is responsible for all costs incurred in repair, relocations, or replacement of any cables, conduits, or other services if damaged without proper investigation.

3.04 EXISTING ENCLOSURES - NEW EQUIPMENT

A. Existing enclosures may be reused to house new equipment including branch panels, industrial controls, and similar systems pending documented verification of the following provided with the applicable new equipment submittals.

1. New equipment or panelboard is listed for the existing enclosure or application.
2. Existing enclosure and new equipment is field evaluated by the manufacturer or nationally recognized testing laboratory for the available fault current, condition, and application.
3. Authority Having Jurisdiction (AHJ) approval.

3.05 CLEANING AND REPAIR

A. Clean and repair existing materials and equipment that remain or are to be reused.

B. Panelboards: Clean exposed surfaces and check tightness of electrical connections. Replace damaged circuit breakers and provide closure plates for vacant positions. Provide typed circuit directory showing revised circuiting arrangement.

C. ELECTRICAL ITEMS (E.G., LIGHTING FIXTURES, RECEPTACLES, SWITCHES, CONDUIT, WIRE, ETC.) REMOVED AND NOT RELOCATED REMAIN THE PROPERTY OF THE OWNER. CONTRACTOR SHALL PLACE ITEMS RETAINED BY THE OWNER IN A LOCATION COORDINATED WITH THE OWNER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DISPOSAL OF MATERIAL THE OWNER DOES NOT WANT.

3.06 INSTALLATION

A. Install relocated materials and equipment under the provisions of Division 1 of Specifications.

END OF SECTION 26 05 05

SECTION 26 05 13
WIRE AND CABLE

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Building Wire - Copper

1.02 RELATED WORK

A. Section 26 05 53 - Electrical Identification: Refer to electrical identification for color and identification labeling requirements.

1.03 REFERENCES

A. NFPA 70 - National Electrical Code (NEC)

B. UL 1581 - Standard for Electrical Wires, Cables, and Flexible Cords

C. UL 2196 - Fire Resistive, Fire Resistant and Circuit Integrity Cables

PART 2 - PRODUCTS

2.01 BUILDING WIRE - COPPER

A. The basis of design is copper conductor.

B. Feeders and Branch Circuits 8 AWG and larger: Copper, stranded conductor, 600-volt insulation, THHN/THWN or XHHW-2.

C. Feeders and Branch Circuits 10 AWG and Smaller: Copper, solid or stranded conductor, 600-volt insulation, THHN/THWN, unless otherwise noted on the drawings.

D. Each 120 and 277-volt branch circuit shall have a dedicated neutral conductor. Neutral conductors shall be considered current-carrying conductors for wire derating.

PART 3 - EXECUTION

3.01 WIRE AND CABLE INSTALLATION SCHEDULE

A. Above Accessible Ceilings:

1. Building wire shall be installed in raceway.
2. Metal clad cable, Type MC, 1/2" size with minimum #12 conductors and ground, shall be allowed for flexible whips to individual luminaires on non-essential circuits. The flexible whips shall be between 18" to 72" in length per Electrical Code.

B. All Other Locations: Building wire in raceway.

C. Above Grade: All conductors installed above grade shall be type "THHN".

3.02 CONTRACTOR CHANGES

A. The basis of design is copper conductors installed in raceway based on ambient temperature of 30C, NEC Table 310.16 (2011 - 2017 edition 310.15(B)(16)).

B. The Contractor shall be responsible for derating and sizing conductors and conduits to equal or exceed the ampacity of the basis of design circuits, if other than the basis of design.

C. Conductor length(s) listed on plans and schedules. The drawings are diagrammatic with intent to convey the components of the electrical distribution system. Conductor length(s) when listed on plans and schedules are for engineering calculation purposes. Conductor length(s) shall NOT be used for bidding purposes.

D. Record drawing shall include the calculations and sketches.

3.03 GENERAL WIRING METHODS

A. Use no wire smaller than 12 AWG for power and lighting circuits, and no smaller than 14 AWG for control wiring.

B. Use no wire smaller than 18 AWG for low voltage control wiring below 100 volts.

C. Use 10 AWG conductor for 20 ampere, 120-volt branch circuit home runs longer than 75 feet, and for 20 ampere, 277-volt branch circuit home runs longer than 200 feet.

D. Use no wire smaller than 8 AWG for outdoor lighting branch circuits.

E. The ampacity of multiple conductors in one conduit shall be derated per the Electrical Code. In no case shall more than 4 conductors be installed in one conduit to such loads as motors larger than 1/4 HP, panelboards, motor control centers, etc.

F. Where installing parallel feeders, place an equal number of conductors for each phase of a circuit in same raceway or cable.

G. Splice only in junction or outlet boxes.

H. Neatly train and lace wiring inside boxes, equipment, and panelboards.

I. Make conductor lengths for parallel circuits equal.

J. All conductors shall be continuous in conduit from last outlet to their termination.

K. Terminate all spare conductors on terminal blocks, and label the spare conductors.

L. Cables or wires shall not be laid out on the ground before pulling.

M. Cables or wires shall not be dragged over earth or paving.

N. Care shall be taken so as not to subject the cable or wire to high mechanical stresses that would cause damage to the wire and cable.

O. At least six (6)-inch loops or ends shall be left at each outlet for installation connection of luminaires or other devices.

P. All wires in outlet boxes not connected to fixtures or other devices shall be rolled up, spliced if continuity of circuit is required, and insulated.

3.04 WIRING INSTALLATION IN RACEWAYS

A. Pull all conductors into a raceway at the same time. Use UL listed wire pulling lubricant for pulling 4 AWG and larger wires.

B. Install wire in raceway after interior of building has been physically protected from the weather and all mechanical work likely to injure conductors has been completed.

C. Pulling shall be continuous without unnecessary stops and starts with wire or cable only partially through raceway.

D. Where reels of cable or wire are used, they shall be set up on jacks close to the point where the wire or cable enters the conduit or duct so that the cable or wire may be unreeled and run into the conduit or duct with a minimum of change in the direction of the bend.

E. Conductors shall not be pulled through conduits until plastering or masonry work is completed and conduits are free from moisture. Care shall be taken so that long pulls of wire or pulls around several bends are not made where the wire may be permanently stretched and the insulation damaged.

F. Only nylon rope shall be permitted to pull cables into conduit and ducts.

G. Completely and thoroughly swab raceway system before installing conductors.

H. Conductor Supports in Vertical Raceways:

1. Support conductors in vertical raceways in accordance with the Electrical Code Spacing of Conductors Supports.

2. Supports shall be of insulated wedge type (OZ Gedney Type S, or equal) and installed in a tapered insulated bushing fitting or a metal woven mesh with a support ring that fits inside conduit fitting installed in an accessible junction box (Hubbell Kellems support grip or equal).

3.05 WIRING CONNECTIONS AND TERMINATIONS

A. Splice and tap only in accessible junction boxes.

B. Use solderless, tin-plated copper, compression terminals (lugs) applied with circumferential crimp for conductor terminations, 8 AWG and larger.

C. Use solderless, tin-plated, compression terminals (lugs) applied with indenter crimp for copper conductor terminations, 10 AWG and smaller.

D. Use solderless pressure connectors with insulating covers for copper wire splices and taps, 8 AWG and smaller. For 10 AWG and smaller, use insulated spring wire connectors with plastic caps.

E. Thoroughly clean wires before installing lugs and connectors.

F. Make splices, taps and terminations to carry full ampacity of conductors without perceptible temperature rise.

G. Phase Sequence: All apparatus shall be connected to operate in the phase sequence A-B-C representing the time sequence in which the phase conductors so identified reach positive maximum voltage.

H. As a general rule, applicable to switches, circuit breakers, starters, panelboards, switchgear and the like, the connections to phase conductors are intended thus:

1. Facing the front and operating side of the equipment, the phase identification shall be:

a. Left to Right - A-B-C

b. Top to Bottom - A-B-C

I. Connection revisions as required to achieve correct rotation of motors shall be made at the load terminals of the starters or disconnect switches.

3.06 FIELD QUALITY CONTROL

A. Field inspection and testing will be performed under provisions of Division 1.

B. Building Wire and Power Cable Testing: Perform an insulation-resistance test on each conductor with respect to ground and adjacent conductors. Test shall be made by means of a low-resistance ohmmeter, such as a "Megger". The applied potential shall be 500 volts dc for 300 volt rated cable and 1000 volts dc for 600 volt rated cable. The test duration shall be one minute. Insulation resistance must be greater than 100 mega-ohm for 600 volt and 25 mega-ohm for 300 volt rated cables per NETA Acceptance Testing Standard. Verify uniform resistance of parallel conductors.

C. Inspect wire and cable for physical damage and proper connection.

D. Torque test conductor connections and terminations to manufacturer's recommended values.

E. Perform continuity test on all power and equipment branch circuit conductors. Verify proper phasing connections.

F. Overspray of paint on any wire or cable will not be accepted. It shall be the Contractor's responsibility to replace any component containing overspray, in its entirety, at no additional cost to the project. Cleaning of the cables with harsh chemicals is not allowed.

END OF SECTION 26 05 13

SECTION 26 05 26
GROUNDING AND BONDING

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Equipment grounding system

1.02 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in Electrical Code, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

B. Comply with UL 467 Grounding and Bonding Equipment.

1.03 REFERENCES

A. NFPA 70 - National Electrical Code (NEC)

1.04 SUMMARY

A. This section includes grounding of electrical systems and equipment. Grounding requirements specified in this Section may be supplemented by special requirements of systems described in other Sections.

PART 2 - PRODUCTS

2.01 GROUNDING CONDUCTORS

A. For insulated conductors, comply with Division 26 Section 26 05 13 "Wire and Cable".

B. Material: Copper.

PART 3 - EXECUTION

3.01 CONNECTIONS

A. General: Make connections so galvanic action or electrolysis possibility is minimized. Select connectors, connection hardware, conductors, and connection methods so metals in direct contact will be galvanically compatible.

1. Use electroplated or hot-tin-coated materials to ensure high conductivity and to make contact points closer to order of galvanic series.
2. Make connections with clean, bare metal at points of contact.
3. Coat and seal connections having dissimilar metals with inert material to prevent future penetration of moisture to contact surfaces.

B. Exothermic-Welded Connections: Comply with manufacturer's written instructions. Welds that are puffed up or that show convex surfaces indicating improper cleaning are not acceptable.

C. Compression-Type Connections: Use hydraulic compression tools to provide correct circumferential pressure for compression connectors. Use tools and dies recommended by connector manufacturer. Provide embossing die code or other standard method to make a visible indication that a connector has been adequately compressed on grounding conductor.

D. Equipment Grounding Conductor Terminations: For No. 8 AWG and larger, use pressure-type grounding lugs. No. 10 AWG and smaller grounding conductors may be terminated with winged pressure-type connectors.

E. Connections at back boxes, junction boxes, pull boxes, and equipment terminations: The equipment grounding conductor(s) associated with all circuits in the box shall be connected together and to the box using a suitable grounding screw. The removal of the respective receptacle, luminaire, or other device served by the box shall not interrupt the grounding continuity.

F. Tighten screws and bolts for grounding and bonding connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A.

G. Moisture Protection: If insulated grounding conductors are connected to ground rods or grounding buses, insulate entire area of connection and seal against moisture penetration of insulation and cable.

3.02 INSTALLATION

A. Use only copper conductors for both insulated and bare grounding conductors in direct contact with earth, concrete, masonry, crushed stone, and similar materials.

B. Grounding Conductors: Route along shortest and straightest paths possible, unless otherwise indicated. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage. Each grounding conductor that passes through a below grade wall must be provided with a waterstop.

C. In raceways, use insulated equipment grounding conductors.

3.03 EQUIPMENT GROUNDING SYSTEM

A. Comply with Electrical Code, for types, sizes, and quantities of equipment grounding conductors, unless specific types, larger sizes, or more conductors than required by Electrical Code are indicated.

B. Install equipment grounding conductors in all feeders and circuits. Terminate each end on a grounding lug or bus.

C. Install insulated equipment grounding conductor with circuit conductors for the following items, in addition to those required by Electrical Code:

1. Lighting and receptacle circuits. Terminate each end on a grounding lug or bus.
2. Single-phase and three-phase motor and appliance branch circuits.
3. Flexible raceway runs, including FMC and LFMC.

3.04 FIELD QUALITY CONTROL

A. Inspect grounding and bonding system conductors and connections for tightness and proper installation.

END OF SECTION 26 05 26

SECTION 26 05 27
SUPPORTING DEVICES

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Conduit and Equipment Supports

B. Fastening Hardware

1.02 QUALITY ASSURANCE

A. Support systems shall be adequate for weight of equipment and conduit, including wiring, which they carry.

1.03 REFERENCES

A. UL 62275 - Cable Management Systems - Cables Ties for Electrical Installations

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Allied Support Systems

B. Cooper B-Line

C. Erico, Inc.

D. Hilti

E. Power Fasteners

F. Orbit Industries

2.02 MATERIAL

A. Support Channel: Hot-dip galvanized stainless steel for wet/damp locations; painted steel for interior/dry locations. All field cut ends shall be touched up with matching finish to inhibit rusting.

B. Hardware: Corrosion resistant.

C. Anchorage and Structural Attachment Components:

1. Strength: Defined in reports by ICBO Evaluation Service or another agency acceptable to Authorities Having Jurisdiction.
    a. Structural Safety Factor: Strength in tension and shear of components used shall be at least two times the maximum seismic forces to which they will be subjected.
2. Through Bolts: Structural type, hex head, high strength. Comply with ASTM F3125/F3125M Standard Specification for High Strength Structural Bolts and Assemblies.
3. Welding Lugs: Comply with MSS-SP-69, Type 57.
4. Beam clamps for Steel Beams and Joists: Double sided or concentric open web joist hangars. Single-sided type is not acceptable.
5. Bushings for Floor-Mounted Equipment Anchors: Neoprene units designed for seismically rated rigid equipment mountings, and matched to the type and size of anchor bolts and studs used.
6. Bushing Assemblies for Wall-Mounted Equipment Anchorage: Assemblies of neoprene elements and steel sleeves designed for seismically rated rigid equipment mountings, and matched to the type and size of attachment devices used.
7. Concrete Anchors: Fasten to concrete using cast-in or post-installed anchors designed per the requirements of Appendix D of ACI 318-05. Post-installed anchors shall be qualified for use in cracked concrete by ACI-355.2.

8. Masonry Anchors: Fasten to concrete masonry units with expansion anchors or self-tapping masonry screws. For expansion anchors into hollow concrete block, use sleeve-type anchors designed for the specific application. Do not fasten in masonry joints. Do not use powder actuated fasteners, wooden plugs, or plastic inserts.

D. Truss and Joist Support System: Provided the installation complies with all loading requirements of truss and joist manufacturers, the following practices are acceptable:

1. Loads of 100 lbs. or less may be attached anywhere along the top or bottom chords of trusses or joists with a minimum 3' spacing between loads.
2. Loads greater than 100 lbs. must be hung concentrically and may be hung from top or bottom chord, provided one of the following conditions is met:
    a. The hanger is attached within 6" from a web/chord joint.
    b. Additional L2x2x1/4 web reinforcement is installed per manufacturer's requirements.
3. It is prohibited to cantilever a load using an angle or other structural component that is attached to a truss or joist in such a fashion that a torsional force is applied to that structural member.
4. If conditions cannot be met, coordinate installation with truss or joist manufacturer and contact Architect/Engineer.

E. Cable Ties for Cable Management Systems:

1. Cables ties, UL Listed, Type 21 or Type 21S, and test to UL Standard 62275 for Cable Management Systems.
2. Acceptable Applications: Low Voltage Wire and Cabling.
    a. Bundle wires and cables within cable trays, auxiliary gutters, and similar applications.
    b. Organize and support wiring and cables within equipment and distribution systems.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Fasten hanger rods, conduit clamps, and outlet and junction boxes to building structure using expansion anchors in concrete and beam clamps on structural steel.

B. Trapeze support installation: Cut hanger rods back at trapeze supports so they do not extend more than 3/4" below bottom face of lowest fastener and blunt any sharp edges.

C. Use toggle bolts or hollow wall fasteners in hollow masonry, plaster, or gypsum board partitions and walls; expansion anchors or preset inserts in solid masonry walls; self-drilling anchors or expansion anchor on concrete surfaces; sheet metal screws in sheet metal studs; and wood screws in wood construction.

D. Do not fasten supports to ceiling systems, piping, ductwork, mechanical equipment, or conduit, unless otherwise noted.

E. Do not use powder-actuated anchors without specific permission.

F. Do not drill structural steel members.

G. Fabricate supports from structural steel or steel channel, rigidly welded or bolted to present a neat appearance. Use hexagon head bolts with spring lock washers under all nuts.

H. In wet locations and on all building floors below exterior earth grade install free-standing electrical equipment on concrete pads.

I. Install cabinets and panelboards with minimum of four anchors. Provide horizontal backing/support framing in stud walls for rigid mounting. Provide steel channel supports to stand surface-mounted panelboard or cabinet one inch off wall.

J. Bridge studs top and bottom with channels to support flush-mounted cabinets and panelboards in stud walls.

K. Do not exceed 25 lbs. per hanger and a minimum spacing of 2'-0" on center when attaching to metal roof decking (excludes concrete on metal deck). This 25 lbs. load and 2'-0" spacing include adjacent electrical and mechanical items hanging from deck. If the hanger restrictions cannot be achieved, supplemental framing off steel framing will need to be added.

L. Refer to Section 26 05 33 for special conduit supporting requirements.

3.02 FINISH

A. Prime coat exposed steel hangers and supports. Hangers and supports in crawl spaces, pipe shafts, and above suspended ceiling spaces are not considered exposed.

B. Trim all ends of exposed field fabricated steel hangers, slotted channel and threaded rod to within 1" of support or fastener to eliminate potential injury to personnel unless shown otherwise on the drawings. Smooth ends and install elastomeric insulation with two coats of latex paint if exposed steel is within 6'-6" of finish floor and presents potential injury to personnel.

END OF SECTION 26 05 27

SECTION 26 05 33
CONDUIT AND BOXES

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Rigid metallic conduit and fittings (RMC)

B. Electrical metallic tubing and fittings (EMT)

C. Flexible metallic conduit and fittings (FMC)

D. Liquidtight flexible metallic conduit and fittings (LFMC)

1.02 RELATED WORK

A. Section 26 05 53 - Electrical Identification: Refer to electrical identification for color and identification labeling requirements.

1.03 REFERENCES

A. American National Standards Institute (ANSI):

1. ANSI C80.1 - Rigid Steel Conduit, Zinc-Coated
2. ANSI C80.3 - Electrical Metallic Tubing, Zinc-Coated and Fittings
3. ANSI C80.4 - Fittings for Rigid Metal Conduit and Electrical Metallic Tubing
4. ANSI/NEMA OS 1 - Sheet-Steel Outlet Boxes, Device Boxes, Covers and Box Supports

B. NECA "Standards of Installation"

C. National Electrical Manufacturers Association (NEMA):

1. ANSI/NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing and Cable

D. NFPA 70 - National Electrical Code (NEC)

E. Underwriters Laboratories (UL): Applicable Listings

1. UL 6 - Rigid Metal Conduit
2. UL797 - Electrical Metal Tubing

F. Definitions:

1. Fittings: Conduit connection or coupling.
2. Body: Enlarged fittings with opening allowing access to the conductors for pulling purposes only.
3. Mechanical Spaces: Enclosed areas, usually kept separated from the general public, where the primary use is to house service equipment and to route services. These spaces generally have exposed structures, bare concrete and non-architecturally emphasized finishes.
4. Finished Spaces: Enclosed areas where the primary use is to house personnel and the general public. These spaces generally have architecturally emphasized finishes, ceilings and/or floors.
5. Concealed: Not visible by the general public. Often indicates a location either above the ceiling, in the walls, in or beneath the floor slab, in column coverings, or in the ceiling construction.
6. Above Grade: Not directly in contact with the earth. For example, an interior wall located at an elevation below the finished grade shall be considered above grade but a wall retaining earth shall be considered below grade.

PART 2 - PRODUCTS

2.01 RIGID METALLIC CONDUIT (RMC) AND FITTINGS

A. Manufacturers:
   1. Atkore Allied Tube & Conduit
   2. Nucor
   3. Electroline
   4. Western Tube
   5. Wheatland Tube Co
   6. or approved equal.

B. Manufacturers of RMC Conduit Fittings:
   1. ABB/Thomas & Betts
   2. Eaton/Crouse-Hinds
   3. Electroline
   4. Emerson Appleton & OZ Gedney
   5. Hubbell Raco and Killark
   6. NSI Bridgeport
   7. Orbit Industries
   8. Wesco Regal
   9. or approved equal.

C. Minimum Size Galvanized Steel: 3/4 inch, unless otherwise noted.

D. Fittings and Conduit Bodies:
   1. End Bell Fittings: Malleable iron, hot dip galvanized, threaded flare type with provisions for mounting to form.
   2. Expansion Joints: Malleable iron and hot dip galvanized providing a minimum of 4 inches of movement. Fitting shall be watertight with an insulating bushing and a bonding jumper.
   3. Expansion Joint for Concrete Encased Conduit: Neoprene sleeve with bronze end coupling, stainless steel bands and tinned copper braid bonding jumper. Fittings shall be watertight and concrete-tight.
   4. Conduit End Bushings: Malleable iron type with molded-on high impact phenolic thermosetting insulation. Where required elsewhere in the contract documents, bushing shall be complete with ground conductor saddle and clamp. High impact phenolic threaded type bushings are not acceptable.
   5. All other fittings and conduit bodies shall be of malleable iron construction and hot dip galvanized.

2.02 ELECTRICAL METALLIC TUBING (EMT) AND FITTINGS

A. Minimum Size Electrical Metallic Tubing: 3/4 inch, unless otherwise noted.

B. Manufacturers of EMT Conduit:
   1. Allied Tube & Conduit
   2. Calbond Calpipe
   3. Nucor
   4. Electroline
   5. Western Tube
   6. Wheatland Tube Co
   7. or approved equal.

C. Fittings and Conduit Bodies:

1. 2" Diameter or Smaller: Compression type of steel designed for their specific application.
2. 1/2" and 3/4" Conduit: Push-on connectors and couplers with locking ring and washer of zinc plated steel, listed for use in dry locations.
3. Larger than 2": Compression type of steel designed for their specific application.
4. Manufacturers of EMT Conduit Fittings:
    a. ABB/Thomas & Betts
    b. Eaton/Crouse-Hinds
    c. Electroline
    d. Emerson Appleton & OZ Gedney
    e. Hubbell Raco and Killark
    f. NSI Bridgeport
    g. Orbit Industries
    h. Wesco Regal
    i. or approved equal.

2.03 FLEXIBLE METALLIC CONDUIT (FMC) AND FITTINGS

A. Minimum Size Galvanized Steel: 3/4 inch, unless otherwise noted. Lighting branch circuit wiring to an individual luminaire may be a manufactured, UL listed 3/8" flexible metal conduit and fittings with #14 AWG THHN conductors and an insulated ground wire. Maximum length of 3/8" FMC shall be six (6) feet.

B. Manufacturers:

1. ABB/Thomas & Betts
2. Anamet Electrical
3. Atkore American Flex AFC and Flexicon
4. Electri-Flex Co
5. Electroline
6. Southwire Alflex
7. or approved equal.

C. Construction: Flexible steel, approved for conduit ground, zinc coated, threadless type formed from a continuous length of spirally wound, interlocked zinc coated strip steel. Provide a separate equipment grounding conductor when used for equipment where flexibility is required.

D. Fittings and Conduit Bodies:

1. Threadless hinged clamp type, galvanized zinc coated cadmium plated malleable cast iron[or screw-in type, die-cast zinc].
2. Fittings and conduit bodies shall include plastic or cast metal inserts supplied by the manufacturer to protect conductors from sharp edges.
3. Manufacturers:
    a. ABB/Thomas & Betts
    b. Eaton/Crouse-Hinds
    c. Electroline
    d. Emerson Appleton & OZ Gedney
    e. Hubbell Raco and Killark
    f. NSI Bridgeport
    g. Orbit Industries

h. Wesco Regal

i. or approved equal.

2.04 LIQUIDTIGHT FLEXIBLE METALLIC CONDUIT (LFMC) AND FITTINGS

A. Manufacturers:

1. ABB/Thomas & Betts
2. Anamet Electrical
3. Atkore American Flex AFC and Flexicon
4. Electri-Flex Co
5. Electroline
6. Southwire Alflex
7. or approved equal.

B. Construction: Flexible steel, approved for conduit ground, zinc coated, threadless type formed from a continuous length of spirally wound, interlocked zinc coated strip steel and an extruded PVC cover.

C. Fittings and Conduit Bodies:

1. Watertight, compression type, galvanized zinc coated cadmium plated malleable cast iron, UL listed.
2. Fittings and conduit bodies shall include plastic or cast metal inserts supplied by the manufacturer to protect conductors from sharp edges.
3. Manufacturers:
   a. ABB/Thomas & Betts
   b. Eaton/Crouse-Hinds
   c. Electroline
   d. Emerson Appleton & OZ Gedney
   e. Hubbell Raco and Killark
   f. NSI Bridgeport
   g. Orbit Industries
   h. Wesco Regal
   i. or approved equal.

2.05 OUTLET BOXES

A. Sheet Metal Outlet Boxes: ANSI/NEMA OS 1; galvanized steel, 16 gauge (approximately 0.0625 inches), with 1/2-inch male fixture studs where required.

B. Cast Boxes: Nema FB1, Type FD, Aluminum, cast feralloy, or stainless steel deep type, gasketed cover, threaded hubs.

C. Outlet boxes for luminaires to be not less than 1-1/2" deep, deeper if required by the number of wires or construction. The box shall be coordinated with surface luminaires to conceal the box from view or provide a finished trim plate.

D. Switch outlet boxes for local light control switches, dimmers and occupancy sensors shall be 4 inches square by 2-1/8 inches deep, with raised cover to fit flush with finish wall line. Multiple gang switch outlets shall consist of the required number of gang boxes appropriate to the quantity of switches comprising the gang. Where walls are plastered, provide a plaster raised cover. Where switch outlet boxes occur in exposed concrete block walls, boxes shall be installed in the block cavity with a raised square edge tile cover of sufficient depth to extend out to face of block or masonry boxes.

E. Outlet boxes for telephone substations in walls and columns shall be 4 inches square and 2-1/8 inches deep with single gang raised cover to fit flush with finished wall line equipped with flush telephone plate.

F. Wall or column receptacle outlet boxes shall be 4 inches square with raised cover to fit flush with finished wall line. Boxes in concrete block walls shall be installed the same as for switch boxes in block walls.

2.06 ECONN; ELECTRICAL CONNECTION

A. Electrical connection to equipment and motors, sized per Electrical Code. Coordinate requirements with contractor furnishing equipment or motor. Refer to specifications and general installation notes for terminations to motors.

2.07 JB; PULL AND JUNCTION BOXES

A. Sheet Metal Boxes: ANSI/NEMA OS 1; galvanized steel.

B. Sheet metal boxes larger than 12 inches in any dimension that contain terminations or components: Continuous hinged enclosure with 1/4 turn latch and white back panel for mounting terminal blocks and electrical components.

C. Cast Metal Boxes for Outdoor and Wet Location Installations: NEMA 250; Type 4 and Type 6, flat-flanged, surface-mounted junction box, UL listed as raintight. Galvanized cast iron box and cover with ground flange, neoprene gasket, and stainless steel cover screws.

D. Flanged type boxes shall be used where installed flush in wall.

2.08 ROUGH-IN

A. Provide with one (1) flush mount double gang box with single gang plaster ring and appropriate cover plate,

B. Conduit routed to nearest cable tray.

C. RI-TECH; Technology Rough-in:

1. Rough-in shall have one (1) 1" conduit.

PART 3 - EXECUTION

3.01 CONDUIT INSTALLATION SCHEDULE AND SIZING

A. In the event the location of conduit installation represents conflicting installation requirements as specified in the following schedule, a clarification shall be obtained from the Architect/Engineer. If this Contractor is unable to obtain a clarification as outlined above, concealed rigid galvanized steel conduit installed per these specifications and the Electrical Code shall be required.

B. Installation Schedule: Refer to drawings.

C. Size conduit as shown on the drawings and specifications. Where not indicated in the contract documents, conduit size shall be according to the Electrical Code. Conduit and conductor sizing shall be coordinated to limit conductor fill to less than 40%, maintain conductor ampere capacity as required by the Electrical Code (to include enlarged conductors due to temperature and quantity derating values) and to prevent excessive voltage drop and pulling tension due to long conduit/conductor lengths.

D. Minimum Conduit Size (Unless Noted Otherwise):

1. Above Grade: 3/4 inch. (The use of 1/2 inch would be allowed for installation conduit to individual light switches, individual receptacles and individual fixture whips from junction box.)

2. Telecommunication Conduit: 1 inch.

3. Controls Conduit: 1/2 inch.

E. Conduit sizes shall change only at the entrance or exit to a junction box, unless specifically noted on the drawings.

3.02 CONDUIT ARRANGEMENT

A. In general, conduit shall be installed concealed in walls, in finished spaces and where possible or practical, or as noted otherwise. Conduit shall be installed parallel or perpendicular to walls, ceilings, and exposed structural members. In unfinished spaces, mechanical and utility areas, conduit may run either concealed or exposed as conditions dictate and as practical unless noted otherwise on drawings. Installation shall maintain headroom in exposed vicinities of pedestrian or vehicular traffic.

B. Exposed conduit on exterior walls or above roof will not be allowed without prior written approval of Architect/Engineer. A drawing of the proposed routing and a photo of the location shall be submitted 14 days prior to start of conduit rough-in. Routing shall be shown on coordination drawings.

C. Conduit arrangement in elevated slabs (restricted to applications specifically noted or shown on drawings):

1. Conduit size shall not exceed one-third of the structural slab thickness. Place conduit between the top and bottom reinforcing with a minimum of 3" concrete cover.
2. Parallel conduits shall be spaced at least 8 inches apart. Exception: Within 18 inches of commonly served floor boxes, junction boxes, or similar floor devices. Arrange conduits parallel or perpendicular to building lines and walls.

D. Conduit shall not share the same cell as structural reinforcement in masonry walls.

E. Conduit runs shall be routed as shown on large scale drawings. Conduit routing on drawings scaled 1/4"=1'-0" or less shall be considered diagrammatic, unless noted otherwise. The correct routing, when shown diagrammatically shall be chosen by the Contractor based on information in the contract documents, in accordance with manufacturer's written instructions, applicable codes, the NECA's "Standard of Installation", in accordance with recognized industry standards, and coordinated with other contractors.

F. Contractor shall adapt Contractor's work to the job conditions and make such changes as required and permitted by the Architect/Engineer, such as moving to clear beams and joists, adjusting at columns, avoiding interference with windows, etc., to permit the proper installation of other mechanical and/or electrical equipment.

G. Contractor shall cooperate with all contractors on the project. Contractor shall obtain details of other contractor's work to ensure fit and avoid conflict. Any expense due to the failure of This Contractor to do so shall be paid for in full by Contractor. The other trades involved as directed by the Architect/Engineer shall perform the repair of work damaged as a result of neglect or error by This Contractor. The resultant costs shall be borne by This Contractor.

3.03 CONDUIT SUPPORT

A. Conduit runs installed above a suspended ceiling shall be properly supported. In no case shall conduit rest on the suspended ceiling construction, nor utilize ceiling support system for conduit support.

1. Support wire used to independently support raceway and wiring systems above suspending ceilings shall be supported on both ends, minimum 12 gauge suspended ceiling support wire, and distinguishable from ceiling support systems by color (field paint), tagging, or equivalent means.

B. Conduit shall <u>not</u> be supported from ductwork, water, sprinkler piping, or other non-structural members, unless approved by the Architect/Engineer. All supports shall be from structural slabs, walls, structural members, and bar joists, and coordinated with all other applicable contractors, unless noted otherwise.

C. Conduit shall be held in place by the correct size of galvanized one-hole conduit clamps, two-hole conduit straps, patented support devices, clamp back conduit hangers, or by other means if called for on the drawings.

D. Support individual horizontal raceways with separate, malleable-iron pipe hangers or clamps.

E. Spring-steel conduit clips specifically designed for supporting single conduits or tubing may be used in lieu of malleable-iron hangers for 1-1/2" and smaller raceways serving lighting and receptacle branch circuits above accessible ceilings and for securing raceways to slotted channel and angle supports.

F. Group conduits in parallel runs where practical and use conduit racks or trapeze hangers constructed of steel channel, suspended with threaded solid rods or wall mounted from metal channels with conduit straps or clamps. Provide space in each rack or trapeze for 25% additional conduits.

G. Do not exceed 25 lbs. per hanger and a minimum spacing of 2'-0" on center when attaching to metal roof decking (excludes concrete on metal deck). This 25 lbs. load and 2'-0" spacing include adjacent electrical and mechanical items hanging from deck. If the hanger restrictions cannot be achieved, supplemental framing off steel framing will need to be added.

H. Arrange supports in vertical runs so the weight of raceways and enclosed conductors is carried entirely by raceway supports, with no weight load on raceway terminals.

I. Supports for metallic conduit shall be no greater than 10 feet. A smaller interval may be used if necessitated by building construction, but in no event shall support spans exceed the Electrical Code requirements. Conduit shall be securely fastened within 3 feet of each outlet box, junction box, device box, cabinet, or fitting.

J. Supports of flexible conduit shall be within 12 inches of each outlet box, junction box, device box, cabinet, or fitting and at intervals not to exceed 4.5 feet.

K. Supports for non-metallic conduit shall be at sufficiently close intervals to eliminate any sag in the conduit. The manufacturer's recommendations shall be followed, but in no event shall support spans exceed the Electrical Code requirements.

L. Where conduit is to be installed in poured concrete floors or walls, provide concrete-tight conduit inserts securely fastened to forms to prevent conduit misplacement.

M. Finish:

1. Prime coat exposed steel hangers and supports. Hangers and supports in crawl spaces, pipe shafts, and above suspended ceiling spaces are not considered exposed.
2. Trim all ends of exposed field fabricated steel hangers, slotted channel and threaded rod to within 1" of support or fastener to eliminate potential injury to personnel unless shown otherwise on the drawings. Smooth ends and install elastomeric insulation with two coats of latex paint if exposed steel is within 6'-6" of finish floor and presents potential injury to personnel.

3.04 CONDUIT INSTALLATION

A. Conduit Connections:

1. Shorter than standard conduit lengths shall be cut square using industry standards. The ends of all conduits cut shall be reamed or otherwise finished to remove all rough edges.
2. Metallic conduit connections in slab on grade installation shall be sealed and one coat of rust inhibitor primer applied after the connection is made.
3. Where conduits with tapered threads cannot be coupled with standard couplings, then approved split or Erickson couplings shall be used. Running threads will not be permitted.
4. Install expansion/deflection joints where conduit crosses structure expansion/seismic joints.

B. Conduit terminations for all low voltage wiring shall have nylon bushings installed on each end of every conduit run.

C. Conduit Bends:

1. Use a hydraulic one-shot conduit bender or factory elbows for bends in conduit 2" in size or larger. All steel conduit bending shall be done cold; no heating of steel conduit shall be permitted.

2. A run of conduit shall not contain more than the equivalent of four (4) quarter bends (360 degrees), including those bends located immediately at the outlet or body.
3. Telecommunications conduits shall have no more than two (2) 90-degree bends between pull points and contain no continuous sections longer than 100 feet. Insert pull points or pull boxes for conduits exceeding 100 feet in length.
    a. A third bend is acceptable if:
        1) The total run is not longer than (33) feet.
        2) The conduit size is increased to the next trade size.
4. Telecommunications pull boxes shall not be used in lieu of a bend. Align conduits that enter the pull box from opposite ends with each other. Pull box size shall be twelve (12) times the diameter of the largest conduit. Slip sleeves or gutters can be used in place of a pull box.
5. Use conduit bodies to make sharp changes in direction (i.e. around beams).

D. Conduit Placement:

1. Conduit shall be mechanically continuous from source of current to all outlets. Conduit shall be electrically continuous from source of current to all outlets, unless a properly sized grounding conductor is routed within the conduit. All metallic conduits shall be bonded per the Electrical Code.
2. Route exposed conduit and conduit above suspended ceilings (accessible or not) parallel/perpendicular to the building structural lines, and as close to building structure as possible. Wherever possible, route horizontal conduit runs above water and steam piping.
3. Route conduit through roof openings provided for piping and ductwork where possible. If not provided or routing through provided openings is not possible, route through roof jack with pitch pocket. Coordinate roof penetrations with other trades.
4. Conduits, raceway, and boxes shall not be installed in concealed locations in metal deck roofing or less than 1.5" below bottom of roof decking.
5. Avoid moisture traps where possible. Where unavoidable, provide a junction box with drain fitting at conduit low point.
6. All conduits through walls shall be grouted or sealed into openings. Where conduit penetrates firewalls and floors, seal with a UL listed sealant. Seal penetrations with intumescent caulk, putty, or sheet installed per manufacturer's recommendations. All materials used to seal penetrations of firewalls and floors shall be tested and certified as a system per ASTM E814 Standard for fire tests or through-penetration fire stops as manufactured by 3M or approved equal.
7. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL OPENINGS REQUIRED IN MASONRY OR EXTERIOR WALLS UNDER THIS DIVISION. A QUALIFIED MASON AT THE EXPENSE OF THIS CONTRACTOR SHALL REPAIR ALL OPENINGS TO MATCH EXISTING CONDITIONS.
8. Seal interior of conduit at exterior entries, air handling units, coolers/freezers, etc., and where the temperature differential can potentially be greater than 20F to prevent moisture penetration. Seal shall be placed where conduit enters warm space. Conduit seal fitting shall be a drain/seal, with sealing compound, identified for use with cable and raceway system.
9. Contractor shall provide suitable mechanical protection around all conduits stubbed out from floors, walls or ceilings during construction to prevent bending or damaging of stubs due to carelessness with construction equipment.
10. Contractor shall provide a polypropylene pull cord with 2000 lbs. tensile strength in each empty conduit (indoor and outdoor), except in sleeves and nipples.
11. Telecommunications conduits that protrude through the structural floor shall be installed 1 to 3" above finished floor (AFF).

12. Telecommunications conduits that enter into Telecommunications rooms below the finished ceiling shall terminate a minimum of 4" below ceiling and as close to the wall as possible.

3.05 CONDUIT TERMINATIONS

A. Where conduit bonding is indicated or required in the contract documents, the bushings shall be a grounding type sized for the conduit and ground bonding conductor as manufactured by O-Z/Gedney, Appleton, Thomas & Betts, Burndy, Regal, Orbit Industries or approved equal.

B. Conduits with termination fittings shall be threaded for one (1) lock nut on the outside and one (1) lock nut and bushing on the inside of each box.

C. Where conduits terminate in boxes with knockouts, they shall be secured to the boxes with lock nuts and provided with approved screw type tinned iron bushings or fittings with plastic inserts.

D. Where conduits terminate in boxes, fittings, or bodies with threaded openings, they shall be tightly screwed against the shoulder portion of the threaded openings.

E. All conduit ends shall be sealed with plastic immediately after installation to prevent the entrance of any foreign matter during construction. The seals shall be removed and the conduits blown clear of all foreign matter prior to any wires or pull cords being installed.

3.06 BOX INSTALLATION SCHEDULE

A. Galvanized steel boxes may be used in:

1. Concealed interior locations above ceilings and in hollow studded partitions.
2. Exposed interior locations in mechanical rooms and in rooms without ceilings; higher than 8' above the highest platform level.

B. Cast boxes shall be used in:

1. Exterior locations.
2. Wet locations.

3.07 COORDINATION OF BOX LOCATIONS

A. Provide electrical boxes as shown on the drawings, and as required for splices, taps, wire pulling, equipment connections, and code compliance.

B. Electrical box locations shown on the Contract Drawings are approximate, unless dimensioned. Verify location of floor boxes and outlets in offices and work areas prior to rough-in.

C. Locate and install boxes to allow access. Avoid interferences with ductwork, piping, structure, equipment, etc. Recessed luminaires shall not be used as access to outlet, pull, and junction boxes. Where installation is inaccessible, provide access doors. Coordinate locations and sizes of required access doors with the Architect/Engineer and General Contractor.

D. Locate and install to maintain headroom and to present a neat appearance.

E. Coordinate locations with Heating Contractor to avoid baseboard radiation cabinets.

3.08 OUTLET BOX INSTALLATION

A. Do not install boxes back-to-back in walls.

1. Provide a minimum horizontal separation of 6 inches between boxes installed on opposite sides of non-rated stud walls. When the minimum separation cannot be maintained, install sound insulation pads on all five sides of the back box in accordance with the manufacturer's instructions.

2. Provide a minimum horizontal separation of 24 inches between boxes installed on opposite sides of fire-rated walls. When the minimum separation cannot be maintained, the box is greater than 16 square inches or the total box area (all trades) per 100 square feet is greater than or equal to 100 square inches, install fire-rated moldable pads to all five sides of the back box to maintain the fire rating of the wall. Install moldable pads in accordance with UL listing for the specific product. Sound insulation pads are not acceptable for use in fire-rated wall applications unless the product carries the necessary fire rating.

B. Install sound insulation pads on all five sides of the back of all boxes in sound-rated wall assemblies. Sound-rated wall assemblies are defined as partition types carrying a Sound Transmission Class (STC) rating.

C. The Contractor shall anchor switch and outlet box to wall construction so that it is flush with the finished masonry, paneling, drywall, plaster, etc. The Contractor shall check the boxes as the finish wall surface is being installed to assure that the box is flush. (Provide plaster rings as necessary.)

D. Mount at heights shown or noted on the drawings or as generally accepted if not specifically noted.

E. Locate boxes in masonry walls to require cutting of masonry unit corner only. Coordinate masonry cutting to achieve neat openings for boxes.

F. Provide knockout closures for unused openings.

G. Support boxes independently of conduit.

H. Use multiple-gang boxes where more than one device is mounted together; do not use sectional boxes. Provide barriers to separate wiring of different voltage systems.

I. Install boxes in walls without damaging wall insulation.

J. Coordinate mounting heights and locations of outlets mounted above counters, benches, backsplashes, and below baseboard radiation.

K. Position outlets to locate luminaires as shown on reflected ceiling drawings.

L. Provide recessed outlet boxes in finished areas; secure boxes to interior wall and partition studs, accurately positioned to allow for surface finish thickness. Use stamped steel stud bridges for flush outlets in hollow stud wall, and adjustable steel channel fasteners for flush ceiling outlet boxes.

M. Align wall-mounted outlet boxes for switches, thermostats, and similar devices.

N. Provide cast outlet boxes in exterior locations and wet locations, and where exposed rigid or intermediate conduit is used.

3.09 PULL AND JUNCTION BOX INSTALLATION

A. Locate pull boxes and junction boxes above accessible ceilings or in unfinished areas.

B. Support pull and junction boxes independent of conduit.

C. Do not install boxes back-to-back in walls.

1. Provide a minimum horizontal separation of 6 inches between boxes installed on opposite sides of non-rated stud walls. When the minimum separation cannot be maintained, install sound insulation pads on all five sides of the back box in accordance with the manufacturer's instructions.

2. Provide a minimum horizontal separation of 24 inches between boxes installed on opposite sides of fire-rated walls. When the minimum separation cannot be maintained, the box is greater than 16 square inches or the total box area (all trades) per 100 square feet is greater than or equal to 100 square inches, install fire-rated moldable pads to all five sides of the back box to maintain the fire rating of the wall. Install moldable pads in accordance with UL listing for the specific product. Sound insulation pads are not acceptable for use in fire-rated wall applications unless the product carries the necessary fire rating.

D. Install sound insulation pads on all five sides of the back of all boxes in sound-rated wall assemblies. Sound-rated wall assemblies are defined as partition types carrying a Sound Transmission Class (STC) rating.

3.10 EXPOSED BOX INSTALLATION

A. Boxes shall be secured to the building structure with proper size screws, bolts, hanger rods, or structural steel elements.

B. On brick, block and concrete walls or ceilings, exposed boxes shall be supported with no less than two (2) Ackerman-Johnson, Paine, Phillips, or approved equal screw anchors or expansion shields and round head machine screws. Cast boxes shall not be drilled.

C. On steel structures, exposed boxes shall be supported to the steel member by drilling and tapping the member and fastening the boxes by means of round head machine screws.

D. Boxes may be supported on steel members by APPROVED beam clamps if conduit is supported by beam clamps.

E. Boxes shall be fastened to wood structures by means of a minimum of two (2) wood screws adequately large and long to properly support. (Quantity depends on size of box.)

F. Wood, plastic, or fiber plugs shall not be used.

G. Explosive devices shall not be used.

END OF SECTION 26 05 33

SECTION 26 09 34
LIGHTING CONTROL SYSTEMS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Line and low voltage standalone lighting controls

B. Automatic load control relay (ALCR3)

C. Distributed lighting control

1.02 RELATED SECTIONS

A. The lighting system design includes a combination of luminaire sources, lighting control components, programming sequences, and supplementary components for building and energy code compliance. The design uses performance-based specifications for portions of the lighting system to account for the limitation of comparable product solutions available by competitive manufacturers. The Contractor shall reference related specification sections, plans, schedules, and details prior to submitting pricing, submittals, and installation. The Contractor shall coordinate system component compatibility among various manufacturers and suppliers for a turnkey lighting system. Referenced sections include, but are not limited to, the following:

1. 26 51 19 LED Lighting
2. Electrical Drawings: Plans, luminaire schedules, lighting control sequence of operations, diagrams, and details.

1.03 RELATED WORK

A. Section 26 51 19 - Lighting

1.04 QUALITY ASSURANCE

A. Manufacturers shall be regularly engaged in the manufacture of lighting control equipment and ancillary equipment, of types and capacities required, whose products have been in satisfactory use in similar service for not less than five (5) years.

B. All components and assemblies are to be factory pre-tested prior to delivery and installation.

C. Comply with Electrical Code as applicable to electrical wiring work.

D. Comply with applicable portions of NEMA standards pertaining to types of electrical equipment and enclosures.

E. Panels and accessory devices are to be UL listed under UL 916 Energy Management Equipment. Panels and accessories used for control of life safety and critical branch circuits shall be listed under UL 924 Emergency Lighting and Power Equipment.

F. All assemblies are to be in compliance with FCC emissions standards specified in Part 15 Subpart J for Class A applications.

1.05 REFERENCES

A. FCC Rules and Regulations, Part 15, Subpart J - Radio Frequency Interference

B. FS W S 896 Switch, Toggle

C. NEMA WD 1 - General Color Requirements for Wiring Devices

D. NEMA WD 7 - Occupancy Motion Sensors

E. NFPA 70 - National Electrical Code (NEC)

F. UL Standard 916 Energy Management Equipment

G. UL 924 - Emergency Lighting and Power Equipment

H. UL 1472 - Solid-State Dimming Controls

1.06 SUBMITTALS

A. Submit product data under provisions of Section 26 05 00.

B. Submit a comprehensive package including devices, hardware, software, product specification, finishes, dimensions, installation instructions, warranty, system software requirements.

C. Provide floor plan showing location, orientation, and coverage area of each control device, sensor, and controller/interface. For areas requiring multiple sensor devices for appropriate coverage, submit specific manufacturer-approved sensor layout as an overlay directly on the project drawings, either in print or approved electronic form.

D. Submit a list of devices and equipment that will be installed for each sequence of operation.

E. Submit project specific control wiring diagrams showing all equipment, line voltage, and control wiring requirements for all components including, but not limited to, dimmers, relays, low voltage switches, occupancy sensors, control stations, and communication interfaces and programming instructions for each sequence of operation. Include network cable specification and end-of-line termination details, if required.

F. Coordinate integration with mechanical and/or other trades.

1.07 PROJECT RECORD DOCUMENTS

A. Accurately record location of all controls and devices. Include description of switching sequences and circuiting arrangements.

1.08 OPERATION AND MAINTENANCE DATA

A. Submit emergency, operation, and maintenance data under provisions of Section 26 05 00. Data shall also include the following:

1. Schedule for routine maintenance, inspection, and calibration of all lighting control devices and system components. Recommended schedule for inspection and recalibration of sensors.
2. Complete narrative describing intended operation and sequence for each control scenario and system component, updated to reflect all changes resulting from commissioning of systems. Narrative shall indicate recommended settings for devices where applicable.
3. Replacement part numbers for all system components.

B. Identify installed location and labeling for each luminaire controlled by automated lighting controls.

C. Submit software operating and maintenance manuals, program software backup on compact disc or compatible media with data files, device address list, and a printout of software application and graphic screens, where applicable.

1.09 SYSTEM DESCRIPTION

A. Performance Statement: This specification section and the accompanying lighting design documents describe the minimum material quality, required features, and operational requirements of the lighting control system (LCS). These documents do not convey every wire that must be installed and every equipment connection that must be made. Based on the performance required of the system, as presented in these documents, the Contractor and system manufacturer/vendor are solely responsible for determining all equipment, wiring, and programming required for a complete and operational system.

B. Provide an integrated lighting controls system consisting of panels, power supplies, controllers, sensors, relays, switches, devices, wiring, etc. necessary to perform the Lighting Control Sequence of Operation as defined on the plans and specifications. Contractor is responsible for confirming that all components and luminaires interoperate as a single system.

1. Sequence of Operation: Describes the required operation and performance for lighting control in each space. Sequences of operation are indicated on the drawings.

2. Drawings: The drawings include sequences of operation, locations of control interface devices, sensors, and control zones. Wiring and additional equipment to make a complete and functioning system has not been shown, but shall be submitted with the shop drawings.

C. The following control types and features are acceptable. Acceptable control locations are shown on the drawings.

1. Line Voltage Control: Control equipment consists of traditional line voltage wiring devices and equipment such as switches, dimmers and combination occupancy/vacancy sensor switches, etc.

2. Distributed Control: Control equipment is in the space/zone being controlled; not reliant on centralized controllers.

a. All locations shall have the ability to be networked for remote control and monitoring, but network connections are not required.

1.10 COMMISSIONING

A. Commissioning of a system or systems specified in this section is part of the construction process. Documentation and testing of these systems, as well as training of the Owner's operation and maintenance personnel, is required in cooperation with the Owner's Representative. Project closeout is dependent on successful completion of all commissioning procedures, documentation, and issue closure. Refer to Division 1 for detailed commissioning requirements.

B. The Contractor shall provide all services necessary for compliance with the IECC Section C408 Commissioning. The commissioning shall include, but not be limited to, a commissioning plan, preliminary commissioning report, construction documents, manuals, final commissioning report, and lighting system functional testing.

C. The Contractor shall notify the Commissioning Agent, Architect/Engineer and Owner's Representative ten (10) working days prior to scheduled commissioning date.

D. The commissioning process requires meeting attendance. Refer to Division 1 for meeting requirements.

E. The system shall be functionally tested by a factory-authorized engineer and comply with the Sequence of Operation. All loads shall be tested live for continuity and freedom from defects, and all control wiring shall be tested for continuity and connections prior to energizing the system.

1.11 WARRANTY

A. Manufacturer shall warrant products under normal use and service to be free from defects in materials and workmanship for a period of two (2) years from date of commissioning.

B. Occupancy, vacancy, daylight sensors and controls shall have a five (5) year warranty from date of Substantial Completion.

PART 2 - PRODUCTS

2.01 LIGHTING CONTROLS

A. All items of material having a similar function (e.g., switches, dimmers, sensors, contactors, relays, etc.) shall be of the same manufacturer, unless specifically stated otherwise on drawings or elsewhere in the specifications. Lighting control switches, systems, and components shall be listed.

B. Color of lighting controls and sensors shall match the receptacle wiring devices specified in the space.

C. The functions described in the lighting sequence of operation shall dictate the actual lighting control device required to accomplish the functions described for the space.

2.02 LIGHTING CONTROL STATION

A. SW: The lighting control station shall contain the controls required by the lighting sequence of operation in a common coverplate. The controls may consist of switches, dimmers, occupancy sensors, pushbuttons, etc.

1. In spaces where the wall control station is shown in multiple locations, the sequence of operation shall be the same at all locations, unless noted otherwise.
2. The controls supplier shall prepare control station shop drawings showing arrangement of controls, dimensioned elevations, wiring diagram, and recommended backboxes. The shop drawing submittal should be identified with the lighting sequence that the station provides. Submit data sheets on the switches, dimmers, sensors, buttons, etc. contained in the control station.

2.03 DEVICE COLOR

A. All switch, lighting controls, and coverplate colors shall be the same as wiring devices, unless indicated otherwise.

2.04 COVERPLATES

A. All switches and lighting controls shall be complete with coverplates that match material and color of the wiring device coverplates in the space.

B. Where several devices are ganged together, the coverplate shall be of the ganged style for the number of devices used.

C. Install nameplate identification as indicated in Section 26 05 53.

D. Plate-securing screws shall be metal with head color matching the wall plate finish.

2.05 WALL SWITCHES

A. Refer to Electrical Symbols List for device type.

B. SW-1P; Single Pole Switch:

1. Single throw, 120/277-volt, 20-amp maintained contact. Toggle handle, side and back wired.
2. Manufacturers:
    a. Hubbell HBL1221
    b. Leviton 1221-2
    c. Pass & Seymour PS20AC1
    d. Cooper AH1221

C. SW-3W; Three-way Switch:

1. 120/277 volt, 20 amp. Toggle handle, side and back wired.
2. Manufacturers:
    a. Hubbell 1223
    b. Leviton 1223-2
    c. Pass & Seymour PS20AC3
    d. Cooper AH1223

2.06 WALL DIMMERS

A. UL listed with integral air-gap switch for on/off control.

B. Integral EMI/RFI suppression.

C. Non-viewable heat sink.

D. Dimmer compatibility and wiring with the load being controlled shall be verified by Contractor prior to purchase and installation.

E. Dimmer to match device color.

2.07 LOCAL DAYLIGHTING CONTROLS

A. Standalone Interior Photo Sensors:

1. SW-LS-D: Daylight Level Sensor and Controller - 0-10V Dimming - One Zone:
    a. Dimming control of one 0-10V zone. Range of 10 to 200 FC. Adjustable deadband prevents cycling. Adjustable time delay. Coordinated with dimming ballast prior to submittal.
    b. Manufacturers:
        1) Watt Stopper LS-301
        2) Hubble Automation DLC7
        3) Sensor Switch N-CMADC
2. Sensor shall detect changes in ambient light level and provide triggering of lighting groups in area based on sequence of operation.
3. Sensor shall be configurable via DIP switches at device or via handheld wireless remote programming unit. Settings shall include:
    a. Ambient sensitivity range between 1 and 1,000 foot-candles.
    b. Time delay of 5 to 300 seconds.
    c. Trigger setpoints with deadband adjustment.
4. Sensor shall provide on/off setpoints in quantity as specified on drawings and as shown in the sequence of operation.
5. Sensor shall be ceiling- or wall-mounted for range and viewing angle meeting application requirements as outlined in the sequence of operation.
6. Output signal from sensor shall be linear with light level.

2.08 INDOOR OCCUPANCY AND VACANCY SENSORS

A. General Description: Wall- or ceiling-mounting, solid-state units with a separate power supply/relay unit.

1. Operation: Unless otherwise indicated, turn lights on when covered area is occupied and off when unoccupied, with a time delay for turning lights off, adjustable over a minimum range of 1 to 30 minutes. Vacancy sensors require a manual switch operation to turn lights on and off, with a time delay for turning lights off when unoccupied.
2. Sensor Output: Contacts rated to operate the connected relay, complying with UL 773A. Sensor shall be powered from the relay unit.
3. Detection Coverage (Room): Detect occupancy anywhere in an area based on hand motion.

B. Dual-Technology Type: Detect occupancy by using a combination of PIR and ultrasonic detection methods in area of coverage. Particular technology or combination of technologies that controls on and off functions shall be selectable in the field by operating controls on unit.

1. **SW-VS-D or SW-OC-D;** 360-Degree Coverage Pattern:
    a. Frequency greater than 40 KHz. Dual sensing verifications (requires both technologies to activate), either technology maintains on status. Integrated ambient light level sensor (2 to 200 FC range), adjustable sensitivity and time delay, integrated isolated relay contact. Sensor shall control all circuits in area, unless noted otherwise. Initial settings: ambient sensor 40 FC.
    b. Manufacturers:
        1) Watt Stopper DT 300 Series
        2) Hubbell OMNI-DT2000 or ATD2000C
        3) Greengate OAC-DT

4) Leviton OSC##-MOW

5) Sensor Switch CM PDT 10

C. Mask sensors where necessary to prevent nuisance switching from adjacent areas.

D. PIR Type: Detect occupancy by sensing a combination of heat and movement in area of coverage.

2.09 AUTOMATIC LOAD CONTROL RELAY (ALCR) (INDIVIDUAL LUMINAIRE - INTEGRAL)

A. This section includes information related to factory and field installed ALCR devices intended for individual luminaires.

B. ALCR3; Automatic Load Control Relay ALCR, 120/277 volt, dry/damp listed, 32F to 113F operating temperature, plenum NEMA 1 rated, test button with visual indicator, remote test and fire alarm control, listed for factory or field installation within luminaire, UL924 listed latest edition, Electrical Code Article 700 compliant.

1. Rating: 3 Amp LED driver, ballast, or incandescent.
2. Lighting Control Coordination: Provide ALCR device compatible with designated lighting zone controls. Example: Switched, 0-10 volt dimming, DALI control, 2 wire dimming, or DMX.
3. Operation:
   a. ALCR device shall allow the same local lighting control devices to control both the normal lights and emergency designated lighting. Devices that require separate local lighting controls for the normal and designated emergency lighting are NOT allowed.
   b. ALCR device shall monitor the normal power circuit and shunt/bypass the local lighting controls upon loss of power, remote test switch, or fire alarm override to provide full lumen output for designated emergency lighting.
   c. ALCR device shall return designated emergency lighting to local lighting control after a 15-minute delay upon return of normal power or remote test/fire alarm override release.
   d. Performance Equivalent by Other Components: A limitation of equivalent comparable products may require some of the required functions of the ALCR device to be provided by an alternative component of the lighting control system. The following functions may be performed by alternative components of the lighting control system when the device is listed for the required function and compatible with the lighting control system.
      1) Remote test switch / fire alarm override interface.
      2) The 15-minute time delay upon return of normal power or remote test/fire alarm override release.
4. Manufacturers:
   a. LVS Controls EPC-2-FM (switched)
   b. EPC-2-D-FM Series (0-10V dimming)
   c. Iota ETS-step (switched)
   d. ETC-DR (0-10V dimming)
   e. Lighting control manufacturer

2.10 DISTRIBUTED LIGHTING CONTROL

A. Manufacturers: as listed below meet the qualifications as outlined in this specification. Contractor is responsible for verifying that selected manufacturer is capable of furnishing the complete system as specified herein.

1. Acuity Controls nLight Series
2. Legrand Watt Stopper DLM Series
3. Hubbell Automation NX Series
4. Eaton Greengate RC3 Series (room-based system)
5. Osram Encelium Series
6. Lutron

B. System Description: The lighting control system shall be a network of remote modules. System includes all associated wiring, relay modules, photocells, switches, dimmers, time clock, occupancy sensors. System shall utilize distributed relays modules, allowing these relay modules to be located above accessible ceilings in or adjacent to rooms they are controlling.

C. Control Devices: All occupancy sensors (ultrasonic, IR and dual technology type), photocells, switches, and timers shall be provided with system and designed to operate on system network. Supplemental power packs shall be provided as required for multiple control devices. This equipment shall be identified in shop drawing submission.

D. Relay Modules: Mounted in NEMA enclosure with physically separate 120/277-volt wiring compartment from low voltage control wiring. Provide low voltage digital communication to control devices as shown on drawings and schedules. Supplemental power packs shall be provided as required for multiple control devices. This equipment shall be identified in shop drawing submission. Dimmable relay modules shall be provided where indicated. Relay modules shall contain up to four (4) relays. Relay modules shall be labeled with room number that relays control lighting within.

E. Single-Pole Relays: Mechanically held unless otherwise indicated; split-coil, momentary-pulsed type, rated 20A, 125-volt AC for tungsten filaments and 20A, 277-volt AC for electronic ballasts, 50,000 cycles at rated capacity.

F. System shall include server / central station with operating software, data network, and BACnet IP communication with other systems as described. System communication protocol shall be compatible with the building automation system.

G. System server / central station shall provide programmable operation of lights connected via system relays and controlled with system devices. System software shall provide control of relays and control devices, time and sequence scheduling, timed out and blink light operation, and monitoring and reporting of system events and components. Initial programming shall be as shown on plans and schedules.

H. Server / Central Control Station: Lighting control system manufacturer shall be responsible to assure coordination between relay modules, network hubs, and control system server/ central station such that system performs as described. Server shall be provided with monitor, keyboard, and mouse, and plugged into a receptacle connected to an equipment emergency circuit as a minimum.

I. Network Hub: Network Hub shall contain processor and astronomic time clock for control and monitoring of lighting. Network hub shall be fed from an equipment emergency circuit at a minimum.

2.11 CONDUCTORS AND CABLES

A. Control Wiring:

1. Where installed with the line-voltage wiring, control wiring shall be copper conductors not smaller than No. 16 AWG with insulation voltage rating and temperature rating equal to that of the line-voltage wiring, complying with Division 26 Section 26 05 13 "Wire and Cable."

2. Tap conductors to switches or relays: Stranded copper conductors of 16 AWG or solid 16 or 18 AWG with insulation rating equal to that of the line-voltage wiring.
3. Tap conductors to dimming ballasts: Solid copper conductors of 18 AWG with insulation voltage rating equal to that of the line-voltage wiring and insulation temperature rating not less than 90C.
4. Network cabling as required by manufacturer.

B. Splices and Taps:
1. Tapping or wire trap connectors shall be used to splice all Class 1 and Class 2 control wiring. Twist-on, wire-nut type connectors are not allowed.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify that surfaces are ready to receive work.

B. Verify field dimensions and coordinate physical size of all equipment with the architectural requirements of the spaces into which they are to be installed. Allow space for adequate ventilation and circulation of air.

C. Verify that required utilities are available, in proper location, and ready for use.

D. Beginning of installation means installer accepts existing conditions.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions and approved shop drawings.

B. All wiring shall be installed in conduit.

C. All branch load circuits shall be live tested before connecting the loads to the lighting control panel.

3.03 Automatic Load Control Relays (ALCR20)

A. Field install per manufacturer requirements.

B. Remote Test Switch: Provide connection to remote test switch.

C. Fire Alarm Override: Provide connection to addressable fire alarm relay.

3.04 SUPPORT SERVICES

A. System Startup:
1. Manufacturer shall provide factory authorized technician to confirm proper installation and operation of all system components.

B. Testing:
1. System shall be completely functional tested by a factory-authorized technician. All loads shall be tested live for continuity and freedom from defects, and all control wiring shall be tested for continuity and connections prior to energizing the system components.
2. Programming of initial zones, schedules, lighting levels, control station groups, and sensor settings shall be performed by a factory-authorized technician. Lighting Control Sequence of Operation shall serve as a basis for programming, However, all final decisions regarding groups and schedules shall be at the direction of the Owner. The following procedures shall be performed at a minimum:
a. Confirm occupancy sensor placement, sensitivity, and time delay settings to meet specified performance criteria.
b. Confirm daylight sensor placement, sensitivity, deadband, and delay settings to meet specified performance criteria.
c. Confirm that schedules and time controls are configured to meet specified performance criteria and Owner's operating requirements.

3. Verify occupancy/vacancy and daylight sensor operation is correct after furniture and equipment is installed in each area. Make adjustments to sensor settings and time delays to allow proper operation.
4. Verify occupancy/vacancy sensors are located to provide complete coverage for the area served with no nuisance switching.
    a. Relocate sensors or provide additional sensors as necessary to provide adequate coverage.
    b. Mask occupancy sensors where necessary to prevent nuisance switching from adjacent areas.

C. Training:
1. Manufacturer shall provide competent factory-authorized technician to train Owner personnel in the operation, maintenance and programming of the lighting control system. Submit training plan with notification seven (7) days prior to proposed training dates.
2. Training duration shall be no less than three (3) days, with one (1) day being scheduled at least two (2) weeks after initial training.

D. Documentation:
1. Manufacturer shall provide system documentation including:
    a. System one-line showing all panels, number and type of control stations and sensors, communication line, and network or BMS/BAS interface unit.
    b. Drawings for each panel showing hardware configuration and numbering.
    c. Panel wiring schedules.
    d. Typical diagrams for each component.

3.05 SYSTEM COMMISSIONING

A. Contractors' tests shall be scheduled and documented in accordance with the commissioning requirements. Refer to Section 01 09 00, General Commissioning, for further details.

B. System verification testing is part of the commissioning process. Verification testing shall be performed by the Contractor and witnessed and documented by the Commissioning Agent. Refer to Section 01 09 00, General Commissioning, for system verification tests and commissioning requirements.

C. Training of the Owner's operation and maintenance personnel is required in cooperation with the Owner's Representative. The instruction shall be scheduled in coordination with the Owner's Representative after submission and approval of formal training plans. Refer to Section 01 09 00, General Commissioning, for Contractor training requirements.

END OF SECTION 26 09 33

SECTION 26 27 26
WIRING DEVICES

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Device plates and box covers

B. Receptacles (REC-#)

C. Floor boxes and floor box with service fitting (FB-#)

1.02 RELATED SECTIONS

A. Section 26 09 33 - Lighting Control Systems.

1.03 QUALITY ASSURANCE

A. Provide similar devices from a single manufacturer.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in the Electrical Code, by a testing agency to Authorities Having Jurisdiction and marked for intended use.

C. Comply with the Electrical Code.

1.04 REFERENCES

A. DSCC W-C-896F - General Specification for Electrical Power Connector

B. FS W-C-596 - Electrical Power Connector, Plug, Receptacle, and Cable Outlet

C. NEMA WD 1 - General Color Requirements for Wiring Devices

D. NEMA WD 6 - Wiring Devices - Dimensional Requirements

E. NFPA 70 - National Electrical Code (NEC)

F. UL 943 - Standard for Ground Fault Circuit Interrupters

1.05 SUBMITTALS

A. Submit product data under provisions of Section 26 05 00.

B. Provide product data showing configurations, finishes, dimensions, and manufacturer's instructions.

1.06 COORDINATION

A. Receptacles for Owner Furnished Equipment: Match plug configurations.

B. Cord and Plug Sets: Match equipment requirements.

PART 2 - PRODUCTS

2.01 DEVICE COLOR

A. All switch, receptacle, and outlet colors shall be white and verified with Architect, unless indicated otherwise.

2.02 COVERPLATES

A. All switches, receptacles, and outlets shall be complete with the following:

1. Unbreakable thermoplastic/thermoset plastic and match device color coverplates in finished spaces where walls are finished.
2. #302 stainless steel coverplates in unfinished spaces for flush boxes.
3. Galvanized steel coverplates in unfinished spaces for surface mounted boxes.

B. Where several devices are ganged together, the coverplate shall be of the ganged style for the number of devices used.

C. Install nameplate identification as indicated in Section 26 05 53.

D. Plate securing screws shall be metal with head color matching the wall plate finish.

E. Where indicated on drawings, provide compatible wire guards for devices to protect against damage and vandalism. Wire guards shall be constructed of durable coated steel wire.

2.03 RECEPTACLES

A. Refer to Electrical Symbols List for device type.

B. REC-DUP: NEMA 5-20R Duplex Receptacle:

1. Spec Grade: 125-volt, 20 amp, 3-wire grounding type with impact resistant thermoplastic face and brass back strap.
    a. Manufacturers:
        1) Hubbell 5352
        2) Leviton 5362-S
        3) Pass & Seymour 5362
        4) Cooper 5362

C. REC-DUP-W: NEMA 5-20R Weatherproof While-In-Use Ground Fault Duplex Receptacle:

1. 125-volt, 20 amp, 3-wire grounding type with test and reset buttons in impact resistant thermoplastic face, weather resistant WR listed. Provide extra-duty NEMA 3R rated while-in-use clear outlet box hood.
2. Device shall perform self-test of GFCI circuitry in accordance with UL 943.
    a. Manufacturers:
        1) Hubbell:
            a) GFRTW20 with clear housing RW57300
        2) Leviton GFWT2 with clear housing 5977-CL
        3) Pass & Seymour 2097TRWR with clear housing WIUC10-C
        4) Cooper WRSGF20 with clear housing WIU-1

D. REC-TAMP: NEMA 5-20R Tamper Resistant Duplex Receptacle:

1. Standard Grade: 125-volt, 20 amp, 3-wire grounding type with impact resistant thermoplastic face.
    a. Manufacturers:
        1) Hubbell BR20TR
        2) Leviton TBR20
        3) Pass & Seymour TR5362
        4) Cooper TRBR20

E. REC-TAMP-QUAD: NEMA 5-20R Double Duplex Tamper Resistant Receptacle:

1. Consists of two duplex tamper resistant receptacles, double gang box, plaster ring and faceplate.
    a. Manufacturers:
        1) Refer to Tamper Resistant Receptacle above.

F. Back wired devices shall be complete with eight holes that are screw activated with metal clamps for connection to #12 or #10 copper conductors.

G. Side wired devices shall have four binding screws that are undercut for positive wire retention.

H. Ground fault circuit interrupter (GFCI) receptacles shall be listed and comply with UL 943 requiring increased surge immunity, improved corrosion resistance, improved resistance to false tripping and diagnostic indication for miswiring if the line and load conductors are reversed during installation.

2.04 FLOOR BOXES

A. Cover Color and Style: Verify with Architect from standard manufacturer options.

B. Refer to Technology drawings for voice/data, Audio/Video outlet, and coordination requirements.

C. Floor Boxes Housing Material Based on Cast-in-Place Floor Type:

1. Slab on Grade: Cast Iron or listed for slab on grade with special kit, coating ,or equivalent; corrosion resistant.

D. FB-1: Concealed Center Compartment:

1. Floor Box, flush-mounted hinged cover, square/rectangular center service area with closed while-in-use cover and cable egress doors in cover, provide complete with appropriate outlet cover plates and hardware. For use with 4-inch minimum concrete pour floors, fully adjustable, UL 514 scrub water listed.
2. Gang / Outlet Descriptions:
    a. 125 Volt, 20 amp, NEMA 5-20R duplex receptacle with 3/4-inch conduit.
3. Manufacturers:
    a. Hubbell CFB Series
    b. Legrand Wiremold RFB Series
    c. ABB Steel City 664/665/667 Series
4. Installation: Group route raceway conduits under slab on grade or in ceiling space below to nearest wall or as shown on plans. Provide provisions to core drill elevated floors and route conduits to ceiling space of associated floor box. Provide hub reducers when applicable.

E. FB-1: Concealed Center Compartment:

1. Floor Box, flush-mounted hinged cover, square/rectangular center service area with closed while-in-use cover and cable egress doors in cover, provide complete with appropriate outlet cover plates and hardware. For use with 4-inch minimum concrete pour floors, fully adjustable, UL 514 scrub water listed.
2. Gang / Outlet Descriptions:
    a. 125 Volt, 20 amp, NEMA 5-20R duplex receptacle with 3/4-inch conduit.
    b. Voice/Data outlet with 1-1/4-inch conduit. Refer to Technology drawings for additional information.
    c. Audio/Visual outlet with 1-1/4-inch conduit. Refer to Technology drawings for additional information.
3. Manufacturers:
    a. Hubbell CFB Series
    b. Legrand Wiremold RFB Series
    c. ABB Steel City 664/665/667 Series
4. Installation: Group route raceway conduits under slab on grade or in ceiling space below to nearest wall or as shown on plans. Provide provisions to core drill elevated floors and route conduits to ceiling space of associated floor box. Provide hub reducers when applicable.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install convenience receptacles at elevations indicated in the General Installation Notes on the contract drawings.

B. Install specific-use receptacles at heights shown on the contract drawings. Install devices level, plumb, and square with building lines. Coordinate installation of adjacent devices of separate systems with common mounting heights, including lighting, power, systems, technology, and temperature control device rough-ins.

C. Ground Fault Protection: Provide ground fault protection for all branch circuit breakers serving 120/208 receptacles and electrical outlets rated 50 amps or less single-phase and 100 amps or less three-phase in the following locations, as shown on drawings, or required by adopted code:

1. Rooftops
2. Interior/Exterior locations subject to damp/wet conditions
3. When located within 6 feet of sinks, bathtubs, and shower stalls

D. Tamper Resistant Protection: Provide tamper resistant protection for all 15 / 20-amp 120/208 straight blade wiring devices in the following locations, as shown on the drawings, or required by adopted code.

1. Childcare, preschool, elementary, middle, high school, educational facilities
2. Public Buildings: Corridors, waiting rooms, common areas
3. Public Spaces involving: Transportation waiting, gymnasiums, fitness centers, auditoriums, public use venue common areas

E. Install receptacles vertically with ground slot up or where indicated on the drawings, horizontally with ground slot to the left.

F. Install galvanized steel plates on outlet boxes and junction boxes in unfinished areas, above accessible ceilings, and on surface-mounted outlets.

G. Install devices and wall plates flush and level.

H. Install nameplate identification to receptacle cover plates indicated. Identification shall identify panel name and circuit number. Refer to Specification Section 26 05 53 - Electrical Identification.

I. Test receptacles for proper polarity, ground continuity and compliance with requirements.

J. Floor Box Installation:

1. Set boxes level and flush with finish flooring material.
2. Use cast iron floor boxes for installations in slab on grade. Trim shall match floor covering to be used.
3. Provide a minimum horizontal offset of 24 inches between boxes.
4. Provide saw-cutting and patching of existing concrete floors as necessary for floor box installations within existing floors.

END OF SECTION 26 27 26

SECTION 26 51 19
LED LIGHTING

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Interior luminaires and accessories

B. Light-emitting diode (LED) luminaire systems

C. Emergency exit signs

1.02 RELATED SECTIONS

A. The lighting system design includes a combination of luminaire sources, lighting control components, programming sequences, and supplementary components for building and energy code compliance. The design uses performance-based specifications for portions of the lighting system to account for the limitation of comparable product solutions available by competitive manufacturers. The Contractor shall reference related specification sections, plans, schedules, and details prior to submitting pricing, submittals, and installation. The Contractor shall coordinate system component compatibility among various manufacturers and suppliers for a turnkey lighting system. Referenced sections include, but are not limited to, the following:

1. 26 09 33 Lighting Control Systems
    a. Automatic load control relay (ALCR) (individual luminaire - integral) (ALCR3)
2. Electrical drawings: Plans, luminaire schedules, lighting control sequence of operations, diagrams, and details.

1.03 REFERENCES

A. ANSI C78.377 - Specifications for the Chromaticity of Solid State Lighting Products

B. ANSI C82.16 - Light-Emitting Diode Drivers - Method of Measurement

C. ANSI C82.77 - Standard for Harmonic Emission Limits and Related Power Quality Requirements for Lighting Equipment

D. NFPA 70E - National Electrical Safety Code

E. NEMA SSL1 - Electronic Drivers for LED Devices, Arrays or System

F. UL 8750 - Light Emitting Diode (LED) Equipment for use in Lighting Products

G. LM-79 - Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

H. UL 924 - Standard for Emergency Lighting and Power Equipment

1.04 SUBMITTALS

A. Submit product data under provisions of Section 26 05 00.

B. Basic Requirements of Submittal:

1. Submit product data sheets for luminaires, LED light engines, drivers and poles. Include complete product model number with all options as specified. Submittal shall be arranged with luminaires listed in ascending order, and with each luminaire's, LED light engine, driver, or pole information following luminaire's product data. Failure to organize submittal in this manner will result in the submittal being rejected.
2. Submit lens product data, dimensions and weights if not included in product data sheet submittal.
3. Include outline drawings, support points, weights, and accessory information for each luminaire.
4. Submit manufacturer origin of LED chipset and driver.

1.05 EXTRA STOCK

A. Exit Signs: Provide 2 additional exit sign luminaires complete with labor, conduit, and wire. Additional exit luminaires shall be located per the Architect/Engineer or provided as attic stock when a location is not defined prior to Owner occupancy. When multiple exit signs are scheduled, the quantity listed above shall represent each type listed.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site. Store and protect under provisions of Section 26 05 00.

B. Protect luminaire finishes, lenses, and trims from damage during storage and installation. Do not remove protective films until construction cleanup within each area is complete.

1.07 WARRANTY

A. The warranty period begins at the date of Substantial Completion.

B. LED Light Engines and Drivers:

1. LED Drivers and Dimming Drivers: Five (5) years
2. Light Emitting Diode (LED) Light Engines: Five (5) years

C. Exit Signs:

1. Exit Signs: Three (3) year, non-prorated
2. Emergency Unit and Exit Sign Battery: Sealed lead acid or lead calcium cell, requiring no maintenance or replacement for ten (10) years under normal conditions.

D. Emergency Drivers:

1. Emergency LED Driver: Three (3) years

E. Emergency Inverter for LED Light Engines:

1. Emergency Inverter and Battery: Sealed nickel cadmium five (5) year, non-prorated.

PART 2 - PRODUCTS

2.01 INTERIOR LUMINAIRES AND ACCESSORIES - GENERAL

A. Recessed Luminaires: Confirm ceiling and wall type and furnish trim and accessories necessary to permit proper installation in each system. Where fire-rated ceiling or wall assemblies are specified, furnish and install listed enclosures around luminaires that maintain the system rating.

B. Luminaires: Louvers shall be anodized low iridescent specular aluminum with mitered corners and interlocking construction.

C. Suspended Luminaires: Coordinate power feed and suspension canopies with ceiling type and architectural RCP for proper fit and location. Ensure finished installations are plumb and level at elevations specified. Verify suspension length prior to submittal.

2.02 LIGHT EMITTING DIODE (LED) LUMINAIRE SYSTEMS

A. Refer to the luminaire schedule for color temperature and minimum color rendering index CRI requirements. Provide light source color consistency by utilizing a binning tolerance within a maximum 3-step McAdam ellipse unless noted otherwise.

B. LED chip arrays specified as color changing shall have chip colors as noted on the luminaire schedule.

C. Rated life shall be minimum of 50,000 hours at L70.

D. LED chips shall be wired so that failure of one chip does not prohibit operation of the remainder of the chip array.

E. Luminaire delivered lumens is defined as the absolute lumens per the manufacturers LM-79-08 test report.

F. LED luminaires shall be designed for ease of component replacement including modular replaceable boards or Zhaga sockets. Luminaires that are factory sealed and do not have field replaceable parts shall provide a 10-year warranty.

G. LED light engine shall have a maximum LLD of 0.85 at 50,000 hours at 25°C ambient.

H. LED Driver:

1. Solid state driver with integral heat sink. Driver shall have over-heat, short-circuit and overload protection, power factor 0.90 or above and maximum total harmonic distortion of 10%. Driver shall have a voltage fluctuation tolerance of +/- 10%.
2. Drivers shall have dimming capabilities as outlined in the luminaire schedule for each luminaire type. Dimming shall control light output in a continuous curve from 100% to 10% unless noted otherwise.
3. Driver shall have a minimum of 50,000 hours rated life.
4. Driver shall be tested to ANSI C82-16 for input current inrush, total harmonic distortion (THD), and power factor. Driver start time shall be less than 0.5 seconds to 98% of initial light output. Flicker should be less than 30% throughout the operating range.
5. Demonstrate no visible change in light output with a variation of plus or minus 10 percent change in line-voltage input.

2.03 EMERGENCY EXIT SIGNS

A. Self-Powered Exit Signs: Stencil face, 6-inch high letters, directional arrows as indicated, universal mounting type as indicated on the drawings. One-piece, self-contained unit with sealed, maintenance-free nickel cadmium battery, test switch, AC ON pilot light, automatic charger, and electronic circuitry. Power failure relay automatically energizes lamp from battery when circuit voltage drops to 80 percent of nominal voltage or below. When normal voltage is restored, relay disconnects lamps from battery, and battery is automatically recharged and floated on charger.

B. Directional Indicators: The directional indicator for exit signage shall be of a chevron type meeting all requirements of NFPA 101.

C. Self-Diagnostics and Testing:

1. Unit shall be self-diagnostic with continuous monitoring of charger performance and battery voltage. Any malfunction of battery, charger, transfer circuit, or emergency lamps shall be detected and visually indicated.
2. Unit shall be programmed to exercise the battery and test emergency operation by performing a five-minute discharge/diagnostic cycle every six months. A manual test switch shall allow a five minute discharge/diagnostic test at any time.

2.04 EMERGENCY INVERTER FOR LED LIGHT ENGINES (INDIVIDUAL LUMINAIRES - INTEGRAL)

A. Unit: Self-contained, with automatic transfer to battery supply on loss of normal power, UL 924 listed for factory or field installation, indoor and damp locations, 32F to 122F operating temperature. Compatible with switched, dimmed, and unswitched lighting controls. Compatible with LED light engines. The inverter output shall be sinusoidal with solid-state low voltage disconnect circuit.

B. Battery: Sealed, high temperature, maintenance free, nickel cadmium battery with capacity to provide 90 minutes of emergency operation at full lumen and wattage output, with 24-hour recharge time. Refer to Luminaire Schedule for lumen and wattage requirements.

C. Features: Integral battery charger with LED charging indicator light, test switch, electronic circuitry for use with LED drivers. Test and monitor switch shall be integral to luminaire or mounted flush in finished ceiling per Luminaire Schedule.

D. Factory and Field Installation: Listed for installation inside and adjacent to luminaire. Refer to Luminaire Schedule for individual luminaire requirements. Remote-mounted units shall be located above finished ceiling, adjacent to luminaire, and accessible from below through luminaire opening.

E. Self-Test Diagnostics and Testing: Provide with listed automatic monthly self-test diagnostics.

F. Manufacturers:

1. Myers LVU Series

PART 3 - EXECUTION

3.01 INSTALLATION

A. Securely fasten luminaires to the listed and labeled ceiling framing member by mechanical means such as bolts, screws, rivets or listed clips identified for use with the type of ceiling framing members. The architectural ceiling framing system may be used in lieu of independent support with prior written approval by the ceiling system manufacturer and Authority Having Jurisdiction (AHJ). Luminaires and wiring installed in fire-rated ceiling assemblies shall be independently supported for all applications.

1. Install recessed flanged luminaires to permit removal from below. Use manufacturer-supplied plaster frames and swing gate supports. Provide independent support as follows:

a. Luminaires less than 56 lbs: Provide a minimum of two (2) #12 gauge suspended ceiling support wires located on diagonal corners of the luminaires.

b. Luminaires 56 lbs or greater: Provide a minimum of four (4) #12 gauge suspended ceiling support wires located on diagonal corners of the luminaires. Support luminaire independent of the ceiling system.

c. Luminaires larger than eight square feet (8 ft2): Support luminaire independent of the ceiling system.

B. Do not fasten luminaire supports to piping, ductwork, mechanical equipment, or conduit, unless otherwise noted. Support wires shall be tightly wrapped (minimum of three turns within 3 inches of the connection) and sharply bend to prevent vertical movement.

C. Support suspended or pendant mounted luminaires independent of ceiling grid with adjustable stainless steel aircraft cables or per luminaire schedule mounting requirements. Suspension assembly and anchors shall be capable of supporting 300 pounds dead load at each suspension point.

D. Support wire used to independently support luminaires, raceways, and wiring systems shall be distinguishable from ceiling support systems by color (field paint), tagging or equivalent means.

E. Adjust aimable luminaires to obtain lighting levels on objects and areas as directed to obtain desired lighting levels.

F. Recessed luminaires and other optical accessories shall remain in protective wraps or films until construction in area is complete and area has been cleaned.

3.02 CONSTRUCTION USE OF PROJECT LUMINAIRES

A. The Contractor shall provide temporary construction lighting per the requirements of Division 1.

B. The project luminaires shown on the construction documents shall not be used for temporary construction purposes without providing a plan for Owner approval that addresses energy and luminaire operating hours.

3.03 AUTOMATIC LOAD CONTROL RELAYS

A. Factory or field installation per manufacturer requirements.

B. Remote Test Switch: Provide connection to remote test switch.

C. Fire Alarm Override: Provide connection to addressable fire alarm relay.

3.04 EXIT SIGNS

A. Install units plumb and level.

B. Test emergency lighting equipment for 60 minutes to determine proper operation, prior to Substantial Completion. Provide electronic copy of periodic test log form to Owner's Representative. Explain and instruct Owner's Representative of requirements for testing and maintenance. Refer to latest adopted NFPA 101 for testing and logging requirements.

3.05 RELAMPING

A. Replace failed LED light engine modules or arrays at completion of work.

3.06 ADJUSTING AND CLEANING

A. Align luminaires and clean lenses and diffusers at completion of work. Clean paint splatters, dirt, and debris from installed luminaires.

B. Touch up luminaire and pole finish at completion of work.

3.07 OWNER TRAINING

A. Test emergency lighting equipment for 60 minutes to determine proper operation, prior to Substantial Completion, with the Owner's Representative.

B. Provide electronic copy of periodic test log form to Owner's Representative. Explain and instruct Owner's Representative of requirements for testing and maintenance. Refer to latest adopted NFPA 101 for testing and logging requirements.

3.08 LUMINAIRE SCHEDULE

A. As shown on the drawings.

END OF SECTION 26 51 19

SECTION 28 31 00

FIRE ALARM AND DETECTION SYSTEMS ADDRESSABLE

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Fire alarm and detection systems.

1.02 RELATED WORK

A. Section 26 05 53 - Electrical Identification: Refer to electrical identification for color and identification labeling requirements.

1.03 QUALITY ASSURANCE

A. Manufacturer: Company specializing in smoke detection and fire alarm systems with ten years' experience.

B. Installer: A factory-authorized Electrical or Security Contractor licensed with the State and local jurisdiction with five years' experience in the design, installation, and maintenance of fire alarm systems by that manufacturer.

C. Qualifications: The person managing/overseeing the preparation of shop drawings and the system installation/programming/testing shall be trained and certified by the system manufacturer and shall be Fire Alarm Certified by NICET, minimum Level 2. This person's name and certification number shall appear on the start-up and testing reports.

1.04 REFERENCES

A. NFPA 70 - National Electrical Code (NEC)

B. NFPA 72 - National Fire Alarm and Signaling Code

C. NFPA 101 - Life Safety Code

D. UL 2017 - General Purpose Signaling Devices and Systems

E. UL 217 / 268 - Standard for Smoke Alarms / Smoke Detectors for Fire Alarm Systems

F. Iowa Fire Code

1.05 SUBMITTALS

A. Submit shop drawings and product data under provisions of Section 26 05 00 and as noted below.

1. Failure to comply with all the following and all the provisions in 26 05 00 will result in the shop drawing submittal being rejected without review.
2. Failure to submit the fire alarm without all requirements fulfilled in a single comprehensive submittal will be grounds to require a complete resubmittal.

B. Provide product catalog data sheets as shop drawings.

1. Provide a product catalog data sheet for each item shown on the Electrical Symbols List and for each piece of equipment that is not shown on the drawings, but required for the operation of the system.
2. Where a particular Electrical Symbols List item has one or more variations (such as those denoted by subscripts, etc.) a separate additional product catalog data sheet shall be provided for each variation that requires a different part number to be ordered. The corresponding Electrical Symbols List symbol shall be shown on the top of each sheet.
3. Where multiple items and options are shown on one data sheet, the part number and options of the item to be used shall be clearly denoted.

C. Submit CAD Floor Plans as Shop Drawings:

1. The complete layout of the entire system, device addresses, auxiliary equipment, and manufacturer's wiring requirements shall be shown.

2. A legend or key shall be provided to show which symbols shown on the submittal floor plans correspond with symbols shown on the Contract Documents.

D. About all fire alarm circuits, provide the following: manufacturer's wiring requirements (manufacturer, type, size, etc.) and voltage drop calculations.

E. Provide installation and maintenance manuals under provisions of Section 26 05 00.

F. Submit manufacturer's certificate that system meets or exceeds specified requirements.

G. Provide information on the system batteries as follows: total battery capacity, total capacity used by all devices on this project, total available future capacity.

H. Submit photocopy proof of NICET certification of the person overseeing the preparation of drawings and installation/testing.

I. When required to comply with local or state regulatory reviews, the fire alarm submittal shall have a NICET Certification of the state in which the project is completed. NOTE: The Architect/Engineer cannot stamp and seal submittal drawings not prepared under their supervision.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site under provisions of Section 26 05 00.

B. Store and protect products under provisions of Section 26 05 00.

1.07 REGULATORY REQUIREMENTS

A. System: UL or FM Global listed.

B. Conform to requirements of NFPA 101.

C. Conform to requirements of Americans with Disabilities Act (ADA).

D. Conform to UL 864 Fire Alarm, UL 1076 Security, UL2017 General Signaling, and UL 2572 Mass Notification Communications.

1.08 SYSTEM DESCRIPTION

A. Performance Statement: This specification section and the accompanying fire alarm specific design documents describe the minimum material quality, required features, and operational requirements of the system. These documents do not convey every wire that must be installed and every equipment connection that must be made. Based on the equipment described and the performance required of the system, as presented in these documents, the Vendor and the Contractor are solely responsible for determining all wiring, programming and miscellaneous equipment required for a complete and operational system.

B. This section of the specifications includes the furnishing, installation and connection of the microprocessor controlled, intelligent reporting, fire alarm equipment required to form a complete coordinated system that is ready for operation. It shall include, but is not limited to, alarm initiating devices, control panels, auxiliary control devices, annunciators, power supplies, and wiring as indicated on the drawings and specified herein.

C. Extending the Existing Fire Alarm System: Provide all items, components, devices, hardware, software, programming, expansion components, conduit, wiring etc. needed to extend fire alarm system. This includes, but is not limited to, additional power supplies, initiating devices and circuits, signaling devices and circuits, monitoring devices and circuits, auxiliary control and related devices such as, door holders and their control, smoke damper control, fan shutdown, etc. The existing fire alarm system shall be extended such that the existing fire alarm system's functionality, integrity and annunciation shall be equivalent to pre-construction conditions, unless noted otherwise. The functionality and integrity shall be maintained during construction. The entire system shall be able to be completely reset from any single reset location point. The entire system shall be annunciated at any annunciation location.

D. Extending the Existing Notifier NFW2-100 Fire Alarm System: The existing control panel shall remain and shall be operational throughout construction. The system shall only be disabled to make new connections and to modify the programming. A fire watch shall be provided for all areas affected during outages. All system outages must be scheduled with the Owner at least one week prior. Individual devices may be disabled as needed based on construction activities to reduce the potential for false alarms, but all devices must be operational when the Contractor is not physically on site. New initiating devices may be connected to the existing signaling line circuits where capacity is available. Provide additional signaling line circuits as needed based on existing and new device quantity, including replacement of existing panel components. Provide new notification circuits to serve the new devices, including all necessary power supplies, amplifiers, batteries, and 120-volt input circuits. All new devices shall be programmed to provide the same sequence of operation as the existing devices of the same type, unless noted otherwise.

E. Fire Alarm System: NFPA 72; Automatic and manual fire alarm system, non-coded, analog-addressable with automatic sensitivity control of certain detectors, multiplexed signal transmission.

1.09 PROJECT RECORD DOCUMENTS

A. Submit documents under the provisions of Section 26 05 00.

B. Include location of end-of-line devices.

C. Provide a CAD drawing of each area of the building (minimum scale of 1/16" = 1'-0") showing each device on the project and its address. The devices shall be shown in their installed location and shall be labeled with the same nomenclature as is used in the fire alarm panel programming.

1.10 OPERATION AND MAINTENANCE DATA

A. Submit data under provisions of Section 26 05 00.

B. Include operating instructions, and maintenance and repair procedures.

C. Include results of testing of all devices and functions.

D. Include manufacturer's representative's letter stating that system is operational.

E. Include the CAD floor plan drawings.

F. Include shop drawings as reviewed by the Architect/Engineer and the local Authority Having Jurisdiction.

1.11 WARRANTY

A. Provide one (1) year warranty on all materials and labor from Date of Substantial Completion.

B. Warranty requirements shall include furnishing and installing all software upgrades issued by the manufacturer during the one (1) year warranty period.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Notifier by Honeywell

2.02 FIRE ALARM PATHWAY CLASS AND SURVIVABILITY LEVEL

A. Pathway Class:

1. Pathway Class B: Circuits NOT capable of transmitting an alarm beyond the location of the fault condition. Wiring of outgoing and return conductors is permitted to be run in the same conduit or cable.

B. Pathway Survivability Level:

1. Pathway Survivability Level 1: Circuits are protected by an automatic sprinkler system and installed in metal raceways.

2.03 SIGNALING LINE CIRCUIT DEVICES

A. Combination Devices: Subscripts identify combination type devices when applicable. Contractor shall provide the combination device or provide multiple device(s) to meet the functionality when the manufacturer does not offer the required functionality with a single device.

B. Signal Line Device(s):

1. Subscripts: Subscripts are used to define the device type, installation, and identify the device with a specific sequence of operation.

a. Device type as follows:

1) Candela Ratings:

a) ## = 15 Candela, 30 Candela; 75 Candela; 110 Candela; 177 Candela

C. FA-120; Smoke Detectors:

1. Subscripts are used to define the device type, installation, and identify the device with a specific sequence of operation.

a. Device types as follows:

1) Blank = Photoelectric

2. (BLANK) Analog Photoelectric Type Sensor: Shall use the photoelectric principle to measure smoke density and send data to the control panel representing the analog level of smoke density measured.

D. FA-122; Duct Smoke Detectors, Sampling Tube Type:

1. Subscripts are used to define the device type, installation, and identify the device with a specific sequence of operation.

a. Device types as follows:

1) # = Equipment or system

b. Duct-type smoke detectors shall use the same analog photoelectric sensor technology, with the same features specified for standard smoke detectors, except with additional features as specified below.

c. Provide sampling tubes and mounting hardware to match the duct to which it is attached. Where the detector housing is larger than the duct height, Contractor shall fabricate a mounting bracket for the detector and attach according to the fire alarm manufacturer's recommendations.

d. Provide a remote alarm LED indicator device (FA-241) or (FA-242) if detector is not visible from a floor-standing position. If detector is located above a suspended ceiling, mount remote indicator in ceiling directly below detector with a white single-gang faceplate labeled: Duct Smoke Detector.

E. FA-131; Manual Pull Stations with Cover:

1. Manual pull station, addressable, single action with plastic breakrod, reset key lock, semi-flush mount, red high abuse plastic or cast metal construction with white lettering. Provide device with clear Lexan tamper resistant cover with integral 9V battery powered alarm that sounds when shield is lifted. Provided with all necessary mounting hardware. Use surface mount only on precast concrete or structure.

F. FA-160; Monitor Modules:

1. Subscripts are used to define the device type, installation, and identify the device with a specific sequence of operation.

a. Device types as follows:

1) Blank = Refer to Plans

2. Monitor Module shall connect directly to an SLC loop and receive power from a separate 24 VDC circuit. It shall interface initiating devices with the control panel using Style D or Style B circuits. Contractor Option: Use an interface module (2-wire operation) for Style B circuits connected to normally-open dry contacts, such as a flow switch.
3. The module shall be mounted in an enclosure located in an accessible service location as near as possible to the device(s) being monitored, or where shown on the drawings. All mounting hardware shall be provided.
4. The module shall supply the required power to operate the monitored device(s).
5. The module shall provide address setting means using rotary decimal or DIP switches.

G. FA-161; Addressable Control Module:

1. Subscripts are used to define the device type, installation, and identify the device with a specific sequence of operation.
    a. Device types as follows:
        1) Blank = Refer to Plans
2. Relay that represents an addressable control point used primarily for the control of auxiliary devices as indicated on the drawings. Contractor to provide additional child relay(s), as required, rated for the electrical load being controlled (Contractor to match voltage, amps, etc.).
3. Relay shall connect directly to an SLC loop and receive power from a separate 24 VDC circuit.
4. The relay shall be mounted in an enclosure located in an accessible service location as near as possible to the device(s) being controlled, unless otherwise shown on the drawings. All mounting hardware shall be provided.
5. The relay shall supply 24 VDC power to the device(s) being controlled, unless otherwise indicated on the drawings.

2.04 NOTIFICATION APPLIANCE DEVICES

A. Combination Devices: Subscripts identify combination type devices when applicable. Contractor shall provide the combination device or provide multiple device(s) to meet the functionality when the manufacturer does not offer the required functionality with a single device.

B. Notification Appliance Device(s):

1. Subscripts: Subscripts are used to define the device type, installation, and identify the device with a specific sequence of operation.
    a. Device types as follows:
        1) W = Weather Proof
        2) Candela Ratings:
            a) ## = 15 Candela; 30 Candela; 75 Candela; 110 Candela; 177 Candela

C. Notification Device(s):

1. Wall Mounted: Red housing with white lettering or pictogram.
2. Ceiling Mounted: White housing with red lettering or pictogram.

D. FA-200; Visual Alarm Devices:

1. Wall or ceiling mounted, refer to plans.
2. High intensity (Candela rating as scheduled on the drawings) xenon strobe or equivalent under a lens. Candela rating shall be visible from exterior of the device.

3. The maximum pulse duration shall be 0.2 seconds with a maximum duty cycle of 40%. The flash rate shall be 1 Hz. Where more than two strobes are visible from any one location, the fire alarm visual devices shall be synchronized.
4. Device, housing, and backbox shall be UL listed for fire alarm/emergency applications.

E. FA-210; Audio Horn Alarm Devices:
1. Subscripts are used to define the device type, installation, and identify the device with a specific sequence of operation.
2. Wall or ceiling mounted, refer to plans.
3. Sound Rating: 85 dB at 10 feet. Sound levels for alarm signals shall not exceed 120 dBA in the occupied area.
4. Device shall be capable of a high and low dB level setting. Unless noted otherwise, the device shall be set to the high setting at building completion.
5. Device, housing, and backbox shall be UL listed for fire alarm/emergency applications.

F. FA-211; Combination Audio Horn and Visual Alarm Device:
1. Wall or ceiling mounted, refer to plans.
2. Combine audio and visual components into a single device. Refer to the corresponding paragraphs above for requirements of each component.

2.05 NOTIFICATION APPLIANCE CIRCUIT PANEL (NAC)

A. As shown on the plans or as a Contractor's option if not shown, furnish and install NAC extender panels as necessary to provide remote power supply for notification appliance circuits (NAC). Contractor shall indicate quantity and locations of each NAC on the shop drawing submittals.

B. Each NAC shall be self-contained remote power supply with batteries, and battery charger mounted in a surface lockable cabinet. Battery capacity shall be sufficient for operation for 24 hours in a non-alarm state followed by alarm for 15 minutes, plus 25% spare capacity for future devices. Each NAC provides a minimum of up to 4 outputs, 2A continuous, or 6A full load total capacity.

C. Power for each NAC shall be from a local 120 VAC circuit. Provide two #12 conductors and one #12 ground in 1/2" conduit to each NAC from a dedicated 20A/1P circuit breaker with a red handle and a manufacturer's standard handle lock-on device. Coordinate panel and circuit number with the Architect/Engineer prior to installation.

D. NAC extender panels may be installed only in janitor closets.

E. Mounting: Surface.

2.06 ANNUNCIATION

A. FA-242; Fire Alarm Remote Indicator and Test Switch:
1. Red LED type.
2. Key switch test selector.
3. Mounts flush to a single gang box.

2.07 CONNECTIONS TO AUXILIARY DEVICES PROVIDED BY OTHERS

A. FA-161; Lighting Control Override:
1. Subscript: Subscripts are used to define the device type, installation, and identify the device with a specific sequence of operation.
a. LC = Lighting Control Override

2. The lighting control system(s) is equipped with a remote input fire alarm override contact to allow the fire alarm system via an output relay to override the lighting control sequence of operation upon a fire alarm "alarm" condition. The fire alarm system will provide addressable fire alarm output relay(s) to interface with the lighting control system. Coordinate the location and quantity of relays required with the lighting control system.
3. Provide (FA-161) fire alarm addressable control module for each interface required for the lighting control system.

2.08 WIRING

A. Fire alarm wiring/cabling shall be furnished and installed by the Contractor in accordance with the manufacturer's recommendations and pursuant to National Fire Codes. Cabling shall be UL listed and labeled as complying with the Electrical Code for power-limited fire alarm signal service.

B. Fire Alarm Cable:
1. Manufacturers:
a. Comtran Corp.
b. Helix/HiTemp Cables, Inc.
c. Rockbestos-Suprenant Cable Corp.
d. West Penn Wire/CDT.
e. Radix.

PART 3 - EXECUTION

3.01 SEQUENCES OF FIRE ALARM OPERATION

A. General:
1. Refer to the Fire Alarm Operation Matrix on the drawings for basic requirements and system operation.
2. All system output programs assigned via control-by-event equations to be activated by the particular point in alarm shall be executed, and the associated system outputs (alarm notification appliances and/or relays) shall be activated.

B. Audible Alarms Sequence:
1. Audible alarms throughout the building shall sound.

C. Visual Alarms Sequence:
1. Visual alarms throughout the building shall flash.

D. HVAC System Sequence:

E. AHU and Mechanical Fan Shutdown Sequence:
1. The fire alarm system shall utilize addressable relays to de-energize all AHU motor controllers and mechanical fans. Coordinate other requirements with HVAC installer.
2. The fire alarm system shall directly shut down the AHU or mechanical fan through the local HVAC control device (i.e., variable frequency drive or motor starter).
3. Where a facility has more than one AHU or mechanical fan, each shall be shutdown individually based on input from initiation devices in the area served by the unit or designated for each air distribution system.

F. Lighting Control Override Sequence: Coordinate requirements between the fire alarm and lighting control system.

1. The fire alarm shall use addressable output relay(s) to remotely override the local lighting control sequences of operation for egress, emergency, and life safety designated lighting. Coordinate the location and quantity of addressable output relays required with the lighting control shop drawings. Addressable fire alarm relays will be required, but not limited to, at the following locations:

   a. Branch circuit lighting control zones, relays, automatic load control relays (ACLR), branch circuit emergency lighting transfer switches (BCELTS).

3.02 INSTALLATION

A. Install system in accordance with manufacturer's instructions and referenced codes.

B. Devices:

1. General:

   a. All ceiling-mounted devices shall be located where shown on the reflected ceiling and floor plans. If not shown on the reflected ceiling or reflected floor drawings, the devices shall be installed in the relative locations shown on the floor drawings in a neat and uniform pattern.

   b. All devices shall be coordinated with luminaires, diffusers, sprinkler heads, piping and other obstructions to maintain a neat and operable installation. Mounting locations and spacing shall not exceed the requirements of NFPA 72.

   c. Where the devices are to be installed in a grid type ceiling system, the detectors shall be centered in the ceiling tile.

   d. The location of all fire alarm devices shall be coordinated with other devices mounted in the proximity. Where a conflict arises with other items or with architectural elements that will not allow the device to be mounted at the location or height shown, the Contractor shall adjust location of device so that new location meets all requirements in NFPA 72 and all applicable building codes.

2. Per the requirements of NFPA, detector heads shall not be installed until after the final construction cleaning unless required by the local Authority Having Jurisdiction (AHJ). If detector heads must be installed prior to final cleaning (for partial occupancy, to monitor finished areas or as otherwise required by the AHJ), they shall not be installed until after the fire alarm panel is installed, with wires terminated, ready for operation. Any detector head installed prior to the final construction cleaning shall be removed and cleaned prior to closeout.

3. Protection of Fire Alarm System:

   a. A smoke detector shall be installed within the vicinity of the main fire alarm panel and every NAC extender panel per NFPA 72. A heat detector may be substituted when a smoke detector is not appropriate for the environment of installation.

4. Duct-type Analog Smoke Detectors:

   a. Duct-type analog smoke detectors shall be installed on the duct where shown on the drawings and details. The sampling tubes shall be installed in the respective duct at the approximate location where shown on the electrical drawings to meet the operation requirements of the system.

   b. All detectors shall be accessible.

   c. Duct-type detectors shall be installed according to the manufacturer's instructions.

5. Manual Pull Stations:

   a. Stations shall be located where shown and at the height noted on the drawings.

6. Addressable Relays and Monitor Modules:
    a. Modules shall be located as near to the respective monitor or control devices as possible, unless otherwise indicated on the drawings.
    b. All modules shall be mounted in or on a junction box in an accessible location.
7. Notification Appliance Devices:
    a. Devices shall be located where shown on the drawings.
    b. Wall-mounted audio, visual and audio/visual alarm devices shall be mounted as denoted on the drawings.

C. Wiring:
1. Fire alarm wiring/cabling shall be provided by the Contractor in accordance with the manufacturer's recommendations and pursuant to National Fire Codes.
2. Wiring shall be installed in conduit.
3. All junction boxes with SLC and NAC circuits shall be identified on cover. Refer to Identification Section 26 05 13 for color and identification requirements.
4. Fire Alarm Power Branch Circuits: Building wiring as specified in Section 26 05 13.
5. Notification Appliance Circuits shall provide the features listed below. These requirements may require separate circuits for visual and audible devices.
    a. Fire alarm temporal audible notification for all audio appliances.
    b. Synchronization of all visual devices where two or more devices are visible from the same location.
    c. Ability to silence audible alarm while maintaining visual device operation.
6. Notification Appliance Circuits shall not span floors.
7. Signal line circuits connecting devices shall not span floors or.
8. No wiring other than that directly associated with fire alarm detection, alarm or auxiliary fire protection functions shall be in fire alarm conduits. Wiring splices shall be avoided to the extent possible, and if needed, they shall be made only in junction boxes, and enclosed by plastic wire nut type connectors. Transposing or changing color coding of wires shall not be permitted. All conductors in conduit containing more than one wire shall be labeled on each end, in all junction boxes, and at each device with "E-Z Markers" or equivalent. Conductors in cabinets shall be carefully formed and harnessed so that each drops off directly opposite to its terminal. Cabinet terminals shall be numbered and coded, and no unterminated conductors are permitted in cabinets or control panels. All controls, function switches, etc. shall be clearly labeled on all equipment panels.

D. Fire Alarm Cabling Color Code: Provide circuit conductors with insulation color coding as follows, or using colored tape at each conductor termination and in each junction box.
1. Power Branch Circuit Conductors: In accordance with Section 26 05 53.
2. Signaling Line Circuit: Overall red jacket with black and red conductors.
3. DC Power Supply Circuit: Overall red jacket with violet and brown conductors.
4. Notification Appliance Circuit: Overall red jacket with blue and white conductors.
5. Door Release Circuit: Gray conductors.
6. Central Station Trip Circuit: Orange conductors.
7. Central Station Fire Alarm Loop: Black and white conductors.

E. Devices surface mounted in finished areas shall be mounted on surface backboxes furnished by fire alarm equipment supplier. Backboxes shall be painted to match device, shall be the same shape and size as the device shall not have visible knockouts.

F. Make conduit and wiring connections to door release devices, sprinkler flow and pressure switches, sprinkler valve monitor switches, fire suppression system control panels, duct analog smoke detectors and all other system devices shown or noted on the Contract Documents or required in the manufacturer's product data and shop drawings.

3.03 FIELD QUALITY CONTROL

A. Field inspection and testing will be performed under provisions of Section 26 05 00.

B. Test in accordance with NFPA 72, Chapter 14 and local fire department requirements. Submit documentation with O & M manuals in accordance with Section 14.6 of the Code.

3.04 MANUFACTURER'S FIELD SERVICES

A. Provide manufacturer's field services under provisions of Section 26 05 00.

END OF SECTION 28 31 00

OPINION OF PROBABLE COST

Project No.: 2022226 | Owner : City of Marshalltown | Date : 10/21/2025

Phase: Construction Documents | Project : Marshalltown Library - Interior Remodel | Estimator : HAS

FEH DESIGN

	DESCRIPTION	QTY	UNIT	COST	TOTALS
Building Construction Costs:					
1	GENERAL REQUIREMENTS 7%	1	LS		$ 168,404.20
2	SELECTIVE DEMOLITION	1	LS		$ 11,375.50
3	STRUCTURAL ELEMENTS	1	LS		-
4	WOOD AND CASEWORK	1	LS		$ 21,270.00
5	ROOFING	1	LS		$ 1,500.00
6	INTERIOR CONSTRUCTION	1	LS		$ 94,542.00
7	SPECIALTIES AND EQUIPMENT	1	LS		$ -
8	DOORS AND WINDOWS	1	LS		$ 29,180.00
9	FIRE PROTECTION	1	LS		$ 9,487.50
10	MECHANICAL HVAC	1	LS		$ 147,991.08
11	ELECTRICAL	1	LS		$ 82,225.00
12	TECHNOLOGY	1	LS		$ 9,487.50
			SubTotal	63.94	$ 575,462.78
			Design / Bid Contingency 10%		$ 57,546.28
			Building Construction Costs SubTotal		$ 633,009.06
			Construction Contingency 15%		$ 94,951.36
			BUILDING CONSTRUCTION COST TOTAL		**$ 727,960.42**
Soft Costs:					
14	Professional Design Fees	1	LS	82,000.00	$ 82,000.00
15	Printing and Distribution of Documents	1	LS	2,500.00	$ 2,500.00
16	Builders Risk Insurance	1	LS	1,500.00	$ 1,500.00
17	Conference Room Monitor	1	LS	800.00	$ 800.00
18	Marker Boards 6'	4	EA	535.00	$ 2,140.00
19	Library Furniture allowance $35/ SF and furnishings design fees	2,920	SF	35.00	$ 102,200.00
20	Manual Shades	1	LS	20,000.00	$ 20,000.00
21	Library Materials Security Systems	1	LS		$ -
22	Security & Surveillance Systems	1	LS		$ -
			Soft Cost SubTotal		$ 211,140.00
			Building Construction Cost Total		$ 727,960.42
			PROJECT TOTAL COST		**$ 939,100.42**

Resolution No. _____

RESOLUTION APPROVING INTERGOVERNMENTAL AGREEMENT CONFIRMING AND CONTINUING THE SOLID WASTE MANAGEMENT COMMISSION OF MARSHALL COUNTY, IOWA, AS AMENDED

WHEREAS, certain governmental subdivisions of the State of Iowa have been operating the Solid Waste Management Commission of Marshall County, Iowa ("Commission") under provisions of Chapter 28E of the Iowa Code and the terms of agreement previously recorded with the Secretary of State of Iowa and the Recorder of Marshall County, Iowa; and

WHEREAS, the full board of the existing Solid Waste Management Commission has proposed to each constituent governmental subdivision an amendment to the Intergovernmental Agreement Creating the Solid Waste Management Commission of Marshall County ("Agreement") to add the municipalities of Roland and McCallsburg as members; and

WHEREAS, _____, Iowa, wishes to confirm its role as a member of the Commission and express its approval of the proposed amendment to the Agreement.

NOW, THEREFORE, BE IT RESOLVED that _____, hereby confirms its role as a member of the Agreement and approves the terms and conditions of said Agreement, as amended.

BE IT FURTHER RESOLVED that _____ be authorized and empowered to enter said Agreement, as amended, and perform all actions necessary to indicate its written consent and approval of said Agreement, as amended, and to do all acts necessary to become a full member of said Commission as a party to the Agreement, as amended.

PASSED AND APPROVED this _____ day of December 2025.

_____ _____

SOLID WASTE MANAGEMENT COMMISSION OF MARSHALL COUNTY

P.O. BOX 217, MARSHALLTOWN, IA. 50158 PHONE: 641-752-0646 FAX: 641-752-4562
www.marshallcountylandfill.org

Dear Commission member,

At their Full Commission meeting held on Tuesday, November 18th the attending members voted to pursue adding the City of Roland and City of McCallsburg to the existing 28E Agreement. Adding them to the Solid Waste Management Waste Commission of Marshall County will give them the benefits of the current members of the agreement.

I have included a copy of the meeting minutes and a resolution that will need to be passed, signed and returned to me at your earliest convenience.

Completed resolutions may be mailed back or emailed to:
don@marshallcountylandfill.org
You must retain the original copy for your records.

Please contact me with any questions.

Sincerely,

Don Ballalatak
Manager

These are the minutes of the **Full Solid Waste Management Commission of Marshall County** from their meeting on Tuesday, November 18, 2025, in Marshalltown, Iowa the Marshall County Landfill 2313 Marshalltown Blvd. Marshalltown, Iowa at 5:30PM.
Board members present: Clemons-Julie Briggman, Collins-Stephanie Smith, Ferguson-Dale Thompson, Haverhill-Shirley Faircloth, LeGrand-Linda Weitzell, Liscomb-John Vry, Marshall County- Kevin Goodman, Marshall County-Mike McCann, Marshalltown-Mark Mitchell, Marshalltown-Mike Ladehoff, Marshalltown–Deborah Ewoldt, Marshalltown-Chad Greene, Melbourne-Gary Fricke, Rhodes-Skeeter Tuttle, State Center-Terry Shaffar.
Absent: Albion- Pat Hemming, Colo-Coltin Adams, Gilman-Les Meyers, Laurel-Darrell Bartlett, Marshalltown-Leon Lamer, St. Anthony-Shawn Bryant, and Whitten-Susan Sams.
Motion Mike Ladehoff, seconded Mark Mitcherll – To approve the agenda as presented. Motion carried unanimously.
Motion Dale Thompson, seconded Mike Ladehoff -To approve the minutes of October 21, 2025, as presented. Motion carried unanimously.
Motion Chad Greene, seconded Julie Briggman – To approve Affirmations of Executive Actions. Motion carried unanimously.
Motin Julie Briggman, seconded Mark Mitchell – To approve Election of Officers with Linda Weitzell renewing another five-year term. Motion carried unanimously.
Motion Mark Mitchell, seconded Mike Ladehoff – To approve bill list of November 18, 2025, for $156,930.66 as presented. Roll call vote. Approved unanimously by all present.
Motion Mike Ladehoff, seconded Mark Mitchell – To approve Resolution Number 202601 "Designating primary and alternate contact persons authorizing payment of Renewal Invoice to ICAP" (Iowa Communities Assurance Pool). Roll call vote. Approved unanimously by all present.
Motion Dale Thompson, seconded Mike Ladehoff – To approve the Fiscal Year 2025 Annual Audit Report as presented by Bowman & Miller, P.C. for submittal to the State of Iowa Auditors Office. Roll call vote. Approved unanimously by all present.
Motion Julie Briggman, seconded Mark Mitchell - To approve Area A Water Quality Report and Submittal to IDNR as presented by HLW Engineering. Motion carried unanimously.
Motion Linda Weitzell, seconded Mike Ladehoff - To approve CAAW Quote to Install 16 Ballast Tubes at Lagoons as presented by HLW Engineering. Motion carried unanimously.
Motion Mike Ladehoff, seconded Julie Briggman - To approve Accepting Roland and McCallsburg to SWMCMC 28E Agreement. Subject to member approving resolution. Roll call vote. Approved unanimously by all present.
Motion Dale Thompson, seconded Mark Mitchell to adjourn the meeting at 6:22 pm.

Solid Waste Management Commission
Of Marshall County
Bill list for November 18, 2025

Contract Service
H & R Block 833.00
Prairie Waste (2).....1,140.00
HLW Engineering.....1,529.50
Marquess Law Office.....100.00

Insurance
Assured Partners.....19,147.75
Aflac.....432.08
Avesis.....136.99
The Cincinnati Life.....207.72
Wellmark BCBS.....21,619.30
Principal Life.....554.97

Recycling
MIW, Incl.....22,640.05
Liberty tire (2).....3,210.04
Payroll Exp.....57,000.64

Service/Repair
Anderson Repair.....1,410.00

MARSHALLTOWN
MORE THAN EVER

Joel Greer, Mayor
Carol Webb, City Administrator
24 North Center Street
Marshalltown, IA 50158
PH 641.754.5701 • FX 641.754.5717

To:	Mayor and City Council
From:	Heather Thomas, Public Works Director
Meeting Date:	December 8, 2025
Re:	Resolution Approving the Marshalltown Municipal Airport Five-Year Capital Improvement Program

Strategic Plan Objective:
S1 (Expand and improve development in the community) - The Marshalltown Municipal Airport is a feature that certain Developers interested in Marshalltown see as a positive of the community. In the 2026 plan – an emphasis was to focus on first impressions; S2 (Enhance Marshalltown's public image) – Enhance the attractiveness of the entrances to the community (The airport serves as an entrance by plane); S3 (Continually improve and sustain the City's infrastructure, organization, and services) – Plan and fund improvements to the City's infrastructure and buildings.

Recommended:
Approval of the city's 5-year FFY27 capital improvement plan (CIP) for use of federal and BIL funding at the airport. (*Please note the submittal is not all inclusive of improvement projects at the airport, only those that plan to leverage federal funds available to the airport*). This CIP acts as tool where FAA collects financial requests from airports, especially where airports are requesting more discretionary federal funding than their entitlement funds.

Budget Impact:
All projects listed (and funded with these federal funds) require a minimum 10% local match. The city has contracted with McClure Engineering for a Master Plan and Airport Layout Plan update, which is currently underway. It is the recommendation of city staff direction and those McClure efforts to first focus on the primary runway (13/31) pavement and lighting. McClure recommends that would then follow with some rehab work on the primary runway's taxiway with lighting.

The preapplication instructions do indicate that the sponsor shall be committed to accomplishing the projects shown in the first two years of the CIP (FFY27 & FFY28). Based on the projects shown on the CIP, this would indicate city council's commitment towards a minimum of 10% of costs associated with these projects (totaling ~$2.4M).

Future budget impact /notes: If reconstruction was funded in FFY27, we could potentially

submit grant application in April 2027 with bids later in 2027. Construction would not start until CY2028, which would likely result in funds not being spent after July 1, 2028 – which would be in the City's 2029 FY with some likely carrying over into City's 2030 FY. The intent is to go after over $14.3M in discretionary and other grant funding to help fund 90% of the runway reconstruction and lighting projects. If we are not awarded those for FFY27 project, FAA would push the project back a minimum of one year.

A similar delayed construction/funding request for the taxiway shown as FFY28 would be anticipated.

Description/Background:
Every year in December, airports coordinate with Iowa DOT and FAA to talk through upcoming airport projects. The purpose of this is for state and federal airport coordinators to have an idea of projects coming down the pipeline and t-up federal funding requests. There are several funding sources that review needs/wants from airports to help understand and in some cases, allocate limited prospective funding to projects. A draft of this plan is due to FAA by November 19th for their preliminary comments. The City's draft CIP was submitted November 14th; however, the city has not yet received any comments back from FAA.

The plan we are presenting is based on the draft submitted to FAA. We hope to have comments back from FAA prior to the December 8th council meeting, as the final CIP is due December 19th and there are no additional council meetings prior to the due date.

As part of the current Master Plan / ALP underway, one of the requirements is to present and get FAA concurrence on justifiable width/length of the runway. The estimates, prepared by McClure, are based on the existing runway remaining the same size.

Marshalltown's Airport (MIW) has regular access (pending continued legislation) to the following two funds. The use of these funds is very restrictive to certain types of projects (drainage, lighting, apron construction/rehab, environmental studies, runway construction/rehab, snow removal equipment, taxiway construction/rehab, and weather observation stations). They cannot be used on operational expenses, addressing the sanitary sewer/wastewater treatment issues we are currently experiencing out at the airport, developing capital improvement planning, and many more improvements.

1. Nonprimary federal entitlement funds in the amount of $150,000 per year
    1. MIW has allocated these funds through FFY23 towards the most recent airport hangar/terminal project, currently in the process of being closed out.
    2. FFY24 entitlement funds and beyond are currently projected to be used for the runway project. These entitlement funds come out of the "federal" bucket and not the local match requirement.
2. Bipartisan Infrastructure Law (BIL) funds (FFY22 – FFY26)

1. This one-time funding is anticipated to span 5 years (starting in FFY22). It's uses can be used on the same projects as entitlement funds in additional to hangars and terminals.
2. FFY22 awards were announced and MIW was awarded $159,000. FFY23 awards were announced and MIW was awarded $145,000. FFY24 awards were announced and MIW was awarded $144,000. Of these BIL fundings, $342,057 is allocated towards the Master Plan and ALP Update, leaving $105,943 remaining of FFY24 BIL funding, which would expire September 30, 2027.
3. FFY25 awards were announced on November 19th, 2024. MIW was allocated $137,000.
4. FFY26 awards were announced on October 27th, 2025. MIW was allocated $137,000.
5. That results in $379,943 of BIL funding that we are requesting to be applied to the runway reconstruction project.

Refer to attached FAA CIP Plan for additional information about projects and costs.

Attachments:

1. Resolution Approving Airport 5 Year CIP
2. Draft MIW FY27 CIP and Data Sheets

2025-255

RESOLUTION APPROVING THE MARSHALLTOWN MUNICIPAL AIRPORT FIVE-YEAR CAPITAL IMPROVEMENT PROGRAM

WHEREAS, there is herewith submitted to the City Council of Marshalltown, Iowa, a proposed annual update of the Marshalltown Municipal Airport Five-Year Capital Improvement Program; and

WHEREAS, the Council has fully examined same and has found same to be in the best interests of the City of Marshalltown, Iowa and that same should now be approved and accepted.

NOW, THEREFORE, BE IT RESOLVED BY THE COUNCIL OF THE CITY OF MARSHALLTOWN, IOWA:

Section 1. That the Five-Year Capital Improvement Program is hereby fully approved in all respects and particulars and the Mayor and City Clerk are hereby authorized and directed to execute same for and on behalf of said City.

Passed this 8th day of December 2025, and signed this _____ day of December 2025.

CITY OF MARSHALLTOWN, IOWA

_____

Joel Greer, Mayor

ATTEST:

_____

Alicia Hunter, CMC, City Clerk

IOWADOT
Form 291112 (10-22)

FIVE-YEAR AIRPORT CAPITAL IMPROVEMENT PROGRAM (CIP)

Attach additional sheets if necessary.

Airport Name, LOCID, City, State: Marshalltown Municipal Airport, KMIW, Marshelltown, Iowa

Prepared By: City of Marshalltown (Assisted by McClure)

Sponsor Email: hthomas@marshalltown-ia.gov

Date Prepared: October 2025

Sponsor Signature:

Sponsor Phone: 641-750-5929

Printed Name: Heather Thomas, P.E.

FY	Detailed Project/Scope Description	Funding Source		Total Estimated Cost
2027	Reconstruct Runway 13-31	**Federal:**	$	$12,963,682.00
		BIL:	$	$379,943.00
		State:	$	
		Local:	$	$1,862,568.00
		Total:	$	$14,826,250.00
2027	Reconstruct Runway 13-31 Lighting	**Federal:**	$	$1,405,849.05
		BIL:	$	
		State:	$	
		Local:	$	$156,205.45
		Total:	$	$1,562,054.50
2028	Rehabilitate Taxiway	**Federal:**	$	$2,505,825.00
		BIL:	$	
		State:	$	
		Local:	$	$278,425.00
		Total:	$	$2,784,250.00
2028	Rehabilitate Taxiway Lighting	**Federal:**	$	$947,479.05
		BIL:	$	
		State:	$	
		Local:	$	$105,275.45
		Total:	$	$1,052,754.50
2029	No project anticipated	**Federal:**	$	$0.00
		BIL:	$	$0.00
		State:	$	$0.00
		Local:	$	$0.00
		Total:	$	$0.00

IOWADOT
Form 291112 (10-22)

FIVE-YEAR AIRPORT CAPITAL IMPROVEMENT PROGRAM (CIP)

Attach additional sheets if necessary.

Airport Name, LOCID, City, State: Marshalltown Municipal Airport, KMIW, Marshelltown, Iowa

Prepared By: McClure

Sponsor Email: hthomas@marshalltown-ia.gov

Date Prepared: October 2025

Sponsor Signature:

Sponsor Phone: 641-750-5929

Printed Name: Heather Thomas, P.E.

FY	Detailed Project/Scope Description	Funding Source		Total Estimated Cost
2030	No project anticipated	**Federal:**	$	$0.00
		BIL:	$	$0.00
		State:	$	$0.00
		Local:	$	$0.00
		Total:	$	$0.00
2031	No project anticipated	**Federal:**	$	$0.00
		BIL:	$	$0.00
		State:	$	$0.00
		Local:	$	$0.00
		Total:	$	$0.00
		Federal:	$	$0.00
		BIL:	$	$0.00
		State:	$	$0.00
		Local:	$	$0.00
		Total:	$	$0.00
		Federal:	$	$0.00
		BIL:	$	$0.00
		State:	$	$0.00
		Local:	$	$0.00
		Total:	$	$0.00
		Federal:	$	$0.00
		BIL:	$	$0.00
		State:	$	$0.00
		Local:	$	$0.00
		Total:	$	$0.00

IOWADOT
Form 291113 (10-22)

LONG-RANGE NEEDS ASSESSMENT
YEARS SIX TO 20

Attach additional sheets if necessary.

Airport Name **Marshalltown Municipal Airport, KMIW, Marshelltown, Iowa**

Estinmated FY	Description of Project	Fund Source		Total Estimated Cost
2032	Rehabilitate Runway 18-36	**Federal**	$	$1,800,000.00
		BIL	$	
		State	$	
		Local	$	$200,000.00
		Total	$	$2,000,000.00
2033	Acquire Snow Removal Equipment	**Federal**	$	$450,000.00
		BIL	$	
		State	$	
		Local	$	$50,000.00
		Total	$	$500,000.00
2034	Construct/Expand Fuel Farm	**Federal**	$	$900,000.00
		BIL	$	
		State	$	
		Local	$	$100,000.00
		Total	$	$1,000,000.00
2035	Construct/Expand Hangar	**Federal**	$	$900,000.00
		BIL	$	
		State	$	
		Local	$	$100,000.00
		Total	$	$1,000,000.00
		Federal	$	
		BIL	$	
		State	$	
		Local	$	
		Total	$	$0.00

FEDERAL AVIATION ADMINISTRATION

CAPITAL IMPROVEMENT PROGRAM (CIP)
AIRPORTS DIVISION - CENTRAL REGION

CIP DATA SHEET

SEE INSTRUCTIONS TO COMPLETE THIS INFORMATION			
Airport Name, LOCID, City, State:	Marshalltown Municipal Airport, KMIW, Marshelltown, Iowa		
AIP Project Type:	Reconstruct Runway 13-31		
Local Priority:	1	**Federal AIP & BIL:**	$13,343,625
FFY Requested:	2027	**State Share**	
Provide Detailed Project Scope and Justification Below. You must attach a sketch/drawing that clearly identifies the scope of the project.		**Local Share:**	$1,482,625
		Total Project Cost:	$14,826,250

Scope:

Justification: **The Iowa DOT Pavement Management System inspected Runway 13-31 in 2024 giving the overall runway a PCI value of 41. The current PCI would be less than 41 sugesting reconstruction as the recommend type of repair. Distress currently plagueing the runway include alligator cracking, LT cracking, Raveling, Weatering, and patching. FOD will become a major concern if the runway is not repaired. Runway13/31 last had major rehabilitation in 2005 according to the Iowa DOT's Airport Pavement Management System. It is necessary to reconstruct the existing 5,007 ft of Runway 13/31 to handle the airport's increased aircraft loads. An airport master plan update is currently underway.**

Date of approved ALP with project shown **11/29/2010**
Date of environmental determination **Categorical Exclusion per FAA Order 1050.1G paragraph B-2.4.e**

SPONSOR SIGNATURE BLOCK			
Signature:		**Date:**	
Printed Name:	Heather Thomas, P.E.	**Title:**	Public Works Director
Phone Number:	641-750-5929	**Email:**	hthomas@marshalltown-ia.gov

OPINION OF PROBABLE PROJECT COST
PROJECT: Reconstruct Runway 13-31
AIRPORT: Marshalltown Municipal Airport, KMIW, Marshelltown, Iowa
DATE: October 2025

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	COST/UNIT	COST
C-100-1	CONTRACTOR QUALITY CONTROL PROGRAM (CQCP)	1	LS	$ 120,000.00	$ 120,000.00
C-102-1	STORMWATER POLLUTION PREVENTION PLAN (SWPPP) PREPARATION AND MANAGEMENT	1	LS	$ 25,000.00	$ 25,000.00
C-102-2	TEMPORARY SEEDING AND MULCHING	65	AC	$ 2,400.00	$ 156,000.00
C-102-3	INSTALLATION AND REMOVAL OF SILT FENCE	10,000	LF	$ 4.50	$ 45,000.00
C-102-4	INSTALLATION AND REMOVAL OF FILTER SOCK	250	LF	$ 6.00	$ 1,500.00
C-102-5	TEMPORARY ROLLED EROSION CONTROL PRODUCT (RECP), TYPE 2C	9,500	SY	$ 3.00	$ 28,500.00
C-105-1	MOBILIZATION	1	LS	$ 1,200,000.00	$ 1,200,000.00
C-105-2	TRAFFIC CONTROL	1	LS	$ 75,000.00	$ 75,000.00
C-105-3	CONSTRUCTION STAKING	1	LS	$ 50,000.00	$ 50,000.00
P-101-1	PAVEMENT REMOVAL 8" ± PCC & BASE REMOVAL	63,000	SY	$ 5.00	$ 315,000.00
P-101-2	EXISTING UNDERDRAIN REMOVAL	11,500	LF	$ 4.00	$ 46,000.00
P-101-3	EXISTING UNDERDRAIN CLEANOUT STRUCTURE REMOVAL	20	EA	$ 500.00	$ 10,000.00
P-152-1	UNCLASSIFIED EXCAVATION & EMBANKMENT	60,000	CY	$ 15.00	$ 900,000.00
P-156-1	12" CEMENT TREATED SUBGRADE	61,000	SY	$ 4.00	$ 244,000.00
P-156-2	CEMENT	1,950	TN	$ 200.00	$ 390,000.00
P-209-1	8"CRUSHED AGGREGATE BASE COURSE	56,500	SY	$ 38.00	$ 2,147,000.00
P-209-2	SEPARATION GEOTEXTILE	56,500	SY	$ 3.50	$ 197,750.00
P-501-1	8" PLAIN PORTLAND CEMENT CONCRETE PAVEMENT	47,500	SY	$ 95.00	$ 4,512,500.00
P-501-2	8" REINFORCED PORTLAND CEMENT CONCRETE PAVEMENT	6,500	SY	$ 120.00	$ 780,000.00
P-604-1	COMPRESSION JOINT SEAL	75,000	LF	$ 4.00	$ 300,000.00
P-620-1	PAVEMENT MARKING (WATERBORNE)	79,000	SF	$ 1.75	$ 138,250.00
P-620-2	TEMPORARY PAVEMENT MARKING (WATERBORNE)	8,000	SF	$ 1.50	$ 12,000.00
D-705-1	6" SCHEDULE 40 PVC PERFORATED UNDERDRAIN, TRENCHED, INCLUDING POROUS BACKFILL AND FILTER FABRIC	9,000	LF	$ 30.00	$ 270,000.00
D-705-2	6" SCHEDULE 80 PVC NON-PERFORATED UNDERDRAIN, TRENCHED	2,200	LF	$ 30.00	$ 66,000.00
D-705-3	UNDERDRAIN CLEANOUT STRUCTURE	30	EA	$ 1,550.00	$ 46,500.00
D-705-4	UNDERDRAIN CONNECTION TO PIPE OR STRUCTURE	15	EA	$ 1,250.00	$ 18,750.00
D-705-5	UNDERDRAIN SPLASH BLOCK	10	EA	$ 750.00	$ 7,500.00
D-751-1	SW-401 MANHOLE, 60-INCH DIA.	1	EA	$ 6,000.00	$ 6,000.00
T-901-1	SEEDING AND FERTILIZING	65	AC	$ 3,000.00	$ 195,000.00
T-905-1	TOPSOILING (STRIPPING, STOCKPILING, RE-SPREADING)	45,500	CY	$ 7.00	$ 318,500.00
T-908-1	MULCHING	65	AC	$ 1,500.00	$ 97,500.00
	TOTAL ESTIMATE OF PROBABLE CONSTRUCTION COST				**$12,719,250**
	GEOTECHNICAL INVESTIGATION				$55,000
	TOPOGRAPHIC SURVEY				$25,000
	DESIGN PHASE ENGINEERING				$950,000
	BIDDING SERVICES				$30,000
	CONSTRUCTION SERVICES				$985,000
	SPONSOR ADMINISTRATION				$1,000
	QA MATERIAL TESTING (EST.)				$26,000
	FAA INSTRUMENT APPROACH PROCEDURE DEVELOPMENT				N/A
	FAA FLIGHT INSPECTION				$35,000
	TOTAL ESTIMATE OF PROBABLE PROJECT COST				**$14,826,250**

FEDERAL AVIATION ADMINISTRATION

CAPITAL IMPROVEMENT PROGRAM (CIP)
AIRPORTS DIVISION - CENTRAL REGION

CIP DATA SHEET

SEE INSTRUCTIONS TO COMPLETE THIS INFORMATION			
Airport Name, LOCID, City, State:	Marshalltown Municipal Airport, KMIW, Marshelltown, Iowa		
AIP Project Type:	Reconstruct Runway 13-31 Lighting		
Local Priority:	1	**Federal AIP & BIL:**	$1,405,849
FFY Requested:	2027	**State Share**	
Provide Detailed Project Scope and Justification Below. You must attach a sketch/drawing that clearly identifies the scope of the project.		**Local Share:**	$156,205
		Total Project Cost:	$1,562,055

Scope:

Justification: **The lighting system for Runway 13-31 has served its useful life and is in need of replacement. The current system has increasing maintenance cost and reliability has fallen in recent years. The project will replace all runway lighting systems to include new LED edge lighting, REILs, PAPIs, and guidance signs.**

Date of approved ALP with project shown **11/29/2010**
Date of environmental determination **Categorical Exclusion per FAA Order 1050.1G paragraph B-2.4.e**

SPONSOR SIGNATURE BLOCK			
Signature:		**Date:**	
Printed Name:	Heather Thomas, P.E.	**Title:**	Public Works Director
Phone Number:	641-750-5929	**Email:**	hthomas@marshalltown-ia.gov

OPINION OF PROBABLE PROJECT COST
PROJECT: Reconstruct Runway 13-31
AIRPORT: Marshalltown Municipal Airport, KMIW, Marshelltown, Iowa
DATE: October 2025

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	COST/UNIT	COST
C-100-1	CONTRACTOR QUALITY CONTROL PROGRAM (CQCP)	1	LS	$ 25,000.00	$ 25,000.00
C-102-1	STORMWATER POLLUTION PREVENTION PLAN (SWPPP) PREPARATION AND MANAGEMENT	1	LS	$ 8,000.00	$ 8,000.00
C-102-2	TEMPORARY SEEDING AND MULCHING	65	AC	$ 2,400.00	$ 156,000.00
C-102-3	INSTALLATION AND REMOVAL OF SILT FENCE	10,000	LF	$ 3.00	$ 30,000.00
C-105-1	MOBILIZATION	1	LS	$ 100,000.00	$ 100,000.00
C-105-2	TRAFFIC CONTROL	1	LS	$ 60,000.00	$ 60,000.00
C-105-3	CONSTRUCTION STAKING	1	LS	$ 40,000.00	$ 40,000.00
L-108-1	NO. 8 AWG, 5 KV, L-824, TYPE C CABLE, INSTALLED IN TRENCH, DUCT BANK OR CONDUIT	20,000	LF	$ 2.00	$ 40,000.00
L-108-2	NO. 6 AWG, 600V, L-824, TYPE C CABLE, INSTALLED IN TRENCH, DUCT BANK OR CONDUIT	15,000	LF	$ 3.00	$ 45,000.00
L-108-3	NO. 6 AWG, SOLID, BARE COPPER COUNTERPOISE WIRE, INSTALLED IN TRENCH WITH GROUND RODS, INCLUDING CONNECTIONS/TERMINATIONS	20,000	LF	$ 2.00	$ 40,000.00
L-108-4	SYSTEM TESTING	1	LS	$ 5,000.00	$ 5,000.00
L-108-5	REMOVE EXISTING DUCT BANK	300	LF	$ 45.00	$ 13,500.00
L-108-6	REMOVE EXISTING CONDUIT AND CABLE(S)	1	LS	$ 4.50	$ 4.50
L-109-1	REMOVE EXISTING CONSTANT CURRENT REGULATOR	1	EA	$ 1,000.00	$ 1,000.00
L-109-2	FURNISH AND INSTALL 7.5KW CONSTANT CURRENT REGULATOR	1	EA	$ 15,000.00	$ 15,000.00
L-109-3	FURNISH AND INSTALL SERIES CUTOUT	1	EA	$ 1,500.00	$ 1,500.00
L-110-1	(1) 2" SCHEDULE 40 PVC CONDUIT, IN TRENCH	13,500	LF	$ 12.00	$ 162,000.00
L-115-1	ELECTRICAL JUNCTION BOX, L-867 BASE CAN, WITH GASKETED COVER, 16" DIA.	20	EA	$ 1,000.00	$ 20,000.00
L-115-2	REMOVE ELECTRICAL JUNCTION BOX	3	EA	$ 200.00	$ 600.00
L-125-1	REMOVE MEDIUM INTENSITY TAXIWAY EDGE LIGHT, BASE MOUNTED	35	EA	$ 350.00	$ 12,250.00
L-125-2	REMOVE HIGH INTENSITY RUNWAY THRESHOLD END LIGHT, BASE MOUNTED	16	EA	$ 300.00	$ 4,800.00
L-125-3	REMOVE HIGH INTENSITY RUNWAY EDGE LIGHT, BASE MOUNTED	56	EA	$ 300.00	$ 16,800.00
L-125-4	REMOVE RUNWAY END IDENTIFIER LIGHT SYSTEM	2	EA	$ 2,000.00	$ 4,000.00
L-125-5	REMOVE L-858 AIRPORT GUIDANCE SIGN, 2-MODULE, HOUSING, FRAME, AND TRANSFORMER, AS PER PLAN	3	EA	$ 800.00	$ 2,400.00
L-125-6	MEDIUM INTENSITY L-861T TAXIWAY EDGE LIGHT, LED, BASE-MOUNTED	40	EA	$ 1,500.00	$ 60,000.00
L-125-7	HIGH INTENSITY L-862 RUNWAY EDGE LIGHT, LED, BASE MOUNTED	56	EA	$ 1,800.00	$ 100,800.00
L-125-8	HIGH INTENSITY L-862E RUNWAY THRESHOLD LIGHT, LED, BASE MOUNTED	18	EA	$ 1,800.00	$ 32,400.00
L-125-9	L-849 RUNWAY END IDENTIFIER LIGHT SYSTEM, LED	2	EA	$ 20,000.00	$ 40,000.00
L-125-10	L-858 AIRPORT GUIDANCE SIGN (2-MODULE), BASE MOUNTED, LED TYPE	3	EA	$ 5,500.00	$ 16,500.00
L-125-11	SPARE HIGH INTENSITY L-862 RUNWAY EDGE LIGHT FIXTURE ASSEMBLY WITH STEEL COVER & ISOLATION TRANSFORMER	1	EA	$ 750.00	$ 750.00
L-125-12	SPARE MEDIUM INTENSITY L-861T TAXIWAY EDGE LIGHT FIXTURE ASSEMBLY WITH STEEL COVER & ISOLATION TRANSFORMER	1	EA	$ 750.00	$ 750.00
L-125-13	SPARE HIGH INTENSITY L-862E RUNWAY THRESHOLD LIGHT FIXTURE ASSEMBLY WITH STEEL COVER & ISOLATION TRANSFORMER	1	EA	$ 750.00	$ 750.00
L-125-14	SPARE RUNWAY END IDENTIFIER LIGHT FIXTURE ONLY	1	EA	$ 750.00	$ 750.00
L-125-15	SPARE PRIMARY CONNECTOR KIT	1	EA	$ 500.00	$ 500.00
L-125-16	REMOVE RUNWAY 13-31 4-BOX VASI SYSTEM	2	EA	$ 2,500.00	$ 5,000.00
L-125-17	4-BOX PRECISION APPROACH PATH INDICATOR SYSTEM (RWY 13-31)	2	EA	$ 60,000.00	$ 120,000.00
L-125-18	SPARE PRECISION APPROACH PATH INDICATOR FIXTURE ONLY	1	EA	$ 2,000.00	$ 2,000.00
L-125-19	DEACTIVATE/COVER EXISTING GUIDANCE SIGNS	1	LS	$ 8,000.00	$ 8,000.00
	TOTAL ESTIMATE OF PROBABLE CONSTRUCTION COST				**$1,191,055**
	GEOTECHNICAL INVESTIGATION				$7,500
	TOPOGRAPHIC SURVEY				$15,000
	DESIGN PHASE ENGINEERING				$155,000
	BIDDING SERVICES				$15,000
	CONSTRUCTION SERVICES				$150,000
	SPONSOR ADMINISTRATION				$500
	QA MATERIAL TESTING (EST.)				$8,000
	FAA INSTRUMENT APPROACH PROCEDURE DEVELOPMENT				N/A
	FAA FLIGHT INSPECTION				$20,000
	TOTAL ESTIMATE OF PROBABLE PROJECT COST				**$1,562,055**

FEDERAL AVIATION ADMINISTRATION

CAPITAL IMPROVEMENT PROGRAM (CIP)
AIRPORTS DIVISION - CENTRAL REGION

CIP DATA SHEET

SEE INSTRUCTIONS TO COMPLETE THIS INFORMATION			
Airport Name, LOCID, City, State:	Marshalltown Municipal Airport, KMIW, Marshelltown, Iowa		
AIP Project Type:	Rehabilitate Taxiway		
Local Priority:	2	**Federal AIP & BIL:**	$2,505,825
FFY Requested:	2028	**State Share**	
Provide Detailed Project Scope and Justification Below. You must attach a sketch/drawing that clearly identifies the scope of the project.		**Local Share:**	$278,425
		Total Project Cost:	$2,784,250

Scope:

Justification: **The Iowa DOT Pavement Management System inspected the parallel taxiway in 2024 giving the overall Taxiway a PCI value ranging from 43 to 71. The lowest current PCI would be less than 43 sugesting reconstruction as the recommend type of repair. Distress currently plagueing the taxiway include alligator cracking, LT cracking, Raveling, Rutting, Weathering, and patching. FOD will become a major concern if the Taxiway is not repaired.**

Date of approved ALP with project shown **11/29/2010**
Date of environmental determination **Categorical Exclusion per FAA Order 1050.1G paragraph B-2.4.e**

SPONSOR SIGNATURE BLOCK			
Signature:		**Date:**	
Printed Name:	Heather Thomas, P.E.	**Title:**	Public Works Director
Phone Number:	641-750-5929	**Email:**	hthomas@marshalltown-ia.gov

OPINION OF PROBABLE PROJECT COST
PROJECT: Rehabilitate Taxiway
AIRPORT: Marshalltown Municipal Airport, KMIW, Marshelltown, Iowa
DATE: October 2025

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	COST/UNIT	COST
C-100-1	CONTRACTOR QUALITY CONTROL PROGRAM (CQCP)	1	LS	$ 80,000.00	$ 80,000.00
C-102-1	STORMWATER POLLUTION PREVENTION PLAN (SWPPP) PREPARATION AND MANAGEMENT	1	LS	$ 8,000.00	$ 8,000.00
C-102-2	TEMPORARY SEEDING AND MULCHING	60	AC	$ 1,000.00	$ 60,000.00
C-102-3	INSTALLATION AND REMOVAL OF SILT FENCE	10,000	LF	$ 3.00	$ 30,000.00
C-102-4	INSTALLATION AND REMOVAL OF FILTER SOCK	250	LF	$ 20.00	$ 5,000.00
C-105-1	MOBILIZATION	1	LS	$ 180,000.00	$ 180,000.00
C-105-2	TRAFFIC CONTROL	1	LS	$ 60,000.00	$ 60,000.00
C-105-3	CONSTRUCTION STAKING	1	LS	$ 40,000.00	$ 40,000.00
P-101-1	COLD MILLING (1-6")	23,000	SY	$ 10.00	$ 230,000.00
P-101-2	HMA PAVEMENT REMOVAL	600	SY	$ 50.00	$ 30,000.00
P-101-3	FULL DEPTH HMA PATCHING	600	SY	$ 240.00	$ 144,000.00
P-101-4	CRACK FILLING AND SEALING, GREATER THAN 1" WIDTH	3,500	LF	$ 12.00	$ 42,000.00
P-101-5	CRACK FILLING AND SEALING, LESS THAN 1" WIDTH	3,500	LF	$ 12.00	$ 42,000.00
P-401-1	ASPHALT SURFACE COURSE	2,000	TN	$ 160.00	$ 320,000.00
P-401-2	ASPHALT BASE COURSE	1,800	TN	$ 140.00	$ 252,000.00
P-603-1	EMULSIFIED ASPHALT TACK COAT	2,200	GAL	$ 5.00	$ 11,000.00
P-620-1	PAVEMENT MARKING (WATERBORNE)	6,500	SF	$ 1.50	$ 9,750.00
T-901-1	SEEDING AND FERTILIZING	60	AC	$ 3,000.00	$ 180,000.00
T-905-1	TOPSOILING (STRIPPING, STOCKPILING, RE-SPREADING)	35,000	CY	$ 7.00	$ 245,000.00
T-908-1	MULCHING	60	AC	$ 1,000.00	$ 60,000.00
	TOTAL ESTIMATE OF PROBABLE CONSTRUCTION COST				**$2,028,750**
	GEOTECHNICAL INVESTIGATION				$50,000
	TOPOGRAPHIC SURVEY				$25,000
	DESIGN PHASE ENGINEERING				$500,000
	BIDDING SERVICES				$30,000
	CONSTRUCTION SERVICES				$150,000
	SPONSOR ADMINISTRATION				$500
	QA MATERIAL TESTING (EST.)				N/A
	FAA INSTRUMENT APPROACH PROCEDURE DEVELOPMENT				N/A
	FAA FLIGHT INSPECTION				N/A
	TOTAL ESTIMATE OF PROBABLE PROJECT COST				**$2,784,250**

FEDERAL AVIATION ADMINISTRATION

CAPITAL IMPROVEMENT PROGRAM (CIP)
AIRPORTS DIVISION - CENTRAL REGION

CIP DATA SHEET

SEE INSTRUCTIONS TO COMPLETE THIS INFORMATION			
Airport Name, LOCID, City, State:	Marshalltown Municipal Airport, KMIW, Marshelltown, Iowa		
AIP Project Type:	Rehabilitate Taxiway Lighting		
Local Priority:	2	**Federal AIP & BIL:**	$947,479
FFY Requested:	2028	**State Share**	
Provide Detailed Project Scope and Justification Below. You must attach a sketch/drawing that clearly identifies the scope of the project.		**Local Share:**	$105,275
		Total Project Cost:	$1,052,755

Scope:

Justification: **The lighting system for the parallel taxiway has served its useful life and is in need of replacement. The current system has increasing maintenance cost year over year and the system is unreliable. The project will replace the taxiway lighting system to include new LED edge lighting and guidance signs.**

Date of approved ALP with project shown **11/29/2010**
Date of environmental determination **Categorical Exclusion per FAA Order 1050.1G paragraph B-2.4.e**

SPONSOR SIGNATURE BLOCK			
Signature:		**Date:**	
Printed Name:	Heather Thomas, P.E.	**Title:**	Public Works Director
Phone Number:	641-750-5929	**Email:**	hthomas@marshalltown-ia.gov

OPINION OF PROBABLE PROJECT COST
PROJECT: Rehabilitate Taxiway Lighting
AIRPORT: Marshalltown Municipal Airport, KMIW, Marshelltown, Iowa
DATE: October 2025

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	COST/UNIT	COST
C-100-1	CONTRACTOR QUALITY CONTROL PROGRAM (CQCP)	1	LS	$ 100,000.00	$ 100,000.00
C-102-1	STORMWATER POLLUTION PREVENTION PLAN (SWPPP) PREPARATION AND MANAGEMENT	1	LS	$ 8,000.00	$ 8,000.00
C-102-2	TEMPORARY SEEDING AND MULCHING	60	AC	$ 1,000.00	$ 60,000.00
C-102-3	INSTALLATION AND REMOVAL OF SILT FENCE	10,000	LF	$ 3.00	$ 30,000.00
C-102-4	INSTALLATION AND REMOVAL OF FILTER SOCK	250	LF	$ 4.00	$ 1,000.00
C-105-1	MOBILIZATION	1	LS	$ 80,000.00	$ 80,000.00
C-105-2	TRAFFIC CONTROL	1	LS	$ 60,000.00	$ 60,000.00
C-105-3	CONSTRUCTION STAKING	1	LS	$ 40,000.00	$ 40,000.00

MARSHALLTOWN
MORE THAN EVER

Joel Greer, Mayor
Carol Webb, City Administrator
24 North Center Street
Marshalltown, IA 50158
PH 641.754.5701 • FX 641.754.5717

To:	Mayor and City Council
From:	Carol Webb, City Administrator
Meeting Date:	December 8, 2025
Re:	Resolution Consenting to Assignment of Development Agreement and Tax Increment Payments

Strategic Plan Objective:
N/A

Recommended:
Staff recommends approval.

Budget Impact:
There is no change to the City's financial obligation. TIF payments will continue as originally approved and according to the same schedule and performance terms outlined in the Development Agreement.

Description/Background:
On September 24, 2024, the City entered into a Development Agreement with RISE M, LLC for the construction of a commercial building to be used as an outpatient health care clinic within Marshalltown Urban Renewal Area No. 3. The agreement included provisions for the City to provide tax increment financing (TIF) payments based on the incremental property value generated by the project.

Under the terms of the Development Agreement, assignment of rights or obligations requires prior written consent from the City.

RISE M, LLC has executed an Assignment of Development Agreement transferring all rights and obligations under the agreement to Marshalltown IA I FGF, LLC. The Assignee has agreed to accept all obligations of the original developer, including compliance with all terms, conditions, and performance requirements.

The Assignment Agreement:

- Transfers all rights, duties, and responsibilities of the Development Agreement from RISE M, LLC to Marshalltown IA I FGF, LLC.

- Affirms that the Development Agreement remains in full force and unmodified.
- Provides assurances that no defaults exist under the agreement.
- Requires City consent, per Section C.1 of the original Development Agreement.

The resolution before Council authorizes:

- Consent to the assignment,
- Approval of the Assignment Agreement, and
- Authorization for the Mayor and City Clerk to execute the Acknowledgment and Consent.

Upon execution, all future communications and TIF payments will be directed solely to the Assignee.

Attachments:

1. 2025-12-08_Resolution Consent to Assignment (Marshalltown #59 2025)-v1
2. 2025-12-08_RISE M Assignment of Development Agreement
3. 2024-09-23_2024-210_SIGNED Development Agreement (RISE) (Marshalltown 59 2024)-v3

CONSENT TO ASSIGNMENT OF DEVELOPMENT AGREEMENT AND TAX INCREMENT PAYMENTS

422742-59

Marshalltown, Iowa

December 8, 2025

A meeting of the City Council of the City of Marshalltown, Iowa, was held at 5:30 p.m., on December 8, 2025, at the City Council Chambers, 10 West State Street, Marshalltown, Iowa, pursuant to the rules of the Council.

The Mayor presided and the roll was called, showing members present and absent as follows:

Present: _____

Absent: _____.

Council Member _____ introduced the resolution next hereinafter set out and moved its adoption, seconded by Council Member _____; and after due consideration thereof by the Council, the Mayor put the question upon the adoption of said resolution, and the roll being called, the following named Council Members voted:

Ayes: _____

Nays: _____.

Whereupon, the Mayor declared said resolution duly adopted, as follows:

RESOLUTION_____

Resolution Consenting to Assignment of Development Agreement and Tax Increment Payments

WHEREAS, the City of Marshalltown, Iowa (the "City"), pursuant to and in strict compliance with all laws applicable to the City, and in particular the provisions of Chapter 403 of the Code of Iowa, has adopted an Urban Renewal Plan for the Marshalltown Urban Renewal Area No. 3 (the "Urban Renewal Area"); and

WHEREAS, this Council has adopted an ordinance providing for the division of taxes levied on taxable property in the Urban Renewal Area pursuant to Section 403.19 of the Code of Iowa and establishing the fund referred to in Subsection 2 of Section 403.19 of the Code of Iowa (the "Urban Renewal Tax Revenue Fund"), which fund and the portion of taxes referred to in that subsection may be irrevocably pledged by the City for the payment of the principal and interest on indebtedness incurred under the authority of Section 403.9 of the Code of Iowa to finance or refinance in whole or in part projects in the Urban Renewal Area; and

WHEREAS, the City previously authorized and entered into a development agreement (the "Development Agreement") with RISE M, LLC (the "Original Developer"), pursuant to which Original Developer agreed to undertake the construction of a commercial building for use in the business operations of an outpatient health care clinic in the Urban Renewal Area (the "Project"), and the City agreed to provide tax increment payments to the Original Developer; and

WHEREAS, under the Development Agreement, assignment of rights and responsibilities thereunder was made subject to prior consent of the contracting parties; and

WHEREAS, the Original Developer has requested that the City consent to the assignment of all of its rights and responsibilities under the Development Agreement to Marshalltown IA I FGF, LLC (the "Successor Developer"); and

WHEREAS, it is now necessary for the City to provide consent to the assignment of the Development Agreement and to approve an Assignment of Development Agreement (the "Assignment Agreement") to carry out the assignment of the Development Agreement;

NOW, THEREFORE, It Is Resolved by the City Council of the City of Marshalltown, Iowa, as follows:

Section 1. The City hereby consents to the request by the Original Developer that all of its rights and responsibilities under the Development Agreement be assigned to the Successor Developer, and the assignment is hereby consented to and approved. The Assignment Agreement is hereby approved in substantially the form and content in which it has been presented to this City Council, and the Mayor and City Clerk are hereby authorized and directed to execute and deliver the "Acknowledgment and Consent of City" page of the Assignment Agreement. The Mayor and the City Administrator are also authorized to make such changes, modifications, additions or deletions as they, with the advice of legal counsel, may believe to be necessary, and to take such actions as may be necessary to carry out the provisions of the Assignment Agreement.

Section 2. Subject to due authorization, execution and delivery of the Assignment Agreement; the Original Developer is hereby released from all remaining duties to be performed under the Development Agreement, and all remaining communications and payments to be made with respect to the Development Agreement shall exclusively be directed to the Successor Developer. The Successor Developer shall in all ways be substituted into the Development Agreement on the same terms and basis as the Original Developer.

Section 3. Nothing contemplated herein shall be interpreted as interfering with the division of incremental property tax revenues and the payments to be funded therefrom as contemplated in the Development Agreement regardless of the future recipient of such payments.

Section 4. All resolutions or parts thereof in conflict herewith are hereby repealed.

Passed and approved December 8, 2025.

_____
Mayor

Attest:

_____
City Clerk

• • • • •

On motion and vote the meeting adjourned.

_____
Mayor

Attest:

_____
City Clerk

STATE OF IOWA
MARSHALL COUNTY SS:
CITY OF MARSHALLTOWN

I, the undersigned, City Clerk of the City of Marshalltown, Iowa hereby certify that the foregoing is a true and correct copy of the minutes of the Council of the City relating to consenting to the assignment of a Development Agreement.

WITNESS MY HAND this _____ day of _____, 2025.

_____
City Clerk

ASSIGNMENT OF DEVELOPMENT AGREEMENT

THIS ASSIGNMENT OF DEVELOPMENT AGREEMENT ("**Assignment**") is made and entered into as of _____, 2025, by **RISE M, LLC**, an Iowa limited liability company ("**Assignor**"), in favor of **Marshalltown IA I FGF, LLC**, an Iowa limited liability company ("**Assignee**").

RECITALS

A. Assignor entered into that certain Development Agreement with the City of Marshalltown, Iowa (the "City") dated as of September 24, 2024 (the "Development Agreement"), which is attached hereto as Exhibit A and incorporated by reference.

B. The Development Agreement contemplates the development, construction, and operation of the improvements described therein, and governs the rights and obligations of the parties under certain terms and conditions.

C. Pursuant to Section C.1 of the Development Agreement, Assignor may not assign its rights or interests under the Development Agreement without the City's written consent.

D. Assignor now desires to assign all of its rights and obligations under the Development Agreement to Assignee, and Assignee desires to accept such rights and assume such obligations, all upon the terms and conditions set forth below.

AGREEMENT

NOW, THEREFORE, in consideration of the sum of Ten Dollars ($10.00) and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Assignor and Assignee agree as follows:

1. Assignment. Assignor hereby unconditionally sells, transfers, assigns, conveys, and delivers unto Assignee all of Assignor's right, title, and interest in and to the Development Agreement, together with all rights and obligations thereunder. Assignee hereby accepts the Assignment and agrees to perform all obligations of Assignor under the Development Agreement from and after the date of this Assignment.

2. Irrevocable Assignment. This Assignment is irrevocable. Assignor shall not take any action inconsistent with this Assignment or attempt to assign or convey any interest in the Development Agreement to any other party.

3. Assignor Representations. Assignor represents and warrants that: (a) it has not previously assigned its rights under the Development Agreement; (b) it has full authority to execute this Assignment; (c) there is no existing default under the Development Agreement by Assignor or, to Assignor's knowledge, by the City; (d) the Development Agreement is in full force and effect and unmodified; and (e) the Development Agreement may not be modified or amended without the City's written consent.

4. Successors. This Assignment shall be binding upon and inure to the benefit of the parties and their respective successors and assigns.

5. Governing Law. This Assignment shall be governed by and construed under the laws of the State of Iowa.

6. Counterparts. This Assignment may be executed in multiple counterparts, each of which shall constitute an original.

7. Severability. If any provision of this Assignment is deemed invalid or unenforceable, the remaining provisions shall remain in full force and effect.

8. Modifications. No amendment or waiver shall be effective unless in writing and signed by the party against whom enforcement is sought.

SIGNATURES

ASSIGNOR:

RISE M, LLC
a Minnesota limited liability company

By: _____
Name: Eric Card
Title: Member

ASSIGNEE:

Marshalltown IA I FGF, LLC
a Delaware limited liability company

By: _____
Name: _____
Title: _____

ACKNOWLEDGMENT AND CONSENT OF CITY

The undersigned City acknowledges and consents to this Assignment and agrees that all obligations and benefits owed under the Development Agreement shall run directly to the Assignee or its nominee, as Assignee may direct, as of the date of this Assignment.

CITY OF MARSHALLTOWN, IOWA

By: _____
Name: _____
Title: _____

Attest:

City Clerk

Exhibit A

Development Agreement dated September 24, 2024
(Attached)

DEVELOPMENT AGREEMENT

This Development Agreement is entered into between the City of Marshalltown, Iowa (the "City") and Rise M, LLC (the "Company") as of the 24th day of September, 2024 (the "Commencement Date").

WHEREAS, the City has established the Marshalltown Urban Renewal Area No. 3 (the "Urban Renewal Area"), and has adopted a tax increment ordinance for the Urban Renewal Area; and

WHEREAS, the Company owns certain real property which is situated in the City, lies within the Urban Renewal Area and is more specifically described on Exhibit A hereto (the "Property"); and

WHEREAS, the Company has proposed to the construction of a new commercial building (the "Project") on the Property for use in the business operations of an outpatient health clinic; and

WHEREAS, the Company has requested that the City provide financial assistance in the form of incremental property tax payments to be used by the Company in paying the costs of constructing and maintaining the Project; and

WHEREAS, the base valuation (the "Base Valuation") of the Property for purposes of calculating Incremental Property Tax Revenues, as herein defined, under this Agreement and Section 403.19 of the Code of Iowa shall be the assessed taxable valuation of the Property as of January 1 of the year prior to the year in which the Triggering Certification (as herein defined) is filed; and

WHEREAS, Chapter 15A of the Code of Iowa authorizes cities to provide grants, loans, guarantees, tax incentives and other financial assistance to or for the benefit of private persons;

NOW THEREFORE, the parties hereto agree as follows:

A. Company's Covenants

1. Project Construction and Operation. The Company agrees to construct the Project on the Property. Furthermore, the Company agrees to invest not less than $5,000,000 into capital improvements for the Project, including construction work and other furnishings. The Company has submitted a detailed site plan (the "Site Plan") for the development of the Project to the City. The Site Plan is attached hereto as Exhibit B. The Company agrees to complete the Project in accordance with the Site Plan by no later than December 31, 2024, subject to a Force Majeure Event (as hereinafter defined).

For purposes of this Agreement a "Force Majeure Event" shall mean delays beyond the control of the Company, including, but not limited to, acts of God, labor strikes or work stoppages not caused by the Company, equipment and/or material shortages, or delays caused by government shutdowns or government prohibitions that delay completion of the Project. Within ten (10) days of the occurrence of a Force Majeure Event, the Company shall notify the City in writing that a

Force Majeure Event has occurred and the estimated delay resulting from the same. Within ten (10) days after resolution or correction of the Force Majeure Event, the Company shall notify the City in writing that shall include the full extent of the delay and the revised completion date reflecting such delay.

The Company agrees to ensure that the completed Project is used in the business operations of an outpatient health clinic throughout the Term, as hereinafter defined, of this Agreement (the "Business Operations Requirement").

The Company further agrees to maintain, preserve, and keep the Property, including but not limited to the Project, useful and in good repair and working order, ordinary wear and tear excepted, and from time to time will make all necessary repairs, replacements, renewals, and additions that the Company deems necessary for the continued use of the Project as an outpatient health clinic. Further, the Company agrees to maintain compliance with local zoning, land use, building and safety codes and regulations.

The Company has previously performed work for infrastructure improvements to the Property and to the adjacent lots in Freedom Hills 1st Addition, a copy of the Final Plat is attached as Exhibit E. Such infrastructure improvements include, but are not limited to, excavation and grading of the entire Freedom Hills 1st Addition, excavation of the retention pond required by the City, surface improvements for vehicle and pedestrian access, and other infrastructure services, all of which benefit the Property and the Project, both directly and indirectly. The City acknowledges and agrees that Payments (as hereinafter defined) made by the City shall be allocated by the Company for reimbursement of costs and expenses previously incurred for infrastructure improvements that benefit the Property and the Project; provided, however, nothing in this paragraph shall cause an increase, or in any way modify, the Maximum Payment Total defined in Section B.1.

2. Property Taxes. The Company agrees to make or ensure timely payment of all property taxes as they come due with respect to that portion of the Property with the completed Project thereon throughout the Term and to submit a receipt or cancelled check in evidence of each such payment.

3. Triggering Certification; TIF Estimate Review.

Triggering Certification: The Company agrees to provide written notification (the "Triggering Certification") to the City of its intent for the Payments (as hereinafter defined) to commence in a particular fiscal year. Such Triggering Certification shall be due by no later than October 1 of the calendar year immediately preceding the start of the fiscal year in which the Payments are intended to begin. In any event, the Triggering Certification shall be made by no later than October 1, 2025. (It is hereby acknowledged that the City's fiscal years begin on July 1 and end on the following June 30.) In submitting each such Company's Triggering Certification, the Company will complete and submit the worksheet attached hereto as Exhibit C.

Review of TIF Estimate: The Company shall review each TIF Estimate (as hereinafter defined) and request any changes thereto within ten (10) days of receipt of each TIF Estimate from the City. The Company acknowledges that failure to request changes to any TIF Estimate within

ten (10) days of receipt thereof will constitute an acceptance by the Company of such TIF Estimate, and the Company shall have no right after such ten-day period to request changes or challenge the City's calculation of the TIF Estimate.

4. Default Provisions.

a. Events of Default. The following shall be "Events of Default" under this Agreement, and the term "Event of Default" shall mean, whenever it is used in this Agreement (unless otherwise provided), any one or more of the following events:

(i) Failure by the Company to complete construction of the Project pursuant to the terms and conditions of this Agreement.

(ii) Failure by the Company to comply with the Business Operations Requirement pursuant to the terms and conditions of this Agreement.

(iii) Failure by the Company to fully and timely remit payment of property taxes when due and owing.

(iv) Failure by the Company to comply with Section A.3 of this Agreement.

(v) Failure by the Company to observe or perform any other material covenant on its part, to be observed or performed hereunder.

b. Notice and Remedies. Whenever any Event of Default described in this Agreement occurs, the City shall provide written notice to the Company describing the cause of the default and the steps that must be taken by the Company in order to cure the default. The Company shall have thirty (30) days after receipt of the notice to cure the default or to provide assurances satisfactory to City that the default will be cured as soon as reasonably possible. If the Company fails to cure the default or provide assurances, the City shall then have the right to:

(i) Pursue any action available to it, at law or in equity, in order to enforce the terms of this Agreement.

(ii) Withhold the Payments provided for under Section B.1 below.

(iii) Terminate this Agreement.

B. City's Obligations

1. Payments. In recognition of the Company's obligations set out above, the City agrees to make twenty (20) semiannual economic development tax increment payments (the "Payments" and each, individually a "Payment") to the Company during the Term pursuant to Chapters 15A and 403 of the Code of Iowa, provided however that the aggregate, total amount of the Payments (the "Maximum Payment Total") shall not exceed $800,000. All Payments under this Agreement shall be subject to annual appropriation by the City Council, as provided hereunder.

The Payments shall not constitute general obligations of the City, but shall be made solely and only from Incremental Property Tax Revenues received by the City from the Marshall County Treasurer attributable to the taxable valuation of the Property.

Prior to funding any Payments under this Agreement, the City will first withhold from the Incremental Property Tax Revenues an amount equal to the Admin Withholding Amount. Once an amount equal to the Admin Withholding Amount has been withheld by the City, the Payments shall be made as hereinafter set forth.

The Payments will be made on December 1 and June 1 of each fiscal year following an affirmative appropriation decision as provided for under Section B.3 below, beginning on December 1 of the fiscal year immediately succeeding the year in which the Triggering Certification is made, and continuing through the expiration of the Term.

For example, assuming the Triggering Certification is made on October 15, 2025 and all appropriation determinations are approved affirmatively by the City Council under Section B.2 below, then Payments will be made on December 1 and June 1, beginning in the City's 2026-2027 fiscal year, and continuing for a period of nine (9) additional fiscal years thereafter, provided, however, that no Payments shall be made after the sooner of June 1, 2036 or the date on which aggregate Payments equal to the Maximum Payment Total have been made.

2. TIF Estimate: For purposes of this Agreement, "Annual Percentage" shall mean the annual percentage in effect from time to time as set forth in the following table:

Fiscal Year of City	Annual Percentage
First Payment Year	90%
Second Payment Year	90%
Third Payment Year	80%
Fourth Payment Year	80%
Fifth Payment Year	70%
Sixth through Tenth Payment Years	70%

The City agrees to certify to the Company by no later than October 15 of each year, commencing October 15 of the year in which the Triggering Certification is filed, an amount (the "TIF Estimate") equal to the Annual Percentage of the estimated Incremental Property Tax Revenues (as hereinafter defined) anticipated to be paid in the fiscal year immediately following such certification with respect to the taxable valuation of the Property.

In submitting each such TIF Estimate, the City will complete and submit the worksheet attached hereto as Exhibit D. The City agrees that the Company will have right to review each such TIF Estimate and request revisions thereto.

For purposes of this Agreement, Incremental Property Tax Revenues are calculated by: (1) determining the consolidated property tax levy (city, county, school, etc.) then in effect with respect to taxation of the Property; (2) subtracting (a) the debt service levies of all taxing jurisdictions, (b) the school district instructional support and physical plant and equipment levies and (c) any other levies which may be exempted from such calculation by action of the Iowa General Assembly; (3) multiplying the resulting modified consolidated levy rate times any incremental growth in the taxable valuation of the Property, as shown on the property tax rolls of

Marshall County, above and beyond the Base Valuation; and (4) deducting any property tax credits which shall be available with respect to the Property.

3. Annual Appropriation. The Payments shall be subject to annual appropriation by the City Council. Prior to December 1 of each year during the Term (as hereinafter defined) of this Agreement, beginning in the calendar year in which the Triggering Certification is filed, the City Council of the City shall consider the question of obligating for appropriation to the funding of the Payments due in the following fiscal year, an amount (the "Appropriated Amount") of Incremental Property Tax Revenues to be collected in the following fiscal year equal to or less than the most recently submitted Company's Estimate.

In any given fiscal year, if the City Council determines to not obligate the then-considered Appropriated Amount, then the City will be under no obligation to fund the Payments scheduled to become due in the following fiscal year, and the Company will have no rights whatsoever to compel the City to make such Payments, to seek damages relative thereto or to compel the funding of such Payments in future fiscal years. A determination by the City Council to not obligate funds for any particular fiscal year's Payments shall not render this Agreement null and void, provided however that no Payment shall be made after June 1, 2036.

4. Payment Amounts. The aggregate Payments to be made in a fiscal year shall not exceed an amount equal to the corresponding Appropriated Amount (for example, for the Payments due on December 1, 2026 and on June 1, 2027, the aggregate maximum amount of such Payments would be determined by the Appropriated Amount determined for certification by December 1, 2025). Furthermore, the amount of each such Payment shall not exceed the Annual Percentage of Incremental Property Tax Revenues (excluding allocations of "back-fill" or "make-up" payments from the State of Iowa for property tax credits or roll-back) actually received by the City from the Marshall County Treasurer attributable to the taxable incremental valuation of the Property in the six (6) months immediately preceding such Payment due date.

5. Certification of Payment Obligation. In any given fiscal year, if the City Council determines to obligate the then-considered Appropriated Amount, as set forth in Section B.3 above, then the City Clerk will certify by December 1 of each such year to the Marshall County Auditor an amount equal to the most recently obligated Appropriated Amount.

C. Administrative Provisions

1. Amendment and Assignment. Neither party may cause this Agreement to be amended, assigned, assumed, sold or otherwise transferred without the prior written consent of the other party. However, the City hereby gives its permission that the Company's rights to receive the Payments hereunder may be assigned by the Company to a private lender, as security on a credit facility taken with respect to the Project, without further action on the part of the City. In the event Company sells the Project to a third-party buyer: (i) at least ninety (90) days prior to the scheduled closing date, the Company shall provide written notice to the City that shall include the scheduled closing date, the identity of the buyer, and a form of assignment agreement assigning the Company's interest in and to this Agreement to buyer on the scheduled closing date ("Notice of Assignment"); (ii) the City shall approve such assignment, or reject such assignment providing a written explanation for the rejection and state what corrections the

Company and/or buyer can make to satisfy the City and gain approval for the requested assignment, within sixty (60) days of the City's receipt of the Notice of Assignment; and (iii) the City's approval of any requested assignment shall not be unreasonably withheld.

2. **Successors.** This Agreement shall inure to the benefit of and be binding upon the successors and assigns of the parties.

3. **Term.** The term (the "Term") of this Agreement shall commence on the Commencement Date and end on June 1, 2036.

4. **Choice of Law**. This Agreement shall be deemed to be a contract made under the laws of the State of Iowa and for all purposes shall be governed by and construed in accordance with laws of the State of Iowa.

The City and the Company have caused this Agreement to be signed, in their names and on their behalf by their duly authorized officers, all as of the day and date written above.

CITY OF MARSHALLTOWN, IOWA

By: _____
Mayor

Attest:

_____
City Clerk

RISE M, LLC

By: _____

Its: Manager

EXHIBIT A
DESCRIPTION OF THE PROPERTY

Certain real property situated in the City of Marshalltown, Marshall County, State of Iowa bearing Marshall County Property Tax Parcel Identification Number 8318-11-428-001.

EXHIBIT B
SITE PLAN

EXHIBIT C
COMPANY'S TRIGGERING CERTIFICATION

Date: October 1, 20____

The City of Marshalltown, Iowa (the "City") and RISE M, LLC (the "Company") entered into a Development Agreement dated as of the ___ day of _____, 2024 (the "Commencement Date").

Pursuant to the Development Agreement, the Company hereby certifies to the City that it intends for the process of dividing Incremental Property Tax Revenues to begin in the City's 20__ - 20__ Fiscal Year.

RISE M, LLC

By:_____
[Name, Title]

EXHIBIT D
TIF ESTIMATE WORKSHEET

(1) Date of Preparation: October _____, 20____.

(2) Assessed Taxable Valuation of Property as of January 1, 20_____:

$_____.

(3) Base Taxable Valuation of Property :

$_____.

(4) Incremental Taxable Valuation of Property (2 minus 3):

$_____ (the "TIF Value").

(5) Current City fiscal year consolidated property tax levy rate for purposes of calculating Incremental Property Tax Revenues (the "Adjusted Levy Rate"):

$_____ per thousand of value.

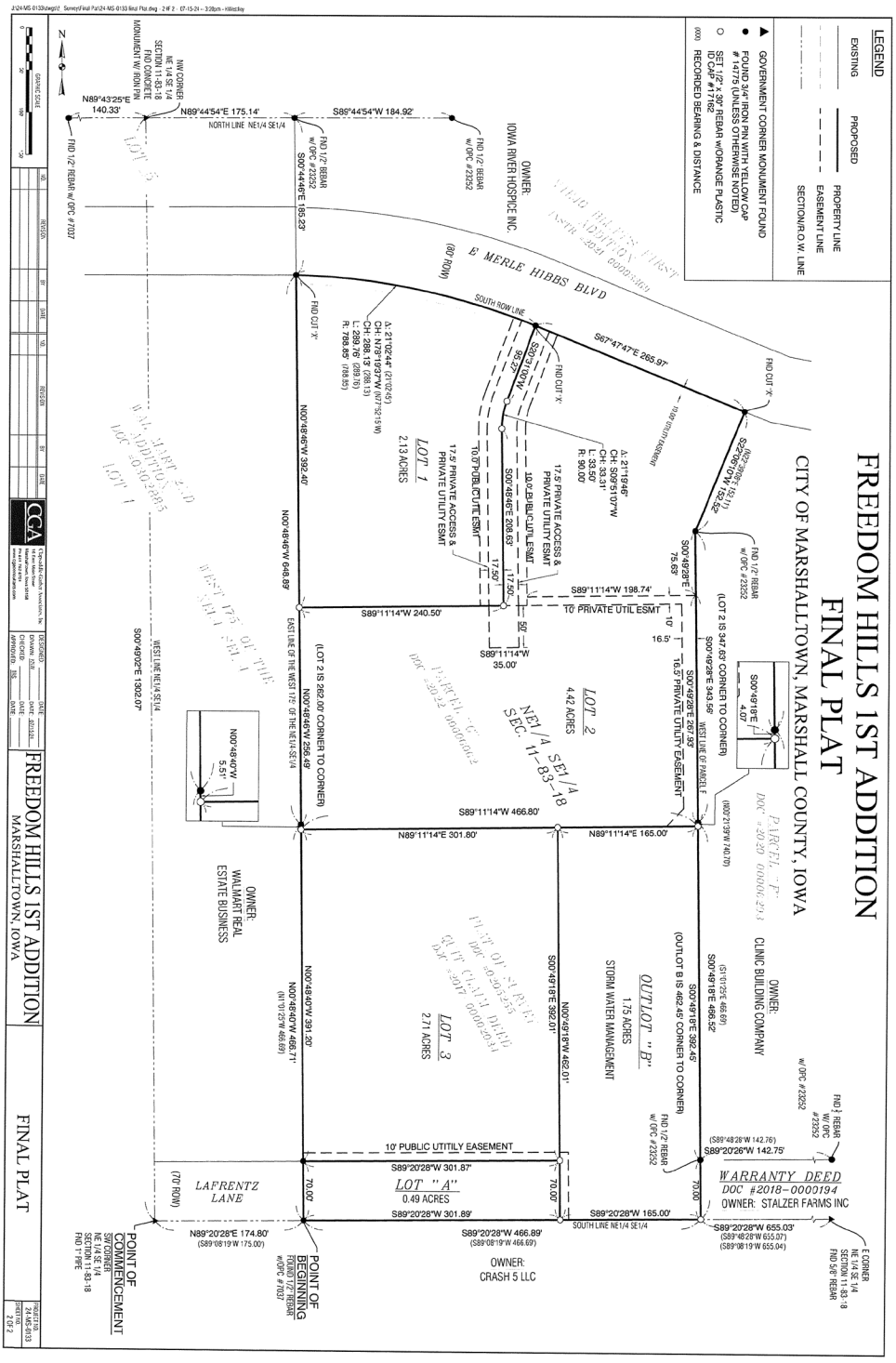
(6) The TIF Value (4) factored by the Adjusted Levy Rate (5).

$_____x $_____/1000 = $_____ ("Available TIF")

(7) Available TIF ($_____ x Annual Percentage* (____%) = TIF Estimate ($_____).

Fiscal Year of City	Annual Percentage
First Payment Year	90%
Second Payment Year	90%
Third Payment Year	80%
Fourth Payment Year	80%
Fifth Payment Year	70%
Sixth through Tenth Payment Years	70%

EXHIBIT E
FREEDOM HILLS 1ST ADDITION FINAL PLAT



4857-5647-0234\3

MARSHALLTOWN
MORE THAN EVER

Joel Greer, Mayor
Carol Webb, City Administrator
24 North Center Street
Marshalltown, IA 50158
PH 641.754.5701 • FX 641.754.5717

To:	Mayor and City Council
From:	Diana Steiner, Finance Director
Meeting Date:	December 8, 2025
Re:	FY27 Budget Schedule

Strategic Plan Objective:

Recommended:

Budget Impact:
Must have public hearings for the full property tax rate and a separate hearing for the overall budget within the time frames set by the state.

Description/Background:
The City went over the General Fund budgets with Council members this past summer and fall. Staff will be bringing forth discussed changes to you during this FY27 budget cycle. In addition, staff will bring budgets for Special Revenues, Debt Service, Capital Funds and Enterprise Funds. Note: Staff are also updating their FY26 budgets for an amendment if needed. Both the FY27 budget and the FY26 proposed amended budget will be presented to you.

The Iowa Legislature requires certain deadlines be met and publication notices be given. In order to accomplish these deadlines, staff are requesting 2 additional special Council meetings be held:

(1) Monday, January 19 (3rd Monday of the month) at 5:30 p.m. to continue discussions on the General Fund from January 12th. We will also present other Special Revenue fund budgets, and enterprise budgets.

(2) Monday, March 23 at 5:00 p.m. for the public hearing on the proposed property tax levy. This has to be the only item on the agenda and has to be a distinct, separate meeting. The regular Council meeting at 5:30 p.m. can happen on the same night. Just need to gavel in and gavel out from the first meeting and keep the second meeting at its regular 5:30 start time (do not start it early).

The County is to provide the City with the taxable valuations by Jan. 1st. Once that amount is known, the Consolidated General Fund Levy can be computed, which leads to the estimate of property tax revenue available to the General Fund.

Does the Council wish to amend dates/times for the special Council meetings?

Attachments:

1. Budget schedule for FY27

Budget Schedule
New Fiscal Year 2027, Budget Amendment for FY 2026, 5-year Capital Plan

Department Head Deadlines

- December: Review of revenue & expenditures & CIP with department heads; City Administrator, Finance Director and Dept. heads meet in December.
- Secondary review with Department heads after receives valuations: week of Jan 5, 2026.

Council Meetings:

- January 12, 2026
  - Discuss Taxable Values
  - General Fund Discussion
  - Overview of Special Funds related to tax levies: Employee Benefits, MFPRSI, Transit
  - Review CIP and Capital Expenditure Purchases (1st Draft)
- January 19, 2026 Special Meeting at 5:30 for Budget
  - Continued discussion on General Fund
  - Remaining Special Revenue Funds: LOST, RUT, grants, donations
  - Enterprise Funds
- January 26, 2026
  - Debt Service Fund and Long-term debt schedule
  - CIP and capital expenditure purchases (2nd Draft)
  - Transfers between funds
- February 9, 2026
  - Finish up any lingering issues
- February 23, 2026
  - Create a proposed tax rate levy and set a public hearing date of March 23 for the proposed property tax levy; enter these items into DOM software so they can be transferred to County Auditor's Office for required mailing to public (along with School District and County Rates).

March 5, 2026 City deadline to send proposed tax levy to County Auditor (thru DOM website).

March 15,2026 COUNTY AUDITOR WILL MAIL TRUTH-IN TAXATION STATEMENTS

- Publication Date of proposed property tax hearing – To T-R March 13 and post on social websites
- March 23, 2026 (Special meeting at 5:00 PM);– only item on the agenda is for Public Hearing on proposed property tax levy). Can have a regular, seperate meeting at 5:30 afterwards.
- April 13, 2026:
  - Council receives and adopts final proposed budget and orders notice of hearing for CIP, FY26 Regular Budget and FY25 Budget Amendment). Set public hearing for April 27.
- Publication Date for final FY26 budget/CIP/FY24 budget amendment April 17 (To TR publication)
- April 27, 2026 Council Final Approval Date –Public hearing and adoption of final budgets
- Budgets submitted online thru DOM website with proof of publication on or before April 30th.

MARSHALLTOWN
MORE THAN EVER

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To:	Mayor and City Council
From:	Kiel Stevenson, Captain
Meeting Date:	December 8, 2025
Re:	Flock Camera Update

Strategic Plan Objective:
Strategy 3: Continually improve and sustain the City's infrastructure, organization, and services.

Recommended:
Staff recommends adding an additional 38 cameras to the Flock Network. The additional cameras would be a combination of LPR, Livefeed, and PTZ style cameras.

Budget Impact:
The current Flock contract is $96,000 annually. The additional cameras would add $94,000 annually. The new annual contract would be $190,000.

Description/Background:
The City of Marshalltown entered into a contract with Flock Safety to provide public safety cameras, which were strategically placed within the city. This program began in March 2024 and was completely implemented in September 2024. The current cameras are Automated License Plate Readers (ALPR). These cameras use technology to identify vehicle features, including license plate, make, style, color, etc. The cameras have two main purposes. First, the cameras will notify officers of active alerts for vehicles. Alerts include stolen vehicles, stolen license plates, wanted subjects, and missing persons. The second purpose is for investigations. Officers can search for vehicles that are involved in a criminal investigation. This helps identify suspects and confirm investigative timelines, among other things.

The additional recommended cameras are a combination of ALPR, Live View, and PTZ style cameras. MPD staff believe the increased coverage would allow officers to be more efficient and provide better service to the community.

It should be noted that there is a one-time installation fee when new cameras are installed. This fee is dependent on the location and whether existing poles can be used for installation.

Attachments:

None