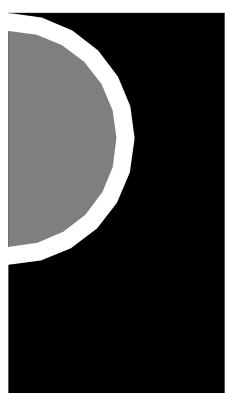
# Warren Civic Center South Fire Station #1 City of Warren, Michigan

# PARTNERS



23 2:50:40 PM C:\\_revitlocal\21-146 WFD STATION 1 CD\_mtearFZV6P.r

Architect:

Partners in Architecture, PLC

65 Market Street Mount Clemens, MI 48043 586-469-3600

Landscape Architect:

J Eppink Partners, Inc.

9336 Shashabaw Road Clarkston, MI 48348 248-922-0789

Structural Engineer:

Shymanski & Associates, LLC

33426 5 Mile Rd Livonia, MI, 48154 734-855-4810 Owner:

City of Warren

1 City Square Warren, MI 48093 586-574-4500

Civil Engineer:

Project Control Er

2420 Pointe Tremble Algonac, MI 48001 810-794-1931

MEP Engineer:

Peter Basso Asso

5145 Livernois Rd # Troy, MI 48098 248-879-5666

I.T. Design Consultant:

Metro Technology Services, Inc.

59 N. Walnut St., Suite 202 Mount Clemens, MI 48043 586-203-8423

# Sheet List

	Sheet No.	Sheet Name
	COVER	
	A0-00	Cover Sheet
	CIVIL	
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	C2-01	Grading Plan
	C3-01	Utility Plan
	C4-01	Storm Water Detention Plan
	C5-01	Soil Erosion and Sediment Control Plan
	DP-1	Concrete Pavement Details
	DP-2	Concrete Pavement Details
	DS-1	Pipe Bedding and Sewer Details
	DS-2a	Manhole & Catch Basin Details
	DW-1	Water Main Details
	LANDSCAPE	
	LP-01	Landscape Planting Plan
	ARCHITECTURAL	
	A0-01	General Project Information
	A0-02	Life Safety Plan & Code Information
	A0-02	Door Schedule, Door & Frame Types, Storefronts
	A0-04	Room Finish Schedule, Wall Types & Signage
	A0-04 A0-05	Door & Typical Opening Details
	A0-09	Detached Garage
	A2-02	Architectural Site Plan Details
	A3-01	Ground Floor Plan
	A3-01d	Ground Floor Plan Dimensions
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	A3-02	Mezzanine & Hose Tower Plan
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	64.00	Canage I Value

11 MILE

S4-00

S4-01

S4-02

S4-03

S5-00

S5-01

S5-02

S5-03

General Notes

General Notes

Details

Details

Details

Details

Details

Schedules and Details

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CONSULTANT

KEY PLAN

### OWNER

### City of Warren

### PROJECT NAME

Warren Civic Center South Fire Station #1

23211 Van Dyke Ave Warren, MI 48089

PROJECT NO.

## 21-146A

ISSUES / REVISIONS Bidding / Construction

6/13/23

DRAWN BY DJG CHECKED BY DG APPROVED BY MAM SHEET NAME Cover Sheet

SHEET NO. **A0-00** 



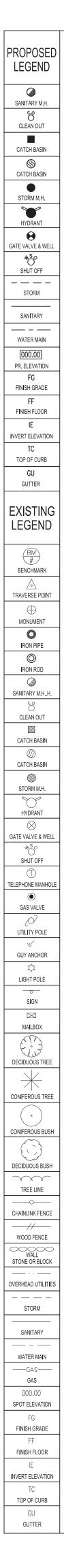
LOCATION MAP

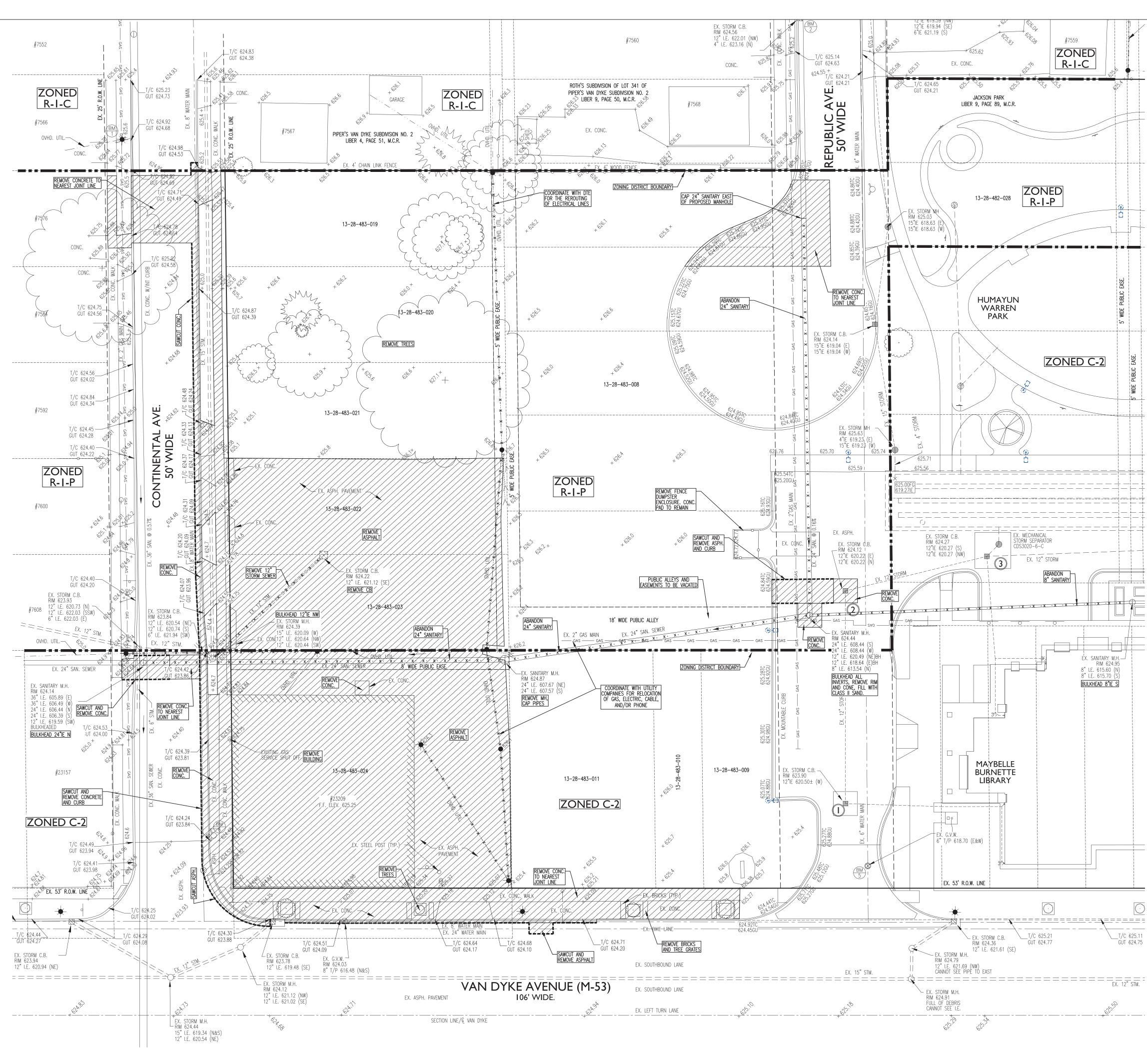
MECHANICAL M0-01 Mechanical Standards and Drawing Index M1-01 Ground Floor Fire Protection Plan M1-02 Mezzanine Fire Protection Plan M2-00 Underground Plumbing Plan Ground Floor Plumbing Plan M2-01 M2-02 Mezzanine and Hose Tower Plumbing Plans M3-01 Ground Floor HVAC Piping Plan M3-02 Mezzanine HVAC Piping Plan M4-01 Ground Floor Sheet Metal Plan M4-02 Mezzanine and Hose Tower Sheet Metal Plans M5-31 Roof Mechanical Plan M6-01 Mechanical Details M6-02 Mechanical Details M6-03 Mechanical Details M6-04 Mechanical Details M6-05 Mechanical Details M6-06 Mechanical Details M7-01 Mechanical Schedules M7-02 Mechanical Schedules M7-03 Mechanical Schedules M7-04 Mechanical Schedules M7-05 Mechanical Schedules M7-06 Mechanical Schedules M7-07 Snowmelt Details and Schedules M8-01 Temperature Control Standards and General Notes M8-02 Temperature Controls M8-03 **Temperature Controls** M8-04 **Temperature Controls** M8-05 **Temperature Controls** M8-06 **Temperature Controls** M8-07 **Temperature Controls** M8-08 Temperature Controls M8-09 Temperature Controls M8-10 Temperature Controls ELECTRICAL E0-01 Electrical Standards and Drawing Index E0-02 Electrical Standard Schedules E0-03 Electrical Standard Schedules E0-04 Electrical New Work Site Plan E2-01 Ground Floor Lighting Plan E2-02 Mezzanine and Hose Tower Lighting Plans E3-01 Ground Floor Power and Auxiliary Systems Plan E3-02 Mezzanine and Hose Tower Power and Auxiliary Systems Plans E5-01 One Line Diagram E5-02 Panel Schedules E5-03 Panel Schedules E7-01 Electrical Details and Diagrams E7-02 Electrical Details and Diagrams E7-03 Electrical Details and Diagrams

Sheet List

Sheet Name

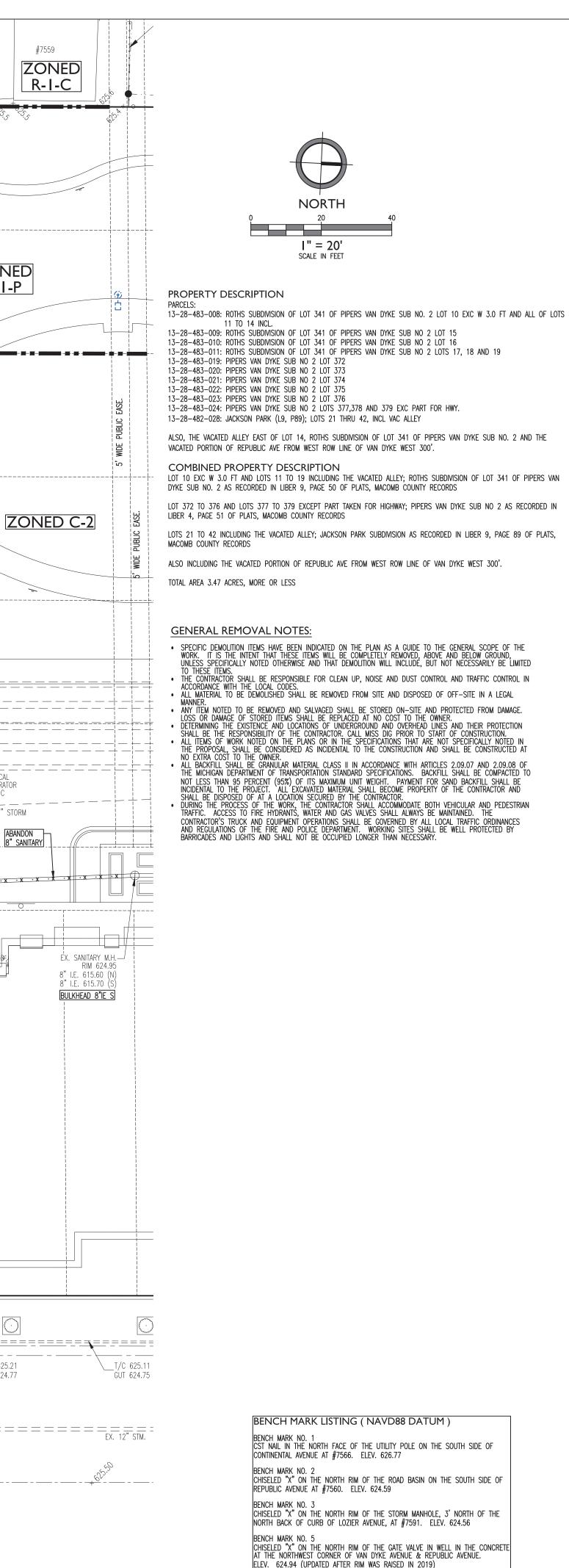
Sheet No





below Call before you dig.

Know what's



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City of Warren

OWNER

PROFESSIONAL SEAL

One City Square Warren, MI 48093 (586) 574-4520 PROJECT NAME

Warren Civic Center South Fire Station #1

23211 Van Dyke Ave. Warren, MI 48089

PROJECT NO.

# 21-146A

ISSUES / REVISIONS SITE PLAN APPROVAL 3RD PARTY REVIEW BIDDING / CONSTRUCTION 06/13/23

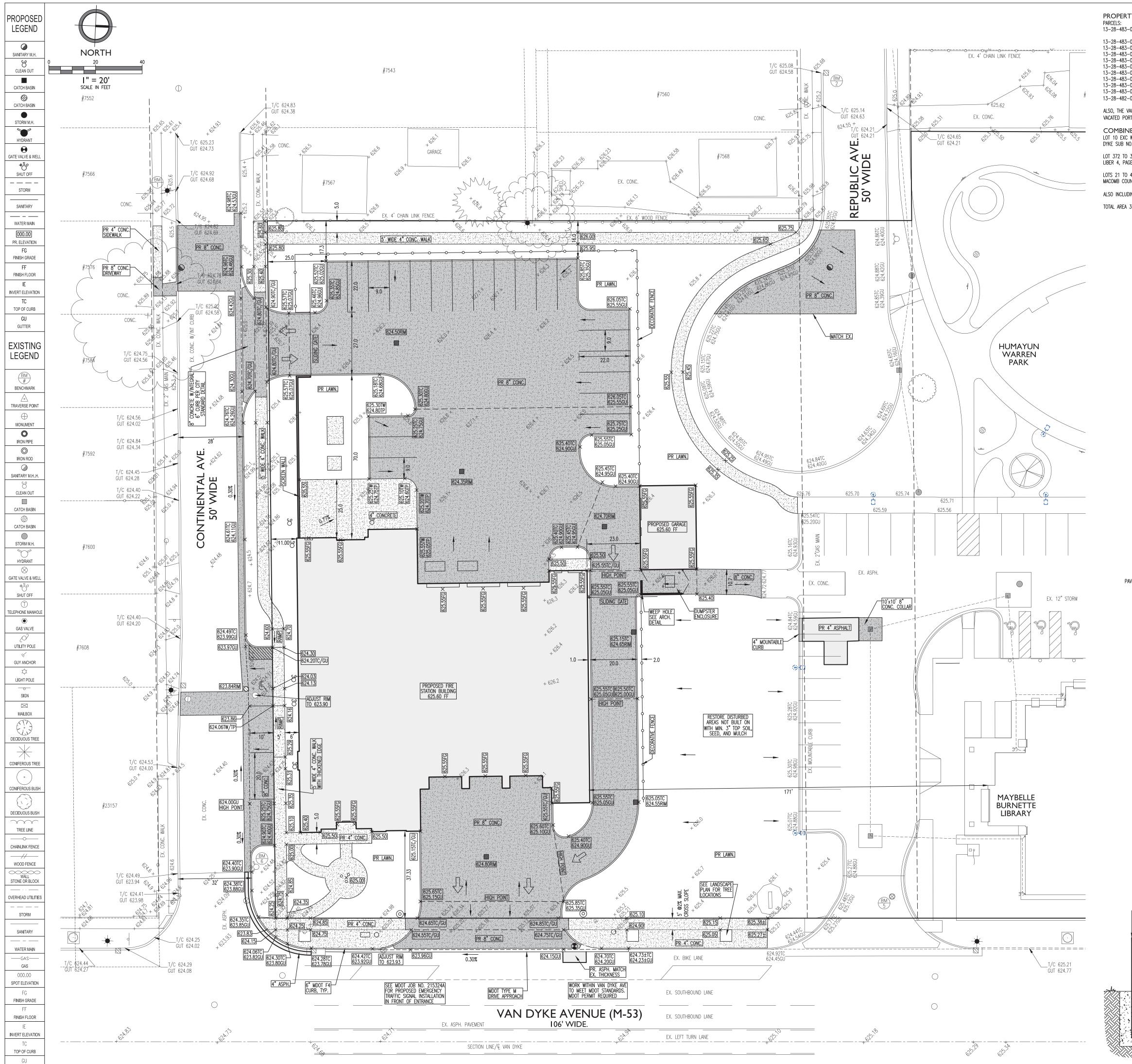
10/19/22 05/26/23

DRAWN BY EHJ CHECKED BY JTM APPROVED BY MAM

SHEET NAME

EX CONDITIONS AND DEMOLITION PLAN

C1-01



GUTTER

13-28-483-0 13-28-483-0 13-28-483-0 13-28-483-0 13-28-483-0

### PROPERTY DESCRIPTION

13-28-483-008: ROTHS SUBDIVISION OF LOT 341 OF PIPERS VAN DYKE SUB NO. 2 LOT 10 EXC W 3.0 FT AND ALL OF LOTS 11 TO 14 INCL

		14 INCL.														
13-28-483-009:	ROTHS	SUBDIVISION	I OF	LOT	341	0F	PIPERS	VAN	DYKE	SUB	NO	2 LC	)T 15			
13-28-483-010:	ROTHS	SUBDIVISION	I OF	LOT	341	0F	PIPERS	VAN	DYKE	SUB	NO	2 LC	)T 16			
13-28-483-011:	ROTHS	SUBDIVISION	I OF	LOT	341	0F	PIPERS	VAN	DYKE	SUB	NO	2 LC	TS 17,	18	AND	19
13-28-483-019:	PIPERS	VAN DYKE	SUB	NO	2 L01	3	72									
13-28-483-020:	PIPERS	VAN DYKE	SUB	NO	2 L01	3	73									
13-28-483-021:	PIPERS	VAN DYKE	SUB	NO	2 L01	3	74									
13-28-483-022:	PIPERS	VAN DYKE	SUB	NO	2 L01	3	75									
13-28-483-023:	PIPERS	VAN DYKE	SUB	NO	2 L01	3	76									
13-28-483-024:	PIPERS	VAN DYKE	SUB	NO	2 L01	IS (	377,378	AND	379	EXC I	PART	FOF	HWY.			
13-28-482-028:	JACKSO	N PARK (LS	), P8	9); I	OTS	21	THRU 4	2, IN	CL VA	C ALL	ΕY					
		``														

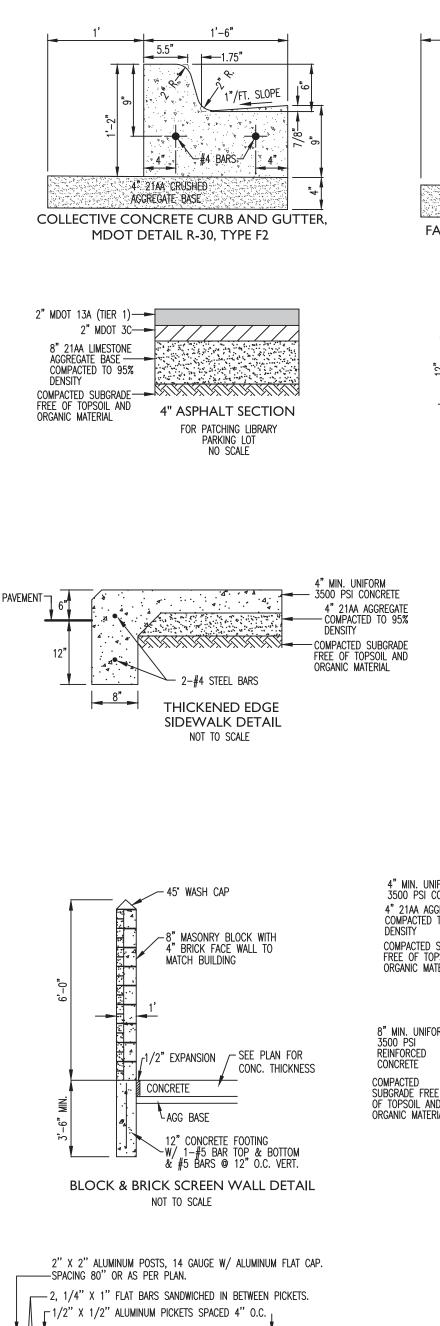
ALSO, THE VACATED ALLEY EAST OF LOT 14, ROTHS SUBDIVISION OF LOT 341 OF PIPERS VAN DYKE SUB NO. 2 AND THE VACATED PORTION OF REPUBLIC AVE FROM WEST ROW LINE OF VAN DYKE WEST 300'.

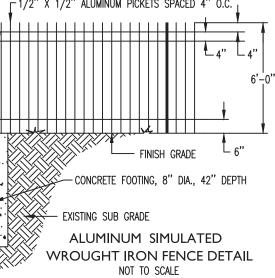
COMBINED PROPERTY DESCRIPTION LOT 10 EXC W 3.0 FT AND LOTS 11 TO 19 INCLUDING THE VACATED ALLEY; ROTHS SUBDIVISION OF LOT 341 OF PIPERS VAN DYKE SUB NO. 2 AS RECORDED IN LIBER 9, PAGE 50 OF PLATS, MACOMB COUNTY RECORDS

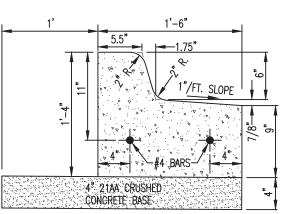
LOT 372 TO 376 AND LOTS 377 TO 379 EXCEPT PART TAKEN FOR HIGHWAY; PIPERS VAN DYKE SUB NO 2 AS RECORDED IN LIBER 4, PAGE 51 OF PLATS, MACOMB COUNTY RECORDS

LOTS 21 TO 42 INCLUDING THE VACATED ALLEY; JACKSON PARK SUBDIVISION AS RECORDED IN LIBER 9, PAGE 89 OF PLATS, MACOMB COUNTY RECORDS

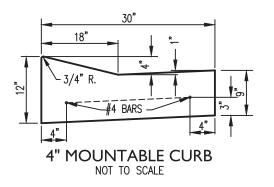
ALSO INCLUDING THE VACATED PORTION OF REPUBLIC AVE FROM WEST ROW LINE OF VAN DYKE WEST 300'. TOTAL AREA 3.47 ACRES, MORE OR LESS







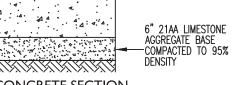
FALLOUT CONCRETE CURB AND GUTTER MODIFIED MDOT DETAIL R-30, TYPE F2



4" MIN. UNIFORM 3500 PSI CONCRETE — 4" 21AA AGGREGATE COMPACTED TO 95% — DENSITY COMPACTED SUBGRADE – FREE OF TOPSOIL AND ORGANIC MATERIAL	4" CONCRETE SIDEWALK NO SCALE

NO SCALE

8" MIN. UNIFORM — 3500 PSI REINFORCED CONCRETE COMPACTED SUBGRADE FREE OF TOPSOIL AND ORGANIC MATERIAL **8**" CONCRETE SECTION



ISSUES / REVISIONS SITE PLAN APPROVAL 3RD PARTY REVIEW

10/19/22 05/26/23 BIDDING / CONSTRUCTION 06/13/23

DRAWN BY	
EHJ	
CHECKED BY	
APPROVED BY	
MAM	
SHEET NAME	

## GRADING PLAN

C2-01

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City of Warren

OWNER

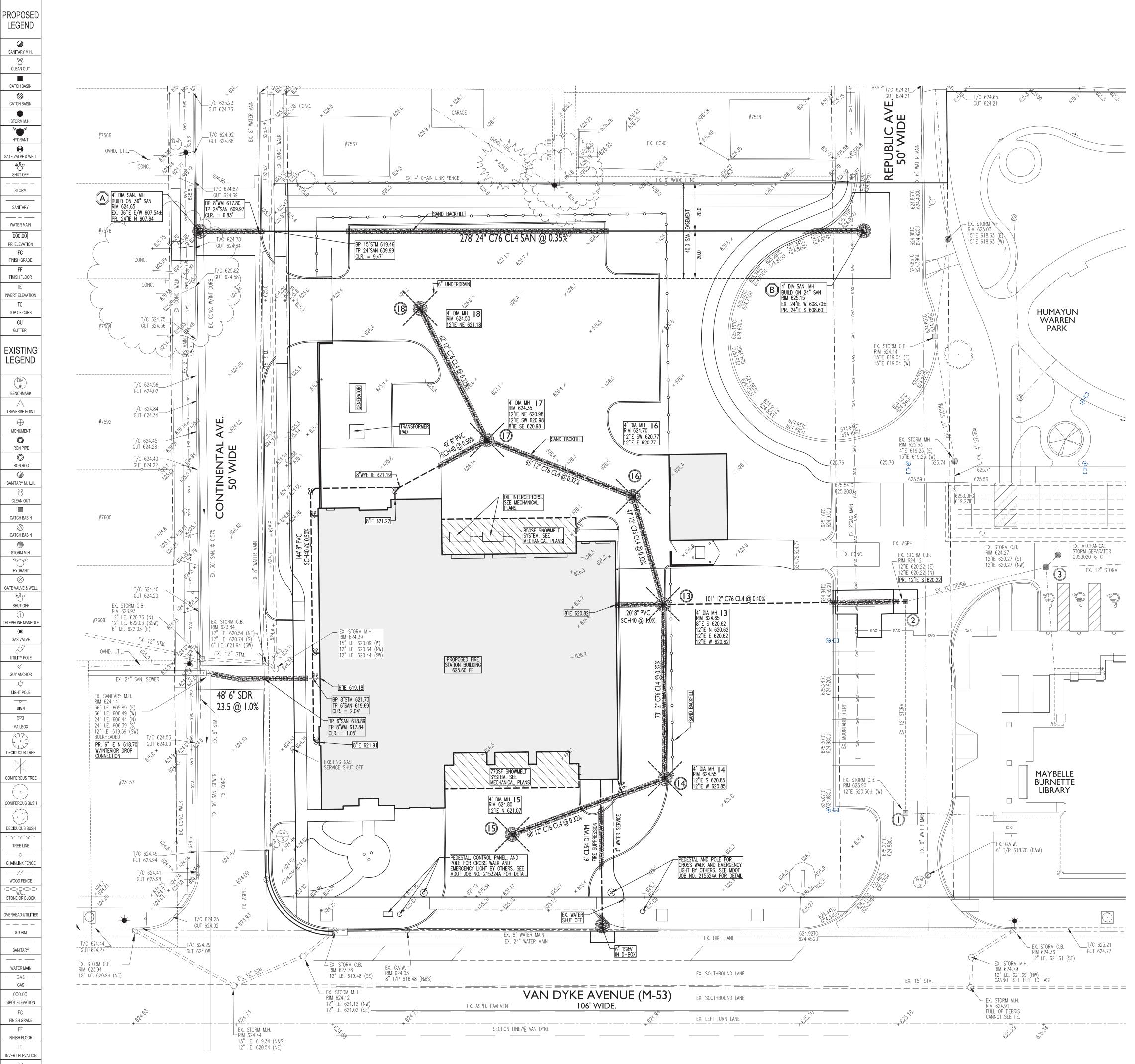
One City Square Warren, MI 48093 (586) 574-4520 PROJECT NAME

Warren Civic Center South Fire Station #1

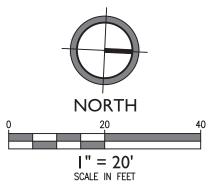
23211 Van Dyke Ave. Warren, MI 48089

### PROJECT NO.

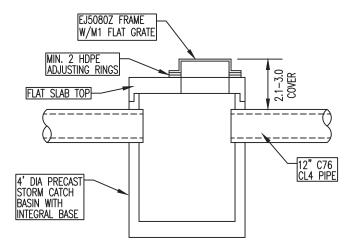
# 21-146A



TC TOP OF CURB GU GUTTER

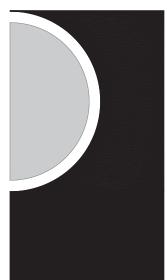


APPROX. SANITARY QUANTITIES 2 EA 4' DIA SANITARY MANHOLES 278 LF 24" C76 CL4 SANITARY SEWER



CATCH BASIN DETAIL

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PROFESSIONAL SEAL

### OWNFR

City of Warren

One City Square Warren, MI 48093 (586) 574-4520

PROJECT NAME

Warren Civic Center South Fire Station #1

23211 Van Dyke Ave. Warren, MI 48089

PROJECT NO.

# 21-146A

ISSUES / REVISIONS SITE PLAN APPROVAL 3RD PARTY REVIEW

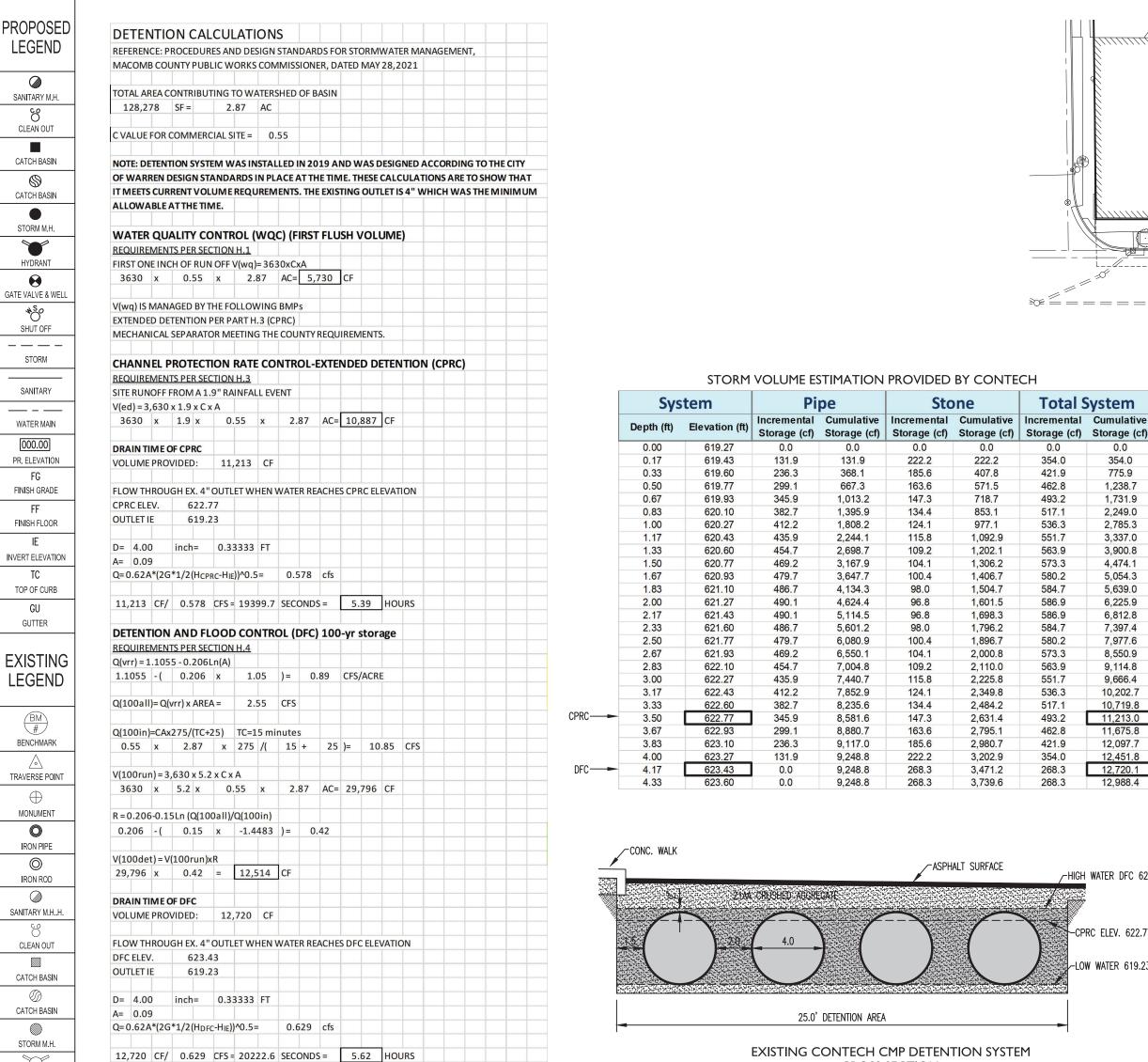
10/19/22 05/26/23 BIDDING / CONSTRUCTION 06/13/23

DRAWN BY EHJ CHECKED BY JTM APPROVED BY MAM

SHEET NAME

UTILITY PLAN

C3-01



V

 $\otimes$ 

GATE VALVE & WEL

TELEPHONE MANHOLI

 $\odot$ 

GAS VALVE

UTILITY POLE \t

GUY ANCHOR ά

LIGHT POLE

\_\_\_\_

SIGN

 $\bowtie$ 

MAILBOX

E.J

DECIDUOUS TREE

 $\times$ 

CONIFEROUS TREE ×

CONIFEROUS BUSH

DECIDUOUS BUSH

 $\sim$ TREE LINE ------

CHAINLINK FENCE \_\_\_\_\_

WOOD FENCE 

STONE OR BLOCK

\_ \_\_ \_\_

STORM

SANITARY

\_\_\_\_ WATER MAIN —GAS—

GAS 000.00 SPOT ELEVATION

FG FINISH GRADE

FF

FINISH FLOOR IE

INVERT ELEVATION TC

TOP OF CURB

GU

GUTTER

HYDRANT

EXISTING CONTECH CMP DETENTION SYSTEM **CROSS SECTION** SCALE:1"=5'

Stone

0.0

0.0

222.2

185.6

163.6

147.3

134.4

124.1

115.8

109.2

104.1

100.4

98.0

96.8

96.8

98.0

100.4

104.1

109.2

115.8

124.1

134.4

147.3

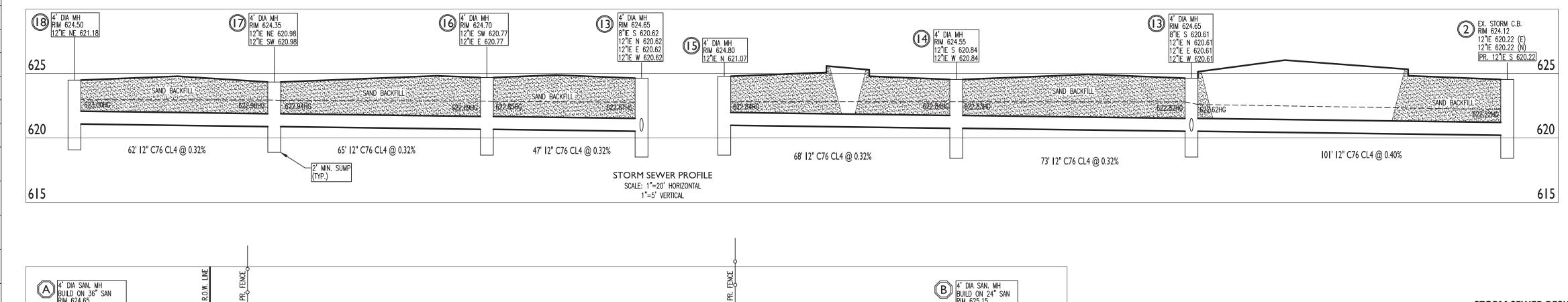
163.6

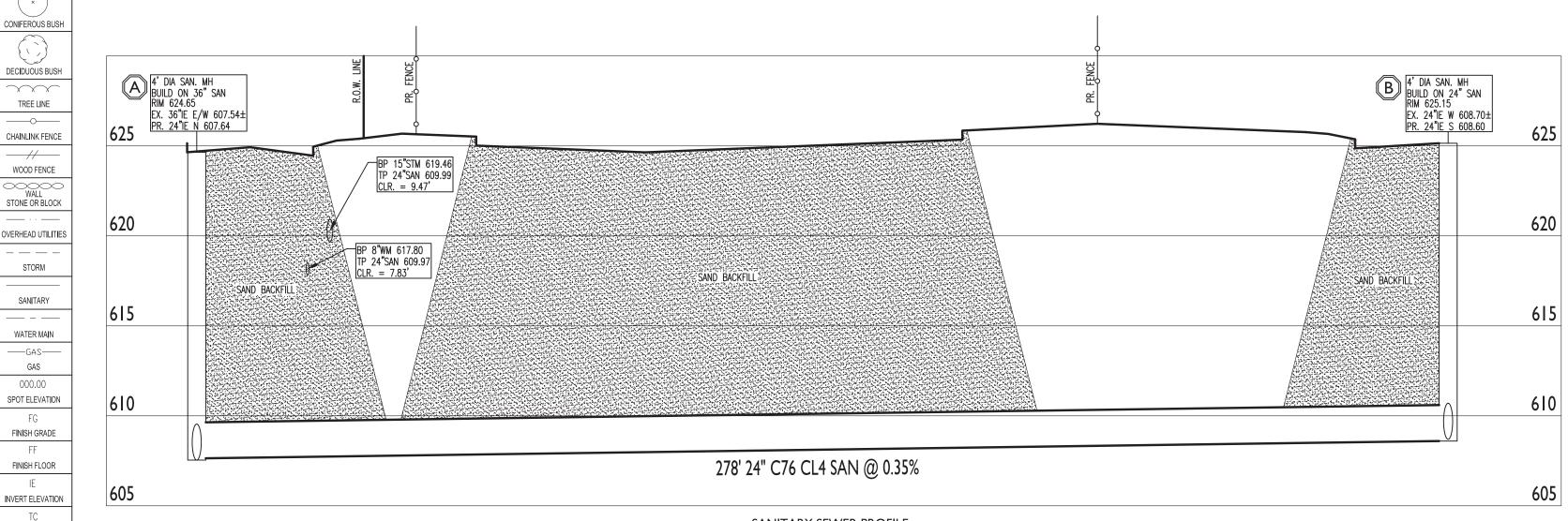
185.6

222.2

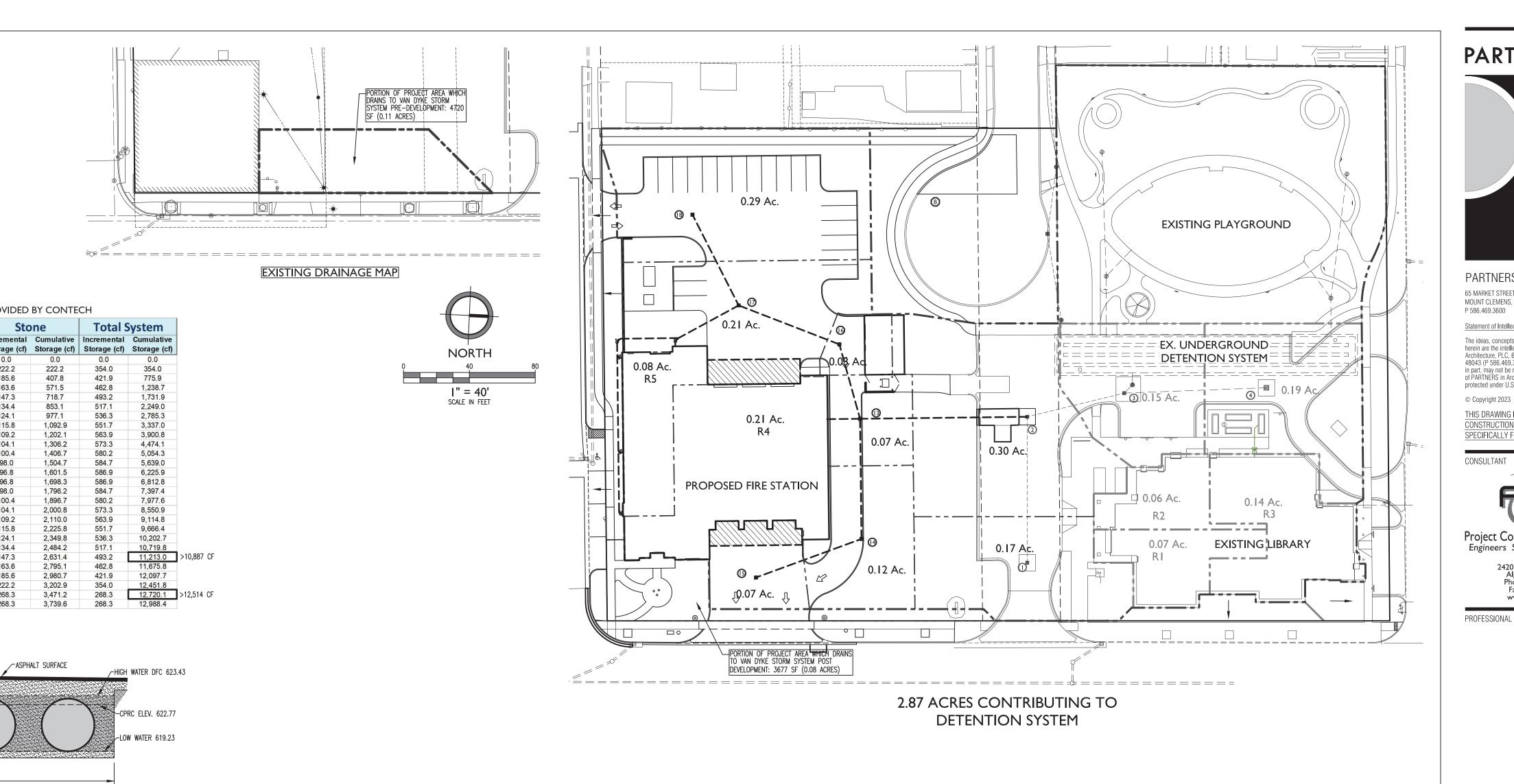
268.3

268.3





SANITARY SEWER PROFILE SCALE: 1"=20' HORIZONTAL 1"=5' VERTICAL



							S	TORM S	EWER	DESIG	N CALCU	JLATION	IS						
	Line Upstream Node to Downstream	Inlet Area	Inlet C	Inlet CA	Total CA	System Flow Time	System Intensity (in/hr)	Discharge	Length	Section	Pine Slone	Pipe	Velocity Flowing Full	-HGL-	-HGL- Downstream	Upstream Rim Elevation	Downstream Rim Elevation	Upstream Invert Elevation	Downstream Invert
	Node		Coefficient	(acres)	(acres)		I=175/(T+25)	5	(ft)	Size (in)	(ft/ft)	(cfs)	(ft/s)	(ft)	(ft)	(ft)	(ft)	(ft)	Elevation (ft)
Г	R5 to 17	0.08	0.55	0.04	0.04	20	3.89	0.17	42	8	0.005	1.23	3.53	623.04	623.04	625.50	624.45	621.19	620.98
	R4 to 13	0.21	0.55	0.12	0.12	20	3.89	0.45	20	8	0.01	1.74	4.99	622.83	622.81	625.60	624.65	620.82	620.62
	18 to 17	0.29	0.55	0.16	0.16	20	3.89	0.62	62	12	0.0032	2.02	2.57	623.05	623.04	624.50	624.45	621.18	620.98
PROPOSED	17 to 16	0.21	0.55	0.12	0.32	20.5	3.85	1.23	65	12	0.0032	2.02	2.57	622.99	622.91	624.45	624.70	620.98	620.77
STORM SEWER -	16 to 13	0.03	0.55	0.02	0.34	20.9	3.82	1.28	47	12	0.0032	2.01	2.56	622.87	622.81	624.70	624.65	620.77	620.62
	15 to 14	0.07	0.55	0.04	0.04	20	3.89	0.15	68	12	0.0032	2.01	2.56	622.84	622.84	624.80	624.55	621.07	620.85
	14 to 13	0.12	0.55	0.07	0.1	20.8	3.82	0.4	73	12	0.0032	2.01	2.56	622.84	622.83	624.55	624.65	620.85	620.62
L	13 to 2	0.07	0.55	0.04	0.59	21.4	3.77	2.24	101	12	0.004	2.25	2.87	622.62	622.22	624.65	624.20	620.62	620.22
	R2 TO 3	0.06	0.55	0.03	0.03	20	3.89	0.13	69	6	0.01	0.56	2.85	621.20	621.13	625.00	624.20	620.96	620.27
	R1 TO 1	0.07	0.55	0.04	0.04	20	3.89	0.15	66	6	0.01	0.56	2.85	622.36	622.32	625.00	624.30	621.26	620.60
EXISTING	1 TO 2	0.17	0.55	0.09	0.13	20.5	3.85	0.51	88	12	0.0032	2.01	2.01	622.31	622.29	624.30	624.20	620.50	620.22
STORM SEWER -	2 TO 3	0.3	0.55	0.17	0.89	21.9	3.73	3.33	68	12	-0.0007	n/a	n/a	621.86	621.27	624.20	624.20	620.22	620.27
	R3 TO 4	0.14	0.55	0.08	0.08	20	3.89	0.3	46	6	0.01	0.56	2.85	621.32	621.18	625.00	624.20	620.99	620.53
	4 TO 3	0.19	0.55	0.1	0.18	20.3	3.87	0.7	81	12	0.0032	2.02	2.57	621.15	621.12	624.20	624.20	620.53	620.27
L	3 TO OUTFALL	0.15	0.55	0.08	1.19	22.1	3.71	4.41	11	12	0.0045	2.4	3.06	620.52	620.35	624.20	625.00	619.40	619.35
	STARTING HG = CROWN OF OUTLET PIPE																		

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PROFESSIONAL SEAL

# OWNER

City of Warren

One City Square Warren, MI 48093 (586) 574-4520 PROJECT NAME

Warren Civic Center South Fire Station #1

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# 21-146A

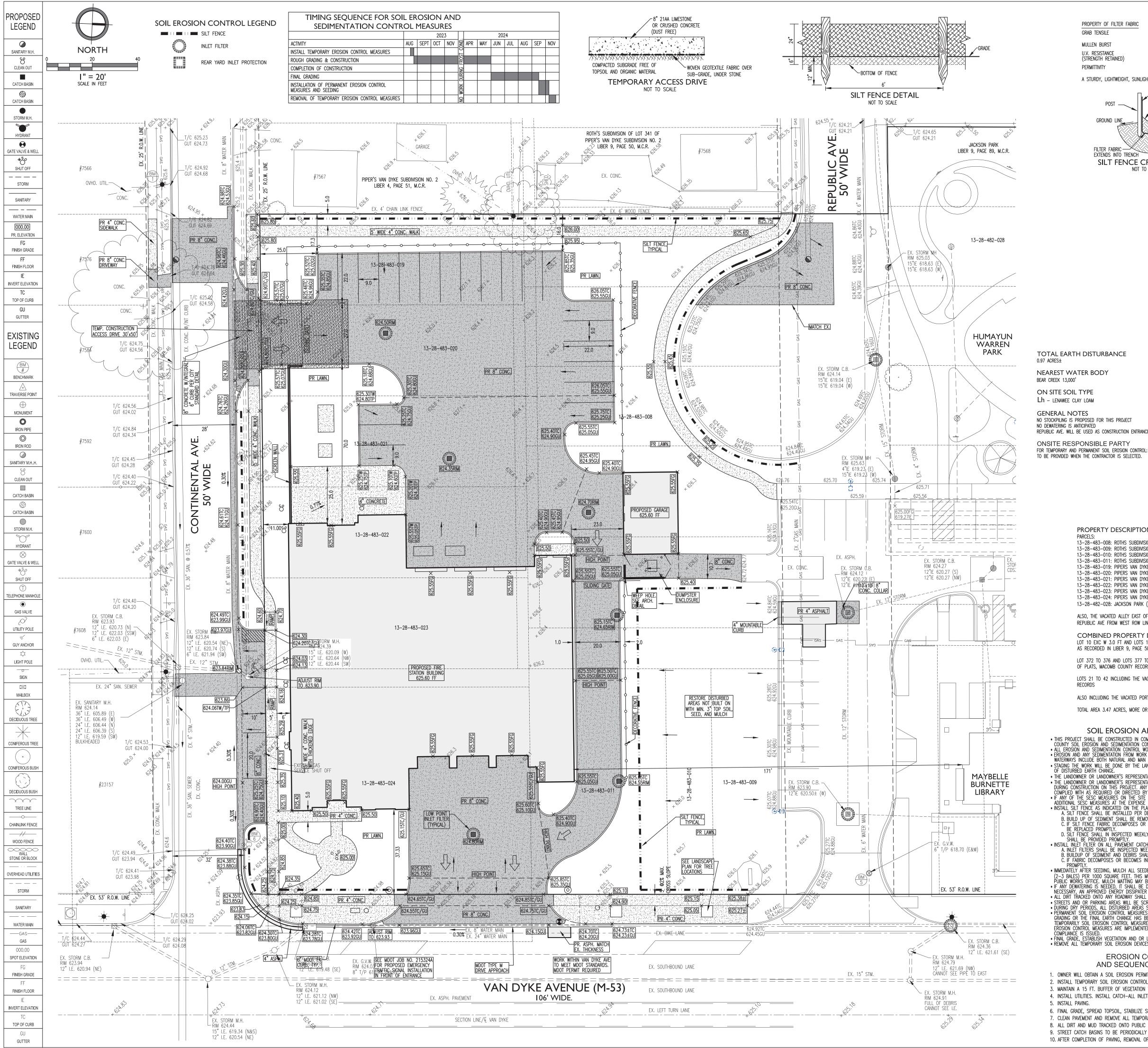
ISSUES / REVISIONS SITE PLAN APPROVAL 3RD PARTY REVIEW BIDDING / CONSTRUCTION 06/13/23

10/19/22 05/26/23

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EHJ
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JTM
APPROVED BY
MAM
SHEET NAME

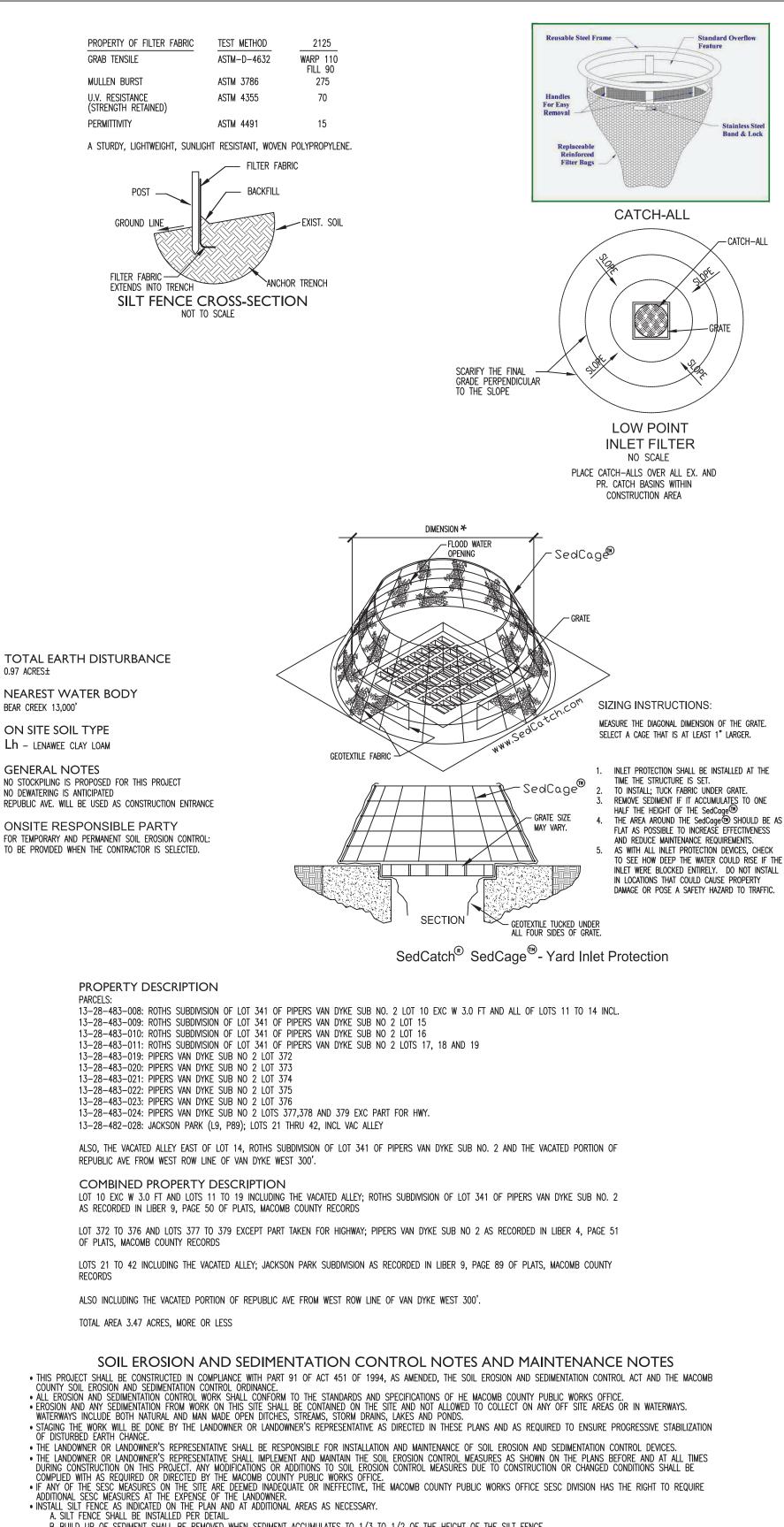
## STORM WATER DETENTION PLAN

C4-01



6. FINAL GRADE, SPREAD TOPSOIL, STABILIZE SIDE SLOPES OF DRAIN, ESTABLISH VEGETATION AND/OR LANDSCAPE ALL DISTURBED AREAS NOT BUILT OR PAVED UPON. 7. CLEAN PAVEMENT AND REMOVE ALL TEMPORARY EROSION CONTROL MEASURES. REESTABLISH VEGETATION AS NECESSARY. 8. ALL DIRT AND MUD TRACKED ONTO PUBLIC ROADS SHALL BE REMOVED IMMEDIATELY. 9. STREET CATCH BASINS TO BE PERIODICALLY CLEANED AND FILTER CLOTH CHANGED AND MAINTAINED.

GRAB TENSILE MULLEN BURST U.V. RESISTANCE PERMITTIVITY



B. BUILD UP OF SEDIMENT SHALL BE REMOVED WHEN SEDIMENT ACCUMULATES TO 1/3 TO 1/2 OF THE HEIGHT OF THE SILT FENCE. C. IF SILT FENCE FABRIC DECOMPOSES OR BECOMES INEFFECTIVE PRIOR TO THE END OF EXPECTED USABLE LIFE AND THE BARRIER IS STILL REQUIRED, THE SILT FENCE SHALL BE REPLACED PROMPILY. D. SILT FENCE SHALL IN INSPECTED WEEKLY UNDER NORMAL CONDITIONS, WITHIN 24 HOURS OF RAINFALL AND DAILY DURING A PROLONGED RAIN EVENT. REQUIRED MAINTENANCE SHALL BE PROVIDED PROMPTLY. • INSTALL INLET FILTER ON ALL PAVEMENT CATCH BASINS PER DETAIL. A. INLET FILTERS SHALL BE INSPECTED WEEKLY UNDER NORMAL CONDITIONS, WITHIN 24 HOURS OF A RAINFALL AND DAILY DURING A PROLONGED RAIN EVENT. B. BUILDUP OF SEDIMENT AND DEBRIS SHALL BE REMOVED PROMPTLY. C. IF FABRIC DECOMPOSES OR BECOMES INEFFECTIVE PRIOR TO THE END OF EXPECTED USABLE LIFE AND THE BARRIER IS STILL REQUIRED, THE FABRIC SHALL BE REPLACED

• IMMEDIATELY AFTER SEEDING, MULCH ALL SEEDED AREAS WITH UNWEATHERED SMALL GRAIN STRAW, SPREAD UNIFORMLY AT THE RATE OF 1 TO 2 TONS PER ACRE OR 100 POUNDS (2-3 BALES) PER 1000 SQUARE FEET. THIS MULCH SHOULD BE ANCHORED WITH DISC TYPE MULCH ANCHORING TOOL OR OTHER MEANS AS APPROVED BY THE MACOMB COUNTY PUBLIC WORKS OFFICE. MULCH MATTING MAY BE USED IN LIEU OF LOOSE MULCH.
 IF ANY DEWATERING IS NEEDED, IT SHALL BE DISCHARGED THROUGH A FILTER BAG OVER A WELL-VEGETATED AREA. THE PUMP MUST DISCHARGE AT A NON-EROSIVE VELOCITY. IF NECESSARY, AN APPROVED ENERGY DISSIPATER MAY BE USED. ALL DIRT TRACKED ONTO ANY ROADWAY SHALL BE REMOVED IMMEDIATELY.

STREETS AND OR PARKING AREAS WILL BE SCRAPED ON A DAILY BASIS AND SWEPT AT A MINIMUM OF ONCE PER WEEK BY THE LANDOWNER OR LANDOWNER'S REPRESENTATIVE.
 DURING DRY PERIODS, ALL DISTURBED AREAS SHALL BE WATERED FOR DUST CONTROL.
 PERMANENT SOIL EROSION CONTROL MEASURES FOR ALL SLOPES, CHANNELS, DITCHES, OR ANY DISTURBED LAND AREA SHALL BE COMPETED WITHIN 5 CALENDAR DAYS AFTER FINAL GRADING OR THE FINAL EARTH CHANGE HAS BEEN COMPLETED. WHEN IT IS NOT POSSIBLE TO PERMANENTLY STABILIZE A DISTURBED AREA AFTER EARTH CHANGE ACTIVITY CEASES, TEMPORARILY SOIL EROSION CONTROL MEASURES SHALL BE IMPLEMENTED IMMEDIATELY. ALL TEMPORARY SOIL EROSION CONTROL SHALL BE MAINTAINED UNTIL PERMANENT SOIL EROSION CONTROL MEASURES ARE IMPLEMENTED. ALL PERMANENT SOIL EROSION CONTROL MEASURES ARE IMPLEMENTED. ALL PERMANENT SOIL EROSION CONTROL MEASURES ARE IMPLEMENTED. ALL PERMANENT SOIL EROSION CONTROL SHALL BE MAINTAINED UNTIL PERMANENT SOIL EROSION CONTROL MEASURES ARE IMPLEMENTED. ALL PERMANENT SOIL EROSION CONTROL MEASURES ARE IMPLEMENTED. ALL PERMANENT SOIL EROSION CONTROL SHALL BE MAINTAINED UNTIL PERMANENT SOIL EROSION CONTROL MEASURES ARE IMPLEMENTED. ALL PERMANENT SOIL EROSION CONTROL MEASURES WILL BE IMPLEMENTED AND ESTABLISHED BEFORE A CERTIFICATE OF CONTROL MEASURES ARE IMPLEMENTED. ALL PERMANENT SOIL EROSION CONTROL MEASURES ARE IMPLEMENTED. ALL PERMANENT SOIL EROSION CONTROL MEASURES WILL BE IMPLEMENTED AND ESTABLISHED BEFORE A CERTIFICATE OF CONTROL MEASURES ARE IMPLEMENTED. ALL PERMANENT SOIL EROSION CONTROL MEASURES WILL BE IMPLEMENTED AND ESTABLISHED BEFORE A CERTIFICATE OF CONTROL MEASURES WILL BE IMPLEMENTED AND ESTABLISHED BEFORE A CERTIFICATE OF CONTROL MEASURES ARE IMPLEMENTED.

FINAL GRADE, ESTABLISH VEGETATION AND OR LANDSCAPE ALL DISTURBED AREAS NOT BUILT OR PAVED UPON.
 REMOVE ALL TEMPORARY SOIL EROSION DEVICES AFTER PERMANENT STABILIZATION IS ESTABLISHED.

**EROSION CONTROL MEASURES** AND SEQUENCE OF CONSTRUCTION

1. OWNER WILL OBTAIN A SOIL EROSION PERMIT PRIOR TO START OF CONSTRUCTION. 2. INSTALL TEMPORARY SOIL EROSION CONTROL MEASURES AS INDICATED ON PLAN AND AT ADDITIONAL AREAS AS NECESSARY

3. MAINTAIN A 15 FT. BUFFER OF VEGETATION WHERE POSSIBLE AROUND PERIMETER OF SITE. 4. INSTALL UTILITIES. INSTALL CATCH-ALL INLET BAGS ON ALL CATCH BASINS AND INLET STRUCTURES.

10. AFTER COMPLETION OF PAVING, REMOVAL OF FORMS, AND GRADING OF R.O.W., TEMPORARY SEED AND MULCH OF R.O.W. MUST BE COMPLETED.

# PARTNERS



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THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION UNLESS ISSUED BELOW SPECIFICALLY FOR "BIDDING / CONSTRUCTION



PROFESSIONAL SEAL

City of Warren

OWNER

One City Square Warren, MI 48093 (586) 574-4520 PROJECT NAME

Warren Civic Center South Fire Station #1

23211 Van Dyke Ave. Warren, MI 48089

PROJECT NO.

# 21-146A

ISSUES / REVISIONS SITE PLAN APPROVAL 3RD PARTY REVIEW BIDDING / CONSTRUCTION 06/13/23

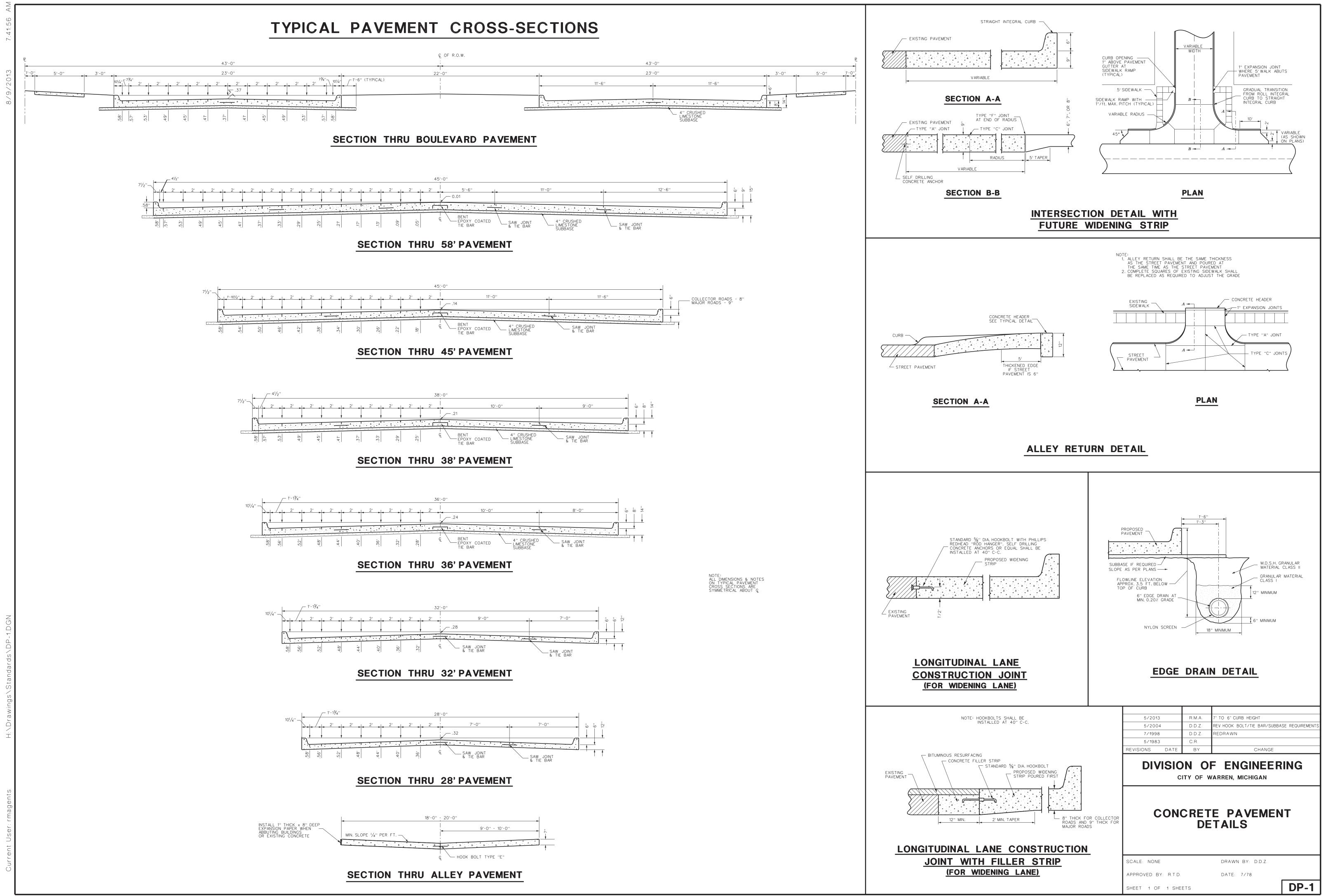
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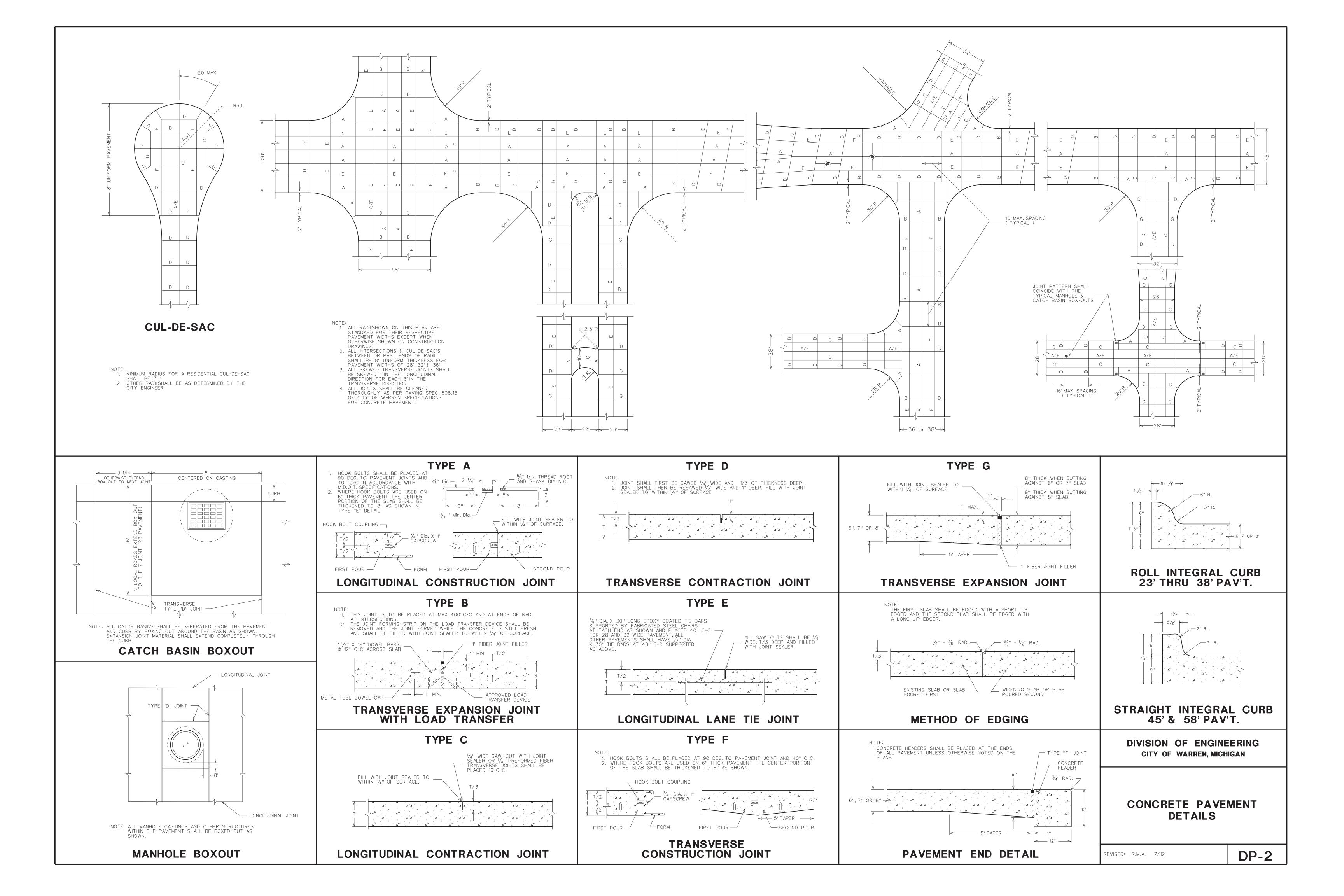
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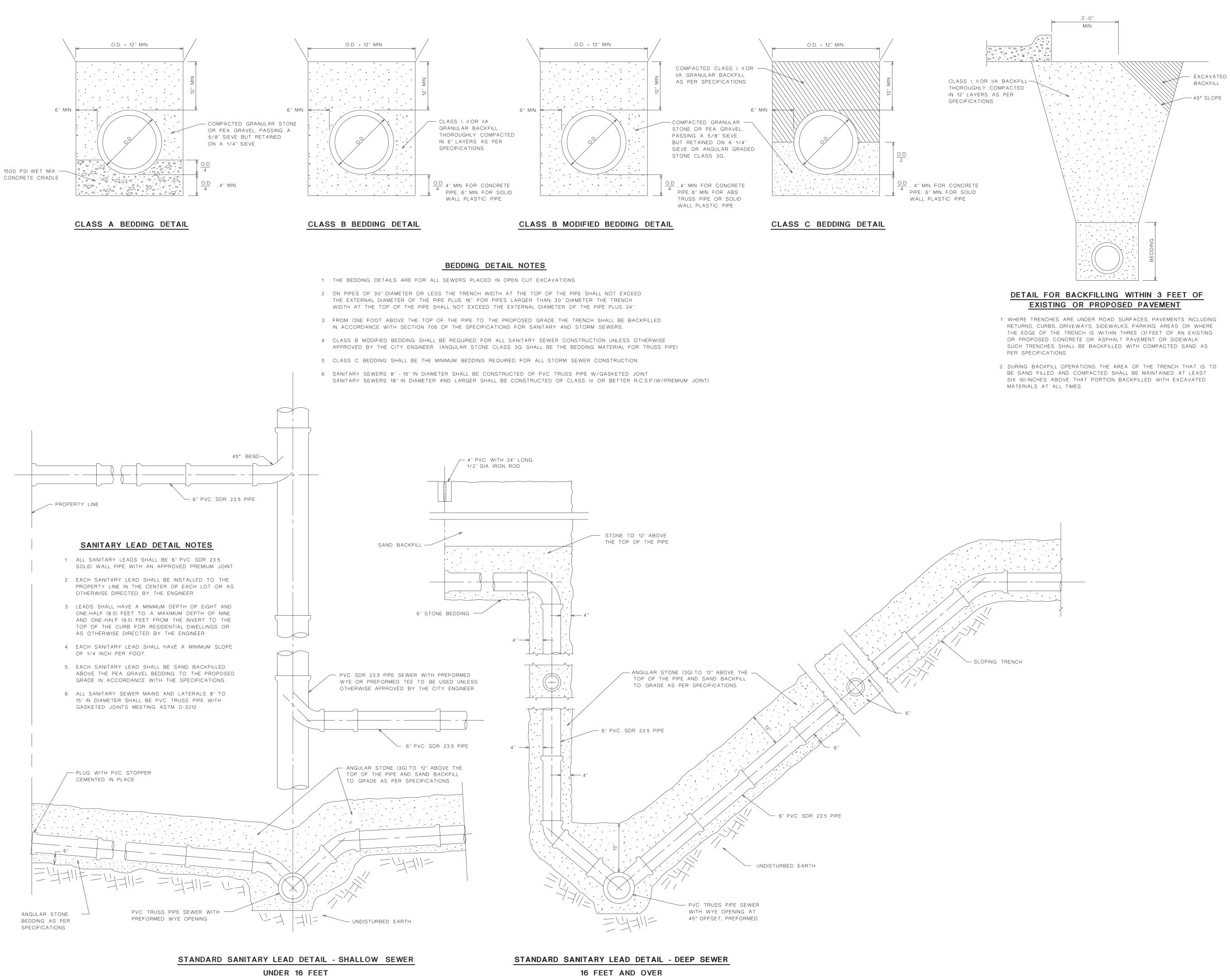
SHEET NAME

SOIL EROSION AND SEDIMENT CONTROL PLAN

C5-01





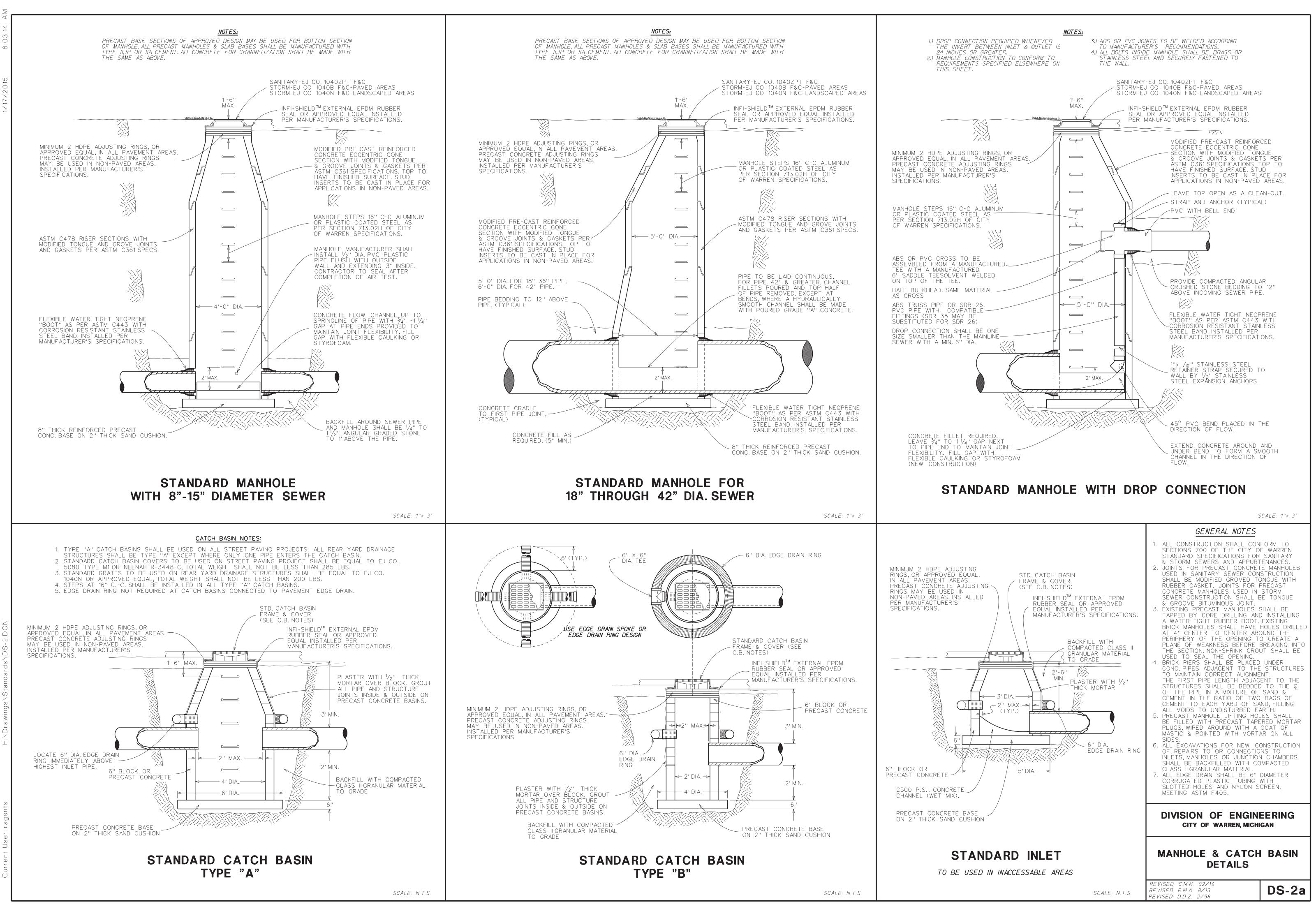


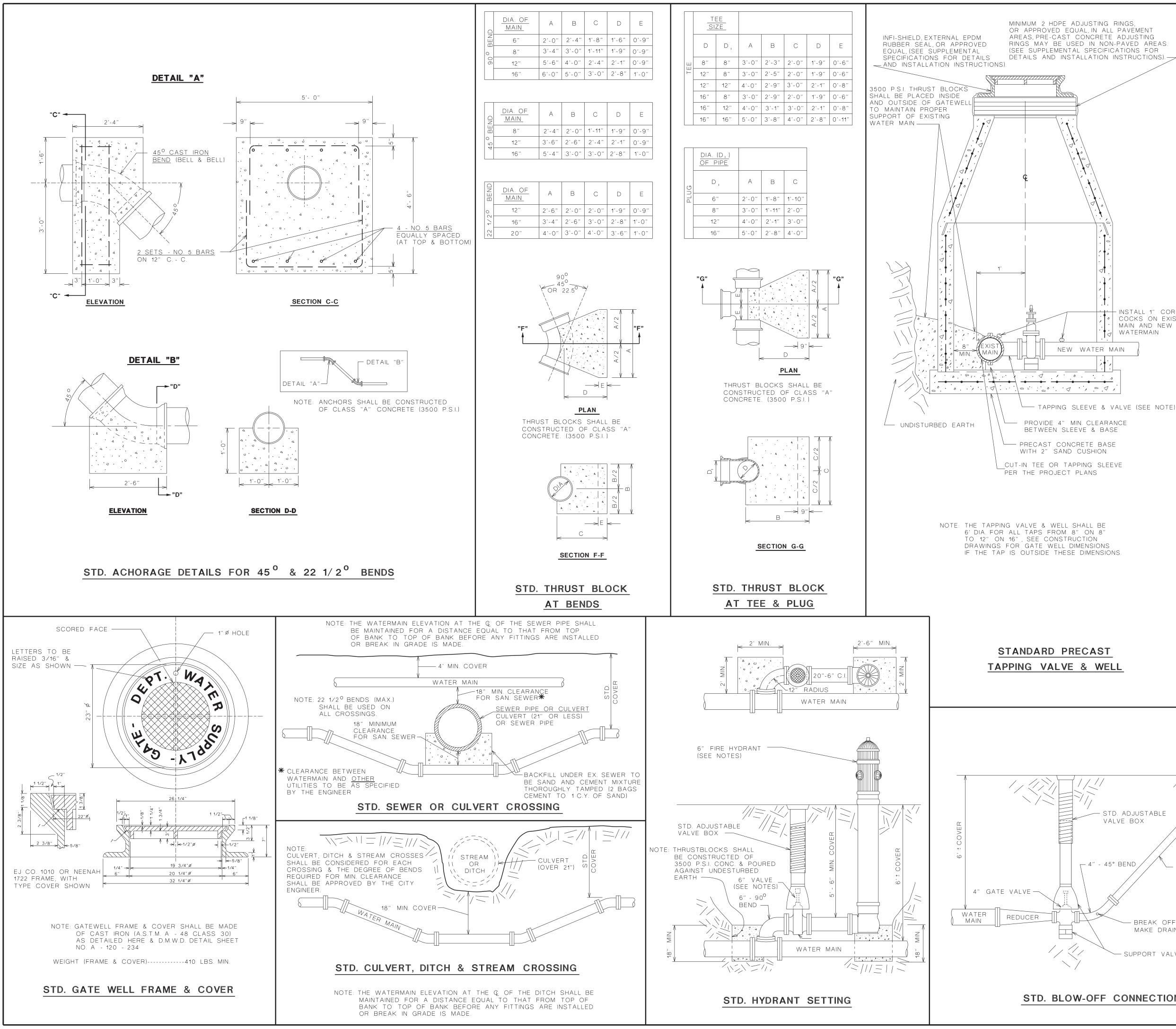
LEGEND PLAN VIEW CENTER LINE \_\_\_\_\_ EXIST. SEWER \_\_\_\_\_ EXIST. GAS MAIN — - G - — — - G - — — – E – — — – E – — EXIST. UNDERGROUND ELECTRIC EXIST. WATER MAIN \_\_\_\_\_ PROPOSED INSTALLATION EXIST. MANHOLE PROPOSED MANHOLE **— — —** UTILITY POLES ø ø ø FIRE HYDRANT GATE VALVE IN WELL  $- \rightarrow \chi - - \chi - -$ EXIST. CATCH BASIN PROP. CATCH BASIN EXIST. INLET PROP. INLET EXIST. FENCE \_\_\_\_X\_\_\_\_X\_\_\_\_X\_\_\_\_ EXIST. SWALE OR DITCH  $\rightarrow$   $\longrightarrow$   $\rightarrow$ EXIST. CULVERT EXIST. CULVERT (WITH HDDRS.) R R TREES (DECIDUOUS) TREES (EVERGREEN) ى \* PROP. PAVM'T. (PAVING PLAN) EXIST. PAVM'T. (SEWER & WATERMAIN PLANS) EXIST. GRAVEL ROAD EXIST. SIDEWALK & PROP. LINE 87777 EXIST. HOUSE OR BLDG. 1234 & lead walk  $\langle / / / /$ PAVEMENT REMOVAL ONLY PAVEMENT REMOVAL & REPLACE TUNNEL, JACK OR BORE SEWER OR WATER MAINS PROFILE CENTER LINE NORTH OR WEST & OR SIDEWALK \_ - -\_\_\_\_ SOUTH OR EAST P OR SIDEWALK \_---NORTH OR WEST HOUSE GRADE N(W) SOUTH OR EAST HOUSE GRADE S(E) PROPOSED GRADE PROPOSED SEWER · -----EXISTING SEWER 1/08/08 UPDATED PIPE TYPES C.M.K. 8/24/0 R.M.A. UPDATED BEDDING MATERIAL NOTES 2/24/9 UPDATED & REDRAWN W.L.K. REVISIONS DATE ΒY CHANGE **DIVISION OF ENGINEERING** CITY OF WARREN, MICHIGAN PIPE BEDDING AND SEWER DETAILS SCALE: NONE DESIGNED BY: T.S.S. APPROVED BY: J.V.H. DRAWN BY: W.L.K.

DS-1

DATE: 2/24/93

SHEET 1 OF 1 SHEETS



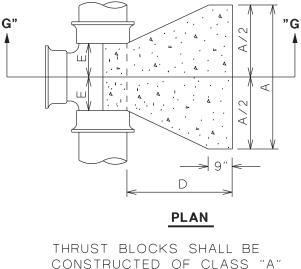


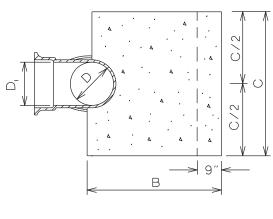
DIA. OF MAIN	A	В	С	D	E
8"	2'-4''	2'-0"	1'-11''	1'-9''	0'-9"
12"	3'-6"	2'-6''	2'-4''	2'-1"	0'-9"
16″	5'-4''	3'-0"	3'-0"	2'-8"	1'-0''

	-	-	-		
DIA. OF	A	В	С	D	E
12″	2'-6"	2'-0"	2'-0"	1'-9"	0'-9"
16″	3'-4''	2'-6"	3'-0"	2'-8''	1'-0''
20"	4'-0''	3'-0''	4'-0''	3'-6"	1'-0''

		EE ZE					
	D	D,	A	В	С	D	E
ш	8"	8"	3'-0"	2'-3"	2'-0''	1'-9''	0'-6"
Ш Ц Ц	12″	8"	3'-0"	2'-5"	2'-0''	1'-9''	0'-6''
	12″	12″	4'-0''	2'-9"	3'-0"	2'-1''	0'-8''
	16″	8"	3'-0''	2'-9"	2'-0"	1'-9"	0'-6"
	16"	12"	4 ' - 0 ''	3'-1"	3'-0"	2'-1"	0'-8"
	16″	<b>1</b> 6″	5'-0''	3'-8''	4 ' - 0 ''	2'-8''	0'-11''

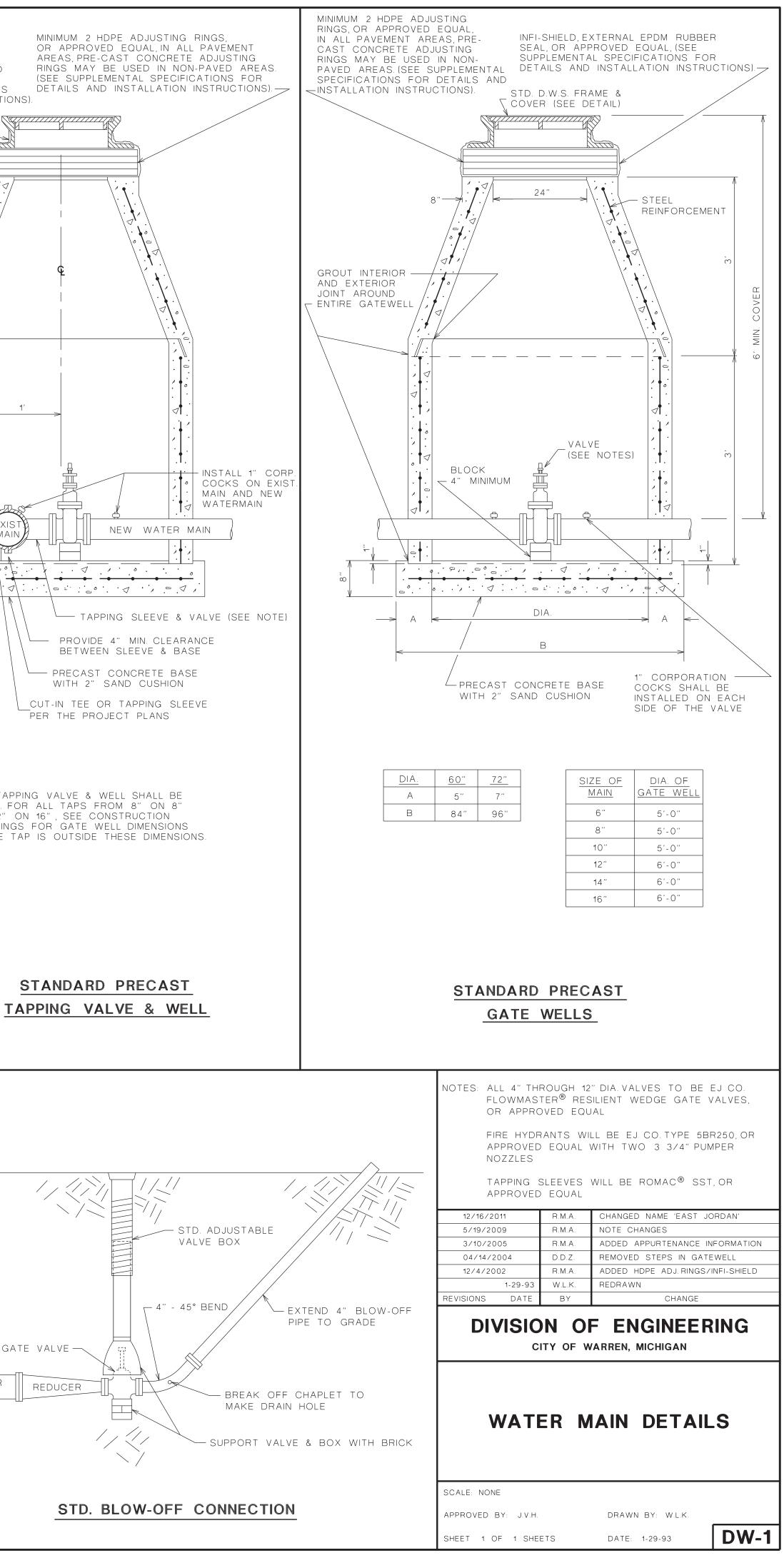
	DIA. (D <sub>1</sub> ) Of PIPE			
ŋ	D,	А	В	С
PLUG	6"	2'-0''	1'-8''	1'-10''
	8"	3'-0''	1'-11"	2'-0''
	12"	4'-0''	2'-1"	3'-0''
	16″	5'-0"	2'-8"	4′-0″





NOTE: THE TAPPING VALVE & WELL SHALL BE

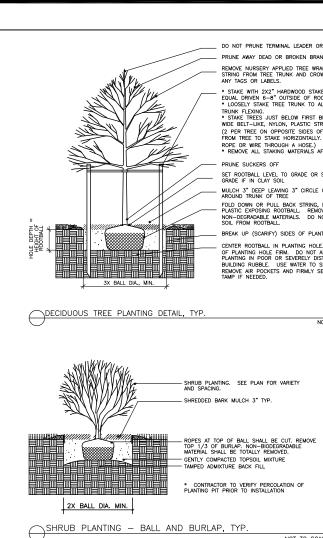
6' DIA. FOR ALL TAPS FROM 8" ON 8" TO 12" ON 16", SEE CONSTRUCTION DRAWINGS FOR GATE WELL DIMENSIONS IF THE TAP IS OUTSIDE THESE DIMENSIONS.



### PLANTING NOTES:

- 1. Contractor shall be responsible for contacting and coordinating with all pertinent utility companies 72 hours in advance of any digging to make themselves familiar with all underground utilities, pipes and structures. Contractor shall take sole responsibility for any cost incurred due to damage of said utilities or structures.
- Contractor shall not willfully proceed with construction as designed when it is obvious that unknown obstructions and/or grade differences exist. Such conditions shall immediately be brought to the attention of the Owner's Representative. The contractor shall assume full responsibility for all necessary revisions due to failure to give such notification.
- Any discrepancies between dimensioned layout and actual field conditions shall be reported to the Owner's Representative. Failure to make such discrepancies known will result in contractor's responsibility and liability for any changes and associated costs.
- 4. Contractor shall be responsible for any coordination with subcontractors as required to accomplish construction installation operations.
- 5. Contractor shall provide and maintain positive surface drainage.
- 6. Contractor shall be responsible for any existing materials that are damaged during construction.
- 7. See Plant & Material List and Planting Details for planting requirements, materials and execution.
- 8. All trees shall have a clay loam or clay root ball. Trees with sand root balls will not be accepted.
- 9. All tree varieties and substitutions to be approved by he Owners Representative prior to being delivered to site. Any plant material delivered to site not previously approved may be rejected and are the sole responsibility of the contractor.
- 10. The location of all plant material shall be scaled from drawings or interpreted from plant list. Final location of all plant material shall be subject to approval from the Owner's Representative.
- 11. The contractor shall "water in" and fertilize all plants immediately after planting.
- 12. Contractor shall install 2 4" of screened Top Soil on all planting areas and all new lawn areas. Contractor shall install Sod at all lawn areas as depicted on drawings.
- 13. Contractor shall install 3" depth Shredded Hardwood Mulch in all shrub and tree planting beds unless otherwise indicated. Peat Moss is to be installed in all annual flower, perennial flower and ground cover planting beds. Such beds shall have no shredded mulch, typ.
- 14. The contractor shall guarantee all trees, shrubs, ground cover and other plant materials for one year from the date of acceptance, including labor and removal and disposal of dead material. Project owner shall be responsible maintenance program.
- 15. All plant material shall be nursery grown. All trees and plant material shall meet the current standards of the American Society of Nurseryman.
- 16. Landscape Contractor shall install an automated irrigation system for all lawn and planting bed areas on a Design/Build basis. A complete design, materials list, and cost estimate is required as part of the original bid proposal.
- 17. All diseased, damaged, or dead material shown on the site plan shall be replaced by the end of the following growing season. Property owner shall be responsible to maintain plant material in healthy condition and/or replace dead plant material for the life of the project.
- 18. Contractor shall adhere to all soil erosion prevention methods as directed within civil engineering drawings and within the municipal Ordinance including maintaining silt fencing and ensuring that soil, silt and other debris is prevented from leaving site or entering area drains, sewer inlets, creeks or natural areas.
- 19. All perennials and ornamental grasses shall be planted on close centers so as to form a single mass appearance within one planting season.

### PLANTING DETAILS:



### PLANT DATA CHART:

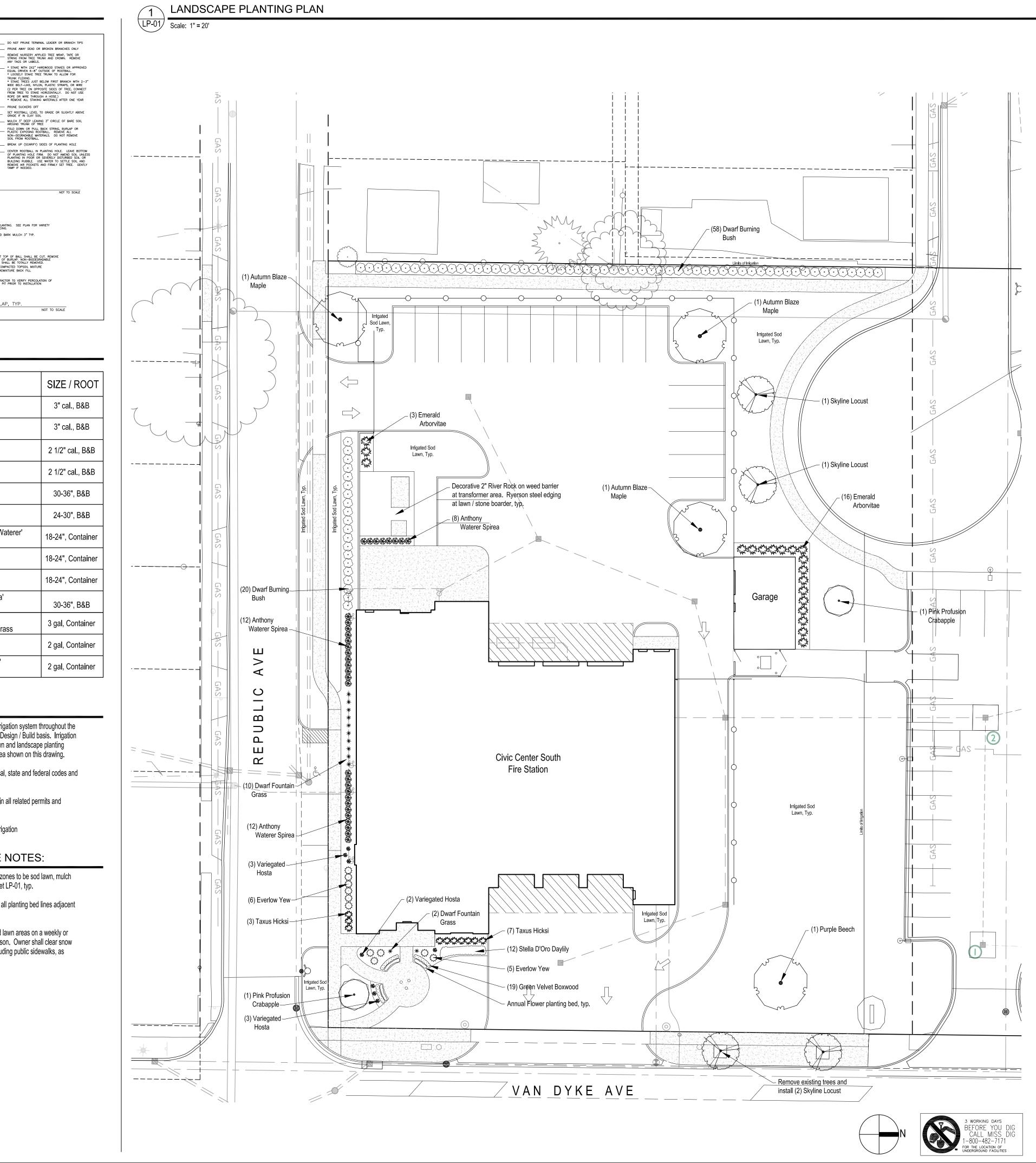
QTY.	DESCRIPTION
3	Acer x freemanii 'Jeffsred' Autumn Blaze Maple
4	Gleditsia trcanthos Skyline Locust
2	Malus, spp Pink Profusion Crabapple
1	Fagus sylvatica 'Tricolor' Variegated Purple Beech
10	Taxus hicksii Hicks Yew
11	Taxus densaformus Everlow Yew
32	Spirea japonica 'Anthony Waterer' Anthony Waterer Spirea
19	Thuja occidentalis Emerald Green Arborvitae
19	Buxus 'Green Velvet' Green Velvet Boxwood
78	Euonymus alata 'Compacta' Dwarf Burning Bush
12	Pennisetum alopecuroides Hamelin Dwarf Fountain Grass
12	Hemerocallis 'Stella D'Oro' Sella D'Oro Daylily
8	Hosta venusta 'Variegated' Variegated Hosta

### **IRRIGATION NOTES:**

- Contractor shall install an automated irrigation system throughout the site as indicated on Sheet LP-01, on a Design / Build basis. Irrigation design shall provide coverage to all lawn and landscape planting areas within the "Limits of Irrigation" area shown on this drawing.
- 2. All work shall be in compliance with local, state and federal codes and ordinances.
- Contractor shall be responsible to obtain all related permits and inspections.
- 4. See project specifications: 322810 Irrigation

### GENERAL LANDSCAPE NOTES:

- 1. All unpaved areas within development zones to be sod lawn, mulch beds or groundcover as shown on Sheet LP-01, typ.
- Ryerson Steel edging to be installed at all planting bed lines adjacent to sod lawn areas, typ.
- Owner shall maintain all landscape and lawn areas on a weekly or bi-weekly basis during the growing season. Owner shall clear snow from parking areas and sidewalks, including public sidewalks, as needed.



# PARTNERS



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C	ONSULTANT			
	T Landscape	own Planning Archltecture		
	Clarkst 248	shabaw Road on, MI 48348 .922.0415 fax 248.922.0789		
		E <b>PPI</b> TNER		
KE	EY PLAN			NORTH
			"C"	$\bigcirc$
	AREA "A"	AREA "B"	AREA "C"	

owner City of Warren

PROJECT NAME

Civic Center South Fire Station

23211 Van Dyke Ave Warren, MI 48089

PROJECT NO.

21-146

ISSUES / REVISIONS

Site Plan Submission10-18-2022Owner Review04-12-2023Bidding / Construction06-13-2023

\_\_\_\_\_

DRAWN BY JTE

CHECKED BY

APPROVED BY

SHEET NAME

Landscape Planting Plan

SHEET NO.

# ABBREVIATIONS

ACCT ADD ADD'L ADJ AGG A/C ALT AL,ALUM ANCH AB ANOD ARCH ASPH AUTO ARS BRG BETW BLKG BRK BLDG BL CLG CEM C TO C СМ CER CHAN CHDK PL CLOS CHK CW COMB COMP CONCE CONC CMU CONN CONST CONST JT CONT CONTR CORR CTR CTSK ELEC EWC ELEV EMEF ENC EQUIP ESC EPDM EXH EB EXP CONST EXT ETR

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	BAS BE/ BE/ BE/ BE/ BE/ BO/ BO/ BO/ BO/ BO/ BO/ BO/ BO/ BO/ BO	SE ARI ARI NCI TW UN DCI ARI TTC TTC CK	h ma Een 11Nou King D Side Side DM OM 0	TE O L ARK JS F CI	r or i urb	BEAN	Л		
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FABRIC WRAPPED PANEL FACE BRICK FACE OF CONCRETE FACTORY FINISH FAR SIDE DEGREES FAHRENHEIT FEET/FOOT FINISH(ED) FIRE EXTINGUISHER FIRE EXTINGUISHER FIRE VALVE CABINET FIRE VALVE CABINET FIRE VALVE CABINET FIRE ONSE STATION FIRE PROOFING FLOOR CHAIN FLOOR DRAIN FLOOR DRAIN FLUORESCENT FOOTING FOUNDATION FRESH AIR FULLY-ADHERED SHEET ROOFING SYSTEM FURR(ED), (ING)
GAGE, GAUGE GALLON GALVANIZED GLASS, GLAZING GRADE, GRADING GRAM GROUND GYPSUM GYPSUM LATH GYPSUM PLASTER GYPSUM WALL BOARD GROUND FACE MASONRY UNIT
HANDICAP(PED) HARDBOARD HARDWARE HARDWOOD HEATING HEATING & VENTILATING HEATING/VENTILATION/ AIR CONDITIONING HEIGHT HIGH POINT HIGH STRENGTH HOLLOW CORE HOLLOW METAL HORIZONTAL HORSE POWER HOSE BIBB HOT WATER HOT WATER HEATER HOUR
INCH(ES) INCLUDE(D), (ING) INFORMATION INSIDE DIMENSION INSULATE(D), (ION) INTEGRAL COLOR ANODIZED INTERIOR/INTERNAL INTERMEDIATE INVERT IRRIGATION
JANITOR'S CLOSET JOINT JOIST JUNCTION BOX
KILOGRAMS KILOVOLT KILOVOLT/AMPERE KILOWATT(S) KILOWATT-HOUR KILOGRAM PER METER KILOGRAM PER SQUARE CENTIMETER KIPS KIPS PER SQUARE INCH KITCHEN KNOCKOUT
LABORATORY LAMINATE(D) LAVATORY LEAD COATED COPPER LEFT HAND LEFT HAND REVERSE LENGTH LIGHT LIGHTING LIGHTING PANEL LINEAR SUSPENDED WOOD CEILING LIVE LOAD LONG LEGS BACK TO BACK LONG LEG HORIZONTAL LONG LEG OUTSTANDING LONG LEG VERTICAL LONG LEG VERTICAL LONG LEG VERTICAL LONG LEG VERTICAL

INSUL

INTERM

kg/m kg/cm

110

LLV

LOC

L.P.

LOW POINT

LOW VOLTAGE

MECH MEMB MFT T MEZZ MISC MISC MON. MCC MTD MULL MWP NAT NCA NEG NONCOMB NOM NTS NO (#) OPG OPP HD PTD/R PARTN PERM PLAS PLBG PLWD lb/# PSF PRE-FAB RECVG REINF REQD ROW

Μ

MAG

MAGNETIC

MANUFACTURE(R)

MARBLE THRESHOLD MARKER BOARD

MANHOLE

MARBLE

MASONRY MASONRY OPENING MATERIAL(S) MAXIMUM MECHANICAL MEDICINE CABINET MEDIUM MEMBER MEMBRANE METAL METAL DIVIDER STRIP METAL LATH METAL THRESHOLD MEZZANINE MILLIMETER(S) MINIMUM MIRROR MISCELLANEOUS MISCELLANEOUS IRON MONITOR(ED) MOTOR CONTROL CENTER MOUNT(ED), (ING) MULLION METAL WALL PANEL NATURAL NATURAL COLOR ANODIZED NEGATIVE NOISE REDUCTION COEFFICIENT NONCOMBUSTIBLE NOMINAL NORTH NOT APPLICABLE NOT IN CONTRACT NOT TO SCALE NUMBER OFFICE ON CENTER(S) OPENING OPPOSITE OPPOSITE HAND ORIGINAL OUNCE OUTSIDE OUTSIDE AIR OUTSIDE DIAMETER OVERHEAD PHYSICALLY HANDICAPPED PAINT(ED) (OR POINT) PAIR PANEL PAPER TOWEL DISPENSER PAPER TOWEL DISPENSER 8 RECEPTACLE COMBINATION PARKING PARTICLE BOARD PARTITION PASSENGER ELEVATOR PERMANENT PLASTER PLASTIC LAMINATE PLATE PLUMBING PLYW00D POLISHED POLYVINYL CHLORIDE POUND(S) POUNDS PER CUBIC FOOT POUNDS PER FOOT POUNDS PER LINEAL FOOT POUNDS PER SQUARE FOOT PRECAST CONCRETE PREFABRICATE(D) QUARRY TILE QUARRY TILE BASE QUARTER RADIUS, RADIATOR, RADIATION RAINWATER CONDUCTOR RECEIVING

RECESS(ED)

REFERENCE

REFRIGERATOR

REGISTER

REQUIRED

RESILIENT RESILIENT TILE

RETURN AIR

RIGHT HAND

RIGHT OF WAY

RISER

ROAD

REFLECT(ED), (IVE), (OR)

REINFORCE(D), (ING)

RESINOUS FLOORING

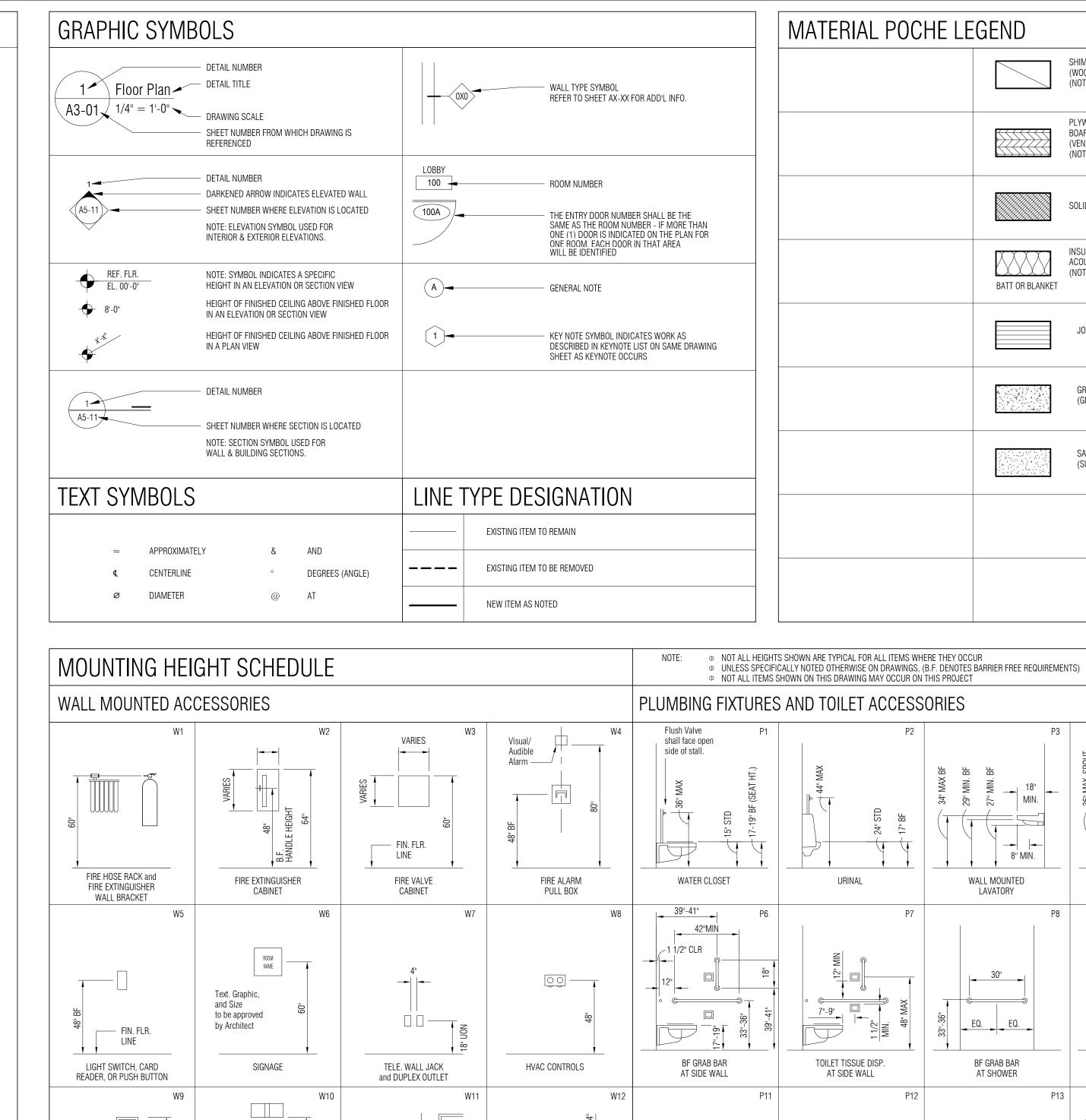
REVISION(S), REVISED

RIGHT HAND REVERSE

R (CONT.)	
RD	ROOF DRAIN
RS	ROOF SUMP
RFG	ROOFING
RM	ROOM
RO	ROUGH OPENING
RUB RB	RUBBER
	RUBBER BASE (OR RESILIENT BASE)
S	
SAN	
SND	SANITARY NAPKIN DISPENSER
SNWR	SANITARY NAPKIN WASTE
SCH	RECEPTACLE SCHEDULE
SJ	SCORED JOINT
S.CONC	SEALED CONCRETE
SEAL	SEALER
SECT	SECTION
SS	SERVICE SINK
SHT	SHEET
SLO	SHORT LEG OUTSTANDING
SIM	SIMILAR
SK	SINK
SB	SOIL BORING
STC	SOUND TRANSMISSION CLASS
S	SOUTH
SPC	SPACER, SPACING
SPK	SPEAKER
SPEC(S)	SPECIFICATION(S)
SPEC'D	SPECIFIED
SQ	SQUARE
cm 2	SQUARE CENTIMETER
SF	SQUARE FOOT (OR STOREFRONT)
STAG	(OR SPORTS FLOORING) STAGGERED
SST	STAINLESS STEEL
STD	STANDARD
STA	STATION
STL	STEEL
STN	STONE
STOR	STORAGE
SD	STORM DRAIN
ST	STREET, STAIN
STRUCT	STRUCTURAL
SA	SUPPLY AIR
SUPP	SUPPORTS
SUSP	SUSPENDED
SW	SWITCH
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
SYM	SYMMETRY(ICAL)
SGMU	STRUCTURAL GLAZED MASONRY UNIT
Т	
ТКВ	TACKBOARD
TP	TANGENT POINT
TEL	TELEPHONE
TV	TELEVISION
TEMP	TEMPERATURE, TEMPERED
TERR	TERRAZZO
TT	TERRAZZO TILE
THERM	THERMOSTAT
ТНК	THICK(NESS)
THRES	THRESHOLD
THRU	THROUGH/THOUGHOUT
TOIL	TOILET
TPH	TOILET PAPER HOLDER
TOL	TOLERANCE
T&G	TONGUE AND GROOVE
T&B	TOP & BOTTOM
TE	TOP ELEVATION
TOC	TOP OF CONCRETE
TC	TOP OF CURB
TOS	TOP OF STEEL
TWC	TOWEL & WASTE CABINET
TRAN	TRANSFORMER
T TYP	TREAD
	TYPICAL
U	
UH	
UON	UNLESS OTHERWISE NOTED
UR	URINAL
V	
v	\/A1\/E
VA	VALVE
VB	VAPOR BARRIER
VR	VAPOR RETARDER
VAR	VARNISH
VERT	VERTICAL
VEST	VESTIBULE
VIN	VINYL
VCT	VINYL COMPOSITION TILE
VT	VINYL TILE
VWC	VINYL WALL COVERING
VIT	VITREOUS
VRS	VINYL RESILIENT STRIP
W	
WAIN	WAINSCOT
WHYD	WALL HYDRANT
WH	WATER HEATER
WC	WATER CLOSET
WM	WATER MAIN
WP	WATERPROOFING, WALL PROTECTION
WR	WATER RESISTANT
WS	WATERSTOP
WT	WEIGHT
WWF	WELDED WIRE FABRIC
WWM	WELDED WIRE MESH
W	WIDTH, WIDE, WEST
W/	WITH WITHOUT
W/O	WITHOUT
WD	WOOD
Y	
I	

YARD

YD



Door

W15

W19

16" MAX

EXIT LIGHT and CLOCK

48" STATUS MONITORS

W14

48" MIN

W18

ELECTRIC PANEL

80" TV MONITOR

W13

W17

TYPICAL WALL

ITEM ALIGNMENT

Shelf -

Rod -

Hooks or

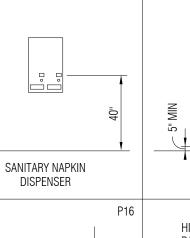
CLOTHES HOOK OR ROD

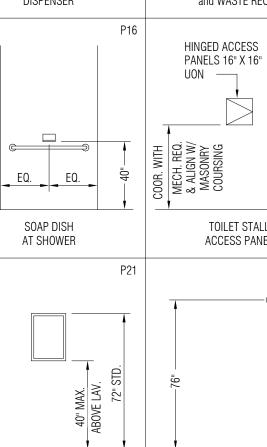
STD 44" [

64<sup>"</sup>

W16

W20



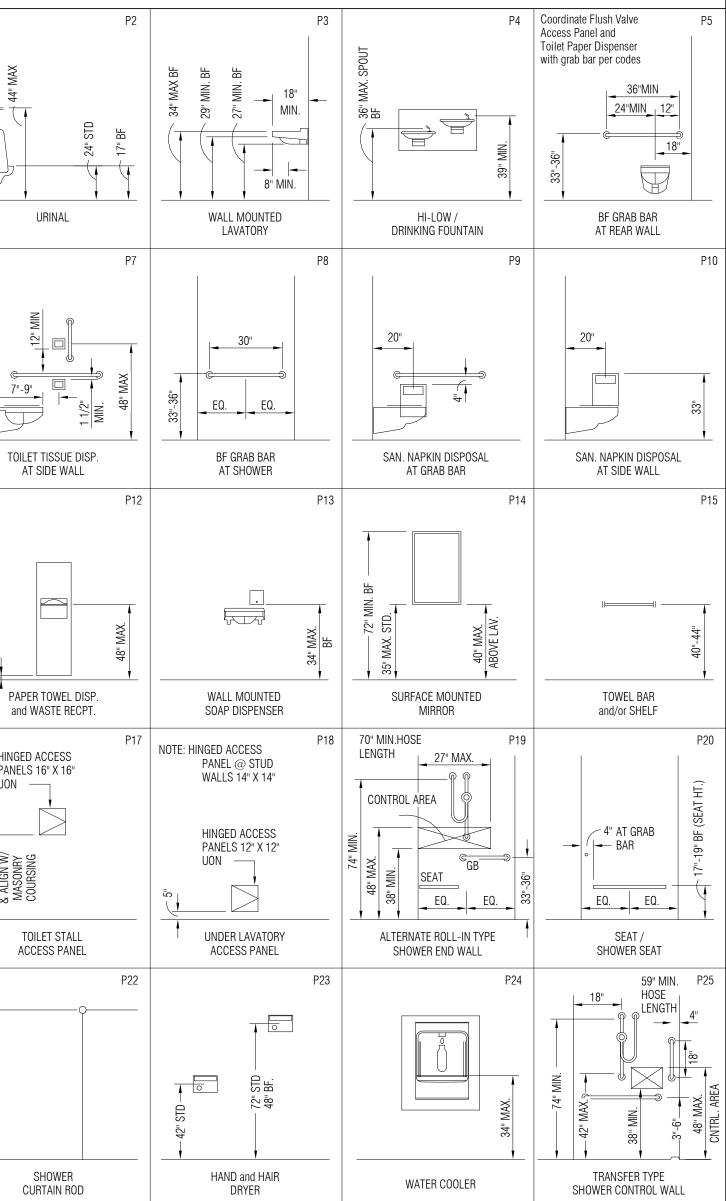


MEDICINE

CABINET

SHOWER CURTAIN ROD

RIAL POCHE LE	GEND			
		SHIM MATERIAL (WOOD, METAL, ETC.) (NOTE MATERIAL)		CONCRETE (SECTION)
		PLYWOOD/PARTICLE BOARD (VENEER FINISH) (NOTE MATERIAL)		STUD WALL (PLAN)
		SOLID SURFACE	RIGID/SEMI-RIGID	INSULATION ACOUSTIC/THERMAL (NOTE TYPE)
	BATT OR BLANKET	INSULATION ACOUSTIC/THERMAL (NOTE TYPE)		BRICK
		JOINT FILLER		GYPSUM WALL BOARD
		GRAVEL/STONE (GRANULAR MATERIAL)		C.M.U. (CONCRETE BLOCK) C.M.U SOLID OR GROUT SOLID CELLS
		SAND/GRAVEL (SUB-BASE MATERIAL)		STEEL/COPPER, METAL, ALUMINUM, ETC. (NOTE MATERIAL)
				WOOD/SOLID SPECIES (FINISH MATERIAL) (NOTE MATERIAL)
				WOOD (CONTINUOUS BLOCKING)



# PARTNERS



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### CONSULTANT

KEY PLAN

OWNER

### City of Warren

## PROJECT NAME

Warren Civic Center South Fire Station #1

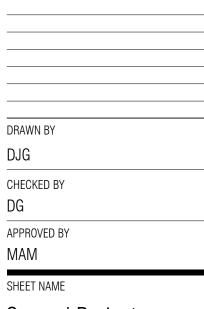
23211 Van Dyke Ave Warren, MI 48089

## PROJECT NO.

# 21-146A

ISSUES / REVISIONS Bidding / Construction

6/13/23



General Project Information

### **CODE INFORMATION GENERAL PROJECT INFORMATION:** CHAPTER 9: FIRE PROTECTION SYSTEMS **<u>OWNER:</u>** CITY OF WARREN - FIRE DEPARTMENT [903.2] FIRE SUPPRESION: PROVIDED THROUGHOUT **PROJECT:** CIVIC CENTER SOUTH FIRE STATION GROUP R FIRE AREAS: SPRINKLERS REQ'D [903.2.8] ADDRESS: 23211 VAN DYKE AVE. WARREN, MI 48089 INCIDENTAL AREAS: SPRINKLERS REQ'D IF CALLED FOR PER TABLE [903.2.11.6] EXEMPT LOCATIONS: NOT REQ'D PER EXPECTION NO.4 (ATTIC) GOVERNING CODES: [903.3.1.1.1] 2015 MICHIGAN BUILDING CODE (MBC) FIRE EXTINGUISHERS, WERE REQ'D: WITHIN 30' OF COMMERICAL COOKING, [906.1] 2015 MICHIGAN MECHANICAL CODE (MMC) EG ALL USE GROUPS, SPECIAL HAZARD AREAS (APPARATUS BAY), AS REQ'D 2018 MICHIGAN PLUMBING CODE (MPC) PER IFC. 2015 MICHIGAN ENERGY CODE (MEC) [TABLE 906.3(1)] FIRE EXTINGUISHER SIZES AND DISTRIBUTION: 2017 NATIONAL ELECTRICAL CODE w/ AMENDMENTS (NEC) 2018 INTERNATIONAL FIRE CODE (IFC), (AS REFERENCED IN THE 2015 MBC) HAZARD LEVEL: M 2009 ICC/ANSI A 117.1 & MICHIGAN BARRIER-FREE DESIGN LAW OF PUBLIC ACT 1 OF 1966 EXTINGUISHER: 2A MIN RATED FLOOR AREA/UNIT OF A: 1500 FT CHAPTER 3: USE AND OCCUPANCY CLASSIFICATION DISTANCE OF TRAVEL TO EXTINGUISHER: 75'-0" [302] NON-SEPARATED MIXED USE INCLUDING THE FOLLOWING OCCUPANCIES: [907.2] FIRE ALARM SYSTEM: NOT REQ'D [304.1] BUSINESS GROUP B [310.4] RESIDENTIAL GROUP R-2 SMOKE ALARMS: REQ'D ON CLG'S OR WALLS OUTSIDE SLEEPING UNITS AND [907.2.11.2] [311.3] LOW-HAZARD STORAGE GROUP S-2 WITHIN EACH FOR USE GROUP R3 CHAPTER 4: SPECIAL REQUIREMENTS [907.2.11.3] SMOKE ALARM NEAR COOKING APPLIANCES: 20'-0" MIN DISTANCE DRYING ROOMS (SECTION 417) SMOKE ALARM NEAR RESTROOMS: 3'-0" MIN FROM DR. [907.2.11.4] [417.1] SHALL BE CONSTRUCTED ENTIRELY OF APPROVED NONCOMBUSTIBLE MATERIALS OR ASSEMBLIES VISIBLE ALARM NOTIFICATION: REQ'D IN PUBLIC USE AND COMMON AREA [907.5.2.3.1] CARBON MONOXIDE DETECTION: REQ'D IN SLEEPING UNITS. OR PER EXCEP. GROUP R-3 (SECTION 420): [915.1.2.3] [420.2] WALLS SEPARATING SLEEPING UNITS IN THE SAME BUILDING AND WALLS SEPARATING SLEEPING UNITS FROM OTHER OCCUPANCIES CONTIGUOUS TO CHAPTER 10: MEANS OF EGRESS THEM IN THE SAME BUILDING SHALL BE CONSTRUCTED AS FIRE PARTITIONS IN [TABLE 1004.1.2] MAXIMUM FLOOR AREA ALLOWANCE PER OCCUPANT: ACCORDANCE WITH SECTION 708 [420.5] OCCUPANCIES SHALL BE EQUIPPED THROUGHOUT WITH AN AUTOMATIC A3 (15 SF GROSS) - 25 (COMM. RM.) SPRINKLER SYSTEM IN ACCORDANCE WITH SECTION 903.2.8 A3 (15 SF GROSS) - 71 ALLOW., LIMITED TO 10 (FITNESS AREA) [420.6] FIRE ALARM SYSTEMS AND SMOKE ALARMS SHALL BE PROVIDED IN ACCORDANCE B (100 SF GROSS) - 15 R2 (200 SF GROSS) - 13 WITH THE APPLICABLE SECTIONS OF CHAPTER 9 S2 (300 SF GROSS) - 27 (PLUS MECH./ELEC.) CHAPTER 5: GENERAL BUILDING HEIGHTS AND AREAS OCCUPANT LOAD TOTALS: ALLOWABLE BUILDING HIEGHT AND AREA TOTAL: 90 ALLOW, 15 ACTUAL [TABLE 504.3] ALLOWABLE BUILDING HEIGHT: 60'-0" (SPRINKLERED) ACTUAL: 39'-0" THE OCCUPANT LOAD OF A MEZZANINE SHALL BE ADDED TO THE OCCUPANT [1004.1.1.2] [TABLE 504.4] ALLOWABLE STORIES: 3 (SPRINKLERED) ACTUAL: 1+MEZZANINE LOAD OF THE ROOM THROUGH WHICH REQUIRED EGRESS OCCURS MEANS OF EGRESS SIZING: [TABLE 1005.3.1] [506.2.1] TOTAL ALLOWABLE AREA: 40,500 SF MAX. 14,415 (ACTUAL) 1 STORY, EQUIPPED THROUGHOUT WITH AN AUTOMATIC SPRINKLER SYSTEM STAIRWAYS: 0.2 PER OCCUPANT OTHER ELEMENTS: 0.15 PER OCCUPANT [506.2.3] BASIS OF ALLOWABLE: MIXED OCCUP./ONE STORY [TABLE 1006.2.1] MIN NUMBER OF EXITS <u>WITHIN</u> MEANS OF EGRESS SYSTEM: [506.3.3] AREA FACTOR INCREASE DUE TO FRONTAGE: .75 SPACES (TABLE 1006.2.1): OCCUPANT LOAD>49: NONE, 1 EXIT REQ'D, 1 EXIT PROVIDED PER SPACE COMMON PATH OF EGRESS TRAVEL: MEZZANINES [505.2] NO. OF AREAS: 2 S2 USE GROUP: 100 MAX, 100 ACTUAL (WHERE GREATEST) R3 USE GROUP: 125 MAX, 117 ACTUAL [505.2.1] AREA LIMITATIONS: <1/3 AGGREGATE AREAS OF SPACES [TABLE 1006.3.1] MIN. NUMBER OF EXITS FROM MEANS OF EGRESS SYSTEM: MEZZANINE NO.1: 18% OF AGGREG. MEZZANINE NO.2: 19% OF AGGREG. STORIES (TABLE 1006.3.1): 1-500 PERSONS OCCUPANT LOAD: 60 PERSONS MAX [505.2.2] MEANS OF EGGRESS: PER CHAPTER 10 EXITS: 2 REQ'D, 4 PROVIDED [505.2.3] OPENESS: MEZZ NO.1 REQ'D OPEN TO ROOM. MEZZ NO.2 ALLOWED CLOSED PER [1007.1.1] DISTANCE APART OF REQ'D EXITS: 1/3 LENGTH OF MAX DIAG. DIM. OF BLDG/SPACE EXCEPTION #1 NO. OF ACCESSIBLE MEANS OF EGRESS (1009.1): 2 REQ'D, 4 PROVIDED MIXED USE OCCUPANCY [508.3.2] MOST RESTRICTIVE USE GOVERNS: **36,000 (B)**, UNLIMITED (R-2), 54,000 (S-2) MIN REQ'D CLEAR DOOR WIDTH: 32" MIN, 36" PROVIDED [1010.1.1] EXCEPTION 1: DIRECTION OF SWING WITH EGRESS TRAVEL UNLESS [1010.1.2.1] [TABLE 508.4] FIRE SEPERATIONS: NOT REQ'D OCCUPANCY OF AREA $\leq$ 50 PERSONS OCCUPANCIES: NON-SEPERATED STAIRWAYS STAIRWAYS: NON-ACCESSIBLE: [1011.2] NCIDENTAL USES CLEAR WIDTH: 36" MIN. 44" ACTUAI [TABLE 509] 1280 SF ROOM/AREA, 0 HR SEPERATION [1011.3] HEADROOM BELOW FOR STAIRS: 80" MIN [1014.2] HANDRAILS: CHAPTER 6: TYPES OF CONSTRUCTION MIN HGT: 34" REQ'D, 34" PROVIDED [1014.2] GUARDRAILS: [602.5] TYPE V-B MIN HGT: 42" REQ'D, 42" PROVIDED FIRE RESISTANCE RATING REQUIREMENTS [TABLE 601] PRIMARY STRUCTURAL FRAME EGRESS THROUGH INTERVENING SPACES: PERMITTED PER EXCEPTION 2 0 HR [1016.2.2] BEARING WALLS 0 HR [TABLE 1017.2] EXIT ACCESS TRAVEL DISTANCE (SPRINKLERED): INTERIOF EXTERIOR USE A3 = 250'-0''0 HR NONBEARING WALLS & PARTITIONS USE R2 = 250'-0" 0 HR USE B = 300'-0''INTERIOR EXTERIOR 0 HR <u>USE S2 = 400'-0''</u> FLOOR CONSTRUCTION 0 HR MAX. ALLOW. 250'-0" (MOST RESTRICTIVE) ROOF CONSTRUCTION 0 HR CORRIDORS RATINGS: OHR MIN, 1/2HR PROVIDED (@R3 SPACES) CHAPTER 7: FIRE AND SMOKE PROTECTION FEATURES [TABLE 1020.1] WIDTHS: 44" MIN. 64 ACTUAL (MIN) [TABLE 1020.2] [704.11] BOTTOM FLANGE PROTECTION: NOT REQUIRED [TABLE 1020.4] DEAD END CORRIDORS: 50' MAX, 31' ACTUAL [TABLE 705.8] MAX AREA OF WALL OPENINGS: UNLIMITED (X>30'-0") CHAPTER 11: ACCESSIBILITY [706.1] FIRE WALLS: NOT REQUIRED [1103.2.1] REQUIRED: YES, WHERE: PUBLIC AREAS NO, ALL OTHER AREAS PER (1103.2.15) [707.1] FIRE BARRIERS: NOT REQUIRED ACCESSIBLE ROUTE PROVIDED: YES [1104.1 [708.3] FIRE RESISTANCE RATING OF FIRE PARTITIONS: 1 HR MIN. FOR CEILINGS, & 1/2 HR 60% OF PUBLIC ENTRANCES ACCESSIBLE: YES, 1 PROVIDED FOR SLEEPING UNIT SEPERATIONS PER EXCEPTION NO.2. [1105.1] [708.4] FIRE PARTITION CONTINUITY EXCEPTION 3: ALLOWS FOR FIRE PARTITION WALLS TO [TABLE 1106.1] ACCESSIBLE PARKING SPACES: MIN 2 REQ'D, 2 PROVIDED TERMINATE INTO 1 HOUR RATED CEILING ASSEMBLIES INSTEAD OF ROOF DECK. TOILET AND BATH FACILITIES [709.1] SMOKE BARRIERS: NOT REQUIRED NO. OF EA. FIXTURE TYPE/ACCESS. TOILET: 1 MIN, 1 PROVIDED [1109.2] [1109.5.1] B.F. DRINKING FOUNTAINS: 1 MIN, 1 PROVIDED [710.1] SMOKE PARTITIONS: NOT REQUIRED 2015 MICHIGAN MECHANICAL CODE: [712.1.11] VERTICAL OPENINGS BETWEEN A MEZZANINE COMPLYING WITH SECTION 505 AND THE FLOOR BELOW SHALL BE PERMITTED [505.1] DOMESTIC KITCHEN EXHAUST SYSTEMS SHALL DISCHARGE TO THE OUTDOORS THROUGH AIR TIGHT SHEET METAL DUCTS EQUIPPED WITH [714.3.1] THROUGH PENETRATION OF FIRE PARTITIONS: ANNULAR SPACE AROUND ITEM BACKDRAFT DAMPERS AND SHALL BE INDEPENDENT OF ALL OTHER PACKED WITH FIRE SAFING PER EXCEPTION NO.2 EXHAUST SYSTEMS [717.3.2.4]CORRIDOR DAMPER RATING: 1HR [717.5.4] EXCEPTION #3: FIRE DAMPERS ARE NOT REQUIRED AT FIRE PARTITION PENETRATIONS WHERE THE DUCT SYSTEM IS CONSTRUCTED OF [717.5.4] DUCT PENETRATIONS OF FIRE PARTITIONS: DAMPERS NOT REQ'D PER EXCEPTION APPROVED MATERIALS, AND COMPLIES WITH THE REQUIREMENTS OF NO.1 AND 714.3.1 THIS SECTION [718.2] FIRE BLOCKING: REQ'D IN CONCEALED SPACE, IF CONBUSTIBLE CONST. [718.4.3] DRAFT STOPPING, ATTICS: NOT REQ'D, FULLY SPRINKLERED CHAPTER 8: INTERIOR FINISHES [TABLE 803.11] INTERIOR WALL/CEILING FINISHES (SPRINKLERED BUILDING) (167 SF ) STAIRWAYS: CLASS B EXIT PASSAGEWAYS: CLASS B CORRIDORS: CLASS B ROOMS: CLASS C [804.4.2] MINIMUM CRITICAL RADIENT FLUX: CLASS II Hose Tower - Life Safety Plan

A5-11 / 3/32" = 1'-0"

## ENERGY STANDARDS REQUIREMENTS (ASHRAE 90.1-2013) <u>GENERAL DATA</u>

CLIMATE ZONE: 5 BUILDING TYPE: NON-RESIDENTIAL

- BUILDING ELEMENTS ROOF: INSULATION ABOVE DECK
- WALLS (ABOVE GRADE): MASS SLAB ON GRADE: UNHEATED

DOORS: ACTIVE WINDOWS (40% OF WALL MAX): METAL (FIXED, METAL (ENTRANCE DR'S) SKYLIGHTS (3% OF ROOF MAX): N/A

PROJECT THERMAL DATA

BUILDING ELEMENT	MIN. R VALUE	ACTUAL R VALUE	MIN. U VALUE	ACTUAL U VALUE			
ROOF	R30 c.i.	R 30	U 0.032	U 0.033			
WALLS (ABOVE GRADE)	R11.4 c.i.	R 16	U 0.090	U 0.063			
SLAB-ON-GRADE (UNHEATED)	R15, MIN. 24"	R 15	F 0.520	F 0.067			
DOORS			U 0.500				
WINDOWS			U 0.32				
R = RESISTANCE	U = RATE OF I	HEAT TRANSFER					
C = AMOUNT OF HEAT PASSING THROUGH 12" OF INSUL							

F = LOSS OF HEAT PER PERIMETER OF LENGHT (S.O.G)

## PLUMBING FIXTURE CALCULATION (PER 2018 MICHIGAN PLUMBING CODE

TOTAL BUILDING OCCUPANT LOAD = 90 (15 ACT.) PERSONS PER SECTION 403.1.1: DIVIDE TOTAL OCCUPANT LOAD IN HALF

90/2 = 45 MALE 45 FEMALE

PER SECTION 403.2: SEPARATE FACILITIES NOT REQUIRED WHERE TOTAL OCCUPANT LOAD <15 PER SECTION 403.3: PUBLIC ACCESS AREA < 300 SF - PUBLIC TOILET FACILITIES NOT REQUIRED

REFER TO CALCULATIONS BELOW FOR NUMBER OF REQUIRED PLUMBING	FIXTURES
---	----------

CLASSIFICATION /		WATER	CLOSETS	LAVATORIES	DRINKING	
OCCUPANCY		MALE FEMALE		Enwittenie	FOUNTAINS	
DORMITORY R-2	REQUIRED RATIO	1 / 10		1/10	1/100	
	# REQUIRED		4	4	1	
	# PROVIDED	6		6	1	
BUSINESS B	REQUIRED RATIO	1 / 25 (≤50) + 1 / 50 (≥50)		1 / 25 (≤50)	1 / 100	
	# REQUIRED	1	1	1	1	
	# PROVIDED	2 SINGLE (	CCUPANT	2	1	
APPARATUS BAY S-2	REQUIRED RATIO	1 / 100		1 / 100	1 / 1,000	
	# REQUIRED	1		1	1	
	# PROVIDED	1		1	1*	
FITNESS AREA A-3 (ACCESSORY TO S-2)	REQUIRED RATIO	1 / 125	1 / 65	1 / 200	1 / 500	
	# REQUIRED	1	1	1	1	
	# PROVIDED	1**	1**	1	1*	

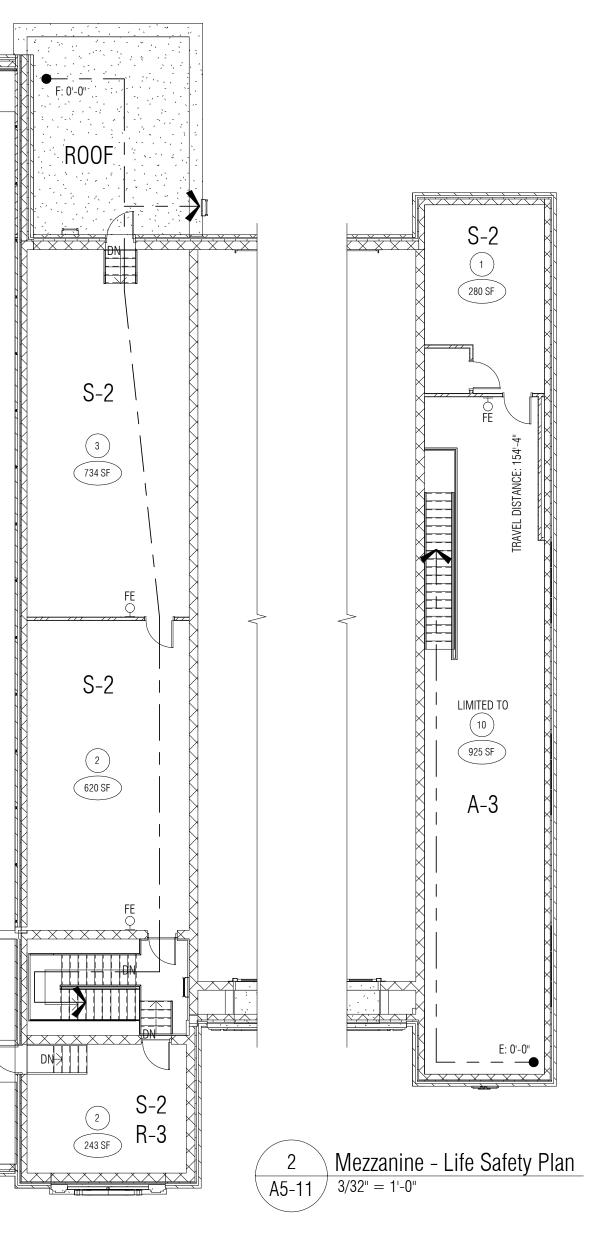
\* USE DRINKING FOUNTAIN IN R-3 NON-SEPARATED USE GROUP AREA \*\* SECOND RESTROOM IN R-3 NON-SEPARATED USE GROUP AREA

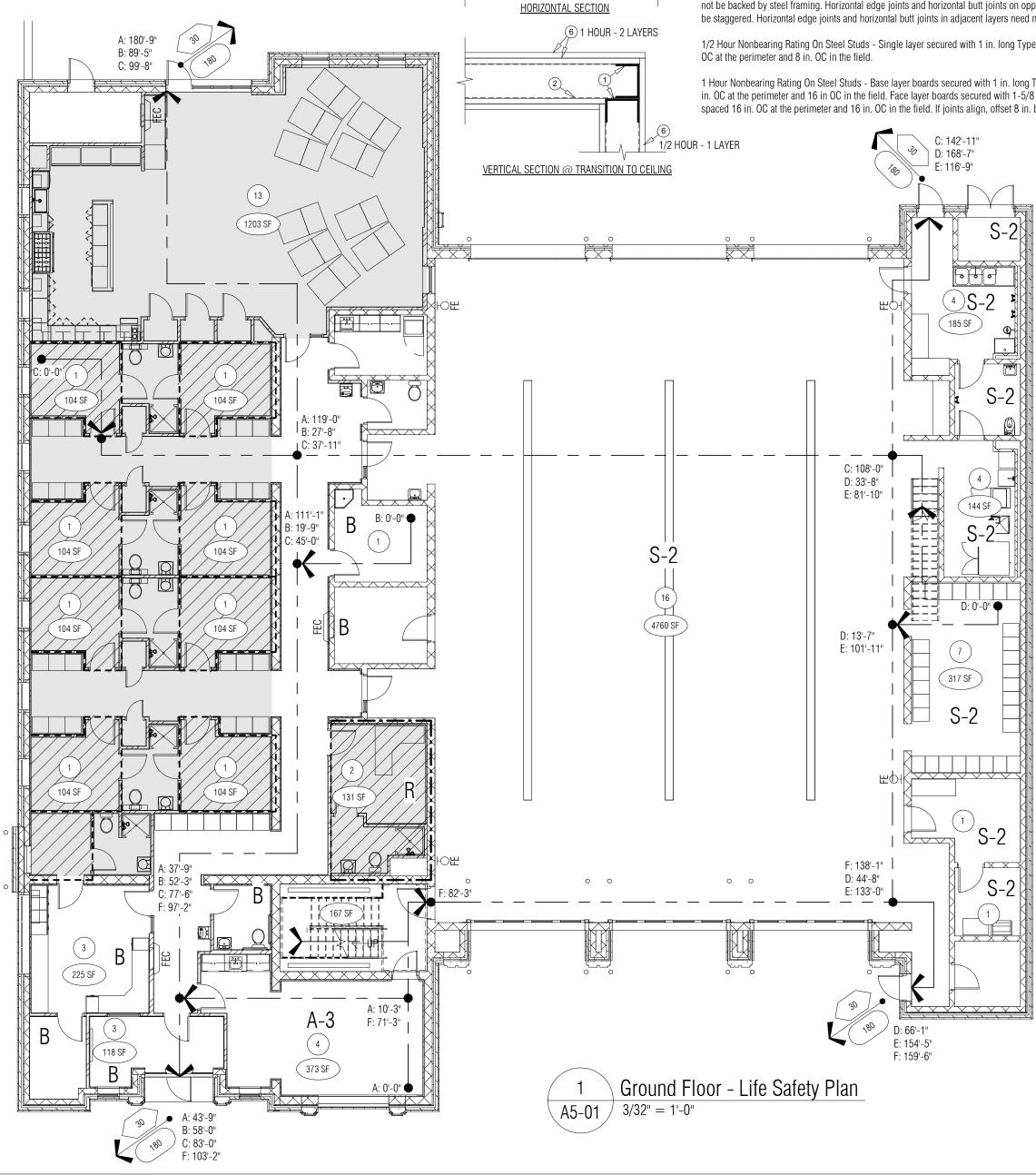
# GENERAL LIFE SAFETY NOTES

ALL WALLS, FIRE BARRIERS, FIRE PARTITIONS, SMOKE BARRIERS SHALL BE IDENTIFIED WITH SIGNS OF STENCILING (WHERE WALL AREAS ARE CONCEALED FROM VIEW) LETTERSMUST BE A MIN. 1/2" HEIGHT AND READ "FIRE AND/OR SMOKE BARRIER. PROTECT ALL OPENINGS" - SPACED AT 30'-0" O.C. (OWNER TO PROVIDE / INSTALL)

THESE CODE ANALYSIS DRAWINGS (SHEET A0-02), NOTES, PLANS AND WALL IDENTIFICATION TYPES AND LOCATIONS ARE FOR FIRE RATINGS AND / OR SMOKE BARRIERS AS REQ'D FOR LIFE SAFETY AND BUILDING CODE COMPLIANCE. REFER TO OTHER DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL CONSTRUCTION REQUIREMENTS

ALL FIRE RATED WALLS OF ANY TYPE SHALL BE SEALED TIGHT TO ROOF DECK SYSTEM ABOVE AND ALL PENETRATIONS SHALL BE PROPERLY SEALED WITH UL APPROVED FIRE SEALANT SYSTEM. REFER TO SPECIFICATION SECTIONS 078413. EACH BID CATEGORY CONTRACTOR RESPONSIBLE FOR INSTALLATION OF APPROVED FIRE SEALANT SYSTEM AT TOPS OF WALLS AND ROOF DECK JUNCTIONS

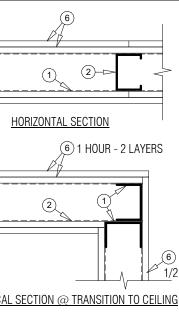




 - TABLE 403.1)				
SHOWER	SERVICE SINKS			
1/8	1 SINK			
4	1			
5	1			
-	1 SINK			
-	1			
-	1			
-	1 SINK			
-	1			
2	1			
-	1 SINK			
-	1			
2	1			

### LIFE SAFETY PLAN LEGEND \_\_\_\_\_ 1/2-HOUR FIRE RATED STUD WALL 1/2 HOUR "FIRE PARTITION" WALL PER THE 2015 MBC SECTION 708. DOOR OPENINGS TO BE EQUIPPED WITH A 20 MIN. ASSEMBLY RATING. PROVIDE FIRE SEAL AT ALL WALL AND ROOF / FLOOR DECK INTERSECTIONS. CONSTRUCT PER UL DESIGN DETAIL U407 THIS SHEET. 1/2-HOUR FIRE RATED HORIZONTAL ASSEMBLY /2-HOUR "HORIZONTAL ASSEMBLY" PER THE 2015 MBC SECTION 711.2.4.3 PROVIDE FIRE SEAL AT ALL WALL AND ROOF / FLOOR DECK INTERSECTIONS. CONSTRUCT PER UL DESIGN DETAIL U407 THIS SHEET. EXIT ACCESS TRAVEL DISTANCE LINE • -COMMON PATH OF EGRESS TRAVEL DISTANCE LINE •-----< 20 OCCUPANT LOAD EXITING THROUGH EGRESS COMPONENT • OCCUPANT CAPACITY OF EGRESS COMPONENT 160 (4975 SF) AREA OF ROOM OR AREA (SQUARE FEET) (50) OCCUPANT LOAD OF ROOM OR AREA LOCATION OF FIRE EXTINGUISHER / CABINET FFC LOCATION OF FIRE EXTINGUISHER MOUNTED TO WALL OCCUPANCY TYPE: R-3

# UL DESIGN DETAIL #U407



1. Floor and Ceiling Runners — (For the 1/2 or 1 Hour Nonbearing Wall Ratings) — For use with Item 2 - Channel shaped, fabricated from min 25 MSG corrosion-protected steel, min depth to accommodate stud size, with min 1-1/4 in. long legs, attached to floor and ceiling with fasteners 24 in. OC max.

2. Steel Studs — (For the 1/2 or 1 Hour Nonbearing Wall Ratings) Channel shaped, fabricated from min 25 MSG corrosion-protected steel, min. 3-5/8 in. deep, spaced a max of 24 in. OC. Studs to be cut 3/4 in. less than assembly heiaht.

6. Gypsum Board\* — 5/8 in. thick paper surfaced, with beveled, square, or tapered edges, applied either horizontally or vertically. Vertical joints in adjacent layers (multilayer systems) staggered one stud cavity. Horizontal joints need not be backed by steel framing. Horizontal edge joints and horizontal butt joints on opposite sides of studs need not be staggered. Horizontal edge joints and horizontal butt joints in adjacent layers need not be staggered.

1/2 Hour Nonbearing Rating On Steel Studs - Single layer secured with 1 in. long Type S steel screws spaced 8 in.

1 Hour Nonbearing Rating On Steel Studs - Base layer boards secured with 1 in. long Type S steel screws spaced 16 in. OC at the perimeter and 16 in OC in the field. Face layer boards secured with 1-5/8 in. long Type S steel screws spaced 16 in. OC at the perimeter and 16 in. OC in the field. If joints align, offset 8 in. between layers.

# PARTNERS



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CONSULTANT

KEY PLAN

OWNER

# City of Warren

PROJECT NAME

Warren Civic Center South Fire Station #1

23211 Van Dyke Ave Warren, MI 48089

PROJECT NO.

21	-1	4	6	A
<u>  </u>	- 1	4	U	Η

ISSUES / REVISIONS	
Bidding / Construction	

 	 	 -

6/13/23

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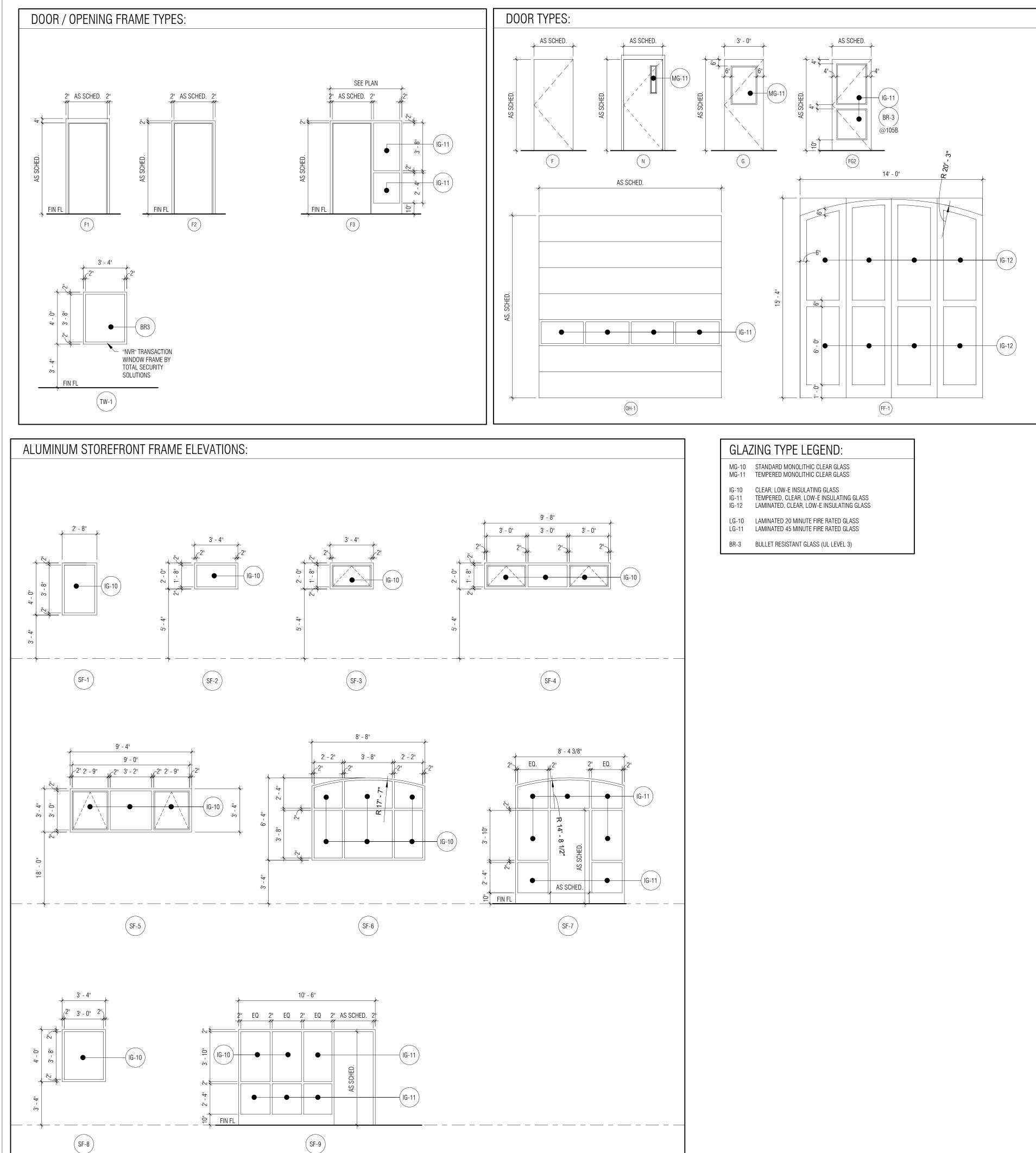
DJG

CHECKED BY

DG APPROVED BY

MAM

SHEET NAME Life Safety Plan & Code Information



6/13/2023 11:14:44 AM C:\\_revitlocal\21-146 WFD STATION 1 CD\_DGwozdzDHM3H.rvt

GLA	ZING TYPE LEGEND:	
MG-10 MG-11	STANDARD MONOLITHIC CLEAR GLASS TEMPERED MONOLITHIC CLEAR GLASS	
IG-10 IG-11 IG-12	CLEAR, LOW-E INSULATING GLASS TEMPERED, CLEAR, LOW-E INSULATING GLASS LAMINATED, CLEAR, LOW-E INSULATING GLASS	
I G_10	I AMINATED 20 MINUTE FIRE RATED GLASS	

# DOOR / OPENING GENERAL NOTES:

FIELD VERIFY ALL OPENINGS PRIOR TO DOOR & FRAME FABRICATION REFER TO SPECIFICATION SECTION 088000 GLAZING FOR ALL GLASS TYPES DOOR TYPE NAMING CONVENTIONS ARE BASED ON SDI 108-18 STANDARDS

6.

# DOOR / OPENING KEY NOTES:

- FOUR-FOLD STEEL DOOR OVERHEAD DOOR
- UL LEVEL 3 BALLISTIC RESISTANCE RATING REFER TO SHEET A0-09 FOR THE DETACHED GARAGE. 8. GALVANIZED STEEL DOOR AND FRAME

## Door / Opening Schedule

2001	/ Openin	g Scł	nedule	;										
DOOR	•	-		DOOR			FRAME			DETAILS		HARDWARE	LABEL	
NO. 101A	0PENING SIZE 14' - 0" x 15'	. ,	TYPE FF-1	MATERIAL STL	FINISH PNT-4	TYPE	MATERIAL STL	FINISH PRE-FIN	HEAD 6/A6-14	JAMB 2/A3-22	SILL	SET # 32.0	(MIN.)	DOOR / OPENING KEY NOTES
101A	14' - 0" x 15'		FF-1	STL	PNT-4		STL	PRE-FIN	6/A6-14	2/A3-22		32.0		1
101C	14' - 0" x 15'		FF-1	STL	PNT-4		STL	PRE-FIN	6/A6-14	2/A3-22	-	32.0		1
101D	14' - 0" x 15'		0H-1	STL	PRE-FIN.		STL	PRE-FIN		D5	-	33.0		2
101E 101F	14' - 0" x 15' 14' - 0" x 15'		0H-1 0H-1	STL STL	PRE-FIN. PRE-FIN.		STL STL	PRE-FIN PRE-FIN		D5 D5	-	33.0 33.0		2 2
102A	3' - 8" x 7' -		F	FRP	DK. BRNZ	F2	ALUM	B. ANOD.	D7	D6	_	31.0		
102B	3' - 0" x 7' -		F	HM	PNT-3	F2	HM	PNT-3	D7	D6	T3	28.0		
103	3' - 0" x 7' -		Ν	WD	WD-1	F2	HM	PNT-3	D8	D9	T5	27.0		
104	3' - 0" x 7' -		F	WD	WD-1	F2	HM	PNT-3	D8	D9	T4	24.0		0
105A 105B	3' - 0" x 7' - 3' - 0" x 7' -		FG2 G	ALUM WD	B. ANOD. WD-1	SF-7 F2	ALUM HM	PNT-3	1/A6-14 D8	1/A3-21 D9	T3 T5	4.0 9.0		6 3
1056	3' - 0" x 7' - 3' - 0" x 7' -		F	WD	WD-1 WD-1	F2 F2	HM	PNT-3 PNT-3	D8	D9	T5	9.0		3
107	3' - 0" x 7' -		FG2	WD	WD-1	F3	HM	PNT-3	D8	D9	T5	15.0		
108	3' - 0" x 7' -		F	WD	WD-1	F2	HM	PNT-3	D8	D9	T5	26.0	20	
109	2' - 8" x 7' -		F	WD	WD-1	F2	HM	PNT-3	D8	D9	T5	16.0		
110	3' - 0" x 7' -		F	WD	WD-1	F2	HM	PNT-3	D8	D9	T5	25.0	20	
111A 111B	3' - 0" x 7' - 3' - 0" x 7' -		F	WD WD	WD-1 WD-1	F2 F2	HM HM	PNT-3 PNT-3	D8 D8	D9 D9	T5 T5	22.0 23.0	20 20	
112	3' - 0" x 7' -		F	WD	WD-1 WD-1	F2	HM	PNT-3	D8	D9	T5	25.0	20	
113	3' - 0" x 7' -		F	WD	WD-1	F2	HM	PNT-3	D8	D9	T5	25.0	20	
114A	3' - 0" x 7' -		F	WD	WD-1	F2	HM	PNT-3	D8	D9	T5	22.0	20	
114B	3' - 0" x 7' -		F	WD	WD-1	F2	HM	PNT-3	D8	D9	T5	23.0	20	
115	3' - 0" x 7' -		F	WD	WD-1	F2	HM	PNT-3	D8	D9	T5	25.0	20	
116 117A	3' - 0" x 7' - 3' - 0" x 7' -		F	WD WD	WD-1 WD-1	F2 F2	HM HM	PNT-3 PNT-3	D8 D8	D9 D9	T5 T5	25.0 22.0	20 20	
117A 117B	3' - 0" x 7' - 3' - 0" x 7' -		F	WD	WD-1 WD-1	F2 F2	HM	PNT-3 PNT-3	D8	D9	T5	22.0	20	
118	3' - 0" x 7' -		F	WD	WD-1	F2	HM	PNT-3	D8	D9	T5	25.0	20	
119	3' - 0" x 7' -	- 0"	F	WD	WD-1	F2	HM	PNT-3	D8	D9	T5	25.0	20	
120A	3' - 0" x 7' -		F	WD	WD-1	F2	HM	PNT-3	D8	D9	T5	22.0	20	
120B	3' - 0" x 7' -		F	WD	WD-1	F2	HM	PNT-3	D8	D9	T5	23.0	20	
121	3' - 0" x 7' -		F	WD	WD-1	F2	HM	PNT-3	D8	D9	T5	25.0 3.0	20	
122 122A	3' - 0" x 7' - 2' - 10" x 7'		F	WD	WD-1	F2	HM	PNT-3	D8	D9	T2 T5	3.0 19.0		
122A 122B	2 - 10" x 7'		F	WD	WD-1 WD-1	F2	HM	PNT-3	D8	D9	T5	19.0		
122C	2' - 10" x 7'		F	WD	WD-1	F2	HM	PNT-3	D8	D9	T5	19.0		
123	3' - 0" x 7' -		F	FRP	FRP	F2	ALUM	B. ANOD.	D11	D10	T1	8.0		
124	3' - 0" x 7' -		G	WD	WD-1	F3	HM	PNT-3	D8	D9	T5	11.0		
125	3' - 0" x 7' -		F	WD	WD-1	F2	HM	PNT-3	D7	D6	T5	16.0		
126 127	3' - 0" x 7' - 3' - 0" x 7' -		F	WD WD	WD-1 WD-1	F2 F2	HM HM	PNT-3 PNT-3	D7 D8	D6 D9	T5 T2	21.0 16.0		
127	3' - 0" x 7' -		F	HM	PNT-3	F2	HM	PNT-3	D0	D9	T1	19.0		5
129	3' - 0" x 7' -		F	WD	WD-1	F2	HM	PNT-3	D7	D6	T5	15.0		
130	2' - 8" x 7' -	· 0"	F	WD	WD-1	F2	HM	PNT-3	D8	D9	T5	20.0		
131	3' - 0" x 7' -		G	HM	PNT-3	F3	HM	PNT-3	D7	D6	T2	10.0		5
132	3' - 0" x 7' -		G	HM	PNT-3	F3	HM	PNT-3	D7	D6	T2	10.0		5
145 146	2' - 0" x 7' - 2' - 0" x 7' -		F	WD WD	WD-1 WD-1	F2 F2	HM HM	PNT-3 PNT-3	D8 D8	D9 D9	T5 T2	14.0 14.0		
140	2' - 0" x 7' -		F	WD	WD-1 WD-1	F2	HM	PNT-3	D8	D9	T5	14.0		
148	2' - 0" x 7' -		F	WD	WD-1	F2	HM	PNT-3	D8	D9	T5	14.0		
150	5' - 8" x 7' -	- 2"	F	FRP	FRP	F2	ALUM	B. ANOD.	D11	D10	T1	5.0		
151A	3' - 0" x 7' -		F	FRP	FRP	F2	ALUM	B. ANOD.	D11	D10	T1	1.0		
151B	3' - 0" x 7' -		F	HM	PNT-3	F2	HM	PNT-3	D7	D6	T1	24.0		5
152A 152B	3' - 0" x 7' - 3' - 0" x 7' -		F	HM HM	PNT-3 PNT-3	F2 F2	HM HM	PNT-3 PNT-3	D7 D7	D6 D6	T1 T1	24.0 17.0		5 5
156	3' - 0" x 7' -		F	HM	PNT-3	F2	HM	PNT-3	D7	D6	T1	18.0		5
157	3' - 0" x 7' -		F	HM	PNT-3	F2	HM	PNT-3	D7	D6	T1	13.0		5
158	3' - 0" x 7' -		F	HM	PNT-3	F2	HM	PNT-3	D7	D6	T1	13.0		5
159	3' - 0" x 7' -		F	FRP	FRP	F2	ALUM	B. ANOD.	D11	D10	T1	2.0		
160A	3' - 0" x 7' - 10' - 0" x 8'		F 0H-1	FRP STL	DK. BRNZ		ALUM	B. ANOD.	D7	D6	T1	6.0		4
160B 200	10' - 0" x 8' 3' - 0" x 7' -		UH-1 F	HM	PRE-FIN. PNT-3	F2	HM	PNT-3	D7	D6	- T6	33.0 29.0		2, 4 5
200	3' - 0" x 7' -		F	HM	PNT-3	F2	HM	PNT-3	D7	D0	T1	30.0		
202	3' - 0" x 7' -		F	FRP	FRP	F2	ALUM	B. ANOD.	D11	D10	Т9	7.0		
203A	3' - 0" x 7' -		F	HM	PNT-3	F2	HM	PNT-3	D7	D8	T7	30.0		5
203B	3' - 0" x 7' -		F	FRP	FRP	F2	ALUM	B. ANOD.	D11	D10	T8	7.0		
205A	3' - 0" x 7' -		F	HM	PNT-3	F2	HM	PNT-3 PNT-3	D8	D9	T1 T1	19.0		
205B ATE 1	3' - 0" x 7' -	· U	F 	HM	PNT-3	F2	HM	rivi-3	D8	D9		-		7
ATE 1 ATE 2														8
ATE 3														9
	DOW SCH													
VIINL		ILUU	LL											
NINDOV				WINDOW					DETAIL	S				WINDOW NOTES
		(	STYLE	T	MATE	RIAL		IEAD	JAMB	T	SILL			
	•			<b>I</b>			<u> </u>					-		
SF	-1	STO	REFRONT		ALU	JM	2/	A6-12	1,6,9/A3-	21	10/A6-11			
SF			REFRONT		ALU									
								A6-11	D12/A0-0		5/A6-11			
SF	-3	ST0	REFRONT		ALU	JM	6//	A6-11	D11/A0-0	U5	5/A6-11			
SF	-4	ST0	REFRONT		ALU	JM	10/	/A6-11	D12/A0-05, 9	/A3-21	5/A6-11			
SF	-5	ST0	REFRONT		ALL	JM	3//	A6-13	D12/A0-0	05	3/A6-13			
SF			REFRONT		ALU			A6-11	D10/A0-(		1/A6-11			
~-	-1		REFRONT		ALU			A6-11	D10/A0-0					
SF		ST0	REFRONT		ALU	JM	2//	A6-12	1,6,9/A3-	21	10/A6-11			
SF SF	-8			1-				]	1.0.0/40	01				
		STO	REFRONT		ALL	JIVI	2//	A6-12	1,6,9/A3-	21				
SF	-9		REFRONT DWED LIGHT	r l	ALU H			A6-12 DW METAL	HOLLOW N		HOLLOW METAL	. 1		
SF SF TW	-9	BORR	OWED LIGHT	T							HOLLOW METAL	. 1		

A. REFER TO SPECIFICATION FOR INTERIOR OR EXTERIOR FINISHESB. PROVIDE INSECT SCREEN AT OPERABLE WINDOW PANELS

Window Key Notes:

1. "NATURAL VOICE THRU" TYPE FRAME, UL LEVEL 3 BALLISTIC RESISTANCE RATING

DOOR / (	OPENING	LEGEND:
----------	---------	---------

ALUM	ALUMINUM DOOR OR FRAME
B ANOD	BLACK ANODIZED FINISH
DK BRZ	DARK BRONZE
GL	GLASS
нм	HOLLOW METAL DOOR OR ERA

HOLLOW METAL DOOR OR FRAME PAINTED FINISH HM PNT

## PREFIN. PREFINISHED METAL DOOR FRAME STL STEEL STN STAINED FINISH WD WOOD DOOR OR FRAME

FRP FIBERGLASS DOOR & FRAME

INTERCOM AT MAIN ENTRY DOOR MAIN ENTRY GATE - PROVIDE ACCESS CONTROL PEDASTAL W/ WIRELESS AND CARD READER OPERATION. EXIT ONLY GATE - OPERATED BY VEHICLE SENSOR ELECTROMECHANCIAL GATE LATCH OPERATED BY C.R.



PARTNERS in Architecture, PLC 65 Market Street Mount Clemens, MI 48043 P 586.469.3600

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CONSULTANT

KEY PLAN

OWNER

City of Warren

### PROJECT NAME

Warren Civic Center South Fire Station #1

23211 Van Dyke Ave Warren, MI 48089

PROJECT NO.

21-1	46A
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**ISSUES / REVISIONS** Bidding / Construction

6/13/23

DRAWN BY

DJG \_\_\_\_\_

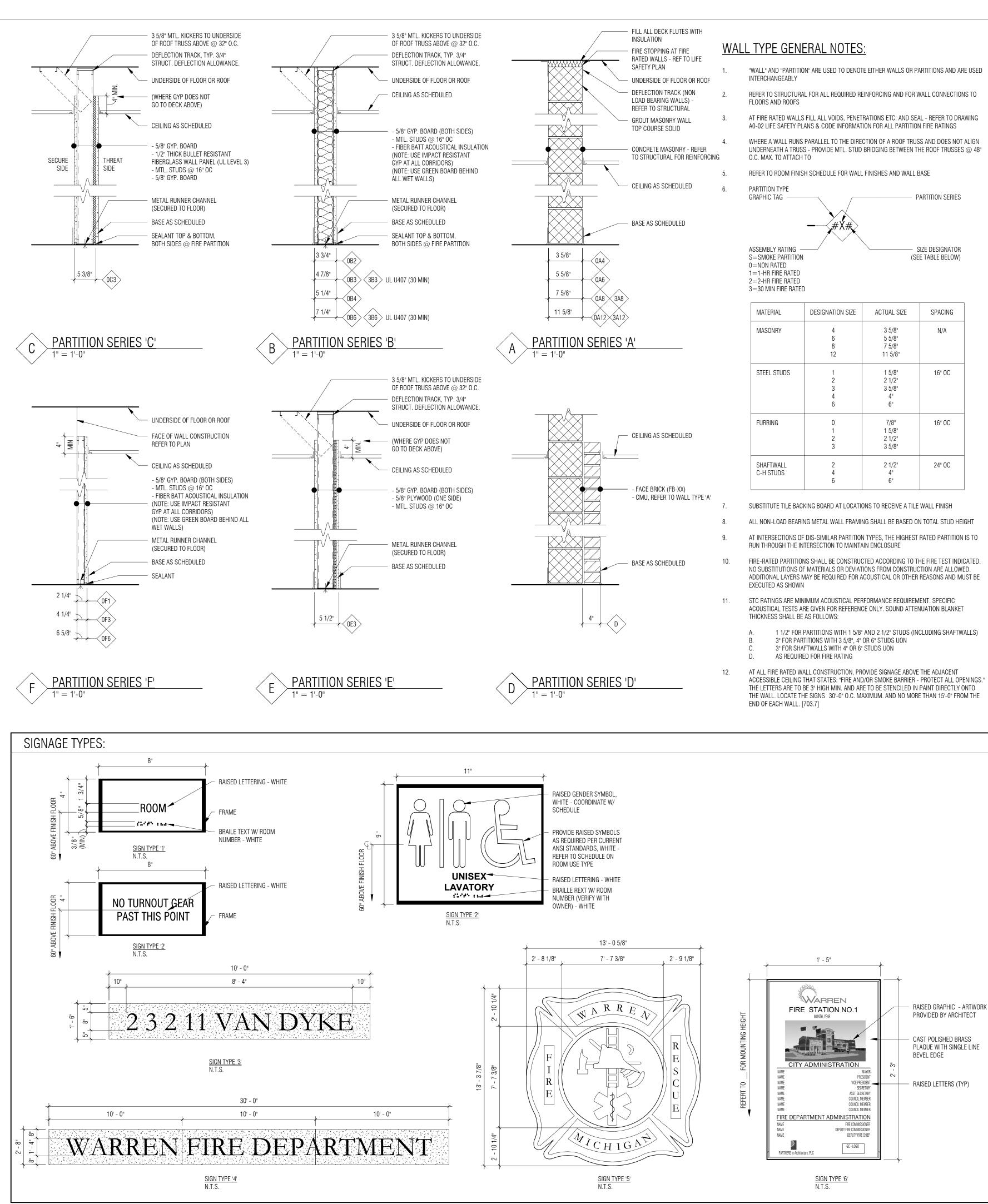
CHECKED BY DG

APPROVED BY

MAM

SHEET NAME

Door Schedule, Door & Frame Types, Storefronts



6/13/2023 11:14:47 AM C:\\_revitlocal\21-146 WFD STATION 1 CD\_DGwozdzDHM3H.rvt

MATERIAL	DESIGNATION SIZE	ACTUAL SIZE	SPACING
MASONRY	4 6 8 12	3 5/8" 5 5/8" 7 5/8" 11 5/8"	N/A
STEEL STUDS	1 2 3 4 6	1 5/8" 2 1/2" 3 5/8" 4" 6"	16" OC
FURRING	0 1 2 3	7/8" 1 5/8" 2 1/2" 3 5/8"	16" OC
SHAFTWALL C-H STUDS	2 4	2 1/2" 4"	24" OC

					W	ALLS			R00		SIGNAGE SCHEDU	LE
								-	M FINIS H KEY	ROO M		
ROOM NO. 101	ROOM NAME APPARATUS BAY	FLOOR EP-1	BASE EP-1	NORTH EP-PNT-1	EAST EP-PNT-1	SOUTH EP-PNT-1	WEST EP-PNT-1	CEILING PNT-1	NOTE		SIGN NAME	MOUN SURFA
102	HOSE TOWER	SEALED CONCRETE	EP-1	EP-PNT-1	EP-PNT-1	EP-PNT-1	EP-PNT-1	EP-PNT-2 ON				
103	COMMUNITY ROOM	CPT-3 / RTF-1	RB-1	PNT-1	PNT-1	PNT-1	PNT-1	LANDING ACT-1		1	COMMUNITY ROOM	GYF
103	WC	PT-1	PT-2	PT-4 / PT-5 / PT-6 / PT-9 /	PT-4 / PT-5 / PT-6 / PT-9 /	PT-4 / PT-5 / PT-6 / PT-9 /	PT-4 / PT-5 / PT-6 / PT-9 /	ACT-1	1	2	RESTROOM	GYI
				EP-PNT-1	EP-PNT-1	EP-PNT-1	EP-PNT-1					
105	SECURE VEST	CPT-1	RB-1	PNT-1	PNT-1	PNT-1	PNT-1	ACT-1				
106 107	STOR / IT WATCH DESK	CPT-2 CPT-2	RB-1 RB-1	PNT-1 PNT-1	PNT-1 PNT-1	PNT-1 PNT-1	PNT-1 PNT-1	ACT-1 ACT-1		1	WATCH DESK	GYI
108	SLEEP	CPT-2	RB-1	PNT-1	PNT-1	PNT-1	PNT-1	ACT-1				
109	BATH	PT-1	PT-2	PT-4 / PT-5 / PT-6 / PT-9 / EP-PNT-1	PT-4 / PT-5 / PT-6 / PT-9 / EP-PNT-1	PT-4 / PT-5 / PT-6 / PT-9 / EP-PNT-1	PT-4 / PT-5 / PT-6 / PT-9 / EP-PNT-1	PNT-2	1			
110	DORM	CPT-2	RB-1	PNT-1	PNT-1	PNT-1	PNT-1	ACT-1		1	DORM 3	GY
111	BATH	PT-1	PT-2	PT-4 / PT-5 / PT-6 / PT-9 / EP-PNT-1	PT-4 / PT-5 / PT-6 / PT-9 / EP-PNT-1	PT-4 / PT-5 / PT-6 / PT-9 / EP-PNT-1	PT-4 / PT-5 / PT-6 / PT-9 / EP-PNT-1	PNT-2 / PT-1	I			
112	DORM	CPT-2	RB-1	PNT-1	PNT-1	PNT-1	PNT-1	ACT-1		1	DORM 1	GYF
113	DORM	CPT-2	RB-1	PNT-1	PNT-1	PNT-1	PNT-1	ACT-1		1	DORM 4	GYF
114	BATH	PT-1	PT-2	PT-4 / PT-5 / PT-6 / PT-9 / EP-PNT-1	PT-4 / PT-5 / PT-6 / PT-9 / EP-PNT-1	PT-4 / PT-5 / PT-6 / PT-9 / EP-PNT-1	PT-4 / PT-5 / PT-6 / PT-9 / EP-PNT-1	PNT-2 / PT-1	1			0.4
115 116	DORM DORM	CPT-2 CPT-2	RB-1 RB-1	PNT-1 PNT-1	PNT-1 PNT-1	PNT-1 PNT-1	PNT-1 PNT-1	ACT-1 ACT-1		1	DORM 2 DORM 7	GYF GYF
117	BATH	PT-1	PT-2	PT-4 / PT-5 / PT-6 / PT-9 /	PT-4 / PT-5 / PT-6 / PT-9 /	PT-4 / PT-5 / PT-6 / PT-9 /	PT-4 / PT-5 / PT-6 / PT-9 /	PNT-2 / PT-1	1	1	DONIWI	
		0.077.0		EP-PNT-1	EP-PNT-1	EP-PNT-1	EP-PNT-1	107.1				
118 119	DORM DORM	CPT-2 CPT-2	RB-1 RB-1	PNT-1 PNT-1	PNT-1 PNT-1	PNT-1 PNT-1	PNT-1 PNT-1	ACT-1 ACT-1		1	DORM 5 DORM 8	GYI GYI
120	BATH	PT-1	PT-2	PINT-1 PT-4 / PT-5 / PT-6 / PT-9 / EP-PNT-1	PINI-1 PT-4 / PT-5 / PT-6 / PT-9 / EP-PNT-1	PT-4 / PT-5 / PT-6 / PT-9 / EP-PNT-1	PNT-1 PT-4 / PT-5 / PT-6 / PT-9 / EP-PNT-1	PNT-2 / PT-1	1	I	DURIVI 6	GI
121	DORM	CPT-2	RB-1	PNT-1	PNT-1	PNT-1	PNT-1	ACT-1		1	DORM 6	GY
122	DAY/DINE/KITCHEN		RB-1 / PT-8	PNT-1	PNT-1	PNT-1	PNT-1	ACT-1/				
122A	PANTRY	RTF-1 / PT-7 PT-7	PT-8	PNT-1	PNT-1	PNT-1	PNT-1	PNT-2 PNT-2				
122B	PANTRY	PT-7	PT-8	PNT-1	PNT-1	PNT-1	PNT-1	PNT-2				
122C	PANTRY	PT-7	PT-8	PNT-1	PNT-1	PNT-1	PNT-1	PNT-2				
123	ELEC	CONC-1	RB-1	PNT-1	PNT-1	PNT-1	PNT-1	ACT-1				
125 126	LAUNDRY WC	RTF-1 PT-1	RB-1 PT-2	EP-PNT-1 PT-5 / PT-6 / PT-7 / EP-PNT-1	EP-PNT-1 PT-5 / PT-6 / PT-7 / EP-PNT-1	EP-PNT-1 PT-5 / PT-6 / PT-7 / EP-PNT-1	EP-PNT-1 PT-5 / PT-6 / PT-7 / EP-PNT-1	ACT-1 ACT-1	1			
127	STORAGE/JC	RTF-1	RB-1	EP-PNT-1	EP-PNT-1	EP-PNT-1	EP-PNT-1	ACT-1				
128	EMS STORAGE	EP-1	EP-1	EP-PNT-1	EP-PNT-1	EP-PNT-1	EP-PNT-1	EP-PNT-1				
129	SENIOR OFFICER	CPT-2	RB-1	PNT-1	PNT-1	PNT-1	PNT-1	ACT-1				
130 131	BATH HOT ZONE	PT-1 EP-1	PT-2 EP-1	PT-4 / PT-5 / PT-6 / PT-9 / EP-PNT-1	PT-4 / PT-5 / PT-6 / PT-9 / EP-PNT-1 EP-PNT-1	PT-4 / PT-5 / PT-6 / PT-9 / EP-PNT-1 EP-PNT-1	PT-4 / PT-5 / PT-6 / PT-9 / EP-PNT-1 EP-PNT-1	PNT-2 / PT-1 PNT-1	1			
132	HOT ZONE	EP-1	EP-1		EP-PNT-1	EP-PNT-1	EP-PNT-1	PNT-1				
140	CORRIDOR	RTF-1	RB-1	PNT-1	PNT-1	PNT-1	PNT-1	ACT-1				
141	CORRIDOR	RTF-1	RB-1	PNT-1	PNT-1	PNT-1	PNT-1	ACT-1				
142	CORRIDOR	RTF-1	RB-1	PNT-1	PNT-1	PNT-1	PNT-1	ACT-1				
143 144	CORRIDOR	RTF-1 RTF-1	RB-1 RB-1	PNT-1 PNT-1	PNT-1 PNT-1	PNT-1 PNT-1	PNT-1 PNT-1	ACT-1 PNT-2				
145	CLOSET	RTF-1	RB-1	PNT-1	PNT-1	PNT-1	PNT-1	PNT-2				
146	CLOSET	RTF-1	RB-1	PNT-1	PNT-1	PNT-1	PNT-1	PNT-2				
147	CLOSET	RTF-1	RB-1	PNT-1	PNT-1	PNT-1	PNT-1	PNT-2				
148 150	CLOSET OUTDOOR STOR	RTF-1 CONC-1	RB-1 RB-1	PNT-1 EP-PNT-1	PNT-1 EP-PNT-1	PNT-1 EP-PNT-1	PNT-1 EP-PNT-1	PNT-2 EXP				
151	DECON	EP-1	EP-1	EP-PNT-1	EP-PNT-1	EP-PNT-1	EP-PNT-1	PNT-1				
152	BATH	EP-1	EP-1	EP-PNT-1	EP-PNT-1	EP-PNT-1	EP-PNT-1	PNT-1				
153	ALCOVE	EP-1	EP-1	EP-PNT-1	EP-PNT-1		EP-PNT-1	PNT-1				
154 155	PPE LAUNDRY PPE STORAGE	EP-1 EP-1	EP-1 EP-1	EP-PNT-1 EP-PNT-1	EP-PNT-1 EP-PNT-1	EP-PNT-1 EP-PNT-1	EP-PNT-1 EP-PNT-1	PNT-1 PNT-1				
156	SCBA	EP-1	EP-1	EP-PNT-1	EP-PNT-1	EP-PNT-1	EP-PNT-1	PNT-1				
157	COMPRESSOR	EP-1	EP-1	EP-PNT-1	EP-PNT-1	EP-PNT-1	EP-PNT-1	PNT-1				
158	UTIL	SEALED CONCRETE	EP-1	EP-PNT-1	EP-PNT-1	EP-PNT-1	EP-PNT-1	PNT-1				
159	ENTRY	EP-1	EP-1	EP-PNT-1	EP-PNT-1	EP-PNT-1	EP-PNT-1	PNT-1				
160 201	GARAGE MEZZANINE/STORAGE	EP-1 SEALED CONCRETE	EP-1 RB-1	EP-PNT-1 EP-PNT-1	EP-PNT-1 EP-PNT-1	EP-PNT-1 EP-PNT-1	EP-PNT-1 EP-PNT-1	EXP EXP				
201	MECHANICAL/ELECTRICAL	SEALED CONCRETE	RB-1 RB-1	EP-PNT-1 EP-PNT-1	EP-PNT-1 EP-PNT-1	EP-PNT-1	EP-PNT-1 EP-PNT-1	EXP				
202	STORAGE	SEALED CONCRETE	RB-1	EP-PNT-1	EP-PNT-1	EP-PNT-1	EP-PNT-1	EXP				
203	HOSE STORAGE											
204	FITNESS AREA	RAF-1	RB-2	EP-PNT-1	EP-PNT-1	EP-PNT-1	EP-PNT-1	EXP				
205A	OPEN TRAINING/STORAGE	SEALED CONCRETE	RB-1	EP-PNT-1	EP-PNT-1	EP-PNT-1	EP-PNT-1	EXP				<u> </u>

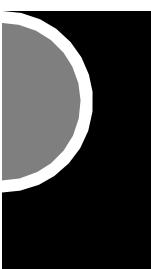


PAINT TRANSITIONS. SCHEDULE.

**ROOM FINISH KEY NOTES** 

REFER TO INTERIOR ELEVATIONS FOR WALL TILE LAYOUT & DESIGN.

# PARTNERS



PARTNERS in Architecture, PLC 65 Market Street Mount Clemens, MI 48043 P 586.469.3600

### F 586.469.3607

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### CONSULTANT

### KEY PLAN

### OWNER

City of Warren

### PROJECT NAME

Warren Civic Center South Fire Station #1

## 23211 Van Dyke Ave Warren, MI 48089

PROJECT NO.

## 21-146A

ISSUES / REVISIONS Bidding / Construction

6/13/23

DRAWN BY

DJG

CHECKED BY DG

APPROVED BY

MAM

SHEET NAME Room Finish Schedule, Wall Types & Signage

### SHEET NO. A0-04

LT GA CLARK-DIETRICH FASTBACK BACKING CLIP APPLY ADHESIVE BETWEN SUPPORT BLOCKING & GYP BD 2x6 WOOD BLOCKING STANDARD BACKING FOR ALL WALL MTD EQUIPMENT 18GA METAL FLAT STOCK BACKING MAY BE SUBSTITUTED FOR 2x6 WOOD SUPPORT BLOCKING/BACKING 3" = 1'-0"

REFER TO REFLECTED CEILING PLANS, INTERIOR ELEVATIONS, AND FINISH FLOOR PLANS FOR LOCATIONS OF MATERIAL, REFER TO MATERAL FINISH & COLOR SCHEDULE, SPECIFICATION SECTION 000200.

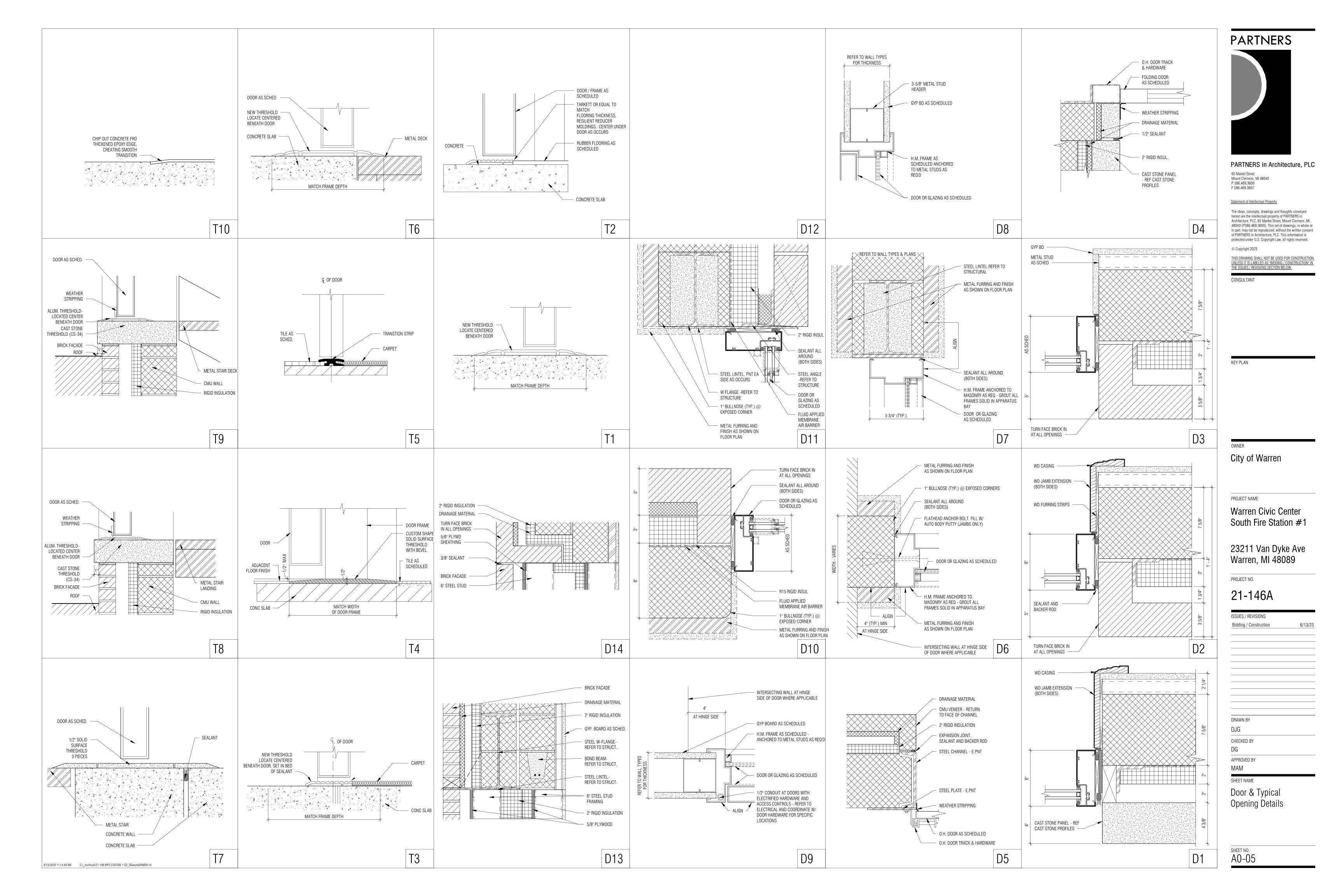
PROVIDE REDUCER STRIP AT FLOOR MATERIAL TRANSITIONS AS NEEDED, REFER TO THRESHOLD DETAILS AND DOOR

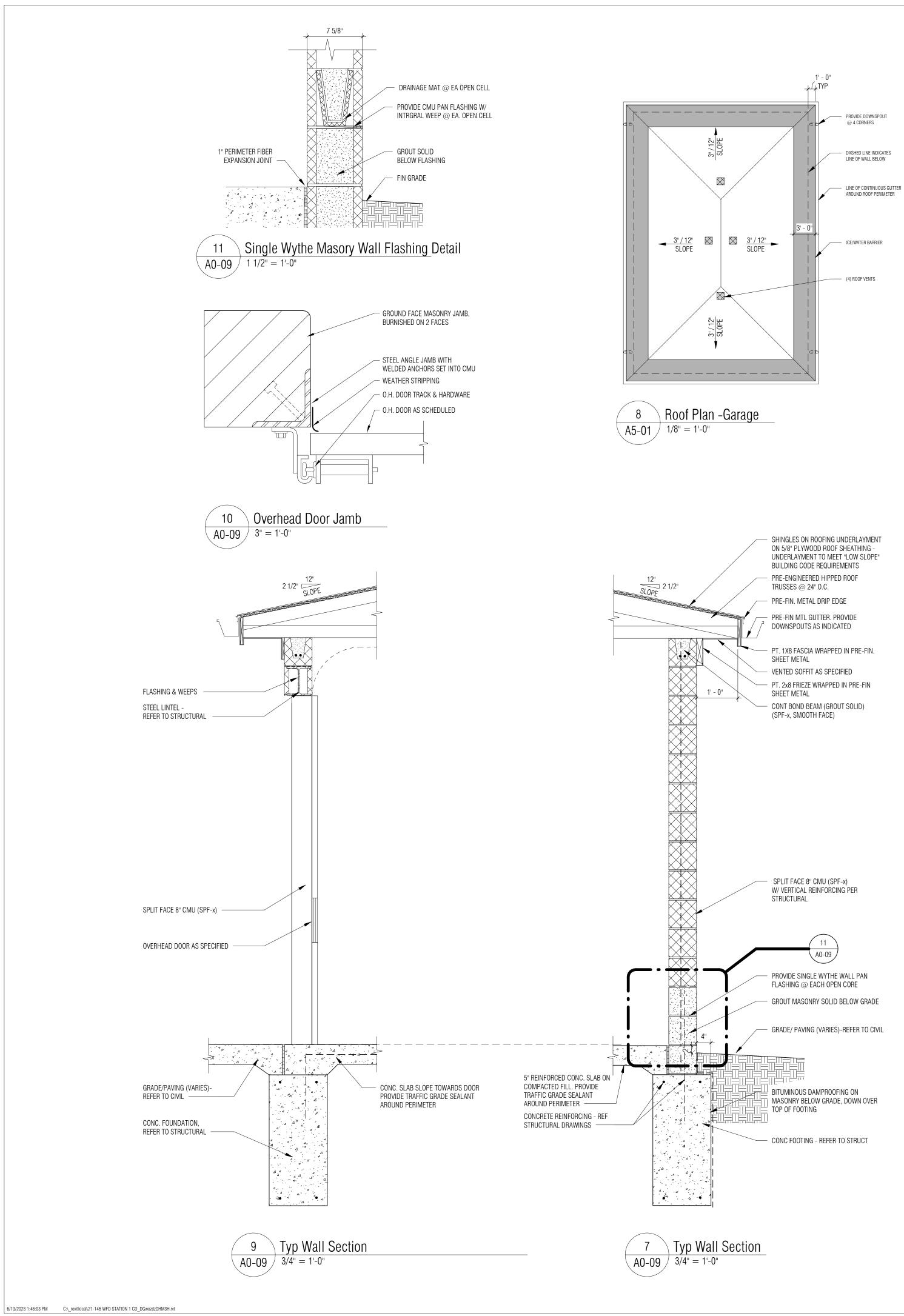
# **ROOM FINISH LEGEND**

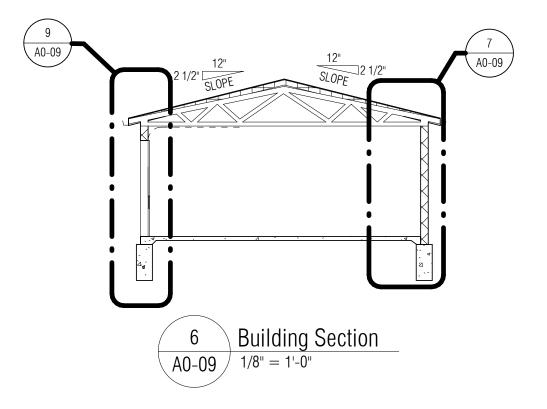
- RAF ATHLETIC FLOORING ACOUSTIC TILE AND GRID CEILING SYSTEM ACT
- CONC CONRETE CPT CARPET
- CERAMIC TILE СТ EPOXY FLOORING EP

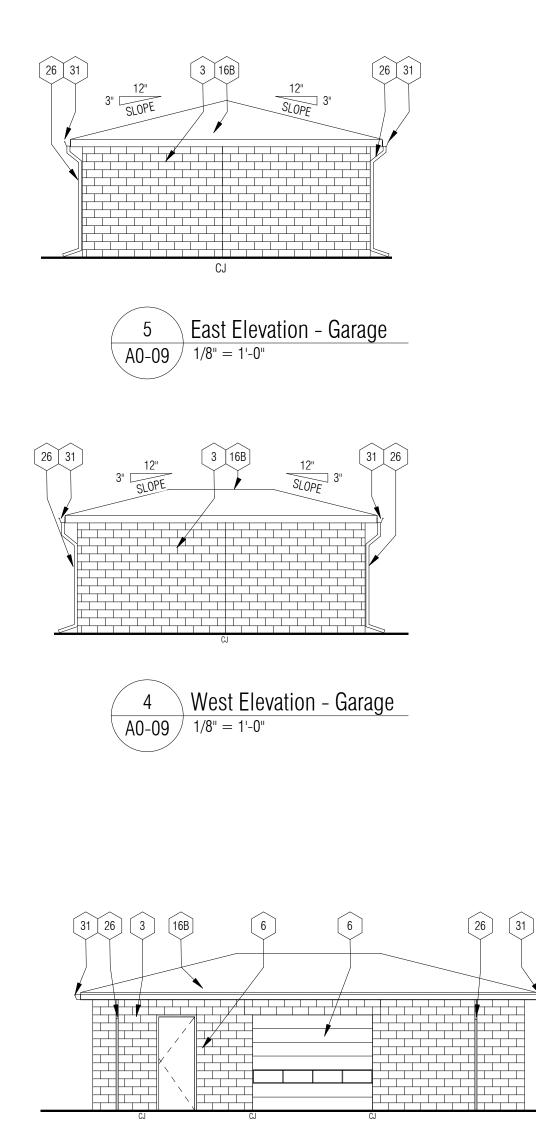
SS

- EP PNT EPOXY PAINT LVT LUXURY VINYL TILE FLOORING EXPOSED PRECAST CONCRETE PLANK CEILING PC PT
- PORCELAIN TILE PAINT PNT RESILIENT WALL BASE
- RB RESILIENT TILE FLOORING RTF SOLID SURFACING
- VINYL COMPOSITION TILE VCT MP FORMED METAL CEILING PANEL





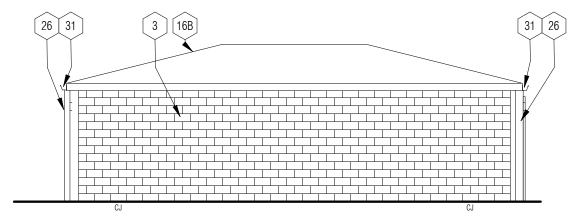




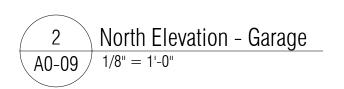
3 South Elev A0-09 1/8" = 1'-0" South Elevation - Garage A0-09 3

## EXTERIOR ELEVATION KEY NOTES

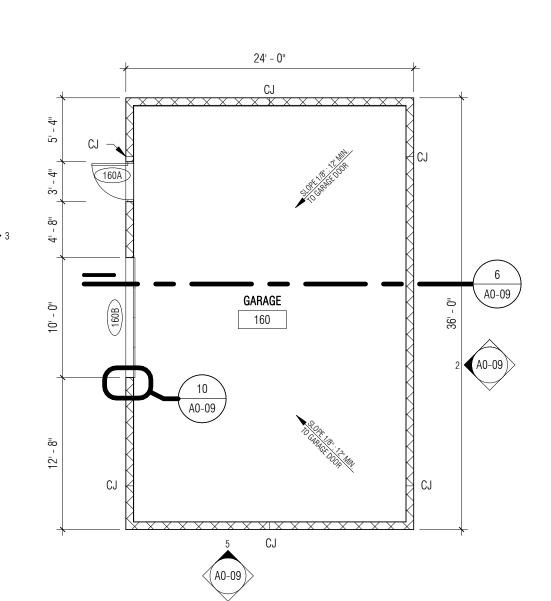
1	CLAY BRICK (FB-1)	16B	ASPHALT SHINGLE ROOF W/ ICE/WATER SHIELD AROUND PERIMETER
2	CLAY BRICK (FB-2)	17	STACKED BRICK (FB-1)
3	GROUND FACE MASONRY BLOCK (GFM-2)	18	PRE-FINISHED LOUVER - REFER TO MECH
4A	GROUND FACE MASONRY BLOCK (RECESS MASONRY BLOCK UNITS 1" AS INDICATED BY SHADED AREA)(GFM-1)	20	UTILITY METER - REF MECH/ELEC
4B	GROUND FACE MASONRY BLOCK (PROJECT MASONRY BLOCK UNITS 1" AS INDICATED BY SHADED AREA) (GFM-1)	21	Flemish Bond Glazed Brick @ 45 - Refer to Detail 2/A6-11
5	GROUND FACE MASONRY BLOCK (GFM-3)	22	BUILDING MOUNTED LADDER - REF DET 7/A3-32
6	EXTERIOR DOOR AS SCHEDULED	23	PIPE BOLLARD - REF DET 7/A2-02
7	ALUMINUM STOREFRONT ENTRANCE SYSTEM	24	CONCRETE BOLLARD - REF DET 3/A2-02
8	ALUMINUM STOREFRONT WINDOW SYSTEM	25	ROOF TO WALL FLASHING 8" MIN
9	SOLDIER BRICK BAND (FB-1)	26	PRE-FIN METAL DOWNSPOUT - REFER TO CIVIL
10	CUT SOLDIER BRICK OPENING( FB-2)	27	FIRE DEPARTMENT CONNECTION. MIN 18" ABOVE GRADE. REFER TO MECH
11	CAST STONE	28	OVERFLOW RAIN CONDUCTOR COWSTOUNGE. CL OF PIPE
12A	ENGRAVED CAST STONE SIGNAGE - REFER TO A0-05	20	AT 2'-0" A.F.F. REFER TO MECH
12B	CAST STONE & CAST METAL MEDALLION	29	WALL SCONCE. REFER TO ELEC FOR MOUNTING HEIGHT AND TYPE
13	3 COURSE SOLDIER BRICK RECESSED 1" (FB-1)	30	WALL PACK. REFER TO ELEC FOR MOUNTING HEIGHT AND
14	ROWLOCK BRICK WINDOW FRAME (FB-1)		ТҮРЕ
15	KNOCK-DOWN PANEL	31	PRE-FIN METAL GUTTER
16	STANDING SEAM METAL ROOF	32	MECH EXAUST HOOD-REFER TO MECH. PRIME AND PAINT.
		33	PRE-FINISHED EXHAUST VENT - REFER TO MECH. PRIME

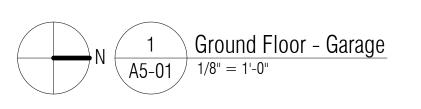


AND PAINT.









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PARTNERS in Architecture, PLC 65 Market Street Mount Clemens, MI 48043 P 586.469.3600

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CONSULTANT

KEY PLAN

OWNER

### City of Warren

PROJECT NAME

## Warren Civic Center South Fire Station #1

23211 Van Dyke Ave Warren, MI 48089

PROJECT NO.

# 21-146A

**ISSUES / REVISIONS** 

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MAA

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SHEET NAME

Detached Garage

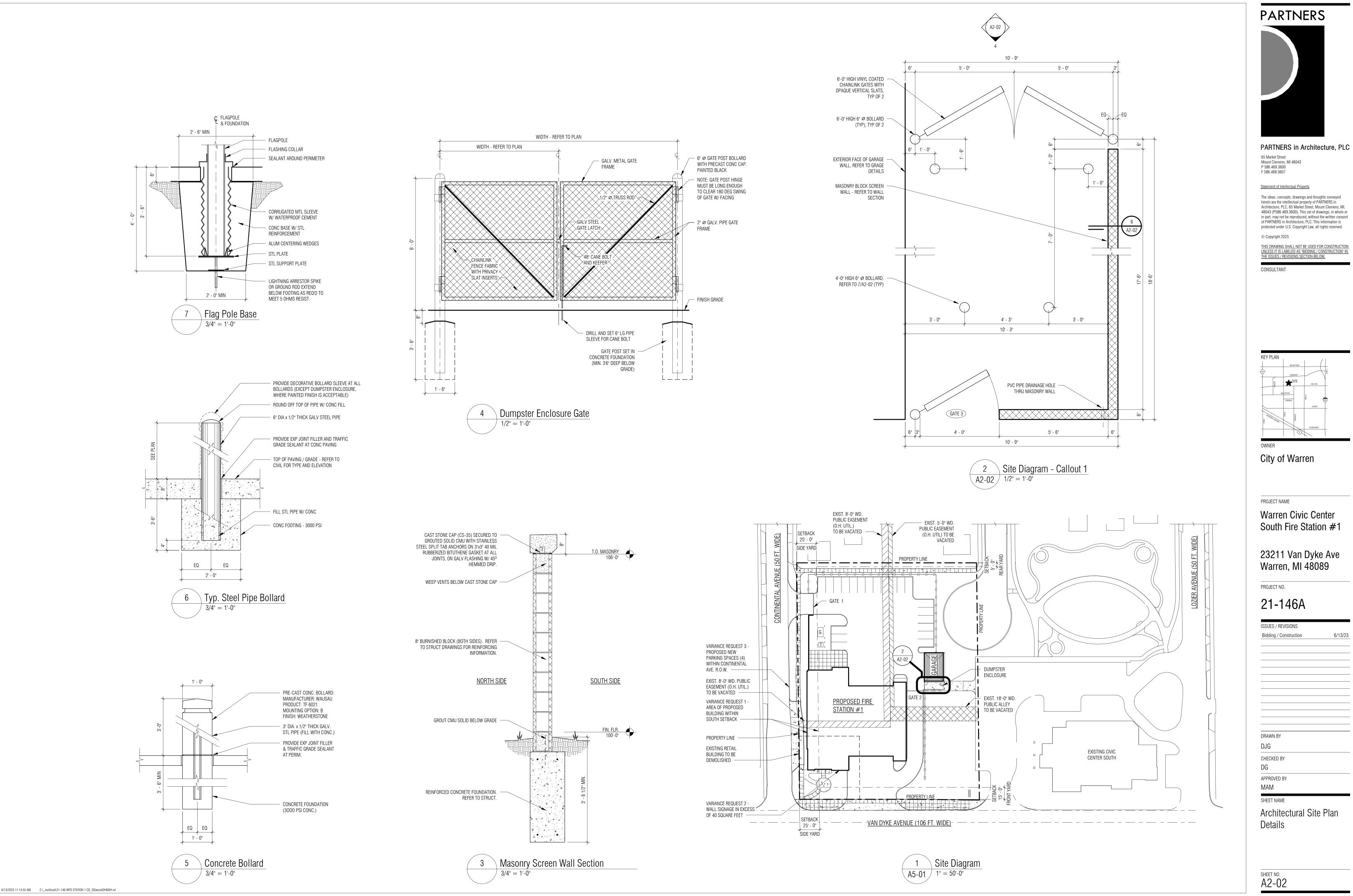
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DG

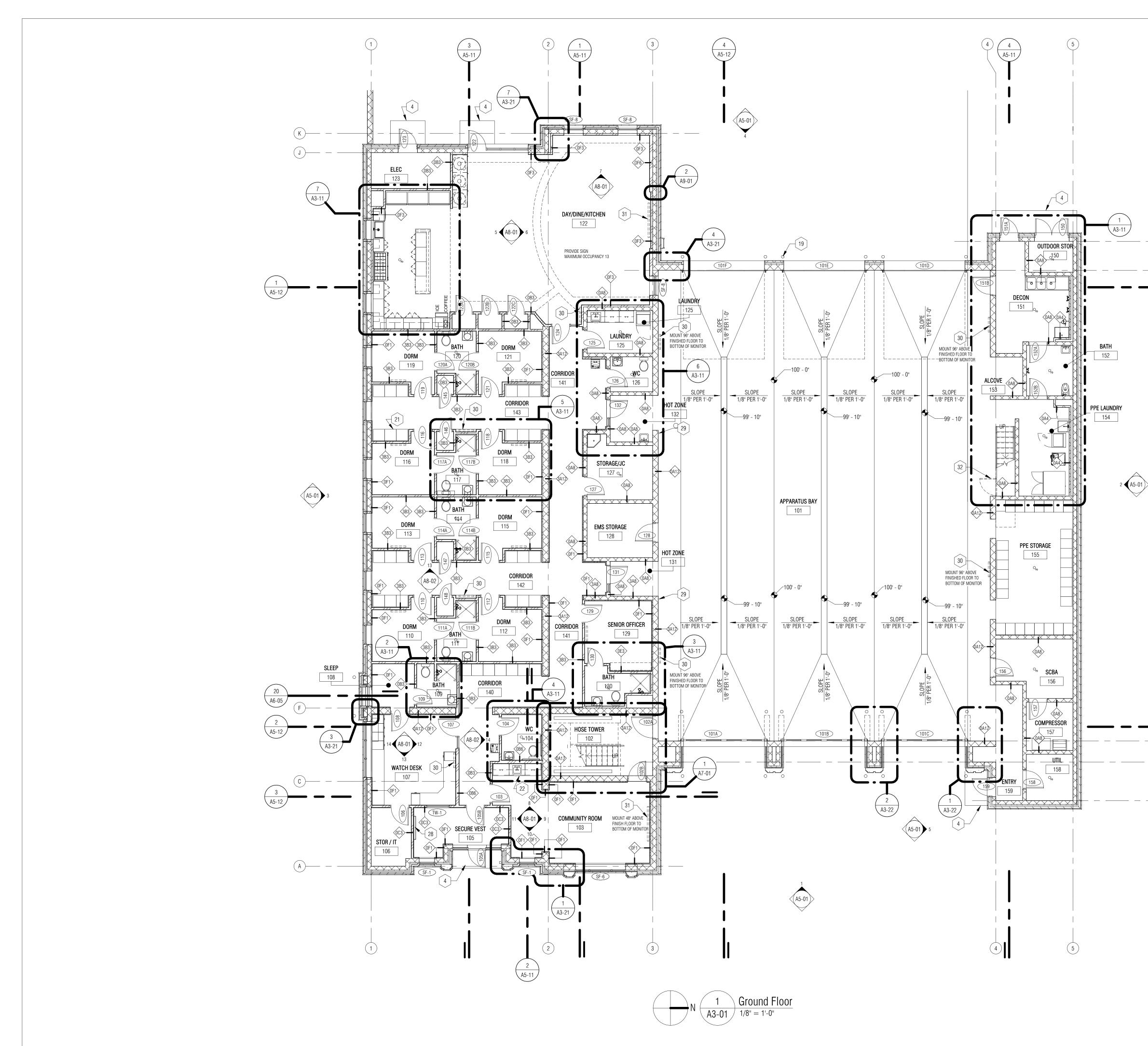
MAM

Bidding / Construction

6/13/23



6/13/23



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IVI.

### FLOOR PLAN GENERAL NOTES

- A. DO NOT SCALE DRAWINGS. USE DIMENSIONS PROVIDED. IF A CONFLICT IS ENCOUNTERED OR REQUIRED DIMENSION IS NOT PROVIDED, REQUEST A CLARIFICATION FROM THE ARCHITECT.
- B. ALL PLAN DIMENSIONS ARE NOMINAL TO THE FACE OF WALLS. REFER TO WALL TYPES ON A0-05 FOR ACTUAL WALL THICKNESSES.
- C. COORDINATE SIZE AND LOCATION OF ALL DUCT, SHAFT, AND LOUVER OPENINGS IN WALLS WITH MECHANICAL.
- D. ALL EXPOSED CORNERS OF CONCRETE MASONRY UNITS ARE TO BE BULLNOSED.
- E. REQUIRED FIRE RATED PARTITIONS, FLOORS, AND CEILINGS ARE INDICATED ON SHEET A0-03, LIFE SAFETY PLAN, AS WELL AS FIRE EXTINGUISHER & CABINET LOCATIONS.
- F. REFER TO REFER TO PLUMBING DRAWINGS AND SPECIFICATIONS FOR PLUMBING FIXTURE IDENTIFICATION & LEGEND
- G. REFER TO SHEETS A3-01d & A3-11 FOR DIMENSIONING INFORMATION

### FLOOR PLAN KEYNOTES

——(H)

- \_\_\_\_(G)

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- WALL MTD. PPE STORAGE READY RACK OWNER FURNISHED/ CONTRACTOR INSTALLED
- 3 ELECTRIC WATER COOLER WITH BOTTLE FILL (SEE MECH)
- 4 FROST SLAB AT BUILDING ENTRY, TYP. (SEE STRUCT)
- 5 WORK SURFACE REFER TO INTERIOR ELEVATIONS
- 6 DISHWASHER OWNER FURNISHED/ CONTRACTOR INSTALLED
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- 14 HOSE DRYER CABINET READY RACK FH6G EXPRESS GEAR 6 DRYER REF MECH PLANS FOR DUCTING.
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- 16 WASHER/DRYER OWNER PROVIDED/ CONTRACTOR INSTALLED REFER TO MECH.
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- - - B

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6/13/23

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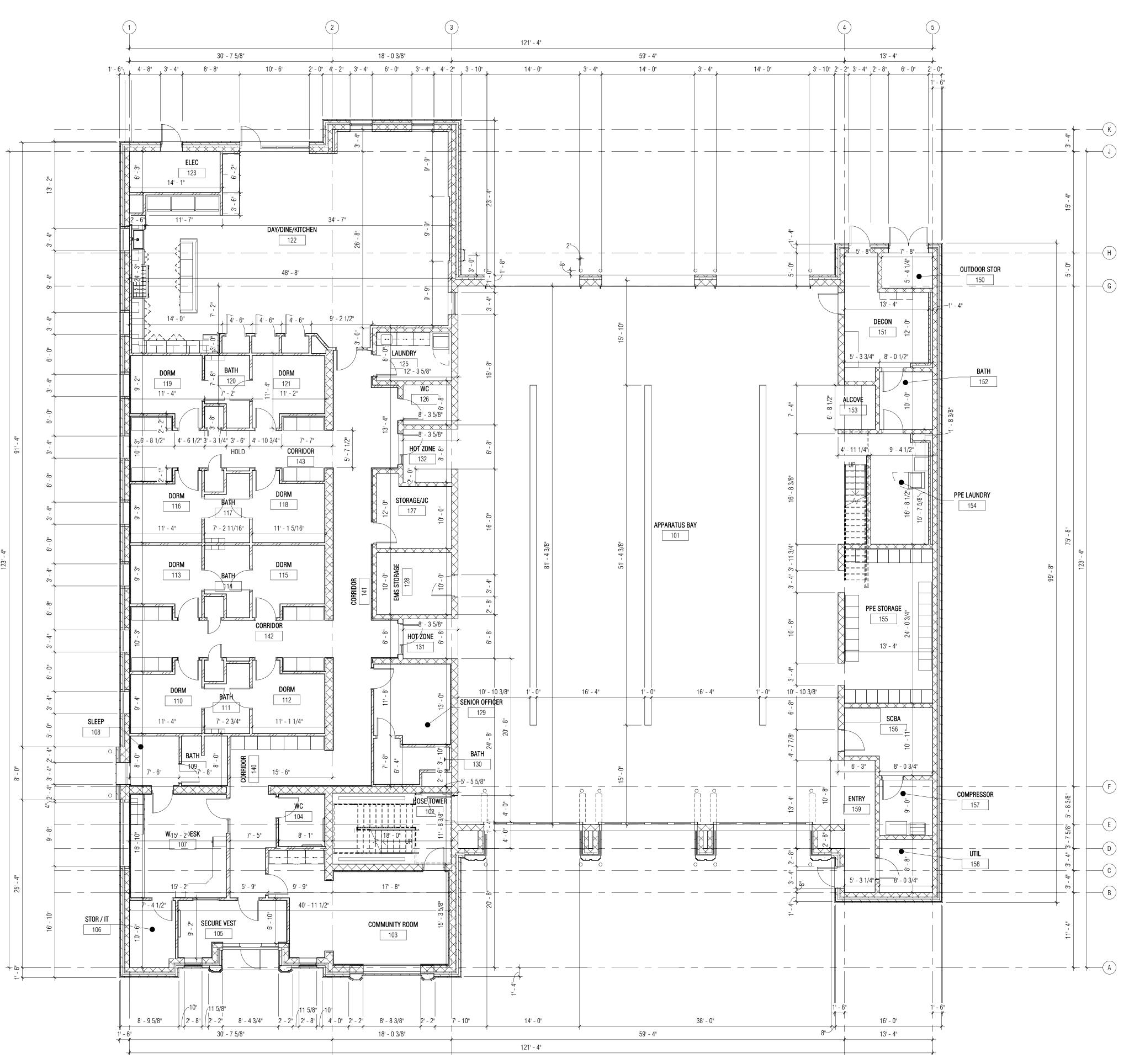
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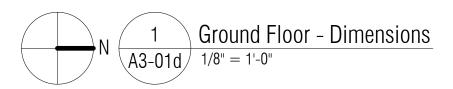
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SHEET NAME

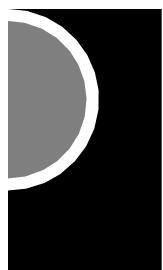
Ground Floor Plan



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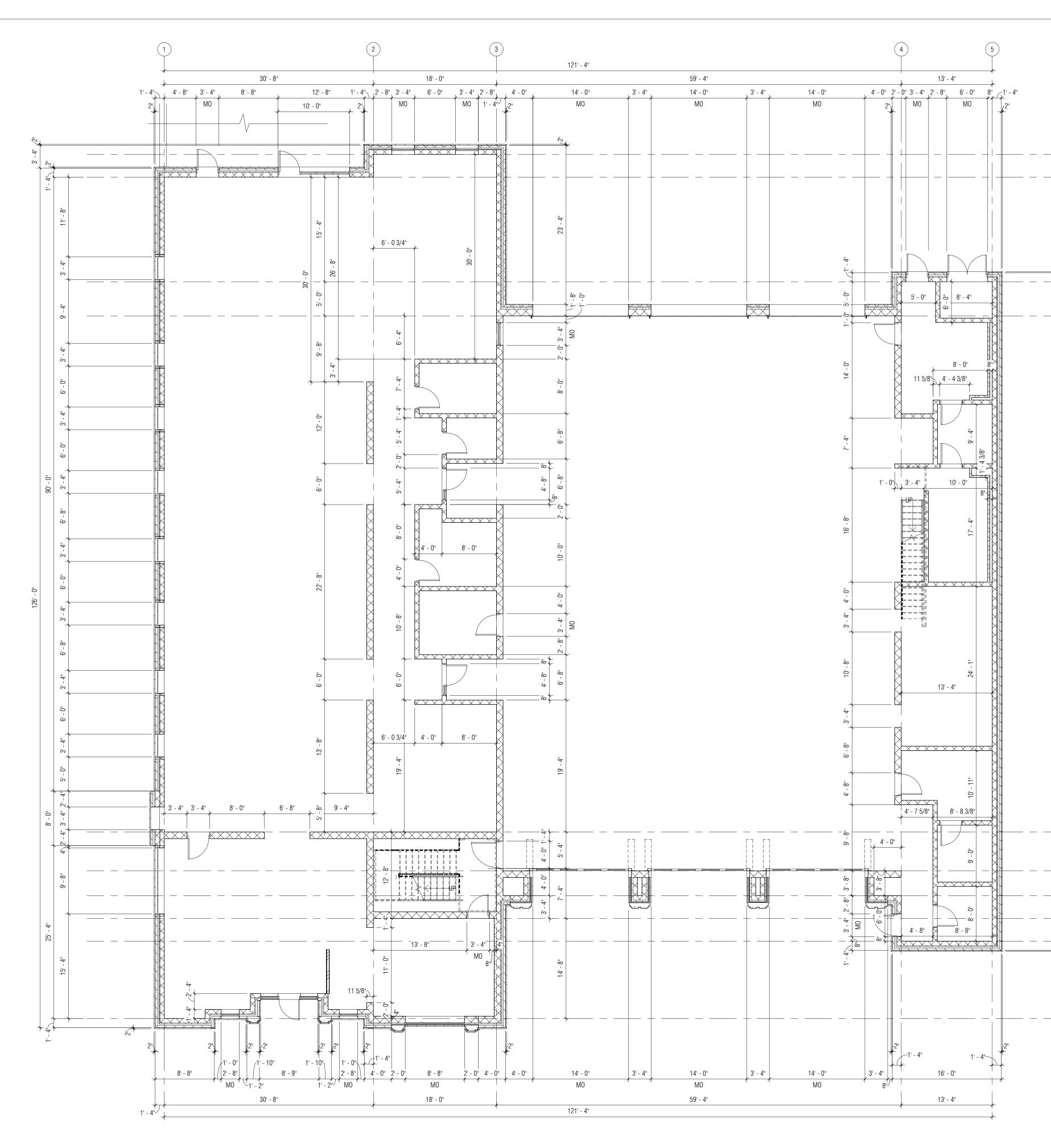
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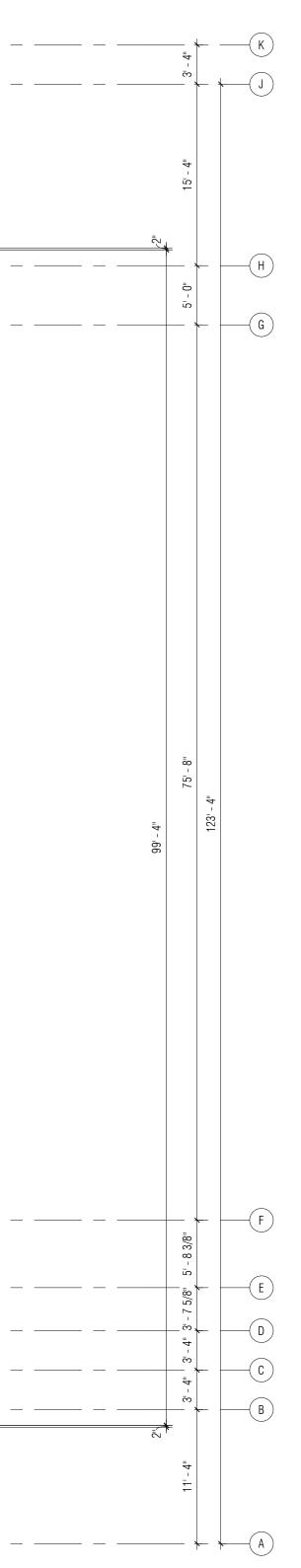
SHEET NAME Ground Floor Plan

Dimensions

sheet no. A3-01d



N  $\begin{pmatrix} 1 \\ A3-01m \end{pmatrix}$  Ground Floor – Dimensions – Masonry



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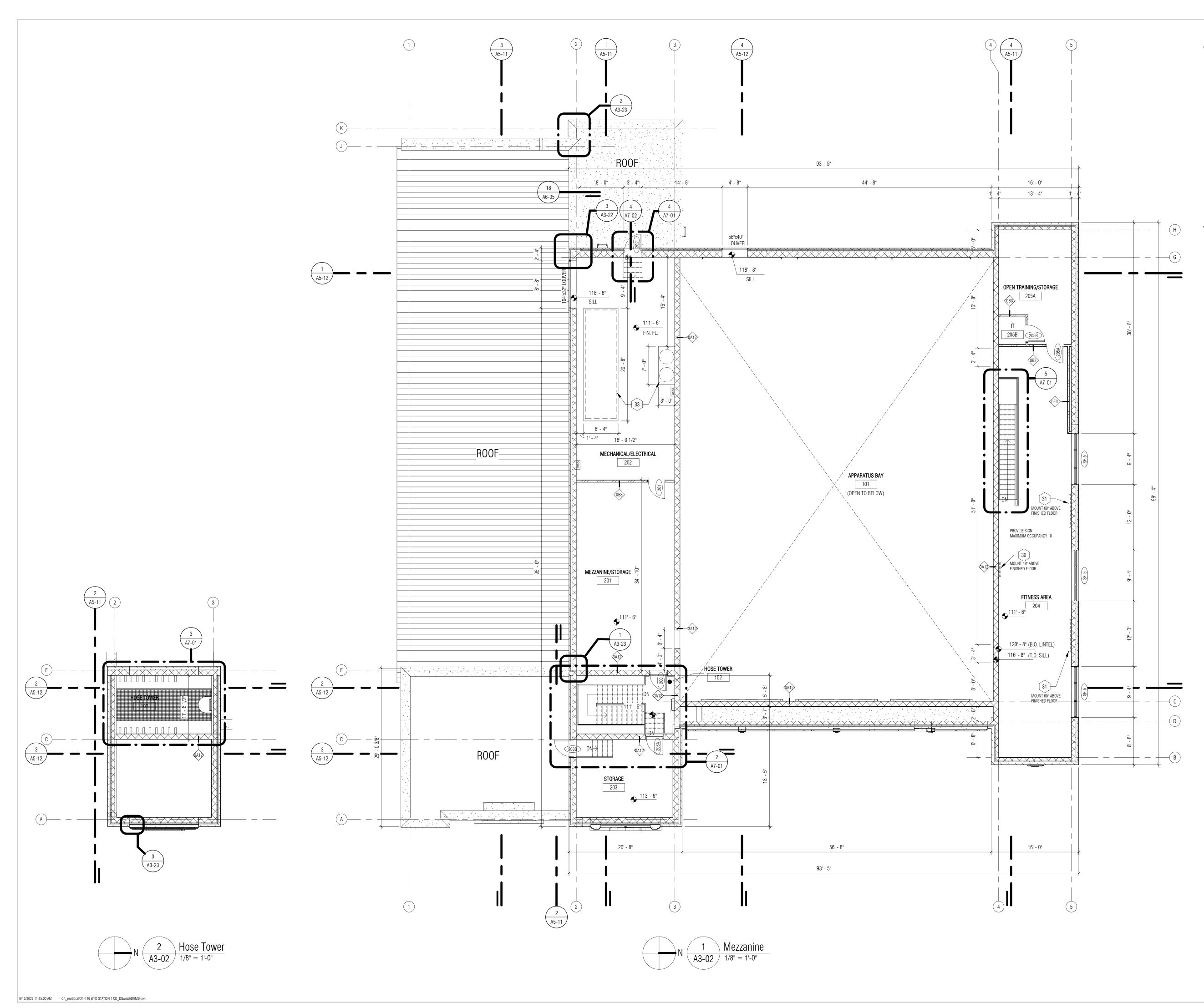
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SHEET NAME Ground Floor Plan Masonry Dimensions

sheet no. **A3-01m** 



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CONSULTANT

KEY PLAN

### OWNER

### City of Warren

### PROJECT NAME

Warren Civic Center South Fire Station #1

23211 Van Dyke Ave Warren, MI 48089

PROJECT NO.

# 21-146A

ISSUES / REVISIONS Bidding / Construction

6/13/23

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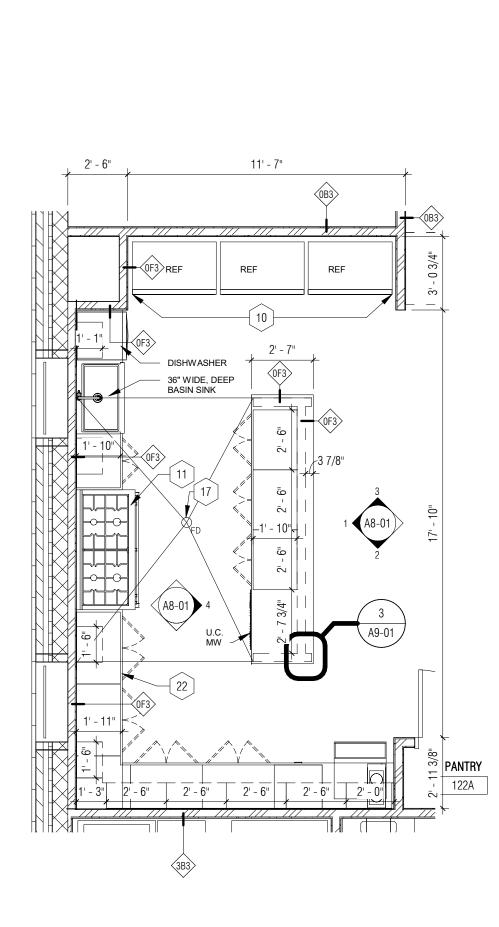
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DG APPROVED BY

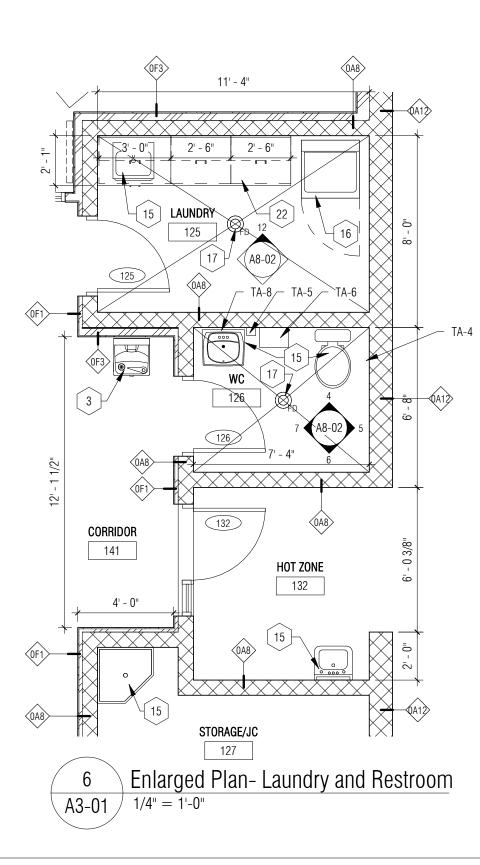
MAM

SHEET NAME

Mezzanine & Hose Tower Plan







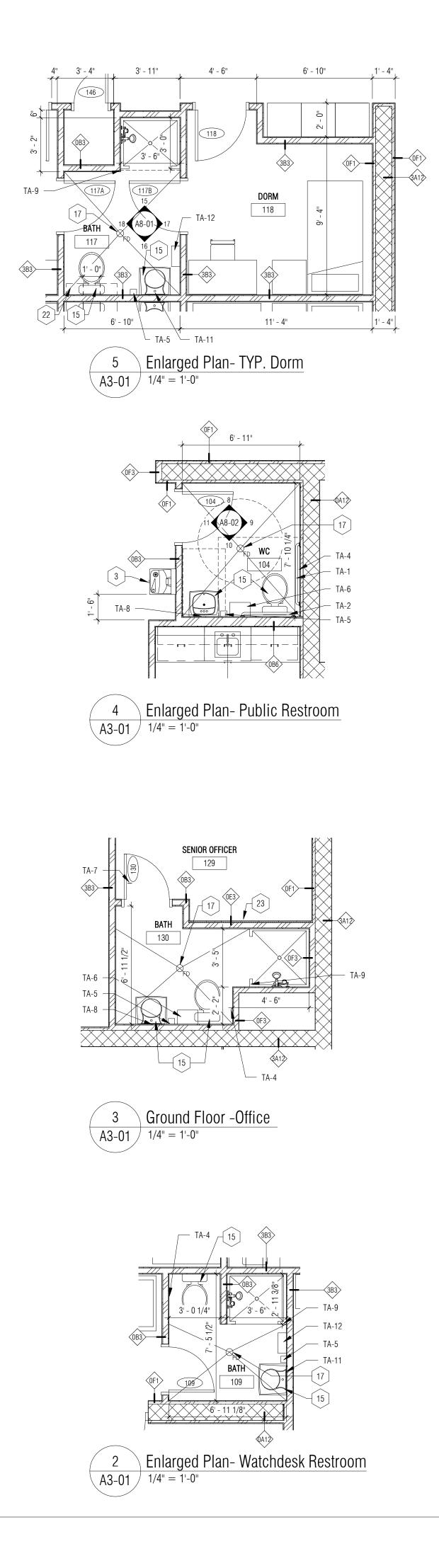
6/13/2023 11:15:06 AM C:\\_revitlocal\21-146 WFD STATION 1 CD\_DGwozdzDHM3H.rvt

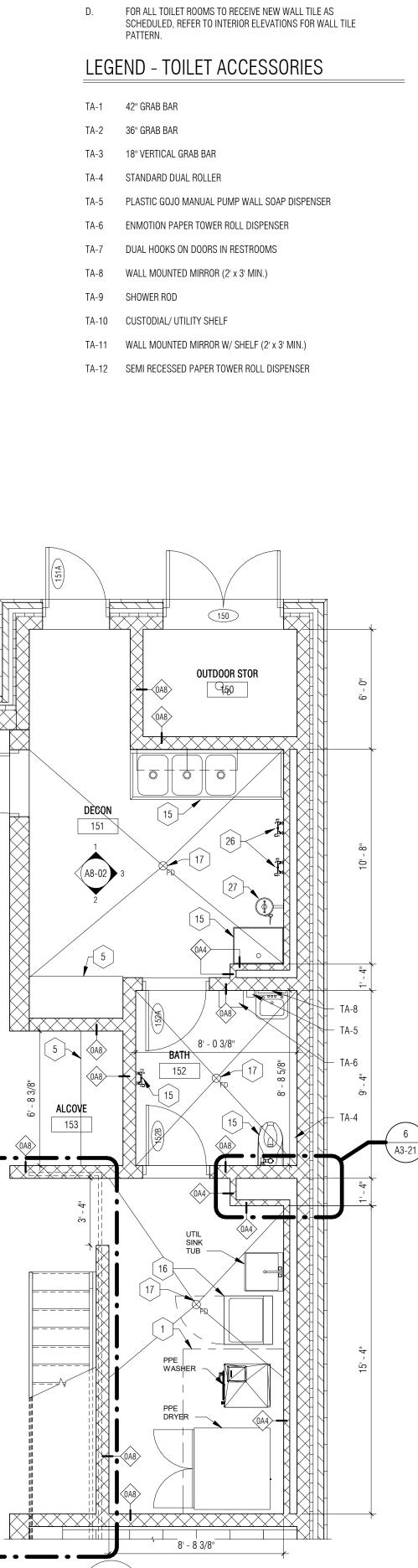
## GENERAL NOTES - TOILET ACCESSORIES

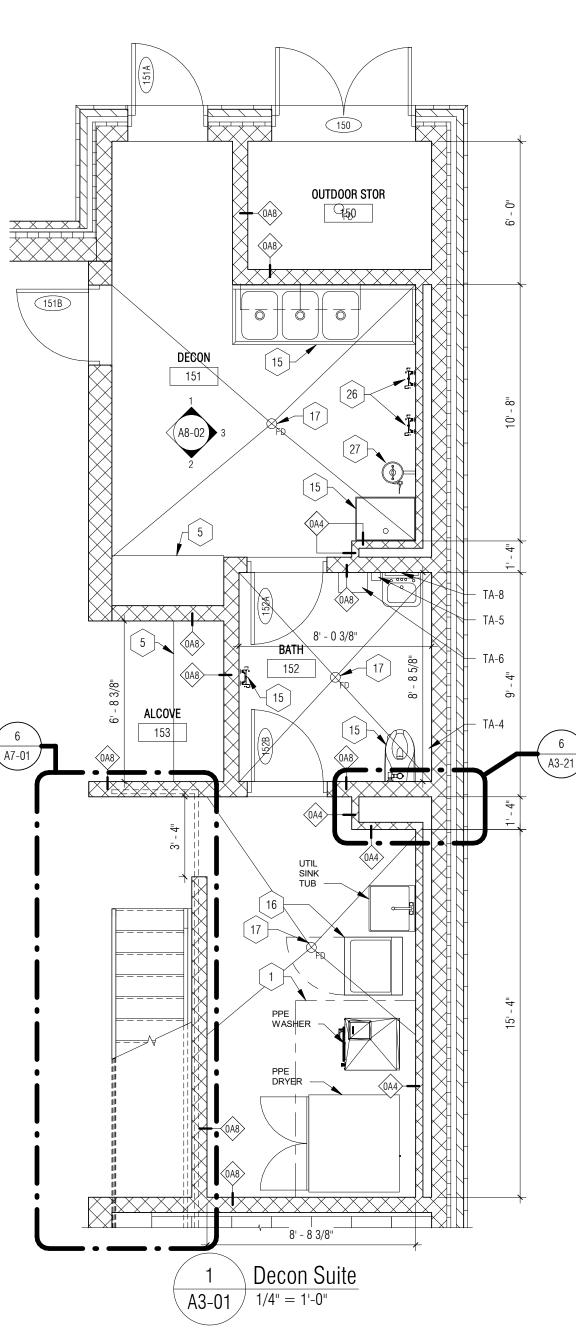
A.

B.









- REFER TO SPECIFICATION SECTION 102800 FOR DESCRIPTION OF TOILET ACCESSORIES. CENTER FLOOR DRAIN IN ROOM UON. ENSURE 1/8" PER FOOT SLOPE TOWARD FLOOR DRAINS. (TYP.) PROVIDE WD BLOCKING SUPPORT AT ALL GRAB BAR LOCATIONS PER GRAB BAR MANUFACTURER'S RECOMMENDATION.

## A. DO NOT SCALE DRAWINGS. USE DIMENSIONS PROVIDED. IF A

ALL PLAN DIMENSIONS ARE NOMINAL TO THE FACE OF WALLS. REFER Β.

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### FLOOR PLAN KEYNOTES

F

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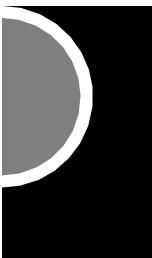
32

33

UNDER-STAIR RAILING AND ACCESS GATE.

ELEVATED EQUPMENT SLAB, TYP. FOR ALL MECH. EQUIPMENT.

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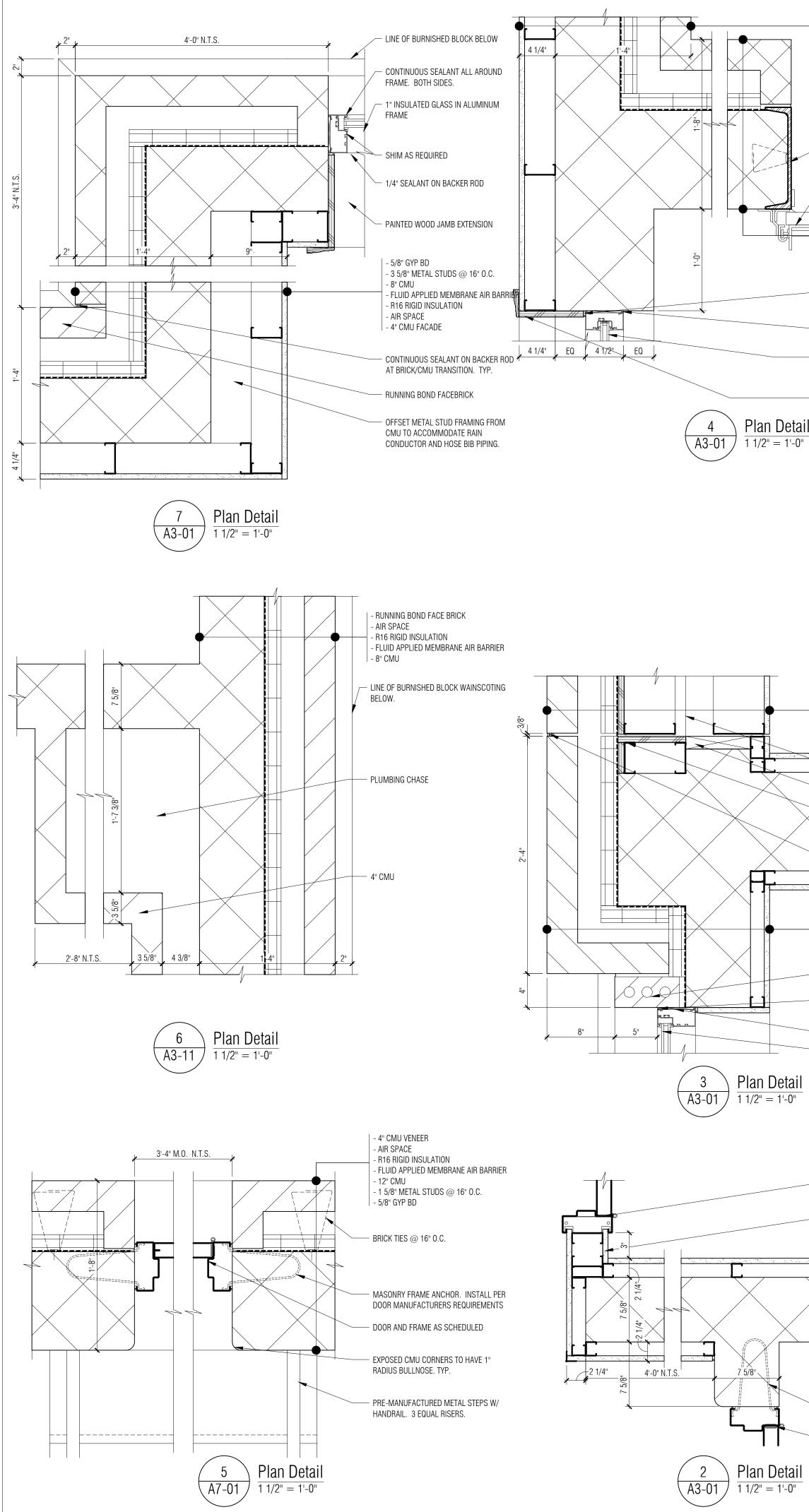
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SHEET NAME

MAM

Enlarged Floor Plans



P:\2021\21-146-Warren Civic Center South Fire Station\02\_CAD\03\_St 1 - Civic Center South\A3-21- Plan Details.dwg - 6/13/2023 10:24:46 AM - Chris Prieb

### - 4" CMU VENEER - AIR SPACE

- R16 RIGID INSULATION

- 8" CMU - 3 5/8" METAL STUDS @ 16" 0.C.

### - STEEL CHANNEL JAMB ANCHORED TO CMU WALL CONSTRUCTION

- OVERHEAD DOOR AS SCHEDULED

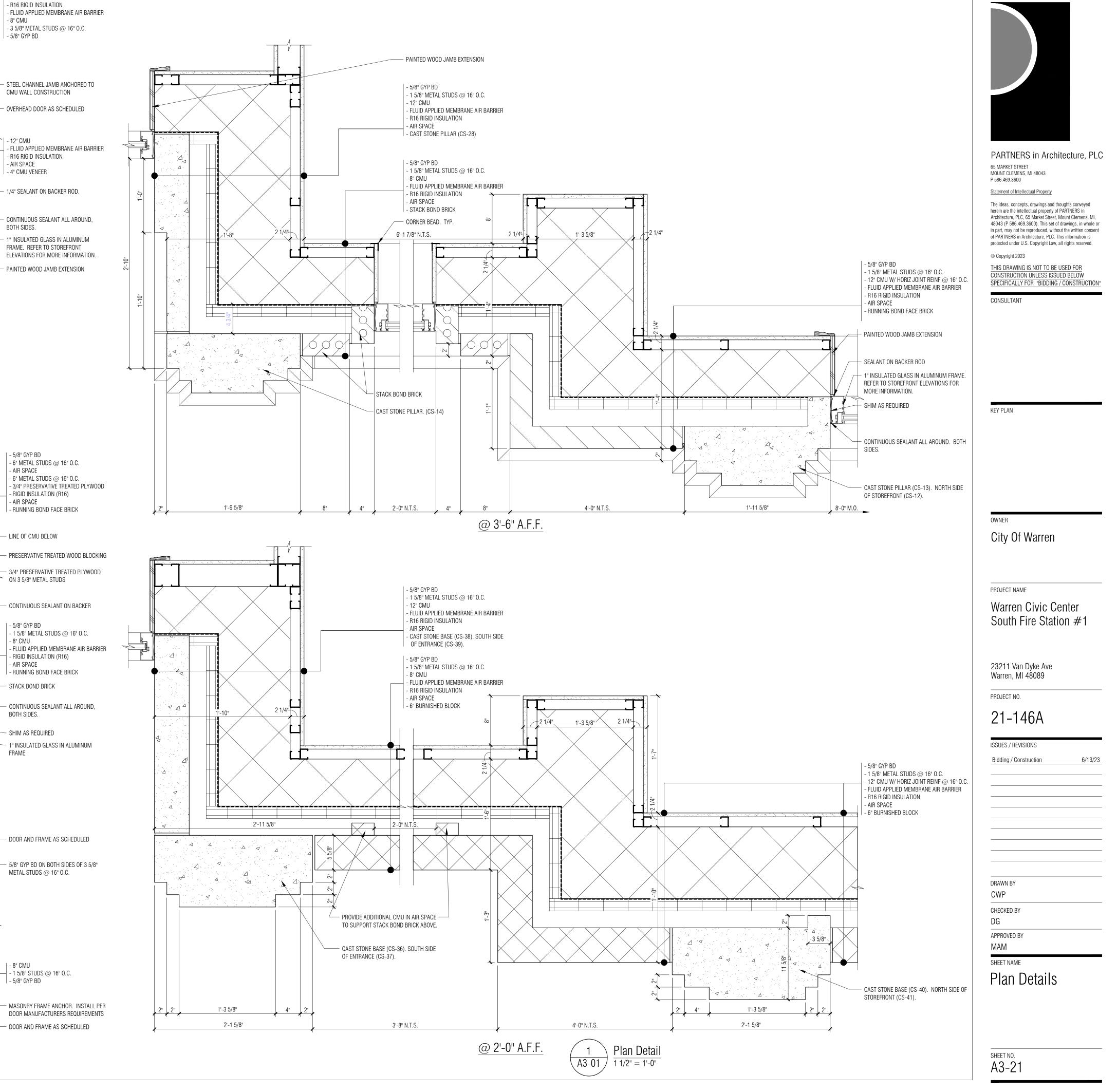
\_\_\_\_\_ - 12" CMU - FLUID APPLIED MEMBRANE AIR BARRIER - R16 RIGID INSULATION - AIR SPACE - 4" CMU VENEER

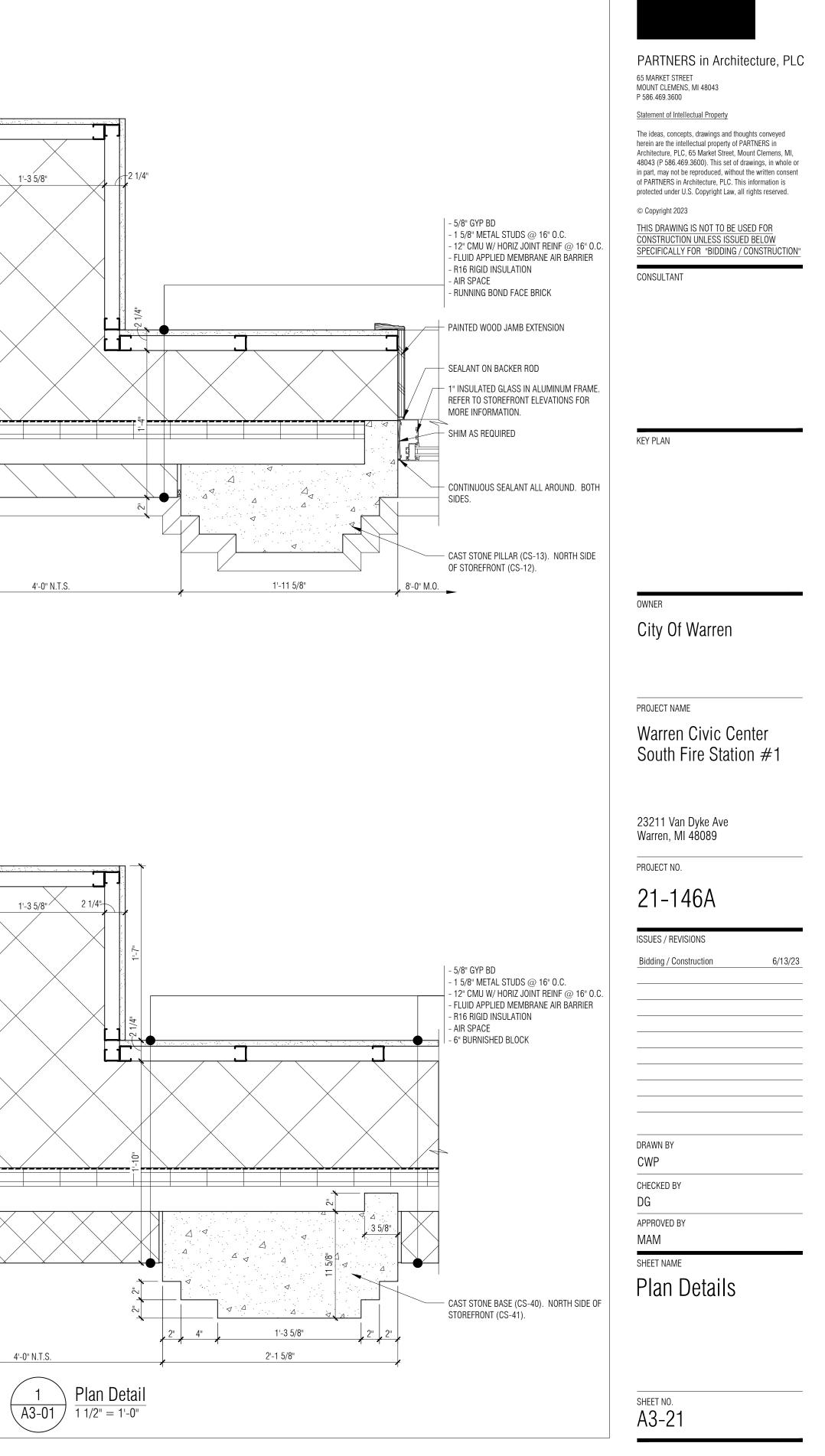
- 1/4" SEALANT ON BACKER ROD.

- CONTINUOUS SEALANT ALL AROUND, BOTH SIDES.

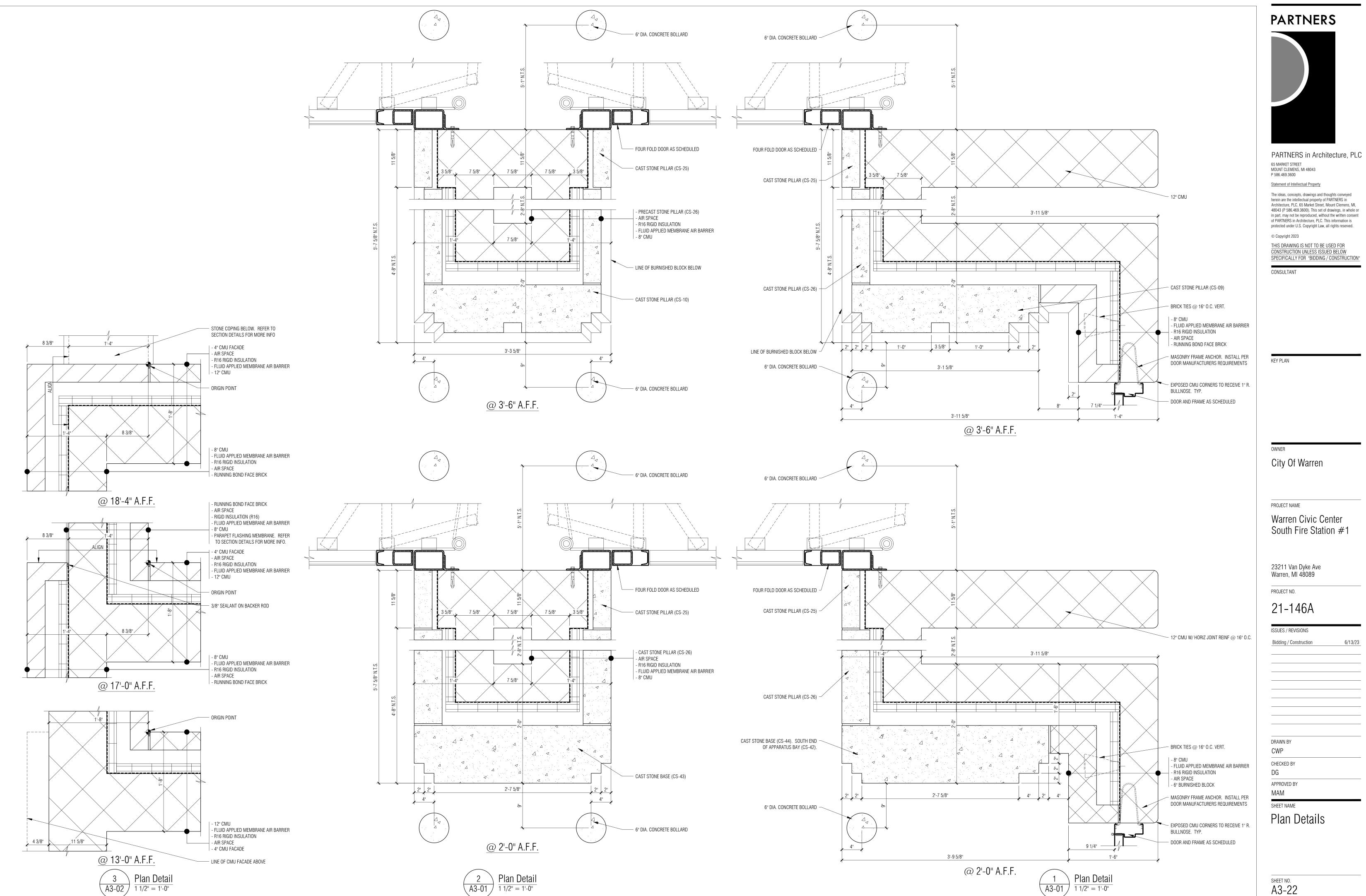
FRAME. REFER TO STOREFRONT ELEVATIONS FOR MORE INFORMATION.

FRAME



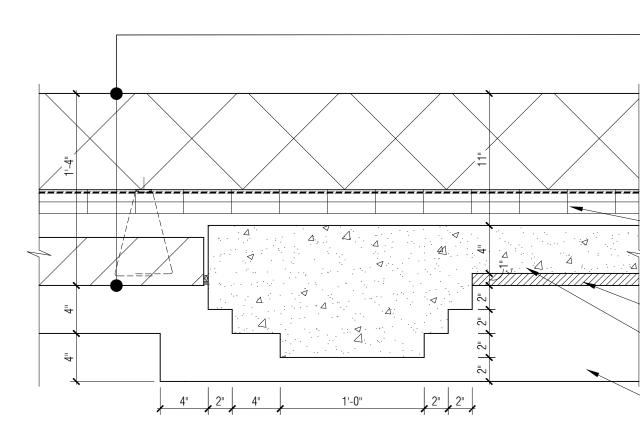


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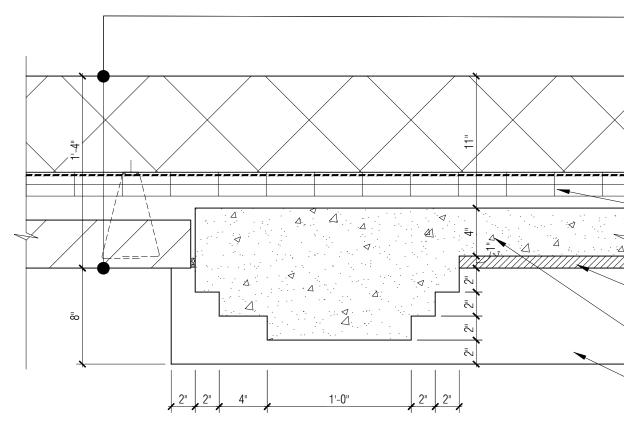


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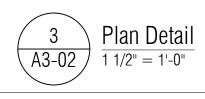
A3-01 11/2" = 1'-0"

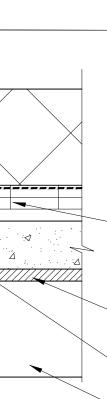


@ 31'-0" A.F.F.



<sup>@ 20&#</sup>x27;-0" A.F.F.







- 4" BRICK VENEER

- RIGID INSULATIONS

- GLAZED BRICK VENEER

—— CAST STONE BASE (CS-18)

- CAST STONE MANTEL (BELOW)

- RIGID INSULATION (R16)

- FLUID APPLIED MEMBRANE AIR BARRIER - 8" CMU W/ HORIZ JOINT REINF @ 16" O.C.

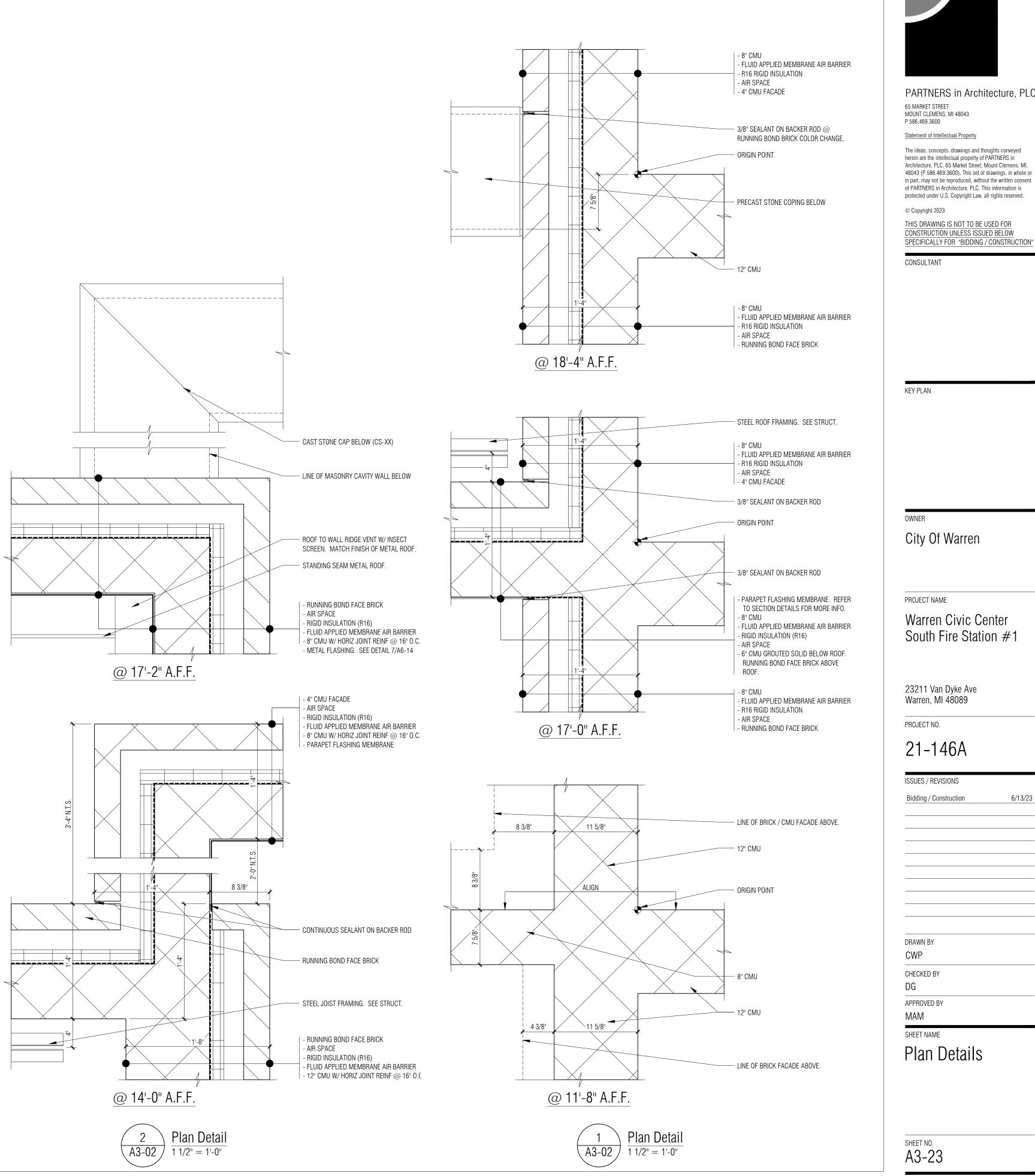
- AIR SPACE



- GLAZED BRICK VENEER

- CAST STONE BASE (CS-18)

- CAST STONE MANTEL (BELOW)

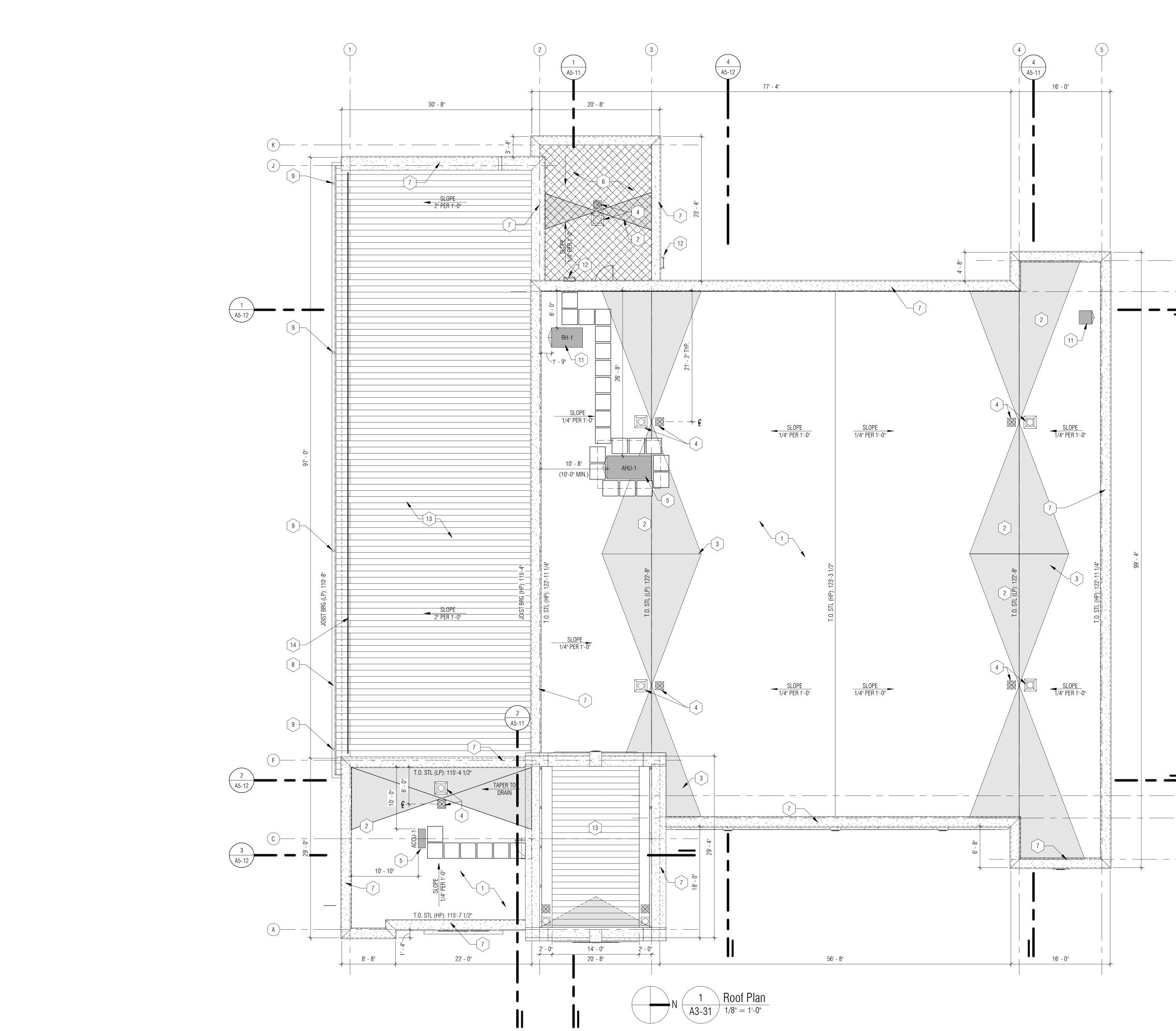




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6/13/23



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## ROOF PLAN GENERAL NOTES

- DO NOT SCALE DRAWINGS. USE DIMENSIONS PROVIDED. IF A Α. CONFLICT IS ENCOUNTERED OR REQUIRED DIMENSION IS NOT PROVIDED, REQUEST A CLARIFICATION FROM THE ARCHITECT.
- B. ALL PLAN DIMENSIONS ARE NOMINAL TO THE FACE OF WALLS.
- C. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION ABOUT ALL ROOF RELATED ITEMS.
- REFER TO MECHANICAL FOR ALL VENT AND PIPE PENETRATION D. LOCATIONS. REFER TO SHEET A3-32, ROOF DETAILS.
- REFER TO EXTERIOR ELEVATIONS FOR ALL GUTTER DOWNSPOUT Ε. LOCATIONS.
- F. PROVIDE POSITIVE SLOPE TO ALL ROOF DRAINS.

## ROOF PLAN KEYNOTES

- 1 SINGLE-PLY MEMBRANE ROOFING SYSTEM REFER TO 7/A3-32
- 2 AREA OF TAPERED ROOF INSULATION BENEATH SINGLE-PLY MEMBRANE ROOFING SYSTEM
- 3 ROOF INSULATION SADDLE
- 4 ROOF DRAIN AND OVERFLOW DRAIN- REFER TO 2/A3-32
- 5 ROOF TOP UNIT REFER TO MECH
- 6 COMPOSITE ROOF PAVER SYSTEM- REFER TO 10/A3-32
- 7 CAST STONE PARAPET CAP
- 8 PRE-FIN MTL GUTTER. A-STYLE PROFILE. 4" DEEP X 6" WIDE, MIN.
- 9 PRE-FIN METAL DOWNSPOUT. RECTANGULAR PROFILE. 4" SQUARE. CONNECT INTO POWDERCOATED, CAST IRON DOWNSPOUT BOOT. COLOR AS SELECTED BY ARCHITECT.
- 10 ADHERED WALKWAY PADS REF SPEC
- 11 ROOF EXHAUST ON CURB REF MECH
- 12 WALL MOUNTED ROOF LADDER (PNT-X) REFER TO 11/A3-32
- 13 STANDING SEAM METAL ROOF ON CONT. ICE/WATER SHIELD
- 14 RAIL TYPE SNOW GUARD- REFER TO SPEC.

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CONSULTANT

KEY PLAN

### OWNER

### City of Warren

### PROJECT NAME

Warren Civic Center South Fire Station #1

23211 Van Dyke Ave Warren, MI 48089

PROJECT NO.

21-146A

**ISSUES / REVISIONS** Bidding / Construction

6/13

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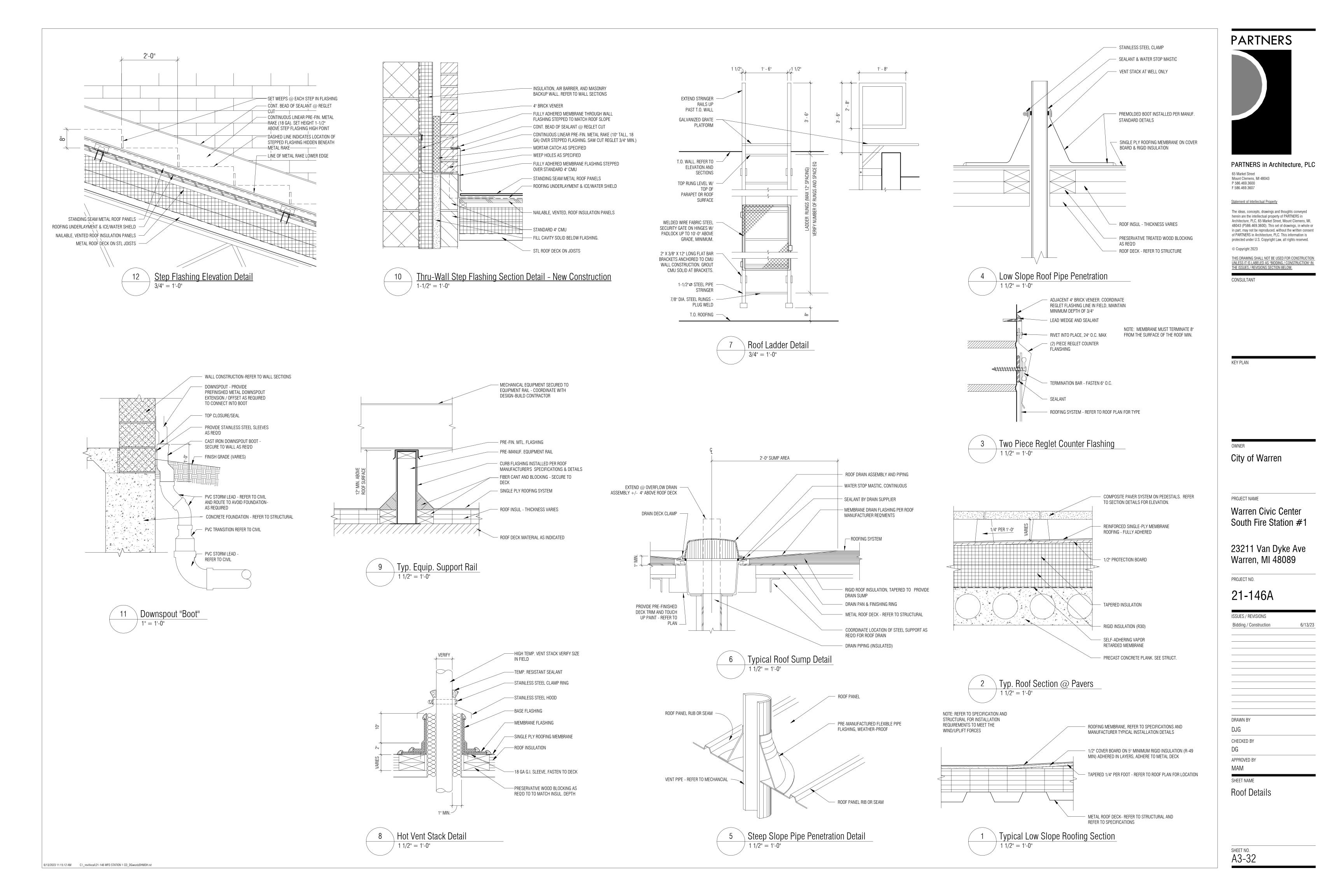
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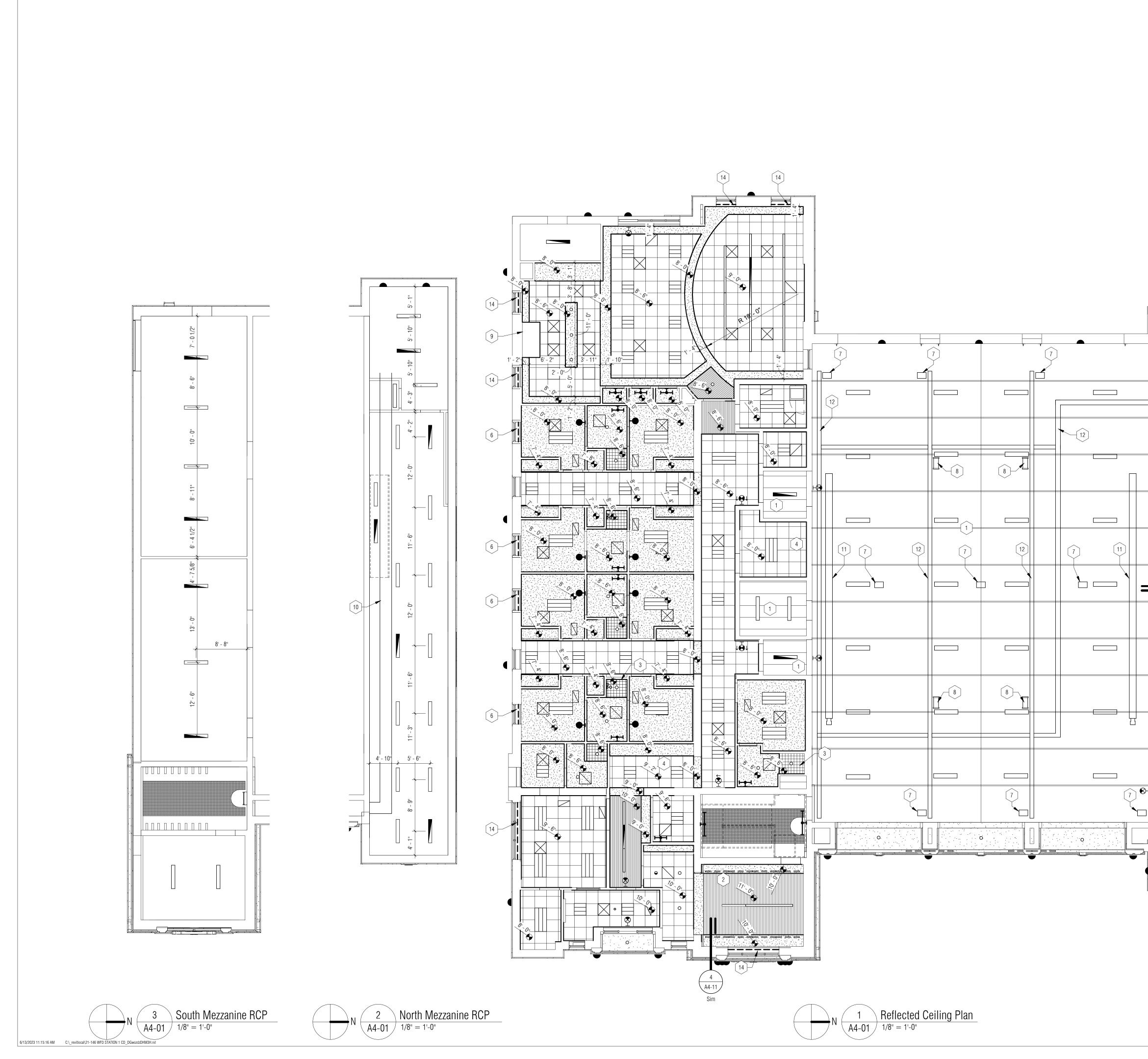
—\_\_\_\_B

# ROOF SYMBOLS LEGEND

SLOPE ROOF SLOPE INDICATION ROOF SUMP  $( \otimes$ OVERFLOW ROOF SUMP ROOF HATCH WALKWAY PAD TAPERED INSULATION COMPOSITE ROOF PAVER SYSTEM CURB MOUNTED EQUIPMENT ICE AND WATER SHIELD STANDING SEAM ROOM

DRAWN BY DJG \_\_\_\_\_ CHECKED BY DG APPROVED BY MAM SHEET NAME Roof Plan





## REFLECTED CEILING PLAN GENERAL NOTES

- A. REFER TO FLOOR PLANS FOR ROOM NAMES, NUMBERS, AND DIMENSIONS
- B. REFER TO ELECTRICAL FOR LIGHT FIXTURE TYPES AND SCHEDULES
- C. REFER TO MECHANICAL FOR DIFFUSER, REGISTER, & RETURN TYPES
- AND SCHEDULES
- D. ALL LIGHT FIXTURES ARE TO CENTERED WITH THE CEILING TILE GRID AND GYPSUM BOARD SOFFITS, U.O.N.
- E. CEILING GRID IS TO BE CENTERED IN THE ROOM, U.O.N.
- PAINT ALL EXPOSED STRUCTURE, MECHANICAL, AND ELECTRICAL
- G. ALL EXPOSED FIRE SUPPRESSION PIPES TO BE PAINTED

SCHEDLE FOR FINISHES

- H. FIRE SUPRESSION HEADS TO BE CENTERED IN CEILING TILES IN BOTH
- DIRECTIONS

   I.
   REFER TO EXTERIOR, INTERIOR ELEVATIONS AND ROOM FINISH

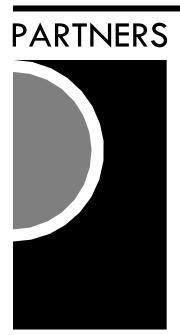
## REFLECTED CEILING PLAN KEYNOTES

- 1 EXPOSED UNDER SIDE OF METAL DECK/ CONCRETE PLANK
- 2 GYP CEILING
- 3 TILED CEILING
- 4 ACOUSTIC TILE CEILING
- 6 WINDOW SHADE DUAL ROLLER (RS-2)- REF SPEC
- 7 POWER REEL- REF ELEC
- 8 HOSE REEL- REF MECH
- 9 RANGE HOOD -REF MECH
- 11 GAS RADIANT TUBE HEATER- REF MECH
- 12 VEHICLE EXHAUST SYSTEM- REF MECH
- 14 WINDOW SHADE SINGLE ROLLER (RS-1)- REF SPEC

# Ceiling Symbols Legend

Linear Recessed/ Pendant Light 24" x 24" Recessed Light Linear Recessed Light 24"x48" Lay-In Fixture ⊢\_\_\_\_ Wall Mounted Linear Light Rectangular Recessed Light Linear Light Fixture **⊢−−−−**| Surface Mount Light Wall Mounted Light **T** Wall Mounted Light Pendant Light 0 Recessed Downlight Recessed Light Fixture 12" x 24" Return Grill  $\square$ 24" x 24" Return Grill  $\square$ 12" x 12" Return Grill 4' Supply Diffuser  $\square$ 24" x 24" Supply Diffuser Exit Light. Arrow indicates direction. Filled area indicates facing. "1" shape Ò

indicates wall mounted.



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CONSULTANT

KEY PLAN

### OWNER

### City of Warren

### PROJECT NAME

Warren Civic Center South Fire Station #1

23211 Van Dyke Ave Warren, MI 48089

PROJECT NO.

21-1	46	A
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ISSUES / REVISIONS Bidding / Construction

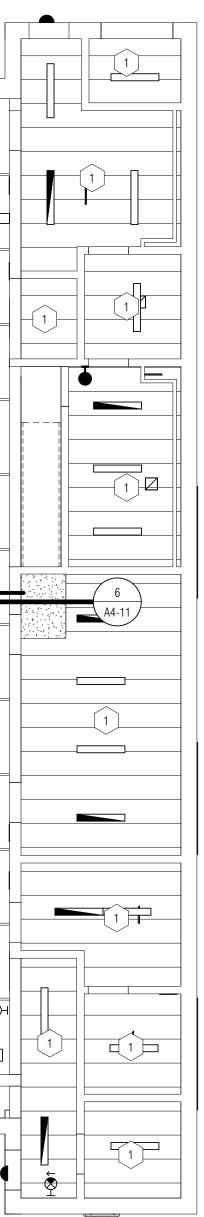
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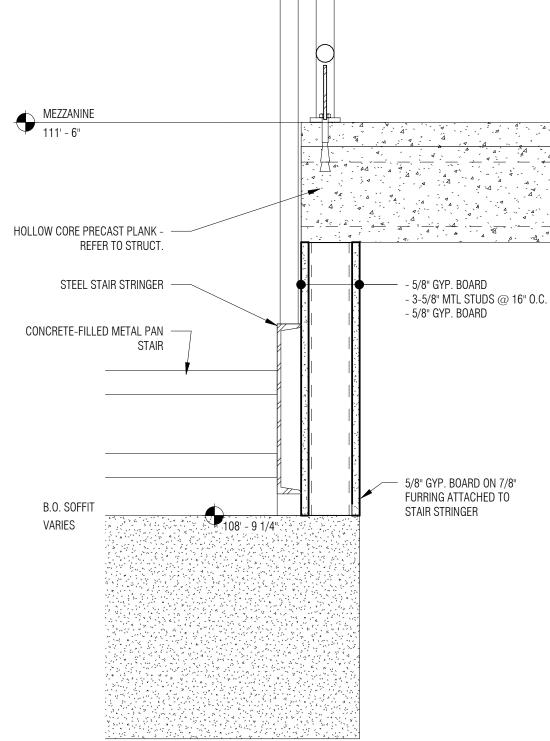
DRAWN BY DJG CHECKED BY DG

APPROVED BY

SHEET NAME

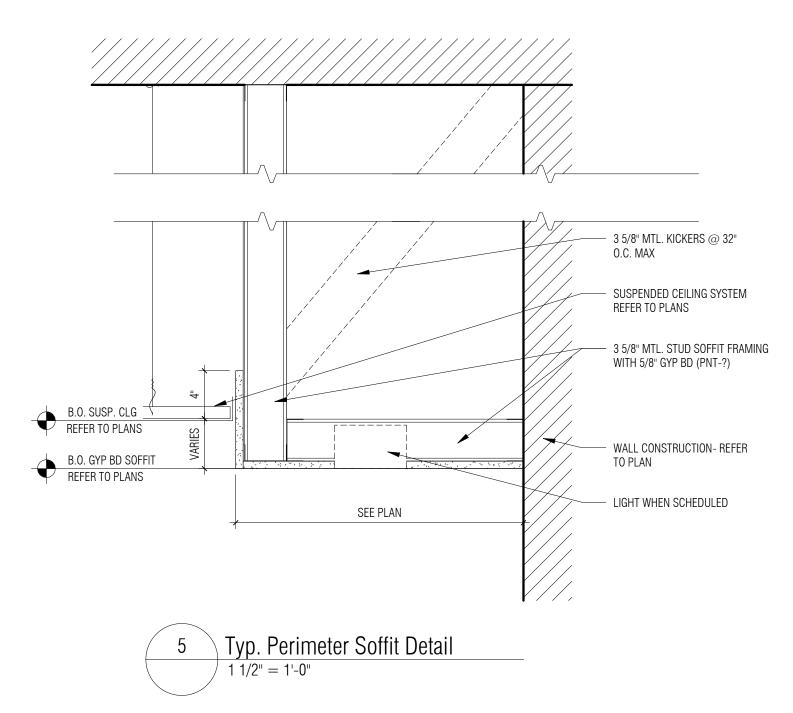
Ground Floor & Mezzanine Reflected Ceiling Plans

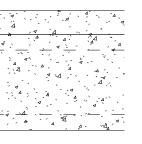




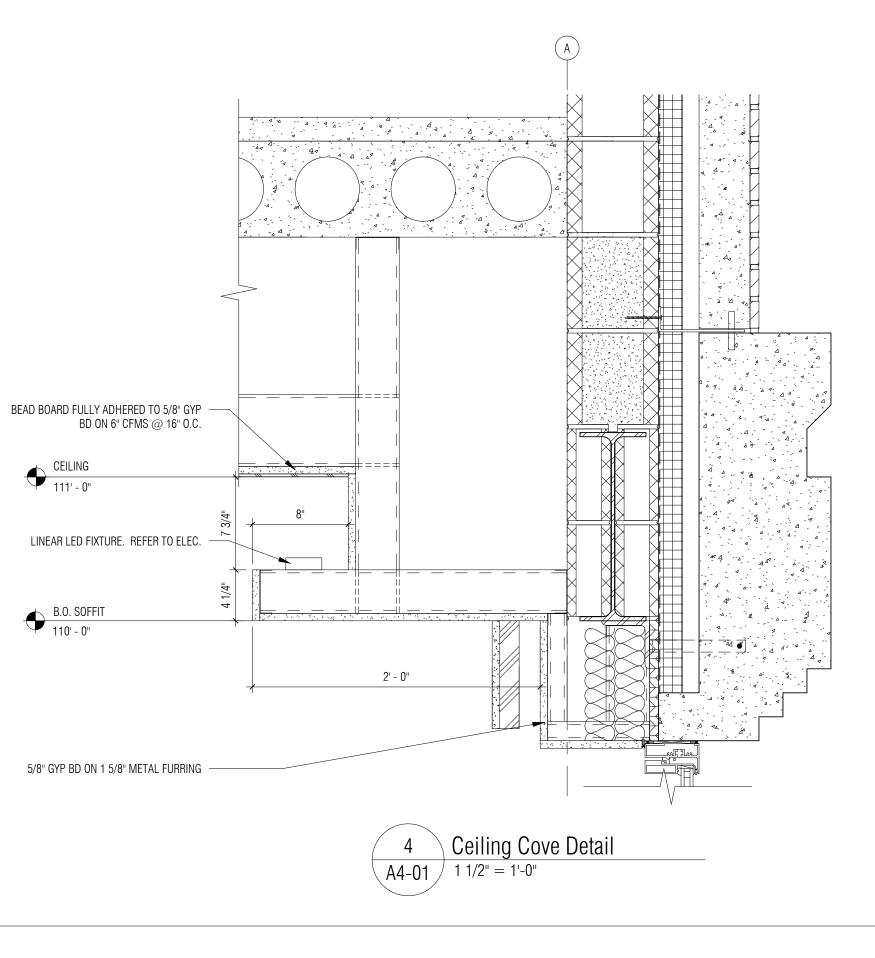


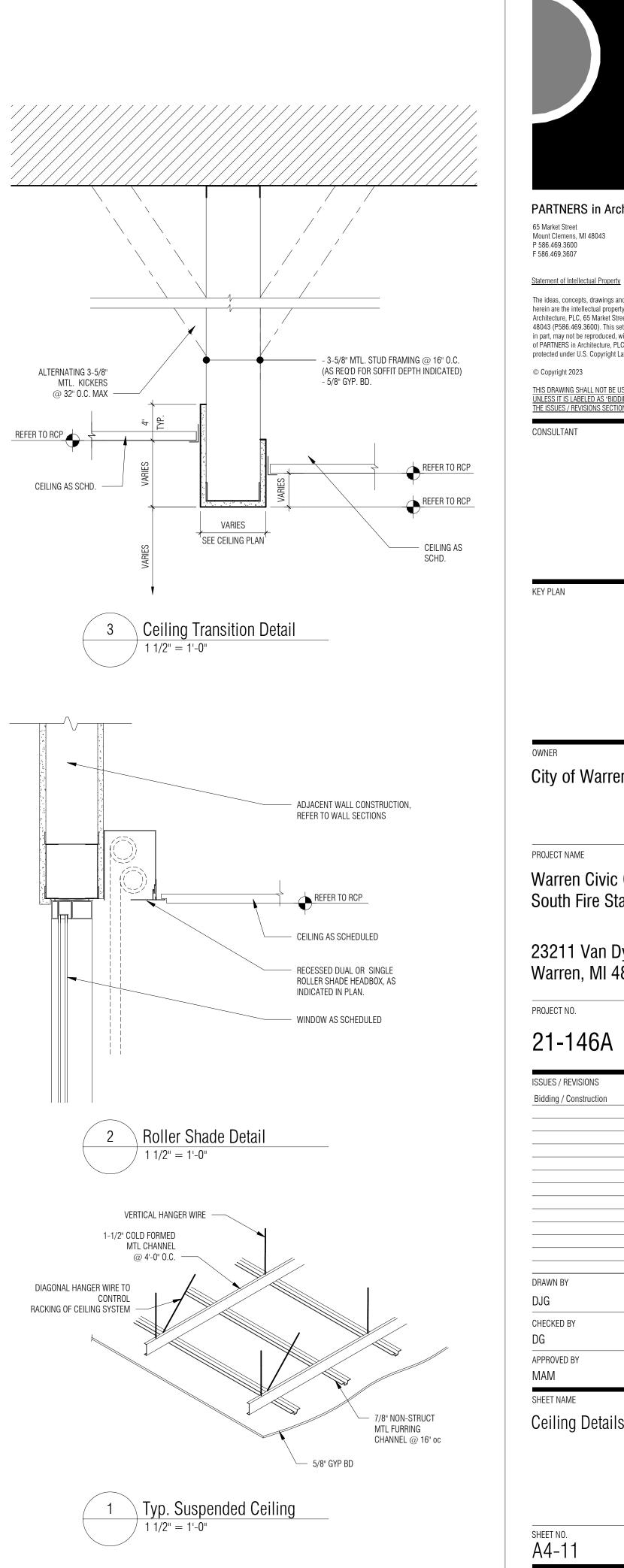
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- 5/8" GYP. BOARD
 - 3-5/8" MTL STUDS @ 16" 0.C.
 - 5/8" GYP. BOARD





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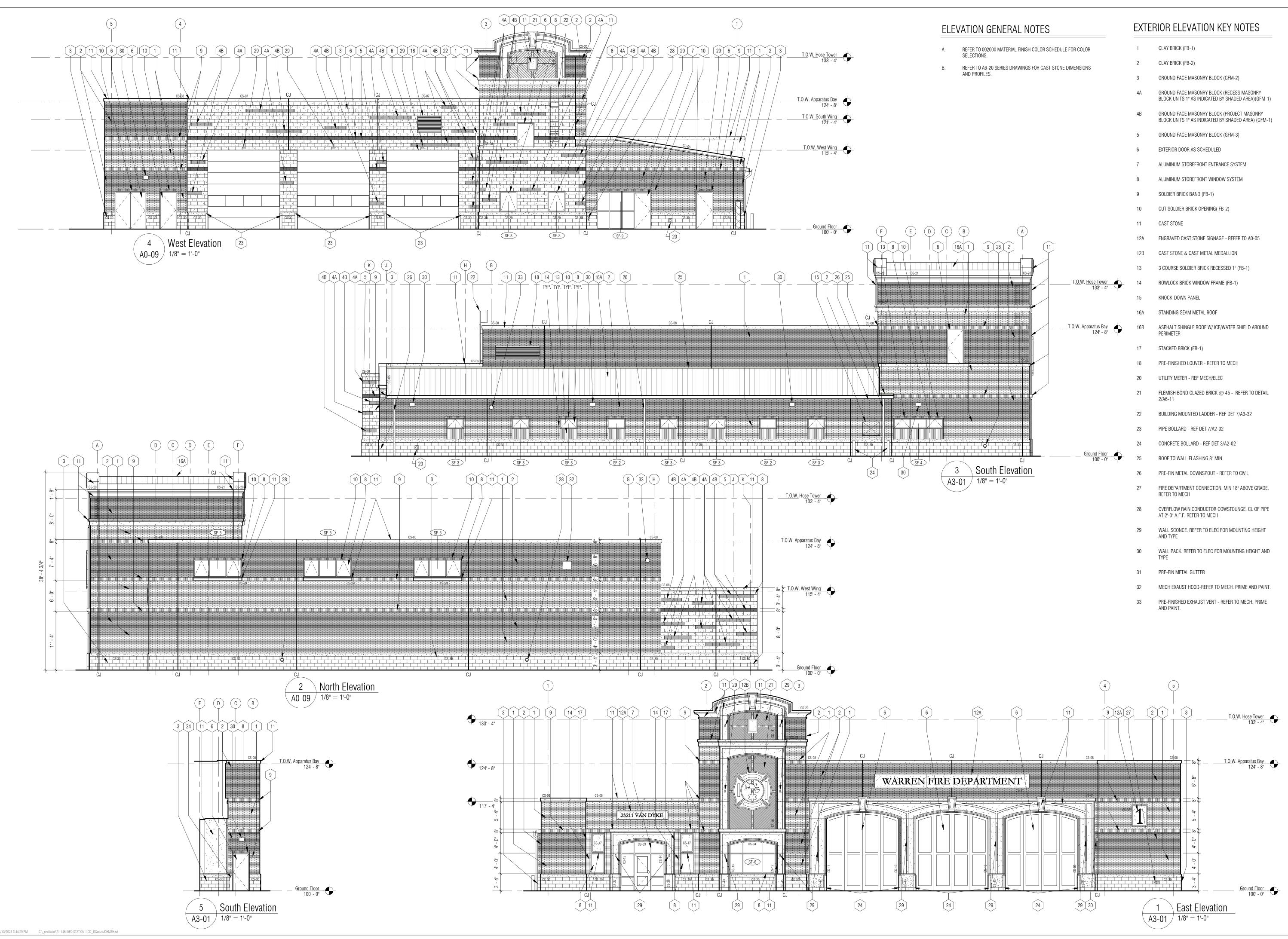


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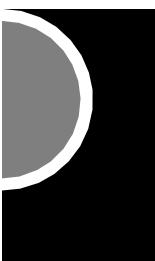
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City of Warren PROJECT NAME Warren Civic Center South Fire Station #1 23211 Van Dyke Ave Warren, MI 48089 PROJECT NO. 21-146A **ISSUES / REVISIONS** Bidding / Construction 6/13/23 DRAWN BY CHECKED BY APPROVED BY SHEET NAME Ceiling Details



1	CLAY BRICK (FB-1)
2	CLAY BRICK (FB-2)
3	GROUND FACE MASONRY BLOCK (GFM-2)
4A	GROUND FACE MASONRY BLOCK (RECESS MASONRY BLOCK UNITS 1" AS INDICATED BY SHADED AREA)(GFM-1)
4B	GROUND FACE MASONRY BLOCK (PROJECT MASONRY BLOCK UNITS 1" AS INDICATED BY SHADED AREA) (GFM-1)
5	GROUND FACE MASONRY BLOCK (GFM-3)
6	EXTERIOR DOOR AS SCHEDULED
7	ALUMINUM STOREFRONT ENTRANCE SYSTEM
8	ALUMINUM STOREFRONT WINDOW SYSTEM
9	SOLDIER BRICK BAND (FB-1)
10	CUT SOLDIER BRICK OPENING( FB-2)
11	CAST STONE
12A	ENGRAVED CAST STONE SIGNAGE - REFER TO A0-05
12B	CAST STONE & CAST METAL MEDALLION
13	3 COURSE SOLDIER BRICK RECESSED 1" (FB-1)
14	ROWLOCK BRICK WINDOW FRAME (FB-1)
15	KNOCK-DOWN PANEL
16A	STANDING SEAM METAL ROOF
16B	ASPHALT SHINGLE ROOF W/ ICE/WATER SHIELD AROUND PERIMETER
17	STACKED BRICK (FB-1)
18	PRE-FINISHED LOUVER - REFER TO MECH
20	UTILITY METER - REF MECH/ELEC
21	Flemish Bond Glazed Brick @ 45 - Refer to Detail 2/A6-11
22	BUILDING MOUNTED LADDER - REF DET 7/A3-32
23	PIPE BOLLARD - REF DET 7/A2-02
24	CONCRETE BOLLARD - REF DET 3/A2-02
25	ROOF TO WALL FLASHING 8" MIN
26	PRE-FIN METAL DOWNSPOUT - REFER TO CIVIL
27	FIRE DEPARTMENT CONNECTION. MIN 18" ABOVE GRADE. REFER TO MECH
28	OVERFLOW RAIN CONDUCTOR COWSTOUNGE. CL OF PIPE AT 2'-0" A.F.F. REFER TO MECH
29	WALL SCONCE. REFER TO ELEC FOR MOUNTING HEIGHT AND TYPE
30	WALL PACK. REFER TO ELEC FOR MOUNTING HEIGHT AND TYPE
31	PRE-FIN METAL GUTTER
32	MECH EXAUST HOOD-REFER TO MECH. PRIME AND PAINT.
33	PRE-FINISHED EXHAUST VENT - REFER TO MECH. PRIME AND PAINT.

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KEY PLAN

### OWNER

### City of Warren

### PROJECT NAME

Warren Civic Center South Fire Station #1

23211 Van Dyke Ave Warren, MI 48089

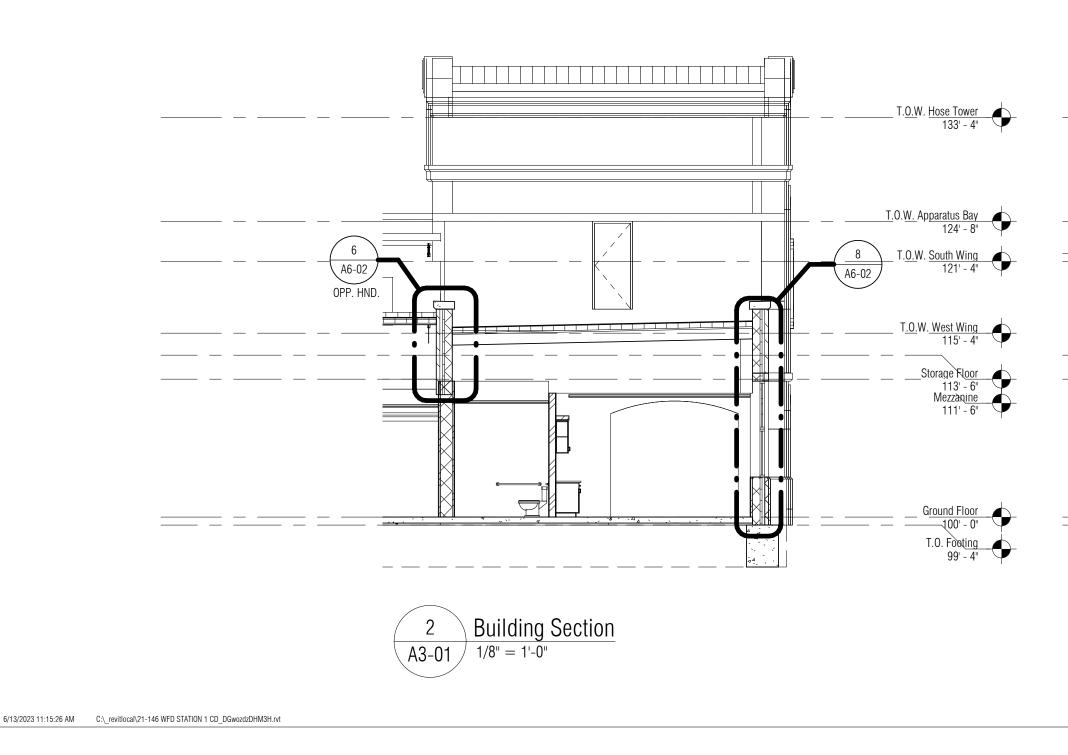
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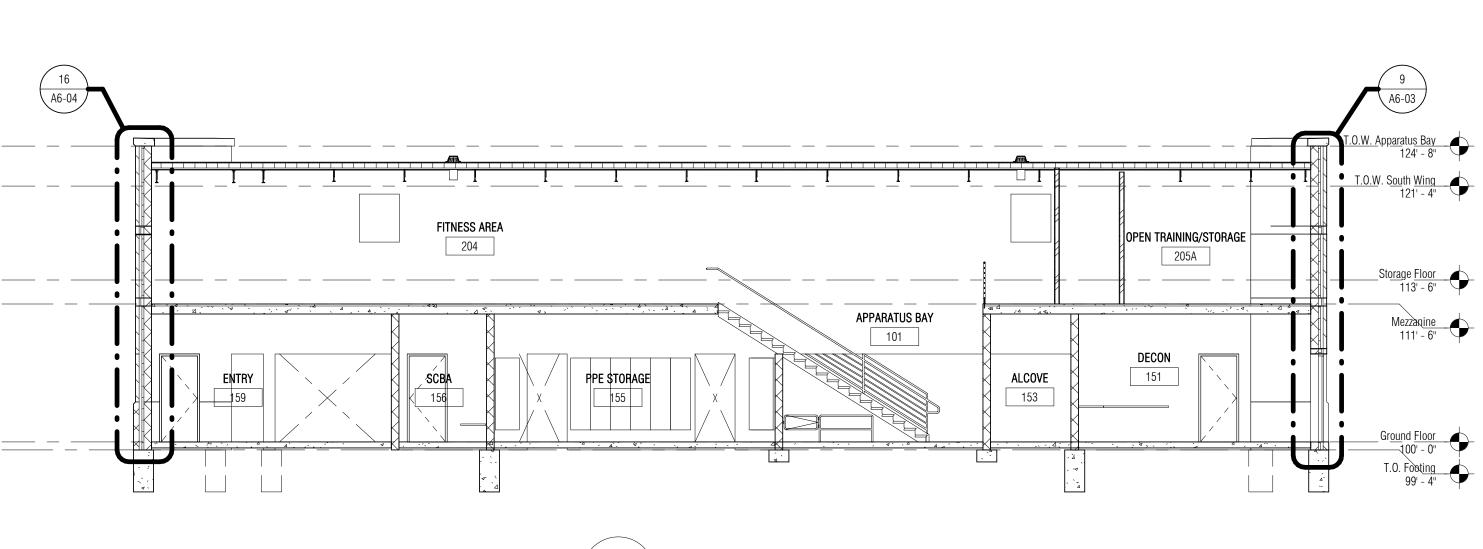
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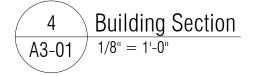
ISSUES / REVISIONS Bidding / Construction

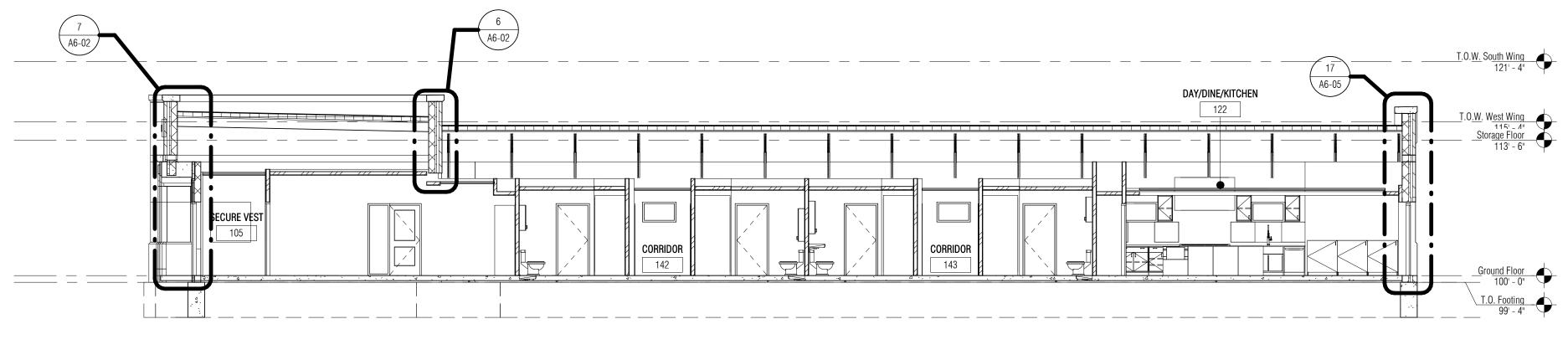
6/13/23

DRAWN BY DJG \_\_\_\_\_ CHECKED BY DG APPROVED BY MAM SHEET NAME Exterior Elevations

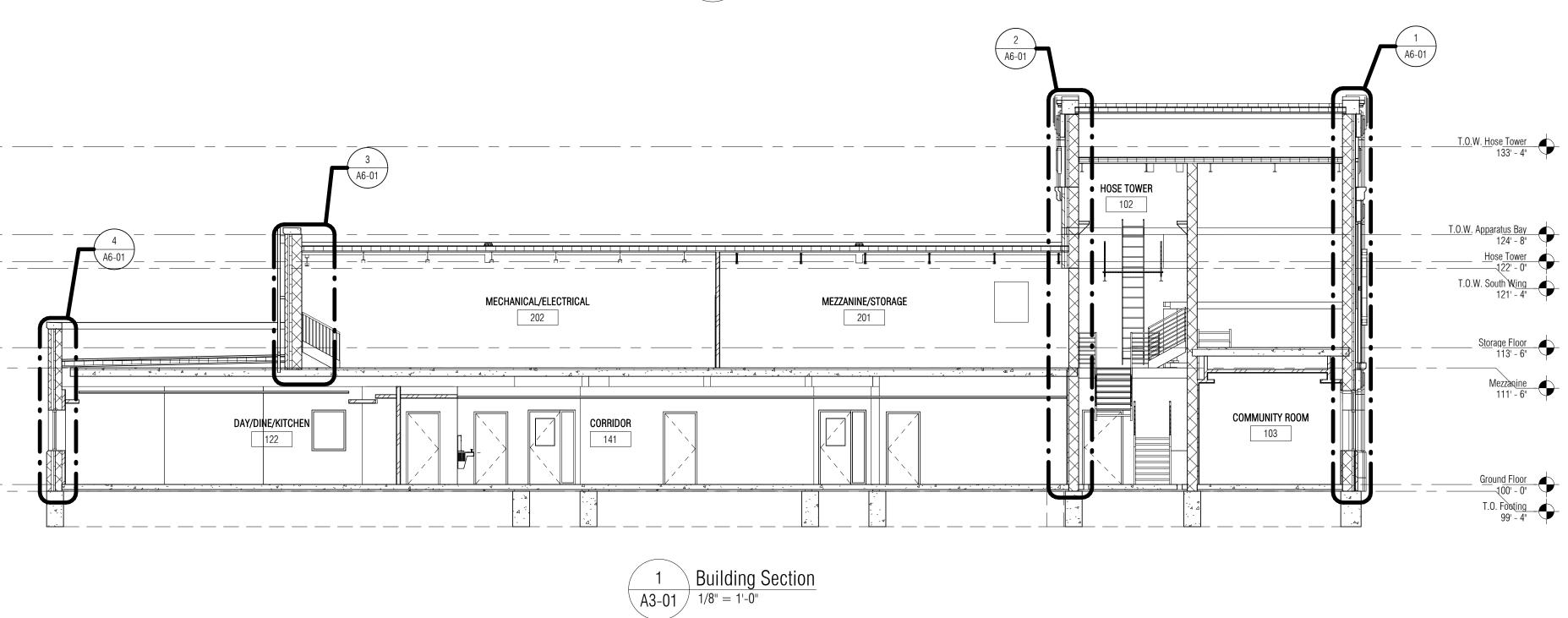








3 Building Section A3-01 1/8" = 1'-0"



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City of Warren

## PROJECT NAME

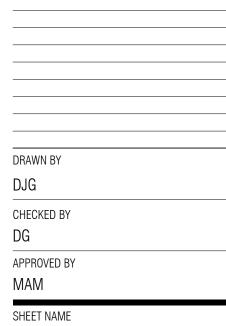
Warren Civic Center South Fire Station #1

23211 Van Dyke Ave Warren, MI 48089

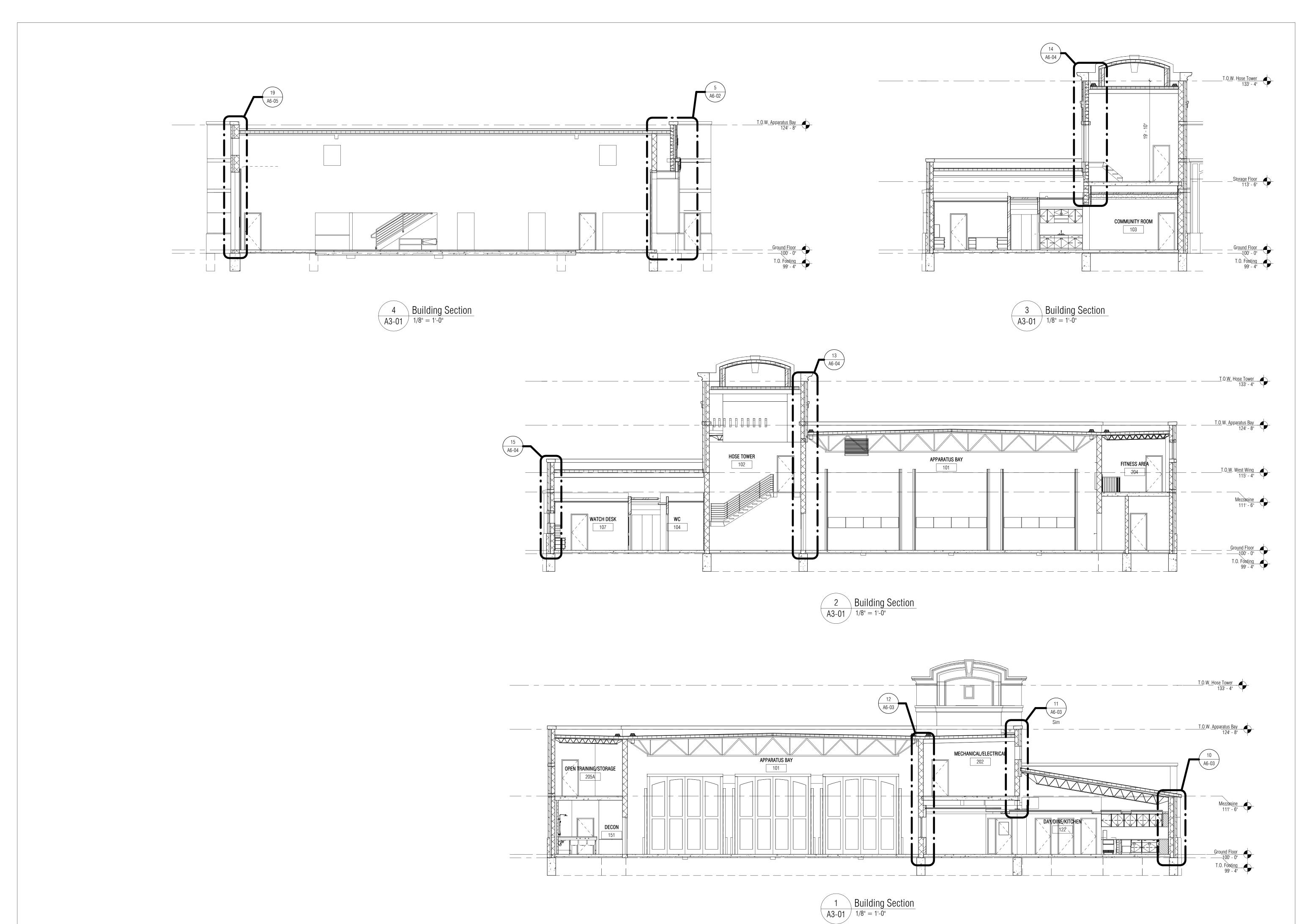
PROJECT NO.

# 21-146A

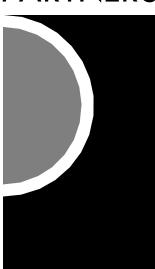
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Building Sections



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CONSULTANT

KEY PLAN

OWNER

## City of Warren

PROJECT NAME

Warren Civic Center South Fire Station #1

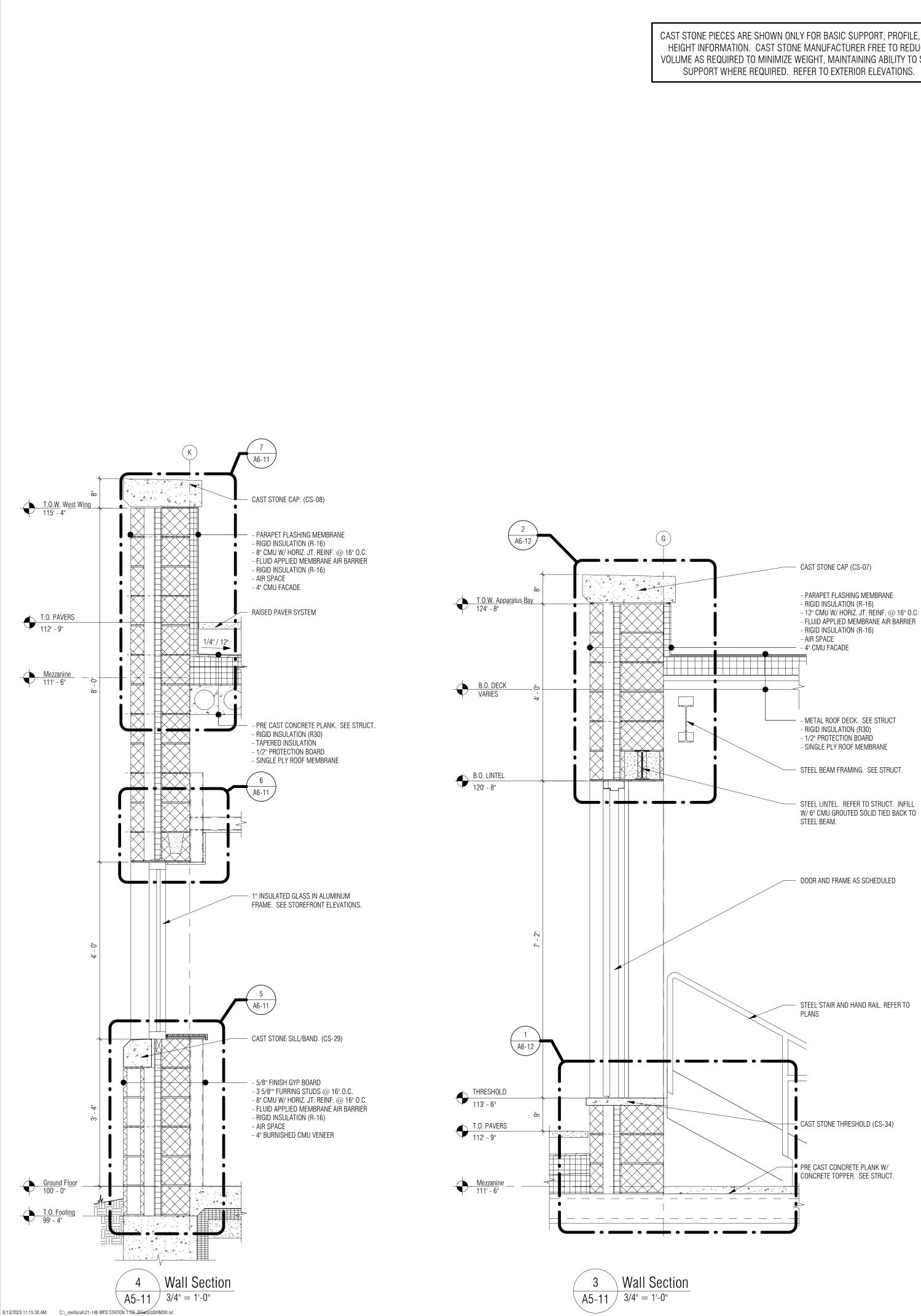
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PROJECT NO.

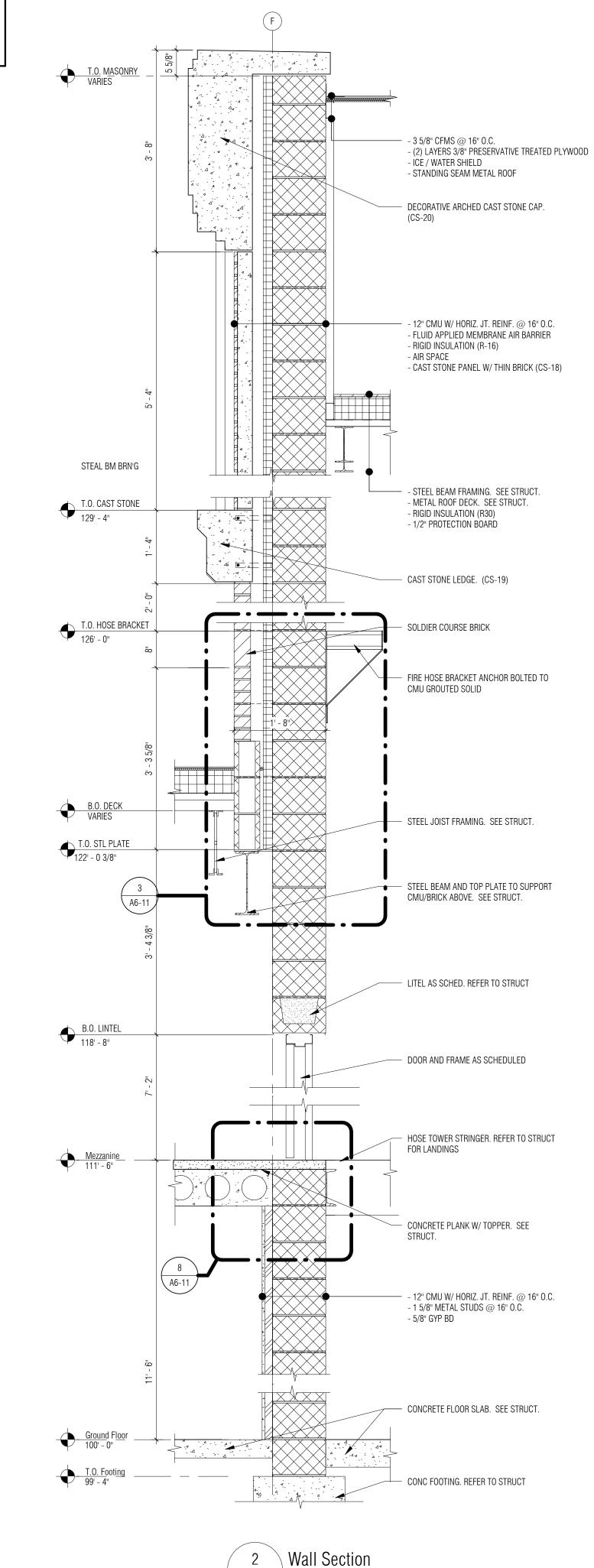
# 21-146A

ISSUES / REVISIONS Bidding / Construction 6/13/23

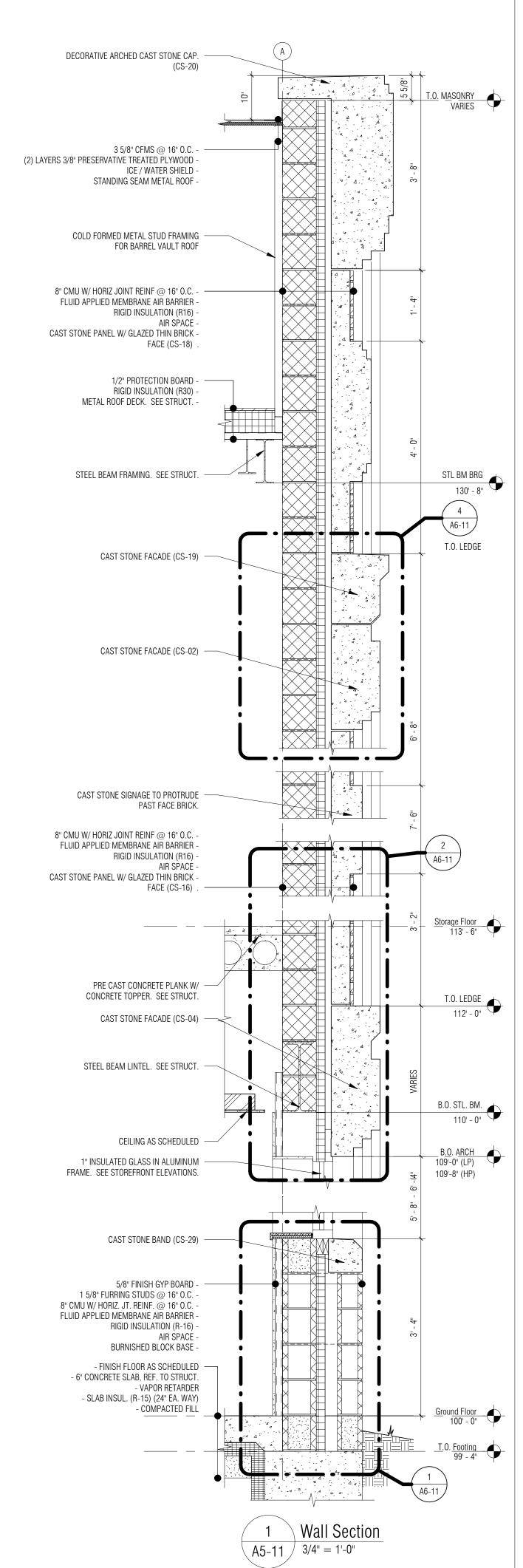




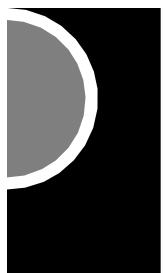
CAST STONE PIECES ARE SHOWN ONLY FOR BASIC SUPPORT, PROFILE, AND HEIGHT INFORMATION. CAST STONE MANUFACTURER FREE TO REDUCE VOLUME AS REQUIRED TO MINIMIZE WEIGHT, MAINTAINING ABILITY TO SELF SUPPORT WHERE REQUIRED. REFER TO EXTERIOR ELEVATIONS.



A5-11 / 3/4" = 1'-0"



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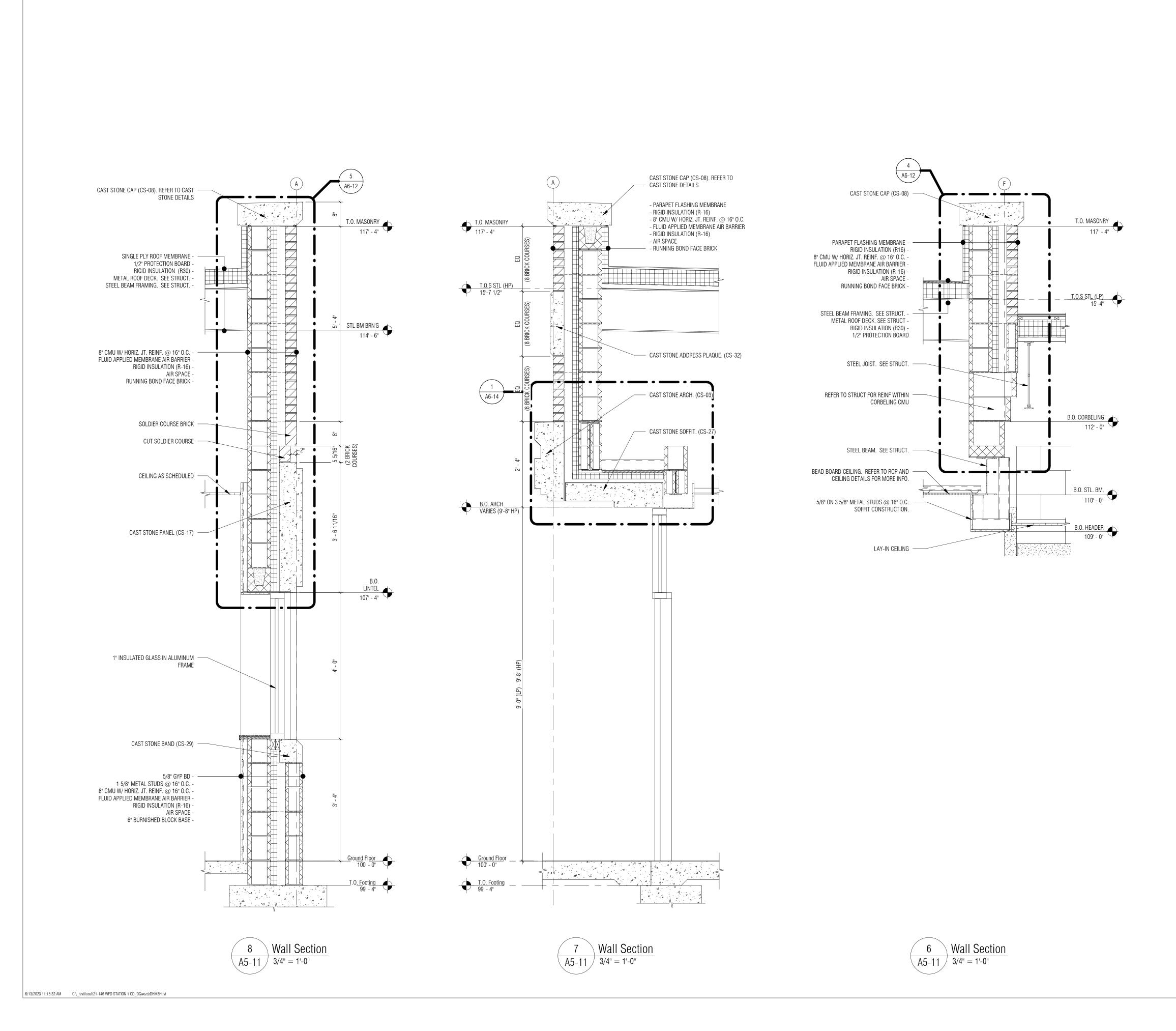
KEY PLAN

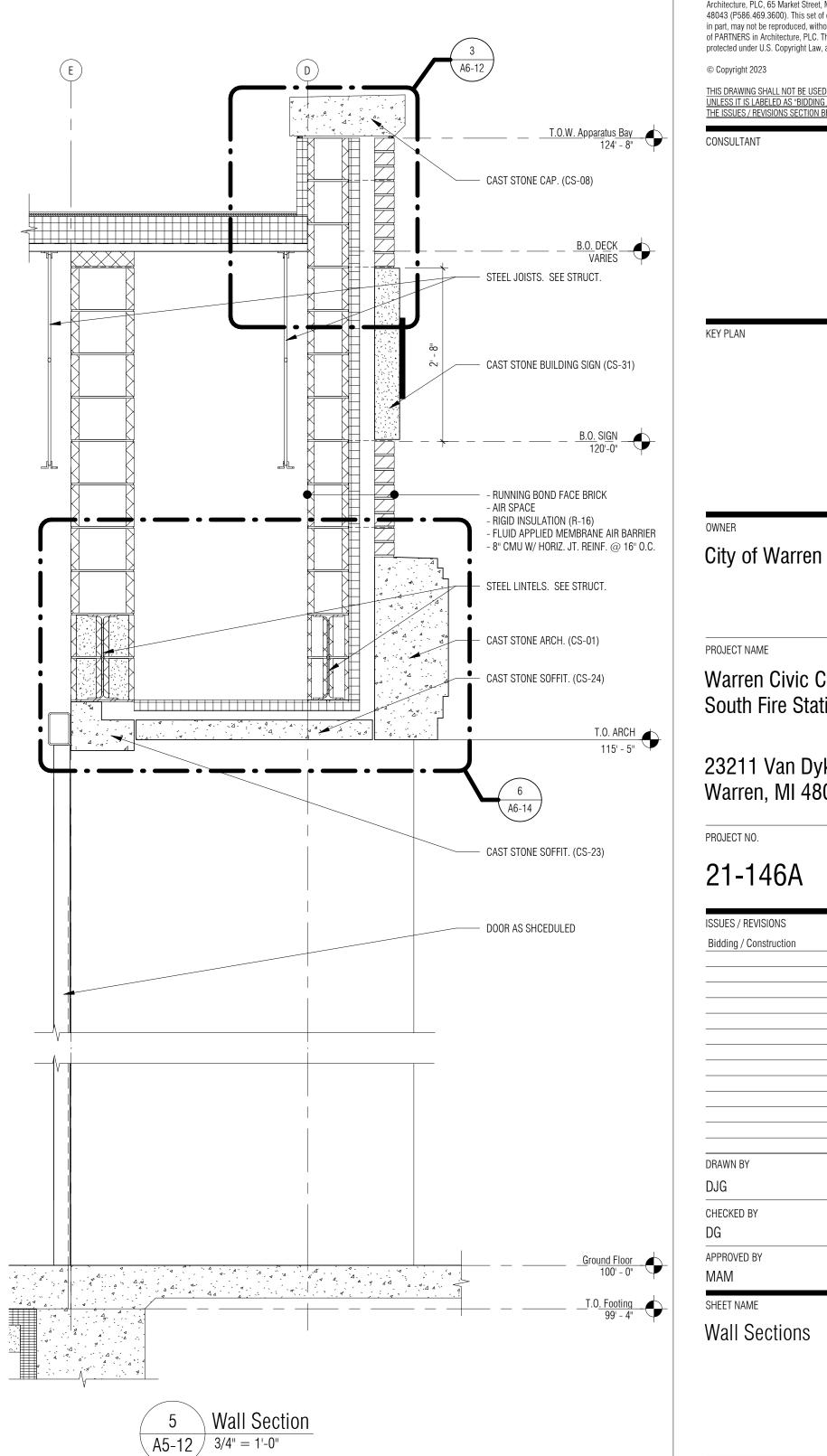
OWNER City of Warren PROJECT NAME Warren Civic Center South Fire Station #1 23211 Van Dyke Ave Warren, MI 48089 PROJECT NO. 21-146A ISSUES / REVISIONS

### Bidding / Construction

6/13/23

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DJG / CWP	
CHECKED BY DG	
APPROVED BY	
SHEET NAME	





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CONSULTANT

KEY PLAN

PROJECT NAME Warren Civic Center South Fire Station #1

23211 Van Dyke Ave Warren, MI 48089

PROJECT NO.

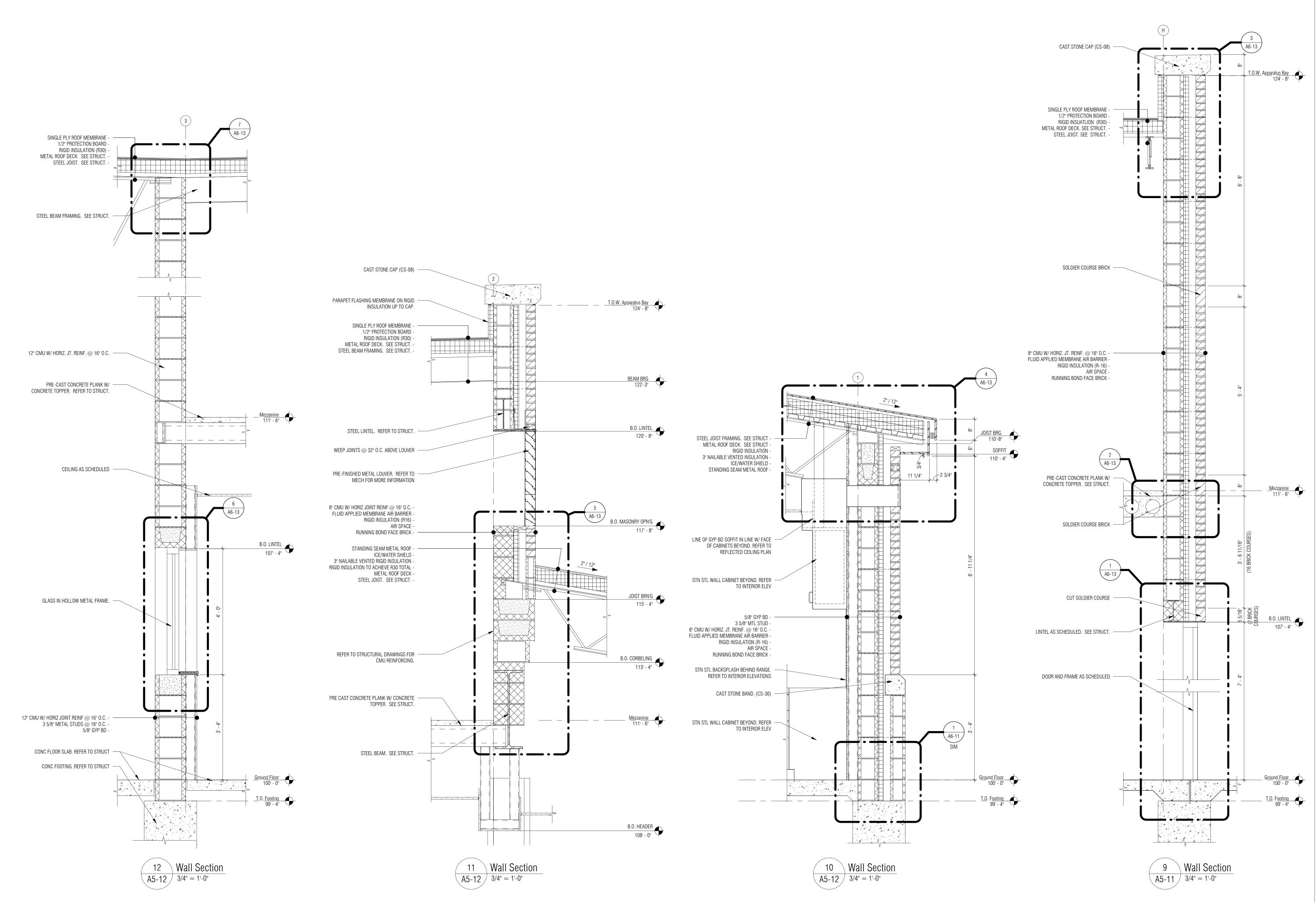
21-146A

**ISSUES / REVISIONS** Bidding / Construction

6/13/23

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Wall Sections



AKTINEKS

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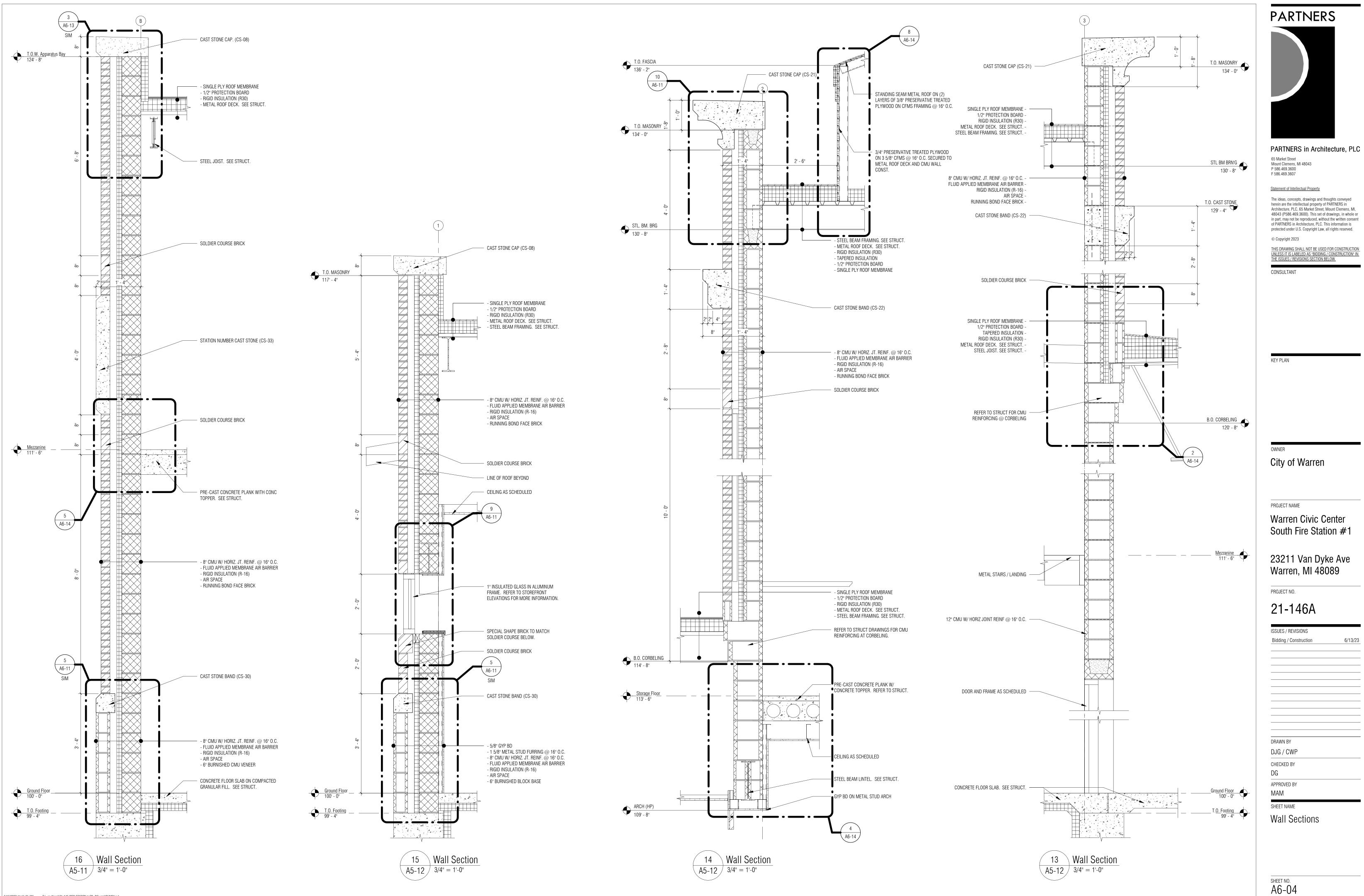
PROJECT NAME

Warren Civic Center South Fire Station #1

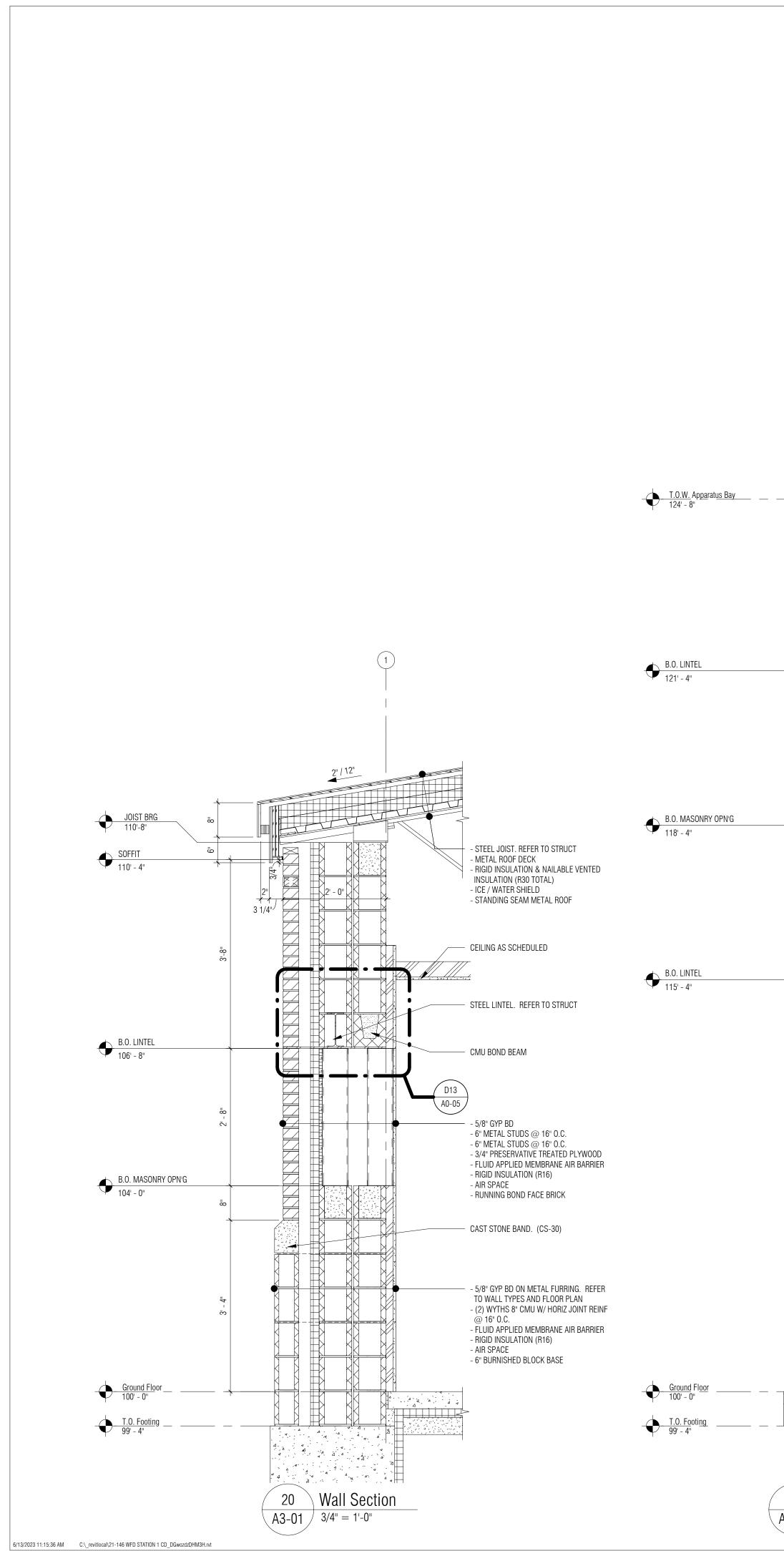
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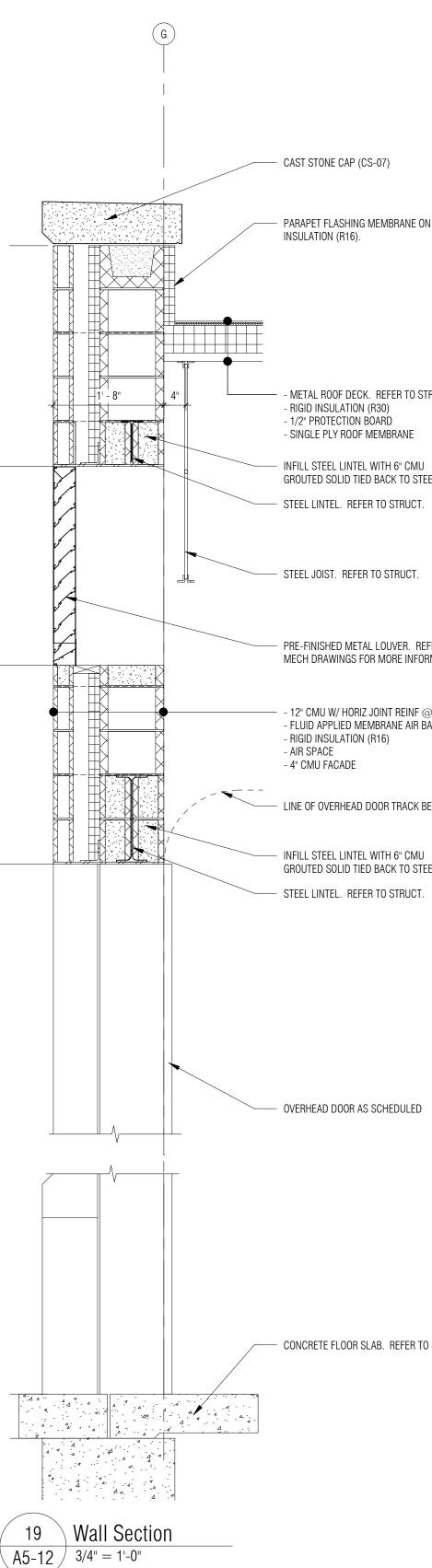
PROJECT NO.

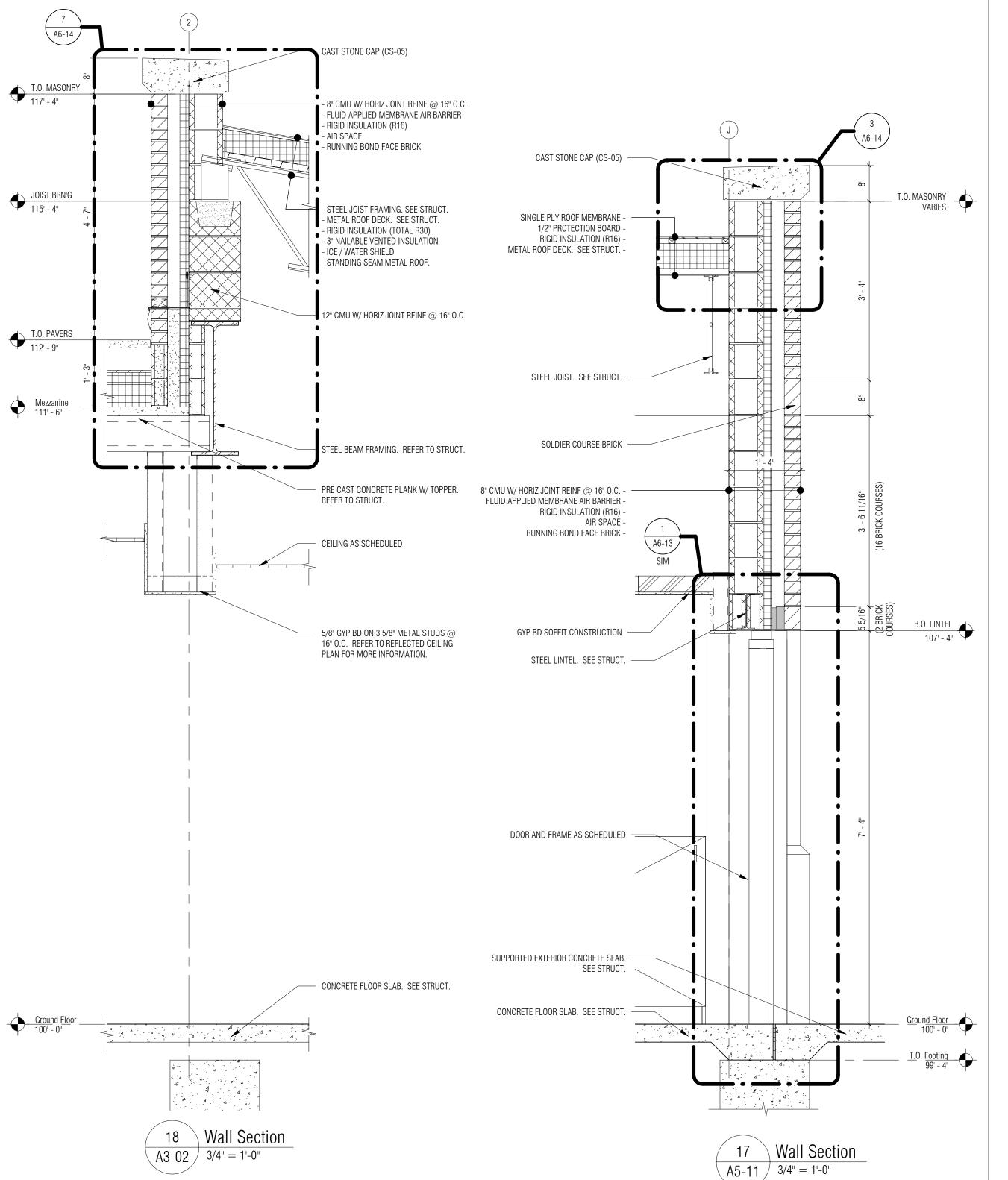
21-146A



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PARAPET FLASHING MEMBRANE ON RIGID

- METAL ROOF DECK. REFER TO STRUCT.

GROUTED SOLID TIED BACK TO STEEL BEAM - STEEL LINTEL. REFER TO STRUCT.

PRE-FINISHED METAL LOUVER, REFER TO MECH DRAWINGS FOR MORE INFORMATION.

- 12" CMU W/ HORIZ JOINT REINF @ 16" O.C. - FLUID APPLIED MEMBRANE AIR BARRIER

LINE OF OVERHEAD DOOR TRACK BEYOND

INFILL STEEL LINTEL WITH 6" CMU GROUTED SOLID TIED BACK TO STEEL BEAM

- CONCRETE FLOOR SLAB. REFER TO STRUCT

# PARTNERS



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# F 586.469.3607

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CONSULTANT

KEY PLAN

City of Warren

# PROJECT NAME

OWNER

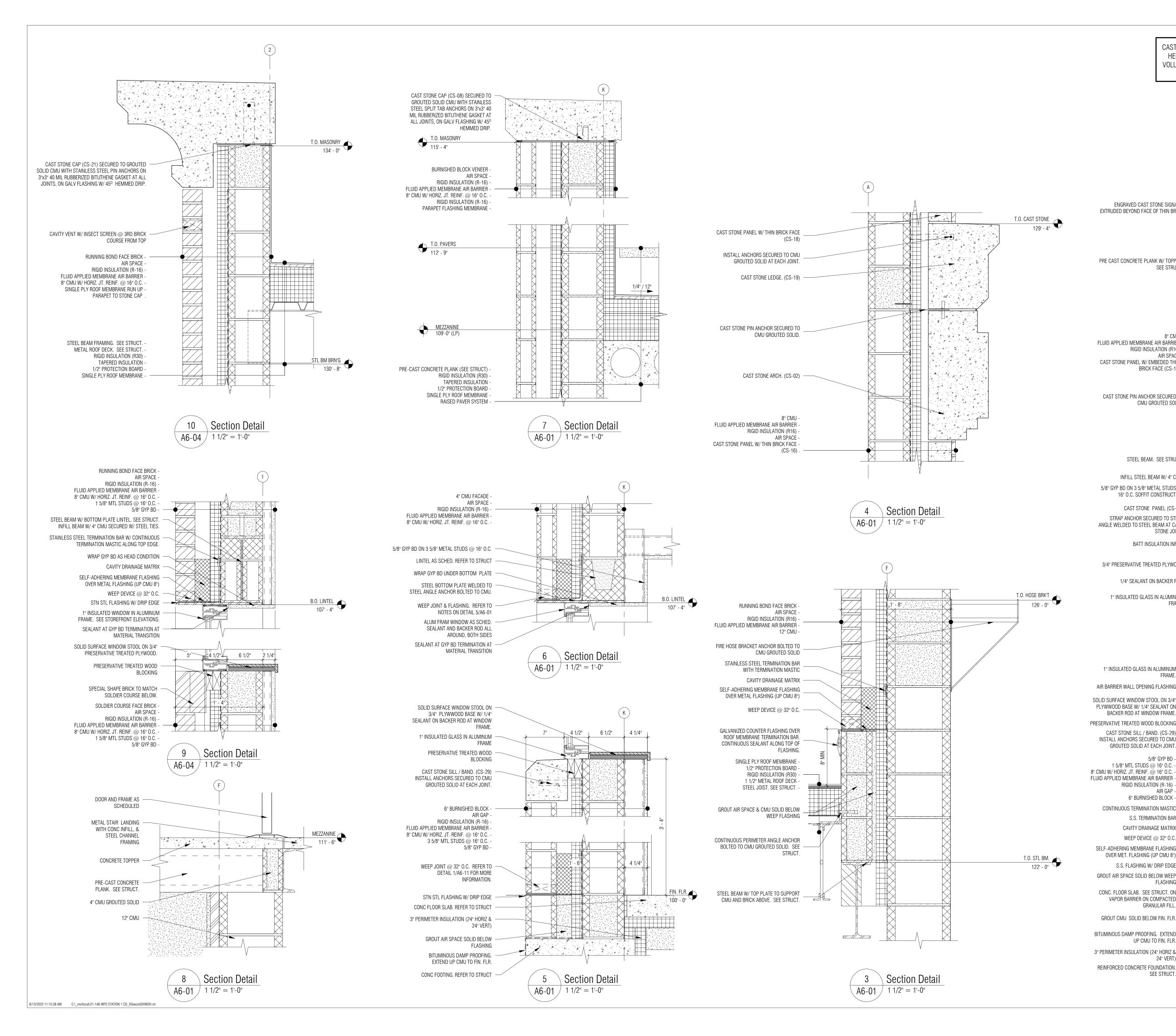
Warren Civic Center South Fire Station #1

23211 Van Dyke Ave Warren, MI 48089

PROJECT NO.

# 21-146A

Bidding / Construction	
	6/13/2
DRAWN BY	
CWP	
CHECKED BY	
DG	
APPROVED BY	
MAM	
SHEET NAME	



# CAST STONE PIECES ARE SHOWN ONLY FOR BASIC SUPPORT, PROFILE, AND HEIGHT INFORMATION. CAST STONE MANUFACTURER FREE TO REDUCE VOLUME AS REQUIRED TO MINIMIZE WEIGHT, MAINTAINING ABILITY TO SELF SUPPORT WHERE REQUIRED. REFER TO EXTERIOR ELEVATIONS. ( A ENGRAVED CAST STONE SIGNAGE EXTRUDED BEYOND FACE OF THIN BRICK PRE CAST CONCRETE PLANK W/ TOPPER. STORAGE FLOOR SEE STRUCT. 113' - 6" 8" CMU -FLUID APPLIED MEMBRANE AIR BARRIER -RIGID INSULATION (R16) AIR SPACE CAST STONE PANEL W/ EMBEDED THIN -T.O. CAST STONE BRICK FACE (CS-16). 112' - 0' . 4 . . . . CAST STONE PIN ANCHOR SECURED TO CMU GROUTED SOLID. STEEL BEAM. SEE STRUCT. INFILL STEEL BEAM W/ 4" CMU 5/8" GYP BD ON 3 5/8" METAL STUDS @ -16" O.C. SOFFIT CONSTRUCTION B.O. STL BM. 110' - 0' CAST STONE PANEL (CS-04) STRAP ANCHOR SECURED TO STEEL ANGLE WELDED TO STEEL BEAM AT CAST STONE JOINT. BATT INSULATION INFILL \_\_\_\_<u>B.O. ARCH</u>\_\_\_\_\_ 109'-0" (LP) 3/4" PRESERVATIVE TREATED PLYWOOD 109'-8" (HP) 1/4" SEALANT ON BACKER ROD 1" INSULATED GLASS IN ALUMINUM FRAME Section Detail A6-01 / 11/2" = 1'-0"1" INSULATED GLASS IN ALUMINUM FRAME. AIR BARRIER WALL OPENING FLASHING 6 1/2" ━=4 1/2"ゴ SOLID SURFACE WINDOW STOOL ON 3/4" PLYWWOOD BASE W/ 1/4" SEALANT ON BACKER ROD AT WINDOW FRAME. PRESERVATIVE TREATED WOOD BLOCKING CAST STONE SILL / BAND. (CS-29) INSTALL ANCHORS SECURED TO CMU GROUTED SOLID AT EACH JOINT. 5/8" GYP BD -1 5/8" MTL STUDS @ 16" 0.C. -8" CMU W/ HORIZ. JT. REINF. @ 16" O.C. -FLUID APPLIED MEMBRANE AIR BARRIER -RIGID INSULATION (R-16) -AIR GAP 6" BURNISHED BLOCK -CONTINUOUS TERMINATION MASTIC S.S. TERMINATION BAR CAVITY DRAINAGE MATRIX WEEP DEVICE @ 32" 0.C. SELF-ADHERING MEMBRANE FLASHING OVER MET. FLASHING (UP CMU 8") S.S. FLASHING W/ DRIP EDGE GROUT AIR SPACE SOLID BELOW WEEP FLASHING FIN. FLR. 100' - 0" CONC. FLOOR SLAB. SEE STRUCT. ON VAPOR BARRIER ON COMPACTED GRANULAR FILL. GROUT CMU SOLID BELOW FIN. FLR. BITUMINOUS DAMP PROOFING. EXTEND UP CMU TO FIN. FLR. 3" PERIMETER INSULATION (24" HORIZ & <sup>、</sup>, < < A

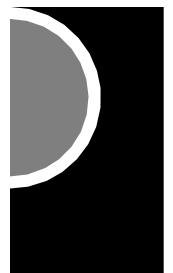
24" VERT)

Section Detail

A6-01 11/2" = 1'-0"

SEE STRUCT.

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# CONSULTANT

KEY PLAN

# OWNER

City of Warren

# PROJECT NAME

Warren Civic Center South Fire Station #1

# 23211 Van Dyke Ave Warren, MI 48089

PROJECT NO.

# 21-146A

ISSUES / REVISIONS	
Bidding / Construction	6/13/23

DRAWN BY

DJG CHECKED BY

DG

APPROVED BY

MAM

SHEET NAME

Section Details

### CAST STONE CAP (CS-08) SECURED TO GROUTED SOLID CMU WITH STAINLESS STEEL SPLIT TAB ANCHORS ON 3"x3" 40 MIL RUBBERIZED BITUTHENE GASKET AT ALL JOINTS, ON GALV FLASHING W/ 450

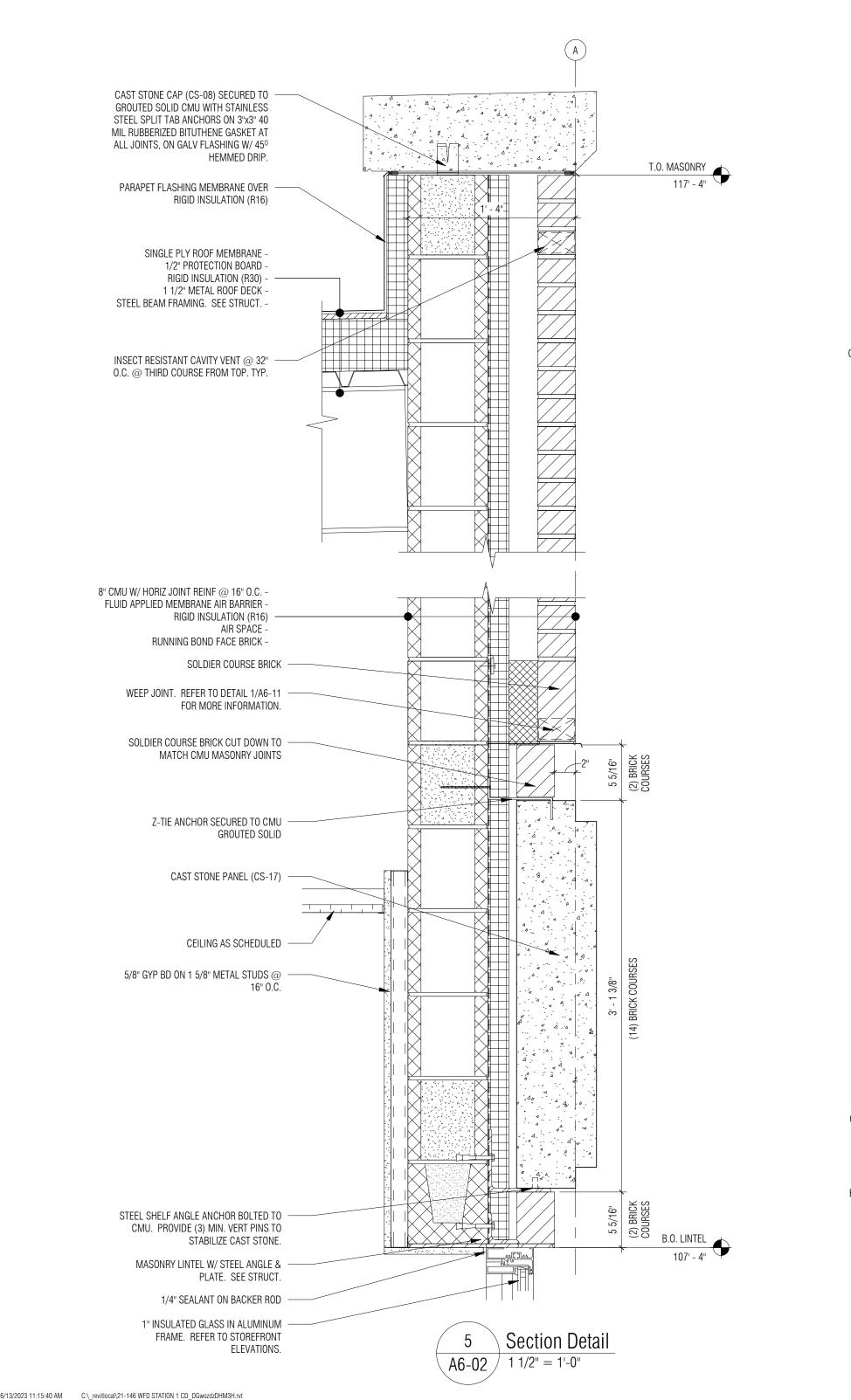
# PARAPET FLASHING MEMBRANE -

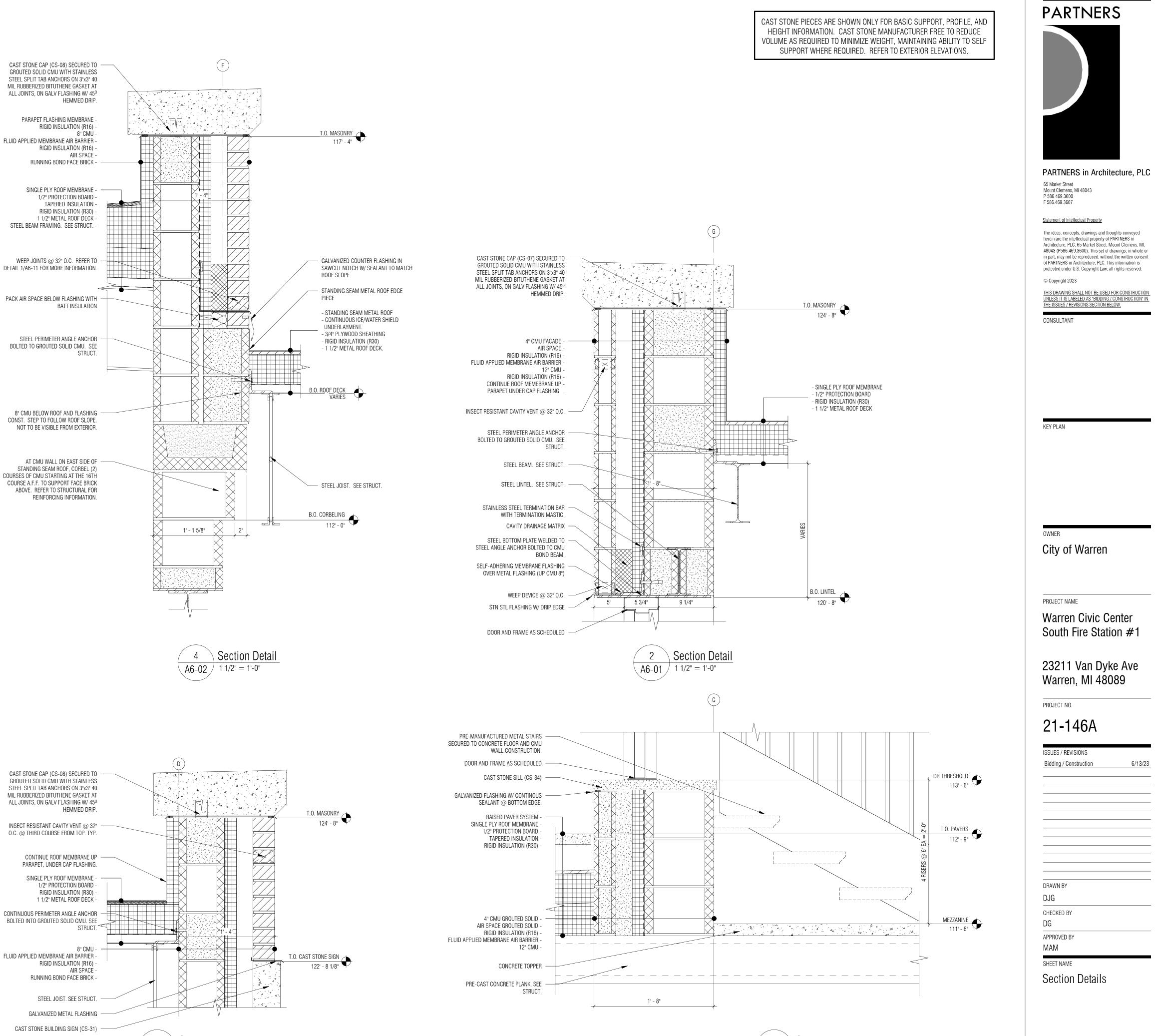
FLUID APPLIED MEMBRANE AIR BARRIER -

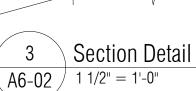
STEEL BEAM FRAMING. SEE STRUCT. -

WEEP JOINTS @ 32" O.C. REFER TO -DETAIL 1/A6-11 FOR MORE INFORMATION.

PACK AIR SPACE BELOW FLASHING WITH



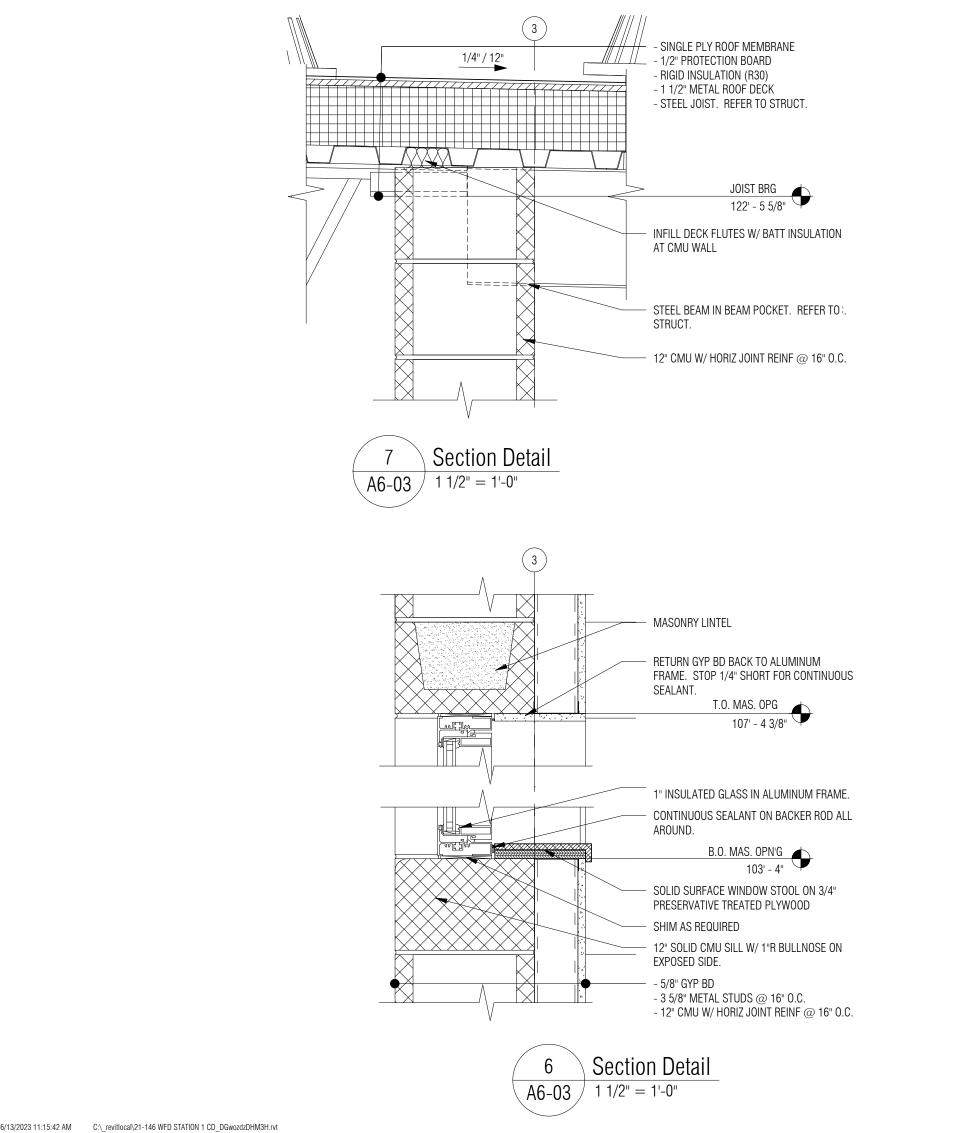






Section Detail / 1 1/2" = 1'-0"

A6-01

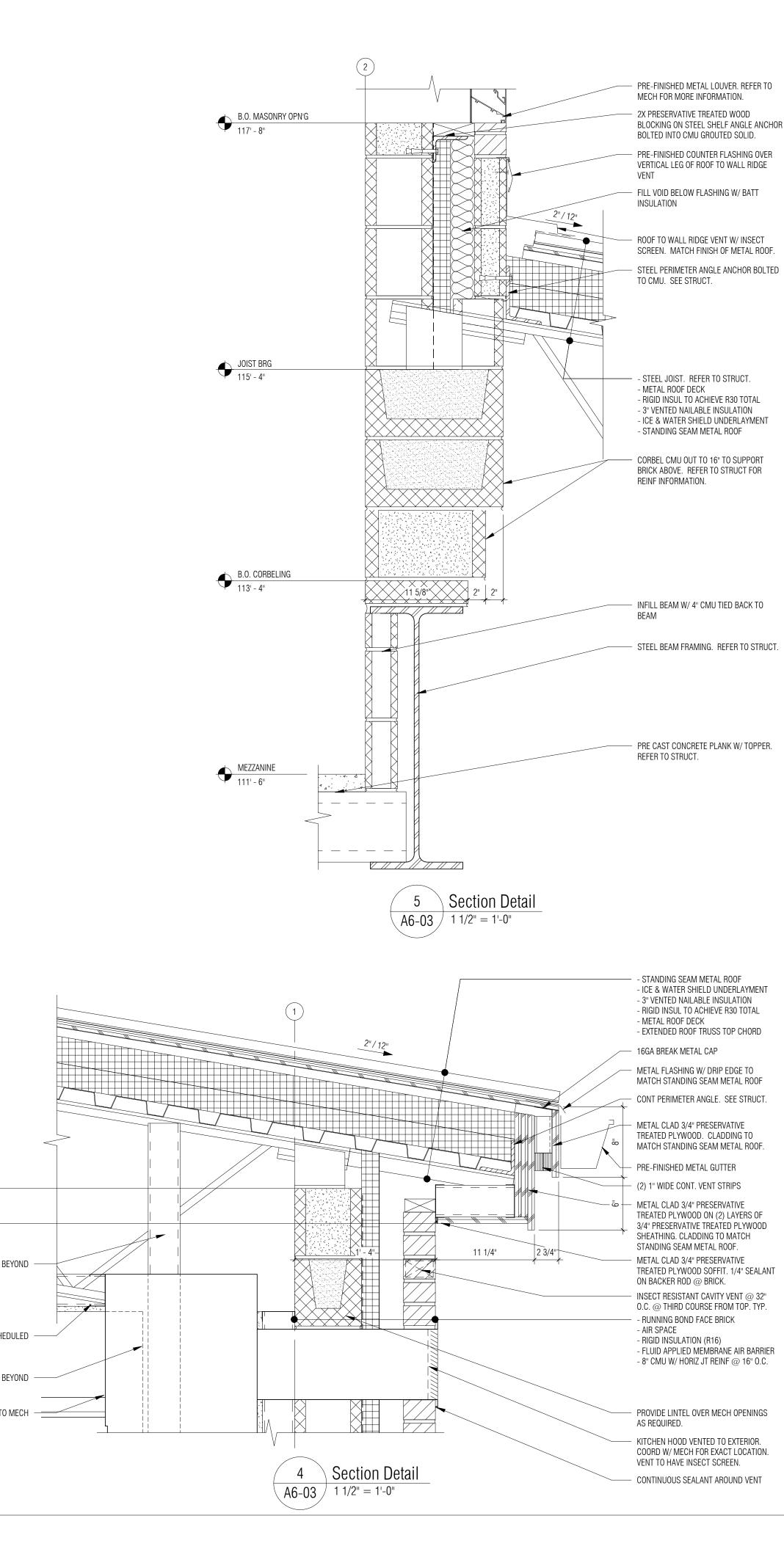


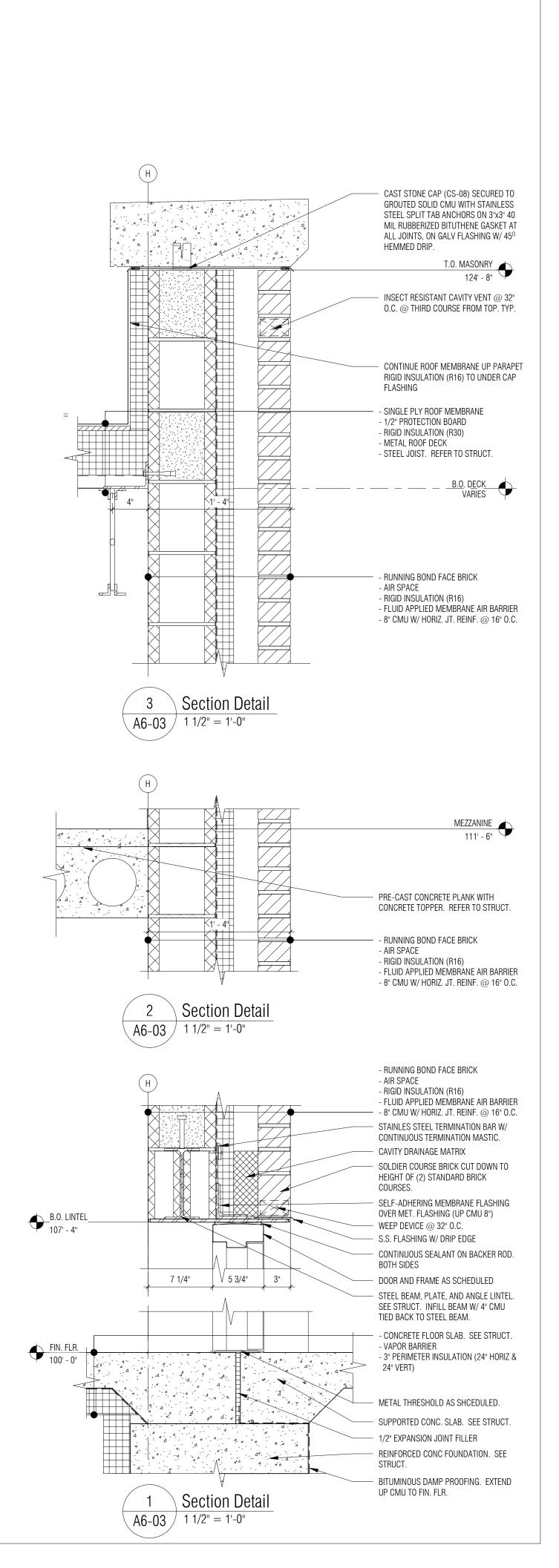
JOIST BRG 110' - 8" SOFFIT 110' - 4" SOFFIT FRAMING BEYOND

CEILING AS SCHEDULED -

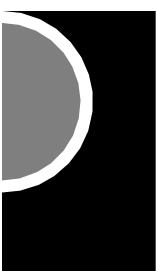
LINE OF SOFFIT CONSTRUCTION BEYOND

LINE OF KITCHEN HOOD. REFER TO MECH





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## CONSULTANT

KEY PLAN

City of Warren

# PROJECT NAME

OWNER

Warren Civic Center South Fire Station #1

23211 Van Dyke Ave Warren, MI 48089

PROJECT NO.

# 21-146A

ISSUES / REVISIONS Bidding / Construction

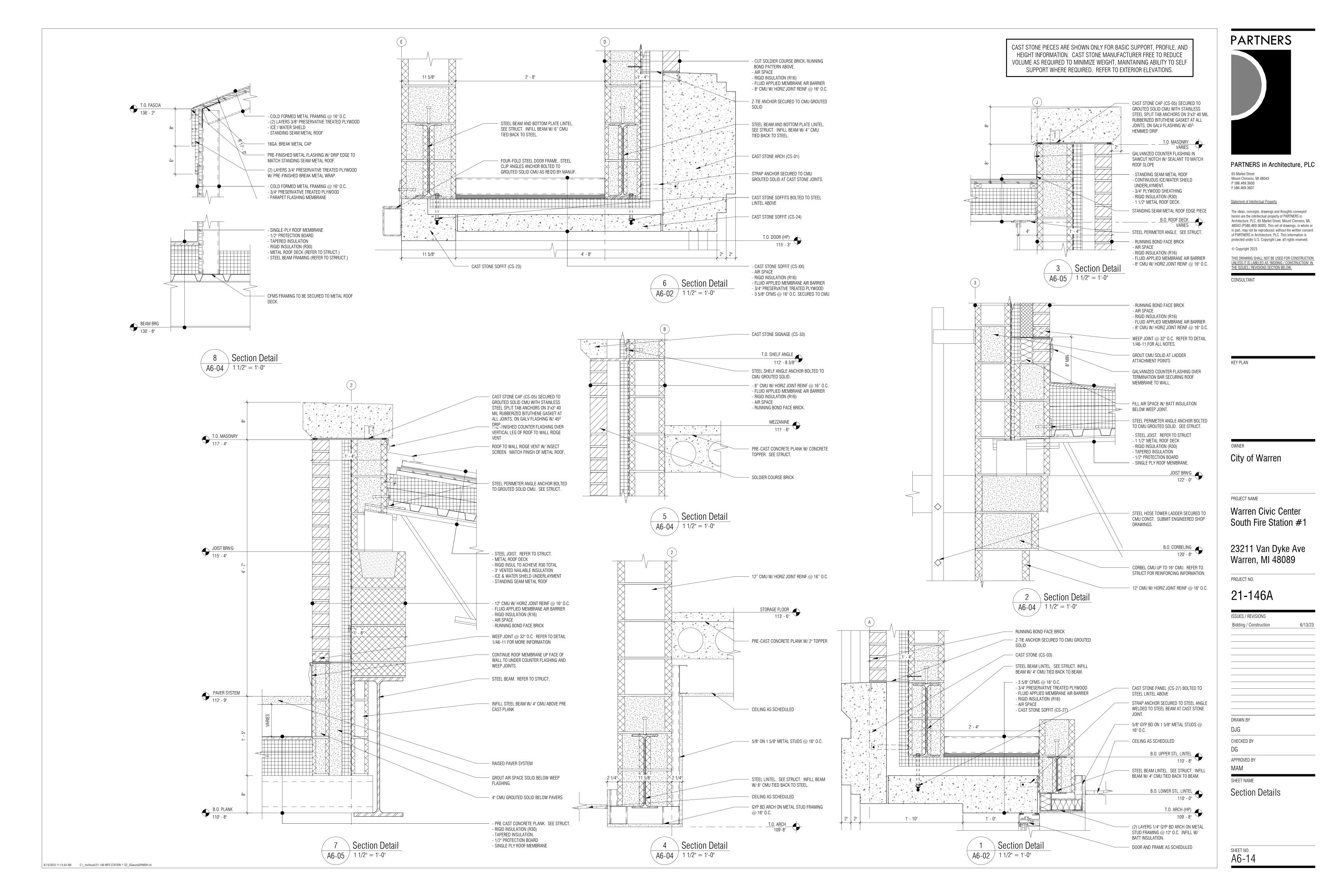
6/13/23

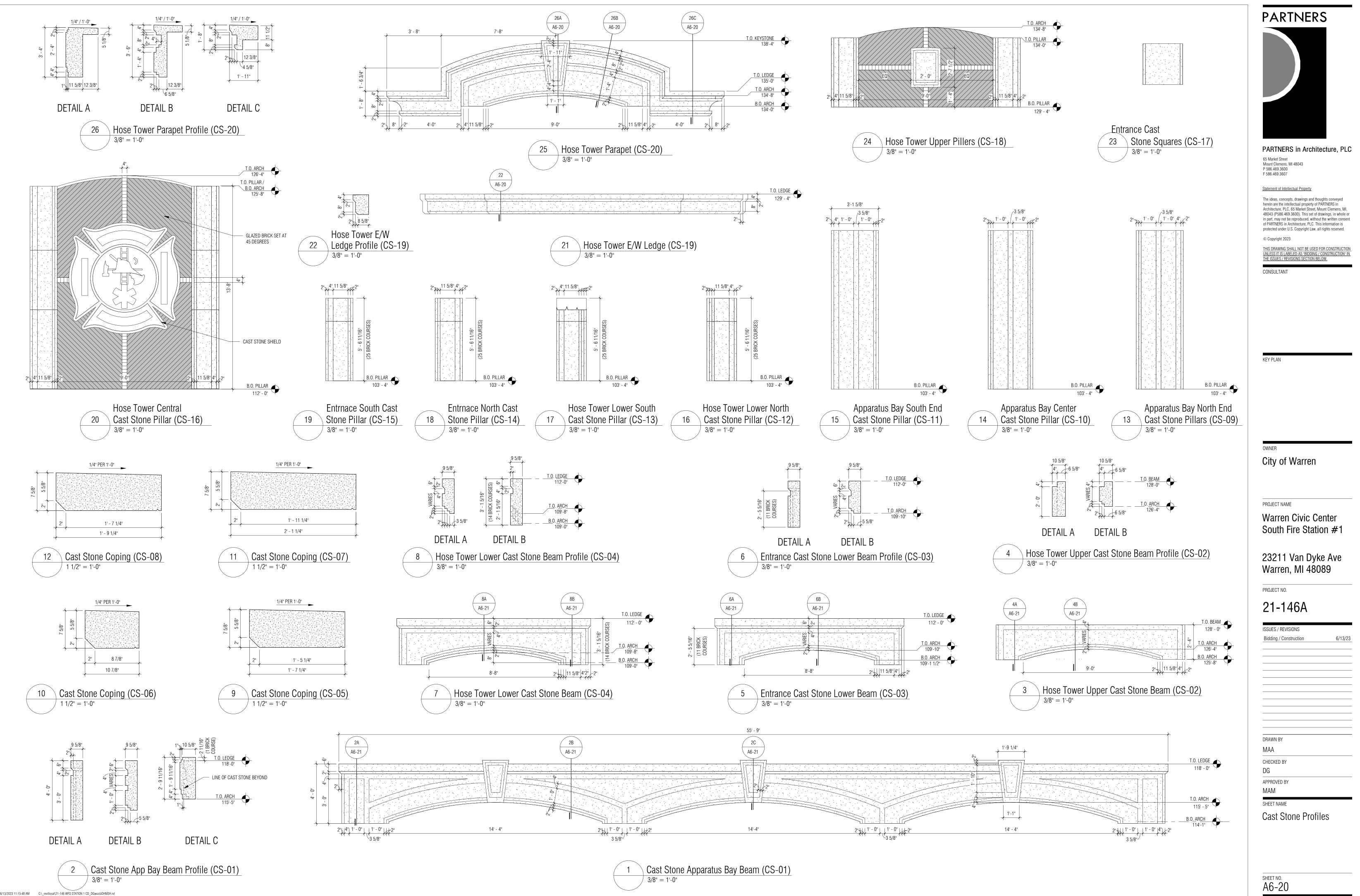
DRAWN BY DJG CHECKED BY

DG APPROVED BY

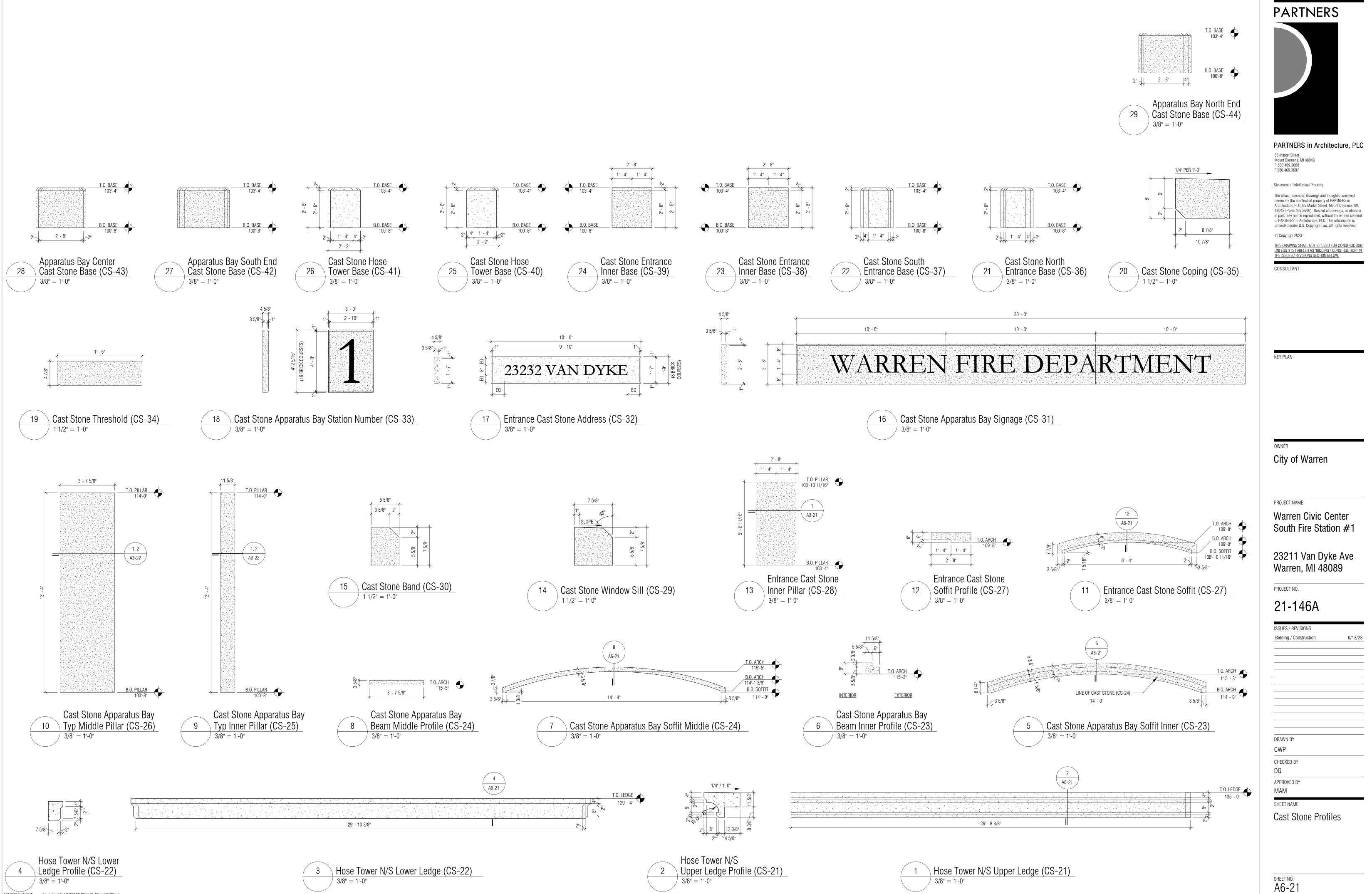
# MAM

SHEET NAME Section Details



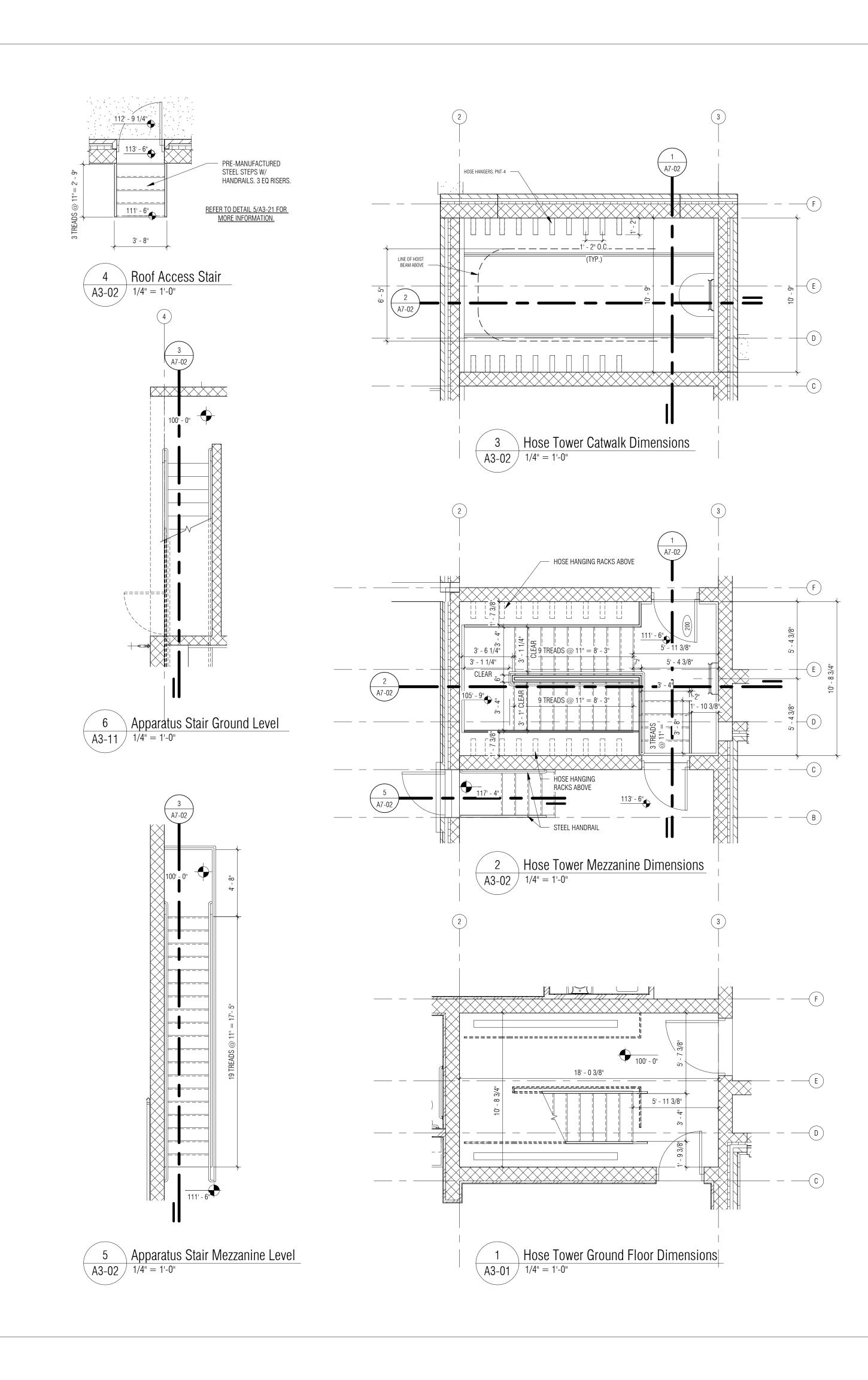


SHEET	NO.
A6	-2



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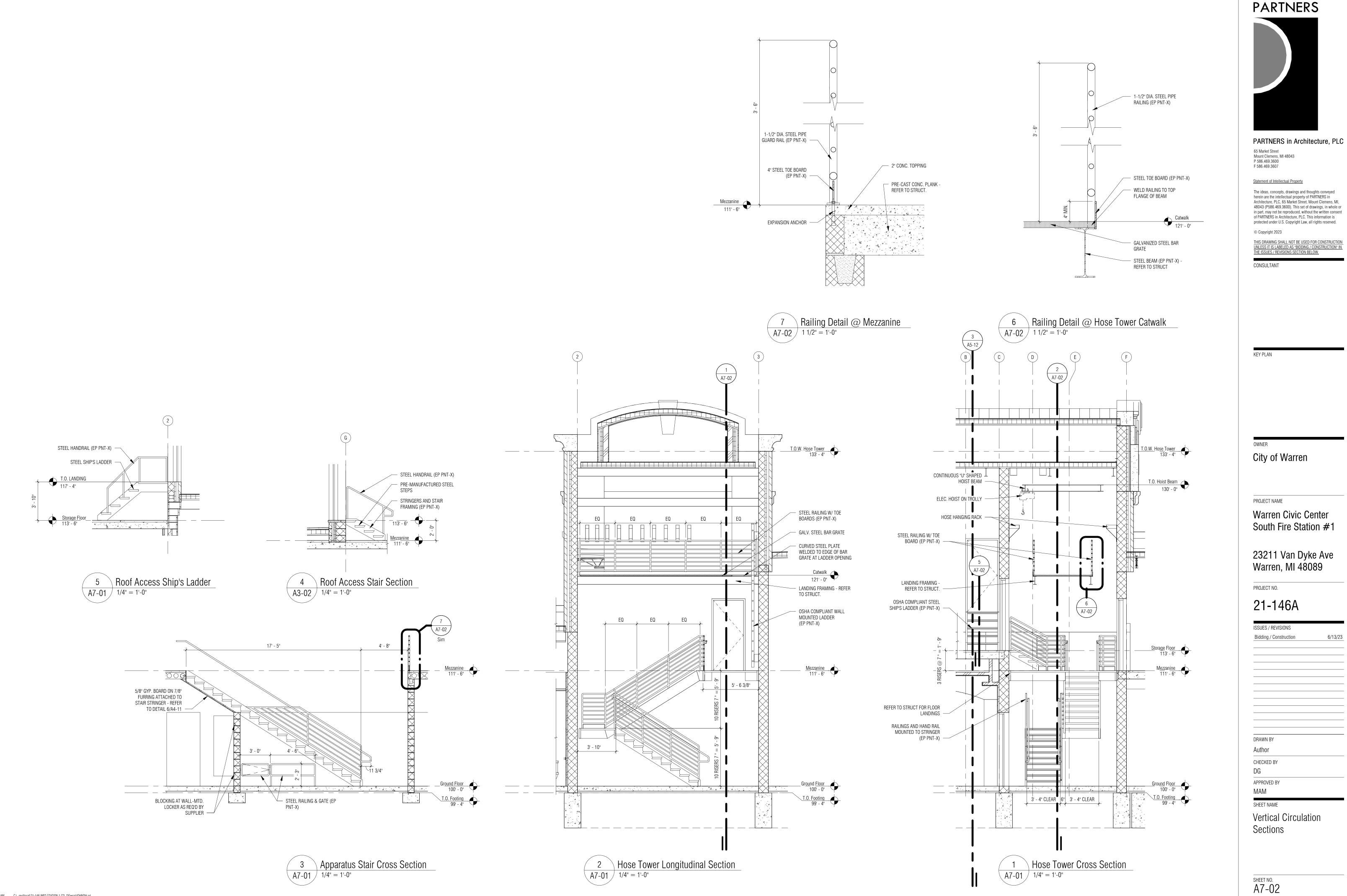
CONSULTANT

KEY PLAN

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# OWNER City of Warren PROJECT NAME Warren Civic Center South Fire Station #1 23211 Van Dyke Ave Warren, MI 48089 PROJECT NO. 21-146A ISSUES / REVISIONS Bidding / Construction 6/13/23 \_\_\_\_\_ DRAWN BY DJG \_\_\_\_\_ CHECKED BY DG \_\_\_\_\_ APPROVED BY MAM SHEET NAME

Vertical Circulation Plans



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Warren Civic Center

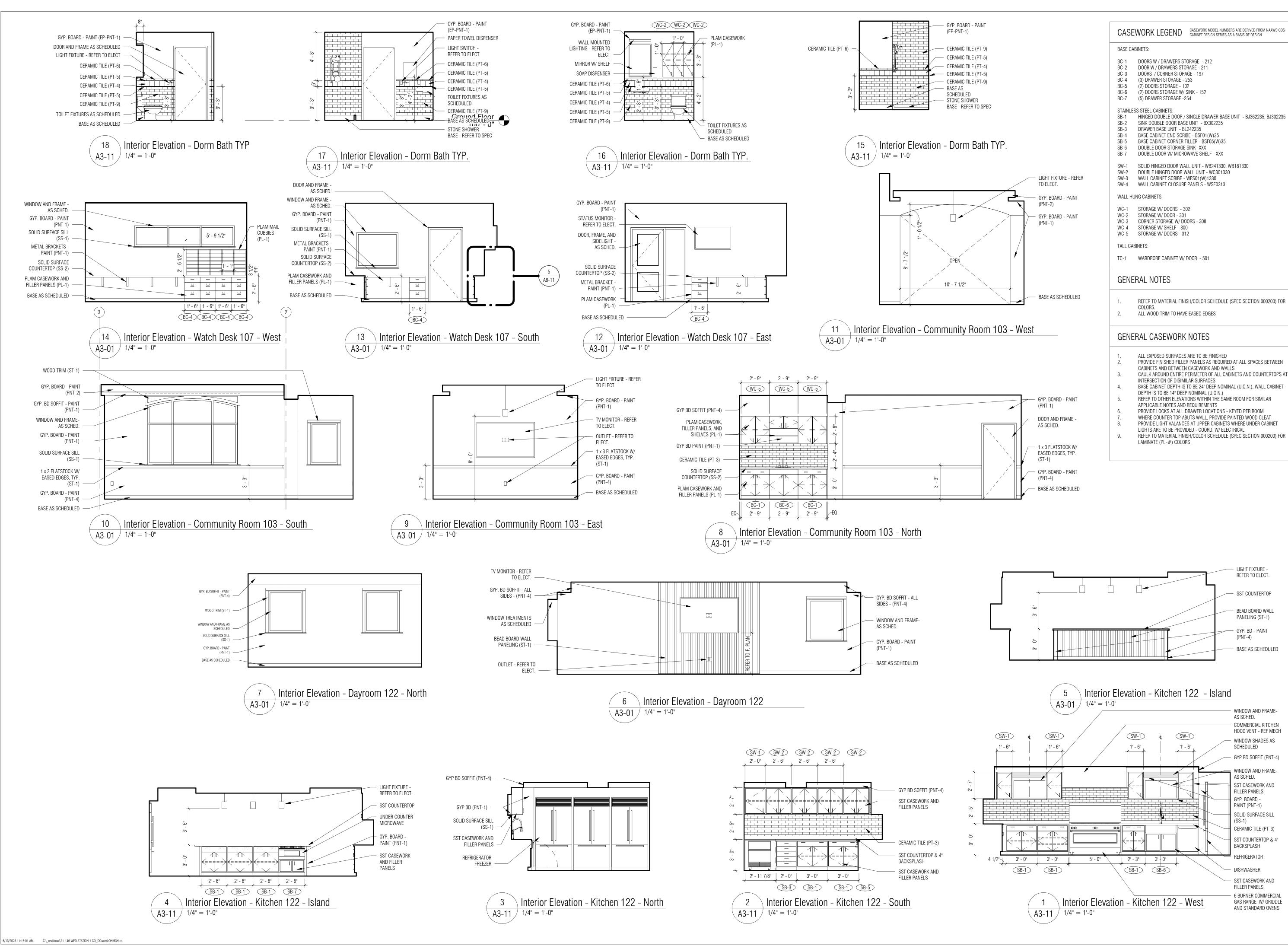
South Fire Station #1

23211 Van Dyke Ave Warren, MI 48089

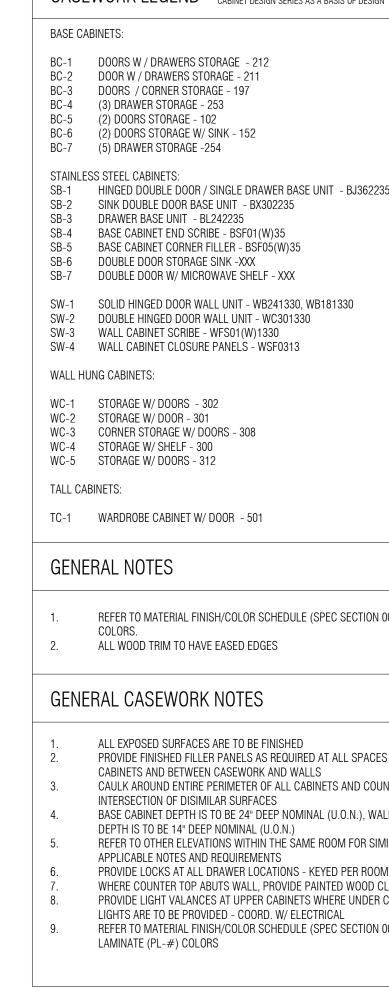
Bidding / Construction

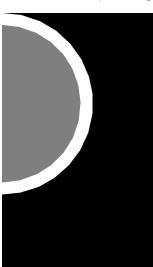
6/13/23

Vertical Circulation









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CONSULTANT

KEY PLAN

OWNER

# City of Warren

# PROJECT NAME

Warren Civic Center South Fire Station #1

23211 Van Dyke Ave Warren, MI 48089

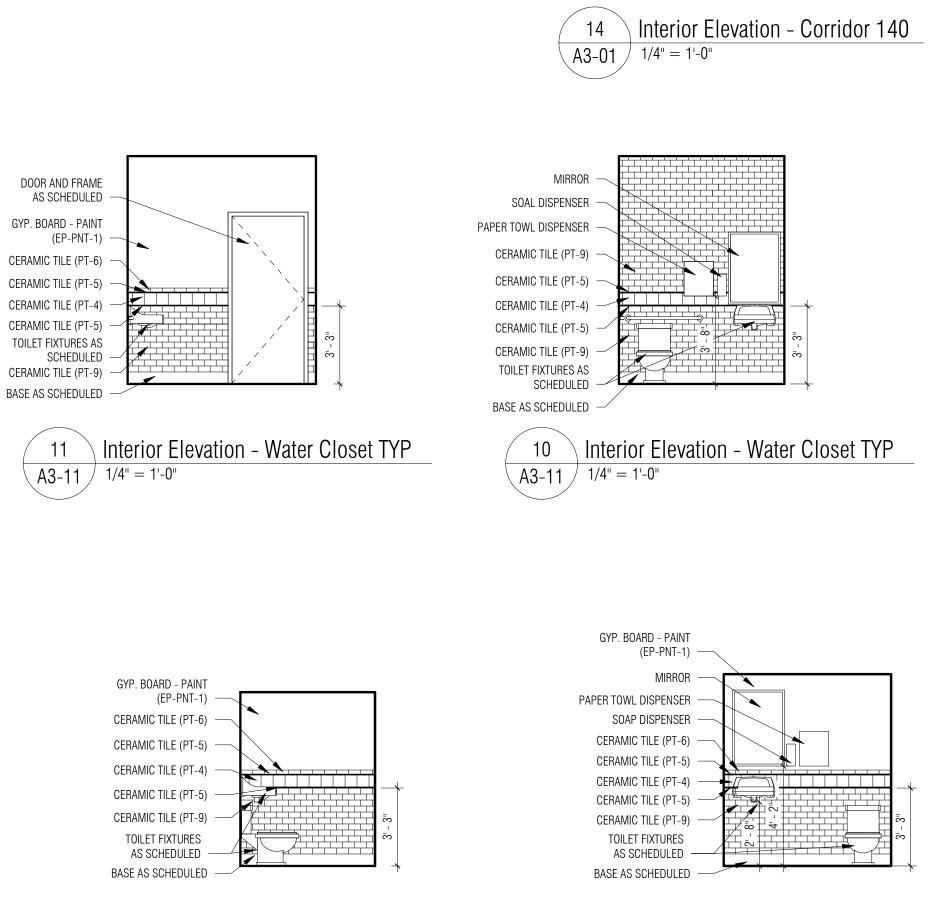
PROJECT NO.

21-146A	ł
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ISSUES / REVISIONS Bidding / Construction

6/13/23

DRAWN BY
CTG
CHECKED BY
DG
APPROVED BY
MAM
SHEET NAME
Interior Elevations



Interior Elevation - Water Closet 126 - East A3-11 1/4" = 1'-0"

5

6/13/2023 11:16:05 AM C:\\_revitlocal\21-146 WFD STATION 1 CD\_DGwozdzDHM3H.rvt



- DOOR AND FRAME AS

DRINKING FOUNTAIN -

- CERAMIC TILE (PT-10)

BASE AS SCHEDULED

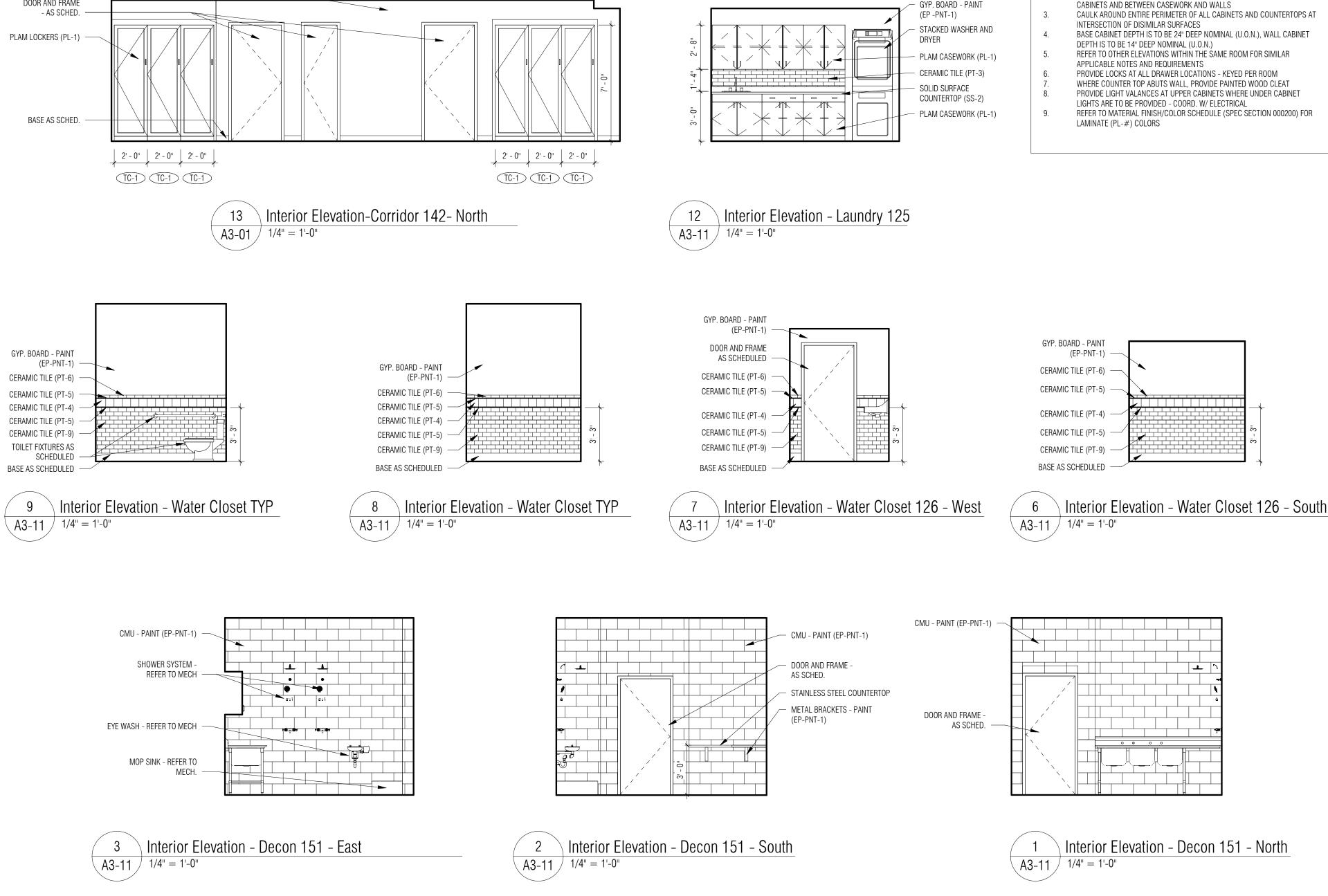
REFER TO MECH

SCHEDULED

• •

GYP. BOARD-PNT (PNT-1)

DOOR AND FRAME



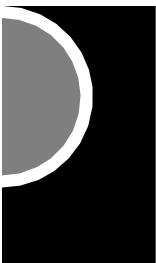
CAS	EWORK LEGEND	CASEWORK MODEL NUMBERS ARE DERIVED FROM NAAWS CDS CABINET DESIGN SERIES AS A BASIS OF DESIGN
BASE C	ABINETS:	
BC-1 BC-2 BC-3 BC-4 BC-5 BC-6 BC-7	DOORS / CORNER STORA (3) DRAWER STORAGE - 2	RAGE - 211 IGE - 197 253 I2 SINK - 152
STAINL SB-1 SB-2 SB-3 SB-4 SB-5 SB-6 SB-7	SINK DOUBLE DOOR BASI DRAWER BASE UNIT - BL BASE CABINET END SCRI	.242235 BE - BSF01(W)35 ILLER - BSF05(W)35 SINK -XXX
SW-1 SW-2 SW-3 SW-4	DOUBLE HINGED DOOR W	WFS01(W)1330
WALL H	IUNG CABINETS:	
WC-1 WC-2 WC-3 WC-4 WC-5	STORAGE W/ DOOR - 301 CORNER STORAGE W/ DO STORAGE W/ SHELF - 300	IORS - 308 )
TALL C	ABINETS:	
TC-1	WARDROBE CABINET W/	DOOR - 501
GEN	ERAL NOTES	
1.	REFER TO MATERIAL FINI COLORS.	SH/COLOR SCHEDULE (SPEC SECTION 000200) FOR
2.	ALL WOOD TRIM TO HAVE	EASED EDGES
GEN	ERAL CASEWORK	NOTES
1. 2.	CABINETS AND BETWEEN	R PANELS AS REQUIRED AT ALL SPACES BETWEEN I CASEWORK AND WALLS
3.	INTERSECTION OF DISIMI	
4. 5.	DEPTH IS TO BE 14" DEEF	TO BE 24" DEEP NOMINAL (U.O.N.), WALL CABINET ? NOMINAL (U.O.N.) IONS WITHIN THE SAME ROOM FOR SIMILAR
б.	APPLICABLE NOTES AND	
0. 7. 8.	WHERE COUNTER TOP AE	BUTS WALL, PROVIDE PAINTED WOOD CLEAT S AT UPPER CABINETS WHERE UNDER CABINET

# REFER TO MATERIAL FINISH/COLOR SCHEDULE (SPEC SECTION 000200) FOR

- GYP. BOARD - PAINT

Interior Elevation - Decon 151 - North

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CONSULTANT

KEY PLAN

# OWNER

# City of Warren

# PROJECT NAME

Warren Civic Center South Fire Station #1

23211 Van Dyke Ave Warren, MI 48089

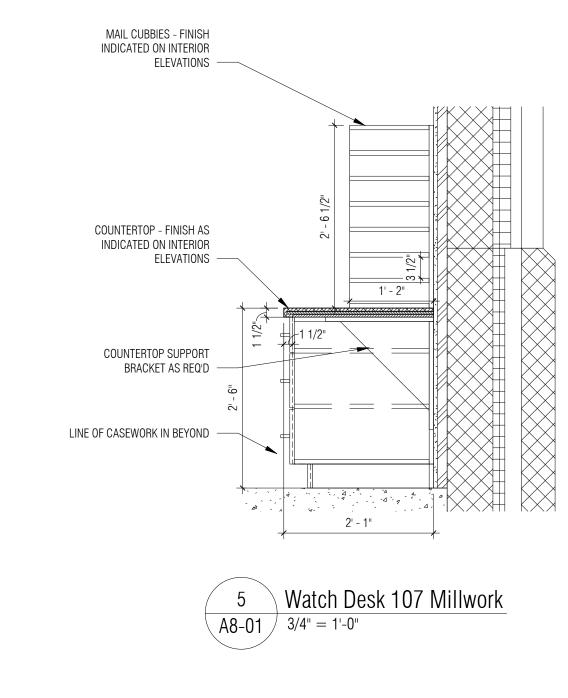
PROJECT NO.

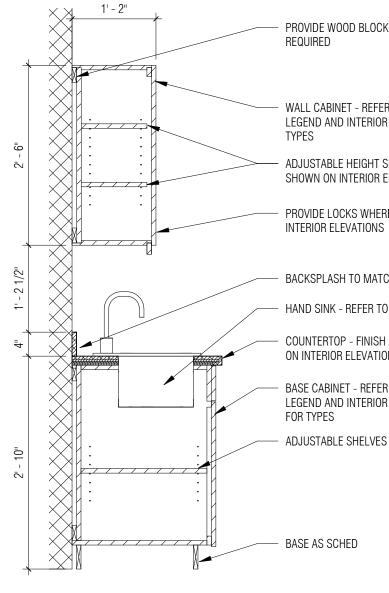
# 21-146A

ISSUES / REVISIONS Bidding / Construction

6/13/23

DRAWN BY
DJG
CHECKED BY
DG
APPROVED BY
MAM
SHEET NAME
Interior Elevations





Laundry 126 Millwork 4 3/4" = 1'-0"

- BASE AS SCHED

BASE CABINET - REFER TO CASEWORK LEGEND AND INTERIOR ELEVATIONS FOR TYPES ADJUSTABLE SHELVES

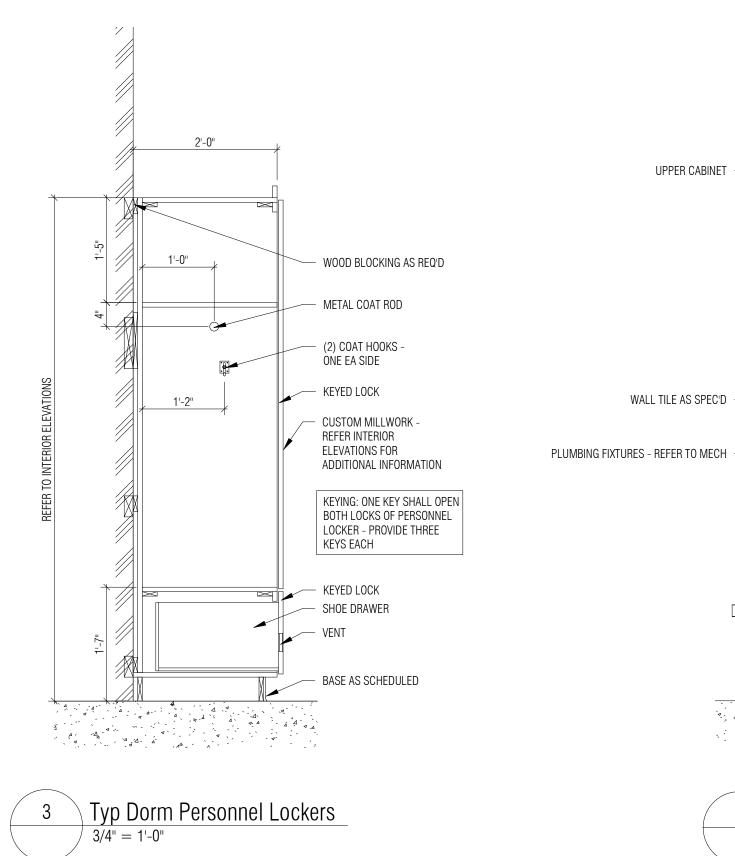
HAND SINK - REFER TO MECH COUNTERTOP - FINISH AS INDICATED ON INTERIOR ELEVATIONS

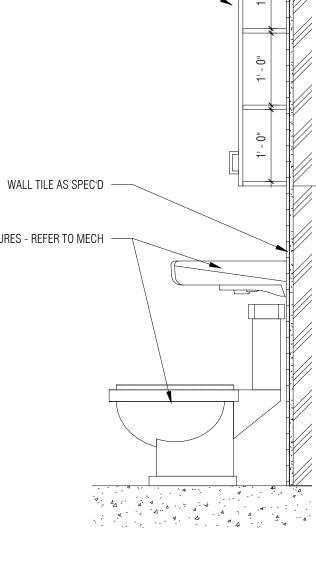
BACKSPLASH TO MATCH COUNTER

· ADJUSTABLE HEIGHT SHELVES AS SHOWN ON INTERIOR ELEVATIONS PROVIDE LOCKS WHERE INDICATED ON

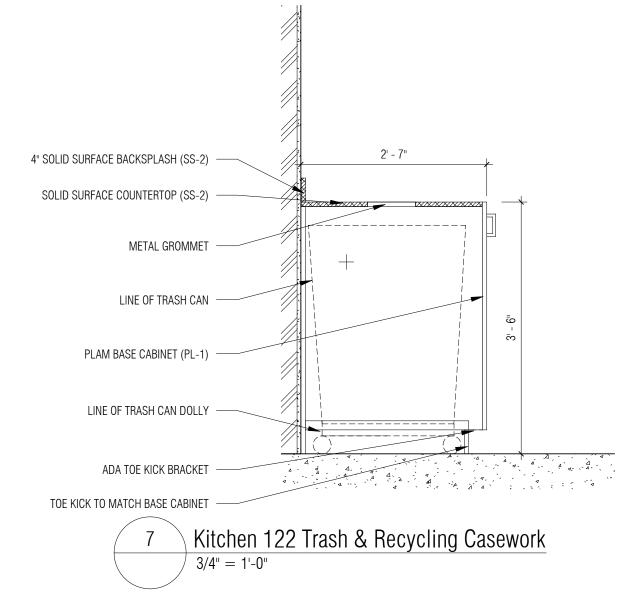
WALL CABINET - REFER TO CASEWORK LEGEND AND INTERIOR ELEVATIONS FOR

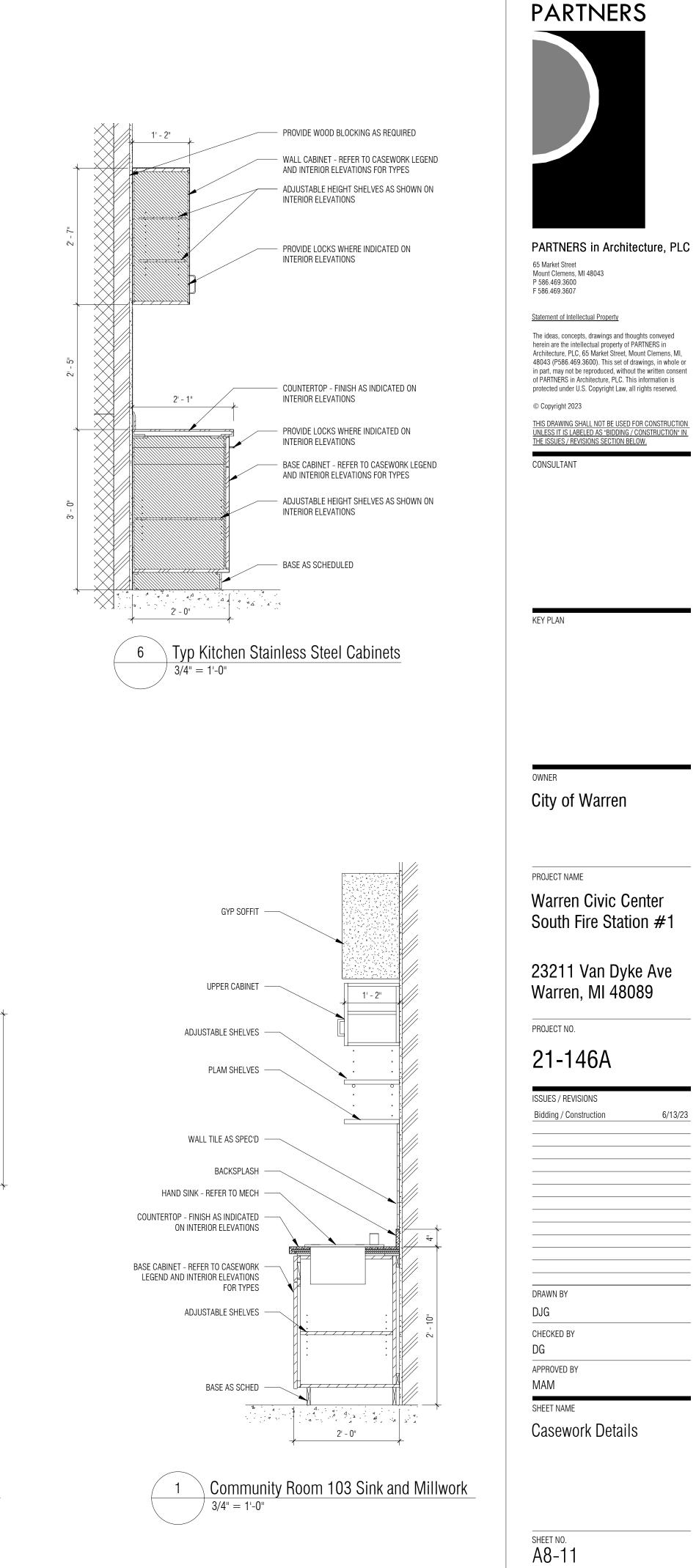
PROVIDE WOOD BLOCKING AS REQUIRED



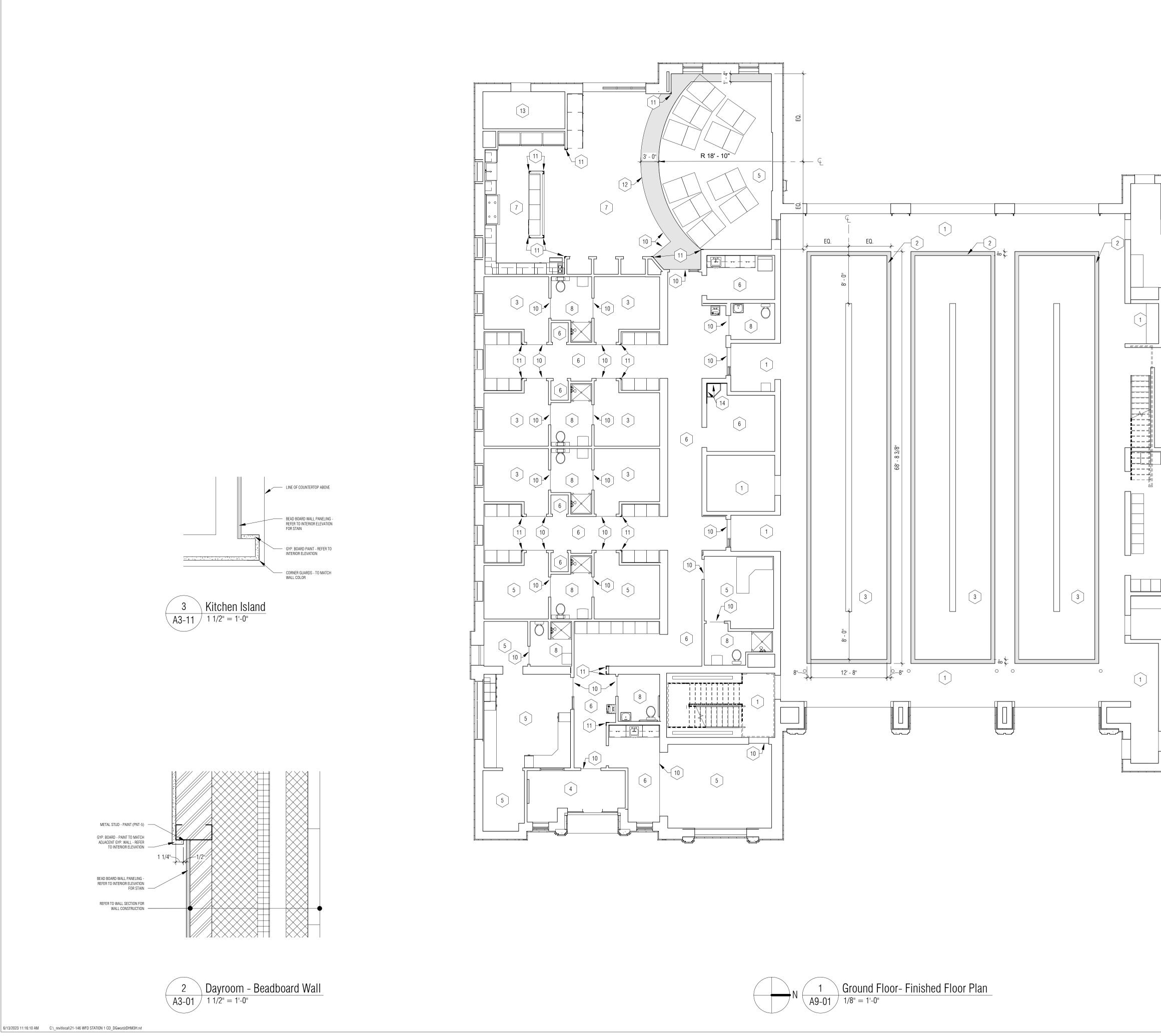


2





 $\frac{\text{Typ Dorm Millwork}}{3/4" = 1'-0"}$ 



# FINISH FLOOR PLAN GENERAL NOTES

- REFERENCE THE ROOM FINISH SCHEDULE AND THE SPECIFICATION A. SECTION 000200 FOR ADDITIONAL INFORMATION.
- UNLESS OTHERWISE NOTED, FLOOR FINISH TRANSITIONS SHALL В. OCCUR UNDERNEATH THE CENTERLINE OF DOORS.

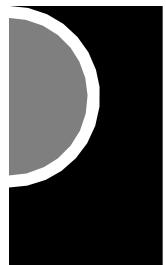
# FINISH FLOOR PLAN KEYNOTES

- $\begin{bmatrix} 1 \end{bmatrix}$ EPOXY FLOORING (EP-1) w/ INEGRAL 4" BASE
- 2 EPOXY FLOORING (EP-2)
- EPOXY FLOORING (EP-3) [3]
- 4 WALK OFF CARPET (CPT-1)
- 5 CARPET TILE (CPT-2)
- 6 RUBBER FLOORING (RTF-1)
- RESILIENT ATHLETIC FLOORING (RAF-1) [7]
- 8 FLOOR TILE (PT-1)
- 9 FLOOR TILE (PT-7)
  - FLOORING TRANSITION-REFER TO SHEET (A0-05) FOR DETAIL
- [11] CORNER GUARD

[10]

- [12] CARPET TILE (CPT-3)
- [13] SEALED CONCRETE
- 14 FRP UP TO 48" AFF @ J.C.

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CONSULTANT

KEY PLAN

OWNER

# City of Warren

PROJECT NAME

Warren Civic Center South Fire Station #1

23211 Van Dyke Ave Warren, MI 48089

PROJECT NO.

21-146A

ISSUES / REVISIONS

Bidding / Construction

6/13/23

DRAWN BY DJG

\_\_\_\_\_ CHECKED BY

DG

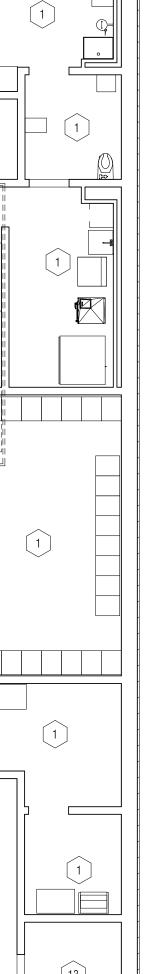
APPROVED BY

MAM

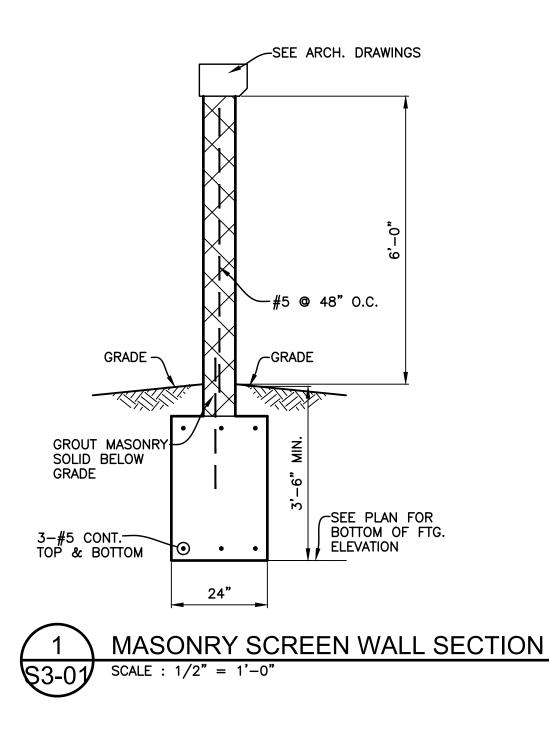
SHEET NAME

Ground Floor Finish Plan

13 [1] R  $\left[1\right]$ 1 13



											<b>4</b> 0'
	_						SITE SCREENWA SLEEVE IN FOC GAS LINE. SEE ARCHITECTURAL	TING FO	OR		T
		FOUNDATION SCHEDULE		REFER TO 1/S	3–01	1					
			F2		F1	MARK		<b>A</b>			
			5'-0"x5'-0"	4'-0'	'x4'-0"	SIZE					
			16"		2"	THICKNESS					
	_		5-#5 EACH WAY	6- EACH	-#4 H WAY	REINFORCING EACH WAY-BOTTOM UNLESS OTHERWISE NOTED					
						REMARKS				┆╨╨┸╴┨ ┨╵	1
	L								\$4-03		
	WAL	L FOOTI	NG SCHED	JLE							
MARK	SIZ W	ZE D	REINFORCING ST BOTTOM U.O.I			REMARKS					
WF1	18"	12"	2-#5								
WF2	24"	12"	2-#5							┆╷ ╻╷╷╻	
WF3	16"	12"	2-#5								1
								.4			1
								91'-4"			



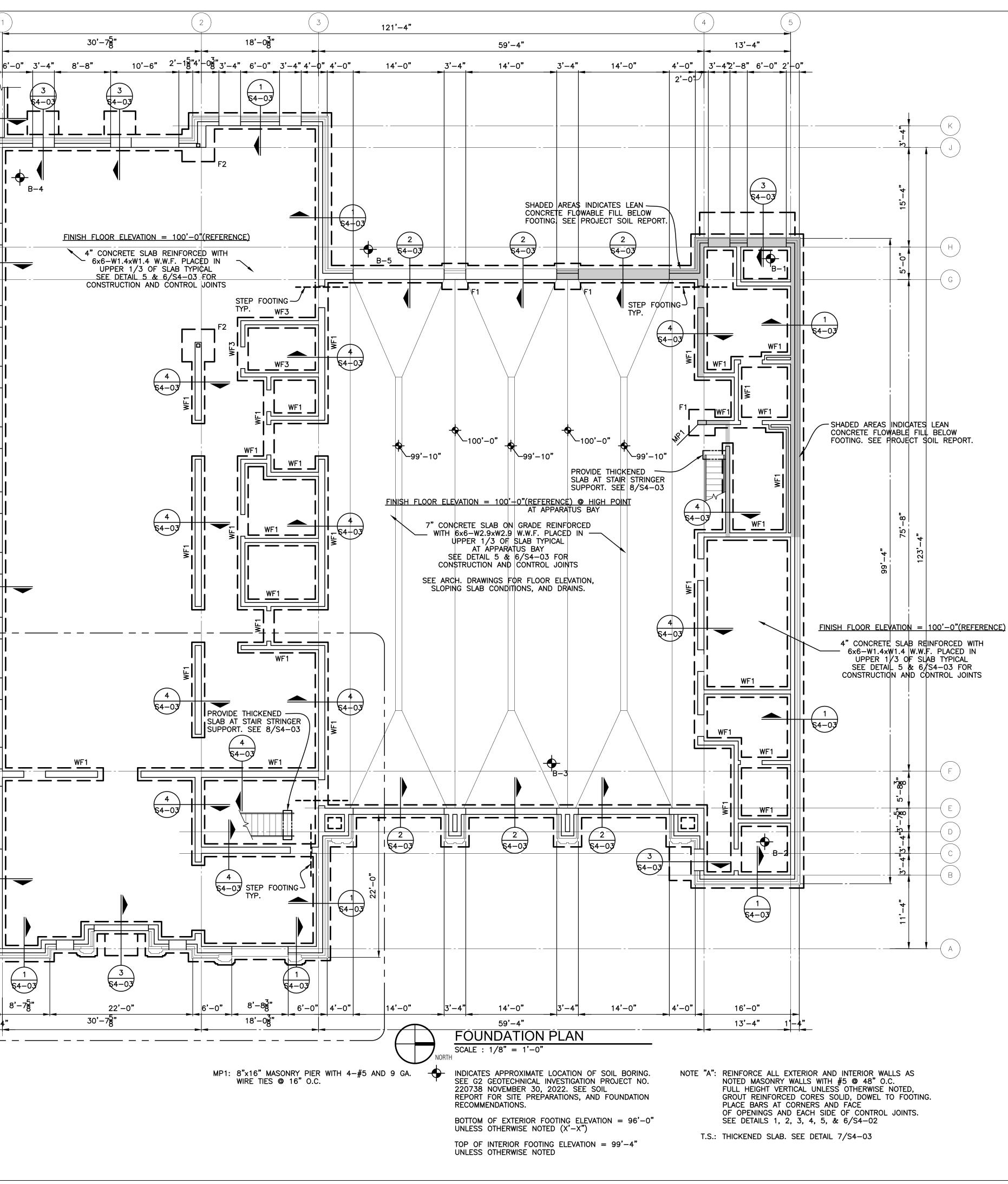
SEE CIVIL & ARCHITECTURAL DRAWINGS AND G2 GEOTECHNICAL INVESTIGATION REPORT.

1

64-03

64-03

64-03



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# **S**hymanski & Associates, L.L.C.

STRUCTURAL ENGINEERS 33426 Five Mile Rd Livonia, Michigan 48154 ph. 734.855.4810 fx. 734.855.4809 email@sastructuralengineers.com

KEY PLAN

# OWNER

# City Of Warren

# PROJECT NAME

# Warren Civic Center South Fire Station #1

23211 Van Dyke Ave Warren, MI 48089

PROJECT NO.

# 21-146A

# **ISSUES / REVISIONS** Bidding/Construction 06/13/2023

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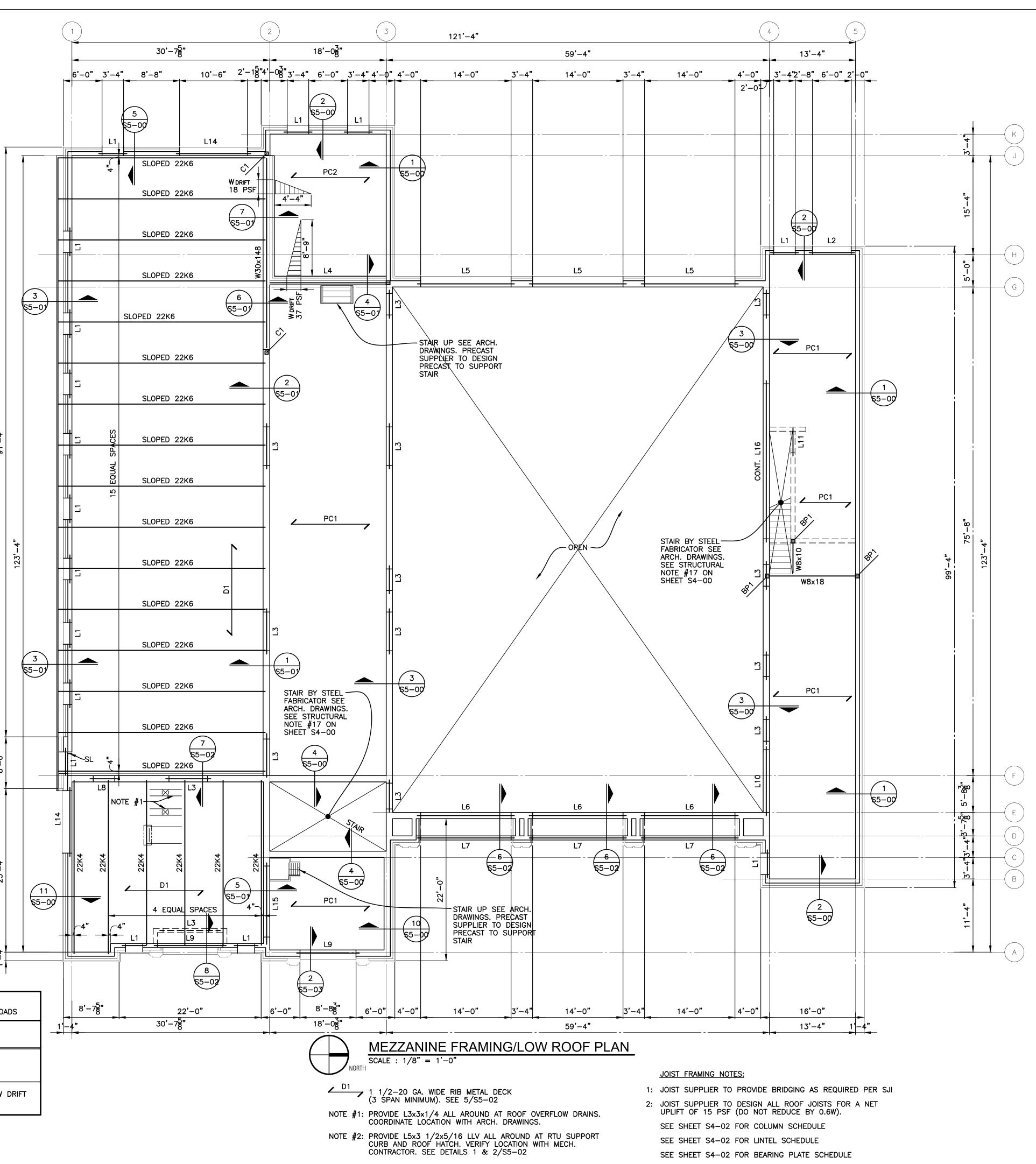
FOUNDATION PLAN

SHEET	NO.
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	PR	ECAST PLANK S		HITECTUAL DRAWINGS FOR AL SUPERIMPOSED DEAD LOA
MARK	SIZE	LIVE LOAD	MINIMUM SUPERIMPOSED DEAD LOAD	REMARKS
PC1	8" HOLLOWCORE UNIT + 2" CONCRETE TOPPING	125 PSF		
PC2	8" HOLLOWCORE UNIT	100 PSF	PAVERS & ROOFING + CEILING	DESIGN TO CARRY SNOW AS SHOWN ON PLAN



PARTNERS in Architecture, PLC 65 MARKET STREET MOUNT CLEMENS, MI 48043 P 586.469.3600

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SPECIFICALLY FOR "BIDDING / CONSTRUCTION"

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KEY PLAN

OWNER

City Of Warren

# PROJECT NAME

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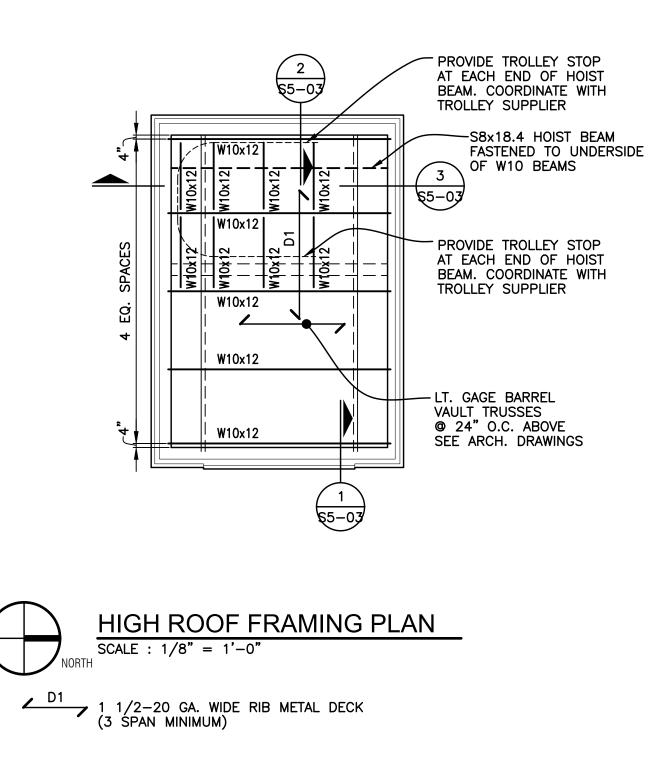
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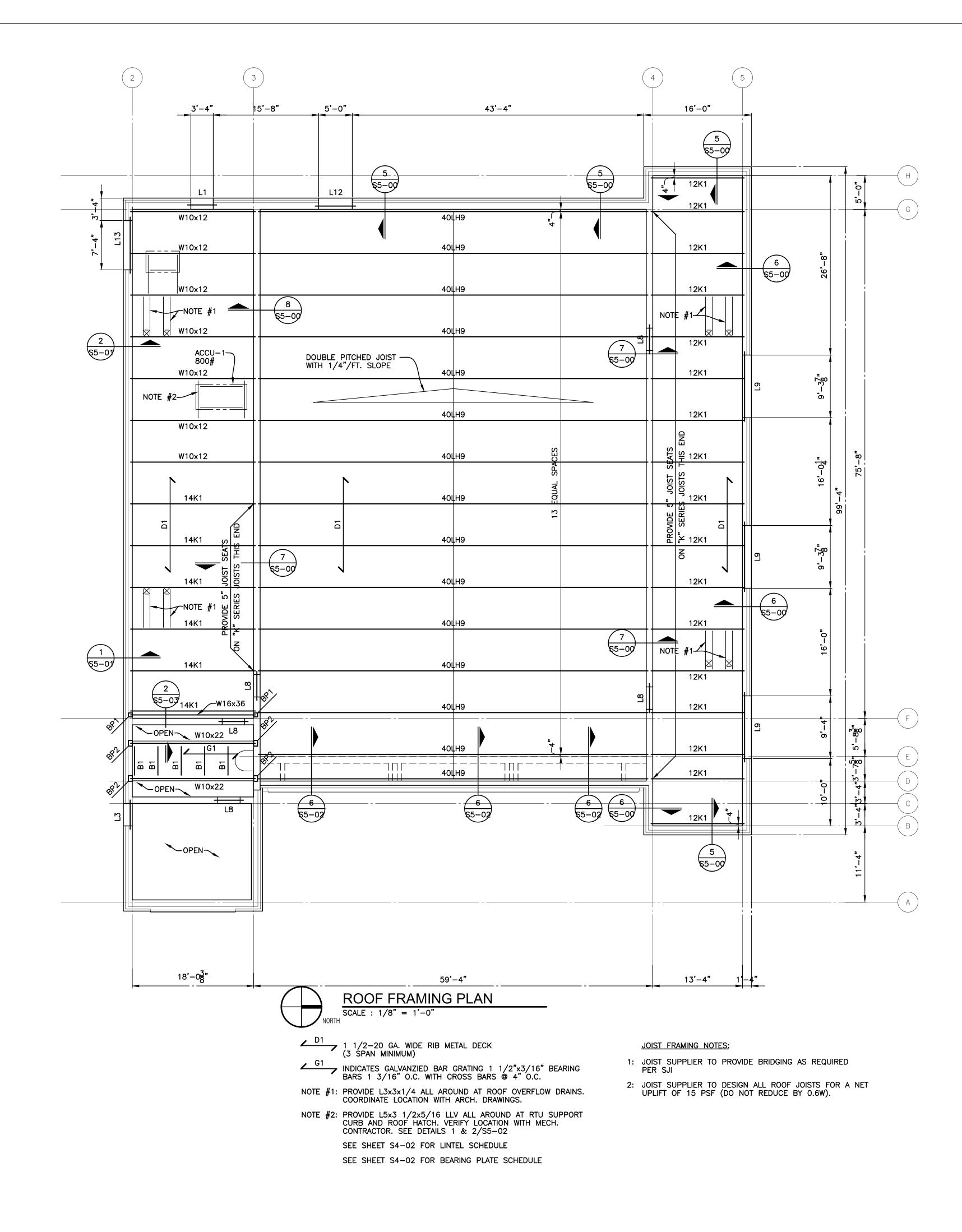
# ISSUES / REVISIONS

Bidding/Construction 06/13/2023

SHEET NO. S3-02

ROOF PLAN







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KEY PLAN

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drawn by RC

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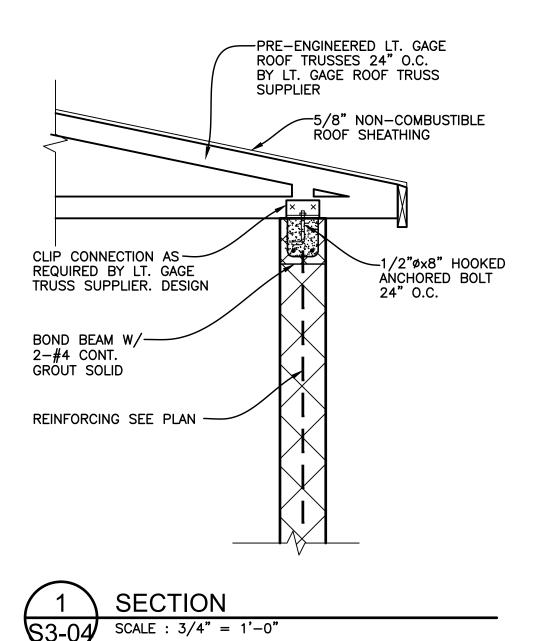
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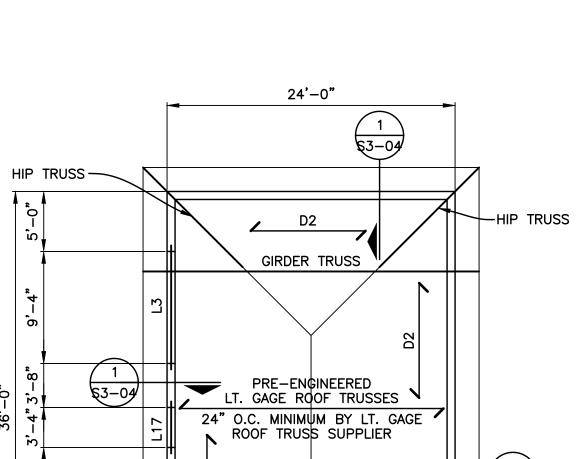
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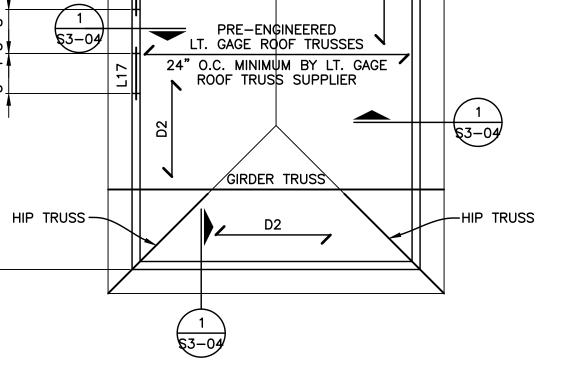
SHEET NAME

ROOF FRAMING PLAN

SHEET NO. **S3-03** 



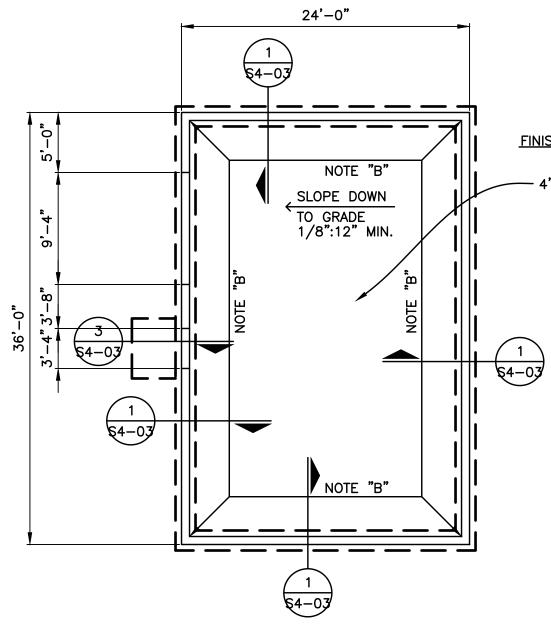




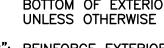


D2 LT. GAGE TRUSSES TO HAVE 5/8" NON-COMBUSTIBLE PLYWOOD ROOF SHEATHING. PROVIDE ROOF CLIPS AT PANEL EDGES BETWEEN TRUSSES. STAGGER PLYWOOD JOINTS BETWEEN ROWS OF SHEATHING (OFFSET 4'-0" EACH ROW) ATTACH WITH #10 TEK SCREWS 6" O.C. AT EDGES AND 12" O.C. IN THE FIELD

SEE SHEET S4-02 FOR LINTEL SCHEDULE







NOTE "B": REINFORCE EXTERIOR MASONRY WALLS AS NOTED WITH #5 @ 48" O.C. FULL HEIGHT VERTICAL UNLESS OTHERWISE NOTED, GROUTE REINFORCED CORES SOLID, DOWEL TO FOOTING. PLACE BARS AT CORNERS AND FACE OF OPENINGS AND EACH SIDE OF CONTROL JOINTS. SEE DETAILS 1, 2, 3, 4, 5 & 6/S4-02

# PARTNERS



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KEY PLAN

<u>FINISH FLOOR ELEVATION = 100'-0"(REFERENCE)</u>

- 4" CONCRETE SLAB ON GRADE REINFORCED WITH 6x6-W1.4xW1.4 W.W.F. PLACED IN UPPER 1/3 OF SLAB TYPICAL AT APPARATUS BAY SEE DETAIL 5 & 6/S4-03 FOR CONSTRUCTION AND CONTROL JOINTS

# GARAGE FOUNDATION PLAN

BOTTOM OF EXTERIOR FOOTING ELEVATION = 96'-0"UNLESS OTHERWISE NOTED

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-----DRAWN BY RC

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MJ

-----APPROVED BY TS

SHEET NAME

GARAGE FOUNDATION AND ROOF FRAMING PLAN SHEET NO. S3-04

GENERAL NOTES GENERAL CONDITIONS

- 1. IF ANY GENERAL NOTE CONFLICTS WITH ANY DETAIL OR NOTE ON THE PLANS OR IN THE SPECIFICATIONS, THE STRICTEST PROVISION SHALL GOVERN.
- 2. THE STRUCTURAL DRAWINGS ARE FOR THE PLACEMENT AND SIZE OF STRUCTURAL COMPONENTS ONLY. O.S.H.A., LOCAL GOVERNMENT CODES AND SAFETY CODE REQUIREMENTS SHALL BE ADHERED TO BY THE CONTRACTOR.
- 3. THE STRUCTURE IS DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER IT IS FULLY COMPLETED. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE, AND TO ENSURE THE SAFETY OF THE STRUCTURE AND ITS COMPONENT PARTS DURING ERECTION. THIS INCLUDES PROVIDING TEMPORARY BRACING, SHORING, GUYS OR TIE- DOWNS. THESE TEMPORARY SUPPORTS WILL REMAIN IN PLACE UNTIL ALL STRUCTURAL COMPONENTS ARE IN PLACE AND COMPLETED.
- 4. USE OF ENGINEERING DRAWINGS AS ERECTION DRAWINGS BY THE CONTRACTOR IS STRICTLY PROHIBITED. DIMENSIONS SHOWN ON THE STRUCTURAL DRAWINGS ARE FOR REFERENCE ONLY AND SHOULD NOT BE USED FOR BUILDING LAYOUT AND LOCATION. SEE ARCHITECTURAL DRAWINGS AND SITE PLAN FOR THESE PURPOSES.
- 5. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AT THE RATE OF NO MORE THAN 80 DRAWINGS PER WEEK. THE CONTRACTOR SHALL SUBMIT A SCHEDULE OF SHOP DRAWINGS PRIOR TO SUBMITTAL. THE CONTRACTOR SHALL CHECK SHOP DRAWINGS PRIOR TO SUBMITTAL AND IS SOLELY RESPONSIBLE FOR ERRORS & OMISSION IN THE PREPARATION OF SHOP DRAWINGS TO CONFORM TO THE DESIGN DRAWINGS. SUBMIT NO MORE THAN ONE REPRODUCIBLE AND TWO PRINTS OF SHOP DRAWINGS FOR ENGINEER REVIEW. TWO COPIES WILL BE RETURNED TO THE ARCHITECT.
- 6. IT IS THE CONTRACTORS RESPONSIBILITY TO VERIFY ALL RELEVANT DIMENSIONS AND ELEVATIONS FOR EQUIPMENT INSTALLATIONS AGAINST PURCHASED MANUFACTURER'S CERTIFIED EQUIPMENT DRAWINGS. DIMENSIONS THAT DEPEND UPON SPECIFIC EQUIPMENT SUCH AS ELEVATOR OPENINGS, MECHANICAL EQUIPMENT SUPPORTS, ETC. SHALL BE COORDINATED BY THE CONTRACTOR PRIOR TO SUBMITTAL TO THE ARCHITECT/ENGINEER. SUCH DIMENSIONS SHALL BE PROVIDED ON THE SHOP DRAWINGS BY THE CONTRACTOR PRIOR TO SUBMITTAL TO THE ARCHITECT/ENGINEER.
- 7. PRE-MANUFACTURED ITEMS SUCH AS CANOPIES, AWNINGS, SUNSHADES, ETC. SHALL BE DESIGNED BY SUPPLIER. SUPPLIER SHALL SUBMIT SIGNED AND SEALED SHOP DRAWINGS AND CALCULATIONS BY A REGISTERED ENGINEER IN THE STATE OF MICHIGAN FOR RECORD TO ARCHITECT. SHOP DRAWINGS SHALL INDICATE ALL DESIGN LOADS AND INCLUDE ALL CONNECTIONS AND MATERIAL NECESSARY FOR INSTALLATION OF PRE-MANUFACTURED ITEMS.

### FOUNDATIONS

- 1. FOOTINGS SHALL BEAR ON FIRM, UNDISTURBED SOIL OR LEAN CONCRETE FILL WITH AN ASSUMED SAFE BEARING CAPACITY OF 2500 P.S.F. IF SOIL OF THIS CAPACITY IS NOT FOUND AT THE ELEVATIONS INDICATED, FOOTINGS SHALL BE ENLARGED OR LOWERED AT THE 10. UNLESS OTHERWISE NOTED WHERE STEEL JOISTS BEAR ON MASONRY, PROVIDE A DIRECTION OF THE ARCHITECT. VERIFY FOUNDATION SOIL BEARING PRESSURE IN FIELD BY SOILS ENGINEER.
- 2. WHERE NEW FOOTINGS ABUT EXISTING FOUNDATIONS, CAREFULLY HAND EXCAVATE AND PLACE BOTTOM OF NEW FOOTING AT THE SAME ELEVATION AS THE EXISTING.
- 3. PROVIDE NECESSARY SHEETING SHORING BRACING, ETC. AS REQUIRED DURING EXCAVATIONS TO PROTECT SIDES OF EXCAVATIONS.
- 4. COMPLY FULLY WITH REQUIREMENTS OF OSHA AND OTHER REGULATORY AGENCIES FOR SAFETY PROVISIONS.

CONCRETE

- MINIMUM CONCRETE STRENGTH TO BE 3000 P.S.I. @ 28 DAYS, U.O.N.; SLABS SHALL BE 3500 P.S.I. MIN. U.O.N. EXPOSED CONCRETE SHALL BE 4000 PSI WITH 6% + 1% ENTRAINED AIR U.O.N.
  - A. PROVIDE 3000 P.S.I. 28-DAY COMPRESSIVE STRENGTH; W/C RATIO, 0.58 MAXIMUM (NON-AIR-ENTRAINED), 5.0 BAG CEMENT MIX FOR ALL FOUNDATION WORK UNLESS NOTED OTHERWISE.
  - B. PROVIDE 3500 P.S.I. 28-DAY COMPRESSIVE STRENGTH; W/C RATIO, 0.53 MAXIMUM (NON-AIR-ENTRAINED), 5.5 BAG CEMENT MIX FOR ALL INTERIOR SLABS UNLESS NOTED OTHERWISE.
  - C. PROVIDE 4000 P.S.I. 28-DAY COMPRESSIVE STRENGTH; W/C RATIO, 0.45 MAXIMUM (AIR-ENTRAINED). 6.0 BAG CEMENT MIX FOR ALL EXTERIOR CONCRETE UNLESS NOTED OTHERWISE.
- 2. FLYASH OR GROUND GRANULATED BLAST FURNACE SLAG MAY BE SUBSTITUTED UP TO 25% MAXIMUM OF MIX DESIGN CEMENT CONTENT IN NON-EXPOSED CONCRETE MIXES. DO NOT USE IN EXPOSED MIX DESIGNS.
- 3. ALL CONCRETE WORK AND PLACEMENT SHALL CONFORM TO THE LATEST RECOMMENDATIONS OF A.C.T.
- 4. ALL REINFORCING BARS, DOWELS AND TIES SHALL CONFORM TO A.S.T.M. A615 GRADE 60. REINFORCING STEEL SHALL BE CONTINUOUS AND SHALL HAVE MINIMUM 36 BAR DIAMETER LAP AND BE FABRICATED AND PLACED IN ACCORDANCE WITH A.C.I. - 315 LATEST EDITION.
- 5. REINFORCED CONCRETE WALLS AND WALL FOOTINGS SHALL HAVE CORNER BARS AT ALL INTERSECTIONS OF THE SAME SIZE AND SPACING AS THE MAIN HORIZONTAL REINFORCING.
- 6. ALL SLABS ON GROUND SHALL BE 4" THICK AND HAVE 6" X 6" W1.4 X W1.4 WELDED WIRE FABRIC IN THE TOP 1/3 OF THE SLAB, UNLESS OTHERWISE NOTED.
- 7. CONCRETE CONTRACTOR SHALL INCLUDE IN HIS COST ADDITIONAL CONCRETE QUANTITY AS REQUIRED TO COMPENSATE FOR DEFLECTIONS OF METAL DECK AND UNSHORED COMPOSITE BEAMS AND TO PROVIDE A LEVEL CONCRETE SURFACE.
- 8. BONDED TOPPING SLABS ON PRECAST CONCRETE SHALL MEET ALL THE REQUIREMENTS OF ACI 302.1R, SECTION 8.10.
- 9. FIELD AND SHOP TESTING OF CONCRETE WORK SHALL INCLUDE INSPECTION OF REINFORCING STEEL PLACEMENT, REBARS, NUMBER, LOCATION, AND LAP SPLICE LENGTH.
- 10. PROVIDE DOWELS INTO FOUNDATION TO MATCH SIZE AND SPACING OF VERTICAL REINFORCEMENT AT ALL COLUMNS AND WALLS, UNLESS OTHERWISE NOTED.
- 11. UNLESS OTHERWISE SHOWN, PROVIDE THE FOLLOWING COVER FOR DETNEODOTNG STEEL

	Shorha STEEL.		
Α.	UNFORMED SURFACES IN CONTACT WITH EARTH	-3	IN.
Β.	UNFORMED SURFACES OVER MOISTURE BARRIERS	-2	IN.
С.	FORMED SURFACES EXPOSED TO EARTH OR WEATHER		
	OR WATER PROOFING/DAMP PROOFING		
	#6 OR LARGER	-2	IN.
	#5 OR SMALLER	-1 1/2	IN.
D.	FORMED SURFACES NOT EXPOSED TO EARTH		
	OR WEATHER		
	SLABS AND WALLS	-3/4	IN.
	COLUMNS	-1 1/2	IN.
	BEAMS AND GIRDERS	-1 1/2	IN.

MASONRY

- SECTION 1.6, TABLE 5.
- MASONRY MSJC SECTION 1.4. B.2.b.
- AREA COMPRESSIVE STRENGTH OF 2800 PSI.

- FOLLOWING MINIMUM LAP LENGTHS:

BAR SIZE	8" CI
#3	18"
#4	24 "
#5	30 "
#6	38"
#7	
#8	PROVII

- OTHERWISE NOTED.

- SPECIFIED f'm.
- FOLLOWING LINTELS: 8" WALLS

(2) L4x3 1/2 x 5/16 LLV FOR OPENINGS UP TO 4'-0" (2) L5x3 1/2 x 5/16 LLV FOR OPENINGS UP TO 5'-4" W8x18 + 3/8" PLATE FOR OPENINGS UP TO 8'-0" W8x28 + 3/8" PLATE FOR OPENINGS UP TO 12'-4"

12" WALLS:

STRUCTURAL STEEL

- WELDERS.
- NOTED. (MIN. 2 BOLTS EACH CONNECTION).
- AND OWNER.
- ONLY.

1. THE MASONRY PORTIONS OF THIS STRUCTURE ARE DESIGNED ACCORDING TO THE LATEST ALLOWABLE STRESS DESIGN PROVISIONS OF THE MASONRY STANDARDS JOINT COMMITTEE (MSJC) BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES (ACI 530/ASCE 602) INCLUDING SECTIONS 2106 AND 2107 OF CHAPTER 21 IN THE MICHIGAN BUILDING CODE. MASONRY COMPONENTS HAVE BEEN DESIGNED ACCORDING TO THE PROVISIONS FOR SEISMIC DESIGN CATEGORY B.

2. ALL STRUCTURAL MASONRY IS TO BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST MASONRY STANDARDS JOINT COMMITTEE (MSJC) BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES (TMS 402/ACI 530/ASCE 5) AND SPECIFICATIONS FOR MASONRY STRUCTURES (TMS 602/ACI 530.1/ASCE 6) MASONRY SUBMITTALS ARE REQUIRED BY ACI 530.1/ASCE 6/TMS 602. SECTION 1.5 MASONRY TESTING AND INSPECTIONS ARE REQUIRED BY ACI 530.1/ASCE 6/TMS 602

3. ALL STRUCTURAL MASONRY HAS BEEN ENGINEERED IN ACCORDANCE WITH CHAPTER 2 ALLOWABLE STRENGTH DESIGN. COMPRESSION STRENGTH SHALL BE DETERMINED ACCORDING TO THE UNIT STRENGTH METHOD FOR CONCRETE

4. ALL BLOCK SHALL CONFORM TO ASTM C90, TYPE I, WITH A MINIMUM UNIT NET

5. MASONRY COMPRESSIVE STRENGTH f'm = 2000 PSI MINIMUM.

6. MORTAR SHALL BE TYPE "S" (1800 PSI) CONFORMING TO ASTM C-270. USE MORTAR CEMENT WHERE EXTERIOR WALLS ARE UNREINFORCED.

7. PROVIDE HORIZONTAL WIRE TYPE REINFORCING WITH 9 GAUGE SIDE AND CROSS MEMBERS IN EVERY SECOND COURSE (16" O.C.), IN ALL MASONRY WALLS. WALLS WITH VERTICAL REINFORCING SHALL ONLY HAVE "LADDER" TYPE REINFORCING.

8. ALL REINFORCING BARS, DOWELS AND TIES SHALL CONFORM TO A.S.T.M. A615 GRADE 60. REINFORCING STEEL SHALL BE CONTINUOUS, FABRICATED AND PLACED IN ACCORDANCE WITH A.C.I. - 315 LATEST EDITION AND HAVE THE

> 12" CMU 24 " IDE MECH. SPLICE

9. ALL MASONRY BEARING STEEL BEAMS AND LINTELS TO BEAR 8" MINIMUM ON 3 COURSES SOLID MASONRY, WITH 2-3/4" DIAMETER BOLTS EACH END, UNLESS

MINIMUM OF ONE COURSE OF SOLID BLOCK BELOW K-SERIES JOISTS AND A MINIMUM OF TWO COURSES SOLID BELOW LH SERIES JOISTS.

11. ALL MASONRY BELOW GRADE SHALL BE GROUTED SOLID.

12. MASONRY GROUT SHALL CONFORM TO ASTM C 476, WITH PEA GRAVEL AGGREGATE AND A MINIMUM STRENGTH OF 2000 PSI, BUT NOT LESS THAN

13. UNLESS OTHERWISE NOTED, AT ALL MASONRY WALLS PROVIDE THE

(3) L4x3- 1/2 x 5/16 LLV FOR OPENINGS UP TO 4'-0" (3) L5x3-1/2 x 5/16 LLV FOR OPENINGS UP TO 5'-4" W8x18 + 3/8" PLATE FOR OPENINGS UP TO 8'-0" W8x28 + 3/8" PLATE FOR OPENINGS UP TO 12'-4"

14. ALL DOUBLE ANGLE LINTELS SHALL BE WELDED BACK TO BACK WITH A MINIMUM 2 INCH STITCH WELD EVERY 8 INCHES.

15. UNLESS OTHERWISE NOTED, PROVIDE L5 X 3-1/2 X 5/16 L.L.V. LINTEL FOR EACH 4" OF MASONRY FOR SPANS UP TO 5'-4" MAX.

16. PROVIDE DOWELS INTO FOUNDATION TO MATCH SIZE AND SPACING OF VERTICAL REINFORCEMENT AT ALL COLUMNS AND WALLS, UNLESS OTHERWISE NOTED.

1. STEEL DESIGN, FABRICATION AND ERECTION TO BE IN ACCORDANCE WITH THE LATEST A.I.S.C. MANUAL AND SPECIFICATION FOR STRUCTURAL STEEL FOR BUILDINGS. ALL WIDE FLANGE BEAMS AND COLUMNS SHALL CONFORM TO THE LATEST ASTM. SERIAL DESIGNATION A992, GR50; ALL MISCELLANEOUS STEEL PLATES, BARS, ANGLES, ETC., SHALL CONFORM TO ASTM A36; STEEL TUBING TO BE ASTM A500, GRADE B; STEEL PIPE ASTM. A-53, GRADE B. ANCHOR BOLTS TO BE ASTM F1554 GRADE 36 KSI MINIMUM UNLESS OTHERWISE NOTED

2. UNLESS OTHERWISE NOTED OR SHOWN, ALL BEAM CONNECTIONS TO HSS 5 X 5 OR SMALLER COLUMN, 5"Ø OR SMALLER COLUMN, OR ANY TUBE COLUMN REGARDLESS OF SIZE WITH A WALL THICKNESS LESS THAN 3/8" SHALL BE MADE WITH THRU PLATES WELDED TO BOTH WALLS OF COLUMN.

3. ALL WELDED CONNECTIONS SHALL BE IN ACCORDANCE WITH THE LATEST AWS CODE, E70XX ELECTRODES, WITH WELDING PERFORMED BY QUALIFIED

4. BOLTED CONNECTIONS SHALL BE MADE WITH A-325 OR A-490 BOLTS. ALL BOLTS ARE TO BE INSTALLED IN ACCORDANCE WITH THE LATEST SPECIFICATIONS FOR "STRUCTURAL JOINTS USING A.S.T.M. A-325 OR A-490 BOLTS." TYPICAL BOLTED CONNECTIONS ARE "BEARING TYPE" UNLESS NOTED OTHERWISE.

5. DESIGN CONNECTIONS FOR MINIMUM ONE-HALF THE TOTAL ALLOWABLE UNIFORM LOAD PER A.I.S.C. BEAM LOAD TABLES, UNLESS OTHERWISE

6. THE STRUCTURAL STEEL CONTRACTOR SHALL INCLUDE (5) TONS OF ADDITIONAL STEEL, INCLUDING FABRICATION AND ERECTION, TO BE USED AT THE DISCRETION OF THE STRUCTURAL ENGINEER. TONNAGE COST IS TO BE BASE ON TONNAGE PRICE PER JOB. ADDITIONAL STEEL NOT USED IS TO BE CREDITED BACK TO THE OWNER. GENERAL CONTRACTOR IS TO COORDINATE WITH STEEL FABRICATOR

7. THE DESIGN, CONFIGURATION & ERECTION SAFETY OF ALL STRUCTURAL STEEL CONNECTIONS SHALL BE THE RESPONSIBILITY OF THE STRUCTURAL STEEL FABRICATOR. REVIEW AND ACCEPTANCE OF THE SHOP DRAWINGS BY THE ENGINEER SHALL CONSTITUTE APPROVAL OF THE LOAD CARRYING ADEQUACY

STRUCTURAL STEEL(CONT.)

- 8. TYPE OF CONSTRUCTION PER ASCE A2.2 IS TYPE 2 "SIMPLE FRAMING" UNLESS NOTED OTHERWISE.
- 9. TEMPORARY ERECTION SEATS SHALL BE PROVIDED AS RECOMMENDED ON PAGE 3-59 OF THE A.I.S.C. PUBLICATION "ENGINEERING FOR STEEL CONSTRUCTION".
- 10. STEEL JOISTS AND JOIST GIRDERS ARE TO BE FABRICATED BY A MEMBER OF THE STEEL JOIST INSTITUTE AND BE DESIGNED, FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST SPECIFICATIONS OF THE S.J.I.
- 11. ALL PROVISIONS OF THE RECOMMENDED CODE OF STANDARD PRACTICE FOR STEEL JOISTS AS ADOPTED BY THE STEEL JOIST INSTITUTE SHALL BE ADHERED TO.
- 12. STEEL JOIST BEARING ON STEEL BEAMS OR PLATES, TO BE WELDED TO STEEL WITH 2" LONG BEAD EACH SIDE OF BEARING.
- 13. STAGGER JOISTS AS REQUIRED TO ACHIEVE NECESSARY BEARING ON WALLS OR GIRDERS.
- 14. METAL DECK SHALL CONFORM TO ALL REQUIREMENTS OF "BASIC DESIGN SPECIFICATION" AS ADOPTED BY THE STEEL DECK INSTITUTE (S.D.I.). METAL ROOF DECK SHALL BE WIDE RIB WITH NESTING SIDE SEAMS OF DEPTH AND GAGE INDICATED ON THE DRAWINGS. DECK SHALL BE WELDED TO ALL SUPPORTING STEEL WITH PUDDLE WELDS (5/8" DIAMETER MINIMUM), AT 12" ON CENTER MAXIMUM SPACING AND 6" O/C (ALL FLUTES) AT END LAP SUPPORT POINTS AND BUILDING PERIMETER ATTACHMENTS. SIDE LAP CONNECTIONS SHALL BE MADE AT MAXIMUM 3'-O" ON CENTER. (AT MIDPOINT OF SPAN FOR SPAN LESS THAN 6'-0" AT THIRD POINTS OF SPAN FOR SPANS GREATER THAN 6'-0") WITH #10 TEK SCREW MIN. REFER TO SPECIFICATIONS FOR ADDITIONAL ERECTION PROCEDURES.
- 15. REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL ANGLES, PLATES, BARS, CLIPS, ETC., ATTACHED TO STRUCTURAL STEEL.
- 16. UNLESS OTHERWISE NOTED, ALL FLOOR AND ROOF OPENINGS SHALL BE FRAMED WITH L 5 X 3-1/2 X 5/16 L.L.V. VERIFY EXACT SIZE AND LOCATION OF ALL FLOOR AND ROOF OPENINGS WITH ARCHITECTURAL AND MECHANICAL DRAWINGS AND WITH CONTRACTOR INVOLVED.
- 17. THE DESIGN OF THE STEEL FRAMED STAIRS AND RAILINGS SHALL BE THE RESPONSIBILITY OF THE STEEL FABRICATOR. PROVIDE COMPLETE ENGINEERED STAIR ASSEMBLIES, CONFORMING TO THE ARCHITECTURAL INTENT (SHOP DRAWINGS), AND CALCULATIONS UNDER THE SEAL OF AN ENGINEER REGISTERED IN THE STATE OF MICHIGAN INCLUDING METAL FRAMING, HANGERS, MASONRY BEARING PLATES, COLUMNS, RAILING ASSEMBLIES, AND OTHER COMPONENTS NECESSARY TO SUPPORT THE STAIRS AND LANDINGS INCLUDING ANCHORAGE TO THE SUPPORTING STRUCTURE.
- 18. THE CONTRACTOR SHALL FURNISH ALL ACCESSORIES INCLUDING CLOSURES, "Z" CLOSURES, COLUMN CLOSURES, SCREED ANGLES AND GIRDER FILLERS AS REQUIRED.
- 19. NO LOADS SHALL BE PERMITTED TO BE HUNG FROM ANY ROOF DECK. ALL HANGERS FOR CEILINGS, DUCTWORK, ELECTRICAL CONDUIT, PIPING, ETC., SHALL BE HUNG DIRECTLY FROM STRUCTURAL STEEL WORK OR SUPPLEMENTARY MEMBERS
- 20. MASONRY AND BRICK LINTELS SHALL BE GALVANIZED G90 PER ASTM A123.
- 21. PROVIDE L4X4X1/4 SEATS AT COLUMN WEBS WHERE REQUIRED FOR SUPPORT OF ROOF AND FLOOR DECKS. PROVIDE ANGLE OUTRIGGER FROM EXTERIOR COLUMNS FOR SLAB AND ROOF EDGE PLATE SUPPORT.
- 22. ALL BOLTED MOMENT CONNECTIONS REQUIRE SLIP CRITICAL BOLTS.
- 23. ALL WIDE FLANGE LINTELS TO HAVE MINIMUM 7"x3/8"x0'-7" BEARING PLATE, ALL WIDE FLANGE FLOOR OR ROOF BEAMS TO HAVE MINIMUM 7"x3/8"x0'-7" BEARING PLATE UNLESS OTHERWISE NOTED

LIGHT GAGE FRAMING

- 1. LIGHT GAGE FRAMING SUPPLIER SHALL SUBMIT SHOP DRAWINGS AND CALCULATIONS SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF MICHIGAN INDICATING ALL DESIGN LOADS AND MATERIALS INCLUDING VERIFYING ANY MEMBER SIZES SHOWN. DESIGN BY SUPPLIERS ENGINEER SHALL INCLUDE ALL CONNECTIONS AND MISCELLANEOUS MATERIALS NECESSARY FOR A COMPLETE STRUCTURE. THE FINAL MEMBER SIZES AND GAGES SHALL BE CALCULATED BY THE LIGHT GAGE ENGINEER. LIGHT GAGE SHOP DRAWINGS NOT SIGNED AND SEALED WILL BE REJECTED.
- 2. LIGHT GAGE MEMBERS SHALL BE DESIGNED, MANUFACTURED AND INSTALLED IN ACCORDANCE WITH THE LATEST REQUIREMENTS OF THE AMERICAN IRON AND STEEL INSTITUTE (AISI) INCLUDING ANY REQUIRED CLIPS. STIFFENERS. AND BRACING.
- 3. MEMBER SIZES INDICATED ON DRAWINGS ARE MINIMUM DEPTH AND GAGE REQUIRED TO MEET THE DESIGN INTENT AND ARE BASED ON THE PROPERTIES AND MATERIALS LISTED IN THE STEEL STUD MANUFACTURERS ASSOCIATION (SSMA) PRODUCT CATALOG. ALTERNATE MANUFACTURERS ARE ACCEPTABLE IF THE PHYSICAL PROPERTIES ARE EQUAL OR BETTER THAN THOSE LISTED ACCEPTABLE TO THE PROJECT ARCHITECT AND ENGINEER, AND MEET OR EXCEED PERFORMANCE CRITERIA.
- 4. LIGHT GAGE DOCUMENTS SUBMITTED BY THE LIGHT GAGE FRAMING SUPPLIER IS A "DEFERRED SUBMITTAL" PER SECTION 107.3.4.1 OF THE MBC 2015
- 5. ALL LIGHT GAGE BACK UP STUDS FOR BRICK VENEER TO BE 16 GA. MINIMUM (54) AND BE DESIGNED FOR L/600 MINIMUM LATERAL DEFLECTION REQUIREMENT.

3. CAST STONE SUPPLIER SHALL FURNISH ALL REQUIRED BRACING AND SUPPORT STEEL SHOWN OR NOT SHOWN, ON THE DRAWINGS AND SHALL EITHER ATTACH IT TO THE STRUCTURE OR FURNISH THE STEEL AND DETAILS TO THE FABRICATOR FOR FABRICATION AND/OR ATTACHMENT TO THE STRUCTURE. 4. CAST STONE PANELS SUBMITTED BY THE CAST STONE PANEL SUPPLIER IS A "DEFERRED SUBMITTAL" PER SECTION 107.3.4.1 OF THE MBC 2015

1. WORK CONSTRUCTED SHALL BE INSPECTED BY AN INDEPENDENT TESTING AGENCY TO ENSURE COMPLIANCE WITH THE REQUIREMENTS SHOWN ON THE DRAWINGS. INSPECTIONS REQUIRED BY CHAPTER 17 OF THE MICHIGAN BUILDING CODE; LOCAL BUILDING DEPARTMENTS AND THE CONTRACT DOCUMENTS SHALL BE PERFORMED BY AN INDEPENDENT TESTING AGENCY. SITE VISITS BY THE DESIGN ENGINEER DO NOT CONSTITUTE OR REPLACE INSPECTION

2. THE FOLLOWING ITEMS SHALL BE INSPECTED IN ACCORDANCE WITH MBC 2015 SEC. 1704 & 1705 BY A CERTIFIED SPECIAL INSPECTOR UNLESS NOTED OTHERWISE IN REMARKS COLUMN. ALL INSPECTION SHALL BE CONTINUOUS UNLESS OTHERWISE NOTED. ALL PRODUCTS WITH ICC APPROVALS SHALL BE INSTALLED PER THE APPROVAL AND PER MANUFACTURER'S RECOMMENDATIONS. FOR MATERIAL TESTING REQUIREMENTS, SEE SPECIFICATIONS AND/OR GENERAL NOTES. TESTING AGENCY SHALL SEND COPIES OF ALL STRUCTURAL TESTING AND INSPECTION REPORTS DIRECTLY TO THE ARCHITECT.

## PRECAST CONCRETE

1. SHOP DRAWINGS AND CALCULATIONS FOR ALL PRECAST STRUCTURAL COMPONENTS SHALL BE SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF MICHIGAN AND SHALL INDICATE ALL DESIGN LOADS. SHOP DRAWINGS NOT SIGNED AND SEALED WILL BE REJECTED.

2. THE PRECAST CONCRETE PRODUCT SUPPLIER SHALL BE A MEMBER OF THE PRESTRESSED CONCRETE INSTITUTE (PCI). THE DESIGN AND MANUFACTURE OF ALL PRECAST CONCRETE PRODUCTS SHALL CONFORM TO ALL PROVISIONS OF THE "PCI DESIGN HANDBOOK" AND TO THE LATEST ACI STANDARDS AND GUIDELINES.

3. ALL HOLES IN PRECAST PLANK ARE TO BE CORE DRILLED THROUGH THE VOID. DO NOT CUT STRANDS. THE PRECAST PLANK SUPPLIER SHALL BE NOTIFIED OF ALL HOLES TO BE CUT AND SHALL VERIFY THE ADEQUACY OF THE PRECAST COMPONENT FOR THE DESIGN LOADS. PROVIDE THE LOCATION OF ALL REQUIRED HOLES TO THE PRECAST CONCRETE SUPPLIER TO CONFIRM STRUCTURAL ADEQUACY.

4. PREPARE STRUCTURAL PRECAST CONCRETE FOR BONDED TOPPINGS PER ACI 302.1R, SECTION 8.10, WHERE BONDED TOPPINGS OCCUR PER THE CONTRACT DRAWINGS.

5. PRECAST CONCRETE HOLLOW CORE SLABS (PLANK) SHALL BE DESIGNED, FABRICATED AND ERECTED IN ACCORDANCE WITH THE REQUIREMENTS OF ACI 318, THE DESIGN RECOMMENDATIONS OF PCI MNL 120 "PCI DESIGN HANDBOOK" 5TH EDITION. THE DESIGN RECOMMENDATIONS OF PCI "MANUAL FOR THE DESIGN OF HOLLOW CORE SLABS" AND IN ACCORDANCE WITH MANUFACTURERS WRITTEN INSTRUCTIONS

6. PROVIDE CONNECTIONS COMPLYING WITH ACI 318, CHAPTER 16 AND PCI RECOMMENDATIONS.

7. PRECAST DOCUMENTS SUBMITTED BY THE PRECAST SUPPLIER IS A "DEFERRED SUBMITTAL" PER SECTION 107.3.4.1 OF THE MBC 2015

CAST STONE PANELS

1. CAST STONE PANELS, COMPONENTS, ETC. SHALL SUBMIT SHOP DRAWINGS AND CALCULATIONS SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF MICHIGAN INDICATING ALL DESIGN LOADS. SHOP DRAWINGS NOT SIGNED AND SEALED WILL BE REJECTED.

2. CAST STONE PANELS AS INDICATED ON DRAWINGS SHALL BE DESIGNED TO SPAN BETWEEN CAST STONE COLUMNS EACH END AND SUPPORT BRICK VENEER ABOVE. REINFORCEMENT, CONNECTIONS, & ANCHORS SHALL BE THE RESPONSIBILITY OF THE CAST STONE SUPPLIER.

SPECIAL INSPECTION

INSPECTION OF FABRICATOR'S (SEC. 1704.2.5) \*

FABRICATION AND IMPLEMENTATION PROCEDURES 1704.2.5.1

\*SPECIAL INSPECTION IS NOT REQUIRED FOR FABRICATOR SHOP IF CERTIFICATE OF APPROVAL SUBMITTED BY FABRICATOR'S INSPECTION AGENCY PER EXCEPTION 1704.2.5.1

> TABLE 1705.2.2 REQUIRED VERIFICATION AND INSPECTION OF STEEL CONSTRUCTION OTHER THAN STRUCTURAL STEEL VERIFICATION AND INSPECTION

NOT

REFERENCED

				APPLICABLE	STANDARD
1. MATERIAL VERIFICATION OF COLD-FORMED STEE	L DECK:				
a. IDENTIFICATION MARKINGS TO CONFORM TO STANDARDS SPECIFIED IN THE APPROVED CONST DOCUMENTS.		-	х	-	APPLICABLE ASTM MATERIAL STANDARDS
b. MANUFACTURER'S CERTIFIED TEST REPORTS.		-	х	-	-
2. INSPECTION OF WELDING:					
a. COLD-FORMED STEEL DECK:					
1) FLOOR AND ROOF DECK WELDS.		-	Х	-	AWS D1.3
b. REINFORCING STEEL:					
1) VERIFICATION OF WELDABILITY OF REI STEEL OTHER THAN ASTM A 706.	NFORCING	-	х	-	
2) REINFORCING STEEL RESISTING FLEXUR AXIAL FORCES IN INTERMEDIATE AND S MOMENT FRAMES, AND BOUNDARY ELEMEN SPECIAL STRUCTURAL WALLS OF CONCRE SHEAR REINFORCEMENT.	SPECIAL ITS OF	x	-	-	AWS D1.4 ACI 318: SECTION 3.5.2
3) SHEAR REINFORCEMENT.		Х	-	-	
4) OTHER REINFORCING STEEL.		-	х	-	
TA REQUIRED SPECIAL INSPECTIONS C	ABLE 1705 DF OPEN-WE		JOISTS	AND JOIS	T GIRDERS
ТҮРЕ	CONTINUOUS SPECIAL INSPECTION	PERIOIDIC SPECIAL INSPECTION		REFERENCE	ED STANDARD <sup>a</sup>
1. INSTALLATION OF OPEN-WEB STEEL JOISTS AND	) JOIST GIRDER	s.			
a. END CONNECTIONS - WELDING OR BOLTED.	-	х	SJI SPEC	IFICATIONS LI	STED IN SECTION 2207.1.
b. BRIDGING - HORIZONTAL OR DIAGONAL.	-				

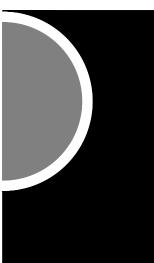
1. STANDARD BRIDGING SJI SPECIFICATIONS LISTED IN SECTION 2207. 2. BRIDGING THAT DIFFERS FROM THE SJI SPECIFICATIONS LISTED IN SECTION 2207.1.

FOR SI: 1 INCH = 25.4 MM. a. WHERE APPLICABLE, SEE ALSO SECTION 1705.12, SPECIAL INSPECTIONS FOR SEISMIC RESISTANCE.

O - OBSERVE THESE ITEMS ON A RANDOM BASIS. OPERATIONS NEED NOT BE DELAYED PENDING THESE INSPECTIONS.

P - PERFORM THESE TASKS FOR EACH WELDED JOINT OR MEMBER.

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CONSTRUCTION UNLESS ISSUED BELO SPECIFICALLY FOR "BIDDING / CONSTRUCTION"

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KEY PLAN

CONSULTANT

City Of Warren

PROJECT NAME

Warren Civic Center South Fire Station #1

23211 Van Dyke Ave Warren, MI 48089

PROJECT NO.

21-146A

ISSUES / REVISIONS Bidding/Construction	06/13/2023
Blading, Construction	00/10/2020

DRAWN BY

CHECKED BY MJ

APPROVED BY

SHEET NAME

GENERAL NOTES

SHEET NO. S4-00 SPECIAL INSPECTION(CONT.)

WELDER IDENTIFICATION SYSTEM<sup>1</sup>

# TABLE N5.4-1 INSPECTION TASKS PRIOR TO WELDING INSPECTION TASKS PRIOR TO WELDING WELDING PROCEDURE SPECIFICATIONS (WPSs) AVAILABLE MANUFACTURER CERTIFICATION FOR WELDING CONSUMABLES AVAILABLE MATERIAL IDENTIFICATION (TYPE/GRADE) FIT-UP OF GROOVE WELDS (INCLUDING JOINT GEOMETRY) JOINT PREPARATION DIMENSIONS (ALIGNMENT, ROOT OPENING, ROOT FACE, BEVEL) CLEANLINESS (CONDITION OF STELL SURFACES) TACKING (TACK WELD QUALITY AND LOCATION) BACKING TYPE AND FIT (IF APPLICABLE)

FIT-UP OF FILLET WELDS
DIMENSIONS (ALIGNMENT, GAPS AT ROOF)
CLEANLINESS (CONDITION OF STEEL SURFACES)
TACKING (TACK WELD QUALITY AND LOCATION) CHECK WELDING EQUIPMENT <sup>1</sup>THE FABRICATOR OR ERECTOR, AS APPLICABLE, SHALL MAINTAIN A SYSTEM BY WHICH A WELDER WHO HAS WELDED A JOINT OR MEMBER CAN BE IDENTIFIED. STAMPS, IF USED, SHALL BE THE LOW-STRESS TYPE. INSPECTION TASK INSPECTION TASKS DURING TO WELDING USE OF QUALIFIED WELDERS

CONFIGURATION AND FINISH OF ACCESS HOLES

CONTROL AND HANDLING OF WELDING CONSUMABLES PACKAGINGEXPOSURE CONTROL

NO WELDING OVER CRACKED TACK WELDS

ENVIRONMENTAL CONDITIONS WIND SPEED WITHIN LIMITS • PRECIPITATION AND TEMPERATURE

WPS FOLLOWED • SETTINGS ON WELDING EQUIPMENT TRAVEL SPEED
 SELECTED WELDING MATERIALS

 SHIELDING GAS TYPE/FLOW RATE PREHEAT APPLIED
 INTERPASS TEMPERATURE MAINTAINED (MIN./MAX.) PROPER POSITION (F, V, H, OH)

WELDING TECHNIQUES • INTERPASS AND FINAL CLEANING • EACH PASS WITHIN PROFILE LIMITATIONS • EACH PASS MEETS QUALITY REQUIREMENTS

INSPECTION TASKS AFTER WELDING WELDS CLEANED SIZE, LENGTH AND LOCATION OF WELDS WELDS MEET VISUAL ACCEPTANCE CRITERIA CRACK PROHIBITION
 WELD/BASE-METAL FUSION • CRATER CROSS SECTION WELD PROFILES

• WELD SIZE UNDERCUT
POROSITY

ARC STRIKES

K-AREA<sup>1</sup>

BACKING REMOVED AND WELD TABS REMOVED (IF REQUIRED)

REPAIR ACTIVITIES

DOCUMENT ACCEPTANCE OR REJECTION OF WELDED JOINT OR MEMBER

### TABLE INSPECTION TASKS

INSPECTION TASKS PRIOR TO BOLTING MANUFACTURER'S CERTIFICATIONS AVAILABLE FOR FASTENER MATER FASTENERS MARKED IN ACCORDANCE WITH ASTM REQUIREMENTS PROPER FASTENERS SELECTED FOR THE JOINT DETAIL (GRADE, TYP IF THREADS ARE TO BE EXCLUDED FROM SHEAR PLANE) PROPER BOLTING PROCEDURE SELECTED FOR JOINT DETAIL CONNECTING ELEMENTS, INCLUDING THE APPROPRIATE FAYING SURFA AND HOLE PREPARATION, IF SPECIFIED, MEET APPLICABLE REQUIR PRE-INSTALLATION VERIFICATION TESTING BY INSTALLATION PERSO AND DOCUMENTED FOR FASTENER ASSEMBLIES AND METHODS USED

PROPER STORAGE PROVIDED FOR BOLTS, NUTS, WASHERS AND OTHER COMPONENTS

# INSPECTION TASKS DURING BOLTING

INSPECTION TASKS DURING BOLTING FASTENERS ASSEMBLIES, OF SUITABLE CONDITION, PLACED IN ALL WASHERS (IF REQUIRED) ARE POSITIONED AS REQUIRED JOINT BROUGHT TO THE SNUG-TIGHT CONDITION PRIOR TO THE PRET OPERATION FASTENER COMPONENT NOT TURNED BY THE WRENCH PREVENTED FROM

FASTENERS ARE PRETENSIONED IN ACCORDANCE WITH THE RCSC SPEC PROGRESSING SYSTEMATICALLY FROM THE MOST RIGID POINT TOWARD TABLE

# INSPECTION TASKS

INSPECTION TASKS AFTER BOLTING FASTENER COMPONENT NOT TURNED BY THE WRENCH PREVENTED FROM ROTATING

0 - OBSERVE THESE ITEMS ON A RANDOM BASIS. OPERATIONS NEED NOT BE DELAYED PENDING THESE INSPECTIONS.

P - PERFORM THESE TASKS FOR EACH WELDED JOINT OR MEMBER.

5 FRIOR TO WE	LDING		
	QC	QA	NOT APPLICABLE
	Ρ	Ρ	-
ABLE	Ρ	Ρ	-
	0	0	-
	0	0	-
EL)	0	0	-
	0	0	-
	0	0	-
	0	-	-

TABLE N5.4-2 ON TASKS DURING WEL	DING		
	QC	QA	NOT APPLICABLE
	0	0	-
	0	0	-
	0	0	-
	0	0	-
.)	0	0	-

0

0

-

### TABLE N5.4-3 INSPECTION TASKS AFTER WELDING

A ILR WELDING						
	QC	QA	NOT APPLICABLE			
	0	0	-			
	Ρ	Ρ	-			
	Ρ	Ρ	-			
	Ρ	Ρ	-			
	Ρ	Ρ	-			
	Ρ	Р	-			
	Ρ	Ρ	-			
R	Ρ	Ρ	-			

# <sup>1</sup>WHEN WELDING OF DOUBLER PLATES, CONTINUITY PLATES OF STIFFENERS HAS BEEN PERFORMED IN THE K-AREA, VISUALLY INSPECT THE WEB K-AREA FOR CRACKS WITHIN 3 IN. (75MM) OF THE WELD.

N5.6-1 S PRIOR TO BO	LTING		
	QC	QA	NOT APPLICABLE
ERIALS	0	Ρ	-
	0	0	-
YPE, BOLT LENGTH	0	0	-
	0	0	-
RFACE CONDITION IREMENTS	0	0	-
RSONNEL OBSERVED	Ρ	0	-
ER FASTNER	0	0	-

# TABLE N5.6-2

	QC	QA	NOT APPLICABLE		
L HOLES AND	0	0	-		
ETENSIONING	0	0	-		
M ROTATING	0	0	-		
ECIFICATION, RD THE FREE EDGES	0	0	-		
N5.6-3 KS AFTER BOLTING					
	QC	QA	NOT APPLICABLE		

0

0

SPECIAL INSPECTION (CONT.)

# REQUIRED VERIFICATION AND INSPECTION OF MASONRY CONSTRUCTION (LEVEL C QUALITY ASSURANCE)

(LEVEL C QUALITY ASSURANCE)						
MINIMUM TESTS						
VERIFICATION OF f'm AND f' <sub>ACC</sub> IN ACCORDANCE WITH SPECIFICATION ARTICLE 1.4B PRIOR TO CONSTRUCTION AND FOR EVERY 5,000 SQ. FT (465 SQ. M) DURING CONSTRUCTION						
VERIFICATION OF PROPORTIONS OF MATERIALS IN PREMIXED OR PREBLENDED MORTAR, PRESTRESSING GROUT, AND GROUT OTHER THAN SELF-CONSOLIDATING GROUT, AS DELIVERED TO HE PROJECT SITE						
VERIFICATION OF SUMP FLOW AND VISUAL STABILITY INDEX (VSI) AS DELIVERED TO THE PROJECT SITE IN ACCORDANCE WITH SPECIFICATION ARTICLE 1.5 B.1 b.3 FOR SELF-CONSOLIDATING GROUT						
MINIMUM INSPEC	ττον					
	1101	FREQUENCY (a	1)	REFERENCE F	OR CRITERIA	
INSPECTION TASK	CONTINUOUS	PERIODIC	NOT APPLICABLE	TMS 402/ACI 530/ASCE 5	TMS 602/ACI 530.1/ASCE 6	
1. VERIFY COMPLIANCE WITH THE APPROVED SUBMITTALS		х			ART. 1.5	
2. VERIFY THAT THE FOLLOWING ARE IN COMPLIANCE:						
a. PROPORTIONS OF SITE-MIXED MORTAR, GROUT		х			ART. 2.1, 2.6A, 2.6B, 2.6C 2.4G 1.b	
b. GRADE, TYPE, AND SIZE OF REINFORCEMENT AND ANCHOR BOLTS		х		SEC. 6.1	ART. 2.4, 3.4	
c. PLACEMENT OF MASONRY UNITS AND CONSTRUCTION OF MORTAR JOINTS		х			ART. 3.3B	
d. PLACEMENT OF REINFORCEMENT, CONNECTORS	х			SEC. 6.1 6.2.1, 6.2.6 6.2.7	ART. 3.2E, 3.4, 3.6A	
e. GROUT SPACE PRIOR TO GROUTING	х				ART. 3.2D, 3.2F	
f. PLACEMENT OF GROUT	х				ART. 3.5, 3.6C	
g. SIZE AND LOCATION OF STRUCTURAL ELEMENTS		х			ART. 3.3F	
h. TYPE, SIZE, AND LOCATION OF ANCHORS, INCLUDING OTHER DETAILS OF ANCHORAGE OF MASONRY TO STRUCTURAL MEMBERS, FRAMES, OR OTHER CONSTRUCTION	х			SEC. 1.2.1(e), 6.1.4.3, 6.2.1		
i. WELDING OF REINFORCEMENT			x	SEC. 8.1.6.7.2, 9.3.3.4(c), 11.3.3.4(b)		
j. PREPARATION, CONSTRUCTION, AND PROTECTION OF MASONRY DURING COLD WEATHER (TEMPERATURE BELOW 40°F (4.4°C) OR HOT WEATHER (TEMPERATURE ABOVE 90°F (32.2°C)		x			ART. 1.8C, 1.8D	
k. APPLICATION OF MEASUREMENT OF PRESTRESSING FORCE			х		ART. 3.6B	
1. PLACEMENT OF AAC MASONRY UNITS AND CONSTRUCTION ON THIN-BED MORTAR JOINTS			x		ART. 3.3B B9, 3.3F.1.b	
m. PROPERTIES OF THIN-BED MORTAR FOR AAC MASONRY			х		ART. 2.1 C.1	
3. OBSERVE PREPARATION OF GROUT SPECIMENS, MORTAR SPECIMENS, AND/OR PRISMS	х				ART. 1.4B.2.a.3, 1.4B.2.b.3, 1.4 B.2.c3, 1.4 B.3, 1.4 B.4	

(a). FREQUENCY REFERS TO THE FREQUENCY OF INSPECTION, WHICH MAY BE CONTINUOUS DURING THE TASK LISTED OR PERIODICALLY DURING THE LISTED TASK, AS DEFINED IN THE TABLE.

TA REQUIRED SPECIAL INSPECTION	ABLE 1705 S AND TE		CONCRETE	CONSTRUCTION	
ТҮРЕ	CONTINUOUS SPECIAL INSPECTION	PERIODIC SPECIAL INSPECTION	NOT APPLICABLE	REFERENCED STANDARD <sup>a</sup>	IBC REFERENCE
<ol> <li>INSPECT REINFORCEMENT, INCLUDING PRESTRESSING TENDONS, AND VERIFY PLACEMENT.</li> </ol>	-	х	-	ACI 318 CH. 20, 25.2, 25.3, 26.6.1-26.6.3	1908.4
<ol> <li>REINFORCING BAR WELDING:</li> <li>a. VERIFY WELDABILITY OF REINFORCING BARS OTHER THAN ASTM A706;</li> </ol>	-	х	-		_
b. INSPECT SINGLE-PASS FILLET WELDS, MAXIMUM 5/16" AND	-	х	-	AWS D1.4 ACI 318: 26.6.4	
c. INSPECT ALL OTHER WELDS.	x	-	-		
3. INSPECT ANCHORS CAST IN CONCRETE	-	х	-	ACI 318: 17.8.2	-
<ul> <li>4. INSPECT ANCHORS POST-INSTALLED IN HARDENED CONCRETE MEMBERS.<sup>b</sup></li> <li>a. ADHESIVE ANCHORS INSTALLED IN HORIZONTALLY OR UPWARDLY INCLINED ORIENTATIONS TO RESIST SUSTAINED TENTION LOADS.</li> </ul>	x	-	-	ACI 318: 17.8.2.4	-
b. MECHANICAL ANCHORS AND ADHESIVE ANCHORS NOT DEFINED IN 4.a.	-	х	-	ACI 318: 17.8.2	
5. VERIFY USE OF REQUIRED DESIGN MIX.	-	х	-	ACI 318: CH.19. 26.4.3, 26.4.4	1904.1, 1904. 1908.2, 1908
6. PRIOR TO CONCRETE PLACEMENT, FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE	x	-	-	ASTM C172 ASTM C31 ACI 318: 26.4,26.12	1908.10
7. INSPECT CONCRETE AND SHOTCRETE PLACEMENT FOR PROPER APPLICATION TECHNIQUES.	х	-	-	ACI 318: 26.5	1908.6, 1908. 2908.8
<ol> <li>VERIFY MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES.</li> </ol>	-	х	-	ACI 318: 26.5.3-26.5.5	1908.9
<ul> <li>9. INSPECT PRESTRESSED CONCRETE FOR:</li> <li>a. APPLICATION OF PRESTRESSING FORCES; AND</li> <li>b. GROUTING OF BONDED PRESTRESSING TENDONS.</li> </ul>	x x	-	-	ACI 318: 26.10	-
10. INSPECT ERECTION OF PRECAST CONCRETE MEMBERS.		Х		ACI 318: CH. 26.8	
<ol> <li>VERIFY IN-SITU CONCRETE STRENGTH, PRIOR TO STRESS- ING OF TENDONS IN POST-TENSIONED CONCRETE AND PRIOR TO REMOVAL OF SHORES AND FORMS FROM BEAMS AND STRUCTURAL SLABS.</li> </ol>	-	х	-	ACI 318: 26.11.2	-
12. INSPECT FORMWORK FOR SHAPE, LOCATION AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED.	-	х	-	ACI 318: 26.11.1.2(b)	-

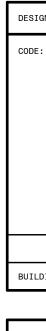
FOR SI: 1 INCH = 25.4 MM

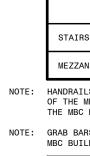
. WHERE APPLICABLE, SEE ALSO SECTION 1705.12, SPECIAL INSPECTIONS FOR SEISMIC RESISTANCE.

. SPECIFIC REQUIREMENTS FOR SPECIAL INSPECTION SHALL BE INCLUDED IN THE RESEARCH REPORT FOR THE ANCHOR ISSUED BY AN APPROVED SOURCE IN ACCORDANCE WITH 17.8.2 IN ACI 318, OR OTHER QUALIFICATION PROCEDURES. WHERE SPECIFIC REQUIREMENTS ARE NOT PROVIDED SPECIAL INSPECTION REQUIREMENTS SHALL BE SPECIFIED BY THE REGISTERED DESIGN PROFESSIONAL AND SHALL BE APPROVED BY THE BUILDING OFFICIAL PRIOR TO THE COMMENCEMENT OF THE WORK.

REQUIRED SPECIAL INSPECTIONS AND TESTS OF SOILS				
VERIFICATION AND INSPECTION TASK	CONTINUOUS SPECIAL INSPECTION	PERIODIC SPECIAL INSPECTION	NOT APPLICABI	
. VERIFY MATERIALS BELOW SHALLOW FOUNDATIONS ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY.	-	х		
<ol> <li>VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL.</li> </ol>	-	х		
<ol> <li>PERFORM CLASSIFICATION AND TESTING OF COMPACTED FILL MATERIALS.</li> </ol>	-	х		
I. VERIFY USE OF PROPER MATERIALS, DENSITIES AND LIFT THICKNESSES DURING PLACEMENT AND COMPACTION OF COMPACTED FILL.	x	-		
5. PRIOR TO PLACEMENT OF COMPACTED FILL, OBSERVE SUBGRADE AND VERIFY THAT SITE HAS BEEN PREPARED PROPERLY.	-	х		

TABLE 1705.6







DESIGN CRITERIA		
	THE FOLLOWING LIVE LOADS, IN ADDITION TO THE & SELF WEIGHT OF THE STRUCTURE. WHERE APPLICABL TH THE PROVISIONS OF THE BUILDING CODE.	E
A. AMERICAN CONCRETE INSTITUTE BUILDING	GCDE (ACI-318).	
B. MANUAL OF STEEL CONSTRUCTION BY AMER (LATEST EDITION).	RICAN INSTITUTE OF STEEL CONSTRUCTION	
	TTEE (MSJC) BUILDING CODE REQUIREMENTS FOR ASCE 5) AND SPECIFICATIONS FOR MASONRY 5)	
D. AMERICAN INSTITUTE OF TIMBER CONSTRU	UCTION (AITC) STANDARDS AND SPECIFICATIONS.	
E. NATIONAL DESIGN SPECIFICATION FOR WO AMERICAN FOREST AND PAPER ASSOCIATIO		
		CODE REFERENCE
BUILDING OCCUPANCY CATEGORY	IV	MBC-Table 1604.5 ASCE Table 1.5-1
FLOOR LIVE LOADS		
		CODE REFERENCE
STAIRS	100 PSF	ASCE Table 4-1
MEZZANINE	125 PSF STORAGE	ASCE Table 4-1
THE MBC BUILDING CODE AND A CONCENTRATED LOAD O	NEAR LOAD OF 50 POUNDS PER LINEAR FOOT. PER SECT: F 200 POUNDS CONCENTRATED LOAD PER SECTION 1607.8	
HE MBC BUILDING CODE. RAB BARS SHALL BE DESIGNED TO RESIST A SINGLE CON BC BUILDING CODE	ICENTRATED LOAD OF 250 POUNDS PER SECTION 1607.8.2	2 PER
SNOW LOADS/ROOF LIVE LOADS		
SNOW CRITERIA		CODE REFERENCE
GROUND SNOW LOAD	Pg = 25 PSF	MBC FIG. 1608.2 ASCE Fig. 7-1
FLAT ROOF SNOW LOAD	Pf = 21 PSF (MINIMUM)	ASCE Sec. 7.3
EXPOSURE FACTOR	Ce = 1.0	ASCE Table 7-2
IMPORTANCE FACTOR	I = 1.2	ASCE Table 1.5-2
THERMAL FACTOR	Ct = 1.0	ASCE Table 7-3
ROOF LIVE LOADS	Lr = 20 PSF	ASCE Table 4-1
NOTE: SNOW LOADS ADJACENT VERTICAL PROJECTIONS TO HIGH ROOFS, OR SLOPED ROOFS ARE INCRE		•
WIND LOADS		
WIND CRITERIA		CODE REFERENCE
BASIC WIND SPEED (3 SEC. GUST)	V = 120 MPH	ASCE FIG. 26.5-1A, 26.5-1B, 26.5-1C
RISK FACTOR	IV	ASCE Table 1.5-1
EXPOSURE CATEGORY	В	ASCE Sec. 26.7.3
INTERNAL PRESSURE COEFFICIENT	± 0.18 (ENCLOSED)	ASCE TABLE 26.11-1
MWFRS ANALYSIS PROCEDURE	DIRECTIONAL PROCEDURE	ASCE CHAP. 27
COMPONENTS AND CLADDING	± 33 PSF MINIMUM ULTIMATE AND PER CODE REQUIREMENTS BASED ON ABOVE INFORMATION	ASCE Sec. 30.2.2
SEISMIC LOADS		
SEISMIC CRITERIA		CODE REFERENCE
SEISMIC RISK CATEGORY	IV	ASCE Table 1.5-1
SEISMIC IMPORTANCE FACTOR	I = 1.5	ASCE Table 1.5-2
-0.2 SEC MAPPED SPECTRAL RESPONSE ACCELERATION (5% OF CRITICAL DAMPING) Ss	Ss = .091	ASCE Sec. 11.4
-1.0 SEC MAPPED SPECTRAL RESPONSE ACCELERATION (5% OF CRITICAL DAMPING) S1	S1 = .046	ASCE Sec. 11.4
SOIL SITE CLASS	D	ASCE Sec. 11.4.2
SEISMIC DESIGN CATEGORY	с	ASCE Sec. 11.6

LATERAL LOADS, SUPER-IMPOSED DEAD LOADS	THE FOLLOWING LIVE LOADS, IN ADDITION TO THE 8, & SELF WEIGHT OF THE STRUCTURE. WHERE APPLICABLE TH THE PROVISIONS OF THE BUILDING CODE.	
A. AMERICAN CONCRETE INSTITUTE BUILDIN	IG CODE (ACI-318).	
B. MANUAL OF STEEL CONSTRUCTION BY AME (LATEST EDITION).	RICAN INSTITUTE OF STEEL CONSTRUCTION	
	MITTEE (MSJC) BUILDING CODE REQUIREMENTS FOR D/ASCE 5) AND SPECIFICATIONS FOR MASONRY 6)	
D. AMERICAN INSTITUTE OF TIMBER CONSTR	RUCTION (AITC) STANDARDS AND SPECIFICATIONS.	
E. NATIONAL DESIGN SPECIFICATION FOR W AMERICAN FOREST AND PAPER ASSOCIATI	NOOD CONSTRUCTION (NDS) AS PUBLISHED BY	
		CODE REFERENCE
BUILDING OCCUPANCY CATEGORY	IV	MBC-Table 1604.5 ASCE Table 1.5-1
FLOOR LIVE LOADS		
		CODE REFERENCE
STAIRS	100 PSF	ASCE Table 4-1
MEZZANINE	125 PSF STORAGE	ASCE Table 4-1
	INEAR LOAD OF 50 POUNDS PER LINEAR FOOT. PER SECTION OF 200 POUNDS CONCENTRATED LOAD PER SECTION 1607.8.1	
RAB BARS SHALL BE DESIGNED TO RESIST A SINGLE CO 3C BUILDING CODE	NCENTRATED LOAD OF 250 POUNDS PER SECTION 1607.8.2 P	ER
SNOW LOADS/ROOF LIVE LOADS		
SNOW CRITERIA		CODE REFERENCE
GROUND SNOW LOAD	Pg = 25 PSF	MBC FIG. 1608.2 ASCE Fig. 7-1
FLAT ROOF SNOW LOAD	Pf = 21 PSF (MINIMUM)	ASCE Sec. 7.3
EXPOSURE FACTOR	Ce = 1.0	ASCE Table 7-2
IMPORTANCE FACTOR	I = 1.2	ASCE Table 1.5-2
THERMAL FACTOR	Ct = 1.0	ASCE Table 7-3
ROOF LIVE LOADS	Lr = 20 PSF	ASCE Table 4-1
NOTE: SNOW LOADS ADJACENT VERTICAL PROJECTION TO HIGH ROOFS, OR SLOPED ROOFS ARE INCR		
WIND LOADS		
WIND CRITERIA		CODE REFERENCE
BASIC WIND SPEED (3 SEC. GUST)	V = 120 MPH	ASCE FIG. 26.5-1A
RISK FACTOR	IV	26.5-1B, 26.5-1C ASCE Table 1.5-1
EXPOSURE CATEGORY	В	ASCE Sec. 26.7.3
INTERNAL PRESSURE COEFFICIENT	± 0.18 (ENCLOSED)	ASCE TABLE 26.11-
MWFRS ANALYSIS PROCEDURE	DIRECTIONAL PROCEDURE ± 33 PSF MINIMUM ULTIMATE AND PER CODE	ASCE CHAP. 27
COMPONENTS AND CLADDING	REQUIREMENTS BASED ON ABOVE INFORMATION	ASCE Sec. 30.2.2
SEISMIC LOADS	1	
SEISMIC CRITERIA		CODE REFERENCE
SEISMIC RISK CATEGORY	IV	ASCE Table 1.5-1
SEISMIC IMPORTANCE FACTOR	I = 1.5	ASCE Table 1.5-2
-0.2 SEC MAPPED SPECTRAL RESPONSE ACCELERATION (5% OF CRITICAL DAMPING) Ss	Ss = .091	ASCE Sec. 11.4
-1.0 SEC MAPPED SPECTRAL RESPONSE ACCELERATION (5% OF CRITICAL DAMPING) $\ensuremath{S}\xspace_1$	S1 = .046	ASCE Sec. 11.4
SOIL SITE CLASS	D	ASCE Sec. 11.4.2
SEISMIC DESIGN CATEGORY	C	ASCE Sec. 11.6
SEISMIC FORCE RESISTING SYSTEM	BEARING WALL SYSTEM WITH INTERMEDIATE REINFORCED MASONRY SHEAR WALLS	ASCE Table 12.2-1
RESPONSE MODIFICATION FACTOR	R = 3.5	ASCE Table 12.2-1
DEFLECTION AMPLIFICATION FACTOR	Cd = 2.25	ASCE Table 12.2-1

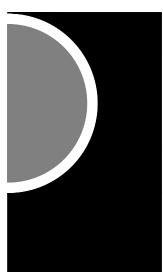
EQUIVALENT LATERAL FORCE

ASCE Sec. 12.8

ANALYSIS PROCEDURE

# SPECIAL INSPECTION(CONT.)

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KEY PLAN

# OWNER

City Of Warren

# PROJECT NAME

Warren Civic Center South Fire Station #1

23211 Van Dyke Ave Warren, MI 48089

PROJECT NO.

# 21-146A

# **ISSUES / REVISIONS**

Bidding/Construction 06/13/2023

DRAWN BY

RC \_\_\_\_

CHECKED BY MJ

APPROVED BY TS

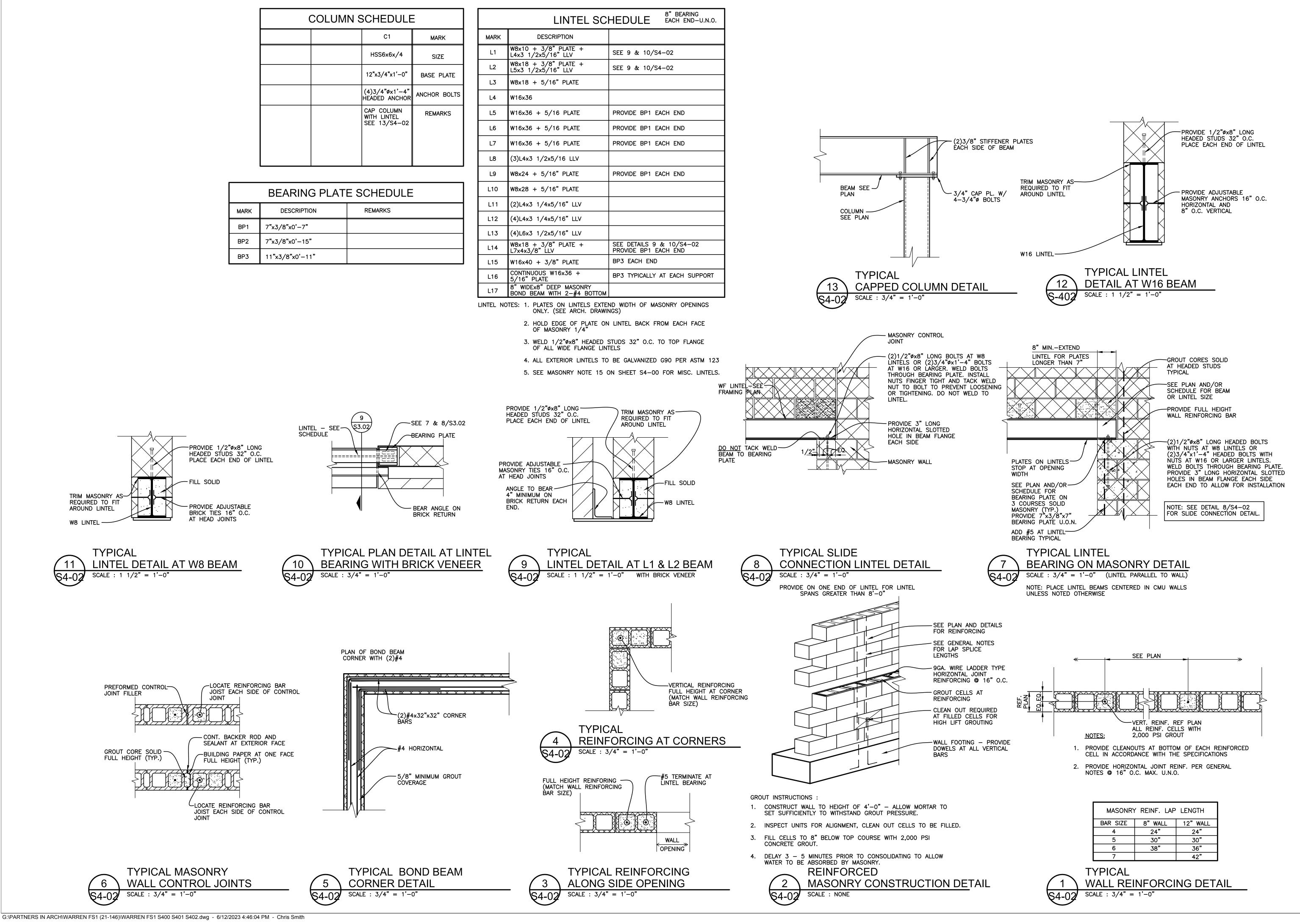
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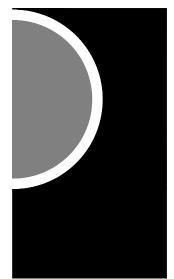
GENERAL NOTES

SHEET NO. S4-01

CC	DLUMN SCHEDULE	E
	C1	MARK
	HSS6x6x/4	SIZE
	12"x3/4"x1'-0"	BASE PLATE
	(4)3/4"øx1'–4" HEADED ANCHOR	ANCHOR BOLTS
	CAP COLUMN WITH LINTEL SEE 13/S4-02	REMARKS

	BEARING PLAT	E SCHEDULE
MARK	DESCRIPTION	REMARKS
BP1	7"x3/8"x0'-7"	
BP2	7"x3/8"x0'-15"	
BP3	11"x3/8"x0'-11"	





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KEY PLAN

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City Of Warren

# PROJECT NAME

# Warren Civic Center South Fire Station #1

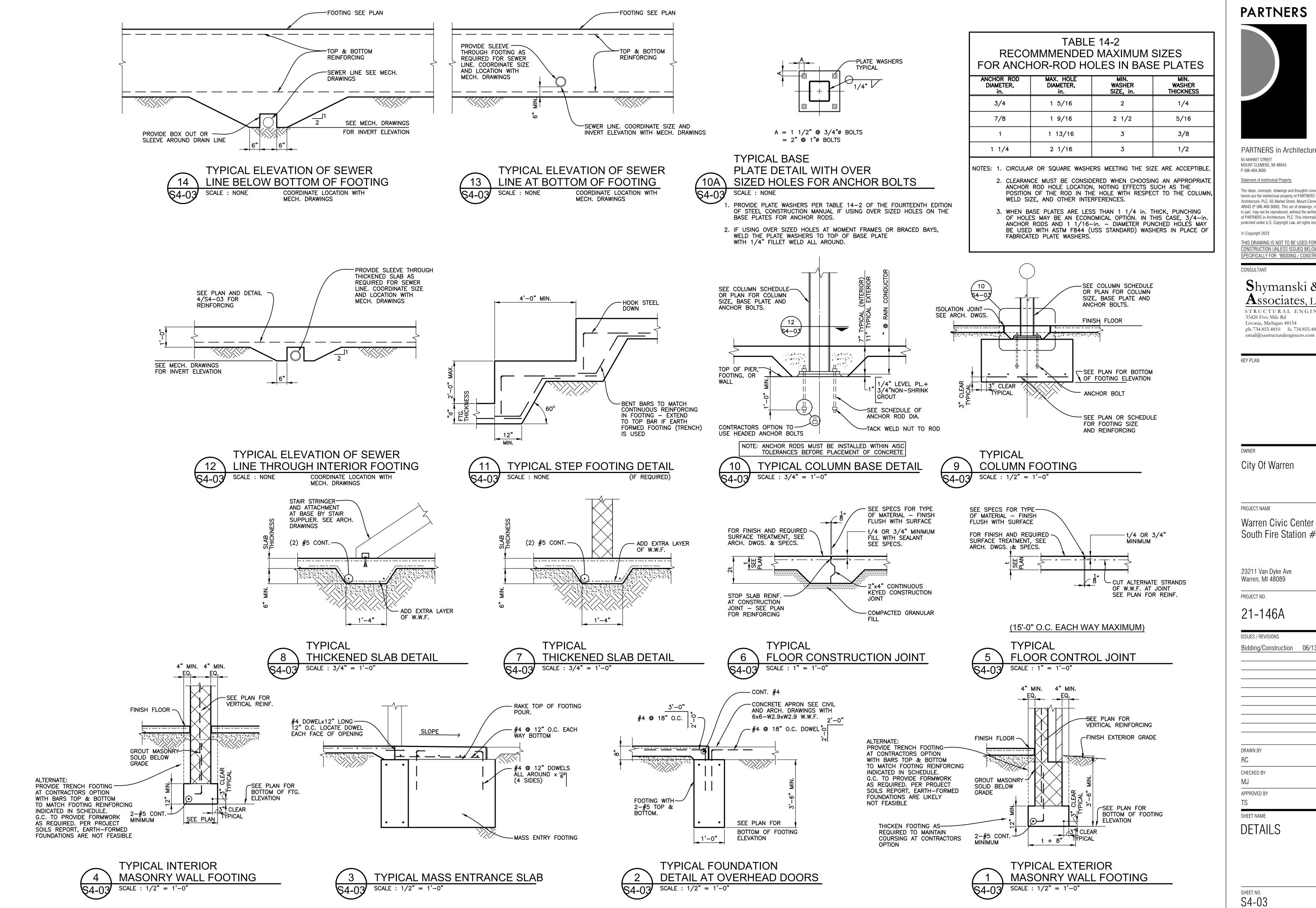
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PROJECT NO.

# 21-146A

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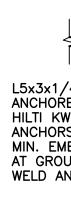


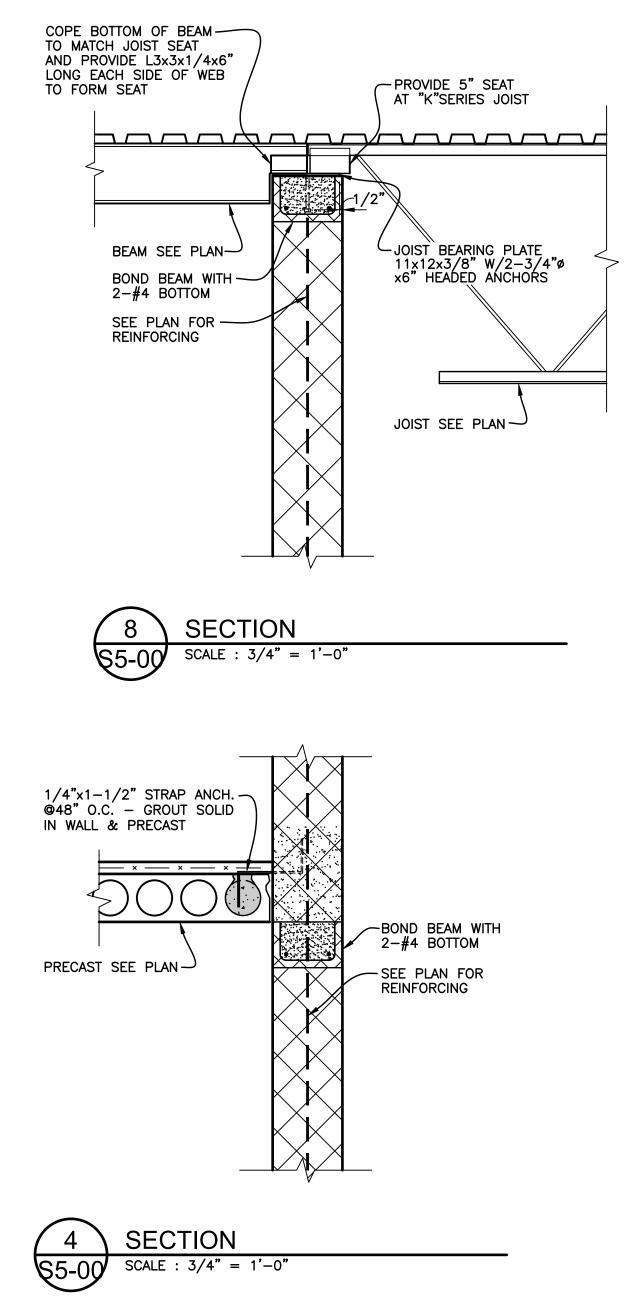
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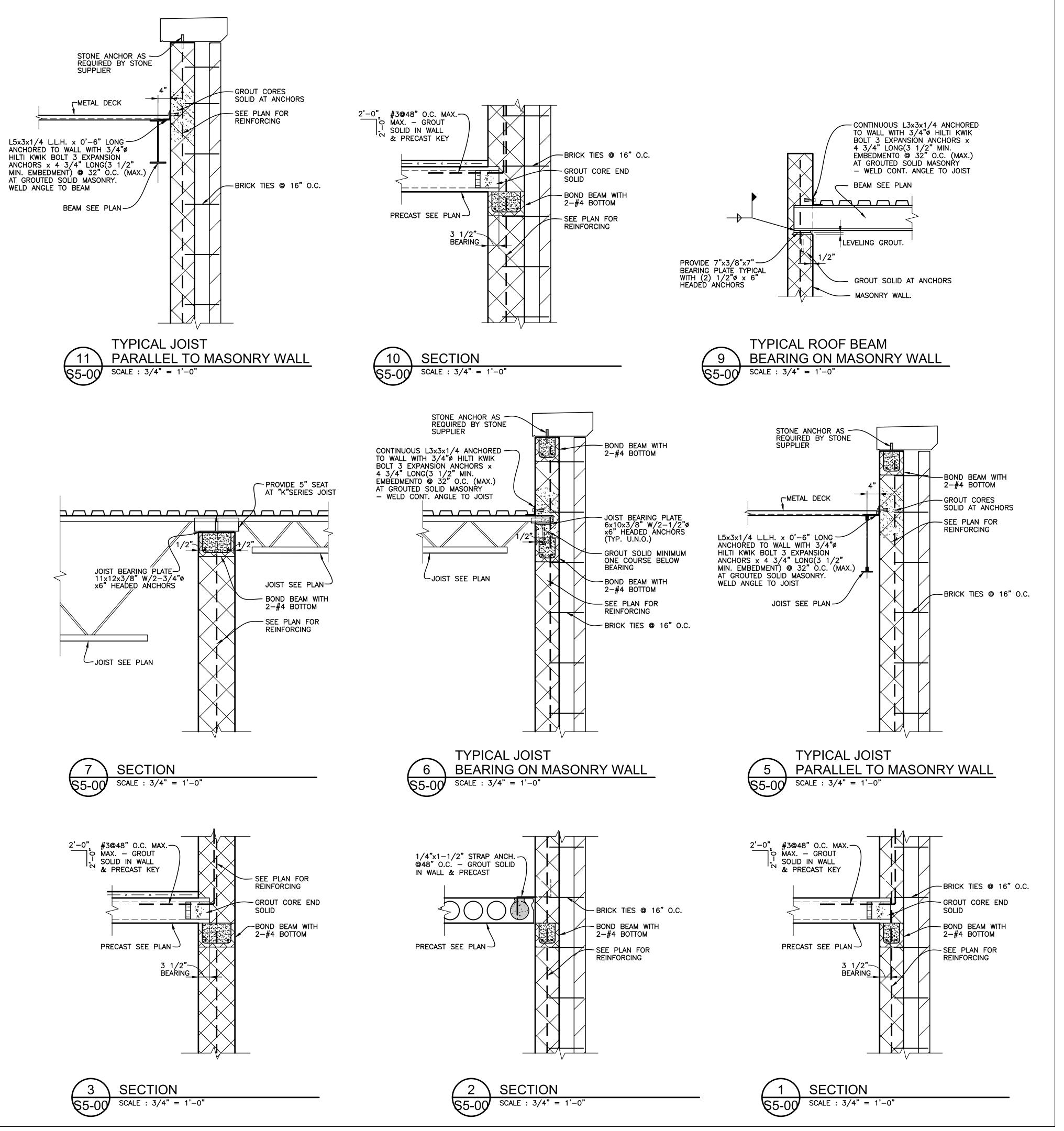
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Warren Civic Center South Fire Station #1

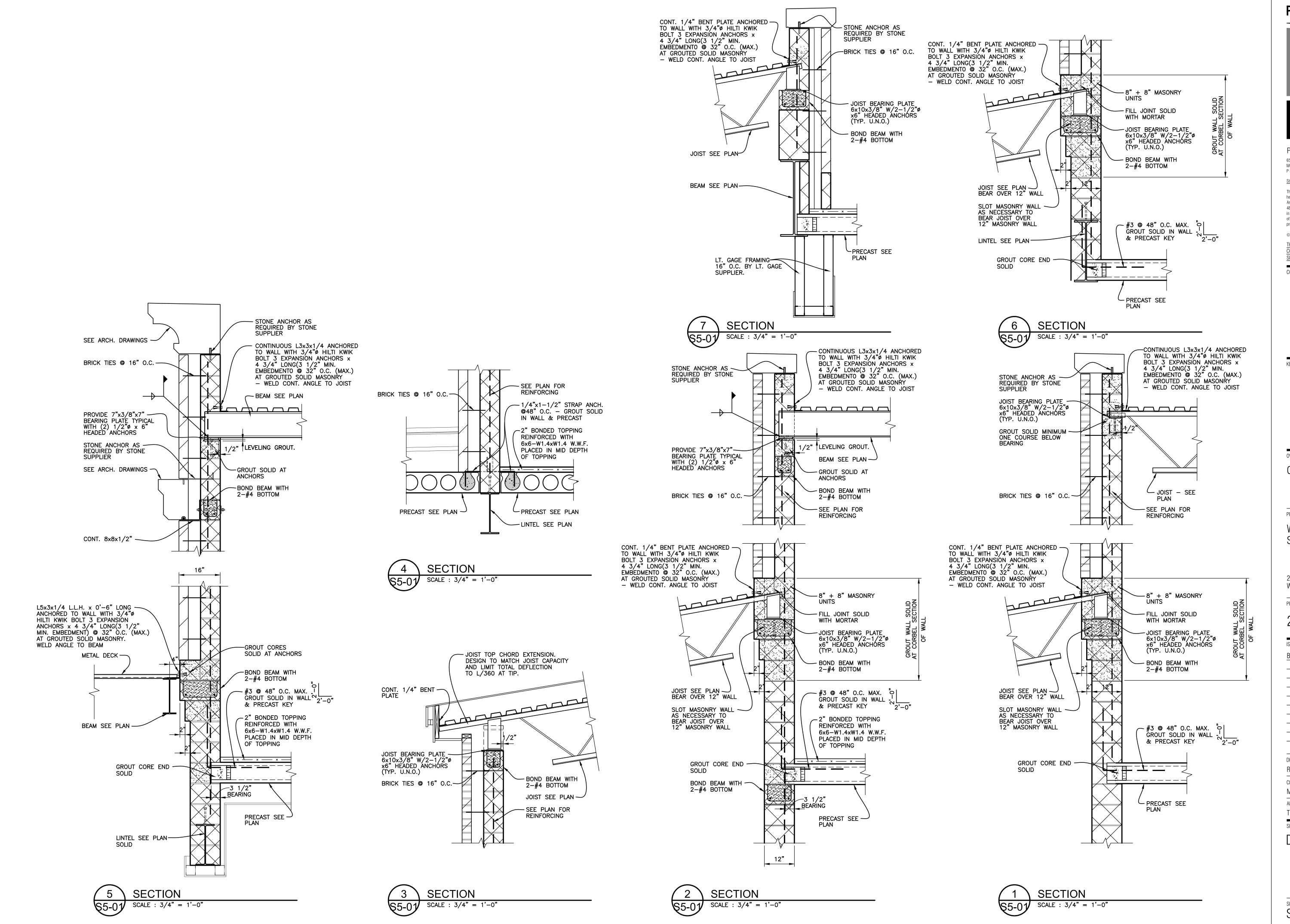
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PROJECT NO.

# 21-146A

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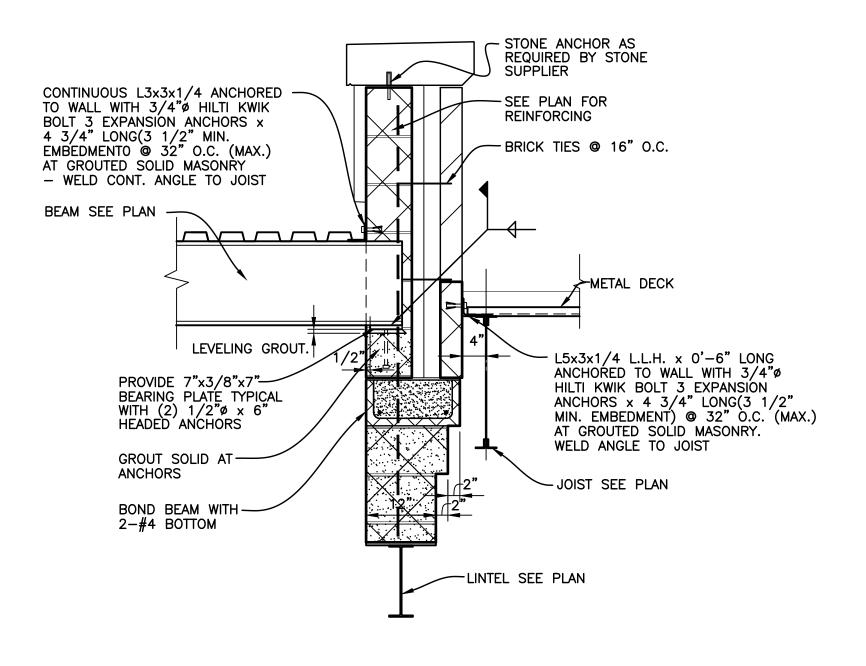


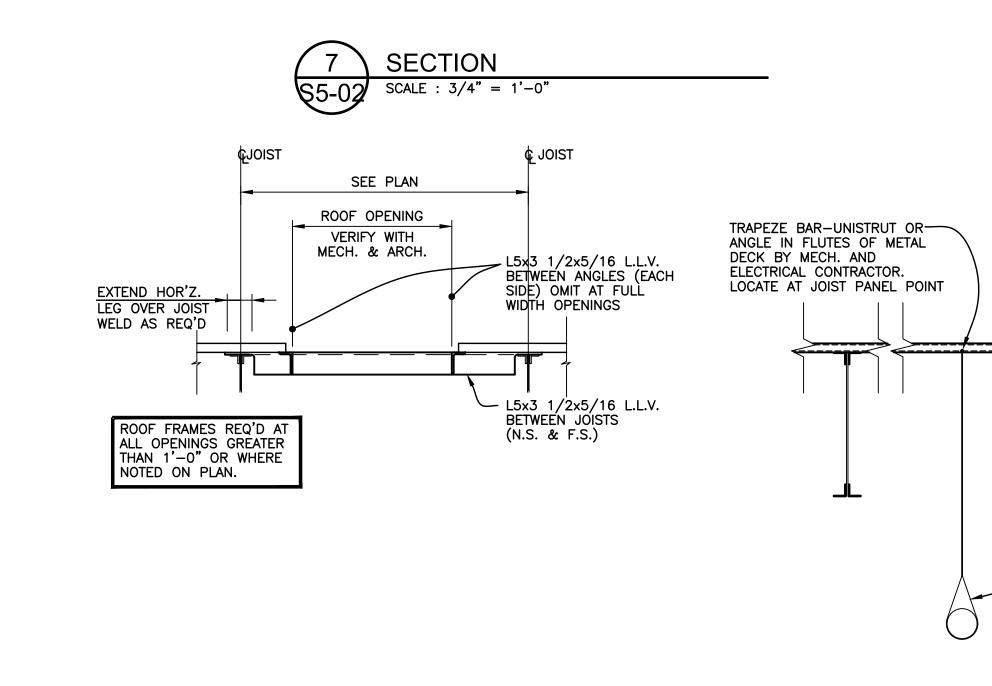
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KEY F	2LAN
OWN	ER
Cit	ty Of Warren
	ect NAME Arren Civic Center
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Wa So	arren Civic Center uth Fire Station #1
Wa So 232 War	arren Civic Center outh Fire Station #1 11 Van Dyke Ave ren, MI 48089
Wa So 232 War PROJ	arren Civic Center uth Fire Station #1 11 Van Dyke Ave ren, MI 48089
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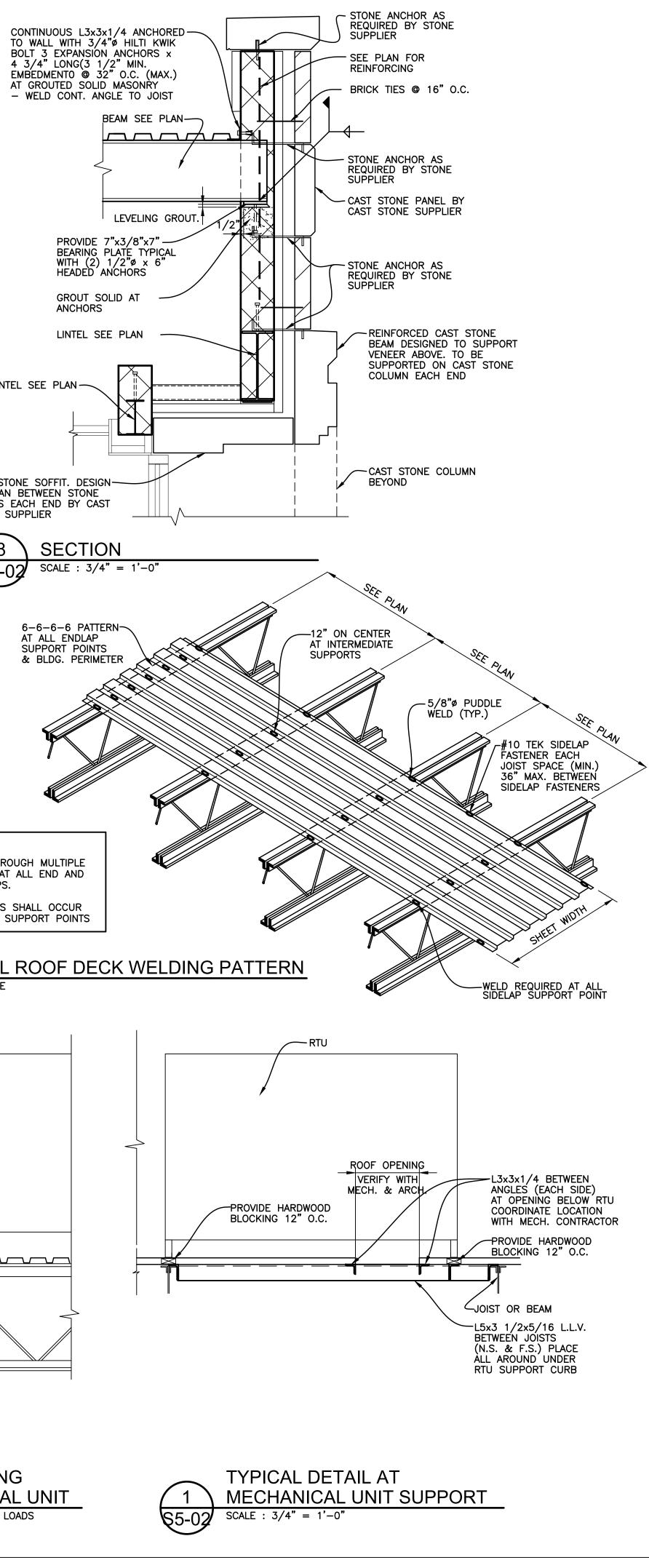
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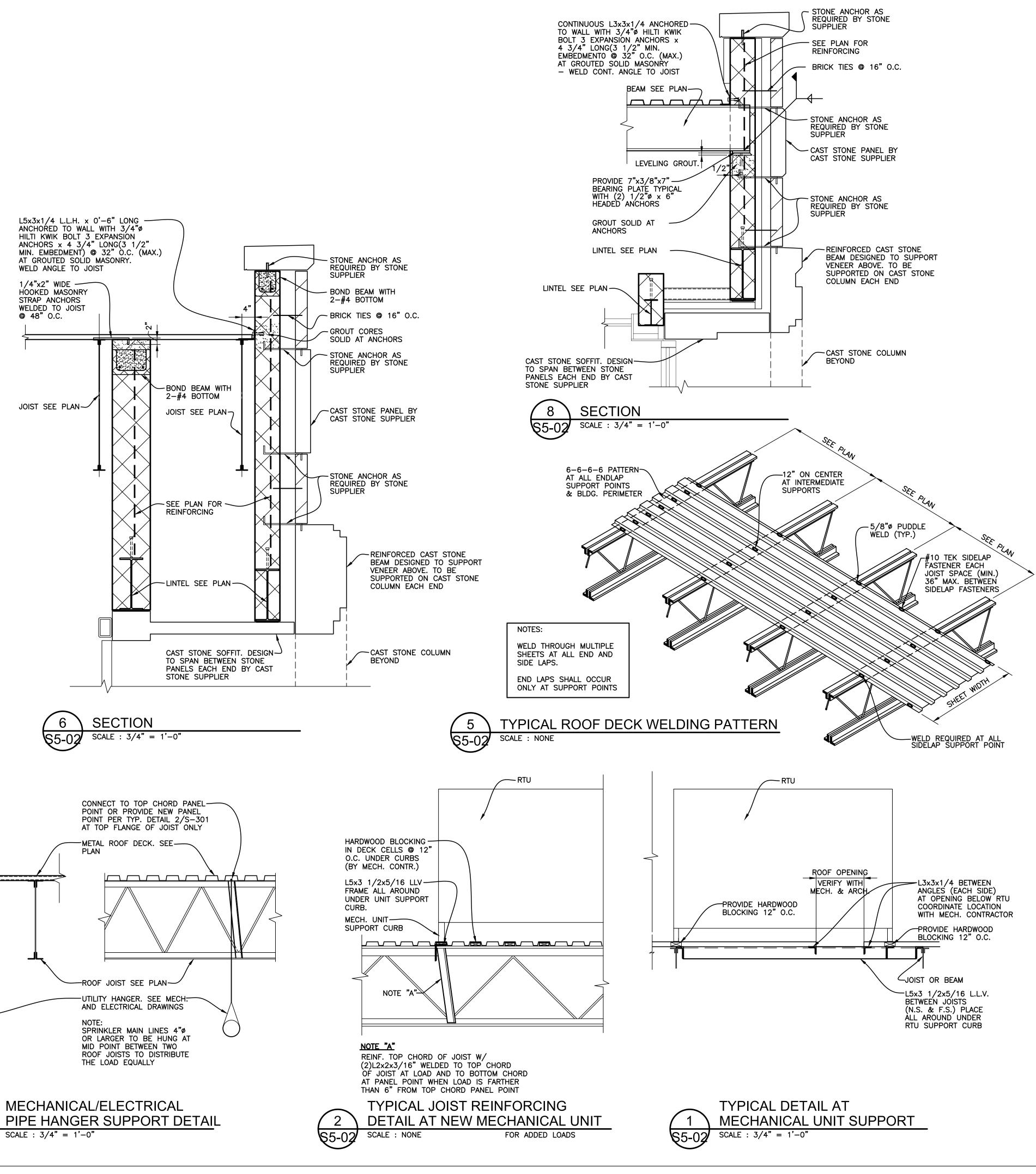






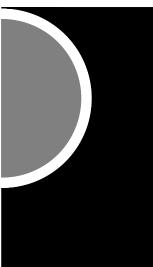






SCALE : 3/4" = 1'-0"

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KEY PLAN

OWNER

City Of Warren

PROJECT NAME

Warren Civic Center South Fire Station #1

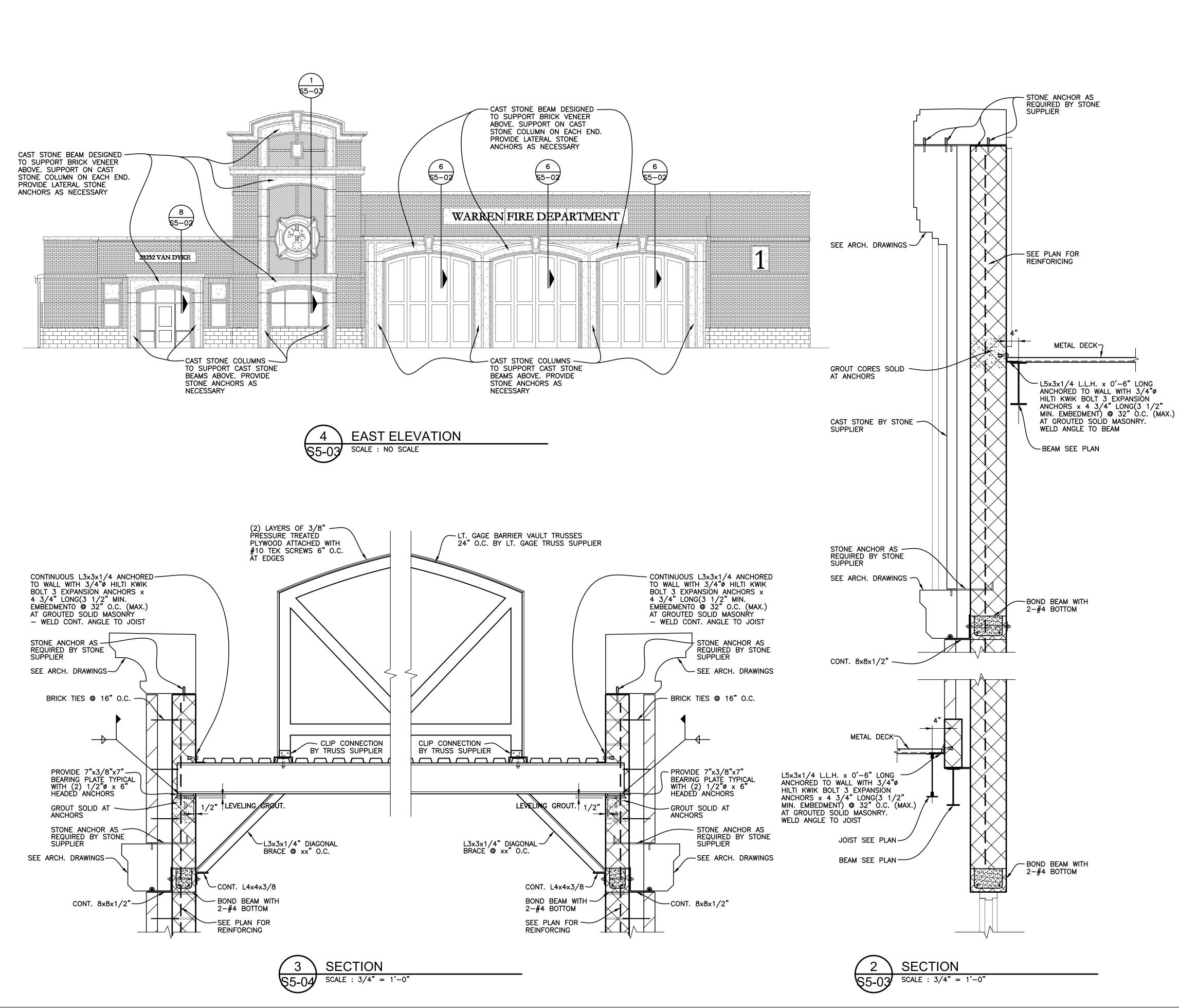
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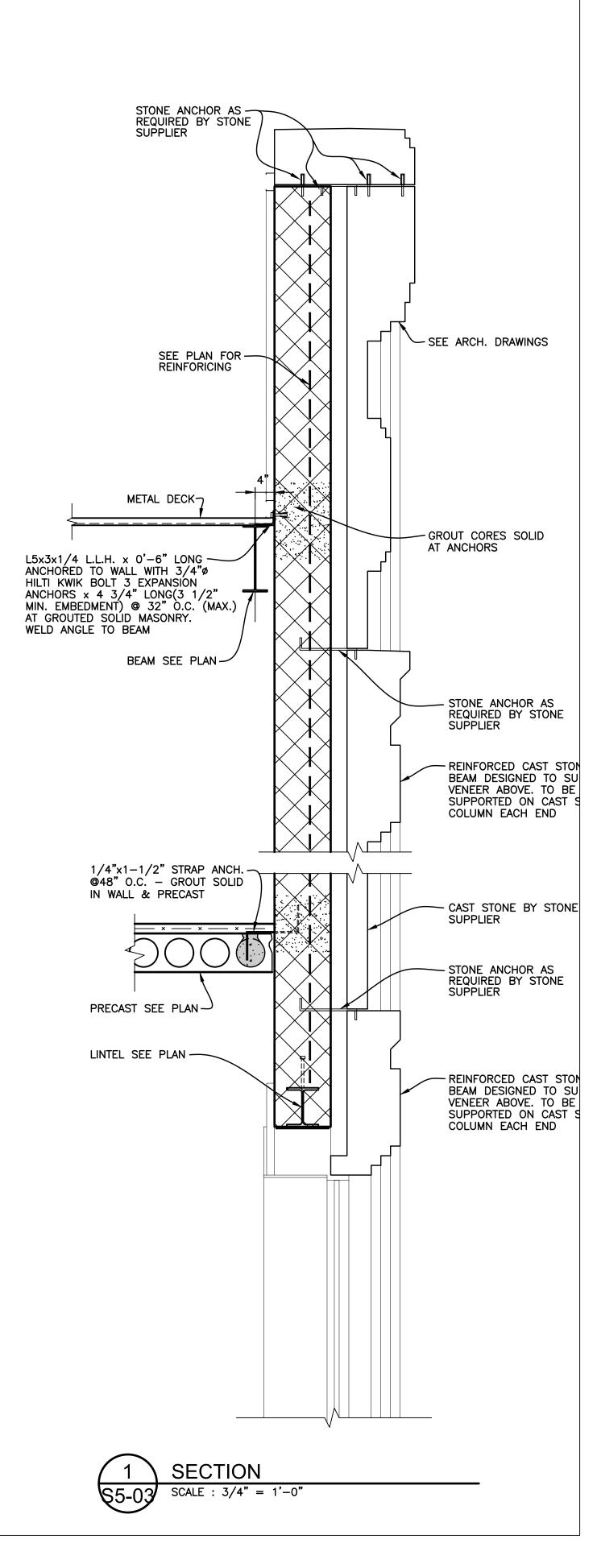
PROJECT NO.

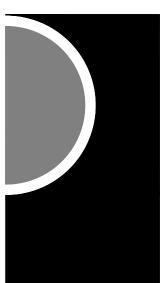
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SHEET NO. S5-02







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KEY PLAN

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OWNER

City Of Warren

PROJECT NAME

Warren Civic Center South Fire Station #1

23211 Van Dyke Ave Warren, MI 48089

PROJECT NO.

# 21-146A

# ISSUES / REVISIONS Bidding/Construction 06/13/2023 Bidding/Construction 06/13/2023 Bidding/Construction Bidding/Construction 06/13/2023 Bidding/Construction Bidding/Construction 06/13/2023 B

SHEET NO. **S5-03** 

	ANICAL ABBREVIATION	I LIST				MECHA	ANICAL SYMBOL LIST	
ABBREVIATION	DESCRIPTION COMPRESSED AIR	<u>ABBREVIATION</u> FD	N <u>DESCRIPTION</u> FLOOR DRAIN	<u>ABBREVIATIO</u> O	N <u>DESCRIPTION</u> OXYGEN	<u>PIPING SYMBOL</u> SYMBOL	<u>-S</u> DESCRIPTION	DUCTWORK S SYMBOL
A(#) AAV	COMPRESSED AIR (SPECIFIC PSIG) AUTOMATIC AIR VENT	FFD FH	FUNNEL FLOOR DRAIN FIRE HYDRANT	OA OAT	OUTSIDE AIR OUTSIDE AIR TEMPERATURE		AIR VENT - AUTOMATIC	· (
ACC ACCU	AIR COOLED CONDENSER AIR COOLED CONDENSER UNIT	FHC FHR	FIRE HOSE CABINET FIRE HOSE RACK	OB OBD	OUTLET BOX OPPOSED BLADE DAMPER	vĀ	AIR VENT - MANUAL	
AD AD	ACCESS DOOR AREA DRAIN	FHV FLA	FIRE HOSE VALVE FULL LOAD AMPS	OC OD	ON CENTER/CENTER TO CENTER OUTSIDE DIAMETER	BFP BFP	BACKFLOW PREVENTER	
AE AFF	AIR EXTRACTOR ABOVE FINISHED FLOOR	FLR FM	FLOOR FLOW METER	OED OFCI	OPEN ENDED DUCT OWNER FURNISHED, CONTRACTOR INSTALLED		CATCH BASIN	
AHU ALT	AIR HANDLING UNIT ALTERNATE	FMS FOB	FLOW MEASURING STATION FLAT ON BOTTOM	OFOI OL	OWNER FURNISHED, OWNER INSTALLED OVERLOAD			
AMP	AMPERE AIR PRESSURE DROP	FOT FPM	FLAT ON TOP FEET PER MINUTE	ORC	OVERFLOW RAIN CONDUCTOR OVERFLOW ROOF DRAIN		CLEAN OUT - IN FLOOR CLEAN OUT - FLANGE	
AR ASHRAE	ARGON AMERICAN SOCIETY OF HEATING, REFRIGERATION	FP FPTU	FIRE PUMP FAN POWERED (AIR) TERMINAL UNIT	OS&Y OV	OUTSIDE SCREW AND YOKE OUTLET VELOCITY	·····	DIRECTION OF FLOW	
	AMERICAN SOCIETY OF HEATING, REFRIGERATION AND AIR-CONDITIONING ENGINEERS AUTOMATIC SPRINKLER RISER	FS	FLOOR SINK	OWS	OPERATOR WORKSTATION	<b>F</b>	DIRECTION OF PITCH - DOWN	
ASR ATD	AIR TRANSFER DUCT	FSEC FT	FOOD SERVICE EQUIPMENT CONTRACTOR FEET	PACU	PACKAGED AIR CONDITIONING UNIT		FINNED TUBE RADIATION	
AUX AV	AUXILIARY ACID VENT	FTR FV	FINNED TUBE RADIATION FACE VELOCITY	PBD PC	PARALLEL BLADE DAMPER PUMPED CONDENSATE	$\longrightarrow$	FIRE PROTECTION - SIAMESE CONNECTION - WALL MOUNTED	BDD
AVTR AW	ACID VENT THROUGH ROOF ACID WASTE	G	NATURAL GAS	PCW PCWR	PROCESS COOLING WATER PROCESS COOLING WATER RETURN		FIRE PROTECTION - SPRINKLER HEAD, CONCEALED	
BAS	BUILDING AUTOMATION SYSTEM	GA GAL	GAUGE GALLON	PCWS PD	PROCESS COOLING WATER SUPPLY PRESSURE DROP (FEET OF WATER)	@	FIRE PROTECTION - SPRINKLER HEAD, PENDANT	M
BCU BDD	BLOWER COIL UNIT BACK DRAFT DAMPER	GRH GPH	GRAVITY RELIEF HOOD GALLONS PER HOUR	PH PHR	PERIMETER HEAT Ý		FIRE PROTECTION - SPRINKLER HEAD, UPRIGHT FIRE PROTECTION - SPRINKLER HEAD, SIDEWALL	
BFF BFP	BELOW FINISHED FLOOR BACKFLOW PREVENTER	GPM GSAN	GALLONS PER MINUTE GREASE SANITARY WASTE	PHS PNL	PERIMETER HEAT SUPPLY PANEL	;0	FLOOR DRAIN	
BHP BOD	BRAKE HORSEPOWER BOTTOM OF DUCT	Н	HYDROGEN	PPM PRESS	PARTS PER MILLION PRESSURE		FLOOR DRAIN - ELEVATION	
BOP BTU	BOTTOM OF PIPE BRITISH THERMAL UNIT	HB HC	HOSE BIBB HEATING COIL	PRV PSAN	PRESSURE REDUCING VALVE PUMPED SANITARY		FLOOR DRAIN - FUNNEL	X
BTUH	BRITISH THERMAL UNIT PER HOUR	HD	HOT DECK	PSI	POUNDS PER SQUARE INCH	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	FLOOR DRAIN - FUNNEL, ELEVATION	
BVC BWV	BEVERAGE CONDUIT BACKWATER VALVE	HEPA HL	HIGH EFFICIENCY PARTICULATE ARRESTANCE HIGH LIMIT	PSIA PSIG	POUNDS PER SQUARE INCH - ABSOLUTE POUNDS PER SQUARE INCH - GAUGE		FLOW MEASURING DEVICE (FOR TEST AND BALANCING)	$\square$
С	COMMON	HOA HP	HAND/OFF/AUTO HEAT PUMP	PST PW	PUMPED STORM PURIFIED WATER	<del></del> Го	FLOW SWITCH	
CAP CAV	CAPACITY CONSTANT AIR VOLUME	HP HPCW	HORSEPOWER HIGH PRESSURE DOMESTIC COLD WATER	PWR PWS	PURIFIED WATER RETURN PURIFIED WATER SUPPLY	HB	FLOW METER HOSE BIBB	
CB CC	CATCH BASIN COOLING COIL	HPHW HPHWR	HIGH PRESSURE DOMESTIC HOT WATER HIGH PRESSURE DOMESTIC HOT WATER RETURN	(R)	RELOCATED	X	PIPE - ANCHOR	
CD CD	COLD DECK CONDENSATE DRAIN	HPL HPLR	HEAT PUMP LOOP HEAT PUMP LOOP RETURN	Ř RA	RETURN GRILLE OR REGISTER RETURN AIR		PIPE - CAP OR PLUG	
CFCI CFH	CONTRACTOR FURNISHED, CONTRACTOR INSTALLED CUBIC FEET PER HOUR	HPLS HR	HEAT PUMP LOOP SUPPLY HOUR	RAT RC	RETURN AIR TEMPERATURE RAIN CONDUCTOR		PIPE - ELBOW DOWN	<del></del>
CFM CFM CH	CUBIC FEET PER MINUTE CHILLER	HTG HV	HEATING HEATING VENTILATING	RCP RD	RADIANT CEILING PANEL ROOF DRAIN	o	PIPE - ELBOW UP	······
CHW CHWR	CHILLED WATER CHILLED WATER RETURN	HVAC HWH	HEATING, VENTILATING, AIR CONDITIONING HOT WATER HEATING	REQD	REQUIRED ROOF EXHAUST FAN		PIPE - EXPANSION JOINT OR COMPENSATOR	ĴĴ,
CHWS	CHILLED WATER SUPPLY	HWHR	HOT WATER HEATING RETURN	RF	RETURN FAN		PIPE - FLANGE	$\rightarrow \rightarrow \rightarrow \rightarrow$
CLG CNDS	COOLING CONDENSATE	HWHS HW	HOT WATER HEATING SUPPLY DOMESTIC HOT WATER	RH RL	RELATIVE HUMIDITY REFRIGERANT LIQUID		PIPE - HOSE AND BRAID FLEXIBLE CONNECTION PIPE - RUBBER FLEXIBLE CONNECTION	5
CNDS (#) CO	CONDENSATE (SPECIFIC PSIG) CLEAN OUT	HW() HWR	DOMESTIC HOT WATER (SPECIFIC TEMP °F) DOMESTIC HOT WATER RETURN	RLFA RPM	RELIEF AIR REVOLUTIONS PER MINUTE		PIPE - GUIDE	5
CO2 CONT	CARBON DIOXIDE CONTINUATION OR CONTINUED	HX HZ	HEAT EXCHANGER HERTZ	RPDA	REDUCED PRESSURE BACKFLOW DETECTION ASSY	—	PIPE - TEE DOWN	Ţ
CONTR CONV	CONTRACTOR CONVECTOR	IAQ	INDOOR AIR QUALITY	RPZA	REDUCED PRESSURE BACKFLOW ZONE ASSY	U	PIPE - TEE UP	$\leftarrow$
COP CP	COEFFICIENT OF PERFORMANCE CIRCULATING PUMP	ID IE	INSIDE DIAMETER INVERT ELEVATION	RS RTU	REFRIGERANT SUCTION ROOFTOP UNIT		PIPE - UNION	$\leftarrow$
CRU CSS	CONDENSATE RETURN UNIT CLINICAL SERVICE SINK	IH IN	INTAKE HOOD INCHES	S	SUPPLY AIR DIFFUSER OR GRILLE	© <u> </u>	PRESSURE AND TEMPERATURE TEST PLUG	•
CT CUH	COOLING TOWER CABINET UNIT HEATER	IR IW	INFRARED HEATER INDIRECT WASTE	SA SA	SOUND ATTENUATOR SUPPLY AIR	_ <u> </u>	PRESSURE GAUGE AND COCK	∽⊠
CW	DOMESTIC COLD WATER			SAN	SANITARY WASTE	—— <b>D</b> ——	REDUCER - CONCENTRIC	$\smile \bigcirc$
CWF CWR	DOMESTIC COLD WATER - FILTERED CONDENSER WATER RETURN	JC JP	JANITOR'S CLOSET JOCKEY PUMP	SAT SCCR	SUPPLY AIR TEMPERATURE SHORT CIRCUIT CURRENT RATING		REDUCER - ECCENTRIC	
CWS	CONDENSER WATER SUPPLY	KA	THOUSAND AMP	SECT SF	SECTION SUPPLY FAN	Ô	ROOF/OVERFLOW DRAIN	
D&T DA	DRIP AND TRAP DISCHARGE AIR	KW KWH	KILOWATT KILOWATT-HOUR	SH SK	SHOWER SINK	<u>`</u>	STRAINER	
DAT DB	DISCHARGE AIR TEMPERATURE DRY BULB	LAT	LEAVING AIR TEMPERATURE	SMR SMS	SNOW MELT RETURN SNOW MELT SUPPLY		STRAINER WITH VALVE AND BLOW-OFF	<u>}</u>
DDC DEG	DIRECT DIGITAL CONTROL DEGREE	LAB LAV	LABORATORY LAVATORY	SP SPEC	STATIC PRESSURE SPECIFICATION	Ψ	THERMOMETER	<del>∽ ∓</del> ⁺⊢∽
DFU DIA	DRAINAGE FIXTURE UNITS DIAMETER	LBS LDB	POUNDS LEAVING DRY BULB	SPKLR SQFT	SPRINKLER SQUARE FOOT/SQUARE FEET		TRAP	<u> </u>
DMPR D/N	DAMPER DAY/NIGHT	LL LPC	LOW LIMIT LOW PRESSURE CONDENSATE	S/S SS	START/STOP SERVICE SINK	×	VALVE - ANGLE	, ,
DN DN DNZ	DOWN DOWNSPOUT NOZZLE	LPS LRA	LOW PRESSURE STEAM LOCKED ROTOR AMPS	ST STD	STANDARD	—-ф	VALVE - BALL	
DS	DUCT SILENCER	LWB	LEAVING WET BULB	STK	STACK	<u> </u>	VALVE - BALANCE (i.e. BALANCE VALVE TO 0.5 GPM)	∽ <u> </u>
DT DTC	DRAIN TILE DRAIN TILE CONNECTION	LWT		STM STM(#)	STEAM STEAM (SPECIFIC PSIG)	——————————————————————————————————————	VAI VF - COMBINATION BAI ANCE & FLOW MEASURING (i.e. BALANCE VALVE TO 0.5 GPM)	
DWH DWG	DOMESTIC WATER HEATER DRAWING	MA MAT	MIXED AIR MIXED AIR TEMPERATURE	S/W SW	SUMMER/WINTER SWITCH		VALVE - BUTTERFLY	
(E)	EXISTING	MAU MAX	MAKE-UP AIR UNIT MAXIMUM	т	TRANSFER GRILLE		VALVE - CHECK VALVE - SPRING CHECK	
E EA	EXHAUST GRILLE OR REGISTER EACH	MBH MCA	THOUSAND BRITISH THERMAL UNITS PER HOUR MEDICAL COMPRESSED AIR	TC TC	TEMPERATURE CONTROL TEMPERING COIL		VALVE - GAS (MANUAL)	
EA EAT	EXHAUST AIR ENTERING AIR TEMPERATURE	MCA MCC	MINIMUM CIRCUIT AMPACITY MOTOR CONTROL CENTER	TCP TD	TEMPERATURE CONTROL PANEL TRENCH DRAIN	¤	VALVE - GLOBE	<
EC ECUH	EXPANSION COMPENSATOR ELECTRIC CABINET UNIT HEATER	MECH MEZZ	MECHANICAL MEZZANINE	TEMP TEMP	TEMPERATURE TEMPORARY	⊠	VALVE - ISOLATION	
EDB	ENTERING DRY BULB ENERGY EFFICIENCY RATIO	MFR MH	MANUFACTURER MANHOLE	TH	TERMINAL HEATING TOTAL HEAT ABSORBED		VALVE - NEEDLE	<u>}□</u> ;
EES EEW	EMERGENCY EYE WASH / SHOWER EMERGENCY EYE WASH	MIL MIN	1/1000th INCH MINIMUM	THR	TERMINAL HEATING RETURN TOTAL HEAT REJECTED	A	VALVE - OS&Y	₫」╼
EF EFF	EXHAUST FAN EFFICIENCY	MISC MMBH	MINIMOM MISCELLANEOUS MILLION BRITISH THERMAL UNITS PER HOUR	THS TMR	TERMINAL HEATING SUPPLY TIMER SWITCH		VALVE - PLUG	$\overline{()}$
EHC	ELECTRIC HEATING COIL	MOP	MAXIMUM OVERCURRENT PROTECTION	TPD	TEPID WATER	k	VALVE - PRESSURE REGULATING	
EJ EL	EXPANSION JOINT ELEVATION	M/S MTD	MOTOR STARTER MOUNTED	TSP TU	TOTAL STATIC PRESSURE (AIR) TERMINAL UNIT		VALVE - PRESSURE REDUCING	<u>DOUBLE LINI</u> SYMBOL
ELEC EMS	ELECTRICAL ENERGY MANAGEMENT SYSTEM	MTR MV	MOTOR MANUAL AIR VENT	TV TW	TURNING VANES TEMPERED WATER	¥	VALVE - PRESSURE RELIEF	
ERL ERLR	ENERGY RECOVERY LOOP ENERGY RECOVERY LOOP RETURN	MVAC	MEDICAL VACUUM	TYP	TYPICAL	\$	VALVE - PRESSURE & TEMPERATURE RELIEF	
ERLS ERU	ENERGY RECOVERY LOOP SUPPLY ENERGY RECOVERY UNIT	N N2O	NITROGEN NITROUS OXIDE	UH UL	UNIT HEATER UNDERWRITER'S LABORATORY		VENT THROUGH ROOF	
ESH ESP	EMERGENCY SHOWER EXTERNAL STATIC PRESSURE	NC NC	NOISE CRITERIA NORMALLY CLOSED	UON UR	UNLESS OTHERWISE NOTED URINAL	—————————————————————————————————————	WALL HYDRANT	
EUH EWB	ELECTRIC UNIT HEATER ENTERING WET BULB	NCTC NCTO	NORMALLY CLOSED TIMED CLOSED NORMALLY CLOSED TIMED OPEN	UV	UNIT VENTILATOR	WM	WATER METER	
EWC	ELECTRIC WATER COOLER ENTERING WATER TEMPERATURE	NFPA NOTC	NATIONAL FIRE PROTECTION AGENCY NORMALLY OPEN TIMED CLOSED	V	VALVE VENT	GM	GAS METER	
EXH	EXHAUST	NOTO	NORMALLY OPEN TIMED OPEN	VAC	VACUUM	DOUBLE LINE P		
F	FIRE PROTECTION	NIC NO	NOT IN CONTRACT NORMALLY OPEN	VAV VB	VARIABLE AIR VOLUME VACUUM BREAKER		DESCRIPTION	₩
°F F&B	DEGREES FAHRENHEIT FACE AND BYPASS	NOM NPCW	NOMINAL NON POTABLE COLD WATER	VD VOL	VOLUME DAMPER (MANUALLY ADJUSTABLE) VOLUME	کــــــــــــــــــــــــــــــــــــ	FLANGE	Ъ
F&T FA	FLOAT AND THERMOSTATIC FACE AREA			VFC VTR	VARIABLE FREQUENCY CONTROLLER VENT THROUGH ROOF		FLEX CONNECTION	
		יאידרואנ		VTU VUV	VENTURI TERMINAL UNIT VERTICAL UNIT VENTILATOR		STRAINER - BASKET	$\sum_{i=1}^{n} \langle i \rangle$
	ERATURE CONTROL - F	<u>AK HAI</u>	- 2 INBOLS LIST	W	WASTE		STRAINER - Y TYPE	
SYMBOL	DESCRIPTION	1BOL DES	SCRIPTION	W&V WAGD	WASTE AND VENT WASTE ANESTHETIC GAS DISPOSAL		VALVE - 2 WAY CONTROL	
				WB	WASTE ANESTHETIC GAS DISPOSAL WET BULB WATER CLOSET		VALVE - 3 WAY CONTROL	
CO2			CUPANCY SENSOR	WC WC	WATER COLUMN			
со			SSURE TRANSMITTER	WG WH	WATER GAUGE WALL HYDRANT		VALVE - BUTTERFLY	
DPT			TIC PRESSURE SENSOR OR PROBE	WMSD WPD	WASHING MACHINE SUPPLY AND DRAIN BOX WATER PRESSURE DROP		VALVE - CHECK	
FM	FLOW METER		VE - 2 WAY CONTROL VALVE	WT	WEIGHT		VALVE - DETECTOR CHECK	
	GUARD FOR STAT OR SENSOR	VAL	VE - 3 WAY CONTROL VALVE	XFMR	TRANSFORMER			
Н	HUMIDISTAT OR HUMIDITY SENSOR		RMOSTAT OR TEMPERATURE SENSOR	ZVB	ZONE VALVE BOX	m/\\		
NOTE: LIST O	(AS DEFINED ON TC DRAWINGS) F ADDITIONAL SYMBOLS & ABBREVIATIONS ASSOCIATED W	,	DEFINED ON TC DRAWINGS)				VALVE - OS&Y HORIZONTAL STEM	
	RATURE CONTROLS ARE IDENTIFIED ON TC DRAWINGS.						VALVE - OS&Y VERTICAL STEM	

# MECHANICAL SVMBOLLIST

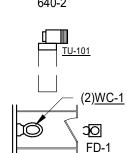
			<u>EET TITLE</u>
<u>SYMBOL</u> —[]]——————————————————————————————————	DESCRIPTION AIR TERMINAL UNIT	M1-01 GR	CHANICAL STANDARDS AND DRAWING INDEX OUND FLOOR FIRE PROTECTION PLAN
	AIR TERMINAL UNIT WITH HEATING COIL		ZZANINE FIRE PROTECTION PLAN DERGROUND PLUMBING PLAN
			OUND FLOOR PLUMBING PLAN ZZANINE AND HOSE TOWER PLUMBING PLANS
	DAMPER - HORIZONTAL FIRE (EXISTING, NEW)		OUND FLOOR HVAC PIPING PLAN ZZANINE HVAC PIPING PLAN
	DAMPER - HORIZONTAL FIRE / SMOKE (EXISTING, NE		OUND FLOOR SHEET METAL PLAN ZZANINE AND HOSE TOWER SHEET METAL PLANS
	DAMPER - SMOKE (EXISTING, NEW)		OF MECHANICAL PLAN CHANICAL DETAILS
	DAMPER - VERTICAL FIRE (EXISTING, NEW)		CHANICAL DETAILS CHANICAL DETAILS
♣ &ر	DAMPER - VERTICAL FIRE / SMOKE (EXISTING, NEW)	M6-04 ME	CHANICAL DETAILS CHANICAL DETAILS
BDD	DAMPER - BACK DRAFT	M6-06 ME	CHANICAL DETAILS CHANICAL DETAILS CHANICAL SCHEDULES
M T	DAMPER - MOTORIZED	M7-02 ME	CHANICAL SCHEDULES
	DAMPER - VOLUME (MANUALLY ADJUSTABLE)	M7-04 ME	CHANICAL SCHEDULES CHANICAL SCHEDULES
	DIFFUSER - BLANK OFF	M7-06 ME	CHANICAL SCHEDULES CHANICAL SCHEDULES
	DIFFUSER - LINEAR SLOT	M8-01 TEI	OWMELT DETAILS AND SCHEDULES MPERATURE CONTROL STANDARDS AND GENERAL NOTES
X	DIFFUSER - SQUARE OR RECTANGULAR	M8-03 TEI	MPERATURE CONTROLS MPERATURE CONTROLS
$\square$	DUCT CROSS SECTION - SUPPLY	M8-05 TEI	MPERATURE CONTROLS MPERATURE CONTROLS
	DUCT CROSS SECTION - RETURN	M8-07 TEI	MPERATURE CONTROLS MPERATURE CONTROLS
	DUCT CROSS SECTION - EXHAUST		MPERATURE CONTROLS MPERATURE CONTROLS
		M8-10 TEI	MPERATURE CONTROLS
		STANDA	RD METHODS OF NOTATION
	DUCT - FLEXIBLE DUCT	S-1 10ø	SUPPLY DIFFUSER WITH SCHEDULE TAG "1", 10" DIAMETER NECK SIZE
Ľ,	DUCT TAKE-OFF - ROUND CONICAL	10ø 350-4 R-1	350 CFM TYPICAL FOR 4 RETURN REGISTER WITH SCHEDULE TAG "1",
$\overline{}$	DUCT TAKE-OFF - RECTANGULAR WITH SHOE TAP	R-1 22x22 640-2	22"x 22" NECK SIZE 640 CFM TYPICAL FOR 2
) )	ELBOW - RECTANGULAR WITH TURNING VANES	2 0+0 M	EXHAUST REGISTER E DESIGNATION SIMILAR.
5	ELBOW - RECTANGULAR/ ROUND SMOOTH RADIUS		AIR TERMINAL UNIT WITH HEATING COIL NO. 101 WITH SERVICE CLEARANCE SHOWN
	ELBOW DOWN - RECTANGULAR		
———	ELBOW DOWN - ROUND		PLUMBING FIXTURE UNIT IDENTIFICATION TAG WATER CLOSET TYPE "1"
——————————————————————————————————————	ELBOW UP - RECTANGULAR	FD-1	-
	ELBOW UP - ROUND	<u> </u>	PIPE DIAMETER NOTATION ALL SIZES IN INCHES
	FAN - AXIAL	8ø – 🗸 👬	
	FAN - CENTRIFUGAL (ELEVATION)	22x10 18x	DUCT SIZE NOTATION ALL SIZES IN INCHES
	х, , , , , , , , , , , , , , , , , , ,		OVAL DUCT
			RECTANGULAR DUCT
	INCLINED DROP IN DIRECTION OF AIRFLOW		CONSTRUCTION KEY NOTE (NUMBER) OR DEMOLITION KEY NOTE (LETTER)
┲╼┑	INCLINED RISE IN DIRECTION OF AIRFLOW	$\left( \begin{array}{c} 1 \end{array} \right)$	
	INTAKE OR RELIEF HOOD	EF	EQUIPMENT DESIGNATION, (i.e. EXHAUST FAN NUMBER 1)
	REGISTER - RETURN OR EXHAUST	$\boxed{1}$	NEW SYSTEM COMPONENT
4	REGISTER - RETURN WITH BOOT		EXISTING SYSTEM COMPONENT TO REMAIN
	REGISTER - TRANSFER GRILLE	<u> </u>	► S
$\langle \widehat{\square} \rangle$	ROOF EXHAUST FAN		
-D	TRANSITION - CONCENTRIC		POINT OF NEW CONNECTION SYMBOL
- <u>D</u> 5	TRANSITION - ECCENTRIC	$\frown$	SECTION OR PLAN NUMBER
	UNIT HEATER - HORIZONTAL THROW	$\begin{array}{c} \bullet \\ \hline \\ M5.1 \end{array}$	
	UNIT HEATER - VERTICAL THROW		SHEET WHERE SECTION IS DRAWN
			AREA OF ENLARGEMENT
<u>OUBLE LINE DU</u> YMBOL	<u>JCTWORK SYMBOLS</u> DESCRIPTION	j j	PLAN NUMBER
	DUCT TAKE-OFF - RECTANGULAR WITH SHOE TAP		$\begin{pmatrix} 1\\ M5.1 \end{pmatrix}$
			SHEET WHERE ENLARGED PLAN IS DRAWN
	DUCT TAKE-OFF - ROUND CONICAL		SECTION OR PLAN NUMBER
· ~	ELBOW - RECTANGULAR WITH TURNING VANES		CTION OR ENLARGED PLAN
	ELBOW - ROUND	M5.1 SCA	LE: 1/8" = 1' - 0"
	ELBOW - RECTANGULAR SMOOTH RADIUS		SHEET WHERE SECTION IS CUT OR ENLARGED PLAN IS REFERENCED
		SHEET M1	
	ELBOW DOWN - RECTANGULAR	SHEET M1	.1 HEAVY LINE WEIGHT INDICATES NEW WORK
	ELBOW DOWN - ROUND		
	ELBOW UP - RECTANGULAR		LIGHT LINE WEIGHT INDICATES EXISTING     EQUIPMENT OR REFERENCED INFORMATION
	ELBOW UP - ROUND		GRAY LINE INDICATES BACKGROUND INFORMATION
	HEATING COIL		- DASHED LINES INDICATE PIPING
	INCLINED DROP IN DIRECTION OF AIRFLOW	·/////////////////////////////////////	ROUTED BELOW SLAB OR GRADE
			TO BE DISCONNECTED AND REMOVED.
	TRANSITION - CONCENTRIC	NOTE SOME SYN	MBOLS AND ABBREVIATION

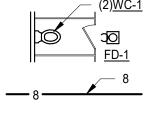
# MECHANICAL DRAWING INDEX

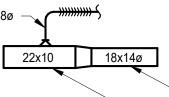
SHEET NO.	SHEET TITLE
M0-01	MECHANICAL STANDARDS AND DRAWING INDEX
M1-01	GROUND FLOOR FIRE PROTECTION PLAN
M1-02	MEZZANINE FIRE PROTECTION PLAN
M2-00	
M2-01	GROUND FLOOR PLUMBING PLAN
M2-02	MEZZANINE AND HOSE TOWER PLUMBING PLANS
M3-01	GROUND FLOOR HVAC PIPING PLAN
M3-02	MEZZANINE HVAC PIPING PLAN
M4-01	GROUND FLOOR SHEET METAL PLAN
M4-02	MEZZANINE AND HOSE TOWER SHEET METAL PLANS
M5-31	ROOF MECHANICAL PLAN
M6-01	MECHANICAL DETAILS
M6-02	MECHANICAL DETAILS
M6-03	MECHANICAL DETAILS
M6-04	MECHANICAL DETAILS
M6-05	MECHANICAL DETAILS
M6-06	MECHANICAL DETAILS
M7-01	MECHANICAL SCHEDULES
M7-02	MECHANICAL SCHEDULES
M7-03	MECHANICAL SCHEDULES
M7-04	MECHANICAL SCHEDULES
M7-05	MECHANICAL SCHEDULES
M7-06	MECHANICAL SCHEDULES
M7-07	SNOWMELT DETAILS AND SCHEDULES
M8-01	TEMPERATURE CONTROL STANDARDS AND GENERAL NOTES
M8-02	TEMPERATURE CONTROLS
M8-03	TEMPERATURE CONTROLS
M8-04	TEMPERATURE CONTROLS
M8-05	TEMPERATURE CONTROLS
M8-06	TEMPERATURE CONTROLS
M8-07	TEMPERATURE CONTROLS
M8-08	TEMPERATURE CONTROLS
M8-09	TEMPERATURE CONTROLS
M8-10	TEMPERATURE CONTROLS

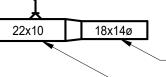
# STANDARD METHODS OF NOTATION

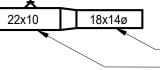
S-1	
10ø	
350-4	
R-1	
22x22	
640-2	

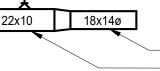


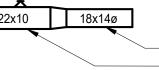


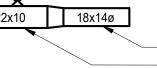














Fax: 248-879-0007 www.PeterBassoAssociates.com PBA Project No.: 2021.0370 KEY PLAN

OWNER

City of Warren

PROJECT NAME

PROJECT NO.

21-146A

**ISSUES / REVISIONS** 

Bidding / Construction 06/13/2023

Warren Civic Center

South Fire Station #1

23211 Van Dyke Ave

Warren, MI 48089

PARTNERS

PARTNERS in Architecture, PLC

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CONSULTANT

Statement of Intellectual Property

MECHANICAL STANDARDS AND DRAWING INDEX

M0-01

APPROVED BY DAC SHEET NAME

SHEET NO.

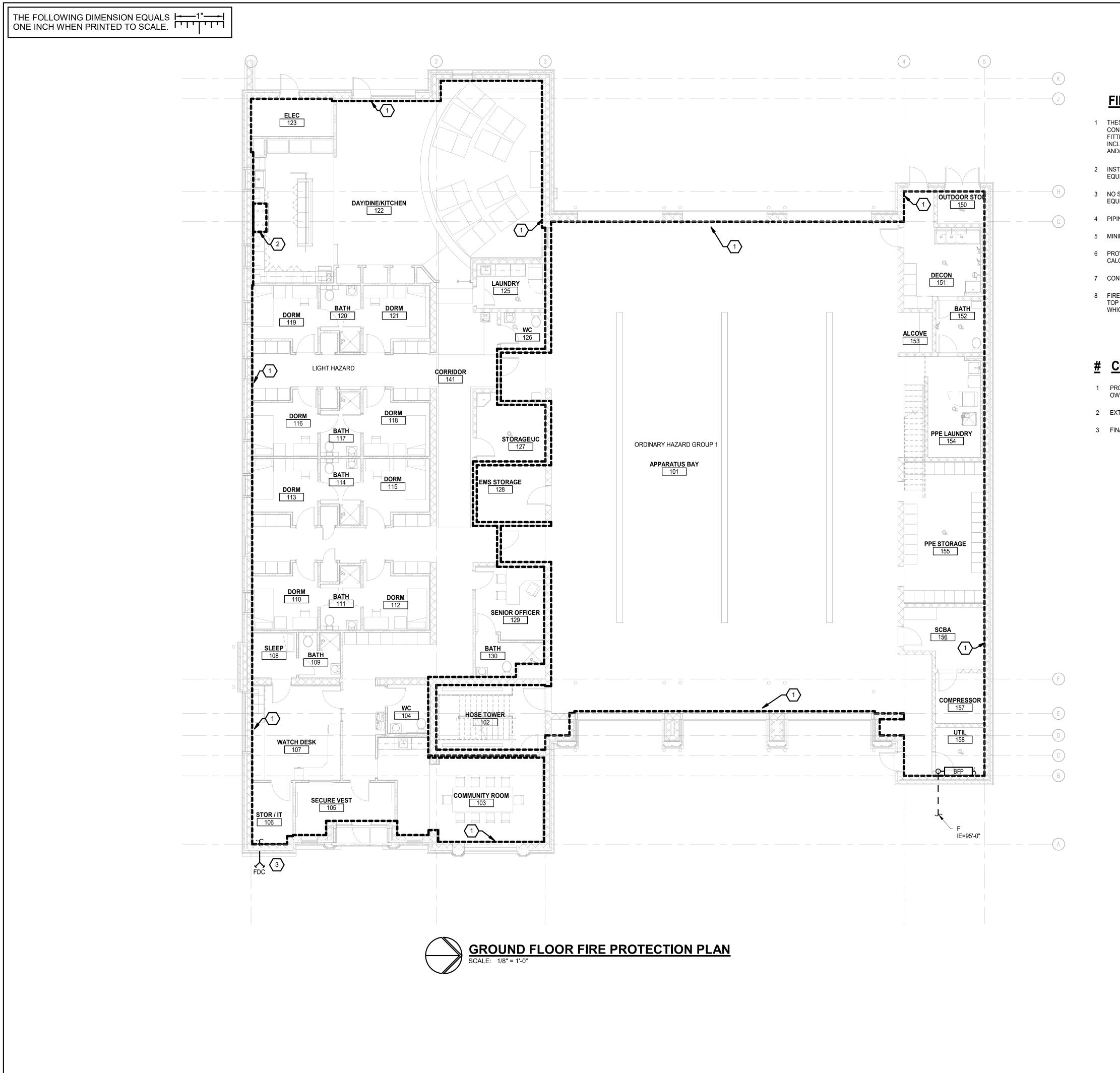
DAC

JTH

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# **FIRE PROTECTION GENERAL NOTES:**

- THESE DRAWINGS ARE DIAGRAMMATIC, AND REPRESENT THE GENERAL INTENT AND ARRANGEMENT OF SYSTEMS. THEY ARE NOT TO BE CONSIDERED FABRICATION/COORDINATION/SHOP DRAWINGS. COORDINATION WITH OTHER TRADES IS REQUIRED. PROVIDE THE ADDITIONAL FITTINGS AND OFFSETS THAT WILL BE REQUIRED TO COMPLETE EACH SYSTEM AND TO AVOID INTERFERENCES WITH ALL OTHER SYSTEMS INCLUDING THE STRUCTURE, SHEET METAL, OTHER PIPING SYSTEMS, ELECTRICAL CONDUITS, BUS DUCTS, CABLE TRAY, LIGHT FIXTURES, ETC. AND/OR OTHER SPACE CONSTRAINTS.
- 2 INSTALL SYSTEMS SUCH THAT REQUIRED CLEARANCE AND SERVICE ACCESS SPACE IS PROVIDED AROUND ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND AROUND ANY COMPONENTS WHICH REQUIRE SERVICE ACCESS.
- 3 NO SPRINKLER PIPING SHALL BE ROUTED THROUGH ELECTRICAL EQUIPMENT ROOMS, TELECOMMUNICATION EQUIPMENT ROOMS, ELEVATOR EQUIPMENT ROOMS OR SIMILAR ROOMS. ONLY SPRINKLER PIPING SERVING SPRINKLERS HEADS IN THOSE ROOMS SHALL BE ALLOWED.
- 4 PIPING SHALL NOT BE INSTALLED ABOVE ELECTRICAL TRANSFORMERS, SWITCHBOARDS, PANELBOARDS OR MOTOR CONTROL CENTERS. 5 MINIMUM RUN-OUT PIPE SIZE TO SPRINKLER HEADS SHALL BE 1".
- 6 PROVIDE AN AUTOMATIC WET PIPE SPRINKLER SYSTEM IN ACCORDANCE WITH NFPA 13 LIGHT HAZARD CLASSIFICATION. HYDRAULIC CALCULATIONS SHALL BE BASED ON DENSITY OF 0.10 GPM/SQ FT. OVER THE MOST REMOTE 1500 SQ. FT.
- 7 CONTRACTOR SHALL MAKE HIS OWN PRESSURE AND FLOW TEST PRIOR TO SYSTEM DESIGN.
- 8 FIRE PROTECTION WATER SERVICE ENTRANCE PIPING SHALL BE BURIED WITH DEPTH OF COVER OVER TOP OF PIPE OF AT LEAST 72", OR WITH TOP OF PIPE AT LEAST 12" BELOW LEVEL OF MAXIMUM FROST PENETRATION, OR AS REQUIRED BY AUTHORITIES HAVING JURISDICTION, WHICHEVER IS DEEPEST.

# <u># CONSTRUCTION KEY NOTES:</u>

1 PROVIDE FULLY FUNCTIONING WET PIPE SPRINKLER SYSTEM IN ACCORDANCE WITH NFPA 13, THE AUTHORITY HAVING JURISDICTION AND THE OWNERS INSURING AGENCY IN THE AREAS INDICATED.

2 EXTEND FIRE PROTECTION LINE TO KITCHEN HOOD, COORDINATE REQUIREMENTS WITH HOOD MANUFACTURER.

3 FINAL LOCATION OF FDC TO BE COORDINATED WITH THE AHJ.

# PARTNERS

PARTNERS in Architecture, PLC 65 Market Street Mount Clemens, MI 48043

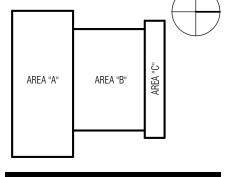
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OWNER City of Warren

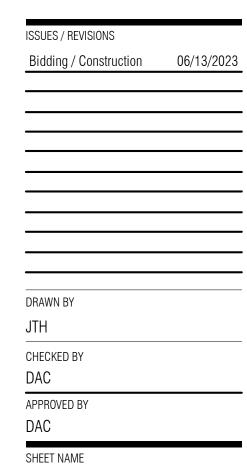
PROJECT NAME

Warren Civic Center South Fire Station #1

23211 Van Dyke Ave Warren, MI 48089

PROJECT NO.

21-146A



GROUND FLOOR FIRE PROTECTION PLAN

SHEET NO. M1-01



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2 EXTEND FIRE PROTECTION LINE TO KITCHEN HOOD, COORDINATE REQUIREMENTS WITH HOOD MANUFACTURER.

3 FINAL LOCATION OF FDC TO BE COORDINATED WITH THE AHJ.

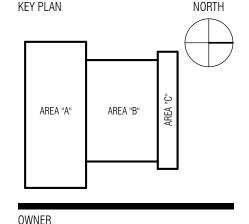
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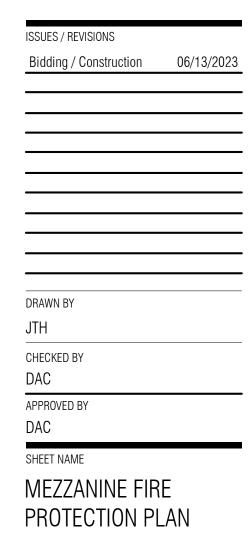
PROJECT NAME

Warren Civic Center South Fire Station #1

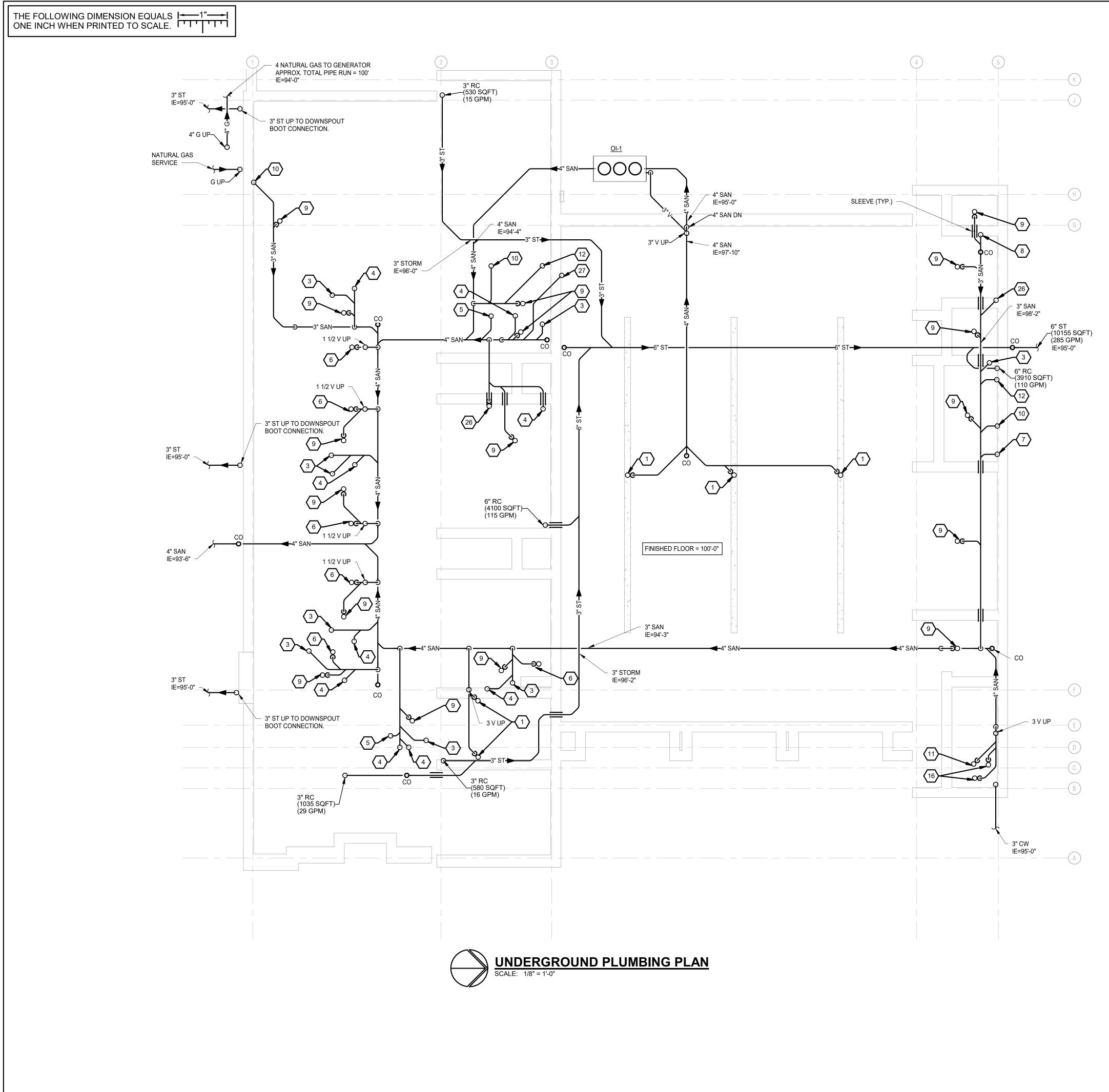
23211 Van Dyke Ave Warren, MI 48089

PROJECT NO.

21-146A



SHEET NO. M1-02



# **PLUMBING GENERAL NOTES:**

1 THESE DRAWINGS ARE DIAGRAMMATIC, AND REPRESENT THE GENERAL INTENT AND ARRANGEMENT OF SYSTEMS. THEY ARE NOT TO BE CONSIDERED FABRICATION/COORDINATION/SHOP DRAWINGS. COORDINATION WITH OTHER TRADES IS REQUIRED. PROVIDE THE ADDITIONAL FITTINGS AND OFFSETS THAT WILL BE REQUIRED TO COMPLETE EACH SYSTEM AND TO AVOID INTERFERENCES WITH ALL OTHER SYSTEMS INCLUDING THE STRUCTURE, SHEET METAL, OTHER PIPING SYSTEMS, ELECTRICAL CONDUITS, BUS DUCTS, CABLE TRAY, LIGHT FIXTURES, ETC. AND/OR OTHER SPACE CONSTRAINTS.

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5 PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL SYSTEMS.

6 REFER TO ARCHITECTURAL PLANS FOR DIMENSIONED LOCATIONS OF PLUMBING FIXTURES.

7 HOT AND COLD WATER PIPING RUN-OUTS TO LAVATORIES AND SINKS SHALL BE 1/2" UNLESS OTHERWISE NOTED.

8 PLUMBING VENT PIPING THROUGH ROOF SHALL BE LOCATED A MINIMUM OF 10'-0" FROM ANY FRESH AIR INTAKE LOCATION AND A MINIMUM OF 18" CLEAR FROM THE INSIDE FACE OF PARAPET.

9 PROVIDE CODE REQUIRED CLEARANCE FOR ALL CLEANOUTS INSTALLED IN SANITARY WASTE AND VENT PIPING.

10 MINIMUM UNDERGROUND PIPE SIZE SHALL BE 3".

11 WATER SERVICE ENTRANCE PIPING SHALL BE BURIED WITH DEPTH OF COVER OVER TOP OF PIPE OF AT LEAST 72", OR WITH TOP OF PIPE AT LEAST 12" BELOW LEVEL OF MAXIMUM FROST PENETRATION, OR AS REQUIRED BY AUTHORITIES HAVING JURISDICTION, WHICHEVER IS

# **CONSTRUCTION KEY NOTES:**

1 4 SAN TO TRENCH DRAIN.

DEEPEST.

2 1 1/4 GAS TO WATER HEATER.

3 4 SAN TO WATER CLOSET.

4 3 SAN TO LAV(S).

5 3 SAN TO ELECTRIC WATER COOLER.

6 3 SAN TO SHOWER.

7 3 SAN TO WASHER EXTRACTOR.

8 3 SAN TO 3-COMPARTMENT SINK.

9 3 SAN TO FLOOR SINK/DRAIN.

10 3 SAN TO SINK.

11 4 SAN TO FLOOR DRAIN.

12 3 SAN TO WASHING MACHINE SUPPLY AND DRAIN BOX.

13 2 NPCW CAPPED FOR LAWN IRRIGATION.

14 ROUTE 1 1/4 NATURAL GAS TO RANGE (PROVIDED BY OWNER).

15 ROUTE 1 1/4 NATURAL GAS TO BOILER.

16 4 SAN TO HUB OUTLET.

SHEET M6-06.

17 ROUTE 1/2 CW TO ELECTRIC WATER COOLER.

18 1 1/4 GAS CAPPED FOR FUTURE GRILL.

19 ROUTE 3/4 NATURAL GAS TO DRYER, INCLUDE NATURAL GAS REGULATOR IN VERTICAL PIPING. REFER TO NATURAL GAS PIPING DIAGRAM ON

20 ROUT 1/2 CW TO COFFE MAKER/REFRIGERATOR.

21 ROUTE 1/2 CW, HW, & HWR TO LAV(S).

22 ROUTE 1 1/4 NATURAL GAS TO RANGE, INCLUDE ELECTRONIC SOLENOID WIRED TO EMERGENCY GAS SHUT OFF BUTTON. REFER TO NATURAL GAS PIPING DIAGRAM ON SHEET M6-06.

23 ROUTE 1 1/4 NATURAL GAS TO INFRA-RED HEATER.

24 3 V UP TO 3 VTR.

25 ROUTE 1 1/4 NATURAL GAS TO SNOWMELT SYSTEM.

26 3 SAN TO SERVICE SINK.

27 4 SAN TO MEZZANINE LEVEL.

28 ROUTE VENT, CW, & HW IN CABINETRY TO SINK TO AVOID WINDOW.

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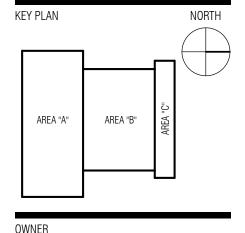
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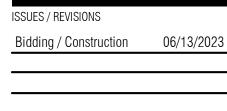
PROJECT NAME

Warren Civic Center South Fire Station #1

23211 Van Dyke Ave Warren, MI 48089

PROJECT NO.

21-146A



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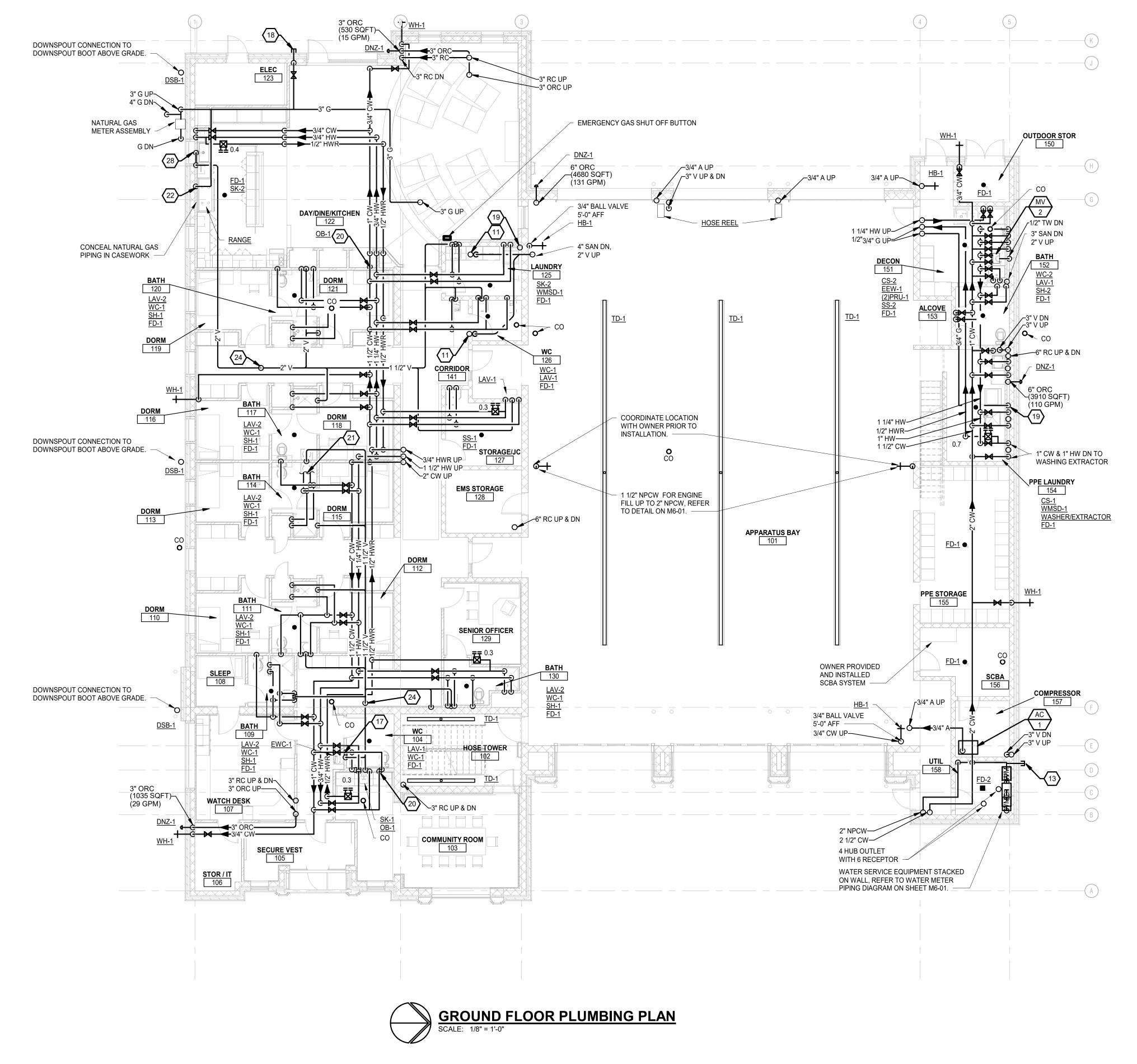
JTH

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APPROVED BY

DAC

SHEET NAME UNDERGROUND PLUMBING PLAN

SHEET NO. M2-00 

# **PLUMBING GENERAL NOTES:**

1	THESE DRAWING CONSIDERED FA FITTINGS AND OI INCLUDING THE ETC. AND/OR OT
2	INSTALL SYSTEM ELECTRICAL EQU
3	PIPING SHALL NO
4	COORDINATE AN REQUIRE SERVIO
5	PROVIDE SUPPL
6	REFER TO ARCH
7	HOT AND COLD \
8	PLUMBING VENT OF 18" CLEAR FR

- DEEPEST.

1	4 SAN TO TREM
2	1 1/4 GAS TO W
3	4 SAN TO WAT
4	3 SAN TO LAV(
5	3 SAN TO ELEC
6	3 SAN TO SHO
7	3 SAN TO WAS
8	3 SAN TO 3-CO
9	3 SAN TO FLOC
10	3 SAN TO SINK
11	4 SAN TO FLOC
12	3 SAN TO WAS
13	2 NPCW CAPPE
14	ROUTE 1 1/4 NA
15	ROUTE 1 1/4 N/
16	4 SAN TO HUB
17	ROUTE 1/2 CW
18	1 1/4 GAS CAPF
19	ROUTE 3/4 NAT SHEET M6-06.
20	ROUT 1/2 CW T
21	ROUTE 1/2 CW
22	ROUTE 1 1/4 N/ NATURAL GAS
23	ROUTE 1 1/4 N
24	3 V UP TO 3 VT

- 26 3 SAN TO SERVICE SINK.

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WATER HEATER.

TER CLOSET.

/(S).

CTRIC WATER COOLER.

WER.

SHER EXTRACTOR.

COMPARTMENT SINK.

OOR SINK/DRAIN.

n.

OOR DRAIN.

ASHING MACHINE SUPPLY AND DRAIN BOX.

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NATURAL GAS TO RANGE (PROVIDED BY OWNER).

NATURAL GAS TO BOILER.

B OUTLET.

V TO ELECTRIC WATER COOLER.

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TR

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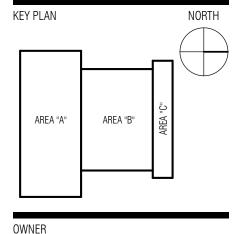
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City of Warren

# PROJECT NAME

Warren Civic Center South Fire Station #1

23211 Van Dyke Ave Warren, MI 48089

PROJECT NO.

ISSUES / REVISIONS		
Bidding / Construction	06/1	

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JTH

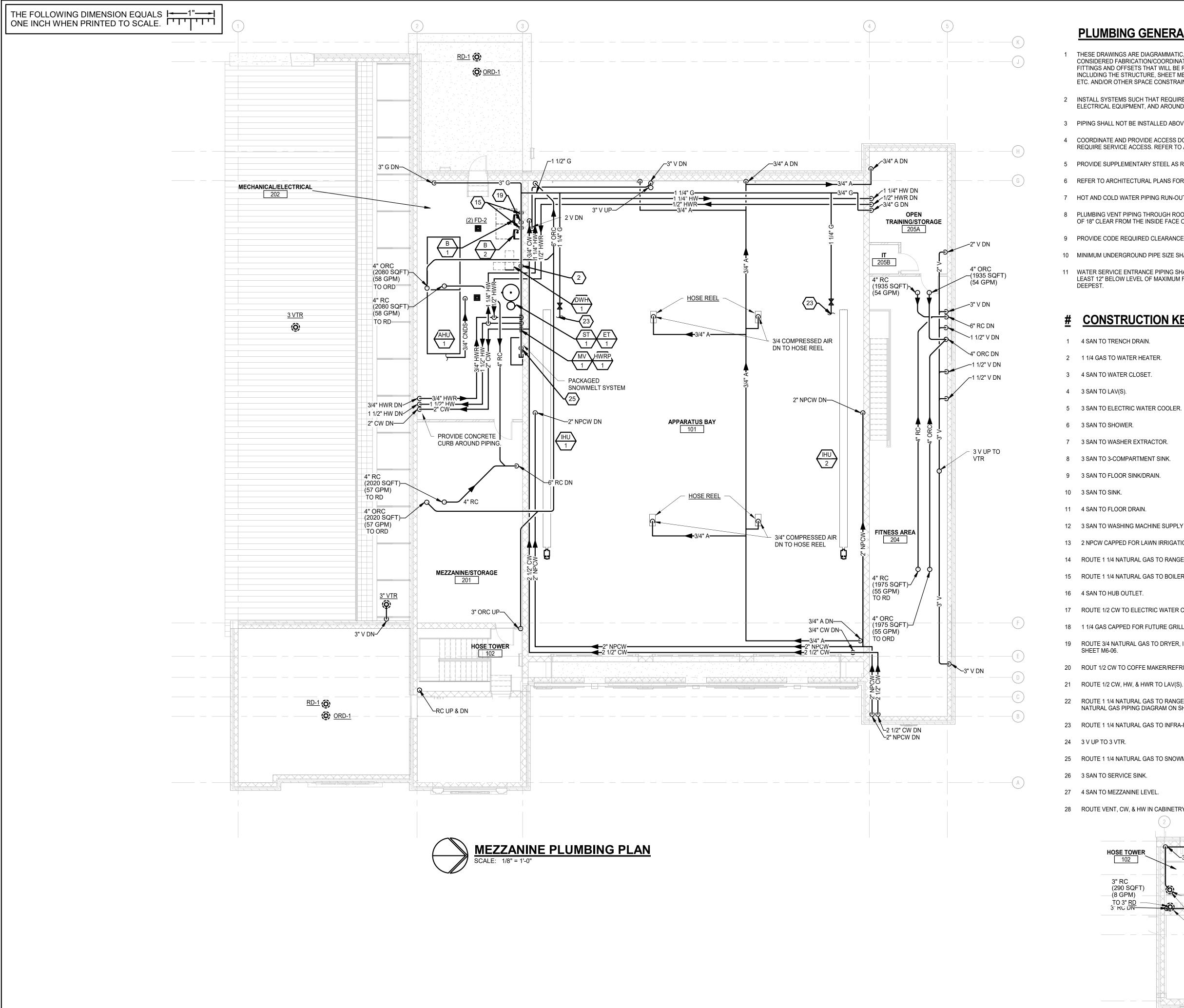
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DAC

SHEET NAME GROUND FLOOR PLUMBING PLAN

SHEET NO. M2-01





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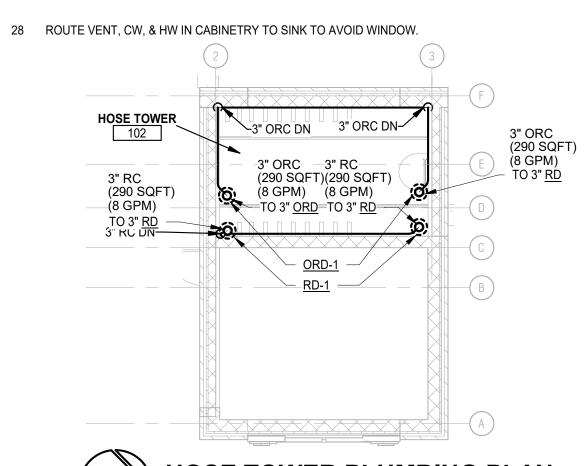
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25 ROUTE 1 1/4 NATURAL GAS TO SNOWMELT SYSTEM.



**HOSE TOWER PLUMBING PLAN** SCALE: 1/8" = 1'-0"

# PARTNERS



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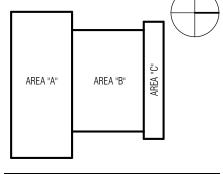
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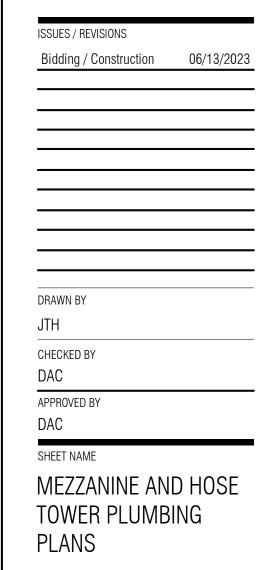
PROJECT NAME

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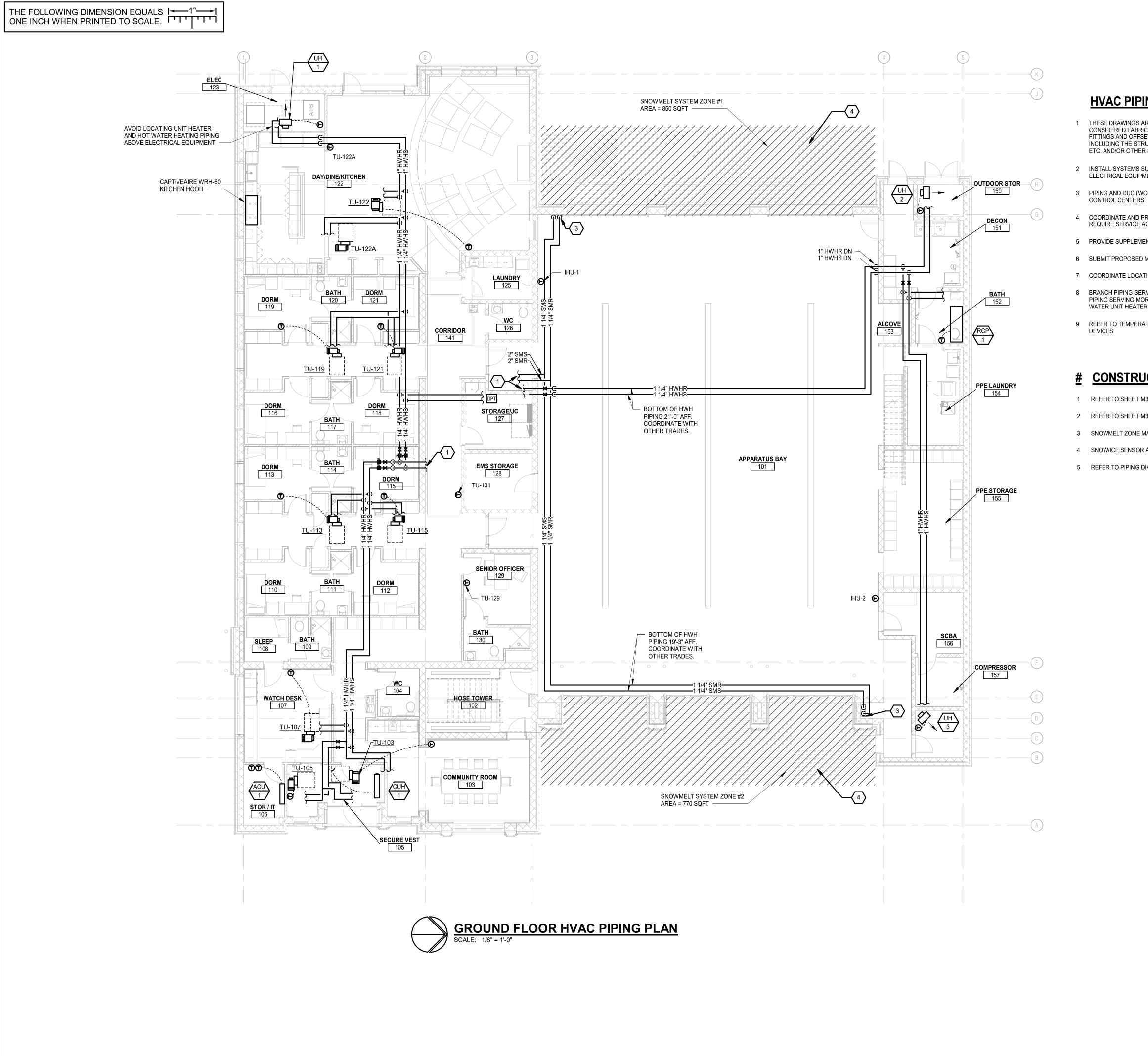
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PROJECT NO.

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SHEET NO. M2-02



# **HVAC PIPING GENERAL NOTES:**

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6 SUBMIT PROPOSED METHODS OF ANCHORING AND GUIDING PIPING SYSTEMS TO STRUCTURAL ENGINEER FOR APPROVAL.

7 COORDINATE LOCATION OF DUCT-MOUNTED HYDRONIC DEVICES WITH SHEET METAL TRADES.

8 BRANCH PIPING SERVING TERMINAL UNIT HEATING COILS OR RADIANT CEILING PANELS SHALL BE 3/4" UNLESS OTHERWISE NOTED. BRANCH PIPING SERVING MORE THAN ONE TERMINAL UNIT HEATING COIL SHALL BE 1" UNLESS OTHERWISE NOTED. BRANCH PIPING SERVING HOT WATER UNIT HEATERS AND CABINET UNIT HEATERS SHALL BE 1" UNLESS OTHERWISE NOTED.

9 REFER TO TEMPERATURE CONTROLS STANDARD MOUNTING HEIGHTS DETAIL FOR ELEVATIONS OF WALL MOUNTED TEMPERATURE CONTROL

# **CONSTRUCTION KEY NOTES:**

1 REFER TO SHEET M3-02 FOR CONTINUATION.

2 REFER TO SHEET M3-01 FOR CONTINUATION.

3 SNOWMELT ZONE MANIFOLD. COORDINATE EXACT LOCATION WITH OWNER PRIOR TO INSTALLATION.

4 SNOW/ICE SENSOR AND SLAB TEMPERATURE SENSOR. COORDINATE WITH TEMPERATURE CONTROLS CONTRACTOR.

5 REFER TO PIPING DIAGRAM FOR HOT WATER HEATING SYSTEM.



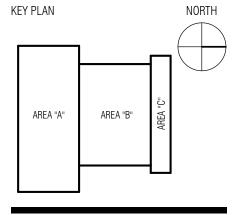
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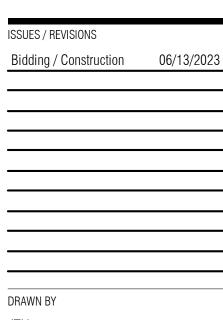
PROJECT NAME

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23211 Van Dyke Ave Warren, MI 48089

PROJECT NO.

21-146A



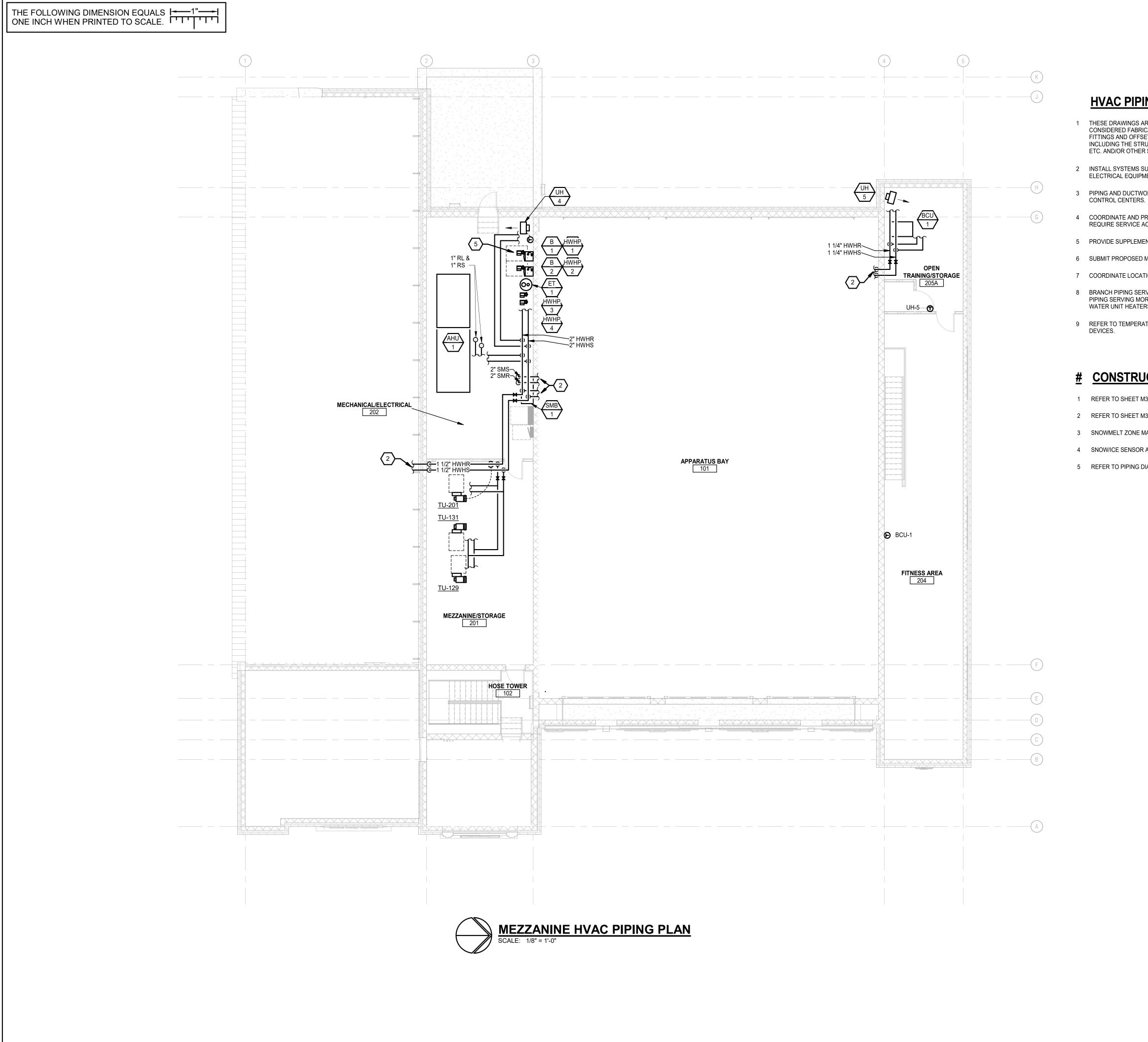
JTH

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DAC APPROVED BY

SHEET NAME GROUND FLOOR HVAC PIPING PLAN

SHEET NO. M3-01



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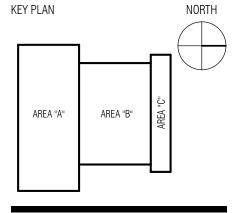
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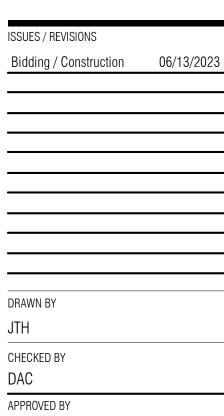
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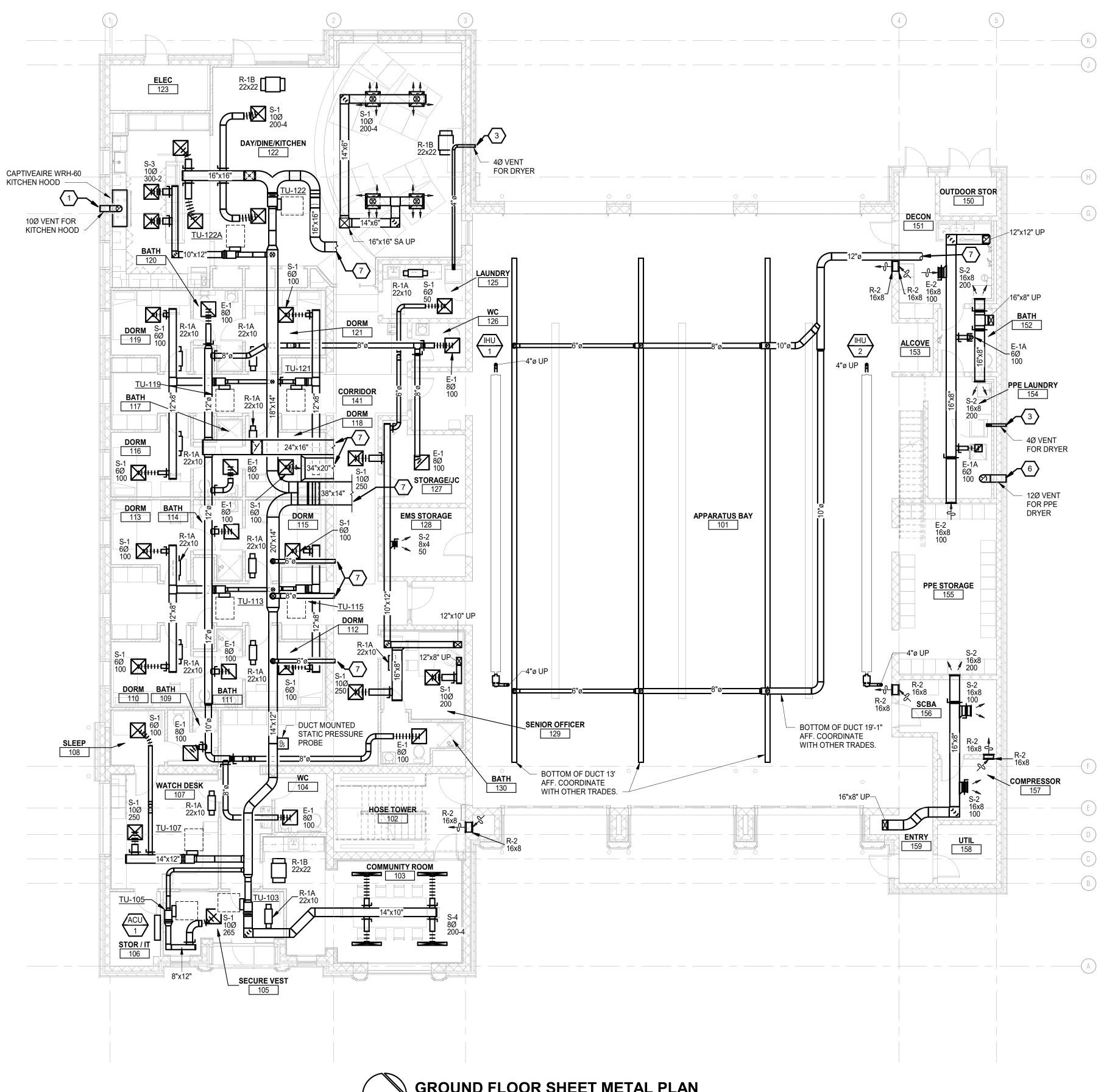
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SHEET NAME MEZZANINE HVAC

PIPING PLAN

SHEET NO. M3-02





- CONSTRAINTS.
- CENTERS.

DEVICES.

- 1 10" VENT CAP.
- 3 4" VENT CAP.

- 6 12" VENT CAP.
- 8 REFER TO SHEET M4-01 FOR CONTINUATION.

# **GROUND FLOOR SHEET METAL PLAN** SCALE: 1/8" = 1'-0"

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7 REFER TO TEMPERATURE CONTROLS STANDARD MOUNTING HEIGHTS DETAIL FOR ELEVATIONS OF WALL MOUNTED TEMPERATURE CONTROL

# # CONSTRUCTION KEY NOTES:

2 B-1 AND B-2 HAVE 3" INTAKE AND 3" FLUE UP THROUGH ROOF.

4 SMB-1 HAS 4" INTAKE AND 4" FLUE UP THROUGH ROOF. 5 DWH-1 HAS 3" INTAKE AND 3" FLUE UP THROUGH ROOF.

7 REFER TO SHEET M4-02 FOR CONTINUATION.

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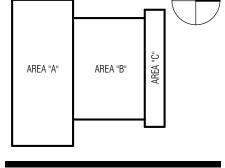
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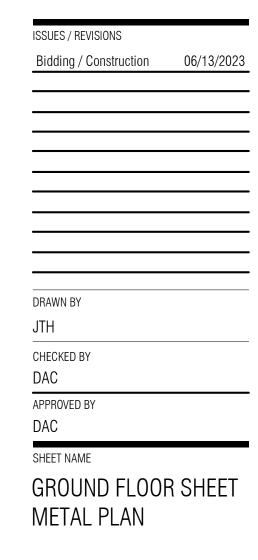
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Warren Civic Center South Fire Station #1

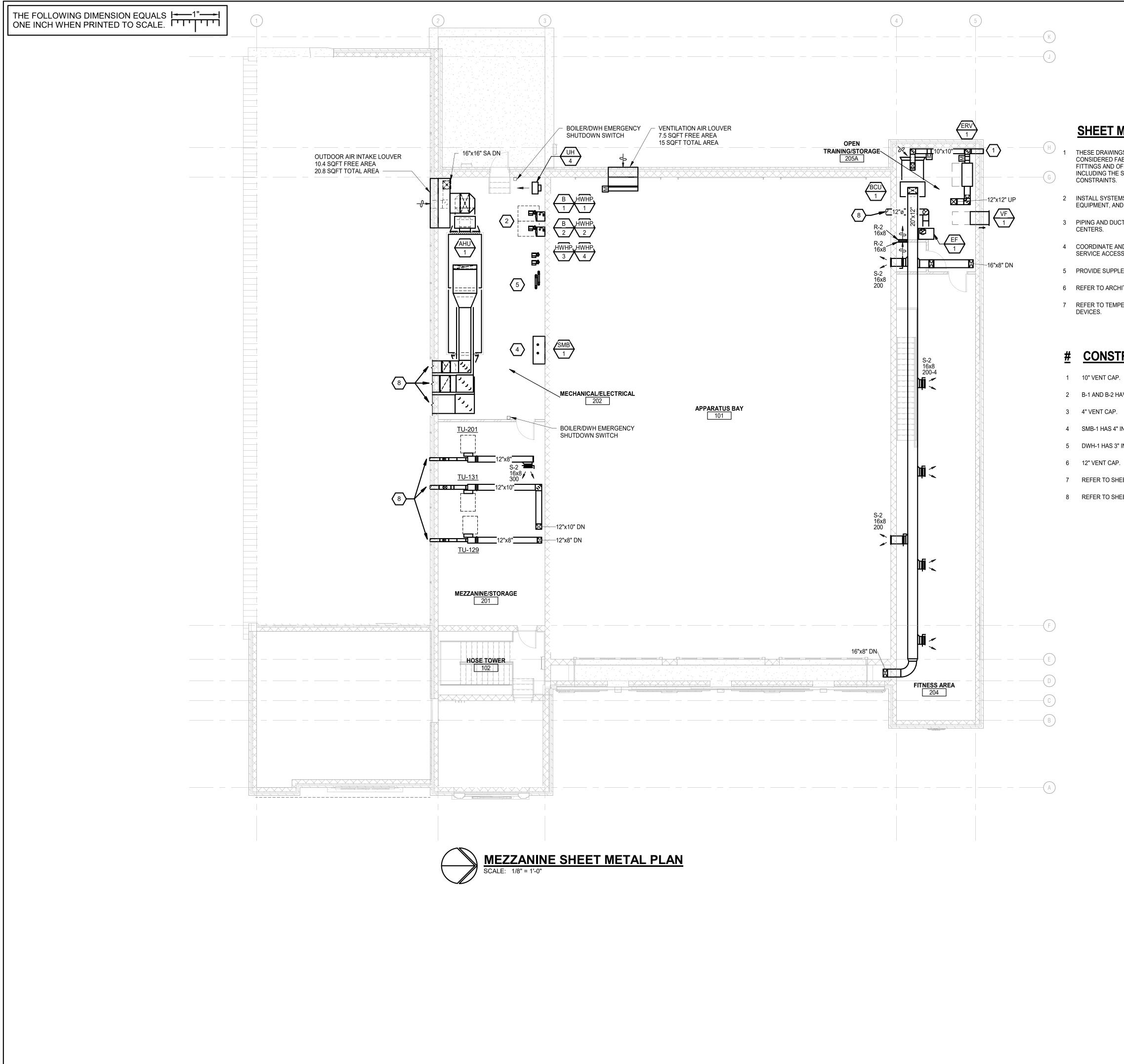
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PROJECT NO.

21-146A



SHEET NO. M4-01



# **SHEET METAL GENERAL NOTES:**

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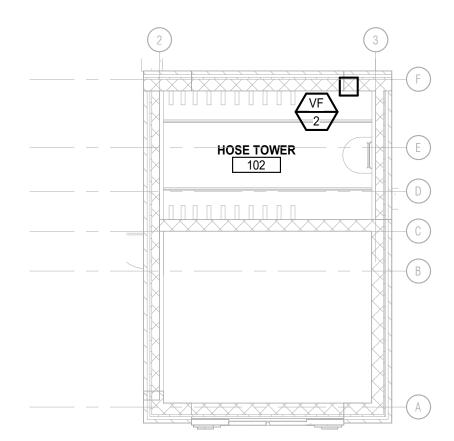
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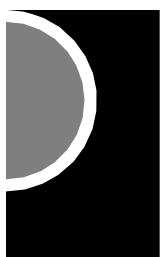
8 REFER TO SHEET M4-01 FOR CONTINUATION.





HOSE TOWER SHEET METAL PLAN SCALE: 1/8" = 1'-0"

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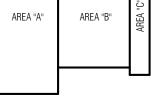
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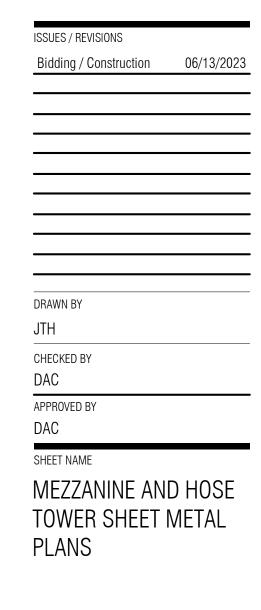
#### PROJECT NAME

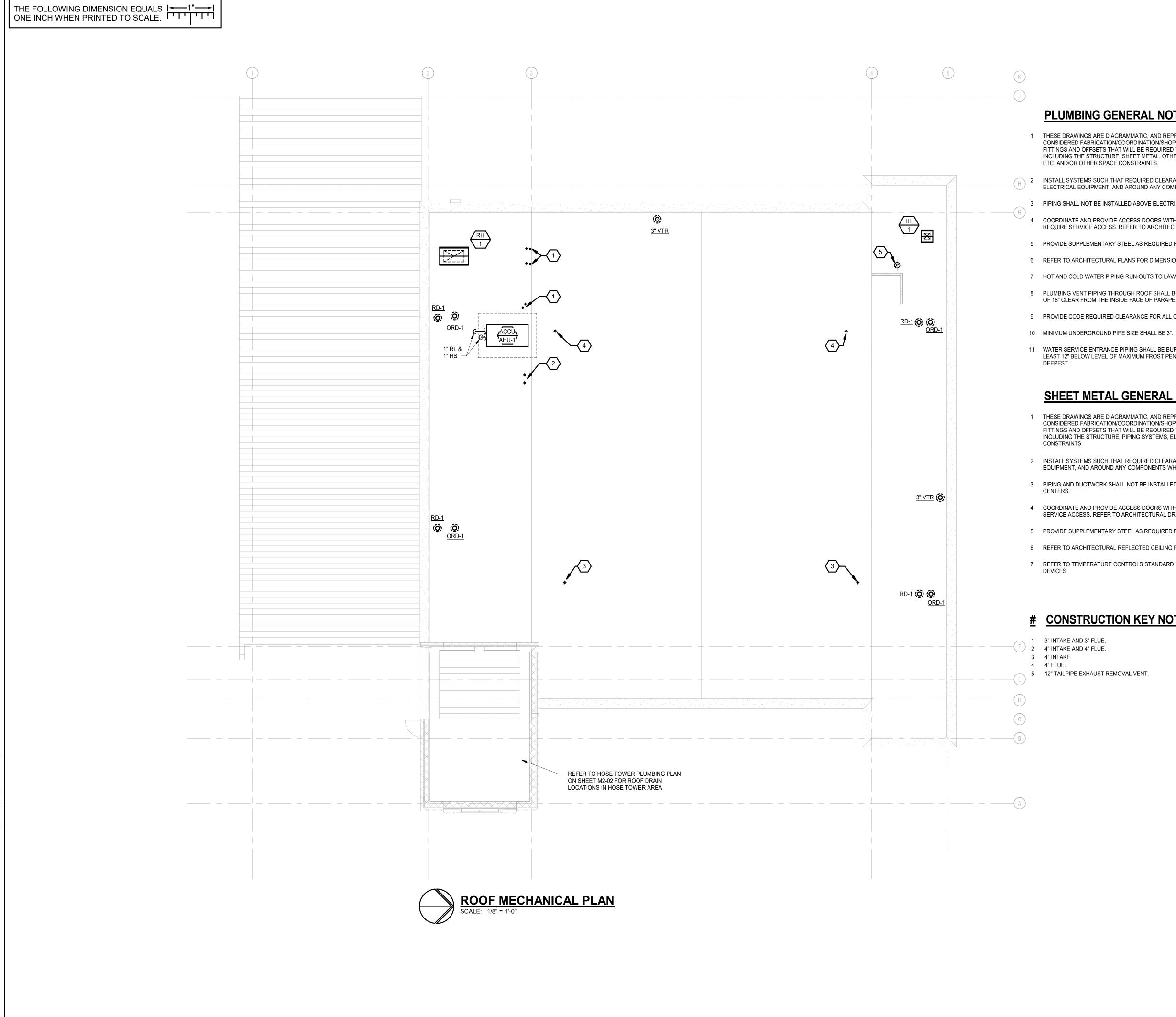
Warren Civic Center South Fire Station #1

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21	-1	4	64	ł
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## **PLUMBING GENERAL NOTES:**

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6 REFER TO ARCHITECTURAL PLANS FOR DIMENSIONED LOCATIONS OF PLUMBING FIXTURES.

7 HOT AND COLD WATER PIPING RUN-OUTS TO LAVATORIES AND SINKS SHALL BE 1/2" UNLESS OTHERWISE NOTED.

8 PLUMBING VENT PIPING THROUGH ROOF SHALL BE LOCATED A MINIMUM OF 10'-0" FROM ANY FRESH AIR INTAKE LOCATION AND A MINIMUM OF 18" CLEAR FROM THE INSIDE FACE OF PARAPET.

9 PROVIDE CODE REQUIRED CLEARANCE FOR ALL CLEANOUTS INSTALLED IN SANITARY WASTE AND VENT PIPING.

11 WATER SERVICE ENTRANCE PIPING SHALL BE BURIED WITH DEPTH OF COVER OVER TOP OF PIPE OF AT LEAST 72", OR WITH TOP OF PIPE AT LEAST 12" BELOW LEVEL OF MAXIMUM FROST PENETRATION, OR AS REQUIRED BY AUTHORITIES HAVING JURISDICTION, WHICHEVER IS

# **SHEET METAL GENERAL NOTES:**

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## **CONSTRUCTION KEY NOTES:**

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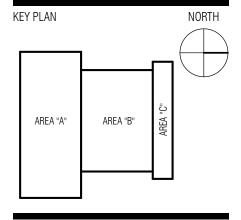
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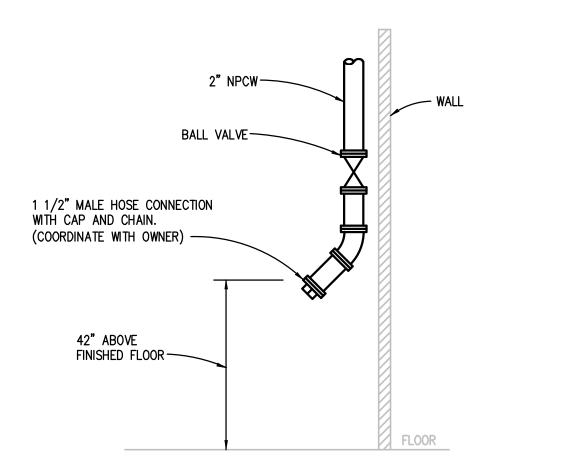
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**ROOF MECHANICAL** PLAN

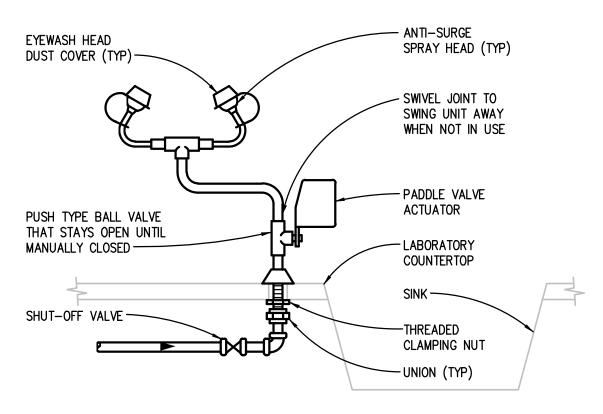


2 1/2" CW TO BUILDING-1/2 MALE CA QUICK CONNECT FITTING (FOR WINTER BLOW-OUT)-2 NPW CAP FOR LAWN IRRIGATION ON EXTERIOR OF BUILDING-2" SIZE REDUCED PRESSURE ZONE BACKFLOW PREVENTER WITH AIR GAP FITTING (2 @ 50%). ROUTE DRAIN TO NEÀREST FLÓOR DRAIN

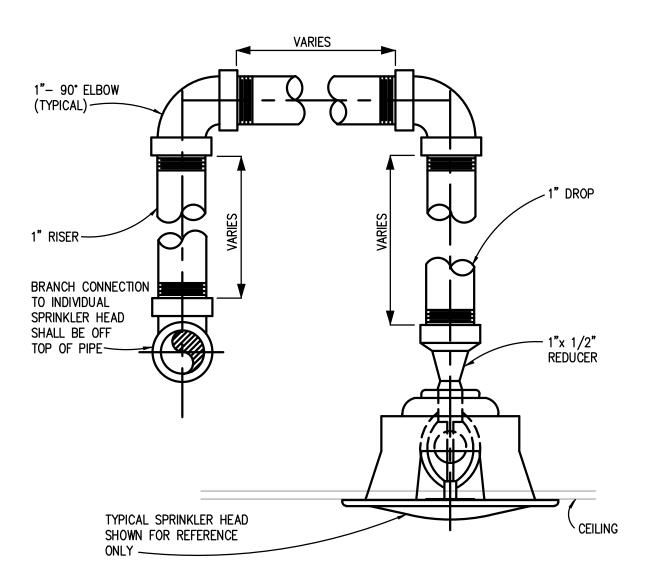
BUILDING INTERIOR WALL-

3/4 DRAIN VALVE WITH HOSE END.	/
2" NPW TO ENGINE FILL CONNECTIONS	
2" ENGINE FILL RPZ	

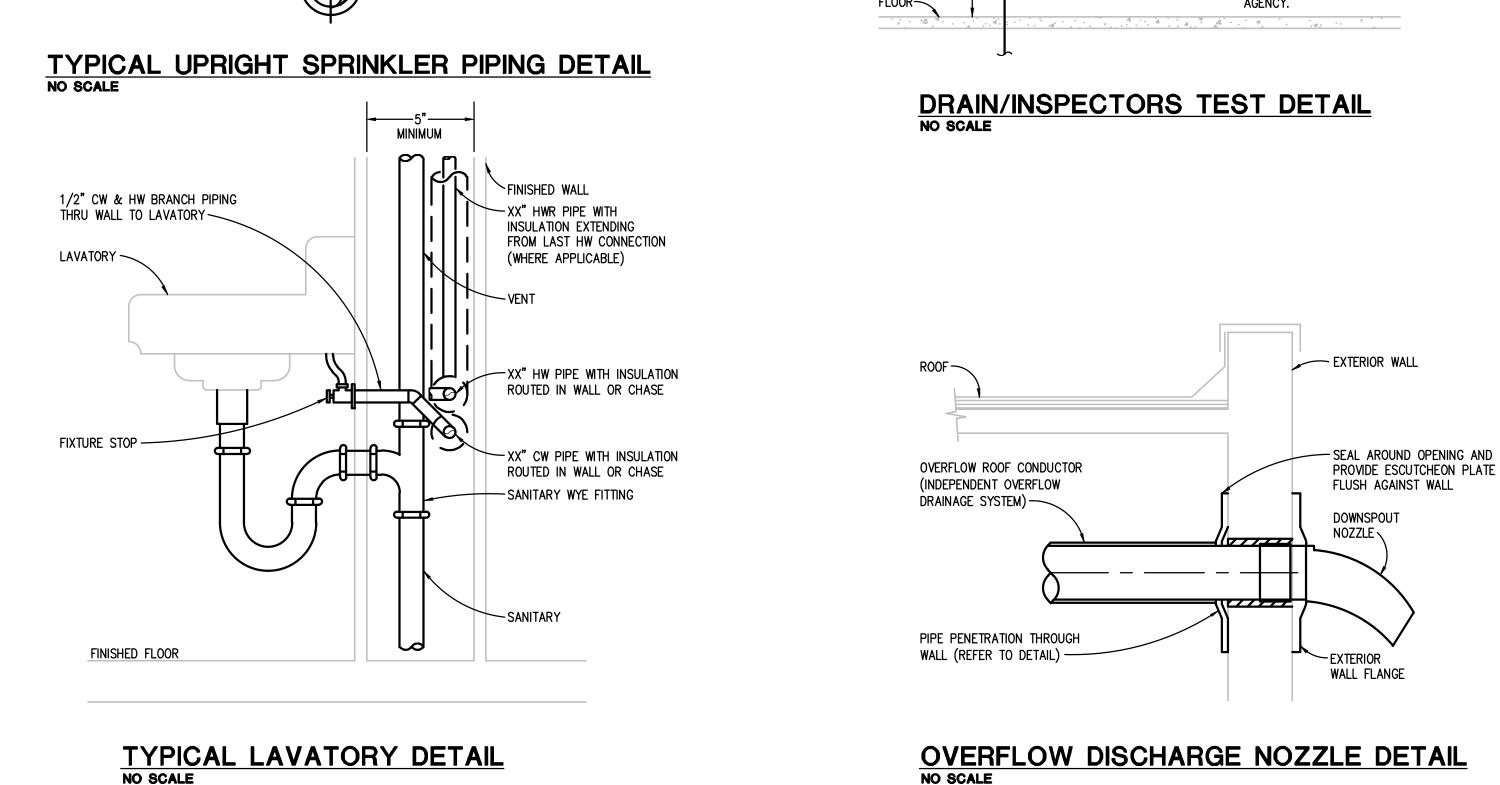
## ENGINE FILL PIPING DIAGRAM NO SCALE



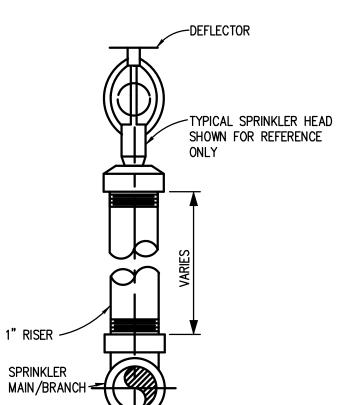
#### EMERGENCY EYEWASH PIPING DIAGRAM NO SCALE

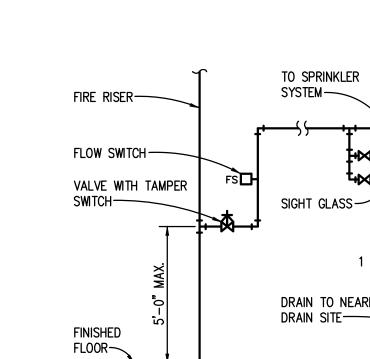


#### TYPICAL SPRINKLER PIPING DETAIL NO SCALE

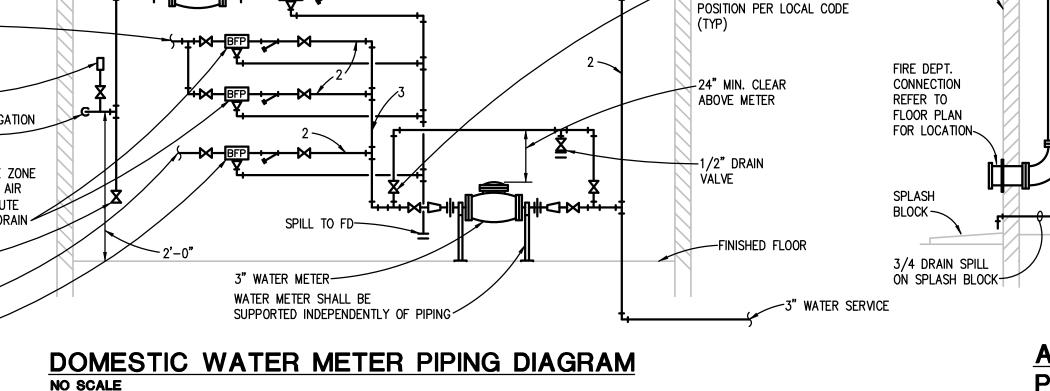








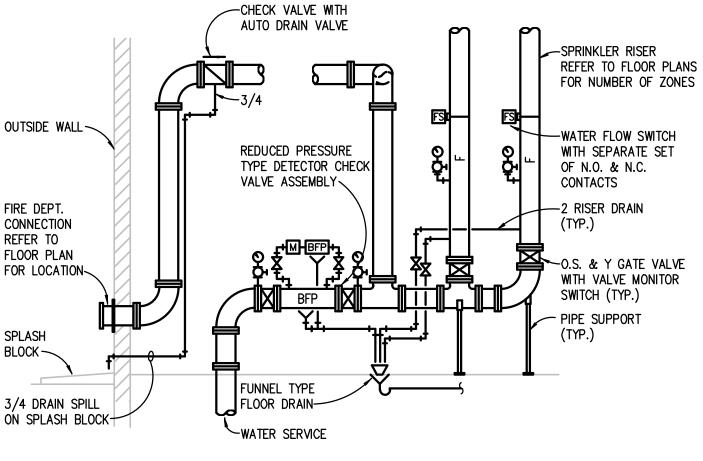
NO SCALE



BUILDING EXTERIOR WALL

BY-PASS VALVES SHALL

BE LOCKED IN THE CLOSED



1. FOR 4" AND LARGER WATER SERVICES SHALL BE ROLLED OFF AT A 45° ANGLE FROM CENTERLINE OF WATER METER.

2. ALL PIPING SHALL BE SUPPORTED INDEPENDENTLY

-2" LAWN IRRIGATION

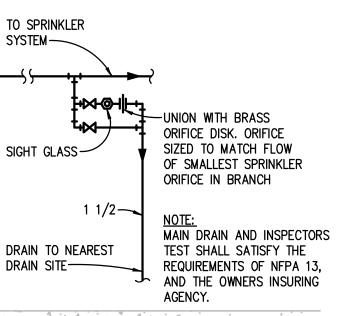
/LAWN IRRIGATION 2" RPZ

WITH AIR GAP FITTING

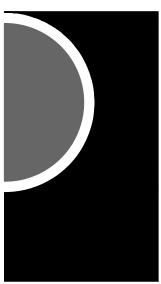
WATER METER

FROM WATER METER.

# AUTOMATIC SPRINKLER RISER **PIPING DIAGRAM**



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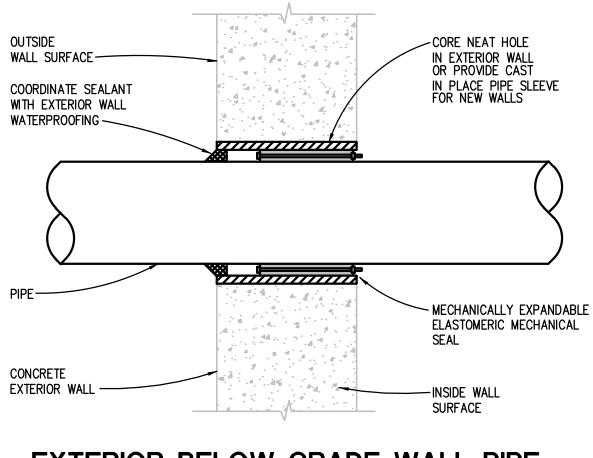
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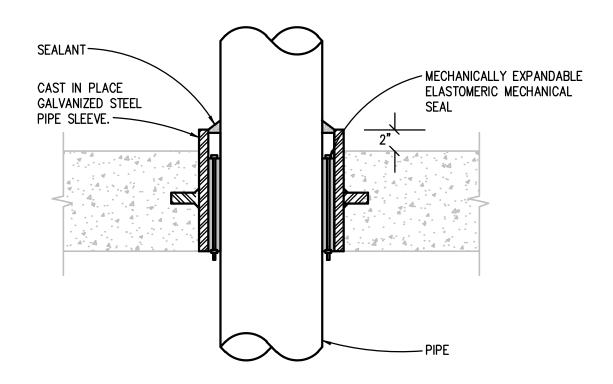
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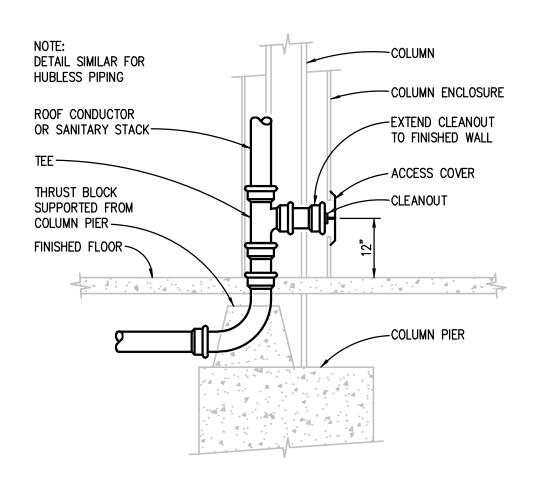
SHEET NAME MECHANICAL DETAILS



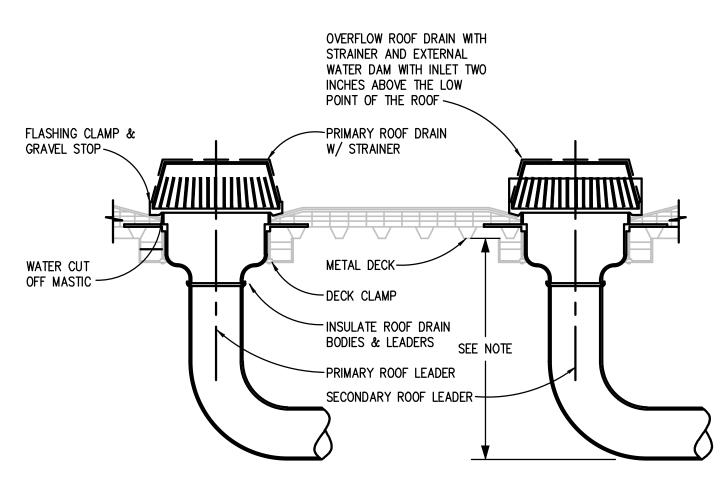
EXTERIOR BELOW GRADE WALL PIPE PENETRATION DETAIL NO SCALE



NEW SLAB ON GRADE FLOOR PIPE PENETRATION DETAIL NO SCALE

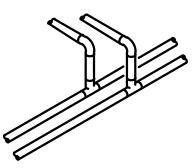




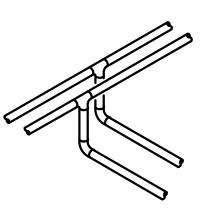


<u>NOTE:</u>

DOUBLE ROOF SUMP DETAIL NO SCALE



BRANCH CONNECTION OFF TOP APPLIES TO THE FOLLOWING SYSTEMS: DOMESTIC WATER COMPRESSED AIR NATURAL GAS



BRANCH CONNECTION OFF BOTTOM APPLIES TO THE FOLLOWING SYSTEMS: HOT WATER HEATING

NOTE: BOTTOM AS INDICATED OR SIDE CONNECTION IS ACCEPTABLE. CONNECTION ABOVE CENTERLINE OF MAINS IS NOT ACCEPTABLE.

TYPICAL BRANCH TAKE-OFF CONNECTION PIPING DETAIL NO SCALE

DIMENSION FOR 6" ROOF DRAIN FROM BOTTOM OF DECK TO BOTTOM OF PIPE SHALL BE MAXIMUM OF 20". DIMENSION FOR 8" ROOF DRAIN SHALL BE A MAXIMUM OF 22". DIMENSION FOR 10" ROOF DRAIN SHALL BE A MAXIMUM OF 26".

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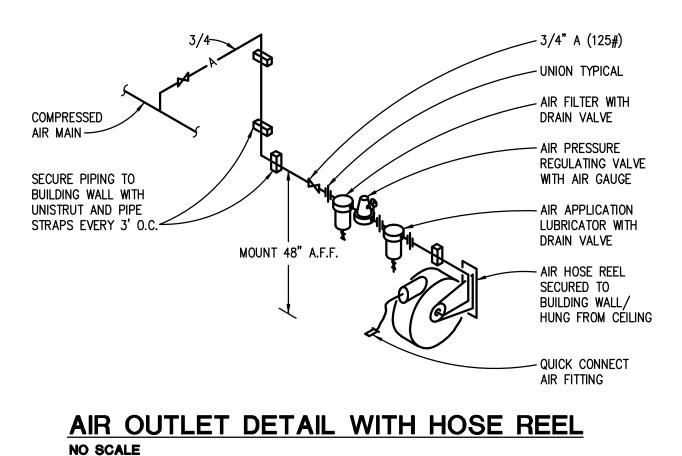
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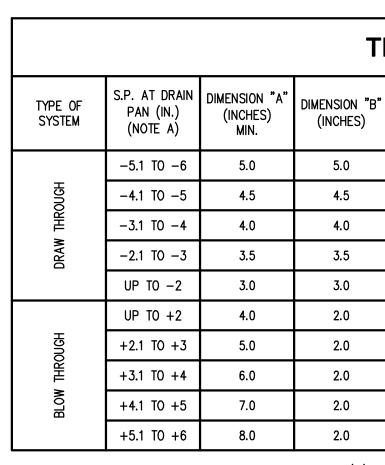
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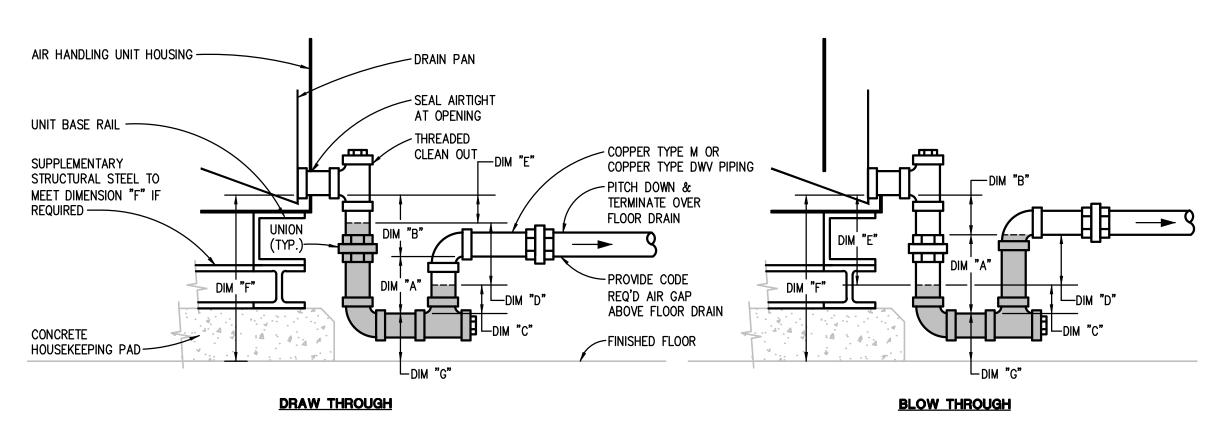
SHEET NAME MECHANICAL DETAILS





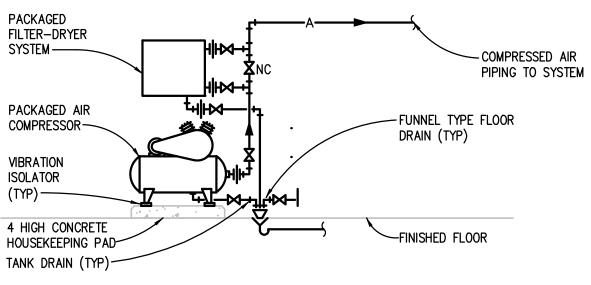
NOTES: A. REFER TO AIR HANDLING UNIT SCHEDULE FOR (-) OR (+) STATIC PRESSURE AT DRAIN PAN.

> B. DIMENSION "G" IS MIN: 3" FOR UP TO 1 1/2" DRAIN PIPE 4" FOR 2" DRAIN PIPE 5" FOR 2 1/2" OR 3" DRAIN PIPE 6" FOR 4" DRAIN PIPE

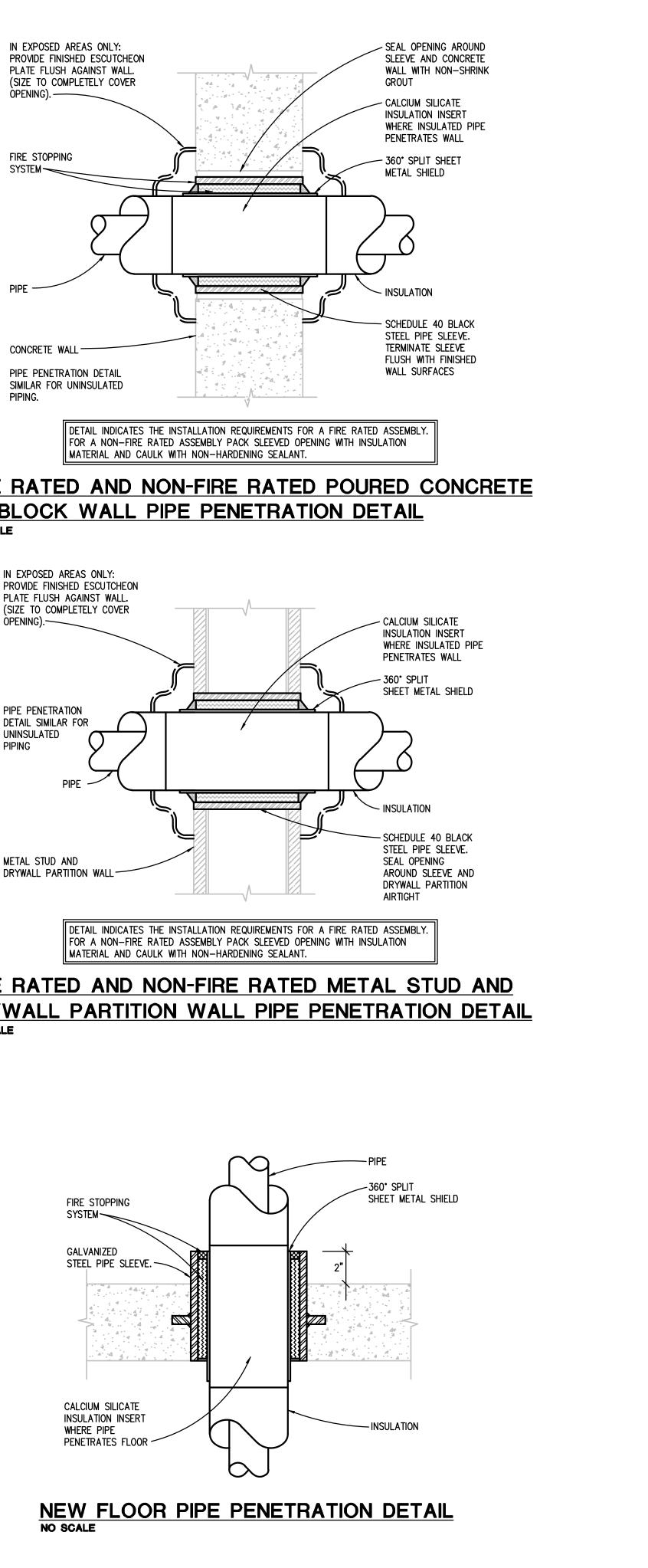


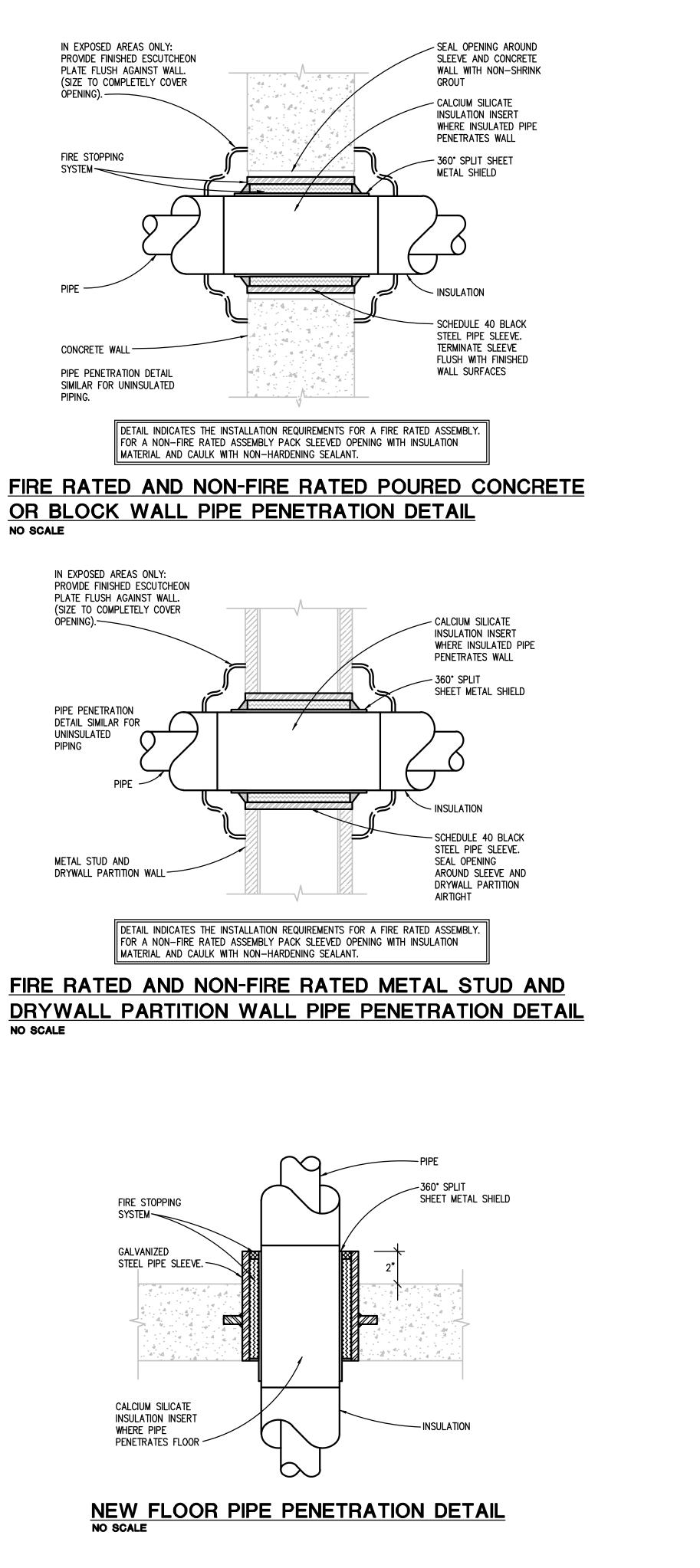
NO SCALE





## AIR COMPRESSOR PIPING DIAGRAM NO SCALE



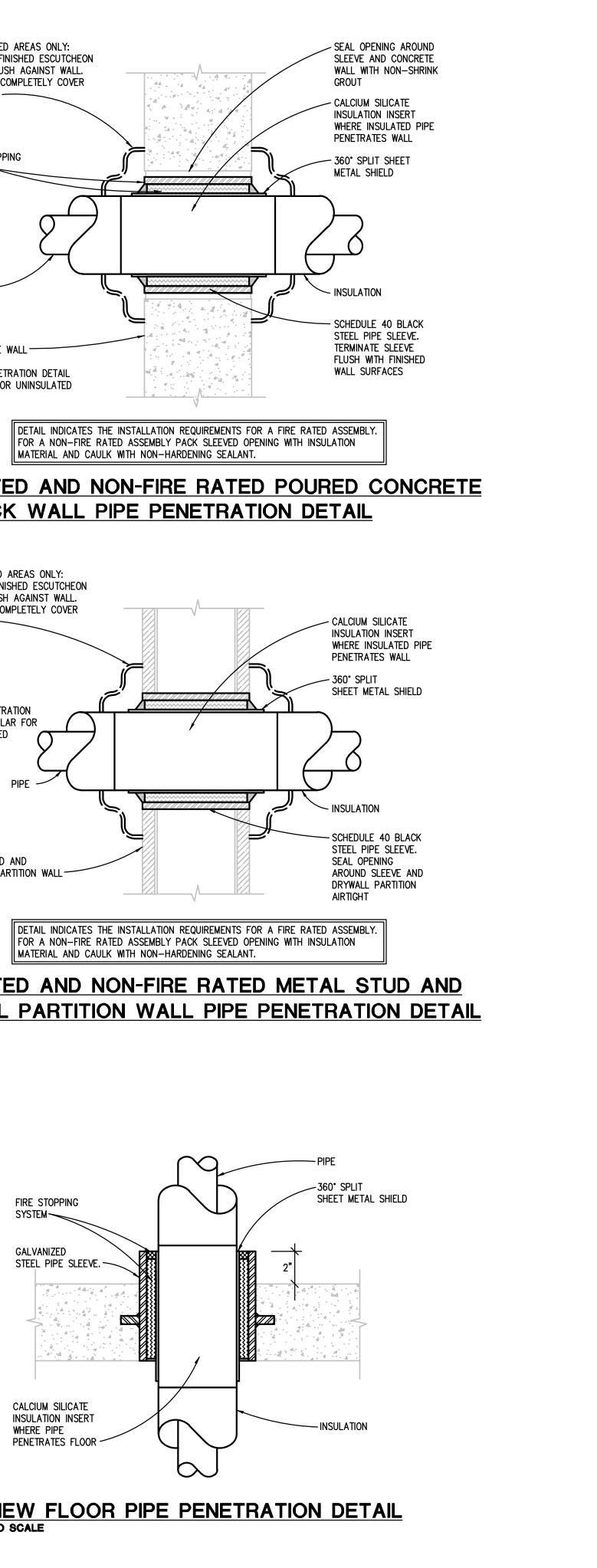


# NO SCALE

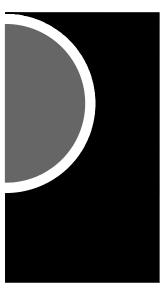
# TRAP DIMENSION TABLE

,	DIMENSION "C"			DIMENSION "F" (INCHES)									
	(INCHES)	DIMENSION "D" (INCHES)	DIMENSION "E" (INCHES)	DRAIN PIPE SIZE (INCHES)									
	(TRAP SEAL)	(), , , , , , , , , , , , , , , , , , ,		1 1/2	2	2 1/2, 3	4						
	2	6	2	13.0	14.0	15.0	16.0						
	2	5	2	12.0	13.0	14.0	15.0						
	2	4	2	11.0 12.0		13.0	14.0						
	2	3	2	10.0	10.0 11.0		13.0						
	2	2	2	9.0	10.0	11.0	12.0						
	2	2	4	9.0	10.0	11.0	12.0						
	2	3	5	10.0	11.0	12.0	13.0						
	2	4	6	11.0	12.0	13.0	14.0						
	2	5	7	12.0	13.0	14.0	15.0						
	2	6	8	13.0	14.0	15.0	16.0						

# **INDOOR AIR HANDLING UNIT CONDENSATE DRAIN PAN TRAP DETAIL**



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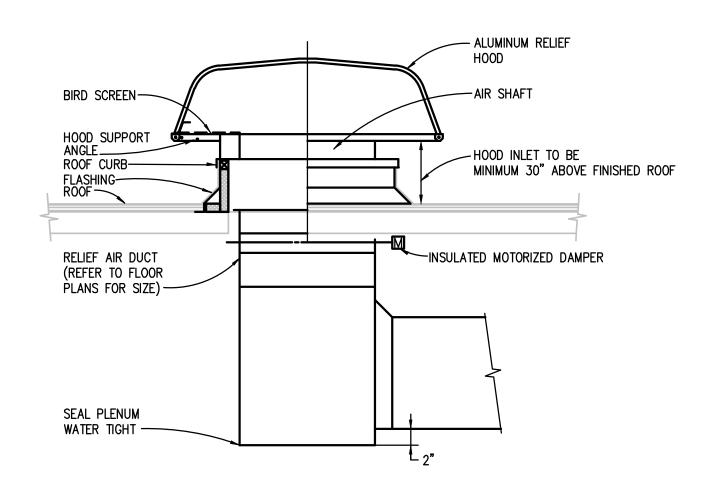
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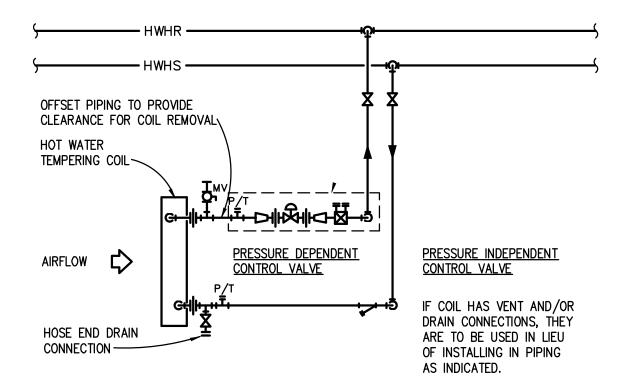
DAC

SHEET NAME MECHANICAL DETAILS

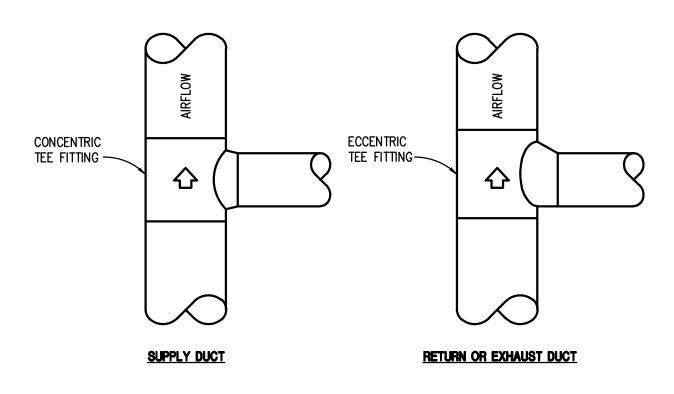


## DUCTED INTAKE OR RELIEF HOOD INSTALLATION DETAIL NO SCALE

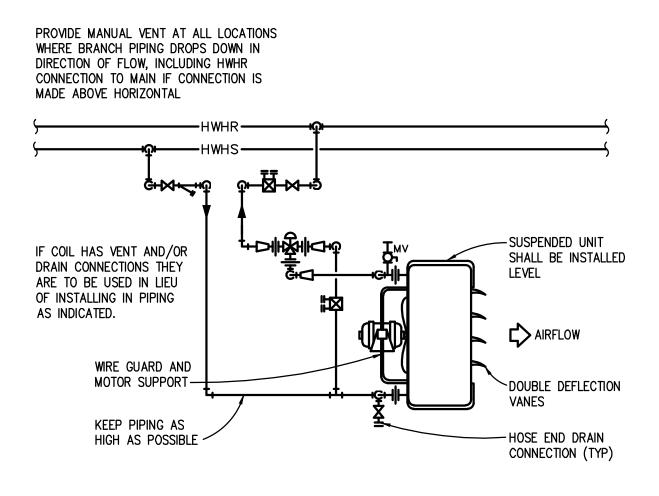
PROVIDE MANUAL VENT AT ALL LOCATIONS WHERE BRANCH PIPING DROPS DOWN IN DIRECTION OF FLOW, INCLUDING HWHR CONNECTION TO MAIN IF CONNECTION IS MADE ABOVE HORIZONTAL



HOT WATER TEMPERING COIL WITH TWO-WAY CONTROL VALVE PIPING DIAGRAM

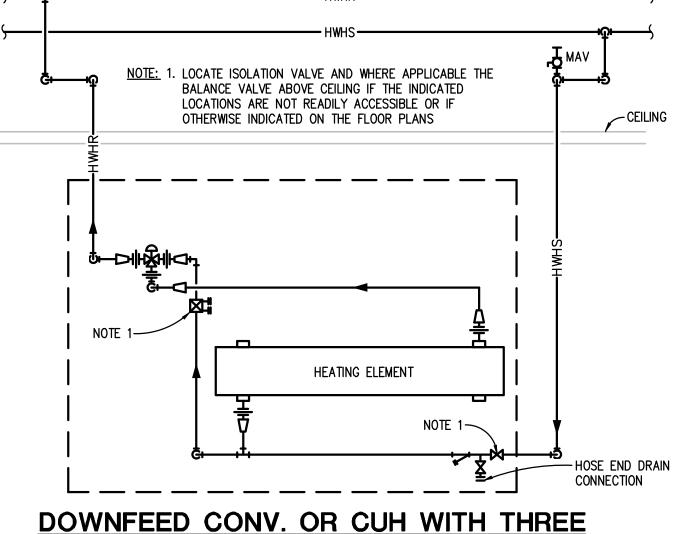


SPIRAL DUCT BRANCH TAKE-OFF DETAILS NO SCALE (ROUND AND FLAT OVAL SIMILAR)

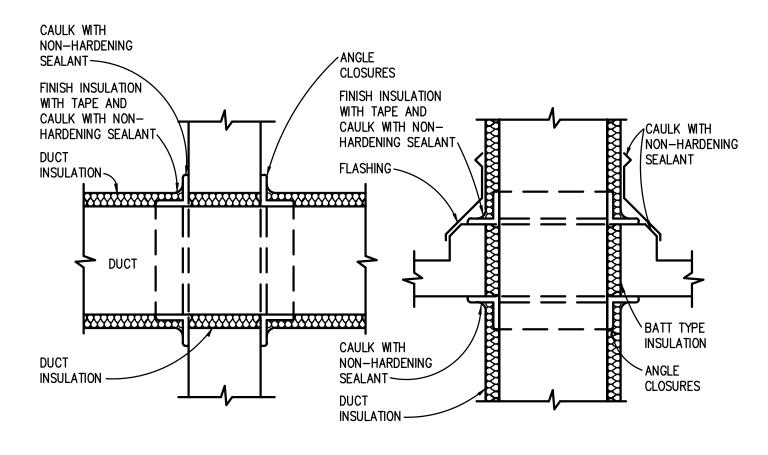


#### HOT WATER UNIT HEATER WITH THREE-WAY CONTROL VALVE PIPING DIAGRAM NO SCALE

PROVIDE MANUAL VENT AT ALL LOCATIONS WHERE BRANCH PIPING DROPS DOWN IN DIRECTION OF FLOW, INCLUDING HWHR CONNECTION TO MAIN IF CONNECTION IS MADE ABOVE HORIZONTAL



WAY CONTROL VALVE PIPING DIAGRAM NO SCALE



#### VERTICAL OR HORIZONTAL (NON FIRE RATED **ASSEMBLY) DUCT PENETRATION DETAIL** NO SCALE

X C X	EVICE IN S SHOWN	PROVIDE COMBINATION VALVE/FLOW MEASUR LIEU OF SEPARATE DI WHERE REQUIRED BY
		MULTIPLE COIL E PIPE SIZING SCH
WATER TING COIL	E IN.	INDIVIDUAL COIL FLOW GPM
MV	-	0 – 1.3 > 1.3 – 3.4
	/4	> 3.4 - 6.9 > 6.4 - 12.5
SET PIPING TO VIDE CLEARANCE COIL PULL (TYP)-	/2	> 12.5 - 19 > 19 - 44 > 44 - 69
I	/2	> 44 - 69

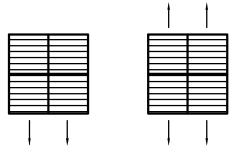
> 69 - 117

> 117 - 230

PROVIDE CLEARANCE FOR COIL PULL (TYP)-

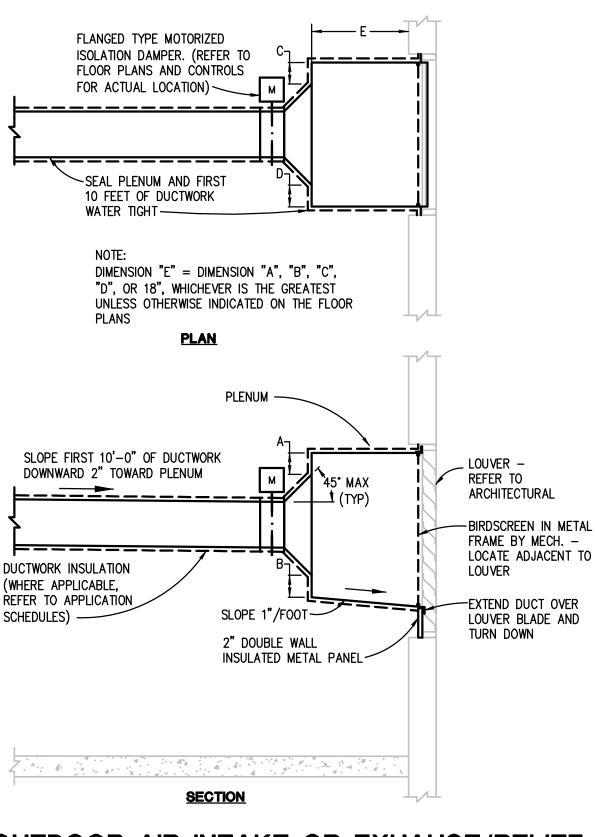
TO OTHER COILS IN COIL BANK -

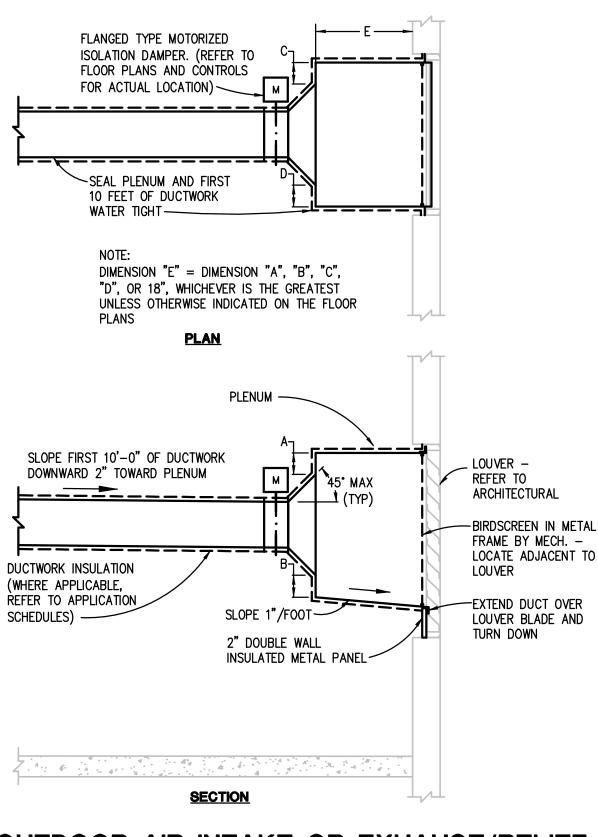
#### AHU HOT WATER HEATING COIL PIPING DIAGRAM #2 NO SCALE



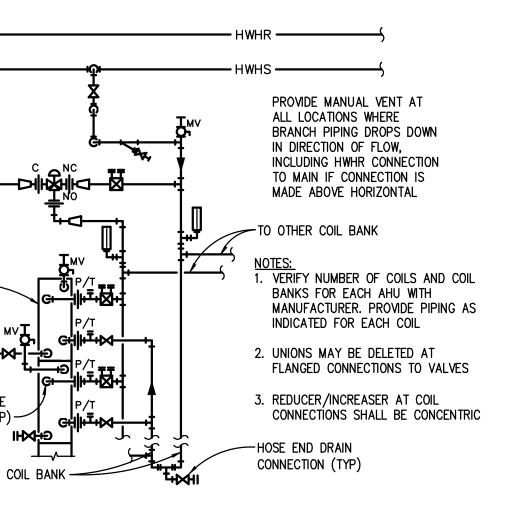
ONE-WAY THROW TWO-WAY THROW

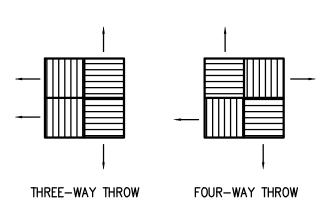
#### MODULAR CORE DIFFUSER ARRANGEMENT DETAIL NO SCALE





OUTDOOR AIR INTAKE OR EXHAUST/RELIEF PLENUM DETAIL NO SCALE

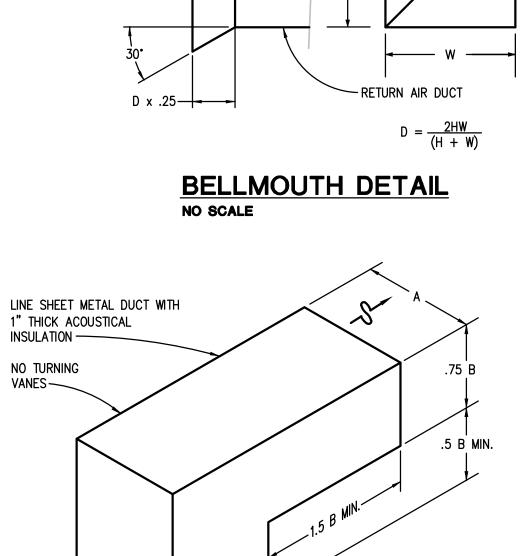




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PARTNERS

SHEET NO.	
	M6-04



-MINIMUM 1/2 THE GREATER OF H OR W TO OBSTRUCTION

BIRD SCREEN -----

1" THICK ACOUSTICAL

RETURN AIR GRILLE SEE

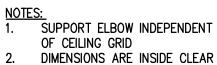
PLANS FOR SIZE AND TYPE

INSULATION ----

NO TURNING

VANES-

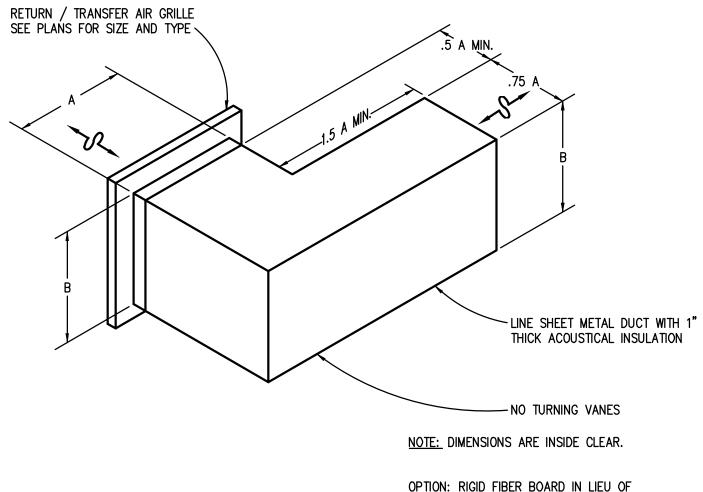
\_\_\_\\_►



<u>OPTIONS:</u>

- RETURN AIR CANOPY. GALVANIZED STEEL WITH ACOUSTIC FIBERGLASS LINER. UNIT SHALL BE BUILT TO THE RETURN GRILLE SIZE. AS
- MANUFACTURED BY PRICE INDUSTRIES-MODEL "RAC" OR OTHER APPROVED.
- 2. RIGID FIBER BOARD IN LIEU OF LINED SHEET METAL DUCT.

**CEILING GRILLE TO/FROM PLENUM** 

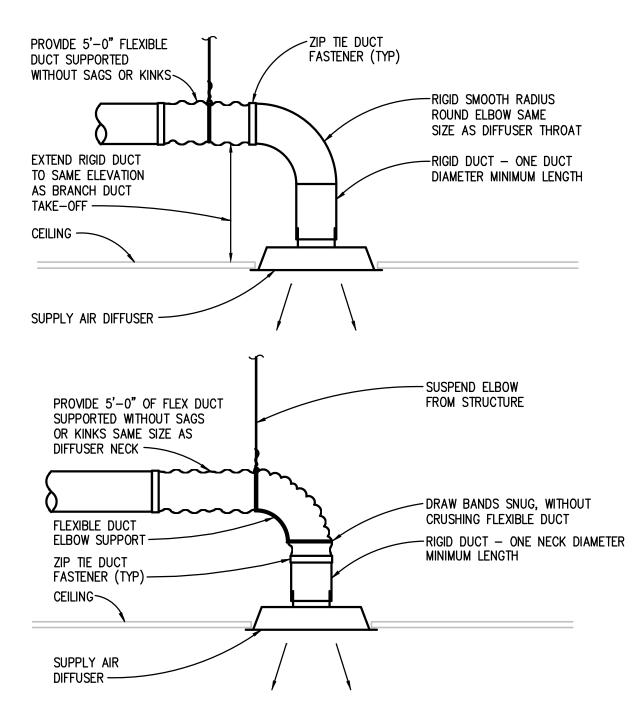


OPTION: RIGID FIBER BOARD IN LIEU OF LINED SHEET METAL DUCT.

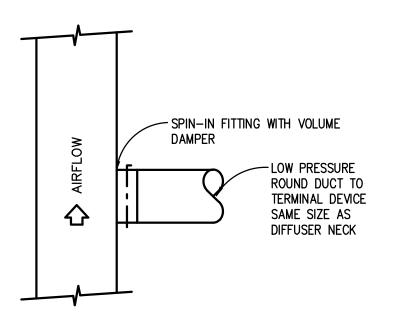
PLENUM TO / FROM WALL GRILLE

#### PLENUM RETURN AIR GRILLE DETAILS NO SCALE

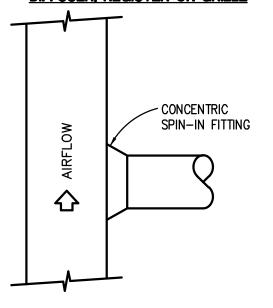




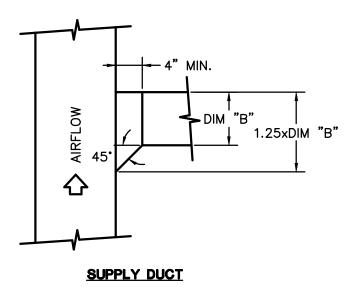


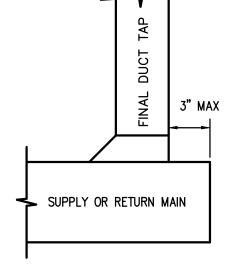


LOW PRESSURE INLET/OUTLET TO/FROM DIFFUSER, REGISTER OR GRILLE

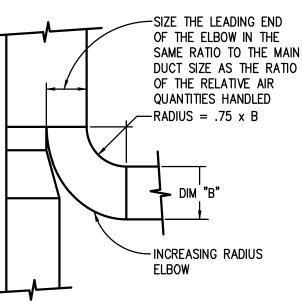


RECTANGULAR TO ROUND DUCT

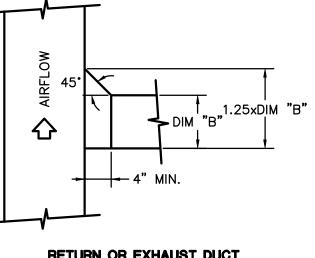




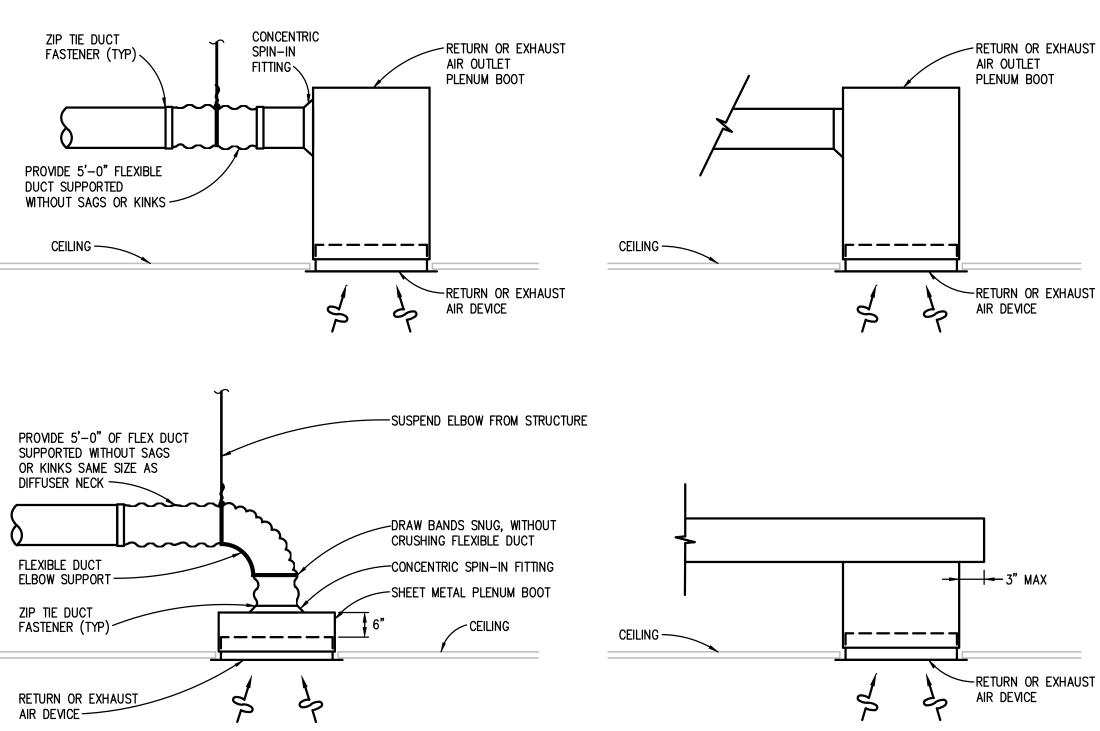
#### LOW PRESSURE END OF RUN



SUPPLY, RETURN OR EXHAUST DUCT FOR USE WHEN A BRANCH TAKE-OFF IS TO HANDLE MORE THAN 25% OF THE AIR HANDLED BY THE MAIN DUCT

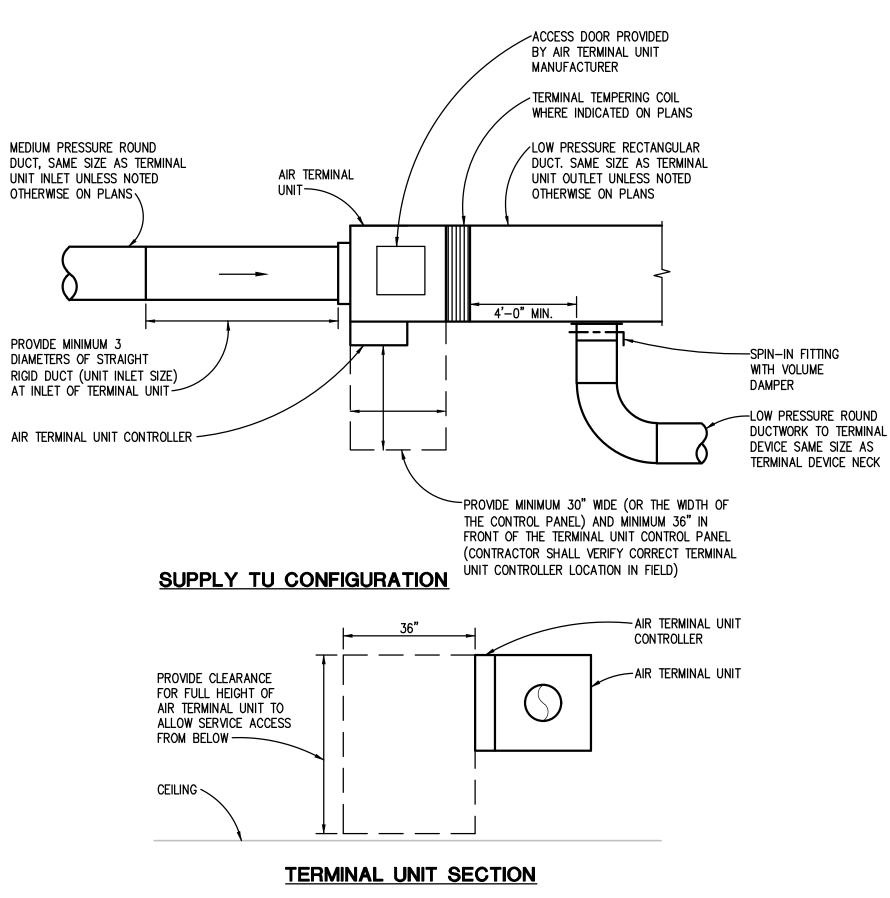


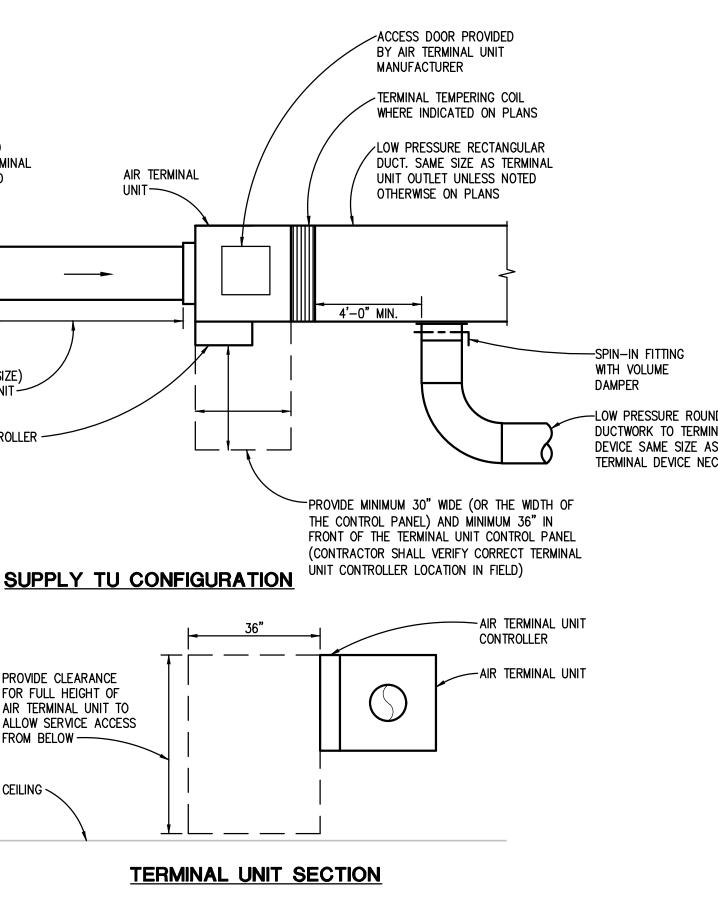




# **RETURN OR EXHAUST AIR DEVICE INSTALLATION DETAIL**

NO SCALE NOTE: PAINT INTERIOR SURFACE OF PLENUM BOX FLAT BLACK.







## **RECTANGULAR DUCT BRANCH TAKE-OFF DETAILS** NO SCALE

# AIR TERMINAL UNIT (TU) DETAIL

# -RETURN OR EXHAUST

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City Of Warren

## PROJECT NAME

OWNER

Warren Civic Center South Fire Station #1

23211 Van Dyke Ave Warren, MI 48089

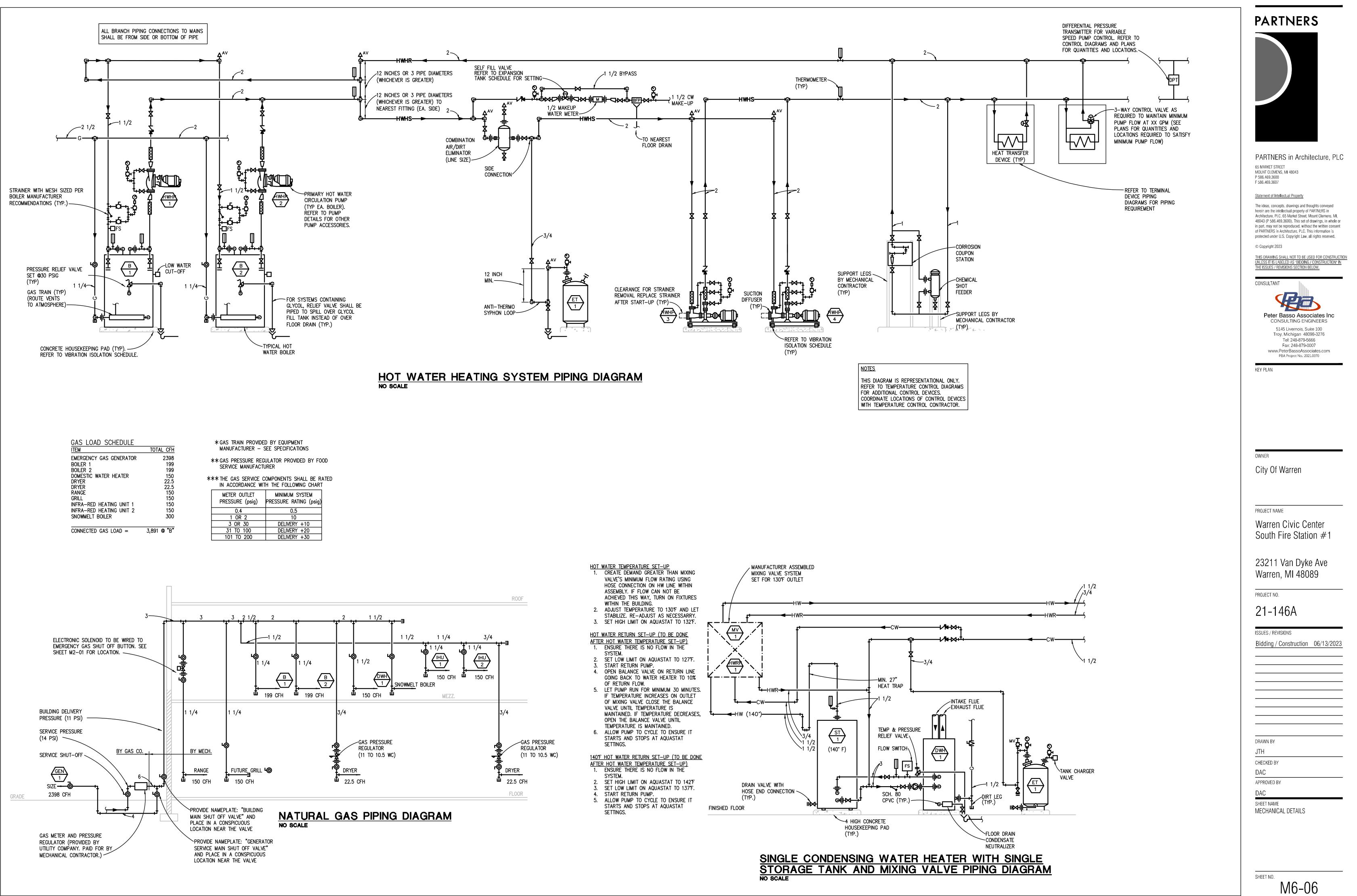
## PROJECT NO.

21-146A

**ISSUES / REVISIONS** Bidding / Construction 06/13/2023 DRAWN BY JTH CHECKED BY DAC APPROVED BY DAC SHEET NAME

SHEET NO. M6-05

MECHANICAL DETAILS



DUCT SYSTEM APPLICATION SCHEDULE																		
		DUCT MATERIAL																
AIR SYSTEMS	G90 GALV. SHEET METAL	DOUBLE-WALL LINED G90 GALV. SHEET METAL (SOLID INNER WALL)	DOUBLE-WALL LINED G90 GALV. SHEET METAL (PERF. INNER WALL)	G90 GALV. SHEET METAL WITH 1-INCH LINING	GALVANNEALED SHEET METAL	ALUMINUM	TYPE 304 STAINLESS STEEL	TYPE 316 STAINLESS STEEL	PVC COATED GALV. SHEET METAL (4X1)	PVC COATED GALV. SHEET METAL (1X4)	PVC COATED GALV. SHEET METAL (4X4)	16 GA. CARBON STEEL	ZERO-CLEARANCE PREFABRICATED RANGE HOOD EXHAUST DUCT	FABRIC	DESIGN PRESSURE CLASS (INCHES WG)	SEAL CLASS	MAX. ALLOWABLE LEAKAGE RATE (PERCENT)	KEYED NOTES
SUPPLY AIR WITHOUT TERMINAL UNITS	x														+2	A	5	
SUPPLY AIR UPSTREAM OF TERMINAL UNITS	x														+6	A	5	
SUPPLY AIR DOWNSTREAM OF TERMINAL UNITS	x														+2	Α	5	
RETURN AIR WITHOUT TERMINAL UNITS	х														-2	Α	5	
EXHAUST AIR WITHOUT TERMINAL UNITS	Х														-2	Α	5	
KITCHEN EXHAUST (TYPE I HOOD)												Х			N/A	N/A	N/A	В
LAUNDRY EXHAUST (DRYER VENT)	x														+/-2	Α	5	A
AIR TRANSFER DUCT				Х											+2	Α	5	
RELIEF AIR DOWNSTREAM OF FANS	х														+6	Α	5	
OUTSIDE AIR AND MIXED AIR DUCT	Х														-6	Α	5	
OUTSIDE AIR, RELIEF AIR AND EXHAUST AIR PLENUMS ADJACENT TO EXTERIOR LOUVERS		x													+/-6	A	5	

GENERAL NOTES

1. 'X' INDICATES ACCEPTABLE SELECTION. IF MORE THAN ONE SELECTION IS INDICATED FOR A DUCT SYSTEM, CONTRACTOR MAY SELECT FROM THOSE INDICATED SELECTIONS. 2. 4 X 1 PVC-COATED GALVANIZED STEEL: FACTORY-APPLIED PVC COATINGS SHALL BE 4 MILS (0.10 MM) THICK ON EXTERIOR SHEET METAL SURFACES OF DUCTS AND FITTINGS EXPOSED TO CORROSIVE CONDITIONS AND MINIMUM 1 MIL (0.025 MM) THICK ON INTERIOR SURFACES. 3. 1 X 4 (4 X 1 REVERSE COATED) PVC-COATED GALVANIZED STEEL: FACTORY-APPLIED PVC COATINGS SHALL BE 4 MILS (0.10 MM) THICK ON INTERIOR SHEET METAL SURFACES OF DUCTS AND FITTINGS EXPOSED TO CORROSIVE CONDITIONS AND MINIMUM 1 MIL (0.025 MM) THICK ON EXTERIOR SURFACES. 4. 4 X 4 PVC-COATED GALVANIZED STEEL: FACTORY-APPLIED PVC COATINGS SHALL BE 4 MILS (0.10 MM) THICK ON SHEET METAL SURFACES OF DUCTS AND FITTINGS EXPOSED TO CORROSIVE CONDITIONS AND 4 MILS (0.10 MM) THICK ON OPPOSITE SURFACES.

KEYED NOTES

A. SCREWS, DAMPERS, OR PROJECTIONS OF ANY TYPE ON INTERIOR OF DUCT SURFACE ARE PROHIBITED. B. ALL WELDED CONSTRUCTION.

ABOV

PIPE SIZE (INCH HEATING HOT

UP TO 2 2-1/2 TO 4 2-1/2 TO 4 GENERAL NOTES

UP TO 2

INDICATED SELECTIONS.

SYSTEM.

<u>KEYED NOTES</u>

## DUCT SYSTEM INSULATION APPLICATION SCHEDULE

	IN	SULAT		eld Plied					
						ET		CKET ERIAL	
	FIBERGLASS BLANKET 0.75 LB/CU FT	FIBERGLASS BLANKET 1.0 LB/CU FT	FIBERGLASS BOARD 2.25 LB/CU FT	FIBERGLASS BOARD 6.0 LB/CU FT	FLEXIBLE ELASTOMERIC	ASTM E2336 2-HOUR FIRE RATED BLANKET	2-HOUR FIRE RATED BLANKET	ALUMINUM	SELF-ADHESIVE (FOR OUTDOOR APPLICATIONS)
DUCT SYSTEMS LOCATED INDOORS									
SUPPLY AIR, EXCEPT AS NOTED BELOW		1.5							
RECTANGULAR SUPPLY AIR IN MECHANICAL ROOMS			1.5						

RECTANGULAR SUPPLY AIR IN MECHANICAL ROOMS		1.5				
RECTANGULAR RETURN AIR IN MECHANICAL EQUIPMENT ROOMS		1.5				
OUTSIDE AIR AND MIXED AIR, EXCEPT AS NOTED BELOW	1.5					
RECTANGULAR OUTSIDE AIR AND MIXED AIR IN MECHANICAL ROOMS		1.5				
EXHAUST AND RELIEF AIR BETWEEN ISOLATION DAMPER AND PENETRATION OF BUILDING EXTERIOR, EXCEPT AS NOTED BELOW	1.5					
RECTANGULAR EXHAUST AND RELIEF AIR BETWEEN ISOLATION DAMPER AND PENETRATION OF BUILDING EXTERIOR, IN MECHANICAL ROOMS		1.5				
KITCHEN EXHAUST (TYPE   HOOD)				Х		

PLENUMS, DUCTS, AND DUCT ACCESSORIES NOT REQUIRING INSULATION:

FIBROUS-GLASS DUCTS

DOUBLE-WALL METAL DUCTS WITH INSULATION OF SUFFICIENT THICKNESS TO COMPLY WITH ENERGY CODE AND ASHRAE/IESNA 90.1 - 2013 METAL DUCTS WITH DUCT LINER OF SUFFICIENT THICKNESS TO COMPLY WITH ENERGY CODE AND ASHRAE/IESNA 90.1 - 2013 FABRIC SUPPLY DUCTS

FACTORY-INSULATED FLEXIBLE DUCTS FACTORY-INSULATED PLENUMS AND CASINGS

FLEXIBLE CONNECTORS

VIBRATION-CONTROL DEVICES FACTORY-INSULATED ACCESS PANELS AND DOORS

#### GENERAL NOTES

1. 'X' OR THICKNESS IN INCHES INDICATE ACCEPTABLE SELECTION. IF MORE THAN ONE SELECTION IS INDICATED FOR A DUCT SYSTEM, CONTRACTOR MAY SELECT FROM

THOSE INDICATED SELECTIONS. 2. REFER TO METAL DUCT SECTION OF SPECIFICATIONS FOR DUCT LINING AND DOUBLE-WALL INSULATED DUCT.

3. REFER TO HVAC CASINGS SECTION OF SPECIFICATIONS FOR DOUBLE-WALL INSULATED PLENUMS.

<u>KEYED NOTES</u>

A. INCLUDE INSULATION AROUND DUCT MOUNTED COILS AND AIR TERMINAL UNIT COILS.

B. NUMBER OF LAYERS AND TOTAL INSULATION THICKNESS AS RECOMMENDED BY SELECTED MANUFACTURER. C. DOES NOT APPLY TO PREFABRICATED, ZERO-CLEARANCE GREASE DUCT.

D. EXPOSED SUPPLY DUCTWORK LOCATED IN A CONDITIONED SPACE SERVED BY THE SAME AIR HANDLING SYSTEM IS NOT REQUIRED TO BE INSULATED.

/EG	GRO	DU	ND	H\	/A(	C F	PIPI	NG	&	V	AL V	/E	AP	PL			ON	S	CHI	EDULE
			М	ATERIA	NL.						CONNE	ECTION				ISC	DLATION	N VALV	ËS	
CHES)	SOFT COPPER TYPE K	HARD COPPER TYPE L	HARD COPPER TYPE M	CARBON STEEL (SCHED. 40)	CARBON STEEL (SCHED. 80)	CARBON STEEL (STD.)	COPPER TYPE DWV	Soldered	BRAZED	WELDED	THREADED	FLANGED	GROOVED	PRESSURE SEAL	MECHANICALLY FORMED TEE	BALL	General service Butterfly	HI-PERF BUTTERFLY	GATE	KEYED NOTES
от w/	ATER	SUPF	PLY &	RETI	JRN -	MIN.	WOR	KING	PRES	S. & '	TEMP.	• 125	PSIG	AT 2	DO DE	GF				
				Х							Х					Х				
		Х						Х	Х							Х				
				Х						Х		Х	Х				Х			A
		Х							Х				Х				Х			A
F۹																				

1. 'X' INDICATES ACCEPTABLE SELECTION. IF MORE THAN ONE SELECTION IS INDICATED FOR A PIPING SYSTEM, CONTRACTOR MAY SELECT FROM THOSE 2. DISSIMILAR-METAL PIPING JOINTS: CONSTRUCT JOINTS USING DIELECTRIC FITTINGS COMPATIBLE WITH BOTH PIPING MATERIALS. IF A BRONZE VALVE

CONNECTS THE DISSIMILAR METALS NO FURTHER DIELECTRIC ISOLATION IS REQUIRED.

a. NPS 2 AND SMALLER: USE BRASS COUPLING, NIPPLE, OR UNION. b. NPS 2–1/2 AND LARGER: USE DIELECTRIC FLANGE KITS.

3. USE UNIONS OR FLANGES AT VALVE AND EQUIPMENT CONNECTIONS.

4. HVAC EQUIPMENT DRAINS, VENTS, SAFETY VALVE PIPING, BLOWDOWN PIPING AND THE LIKE SHALL BE SAME PIPING MATERIAL AS ASSOCIATED PIPING 5. GROOVED END VALVES MAY BE USED WITH GROOVED PIPING.

A. GROOVED AND FLANGED FITTINGS, JOINTS, AND COUPLINGS, IF INDICATED AS AN ACCEPTABLE SELECTION, MAY BE USED IN ACCESSIBLE LOCATIONS FOR THIS PIPING SYSTEM ONLY. ACCESSIBLE LOCATIONS ARE DEFINED AS EXPOSED CONSTRUCTION OR ABOVE LAY-IN CEILINGS. B. BALL VALVE WITH 250 PSIG STEAM TRIM. C. BALL VALVE WITH 150 PSIG STEAM TRIM.

	IN	ISULAT			& TH		SS							
				INCHES				FIEL	D-APP	PLIED J	IACKET	MATE	RIAL	
	FLEXIBLE ELASTOMERIC	FIBERGLASS	MINERAL WOOL	POLYISOCYANURATE	PHENOLIC	CELLULAR GLASS	CALCIUM SILICATE	ALUMINUM	STAINLESS STEEL	PVC	SELF-ADHESIVE (FOR OUTDOOR APPLICATIONS)	PVDC (INDOOR)	PVDC (OUTDOOR)	KEYED NOTE
INDOOR PIPE SYSTEM AND SIZE (INCHES)														
HEATING HOT WATER SUPPLY & RETURN 201 TO 250 DEG F														
NPS $3-1/2$ AND SMALLER		2.5	2.5					Х		Х				A
REFRIGERANT SUCTION & HOT GAS (RIGID COPPER)														
NPS 6 AND SMALLER	1	1		1	1	1		х		Х				
REFRIGERANT SUCTION & HOT GAS (SOFT COPPER)	1							Х		Х				
OUTDOOR (ABOVEGROUND) AND TUNNEL PIPE SYSTEM A	ND SIZE (INCH	ies)												
REFRIGERANT SUCTION & HOT GAS (RIGID COPPER)	2.5	2.5						х			х			В
REFRIGERANT SUCTION & HOT GAS (SOFT COPPER)	2													В

GENERAL NOTES

1. 'X' OR THICKNESS IN INCHES INDICATES ACCEPTABLE SELECTION. IF MORE THAN ONE SELECTION IS INDICATED, CONTRACTOR MAY SELECT FROM THOSE INDICATED SELECTIONS. 2. INSULATE PIPING WITHIN AIR HANDLING EQUIPMENT THE SAME AS INDOOR PIPING. PROVIDE ALUMINUM OR STAINLESS STEEL JACKET.

3. FOR PIPING NPS 1-1/4 AND SMALLER WITHIN PARTITIONS IN CONDITIONED SPACES INSULATION MAY BE REDUCED BY ONE-INCH THICKNESS, BUT NOT TO LESS THAN ONE-INCH THICKNESS. 4. FOR PIPING NPS 1 AND SMALLER, INSULATION IS NOT REQUIRED FOR STRAINERS, CONTROL VALVES, AND BALANCING VALVES.

<u>KEYED NOTES</u>

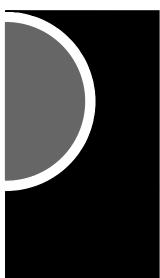
A. PROVIDE FIELD APPLIED JACKET FOR PIPING EXPOSED IN EQUIPMENT ROOMS, STORAGE ROOMS, JANITORS CLOSETS, RECEIVING ROOMS, TEST AREAS, CIRCULATION AREAS AND SUCH AREAS SUBJECT TO DAMAGE WITHIN 10 FEET (3 METERS) OF FINISHED FLOOR. B. PROVIDE MANUFACTURER'S RECOMMENDED PROTECTIVE COATING FOR FLEXIBLE ELASTOMERIC THERMAL INSULATION.

	SCHEDULES GENERAL NOTES
	TYPICAL FOR ALL SCHEDULE SHEETS:
	1. REFER TO ELECTRICAL STANDARD SCHEDULES, ONE LINE DIAGRAM AND PANEL SCHEDULES FOR ADDITIONAL ELECTRICAL INFORMATION
	2. PROVIDE THE FOLLOWING FACTORY-WIRED ELECTRICAL OPTIONS/ACCESSORIES WHERE INDICATED IN SCHEDULE:
APPLICA IIONS)	<ul> <li>A - NON-FUSED DISCONNECT SWITCH</li> <li>B - UNIT SHALL BE SINGLE POINT ELECTRICAL CONNECTION WITH FACTORY INSTALLED DISCONNECTING MEANS AND ALL REQUIRED STARTERS AND CONTROLS</li> <li>C - SERVICE RECEPTACLE</li> <li>D - FUSED DISCONNECT SWITCH</li> <li>E - COMBINATION STARTER</li> <li>F - UNIT SHALL HAVE (2) SINGLE POINT CONNECTIONS WITH FACTORY INSTALLED DISCONNECTING MEANS AND ALL REQUIRED STARTERS AND CONTROLS. (1) CONNECTION SHALL BE FOR CONDENSING SECTION AND (1) CONNECTION SHALL BE FOR THE REMAINDER OF THE UNIT.</li> </ul>
KEYED NOTES	3. FOR MODULATION/CONTROL TYPE COLUMN, "VFC" INDICATES VARIABLE FREQUENCY CONTROLLERS, "AUTO" INDICATES AUTOMATIC OPERATION (CONTROLLED BY TEMPERATURE CONTROLS OR SELF CONTAINED CONTROLS), "MANUAL" INDICATES HAND OPERATION.
A, D	4. IF VARIABLE FREQUENCY CONTROLLERS ARE INDICATED TO BE PROVIDED AND ARE NOT INSTALLED INTEGRAL TO THE UNIT, VARIABLE FREQUENCY CONTROLLERS SHALL BE SUPPLIED BY THE MECHANICAL CONTRACTOR (UNLESS OTHERWISE NOTED) AND INSTALLED BY THE ELECTRICAL CONTRACTOR INCLUDING THE LINE SIDE AND LOAD SIDE WIRING TO THE MOTOR AND INCLUDING MISCELLANEOUS STEEL REQUIRED FOR THE SUPPORT AND MOUNTING OF THE VFC. REFER TO FLOOR PLANS FOR LOCATION.
	5. WHERE EQUIPMENT IS INDICATED TO HAVE A SINGLE POINT ELECTRICAL CONNECTION, THAT EQUIPMENT SHALL COME COMPLETE WITH FACTORY INSTALLED STARTERS, MOTOR OVERLOAD PROTECTION, CONTACTORS, FUSING AND ALL NECESSARY INTERNAL WIRING AND CONTROLS. PROVIDE A FACTORY MOUNTED UNIT DISCONNECTING MEANS WHERE THE ELECTRICAL CONTRACTOR SHALL MAKE SINGLE POINT CONNECTION. INSTALL PACKAGED EQUIPMENT SUCH THAT THE ELECTRICAL CONNECTION AND CONTROLS ARE ACCESSIBLE AND HAVE CLEARANCES MEETING THE NATIONAL ELECTRICAL CODE.
B, C	6. WHERE PACKAGED EQUIPMENT IS PROVIDED, NAMEPLATE MUST INDICATE MAXIMUM OVERCURRENT PROTECTION BY HACR RATED CIRCUIT BREAKERS OR FUSES. IF FUSE PROTECTION ONLY IS INDICATED, PROVIDE A FUSIBLE DISCONNECT AND FUSES WITH THE UNIT.
	7. WHERE EQUIPMENT IS DESIGNATED BY MANUFACTURER AND MODEL NUMBER, THIS IS THE BASIS OF DESIGN. IF THE CONTRACTOR ELECTS TO PROVIDE EQUIPMENT BY OTHER SPECIFIED MANUFACTURERS OR PROPOSED ALTERNATE EQUIPMENT BY THE BASIS OF DESIGN MANUFACTURER, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY REVISIONS TO ELECTRICAL REQUIREMENTS, STRUCTURAL LOADING, OR ARCHITECTURAL APPURTENANCES AND SHALL INCLUDE THE COST OF SUCH REVISIONS IN HIS BID.
	8. WHERE EQUIPMENT IS SCHEDULED TO INCLUDE A SERVICE RECEPTACLE, PROVIDE A FACTORY MOUNTED SERVICE RECEPTACLE WITH APPROPRIATE FUSES AND TRANSFORMERS CONNECTED ON THE LINE SIDE OF THE UNIT DISCONNECT. PROVIDE

ACLE, PROVIDE A ES AND NSFORMERS CONNECTED ON THE LINE SIDE OF THE UNIT DISCONNECT. PROVIDE A NAMEPLATE ON THE DISCONNECT SWITCH INDICATING THE PRESENCE OF LIVE POWER TO THE SERVICE RECEPTACLE WHEN THE UNIT DISCONNECT IS IN THE OFF POSITION.

9. SIZE ALL EQUIPMENT FEEDERS BASED ON THE LISTED MOP (MAXIMUM OVERC PROTECTION). REFER TO THE FEEDER AND BRANCH CIRCUIT SIZING SCHEDULE THE ELECTRICAL STANDARD SCHEDULES SHEET.

# PARTNERS



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OWNER

City Of Warren

#### PROJECT NAME

Warren Civic Center South Fire Station #1

23211 Van Dyke Ave Warren, MI 48089

#### PROJECT NO.

# 21-146A

**ISSUES / REVISIONS** Bidding / Construction 06/13/2023 DRAWN BY JTH CHECKED BY DAC APPROVED BY

#### DAC SHEET NAME

MECHANICAL SCHEDULES

CURRENT LE ON	

									Ρ	LUI	MB	NG	i P	IPI	NG	&	VA		Έ	AP	PL			ON	S	CHE	EDI	JLE											
								МАТ	ERIAL								$\overline{1}$							ECTION							AVITY ( NNECTIO				ISOLA	tion v	/ALVES		
PIPE SIZE (INCHES)	SOFT COPPER TYPE K	HARD COPPER TYPE L	HARD COPPER TYPE M	CARBON STEEL (SCHED. 40)	CARBON STEEL (STD.)	GALV. STEEL (SCHED. 40)	STAINLESS STEEL (SCHED. 10)	PEX	PE PIPE	PE SHEATHED CARBON STEEL PIPE	CSST	NO-HUB CISP	PVC TYPE DWV	PP DRAINAGE PIPE	COPPER TYPE DWV	DUCTILE IRON PIPE	SOLDERED	BRAZED	WELDED	THREADED	FLANGED	GROOVED	INSERT & CRIMP		PRESSURE-SEAL		MECHANICAL JOINT	PUSH-ON-JOINT	SOLVENT WELDED	SOLDERED	FUSION	CISP HUBLESS	HEAVY-DUTY HUBLESS	BALL	AGA BALL	General service Butterfly	LUBRICATED PLUG	GATE	Keyed Notes
ABOVEGROUND DOME	STIC	WATE	ER (P(			ND NO	ON-PC	DTABL	.E) Ol	N DIS1	<b>ribu</b> '		SIDE	OF M	ETER	- MI	N. WC	RKIN	g pre	ESS. 8	L TEN	<b>IP.</b> ; 12	25 PS		200	DEG	F										i	1	<b></b>
UP TO 4		Х															Х	Х			Х	Х			Х	Х								Х		Х			А
ABOVEGROUND SANIT	ARY	WASI	E & '	VENT	' - MI	N. WC	RKIN	g pre	ESS.	10-FO	ot he	EAD C	F W	ATER					_				_				_								<u> </u>				
1-1/2 TO 15												Х																				Х							
UNDERGROUND SANIT	ARY	WAST	E & \	VENT	- MIN	I. WO	RKING	g pre	SS., 1	10-FO	ot he	AD O	F WA	TER									-																
3 TO 12												Х																					Х						
3 TO 12													X																X										
ABOVEGROUND COLD	CONI	DENS	ATE C	DRAIN	- MI	N. WC	, RKIN	g Pre	ESSUF	RE: 10	FT. H		OF W	' /ATEF	<u>ا</u>																								
ALL SIZES			x												X		x	X																	1				
ABOVEGROUND STOR	M DR/	I AINAG	ie - N	i Vin. V	<b>VORKI</b>	NG P	RESS	10-F	ГООТ	HEAD	) OF \		r R																						<u> </u>				L
2												x								Τ	Τ			Т								Х			<u> </u>				
3 TO 15												х																				х			<u> </u>				
UNDERGROUND STORI	u dra		L E - M	I 1IN. W	l /ORKII	i Ng Pf	RESS.	., 10-F	ООТ	HEAD	OF V		I R																						<u> </u>				<u> </u>
3 TO 12				1								x			$\mathbf{T}$			$\mathbf{T}$	$\mathbf{T}$	$\mathbf{T}$	$\mathbf{T}$	$\mathbf{T}$		Т		$\mathbf{T}$							х		$\square$				
3 TO 12					$\vdash$	$\square$		+	$\vdash$				x	$\vdash$	$\vdash$				-		-	+		+	+			$\left  \right $	x						├──				<u> </u>
ABOVEGROUND FUEL	GAS	- MIN	WOF			 88 - 1	1 00 PS	 SIG		1	I			1	1	<b>I</b>	1											1	<u> </u>										L
UP TO 2									T		1				1		T	T	X	x	Г		1		Т	1	1								x				в
2-1/2 TO 3				×	$\left  \right $	$\left  \right $	-	+	+					$\left  \right $	+		-	+	x x	$\uparrow$	X	+		+	+	+		$\left  \right $							x x				B
		-				┢	+		┢	$\left  \right $			├──		┢	$\left  - \right $	$\vdash$	+		+			_	+		+									<u>├</u>				-
																			X		X																X		В
	485 ·	- MIN.	WOR	aking T	PRES	55.º 10						<u> </u>	<u> </u>	-	<u> </u>			-	-	<u> </u>	-	-			-			-	<u> </u>						—		<u> </u>		
1/2 TO 12 GENERAL NOTES									X															X															С

1. 'X' INDICATES ACCEPTABLE SELECTION. IF MORE THAN ONE SELECTION IS INDICATED FOR A PIPING SYSTEM, CONTRACTOR MAY SELECT FROM THOSE INDICATED SELECTIONS. 2. DISSIMILAR-METAL PIPING JOINTS: CONSTRUCT JOINTS USING DIELECTRIC FITTINGS COMPATIBLE WITH BOTH PIPING MATERIALS.

a. NPS 2 AND SMALLER: USE DIELECTRIC NIPPLE/WATERWAY.

b. NPS 2-1/2 AND LARGER: USE DIELECTRIC FLANGE KITS.

3. USE UNIONS OR FLANGES AT VALVE AND EQUIPMENT CONNECTIONS.

4. PLUMBING EQUIPMENT DRAINS, VENTS, SAFETY VALVE PIPING, BLOWDOWN PIPING AND THE LIKE SHALL BE SAME PIPING MATERIAL AS ASSOCIATED PIPING SYSTEM. 5. GROOVED END VALVES MAY BE USED WITH GROOVED PIPING.

#### KEYED NOTES

A. GROOVED AND FLANGED FITTINGS, JOINTS, AND COUPLINGS, IF INDICATED AS AN ACCEPTABLE SELECTION, MAY BE USED IN ACCESSIBLE LOCATIONS ONLY FOR THIS PIPING SYSTEM. ACCESSIBLE LOCATIONS ARE DEFINED AS EXPOSED CONSTRUCTION OR ABOVE LAY-IN CEILINGS. B. VALVES, UNIONS, AND FLANGED JOINTS MAY BE USED IN ACCESSIBLE LOCATIONS ONLY, EXCLUDING CEILINGS USED AS AIR PLENUMS. ACCESSIBLE LOCATIONS ARE DEFINED AS EXPOSED CONSTRUCTION OR ABOVE LAY-IN CEILINGS. USE ONLY STEEL WELDED FITTINGS AND WELDED JOINTS IN CEILING USED AS AIR PLENUMS. C. NO JOINTS ALLOWED UNDERGROUND.



ROOF MOUNTED PIPING SUF	PP	OR	T	AP	PL	.IC	AT	101	1 8	SC	HE	DULE
			S	UPPOF	rt tyf	ΡĒ			SHI	eld t	YPE	
PIPE TYPE & SIZE	LOW FIXED-HEIGHT SINGLE-BASE STAND	LOW ADJUSTABLE-HEIGHT SINGLE-BASE STAND	HIGH ADJUSTABLE-HEIGHT SINGLE-BASE STAND	LOW FIXED HEIGHT SINGLE-BASE ROLLER STAND	LOW ADJUSTABLE-HEIGHT SINGLE-BASE ROLLER STAND	HIGH MULTIPLE-BASE PIPE STAND	CUSTOM MULTIPLE BASE PIPE STAND	CURB-MOUNTING PIPE STAND	MSS TYPE 39 PROTECTION SADDLE	MSS TYPE 40 INSULATION PROTECTION SHIELD	THERMAL-HANGER SHIELD	KEYED NOTES
SINGLE PIPES												
EFRIGERANT PIPE NPS 4 AND SMALLER				Х	Х			Х				

<u>GENERAL NOTES</u>

1. "X" INDICATES APPROVED HANGER OR SUPPORT ELEMENTS. IF MORE THAN ONE HANGER OR SUPPORT ELEMENT IS INDICATED, SELECTION FROM APPROVED ELEMENTS IS CONTRACTOR'S OPTION.

2. REFER TO HANGER AND SUPPORT SECTION FOR APPROVED MANUFACTURERS. 3. SUPPORT ELEMENTS IN CONTACT WITH BARE COPPER PIPE SHALL BE COPPER PLATED, PLASTIC OR PLASTIC COATED, FELT LINED, OR USE MANUFACTURED COPPER TUBE ISOLATORS

DOMESTIC	COLD	WATER

				_										
	IN	SULAT		ATERIAL INCHES			SS	FIEL	D-APF	PLIED J	JACKET	MATE	RIAL	
	FLEXIBLE ELASTOMERIC	FIBERGLASS	MINERAL WOOL	POLYISOCYANURATE	PHENOLIC	CELLULAR GLASS	CALCIUM SILICATE	ALUMINUM	STAINLESS STEEL	PVC	SELF-ADHESIVE (FOR OUTDOOR APPLICATIONS)	PVDC (INDOOR)	PVDC (OUTDOOR)	KEYED NOTE:
INDOOR PIPE SYSTEM AND SIZE (INCHES)														
DOMESTIC COLD WATER	1	1						X		X				A
DOMESTIC HOT WATER SUPPLY & RETURN 140 DEG F AND LESS:														
NPS 1–1/4 AND SMALLER	1	1						X		X				A
NPS 1–1/2 AND LARGER	1.5	1.5						X		Х				A
STORM WATER & OVERFLOW	1	1						Х		Х				A
ROOF DRAIN AND OVERFLOW DRAIN BODIES	1	1												
CONDENSATE AND EQUIPMENT DRAIN PIPING BELOW 60 DEG F	0.75	1												
FLOOR DRAINS, TRAPS AND SANITARY DRAIN PIPING WITHIN 10 FEET OF DRAIN RECEIVING CONDENSATE AND EQUIPMENT DRAIN WATER BELOW 60 DEG F UNLESS OTHERWISE INDICATED OR SCHEDULED, DO NOT INSULATE THE FC	0.75							х		X				A

FUEL GAS PIPING FUEL OIL PIPING

<u>GENERAL NOTES</u>

1. 'X' OR THICKNESS IN INCHES INDICATES ACCEPTABLE SELECTION. IF MORE THAN ONE SELECTION IS INDICATED FOR A SYSTEM, CONTRACTOR MAY SELECT FROM THOSE INDICATED SELECTIONS. 2. INSULATE PIPING WITHIN AIR HANDLING EQUIPMENT THE SAME AS INDOOR PIPING. PROVIDE ALUMINUM OR STAINLESS STEEL JACKET. <u>KEYED NOTES</u>

A. PROVIDE FIELD APPLIED JACKET FOR PIPING EXPOSED IN EQUIPMENT ROOMS, STORAGE ROOMS, JANITORS CLOSETS, RECEIVING ROOMS, TEST AREAS, CIRCULATION AREAS AND SUCH AREAS SUBJECT TO DAMAGE, WITHIN 10 FEET (3 METERS) OF FINISHED FLOOR.

HORIZONTAL PIPIN						)R1	ΓΑ	PP	LIC	
	<u>_S(</u>	CHE	EDI	JLE						
	+	IANGEF	OR S		t typ	E	SHI	ELD T	YPE	
Metal Pipe type & Size	MSS TYPE 1 CLEVIS HANGER	MSS TYPE 10 SWIVEL RING BAND HANGER	MSS TYPE 41 DOUBLE ROD PIPE ROLLER	MSS TYPE 43 SINGLE ROD ROLLER HANGER	MSS TYPE 44 PIPE ROLLER & STAND	MSS TYPE 46 ADJUSTABLE PIPE ROLL STAND	MSS TYPE 39 PROTECTION SADDLE	MSS TYPE 40 INSULATION PROTECTION SHIELD	THERMAL-HANGER SHIELD	KEYED NOTES
UNINSULATED SINGLE PIPE										
UP TO 2 INCH	Х	х								
2-1/2 INCH TO 4 INCH	Х	Х								
INSULATED SINGLE COLD PIPES										
UP TO 2 INCH	Х	Х						Х	Х	A
2-1/2 INCH TO 4 INCH	Х								Х	
6 INCH TO 8 INCH	Х								Х	
INSULATED SINGLE HOT PIPES										
UP TO 2 INCH	Х	Х					Х	Х	Х	A, C
2-1/2 INCH TO 4 INCH			Х	Х	Х	Х	Х		Х	В, С
CENERAL NOTES									-	

<u>GENERAL NOTES</u>

1. "X" INDICATES APPROVED HANGER OR SUPPORT ELEMENTS. IF MORE THAN ONE HANGER OR SUPPORT ELEMENT IS INDICATED, SELECTION FROM APPROVED ELEMENTS IS CONTRACTOR'S OPTION.

. REFER TO HANGER AND SUPPORT SECTION FOR APPROVED MANUFACTURERS. 3. HANGERS AND SUPPORTS USED FOR FIRE PROTECTION SERVICES SHALL BE UL LISTED OR FMG APPROVED.

4. HANGER ELEMENTS IN CONTACT WITH BARE COPPER PIPE SHALL BE COPPER PLATED, PLASTIC COATED, FELT

LINED, OR USE MANUFACTURED COPPER TUBE ISOLATORS. 5. REFER TO INDIVIDUAL PIPING SPECIFICATION SECTIONS FOR HANGER SPACING.

6. MULTIPLE PARALLEL COLD PIPES MAY BE TRAPEZE SUPPORTED FROM BELOW USING U-BOLTS OR STRUT CLAMPS AND THERMAL HANGER SHIELDS. REFER TO KEYED NOTE A. 7. MULTIPLE PARALLEL COLD PIPES MAY BE TRAPEZE SUPPORTED FROM ABOVE USING STANDARD HANGER ELEMENTS

INDICATED FOR SINGLE COLD PIPES. 8. MULTIPLE PARALLEL HOT PIPES MAY BE TRAPEZE SUPPORTED FROM BELOW USING ROLLER ELEMENTS AND

THERMAL HANGER SHIELD OR INSULATION PROTECTION SADDLE. REFER TO KEYED NOTES B AND C.

9. MULTIPLE PARALLEL HOT PIPES MAY BE TRAPEZE SUPPORTED FROM ABOVE USING STANDARD ROLLER HANGERS INDICATED AND THERMAL HANGER SHIELD OR INSULATION PROTECTION SADDLE. REFER TO KEY NOTES B AND C. 10. REFER TO INDIVIDUAL PIPING SPECIFICATION SECTIONS FOR ADDITIONAL SYSTEM SPECIFIC HANGER APPLICATIONS. KEYED NOTES

A. USE THERMAL HANGER SHIELD ON TRAPEZE SUPPORTED INSULATED PIPE TO PREVENT CRUSHING OF INSULATION. B. USE THERMAL HANGER SHIELD DESIGNED FOR USE ON ROLLER SUPPORTS FOR INSULATED HOT PIPE . C. USE TYPE 39 PROTECTION SADDLES IF INSULATION WITHOUT VAPOR BARRIER IS INDICATED. FILL INTERIOR VOIDS WITH INSULATION MATCHING ADJOINING INSULATION.

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Statement of Intellectual Property

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KEY PLAN

OWNER

City Of Warren

PROJECT NAME

Warren Civic Center South Fire Station #1

23211 Van Dyke Ave Warren, MI 48089

PROJECT NO.

**ISSUES / REVISIONS** Bidding / Construction 06/13/2023 DRAWN BY JTH CHECKED BY DAC

DAC

APPROVED BY

SHEET NAME MECHANICAL SCHEDULES

																	FAN	SCHED	ULE																
UNIT IDENTIFICATION	SYSTEM SERVED	TYPE	AIRFLOW CFM	T.S.P. IN. W.G.	WHEEL	RPM	CLASS	ARRANGEMENT	OUTLET VELOCITY		МС	OTOR		MODULATION/ CONTROL TYPE		ELE	ECTRICAL								М	IAXIMUM SOUNE	POWER LEVE	LS							MODEL KEY NUMBER NOT
					DIAMETER INCHES				FPM	BHP	HP	RPM	DRIVE TYPE		VOLTS	PHASE	SCCR KA	OPTIONS/ ACCESSORIES			UNIT	DISCHARGE L	W BY OCTAVE	BAND					1U	NIT INLET LW E	BY OCTAVE BA	ND			
																	(NOTE 3)		63 HZ (DB)	125 HZ (DB)	250 HZ (DB)	500 HZ (DB)	1000 HZ (DB)	2000 HZ (DB)	4000 HZ (DB)	8000 HZ (DB)	63 HZ (DB)	125 HZ (DB)	250 HZ (DB)	500 HZ (DB)	1000 HZ (DB)	2000 HZ (DB)	4000 HZ (DB)	8000 HZ (DB)	
SF-AHU-1	AHU-1	PLENUM	5,500	0.92	18.2	2,682	II	HORIZONTAL		7.8	10.0	1,800	DIRECT	VFC	208	3	14	В	95	91	91	95	85	83	81	79	95	87	87	89	82	74	73	71	39M
EF-AHU-1	AHU-1	AIRFOIL	5,500	0.57	13	2,145	II	HORIZONTAL			10.0	1,800	BELT	VFC	208	3	14	В																	39M

1. REFER TO SCHEDULES GENERAL NOTES. 2. MODEL NUMBERS ARE GREENHECK UNLESS OTHERWISE NOTED.

3. CONTROLLER (E.G. VARIABLE FREQUENCY CONTROLLER, MOTOR STARTER) FOR SPECIFIED EQUIPMENT SHALL BE MANUFACTURED AND MARKED PER NEC WITH A MINIMUM SHORT CIRCUIT CURRENT RATING AS INDICATED.

# **VIBRATION ISOLATOR APPLICATION SCHEDULE**

						EQUIPMENT	LOCATION			
					SLAB ON GRADI	Ξ	UP TO 40	) FT (12 M) FL	OOR SPAN	
Equipment Type	EQUIPMENT CATEGORY	HORSEPOWER AND OTHER	RPM	BASE TYPE	ISOLATOR TYPE	MIN. DEFL., IN. (MM)	BASE TYPE	ISOLATOR TYPE	MIN. DEFL., IN. (MM)	KEYED N
AIR COMPRESSORS AND VACUUM	TANK-MOUNTED HORIZ.	≤10 ≥15	ALL ALL	A C	3 3	0.75 (19) 0.75 (19)	A C	3 3	1.50 (38) 1.50 (38)	NOTE 3
PUMPS	TANK-MOUNTED VERT. BASE-MOUNTED LARGE RECIPROCATING	ALL ALL ALL	ALL ALL ALL	C C C	3 3 3	0.75 (19) 0.75 (19) 0.75 (19)	C C C	3 3 3	1.50 (38) 1.50 (38) 1.50 (38)	
BASE MOUNTED HEAT PUMPS, FAN COILS, COMPUTER ROOM UNITS	ALL	ALL	ALL	A	3	0.75 (19)	A	3	1.50 (38)	NOTES 1
SUSPENDED HEAT PUMPS, FAN COILS, CONDENSING UNITS, COMPUTER ROOM UNITS, LOCATED INDOORS.	ALL	ALL	ALL				A OR B	8a OR 8b	1.50 (38)	NOTES 1
BASE MOUNTED CONDENSING UNITS	ALL ALL	≤1HP >1HP	ALL ALL	A OR B A OR B	2 2	0.25 (6) 0.25 (6)	A OR B A OR B	2 4	0.25 (64) 2.50 (64)	NOTE 3
PACKAGED AND	ALL	≤10	ALL	A	3	0.75 (19)	A	3	0.75 (19)	NOTES 1
MODULAR AIR HANDLING, AIR CONDITIONING, AND HEATING AND VENTILATING UNITS	ALL	≤15 AND ≤4 IN. SP	UP TO 300 301 TO 500 500 AND UP	A A A	3 3 3	0.75 (19) 0.75 (19) 0.75 (19)	C A A	3 3 3	3.50 (89) 2.50 (64) 1.50 (38)	
		≥15 AND/OR >4 IN. SP	UP TO 300 301 TO 500 500 AND UP	B B B	3 3 3	0.75 (19) 0.75 (19) 0.75 (19)	C C C	3 3 3	3.50 (89) 2.50 (64) 2.50 (64)	
PACKAGED AND MODULAR AIR HANDLING, AIR CONDITIONING AND HEATING AND VENTILATING UNITS WITH INTERNAL SPRING ISOLATORS	ALL	ALL	ALL	A	1a	0.25 (6)	A	1α	0.25 (6)	NOTES 1
AIR HANDLING EQUIPMENT WITH NON-INTERNALLY ISOLATED FAN ARRAYS (AIR HANDLING UNITS, CABINET FANS, FAN UNITS, ETC.) GENERAL NOTES:	ALL	ALL	ALL	A	3	0.75 (19)	A	3	2.50 (64)	NOTES 1

KEYED NOTES: 1. THRUST RESTRAINTS: PROVIDE THRUST RESTRAINTS BETWEEN FAN DISCHARGE AND DUCT (IN PAIRS, LOCATED ON THE CENTERLINE OF THE DISCHARGE OUTLET OF THE FAN, BRIDGING THE FLEXIBLE DUCT CONNECTOR) FOR ALL FAN HEADS, FOR AXIAL AND CENTRIFUGAL FANS UNITS OPERATING AT 2 INCHES OR GREATER TOTAL STATIC PRESSURE AND AS SHOWN ON DRAWINGS. SPRING DEFLECTION SHALL BE SAME AS THE SUPPORT ISOLATORS.

2. PIPING RISER ISOLATION: PROVIDE PIPE RISER RESILIENT ANCHORS, SPRING MOUNTS AND RESILIENT PIPE GUIDES CAPABLE OF DISTRIBUTING THE LOADS WITHIN THE BUILDING DESIGN LIMITS AT THE SUPPORT POINTS.

3. HORIZONTAL PIPING VIBRATION ISOLATION: PROVIDE TYPE 8a OR 8b SPRING HANGERS FOR PIPING CONNECTED TO VIBRATION ISOLATED EQUIPMENT FOR ALL PIPING IN MECHANICAL ROOMS OR THE FOLLOWING MINIMUM HORIZONTAL DISTANCES FROM THE ISOLATED EQUIPMENT: UP TO 6" - 50 FEET (1 1/2" MINIMUM DEFLECTION), 8" AND LARGER - 100 FEET (2 1/2" MINIMUM DEFLECTION), WHICHEVER IS GREATER, AND AS SHOWN ON DRAWINGS. THE FIRST 4 HANGERS FROM THE ISOLATED EQUIPMENT SHALL BE TYPE 8b.

4. DUCTWORK VIBRATION ISOLATION: PROVIDE TYPE 80 OR 86 SPRING HANGERS FOR DUCTWORK WITH A CROSS SECTION OF 2 SQUARE FEET OR GREATER CONNECTED TO AIR HANDLING UNITS, RETURN OR RELIEF FANS, AND VIBRATION ISOLATED EQUIPMENT FOR ALL SUCH DUCTWORK IN MECHANICAL ROOMS OR FOR A MINIMUM HORIZONTAL DISTANCE OF 100 FEET FROM THE ISOLATED EQUIPMENT, WHICHEVER IS GREATER, AND AS SHOWN ON

DRAWINGS (3/4" MINIMUM DEFLECTION). 5. IF SPAN DOÈS NOT EXCEED 20 FT, SPRING DEFLECTION MAY BE 1.0 IN AND TYPE D BASE MAY BE USED. FOR SPANS GREATER THAN 20 FT, USE SPRING DEFLECTION INDICATED AND TYPE E BASE.

BASE TYPES:

- BASE TYPE A NO BASE, ISOLATORS ATTACHED DIRECTLY TO EQUIPMENT.
- BASE TYPE B STRUCTURAL, STEEL RAILS OR BASE.
- BASE TYPE C CONCRETE INERTIA BASE. BASE TYPE D - CURB - MOUNTED ALUMINUM BASE WITH 1" DEFL. SPRING ISOLATORS
- BASE TYPE E CURB MOUNTED STEEL BASE WITH ADJUSTABLE 1", 2" OR 3" DEFL. SPRING ISOLATORS

ISOLATOR TYPES:

- ISOLATOR TYPE 1a ELASTOMERIC ISOLATION PAD.
- ISOLATOR TYPE 1b ELASTOMERIC ISOLATION PAD WITH STEEL LOAD BEARING PLATE. ISOLATOR TYPE 2 - ELASTOMERIC FLOOR ISOLATOR.
- ISOLATOR TYPE 3 FREE STANDING SPRING FLOOR ISOLATOR.
- ISOLATOR TYPE 4 RESTRAINED SPRING ISOLATOR. ISOLATOR TYPE 5 - THRUST RESTRAINT.
- ISOLATOR TYPE 6 AIR SPRING.
- ISOLATOR TYPE 7 ELASTOMERIC HANGERS.
- ISOLATOR TYPE 8a SPRING HANGERS.
- ISOLATOR TYPE 8b SPRING HANGERS WITH VERTICAL-LIMIT STOP.

# MODULAR AIR HANDLING UNIT COMPONENT SCHEDULE

	-	-	-							
UNIT	POSITION	POSITION	POSITION	POSITION	POSITION	POSITION	POSITION	POSITION	MAXIMUM	KEYED NOTES
IDENTIFICATION	NUMBER 1	NUMBER 2	NUMBER 3	NUMBER 4	NUMBER 5	NUMBER 6	NUMBER 7	NUMBER 8	UNIT LENGTH	
AHU-1	EXHAUST FAN	PRE FILTER		RETURN FILTER	FINAL FILTER	COOLING COIL	HEATING COIL	SUPPLY FAN	20'-9/16"	
			WHEEL							
GENERAL NOTES	):									

1. MODULES SELECTED BASED ON CARRIER INDOOR MODULAR AIR HANDLING UNIT. 2. POSITION NUMBERS ARE INDICATED IN THE DIRECTION OF AIRFLOW FROM RETURN AIR INLET TO SUPPLY AIR DISCHARGE.

			AIR	HAND	LING	UNIT	FILT	ER SC	CHEDL	JLE			
UNIT I.D.	SYSTEM SERVED	TYPE	AIRFLOW CFM	AIR PRES	S. DROP				FILTER MEDI	A		MODEL NO.	KEYED NOTES
				initial In. W.G.	dirty In. W.G.	MERV	QUAN.	WDTH In.	HEIGHT IN.	depth In.	MIN. MEDIA FACE AREA SQ. FT.		
AF-1	AHU-1 OA FILTER	PLEATED	5500	0.15	0.55	8	6	20	20	2	16.66	31K2B0000000620204	
AF-2	AHU-1 RA FILTER	PLEATED	5500	0.15	0.55	8	6	20	20	2	16.66	31K2B000000620204	
AF-3	AHU–1 SA FILTER	PLEATED	5500	0.25	0.85	13	6	20	16	4	13.33	31K4F0000000616204	

GENERAL NOTES: 1. MODEL NUMBERS ARE FARR UNLESS OTHERWISE NOTED.

2. PROVIDE 25% TO 30% EFFICIENT 2 INCH THROW AWAY PREFILTERS

3. MERV DESIGNATES THE "MINIMUM EFFICIENCY REPORTING VALUE" AS EVALUATED UNDER ASHRAE STANDARD 52.2 1999.

HANDLING UNIT TOTAL STATIC PRESSURE FOR VARIABLE AIR VOLUME SYSTEMS IS BASED ON THE FILTER DIRTY AIR SSURE DROP AND AVERAGE/MIDLIFE FILTER AIR PRESSURE DROP FOR CONSTANT VOLUME SYSTEMS UNLESS NOTED OTHERWISE.

ENERGY REC	OVERY WHEEL S	}C⊦
SUPPLY AIR SIDE – SUMMER/WINTER	EXHAUST AIR SIDE	

									111								
	SYSTEM		SUPP	PLY AIR SIDE	– Summer	R/WINTER			EXHAUS	t air side			ELEC	TRICAL		MODEL NO.	KEYED NOTES
IDENTIFICATION	SERVED	AIRFLOW CFM	E.D.B • F	E.W.B. • F	L.D.B. • F	L.W.B. • F	MAX A.P.D. IN. W.G.	AIRFLOW CFM	E.D.B • F	E.W.B. • F	MAX A.P.D. IN. W.G.	VOLTS	PHASE	SCCR KA	OPTIONS/ ACCESSORIES		
ERW-1	AHU-1	1,525	90.9/-10	73.8/-10	77.6/56.1	64.8/44.8	0.59	1,525	75/70	62.5/53	0.59	208	3	14	В	ERC4128C	1
GENERAL NOTES:																	

1. REFER TO SCHEDULES GENERAL NOTES. 2. MODEL NUMBERS ARE CARRIER UNLESS OTHERWISE NOTED.

KEYED NOTES: 1. PROVIDE WHEEL VARIABLE FREQUENCY CONTROLLER.

					DIRE	СТ ЕХ	<b>KPAN</b>	SION	COOL	ING C	COIL SC	HEDUL	E					
UNIT IDENTIFICATION	SYSTEM SERVED	ASSOCIATED CONDENSING		MINIMUM NUMBER	TOTAL CAPACITY				AIR			MINIMUM Face Area	FACE VELOCITY	FINS Per inch	COIL SUCTION TEMPERATURE	NUMBER OF	MODEL NUMBER	KEYED NOTES
		UNIT		ROWS	MBH	AIRFLOW CFM	E.D.B. F	E.W.B. F	L.D.B. F	L.W.B. F	MAXIMUM A.P.D. IN. W.G.	SQ. FT.	FPM		F	CIRCUITS		
CC-1	AHU-1	ACCU-1	R-410A	6	145.0	5,500	75.7	63.1	53.2	52.1	0.64	12.64	435	8	43.7	1	28ME	

<u>GENERAL NOTES:</u> 1. MODEL NUMBERS ARE BASED ON CARRIER UNLESS OTHERWISE NOTED.

						нот	<b>WA</b> 1	ER HE	ATING O	COIL S	SCHE	DULE					
UNIT	SYSTEM	MAXIMUM	MAXIMUM	CAPACITY			AIR		MINIMUM			WATER			CONTROL VALVE	MODEL	KEYED NOTES
IDENTIFICATION	SERVED	NUMBER ROWS	FIN DENSITY FINS/INCH	MBH	AIRFLOW CFM	E.D.B. F	L.D.B. F	MAXIMUM A.P.D. IN. W.G.	FACE AREA SQ. FT.	FLOW GPM	Fluid type	E.W.T. F	L.W.T. F	MAXIMUM W.P.D. FT. HEAD	W.P.D. FT. HD.	NUMBER	
HC-1	AHU—1	1	8	56.8	3,300	44.2	60.0	0.15	12.64	3.9	W	150	120	5	15	28MH	

GENERAL NOTES: 1. MODEL NUMBERS ARE TRANE UNLESS OTHERWISE NOTED.

2. COIL SELECTION BASED ON .00025 FOULING FACTOR. 3. FLUID TYPE: W = WATER, PGXX = PROPYLENE GLYCOL SOLUTION XX PERCENTAGE OF GLYCOL, EGXX = ETHYLENE GLYCOL SOLUTION XX PERCENTAGE OF GLYCOL.

							AIR	COOLEI	D CONE	DENSI	NG UI	NIT SCH	HEDULI	Ξ								
UNIT IDENTIFICATION	SYSTEM SERVED		MINIMUM EER	REFRIGERATION TYPE	NUMBER OF CIRCUITS	NUMBER OF CONTROL	CONDI	ENSER	SUCTION TEMPERATURE	CONDEN	SER FAN	COMPRI	ESSOR	MODULATION			EL	ECTRICAL	L		MODEL NUMBER	KEYED NOTES
		МВН				STAGES	Design Ambient Temperature F	Minimum Ambient Temperature F	F	QUANTITY	HP EACH	NUMBER OF COMPRESSORS	TYPE OF COMPRESSOR	CONTROL TYPE	VOLTS	PHASE	MCA	MOP	SCCR KA	OPTIONS/ ACCESSORIES		
ACCU-AHU-1	CC-1	145.0	13.0	R-410A	2	2	95.0	45.0	43.6	2		2	SCROLL	AUTO	208	3	60.8	80.0	14	В	38AUD	

GENERAL NOTES: 1. REFER TO SCHEDULES GENERAL NOTES.

2. MODEL NUMBERS ARE CARRIER UNLESS OTHERWISE NOTED. 3. REFER TO AIR HANDLING UNIT DIRECT EXPANSION COOLING COIL SCHEDULE FOR ASSOCIATED COOLING COIL.

4. EFFICIENCY RATING SHALL BE IN ACCORDANCE WITH ARI-STANDARD 340/360-2004.

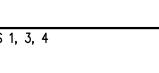
# NOTES

S 1, 3, 4

S 1, 3, 4

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	MERV AIR H/ PRESS
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## 

# PARTNERS



PARTNERS in Architecture, PLC 65 MARKET STREET MOUNT CLEMENS, MI 48043 P 586.469.3600

## Statement of Intellectual Property

F 586.469.3607

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KEY PLAN

OWNER

City Of Warren

#### PROJECT NAME

Warren Civic Center South Fire Station #1

23211 Van Dyke Ave Warren, MI 48089

## PROJECT NO.

# 21-146A

ISSUES / REVISIONS	
Bidding / Construction	06/13/2023
DRAWN BY	
JTH	
CHECKED BY	
DAC	
APPROVED BY	
DAC	
SHEET NAME	

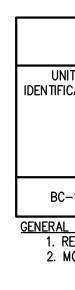
SHEET NAME MECHANICAL SCHEDULES

UNIT IDENTIFICATION         SYSTEM SERVED         TYPE         AIRFLOW CFM         T.S.P. IN. W.G.         TIP SPEED FPM         FAN RPM         MOTOR         CURB HEIGHT INCHES         MODULATION/ CONTROL TYPE         ELECTRICAL         ELECTRICAL         UNIT DISCHARGE I           VOLTS         PHASE         SCCR (NOTE 3)         OPTIONS/ ACCESSORIES         0PTIONS/ (NOTE 3)         UNIT DISCHARGE I																																		
UNIT IDENTIFICATION	SYSTEM SERVED	TYPE			TIP SPEED FPM	FAN RPM		N	OTOR		CURB HEIGHT INCHES	MODULATION/ CONTROL TYPE		ELEC	TRICAL								MAXI	NUM SOUND	POWER LE	VELS							MODEL NUMBER	KEYED NOTES
							BHP	HP	RPM	DRIVE TYPE	1		VOLTS	PHASE	SCCR				UNIT DIS	SCHARGE L	W BY OCTA	/E BAND					UNIT	INLET LW E	BY OCTAVE	BAND				
																ACCESSORIES	63 HZ (DB)	125 HZ (DB)	250 HZ (DB)	500 HZ (DB)	1000 HZ (DB)	2000 HZ (DB)	4000 HZ (DB)	8000 HZ (DB)	63 HZ (DB)	125 HZ (DB)	250 HZ (DB)	500 HZ (DB)	1000 HZ (DB)	2000 HZ (DB)	4000 HZ (DB)	8000 HZ (DB)		
VF-1	APPARATUS BAY PURGE	SIDEWALL	3,700	0.25	6,112	1,160	0.42	1/2	1,160	DIRECT		AUTO	208	3	14										75	85	84	82	74	69	65	59	AER-20	
VF-2	HOSE TOWER	SIDEWALL	350	0.25		1,050	0.06	1/20	1,050	DIRECT		AUTO	120	1	14										80	68	40	41	45	44	39	32	SE1-12-432-E	
EF-1	TAILPIPE EXHAUST	CENTRIFUGAL	3,000	5.0		3,500		7-1/2	3,500	DIRECT		AUTO	208	3	14										103	106	106	103	94	89	85	80	Plymovent Tev-585-60	

<u>GENERAL NOTES:</u> 1. REFER TO SCHEDULES GENERAL NOTES.

2. MODEL NUMBERS ARE GREENHECK UNLESS OTHERWISE NOTED. 3. CONTROLLER (E.G. VARIABLE FREQUENCY CONTROLLER, MOTOR STARTER) FOR SPECIFIED EQUIPMENT SHALL BE MANUFACTURED AND MARKED PER NEC WITH A MINIMUM SHORT CIRCUIT CURRENT RATING AS INDICATED.

																		El	NER	GY	RE	CO	VER	Υι	JNIT	r sc	HE	DUI	E																
UNIT IDENT- IFICATION	AREA/ SYSTEM SERVED				SUPPLY	FAN					EXHA	UST FAN				HEAT	EXCHAN	GER (SUN	(MER)			HE	AT EXCH	IANGER	(WINTER	?)	0	UTSIDE	air filt	TERS	RETURN	FILTERS			ELE	CTRICAL				CURB		UNIT WEIGHT W/	SA/RA CONFIG	EA/OA CONFIG.	KEYED NOTES
							м	otor					мс	TOR	SUI	PPLY SID	:	EXHAUS	t side		s	upply si	DE	EXHA	aust sii	DE	E	.FF. Al % \$	REA S SQ. TO TT.	SP" DTAL	EFF. AR % Si F	A SP" ). TOTA	VOLTS	6 PHASE	MCA	MOP	SCCR KA	OPTIONS/ ACCESS- ORIES	т	YPE		CURB (LBS.)			
		CFM	MIN. OA CFM/ %	ESP"	TSP"	CONTROL TYPE	- BHP	HP	CFM	ESP"	TSP"	CONTRO TYPE	BHP		E.A.T. F	Г	.P.D. E. <i>F</i> IN. 1 WG.	T. L.A. F	T. A.P.D IN. WG.	• EFFIC (%)	E.A.T. F	L.A.T. F	A.P.D. IN. WG.	E.A.T. F	L.A.T. F	A.P.D. IN. WG. (%	FIC. 8)												STANDARD	VIBRATION ISOLATION SPRING CURB	HEIGHT				
ERV-1	APPARATUS BAY	400	400	0.5	0.6	AUTO	0.13	0.5	400	0.5	0.6	AUTO	0.14	0.5	90.3	90.3	0.1 90	.3 90.3	3 0.1		-10.0	41.9	0.1	65.0	13.4	0.1	М	ERV –			MERV		- 208	1	8.6	15.0	14	В				450	END	END	



UNIT IDENTIFICATION	System Served	CFM	Throat Size Inches
IH–1	ERV–1	400	12x12
GENERAL NOTES:			

1. MODEL NUMBERS ARE GREENHECK UNLESS OTHERWISE NOTED. 2. PROVIDE WITH BIRD SCREEN.

							JUNE	DULE				
	SYSTEM SERVED	CFM	THROAT SIZE	THROAT VELOCITY	STATIC PRESSURE		HOOD SIZE		CURB HEIGHT	HOOD CONSTRUCTION	MODEL NUMBER	KEYED NOTES
			INCHES	FPM	DROP IN. W.G.	WIDTH INCHES	LENGTH INCHES	HEIGHT INCHES	INCHES			
RH—1 AI	AHU-1	5500	42x24	786	0.085	34	60	19	18	STEEL	FGR	

2. PROVIDE WITH BIRD SCREEN.

									HO	T WA	TER C	ABINET U	NIT H	EATE	R SC	HEDUL	E								
UNIT IDENTIFICATION	FICATION MBH															KEYED NOTES									
		FLOW GPM	Fluid type	E.W.T. F	L.W.T. F	MAXIMUM W.P.D. FT. HEAD		LENGTH INCHES	HEIGHT INCHES	depth Inches	INCHES	TYPE	AREA SQ. FT.		VOLTS	PHASE	SCCR KA	OPTIONS/ ACCESSORIES							
CUH-1	19.2	430	60.0	101.1	2 @ 1/10	1,050	1.3	w	150.0	120.0	5.0	15.0	47.0	33.0	9.0		DISP.	1.9	AUTO	120	1	14	В	WI-04	
GENERAL NOTES:	SCHEDULES GEI	NERAL NOTES			•		•							•	•			•		•	•		•		•

GENERAL NOTES: 1. REFER TO SCHEDULES GENERAL NOTES. 2. MODEL NUMBERS ARE CARRIER UNLESS OTHERWISE NOTED. 3. FLUID TYPE: W = WATER, PGXX = PROPYLENE GLYCOL SOLUTION XX PERCENTAGE OF GLYCOL, EGXX = ETHYLENE GLYCOL SOLUTION XX PERCENTAGE OF GLYCOL. 4. FOR UNITS LOCATED OUTDOORS, INSULATE AND PROVIDE ELECTRIC HEAT TRACE FOR HEAT EXCHANGER CABINET DRAIN PIPING.

												B	LOWE		UNIT SC	CHEC	ULE									
UNIT TIFICATION			FAN							HEA	TING CO	L				MAXIMUM	1 UNIT DIMI	NSIONS	FILTER	MODULATION/ CONTROL TYPE		E	LECTRICAL	-	MODEL NUMBER	Keyed Notes
	AIRFLOW CFM	ESP IN. W.G.	tsp In. W.g.	BHP	HP	FAN RPM	MINIMUM TOTAL CAPACITY	AI	R				WATER		ARRANGEMENT				TYPE		VOLTS	PHASE	SCCR KA	OPTIONS/ ACCESSORIES		
							MBH	E.D.B. F	L.D.B. F	FLOW GPM	E.W.T. °F	L.W.T. F	FT. HEAD	CONTROL VALVE W.P.D. FT. HEAD		Length Inches	WIDTH INCHES	HEIGHT INCHES						NOOLOODNILO		
BC-1	2,000	0.5	0.85		1.0	1,800	48.7	50.0	72.5	3.3	150.0	120.0	2.8	15.0	VERTICAL	30	50	50	DISP.	AUTO	208	1	14	В	HDD20	

GENERAL NOTES: 1. REFER TO SCHEDULES GENERAL NOTES. 2. MODEL NUMBERS ARE ENVIRE-TEC UNLESS OTHERWISE NOTED

#### INTAKE HOOD SCHEDULE HOOD THROAT STATIC INTAKE VELOCITY PRESSURE VELOCITY FPM DROP FPM IN. W.G. CURB HEIGHT INCHES MODEL KEYED NOTES NUMBER HOOD CONSTRUCTION HOOD SIZE MDTH LENGTH HEIGHT INCHES INCHES INCHES 0.021 STEEL 400 22 24 14 18 FGI \_\_\_\_

			-		ND DIFFUS				
UNIT IDENTIFICATION	TYPE	FACE SIZE	NECK SIZE	FRAME TYPE	ACCESSORY	CONSTRUCTION	FINISH	MODEL NUMBER	KEYED NOTES
S–1	DIFFUSER	24x24	SEE PLAN	LAY IN		ALUMINUM	WHITE	AMCD	
S-2	GRILLE	D+1 3/4	SEE PLAN	DUCT MOUNTED		STEEL	WHITE	520	
S-3	DIFFUSER	24x24	SEE PLAN	LAY IN		ALUMINUM	WHITE	PDS	
S-4	DIFFUSER	48x2 SLOTS	SEE PLAN	LAY IN	INSULATED PLENUM WITH REMOTE BALANCING DAMPER	ALUMINUM	WHITE	SDS100	1
R–1A	DIFFUSER	24x12	22x10	LAY IN		STEEL	WHITE	PDDR	
R–1B	DIFFUSER	24x24	22x22	LAY IN		STEEL	WHITE	PDDR	
R-2	GRILLE	D+1 3/4	SEE PLAN	DUCT MOUNTED		STEEL	WHITE	530	
E-1	DIFFUSER	24x24	SEE PLAN	LAY IN		STEEL	WHITE	PDDR	

<u>GENERAL NOTES:</u> 1. MODEL NUMBERS ARE PRICE UNLESS OTHERWISE NOTED.

<u>KEYED NOTES:</u> 1. PROVIDE PLASTER FRAME WHERE INSTALLED IN HARD LID CEILING.

REFER TO SCHEDULES GENERAL NOTES.
 MODEL NUMBERS ARE STERLING UNLESS OTHERWISE NOTED.
 FLUID TYPE: W = WATER, PGXX = PROPYLENE GLYCOL SOLUTION XX PERCENTAGE OF GLYCOL, EGXX = ETHYLENE GLYCOL SOLUTION XX PERCENTAGE OF GLYCOL.

# PARTNERS



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#### Statement of Intellectual Property

F 586.469.3607

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CONSULT	ANT
	<b>Re</b> os
	er Basso Associates Inc
W	5145 Livernois, Suite 100 Troy, Michigan 48098-3276 Tel: 248-879-5666 Fax: 248-879-0007 ww.PeterBassoAssociates.com PBA Project No.: 2021.0370
KEY PLAN	
OWNER	

City Of Warren

#### PROJECT NAME

Warren Civic Center South Fire Station #1

23211 Van Dyke Ave Warren, MI 48089

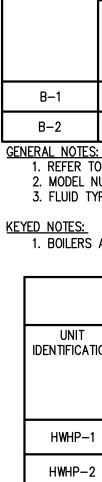
# PROJECT NO.

# 21-146A

ISSUES / REVISIONS	
Bidding / Construction	06/13/2023
DRAWN BY	
JTH	
CHECKED BY	
DAC	
APPROVED BY	
DAC	
SHEET NAME	

MECHANICAL SCHEDULES

SHEET NO.		
	M7-04	





	HOT	WATE	ER R/		T CEII	ING P	ANEL SCH	IEDULE								HVAC SY	STEM	EXPA	NSION	TANK	SCHEDL	JLE					
(	FLUID TYPE	WATER	TEMP	DIMEN	ISIONS	FINISH	CONSTRUCTION	CONTROL VALVE		KEYED NOTES		SYSTEM	ESTIMATED TOTAL	TYPE		SYSTEM FILL VALVE			SYSTEM (		EXPANSION			DIMEN	ISIONS	MODEL	KEYED NOTES
-		E.W.T.	L.W.T.	LENGTH	WIDTH			W.P.D. FT. HEAD	NUMBER		IDENTIFICATIO	I SERVED	SYSTEM VOLUME		TYPE	OR GLYCOL PUMP				ATURES	VOLUME	FACTOR				NUMBER	
۱.		۴	۴	INCHES	INCHES								GALLONS			PRESSURE SETTING PSIG	CHARGE (	MAX OPERATING)	MINIMUM F	MAXIMUM F	GALLONS		VOLUME GALLONS	DIAMETER INCHES	HEIGHT INCHES		
	W	150.0	120.0	SEE PLANS	24	WHITE	ALUMINUM	15.0	LRP								PSIG	PSIG									
	٧٧	130.0	120.0	JLL FLANS	24	WHILE	ALOMINUM	13.0	LINF		ET-1	HWH SYSTEM		DIAPHRAGM	w									8	12 5/8	PT-5	

		НОТ	WATE	RR		T CEI	LING P	ANEL SCH	HEDULE								HVAC SY	STEM		NSION	TANK	SCHEDI	JLE					
UNIT IDENTIFICATION	CAPACITY BTUH/	Fluid type	WATER	TEMP	DIME	NSIONS	FINISH	CONSTRUCTION	CONTROL VALVE W.P.D. FT. HEAD	MODEL NUMBER	KEYED NOTES	UNIT IDENTIFICATION	SYSTEM SERVED	ESTIMATED TOTAL SYSTEM VOLUME	TYPE	FLUID	SYSTEM FILL VALVE OR GLYCOL PUMP		G PRESSURES	SYSTEM	OPERATING RATURES	EXPANSION VOLUME	ACCEPTANCE FACTOR	MINIMUM TANK	DIMENS	SIONS	MODEL NUMBER	KEYED NOTES
IDENTIFICATION	LINEAR FT.		E.W.T. F	L.W.T. F	LENGTH INCHES	WIDTH INCHES				NOMBER		IDENTIFICATION	SERVED	GALLONS			PRESSURE SETTING PSIG		MAX (OPERATING)	MINIMUM F	MAXIMUM	GALLONS	TACTOR	VOLUME GALLONS	DIAMETER INCHES	HEIGHT INCHES	NOMBER	
RCP-1	238	w	150.0	120.0	SEE PLANS	24	WHITE	ALUMINUM	15.0	LRP								PSIG	PSIG								'	
GENERAL NOTES	200 S:	"	100.0	120.0								ET-1	HWH SYSTEM		DIAPHRAGM	w									8	12 5/8	PT-5	

1. MODEL NUMBERS ARE STERLING UNLESS OTHERWISE NOTED. 2. EXTRUDED ARCHITECTURAL SPACE MASTERY SERIES HEF-2 FLUTED.

3. FLUID TYPE: W = WATER, PGXX = PROPYLENE GLYCOL SOLUTION XX PERCENTAGE OF GLYCOL, EGXX = ETHYLENE GLYCOL SOLUTION XX PERCENTAGE OF GLYCOL.

							FI	NNED W	/ATER	TUE	BE E	BOILI	ER (	SCH	EDULE								
UNIT IDENTIFICATION		FUEL		output MBH	PRESSURE RATING	NUMBER OF CONTROL		DIMENSIONS				FLUID			MODULATION/ CONTROL TYPE			ELE	CTRICAL			MODEL NUMBER	KEYED NOTES
	TYPE	MIN/MAX MANUFACTURER REQUIRED INLET PRESSURE AT GAS TRAIN	input MBH		PSIG	STAGES	WIDTH	LENGTH	HEIGHT	E.W.T. F	L.W.T. F	FLOW GPM	fluid Type	W.P.D. FT		VOLTS	PHASE	FLA	MOP	SCCR KA	OPTIONS/ ACCESSORIES		
B-1	NAT. GAS	4–14	199.0	180.0	80	10:1	18-3/4	19–1/8	31–1/8	120	150	12.0	W	5	AUTO	120	1	3.3	15.0	14	В	WHB199	1
B-2	NAT. GAS	4–14	199.0	180.0	80	10:1	18-3/4	19–1/8	31–1/8	120	150	12.0	W	5	AUTO	120	1	3.3	15.0	14	В	WHB199	1

1. REFER TO SCHEDULES GENERAL NOTES.

2. MODEL NUMBERS ARE LOCHINVAR UNLESS OTHERWISE NOTED.

3. FLUID TYPE: W = WATER, PGXX = PROPYLENE GLYCOL SOLUTION XX PERCENTAGE OF GLYCOL, EGXX = ETHYLENE GLYCOL SOLUTION XX PERCENTAGE OF GLYCOL.

1. BOILERS ARE SIZED AT 2/3 OF THE ANTICIPATED BUILDING LOAD.

								PL	JMP SC	HEDULE										
UNIT IDENTIFICATION	SYSTEM SERVED	LOCATION	TYPE	COUPLING TYPE	WATERFLOW GPM	Fluid Type	SYSTEM OPERATING		OVERLOAD GPM	MINIMUM EFFICIENCY %		MOTOR		MODULATION/ CONTROL TYPE		ELE	CTRICAL		MODEL NUMBER	KEYED NOTES
							TEMP. F FOR PUMP SELECTION				BHP	HP	RPM		VOLTS	PHASE	SCCR KA (NOTE 4)	OPTIONS/ ACCESSORIES		
HWHP-1	B-1	MECHANICAL 202	INLINE	CLOSE	20.0	w	60.0	12.0	NON- OVERLOADING			120W		ECM	120	1	14		GRUNDFOS UPMXL 25-124	1
HWHP-2	B-2	MECHANICAL 202	INLINE	CLOSE	20.0	w	60.0	12.0	NON- OVERLOADING			120W		ECM	120	1	14		GRUNDFOS UPMXL 25-124	1
HWHP-3	HWH	MECHANICAL 202	INLINE	CLOSE	18.0	W	60.0	22.0	NON- OVERLOADING	35.1	0.43	1.0	4,200	ECM	208	1	14	В	ECOCIRC XL 65-130	
HWHP-4	HWH	MECHANICAL 202	INLINE	CLOSE	18.0	W	60.0	22.0	NON- OVERLOADING	35.1	0.43	1.0	4,200	ECM	208	1	14	В	ECOCIRC XL 65–130	

GENERAL NOTES: 1. REFER TO SCHEDULES GENERAL NOTES.

2. MODEL NUMBER ARE BELL & GOSSETT UNLESS OTHERWISE NOTED.

3. FLUID TYPE: W = WATER, PGXX = PROPYLENE GLYCOL SOLUTION <u>XX</u> PERCENTAGE OF GLYCOL, EGXX = ETHYLENE GLYCOL SOLUTION <u>XX</u> PERCENTAGE OF GLYCOL.

4. CONTROLLER (E.G. VARIABLE FREQUENCY CONTROLLER, MOTOR STARTER) FOR SPECIFIED EQUIPMENT SHALL BE MANUFACTURED AND MARKED PER NEC WITH A MINIMUM SHORT CIRCUIT CURRENT RATING AS INDICATED.

KEYED NOTES: 1. PUMP POWER FED FROM ASSOCIATED BOILER.

					HO	TWA	TER I	PROP	ELLEF	RFAN	UNIT HEA	TER SCH	EDUL	E				
UNIT IDENTIFICATION	CAPACITY MBH	AIRFLOW CFM	LEAVING AIR TEMPERATURE	F/	٩N			WATER			CONTROL VALVE W.P.D. FT. HEAD	MODULATION/ CONTROL TYPE		ELE	CTRICAL		MODEL NUMBER	KEYED NOTES
	MD11		F	HP	RPM	FLOW GPM	FLUID TYPE	E.W.T. F	L.W.T. F	MAXIMUM W.P.D. FT. HEAD			VOLTS	PHASE	SCCR KA	OPTIONS/ ACCESSORIES	Nomber	
UH-1	3.1	245	91.0	16 W	1,550	0.5	W	150.0	120.0	5.0	15.0	AUTO	120	1	14	В	HS-108A	
UH-2	3.1	245	91.0	16 W	1,550	0.5	w	150.0	120.0	5.0	15.0	AUTO	120	1	14	В	HS-108A	
UH-3	3.1	245	91.0	16 W	1,550	0.5	w	150.0	120.0	5.0	15.0	AUTO	120	1	14	В	HS-108A	
UH-4	3.1	245	91.0	16 W	1,550	0.5	w	150.0	120.0	5.0	15.0	AUTO	120	1	14	В	HS-108A	
UH-5	3.1	245	91.0	16 W	1,550	0.5	w	150.0	120.0	5.0	15.0	AUTO	120	1	14	В	HS-108A	

<u>GENERAL NOTES:</u> 1. REFER TO SCHEDULES GENERAL NOTES. 2. MODEL NUMBERS ARE STERLING UNLESS OTHERWISE NOTED. 3. FLUID TYPE: W = WATER, PGXX = PROPYLENE GLYCOL SOLUTION XX PERCENTAGE OF GLYCOL, EGXX = ETHYLENE GLYCOL SOLUTION XX PERCENTAGE OF GLYCOL.

# GENERAL NOTES: 1. MODEL NUMBERS ARE BELL & GOSSETT UNLESS OTHERWISE NOTED.

2. THE CONTRACTOR SHALL PRE-CHARGE THE TANK TO THE VALUE INDICATED IN THE SCHEDULE. FOR TANKS THAT ARE SUPPLIED PRE-CHARGED BY THE MANUFACTURER, THE CONTRACTOR SHALL CONFIRM THE PRESSURE AND MAKE ADJUSTMENTS AS REQUIRED. 3. FLUID TYPE: W = WATER, PGXX = PROPYLENE GLYCOL SOLUTION XX PERCENTAGE OF GLYCOL, EGXX = ETHYLENE GLYCOL SOLUTION XX PERCENTAGE OF GLYCOL.

				AIR <sup>-</sup>	TERM	INAL	UNIT	WITH	н нот	WA
						AIR FLOW				
UNIT IDENTIFICATION	inlet Size	AREA SERVED	UNIT SERVED FROM	COOLING MAX CFM	COOLING MIN. CFM	HEATING MIN. CFM	HEATING MAX CFM	MAXIMUM A.P.D. W/ COIL IN. W.G.	CAPACITY MBH	Maximum Number Rows
TU-103	10	COMMUNITY ROOM	AHU-1	790	230	230	475	0.25	18.0	2
TU-105	6	LOBBY	AHU-1	265	80	80	265	0.25	11.3	2
TU-107	8	WATCH DESK	AHU-1	350	145	145	285	0.25	10.8	2
TU-113	6	DORM	AHU-1	200	100	100	190	0.25	7.2	2
TU-115	6	DORM	AHU-1	200	100	100	150	0.25	4.2	2
TU-119	6	DORM	AHU-1	200	100	100	190	0.25	7.2	2
TU-121	6	DORM	AHU-1	200	100	100	150	0.25	4.2	2
TU-122	12	DAYROOM	AHU-1	1600	325	325	740	0.25	28.1	2
TU-122A	8	KITCHEN HOOD	AHU-1	600	0	0	600	0.25	6.5	2
TU-129	6	SENIOR OFFICER	AHU-1	200	100	100	150	0.25	4.8	2
TU-131	8	CORRIDOR	AHU-1	600	400	400	530	0.25	21.8	2
TU-201	6	MEZZANINE	AHU-1	300	100	100	300	0.25	11.3	2

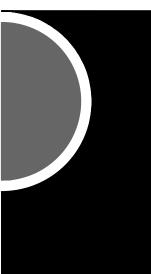
1. MODEL NUMBERS ARE TITUS UNLESS OTHERWISE NOTED.

2. MAXIMUM PRESSURE DROP SCHEDULED SHALL BE THE MAXIMUM ALLOWABLE STATIC PRESSURE FOR BOX AND COIL AT THE MAXIMUM CFM. 3. HEATING COIL SELECTION BASED ON HEATING MAXIMUM AIR FLOW.

KEYED NOTES:

#### ATER COIL SCHEDULE HEATING COIL (NOTE 3) AIR WATER DIAGRAM KEYED NOTES MAXIMUM CONTROL CONTROL E.D.B. L.D.B. FLOW GPM E.W.T. L.W.T. W.P.D FT. VALVE W.P.D. VALVE HEAD FT. HEAD TYPE 55.0 89.9 1.2 150.0 120.0 5.00 2-WAY 15 55.0 94.5 0.8 150.0 120.0 5.00 2-WAY 15 55.0 89.9 0.7 150.0 120.0 5.00 55.0 89.9 0.5 150.0 120.0 5.00 55.0 89.9 0.5 150.0 120.0 5.00 55.0 80.7 0.5 150.0 120.0 5.00 15 2-WAY 15 2-WAY 15 2-WAY 55.0 89.9 0.5 150.0 120.0 5.00 2-WAY 15 55.0 80.7 0.5 150.0 120.0 5.00 15 2-WAY 55.0 89.9 1.9 150.0 120.0 5.00 15 2-WAY 55.0 65.0 0.5 150.0 120.0 5.00 15 2-WAY 55.0 84.3 0.5 150.0 120.0 5.00 55.0 65.0 0.5 150.0 120.0 5.00 2-WAY 15 15 2-WAY 55.0 89.9 0.8 150.0 120.0 5.00 15 2-WAY

# PARTNERS



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OWNER

City Of Warren

#### PROJECT NAME

Warren Civic Center South Fire Station #1

23211 Van Dyke Ave Warren, MI 48089

#### PROJECT NO.

# 21-146A

ISSUES / REVISIONS Bidding / Construction 06/13/2023 DRAWN BY JTH CHECKED BY DAC APPROVED BY DAC SHEET NAME

MECHANICAL SCHEDULES

TH	IERMOS		IXING VAL	VE SCHED	ULE				F	UEL	FIRED C	OME	STIC	WATER H	IEATE	ER SC	HEDU	ILE				
UNIT IDENTIFICATION	MINIMUM FLOW	MAXIMUM FLOW	PRESSURE DROP AT	MODEL NUMBER	KEYED NOTES	UNIT IDENTIFICATION	STORAGE CAPACITY		FUEL		RECOVERY GPH	E.W.T. F	L.W.T. F	MODULATION/ CONTROL TYPE			ELE	CTRICAL			MODEL NUMBER	KEYED NOTES
	GPM	GPM	MAXIMUM FLOW PSIG				GALLONS	TYPE	MIN/MAX MANUFACTURER	INPUT MBH					VOLTS	PHASE	FLA	MOP	SCCR KA	OPTIONS/ ACCESSORIES		
MV-1	1	165	50	MEGATRON 5NB-LF					REQUIRED INLET PRESSURE AT GAS													
MV-2	1.5	5	15	S19–2000	1				TRAIN													
GENERAL NOTES:	MRERS ARE LEON	ARD UNLESS OTHER	WISE NOTED	•		DWH-1	_	NATURAL GAS	4–14	150	125	40	140	AUTO	120	1	4.5	_	-		AWN151PM	

KEYED NOTES: 1. MODEL NUMBER IS BRADLEY.

DOMES'	TIC HOT	WATER S	TORAGE	TANK SC	HEDULE
UNIT IDENTIFICATION	STORAGE CAPACITY	DIMEN	SIONS	MODEL NUMBER	REMARKS
	GALLONS	DIAMETER (INCHES)	HEIGHT (INCHES)		
ST-1	257	34	91	RGA257	
ST-1	257	. ,		RGA257	

NOTE: 1. REFER TO SCHEDULES GENERAL NOTES. 2. MODEL NUMBERS ARE LOCHINVAR UNLESS OTHERWISE NOTED.



											SP	LIT S	YSTE	EM AI	R COND		G UNIT :	SCHEDUL	E										
							INE	DOOR UNIT												C	UTDOOR L	NIT							
UNIT IDENTIFICATION	TOTAL CAPACITY	EVA	PORATOR	FAN		COOLIN	IG COIL	F	LTER			ELECTRICAL			MODEL NUMBER	UNIT		CONDENSI	NG SECTION			MODULATION/_		E	ELECTRICAL	-		MODEL NUMBER	KEYE NOTE
IDENTIFICATION	MBH	AIRFLOW CFM		WATTS EACH	E.D.B. F	E.W.B. °F	MINIMUM FACE AREA SQ. FT.	EFF. %	AREA SQ. FT.	VOLTS	PHASE	МСА	MOP	SCCR KA		IDENTIFICATION	NUMBER OF COMPRESSORS	NUMBER OF CONTROL STAGES	Ambient Temperture †	AIRFLOW CFM	FAN WATTS	Control type	VOLTS	PHASE	МСА	MOP	SCCR KA		
ACU-1	18.0	500	1		80.0	67.0		MERV 4		208	1	0.5	15.0	14	FAQ18TAVJURZQ1 8TAVJUA	ACCU-1	1	MODULATING	95.0	2682		AUTO	208	1	16.5	20.0	14	FAQ18TAVJURZQ18 TAVJUA	<sup>3</sup> 1,2

1. REFER TO SCHEDULES GENERAL NOTES. 2. MODEL NUMBERS DAIKIN UNLESS OTHERWISE NOTED.

<u>KEYED NOTES:</u> 1. INDOOR UNIT POWER FEED THROUGH OUTDOOR UNIT. 2. UNITS SHALL BE CAPABLE OF OPERATING DOWN TO 0 DEG. F.

1. REFER TO SCHEDULES GENERAL NOTES. 2. MODEL NUMBERS ARE LOCHINVAR UNLESS OTHERWISE NOTED.

		C	OMEST	LIC HO	DT W	ATER \$	SYSTE		NSION	TANK S	SCHE	DULE			
UNIT IDENTIFICATION	DENTIFICATION SERVED SYSTEM VOLUME TANK TANK TEMPERATURES VOLUME FACTOR TANK DIMENSIONS NUMBER GALLONS INITIAL PRE- MAX MINIMUM MAXIMUM GALLONS VOLUME DIAMETER HEIGHT														
		GALLONS		INITIAL PSIG	PRE- Charge Psig	MAX (OPERATING) PSIG	MINIMUM F	MAXIMUM F	GALLONS		VOLUME GALLONS	Diameter Inches	Height Inches		
ET-1	DWH-1	26	DIAPHRAGM	38	38	150	40	200	1	0.39	1	8	13	PT-5	
EI-1 GENERAL NOTES		26	DIAPHRAGM	38	38	150	40	200	1	0.39	1	8	13	PI-5	

GENERAL NOTES: 1. MODEL NUMBERS ARE BELL & GOSSETT UNLESS OTHERWISE NOTED.

2. THE CONTRACTOR SHALL PRE-CHARGE THE TANK TO THE VALUE INDICATED IN THE SCHEDULE. FOR TANKS THAT ARE SUPPLIED PRE-CHARGED BY THE MANUFACTURER, THE CONTRACTOR SHALL CONFIRM THE PRESSURE AND MAKE ADJUSTMENTS AS REQUIRED.

							DOM	ESTIC V	VATER	PUMP	SCHE	DULE								
UNIT IDENTIFICATION	SYSTEM SERVED	LOCATION	TYPE	COUPLING TYPE	WATERFLOW GPM		SYSTEM OPERATING		OVERLOAD GPM	MINIMUM EFFICIENCY %		MOTOR		MODULATION/ CONTROL TYPE		ELE	CTRICAL		MODEL NUMBER	KEYED NOTES
							TEMP. F FOR PUMP SELECTION				BHP	HP	RPM		VOLTS	PHASE	SCCR KA (NOTE 4)	OPTIONS/ ACCESSORIES		
HWRP-1	DWH-1	MECHANICAL/ ELECTRICAL 202	INLINE	CLOSE	2.3	W	40	4	0	0	0	1/6	3,300	AUTO	120	1	14		PL-36	

GENERAL NOTES: 1. REFER TO SCHEDULES GENERAL NOTES. 2. MODEL NUMBER ARE BELL & GOSSETT UNLESS OTHERWISE NOTED. 3. FLUID TYPE: W = WATER, PGXX = PROPYLENE GLYCOL SOLUTION XX PERCENTAGE OF GLYCOL, EGXX = ETHYLENE GLYCOL SOLUTION XX PERCENTAGE OF GLYCOL. 4. CONTROLLER (E.G. VARIABLE FREQUENCY CONTROLLER, MOTOR STARTER) FOR SPECIFIED EQUIPMENT SHALL BE MANUFACTURED AND MARKED PER NEC WITH A MINIMUM SHORT CIRCUIT CURRENT RATING AS INDICATED.

						AIR C	OMPF	RESSO	OR SO	CHEDL	JLE						
UNIT NUMBER	SIMPLEX OR	TYPE	DELIVERY PRESSURE	CAPACITY S.C.F.M.	COM	IPRESSOR(S)			RECI	EIVER		MODULATION/ CONTROL TYPE		ELECTRICAL		MODEL NUMBER	KEYED NOTES
	DUPLEX		PSIG		S.C.F.M. EACH	HP EACH	RPM	TYPE	Length Inches	DIAMETER INCHES	GALLONS		VOLTS	PHASE	SCCR KA		
AC-1	SIMPLEX	RECIPROCATING	175	17.3	_	5	845	TANK	74	34	80	AUTO	208	3	-	PSB-5-75-80VT	

<u>GENERAL NOTES:</u> 1. REFER TO SCHEDULES GENERAL NOTES.

2. MODEL NUMBERS ARE PNEUTECH UNLESS OTHERWISE NOTED.

		GAS F	IRED INF	RA-RED H	IEATE	ER SC	HEDULI	E	
UNIT IDENTIFICATION	HEATER LENGTH	NAT GAS INPUT MBH	INLET PRESSURE AT GAS TRAIN	MODULATION/ CONTROL TYPE		ELECTRICA	۱L	MODEL NUMBER	REMA
					VOLTS	PHASE	OPTIONS/ ACCESSORIES		
IHU–1	41'-3 1/4"	150	7"–14"	AUTO	120	1	В	MTSA150/100L40	
IHU-2	41'-3 1/4"	150	7"–14"	AUTO	120	1	В	MTSA150/100L40	

NOTE: 1. REFER TO SCHEDULES GENERAL NOTES. 2. MODEL NUMBERS ARE SOLARONICS UNLESS OTHERWISE NOTED.

ARKS	

PLUN	BING	CONNE		I SCHI	EDULE
UNIT IDENTIFICATION	CW INCHES	HW INCHES	SAN INCHES	VENT INCHES	KEYED NOTES
WC-1	1 1/2	-	4	2	
WC-2	1 1/2	_	4	2	
LAV–1	1/2	1/2	1 1/2	1 1/2	
LAV-2	1/2	1/2	1 1/2	1 1/2	
SK-1	3/4	3/4	1 1/2	1 1/2	
SK-2	3/4	3/4	1 1/2	1 1/2	
SK-3	3/4	3/4	1 1/2	1 1/2	
CS-1	3/4	3/4	-	-	
SS-1	3/4	3/4	3	-	
EWC-1	1/2	-	1 1/2	1 1/2	
SH-1	3/4	3/4	I	I	1
SH-2	3/4	3/4	_	_	1
FD-1	-	_	3	_	
FD-2	_	-	4	_	
FS-1	_	_	3	_	

<u>GENERAL NOTES:</u> 1. INDIVIDUAL WATER LINE BRANCHES, WASTE LINES, VENTS, AND TRAPS FOR CONNECTION TO INDIVIDUAL FIXTURES, FIXTURE FITTINGS, AND SPECIALTIES SHALL BE IN ACCORDANCE WITH THE FOLLOWING SCHEDULE OR AS INDICATED ON DRAWINGS, WHICHEVER IS GREATER.

<u>KEYED NOTES:</u> 1. PROVIDE MIXING VALVE.

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	Peter Basso Associates Inc CONSULTING ENGINEERS	
	5145 Livernois, Suite 100 Troy, Michigan 48098-3276 Tel: 248-879-5666 Fax: 248-879-0007 www.PeterBassoAssociates.com PBA Project No.: 2021.0370	
KEY	PLAN	•

OWNER

City Of Warren

#### PROJECT NAME

Warren Civic Center South Fire Station #1

23211 Van Dyke Ave Warren, MI 48089

## PROJECT NO.

ISSUES / REVISIONS	
Bidding / Construction	06/13/2023
DRAWN BY	
JTF	
CHECKED BY	
DAC	
APPROVED BY	
DAC	

SHEET NAME MECHANICAL SCHEDULES

UNIT IDENTIFICATION			BOILER				
	MIN SNOW MELT LOAD (MBH)	INPUT (MBH)	OUTPUT (MBH)	SNOW MELT FLUID E.W.T. F	SNOW MELT FLUID L.W.T. F	RELIEF VALVE SETTING (PSI)	
							PUMP TYPE
SMB-1	267.3	300	278	100	130	30	INLINE

NOTE: 1. REFER TO SCHEDULES GENERAL NOTES.

2. MODEL NUMBERS ARE PROPAK SOLUTIONS BOILERS UNLESS OTHERWISE NOTED. 3. ENTIRE PACKAGE PIPED, WIRED, AND INSTALLED ON RIGID STEEL BASE.

VIE	BRATION ISOL	ATOF	R APP		ION S	CHEDL	JLI
				EQUIPME	NT LOCATION		
			SLAB ON GR/	ADE	UP TO 4	0 FT (12 M) FL	_00R
equipment Type	EQUIPMENT CATEGORY	BASE TYPE	ISOLATOR TYPE	MIN. DEFL., IN. (MM)	BASE TYPE	ISOLATOR TYPE	MI
PACKAGED SNOWMELT SYSTEM	ALL	A OR B	3	0.25 (6)	A OR B	3	0
BASE TYPES:							

BASE TYPE A - NO BASE, ISOLATORS ATTACHED DIRECTLY TO EQUIPMENT.

ISOLATOR TYPES:

ISOLATOR TYPE 1a - ELASTOMERIC ISOLATION PAD. ISOLATOR TYPE 1b - ELASTOMERIC ISOLATION PAD WITH STEEL LOAD BEARING PLATE. ISOLATOR TYPE 3 - FREE STANDING SPRING FLOOR ISOLATOR.

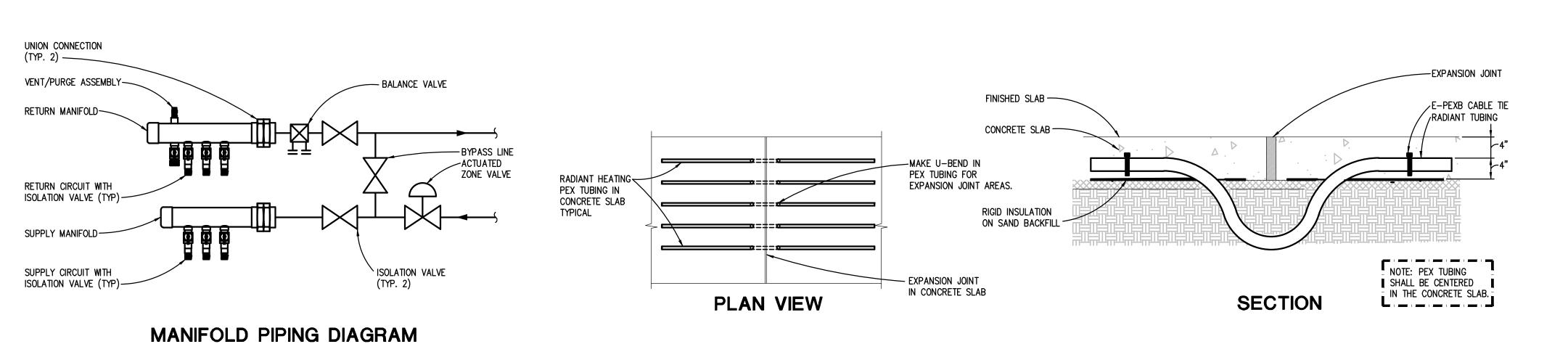
SN	IOV	٧M	EL	ΤF	PIPI	NG	i &	V		/E	AF	PL			ON	S	СН	ED	ULI	E
			М	ATERIA	۱L						CONNE	ECTION				ISC	OLATIO	N VALV	VES	
PIPE SIZE (INCHES)	SOFT COPPER TYPE K	HARD COPPER TYPE L	HARD COPPER TYPE M	CARBON STEEL (SCHED. 40)	CARBON STEEL (SCHED. 80)	CARBON STEEL (STD.)	PEX	SOLDERED	BRAZED	Welded	THREADED	FLANGED	GROOVED	PRESSURE SEAL	MECHANICALLY FORMED TEE	BALL	General Service Butterfly	HI-PERF BUTTERFLY	GATE	KEYED NOTES
INDOOR, ABOVEG	ROU	ND SN	IOWM	ELT 8	BYSTI	EM SI	UPPL	/ & R	etur	N - M	IN. W	ORKIN	ig pr	ess.	& TE	MP., 1	25 P8	SIG A'	T 200	DEG F
UP TO 2		Х						Х								Х				
BELOW GROUND	SNO	WMEL	T SY	STEM	UND	ERSL	AB SL	JPPLY	' & R	ETURI	N - M	IN. W	ORKIN	ig pr	ESS.	& TEI	MP.: 1	25 PS	SIG AT	200 DEG F
UP TO 1							X													
<u>GENERAL NOTES</u>				-	-	-	-	-	7	-	-	-	-		-	-	-	7	-	-

1. 'X' INDICATES ACCEPTABLE SELECTION. IF MORE THAN ONE SELECTION IS INDICATED FOR A PIPING SYSTEM, CONTRACTOR MAY SELECT FROM THOSE INDICATED SELECTIONS.

2. DISSIMILAR-METAL PIPING JOINTS: CONSTRUCT JOINTS USING DIELECTRIC FITTINGS COMPATIBLE WITH BOTH PIPING MATERIALS. IF A BRONZE

VALVE CONNECTS THE DISSIMILAR METALS NO FURTHER DIELECTRIC ISOLATION IS REQUIRED. a. NPS 2 AND SMALLER: USE BRASS COUPLING, NIPPLE, OR UNION. b. NPS 2-1/2 AND LARGER: USE DIELECTRIC FLANGE KITS.

3. USE UNIONS OR FLANGES AT VALVE AND EQUIPMENT CONNECTIONS. 4. HVAC EQUIPMENT DRAINS, VENTS, SAFETY VALVE PIPING, BLOWDOWN PIPING AND THE LIKE SHALL BE SAME PIPING MATERIAL AS ASSOCIATED PIPING SYSTEM.



NO SCALE

ON S	CHEDL	JLE						SNOW	MELT	ZONING	3
LOCATION				MANIFOLD	AREA SERVED	NUMBER OF CIRCUITS	CAPACITY (BTUH)	WATERFLOW (GPM)	WATER 1	TEMPERATURE	
UP TO 40	) FT (12 M) FI	LOOR SPAN			(SQFT)		(2.0.1)		E.W.T F	L.W.T °F	
BASE TYPE	ISOLATOR TYPE	MIN. DEFL., IN. (MM)	KEYED NOTES	ZONE #1-EAST APPARATUS BAY	850	4	139200	10	130	100	ľ
A OR B	3	0.25 (64)	NOTE 3	ZONE #2-WEST APPARATUS BAY	770	4	128100	9.2	130	100	

SNOWMELT

FLUID

40% PG

AIR SEPERATOR

INLINE

DIAPHRAGM

EXPANSION TANK

TANK TYPE VOLUME ACCEPTANCE

25

(GALLONS) (GALLONS)

20.2

GLYCOL

MAKEUP UNI (GALLONS)

6

VOLTS

120

SYSTEM

PACKAGED SNOWMELT BOILER SCHEDULE

HP

2/5

SECONDARY

30

HP PUMP TYPE GPM HEAD (FEET)

19.2

INLINE

PUMPS

1/6

PRIMARY

HEAD (FEET)

15

GPM

19.2

ABOVEGROUND SNOWMEL						OR	Y	IN	ISI	JL	<b>A</b> -	ΓΙΟ	)N
	INSUL	ATION	MATEF (INC	RIAL & HES)	THICK	NESS	FIE			LIED U ERIAL		ΞT	
	FLEXIBLE ELASTOMERIC	FIBERGLASS	MINERAL WOOL	POLYISOCYANURATE	CELLULAR GLASS	CALCIUM SILICATE	ALUMINUM	STAINLESS STEEL	PVC	SELF-ADHESIVE (FOR OUTDOOR APPLICATIONS)	PVDC (INDOOR)	PVDC (OUTDOOR)	KEYEI NOTE
NDOOR PIPE SYSTEM AND SIZE (INCHES)												<b></b>	
SNOWMELT SUPPLY & RETURN 200 DEG F AND LOWER													
3 AND SMALLER		1					X		X				A

1. 'X' OR THICKNESS IN INCHES INDICATES ACCEPTABLE SELECTION. IF MORE THAN ONE SELECTION IS INDICATED, CONTRACTOR MAY SELECT FROM THOSE INDICATED SELECTIONS. 2. INSULATE PIPING WITHIN AIR HANDLING EQUIPMENT THE SAME AS INDOOR PIPING. PROVIDE ALUMINUM OR STAINLESS STEEL JACKET.

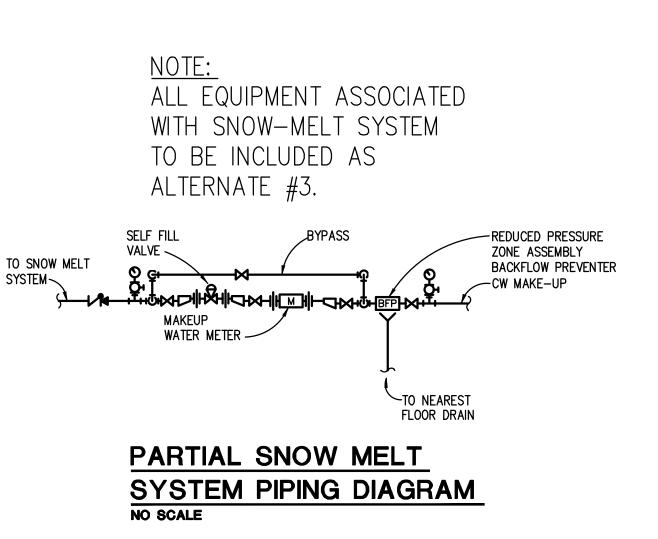
<u>Keyed Notes</u>

A. PROVIDE FIELD APPLIED JACKET FOR PIPING EXPOSED IN EQUIPMENT ROOMS, STORAGE ROOMS, JANITORS CLOSETS, RECEIVING ROOMS, TEST AREAS, CIRCULATION AREAS AND SUCH AREAS SUBJECT TO DAMAGE WITHIN 10 FEET (3 METERS) OF FINISHED FLOOR. B. PROVIDE MANUFACTURER'S RECOMMENDED PROTECTIVE COATING FOR FLEXIBLE ELASTOMERIC THERMAL INSULATION. C. STEAM AND CONDENSATE PIPING JACKET SHALL BE STUCCO EMBOSSED.

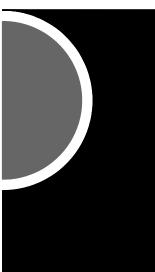
## PEX TUBING EXPANSION JOINT DETAIL NO SCALE

	ELECT	RICAL			MODEL NUMBER	REMARKS
PHASE	FLA	MOP	SCCR KA	OPTIONS/ ACCESSORIES		
1	26	30	14	В	SMP-B-1-1/4-120-1PH	

6	G SCHEDULE					
			TUBING			REMARKS
	Tube diameter Inches	TUBE SPACING INCHES	MAX. CIRCUIT LENGTH FT.	TUBING HEAD LOSS (FT.)	Control Valve W.P.D. Ft HD.	
	3/4	9	350	15	15	
	3/4	9	350	15	15	



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CONSULTING ENGINEERS 5145 Livernois, Suite 100 Troy, Michigan 48098-3276 Tel: 248-879-5666 Fax: 248-879-0007 www.PeterBassoAssociates.com PBA Project No.: 2021.0370
KEY PLAN
OWNER
City Of Warren
PROJECT NAME
Warren Civic Center South Fire Station #1
00011 Van Duka Ava

23211 Van Dyke Ave Warren, MI 48089

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# 21-146A

ISSUES / REVISIONS	
Bidding / Construction	06/13/2023
DRAWN BY	
JTH	
CHECKED BY	
DAC	
APPROVED BY	
DAC	
SHEET NAME SNOWMELT DETAILS AND	) SCHEDULES

# **TEMPERATURE CONTROL - SYMBOLS LIST**

		SCHEMATIC SYN	
<u>SYMBOL</u>	DESCRIPTION	<u>SYMBOL</u>	DESCRIPTION
AFC	AIR FLOW CONTROLLER		SMOKE DETECTOR – DUCT MOUNTED
	AQUASTAT, STRAP ON BULB	s/s	START/STOP RELAY
C02	CARBON DIOXIDE SENSOR - WALL MOUNTED	SPT	STATIC PRESSURE TRANSMITTER
C02	CARBON DIOXIDE SENSOR - DUCT MOUNTED	SP	STATIC PRESSURE SENSOR OR PROBE
cs	CURRENT SWITCH	SW	SMTCH
$\rightarrow \rightarrow $	DAMPER – OPPOSED BLADE		TEMPERATURE SENSOR - RIGID ELEMENT IN WELL
<del>-////</del>	DAMPER – PARALLEL BLADE		TEMPERATURE SENSOR - STRAP ON BULB
м	DAMPER MOTOR	Ţ	TEMPERATURE SENSOR - DUCT MOUNTED AVG ELEMENT
DPT	DIFFERENTIAL PRESSURE TRANSMITTER	Т	TEMPERATURE SENSOR - DUCT MOUNTED RIGID ELEMENT
DPS	DIFFERENTIAL PRESSURE SWITCH	T	THERMOSTAT OR TEMPERATURE SENSOR (AS DEFINED ON TC DRAWINGS)
СМ	FIRE ALARM SYSTEM, ADDRESSABLE CONTROL MODULE	XF	TRANSFORMER
FMS	FLOW MEASURING STATION	Ŕ	VALVE - 2 WAY CONTROL VALVE
FM	FLOW METER	C A A	VALVE - 3 WAY CONTROL VALVE
FS	FLOW SWITCH	_	
FZ	FREEZESTAT	VFC	VARIABLE FREQUENCY CONTROLLER
 (F/)	GAUGE - FLOW	vs	VELOCITY SENSOR
P/)	GAUGE – PRESSURE	VIB	VIBRATION SWITCH
 	GAUGE – TEMPERATURE	V	VOLTAGE SENSOR
	GUARD FOR STAT OR SENSOR	WIRING SYMBOL	
	HUMIDIFIER	<u>SYMBOL</u> ≻{	DESCRIPTION AUDIBLE DEVICE (AS DEFINED ON TC DRAWINGS)
н	HUMIDISTAT OR HUMIDITY SENSOR		COIL - MOTOR STARTER CONTACTOR
	(AS DEFINED ON TC DRAWINGS) HUMIDITY SENSOR, DUCT MOUNTED	-(R)-	COIL - RELAY
	LEVEL SWITCH OR TRANSMITTER	$\bigcirc$	
LS	LIMIT SWITCH		COIL - TIME DELAY RELAY
	LINE - ELECTRIC		COIL - VARIABLE SPEED DRIVE CONTACTOR
	LINE - INSTRUMENT AIR		COIL – EP OR SOLENOID VALVE
M/s	MOTOR STARTER	에는	CONTACT – INSTANT OPERATING, NO
<u>/ s</u> os	OCCUPANCY SENSOR	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	CONTACT - INSTANT OPERATING, NC
03		$\sum_{i=1}^{n}$	CONTACT - TIMED AFTER COIL IS ENERGIZED, NOTC
R	PILOT LIGHT OR BEACON R - RED LENS	م ب م	CONTACT - TIMED AFTER COIL IS ENERGIZED, NCTO
·	A — AMBER LENS B — BLUE LENS	°↓	CONTACT - TIMED AFTER COIL IS DE-ENERGIZED, NOTO
	G – GREEN LENS	0	CONTACT - TIMED AFTER COIL IS DE-ENERGIZED, NCTC
PS	PRESSURE SWITCH	<u>_</u>	GROUND
РТ	PRESSURE TRANSMITTER	6	MOTOR, SINGLE PHASE
R	RELAY, ELECTRIC	, ~~	PILOT LIGHT OR BEACON
⊿ <sub>N</sub>	SELECTOR SWITCH, (N=NUMBER OF POSITIONS)	R	R – RED LENSE A – AMBER LENS
Al	SIGNAL – DDC/BAS, ANALOG INPUT		B – BLUE LENSE G – GREEN LENS
AO	SIGNAL – DDC/BAS, ANALOG OUTPUT	$\Box \rightarrow \checkmark$	
DI	SIGNAL – DDC/BAS, DIGITAL INPUT		PILOT LIGHT, WITH PUSH-TO-TEST
DO	SIGNAL – DDC/BAS, DIGITAL OUTPUT	o o⁄	
AI	SIGNAL – PACKAGED EQUIPMENT, ANALOG INPUT	o	PUSH BUTTON - MOMENTARY CONTACT, NO
AO	SIGNAL – PACKAGED EQUIPMENT, ANALOG OUTPUT		DUSH RUTTON - MOMENTARY CONTACT NO
DI	SIGNAL – PACKAGED EQUIPMENT, DIGITAL INPUT		PUSH BUTTON - MOMENTARY CONTACT, NC
	SIGNAL – PACKAGED EQUIPMENT, DIGITAL OUTPUT	$ \circ   \circ \circ \circ \circ \circ \circ \circ \circ \circ \circ \circ \circ \circ \circ \circ \circ \circ $	PUSH BUTTON - MOMENTARY CONTACT, NO & NC
- MESYMBOLS &	ARREVIATIONS SHOWN MAY NOT ADDLY TO THIS DROUGOT		PUSH BUTTON — MOMENTARY, NO (MUSHROOM HEAD)
	ABBREVIATIONS SHOWN MAY NOT APPLY TO THIS PROJECT.	÷ ·	
	VIATIONS THAT MAY BE USED ON TEMPERATURE CONTROL	<u>a T</u> a	PUSH BUTTON - MOMENTARY, NC (MUSHROOM HEAD)
	I		

## ABBREVIATION LIST

ACCESS DOOR

ALTERNATE

AMPERE

AUTOMATIC AIR VENT

AIR COOLED CONDENSER

ABOVE FINISHED FLOOR

AIR HANDLING UNIT

AIR COOLED CONDENSING UNIT

ABBREVIATION DESCRIPTION

AAV

ACC

AD

AFF

AHU

ALT

AMP

APD

AUX

BAS

CFM

CHWP

CHWR

CHWS

CLG

CLP

CLR

CLS

C02

COND

CONT

CONTR

CONV

COS

CP

СТ

CUH

CW

CWP

CWR

CWS

DA

DAT

DB

DDC

DEG

D/N

DN

DPR

DWG

DWH

DX

(F)

ECUH

EDB

FFF

EHC ELEC

ERCP

ERU

EUH

EWB

EWT

EXH

F&B

FAS FCU

FIR

FM FT

FTR

GPM

GRH

HOA

HP

HP

HPLP

HPLR

HPLS

HR

HTG

HV

HVAC

HWHR

HWHS

HW

HWR

HX

IAO

HWH

DMPF

CH

ASHRAE

ACCU

<u>S (CONT.)</u>				
DESCRIPTION				
SWITCH - 2 POSITION SELECTOR				
SWITCH – 3 POSITION SELECTOR HAND/OFF/AUTO				
SWITCH – FLOW (AIR, WATER, ETC.), NO				
SWITCH – FLOW (AIR, WATER, ETC.), NC				
SWITCH — LIMIT, NO				
SWITCH - LIMIT, NO, HELD CLOSED				
SWITCH - LIMIT, NC				
SWITCH - LIMIT, NC, HELD OPEN				
SWITCH - LIQUID LEVEL, NO				
SWITCH - LIQUID LEVEL, NC				
SWITCH – MANUAL SPST, NO				
SHITCH MANUAL SI SI, NU				
SWITCH - MANUAL DPST, NO				
SWITCH - MANUAL SPST, NC				
SWITCH – MANUAL DPST, NC				
SWITCH - MANUAL SPDT				
SWITCH - MANUAL DPDT				
SWITCH - PRESSURE & VACUUM, NO				
SWITCH - PRESSURE & VACUUM, NC				
SWITCH – TEMPERATURE ACTUATED, NO				
SWITCH – TEMPERATURE ACTUATED, NC				
THERMAL OVERLOAD, SINGLE PHASE				
THERMAL OVERLOAD CONTACTS – 3 PHASE				
TRANSFORMER				
WIRE TERMINATION AT DEVICE				
WIRE TO WIRE TERMINATION				
WIRING NOT CONNECTED				
DESCRIPTION				
BUILDING AUTOMATION SYSTEM DIRECT DIGITAL CONTROL TEMPERATURE CONTROLS				
NORMALLY OPEN				
NORMALLY CLOSED NORMALLY OPEN TIMED OPEN				
NORMALLY OPEN TIMED CLOSED				
NORMALLY CLOSED TIMED OPEN				
NORMALLY CLOSED TIMED CLOSED				

SPST

SPDT

DPST

DPDT

SINGLE POLE SINGLE THROW

SINGLE POLE DOUBLE THROW

DOUBLE POLE SINGLE THROW

DOUBLE POLE DOUBLE THROW

Ξ	AIR PRESSURE DROP AMERICAN SOCIETY OF HEATING, REFRIGERATION, AND AIR-CONDITIONING ENGINEERS AUXILIARY	MBH MCC MECH MEZZ	THOUSAND BRITISH THERMAL UNITS PER HOUF MOTOR CONTROL CENTER MECHANICAL MEZZANINE
	BUILDING AUTOMATION SYSTEM	MFR MIN	MANUFACTURER
	COMMON CUBIC FEET PER MINUTE	MISC MMBH M/S	MISCELLANEOUS MILLION BRITISH THERMAL UNITS PER HOUR MOTOR STARTER
	CHILLER	MŤD	MOUNTED
	CHILLED WATER PUMP CHILLED WATER RETURN CHILLED WATER SUPPLY COOLING	MTR MV MZ	MOTOR MANUAL AIR VENT MULTI-ZONE
	COMPUTER LOOP PUMP COMPUTER LOOP RETURN	NC NCTC	NORMALLY CLOSED NORMALLY CLOSED TIMED CLOSED
	COMPUTER LOOP SUPPLY	NCTO NIC	NORMALLY CLOSED TIMED OPEN NOT IN CONTRACT
	CARBON DIOXIDE CONDENSATE	NFPA NO	NATIONAL FIRE PROTECTION AGENCY NORMALLY OPEN
	CONTINUATION OR CONTINUED	NOTC NOTO	NORMALLY OPEN TIMED CLOSED NORMALLY OPEN TIMED OPEN
	CONVECTOR CENTRAL OPERATOR STATION	NSB	NIGHT SETBACK
	CIRCULATING PUMP COOLING TOWER	OA OAT	OUTSIDE AIR OUTSIDE AIR TEMPERATURE
	CABINET UNIT HEATER DOMESTIC COLD WATER	DACU	
	CONDENSER WATER PUMP CONDENSER WATER RETURN	PACU PD	PACKAGED AIR CONDITIONING UNIT PRESSURE DROP (FEET OF WATER)
	CONDENSER WATER SUPPLY	PHR PHS	PERIMETER HEAT RETURN PERIMETER HEAT SUPPLY
	DISCHARGE AIR DISCHARGE AIR TEMPERATURE	PNL PPM	PANEL PARTS PER MILLION
	DRY BULB TEMPERATURE DIRECT DIGITAL CONTROL	PRV PSI	PRESSURE REDUCING VALVE POUNDS PER SQUARE INCH
	DEGREES	R	RETURN
	DAMPER DAY/NIGHT	RA RAT	RETURN AIR RETURN AIR TEMPERATURE
	DOWN DAMPER	RCP RELA	RADIANT CEILING PANEL RELIEF AIR
	DRAWING DOMESTIC WATER HEATER	REQD	REQUIRED
	DIRECT EXPANSION	RF RH	RETURN FAN RELATIVE HUMIDITY
	EXISTING EACH	RTU SA	ROOF TOP UNIT SUPPLY AIR
	EXHAUST AIR ENTERING AIR TEMPERATURE	SF SP	SUPPLY FAN STATIC PRESSURE
	ELECTRIC CABINET UNIT HEATER ENTERING DRY BULB	s/s	START/STOP
	EXHAUST FAN EFFICIENCY	STD STM	STANDARD STEAM
	ELECTRIC HEATING COIL ELECTRICAL	SZ S/W	SINGLE-ZONE SUMMER/WINTER
	ELECTRIC RADIANT CEILING PANEL ENERGY RECOVERY UNIT	SW	SWITCH
	ELECTRIC UNIT HEATER ENTERING WET BULB	TC TCP	TEMPERATURE CONTROL TEMPERATURE CONTROL PANEL
	ENTERING WATER TEMPERATURE	TEMP THR	TEMPERATURE TERMINAL HEATING RETURN
	EXHAUST	THS TSP	TERMINAL HEATING SUPPLY TOTAL STATIC PRESSURE
	DEGREES FAHRENHEIT FACE AND BYPASS DAMPER	tu Typ	(AIR) TERMINAL UNIT TYPICAL
	FIRE ALARM SYSTEM FAN COIL UNIT	UH	UNIT HEATER
	FLOOR FLOW MEASURING DEVICE	UL UV	UNDERWRITER'S LABORATORY UNIT VENTILATOR
	FEET FINNED TUBE RADIATION	VAV	VARIABLE AIR VOLUME
	GALLONS PER MINUTE	VFC VUV	VARIABLE FREQUENCY CONTROLLER VERTICAL UNIT VENTILATOR
	GRAVITY RELIEF HOOD	VS WC	VELOCITY SENSOR (AIRFLOW) WATER COLUMN
	HAND/OFF/AUTO HEAT PUMP	XFMR	TRANSFORMER
	HORSEPOWER HEAT PUMP LOOP PUMP		
	HEAT PUMP LOOP RETURN HEAT PUMP LOOP SUPPLY		
	HOUR HEATING		
	HEATING VENTILATING HEATING, VENTILATING, AIR CONDITIONING		
	HOT WATER HEATING HOT WATER HEATING RETURN		
	HOT WATER HEATING SUPPLY DOMESTIC HOT WATER		
	DOMESTIC HOT WATER DOMESTIC HOT WATER RETURN HEAT EXCHANGER		
	INDOOR AIR QUALITY		
	INCHES		F
	JANITOR'S CLOSET		VOST^ H
			or Thermostat Humidistat Or Ded Switch
	i	7	R OR T HUMIC ADED
	, , , , , , , , , , , , , , , , , , ,		

ABBREVIATION DESCRIPTION

KW

MA

MAT

MAU

MAX

KWH

LBS/HR

KILOWATT

MIXED AIR

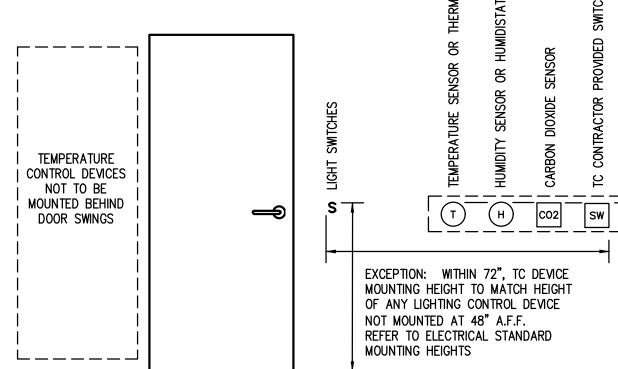
MAXIMUM

KILOWATT-HOUR

POUNDS PER HOUR

MAKE-UP AIR UNIT

MIXED AIR TEMPERATURE



#### TC DEVICE STANDARD MOUNTING HEIGHTS DETAIL NO SCALE

## TC GENERAL NOTES

- 1. THESE GENERAL NOTES SHALL BE APPLICABLE FOR ALL TEMPERATURE CONTROL (TC) DRAWINGS.
- 2. "PROVIDE" IS DEFINED AS 'FURNISH AND INSTALL".
- 3. TEMPERATURE CONTROLS CONTRACTOR (TC CONTRACTOR) SHALL BE RESPONSIBLE TO COMPLY WITH ALL APPLICABLE CODES AND STANDARDS.
- 4. FOR TEMPERATURE CONTROL DRAWINGS ONLY: ALL DETAILED INFORMATION IDENTIFIED WITH HEAVY LINE WEIGHT SHALL BE PROVIDED BY TC CONTRACTOR. ALL OTHER INFORMATION IDENTIFIED WITH LIGHT LINE WEIGHT SHALL BE PROVIDED BY OTHER TRADES.
- 5. ALL CONTROL SCHEMATICS AND WIRING DIAGRAMS ARE FOR THE CLARIFICATION OF EQUIPMENT INTERLOCKING FUNCTIONS AND THE INTERFACE OF VARIOUS CONTRACTORS' WORK AND SHALL NOT BE MISTAKEN AS SHOP DRAWINGS FOR ACTUAL INSTALLATION.
- 6. TC CONTRACTOR SHALL PROVIDE DDC CONTROLLERS AS REQUIRED TO MEET INTENT OF DESIGN DOCUMENTS. REFER TO THE PLANS FOR THE DDC FUNCTIONS THAT APPLY TO EACH MECHANICAL SYSTEM.
- 7. ALL TC PROVIDED COMPONENTS AND ALL TC CONTRACTOR INSTALLED WIRING SHALL BE LABELED PER SPECIFICATIONS.
- 8. ALL WIRING AND SYSTEM CONTROL VOLTAGES SHALL BE IN ACCORDANCE WITH THE EQUIPMENT MANUFACTURER'S RECOMMENDATION AND THE ELECTRICAL SPECIFICATIONS.
- 9. FAN AND PUMP MOTOR STARTERS, STARTER WIRING, CONTROL VOLTAGE TRANSFORMERS AND ASSOCIATED POWER WIRING SHALL BE PROVIDED BY OTHER TRADES.
- 10. FAN AND PUMP MOTOR VARIABLE FREQUENCY CONTROLLERS SHALL BE PROVIDED BY THE TC CONTRACTOR INCLUDING CONTROL WIRING AND CONTROL VOLTAGE TRANSFORMERS.
- 11. DUCT SMOKE DETECTORS SHALL BE FURNISHED, INSTALLED AND WIRED TO THE FIRE ALARM SYSTEM BY THE ELECTRICAL CONTRACTOR. ELECTRICAL SHALL PROVIDE FIRE ALARM SYSTEM CONTROL MODULES FOR REQUIRED SAFETIES TO MOTOR STARTERS OR VEC'S AS INDICATED. CONTROL MODULES SHALL BE LOCATED NEAR RESPECTIVE MOTOR STARTERS OR VFCs. TC CONTRACTOR SHALL PROVIDE INTERLOCK WIRING FROM CONTROL MODULES TO MOTOR STARTERS OR VFCs.
- 12. ALL DDC AND CONTROL INTERLOCK WIRING SHALL BE BY TC CONTRACTOR UNLESS OTHERWISE NOTED. TC CONTRACTOR SHALL COORDINATE WITH VFC AND MOTOR STARTER SUPPLIERS TO DETERMINE EXACT WIRING REQUIREMENTS AND TERMINATION POINTS.
- 13. ALL DDC AND CONTROL INTERLOCK WIRING BETWEEN COMPONENTS SHALL BE INSTALLED WITHOUT INTERMEDIATE STOPS. WIRE SPLICING AT INTERMEDIATE TERMINAL STRIPS IS NOT ACCEPTABLE.
- 14. ALL ELECTRICAL WIRING AND RACEWAY SYSTEMS SHALL COMPLY WITH ELECTRICAL SPECIFICATION REQUIREMENTS. WHERE RACEWAY IS REQUIRED, TWO SEPARATE ELECTRICAL RACEWAY SYSTEMS SHALL BE PROVIDED: ONE FOR 120V WIRING AND THE OTHER FOR 24V WIRING.
- 15. TC CONTRACTOR SHALL BE RESPONSIBLE FOR ALL POWER SUPPLIES REQUIRED FOR TC SYSTEM UNLESS OTHERWISE NOTED. REFER TO ELECTRICAL PANEL SCHEDULES FOR SPARE CIRCUITS OR CIRCUITS DEDICATED TO TEMPERATURE CONTROLS. COORDINATE CIRCUIT USE WITH ELECTRICAL CONTRACTOR.
- 16. TC CONTRACTOR SHALL VERIFY EXACT LOCATION OF ALL FIELD MOUNTED COMPONENTS.
- 17. THERMOSTATS AND SPACE TEMPERATURE SENSORS SHALL BE MOUNTED 4'-0" ABOVE FINISHED FLOOR UNLESS NOTED OTHERWISE. PROVIDE GUARDS FOR SPACE TEMP SENSORS LOCATED IN PUBLIC AREA.
- 18. TC CONTRACTOR SHALL PROVIDE AUXILIARY PANELS FOR REQUIRED PANEL MOUNTED EQUIPMENT SUCH AS RELAYS, TRANSDUCERS, CONTROL TRANSFORMERS, ETC. AUXILIARY PANELS SHALL BE LOCATED NEXT TO ASSOCIATED DDC PANEL. DEPENDING ON WIRE QUANTITY OR COMPLEXITY, PROVIDE CONDUITS BETWEEN PANELS OR WIRING THROUGH WITH CONDUIT STUBS ABOVE ALL ASSOCIATED PANELS.
- 19. REMOTELY MOUNTED FIELD DEVICES SUCH AS RELAYS, CONTROL TRANSFORMERS, ETC., SHALL BE HOUSED IN AN ENCLOSURE PROVIDED BY THE TC CONTRACTOR.
- 20. CONTROL TRANSFORMERS WHEN REQUIRED SHALL BE SIZED FOR 150% OF ACTUAL LOAD.
- 21. FREEZESTATS SHALL BE MOUNTED ON UPSTREAM FACE OF COOLING COILS. FREEZESTAT QUANTITY SHALL BE ONE PER 20 SQ. FT OF CROSS SECTIONAL AREA.
- 22. CURRENT SWITCHES USED FOR OPERATIONAL STATUS SHALL HAVE CURRENT THRESHOLD SETPOINT ADJUSTED TO INDICATE BELT OR DRIVE FAILURE.
- 23. ALL CONTROL VALVES, CONTROL DAMPERS AND ASSOCIATED CONTROL ACTUATORS IDENTIFIED ON TC DRAWINGS SHALL BE FURNISHED BY TC CONTRACTOR UNLESS OTHERWISE NOTED. DAMPER SIZE AND LOCATIONS ARE INDICATED ON MECHANICAL FLOOR PLAN DRAWINGS.
- 24. ALL CONTROL VALVES AND DAMPERS FURNISHED BY THE TC CONTRACTOR SHALL BE INSTALLED BY THE MECHANICAL CONTRACTOR. ALL PIPE PENETRATIONS AND BASIC FITTINGS REQUIRED FOR SENSOR INSTALLATIONS SHALL BE PROVIDED BY MECHANICAL CONTRACTOR.
- 25. DAMPER ACTUATORS SHALL BE INSTALLED BY TC CONTRACTOR WHEN FURNISHED BY TC CONTRACTOR.
- 26. ALL INSTRUMENTATION TUBING REQUIRED FOR DPS AND DPT COMPONENT INSTALLATIONS SHALL BE PROVIDED BY TC CONTRACTOR.
- 27. TC CONTRACTOR SHALL FIELD MOUNT ALL REQUIRED "SHIPPED LOOSE" PACKAGED CONTROL COMPONENTS FURNISHED BY EQUIPMENT SUPPLIERS. ALL REQUIRED 24V AND 120V FIELD WIRING SHALL BE PROVIDED BY TC CONTRACTOR UNLESS NOTED OTHERWISE. TC CONTRACTOR SHALL COORDINATE SPECIFIC SYSTEM WIRING REQUIREMENTS WITH PACKAGED EQUIPMENT SUPPLIERS.

TEMPERATURE CONTROL DEVICES NOT TO BE MOUNTED BEHIND TELEVISIONS, OTHER PERMANENT FIXTURES, OR NEAR COPY MACHINES.

48" A.F.F. TO TOP OF BOX UNLESS OTHERWISE NOTED

# PARTNERS



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KEY PLAN

## OWNER

City Of Warren

#### PROJECT NAME

Warren Civic Center South Fire Station #1

23211 Van Dyke Ave Warren, MI 48089

#### PROJECT NO.

# 21-146A

ISSUES / REVISIONS

Bidding / Construction 06/13/2023

DRAWN BY

#### JTH

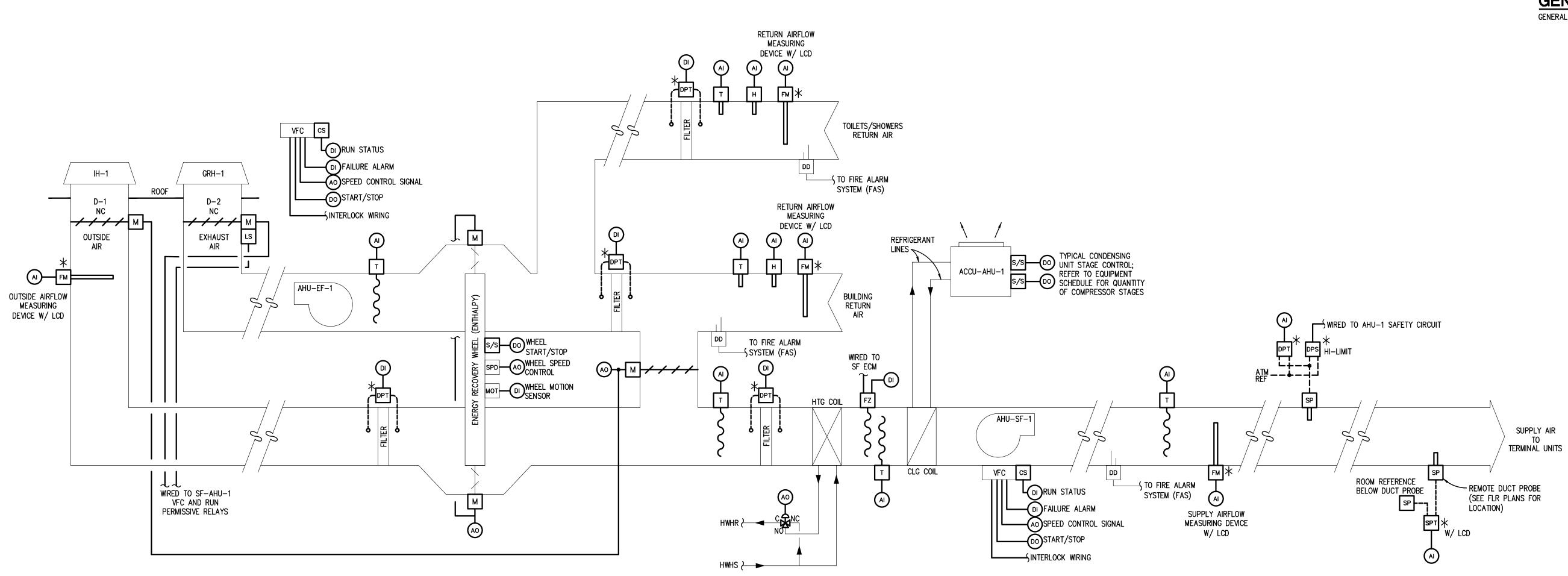
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SHEET NAME

TEMPERATURE CONTROL STANDARDS AND GENERAL NOTES



# **AHU-1 SEQUENCE OF OPERATION**

- NOTES: 1. MAIN BUILDING AIR HANDLER (AHU-1) SHALL BE SUPPLIED FOR PROJECT WITH COMPLETE INCLUDING FANS, FILTERS, DAMPERS, ENERGY WHEEL, ETC. AS SHOWN IN LIGHT LINE WEIGHT.
- 2. TC CONTRACTOR SHALL PROVIDE FIELD-WIRED, BACNET, DDC CONTROLLER INCLUDING ALL SENSORS & DEVICES FOR CONTROLS, RELAYS, AIRFLOW MEASURING DEVICES, ETC. AS SHOWN IN HEAVY LINE WEIGHT.
- 3. TC CONTRACTOR SHALL INSTALL THE MANUFACTURER'S FIELD-WIRED (SHIPPED LOOSE) SENSORS AND DEVICES, PLUS PROVIDE FIELD CONTROL WIRING FOR UNIT AS INDICATED, PLUS ANY MISCELLANEOUS FIELD CONTROL WIRING THAT MAY BE REQUIRED FOR THE UNIT THAT IS NOT SHOWN.
- 4. ELECTRICAL CONTRACTOR SHALL PROVIDE FIRE ALARM SYSTEM COMPONENTS AND WIRING FROM FIRE ALARM PANEL TO CONTROL MODULE. TC CONTRACTOR SHALL PROVIDE WIRING FROM CONTROL MODULE TO SAFETY CUTOUT RELAY.
- 5. TC CONTRACTOR AND ELECTRICAL CONTRACTOR SHALL COORDINATE WITH EQUIPMENT SUPPLIER FOR EXACT WIRING REQUIREMENTS.

<u>AHU-1 SEQUENCE OF OPERATION:</u>

NOTE: ALL SETPOINTS, RESET SCHEDULE SETPOINTS, DEADBANDS, AND TIME INTERVALS DESCRIBED IN SEQUENCE SHALL BE ADJUSTABLE BY SYSTEM OPERATORS. ALL MOTOR CONTROL SWITCHES SHALL BE IN "AUTO" POSITION. ALL CONTROL LOOPS SHALL BE ENABLED AND DISABLED BASED ON SYSTEM STATUS TO PREVENT LOOP WINDUP. 1. AHU-1 SHALL RUN 24X7 YEAR-ROUND. UNOCCUPIED MODE REFERS ONLY TO

- TERMINAL UNITS. 2. WHEN COMMANDED OFF THRU DDC OR THE BAS, OR OFF ON A SAFETY DEVICE TRIP,
- SUPPLY FAN, EXHAUST FAN, AND ENERGY WHEEL SHALL BE OFF, OUTSIDE AIR AND EXHAUST AIR DAMPERS SHALL CLOSE, DX COOLING CONTROL SHALL BE DISABLED. WHEN OA TEMP IS LESS THAN 40°F (ADJ.), DDC SHALL MODULATE THE HWH COIL VALVE TO MAINTAIN 50°F PLENUM SETPOINT AS MEASURED LEAVING AIR TEMP SENSOR. OTHERWISE HWH COIL VALVE SHALL CLOSE TO THE COIL. DDC SHALL SHUTDOWN THE ENTIRE AHU SYSTEM IN AN ORDERLY AND CONTROLLED MANNER.
- 3. ALL CONTROL DEVICES SHALL FAIL TO THE INDICATED "NORMAL FAIL-SAFE POSITION". SYSTEM ACTIVATED:
- 4. AHU SHALL RUN CONTINUOUSLY WITH BAS TIME OF DAY PROGRAMMING. OA AND EA DAMPERS SHALL OPEN WHEN SF VFC IS COMMANDED ON. DAMPER LIMIT SWITCHES SHALL PROVIDE RUN PERMISSIVE SIGNALS TO SF AND EF VFCs.

## **AHU-1 CONTROL**

<u>NOTES:</u>

- 1.  $\star$  INDICATES PANEL MOUNTED COMPONENT.
- 2. SUPPLY AIR AND RETURN AIR AIRFLOW MEASURING DEVICE RANGES SHALL BE 50% GREATER THAT EXPECTED CFM. REFER TO MECHANICAL EQUIPMENT SCHEDULES.
- 3. ELECTRICAL CONTRACTOR SHALL PROVIDE FIRE ALARM SYSTEM COMPONENTS AND WIRING FROM FIRE ALARM PANEL TO CONTROL MODULE. TC CONTRACTOR SHALL PROVIDE WIRING FROM CONTROL MODULE TO VFC SAFETY CIRCUIT.
- 5. UPON ANY SAFETY ACTIVATING, SF AND EF VFCs SHALL STOP THE RESPECTIVE FANS, OA & EA DAMPERS SHALL CLOSE. DDC SHALL PROVIDE AN AHU SAFETY ALARM TO THE BAS. 6. UPON INITIAL START, DDC SHALL START BOTH SF AND EF VFCs AT MINIMUM OUTPUT
- SIGNAL. VFCs SHALL SLOWLY RAMP UP TO SETPOINT OVER A 180 SECOND INTERVAL.
- 7. SF AND EF STATUSES SHALL BE MONITORED THRU RESPECTIVE CURRENT SWITCHES. ABNORMAL STATUS CONDITION SHALL ACTIVATE AN ALARM TO THE BAS. DDC SHALL TOTALIZE EACH FAN'S MOTOR RUNTIME HOURS OF OPERATION VIA THE CURRENT SWITCH FOR BAS DISPLAY.
- 8. DDC SHALL MONITOR OUTSIDE AIR (OA) AIRFLOW AND MAINTAIN 1525 CFM AS MINIMUM OA SETPOINT. FREE COOLING ECONOMIZER OVERRIDES MINIMUM OA CONTROL.
- 9. MIXED AIR DAMPERS (OA AND RA DAMPERS) ARE REFERRED TO AS DAMPERS HEREIN.
- 10. WHEN DISCHARGE AIR TEMPERATURE (DAT) IS BELOW DAT SETPOINT, DDC SHALL MODULATE DAMPERS TO MINIMUM OA POSITION AND MODULATE THE HWH COIL VALVE TO MAINTAIN DAT SETPOINT.
- 11. WHEN DAT IS ABOVE DAT SETPOINT AND OA ENTHALPY IS LESS THAN RA ENTHALPY, DDC SHALL MODULATE DAMPERS ABOVE MINIMUM OA POSITION TO MAINTAIN DAT SETPOINT. WHEN DAMPERS REACH 100% OA POSITION, IF DAT IS STILL ABOVE DAT SETPOINT, DDC SHALL STAGE DX COOLING MAINTAIN DAT SETPOINT.
- 12. WHEN SPACE TEMP IS ABOVE DAT SETPOINT AND OA ENTHALPY IS GREATER THAN RA ENTHALPY, DDC SHALL MODULATE DAMPERS TO MINIMUM OA POSITION AND STAGE DX COOLING MAINTAIN DAT SETPOINT.
- 13. DDC SHALL PROVIDE DISCHARGE AIR TEMP SETPOINT THAT SHALL BE RESET BASED ON THE FOLLOWING SCHEDULE:

<u>)AT</u>	DAT
<u>&lt;</u> 30°F	60¶
<u>55</u> °F	55¶

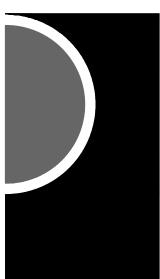
14. DDC SHALL MODULATE SF VFC TO MAINTAIN DOWN-THE-DUCT SUPPLY AIR STATIC PRESSURE SETPOINT THAT SHALL BE RESET BASED ON DAMPER POSITION FEEDBACK FROM ASSOCIATED SUPPLY AIR TERMINAL UNIT CONTROLLERS (VIA BACNET) AS FOLLOWS: SETPOINT SHALL BE ADJUSTED TO ALLOW 2 SA TERMINAL UNITS TO OPERATE AT 90% OPEN DAMPER POSITION. BELOW 2 SA TERMINAL UNITS AT 90%, SETPOINT SHALL BE SLOWLY DECREASED. ABOVE 2 SA TERMINAL UNITS AT 90%, SETPOINT SHALL BE SLOWLY INCREASED. LOW/HIGH SETPOINT RANGE SHALL BE 0.5" W.G. TO 1.5" W.G. LOW/HIGH SETPOINTS SHALL BE REVISED BASED ON TAB CONTRACTOR'S FINAL AIR BALANCE. INITIAL SETPOINT SHALL BE +1.5" W.G.

- 15. DDC SHALL MONITOR TWO RETURN AIR AIRFLOW DEVICES AND PROVIDE A SUMMATION OF THE TWO AIRFLOWS FOR CONTROL PURPOSES.
- 16. DDC SHALL MODULATE EF VFC TO MAINTAIN "TOILETS/SHOWERS/LOCKER ROOMS" CONSTANT VOLUME AIRFLOW SETPOINT. SETPOINT SHALL BE BASED ON TAB CONTRACTOR'S FINAL AIR BALANCE.
- 17. DDC SHALL PROVIDE DISCHARGE AIR STATIC PRESSURE HIGH LIMIT CONTROL WITH SETPOINT OF 3.5 INCHES W.G. DDC SHALL OVERRIDE CONTROL OF SF VFCs TO PREVENT STATIC PRESSURE FORM EXCEEDING SETPOINT. DDC SHALL ACTIVATE A BAS DISPLAY MESSAGE IF OPERATING IN OVERRIDE CONDITION.
- 18. DDC SHALL MONITOR THE ENERGY WHEEL EXHAUST AIR TEMPERATURE. WHEN THE EA TEMP REDUCES BETWEEN 40'F AND 37'F SETPOINTS, DDC SHALL SLOW THE ENERGY WHEEL PROPORTIONALLY TO AS LOW AS MINIMUM ROTATIONAL SPEED BASED ON THE MFR'S DATA. WHEN EA TEMP IS LESS THAN 36°F, DDC SHALL STOP THE ENERGY WHEEL. WHEN EA TEMP IS GREATER THAN 39°F, DDC SHALL RESTART THE ENERGY WHEEL.
- 19. DDC SHALL MONITOR THE ENERGY WHEEL MOTION SENSOR FOR BAS DISPLAY AND DIAGNOSTIC PURPOSES.
- 20. DDC SHALL MONITOR THE AHU SAFETY RELAY AND RUN PERMISSIVE RELAY STATUSES. 21. WHEN DDC REQUIRES THE ENERGY WHEEL TO ROTATE AND THE MOTION SENSOR INDICATES MOTION IS STOPPED, DDC SHALL PROVIDE AN ALARM.
- 22. SUPPLY AIR HIGH STATIC LIMIT DIFFERENTIAL PRESSURE SWITCH (DPS) WITH DP SETPOINT OF 4.0 INCHES W.G. SHALL PROVIDE HARDWIRED SAFETY CONTROL.
- 23. FILTER STATUSES SHALL BE MONITORED BY DDC THRU DIFFERENTIAL PRESSURE TRANSMITTERS (DPT). WHEN DPT'S REACH INDIVIDUAL DP SETPOINT MINUS 0.2 IN. W.G. BASED ON FILTER MANUFACTURER'S LOADED FILTER DATA, DDC SHALL ACTIVATE A DIRTY FILTER WARNING. WHEN DPTs REACH INDIVIDUAL DP SETPOINT BASED ON FILTER MANUFACTURER'S LOADED FILTER DATA, DDC SHALL ACTIVATE DIRTY FILTER ALARM.
- 24. FREEZESTAT(S) SHALL DEACTIVATE SF & EF WHEN TEMPERATURE IS 35°F OR BELOW. FREEZESTAT STATUS SHALL ACTIVATE ALARM IF CONDITION OCCURS TO THE BAS.
- 25. DUCT SMOKE DETECTOR(S) SHALL DEACTIVATE SF & EF THRU FIRE ALARM SYSTEM CONTROL MODULES WHEN PRODUCTS OF COMBUSTION ARE DETECTED.
- 26. WHEN AHU-1 IS DEACTIVATED, DDC SHALL SHUTDOWN THE SYSTEM IN AN ORDERLY MANNER.

## **GENERAL NOTES**

GENERAL NOTES ON TC DRAWING M8.1 APPLY TO THIS DRAWING.

# PARTNERS



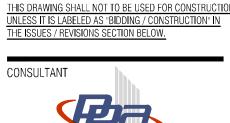
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Tel: 248-879-5666 Fax: 248-879-0007 www.PeterBassoAssociates.com PBA Project No.: 2021.0370

KEY PLAN

OWNER

City Of Warren

PROJECT NAME

Warren Civic Center South Fire Station #1

23211 Van Dyke Ave Warren, MI 48089

PROJECT NO.

# 21-146A

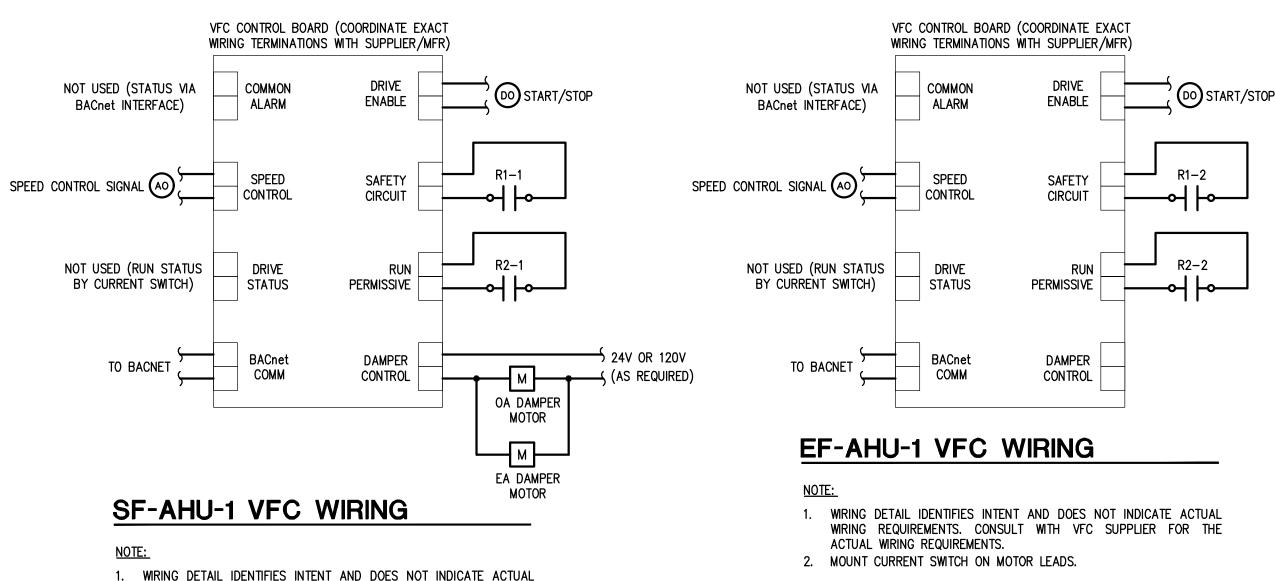
**ISSUES / REVISIONS** Bidding / Construction 06/13/2023 DRAWN BY JTH

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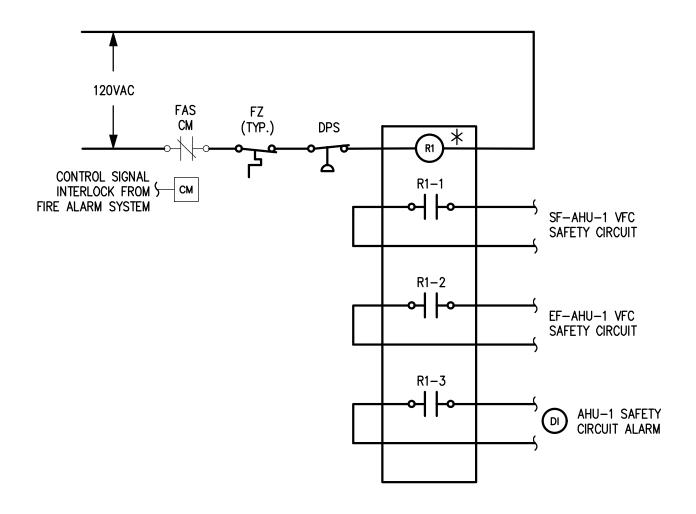
APPROVED BY

DAC SHEET NAME

TEMPERATURE CONTROLS



- WIRING REQUIREMENTS. CONSULT WITH VFC SUPPLIER FOR THE
- ACTUAL WIRING REQUIREMENTS. 2. MOUNT CURRENT SWITCH ON MOTOR LEADS.



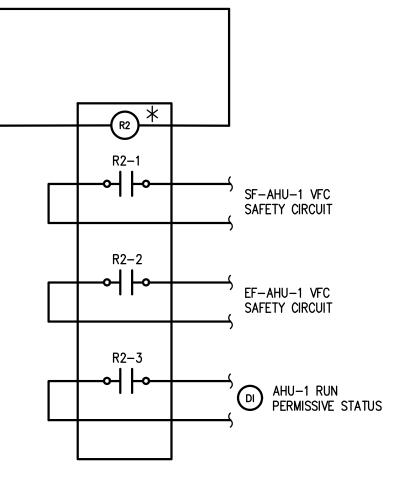


EA LS

120VAC

- AHU-1 SF/EF VFC SAFETY WIRING
- 1. RELAY SHALL BE MOUNTED IN AN AUXILIARY CONTROL PANEL NEAR RESPECTIVE DDC CONTROL PANEL. COORDINATE LOCATION WITH ARCHITECT AND ELECTRICAL CONTRACTOR.
- 2. CONTROL DEVICES AND FIELD WIRING SHOWN WITH HEAVY LINEWEIGHT ARE BY TC CONTRACTOR.
- 3. PROVIDE 120VAC CONTROL POWER FROM A DEDICATED CIRCUIT BREAKER. COORDINATE WITH THE ELECTRICAL CONTRACTOR. PROVIDE A CIRCUIT BREAKER "LOCK-ON" DEVICE TO PREVENT INADVERTENT SWITCHING OFF OF BREAKER.

- AND ELECTRICAL CONTRACTOR.
- TC CONTRACTOR.

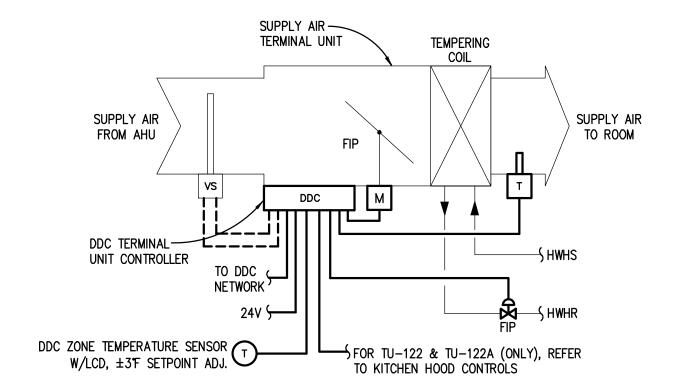


# AHU-1 SF/EF RUN PERMISSIVE WIRING

1. RELAY SHALL BE MOUNTED IN AN AUXILIARY CONTROL PANEL NEAR RESPECTIVE DDC CONTROL PANEL. COORDINATE LOCATION WITH ARCHITECT

2. CONTROL DEVICES AND FIELD WIRING SHOWN WITH HEAVY LINEWEIGHT ARE BY

3. PROVIDE 120VAC CONTROL POWER FROM A DEDICATED CIRCUIT BREAKER. COORDINATE WITH THE ELECTRICAL CONTRACTOR. PROVIDE A CIRCUIT BREAKER "LOCK-ON" DEVICE TO PREVENT INADVERTENT SWITCHING OFF OF BREAKER.



## AIR TERMINAL UNIT W/REHEAT CONTROL

REFER TO AIR TERMINAL UNIT SCHEDULE FOR APPLICATION. <u>NOTES:</u>

- 1. REFER TO PIPING & SHEET METAL PLANS FOR LOCATIONS AND QUANTITY OF UNITS AND LOCATIONS OF ROOM TEMP SENSORS.
- 2. WHERE INDICATED ON FLOOR PLANS, ZONE TEMPERATURE SHALL BE REFERENCED TO MULTIPLE AIR TERMINAL UNIT CONTROLLERS VIA DDC NETWORK.
- 3. TC CONTRACTOR SHALL PROVIDE 24V POWER SUPPLY TO TERMINAL UNIT CONTROLLER.
- 4. TERMINAL UNIT MANUFACTURER SHALL PROVIDE DAMPER AND TC CONTRACTOR SHALL PROVIDE DAMPER ACTUATOR.
- 5. TERMINAL UNIT MANUFACTURER SHALL PROVIDE VELOCITY SENSOR FOR SYSTEM CONTROL. TC CONTRACTOR SHALL COORDINATE WITH TAB CONTRACTOR TO DETERMINE DAMPER CONTROL SETTINGS TO ACHIEVE SCHEDULED MINIMUM AND MAXIMUM CFMs.
- 6. TC CONTRACTOR SHALL FURNISH CONTROL VALVES FOR HEATING ELEMENTS PER THE MECHANICAL DETAILS. SELECT CONTROL VALVES TO ACHIEVE THE SCHEDULED FLOW RATES.

# SEQUENCE OF OPERATION

NOTE: ALL SETPOINTS, RESET SCHEDULE SETPOINTS, DEADBANDS, AND TIME INTERVALS DESCRIBED IN SEQUENCE SHALL BE ADJUSTABLE BY SYSTEM OPERATORS. ALL CONTROL LOOPS SHALL BE ENABLED AND DISABLED BASED ON SYSTEM STATUS TO PREVENT LOOP WINDUP.

- 1. ALL TU'S ASSOCIATED WITH A SINGLE ZONE TEMP SENSOR SHALL CONTROL IN UNISON.
- 2. SUPPLY AIR TERMINAL UNIT'S (TU) VAV COOLING AND HEATING MINIMUM AND MAXIMUM AIRFLOW SETTINGS SHALL BE AS INDICATED ON THE MECHANICAL SCHEDULES. WHERE MINIMUM AND MAXIMUM AIRFLOW SETTINGS ARE THE SAME, THE TU CONTROLLER SHALL PERFORM CONSTANT AIR VOLUME CONTROL.
- 3. IN ALL MODES OF HEATING, TU DISCHARGE AIR TEMP (DAT) SENSOR SHALL PROVIDE HIGH LIMIT SETPOINT CONTROL AT 90°F DAT.
- 4. WHEN ZONE TEMP RISES ABOVE THE COOLING SETPOINT, TU CONTROLLER SHALL KEEP THE TEMPERING COIL VALVE CLOSED AND MODULATE THE SUPPLY AIRFLOW BETWEEN ITS MINIMUM AND MAXIMUM COOLING AIRFLOW SETTINGS TO MAINTAIN ZONE COOLING TEMPERATURE SETPOINT.
- 5. WHEN ZONE TEMP FALLS BELOW HEATING SETPOINT, TU CONTROLLER SHALL FIRST MODULATE TU DAMPER TOWARDS ITS MINIMUM HEATING AIRFLOW SETTING. WHEN AIRFLOW IS AT MINIMUM HEATING AIRFLOW, CONTROLLER SHALL MODULATE TEMPERING COIL VALVE TOWARDS OPEN. IF THE ZONE TEMP IS BELOW SETPOINT WITH TEMPERING COIL DAT AT HIGH LIMIT SETPOINT. TU CONTROLLER SHALL MODULATE THE SUPPLY AIRFLOW BETWEEN ITS MINIMUM AND MAXIMUM HEATING AIRFLOW SETTINGS TO MAINTAIN ZONE HEATING TEMPERATURE SETPOINT.
- 6. ZONE TEMPERATURE SETPOINTS SHALL BE AS FOLLOWS:
  - HEATING UNOCCUPIED SETPOINT =  $62^{\circ}$ F
  - HEATING OCCUPIED SETPOINT =  $70^{\circ}F$
  - COOLING OCCUPIED SETPOINT =  $75^{\circ}F$ COOLING UNOCCUPIED SETPOINT =  $80^{\circ}F$
- 7. DURING BUILDING UNOCCUPANCY, RELATED AHU SHALL CYCLE AS REQUIRED TO MAINTAIN BUILDING SETBACK AND SETUP TEMP SETPOINTS.
- 8. WHEN RESPECTIVE AHU IS DEACTIVATED, THE TERMINAL UNIT TEMPERING COIL VALVE SHALL REMAIN CLOSED.
- 9. WHEN RESPECTIVE AHU IS OPERATING IN WARM-UP OR PURGE MODES, THE TERMINAL UNIT SHALL MAINTAIN ITS MAXIMUM AIRFLOW SETTING UNTIL ZONE OCCUPIED TEMPERATURE SETPOINT IS ACHIEVED.
- 10. TU CONTROLLER SHALL RECALIBRATE THE AIRFLOW SENSOR AND RESET FLOATING CONTROL DAMPER AND VALVE ACTUATORS ONCE A WEEK MINIMUM. THE RECALIBRATION AND RESET PROCESS SHALL OCCUR WHEN RESPECTIVE AHU IS DEACTIVATED. IF RELATED AHU OPERATES CONTINUOUSLY, THE RECALIBRATION AND RESET PROCESS SHALL BE STAGGERED AMONGST THE TERMINAL UNITS SO THE DUCT STATIC PRESSURE DOES NOT EXCEED LIMITS.
- 11. CONTROL SIGNALS FOR AIR TERMINAL UNIT DAMPER AND HEATING CONTROL OUTPUTS SHALL BE DISPLAYED WITH SYSTEM GRAPHICS.
- 12. DISCHARGE AIR TEMP SHALL BE MONITORED FOR SYSTEM DIAGNOSTICS.

# GENERAL NOTES

GENERAL NOTES ON TC DRAWING M8.1 APPLY TO THIS DRAWING.

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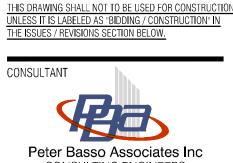
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KEY PLAN

OWNER

City Of Warren

#### PROJECT NAME

Warren Civic Center South Fire Station #1

23211 Van Dyke Ave Warren, MI 48089

#### PROJECT NO.

# 21-146A

ISSUES / REVISIONS Bidding / Construction 06/13/2023

#### DRAWN BY

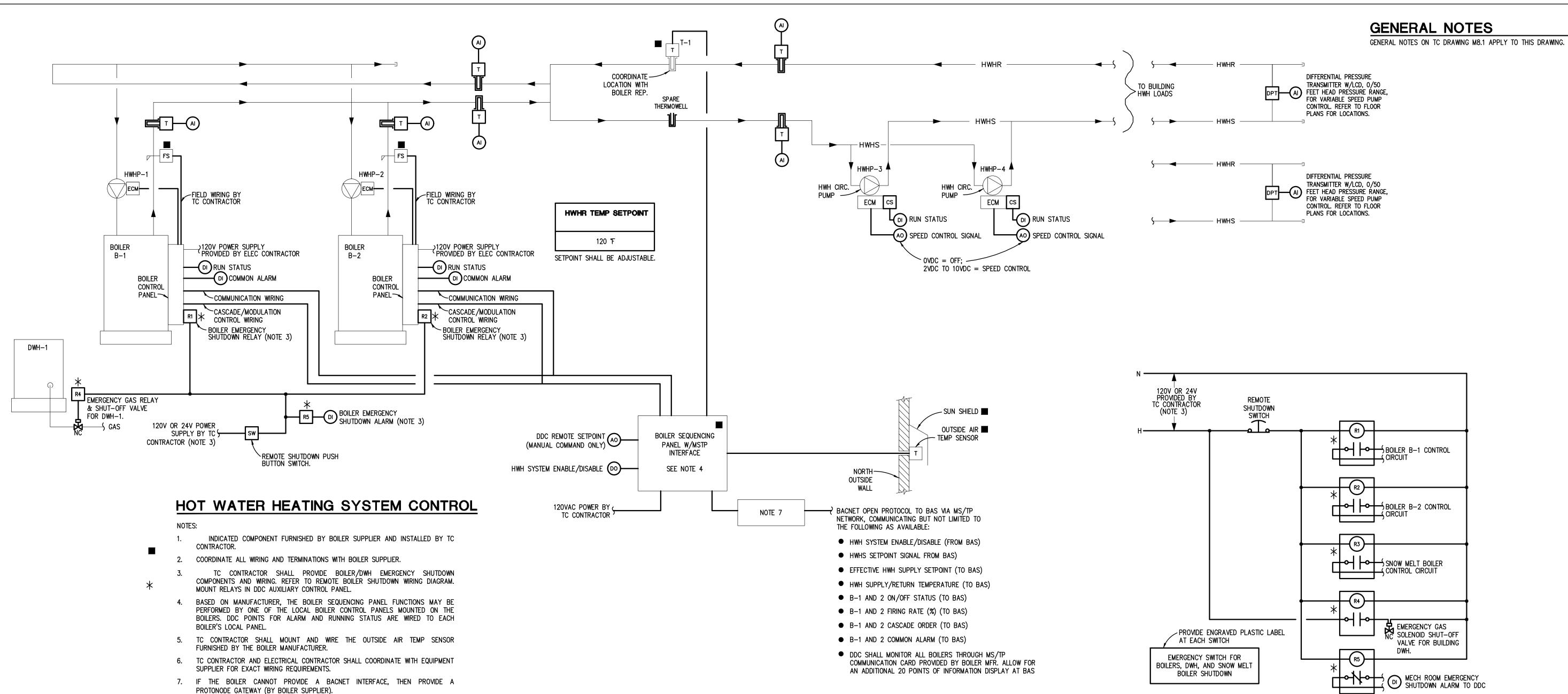
JTH

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DAC

SHEET NAME TEMPERATURE CONTROLS



- PROTONODE GATEWAY (BY BOILER SUPPLIER).

## SEQUENCE OF OPERATION

NOTE: ALL SETPOINTS, RESET SCHEDULE SETPOINTS, DEADBANDS, AND TIME INTERVALS DESCRIBED IN SEQUENCE SHALL BE ADJUSTABLE BY SYSTEM OPERATORS. ALL MOTOR CONTROL SWITCHES SHALL BE IN "AUTO" POSITION. ALL CONTROL LOOPS SHALL BE ENABLED AND DISABLED BASED ON SYSTEM STATUS TO PREVENT LOOP WINDUP.

HOT WATER HEATING (HWH) SYSTEM:

- 1. HWH SYSTEM SHALL BE ACTIVATED FOR CONTINUOUS YEAR-ROUND OPERATION. HWH SYSTEM SERVES ALL AIR HANDLERS AND TEMPERING COILS FOR REHEAT.
- 2. VARIABLE SECONDARY HWH CIRC. PUMPS HWHP-3 & HWHP-4 SHALL HAVE START/STOP CAPABILITY FROM BAS. ONE OF THE TWO PUMPS SHALL BE ACTIVATED BY DDC AS "LEAD" PUMP TO OPERATE CONTINUOUSLY. THE OTHER WILL SERVE AS "STANDBY" PUMP.
- 3. DDC SHALL ALTERNATE PUMP HWHP-3 & HWHP-4 OPERATION BASED ON RUNTIME HOURS OR BI-WEEKLY - OPERATOR SELECTABLE.
- 4. DDC SHALL MONITOR OPERATING STATUS OF EACH PUMP VIA CURRENT SWITCH. UPON "LEAD" PUMP FAILURE, DDC SHALL ACTIVATE FAILURE ALARM AND AUTOMATICALLY START THE "STANDBY" PUMP. IF "LEAD" PUMP AND "STANDBY" PUMP FAIL TO RUN, DDC SHALL PROVIDE THE BAS WITH AN "EMERGENCY HWH SYSTEM FAILURE" ALARM.
- 5. DDC SHALL TOTALIZE EACH PUMP'S MOTOR RUNTIME HOURS OF OPERATION VIA THE CURRENT SWITCH FOR BAS DISPLAY.
- 6. DDC SHALL MONITOR TWO HWH DIFFERENTIAL PRESSURE (DP) TRANSMITTERS (DPT) FOR THE SYSTEM. DP SETPOINTS SHALL BE PROVIDED FOR BOTH DPTs.
- 7. DDC SHALL MODULATE THE VFC OF THE "ACTIVE" SECONDARY HWH CIRC PUMP TO MAINTAIN THE LOWEST DPT AT SETPOINT. DP SETPOINTS SHALL BE ADJUSTED AT SYSTEM BALANCING BY THE TAB CONTRACTOR. INITIAL DP SETPOINT SHALL BE 25 FEET OF HEAD PRESSURE FOR BOTH DPTs.
- 8. DDC SHALL NOT DECREASE THE "ACTIVE" SECONDARY HWH CIRC PUMP BELOW THE MANUFACTURER'S CURVE FOR LOWEST PUMP SPEED (CALLED SYSTEM SPEED). WHEN DP DECREASES TO THE PUMP'S SYSTEM SPEED, DDC SHALL HOLD THE PUMP'S SPEED CONSTANT. HWH SYSTEM 3W VALVES SHALL PROVIDE MINIMUM PUMP FLOW.
- 9. DDC SHALL MONITOR BOILER RUN STATUS AND FAULT ALARM FOR EACH BOILER THROUGH DRY CONTACTS AVAILABLE IN RESPECTIVE BOILER LOCAL CONTROL PANEL. 10. DDC SHALL MONITOR ALL TEMPERATURE SENSORS FOR DIAGNOSTIC AND BAS DISPLAY PURPOSES.
- 11. AFTER INITIAL ENABLING OF THE HWH SYSTEM, AND A DELAY OF 20 MINUTES, IF SECONDARY HWH SUPPLY TEMP DROPS BELOW 120F, DDC SHALL PROVIDE AN ALARM TO THE BAS.
- 12. BOTH BOILERS SHALL BE CONNECTED TO MECH ROOM EMERGENCY SHUTDOWN SYSTEM. (REFER TO WIRING DETAILS ON THIS SHEET).

BOILERS & MASTER SEQUENCING PANEL SHALL PROVIDE THE FOLLOWING:

- BOILER CONTROLS SHALL BE SUPPLIED WITH LOCAL/REMOTE CONTROL CAPABILITIES AND ALL REQUIRED SAFETIES. THE LOCAL/OFF/REMOTE SWITCH SHALL NORMALLY BE SET IN "REMOTE" MODE POSITION BY BUILDING OPERATORS.
- BOILER SEQUENCING PANEL SHALL USE OUTSIDE AIR TEMPERATURE SENSOR (FURNISHED BY THE EQUIPMENT SUPPLIER) FOR "LOCAL OPERATING MODE" ONLY.
- WHEN BOILERS ARE OFF-LINE FOR MAINTENANCE, THE LOCAL/OFF/REMOTE SWITCH SHALL BE SET IN "OFF" POSITION BY BUILDING OPERATORS.
- BOILER SEQUENCING PANEL SHALL INCLUDE CASCADE "LEAD/LAG" CONTROL OF THE BOILERS TO MAINTAIN HWH SUPPLY WATER TEMPERATURE HIGH ENOUGH TO MEET BUILDING DEMAND AND MAINTAIN HWH RETURN WATER TEMPERATURE SETPOINT AT 120°F (ALLOWS MAXIMUM CONDENSING OPERATION). BUILDING DEMAND IS MET BY BOILER SEQUENCING PANEL'S CONTROL OF SUPPLY WATER TEMPERATURE TO MAINTAIN THE HWH RETURN WATER TEMPERATURE SETPOINT.
- THE BOILER SEQUENCING PANEL SHALL INCLUDE OPERATOR SELECTABLE BOILER "LEAD/LAG" OPERATION OR FIRST ON/FIRST OFF OPERATION. BOILER SEQUENCING PANEL SHALL IMMEDIATELY ACTIVATE "LAG" BOILER UPON "LEAD" BOILER FAULT INDICATION.
- WHENEVER A BOILER IS ACTIVATED, ITS RESPECTIVE NEAR-BOILER CIRC PUMP SHALL BE ACTIVATED BY FACTORY WRED PUMP RELAY AT LOCAL CONTROLLER. BOILER SHALL NOT FIRE UNTIL FLOW IS PROVEN BY FLOW SWITCH. DDC SHALL TOTALIZE EACH PUMP'S MOTOR RUNTIME HOURS OF OPERATION VIA THE CURRENT SWITCH FOR BAS DISPLAY.
- WHENEVER A BOILER IS DEACTIVATED, A LOCAL CONTROLLER TIME DELAY SHALL KEEP NEAR-BOILER PUMP RUNNING FOR 10 MINUTES (ADJUSTABLE AT LOCAL CONTROLLER) TO DISSIPATE HEAT FROM THE DEACTIVATED BOILER.
- LOCAL CONTROL SHALL BE UTILIZED WHEN BOILER SEQUENCING PANEL CONTROL IS NOT AVAILABLE. LOCAL BOILER FIRE RATE CONTROLLER SHALL MODULATE THE RESPECTIVE BOILER'S GAS BURNER TO MAINTAIN BOILER DISCHARGE HWHS TEMP SETPOINT OF 180°F.
- EACH BOILER'S SAFETY CONTROLS SHALL INCLUDE AN AUTO-RESET HI-LIMIT (BOILER OPERATOR) SETPOINT AND A MANUAL-RESET HI-LIMIT SETPOINT. BOILER REP SHALL ADJUST SETPOINTS.

NOTES:

2. WHEN PUSHBUTTON IS ACTIVATED, THE RELAY NO CONTACTS SHALL OPEN/INTERRUPT ALL BOILERS' CONTROL CIRCUITS AND ACTIVATES DWH-1 GAS SOLENOID SHUT-OFF VALVE WHICH CLOSES THE VALVE.

VALVF. 4. WHEN PUSHBUTTON IS ACTIVATED, DDC SHALL ACTIVATE AN EMERGENCY ALARM AT THE BAS. 5. WHEN PUSHBUTTON IS RE-ACTIVATED VIA KEYLOCKS, THE SYSTEM IS RESET TO NORMAL OPERATING MODE.

## MECH ROOM EMERGENCY SHUTDOWN WIRING

1. LOCATE AN EMERGENCY SHUTDOWN SWITCH AT EACH ENTRANCE AS SHOWN ON MECHANICAL DRAWINGS. REFER TO FLOOR PLANS FOR QUANTITY AND LOCATION OF ROOM ENTRANCES. COORDINATE SWITCH LOCATIONS WITH ALL OTHER TRADES.

2. TC CONTRACTOR SHALL PROVIDE SIGN (NAME PLATE) TO BE PLACED DIRECTLY ABOVE OR BELOW EACH PUSH BUTTON SWITCH THAT READS: "BOILER/DWH EMERGENCY SHUTDOWN SWITCH".

3. TC CONTRACTOR SHALL SUPPLY POWER TO CONTROL RELAYS AND GAS SOLENOID SHUT-OFF VALVE FROM COMMERCIAL POWER CIRCUIT. REFER TO ELECTRICAL PANEL SCHEDULES AND COORDINATE WITH ELECTRICAL CONTRACTOR AS NECESSARY. COORDINATE WITH THE ELECTRICAL CONTRACTOR TO PROVIDE A LOCKOUT AT THE CIRCUIT BREAKER.

4. TC CONTRACTOR SHALL MOUNT SHUTDOWN CONTROL RELAYS IN AUX. CONTROL PANEL. TC CONTRACTOR SHALL WRE BOILERS' CONTROL CIRCUITS (POWER FROM SECONDARY SIDE OF CONTROL TRANSFORMERS) AND GAS SOLENOID SHUT-OFF VALVE THRU NORMALLY OPEN RELAY CONTACTS. TC CONTRACTOR SHALL COORDINATE EXACT WIRING AND TERMINATION REQUIREMENTS WITH BOILER MANUFACTURER.

5. TC CONTRACTOR SHALL PROVIDE PUSHBUTTON SWITCHES (PUSH TO LATCH - TURN KEY TO RELEASE) WITH MUSHROOM HEAD OPERATOR AND NORMALLY CLOSED (NC) CONTACTS. PROVIDE WITH PROPER ENCLOSURE.

# SEQUENCE OF OPERATION

1. UNDER NORMAL OPERATING CONDITIONS, THE PUSHBUTTON CIRCUIT ENERGIZES THE RELAYS WHICH CLOSES THEIR NORMALLY OPEN (NO) CONTACTS AND OPENS THE NORMALLY CLOSED (NC) CONTACTS.

3. WHEN PUSHBUTTON IS KEY-RELEASED, THE RELAYS' CONTACTS RE-ENERGIZE THE BOILERS' CONTROL CIRCUITS AND DE-ACTIVATES GAS SOLENOID SHUT-OFF VALVE WHICH OPENS THE

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KEY PLAN

## OWNER

City Of Warren

## PROJECT NAME

Warren Civic Center South Fire Station #1

23211 Van Dyke Ave Warren, MI 48089

## PROJECT NO.

# 21-146A

**ISSUES / REVISIONS** Bidding / Construction 06/13/2023

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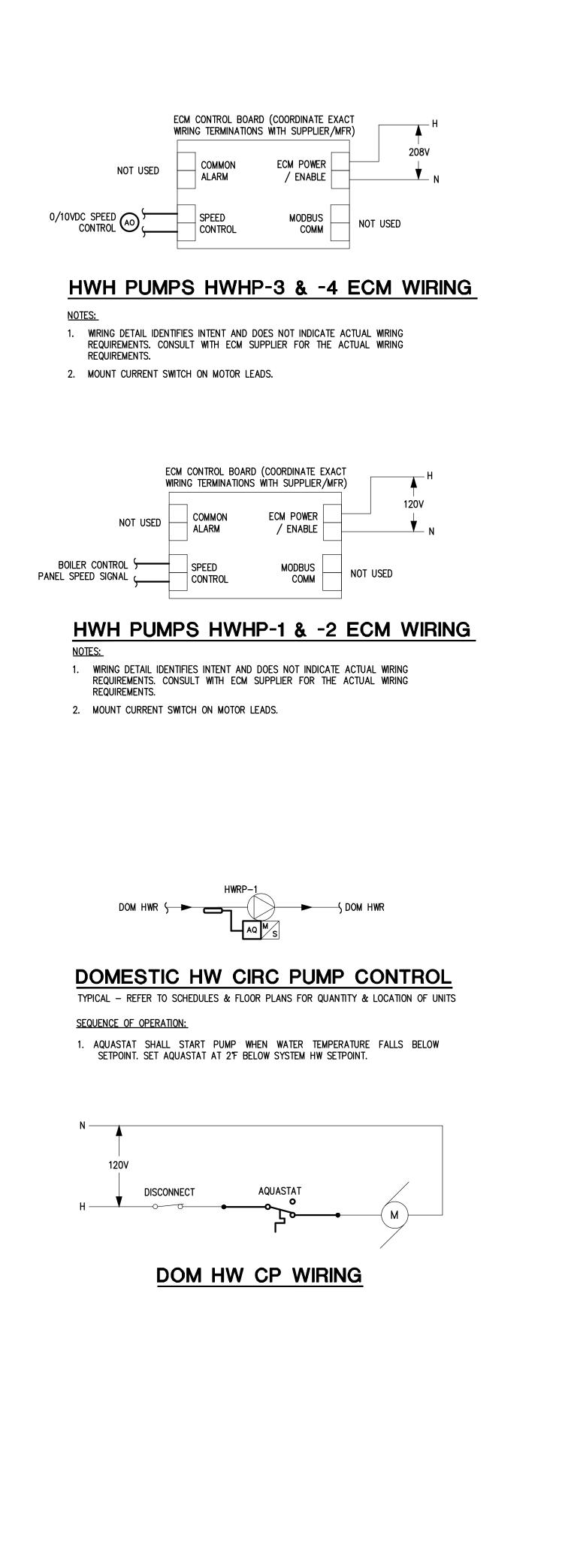
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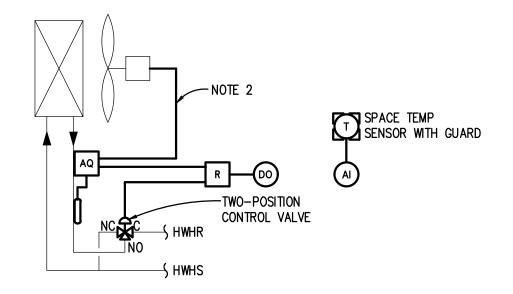
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SHEET NAME TEMPERATURE CONTROLS





## HWH UH/CUH CONTROL

TYPICAL

NOTES:

- 1. REFER TO FLOOR PLANS FOR QUANTITY AND LOCATION OF UNITS.
- 2. AQUASTAT SHALL BE WIRED IN SERIES WITH FAN CONTROL WIRING CIRCUIT.

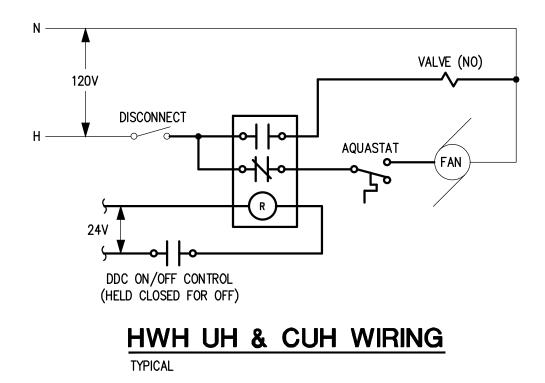
#### SEQUENCE OF OPERATION:

NOTE: ALL SETPOINTS, RESET SCHEDULE SETPOINTS, DEADBANDS, AND TIME INTERVALS DESCRIBED IN SEQUENCE SHALL BE ADJUSTABLE BY BAS OPERATORS. 1. ASHRAE 90.1-2013 FOR VESTIBULES ONLY.

- 1.1. DDC SHALL ENABLE/DISABLE UH/CUH FAN CIRCUIT AND OPEN/CLOSE HEATING VALVE AS REQUIRED TO MAINTAIN SPACE TEMPERATURE SETPOINT OF 60°F. FAN SHALL ACTIVATE UPON PROOF OF HWHR FLOW BY AQUASTAT. AQUASTAT SHALL PROVIDE 4°F DEADBAND FOR CONTROL. DDC SHALL PROVIDE 2°F DEADBAND FOR CONTROL.
- 1.2. WHEN OUTSIDE AIR TEMPERATURE INCREASES ABOVE 45°F, DDC SHALL DISABLE CONTROL OF THE UH/CUH.

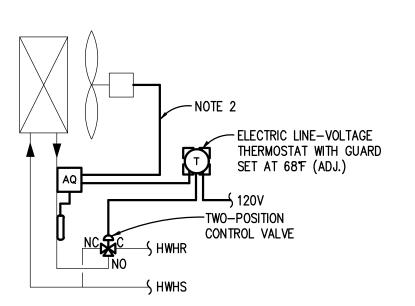
#### 2. FOR ALL OTHER AREAS/ROOMS:

- 2.1. DDC SHALL ENABLE/DISABLE UH/CUH FAN CIRCUIT AND OPEN/CLOSE HEATING VALVE AS REQUIRED TO MAINTAIN SPACE TEMPERATURE SETPOINT OF 68°F DURING BUILDING OCCUPIED MODE AND 50°F DURING BUILDING UNOCCUPIED MODE. UH/CUH FAN SHALL ACTIVATE UPON PROOF OF HWHR FLOW BY AQUASTAT. AQUASTAT SHALL PROVIDE 4°F DEADBAND FOR CONTROL. DDC SHALL PROVIDE 2°F DEADBAND CONTROL AROUND SETPOINTS.
- 2.2. WHEN OUTSIDE AIR TEMPERATURE INCREASES ABOVE 60°F, DDC SHALL DISABLE CONTROL OF THE UH/CUH.



## **GENERAL NOTES**

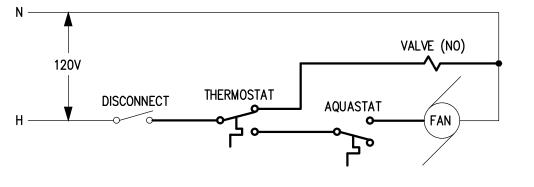
GENERAL NOTES ON TC DRAWING M8.1 APPLY TO THIS DRAWING.



# HWH UH & CUH CONTROL

SEQUENCE OF OPERATION:

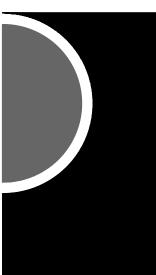
- LINE VOLTAGE THERMOSTAT SHALL ENABLE/DISABLE UH/CUH FAN CIRCUIT AND OPEN/CLOSE HWH VALVE AS REQUIRED TO MAINTAIN SPACE TEMPERATURE SETPOINT OF 68°F DURING BUILDING OCCUPIED MODE AND 50°F DURING BUILDING UNOCCUPIED MODE.
- 2. UH/CUH FAN SHALL ACTIVATE UPON PROOF OF HWHR FLOW BY AQUASTAT.
- 3. AQUASTAT SHALL PROVIDE 4'F DEADBAND FOR CONTROL.



## HWH UH & CUH WIRING

TYPICAL

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OWNER

City Of Warren

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PROJECT NO.

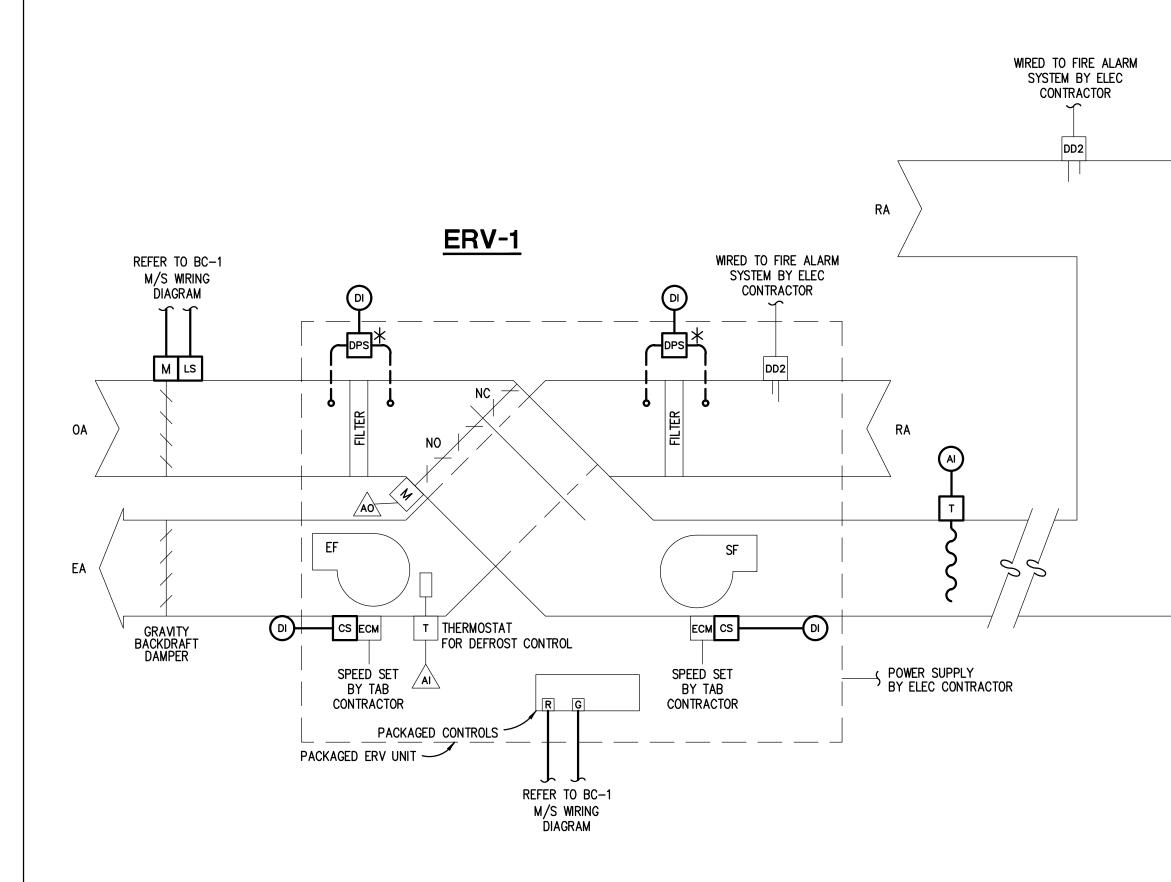
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SHEET NAME TEMPERATURE CONTROLS



## **ERV-1/BC-1 CONTROLS**

<u>NOTES:</u>

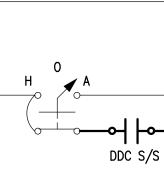
- 1.  $\star$  INDICATES PANEL MOUNTED COMPONENT.
- 2. DAMPERS SHALL BE FURNISHED AND FACTORY INSTALLED BY ERV MANUFACTURER. TC CONTRACTOR SHALL PROVIDE DAMPER ACTUATORS.
- 3. ELECTRICAL CONTRACTOR SHALL PROVIDE FIRE ALARM SYSTEM COMPONENTS AND WIRING FROM FIRE ALARM PANEL TO CONTROL MODULE (CM). TC CONTRACTOR SHALL PROVIDE WIRING FROM CONTROL MODULE TO SAFETY CIRCUIT.
- 4. COORDINATE WIRING, TERMINATION, CONTROL, AND I/O REQUIREMENTS WITH EQUIPMENT MANUFACTURER. SPECIFIC CONTROL REQUIREMENTS MAY DIFFER SLIGHTLY DEPENDING ON EQUIPMENT MANUFACTURER.
- 5. TC CONTRACTOR SHALL ADJUST DPSs BASED ON THE FILTER MANUFACTURER'S LOADED FILTER DATA.

## SEQUENCE OF OPERATION

ENERGY RECOVERY UNIT CONTROL:

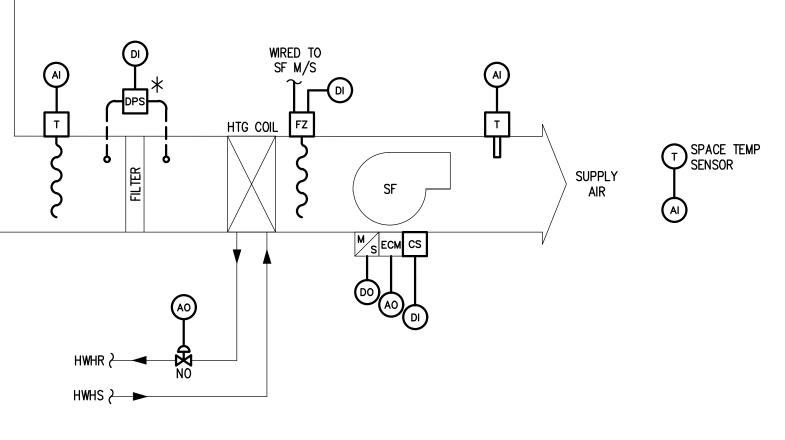
NOTE: ALL SETPOINTS, RESET SCHEDULE SETPOINTS, DEADBANDS, AND TIME INTERVALS DESCRIBED IN SEQUENCE SHALL BE ADJUSTABLE BY SYSTEM OPERATORS. ALL MOTOR CONTROL SWITCHES SHALL BE IN "AUTO" POSITION. ALL CONTROL LOOPS SHALL BE ENABLED AND DISABLED BASED ON SYSTEM STATUS TO PREVENT LOOP WINDUP.

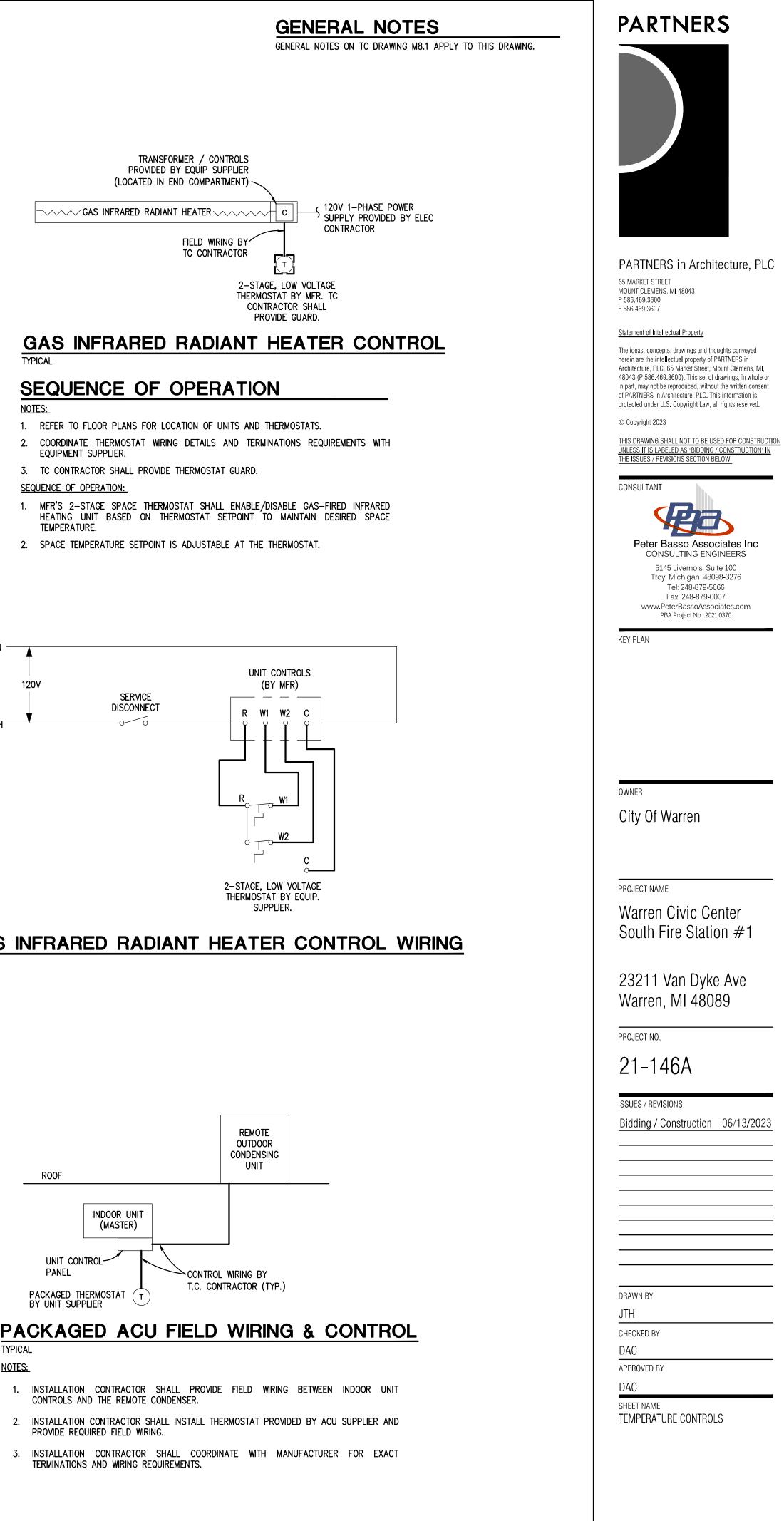
- 1. ERV-1 SUPPLY FAN (SF), ERV-1 EXHAUST FAN (EF), AND BC-1 SF SHALL HAVE START/STOP CAPABILITY FROM THE DDC/BAS SYSTEM.
- ERV-1/BC-1 (THE SYSTEM) SHALL OPERATE BASED ON TIME SCHEDULED OCCUPIED MODE COMPENSATED BY OPTIMUM START PROGRAM AND UNOCCUPIED CYCLE MODE.
- 3. SFs AND EF STATUSES SHALL BE MONITORED BY DDC SYSTEM THRU RESPECTIVE CURRENT SWITCHES. ALL CURRENT SWITCHES SHALL PROVIDE FEEDBACK TO ENABLE TEMPERATURE CONTROLS. ABNORMAL STATUS CONDITION FOR ANY FAN SHALL ACTIVATE AN ALARM AT THE BAS.
- WHEN THE SYSTEM IS ACTIVATED DURING OCCUPIED MODE, ERV-1 OA DAMPER 4. SHALL OPEN, ERV-1 SF & EF SHALL RUN, AND BC-1 SF SHALL RUN. ERV-1 PROVIDE DISCHARGE AIR BASED ON OA TEMPERATURE AND RA TEMPERATURE FROM THE SPACE. DDC MODULATE BC-1 HWH COIL VALVE TO MAINTAIN SPACE TEMPERATURE SETPOINT.
- 5. ERV-1 PACKAGED DEFROST CYCLE SHALL BE ACTIVATED WHEN ERV-1 PLATE EXHAUST AIR TEMPERATURE DROPS BELOW FACTORY SETPOINT.
- 6. DDC SHALL MONITOR ALL SENSORS AND DEVICES FOR BAS DISPLAY.
- 7. SPACE TEMPERATURE SETPOINTS SHALL BE AS FOLLOWS:
  - HEATING UNOCCUPIED SETPOINT =  $62^{\circ}$ F HEATING OCCUPIED SETPOINT =  $70^{\circ}F$
- 8. DUCT SMOKE DETECTOR(S) SHALL DEACTIVATE SF AND EF WHEN PRODUCTS OF COMBUSTION ARE DETECTED.
- ERV-1 FREEZESTAT SHALL DEACTIVATE ERV-1 AND BC-1 FANS. DDC SHALL CLOSE 9. BC-1 HWH COIL VALVE TO THE COIL.
- 10. ERV-1 OA AND EA, AND BC-1 FILTER STATUSES SHALL BE MONITORED BY DDC SYSTEM THRU DIFFERENTIAL PRESSURE SWITCHES. FILTER STATUS ALARMS SHALL BE MONITORED BY DDC SYSTEM.
- 11. WHEN ERU IS DEACTIVATED, OA DAMPER SHALL CLOSE, AND ALL FANS SHALL TURN
- 12. IN UNOCCUPIED MODE, DDC SHALL NIGHT CYCLE THE SYSTEM TO MAINTAIN UNOCCUPIED HEATING SETPOINT WITH A 4°F DEADBAND.



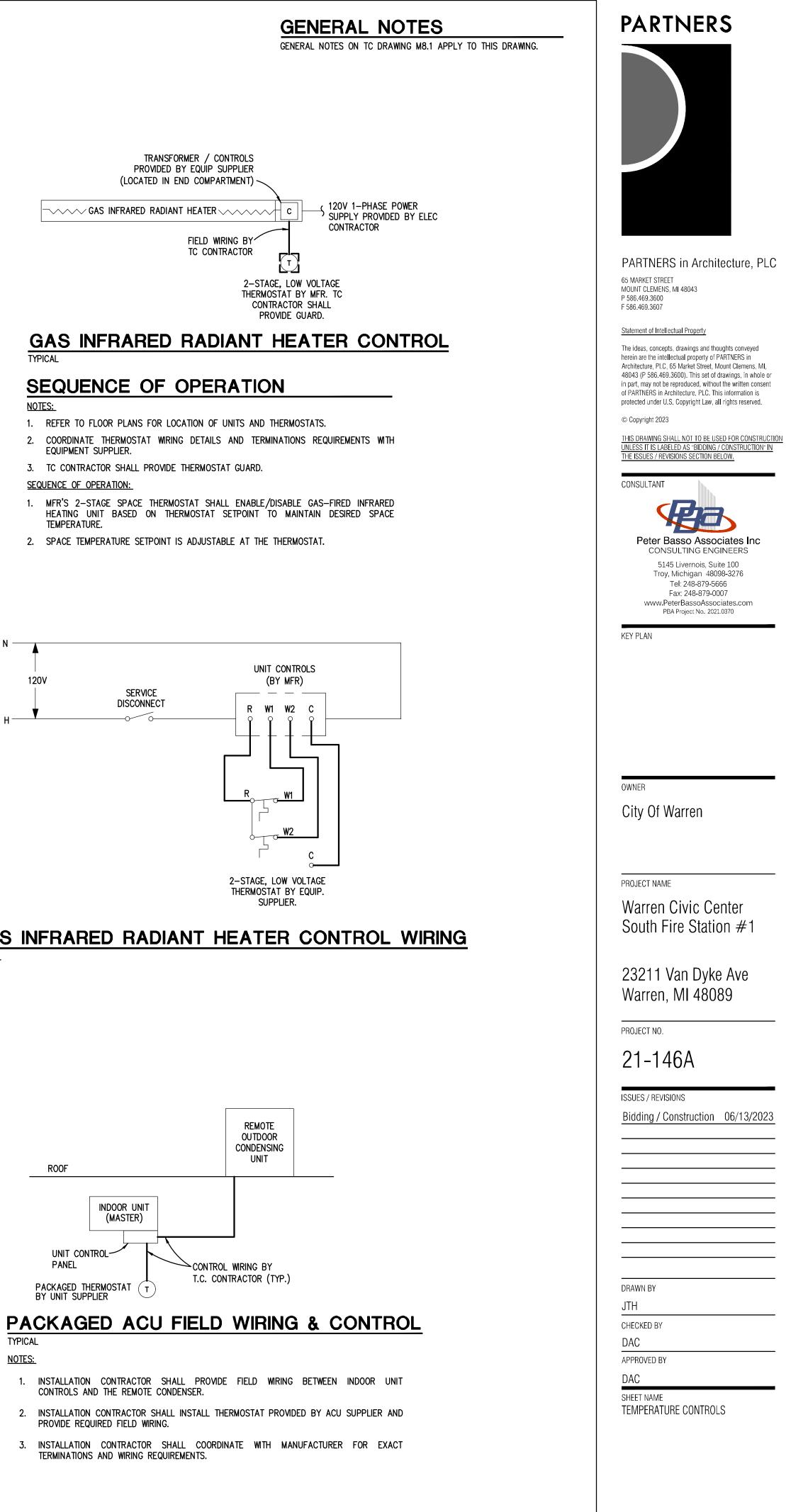
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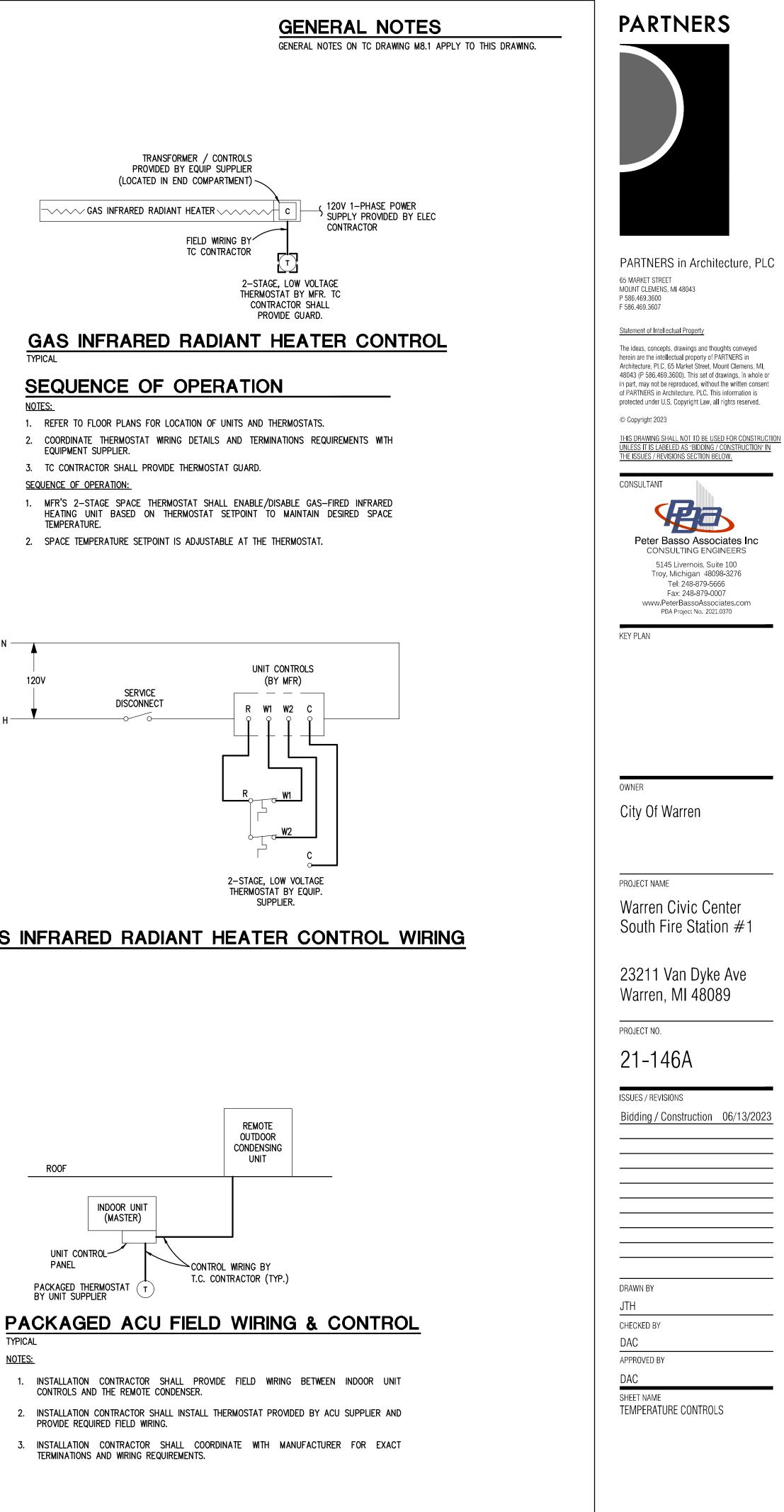


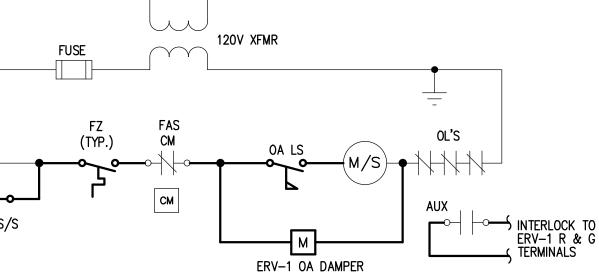




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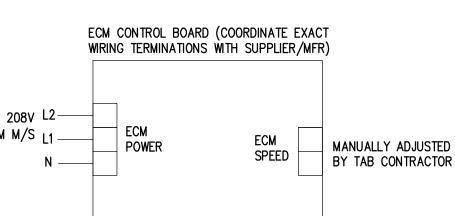




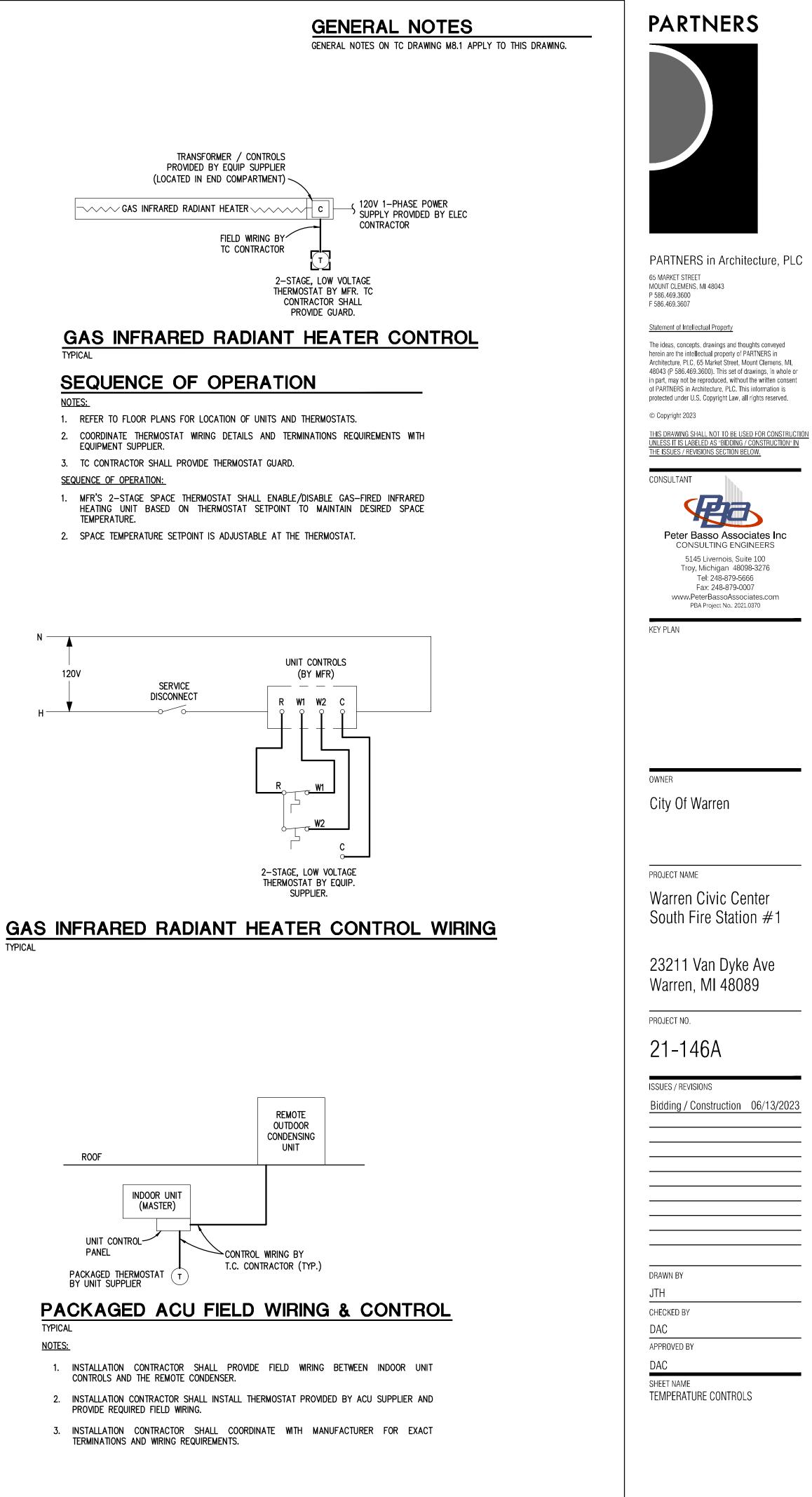


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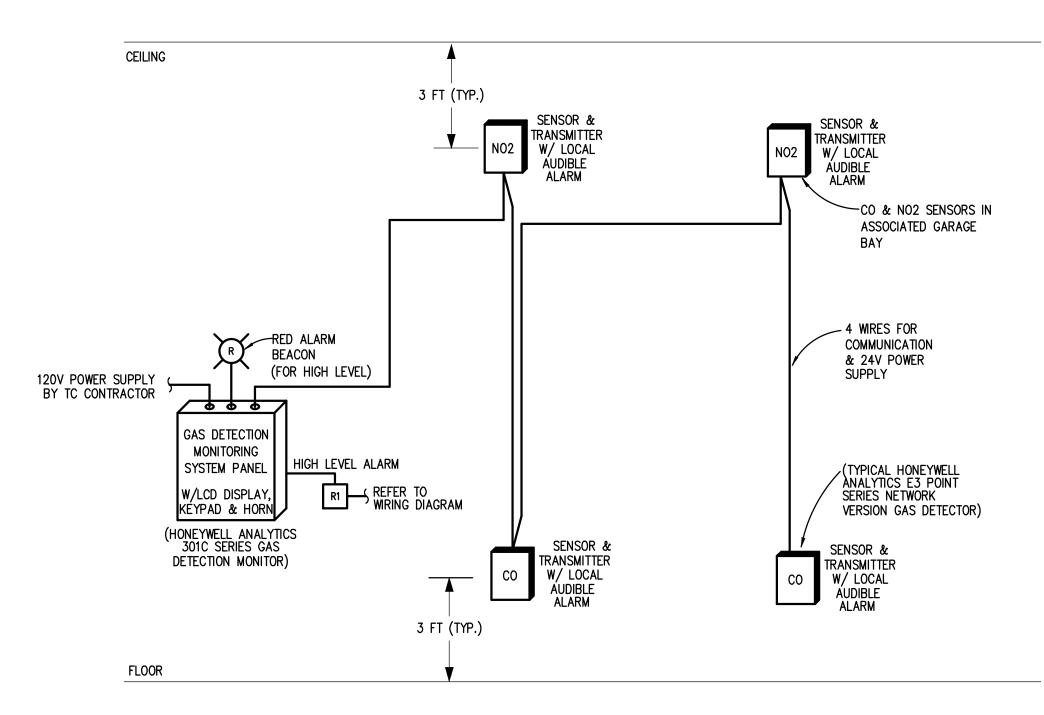
L2



**BC-1 SF ECM WIRING** 



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# GAS DETECTION MONITORING SYSTEM CONTROLS

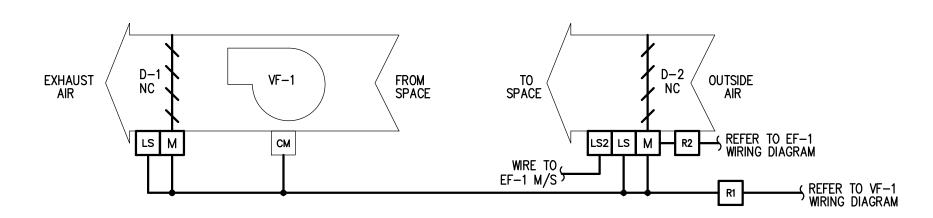
NOTES:

- 1. REFER TO MECHANICAL FLOOR PLANS FOR SENSORS AND DEVICE QUANTITIES & LOCATIONS.
- TC CONTRACTOR SHALL PROVIDE GAS DETECTION MONITORING SYSTEM & SENSORS AS SPECIFIED.
   THE PEPPESENTATIVE OF THE CAS DETECTION SYSTEM MANUFACTURES SHALL PROVIDE
- 3. THE REPRESENTATIVE OF THE GAS DETECTION SYSTEM MANUFACTURER SHALL PROVIDE RESPECTIVE CO AND NO2 ALARM LIMITS FOR THE OPERATION AND PROGRAMMING OF THE CONTROLLER.
- 4. PER MMC-2015, CO SHALL NOT EXCEED 25PPM AND NO2 SHALL NOT EXCEED 3PPM.

# SEQUENCE OF OPERATION

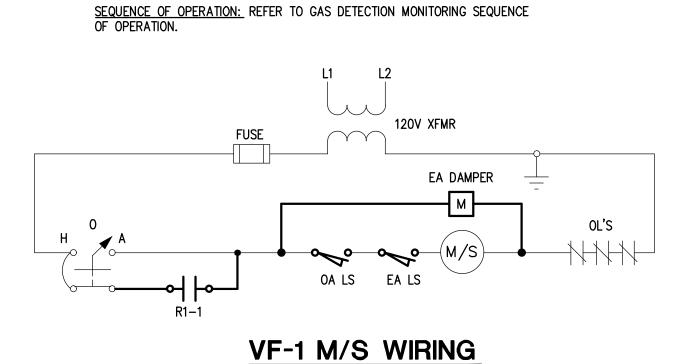
NOTE: ALL SETPOINTS, RESET SCHEDULE SETPOINTS, DEADBANDS, AND TIME INTERVALS DESCRIBED IN SEQUENCE SHALL BE ADJUSTABLE BY SYSTEM OPERATORS. ALL MOTOR CONTROL SWITCHES SHALL BE IN "AUTO" POSITION.

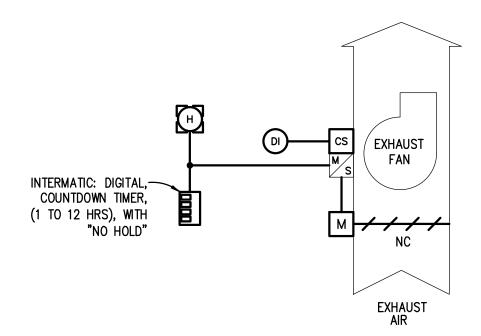
- 1. WHEN THE GAS DETECTION SYSTEM IS IN "NORMAL" MODE (NO GAS DETECTED), VF-1 SHALL REMAIN OFF.
- 2. WHEN GAS IS DETECTED, PURGE MODE SHALL BE ACTIVATED BY GAS DETECTION SYSTEM'S DRY CONTACT CLOSURE FOR HIGH LIMIT ALARM. CONTROL RELAY R1 IS ENERGIZED, INTERLOCK WIRING OPENS THE DAMPERS, WHEN LIMIT SWITCHES MAKE, VF-1 SHALL BE ENERGIZED.
- 3. WHEN GAS DETECTION SYSTEM'S CONTACT CLOSES, RELAY R1'S CONTACTS OPEN, VF-1 IS DE-ENERGIZED AND DAMPERS SHALL CLOSE.
- 4. IN PURGE MODE, VF-1 SHALL RUN UNTIL THE GAS DETECTION SYSTEM IS RESET BACK TO NORMAL OPERATION.



# PURGE VENT FAN VF-1 CONTROL WIRING

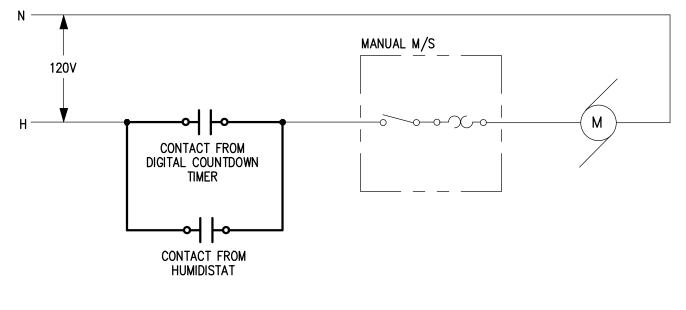
SERVES THE APPARATUS BAY





## SEQUENCE OF OPERATION

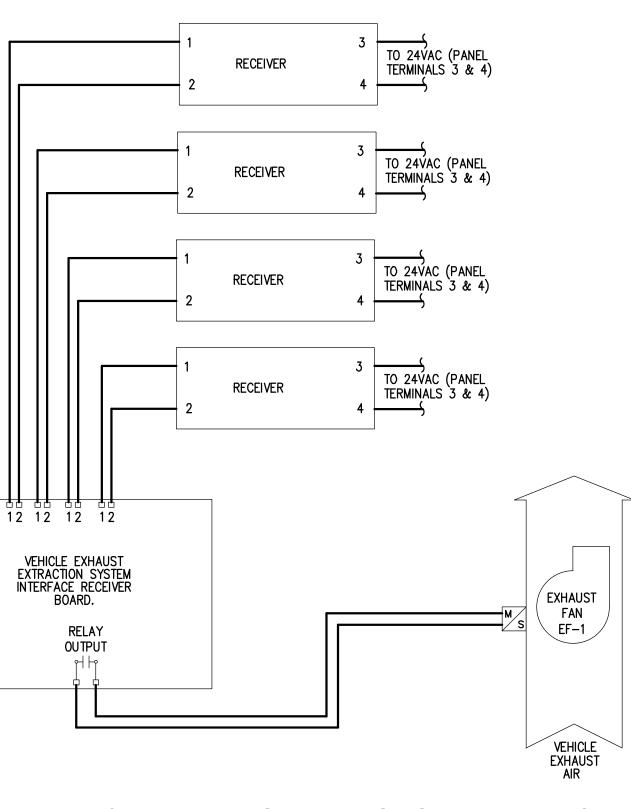
- 1. HOSE TOWER USER SHALL MANUALLY SELECT A RUN TIME FOR VF-2 USING THE DIGITAL TIMER. VF-2 SHALL RUN FOR THE PERIOD OF TIME SELECTED AND THEN SHUTOFF.
- 2. HUMIDISTAT SHALL OVERRIDE THE DIGITAL TIMER (IF OFF) AND RUN VF-2 UNTIL THE HUMIDITY DECREASES BELOW THE HUMIDISTAT'S SETPOINT. INITIAL SETPOINT SHALL BE 60% RH.



VF-2 M/S WIRING

# GENERAL NOTES

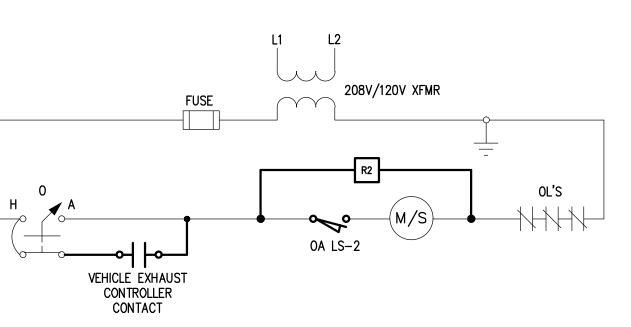
GENERAL NOTES ON TC DRAWING M8.1 APPLY TO THIS DRAWING.



# VEHICLE EXHAUST EF-1 SYSTEM WIRING

1. CONTRACTOR SHALL PROVIDE INTERLOCK WIRING AS INDICATED. COORDINATE WIRING REQUIREMENTS WITH EQUIPMENT SUPPLIER.

- SEQUENCE OF OPERATION
- 1. EXHAUST FAN SHALL BE STARTED AND STOPPED BY VEHICLE EXHAUST SYSTEM CONTROLLER WHENEVER AN EXHAUST HOSE IS PLACED INTO USE.
- 2. WIRING INTERLOCK SHALL OPEN VENTILATION OUTSIDE AIR DAMPER ASSOCIATED WITH EF-1.



# EF-1 M/S WIRING

PA	RT	'N	Ε	RS	5
					j



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KEY PLAN
OWNER
City Of Warren
ony of Walten
PROJECT NAME
Warren Civic Center
South Fire Station #1
23211 Van Dyke Ave
Warren, MI 48089
PROJECT NO.
THOJECTINO.
21-146A
ISSUES / REVISIONS
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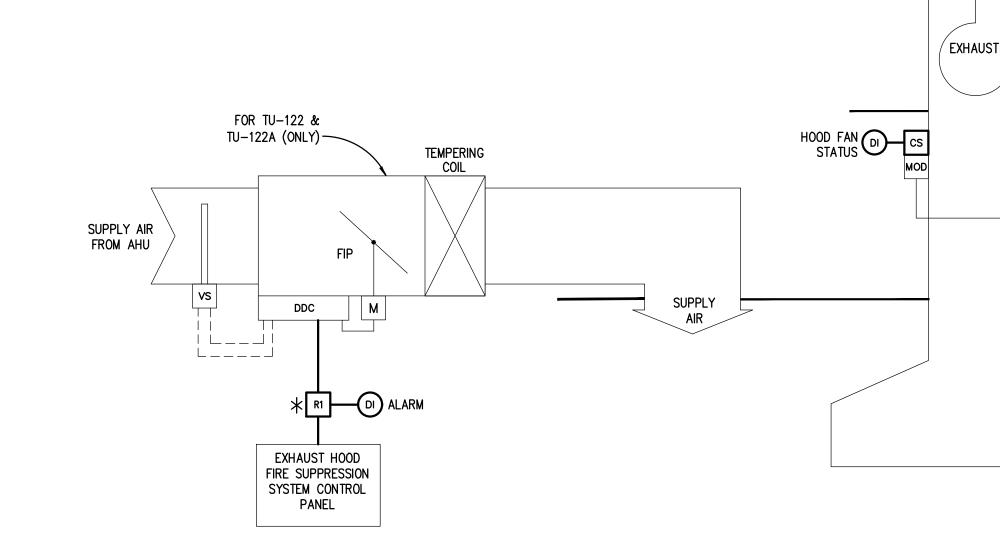
DAC

APPROVED BY

SHEET NAME TEMPERATURE CONTROLS

M8-07

SHEET NO.



## KITCHEN EXHAUST HOOD CONTROL

- 1. INDICATES INDOOR PANEL MOUNTED COMPONENT. COORDINATE PANEL LOCATION WITH ARCHITECT.
- 2. TC CONTRACTOR SHALL COORDINATE WITH THE AUTHORITY HAVING JURISDICTION WHETHER EXHAUST WILL RUN AFTER FIRE SUPPRESSION SYSTEM ACTIVATION 3. TC CONTRACTOR SHALL COORDINATE WIRING AND TERMINATION REQUIREMENTS WITH
- SUPPLIERS. 4. TC CONTRACTOR SHALL PROVIDE WIRING FROM FIRE SUPPRESSION SYSTEM FOR INTERLOCK WIRING AND SIGNAL TO THE FSE CONTROLLER. COORDINATE WIRING AND TERMINATION REQUIREMENTS WITH SUPPLIER.

#### SEQUENCE OF OPERATION

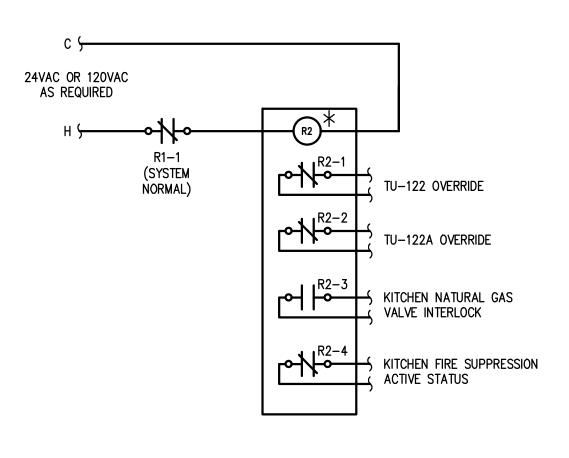
#### NOTES:

NOTES:

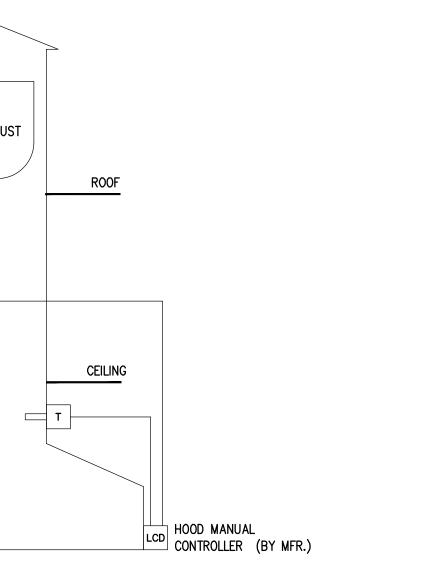
1. ALL SETPOINTS, RESET SETPOINTS, DEADBANDS, AND TIME DELAYS DESCRIBED IN SEQUENCE SHALL BE ADJUSTABLE BY SYSTEM OPERATORS. APPROPRIATE DEADBANDS SHALL BE USED TO PREVENT SHORT CYCLING SITUATIONS. ALL MOTOR CONTROL SWITCHES SHALL BE IN "AUTO" POSITION.

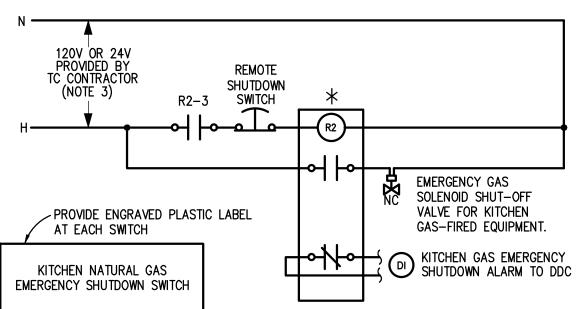
SEQUENCE OF OPERATION:

- 1. KITCHEN HOOD IS MANUALLY ACTIVATED BY KITCHEN USER THROUGH MFR'S HUMAN MACHINE INTERFACE (HMI) OR HOOD THERMOSTAT(S).
- 2. WHEN DDC CURRENT SWITCH SENSES THAT THE HOOD FAN IS ENERGIZED, DDC SHALL COMMAND TU-120 AND TU-122A TO HIGHER CFM TO PROVIDE MAKEUP AIR.
- 3. WHEN DDC CURRENT SWITCH SENSES THAT THE HOOD FAN IS DE-ENERGIZED, DDC SHALL COMMAND TU-120 AND TU-122A TO NORMAL CONTROL.
- 4. IF FIRE SUPPRESSION SYSTEM ACTIVATES, INTERLOCK RELAY SHALL SIGNAL TU-122 AND TU-122A TO CLOSE THEIR RESPECTIVE FLOW CONTROL DAMPERS (0 CFM) REGARDLESS OF WHETHER THE KITCHEN EXHAUST FAN IS RUNNING OR NOT. INTERLOCK RELAY SHALL SIGNAL THE KITCHEN NATURAL GAS SHUTOFF VALVE TO CLOSE.



# KITCHEN FIRE SUPPRESSION SYSTEM INTERLOCK WIRING





## KITCHEN GAS SHUTDOWN WIRING

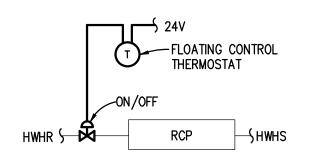
<u>NOTES:</u>

- 1. LOCATE AN EMERGENCY SHUTDOWN SWITCH SHOWN ON MECHANICAL DRAWINGS. COORDINATE SWITCH LOCATION WITH ALL OTHER TRADES.
- 2. TC CONTRACTOR SHALL PROVIDE SIGN (NAME PLATE) TO BE PLACED DIRECTLY ABOVE OR BELOW EACH PUSH BUTTON SWITCH THAT READS: "KITCHEN NATURAL GAS EMERGENCY SHUTDOWN SWITCH".
- 3. TC CONTRACTOR SHALL SUPPLY POWER TO CONTROL RELAY AND NATURAL GAS SOLENOID SHUT-OFF VALVE FROM COMMERCIAL POWER CIRCUIT. REFER TO ELECTRICAL PANEL SCHEDULES AND COORDINATE WITH ELECTRICAL CONTRACTOR AS NECESSARY. COORDINATE WITH THE ELECTRICAL CONTRACTOR TO PROVIDE A LOCKOUT AT THE CIRCUIT BREAKER.
- 4. TC CONTRACTOR SHALL MOUNT SHUTDOWN CONTROL RELAY IN AUX. CONTROL PANEL. TC CONTRACTOR SHALL WIRE NATURAL GAS SOLENOID SHUT-OFF VALVE THRU NORMALLY OPEN RELAY CONTACTS. TC CONTRACTOR SHALL COORDINATE EXACT WIRING AND TERMINATION REQUIREMENTS WITH BOILER MANUFACTURER.
- 5. TC CONTRACTOR SHALL PROVIDE PUSHBUTTON SWITCH (PUSH TO LATCH TURN KEY TO RELEASE) WITH MUSHROOM HEAD OPERATOR AND NORMALLY CLOSED (NC) CONTACTS. PROVIDE WITH PROPER ENCLOSURE.

## SEQUENCE OF OPERATION

1. THE FOLLOWING OCCURS WHEN FIRE SUPPRESSION SYSTEM INTERLOCK RELAY R1 IS NORMAL:

- 1.1. UNDER NORMAL OPERATING CONDITIONS, THE PUSHBUTTON CIRCUIT ENERGIZES RELAY R2 WHICH CLOSES THE NORMALLY OPEN (NO) CONTACTS AND OPENS THE NORMALLY CLOSED (NC) CONTACTS.
- WHEN PUSHBUTTON IS ACTIVATED, RELAY R2 NO CONTACTS SHALL OPEN/INTERRUPT THE 1.2. KITCHEN NATURAL GAS SOLENOID SHUT-OFF VALVE WHICH CLOSES THE VALVE.
- 1.3. WHEN PUSHBUTTON IS KEY-RELEASED. THE RELAYS' CONTACTS RE-ENERGIZE AND DEACTIVATES THE KITCHEN NATURAL GAS SOLENOID SHUT-OFF VALVE WHICH OPENS THE VALVE.
- 1.4. WHEN PUSHBUTTON IS ACTIVATED, DDC SHALL ACTIVATE AN EMERGENCY ALARM AT THE BAS.
- 1.5. WHEN PUSHBUTTON IS RE-ACTIVATED VIA KEYLOCKS, AND INTERLOCK RELAY R1 IS NORMAL. THE SYSTEM IS RESET TO NORMAL OPERATING MODE.
- 2. INTERLOCK RELAY R1 SHALL SIGNAL THE KITCHEN NATURAL GAS SHUTOFF VALVE TO CLOSE WHEN THE FIRE SUPPRESSION SYSTEM ACTIVATES. DDC SHALL ACTIVATE AN EMERGENCY ALARM AT THE BAS.



# **RADIANT CEILING PANEL CONTROL**

TYPICAL FOR EXISTING UNITS <u>NOTES:</u>

- 1. REFER TO FLOOR PLANS FOR QUANTITY AND LOCATION OF UNITS.
- 2. EXISTING CONVECTOR CONTROL VALVES SHALL BE REPLACED.

SEQUENCE OF OPERATION:

- 1. THERMOSTAT SHALL OPEN/CLOSE HEATING VALVE AS REQUIRED TO MAINTAIN SPACE TEMP SETPOINT OF 68°F.
- 2. THERMOSTAT SHALL PROVIDE A 2°F DEADBAND FOR CONTROL.

# GENERAL NOTES

GENERAL NOTES ON TC DRAWING M8.1 APPLY TO THIS DRAWING.

# PARTNERS



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KEY PLAN

OWNER

City Of Warren

PROJECT NAME

Warren Civic Center South Fire Station #1

23211 Van Dyke Ave Warren, MI 48089

PROJECT NO.

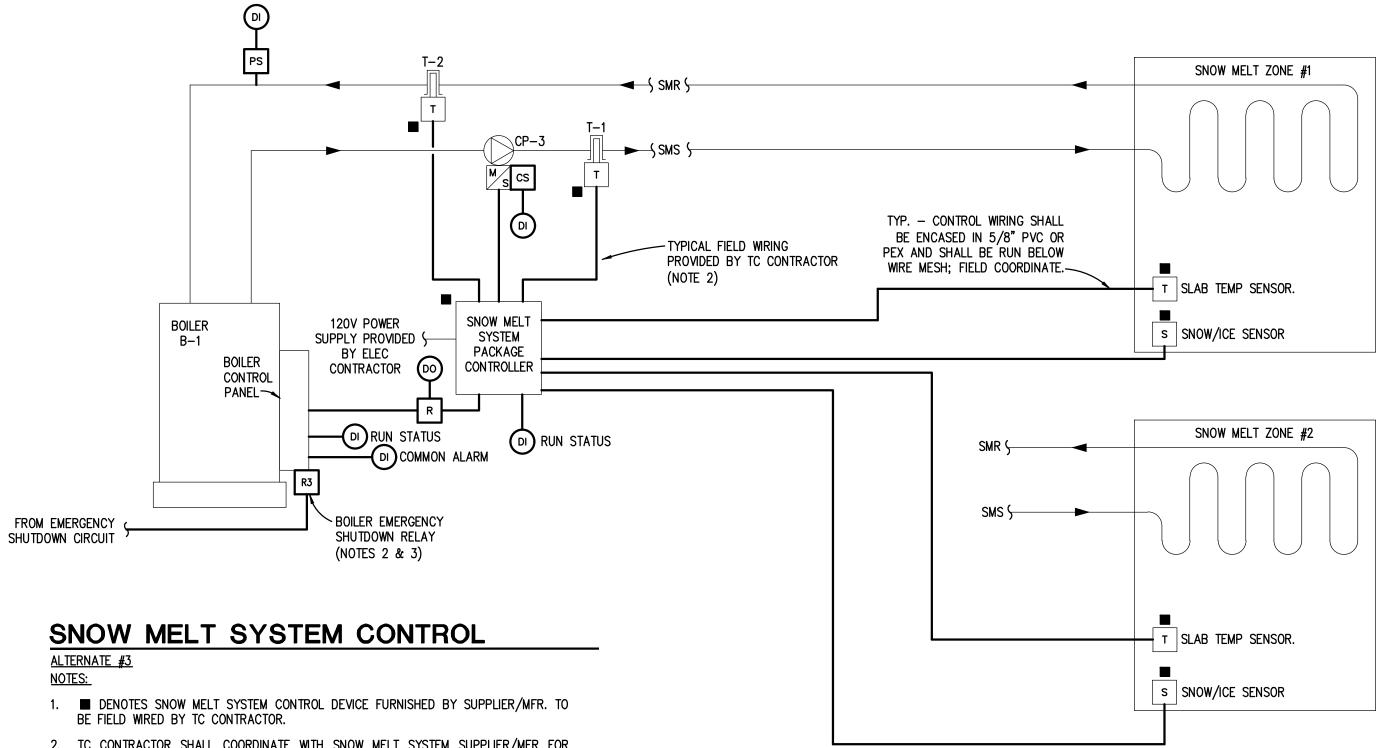
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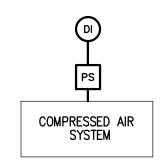
SHEET NAME TEMPERATURE CONTROLS



- 2. TC CONTRACTOR SHALL COORDINATE WITH SNOW MELT SYSTEM SUPPLIER/MFR FOR EXACT TERMINATIONS AND WIRING REQUIREMENTS.
- 3. REFER TO MANUFACTURER'S MANUAL FOR A DETAILED DESCRIPTION OF OPERATION.

SEQUENCE OF OPERATION:

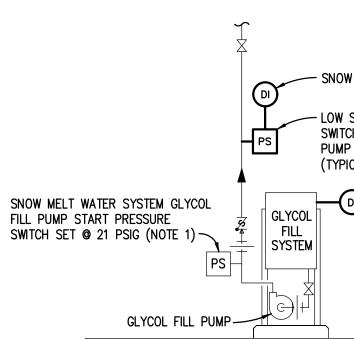
- 1. THE SNOW MELT SYSTEM SHALL BE OPERATED BY THE PACKAGED SNOW MELT CONTROL PANEL.
- 2. WHEN OUTDOOR AIR TEMP IS BELOW 37'F (ADJ.) THE SYSTEM IS ENABLED. DURING THIS TIME THE SYSTEM SHALL IDLE UNTIL MOISTURE IS SENSED. WHEN MOISTURE IS DETECTED, THE SYSTEM SHALL BECOME ACTIVE AND BE CONTROLLED TO MAINTAIN A SPECIFIC SLAB TEMPERATURE.
- 3. BOILER SHALL BE INTERLOCKED TO SNOW MELT SYSTEM CONTROL PANEL TO OPERATE ON DEMAND FOR HEAT. BOILER SHALL MAINTAIN A SUPPLY TEMPERATURE OF 120°F (ADJUSTABLE).
- 4. BOILER CONTROL PANEL SHALL OPERATE BOILER CIRC PUMP VIA INTERLOCK WIRING. DDC SHALL MONITOR SNOW MELT CIRC PUMP STATUS AND TOTALIZE RUN TIME HOURS OF OPERATION.
- 5. WHEN THE REMOTE MECH ROOM EMERGENCY SHUTDOWN SWITCH IS PUSHED, SNOW MELT BOILER BURNER CONTROLS SHALL BE DE-ENERGIZED THRU HARDWIRE INTERLOCK. REFER TO HWH SYSTEM TC DETAILS.
- 6. DDC SYSTEM SHALL MONITOR SMS PIPE PRESSURE AND GLYCOL FEED SYSTEM PRESSURE AND PROVIDE ALARMS TO THE BAS IF EITHER PRESSURES DROP BELOW INDIVIDUAL SETPOINTS.



## COMPRESSED AIR SYSTEM MONITORING

NOTE: TC CONTRACTOR SHALL PROVIDE PRESSURE SWITCH FOR AIR PRESSURE SENSING. SEQUENCE OF OPERATION:

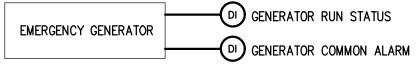
1. DDC SHALL MONITOR PRESSURE SWITCH FOR LOW PRESSURE ALARM SYSTEM STATUS.



# GLYCOL FILL STATION MONITORING

GLYCOL FILL STATION SERVES SNOW MELT SYSTEM <u>NOTES:</u>

- 1. PUMP CONTROL PRESSURE SWITCH AND ASSOCIATED CONTROL WIRING ARE PROVIDED WITH GLYCOL FILL STATION.
- 2. PRESSURE SWITCH FOR ALARM MONITORING SHALL BE FURNISHED BY TC CONTRACTOR AND INSTALLED BY MECHANICAL CONTRACTOR.
- 3. DRY CONTACTS FOR REMOTE MONITORING OF LOW TANK RESERVE ALARM PROVIDED WITH GLYCOL FILL STATION.



EMERGENCY GENERATOR MONITORING

#### TYPICAL

#### NOTES:

- 1. DRY CONTACTS FOR REMOTE SYSTEM MONITORING SHALL BE PROVIDED WITH GENERATOR SYSTEM. COORDINATE WIRING REQUIREMENTS WITH SYSTEM SUPPLIER.
- 2. REFER TO DRAWINGS FOR GENERATOR SYSTEM SYSTEM PANEL LOCATION.

#### SEQUENCE OF OPERATION:

1. DDC SHALL MONITOR EACH GENERATOR SYSTEM FOR FOR BAS DISPLAY OF COMMON ALARM AND RUNNING STATUS.

AUTOMATIC TRANSFER	
SWITCH PANEL	

## AUTOMATIC TRANSFER SWITCH MONITORING

#### TYPICAL NOTES:

- 1. DRY CONTACTS FOR REMOTE TRANSFER SWITCH MONITORING SHALL BE PROVIDED WITH SYSTEM. COORDINATE WIRING REQUIREMENTS WITH SYSTEM SUPPLIER.
- 2. REFER TO ELECTRICAL DRAWINGS FOR AUTOMATIC TRANSFER SWITCH (ATS) LOCATIONS. SEQUENCE OF OPERATION:
- 1. DDC SHALL MONITOR EACH ATS CONTACT FOR BAS DISPLAY INDICATING "ON COMMERCIAL POWER" AND "ON GENERATOR POWER."

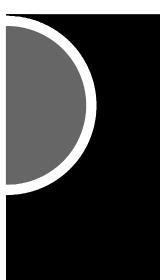
# GENERAL NOTES

GENERAL NOTES ON TC DRAWING M8.1 APPLY TO THIS DRAWING.

SWITCH SET @ 5 PSIG BELOW PUMP START PRESSURE SWITCH (TYPICAL) (NOTE 2)

LOW TANK RESERVE ALARM

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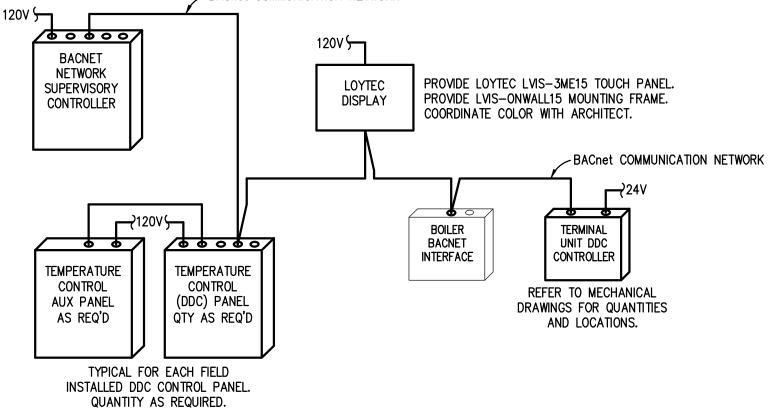
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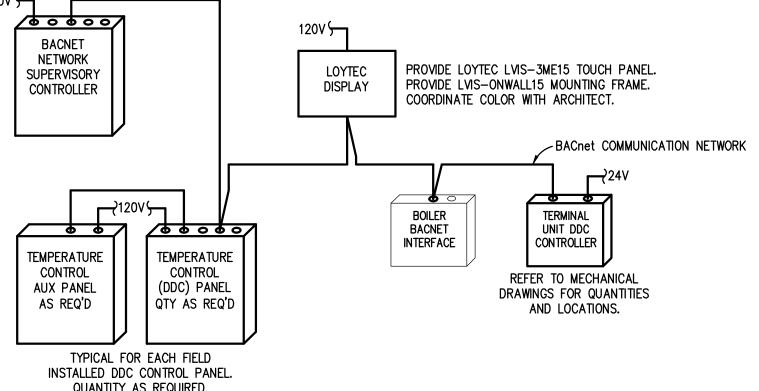
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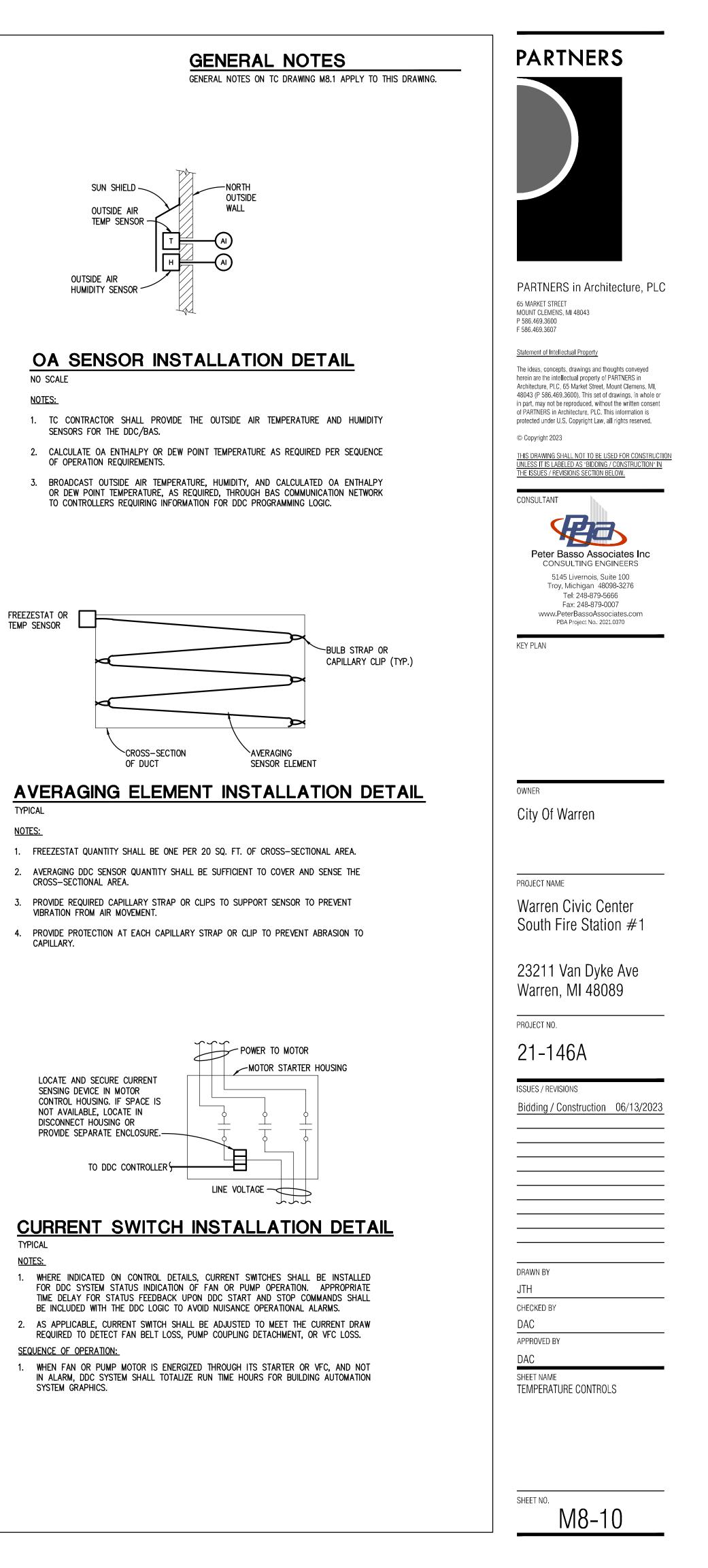
#### DDC SYSTEM ARCHITECTURE NO SCALE

NOTES:

- 1. REFER TO TEMPERATURE CONTROL SCHEMATICS FOR THE REQUIRED DDC POINTS ASSOCIATED FOR EACH SYSTEM.
- 2. THE TC CONTRACTOR SHALL PROVIDE THE BUILDING AUTOMATION SYSTEM (BAS) FOR HVAC SYSTEMS AND ASSOCIATED AND/OR RELATED CONTROLS AND BACNET INTEGRATION OF HVAC AND RELATED SYSTEMS AND EQUIPMENT. THE TEMPERATURE CONTROLS (TC) CONTRACTOR SHALL PROVIDE THE ASSOCIATED COMPONENTS AS INDICATED.
- 3. TC CONTRACTOR SHALL DETERMINE DDC PANEL QUANTITY BASED ON POINT DENSITIES AND AVAILABLE MOUNTING SPACE, PANEL COMPONENTS, CONFIGURATION AND SIZE REQUIREMENTS WITH THE OWNER'S REPRESENTATIVE (OR ARCHITECT).
- 4. THE TC CONTRACTOR SHALL COORDINATE TERMINATION REQUIREMENTS FOR POWER SUPPLY TO HVAC SYSTEM CONTROLS AND COMMUNICATION WIRING FOR BAS INTEGRATION TO HVAC AND RELATED SYSTEMS AND EQUIPMENT. TC CONTRACTOR SHALL PROVIDE REQUIRED PROGRAMMING FOR HVAC SYSTEM CONTROLS. TC CONTRACTOR SHALL LOCATE DDC PANELS AND COORDINATE WITH OTHER TRADES.
- 5. TC CONTRACTOR SHALL PROVIDE REQUIRED 120V POWER SUPPLIES FROM SPARE CIRCUITS IDENTIFIED ON ELECTRICAL PANEL SCHEDULES. COORDINATE WITH ELECTRICAL CONTRACTOR. REFER TO ELECTRICAL DRAWINGS FOR PANEL SCHEDULES AND PANEL LOCATIONS.

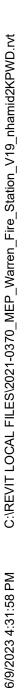
#### BACnet COMMUNICATION NETWORK

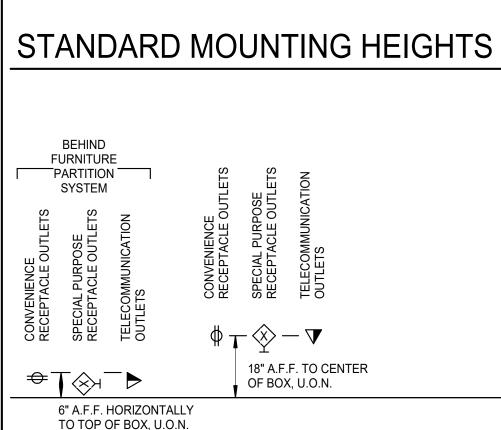
- 6. TC CONTRACTOR SHALL PROVIDE 24V TRANSFORMERS AS REQUIRED FOR DDC CONTROLLERS LOCATED IN MECHANICAL OR ELECTRICAL ROOMS - COORDINATE LOCATIONS. MAXIMUM TRANSFORMER SIZE SHALL BE 100VA. PROVIDE ENCLOSURE(S) FOR TRANSFORMERS.
- 7. TC CONTRACTOR SHALL BE RESPONSIBLE TO INTEGRATE PROJECT RELATED HVAC CONTROLLERS PROVIDED BY EQUIPMENT MANUFACTURERS AS SHOWN ON M8 DRAWINGS FOR CONTROL BY BUILDING OPERATORS.
- 8. TC CONTRACTOR SHALL PROVIDE TIME OF DAY SCHEDULING FUNCTIONS, TRENDING, ALARM MONITORING, AND TREND DATA FOR CONTROLLERS THAT REQUIRE THEM.
- 9. BUILDING DDC NETWORK SHALL BE CONNECTED TO THE LOYTEC DISPLAY FOR OWNER'S USE TO MONITOR SYSTEMS/SUBSYSTEMS, TIME OF DAY SCHEDULES, ALARM REPORTS, CHANGE SETPOINTS, ETC. TC CONTRACTOR SHALL PROVIDE NETWORK COMMUNICATION CONTROLLER PANEL COMPATIBLE FOR THIS CONNECTION.
- 10. TC CONTRACTOR SHALL PROVIDE INTEGRATION OF 3RD PARTY HVAC EQUIPMENT CONTROLLERS PROVIDED BY HVAC EQUIPMENT MANUFACTURERS.
- 11. TC CONTRACTOR SHALL PROVIDE AUXILIARY PANEL FOR GAUGES, TRANSMITTERS, RELAYS, POWER TRANSFORMERS, ETC.
- 12. TC CONTRACTOR SHALL PROVIDE GRAPHICS ASSOCIATED WITH FIELD INSTALLED AND 3RD PARTY BACNET DDC CONTROLLERS FOR THE HVAC SYSTEM AND ASSOCIATED AND/OR RELATED CONTROLS.

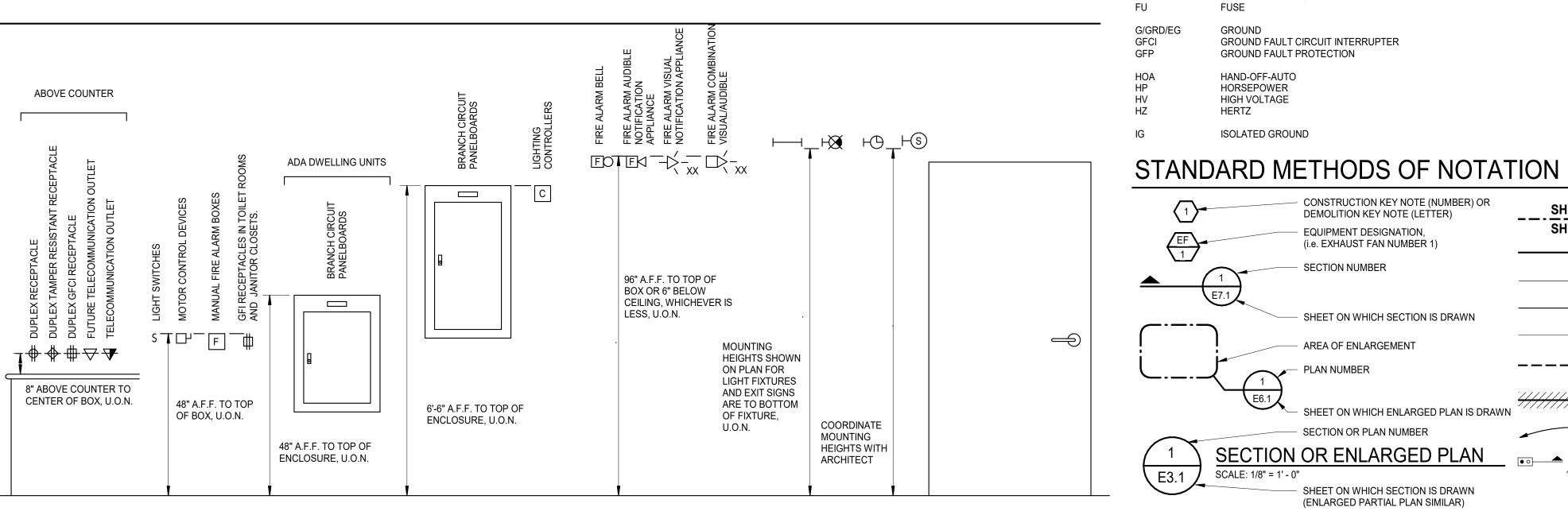


# ELECTRICAL SYMBOL LIST (NOTE: SOME SYMBOLS AND ABBREVIATIONS SHOWN MAY NOT APPLY TO THIS PROJECT.)

SYMBOL	DESCRIPTION	<u>SYMBOL</u>	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION		SYMBOL DESCRIPTION				SHEET NO.	SHEET TITLE	
FX (NL)	FIXTURE TYPE (NL INDICATES NIGHT LIGHT)	TWC	TWO-WAY COMMUNICATION SYSTEM CALL STATION	CP	CONTROL PANEL		SECURITY CAMERA	F	MANUAL FIRE ALARM BOX				E0-01 E0-02	ELECTRICAL STAN ELECTRICAL STAN	IDARDS AND DRAWING INDEX
	``````````````````````````````````````	TWCD	TWO-WAY COMMUNICATION SYSTEM AUTO	$\mathcal{N}$	MOTOR	MD	MOTION DETECTOR	SD	SMOKE DETECTOR				E0-03	ELECTRICAL STAN	IDARD SCHEDULES
	LIGHTING FIXTURE	TWCD	DIALER	VFC	VARIABLE FREQUENCY CONTROLLER	<u></u> κ>	SECURITY KEY SWITCH	DD	DUCT SMOKE DETECTOR				E0-04 E2-01	ELECTRICAL NEW GROUND FLOOR L	
	DIRECT/INDIRECT LIGHTING FIXTURE	TWCA	TWO-WAY COMMUNICATION SYSTEM ANNUNCIATOR & COMMUNICATION PANEL		MANUAL CONTROLLER	DC	DOOR CONTACT	СО	CARBON MONOXIDE DETECTOR				E2-02 E3-01		IOSE TOWER LIGHTING PLANS POWER AND AUXILIARY SYSTEMS PLAN
	EMERGENCY LIGHTING FIXTURE	TWCP	TWO-WAY COMMUNICATION SYSTEM POWER SUPPLY WITH BATTERY BACK-UP	$\boxtimes$	MAGNETIC CONTROLLER	КР	KEY PAD	RT	REMOTE TEST STATION (FOR DUCT DE	TECTOR)			E3-02	MEZZANINE AND H	IOSE TOWER POWER AND AUXILIARY SYSTEMS
			TWO-WAY COMMUNICATION SYSTEM AUTO DIALER		COMBINATION MAGNETIC CONTROLLER	CR	CARD READER	ТО	THERMAL DETECTOR				E5-01 E5-02	ONE LINE DIAGRAM	
		TWCDP	POWER SUPPLY WITH BATTERY BACK-UP		NON-FUSIBLE DISCONNECT SWITCH	DB	DURESS PUSH BUTTON STATION		PROJECTED BEAM DETECTOR				E5-03 E7-01	PANEL SCHEDULE	
⊢₽┤∕Ю	WALL MOUNTED LIGHTING FIXTURE	RGP	REMOTE GENERATOR ANNUNCIATOR PANEL		FUSIBLE DISCONNECT SWITCH	DE	DELAYED EGRESS	FO	FIRE ALARM BELL				E7-02	ELECTRICAL DETA	ILS AND DIAGRAMS
0/□	LIGHTING FIXTURE	ATS	AUTOMATIC TRANSFER SWITCH					EQ EQ	FIRE ALARM AUDIBLE NOTIFICATION AF				E7-03	ELECTRICAL DETA	ILS AND DIAGRAMS
⟨O / □⟩	RECESSED OR SURFACE MOUNTED DIRECTIONAL LIGHTING FIXTURE	UPS	UNINTERRUPTIBLE POWER SUPPLY	CB+	ENCLOSED CIRCUIT BREAKER	REX	REQUEST TO EXIT STATION	,	FIRE ALARM VISUAL NOTIFICATION AF	-					
,		CSX	LOW VOLTAGE CONTROL STATION		PUSH BUTTON STATION	99	AUTOMATIC DOOR PUSH PAD OPERATO	-1>-xx	"XX" INDICATES CANDELA RATING						
$\odot$			"X" INDICATES TYPE SINGLE / DUPLEX RECEPTACLE OUTLET	$\bigcirc$	JUNCTION BOX	DO	DOOR OPERATOR		IF NO RATING SHOWN, APPLIANCE IS 1 FIRE ALARM COMBINATION VISUAL/ AU						
$\Box$	WALL SCONCE	φ/φ	"X" INDICATES TYPE	lacksquare	HARD WIRE POWER CONNECTION	DA	DOOR ACTUATOR	Ľ, −,xx	"XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 1	5cd					
	LIGHTING TRACK	ዋ /	SINGLE / DUPLEX RECEPTACLE OUTLET CONTROLLED BY AUTOMATIC CONTROL DEVICE / SYSTEM		GROUND ROD	AC	ACCESS CONTROL STATION		FIRE ALARM COMBINATION VISUAL/ AU						
$\bigtriangledown$	TRACK LIGHTING FIXTURE	8	QUAD RECEPTACLE OUTLET		GROUND CONNECTION	ACCP	ACCESS CONTROL CONTROL PANEL	-F_xx	AX INDICATES CANDELA NATING						
•	POLE MOUNTED LIGHTING FIXTURE	т _Ж	ABOVE COUNTER DUPLEX RECEPTACLE (SIMILAR	<b>F1</b>	CONDUIT SLEEVE WITH BUSHINGS LENGTH AS REQUIRED	ACPS	ACCESS CONTROL POWER SUPPLY	\ /	IF NO RATING SHOWN, APPLIANCE IS 1						
$\mathbf{X}$	POLE MOUNTED LIGHTING FIXTURE - POST TOP	$\mathbf{A}$	FOR TAMPER RESISTANT, QUADS, EMERGENCY AND GFCI RECEPTACLES)	X	"X" INDICATES CONDUIT SIZE	°	CIRCUIT BREAKER	-Ò-¯xx	CEILING MOUNTED "XX" INDICATES CANDELA RATING						
$\overset{\odot}{\triangleleft}$	BOLLARD LIGHTING FIXTURE	щ	DUPLEX RECEPTACLE-GROUND FAULT CIRCUIT	НН	HANDHOLE	Î.		/ 、	IF NO RATING SHOWN, APPLIANCE IS 1						
	EMERGENCY LIGHTING UNIT	# _	INTERRUPTER	o	CONDUIT UP	) J	DRAWOUT CIRCUIT BREAKER MANUALLY/ OPERATED	F	FIRE ALARM AUDIBLE NOTIFICATION AF CEILING MOUNTED	PLIANCE -					
×	EXIT LIGHTING FIXTURE WITH DIRECTIONAL ARROWS (SHADED AREA INDICATES FACE)		DEAD FRONT-GROUND FAULT CIRCUIT INTERRUPTER	•	CONDUIT DOWN	Î	DRAWOUT CIRCUIT BREAKER	⋖ <sub>F</sub>	FIREFIGHTERS PHONE JACK						
<b>∱</b> €€	EXIT LIGHTING FIXTURE WITH DIRECTIONAL ARROWS (SHADED AREA INDICATES FACE)	•	DUPLEX EMERGENCY RECEPTACLE OUTLET	$\triangleleft$	EMPTY BOX FOR FUTURE	] ↓	ELECTRICALLY/ OPERATED	FACP	FIRE ALARM CONTROL PANEL						
ΗX	EXIT LIGHTING FIXTURE - WALL MOUNTED	₼	DUPLEX TAMPER RESISTANT RECEPTACLE OUTLET	4	TELECOMMUNICATION OUTLET EMPTY BOX FOR FUTURE TELECOMMUNICATIO	on °/	SWITCH	FAA	FIRE ALARM ANNUNCIATOR PANEL						
H	EXIT/EMERGENCY LIGHTING COMBO	۲		$\mathcal{A}$	OUTLET MOUNTED 8" ABOVE COUNTERTOP	۰ . س ۹	AUTOMATIC OR MANUAL	NAC	NOTIFICATION APPLIANCE CIRCUIT EXT	ENDER PANEL					
ALCR	AUTOMATIC LOAD CONTROL RELAY	*	QUAD TAMPER RESISTANT RECEPTACLE OUTLET	$\bigcirc$	EMPTY BOX FOR FUTURE CEILING MOUNTED TELECOMMUNICATION OUTLET		TRANSFER SWITCH	IM	ADDRESSABLE MONITORING MODULE						
BCELTS	BRANCH CIRCUIT EMERGENCY LIGHTING	♦	ABOVE COUNTER DUPLEX TAMPER RESISTANT RECEPTACLE OUTLET		TELECOMMUNICATION OUTLET		FUSE	СМ	ADDRESSABLE CONTROL MODULE		RICAL ABBREVIA		191		
	TRANSFER SWITCH LIGHTING CONTROL DEVICE - REFER TO	#	DUPLEX UPS RECEPTACLE	X	"X" INDICATES TYPE		TRANSFORMER	TS	TAMPER SWITCH	ABBREVIATION	DESCRIPTION	ABBREVIATION	DESCRIPTION	ABBREVI	ATIOIDESCRIPTION
LC	LIGHTING CONTROL SCHEDULE	\\$	DUPLEX RECEPTACLE WITH 2 USB PORTS OUTLET	$\triangleleft$	TELECOMMUNICATION OUTLET MOUNTED 8" ABOVE COUNTERTOP		CURRENT TRANSFORMER	FS	FLOW SWITCH	٨	AMPERES	JB	JUNCTION BOX	D	POLE
XX	ROOM CONTROL DESIGNATION - REFER TO LIGHTING CONTROL SCHEDULE	 YF	USB 4 PORT CHARGING STATION	^		<sup>₩</sup> <sup>™</sup> 3{	POTENTIAL TRANSFORMER		MAGNETIC DOOR RELEASE	AER	AMPENES ARC ENERGY REDUCTION AMPERES FRAME (BREAKER RATING)	KV 2D	THOUSAND AMP	PB DH	PUSHBUTTON STATION PHASE
S	SINGLE POLE TOGGLE SWITCH	"	CEILING MOUNTED DUPLEX / QUAD RECEPTACLE	$\mathbf{A}_{x}$	TELECOMMUNICATION CEILING MOUNTED OUTLET "X" INDICATES TYPE	••–  ₁	LIGHTNING ARRESTOR			AFCI A.F.F.	ARC FAULT CIRCUIT INTERRUPTER ABOVE FINISH FLOOR	KV KVA	KILOVOLT KILOVOLT - AMPERES	PT PDP	POTENTIAL TRANSFORMER POWER DISTRIBUTION PANEL
\$2	TWO POLE TOGGLE SWITCH	⊕/®	CEILING MOONTED DUPLEX / QUAD RECEPTACLE		TELECOMMUNICATION BACKBOARD	x			BRANCH CIRCUIT PANEL BOARD	AIC	ABOVE FINISH FLOOR AMPS INTERRUPTING CAPACITY AUDIENCE LEFT	KWH	KILOVOLT - AMPERES KILOWATT KILOWATT - HOURS	RECEPT.	RECEPTACLE
\$3 6 -	3 WAY TOGGLE SWITCH		POWER POLE	⊢tgb –	TELECOMMUNICATION GROUNDING BUS BAR		"X" INDICATES PANELBOARD NAME GROUND		LOAD CENTER	ALCR	AUDIENCE LEFT AUTOMATIC LOAD CONTROL RELAY AUDIENCE RIGHT		LIGHTING ARRESTOR	RDP	RECEPTACLE RECEPTACLE DISTRIBUTION PANEL RECEPTACLE PANEL
\$4	4 WAY TOGGLE SWITCH	◈/⊗	WALL / CEILING MOUNTED SPECIAL RECEPTACLE - REFER TO ELECTRICAL STANDARD SCHEDULES	<b>⊢</b> тмдв <b>-</b>	TELECOMMUNICATION MAIN GROUNDING BUS	BAR 🚽			MOTOR CONTROL CENTER	AR AT	AUDIENCE RIGHT AMPERES TRIP (BREAKER SETTING) AUTOMATIC TRANSFER SWITCH	la Lp Ldp	LIGHTING PANEL	RSC	RECEPTACLE PANEL RIGID STEEL CONDUIT
K	KEY OPERATED SWITCH	т — — — — — — — — — — — — — — — — — — —	MULTI-OUTLET SURFACE RACEWAY	IC	INTERCOM OUTLET		STRESS CONE TERMINATION	Т	TRANSFORMER	ATS AUX	AUXILIARY		LIGHTING DISTRIBUTION PANE	SCCR	SHORT CIRCUIT CURRENT RATING
K3	3 WAY KEY OPERATED SWITCH			S	SPEAKER	K	SECURITY KEY INTERLOCK		DISTRIBUTION PANEL	BCELTS	BRANCH CIRCUIT EMERGENCY LIGHTING		MINIMUM CIRCUIT AMPACITY	SCHED SPD	SCHEDULE SURGE PROTECTION DEVICE
K4 D	4 WAY KEY OPERATED SWITCH DIMMER SWITCH		MULTI-SERVICE DROP SEE ELECTRICAL DETAILS AND DIAGRAMS SHEET	⊢s	SPEAKER - WALL MOUNTED	G	ENGINE GENERATOR	⊢gb⊣	GROUND BUS	BKR	TRANSFER SWITCH BREAKER	MCB MCC	MAIN CIRCUIT BREAKER MOTOR CONTROL CENTER	ST	SHUNT TRIP SWITCH
Do	DIMMER OCCUPANCY SENSOR SWITCH		"X" INDICATES TYPE	MIC	MICROPHONE	(M)	UTILITY METER	—PB —	PLUG IN BUSWAY	BPS	BOLTED PRESSURE SWITCH	MDP MECH	MAIN DISTRIBUTION PANEL MECHANICAL	SWBD SWGR	SWITCHBOARD SWITCHGEAR
DL	LOW VOLTAGE DIMMER SWITCH	PTX	POKE-THROUGH ASSEMBLY "X" INDICATES TYPE			EMU	ELECTRONIC METERING UNIT	⊢FB –	FEEDER BUSWAY	C CB	CONDUIT CIRCUIT BREAKER	MIN MISC.	MINIMUM MISCELLANEOUS	TB	TERMINAL BOX
D3	3 WAY DIMMER SWITCH	FBX	FLOOR SERVICE FITTING "X" INDICATES TYPE		VOLUME CONTROL	(A)	AMMETER	-~~-	THERMAL OVERLOAD RELAY	CKT CT	CIRCUIT CURRENT TRANSFORMER	MLO MOP	MAIN LUGS ONLY MAXIMUM OVERCURRENT PRC		TAMPER RESISTANT
ςp	PILOT SWITCH	AFX	ACCESS FLOOR SERVICE FITTING	BO	SIGNALING BELL	$\heartsuit$	VOLTMETER		NORMALLY OPEN CONTACTS	DEMO	DEMOLITION	MTD MTG	MOUNTED MOUNTING	TTP TYP	TELEPHONE TERMINAL BACKBOARD TYPICAL
ST	DIGITAL TIME SWITCH		"X" INDICATES TYPE CORD REEL	G	SINGLE FACE CLOCK - CEILING MOUNTED	AS	AMMETER SWITCH	01\10	NORMALLY CLOSED CONTACTS	DIM DISC	DIMENSION DISCONNECT	MTR	MOTOR	U.O.N.	UNLESS OTHERWISE NOTED
		RX	"X" INDICATES TYPE	нĠ	SINGLE FACE CLOCK - WALL MOUNTED	VS	VOLTMETER SWITCH		N.O. PUSH BUTTON SINGLE CIRCUIT	DP DS	DISTRIBUTION PANEL DOWNSTAGE	N NC	NEUTRAL NORMALLY CLOSED	US	UPSTAGE
Sı	ILLUMINATED TOGGLE SWITCH FOR CONTROL OF LIGHTING ON CRITICAL POWER-ILLUMINATED WHE SWITCH IS IN "OFF" POSITION		DUAL SWITCHING FOR INNER/OUTER LAMPS OF FLUORESCENT LIGHT FIXTURES	8	DOUBLE FACE CLOCK - CEILING MOUNTED	SPD	SURGE PROTECTIVE DEVICE	∘ ∘⊥₀	N.C. PUSH BUTTON SINGLE CIRCUIT	DWG EBU	DRAWING EMERGENCY BATTERY UNIT	NEC NF NIC	NATIONAL ELECTRICAL CODE NON-FUSIBLE NOT IN CONTRACT	V W	VOLTS WIRE OR WATTS
SL	LOW VOLTAGE SWITCH	5353	3-WAY DUAL SWITCHING FOR INNER/OUTER	S	DOUBLE FACE COMBINATION CLOCK/SPEAKER		CONTROL RELAY		CABLE VAULT	EC ELEC	ELECTRICAL CONTRACTOR ELECTRICAL	NL NO	NIGHT LIGHT NORMALLY OPEN	WG	WIRE GUARD WEATHERPROOF
So	OCCUPANCY SENSOR			U M	CEILING MOUNTED	PRM	PHASE ROTATION MONITOR	X-X	"X-X" INDICATES TYPE	EM/ EMERG EMT	EMERGENCY ELECTRICAL METALLIC TUBING	NTS	NOT TO SCALE	WR	WEATHER RESISTANT
SO2	OCCUPANCY SENSOR - REFER TO ELECTRICAL	5454	4-WAY DUAL SWITCHING FOR INNER/OUTER LAMPS OF FLUORESCENT LIGHT FIXTURES	FB	DOUBLE FACE CLOCK - WALL MOUNTED	$\overline{\bullet}$	CAMLOK - MALE			EO EPO	ELECTRICAL METALLIC TOBING ELECTRICALLY OPERATED EMERGENCY POWER OFF	OC OFCI	ON CENTER OWNER FURNISHED,	XFMR XP	TRANSFORMER EXPLOSION PROOF
	STANDARD SCHEDULE	1/2	TIME CLOCK	S	DOUBLE FACE COMBINATION CLOCK/SPEAKER	$\overline{O}$	CAMLOK - FEMALE			EPO EWC EXIST	ELECTRIC WATER COOLER EXISTING	OFOI	CONTRACTOR INSTALLED OWNER FURNISHED,		EXISTING
os <sub>x</sub>	OCCUPANCY SENSOR - REFER TO ELECTRICAL STANDARD SCHEDULES - "X" INDICATES TYPE	С	CONTACTOR	L S S	WALL MOUNTED	$\bigcirc$	TIME DELAY RELAY			FA	FIRE ALARM		OWNER FORNISHED, OWNER INSTALLED	(E) (R)	RELOCATED
		P	PHOTOCELL			(TDR)				FA FLA FLR	FIRE ALARM FULL LOAD AMPS FLOOR				
			TWIST TIMER							FLR FOH FSEC	FRONT OF HOUSE FOOD SERVICE EQUIPMENT CONTRACTC	)R			
										FU	FUSE				







FUSE

# ELECTRICAL DRAWING INDEX

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DTE (NUMBER) OR (LETTER) ON, BER 1)	SHEET E1.0 SHEET E1.1
ION IS DRAWN	
Т	
RGED PLAN IS DRAWN BER	
ION IS DRAWN	

#### MATCH LINE

HEAVY LINE WEIGHT INDICATES NEW WORK

LIGHT LINE WEIGHT INDICATES EXISTING EQUIPMENT OR REFERENCED INFORMATION

GRAY LINE INDICATES BACKGROUND INFORMATION

THIN GRAY LINE INDICATES CEILING GRID

DASHED LINES INDICATE CONDUIT ROUTED IN OR BELOW SLAB OR GRADE

HATCH MARKS INDICATE EQUIPMENT OR MATERIALS TO BE DISCONNECTED AND REMOVED.

**CIRCUIT HOMERUN** 

DUCT BANK - CONCRETE ENCASED / DIRECT BURIED IN USE SPARE

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KEY PLAN

#### OWNER

City of Warren

#### PROJECT NAME

Warren Civic Center South Fire Station #1

23211 Van Dyke Ave Warren, MI 48089

PROJECT NO.

21-146A

#### **ISSUES / REVISIONS** Bidding / Construction 06/13/2023

DRAWN BY

SAM

CHECKED BY EMG

\_\_\_\_ APPROVED BY

EMG SHEET NAME

ELECTRICAL STANDARDS AND DRAWING INDEX

BRANCH CIRCUIT VOLTAGE DROP WIRING SCHEDULE FOR SINGLE PHASE CIRCUITS														
	WIRE SIZE		MAXIMUM BRANCH CIRCUIT LENGTH (IN FEET)											
BRANCH CIRCUIT RATING (A)	(AWG)	120V	208V	240V	277V	480V								
20A	12	83	143	165	191	331								
20A	10	128	222	256	295	511								
20A	8	201	348	402	464	804								
20A	6	313	542	625	721	1250								
30A	10	85	148	170	197	341								
30A	8	134	232	268	309	536								
30A	6	208	361	417	481	833								
30A	4	313	542	625	721	1250								

GENERAL NOTES THE ABOVE TABLE VALUES ARE BASED ON COPPER CONDUCTORS, IN STEEL CONDUIT, WITH A LOAD POWER FACTOR

OF 0.85 PER NEC CHAPTER 9, TABLE 9. PROVIDE BRANCH CIRCUIT CONDUCTORS AS INDICATED IN THE TABLE ABOVE FOR ALL LIGHTING AND RECEPTACLE 2. BRANCH CIRCUITS. WHERE BRANCH CIRCUITS SERVE DEDICATED EQUIPMENT, THE CONTRACTOR MAY PERFORM VOLTAGE DROP CALCULATIONS BASED ON ACTUAL EQUIPMENT CONNECTED LOAD AND PROVIDE CONDUCTORS APPROPRIATELY SIZED TO LIMIT VOLTAGE DROP TO A MAXIMUM OF 3%.

CONDUCTOR SIZES ARE BASED ON MAXIMUM OF 9 CURRENT CARRYING CONDUCTORS IN A SINGLE CONDUIT. LIMITS FOR CONDUCTOR LENGTHS SHOWN ARE BASED ON A MAXIMUM BRANCH CIRCUIT LOADING OF 64% OF THE 4. BRANCH BREAKER RATING AND A MAXIMUM OF 3 PERCENT VOLTAGE DROP TO COMPLY WITH ASHRAE 90.1 AND THE NEC. FOR CIRCUITS LOADED GREATER THAN 64% OF BRANCH BREAKER RATING, THE CONTRACTOR SHALL PROVIDE CONDUCTORS APPROPRIATELY SIZED TO LIMIT VOLTAGE DROP TO 3%.

OCCUPANCY SENSOR LEGEND TYPE DESCRIPTION IOSIA 360° CEILING MOUNTED DUAL TECHNOLOGY OCCUPANCY SENSOR

	FEEDER AND BRANCH CIRCUIT SIZING SCHEDULE - GENERAL PURPOSE													
				PER CONDUCTORS										
	WIRE SIZE (AWG OR KCMIL) CONDUIT SIZE							WIRE SIZE (AWG OR KCMIL) CONDUCTORS						
OVERCURRENT DEVICE RATING	PHASE &		SINGLE PHASE 2 WIRE+G (1PH, 1N, 1G;	SINGLE PHASE 3 WIRE+G	THREE PHASE 3 WIRE+G	THREE PHASE & NEUTRAL 4 WIRE+G	KEYED	PHASE &		SINGLE PHASE 3 WIRE+G	THREE PHASE 3 WIRE+G	THREE PHASE & NEUTRAL 4 WIRE+G		
(AMPERES)	NEUTRAL	GROUND	2PH, 1G)	(2PH, 1N, 1G)	(3PH, 1G)	(3PH, 1N, 1G)	NOTES	NEUTRAL	GROUND	(2PH, 1N, 1G)	(3PH, 1G)	(3PH, 1N, 1G)		
15-20	12	12	3/4"	3/4"	3/4"	3/4"		N/A	N/A	N/A	N/A	N/A		
25-30	10	10	3/4"	3/4"	3/4"	3/4"		N/A	N/A	N/A	N/A	N/A		
35-40	8	10	3/4"	3/4"	3/4"	3/4"		N/A	N/A	N/A	N/A	N/A		
45-50	8 (6)	10	3/4"	3/4"	3/4"	3/4"	1	N/A	N/A	N/A	N/A	N/A		
60	6 (4)	10	3/4" (1")	3/4" (1")	3/4" (1")	1" (1 1/4")	1	N/A	N/A	N/A	N/A	N/A		
70	4	8	1"	1 1/4"	1 1/4"	1 1/4"		N/A	N/A	N/A	N/A	N/A		
80	4 (3)	8	1"	1 1/4"	1 1/4"	1 1/4"	1	N/A	N/A	N/A	N/A	N/A		
90-100	3 (2)	8	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1	1	6	1 1/2"	1 1/2"	1 1/2"		
110	2 (1)	6	-	1 1/4"	1 1/4"	1 1/4" (1 1/2")	1	1/0	4	1 1/2"	1 1/2"	2"		
125	1 (1/0)	6	-	1 1/4" (1 1/2")	1 1/4" (1 1/2")	1 1/2"	1	2/0	4	1 1/2"	1 1/2"	2"		
150	1/0	6	-	1 1/2"	1 1/2"	1 1/2"		3/0	4	2"	2"	2 1/2"		
175	2/0	6	-	2"	2"	2"		4/0	4	2"	2"	2 1/2"		
200	3/0	6	-	2"	2"	2 1/2"		250	4	2"	2"	3"		
225	4/0	4	-	2"	2"	2 1/2"		300	2	2 1/2"	2 1/2"	3"		
250	250	4	-	2 1/2"	2 1/2"	2 1/2"		350	2	2 1/2"	2 1/2"	3"		
300	350	4	-	2 1/2"	2 1/2"	3"		500	2	3"	3"	3 1/2"		
350	500	3	-	3"	3"	3"		2-4/0	2-1/0	2-2"	2-2"	2-2"		
400	500	3	-	3"	3"	3"		2-250	2-1/0	2-2 1/2"	2-2 1/2"	2-2 1/2"		
450	2-4/0	2-2	-	2-2"	2-2"	2-2 1/2"		2-300	2-1/0	2-2 1/2"	2-2 1/2"	2-3"		
500	2-250	2-2	-	2-2 1/2"	2-2 1/2"	2-2 1/2"		2-350	2-1/0	2-2 1/2"	2-2 1/2"	2-3"		
600	2-350	2-1	-	2-2 1/2"	2-2 1/2"	2-3"		2-500	2-2/0	2-3"	2-3"	2-3 1/2"		
700	2-500	2-1/0	-	2-3"	2-3"	2-3"		2-600	2-3/0	2-3"	2-3"	2-3 1/2"		
800	2-500	2-1/0	-	2-3"	2-3"	2-3 1/2"		3-400	3-3/0	3-3"	3-3"	3-3 1/2"		
1000	3-400	3-2/0	-	3-3"	3-3"	3-3"		3-600	3-4/0	-	3-3 1/2"	3-3 1/2"		
1200	3-600	3-3/0	-	3-3 1/2"	3-3 1/2"	3-3 1/2"		4-500	4-250	-	4-3"	4-3 1/2"		
1600	4-600	4-4/0	-	4-3 1/2"	4-3 1/2"	4-3 1/2"		5-600	5-350	-	5-3 1/2"	5-4"		
2000	5-600	5-250	-	5-3 1/2"	5-3 1/2"	5-3 1/2"		6-600	6-400	-	6-3 1/2"	6-4"		

GENERAL NOTES:

CONTRACTOR TO SIZE FEEDERS AND BRANCH CIRCUITS BASED ON THIS SCHEDULE AND OVER CURRENT DEVICE SIZE, UNLESS NOTED OTHERWISE.

CONTRACTOR MAY COMBINE 20A CIRCUITS AS NOTED IN SPECIFICATION.

COPPER CONDUCTORS ARE BASED ON THHN/THWN UP TO AND INCLUDING #4/0. COPPER CONDUCTORS LARGER THAN #4/0 AND ALUMINUM CONDUCTORS ARE BASED ON XHHW-2. CONDUIT SIZES ARE VALID FOR EMT OR RGS. CONDUIT SIZES SHALL BE ADJUSTED AS REQUIRED FOR OTHER TYPES OF CONDUIT. ELECTRICAL CONTRACTOR TO COORDINATE WITH MECHANICAL CONTRACTOR AND PROVIDE REQUIRED WIRE SIZES TO ACCOMMODATE MECHANICAL EQUIPMENT LUG SIZES. SIZE OF DISCONNECT SWITCH LOCATED AT EQUIPMENT SHALL BE SIZED BASED UPON OVERCURRENT PROTECTION OF THAT DEVICE.

OBTAIN APPROVAL FROM ENGINEER PRIOR TO INSTALLING DIFFERENT SIZE/QUANTITY OF CONDUCTORS TO OBTAIN AN EQUIVALENT AMPACITY. SPLICE FROM ALUMINUM TO COPPER PRIOR TO ENTERING EQUIPMENT LISTED FOR USE WITH COPPER CONDUCTORS ONLY OR USE COPPER CONDUCTORS FOR THE ENTIRE LENGTH OF FEEDER. N/A = NOT ACCEPTABLE

KEYED NOTES: 1. CONDUCTORS ARE BASED ON 90°C, 600V. INSULATED WIRE APPLIED AT 75°C FOR TERMINATION RATED 60/75°C OR 75°C. FOR TERMINATION RATED AT 60°C, USE CONDUCTORS AND CONDUIT SIZES INDICATED IN

MOTOR HP	SWITCH/FUSE	CIRCUIT BREAKER	STARTER SIZE/TYPE	MOTOR DISCONNEC (NOTE 3)
1/2	30/6A	15A	1	30A
3/4	30/6A	15A	1	30A
1	30/10A	15A	1	30A
1 1/2	30/10A	15A	1	30A
2	30/10A	15A	1	30A
3	30/20A	20A	1	30A
5	30/25A	35A	1	30A
7 1/2	60/40A	50A	1	60A
10	60/50A	60A	2	60A
15	60/60A	90A	3	60A
20	100/90A	100A	3	100A
25	100/100A	110A	3	100A
30	200/125A	125A	4	200A
40	200/175A	175A	4	200A
50	200/200A	200A	5	200A
60	400/250A	250A	5	400A
75	400/300A	300A	5	400A
100	400/400A	400A	6	400A
125	600/500A	600A	6	600A
150	600/600A	600A	6	600A

MOTOR CIRCUIT SIZING SCHEDULE (120V, SINGLE PHASE)										
MOTOR HP	CIRCUIT BREAKER	MANUAL MOTOR STARTER SIZE	COMBINATION STARTER SIZE	MOTOR DISCONNECT (NOTE 3)						
1/6	15A	1 HP	0	20A						
1/4	15A	1 HP	0	20A						
1/3	15A	1 HP	0	20A						
1/2	20A	1 HP	0	20A						

TYPE DESCRIPTION FB4D MULTI FUNCTION FOUR GANG, MULTI SERVICE, STAMPED STEEL FOR SLAB ON GRADE APPLICATIONS, RECESSED FLOOR BOX. 2 DUPLEX RECEPTACLES AND 2 TELECOM CARPET/TILE INSERT COVER.

RACEWAY / CONDUCT				.E /	AP	PLI	CA		DN RACE		HE	Ð	JLE	Ξ			BLE/C	<u></u>
										VVAY						WC)		Т
	COPPER, TYPE THHN/THWN-2	COPPER, TYPE XHHW-2	ALUMINUM, TYPE XHHW-2 (100A AND ABOVE ONLY)	ELECTRICAL METALLIC TUBING (EMT)	INTERMEDIATE METAL CONDUIT (IMC)	RIGID STEEL CONDUIT (RSC)	ALUMINUM RIGID CONDUIT	RIGID NON-METALLIC CONDUIT (RNC) TYPE EPC-40	RIGID NON-METALLIC CONDUIT (RNC) TYPE EPC-80	HIGH DENSITY POLYETHYLENE (HDPE) SCHEDULE 40	HIGH DENSITY POLYETHYLENE (HDPE) SCHEDULE 80	FLEXIBLE METAL CONDUIT (FMC)	LIQUID TIGHT FLEXIBLE METAL CONDUIT (LFMC)	SURFACE RACEWAY	CABLE TRAY	METAL CLAD TYPE CABLE WITH INSULATED GROUND WIRE (TYPE M	VFC CABLE	CIRCUIT INTEGRITY CABLE (TYPE CI)
FEEDERS - EXTERIOR							і Г	г				ı						
EXPOSED, SURFACE MOUNTED TO STRUCTURE EXPOSED, WITH FREESTANDING SUPPORT CONCEALED IN RETAINING WALL OR SIMILAR ELEMENT BELOW PARKING LOTS AND ROADWAYS BELOW GREEN SPACE WITHIN 5' OF FOUNDATION WALL		X X X X X X	X X X X X X X		X X	X X X X		X X X	X X	 X	X							
ROOFTOPS (WHEN APPROVED BY ENGINEER)		Х	Х		Х	Х												
FEEDERS - INTERIOR CONCEALED, ACCESSIBLE CEILINGS CONCEALED, INACCESSIBLE CEILINGS CONCEALED IN GYPSUM BOARD PARTITION WALLS CONCEALED IN CMU WALLS	X X X X		X X X X	X X X X	X X X X													
EXPOSED, BELOW 10' AFF AND SUBJECT TO DAMAGE EXPOSED, BELOW 10' AFF AND NOT SUBJECT TO DAMAGE EXPOSED, ABOVE 10' AFF UNFINISHED SPACES	X X X		X X X	X X	X X X	X												+
EXPOSED, FINISHED SPACES	X		Х											Х				
BELOW SLAB ON GRADE DAMP AND WET LOCATIONS	X X		X X		X	X X		X X	X									┢
																		<u> </u>
BRANCH CIRCUITS - EXTERIOR EXPOSED, SURFACE MOUNTED TO STRUCTURE		x			x	x			x									T
EXPOSED, WITH FREESTANDING SUPPORT		X			X	X												
CONCEALED IN RETAINING WALL OR SIMILAR ELEMENT BELOW PARKING LOTS AND ROADWAYS		X X				X X		X X		X								-
BELOW GREEN SPACE		X				~		X										
WITHIN 5' OF FOUNDATION WALL ROOFTOPS (WHEN APPROVED BY ENGINEER)		X X			X	X X												_
BRANCH CIRCUITS - INTERIOR CONCEALED, ACCESSIBLE CEILINGS	x	1	1	X	X	<u> </u>	1	<u> </u>				1	<u> </u>			X	<u> </u>	<del></del>
CONCEALED, NACCESSIBLE CEILINGS	X			X	X											~		┢
CONCEALED IN GYPSUM BOARD PARTITION WALLS	Х			X	X							Х				Х		
CONCEALED IN CMU WALLS EXPOSED, BELOW 10' AFF AND SUBJECT TO DAMAGE	X X			X	X X	X												┢
EXPOSED, BELOW 10' AFF AND NOT SUBJECT TO DAMAGE	X			Х	X									Х				
EXPOSED, ABOVE 10' AFF UNFINISHED SPACES EXPOSED, FINISHED SPACES	X			X	Х									v				
BELOW SLAB ON GRADE	X							X						Х				┢
EMBEDDED IN ELEVATED CONCRETE SLAB	Х							Х										
DAMP AND WET LOCATIONS	X				Х	Х		X					Х					
SPECIAL APPLICATIONS		·										·	<u> </u>					
SERVICE ENTRANCE - UNDERGROUND		X	X					Х	Х	Х	Х							$\vdash$
SERVICE ENTRANCE - ABOVE GROUND CONNECTION BETWEEN VFC AND MOTORS (KEYED NOTE 1)		X	X	Х	Х	X											X	$\vdash$
CLASS 1 CONTROL CIRCUITS	X			Х	Х	Х												
CLASS 2 CONTROL CIRCUITS	X			X	X	X									X			$\vdash$
CLASS 3 CONTROL CIRCUITS CONNECTIONS TO TRANSFORMERS, MOTORS AND VIBRATING	X	X	<u> </u>	X	X	X							X		Х			╞
EQUIPMENT			1															1

GENERAL NOTES: 1. TRANSITION FROM PVC/HDPE AND PROVIDE RIGID STEEL OR RTRC SWEEPS WHERE CONDUITS PENETRATE WALLS, CONCRETE SLABS, CONCRETE BASES, AND ASPHALT. REFER TO SPECIFICATIONS FOR RESTRICTIONS ON MC/AC CABLE INSTALLATION. EMT SHALL NOT BE USED ON THE EXTERIOR OF A BUILDING OR IN AREAS SUBJECT TO DAMAGE BELOW 10' AFF. INSTALL SURFACE RACEWAYS ONLY WHERE SHOWN ON DRAWINGS.

KEYED NOTES: NON-ARMORED CABLE SHALL BE INSTALLED IN RACEWAY. ARMORED CABLE SHALL BE INSTALLED IN TRAY OR FREE-AIR AS APPLICABLE. CONDUIT AND BUILDING WIRE ALLOWED WHEN ENCASED IN MINIMUM 2" CONCRETE. EMERGENCY FEEDERS IN OCCUPANCIES THAT ARE UNDER 700.10(D) SHALL HAVE A TWO HOUR RATING. RATING SHALL BE OBTAINED BY ROUTING CONDUIT AND BUILDING WIRE IN SPRINKLERED SPACE, IN A TWO HOUR SHAFT, OUTSIDE OF THE BUILDING, IN A LISTED TWO HOUR RATED RACEWAY, OR UNDER A MINIMUM OF 2" OF CONCRETE; OR BY

USING A LISTED TWO-HOUR RATED CABLE ASSEMBLY. SHALL BE INSTALLED PER MANUFACTURER'S INSTRUCTIONS BASED ON UL TESTING AND RATING. 4 FOR USE IN PATIENT CARE SPACES. SHALL NOT BE USED FOR LIFE SAFETY OR CRITICAL CIRCUITS EXCEPT WHERE PERMITTED BY NEC 517.

PULLING LUBRICANT SHALL NOT BE USED.

ALL CONDUIT, FITTINGS, AND OTHER ACCESSORIES SHALL BE NON-FERROUS. ALL CONDUIT, FITTINGS, AND OTHER ACCESSORIES SHALL BE RATED FOR THE HAZARD CLASSIFICATION OF THE SPACE OR AREA.

FLOOR SERVI	ICE FITTING SCHEDULE						
	MANUFACTURER (SEE NOTE #2)	MODEL	DEVICE CONFIGURATION	FLANGE/COVER MATERIAL & COLOR	SERVICE PLATE TYPE	MINIMUM DEPTH	MAXIMUM COI
ES AND 2 TELECOM OUTLETS,	WIREMOLD	RFB4E-OG	2D / 2T	BS,GY,BK,BZ,NK	F	3 1/2"	2"



PF = PARTITION FEED D = DUPLEX RECEPTACLE T = 2 TELECOM OPENINGS

AL = ALUMINUM BK = BLACK GY = GRAY (CONCRETE) BZ = BRONZE NK = NICKEL

BS = BRASS

FR = FLIP LID/RECTANGULAR SL = SLIDES F = FLIP COVER

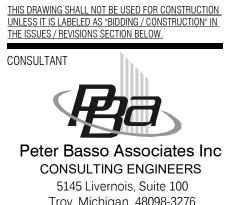
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KEY PLAN

OWNER

City of Warren

PROJECT NAME

Warren Civic Center South Fire Station #1

23211 Van Dyke Ave Warren, MI 48089

PROJECT NO.

21	-1	4	6	A
		•	<u> </u>	

SSUES / REVISIONS	
Bidding / Construction	06/13/2023

DRAWN BY

SAM

CHECKED BY

EMG APPROVED BY

EMG

SHEET NAME ELECTRICAL

STANDARD SCHEDULES

TYPE	DESCRIPTION	MANUFACTURER(S)	WATTAGE	VOLTAGE	LIGHT CHARACTERISTICS	CONTROLS	REMARKS
TTPE			WATTAGE	VULTAGE			REMARKS
L1	ARCHITECTURAL 2X2 RECESSED LED TROFFER WITH PERFORATED CENTER BASKET	FOCAL POINT LUNA 2X2 - FLUL 22	48	UNV	2X2 RECESSED LED TROFFER, 3500K, 4000L, 80CRI	0—10V DIMMING, 10%	
L1A	ARCHITECTURAL 2X2 RECESSED LED TROFFER WITH PERFORATED CENTER BASKET	FOCAL POINT LUNA 2X2 - FLUL 22	28	UNV	2X2 RECESSED LED TROFFER, 3500K, 2500L, 80CRI	0—10V DIMMING 10%	
L1B	ARCHITECTURAL 2X2 RECESSED LED TROFFER WITH PERFORATED CENTER BASKET	FOCAL POINT LUNA 2X2 - FLUL 22	41	UNV	2X2 RECESSED LED TROFFER, 3500K, 3500L, 80CRI	0—10V DIMMING 10%	
L2	ARCHITECTURAL 2X4 RECESSED LED TROFFER WITH PERFORATED CENTER BASKET	FOCAL POINT LUNA 2X4 FLUL 24	35	UNV	2X4 RECESSED LED TROFFER, 3500K, 3500L, 80CRI	0—10V DIMMING, 10%	
L2A	ARCHITECTURAL 2X4 RECESSED LED TROFFER WITH PERFORATED CENTER BASKET	FOCAL POINT LUNA 2X4 FLUL 24	61	UNV	2X4 RECESSED LED TROFFER, 3500K, 5500L, 80CRI	0—10V DIMMING, 10%	
L2B	ARCHITECTURAL 2X4 RECESSED LED TROFFER WITH PERFORATED CENTER BASKET	FOCAL POINT LUNA 2X4 FLUL 24	48	UNV	2X4 RECESSED LED TROFFER, 3500K, 4500L, 80CRI	0—10V DIMMING, 10%	
L3	DOWNLIGHT	FOCAL POINT - FLC6D	17	120	6" DOWNLIGHT, LED, 3500K, 1500L, 80CRI	0-10V DIMMING, 10%	
L4	UTILITY LINEAR	LITHONIA LIGHTING – ZL1D	30	UNV	4' LINEAR, 3500K, 3000L, 80CRI	0-10V DIMMING, 10%	
L4A	UTILITY LINEAR	LITHONIA LIGHTING – ZL1D	59	UNV	4' LINEAR, 3500K, 7000L, 80CRI	0-10V DIMMING, 10%	
L4B	UTILITY LINEAR	LITHONIA LIGHTING – ZL1D	41	UNV	4' LINEAR, 3500K, 5000L, 80CRI	0-10V DIMMING, 10%	
L5	VANITY LIGHT	LITHONIA LIGHTING - FMVCSL SERIES	18	MULTI	2' WALL MOUNTED LINEAR, 1300L, 90CRI		
L6	SHOWER LIGHT 6" ROUND FLUSH LENS	FOCAL POINT ID+6" FLC6D	11	120	6" DOWNLIGHT, LED, 3500K, 1000L, 80CRI	0—10V DIMMING, 10%	
L7	LINEAR LED DIRECT/INDIRECT - CABLE HUNG PENDANT	FOCAL POINT SEEM 4	72	120/277	8' LINEAR, 625L DN/375L UP, 3500K, 8000L, 80CRI	0—10V DIMMING, 10%	
L7A	LINEAR LED DIRECT/INDIRECT – CABLE HUNG PENDANT	FOCAL POINT SEEM 4	75	120/277	12' LINEAR, 375L DN/275L UP, 3500K, 5200L, 80CRI	0—10V DIMMING, 10%	
L8	LINEAR ROUGH SERVICE 1X4 FROSTED LENS WET LOCATION	LITHONIA LIGHTING - VAP LED	67	UNV	1x4 LINEAR, LED, 3500K, 8000L, 80CRI	0-10V DIMMING 10%	
L8A	LINEAR ROUGH SERVICE 1X4 FROSTED LENS WET LOCATION	SAME AS TYPE L8 EXCEPT AS NOTED	33		4000L		
L9	LINEAR RECESSED FLUSH SATIN LENS	FOCAL POINT SEEM 4	104/8'	UNV	LINEAR, 375L/FT, 3500K, 80CRI	0-10V DIMMING, 10%	LENGTHS AS PLAN
L10	2X2 EDGE LIT LED FLAT PANEL	LITHONIA EPANL LED	30	MVOLT	2X2 RECESSED FLAT PANEL, LED, 3500K 3400L, 80CRI	0—10V DIMMING, 10%	
L11	BATHROOM OCCUPANCY INDICATING LIGHT	KENALL – MCSL	2	UNV	AMBER LED, VERTICAL RECTANGLE		
L12	1X4 LOW PROFILE ENCLOSED AND GASKETED WALL MOUNTED LED FROSTED LENS FIXTURE	LITHONIA LIGHTING – FEM LED	75	MVOLT	1X4 SURFACE WALL MOUNTED LED, 4000K, 12000L, 80CRI, WIDE DISTRIBUTION	0—10V DIMMING, 10%	
L13	LED COVE LIGHT FIXTURE	MARK ARCHITECTURAL LIGHTING, MARKCOVE SERIES	78	MVOLT	LED LINEAR COVE, ADJUSTABLE, 120 X 120 DISTRIBUTION 3500K, 80CRI MIN, 600L/FOOT	0—10V DIMMING, 1%	PROVIDE TOTA LENGTH AS INDICATED.
L14	2' PANTRY LIGHT FIXTURE	DECO LIGHTING, DACH-LED ROUND ARCHITECTURAL CHANNEL	22	UNIV	2' LED SURFACE MOUNTED, 2350L, ROUND, 4000K	0—10V DIMMING, 10%	
X1	EXIT SIGN	LITHONIA LIGHTING - LRP	2	UNV	RED LETTERING, WHITE BACKGROUND, WHITE HOUSING, NICKEL CADMIUM BATTERY		MOUNTING & SIDES & ARR

1. REFER TO SPECIFICATIONS FOR DETAILED LIGHT FIXTURE CUT SHEETS.

WATTAGE LISTED IS FROM THE BASIS OF DESIGN MANUFACTURER.
 FINISH TO BE APPROVED BY INTERIOR DESIGNER, ARCHITECT OR CLIENT.
 ALL LUMINAIRES TO BE AS SPECIFIED OR EQUAL APPROVED BY PBA

		LOCA	L CONTROL	CONTROL				SENSOR		SENSOR FULL	EMERGENCY	
PLAN REFERENCE	ROOM TYPE	SWITCH TYPE	SWITCH CONTROL	ON / OFF	SENSOR TYPE	TURN ON LIGHTING TO %	BI-LEVEL CONTROL	OF TIME	%	OFF TIME	LIGHTING CIRCUIT CONTROL	NOTES
A	CORRIDOR (ALL OTHER CORRIDORS)	LOW VOLTAGE	ON-OFF	SENSOR ON / SENSOR OFF	DUAL TECHNOLOGY	FULL 100%	NA	20 MIN	50%	15 MIN	BATTERY	INTEGRATE LIGHTING CONTROL BRIX STATION ALERTING SYSTEM INDICATED ON PLAN
В	OFFICE (ENCLOSED AND $\leq$ 250 SQFT)	LOW VOLTAGE	ON-OFF-DIM	MANUAL ON / SENSOR OFF	DUAL TECHNOLOGY	FULL 100%	Continuous dim	NA	NA	20 MIN	BATTERY	
С	STORAGE ROOM ( $\ge$ 50 FT2 AND $\le$ 1000 SQFT)	LOW VOLTAGE	ON-OFF	MANUAL ON / SENSOR OFF	DUAL TECHNOLOGY	FULL 100%	NA	NA	NA	15 MIN	BATTERY	INTEGRATE LIGHTING CONTROL BRIX STATION ALERTING SYSTEM INDICATED ON PLAN
D	ELECTRICAL/MECHANICAL ROOM	LOW VOLTAGE	ON-OFF	MANUAL ON / MANUAL OFF	NA	NA	NA	NA	NA	NA	BATTERY	
E	RESTROOM (ALL OTHER RESTROOMS)	LOW VOLTAGE	ON-OFF	SENSOR ON / SENSOR OFF	DUAL TECHNOLOGY	FULL 100%	NA	NA	NA	20 MIN	BATTERY	
F	LOBBY (ALL OTHER LOBBIES)	LOW VOLTAGE	ON-OFF-DIM	SENSOR ON / SENSOR OFF	DUAL TECHNOLOGY	FULL 100%	Continuous dim	20 MIN	50%	20 MIN	BATTERY	
н	GYMNASIUM/FITNESS CENTER (IN AN EXERCISE AREA)	LOW VOLTAGE	ON-OFF-DIM	MANUAL ON / MANUAL OFF	DUAL TECHNOLOGY	FULL 100%	Continuous dim	NA	NA	20 MIN	BATTERY	
I	FIRE STATION – SLEEPING QUARTERS	LOW VOLTAGE	ON-OFF-DIM	MANUAL ON / MANUAL OFF	NA	FULL 100%	Continuous dim	NA	NA	NA	BATTERY	INTEGRATE LIGHTING CONTRO BRIX STATION ALERTING SYSTE INDICATED ON PLAN
J	EMERGENCY VEHICLE GARAGE	LOW VOLTAGE	ON-OFF	SENSOR ON / SENSOR OFF	NA	PARTIAL 75%	NA	NA	NA	20 MIN	BATTERY	INTEGRATE LIGHTING CONTRO BRIX STATION ALERTING SYSTE INDICATED ON PLAN
к	LOUNGE/BREAKROOM (ALL OTHER LOUNGES/BREAKROOMS)	LOW VOLTAGE	ON-OFF-DIM	MANUAL ON / SENSOR OFF	DUAL TECHNOLOGY	FULL 100%	Continuous dim	NA	NA	20 MIN	BATTERY	INTEGRATE LIGHTING CONTRO BRIX STATION ALERTING SYSTEI INDICATED ON PLAN
L	LAUNDRY/WASHING AREA	LOW VOLTAGE	ON-OFF-DIM	MANUAL ON / SENSOR OFF	DUAL TECHNOLOGY	FULL 100%	Continuous dim	NA	NA	20 MIN	BATTERY	
м	ELECTRICAL/MECHANICAL ROOM	LOW VOLTAGE	ON-OFF	MANUAL ON / MANUAL OFF	NA	NA	NA	NA	NA	NA	BATTERY	
N	CONFERENCE/MEETING/MULTIPURPOSE ROOM	LOW VOLTAGE	ON-OFF	SENSOR ON / SENSOR OFF	DUAL TECHNOLOGY	FULL 100%	NA	20 MIN	50%	15 MIN	BATTERY	INTEGRATE LIGHTING CONTRO BRIX STATION ALERTING SYSTEI INDICATED ON PLAN
0	FOOD PREPARATION AREA	LOW VOLTAGE	ON-OFF	MANUAL ON / SENSOR OFF	DUAL TECHNOLOGY	FULL 100%	NA	20 MIN	NA	20 MIN	BATTERY	INTEGRATE LIGHTING CONTRO BRIX STATION ALERTING SYSTEM INDICATED ON PLAN
Р	DINING AREA (ALL OTHER DINING AREAS)	LOW VOLTAGE	ON-OFF-DIM	MANUAL ON / SENSOR OFF	DUAL TECHNOLOGY	FULL 100%	Continuous dim	20 MIN	NA	20 MIN	BATTERY	INTEGRATE LIGHTING CONTRO BRIX STATION ALERTING SYSTE INDICATED ON PLAN
Q	PARKING AREA, INTERIOR	LOW VOLTAGE	ON-OFF	MANUAL ON / MANUAL OFF	NA	FULL 100%	INTERMEDIATE STEP 50%	20 MIN	30%	NA	BATTERY	

LENGTHS AS ON PLAN

PROVIDE TOTAL LENGTH AS INDICATED.

Mounting & Sides & Arrows As Indicated

1. REFER TO PLANS FOR LOCATION OF LOCAL CONTROL.

2. REFER TO PLANS FOR SCENE CONTROL.

3. NOT USED 4. NOT USED 5. CONTRACTOR SHALL PROVIDE FLOOR PLAN INDICATING SENSOR LOCATIONS OF CHOSEN CONTROL SYSTEM. 6. REFER TO LUMINAIRE SCHEDULE FOR FIXTURE CHARACTERISTICS.

		[			1	
TYPE	DESCRIPTION	MANUFACTURER(S)	WATTAGE	VOLTAGE	LIGHT CHARACTERISTICS	CONTROLS
OL1	LED PARKING LOT LIGHTING FIXTURE W/ 14'-0" POLE	lithonia lighting — D series size o	71	MVOLT	8447L, 4000K, 70CRI FORWARD THROW MEDIUM DISTRIBUTION, DARK BRONZE, WET LOCATION.	
OL2	LED PARKING LOT LIGHTING FIXTURE W/ 12'-6" POLE	lithonia lighting — D series size o	71	MVOLT	8447L, 4000K, 70CRI FORWARD THROW MEDIUM DISTRIBUTION, DARK BRONZE, WET LOCATION.	
OL3	FLAGPOLE LIGHTING	COOPER LUMIERE MONACO 3002A	25	UNV	INGROUND ADJUSTABLE LED 1307L, NARROW FLOOD, WITH DIFFUSED OPTICAL LENS, 4000K, 85CRI	
OL4	EXTERIOR ARCHITECTURAL WALL SCONCE	lithonia lighting — WST Led Series	25	MVOLT	3000L, 4000K, FORWARD THROW DISTRIBUTION	
OL5	EXTERIOR WALL SCONCE	LITHONIA LIGHTING - WST LED SERIES	11	MVOLT	1500L, 4000K, FORWARD THROW DISTRIBUTION	
OL6	EXTERIOR DECORATIVE WALL SCONCE – 90"H X 7"W X 4"D		58	120–277	1914L, 4000K, WET LOCATION	0–10V DIMMING. DI FIXTURE TO 50% A INSTALLATION
OL7		BARN LIGHT ELECTRIC CO — THE ORIGINAL INTEGRATED LED SERIES	16	120V	1250L, 4000K, WET LOCATION	0-10V DIMMING, 10
OL8	EXTERIOR WALL SCONCE	BEGA — 33590	3.8	120-277	89L, 4000K, WET LOCATION	
OL9	RECESSED DOWNLIGHT	LITHONIA LIGHTING - LDN3	14.3	MVOLT	1000L, 4000K, WET LOCATION	0-10V DIMMING, 10
OL10	EXTERIOR SMALL FLOODLIGHT, VANDAL SHEILD	eaton — streetworks ufld—s	26	MVOLT	2700L, 4000K, NEMA 3H X 3V SPOT, WET LOCATION	0-10V DIMMING, 10
0L11	30FT EXTERIOR SURFACE MOUNT LINEAR	MARK ARCHITECTURAL LIGHTING – S2LS	108	MVOLT	400L/FT, 4000K, WALL WASH DISTRIBUTION, WET LOCATION	0–10V DIMMING. DI FIXTURE TO 50% A INSTALLATION

REFER TO SPECIFICATIONS FOR DETAILED LIGHT FIXTURE CUT SHEETS.
 WATTAGE LISTED IS FROM THE BASIS OF DESIGN MANUFACTURER.
 FINISH TO BE APPROVED BY INTERIOR DESIGNER, ARCHITECT OR CLIENT.

4. ALL LUMINAIRES TO BE AS SPECIFIED OR EQUAL APPROVED BY PBA

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	REMARKS
	TIME CLOCK/ROOF PHOTOCELL PER OWNERS SCHEDULE
	PB PHOTOCONTROL
IG. DIM 50% AT	PB PHOTOCONTROL
IG, 10%	PB PHOTOCONTROL
	PB PHOTOCONTROL
IG, 10%	PB PHOTOCONTROL
IG, 10%	PB PHOTOCONTROL
IG. DIM 50% AT	PB Photocontrol

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#### OWNER

City Of Warren

## PROJECT NAME

Warren Civic Center South Fire Station #1

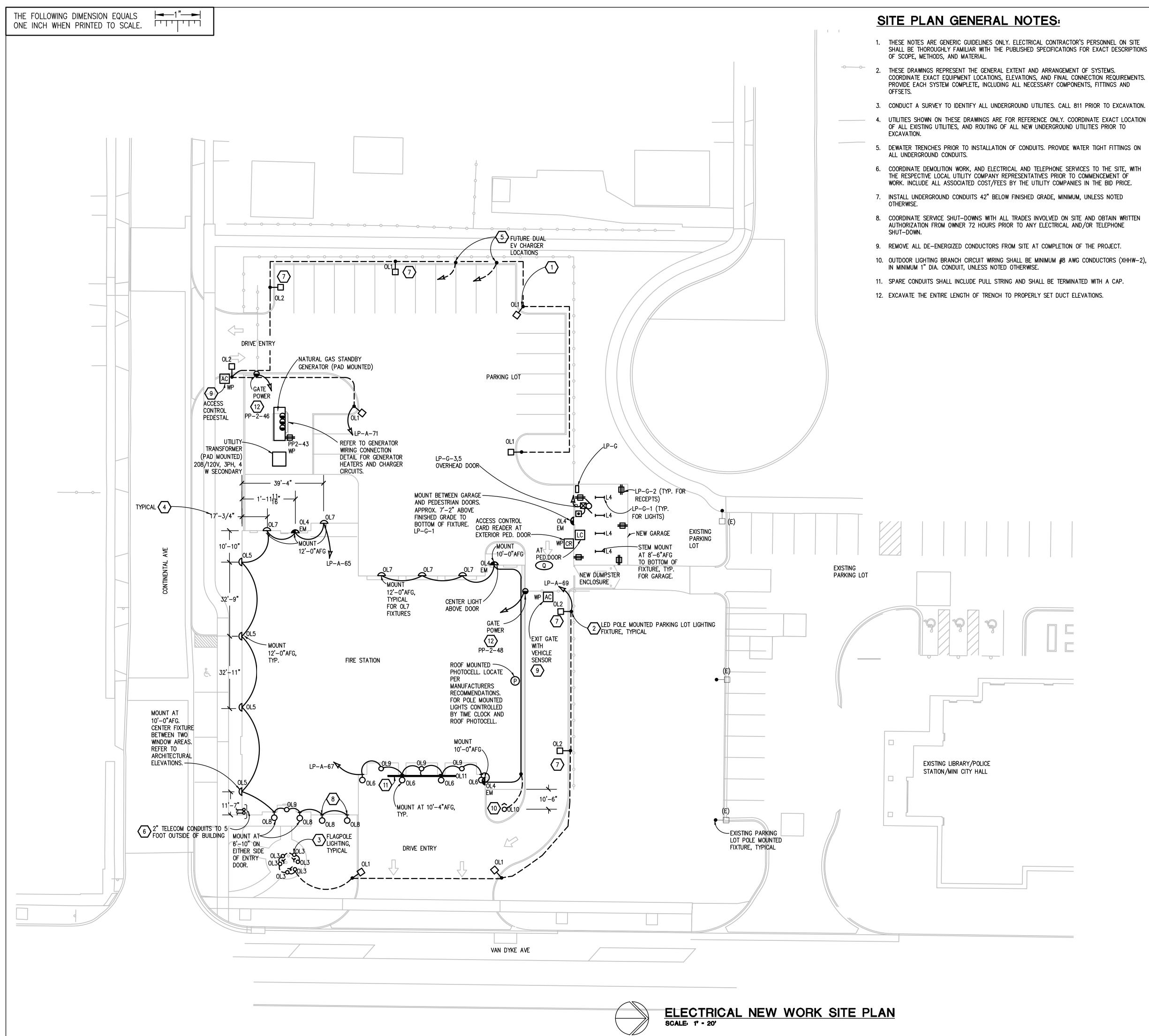
23211 Van Dyke Ave Warren, MI 48089

# PROJECT NO.

# 21-146A

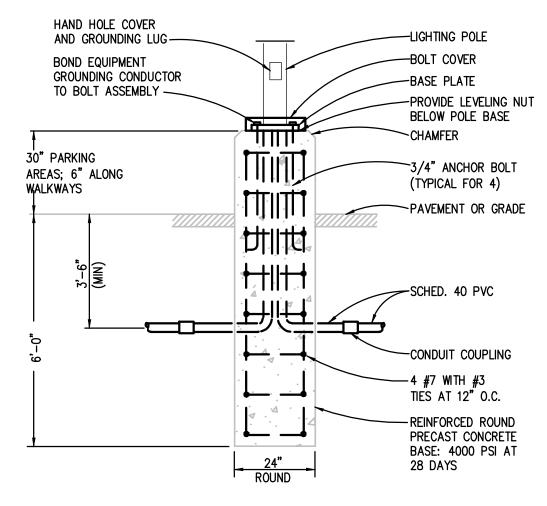
ISSUES / REVISIONS	
Bidding / Construction	06/13/2023
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SAM	
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EMG	
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EMG	

SHEET NAME ELECTRICAL STANDARD SCHEDULES



# (#) CONSTRUCTION KEY NOTES:

- 1. LIGHTING FIXTURE TYPE "OL1": OUTDOOR LIGHTING FIXTURE CONSISTING OF REINFORCED CONCRETE BASE, 14'-0" NOMINAL HEIGHT POLE SINGLE ARM MOUNTED LUMINAIRE. THE ENTIRE ASSEMBLY SHALL BE DESIGNED TO WITHSTAND A SUSTAINED WIND OF 80 MPH WITHOUT PERMANENT DAMAGE. LUMINAIRE SHALL BE 71 WATT LED WITH 120-277V DRIVER, 8447 LUMENS OUTPUT WITH 4000K COLOR, FORWARD THROW DISTRIBUTION. FUSES SHALL BE IN-LINE TYPE AND INSTALLED IN POLE BASE. DARK BRONZE FINISH. PROVIDE ALL ACCESSORIES AND HARDWARE FOR INSTALLATION INCLUDING POLE BASE BOT COVERS. POLE SHALL BE INTERNALLY COATED AT THE BASE WITH THERMO-PLASTIC RUST PREVENTING HYDRO-CARBON RESIN. PROVIDE WEATHERPROOF GFCI RECEPTACLE AT POLE WHERE INDICATED ON PLAN. LITHONIA #DSX0-LED-P3-40K-TFTM-MVOLT-DDBXD OR ENGINEER- APPROVED EQUAL. LOCATE BASE APPROXIMATELY 3'-0" FROM EDGE OF PAVEMENT/SIDEWALK.
- 2. LIGHTING FIXTURE TYPE "OL2" SHALL BE SAME AS TYPE "OL1" EXCEPT WITH 12'-6" POLE.
- 3. LIGHTING FIXTURE "OL3": IN GROUND MOUNTED FLAGPOLE LIGHTING FIXTURES. POSITION PER MANUFACTURERS RECOMMENDATIONS. 2 FIXTURES PER POLE.
- 4. DIMENSIONS ARE APPROXIMATE. REFER TO ARCHITECTURAL PLANS AND ELEVATIONS FOR EXACT FIXTURE POSITIONS.
- PROVIDE INDIVIDUAL 2" EMPTY CONDUIT ROUTED UNDERGROUND FROM MAIN ELECTRICAL ROOM 5. TO INDICATED PARKING SPACES FOR FUTURE DUAL EV CHARGERS. STUB AND CAP CONDUIT 6 INCHES ABOVE GRADE, APPROXIMATELY 2' ABOVE AND BETWEEN HEAD OF PARKING SPACES. STUB AND CAP 6 INCHES ABOVE FIN. FLOOR IN ELECTRICAL ROOM. PROVIDE LABEL "FOR FUTURE EV CHARGER WIRING AT PARKING LOT".
- 6. COORDINATE REQUIREMENTS WITH TELECOMMUNICATIONS UTILITIES.
- 7. PROVIDE HOUSE SIDE SHIELDS FOR INDICATED LIGHTING FIXTURES.
- 8. MOUNT (3) LEVELS OF OL8 FIXTURES (2 FIXTURES EACH LEVEL) CENTERED ON WALL. MOUNT FIRST AT 6'-10"AFG, SECOND AT 17'-6"AFG, AND THIRD AT 31'-3"AFG. HEIGHTS ARE APPROXIMATE; COORDINATE WITH ARCHITECTURAL ELEVATIONS.
- 9. SECURITY/DOOR HARDWARE EQUIPMENT. REFER TO ARCHITECTURAL AND DOOR HARDWARE PLANS AND SPECIFICATIONS FOR EXACT LOCATION AND DETAILED REQUIREMENTS. COORDINATE RACEWAY, BACKBOX, POWER, AND OTHER REQUIREMENTS.
- 10. AIM OL10 FIXTURE AT BUILDING SIGNAGE IN FIELD.
- 11. INSTALL OL11 FIXTURE BELOW LEDGE CENTERED ABOVE SIGNAGE. COORDINATE EXACT LOCATION WITH ARCHITECTURAL ELEVATIONS.
- 12. PROVIDE GATE POWER. COORDINATE WITH ARCHITECTURAL SPECIFICATIONS AND SUPPLIER FOR FINAL REQUIREMENTS.

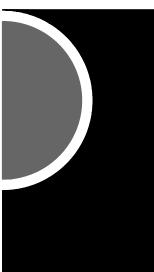


#### LIGHTING POLE BASE DETAIL NO SCALE

<u>NOTE:</u>

- PROVIDE PRECAST CONCRETE BASE AS MANUFACTURED BY
- NORTHERN CONCRETE PIPE, INC. OR APPROVED EQUAL. CONCRETE REINFORCEMENTS SHALL BE BARE, ZINC GALVANIZED, OR ELECTRICALLY CONDUCTIVE COATED STEEL. BOND ALL CONCRETE REINFORCEMENTS AND ANCHOR BOLTS TOGETHER SO THAT SYSTEM IS ELECTRICALLY CONTINUOUS.

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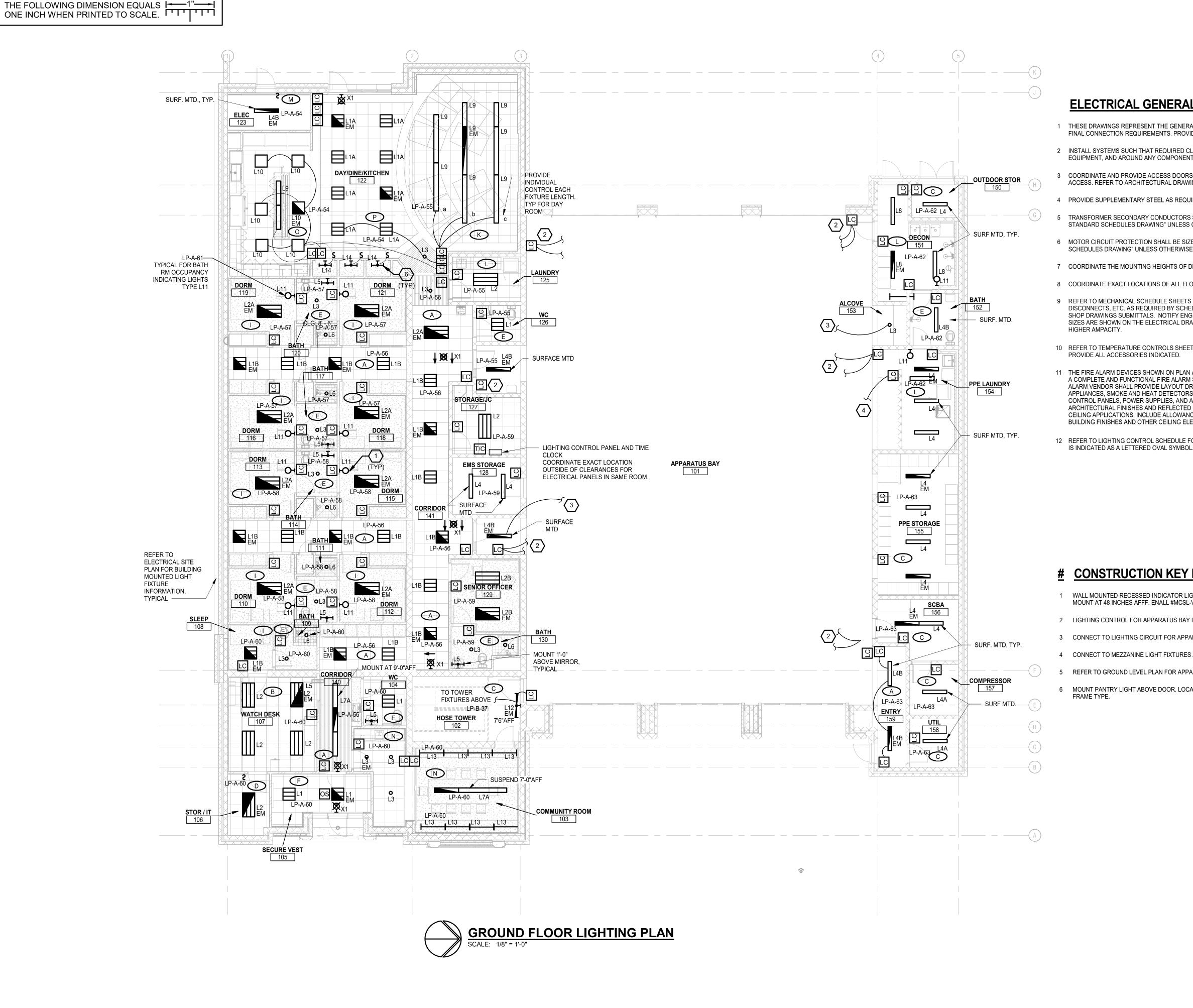
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# 21-146A

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Bidding / Construction	06/13/2023
DRAWN BY	
SAM	
CHECKED BY	
EMG	
APPROVED BY	
EMG	
SHEET NAME ELECTRICAL NEW WORK	SITE PLAN



# **ELECTRICAL GENERAL NOTES:**

THESE DRAWINGS REPRESENT THE GENERAL EXTENT AND ARRANGEMENT OF SYSTEMS. COORDINATE EXACT EQUIPMENT LOCATIONS, ELEVATIONS, AND FINAL CONNECTION REQUIREMENTS. PROVIDE EACH SYSTEM COMPLETE, INCLUDING ALL NECESSARY COMPONENTS, FITTINGS AND OFFSETS.

2 INSTALL SYSTEMS SUCH THAT REQUIRED CLEARANCE AND SERVICE ACCESS SPACE IS PROVIDED AROUND ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND AROUND ANY COMPONENTS WHICH REQUIRE SERVICE ACCESS.

3 COORDINATE AND PROVIDE ACCESS DOORS WITHIN INACCESSIBLE CEILING, SHAFT, AND CHASE AREAS FOR ALL COMPONENTS WHICH REQUIRE SERVICE ACCESS. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.

4 PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL SYSTEMS.

TRANSFORMER SECONDARY CONDUCTORS SHALL BE SIZED IN ACCORDANCE WITH TRANSFORMER CIRCUIT SIZING SCHEDULE SHOWN ON "ELECTRICAL STANDARD SCHEDULES DRAWING" UNLESS OTHERWISE NOTED.

6 MOTOR CIRCUIT PROTECTION SHALL BE SIZED IN ACCORDANCE WITH MOTOR CIRCUIT SIZING SCHEDULES SHOWN ON "ELECTRICAL STANDARD SCHEDULES DRAWING" UNLESS OTHERWISE NOTED.

7 COORDINATE THE MOUNTING HEIGHTS OF DEVICES WITH ARCHITECTURAL ELEVATIONS AND THE TRADES INSTALLING THE WORK.

8 COORDINATE EXACT LOCATIONS OF ALL FLOOR SERVICE FITTINGS AND POKE-THROUGH ASSEMBLIES WITH FINAL FURNITURE LAYOUT DRAWINGS.

9 REFER TO MECHANICAL SCHEDULE SHEETS FOR ELECTRICAL REQUIREMENTS FOR MECHANICAL EQUIPMENT. PROVIDE ALL CONNECTIONS, STARTERS, DISCONNECTS, ETC, AS REQUIRED BY SCHEDULES AND WHERE NOTED ELSEWHERE, VERIFY REQUIREMENTS OF ALL MECHANICAL EQUIPMENT WITH SHOP DRAWINGS SUBMITTALS. NOTIFY ENGINEER OF ANY CONFLICTS BETWEEN EQUIPMENT SUBMITTALS AND ELECTRICAL DRAWINGS. WHERE CIRCUIT SIZES ARE SHOWN ON THE ELECTRICAL DRAWINGS THAT DIFFER FROM WHAT IS INDICATED ON THE MECHANICAL SCHEDULES, PROVIDE THE CIRCUIT OF

10 REFER TO TEMPERATURE CONTROLS SHEETS FOR REQUIRED FIRE ALARM CONTROL MODULES, DUCT SMOKE DETECTORS, AND MOTOR CONTROLLERS.

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12 REFER TO LIGHTING CONTROL SCHEDULE FOR ROOM CONTROL AND EMERGENCY LIGHTING CIRCUIT CONTROL REQUIREMENTS. DESIGNATION FOR ROOM

# CONSTRUCTION KEY NOTES:

WALL MOUNTED RECESSED INDICATOR LIGHT, WHITE FINISH, AMBER COLOR 2W LED LAMP, 120-277V DRIVER WIRED TO BATHROOM OCCUPANCY SENSOR. MOUNT AT 48 INCHES AFFF. ENALL #MCSL-VR-MW-2LAMB-DV OR APPROVED EQUAL

2 LIGHTING CONTROL FOR APPARATUS BAY LIGHTS ABOVE.

3 CONNECT TO LIGHTING CIRCUIT FOR APPARATUS BAY LIGHTS ABOVE

4 CONNECT TO MEZZANINE LIGHT FIXTURES AND LIGHTING CONTROL ABOVE.

REFER TO GROUND LEVEL PLAN FOR APPARATUS BAY LIGHTING CONTROL LOCATIONS

MOUNT PANTRY LIGHT ABOVE DOOR. LOCATE SWITCH IN DOOR FRAME. COORDINATE SWITCH TYPE AND EXACT LOCATION WITH ARCHITECT AND DOOR

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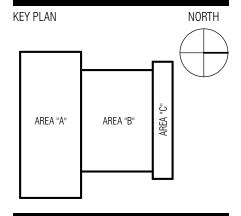
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OWNER

City of Warren

PROJECT NAME

Warren Civic Center South Fire Station #1

23211 Van Dyke Ave Warren, MI 48089

PROJECT NO.

21-146A

ISSUES / REVISIONS Bidding / Construction 06/13/2023

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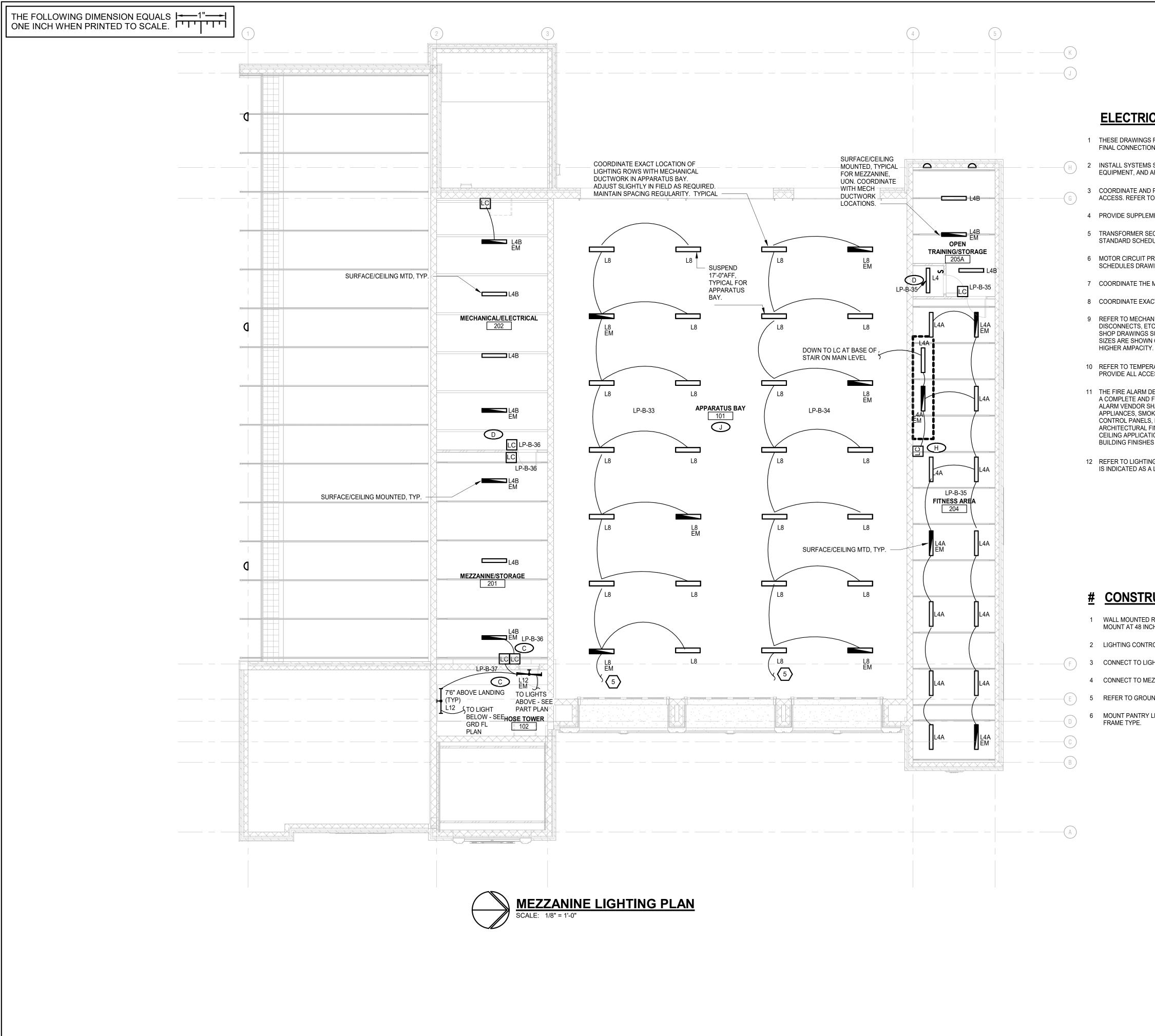
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APPROVED BY

SHEET NAME

EMG

GROUND FLOOR LIGHTING PLAN



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7 COORDINATE THE MOUNTING HEIGHTS OF DEVICES WITH ARCHITECTURAL ELEVATIONS AND THE TRADES INSTALLING THE WORK.

8 COORDINATE EXACT LOCATIONS OF ALL FLOOR SERVICE FITTINGS AND POKE-THROUGH ASSEMBLIES WITH FINAL FURNITURE LAYOUT DRAWINGS.

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10 REFER TO TEMPERATURE CONTROLS SHEETS FOR REQUIRED FIRE ALARM CONTROL MODULES, DUCT SMOKE DETECTORS, AND MOTOR CONTROLLERS. PROVIDE ALL ACCESSORIES INDICATED.

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12 REFER TO LIGHTING CONTROL SCHEDULE FOR ROOM CONTROL AND EMERGENCY LIGHTING CIRCUIT CONTROL REQUIREMENTS. DESIGNATION FOR ROOM IS INDICATED AS A LETTERED OVAL SYMBOL.

# # CONSTRUCTION KEY NOTES:

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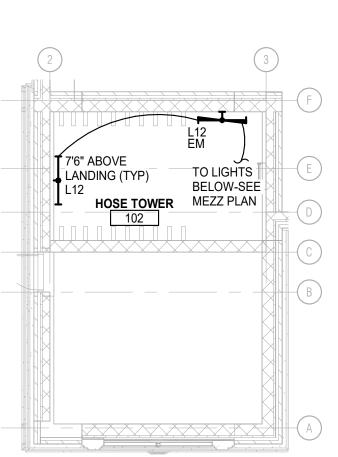
FRAME TYPE.

CONNECT TO LIGHTING CIRCUIT FOR APPARATUS BAY LIGHTS ABOVE.

4 CONNECT TO MEZZANINE LIGHT FIXTURES AND LIGHTING CONTROL ABOVE.

REFER TO GROUND LEVEL PLAN FOR APPARATUS BAY LIGHTING CONTROL LOCATIONS

MOUNT PANTRY LIGHT ABOVE DOOR. LOCATE SWITCH IN DOOR FRAME. COORDINATE SWITCH TYPE AND EXACT LOCATION WITH ARCHITECT AND DOOR





HOSE TOWER LIGHTING PLAN SCALE: 1/8" = 1'-0"





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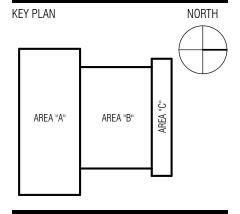
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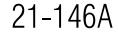
City of Warren

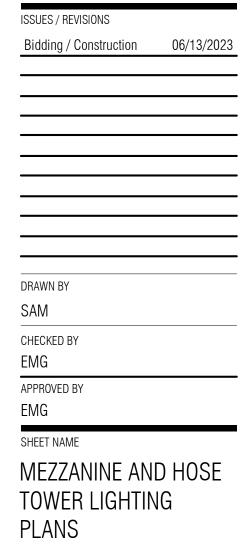
PROJECT NAME

Warren Civic Center South Fire Station #1

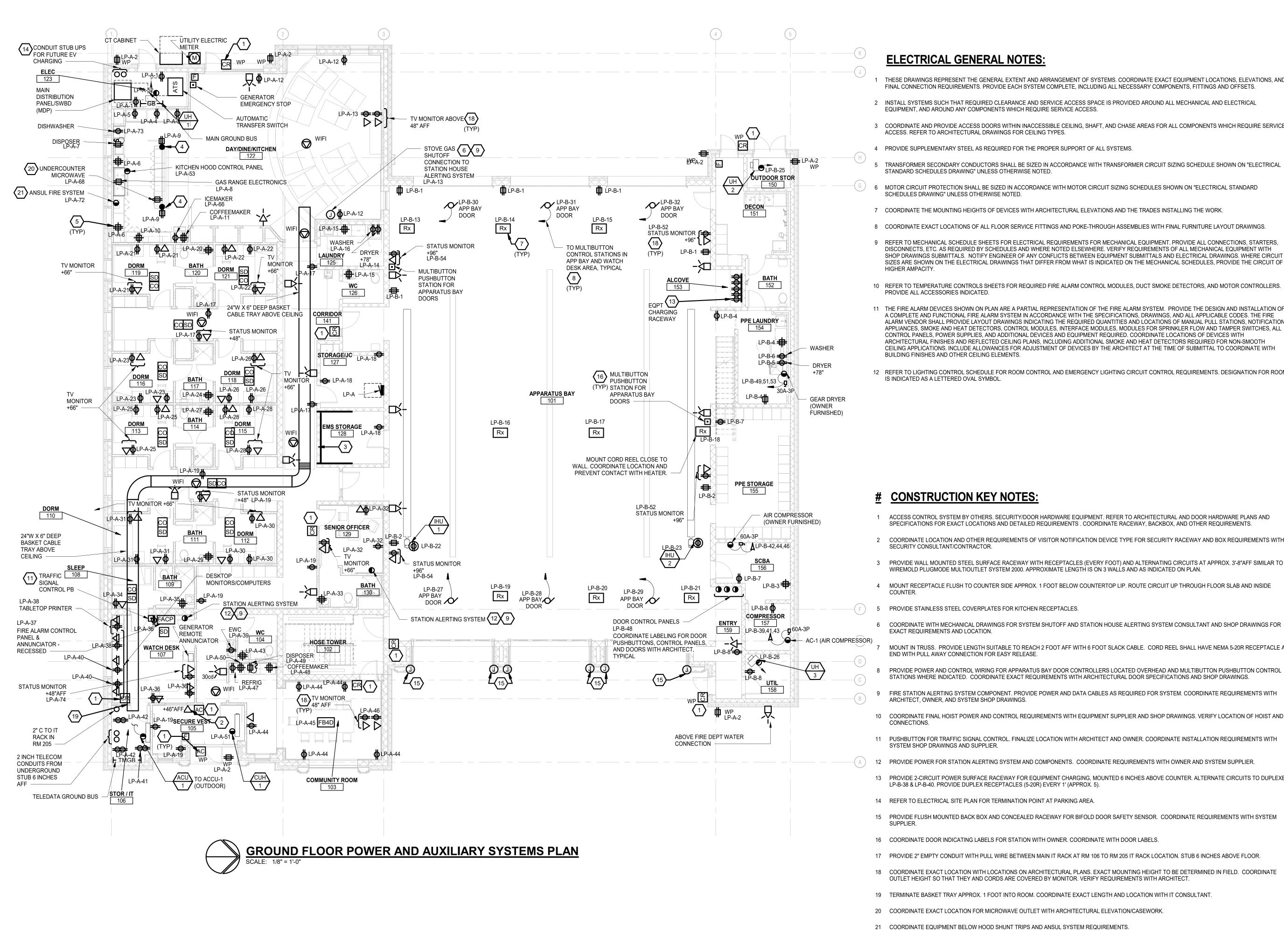
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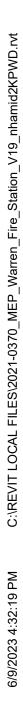
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ONE INCH WHEN PRINTED TO SCALE.





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THESE DRAWINGS REPRESENT THE GENERAL EXTENT AND ARRANGEMENT OF SYSTEMS. COORDINATE EXACT EQUIPMENT LOCATIONS, ELEVATIONS, AND FINAL CONNECTION REQUIREMENTS. PROVIDE EACH SYSTEM COMPLETE, INCLUDING ALL NECESSARY COMPONENTS. FITTINGS AND OFFSETS.

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12 REFER TO LIGHTING CONTROL SCHEDULE FOR ROOM CONTROL AND EMERGENCY LIGHTING CIRCUIT CONTROL REQUIREMENTS. DESIGNATION FOR ROOM

# **CONSTRUCTION KEY NOTES:**

ACCESS CONTROL SYSTEM BY OTHERS. SECURITY/DOOR HARDWARE EQUIPMENT. REFER TO ARCHITECTURAL AND DOOR HARDWARE PLANS AND SPECIFICATIONS FOR EXACT LOCATIONS AND DETAILED REQUIREMENTS . COORDINATE RACEWAY, BACKBOX, AND OTHER REQUIREMENTS.

COORDINATE LOCATION AND OTHER REQUIREMENTS OF VISITOR NOTIFICATION DEVICE TYPE FOR SECURITY RACEWAY AND BOX REQUIREMENTS WITH

WIREMOLD PLUGMODE MULTIOUTLET SYSTEM 2000. APPROXIMATE LENGTH IS ON 3 WALLS AND AS INDICATED ON PLAN.

PROVIDE STAINLESS STEEL COVERPLATES FOR KITCHEN RECEPTACLES.

COORDINATE WITH MECHANICAL DRAWINGS FOR SYSTEM SHUTOFF AND STATION HOUSE ALERTING SYSTEM CONSULTANT AND SHOP DRAWINGS FOR

MOUNT IN TRUSS. PROVIDE LENGTH SUITABLE TO REACH 2 FOOT AFF WITH 6 FOOT SLACK CABLE. CORD REEL SHALL HAVE NEMA 5-20R RECEPTACLE AT END WITH PULL AWAY CONNECTION FOR EASY RELEASE

PROVIDE POWER AND CONTROL WIRING FOR APPARATUS BAY DOOR CONTROLLERS LOCATED OVERHEAD AND MULTIBUTTON PUSHBUTTON CONTROL STATIONS WHERE INDICATED. COORDINATE EXACT REQUIREMENTS WITH ARCHITECTURAL DOOR SPECIFICATIONS AND SHOP DRAWINGS.

FIRE STATION ALERTING SYSTEM COMPONENT. PROVIDE POWER AND DATA CABLES AS REQUIRED FOR SYSTEM. COORDINATE REQUIREMENTS WITH

10 COORDINATE FINAL HOIST POWER AND CONTROL REQUIREMENTS WITH EQUIPMENT SUPPLIER AND SHOP DRAWINGS. VERIFY LOCATION OF HOIST AND

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12 PROVIDE POWER FOR STATION ALERTING SYSTEM AND COMPONENTS. COORDINATE REQUIREMENTS WITH OWNER AND SYSTEM SUPPLIER.

13 PROVIDE 2-CIRCUIT POWER SURFACE RACEWAY FOR EQUIPMENT CHARGING, MOUNTED 6 INCHES ABOVE COUNTER. ALTERNATE CIRCUITS TO DUPLEXES: LP-B-38 & LP-B-40. PROVIDE DUPLEX RECEPTACLES (5-20R) EVERY 1' (APPROX. 5).

15 PROVIDE FLUSH MOUNTED BACK BOX AND CONCEALED RACEWAY FOR BIFOLD DOOR SAFETY SENSOR. COORDINATE REQUIREMENTS WITH SYSTEM

16 COORDINATE DOOR INDICATING LABELS FOR STATION WITH OWNER. COORDINATE WITH DOOR LABELS.

17 PROVIDE 2" EMPTY CONDUIT WITH PULL WIRE BETWEEN MAIN IT RACK AT RM 106 TO RM 205 IT RACK LOCATION. STUB 6 INCHES ABOVE FLOOR.

18 COORDINATE EXACT LOCATION WITH LOCATIONS ON ARCHITECTURAL PLANS. EXACT MOUNTING HEIGHT TO BE DETERMINED IN FIELD. COORDINATE OUTLET HEIGHT SO THAT THEY AND CORDS ARE COVERED BY MONITOR. VERIFY REQUIREMENTS WITH ARCHITECT.

19 TERMINATE BASKET TRAY APPROX. 1 FOOT INTO ROOM. COORDINATE EXACT LENGTH AND LOCATION WITH IT CONSULTANT.

20 COORDINATE EXACT LOCATION FOR MICROWAVE OUTLET WITH ARCHITECTURAL ELEVATION/CASEWORK.

21 COORDINATE EQUIPMENT BELOW HOOD SHUNT TRIPS AND ANSUL SYSTEM REQUIREMENTS

# PARTNERS



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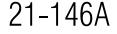
City of Warren

PROJECT NAME

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ISSUES / REVISIONS Bidding / Construction 06/13/2023

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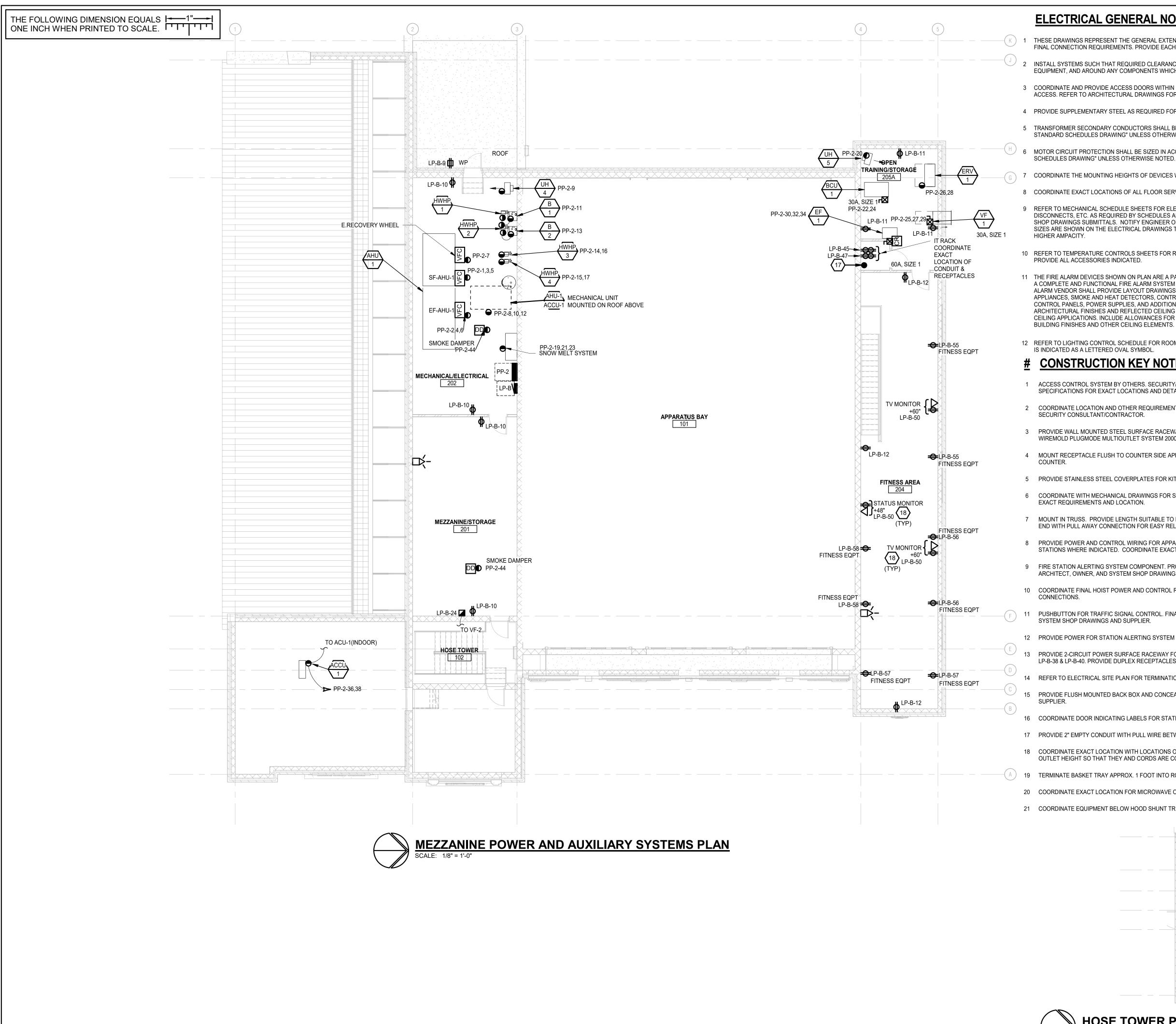
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EMG

SHEET NAME

**GROUND FLOOR** POWER AND AUXILIARY SYSTEMS PLAN





## **ELECTRICAL GENERAL NOTES:**

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3 PROVIDE WALL MOUNTED STEEL SURFACE RACEWAY WITH RECEPTACLES (EVERY FOOT) AND ALTERNATING CIRCUITS AT APPROX. 3'-8"AFF SIMILAR TO WIREMOLD PLUGMODE MULTIOUTLET SYSTEM 2000. APPROXIMATE LENGTH IS ON 3 WALLS AND AS INDICATED ON PLAN.

4 MOUNT RECEPTACLE FLUSH TO COUNTER SIDE APPROX. 1 FOOT BELOW COUNTERTOP LIP. ROUTE CIRCUIT UP THROUGH FLOOR SLAB AND INSIDE

5 PROVIDE STAINLESS STEEL COVERPLATES FOR KITCHEN RECEPTACLES.

COORDINATE WITH MECHANICAL DRAWINGS FOR SYSTEM SHUTOFF AND STATION HOUSE ALERTING SYSTEM CONSULTANT AND SHOP DRAWINGS FOR

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9 FIRE STATION ALERTING SYSTEM COMPONENT. PROVIDE POWER AND DATA CABLES AS REQUIRED FOR SYSTEM. COORDINATE REQUIREMENTS WITH ARCHITECT, OWNER, AND SYSTEM SHOP DRAWINGS.

10 COORDINATE FINAL HOIST POWER AND CONTROL REQUIREMENTS WITH EQUIPMENT SUPPLIER AND SHOP DRAWINGS. VERIFY LOCATION OF HOIST AND

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14 REFER TO ELECTRICAL SITE PLAN FOR TERMINATION POINT AT PARKING AREA.

15 PROVIDE FLUSH MOUNTED BACK BOX AND CONCEALED RACEWAY FOR BIFOLD DOOR SAFETY SENSOR. COORDINATE REQUIREMENTS WITH SYSTEM

16 COORDINATE DOOR INDICATING LABELS FOR STATION WITH OWNER. COORDINATE WITH DOOR LABELS.

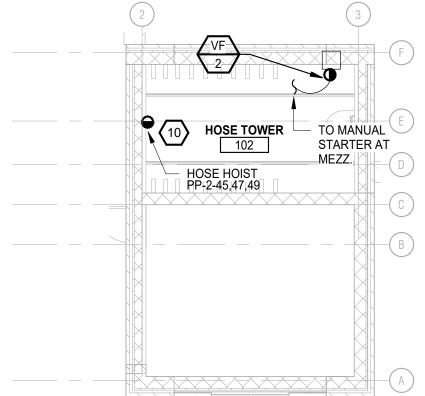
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18 COORDINATE EXACT LOCATION WITH LOCATIONS ON ARCHITECTURAL PLANS. EXACT MOUNTING HEIGHT TO BE DETERMINED IN FIELD. COORDINATE OUTLET HEIGHT SO THAT THEY AND CORDS ARE COVERED BY MONITOR. VERIFY REQUIREMENTS WITH ARCHITECT.

(A) 19 TERMINATE BASKET TRAY APPROX. 1 FOOT INTO ROOM. COORDINATE EXACT LENGTH AND LOCATION WITH IT CONSULTANT.

20 COORDINATE EXACT LOCATION FOR MICROWAVE OUTLET WITH ARCHITECTURAL ELEVATION/CASEWORK.

21 COORDINATE EQUIPMENT BELOW HOOD SHUNT TRIPS AND ANSUL SYSTEM REQUIREMENTS



# **HOSE TOWER POWER AND AUXILIARY SYSTEMS PLAN**

# PARTNERS



PARTNERS in Architecture, PLC 65 Market Street Mount Clemens, MI 48043 P 586.469.3600

F 586.469.3607

Statement of Intellectual Property

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K	EY PLAN			NORTH
				$\square$
	AREA "A"	AREA "B"	AREA "C"	

PBA Project No.: 2021.0370

OWNER

City of Warren

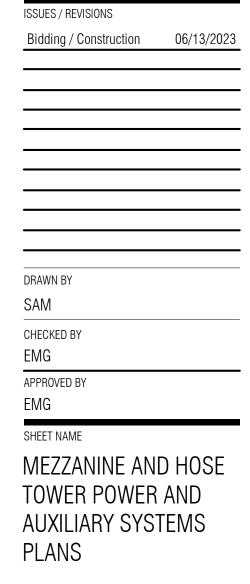
PROJECT NAME

Warren Civic Center South Fire Station #1

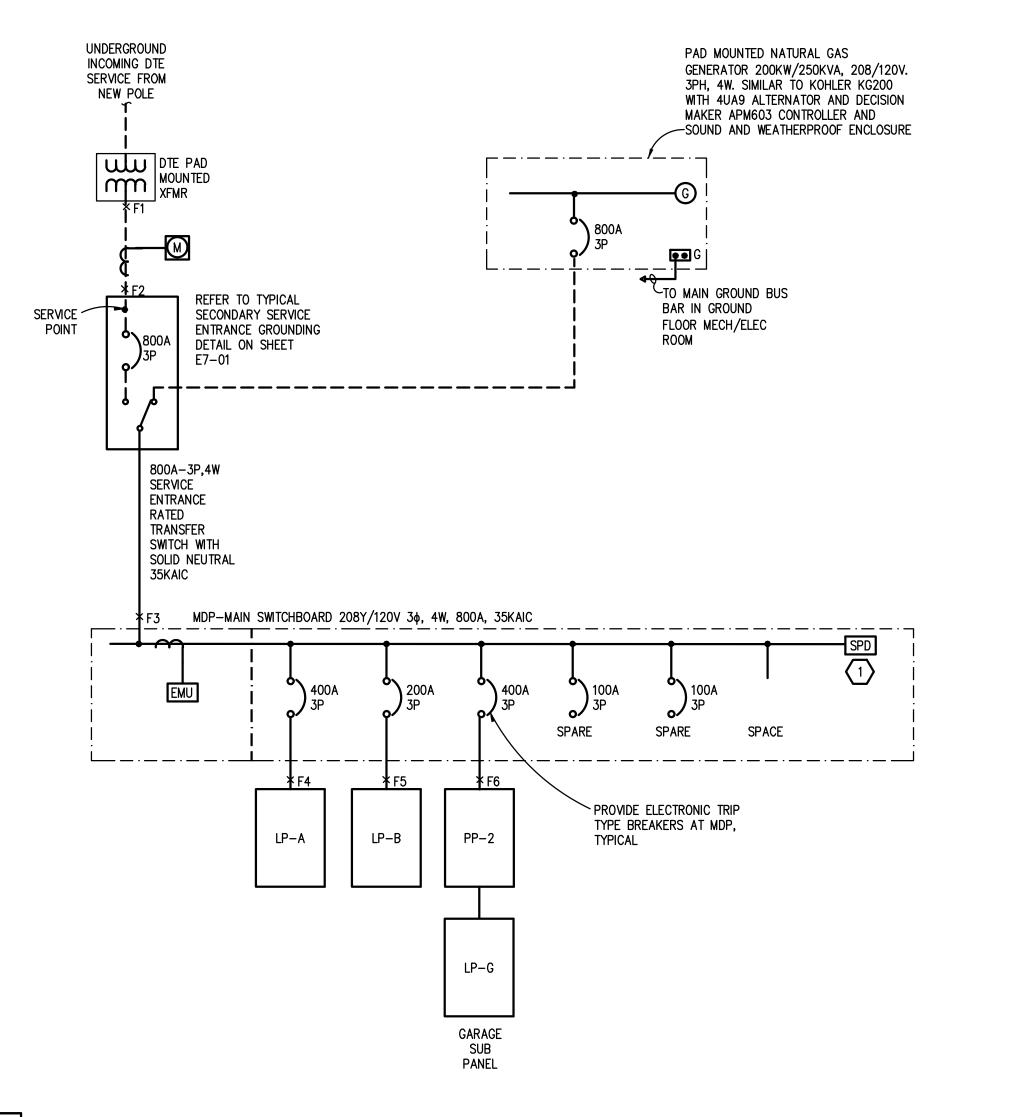
23211 Van Dyke Ave Warren, MI 48089

PROJECT NO.

21	-1	46A
21	-1	46A



#LOAD TYPEDESCRIPTIONCB TYPECB TYPECBVAØAØBØCVACBCB TYPEDESCRIPTION1LGARAGE LIGHTING2026458290020GARAGE RECER3M GARAGE OVERHEAD DOOR OPERATOR 1/2HP1558358320SPARE7SPARE2058320SPARE9SPARE202020SPARE11SPARE202020SPARE11SPARE20583583583ØAØBØCFEEDER AND	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	LOAD TYPE
5     M     GARAGE OVERHEAD DOOR OPERATOR 1/2HP     15     583     583     20     SPARE       7     SPARE     20     20     20     20     SPARE       9     SPARE     20     20     20     SPARE       11     SPARE     20     583     583     20     SPARE       11     SPARE     20     582     583     583       ØA     ØB     ØC     FEEDER AND	PTACLES R
9         SPARE         20         20         20         SPARE           11         SPARE         20         20         20         SPARE           -         -         -         582         583         583           ØA         ØB         ØC         FEEDER AND	
11         SPARE         20         20         20         SPARE           582         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583         583	
582     583       ØA     ØB       ØC     FEEDER AND	
ØA ØB ØC FEEDER AND	
PANELBOARD INFORMATION     DEMAND     CALCULATED     OVERCURRENT       VOLTAGE:     208Y/120     BRANCH CIRCUIT CONNECTED LOAD     FACTOR     LOAD     SIZING	
ADDITIONAL TRACK LIGHTING LOAD 100%	1 <u>166</u>



	LOAD TYPE	#	
	R	2 4 6 8	
		4	
		6	
		8	
		10	
		12	
-		•	

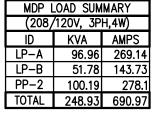
Fault Point	PANEL/ TRANSFORMER	Source Fault Point	SOURCE Isc	Conduit Type	CONDUCTOR MATERIAL	CONDUCTOR OR BUS SIZE	'C' VALUE	E (V)	L (FT)	XFMR kVA	XFMR %Z	f	М	lsc
1	UTILITY XFMR							208		300	1.6			52,04
2	ATS	1	52,046	NM	CU	2 SETS OF 300 KCML	20868	208	99.0			1.028	0.49	25,66
3	MDP	2	25,664	М	CU	2 SETS OF 300 KCML	18177	208	12.0			0.071	0.93	23,97
4	LP-A	3	23,973	М	CU	1 SET OF 500 KCML	22185	208	105.0			0.945	0.51	12,32
5	LP-B	3	23,973	М	CU	1 SET OF 3/0	12844	208	120.0			1.865	0.35	8,36
6	PP-2	1 SET OF 500 KCML	26706	208	102.0			0.762	0.57	13,60				
THE FOLLOWING THREE PHASE CALCULATIONS ARE BASED ON THE "POINT-BY POINT" METHOD WHERE: $\begin{array}{c} \text{Isc} = \text{Isc} \times M \\ M = 1/(1+f) \end{array} \qquad \begin{array}{c} \text{CONDUCTOR OR BUS} \\ f = \frac{1.732 \times L \times \text{Isc}}{C \times n \times E} \end{array} \qquad \begin{array}{c} \text{UTILITY XFMR:} \\ \text{Isc} = \frac{kVA \times 100,000}{E \times 1.732 \times \%Z} \qquad \begin{array}{c} f = \frac{lp(sc) \times Ep \times 1.73 \times \%Z}{100,000 \times KVA} \qquad \begin{array}{c} \text{Isc} = \frac{Ep \times M \times lp(sc)}{E \times 1.732 \times \%Z} \end{array}$												<u>L</u>		

# DIAGRAM GENERAL NOTES:

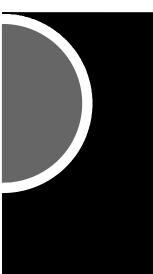
- 1. THESE DRAWINGS REPRESENT THE GENERAL EXTENT AND ARRANGEMENT OF SYSTEMS. COORDINATE EXACT EQUIPMENT LOCATIONS, ELEVATIONS, AND FINAL CONNECTION REQUIREMENTS. PROVIDE EACH SYSTEM COMPLETE, INCLUDING ALL NECESSARY COMPONENTS, FITTINGS AND OFFSETS.
- 2. FEEDER AND BRANCH CIRCUIT CONDUCTORS SHALL BE SIZED IN ACCORDANCE WITH THE "FEEDER AND BRANCH CIRCUIT SIZING SCHEDULE-GENERAL PURPOSE" ON THE "ELECTRICAL STANDARD SCHEDULES DRAWING" UNLESS SPECIFICALLY NOTED OTHERWISE.
- 3. TRANSFORMER SECONDARY CONDUCTORS SHALL BE SIZED IN ACCORDANCE WITH THE "TRANSFORMER CIRCUIT SIZING SCHEDULE-GENERAL PURPOSE" ON THE "ELECTRICAL STANDARD SCHEDULES DRAWING" UNLESS SPECIFICALLY NOTED OTHERWISE.
- 4. MOTOR CIRCUIT PROTECTION SHALL BE SIZED IN ACCORDANCE WITH THE MOTOR CIRCUIT SIZING SCHEDULES ON THE "ELECTRICAL STANDARD SCHEDULES DRAWING" UNLESS SPECIFICALLY NOTED OTHERWISE.
- 5. BASIS OF DESIGN IS SQUARE D/SCHNEIDER DISTRIBUTION EQUIPMENT AND ASCO TRANSFER SWITCHES. IF THE CONTRACTOR ELECTS TO PROVIDE EQUIPMENT FROM OTHER APPROVED MANUFACTURERS, THE CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE THE LAYOUT AND CLEARANCE REQUIREMENTS IN ALL SPACES CONTAINING ELECTRICAL EQUIPMENT AND PROVIDE EQUIPMENT MEETING THE SPECIFICATIONS AND ACHIEVING CODE REQUIRED CLEARANCES WITHIN THE SPACE PROVIDED.
- 6. SELECTIVE COORDINATION (PER NEC ARTICLES 517.31(G), 700.32 AND 701.27) IS BASED ON SQUARE D/SCHNEIDER DISTRIBUTION EQUIPMENT AND ASCO TRANSFER SWITCHES. ELECTRICAL CONTRACTOR SHALL SUBMIT SELECTIVE COORDINATION STUDY WITH TIME CURRENT CHARACTERISTIC CURVES (AND TABLES FOR TESTED PAIR INSTANTANEOUS COORDINATION) FOR THE EMERGENCY SYSTEMS. ELECTRICAL CONTRACTORS SHALL RECEIVE APPROVED SHOP DRAWINGS BACK FROM ENGINEER OF RECORD PRIOR TO PURCHASING OR INSTALLING ANY ELECTRICAL DISTRIBUTION EQUIPMENT. BREAKERS MUST BE COORDINATED WITH AUTOMATIC TRANSFER SWITCHES 3-CYCLE WITHSTAND RATING. ALTERNATE MANUFACTURERS SHALL MEET SELECTIVE COORDINATION CRITERIA AT NO ADDITIONAL COST TO THE PROJECT.
- 7. VARIABLE FREQUENCY CONTROLLERS (VFC) FURNISHED BY MECHANICAL TRADES. ELECTRICAL CONTRACTOR SHALL INSTALL VFC, PROVIDE POWER FEEDER FROM DISTRIBUTION EQUIPMENT TO VFC AND PROVIDE POWER FEEDER FROM VFC TO MOTOR. REFER TO SPECIFICATIONS FOR APPLICATION OF VFC POWER CABLE FROM VFC TO MOTOR.

# **EXAMPLE 1 CONSTRUCTION KEY NOTES:**

1. SIZE PER MANUFACTURERS RECOMMENDATIONS.



# PARTNERS



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OWNER

City Of Warren

#### PROJECT NAME

Warren Civic Center South Fire Station #1

23211 Van Dyke Ave Warren, MI 48089

PROJECT NO.

# 21-146A

ISSUES / REVISIONS Bidding / Construction 06/13/2023

DRAWN BY SAM CHECKED BY EMG

#### APPROVED BY

EMG

SHEET NAME ONE LINE DIAGRAM

						PAN	NELBO	DARD	PP-2						
#	LOAD TYPE	DESCRIPTION	CB TYPE	СВ		4		В		с	СВ	CB TYPE	DESCRIPTION	LOAD TYPE	
1					3864	3864									2
3	М	SF-AHU-1 MECH/ELEC 202	2	60			3864	3864			60		EF-AHU-1 MECH/ELEC 202	М	4
5									3864	3864					6
7	М	ENERGY RECOVERY WHE	EL - AHU-1	15	130	5837									1
9	М	UH-4 MECH/ELEC 202		15			16	5837			80		ACCU-1/AHU-1 ROOF	М	1
11	С	B-1/HWHP-1 MECH/ELEC	202	15					396	5837					
13	С	B-2/HWHP-2 MECH/ELEC 2	202	15	396	960					- 15		HWHP-3 MECH/ELEC 202	м	
15	М	HWHP-4 MECH/ELEC 202		15			960	0			15			IVI	
17	IVI			10					0	300	15		DWH-1 MECH/ELEC 202	С	-
19					2880	16					15		UH-5 OPEN TRNING/STORAGE 205	М	2
21	М	SNOW MELT SYSTEM MEC	CH/ELEC	30			2880	0			15		BCU-1 OPEN TRNING/STORAGE 205	м	2
23									2880	0	10			IVI	2
25					300	358					- 15		ERV-1 OPEN TRNING/STORAGE 205	м	:
27	Μ	VF-1 OPEN TRNING/STOR	AGE 205	15			300	358			10			IVI	2
29									300	3036					:
31					777	3036					50		EF-1 OPEN TRNING/STORAGE 205	М	;
33	С	GARAGE PANEL LP-G		60			777	3036							:
85									777	1373	20		ACU-1/ACCU-1	м	
7	Е	GENERATOR - COOLANT J	KT HTR	20	1248	1373									
39	L			20			1248	12480			20		GENERATOR OIL HEATER	E	4
11	С	GENERATOR - BATTERY C	HARGER	20					1440	1248	20				4
13	NC	GENERATOR ENCL - I	RECEPT.	20	1920	800					20		SMOKE DAMPER	Other	_
15							1440	1800			20		ENTRY GATE	М	4
17	М	HOSE HOIST		20					1440	1800	20		ENTRY GATE	М	4
19					1440	0					20		SPARE		Ę
51		SPARE					0	0			20		SPARE		ţ
53		SPARE							0	0	20		SPARE		5
55		SPARE			0	0					20		SPARE		5
57		SPACE					0	0					SPACE		5
59		SPACE							0	0			SPACE		6
61		SPACE			0	0							SPACE		6
53		SPACE					0	0					SPACE		6
						198		859		554					
			BRANCH CIRCUIT CO	NNECT		бA	Ø	ØB DEM/		ØC <u>CULATED</u>		FI	EEDER AND		
	PANEL	BOARD INFORMATION	LOAD					FAC	TOR LOA	<u>D</u>		<u>0</u>	VERCURRENT NOTES		
	VOLTA	GE: 208Y/120V	CONTINUOUS LOAD (	(C):	4	1862		10	00% 4862	2		125% 60	077.5		
	BUS AN	MPACITY: 400A	ELECTRIC HEAT (E)		1	6224		10	00% 1622	24		100% 16	5224		
	MAIN T	YPE: 400A MCB	NON-CONTINUOUS L	OAD (N	C): 1	1920		10	00% 1920	)		100% 19	920		
		JM A.I.C.: 14,000	KITCHEN LOAD (K):		· -	)			0			100% 0			
	MOUN		RECEPT BASE LOAD	(R):				1	0 %00			100% 0			
			RECEPT DEMAND LO						50% 0			100% 0			
				ли (R):	_										
			LIGHTING LOAD (L):			)		10	0 %00			125% 0			
			ADDITIONAL TRACK I									100% 0			
		MOTORS, HIGHEST LOAD (M): <u>17510</u> 125 % 21887.5							37.5		100% 2	1887.5			
					_							100 0/ 5			

PANELBOARD LOCATION

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100 % 55296

TOTAL... 278.10

TOTAL (kVA): 100.19

100 % 55296

TOTAL... 281.47

MOTORS, REMAINING

NOTE: DEMAND AND SIZING INFORMATION IS CALCULATED...

						PAN	IELBO	DARD	LP-A						
#	LOAD			0.5				-			0.5			LOAD	
1			CB TYPE	CB		4		B		C	CB 20	CBIYPE		TYPE	:
$\rightarrow$	R	RECEPTACLES - ELEC 123	0501	20	360	1080	4000	4000			-			R	
3	K	FREEZER RECEPT - KITCHEN 122	GFCI	20			1200	1200	4000	0	20	GFCI	REFRIG RECEPT - KITCHEN 122	K	_
5	K	REFRIG RECEPT - KITCHEN 122	GFCI	20					1200	0	20		COUNTERTOP RECEPTS - KITCHEN	K	
7	K	DISPOSER RECEPT - KITCHEN 122		20	1800	180					20	SHNT TRIP	GAS RANGE ELECTRONICS - KITCH	K	
)	R	ISLAND RECEPTS - KITCHEN 122		20			360	1800			20		COUNTER RECEPT - KITCHEN 122	K	_
1	K	COFFEEMAKER RECEPT - KITCHEN		20					1800	540	20		RECEPTACLES - DAY RM 122	R	_
3	R	TV MON. RECEPTS - DAY RM 122		20	400	1400					20		DRYER RECEPT - LAUNDRY 125	R	
5	R	RECEPTACLE - WC 126		20			360	1000			20	GFCI	WASHER RECEPT - LAUNDRY 125	R	
7	R	RECEPTACLES & MONITOR - CORR		20					940	540	20		RECEPTS - STORAGE 127 & 128	R	
9	R	RECEPTS & MONITOR CORR & SEC		20	1300	180					20		RECEPTACLE - BATH 120	R	
1	R	RECEPTACLES - DORM 119		20			780	780			20		RECEPTACLES - DORM 122	R	
3	R	RECEPTACLES - DORM 116		20					780	180	20		RECEPTACLE - BATH 117	R	
5	R	RECEPTACLES - DORM 113		20	780	780					20		RECEPTACLES - DORM 118	R	
7	R	RECPTACLE - BATH 114		20			180	780			20		RECEPTACLES - DORM 115	R	1
9	R	RECEPTACLE - BATH 111		20					180	780	20		RECEPTACLES - DORM 112	R	1
1	R	RECEPTACLES - DORM 110		20	780	780					20		RECEPTACLES - SENIOR OFFICER	R	+
3	R	RECEPTACLE - BATH 130		20			180	120000			20		RECEPTACLE - SLEEP 108	R	+
5	R	RECEPTACLE - BATH 109		20			100	120000	180	540	20		RECEPTACLES - WATCH DESK 107	R	-
7	C	FACP - WATCH DESK 107		20	1200	1400			100	340	20		PRINTER & CNTR RECEPTS - W DESK	R	-
-	-				1200	1400	100	400			20				_
)	R		GFCI	20			180	400	000	700			COUNTER RECEPTS - WATCH DESK	R	_
		QUAD RECEPTACLE - IT/STOR 106		20					360	720	20		QUAD RECEPTS - IT/STOR 106	R	_
3	R	RECEPTACLE - WC 104		20	180	900					20		RECEPTS - COMM RM 103	R	_
5	R	FLOOR BOX - COMM RM 103		20			360	360			20		RECEPTACLES - COMM RM 103	R	_
7	R	REFRIG. RECEPT - COMM RM 103	GFCI	20					180	1800	20		COFFEEMKR RECEPT- COMM RM 103	R	_
9	R	DISPOSER RECEPT - COMM RM		20	1200	180					20		COUNTER RECEPTACLE - COMM RM	R	_
1	М	CUH-1 SECURE VEST 105		15			200	16			15		UH-1 ELEC RM 123	M	
3	С	KITCHEN HOOD CONTROL PANEL	SHNT TRIP	15					1440	530	20		LTG - ELEC RM, KITCHEN/DINING	L	
5	L	LTG - DAYRM, LAUNDRY, WC,		20	878	934					20		LTG - CORRIDOR 141	L	
7	L	LTG - DORMS & BATHS		20			336	336			20		LTG - DORMS & BATHS	L	
9	L	LTG - BATH, SEN OFF, EMS STOR,		20					237	666	20		LTG - SLEEP, BATH, WATCH,WC, VES	L	
1	L	LTG		20	40	362					20		LTG - OUTDR STOR, DECON, BATH,	L	
3	L	LTG - PPE		20			380	800			20		STATION ALERTING SYSTEM	С	
5	L	BUILDING MTD EXTERIOR		20					499	1200	20	GFCI	ICEMAKER RECEPT - KITCH 122	K	-
7	L	BUILDING MTD EXTERIOR		20	465	1800					20		MICROWAVE RECEPT - KITCH 122	R	-
9	L	FLAGPOLE & DRIVE LIGHTING		20			460	0			20		SPARE		-
1	-	DRIVE AND PARKING LOT LTG		20				•	426	1200	20		ANSUL FIRE SYSTEM - KITCH 122	С	-
3	R	DISHWASH RECEPT -KITCHEN	GFCI	20	180	400			120	1200	20		RECEPT MONITOR - WATCH	R	_
5		SPARE		20	100	400	0	0			20		SPARE		-
7		SPARE		20			0	0	0	0	20		SPARE		_
_				-	0	0			0	0					_
9 1		SPARE		20	0	0	0	-			20		SPARE		_
_		SPARE		20			0	0	<u>^</u>		20		SPARE		
3		SPARE		20					0	0	20		SPARE		_
5		SPARE		20	0										
						939 IA		2448 ØB		919 ØC					
	PANEL	BOARD INFORMATION BRANCH	I CIRCUIT CO	NNECT			×	DEMA		CULATED			EEDER AND VERCURRENT NOTES		
	VOLTA	GE: 208Y/120V CONTIN	JOUS LOAD (	C):	4	640		10	0% 4640	)		125% 58	00		
	BUS A	MPACITY: 400A ELECTR	IC HEAT (E)			)		10	0 %0		-	100% 0			

#### BUS AMPACITY: 400A ELECTRIC HEAT (E) NON-CONTINUOUS LOAD (NC): 0 MAIN TYPE: 400A MCB MINIMUM A.I.C.: 14,000 KITCHEN LOAD (K): MOUNTING: SURFACE RECEPT BASE LOAD (R): RECEPT DEMAND LOAD (R): LIGHTING LOAD (L): ADDITIONAL TRACK LIGHTING... MOTORS, HIGHEST LOAD (M): 200 MOTORS, REMAINING 16 PANELBOARD LOCATION

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NOTE: DEMAND AND SIZING INFORMATION IS CALCULATED...

	TOTAL	269.14	TOTAL
	TOTAL (kVA):	96.96	
	100 %	16	100
	125 %	250	100
	_		100
	100%	6549	125
0	50%	68760	100
	100%	10000	100
	65.00%	6747	100
	100%	0	100
	100%	0	100
	100%	4640	125
	FACTOR	LOAD	

00% 0 00% 0 00% 6747 00% 10000 00% 68760 25% 8186.25 0% 0 100% 250 \_\_\_\_\_ 00 % 16 TAL... 276.90



21-146A

Didding / Construction	00/10/0000
Bidding / Construction	06/13/2023
DRAWN BY	
SAM	
CHECKED BY	
EMG	
APPROVED BY	
EMG	
SHEET NAME	
PANEL SCHEDU	ILE2

R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R	PE         D           R         R           L         R           L         R           L         R           L         R           L         R           L         R           L         R           L         R           L         R           L         R           L         R           L         R           L         R           L         R           L         R           L         R           L         R           L         R           L         R           L         R           L         R           L         R           L         R           L         R           L         R           L         R           L         R           L         R           L         R           L         R           L         R           L         R           L         R           L         R	DESCRIPTION RECEPTACLES - APP BAY 101 RECEPTACLE - BATH 152 DRYER RECEPT - PPE LAUNDRY RECEPTS - PPE STOR & SCBA ROOFTOP RECEPTACLE	CB TYPE	CB 20		•								LOAD
TYP           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R           R	PE         D           R         R           L         R           L         R           L         R           L         R           L         R           L         R           L         R           L         R           L         R           L         R           L         R           L         R           L         R           L         R           L         R           L         R           L         R           L         R           L         R           L         R           L         R           L         R           L         R           L         R           L         R           L         R           L         R           L         R           L         R           L         R           L         R           L         R           L         R           L         R	RECEPTACLES - APP BAY 101 RECEPTACLE - BATH 152 ORYER RECEPT - PPE LAUNDRY RECEPTS - PPE STOR & SCBA ROOFTOP RECEPTACLE	CB TYPE			•	1		1		1			
R           R           R           1           3           7           8           7           8           7           8           7           8           7           8           7           8           7           9           7           7           7           7           7           7           7           7           7           7	F           C           F           C           C           C           C           C           C           C           C           C           C           C           C           C           C           C	RECEPTACLE - BATH 152 DRYER RECEPT - PPE LAUNDRY RECEPTS - PPE STOR & SCBA ROOFTOP RECEPTACLE		20		4		B		2	CB	CB TYPE	DESCRIPTION	TYPE
R           R           R           1           3           6           7           8           7           8           7           8           7           8           7           8           7           7           7           7           7           7           7           7           7           7           7           7		DRYER RECEPT - PPE LAUNDRY RECEPTS - PPE STOR & SCBA ROOFTOP RECEPTACLE		20	900	360					20		RECEPTACLES - APP BAY 101	R
R           R           1           3           5           7           8           7           8           7           8           7           8           7           7           7           7           9           7           9           1           7           9           1	F           F           F           F           F           F           F           F           F           F           F           F           F           F           F           F           F           F           F           F           F           F           F           F           F           F           F           F           F           F           F           F           F           F           F           F           F           F           F           F           F           F           F           F           F           F           F           F           F           F           F           F           F           F	RECEPTS - PPE STOR & SCBA		20			180	540			20		RECEPTS - PPE LAUNDRY 154	R
R           1         R           5         R           7         R           9         R           1         R           3         C           5         M           7         M           9         M           1         M		ROOFTOP RECEPTACLE	GFCI	20					1400	1000	20	GFCI	WASHER RECEPT - PPE LAUNDRY	R
1     R       3     R       5     R       7     R       9     R       1     R       3     C       5     M       7     M       9     M       1     M				20	720	540					20		RECEPTS - COMP, ENTRY, UTIL RMS	R
3     R       5     R       7     R       9     R       1     R       3     C       5     M       7     M       9     M       1     M				20			180	720			20		RECEPTS - MECH/ELEC & MEZZ STOR	R
5 R 7 R 9 R 1 R 3 C 5 M 7 M 9 M 1 M		RECEPTS - OPEN TRNG/STORAGE		20					540	540	20		RECEPTS - FITNESS AREA	R
7 R 9 R 1 R 3 C 5 M 7 M 9 M 1 M		ORD REEL - APP BAY 101		20	180	180					20		CORD REEL - APP BAY 101	R
P     R       1     R       3     C       5     M       7     M       P     M       1     M	C	CORD REEL - APP BAY 101		20			180	180			20		CORD REEL - APP BAY 101	R
1 R 3 C 5 M 7 M 9 M 1 M		ORD REEL - APP BAY 101		20					180	180	20		CORD REEL - APP BAY 101	R
3         C           5         M           7         M           9         M           1         M		CORD REEL - APP BAY 101		20	180	180					20		CORD REEL - APP BAY 101	R
5 M 7 M 9 M 1 M		ORD REEL - APP BAY 101		20			180	360			20		IHU-1 - APP BAY 101	С
7 M 9 M 1 M	:	HU-2 - APP BAY 101		20					360	200	20		VF-2 - HOSE TOWER 102	М
9 M 1 M	I L	JH-2 - OUTDOOR STORAGE 150		15	16	16					15		UH-3 - UTIL 158	М
1 M	I A	APP BAY DOOR		20			1656	1656			20		APP BAY DOOR	М
-	I A	APP BAY DOOR		20					1656	1656	20		APP BAY DOOR	М
, .	I A	APP BAY DOOR		20	1656	1656					20		APP BAY DOOR	М
3  L	L	IGHTING - APPARATUS BAY		20			938	938			20		LIGHTING - APPARATUS BAY	L
5 L	L	.TG - TRNG/STOR, FITNESS, STAIR		20					920	287	20		LTG - MECH/ELEC, MEZZ STORAGE	L
7 L	L	TG - HOSE TOWER		20	225	540					20		RECEPT RCWAY - ALCOVE 153	R
9	+						2100	360			20		RECEPT RCWAY - ALCOVE 153	R
1 M	I A	AC-1 AIR COMPRSR 5HP		35					2100	2100				
3	ľ	-			2100	2100					35		AIR COMPRSR (OWNER-FURN) 5HP	М
5 C	;	QUAD RECEPT - IT MEZZ		20			1800	2100						
7 C		QUAD RECEPT - IT MEZZ		20			1000	2.00	360	150	20		DOOR CONTROL PNLS ENTRY	С
9					2124	1200				100	20		RECEPTS MONITORS MEZZ.	R
1 M		GEAR DRYER - PPE LAUNDRY 15	4	30		1200	2124	800			20		RECEPTS MONITORS APP BAY	R
3	'  C		-	50			2127	000	2124	800	20		RECEPTS MONITORS APP BAY	R
5 R		RECEPTS FITNESS EQPT - MEZ.		20	1800	1080			2124	000	20		RECEPTS FITNESS EQPT - MEZ	R
7 R		RECEPTS FITNESS EQPT - MEZ.	•	20	1000	1000	1800	1800			20		RECEPTS FITNESS EQPT - MEZ	R
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KEY PLAN

OWNER

City of Warren

PROJECT NAME

Warren Civic Center South Fire Station #1

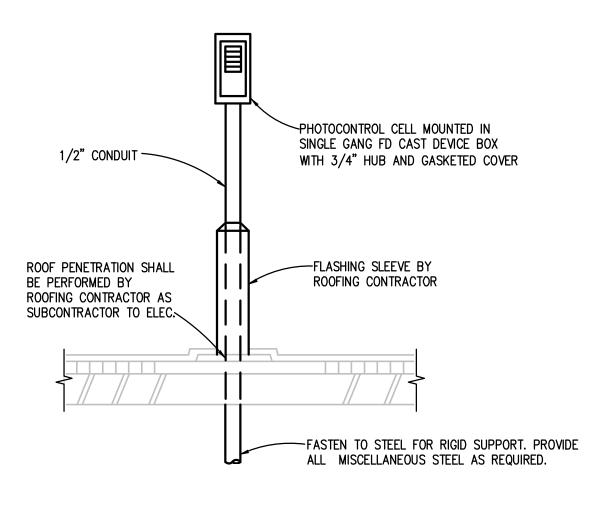
23211 Van Dyke Ave Warren, MI 48089

PROJECT NO.

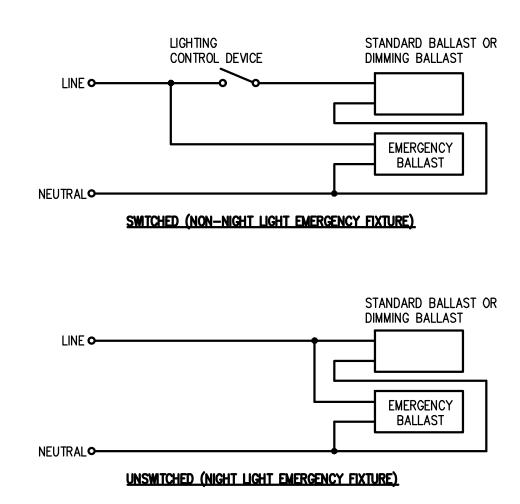
21-146A

ISSUES / REVISIONS	
Bidding / Construction	06/13/2023
DRAWN BY	
SAM	
CHECKED BY	
EMG	
APPROVED BY	
EMG	
SHEET NAME	
PANEL SCHEDL	JLES

SHEET NO. E5-03



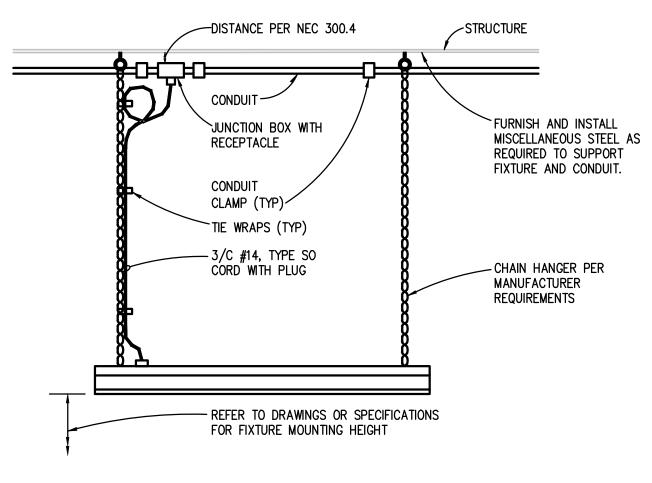
PHOTOCONTROL CELL MOUNTING DETAIL NO SCALE



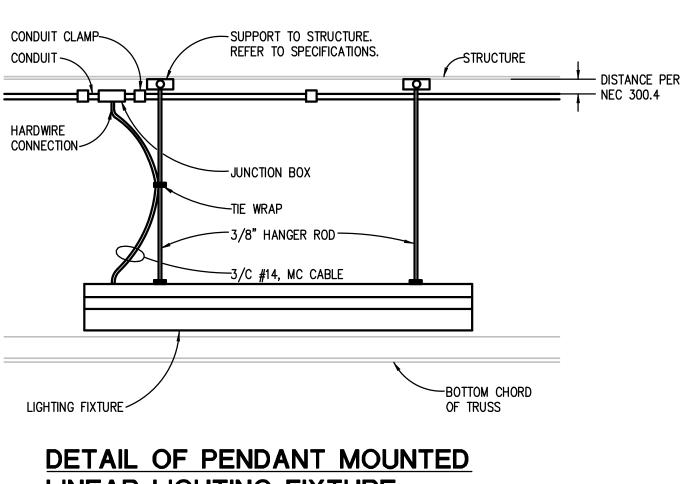
## EMERGENCY BALLAST WIRING DIAGRAM NO SCALE

<u>NOTE:</u>

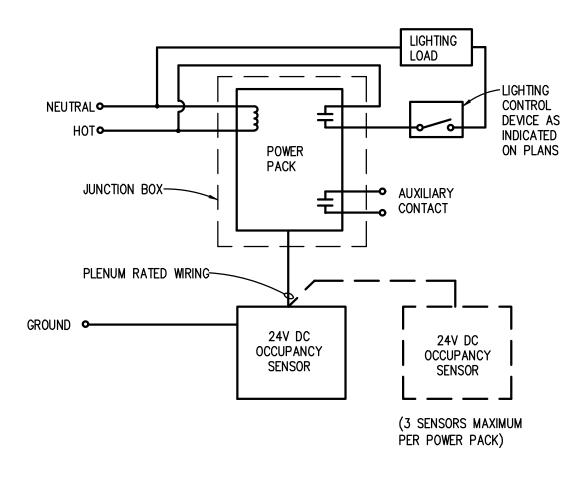
PRIMARY CIRCUIT ONLY. LAMP LEADS NOT SHOWN.



#### TYPICAL MOUNTING DETAIL FOR CHAIN HUNG LIGHTING FIXTURES NO SCALE



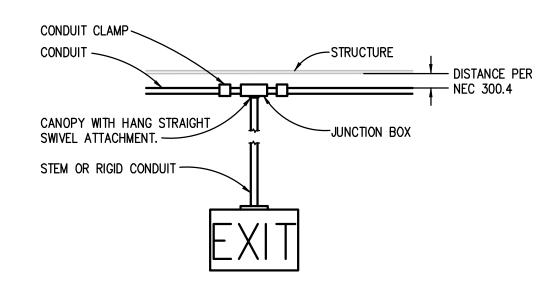
LINEAR LIGHTING FIXTURE NO SCALE



#### OCCUPANCY SENSOR WIRING DIAGRAM NO SCALE

NOTES:

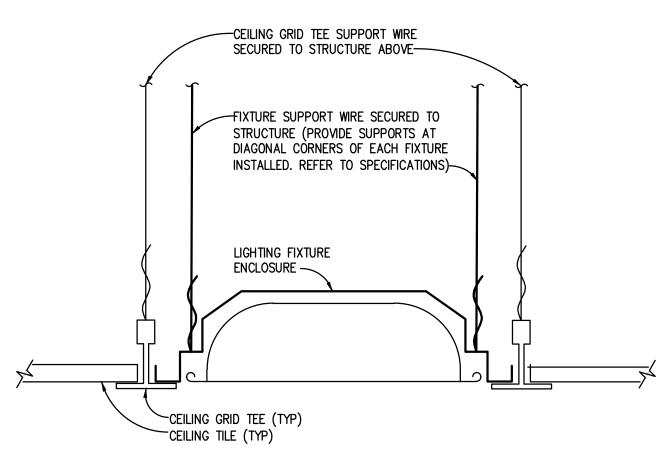
- REFER TO SPECIFICATIONS FOR ACCEPTED MANUFACTURERS. PROVIDE POWER PACKS AND SLAVE PACKS AS REQUIRED FOR SWITCHING AS INDICATED ON
- PLAN. REVISE DETAIL AS REQUIRED BY MANUFACTURER. MOUNTING LOCATION PER MANUFACTURER'S RECOMMENDATION.
- 4. ADJUST SENSITIVITY LEVELS PER THE OWNER REQUIREMENTS. PROVIDE FACTORY SUPPORT FOR AIMING/ADJUSTING OF SENSORS. 5
- 6. PLACE CEILING MOUNTED OCCUPANCY SENSORS IN CENTER OF A FULL CEILING TILE, WHERE APPLICABLE.
- SENSOR ADJUSTMENT: BEFORE MAKING ADJUSTMENTS, MAKE SURE ROOM FURNITURE IS INSTALLED, LIGHTING CIRCUITS ARE TURNED ON, AND THE HVAC SYSTEMS ARE IN THE ON POSITION. VAV SYSTEMS SHOULD BE SET TO THEIR HIGHEST AIRFLOW. SET THE LOGIC CONFIGURATION DIP SWITCHES TO "EITHER". EITHER REQUIRES MOTION DETECTION BY ONLY ONE TECHNOLOGY. SET THE TIME DELAY PER OWNERS DIRECTION.



#### EXIT SIGN PENDANT MOUNTING DETAIL NO SCALE

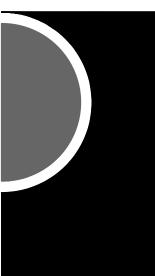
NOTES:

- 1. STEM OR RIGID CONDUIT LENGTH TO BE COORDINATED TO ENSURE SIGNAGE IS READILY VISIBLE FROM ANY DIRECTION OF EGRESS TRAVEL. THE BOTTOM OF THE SIGNAGE SHALL NOT BE MORE THAN 6'-8" ABOVE THE TOP EDGE OF THE EGRESS OPENING INTENDED FOR DESIGNATION BY THE SIGNAGE (NFPA 101 7.10.1.9).
- 2. MOUNT EXIT SIGN PER MANUFACTURER'S RECOMMENDATIONS AT BOTTOM OF STEM/RIGID CONDUIT.



#### RECESSED LIGHTING FIXTURE **INSTALLATION DETAIL** NO SCALE

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OWNER

City Of Warren

PROJECT NAME

Warren Civic Center South Fire Station #1

23211 Van Dyke Ave Warren, MI 48089

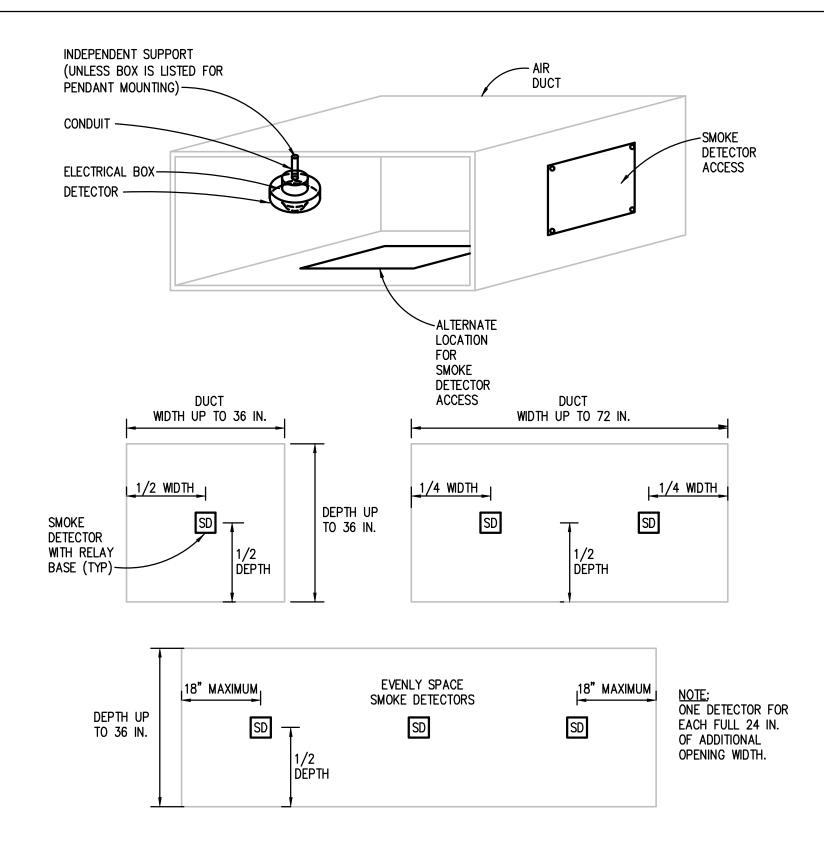
PROJECT NO.

# 21-146A

ISSUES / REVISIONS	
Bidding / Construction	06/13/2023
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SAM	
CHECKED BY	
EMG	
APPROVED BY	

EMG SHEET NAME

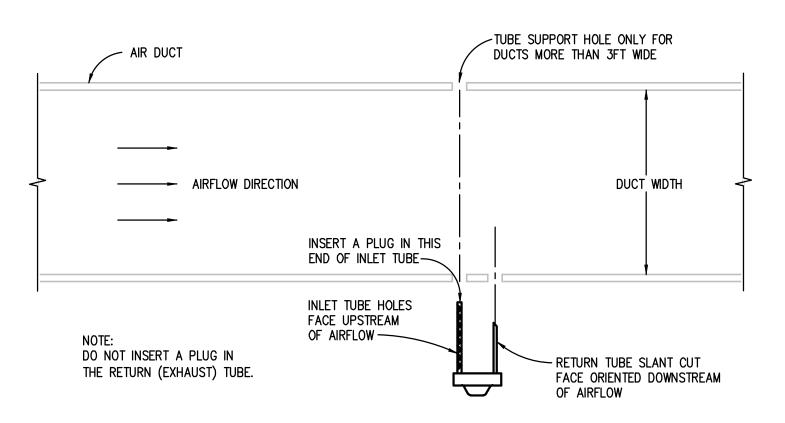
ELECTRICAL DETAILS AND DIAGRAMS



#### SPOT-TYPE DUCT DETECTOR INSTALLATION DETAIL NO SCALE

NOTES:

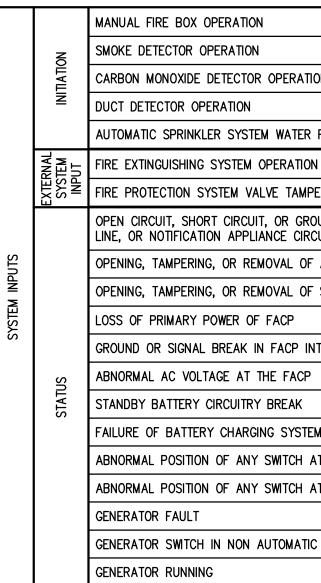
- WHERE IN-DUCT SMOKE DETECTORS ARE INSTALLED IN CONCEALED LOCATIONS MORE THAN 10FT AFF OR IN A LOCATION THAT IS NOT VISIBLE, THE DETECTORS SHALL BE PROVIDED WITH REMOTE ALARM OR SUPERVISORY INDICATION IN A LOCATION THAT IS ACCEPTABLE TO THE AHJ.
- 2. PROVIDE QUANTITY OF SMOKE DETECTORS REQUIRED AT EACH SMOKE DAMPER BASED ON DUCT SIZE, DETAIL ABOVE AND NFPA 72 REQUIREMENTS. REFER TO MECHANICAL PLANS FOR DUCT SIZES. 3. THE NUMBER AND SPACING OF THE DETECTOR(S) IN THE DEPTH (VERTICAL) OF THE
- OPENING SHOULD BE THE SAME AS THOSE GIVEN FOR THE WIDTH (HORIZONTAL).



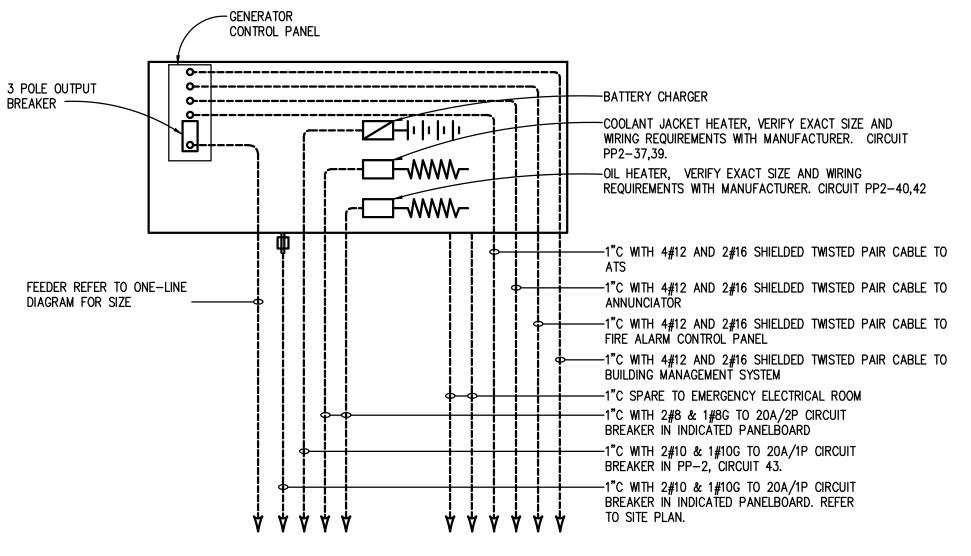
#### DUCT TYPE DETECTOR INSTALLATION NO SCALE

<u>NOTES:</u>

1. PROVIDE SAMPLING TUBE LENGTH AS REQUIRED FOR WIDTH OF DUCT.





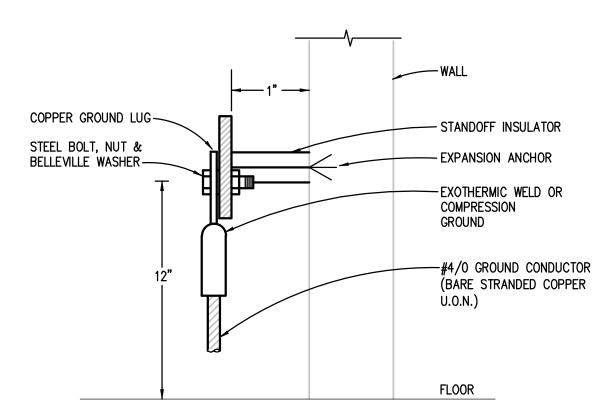


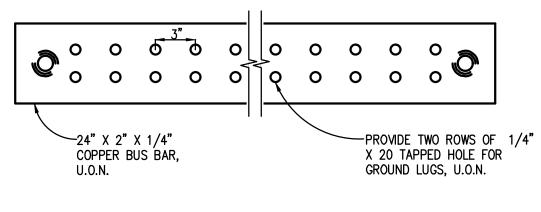
# GENERATOR WIRING CONNECTION DETAIL

NO SCALE

NOTES: 1. VERIFY ALL WIRING WITH SELECTED GENERATOR MANUFACTURERS DRAWINGS AND WIRING DIAGRAMS

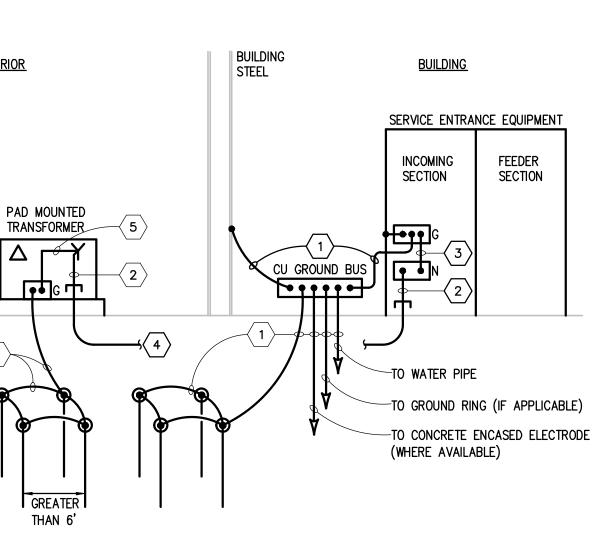
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NO SCALE

# FIRE ALARM MATRIX



#### TYPICAL SECONDARY SERVICE ENTRANCE GROUNDING NO SCALE

#### # KEYED NOTES

<u>EXTERIOR</u>

 $\Delta$ 

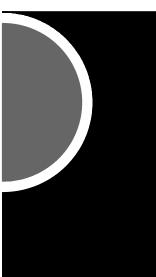
GROUND

MAT (TYF

- 1. GROUNDING ELECTRODE CONDUCTOR, #4/0 COPPER.
- GROUNDED CONDUCTOR (NEUTRAL), SEE ONE LINE DIAGRAM.
- MAIN BONDING JUMPER, PROVIDED BY MANUFACTURER AS PART OF LISTED EQUIPMENT SIZED PER NEC 250.28 AND 250.102. 4. SERVICE ENTRANCE PHASE CONDUCTORS AND GROUNDED CONDUCTOR IN CONDUIT. SEE
- ONE LINE DIAGRAM. 5. CONNECTION FROM GROUNDED SERVICE CONDUCTOR TO GROUNDING ELECTRODE AT THE TRANSFORMER PER NEC 250.24. COORDINATE WITH UTILITY.
- 6. COORDINATE REQUIREMENTS WITH UTILITY COMPANY PRIOR TO INSTALLATION. PROVIDE ALL NECESSARY GROUND RODS AND CONDUCTORS TO MEET UTILITY COMPANY REQUIREMENTS.

## ELECTRICAL GROUND BUS DETAIL

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City Of Warren

#### PROJECT NAME

Warren Civic Center South Fire Station #1

23211 Van Dyke Ave Warren, MI 48089

#### PROJECT NO.

# 21-146A

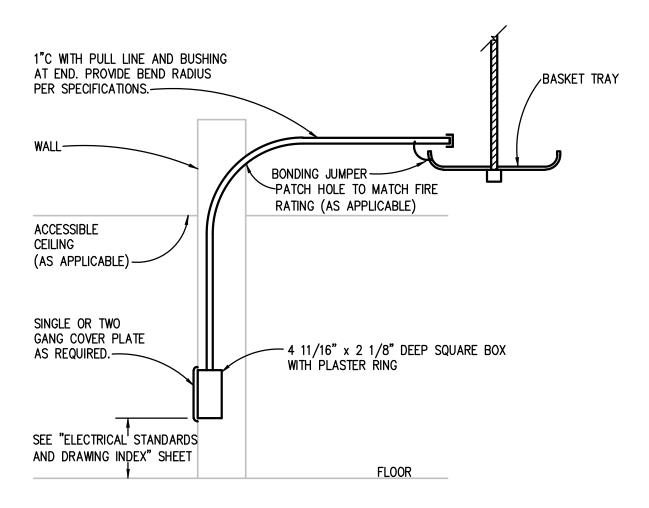
**ISSUES / REVISIONS** Bidding / Construction 06/13/2023 DRAWN BY SAM

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APPROVED BY

## EMG

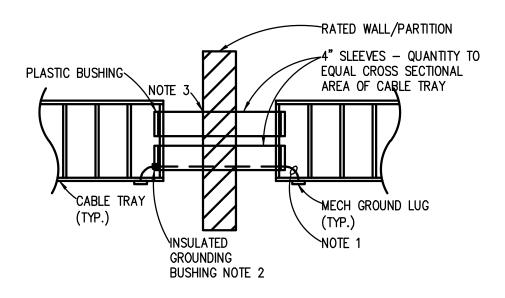
SHEET NAME ELECTRICAL DETAILS AND DIAGRAMS



#### TELECOMMUNICATION OUTLET DETAIL NO SCALE

<u>NOTES:</u>

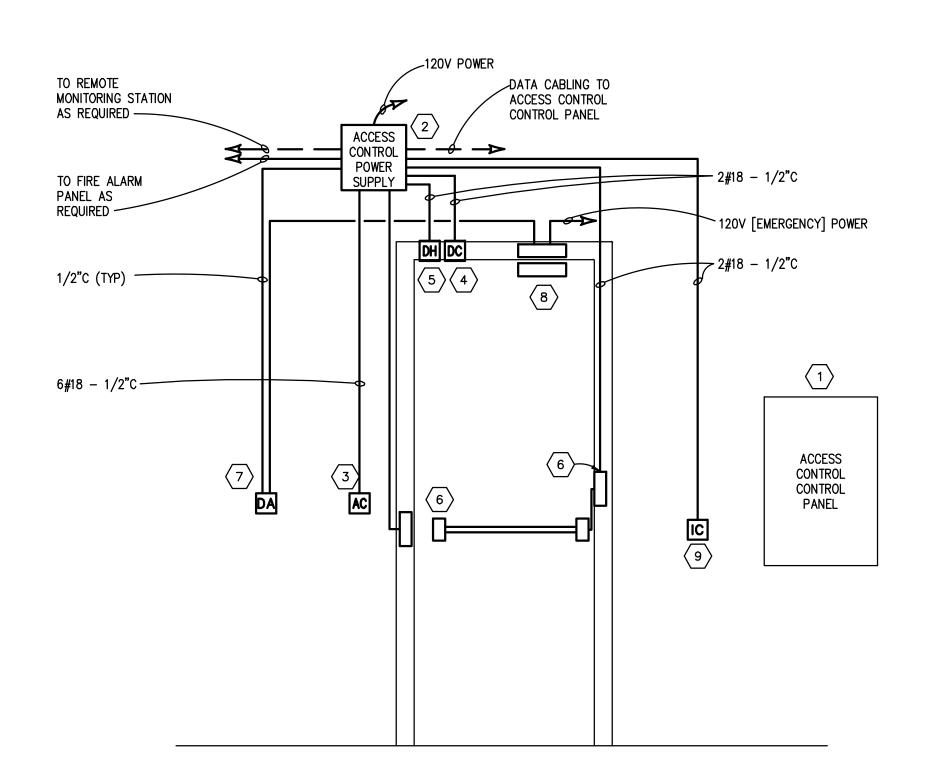
1. IF CEILING IN ROOM IS NOT ACCESSIBLE, ROUTE CONDUIT THROUGH NEAREST ACCESSIBLE CEILING TO CABLE/WIRE BASKET TRAY.



#### CABLE TRAY TO CONDUIT TRANSITION THROUGH RATED WALL NO SCALE

<u>NOTES:</u>

- 1. BOND TRAY TO CONDUIT WITH A #6 AWG COPPER GREEN INSULATED
- GROUND WIRE. 2. PROVIDE GROUNDING BUSHINGS ON CONDUIT SLEEVES AND BOND
- SLEEVES WITH #6 AWG COPPER GREEN INSULATED GROUND WIRE.
- 3. PROVIDE FIRE-STOPPING IN AND AROUND ALL CONDUITS MAINTAIN FIRE RATING OF PARTITION AND TO MAKE PENETRATION AIR TIGHT.



#### DOOR HARDWARE SINGLE DOOR CONNECTION DIAGRAM NO SCALE

#### GENERAL NOTES:

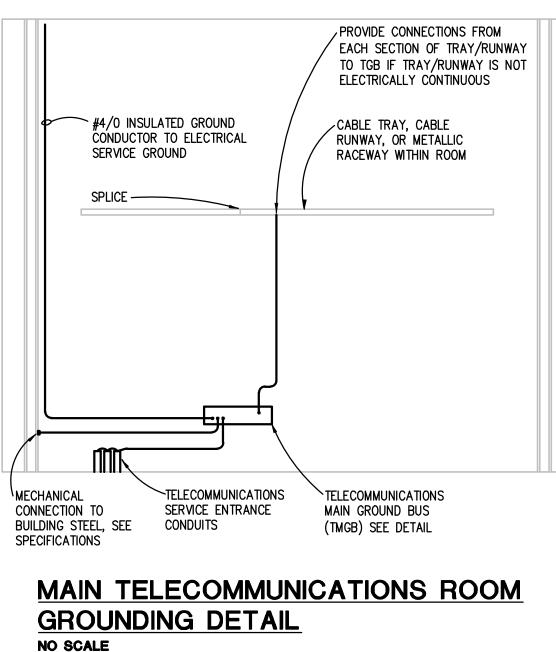
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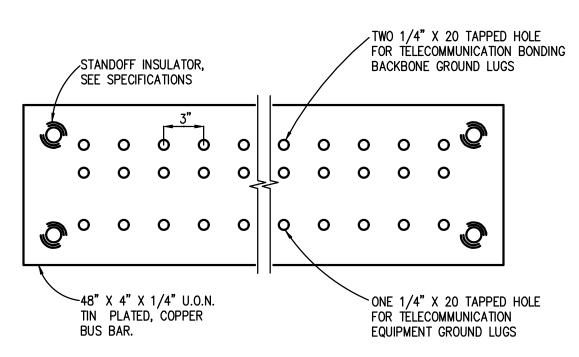
5.

- 1. REFER TO ELECTRICAL FLOOR PLANS FOR INDIVIDUAL DOOR
- REQUIREMENTS AND DEVICE LOCATIONS. PROVIDE BACK BOXES, CONDUIT, WIRING, CABLING, AND TERMINATIONS AS REQUIRED BY MANUFACTURER. ROUTE AND SUPPORT CABLING PER TELECOMMUNICATIONS CABLING REQUIREMENTS. COORDINATE EXACT
- REQUIREMENTS AND SCOPE OF WORK WITH OWNER AND ACCESS CONTROL CONTRACTOR. WIRE SIZES AND QUANTITIES ARE TYPICAL ONLY. WIRING SHALL BE PER
- MANUFACTURER'S REQUIREMENTS. SOME DEVICES INDICATED MAY NOT APPLY. REFER TO DOOR HARDWARE AND DOOR SCHEDULE AND COORDINATE ALL WORK WITH HARDWARE
- CONTRACTOR. ELECTRICAL CONTRACTOR SHALL PROVIDE INTERCONNECTION WITH FIRE
- ALARM PANEL TO RELEASE DOORS (I.E. ELECTROMAGNETIC LOCKS) UPON AN ALARM CONDITION, AS REQUIRED.

#### **#**<u>KEYED NOTES:</u>

- 1. ACCESS CONTROL CONTROL PANEL BY OTHERS. COORDINATE EXACT LOCATION WITH OWNER OR ACCESS CONTROL CONTRACTOR.
- 2. ACCESS CONTROL POWER SUPPLY. COORDINATE EXACT LOCATION AND QUANTITY WITH OWNER OR ACCESS CONTROL CONTRACTOR.
- 3. ACCESS CONTROL STATION. QUANTITY AND DEVICE TYPE PER DOOR HARDWARE SCHEDULE. (EXAMPLE DEVICES: CARD READER, KEYPAD, REQUEST TO EXIT PUSH PAD, MOTION DETECTOR, ETC)
- 4. DOOR MONITOR CONTACT SWITCH. 5. DOOR HOLDER: ELECTROMAGNETIC SWITCH MOUNTED ON/IN DOOR
- AND FRAME. [FOR DELAYED OPERATION] IN LIEU OF ELECTRIC STRIKE. 6. ELECTRIC STRIKE, PANIC HARDWARE, POWER TRANSFER: PROVIDED
- BY HARDWARE CONTRACTOR. COORDINATE POWER REQUIREMENTS AND WIRING CONNECTIONS. 7. DOOR OPERATOR ACTUATOR (EXAMPLE DEVICES: PUSH PAD,
- TOUCHLESS, ETC): PROVIDED BY OTHERS, PROVIDE INTERCONNECTION WIRING AND CONDUIT AS REQUIRED. 8. DOOR OPERATOR: PROVIDED BY HARDWARE CONTRACTOR.
- COORDINATE POWER REQUIREMENTS WIRING AND CONDUIT AS REQUIRED.
- 9. INTERCOM STATION: PROVIDE INTERCONNECTION FROM MASTER STATION TO [TWO] REMOTE STATIONS FOR MANUAL RELEASE OF DOOR STRIKE.





<u>NOTES:</u>

1. ALL GROUNDING SHALL COMPLY WITH NEC ARTICLE 250 AND TIA/EIA-607.

#### **TELECOMMUNICATIONS MAIN** GROUND BUS (TMGB) DETAIL NO SCALE

# PARTNERS



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Warren Civic Center South Fire Station #1

23211 Van Dyke Ave Warren, MI 48089

#### PROJECT NO.

# 21-146A

ISSUES / REVISIONS	
Bidding / Construction	06/13/2023
DRAWN BY	
SAM	

CHECKED BY

EMG APPROVED BY

#### EMG

SHEET NAME ELECTRICAL DETAILS AND DIAGRAMS