PROPOSED EARLY CHILDHOOD SCHOOL FOR:

QUATTRO DEVELOPMENT

ROSEVILLE,

MINNESOTA

LOCATION MAP

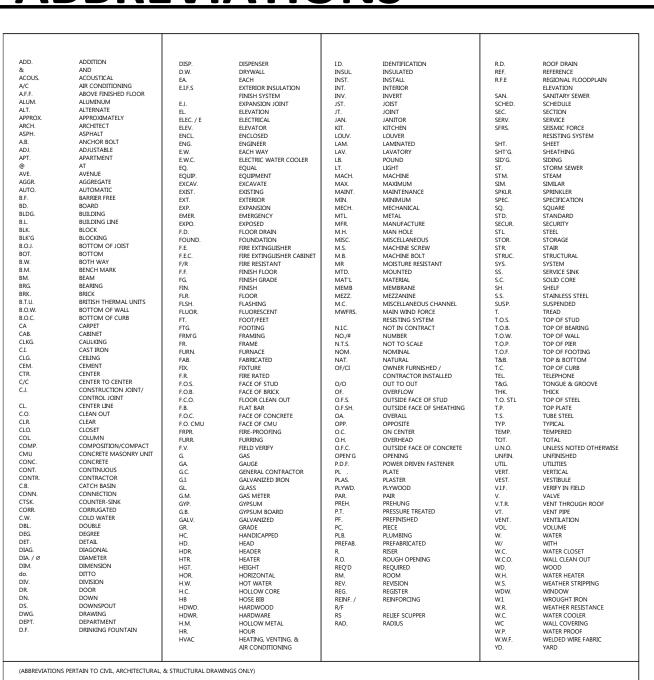


SHEET INDEX

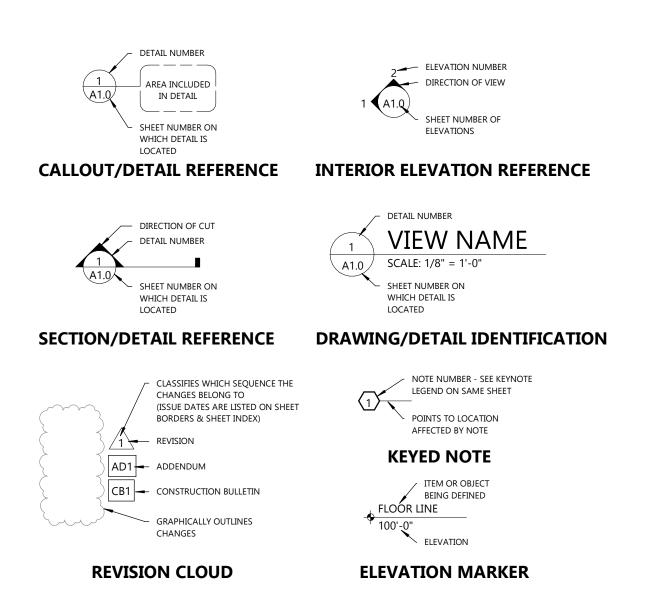
			LATEST S	HEET REVISION
NUMBER	SHEET NAME / DESCRIPTION	SHEET ISSUE DATE	NUMBER	DATE
GENERAL			055	
T1.0	TITLE SHEET	FEB. 14, 2023	CB5	JUNE 21, 2023
T1.1	PROJECT INFORMATION	FEB. 14, 2023	AD3	APR. 19, 2023
CIVIL				
C0.1	COVER AND SPECIFICATION SHEET	FEB. 14, 2023		
C1.0	EXISTING SITE AND DEMOLITION PLAN	FEB. 14, 2023	CB4	JUNE 14, 2023
C1.1	SITE PLAN	FEB. 14, 2023	CB4	JUNE 14, 2023
C1.2	GRADING AND EROSION CONTROL PLAN	FEB. 14, 2023	CB4	JUNE 14, 2023
C1.3	UTILITY PLAN	FEB. 14, 2023	CB4	JUNE 14, 2023
C1.4	LANDSCAPE AND RESTORATION PLAN	FEB. 14, 2023	CB4	JUNE 14, 2023
C2.0	DETAILS	FEB. 14, 2023	AD2	MAR. 23, 2023
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A0.1	SPECIFICATIONS	FEB. 14, 2023		
A0.2	SPECIFICATIONS	FEB. 14, 2023	AD2	MAR. 23, 2023
A0.3	SPECIFICATIONS	FEB. 14, 2023	AD2	MAR. 23, 2023
A1.0	DUMPSTER ENCLOSURE DETAILS	FEB. 14, 2023	ADL	WAR. 23, 2023
A1.1	FIRST FLOOR PLAN	FEB. 14, 2023	CB5	JUNE 21, 2023
A1.1A	ENLARGED FLOOR PLAN - NORTH & INT/EXT WALL TYPES	FEB. 14, 2023	AD3	APR. 19, 2023
A1.1B	ENLARGED FLOOR PLAN - SOUTH	FEB. 14, 2023	AD3	APR. 19, 2023
A1.2	EXITING PLAN & LINE OF SIGHT	MAR. 23, 2023	AD2	MAR. 23, 2023
A1.3	ROOF PLAN	FEB. 14, 2023	AD2	MAR. 23, 2023
A2.0	EXTERIOR ELEVATIONS	FEB. 14, 2023	CB2	JUNE 5, 2023
A4.0	WALL SECTIONS & DETAILS	FEB. 14, 2023	CDL	30.12 3, 2023
A4.1	WALL DETAILS	FEB. 14, 2023		
A5.0	ENLARGED PLANS	FEB. 14, 2023	CB2	JUNE 5, 2023
A5.1	INTERIOR ELEVATIONS	FEB. 14, 2023	CB2	JUNE 5, 2023
A5.2	INTERIOR ELEVATIONS	FEB. 14, 2023	CB2	JUNE 5, 2023
A6.0	SCHEDULES	FEB. 14, 2023	CB5	JUNE 21, 2023
A6.1	DOOR SCHEDULE	FEB. 14, 2023	CB3	JUNE 13, 2023
A7.1	REFLECTED CEILING PLAN	FEB. 14, 2023	AD3	APR. 19, 2023
STRUCTURAL S0.1	SPECIFICATIONS & DESIGN CRITERIA	FEB. 14, 2023		
S0.1	DESIGN CRITERIA	FEB. 14, 2023	AD2	MAR. 23, 2023
S0.2	SPECIAL INSPECTIONS	FEB. 14, 2023	ADZ	IVIAN. 23, 2023
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S1.1	ROOF FRAMING PLAN	FEB. 14, 2023 FEB. 14, 2023	AD1	FEB. 28, 2023 FEB. 28, 2023
\$1.2 \$2.0	FOUNDATION SCHEDULES	FEB. 14, 2023 FEB. 14, 2023	ADI	1 LD. 20, 2023
\$3.0	FRAMING SCHEDULES		ΛD1	EEB 38 3033
33.U	FUNITING SCHEDULES	FEB. 14, 2023	AD1	FEB. 28, 2023

			LATEST S	HEET REVISION
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S4.0	FRAMING ELEVATIONS	FEB. 14, 2023	AD1	FEB. 28, 2023
UMBING				
P0.1	LEGEND AND SPECIFICATIONS	FEB. 14, 2023	CB1	MAY 10, 2023
P0.2	SPECIFICATIONS	FEB. 14, 2023		
P1.U	UNDERGROUND PLAN	FEB. 14, 2023	CB2	JUNE 5, 2023
P1.1	FIRST FLOOR PLAN	FEB. 14, 2023	CB2	JUNE 5, 2023
P1.2	ROOF PLAN	MAY 10, 2023	CB1	MAY 10, 2023
P3.0	WATER ISOMETRICS	FEB. 14, 2023	CB1	MAY 10, 2023
P3.1	WASTE AND VENT ISOMETRIC	FEB. 14, 2023	CB2	JUNE 5, 2023
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VAC				
H0.1	LEGEND AND SPECIFICATIONS	FEB. 14, 2023		
H0.2	SPECIFICATIONS	FEB. 14, 2023		
H1.1	FIRST FLOOR PLAN	FEB. 14, 2023	CB2	JUNE 5, 2023
H1.2	ROOF PLAN	FEB. 14, 2023	CDL	30.12 3, 2023
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H3.1	DETAILS	FEB. 14, 2023	CB2	JUNE 5, 2023
H4.0	SCHEDULES	FEB. 14, 2023	CB2	JUNE 5, 2023
			-	
ECTRICAL E0.1	LEGEND AND SPECIFICATIONS	FEB. 14, 2023		
E0.2	SPECIFICATIONS	FEB. 14, 2023		
E1.0	SITE PLAN	FEB. 14, 2023	AD2	MAR. 23, 2023
E1.1L	FIRST FLOOR PLAN - LIGHTING	FEB. 14, 2023	CB2	JUNE 5, 2023
E1.1P	FIRST FLOOR PLAN - POWER	FEB. 14, 2023	CB2	JUNE 5, 2023
E1.3	ROOF PLAN	FEB. 14, 2023	CDL	JOINE 3, 2023
E3.0	DETAILS	FEB. 14, 2023		
E4.0	ONELINE DIAGRAMS & SCHEDULES	FEB. 14, 2023	CB2	JUNE 5, 2023
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OW VOLTAGE FA0.1	FIRE ALARM LEGEND AND SPECIFICATIONS	FEB. 14, 2023		
171011	1	1 23. 1 1, 2023		

ABBREVIATIONS



SYMBOLS LEGEND



PROJECT CONTACTS

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PLUMBING & FIRE PROTECTION: Nick Streeter Phone: (920) 322-1627 E-mail: nick.streeter@excelengineer.com

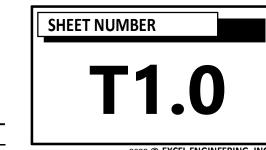
PROJECT INFORMATION

LAKE LAKE **PROP**(

PROFESSIONAL SEAL

SHEET DATES FEB. 14, 2023 REVISIONS FEB. 28, 2023 MAR. 23, 2023 APR. 19, 2023 MAY 10, 2023 JUNE 5, 2023 JUNE 13, 2023 JUNE 14, 2023 JUNE 21, 2023

JOB NUMBER 2255300



PROJECT INFORMATION

APPLICABLE BUILDING CODES

2020 MINNESOTA BUILDING CODE (2018 IBC) 2020 MINNESOTA MECHANICAL CODE (2018 IMC) 2020 MINNESOTA FUEL GAS CODE (2018 IFGC)

2020 MINNESOTA ENERGY CODE (2018 IECC)

2020 MINNESOTA FIRE CODE (2018 IFC) 2020 MINNESOTA PLUMBING CODE (2018 UPC)

2020 MINNESOTA ACCESSIBILITY CODE (2009 ICC/ANSI A117.1) 2020 NATIONAL ELECTRICAL CODE

BUILDING SIZE

TOTAL AREA 10,419 S.F.

NUMBER OF STORIES

2020 MBC TABLE 504.4 MAX. (2) STORIES PER MOST RESTRICTIVE OCCUPANCY

TOTAL STORIES = (1)

CONSTRUCTION CLASSIFICATION

2020 MBC SECTION 602.5 TYPE V(B) CONSTRUCTION

ENTIRE BUILDING IS FULLY EQUIPPED w/ AN AUTOMATIC SPRINKLER SYSTEM PER N.F.P.A. 13

OCCUPANCY CLASSIFICATIONS

NON-SEPARATED USES w/ MIXED OCCUPANCY BUILDING IS DESIGNED FOR GROUP I-4 OCCUPANCY (MOST RESTRICTIVE)

OCCUPANCY CLASSIFICATIONS WITHIN BUILDING INCLUDE: INSTITUTIONAL GROUP I-4 2020 MBC SECTION 308.5 - GROUP I-4, DAYCARE FACILITIES

ALLOWABLE HEIGHT & AREAS

2020 MBC TABLE 504.3 MAXIMUM ALLOWABLE BUILDING HEIGHT = 60'-0"

TOTAL BUILDING HEIGHT = 18'-0"

MAXIMUM ALLOWABLE BUILDING AREA

(At) = 36,000 S.F. PER FLOOR

TOTAL AREA = 10,419 S.F.

MEANS OF EGRESS

2020 MBC TABLE 1017.2 250 FT. EXIT ACCESS TRAVEL DISTANCE (SPRINKLERED)

2020 MBC SECTION 1005.3.2 EGRESS WIDTH PER OCCUPANT SERVED = 0.2" (SPRINKLERED)

(300) TOTAL OCCUPANTS x 0.2" = 60" EGRESS WIDTH REQUIRED PROVIDED EGRESS WIDTH = 540"

EXTERIOR WALL OPENINGS

2020 MBC TABLE 705.8 BUILDING PERMITTED TO HAVE UNLIMITED UNPROTECTED OPENINGS DUE TO FIRE SEPARATION DISTANCE TO PROPERTY LINE IS

GREATER THAN 30 FT.

BUILDING PERMITTED TO HAVE UNLIMITED UNPROTECTED OPENINGS 2020 MBC 602 DUE TO EXTERIOR BEARING, NON-BEARING, AND STRUCTURAL FRAME

IS NOT REQ'D TO BE FIRE-RESISTANCE RATED

OCCUPANT LOADS

TOTAL OCCUPANT LOAD OF THE BUILDING = 209 OCCUPANTS

ROOM OR SPACE DESIGNATION	CLASSIFICATION OF OCCUPANCY FOR USE	FLOOR AREA (S.F.)	DENSITY SF/PERSON	OCCUPANT LOAD BY CALCULATION	OCCUPANT LOAD BY ACTUAL NO.	
DAYCARE	DAYCARE	6,666	35 NET	190.5	191	
STORAGE / MECHANICAL	ACCESSORY STORAGE AREAS	300	300 GROSS	1.0	1	
OFFICE	BUSINESS AREAS	786	150 GROSS	5.2	6	
GROSS MOTOR ROOM	ASSEMBLY UNCONCENTRATED	531	50 NET	10.6	11	

SANITARY FIXTURES

occu	PANCY	WA ⁻	TER CLOSETS		LAVATOR	RIES	DRINK FO	UNTAINS
TYPE	CAPACITY	FACTORS	# M. FIX.	# F. FIX.	FACTORS	# FIX.	FACTORS	# FIX.
DAYCARE	202 PERSONS	1/15	6.73	6.73	1/50	4.04	1/100	2.02
B GROUP (OFFICE)	6 PERSONS	1/25 (FIRST 50) 1/50 (AFTER)	0.12	0.12	1/40 (FIRST 80) 1/80 (AFTER)	0.15	1/100	0.06
S GROUP (STORAGE)	1 PERSONS	1/100	0.01	0.01	1/100	0.01	1/1000	0.001
TOTAL	210 PERSONS		6.9	6.9		4.22		2.08
PROVIDED FIXTURES			6 CHILD 3 ADULT	6 CHILD 4 ADULT		32		3
	•		•	•				

Always a Better Plan 100 Camelot Drive Fond du Lac, WI 54935 920-926-9800 excelengineer.com

COLLABORATION

PROJECT INFORMATION

QUA TWIN LAKES

PROFESSIONAL SEAL

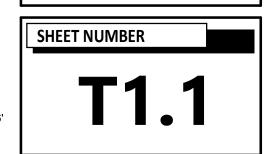
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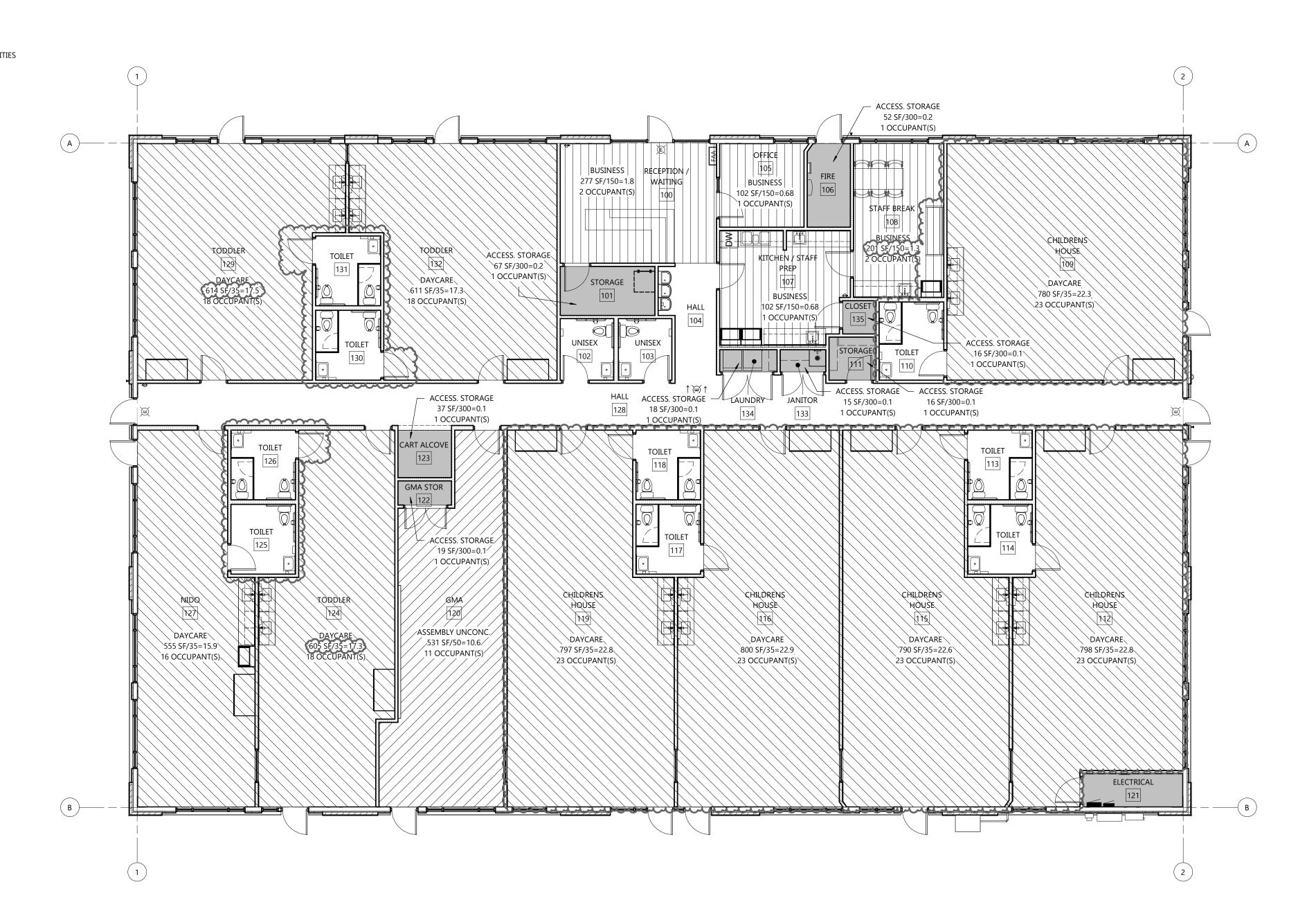
SHEET DATES FEB. 14, 2023 MAR. 23, 2023 APR. 19, 2023

JOB NUMBER 2255300

LIFE SAFETY PLAN

PROJECT INFORMATION





PROPOSED EARLY CHILDHOOD SCHOOL FOR: QUATTRO DEVELOPMENT

ROSEVILLE, MINNESOTA

LEGEND

• 000.00 MG MASTER GRADING PLAN SPOT ELEVATIONS (FLOW LINE OF CURB UNLESS OTHERWISE SPECIFIED)

> PROPOSED SPOT ELEVATIONS (FLOW LINE OF CURB UNLESS OTHERWISE SPECIFIED)

PROPOSED SPOT ELEVATIONS (TOP OF CURB, FLOWLINE OF CURB)

PROPOSED SPOT ELEVATIONS (REFERENCE R-WALL DETAIL) BG-FINISHED SURFACE GRADE AT BACK OF WALI FG-FINISHED SURFACE GRADE AT FRONT OF WALL

00.00 TW PROPOSED SPOT ELEVATIONS BW (TOP OF WALK, BOTTOM OF WALK @ FLOWLINE)

PROPOSED WATER VALVE IN BOX PROPOSED LIGHT POLE PROPOSED SIGN

PROPOSED STORM CATCH BASIN - ST CB

PROPOSED STORM FIELD INLET - ST FI

PROPOSED STORM CURB INLET - ST CI PROPOSED HANDICAP PARKING STALL PROPOSED DRAINAGE FLOW

PROPOSED APRON END SECTION

EROSION MATTING

PROPOSED INLET PROTECTION

PROPOSED PROPERTY LINE PROPOSED STORM SEWER AND MANHOLE - ST MH PROPOSED SANITARY SEWER AND MANHOLE - SAN MH PROPOSED WATER LINE AND HYDRANT PROPOSED CURB AND GUTTER

EXISTING CURB AND GUTTER RIGHT-OF-WAY LINE

INTERIOR PROPERTY LINE

CONTACTS

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CIVIL SHEET INDEX

SHEET	SHEET TITLE
C0.1	CIVIL COVER AND SPECIFICATION SHEET
C1.0	EXISTING SITE AND DEMOLITION PLAN
C1.1	SITE PLAN
C1.2	GRADING AND EROSION CONTROL PLAN
C1.3	UTILITY PLAN
C1.4	LANDSCAPE AND RESTORATION PLAN
C2.0	DETAILS





DIVISION 31 EARTH WORK

31 10 00 SITE CLEARING (DEMOLITION)

A. CONTRACTOR SHALL CALL GOPHER STATE ONE CALL AND CONDUCT A PRIVATE UTILITY LOCATE AS REQUIRED TO ENSURE THAT ALL UTILITIES HAVE BEEN LOCATED BEFORE STARTING SITE DEMOLITION. DESIGN ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCIES BETWEEN PLAN AND FIELD CONDITIONS PRIOR TO CONSTRUCTION

DEMOLITION PLAN IS AN OVERVIEW OF DEMOLITION TO TAKE PLACE ON SITE. CONTRACTOR TO FIELD VERIFY EXISTING SITE CONDITIONS PRIOR TO BIDDING. CONTRACTOR SHALL REMOVE, REPLACE, OR DEMOLISH ALL ITEMS AS NEEDED DURING

CONTRACTOR TO PROTECT EXISTING IMPROVEMENTS THAT ARE SCHEDULED TO REMAIN. ANY DAMAGE TO EXISTING FACILITIES SHALL BE REPLACED AT CONTRACTORS EXPENSE. D. ALL CONCRETE NOTED TO BE REMOVED SHALL BE REMOVED TO THE NEAREST CONTROL JOINT

31 20 00 EARTH MOVING

A. CONTRACTOR SHALL CALL GOPHER STATE ONE CALL AND CONDUCT A PRIVATE UTILITY LOCATE AS REQUIRED TO ENSURE THAT ALL UTILITIES HAVE BEEN LOCATED BEFORE STARTING EXCAVATION. DESIGN ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCIES BETWEEN PLAN AND FIELD CONDITIONS PRIOR TO CONSTRUCTION. B. PROVIDE ALL LABOR, MATERIALS AND EQUIPMENT FOR ALL EXCAVATION, GRADING, FILL AND BACKFILL WORK AS

REQUIRED TO COMPLETE THE GENERAL CONSTRUCTION WORK. ALL EXCAVATION AND BACKFILL FOR ELECTRICALS AND MECHANICALS ARE THE RESPONSIBILITY OF THE RESPECTIVE CONTRACTOR UNLESS OTHERWISE SPECIFIED IN THE BID

C. ALL ORGANIC TOPSOIL INSIDE THE BUILDING AREA, UNDER PAVED AREAS, AND AT SITE FILL AREAS SHALL BE REMOVED. PROOF ROLL SUBGRADES BEFORE PLACING FILL WITH HEAVY PNEUMATIC-TIRED EQUIPMENT, SUCH AS A FULLY-LOADED TANDEM AXLE DUMP TRUCK, TO IDENTIFY SOFT POCKETS AND AREAS OF EXCESS YIELDING. CONTRACTOR SHALL VERIFY TOPSOIL DEPTHS PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL REVIEW AND FOLLOW THE RECOMMENDATIONS OF THE GEOTECHNICAL REPORT AND ACCOUNT FOR EXISTING CONDITIONS PRIOR TO SUBMITTING BID FOR THE PROJECT. EXCESS MATERIALS SHALL BE REMOVED FROM THE SITE UNLESS OTHERWISE DIRECTED IN THE PLANS OR BY LOCAL ZONING REQUIREMENTS.

D. PLACE AND COMPACT FILL MATERIAL IN LAYERS TO REQUIRED ELEVATIONS. UNIFORMLY MOISTEN OR AERATE SUBGRADE AND EACH SUBSEQUENT FILL OR BACKFILL LAYER BEFORE COMPACTION AS RECOMMENDED TO ACHIEVE SPECIFIED DRY DENSITY REMOVE AND REPLACE, OR SCARIFY AND AIR DRY, OTHERWISE SATISFACTORY SOIL MATERIAL THAT IS TOO WET TO COMPACT

E. PLACE BACKFILL AND FILL MATERIALS IN LAYERS NOT MORE THAN 8" IN LOOSE DEPTH FOR MATERIAL COMPACTED BY HEAVY COMPACTION EQUIPMENT, AND NOT MORE THAN 4" IN LOOSE DEPTH FOR MATERIAL COMPACTED BY HAND-OPERATED

F. COMPACT THE SOIL TO NOT LESS THAN THE FOLLOWING PERCENTAGES OF MAXIMUM DRY DENSITY ACCORDING TO ASTM D 698, STANDARD PROCTOR TEST. FILL MAY NOT BE PLACED ON FROZEN GROUND AND NO FROZEN MATERIALS MAY BE USED FOR BACK FILL. APPLY THE MORE STRINGENT REQUIREMENTS WHEN COMPARING BETWEEN THE FOLLOWING AND THE

1. UNDER FOUNDATIONS - SUBGRADE, AND EACH LAYER OF BACKFILL OR FILL MATERIAL, TO NOT LESS THAN 98 PERCENT . UNDER INTERIOR SLAB-ON-GRADE WHERE GROUNDWATER IS MORE THAN 3 FEET BELOW THE SLAB - PLACE A DRAINAGE COURSE LAYER OF 3/4" CRUSHED STONE. WITH 5% TO 12% FINES, PER THICKNESS INDICATED ON FOUNDATION PLANS ON PREPARED SUBGRADE. COMPACT THE SUBGRADE AND DRAINAGE COURSE TO NOT LESS THAN

3. UNDER INTERIOR SLAB-ON-GRADE WHERE GROUNDWATER IS WITHIN 3 FEET OF THE SLAB SURFACE- PLACE A DRAINAGE COURSE LAYER OF CLEAN 3/4" CRUSHED STONE, WITH NO MORE THAN 5% FINES, PER THICKNESS INDICATED ON FOUNDATION PLANS ON PREPARED SUBGRADE. COMPACT THE SUBGRADE AND DRAINAGE COURSE TO NOT LESS THAN 95 PERCENT 4. UNDER EXTERIOR CONCRETE AND ASPHALT PAVEMENTS - COMPACT THE SUBGRADE AND EACH LAYER OF BACKFILL OR

FILL MATERIAL TO NOT LESS THAN 95 PERCENT. 5. UNDER WALKWAYS - COMPACT SUBGRADE AND EACH LAYER OF BACKFILL OR FILL MATERIAL TO NOT LESS THAN 95

6. UNDER LAWN OR UNPAVED AREAS - COMPACT SUBGRADE AND EACH LAYER OF BACKFILL OR FILL MATERIAL, TO NOT CONTRACTOR SHALL ENGAGE A QUALIFIED INDEPENDENT TESTING AND INSPECTING AGENCY TO PERFORM FIELD TESTS

AND INSPECTIONS. IT IS SUGGESTED THAT THE GEOTECHNICAL FIRM USED TO PERFORM THE SUBSURFACE SOIL INVESTIGATION BE ENGAGED FOR THE FIELD QUALITY CONTROL TESTS. H. ALLOW THE TESTING AGENCY TO TEST AND INSPECT SUBGRADES AND EACH FILL OR BACKFILL LAYER. PROCEED WITH SUBSEQUENT EARTHWORK ONLY AFTER TEST RESULTS FOR PREVIOUSLY COMPLETED WORK COMPLY WITH REQUIREMENTS. PROVIDE ONE TEST FOR EVERY 2000 SQUARE FEET OF PAVED AREA OR BUILDING SLAB, ONE TEST FOR EACH SPREAD FOOTING, AND ONE TEST FOR EVERY 50 LINEAR FEET OF WALL STRIP FOOTING

WHEN THE TESTING AGENCY REPORTS THAT SUBGRADES, FILLS, OR BACKFILLS HAVE NOT ACHIEVED DEGREE OF COMPACTION SPECIFIED, SCARIFY AND MOISTEN OR AERATE, OR REMOVE AND REPLACE SOIL TO DEPTH REQUIRED; RECOMPACT AND RETEST UNTIL SPECIFIED COMPACTION IS OBTAINED. THE BUILDING SITE SHALL BE GRADED TO PROVIDE DRAINAGE AWAY FROM THE BUILDING AS INDICATED ON THE PLANS. SITE EARTHWORK SHALL BE GRADED TO WITHIN 0.10' OF REQUIRED EARTHWORK ELEVATIONS ASSUMING POSITIVE DRAINAGE IS MAINTAINED IN ACCORDANCE WITH THE GRADING PLAN.

31 30 00 EROSION CONTROL/STORMWATER MANAGEMENT

A. THE GRADING PLAN REFLECTS LESS THAN 1 ACRE OF DISTURBED AREA. THE SITE IS THEREFORE EXEMPT FROM MPCA REOUIREMENTS.

B. EROSION AND SEDIMENT CONTROL IMPLEMENTED DURING CONSTRUCTION SHALL STRICTLY COMPLY WITH THE GUIDELINES AND REQUIREMENTS SET FORTH IN MPCA STORMWATER MANUAL. TECHNICAL STANDARDS PUBLISHED BY THE MINNESOTA STORMWATER MANUAL SHALL ALSO BE UTILIZED TO IMPLEMENT THE REQUIRED PERFORMANCE STANDARDS. THE METHODS AND TYPES OF EROSION CONTROL WILL BE DEPENDENT ON THE LOCATION AND TYPE OF WORK INVOLVED. ALL SEDIMENT CONTROL MEASURES SHALL BE ADJUSTED TO MEET FIELD CONDITIONS AT THE TIME OF CONSTRUCTION, AND INSTALLED PRIOR TO ANY GRADING OR DISTURBANCE OF EXISTING SURFACE MATERIAL. BELOW IS A LIST OF EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES TO ACHIEVE THE PERFORMANCE STANDARDS REQUIRED.

1. SILT FENCE SHALL BE PLACED ON SITE AT LOCATIONS SHOWN ON THE EROSION CONTROL PLAN. SILT FENCE SHALL ALSO BE PROVIDED AROUND THE PERIMETER OF ALL SOIL STOCKPILES THAT WILL EXIST FOR MORE THAN 7 DAYS. 2. DITCH CHECKS SHALL BE PROVIDED TO REDUCE THE VELOCITY OF WATER FLOWING IN DITCH BOTTOMS. PLACE AT

LOCATIONS SHOWN ON THE EROSION CONTROL PLAN. 3. STONE TRACKING PADS AND TRACKOUT CONTROL PRACTICES SHALL BE PLACED AT ALL CONSTRUCTION SITE ENTRANCES AND SHALL BE INSTALLED PRIOR TO ANY TRAFFIC LEAVING THE CONSTRUCTION SITE. SEE THE EROSION CONTROL PLAN FOR LOCATIONS. THE AGGREGATE USED FOR THE STONE TRACKING PAD SHALL BE 3/8" TO 3 INCH. CLEAR OR WASHED STONE AND SHALL BE PLACED IN A LAYER AT LEAST 12 INCHES THICK. THE STONE SHALL BE UNDERLAIN WITH A GEOTEXTILE FABRIC AS NEEDED. THE TRACKING PAD SHALL BE THE FULL WIDTH OF THE EGRESS POINT (12' MIN WIDTH) AND SHALL BE A MINIMUM OF 50 FEFT LONG. SURFACE WATER MUST BE PREVENTED FROM PASSING THROUGH THE TRACKING PAD. OTHER TRACKOUT CONTROL PRACTICES INCLUDING STABILIZED WORK SURFACES, MANUFACTURED TRACKOUT CONTROL DEVICES, TIRE WASHING, AND STREET/PAVEMENT CLEANING SHALL

BE IMPLEMENTED AS NECESSARY TO MITIGATE THE TRACKOUT OF SEDIMENT OFFSITE. 4. STORM DRAIN INLET PROTECTION SHALL BE PROVIDED FOR ALL NEW AND DOWNSTREAM STORM CATCH BASINS AND

5. DUST CONTROL MEASURES SHALL BE PROVIDED TO REDUCE OR PREVENT THE SURFACE AND AIR TRANSPORT OF DUST DURING CONSTRUCTION. CONTROL MEASURES INCLUDE APPLYING MULCH AND ESTABLISHING VEGETATION, WATER SPRAYING, SURFACE ROUGHENING, APPLYING POLYMERS, SPRAY-ON TACKIFIERS, CHLORIDES, AND BARRIERS. SOME SITES MAY REQUIRE AN APPROACH THAT UTILIZES A COMBINATION OF MEASURES FOR DUST CONTROL.

6. THE USE, STORAGE, AND DISPOSAL OF CHEMICALS, CEMENT, AND OTHER COMPOUNDS AND MATERIALS USED ON SITE SHALL BE MANAGED DURING THE CONSTRUCTION PERIOD TO PREVENT THEIR TRANSPORT BY RUNOFF INTO WATERS 7. CONTRACTOR SHALL PROVIDE AN OPEN AGGREGATE CONCRETE TRUCK WASHOUT AREA ON SITE. CONTRACTOR TO ENSURE THAT CONCRETE WASHOUT SHALL BE CONTAINED TO THIS DESIGNATED AREA AND NOT BE ALLOWED TO RUN INTO STORM INLETS OR INTO THE OVERLAND STORMWATER DRAINAGE SYSTEM. WASHOUT AREA SHALL BE REMOVED

ALL DRIVEWAYS AND CURB CUTS TO BE CONSTRUCTED ACCORDING TO LOCAL ORDINANCES. CONTRACTOR TO

2. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL WORK IN ROW PERMITS.

UPON COMPLETION OF CONSTRUCTION.

GENERAL PROJECT NOTES

PLAN SPECIFICATIONS (BASED ON CSI FORMAT)

- 8. TEMPORARY SITE RESTORATION SHALL TAKE PLACE IN DISTURBED AREAS THAT WILL NOT BE BROUGHT TO FINAL GRADE OR ON WHICH LAND DISTURBING ACTIVITIES WILL NOT BE PERFORMED FOR A PERIOD GREATER THAN 7 DAYS AND REQUIRES VEGETATIVE COVER FOR LESS THAN ONE YEAR. THIS TEMPORARY SITE RESTORATION REQUIREMENT ALSO APPLIES TO SOIL STOCKPILES THAT EXIST FOR MORE THAN 7 DAYS. PERMANENT RESTORATION APPLIES TO AREAS WHERE PERENNIAL VEGETATIVE COVER IS NEEDED TO PERMANENTLY STABILIZE AREAS OF EXPOSED SOIL PERMANENT STABILIZATION SHALL OCCUR WITHIN 3 WORKING DAYS OF FINAL GRADING. TOPSOIL, SEED, AND MULCH SHALL BE IN GENERAL CONFORMANCE WITH MPCA STANDARDS AND SHALL MEET THE SPECIFICATIONS FOUND IN THE LANDSCAPING AND SITE STARILIZATION SECTION OF THIS CONSTRUCTION DOCUMENT, ANY SOIL FROSION THAT OCCURS AFTER FINAL GRADING AND/OR FINAL STABILIZATION MUST BE REPAIRED AND THE STABILIZATION WORK
- 9. IF SITE DEWATERING IS REQUIRED FOR PROPOSED CONSTRUCTION ACTIVITIES, ALL SEDIMENT LADEN WATER GENERATED DURING THE DEWATERING PROCESS SHALL BE TREATED TO REMOVE SEDIMENT PRIOR TO DISCHARGING OFF-SITE OR TO WATERS OF THE STATE.
- 10. ALL OFF-SITE SEDIMENT DEPOSITS OCCURRING AS A RESULT OF CONSTRUCTION WORK OR A STORM EVENT SHALL BE CLEANED UP BY THE END OF EACH WORKING DAY. FLUSHING SHALL NOT BE ALLOWED. EROSION CONTROL MEASURES SHALL NOT BE REMOVED UNTIL THE AREA(S) SERVED HAVE ESTABLISHED VEGETATIVE
- THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL LOCAL EROSION CONTROL PERMITS.

DIVISION 32 EXTERIOR IMPROVEMENTS

32 20 00 CONCRETE AND AGGREGATE BASE

- A. CONTRACTOR TO PROVIDE CRUSHED AGGREGATE BASE AND CONCRETE WHERE INDICATED ON THE PLANS. ALL AGGREGATE PROVIDED MUST COMPLY WITH MNDOT SPECIFICATIONS. ALL AGGREGATE PLACED MUST BE COMPACTED TO AN AVERAGE DENSITY PER MNDOT SPECIFICATIONS. C. DESIGN AND CONSTRUCTION OF ALL CAST-IN-PLACE EXTERIOR CONCRETE FLAT WORK SHALL CONFORM TO ACI 330R-08
- EXTERIOR CONCRETE FLAT WORK CONSTRUCTION TO BE PROVIDED PER MORE STRINGENT REQUIREMENTS OF THE GEOTECHNICAL REPORT OR THIS SPECIFICATION. CONCRETE FLAT WORK CONSTRUCTION IS AS FOLLOWS: 1. SIDEWALK CONCRETE - 4" OF CONCRETE OVER 4" OF 3/4" CRUSHED AGGREGATE BASE. CONTRACTION JOINTS SHALL
- CONSIST OF 1/8" WIDE BY 1" DEEP TOOLED JOINT WHERE INDICATED ON THE PLANS 2. DUMPSTER PAD/APRON CONCRETE - 8" OF CONCRETE OVER 6" OF AGGREGATE BASE
- a. CONCRETE SHALL BE STEEL REINFORCED WITH THE FOLLOWING AND PLACED IN THE UPPER 1/3 TO ½ OF THE SLAB: 1). TIE BARS AT ALL CONTRACTION JOINTS OF THE CONCRETE. TIE BARS SHALL BE #4 REBAR 30" LONG PLACED AT 30" O.C.
- b DUMPSTER PAD CONCRETE IOINTING SHALL BE AS FOLLOWS:
- 1). CONTRACTION SAWCUT JOINT CONTRACTOR SHALL PROVIDE A SAWCUT JOINT AT MAXIMUM SPACING OF 15' ON CENTER. SAWCUT SHALL BE 2" IN DEPTH.
- 2). TYPICAL POUR CONTROL JOINT POUR CONTROL JOINT SHALL BE PROVIDED WITH 1-1/4" DIAMETER BY 20" LONG SMOOTH DOWEL PLACED AT 12" O.C. ONE HALF OF THE DOWEL SHALL BE GREASED. GREENSTREAK 9" SPEED DOWEL TUBES SHALL BE USED.
- DESIGN MIXES SHALL BE IN ACCORDANCE WITH ASTM C94 1. STRENGTH TO BE MINIMUM OF 4,500 PSI AT 28 DAYS FOR EXTERIOR CONCRETE.
- MAXIMUM WATER/CEMENT RATIO SHALL BE 0.45. 3. SLUMP SHALL NOT EXCEED 4" FOR EXTERIOR CONCRETE FLAT WORK
- 4. SLUMP SHALL BE 2.5" OR LESS FOR SLIP-FORMED CURB AND GUTTER
- 5. SLUMP SHALL BE BETWEEN 1.5" TO 3" FOR NON SLIP-FORMED CURB AND GUTTER.
- 6. ALL EXTERIOR CONCRETE SHALL BE AIR ENTRAINED WITH 4% TO 7% AIR CONTENT. NO OTHER ADMIXTURES SHALL BE USED WITHOUT APPROVAL OF EXCEL ENGINEERING, INC. CALCIUM CHLORIDE SHALL NOT BE USED. 7. MAXIMUM AGGREGATE SIZE FOR ALL EXTERIOR CONCRETE SHALL BE 0.75 INCHES.
- VERIFY EQUIPMENT CONCRETE PAD SIZES WITH RESPECTIVE CONTRACTORS. PADS SHALL HAVE FIBERMESH 300 FIBERS AT A RATE OF 1.5 LBS/CU. YD. OR 6 X 6-W1.4 X W1.4 WELDED WIRE MESH WITH MINIMUM 1 INCH COVER. EQUIPMENT PADS SHALL

BE 3.5 INCHES THICK WITH 1 INCH CHAMFER UNLESS SPECIFIED OTHERWISE. COORDINATE ADDITIONAL PAD REQUIREMENTS G. ALL CONCRETE FLAT WORK SURFACES AND CONCRETE CURB FLOWLINES SHALL BE CONSTRUCTED TO WITHIN 0.05' OF

DESIGN SURFACE AND FLOWLINE GRADES ASSUMING POSITIVE DRAINAGE IS MAINTAINED IN ACCORDANCE WITH THE DESIGN.

H. CONCRETE FLAT WORK SHALL HAVE CONSTRUCTION JOINTS OR SAW CUT JOINTS PLACED AS INDICATED ON THE PLANS OR PER THIS SPECIFICATION SAWCUTS SHALL BE DONE AS SOON AS POSSIBLE, BUT NO LATER THAN 24 HOURS AFTER CONCRETE IS PLACED. CONCRETE CURB AND GUTTER JOINTING SHALL BE PLACED EVERY 10' OR CLOSER (6' MIN.). IF CONCRETE PAVEMENT IS ADJACENT TO CONCRETE CURB, JOINTING IN THE PAVEMENT AND CURB SHALL ALIGN. ALL EXTERIOR CONCRETE SHALL HAVE A LIGHT BROOM FINISH UNLESS NOTED OTHERWISE. A UNIFORM COAT OF A HIGH SOLIDS CURING COMPOUND MEETING ASTM C309 SHOULD BE APPLIED TO ALL EXPOSED CONCRETE SURFACES. ALL CONCRETE IS TO BE CURED FOR 7 DAYS. EXTERIOR CONCRETE SHALL BE SEPARATED FROM BUILDINGS WITH CONTINUOUS 0.5 INCH FIBER EXPANSION JOINT AND/OR 0.25 INCH FIBER EXPANSION JOINT AT DECORATIVE MASONRY UNITS. I. ALL REINFORCING BARS SHALL BE ASTM A615 GRADE 60. THICKNESS OF CONCRETE COVER OVER REINFORCEMENT SHALL

BE NOT LESS THAN 3" WHERE CONCRETE IS DEPOSITED AGAINST THE GROUND WITHOUT THE USE OF FORMS AND NOT LESS THAN 1.5" IN ALL OTHER LOCATIONS. ALL REINFORCING SHALL BE LAPPED 36 DIAMETERS FOR UP TO #6 BARS, 60 DIAMETERS FOR #7 TO #10 BARS OR AS NOTED ON THE DRAWINGS AND EXTENDED AROUND CORNERS WITH CORNER BARS. PLACING AND DETAILING OF STEEL REINFORCING AND REINFORCING SUPPORTS SHALL BE IN ACCORDANCE WITH CRSI AND ACI MANUAL AND STANDARD PRACTICES. THE REINFORCEMENT SHALL NOT BE PAINTED AND MUST BE FREE OF GREASE/OIL. DIRT OR DEEP RUST WHEN PLACED IN THE WORK, ALL WELDED WIRE FABRIC SHALL MEET THE REQUIREMENTS OF ASTM A 185. WELDED WIRE FABRIC SHALL BE PLACED 2" FROM TOP OF SLAB, UNLESS INDICATED OTHERWISE.

J. CONTRACTOR SHALL ENGAGE A QUALIFIED INDEPENDENT TESTING AND INSPECTING AGENCY TO SAMPLE MATERIALS, PERFORM TESTS, AND SUBMIT TEST REPORTS DURING CONCRETE PLACEMENT. TESTS WILL BE PERFORMED ACCORDING TO ACI 301 CAST AND LABORATORY CLIRE ONE SET OF FOUR STANDARD CYLINDERS FOR EACH COMPOSITE SAMPLE FOR EACH DAY'S POUR OF EACH CONCRETE MIX EXCEEDING 5 CU. YD., BUT LESS THAN 25 CU. YD., PLUS ONE SET FOR EACH ADDITIONAL 50 CU. YD. OR FRACTION THEREOF. PERFORM COMPRESSIVE-STRENGTH TESTS ACCORDING TO ASTM C 39. TEST TWO SPECIMENS AT 7 DAYS AND TWO SPECIMENS AT 28 DAYS. PERFORM SLUMP TESTING ACCORDING TO ASTM C 143. PROVIDE ONE TEST AT POINT OF PLACEMENT FOR EACH COMPOSITE SAMPLE, BUT NOT LESS THAN ONE TEST FOR EACH DAY'S POUR OF EACH CONCRETE MIX. PERFORM ADDITIONAL TESTS WHEN CONCRETE CONSISTENCY APPEARS TO CHANGE.

K. PROTECT FRESHLY PLACED CONCRETE FROM PREMATURE DRYING AND EXCESSIVE COLD OR HOT TEMPERATURES. IN HOT, DRY, AND WINDY WEATHER, APPLY AN EVAPORATION-CONTROL COMPOUND ACCORDING TO MANUFACTURER'S INSTRUCTIONS AFTER SCREEDING AND BULL FLOATING, BUT BEFORE POWER FLOATING AND TROWELLING.

LIMIT MAXIMUM WATER-CEMENTIOUS RATIO OF CONCRETE EXPOSED TO FREEZING, THAWING AND DEICING SALTS TO

M. TEST RESULTS WILL BE REPORTED IN WRITING TO THE DESIGN ENGINEER, READY-MIX PRODUCER, AND CONTRACTOR WITHIN 24 HOURS AFTER TESTS. REPORTS OF COMPRESSIVE STRENGTH TESTS SHALL CONTAIN THE PROJECT IDENTIFICATION NAME AND NUMBER, DATE OF CONCRETE PLACEMENT, NAME OF CONCRETE TESTING SERVICE, CONCRETE TYPE AND CLASS, LOCATION OF CONCRETE BATCH IN STRUCTURE, DESIGN COMPRESSIVE STRENGTH AT 28 DAYS, CONCRETE MIX PROPORTIONS AND MATERIALS, COMPRESSIVE BREAKING STRENGTH, AND TYPE OF BREAK FOR BOTH 7-DAY TESTS AND 28-DAY TESTS.

N. CONTRACTOR TO PROVIDE 4" WIDE (YELLOW OR WHITE) PAINTED STRIPING FOR PARKING STALLS, TRAFFIC LANES, AND NO PARKING AREAS. (YELLOW OR WHITE) PAINT MARKINGS SHALL ALSO BE PROVIDED FOR H.C. ACCESSIBLE SYMBOLS, TRAFFIC

32 30 00 LANDSCAPING AND SITE STABILIZATION

TOPSOIL: CONTRACTOR TO PROVIDE A MINIMUM OF 6" OF TOPSOIL FOR ALL DISTURBED OPEN AREAS. REUSE SURFACE SOIL STOCKPILED ON SITE AND SUPPLEMENT WITH IMPORTED OR MANUFACTURED TOPSOIL FROM OFF SITE SOURCES WHEN QUANTITIES ARE INSUFFICIENT. EXCAVATOR SHALL BE RESPONSIBLE FOR ROUGH PLACEMENT OF TOPSOIL TO WITHIN 1" OF FINAL GRADE PRIOR TO LANDSCAPER FINAL GRADING. LANDSCAPER TO PROVIDE PULVERIZING AND FINAL GRADING OF TOPSOIL. PROVIDE SOIL ANALYSIS BY A QUALIFIED SOIL TESTING LABORATORY AS REQUIRED TO VERIFY THE SUITABILITY OF SOIL TO BE USED AS TOPSOIL AND TO DETERMINE THE NECESSARY SOIL AMENDMENTS. TEST SOIL FOR PRESENCE OF ATRAZINE AND INFORM EXCEL ENGINEERING, INC. IF PRESENT PRIOR TO BIDDING PROJECT. TOPSOIL SHALL HAVE A PH RANGE OF 5.5 TO 8, CONTAIN A MINIMUM OF 5 PERCENT ORGANIC MATERIAL CONTENT, AND SHALL BE FREE OF STONES 1 INCH OR LARGER IN DIAMETER. ALL MATERIALS HARMFUL TO PLANT GROWTH SHALL ALSO BE REMOVED.

TOPSOIL INSTALLATION: LOOSEN SUBGRADE TO A MINIMUM DEPTH OF 6 INCHES AND REMOVE STONES LARGER THAN 1 IN DIAMETER. ALSO REMOVE ANY STICKS, ROOTS, RUBBISH, AND OTHER EXTRANEOUS MATTER AND DISPOSE OF THEM OFF THE PROPERTY. SPREAD TOPSOIL TO A DEPTH OF 6" BUT NOT LESS THAN WHAT IS REQUIRED TO MEET FINISHED GRADES AFTER LIGHT ROLLING AND NATURAL SETTLEMENT. DO NOT SPREAD TOPSOIL IF SUBGRADE IS FROZEN, MUDDY, OR EXCESSIVELY WET. GRADE PLANTING AREAS TO A SMOOTH, UNIFORM SURFACE PLANE WITH LOOSE, UNIFORMLY FINE TEXTURE. GRADE TO WITHIN 0.05 FEET OF FINISHED GRADE ELEVATION.

1. PERMANENT LAWN AREAS SHALL BE SEEDED WITH THE FOLLOWING MIXTURE: MN DOT SEED MIXTURE 25-131 PER THE 2014 MN DOT SEEDING MANUAL. STRAW AND MULCH SHALL BE LAID AT 100LBS/1,000 S.F. FERTILIZE AS PER SOIL TEST OR APPLY 5-10-10 OR EQUIVALENT AT 5-6 LBS/1,000 S.F. SEE EROSION MATTING SPECIFICATIONS AS REQUIRED. ALL SITE DISTURBED AREAS NOT DESIGNATED FOR OTHER LANDSCAPING AND SITE STABILIZATION METHODS SHALL BE SEEDED AS PERMANENT LAWN. NO BARE TOPSOIL SHALL BE LEFT ONSITE.

2. ALL PERMANENT AND TEMPORARY STORM WATER CONVEYANCE SWALE BOTTOMS AND SIDE SLOPES AS WELL AS STORMWATER MANAGEMENT BASIN BOTTOMS AND SIDE SLOPES SHALL BE SEEDED WITH THE FOLLOWING MIXTURE: MN DOT SEED MIXTURE 33-262 PER THE 2014 MN DOT SEEDING MANUAL. FERTILIZE AS PER SOIL TEST OR APPLY 5-10-10 OR EQUIVALENT AT 5-6 LBS./1,000 S.F. SEE EROSION MATTING SPECIFICATIONS AS REQUIRED.

3. ALL TEMPORARY SEEDING SHALL CONSIST OF THE FOLLOWING MIXTURE: MN DOT SEED MIXTURE 21-112 FOR FALL COVER, MN DOT SEED MIXTURE 21-111 FOR SPRING/SUMMER COVER, PER THE 2014 MN DOT SEEDING MANUAL. STRAW AND MULCH SHALL BE LAID AT 100 LBS./1.000 S.F. FERTILIZE AS PER SOIL TEST OR APPLY 5-10-10 OR EQUIVALENT AT 5-6 LBS./1,000 S.F. SEE EROSION MATTING SPECIFICATIONS AS REQUIRED.

SEEDED LAWN MAINTENANCE: CONTRACTOR TO PROVIDE MAINTENANCE OF ALL LANDSCAPING FOR A PERIOD OF 90 DAYS FROM THE DATE OF INSTALLATION. AT THE END OF THE MAINTENANCE PERIOD, A HEALTHY, UNIFORM, CLOSE STAND OF GRASS SHOULD BE ESTABLISHED FREE OF WEEDS AND SURFACE IRREGULARITIES. LAWN COVERAGE SHOULD EXCEED 90% AND BARE SPOTS SHOULD NOT EXCEED 5"X5". CONTRACTOR SHOULD REESTABLISH LAWNS THAT DO NOT COMPLY WITH THESE REQUIREMENTS AND CONTINUE MAINTENANCE UNTIL LAWNS ARE SATISFACTORY.

- 1. CONTRACTOR TO PROVIDE EROSION CONTROL MATTING (NORTH AMERICAN GREEN S150) OR EQUIVALENT ON ALL SLOPES THAT ARE 4:1 AND GREATER OUTSIDE OF STORMWATER CONVEYANCE SWALES AND STORMWATER
- 2. CONTRACTOR TO PROVIDE EROSION MATTING (NORTH AMERICAN GREEN C125) OR EQUIVALENT IN ALL SWALE BOTTOMS AND SIDE SLOPES AS WELL AS STORMWATER MANAGEMENT BASIN BOTTOMS AND SIDE SLOPES AS

TREES AND SHRUBS: FURNISH NURSERY-GROWN TREES AND SHRUBS WITH HEALTHY ROOT SYSTEMS DEVELOPED BY TRANSPLANTING OR ROOT PRUNING. PROVIDE WELL-SHAPED, FULLY BRANCHED, AND HEALTHY LOOKING STOCK. STOCK SHOULD ALSO BE FREE OF DISEASE, INSECTS, EGGS, LARVAE, AND DEFECTS SUCH AS KNOTS, SUN SCALD, INJURIES, ABRASIONS, AND DISFIGUREMENT. SEE THE LANDSCAPE PLAN FOR SPECIFIC SPECIE TYPE, SIZE, AND LOCATION.

F. TREE AND SHRUB INSTALLATION: EXCAVATE CIRCULAR PITS WITH SIDES SLOPED INWARD. TRIM BASE LEAVING CENTER AREA RAISED SLIGHTLY TO SUPPORT ROOT BALL. EXCAVATE PIT APPROXIMATELY THREE TIMES AS WIDE AS THE ROOT BALL DIAMETER. SET TREES AND SHRUBS PLUMB AND IN CENTER OF PIT WITH TOP OF BALL 1" ABOVE ADJACENT FINISHED GRADES. PLACE PLANTING SOIL MIX AROUND ROOT BALL IN LAYERS AND TAMP TO SETTLE MIX. WATER ALL PLANTS THOROUGHLY.

G. TREE AND SHRUB MAINTENANCE/WARRANTY: CONTRACTOR TO PROVIDE MAINTENANCE OF ALL LANDSCAPING FOR A PERIOD OF 90 DAYS FROM THE DATE OF INSTALLATION. MAINTENANCE TO INCLUDE REGULAR WATERING AS REQUIRED FOR SUCCESSFUL PLANT ESTABLISHMENT. CONTRACTOR TO PROVIDE 1 YEAR WARRANTY ON ALL TREES, SHRUBS, AND PERENNIALS. H. MINERAL MULCH: PROVIDE 3" MINIMUM THICK BLANKET OF 1.5" MINIMUM TO 2.5" MAXIMUM CRUSHED DECORATIVE STONE AT ALL PLANTING AREAS INDICATED ON THE LANDSCAPE PLAN. INSTALL OVER NON-WOVEN WEED BARRIER FABRIC.

PLASTIC EDGING: INSTALL VALLEY VIEW INDUSTRIES BLACK DIAMOND LAWN EDGING TO SEPARATE ALL PLANTING BEDS FROM LAWN AREAS. EDGING TO BE 5.5" TALL WITH METAL STAKES INSTALLED PER MANUFACTURER'S WRITTEN INSTRUCTIONS.

DIVISION 33 UTILITIES

33 10 00 SITE UTILITIES

CONTRACTOR TO FIELD VERIFY ALL EXISTING UNDERGROUND UTILITIES ON SITE. CONTRACTOR TO VERIFY PIPE LOCATIONS, SIZES, AND DEPTHS AT POINT OF PROPOSED CONNECTIONS AND VERIFY PROPOSED UTILITY ROUTES ARE CLEAR (PER CODE) OF ALL EXISTING UTILITIES AND OTHER OBSTRUCTIONS PRIOR TO CONSTRUCTION. COSTS INCURRED FOR FAILURE TO DO SO SHALL BE THE CONTRACTORS RESPONSIBILITY.

B. CONTRACTOR TO FIELD TELEVISE ALL EXISTING SANITARY AND STORM LATERALS THAT ARE SCHEDULED TO BE RE-USED AND/OR CONNECTED TO ON SITE. THE TELEVISING SHALL BE COMPLETED TO ENSURE THE EXISTING LATERAL(S) ARE FREE OF OBSTRUCTIONS AND IN SOUND STRUCTURAL CONDITION. TELEVISING OF THESE LATERAL(S) SHOULD BE COMPLETED AT BEGINNING OF CONSTRUCTION AND DESIGN ENGINEER SHALL BE NOTIFIED OF ANY PIPE OBSTRUCTIONS AND/OR STRUCTURAL DEFICIENCIES IMMEDIATELY AFTER COMPLETION OF FIELD TELEVISING

ALL PROPOSED SANITARY PIPE SHALL BE IN ACCORDANCE WITH MATERIALS SPECIFIED IN TABLE A: ALLOWABLE PIPE MATERIAL SCHEDULE ON C0.1 OF THE PROPOSED PLANSET. ALL PROPOSED SANITARY PIPE BELOW PROPOSED & FUTURE BUILDINGS SHALL BE IN ACCORDANCE WITH MATERIALS SPECIFIED IN TABLE A: ALLOWABLE PIPE MATERIAL SCHEDULE ON CO.1

D. ALL PROPOSED WATER PIPE SHALL BE IN ACCORDANCE WITH MATERIALS SPECIFIED IN TABLE A: ALLOWABLE PIPE MATERIAL SCHEDULE ON CO.1 OF THE PROPOSED PLANSET. 8' MINIMUM COVER SHALL BE PROVIDED OVER ALL WATER PIPING UNLESS OTHERWISE SPECIFIED. REFER TO MN PLUMBING CODE.

E. ALL PROPOSED HDPE STORM PIPE SHALL BE IN ACCORDANCE WITH MATERIALS SPECIFIED IN TABLE A: ALLOWABLE PIPE MATERIAL SCHEDULE ON C0.1 OF THE PROPOSED PLANSET. ALL CONCRETE STORM PIPING SHALL BE IN ACCORDANCE WITH MATERIALS SPECIFIED IN TABLE A: ALLOWABLE PIPE MATERIAL SCHEDULE ON C0.1 OF THE PROPOSED PLANSET. ALL PROPOSED STORM PIPE BELOW BUILDINGS SHALL BE IN ACCORDANCE WITH MATERIALS SPECIFIED IN TABLE A: ALLOWABLE PIPE MATERIAL SCHEDULE ON CO.1 OF THE PROPOSED PLANSET. SEE UTILITY PLANS FOR ALL STORM PIPE MATERIAL TYPES TO BE USED. PIPE SHALL BE PLACED MIN. 8' HORIZONTALLY FROM FOUNDATION WALLS.

F. SANITARY, STORM, AND WATER UTILITY PIPE INVERTS SHALL BE CONSTRUCTED WITHIN 0.10' OF DESIGN INVERT ELEVATIONS ASSUMING PIPE SLOPE AND SEPARATION IS MAINTAINED PER THE UTILITY DESIGN PLANS AND STATE REQUIREMENTS.

G. SITE UTILITY CONTRACTOR SHALL RUN SANITARY SERVICE TO A POINT WHICH IS A MINIMUM OF 5' FROM THE EXTERIOR WALL OF THE FOUNDATION AND COORDINATE WITH SEPTIC DESIGN PLANS. SITE UTILITY CONTRACTOR SHALL RUN STORM SEWER FOR INTERNALLY DRAINED BUILDINGS TO A POINT WHICH IS A MINIMUM OF 5' FROM THE EXTERIOR WALL OF THE FOUNDATION. SITE UTILITY CONTRACTOR SHALL RUN DOWNSPOUT LEADS TO BUILDING FOUNDATION AND UP 6" ABOVE SURFACE GRADE FOR CONNECTION TO DOWNSPOUT. ALL DOWNSPOUT LOCATIONS SHOULD BE VERIFIED WITH ARCHITECTURAL PLANS AND DOWNSPOUT CONTRACTOR/GC PRIOR TO INSTALLATION OF DOWNSPOUT LEADS. DOWNSPOUT LEADS SHALL NOT UNDERMINE BUILDING FOUNDATIONS. SITE UTILITY CONTRACTOR SHALL RUN WATER SERVICE TO A POINT WITHIN THE FOUNDATION SPECIFIED BY THE PLUMBING PLANS. CONTRACTOR TO CUT AND CAP WATER SERVICE 12" ABOVE

H. ALL UTILITIES SHALL BE INSTALLED WITH PLASTIC COATED TRACER WIRE (10 TO 14 GAUGE SOLID COPPER, OR COPPER COATED STEEL WIRE). PLASTIC WIRE MAY BE TAPED TO PLASTIC WATER OR SEWER PIPE. IF ATTACHED, THE TRACER WIRE SHALL BE SECURED EVERY 6 TO 20 FEET AND AT ALL BENDS. TRACER WIRE SHALL HAVE ACCESS POINTS AT LEAST EVERY 300 FEET. I. ALL UTILITIES SHALL BE INSTALLED PER STATE, LOCAL, AND INDUSTRY STANDARDS. WATER, SANITARY, AND STORM SEWER SHALL BE INSTALLED PER STANDARD SPECIFICATIONS IN MINNESOTA. THE DESIGN ENGINEER SHALL BE RESPONSIBLE FOR OBTAINING STATE PLUMBING REVIEW APPROVAL. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL OTHER PERMITS REQUIRED TO INSTALL WATER, SANITARY AND STORM SEWER.

J. SEE PLANS FOR ALL OTHER UTILITY SPECIFICATIONS AND DETAILS.

	Table	A: Allowable Pipe Mate	erial Schedule	
Utility	Material	Pipe Code	Fitting Code	Joint Code
Combined Domestic/Fire Service	C900 PVC	AWWA C900, ASTM D1785, ASTM D2241	AWWA C110, AWWA C153, ASTM D2464, ASTM D2466, ASTM D2467, ASTM D3311, ASTM F409, ASTM F1336, ASTM F1866	Joint: ASTM D3139 Integral Bell & Spigot Elastomeric Seal: ASTM F477
Sanitary Sewer	SCH. 40 PVC	ASTM D1785, ASTM D2665, ASTM F891	ASTM F1336	Primer: ASTM F656 Solvent Cement: ASTM D2564
Storm Sewer	SDR 35 PVC	ASTM D1785, ASTM D2665, ASTM D3034, ASTM F891	ASTM F1336	Push On: ASTM D3212 for Tightness Elastomeric Gasket: ASTM F477

Always a Better Plan

100 Camelot Drive Fond du Lac, WI 54935 920-926-9800 excelengineer.com

COLLABORATION

PROJECT INFORMATION

ОР 4

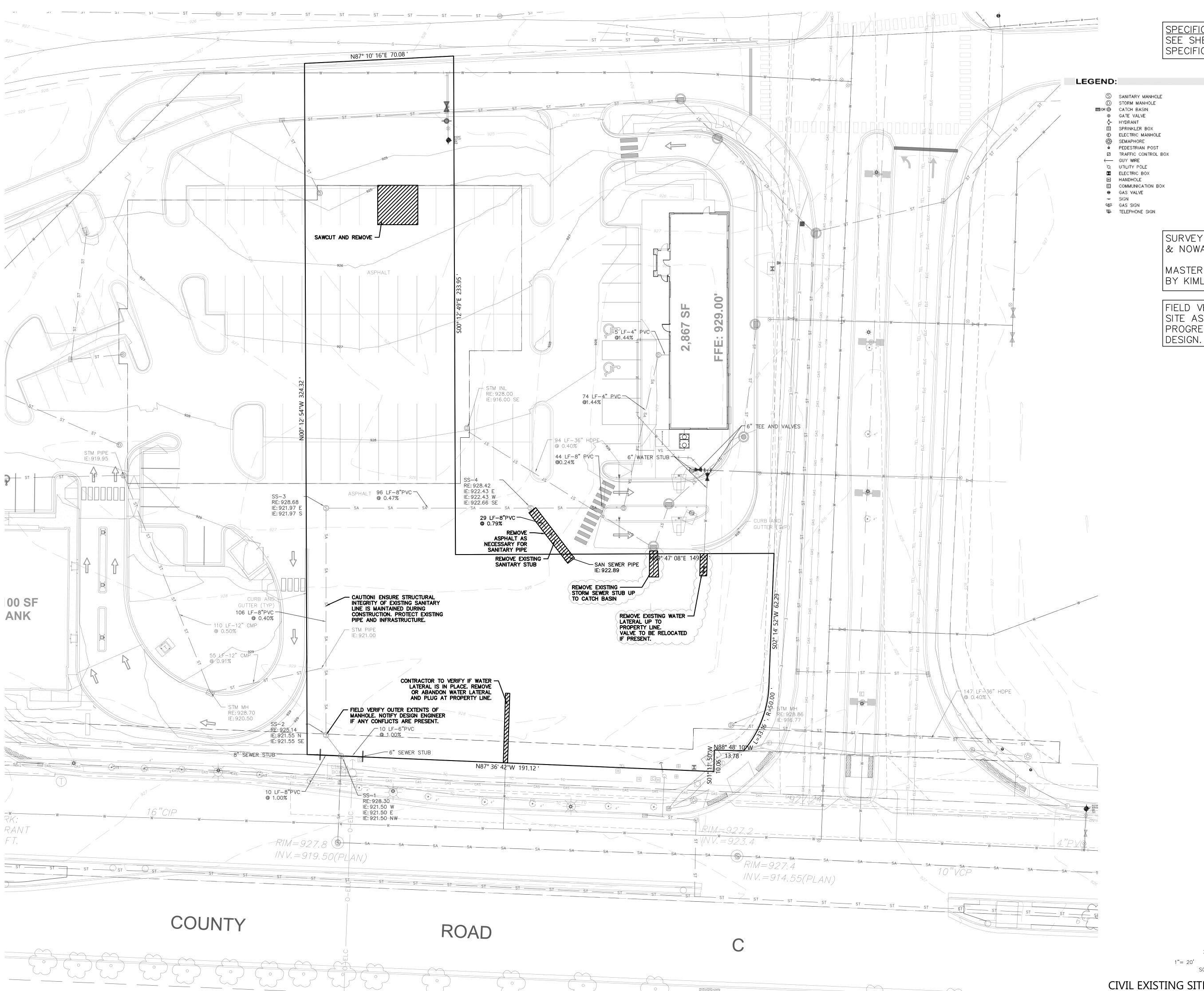
PROFESSIONAL SEA

SHEET DATES

2255300

JOB NUMBER

CIVIL COVER AND SPECIFICATION SHEET



CHAIN LINK CONSTRUCTION FENCE
SA SANITARY SEWER
ST STORM SEWER
WATERMAIN
UNDERGROUND ELECTRIC
OHW OVERHEAD WIRE
UNDERGROUND TELECOMMUNICATION
UNDERGROUND GAS
BENCHMARK

BENCHMARK

SPOT ELEVATION
EXISTING CONTOUR LINE

TREE

BITUMINOUS SURFACE

CONCRETE SURFACE

PAVERS SURFACE

SURVEY PROVIDED BY EGAN, FIELD & NOWAK, INC. ON JULY 27, 2022.

MASTER GRADING PLAN PROVIDED BY KIMLEY HORN & ASSOCIATES.

FIELD VERIFY CURRENT STATE OF SITE AS CONSTRUCTION WAS IN PROGRESS AT TIME OF SITE DESIGN.



PROJECT INFORMATION

PROPOSED EARLY CHILDHOOD SCHOOL FOR:

UATTRO DEVELOPMENT

N LAKES STATION - LOT 2. ROSEVILLE, MN 55113

PROFESSIONAL SEAL

SHEET DATES

SHEET ISSUE FEB. 14, 2023

REVISIONS

CB2 JUNE 5, 2023

CB4 JUNE 14, 2023

JOB NUMBER 2255300

NORTH

SHEET NUMBER

C1.0

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CIVIL EXISTING SITE AND DEMOLITION PLAN

SITE INFORMATION:

LEGAL DESCRIPTION: Lot 2 of Twin Lakes 4th Addition Plat

AREA = 37,319 S.F. (0.86 ACRES).PROPERTY AREA: EXISTING ZONING: MU-2B COMMUNITY MIXED USE PROPOSED ZONING: MU-2B COMMUNITY MIXED USE

AREA OF SITE DISTURBANCE: 0.52 ACRES

BUILDING: FRONT = 0-25' BUILD-TO LINE SIDE = 6' REAR = 0'

PROPOSED BUILDING HEIGHT: 18'

PARKING REQUIRED: 1 SPACE PER EMPLOYEE (22 EMPLOYEES) + 1 PER 10 STUDENTS OF MAX. CAPACITY. (147 STUDENTS)

(37 SPACES REQ.)

PARKING PROVIDED: 37 SPACES (2 H.C. ACCESSIBLE)

HANDICAP STALLS REQUIRED: 2, HANDICAP STALLS PROVIDED: 2

	AREA (AC)	AREA (SF)	R
PROJECT SITE	0.86	37,319	
BUILDING FLOOR AREA	0.00	0	
PAVEMENT (ASP. & CONC.)	0.30	13,088	3
TOTAL IMPERVIOUS	0.30	13,088	3
LANDSCAPE/ OPEN SPACE	0.56	24,231	6
<u>PROPOSED SITE DATA</u>			
<u>PROPOSED SITE DATA</u>	AREA (AC)	AREA (SF)	R
PROPOSED SITE DATA PROJECT SITE	AREA (AC) 0.86	AREA (SF) 37,319	R
	, ,	, ,	
PROJECT SITE	0.86	37,319	2
PROJECT SITE BUILDING FLOOR AREA	0.86 0.24	37,319 10,419	R 2 3 6

<u>site plan keynotes</u>

REPLACE ASPHALT AND GRAVEL BASE IN KIND FOR REPLACEMENT OF SANITARY PIPE

CONCRETE SIDEWALK (TYP.)

DUMPSTER PAD/APRON CONCRETE (TYP)

CONCRETE STOOP (TYP.) SEE ARCH. PLANS FOR DETAILS.

CURB RAMP (TYP.)

B612 CURB & GUTTER (TYP.)

CURB TAPER (TYP.)

CONCRETE TRANSFORMER PAD BY UTILITY SUPPLIER (CONTRACTOR TO VERIFY FINAL LOCATION & DESIGN PRIOR TO

CONSTRUCTION)

HANDICAP SIGN (TYP.)

HANDICAP STALL & STRIPING PER STATE CODES.

(DETAILS, FINAL LOCATION, & APPROVAL BY SIGN VENDOR)

DUMPSTER ENCLOSURE (SEE ARCH PLANS FOR DETAILS)

6" CONCRETE BOLLARDS (SEE DETAIL ON ARCH. PLAN)

6' HIGH WROUGHT IRON PERIMETER FENCE

FENCE GATE

4' HIGH INTERMEDIATE FENCE

FENCE GATE WITH PANIC HARDWARE

POURED RUBBER PLAYGROUND SURFACE OVER 4-6" CLEAR STONE AGGREGATE BASE (FOLLOW DESIGN SPECS. BY SUPPLIER)

WOOD FIBER SURFACE BY PLAYGROUND VENDOR

TRAFFIC ARROWS (TYP.)

DECOMPOSED GRANITE

VARIABLE WIDTH PUBLIC RIGHT OF WAY

6' HIGH WROUGHT IRON PERIMETER FENCE WITH OPAQUE SCREENING

NO PARKING SIGN (PER ANSI A117.1, SECTION 502.4.4 MARKING)

NORTH

CIVIL SITE PLAN

SHEET NUMBER

DE PROPO M

Always a Better Plan

100 Camelot Drive

Fond du Lac, WI 54935 920-926-9800

excelengineer.com

PROJECT INFORMATION

COLLABORATION

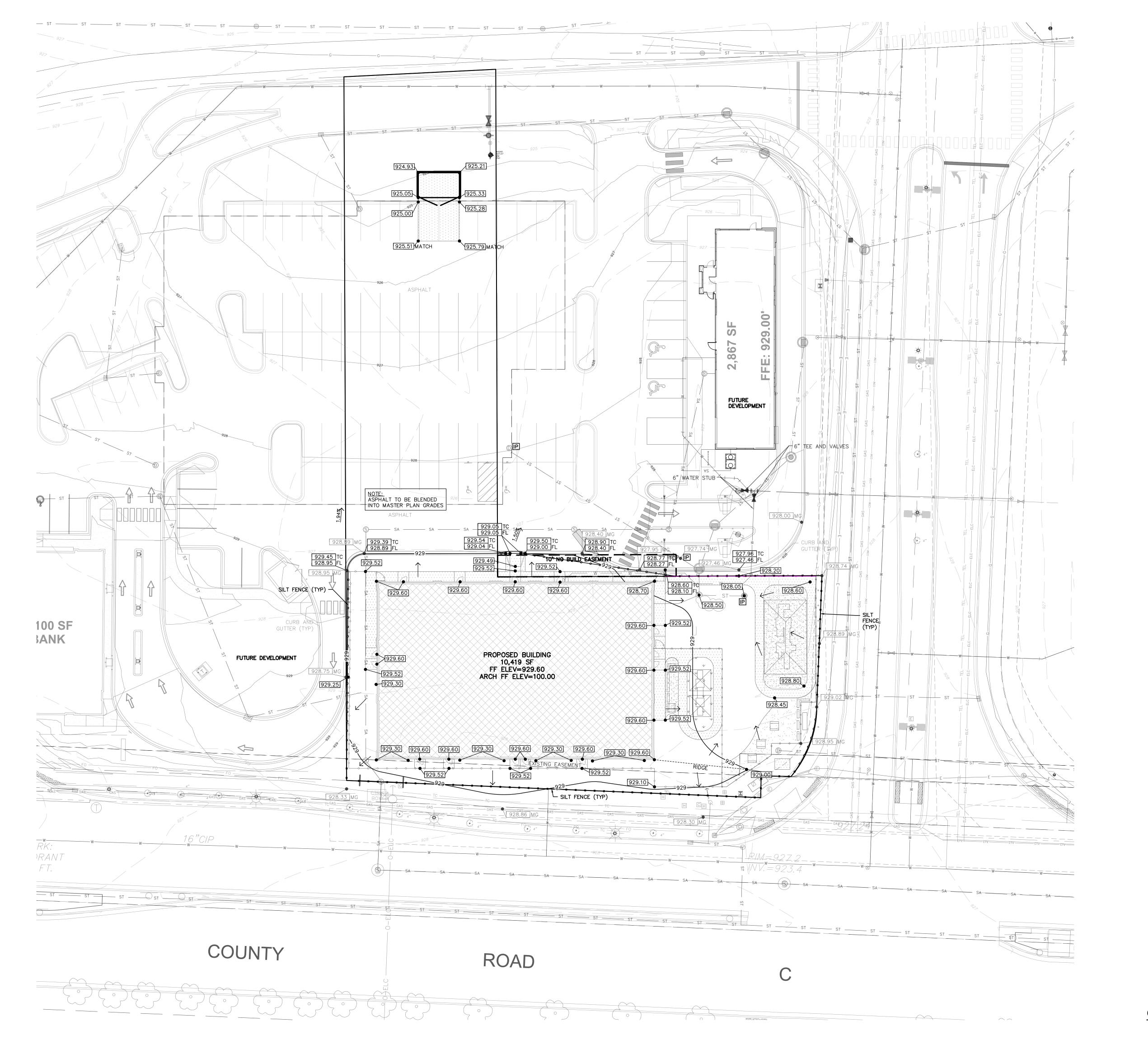
PROFESSIONAL SEAL

SHEET DATES FEB. 14, 2023

REVISIONS AD2 MAR. 23, 2023 JUNE 5, 2023

JUNE 14, 2023 UPDATED BACKGROUND

JOB NUMBER 2255300



NOTES:

- 1. HANDICAP STALL AND ACCESS AISLES SHALL NOT EXCEED A SLOPE OF 1.50% IN ANY DIRECTION. HANDICAP STALL & ACCESS AISLES SHALL CONFORM TO ADA REQUIREMENTS (CURRENT EDITION)
- 2. ALL SIDEWALKS SHALL NOT EXCEED A MAXIMUM CROSS SLOPE OF 1.50% AND RUNNING SLOPE OF 4.50% UNLESS OTHERWISE SPECIFIED.

INLET PROTECTION NOTE:

CONTRACTOR SHALL PROVIDE TEMPORARY INLET PROTECTION FOR ALL CURB INLETS & CATCH BASINS ONSITE & OFFSITE IMMEDIATELY DOWNSTREAM OF THE PROJECT SITE PER LOCAL CODE.

STABILIZED CONSTRUCTION ENTRANCE NOTE:

CONTRACTOR SHALL PROVIDE STABILIZED CONSTRUCTION ENTRANCE AT CONSTRUCTION ENTRANCE FOR PROPOSED IMPROVEMENTS AS REQUIRED PER CODE.

CONCRETE WASHOUT NOTE:

CONTRACTOR SHALL PROVIDE CONCRETE WASHOUT AS REQUIRED PER CODE. FINAL LOCATION TBD BY CONTRACTOR.

SPOT ELEVATION NOTE:

SPOT ELEVATIONS NOTED WITH "MG" REFERS TO MASTER GRADING PER SITE DEVELOPMENT PLANS PROVIDED BY KIMLEY-HORN.

Always a Better Plan

100 Camelot Drive

Fond du Lac, WI 54935

920-926-9800 excelengineer.com



PROJECT INFORMATION

SCHOOL

PROFESSIONAL SEAL

PROPO

QUAT

SHEET DATES SHEET ISSUE FEB. 14, 2023 MAR. 23, 2023 **UPDATED BACKGROUND** JUNE 5, 2023 UPDATED BACKGROUND

JUNE 14, 2023

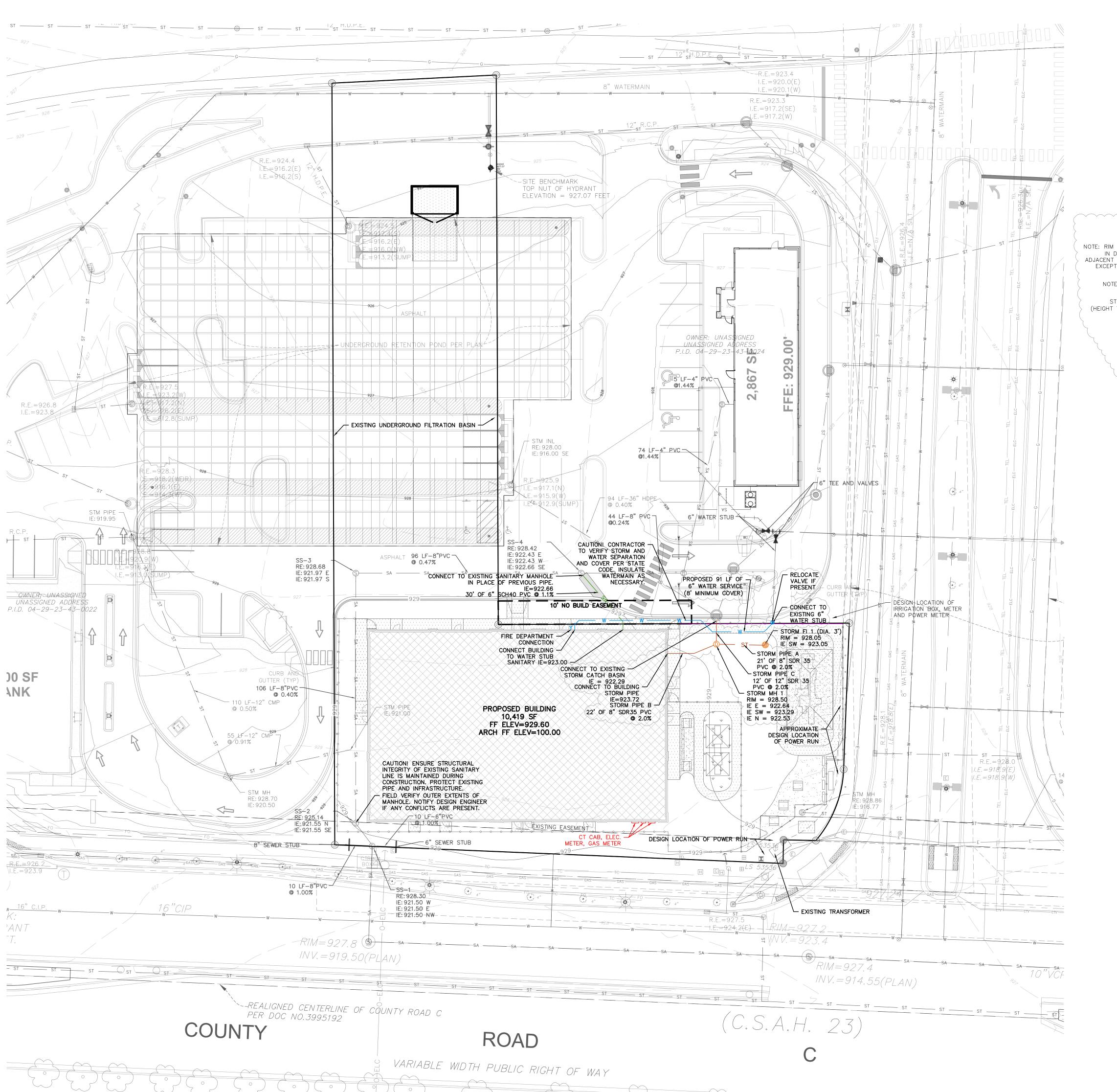
2023 © EXCEL ENGINEERING, INC.

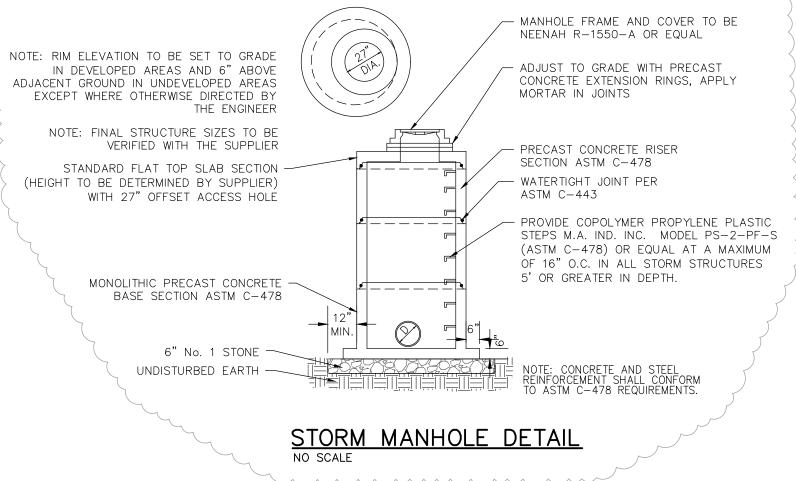
JOB NUMBER 2255300

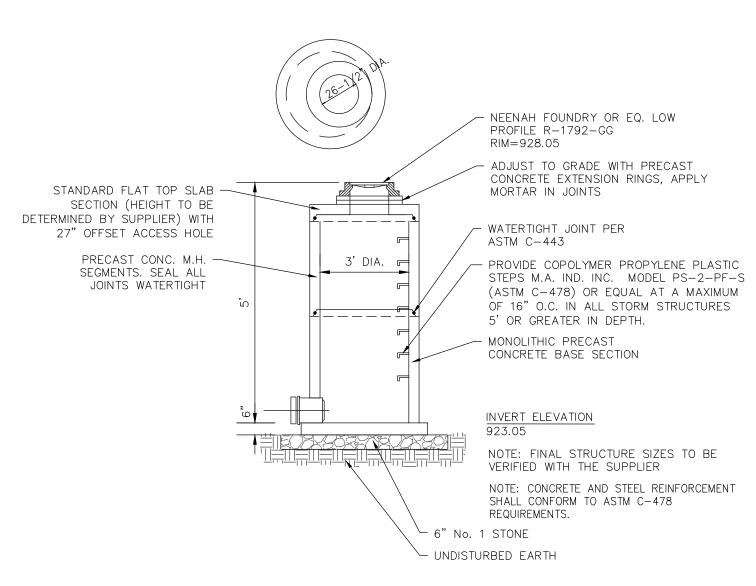
SHEET NUMBER

CIVIL GRADING AND EROSION CONTROL PLAN

NORTH







STORM CATCH BASIN DETAIL

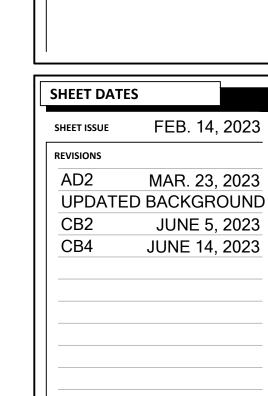
1"= 20'

SCALE

NOTE:
PROVIDE
ALTERNATE FOR
18" NYLOPLAST
DRAIN BASIN

NORTH

CIVIL UTILITY PLAN



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100 Camelot Drive Fond du Lac, WI 54935 920-926-9800 excelengineer.com

PROJECT INFORMATION

OPMEN

0

H

Q

JAT

SED

ROP

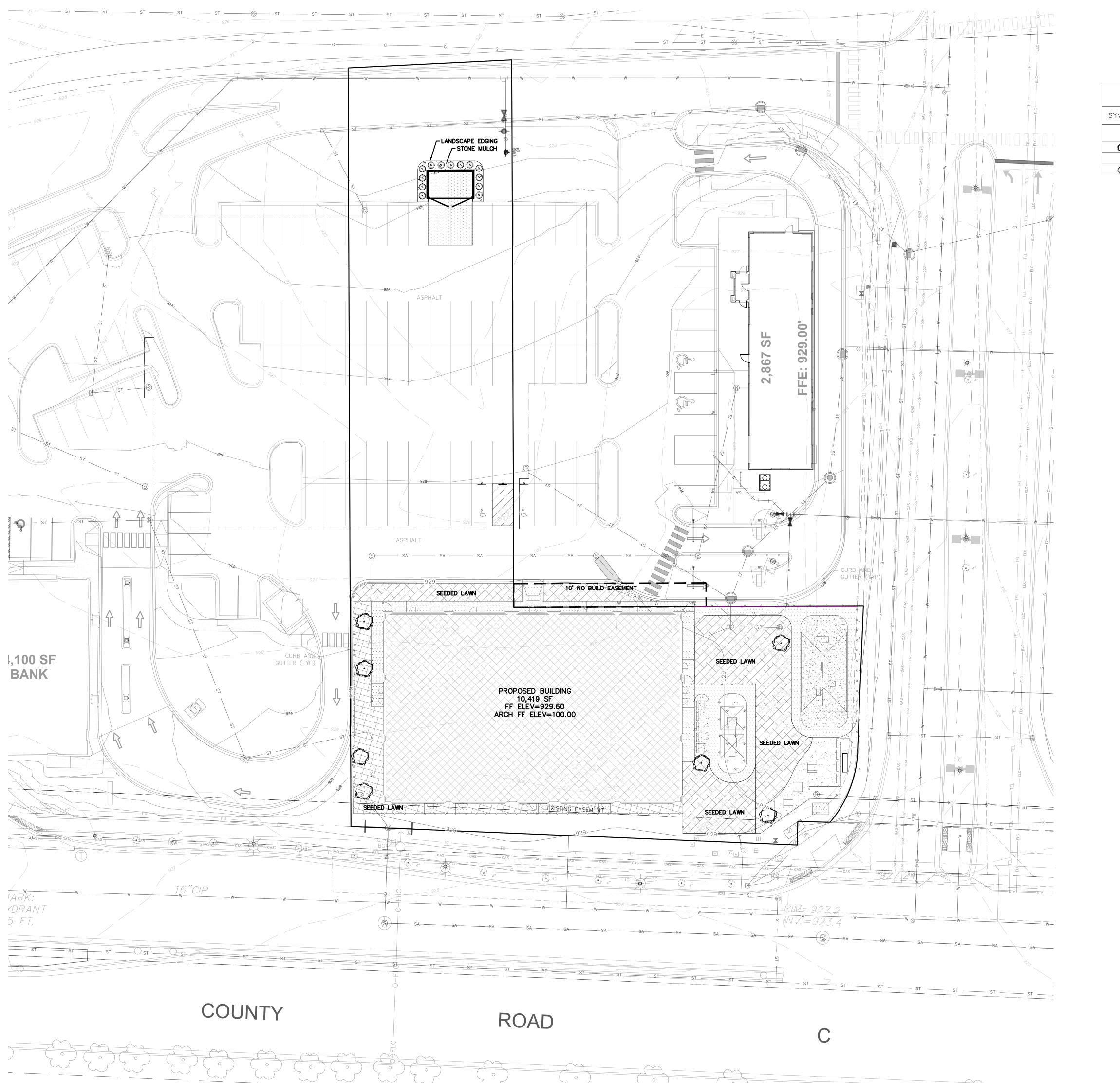
PROFESSIONAL SEAL

SCHOOL

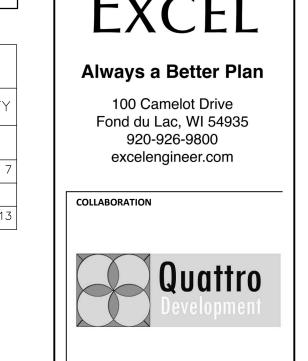
COLLABORATION

ов NUMBER 2255300

C1.3



	Landscape	Planting Schedule		
SYMBOL	COMMON NAME	BOTANICAL NAME	PLANTED SIZE	QUANTIT'
	DI	ECIDUOUS TREES		
0	Skyline Honeylocust	Gleditsia triacanthos 'Skyline'	0'-2"	
	EVI	ERGREEN SHRUBS		
\odot	Arborvitae Sunkist	Thuja accidentalis 'Sunkist'	2'-0"	1



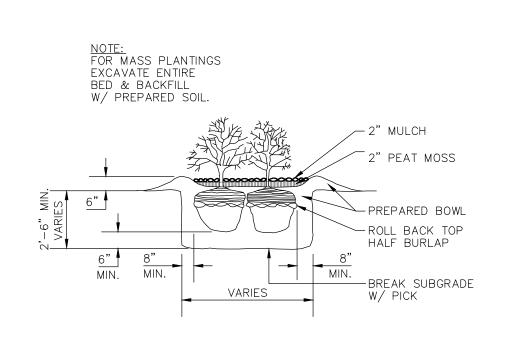
PROJECT INFORMATION

DE

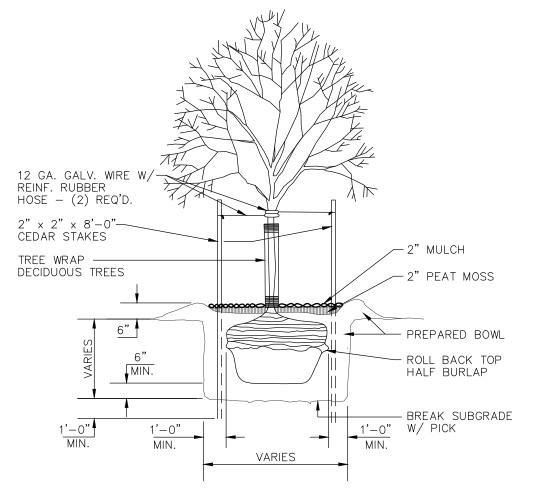
PROPOS QUAT TWIN LAKES

SED EARLY

PROFESSIONAL SEAL

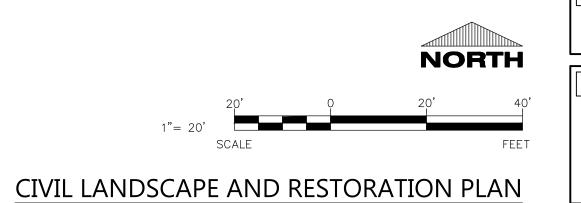


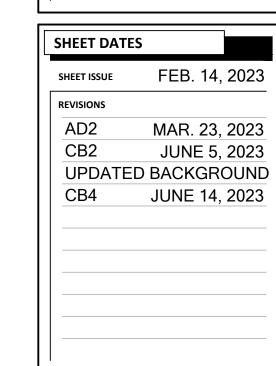


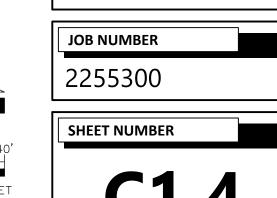


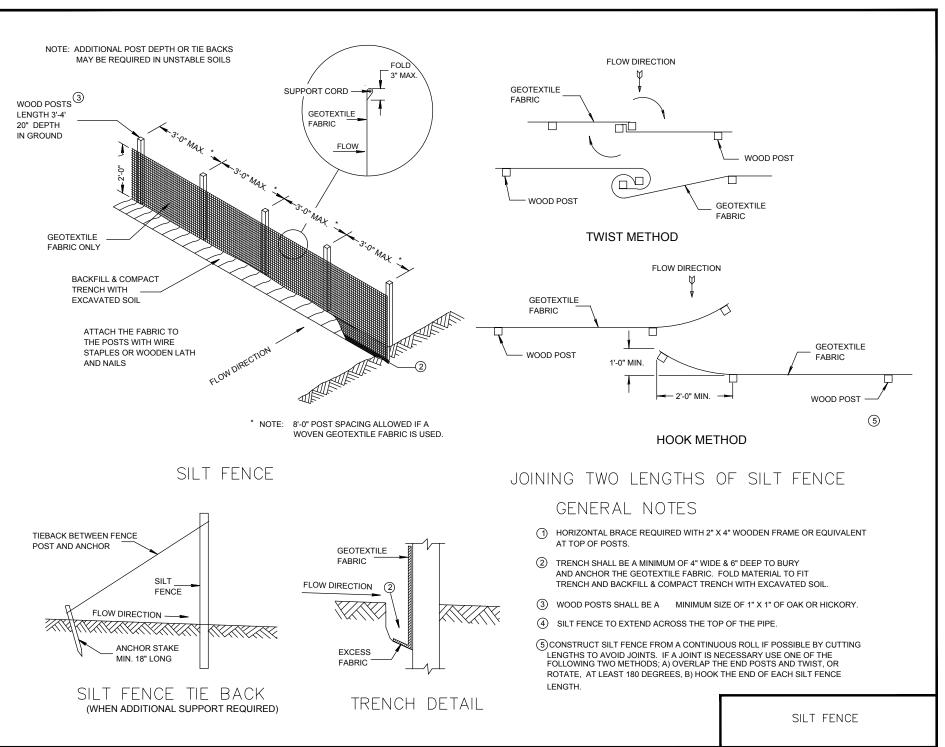
TREE PLANTING DETAIL

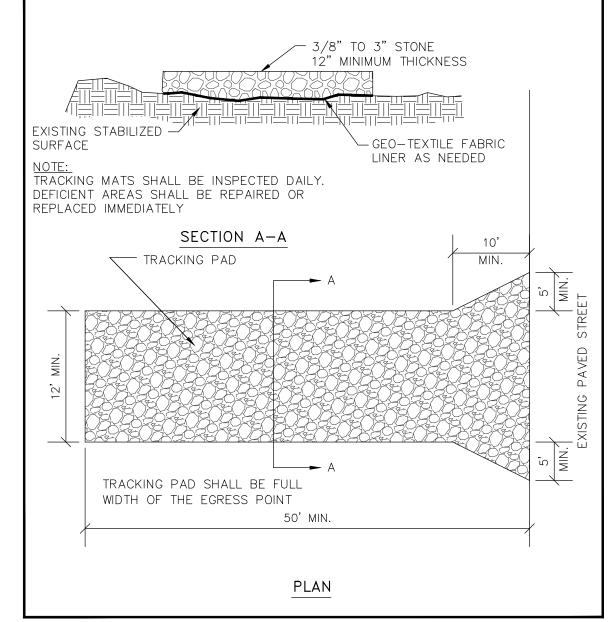
NO SCALE







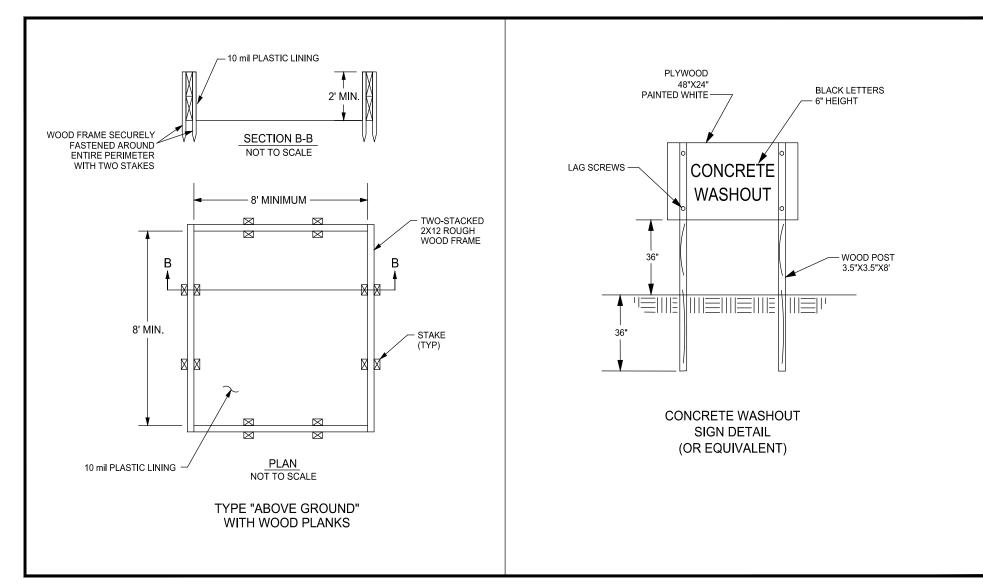




TRACKPAD DETAILS

NO SCALE

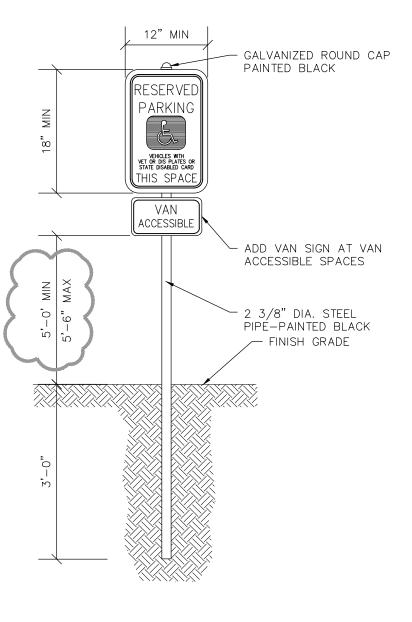
SILT FENCE - INSTALLATION DETAIL NO SCALE



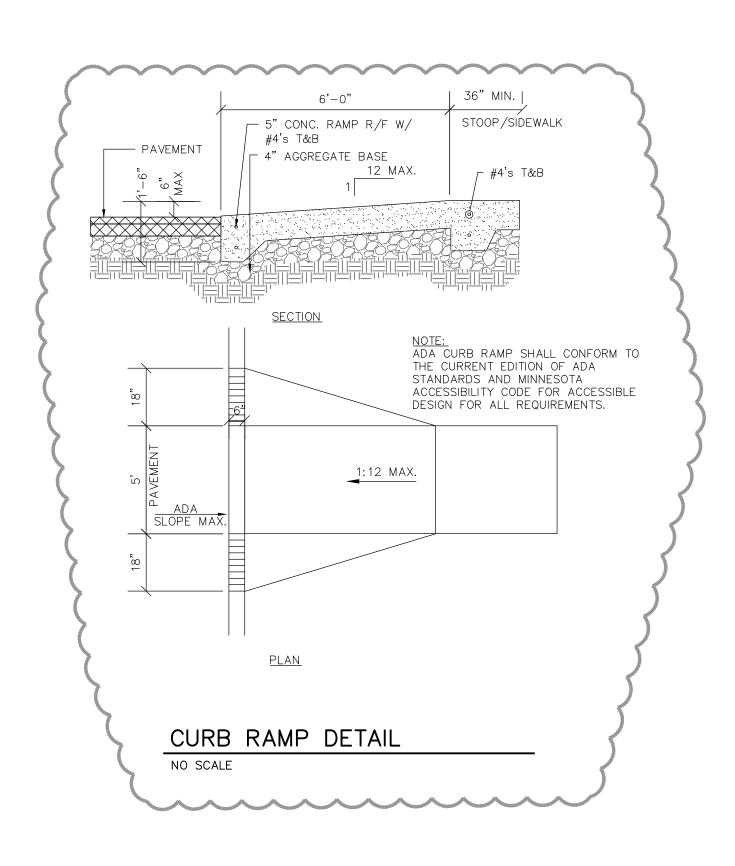
CONTRACTOR TO ADHERE TO NYS STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL (BLUE BOOK) DATED NOVEMBER 2016

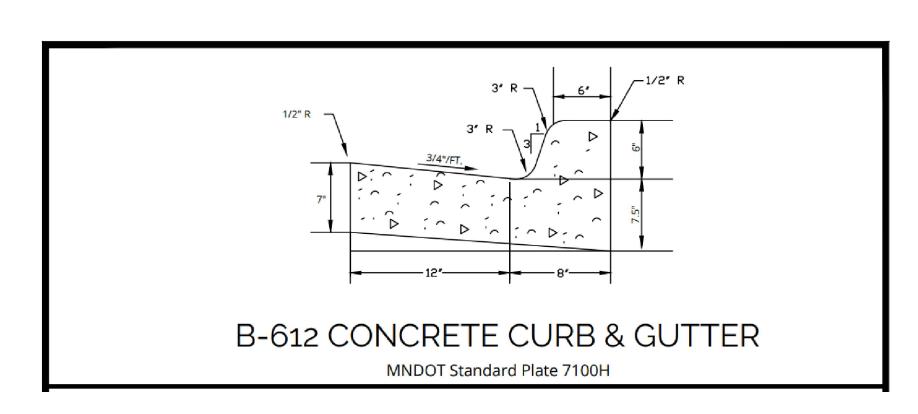
CONCRETE WASHOUT DETAIL

NO SCALE

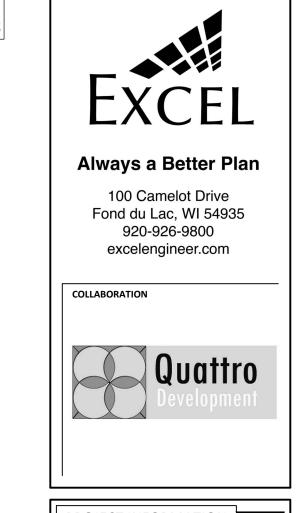


HANDICAP SIGNAGE WITHOUT CONCRETE BASE DETAIL





18" CONCRETE CURB & GUTTER DETAIL
NO SCALE



PROPOSED EARLY CHILDHOOD SCHOOL FOR:

QUATTRO DEVELOPMENT

TWIN LAKES STATION - LOT 2. ROSEVILLE, MN 55113

SHEET ISSUE	FEB. 14, 202
REVISIONS	
AD2	MAR. 23, 202

JOB NUMBER	
2255300	

DIVISION 00 PROCUREMENT AND CONTRACTING

00 72 00 GENERAL CONDITIONS

A. THE AIA GENERAL CONDITIONS A201 LATEST EDITION IS A PART OF THESE DOCUMENTS. COPIES ARE ON FILE AT THE OFFICE OF EXCEL ENGINEERING, INC.

00 73 16 INSURANCE REQUIREMENTS

- A. PRIOR TO COMMENCEMENT OF WORK, THE CONTRACTOR SHALL SUBMIT TO THE OWNER CERTIFICATE OF INSURANCE
- FOR NOT LESS THAN THE FOLLOWING LIMITS: 1. WORKER'S COMPENSATION AND EMPLOYERS LIABILITY:
- a. PER STATUTORY LIMITS
- 2. COMMERCIAL GENERAL LIABILITY: a. GENERAL AGGREGATE: \$2,000,000
- b. PRODUCTS AND COMPLETED OPERATIONS AGGREGATE: \$2,000,000
- c. PERSONAL AND ADVERTISING INJURY: \$1,000,000
- d. EACH OCCURRENCE: \$1,000,000 e. CONTRACTOR SHALL LIST EXCEL ENGINEERING, INC. AS ADDITIONAL INSURED.

DIVISION 01 GENERAL REQUIREMENTS

01 11 00 SUMMARY OF WORK

- A. THE PLANS AND SPECIFICATIONS ARE INTENDED TO GIVE A DESCRIPTION OF THE WORK. NO DEVIATION FROM THE PLANS AND SPECIFICATIONS SHALL BE MADE WITHOUT THE WRITTEN CONSENT OF EXCEL ENGINEERING, INC. THE CONTRACTOR IS TO CLARIFY ANY DISCREPANCIES WITH EXCEL ENGINEERING, INC. PRIOR TO BIDDING. THE CONTRACTOR SHALL VISIT THE SITE TO VERIFY EXISTING CONDITIONS AND ACCESS TO THE WORK AREA.
- B. REFERENCE TO "GENERAL CONTRACTOR" OR "GC" IN THE CONSTRUCTION DOCUMENTS IS INTENDED TO REPRESENT THE CONTRACTOR RESPONSIBLE FOR OVERALL CONSTRUCTION AND COORDINATION OF THE WORK. THE "GC" COULD BE A GENERAL CONTRACTOR, CONSTRUCTION MANAGER OR ANY OTHER CONTRACTOR RESPONSIBLE FOR THE OVERALL PROJECT. IT IS THE RESPONSIBILITY OF THE GC TO ASSIGN RESPONSIBILITY FOR ALL WORK.

01 25 13 PRODUCT SUBSTITUTION PROCEDURES

A. REFERENCE TO MATERIALS OR SYSTEMS HEREIN BY NAME. MAKE OR CATALOG NUMBER IS INTENDED TO ESTABLISH A QUALITY STANDARD, AND NOT TO LIMIT COMPETITION. THE WORDS "OR APPROVED EQUIVALENT" ARE IMPLIED FOLLOWING EACH BRAND NAME/MODEL NUMBER UNLESS STATED OTHERWISE. "OR APPROVED EQUIVALENT" MATERIALS SHALL BE APPROVED BY EXCEL ENGINEERING, INC. PRIOR TO BIDS BEING ACCEPTED AND ACCEPTANCE FOR USE. PROVIDE A LETTER FROM THE MANUFACTURER CERTIFYING THAT THE PRODUCT MEETS OR EXCEEDS THE SPECIFIED PRODUCT.

01 31 00 PROJECT MANAGEMENT AND COORDINATION

- A. THE CONTRACTOR HAS THE SOLE RESPONSIBILITY FOR AND SHALL HAVE CONTROL OF CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND SAFETY PRECAUTIONS AND PROCEDURES USED TO CONSTRUCT THE
- B. THE CONTRACTOR SHALL FURNISH ALL LABOR, MATERIAL (INCLUDING TAXES) AND EQUIPMENT AS NECESSARY TO COMPLETE THE WORK. PERMITS SHALL BE OBTAINED AND PAID FOR BY THE RESPECTIVE CONTRACTOR, INCLUDING TEMPORARY OCCUPANCY PERMIT IF REQUIRED
- C. AUTOCAD FILES OF CONSTRUCTION DOCUMENTS MAY BE OBTAINED BY CONTACTING EXCEL ENGINEERING, INC. REVIT FILES WILL NOT BE MADE AVAILABLE. AUTOCAD FILE REQUESTS SHALL BE EMAILED TO EXCEL PROJECT MANAGER AND PROJECT ASSISTANT AND SHALL INCLUDE THE FOLLOWING INFORMATION:
- 1. EXCEL ENGINEERING PROJECT NAME 2. EXCEL ENGINEERING PROJECT NUMBER
- 3. SHEET NUMBERS REQUESTED
- D. AUTOCAD FILES REQUEST SHALL BE MADE TO:
- 1. PROJECT MANAGER: DEAN SCHULZ <u>dean.schulz@excelenginner.com</u>
- 2. PROJECT ASSISTANT: KIM OLIG kim.olig@excelengineer.com E. AUTOCAD FILES WILL BE SENT BY METHOD OF EXCEL ENGINEERING, INC. CHOOSING AS SOON AS POSSIBLE.
- F. AUTOCAD FILES SHALL NOT BE USED FOR COMPONENT SUBMITTALS OR SHOP DRAWINGS. SUBMITTALS AND SHOP DRAWINGS USING EXCEL ENGINEERING, INC. CAD FILES WILL BE RETURNED REJECTED AND UN-REVIEWED.
- G. ALL "REQUEST FOR INFORMATION" (RFI) SHALL BE MADE THROUGH THE GENERAL CONTRACTOR FOR LOGGING AND TRACKING PURPOSES. RFI'S SHALL BE SUBMITTED TO THE EXCEL ENGINEERING PROJECT ASSISTANT. RFI'S SHALL BE SUBMITTED ON AN ARCHITECT APPROVED FORM, NUMBER SEQUENCE AND INCLUDE THE FOLLOWING INFORMATION: 1. EXCEL ENGINEERING PROJECT NAME
- 2. EXCEL ENGINEERING PROJECT NUMBER
- 3. DIVISION OF CONSTRUCTION REFERENCED 4. POTENTIAL SCHEDULE IMPACTS
- 5. POTENTIAL COST IMPACTS OF ANY SUGGESTED ALTERNATES FROM THE CONSTRUCTION DOCUMENTS 01 32 00 SCHEDULING OF WORK

A. THE CONTRACTOR SHALL OBTAIN THE OWNER'S APPROVAL OF THE CONSTRUCTION SCHEDULE PRIOR TO PROCEEDING WITH THE WORK.

01 33 23 SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

- A. SUBMIT FOR APPROVAL ARCHITECTURAL, CIVIL, STRUCTURAL, HVAC, PLUMBING, FIRE PROTECTION AND ELECTRICAL SHOP DRAWINGS, PRODUCT DATA, TEST RESULTS AND SAMPLES INDICATED IN THE CONSTRUCTION ADMINISTRATION SUBMITTAL LIST (CASL). SEE DISCIPLINE SPECIFICATIONS FOR DISCIPLINE SPECIFIC CASL.
- B. SHOP DRAWING SUBMITTALS SHALL BE MADE TO EXCEL ENGINEERING, INC. FOR APPROVAL PRIOR TO FABRICATION
- C. SUBMITTALS SHALL BE MADE BY ELECTRONIC SUBMISSION IN PORTABLE DOCUMENT FORMAT (PDF) UNLESS NOTED OTHERWISE. WHEN HARD COPY SUBMISSIONS ARE REQUIRED, COORDINATE WITH EXCEL ENGINEERING, INC. PRIOR
- D. SUBMITTALS SHALL BE MADE TO THE EXCEL ENGINEERING, INC. PROJECT ASSISTANT.
- 1. KIM OLIG AT <u>ARCHRETAIL@EXCELENGINEER.COM</u>
- E. SUBMITTAL SHALL BE MADE USING APPROVED SUBMITTAL FORM CONTAINING AT MINIMUM THE FOLLOWING INFORMATION:
- EXCEL ENGINEERING PROJECT NAME
- 2. EXCEL ENGINEERING PROJECT NUMBER
- 3. SUBMITTAL DIVISION OF CONSTRUCTION 4. MATERIAL SUPPLIER / SUB CONTRACTOR
- 5. SUBMITTAL DESCRIPTION (i.e. CONCRETE MIX DESIGN)
- F. SUBMITTALS SHALL BE REVIEWED AND STAMPED BY THE CONTRACTOR PRIOR TO SUBMITTING FOR APPROVAL. CONTRACTOR SHALL COMPLETE ALL FIELD VERIFICATIONS PRIOR TO SUBMITTAL SUBMISSION.
- G. SUBMITTALS MUST BE 100% COMPLETE AND IN ONE (1) PACKAGE FOR THE ITEM BEING SUBMITTED. NON-COMPLETE SUBMITTALS WILL BE RETURNED TO THE CONTRACTOR WITHOUT COMMENT AND STAMPED "REJECTED-RESUBMIT". CONTRACTORS WHO KNOWINGLY WANT TO SUBMIT NON-COMPLETE SUBMITTALS OR BREAK SINGLE SYSTEM SUBMITTALS INTO MULTIPLE SUBMITTALS WILL BE RESPONSIBLE TO ARRANGE WITH EXCEL ENGINEERING, PRIOR TO
- SUBMITTING THE SUBMITTAL(S), AND TO COMPENSATE EXCEL ENGINEERING FOR THE EXTRA WORK INVOLVED. H. SHOP DRAWINGS SHALL CLEARLY INDICATE SPECIFIC MODEL BEING PROVIDED WHERE CUT SHEETS SHOW MULTIPLE
- I. FAILURE TO SUBMIT SHOP DRAWINGS SHALL NOT RELIEVE THE CONTRACTOR FROM PROVIDING THE SPECIFIED EQUIPMENT AND MATERIALS.
- J. PHYSICAL SAMPLES FOR FINISHES ARE TO BE SUBMITTED TO EXCEL ENGINEERING, INC. FOR APPROVAL PRIOR TO
- K. BUILDING COMPONENTS REQUIRING SUBMISSION "FOR RECORD" TO THE AUTHORITY HAVING JURISDICTION REQUIRE SEALED AND SIGN HARD COPIES, PROVIDE TWO (2) HARD COPIES WITH WET SEAL AND ORIGINAL SIGNATURE IN
- ADDITION TO THE ELECTRONIC SUBMISSION IN PORTABLE DOCUMENT FORMAT (PDF). L. TEST RESULTS SHALL BE SUBMITTED FOR REVIEW WITHIN 24 HOURS OF COMPLETION OF TEST. M. CONTRACTOR SHALL ALLOW 10 WORKING DAYS IN SCHEDULE FOR A/E TO REVIEW SUBMITTALS. IF SUBMITTALS REQUIRE AN EXPEDITED REVIEW PROCESS, CONTACT EXCEL ENGINEERING, INC. PRIOR TO SUBMITTING THE
- N. SUBMITTALS REQUIRING RESUBMISSION SHALL HAVE CHANGES MADE TO A PREVIOUSLY REVIEWED SUBMITTAL
- DENOTED WITH REVISION CLOUDS AND TAGS IDENTIFYING CHANGES. O. ARCHITECTURAL CONSTRUCTION ADMINISTRATION SUBMITTAL LIST:

SUBMITTAL(S) TO MAKE THE APPROPRIATE ARRANGEMENT.

- ARCHITECTURAL PRECAST
- 2. UNIT MASONRY MASONRY VENEER
- BRICK
- ROUGH CARPENTRY MATERIALS 6. EXTERIOR FINISH CARPENTRY MATERIALS
- 7. INTERIOR FINISH CARPENTRY MATERIALS
- 8. WATERPROOFING 9. INSULATION
- 10. EXTERIOR INSULATION AND FINISH SYSTEMS (EIFS) 11. WEATHER BARRIER 12. AIR AND MOISTURE BARRIERS
- 13. MEMBRANE ROOFING SYSTEMS 14. ROOFING ACCESSORIES
- 15. PENETRATION FIRE STOPPING
- 16. SEALANTS
- 17. HOLLOW METAL DOORS AND FRAMES 18. FLUSH WOOD DOORS
- 19. ALUMINUM FRAMED ENTRANCES AND STOREFRONTS
- 20. GLAZED ALUMINUM CURTAIN WALLS

- 21. DOOR HARDWARE
- 22. GLAZING
- 23. DRYWALL STUDS 24. GYPSUM BOARD

25. TILING

- 26. ACOUSTICAL PANEL CEILINGS
- 27. RESILIENT SHEET FLOORING 28. RESILIENT TILE FLOORING
- 29. TILE CARPETING 30. SHEET CARPETING 31. WALL COVERING
- 32. PAINTING SYSTEMS 33. SIGNAGE
- 34. FIRE EXTINGUISHERS
- 35. TOILET ACCESSORIES
- 36. TOILET PARTITIONS
- 37. CABINET AND MILLWORK P. STRUCTURAL AND ARCHITECTURAL PLANS SHOW DIMENSIONS AND ELEVATIONS TO SIGNIFICANT WORKING POINTS. SHOP DRAWING DETAILERS AND SUPPLIERS ARE RESPONSIBLE FOR THE DETERMINATION OF ALL DIMENSIONS, PITCHES, ELEVATIONS, ETC., BEYOND THOSE NOTED AS NECESSARY TO THOROUGHLY DETAIL / FABRICATE THEIR
- WORK. CONTACT A/E WITH ANY DISCREPANCIES FOUND. Q. IN NO CASE SHALL CHANGES BE MADE TO WORK SHOWN OR PROCEDURE SPECIFIED ON STRUCTURAL PLANS UNLESS FIRST APPROVED IN WRITING BY A/E. REVIEW OF SHOP DRAWINGS BY A/E DOES NOT CONSTITUTE ACCEPTANCE OF A DESIGN CHANGE. PROPOSED CHANGES BY CONTRACTOR MUST BE SUBMITTED IN RFI FORMAT AND MUST BE APPROVED IN THE SAME MANNER. CONTRACTOR REQUESTING CHANGE MAY BE BILLED ON A TIME AND EXPENSE BASIS BY A/E FOR ALL REDESIGN WORK, FOR ALL NEW SKETCHES PREPARED, AND FOR ALL ADDITIONAL REVIEW TIME RELATED TO THE CHANGES.

01 40 00 QUALITY REQUIREMENTS

A. IN AS MUCH AS THE SPECIFICATIONS ARE BRIEF, THE CONTRACTOR SHALL PROVIDE WORKMANSHIP THAT IS NEAT, SECURE AND OF THE BEST QUALITY WITH THE BEST POSSIBLE APPEARANCE AND UTILITY MEETING ALL APPLICABLE STANDARDS. FAULTY WORK SHALL BE REPAIRED OR REPLACED AT NO COST TO THE OWNER. INDUSTRY STANDARDS SHALL BE USED AS THE GUIDE FOR QUALITY OF MATERIALS AND WORKMANSHIP.

01 41 00 REGULATORY REQUIREMENTS

A. ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES, ORDINANCES AND REGULATIONS, INCLUDING THE REQUIREMENTS OF THE AMERICAN WITH DISABILITIES ACT (A.D.A.) ARE MADE PART OF THESE SPECIFICATIONS AND SHALL BE COMPLIED WITH AS FAR AS THEY APPLY TO WORK UNDER THIS CONTRACT.

01 45 00 QUALITY CONTROL

- A. THE CONTRACTOR SHALL CONTACT EXCEL ENGINEERING, INC. (2) WORKING DAYS PRIOR TO POURING CONCRETE FOOTINGS AND BEFORE THE STRUCTURAL SYSTEM HAS BEEN ENCLOSED. A FINAL INSPECTION WILL BE MADE BY EXCEL ENGINEERING, INC. UPON COMPLETION OF THE PROJECT.
- B. NOTIFY ARCHITECT ONE WEEK IN ADVANCE TO SCHEDULE FINAL COMPLIANCE WALK-THRU. PRIOR TO THIS WALK THRU, PROVIDE THE ARCHITECT WITH THE FIRE PROTECTION SYSTEM TEST REPORT AND A COPY OF THE ELEVATOR INSPECTION REPORT AS APPLICABLE. ALL COMPONENT SUBMITTALS SHOULD BE FILED AND AVAILABLE FOR REVIEW AT THE WALK THRU. THE BUILDING SHALL BE COMPLETE AND ALL SYSTEMS OPERATIONAL AT THE TIME OF THE WALK THRU. IF THE ARCHITECT IS REQUIRED TO MAKE ADDITIONAL VISITS DUE TO NON-COMPLIANCE, THEY WILL BE CHARGED TO THE REQUESTING CONTRACTOR.

01 52 00 CONSTRUCTION FACILITIES

A. THE CONTRACTOR SHALL FURNISH TEMPORARY OFFICE, TOILET FACILITIES, WORKING TELEPHONE, ELECTRICITY, HEAT, WATER AND FIRE EXTINGUISHERS AS REQUIRED FOR COMPLETION OF THE WORK UNLESS THE OWNER HAS AGREED IN WRITING TO FURNISH OR WAIVE ANY OF THE ABOVE ITEMS.

01 53 00 TEMPORARY CONSTRUCTION

A. THE CONTRACTOR SHALL FURNISH TEMPORARY BRACING OF ALL BUILDING ELEMENTS DURING CONSTRUCTION. TEMPORARY BRACING SYSTEMS SHALL BE DESIGNED TO WITHSTAND CODE DESIGN LOADS. CONTRACTOR SHALL RETAIN SERVICES OF A PROFESSIONAL ENGINEER TO DESIGN AND SUPERVISE BRACING INSTALLATION IF THEY DO NOT HAVE THE EXPERTISE REQUIRED.

01 71 00 FIELD ENGINEERING

A. THE CONTRACTOR SHALL PROVIDE ALL LAYOUT AS REQUIRED, COMPETENT FULLTIME ON SITE SUPERVISION, AND BROOM CLEANING OF CONSTRUCTION SITE INCLUDING DUMPSTERS FOR REFUSE DISPOSAL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SAFETY ON SITE AND PROTECTION OF SITE PER LOCAL, STATE AND FEDERAL REQUIREMENTS.

01 78 00 CLOSEOUT SUBMITTALS

A. THE CONTRACTOR SHALL FURNISH "AS-BUILT" DRAWINGS REFLECTING ALL CHANGES DURING CONSTRUCTION PROVIDE TWO (2) COPIES OF OPERATING AND MAINTENANCE MANUALS TO OWNER FOR ALL FURNISHED EQUIPMENT.

01 78 36 WARRANTIES

A. THE CONTRACTOR SHALL GUARANTEE ALL WORKMANSHIP AND MATERIALS FOR A PERIOD OF ONE YEAR AFTER SUBSTANTIAL COMPLETION OF THE PROJECT. FURNISH MANUFACTURER'S WRITTEN WARRANTIES FOR SPECIFIED EQUIPMENT STATING EFFECTIVE WARRANTY DATE.

DIVISION 02 EXISTING CONDITIONS

02 41 19 SELECTIVE DEMOLITION

- A. CONDUCT DEMOLITION AND DEBRIS REMOVAL OPERATIONS TO INSURE MINIMUM INTERFERENCE WITH ROADS,
- STREETS, WALKS, AND OTHER ADJACENT OCCUPIED AND USED FACILITIES.
- B. IT IS UNKNOWN WHETHER HAZARDOUS MATERIALS WILL BE ENCOUNTERED, DO NOT DISTURB, IMMEDIATELY NOTIFY C. DEMOLISH AND REMOVE EXISTING CONSTRUCTION ONLY TO THE EXTENT REQUIRED BY NEW CONSTRUCTION AND AS SHOWN ON THE DEMOLITION PLANS. USE METHODS REQUIRED TO COMPLETE THE WORK WITHIN LIMITATIONS OF
- D. EXCEPT FOR ITEMS OR MATERIALS INDICATED TO BE REUSED, SALVAGED, REINSTALLED OR TO REMAIN OWNER'S PROPERTY, REMOVE DEMOLISHED MATERIALS FROM PROJECT SITE AND LEGALLY DISPOSE OF THEM IN AN EPA

DIVISION 03 CONCRETE

03 30 00 CAST-IN-PLACE CONCRETE

- A. SEE STRUCTURAL SPECIFICATIONS.
- 03 41 00 PRECAST CONCRETE

A. SEE STRUCTURAL SPECIFICATIONS. 03 60 00 GROUT

A. SEE STRUCTURAL PLANS.

DIVISION 04 MASONRY

A. MASONRY ANCHORS:

04 05 19 MASONRY ANCHORS

- 1. ANCHORS TO MASONRY BACKUP: No 75: HECKMANN "POS-I-TIE" CONCRETE/ CMU SCREW WITH OVERSIZED HECKMANN 610 THERMAL GRIP INSULATION WASHERS 2. ANCHORS TO METAL STUD BACKUP: No 75: HECKMANN "POS-I-TIE" SELF-DRILLING SCREW WITH OVERSIZED
- HECKMANN 610 THERMAL GRIP INSULATION WASHERS. 3. PROVIDE ANCHORS WITH HECKMANN No. 75-TC POS-I-TIE THERMAL CLIP TO CREATE A THERMAL BREAK BETWEEN
- 4. PROVIDE ANCHORS WITH HECKMANN No. 282-N PINTLE WIRE TIES. PROVIDE TIES IN HOT-DIP GALVANIZED. 5. PROVIDE MASONRY VENEER TIED TO MASONRY BACK-UP WITH HOHMANN & BARNARD, INC. LADDER TYPE #270
- ADJUSTABLE EYE-WIRE REINFORCEMENT AT 16" ON CENTER VERTICALLY IF SHOWN ON PLANS. B. INSTALL MASONRY ANCHOR PRODUCTS IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS
- C. MAXIMUM VERTICAL SPACING OF 18" AND MAXIMUM HORIZONTAL SPACING OF 24", TO OTHER BACKUP MATERIALS OR AS NOTED ON DRAWINGS (MAX. 2 S.F. PER TIE).

04 20 00 UNIT MASONRY

A. SEE STRUCTURAL SPECIFICATIONS.

04 31 13 BRICK

- A. ALL BRICK MATERIALS AND INSTALLATION SHALL COMPLY WITH LOCAL AND STATE CODES, AND SPECIFICATIONS OF THE BRICK INSTITUTE OF AMERICA (BIA). ALL BRICK WORK SHALL BE LAID IN TYPE N CEMENT AND LIME MORTAR, WITH ALL BRICK FACES FULL BEDDED IN PLACE HAVING BOTH VERTICAL AND HORIZONTAL JOINTS ON STRAIGHT LINES.
- PROVIDE A 3/8" CONTROL JOINT AT 20'-0" O.C. UNLESS SHOWN OTHERWISE ON PLANS. B. INSTALL WEEP VENTS AT TOP AND BOTTOM COURSE OF BRICK, AND ABOVE ALL OPENINGS IN EXTERIOR WALLS AT 32"
- ON CENTER OR AS INDICATED ON THE DRAWINGS. C. CONTRACTOR SHALL ALLOW FOR COLOR MATCH MORTAR.

D. CONTROL JOINTS SHALL BE SPACED PER BIA TECHNICAL NOTE 18 — VOLUME CHANGES AND EFFECTS OF MOVEMENT, PART 1 AND BIA TECHNICAL NOTE 21B — BRICK MASONRY CAVITY WALL - DETAILING AND AS INDICATED ON PLANS. CONTROL JOINT CAULK COLOR TO MATCH COLOR OF THE FIELD BRICK ADJACENT TO JOINT. CONTROL JOINTS TO ALIGN WITH EXPOSED CONCRETE FOUNDATION WALL JOINTS IF APPLICABLE.

DIVISION 05 METALS

05 12 00 STRUCTURAL STEEL FRAMING

A. SEE STRUCTURAL SPECIFICATIONS.

DIVISION 06 WOOD, PLASTICS AND COMPOSITES

06 10 00 ROUGH CARPENTRY A. SEE STRUCTURAL SPECIFICATIONS

- **06 16 00 SHEATHING** A. WOOD
- 1. PARAPET VERTICAL: MINIMUM 7/16" PLYWOOD DOC PS-1 OR 2, EXPOSURE 1 MINIMUM CLASSIFICATION.
- PROVIDE SHEATHING WARRANTED FOR THE EXPOSURE.
- 3. EXPOSED INTERIOR WALL SHEATHING SHALL BE MINIMUM CDX GRADE 4. PROVIDE FIRE TREATED SHEATHING WHERE SPECIFIED ON PLANS.
- 5. SEE STRUCTURAL SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS. B. GLASS MAT SHEATHING
- 1. INSTALL IN ACCORDANCE WITH MANUFACTURER INSTRUCTIONS. NONCOMBUSTIBLE AS TESTED IN ACCORDANCE WITH ASTM E136.
- MANUFACTURED TO MEET ASTM C1177.
- 4. MOLD RESISTANCE PER ASTM D3273 OF 10 . FLAME SPREAD AND SMOKE DEVELOP RATING OF 0/0 WHEN TESTED IN ACCORDANCE WITH ASTM E84.

2. COORDINATE SHEATHING INSTALLATION SO SHEATHING IS NOT DIRECTLY EXPOSED TO PRECIPITATION OR

- 6. WALL a. PRODUCT: DENSGLASS GOLD EXTERIOR SHEATHING.
- b. TREATED, WATER-RESISTANT GYPSUM CORE SURFACED WITH FIBERGLASS MATS AND A PRIMER COATING. c. MIN. 1/2" THICK. MINIMUM SPAN RATING EQUAL TO SUPPORT SPACING.
- d. 1.9 LBS/SF, >23 PERMS, 0.56 R VALUE. ROOF
- a. VERTICAL
- i. PRODUCT: DENSDECK PRIME ROOF BOARD.
- j. FIBERGLASS MATS MECHANICALLY BONDED TO FRONT AND BACK OF HIGH DENSITY GYPSUM CORE WITH FACE MAT ENHANCEMENTS TO ALLOW UNIFORM ADHESIVE SPREADING.
- 900 PSI COMPRESSIVE STRENGTH.
- iv. 2.0 LBS/SF, >35 PERMS, 0.56 R VALUE FOR 1/2" THICK. UL 790 CLASSIFIED FOR USE AS A FIRE BARRIER OVER COMBUSTIBLE AND NONCOMBUSTIBLE DECKS.
- vi. UL 1256 CLASSIFIED FOR INTERNAL (UNDER DECK) FIRE EXPOSURE. vii. FM CLASS 1 FIRE RATING.
- viii. MINIMUM SPAN RATING EQUAL TO SUPPORT SPACING.
- b. HORIZONTAL i. PRODUCT: DENSDECK ROOF BOARD.
- j. FIRE BARRIER, THERMAL BARRIER, COVERBOARD AND RECOVERY BOARD. FIBERGLASS MATS MECHANICALLY BONDED TO FRONT AND BACK OF HIGH DENSITY GYPSUM CORE.
- iv. 900 PSI COMPRESSIVE STRENGTH.
- v. 2.0 LBS/SF, >35 PERMS, 0.56 R VALUE FOR 1/2" THICK. vi. UL 790 CLASSIFIED FOR USE AS A FIRE BARRIER OVER COMBUSTIBLE AND NONCOMBUSTIBLE DECKS.
- vii. UL 1256 CLASSIFIED FOR INTERNAL (UNDER DECK) FIRE EXPOSURE. viii. FM CLASS 1 FIRE RATING.
- ix. MINIMUM SPAN RATING EQUAL TO FLUTE SPACING. 06 17 53 WOOD TRUSSES
- A. SEE STRUCTURAL SPECIFICATIONS.

06 20 23 INTERIOR FINISH CARPENTRY

06 20 13 EXTERIOR FINISH CARPENTRY

- A. INSTALL EXTERIOR FINISH CARPENTRY LEVEL, PLUMB, TRUE, AND ALIGNED WITH ADJACENT MATERIALS. B. SCRIBE AND CUT EXTERIOR FINISH CARPENTRY TO FIT ADJOINING WORK. REFINISH AND SEAL CUTS AS RECOMMENDED BY MANUFACTURER.
- C. INSTALL TRIM WITH MINIMUM NUMBER OF JOINTS PRACTICAL, USING FULL LENGTH PIECES FROM MAXIMUM LENGTHS
- D. INSTALL EXTERIOR FINISH CARPENTRY TO COMPLY WITH MANUFACTURERS WRITTEN INSTRUCTIONS. E. SEE PLANS FOR SIDING, TRIM/FACIA, SOFFIT, ETC MATERIAL TYPE AND LOCATION.
- A. PREMIUM GRADE S4S HARDWOOD LUMBER, CLEAR, KILN DRIED SELECTED FOR COMPATIBLE GRAIN AND COLOR. B. BEFORE INSTALLING INTERIOR FINISH CARPENTRY, CONDITION MATERIALS TO AVERAGE PREVAILING HUMIDITY IN INSTALLATION AREAS FOR A MINIMUM OF 24 HOURS. C. INSTALL INTERIOR FINISH CARPENTRY LEVEL, PLUMB, TRUE, AND ALIGNED WITH ADJACENT MATERIALS.
- D. INSTALL TRIM WITH MINIMUM NUMBER OF JOINTS PRACTICAL, USING FULL LENGTH PIECES FROM MAXIMUM LENGTHS OF LUMBER AVAILABLE. COPE AT RETURNS, MITER AT OUTSIDE CORNERS AND COPE AT INSIDE CORNERS TO PRODUCE TIGHT FITTING JOINTS. USE SCARF JOINTS FOR END TO END JOINTS. E. IN STEEL STUD CONSTRUCTION, ATTACH WITH FINISH SCREWS - PREDRILL AND COUNTERSINK FASTENERS, FILL
- SURFACE FLUSH WITH FINISH COMPATIBLE FILLER AND SAND SMOOTH PROVIDE SAMPLE TO OWNER/ INTERIOR

F. SEE PLANS FOR INTERIOR TRIM AND CARPENTRY MATERIAL TYPE AND LOCATION.

G. SEE MATERIAL LEGEND FOR WOOD FINISH.

DIVISION 07 THERMAL AND MOISTURE PROTECTION

- **07 14 16 WATERPROOFING**
- A. ALL WATERPROOFING MATERIALS AND INSTALLATION SHALL COMPLY WITH LOCAL AND STATE CODES.
- 1. PRODUCT DATA: MANUFACTURER'S TECHNICAL BULLETINS.
- C. FOLLOW MANUFACTURER'S INSTRUCTIONS ON PRODUCT STORAGE AND HANDLING. D. STORE MOISTURE SENSITIVE MATERIALS IN WEATHER PROTECTED ENCLOSURES. E. PROVIDE A COMPLETE WATERPROOFING SYSTEM USING A ONE-COMPONENT, MOISTURE-CURING, BITUMEN MODIFIED

POLYURETHANE, ELASTOMERIC WATERPROOFING MEMBRANE FOR EXTERIOR BELOW GRADE APPLICATIONS.

- 1. ACCEPTABLE PRODUCT: HLM 5000 S BY BASF BUILDING SYSTEMS. F. INSTALL WATERPROOFING MEMBRANE IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS AND AS SHOWN ON PLANS.
- 1. ON VERTICAL APPLICATIONS, SPRAY APPLY AT A RATE OF 25 SQUARE FEET PER GALLON. 2. VERIFY APPLIED THICKNESS WITH MIL GAUGE AS WORK PROGRESSES.
- G. ALL SURROUNDING AREAS, WHERE THE WATERPROOFING MEMBRANE HAS BEEN INSTALLED, SHALL BE LEFT FREE OF DEBRIS AND FOREIGN SUBSTANCES RESULTING FROM THE WORK. H. PROTECT WATERPROOFING MEMBRANE DURING BACKFILL WITH FOUNDATION DRAINAGE PANELS. PROVIDE THE
- INSULATION BOARD IN THE THICKNESS AS SHOWN ON THE PLANS. I. PROTECT FINISHED WORK FROM DAMAGE DURING REMAINDER OF CONSTRUCTION PERIOD.

- **07 21 00 INSULATION**
- A. ALL INSULATION MATERIALS AND INSTALLATION SHALL COMPLY WITH LOCAL AND STATE CODES. B. FIBERGLASS BATT INSULATION
- 1. MANUFACTURER: CERTAINTEED OR OWENS CORNING.
- 2. UNFACED FIBERGLASS BATT OR ROLL COMPLYING WITH ASTM C665 AND NONCOMBUSTIBLE PER ASTM E136. 3. THICKNESS OR R VALUE AS INDICATED ON PLANS. IF THICKNESS IS NOT SHOWN ON PLANS, THICKNESS TO BE THE DEPTH OF THE WALL OR RAFTER SYSTEM.
- 4. STRAP TO PREVENT SLUMPING IF GYPSUM BOARD NOT BEING INSTALLED. C. VAPOR RETARDER
- a. MANUFACTURER: CERTAINTEED "MEMBRAIN" b. MEMBRANE VAPOR RETARDER INSTALLED ON WARM SIDE (NORMALLY INSIDE) FACE OF THE INSULATION. MAX PERM 1.0 PER ASTM E-96.

WALL / UNDERSIDE OF ATTIC

a. MANUFACTURER: W.R. MEADOWS "PERMINATOR" b. 10 MIL POLYOLEFIN-BASED RESIN. MAX PERM 0.02 PER ASTM E-96.

MANUFACTURER: CERTAINTEED "INSULSAFE SP"

THICKNESS AS INDICATED ON PLANS. E. BLOWN IN WALL INSULATION 1. MANUFACTURER: CERTAINTEED "OPTIMA"

G. EXTERIOR MASONRY

D. BLOWN IN FIBER GLASS INSULATION

- F. ACOUSTICAL WALL INSULATION MANUFACTURER: CERTAINTEED 2. WOOD FRAME WALLS: NOISE REDUCER SOUND CONTROL BATTS
- 3. METAL FRAMED WALLS: CERTASOUND SOUND ATTENUATION BATTS 4. CEILINGS: CERTASOUND SOUND ATTENUATION BATTS
- 1. MANUFACTURER: TAILORED CHEMICAL PRODUCTS "CORE-FILL 500" FOAM-IN PLACE

- 2. TWO COMPONENT THERMAL INSULATION PRODUCED BY COMBINING A PLASTIC RESIN AND CATALYST FOAMING AGENT SURFACTANT WHICH, WHEN PROPERLY RATIOED AND MIXED, TOGETHER WITH COMPRESSED AIR PRODUCE A COLD-SETTING FOAM INSULATION IN THE HOLLOW CORES OF HOLLOW UNIT MASONRY WALLS.
- 3. THERMAL VALUE: "R" VALUE OF 4.91/INCH AT 32 DEGREES F MEAN; ASTM C-177. H. FOUNDATION DRAINAGE PANELS
- 1. MANUFACTURER: DOW STYROFOAM PERIMATE EXTRUDED POLYSTYRENE (XPS) INSULATION PANELS. 2. 30 PSI MIN. VERTICAL COMPRESSIVE STRENGTH MEASURED AT 10% STRAIN DEFORMATION OR AT YIELD,
- WHICHEVER OCCURS FIRST. 3. THERMAL VALUE "R" VALUE OF 5.0 PER 1.063 INCHES.
- 4. 2.125 INCHES THICK, R=10. I. PERIMETER FOUNDATION INSULATION
- 1. MANUFACTURER: DOW STYROFOAM SOUARE EDGE EXTRUDED POLYSTYRENE (XPS) INSULATION PANELS, 25 PSI MIN. VERTICAL COMPRESSIVE STRENGTH MEASURED AT 10% STRAIN DEFORMATION OR AT YIELD, WHICHEVER
- OCCURS FIRST. THERMAL VALUE "R" VALUE OF 5.0 PER INCH. 2 INCHES THICK, R=10. 2. MANUFACTURER: PLYMOUTH FOAM GOLD-GUARD FOUNDATION PERIMETER INSULATION EXPANDED POLYSTYRENE (EPS) INSULATION, 25 PSI MIN. VERTICAL COMPRESSIVE STRENGTH MEASURED AT 10% STRAIN DEFORMATION, THERMAL VALUE "R" VALUE OF 4.35 PER INCH. 2.3 INCHES THICK, R=10.
- J. BELOW SLAB INSULATION 1. MANUFACTURER: DOW STYROFOAM SQUARE EDGE EXTRUDED POLYSTYRENE (XPS) INSULATION PANELS, THERMAL
- VALUE "R" VALUE OF 5.0 PER INCH. 2. 25 PSI MIN. VERTICAL COMPRESSIVE STRENGTH MEASURED AT 10% STRAIN DEFORMATION OR AT YIELD, WHICHEVER OCCURS FIRST, EXCEPT WHERE PLANS/DETAILS INDICATE HIGHER VALUE. STYROFOAM HIGHLOAD INSULATION WHERE HIGHER VERTICAL COMPRESSIVE STRENGTHS ARE REQUIRED (MIN. VERTICAL COMPRESSIVE STRENGTH MEASURED AT 5% STRAIN DEFORMATION OR AT YIELD, WHICHEVER OCCURS FIRST).
- 3. THICKNESS AS INDICATED ON PLANS
- K. SPRAY POLYURETHANE FOAM INSULATION
- 1. MANUFACTURER: BASF SPRAYTITE 81206 XF. 2. SPRAYTITE 81206 XF FOR AMBIENT TEMPERATURE RANGE OF 29 TO 65 DEG F. SPRAYTITE 81206 F FOR AMBIENT TEMPERATURE RANGE OF 60 TO 120 DEG F.
- 3. TWO COMPONENT CLOSED CELL SPRAY POLYURETHANE FOAM INSULATION TO MEET NFPA 285 AND ASTM E84 (CLASS 1) WITH FLAME SPREAD INDEX LESS THAN 25 AND SMOKE DEVELOPED LESS THAN 450. MINIMUM DENSITY OF 2.0 LB/ CU. FT.
- 4. THERMAL VALUE: "R" VALUE OF 6.7 PER INCH 5. "R" VALUE AS INDICATED ON THE PLAN.

P. RIGID AIR AND MOISTURE BARRIER INSULATION

SEE ROOF PLAN.

- L. THERMAL BARRIER / IGNITION BARRIER INTUMESCENT COATING 1. MANUFACTURER: NO-BURN PLUS THB
- 2. THICKNESS AS REOUIRED BY MANUFACTURER TO MEET CODE. 3. COLOR SELECTED BY OWNER (WHITE, GRAY, DARK CHARCOAL). M. ROOF INSULATION
- N. RIGID CAVITY WALL INSULATION IN MASONRY CAVITY WALLS 1. MANUFACTURER: DOW STYROFOAM CAVITYMATE OR PLYMOUTH FOAM 2. EXTRUDED POLYSTYRENE INSULATION, 15 PSI COMPRESSIVE STRENGTH
- 3. THERMAL VALUE: "R" VALUE OF 5 PER INCH THICKNESS AS SHOWN ON THE PLAN. O. RIGID CAVITY WALL INSULATION IN WOOD STUD WALLS

1. MANUFACTURER: DUPONTOW STYROFOAM CAVITYMATE

APPROVED FASTENERS PER MANUFACTURER GUIDELINES.

- 2. EXTRUDED POLYSTYRENE INSULATION, 15 PSI COMPRESSIVE STRENGTH 3. THERMAL VALUE: "R" VALUE OF 5 PER INCH 4. THICKNESS AS SHOWN ON THE PLAN.
- 1. MANUFACTURER: DUPONT THERMAX XARMOR CI (CONTINUOUS INSULATION) 2. RIGID FOIL FACED POLYISOCYANURATE BOARD INSULATION, 25 PSI COMPRESSIVE STRENGTH, 4.0 MIL EMBOSSED
- 3. THERMAL VALUE: "R" VALUE OF 6.5 PER INCH. 4. THICKNESS AS INDICATED ON THE PLANS. 5. FASTEN RIGID INSULATION BOARDS TO SUBSTRATE WITH THRUFAST THERMAL-GRIP OR OTHER DUPONT
- 6. SEAM TREATMENT: a. MANUFACTURER: DUPONT LIQUIDARMOR-CM, LIQUIDARMOR LT, LIQUIDARMOR QS AND LIQUIDARMOR RS. PROVIDE MANUFACTURER SPECIFIED THICKNESS AND WIDTH OF LIQUIDARMOR PRODUCT. MAKE

ACRYLIC-COATED EXTERIOR FOIL FACER AND 1.25 MIL EMBOSSED ALUMINUM BACK INTERIOR FACER.

b. COORDINATE SEQUENCE OF FLASHING INSTALLATIONS WITH OTHER TRADES. c. COMPLETE WATER-RESISTIVE BARRIER BY SEALING ALL END AND EDGE JOINTS, THRU-WALL PENETRATIONS, WINDOW AND DOOR OPENINGS, PENETRATIONS AND TRANSITION FLASHINGS WITH MANUFACTURER'S

7. PRE-INSTALLATION MEETING: PRIOR TO APPLICATION OF WALL SYSTEM, CONTRACTOR SHALL REVIEW AND

10. THERMAX WALL SYSEM GOLD WARRANTY: CONTRACTOR SHALL COORDINATE AND COMPLETE APPICABLE FORMS

S. INSTALL INSULATION IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS AND AS SHOWN ON

A. ALL EIFS MATERIALS AND INSTALLATION SHALL COMPLY WITH LOCAL AND STATE CODES AND TO EIMA GUIDELINE

LIQUIDARMOR PRODUCT AVAILABLE TO ALL TRADES MAKING PENETRATIONS IN THE EXTERIOR WALL.

- DOCUMENT METHODS AND PROCEDURES RELATED TO INSTALLATION WITH APPLICATOR AND MANUFACTURER REPRESENTATIVE AT MEETING. 8. INSTALLATION REVIEW: PROVIDE INSTALLATION INSPECTION COMPLETED BY MANUFACTURER CERTIFIED REPRESENTATIVE. PROVIDE INSPECTION REPORT TO ARCHITECT. PROVIDE PHOTOS OF WALL BASE FLASHING,
- WINDOW OPENING PERIMETER AND EXAMPLE MECHANICAL PENETRATIONS THRU EXTERIOR WALL. 9. CONTRACTOR SHALL CALL AND SCHEDULE PRE-INSTALLATION MEETING AND INSTALLATION REVIEW WITH MFR

AND PROVIDE OWNER FINAL WARRANTY CERTIFICATE AS PART OF THE CLOSEOUT SUBMITTALS.

- 1. MANUFACTURER: DUPONT STYROFOAM SILL SEAL FOAM GASKET. R. FOLLOW MANUFACTURER'S INSTRUCTIONS ON PRODUCT STORAGE AND HANDLING.
- 07 24 13 EXTERIOR INSULATION AND FINISH SYSTEM (EIFS)
- SPECIFICATIONS FOR EXTERIOR INSULATION AND FINISH SYSTEMS, CLASS PB WITH MOISTURE DRAINAGE. B. SUBMIT THE FOLLOWING ITEM:
- 2. SAMPLES: SAMPLES FOR EACH FINISH, TEXTURE, AND COLOR TO BE USED ON PROJECT. 3. QUALITY ASSURANCE/CONTROL SUBMITTALS: MANUFACTURER'S INSTALLATION INSTRUCTIONS. C. FOLLOW MANUFACTURER'S INSTRUCTIONS ON PRODUCT STORAGE AND HANDLING.

1. PRODUCT DATA: PRODUCT DATA SHEETS DESCRIBING PRODUCTS TO BE USED ON PROJECT.

- D. STORE MOISTURE SENSITIVE MATERIALS IN WEATHER PROTECTED ENCLOSURES. E. PROVIDE A COMPLETE EXTERIOR INSULATION AND FINISH SYSTEM, CLASS PB, WITH CAPACITY FOR MOISTURE DRAINAGE. SYSTEM CONSISTS OF, BUT NOT LIMITED TO, AN ADHESIVE, GROOVED EXPANDED POLYSTYRENE INSULATION BOARD, BASE COAT, REINFORCING MESH (ES) AND FINISH.
- 1. MANUFACTURERS PRODUCTS THAT MAY BE INCORPORATED INTO THE WORK INCLUDE, BUT ARE NOT LIMITED TO THE FOLLOWING: a. DRYVIT-OUTSULATION LCMD SYSTEM 3
- F. INSTALL EIFS IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS AND AS SHOWN ON PLANS. G. INSULATION BOARD TO BE TYPE I EXPANDED POLYSTYRENE BOARD (ASTM 578), R-VALUE 4.0 PER INCH, 15 PSI COMPRESSIVE STRENGTH, 1 LB / CU. FT. DENSITY, THICKNESS AS SHOWN ON THE PLAN. H. ALL SURROUNDING AREAS, WHERE THE EIFS HAS BEEN INSTALLED, SHALL BE LEFT FREE OF DEBRIS AND FOREIGN

I. PROTECT FINISHED WORK FROM INCLEMENT WEATHER UNTIL DRY AND PERMANENT PROTECTION IN THE FORM OF FLASHINGS, SEALANTS, ETC. ARE INSTALLED. J. PROTECT FINISHED WORK FROM DAMAGE DURING REMAINDER OF CONSTRUCTION PERIOD.

SUBSTANCES RESULTING FROM THE WORK.

07 27 26 AIR AND MOISTURE BARRIER

A. ALL AIR AND MOISTURE BARRIER MATERIALS AND INSTALLATION SHALL COMPLY WITH LOCAL AND STATE CODES.

B. SUBMIT THE FOLLOWING ITEMS: PRODUCT DATA: MANUFACTURER'S TECHNICAL BULLETINS. C. FOLLOW MANUFACTURER'S INSTRUCTIONS ON PRODUCT STORAGE AND HANDLING.

D. CONDUCT ON-SITE PREINSTALLATION CONFERENCE WITH MANUFACTURER'S REPRESENTATIVE.

E. STORE MOISTURE SENSITIVE MATERIALS IN WEATHER PROTECTED ENCLOSURES. F. INSTALL AIR AND MOISTURE BARRIER IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS AND

G. PROVIDE INSTALLATION INSPECTION COMPLETED BY MANUFACTURER CERTIFIED REPRESENTATIVE. PROVIDE

- INSPECTION REPORT TO ARCHITECT. H. SHEET APPLIED.
- MANUFACTURER: DUPONT 2. COMMERCIAL BUILDING WRAP TO BE TYVEK COMMERCIAL WRAP D.
- 1. PROVIDE A COMPLETE AIR AND MOISTURE BARRIER SYSTEM USING A FLUID APPLIED THREE-PART SYSTEM. THE SYSTEM CONSISTS OF ADHESIVE MESH TAPE AND LIQUID FILL AND SPRAY WRAP. 2. ACCEPTABLE PRODUCT: PROSOCO R-GUARD MVP. 3. APPLY R-GUARD TAPE OVER SHEATHING JOINTS AND SEAMS. FOLD AND APPLY R-GUARD TAPE TO ROUGH

OPENINGS, INSIDE AND OUTSIDE CORNERS. USE A SEAM ROLLER OR OTHER BLUNT TOOL TO FIRMLY ADHERE TAPE

4. UNIFORMLY COVER TAPE AND ABOUT 4 INCHES OF SHEATHING ON EITHER SIDE OF THE TAPE WITH R-GUARD FILL USING A TROWEL OR TEXTURE SPRAYER. TROWEL SMOOTH. SPOT FILL FASTENERS AND SURFACE DEFECTS WITH R-



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COLLABORATION



PROJECT INFORMATION

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PROFESSIONAL SEAL

SHEET DATES FEB. 14, 2023 REVISIONS

2255300 **SHEET NUMBER**

JOB NUMBER

ARCHITECTURAL SPECIFICATIONS

ARCHITECTURAL SPECIFICATIONS (CONT)

- 5. SPRAY OR ROLLER APPLY R-GUARD SPRAY WRAP TO THE ENTIRE SURFACE-INCLUDING AREAS COVERED BY R-GUARD TAPE AND R-GUARD FILL TO A UNIFORM WET MIL THICKNESS (10 MILS). LET DRY. ON MASONRY CONSTRUCTION, WHEN SPRAY APPLYING, BACKROLL TO CLOSE PINHOLES AND ENSURE EVEN COVERAGE. APPLY NUMBER OF COATS AS REQUIRED BY MANUFACTURER'S SPECIFICATIONS.
- 1. PROVIDE A COMPLETE AIR AND MOISTURE BARRIER SHEATHING SYSTEM. a. ACCEPTABLE PRODUCT: ZIP SYSTEM WALL SHEATHING W/INTEGRAL AIR AND MOISTURE BARRIER.
- 2. ORIENTED STRAND BOARD WOOD STRUCTURAL PANELS WITH BUILT-IN PROTECTIVE OVERLAYS TO MEET GRADE D WRB MOISTURE BARRIER AND 0.037 L/(S-M2) AIR BARRIER.
- 3. MINIMUM 7/16" THICK.
- 4. MINIMUM SPAN RATING EQUAL TO SUPPORT SPACING. DOC PS-2, EXPOSURE 1.
- 6. APPLY BUTYL RUBBER SELF-SEALING, SELF-HEALING, FULLY ADHERED ZIP TAPE OVER SHEATHING JOINTS AND SEAMS, AROUND PENETRATIONS, GAPS, AND INTO OPENINGS.
- 7. FOLD AND APPLY ZIP TAPE TO ROUGH OPENINGS, INSIDE AND OUTSIDE CORNERS. 8. USE A SEAM ROLLER OR OTHER BLUNT TOOL TO FIRMLY ADHERE TAPE TO SHEATHING, OR SPRAY APPLY ZIP
- SYSTEM LIQUID FLASH.
- K. ALL SURROUNDING AREAS, WHERE THE AIR AND MOISTURE BARRIER HAS BEEN INSTALLED, SHALL BE LEFT FREE OF DEBRIS AND FOREIGN SUBSTANCES RESULTING FROM THE WORK.
- L. PROTECT FINISHED WORK FROM DAMAGE DURING REMAINDER OF CONSTRUCTION PERIOD.

07 54 23 THERMOPLASTIC POLYOLEFIN (TPO) ROOFING

- A. INSTALLER SHALL BE APPROVED, AUTHORIZED OR LICENSED BY A MINIMUM OF TWO OF APPROVED SYSTEM MANUFACTURERS FOR MINIMUM OF 5 CONSECUTIVE YEARS TO INSTALL MANUFACTURER'S PRODUCTS AND IS ELIGIBLE TO RECEIVE MANUFACTURER'S WARRANTIES.
- B. PROVIDE FM APPROVALS ROOFNAV LISTING FOR CLASS 1 OR NONCOMBUSTIBLE CONSTRUCTION WITH SYSTEM C. FASTENING SYSTEM SHALL BE CAPABLE OF WITHSTANDING WIND UPLIFT REQUIREMENTS INDICATED ON THE
- D. CONDUCT ON-SITE PREINSTALLATION CONFERENCE WITH ALL TRADES INTERFACING OR ADJACENT TO THE ROOFING SYSTEM. INCLUDE MANUFACTURER'S REPRESENTATIVE.
- E. ALL COMPONENTS OF THE ROOFING SYSTEM SHALL BE PROVIDED FROM A SINGLE SOURCE INCLUDING ALL AUXILIARY AND ACCESSORIES MATERIALS FOR A COMPLETE INSTALLATION.
- F. COORDINATE INSTALLING MEMBRANE ROOFING SYSTEM COMPONENTS SO INSULATION IS NOT EXPOSED TO PRECIPITATION OR LEFT EXPOSED AT THE END OF THE WORKDAY.
- G. COMPLY WITH MEMBRANE ROOFING SYSTEM AND INSULATION MANUFACTURER'S WRITTEN INSTRUCTIONS AND
- DETAILS FOR INSTALLING ROOF INSULATION.
- H. FILL ALL GAPS EXCEEDING 1/4" IN WIDTH WITH INSULATION.
- INSTALL MEMBRANE ROOFING OVER AREA TO RECEIVE ROOFING ACCORDING TO MEMBRANE ROOFING SYSTEM MANUFACTURER'S WRITTEN INSTRUCTIONS. J. SEAM MEMBRANE ROOFING ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS TO ENSURE A WATERTIGHT
- SEAM INSTALLATION. K. INSTALL SHEET FLASHINGS AND PREFORMED FLASHING ACCESSORIES AND ADHERE TO SUBSTRATES ACCORDING TO MEMBRANE ROOFING SYSTEM MANUFACTURER'S WRITTEN INSTRUCTIONS.
- L. PROTECT ROOFING SYSTEM FOR DURATION OF CONSTRUCTION FROM DAMAGE FROM CONSTRUCTION ACTIVITIES.
- PROTECT AT ALL LOCATIONS WHERE CUTTING, GRINDING OR OTHER HOT WORK IS BEING COMPLETED.
- M. CONDUCT ROUTINE ROOF DEBRIS CLEANING AND INSPECTION DURING THE DURATION OF CONSTRUCTION ACTIVITIES
- N. CLEAN OVERSPRAY OR SPILLAGE FROM ADJACENT CONSTRUCTION USING CLEANING AGENTS AND PROCEDURES RECOMMENDED BY MANUFACTURER OF AFFECTED CONSTRUCTION.
- O. SEE PLANS FOR SYSTEMS REQUIREMENTS INCLUDING WARRANTY, MATERIAL TYPE AND LOCATION OF USE.
- P. INCLUDE COPY OF MANUFACTURER'S FINAL INSTALLATION INSPECTION ACCEPTANCE REPORT AND WARRANTY UPON INSTALLATION COMPLETION.

07 84 13 PENETRATION FIRESTOPPING

- A. PROVIDE PRODUCTS BY ONE OF THE FOLLOWING:
- JOHNS MANVILLE

HILTI, INC.

- 3. <u>3M FIRE PROTECTION PRODUCTS</u>
- 4. TREMCO, INC. TREMCO FIRE PROTECTION SYSTEMS GROUP
- 6. <u>RECTORSEAL METACAULK FIRESTOPPING PRODUCTS</u>
- B. PROVIDE PENETRATION FIRESTOPPING THAT IS PRODUCED AND INSTALLED TO RESIST SPREAD OF FIRE ACCORDING TO INDICATED REQUIREMENTS, RESIST PASSAGE OF SMOKE AND OTHER GASES AND MAINTAIN ORIGINAL FIRE-RESISTANCE RATING OF CONSTRUCTION PENETRATED. PENETRATION FIRESTOPPING SYSTEMS SHALL BE COMPATIBLE WITH ONE ANOTHER, WITH THE SUBSTRATES FORMING OPENINGS, AND WITH ANY PENETRATING ITEMS.
- C. PENETRATIONS IN FIRE-RESISTANCE-RATED WALLS:
- 1 RATINGS DETERMINED PER ASTM F 814 OR III 1479
- . F-RATING NOT LESS THAN THE FIRE-RESISTANCE RATING OF CONSTRUCTIONS PENETRATED.
- D. PENETRATIONS IN HORIZONTAL ASSEMBLIES:
- 1. RATINGS DETERMINED PER ASTM E 814 OR UL 1479.
- 2. F-RATING AT LEAST 1 HOUR, BUT NOT LESS THAN THE FIRE-RESISTANCE RATING OF CONSTRUCTIONS
- 3. T-RATING AT LEAST 1 HOUR, BUT NOT LESS THAN THE FIRE-RESISTANCE RATING OF CONSTRUCTIONS PENETRATED EXCEPT FOR FLOOR PENETRATIONS WITHIN THE CAVITY OF A WALL.
- 1. PROVIDE PENETRATION FIRESTOPPING WITH RATINGS DETERMINED PER UL 1479.
- 2. L-RATING NOT EXCEEDING 5.0 CFM/SF OF PENETRATION OPENING AT BOTH AMBIENT AND ELEVATED
- F. EXPOSED PENETRATION FIRESTOPPING: PROVIDE PRODUCTS WITH FLAME-SPREAD AND SMOKE-DEVELOPED INDEXES OF LESS THAN 25 AND 450, RESPECTIVELY, AS DETERMINED PER ASTM E 84.
- G. ACCESSORIES: PROVIDE COMPONENTS FOR EACH PENETRATION FIRESTOPPING SYSTEM THAT ARE NEEDED TO INSTALL FILL MATERIALS AND TO MAINTAIN REQUIRED RATINGS. USE ONLY THOSE COMPONENTS SPECIFIED BY PENETRATION FIRE STOPPING MANUFACTURER AND APPROVED BY QUALIFIED TESTING AND INSPECTING AGENCY FOR
- H. EXAMINE SUBSTRATES AND CONDITIONS FOR COMPLIANCE WITH REQUIREMENTS FOR OPENING CONFIGURATIONS,
- PENETRATING ITEMS, SUBSTRATES, AND OTHER CONDITIONS AFFECTING PERFORMANCE OF THE WORK. I. SUBMIT FIRE STOPPING SUBMITTAL PACKAGE WITH DETAILS OF ALL PENETRATIONS AND FIRESTOPPING TO BE USED ON THE PROJECT TO AHJ 30 DAYS PRIOR TO INSTALLATION.
- J. INSTALL PENETRATION FIRE STOPPING TO COMPLY WITH MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS AND PUBLISHED DRAWINGS FOR PRODUCTS AND INDICATED APPLICATIONS.
- K. INSTALL FORMING MATERIALS AND OTHER ACCESSORIES OF TYPES REQUIRED TO SUPPORT FILL MATERIALS DURING THEIR APPLICATION AND IN THE POSITION NEEDED TO PRODUCE CROSS-SECTIONAL SHAPES AND DEPTHS REQUIRED TO ACHIEVE FIRE RATINGS INDICATED.
- 1. AFTER INSTALLING FILL MATERIALS AND ALLOWING THEM TO FULLY CURE, REMOVE COMBUSTIBLE FORMING
- MATERIALS AND OTHER ACCESSORIES NOT INDICATED AS PERMANENT COMPONENTS OF FIRESTOPPING. INSTALL FILL MATERIALS FOR FIRESTOPPING BY PROVEN TECHNIQUES TO PRODUCE THE FOLLOWING RESULTS: 1. FILL VOIDS AND CAVITIES FORMED BY OPENINGS, FORMING MATERIALS, ACCESSORIES, AND PENETRATING ITEMS
- 2. APPLY MATERIALS SO THEY CONTACT AND ADHERE TO SUBSTRATES FORMED BY OPENINGS AND PENETRATING
- 3. FINISH FILL MATERIALS THAT WILL REMAIN EXPOSED AFTER COMPLETING THE WORK TO PRODUCE SMOOTH,
- UNIFORM SURFACES THAT ARE FLUSH WITH ADJOINING FINISHES. M. IDENTIFY PENETRATION FIRESTOPPING WITH PREPRINTED METAL OR PLASTIC LABELS. ATTACH LABELS PERMANENTLY TO SURFACES ADJACENT TO AND WITHIN 6 INCHES OF FIRESTOPPING EDGE SO LABELS WILL BE VISIBLE TO ANYONE SEEKING TO REMOVE PENETRATING ITEMS OR FIRESTOPPING. USE MECHANICAL FASTENERS OR SELF-ADHERING TYPE
- LABELS WITH ADHESIVES CAPABLE OF PERMANENTLY BONDING LABELS TO SURFACES ON WHICH LABELS ARE PLACED. INCLUDE THE FOLLOWING INFORMATION ON LABELS: 1. THE WORDS "WARNING - PENETRATION FIRESTOPPING - DO NOT DISTURB. NOTIFY BUILDING MANAGEMENT OF
- ANY DAMAGE" 2. CONTRACTOR'S NAME, ADDRESS, AND PHONE NUMBER
- 3. DESIGNATION OF APPLICABLE TESTING AND INSPECTING AGENCY

AS REQUIRED TO ACHIEVE FIRE-RESISTANCE RATINGS INDICATED.

- 4. DATE OF INSTALLATION
- 5. MANUFACTURER'S NAME 6. INSTALLER'S NAME
- N. PROVIDE OWNER WITH DETAILS OF ALL INSTALLATIONS AND PRODUCTS USED. AT PROJECT CLOSEOUT.

07 92 00 SEALANTS

- 1. IT IS THE INTENTION OF THIS SPECIFICATION THAT ALL JOINTS ARE TO RECEIVE SEALANT.
- 2. APPLY SEALANT IN ALL INDICATED LOCATIONS ACCORDING TO THE MANUFACTURER'S WRITTEN INSTRUCTIONS, INCLUDING BUT NOT LIMITED TO; JOINT WIDTH, SURFACE PREPARATION, PRIMERS, APPLICATION TEMPERATURE
- 3. APPLY SEALANT AFTER FINISH OPERATIONS ARE COMPLETE.
- 4. PROVIDE APPROPRIATE SIZED BACKER RODS AND BOND BREAK AT ALL JOINTS UNLESS OTHERWISE NOTED IN THE MANUFACTURER'S INSTRUCTIONS.
- B. SEE SCHEDULE ON PLANS.

DIVISION 08 OPENINGS

08 11 13 HOLLOW METAL DOORS AND FRAMES

A. HOLLOW METAL FRAMES: COMPLY WITH ANSI/SDI A250.11.

- 1. SET FRAMES ACCURATELY IN POSITION, PLUMBED, ALIGNED, AND BRACED SECURELY UNTIL PERMANENT ANCHORS ARE SET. AFTER WALL CONSTRUCTION IS COMPLETE, REMOVE TEMPORARY BRACES, LEAVING SURFACES SMOOTH AND UNDAMAGED.
- 2. AT FIRE-PROTECTION-RATED OPENINGS, INSTALL FRAMES ACCORDING TO NFPA 80. B. HOLLOW METAL DOORS: FIT HOLLOW METAL DOORS ACCURATELY IN FRAMES, WITHIN CLEARANCES. SHIM AS
- NECESSARY TO ACHIEVE CLEARANCES INDICATED. 1. FIRE-RATED DOORS: INSTALL DOORS WITH CLEARANCES ACCORDING TO NFPA 80.
- 2. SMOKE-CONTROL DOORS: INSTALL DOORS ACCORDING TO NFPA 105. C. SEE PLAN FOR PRODUCT SPECIFICATION AND LOCATION. FURNISH AND INSTALL ALL DOORS AND FRAMES AS

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INDICATED ON THE PLANS. D. AND LOCATION. FURNISH AND INSTALL All DOORS AND FRAMES AS INDICATED ON THE PLANS.

08 14 16 FLUSH WOOD DOORS

- A. INSTALL DOORS TO COMPLY WITH MANUFACTURER'S WRITTEN INSTRUCTIONS AND THE REFERENCED QUALITY
- STANDARD, AND AS INDICATED.
- 1. INSTALL FIRE-RATED DOORS IN CORRESPONDING FIRE-RATED FRAMES ACCORDING TO NFPA 80. B. ALIGN IN FRAMES FOR UNIFORM CLEARANCE AT EACH EDGE.

08 41 13 ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

- 1. COMPLY WITH MANUFACTURER'S WRITTEN INSTRUCTIONS.
- 2. DO NOT INSTALL DAMAGED COMPONENTS. 3. FIT JOINTS TO PRODUCE HAIRLINE JOINTS FREE OF BURRS AND DISTORTION.
- RIGIDLY SECURE NONMOVEMENT JOINTS.
- 5. INSTALL ANCHORS WITH SEPARATORS AND ISOLATORS TO PREVENT METAL CORROSION AND ELECTROLYTIC
- 6. SEAL JOINTS WATERTIGHT UNLESS OTHERWISE INDICATED. B. INSTALL COMPONENTS TO DRAIN WATER PASSING JOINTS, CONDENSATION OCCURRING WITHIN FRAMING MEMBERS,
- AND MOISTURE MIGRATING WITHIN THE SYSTEM TO EXTERIOR. C. INSTALL COMPONENTS PLUMB AND TRUE IN ALIGNMENT WITH ESTABLISHED LINES AND GRADES, AND WITHOUT
- D. ENTRANCE DOORS: INSTALL DOORS TO PRODUCE SMOOTH OPERATION AND TIGHT FIT AT CONTACT POINTS.
- E. SEE PLAN FOR PRODUCT SPECIFICATION AND LOCATION. FURNISH AND INSTALL ALL ENTRANCES AND STOREFRONTS AS INDICATED ON THE PLANS.

08 71 00 HARDWARE

- 1. ALL LOCKSETS SHALL BE LEVER TYPE AS REQUIRED TO MEET REQUIREMENTS OF A.D.A.
- 2. ALL OTHER HARDWARE SHALL CONFORM TO THE REQUIREMENTS OF A.D.A. 3. ALL EXIT DOORS SHALL BE EQUIPPED WITH LEVER TYPE OR PANIC TYPE EXIT HARDWARE OPENABLE FROM THE
- INSIDE WITHOUT THE USE OF A LATCH, KEY OR BOLT. 4. CONTRACTOR TO COORDINATE KEYING SCHEDULE WITH OWNER.
- B. MOUNTING HEIGHTS: MOUNT DOOR HARDWARE UNITS AT HEIGHTS REQUIRED TO COMPLY WITH GOVERNING
- C. INSTALL EACH DOOR HARDWARE ITEM TO COMPLY WITH MANUFACTURER'S WRITTEN INSTRUCTIONS.
- D. THRESHOLDS: SET THRESHOLDS FOR EXTERIOR AND ACOUSTICAL DOORS IN FULL BED OF SEALANT. E. ADJUSTMENT: ADJUST AND CHECK EACH OPERATING ITEM OF DOOR HARDWARE AND EACH DOOR TO ENSURE PROPER OPERATION OR FUNCTION OF EVERY UNIT. REPLACE UNITS THAT CANNOT BE ADJUSTED TO OPERATE AS INTENDED. ADJUST DOOR CONTROL DEVICES TO COMPENSATE FOR FINAL OPERATION OF HEATING AND
- VENTILATING EQUIPMENT AND TO COMPLY WITH REFERENCED ACCESSIBILITY REQUIREMENTS. F. SEE PLAN FOR PRODUCT SPECIFICATION AND LOCATION. FURNISH AND INSTALL ALL HARDWARE AS INDICATED ON

08 80 00 GLAZING

- A. COMPLY WITH COMBINED WRITTEN INSTRUCTIONS OF MANUFACTURERS OF GLASS, SEALANTS, GASKETS, AND OTHER GLAZING MATERIALS, UNLESS MORE STRINGENT REQUIREMENTS ARE INDICATED, INCLUDING THOSE IN REFERENCED
- B. PROTECT GLASS EDGES FROM DAMAGE DURING HANDLING AND INSTALLATION. REMOVE DAMAGED GLASS FROM PROJECT SITE AND LEGALLY DISPOSE OF OFF PROJECT SITE. DAMAGED GLASS IS GLASS WITH EDGE DAMAGE OR OTHER IMPERFECTIONS THAT, WHEN INSTALLED, COULD WEAKEN GLASS AND IMPAIR PERFORMANCE AND
- C. PROVIDE SAFETY GLASS IN ALL GLAZING AS LISTED BELOW UNLESS NOTED OTHERWISE:
- 1. WHERE REQUIRED BY FEDERAL, STATE AND LOCAL CODES. D. SAFETY GLASS REQUIREMENTS:
- SAFETY GLASS SHALL BE, BUT NOT LIMITED TO
- a. TEMPERED GLASS
- c. SAFETY PLASTIC
- d. SAFETY INSULATING UNITS WHICH MEET THE TEST REQUIREMENTS OF ANSI Z97.1, AND WHICH ARE CONSTRUCTED, TREATED, OR COMBINED WITH OTHER MATERIALS SO AS TO MINIMIZE THE LIKELIHOOD OF CUTTING AND PIERCING INJURIES RESULTING FROM HUMAN IMPACT WITH THE GLAZING MATERIAL.
- 2. ALL SAFETY GLAZING MATERIAL SHALL BE LABELED PER LOCAL, STATE, AND FEDERAL REQUIREMENTS. E. SEE PLAN FOR PRODUCT SPECIFICATION AND LOCATION. FURNISH AND INSTALL THE GLAZING AS INDICATED ON THE

DIVISION 09 FINISHES

09 01 00 FINISHES

- PROVIDE AND INSTALL ALL FINISHES AS INDICATED ON PLANS.
- 2. INSTALL ALL MATERIALS PER MANUFACTURER'S RECOMMENDATIONS AND SPECIFICATIONS.
- 3. "FINISH" INSTALLER INSPECT SUBSURFACE AND PREPARE AS PER MANUFACTURER'S SPECIFICATIONS PRIOR TO INSTALLATION OF PRODUCT
- 4. ALL FINISHES TO MEET ALL CODE REQUIREMENTS AND REGULATIONS INCLUDING FLAME SPREAD AND SMOKE B. EXTRA MATERIAL:
- 1. PROVIDE NEW, EXTRA MATERIAL OF EACH FINISH TYPE AND COLOR TO BE TURNED OVER TO OWNER AT JOB COMPLETION FOR THE FOLLOWING ITEMS:
- a. PAINT: PROVIDE 1 GALLON FOR FIELD COLORS AND 1 QUART FOR ACCENT COLORS APPLIED. b. RESILIENT TILE FLOORING: PROVIDE 1 BOX FOR EVERY 50 BOXES OR FRACTION THEREOF INSTALLED. FURNISH
- ACCESSORY SUPPLIED. c. ACOUSTICAL CEILING TILE: PROVIDE FULL-SIZE UNITS EQUAL TO 2% OF QUANTITY INSTALLED, BUT NOT LESS

MINIMUM 10 LINEAR FEET FOR EACH 500 LINEAR FEET OR FRACTION THEREOF OF EACH TYPE OF RESLIENT

- d. WOOD FLOORING: PROVIDE FULL-SIZE UNITS EQUAL TO 3% OF QUANTITY INSTALLED, BUT NOT LESS THAN 50 e. LAMINATE FLOORING: PROVIDE FULL-SIZE UNITS EQUAL TO 3% OF QUANTITY INSTALLED, BUT NOT LESS THAN
- f. RESILIENT SHEET FLOORING: PROVIDE NOT LESS THAN 10 LINEAR FEET FOR EACH 500 LINEAR FEET OR
- g. WALL COVERING MATERIAL: PROVIDE FULL-SIZE UNITS EQUAL TO 5 PERCENT INSTALLED.
- h. TILE CARPET: PROVIDE FULL-SIZE UNITS EQUAL TO 5 PERCENT OF THE AMOUNT INSTALLED, BUT NOT LESS i. SHEET CARPET: PROVIDE FULL-WIDTH ROLLS EQUAL TO 5 PERCENT OF THE AMOUNT INSTALLED, BUT NOT
- i. Ceramic, Quarry and Porcelain tile: Provide full-size units equal to 3% of Quantity installed,
- BUT NOT LESS THAN 50 S.F.
- 09 22 16 DRYWALL STUDS (INTERIOR NON-BEARING)

THAN 1 BOX OF EACH TYPE OF CEILING TILE SUPPLIED.

- 1. STUDS SHALL BE SECURED TO TOP AND BOTTOM TRACK WITH (1) #8ML SCREW IN EACH FLANGE (UNLESS A SLIP TRACK IS REQUIRED AT THE TOP OF THE WALL).
- 2. PROVIDE SLIP TRACK AT TOP OF FULL HEIGHT PARTITIONS. 3. STUDS SHALL BE INSTALLED PER "GYPSUM CONSTRUCTION HANDBOOK" AS PUBLISHED BY UNITED STATES
- GYPSUM COMPANY LATEST EDITION. 4. DRYWALL STUDS SHALL BE ACCORDING TO THE LIST BELOW OR AS INDICATED ON THE PLANS (THESE HEIGHTS ARE
- BASED ON THE STUDS HAVING (1) LAYER OF DRYWALL EACH FACE).
- 5. STUD SIZE GAUGE LIMITING HEIGHT WITH STUD SPACING a. 3 5/8" — 25 GA. — 13'-6" AT 16" O.C. — 11'-9" AT 24" O.C.
- b. 3 5/8" 22 GA. 15'-3" AT 16" O.C. 13'-4" AT 24" O.C.
- c. 3 5/8" 20 GA. 15'-11" AT 16" O.C. 13'-11" AT 24" O.C. d. 6" — 25 GA. — 20'-0" AT 16" O.C. — 17'-6" AT 24" O.C.
- e. 6" 22 GA. 22'-9" AT 16" O.C. 19'-11" AT 24" O.C. f. 6" — 20 GA. — 23'-9" AT 16" O.C. — 20'-9" AT 24" O.C.

09 29 00 GYPSUM BOARD (GYP)

- A. DRYWALL SHALL BE INSTALLED PER THE LATEST EDITIONS OF "RECOMMENDED SPECIFICATIONS FOR THE APPLICATION AND FINISHING OF GYPSUM BOARD" GA-216 AS PUBLISHED BY THE GYPSUM ASSOCIATION AND THE "GYPSUM CONSTRUCTION HANDBOOK" AS PUBLISHED BY UNITED STATES GYPSUM COMPANY. PROVIDE CONTROL JOINTS PER THESE REQUIREMENTS.
- B. COMPLY WITH ASTM C36 OR ASTM C 1396 AS APPLICABLE TO THE TYPE OF GYPSUM BOARD INDICATED.

- C. SUBJECT TO COMPLIANCE WITH REQUIREMENTS, MANUFACTURES OFFERING PRODUCTS THAT MAY BE INCORPORATED INCLUDE, BUT ARE NOT LIMITED TO THE FOLLOWING: AMERICAN GYPSUM CO.
- 2. BPB AMERICAN INC.
- G-P GYPSUM 4. LAFARGE NORTH AMERICA INC.
- 5. NATIONAL GYPSUM COMPANY
- D. AT ALL TOILET ROOMS, LOCKERS ROOMS, COOLER/FREEZER ROOMS, UNDER FRP PANELS OR OTHER DAMP/WET
- 1. GOLD BOND XP GYPSUM BOARD BY NATIONAL GYPSUM OR EQUAL. E. UNDER CERAMIC AND PORCELAIN TILE IN TOILET ROOMS, LOCKER ROOMS OR OTHER DAMP/WET LOCATIONS
- 1. FIBEROCK AQUA-TOUGH TILE BACKER BOARD BY USG CORPORATION OR EQUAL
- F. UNDER CERAMIC AND PORCELAIN TILE IN SHOWERS, TUBS, KITCHEN WASH DOWN AREAS OR OTHER HIGH-MOISTURE 1. DUROCK CEMENT BOARD BY USG CORPORATION OR EQUAL
- G. DRYWALL FINISHES SHALL BE INSTALLED PER THE LATEST EDITION OF "RECOMMENDED LEVELS OF GYPSUM BOARD FINISH" GA-214 AS PUBLISHED BY THE AWCI, PAINTING AND DECORATING CONTRACTORS OF AMERICA, GYPSUM ASSOCIATION AND CISCA.
- H. LEVELS OF FINISH:
- SEE PLANS FOR FINISH LOCATIONS.
- LEVEL 0 NO TAPING, FINISHING OR ACCESSORIES REQUIRED. 3. LEVEL 1 — JOINTS AND INTERIOR ANGLES HAVE TAPE SET IN JOINT COMPOUND; SURFACE IS FREE OF EXCESS JOINT COMPOUND; TOOL MARKS AND RIDGES ARE ACCEPTABLE; TAPE AND FASTENERS ARE NOT COVERED WITH
- 4. LEVEL 2 JOINTS AND INTERIOR ANGLES HAVE TAPE EMBEDDED IN JOINT COMPOUND AND HAVE A THIN COAT OF JOINT COMPOUND OVER JOINTS AND INTERIOR ANGLES; FASTENER HEADS AND ACCESSORIES ARE COVERED WITH JOINT COMPOUND; SURFACE IS FREE OF EXCESS JOINT COMPOUND; TOOL MARKS AND RIDGES ARE
- 5. LEVEL 3 JOINTS AND INTERIOR ANGLES HAVE TAPE EMBEDDED IN JOINT COMPOUND AND ONE ADDITIONAL COAT OF JOINT COMPOUND OVER ALL JOINTS AND INTERIOR ANGLES; FASTENER HEADS AND ACCESSORIES
- COVERED WITH TWO (2) COATS OF JOINT COMPOUND; NO TOOL MARKS OR RIDGES. 6. LEVEL 4 — JOINTS AND INTERIOR ANGLES HAVE TAPE EMBEDDED IN JOINT COMPOUND AND TWO SEPARATE COATS OF JOINT COMPOUND APPLIED OVER ALL FLAT JOINTS AND ONE SEPARATE COAT APPLIED OVER INTERIOR ANGLES; FASTENER HEADS AND ACCESSORIES ARE COVERED WITH THREE (3) SEPARATE COATS OF JOINT
- COMPOUND; NO TOOL MARKS OR RIDGES. 7. LEVEL 5 — IN ADDITION TO REQUIREMENTS OF LEVEL 4, A THIN SKIM COAT OF JOINT COMPOUND OR EQUAL SHALL BE APPLIED TO THE ENTIRE SURFACE: NO TOOL MARKS OR RIDGES ON THIS SURFACE.

09 51 13 ACOUSTICAL CEILINGS (ACT/ VCGB)

- 1. PROVIDE MANUFACTURER'S STANDARD CEILING TILE AS SCHEDULED COMPLYING WITH ASTM 1264
- 2. INSTALL PANELS WITH UNDAMAGED EDGES AND FIT ACCURATELY INTO SUSPENSION SYSTEM RUNNERS AND EDGE MOLDINGS. SCRIBE AND CUT PANELS AT BORDERS AND PENETRATIONS TO PROVIDE A NEAT, PRECISE FIT.
- 3. PROVIDE HOLD-DOWN CLIPS AT ENTRY VESTIBULE(S) AND FOR FIRST 12' OF CORRIDOR(S) IN FRONT OF EACH
- 4. PROVIDE APPROVED FIRE RATED GRID SYSTEM FOR FIRE RATED CEILINGS.
- 5. SEE PLAN FOR PRODUCT SPECIFICATION AND LOCATION. 1. COMPLY WITH ASTM C636 (STANDARD PRACTICE FOR INSTALLATION OF METAL CEILING SUSPENSION SYSTEMS FOR ACOUSTICAL TILE AND LAY-IN PANELS), ASTM C635 (STANDARD SPECIFICATION FOR THE MANUFACTURE,
- PERFORMANCE AND TESTING OF METAL SUSPENSION SYSTEMS FOR ACOUSTICAL TILE AND LAY-IN PANEL CEILINGS) AND SEISMIC DESIGN REQUIREMENTS INDICATED, PER MANUFACTURER'S WRITTEN INSTRUCTIONS AND CISCA'S "CEILING SYSTEMS HANDBOOK". 2. SUSPEND CEILING HANGERS FROM BUILDING'S STRUCTURAL MEMBERS, PLUMB AND FREE FROM CONTACT WITH INSULATION OR OTHER OBJECTS WITHIN CEILING PLENUM. SPLAY HANGERS ONLY WHERE REQUIRED AND, IF PERMITTED WITH FIRE-RESISTANCE-RATED CEILINGS, TO MISS OBSTRUCTIONS, OFFSET RESULTING HORIZONTAL FORCES BY BRACING, COUNTER SPLAYING, OR OTHER EQUALLY EFFECTIVE MEANS. WHERE WIDTH OF DUCTS AND OTHER CONSTRUCTION WITHIN CEILING PLENUM PRODUCES HANGER SPACING THAT INTERFERE WITH LOCATION

OF HANGERS, USE TRAPEZES OR EQUIVALENT DEVICES. WHEN STEEL FRAMING DOES NOT PERMIT INSTALLATION

- OF HANGER WIRES AT SPACING REQUIRED, INSTALL CARRYING CHANNELS OR OTHER SUPPLEMENTAL SUPPORT FOR ATTACHMENT OF HANGER WIRES.
- 3. WIRE HANGERS TO BE ZINC-COATED CARBON STEEL WIRE COMPLYING WITH ASTM A641 STANDARDS, SIZED TO WITHSTAND 5X THE HANGER DESIGN LOAD BUT NOT LESS THAN 0.106" IN DIAMETER. 4. INSTALL EDGE MOLDINGS AND TRIM AT PERIMETER OF ACOUSTICAL CEILING AREA AND WHERE NECESSARY TO
- SUSPENSION SYSTEM. MITER CORNERS ACCURATELY AND CONNECT SECURELY 5. INSTALL SUSPENSION SYSTEM RUNNERS SO THEY ARE SQUARE AND SECURELY INTERLOCKED WITH ONE ANOTHER. REMOVE AND REPLACE DENTED, BENT, OR KINKED MEMBERS. SUSPENSION SYSTEM AS REQUIRED FOR THE

CONCEAL EDGES OF ACOUSTICAL PANELS. SCREW ATTACH MOLDINGS TO SUBSTRATE, LEVELING WITH CEILING

6. PROVIDE CORROSION RESISTANT GRID IN SHOWER AND EXTREME ENVIRONMENT AREAS. 09 65 13 VINYL COVE BASE AND ACCESSORIES (VB)

SPECIFIED TILE-INTERMEDIATE DUTY CLASSIFICATION.

- A. PROVIDE MANUFACTURES STANDARD VINYL BASE AS SPECIFIED THAT COMPLIES WITH ASTM F1861 TYPE TV. B. PROVIDE MANUFACTURES STANDARD VINYL ACCESSORIES AS SPECIFIED THAT COMPLIES WITH ASTM F2169 TYPE TV.
- C. COMPLY WITH MANUFACTURER'S WRITTEN INSTRUCTIONS FOR INSTALLING RESILIENT BASE AND ACCESSORIES. D. PREPARE SUBSTRATES ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS TO ENSURE ADHESION OF BASE
- E. APPLY RESILIENT BASE TO WALLS, COLUMNS, PILASTERS, CASEWORK AND CABINETS IN TOE SPACES AND OTHER PERMANENT FIXTURES IN ROOMS AND AREAS WHERE BASE IS SPECIFIED. F. INSTALL RESILIENT BASE IN LENGTHS AS LONG AS PRACTICAL WITHOUT GAPS AT SEAMS AND WITH TOPS OF ADJACENT PIECES ALIGNED.
- G. TIGHTLY ADHERE RESILIENT BASE OR ACCESSORY TO SUBSTRATE THROUGHOUT LENGTH OF EACH PIECE, WITH BASE OR ACCESSORY IN CONTINUOUS CONTACT WITH HORIZONTAL AND VERTICAL SUBSTRATES. H. DO NOT STRETCH RESILIENT BASE DURING INSTALLATION.

BASE WITH MANUFACTURER'S RECOMMENDED ADHESIVE FILLER MATERIAL. J. SEE PLAN FOR PRODUCT SPECIFICATION AND LOCATION.

I. ON MASONRY SURFACES OR OTHER SIMILAR IRREGULARS SUBSTRATES, FILL VOIDS ALONG TOP EDGE OF RESILIENT

- 09 65 19 RESILIENT TILE FLOORING VINYL COMPOSITION TILE (VCT) / LUXURY VINYL
- A. PREPARE SUBSTRATES ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS TO ENSURE ADHESION OF FLOOR 1. MOISTURE TESTING: PERFORM TESTS RECOMMENDED BY MANUFACTURER. PROCEED WITH INSTALLATION ONLY
- B. FILL CRACKS, HOLES, AND DEPRESSIONS IN SUBSTRATES WITH TROWELABLE LEVELING AND PATCHING COMPOUND AND REMOVE BUMPS AND RIDGES TO PRODUCE A UNIFORM AND SMOOTH SUBSTRATE
- C. DO NOT INSTALL FLOOR COVERINGS UNTIL THEY ARE SAME TEMPERATURE AS SPACE WHERE THEY ARE TO BE
- D. SWEEP AND VACUUM CLEAN SUBSTRATES TO BE COVERED BY FLOOR COVERINGS IMMEDIATELY BEFORE E. COMPLY WITH MANUFACTURER'S WRITTEN INSTRUCTIONS FOR INSTALLING FLOOR TILE.
- F. LAY OUT FLOOR TILES FROM CENTER MARKS ESTABLISHED WITH PRINCIPAL WALLS, DISCOUNTING MINOR OFFSETS, SO TILES AT OPPOSITE EDGES OF ROOM ARE OF EQUAL WIDTH. ADJUST AS NECESSARY TO AVOID USING CUT WIDTHS THAT EQUAL LESS THAN ONE-HALF TILE AT PERIMETER.

1. VCT: SEE FLOOR FINISH PLAN FOR PATTERN AND INSTALLATION DIRECTION. IF NO FLOOR PLAN, MATCH TILES

- FOR COLOR/PATTERN AND LAY WITH GRAIN DIRECTION ALTERNATING IN ADJACENT TILES. G. SCRIBE, CUT, AND FIT FLOOR TILES TO BUTT NEATLY AND TIGHTLY TO VERTICAL SURFACES AND PERMANENT FIXTURES INCLUDING BUILT-IN FURNITURE, CABINETS, PIPES, OUTLETS, AND DOOR FRAMES.
- H. EXTEND FLOOR TILES INTO TOE SPACES, DOOR REVEALS, CLOSETS, AND SIMILAR OPENINGS. EXTEND FLOOR TILES TO I. ADHERE FLOOR TILES TO FLOORING SUBSTRATES USING A FULL SPREAD OF ADHESIVE APPLIED TO SUBSTRATE TO PRODUCE A COMPLETED INSTALLATION WITHOUT OPEN CRACKS, VOIDS, RAISING AND PUCKERING AT JOINTS,
- J. VCT: FLOORING CONTRACTOR SHALL STRIP AND FINISH ALL VCT FLOORING AS RECOMMENDED PER MANUFACTURERS SPECIFICATIONS PRIOR TO OCCUPANCY.

TELEGRAPHING OF ADHESIVE SPREADER MARKS, AND OTHER SURFACE IMPERFECTIONS.

K. COMPLY WITH MANUFACTURER'S WRITTEN INSTRUCTIONS FOR CLEANING AND PROTECTION OF FLOOR TILE. L. CLEAN ADHESIVE MARKS ON EXPOSED SURFACES DURING APPLICATION BEFORE THE ADHESIVE SETS. M. KEEP TRAFFIC OFF FLOOR TILE MATERIAL FOR A MINIMUM 72 HOURS ATER INSTALLATION.

N. LVT: INITIAL CLEANING OF LVT SHOULD NOT BE PERFORMED UNTIL A MINIMUM OF 72 HOURS AFTER THE COMPLETE

O. MAINTAIN FLOORING ACCORDING TO MANUFACTURER'S CURRENT MAINTENANCE INSTRUCTIONS FOR SPECIFIED

P. SEE PLAN FOR PRODUCT SPECIFICATION AND LOCATION.

AFTER SUBSTRATES PASS TESTING.

- A. FURNISH ALL LABOR, MATERIALS, TOOLS, EQUIPMENT AND SCAFFOLDING REQUIRED FOR COMPLETING SURFACE PREPARATION, PAINTING, FINISHING AND RELATED ITEMS
- B. SEAL TOPS, BOTTOMS AND CUTOUTS OF UNPRIMED WOOD DOORS WITH A HEAVY COAT OF SEALER IMMEDIATELY UPON DELIVERY TO THE PROJECT.
- C. PREPARATION

- 2. REMOVE AND/OR PROTECT ALL HARDWARE, HARDWARE ACCESSORIES, MACHINED SURFACES, PLATES, LIGHTING FIXTURES, SPRINKLER HEADS AND SIMILAR ITEMS THAT ARE NOT TO BE PAINTED, BUT REQUIRE PROTECTION FROM THE PAINTING PROCESS. RE-INSTALL SAME AFTER COMPLETION OF PAINTING. MASK OFF ALL NAMEPLATES, EQUIPMENT IDENTIFICATION AND SIMILAR ITEMS. REMOVAL AND REINSTALL OF ITEMS IS TO BE DONE BY
- CONTRACTOR SKILLED IN SUCH WORK. 3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER PREPARATION OF ALL SURFACES PRIOR TO THE
- PAINTING INSTALLATION. 4. REVIEW CLEANING SOLVENTS AND PROTOCOLS WITH COATING MANUFACTURER TO DETERMINE TEMPERATURE AND CHEMICAL RESISTANCE.
- a. PREPARE TO SSPC SP-10 NEAR WHITE METAL BLAST CLEANING.
- b. APPLY PRIMER WITHIN 8 HOURS OF PREPARATION. c. PREPARE ALL FIELD WELDED LOCATIONS PER THE REQUIREMENTS SET FORTH IN THIS SECTION.
- d. VERIFY FINISH COAT COLORS WITH OWNER.
- GALVANIZED METAL a. CLEAN PER SSPC-SP1 USING DETERGENT AND WATER OR A DEGREASING CLEANER TO REMOVE GREASES AND
- b. APPLY A TEST AREA, PRIMING AS REQUIRED. ALLOW THE COATING TO DRY AT LEAST ONE WEEK BEFORE
- c. IF ADHESION IS POOR, BRUSH BLAST PER SSPC-SP16 IS NECESSARY TO REMOVE THESE TREATMENTS. 7. CONCRETE BLOCK (CMU)
- a. PREPARE ALL CMU SURFACES PER COATING MANUFACTURER'S RECOMMENDATIONS RELATED TO CLEANLINESS, DRYNESS AND SURFACE PROFILE. b. FILL ALL CMU SURFACES TO REMOVE VOIDS AND PROVIDE A SURFACE PROFILE CONSISTENT WITH
- REQUIREMENTS FOR INTERMEDIATE AND/OR FINISH COATING APPLICATIONS. c. VERIFY FINISH COAT COLORS WITH OWNER.
- 8. PRECAST CONCRETE

CONDUIT, ETC.) TO MATCH ADJOINING WALL SURFACES.

- a. PREPARE PRECAST SURFACES PER SSPC SP-13 b. IF REQUIRED BY THE COATING MANUFACTURER, ACHIEVE THE APPROPRIATE CONCRETE SURFACE PROFILE (CSP)
- AS DEFINED BY ICRI GUIDELINES 310.2R-2013. D. CONTRACTOR TO VERIFY THAT PAINT IS COMPATIBLE WITH PRIMER OF SHOP PRIMED SURFACES. NOTIFY EXCEL ENGINEERING IF THERE ARE ANY COMPATIBILITY ISSUES.
- E. ALL PAINT COLORS, STAIN COLORS, AND VARNISH TO BE SELECTED BY ARCHITECT/OWNER FROM A FULL RANGE OF AVAILABLE COLORS UNLESS NOTED OTHERWISE.
- G. APPLY PAINT PER MANUFACTURER'S TEMPERATURE AND HUMIDITY REQUIREMENTS. H. COMPLETED WORK SHALL BE FREE FROM DEFECTS AND FLAWS. I. THE CONTRACTOR SHALL KEEP EMPTY CONTAINERS ON THE PROJECT SITE UNTIL ALL PRODUCTS ARE VERIFIED AS TO

F. THE FINISH PRODUCT SHALL HAVE A CONSISTENT, SMOOTH APPEARANCE OF THE SPECIFIED LUSTER.

- COLOR AND/OR SHEEN. THE CONTRACTOR SHALL LEAVE WITH THE OWNER ALL OPENED PAINT CONTAINERS. J. DISPOSE OF EXCESS MATERIALS, CONTAINERS AND OTHER ITEMS NECESSARY FOR THE COMPLETION OF THE WORK IN A MANNER THAT MEETS OR EXCEEDS THE STRICTEST LAWS GOVERNING THE PROJECT'S MUNICIPALITY AND/OR STATE. THE PAINTING CONTRACTOR IS RESPONSIBLE FOR COMPLETE ADHERENCE TO ALL DISPOSAL REGULATIONS.
- K. COATING MAINTENANCE MANUAL 1. UPON CONCLUSION OF THE PROJECT, THE CONTRACTOR OR PAINT MANUFACTURER/SUPPLIER SHALL FURNISH A COATING MAINTENANCE MANUAL, SUCH AS SHERWIN WILLIAMS "CUSTODIAN PROJECT COLOR AND PRODUCT INFORMATION" REPORT OR EQUAL. MANUAL SHALL INCLUDE AN AREA SUMMARY WITH FINISH SCHEDULE, AREA DETAIL DESIGNATING WHERE EACH PRODUCT/COLOR/FINISH WAS USED, PRODUCT DATA PAGES, MATERIAL
- SAFETY DATA SHEETS, CARE AND CLEANING INSTRUCTIONS, TOUCH-UP PROCEDURES, AND COLOR SAMPLES OF EACH COLOR AND FINISH USED. L. EXPOSED MECHANICAL PIPING SYSTEM SHALL BE PAINTED PER APPROPRIATE METAL TYPE SPECIFICATION AND AS
- 2. FIRE PROTECTION RED (GALVANIZED AND STAINLESS STEEL PIPE AND FITTINGS SHALL NOT BE PAINTED). M. PAINT VENT THRU ROOFS ON PITCHED ROOF SAME COLOR AS ROOFING MATERIAL. N. PAINT ALL EXPOSED MISCELLANEOUS ITEMS, FINISHED OR UNFINISHED (INCLUDING H.V.A.C. RETURN AIR GRILLES,
- O. PAINT CEILING ACCESS PANELS TO MATCH ADJACENT CEILING FINISH. P. PROVIDE A YELLOW STRIPED AREA, 3' DEEP BY THE WIDTH OF THE ELECTRICAL PANELS, ON THE CONCRETE FLOOR IN FRONT OF THE ELECTRICAL PANELS AND SWITCHGEAR. AT THE SWITCHGEAR, PAINT THE EXPOSED PORTION OF THE
- CONCRETE HOUSEKEEPING PAD YELLOW. Q. ALL EXPOSED EXTERIOR & INTERIOR METAL SURFACES SHALL BE PAINTED, U.N.O. R. ALL EXPOSED MISCELLANEOUS ITEM IN FOOD PROCESS ROOMS SHALL REMAIN UNPAINTED UNLESS NOTED OTHERWISE. PROTECT ALL SUCH SYSTEM DURING THE PAINTING PROCESSES WITHIN THE ROOMS.
- S. EXTERIOR ITEMS: a. ACRYLIC - MISCELLANEOUS IRON, HANDRAILS, HOLLOW METAL DOORS AND FRAMES, ROOF STRUCTURE,
- **EXPOSED ROOF PIPING, ETC.:** i. ALKYD SHOP PRIMER ON METAL (REFER TO DIVISION 5) OR 1 COAT S-W KEM BOND HS UNIVERSAL METAL PRIMER B50 SERIES . 2 COATS S-W PRO INDUSTRIAL ACRYLIC SEMI GLOSS, B66-650 @ 2.5-4.0 MILS DFT/COAT.
- 2. GALVANIZED, ALUMINUM, ZINC-COATED AND NON FERROUS METALS: i. 1 COAT S-W PRO INDUSTRIAL PRO-CRYL UNIVERSAL PRIMER (refer to Division 5), B66-1310 SERIES, @ 2.0-4.0

j. 2 COATS S-W PRO INDUSTRIAL ACRYLIC SEMI GLOSS, B66-650 @ 2.5-4.0 MILS DFT/COAT.

3. CONCRETE (CEMENTITIOUS SIDING, STUCCO, PRECAST, AND POURED IN PLACE CONCRETE): a. ACRYLIC WATER BASED SYSTEM — NON WATER PENETRATION RESISTANT (DESCRIBE TYPICAL LOCATION) i. 1 COAT S-W LOXON CONCRETE MASONRY PRIMER LX02 @ 2.0-3.5 MILS DFT.

j. 2 COAT S-W A-100 EXTERIOR LATEX SATIN A82 SERIES @ 1.5-2.0 MILS DFT/COAT.

- 4. CONCRETE (CONCRETE MASONRY UNITS, CINDER or CONCRETE BLOCK): a. ACRYLIC WATER BASED SYSTEM — NON WATER PENETRATION RESISTANT (DESCRIBE TYPICAL LOCATION). i. 1 COAT S-W LOXON ACRYLIC BLOCK SURFACER, LX01 SERIES (50-100 sf/gal).
- j. 2 COAT S-W A-100 EXTERIOR LATEX SATIN A82 SERIES @ 1.5-2.0 MILS DFT/COAT.

a. ACRYLIC FLAT

- T. INTERIOR ITEMS: GYPSUM DRYWALL (PA): a. ACRYLIC EG-SHEL
- j. 2 Coats S-W promar 200 zero voc interior latex eg-shel B20-2600 @ 1.7 mils dft/coat. i. 1 COAT S-W PROMAR 200 ZERO VOC INTERIOR LATEX PRIMER B28W2600 @ 1.2-1.5 MILS DFT. j. 2 COATS S-W PROMAR 200 ZERO VOC INTERIOR LATEX FLAT B30-2600 @ 1.4 MILS DFT/COAT.

i. 1 COAT S-W PROMAR 200 ZERO VOC INTERIOR LATEX PRIMER B28W2600 @ 1.0 MILS DFT.

- i. 1 COAT S-W PROMAR 200 ZERO VOC INTERIOR LATEX PRIMER B28W2600 @ 1.2-1.5 MILS DFT. j. 2 COATS S-W PROMAR 200 ZERO VOC INTERIOR LATEX SEMI-GLOSS B31-2600 @ 1.5 MILS DFT/COAT.
- i. 1 COAT S-W MINWAX PERFORMANCE SERIES TINTABLE WOOD STAIN 250. 2 COAT S-W MINWAX WATERBASED OIL MODIFIED POLYURETHANE: SATIN/SEMI-GLOSS/GLOSS.

a. DOORS, FRAMES, HANDRAILS, MISC. METALS, ETC., (PRIMER, BRUSH/ROLLER)

- i. 1 COAT S-W PREMIUM WALL AND WOOD PRIMER B28W8111 @ 1.8-2.1 MILS DFT. j. 2 COATS S-W PRO INDUSTRIAL ACRYLIC SEMI GLOSS B66-660 @ 2.5-4.0 MILS DFT/COAT. 3. FERROUS METAL
- (A). 1 COAT S-W PRO INDUSTRIAL PRO-CRYL UNIVERSAL PRIMER B66-1310 @ 2.0-4.0 MILS DFT. (B). 2 COATS S-W PRO INDUSTRIAL ACRYLIC SEMI GLOSS B-66-650 @ 2.5 — 4 MILS DFT/COAT. ii. ALKYD (WATERBASED URETHANE MODIFIED ALKYD): HIGH TRAFFIC AREA:
- (B). 2 COATS S-W PRO INDUSTRIAL WATER BASED ALKYD URETHANE ENAMEL SEMI GLOSS B53-1150 @ b. EXPOSED STRUCTURAL STEEL AND EXPOSED MECHANICAL/ELECTRICAL ITEMS (PRIMER, SPRAYED): i. ACRYLIC (NON CORROSIVE, NON MOISTURE) NORMAL EXPOSURE (PA):

(B). SPOT PRIME AS NEEDED: S-W PRO INDUSTRIAL PRO-CRYL UNIVERSAL PRIMER b66-1310 @ 2.0-4.0 MILS

(2). AMBIENT TEMPERATURE AND SUBSTRATE TEMPERATURE SHALL BE 50 DEGREES F TO 110 DEGREES

(B). SPOT PRIME AS NEEDED: S-W KEM BOND HS UNIVERSAL METAL PRIMER B50 SERIES @ 2.0-5.0 MILS DFT.

(A). 1 COAT S-W PRO INDUSTRIAL PRO-CRYL UNIVERSAL PRIMER B66-1310 @ 2.0-4.0 MILS DFT.

(C). 2 COATS S-W PRO INDUSTRIAL WATERBORNE ACRYLIC DRY FALL, EG-SHEL, B42-82 @ 2.0-3.0 MILS DFT. (1). CONTRACTOR SHALL MAINTAIN A DAILY LOG OF TEMPERATURE AND RELATIVE HUMIDITY.

(A). CONFIRM COMPATIBILITY WITH SHOP APPLIED PRIMERS.

(3). RELATIVE HUMIDITY SHALL NOT EXCEED 75%. ii. ALKYD (NON CORROSIVE, NON- MOISTURE) (PA): (A). CONFIRM COMPATIBILITY WITH SHOP APPLIED PRIMERS.

(C). FINISH COAT S-W SUPER SAVE-LITE HI-TEC DRY FALL, EG-SHEL B48 SERIES @ 3.0-3.5 MILS DFT.

- 4. GALVANIZED INTERIOR CEILING DECKING (PA): a. ACRYLIC (NON CORROSIVE, NON MOISTURE) (SPRAYED): i. 2 COATS S-W PRO INDUSTRIAL WATERBORNE DRY FALL, EG-SHEL, B42-82 @ 2.0-3.0 MILS DFT. 5. ALUMINUM, ZINC-COATED AND NON FERROUS METALS:
- i. 1 COAT S-W PRO INDUSTRIAL PRO-CRYL UNIVERSAL PRIMER B66-1310 @ 2.0 4.0 MILS DFT. j. 2 COATS S-W PRO INDUSTRIAL SEMI GLOSS B66-650 @ 2.5-4.0 MILS DFT/COAT. 6. CONCRETE MASONRY UNITS (PA):

i. 1 COAT S-W PREPRITE BLOCK FILLER B25W25- WHITE.

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PROJECT INFORMATION

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SHEET DATES REVISIONS MAR. 23, 2023

JOB NUMBER

2255300

SHEET NUMBER

ARCHITECTURAL SPECIFICATIONS

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FEB. 14, 2023

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- ii. 2 COATS S-W PROMAR 200 ZERO VOC INTERIOR LATEX FLAT B30-2600 @ 1.4 MILS DFT/COAT.
- b. ACRYLIC SEMI-GLOSS
- j. 2 COATS S-W PROMAR 200 ZERO VOC INTERIOR LATEX SEMI-GLOSS B31-2600 @ 1.5 MILS DFT/COAT.
- i. 1 COAT S-W LOXON CONCRETE MASONRY PRIMER LX02 @ 2.0-3.5 MILS DFT.
- j. 2 COATS S-W PROMAR 200 ZERO VOC INTERIOR LATEX FLAT B30-2600 @ 1.4 MILS DFT/COAT.
- i. 1 COAT S-W PROMAR 200 ZERO VOC INTERIOR LATEX PRIMER B28W2600 @ 1.2-1.5 MILS DFT.

10 14 00 SIGNAGE

- 1. CONTRACTOR TO FURNISH AND INSTALL SIGNAGE PER LOCAL, STATE, AND FEDERAL CODES AND PER ADDITIONAL
- 3. ALL SIGNAGE SHALL MEET THE REQUIREMENTS OF THE A.D.A. AND ANSI.
- DOOR, INCLUDING AT DOUBLE LEAF DOORS, SIGNS SHALL BE PLACED ON THE NEAREST ADJACENT WALL. 5. MOUNTING HEIGHT SHALL BE 60" ABOVE FINISH FLOOR TO THE CENTERLINE OF THE SIGN UNLESS INDICATED
- 6. PROVIDE HANDICAP PARKING SIGNS AS INDICATED ON PLANS AND AS REQUIRED BY LOCAL, STATE, AND FEDERAL

10 44 00 FIRE EXTINGUISHERS

- 2. MOUNT FIRE EXTINGUISHER NOT HIGHER THAN 48" ABOVE FINISH FLOOR UNLESS LOCAL REGULATIONS REQUIRE

DIVISION 22 PLUMBING

22 05 00 PLUMBING WORK

A. SEE PLUMBING PLANS FOR SPECIFICATIONS

AND VENTILATING AND AIR CONDITIONING

23 05 00 HEATING AND VENTILATION WORK

DIVISION 26 ELECTRICAL

DIVISION 31 EARTH WORK

A. SEE CIVIL PLANS FOR SPECIFICATIONS.

31 20 00 EARTH MOVING

A. SEE CIVIL PLANS FOR SPECIFICATIONS.

32 10 00 GRANULAR BASE AND ASPHALT PAVEMENT

A. SEE CIVIL PLANS FOR SPECIFICATIONS.

32 20 00 CONCRETE AND AGGREGATE BASE

32 30 00 LANDSCAPING AND SITE STABILIZATION

A. SEE CIVIL PLANS FOR SPECIFICATIONS.

DIVISION 33 UTILITIES

SHEET DATES SHEET ISSUE FEB. 14, 2023

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MAR. 23, 2023

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SPECIFICATIONS



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PROJECT INFORMATION

COLLABORATION

i. 1 COAT S-W PREPRITE BLOCK FILLER B25W25- WHITE. 7. PRECAST CONCRETE (PA): a. ARYLIC EG-SHEL j. 2 COAT S-W PROMAR 200 ZERO VOC INTERIOR LATEX EG-SHEL B20 SERIES @ 1.7 MILS DFT/COAT.

i. 1 COAT S-W LOXON CONCRETE MASONRY PRIMER LX02 @ 2.0-3.5 MILS DFT.

j. 2 COATS S-W PROMAR 200 ZERO VOC INTERIOR LATEX SEMI-GLOSS B31-2600 @ 1.5 MILS DFT/COAT.

DIVISION 10 SPECIALTIES

DETAILS ON PLANS. 2. COORDINATE STYLE AND COLOR WITH OWNER UNLESS SPECIFICALLY INDICATED ON PLANS.

4. WHERE PERMANENT IDENTIFICATION IS PROVIDED FOR ROOMS AND SPACES, SIGNS SHALL BE INSTALLED ON THE WALL ADJACENT TO THE LATCH SIDE OF THE DOOR. WHERE THERE IS NO WALL SPACE TO THE LATCH SIDE OF THE

- 1. FURNISH AND INSTALL EXTINGUISHERS PER LOCAL, STATE, AND FEDERAL CODES, AND N.F.P.A. NO.10-1978.
- 3. ALL FIRE EXTINGUISHERS AND CABINETS TO MEET THE REQUIREMENTS OF THE A.D.A. AND ANSI A117.1.

DIVISION 21 FIRE SUPPRESSION

21 10 00 FIRE PROTECTION WORK

A. SEE FIRE PROTECTION PLANS FOR SPECIFICATIONS.

A. SEE HVAC PLANS FOR SPECIFICATIONS.

26 05 00 ELECTRICAL WORK

A. SEE ELECTRICAL PLANS FOR SPECIFICATIONS.

31 10 00 SITE CLEARING

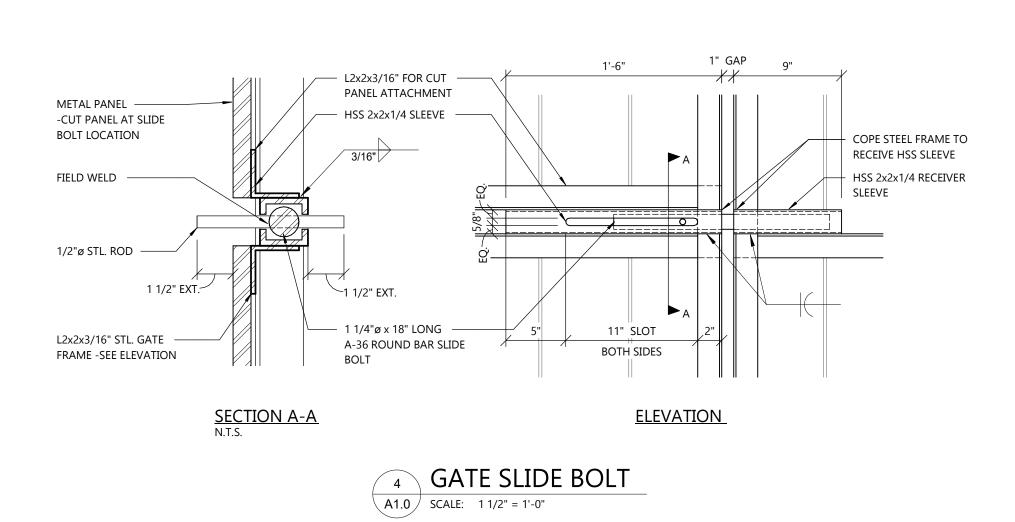
31 30 00 EROSION CONTROL

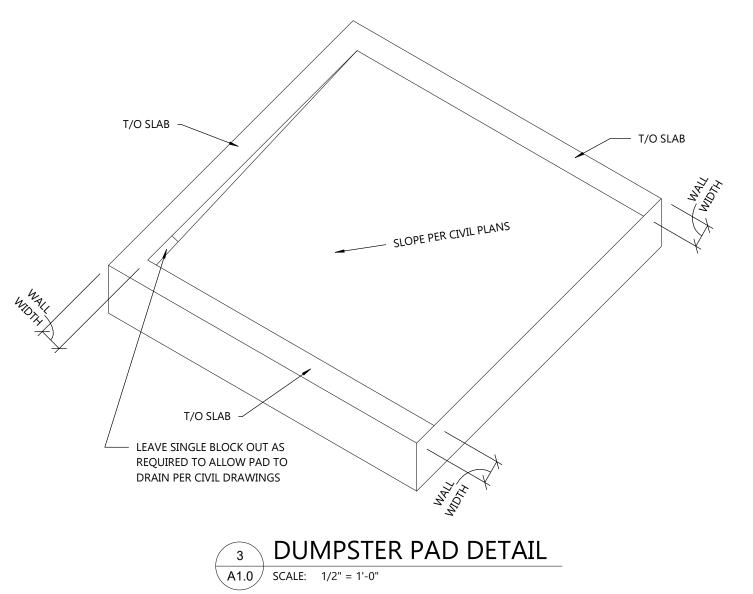
DIVISION 32 EXTERIOR IMPROVEMENTS

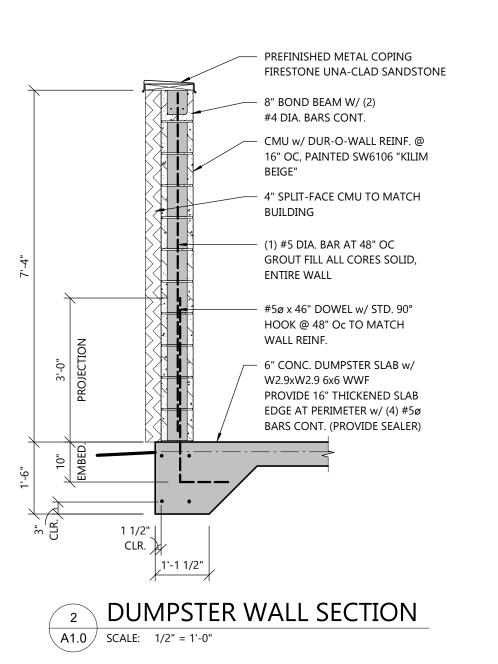
A. SEE CIVIL PLANS FOR SPECIFICATIONS.

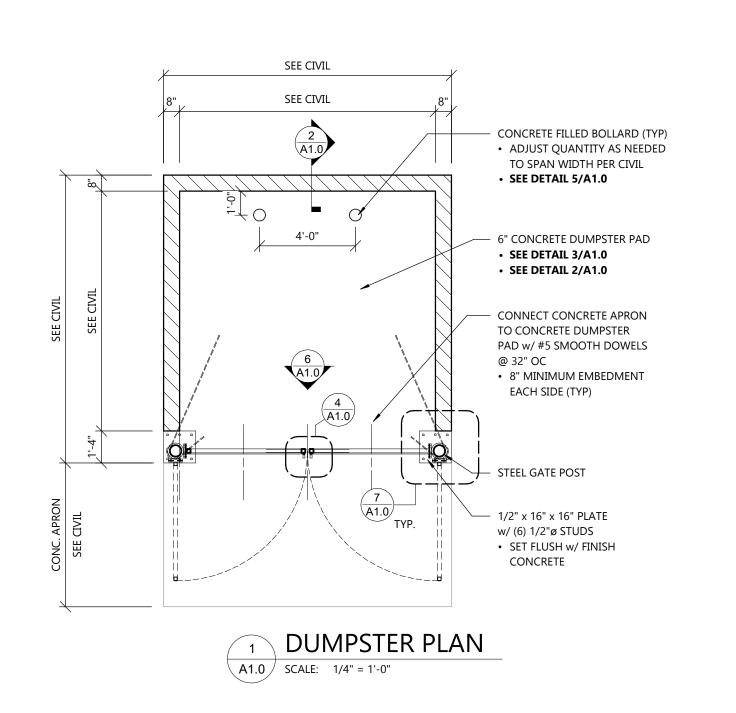
33 10 00 SITE UTILITIES

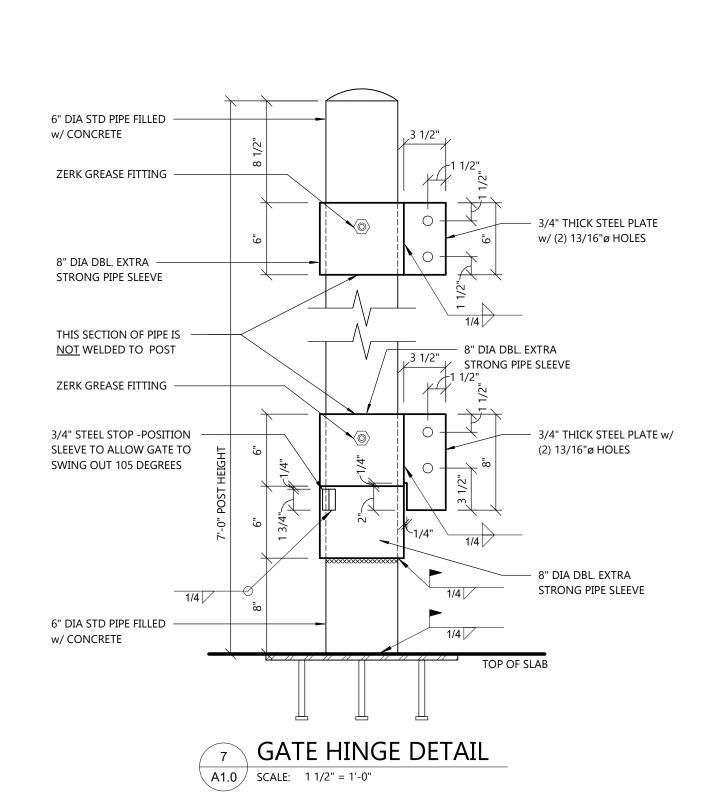
SEE CIVIL PLANS FOR SPECIFICATIONS.

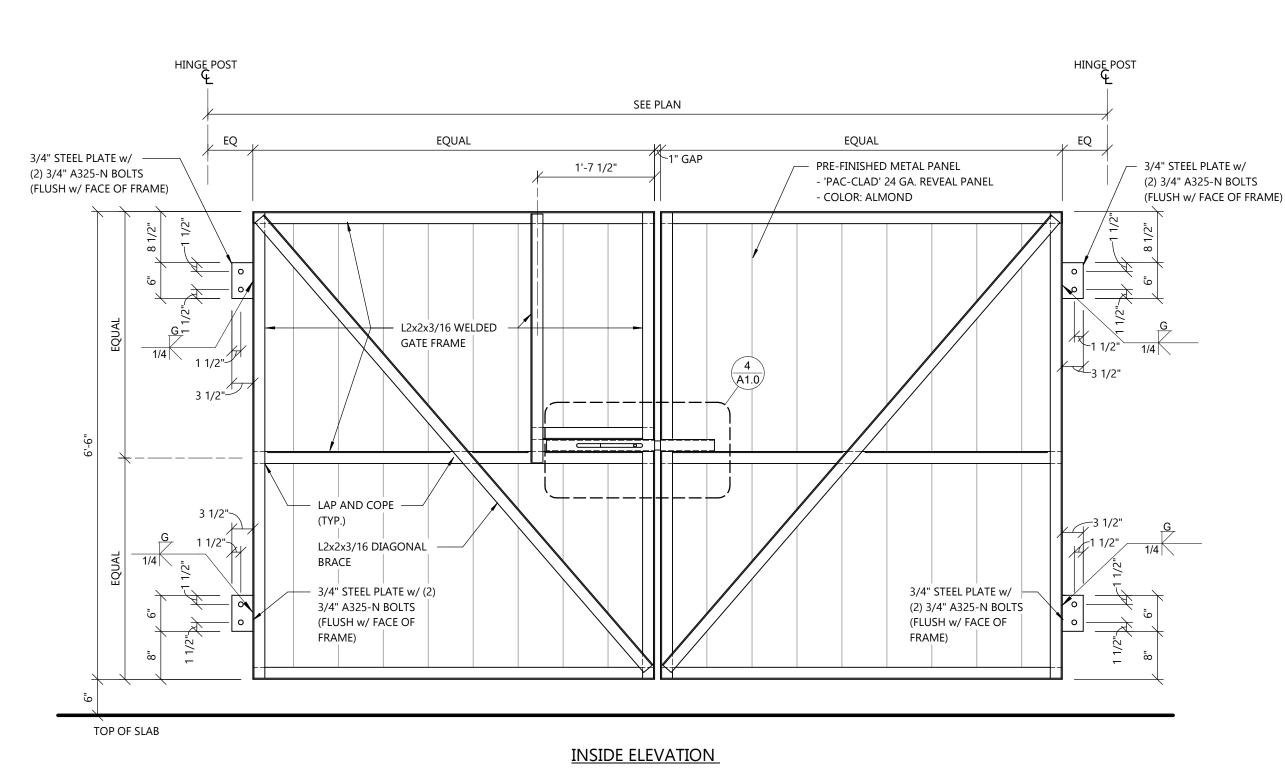


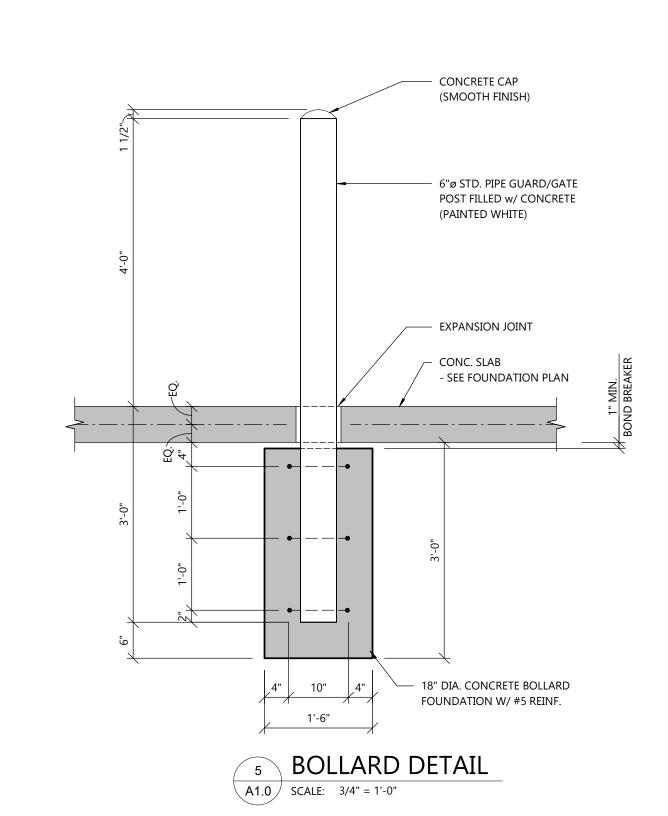




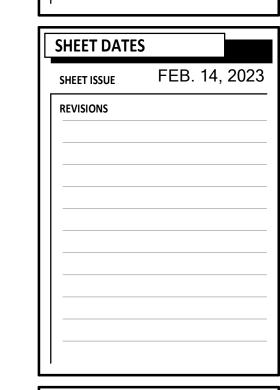












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PROJECT INFORMATION

SCHOOL FOR:

CHILDHOOD

OSED

PROP(

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ELOPMENT ROSEVILLE, MN 55

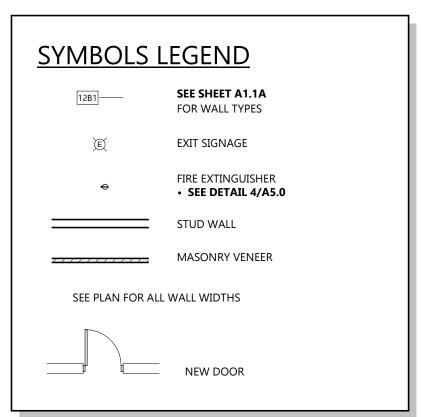
QUA TWIN LAKES

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COLLABORATION

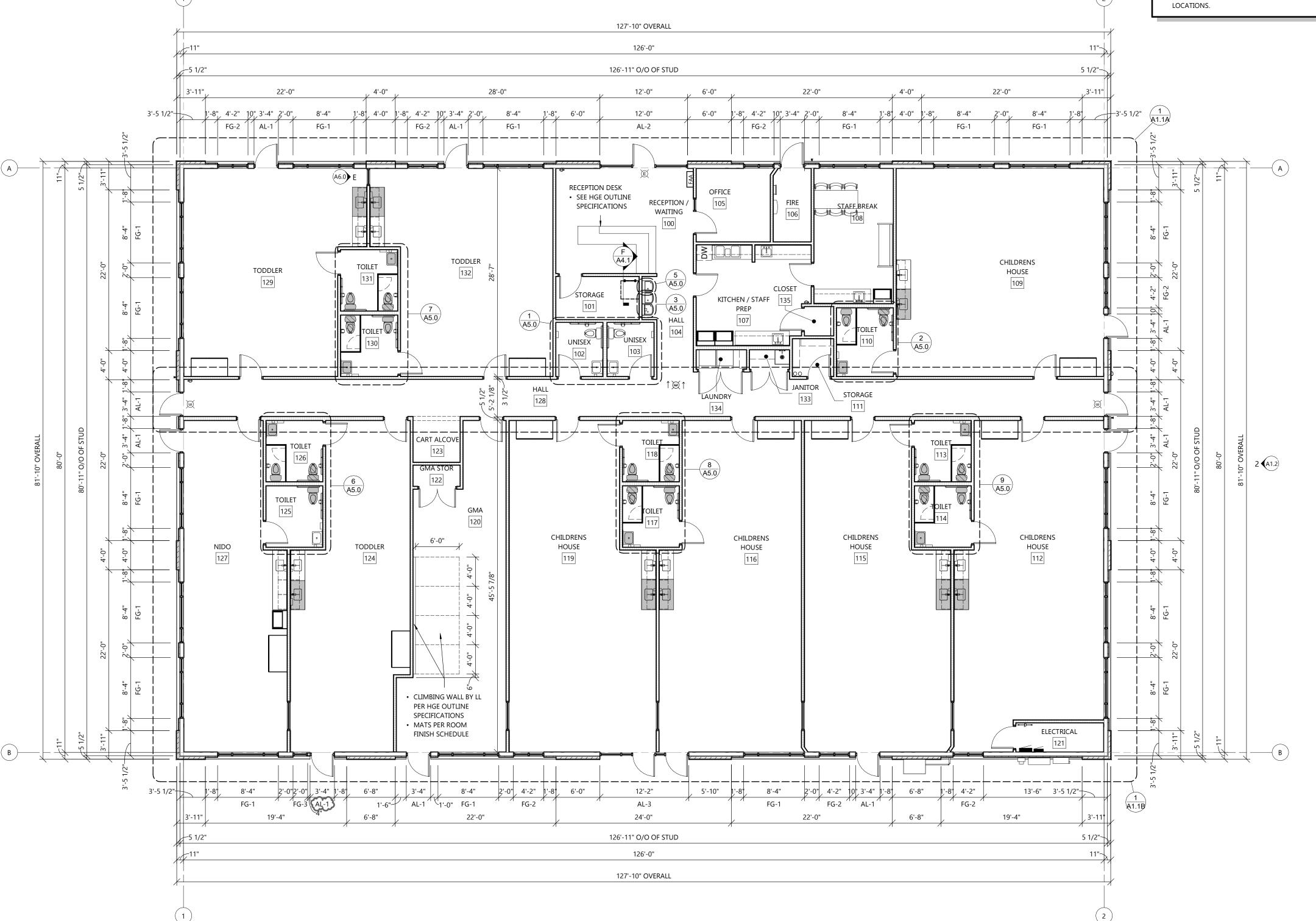
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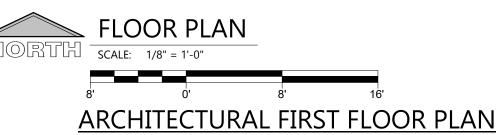
A1.0



GENERAL NOTES

- ALL INTERIOR DIMS. ARE FROM FACE-OF-STUD TO FACE OF-
- ALL INTERIOR WALLS TO BE 2x4 OR 2x6 @ 16" O.C. (SEE FLOOR PLAN FOR SIZE) W/ 1/2" OR 5/8" GYPSUM BOARD BOTH SIDES -EXTEND TO BOTTOM CHORD OF TRUSSES / UNDERSIDE OF
- PROVIDE 3 1/2" SOUND BATT INSULATION AROUND PERIMETER OF TOILET ROOM AND OFFICE WALLS.
- PROVIDE WOOD BLOCKING FOR ANY FURNISHINGS BY OWNER. (VERIFY LOCATIONS)
- ALL EXTERIOR WINDOWS TO HAVE GYPSUM BOARD RETURNS AT HEAD AND JAMBS AND PLASTIC LAMINATE COVERED WOOD
- ALL CABINETS AND COUNTERTOPS TO HAVE PLASTIC LAMINATE FRONTS AND TOPS.
- ALL CABINETRY AND EQUIPMENT BY OTHERS SEE EQUIPMENT DRAWING BY INTERIOR DESIGNER FOR REQUIREMENTS.
- CHILD HEIGHT FIXTURES INDICATED ON PLAN BY **GRAY/GRAY** w/ **DIAGONAL LINES HATCHING**. SEE FLOOR PLANS & ENLARGED FLOOR PLANS FOR ALL CHILD HEIGHT FIXTURE







PROJECT INFORMATION

SCHOOL FOR:

OPMI SEVILLE, N CHILDHOOD

QUA TWIN LAKES

PROFESSIONAL SEAL

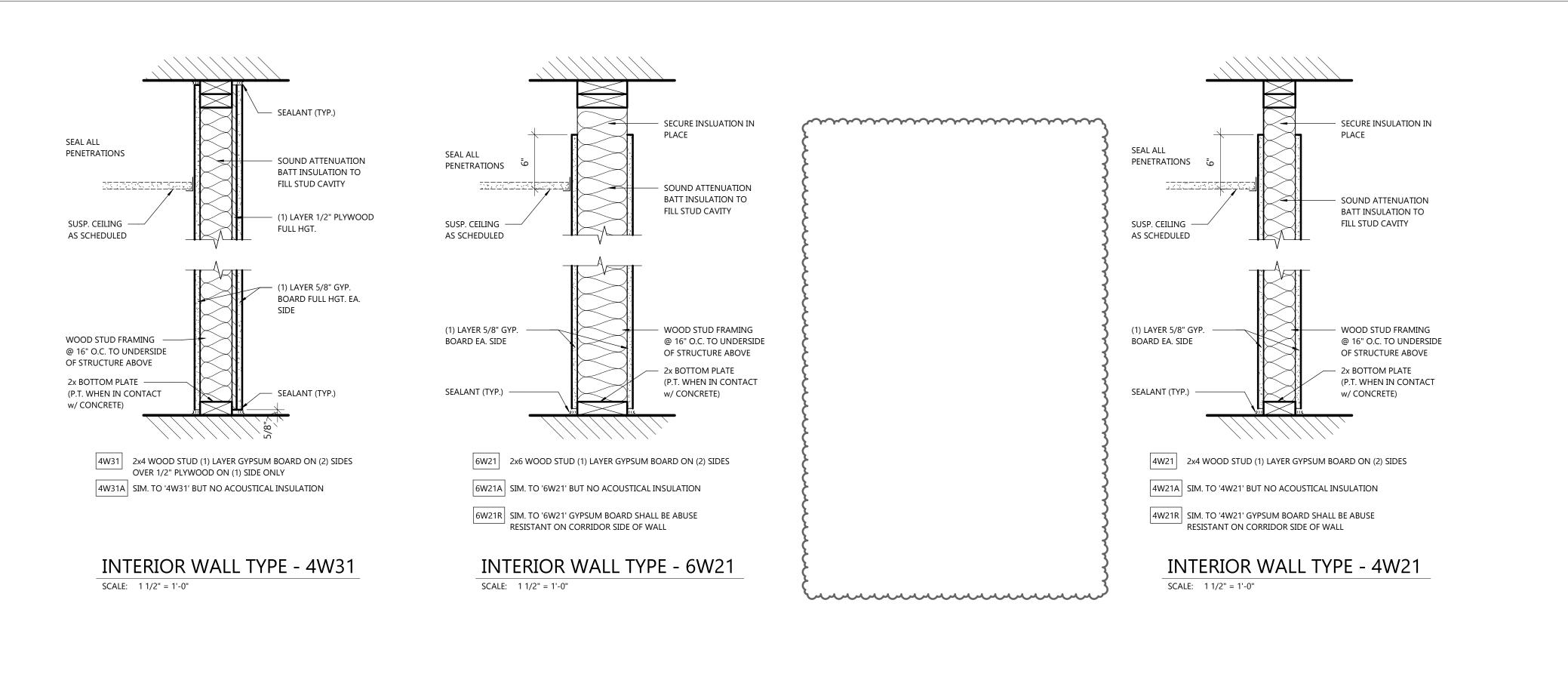
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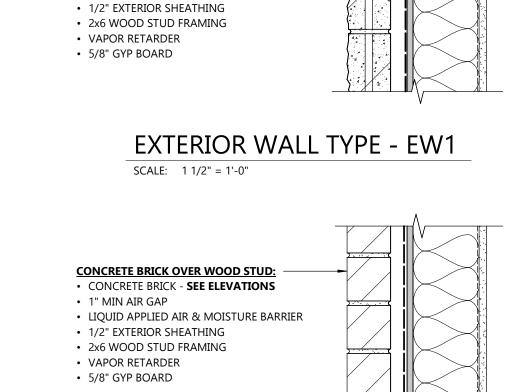
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SHEET ISSUE	FEB. 14,	2
REVISIONS		
AD1	FEB. 28,	2
AD2	MAR. 23,	2
AD3	APR. 19,	2
CB2	JUNE 5,	2
CB5	JUNE 21,	2

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SHEET NUMBER





EXTERIOR WALL TYPE - EW2

GENERAL KEYNOTES

4" SPLIT-FACE CMU OVER WOOD STUD:

LIQUID APPLIED AIR & MOISTURE BARRIER

SCALE: 1 1/2" = 1'-0"

• EIFS INSTALLED PER MFR SPECIFICATIONS w/

3" RIGID INSULATION & INTEGRATED

DRAINAGE PLANE - **SEE ELEVATIONS**• LIQUID APPLIED AIR & MOISTURE BARRIER

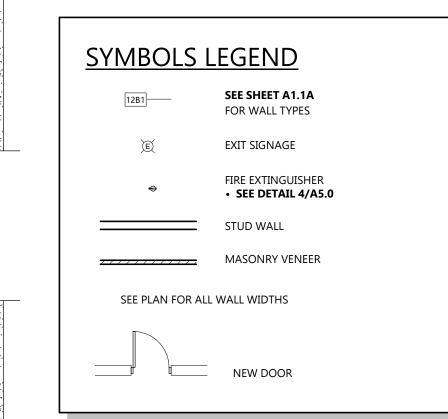
EIFS OVER WOOD STUD:

• 1/2" EXTERIOR SHEATHING

4" SPLIT-FACE CMU - SEE ELEVATIONS

1" MIN AIR GAP

 $\overline{\langle A \rangle}$ wire shelving per hge outline specifications.



GENERAL NOTES

OF TOILET ROOM AND OFFICE WALLS.

(VERIFY LOCATIONS)

FRONTS AND TOPS.

LOCATIONS.

• ALL INTERIOR DIMS. ARE FROM FACE-OF-STUD TO FACE OF-

• ALL INTERIOR WALLS TO BE 2x4 OR 2x6 @ 16" O.C. (SEE FLOOR

PLAN FOR SIZE) W/ 1/2" OR 5/8" GYPSUM BOARD BOTH SIDES -

• PROVIDE 3 1/2" SOUND BATT INSULATION AROUND PERIMETER

• PROVIDE WOOD BLOCKING FOR ANY FURNISHINGS BY OWNER.

• ALL EXTERIOR WINDOWS TO HAVE GYPSUM BOARD RETURNS

AT HEAD AND JAMBS AND PLASTIC LAMINATE COVERED WOOD

ALL CABINETS AND COUNTERTOPS TO HAVE PLASTIC LAMINATE

• ALL CABINETRY AND EQUIPMENT BY OTHERS - SEE EQUIPMENT

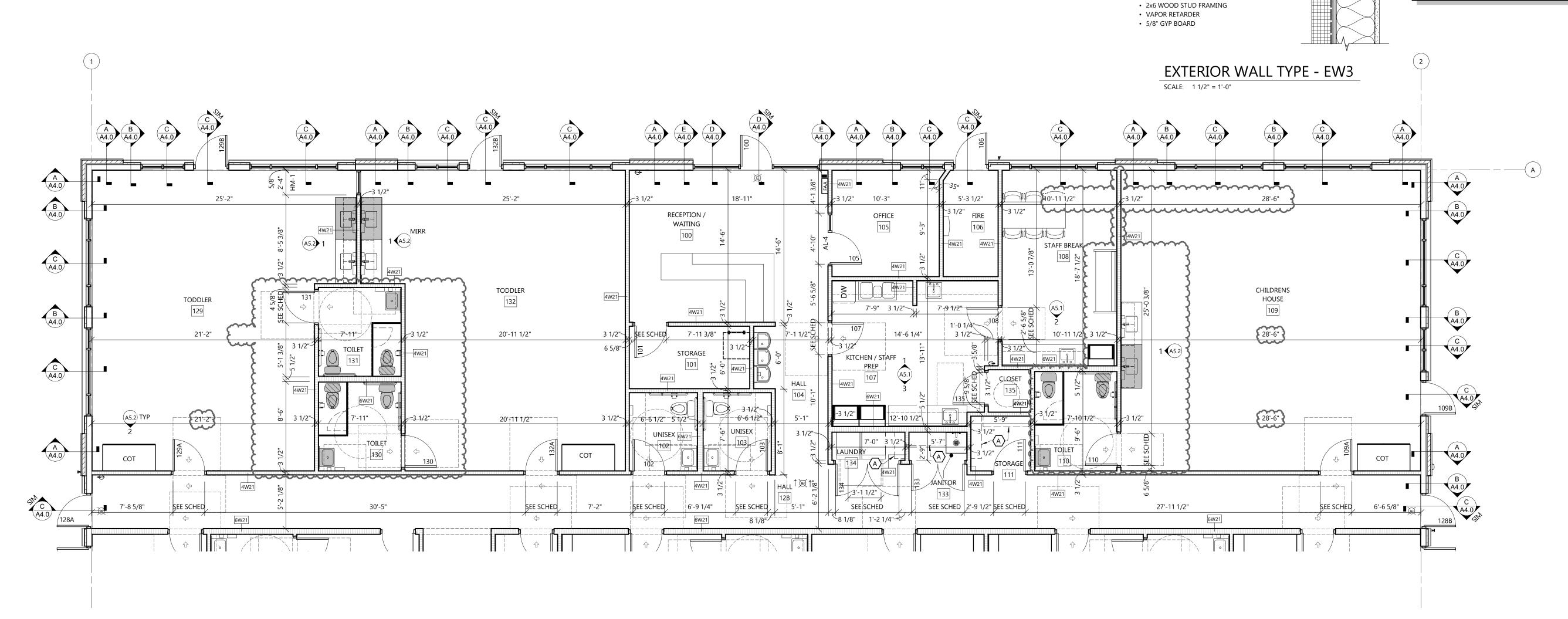
• CHILD HEIGHT FIXTURES INDICATED ON PLAN BY **GRAY/GRAY**

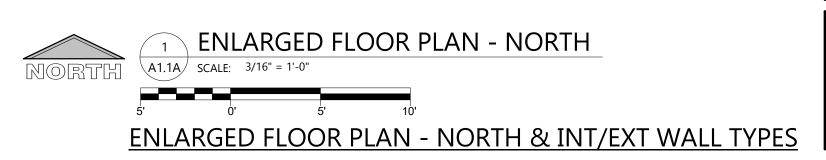
DRAWING BY INTERIOR DESIGNER FOR REQUIREMENTS.

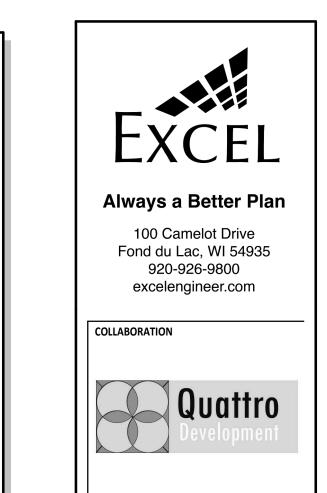
w/ Diagonal lines hatching. See Floor Plans &

ENLARGED FLOOR PLANS FOR ALL CHILD HEIGHT FIXTURE

EXTEND TO BOTTOM CHORD OF TRUSSES / UNDERSIDE OF







PROJECT INFORMATION

PROPOSED EARLY CHILDHOOD SCHOOL FOR:

QUATTRO DEVELOPMENT

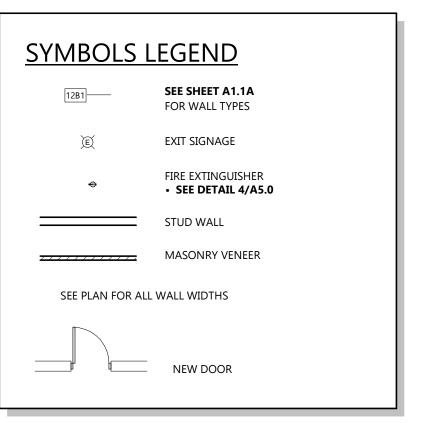
TWIN LAKES STATION - LOT 2 • ROSEVILLE, MN 55113

FEB. 14, 202 FEB. 28, 202 IAR. 23, 202 APR. 19, 202
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APR. 19, 202

PROFESSIONAL SEAL

JOB NUMBER 2255300

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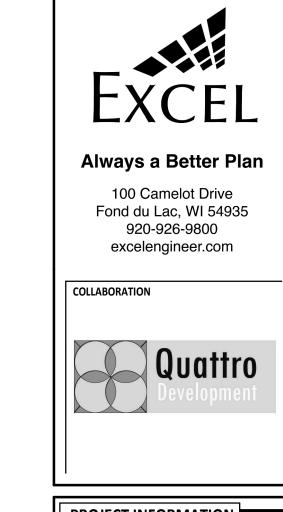
GENERAL NOTES

- ALL INTERIOR DIMS. ARE FROM FACE-OF-STUD TO FACE OF-STUD.
- ALL INTERIOR WALLS TO BE 2x4 OR 2x6 @ 16" O.C. (SEE FLOOR PLAN FOR SIZE) W/ 1/2" OR 5/8" GYPSUM BOARD BOTH SIDES -EXTEND TO BOTTOM CHORD OF TRUSSES / UNDERSIDE OF
- PROVIDE 3 1/2" SOUND BATT INSULATION AROUND PERIMETER
 OF TOILET ROOM AND OFFICE WALLS.
- PROVIDE WOOD BLOCKING FOR ANY FURNISHINGS BY OWNER.
 (VERIFY LOCATIONS)
- ALL EXTERIOR WINDOWS TO HAVE GYPSUM BOARD RETURNS
 AT HEAD AND JAMBS AND PLASTIC LAMINATE COVERED WOOD
- ALL CABINETS AND COUNTERTOPS TO HAVE PLASTIC LAMINATE
- FRONTS AND TOPS.

 ALL CABINETRY AND EQUIPMENT BY OTHERS SEE EQUIPMENT

DRAWING BY INTERIOR DESIGNER FOR REQUIREMENTS.

CHILD HEIGHT FIXTURES INDICATED ON PLAN BY **GRAY/GRAY w/ DIAGONAL LINES HATCHING**. SEE FLOOR PLANS &
ENLARGED FLOOR PLANS FOR ALL CHILD HEIGHT FIXTURE



PROJECT INFORMATION

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FOR:

CHILDHOOD SCHOOL FOR: **DEVELOPMEN**LOT 2 • ROSEVILLE, MN 55

QUATTRO DEV
TWIN LAKES STATION - LOT 2

PROFESSIONAL SEAL

SHEET DATES

SHEET ISSUE FEB. 14, 2023

REVISIONS

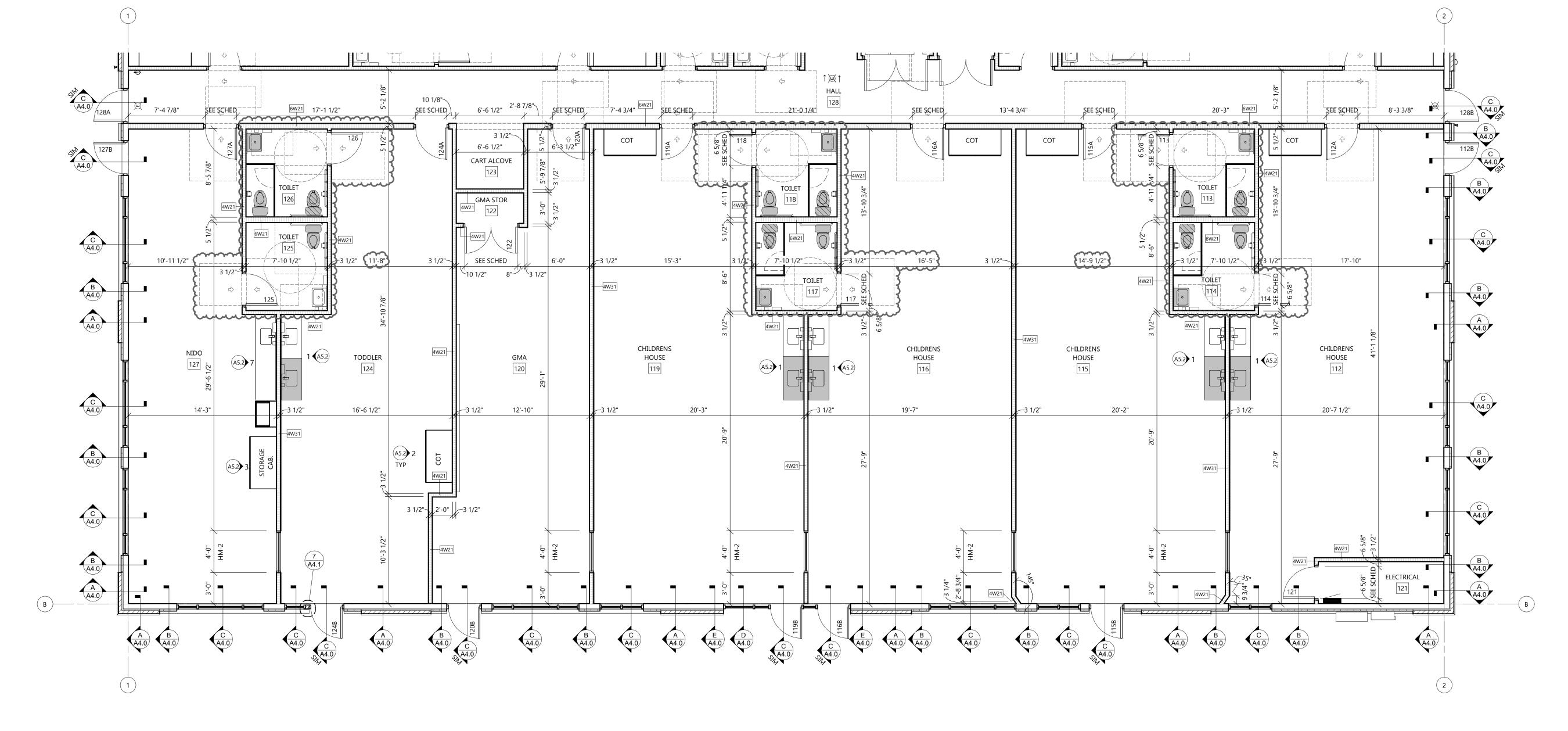
AD1 FEB. 28, 2023

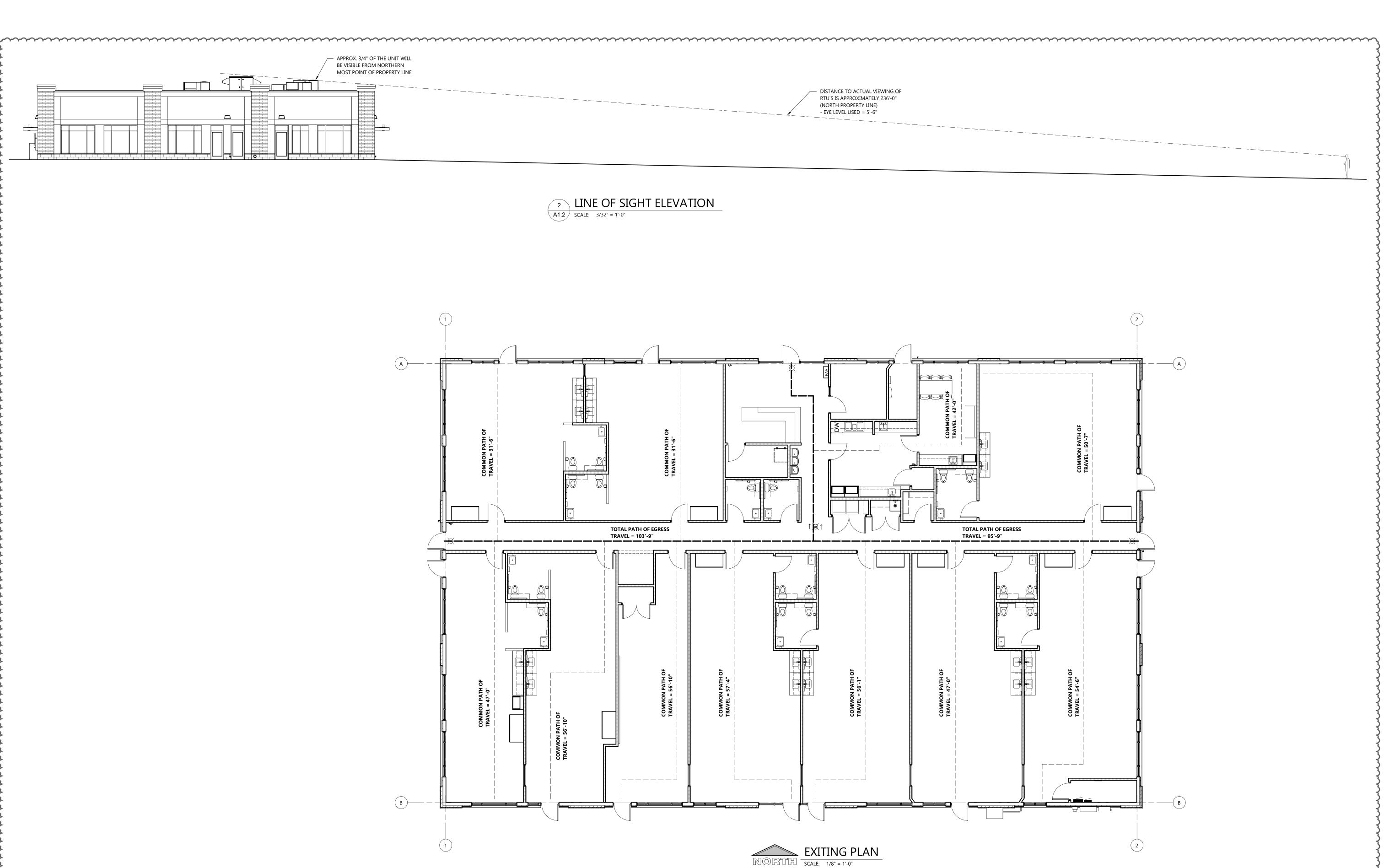
AD2 MAR. 23, 2023

AD3 APR. 19, 2023

JOB NUMBER 2255300

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PROJECT INFORMATION

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FOR: **ENT** AN 55113

VELOPMENT

QUATTRO DEVEL

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SHEET DATES

SHEET ISSUE MAR. 23, 2023

REVISIONS
AD2 MAR. 23, 2023

JOB NUMBER 2255300

SHEET NUMBER

A1.2

ROOF SPE	ROOF SPECIFICATION				
TYPE "TP	O - A"				
DECK	• WOOD				
THERMAL BARRIER	• 1/2" GLASS MAT SHEATHING				
VAPOR RETARDER	• NONE				
INSULATION	 MINIMUM TWO LAYERS OF POLYISOCYANURATE (R=26.1) STAGGER JOINTS. TAPERED INSULATION IS ADDITION TO LISTED R VALUE. BASE LAYER MECH. FASTENED. SECOND LAYER FULLY ADHERED. ALL INSULATION JOINTS TO BE TIGHT. 				
TAPERED INSULATION	WHERE SHOWN ON PLANS, 1/4" PER FOOT PERPENDICULAR TO VALLEY. POLYISOCYANURATE TO MATCH BASE INSULATION.				
COVERBOARD	 1/2" GLASS MAT SHEATHING OVER EXPANDED POLYSTYRENE INSULATION PER MFR REQUIREMENTS. UL CLASS RATING: NONE 				
MEMBRANE	 CARLISLE SURE-WELD, FIRESTONE - ULTRAPLY, VERSSICO - VERSIWELD 60 MIL ADHERED WHITE THERMOPLASTIC POLYOLEFIN (TPO) WELDED SEAMS. PROVIDE TPO WHITE WALKWAY ROLLS BY MEMBRANE MFR WITH RAISED TREAD PATTERN. WELD TO TPO ROOFING. INSTALL PER MFRS INSTALLATION INSTRUCTIONS AND RECOMMENDATIONS. PROVIDE 12" X 12" MEMBRANE SAMPLE WITH SHOP DRAWING SUBMITTAL 				

• PROVIDE 2 YEAR CONTRACTORS WARRANTY ON MATERIALS (EXCLUDING MEMBRANE) AND WORKMANSHIP.

WARRANTY

WARRANTY.

• INSTALL MATERIALS IN ORDER OF LISTING FROM DECK TO MEMBRANE.

• SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS

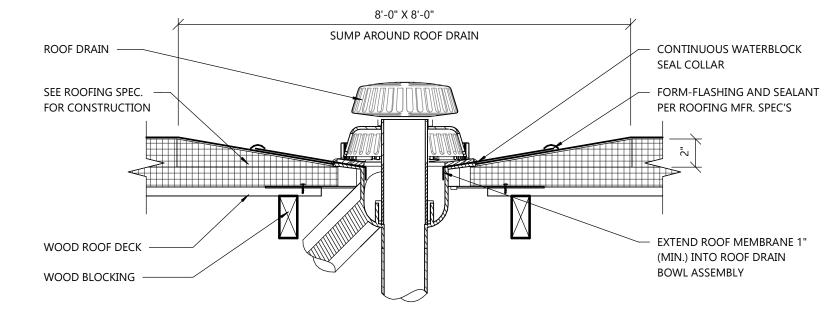
• AT CONTRACTOR OPTION, THE USE OF A FACTORY APPLIED ADHESIVE ACROSS ENTIRE SURFACE OF THE MEMBRANE ROLL IS ACCEPTABLE.

• PROVIDE 20 YEAR TOTAL SYSTEM, LABOR AND MATERIAL WARRANTY, NO DOLLAR LIMIT FOR LEAKS, COMMENCING WITH THE DATE OF FINAL

INSPECTION AND ACCEPTANCE BY ROOF MANUFACTURER. ALL PORTIONS OF ROOFING SYSTEM MUST MEET MFRS REQUIREMENTS FOR

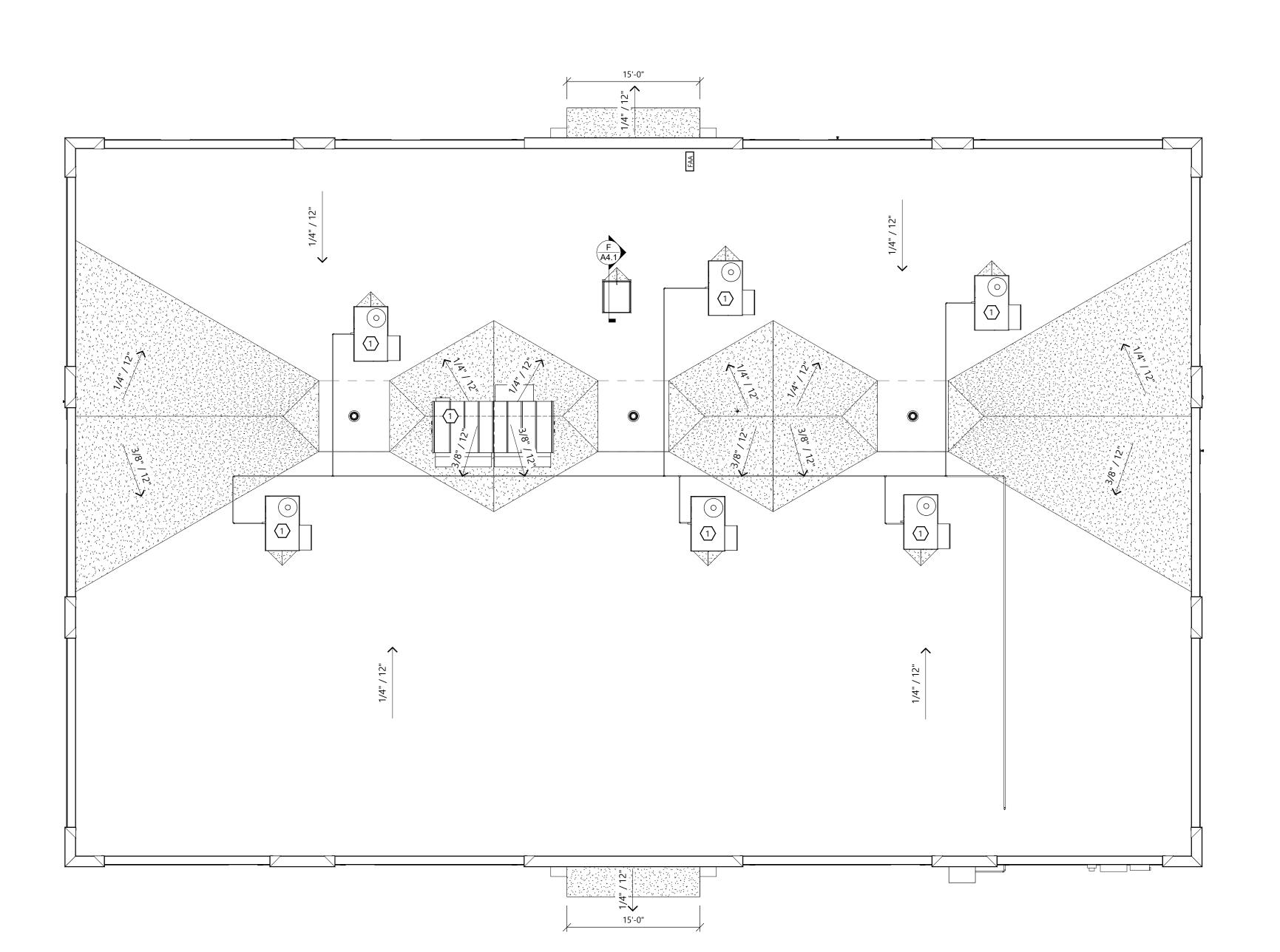
-	— ROOF EQUIPMENT - SEE MECHANICAL PLANS
INSULATED MTL. ROOF CURB BY EQUIPMENT SUPPLIER - INSTALL SO THAT TOP OF CURB IS LEVEL	 ROOF MEMBRANE FORM FLASHING AS REQ'D - ALL FLASHING REQ'D FOR ROOF PENETRATIONS BY ROOFING CONTRACTOR
PROVIDE BLOCKING UNDER CURB AS REQ'D TO RAISE TOP OF CURB HEIGHT ABOVE ROOF INSULATION TO ROOFING MANUF. MIN. REQUIREMENTS	
	— ROOF DECK
ROOF TOP EQUIPMENT C	CURB DETAIL

A1.3 | SCALE: 1 1/2" = 1'-0"





A1.3 SCALE: 1 1/2" = 1'-0"



GENERAL ROOF NOTES:

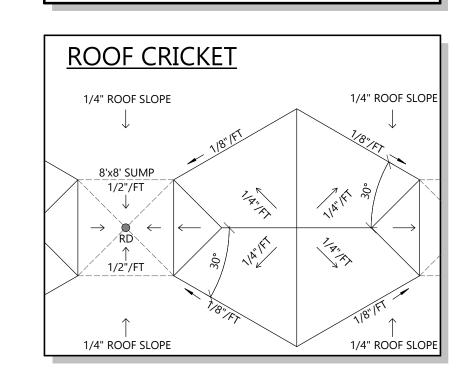
- ROOFING CONTRACTOR SHALL PROVIDE MEMBRANE FORM FLASHING FOR ALL ROOF PENETRATIONS PER ROOF MEMBRANE MANUFACTURER'S REQUIREMENTS.
- SEE MECHANICAL DRAWINGS FOR LOCATION AND SIZE OF ALL ROOF PENETRATIONS AND CURBS REQUIRED FOR MECHANICAL EQUIPMENT.
- PIPE STANDS NOT INSTALLED ON CURBS SHALL BE INSTALLED
 ON SLEEPERS OR CONCRETE PADS 6" LARGER THAN
 EQUIPMENT.
- PROVIDE SINGLE PLY ROOFING MEMBRANE NOT ADHERED TO ROOF UNDER ALL FREE STANDING PIPE AND EQUIPMENT
- PROVIDE WALKWAY FROM ROOF ACCESS TO ALL MOTORIZED EQUIPMENT AND SIDES OF EQUIPMENT REQUIRING ACCESS. PROVIDE PRICE PER FOOT. FIELD VERIFY.

KEYNOTES

CURB MOUNTED MECHANICAL EQUIPMENT.SEE DETAIL 2/A1.3

STANDS 6" LARGER THAN STANDS.

RD ROOF DRAIN SEE DETAIL 1/A1.3 ROOF SLOPE DIRECTION ROOF STRUCTURE IS PITCHED TO ACHIEVE SLOPE TAPERED INSULATION AT MIN. 1/4" PER FOOT SLOPE UNLESS INDICATED OTHERWISE CRICKET ON HIGH SIDE OF ROOF EQUIPMENT



VENTED SOFFIT SPECIFICATIONS:

MANUFACTURER:
• ROLLEX OR EQUIVALENT

PRODUCT:

- A-SYS312CV SYSTEM 3 ALUMINUM VENTED SOFFIT SYSTEM
 INSTALL PER ALL MANUF. SPECIFICATIONS AND DETAILS
- 12" WIDE, 0.019" THICK ALUMINUM PANELS
 PROVIDE NECESSARY TRIM, CLIPS, AND FASTENERS OF MATCHING COLOR
- AS REQ'D FOR A COMPLETE INSTALLATION

 COLOR SELECTED BY ARCHITECT/OWNER (PROVIDE COLOR SAMPLES FOR APPROVAL)

WARRANTY:

LIMITED LIFETIME WARRANTY
 25 YEAR CHALK AND FADE COVERAGE

SHEET DATES

SHEET ISSUE FEB. 14, 2023

REVISIONS
AD2 MAR. 23, 2023

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100 Camelot Drive Fond du Lac, WI 54935

920-926-9800

excelengineer.com

PROJECT INFORMATION

SCHOOL FOR:

CHILDHOOD

OSED

PROP(

PROFESSIONAL SEAL

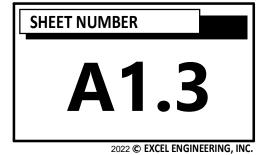
OPMEN

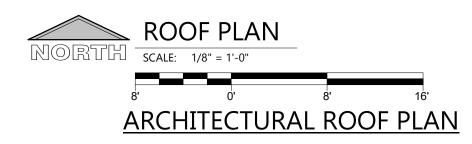
SEVILLE, MN 55

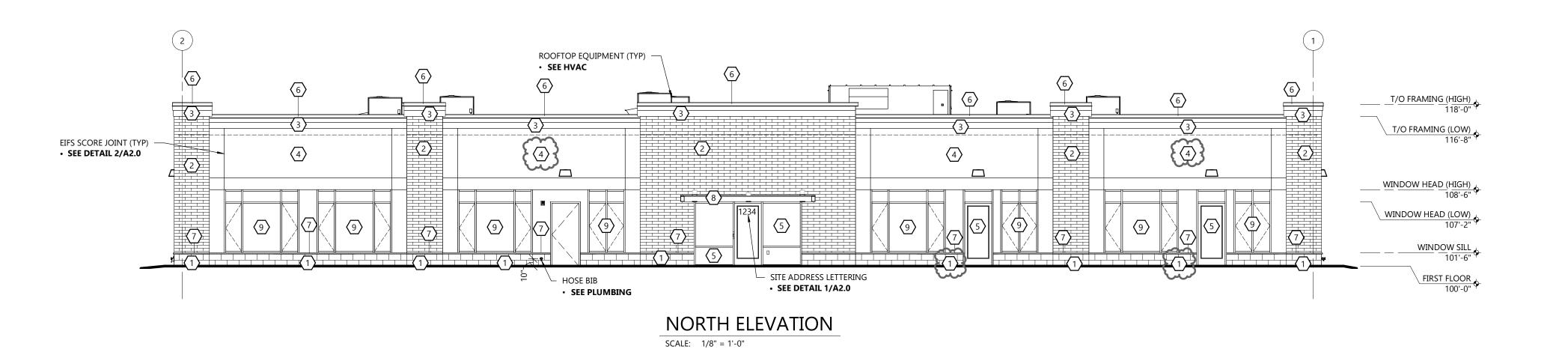
QUA TWIN LAKES

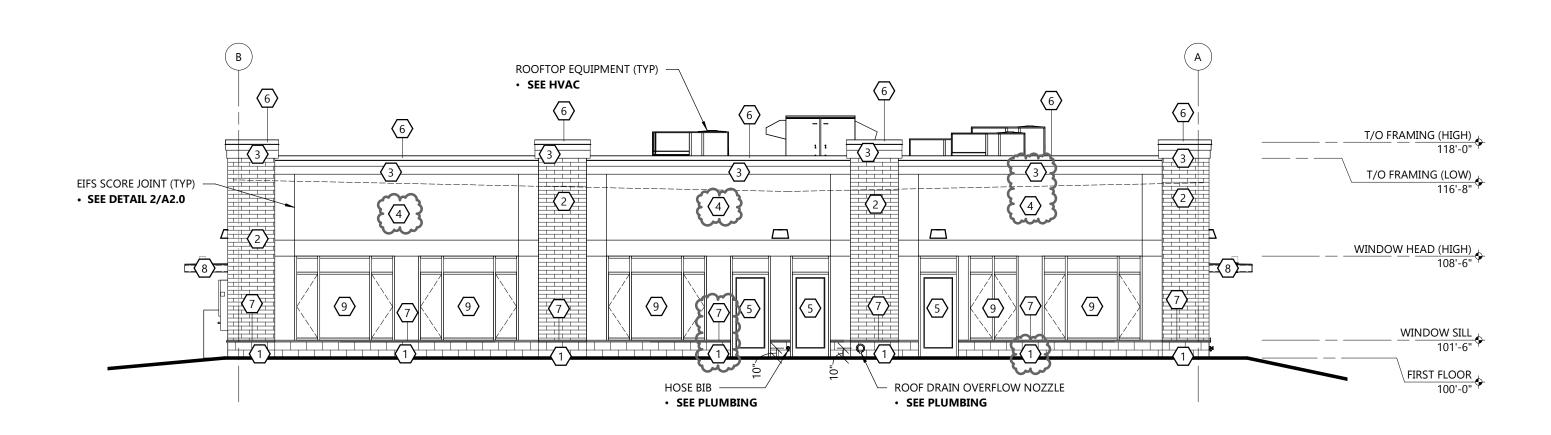
COLLABORATION

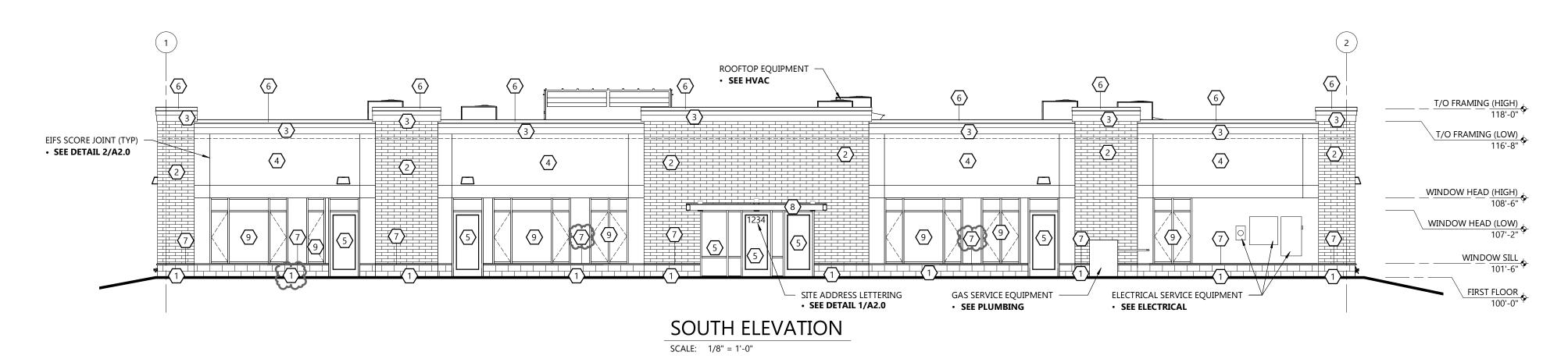
JOB NUMBER 2255300





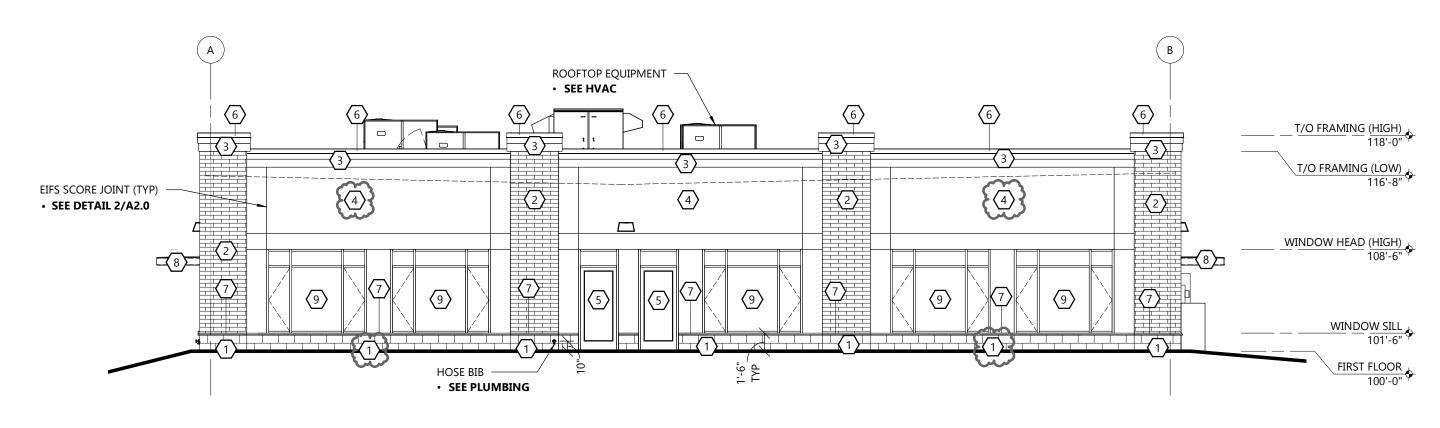






EAST ELEVATION

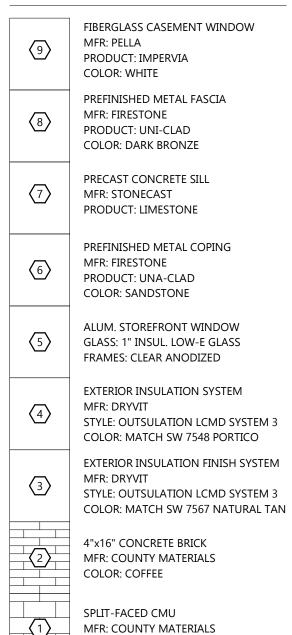
SCALE: 1/8" = 1'-0"



WEST ELEVATION

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

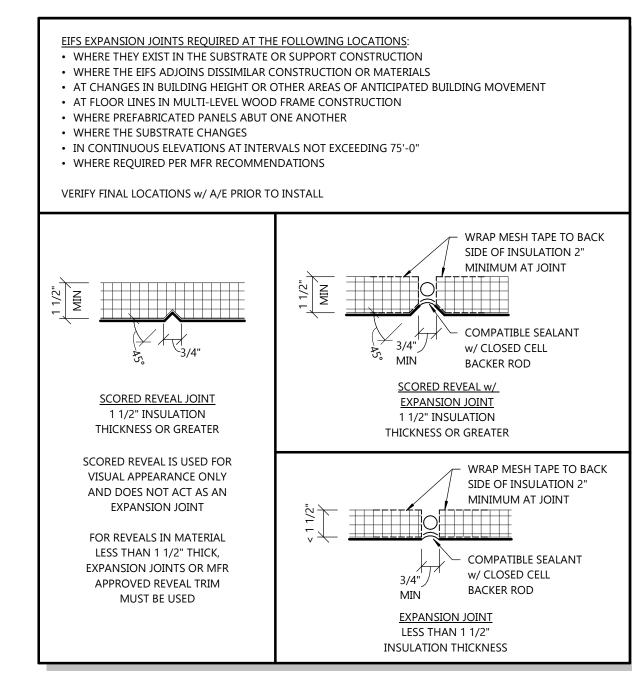




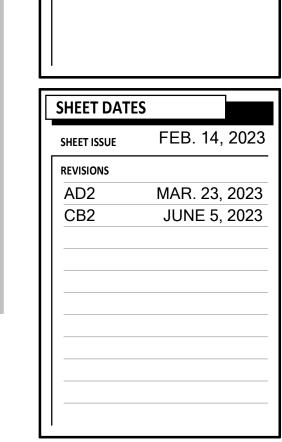


COLOR: MOCHA

1 ADDRESS DETAIL
A2.0 SCALE: 1/2" = 1'-0"







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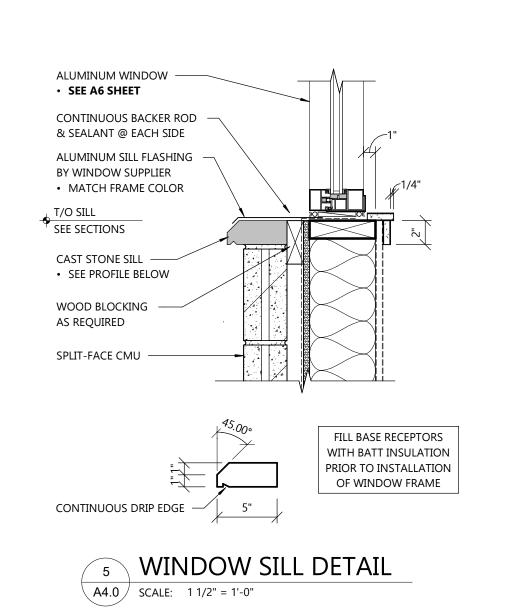
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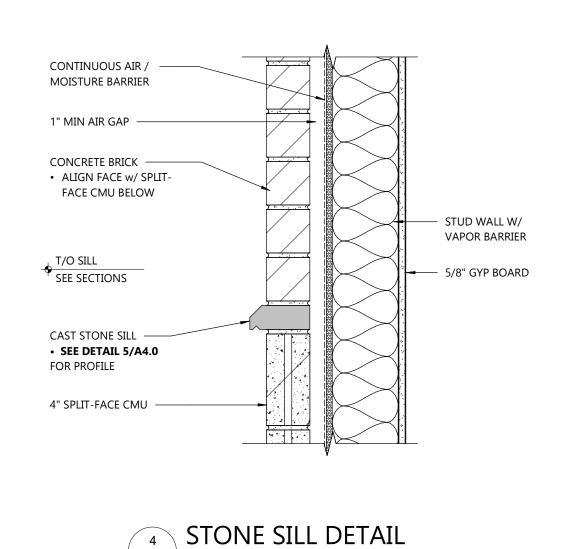
QUA TWIN LAKES

COLLABORATION

JOB NUMBER 2255300

A2.0

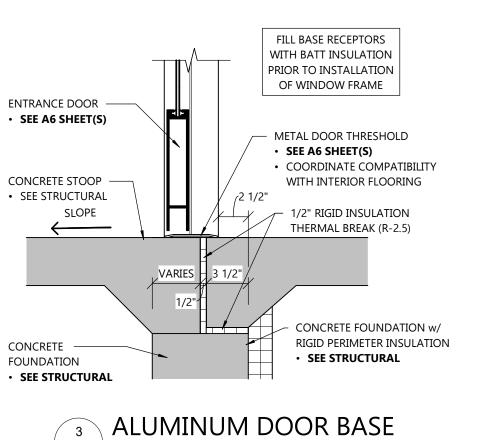




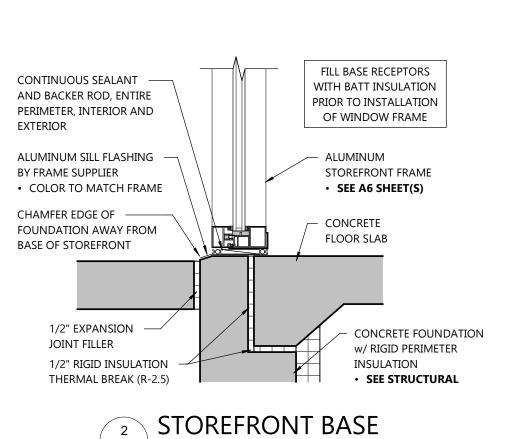
A4.0 SCALE: 1 1/2" = 1'-0"

D WALL SECTION

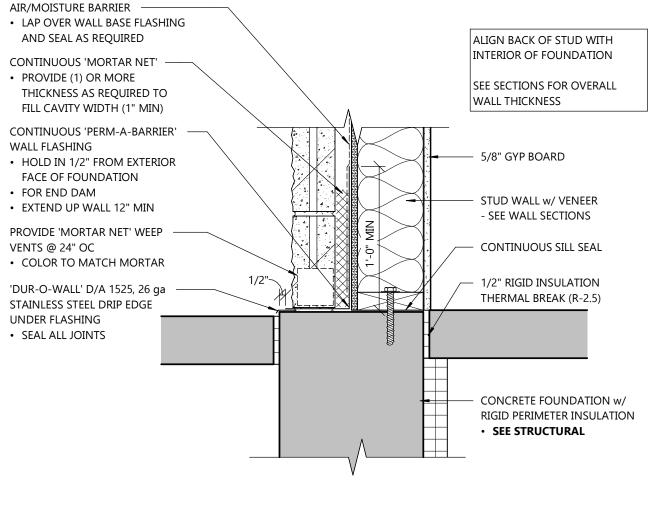
A4.0 SCALE: 1/2" = 1'-0"



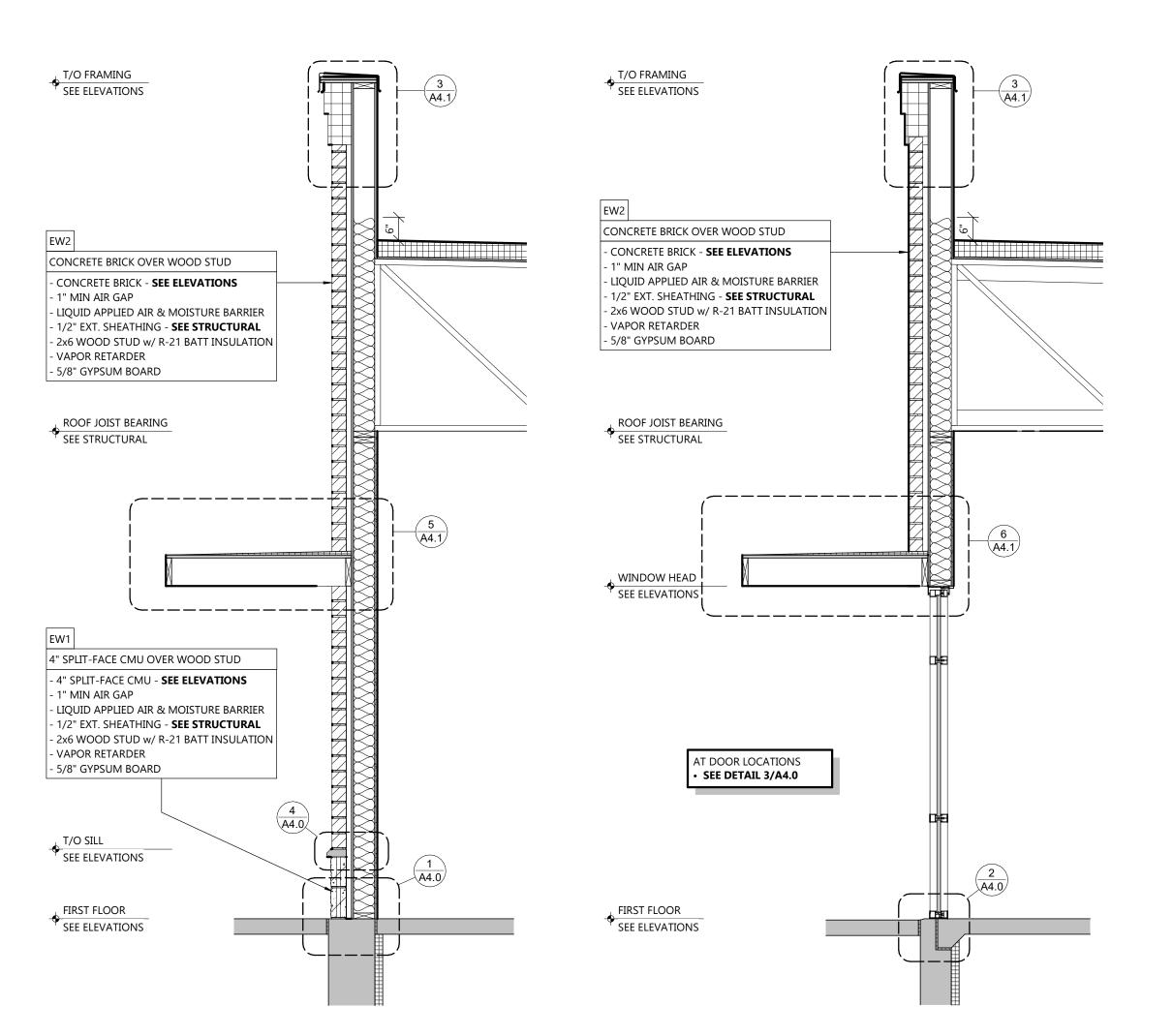
A4.0 SCALE: 1 1/2" = 1'-0"



A4.0 SCALE: 1 1/2" = 1'-0"

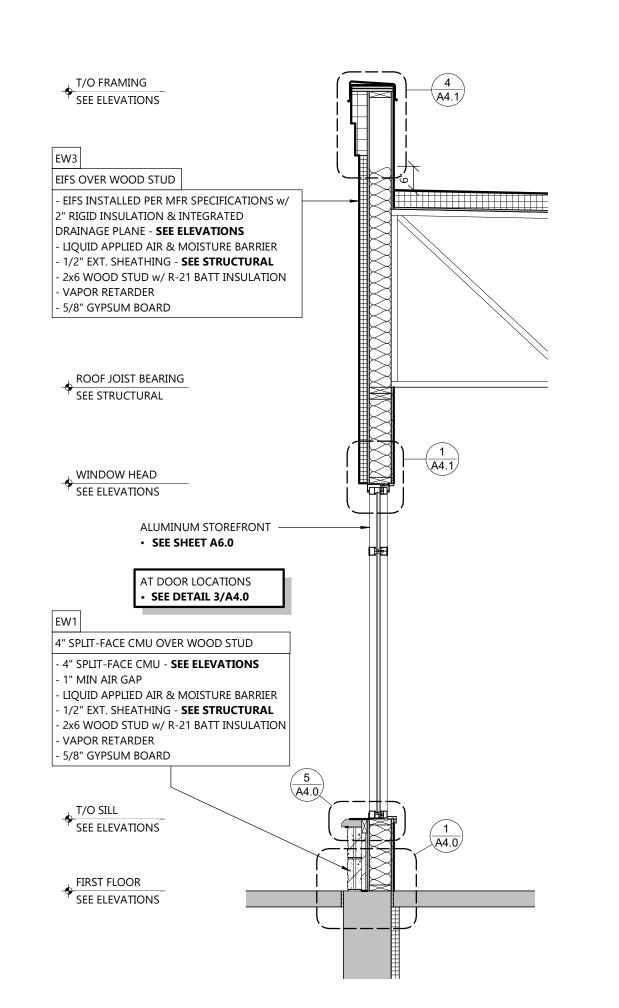


BASE FLASHING DETAIL A4.0 SCALE: 1 1/2" = 1'-0"

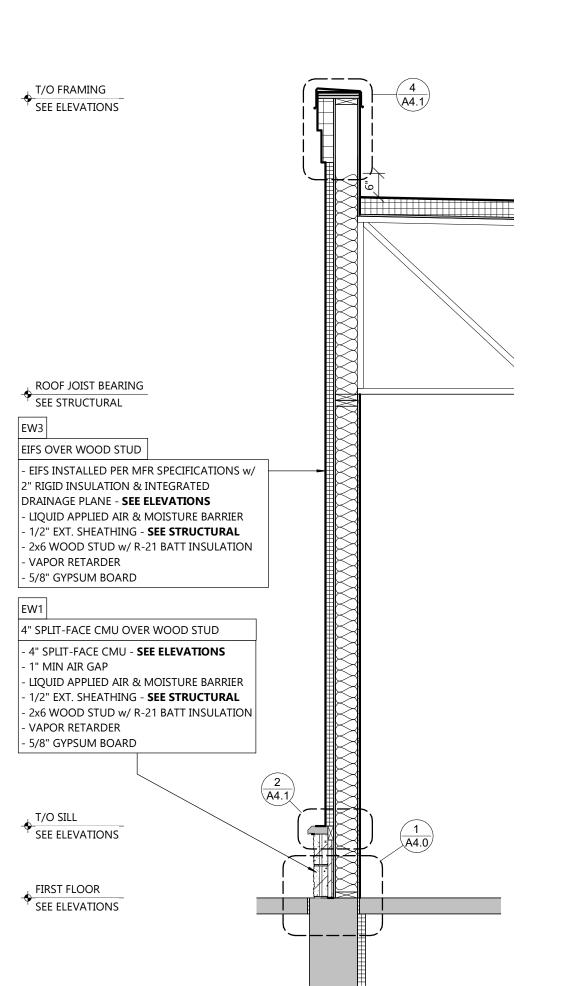


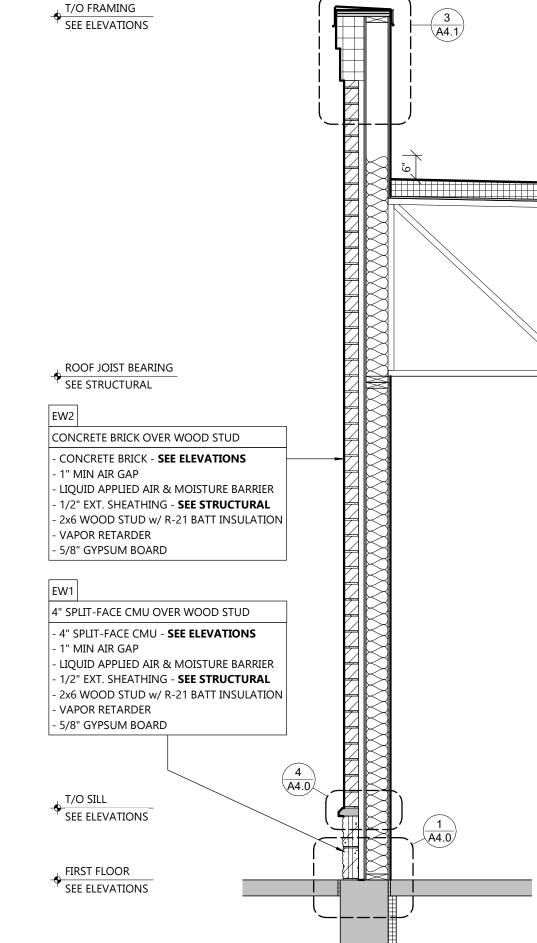
E WALL SECTION

A4.0 SCALE: 1/2" = 1'-0"



c WALL SECTION
A4.0 SCALE: 1/2" = 1'-0"







B WALL SECTION
A4.0 SCALE: 1/2" = 1'-0"

SHEET NUMBER

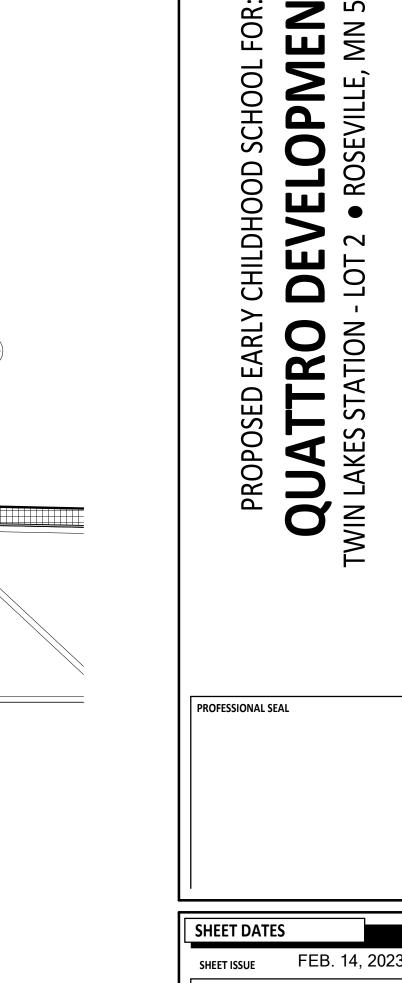
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JOB NUMBER

2255300

REVISIONS

ARCHITECTURAL WALL SECTIONS & DETAILS



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100 Camelot Drive

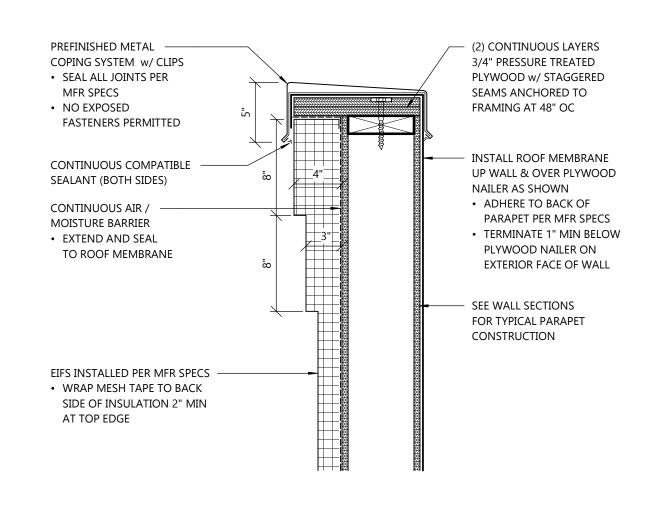
Fond du Lac, WI 54935

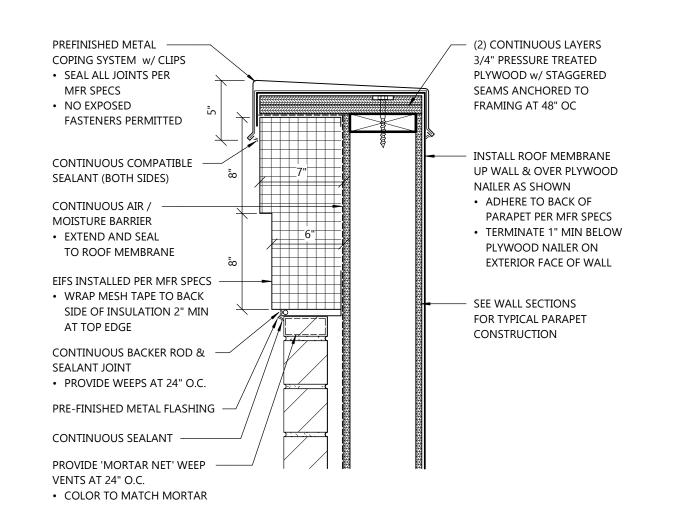
920-926-9800

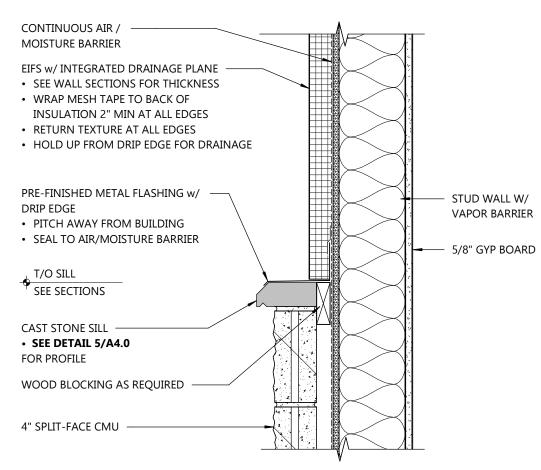
excelengineer.com

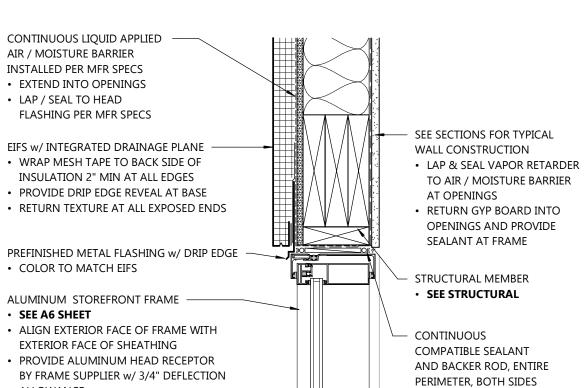
PROJECT INFORMATION

COLLABORATION











PROJECT INFORMATION

SCHOOL

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PM

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Always a Better Plan

100 Camelot Drive

Fond du Lac, WI 54935



GC TO INSULATE ALL VOIDS AS REQUIRED

WOOD HEADER

SEE STRUCTURAL

SEE STRUCTURAL FOR CANOPY

CONSTRUCTION & ATTACHMENT

ALUMINUM STOREFRONT FRAME

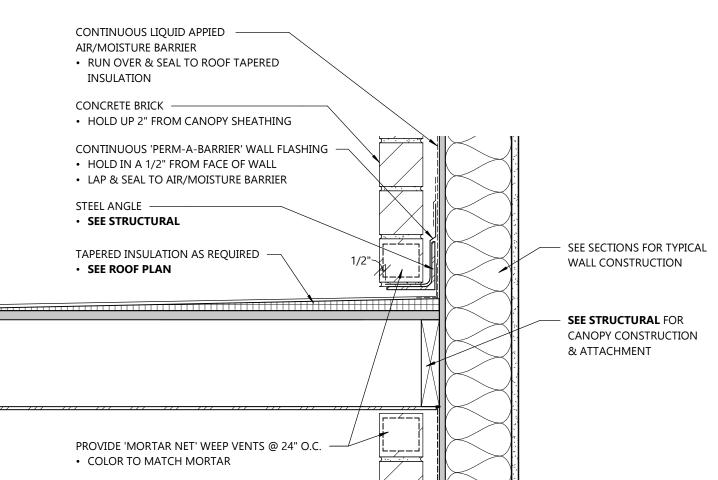
ALIGN EXTERIOR FACE OF FRAME

SHEATHING

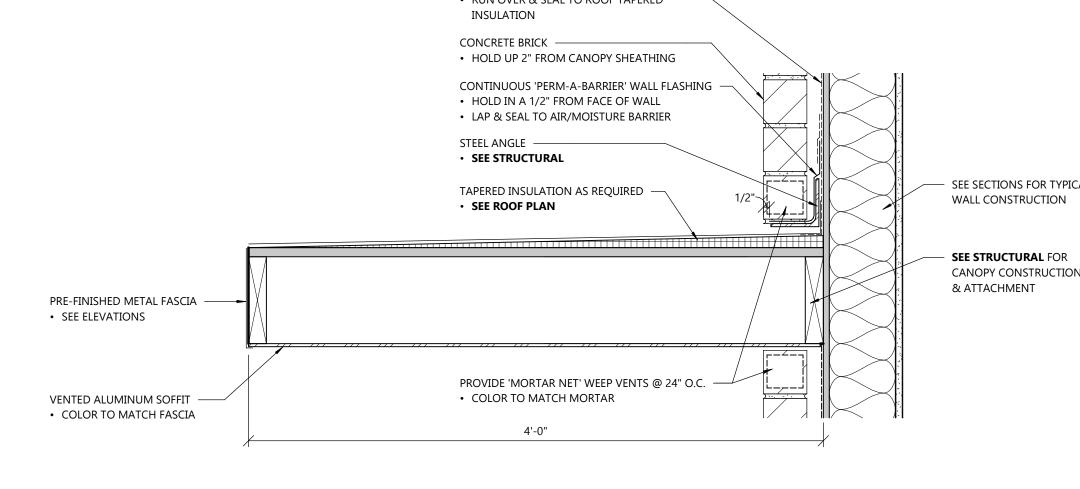
w/ EXTERIOR FACE OF ADJACENT



STONE SILL DETAIL A4.1 | SCALE: 1 1/2" = 1'-0"



PROVIDE BILCO LADDER UP SAFETY POST ATTACHED TO LADDER



6 CANOPY FLASHING DETAIL A4.1 SCALE: 1 1/2" = 1'-0"

PRE-FINISHED METAL FLASHING w/ DRIP EDGE

CONTINUOUS COMPATIBLE SEALANT AS REQUIRED

COLOR TO MATCH STOREFRONT

4'-0"

CONTINUOUS LIQUID APPIED -

RUN OVER & SEAL TO ROOF TAPERED

• HOLD UP 2" FROM CANOPY SHEATHING

HOLD IN A 1/2" FROM FACE OF WALL

TAPERED INSULATION AS REQUIRED -

• LAP & SEAL TO AIR/MOISTURE BARRIER

CONTINUOUS 'PERM-A-BARRIER' WALL FLASHING

AIR/MOISTURE BARRIER

INSULATION

STEEL ANGLE

PRE-FINISHED METAL FASCIA -

VENTED ALUMINUM SOFFIT—

COLOR TO MATCH FASCIA

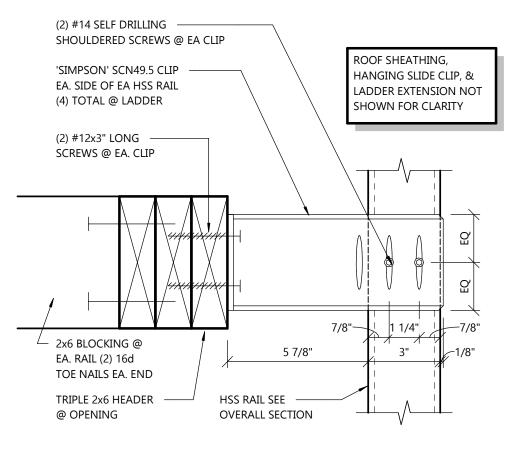
SEE ELEVATIONS

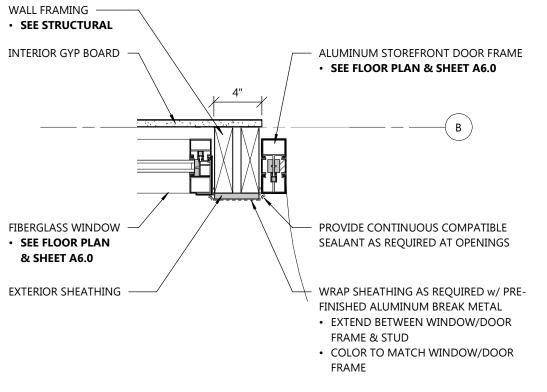
SEE STRUCTURAL

SEE ROOF PLAN

CONCRETE BRICK —

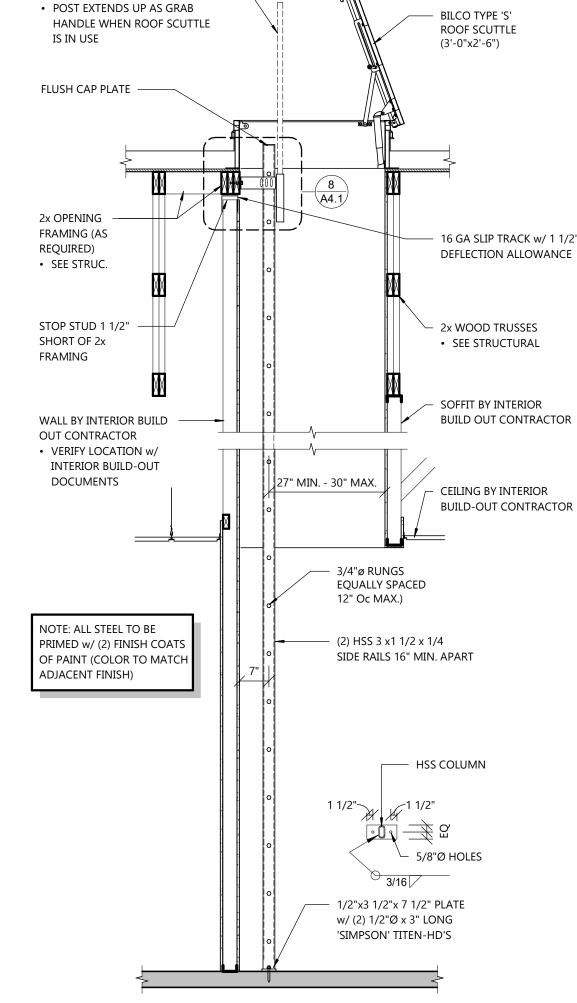
CANOPY FLASHING DETAIL A4.1 SCALE: 1 1/2" = 1'-0"



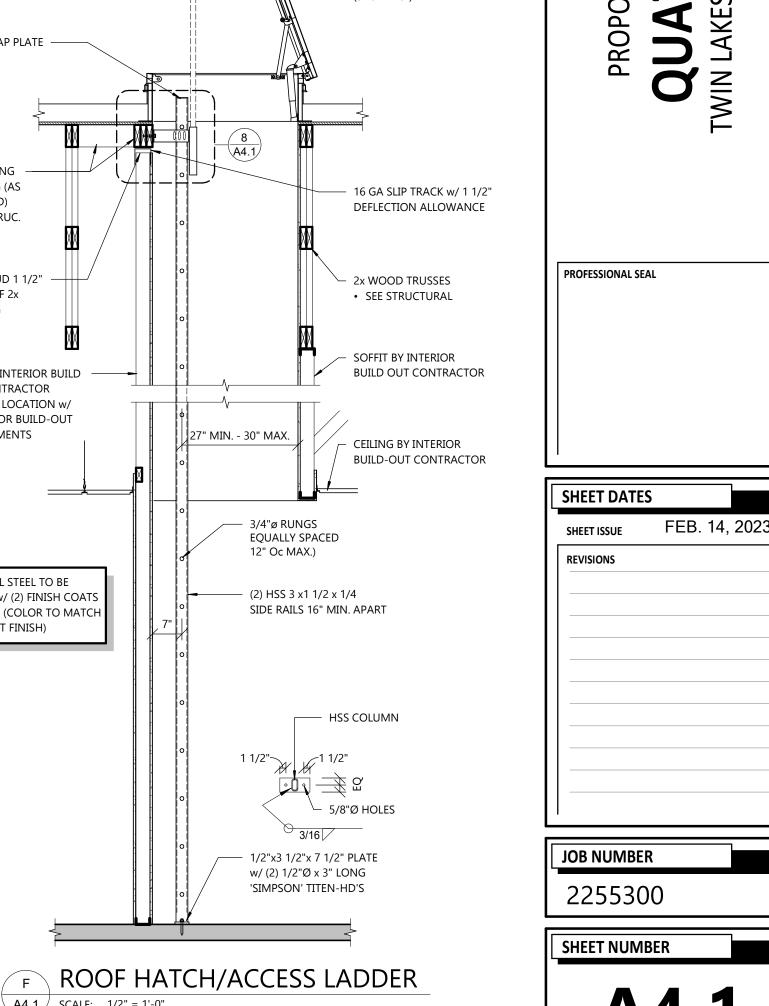


7 PLAN DETAIL A4.1 SCALE: 1 1/2" = 1'-0"



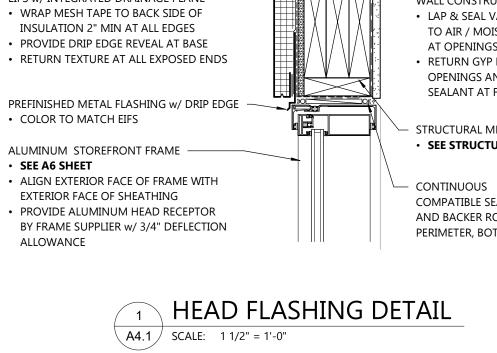


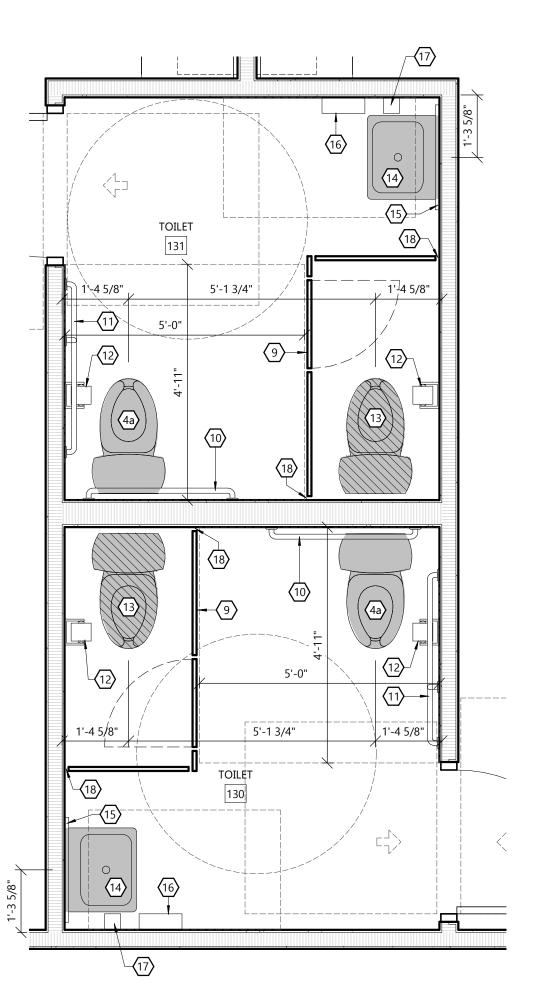
A4.1 SCALE: 1/2" = 1'-0"



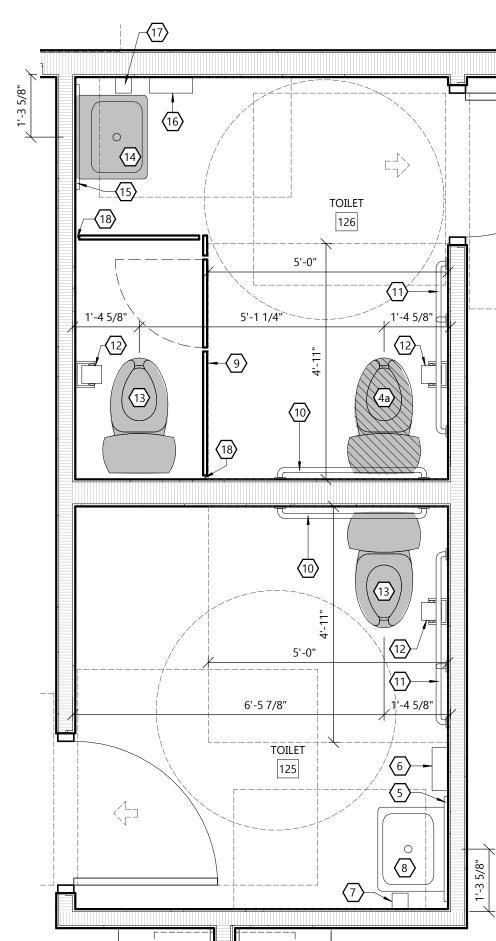
2022 © EXCEL ENGINEERING, INC.

WALL DETAILS





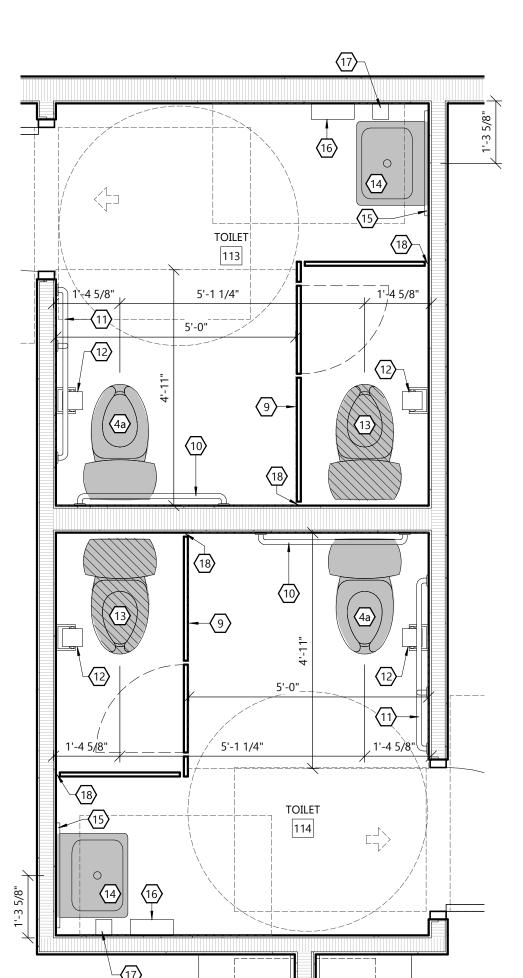
7 ENLARGED RESTROOMS 130 & 131
A5.0 SCALE: 1/2" = 1'-0"



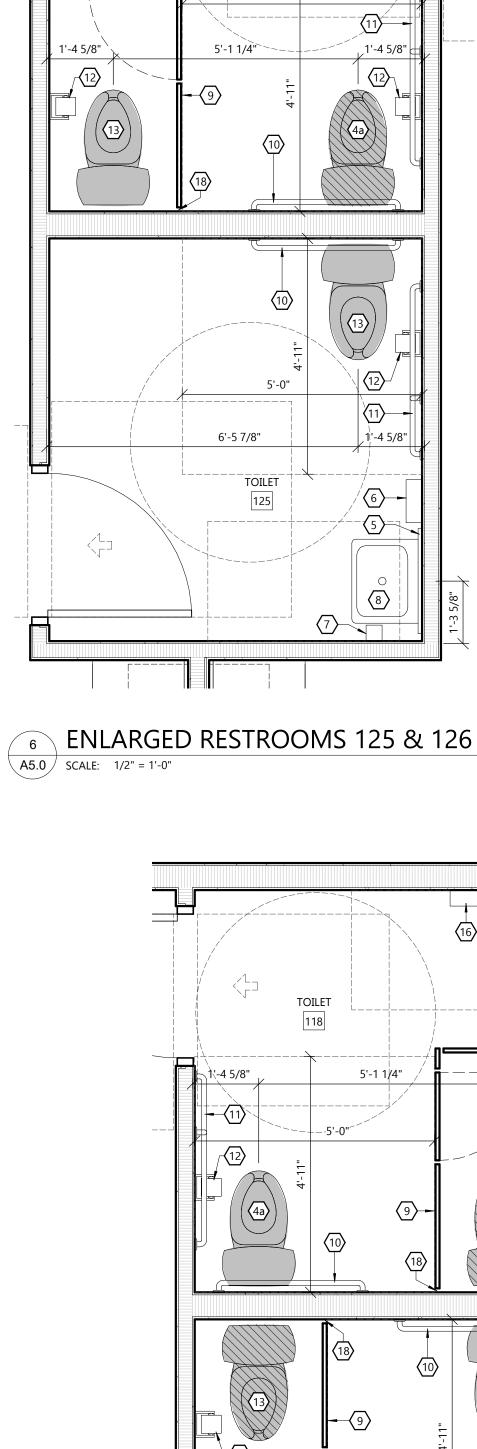
A5.0 | SCALE: 1/2" = 1'-0"

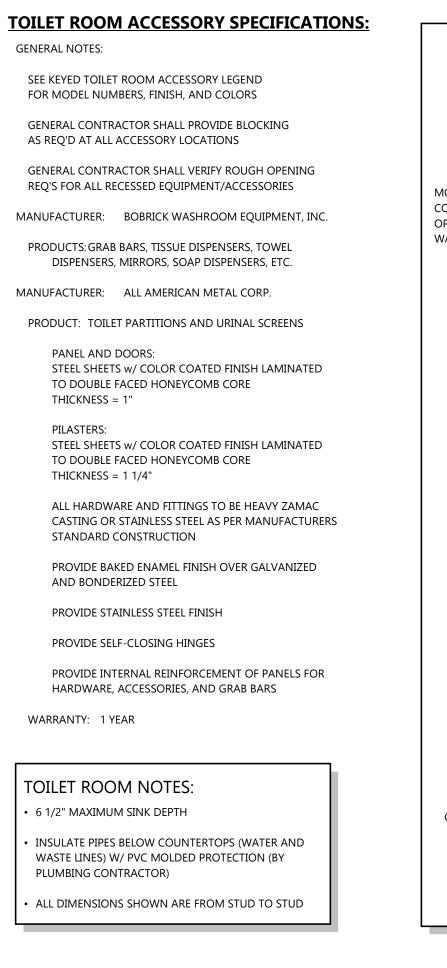
1'-4 5/8"

A5.0 SCALE: 1/2" = 1'-0"



9 ENLARGED RESTROOMS 113 & 114 A5.0 SCALE: 1/2" = 1'-0"





GENERAL NOTES:

FOR MODEL NUMBERS, FINISH, AND COLORS

AS REQ'D AT ALL ACCESSORY LOCATIONS

PANEL AND DOORS:

THICKNESS = 1 1/4"

STANDARD CONSTRUCTION

PROVIDE STAINLESS STEEL FINISH

PROVIDE SELF-CLOSING HINGES

AND BONDERIZED STEEL

WARRANTY: 1 YEAR

TOILET ROOM NOTES:

• 6 1/2" MAXIMUM SINK DEPTH

PLUMBING CONTRACTOR)

(17)

- 1'₇4 5/8"

(1) -

1'-45/8"

5'-0"

TOILET

5'-1 1/4"

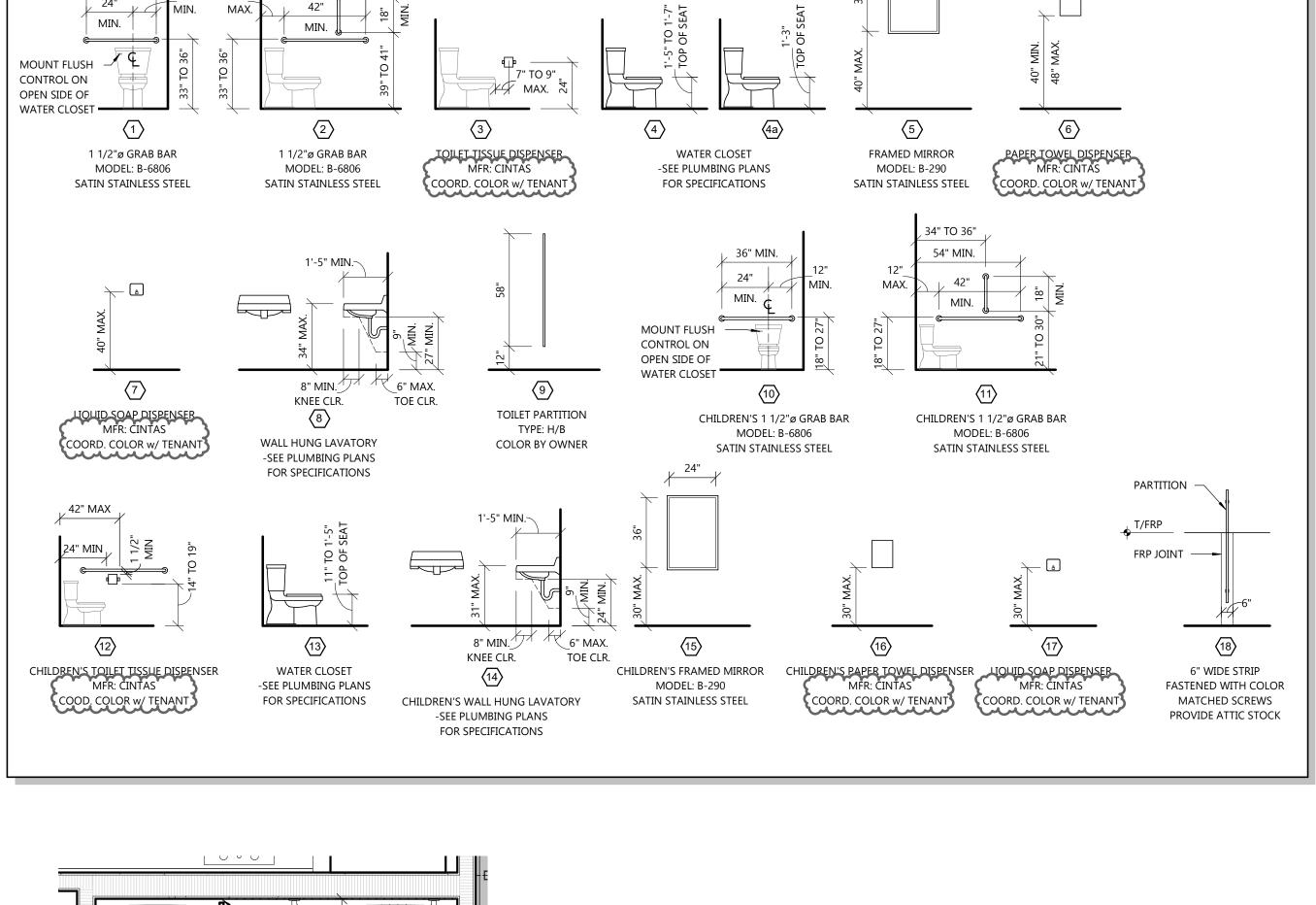
8 ENLARGED RESTROOMS 117 & 118

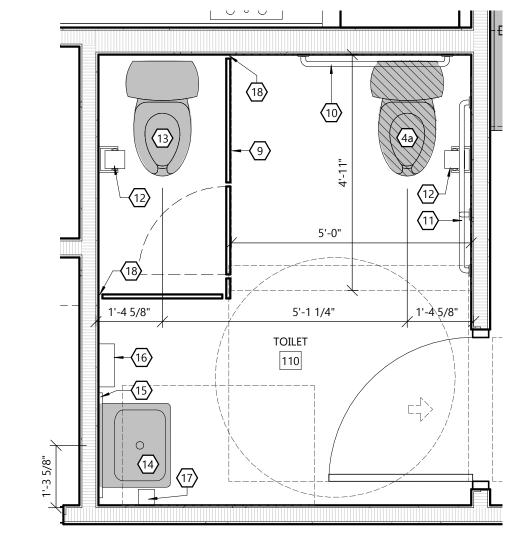
THICKNESS = 1"

PILASTERS:

TO DOUBLE FACED HONEYCOMB CORE

TO DOUBLE FACED HONEYCOMB CORE

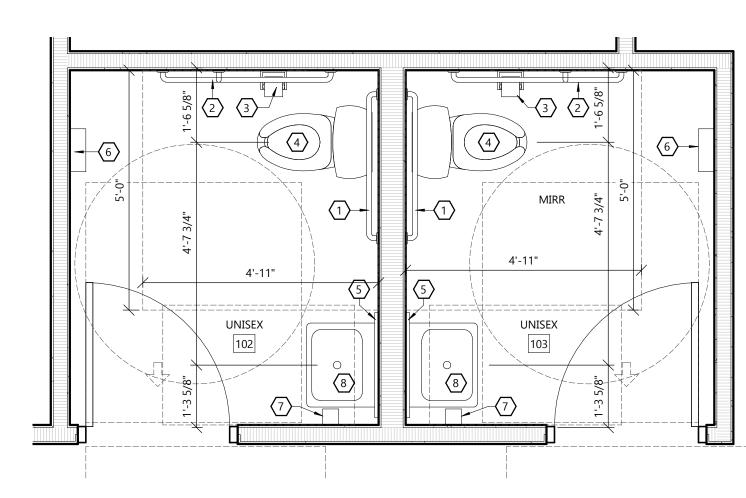




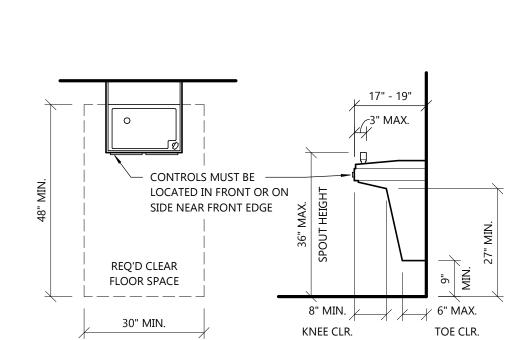
KEYED TOILET ROOM ACCESSORY LEGEND

54" MIN.

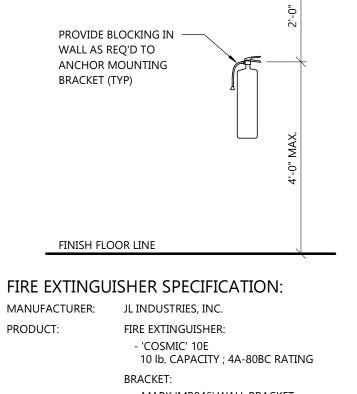
2 ENLARGED RESTROOM 110
A5.0 SCALE: 1/2" = 1'-0"



ENLARGED RESTROOMS 102 & 103 A5.0 SCALE: 1/2" = 1'-0"

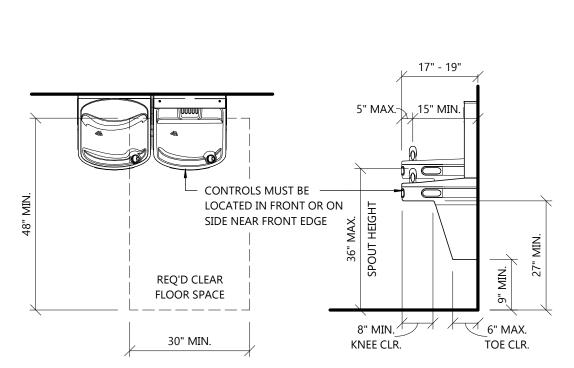


5 ELECTRIC WATER COOLER A5.0 SCALE: 1/2" = 1'-0"



5" x 6" JL INDUSTRIES 24S 3D FIRE EXTINGUISHER

- MARK 'MB846' WALL BRACKET FIRE EXTINGUISHER A5.0 SCALE: 1/4" = 1'-0"



3 ELECTRIC WATER COOLER A5.0 SCALE: 1/2" = 1'-0"

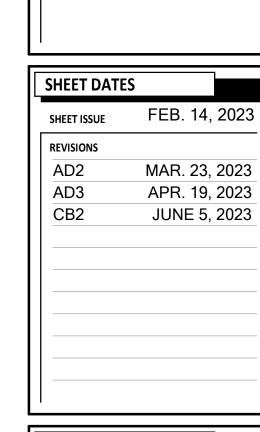
ARCHITECTURAL ENLARGED PLANS



SCHOOL FOR: CHILDHOOD

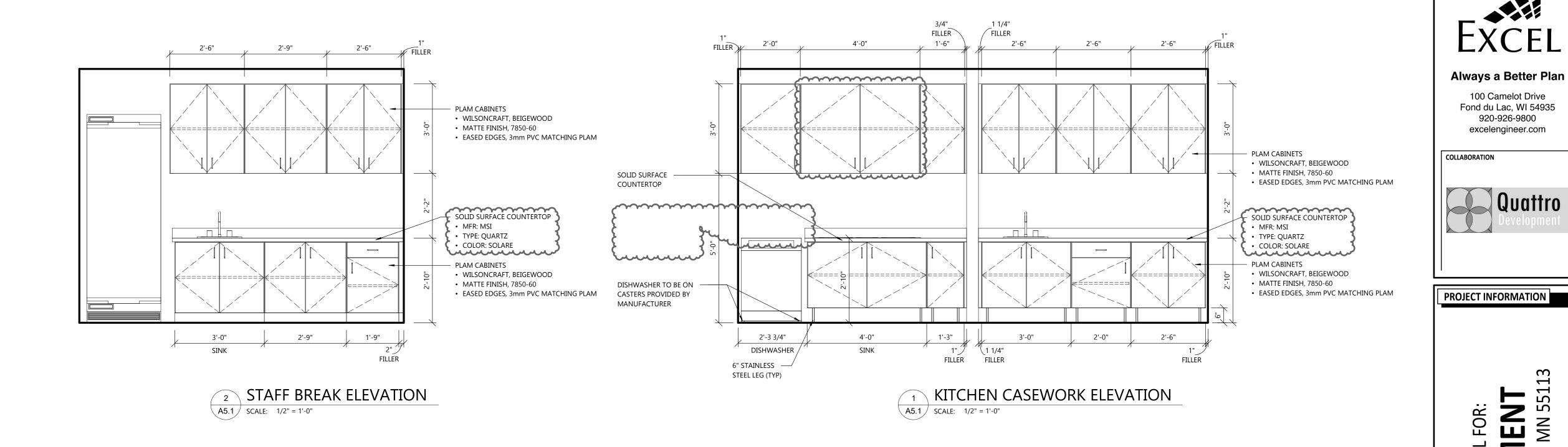
ED QUA TWIN LAKES **PROP**(

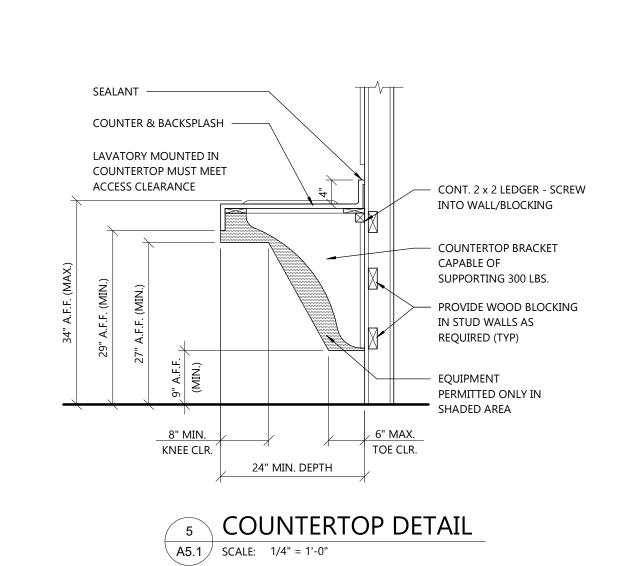
PROFESSIONAL SEAL



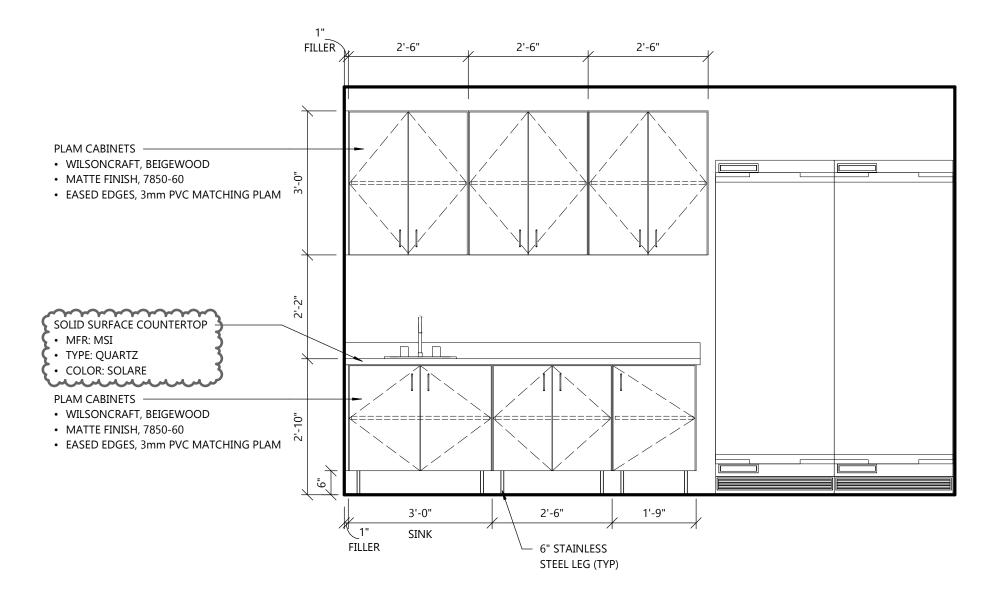
JOB NUMBER 2255300

SHEET NUMBER 2022 © EXCEL ENGINEERING, INC.





DETAIL 4 NO LONGER USED



3 KITCHEN CASEWORK ELEVATION
A5.1 SCALE: 1/2" = 1'-0"

SHEET DATES	
SHEET ISSUE	FEB. 14, 202
REVISIONS	
AD2	MAR. 23, 202
AD3	APR. 19, 202
CB2	JUNE 5, 202

DEVELOPMENT
- LOT 2 • ROSEVILLE, MN 5511

TTRO ES STATION

QUA TWIN LAKES

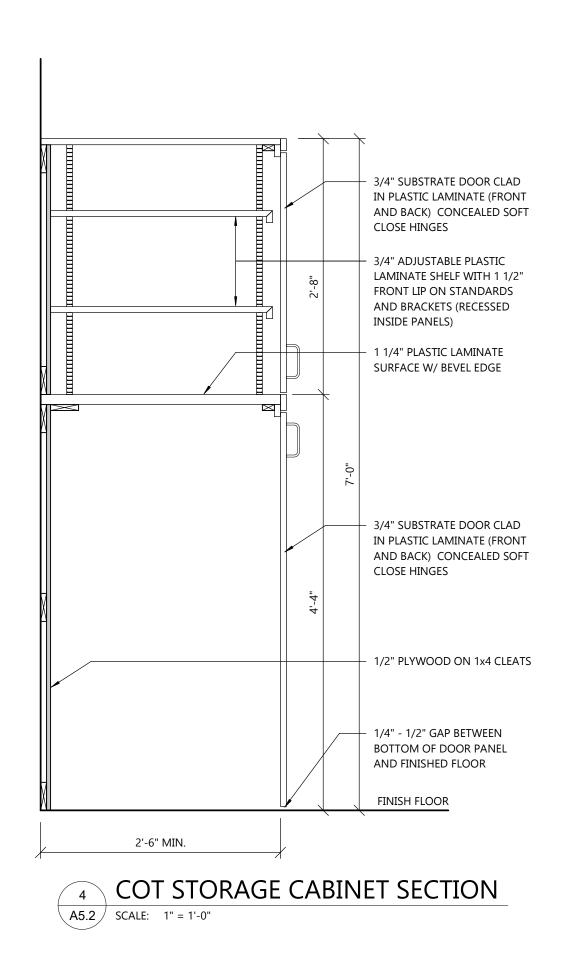
PROPOSED EARLY CHILDHOOD SCHOOL FOR:

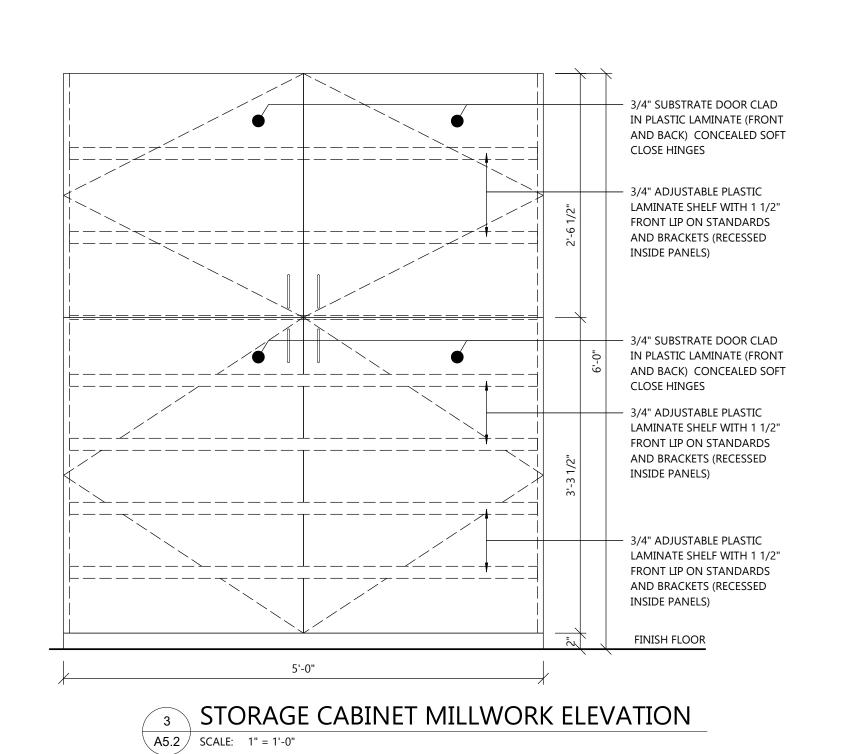
PROFESSIONAL SEAL

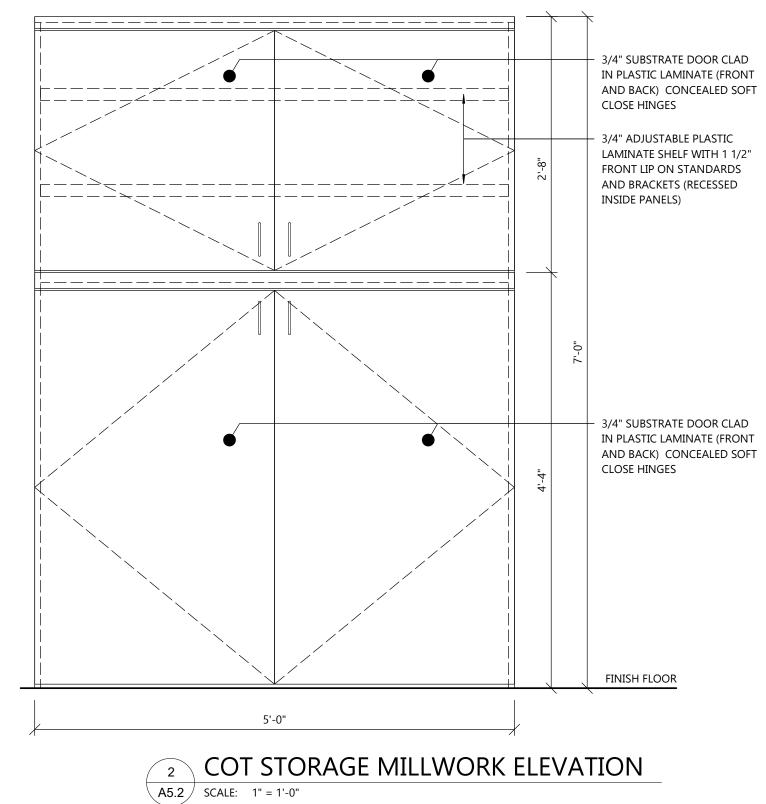
2255300

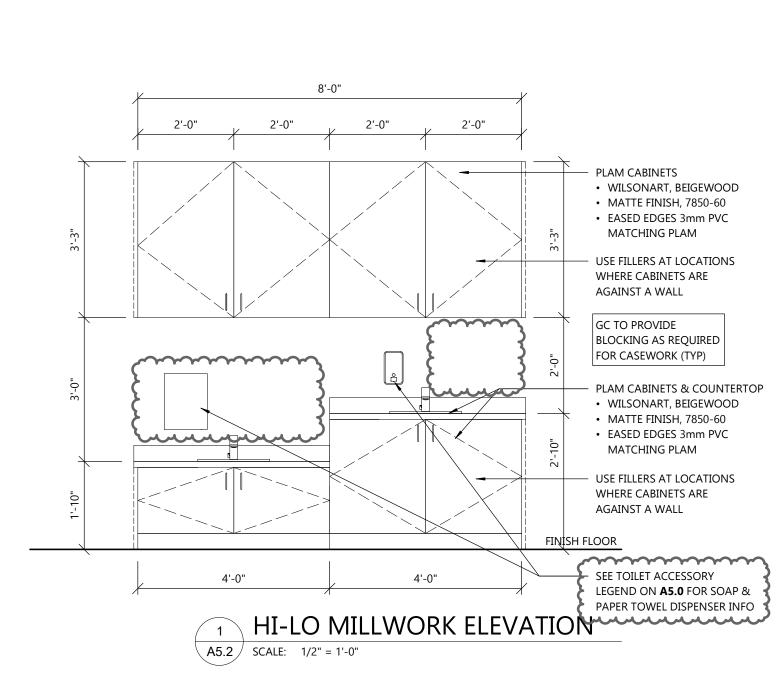
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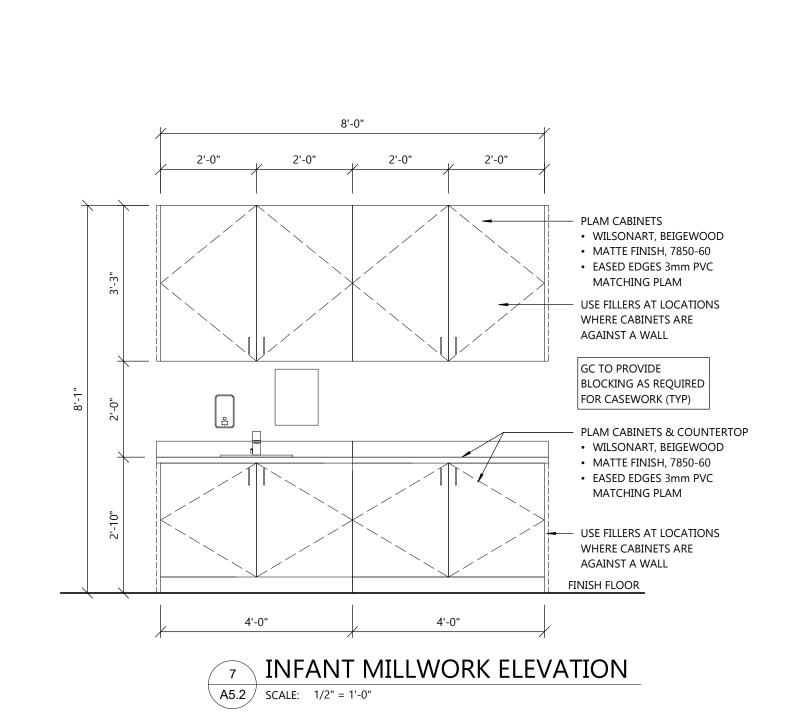
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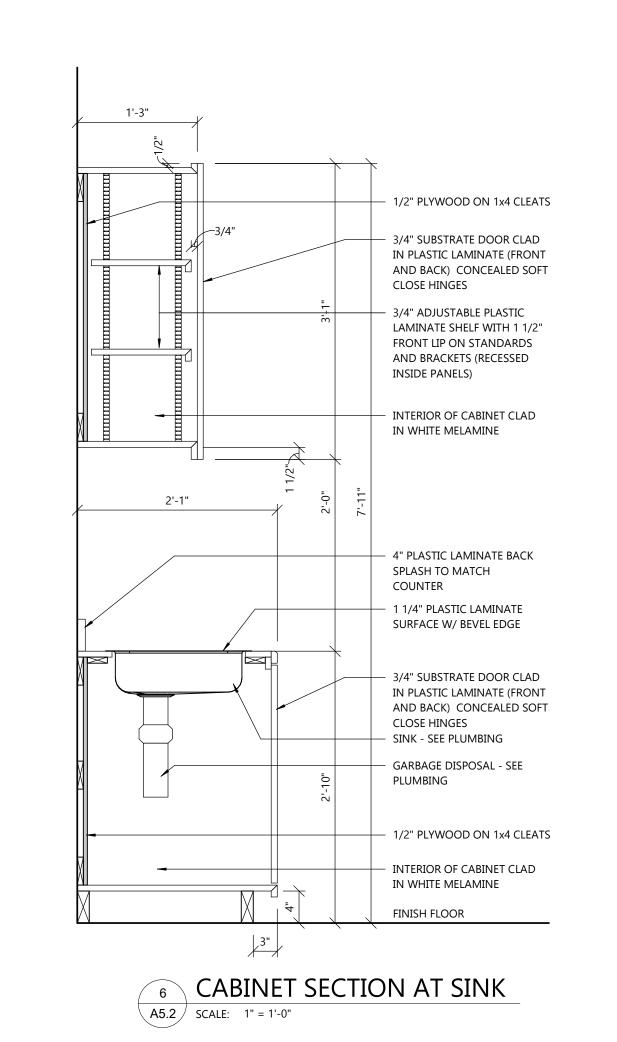


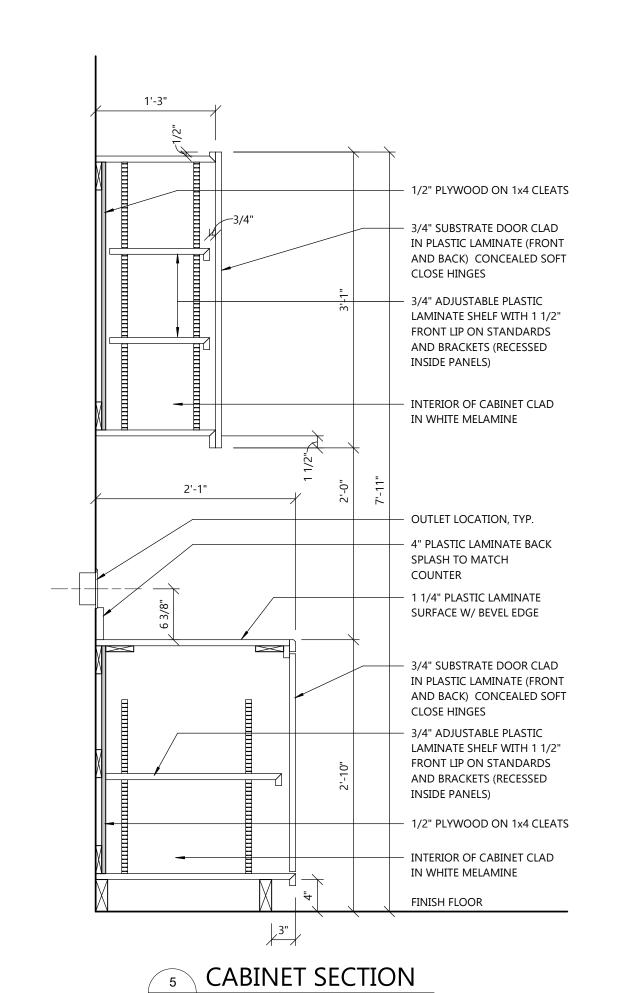




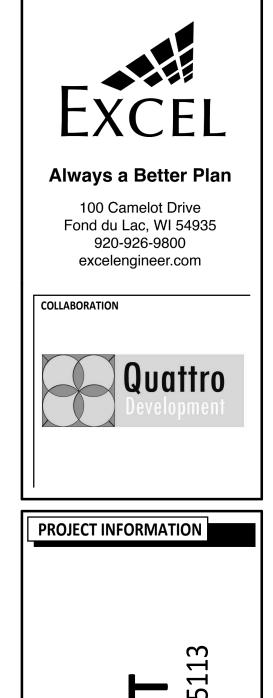








A5.2 SCALE: 1" = 1'-0"



PROPOSED EARLY CHILDHOOD SCHOOL FOR:

QUATTRO DEVELOPMENT

TWIN LAKES STATION - LOT 2 • ROSEVILLE, MN 55113

SHEET DATES

SHEET ISSUE FEB. 14, 2023

REVISIONS

CB2 JUNE 5, 2023

JOB NUMBER 2255300

SHEET NUMBER

A5.2

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LOCATION	MFR	PRODUCT	DESCRIPTION
EXTERIOR			
WINDOW, DOOR, LOUVER OPENINGS	TREMCO	DYMONIC FC	ONE PART HIGH PERFORMANCE POLYURETHANE SEALANT
DIFFERENT MATERIALS MEET	TREMCO	DYMONIC FC	ONE PART HIGH PERFORMANCE POLYURETHANE SEALANT
ROOF OPENINGS	TREMCO	GUTTER SEAL	SYNTHETIC RUBBER AND RESIN SEALANT
EAVES AND SOFFITS	TREMCO	GUTTER SEAL	SYNTHETIC RUBBER AND RESIN SEALANT
THRESHOLDS TO SUBSTRATE	TREMCO	BUTYL SEALANT	MULTI-COMPONENT SEALANT
CMU CONTROL JOINTS	TREMCO	DYMONIC FC	ONE PART HIGH PERFORMANCE POLYURETHANE SEALANT
PRE-CAST CONCRETE PANEL JOINTS	TREMCO	DYMONIC FC	ONE PART HIGH PERFORMANCE POLYURETHANE SEALANT
PRE-CAST TO MASONRY JOINTS	TREMCO	DYMONIC FC	ONE PART HIGH PERFORMANCE POLYURETHANE SEALANT
PRE-CAST TO CAST-IN-PLACE CONCRETE JOINTS	TREMCO	DYMONIC FC	ONE PART HIGH PERFORMANCE POLYURETHANE SEALANT
NSULATED METAL PANEL BASE CHANNEL TO FOUNDATION	TREMCO	BUTYL SEALANT	MULTI-COMPONENT SEALANT
NSULATED METAL PAINEL BASE CHANNEL TO FOUNDATION	TREMCO	440 TAPE	BUTYL SEALANT TAPE
NSULATED METAL PANEL TO BASE CHANNELS	SIKA	SIKALASTOMER - 511	NON-SKINNING BUTYL SEALANT
NSULATED METAL PANEL TO PANEL JOINTS	SIKA	SIKALASTOMER - 511	NON-SKINNING BUTYL SEALANT
NSULATED METAL PANEL FACE JOINTS WHERE INDICATED	TREMCO	SPECTREM 2	ONE PART SILICONE SEALANT
TRAFFIC SURFACE JOINTS (I.E. CONCRETE PAVEMENT, SIDEWALKS & PADS)	TREMCO	VULKEM 45 SSL	ONE PART POURABLE SELF-LEVELING POLYURETHANE SEALANT
OINTS IN TRAFFIC SURFACES SLOPING IN EXCESS OF 1/2" PER FOOT	TREMCO	DYMONIC FC	ONE PART HIGH PERFORMANCE POLYURETHANE SEALANT
NTERIOR			
COUNTERTOP AND BACKSPLASH	TREMCO	TREMSIL 200	
PLUMBING FIXTURE PERIMETER	TREMCO	TREMSIL 200	
JNDER DRYWALL PARTITION BASE TRACK	DAP	ALEX PLUS	PAINTABLE ACRYLIC LATEX - SILICONIZED SEALANT
NTERIOR DOOR AND WINDOW FRAMES	DAP	ALEX PLUS	PAINTABLE ACRYLIC LATEX - SILICONIZED SEALANT
WALL ANGLE AT SUSPENDED CEILINGS	DAP	ALEX PLUS	PAINTABLE ACRYLIC LATEX - SILICONIZED SEALANT
CMU CONTROL JOINTS	TREMCO	DYMONIC FC	ONE PART HIGH PERFORMANCE POLYURETHANE SEALANT
EXPOSED CONCRETE SLAB JOINTS	VERSA-FLEX	SL/85	TWO PART SELF-LEVELING POLYUREA SEALANT
PRE-CAST CONCRETE PANEL JOINTS	TREMCO	DYMONIC FC	ONE PART HIGH PERFORMANCE POLYURETHANE SEALANT
PRE-CAST TO MASONRY JOINTS	TREMCO	DYMONIC FC	ONE PART HIGH PERFORMANCE POLYURETHANE SEALANT
PRE-CAST TO CAST-IN-PLACE CONCRETE JOINTS	TREMCO	DYMONIC FC	ONE PART HIGH PERFORMANCE POLYURETHANE SEALANT
NSULATED METAL PANEL AND TOP OF CONCRETE CURB JOINT	TREMCO	DYMERIC 240FC	MULTI-COMPONENT CHEMICALLY CURING POLYURETHANE SEALAN
NSULATED METAL PANEL AND TRIM ELEMENTS JOINT	TREMCO	SPECTREM 2	ONE PART SILICONE SEALANT
COOLER AND FREEZER FLOOR JOINTS	M&M	SPAL-PRO RSF	TWO COMPONENT POLYUREA JOINT FILLER
JOINTS IN ROOMS WITH "STRANLOK" FINISH	TREMCO	DYMONIC FC	ONE PART HIGH PERFORMANCE POLYURETHANE SEALANT

FLOOR FINISHES	BASE FINISHES
VINYL COMPOSITION TILE (LVT1) 1. LUXURY VINYL TILE. COLOR: LIVING LOCAL SABLE	VINYL COVE BASE (VB1) 1. MOHAWK ELEMENTAL EDGES 4" VINYL WALL BASE 2. COLOR: DEEP CHESTNUT
VINYL COMPOSITION TILE (LVT2)	Z. COLOR. DELI CHESTIVOT
1. LUXURY VINYL TILE. COLOR: MEDELLA OYSTER	EPOXY (EPX1)
	1. MANUFACTURER: DURA-FLEX
RUBBER FLOOR (RB1)	2. <u>STYLE:</u> DUR-A-GARD
1. <u>MANUFACTURER:</u> SPARTAN SURFACES/CAPRI	3. <u>COLOR:</u> CARAMEL
FITNESS & REC	4. MIN. 4" IN HEIGHT A.F.F.
2. <u>COLOR:</u> ALLEY RTL4030	
3. <u>SIZE:</u> 4' ROLL x 8MM	
EPOXY (EPX1)	
1. <u>MANUFACTURER</u> . DURA-FLEX	
2. <u>STYLE:</u> DUR-A-GARD	
3. <u>COLOR:</u> CARAMEL	
PLYWOOD (PLY)	

WALL FINISHES

PAINTED GYPSUM BOARD (PT-GYP1) 1. UNFINISHED. SEE A6.0 FOR LEVEL OF FINISH. SEE A0.1 FOR ADDITIONAL INFORMATION.

PAINTED GYPSUM BOARD (PT-GYP2)

1. *3/4" PLYWOOD*

1. 5/8" GYPSUM BOARD w/ (1) COAT PRIMER AND (2) COATS INTERIOR SEMI-GLOSS ACRYLIC ENAMEL FINISH PAINT. (SW7005 - PURE WHITE) SEE A6.0 FOR LEVEL OF FINISH. SEE A0.1 FOR ADDITIONAL INFORMATION.

PAINTED GYPSUM BOARD (PT-GYP3)

5/8" GYPSUM BOARD w/ (1) COAT PRIMER AND (2) COATS INTERIOR EGGSHELL ACRYLIC ENAMEL FINISH PAINT. (50% SW6442 - BRACING BLUE) SEE A6.0 FOR LEVEL OF FINISH. SEE A0.1 FOR ADDITIONAL INFORMATION.

PAINTED GYPSUM BOARD (PT-GYP4)

1. 5/8" GYPSUM BOARD w/ (1) COAT PRIMER AND (2) COATS INTERIOR EGGSHELL ACRYLIC ENAMEL FINISH PAINT. (50% SW1015 - SKYLINE STEEL) SEE A6.0 FOR LEVEL OF FINISH. SEE A0.1 FOR ADDITIONAL INFORMATION.

PAINTED GYPSUM BOARD (PT-GYP5)

1. 5/8" GYPSUM BOARD w/ (1) COAT PRIMER AND (2) COATS INTERIOR EGGSHELL ACRYLIC ENAMEL FINISH PAINT. (SW7042 - SHOJI WHITE) SEE A6.0 FOR LEVEL OF FINISH. SEE A0.1 FOR ADDITIONAL INFORMATION.

FIBERGLASS REINFORCED PLASTIC (FRP)

1/8" KEMLITE TO 48" AFF COLOR: WHITE

CEILING FINISHES

ACOUSTICAL TILE (AT1) 1. 2x4 ARMSTRONG DUNE 'SECOND LOOK' BASIC ACOUSTICAL TILE ON SUSPENDED GRID SYSTEM. COLOR SELECTION BY OWNER. ACOUSTICAL TILE (AT2)

2. 2x4 ARMSTRONG KITCHEN ZONE ACOUSTICAL TILE ON SUSPENEDED GRID SYSTEM. COLOR SELECTION BY OWNER.

WINDOW BLINDS

PROVIDE AT ALL EXTERIOR WINDOWS MANUF: SELECT WEAVE S100 S1 OPENESS FACTOR: 1% S1003 NEUTRAL/PEARL GRAY

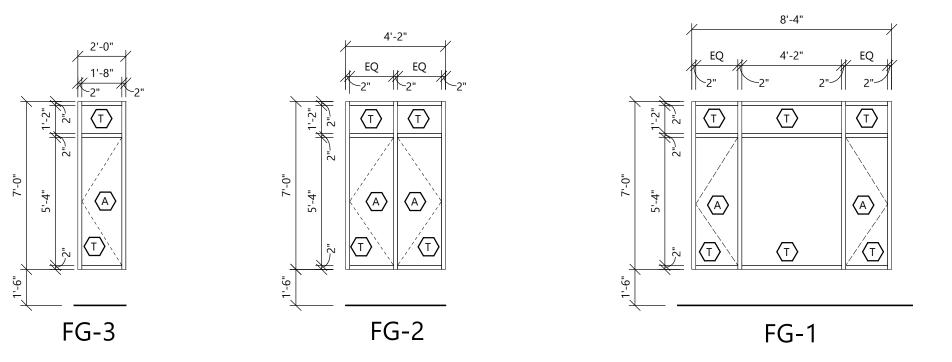
~~~~~~~~ SEE SCHED 12'-0" 5'-0" <u>|</u>|-2" 2'-8" ___1'-4" ___ SEE SCHED __1'-2" ___ SEE SCHED SEE SCHED , 1'-6" , , SEE SCHED IG-1 2"2" IG-2 AL-2 AL-4

ALUMINUM FRAME ELEVATIONS

FIBERGLASS FRAME ELEVATIONS

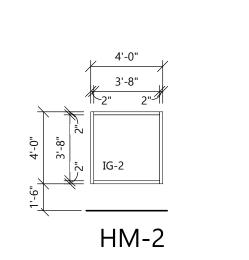
SCALE: 1/4" = 1'-0"

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



A INDICATES OPERABLE WINDOW. COORDINATE WINDOW STYLE & FUNCTION w/ OWNER. PROVIDE 6" LIMITER

 $\langle \mathsf{T} \rangle$ indicates window to receieve tempered glazing



HOLLOW METAL FRAME ELEVATIONS SCALE: 1/4" = 1'-0"

HM-1

EXTERIOR ALUM. STOREFRONT SPECIFICATIONS:

ROOM FINISH SCHEDULE

SOUTH

PT-GYP5

PT-GYP5

FRP / PT-GYP5

FRP / PT-GYP5

PT-GYP5

PT-GYP5

PT-GYP5

FRP / PT-GYP5

PT-GYP5

PT-GYP5

FRP / PT-GYP5

PT-GYP5

FRP / PT-GYP5

PT-GYP3

PT-GYP3

FRP / PT-GYP5

PT-GYP3

PT-GYP3

PT-GYP5

PT-GYP5

PT-GYP5

PT-GYP3

FRP / PT-GYP5

PT-GYP5

PT-GYP5

PT-GYP5

FRP / PT-GYP5

PT-GYP5

NORTH

PT-GYP5

PT-GYP5

FRP / PT-GYP5

FRP / PT-GYP5

PT-GYP5

PT-GYP5

PT-GYP5

FRP / PT-GYP5

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FRP / PT-GYP5

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PT-GYP5

PT-GYP5

PT-GYP5

PT-GYP5

FRP / PT-GYP5

PT-GYP5

PT-GYP5

PT-GYP3

FRP / PT-GYP5

PT-GYP3

FRP / PT-GYP5

WALLS

WEST

PT-GYP5

PT-GYP5

FRP / PT-GYP5

PT-GYP5

PT-GYP5

FRP / PT-GYP5

PT-GYP5

PT-GYP5

FRP / PT-GYP5

PT-GYP5

FRP / PT-GYP5

PT-GYP5

PT-GYP5

PT-GYP5

PT-GYP5

PT-GYP5

PT-GYP5

PT-GYP5

FRP / PT-GYP5

PT-GYP3

PT-GYP5

PT-GYP5

FRP / PT-GYP5 | FRP / PT-GYP5 | FRP / PT-GYP5

PT-GYP5

FRP / PT-GYP5 FRP / PT-GYP5

EAST

PT-GYP5

FRP / PT-GYP5

FRP / PT-GYP5

PT-GYP5

PT-GYP5

PT-GYP5

FRP / PT-GYP5

PT-GYP5

PT-GYP3

FRP / PT-GYP5

PT-GYP3

FRP / PT-GYP5

FRP / PT-GYP

PT-GYP5

FRP / PT-GYP5

PT-GYP5

PT-GYP5

PT-GYP5

PT-GYP5

PT-GYP5

PT-GYP5

FRP / PT-GYP5

PT-GYP5

PT-GYP5

PT-GYP5

CEILING FINISH

AT1

AT1

AT1

ΔΤ1

AT1

AT2

AT1

REMARKS

MANUFACTURER:

KAWNEER

ROOM #

100

107

108

114

115

116

117

118

121

122

123

124

128

129

130

131

132

134

REMARKS:

1. FRP TO BE FULL HEIGHT.

ROOM NAME

RECEPTION / WAITING

UNISEX

OFFICE

KITCHEN / STAFF PREP

STAFF BREAK

CHILDRENS HOUSE

STORAGE

CHILDRENS HOUSE

TOILET

CHILDRENS HOUSE

CHILDRENS HOUSE

TOIL FT

CHILDRENS HOUSE

ELECTRICAL

GMA STOR

CART ALCOVE

TODDI FR

TOILET

NIDO

HALL

TODDLER

TOILET

TOILET

TODDI FR

JANITOR

LAUNDRY

CLOSET

FLOOR

LVT1

LVT1

LVT1

LVT1

LVT1

LVT1

LVT1

EXP1

LVT1

RB1

LVT1

BASE

VB1

VB1

VB1

EPX1

VB1

PRODUCT: TRIFAB VG 451T THERMALLY BROKEN FRAMING SYSTEM

CONSTRUCTION: • 2" x 4 1/2" DEEP FRAMING MEMBERS. ASTM B 221; 6063-T5 ALLOY AND TEMPER

- [FRONT, CENTER, BACK, or MULTI-PANE] GLAZING SYSTEM SUPPLIER TO VERIFY ALL WIND LOAD AND DEFLECTION CRITERIA AND PROVIDE ALL ACCESSORIES AND REINFORCEMENT AS REQ'D BY APPLICABLE CODES AND
- FOR A COMPLETE INSTALLATION SUPPLIER TO PROVIDE AND INSTALL ANY REQ'D BRAKE METAL PANELS AS
- REQ'D TO COVER ANY STRUCTURE, FRAMING, OR ADJACENT / INTERVENING
- PROVIDE CONT. EXTRUDED SILL FLASHING AT EACH EXT. FRAMING UNIT
- PROVIDE CONT. EXTRUDED, THERMALLY BROKEN HEAD RECEPTOR AT EACH FRAMING UNIT
- PROVIDE CONT_EXTRUDED. THERMAL FLAT FILLER TO JAMB MEMBERS. • WHERE ALUMINUM WILL CONTACT DISSIMILAR METALS, PROTECT AGAINST GALVANIC REACTIONS BY PAINTING CONTACT SURFACES WITH PRIMER OR BY
- APPLYING SEALANT OR TAPE PER MANUF, SPEC'S PAINT (70% KYNAR) FINISH TO BE KAWNEER PERMADIZE (70% PVDF), AAMA 2605,

FLUOROPOLYMER COATING - COLOR TO BE WHITE

INTERIOR ALUM. STOREFRONT SPECIFICATIONS:

MANUFACTURER:

KAWNEER PRODUCT:

TRIFAB VG 451 FRAMING SYSTEM

CONSTRUCTION:

- 2" x 4 1/2" DEEP FRAMING MEMBERS. ASTM B 221; 6063-T5 ALLOY AND TEMPER • [FRONT, CENTER, BACK, or MULTI-PANE] GLAZING SYSTEM
- SUPPLIER TO VERIFY ALL WIND LOAD AND DEFLECTION CRITERIA AND PROVIDE ALL ACCESSORIES AND REINFORCEMENT AS REQ'D BY APPLICABLE CODES AND
- FOR A COMPLETE INSTALLATION
- SUPPLIER TO PROVIDE AND INSTALL ANY REQ'D BRAKE METAL PANELS AS REQ'D TO COVER ANY STRUCTURE, FRAMING, OR ADJACENT / INTERVENING
- WHERE ALUMINUM WILL CONTACT DISSIMILAR METALS, PROTECT AGAINST GALVANIC REACTIONS BY PAINTING CONTACT SURFACES WITH PRIMER OR BY
- APPLYING SEALANT OR TAPE PER MANUF. SPEC'S

FINISH TO BE KAWNEER PERMANODIC AA-M12C22A31, AAMA 611, ARCHITECTURAL CLASS II CLEAR ANODIC COATING COLOR TO BE #17 CLEAR

FIBERGLASS WINDOW SPECIFICATIONS:

MANUFACTURER:

 PELLA PRODUCT:

IMPERVIA

CONSTRUCTION:

GENERAL REQUIREMENTS MITERED CORNERS (w/ NO JOINTS VISIBLE)

- 1" INSULATED GLAZING, LOW-E, ARGON FILLED SEE FIBERGLASS WINDOW
- INTEGRAL NAILING FIN ATTACHMENT
- OPERABLE & NON-OPERABLE (SEE FRAME ELEVATIONS FOR OPERABLE WINDOWS)
- SUPPLIER TO VERIFY ALL WIND LOAD AND DEFLECTION CRITERIA AND
- PROVIDE ALL ACCESSORIES AND REINFORCEMENT AS REQ'D BY APPLICABLE CODES AND FOR A COMPLETE INSTALLATION
- REQ'D TO COVER ANY STRUCTURE, FRAMING, OR ADJACENT / INTERVENING

SUPPLIER TO PROVIDE AND INSTALL ANY REQ'D BRAKE METAL PANELS AS CONSTRUCTION

GLAZING SCHEDULE

- GLAZING SHALL MEET THE FOLLOWING STANDARDS AND GUIDELINES AS APPLICABLE FOR EACH TYPE: ASTM E 1300, ASTM C 1036, ASTM C 1048, ASTM E 774
- GANA GLAZING MANUAL
- SIGMA TM-3000 VERTICAL GLAZING GUIDELINES

IG-1: LOW-E TINTED INSULATED GLAZING

- PRODUCT: UNIT OVERALL THICKNESS WINTER U-VALUE: .33, SUMMER U-VALUE: .33 SHADING COEFFICIENT: .54 COLOR TO BE SELECTED BY ARCHITECT
- INDOOR LITE: TYPE I, CLASS I, QUALITY Q3 FLOAT GLASS, KIND HS (HEAT STRENGTHENED), CONDITION A
- OUTDOOR LITE: TYPE I, CLASS I, QUALITY Q3 FLOAT GLASS,
- KIND HS (HEAT STRENGTHENED), CONDITION A
- LOW-EMISSIVITY COATING ON THIRD SURFACE

IG-2: LOW-E TINTED INSULATED TEMPERED GLAZING

WINTER U-VALUE: .33, SUMMER U-VALUE: .33 SHADING COEFFICIENT: .54 COLOR TO BE SELECTED BY ARCHITECT

UNIT OVERALL THICKNESS

- INDOOR LITE: TYPE I, CLASS I, QUALITY Q3 FLOAT GLASS, KIND FT (FULLY TEMPERED), CONDITION A
- OUTDOOR LITE: TYPE I, CLASS I, QUALITY Q3 FLOAT GLASS, KIND FT (FULLY TEMPERED), CONDITION A
- LOW-EMISSIVITY COATING ON THIRD SURFACE

FIBERGLASS WINDOW SCHEDULE

MFR: PELLA PROD: IMPERVIA

PRODUCT:

GLAZING VALUES: (PEL-N-277-00092-00001) U-FACTOR: 0.25

SHGC: 0.23 VT: 0.42

SHEET DATES FEB. 14, 2023 REVISIONS AD2 MAR. 23, 2023

AD3 APR. 19, 2023 CB2 JUNE 5, 2023 CB3 JUNE 13, 2023 JUNE 21, 2023

Always a Better Plan

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Fond du Lac, WI 54935

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excelengineer.com

PROJECT INFORMATION

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PROPC

PROFESSIONAL SEAL

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LAKE

COLLABORATION

JOB NUMBER 2255300

SHEET NUMBER

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ARCHITECTURAL SCHEDULES

SOLID CORE WOOD DOOR SPECIFICATIONS:

MANUFACTURER:

MARSHFIELD DOOR SYSTEMS, INC.

CONSTRUCTION:

- 5 PLY CONSTRUCTION w/ STILES AND RAILS BONDED TO CORE PARTICLE BOARD CORE OR STRUCTURAL COMPOSITE LUMBER CORE PER MANUFACTURER RECOMMENDATIONS w/ HARDWOOD EDGES TO MATCH
- FACE SPECIES AS REQ'D FOR CUTOUTS
- MINERAL CORE w/ HARDWOOD EDGES TO MATCH FACE SPECIES AS REQ'D
- FOR FIRE RATED DOORS RED OAK, PLAIN SLICED WDMA CUSTOM GRADE w/ GRADE A FACES
- STANDARD DUTY DOOR UNLESS NOTED OTHERWISE
- VENEER LEAVES TO BE BOOK MATCH, RUNNING MATCH PAIR AND SET
- MATCH @ DOORS IN SAME OPENING OR FRAME PROVIDE BLOCKING AS REQ'D TO ELIMINATE THROUGH BOLTING OF ALL
- PROVIDE MANUF. STANDARD FLUSH WOOD BEAD AT LITES & GRILLES
- (WDMA OPTION: M1) • ALL RATED DOORS ARE TO BE CATEGORY A, POSITIVE PRESSURE, UL10C

WARRANTY: LIFETIME

HOLLOW METAL DOOR & FRAME SPECIFICATIONS:

MANUFACTURER:

CURRIES (APPROVED EQUIVALENT: STEELCRAFT)

CONSTRUCTION:

• INTERIOR: 707 SERIES, MIN. 18 GA. W/ POLYSTYRENE CORE.

ASTM C1363 OPERABLE R-VALUE = 2.7.

• EXTERIOR: 707 SERIES, MIN. 16 GA. W/ POLYSTYRENE CORE & FLUSH TOP CAP,

FINISH: SEE MATERIAL LEGEND

• EXTERIOR (WHERE INDICATED BY AN "E" SUFFIX ON DOOR TAG; I.E., "MD1E"): 747 SERIES, MIN. 16 GA. W/ 22 GA. STIFFENERS AT 6" CENTERS W/ FIBERGLASS INSULATION AND FLUSH TOP CAP, ASTM C1363 OPERABLE R-VALUE = 1.8

FRAMES

- 'M' PROFILE w/ CONT. WELD FACE SEAMS AT FULL WIDTH OF JAMB
- MIN. 16 ga. @ INTERIOR FRAMES • MIN. 14 ga. @ EXTERIOR FRAMES w/ URETHANE FOAM INSUL.
- GENERAL REQUIREMENTS
- ALL EXTERIOR DOORS AND FRAMES TO BE GALVANIZED
- ALL DOORS & FRAMES TO HAVE BAKED ON PRIMER FINISH ALL DOORS & FRAMES TO BE REINFORCED AND PREPARED FOR HARDWARE
- ALL REINFORCEMENT TO BE MIN. 12 ga.
- PROVIDE WELDED-IN BASE ANCHORS
- PROVIDE (3) SILENCERS PER JAMB @ ALL METAL DOOR FRAMES PROVIDE BITUMINOUS COATING ON INT. FACE OF FRAMES IN MASONRY
- PROVIDE METAL FRAME FOR LITES & GRILLES PAINT LITE FRAMES TO MATCH DOOR FRAMES

GENERAL DOOR AND FRAME NOTES:

- ALL DOORS SHALL MEET A.D.A. REQUIREMENTS
- ALL DOOR THRESHOLDS SHALL NOT EXCEED 1/2" IN HEIGHT VERIFY FRAME DEPTHS W/ WALL THICKNESS. PROVIDE WRAP AROUND FRAMES AT STUD WALLS
- PROVIDE SEALANT BOTH SIDES OF DOOR FRAMES, WHERE DIFFERENT MATERIALS MEET AND FOR WEATHER TIGHTNESS
- GENERAL CONTRACTOR TO VERIFY SIZE OF ALL EQUIPMENT (ELECTRICAL, MECHANICAL, KITCHEN, LAUNDRY, ETC.) SELECTED FOR THE PROJECT TO DETERMINE THAT ALL DOORS (INCLUDING PATH OF TRAVEL) ARE OF ADEQUATE SIZE TO ACCOMMODATE INSTALLATION AND REPLACEMENT
- VERIFY ALL ROUGH OPENING REQUIREMENTS WITH MANUFACTURERS DRAWINGS • SEE SHEET A0.1 FOR GENERAL BUILDING SPECIFICATIONS
- DOOR, FRAME AND HARDWARE SCHEDULE TO BE PROVIDED BY HARDWARE SUPPLIER FOR A/E REVIEW - NUMBERING SYSTEM AND NOMENCLATURE SHALL
- MATCH THOSE FOUND IN CONSTRUCTION DOCUMENTS HARDWARE SUPPLIER IS RESPONSIBLE FOR COORDINATING KEYING REQUIREMENTS
- WITH OWNER ALUMINUM SUPPLIER SHALL FURNISH AND INSTALL ALL HARDWARE FOR ALUMINUM DOORS AS NOTED ON PLANS - THE SAME MANUFACTURERS AND
- MODELS SHALL BE USED FOR BOTH ALUMINUM AND OTHER DOOR HARDWARE CONTRACTOR TO PROVIDE PRODUCTS AND SYSTEMS COMPLETE WITH ALL ACCESSORIES, TRIM, FINISH, FASTENERS AND OTHER ITEMS NEEDED FOR A
- COMPLETE INSTALLATION AND INTENDED USE AND EFFECT
- DOOR UNDERCUTS, WHERE NOTED, SHALL BE 1" FROM FINISHED FLOOR (TYP.) DOOR TRANSFER GRILLES BY DOOR SUPPLIER

NATIONAL GUARD PRODUCTS MODEL L-700-RX

SIGHT PROOF, V-SLAT WOOD LOUVER

-PAINT TO MATCH DOOR FRAME NATIONAL GUARD PRODUCTS MODEL L-700-C -PAINT TO MATCH DOOR FRAME

-STAIN AND VARNISH TO MATCH DOOR SEE ELECTRICAL PLANS FOR DOOR CARD READER LOCATIONS

DOOR HARDWARE KEY

\leq	DESCRIPTION / FINISH	Ives	Hager	McKinney	Stanley
1	STANDARD (626)	5BB1	BB1279	TA2714	FBB179
2	HEAVY (626)	5BB1HW	BB1168	T4A3786	FBB168
3	STANDARD (630)	5BB1 SS	BB1191	TA2314	FBB191
4	HEAVY (630)	5BB1HW SS	BB1199	T4A3386	FBB199
	_	CONTINUOUS	HINGES		

	CONTINUES						
\times	DESCRIPTION / FINISH	Roton (Hager)	McKinney	Select	Pemko		
H5	AL. GEAR TYPE (MATCH)	780-112HD	MCK-12HD	SL-11HD	CFMHD		
Н6	AL. GEAR TYPE (630)	780-224HD	MCK-25HD	SL-24HD	CFMHD		
H7	SS PIN/BARREL (630)	790-900	MCK-FM300	SL-300	SPDFM		

		LOCKSETS		
${>}$	DESCRIPTION / FINISH	Schlage ND Series (RHO)	Sargent 10-Line (LL)	Best 93K (15D)
L1	ENTRANCE (626)	ND53PD	10G05	93K AB
L2	CLASSROOM (626)	ND70PD	10G37	93K R
L3	PRIVACY (626)	ND40S	10U65	93K L
L4	STOREROOM (626)	ND80PD	10G04	93K D
L5	RIM CYLINDER (626)	20-022	34 SERIES	1E-72
L6	INSTITUTION (626)	ND82PD	10G17	93K W
L7	MORTISE CYLINDER (626)	20-001	40 SERIES	1E-74
L8	DEADLOCK (626)	B660P	480 SERIES	83T SERIES
L9	PASSAGE (626)	ND10S	10U15	93K N
L10	EXIT ONLY (626)	ND25	10G13	93K Y
L11	DUMMY TRIM (626)	ND170	10U93	93K 1DT

\times	DESCRIPTION / FINISH	Ives	Hager	Rockwood
S1	FLOOR MTD. (626)	FS436	241F	441
S2	WALL MTD. (626)	WS407CCV	236W	409

CLOSERS					
$\overline{}$	DESCRIPTION / FINISH	LCN	Sargent	Norton	
C1	PULL SIDE REG. (689)	4040 XP REG	351 O	7501	
C2	PULL SIDE HOLD-OPEN (689)	4040XP H	351 H	7501H	
C 3	PUSH SIDE REG. (689)	4040XP EDA	351 P10	PR7501	
C4	PUSH SIDE w/ STOP (689)	4040XP CUSH	351 PS	CLP7501	
C5	PUSH SIDE HOLD-OPEN (689)	4040XP HCUSH	351 PSH	CLP7501H	
C6	PUSH SIDE EXT. DOORS (689)	4040XP SCUSH	351 CPS	UNI7501	
C 7	DROP PLATE (689)	4040XP-18PA	351-D	7788	
C8	PULL SIDE w/ STOP (689)	-	-	CLP7500	

$\setminus /$		VonDup	rin	Sarg	ent
$\wedge \setminus$	DESCRIPTION / FINISH	Med./Wide Stile	Narrow Stile	Med./Wide Stile	Narrow Stile
E1	RIM - EXIT ONLY (626)	98/99EO	33EO	8810	
E2	RIM - LEVER (626)	98/99Lx996L	33Lx360L	8813 ETL	0.400 C
E3	SURF. RODS - LEVER (626)	98/9927Lx996L	3327Lx360L	8713 ETL	8400 Series
E4	CON. RODS - LEVER (626)	98/9947Lx996L	3347Lx360L	8613 ETL	
E5	RIM - EXIT ONLY (630)	98	EO	88	10
E6	RIM - LEVER (630)	98Lx	996L	8813	ETL
E7	SURF. RODS - LEVER (630)	9827L	x996L	8713	ETL
Wh	en a cylinder lockset is schedul	ed with an exit device	ce, trim w/ cylind	er should be provid	ded. If no
cvlii	nder lockset is scheduled, trim	shall be blank escute	cheon (unless spe	cified otherwise)	

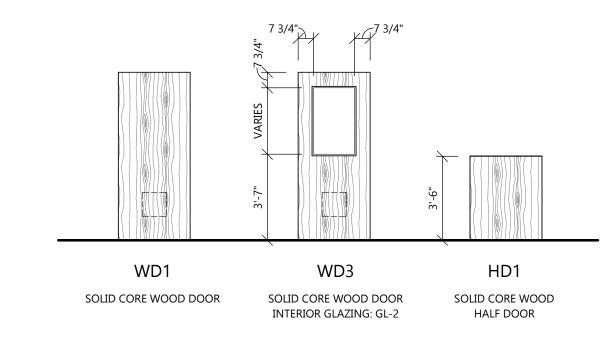
PUSH-PULL / KICKPLATES					
\times	DESCRIPTION / FINISH	Rockwood	Hager	Ives	
PP1	PUSH PLATE (630)	70C	30S	8200 4"x16"	
PP2	PULL w/ PLATE (630)	106x70C	33E	8302	
PP3	PUSH-PULL BAR (630)	BF15847	160D	9190-12	
K1	KICKPLATE 8"x2"LDW (630)	K1050-B4E	190S	8400	

	WEATHERSTRIP, SWEEPS, & THRESHOLDS									
\times	DESCRIPTION	National Guard	Reese	Pemko						
T1	THRESHOLD	8424	S282A	252x2 FG						
T2	SS SADDLE THRESHOLD	-	2125	154SS						
T3	SS THERMAL THRESHOLD	-	-	252-3SSFG						
SW1	SWEEP	200NA	772	315N						
WS1	WEATHERSTRIP	160VA	DS106C	294AV						
WS2	SMOKE SEAL	5050B	797B	S88						

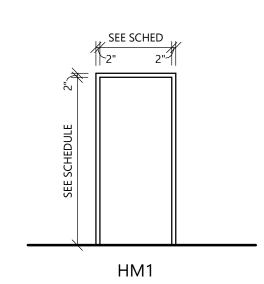
							DOOR S	CHEDULE							
		DOOR SI	ZE			UNDERCUT				DOOR HA	RDWARE				
DOOR	MADTIL	ПЕТСИТ	THICKNIESS	DOOD TVDE		OR GRILLE	LITALOT	LOCKET	CTORC	CLOSED	EXIT DEVICE	PUSH-PULL	W.S., SWEEP, THRESHOLD		DEMARKS
NO.	WIDTH		THICKNESS	DOOR TYPE	FRAME TYPE	(W x H)	HINGE	LOCKSET	STOPS	CLOSER		/ KICK		1 2	REMARKS
100	3'-0"	7'-0"	1 3/4"	AD5	AL-2	-	H5	L5	-	C5	E2	PP3	T1, SW1, WS1	1, 2	
101	3'-0"	7'-0"	1 3/4"	WD1	HM1	-	H1	L2	S2	-	-	-	-	-	
102	3'-0"	7'-0"	1 3/4"	WD1	HM1	1"	H1	L3	S2	C1	-	-	-	-	
103	3'-0"	7'-0"	1 3/4"	WD1	HM1	1"	H1	L3	S2	C1	-	-	-	-	
105	3'-0"	7'-0"	1 3/4"	AD5	AL-5	-	H5	L2	S2	-	-	-	-		
106	3'-0"	7'-0"	1 3/4"	MD1	HM1	-	H6	L5	-	C4	E2	K1	T1, SW1, WS1		
107	3'-0"	7'-0"	1 3/4"	WD3	HM1	-	H1	L2	-	C1	-	PP1, PP2, K1	-		
108	3'-0"	7'-0"	1 3/4"	WD3	HM1	-	H1	L2	-	C1	-	PP1, PP2, K1	-		
109A	3'-0"	7'-0"	1 3/4"	WD3	HM1	-	H1	L2	S2	C8	-	-	-		
109B	3'-0"	7'-0"	1 3/4"	AD5	AL-1	-	H5	L5	-	C5	-	PP3	T1, SW1, WS1	1	
110	3'-0"	7'-0"	1 3/4"	WD3	HM1	GRILLE	H1	L9	S2	C1	-	-	-		
111	3'-0"	7'-0"	1 3/4"	WD1	HM1	-	H1	L2	S2	-	-	-	-	1	
112A	3'-0"	7'-0"	1 3/4"	WD3	HM1	-	H1	L2	S2	C8	-	-	-		
112B	3'-0"	7'-0"	1 3/4"	AD5	AL-1	-	H5	L5	-	C 5	-	PP3	T1, SW1, WS1	1	
113	3'-0"	7'-0"	1 3/4"	WD3	HM1	GRILLE	H1	L9	S 2	C1	-	-	-		
114	3'-0"	7'-0"	1 3/4"	WD3	HM1	GRILLE	H1	L9	-	C4	-	-	-		
115A	3'-0"	7'-0"	1 3/4"	WD3	HM1	-	H1	L2	S 2	C8	-	-	-		
115B	3'-0"	7'-0"	1 3/4"	AD5	AL-1	-	H5	L5	-	C5	-	PP3	T1, SW1, WS1	1	
116A	3'-0"	7'-0"	1 3/4"	WD3	HM1	-	H1	L2	S 2	C8	-	-	-		
116B	3'-0"	7'-0"	1 3/4"	AD5	AL-3	-	H5	L5	-	C5	-	PP3	T1, SW1, WS1	1	
117	3'-0"	7'-0"	1 3/4"	WD3	HM1	GRILLE	H1	L9	-	C4	-	-	-		
118	3'-0"	7'-0"	1 3/4"	WD3	HM1	GRILLE	H1	L9	S 2	C1	-	-	-		
119A	3'-0"	7'-0"	1 3/4"	WD3	HM1	-	H1	L2	S 2	C8	-	-	-		
119B	3'-0"	7'-0"	1 3/4"	AD5	AL-3	-	H5	L5	-	C5	-	PP3	T1, SW1, WS1	1	
120A	3'-0"	7'-0"	1 3/4"	WD3	HM1	-	H1	L2	S 2	C1	-	-	-		
120B	3'-0"	7'-0"	1 3/4"	AD5	AL-1	-	H5	L5	-	C5	-	PP3	T1, SW1, WS1	1	
121	3'-0"	7'-0"	1 3/4"	MD1	HM1	-	H1	L2	S2	C1	-	-			
122	5'-0"	7'-0"	1 3/4"	(2)WD1	HM1	-	H1	L2	S2	-	-	-	-		
124A	3'-0"	7'-0"	1 3/4"	WD3	HM1	-	H1	L2	S2	C1	-	-	-		
124B	3'-0"	7'-0"	1 3/4"	AD5	AL-1	_	H5	L5	_	C5	-	PP3	T1, SW1, WS1	1	
125	3'-0"	7'-0"	1 3/4"	WD3	HM1	GRILLE	H1	L9	S 2	C1	-	-	-		
126	3'-0"	7'-0"	1 3/4"	WD3	HM1	GRILLE	H1	L9	S2	C1	-	-	-		
127A	3'-0"	7'-0"	1 3/4"	WD3	HM1	-	H1	L2	S2	C1	-	-	-		
127B	3'-0"	7'-0"	1 3/4"	AD5	AL-1	_	H5	L5	-	C5	_	PP3	T1, SW1, WS1	1	
128A	3'-0"	7'-0"	1 3/4"	AD5	AL-1	_	H5	L5	_	C5	E4	PP3	T1, SW1, WS1	1	
128B	3'-0"	7'-0"	1 3/4"	AD5	AL-1	-	H5	L5	_	C5	E4	PP3	T1, SW1, WS1	1	
129A	3'-0"	7'-0"	1 3/4"	WD3	HM1	_	H1	L2	S2	C8	-	-	-	<u> </u>	
129B	3'-0"	7'-0"	1 3/4"	AD5	AL-1	-	H5	L5	-	C5	-	PP3	T1, SW1, WS1	1	
130	3'-0"	7'-0"	1 3/4"	WD3	HM1	GRILLE	H1	L9	S2	C1	_	-	-	ļ.	
131	3'-0"	7'-0"	1 3/4"	WD3	HM1	GRILLE	H1	L9	-	C4	-	_	_	1	
132A	3'-0"	7'-0"	1 3/4"	WD3	HM1	- GRILL	H1	L2	 S2	C4 C8	-	-	-		
132A	3'-0"	7'-0"	1 3/4"	AD5	AL-1	-	H5	L5	<u> </u>	C5	-	PP3	T1, SW1, WS1	1	
133	5'-0"	7'-0"	1 3/4"	(2)WD1	HM1	1"	H1	L2	 S2	-	-	-	-	+'-	
134	6'-0"	7'-0"	1 3/4"		HM1	-	H1	L2 L2		-					
				(2)WD1							-	-	-		
135	3'-0"	7'-0"	1 3/4"	WD1	HM1	-	H1	L2	-	C4	-	-	-		

1. SEE ALUMINUM FRAME ELEVATIONS ON SHEET **A6.0**.

^{2.} DOOR TO RECEIVE IEI STANDARD KEYPAD PER HGE OUTLINE SPECIFICATIONS.



SOLID CORE WOOD DOOR ELEVATIONS SCALE: 1/4" = 1'-0"

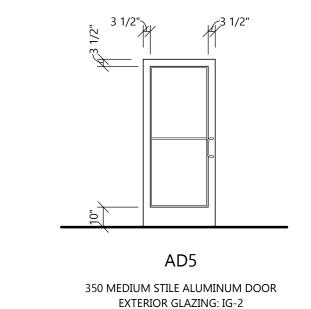


HOLLOW METAL FRAME ELEVATIONS

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



HOLLOW METAL DOOR ELEVATION SCALE: 1/4" = 1'-0"



ALUMINUM DOOR ELEVATION SCALE: 1/4" = 1'-0"

REVISIONS MAR. 23, 2023 APR. 19, 2023 JUNE 5, 2023 CB3 JUNE 13, 2023

FEB. 14, 2023

JOB NUMBER 2255300

SHEET NUMBER

2022 © EXCEL ENGINEERING, INC.

ALL SHADED ITEMS ARE CHANGES MADE AS PART OF CB3. Warmanner (ARCHITECTURAL DOOR SCHEDULE

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PROJECT INFORMATION

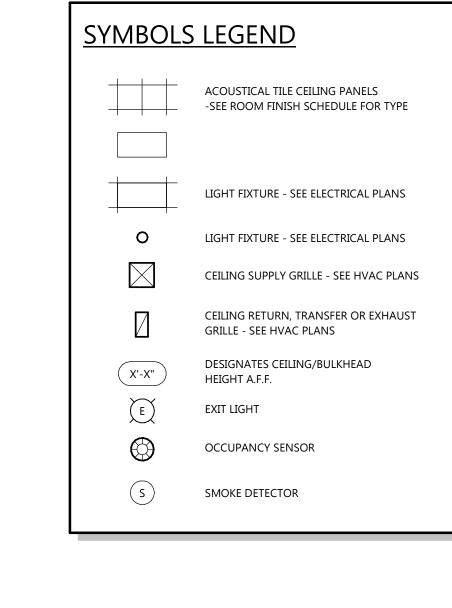
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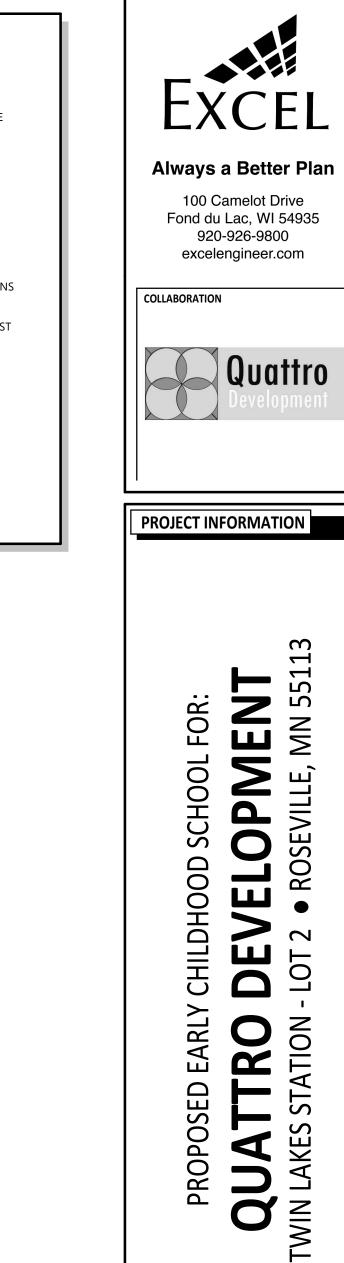
QUA TWIN LAKES

PROFESSIONAL SEAL

SHEET DATES

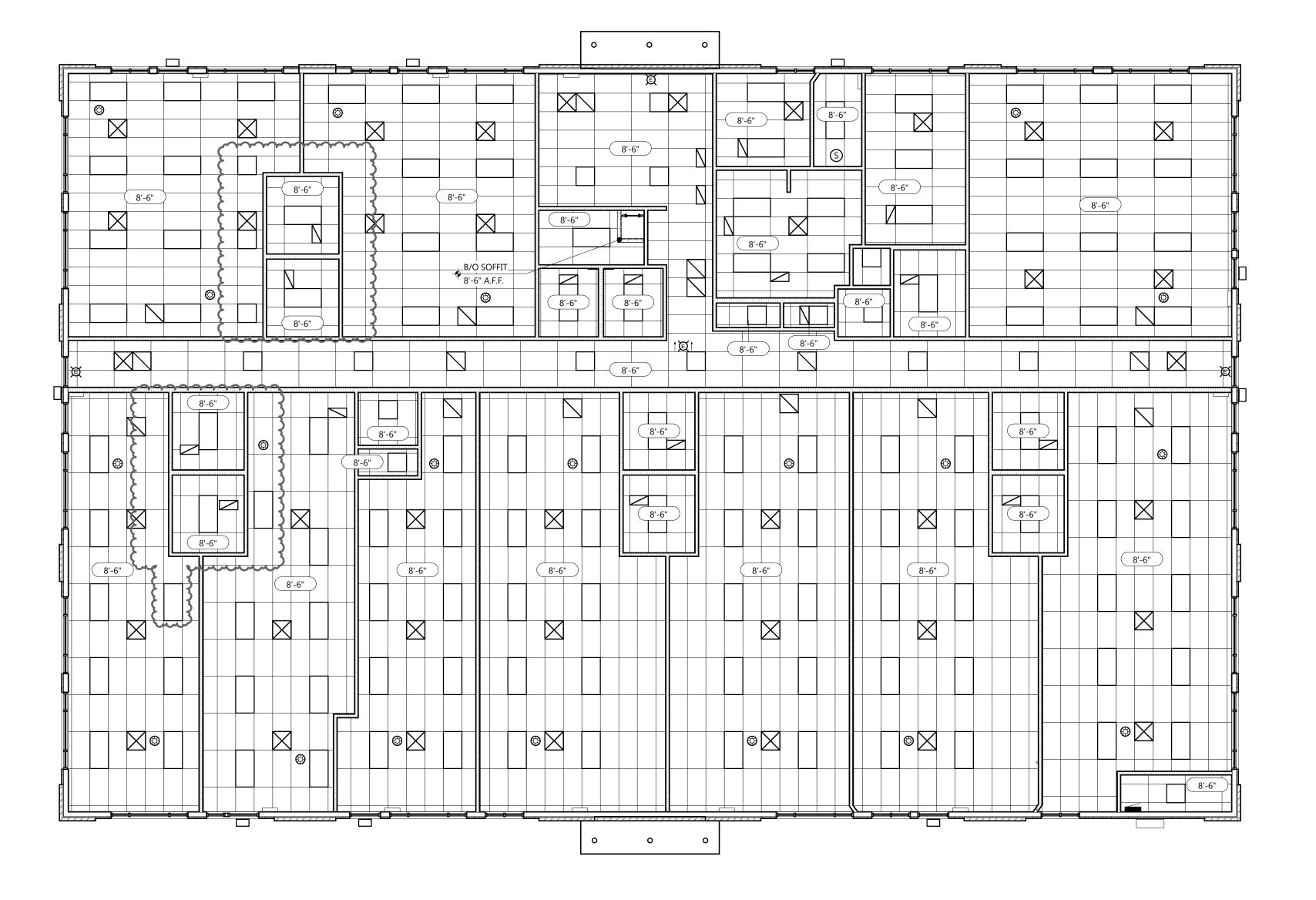
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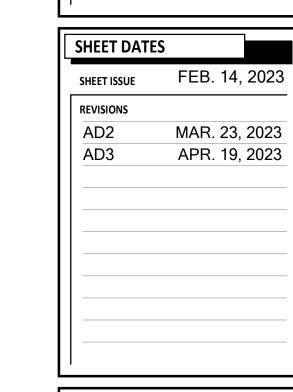




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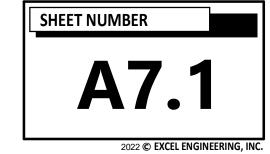
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PROFESSIONAL SEAL

JOB NUMBER 2255300



STRUCTURAL SPECIFICATIONS

BASIC REQUIREMENTS

- A. SEE DIVISION 00 PROCUREMENT AND CONTRACTING AND DIVISION 01 GENERAL REQUIREMENT FOR ADDITIONAL REQUIREMENTS.
- B. SUBSTITUTIONS1. SEE DIVISION 01 25 13 PRODUCT SUBSTITUTION PROCEDURES FOR ADDITIONAL
- 2. CONTRACTOR SHALL PROVIDE ALL SUPPORTING DATA AND ASSUME THE BURDEN OF PROOF THAT ANY SUBSTITUTE IS EQUIVALENT AS TO APPEARANCE, CONSTRUCTION, CAPACITY, AND PERFORMANCE. THE JUDGMENT OF EQUIVALENCY SHALL BE MADE BY THE ENGINEER AT THE TIME OF SHOP DRAWING REVIEW, NOT DURING BIDDING.
- C. SHOP DRAWINGS, PRODUCT DATA, TEST RESULTS, PROJECT CLOSEOUT DOCUMENTS:
- SEE DIVISION 01 33 23 SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES ON ARCHITECTURAL PLANS FOR ADDITIONAL REQUIREMENTS.
- DESIGN DRAWINGS SHALL NOT BE USED AS SHOP DRAWINGS.
 THE CONTRACTOR SHALL PREPARE A SCHEDULE OF ALL ITEMS TO BE SUBMITTED FOR A/E REVIEW. SCHEDULE SHALL SHOW ITEMS TO BE SUBMITTED AND ANTICIPATED DATE OF SUBMISSION. THIS SUBMITTAL SCHEDULE SHALL BE GIVEN TO THE A/E WITHIN 20 DAYS OF
- AWARD OF CONTRACT.

 4. IF SHOP DRAWINGS REQUIRE AN EXPEDITED REVIEW PROCESS, CONTACT A/E PRIOR TO
- SUBMITTING THE SHOP DRAWINGS TO MAKE THE APPROPRIATE ARRANGEMENT.

 5. STRUCTURAL AND ARCHITECTURAL PLANS SHOW DIMENSIONS AND ELEVATIONS TO SIGNIFICANT WORKING POINTS. SHOP DRAWING DETAILERS AND SUPPLIERS ARE RESPONSIBLE FOR THE DETERMINATION OF ALL DIMENSIONS, PITCHES, ELEVATIONS, ETC., BEYOND THOSE NOTED ABOVE AS NECESSARY TO THOROUGHLY DETAIL/FABRICATE THEIR WORK. CONTACT A/E WITH ANY DISCREPANCIES FOUND.
- 6. IN NO CASE SHALL CHANGES BE MADE TO WORK SHOWN OR PROCEDURE SPECIFIED ON STRUCTURAL PLANS UNLESS FIRST APPROVED IN WRITING BY A/E. REVIEW OF SHOP DRAWINGS BY A/E DOES NOT CONSTITUTE ACCEPTANCE OF A DESIGN CHANGE. PROPOSED CHANGES BY CONTRACTOR MUST BE SUBMITTED IN RFI FORMAT AND MUST BE APPROVED IN THE SAME MANNER. CONTRACTOR REQUESTING CHANGE MAY BE BILLED ON A TIME AND EXPENSE BASIS BY A/E FOR ALL REDESIGN WORK, FOR ALL NEW SKETCHES PREPARED, AND FOR ALL ADDITIONAL REVIEW TIME RELATED TO THE CHANGES.
- 7. CONSTRUCTION ADMINISTRATION SUBMITTAL LIST: a. GEOTECHNICAL REPORT
- b. SOIL COMPACTION TEST REPORTS
- c. CONCRETE MIX DESIGNS
- d. CONCRETE TEST REPORTS FOR SLUMP, AIR ENTRAINMENT AND COMPRESSIVE STRENGTH
- e. CONCRETE FOUNDATION POUR SCHEDULE, INCLUDING YARDS TO BE PLACEDf. SLAB ON GRADE JOINT LAYOUT PLAN AND POUR SCHEDULE, INCLUDING YARDS TO BE
- g. CONCRETE REINFORCEMENT
- h. POST INSTALLED ANCHORSi. WOOD ROOF TRUSSES
- i. WOOD ROOF TRUSS

 D. FINISHING AND PAINTING
- 1. SEE DIVISION 09 91 00 FINISH AND PAINTING FOR ADDITIONAL REQUIREMENTS. E. GENERAL STRUCTURAL NOTES:
- IN THE FOLLOWING NOTES, THE TERM "CONTRACTOR" REFERS TO ALL CONTRACTORS,
 SUBCONTRACTORS, AND SUPPLIERS ENGAGED IN THE EXECUTION OF WORK SHOWN ON
- THESE PLANS. THE TERM "A/E" REFERS TO EXCEL ENGINEERING, INC.

 2. CONTRACTOR SHALL CROSS CHECK WITH ARCHITECTURAL, HVAC AND PLUMBING PLANS FOR ADDITIONAL DETAILS, DIMENSIONS, ELEVATIONS, OPENINGS, INSERTS, BRICK LEDGES, ETC. NOTIFY A/E OF ANY CONFLICTS BEFORE BEGINNING WORK.
- 3. IT IS SOLELY THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE IN ORDER TO ENSURE THE SAFETY OF THE BUILDING, WORKMEN, AND OCCUPANTS DURING CONSTRUCTION (MEANS & METHODS OF CONSTRUCTION). THIS INCLUDES, BUT IS NOT LIMITED TO, THE ADDITION OF SHORING, UNDERPINNING, AND TEMPORARY BRACING, AS NECESSARY. A/E MAY BILL CONTRACTOR ON A TIME AND EXPENSE BASIS FOR ADDITIONAL WORK, FOR ALL NEW SKETCHES, AND FOR ALL ADDITIONAL REVIEW TIME RELATED TO MEANS & METHODS.
- 4. WHERE DETAILS ARE CALLED FOR IN ONE AREA OF THE BUILDING THEY SHALL BE DUPLICATED AT SIMILAR CONDITIONS, UNLESS SHOWN OTHERWISE.
- 5. IN THE EVENT OF ANY CONFLICT BETWEEN PLANS, DETAILS, STRUCTURAL NOTES, STRUCTURAL AND ARCHITECTURAL DRAWINGS, AND SPECIFICATIONS, CONTRACTOR SHALL BRING THE CONFLICT TO THE A/E'S ATTENTION. CONTRACTOR SHALL BID THE MOST EXPENSIVE INSTALLATION CALLED OUT.
- 6. THESE STRUCTURAL PLANS DEPICT A STRUCTURAL FRAMING SYSTEM AND THE MAJOR COMPONENTS OF THAT SYSTEM. MINOR ITEMS SUCH AS POURSTOPS, DECK SUPPORT ANGLES AT COLUMNS, FRAMES AT FLOOR AND ROOF DECK OPENINGS, ETC, SHALL BE SUPPLIED BY THE CONTRACTOR AS NEEDED TO PROVIDE A COMPLETE SYSTEM.
- 7. PROVIDE OVERFLOW DRAINS AND/OR SCUPPERS SUFFICIENT TO LIMIT DEPTH OF STANDING WATER TO 6" AT DRAINS, IN THE EVENT THAT THE PRIMARY ROOF DRAINS ARE NOT FUNCTIONING. IN NO CASE SHALL BOTTOM OF SCUPPER BE LOCATED MORE THAN 1/2" ABOVE MAIN ROOF MEMBRANE ELEVATION (NOT CANT) AT EXTERIOR WALL OF BUILDING.
- 8. BOTTOM OF FOOTING ELEVATION SHALL BE A MINIMUM OF 4'-0" BELOW ADJACENT EXTERIOR GRADE. NOTIFY A/E OF ANY FOOTING ELEVATION CHANGE REQUIRED IN ORDER TO PROVIDE 4'-0" FROST PROTECTION BEFORE PLACING FOOTINGS.
- 9. FOUNDATION SHORING AND/OR UNDERPINNING SHALL BE DESIGNED BY THE
 CONTRACTOR TO LIMIT HORIZONTAL AND VERTICAL MOVEMENT OF EXISTING
 CONSTRUCTION TO 3/16".
 F. POST-INSTALLED ANCHORS:
- CONTRACTOR SHALL PROVIDE EXCEL ENGINEERING WITH SPECIFICATIONS AND DESIGN INFORMATION FOR ALL ALTERNATE ANCHORS. CONTRACTOR SHALL MAKE
- ARRANGEMENTS TO COMPENSATE EXCEL ENGINEERING FOR THE EXTRA WORK INVOLVED.

 2. CLEAN SURFACES THOROUGHLY PRIOR TO INSTALLATION. PREPARE SURFACES USING THE METHODS RECOMMENDED BY THE MANUFACTURER FOR ACHIEVING THE BEST RESULTS
- DO NOT BEGIN INSTALLATION UNTIL SUBSTRATES HAVE BEEN PROPERLY PREPARED. IF SUBSTRATE PREPARATION IS THE RESPONSIBILITY OF ANOTHER INSTALLER, NOTIFY CONTRACTOR OF UNSATISFACTORY PREPARATION BEFORE PROCEEDING.
- 4. INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS AND AS REQUIRED BY APPLICABLE CODE.

FOR THE SUBSTRATE UNDER THE PROJECT CONDITIONS.

- 5. APPLY ANCHOR ITEMS NEATLY, WITH ANCHORS MOUNTED PLUMB AND LEVEL UNLESS OTHERWISE INDICATED.
- 6. EXCEL ENGINEERING RESERVES THE RIGHT TO REQUIRE THE ANCHOR MANUFACTURER'S REPRESENTATIVE TO DEMONSTRATE PROPER INSTALLATION PROCEDURES FOR POST-INSTALLED ANCHORS AND TO OBSERVE CONTRACTOR'S INSTALLATION PROCEDURES, AT NO EXTRA COST TO OWNER.
- 7. EXCEL ENGINEERING RESERVES THE RIGHT TO REQUIRE PULLOUT OR SHEAR TESTS TO DETERMINE ADEQUACY OF ANCHORS, AT NO EXTRA COST TO OWNER.

DIVISION 03 CONCRETE

03 30 00 CAST-IN-PLACE CONCRETE

- A. DESIGN AND CONSTRUCTION OF ALL CAST-IN-PLACE CONCRETE WORK SHALL CONFORM TO ACI 318 BUILDING CODE AND CRSI MANUAL OF STANDARD PRACTICE.
 B. PREPARATION OF THE SUBGRADE AND BASE COURSE/DRAINAGE LAYER FOR CONCRETE SLAB ON GRADE CONSTRUCTION TO BE PROVIDED PER MORE STRINGENT REQUIREMENTS OF
- GEOTECHNICAL REPORT OR CONSTRUCTION DOCUMENTS.
 C. DESIGN MIXES SHALL BE IN ACCORDANCE WITH ASTM C94.
- 1. SEE SPECIFICATIONS ON CIVIL PLANS FOR DESIGN MIXES ASSOCIATED WITH EXTERIOR
- CONCRETE FLATWORK SHOWN ON THE CIVIL PLANS.

 2. GROUP A FOOTINGS, GRADE BEAMS, AND TIE BEAMS.
- a. EXPOSURE CLASS: ACI 318 (F0)b. MINIMUM COMPRESSIVE STRENGTH: 3000 PS
- b. MINIMUM COMPRESSIVE STRENGTH: 3000 PSI AT 28 DAYSc. MAXIMUM WATER/CEMENT RATIO: NONE
- d. MAXIMUM AGGREGATE SIZE: 1 1/2"
- e. AIR CONTENT: N/A

 3. GROUP B INTERIOR SLABS ON GRADE AND HOUSEKEEPING PADS (6" THICKNESS OR LESS).
- a. EXPOSURE CLASS: ACI 318 (F0)
- b. MINIMUM COMPRESSIVE STRENGTH: 3500 PSI AT 28 DAYS

- c. MAXIMUM WATER/CEMENT RATIO: NONE
- d. MAXIMUM AGGREGATE SIZE: 3/4"
- e. AIR CONTENT: N/A
 4. GROUP C INTERIOR SLABS ON GRADE AND HOUSEKEEPING PADS (GREATER THAN 6"
- THICKNESS).
- a. EXPOSURE CLASS: ACI 318 (F0)b. MINIMUM COMPRESSIVE STRENGTH: 4000 PSI AT 28 DAYS
- c. MAXIMUM WATER/CEMENT RATIO: NONEd. MAXIMUM AGGREGATE SIZE: 1 1/2"
- e. AIR CONTENT: N/A
- 5. GROUP D INTERIOR WALLS, PIERS, COLUMNS, BEAMS, AND STRUCTURAL SLABS. a. EXPOSURE CLASS: ACI 318 (F0)
- b. MINIMUM COMPRESSIVE STRENGTH: 4000 PSI AT 28 DAYS
- c. MAXIMUM WATER/CEMENT RATIO: NONEd. MAXIMUM AGGREGATE SIZE: 3/4"
- e. AIR CONTENT: N/A6. GROUP E INTERIOR CONCRETE FILLED METAL DECK AND PRECAST TOPPINGS.
- a. EXPOSURE CLASS: ACI 318 (F0)b. MINIMUM COMPRESSIVE STRENGTH: 4000 PSI AT 28 DAYS
- c. MAXIMUM WATER/CEMENT RATIO: NONE
- d. MAXIMUM AGGREGATE SIZE: 3/4"e. AIR CONTENT: N/A
- 7. GROUP F INTERIOR CONCRETE FILLED METAL PAN STAIRS AND LANDINGS.
- a. EXPOSURE CLASS: ACI 318 (F0)b. MINIMUM COMPRESSIVE STRENGTH: 4000 PSI AT 28 DAYS
- c. MAXIMUM WATER/CEMENT RATIO: NONEd. MAXIMUM AGGREGATE SIZE: 1/2"
- e. AIR CONTENT: N/A
- 8. GROUP G EXTERIOR WALLS, PIERS, COLUMNS, BEAMS, AND STRUCTURAL SLABS
- a. EXPOSURE CLASS: ACI 318 (F2)b. MINIMUM COMPRESSIVE STRENGTH: 4500 PSI AT 28 DAYS
- c. MAXIMUM WATER/CEMENT RATIO: 0.45
- d. MAXIMUM AGGREGATE SIZE: 3/4"e. AIR CONTENT: 6.0% (+/-1.5%) AT POINT OF DELIVERY
- GROUP H ALL EXTERIOR CONCRETE EXPOSED TO FREEZING, THAWING, AND DEICING SALTS (I.E. EXPOSED WALLS, PIERS, ETC. THAT IS ABUTTED UP TO PAVED SURFACES WHERE
- DEICING SALTS MAY BE USED)

 a. EXPOSURE CLASS: ACI 318 (F3)
- b. MINIMUM COMPRESSIVE STRENGTH: 5000 PSI AT 28 DAYSc. MAXIMUM WATER/CEMENT RATIO: 0.40
- d. MAXIMUM AGGREGATE SIZE: 3/4"
- e. AIR CONTENT: 6.0% (+/-1.5%) AT POINT OF DELIVERY 10. SLUMP LIMIT SHALL BE 4" (+/- 1").
- 10. SLUMP LIMIT SHALL BE 4" (+/- 1").

 11. SLUMP LIMIT SHALL BE 8" (+/- 1") FOR CONCRETE WITH VERIFIED SLUMP OF 2" TO 4" BEFORE ADDING HIGH-RANGE WATER-REDUCING ADMIXTURE OR PLASTICIZING ADMIXTURE.
- 12. ALL CONCRETE EXPOSED TO WEATHER SHALL BE AIR-ENTRAINED WITH AIR CONTENT SPECIFIED IN DESIGN MIX GROUPS ABOVE. NO OTHER ADMIXTURES SHALL BE USED WITHOUT APPROVAL OF EXCEL ENGINEERING, INC. CALCIUM CHLORIDE SHALL NOT BE
- USED.

 13. CEMENTITIOUS MATERIALS: LIMIT PERCENTAGE, BY WEIGHT, OF CEMENTITIOUS MATERIALS
 OTHER THAN PORTLAND CEMENT IN CONCRETE WITH EXPOSURE CLASS (F3) AS FOLLOWS:
- a. FLY ASH OR OTHER POZZOLANS: 25 PERCENT BY MASSb. SLAG CEMENT: 50 PERCENT BY MASS
- c. TOTAL OF FLY ASH OR OTHER POZZOLANS, SLAG CEMENT: 50 PERCENT BY MASS, WITH FLYASH OR POZZOLANS NOT EXCEEDING 25 PERCENT BY MASS
 d. TOTAL OF FLY ASH OR OTHER POZZOLANS: 35 PERCENT BY MASS WITH FLY ASH OR
- POZZOLANS NOT EXCEEDING 25 PERCENT BY MASS

 D. PLACE SLABS ON GRADE WITH CONSTRUCTION JOINT OR SAW JOINT AS INDICATED ON THE PLANS. SAW CUT TO BE DONE AS SOON AS POSSIBLE, BUT NO LATER THAN 24 HOURS AFTER CONCRETE IS PLACED. ALL INTERIOR SLABS TO HAVE A TROWEL FINISH AND ALL EXTERIOR SLABS TO HAVE A LIGHT BROOM FINISH UNLESS NOTED OTHERWISE. MAINTAIN FLOOR LEVEL AT WALLS AND PITCH SURFACES UNIFORMLY TO DRAINS. ALL CONCRETE IS TO BE CURED FOR 7 DAYS. FLOORS TO BE STAINED, TO RECEIVE AN ASHFORD SEALER, OR TO RECEIVE ANOTHER FINISH THAT IS NOT COMPATIBLE WITH CURING COMPOUNDS ARE TO BE WET CURED OR CURED WITH AN ARMORLON TRANSGUARD 4000 WET CURE COVER PER MANUFACTURER'S SPECIFICATION. EXTERIOR SLABS SHALL BE SEPARATED FROM BUILDINGS WITH CONTINUOUS 1/2" FIBER EXPANSION JOINT AND/OR 1/4" FIBER EXPANSION JOINT AT DECORATIVE MASONRY UNITS. INTERIOR SLABS SHALL BE SEPARATED FROM FOUNDATION WALLS AND PIERS WITH
- E. THE SLAB-ON-GRADE FLOOR FLATNESS/LEVELNESS SHALL MEET TO THE FOLLOWING CRITERIA:
 1. TOP OF FLOOR ELEVATION SHALL BE WITHIN 3/4" OF DESIGN ELEVATION IN ACCORDANCE TO ACI 117 TOLERANCES.

FORM RELEASE AGENT, 15 LB. FELT OR AS DETAILED ON PLANS.

- THE SPECIFIED OVERALL VALUE FOR THE FLOOR FLATNESS/LEVELNESS PER ACI 117 AND
 ASTM E1155 IS AS FOLLOWS:
 a. NONCRITICAL MECHANICAL ROOMS, NONPUBLIC AREAS, AND PARKING FF20 / FL15.
- b. CARPETED AREAS IN COMMERCIAL OFFICE, INDUSTRIAL BUILDING FF25 / FL20.
 c. THIN-SET FLOORING, WAREHOUSE, POLISHED CONCRETE FF35 / FL25.
- d. WAREHOUSE WITH AIR-PALLET USE, ICE RINKS FF45 / FL35.e. CRITICAL AREAS AS INDICATED ON PLAN >FF50 / >FL50.
- THE MINIMUM LOCAL VALUE FOR THE FLOOR FLATNESS/LEVELNESS SHALL NOT BE LESS THAN 67% OF THE SPECIFIED OVERALL VALUE.
 THE GENERAL CONTRACTOR SHALL PROVIDE A WRITTEN REPORT AT CONTRACTOR'S EXPENSE TO OWNER'S REPRESENTATIVE WITHIN 48 HOURS OF COMPLETION OF EACH
- 5. CONTRACTOR SHALL REPLACE AREAS THAT DO NOT MEET THESE CRITERIA.

 F. THE SLAB-ON-GRADE FLOOR FLATNESS FOR SUPER FLAT FLOORS IN NARROW AISLE WAREHOUSES AND AREAS WITH DEFINED TRAFFIC FLOORS SHALL MEET THE FOLLOWING
- CRITERIA:
- THE SPECIFIED FLOOR FLATNESS SHALL BE F MIN. 100.
 SUPER FLAT FLOORS SHALL BE PLACED BY CONTINUOUS STRIP POURING. JOINT LOCATIONS SHALL BE PLACED AS INDICATED ON PLANS.
- SUPER FLAT FLOORS SHALL BE TESTED FOR COMPLIANCE USING A VEHICLE SIMULATION
 TESTING PROCEDURE. TESTING PROCEDURE AND AGENCY PERFORMING SIMULATION
 SHALL BE APPROVED BY OWNER'S REPRESENTATIVE PRIOR TO START OF SLAB-ON-GRADE
 CONSTRUCTION.
 AREAS NOT MEETING THE SPECIFIED FLOOR FLATNESS SHALL BE REPAIRED BY GRINDING IF
- POSSIBLE. IF COMPLIANCE BY GRINDING IS NOT POSSIBLE CONTRACTOR SHALL REPLACE AREAS THAT DO NOT MEET CRITERIA.

 5. THE GENERAL CONTRACTOR SHALL PROVIDE A WRITTEN REPORT AT CONTRACTOR'S
- EXPENSE TO OWNER'S REPRESENTATIVE WITHIN 48 HOURS OF TEST COMPLETION.

 G. FOUNDATION WALLS EXPOSED 2 FEET OR MORE, RETAINING WALLS, AND BASEMENT WALLS SHALL HAVE CONTROL JOINTS AS DETAILED ON PLANS. FOUNDATION WALLS WITH MASONRY CONSTRUCTION ABOVE SHALL HAVE THE CONTROL JOINTS ALIGNED WITH THE MASONRY JOINTS. ALL EXPOSED FOUNDATION WALLS TO HAVE TIES AND FINS REMOVED PER ACI 301-99, 5.3.3.3.B "SMOOTH —FORM FINISH." AND BE HAND RUBBED PER ACI 301-99, 5.3.3.4.A

"SMOOTH-RUBBED FINISH" AND HAVE TWO (2) COATS WHITE OR GRAY THOROSEAL APPLIED

- PER LOCATIONS INDICATED ON THE PLANS.

 H. BACKFILLING OF FOUNDATIONS:

 1. BACKFILLING OF OPPOSITE SIDES OF UNBRACED FOUNDATION WALLS SHALL MAINTAIN A MAXIMUM 2 FOOT DIFFERENTIAL IN ELEVATION PRIOR TO ACHIEVING FINAL SPECIFIED
- TEMPORARY CONSTRUCTION BRACING DURING BACKFILLING.
 a. FOUNDATION WALLS WITH PERMANENT TOP LATERAL SUPPORTS SHALL BE
 TEMPORARILY BRACED UNTIL TOP SUPPORT SYSTEMS ARE INSTALLED. TEMPORARY
- CONSTRUCTION BRACING SHALL BE DESIGNED AND INSTALLED BY THE CONTRACTOR.

 b. THE BOTTOM OF THE BASEMENT WALLS SHALL BE TEMPORARILY BRACED UNTIL THE BASEMENT FLOOR SLAB IS IN PLACE. TEMPORARY CONSTRUCTION BRACING SHALL BE DESIGNED AND INSTALLED BY THE CONTRACTOR.

- I. ALL REINFORCING BARS SHALL BE ASTM A615 GRADE 60. THICKNESS OF CONCRETE COVER OVER REINFORCEMENT SHALL BE NOT LESS THAN 3" WHERE CONCRETE IS DEPOSITED AGAINST THE GROUND WITHOUT THE USE OF FORMS AND NOT LESS THAN 1 1/2" FOR UP TO #6, 2" FOR #7 TO #10 IN ALL OTHER LOCATIONS. ALL REINFORCING SHALL BE LAPPED 48 DIAMETERS FOR UP TO #6 BARS, 62 DIAMETERS FOR #7 TO #9 BARS, 68 DIAMETERS FOR #10 BARS OR AS NOTED ON THE DRAWINGS AND EXTENDED AROUND CORNERS WITH CORNER BARS. PLACING AND DETAILING OF STEEL REINFORCING AND REINFORCING SUPPORTS SHALL BE IN ACCORDANCE WITH CRSI AND ACI MANUAL AND STANDARD PRACTICES. THE REINFORCEMENT SHALL NOT BE PAINTED AND MUST BE FREE OF GREASE/OIL, DIRT OR DEEP RUST WHEN PLACED IN THE WORK. ALL WELDED WIRE FABRIC SHALL MEET THE REQUIREMENTS OF ASTM A1064. WELDED WIRE FABRIC SHALL BE PLACED 2" FROM TOP OF SLAB, UNLESS INDICATED OTHERWISE.
- J. CONTRACTOR SHALL ENGAGE A QUALIFIED INDEPENDENT TESTING AND INSPECTING AGENCY TO SAMPLE MATERIALS, PERFORM TESTS, AND SUBMIT TEST REPORTS DURING CONCRETE PLACEMENT. TESTS WILL BE PERFORMED ACCORDING TO ACI 301. CAST AND LABORATORY CURE ONE SET OF FOUR STANDARD CYLINDERS FOR EACH COMPOSITE SAMPLE FOR EACH DAY'S POUR OF EACH CONCRETE MIX EXCEEDING 5 CU. YD., BUT LESS THAN 25 CU. YD., PLUS ONE SET FOR EACH ADDITIONAL 50 CU. YD. OR FRACTION THEREOF. PERFORM COMPRESSIVE-STRENGTH TESTS ACCORDING TO ASTM C 39. TEST TWO SPECIMENS AT 7 DAYS AND TWO SPECIMENS AT 28 DAYS. PERFORM SLUMP TESTING ACCORDING TO ASTM C 143. PROVIDE ONE TEST AT POINT OF PLACEMENT FOR EACH COMPOSITE SAMPLE, BUT NOT LESS THAN ONE TEST FOR EACH DAY'S POUR OF EACH CONCRETE MIX. PERFORM ADDITIONAL TESTS WHEN CONCRETE CONSISTENCY APPEARS TO CHANGE.
- K. VERIFY INTERIOR EQUIPMENT CONCRETE PAD SIZES WITH RESPECTIVE CONTRACTORS. PADS SHALL HAVE FIBERMESH 300 FIBERS AT A RATE OF 1.5 LBS/CU. YD. OR 6 X 6-W1.4 X W1.4 WELDED WIRE MESH WITH MINIMUM 1 INCH COVER. EQUIPMENT PADS SHALL BE 3.5 INCHES THICK (TOP OF PAD SHALL BE LEVEL IF POURED ON SLOPED FLOOR, THICKNESS SHALL BE AT HIGHEST FLOOR ELEVATION) WITH 1 INCH CHAMFER UNLESS SPECIFIED OTHERWISE AND SHALL BE PLACED AFTER PRECAST TOPPING HAS BEEN POURED.
- L. REINFORCMENT IN CONCRETE TOPPINGS ON PRECAST CONCRETE SHALL BE FIBERMESH 300 FIBERS AT A RATE OF 1.5 LBS/CU. YD. AND 6 X 6-W1.4 X W1.4 WELDED WIRE MESH UNLESS NOTED OTHERWISE.
- M. REINFORCEMENT IN CONCRETE TOPPINGS ON METAL DECK SHALL BE FIBERMESH 300 FIBERS AT A RATE OF 1.5 LBS/CU. YD. AND 6 X 6-W2.1 X W2.1 WELDED WIRE MESH UNLESS NOTED OTHERWISE.
 N. PROTECT FRESHLY PLACED CONCRETE FROM PREMATURE DRYING AND EXCESSIVE COLD OR
- N. PROTECT FRESHLY PLACED CONCRETE FROM PREMATURE DRYING AND EXCESSIVE COLD OR HOT TEMPERATURES. IN HOT, DRY, AND WINDY WEATHER, APPLY AN EVAPORATION-CONTROL COMPOUND ACCORDING TO MANUFACTURER'S INSTRUCTIONS AFTER SCREEDING AND BULL FLOATING, BUT BEFORE POWER FLOATING AND TROWELING.

O. APPLY TROWEL FINISH TO MONOLITHIC SLAB SURFACES TO BE EXPOSED TO VIEW AND SLAB

SURFACES TO BE COVERED WITH RESILIENT FLOORING, CARPET, PAINT, OR OTHER THIN FILM-FINISH COATING SYSTEM. APPLY NONSLIP BROOM FINISH TO EXTERIOR CONCRETE PLATFORMS, STEPS, AND RAMPS, AND ELSEWHERE AS INDICATED.

P. TEST RESULTS WILL BE REPORTED IN WRITING TO ARCHITECT, READY-MIX PRODUCER, AND CONTRACTOR WITHIN 24 HOURS AFTER TESTS. REPORTS OF COMPRESSIVE STRENGTH TESTS SHALL CONTAIN THE PROJECT IDENTIFICATION NAME AND NUMBER, DATE OF CONCRETE

PLACEMENT, NAME OF CONCRETE TESTING SERVICE, CONCRETE TYPE AND CLASS, LOCATION OF

CONCRETE BATCH IN STRUCTURE, DESIGN COMPRESSIVE STRENGTH AT 28 DAYS, CONCRETE

MIX PROPORTIONS AND MATERIALS, COMPRESSIVE BREAKING STRENGTH, AND TYPE OF BREAK

03 60 00 GROUT

- A. NONMETALLIC, SHRINKAGE-RESISTANT GROUT SHALL BE ASTM C1107/C1107M, FACTORY-PACKAGED, NONMETALLIC AGGREGATE GROUT, NONCORROSIVE AND NONSTAINING, MIXED
- WITH WATER TO A CONSISTENCY SUITABLE FOR APPLICATION.

 B. GROUT TO BE USED UNDER BEARING PLATES AND COLUMN BASE PLATES. PACK GROUT SOLIDLY BETWEEN BEARING SURFACES AND PLATES SO NO VOIDS REMAIN. NEATLY FINISH EXPOSED SURFACES, PROTECT GROUT AND ALLOW TO CURE. COMPLY WITH MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS FOR GROUTING.
- C. MINIMUM COMPRESSIVE STRENGTH: 8000 PSI AT 28 DAYS.D. FOR GROUT USED TO FILL MASONRY CORES SEE DIVISION 04 MASONRY

DIVISION 6 WOOD, PLASTICS AND COMPOSITES

06 10 00 ROUGH CARPENTRY

SINGLE-WYTHE MASONRY WALLS.

FOR BOTH 7-DAY TESTS AND 28-DAY TESTS.

- A. LUMBER SHALL BE GRADED AND STAMPED WITH MINIMUM STRUCTURAL DESIGN VALUES AS LISTED BELOW.
 1. #1/#2 DOUG FIR 850 PSI FB, 180 PSI FV, 1,600 KSI E (BEAMS, LINTELS & HEADERS, UNLESS)
- #1/#2 S.P.F. 875 PSI FB, 1,150 PSI FC, 1,400 KSI E (ALL STUDS & PLATES, UNLESS NOTED)
 LVL @ 1,800 KSI E OR MICRO-LAM @ 1,900 KSI E 2600 PSI FB, 285 PSI FV (OR AS NOTED ON THE PLANS).
- 4. WOOD HEADER MATERIAL SHALL BE FREE OF ALL SPLITS, SHAKES AND CHECKS.
 B. (THE FOLLOWING APPLIES WHEN PARTS OF WOOD STRUCTURE ARE DESIGNED EMPIRICALLY ACCORDING TO IBC SECTION 2308). SEE PLANS FOR PORTIONS OF STRUCTURE DESIGNED IN
- ACCORDANCE WITH IBC SECTION 2308, CONVENTIONAL LIGHT-FRAMED CONSTRUCTION.

 C. MISCELLANEOUS LUMBER: PROVIDE NO. 3 OR STANDARD GRADE LUMBER OF ANY SPECIES FOR SUPPORT OR ATTACHMENT OF OTHER CONSTRUCTION, INCLUDING ROOFTOP EQUIPMENT CURBS AND SUPPORT BASES, CANT STRIPS, BUCKS, NAILERS, BLOCKING, AND SIMILAR
- MEMBERS.

 D. PROTECTION AGAINST DECAY WITH PRESERVATIVE-TREATED WOOD. PRESSURE TREATED WOOD SHALL BE REQUIRED IN THE FOLLOWING AREAS:
- ALL WOOD SILL PLATES, FRAMING, AND FURRING STRIPS ATTACHED TO EXTERIOR BELOW GRADE MASONRY AND CONCRETE WALLS.
 ALL WOOD PLATES, BLOCKING, FRAMING AND FURRING STRIPS ATTACHED TO EXTERIOR,
- ALL WOOD CAP FLASHING BLOCKING ATTACHED TO MASONRY OR CONCRETE PARAPETS.
 ALL WOOD SLEEPERS AND SILL PLATES ON CONCRETE SLABS IN DIRECT CONTACT WITH EARTH.
 EXCEPTION: WOOD SILL PLATES ON CONCRETE SLABS SEPARATED FROM DIRECT CONTACT
- TO THE EARTH WITH A 10 MIL POLYETHYLENE VAPOR RETARDANT WILL NOT REQUIRE PRESERVATIVE-TREATMENT.

 6. ALL WOOD IN CONTACT WITH GROUND OR EXPOSED TO THE WEATHER.
- E. FINISHES FOR FASTENERS AND HARDWARE IN CONTACT WITH PRESERVATIVE-TREATED WOOD ARE BASED ON THE FOLLOWING ASSUMPTIONS:
 1. ALL INTERIOR TREATED WOOD SHALL USE AN ACQ-C, ACQ-D (CARBONATE), CBA-A, OR CA-B TREATMENT WITH RETENTION LEVELS LESS THAN OR EQUAL TO 0.40 PCF, 0.40 PCF, 0.41 PCF,
- AND 0.21 PCF RESPECTIVELY.

 2. ALL CONNECTION HARDWARE AND FASTENERS IN DIRECT CONTACT WITH INTERIOR TREATED WOOD SHALL BE HOT-DIPPED GALVANIZED, MECHANICALLY GALVANIZED, OR
- STAINLESS STEEL.

 3. ALL CONNECTION HARDWARE AND FASTENERS IN DIRECT CONTACT WITH EXPOSED EXTERIOR TREATED WOOD OR UNKNOWN TREATMENTS SHALL BE STAINLESS STEEL.

 4. USE TAPCON "CLIMASEAL" FASTENERS TO CONNECT ACQ-TREATED WOOD BLOCKING TO
- MASONRY OR CONCRETE PARAPETS.

 F. SHOP DRAWINGS FOR PRESERVATIVE-TREATED WOOD, HARDWARE, AND FASTENERS:

 1. THE CONTRACTOR SHALL FURNISH MATERIAL CERTIFICATES FOR ALL PRESERVATIVE-TREATED WOOD TYPES, SPECIFYING THE NAME OF THE TREATING COMPANY, THE PRESERVATIVE USED, THE LEVEL OF TREATMENT (0.10, 0.25, 0.40, ETC.), THE INTENDED USE
- AWPA STANDARD.

 2. THE CONTRACTOR SHALL FURNISH MATERIAL DATA SHEETS FOR HARDWARE AND

FASTENERS IN CONTACT WITH PRESERVATIVE-TREATED WOOD.

(ABOVE GROUND, GROUND CONTACT, ETC.), AND A REFERENCE TO THE APPROPRIATE

06 16 00 SHEATHING

- WOOD

 1. ALL SHEATHING TO BE APA RATED PS-1 OR PS-2.
- SEE STRUCTURAL PLANS FOR EXPOSURE RATING.
 PLYWOOD / OSB THICKNESS & REQUIRED SPAN RATING

- a. 7/16", 15/32", & 1/2" THICK PANELS ARE INTERCHANGEABLE EXCEPT @ SHEARWALLS. 7/16 1/2" SHEATHING ARE REQUIRED TO HAVE A MINIMUM SPAN RATING OF 24/16.
- b. 19/32" & 5/8" SHEATHING ARE INTERCHANGEABLE. 19/32" & 5/8" SHEATHING ARE REQUIRED TO HAVE A MINIMUM SPAN RATING OF 40/20.
 c. 23/32" & 3/4" THICK PANELS ARE INTERCHANGEABLE. 23/32" & 3/4" SHEATHING ARE
- REQUIRED TO HAVE A MINIMUM SPAN RATING OF 48/24
 4. EXTERIOR WALL: SEE STRUCTURAL PLANS.
- 5. SUBFLOOR: SEE STRUCTURAL PLANS.
- a. ALL SHEATHING SHALL BE TONGUE AND GROOVE.
- 6. ROOF: SEE STRUCTURAL PLANS.
 a. AT 7/16", 15/32", & 1/2" THICK PANELS INSTALL H-CLIPS AT JOINTS CENTERED BETWEEN
- b. AT 19/32" & 5/8" THICK PANELS:
- i. FOR ROOF AREAS WITH EXPOSED UNDERSIDE OF ROOF DECK IN CONTACT WITH CONTINUOUS INSULATION, SHEATHING SHALL BE TONGUE AND GROOVE.
- j. FOR ALL OTHER ROOF AREAS, INSTALL H-CLIPS AT JOINTS CENTERED BETWEEN JOISTS/TRUSSES.
- c. AT 23/32" & 3/4" THICK PANELS, EDGES SHALL BE TONGUE AND GROOVE.
 7. PROVIDE MINIMUM 1/8" GAP BETWEEN ALL ROOF & WALL PANEL EDGES.
- SEE ARCHITECTURAL SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
 PARAPET VERTICAL: MINIMUM 7/16" PLYWOOD DOC PS-1 OR 2, EXPOSURE 1 MINIMUM CLASSIFICATION.
- 10. COORDINATE SHEATHING INSTALLATION SO SHEATHING IS NOT DIRECTLY EXPOSED TO PRECIPITATION OR PROVIDE SHEATHING WARRANTED FOR THE EXPOSURE.
- 11. EXPOSED INTERIOR WALL SHEATHING SHALL BE MINIMUM CDX GRADE.12. PROVIDE FIRE TREATED SHEATHING WHERE SPECIFIED ON PLANS.
- B. GLASS MAT SHEATHING

 1. SEE ARCHITECTURAL PLANS

06 17 53 WOOD TRUSSES

- A. WOOD TRUSSES SHALL BE DESIGNED FOR ALL LOADS AND OTHER REQUIREMENTS AS INDICATED IN "DESIGN LOADS" SECTION. TRUSS MANUFACTURER SHALL LOCATE ALL REQUIRED TRUSS BRACING. BRACING SHALL BE PROVIDED BY CONTRACTOR.
- B. SHOP DRAWINGS:
 1. DRAWINGS SHALL BE COMPLETE AND INCLUDE FRAMING PLANS, TRUSS PROFILES, AND DESIGN LOAD INFORMATION FOR ALL COMPONENTS AND ACCESSORIES TO BE FURNISHED
- BY THE TRUSS SUPPLIER.

 2. APPROVAL OF SHOP DRAWINGS IS AN APPROVAL OF GENERAL DESIGN ONLY AND DOES NOT RELIEVE THE TRUSS SUPPLIER FROM THE NECESSITY OF MAKING, WITHOUT COST, CHANGES OR CORRECTIONS DUE TO ERRORS IN FABRICATION, OR RESULTING FROM
- ERRORS IN SHOP DRAWING DIMENSIONS.

 3. GENERAL CONTRACTOR TO VERIFY ALL DIMENSIONS AND ANY OTHER LOAD REQUIREMENTS WITH TRUSS SUPPLIER.
- C. APPROVAL DRAWINGS FOR THE AUTHORITY HAVING JURISDICTION (AHJ):
 1. THE WOOD TRUSS SUPPLIER SHALL FURNISH DRAWINGS AND COMPLETE DESIGN
 CALCULATIONS OF ALL STRUCTURAL COMPONENTS THAT ARE SIGNED AND SEALED BY A
 REGISTERED PROFESSIONAL ENGINEER ACCEPTABLE TO THE AHJ TO EXCEL ENGINEERING,
 INC. FOR REVIEW AND APPROVAL.
- 2. SUBMITTAL REQUIREMENTS SHALL BE AS SPECIFIED IN SECTION 01 33 23.



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COLLABORATION



PROJECT INFORMATION

ELOPMENT

ROSEVILLE, MN 55113

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PROFESSIONAL SEAL

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SHEET DATES

SHEET ISSUE FEB. 14, 2023

REVISIONS

JOB NUMBER 2255300

SHEET NUMBER

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CONNECTION	WOOD CONNECTION FASTENING SCHEDULE FASTENING (A) (M)	LOCATION
COMMECTION	FASTENING (A) (M) ROOF	LOCATION
1. BLOCKING BETWEEN CEILING JOISTS, RAFTERS OR FRUSSES TO TOP PLATE OR OTHER FRAMING BELOW	3 - 8d COMMON 3 - 10d BOX 3 - 3" X 0.131" NAILS 3 - 3" X 14 GAGE STAPLES	EACH END, TOENAIL
BLOCKING BETWEEN RAFTERS OR TRUSS NOT AT THE	2 - 8d COMMON 2 - 3" X 0.131" NAILS 2 - 3" X 14 GAGE STAPLES	EACH END, TOENAIL
WALL TOP PLATE, TO RAFTER OR TRUSS	2 - 16d COMMON 3 - 3" X 0.131" NAILS 3 - 3" X 14 GAGE STAPLES	END NAIL
FLAT BLOCKING TO TRUSS AND WEB FILLER	16d COMMON @ 6" O.C. 3" X 0.131" NAILS @ 6" O.C. 3" X 14 GAGE STAPLES @ 6" O.C. 3 - 8d COMMON	FACE NAIL
2. CEILING JOISTS TO TOP PLATE	3 - 10d BOX 3 - 3" X 0.131" NAILS 3 - 3" X 14 GAGE STAPLES	EACH JOIST, TOENAIL
3. CEILING JOIST NOT ATTACHED TO PARALLEL RAFTER, LAPS OVER PARTITIONS (NO THRUST) (SEE SECTION 2308.7.3.1, TABLE 2308.7.3.1)	3 - 16d COMMON 4 - 10d BOX 4 - 3" X 0.131" NAILS 4 - 3" X 14 GAGE STAPLES	FACE NAIL
4. CEILING JOIST ATTACHED TO PARALLEL RAFTER (HEEL JOINT) (SEE SECTION 2308.7.3.1, TABLE 2308.7.3.1)	PER TABLE 2308.7.3.1	FACE NAIL
5. COLLAR TIE TO RAFTER	3 - 10d COMMON 4 - 10d BOX 4 - 3" X 0.131" NAILS 4 - 3" X 14 GAGE STAPLES	FACE NAIL
6. RAFTER OR ROOF TRUSS TO TOP PLATE (SEE SECTION 2308.7.5, TABLE 2308.7.5)	3 - 10d COMMON 3 - 16d BOX 4 - 10d BOX 4 - 3" X 0.131" NAILS 4 - 3" X 14 GAGE STAPLES	TOENAIL ^C
7. ROOF RAFTERS TO RIDGE VALLEY OR HIP	2 - 16d COMMON 3 - 10d BOX 3 - 3" X 0.131" NAILS 3 - 3" X 14 GAGE STAPLES	END NAIL
RAFTERS; OR ROOF RAFTER TO 2-INCH RIDGE BEAM	3 - 10d COMMON 3 - 16d BOX 4 - 10d BOX 4 - 3" X 0.131" NAILS	TOENAIL
	4 - 3" X 14 GAGE STAPLES WALL	24" O.C. FACE NAU
3. STUD TO STUD (NOT AT BRACED WALL PANELS)	16d COMMON 10d BOX	24" O.C. FACE NAIL
	3" X 0.131" NAILS 3 - 3" X 14 GAGE STAPLES	16" O.C. FACE NAIL
9. STUD TO STUD AND ABUTTING STUDS AT	16d COMMON 16d BOX	16" O.C. FACE NAIL 12" O.C. FACE NAIL
NTERSECTING WALL CORNERS (AT BRACED WALL PANELS)	3" X 0.131" NAILS 3 - 3" X 14 GAGE STAPLES	12 O.C. FACE NAIL
LO. BUILT-UP HEADER (2" TO 2" HEADER)	16d COMMON	16" O.C. EACH EDGE, FACE NAIL
.1. CONTINUOUS HEADER TO STUD	16d BOX 4 - 8d COMMON	12" O.C. EACH EDGE, FACE NAIL TOENAIL
I. COMMOGGS TEADER TO STOD	4 - 10d BOX 16d COMMON	16" O.C. FACE NAIL
2. TOP PLATE TO TOP PLATE	10d BOX 3" X 0.131" NAILS 3" X 14 GAGE STAPLES	12" O.C. FACE NAIL
13. TOP PLATE TO TOP PLATE, AT END JOINTS	8 - 16d COMMON 12 - 10d BOX 12 - 3" X 0.131" NAILS 12 - 3" X 14 GAGE STAPLES	EACH SIDE OF END JOINT, FACE NAIL (MINIMUM 24" LAP SPLICE LENGTH AT EACH SIDE O END JOINT)
14 POTTOM DI ATE TO IOIST PIM IOIST PAND IOIST	16d COMMON 16d BOX	16" O.C. FACE NAIL
L4. BOTTOM PLATE TO JOIST, RIM JOIST, BAND JOIST, DR BLOCKING (NOT AT BRACED WALL PANELS)	3" X 0.131" NAILS 3" X 14 GAGE STAPLES 2 - 16d COMMON	12" O.C. FACE NAIL
L5. BOTTOM PLATE TO JOIST, RIM JOIST, BAND JOIST, DR BLOCKING AT BRACED WALL PANELS	3 - 16d BOX 4 - 3" X 0.131" NAILS 4 - 3" X 14 GAGE STAPLES 4 - 8d COMMON	16" O.C. FACE NAIL
16. STUD TO TOP OR BOTTOM PLATE	4 - 10d BOX 4 - 3" X 0.131" NAILS 4 - 3" X 14 GAGE STAPLES 2 - 16d COMMON	TOENAIL
	3 - 10d BOX 3 - 3" X 0.131" NAILS 3 - 3" X 14 GAGE STAPLES 2 - 16d COMMON	END NAIL
17. TOP OR BOTTOM PLATE TO STUD	3 - 10d BOX 3 - 3" X 0.131" NAILS 3 - 3" X 14 GAGE STAPLES 2 - 16d COMMON	END NAIL
18. TOP PLATES, LAPS AT CORNERS AND NTERSECTIONS	3 - 10d BOX 3 - 3" X 0.131" NAILS 3 - 3" X 14 GAGE STAPLES 2 - 8d COMMON	FACE NAIL
19. 1" BRACE TO EACH STUD AND PLATE	2 - 30 COMMON 2 - 10d BOX 2 - 3" X 0.131" NAILS 2 - 3" X 14 GAGE STAPLES	FACE NAIL
20. 1" X 6" SHEATHING TO EACH BEARING	2 -8d COMMON 2 - 10d BOX	FACE NAIL
11. 1" X 8" AND WIDER SHEATHING TO EACH BEARING	3 - 8d COMMON 3 - 10d BOX FLOOR	FACE NAIL
22. JOIST TO SILL, TOP PLATE, OR GIRDER	3 - 8d COMMON 3 - 10d BOX 3 - 3" X 0.131" NAILS 3 - 3" X 14 GAGE STAPLES	TOENAIL
23. RIM JOIST, BAND JOIST, OR BLOCKING TO TOP PLATE, SILL OR OTHER FRAMING BELOW	8d COMMON 10d BOX 3" X 0.131" NAILS 3" X 14 GAGE STAPLES	6" O.C., TOENAIL
24. 1" X 6" SUBFLOOR OR LESS TO EACH JOIST	2 - 8d COMMON 2 - 10d BOX	FACE NAIL
5. 2" SUBFLOOR TO JOIST OR GIRDER 6. 2" PLANKS (PLANK & BEAM - FLOOR & ROOF)	2 - 16d COMMON 2 - 16d COMMON	FACE NAIL EACH BEARING, FACE NAIL
Z I LANNA IT LANN & DEAIVI - PLUUK & KUUF)	20d COMMON	32" O.C., FACE NAIL AT TOP AND BOTTOM
	10d BOX	STAGGERED ON OPPOSITE SIDES
27. BUILT-UP GIRDERS AND BEAMS 2" LUMBER LAYERS	3" X 0.131" NAILS 3" X 14 GAGE STAPLES AND: 2 - 20d COMMON	24" O.C., FACE NAIL AT TOP AND BOTTOM STAGGERED ON OPPOSITE SIDES
	3 - 10d BOX 3 - 3" X 0.131" NAILS 3 - 3" X 14 GAGE STAPLES 3 - 16d COMMON	ENDS AND AT EACH SPLICE, FACE NAIL
28. LEDGER STRIP SUPPORTING JOISTS OR RAFTERS	4 - 10d BOX 4 - 3" X 0.131" NAILS 4 - 3" X 14 GAGE STAPLES 3 - 16d COMMON	EACH JOIST OR RAFTER, FACE NAIL
29. JOIST TO BAND JOIST OR RIM JOIST	4 - 10d BOX 4 - 3" X 0.131" NAILS 4 - 3" X 14 GAGE STAPLES	END NAIL
	2 - 8d COMMON	

	TABLE 2304.10.1		
V	VOOD CONNECTION FASTENING SCHEDULE (CONT.)		
WOOD STRUCTURAL PANELS (WSP). SUBFLO	OR, ROOF AND INTERIOR WALL SHEATHING TO FRAMING AND P.	ARTICLEBOARD WAI	L SHEATHING TO FRAMING
		EDGES (INCHES)	INTERMEDIATE SUPPORTS (INCHES)
	6d COMMON OR DEFORMED (SUBFLOOR AND WALL)	6	12
	8d BOX OR DEFORMED (ROOF)	6	12
31. 3/8" 1/2"	2 3/8" X 0.113" NAILS (SUBFLOOR AND WALL)	6	12
51. 5/0 1/2	1 3/4" X 16 GAGE STAPLES (SUBFLOOR AND WALL)	4	8
	2 3/8" X 0.113" NAILS (ROOF)	4	8
	1 3/4" X 16 GAGE STAPLES (ROOF)	3	6
	8d COMMON	6	12
32. 19/32" 3/4"	6d DEFORMED	Ů	12
J2. 13/32 3/4	2 3/8" X 0.113" NAILS (ROOF) 2" X 16 GAGE STAPLES	4	8
22.7/0 4.4/4	10d COMMON		12
33. 7/8" 1 1/4"	8d DEFORMED	6	12
	OTHER EXTERIOR WALL SHEATHING		
34. 1/2" FIBERBOARD SHEATHING (b)	1 1/2" GALVANIZED ROOFING NAIL (7/16" HEAD DIAMETER) 1 1/4" X 16 GAGE STAPLES	3	6
35. 25/32" FIBERBOARD SHEATHING (b)	1 3/4" GALVANIZED ROOFING NAIL (7/16" HEAD DIAMETER)	3	6
WOOD STRICT	1 1/2" X 16 GAGE STAPLES RAL PANELS, COMBINATION SUBFLOOR UNDERLAYMENT TO FRA	MING	
WOOD STRUCTO	8d COMMON	AIVIING	
36. 3/4" OR LESS	6d DEFORMED	6	12
	8d COMMON		
37. 7/8" 1"	8d DEFORMED	6	12
38. 1 1/8" 1 1/4"	10d COMMON 8d DEFORMED	6	12
	PANEL SIDING TO FRAMING		
	6d CORROSION-RESISTANT SIDING		
	(1 7/8" X 0.106")		
39. 1/2" OR LESS	6d CORROSION-RESISTANT CASING	6	12
	(2" X 0.099")		
	8d CORROSION-RESISTANT SIDING	<u> </u>	
40. 5 (0)	(2 3/8" X 0.128")		42
40. 5/8"	8d CORROSION-RESISTANT CASING	6	12
	(2 1/2" X 0.113")		
	INTERIOR PANELING		
44 4 4 11	4d CASING (1 1/2" X 0.080")		40
11. 1/4"	4d FINISH (1 1/2" X 0.072")	6	12
42. 2/0	6d CASING (2" X 0.099")		42
42. 3/8"	6d FINISH (PANEL SUPPORTS AT 24 INCHES)	6	12

a. NAILS SPACED AT 6 INCHES AT INTERMEDIATE SUPPORTS WHERE SPANS ARE 48 INCHES OR MORE. FOR NAILING OF WOOD STRUCTURAL PANEL AND PARTICLEBOARD DIAPHRAGMS AND SHEAR WALLS, REFER TO SECTION 2305. NAILS FOR WALL SHEATHING ARE PERMITTED TO BE COMMON, BOX, OR CASING.

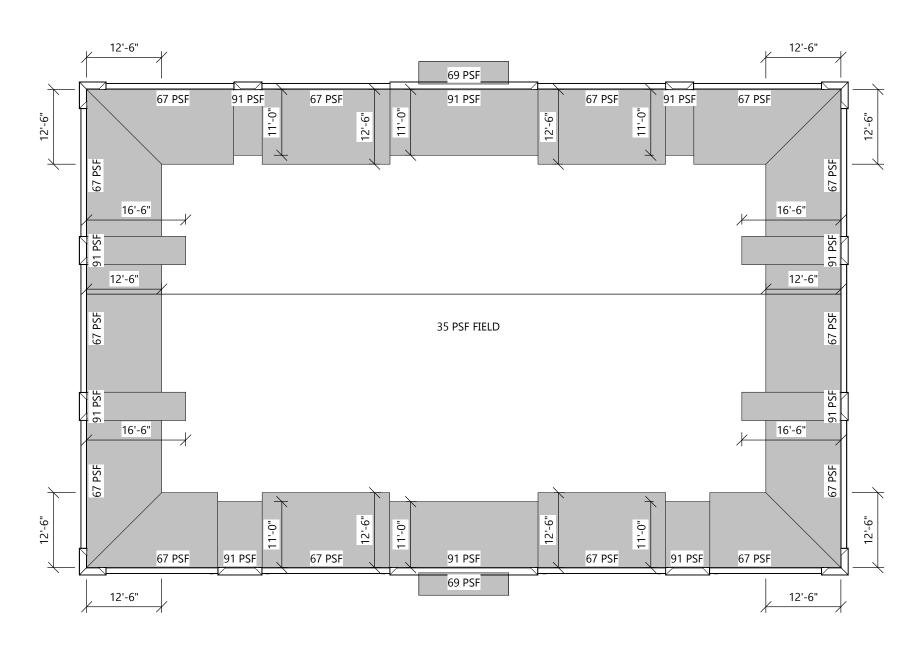
b. SPACING SHALL BE 6 INCHES ON CENTER ON THE EDGES AND 12 INCHES ON CENTER AT INTERMEDIATE SUPPORTS FOR NONSTRUCTURAL APPLICATIONS. PANEL SUPPORTS AT 16" (20 INCHES IF STRENGTH AXIS IN THE LONG DIRECTION OF THE PANEL, UNLESS OTHERWISE MARKED).

c. WHERE A RAFTER IS FASTENED TO AN ADJACENT PARALLEL CEILING JOIST IN ACORDANCE WITH THIS SCHEDULE AND THE CEILING JOIST IS FASTENED TO THE TOP PLATE IN ACCORDANCE WITH THIS SCHEDULE, THE NUMBER OF TOENAILS IN THE RAFTER SHALL BE PERMITTED TO BE REDUCED BY ONE NAIL.

STRUCTURAL DESIGN CRITERIA

GOVERNING	G CODES:	
	NAL BUILDING CODE (IBC)	
	VN ON PLANS ARE UNFACTORED FOR ALLOWABLE STRESS DESIGN (ASD) LOAD COMBINA	ATIONS
LOAD COMBINAT	ION UTILIZED ARE FROM ASCE 7-16	
BOOF CHOIL	ULOAD (DED CECTION 1000 AND 100E 7 10 CECTION 7)	
	V LOAD (PER SECTION 1608 AND ASCE 7-16 SECTION 7)	
	LOAD (Pg) (PER FIGURE 1608.2)	50 PSF
<u>FLAT ROOF SNOV</u> SNOW EXPOSURE	V LOAD (Pf) - *INCLUDES RAIN-ON-SNOW SURCHARGE*	35 PSF 1.0
SNOW IMPORTAL		1.0 (RISK CATEGORY II)
THERMAL FACTO		1.0
	OF SNOW LOADS PER ASCE 7-16 (SECTION 7.6)	
	ASCE 7-16, (SECTIONS 7.7 AND 7.8)	
SLIDING SNOW P	ER ASCE 7-16, (SECTION 7.9)	
KAIN-UN-SNOW	SURCHARGE LOAD PER ASCE 7-16, (SECTION 7.10)	
ROOF LIVE L	040	
		00
MINIMUM ROOF	LIVE LOAD PER SECTION 1607.13	20 PSF
PAGE DE 4 D	LOADS AND DEFLECTION DECLEDENTS	
ROOF DEAD	LOADS AND DEFLECTION REQUIREMENTS	
	DEAD LOAD - TOP CHORD	10 PSF
WOOD TRUSS	DEAD LOAD - BOT. CHORD R.T.U. LOADS PER FRAMING PLANS/SPECIAL TRUSS DIAGRAMS ON STRUCTURAL	10 PSF (INCL. 3 PSF COLLATERAL)
WOOD IKUSS	DEFL. REQ. DUE TO GRAVITY LOADS	L/240 LL L/180 TL
	DEFL. REQ. DUE TO WIND AT GABLE TRUSS VERT.	L/240
	•	
LATERAL		
LATERAL	RASIC WIND SPEED = 109 MPH (RISK CATEGORY II)	
LATERAL	BASIC WIND SPEED = 109 MPH (RISK CATEGORY II) WIND EXPOSURE = "B"	
LATERAL	WIND EXPOSURE = "B" ENVELOPE PROCEDURE PER ASCE 7-16 CHAPTER 28	
LATERAL	WIND EXPOSURE = "B" ENVELOPE PROCEDURE PER ASCE 7-16 CHAPTER 28 INTERNAL PRESSURE COEFFICIENT = + OR - 0.18	
LATERAL	WIND EXPOSURE = "B" ENVELOPE PROCEDURE PER ASCE 7-16 CHAPTER 28 INTERNAL PRESSURE COEFFICIENT = + OR - 0.18 COMPONENT AND CLADDING PRESSURES/SUCTIONS FOR EFFECTIVE AREAS <= 10 S.F.	. AS FOLLOWS:
	WIND EXPOSURE = "B" ENVELOPE PROCEDURE PER ASCE 7-16 CHAPTER 28 INTERNAL PRESSURE COEFFICIENT = + OR - 0.18 COMPONENT AND CLADDING PRESSURES/SUCTIONS FOR EFFECTIVE AREAS <= 10 S.F. EDGE STRIP (A) = 6.50 FT	. AS FOLLOWS:
WIND LOADS AND DESIGN	WIND EXPOSURE = "B" ENVELOPE PROCEDURE PER ASCE 7-16 CHAPTER 28 INTERNAL PRESSURE COEFFICIENT = + OR - 0.18 COMPONENT AND CLADDING PRESSURES/SUCTIONS FOR EFFECTIVE AREAS <= 10 S.F. EDGE STRIP (A) = 6.50 FT ROOF ZONE 1 PRESSURE = 16.0 PSF, SUCTION = -21.4 PSF	. AS FOLLOWS:
WIND LOADS	WIND EXPOSURE = "B" ENVELOPE PROCEDURE PER ASCE 7-16 CHAPTER 28 INTERNAL PRESSURE COEFFICIENT = + OR - 0.18 COMPONENT AND CLADDING PRESSURES/SUCTIONS FOR EFFECTIVE AREAS <= 10 S.F. EDGE STRIP (A) = 6.50 FT	. AS FOLLOWS:
WIND LOADS AND DESIGN	WIND EXPOSURE = "B" ENVELOPE PROCEDURE PER ASCE 7-16 CHAPTER 28 INTERNAL PRESSURE COEFFICIENT = + OR - 0.18 COMPONENT AND CLADDING PRESSURES/SUCTIONS FOR EFFECTIVE AREAS <= 10 S.F. EDGE STRIP (A) = 6.50 FT ROOF ZONE 1 PRESSURE = 16.0 PSF, SUCTION = -21.4 PSF ROOF ZONE 2 PRESSURE = 16.0 PSF, SUCTION = -35.9 PSF	AS FOLLOWS:
WIND LOADS AND DESIGN	WIND EXPOSURE = "B" ENVELOPE PROCEDURE PER ASCE 7-16 CHAPTER 28 INTERNAL PRESSURE COEFFICIENT = + OR - 0.18 COMPONENT AND CLADDING PRESSURES/SUCTIONS FOR EFFECTIVE AREAS <= 10 S.F. EDGE STRIP (A) = 6.50 FT ROOF ZONE 1 PRESSURE = 16.0 PSF, SUCTION = -21.4 PSF ROOF ZONE 2 PRESSURE = 16.0 PSF, SUCTION = -35.9 PSF ROOF ZONE 3 PRESSURE = 16.0 PSF, SUCTION = -54.0 PSF WALL ZONE 4 PRESSURE = 21.4 PSF, SUCTION = -23.2 PSF WALL ZONE 5 PRESSURE = 21.4 PSF, SUCTION = -28.6 PSF	. AS FOLLOWS:
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WIND LOADS AND DESIGN DATA SEISMIC LOADS AND DESIGN DATA	WIND EXPOSURE = "B" ENVELOPE PROCEDURE PER ASCE 7-16 CHAPTER 28 INTERNAL PRESSURE COEFFICIENT = + OR - 0.18 COMPONENT AND CLADDING PRESSURES/SUCTIONS FOR EFFECTIVE AREAS <= 10 S.F. EDGE STRIP (A) = 6.50 FT ROOF ZONE 1 PRESSURE = 16.0 PSF, SUCTION = -21.4 PSF ROOF ZONE 2 PRESSURE = 16.0 PSF, SUCTION = -35.9 PSF ROOF ZONE 3 PRESSURE = 16.0 PSF, SUCTION = -54.0 PSF WALL ZONE 4 PRESSURE = 21.4 PSF, SUCTION = -23.2 PSF WALL ZONE 5 PRESSURE = 21.4 PSF, SUCTION = -28.6 PSF PRESSURES/SUCTIONS MAY BE REDUCED FOR AREAS > 10 S.F. PER ASCE 7-16 MINIMUM WIND LOADS PER ASCE 7-16 MWFRS: 16.0 PSF ON HORIZONTAL AND VERTICAL PROJECTION COMPONENT AND CLADDING: + OR - 16.0 PSF NORMAL TO SURFACE. SEISMIC IMPORTANCE FACTOR, Ie = 1.00 (RISK CATEGORY = II) MAPPED RESPONSE COEFFICIENTS = S(S) = 0.047 SPECTRAL RESPONSE COEFFICIENTS = S(DS) = 0.051 SITE CLASS = D (ASSUMED) SEISMIC DESIGN CATEGORY = A	S(1) = 0.029 S(D1) = 0.047
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THE VERIFIED SOIL BEARING CAPACITY IS 3,000 PSF AS DETERMINED BY THE GEOTECHNICAL REPORT PREPARED BY TERRACON - REPORT NO. MP225152



SNOW DRIFT PLAN

SCALE: 1/16" = 1'-0"



Quattro Development

PROJECT INFORMATION

QUATTRO DEVELOPMENT

TWIN LAKES STATION - LOT 2 • ROSEVILLE, MN 5511

SHEET DATES

SHEET ISSUE FEB. 14, 2023

REVISIONS
AD2 MAR. 23, 2023

PROFESSIONAL SEAL

JOB NUMBER 2255300

SHEET NUMBER

SO.2

	SCHEDU	LE OF	SPECIAL INSPECTION S	ERVICES				
PROJECT					APPLICABLE TO THIS PROJECT			
MATERIAL / ACTIVITY	SERVICE	Y/N	EXTENT	AGENT*	DATE COMPLETED			
1704.2.5 Inspection of Fabricators								
Verify fabrication/quality control procedures	In-plant review (3)	Y	Periodic					
1705.1.1 Special Cases (work unusual in nature, including but not limited to alternative materials and systems, unusual design applications, materials and systems with special manufacturer's requirements)	Submittal review, shop (3) and/or field inspection	Y	Periodic					
1705.2 Steel Construction								
Fabricator and erector documents (Verify reports and certificates as listed in AISC 360, chapter N, paragraph 3.2 for compliance with construction documents)	Submittal Review	Y	Each submittal					
Material verification of structural steel Embedments (Verify diameter, grade, type, length, embedment. See 1705.3 for anchors)	Shop (3) and field inspection Field inspection	Y	Periodic					
Verify member locations, braces, stiffeners, and application of joint details at each connection								
comply with construction documents 5. Structural steel welding:	Field inspection	Y	Periodic					
a. Inspection tasks Prior to Welding (Observe, or perform for each welded joint or member, the QA tasks listed in AISC 360, Table N5.4-1)	Shop (3) and field inspection	N	Observe or Perform as noted (4)					
b. Inspection tasks During Welding (Observe, or perform for each welded joint or member, the QA tasks listed in AISC 360, Table N5.4-2)	Shop (3) and field inspection	N	Observe (4)					
c. Inspection tasks After Welding (Observe, or perform for each welded joint or member, the QA tasks listed in AISC 360, Table N5.4-3)	Shop (3) and field inspection	N	Observe or Perform as noted (4)					
d. Nondestructive testing (NDT) of welded joints: see Commentary		_						
Complete penetration groove welds	Shop (3) or field ultrasonic testing - 100%	N	Periodic					
5/16" or greater in risk category III or IV 2) Complete penetration groove welds	Shop (3) or field ultrasonic testing - 10%							
5/16" or greater in risk category II	of welds minimum	N	Periodic					
3) Thermally cut surfaces of access holes when material t > 2"	Shop (3) or field magnetic Partical or Penetrant testing	N	Periodic					
4) Welded joints subject to fatigue when required by AISC 360, Appendix 3, Table A-3.1	Shop (3) or field radiographic or Ultrasonic testing	N	Periodic					
5) Fabricator's NDT reports when fabricator performs NDT	Verify reports	N	Each submittal (5)					
1705.3 Concrete Construction								
1. Inspection of reinforcing steel installation (see 1705.2.2 for welding)	Shop (3) and field inspection	Υ	Periodic					
2. Inspection of prestressing steel installation	Shop (3) and field inspection	N	Periodic					
3. Inspection of anchors cast in concrete where allowable loads have been increased per section 1908.5 or where strength design is used	Shop (3) and field inspection	N	Periodic					
4. Inspection of anchors and reinforcing steel post-installed in hardened concrete: Per research reports including verification of anchor type, anchor dimensions, hole dimensions, hole cleaning procedures, anchor spacing, edge distances, concrete minimum thickness, anchor embedment and tightening torque	Field inspection	Y	Periodic or as required by the research report issued by an approved source					
5. Verify use of approved design mix	Shop (3) and field inspection	Υ	Periodic					
6. Fresh concrete sampling, perform slump and air content tests and determine temperature of concrete	Shop (3) and field inspection	Υ	Continuous					
7. Inspection of concrete and shotcrete placement for proper application techniques	Shop (3) and field inspection	Υ	Periodic					
8. Inspection for maintenance of specified curing temperature and techniques	Shop (3) and field inspection	Υ	Periodic					
9. Inspection of prestressed concrete:	Shop (3) and field inspection							
a. Application of prestressing force		N	Continuous					
b. Grouting of bonded prestressing tendons in the seismic-force-resisting system		N	Continuous					
11. Verification of in-situ concrete strength, prior to stressing of tendons in post tensioned concrete and prior to removal of shores and forms from beams and structural slabs	Review field testing and laboratory reports	N	Periodic					
12. Inspection of formwork for shape, lines, location and dimensions	Field inspection	Υ	Periodic					
13. Concrete strength testing and verification of compliance with construction documents 1705.5 Wood Construction	Field testing and review of laboratory reports	Υ	Periodic					
Inspection of the fabrication process of wood structural elements and assemblies in accordance with Section 1704.2.5	In-plant review (3)	Y	Periodic					
2. For high-load diaphragms, verify grade and thickness of structural panel sheathing agree with approved building plans	Field inspection	Υ	Periodic					
3. For high-load diaphragms, verify nominal size of framing members at adjoining panel edges, nail or staple diameter and length, number of fastener lines, and that spacing between fasteners in each line and at edge margins agree with approved building plans		Y	Periodic					
4. Metal-plate-connected wood trusses spanning 60 feet or greater: verify temporary and permanent restraint/bracing are installed in accordance with the approved truss submittal package 1705.6 Soils	Field inspection	N	Periodic					
Verify materials below shallow foundations are adequate to achieve the design bearing capacity.	Field inspection	Y	Periodic					

2. Verify excavations are extended to proper depth and have reached proper material.	Field inspection	Υ	Periodic	
B. Perform classification and testing of controlled ill materials.	Field inspection	Y	Periodic	
I. Verify use of proper materials, densities, and lift hicknesses during placement and compaction of controlled fill	Field inspection	Y	Continuous	
5. Prior to placement of controlled fill, observe subgrade and verify that site has been prepared properly	Field inspection	Y	Periodic	
* INSPECTION AGENTS FIRM 1.		•	ADDRESS	TELEPHONE NO.
2. 3.				
testing agencies may be subject to the app 2. The list of Special Inspectors may be submi 3. Special Insepctions as required by Section	sclosed to the Building Official prior to co proval of the Building Official and/or the itted as a separate document, if noted so 1704.2.5 are not required where the fabi	ommencing Design Proi above. icator is app	work. The qualifications of the Special Inspector(s,) and/or

Statement of Special Inspections Requirements for Seismic Resistance

See the Schedule of Special Inspections for inspection and testing requirements

Seismic Design Category: A

Statement of Special Inspection for Seismic Resistance Required (Yes/No): NO

Description of seismic force-resisting system subject to special inspection and testing for seismic resistance:

(Required for Seismic Design Categories C, D, E or F in accordance with IBC Sections 1705.11.1 through 1705.11.3, 1707.12.1 and 1705.12.2.)

LIGHT-FRAME WALLS SHEATHED WITH WOOD STRUCTURAL PANELS RATED FOR SHEAR RESISTANCE.

<u>Description of designated seismic systems subject to special inspection and testing for seismic resistance:</u>

(Required for architectural, electrical and mechanical systems and their components that require design in accordance with Chapter 13 of ASCE 7, have a component importance factor, *Ip*, greater than one and are in Seismic Design Categories C, D, E or F.)

N/A

<u>Description of additional seismic systems and components requiring special inspections and testing:</u>
(Required for systems noted in IBC Section 1705.11, cases 3, 4 & 5 in Seismic Design

(Required for systems noted in IBC Section 1705.11, cases 3, 4 & 5 in Seismic Desig Categories C, D, E or F.)

N/A

Statement of Responsibility:

NOT REQUIRED

Each contractor responsible for the construction or fabrication of a system or component described above must submit a Statement of Responsibility.

Statement of Special Inspections Requirements for Wind Resistance

See the Schedule of Special Inspections for inspection and testing requirements

2/15/2023

Nominal Design Wind Speed, V_{asd}: 90 m.p.h.

Wind Exposure Category: B

DATE:

Statement of Special Inspection for Wind Resistance Required (Yes/No): NO (Required in wind exposure Category B, where the nominal design wind speed V...

(Required in wind exposure Category B, where the nominal design wind speed, V_{asd} , is 120 miles per hour or greater. Required in wind exposure Category C or D, where the nominal design wind speed, V_{asd} , is 110 miles per hour or greater.)

<u>Description of main wind-force resisting system subject to special inspection for wind resistance:</u>

(Required for systems noted in IBC Section 1705.10.1 and 1705.10.2)

N/A

<u>Description of wind-force resisting components subject to special inspection for wind resistance:</u>

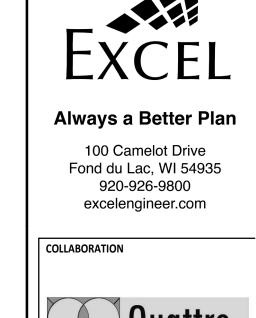
(Required for systems and components noted in IBC Section 1705.10.3)

N/A

Statement of Responsibility:

Each contractor responsible for the construction or fabrication of a system or component described above must submit a Statement of Responsibility.

NOT REQUIRED



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SEVILLE, MN 55113

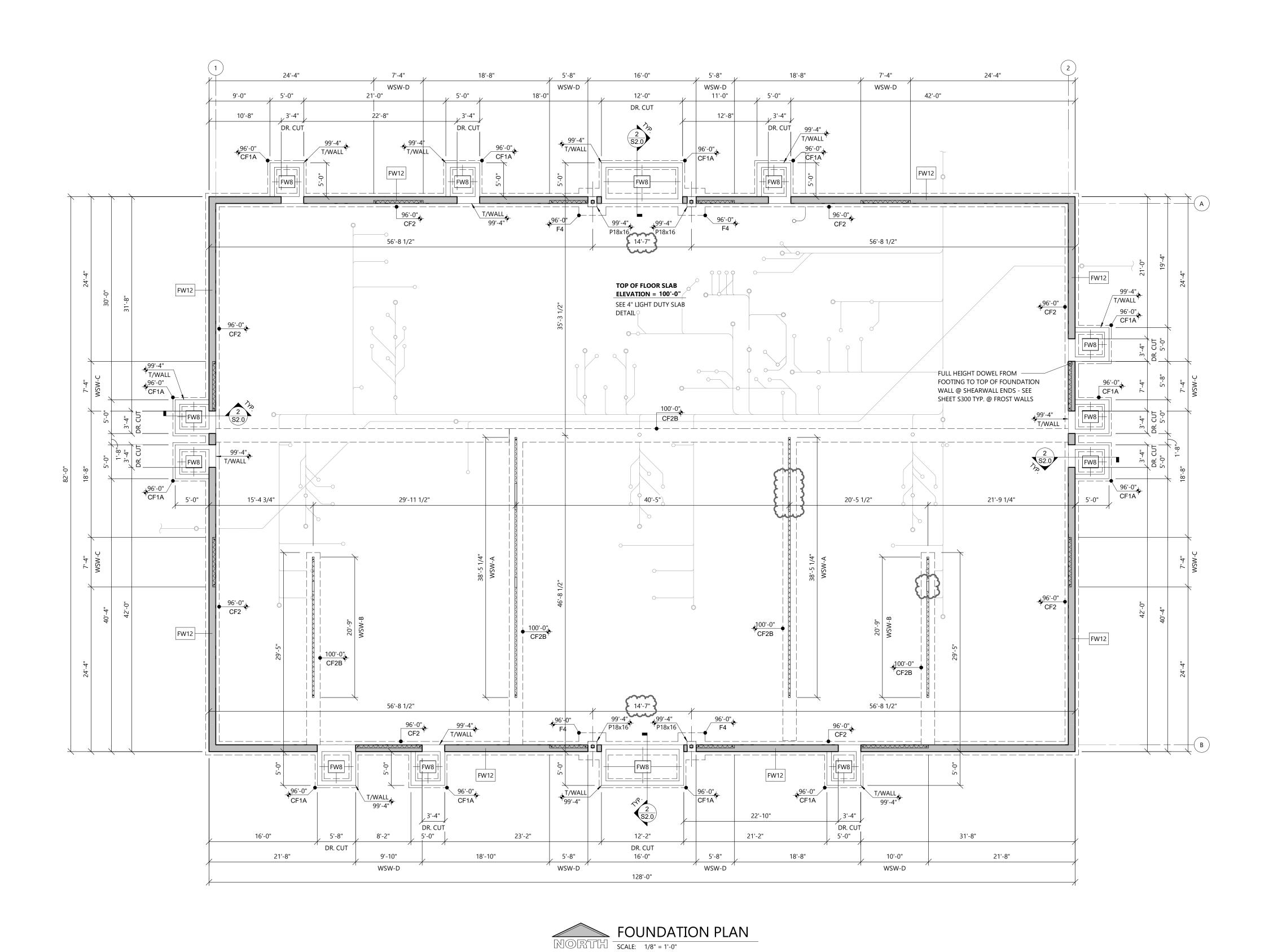
QUATTRO DEVELO
TWIN LAKES STATION - LOT 2 • ROSEV

PROFESSIONAL SEAL

SHEET ISSUE	FEB. 14, 202
REVISIONS	<u> </u>

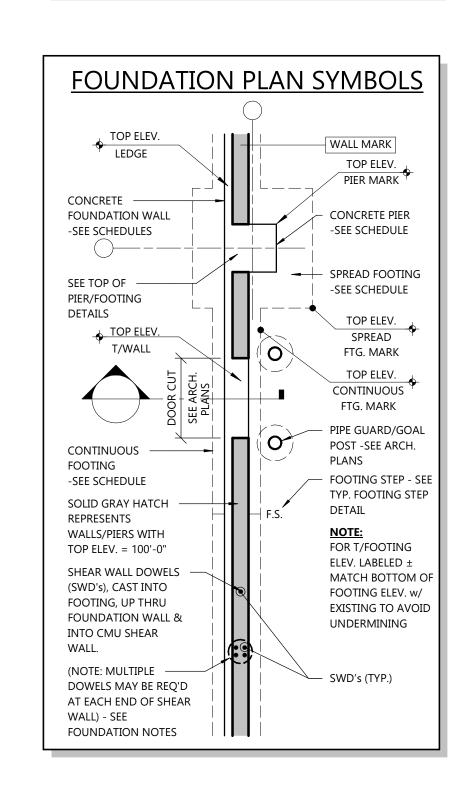
2255300

SHEET NUMBER



FOUNDATION NOTES

- SEE DESIGN LOADS ON SO SHEETS FOR ALL DESIGN LOADS NOT SHOWN ON PLANS.
- SEE GENERAL BUILDING SPECIFICATIONS ON A0 SHEETS AND STRUCTURAL SPECIFICATIONS ON S0 SHEETS FOR MATERIAL SPECIFICATIONS NOT SHOWN ON PLANS.
- GEOTECHNICAL REPORT REQUIREMENTS:
 CONTRACTOR TO READ, REVIEW AND FOLLOW ALL
 RECOMMENDATIONS LISTED IN GEOTECHNICAL REPORT (U.N.O.).
 SEE STRUCTURAL DESIGN CRITERIA FOR GEOTECHNICAL REPORT
- SEE S2 SHEETS FOR ADDITIONAL FOUNDATION DETAILS NOT REFERENCED ON FOUNDATION PLANS.
- SEE SPECIFICATIONS FOR PERIMETER FOUNDATION INSULATION AND FOUNDATION DRAINAGE PANEL THICKNESS.
- COORDINATE AND VERIFY ALL UNDERGROUND WORK PRIOR TO POURING CONCRETE FLOOR SLAB.
- SEE CIVIL PLANS AND SPECIFICATIONS ON CIVIL PLANS FOR ALL EXTERIOR CONCRETE FLATWORK NOT SPECIFICALLY SHOWN/DETAILED ON THE STRUCTURAL PLANS.
- SEE S2 SHEETS FOR TOP OF PIER/FOOTING AND CONTROL JOINT AT COLUMN LOCATIONS.
- SEE S2 SHEETS FOR SLAB TYPES.
- SEE ARCHITECTURAL FLOOR PLANS FOR TAGS OF ALL GUARDPOSTS & GOALPOSTS. GUARDPOST & GOALPOST SCHEDULE & DETAILS LOCATED ON A6 SHEETS.
- PLUMBING PIPE LINES SHOWN ON THIS PLAN ARE FOR GENERAL LAYOUT INTENT PURPOSES ONLY. REFER TO THE PLUMBING PLANS FOR SPECFIC INFORMATION.
- WOOD SHEAR WALL DOWELS ARE A PART OF THIS FOUNDATION DESIGN AND MUST BE PLACED IN COORDINATION w/ THE FOOTINGS AND FOUNDATION WALLS PRIOR TO POURING FOUNDATIONS. (THESE DOWELS RUN FROM THE FOOTING UP INTO THE CMU SHEAR WALLS.) CONTRACTORS MUST HAVE A CLEAR UNDERSTANDING OF WHAT IS REQUIRED PRIOR TO BEGINNING FOUNDATION WORK. CONTRACTORS ARE TO REVIEW THE CMU SHEAR WALL SCHEDULE AND DETAIL FOR DOWEL INFORMATION AND IDENTIFY ALL LOCATIONS PRIOR TO POURING. CONTACT EXCEL ENGINEERING, INC. WITH ANY QUESTIONS YOU MAY HAVE PRIOR TO BEGINNING WORK.





COLLABORATION

Quattro Development

PROJECT INFORMATION

CHILDHOOD SCHOOL FOR: **DEVELOPMENT**LOT 2 • ROSEVILLE, MN 55113

QUATTRO DEV TWIN LAKES STATION - LOT 2

PROFESSIONAL SEAL

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SHEET DATES

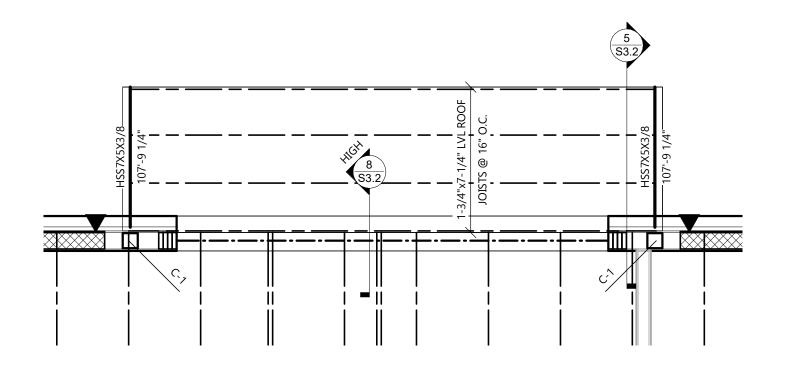
SHEET ISSUE FEB. 14, 2023

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AD1 FEB. 28, 2023

JOB NUMBER 2255300

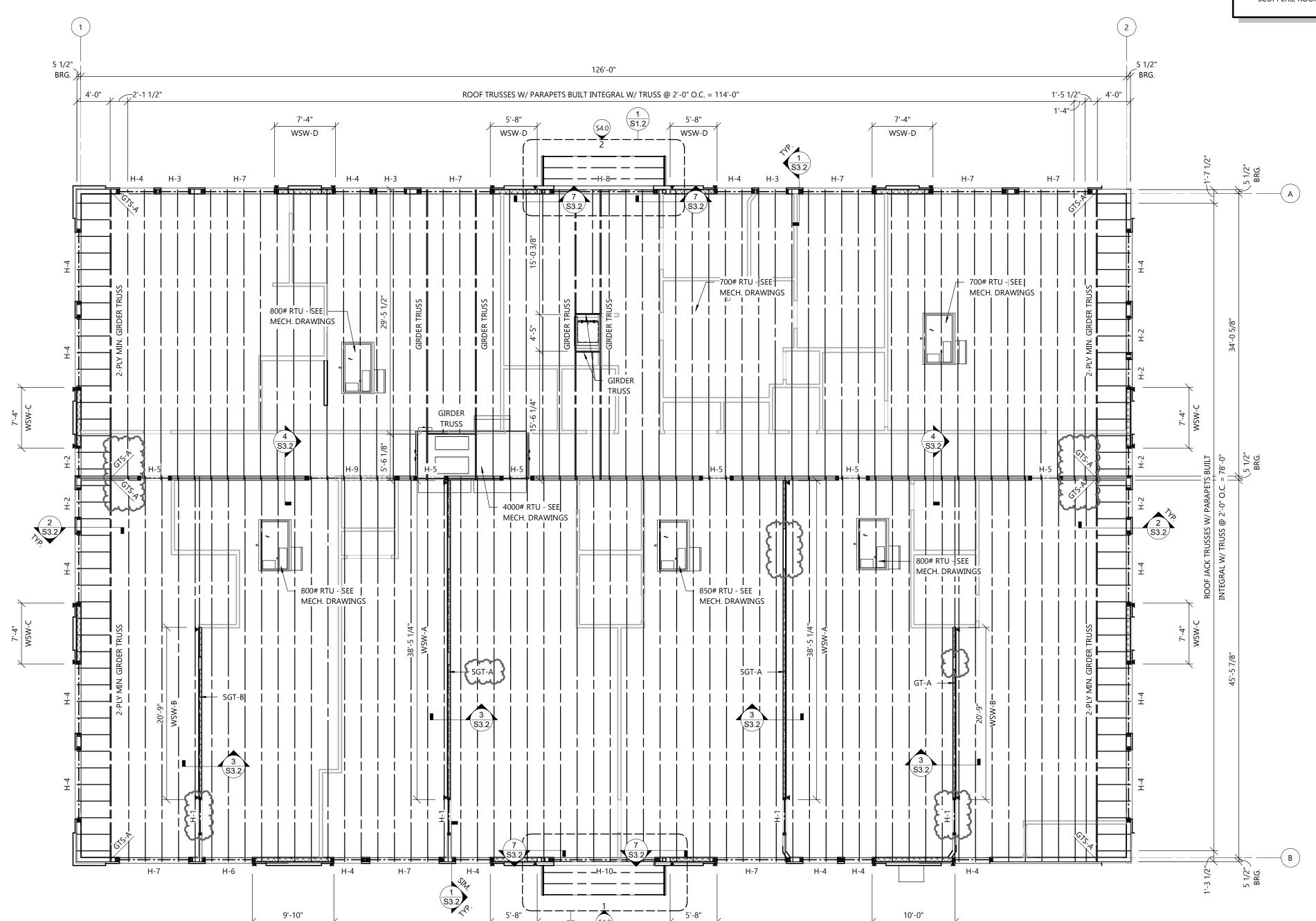
SHEET NUMBER

S 1.1



OVERHANG FRAMING PLAN

10'-0"



TRUSS FRAMING NOTES

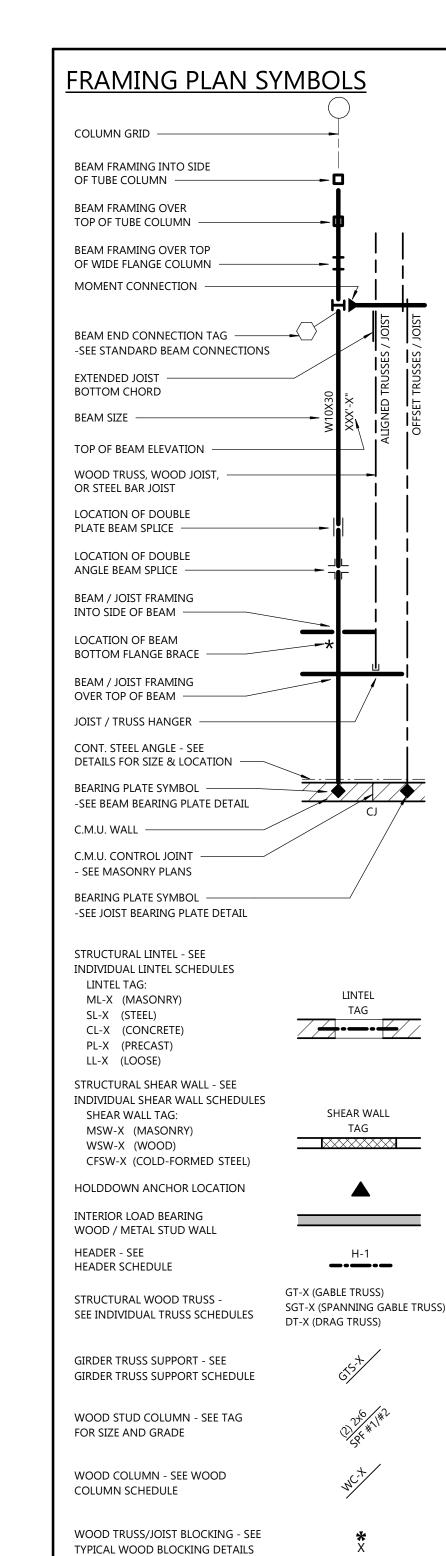
- ROOF FRAMING PLANS AND FLOOR FRAMING PLANS ARE "SCHEMATIC" ONLY - TRUSS MANUFACTURER TO PREPARE FINAL FRAMING PLANS FOR THE CONTRACTOR'S USE IN FIELD. NOTIFY ARCHITECT / ENGINEER OF ANY CHANGES.
- SEE BUILDING CROSS SECTIONS AND DETAILS FOR TRUSS PROFILES & PRESENCE OF BOTTOM CHORD • THE NUMBER AND SIZE OF NAILS CONNECTING SHEATHING.
- ALL PERMANENT TRUSS BRACING; INCLUDING CONTINUOUS LATERAL, DIAGONAL, BOTTOM CHORD, AND PIGGY-BACK, AND THEIR CONNECTIONS, SHALL BE DESIGNED BY TRUSS LOCATION REQUIREMENTS. ALL BRACING SHALL BE
- INSTALLED BY G.C. G.C. TO PROVIDE TRUSS MANUFACTURER W/
- ALL METAL TRUSS HANGERS BY TRUSS MANUFACTURER WHERE REQUIRED.

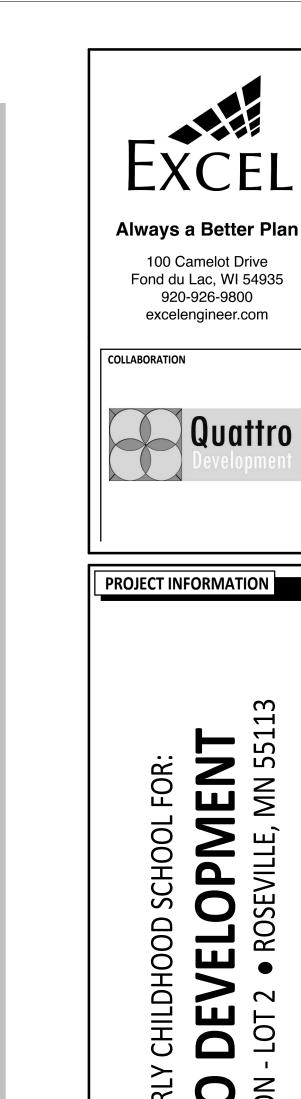
INTERSECTIONS.

LOCATIONS & WEIGHTS OF EQUIPMENT LOADS.

- PROVIDE SKEWED 45° "SIMPSON" METAL HANGERS SU (L) OR (R) AT ALL CORNER FRAME
- PROVIDE (2) 2x6 WOOD BLOCKING AROUND ALL ROOF DECK OPENINGS & UNDER ROOF CURBS, SCUPPERS, ROOF DRAINS, ETC . .

- PROVIDE (1) LAYER 1/2" GYPSUM BOARD ON (1) SIDE OF TRUSS AND EXTEND OUT INTO ROOF OVERHANG FOR ATTIC COMPARTMENTALIZATION (SEE ROOF FRAMING PLAN FOR LOCATIONS). PROVIDE 20"x30" ACCESS PANEL IN EACH TRUSS DRAFTSTOP FOR ACCESS TO EACH ATTIC COMPARTMENT.
- WOOD MEMBERS SHALL NOT BE LESS THAN THAT SET FORTH IN I.B.C. TABLE 2304.9.1 "FASTENING SCHEDULE" - SEE STRUCTURAL DRAWINGS.
- PROVIDE FULL DEPTH BLOCKING AT ALL INTERIOR BEARING WALLS @ 48" O.C. MAX. MANUFACTURER - SEE TRUSS MANUFACTURER'S Drawings for web & lateral bracing size & 🔓 • USE (1) "Simpson" H2.5A truss anchors @ Each ROOF TRUSS END W/ (5) 8d NAILS INTO TRUSS & (5) 8d NAILS INTO MIN. DOUBLE PLATE - APPLY AT OPPOSITE SIDES OF TRUSS & PLATE.
 - UNLESS NOTED OTHERWISE, NAIL WALL SHEATHING 6" O.C. @ PANEL EDGES W/ 8d NAILS. NAIL 12" O.C. (MIN.) TO INTERMEDIATE SUPPORTS.





SE

PROPC

PROFESSIONAL SEAL

LAKE

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FEB. 14, 2023
FEB. 28, 2023

JOB NUMBER 2255300

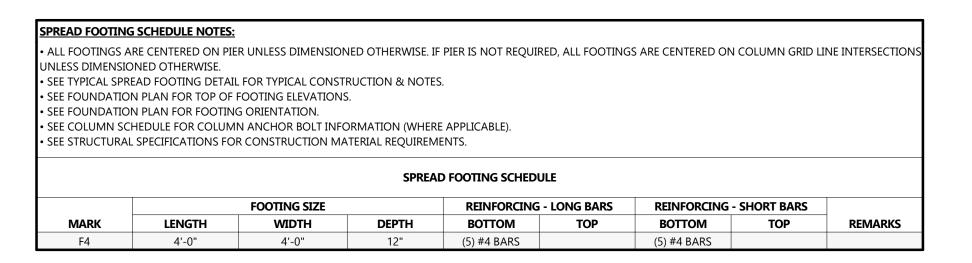
SHEET NUMBER

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		OF FRAMINO	G PLAN	
NORTH	SCALE:	1/8" = 1'-0"		_
	8'	0'	8'	16'
	Ü	•	· ·	

9'-10"

WSW-D



REINFORCING EQ. SPACED (U.N.O)

REINFORCING

LENGTH

PLAN VIEW

SECTION VIEW

TYPICAL SPREAD FOOTING DETAIL

TOP REINFORCING

BOTTOM REINFORCING

(LONG BARS BELOW SHORT BARS)

NOT TO SCALE

(LONG BARS ABOVE SHORT BARS)

SEE PIER AND WALL SCHEDULES

FOR DOWELS TO BE CAST IN w/

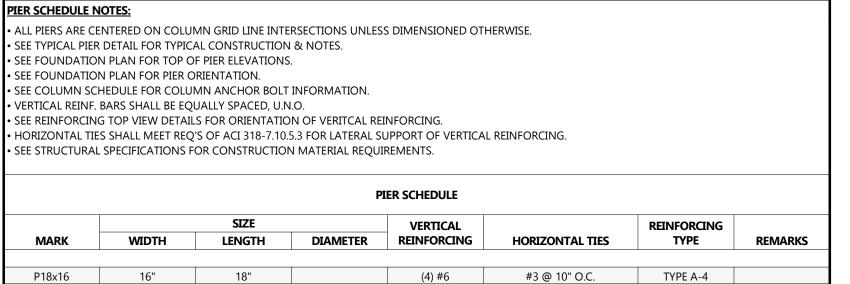
FOOTING POUR.

NOT TO SCALE

BARS (TYP.)

REINFORCING

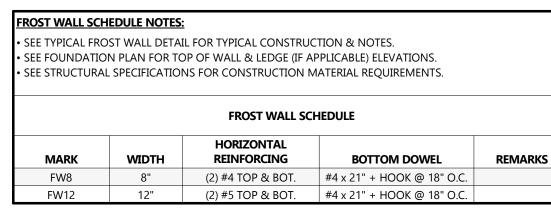
BARS (TYP.)

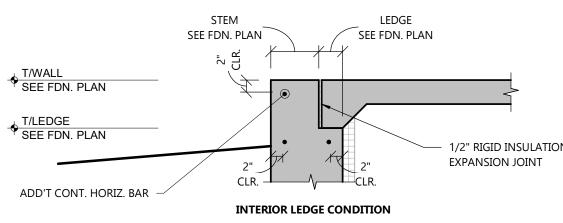


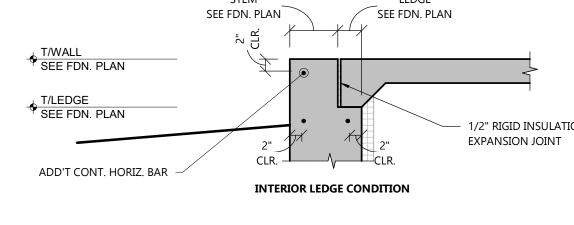
PIER LENGTH

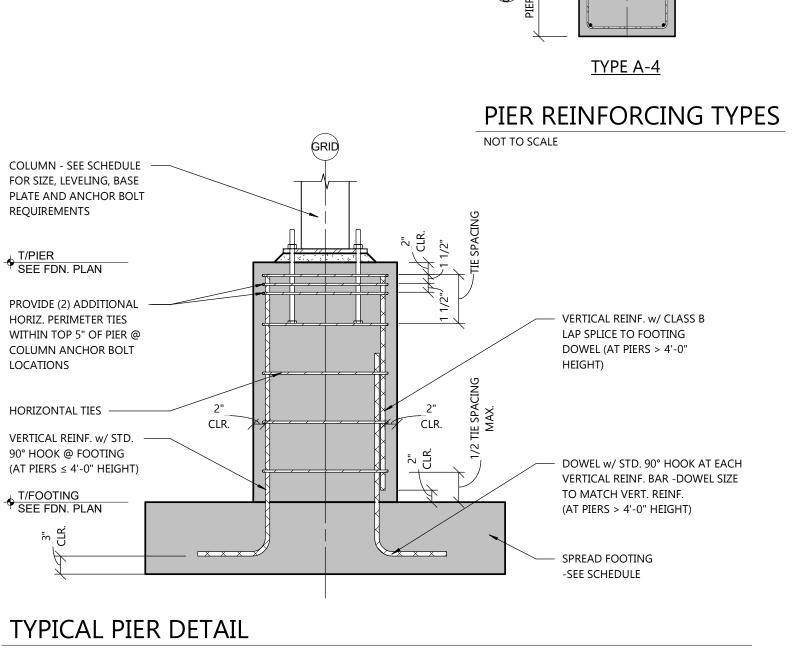
2" CLR. TO VERT.

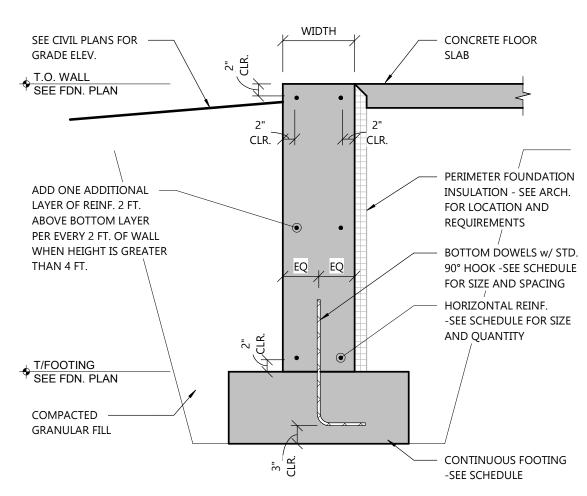
BAR (TYP.)



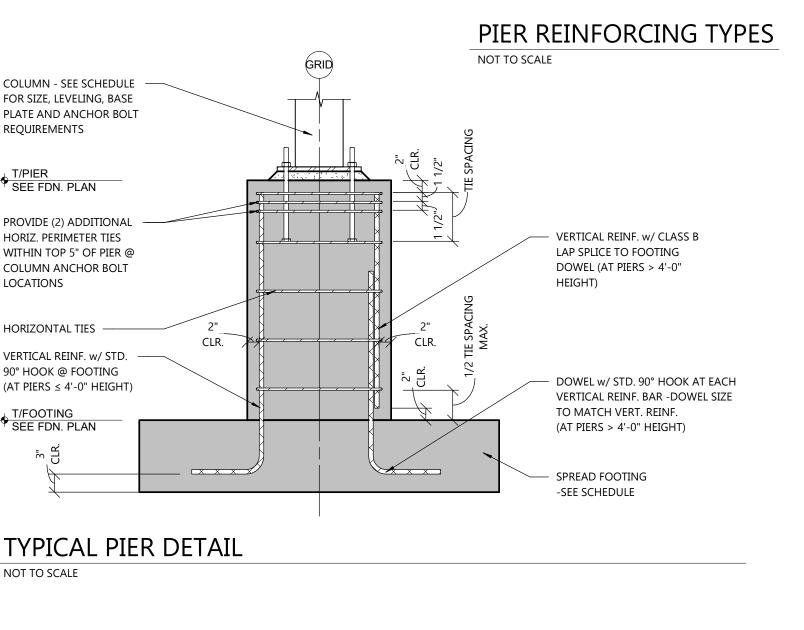


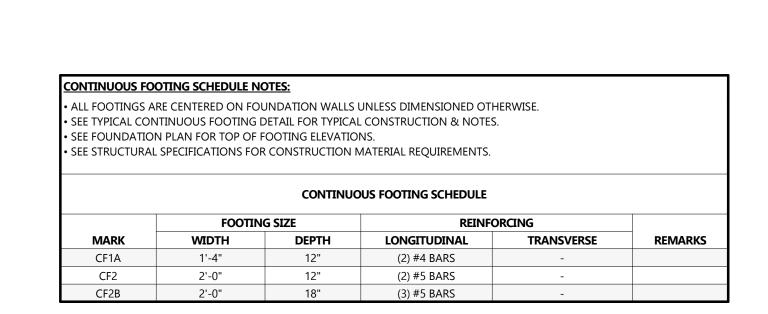


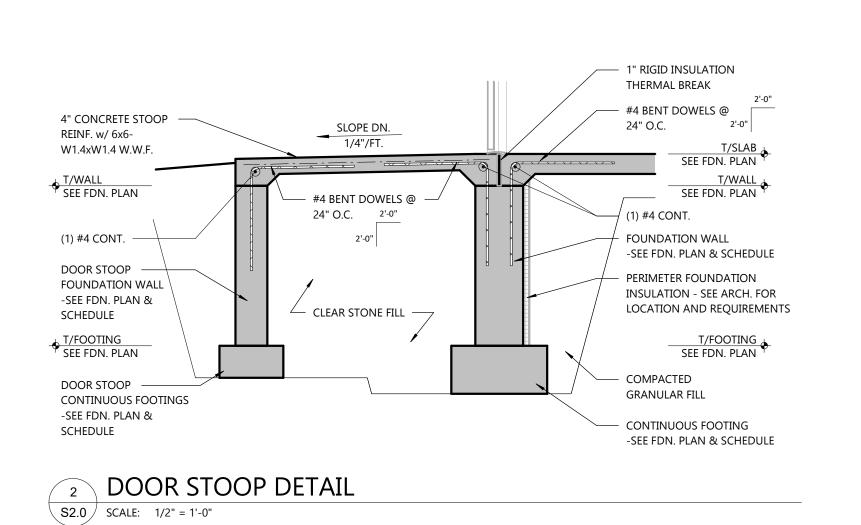




TYPICAL FROST WALL DETAIL







4" CONCRETE FLOOR SLAB REINFORCED w/ BLENDED LENGTH

W1.4 x W1.4 W.W.F.

JOINTS PER SPEC

SAW CUT JOINT

TYP. LIGHT DUTY SLAB

TYP. SAWCUT JOINT (SJ)

SAWCUT JOINT @ MAX. 10'-0" OC

TYP. POUR JOINT (PJ)

POUR JOINT @ MAX. 40'-0" O.C.

S2.0 SCALE: 1" = 1'-0"

4" LIGHT DUTY SLAB DETAIL

FIBRILLATED POLYPROPYLENE FIBERS

COMPACTED GRANULAR FILL – PROVIDE THICKNESS

PER THE GEOTECHNICAL REPORT (6" MIN.)

- "WET CUT SAW" = 1/4 SLAB THICKNESS

- "EARLY ENTRY SAW" = 1" MIN.

FILL JOINT W/ SEALANT PER SPEC

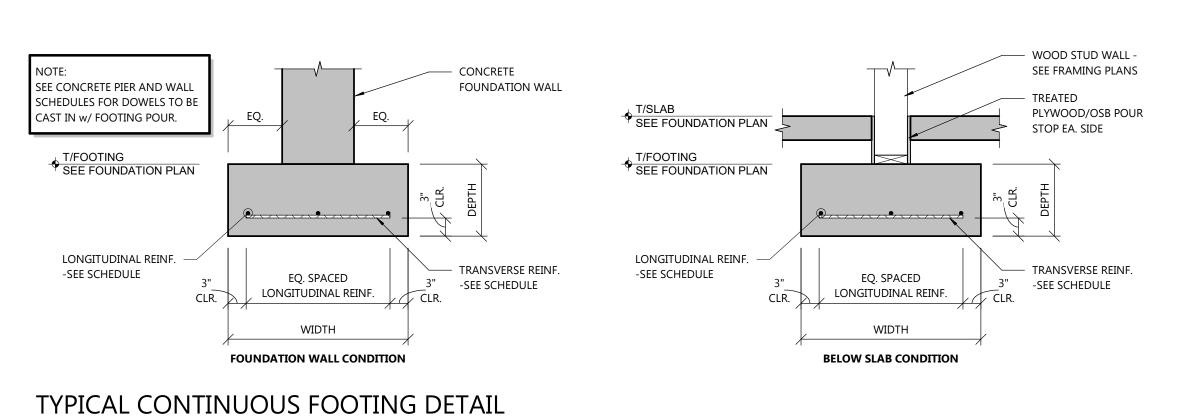
FILL JOINT W/ SEALANT PER SPEC

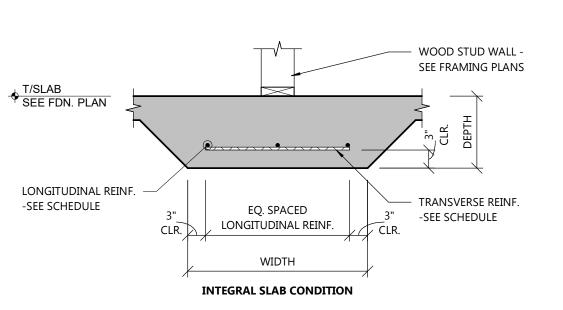
W.W.F. (DISCONTINUOUS @ JOINT)

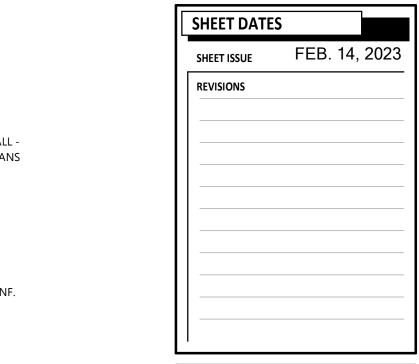
W.W.F. (CONTINUOUS THRU JOINT)

AT 1.5 LBS. / CUBIC YARD OR 6x6-

VAPOR RETARDER W/ TAPED







PROFESSIONAL SEAL

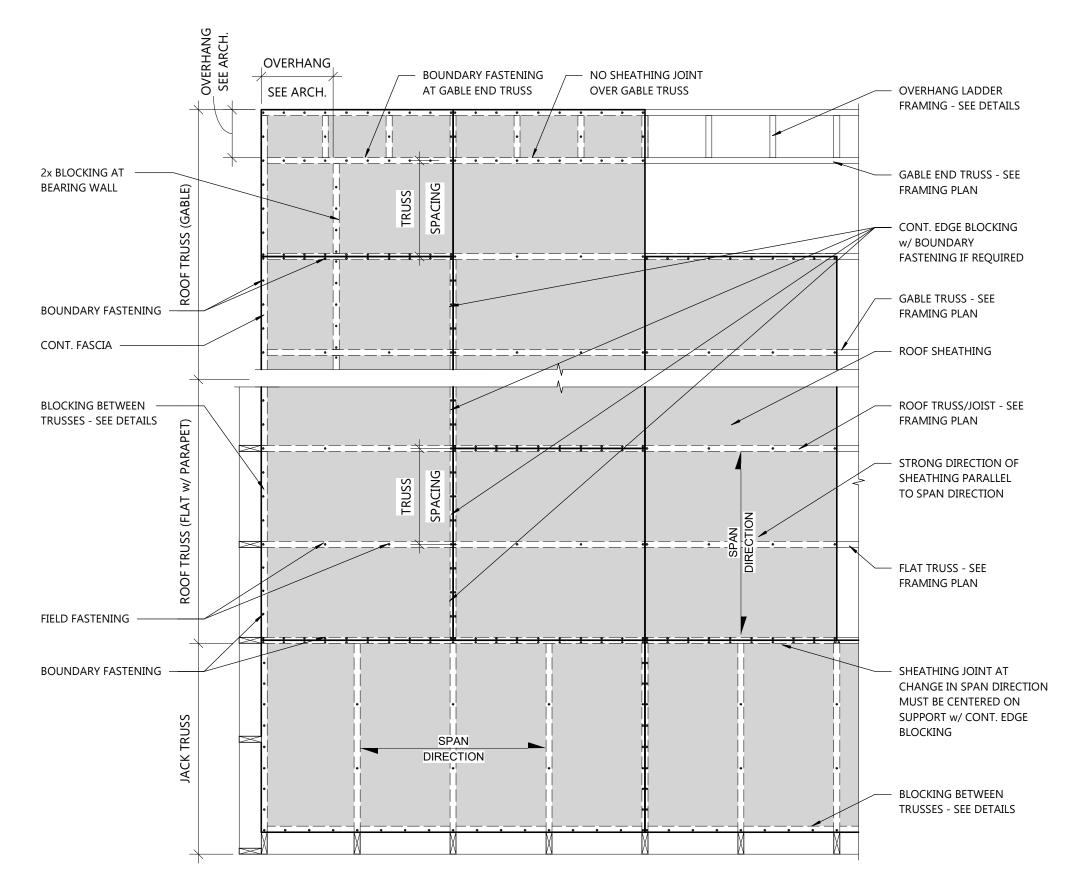
JOB NUMBER 2255300

SHEET NUMBER

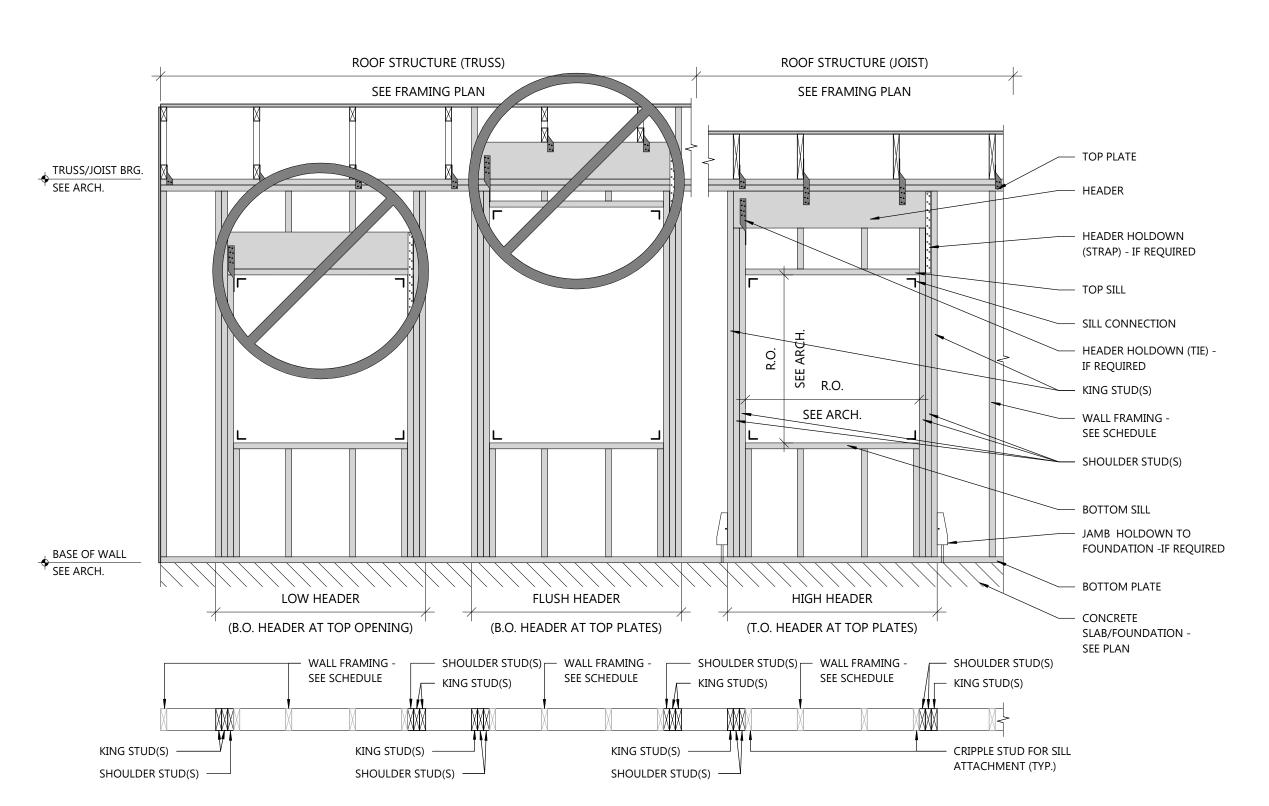
Always a Better Plan 100 Camelot Drive REMARKS Fond du Lac, WI 54935 920-926-9800 excelengineer.com COLLABORATION 1/2" RIGID INSULATION PROJECT INFORMATION

> SCHOOL FOR: 00D CHILDH(DE QUA TWIN LAKES PROP(

WOOD ROOF SHEATHING SCHEDULE NOTES: * UNLESS NOTED OTHERWISE, WRS-1 APPLIES TO ALL WOOD ROOF SHEATHING. • GAP BETWEEN PANEL JOINTS REQUIRED - SEE SPECIFICATION. • SHEATHING PANELS TO BE RATED EXPOSURE 1 MINIMUM. • SEE SPECIFICATION FOR ADDITIONAL REQUIREMENTS. WOOD ROOF SHEATHING SCHEDULE **FIELD FASTENING BOUNDARY FASTENING** SHEATHING DESIGNATION MINIMUM CONT. EDGE FASTENER SPACING | BLOCKING REQ'D | FASTENER | FASTENER SPACING THICKNESS **TYPE** REMARKS 6" O.C. NO



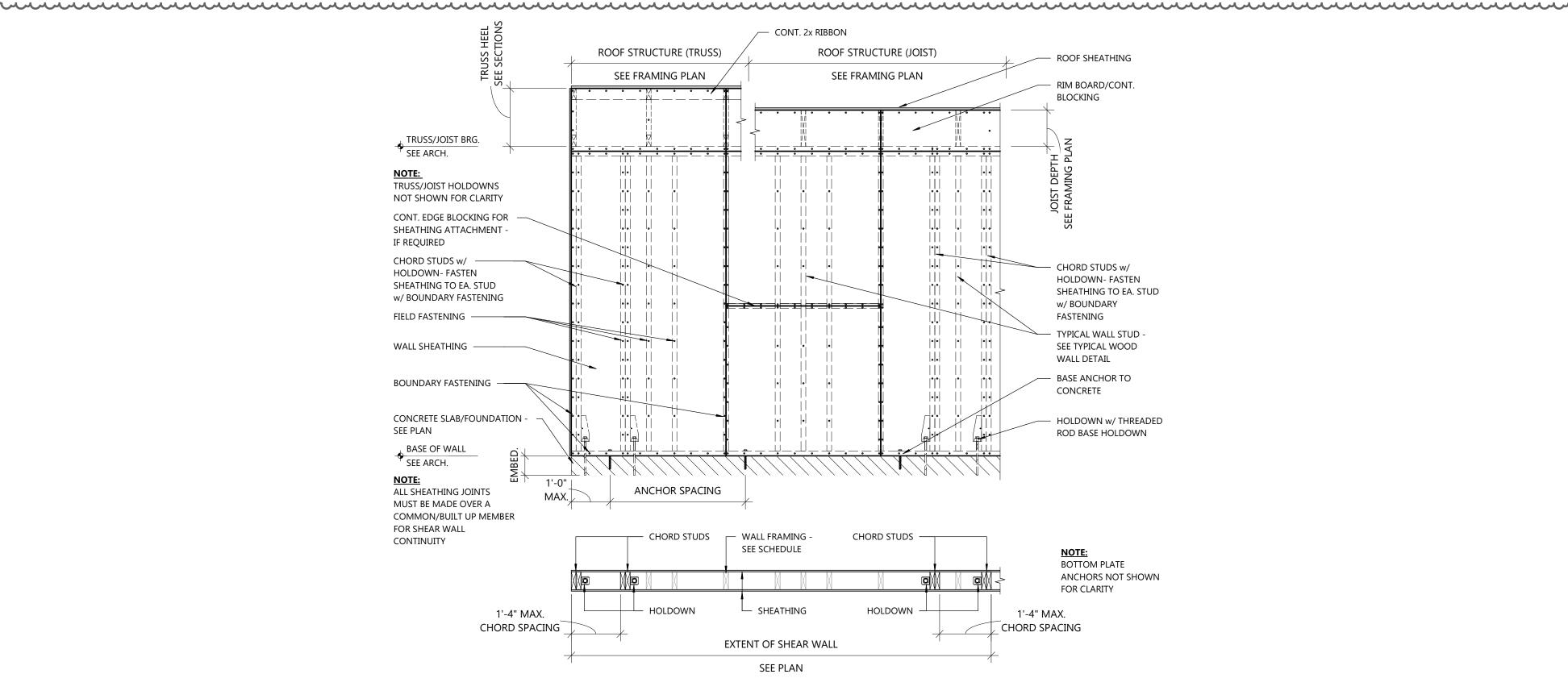
WOOD ROOF SHEATHING DETAIL



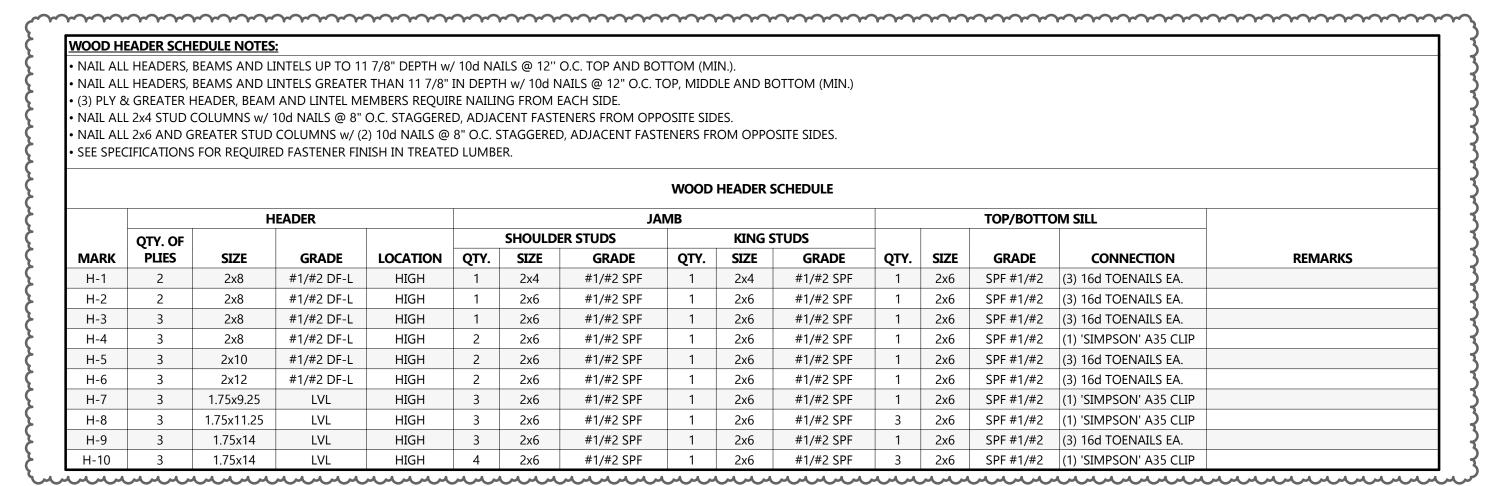
TYPICAL WOOD HEADER DETAIL NOT TO SCALE

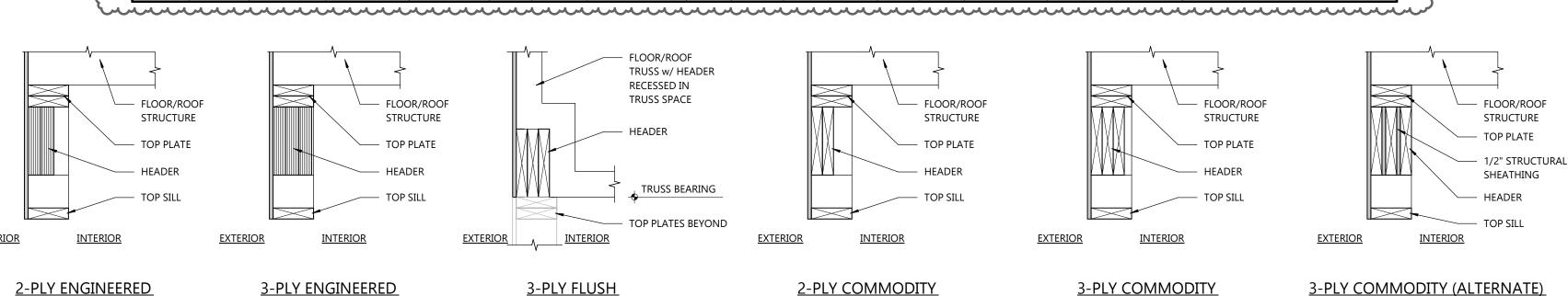
WOOD SHEAR WALL SCHEDULE NOTES: • USE "SIMPSON AT ACRYLIC TIE" IN LIEU OF "SIMPSON SET EPOXY-TIE ADHESIVE" WHEN TEMPERATURE < 50 DEG. F DURING CURE TIME. SEE MANUFACTURER'S SPEC.'S FOR CURE TIMES. • SEE SPECIFICATIONS FOR REQUIRED FASTENER FINISH IN TREATED LUMBER. • ALTERNATE EQUAL FOR 6d COOLER NAILS = 1-1/2" LONG - 16 GA. STAPLES.

~~~~	SHEA	ATHING DESIGNA	TION	•	SHEATHING FASTENIN	IG	~~~	*****		R WALL SCHEDU		RD	·~~~	BASE ANCHORS	*****	
	MINIMUM			ВО	UNDARY	FIELD			FRAMING	5		HOLDOWN			MAX.	
MARK	THICKNESS	TYPE	NO. OF SIDES	FASTENING	BLOCKING REQ'D	FASTENING	QTY.	QTY.	SIZE	GRADE	TYPE	ANCHORAGE	SIZE	TYPE	SPACING	REMARKS
WSW-A	7/16"	OSB/PLYWOOD	ONE SIDE	8d @ 6" O.C.	REQ'D	8d @ 12" O.C.	1	2	2x4	#1/#2 SPF	DTT2Z	1/2" A36 THREADED ROD EMBED 5" W/ 'SIMPSON' SET-XP EPOXY	1/2"ø x 6"	'SIMPSON' TITEN HD	36" O.C.	
WSW-B	7/16"	OSB/PLYWOOD	ONE SIDE	8d @ 6" O.C.	REQ'D	8d @ 12" O.C.	1	2	2x4	#1/#2 SPF	HDU2-SDS2.5	5/8" A36 THREADED ROD EMBED 10" W/ 'SIMPSON' SET-XP EPOXY	1/2"ø x 6"	'SIMPSON' TITEN HD	36" O.C.	
WSW-C	7/16"	OSB/PLYWOOD	ONE SIDE	8d @ 6" O.C.	REQ'D	8d @ 12" O.C.	1	2	2x6	#1/#2 SPF	HDU2-SDS2.5	5/8" A36 THREADED ROD EMBED 10" W/ 'SIMPSON' SET-XP EPOXY	1/2"ø x 6"	'SIMPSON' TITEN HD	48" O.C.	
WSW-D	7/16"	OSB/PLYWOOD	ONE SIDE	8d @ 6" O.C.	REQ'D	8d @ 12" O.C.	1	2	2x6	#1/#2 SPF	HDU2-SDS2.5	5/8" A36 THREADED ROD EMBED 10" W/ 'SIMPSON' SET-XP EPOXY	1/2"ø x 6"	'SIMPSON' TITEN HD	36" O.C.	



# TYPICAL WOOD SHEAR WALL DETAIL





WOOD HEADER TYPES

NOT TO SCALE

• PROVIDE 'SIMPSON' BPS1/2-3 PLATE WASHER @ EA. SHEAR WALL ANCHOR.

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**COLLABORATION** 

PROJECT INFORMATION

FOR: SCH00L 4 00D CHILDH(

ш ш PROP( **LAKE** 

PROFESSIONAL SEAL

SHEET DATES FEB. 14, 2023 REVISIONS AD1 FEB. 28, 2023

**JOB NUMBER** 2255300

SHEET NUMBER 2022 © EXCEL ENGINEERING, INC.

# GIRDER TRUSS SUPPORT SCHEDULE MARK DESCRIPTION LUMBER SIZE/GRADE 1) STUD COLUMN TO EXTEND TO FOUNDATION (2) 2x6 STUDS w/ 2) PROVIDE CRIPPLE STUDS IN JOIST SPACE AS REQUIRED GTS-A 'SIMPSON' LGT2 2x6 #1/#2 SPF 3) PROVIDE (1) 'SIMPSON' HDU2-SDS2.5 w/ 5/8"ø THREADED ROD, 10" EMBED. AND TIE DOWN 'SIMPSON' SET EPOXY-TIE ADHESIVE TO FND.

GIRDER TRUSS SUPPORT SCHEDULE NOTES:

1. NUMBER OF STUDS AND GRADES ARE MINIMUMS. VERIFY NUMBER OF STUDS NOT LESS THAN GIRDER PLY. NUMBER OF STUDS AND LUMBER GRADES MAY BE INCREASED.

**WOOD WALL STUD SCHEDULE NOTES:** . THE SCHEDULE APPLIES TO LOAD BEARING WALLS. . REFER TO PLANS & DETAILS FOR POSSIBLE WALL STUD VARIATIONS. SCHEDULED STUD QUANTITY AND GRADE ARE TO BE TREATED AS MINIMUMS AND SPACING TO BE TREATED AS A MAXIMUM. . WHERE WALL STUDS MUST ALIGN FROM FLOOR TO FLOOR, PLACE ADDITIONAL STUDS AS REQUIRED. PLACE CRIPPLE STUDS IN TRUSS SPACE AS REQUIRED FOR CONTINUOUS LOAD PATH TO FOUNDATION.

. WHERE WALL STUDS MUST ALIGN WITH ROOF/FLOOR TRUSSES, PLACE ADDITIONAL STUDS AS REQUIRED. PLACE CRIPPLE STUDS IN TRUSS SPACE AS REQUIRED FOR CONTINUOUS LOAD PATH TO FOUNDATION

. DEFER TO WOOD HEADER SCHEDULE FOR JAMB STUD QUANTITIES, AND DEFER TO WOOD SHEAR WALL SCHEDULE FOR CHORD STUD QUANTITIES.

WOOD WALL STUD SCHEDULE - STRUCTURAL BEARING WALLS											
		TOP	PLATES	SIZE	GRADE	SPACING	STUDS ALIGN FLR. TO FLR.	STUDS ALIGN w/ TRUSSES			
FLOOR LEVEL	No.	SIZE	GRADE	SIZE	GRADE SPACING (SEE NOTE 3)		(SEE NOTE 3)	(SEE NOTE 4)			
1ST FLOOR EXTERIOR WALLS	3	2x6	#1/#2 SPF	2x6	#1/#2 SPF	16" O.C.	NOT REQ'D	NOT REQ'D			
1ST FLOOR INTERIOR WALLS	2	2x6	#1/#2 SPF	(2) 2x6	#1/#2 SPF	24" O.C.	NOT REQ'D	REQ'D			

### SPANNING GABLE TRUSS SCHEDULE SHEATHING DEFL. LIMIT MARK | SPACING | JOINT BLOCKING | ON VERT. WEB | BOUNDARY HOLDOWN STRAP TRUSS-TO-WALL SPACING (MAX.) (OUT-OF-PLAN... NAILING TYPE CONNECTORS 12" O.C. SGT-A 24" o.c. CONTINUOUS L/240 8d @ 6" o.d 7/16" OSB ONE SIDE SIMPSON H2.5A 8d COMMON NAILS SGT-B 24" o.c L/240 7/16" OSB ONE SIDE 8d COMMON NAILS CONTINUOUS 8d @ 6" o. SIMPSON H2.5A

NOT TO SCALE

PLATE

TxWxL

3/4"x5-1/2"x11"

WELD

1/4"

7/8" Ø AB = 1 9/16" Ø HOLE WITH 2 1/2"x5/16" A36 PLATE WASHER; 1" Ø AB = 1 13/16" Ø HOLE WITH 3"x3/8" A36 PLATE WASHER; 1 1/4" Ø AB = 2 1/16" Ø HOLE WITH 3"x1/2" A36 PLATE WASHER; 1 1/2" Ø AB = 2 5/16" Ø HOLE WITH 3 1/2"x1/2" A36 PLATE WASHER 1 3/4" Ø AB = 2 3/4" Ø HOLE WITH 4"x5/8" A36 PLATE WASHER; 2" Ø AB = 3 1/4" Ø HOLE WITH 5 1/2"x7/8" A36 PLATE WASHER; 2 1/2" Ø AB = 3 3/4" Ø HOLE WITH 5 1/2"x7/8" A36 PLATE WASHER; 2 1/2" Ø AB = 3 3/4" Ø HOLE WITH 5 1/2"x7/8" A36 PLATE WASHER; 2 1/4" Ø AB = 3 1/4" Ø HOLE WITH 5 1/2"x7/8" A36 PLATE WASHER; 2 1/4" Ø AB = 3 3/4" Ø HOLE WITH 5 1/2"x7/8" A36 PLATE WASHER; 2 1/4" Ø AB = 3 1/4" Ø HOLE WITH 5 1/2"x7/8" A36 PLATE WASHER; 2 1/4" Ø AB = 3 1/4" Ø HOLE WITH 5 1/2"x7/8" A36 PLATE WASHER; 2 1/4" Ø AB = 3 1/4" Ø HOLE WITH 5 1/2"x7/8" A36 PLATE WASHER; 2 1/4" Ø AB = 3 1/4" Ø HOLE WITH 5 1/2"x7/8" A36 PLATE WASHER; 2 1/4" Ø AB = 3 1/4" Ø HOLE WITH 5 1/2"x7/8" A36 PLATE WASHER; 2 1/4" Ø AB = 3 1/4" Ø AB = 3 1/4" Ø HOLE WITH 5 1/2"x7/8" A36 PLATE WASHER; 2 1/4" Ø AB = 3 1/4" Ø A

**ANCHORS** 

QTY. DIA. (IN.) PROJ. (IN.) EMBED (IN.) TYPE

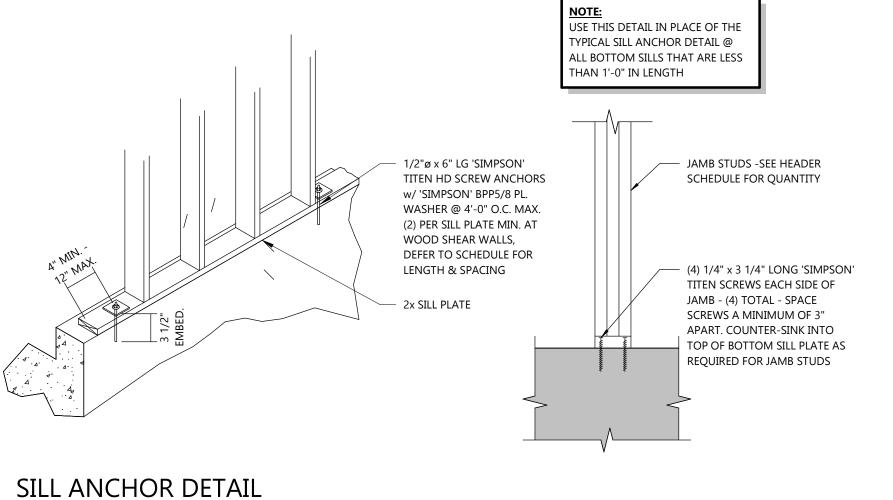
4 3/4" 4" 12" A

GABLE TRUSS SCHEDULE NOTES:

1. WIND LOADING PER DESIGN LOAD TABLE, SEE STRUCTURAL SHEETS.

2. HOLDDOWNS ARE MINIMUMS. COORDINATE w/ TRUSS SUPPLIER FOR GIRDER PLY.

2. GT-X INDICATES GABLE TRUSS; ST-X INDICATES SHEATHED TRUSS, SEE PLAN FOR LOCATIONS. 3. HOLDOWN AND TRUSS-TO-WALL CONNECTORS BY SIMPSON STRONG-TIE.



GABLE TRUSS SCHEDULE DEFL. LIMIT SPACING **JOINT BLOCKING** ON VERT. WEB **SHEATHING HOLDOWN STRAP** TRUSS-TO-WALL REQT. (OUT-OF-PLANE) NAILING CONNECTORS 16d COMMON NAILS CONTINUOUS 7/16" OSB ONE SIDE (1) SIMPSON H2.5A GT-A 24" o.c. L/240 8d @ 6" o.c CONTINUOUS 7/16" OSB ONE SIDE (1) SIMPSON H2.5A 16d COMMON NAILS GT-B 24" o.c. 8d @ 6" o.c

NOT TO SCALE

GABLE TRUSS SCHEDULE NOTES:

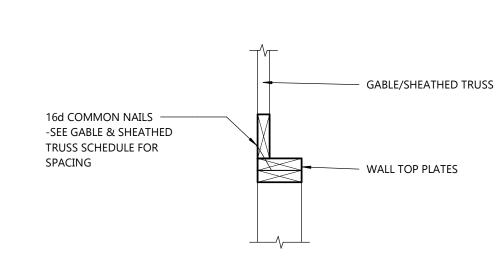
1. WIND LOADING PER DESIGN LOAD TABLE, SEE STRUCTURAL SHEETS. 2. GT-X INDICATES GABLE TRUSS; ST-X INDICATES SHEATHED TRUSS, SEE PLAN FOR LOCATIONS.

3. HOLDOWN AND TRUSS-TO-WALL CONNECTORS BY SIMPSON STRONG-TIE.

PROVIDE OVERLAPPING AT CORNERS AND AT INTERSECTIONS WITH OTHER PARTITIONS TOP PLATE - SEE STRUCTURAL WOOD STUD WALL SCHEDULE STUD FRAMING - SEE STRUCTURAL WOOD STUD WALL SCHEDULE (8) 16d NAILS (MIN.) ON EACH SIDE OF BREAK IN TOP PLATE

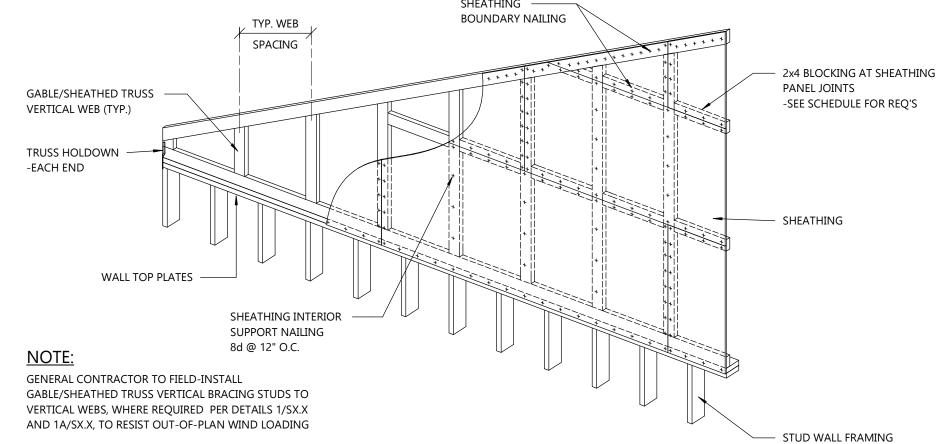
TYPE - A





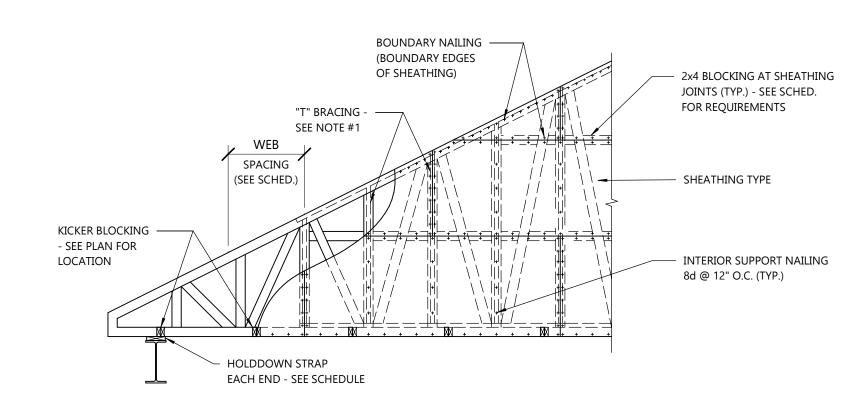
**COMMON NAIL TYPE** 

TRUSS TO WALL CONNECTION DETAIL NOT TO SCALE



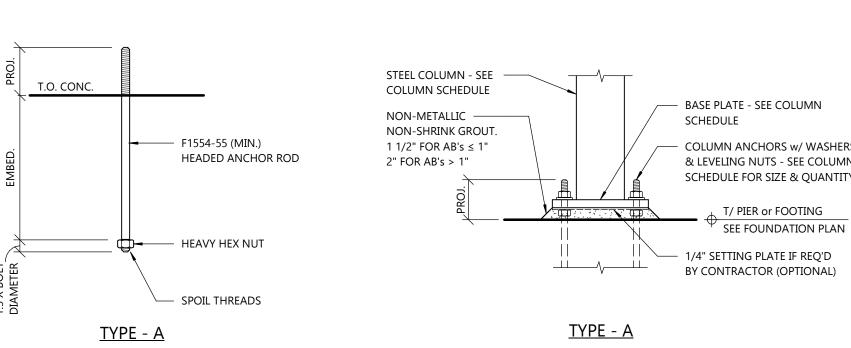
TRUSS DETAIL

NOT TO SCALE



GENERAL CONTRACTOR TO FIELD-INSTALL "T" BRACING TO VERTICAL WEBS, WHERE REQUIRED PER TRUSS VERTICAL BRACING DETAILS, TO RESIST OUT-OF-PLAN WIND LOADING

TYPICAL SPANNING GABLE TRUSS (PARTIAL)



PROVIDE OVERSIZED HOLES AND WASHERS AT ALL BASEPLATES FOR ANCHOR BOLTS AS FOLLOWS UNLESS NOTED/DETAILED OTHERWISE (PLATE WASHERS MAY BE CIRCULAR OR SQUARE):

3/4" Ø AB = 1 1/16" Ø HOLE WITH ASTM F844 STANDARD WASHER (FOR BASE PLATES LESS THAN 1 1/4" THICK) OR 3/4" Ø AB = 1 5/16" Ø HOLE WITH 2"x1/4" A36 PLATE WASHER

• WELDS DESIGNATED AS DEMAND CRITICAL (DCW) SHALL BE MADE WITH FILLER METALS MEETING THE REQUIREMENTS SPECIFIED IN AWS D1.8/D1.8M CLAUSES 6.1, 6.2, AND 6.3.

**BASE PLATE** 

LEVELING

TYPE

ALL ANCHOR BOLTS SHALL BE INSTALLED FREE OF DIRT, OIL, OR ANY OTHER CONTAMINANTS WHICH MAY DESTROY OR REDUCE BOND TO CONCRETE PER SSPC-SP1.

COLUMN BASE PLATE LEVELING TYPES COLUMN ANCHOR TYPES NOT TO SCALE NOT TO SCALE

PLATE

1/4"

TxWxL

HSS5X5X1/4 A 3/4"x11"x11"

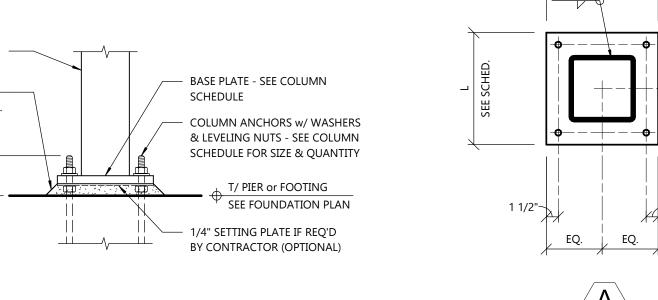
1/2" TO 5/8" ø AB = 9/16" ø TO 11/16" ø HOLE WITH ASTM F844 STANDARD WASHER

**COLUMN SCHEDULE NOTES:** 

COLUMN

SIZE

Mark



COLUMN BASE PLATE TYPES NOT TO SCALE

CAP PLATE

QTY.

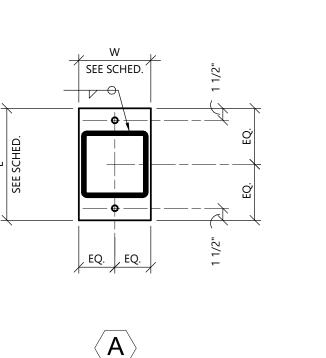
SEE SCHED.

**BOLTS** 

A307 THRU BOLTS

DIA. (IN.)

3/4"



REMARKS

COLUMN CAP PLATE TYPES NOT TO SCALE

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excelengineer.com **COLLABORATION PROJECT INFORMATION** 

Always a Better Plan

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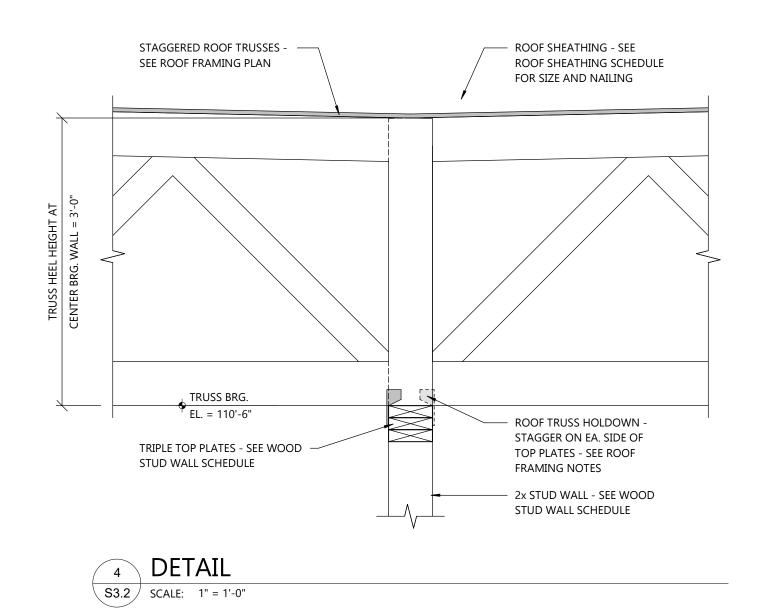
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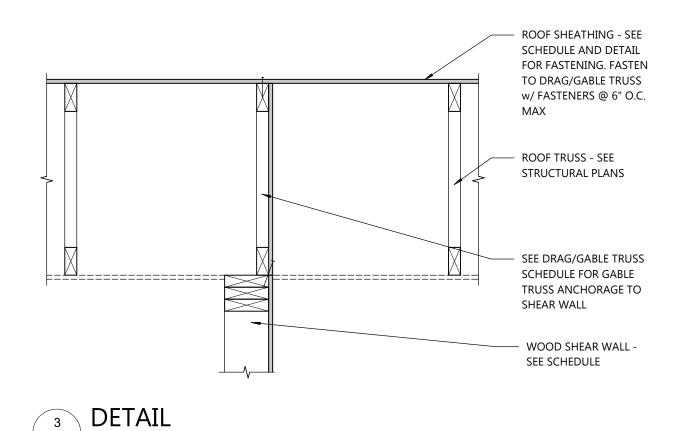
SCHOOL 4 OD CHILDH( Ш ш LAKE PROP(

PROFESSIONAL SEAL

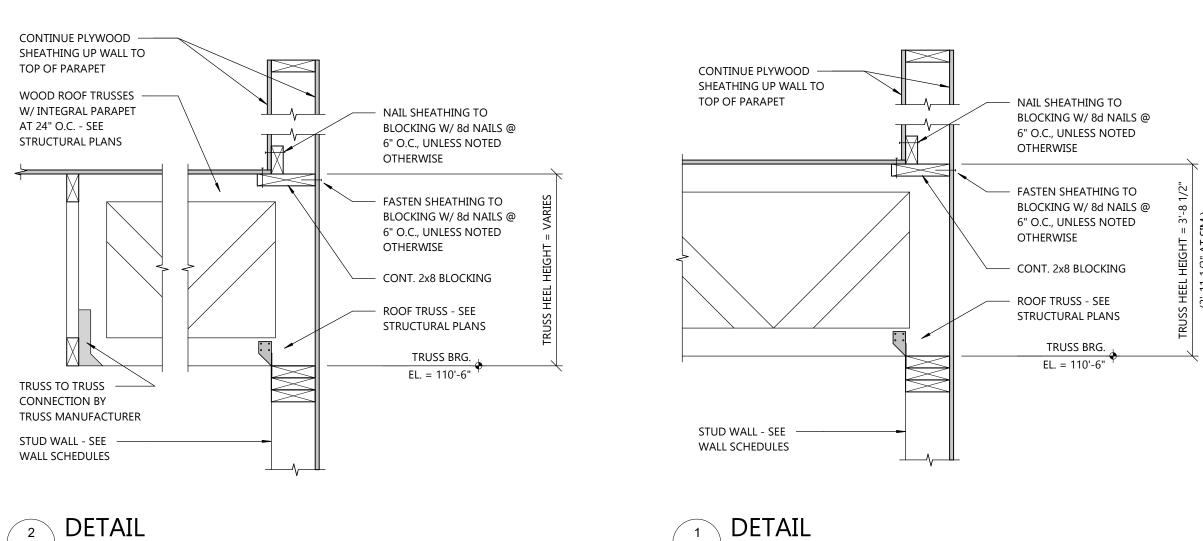
**SHEET DATES** FEB. 14, 2023 REVISIONS AD1 FEB. 28, 2023

> **JOB NUMBER** 2255300

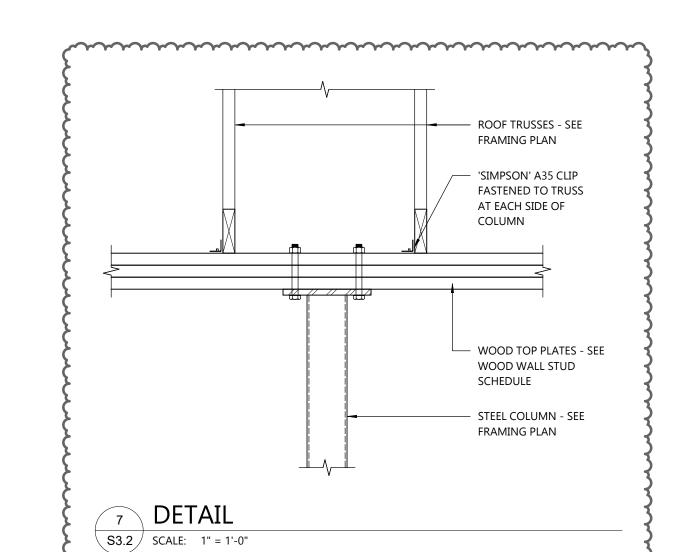


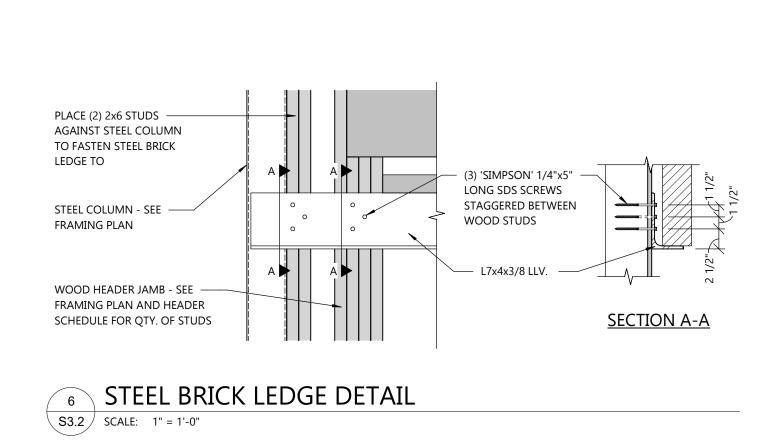


S3.2 SCALE: 1" = 1'-0"

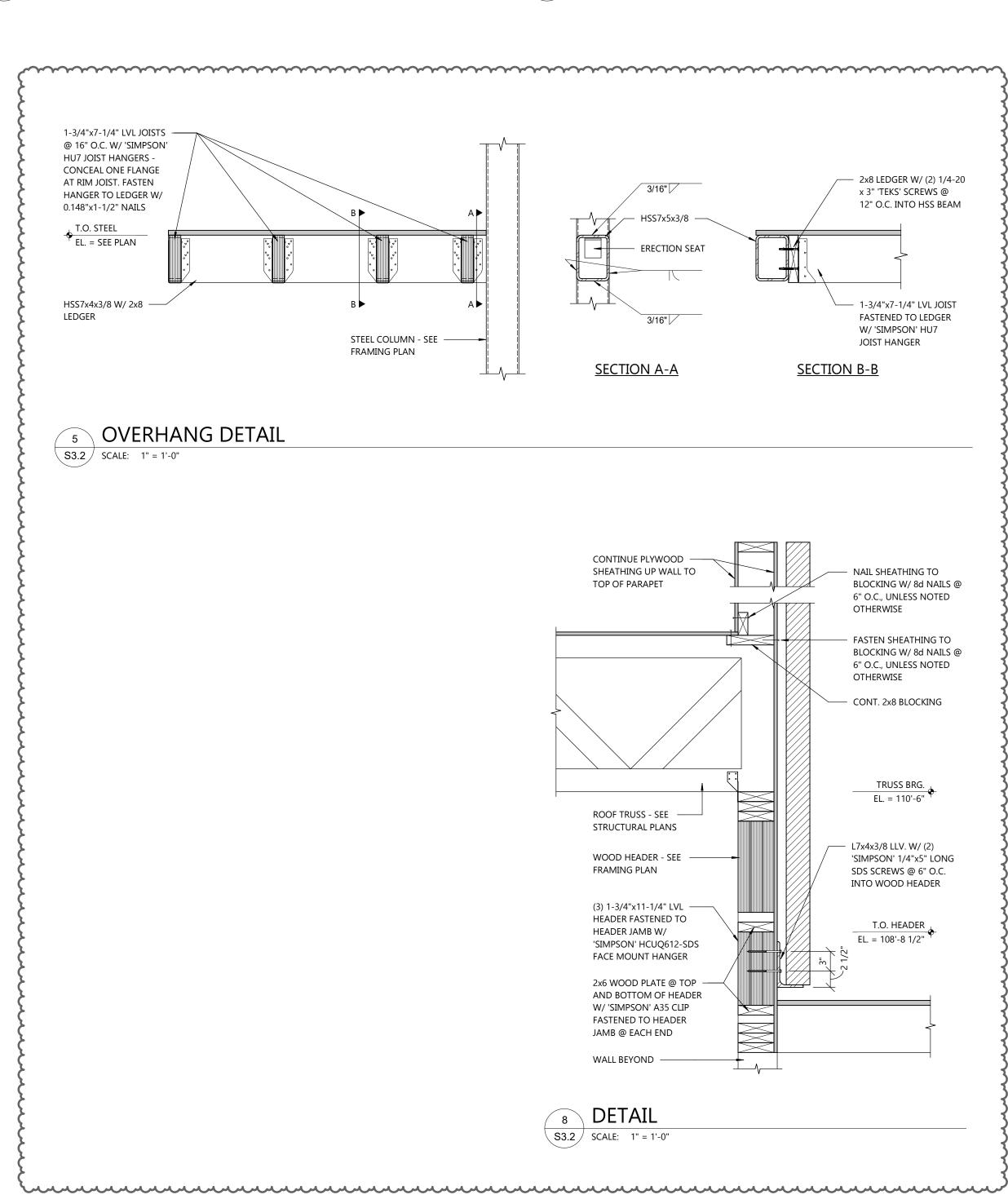


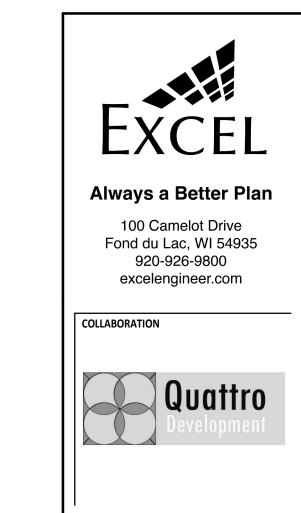
S3.2 SCALE: 1" = 1'-0"





S3.2 SCALE: 1" = 1'-0"





PROPOSED EARLY CHILDHOOD SCHOOL FOR:

QUATTRO DEVELOPMENT

TWIN LAKES STATION - LOT 2 • ROSEVILLE, MN 55113

SHEET DATES

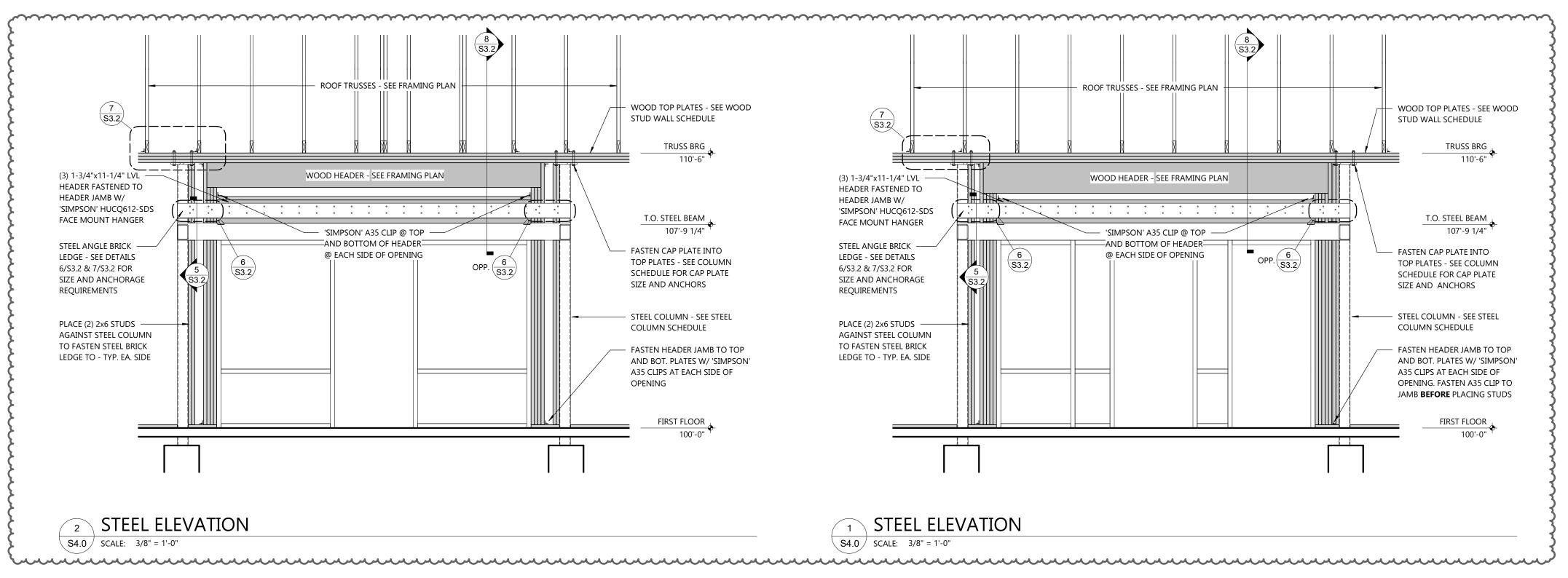
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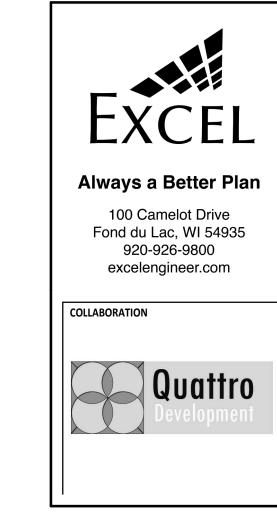
REVISIONS
AD1 FEB. 28, 2023

JOB NUMBER 2255300

SHEET NUMBER

S13.2





PROJECT INFORMATION

FOR: **ENT** AN 55113

SED EARLY CHILDHOOD SCHOOL FOR:

TTRO DEVELOPMEN

S STATION - LOT 2 • ROSEVILLE, MN 5

QUA TWIN LAKES

PROFESSIONAL SEAL

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#### **DIVISION 22 PLUMBING**

#### 22 05 00 BASIC PLUMBING REQUIREMENTS

- A. SEE DIVISION 00 PROCUREMENT AND CONTRACTING AND DIVISION 01 GENERAL REQUIREMENT FOR ADDITIONAL
- B. THE CONTRACTOR IS RESPONSIBLE FOR REVIEWING THE TENANT WORK LETTER AND IS TO CLARIFY ANY DISCREPANCIES WITH EXCEL ENGINEERING, INC. PRIOR TO BEGINNING WORK.
- C. SUBSTITUTIONS 1. SEE DIVISION 01 25 13 PRODUCT SUBSTITUTION PROCEDURES FOR ADDITIONAL REQUIREMENTS.
- 2. CONTRACTOR SHALL PROVIDE ALL SUPPORTING DATA AND ASSUME THE BURDEN OF PROOF THAT ANY SUBSTITUTE IS EQUIVALENT AS TO APPEARANCE, CONSTRUCTION, CAPACITY, AND PERFORMANCE. THE JUDGMENT OF EQUIVALENCY
- SHALL BE MADE BY THE ENGINEER AT THE TIME OF SHOP DRAWING REVIEW, NOT DURING BIDDING. 3. WHERE SUBSTITUTE EQUIPMENT REQUIRES REDESIGN OF ANY PART OF THE PROJECT, THE COST OF REDESIGN AND ADDITIONAL COSTS OF THE WORK SHALL BE PAID BY THE CONTRACTOR. REDESIGN SHALL BE SUBJECT TO THE
- APPROVAL OF ALL AUTHORITIES HAVING JURISDICTION OVER THE WORK INCLUDING THE ARCHITECT/ ENGINEER 4. CONTRACTOR SHALL ASSUME ALL COORDINATION RESPONSIBILITIES FOR SUBSTITUTE EQUIPMENT INCLUDING
- COORDINATION ACROSS TRADES AND COORDINATION OF PREVIOUSLY REVIEWED AND APPROVED SHOP DRAWING SUBMITTALS, SHOULD THESE SHOP DRAWINGS BE AFFECTED BY THE SUBSTITUTED EQUIPMENT.
- D. SHOP DRAWINGS, PRODUCT DATA, TEST RESULTS AND SAMPLE SUBMITTALS: 1. SEE DIVISION 01 33 23 SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES FOR ADDITIONAL REQUIREMENTS. 2. PLUMBING CONSTRUCTION ADMINISTRATION SUBMITTAL LIST:

  - b. PIPE IDENTIFICATION
  - d. INSULATION

c. FIXTURES

- e. HANGERS f. DRAINS AND CLEANOUTS
- g. VALVES h. BACKFLOW PREVENTERS
- WATER HEATERS
- WATER HEATER FLUES
- k. PUMPS I. WATER TREATMENT EQUIPMENT
- m. INTERCEPTORS PROJECT CLOSEOU
- a. PROVIDE PLUMBING EQUIPMENT OPERATING AND MAINTENANCE MANUALS TO THE OWNER PER IMC 364.0313(3). 4. AS-BUILT DRAWINGS SHALL BE MARKED ON A FINAL SET OF DRAWINGS WHICH INCLUDES ALL REVISIONS.
- 1. SEE DIVISION 09 91 00 FINISH AND PAINTING FOR ADDITIONAL REQUIREMENTS. 2. PREPARE EXPOSED PIPE, FITTINGS, SUPPORTS, AND ACCESSORIES FOR FINISH PAINTING IN ROOMS THAT WILL HAVE
- CEILING AND STRUCTURE PAINTED. 3. COORDINATE WORK WITH THE PAINTERS SO THAT ALL EQUIPMENT IS INSTALLED PRIOR TO PAINTING. P.C. SHALL
- PAINT ITEMS IF NOT IN PLACE PRIOR TO NORMAL ROUTINE PAINTING.
- 4. IF FINISH BECOMES RUSTED, CORRODED, SCRATCHED, OR FLAKED DURING STORAGE OR INSTALLATION, REFINISH THE EQUIPMENT TO THE SATISFACTION OF THE OWNER.
- 5. WHERE THE PLUMBING CONTRACTOR IS REQUIRED TO PAINT, THE PAINTING SHALL BE DONE IN ACCORDANCE WITH THE PAINTING PORTION OF THE ARCHITECTURAL SPECIFICATION.
- 6. PAINT VENT THRU ROOFS ON PITCHED ROOF SAME COLOR AS SHINGLES. USE PAINT SUITABLE FOR PIPE MATERIAL.
- F. DETAILS AND SCHEDULES ARE SHOWN TO AID THE CONTRACTOR AND ARE NOT MEANT TO BE INCLUSIVE OF ALL DEVICES. PROVIDE REQUIRED EQUIPMENT AND ACCESSORIES FOR A COMPLETE INSTALLATION.
- G. INSTALL ALL EQUIPMENT PER MANUFACTURER'S INSTALLATION INSTRUCTIONS AND REQUIREMENTS. PROVIDE ADDITIONAL WORK AND MATERIALS AS REQUIRED.
- 1. PERFORM WORK PER ALL LOCAL AND STATE CODES, ORDINANCES AND REGULATIONS HAVING JURISDICTION. I. COORDINATE INSTALLATION OF PLUMBING WORK WITH THE OTHER CONTRACTORS TO AVOID CONFLICTS WITH OTHER
- J. VERIFY CONNECTION REQUIREMENTS FOR EQUIPMENT FURNISHED BY OTHERS WITH FINAL SHOP DRAWINGS. K. FIRE RATED INTERIOR WALL AND FLOOR PIPE PENETRATIONS
- 1. SLEEVE REQUIRED FOR PENETRATION OF CONCRETE AND MASONRY WALLS AND FLOORS.
- 2. SEAL OPENING AROUND PIPE WITH A UL APPROVED FIRE-STOP SYSTEM HAVING AN F-RATING NOT LESS THAN THE HOURLY RATING OF THE ASSEMBLY BEING PENETRATED.
- 3. PROVIDE FIRE-RESISTIVE JOINT SYSTEM PRODUCTS BY THE SAME MANUFACTURER AS BEING USED ON THE REMAINDER
- OF THE PROJECT (COORDINATE WITH GC/CM). 4. WHERE A SLEEVE IS REQUIRED, FURNISH AND INSTALL SLEEVES FOR NEW DRYWALL WALLS AND CONCRETE WALLS AND FLOORS. FURNISH SLEEVES TO THE MASON CONTRACTOR FOR INSTALLATION IN NEW MASONRY WALLS. PROVIDE
- SLEEVE AND GROUT SLEEVE IN EXISTING MASONRY WALLS. PROVIDE UL ASSEMBLY PENETRATION NUMBER TO AHJ COMPLIANT WITH BUILDING UL ASSEMBLY 30 DAYS PRIOR TO INSTALLATION IF REQUIRED BY AHJ.
- 1. PLUMBING CONTRACTOR SHALL PROVIDE ALL SEALANTS WHERE JOINT IS HIDDEN AND WHERE JOINT IS EXPOSED IN
- SEALANT CONTRACTOR SHALL PROVIDE SEALANTS AT ALL EXPOSED LOCATIONS IN FINISHED ROOMS.
- 3. SEE SECTION 07 92 00 SEALANTS FOR ADDITIONAL INFORMATION. M. ESCUTCHEONS
- 1. INSTALL ONE-PIECE (TWO PIECE FOR EXISTING PIPING) POLISHED CHROME PLATED STEEL ESCUTCHEONS AT
- PENETRATIONS EXPOSED IN FINISHED ROOMS (ROOMS WHICH DON'T HAVE UNFINISHED CONCRETE FLOORS). 2. ESCUTCHEONS WITH SPRINGS FOR WALL AND CEILING LOCATIONS.
- 3. ID TO CLOSELY FIT AROUND PIPE/INSULATION, OD THAT COMPLETELY COVERS THE OPENING.
- 4. ESCUTCHEONS REQUIRED IN CABINETS AND CASEWORK.
- N. REMOVE PLUMBING EQUIPMENT, FIXTURES, PIPING, ETC. INDICATED BY THE DRAWINGS TO BE DEMOLISHED FROM THE JOB SITE, UNLESS INDICATED TO BE TURNED OVER TO THE OWNER.
- O. PROJECT COMPLETION 1. CLEAN FIXTURES AND EQUIPMENT AND LEAVE IN PROPER WORKING CONDITION AT THE TIME OF FINAL CLEAN-UP. 2. REMOVE, CLEAN AND REPLACE AERATORS AFTER FLUSHING WATER PIPING.
- 3. PROVIDE OPERATING INSTRUCTIONS FOR A TOTAL OF TWO (2) HOURS. MAINTAIN A RECORD OF OPERATING
- INSTRUCTION PERIODS AND OBTAIN OWNER SIGNOFF THAT INSTRUCTIONS HAVE BEEN COMPLETED.
- 1. FURNISH ACCESS PANELS OF ADEQUATE SIZE TO PERMIT SERVICE OF EQUIPMENT, VALVES, OR OTHER SPECIALTIES WHICH REQUIRE MAINTENANCE OR ADJUSTMENT WHICH ARE INSTALLED BEHIND WALLS OR ABOVE NON-LAYIN
- 2. PANELS SHALL BE SUITABLE FOR INSTALLATION IN THE MATERIAL FORMING THE FINISHED SURFACE, WITH FLANGED FLUSH METAL FRAME, FLUSH HINGED STEEL DOOR, FLUSH SCREWDRIVER OPERATED LATCH.
- 3. PANELS UL LISTED TO CONFORM TO THE FIRE RATING OF THE SURFACE INSTALLED IN. 4. TURN ACCESS PANEL OVER TO CONTRACTOR SKILLED IN THE CONSTRUCTION OF THE SURFACES INVOLVED FOR
- 5. ARCHITECT TO APPROVE ACCESS PANEL LOCATION PRIOR TO INSTALLATION OF EQUIPMENT REQUIRING ACCESS.
- 6. COORDINATE WITH THE OTHER CONTRACTORS AND WHEREVER PRACTICAL, GROUP DEVICES IN SUCH A MANNER SO

# 22 05 19 METERS AND GAUGES

- A. PRESSURE GAUGES AND THERMOMETERS 1. MANUFACTURERS: TRERICE, U.S. GAUGE, ASHCROFT, MARSH, WEISS, WEKSLER.
- PRESSURE GAUGES a. GENERAL PURPOSE: TRERICE 600CB PBF CERTIFIED LEAD FREE CAST ALUMINUM CASE, PHOSPHOR BRONZE
- BOURDON TUBE; TRERICE 872-1PBF LEAD FREE BRASS PRESSURE SNUBBER.
- 1). GAUGE COCK: APOLLO 77FLF-100 LEAD FREE FULL PORT THREADED BRASS VALVE, 150 PSI SWP, 400 DEG F
- 3. STEM THERMOMETERS: a. GENERAL PURPOSE: TRERICE BX9, ASTM E1, ORGANIC SPIRIT LIQUID FILL, CAST ALUMINUM CASE WITH EPOXY
- FINISH, CAST ALUMINUM ADJUSTABLE JOINT WITH POSITIVE LOCKING DEVICE, 9" SCALE, 3/4" NPT BRASS STEM, WITH EXTENSIONS AS REQUIRED FOR INSULATION.
- b. PROVIDE THERMOWELL FOR ALL THERMOMETERS. BRASS IN COPPER TUBING. SIZE AND INSERTION LENGTH FOR APPLICATION. PROVIDE HEAT TRANSFER MEDIUM.
- 4. SCALE RANGES AND MINIMUM INCREMENT AS FOLLOWS:
- a. COLD WATER: 0-100 PSIG/ 1 PSIG; 0-100 DEG F/ 1 DEG F b. HOT WATER: 0-100 PSIG/ 1 PSIG; 0-160 DEG F/ 2 DEG F.

B. ANGLES, CHANNELS, AND BEAMS: ASTM A36 AND A572 AS REQUIRED.

- 5. EXTEND NIPPLES TO ALLOW INSULATION CLEARANCE. 6. INSTALL WHERE READ FROM NORMAL OPERATING LEVEL.

## CALIBRATE FOR ACCURACY.

- 22 05 29 PIPE AND EQUIPMENT HANGERS AND SUPPORTS A. MANUFACTURERS: B-LINE, EMPIRE INDUSTRIES, GLOBAL PIPE HANGER PRODUCTS, GRINNEL, NATIONAL PIPE HANGER, UNI
- C. HANGERS SHALL NOT BE ATTACHED TO JOIST BRIDGING.

1. MAXIMUM HANGER LOAD OF 50 LBS.

- D. ATTACHMENT TO METAL DECK: HANGERS MAY BE ANCHORED TO METAL FLOOR/ROOF DECK IF ALL THE FOLLOWING CONDITIONS ARE MET:
- 2. ANCHORED TO BOTTOM OF DECK FLUTES, NOT UPPER FLUTE.
- 3. ANCHOR LENGTH SHALL EXCEED DECK DEPTH. E. PIPE HANGERS/SUPPORTS
- 1. SEE DETAILS ON PLANS FOR ADDITIONAL PIPE HANGER SPECIFICATIONS.

- 2. SEE SCHEDULE ON PLANS FOR HANGER SPACING.
- CONFORM TO ASME B31.9 AND MANUFACTURER'S STANDARDIZATION SOCIETY (MSS) SP-58-2009. 4. INSTALL HANGERS AND SUPPORTS SO PIPING LIVE AND DEAD LOADS AND STRESSES FROM MOVEMENT WILL NOT BE TRANSMITTED TO CONNECTED EQUIPMENT. ADJUST HANGERS TO DISTRIBUTE LOADS EQUALLY ON ATTACHMENTS AND TO PROVIDE INDICATED PIPE SLOPES.
- 5. PROVIDE SWAY BRACING ON HORIZONTAL DRAINAGE PIPES ABOVE GRADE 4" AND LARGER AT ALL CHANGES IN DIRECTION GREATER THAN 45 DEG WITHIN 12" OF CHANGE IN DIRECTION.
- a. V BOTTOM CLEVIS HANGER: MSS SP-58 TYPE 1, B-LINE FIGURE B3106 AND FIGURE B3106V PRE-GALVANIZED
- PLASTIC PIPE SUPPORT CHANNEL FOR PEX PIPING TO INCREASE HANGER SPACING.
- 1. COMPLY WITH THE LATEST REVISION OF MFMA STANDARDS PUBLICATION NUMBER MFMA-3, "METAL FRAMING
- 2. INSTALL STRUT IN ACCORDANCE WITH MFMA-102 "GUIDELINES FOR THE USE OF METAL FRAMING"; IN ACCORDANCE
- WITH EQUIPMENT MANUFACTURER'S RECOMMENDATONS, AND WITH RECOGNIZED INDUSTRY PRACTICES. 3. COLD FORMED LOW CARBON STEEL METAL FRAMING CHANNEL STRUT: B-LINE TYPE B CHANNEL
- 4. 1-5/8 INCHES WIDE IN VARYING HEIGHTS AND WELDED COMBINATIONS AS REQUIRED TO MEET LOAD CAPACITIES. 5. MANUFACTURER'S STANDARD FINISH OR PLAIN FINISH.
- G. EQUIPMENT PIPE STANDS: CONTRACTOR FABRICATED STAND CONSISTING OF STRUCTURAL STEEL MEMBERS SUPPORTED
- BY PIPE SUPPORTS. HOT DIP GALVANIZE AFTER FABRICATION WHERE EXPOSED TO WEATHER. H. PROVIDE SUPPORT FOR UTILITY METERS IN ACCORDANCE WITH REQUIREMENTS OF UTILITY COMPANY.
- 1. COORDINATE FINAL EQUIPMENT CONCRETE PAD SIZE REQUIREMENTS. PADS SHALL EXTEND MINIMUM 6" BEYOND

#### 22 05 53 MECHANICAL IDENTIFICATION

- 1. MANUFACTURERS: MARKING SERVICES, W.H. BRADY, AND SETON NAME PLATE COMPANY.
- 2. 1-1/2" DIAMETER 20 GAUGE BRASS TAG WITH STAMPED BLACK LETTERS. ATTACH WITH 5765 #6 SOLID BRASS BEAD 3. PROVIDE TYPEWRITTEN LETTER SIZE CHART.
- 4. COORDINATE VALVE TAG NOMENCLATURE/NUMBERING SEQUENCE/STARTING NUMBER WITH OWNER PRIOR TO
- 5. ALL VALVES SHALL BE TAGGED EXCEPT DRAIN VALVES AND FIXTURE STOPS.
- B. PIPE IDENTIFICATION 1. INDOOR SELF-ADHESIVE PIPE MARKERS
  - a. MANUFACTURERS: MARKING SERVICES MS-900, BRADY B-736, SETON OPTI-CODE. b. FLEXIBLE PVC FILM WITH PRESSURE SENSITIVE ACRYLIC ADHESIVE BACKING WITH PRINTED MARKINGS.
- c. SECURE WITH 2" WIDE TAPE WITH ARROWS INDICATING FLOW 2. COLOR, OVERALL SIZE AND LETTER HEIGHT SHALL CONFORM TO ASME A13.1- 2007 "SCHEME FOR THE IDENTIFICATION
- OF PIPING SYSTEMS". 3. IDENTIFY PIPE SERVICE, FLOW DIRECTION, AND PRESSURE.
- 4. LOCATIONS a. LOCATE TO FACE GREATEST POINT OF VISIBILITY. ALL ADJACENT LABELS TO BE INSTALLED NEATLY IN A ROW.
- b. LOCATE IDENTIFICATION NOT-TO-EXCEED 50 FEET FOR EXPOSED PIPING.
- c. LOCATE IDENTIFICATION NOT-TO-EXCEED 25 FEET FOR PIPING ABOVE CEILINGS.
- d. MINIMUM ONE LOCATION PER ROOM. e. INSTALL IDENTIFICATION AFTER PIPING AND INSULATION IS COMPLETE TO ENSURE MAXIMUM VISIBILITY OF THE
- f. BEHIND ACCESS PANELS AND ALL OTHER ACCESSIBLE POINTS OF SERVICE.
- g. NEAR LOCATIONS WHERE PIPES PENETRATE WALLS, FLOORS OR CEILINGS.
- h. NEAR EACH VALVE AND CONTROL DEVICE. i. AT EACH MAJOR PIECE OF EQUIPMENT.

### **22 07 00 INSULATION**

- 1. SEE INSULATION SCHEDULES ON PLANS FOR ADDITIONAL INFORMATION.
- 2. INSULATION, INSULATION SYSTEMS AND JACKETS SHALL MEET UL-723/ASTM E84 REQUIREMENTS OF MAX. FIRE HAZARD CLASSIFICATION OF 25, AND MAX. FLAME SPREAD, FUEL CONTRIBUTED, AND SMOKE DEVELOPED OF 50 WHEN
- 3. INSTALL MATERIALS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND MICA PUBLICATION "COMMERCIAL AND INDUSTRIAL STANDARDS", 2011 SEVENTH EDITION.
- 4. CONTINUE INSULATION WITHOUT INTERRUPTIONS THROUGH WALLS AND FLOOR PENETRATIONS AND HANGERS. 5. REPAIR INSULATION ON EXISTING PIPING WHICH IS DAMAGED DUE TO CONNECTING OF NEW PIPING. MAINTAIN EXISTING VAPOR BARRIER INTEGRITY.
- B. FIBERGLASS (F.G.) INSULATION
  - a. O.C. FIBERGLAS PIPE INSULATION, KNAUF EARTHWOOL PIPE INSULATION, JOHNS MANVILLE MICRO-LOK.
  - b. SINGLE OR DOUBLE ADHESIVE SELF-SEALING LAP SYSTEM FOR LONGITUDINAL JOINT, PRESSURE SENSITIVE BUTT
  - STRIP SEALS, ALL SERVICE JACKET VAPOR BARRIER COVERING. c. 3.5-5.5 LB./CU.FT., R=4.3 / NOMINAL INCH AT 75 DEG F.
  - d. MAX 850 DEG F, JACKET MAX 150 DEG F, 0.02 PERM.
  - e. COMPRESSIVE STRENGTH AT 10% DEFORMATION 125 LB./S.F. f. VALVES, FITTINGS, AND FLANGE COVERS:
- 1). ZESTON 2000/300 SERIES, CEELCO 300 SERIES, PROTO LOSMOKE PVC JACKET 2). HIGH IMPACT 30 MIL WHITE PVC WITH PRECUT FIBERGLASS INSERTS. MAX TEMP 150 DEG
- C. ELASTOMERIC FOAM INSULATION SEAL BUTT JOINTS WITH ADHESIVE.
- 2. SHEET a. MANUFACTURERS: AEROFLEX AEROCEL, K-FLEX INSUL-SHEET, ARMACELL AP ARMAFLEX
- b. EPDM/PVC BASE ELASTOMERIC FOAM MATERIAL
- c. MAX. 'K' VALUE 0.245 AT 75 DEG F d. MAX. CONTINUOUS TEMPERATURE 220 DEG F
- e. MAX. 0.05 PERM PER ASTM E96 f. Max. fire/smoke developed of 25/50 per astm e84 for up to 2" thick.
- g. ADHERE WITH 100% ADHESIVE COVERAGE, BOTH SURFACES.
- a. MANUFACTURERS: AEROFLEX AEROCEL SSPT, K-FLEX INSUL-LOCK DS, ARMACELL AP/ARMAFLEX BLACK LAPSEAL.
- b. EPDM/PVC BASE ELASTOMERIC FOAM MATERIAL c. DUAL TAPE CLOSURE
- d. MAX. 'K' VALUE 0.245 AT 75 DEG F e. MAX. CONTINUOUS TEMPERATURE 220 DEG F
- f. MAX. 0.05 PERM PER ASTM E96 g. MAX. FIRE/SMOKE DEVELOPED OF 25/50 PER ASTM E84 FOR UP TO 2" THICK.
- h. PROVIDE MANUFACTURER PREFORMED INSULATION OVER VALVES AND FITTINGS
- i. FIELD CUTTING AND GLUING LONGITUDINAL JOINT NOT PERMITTED. D. PIPE INSULATION REQUIREMENTS
- 1. INSULATE ENTIRE PIPING SYSTEM INCLUDING VALVES AND FITTINGS PER MICA INSULATION STANDARDS PLATES 10
- 2. SEAL ALL INSULATION ENDS.

### 22 10 00 EXCAVATION AND BACKFILL

- A. P.C. SHALL EXCAVATE AND BACKFILL TRENCHES FOR PLUMBING WORK
- B. PROTECT TREES, PLANTS, LAWNS, AND OTHER FEATURES REMAINING AS PORTION OF FINAL LANDSCAPING. C. PROTECT BENCHMARKS, EXISTING STRUCTURES, FENCES, SIDEWALKS, PAVING, AND CURBS FROM EXCAVATING EQUIPMENT
- D. MAINTAIN, PROTECT, AND TEMPORARILY SUPPORT ABOVE AND BELOW GRADE UTILITIES WHICH ARE TO REMAIN.
- E. PROVIDE AND MAINTAIN ALL FENCING, BARRICADES, SIGNS, WARNING LIGHTS, AND/OR OTHER EQUIPMENT NECESSARY TO KEEP ALL EXCAVATION PITS AND TRENCHES AND THE ENTIRE SUBGRADE AREA SAFE UNDER ALL CIRCUMSTANCES AND AT ALL TIMES. NO EXCAVATION SHALL BE LEFT UNATTENDED WITHOUT ADEQUATE PROTECTION. F. ELEVATIONS SHOWN ON THE PLANS ARE SUBJECT TO SUCH REVISIONS AS MAY BE NECESSARY TO FIT FIELD CONDITIONS.
- 1. CUT TRENCHES SUFFICIENTLY WIDE TO ENABLE INSTALLATION AND ALLOW INSPECTION. REMOVE WATER OR
- MATERIALS THAT INTERFERE WITH WORK 2. DO NOT INTERFERE WITHIN 45 DEGREE BEARING SPLAY OF FOUNDATIONS. 3. EXCAVATE MINIMUM 4" BELOW BOTTOM OF PIPE IF STONE GREATER THAN 1" OR BEDROCK IS ENCOUNTERED. 4. REMOVE UNSTABLE AREAS OF SUBGRADE BELOW PIPE TO MINIMUM 24" BELOW PIPE OR TO STABLE MATERIAL.
- BACKFILL WITH PEA GRAVEL, LIMESTONE SCREENINGS, OR EQUIVALENT AND COMPACT TO DENSITY EQUAL TO REQUIREMENTS FOR SUBSEQUENT BACKFILL MATERIAL. 5. STOCKPILE EXCAVATED MATERIAL IN AREA DESIGNATED ON SITE AND REMOVE EXCESS MATERIAL NOT BEING USED
- FROM SITE. H. BEDDING AND BACKFILL
- LINES PASSING UNDER FOUNDATIONS: a. INSTALL WITH MINIMUM OF 1-1/2 INCH CLEARANCE TO CONCRETE AND ENSURE THERE IS NO DISTURBANCE OF
- BEARING SOIL. b. BACKFILL WITH COMPACTED ENGINEER FILL PER GEOTECH REPORT.
- 2. MECHANICALLY COMPACT BEDDING AND BACKFILL TO PREVENT SETTLEMENT. THE INITIAL COMPACTED LIFT TO NOT EXCEED 24" COMPACTED TO 95% DENSITY PER MODIFIED PROCTOR TEST (ASTM D-1557). SUBSEQUENT LIFTS UNDER PAVEMENTS, CURBS, WALKS AND STRUCTURES ARE NOT TO EXCEED 12" AND BE COMPACTED TO 95% DENSITY PER MODIFIED PROCTOR TEST. IN ALL OTHER AREAS WHERE CONSTRUCTION ABOVE THE EXCAVATION IS NOT ANTICIPATED WITHIN 2 YEARS, MECHANICALLY COMPACT BACKFILL IN LIFTS NOT EXCEEDING 24" TO 90% DENSITY PER MODIFIED
- 3. MAINTAIN OPTIMUM MOISTURE CONTENT OF FILL MATERIALS TO ATTAIN REQUIRED COMPACTION DENSITY.

- a. BEDDING: WHERE OVEREXCAVATED, BRING BACK TO BOTTOM OF PIPE ELEVATION WITH DRY SAND, GRAVEL, PEA
- GRAVEL, WASHED STONE OR CRUSHED STONE PASSING A 3/4" SIEVE. b. BACKFILL TO A DEPTH OF 12" OVER THE PIPE WITH SAND, CRUSHED STONE THAT PASSES A 1" SIEVE. PLACE IN
- WELL TAMPED MAXIMUM 6" LAYERS FOR LENGTH OF SEWER AND WIDTH OF TRENCH. 5. BACKFILL ABOVE 12" ABOVE THE PIPE: a. UNDER EXISTING AND FUTURE UTILITIES, AND BUILDINGS: GRANULAR MATERIALS, PIT RUN SAND, GRAVEL, OR
- CRUSHED STONE, FREE FROM LARGE STONES, ORGANIC, AND FROZEN MATERIALS. 6. DIRECT SURFACE WATER AWAY FROM STOCKPILE SITE TO PREVENT EROSION OR DETERIORATION OF MATERIALS. REMOVE STOCKPILE, LEAVE AREA IN A CLEAN AND NEAT CONDITION. GRADE SITE SURFACE TO PREVENT FREESTANDING SURFACE WATER.

#### 22 11 00 WATER PIPING AND VALVES

- 1. SEE PIPE SCHEDULE ON PLANS FOR ADDITIONAL INFORMATION.
- B. PIPING INSTALLATION
- 1. DRAWINGS AND DIAGRAMS SHOW SIZE AND APPROXIMATE LOCATION OF PIPING. THE DRAWINGS SHALL NOT BE SCALED TO DETERMINE EXACT LOCATION. PROVIDE ADDITIONAL OFFSETS TO COORDINATE WITH INSTALLATION
- REQUIREMENTS OF OTHER SYSTEMS. ROUTE ABOVE GROUND PIPING IN ORDERLY MANNER, PARALLEL TO BUILDING STRUCTURE. OFFSET PIPE
- CONNECTIONS AT EQUIPMENT TO ALLOW FOR SERVICE, SUCH AS REMOVAL OF THE EQUIPMENT. 3. INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
- 4. INSTALL PIPING TO CONSERVE BUILDING SPACE AND NOT INTERFERE WITH USE OF SPACE AND OTHER WORK. GROUP PIPING WHENEVER PRACTICAL AT COMMON ELEVATIONS. 5. INSTALL PIPING TO ALLOW FOR EXPANSION AND CONTRACTION WITHOUT STRESSING PIPE, JOINTS, OR CONNECTED
- EQUIPMENT WITH RESPECT TO THE BUILDING AND PLUMBING SYSTEM. PROVIDE CLEARANCE FOR INSTALLATION OF INSULATION AND ACCESS TO VALVES.
- DO NOT ROUTE PIPING ABOVE TRANSFORMERS, PANELBOARDS, MOTOR CONTROL CENTERS, SWITCHBOARDS OR OTHER ELECTRICAL DISTRIBUTION EQUIPMENT.
- PROVIDE NON-CONDUCTING DIELECTRIC CONNECTIONS WHEREVER JOINTING DISSIMILAR METALS. 9. USE ONLY NEW MATERIAL, FREE OF DEFECTS, RUST AND SCALE, AND MEETING THE LATEST REVISION OF THE ASTM
- 10. PREPARE EXPOSED UNFINISHED PIPE, FITTINGS, SUPPORTS, AND ACCESSORIES, READY FOR FINISH PAINTING. 11. SLOPE PIPING AND ARRANGE SYSTEMS TO DRAIN AT LOW POINTS. USE TOP CONNECTIONS FOR TAKEOFFS TO EQUIPMENT ABOVE THE MAINS AND BOTTOM CONNECTIONS FOR TAKEOFFS TO EQUIPMENT BELOW THE MAINS.
- 12. USE LONG RADIUS ELBOWS FOR ALL 90 DEGREE ELBOWS.
- 13. INSTALL VALVE STEM BETWEEN THE VERTICAL (UPRIGHT) OR HORIZONTAL POSITION. 14. DO NOT SUPPORT WEIGHT OF PIPING ON VALVE.
- C. PIPING TESTING EACH TEST MUST BE WITNESSED BY THE OWNER'S REPRESENTATIVE. IF LEAKS ARE FOUND, REPAIR THE AREA WITH NEW MATERIALS AND REPEAT THE TEST. DO NOT INSULATE PIPE UNTIL IT HAS BEEN SUCCESSFULLY TESTED.
- MEASURE AND RECORD TEST PRESSURE AT THE HIGH POINT IN THE SYSTEM. 3. TEST WATER DISTRIBUTION SYSTEM WITH POTABLE WATER UNDER A WATER PRESSURE OF 100 PSIG OR THE WORKING PRESSURE OF THE SYSTEM (WHICHEVER IS GREATER) FOR A PERIOD OF (4) HOURS. IF LOCAL AUTHORITIES REQUIRE
- MORE STRINGENT TESTING, CONTRACTOR SHALL COMPLY WITH THOSE REQUIREMENTS. 4. WHERE NEW PIPING IS AN EXTENSION OF THE EXISTING SYSTEM, TEST THE NEW PIPING PRIOR TO CONNECTION TO THE EXISTING SYSTEM.
- 1. VERIFY THAT SUFFICIENT WATER FLOW, PRESSURE AND TEMPERATURE ARE AVAILABLE AT EACH OUTLET AND 2. BALANCE CIRCULATING HOT WATER SYSTEM TO ENSURE PROPER CIRCULATION OF HOT WATER IN THE SYSTEM WITH HOT WATER AVAILABLE TO ALL FIXTURES AND CONNECTIONS.
- 3. BALANCE VALVE MINIMUM FLOW: 0.5 GPM. E. FLUSH AND DISINFECT DOMESTIC WATER SUPPLY SYSTEM AS FOLLOWS:

1. FILL PIPING WITH POTABLE WATER AND ALLOW TO STAND FOR 24 HOURS.

- 2. FLUSH EACH OUTLET BEGINNING WITH OUTLET CLOSEST TO BUILDING CONTROL VALVE AND THEN EACH SUCCESSIVE OUTLET IN THE SYSTEM.
- 3. FLUSH EACH OUTLET MINIMUM 1 MINUTE AND UNTIL WATER APPEARS CLEAR AT THE OUTLET. 4. FILL SYSTEM WITH WATER/CHLORINE SOLUTION OF 50 PPM OF CHLORINE AND LET STAND FOR 24 HOURS, OR 200 PPM
- FLUSH WITH POTABLE WATER. REPEAT DISINFECTION IF BACTERIOLOGICAL CONTAMINATION EXISTS. PERFORM WATER QUALITY TEST IF REQUIRED BY LOCAL AUTHORITIES.
- 8. IF LOCAL AUTHORITIES REQUIRE MORE STRINGENT FLUSHING AND DISINFECTION, CONTRACTOR SHALL COMPLY WITH THOSE REQUIREMENTS. 1. MANUFACTURERS: NIBCO, APOLLO, BONOMI, KEYSTONE, CENTERLINE, DEZURIK, CRANE, MUELLER, POWELL, VIEGA,

GRINNELL, SIOUX CHIEF. LISTING OF MODEL NUMBER DOES NOT PRECLUDE OTHER ACCEPTABLE MANUFACTURERS

- FROM PROVIDING EQUIVALENT VALVES. PROVIDE BRONZE VALVE FOR COPPER PIPE
- 1). APOLLO 77X SERIES 2). BRONZE THREE PIECE BODY, CHROME PLATED BRASS BALL, FULL PORT, TEFLON SEATS AND STUFFING BOX RING, LEVER HANDLE WITH VALVE EXTENSIONS FOR INSULATED PIPING, CRIMP JOINT ENDS, 200 PSI WOG, NSF

3. SHUTOFF VALVES 1" AND SMALLER

a. PEX BALL VALVE

D. WATER PIPING BALANCING

FOR 3 HOURS.

- 4. SHUTOFF VALVES 2" AND SMALLER
- a. BRONZE BALL VALVE: 1). SOLDERED: NIBCO S-685-66-LF.
- 2). PRESS FITTING: VIEGA SERIES 2970.*ZL OR SERIES 2971.*ZL 3). TWO PIECE, CHROME PLATED BRASS OR STAINLESS STEEL BALL, FULL PORT, REINFORCED PTFE SEATS AND STUFFING BOX RING, LEVER HANDLE WITH LOCKABLE HANDLE AND VALVE STEM EXTENSIONS FOR INSULATED PIPING, 250 PSI, NSF 61 ANNEX G LISTED.
- b. CPVC BALL VALVE 1). SIOUX CHIEF 648 SERIES 2). TWO PIECE BRASS BODY, CHROME PLATED BRASS OR STAINLESS STEEL BALL, FULL PORT, TEFLON SEATS AND STUFFING BOX RING, LEVER HANDLE WITH VALVE EXTENSIONS FOR INSULATED PIPING, CPVC SOCKET ENDS,
- 150 PSI WORKING PRESSURE 5. MANUAL BALANCE VALVES 2" AND SMALLER a. BELL & GOSSETT A-549LFP(C), CALEFFI, NIBCO, FLOWSET, ARMSTRONG, AND IMI HYDRONIC ENGINEERING):
- BRONZE BODY WITH CALIBRATED BRASS ORIFICE OR VENTURI, MEMORY STOP, SOLDERED ENDS AND PRESSURE TAPS. 125 PSIG RATING AT 240 DEG F, NSF 61 ANNEX G LISTED LEAD FREE
- b. INSTALL 5 PIPE DIAMETERS DOWNSTREAM AND 2 PIPE DIAMETERS UPSTREAM OF A FITTING. 6. DRAIN VALVES: SHUTOFF VALVE WITH THREADED CAP. PROVIDE FOR COMPLETE SYSTEM DRAINAGE, NSF 61 LISTED.
- SPRING LOADED CHECK VALVES a. 2" AND SMALLER:
- 1). THREADED: NIBCO MODEL 480-Y-LF 2). BRONZE BODY, TFE SEAT AND DISC, STAINLESS STEEL SPRING, CLASS 125, NSF 61 ANNEX G LISTED LEAD FREE.

## 8. WATER HAMMER ARRESTORS: SEE SCHEDULE. INSTALL IN ACCESSIBLE LOCATION.

- **22 13 00 DRAIN PIPING AND VALVES**
- A. PIPING INSTALLATION

EQUIPMENT WITH RESPECT TO THE BUILDING AND PLUMBING SYSTEM.

- 1. INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. 2. FIELD VERIFY EXISTING AND PROPOSED SEWER ELEVATIONS AND SIZES AND NOTIFY THE OWNER'S REPRESENTATIVE IN WRITING OF ANY VARIATION OF THE ELEVATIONS BEFORE BEGINNING ANY SEWER AND BUILDING DRAIN WORK. 3. DRAWINGS AND DIAGRAMS SHOW SIZE AND APPROXIMATE LOCATION OF PIPING. THE DRAWINGS SHALL NOT BE
- SCALED TO DETERMINE EXACT LOCATION. PROVIDE ADDITIONAL OFFSETS TO COORDINATE WITH INSTALLATION REQUIREMENTS OF OTHER SYSTEMS. 4. ROUTE ABOVE GROUND PIPING IN ORDERLY MANNER, PARALLEL TO BUILDING STRUCTURE. OFFSET PIPE

CONNECTIONS AT EQUIPMENT TO ALLOW FOR SERVICE, SUCH AS REMOVAL OF THE EQUIPMENT.

- 5. INSTALL PIPING TO CONSERVE BUILDING SPACE AND NOT INTERFERE WITH USE OF SPACE AND OTHER WORK. GROUP PIPING WHENEVER PRACTICAL AT COMMON ELEVATIONS. 6. INSTALL PIPING TO ALLOW FOR EXPANSION AND CONTRACTION WITHOUT STRESSING PIPE, JOINTS, OR CONNECTED
- 7. PROVIDE CLEARANCE FOR INSTALLATION OF INSULATION AND ACCESS TO VALVES. 8. DO NOT ROUTE PIPING ABOVE TRANSFORMERS, PANELBOARDS, MOTOR CONTROL CENTERS, SWITCHBOARDS OR
- OTHER ELECTRICAL DISTRIBUTION EQUIPMENT. 9. PROVIDE NON-CONDUCTING DIELECTRIC CONNECTIONS WHEREVER JOINTING DISSIMILAR METALS.
- 10. PROVIDE NO-HUB ADAPTER ON PVC PIPE WHERE USING NO-HUB COUPLINGS. 11. SLOPE SANITARY PIPE 2" AND SMALLER 1/4" PER FOOT; 3" AND LARGER PIPING 1/8" PER FOOT.

12. SLOPE GREASE WASTE LINES UPSTREAM OF GREASE INTERCEPTOR MINIMUM 1/4" PER FOOT.

#### B. SANITARY DRAIN PIPING TESTING: TEST DRAIN AND VENT PIPING PER CODE REQUIREMENTS. 22 40 00 PLUMBING FIXTURES

- SEE SCHEDULES FOR ADDITIONAL INFORMATION.
- 2. LIKE FIXTURE TYPE (FAUCETS, WATER CLOSETS, LAVS, ETC.) SHALL BE THE PRODUCT OF THE SAME MANUFACTURER. 3. SAFETY COVERS OVER EXPOSED WASTE AND SUPPLY PIPING AT ADA ACCESSIBLE FIXTURES SHALL BE LAV-GUARD BY TRUEBRO OR EQUIVALENT.
- 1. SAFING MATERIAL SHALL BE WATERPROOF WHEN SUBJECTED TO 2 FEET OF HYDROSTATIC HEAD WHEN TESTED IN ACCORDANCE WITH ASTM C1306 OR ASTM D4068, AND SHALL BE RECOGNIZED BY THE MANUFACTURER AS A SAFING

a. FURNISH AND INSTALL SAFING MATERIAL AT ALL SITE-CONSTRUCTED SHOWER STALLS.

LEG	EN[	)			
NOTE: AL	L SYMBOL	LS SHOWN MAY NOT APPEAR ON DRAWING	GS.		
SYM.	ABBR.	IDENTIFICATION	SYM.	<u>ABBR.</u>	<u>IDENTIFICATION</u>
<u>PIPING A</u>	CCESSORI	<u>IES</u>			
$\overline{}$	СО	CLEAN OUT	<b>—</b>		PIPING CAP
-	WCO	WALL CLEAN OUT			UNION
<b>—</b>	FCO	FLOOR CLEAN OUT (FLUSH)	<u>П</u> Ф		THERMOMETER
——	BFP	BACKFLOW PREVENTER	<u> </u>		PRESSURE GAUGE
<b>→</b> \$	. PRV	PRESSURE REDUCING VALVE	<u></u> —ı	НВ	HOSE BIBB
<b>—</b>		SHUTOFF VALVE	(O)	RD	ROOF DRAIN
-ф-		BALANCE VALVE	0	OF	OVERFLOW DRAIN
-⊘-		AUTOMATIC BALANCE VALVE	0	HD	HUB DRAIN
<b>-</b> &-		THERMOSTATIC BALANCE VALVE	0	HD-R	HUB DRAIN WITH REDUCER
N		CHECK VALVE	0	FD	FLOOR DRAIN
ਠ		GLOBE VALVE	X		FIXTURE UNIT (WATER SUPPLY, WASTE)
р	WHA	WATER HAMMER ARRESTOR			
		TEST CONNECTION			
<u>PIPING</u>					
	• CW	COLD HARD WATER PIPING	—P—	Р	PROCESS SEWER PIPING
	• HW	HOT WATER PIPING	—LS—	LS	LOW STRENGTH PROCESS SEWER PIPING
	• HWR	HOT WATER RETURN PIPING	—нѕ—	HS	HIGH STRENGTH PROCESS SEWER PIPING
<u>—</u> s—	SOFT	COLD SOFT WATER PIPING	—st—	ST	STORM PIPING
<b>—</b> 140S <b>—</b>	· 140 HWS	5 140° HOT WATER PIPING	—OF—	OF	OVERFLOW CONDUCTOR PIPING

HP-HW	HP HW	HIGH PRESSURE HOT WATER SUPPLY	AV	AV	ACID VENT PIPING
-HP-HWR-	HP HWR	HIGH PRESSURE HOT WATER RETURN	—CLW—	CLW	CLEARWATER DRAIN PIPING
-NP-CW-	NP	NON-POTABLE WATER PIPING	—CLV—	CLV	CLEARWATER VENT PIPING
-NP-HW-	NP HW	NON-POTABLE HOT WATER	<u>—</u> G—	G	GAS PIPING
-NP-HWR-	NP HWR	NON-POTABLE HOT WATER RETURN	——А—	AIR	AIR PIPING
—TW—	TW	TEMPERED WATER PIPING	<b>—</b> нѕ—	HS	HYDRAULIC SUPPLY PIPING
—SA—	SA	SANITARY SEWER PIPING	—нr—	HR	HYDRAULIC RETURN PIPING
—gw—	GW	GREASE WASTE PIPING	—NIT—	NIT	NITROGEN PIPING
——F—	F	FILTERED WATER PIPING	—co2—	CO2	CARBON DIOXIDE PIPING
MISCELLA	<u>NEOUS</u>				
•	EL	ELEVATION	$\Diamond$		DETAIL OR SECTION NUMBER SHEET NUMBER
<u>ABBREVI</u> A	<u>ATIONS</u>				
	AFF	ABOVE FINISHED FLOOR		ОС	ON CENTER
	AFG	ABOVE FINISHED GRADE		PC	PLUMBING CONTRACTOR
	BJ	BETWEEN JOISTS		RC	REFRIGERATION CONTRACTOR
	EC	ELECTRICAL CONTRACTOR		RI	ROUGH IN
	FPC	FIRE PROTECTION CONTRACTOR		TJ	THRU JOISTS
	GC	GENERAL CONTRACTOR / CONSTRUCTION MANAGER		TTS	TIGHT TO STRUCTURE
	НС	HVAC CONTRACTOR		TYP	TYPICAL

—AW— AW ACID WASTE PIPING

VTR VENT THRU ROOF

WP WEATHER PROOF

FIRE - 3 HOUR

FIRE - 4 HOUR

-140R- 140 HWR 140° HOT WATER RETURN PIPING

IE INVERT ELEVATION

NIC NOT IN CONTRACT

NTS NOT TO SCALE

FIRE - 1 HOUR

FIRE - 2 HOUR

FIRE RATED WALLS

HP-CW— HP CW HIGH PRESSURE COLD WATER SUPPLY

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PROJECT INFORMATION

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PROFESSIONAL SEAL

**SHEET DATES** FEB. 14, 2023 REVISIONS MAY 10, 2023

**JOB NUMBER** 2255300

**SHEET NUMBER** 

PLUMBING LEGEND AND SPECIFICATIONS

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LEGEND AND SPECIFICATIONS

WASTE AND VENT ISOMETRIC

SPECIFICATIONS

FIRST FLOOR PLAN

WATER ISOMETRICS

UNDERGROUND PLAN

**SHEET NAME** 

SHEET INDEX

P1.2 ROOF PLAN

DETAILS

DETAILS

SCHEDULES

SCHEDULES

PLUMBING

P0.1

P1.1

P3.1

P4.0

- b. INSTALL SAFING MATERIAL BENEATH THE FINISHED FLOOR OF THE ENTIRE ENCLOSURE OR ROOM AND UPWARD ALONG THE SIDES TO A MINIMUM OF 6" ABOVE THE CURB OR MAXIMUM WATER LEVEL, AND AT THE CORNERS TO A HEIGHT OF 6 FEET AND AT LEAST 3" IN EACH DIRECTION FROM THE CORNERS.
- a. NOT REQUIRED FOR AREAS OVER UNEXCAVATED PORTIONS OF A BUILDING.
- b. FURNISH AND INSTALL SAFING MATERIAL EXTENDING MINIMUM 12" FROM THE DRAIN. INSTALLATION

#### INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

SCHEDULES AND DETAILS.

- PROVIDE CHROME PLATED RIGID SUPPLIES TO FIXTURES WITH STOPS, REDUCERS, AND ESCUTCHEONS UNLESS OTHERWISE NOTED IN SCHEDULES AND DETAILS.
- SEAL FIXTURES TO WALL AND FLOOR SURFACES WITH MILDEW-RESISTANT SILICONE SEALANT, COLOR TO MATCH
  FIXTURE.
   INSTALL BARRIER-FREE FIXTURES IN COMPLIANCE WITH LOCAL CODES AND FEDERAL ADA ACCESSIBILITY GUIDELINE
- INSTALL BARRIER-FREE FIXTURES IN COMPLIANCE WITH LOCAL CODES AND FEDERAL ADA ACCESSIBILITY GUIDELINES.
   EXPOSED TRAPS, PIPING, AND ESCUTCHEONS SHALL BE CHROME PLATED BRASS UNLESS OTHERWISE NOTED IN
- 6. ADJUST LAVATORY THERMOSTATIC MIXING VALVE TO 95 DEG F MAXIMUM OUTLET TEMPERATURE.



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PROJECT INFORMATION

VELOPMENT

• ROSEVILLE, MN 5511

QUATTRO DEVEL
TWIN LAKES STATION - LOT 2 • RO

DOLECCIONIAI CEVI

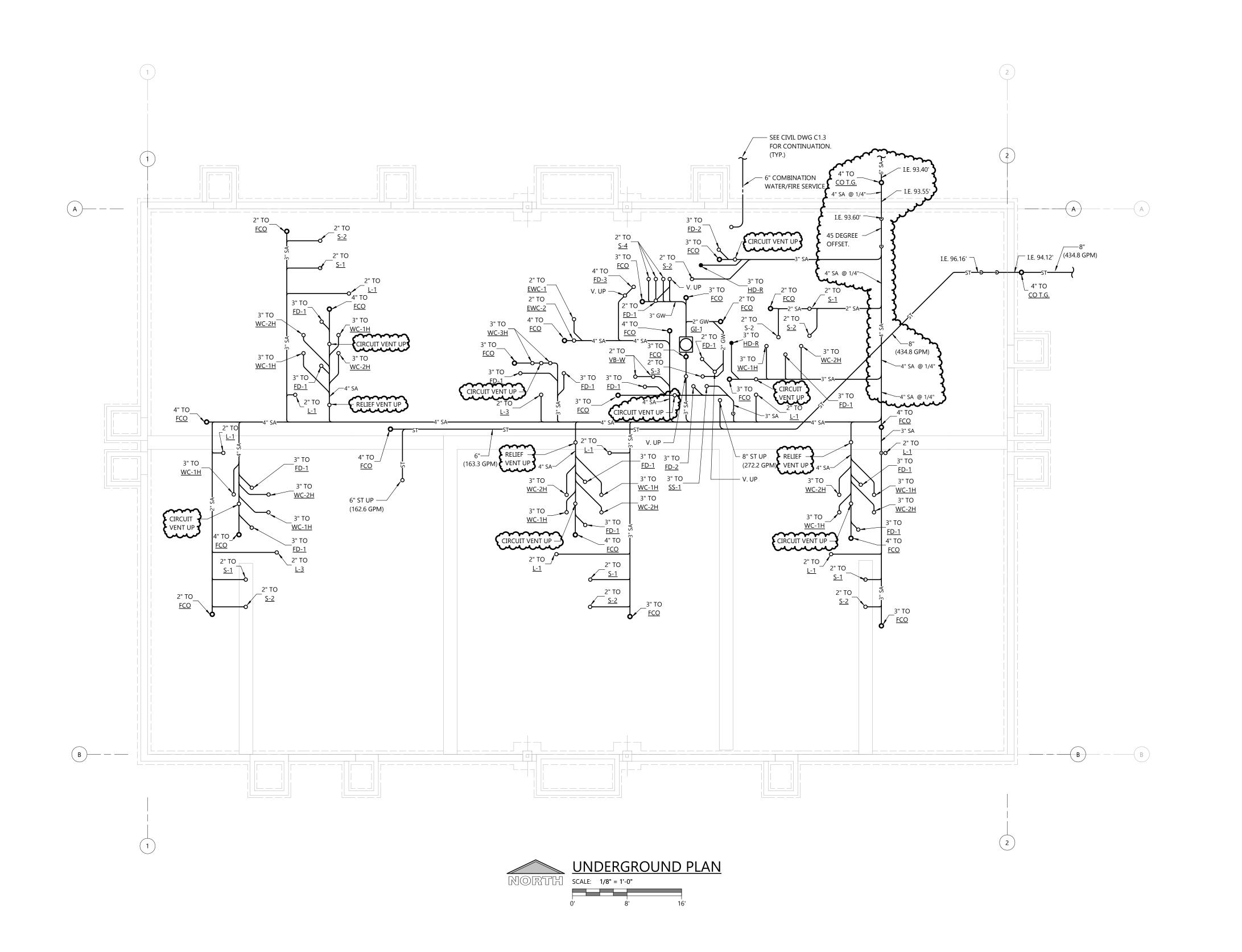
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SHEET ISSUE FEB. 14, 2023

REVISIONS

JOB NUMBER 2255300

SHEET NUMBER
P0.2



# **GENERAL NOTES:**

 NO UNDERGROUND BUILDING DRAIN PIPING SHALL BE INSTALLED UNTIL BUILDING SEWERS ARE BROUGHT TO THE BUILDING AND INVERT ELEVATIONS VERIFIED. COSTS INCURRED FOR FAILURE TO DO SO SHALL BE THE CONTRACTOR'S RESPONSIBILITY.

- ALL PIPING IS TO BE CONCEALED. IF BUILDING CONSTRUCTION DOES NOT PERMIT CONCEALING PIPING, LOCATIONS AND ROUTING ARE TO BE APPROVED BY ARCHITECT/OWNER PRIOR TO INSTALLATION.
- INSTALL CLEANOUTS AT STACKS WHICH PENETRATE THE LOWEST FLOOR LEVEL 28" AFF UNLESS NOTED OTHERWISE.
- FLOOR AND WALL CLEANOUT LOCATIONS NOT PERMITTED TO BE MOVED WITHOUT APPROVAL OF ARCHITECT/ENGINEER.
- SEE STRUCTURAL S1 SHEETS FOR FLOOR DRAIN RIM ELEVATIONS.
- SLOPE ALL ST/OF PIPING AT 1/8"/FT UNLESS NOTED OTHERWISE.
- INSTALL HOSE BIBBS AT 10" AFF

# **KEYNOTES:**

1 CONCRETE PAD.

2 INTAKE AND EXHAUST FLUES UP TO VENTS THRU ROOF. INSTALL PER MANUFACTURER REQUIREMENTS.



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PROJECT INFORMATION

CHILDHOOD

QUA TWIN LAKES

PROFESSIONAL SEAL

PROPOSED

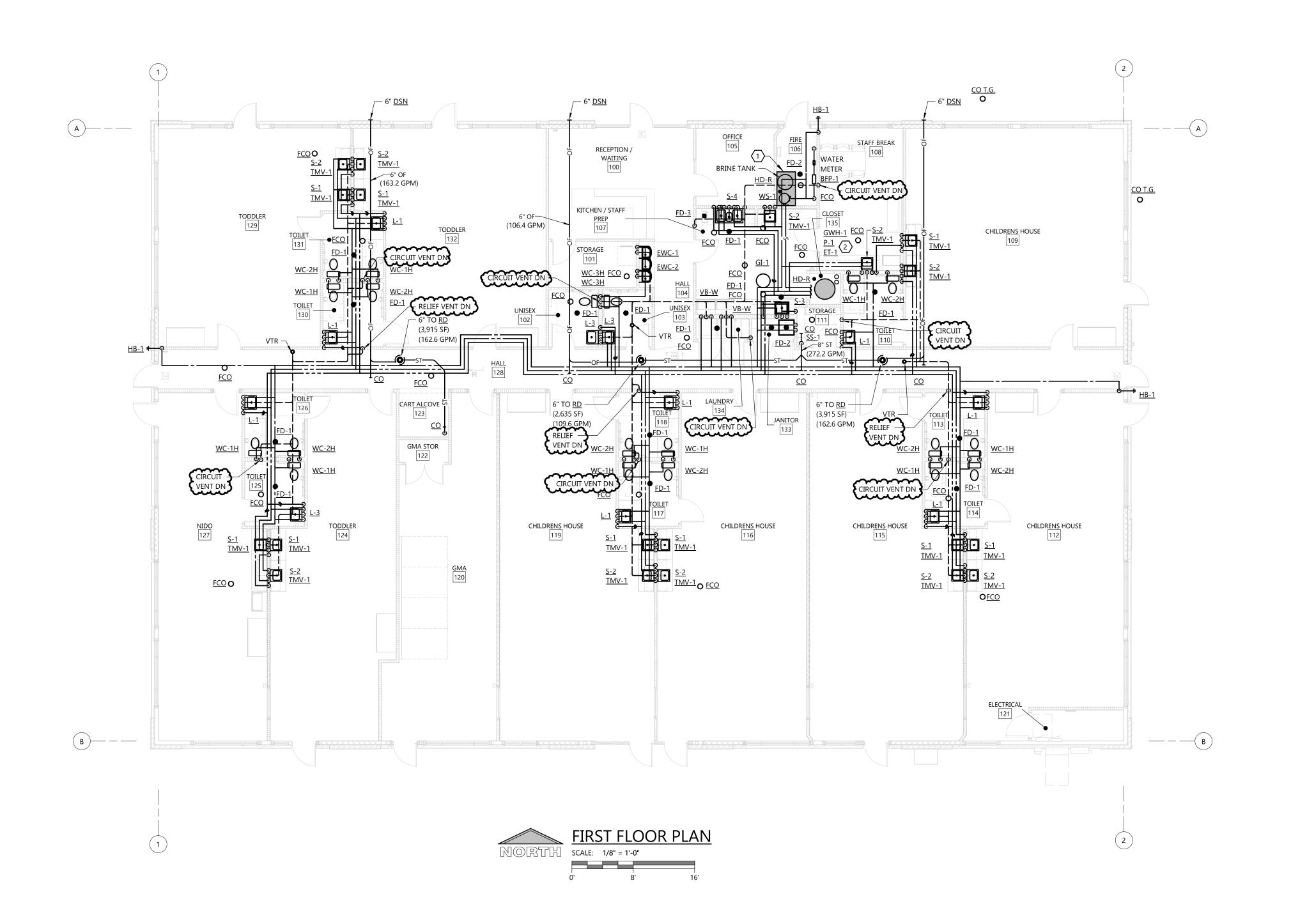
SHEET DATES FEB. 14, 2023 REVISIONS APR. 19, 2023 MAY 10, 2023 JUNE 5, 2023

JOB NUMBER 2255300

SHEET NUMBER

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PLUMBING UNDERGROUND PLAN



# **GENERAL NOTES:**

 NO UNDERGROUND BUILDING DRAIN PIPING SHALL BE INSTALLED UNTIL BUILDING SEWERS ARE BROUGHT TO THE BUILDING AND INVERT ELEVATIONS VERIFIED. COSTS INCURRED FOR FAILURE TO DO SO SHALL BE THE CONTRACTOR'S RESPONSIBILITY.

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- INSTALL CLEANOUTS AT STACKS WHICH PENETRATE THE LOWEST FLOOR LEVEL 28" AFF UNLESS NOTED OTHERWISE.
- FLOOR AND WALL CLEANOUT LOCATIONS NOT PERMITTED TO BE
- SEE STRUCTURAL S1 SHEETS FOR FLOOR DRAIN RIM ELEVATIONS.

MOVED WITHOUT APPROVAL OF ARCHITECT/ENGINEER.

- SLOPE ALL ST/OF PIPING AT 1/8"/FT UNLESS NOTED OTHERWISE.
- INSTALL HOSE BIBBS AT 10" AFF

# KEYNOTES:

1 CONCRETE PAD.

2 INTAKE AND EXHAUST FLUES UP TO VENTS THRU ROOF. INSTALL PER MANUFACTURER REQUIREMENTS.



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**•** 113

DEVELOPMENT
OT 2 • ROSEVILLE, MN 5511

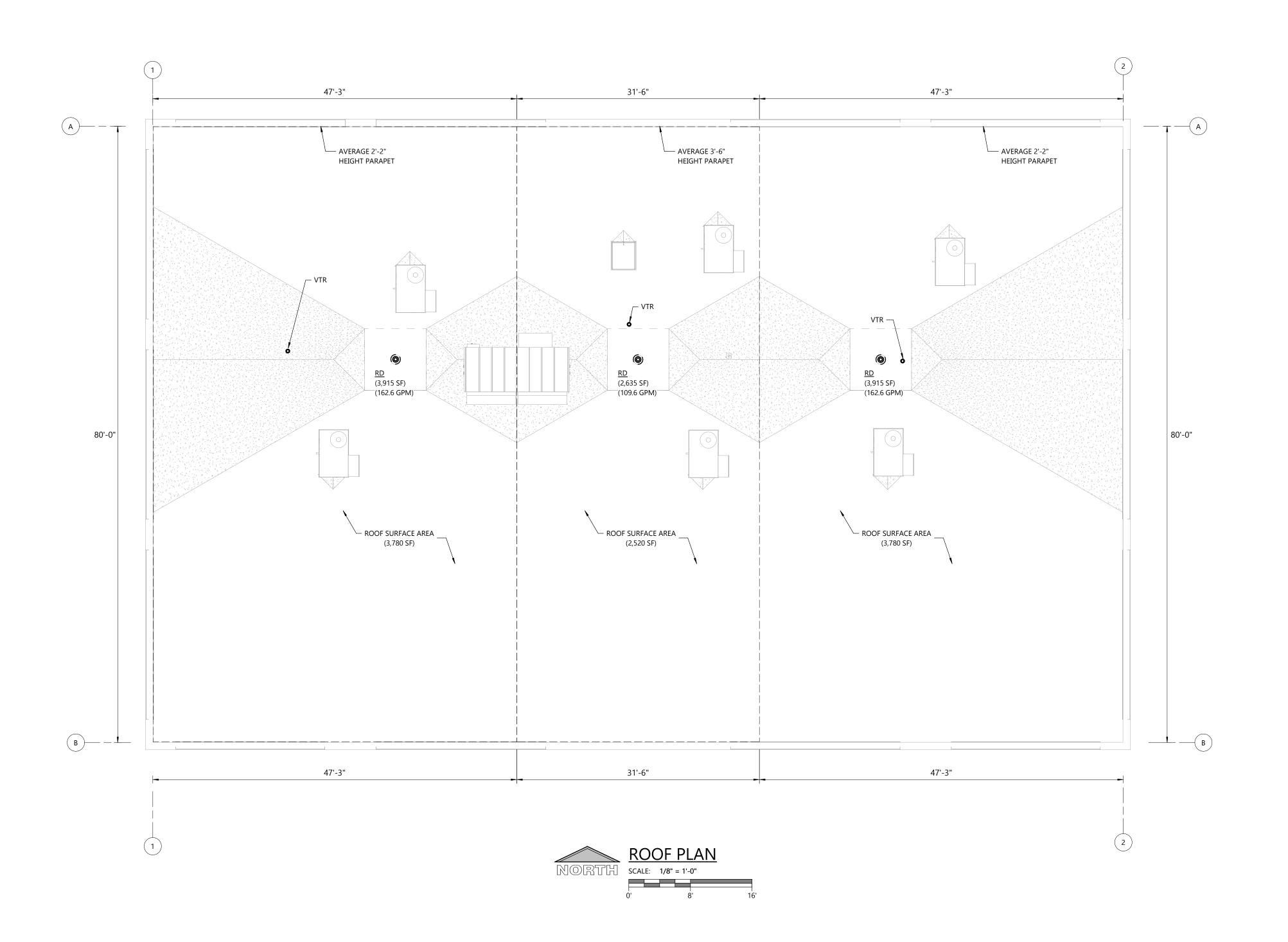
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AD3 APR. 19, 2023 CB1 MAY 10, 2023	SHEET ISSUE	FEB. 14, 202
AD3 APR. 19, 2023 CB1 MAY 10, 2023	REVISIONS	
CB1 MAY 10, 2023	AD2	MAR. 23, 2023
	AD3	APR. 19, 2023
CB2 JUNE 5, 2023	CB1	MAY 10, 2023
	CB2	JUNE 5, 2023

JOB NUMBER 2255300

SHEET NUMBER
P1.1



# **GENERAL NOTES:**

NO UNDERGROUND BUILDING DRAIN PIPING SHALL BE INSTALLED UNTIL BUILDING SEWERS ARE BROUGHT TO THE BUILDING AND INVERT ELEVATIONS VERIFIED. COSTS INCURRED FOR FAILURE TO DO SO SHALL BE THE CONTRACTOR'S RESPONSIBILITY.

- ALL PIPING IS TO BE CONCEALED. IF BUILDING CONSTRUCTION
  DOES NOT PERMIT CONCEALING PIPING, LOCATIONS AND ROUTING
  ARE TO BE APPROVED BY ARCHITECT/OWNER PRIOR TO
  INSTALLATION.
- INSTALL CLEANOUTS AT STACKS WHICH PENETRATE THE LOWEST FLOOR LEVEL 28" AFF UNLESS NOTED OTHERWISE.
- FLOOR AND WALL CLEANOUT LOCATIONS NOT PERMITTED TO BE MOVED WITHOUT APPROVAL OF ARCHITECT/ENGINEER.
- SEE STRUCTURAL S1 SHEETS FOR FLOOR DRAIN RIM ELEVATIONS.
- SLOPE ALL ST/OF PIPING AT 1/8"/FT UNLESS NOTED OTHERWISE.
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# **KEYNOTES:**

1 CONCRETE PAD.

2 INTAKE AND EXHAUST FLUES UP TO VENTS THRU ROOF. INSTALL PER MANUFACTURER REQUIREMENTS.



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SED EARLY CHILDHOOD SCHOOL FOR:

TTRO DEVELOPMENT

S STATION - LOT 2 • ROSEVILLE, MN 55

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SHEET DATES

SHEET ISSUE MAY 10, 2023

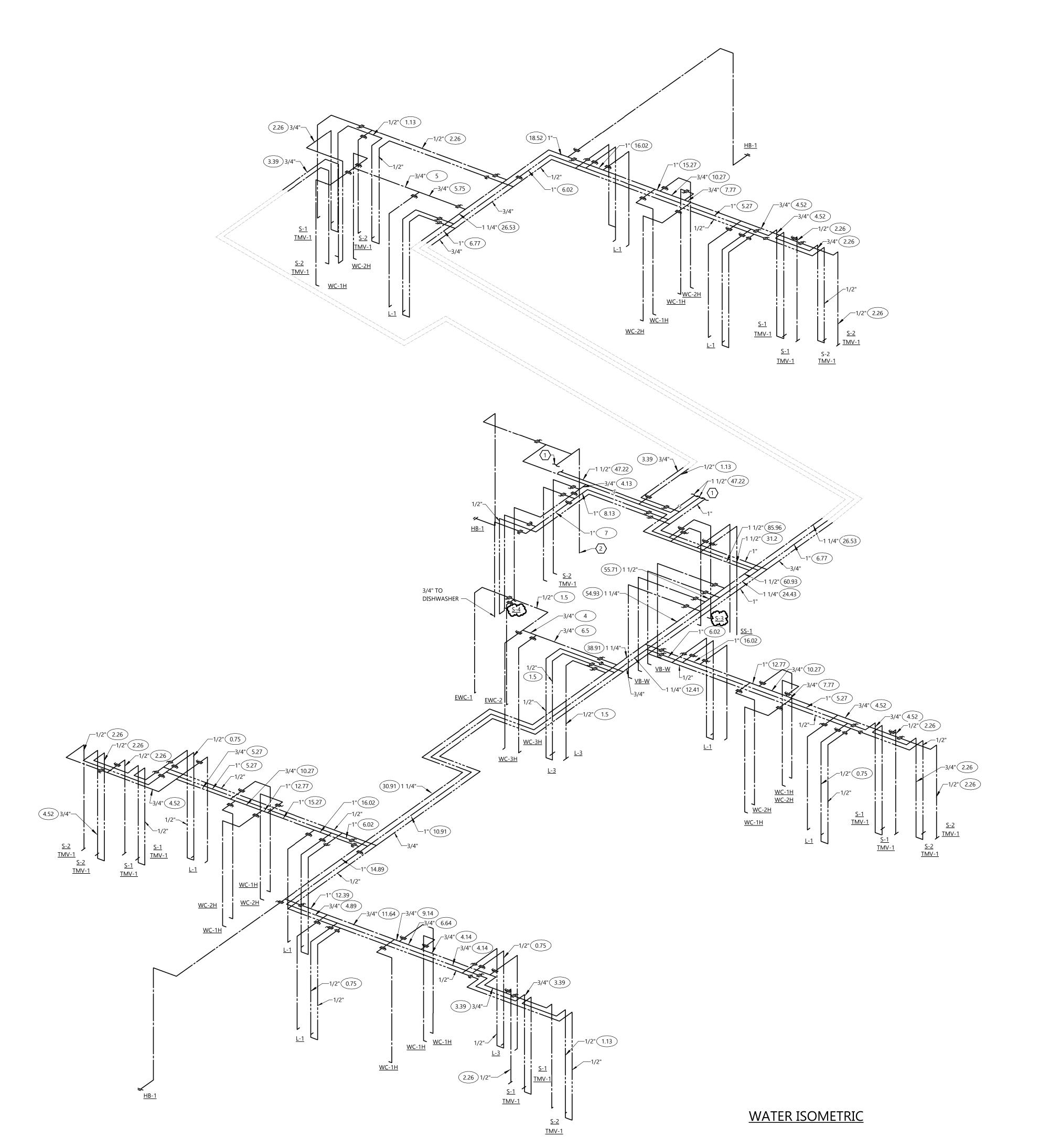
REVISIONS

CB1 MAY 10, 2023

2255300

SHEET NUMBER

P1.2



# **GENERAL NOTES:**

SEE FIXTURE UNIT SCHEDULE ON SHEET P2.0 FOR RUNOUT PIPING SIZE TO FIXTURE

• PIPING SIZED BASED ON TYPE L COPPER TUBING. IF CPVC OR PEX IS SUBSTITUTED RESIZE PER TABLE IN WATER CALCULATIONS.

• PIPING INDICATED AS PEX OR CPVC, SIZED AS PEX OR CPVC.

# **KEYNOTES:**

SEE WATER SOFTENER/HEATER PIPING DETAIL FOR CONTINUATION.

2 SEE WATER METER PIPING DETAIL FOR CONTINUATION.

## **FIXTURE UNITS**

		WASTE			c	COLD WATER			IOT WA	TOTAL	<b>TOTAL WATER</b>	
NO.	FIXTURE	UNITS	TOTAL	TRAP SIZE	UNITS	TOTAL	BRANCH SIZE	UNITS	TOTAL	BRANCH SIZE	UNITS	TOTAL
1	3/4" HOSEBIBB #1	-	-	-	2.5	2.5	3/4"	-	-	-	5	5
1	3/4" HOSEBIBB #2	-	-	-	1	1	3/4"	-	-	-	5	5
1	3/4" HOSEBIBB #3	-	-	-	1	1	3/4"	-	-	-	5	5
2	CLOTHES WASHER - COIN OP	3	6	2"	3	6	3/4"	3	6	3/4"	4	8
1	DISHWASHER	-	-	2"	-	-	-	4	4	3/4"	4	4
1	EWC	0.5	0.5	1 1/4"	0.5	0.5	1/2"	-	-	-	0.5	0.5
1	DUAL HEIGTH EWC	1	1	1 1/4"	1	1	1/2"	-	-	-	1	1
2	FLOOR DRAIN- 2"	4	8	2"	-	-	-	-	-	-	-	-
12	EMERGENCY FLOOR DRAIN- 3"	0	0	3"	-	-	-	-	-	-	-	-
2	FLOOR DRAIN- 3"	6	12	3"	-	-	-	-	-	-	-	-
1	FLOOR DRAIN- 4" & LARGER	8	8	4"	-	-	-	-	-	-	-	-
2	HUB DRAIN - 3"	6	12	3"	-	-	-	-	-	-	-	-
11	LAV - SINGLE	1	11	1 1/4"	0.75	8.25	1/2"	0.75	8.25	1/2"	1	11
17	SINK- EXAM/TREAT/CLASS	2	34	1 1/2"	1.13	19.21	1/2"	1.13	19.21	1/2"	1.5	25.5
2	SINK- HAND WASH	2	4	1 1/2"	1.13	2.26	1/2"	1.13	2.26	1/2"	1.5	3
1	SINK- 3 COMP.	4	4	2"	3	3	1/2"	3	3	1/2"	4	4
1	SINK- PREP SINK	3	3	2"	2.25	2.25	1/2"	2.25	2.25	1/2"	3	3
1	SINK- SERVICE- 3"	3	3	3"	2.25	2.25	1/2"	2.25	2.25	1/2"	3	3
19	WATER CLO- TANK	4	76	3"	2.5	47.5	1/2"	-	-	-	2.5	47.5
79	TOTAL		182.5			96.72			47.22			125.5

# **WATER CALCULATIONS**

WATI	ER PRESSURE DATA		
1	STATIC PRESSURE AT MAIN	69.4	PSIG
2	RESIDUAL PRESSURE AT MAIN	69	PSIG
3	RESIDUAL FLOW AT MAIN	1294	GPM
4	BUILDING FIXTURE UNITS	125.5	F.U.
5	PREDOMINATE FLUSH TYPE	TANK	
6	CONTINUOUS FLOW GPM	0	GPM
7	BUILDING DEMAND	49.3	GPM
8	RESIDUAL PRESSURE AT BUILDING DEMAND	69.4	<b>PSIG</b>
9	SAFETY FACTOR	5	<b>PSIG</b>
10	PRESSURE AVAILABLE FOR DOMESTIC USE	64.4	<b>PSIG</b>

#### WATER SERVICE AND DISTRIBUTION SIZING DATA

11 ELEVATION OF RESIDUAL TEST HYDRANT 12 ELEVATION OF WATER METER 13 ELEVATION DIFFERENCE TEST HYDRANT TO METER 14 WATER METER SIZE 15 DEVELOPED LENGTH MAIN TO METER 16 WATER SERVICE SIZE	101.50 FEET 105.00 FEET 3.50 FEET 1 INCHES 198 FEET 6 INCHES
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------

### PRESSURE AVAILABLE AFTER METER

17	PRESSURE DROP BETWEEN MAIN AND METER	0.01 PSIG/100'
18	FRICTION PRESSURE LOSS BETWEEN MAIN AND METER	0.0 PSIG
19	ELEVATION PRESSURE LOSS BETWEEN MAIN AND METER	1.5 PSIG
20	METER PRESSURE LOSS	6 PSIG
21	BACKFLOW PREVENTER PRESSURE LOSS	13 PSIG
22	PRESSURE AVAILABLE AFTER METER	43.9 PSIG

## WATER DISTRIBUTION SIZING - COLD WATER

Α	AVAILABLE BUILDING WATER PRESSURE	43.9 PSIG					
В	START POINT TAG (SEE ISOMETRIC FOR TAG LOCATION)	METER					
C	DIST. PREVIOUS START POINT TO THIS START POINT				WSFU@	98'/SEC	
D	UNIFORM LOSS PREV. START POINT TO THIS START POINT			Copper	CF	VC	PEX
Ε	PIPE PRESSURE DROP FROM METER TO START POINT		Pipe	Flush	Flu	ısh	Flush
F	CONTROLLING FIXTURE: ID:	WC-1H	size	tank	ta	nk	tank
	ROOM NAME & NO.:	TOILET 124	1/2	4.0	3	.0	2.5
	PRESSURE REQUIRED	20 PSIG	3/4	14.0	10	0.0	5.0
G	ELEV. DIFF. BETW. METER AND CONTROLLING FIXTURE	2 FEET	1	31.0	23	3.0	19.0
Н	PRESSURE LOSS DUE TO WATER SOFTENER	0 PSIG	1 1/4	58.0	4	1.0	34.0
I	PRESSURE LOSS DUE TO MIXING VALVE	0 PSIG	1 1/2	107.0	68	3.0	55.0
J	PRESSURE AVAILABLE FOR PIPING PRESSURE DROP	23.0 PSIG	2	260.0	17	1.0	135.0
K	DEVELOPED LENGTH START PT. TO CONTR. FIXTURE	145 FEET	2 1/2	469.0	38	5.0	
L	EQUIVALENT LENGTH START PT. TO CONTR. FIXTURE	218 FEET	3	752.0	65	5.0	
M	PRESSURE AVAILABLE FOR UNIFORM LOSS	10.57 PSIG/100'	4	1792.0	109	94.0	

# WATER DISTRIBUTION SIZING - HOT WATER

C DI D UI E PI	TART POINT TAG (SEE ISOMETRIC FOR TAG LOCATION) IST. PREVIOUS START POINT TO THIS START POINT NIFORM LOSS PREV. START POINT TO THIS START POINT IPE PRESSURE DROP FROM METER TO START POINT ONTROLLING FIXTURE:  ROOM NAME & NO.:	METER  S-1 NIDO 127	Pipe size	WSFU@5 Copper Flush tank	5'/SEC - C	CP & PEX CPVC Flush tank	F	FTGS PEX lush ank
E PI	IPE PRESSURE DROP FROM METER TO START POINT ONTROLLING FIXTURE: ID:		size	Flush tank		Flush	FI	lush
	ONTROLLING FIXTURE: ID:		size	tank		1		
F C						tank	ta	ank
	ROOM NAME & NO.	NIDO 127	1/2	1 4 0				
	NOOM NAME & NO	11200 127	1/2	1.9		2.0		1.3
	PRESSURE REQUIRED	8 PSIG	3/4	6.3		8.0	í	2.2
G EL	LEV. DIFF. BETW. METER AND CONTROLLING FIXTURE	3 FEET	1	15.0		17.5	8	8.8
H PF	RESSURE LOSS DUE TO WATER SOFTENER	11 PSIG	1 1/4	32.5		33.0	1	16.6
I PF	RESSURE LOSS DUE TO MIXING VALVE	4 PSIG	1 1/2	66.9		63.0	3	31.3
J PF	RESSURE AVAILABLE FOR PIPING PRESSURE DROP	19.6 PSIG	2	162.5		171.0	8	34.4
K D	EVELOPED LENGTH START PT. TO CONTR. FIXTURE	211 FEET	2 1/2	293.1		385.0		
L EC	QUIVALENT LENGTH START PT. TO CONTR. FIXTURE	317 FEET	3	470.0		655.0		
_M PF	RESSURE AVAILABLE FOR UNIFORM LOSS	6.18 PSIG/100'	4	1120.0		1094.0		



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PROJECT INFORMATION

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SHEET DATES FEB. 14, 2023 REVISIONS APR. 19, 2023 MAY 10, 2023

JOB NUMBER 2255300

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# **GENERAL NOTES:**

SEE UNDERGROUND PLAN AND FIXTURE UNIT SCHEDULE FOR RUNOUT TRAP SIZE TO FIXTURE.

# **KEYNOTES:**

1 EMERGENCY FLOOR DRAIN.





PROJECT INFORMATION

DEVELOPMENT
- LOT 2 • ROSEVILLE, MN 55113 PROPOSED EARLY CHILDHOOD SCHOOL FOR: ATTRO ES STATION

QUA TWIN LAKES

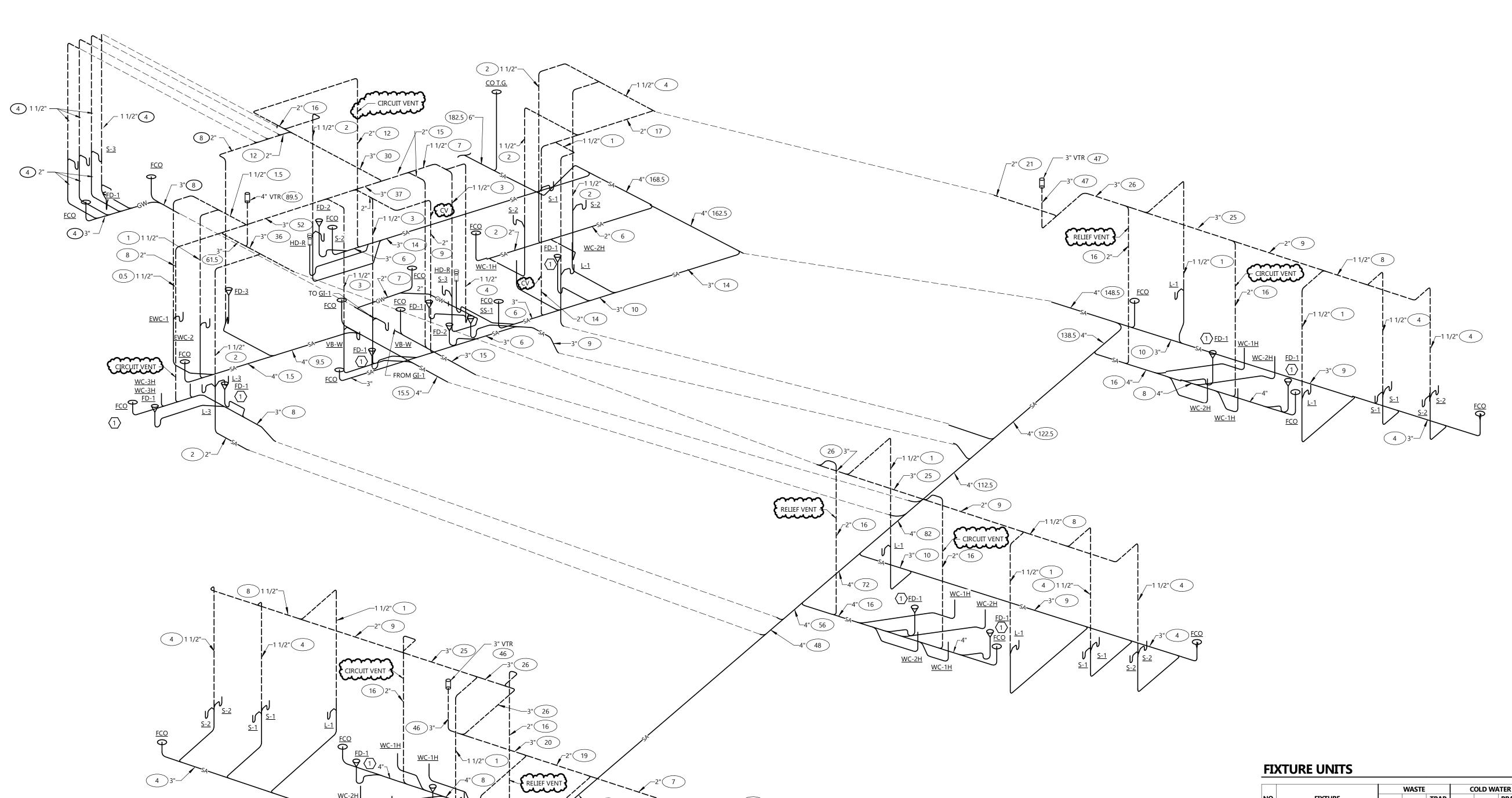
PROFESSIONAL SEAL

SHEET DATES FEB. 14, 2023 REVISIONS APR. 19, 2023 MAY 10, 2023 JUNE 5, 2023

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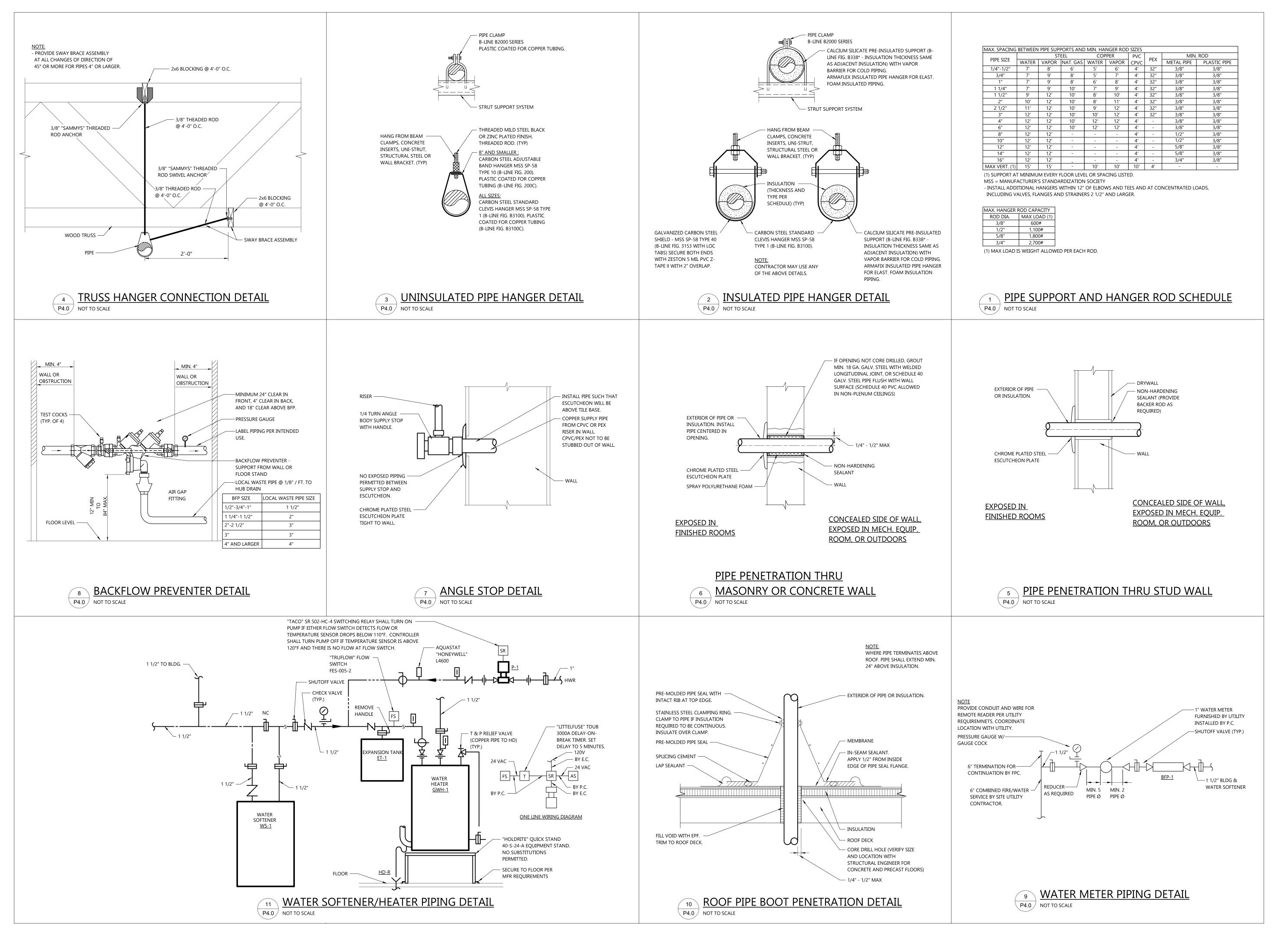


1 1/2" 2

WASTE AND VENT ISO

CIRCUIT VENT

			WASTE			COLD WATER			HOT WA	TOTAL WATER		
NO.	FIXTURE	UNITS	TOTAL	TRAP SIZE	UNITS	TOTAL	BRANCH SIZE	UNITS	TOTAL	BRANCH SIZE	UNITS	TOTA
1	3/4" HOSEBIBB #1	-	-	-	2.5	2.5	3/4"	-	-	-	5	5
1	3/4" HOSEBIBB #2	-	-	-	1	1	3/4"	-	-	-	5	5
1	3/4" HOSEBIBB #3	-	-	-	1	1	3/4"	-	-	-	5	5
2	CLOTHES WASHER - COIN OP	3	6	2"	3	6	3/4"	3	6	3/4"	4	8
1	DISHWASHER	-	-	2"	-	-	-	4	4	3/4"	4	4
1	EWC	0.5	0.5	1 1/4"	0.5	0.5	1/2"	-	-	-	0.5	0.5
1	DUAL HEIGTH EWC	1	1	1 1/4"	1	1	1/2"	-	-	-	1	1
2	FLOOR DRAIN- 2"	4	8	2"	-	-	-	-	-	-	-	-
12	EMERGENCY FLOOR DRAIN- 3"	0	0	3"	-	-	-	-	-	-	-	-
2	FLOOR DRAIN- 3"	6	12	3"	-	-	-	-	-	-	-	-
1	FLOOR DRAIN- 4" & LARGER	8	8	4"	-	-	-	-	-	-	-	-
2	HUB DRAIN - 3"	6	12	3"	-	-	-	-	-	-	-	-
11	LAV - SINGLE	1	11	1 1/4"	0.75	8.25	1/2"	0.75	8.25	1/2"	1	11
17	SINK- EXAM/TREAT/CLASS	2	34	1 1/2"	1.13	19.21	1/2"	1.13	19.21	1/2"	1.5	25.5
2	SINK- HAND WASH	2	4	1 1/2"	1.13	2.26	1/2"	1.13	2.26	1/2"	1.5	3
1	SINK- 3 COMP.	4	4	2"	3	3	1/2"	3	3	1/2"	4	4
1	SINK- PREP SINK	3	3	2"	2.25	2.25	1/2"	2.25	2.25	1/2"	3	3
1	SINK- SERVICE- 3"	3	3	3"	2.25	2.25	1/2"	2.25	2.25	1/2"	3	3
19	WATER CLO- TANK	4	76	3"	2.5	47.5	1/2"	-	-	-	2.5	47.5
79	TOTAL		182.5			96.72			47.22			125.5



EXCEL

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100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

COLLABORATION

Quattro Development

PROJECT INFORMATION

TTRO DEVELOPMENT
STATION - LOT 2 • ROSEVILLE, MN 551

QUA TWIN LAKES

PROFESSIONAL SEAL

**PROP**(

SHEET DATES

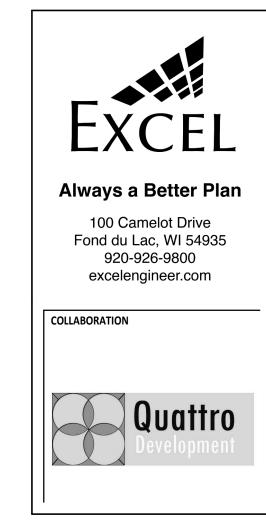
SHEET ISSUE FEB. 14, 2023

REVISIONS

JOB NUMBER 2255300

P4.0





PROJECT IN	FORMATION
PROPOSED EARLY CHILDHOOD SCHOOL FOR:	QUATTRO DEVELOPMENT TWIN LAKES STATION - LOT 2 • ROSEVILLE, MN 55113
PROFESSIONAL SI	EAL
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P4.1

					C	OPPER					PEX					PVC							CPV	/C				CAS	T IRON	
			C12200 TUBE		FIT	TINGS		J	OINTS	PIPE	FITTINGS	JOINTS		PI	PE		FITTI	NGS	JOI	INT		PIPE		FITT	ING .	OINT	PIPE &	t FITTING	JOI	NTS
SERVICE	LOCATION	PIPE SIZE	ASTM B88 TYPE L HARD DRAWN ASTM B88 TYPE K SOFT ASTM B819 TYPE K HARD DRAWN ASTM B280 TYPE K ACR HARD DRAWN	ASME B16.15 CAST BRONZE THREA	AS	ASTM B-88 CDA 89833 CAST OR ASTM B-75 C12200 WROT COPPER ALLOY GROOVED FITTING. (5)	ASME B16.22 WROUGHT COPPER SO	LEAD FREE SOLDER ASTM 832 AWS A5 8 BC.IP SII VER BRAZE	COLD PRESS MECH. JOINT (4)	ASTM F876, F877, F2023	ASTM F1960, F2159	PER MFR REQUIREMENTS	SCH. 40 PRESSURE RATED ASTM D1785	SCH. 80 PRESSURE RATED ASTM D1785  DWV NON-PRESS. RATED ASTM F891	40 NON-PRESS. RATED ASTM D D2665	SDR 35 NON-PRESS. ASTM D3034	80 ASTM	SCH. 40 DWV ASTM D2665 SDR 35 ASTM D3034	ASTM F656 PRIMER, ASTM D2564 SOLVENT	ASTM F477 ELASTOMERIC GASKET	SCHEDULE	ASTM D2846 - SDR 11 ASTM D1784 CI ASS 23447 E441	ASTM F2618, D331	ASTM D1784,	ASTM D1784, F439	SOLVENT CEMENT AST M F493, NSF 14	HUBLESS ASTM A888, CISPI 301	BELL AND SPIGOT ASTM A74 SERVICE WEIGHT	ASTM C1277, CISPI 310 STD. TYPE 304 S.S. CLAMP & SHIELD. ASTM C564 RUBBER GASKET.	ASTM C1540, CISPI 310 HEAVY DUTY
WATER	ABOVE GROUND	ALL	X	X	X X	X	X	X	X :	X	Х	X									(16)	X X			Х	Х				
ANITARY, STORM AND CLEAR WATER	ABOVE GROUND	ALL												X				X	X								Х		<=4"	>4
DRAIN AND VENT	UNDER BUILDING	ALL											Х		Х			Х	X								Х	Х	<=4"	>4
MM. DISH, PAN, UTENSIL WASHER DRAIN  D WASTE (VENT PIPING PER SAN. DRAIN)	WITHIN 15' OF HUB																										Х	Х	<=4"	>
ECT VENT WATER HEATER VENT AND EXHAUST	ALL	ALL											х			\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	K		Х											

. ALL IMPORTED MATERIAL SHALL BE CERTIFIED BY A DOMESTIC THIRD PARTY FOR COMPLIANCE WITH STANDARD.

(1) LEAD-FREE DEZINCIFICATION-RESISTANT (DZR) BRASS ALLOY C87850 PER ASTM B584 (2) LEAD-FREE PER ASTM B75 ALLOY C12200

(4) INSTALL PER MANUFACTURER'S INSTRUCTIONS. 50 YEAR WARRANTY AGAINST MANUFACTURING DEFECTS. (5) INSTALL PER MANUFACTURER'S INSTRUCTIONS. 10 YEAR WARRANTY AGAINST MANUFACTURING DEFECTS.

(6) GRINNELL FIG 6400 OR EQUIVALENT. DUCTILE IRON ASTM A536 GRADE 65-45-12 HOUSING WITH COPPER ACRYLIC ENAMEL COATING,

BOLTS CONFORMING TO SAE J429 GRADE 5 WITH ASTM A563 GRADE A HEX NUTS (BOTH ZINC PLATED), GRADE "EP" EPDM (COPPER COLOR CODE) NSF 61 APPROVED COMPOUND GASKET SUITABLE FOR WATER TEMPERATURE. (16) PIPING SHALL BE SCH. 80 SPEARS EVERTUFF FOR 2 1/2" THROUGH 4" SIZES. GREATER THAN 4" CPVC NOT PERMITTED.

W	<b>ATER</b>	SOI	FTEN	<b>NER SC</b>	HEDU	LE (\	NS)							
	WATER			MIN	<b>ERAL TANI</b>	(				BRINI	E TANK			
NO.	HARD-	FLOW	P.D.	SIZE	BACK-	RESIN	ME	TER	CAPA	CITY	SIZE	<b>DRY SALT</b>	MODEL	REMARKS
	NESS	GPM	PSI	DIA x HT	WASH	CU. FT.	SIZE	P.D.	GRAINS	@ LBS	DIA x HT	<b>STORAGE</b>		
1	6	27	10	16" x 65"	5.3 GPM	4	1.5"	0.5	112,000	40	24" x 41"	640	H151-120	HELLENBRAND

 $\hbox{-} \ ACCEPTABLE \ MANUFACTURERS: \ ADDIE, \ HELLENBRAND, \ CULLIGAN, \ WATER \ CONTROL, \ WATER-RIGHT.$ 

- PROVIDE COMPLETE FILL OF BRINE TANK AT PROJECT COMPLETION. - PROVIDE "PROFLOW" ELECTRONIC METER CONTROLLER HEADS PROGRAMMED FOR IMMEDIATE REGENERATION BASED ON FLOW FOR EACH MINERAL TANK.

	EXI	PANSIC	N TAN	K SC	HED	ULE (E	<b>T</b> )						
	NO.	MOUNTING	TANK TYPE	CONN. SIZE	TANK CAP. (GAL.)	ACCEPT. CAPACITY (GAL.)	PRECHARGE PRESSURE (PSIG)	WORKING PRESS (PSIG)	DIA.	HEIGHT	WEIGHT FILLED (LBS.)	MODEL	REMARKS
I	1	PIPE	DIAPHRAGM	3/4"	9	4.1	70	150	12.5"	18.9"	50	PH 25	FLEXCON

INTERIOR GREASE INTERCEPTOR SCHEDULE	(GI
--------------------------------------	-----

- ACCEPTABLE MANUFACTURERS: FLEXCON, AMTROL, WESSELS, ZILMET.

	NO.	LOC.	SIZE L x W x H	GPM	GREASE CAPACITY (LBS.)	LIQUID CAPACITY (GALLONS)	INLET & OUTLET SIZE	MAT'L	RECESS	EXTENSIO N	MODEL	REMARKS
	1	107	37"X38"X15"	50	272.7	40	3"	(1)	FULL	YES	GB-3	SCHIER

- ACCEPTABLE MANUFACTURERS: SCHIER, STRIEM, ENDURA, J.R. SMITH, WATTS, GREEN TURTLE, MIFAB. - FULLY RECESSED INTERCEPTORS TOPS FLUSH WITH FLOOR, AND ANCHOR FLANGE.

(1) HIGH DENSITY POLYETHYLENE BODY.

			COMPAR	RTMENT			0.75 x	FLOW
FIXTURE	NUMBER	LENGTH	WIDTH	DEPTH	VOLUME	VOLUME	VOLUME	RATE
	OF	(INCHES)	(INCH)	(INCHES)	(CU. IN.)	(GALLONS)		(GPM)
S-3	1	25	22	6	3,300	14	11	11
S-4	3	10	14	10	4,200	18	14	14
TOTAL (MINIMUM I	FLOW RATE)				•			24
MINIMUM GREASE	HOLDING CAP	ACITY						49
HOLDING CAPACIT	Y OF SINKS						25	GALLONS

LA	VATORY	SCHED	ULE (L	.)								
		OVERALL	FAUCET		LAV	DRA	IN		SUPPLY STOP			AUCET
NO.	MOUNTING	SIZE	CENTERS	CARRIER	MODEL	TYPE	MODEL	TYPE	MODEL	TYPE	GPM	MODEL
1	WALL HUNG	21" x 18"	4"	YES	TOTO LT307.4	OFFSET GRID	K-7131-A	HANDLE	BRASSCRAFT OCR1912AZX C	WRIST BLADE	1.0	KOHLER K-400T70-5AKA
2	WALL HUNG	21" x 18"	4"	YES	TOTO LT307.4	OFFSET GRID	K-7131-A	HANDLE	BRASSCRAFT OCR1912AZX C	WRIST BLADE	1.0	KOHLER K-400T70-5AKA
3	WALL HUNG	21" x 18"	4"	YES	TOTO LT307.4	OFFSET GRID	K-7131-A	HANDLE	BRASSCRAFT OCR1912AZX C	WRIST BLADE	1.0	KOHLER K-400T70-5AKA

- ACCEPTABLE MANUFACTURERS:

-LAV: TOTO, KOHLER, AMERICAN STANDARD, CRANE, ELJER, MANSFIELD. -FAUCETS: KOHLER, SYMMONS, CHICAGO, AMERICAN STANDARD, DELTA, ZURN, HYDROTEK.

-DRAINS AND TRAPS: KOHLER, DEARBORN, KEENEY, MCGUIRE, BRASSCRAFT. -STOPS AND SUPPLIES: KOHLER, BRASSCRAFT, DEARBORN, KEENEY, MCGUIRE.

-CARRIERS AND SUPPORTS: ANCON, JOSAM, SMITH, WADE, ZURN.

- ALL MODEL NUMBERS BASED ON KOHLER UNLESS INDICATED OTHERWISE. - VITREOUS CHINA LAVS, 1-1/4" 17 GAUGE "P" TRAP WITH CLEANOUT PLUG (MCGUIRE 8872), BUSHING ON END OF OUTLET TUBE, WALL FLANGE.

- ALL WETTED PARTS SHALL BE LEAD FREE COMPLIANT. - FAUCETS WITH VANDAL RESISTANT AERATOR.

## SEBVICE SINK SCHEDI II E (SS)

<b>JER</b>	AICE 21	IAIV OCLIE	DULE	(33)					
			BASIN				FAUCET		
NO.	MOUNTING	MAT'L	SIZE	RIM	MODEL	PIPING	BACKFLOW	GPM	MFR/MODEL
				GUARD		EXPOSURE	PREVENTER		
1	FLOOR	DURASTONE	24"x24"x10"	(1)	MUSTEE 63M	CONCEALED	WATTS SERIES 8	5-7	CHICAGO 305

- ACCEPTABLE MANUFACTURERS:

-BASIN: MUSTEE, FIAT, KOHLER, WILLIAMS. -FAUCET: CHICAGO, DELTA, KOHLER, AMERICAN STANDARD, SYMMONS. T&S BRASS.

-DRAINS AND TRAPS: KOHLER, DEARBORN, KEENEY, MCGUIRE, BRASSCRAFT. - FLOOR SERVICE SINKS WITH 3" BRASS DRAIN, STAINLESS STEEL 3 MOP HOLDER HANGER, HEAVY DUTY 5/8" DIAMETER

REINFORCED RUBBER HOSE, AND STAINLESS STEEL HOSE BRACKET.

- PROVIDE "HYDRO SYSTEMS" MODEL 195 BLEEDER T DEVICE WHERE CHEMICAL DISPENSER IS CONNECTED TO FAUCET.

(1) BUMPER GUARDS ON EXPOSED RIMS.

#### SINK SCHEDULE (S) NO. COMPARTMENT OVERALL SIZE SPOUT GPM HANDLE FINISH SPRAY MODEL 5.375" 25" x 21.25" ELKAY GECR2521 KOHLER K-400T70-5AKA 1 5" 12.5" x 18.5" BK DDI-1014524S-P-G 1 5.375" 25" x 21.25" ELKAY GECR2521 12.5" x 18.5" BK DDI-1014524S-P-G 1.0 WR. BLADE CHROME NO KOHLER K-400T70-5AKA 2 5.25" 5" 1.0 WR. BLADE CHROME NO KOHLER K-400T70-5AKA 3 10" 37" x 19" ELKAY DI-3C-101410X (1) 2 12" 5" 2.2 LEVER CHROME NO T & S BRASS B-1113

- ACCEPTABLE MANUFACTURERS:

-SINK: KOHLER, AMERICAN STANDARD, CRANE, ELKAY, JUST.

-FAUCETS: KOHLER, CHICAGO, AMERICAN STANDARD, T&S BRASS, DELTA. -STOPS AND SUPPLIES: KOHLER, BRASSCRAFT, DEARBORN, KEENEY, MCGUIRE.

-DRAINS AND TRAPS: KOHLER, DEARBORN, KEENEY, MCGUIRE, BRASSCRAFT, PASCO. - SELF-RIMMING 18 GA. 304 S.S. SINK, ANGLE SUPPLIES WITH HANDLE STOPS WITH BRASS STEMS (BRASSCRAFT OCR1912AZX C). PROVIDE EACH

COMPARTMENT WITH STAINLESS STEEL STRAINER AND STAINLESS STEEL TAILPIECE (ELKAY LK-35B), AND 1-1/2" 17 GAUGE "P" TRAP W/ CLEANOUT (MCGUIRE 8912).

- VERIFY SINK CUTOUT SIZE WILL FIT IN COUNTERTOP WITH CABINET SHOP DRAWINGS PRIOR TO ORDERING. (1) PROVIDE TWIST WASTE VALVE (T&S BRASS B-3950).

SERVICE	LOCATION	INSULATION	JACKET	PIPE	SIZE
		TYPE (1)		<1.5"	=>1.5"
CW	GENERAL BUILDING	RIGID F.G. OR ELAST. FOAM (10)	NR	1/2"	1/2"
CW	IN WALLS	ELASTOMERIC FOAM	NR	1/2"	1/2"
CW (PEX AND CPVC)	ALL	NR	NR	NR	NR
HW, HWR	GENERAL BUILDING	RIGID F.G. OR ELAST. FOAM (10)	NR	1"	1"
HW, HWR (>140°F)	GENERAL BUILDING	RIGID F.G. OR ELAST. FOAM (10)	NR	1 1/2"	2"
HW NOT ON RECIRC. LOOP	GENERAL BUILDING	RIGID F.G. OR ELAST. FOAM (10)	NR	1"	1"
HW BRANCH	IN WALLS	ELASTOMERIC FOAM	NR	1/2"	1/2"
WATER HEATER EXHAUST	UNHEATED SPACES	FLEX. F.G.	NR	1 1/2"	1 1/2"

NR = NOT REQUIRED

COLD WATER = HARD, SOFT, IRRIGATION, HOSE STATION, ETC. AT ALL PRESSURES.

HOT WATER = WATER SYSTEMS OPERATING AT TEMPERATURES GREATER THAN 105 DEG F AT ALL PRESSURES.

(1) WHERE INSULATION IS PROVIDED ON PIPING INSULATE METERS, VALVES, BACKFLOW PREVENTERS AND ALL INLINE EQUIPMENT. (10) INSULATION NOT REQUIRED FOR EXPOSED FINAL PIPING CONNECTIONS TO FIXTURES.

PL = PILOT LIGHT

<b>ELECTRICAL/STARTI</b>	ER/DIS	CON	NEC	T SC	HE	DULI	E								
				ELECT	RICAL D	ATA				STARTER			DISCON	INECT	
NO.	LOCATION	HP	KW	AMPS	MCA	МОР	VOLT	PH	. TYPE	LOCATION	FURN. BY	ACCESS- ORIES	DIS- CONNECT	FURN. BY	REMARKS
EWC-1	SEE DWG	-	-	5.0	-	-	120	1	INTEG	INTEGRAL	EM	-	NR	-	REC.
EWC-2	SEE DWG	-	-	6.0	-	-	120	1	INTEG	INTEGRAL	EM	-	NR	-	REC.
GWH-1	135	-	-	-	-	-	120	1	INTEG	INTEGRAL	EM	-	NR	-	REC.
P-1	135	-	0.055	-	-	-	120	1	RELAY	135	PC	-	NR	-	-
N/C 1	100						120	1	TAITEC	TAITECDAL	E 1 4		NID		DEC

R = REQUIRED

F= FUSED

WP= WEATHERPROOF

INTEG.= INTEGRAL: PROVIDED INTEGRAL WITH EQUIPMENT.

PC = PLUMBING CONTRACTOR

RELAY= UL LISTED MOTOR RATED RELAY WITH SEPARATE ENTRANCES FOR INPUT AND OUTPUT CONTACTS (RIBT SERIES), OVERIDE SWITCH AND LED STATUS INDICATOR. CONTACT RATING, CONFIGURATION, AND COIL VOLTAGE SUITABLE FOR APPLICATION.

MAN= MANUAL: NEMA ICS 2, AC GENERAL PURPOSE CLASS A MANUALLY OPERATED, FULL-VOLTAGE CONTROLLER WITH QUICK MAKE AND BREAK TOGGLE ACTION AND DOUBLE BREAK SILVER ALLOY CONTACTS. BIMETALLIC OR MELTING ALLOY TYPE THERMAL OVERLOAD UNITS. NEMA ICS 6 GENERAL

PURPOSE FLUSH MOUNTED ENCLOSURE WITH STAINLESS STEEL COVER PLATE IN FINISHED AREAS AND TYPE 1 SURFACE MOUNTED IN UNFINISHED AREAS. EM = EQUIPMENT MANUFACTURER NR= NOT REQUIRED REC.=RECEPTACLE HOA = HAND-OFF-AUTO

EC = ELECTRICAL CONTRACTOR PB = PUSH BUTTON HC = HEATING CONTRACTOR 2-SP = TWO SPEED RV = REDUCED VOLTAGE

ELE	CTRI	C W	ATER (	COOLER	SCHEDULE (E	WC)			
NO.	RECESS	CAP. (GPH)	BARRIER FREE	NUMBER OF BASINS	CONTROL	RATED WATTS	FULL LOAD AMPS	MODEL	REMARKS
1	NO	8.0	YES	1	FRONT PUSHBAR	370	5.0	EZS8L	ELKAY (1)
2	NO	8.0	YES	2	FRONT PUSHBAR	370	6.0	EZSTL8WS(VR)LK	ELKAY (4)

- ACCEPTABLE MANUFACTURERS: -FIXTURE: ELKAY, HALSEY TAYLOR, OASIS, HAWS, FILTRINE.

-DRAINS AND TRAPS: KOHLER, DEARBORN, KEENEY, MCGUIRE, BRASSCRAFT. -STOPS AND SUPPLIES: KOHLER, BRASSCRAFT, DEARBORN, KEENEY, MCGUIRE.

- PROVIDE WITH 1-1/4" P-TRAP WITH C.O. PLUG (MCGUIRE 8872), AND ANGLE WATER STOP WITH HANDLE AND BRASS STEM (BRASSCRAFT OCR19ZX C).

- CAPACITY BASED ON 50 DEGREE F WATER IN AMBIENT TEMPERATURE OF 90 DEGREES F. - LEAD FREE CONSTRUCTION.

(1) WALL MOUNTED, STAINLESS STEEL BASIN, VINYL CLAD CABINET. (4) WALL MOUNTED, STAINLESS STEEL BASIN, VINYL CLAD CABINET WITH BOTTLE FILLING STATION.

GAS	WA	TER H	IEA ¹	ΓER S	CHEDU	JLE	(GV	VH)					
NO.	LOC.	TYPE	SIZE DIA.	GAS INPUT MBH	THERMAL EFF.	REC. GPH (1)	TANK SIZE GAL.	MAX. WORKING PRESS.	T & P REL. VALVE SETTING	LINING	TANK TEMP DEG. F	MODEL	REMARKS
1	135	TANK	33"	300	96.0	349	119	150 PSIG	100 PSIG	GLASS	140	BTH-300	AO SMITH (2)
. !	133	IAINK	33	300	30.0	343	113	130 F3IG	100 F3IG	GLASS	140	B111-300	AOS

- ACCEPTABLE MANUFACTURERS: BRADFORD WHITE, RHEEM, LOCHINVAR, STATE, BOCK, A.O. SMITH.

- SEE WATER HEATER PIPING DETAIL(S) FOR ADDITIONAL CONTROLS REQUIRED FOR IECC COMPLIANCE.

(1) RECOVERY BASED ON 100 DEGREE F TEMPERATURE RISE. (2) DIRECT VENT, SEALED COMBUSTION WATER HEATER. PROVIDE WITH CONCENTRIC VENT KIT APPROVED BY HEATER MFR FOR USE WITH THEIR... OR SCREENED AIR INTAKE ELBOW AND EXHAUST COUPLING TERMINATION. CONTRACTOR RESPONSIBLE FOR COMBUSTION AIR AND VENT PIPE SIZING...

ON ACTUAL EQUIVALENT LENGTH OF INSTALLATION.

CIR	CULATING	PUN	IP S	CHE	DUI	LE (P)					
NO.	SERVICE	FLUID TEMP F	GPM	HEAD (FT)	RPM	MOTOR H.P.	VOLT/ PHASE	MIN. EFF.	TYPE	MODEL	REMARKS
1	HOT WATER CIRC	140	8	5	2800	55 WATT	120/1	-	IN-LINE	NBF-12	B&G

- ACCEPTABLE MANUFACTURERS: GRUNDFOS, B & G, ARMSTRONG, TACO, ALLIS-CHALMERS, AMTROL.

- SEE MOTOR SPECIFICATIONS FOR MOTOR REQUIREMENTS.

- SEE WATER HEATER PIPING DETAIL FOR CONTROLS REQUIRED FOR IECC COMPLIANCE. - LEAD FREE BRONZE BODY.

Always a Better Plan 100 Camelot Drive Fond du Lac, WI 54935 920-926-9800 excelengineer.com

COLLABORATION

PROJECT INFORMATION

CHILDHOOD 

**LAKE** 

PROFESSIONAL SEAL

PROP(

SHEET DATES FEB. 14, 2023 REVISIONS AD3 APR. 19, 2023 CB1 MAY 10, 2023

**JOB NUMBER** 2255300

**SHEET NUMBER** 

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PLUMBING SCHEDULES

S.REC.=SWITCHED RECEPTACLE



THE	<b>RMOST</b>	ATIC I	MIXIN	IG VA	LVE S	CHE	DULE	(TMV	<b>/</b> )					
				MAX.	ACTUAL	ACT.	1	NLET CO	NDITIONS		RECIRC	TEMP.		
NO.	SERVICE	INLETS	OUTLET	FLOW	FLOW	P.D.	COLD	PRESS.	HOT	PRESS.	RATE	SETTING	MODEL	REMARKS
				(GPM)	(GPM)	(PSI)	(DEG F)	(PSIG)	(DEG F)	(PSIG)	(GPM)	(DEG F)		
1	SINK	3/8"	3/8"	3.0	1.0	4		-		-	NA	105	LFe480-11	POWERS (1)

- ACCEPTABLE MANUFACTURERS: LEONARD, SYMMONS, WATTS, POWERS.

- LEAD FREE BODY, REMOVABLE CARTRIDGE WITH STRAINER, STAINLESS STEEL SPRING, EPDM O-RINGS AND SOLID WAX

THERMOSTAT ASSEMBLY.

- P.C. SHALL FIELD ADJUST TMV TO TEMPERATURE SETTING INDICATED IN SCHEDULE. (1) POINT OF USE TMV SHALL COMPLY WITH ASSE 1070.

		MIN.	ACTUAL	MIN.	FLUSH			BOWL		FLUSH VALVE	FLUSH VALVE/	-
NO.	MT'G	MaP (1)	MaP (1)	PRESS. PSIG	TYPE	GPF	MFR/MODEL	RIM HT. A.F.F.	PIPING CONNECTION	TYPE	SUPPLY STOP MFR/MODEL	SEAT
1H	FLOOR	500	500	8	TANK	1.28	AM. STD. 2315.228	10-1/4"	HANDLE STOP	-	BRASSCRAFT OCR1912AZX C	AM. STD. 5001G.055 P
2	FLOOR	800	800	8	TANK	1.28	KOHLER K-3575	14-1/2"	HANDLE STOP	-	BRASSCRAFT OCR1912AZX C	BEMIS 1655 SSCT
2H	FLOOR	800	800	8	TANK	1.28	KOHLER K-3575	14-1/2"	HANDLE STOP	-	BRASSCRAFT OCR1912AZX C	BEMIS 1655 SSCT
3H	FLOOR	800	800	8	TANK	1.28	KOHLER K-3999	16-1/2"	HANDLE STOP	-	BRASSCRAFT OCR1912AZX C	BEMIS 1655 SSCT
ACCE	PTARIF M	1ANUFAC	TURFRS:		ļ.						-	<del>mm</del>

- ACCEPTABLE MANUFACTURERS:

-BOWL: TOTO, KOHLER, AMERICAN STANDARD, CRANE, ELJER, MANSFIELD.

-SUPPLY STOPS: BRASSCRAFT, CHICAGO, KOHLER, DEARBORN, KEENEY, MCGUIRE. -SEAT: TOTO, KOHLER, BEMIS, SPERZEL, OLSONITE, AMERICAN STANDARD, CHURCH.

- TANK WATER CLOSETS: CLOSE-COUPLED WITH VITREOUS CHINA TANK AND COVER, FLUSH ASSEMBLY, AND ANGLE SUPPLY WITH BRASS STEM.

- FLOOR SET WATER CLOSETS WITH BOLT CAPS.

- CONTROLS FOR ADA ACCESSIBLE FIXTURES SHALL BE ON THE OPEN SIDE.

(1) MAXIMUM PERFORMANCE (MaP) RATING PER VERITEC CONSULTING INC. AND KOELLER AND COMPANY. PROVIDE MaP RATING INFORMATION WITH PRODUCT SUBMITTAL.

VAL	<b>VE BOX SCH</b>	DULE (VE	3)						
NO.	SERVICE	MOUNTING	VALVE	BOX MATERIAL	WATER INLET SIZE	WATER OUTLET SIZE	DRAIN SOCKET SIZE	MODEL	REMARKS
W	WASHING MACHINE	RECESSED	1/4 TURN	PLASTIC	1/2" HOT & COLD	3/4" HOSE	2"	37609	OATEY

- ACCEPTABLE MANUFACTURERS: OATEY, SIOUX CHIEF, SYMMONS, GUY GRAY. - ABS PLASTIC BOX AND FRAME, GALVANIZED STEEL MOUNTING BRACKET, BRASS VALVE BODY, INTEGRAL WATER HAMMER ARRESTOR AND TRIM.

- BOX SHALL BE RATED FOR THE WALL SYSTEM IN WHICH IT IS INSTALLED.

			BODY	PLUG	A	CCESS COVER			
NO.	LOCATION	SIZES	MAT'L	MAT'L	MAT'L	MISC.	MISC.	FIGURE	REMARKS
СО	ABV. CLGS & EXPOSED PIPE	2" - 6"	(1)	PVC	-	-	-	(1)	(1)
FCO	FINISHED ROOMS W/O CARPET (2)	2" - 6"	C.I.	PVC	N.B.	-	-	Z-1400	ZURN
FCO	FINISHED ROOMS WITH CARPET (2)	2" - 6"	C.I.	PVC	N.B.	CARPET MARKER	-	Z-1400-CM	ZURN
WCO	WALL	3" - 4"	(5)	POLY	S.S.	-	-	Z-1469	ZURN
WCO	WALL	2" &	(6)	POLY	S.S.	-	-	Z-1469	ZURN
CO T.G.	OUTSIDE	2" - 6"	C.I.	PVC	C.I.	-	-	Z-1474-N	ZURN

- ACCEPTABLE MANUFACTURERS: J.R. SMITH, SCHIER, JOSAM, WADE, ZURN.

- RECESSED TAPER THREAD PLUG WITH SLOTTED RECESS.

(1) PROVIDE THREADED FEMALE ADAPTER WITH INTERNAL PLUG. ADAPTER MATERIAL SHALL MATCH PIPE MATERIAL TO WHICH CO IS BEING CONNECTED. (2) FINISHED ROOMS ARE ROOMS WITH CARPET OR FLOOR TILE OR ROOMS ACCESSIBLE BY A DOOR LESS THAN 42" WIDE.

(6) PROVIDE TEST/CLEANOUT TEE. THREADED PLUG WITH BRASS INSERT. MATERIAL SHALL MATCH PIPE MATERIAL TO WHICH TEE IS BEING CONNECTED.

(5) PROVIDE "HOLDRITE" TESTRITE TEST/CLEANOUT TEE. THREADED PLUG WITH BRASS INSERT. MATERIAL SHALL MATCH PIPE MATERIAL TO WHICH TEE IS BEING CONNECTED.

			OUTLET	BODY	STRAINER/TOP				
NO.	TYPE	APPLICATION	SIZE	MAT'L	MAT'L	SIZE	MISC.	MODEL	REMARKS
RD	ROOF/OVERFLOW	INSULATED ROOF	3"-8" (2)	CAST IRON	CAST IRON	12"	(1B)	FROET 100C*LP-DU-DP	ZURN
FD-1	FLOOR	PEDESTRIAN TRAFFIC	2"-3" (2)	CAST IRON	N. B. "TYPE B"	5" DIA	-	ZN-415-5B	ZURN (11) (19)
FD-2	FLOOR	EQ. RM. / MED. DUTY	2"-4" (2)	CAST IRON	CAST IRON	7" DIA	-	Z-507	ZURN (11) (19)
FD-3	FLOOR	FLOOR SINK	3"	CAST IRON	N.B. OPEN QUARTER	12" x 12"	ALUM. DOME	861-23XN2D	SIOUX CHIEF
DSN	-	DOWNSPOUT NOZZLE	2"-12" (2)	NI. BRASS	-	-	(20)	G-O-N	RECTORSEAL
HD-R	HUB DRAIN	INDIRECT WASTE	(2)	-	STUB DRAIN PIPE 2"	A.F.F. AND	PROVIDE 1 PIPE SIZE INC	REASE ON END OF PIPE.	(19)

- ACCEPTABLE MANUFACTURERS: ZURN, J.R. SMITH, JOSAM, WADE, WATTS, SCHIER, KUSEL, SIOUX CHIEF. (1B) DECK MOUNTING PLATE FOR DRAIN TO BE BOLTED DIRECTLY TO PLATE, RING EXTENSIONS TO EXTEND SUMP BODY TO BELOW TOP OF ROOF INSULATION, OVERFLOW STRAINER.

(2) AS NOTED ON DRAWINGS

(11) SUFFIX "C" DENOTES DRAIN WITH FLASHING...

(19) PROVIDE BARRIER TYPE INSERT DRAIN TRAP SEAL COMPLIANT WITH ASSE 1072. (20) PROVIDE ANTI-THEFT ESCUTCHEON AND STAINLESS STEEL BIRD SCREEN.

			P.D.	INDIRECT		MAX. OP		MAX.	BFP/VB		ASSE		
NO.	LOC.	GPM	(PSI)	WASTE	SIZE	TEMP.	TYPE	HAZ.	PRESS.	APPLICATION	STD.	MODEL	REMARKS
				REQ'D		DEG. F.							
1	106	53	13.0	YES (6)	1 1/2"	180	REDUCED PRESS. PRINCIPLE BFP	HIGH	CONTIN.	BLDG POTABLE WATER SYSTEM PROTECTION	1013	LF919QT	WATTS (1)

- ACCEPTABLE MANUFACTURERS: WATTS, AMES, ZURN/WILKINS, APOLLO, MIFAB. (1) LEAD FREE BODY.

(6) PROVIDE AIR GAP FITTING.

Always a Better Plan

100 Camelot Drive Fond du Lac, WI 54935 920-926-9800 excelengineer.com

COLLABORATION



PROJECT INFORMATION

**DE** 101 **QUA** TWIN LAKES PROPC

PROFESSIONAL SEAL

**SHEET DATES** SHEET ISSUE FEB. 14, 2023 REVISIONS MAY 10, 2023

> **JOB NUMBER** 2255300

SHEET NUMBER

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PLUMBING SCHEDULES

# FIRE PROTECTION SPECIFICATIONS

#### **DIVISION 21 FIRE PROTECTION**

#### 21 05 00 BASIC FIRE PROTECTION REQUIREMENTS

- A. SEE DIVISION 00 PROCUREMENT AND CONTRACTING AND DIVISION 01 GENERAL REQUIREMENT FOR
- ADDITIONAL REQUIREMENTS AND DIVISION OF WORK DESCRIPTION. B. THE CONTRACTOR IS RESPONSIBLE FOR REVIEWING THE TENANT WORK LETTER AND IS TO CLARIFY ANY
- DISCREPANCIES WITH EXCEL ENGINEERING, INC. PRIOR TO BEGINNING WORK. C. SHOP DRAWINGS, PRODUCT DATA, TEST RESULTS AND SAMPLE SUBMITTALS: 1. SEE DIVISION 01 33 23 SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES FOR ADDITIONAL
- REQUIREMENTS.
- 2. FIRE PROTECTION CONSTRUCTION ADMINISTRATION SUBMITTAL LIST:
- a. ALL SCHEDULED EQUIPMENT b. SPRINKLER SYSTEM/FIRE PROTECTION
- c. HANGERS
- d. PIPE IDENTIFICATION
- 3. AS-BUILT DRAWINGS SHALL BE MARKED ON A FINAL SET OF DRAWINGS WHICH INCLUDES ALL REVISIONS.
- 1. IF FINISH BECOMES RUSTED, CORRODED, SCRATCHED, OR FLAKED DURING STORAGE OR INSTALLATION, REFINISH THE EQUIPMENT TO THE SATISFACTION OF THE OWNER.
- E. INSTALL ALL EQUIPMENT PER MANUFACTURER'S INSTALLATION INSTRUCTIONS AND REQUIREMENTS. PROVIDE ADDITIONAL WORK AND MATERIALS AS REQUIRED.
- F. DETAILS AND SCHEDULES ARE SHOWN TO AID THE CONTRACTOR AND ARE NOT MEANT TO BE INCLUSIVE OF ALL DEVICES. PROVIDE REQUIRED EQUIPMENT AND ACCESSORIES FOR A COMPLETE INSTALLATION.
- G. COORDINATE WORK WITH OTHER CONTRACTORS AND MAKE ADJUSTMENTS TO THE FIRE PROTECTION SYSTEM INSTALLATION WHERE IT WILL BE INSTALLED IN CLOSE PROXIMITY TO THE WORK OF OTHER TRADES. IF THE FPC INSTALLS WORK BEFORE COORDINATING IT WITH OTHER TRADES SO AS TO CAUSE INTERFERENCE WITH WORK OF OTHER TRADES, THE FPC SHALL MAKE NECESSARY CHANGES IN THE WORK TO CORRECT THE
- CONDITION WITHOUT EXTRA CHARGES.
- H. FIRE RATED INTERIOR WALL AND FLOOR PIPE PENETRATIONS SLEEVE REQUIRED FOR PENETRATION OF CONCRETE AND MASONRY WALLS AND FLOORS.
- 2. SEAL OPENING AROUND PIPE WITH A UL APPROVED FIRE-STOP SYSTEM HAVING AN F-RATING NOT LESS THAN THE HOURLY RATING OF THE ASSEMBLY BEING PENETRATED.
- FIRE-RESISTIVE JOINT SYSTEM PRODUCTS BY THE SAME MANUFACTURER AS BEING USED ON THE
- 4. PROVIDE UL ASSEMBLY PENETRATION NUMBER TO AHJ COMPLIANT WITH BUILDING UL ASSEMBLY 30 DAYS PRIOR TO INSTALLATION IF REQUIRED BY AHJ.
- SEE PLANS FOR ADDITIONAL WALL AND FLOOR PENETRATION DETAILS.
- 1. INSTALL ONE-PIECE (TWO PIECE FOR EXISTING PIPING) POLISHED CHROME PLATED STEEL ESCUTCHEONS
- 2. ESCUTCHEONS NOT REQUIRED WHERE INSULATION BUTTED TO WALL/CEILING FULLY COVERS THE

AT PENETRATIONS EXPOSED IN FINISHED ROOMS (ROOMS WHICH DON'T HAVE UNFINISHED CONCRETE

- SLEEVE/WALL OPENING AND INSULATION IS CAULKED AT WALL/CEILING.
- 3. ESCUTCHEONS WITH SPRINGS FOR WALL AND CEILING LOCATIONS. 4. ID TO CLOSELY FIT AROUND PIPE/INSULATION, OD THAT COMPLETELY COVERS THE OPENING.
- 5. ESCUTCHEONS REQUIRED IN CABINETS AND CASEWORK. K. PROVIDE A COMPLETE DESIGN/BUILD FIRE PROTECTION SYSTEM FOR THE PROPOSED PROJECT.
- L. THE REQUIREMENTS OF MUNICIPAL AND STATE CODES, LAWS, ORDINANCES AND REGULATIONS, AND NFPA ARE MADE PART OF THESE SPECIFICATIONS AND SHALL BE COMPLIED WITH AS FAR AS THEY APPLY TO THE
- M. FIRE PROTECTION CONTRACTOR SHALL BE LICENSED BY THE STATE OF MINNESOTA TO FURNISH AND INSTALL FIRE PROTECTION SYSTEMS.
- N. FIRE PROTECTION CONTRACTOR SHALL BE RESPONSIBLE FOR STATE OF MINNESOTA AND/OR LOCAL
- SUBMITTAL AND PLAN REVIEW FEES. O. COMPLETE DESIGN AND SUBMIT FOR APPROVAL TO AUTHORITIES HAVING JURISDICTION WITHIN 60 DAYS OF
- CONTRACT AWARD. CONSTRUCTION REWORK COSTS INCURRED BY OTHER CONTRACTORS DUE TO FAILURE BY FPC TO OBTAIN APPROVAL IN A TIMELY MANNER SHALL BE BORNE BY THE FIRE PROTECTION CONTRACTOR. P. BE RESPONSIBLE FOR DESIGNING AND SIZING THE DISTRIBUTION SYSTEMS BY HYDRAULIC CALCULATION, AND SHALL PROVIDE THE NECESSARY ENGINEERING DRAWINGS AND CALCULATIONS TO OBTAIN ACCEPTANCE OF
- ALL AUTHORITIES HAVING JURISDICTION. Q. IF FIRE PROTECTION DESIGN REQUIRES ANY MODIFICATIONS OR ADDITIONS TO THE BUILDING IN ORDER TO MEET THE SPRINKLER SYSTEM REQUIREMENTS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF
- MODIFICATIONS OR ADDITIONS OR SHALL SPECIFICALLY NOTE IN THE BID THE WORK REQUIRED. DRAWINGS INDICATING NEW FIRE PROTECTION SYSTEMS TO BE INSTALLED WITH PIPE SIZES, ETC., AND COPY OF SYSTEMS HYDRAULIC CALCULATIONS SHALL BE SUBMITTED TO THE FOLLOWING FOR REVIEW:
- NUMBER OF PRINTS AS REQUIRED TO LOCAL FIRE DEPARTMENT AUTHORITY. NUMBER OF PRINTS AS REQUIRED TO OWNER'S INSURING AUTHORI S. LEAVE SYSTEM IN PROPER WORKING CONDITION AT THE TIME OF FINAL CLEAN-UP.
- PROVIDE OPERATING INSTRUCTIONS FOR A TOTAL OF TWO (2) HOURS. MAINTAIN A RECORD OF OPERATING INSTRUCTION PERIODS.
- T. AVAII ABI F WATER FLOW DATA
- 1. FPC IS RESPONSIBLE FOR VERIFYING AND OBTAINING WATER FLOW TEST DATA FOR DESIGN. TESTS TO BE REPRESENTATIVE OF HIGH WATER USE PERIODS. U. TESTS AND INSPECTIONS
- 1. BE RESPONSIBLE FOR TESTING AND CERTIFICATION OF SYSTEMS AND ORDERING INSPECTIONS AS REQUIRED BY AUTHORITIES HAVING JURISDICTION.
- 2. ALL TESTS SHALL BE CONDUCTED IN THE PRESENCE OF AND TO THE SATISFACTION OF THE OWNER OR AN AUTHORIZED REPRESENTATIVE. 3. INSPECTIONS SHALL BE MADE BY THE OWNER'S AUTHORIZED REPRESENTATIVE AND INSPECTORS HAVING

### 21 05 13 ELECTRICAL WORK

- A. FURNISH AND INSTALL ALL FLOW AND TAMPER SWITCHES. ALL DEVICES SHALL BE 110 VAC. PROVIDE TRANSFORMERS AS REQUIRED IF VOLTAGE REQUIREMENT IS LOWER THAN 110 VAC.
- B. ELECTRICAL CONTRACTOR IS RESPONSIBLE TO WIRE FROM THE AUTOMATIC SPRINKLER SYSTEM,
- COMPONENTS TO THE BUILDING FIRE ALARM SYSTEM.

### 21 05 29 SUPPORTS AND HANGERS

A. PROVIDE PIPE HANGERS AND SUPPORTS IN COMPLIANCE WITH NFPA 13. B. HANGERS SHALL NOT BE ATTACHED TO JOIST BRIDGING.

### 21 05 53 IDENTIFICATION

A. PROVIDE IDENTIFICATION PER NFPA 13.

### 21 13 13 PIPING

- A. DESIGN REQUIREMENTS: ALL SYSTEM COMPONENTS SHALL BE RATED FOR THE MAXIMUM WORKING
- PRESSURE TO WHICH THEY ARE EXPOSED BUT NOT LESS THAN 175 PSIG.
- B. PIPE AND FITTINGS: PROVIDE PER NFPA 13.
- RUBBER GASKETED OUTLET FITTINGS NOT PERMITTED.
- D. INSTALL PIPE AND FITTINGS IN ACCORDANCE WITH NFPA 13, MANUFACTURERS INSTALLATION INSTRUCTIONS AND RECOGNIZED INDUSTRY PRACTICES.
- E. INSTALL PIPING LEVEL, TAKING INTO ACCOUNT DRAINAGE REQUIREMENTS. PIPING SHALL NOT FOLLOW ROOF PITCH WHERE PITCH CHANGES.
- F. DRAIN POINTS IN SYSTEM LOCATED IN FINISHED/PUBLIC AREAS WITH EXPOSED STRUCTURE NOT PERMITTED WITHOUT WRITTEN APPROVAL BY ARCHITECT.
- G. INSTALL PIPING PARALLEL TO WALLS AND CEILINGS AND AT HEIGHTS WHICH DO NOT OBSTRUCT WINDOWS, DOORWAYS, STAIRWAYS, OR PASSAGEWAYS. OFFSET OR REROUTE PIPING TO CLEAR INTERFERENCES WHICH

H. INSTALL PIPING TO CONSERVE BUILDING SPACE AND NOT INTERFERE WITH USE OF SPACE. CONCEAL PIPING

- WITHIN WALLS AND CHASES OR ABOVE CEILINGS. I. COORDINATION COORDINATE LOCATIONS OF PIPING WITH PIPING, DUCTWORK, CONDUIT AND EQUIPMENT OF OTHER
- REVIEW DRAWINGS FOR EXACT LOCATION OF PIPE SPACES, CEILING HEIGHTS, CEILING GRID, LIGHT FIXTURES AND GRILLES BEFORE INSTALLING PIPING.
- INSTALL WITH SUFFICIENT CLEARANCES FOR INSTALLATION OF OTHER CONTRACTOR'S WORK.
- 4. PIPING SHALL NOT OBSTRUCT SERVICE CLEARANCES REQUIRED FOR EQUIPMENT. PIPING SHALL NOT BE INSTALLED BELOW OR WITHIN 45 DEG OF LIGHT EDGE.
- 6. DO NOT ROUTE PIPING ABOVE TRANSFORMERS, PANELBOARDS, MOTOR CONTROL CENTERS,
- SWITCHBOARDS OR OTHER ELECTRICAL DISTRIBUTION EQUIPMENT. 7. ROUTE MAINS AROUND ELECTRICAL AND COMPUTER ROOMS. ONLY PIPING SERVING THESE ROOMS
- ALLOWED IN THE ROOMS. J. PROVIDE PROTECTIVE SLEEVE COVERING WHERE COPPER OR STEEL PIPING IS EMBEDDED IN MASONRY OR
- PROVIDE CLEARANCE FOR ACCESS TO VALVES AND PIPING SPECIALTIES.
- PREPARE EXPOSED PIPE, FITTINGS, SUPPORTS, AND ACCESSORIES NOT PREFINISHED, READY FOR FINISH
- M. PIPING SYSTEM LEAK TESTS
- 1. CONDUCT PRESSURE TEST WITH WATER. IF LEAKS ARE FOUND, REPAIR THE AREA WITH NEW MATERIALS

- 2. TEST PIPING IN SECTIONS OR ENTIRE SYSTEM AS REQUIRED BY SEQUENCE OF CONSTRUCTION. DO NOT CONCEAL PIPE UNTIL IT HAS BEEN SUCCESSFULLY TESTED. PROVIDE TEMPORARY RESTRAINTS AT FITTINGS OR EXPANSION JOINTS IF REQUIRED FOR THE ADDITIONAL PRESSURE LOAD UNDER TEST. ENTIRE TEST
- MUST BE WITNESSED BY THE DIVISION'S REPRESENTATIVE. 3. USE CLEAN WATER AND REMOVE AIR FROM THE PIPING BEING TESTED WHERE POSSIBLE. MEASURE AND RECORD TEST PRESSURE AT THE HIGH POINT IN THE SYSTEM.
- 4. TEST SYSTEM AT 175 PSI FOR 2 HOURS SHOWING NO LEAKAGE.
- 5. ALL PRESSURE TESTS ARE TO BE DOCUMENTED ON NFPA CONTRACTOR'S MATERIAL AND TEST CERTIFICATE FORMS.

#### 21 13 15 SPECIALTIES

- A. ZONE CONTROL VALVES
- 1. MANUFACTURERS: NIBCO, KENNEDY, MILWAUKEE.
- 2. 2" AND UNDER: NIBCO KT-585-70-UL & KT-580-70-UL. TWO-PIECE BRONZE BALL VALVE WITH CHROME PLATED BALL, BLOWOUT PROOF STEM, REINFORCED TFE SEATS, UL LISTED, 175 PSI WWP.
- 3. 2-1/2" AND OVER: NIBCO F-607-RW, GATE VALVE, IRON BODY, BRONZE TRIM, RISING STEM, HANDWHEEL, OS & Y, DUCTILE IRON RESILIENT WEDGE, FLANGED ENDS, UL LISTED, 175 PSI WWP.
- 1. MANUFACTURERS: NIBCO, APOLLO, CRANE, HAMMOND, WATTS.
- 2. NIBCO 585-70HC OR EQUIVALENT BRONZE TWO PIECE BODY, STAINLESS STEEL BALL AND TRIM, FULL PORT, LEVER HANDLE, THREADED ENDS.
- 3. PROVIDE DRAIN VALVES AT ALL LOW AND TRAPPED AREAS OF SYSTEM AND WHERE REQUIRED TO DRAIN RISERS. PROVIDE 3/4" HOSE CONNECTION WITH CAP AT EACH DRAIN CONNECTION.
- C. VALVE TAMPER SWITCHES 1. MANUFACTURERS: POTTER MODEL OSYSU-2, NOTIFIER, GRINNEL.
- 2. OUTSIDE SCREW AND YOKE VALVE, SUPERVISORY SWITCH WITH DIE CAST ALUMINUM COVER, TAMPER RESISTANT SCREWS AND TWO SETS OF CONTACTS, 120V AC, UL LISTED.
- 3. CONTACTS TO BE NORMALLY OPEN, CLOSED WHEN VALVE IS CLOSED. D. FLOW SWITCH
- 1. MANUFACTURER: POTTER MODEL VSR-F, NOTIFIER, GRINNELL.
- 2. VANE TYPE WATER FLOW ALARM SWITCH WITH ADJUSTABLE RETARD, TWO SETS OF CONTACTS, CAST ALUMINUM HOUSING, 120V AC, UL LISTED.
- 3. PROVIDE EACH FLOW SWITCH WITH A MEANS OF TESTING FLOW THRU IT.
- 4. PROVIDE A VALVE UPSTREAM OF EACH FLOW SWITCH IN THE SAME BRANCH AS THE FLOW SWITCH. 5. AUDIBLE / VISUAL ALARM AT FIRE DEPARTMENT CONNECTION BY FIRE ALARM SUPPLIER.
- E. FIRE DEPARTMENT CONNECTION 1. HOSE THREADS TO MATCH LOCAL FIRE DEPARTMENT.
- F. BACKFLOW PREVENTOR 1. PROVIDE APPROVED BACKFLOW PREVENTOR FOR CONNECTION TO THE WATER SYSTEM.
- G. INSPECTOR'S TEST CONNECTION 1. COMPLETE WITH TEST AND DRAIN VALVES, SIGHT GLASS, 3/4" HOSE CONNECTION, AND SMOOTH BORE
- CORROSION RESISTANT ORIFICE GIVING A FLOW EQUIVALENT TO ONE SPRINKLER. 2. PROVIDE INSPECTOR'S TEST CONNECTION FROM MOST REMOTE END OF SYSTEM.

#### 21 13 17 AUTOMATIC SPRINKLER SYSTEMS

- A. SYSTEM DESCRIPTION
- 1. PROVIDE AUTOMATIC SPRINKLER SYSTEM TO PROTECT BUILDING AREA INDICATED.
- 2. SYSTEM DESIGN SHALL CONFORM TO SYSTEM SCHEDULE ON THE DRAWINGS, AND COMPLY WITH NFPA 13 AND REQUIREMENTS OF LOCAL AUTHORITIES HAVING JURISDICTION. a. DEVIATIONS FROM THESE DOCUMENTS SHALL BE COMMUNICATED IN WRITING AT TIME OF BID
- 3. UL LISTED AND LABELED SYSTEM COMPONENTS RATED FOR 175 PSIG MINIMUM OPERATING PRESSURE. 4. INCLUDE INSIDE AND OUTSIDE HOSE STREAMS IN THE DESIGN OF THE HYDRAULICALLY CALCULATED
- SPRINKLER SYSTEMS. 5. SIMILAR COMPONENT ITEMS SHALL BE BY THE SAME MANUFACTURER.
- B. SPRINKLERS MANUFACTURERS: VIKING, CENTRAL, TYCO.
- SEE SCHEDULE ON PLANS. 3. MAY USE FLEXIBLE PENDENT SYSTEM AS LISTED FOR THE OCCUPANCY HAZARD OF THE SPACE BEING
- 1. INSTALL SPRINKLERS TO MISS ALL LIGHTS, GRILLES AND ANY OTHER CEILING OBSTRUCTIONS. 2. PROVIDE MOUNTABLE METAL BOX OF SPARE HEADS WITH PROPER WRENCH FOR HEAD REPLACEMENT. 3. PROVIDE WIRE GUARDS ON SPRINKLERS LOCATED BELOW 84 INCHES AFF

# LEGEND

#### NOTE: A<u>LL SYMBOLS SHOWN MAY NOT APPEAR ON DRAWINGS.</u>

<b>⊕</b> EL	ELEVATION	• <b>-</b>		CONNECT TO EXISTING
■→	EQUIPMENT BY OTHERS. CONNECTION BY FPC	$\bigcirc$		DETAIL OR SECTION NUMBER SHEET NUMBER
ABBREVIATION	<u> </u>			
			NIC	NOT IN CONTRACT
AFF	ABOVE FINISHED FLOOR	l l	NTS	NOT TO SCALE
AFG	ABOVE FINISHED GRADE	(	OC	ON CENTER
ВЈ	BETWEEN JOISTS		PC	PLUMBING CONTRACTOR
EC	ELECTRICAL CONTRACTOR		TJ	THRU JOISTS
FPC	FIRE PROTECTION CONTRACTOR	-	TTS	TIGHT TO STRUCTURE
GC	GENERAL CONTRACTOR / CONSTRUCTION MANAGER	7	TYP	TYPICAL
НС	HVAC CONTRACTOR	1	WP	WEATHER PROOF
IMP	INSULATED METAL PANEL			

FIRE - 4 HOUR

ESIGN CRITERIA					
DESIGNATION	SYSTEM TYPE	HAZARD/ COMMODITY	MINIMUM DENSITY (3)	REMOTE AREA	HOSE ALLOWANCE
LH	WET	LIGHT HAZARD (1)	0.10 GPM/S.F.	1,500 S.F. (2)	100 GPM
OG1	WET	ORDINARY GROUP 1 (1)	0.15 GPM/S.F.	1,500 S.F. (2)	250 GPM

FIRE - 2 HOUR

- CONTRACTOR SHALL VERIFY DESIGN CRITERIA. - See specification section 21 05 00 for additional requirements regarding rack storage.

(2) REDUCE REMOTE AREA BY 2013 NFPA 13 FOR AREAS WITH QUICK RESPONSE SPRINKLERS. SEE REFLECTED ARCH PLAN FOR CEILING HEIGHTS. (3) INCREASE AREA OF OPERATION BY 30% FOR AREAS WITH SLOPED CEILING GREATER THAN 1 IN 6.

ELECTRICAL / FIRE ALAR	M COOF	RDI	NA	TIC	ON:	SCHED	ULE					
SYM.	LOCATION	НР	VOLT	PH.	TYPE	STARTER LOCATION	FURN. BY	DISCOI DIS- CONNECT	NNECT FURN. BY	FIRE AL MONITO QUANT.	RING	REMARKS
FLOW SWITCHES	106	-	-	-	-	-	-	-	-	1 (2)	-	-
TAMPER SWITCHES	106	I -	I -	I -	_	_	-	_	_	1 (2)	(1)	_

- INTEG. = INTEGRAL: PROVIDED INTEGRAL WITH EQUIPMENT.
- RELAY= UL LISTED MOTOR RATED RELAY WITH SEPARATE ENTRANCES FOR INPUT AND OUTPUT CONTACTS (RIBT SERIES), AND LED STATUS INDICATOR. CONTACT RATING, CONFIGURATION, AND COIL VOLTAGE SUITABLE FOR APPLICATION.
- MAN= MANUAL: NEMA ICS 2, AC GENERAL PURPOSE CLASS A MANUALLY OPERATED, FULL-VOLTAGE CONTROLLER WITH QUICK MAKE AND BREAK TOGGLE ACTION AND DOUBLE BREAK SILVER ALLOY CONTACTS. BIMETALLIC OR MELTING ALLOY TYPE THERMAL OVERLOAD UNITS. NEMA ICS 6 GENERAL PURPOSE FLUSH MOUNTED ENCLOSURE WITH STAINLESS STEEL COVER PLATE IN FINISHED AREAS AND TYPE 1 SURFACE MOUNTED IN UNFINISHED AREAS.
- FURNISHED BY:
- EM = EQUIPMENT MANUFACTURER FPC = FIRE PROTECTION CONTRACTOR

(1) FIRE PROTECTION CONTRACTOR TO DETERMINE IF TAMPER SWITCHES ARE REQUIRED.

NR= NOT REQUIRED REC.=RECEPTACLE R = REQUIREDEC = ELECTRICAL CONTRACTOR

(2) QUANTITY IS ESTIMATED. FPC TO PROVIDE QUANTITY AS REQUIRED BY SYSTEM. PROVIDE ANY ADDITIONAL DEVICES RELATED TO THE WORK NOT SHOWN ON

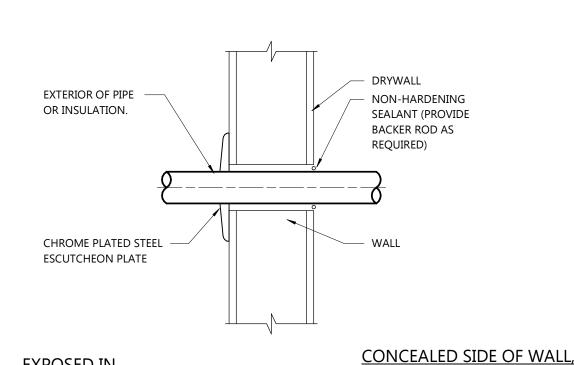
THE DRAWINGS. FPC SHALL PROVIDE POWER AND CONTROL WIRING INSTALLED PER ELECTRICAL SPECIFICATIONS FOR ANY DEVICES NOT LISTED.

SPF	RINKLER REQUIREN	/ENT	S							
TA.C	ADDITION	SYSTEM		BODY	FLEDAFNIT	SPRINKLER		CHEON	TEMPERATURE	CENTER
TAG	APPLICATION	TYPE	MOUNTING	MAT'L	ELEMENT	FINISH	TYPE	MAT'L/COLOR	CLASSIFICATION	OF TILE (3)
Α	ROOMS W/CEILINGS	WET	PENDENT	BRASS	GLASS BULB	WHITE	CONCEALED	WHITE	ORDINARY	YES
В	ROOMS W/O CEILINGS	WET	UPRIGHT	BRASS	GLASS BULB	NONE	NONE	NONE	ORDINARY	NO
С	ATTIC SPRINKLER	WET	UPRIGHT	BRASS	GLASS BULB	NONE	NONE	NONE	INTERMEDIATE	NO
										$\overline{}$

DISCONNECT:

REMARKS:

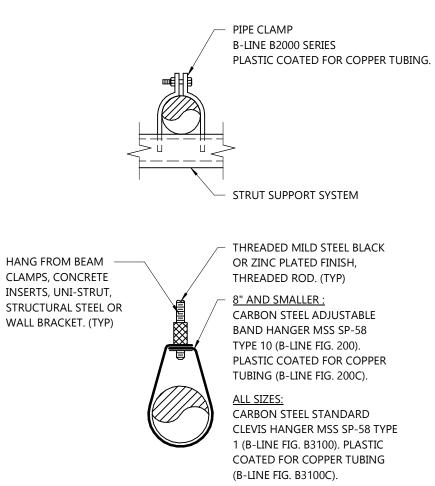
- ALL TEMPERATURES AS LISTED UNLESS OTHERWISE REQUIRED BY NFPA. - SIDEWALL HEADS ARE ACCEPTABLE IN LIEU OF PENDENT WHERE APPLICABLE. (3) CENTER OF TILE LOCATION ESTABLISHED AFTER CEILING GRID IS INSTALLED.

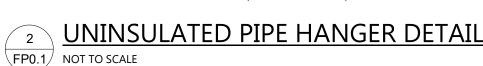


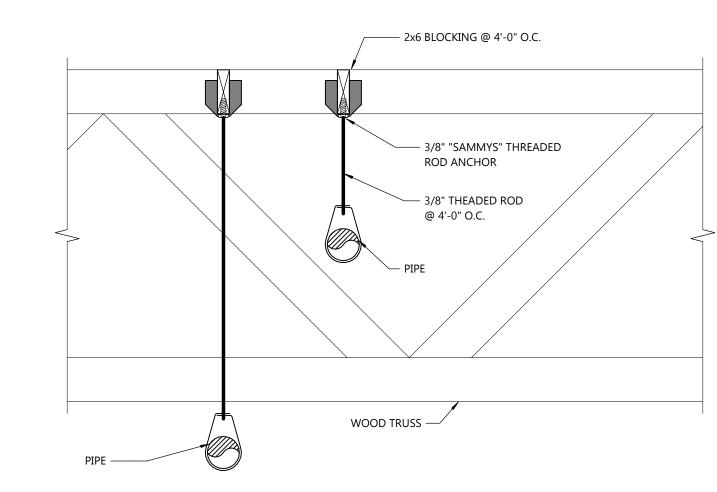
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EXPOSED IN MECH. EQUIP.







TRUSS HANGER CONNECTION DETAIL

# SHEET INDEX

NUMBER	SHEET NAME
FIRE PROTECTIO	N
FP0.1	LEGEND AND SPECIFICATIONS
FD1 1	FIRST FLOOD DLAN

FP1.1 | FIRST FLOOR PLAN

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PROJECT INFORMATION

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PROFESSIONAL SEAL

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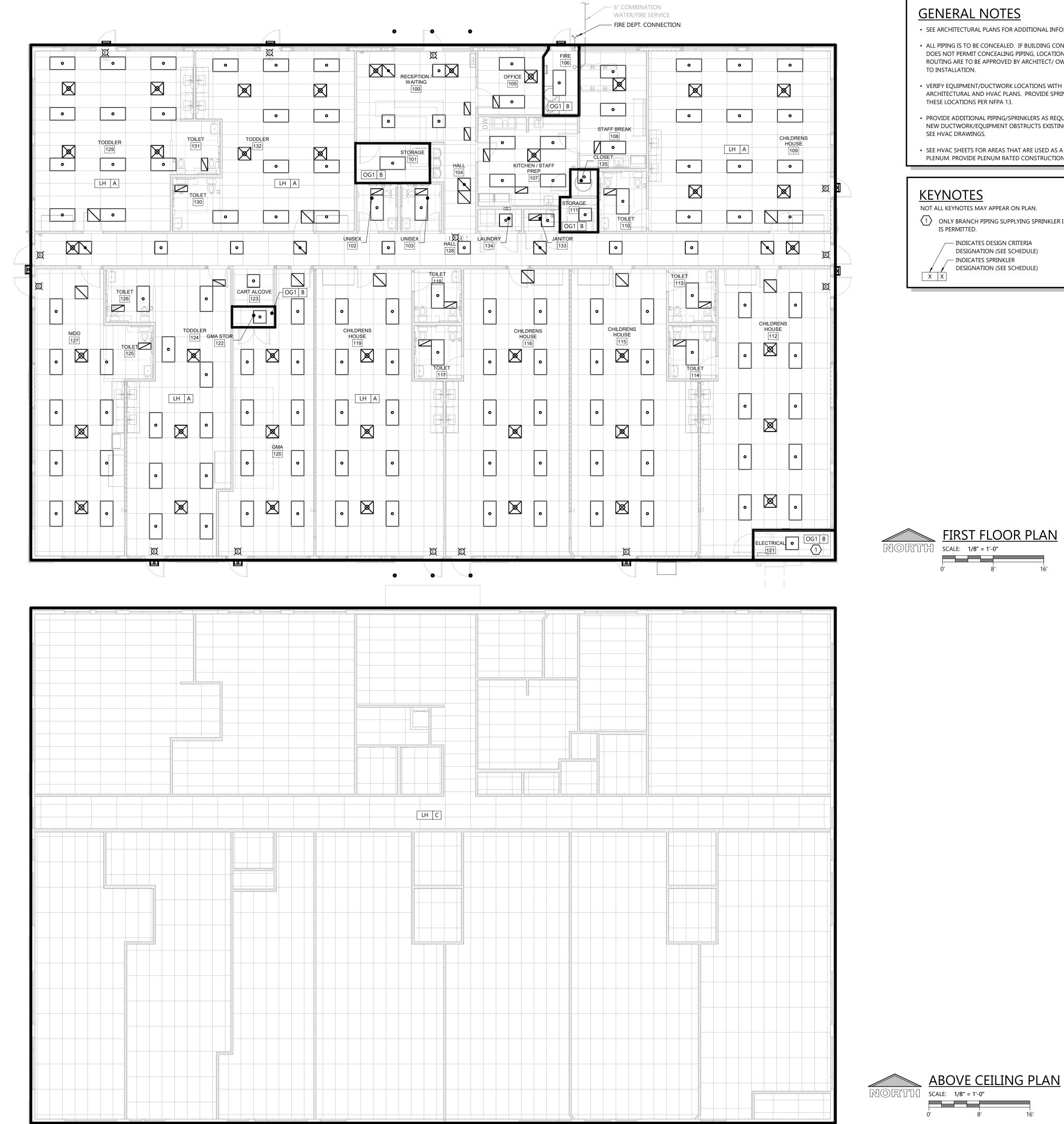
**SHEET DATES** FEB. 14, 2023 REVISIONS

**JOB NUMBER** 2255300

SHEET NUMBER

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FIRE PROTECTION LEGEND AND SPECIFICATIONS





• SEE ARCHITECTURAL PLANS FOR ADDITIONAL INFORMATION.

• ALL PIPING IS TO BE CONCEALED. IF BUILDING CONSTRUCTION DOES NOT PERMIT CONCEALING PIPING, LOCATIONS AND ROUTING ARE TO BE APPROVED BY ARCHITECT/ OWNER PRIOR TO INSTALLATION.

 VERIFY EQUIPMENT/DUCTWORK LOCATIONS WITH ARCHITECTURAL AND HVAC PLANS. PROVIDE SPRINKLERS AT THESE LOCATIONS PER NFPA 13.

PROVIDE ADDITIONAL PIPING/SPRINKLERS AS REQUIRED WHERE NEW DUCTWORK/EQUIPMENT OBSTRUCTS EXISTING COVERAGE. SEE HVAC DRAWINGS.

• SEE HVAC SHEETS FOR AREAS THAT ARE USED AS A RETURN AIR PLENUM. PROVIDE PLENUM RATED CONSTRUCTION.

## **KEYNOTES**

NOT ALL KEYNOTES MAY APPEAR ON PLAN.

ONLY BRANCH PIPING SUPPLYING SPRINKLER IN THIS ROOM IS PERMITTED.

FIRST FLOOR PLAN

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

— INDICATES DESIGN CRITERIA DESIGNATION (SEE SCHEDULE) — INDICATES SPRINKLER DESIGNATION (SEE SCHEDULE) Always a Better Plan

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PROJECT INFORMATION

ELOPMENT ROSEVILLE, MN 5511 CHILDHOOD SCHOOL FOR: **DE** LOT ( **OSED EARLY** TTRO STATION

QUA TWIN LAKES

PROFESSIONAL SEAL

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**SHEET DATES** SHEET ISSUE FEB. 14, 2023 REVISIONS

JOB NUMBER 2255300

SHEET NUMBER

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FIRE PROTECTION FIRST FLOOR PLAN

# **HVAC SPECIFICATIONS**

#### **DIVISION 23 HVAC**

#### 23 05 00 BASIC HVAC REQUIREMENTS

- A. SEE DIVISION 00 PROCUREMENT AND CONTRACTING AND DIVISION 01 GENERAL REQUIREMENT FOR ADDITIONAL
- REQUIREMENTS.
- B. SUBSTITUTIONS 1. SEE DIVISION 01 25 13 PRODUCT SUBSTITUTION PROCEDURES FOR ADDITIONAL REQUIREMENTS. 2. CONTRACTOR SHALL PROVIDE ALL SUPPORTING DATA AND ASSUME THE BURDEN OF PROOF THAT ANY
- SUBSTITUTE IS EQUIVALENT AS TO APPEARANCE, CONSTRUCTION, CAPACITY, AND PERFORMANCE. THE JUDGMENT OF EQUIVALENCY SHALL BE MADE BY THE ENGINEER AT THE TIME OF SHOP DRAWING REVIEW, NOT DURING BIDDING.
- WHERE SUBSTITUTE EQUIPMENT REQUIRES REDESIGN OF ANY PART OF THE PROJECT, THE COST OF REDESIGN AND ADDITIONAL COSTS OF THE WORK SHALL BE PAID BY THE CONTRACTOR. REDESIGN SHALL BE SUBJECT TO THE APPROVAL OF ALL AUTHORITIES HAVING JURISDICTION OVER THE WORK INCLUDING THE ARCHITECT/ENGINEER
- 4. CONTRACTOR SHALL ASSUME ALL COORDINATION RESPONSIBILITIES FOR SUBSTITUTE EQUIPMENT INCLUDING COORDINATION ACROSS TRADES AND COORDINATION OF PREVIOUSLY REVIEWED AND APPROVED SHOP DRAWING SUBMITTALS, SHOULD THESE SHOP DRAWINGS BE AFFECTED BY THE SUBSTITUTED EQUIPMENT.
- SHOP DRAWINGS, PRODUCT DATA, TEST RESULTS, PROJECT CLOSEOUT DOCUMENTS: SEE DIVISION 01 33 23 SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES FOR ADDITIONAL REQUIREMENTS
- a. DUCTWORK b. DUCTWORK ACCESSORIES

CONSTRUCTION ADMINISTRATION SUBMITTAL LIST:

- c. INSULATION
- d. PIPING
- e. PIPE HANGERS f. VALVES
- g. GRILLES
- h. GAS PRESSURE REGULATORS i. ROOFTOP AIR CONDITIONING UNITS.
- **ENERGY RECOVERY UNITS**
- TEMPERATURE CONTROLS
- TEST AND BALANCE REPORT
- a. DOCUMENTATION: PROVIDE VENTILATION SYSTEM DOCUMENTATION PER ASHRAE 62.1-2007, SECTION
- b. AS-BUILT DRAWINGS SHALL BE MARKED ON A FINAL SET OF DRAWINGS WHICH INCLUDES ALL REVISIONS. PROVIDE HVAC EQUIPMENT OPERATING AND MAINTENANCE MANUALS TO THE OWNER PER IECC C408.1.1
- D. FINISHING AND PAINTING
- 1. IF FINISH BECOMES RUSTED, CORRODED, SCRATCHED, OR FLAKED DURING STORAGE OR INSTALLATION, REFINISH THE EQUIPMENT TO THE SATISFACTION OF THE OWNER.
- DETAILS AND SCHEDULES ARE SHOWN TO AID THE CONTRACTOR AND ARE NOT MEANT TO BE INCLUSIVE OF ALL DEVICES. PROVIDE REQUIRED EQUIPMENT AND ACCESSORIES FOR A COMPLETE INSTALLATION.
- F. INSTALL ALL EQUIPMENT PER MANUFACTURER'S INSTALLATION INSTRUCTIONS AND REQUIREMENTS. PROVIDE ADDITIONAL WORK AND MATERIALS AS REQUIRED.
- G. COORDINATE INSTALLATION OF HVAC WORK WITH THE OTHER CONTRACTORS TO AVOID CONFLICTS WITH OTHER
- H. PROJECT COMPLETION
- 1. INSTALL CLEAN SET OF FILTERS IN ALL UNITS AT TIME OF TESTING AND BALANCING. 2. CLEAN GRILLES AND EQUIPMENT AND LEAVE IN PROPER WORKING CONDITION AT THE TIME OF FINAL CLEAN-
- 3. PROVIDE OPERATING INSTRUCTIONS FOR A TOTAL OF FOUR (4) HOURS. MAINTAIN A RECORD OF OPERATING
- INSTRUCTION PERIODS AND OBTAIN OWNER SIGNOFF THAT INSTRUCTIONS HAVE BEEN COMPLETED.
- 1. ACCESS PANELS OF ADEQUATE SIZE TO PERMIT SERVICE OF EQUIPMENT, VALVES, OR OTHER SPECIALTIES WHICH REQUIRE MAINTENANCE OR ADJUSTMENT WHICH ARE INSTALLED BEHIND WALLS OR ABOVE CEILING SURFACES.
- 2. PANELS SHALL BE SUITABLE FOR INSTALLATION IN THE MATERIAL FORMING THE FINISHED SURFACE, WITH FLANGED FLUSH METAL FRAME, FLUSH HINGED STEEL DOOR, FLUSH SCREWDRIVER OPERATED LATCH.
- 3. PANELS UL LISTED TO CONFORM TO THE FIRE RATING OF THE SURFACE INSTALLED IN.
- 4. ARCHITECT TO APPROVE ACCESS PANEL LOCATION PRIOR TO INSTALLATION OF EQUIPMENT REQUIRING ACCESS. 5. COORDINATE WITH THE OTHER CONTRACTORS AND WHEREVER PRACTICAL, GROUP DEVICES IN SUCH A MANNER SO AS TO MINIMIZE PANELS.
- - 1. COORDINATE INSTALLATION OF GAS SERVICE WITH GAS UTILITY. CONTACT GAS UTILITY TO ARRANGE SERVICE
  - AND ASSIST OWNER IN APPLYING FOR NEW SERVICE. GAS SERVICE COST BY OWNER.
- GAS COMPANY
- a. XCEL ENERGY b. CONTACT: 800-481-4700

### 23 05 13 MOTORS AND ELECTRICAL WORK

- 1. MANUFACTURERS: GENERAL ELECTRIC, LOUIS ALLIS, MARATHON, AND BALDOR. 2. MOTORS LESS THAN 250 WATTS: EQUIPMENT MANUFACTURER'S STANDARD AND NEED NOT CONFORM TO
- 3. OPEN DRIP-PROOF TYPE EXCEPT TOTALLY ENCLOSED FAN COOLED FOR THE FOLLOWING MOTORS:
- a. EXTERIOR LOCATIONS b. WHERE NOTED ON EQUIPMENT SCHEDULES
- 4. DESIGN FOR CONTINUOUS OPERATION IN 40 DEGREES C ENVIRONMENT AND FOR TEMPERATURE RISE IN ACCORDANCE WITH NEMA MG 1 LIMITS.
- 5. SINGLE PHASE POWER (PERMANENT-SPLIT CAPACITOR MOTORS) WITH STARTING TORQUE EXCEEDING ONE FOURTH OF FULL LOAD TORQUE AND STARTING CURRENT UP TO SIX TIMES FULL LOAD CURRENT. CLASS A (50 DEGREES C TEMPERATURE RISE) INSULATION, MINIMUM 1.0 SERVICE FACTOR, PRELUBRICATED SLEEVE OR BALL
- BEARINGS, AUTOMATIC RESET OVERLOAD PROTECTOR. 6. THREE PHASE POWER (SQUIRREL CAGE MOTORS) WITH STARTING TORQUE BETWEEN 1 AND 1-1/2 TIMES FULL LOAD TORQUE AND STARTING CURRENT SIX TIMES FULL LOAD CURRENT. NEMA DESIGN B MOTOR AND INSULATION SYSTEM. MINIMUM 1.15 SERVICE FACTOR FOR OPEN DRIP-PROOF MOTORS, 1.0 (MINIMUM) FOR OTHER TYPES. MINIMUM 85% NOMINAL POWER FACTOR UNDER RATED LOAD CONDITIONS. GREASE
- LUBRICATED ANTI-FRICTION BALL BEARINGS, RATED FOR MINIMUM AFBMA 9, L-10 LIFE OF 200,000 HOURS.
- 1. SEE ELECTRICAL STARTER DISCONNECT SCHEDULE ON PLANS.

### 23 05 29 PIPE AND EQUIPMENT HANGERS AND SUPPORTS

- A. MANUFACTURERS: B-LINE, EMPIRE INDUSTRIES, GLOBAL PIPE HANGER PRODUCTS, GRINNELL, NATIONAL PIPE
- B. HOT DIP GALVANIZED HANGERS, RODS, AND ACCESSORIES AFTER FABRICATION WHICH ARE EXPOSED TO WEATHER. ANGLES, CHANNELS, AND BEAMS: ASTM A36 AND A572 AS REQUIRED.
- HANGERS SHALL NOT BE ATTACHED TO JOIST BRIDGING. E. ATTACHMENT TO METAL DECK: HANGERS MAY BE ANCHORED TO METAL FLOOR/ROOF DECK IF ALL THE FOLLOWING
- CONDITIONS ARE MET: a. MAXIMUM HANGER LOAD OF 50 LBS.
- b. ANCHORED TO BOTTOM OF DECK FLUTES, NOT UPPER FLUTE. c. ANCHOR LENGTH SHALL NOT EXCEED DECK DEPTH.
- PIPE HANGERS AND SUPPORTS 1. SEE DETAILS ON PLANS FOR ADDITIONAL PIPE HANGER SPECIFICATIONS.
- 2. SEE SCHEDULE ON PLANS FOR HANGER SPACING. 3. CONFORM TO ASME B31.9 AND MANUFACTURER'S STANDARDIZATION SOCIETY (MSS) SP-58-2009.
- 4 MATERIALS
- 5. INSTALL HANGERS AND SUPPORTS SO PIPING LIVE AND DEAD LOADS AND STRESSES FROM MOVEMENT WILL NOT BE TRANSMITTED TO CONNECTED EQUIPMENT. ADJUST HANGERS TO DISTRIBUTE LOADS EQUALLY ON ATTACHMENTS AND TO PROVIDE INDICATED PIPE SLOPES. G. STRUT SYSTEM
- 1. COMPLY WITH THE LATEST REVISION OF MFMA STANDARDS PUBLICATION NUMBER MFMA-3, "METAL FRAMING STANDARDS PUBLICATION"
- 2. INSTALL STRUT IN ACCORDANCE WITH MFMA-102 "GUIDELINES FOR THE USE OF METAL FRAMING"; IN ACCORDANCE WITH EQUIPMENT MANUFACTURER'S RECOMMENDATIONS, AND WITH RECOGNIZED INDUSTRY
- 3. COLD FORMED LOW CARBON STEEL METAL FRAMING CHANNEL STRUT: B-LINE TYPE B CHANNEL. 4. MANUFACTURER'S STANDARD FINISH OR PLAIN FINISH UNLESS INSTALLED OUTDOORS, OR IN WET LOCATIONS.
- 5. 1-5/8 INCHES WIDE IN VARYING HEIGHTS AND WELDED COMBINATIONS AS REQUIRED TO MEET LOAD

# **23 07 00 INSULATION**

- 1. SEE INSULATION SCHEDULES ON PLANS FOR ADDITIONAL INFORMATION.
- 2. INSULATION, INSULATION SYSTEM AND JACKETS SHALL MEET UL-723/ASTM E84 REQUIREMENTS OF MAX. FIRE HAZARD CLASSIFICATIONS OF 25, AND MAX. FLAME SPREAD, FUEL CONTRIBUTED, AND SMOKE DEVELOPED OF 50 WHEN INSTALLED IN A RETURN AIR PLENUM.
- 3. INSTALL MATERIALS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND MICA PUBLICATION "NATIONAL COMMERCIAL AND INDUSTRIAL STANDARDS", EIGHTH EDITION.

- 4. CONTINUE INSULATION WITHOUT INTERRUPTIONS THROUGH WALLS AND FLOOR PENETRATIONS AND
- B. FIBERGLASS (F.G.) INSULATION
- FLEX. F.G.: a. O.C. SOFTR DUCT WRAP, KNAUF FRIENDLY FEEL DUCT WRAP, CERTAINTEED SOFTTOUCH, JOHNS MANVILLE
- MICROLITE EQ FSK DUCT WRAP. b. GLASS FIBER INSULATION FACTORY LAMINATED TO FRK/FSK VAPOR RETARDER. LISTED THICKNESS IS
- c. 0.75 LB/CU. FT., R=3.3 / NOMINAL INCH AT 75 DEG F. d. MAX 250 DEG F, JACKET MAX 150 DEG F, 0.02 PERM.
- 2. ACOUSTICAL DUCT LINING a. O.C. QUIETR ROTARY DUCT LINER, KNAUF EQUIPMENT LINER M, CERTAINTEED TOUGHGARD 2, JOHNS
- b. DUCT LINER COMPLYING WITH ASTM C1071, NFPA 90A AND 90B.
- c. LININGS MUST MEET ASTM C1338, ASTM G21 FUNGI TEST AND ASTM G22 BACTERIA TEST. d. AIR STREAM SURFACES SHALL BE EVALUATED IN ACCORDANCE WITH THE "EROSION TEST" IN UL 181 AND SHALL NOT BREAK AWAY, CRACK, PEEL, FLAKE OFF, OR SHOW EVIDENCE OF DELAMINATION OR CONTINUED EROSION UNDER TEST CONDITIONS.
- e. EDGE COAT ALL TRANSVERSE JOINTS AND EXPOSED EDGES. f. R= 4.2 /INCH AT 75 DEG F.
- g. MAX 250 DEG F
- C. DUCT INSULATION REQUIREMENTS
- 1. INSULATE FITTINGS, JOINTS, FLANGES, FLEXIBLE CONNECTIONS, DAMPERS, AND IN-LINE ACCESSORIES WITHOUT INTERNAL LINING/INSULATION WITH SAME MATERIAL AND THICKNESS AS SPECIFIED FOR THE DUCT SYSTEM. STOP AND POINT INSULATION AROUND ACCESS DOORS AND DAMPER OPERATORS TO ALLOW OPERATION WITHOUT DISTURBING WRAPPING.

#### 23 11 23 NATURAL GAS PIPING AND ACCESSORIES

- 1. INSTALL, INSPECT, TEST, AND PURGE GAS PIPING IN CONFORMANCE WITH NFPA 54, UTILITY COMPANY AND ALL
- OTHER GOVERNING CODES. 2. MAKE BRANCH CONNECTIONS TO THE MAIN FROM THE TOP OR SIDE.
- 3. PAINTING PER SPECIFICATION 09 91 00 PAINTING.
- 4. PROVIDE PIPE SLEEVE FOR PIPES PASSING THRU FOUNDATION WALL AND SEAL VOID SPACE. B. GAS VALVES
- 1. UL LISTED FOR USE AS NATURAL GAS SHUTOFF.
- 2. BALL VALVES (MANUFACTURERS: NIBCO 585/580-70UL, WATTS B6000UL): BRONZE BODY, THREADED ENDS, CHROME PLATED BRONZE BALL, FULL/CONVENTIONAL PORT, TEFLON SEAT, BLOWOUT-PROOF STEM, TWO-PIECE CONSTRUCTION, 150 PSIG WORKING PRESSURE.
- 3. PLUG VALVES (MANUFACTURERS: DEZURIK PEC, HOMESTEAD SERIES 612): CAST IRON BODY, FLANGED ENDS, BRONZE BEARINGS, ELECTROLESS NICKEL PLATED CAST IRON PLUG WITH HYCAR RESILIENT PLUG SEAL, BUNA-N STEM SEAL PACKING, LEVER ACTUATOR, 175 PSIG WOG.
- C. GAS PRESSURE REGULATORS 1. CAST IRON BODY, ALUMINUM SPRING CASE, ALUMINUM ORIFICE, BUNA-N DIAPHRAGM, INTERNAL RELIEF VALVE SET TO RELIEVE AT 7-10" W.C. ABOVE NORMAL OUTLET PRESSURE SETTING OF 7" WC., TOPCOAT ENAMEL.
- E. SENSUS MODELS 496, 61R2, 143-80, 243 3. FOR REGULATORS INSTALLED INDOORS, PIPE THE RELIEF VALVE VENT FULL SIZE TO THE OUTSIDE OF THE BUILDING AT A NON-HAZARDOUS LOCATION. INCREASE VENT SIZE ONE PIPE SIZE IF VENT LENGTH EXCEEDS 10
- FEET. TERMINATE WITH AN ELBOW DOWN WITH A SCREEN OVER THE OPENING. DO NOT COMBINE VENTS. 4. MAXITROL 325 SERIES WITH VENT LIMITER ARE PERMITTED FOR INDOOR APPLICATIONS WHERE SUPPLYING LESS
- 5. FOR REGULATORS INSTALLED OUTDOORS, POSITION THE REGULATOR SO THE RELIEF VALVE VENT IS FACING DOWN OR INSTALL ELBOW FACING DOWN A MINIMUM 10 FEET FROM AN OUTSIDE AIR INTAKE AND 5 FEET FROM A GAS FLUE DISCHARGE.

#### 23 31 13 DUCTWORK

- A. PERFORM WORK IN ACCORDANCE WITH THE LATEST EDITIONS OF SMACNA HVAC DUCT CONSTRUCTION STANDARDS, NFPA 90A.
- 1. SEAL ALL OUTSIDE AIR DUCT JOINTS WATERTIGHT WITH SILICONE SEALANT.
- 2. PAINT THE INSIDE OF ALL DUCTS VISIBLE THROUGH GRILLES IN ROOMS WITH CEILINGS WITH DULL BLACK PAINT. 3. CERTAIN VERTICAL AND HORIZONTAL OFFSETS ARE INDICATED IN DUCTS TO INDICATE THE GENERAL POSITION RELATIONSHIP OF THE DUCTWORK SYSTEMS: PROVIDE ADDITIONAL OFFSETS AS REQUIRED TO COORDINATE WITH THE INSTALLATION OF OTHER SYSTEMS, CEILINGS AND STRUCTURE. THE DRAWINGS SHALL NOT BE
- SCALED TO DETERMINE EXACT LOCATION OF DUCTWORK. 4. PROVIDE TEMPORARY CLOSURES OF METAL OR TAPED POLYETHYLENE ON OPEN DUCTWORK TO PREVENT
- CONSTRUCTION DUST FROM ENTERING DUCTWORK SYSTEM. 5. LOCATE DUCTS WITH SUFFICIENT SPACE AROUND EQUIPMENT TO ALLOW NORMAL OPERATING AND
- 6. INCREASE DUCT SIZES GRADUALLY, NOT EXCEEDING 15 DEGREES WHENEVER POSSIBLE. 30 DEGREE MAXIMUM. 7. ROUND DUCTS MAY BE SUBSTITUTED FOR RECTANGULAR IF SIZED IN ACCORDANCE WITH ASHRAE TABLES OF EQUIVALENT RECTANGULAR AND ROUND DUCTS.
- 1. CONCEALED BRANCH DUCTWORK TO GRILLES AND DIFFUSERS MAY BE LONGITUDINAL LOCKSEAM. ALL OTHER

C. ROUND DUCTWORK

- ROUND DUCTWORK SHALL BE SPIRAL LOCKSEAM WITH FITTINGS AND COUPLINGS MINIMUM 2 GAUGES HEAVIER THAN DUCT. D. FLEXIBLE DUCTWORK
- 1. MANUFACTURERS: THERMAFLEX, FLEXMASTER, CLEVAFLEX.
- 2. U.L. 181 LISTED CLASS 1 FACTORY FABRICATED FLEXIBLE AIR DUCT, COMPLY WITH NFPA 90A, FLAME SPREAD OF
- 25 OR LESS, SMOKE DEVELOPED RATING OF 50 OR LESS. 3. MINIMUM PRESSURE RANGE -1/2" TO 4" W.C., TEMPERATURE RANGE 0-200 DEG F.
- 4. ACOUSTIC: THERMAFLEX M-KE OR G-KM, FLEXMASTER TYPE 1 OR 6
- a. POLYETHYLENE, SPUNBOUND NYLON OR CHLORINATED POLYETHYLENE LINER. b. DUCTWORK TO HAVE TESTED ACOUSTICAL PERFORMANCE NOT LESS THAN 2 DB LESS THAN THE TYPES . SEMI-RIGID FLEXIBLE ALUMINUM DUCTWORK NOT PERMITTED.
- 6. SUPPLY DUCTWORK SHALL BE INSULATED WITH FIBERGLASS INSULATION, MINIMUM R VALUE 4, WITH VAPOR BARRIER JACKET WITH MAXIMUM 0.10 PERM RATING
- 7. CONNECT TO SUPPLY DUCTWORK BY SLIDING CORE OVER COLLAR, TAPE JOINT WITH MINIMUM 3 WRAPS OF TAPE, AND APPLY METAL BAND CLAMP OR PANDUIT. FOR INSULATED DUCTWORK, PULL INSULATION AND OUTER JACKET BACK INTO POSITION, AND TAPE WITH MINIMUM 3 WRAPS OF TAPE BETWEEN FLEX DUCT AND
- 8. CONNECT TO GRILLES AND RETURN AND TRANSFER DUCTWORK WITH METAL BAND CLAMP OR PANDUIT. 9. MAXIMUM LENGTH FROM DUCTWORK TO GRILLES OR SLOTS 8'-0" WITH ONE 90 DEG ELBOW. 10. DO NOT RUN THROUGH WALLS OR PARTITIONS.
- E. DUCTWORK SEALANTS 1. MANUFACTURERS: HARDCAST SURE-GRIP 404 SOLVENT BASED DUCT SEALANT OR EQUIVALENT.
  - a. SYNTHETIC RUBBER RESIN BASE.
  - b. -20 TO 200 DEG F.
  - c. PRESSURE CLASSES UP TO 10" W.C., MEETING SEAL CLASS A. d. MAXIMUM FLAME SPREAD OF 25, SMOKE DEVELOPED OF 50.
  - e. APPLY MINIMUM 20-MIL THICK WET FILM AT TEMPERATURES BETWEEN 35-100 DEG F.
- 2. HARDCAST ALUMA-GRIP 701 OR EQUIVALENT PRESSURE SENSITIVE DUCT JOINT ROLLED SEALANT MAY BE USED IN PLACE OF MASTIC. SEALANT SHALL COMPLY WITH THE FOLLOWING:
- a. MILL FINISH ALUMINUM SUSTRATE WITH GRAY ADHESIVE. b. MINIMUM 30 MIL THICK
- c. MIN. 17 LB PER LINEAR INCH PEEL STRENGTH d. MAX FLAME SPREAD OF 25, MAX SMOKE DEVELOPED OF 50 WHEN TESTED IN ACCORDANCE WITH ASTM
- e. VOC: 0 G/L, COMPLIANT WITH LEED SCAQMD RULE 1168.
- f. PRESSURE CLASSES UP TO 10" W.C. F. DUCT CLEANING 1. PROTECT DUCTWORK AGAINST ENTRY OF FOREIGN MATTER DURING CONSTRUCTION. PROVIDE TEMPORARY
- END CAPS AND SEALS. PROVIDE TEMPORARY FILTERS OVER RETURN OR EXHAUST AIR INLETS IF DUCTWORK IS USED DURING CONSTRUCTION. 2. REMOVE ALL DIRT AND FOREIGN MATTER AND CLEAN DIFFUSERS, REGISTERS, AND GRILLES BEFORE OPERATING
- G. SEALING DUCT PENETRATIONS 1. THRU NON-RATED WALLS WHERE DRYWALL, CONCRETE, OR MASONRY EXTENDS TO STRUCTURE, FILL VOID BETWEEN DUCT AND WALL WITH MINERAL WOOL. CAULK BOTH SIDES WITH NON-HARDENING CAULK IF VOID

#### NOT ABOVE CEILING. 23 33 00 DUCTWORK ACCESSORIES

B. TURNING VANES

- A. GENERAL ALL DUCT ACCESSORIES SHALL BE CONSTRUCTED OF SAME MATERIAL AS DUCTWORK BEING INSTALLED
- 1. MANUFACTURERS: AERO/DYNE CO. H.E.P., HART & COOLEY, UNITED MCGILL, SEMCO. 2. RECTANGULAR DUCTWORK: AIRFOIL TURNING VANES IN ACCORDANCE WITH SMACNA FIG. 2-3 AND 2-4. VANE
- RADIUS AS PROVIDED BY AERO/DYNE H.E.P. OR 4-1/2 INCHES WITH A 3-1/2 INCH SPACING. 3. ROUND DUCTWORK: TWO-PIECE MITERED, MINIMUM 20 GAUGE. C. MANUAL VOLUME DAMPERS
- 1. MANUFACTURERS: RUSKIN, VENT PRODUCTS, UNITED MCGILL. 2. DAMPERS WITH EXTENDED SHAFTS AND QUADRANTS, OPERATOR WITH LOCKING DEVICE, POSITION INDICATOR, AND ELEVATED PLATFORM FOR EXTERNALLY INSULATED DUCTWORK.

NOTE: ALL SYMBOLS SHOWN MAY NOT APPEAR ON DRAWINGS.

R R	DUCT (R)ISE/(D)ROP		SA OR OA DUCT DOWN OR AWAY
	RADIUS ELBOW		EA DUCT DOWN OR AWAY
			LA DOCT DOWN OR AWAT
	SQUARE ELBOW WITH TURNING VANES		RA DUCT DOWN OR AWAY
	SQUARE ELBOW WITHOUT TURNING VANES	₩ V	D VOLUME DAMPER
	SQUARE OR RECTANGULAR BRANCH TAKEOFF	BC BC	DD BACKDRAFT DAMPER
	RECTANGULAR TO ROUND TAKEOFF	MC MC	DD MOTOR OPERATED DAMPER
	TEE WITH TURNING VANES	(DS) DS	SD DUCT SMOKE DETECTOR
T T	ROUND TO ROUND CONICAL TAKEOFF	F FC	D FIRE DAMPER
	ECCENTRIC TRANSITION	S SI	SMOKE DAMPER
	CONCENTRIC TRANSITION	FS FS	
	SQUARE TO ROUND TRANS.		G SUPPLY GRILLE
	DUCT CAP	1 1 1 1 / 1	i,rg,    (e)xhaust / (r)eturn / (t)ransfer g Ig
ALD	ACOUSTICALLY LINED DUCT	UCD U	CD UNDERCUT DOOR (BY GC)
SA	SUPPLY AIR DUCT UP	DTG ◆   D (0 SF)	TG DOOR TRANSFER GRILLE
OA OA	OUTSIDE AIR DUCT UP	F	FC FLEXIBLE CONNECTION
RA	RETURN AIR DUCT UP	FET A	AD ACCESS DOOR
EA	EXHAUST AIR DUCT UP		
MISCELLANEOU	S AND CONTROLS	<u>I</u>	
$\triangle$	DETAIL OR SECTION NUMBER	Ś	STATIC PRESS. SENSOR
$oxed{\mathbb{B}}$	SHEET NUMBER HUMIDISTAT / HUMID. SENSOR	SS	SLAB TEMPERATURE SENSOR
① ①	THERMOSTAT / TEMP. SENSOR	<u> </u>	COMBINATION STARTER
-			
VFD VFD AFF	VARIABLE FREQUENCY DRIVE	MS	MANUAL STARTER
AFF	ABOVE FINISHED FLOOR  ABOVE FINISHED GRADE		OC ON CENTER PC PLUMBING CONTRACTOR
AP	ACCESS PANEL		AO RETURN AIR OPENING
ВЈ	BETWEEN JOISTS		AO TRANSFER AIR OPENING
BOD	BOTTOM OF DUCT	E.	AO EXHAUST AIR OPENING
BOG	BOTTOM OF GRILLE	T	CC TEMPERATURE CONTROL CONTRACTO
EC	ELECTRICAL CONTRACTOR	Т	CP TEMPERATURE CONTROL PANEL
GC	GENERAL CONTRACTOR / CONSTRUCTION MANAGER	Т	rj thru joists
HC	HVAC CONTRACTOR	T	YP. TYPICAL
IMP	INSULATED METAL PANEL	Т	TS TIGHT TO STRUCTURE
NIC	NOT IN CONTRACT	1	TV TURNING VANES
NTS	NOT TO SCALE	W	/WM WELDED WIRE MESH
PIPING			
<u> </u>	SHUTOFF VALVE	->O	RV PRESS. REDUCING VALVE
<b> </b>	BALANCE VALVE	_ <b>_</b> ₹ <del> </del>	RV SAFETY RELIEF VALVE
M	CHECK VALVE	-&-	STEAM TRAP
<i>-</i> Ø−	COMBINATION VALVE	<del>-X-</del>	ANCHOR
+	STRAINER		GUIDE
	DRAIN VALVE	<u> </u>	PIPING BOTTOM TAKE-OFF
	GLOBE VALVE		PIPING TOP TAKE-OFF
		<del>                                     </del>	PIPE DOWN OR AWAY
	THERMOMETER	<del>-</del>	
PG PG	PRESSURE GAUGE	_0	PIPE UP
<del>-    -</del>	GAUGE COCK	<del></del> ]	PIPING CAP
→ <mark>S</mark> — TCV	TEMP. CONTROL VALVE	<b>—</b>   —	UNION/FLANGE
	TEST CONNECTION		PIPE PITCH DOWN
수 MAV	MANUAL AIR VENT	<b>→</b>	CONCENTRIC REDUCER
<b>-E</b> FM	FLOW METER		ECCENTRIC REDUCER
<u> </u>	FLOW CONTROL / SHUTOFF VALVE	- <b>-</b>	FC FLEXIBLE CONNECTION
<u>-Ψ-</u> Α	FLOW CONTROL VALVE		BF BLIND FLANGE
GEO-S/GEO-R	GEOTHERMAL SUPPLY/RETURN	HWS/F	
CTS/CTR	COOLING TOWER WATER SUPPLY/RETURN	GS/G	
MU	MAKEUP WATER	RWS/R	
LPS/LPC	LOW PRESSURE STEAM/CONDENSATE	SMS/S	MR SNOW MELT SUPPLY/RETURN
HPS/HPC	HIGH PRESSURE STEAM/CONDENSATE	FOS/F	OR FUEL OIL SUPPLY/RETURN
PC	PUMPED CONDENSATE	BF	BOILER FEED
G/LP	NATURAL GAS/LP GAS	CF	
D CLIME (CLIME	DRAIN  CUILLED WATER SURDIVIDETURN	A	
CHWS/CHWR	CHILLED WATER SUPPLY/RETURN	V	VENT
FIRE RATED WA			
	TALL THOOK		FIRE - 3 HOUR
	FIRE - 2 HOUR		FIRE - 4 HOUR

### PROJECT DESIGN CRITERIA

MECHANICAL CODE **MN MC 2020** ENERGY CODE MN EC 2020 SEISMIC DESIGN CATEGORY A NEAREST ASHRAE CITY **ST PAUL DOWNTOWN** ELEVATION **700** 

	OUTSIDE				
	DB WB				
WINTER:	-15	N/A			
SUMMER:	88	72			

BASED ON ASHRAE 0.4% DESIGN CONDITIONS

HVAC	
H0.1	LEGEND AND SPECIFICATIONS
H0.2	SPECIFICATIONS
H1.1	FIRST FLOOR PLAN
H1.2	ROOF PLAN
H3.0	DETAILS
H3.1	DETAILS
H4.0	SCHEDULES

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PROJECT INFORMATION

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PROFESSIONAL SEAL

**SHEET DATES** FEB. 14, 2023 REVISIONS

> **JOB NUMBER** 2255300

SHEET NUMBER

# **HVAC SPECIFICATIONS (CONT.)**

- 3. EVERY SUPPLY, RETURN AND EXHAUST GRILLE SHALL HAVE EITHER A VOLUME DAMPER IN THE BRANCH DUCT OR AT THE GRILLE WHERE SHOWN. IF ONE IS NOT SHOWN, CONTRACTOR SHALL PROVIDE VOLUME DAMPER IN DUCT IF DUCT IS ACCESSIBLE, OTHERWISE AT THE GRILLE.
- 4. RECTANGULAR DAMPERS WHICH DO NOT EXCEED 12" HIGH OR 36" WIDE: BUTTERFLY DAMPER, MINIMUM 22 GAUGE. SHAFT ALONG ENTIRE LENGTH OF DAMPER FOR DAMPERS EXCEEDING 18" IN WIDTH. 5. RECTANGULAR DAMPERS GREATER THAN 12" HIGH OR 36" WIDE: MULTI-BLADE DAMPER WITH CONNECTING
- LINKAGE TO CONTROL FROM A SINGLE POINT. BLADES MINIMUM 16 GAUGE WITH OPPOSED BLADE ACTION. 6. ROUND DAMPERS: MINIMUM 20 GAUGE BUTTERFLY DAMPER.
- D. TAKE-OFF FITTINGS
- 1. MANUFACTURERS: FLEXMASTER, UNITED MCGILL.
- 2. ROUND BRANCH TAKE-OFFS TO MULTIPLE GRILLES SHALL BE CONICAL. 3. RECTANGULAR BRANCH TAKE-OFFS TO MULTIPLE GRILLES SHALL BE PER DUCT FITTING DETAIL ON PLANS.
- 4. ROUND TAKE-OFFS TO INDIVIDUAL GRILLES AND SLOT DIFFUSERS: ONE PIECE SPIN-IN WITH INTEGRAL FACTORY INSTALLED LOCKING TYPE BALANCING DAMPERS.
- E. DUCT ACCESS DOORS
- 1. PROCESS DUCT: SEE DETAIL ON PLANS.
- 2. MANUFACTURERS: CESCO, FLEXMASTER, VENT PRODUCTS, KEES, UNITED MCGILL, SEMCO, DUCTMATE. 3. HINGE, LATCHES, HANDLES, AND RUBBER GASKET IN FRAME. 1" INSULATED DOUBLE WALL CONSTRUCTION FOR DOORS IN LINED OR EXTERNALLY INSULATED DUCTWORK. ATTACHMENT CABLES FOR SPIN-IN UNITS. DOOR
- SUITABLE FOR DUCT STATIC PRESSURE CLASS. 4. DOOR SIZE 2" LESS THAN THE WIDTH OF THE DUCT (MAX. DOOR SIZE 24"X 24" (24" DIA.).
- 5. ROUND DUCTWORK: 16 GAUGE ROLLED SHEET METAL HINGED ACCESS DOOR WITH BUCKLE LOCKS.
- a. MOTOR OPERATED AND BACKDRAFT DAMPERS
- b. UPSTREAM SIDE OF TURNING VANES IN RETURN AND EXHAUST DUCTWORK c. DRAIN PANS
- d. AT ANY DEVICE IN THE DUCT WHICH REQUIRES MAINTENANCE, SERVICE OR CLEANING.
- 7. USE HINGED ACCESS DOORS WHERE POSSIBLE. USE CAM OPERATED REMOVABLE DOORS WHERE SPACE PREVENTS THE OPENING OF A HINGED MODEL.
- F. FLEXIBLE CONNECTIONS 1. MANUFACTURERS: VENTFABRICS, DURO-DYNE.
- 2. MATERIAL BOLTED SECURELY TO THE EQUIPMENT AND CONNECTING DUCTWORK WITH #16 GAUGE GALVANIZED IRON BAND (LOOP) CLAMPS BOLTED TIGHT TO MAKE AN AIRTIGHT CONNECTION, MINIMUM 6"
- 3. PROVIDE AT INLET AND OUTLET OF ALL AIR HANDLING UNITS AND FANS IN ACCORDANCE WITH SMACNA
- 4. CONVENTIONAL INTERIOR: VENTGLAS, -20 TO 200 DEG F., 30 OZ. PER SQUARE YARD GLASS FABRIC DOUBLE COATED WITH NEOPRENE, UL 214 APPROVED.

#### 23 90 00 TEMPERATURE CONTROLS

- A. INSTALLER QUALIFICATIONS: AUTOMATIC CONTROL SYSTEM MANUFACTURER'S AUTHORIZED REPRESENTATIVE WHO IS TRAINED AND APPROVED FOR INSTALLATION OF SYSTEM COMPONENTS REQUIRED FOR THIS PROJECT.
- B. ALL PRODUCTS USED IN THIS INSTALLATION SHALL BE NEW, CURRENTLY UNDER MANUFACTURE, AND SHALL BE APPLIED IN STANDARD OFF THE SHELF PRODUCTS. THIS INSTALLATION SHALL NOT BE USED AS A TEST SITE FOR ANY NEW PRODUCTS UNLESS EXPLICITLY APPROVED BY THE ENGINEER IN WRITING. SPARE PARTS SHALL BE AVAILABLE FOR AT LEAST 5 YEARS AFTER COMPLETION OF THIS CONTRACT.
- C. ELECTRICAL COMPONENTS, DEVICES, AND ACCESSORIES: LISTED AND LABELED AS DEFINED IN NFPA 70, ARTICLE 100, BY A TESTING AGENCY ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION, AND MARKED FOR INTENDED USE. D. LABOR AND MATERIALS FOR THE CONTROL SYSTEM SPECIFIED SHALL BE WARRANTED FREE FROM DEFECTS FOR A
- PERIOD OF 12 MONTHS AFTER FINAL COMPLETION AND ACCEPTANCE. CONTROL SYSTEM FAILURES DURING THE WARRANTY PERIOD SHALL BE ADJUSTED, REPAIRED, OR REPLACED AT NO ADDITIONAL COST OR REDUCTION IN SERVICE TO THE OWNER.
- E. CONNECT AND CONFIGURE EQUIPMENT AND SOFTWARE TO ACHIEVE SEQUENCE OF OPERATION SPECIFIED. F. CONTROLLER HARDWARE USED OUTDOORS AND/OR IN WET AMBIENT CONDITIONS SHALL BE MOUNTED WITHIN NEMA 3R ENCLOSURES, AND RATED FOR OPERATION AT -40 DEG F TO 150 DEG F AND 10 TO 90% RH. HARDWARE
- USED IN CONDITIONED SPACE SHALL BE MOUNTED IN AN ENCLOSURE AND BE RATED FOR OPERATION AT 32 DEG F G. POWER SUPPLIES: UL LISTED TRANSFORMERS WITH CLASS 2 CURRENT-LIMITING TYPE OR OVERCURRENT
- PROTECTION; LIMIT CONNECTED LOADS TO 80 PERCENT OF RATED CAPACITY. DC POWER SUPPLY SHALL MATCH OUTPUT CURRENT AND VOLTAGE REQUIREMENTS AND BE FULL-WAVE RECTIFIER TYPE.
- H. POWER LINE FILTERING: INTERNAL OR EXTERNAL TRANSIENT VOLTAGE AND SURGE SUPPRESSION. I. ELECTRONIC SENSORS/TRANSMITTERS
- INSTALLATION
- a. INSTALL ALL SENSORS IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. b. ROOM TEMPERATURE SENSORS SHALL BE INSTALLED ON CONCEALED JUNCTION BOXES PROPERLY
- SUPPORTED BY THE WALL FRAMING WITH CONDUIT STUB TO ABOVE THE CEILING.
- c. INSTALL DEVICES WHICH HAVE ADJUSTMENT 48 INCHES ABOVE THE FLOOR OR COMPLY WITH CURRENT ADA REQUIREMENTS. INSTALL NON-ADJUSTABLE CONTROL SENSORS AT 60 INCHES ABOVE THE FLOOR.
- d. COORDINATE LOCATION OF THERMOSTATS AND OTHER EXPOSED CONTROL SENSORS WITH PLANS AND ROOM DETAILS BEFORE INSTALLATION.
- e. ALL WIRES ATTACHED TO SENSORS SHALL BE AIR SEALED IN THEIR RACEWAYS OR IN THE WALL TO STOP AIR TRANSMITTED FROM OTHER AREAS AFFECTING SENSOR READINGS.
- 1. ELECTRIC, SOLID-STATE, MICROCOMPUTER-BASED ROOM THERMOSTAT WITH REMOTE SENSOR (7 DAY PROGRAMMABLE): HONEYWELL VISIONPRO 8000. THERMOSTAT SHALL HAVE THE CAPABILITY TO SET BACK OR TEMPORARILY OPERATE THE SYSTEM TO MAINTAIN ZONE TEMPERATURES DOWN TO 55 DEG. F AND SHALL HAVE OPTIMAL START CAPABILITY. a. SEE "SEQUENCE OF OPERATION" FOR ADDITIONAL INFORMATION.
- 2. ELECTRIC, LOW- AND HIGH-LIMIT DUCT THERMOSTATS: SNAP-ACTING, SINGLE-POLE, SINGLE-THROW, MANUAL RESET SWITCH THAT TRIPS IF TEMPERATURE SENSED ACROSS ANY 12 INCHES OF BULB LENGTH IS BELOW OR ABOVE RESPECTIVE SET POINT. HARDWIRE TO OUTSIDE AIR DAMPER, HOT WATER VALVE, AND FAN STARTER.
- b. QUANTITY: ONE THERMOSTAT FOR EVERY 20 SQ. FT. OF COIL SURFACE.
- K. AUXILIARY CONTROL DEVICES 1. RELAYS: SEE ELECTRICAL STARTER DISCONNECT SCHEDULE.

a. BULB LENGTH: MINIMUM 20 FEET.

- 2. VOLTAGE TRANSFORMERS: UL/CSA RECOGNIZED, 600 VAC RATED, COMPLETE WITH BUILT-IN FUSE PROTECTION. SUITABLE FOR AMBIENT TEMPERATURES OF 40 TO 130 DEG F. PROVIDE PLUS OR MINUS 0.5% ACCURACY AT 24 VAC AND A 5 VA LOAD. WINDINGS COMPLETELY ENCLOSED WITH METAL OR PLASTIC MATERIAL.
- L. ELECTRICAL WIRING AND CONNECTION INSTALLATION 1. PROVIDE 120 VAC POWER TO ANY CONTROL PANELS RELATED TO THIS SECTION NOT SHOWN ON THE
- 2. ALL CONTROL AND INTERLOCK WIRING SHALL COMPLY WITH NATIONAL AND LOCAL ELECTRICAL CODES AND ELECTRICAL SPECIFICATION. WHERE THE REQUIREMENTS OF THIS SECTION DIFFER WITH THOSE IN THE
- ELECTRICAL SPECIFICATIONS, THE MORE STRINGENT REQUIREMENTS SHALL TAKE PRECEDENCE. 3. ALL NEC CLASS 1 (LINE VOLTAGE) WIRING SHALL BE UL LISTED IN APPROVED RACEWAY PER NEC AND ELECTRICAL SPECIFICATIONS.
- 4. SEE ELECTRICAL SPECIFICATIONS FOR CONDUIT REQUIREMENTS. 5. ALL LOW-VOLTAGE WIRING SHALL MEET NEC CLASS 2 REQUIREMENTS. (LOW-VOLTAGE POWER CIRCUITS SHALL
- BE SUB-FUSED WHEN REQUIRED TO MEET CLASS 2 CURRENT-LIMIT). 6. ALL WIRING IN MECHANICAL, ELECTRICAL, OR SERVICE ROOMS AND WHERE SUBJECT TO DAMAGE SHALL BE
- 7. WHERE NEC CLASS 2 (CURRENT-LIMITED) WIRES ARE IN CONCEALED AND ACCESSIBLE LOCATIONS, APPROVED CABLES NOT IN RACEWAY MAY BE USED PROVIDED THAT CABLES ARE UL LISTED FOR THE INTENDED
- 8. DO NOT INSTALL CLASS 2 WIRING IN RACEWAY, BOXES AND PANELS CONTAINING CLASS 1 WIRING. 9. SUPPORT CABLES AND RACEWAYS FROM STRUCTURAL MEMBERS. CABLES AND RACEWAYS SHALL NOT BE SUPPORTED BY DUCTWORK, ELECTRICAL RACEWAYS, PIPING, OR CEILING SUSPENSION SYSTEMS. SECURE AND SUPPORT CABLE AT INTERVALS NOT EXCEEDING 30 INCHES AND NOT MORE THAN 6 INCHES FROM CABINETS,
- BOXES, FITTINGS, OUTLETS, RACKS, FRAMES, AND TERMINALS. 10. INSTALL WIRING IN SLEEVES WHERE IT PASSES THROUGH WALLS AND FLOORS. MAINTAIN FIRE RATING AT ALL
- 11. SIZE OF WIRE AND RACEWAY SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR, AND BE PER THE
- MANUFACTURER'S RECOMMENDATION AND NEC REQUIREMENTS. 12. INCLUDE ONE PULL STRING IN EACH RACEWAY 1" OR LARGER.
- 13. LOCATE CONTROL AND STATUS RELAYS IN DESIGNATED ENCLOSURES ONLY.
- 14. FLEXIBLE METAL RACEWAYS ARE NOT PERMITTED OVER 6 FEET. 15. MAINTAIN UPDATED (AS-BUILT) WIRING DIAGRAMS WITH TERMINATIONS IDENTIFIED AT THE JOB SITE.
- 16. IDENTIFICATION OF HARDWARE AND WIRING a. LABEL ALL WIRING AND CABLING, INCLUDING THAT WITHIN FACTORY-FABRICATED PANELS, AT EACH END WITHIN 2" OF TERMINATION WITH THE DDC ADDRESS OR TERMINATION NUMBER.
- b. PERMANENTLY LABEL OR CODE EACH POINT/OBJECT OF FIELD TERMINAL STRIPS TO SHOW THE INSTRUMENT OR ITEM SERVED. M. DUCT SMOKE DETECTORS AND THE INTERLOCK REQUIRED FOR AIR HANDLING EQUIPMENT SHUTDOWN ARE
- FURNISHED AND INSTALLED UNDER ELECTRICAL SPECIFICATIONS OR BY THE EQUIPMENT MANUFACTURER. 1. INSTALL EQUIPMENT, PIPING, AND WIRING/RACEWAY PARALLEL TO BUILDING LINES (I.E., HORIZONTAL,
- VERTICAL, AND PARALLEL TO WALLS) WHEREVER POSSIBLE. 2. INSTALL ALL EQUIPMENT IN READILY ACCESSIBLE LOCATIONS AS DEFINED BY CHAPTER 1, ARTICLE 100, PART A
- OF THE NATIONAL ELECTRICAL CODE (NEC). 3. THE CONTRACTOR SHALL PROTECT ALL WORK AND MATERIAL FROM DAMAGE BY HIS WORK OR EMPLOYEES,
- AND SHALL BE LIABLE FOR ALL DAMAGE THUS CAUSED. 4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR HIS WORK AND EQUIPMENT UNTIL FINALLY INSPECTED, TESTED, AND ACCEPTED. THE CONTRACTOR SHALL PROTECT ANY MATERIAL THAT IS NOT IMMEDIATELY INSTALLED.
- 5. TEST AND BALANCE: FURNISH ALL TOOLS NECESSARY TO INTERFACE TO THE CONTROL SYSTEM FOR TEST AND BALANCE PURPOSES. PROVIDE A QUALIFIED TECHNICIAN TO ASSIST IN THE TEST AND BALANCE PROCESS.

- O. FIELD QUALITY CONTROL
- 1. INSPECT, TEST, AND ADJUST FIELD-ASSEMBLED COMPONENTS AND EQUIPMENT INSTALLATION, AND TO ASSIST
- 2. PERFORM THE FOLLOWING FIELD TESTS AND INSPECTIONS AND PREPARE TEST REPORTS: a. OPERATIONAL TEST: AFTER ELECTRICAL CIRCUITRY HAS BEEN ENERGIZED, START UNITS TO CONFIRM
- PROPER UNIT OPERATION. REMOVE AND REPLACE MALFUNCTIONING UNITS AND RETEST. TEST AND ADJUST CONTROLS AND SAFETIES
- c. TEST CALIBRATION OF ELECTRONIC CONTROLLERS BY DISCONNECTING INPUT SENSORS AND SIMULATING OPERATION WITH COMPATIBLE SIGNAL GENERATOR. d. TEST EACH POINT THROUGH ITS FULL OPERATING RANGE TO VERIFY THAT SAFETY AND OPERATING
- CONTROL SET POINTS ARE AS REQUIRED. e. TEST EACH CONTROL LOOP TO VERIFY STABLE MODE OF OPERATION AND COMPLIANCE WITH SEQUENCE
- OF OPERATION. ADJUST PID ACTIONS. f. TEST EACH SYSTEM FOR COMPLIANCE WITH SEQUENCE OF OPERATION.
- g. TEST SOFTWARE AND HARDWARE INTERLOCKS.
- P. CALIBRATING AND ADJUSTING: CALIBRATE INSTRUMENTS.
- MAKE THREE-POINT CALIBRATION TEST FOR BOTH LINEARITY AND ACCURACY FOR EACH ANALOG INSTRUMENT. 3. CALIBRATE EQUIPMENT AND PROCEDURES USING MANUFACTURER'S WRITTEN RECOMMENDATIONS AND INSTRUCTION MANUALS. USE TEST EQUIPMENT WITH ACCURACY AT LEAST DOUBLE THAT OF INSTRUMENT BEING CALIBRATED.
- 4. CONTROL SYSTEM INPUTS AND OUTPUTS: a. CHECK ANALOG INPUTS AT 0, 50, AND 100 PERCENT OF SPAN.

b. CALIBRATE TEMPERATURE SWITCHES TO MAKE OR BREAK CONTACTS.

- b. CHECK ANALOG OUTPUTS USING MILLIAMPERE METER AT 0, 50, AND 100 PERCENT OUTPUT.
- c. CHECK DIGITAL INPUTS USING JUMPER WIRE. d. CHECK DIGITAL OUTPUTS USING OHMMETER TO TEST FOR CONTACT MAKING OR BREAKING.
- e. CHECK RESISTANCE TEMPERATURE INPUTS AT 0, 50, AND 100 PERCENT OF SPAN USING A PRECISION-RESISTANT SOURCE.
- a. CALIBRATE RESISTANCE TEMPERATURE TRANSMITTERS AT 0, 50, AND 100 PERCENT OF SPAN USING A PRECISION-RESISTANCE SOURCE.
- PROVIDE A MINIMUM OF TWO ONSITE TRAINING CLASSES, 2 HOURS EACH SEPARATED BY TWO WEEKS, AT THE
- COMPLETION OF CALIBRATING AND ADJUSTING FOR PERSONNEL DESIGNATED BY THE OWNER. 2. RECORD ALL OPERATING INSTRUCTIONS TO A DIGITAL FILE FORMAT (MP4 OR MPEG) AND PROVIDE A COPY TO
- OWNER ON A LABELED USB FLASH DRIVE. INCLUDE THE INSTALLATION FILE FOR A COMPATIBLE VIDEO PLAYER 3. PROVIDE DOCUMENTATION OF ITEMS COVERED IN TRAINING EITHER IN HARD COPY OR ELECTRONIC FORMAT.
- 4. TRAIN THE OWNER DESIGNATED DAY-TO-DAY OPERATORS TO ENABLE THEM TO:
- a. PROFICIENTLY OPERATE THE SYSTEM
- b. ADJUST AND CHANGE SYSTEM SETPOINTS, TIME SCHEDULES, AND HOLIDAY SCHEDULES c. UNDERSTAND SYSTEM DRAWINGS, AND OPERATION AND MAINTENANCE MANUAL
- d. UNDERSTAND THE JOB LAYOUT AND LOCATION OF CONTROL COMPONENTS 5. OCCUPANCY ADJUSTMENTS: WHEN REQUESTED WITHIN 12 MONTHS OF DATE OF SUBSTANTIAL COMPLETION,
- PROVIDE ON-SITE ASSISTANCE IN ADJUSTING SYSTEM TO SUIT ACTUAL OCCUPIED CONDITIONS. PROVIDE UP TO TWO VISITS TO PROJECT DURING OTHER THAN NORMAL OCCUPANCY HOURS FOR THIS PURPOSE.

#### 23 90 10 SEQUENCE OF OPERATION

- A. ROOFTOP AIR CONDITIONING UNITS
- 1. PROVIDE A HONEYWELL VISION PRO 8000 SEVEN DAY PROGRAMMABLE HEATING/COOLING THERMOSTAT CAPABLE OF 2 STAGES OF HEATING AND 2 STAGES OF COOLING (CONVENTIONAL), WITH ECONOMIZER/TIME OF
- EQUIPMENT OPERATION DURING UNOCCUPIED PERIODS. b. SET INSTALLER SETUP NUMBERS TO MATCH INSTALLED SYSTEM IN ADDITION TO THE FOLLOWING

a. SET FAN SETTING TO "ON" FOR FAN TO RUN CONTINUOUSLY IN OCCUPIED PERIODS, AND TO RUN WITH

- (CONTACT ENGINEER WITH ANY QUESTIONS REGARDING ANY SETUP NUMBERS): 1). 101 APPLICATION: COMMERCIAL 2). 326 EXTENDED FAN RUN TIME IN HEAT: 60 SECONDS.
- 2. ECONOMIZER PACKAGE PROVIDED WITH ROOFTOP UNIT. MONITOR FAULT DETECTION AND DIAGNOSTICS
- 3. POWER RELIEF: CONTROLLED BY ROOFTOP UNIT BASED ON OUTSIDE AIR DAMPER POSITION.
- a. MOTOR OPERATED DAMPERS AND ACTUATORS FOR ENERGY RECOVERY UNIT OUTSIDE AIR AND EXHAUST AIR ARE FACTORY INSTALLED IN ERU.
- b. RTAC-1 THERMOSTAT AUXILIARY RELAY CONTACT SHALL CLOSE DURING OCCUPIED HOURS TO TURN THE ENERGY RECOVERY UNIT ON AND OPEN DAMPERS.
- 5. MOUNT AND WIRE ALL CONTROL WIRING ASSOCIATED WITH THE ROOFTOP UNITS AND ENERGY RECOVERY
- UNIT AND PROVIDE ANY ADDITIONAL DEVICES NECESSARY FOR A COMPLETE OPERATIONAL SYSTEM.

### 23 95 00 TESTING, ADJUSTING AND BALANCING

- A. QUALITY ASSURANCE
  - 1. PERFORM TOTAL SYSTEM BALANCE IN ACCORDANCE WITH AABC NATIONAL STANDARDS FOR FIELD MEASUREMENT AND INSTRUMENTATION, TOTAL SYSTEM BALANCE OR NEBB PROCEDURAL STANDARDS FOR TESTING, BALANCING AND ADJUSTING OF ENVIRONMENTAL SYSTEMS, AND ASHRAE STANDARD 111.
- 2. THE TESTING, ADJUSTING AND BALANCING (TAB) CONTRACTOR SHALL BE AN INDEPENDENT COMPANY SPECIALIZING IN THE TESTING, ADJUSTING, AND BALANCING OF SYSTEMS WITH MINIMUM THREE YEARS
- EXPERIENCE AND NOT ASSOCIATED WITH THE SUPPLIERS OF EQUIPMENT OR THE INSTALLING CONTRACTOR. 3. PERFORM WORK UNDER SUPERVISION OF AABC CERTIFIED TEST AND BALANCE ENGINEER OR NEBB CERTIFIED TESTING, BALANCING AND ADJUSTING SUPERVISOR.
- 1. CONTRACTOR SHALL SUBMIT THE FINAL TESTING AND BALANCING REPORT PRIOR TO PROJECT COMPLETION AND IN ADVANCE OF DATE OF OCCUPANCY. SUBMIT REPORTS ON AABC NATIONAL STANDARDS FOR TOTAL
- SYSTEM BALANCE OR NEBB FORMS. 2. SUBMIT THE DESIGN AND ACTUAL DATA FOR EACH SCHEDULED PIECE OF EQUIPMENT: MODEL; SUPPLY, RETURN, AND OUTSIDE AIR FLOWS; STATIC PRESSURE PROFILES OF AIR HANDLING UNIT COMPONENTS AND ALL FANS; FAN RPM, BHP, AMPERAGE; FAN AND MOTOR SHEAVE, DIAMETER, BORE AND MAKE; BELT SIZE AND QUANTITY; MOTOR SHEAVE CENTER LINE AND OPERATOR DISTANCE; ROOM AIR FLOW; ROOFTOP UNIT MAXIMUM AND
- C. INSTALLATION TOLERANCES 1. AIR HANDLING SYSTEMS: ADJUST SUPPLY SYSTEMS TO WITHIN PLUS OR MINUS 5 PERCENT OF DESIGN AND RETURN AND EXHAUST SYSTEMS TO PLUS OR MINUS 10 PERCENT OF DESIGN.
- 2. AIR OUTLETS AND INLETS: ADJUST TOTAL AIR FLOW TO SPACE TO WITHIN PLUS 10 PERCENT AND MINUS 5 PERCENT OF DESIGN.
- 3. ADJUST OUTLETS AND INLETS IN SPACE TO WITHIN PLUS OR MINUS 10 PERCENT OF DESIGN. D. AIR SYSTEM BALANCE

MINIMUM AIRFLOWS; EQUIPMENT FLOW RATES AND PRESSURE DROPS.

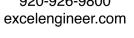
- 1. VARY TOTAL SYSTEM AIR QUANTITIES BY ADJUSTING FAN SPEEDS. VARY BRANCH AIR QUANTITIES BY DAMPER
- 2. ADJUST SETTINGS ON DIRECT DRIVE FANS WITH ECM MOTORS AS REQUIRED TO ACHIEVE DESIGN AIRFLOW. 3. ADJUST OUTSIDE AIR, RETURN AIR, AND EXHAUST AIR AUTOMATIC DAMPERS FOR DESIGN CONDITIONS. 4. TEST AIR HANDLING UNITS AT MINIMUM AND 100% OUTSIDE AIR.
- E. FANS WITH FIXED MOTOR SHEAVES TEST THE FAN EQUIPMENT. IF THE DESIGN CONDITIONS ARE NOT OBTAINED, CALCULATE THE FINAL FIXED MOTOR SHEAVE AND/OR BELTS REQUIRED TO OBTAIN DESIGN CONDITIONS. HEATING CONTRACTOR SHALL OBTAIN THE FINAL FIXED MOTOR SHEAVE AND BELT(S) FROM THE FAN MANUFACTURER AND TURN THEM OVER TO THE TAB CONTRACTOR FOR INSTALLATION.



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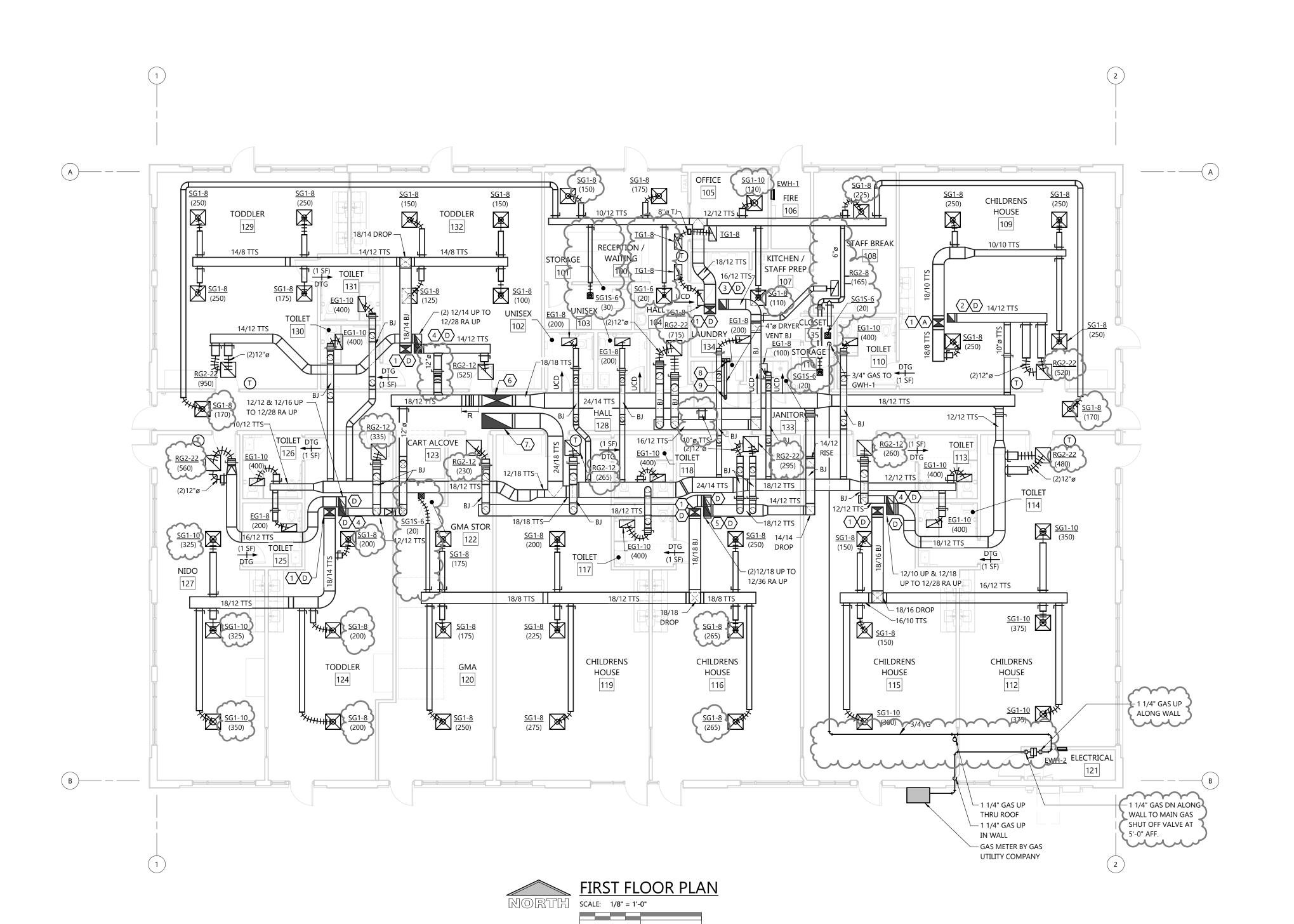
SHEET DATES FEB. 14, 2023 REVISIONS

**JOB NUMBER** 

2255300

SHEET NUMBER

**HVAC SPECIFICATIONS** 



## **GENERAL NOTES**

- DUCT FITTINGS SHALL BE TYPE SHOWN ON PLAN OR CALLED OUT BY KEYNOTE. SEE DETAIL 1/H3.0 FOR ATTIONAL FITTING DETAIL.
- VERIFY BUILDING OPENING AND CURB SIZES LISTED ON PLANS WITH ACTUAL EQUIPMENT SCHEDULED AND SUPPLIED. COORDINATE REQUIRED OPENING SIZES AND LOCATIONS WITH CONTRACTORS PROVIDING OPENING. SCHEDULES AND ACTUAL EQUIPMENT SIZES SHALL TAKE PRECEDENCE OVER SIZES SHOWN ON PLANS.
- DETAIL REFERENCES ON PLANS ARE TO AID THE CONTRACTOR IN IDENTIFYING THE APPLICABLE DETAIL. NOT ALL DETAILS, OR INSTANCES OF DETAILS, ARE REFERENCED ON PLANS. CONTRACTOR IS RESPONSIBLE TO REVIEW AND COMPLY WITH ALL APPLICABLE DETAILS WHETHER OR NOT REFERENCED ON
- COORDINATE LOCATION OF ALL EXPOSED PIPING AND DUCTWORK WITH OWNER PRIOR TO INSTALLATION.
- IF DUCT SYSTEMS ARE USED FOR TEMPORARY HEAT, PROVIDE TEMPORARY FILTERS AT RETURN AIR OPENINGS AND INSTALL FILTERS IN THE UNITS EQUIVALENT TO THE EFFICIENCY OF THE SPECIFIED FILTERS FOR THE UNIT. IF PROPER EFFICIENCY FILTERS ARE NOT INSTALLED IN UNIT, UNIT AND ALL DUCTWORK DOWNSTREAM OF UNIT SHALL BE CLEANED BEFORE TEST AND

## **KEYNOTES**

- (A) (H) SEE DUCT FITTING DETAILS 1/H3.0
- 1 18/12 SA UP TO RTAC.
- $\langle 2 \rangle$  12/14 RA UP TO RTAC TRANSITION TO RTAC CONNECTION SIZE IN RISE.
- 3 12/16 RA UP TO RTAC TRANSITION TO RTAC CONNECTION SIZE IN RISE.
- $\boxed{4}$  12/28 RA UP TO RTAC TRANSITION TO RTAC CONNECTION SIZE IN RISE.
- $\langle 5 \rangle$  12/36 RA UP TO RTAC TRANSITION TO RTAC CONNECTION SIZE IN RISE. 6 48/18 SA UP TO <u>ERU-1</u>. TRANSITION TO ERU CONNECTION SIZE IN RISE.
- $\langle 7 \rangle$  48/24 RA UP TO <u>ERU-1</u>. TRANSITION TO ERU CONNECTION SIZE IN RISE.
- 8 PROVIDE "DRYERBOX" MODEL 425 FOR DRYER EXHAUST. CONFIRM FINAL INSTALLATION HEIGHT WITH OWNER.
- $\langle 9 \rangle$  4"ø DRYER VENT UP.

# **GAS LOAD SUMMARY**

ITEM	INPUT	PRESSURE (
RTAC-1	110	7" W.C.
RTAC-2	67	7" W.C.
RTAC-3	150	7" W.C.
RTAC-4	110	7" W.C.
RTAC-5	110	7" W.C.
RTAC-6	110	7" W.C.
GWH-1	300	7" W.C.
TOTAL	957	

- GAS PRESSURE AT METER = 2 PSIG - PROVIDE GAS PRESSURE REGULATOR AT

EACH PIECE OF EQUIPMENT LISTED ABOVE. - CONNECT TO EACH PIECE OF EQUIPMENT LISTED ABOVE.

(1) VERIFY PRESSURE REQUIRED WITH ACTUAL EQUIPMENT INSTALLED ON PROJECT BEFORE SIZING REGULATOR.



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SCHOOL FOR:

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PROFESSIONAL SEAL

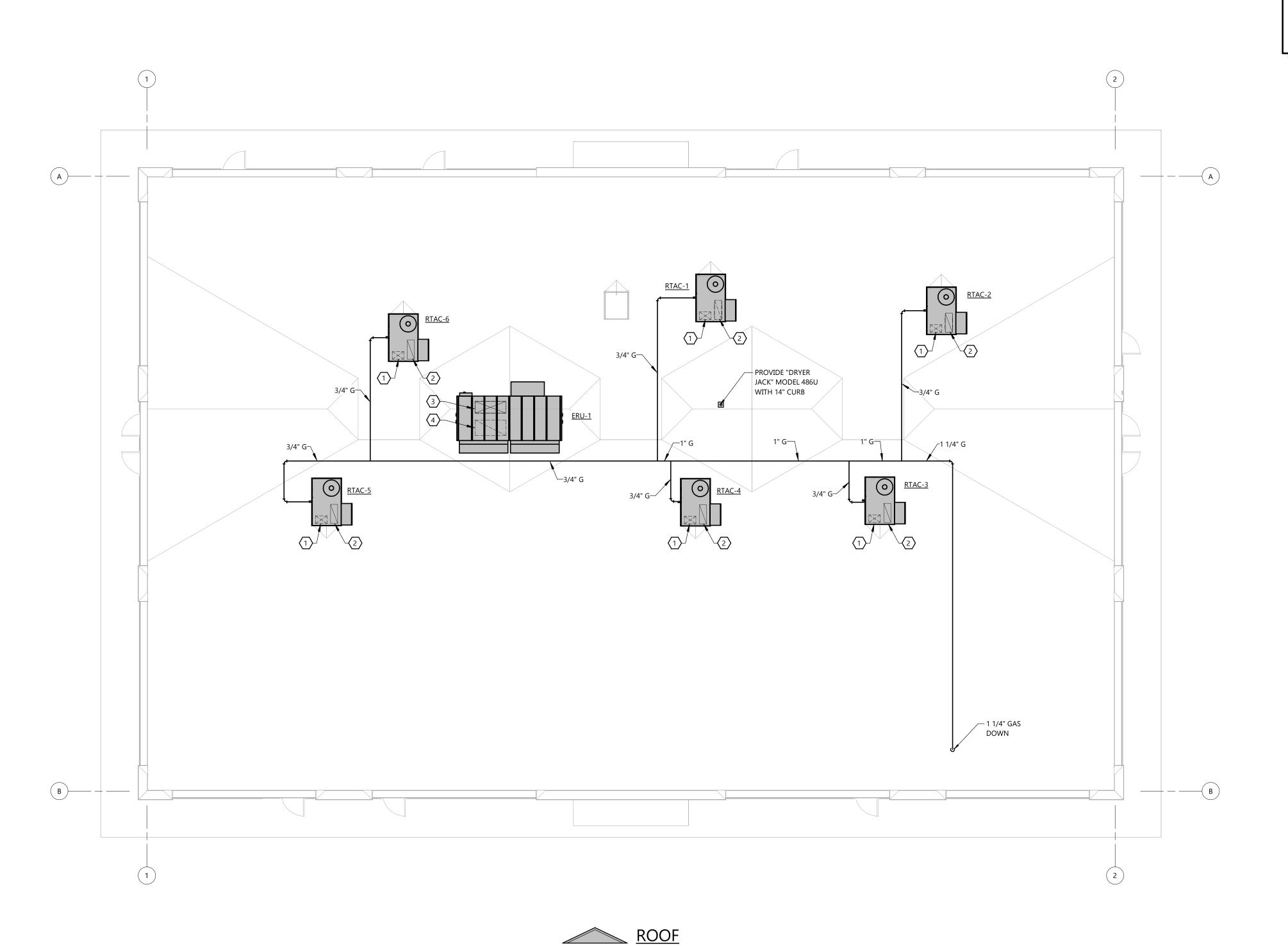
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**SHEET DATES** FEB. 14, 2023 SHEET ISSUE REVISIONS MAR. 23, 2023 APR. 19, 2023 CB2 JUNE 5, 2023

**JOB NUMBER** 

2255300

**SHEET NUMBER** 



# **GENERAL NOTES**

- VERIFY BUILDING OPENING AND CURB SIZES LISTED ON PLANS WITH ACTUAL EQUIPMENT SCHEDULED AND SUPPLIED. COORDINATE REQUIRED OPENING SIZES AND LOCATIONS WITH CONTRACTORS PROVIDING OPENING. SCHEDULES AND ACTUAL EQUIPMENT SIZES SHALL TAKE PRECEDENCE OVER SIZES SHOWN ON PLANS.
- DETAIL REFERENCES ON PLANS ARE TO AID THE CONTRACTOR IN IDENTIFYING THE APPLICABLE DETAIL. NOT ALL DETAILS, OR INSTANCES OF DETAILS, ARE REFERENCED ON PLANS. CONTRACTOR IS RESPONSIBLE TO REVIEW AND COMPLY WITH ALL APPLICABLE DETAILS WHETHER OR NOT REFERENCED ON
- TERMINATE ALL GAS REGULATOR VENTS MINIMUM 10'-0" FROM EDGE OF ROOF. VENTS SHALL NOT BE TERMINATED OUT EXTERIOR WALLS
- DASHED LINES AROUND EXHAUST TERMINATIONS INDICATE 10'-0" REQUIRED CLEARANCE TO OUTSIDE AIR INTAKES.

# **KEYNOTES**

- $\bigcirc$  18/12 SA DOWN THRU ROOF.
- 2 11/30 RA DOWN THRU ROOF.
- 3 48/18 OA DOWN THRU ROOF.
- 4 48/24 EA DOWN THRU ROOF.

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100 Camelot Drive Fond du Lac, WI 54935 920-926-9800 excelengineer.com

COLLABORATION



PROJECT INFORMATION

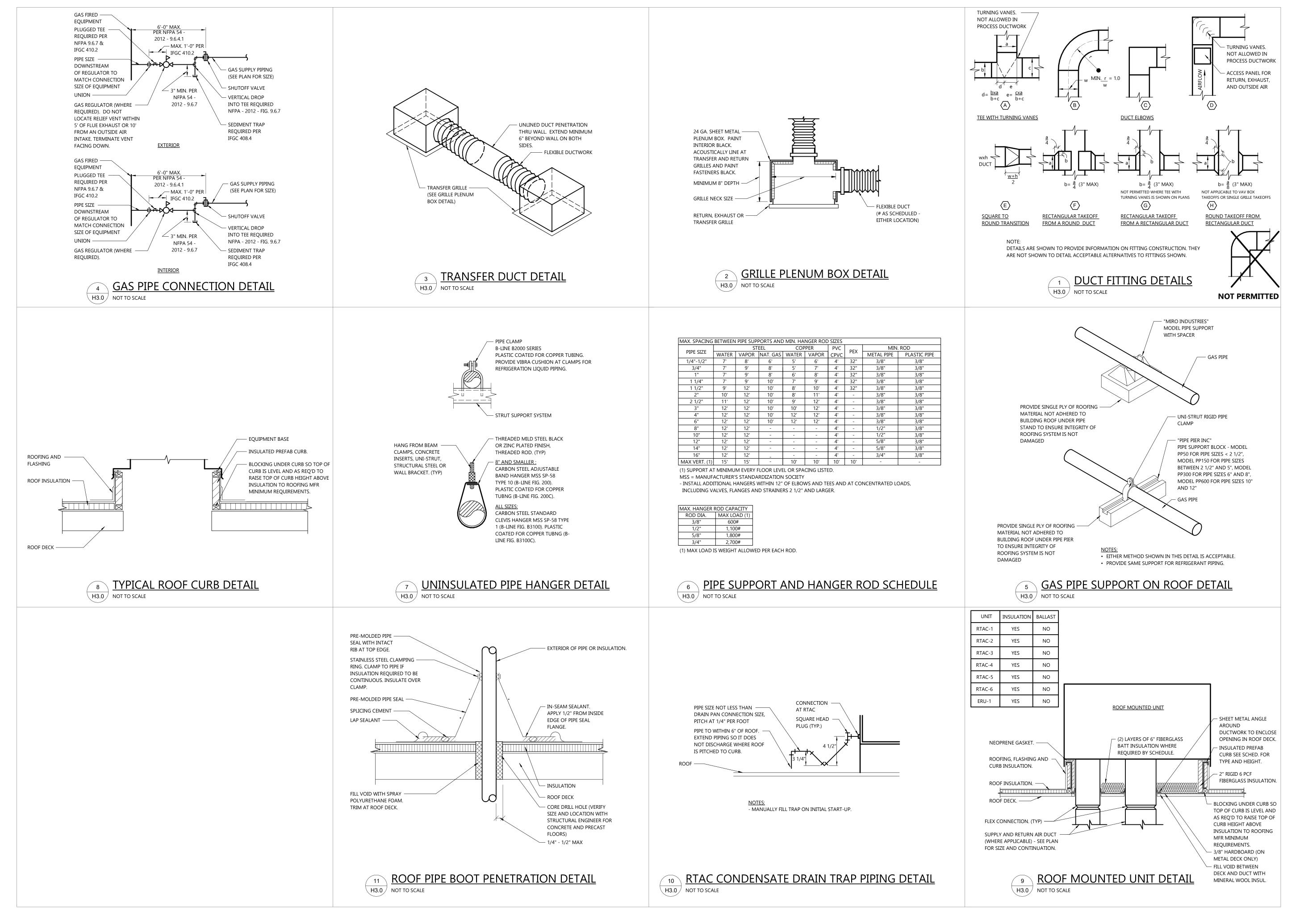
PROPOSED EARLY CHILDHOOD SCHOOL FOR:

PROFESSIONAL SEAL

SHEET DATES SHEET ISSUE FEB. 14, 2023 REVISIONS

JOB NUMBER 2255300

SHEET NUMBER



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PROJECT INFORMATION

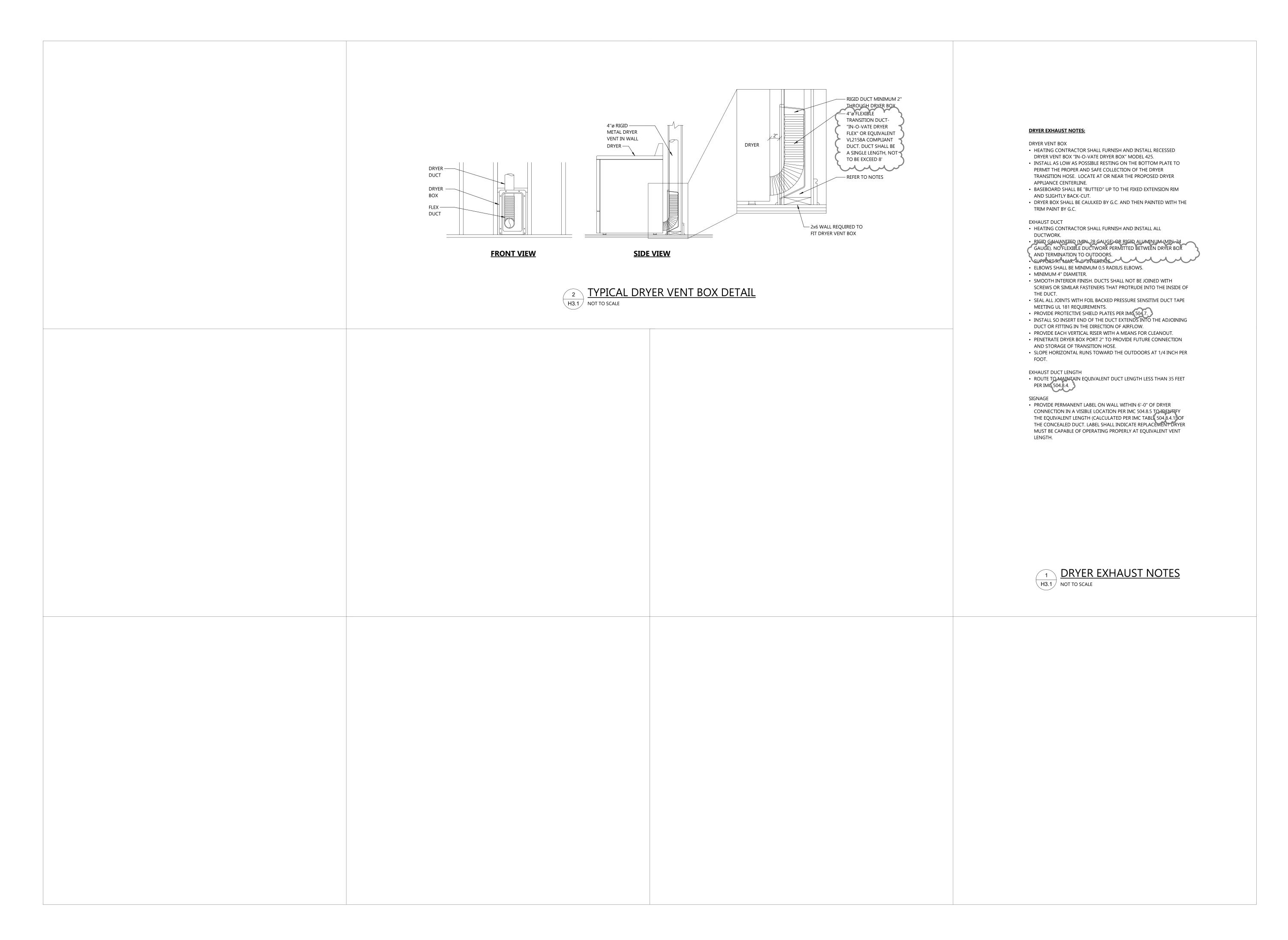
SCHOOL FOR: PM CHILDHOOD 0 SED QUA TWIN LAKES PROPC

PROFESSIONAL SEAL

**SHEET DATES** FEB. 14, 2023 SHEET ISSUE REVISIONS

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COLLABORATION



PROJECT INFORMATION

EARLY CHILDHOOD SCHOOL FOR: OPMI DSEVILLE, N

QUA TWIN LAKE

PROFESSIONAL SEAL

SHEET DATES		
SHEET ISSUE	FEB. 14,	2023
REVISIONS		
CB2	JUNE 5,	2023

JOB NUMBER 2255300

SHEET NUMBER

RTAC-1:		2020 MN MC 403.3	GROSS		202	0 MN MC 4	403.3 O.A. I	REQ.	REQ'D	ACTUAL
ROOM NUMBER	ROOM NAME	OCCUPANCY	FLOOR	PEOPLE	CFM/	AREA	CFM/	PEOPLE	TOTAL	TOTAL
		CLASSIFICATION	AREA (SF)		SF	CFM	PERSON	CFM	CFM	CFM
100	RECEPT/WAIT	Reception areas	276	8	0.06	17	5	41	58	87
101	STORAGE	Storage rooms	66	0	0.12	8	0	0	8	8
102	UNISEX	Toilet private	48	0	0.00	0	0	0	0	(
103	UNISEX	Toilet private	48	0	0.00	0	0	0	0	(
104	HALL	Corridors	70	0	0.06	4	0	0	4	[
105	OFFICE	Office space	105	1	0.06	6	5	3	9	29
107	KIT/STAFF PREP	Kitchens (cooking)	210	0	0.00	0	0	0	0	29
108	STAFF BREAK	Break rooms	195	5	0.06	12	5	24	36	60
111	STORAGE	Storage rooms	30	0	0.12	4	0	0	4	ļ
123	CART ALCOVE	Corridors	36	0	0.06	2	0	0	2	4
128	HALL	Corridors	643	0	0.06	39	0	0	39	87
133	JAN	Janitor closet	21	0	0.00	0	0	0	0	(
134	LAUNDRY	Soiled Laundry	21	0	0.00	0	0	0	0	(
135	CLOSET	Storage rooms	16	0	0.12	2	0	0	2	Ī
								JB-TOTAL	161	
						VENTILAT	ION EFFEC		0.8	
								TOTAL	202	32

RTAC-2:										
		2020 MN MC 403.3	GROSS		2020	MN MC 4	103.3 O.A. I	REQ.	REQ'D	ACTUAL
ROOM NUMBER	ROOM NAME	OCCUPANCY	FLOOR	PEOPLE	CFM/	AREA	CFM/	PEOPLE	TOTAL	TOTAL
		CLASSIFICATION	AREA (SF)		SF	CFM	PERSON	CFM	CFM	CFM
109	CHILD HOUSE	Classrooms (ages 5-8)	789	20	0.12	95	10	197	292	480
110	TOILET	Toilet private	70	0	0.00	0	0	0	0	0
							SU	JB-TOTAL	292	
						VENTILAT	ON EFFEC	TIVENESS	0.8	

RTAC-3:										
		2020 MN MC 403.3	GROSS		202	0 MN MC 4	103.3 O.A.	REQ.	REQ'D	ACTUAL
ROOM NUMBER	ROOM NAME	OCCUPANCY	FLOOR	PEOPLE	CFM/	AREA	CFM/	PEOPLE	TOTAL	TOTAL
		CLASSIFICATION	AREA (SF)		SF	CFM	PERSON	CFM	CFM	CFM
112	CHILD HOUSE	Classrooms (ages 5-8)	800	20	0.12	96	10	200	296	620
113	TOILET	Toilet private	62	0	0.00	0	0	0	0	0
114	TOILET	Toilet private	62	0	0.00	0	0	0	0	0
115	CHILD HOUSE	Classrooms (ages 5-8)	793	20	0.12	95	10	198	293	340
				· · · · · · · · · · · · · · · · · · ·		'	Sl	JB-TOTAL	589	
						VENTILAT:	ION EFFEC	TIVENESS	0.8	

		2020 MN MC 403.3	GROSS		2020	) MN MC 4	103.3 O.A. I	REQ.	REQ'D	ACTUAL
ROOM NUMBER	ROOM NAME	OCCUPANCY	FLOOR	PEOPLE	CFM/	AREA	CFM/	PEOPLE	TOTAL	TOTAL
		CLASSIFICATION	AREA (SF)		SF	CFM	PERSON	CFM	CFM	CFM
116	CHILD HOUSE	Classrooms (ages 5-8)	806	20	0.12	97	10	201	298	485
117	TOILET	Toilet private	62	0	0.00	0	0	0	0	0
118	TOILET	Toilet private	62	0	0.00	0	0	0	0	0
119	CHILD HOUSE	Classrooms (ages 5-8)	797	20	0.12	96	10	199	295	435
120	GMA	Classrooms (ages 5-8)	533	13	0.12	64	10	133	197	375
122	GMA STOR	Storage rooms	18	0	0.12	2	0	0	2	15
	1						SU	JB-TOTAL	792	
						<b>VENTILAT</b>	ION EFFEC	TIVENESS	0.8	I

RTAC-5:										
KIAC-J.		2020 MN MC 403.3	GROSS		2020	O MN MC 4	403.3 O.A.	REQ.	REQ'D	ACTUAL
<b>ROOM NUMBER</b>	ROOM NAME	OCCUPANCY	FLOOR	PEOPLE	CFM/	AREA	CFM/	PEOPLE	TOTAL	TOTAL
		CLASSIFICATION	AREA (SF)		SF	CFM	PERSON	CFM	CFM	CFM
124	TODDLER	Daycare (through age	614	15	0.18	110	10	153	264	265
125	TOILET	Toilet private	62	0	0.00	0	0	0	0	0
126	TOILET	Toilet private	62	0	0.00	0	0	0	0	0
127	NIDO	Daycare (through age	557	14	0.18	100	10	139	239	440
	ı		•	-			SU	JB-TOTAL	503	

		2020 MN MC 403.3	GROSS		2020	MN MC 4	403.3 O.A. I	REQ.	REQ'D	ACTUA
ROOM NUMBER	ROOM NAME	OCCUPANCY	FLOOR	PEOPLE	CFM/	AREA	CFM/	PEOPLE	TOTAL	TOTAL
		CLASSIFICATION	AREA (SF)		SF	CFM	PERSON	CFM	CFM	CFM
129	TODDLER	Daycare (through age	622	16	0.18	112	10	155	267	51
130	TOILET	Toilet private	62	0	0.00	0	0	0	0	
131	TOILET	Toilet private	62	0	0.00	0	0	0	0	
132	TODDLER	Daycare (through age	612	15	0.18	110	10	153	263	
							SU	JB-TOTAL	530	
								VENTIL	0.8	
								TOTAL	663	80

# **SUPPLY GRILLE SCHEDULE (S.G.)**

NO.	TYPE	RANGE	FACE SIZE	DUCT DIA.	MAT'L	DM	FINI	FRAME	THROW	MODEL	REMARKS	
1-6	PLAQUE	0-75	24 X	6"	STEEL	(1)	WHITE	LAY-IN	4-WAY	OMNI	"TITUS"	
1-8	PLAQUE	76-275	24 X	8"	STEEL	(1)	WHITE	LAY-IN	4-WAY	OMNI	"TITUS"	
1-10	PLAQUE	276-375	24 X	10"	STEEL	(1)	WHITE	LAY-IN	4-WAY	OMNI	"TITUS"	
1-12	PLAQUE	376-550	24 X	12"	STEEL	(1)	WHITE	LAY-IN	4-WAY	OMNI	"TITUS"	
1-14	PLAQUE	551-750	24 X	74	STEEL	(1)	WHITE	LAY-IN	2-VAY	CIVINI	"TIVOS"	
1-65	PLAQUE	0-75	12 X	6"	STEEL	(1)	WHITE	FLANGE	4-WAY	OMNI	"TITUS"	3
	A A	A A			A A	1		A A A	A A	A 1		$\boldsymbol{\nu}$

- NOT ALL SUPPLY GRILLES SCHEDULED ARE USED ON THE PROJECT.

(1) VOLUME DAMPER AT THE GRILLE INDICATED BY A "D" AFTER THE GRILLE DESIGNATION. EXAMPLE: SG1S-8D IS SG1S-8 WITH A DAMPER.

)	<b>RETU</b>	<b>IRN GRILL</b>	<b>E SCHE</b>	<b>DULE</b>	(RG	)					
3	NO.	ТҮРЕ	MAX. CFM	NECK/ FACE SIZE	FLEX. DUCT. DIA.	MAT'L	VOL. DMPR	FINISH	FRAME	MODEL	REMARKS
J	1-6	LOUVERED	75	22 x 10	6"	STEEL	(1)	WHITE	LAY-IN (3)	530	"PRICE"
)	1-8	LOUVERED	250	22 x 10	8"	STEEL	(1)	WHITE	LAY-IN (3)	530	"PRICE"
7	1-10	LOUVERED	450	22 x 10	10"	STEEL	(1)	WHITE	LAY-IN (3)	530	"PRICE"
	1-12	LOUVERED	750	22 x 22	12"	STEEL	(1)	WHITE	LAY-IN (3)	530	"PRICE"
$\prec$	1-14	LOUVERED	1,100	22 x 22	14"	STEEL	(1)	WHITE	LAY-IN (3)	530	"PRICE"
4	1-16	LOUVERED	1,600	22 x 22	16"	STEEL	(1)	WHITE	LAY-IN (3)	530	"PRICE"
	1-22	LOUVERED	1,600	22 x 22	(7)	STEEL	(1)	WHITE	LAY-IN (3)	530	"PRICE"

- ACCEPTABLE MANUFACTURERS: PRICE, TITUS, CARNES, METALAIRE, ANEMOSTAT, KRUEGER, NAILOR.

- NOT ALL RETURN GRILLES SCHEDULED ARE USED ON THE PROJECT. (1) VOLUME DAMPER AT THE GRILLE INDICATED BY A "D" AFTER THE GRILLE DESIGNATION. EXAMPLE: RG1S-8D IS RG1S-8 WITH A DAMPER.

(3) SURFACE MOUNT BORDER WITH NO SCREW HOLES FOR LAY-IN APPLICATION. (7) SEE PLAN FOR NUMBER AND SIZE OF CONNECTIONS.

TOTAL 365 480

TOTAL 736 960

TOTAL 991 1310

TOTAL 629 705

VENTILATION EFFECTIVENESS 0.8

TRAN	<b>NSFER GRI</b>	LLE SCH	IEDU	<b>LE (</b> 1	ΓG)				
NO.	TYPE	MAX CFM	NECK/ FACE SIZE	FLEX. DUCT. DIA.	MAT'L	FINISH	FRAME	MODEL	REMARKS
1-8	LOUVERED	170	22 x 10	8"	STEEL	WHITE	LAY-IN (3)	530	"PRICE"
1-10	LOUVERED	260	22 x 10	10"	STEEL	WHITE	LAY-IN (3)	530	"PRICE"
1-12	LOUVERED	400	22 x 22	12"	STEEL	WHITE	LAY-IN (3)	530	"PRICE"

- ACCEPTABLE MANUFACTURERS: PRICE, TITUS, CARNES, METALAIRE, ANEMOSTAT, KRUEGER, NAILOR. - NOT ALL TRANSFER GRILLES SCHEDULED ARE USED ON THE PROJECT.

(3) SURFACE MOUNT BORDER WITH NO SCREW HOLES FOR LAY-IN APPLICATION.

)	<b>EXH</b>	<b>NUST GRIL</b>	LE SCH	DUL	E (E	G)					
(	NO.	TYPE	CFM RANGE	NECK/ FACE SIZE	FLEX. DUCT. DIA.	MAT'L	VOL. DMPR	FINISH	FRAME	MODEL	REMARKS
	1-6	LOUVERED	0-75	22 x 10	6"	STEEL	(1)	WHITE	LAY-IN (3)	530	"PRICE"
)	1-8	LOUVERED	76-250	22 x 10	8"	STEEL	(1)	WHITE	LAY-IN (3)	530	"PRICE"
	1-10	LOUVERED	251-450	22 x 10	10"	STEEL	(1)	WHITE	LAY-IN (3)	530	"PRICE"
١	1-12	LOUVERED	451-750	22 x 22	12"	STEEL	(1)	WHITE	LAY-IN (3)	530	"PRICE"
- 11											

- ACCEPTABLE MANUFACTURERS: PRICE, TITUS, CARNES, METALAIRE, ANEMOSTAT, KRUEGER, NAILOR.

- NOT ALL EXHAUST GRILLES SCHEDULED ARE USED ON THE PROJECT. (1) VOLUME DAMPER AT THE GRILLE INDICATED BY A "D" AFTER THE GRILLE DESIGNATION. EXAMPLE: EG1S-8D IS EG1S-8 WITH A DAMPER. (3) SURFACE MOUNT BORDER WITH NO SCREW HOLES FOR LAY-IN APPLICATION.

#### DUCTWORK AND DUCTWORK INSULATION SCHEDULE

		DUCT	SMACNA	INSULATI	ON	INSUL.
SERVICE	LOCATION	MAT'L	PRESS. CLASS	RECTANGULAR DUCT	ROUND DUCT	JACKET
SUPPLY SINGLE ZONE ROOFTOP SYSTEMS	CONCEALED	GALV. ST.	+1"	1.5" FLEX. F.G.	1.5" FLEX. F.G.	N.R.
RETURN UPSTREAM OF FAN	CONCEALED	GALV. ST.	-1"	N.R.	N.R.	N.R.
OUTSIDE AIR DOWNSTREAM OF ENERGY RECOVERY UNIT	CONCEALED	GALV. ST.	+1"	1.5" FLEX. F.G.	1.5" FLEX. F.G.	N.R.
TRANSFER	CONCEALED	GALV. ST.	+1/2"	1" A.L.D. (1)	N.R.	N.R.
EXHAUST UPSTREAM OF ENERGY RECOVERY UNIT	ALL	GALV. ST.	+1"	1.5" FLEX. F.G.(2)	1.5" FLEX. F.G.(2)	N.R.
EXHAUST CLOTHES DRYER	CONCEALED AND EXPOSED	GALV. ST. (17)	+2"	N.R.	N.R.	N.R.

N.R. = NOT REQUIRED

EXPOSED = VISIBLE FROM OCCUPIED SPACE, DOES NOT INCLUDE DUCTWORK IN MECHANICAL ROOMS. CONCEALED = HIDDEN FROM VIEW BY WALLS AND CEILINGS. INCLUDES DUCTWORK IN MECHANICAL ROOMS.

GALV. STEEL: ASTM A653, LOCK FORMING QUALITY, 1.25 OUNCES/ S.F. ZINC COATING (G90 IN ACCORDANCE WITH ASTM A90 BOTH SIDES).

- ALL JOINTS, LONGITUDINAL AND TRANSVERSE SEAMS AND CONNECTIONS IN DUCTWORK SHALL BE SEALED PER 2015 IECC 403.2.9.

(1) DUCT DIMENSIONS ARE SHEET METAL DIMENSIONS AND INCLUDE LINING. (2) INSULATE FROM 18" UPSTREAM OF THE POINT WHERE THE DUCT EXITS THE BUILDING.

(17) CLOTHES DRYER EXHAUST DUCTWORK SHALL COMPLY WITH 2015 IMC SECTION 504.

PIPE SCHEDULE																							
								STEEL							CC	OPPER				PL	ASTIC		PEX
					PE					FITT	INGS		_	Pl	PE	FITTI	INGS				PIPE F	ITTINGS	]
SERVICE	PIPE SIZE	BLACK STEEL	GALVANIZED	_	TM A		SCHEDULE	CAST IRON THREADED ASTM A126/ANSI B16.4	MALLEABLE IRON THREADED ASME/ANSI B16.3	FORGED STEEL THREADED OR WELDED ASTM A105 GRADE II/ ANSI B16.11	SEAMLESS CARBON STEEL WELDED ASTM A234, GR. WPB/ ANSI 16.9	COLD PRESS MECHANICAL JOINT	CLASS	ASTM B280 TYPE ACR	PRECHARGED LINE SET	ASME B16.22 WROUGHT COPPER	SOLDER / BRAZING	PRESSURE RATED	NON-PRESSURE RATED	SCHEDULE	PVC ASTM D1784, D1785, D2672	PVC ASTM D2464, D2467, D1784	
GAS (INDOOR ≤ 5 PSIG)	1/2" - 3"	X			Х	X	40	Х	Х	X	X	(3)	125/150								_		+
GAS (OUTDOOR)	1/2"- 4"	X			Х	Х	40	X	X	X	X	(3)	125/150										
GAS REGULATOR VENTS	ALL SIZES	X			Χ	Х	40	Х	Х	Х	Х	(3)	125/150										
COND DRAIN	All								ĺ .			<u> </u>							Х	40	Х	(2)	

(2) ASTM F656 SOLVENT WELD WITH ASTM D2564 CLEAR SOLVENT CEMENT.

(3) VIEGA MEGAPRESS FITTING COMPLYING WITH ASTM A420 OR ASME B16.3. HNBR SEAL FOR GAS. 10 YEAR WARRANTY IN MATERIAL AND WORKMANSHIP. INSTALL PER MFR INSTALLATION INSTRUCTIONS.

#### FLECTRICAL/STARTER/DISCONNECT SCHEDULE

			ELECT	RICAL	DATA					STARTE	R		SMOKE	DISCON	NECT	
SYM.	HP	KW	FLA	MCA	MOP	VOLT	PH.	TYPE	LOCATION	FURN. BY	AUX. CONTACT	ACCESS- ORIES	DETECTOR	DIS- CONNECT	FURN. BY	REMARKS
RTAC-1	-	-	-	20.0	30	208	3	INTEG.	INTEGRAL	EM	-	-	-	R	EM (2)	-
RTAC-2	-	-	-	20.0	30	208	3	INTEG.	INTEGRAL	EM	-	-	-	R	EM (2)	-
RTAC-3	-	-	-	28.0	40	208	3	INTEG.	INTEGRAL	EM	-	-	-	R	EM (2)	-
RTAC-4	-	-	-	28.0	45	208	3	INTEG.	INTEGRAL	EM	-	-	(6)	R	EM (2)	-
RTAC-5	-	-	-	31.0	40	208	3	INTEG.	INTEGRAL	EM	-	-	-	R	EM (2)	-
RTAC-6	-	-	-	26.0	30	208	3	INTEG.	INTEGRAL	EM	-	-	-	R	EM (2)	-
ERU-1	-	-	-	32.6	45	208	3	INTEG.	INTEGRAL	EM	-	-	-	R	EM	-
EWH's	-	2	-	-	-	208	1	INTEG.	INTEGRAL	EM	-	-	-	R	EM	-

INTEG.= INTEGRAL: PROVIDED INTEGRAL WITH EQUIPMENT.

RELAY= UL LISTED MOTOR RATED RELAY WITH SEPARATE ENTRANCES FOR INPUT AND OUTPUT CONTACTS (RIBT SERIES), OVERRIDE SWITCH AND LED STATUS INDICATOR.

CONTACT RATING, CONFIGURATION, AND COIL VOLTAGE SUITABLE FOR APPLICATION. MAN= MANUAL: NEMA ICS 2, AC GENERAL PURPOSE CLASS A MANUALLY OPERATED, FULL-VOLTAGE CONTROLLER WITH QUICK MAKE AND BREAK TOGGLE

ACTION AND DOUBLE BREAK SILVER ALLOY CONTACTS. BIMETALLIC OR MELTING ALLOY TYPE THERMAL OVERLOAD UNITS. NEMA ICS 6 GENERAL

PURPOSE FLUSH MOUNTED ENCLOSURE WITH STAINLESS STEEL COVER PLATE IN FINISHED AREAS AND TYPE 1 SURFACE MOUNTED IN UNFINISHED AREAS.

**FURNISHED BY:** ACCESSORIES: **DISCONNECT**: EM = EQUIPMENT MANUFACTURER HOA = HAND-OFF-AUTO NR= NOT REQUIRED

PL =LED PILOT LIGHT HC = HEATING CONTRACTOR R = REQUIREDEC = ELECTRICAL CONTRACTOR PB = PUSH BUTTON 3R = NEMA 3R

- ACCEPTABLE MANUFACTURERS: ALLEN BRADLEY, CUTLER HAMMER, SQUARE D, GENERAL ELECTRIC.

- VERIFY VOLTAGE AND PHASE WITH ELECTRICAL CONTRACTOR BEFORE ORDERING EQUIPMENT. - FURNISH MOTOR STARTERS TO E.C. FOR INSTALLATION AND WIRING WHEN THE STARTER SCHEDULE CALLS FOR H.C. TO FURNISH.

(2) DISCONNECT FACTORY MOUNTED AND PREWIRED BY EQUIPMENT MANUFACTURER.

(6) SMOKE DETECTOR PROVIDED WITH RTAC TO SHUT DOWN UNIT ON SMOKE DETECTION. EC SHALL POWER AND MONITOR SMOKE DETECTOR THRU FIRE ALARM PANEL.

# ROOFTOP AIR CONDITIONING UNIT SCHEDULE (R.T.A.C.)

	NO	M.			SUPPLY	FAN					C	ONTROLS					COOLIN	G			HEATI	NG		Cl	JRB			VOLT/		EFFICIENCY		WEIGHT		
NO.	. TO	NS CF	M N	/IN. OA	EXT.	DRIVE	MOTOR	RELIEF	OUTSIDE		UNIT	DAT	FAN	DUCT SP			AMB.			KW	MBH M	IBH	NO.	HEIGHT	TYPE	MCA	MOP	PHASE	MIN.	UNIT	TEST	(LBS.)	MODEL	REMARKS
			G	FM (3)	SP	TYPE	BHP		AIR	DETECTOR	CONTROL	SENSOR	AIRFLOW	SENSOR	DB / WE	CAP.	TEMP F	COMPR. S	TAGES		IN O	UT S	STAGES	BY MFR.					CODE	RATING	PROC.			
1	3	1,2	200	320	1.0	DIRECT (2)	0.57	BAR.	(10)	NO	(12A)	NO	CONSTANT	NO	76.6/64.0	31.3	100	1	1	-	110 8	38	2	18"	STANDARD	20.0	30	208/3	14.0 SEER	14.0 SEER	ARI 210/240	700	48FC	CARRIER (1)
2	3	1,0	000	480	1.0	DIRECT (2)	0.48	BAR.	(10)	NO	(12A)	NO	CONSTANT	NO	77.1/64.6	30.5	100	1	1	-	67 5	54	1	18"	STANDARD	20.0	30	208/3	14.0 SEER	14.0 SEER	ARI 210/240	700	48FC	CARRIER (1
3	5	1,7	700 📞	960	1.0	DIRECT (2)	1.53	BAR.	(10)	NO	(12A)	NO	CONSTANT	NO	77.3/64.8	3 54.6	100	1	1	-	150 1	20	2	18"	STANDARD	28.0	40	208/3	14.0 SEER	14.0 SEER	ARI 210/240	800	48FC	CARRIER (1
4	6	2,1	100	1,310 🔫	1.0	DIRECT (2)	1.69	BAR.	(10)	YES (11)	(12A)	NO	2 STAGE (14)	NO	77.4/64.9	67.5	100	1	2	-	110 8	38	1	18"	STANDARD	28.0	45	208/3	12.6 IEER, 11.0 EER	15.0 IEER	ARI 340/360	850	48FC	CARRIER (1
5	5	1,6	500	705	1.0	DIRECT (2)	1.23	BAR.	(10)	NO	(12A)	NO	CONSTANT	NO	77.0/64.5	5 53.4	100	1	1	-	110 8	38	1	18"	STANDARD	31.0	40	208/3	14.0 SEER	14.0 SEER	ARI 210/240	800	48FC	CARRIER (1)
6	4	1,4	<del>1</del> 75	800	1.0	DIRECT (2)	0.99	BAR.	(10)	NO	(12A)	NO	CONSTANT	NO	77.2/64.7	7 43.5	100	1	1	-	110 8	38	1	18"	STANDARD	26.0	30	208/3	14.0 SEER	14.0 SEER	ARI 210/240	800	48FC	CARRIER (1)

- ACCEPTABLE MANUFACTURERS: CARRIER, TRANE, DAIKIN, AAON, LENNOX. USE OF MANUFACTURER OR MODEL OTHER THAN LISTED IN SCHEDULE ABOVE SHALL BE CONSIDERED A SUBSTITUTION.

DRAWINGS SHOWING REVISED DUCT ROUTING, ROOF OPENINGS, STRUCTURAL STEEL, ETC. WILL BE REQUIRED AT TIME OF RTAC SHOP DRAWINGS SUBMITTAL. - SEE MOTOR SPECIFICATIONS FOR MOTOR REQUIREMENTS. FOR MOTORS DRIVEN BY VFD, PROVIDE NEMA MG1 PART 31 PREMIUM EFFICIENCY MOTOR SUITABLE FOR VFD APPLICATION WITH FACTORY INSTALLED AEGIS SHAFT GROUNDING RING.

- PROVIDE 2" ASHRAE STD 52.2 MERV 8 T.A. FILTERS, HAIL GUARD FOR CONDENSING COILS. - RTAC DESIGNED TO PREVENT RAIN INTRUSION INTO THE AIRSTREAM WHEN TESTED AT DESIGN AND NO AIRFLOW PER SECTION 58 OF UL 1995.

- PROVIDE UNIT WITH INTEGRAL MANUFACTURER INSTALLED WATER-LEVEL MONITORING DEVICE IN THE PRIMARY DRAIN PAN TO SHUT OFF THE EQUIPMENT PER IMC 307.2.3.1. - PROVIDE FACTORY RECOMMENDED FLUE EXTENSION. EXTENSION SHALL TAKE FLUE GASES TO 6" ABOVE TOP OF CABINET.

(1) PROVIDE UNIT MOUNTED NEMA 3R DISCONNECT.

(2) DIRECT DRIVE FANS WITH ECM MOTOR OR VFD FOR BALANCING.

(3) OUTDOOR AIR PROVIDED THRU ERU-1. CONTROLS

(10) PROVIDE MODULATING ECONOMIZER DAMPERS AND ACTUATOR WITH DIFFERENTIAL ENTHALPY CONTROL. CONTROL SHALL INCLUDE FAULT DETECTION AND DIAGNOSTICS SYSTEM COMPLYING WITH 2015 IECC C403.2.4.7.

(11) PROVIDE FACTORY INSTALLED DUCT SMOKE DETECTOR IN RETURN AIR SECTION WIRED TO SHUT DOWN SUPPLY FAN ON DETECTION OF SMOKE. DETECTOR POWERED FROM FIRE ALARM SYSTEM.

PROVIDE SMOKE DETECTOR WITH AUX. CONTACTS FOR SMOKE DETECTION ALARM AND SMOKE DETECTOR TROUBLE CONDITION.

(12A) PROVIDE TERMINAL STRIP FOR USE WITH REMOTE THERMOSTAT. (14) FAN AIRFLOW VARIED BY ECM MOTOR OR VFD. ROOFTOP UNIT CONTROLS TO CONTROL.

ENE			COV		UNIT		(.U.)																							
		UTSIE	DE AIR FA	.N		EXHAU					WINTER						SUMM	ER			Cl	JRB		١ ١	OLT/	DEFROST				
NO.	CFM	EXT.	DRIVE	<b>MOTOR</b>	CFM	EXT.	DRIVE	MOTOR	EXHAUS'	T AIR	OUTSID	E AIR	MIN.	MBH	EXHAUS	T AIR	OUTSI	DE AIR	MIN.	MBH	HEIGHT	TYPE	MCA	MOP P	HASE	CONTROL	(LBS.)	MODEL	ACCESS.	REMARKS
		SP	TYPE	HP		SP	TYPE	HP	EAT	LAT	EAT	LAT	EFF.		EAT	LAT	EAT	LAT	EFF.		BY MFR.						` ,			
1	4,575	1.0	BELT	5	4,100	1.0	BELT	5	70.0/51.3	-	-15.0/-16.0	44.7/36.6	78.0%	355	75.0/62.4	-	88.0/72.0	78.9/67.0	78.0%	87	18"	STANDARD	32.6	45 2	208/3	-	4,000	LE-8X	(3)	"RENEWAIRE"
-															·														`	
A C C E		4 4 5 11 1	F A CTUDE!	DC. CDEEN	IHECK BE		<u></u>																							

- PROVIDE WITH ASHRAE STD 52.2 MERV 8 T.A. FILTERS FOR THE OUTSIDE AIR AND EXHAUST AIR STREAMS.

- ENERGY RECOVERY WHEEL SHALL BE AIR CERTIFIED.

(3) PROVIDE DISCONNECT SWITCH AND MOTORIZED OUTSIDE AIR (AT UNIT INLET) AND EXHAUST (AT UNIT DISCHARGE) DAMPERS PREWIRED TO OPEN WITH FAN OPERATION.

# **ELECTRIC WALL HEATER SCHEDULE - (E.W.H.)**

REC.=RECEPTACLE

		EAT	LAT		HTG		CABIN	IET		
NO.	CFM	F	F	MBH	KW	THERMOSTAT	RECESS DEPTH	HGT. AFF	MODEL	REMARKS
1	100	60	122	6.8	2	INTEG., PREWIRED, TAMPER-RESISTANT	0"	12"	FRC-4020	"BERKO"
2	100	60	122	6.8	2	INTEG., PREWIRED, TAMPER-RESISTANT	3-3/4"	12"	FRC-4020	"BERKO"

- ACCEPTABLE MANUFACTURERS: BERKO, RAYWALL, Q-MARK, MARKEL. - PROVIDE ALL EWH'S WITH PREWIRED DISCONNECT SWITCH, PREWIRED AUTOMATIC RESET THERMAL OVERLOAD

PROTECTION, BUILT-IN FAN DELAY CONTROLS, 16 GAUGE FRONT BAR GRILLE.

**JOB NUMBER** 2255300 SHEET NUMBER

Always a Better Plan

100 Camelot Drive

Fond du Lac, WI 54935 920-926-9800

excelengineer.com

PROJECT INFORMATION

LAKE

PROP(

PROFESSIONAL SEAL

SHEET DATES

REVISIONS AD3

FEB. 14, 2023

APR. 19, 2023 JUNE 5, 2023

COLLABORATION

**HVAC SCHEDULES** 

#### **DIVISION 26 ELECTRICAL**

#### **26 05 00 BASIC ELECTRICAL REQUIREMENTS**

- A. SEE DIVISION 00 PROCUREMENT AND CONTRACTING AND DIVISION 01 GENERAL REQUIREMENT FOR ADDITIONAL REQUIREMENTS
- B. ELECTRICAL CONTRACTOR SHALL VERIFY REQUIREMENTS FOR TEMPORARY LIGHTING AND POWER WITH GENERAL CONTRACTOR AND INCLUDE IN HIS SCOPE OF WORK WHEN DIRECTED BY G.C. INSTALL IN ACCORDANCE WITH ALL CODE AND OSHA REQUIREMENTS FOR CONSTRUCTION PROJECTS.
- C. SUBSTITUTIONS 1. SEE DIVISION 01 23 00 PRODUCT SUBSTITUTION PROCEDURES FOR ADDITIONAL REQUIREMENTS.
- 2. CONTRACTOR SHALL PROVIDE ALL SUPPORTING DATA AND ASSUME THE BURDEN OF PROOF THAT ANY SUBSTITUTE IS EQUIVALENT AS TO APPEARANCE, CONSTRUCTION, CAPACITY, AND PERFORMANCE. THE JUDGMENT OF EQUIVALENCY SHALL BE MADE BY THE ENGINEER AT THE TIME OF SHOP DRAWING REVIEW, NOT DURING
- 3. WHERE SUBSTITUTE EQUIPMENT REQUIRES REDESIGN OF ANY PART OF THE PROJECT, THE COST OF REDESIGN AND ADDITIONAL COSTS OF THE WORK SHALL BE PAID BY THE CONTRACTOR. REDESIGN SHALL BE SUBJECT TO THE APPROVAL OF ALL AUTHORITIES HAVING JURISDICTION OVER THE WORK INCLUDING THE ARCHITECT/ENGINEER.
- 1. SEE DIVISION 01 33 23 SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES FOR ADDITIONAL REQUIREMENTS.

- d. OCCUPANCY SENSORS
- 3. INCLUDE OUTLINE AND GENERAL ARRANGEMENT DRAWINGS, DATA SHEETS AND WIRING DIAGRAMS
- 6. SYSTEM WIRING RISER DIAGRAMS SHALL INDICATE ALL COMPONENTS SHOWN ON THE FLOOR PLANS, TYPE AND TERMINATION POINT OF CABLE TO EACH COMPONENT.
- a. MARK RECORD DRAWINGS ON A FINAL SET OF DRAWINGS WHICH INCLUDES ALL REVISIONS.
- 8. PROVIDE RECORD DRAWINGS TO THE OWNER IN AUTOCAD FORMAT.
- E. FINISHING AND PAINTING

- 3. E.C. SHALL PROVIDE A FACTORY OR FIELD APPLIED PRIME AND FINISH COAT OF COLOR SELECTED BY THE OWNER'S
- 4. COORDINATE WORK WITH THE PAINTERS SO THAT ALL EQUIPMENT IS INSTALLED PRIOR TO PAINTING. E.C. SHALL PAINT ITEMS IF NOT IN PLACE PRIOR TO NORMAL ROUTINE PAINTING.
- 5. IF FINISH BECOMES RUSTED, CORRODED, SCRATCHED, OR FLAKED DURING STORAGE OR INSTALLATION, REFINISH
- 6. WHERE THE ELECTRICAL CONTRACTOR IS REQUIRED TO PAINT, THE PAINTING SHALL BE DONE IN ACCORDANCE WITH THE PAINTING PORTION OF THE ARCHITECTURAL SPECIFICATION.
- DEVICES. PROVIDE REQUIRED EQUIPMENT AND ACCESSORIES FOR A COMPLETE INSTALLATION. G. INSTALL ALL EQUIPMENT PER MANUFACTURER'S INSTALLATION INSTRUCTIONS AND REQUIREMENTS. PROVIDE
- ADDITIONAL WORK AND MATERIALS AS REQUIRED. H. COORDINATE INSTALLATION OF ELECTRICAL WORK WITH THE OTHER CONTRACTORS TO AVOID CONFLICTS WITH
- SPACE CONDITIONS APPEAR INADEQUATE, NOTIFY ARCHITECT/ENGINEER BEFORE PROCEEDING WITH THE
- L. INSTALL MOTOR STARTERS/VFDS FURNISHED BY HVAC AND PLUMBING CONTRACTORS, AND WIRE FROM THE POWER
- SOURCE TO THE STARTER/VFD AND FROM THE STARTER/VFD TO THE MOTOR.
- N. CONTRACTOR SHALL CALL LOCAL UTILITY LOCATING SERVICE AND CONDUCT A PRIVATE UTILITY LOCATE TO ENSURE THAT ALL ELECTRICAL FEEDERS, BRANCH CIRCUITS, LOW VOLTAGE CABLES AND FIBER OPTIC HAVE BEEN LOCATED
- DISCREPANCIES RETWEEN PLAN AND FIELD CONDITIONS PRIOR TO CONSTRUCTION O. SCHEDULE REQUIRED POWER, TELEPHONE OR DATA OUTAGES IN OCCUPIED AREAS OF THE BUILDING WITH THE
- NON-WORKING HOURS, WEEKENDS, OR HOLIDAYS.
- IDENTIFIED TO BE THE WORK OF OTHER CONTRACTORS. PATCHING SHALL MATCH ADJACENT SURFACES.
- Q. PROJECT COMPLETION
- R. PROVIDE OPERATING INSTRUCTIONS AS FOLLOWS:
- 2. TWO (2) HOURS FOR LIGHTING CONTROL BY A MFR'S AUTHORIZED TECHNICIAN.
- 4. MAINTAIN A RECORD OF OPERATING INSTRUCTION PERIODS.
- 1. THE ARCHITECT SHALL RESERVE THE RIGHT TO MAKE OUTLET POSITION CHANGES UP TO 10' BEFORE INSTALLATION
- WORK OF OTHER TRADES, DOOR SWING, COUNTER, EQUIPMENT, ETC.

- d. ARCHITECT TO APPROVE ACCESS PANEL LOCATION PRIOR TO INSTALLATION OF EQUIPMENT REQUIRING
- MANNER SO AS TO MINIMIZE PANELS.
- 2. EXCAVATE AND BACKFILL TRENCHES FOR ELECTRICAL WORK. BACKFILL AND COMPACTION SHALL MEET
- 4. BURY CONDUIT AND CABLE A MINIMUM 24" DEEP WITH 6" SAND BED ABOVE AND BELOW, AND WARNING MARKER TAPE MINIMUM 12" ABOVE.
- 5. RESTORE EXISTING GROUND, LAWNS, PAVING, WALKS, ETC. TO ORIGINAL CONDITION.
- 6. BRANCH CIRCUITS SIZED LESS THAN 100 AMPS MAY BE TRENCHED IN USING A "DITCH WITCH" STYLE TRENCHER OR VIBRATORY PLOW WHERE SOILS ARE SUITABLE FOR SUCH INSTALLATION METHODS AND WHERE ALLOWED BY STATE AND LOCAL CODES AND LOCAL AUTHORITY HAVING JURISDICTION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROVE INSTALLATION DEPTHS TO THE AUTHORITY HAVING JURISDICTION.

## **26 05 02 UTILITIES**

- A. PROVIDE A NEW ELECTRIC SERVICE AS SHOWN ON THE DRAWINGS.
- B. ASSIST THE OWNER IN APPLYING FOR ELECTRICAL SERVICE AND COORDINATE NEW SERVICE INSTALLATION WITH THE UTILITY COMPANY. PROVIDE METERING EQUIPMENT, TRANSFORMER PAD, AND CONDUIT ROUGH-IN AS REQUIRED BY THE UTILITY.

26 05 19 LOW VOLTAGE POWER CONDUCTORS AND CABLES (600V AND LESS)

- C. ELECTRIC SERVICE COST BY OWNER.
- D. ELECTRIC UTILITY WE ENERGIES
- E. UTILITY COST BY OWNER.
- F. TELEPHONE UTILITIES NEW TELEPHONE SERVICE
- 2. TELEPHONE UTILITY COSTS BY OWNER
- 1. NO. 10 & 12: SOLID OR STRANDED COPPER, 600V, THHN/THWN.

2. NO. 8 TO 3: STRANDED COPPER, 600V, THHN/THWN.

- - 11. TYPE AC OR MC CABLE UTILIZED IN ALL PATIENT CARE AREAS SHALL COMPLY WITH THE "REDUNDANT GROUND" REQUIREMENTS OF NEC 517.13(A) AND (B). B. NEUTRALS AND GROUNDS SHALL BE COLOR CODED PER NEC. C. WIRE COLORS
- D. SHOP DRAWINGS, PRODUCT DATA, TEST RESULTS AND SAMPLE SUBMITTALS:
- 2. ELECTRICAL CONSTRUCTION ADMINISTRATION SUBMITTAL LIST:
- a. PANELBOARDS b. LIGHT FIXTURES
- c. LOW VOLTAGE LIGHTING CONTROL PANELS
- e. FIRE ALARM
- 4. SHOP DRAWINGS SHALL CLEARLY INDICATE SPECIFIC MODEL BEING PROVIDED WHERE CUT SHEETS SHOW MULTIPLE
- 5. LIGHT FIXTURE SHOP DRAWINGS SHALL CLEARLY INDICATE INDENTIFICATION TAG AS INDICATED IN LIGHT FIXTURE SCHEDULE. ALL OPTIONS, ACCESSORIES AND FINISHES BEING PROVIDED SHALL BE CLEARLY INDICATED.

- 1. SEE DIVISION 09 91 00 FINISH AND PAINTING FOR ADDITIONAL REQUIREMENTS.
- 2. PREPARE EXPOSED CONDUIT, FITTINGS, SUPPORTS, AND ACCESSORIES FOR FINISH PAINTING IN ROOMS THAT WILL HAVE CELLING AND STRUCTURE PAINTED
- REPRESENTATIVE TO ALL ROOF MOUNTED EQUIPMENT AND OTHER EXTERIOR MATERIALS, INCLUDING SUPPORT
- THE EQUIPMENT TO THE SATISFACTION OF THE OWNER.
- F. DETAILS AND SCHEDULES ARE SHOWN TO AID THE CONTRACTOR AND ARE NOT MEANT TO BE INCLUSIVE OF ALL
- MAINTAIN MAXIMUM HEADROOM AND SPACE CONDITION AT ALL POINTS IN THE BUILDING. WHERE HEADROOM OR
- J. COMPLY WITH THE REQUIREMENTS OF NFPA; NATIONAL, STATE AND LOCAL ELECTRICAL CODES AND LOCAL UTILITY
- K. MATERIAL SHALL BEAR U.L. AND/OR OTHER APPROVED AGENCY LISTING.
- M. VERIFY ELECTRICAL SIZE AND CONNECTION REQUIREMENTS FOR EQUIPMENT FURNISHED BY OTHERS WITH FINAL SHOP
- BEFORE STARTING SITE DEMOLITION. DESIGN ENGINEER AND GENERAL CONTRACTOR SHALL BE NOTIFIED OF ANY
- OWNER. CONTRACTOR SHALL WORK UNTIL SERVICE IS RESTORED. OUTAGE WORK SHALL BE PERFORMED DURING
- P. PROVIDE ALL CUTTING AND PATCHING NECESSARY FOR ELECTRICAL WORK INSTALLATION UNLESS THIS WORK IS
- 1. CLEAN FIXTURES AND EQUIPMENT AND LEAVE IN PROPER WORKING CONDITION AT THE TIME OF FINAL CLEAN-UP.
- TWO (2) HOURS FOR BUILDING ELECTRICAL SYSTEM.
- 3. TWO (2) HOURS FOR FIRE ALARM SYSTEM. THE SUPPLIER SHALL REVIEW THE FIRE ALARM PANEL SEQUENCES OF
- A. LOCATION
- WITHOUT ANY ADDITIONAL COST TO PROJECT. 2. DO NOT LOCATE OUTLETS OR EQUIPMENT WHERE THE USEFULNESS AND/OR OPERATION WILL BE AFFECTED BY THE
- 1. INSTALL EQUIPMENT, JUNCTION BOXES, PULL BOXES AND ACCESSORIES TO PERMIT ACCESS WITHOUT RELOCATING INSTALLED OR YET TO BE INSTALLED EQUIPMENT.
- ACCESS PANELS a. FURNISH ACCESS PANELS OF ADEQUATE SIZE TO PERMIT SERVICE OF CONCEALED DEVICES. PANELS SHALL BE SUITABLE FOR INSTALLATION IN THE MATERIAL FORMING THE FINISHED SURFACE, WITH FLUSH METAL FRAME, FLUSH HINGED STEEL DOOR, FLUSH SCREWDRIVER OPERATED LATCH.
- b. PANELS UL LISTED TO CONFORM TO THE FIRE RATING OF THE SURFACE INSTALLED IN. c. TURN ACCESS PANEL OVER TO CONTRACTOR SKILLED IN THE CONSTRUCTION OF THE SURFACES INVOLVED FOR
- e. COORDINATE WITH THE OTHER CONTRACTORS AND WHEREVER PRACTICAL, GROUP DEVICES IN SUCH A
- 1. VERIFY ALL EXISTING UNDERGROUND ELECTRICAL FEEDERS, BRANCH CIRCUITS, LOW VOLTAGE CABLES AND FIBER OPTIC AND PLUMBING PIPING HAVE BEEN LOCATED PRIOR TO EXCAVATION. CONTRACTOR SHALL NOT USE MACHINE EXCAVATORS AROUND EXISTING BURIED ELECTRICAL AND PLUMBING LINES.
- REQUIREMENTS SPECIFIED ELSEWHERE. 3. CONDUIT PASSING UNDER FOOTINGS AND FOUNDATION WALLS ARE ALLOWED WHERE PERMITTED BY NEC. MAINTAIN MINIMUM 1-1/2" CLEARANCE UNDER FOOTINGS AND FOUNDATION WALLS.
- - OR EXPOSING STEEL 3. GROUNDING CONDUCTORS: ROUTE ALONG SHORTEST AND STRAIGHTEST PATHS POSSIBLE, EXCEPT AS OTHERWISE INDICATED. AVOID OBSTRUCTING ACCESS OR PLACING CONDUCTORS WHERE THEY MAY BE SUBJECTED TO STRAIN, IMPACT, OR DAMAGE
    - 4. UNDERGROUND GROUNDING CONDUCTORS: USE BARE TINNED COPPER WIRE. BURY AT LEAST 30 INCHES (600 MILLIMETERS) BELOW GRADE.

3. NO. 2 TO 4/0: STRANDED COPPER OR ALUMINUM, 600V, THHN/THWN.

1. 120/208-VOLT SYSTEM: PHASE-A (BLACK), PHASE-B (RED), PHASE-C (BLUE).

AMPACITY OF THE BRANCH CIRCUITS OVERCURRENT PROTECTION DEVICE.

PROVIDE GROUND CONDUCTOR(S) WITH EVERY BRANCH CIRCUIT AND EVERY FEEDER.

RECEPTACLE OR PIECE OF EQUIPMENT IS SHOWN WITH AN INDIVIDUAL HOMERUN.

THE LARGEST SOURCE CONDUCTOR WHEN THE NEUTRAL IS SHARED.

3. GROUNDING-ELECTRODE CONDUCTORS: STRANDED CABLE.

b. ASSEMBLY OF STRANDED CONDUCTORS: ASTM B8.

1. PRESSURE CONNECTORS: HIGH CONDUCTIVITY PLATED UNITS.

J. VERIFY LUG SIZES AND TERMINATION LOCATION PRIOR TO INSTALLING FEEDERS.

. MINIMUM BRANCH CIRCUIT WIRE SIZE NO. 12.

JURISDICTION

D. VOLTAGE DROP

HAVING JURISDICTION.

STRANDED PURE ALUMINUM CONDUCTORS.

**26 05 26 GROUNDING AND BONDING** 

A. GROUNDING AND BONDING PRODUCTS

5. BARE COPPER CONDUCTORS:

C. MISCELLANEOUS CONDUCTORS

AS INDICATED.

D. CONNECTOR PRODUCTS

E. GROUNDING ELECTRODES

INDICATED.

STRANDING.

B. WIRE AND CABLE GROUNDING CONDUCTORS

c. TINNED CONDUCTORS: ASTM B33.

TERMINATED WITH COPPER FERRULES.

BOLTED CLAMPS: HEAVY-DUTY TYPE.

GROUNDING RODS: COPPER-CLAD STEEL.

THAN REQUIRED BY NEC ARE INDICATED

TO THOSE REQUIRED BY CODE:

6). FLEXIBLE RACEWAY RUNS.

2). LIGHTING CIRCUITS.

CENTRAL EQUIPMENT LOCATION.

OR SPECIFICATIONS EXCEED NEC REQUIREMENTS.

FROM ANY OTHER GROUNDING ELECTRODE.

OTHERWISE INDICATED

3). RECEPTACLE CIRCUITS.

1). FEEDERS AND BRANCH CIRCUITS.

4). SINGLE-PHASE MOTOR OR APPLIANCE BRANCH CIRCUITS.

5). THREE-PHASE MOTOR OR APPLIANCE BRANCH CIRCUITS.

IN PANEL TO EQUIPMENT GROUNDING-BAR TERMINAL ON BUSWAY.

UNLESS THEY ARE DESIGNATED FOR TELEPHONE OR DATA CABLES.

ON 1/4 BY 2 BY 12 INCHES (6 BY 50 BY 300 MILLIMETER) GROUNDING BUS.

RUNS FROM COMPUTER AREA POWER PANELS OR POWER-DISTRIBUTION UNITS.

7). ARMORED AND METAL-CLAD CABLE RUNS.

6. CONTROL WIRING: STRANDED COPPER, MINIMUM NO. 14.

7. GREEN INSULATION, COPPER STRANDED EQUIPMENT GROUND.

4. 250 KCMIL AND LARGER: STRANDED COPPER OR ALUMINUM, 600V, XHHW.

8. NM CABLE IS ACCEPTABLE WHERE ALLOWED BY STATE AND LOCAL CODES AND LOCAL AUTHORITY HAVING

9. UF CABLE IS ACCEPTABLE WHERE ALLOWED BY STATE AND LOCAL CODES AND LOCAL AUTHORITY HAVING

1. AT NO POINT IN THE ELECTRICAL SYSTEM SHALL THERE BE MORE THAN 5 PERCENT TOTAL VOLTAGE DROP.

DROP TO 2 PERCENT OR LESS FOR FEEDERS, AND 3 PERCENT OR LESS FOR BRANCH CIRCUITS.

2. THE CONTRACTOR SHALL APPROPRIATELY INCREASE THE SIZE OF ALL CIRCUIT CONDUCTORS TO LIMIT VOLTAGE

3. VOLTAGE DROP ON BRANCH CIRCUITS FOR LIGHTING OR RECEPTACLES SHALL BE CALCULATED USING 80 PERCENT

F. WHEN USING ALUMINUM CONDUCTORS: THE CONTRACTOR SHALL SEAL ALL EXPOSED ALUMINUM WHEN CONDUCTOR

IS EXPOSED IN A LUG WITH AN ANTI-OXIDANT COMPOUND. THE CONDUCTORS SHALL BE COMPACT CONCENTRIC

H. PROVIDE A SEPARATE NEUTRAL CONDUCTOR FOR EACH LIGHTING BRANCH CIRCUIT THAT SERVES HID, ELECTRONIC

FLUORESCENT BALLASTS AND SOLID-STATE LED DRIVERS OR PROVIDE A NEUTRAL CONDUCTOR ONE SIZE LARGER THAN

I. TESTING: ALL CIRCUITS SHALL BE TESTED FOR PROPER OPERATION AND FUNCTION. REPAIR ALL NON-WORKING, NEWLY

1. GOVERNING REQUIREMENTS: WHERE TYPES, SIZES, RATINGS, AND QUANTITIES INDICATED ARE IN EXCESS OF NEC

1. CONFORM TO NEC TABLE 8, EXCEPT AS OTHERWISE INDICATED FOR CONDUCTOR PROPERTIES, INCLUDING

2. EQUIPMENT GROUNDING CONDUCTORS: INSULATED WITH GREEN COLOR INSULATION.

4. UNDERGROUND CONDUCTORS: BARE, TINNED, STRANDED, EXCEPT AS OTHERWISE INDICATED.

a. SOLID CONDUCTORS: AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) B3.

1. GROUNDING BUS: BARE, ANNEALED COPPER BARS OF RECTANGULAR CROSS SECTION

REQUIREMENTS, MORE STRINGENT REQUIREMENTS AND GREATER SIZE, RATING, AND QUANTITY INDICATIONS

2. BRAIDED BONDING JUMPERS: COPPER TAPE, BRAIDED NO. 3/0 AMERICAN WIRE GAUGE (AWG) BARE COPPER WIRE,

3. BONDING STRAPS: SOFT COPPER, 0.05 INCH (1 MILLIMETER) THICK AND 2 INCHES (50 MILLIMETERS) WIDE, EXCEPT

3. EXOTHERMIC-WELDED CONNECTIONS: PROVIDED IN KIT FORM AND SELECTED PER MANUFACTURER'S WRITTEN

b. PLATE ELECTRODES: COPPER, SQUARE OR RECTANGULAR SHAPE. MINIMUM 0.10 INCH THICK, SIZE AS

EQUIPMENT GROUNDING CONDUCTORS: COMPLY WITH NEC ARTICLE 250 FOR TYPES, SIZES, AND QUANTITIES OF

EQUIPMENT GROUNDING CONDUCTORS, EXCEPT WHERE SPECIFIC TYPES, LARGER SIZES, OR MORE CONDUCTORS

a. INSTALL EQUIPMENT GROUNDING CONDUCTOR WITH CIRCUIT CONDUCTORS FOR ITEMS BELOW IN ADDITION

b. BUSWAY SUPPLY CIRCUITS: INSTALL SEPARATE EQUIPMENT GROUNDING CONDUCTOR FROM GROUNDING BUS

c. COMPUTER OUTLET CIRCUITS: INSTALL SEPARATE EQUIPMENT GROUNDING CONDUCTOR IN BRANCH CIRCUIT

GROUNDING CONDUCTOR TO EACH ELECTRIC WATER HEATER, HEAT-TRACING ASSEMBLY, AND ANTIFROST

COMMUNICATION SYSTEMS, PROVIDE NO. 4 AWG MINIMUM INSULATED GROUNDING CONDUCTOR IN RACEWAY

FROM GROUNDING-ELECTRODE SYSTEM TO EACH SERVICE LOCATION, TERMINAL CABINET, WIRING CLOSET, AND

a. SERVICE AND CENTRAL EQUIPMENT LOCATIONS AND WIRING CLOSETS: TERMINATE GROUNDING CONDUCTOR

HEATING CABLE. BOND CONDUCTOR TO HEATER UNITS, PIPING, CONNECTED EQUIPMENT, AND COMPONENTS.

d. NONMETALLIC RACEWAYS: INSTALL EQUIPMENT GROUNDING CONDUCTOR IN NONMETALLIC RACEWAYS

e. WATER HEATER, HEAT-TRACING, AND ANTIFROST HEATER CIRCUITS: INSTALL SEPARATE EQUIPMENT

b. TERMINAL CABINETS: TERMINATE GROUNDING CONDUCTOR ON CABINET GROUNDING TERMINAL.

4. METAL POLES SUPPORTING OUTDOOR LIGHTING FIXTURES: GROUND POLE TO GROUNDING ELECTRODE IN

ADDITION TO SEPARATE EQUIPMENT GROUNDING CONDUCTOR RUN WITH SUPPLY BRANCH CIRCUIT.

5. PIPING SYSTEMS AND OTHER EQUIPMENT: COMPLY WITH NEC ARTICLE 250 FOR BONDING REQUIREMENTS.

1. GROUND ELECTRICAL SYSTEMS AND EQUIPMENT ACCORDING TO NEC REQUIREMENTS, EXCEPT WHERE DRAWINGS

2. GROUNDING RODS: LOCATE MINIMUM OF 1 ROD LENGTH FROM EACH OTHER AND AT LEAST SAME DISTANCE

a. DRIVE UNTIL TOPS ARE 2 INCHES (50 MILLIMETERS) BELOW FINISHED FLOOR OR FINAL GRADE, EXCEPT AS

b. INTERCONNECT WITH GROUNDING-ELECTRODE CONDUCTORS. USE EXOTHERMIC WELDS, EXCEPT AT TEST

WELLS AND AS OTHERWISE INDICATED. MAKE THESE CONNECTIONS WITHOUT DAMAGING COPPER COATING

3. SEPARATELY DERIVED SYSTEMS: WHERE NEC REQUIRES GROUNDING, GROUND ACCORDING TO NEC PARAGRAPH

2. SIGNAL AND COMMUNICATION SYSTEMS: FOR TELEPHONE, ALARM, VOICE AND DATA, AND OTHER

INSTRUCTIONS FOR SPECIFIC TYPES, SIZES, AND COMBINATIONS OF CONDUCTORS AND CONNECTED ITEMS.

G. PROVIDE A SEPARATE GROUND CONDUCTOR AND A SEPARATE NEUTRAL CONDUCTOR WHEN AN INDIVIDUAL

10. TYPE AC OR MC CABLE IS ACCEPTABLE WHERE ALLOWED BY STATE AND LOCAL CODES AND LOCAL AUTHORITY

- 5. METAL WATER SERVICE PIPE: PROVIDE INSULATED COPPER GROUNDING CONDUCTORS, SIZED AS INDICATED, IN CONDUIT, FROM BUILDING'S MAIN SERVICE EQUIPMENT, OR GROUNDING BUS, TO MAIN METAL WATER SERVICE ENTRANCES TO BUILDING. CONNECT GROUNDING CONDUCTORS TO MAIN METAL WATER SERVICE PIPES BY GROUNDING-CLAMP CONNECTORS. WHERE DIELECTRIC MAIN WATER FITTING IS INSTALLED, CONNECT GROUNDING CONDUCTOR TO STREET SIDE OF FITTING. DO NOT INSTALL GROUNDING JUMPER ACROSS DIELECTRIC FITTINGS. BOND GROUNDING-CONDUCTOR CONDUIT TO CONDUCTOR AT EACH END.
- CONNECT TO PIPE WITH GROUNDING-CLAMP CONNECTORS. 7. BOND INTERIOR METAL PIPING SYSTEMS AND METAL AIR DUCTS TO EQUIPMENT GROUNDING CONDUCTORS OF ASSOCIATED PUMPS, FANS, BLOWERS, ELECTRIC HEATERS, AND AIR CLEANERS. USE BRAIDED-TYPE BONDING

WATER METER PIPING: USE BRAIDED-TYPE BONDING JUMPERS TO ELECTRICALLY BYPASS WATER METERS.

- 8. CONCRETE-ENCASED GROUNDING ELECTRODE (GROUNDING BUILDING/STRUCTURE FOOTING): FABRICATE ACCORDING TO NEC ARTICLE 250 USING MINIMUM OF 20 FEET (6 METERS) OF BARE TINNED COPPER CONDUCTOR NOT SMALLER THAN NO. 4 AWG OR MINIMUM 20 FEET (6 METERS) REBAR 1/2 INCH OR LARGER IN DIAMETER. BOND GROUNDING CONDUCTOR TO REINFORCING STEEL TO AT LEAST 4 LOCATIONS, AND TO ANCHOR BOLTS. EXTEND GROUNDING CONDUCTOR UP IN FOUNDATION WALL.
- H. CONNECTIONS

- 1. MAKE CONNECTIONS SO POSSIBILITY OF GALVANIC ACTION OR ELECTROLYSIS IS MINIMIZED. SELECT CONNECTORS, CONNECTION HARDWARE, CONDUCTORS, AND CONNECTION METHODS SO METALS IN DIRECT
- CONTACT WILL BE GALVANICALLY COMPATIBLE a. USE ELECTROPLATED OR HOT-TIN-COATED MATERIALS TO ASSURE HIGH CONDUCTIVITY AND TO MAKE
- CONTACT POINTS CLOSER IN ORDER OF GALVANIC SERIES.
- b. MAKE CONNECTIONS WITH CLEAN, BARE METAL AT POINTS OF CONTACT. c. MAKE ALUMINUM-TO-STEEL CONNECTIONS WITH STAINLESS-STEEL SEPARATORS AND MECHANICAL CLAMPS. d. MAKE ALUMINUM-TO-GALVANIZED STEEL CONNECTIONS WITH TIN-PLATED COPPER JUMPERS AND
- e. COAT AND SEAL CONNECTIONS HAVING DISSIMILAR METALS WITH INERT MATERIAL TO PREVENT FUTURE PENETRATION OF MOISTURE TO CONTACT SURFACES. EXOTHERMIC-WELDED CONNECTIONS: USE FOR CONNECTIONS TO STRUCTURAL STEEL AND FOR UNDERGROUND
- CONNECTIONS, EXCEPT THOSE AT TEST WELLS. COMPLY WITH MANUFACTURER'S WRITTEN INSTRUCTIONS. WELDS THAT ARE PUFFED UP OR THAT SHOW CONVEX SURFACES INDICATING IMPROPER CLEANING ARE NOT ACCEPTABLE. 3. EQUIPMENT GROUNDING-WIRE TERMINATIONS: FOR NO. 8 AWG AND LARGER, USE PRESSURE-TYPE GROUNDING LUGS. NO. 10 AWG AND SMALLER GROUNDING CONDUCTORS MAY BE TERMINATED WITH WINGED PRESSURE-TYPE
- 4. NONCONTACT METAL RACEWAY TERMINATIONS: WHERE METALLIC RACEWAYS TERMINATE AT METAL HOUSINGS WITHOUT MECHANICAL AND ELECTRICAL CONNECTION TO HOUSING, TERMINATE EACH CONDUIT WITH A GROUNDING BUSHING. CONNECT GROUNDING BUSHINGS WITH BARE GROUNDING CONDUCTOR TO GROUNDING BUS OR TERMINAL IN HOUSING. BOND ELECTRICALLY NONCONTINUOUS CONDUITS AT BOTH ENTRANCES AND EXITS WITH GROUNDING BUSHINGS AND BARE GROUNDING CONDUCTORS, EXCEPT AS OTHERWISE INDICATED. TIGHTEN SCREWS AND BOLTS FOR GROUNDING AND BONDING CONNECTORS AND TERMINALS ACCORDING TO MANUFACTURER'S PUBLISHED TORQUE-TIGHTENING VALUES. WHERE THESE REQUIREMENTS ARE NOT AVAILABLE,
- USE THOSE SPECIFIED IN UL 486A AND UL 486B. 6. COMPRESSION-TYPE CONNECTIONS: USE HYDRAULIC COMPRESSION TOOLS TO PROVIDE CORRECT CIRCUMFERENTIAL PRESSURE FOR COMPRESSION CONNECTORS. USE TOOLS AND DIES RECOMMENDED BY MANUFACTURER OF CONNECTORS. PROVIDE EMBOSSING DIE CODE OR OTHER STANDARD METHOD TO MAKE VISIBLE INDICATION THAT CONNECTOR HAS BEEN ADEQUATELY COMPRESSED ON GROUNDING CONDUCTOR. MOISTURE PROTECTION: WHERE INSULATED GROUNDING CONDUCTORS ARE CONNECTED TO GROUNDING RODS

OR GROUNDING BUSES, INSULATE ENTIRE AREA OF CONNECTION AND SEAL AGAINST MOISTURE PENETRATION OF

## 26 05 29 HANGERS AND SUPPORTS

- A. CONDUIT HANGERS, ATTACHMENTS, AND SUPPORTS 1. PROVIDE PROPER FITTINGS AND SUPPORT SUITABLE FOR AMBIENT/ENVIRONMENTAL CONDITIONS AND SERVICE
- 2. ATTACH TO STRUCTURAL COMPONENTS TO NOT JEOPARDIZE STRUCTURAL INTEGRITY. 3. PROVIDE ANGLES, CHANNELS, AND BEAMS AS REQUIRED.
- 1. 3/4" PLYWOOD PAINTED ON BOTH SIDES AND EDGES WITH TWO COATS OF WHITE ENAMEL PAINT TO MOUNT
- EOUIPMENT WHERE SHOWN. 2. SUPPORT WITH PAINTED OR GALVANIZED STEEL CHANNEL.
- C. CONCRETE PADS 1. COORDINATE FINAL EQUIPMENT CONCRETE PAD SIZE REQUIREMENTS. PADS SHALL EXTEND MINIMUM 2" BEYOND **EQUIPMENT FOOTPRINT**
- D. EXTERIOR LIGHT POLE AND BOLLARD BASES
- 1. PROVIDE EXTERIOR LIGHT POLE AND BOLLARD CONCRETE BASES PER DETAILS.

# 26 05 30 CONDUIT

1. ALLOWED FOR ALL SIZES BELOW GRADE AND INSIDE ABOVE GRADE.

ALLOWED FOR INSIDE ABOVE GRADE CONDUIT 2" AND SMALLER.

- REQUIRED WHERE CALLED OUT ON PLANS. REQUIRED FOR ALL SIZES OF OUTDOOR ABOVE GRADE CONDUIT.
- 4. GALVANIZED RIGID STEEL REQUIRED FOR ALL UNDERGROUND 90 DEGREE BENDS
- 5. GALVANIZED RIGID STEEL WITH GALVANIZED RIGID STEEL FITTINGS, THREADED WATERTIGHT
- 2. STEEL SET SCREW OR COMPRESSION TYPE FITTINGS WITH INSULATED THROAT. 3. CAST METAL SET SCREW FITTINGS NOT ALLOWED.
- 1. SIZES: MINIMUM 1/2", MAXIMUM 1". 2. ALLOWED FOR ABOVE GRADE CONDUIT WHICH IS CONCEALED INSIDE NON-RATED WALLS AND WHERE PERMITTED
- BY CODE AND LOCAL AUTHORITY HAVING JURISDICTION. 3. SUPPORT MINIMUM EVERY TWO FEET.
- D. FLEXIBLE
- MINIMUM SIZE 1/2" MAXIMUM LENGTH 36" FOR CONNECTION TO HVAC EQUIPMENT
- MAXIMUM LENGTH 72" FOR CONNECTION TO FIXTURES IN TILE CEILINGS. 4. STEEL FITTINGS WITH INSULATED THROAT, UL LISTED.
- 1. USE FOR CONDUIT IN CONCRETE, UNDER FLOOR SLABS, OR IN EARTH WHEN PERMITTED BY CODE AND LOCAL ORDINANCES.
- 2. MINIMUM SIZE 3/4". 3. SCHEDULE 40 PVC
- F. FITTINGS 1. FITTING MATERIAL SHALL MATCH CONDUIT MATERIAL UNLESS OTHERWISE NOTED IN PLANS AND SPECIFICATIONS OR WITH WRITTEN APPROVAL BY ENGINEER.
- G. INSTALLATION DRAWINGS AND DIAGRAMS SHOW SIZE AND APPROXIMATE LOCATION OF CONDUIT. THE DRAWINGS ARE DIAGRAMMATIC AND SHALL NOT BE SCALED TO DETERMINE EXACT LOCATION. PROVIDE ADDITIONAL OFFSETS AS REQUIRED FOR FIELD CONDITIONS. ROUTE CONDUIT IN ORDERLY MANNER, PARALLEL TO BUILDING STRUCTURE.
- CONCEAL CONDUIT IN FINISHED AREAS. 2. INSTALL UL APPROVED EXPANSION FITTINGS COMPLETE WITH GROUNDING JUMPERS WHERE CONDUITS CROSS BUILDINGS EXPANSION JOINTS AND IN LONG CONDUIT RUNS WHERE DIFFERENTIAL EXPANSION OR CONTRACTION
- WOULD CAUSE BENDING OR SEPARATION.
- INSTALL CONDUIT WITH ADEQUATE DRAINAGE. 4. PROVIDE PULL STRING IN ALL EMPTY CONDUITS.
- WHEN REQUIRED BY STATE AND LOCAL CODES AND ORDINANCES, PROVIDE SEPARATE CONDUIT/RACEWAY FOR FIRE ALARM AND TELECOMMUNICATION SYSTEMS. ROUTE CONDUIT ABOVE LAY-IN SUSPENDED CEILINGS SO AS NOT TO INTERFERE WITH TILE REMOVAL

7. INSTALL FLEXIBLE STEEL CONDUIT DROPS FROM INDEPENDENT JUNCTION BOX MOUNTED ABOVE CEILING TO

- RECESSED LIGHT FIXTURES 8. SECURE CONDUITS WITH AT LEAST ONE CORROSION PROOF MALLEABLE ALLOY STRAP OR HANGER EVERY 8 FT. DO
- NOT USE PERFORATED STRAPPING. 9. PROVIDE UL LISTED FIRE-WALL PENETRATIONS WHEN CONDUIT PASS THROUGH A FIRE RATED WALL.

NUMBER	SHEET NAME
ELECTRICAL	
E0.1	LEGEND AND SPECIFICATIONS
E0.2	SPECIFICATIONS
E1.0	SITE PLAN
E1.1L	FIRST FLOOR PLAN - LIGHTING
E1.1P	FIRST FLOOR PLAN - POWER
E1.3	ROOF PLAN
E3.0	DETAILS
E4.0	ONELINE DIAGRAMS & SCHEDULES

SYM.  LIGHTING  O  O  O	<u>IDENTIFICATION</u>	SYM.	TING HEIGHTS ARE TYPICAL UNLESS NOTED OTHERWISE.
0			<u>IDENTIFICATION</u>
O-			
<u>O</u>	RECESSED, SURFACE, OR PENDANT MOUNTED	4-4	EMERGENCY LIGHT MOUNT 11'-0" AFF. TO TOP OR 8"
<u>٠</u>	UIGHT FIXTURE WALL MOUNTED LIGHT FIXTURE.	<u> </u>	BELOW CEILING, WHICHEVER IS LOWER
<u>•</u>	MOUNT 7'-0" AFF. OR 8" ABOVE MIRROR	4□^	RECESSED EMERGENCY LIGHT
M	RECESSED, SURFACE MOUNTED, OR CHAIN HUNG LIGHT FIXTURE		EXIT LIGHT
<b>X</b> 2	PENDANT FIXTURE		OCCUPANCY SENSOR
	EXTERIOR WALL MOUNTED OR INTEROR WALL	<b>⊕</b> ⊣	WALL MOUNTED OCCUPANCY SENSOR WITH SWITCH
- =	WASH FIXTURE		D = DIMMER  DUAL LEVEL/CIRCUIT OCCUPANCY SENSOR WITH
	SINGLE HEAD POLE	<b>●</b> H	SWITCH
•	TWIN HEAD POLE MOUNTED FIXTURE	□ _{PC}	PHOTO CONTROL
WIRING DE		1	
\$	SINGLE POLE SWITCH.  MOUNT 46" AFF. TO CENTER, 3 = 3 WAY, 4 = 4 WAY,	MW P	DUPLEX RECEPTACLE. MOUNT IN CABINET BEHIND
Ψ	P = PILOT, D = DIMMER, K = KEYED	l H	MICROWAVE, FIELD VERIFY HEIGHT
<b>\$</b> \$	DUAL LEVEL SWITCH. MOUNT 46" AFF. TO CENTER SEE DETAIL	Φ	POWER RECEPTACLE. MOUNT 18" AFF. TO CENTER
\$	LOW VOLTAGE SWITCH.	_	SWITCH BOTTOM HALF OF RECEPTACLE, TOP
	MOUNT 46" AFF. TO CENTER	<del>                                     </del>	HALF UNSWITCHED
Φ	SIMPLEX RECEPTACLE. MOUNT 18" AFF. TO CENTER	•	SPECIAL OUTLET
Ψ	DUPLEX RECEPTACLE. MOUNT 18" AFF. TO CENTER	0	JUNCTION BOX
#	DOUBLE DUPLEX RECEPTACLE. MOUNT 18" AFF. TO CENTER	<b>#</b>	SWITCH BOTTOM HALF OF GFI RECEPTACLE, TOP HALF UNSWITCHED
Ф	GFI DUPLEX RECEPTACLE. MOUNT 18" AFF. TO CENTER	ф	DUPLEX RECEPTACLE SURFACE MOUNTED CLG = CEILING/SOFFIT MOUNTED
#	GFI DOUBLE DUPLEX RECEPTACLE. MOUNT 18" AFF. TO CENTER	•	BLANK BOX 4" EXTRA DEEP BOX, SINGLE GANG RING, BLANKPLATE, 1" C STUB INTO ACCESSIBLE SPACE, MOUNT 18" AFF. TO CENTER
Φ	DUPLEX RECEPTACLE MOUNT VERTICALLY 6" ABOVE BACKSPLASH TO CENTER. IF NO BACKSPLASH MOUNT 6" ABOVE COUNTER	<b>(</b>	ABOVE COUNTER BLANK BOX, 4" EXTRA DEEP BOX, SINGLI GANG RING, BLANKPLATE, 1"C STUBBED INTO ACCESSIBLE SPACE, MOUNT 6" ABOVE BACKSPLASH TO CENTER
<b>#</b>	GFI DUPLEX RECEPTACLE MOUNT VERTICALLY 6" ABOVE BACKSPLASH TO CENTER. IF NO BACKSPLASH MOUNT 6" ABOVE COUNTER	₩0	COMBINATION FLOOR OUTLET/BLANK JUNCTION BOX - WIREMOLD - RESOURCE RFB/SERIES OR EQUIVALENT, 1" C STUB INTO ACCESSIBLE SPACE
MOTORS /	MOTOR CONTROL / EQUIPMENT		Equivalent, 1 conocinto necessible of nec
	DISCONNECT FURNISHED BY EC		
	F = FUSIBLE	MS	MANUAL STARTER
$\boxtimes$	NON-COMBINATION STARTER	10	MOTOR CONNECTION
$\square$	COMBINATION STARTER	10/	MOTOR CONNECTION REQUIRING REMOTE STARTER/VFD
_	SURFACE MOUNTED PANELBOARD		EQUIPMENT CONNECTION
$\overline{z}$	RECESSED PANELBOARD		SURFACE MOUNTED RACEWAY
FIRE ALARI	M / LIFE SAFETY		
<u></u>	STROBE. MOUNT 84" AFF. TO TOP OR 6" BELOW	М	MAGNETIC DOOR HOLDER
<u> </u>	CEILING WHICHEVER IS LOWER  SPEAKER. CEILING MOUNTED	LIVI	WINGINETIC DOOK HOLDER
$\bigcirc \bigcirc$	W = WALL MOUNTED	FS	SPRINKLER FLOW SWITCH
Ž	HORN/STROBE. MOUNT 84" AFF. TO TOP OR	TS	SPRINKLER TAMPER SWITCH
	6" BELOW CEILING WHICHEVER IS LOWER SPEAKER/STROBE. MOUNT 84" AFF. TO TOP OR	£	SPRINKLER BELL
	6" BELOW CEILING WHICHEVER IS LOWER	7	STRINKLIN DLLL
	HORN (SOUNDER). MOUNT 84" AFF. TO TOP OR 6" BELOW CEILING WHICHEVER IS LOWER	FACP	FIRE ALARM CONTROL PANEL
F	PULL STATION. MOUNT 46" AFF. TO CENTER	FAA	FIRE ALARM ANNUNCIATOR PANEL
H	HEAT DETECTOR	ARS	AREA OF REFUGE STATION
S	SMOKE DETECTOR	ARL	AREA OF REFUGE LIGHTING
(S) _D	DUCT SMOKE DETECTOR	ARM	AREA OF REFUGE MASTER PANEL
(S) _E	ELEVATOR SMOKE DETECTOR	ECM	EMERGENCY COMMUNICATIONS MASTER
S _{SB}	SMOKE DETECTOR WITH SOUNDER BASE	ECS	EMERGENCY COMMUNICATIONS STATION
G) SB	CARBON MONOXIDE DETECTOR		
MISCELLAN			DUSHRUTTON DROWING HUNCTION POV AND
<del></del> -	CONDUIT STUB THROUGH WALL BUSHED EACH END	•	PUSHBUTTON, PROVIDE JUNCTION BOX AND CONDUIT, MOUNT AT SWITCH HEIGHT
<del></del>	CONDUIT WITH BUSHING ON END.		GROUND ROD
	ELECTRICAL HOMERUN, CIRCUIT AS SHOWN	•	EXO-THERMIC WELD CONNECTION
*PNL-X	SHARED ELECTRICAL HOMERUN WHEN WIRE TAG	M	NURSE CALL DOME LIGHT
	HAS (*) ASTERISK PRECEDING PANEL-CIRCUIT INFO		
	RELAY CIRCUIT	P	NURSE CALL PULL CORD
	ITEMS AND/OR DEVICES CIRCUITED TOGETHER	$\bigcirc$	DETAIL OR SECTION NUMBER SHEET NUMBER
	ITEMS AND/OR DEVICES CIRCUITED TOGETHER, BUT		S. IEE TOMBER
ADDDELCT	SWITCHED SEPARATELY		
ABBREVIAT			TO LATED CROUNE
AC	ABOVE COUNTER	IG	ISOLATED GROUND
AFF.	ABOVE FINISHED FLOOR  AROVE FINISHED GRADE	LCP	LIGHTING CONTROL PANEL
DISC	ABOVE FINISHED GRADE  DISCONNECT	NL NTS	NIGHT LIGHT  NOT TO SCALE
DISC	DISHWASHER	OC	ON CENTER
~ v v	FLECTRICAL CONTRACTOR	50	OIN CEINIEIN

# SHEET INDEX

ELEV	ELEVATION	PC	PLUMBING CONTRACTOR
EM	EMERGENCY	PNL	PANELBOARD
ETR	EXISTING TO REMAIN	REF	REFRIGERATOR
EWC	ELECTRIC WATER COOLER	UC	UNDER COUNTER
FPC	FIRE PROTECTION CONTRACTOR	UNO	UNLESS NOTED OTHERWISE
GC	GENERAL CONTRACTOR/CONSTRUCTION MANAGER	3R	NEMA 3R
GDSP	GARBAGE DISPOSAL	4X	NEMA 4X
GFI	GROUND FAULT CIRCUIT INTERRUPTER	WT	WATER TIGHT
НС	HVAC CONTRACTOR	XFMR	TRANSFORMER
FIRE RATE	<u>D WALLS</u>		
	FIRE - 1 HOUR		FIRE - 3 HOUR
	FIRE - 2 HOUR		FIRE - 4 HOUR
SECURITY			
DC	DOOR CONTACT	K	KEY PAD
ES	ELECTRIC STRIKE	L	LED INDICATOR LIGHT
CR	CARD READER	FP	FINGER PRINT SCANNER
RE	REQUEST TO EXIT	AL	DOOR ALARM
I	INTERCOM		CAMERA
COMMUN	<u>ICATION</u>		
▼	TELEPHONE OUTLET, 1" C. STUB INTO ACCESSIBLE SPACE, W = WALL MOUNT 52" AFF. TO CENTER	(1))	CEILING MOUNTED SPEAKER
х∇	DATA OUTLET, 1" C STUB INTO ACCESSIBLE SPACE, X = NUMBER OF DATA DROPS PER BOX	(۱)	WALL MOUNTED SPEAKER
4	COMBINATION TELEPHONE/DATA, 1" C STUB INTO ACCESSIBLE SPACE	TV	TELEVISION OUTLET MOUNT 18" AFF. TO CENTER

ELECTRICAL CONTRACTOR

LOCAL VOLUME CONTROL

ELECTRICAL	
E0.1	LEGEND AND SPECIFICATIONS
E0.2	SPECIFICATIONS
E1.0	SITE PLAN
E1.1L	FIRST FLOOR PLAN - LIGHTING
E1.1P	FIRST FLOOR PLAN - POWER
E1.3	ROOF PLAN
E3.0	DETAILS
E4.0	ONELINE DIAGRAMS & SCHEDULES
_	

Always a Better Plan 100 Camelot Drive

excelengineer.com

COLLABORATION

Fond du Lac, WI 54935

920-926-9800



**PROJECT INFORMATION** 

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PROFESSIONAL SEAL

**SHEET DATES** FEB. 14, 2023 REVISIONS

> **JOB NUMBER** 2255300

SHEET NUMBER

**ELECTRICAL LEGEND AND SPECIFICATIONS** 

OFCI OWNER FURNISHED, CONTRACTOR INSTALLED

#### **26 05 33 BOXES**

- A. FLUSH INTERIOR 4" SQUARE STEEL BOXES WITH RAISED COVERS AND SQUARE CUT CORNERS. PROVIDE BOXES RATED FOR THROUGH FEED.
- B. PROVIDE CAST BOXES FOR EXTERIOR USE DEVICES. PROVIDE COVERS WITH GASKETS.

RACEWAY MANUFACTURER TO BE COMPATIBLE WITH THE RACEWAY USED.

- C. JUNCTION AND SPLICE BOXES SHALL HAVE GALVANIZED SCREW COVERS AND BE NOT LESS THAN CODE DIMENSIONS.
- THROUGH-WALL AND BACK-TO-BACK BOXES NOT ALLOWED. D. OUTLET AND JUNCTION BOXES USED AS SURFACE METAL RACEWAY SHALL BE MANUFACTURED BY THE SURFACE METAL
- E. VERIFY LOCATION PRIOR TO ROUGH-IN. MATCH THE HEIGHT OF EXISTING DEVICES FOR INSTALLATIONS IN ADDITIONS

#### 26 05 35 PENETRATIONS

- 1. FURNISH RIGID CONDUIT SLEEVES FOR CABLES PASSING THROUGH MASONRY, CONCRETE, OR OTHER SIMILAR
- 2. FURNISH SLEEVE TO MASON FOR NEW MASONRY WALLS.
- 3. FURNISH, INSTALL, AND GROUT SLEEVE IN EXISTING MASONRY AND NEW CONCRETE WALLS. 4. SLEEVE NOT REQUIRED FOR DRYWALL WALLS OR CORE DRILLED HOLE IN CONCRETE WALL.
- B. NON-FIRE RATED INTERIOR WALL AND FLOOR PENETRATIONS: FILL VOID BETWEEN CONDUIT AND SLEEVE, CONCRETE, OR DRYWALL WITH EXPANDING POLYURETHANE FOAM. CAULK BETWEEN CONDUIT AND SLEEVE OR WALL WITH NON-
- C. FIRE RATED INTERIOR WALL AND FLOOR PENETRATIONS: SEAL OPENING AROUND PIPE WITH A UL APPROVED FIRE-STOP SYSTEM HAVING AN F-RATING NOT LESS THAN THE HOURLY RATING OF THE ASSEMBLY BEING PENETRATED.
- D. SMOKE WALL PENETRATIONS: CONDUITS OR CABLES PENETRATING PENETRATION SHALL NOT DESTROY THE BARRIER'S
- E. CONTRACTOR SHALL USE CAUTION PRIOR TO MAKING PENETRATIONS AS TO NOT DISTURB ANY EXISTING UTILITIES THAT MIGHT BE PRESENT IN EXISTING WALLS, CEILINGS OR FLOORS. THIS CONTRACTOR IS RESPONSIBLE FOR LOCATING
- EXISTING UTILITIES IN EXISTING WALLS, CEILINGS OR FLOORS. F. SEAL ALL RACEWAY, CABLE AND CONDUIT PENETRATIONS THROUGH ALL WALLS IN THE ELECTRICAL ROOM(S).

#### **26 05 53 IDENTIFICATION FOR ELECTRICAL SYSTEMS**

- A. ENGRAVED LABELS: ENGRAVED 3-LAYER PHENOLIC LABEL WITH BLACK LETTERS ON WHITE MATERIAL, UNLESS OTHER COLORS ARE CALLED OUT ON THE DRAWINGS OR DETAILS. LABELS MINIMUM 3/4" HIGH AND 3" LONG. LABELS MAY BE ATTACHED WITH DOUBLE BACKED ADHESIVE TAPE UNLESS INDICATED OTHERWISE. LABELS REQUIRED AT:
- a. MOUNT IDENTIFICATION LABEL AT THE TOP OF THE FRONT COVER. MOUNT ON THE INSIDE OF DOOR FOR
- b. FAULT CURRENT AMPERE RATING
- c. "FED FROM" LABEL. DISCONNECTS:
- a. LABEL EQUIPMENT THAT IT SERVES.
- b. "FED FROM" LABEL.
- LIGHTING CONTROL PANELS:
- a. MOUNT IDENTIFICATION LABEL AT THE TOP OF THE FRONT COVER. b. PROVIDE "CIRCUITS CONTROLLED ARE FED FROM" LABEL.
- B. PROVIDE TYPEWRITTEN DIRECTORY ACCURATELY INDICATING ROOMS AND/OR EQUIPMENT BEING SERVED AT THE FOLLOWING LOCATIONS: PANELBOARDS
- LIGHTING CONTROL PANELS.
- 3. PROVIDE TYPEWRITTEN DIRECTORY ELECTRONICALLY TO THE OWNER IN A FORMAT ACCEPTABLE TO THE OWNER. C. PROVIDE ARC-FAULT LABELS ON ALL SWITCHBOARDS, DISTRIBUTION PANELS, PANELBOARDS, MOTOR CONTROL
- CENTERS, DISCONNECTS AND STARTERS. 1. LABEL SHALL MEET THE MOST CURRENT NFPA 70E REQUIREMENTS
- 2. PROVIDE COLORED LABELS. VERIFY LABEL TYPE IS ACCEPTABLE TO THE OWNER'S REPRESENTATIVE PRIOR TO

#### 26 09 23 LIGHTING CONTROL PANEL

- A. MANUFACTURERS: THE WATT STOPPER, DOUGLAS, INTELLIGENT LIGHTING CONTROLS, LEVITON, HUBBELL BUILDING AUTOMATION, LIGHTING CONTROL AND DESIGN, LITHONIA, NEXLIGHT, PCI SYSTEMS, SPI SYSTEMS.
- B. PROVIDE LIGHTING CONTROL PANEL(S) WITH A RELAY TO CONTROL EACH LIGHTING BRANCH CIRCUIT OR AREA INDICATED IN PANEL SCHEDULE(S) AND PLANS. SEE PLANS FOR LOCAL AND LOW VOLTAGE SWITCHING SCHEMES. SOME CIRCUITS MAY REQUIRE MULTIPLE RELAYS. THE CONTRACTOR OR THEIR VENDOR SHALL DETERMINE THE NUMBER
- C. ELECTRICALLY OR MECHANICALLY HELD 120 VOLT, 20 AMP RELAYS, UL APPROVED FOR COMMERCIAL USE, CAPABLE OF A MINIMUM OF 200,000 ON/OFF CYCLES.
- D. TIME CLOCK CONTROL FUNCTIONS TO FACILITATE A MINIMUM OF 24 DIFFERENT TIME CONTROL SCENARIOS.
- E. SWITCHES AND COVER PLATES PER MANUFACTURER'S RECOMMENDATIONS. . SEE DEVICE SECTION FOR COVER PLATE AND SWITCH COLORS.
- 2. PROVIDE LOW VOLTAGE SWITCHES AND OVERRIDE SWITCHES WHERE SHOWN ON DRAWINGS.
- 3. SWITCHES SHALL BE ANALOG OR DIGITAL.
- F. SEE "BASIC ELECTRICAL REQUIREMENTS" FOR OPERATING INSTRUCTION REQUIREMENTS. G. PROVIDE COMMUNICATION WIRING BETWEEN PANELS PER MANUFACTURER'S RECOMMENDATIONS FOR RELAY SIGNAL TRANSMISSION BETWEEN PANELS. PROVIDE SOFTWARE FOR COMMUNICATION BETWEEN PANELS. H. PROVIDE PHOTO EYE CONTROL INTERFACE WITH UNIT.
- MANUFACTURER'S STANDARD FINISH.
- 26 24 16 PANELBOARDS
- A. MANUFACTURER: EATON CUTLER HAMMER
- GENERAL ELECTRIC 3. ITE — SIEMENS
- SQUARE D
- 1. NEMA 1 CABINET, OR AS LISTED IN PANEL SCHEDULES, CODE GAUGE STEEL CONSISTING OF A BOX WITH A
- REMOVABLE FRONT WITH HINGED DOOR AND LATCH. 2. FABRICATE WITH STRAIGHT EDGES AND SQUARE CORNERS.
- 3. BOXES SHALL BE MINIMUM 20" WIDE.
- 4. MANUFACTURER'S STANDARD FINISH, PRIME COAT AND BAKED ENAMEL FINISH.
- 5. RECESSED DOUBLE TUB PANELBOARDS SHALL HAVE TUBS OF THE SAME HEIGHT. C. PROVIDE A NAMEPLATE LISTING OF THE PANEL TYPE AND NUMBER OF PROTECTIVE AND SWITCHING DEVICES AND
- D. BUS BARS FOR THE MAINS SHALL BE COPPER OR ALUMINUM SIZED IN ACCORDANCE WITH UL STANDARDS. INCLUDE FULL SIZE NEUTRAL BARS UNLESS OTHERWISE NOTED. PROVIDE GROUND BUS.
- E. NEUTRAL BUSSING SHALL HAVE ONE LUG FOR EVERY BRANCH CIRCUIT THAT THE PANELBOARD IS CAPABLE OF
- F. BUS SPACES FOR FUTURE SWITCHING AND PROTECTIVE DEVICES FOR THE MAXIMUM DEVICES AND SWITCHES THAT THE PANELBOARD CAN ACCOMMODATE. G. CIRCUIT BREAKERS:
- 1. UNLESS INDICATED OTHERWISE, CIRCUIT BREAKERS SHALL BE PLUG-ON, INDIVIDUALLY REPLACEABLE, THERMAL-MAGNETIC, AUTOMATIC FREE TRIPPING, SEPARATELY INDICATING "ON", "TRIPPED", AND "OFF", AMBIENT COMPENSATED AT 40 DEGREES C., SINGLE, DOUBLE, OR TRIPLE POLE, AS REQUIRED BY THE PANEL SCHEDULES.
- 2. CIRCUIT BREAKERS INDICATED AS MULTIPLE POLE SHALL BE COMMON TRIP. 3. SHUNT TRIP BREAKERS SHALL HAVE INTEGRAL RELAYS.
- H. PROVIDE FOUR (4) ONE-INCH CONDUIT STUBS FROM PANELBOARD TO AN ACCESSIBLE SPACE FOR EACH RECESSED

### 26 27 26 WIRING DEVICES

- A. MANUFACTURERS: COOPER, HUBBELL, LEVITON AND PASS & SEYMOUR.
- 1. SWITCH AND RECEPTACLE COLORS SHALL BE WHITE. 2. COVER PLATE COLORS SHALL BE WHITE.
- C. WALL SWITCHES: 1. 20-AMPERE HUBBELL 1221 SINGLE POLE, 1223 THREE-WAY AND 1224 FOUR-WAY.
- 2. SEE LEGEND FOR MOUNTING HEIGHTS.
- 3. PROVIDE PILOT LIGHT SWITCHES WHERE INDICATED.
- 1. 20 AMPERE SLIDE DIMMER WITH INTEGRAL ON/OFF SWITCH. DIMMER SHALL BE RATED FOR AN LED LOAD OF 1200 WATTS MINIMUM, UNLESS NOTED OTHERWISE.
- 2. FOR LED DIMMING LOADS GREATER THAT 1200W PROVIDE LEVITON AWSMT-7DW OR APPROVED EQUIVALENT.
- PROVIDE COLOR CHANGE KIT AS NECESSARY TO MEET DEVICE COLOR SPECIFICATIONS. 3. DIMMERS RATED OVER 1200W SHALL NOT BE MULTI-GANGED. INSTALL PER MANUFACTURERS INSTALLATION
- 4. CONTRACTOR SHALL VERIFY WITH THEIR SUPPLIER(S) ALL DIMMERS AND DIMMABLE FIXTURES ARE 100%
- E. RECEPTACLES: 1. DUPLEX GROUNDED RECEPTACLES, 20 AMPERE SPECIFICATION GRADE, HUBBELL 5362.
- 2. GFCI RECEPTACLES: 20-AMPERE HUBBELL SPECIFICATION GRADE WITH LOCK OUT CAPABILITY UPON GFCI FAILURE. 3. USB CHARGER DUPLEX RECEPTACLE, 20 AMPERE WITH 2 USB 3 AMP CHARGING PORTS, LEVITON T5832.
- 4. EXTERIOR RECEPTACLES SHALL BE MARKED "WEATHER-RESISTANT" PER NEC. 5. RECEPTACLES UTILIZED IN AREAS SPECIFIED IN THE FOLLOWING AREAS SHALL BE LISTED TAMPER-RESISTANT
- RECEPTACLES AS REQUIRED IN NEC. a. PRESCHOOL AND ELEMENTARY EDUCATION FACILITIES

- b. GYMNASIUMS AND AUDITIORIUMS.
- 6. SEE LEGEND FOR MOUNTING HEIGHTS.
- 7. MATCH EXISTING MOUNTING HEIGHTS IN EXISTING BUILDINGS WHERE HEIGHTS COMPLY WITH ADA.
- 8. REVIEW RECEPTACLE LAYOUT WITH OWNER PRIOR TO ROUGH-IN.
- 9. VERIFY ACTUAL LOCATION OF EQUIPMENT WITH OWNER PRIOR TO ROUGH-IN. 10. MAKE CONNECTIONS THROUGH THE USE OF PIG-TAILS.
- F. COVER PLATES 1. INTERIOR: SMOOTH NYLON MATERIAL.
- GYMNASIUMS: BRUSHED STAINLESS STEEL.
- 3. MECHANICAL EQUIPMENT ROOM: STEEL. 4. EXTERIOR: WEATHER-PROOF, GASKETED, LIFT COVER. RECEPTACLE COVER SHALL ALLOW CONTINUED USE WHEN
- G. BLANK, TELEVISION AND TELEPHONE OUTLETS: 4" SQUARE EXTRA DEEP BOX, SINGLE GANG RING AND BLANK COVER PLATE. PROVIDE CONDUIT FROM EACH BOX INTO AN ACCESSIBLE SPACE. TERMINATE CONDUIT WITH INSULATED CONNECTORS ON BOTH ENDS.

#### 26 27 27 OCCUPANCY SENSORS / VACANCY SENSORS

- A. MANUFACTURERS: COOPER, HUBBELL, LEVITON, SENSOR SWITCH, & THE WATT STOPPER.
- a. WALL MOUNTED SENSORS SHALL BE THE SAME COLOR AS WIRING DEVICES. REFERENCE SPECIFICATION
- b. CEILING MOUNTED SENSORS SHALL MATCH COLOR OF CEILING THEY'RE INSTALLED ON. 2. SHALL BE FROM THE SAME MANUFACTURER AS THE WIRING DEVICES.
- B. SENSOR TECHNOLOGY ULTRASONIC (US).
  - a. RESTROOMS
- b. HALLWAYS 2. PASSIVE INFRARED (PIR).
- a. STORAGE ROOMS 3. DUAL TECHNOLOGY (PASSIVE INFRARED & ULTRASONIC)
- a. OFFICES
- b. CONFERENCE ROOMS
- c. CLASSROOMS d. OTHER SPACES
- C. SENSOR PERFORMANCE
- INFRARED: a. UTILIZE MULTIPLE SEGMENTED LENS, WITH INTERNAL GROOVES TO ELIMINATE DUST AND RESIDUE BUILD-UP.
- a. UTILIZE AN OPERATING FREQUENCY OF 32 KHZ OR 40 KHZ THAT SHALL BE CRYSTAL CONTROLLED TO OPERATE
- WITHIN PLUS OR MINUS 0.005% TOLERANCE. UTILIZE DOPPLER SHIFT ULTRASONIC DETECTION TECHNOLOGY.
- a. UTILIZE MULTIPLE SEGMENTED LENS, WITH INTERNAL GROOVES TO ELIMINATE DUST AND RESIDUE BUILD-UP. b. UTILIZE AN OPERATING FREQUENCY OF 32 KHZ OR 40 KHZ THAT SHALL BE CRYSTAL CONTROLLED TO OPERATE
- WITHIN PLUS OR MINUS 0.005% TOLERANCE.
- c. INCORPORATE DOPPLER SHIFT ULTRASONIC AND PASSIVE INFRARED MOTION DETECTION TECHNOLOGIES. PRODUCTS THAT REACT TO NOISE OR AMBIENT SOUND SHALL NOT BE CONSIDERED.
- 4. SENSOR DEVICES SHALL HAVE EITHER INTEGRAL DUAL RELAYS OR CONTROL SEPARATE DUAL RELAY POWER PACKS TO ACHIEVE DUAL LEVEL LIGHTING WHEN DUAL LEVEL CONTROL IS INDICATED.
- 5. INTEGRAL ADJUSTABLE LIGHT LEVEL SENSOR WITH CAPACITY TO CONTROL ONE OR MORE RELAY WHEN THE SELECTED ADEQUATE DAYLIGHT IS PRESENT 6. UTILIZE ZERO CROSSING CIRCUITRY WHICH INCREASES RELAY LIFE AND SENSORS LONGEVITY.
- 7. SHOULD POWER BE INTERRUPTED AND SUBSEQUENTLY RESTORED, SETTINGS AND PARAMETERS SAVED IN PROTECTED MEMORY SHALL NOT BE LOST. 8. SENSORS SHALL BE SIZED FOR THE ROOM THEY SERVE BY MANUFACTURER'S VENDOR OR COVER 1,500 SQUARE FEET
- WITH STANDARD LENS AND UP TO 90 LINEAR FEET WITH LONG RANGE LENS FOR WALKING MOTION WHEN MOUNTED AT A CEILING HEIGHT OF 12 FEET. 9. INDEPENDENT SENSITIVITY ADJUSTMENTS AND LED DISPLAY FOR EACH SENSING TECHNOLOGY.
- 10. SENSOR SHALL HAVE STANDARD 5 YEAR WARRANTY AND BE UL LISTED.
- 1. AUTOMATIC CONTROLS SHALL BE MANUAL ON, OR SHALL TURN ON NOT MORE THAN 50% OF THE OF THE CONTROLLED LAMPS WITH THE REMAINING LAMPS BEING CONTROLLED MANUALLY.
- a. EXCEPTION: PUBLIC CORRIDORS, STAIRWAYS, RESTROOMS, PRIMARY ENTRANCES AND LOBBIES SHALL HAVE FULL ON AUTOMATIC CONTROLS.
- 2. AUTOMATIC CONTROLS SHALL TURN LIGHTS OFF WITHIN 30 MINUTES OF ALL OCCUPANTS LEAVING THE SPACE. 3. RETRIGGER TIME DELAY: ONLY ONE MOTION IS NECESSARY TO TURN ON THE LIGHTS WITHIN 5 SECONDS AFTER
- 4. E.C. SHALL INCLUDE TIME IN HIS BID TO WORK WITH THE OWNER AND MANUFACTURER TO DETERMINE THE PROPER TIME AND SENSOR SETTINGS FOR EACH SENSOR IN THE SPACES IN WHICH THEY OPERATE. INCLUDE TIME IN BID TO HAVE THE MANUFACTURER'S REPRESENTATIVE ON SITE AND REVIEW THE JOB TO DETERMINE WHAT THE EXPECTED

#### **EQUIPMENT SETTINGS SHOULD BE.** 26 28 16 ENCLOSED DISCONNECT SWITCHES

- A. ELECTRICAL COMPONENTS, DEVICES, AND ACCESSORIES: LISTED AND LABELED AS DEFINED IN NFPA 70, ARTICLE 100, BY A TESTING AGENCY ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION, AND MARKED FOR INTENDED USE.
- B. NONFUSIBLE SWITCH: TYPE GD WITH LOCKABLE HANDLE.
- C. FUSIBLE SWITCH: TYPE HD WITH CLIPS TO ACCOMMODATE FUSES. HANDLE LOCKABLE IN OPEN AND CLOSED POSITION. HANDLE INTERLOCKED WITH COVER IN CLOSED POSITION WITH INTERLOCK BYPASS.
- D. ENCLOSURES: NEMA AB 1 AND NEMA KS 1 TO MEET ENVIRONMENTAL CONDITIONS OF INSTALLED LOCATION.
- 1. OUTDOOR LOCATIONS: NEMA 250 TYPE 3R. 2. KITCHEN AREAS: NEMA 250 TYPE 4X, STAINLESS STEEL.
- 3. OTHER WET OR DAMP INDOOR LOCATIONS: NEMA 250 TYPE 4.
- 4. HAZARDOUS AREAS INDICATED ON DRAWINGS: NEMA 250 TYPE 7C E. MANUFACTURER'S STANDARD PRIME-COAT FINISH READY FOR FIELD PAINTING.
- F. LABEL EACH ENCLOSURE WITH ENGRAVED METAL OR LAMINATED-PLASTIC NAMEPLATE MOUNTED WITH CORROSION-
- G. INSTALL EQUIPMENT GROUNDING CONNECTIONS FOR SWITCHES AND CIRCUIT BREAKERS WITH GROUND CONTINUITY TO MAIN ELECTRICAL GROUND BUS.
- H. DEMONSTRATE PRODUCT CAPABILITY AND COMPLIANCE WITH REQUIREMENTS AFTER INSTALLATION AND AFTER ELECTRICAL CIRCUITRY HAS BEEN ENERGIZED.
- 1. PERFORM VISUAL AND MECHANICAL INSPECTION AND ELECTRICAL TEST. CERTIFY COMPLIANCE WITH TEST 2. CORRECT MALFUNCTIONING UNITS, ON-SITE WHERE POSSIBLE, AND RETEST TO DEMONSTRATE COMPLIANCE.

### **DIVISION 27 COMMUNICATIONS**

## 27 05 00 TELECOMMUNICATION PREMISE WIRING

A. PREMISE WIRING IS NOT PART OF THIS BID PACKAGE. PROVIDE JUNCTION BOXES AND CONDUIT STUBS FOR ALL TELEPHONE, DATA AND COMBINATION TELEPHONE/DATA JACKS SHOWN ON THE DRAWINGS.

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Fond du Lac, WI 54935 920-926-9800 excelengineer.com



**PROJECT INFORMATION** 

CHOOL 4

للا **₹** PROP

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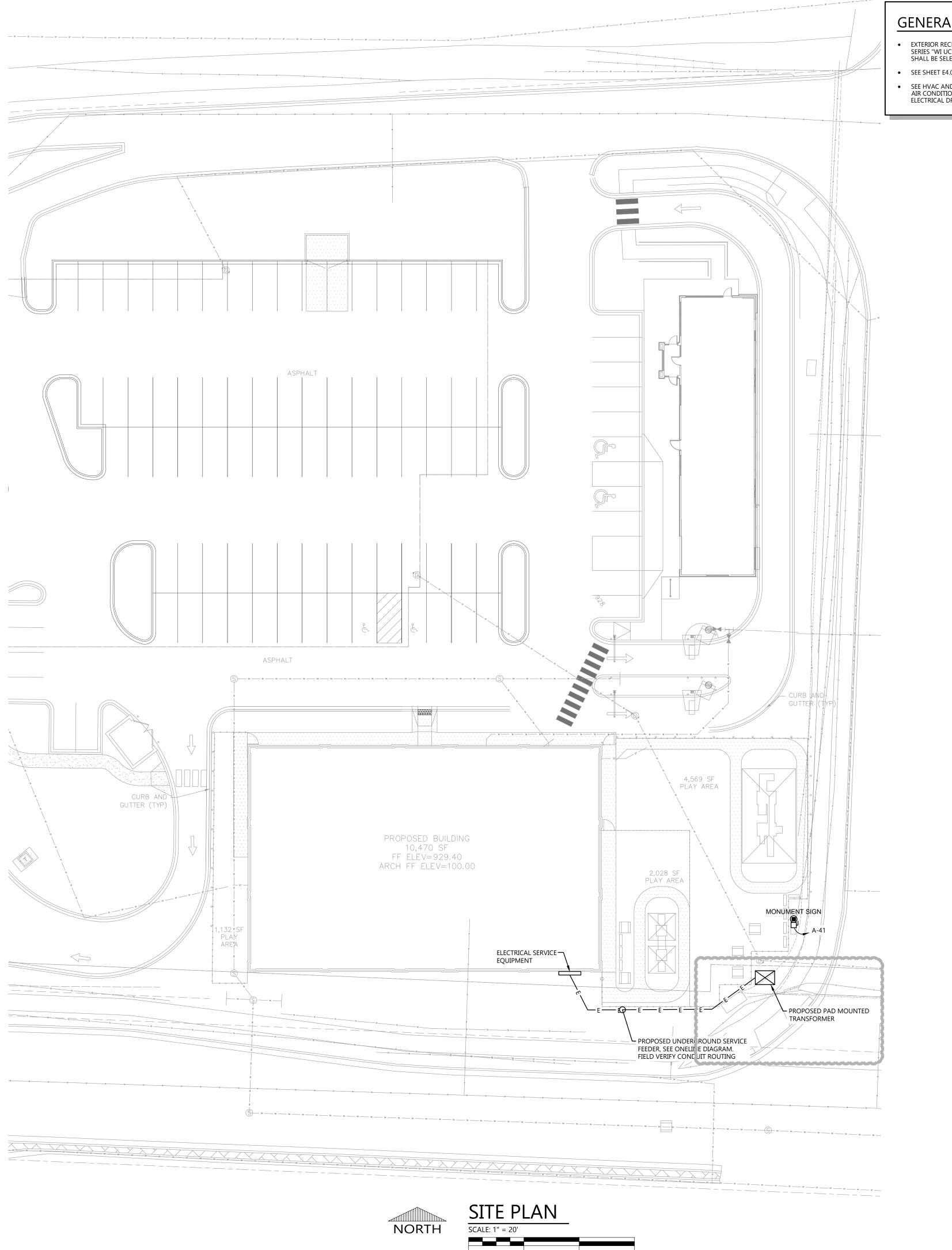
**SHEET DATES** SHEET ISSUE FEB. 14, 2023 REVISIONS

**JOB NUMBER** 

2255300

**ELECTRICAL SPECIFICATIONS** 

SHEET NUMBER





- EXTERIOR RECEPTACLES SHALL BE GFI TYPE. PROVIDE PASS & SEYMOUR SERIES "WI UC" OR EQUIVALENT COVER. (PER NEC 406.8(B) AND AHJ). COLOR SHALL BE SELECTED BY ARCHITECT.
- SEE SHEET E4.0 FOR BRANCH CIRCUIT FEEDER SIZES.
- SEE HVAC AND PLUMBING PLANS FOR LOCATIONS OF HEATING, VENTILATING, AIR CONDITIONING AND PLUMBING EQUIPMENT. DO NOT REFERENCE ELECTRICAL DRAWINGS FOR EXACT LOCATION.

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PROJECT INFORMATION

VELOPMENT **DE** - LOT SED EARLY TRO

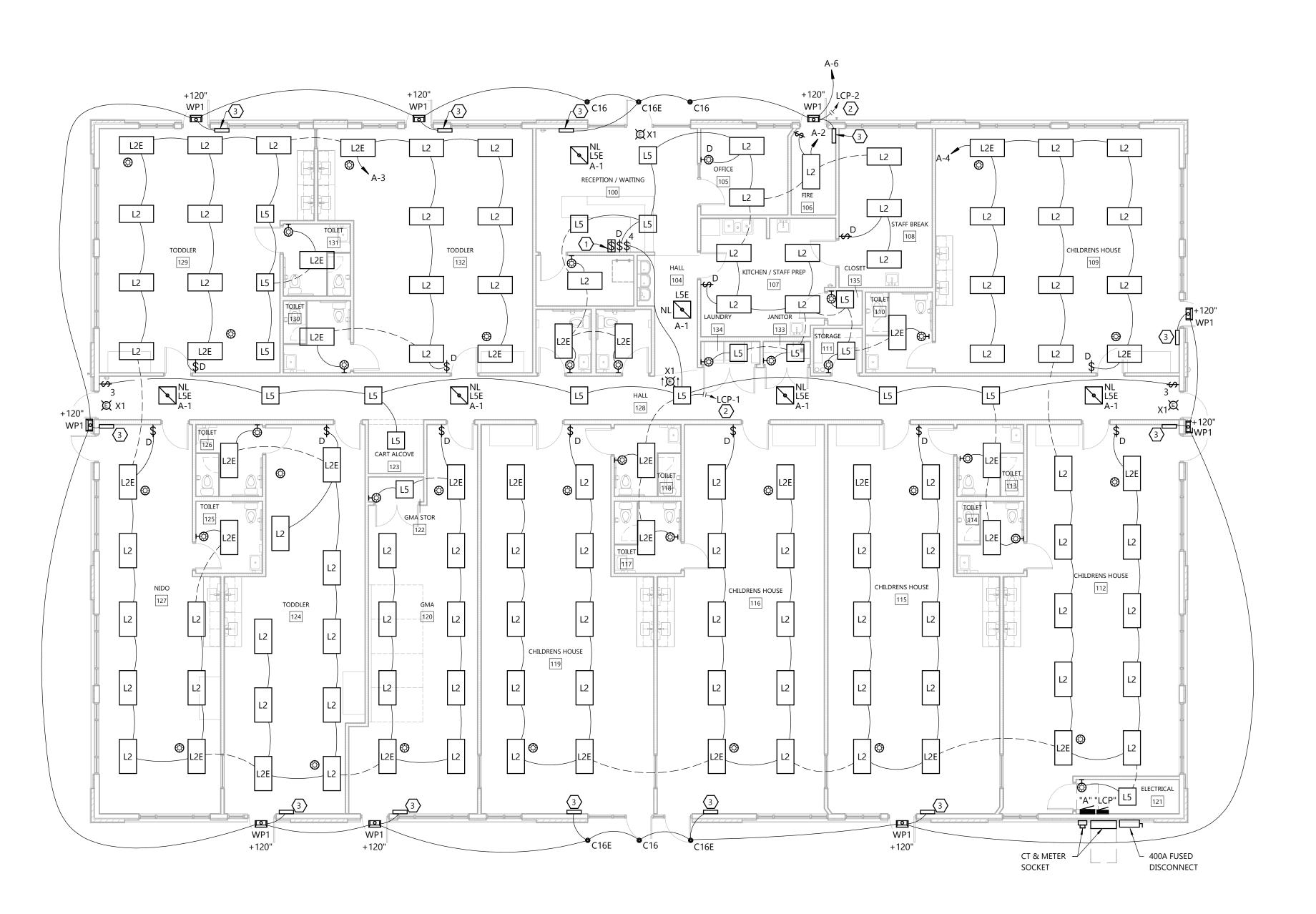
PROPOS QUAT TWIN LAKES

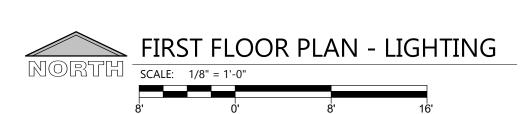
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SHEET DATES FEB. 14, 2023 REVISIONS AD2 MAR. 23, 2023

JOB NUMBER 2255300

SHEET NUMBER





#### LIGHTING CONTROL PANEL **SUPPLY FROM RELAY CIRCUIT** AUTOMATIC CONTROLS | VOLTAGE | PANEL | CIRCUIT ROOM / AREA **SWITCH** <del>᠘</del> LOCAL SWITCH 120 V HALLWAY / COMMON AREA 120 V EXTERIOR BUILDING LIGHTS TIMECLOCK/PHOTOCELL TIMECLOCK/PHOTOCELL TIMECLOCK/PHOTOCELL 120 V MONUMENT SIGN TIMECLOCK/PHOTOCELL

120 V

TIMECLOCK/PHOTOCELL TIMECLOCK/PHOTOCELL

# **GENERAL NOTES**

- VERIFY ALL EXPOSED CONDUIT ROUTING WITH ARCHITECT/ENGINEER WHERE CONDUIT IS EXPOSED IN FINISHED ROOMS.
- DETAIL REFERENCES ON PLANS ARE TO AID THE CONTRACTOR IN IDENTIFYING THE APPLICABLE DETAIL. NOT ALL DETAILS, OR INSTANCES OF DETAILS, ARE REFERENCES ON PLANS. CONTRACTOR IS RESPONSIBLE TO REVIEW AND COMPLY WITH ALL APPLICABLE DETAILS WHETHER OR NOT REFERENCED ON PLANS.
- COORDINATE LIGHT FIXTURE LOCATIONS IN MECHANICAL EQUIPMENT ROOMS WITH OTHER CONTRACTORS PRIOR TO ROUGH IN.
- WIRE EMERGENCY/EXIT LIGHTS UNSWITCHED TO LIGHTING CIRCUIT SERVING SAME ROOM, OR TO "NIGHT LIGHT" CIRCUIT WHEN AVAILABLE.
- LOCATE EXTERIOR EGRESS LIGHT AT SINGLE WYTHE MASONRY CONSTRUCTION MIN. 12" ABOVE FLASHING AT DOOR HEAD.
- EXIT LIGHT CONDUIT AT SINGLE WYTHE MASONRY CONSTRUCTION SHALL NOT PENETRATE FLASHING ABOVE DOOR HEAD IF EXIT LIGHT IS WALL
- SEE HVAC PLANS FOR AREAS THAT ARE USED AS A RETURN AIR PLENUM. PROVIDE PLENUM RATED CONSTRUCTION.
- SEE ARCHITECTURAL REFLECTED CEILING AND ELEVATION PLANS FOR LOCATION OF ALL LIGHTING FIXTURES. LOCATE FIXTURES IN ACCORDANCE WITH CEILING AND ELEVATION PLANS.
- DEVICE LOCATIONS MAY BE DISTORTED FOR CLARITY. LOCATE DEVICES SYMMETRICALLY WITH THE ARCHITECTURAL ELEMENTS.
- SEE LIGHTING FIXTURE LEGEND FOR FIXTURE WIRING INFORMATION.

## **KEYNOTES**

- ALL KEYNOTES MAY NOT APPEAR ON THIS SHEET.
- 1 TIMECLOCK OVERRIDE SWITCH. PROVIDE LABEL "TIMECLOCK OVERRIDE SWITCH".
- 2 ROUTE CIRCUIT THRU TIME CLOCK CONTROLLED RELAY. SEE EXTERIOR LIGHTING CONTROL DETAIL.
- PROVIDE REMOTE MOUNT LED DRIVER IOTA-CP10 IN NEMA1 ENCLOSURE. MOUNT ON WALL ABOVE NEAREST ACCESSIBLE CEILING. DRIVER TO PROVIDE EMERGENCY POWER TO FIXTURE TYPE WP1 AND C16 LOCATED AT EXTERIOR ENTRANCE/EXITS.

EXTERIOR SIGNAGE

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COLLABORATION



PROJECT INFORMATION

SCHOOL FOR:

OPMI SEVILLE, N CHILDHOOD 

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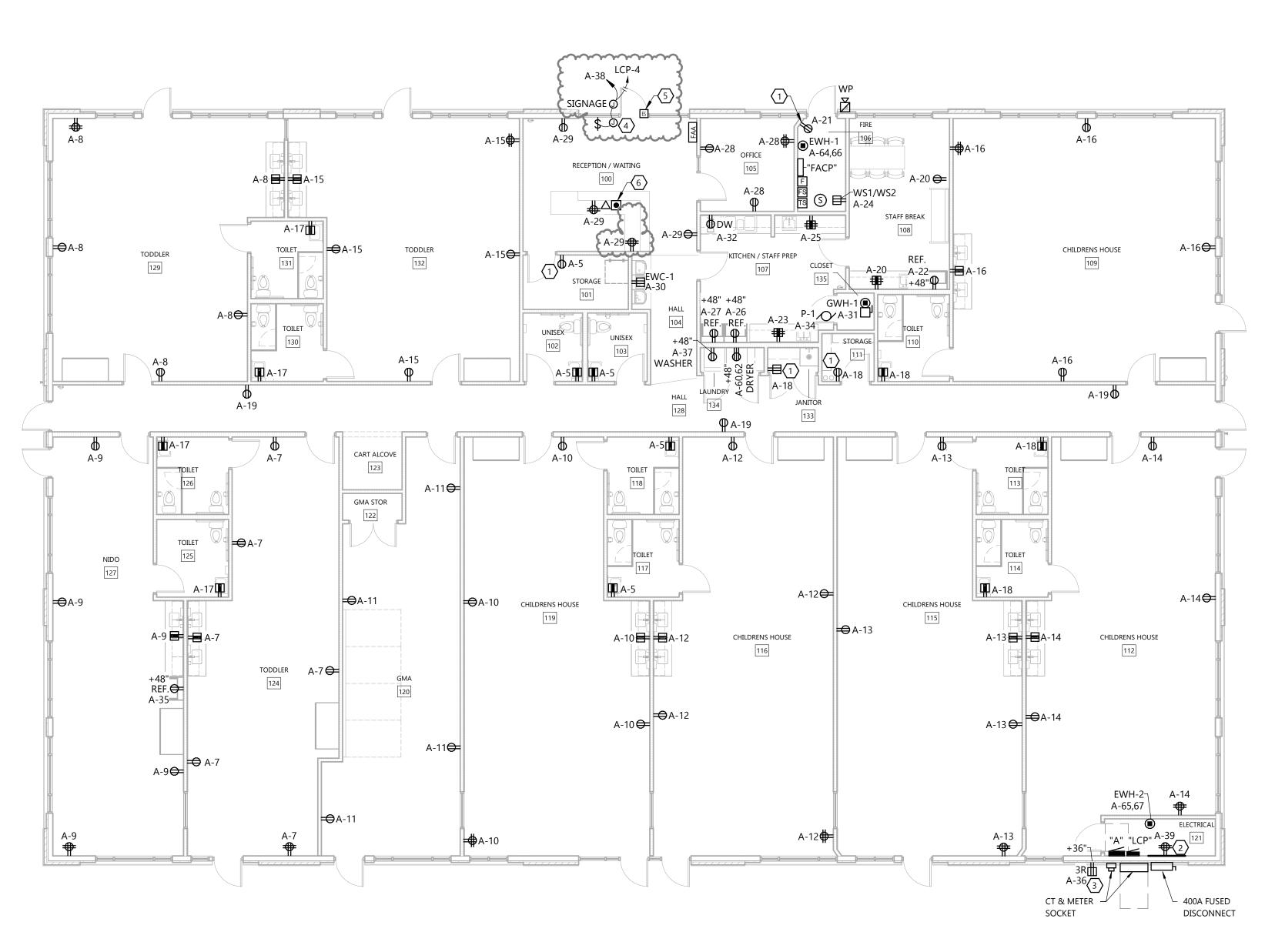
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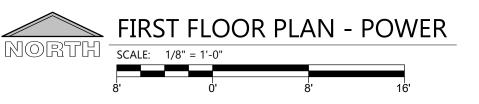
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**SHEET DATES** FEB. 14, 2023 REVISIONS MAR. 23, 2023 APR. 19, 2023 JUNE 5, 2023

**JOB NUMBER** 2255300

**SHEET NUMBER** ELECTRICAL FIRST FLOOR PLAN - LIGHTING





**GENERAL NOTES** 

- VERIFY ALL EXPOSED CONDUIT ROUTING WITH ARCHITECT/ENGINEER WHERE CONDUIT IS EXPOSED IN FINISHED ROOMS.
- DETAIL REFERENCES ON PLANS ARE TO AID THE CONTRACTOR IN IDENTIFYING THE APPLICABLE DETAIL. NOT ALL DETAILS, OR INSTANCES OF DETAILS, ARE REFERENCES ON PLANS. CONTRACTOR IS RESPONSIBLE TO REVIEW AND COMPLY WITH ALL APPLICABLE DETAILS WHETHER OR NOT REFERENCED ON PLANS.
- EXTERIOR RECEPTACLES SHALL BE GFI TYPE. PROVIDE PASS & SEYMOUR SERIES "WI UC" OR EQUIVALENT COVER. (PER NEC 406.8(B) AND AHJ). COLOR SHALL BE SELECTED BY ARCHITECT.
- ROUGH-IN RECEPTACLES FOR ELECTRIC WATER COOLERS (EWC) BEHIND UNIT. VERIFY LOCATION PRIOR TO ROUGH-IN.
- PROVIDE GFI PROTECTION FOR ALL SINGLE PHASE RECEPTACLES IN THE FOLLOWING LOCATIONS: BATHROOMS, KITCHENS, ROOFS, LOCKER ROOMS & SHOWERING FACILITIES, SERVING WATER COOLERS & VENDING MACHINES, GARAGES & SERVICE BAYS, WITHIN 6'-0" OF A SINK, AND ALL OTHER WET LOCATIONS.
- SEE SHEET E4.0 FOR BRANCH CIRCUIT FEEDER SIZES.
- ALL CONDUITS TO ISLAND CABINETRY AND TABLES SHALL BE UNDERGROUND.
- DEVICE LOCATIONS MAY BE DISTORTED FOR CLARITY. LOCATE DEVICES SYMMETRICALLY WITH THE ARCHITECTURAL ELEMENTS.
- SEE HVAC AND PLUMBING PLANS FOR LOCATIONS OF HEATING, VENTILATING, AIR CONDITIONING AND PLUMBING EQUIPMENT. DO NOT REFERENCE ELECTRICAL DRAWINGS FOR EXACT LOCATION.
- SEE HVAC SHEET PLANS FOR AREAS THAT ARE USED AS A RETURN AIR PLENUM. PROVIDE PLENUM RATED CONSTRUCTION.

# **KEYNOTES**

- 1 INSTALL RECEPTACLE IN SAME BOX AS LIGHT SWITCH.
- 2 TELEPHONE BOARD, SEE DETAIL FOR MORE INFORMATION.
- PROVIDE ARLINGTON "IN BOX" SERIES EXTERIOR BOX AND COVER. PAINT TO MATCH BUILDING EXTERIOR. COORDINATE COLOR WITH ARCHITECT.
- PROVIDE JUNCTION BOX(ES) WITH LOCAL TOGGLE SWITCH DISCONNECT LOCATED ABOVE ACCESSIBLE CEILING AND ASSOCIATED 120V, 1Ø, 20 AMP CIRCUIT(S) FOR SIGNAGE. FIELD VERIFY EXACT ROUGH-IN LOCATION. CIRCUIT THROUGH LIGHTING CONTROL PANEL LCP-1 FOR AUTOMATIC ON/OFF CONTROL OF LIGHTING.
- 5 PROVIDE POWER FOR ELECTRIC DOOR STRIKE FROM NEAREST
- 6 PROVIDE CONDUIT AND BACK BOX AS NECESSARY TO ALLOW FOR ACCESS CONTROL OF FRONT ENTRY DOOR. COORDINATE EXACT REQUIREMENTS WITH SECURITY SYSTEM PROVIDER.

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COLLABORATION



PROJECT INFORMATION

OPMEN

SEVILLE, MN 55 SCHOOL FOR: CHILDHOOD

**DSED** 

PROFESSIONAL SEAL

**SHEET DATES** FEB. 14, 2023 REVISIONS MAR. 23, 2023 APR. 19, 2023 JUNE 5, 2023

JOB NUMBER 2255300

**SHEET NUMBER** 

# **GENERAL NOTES**

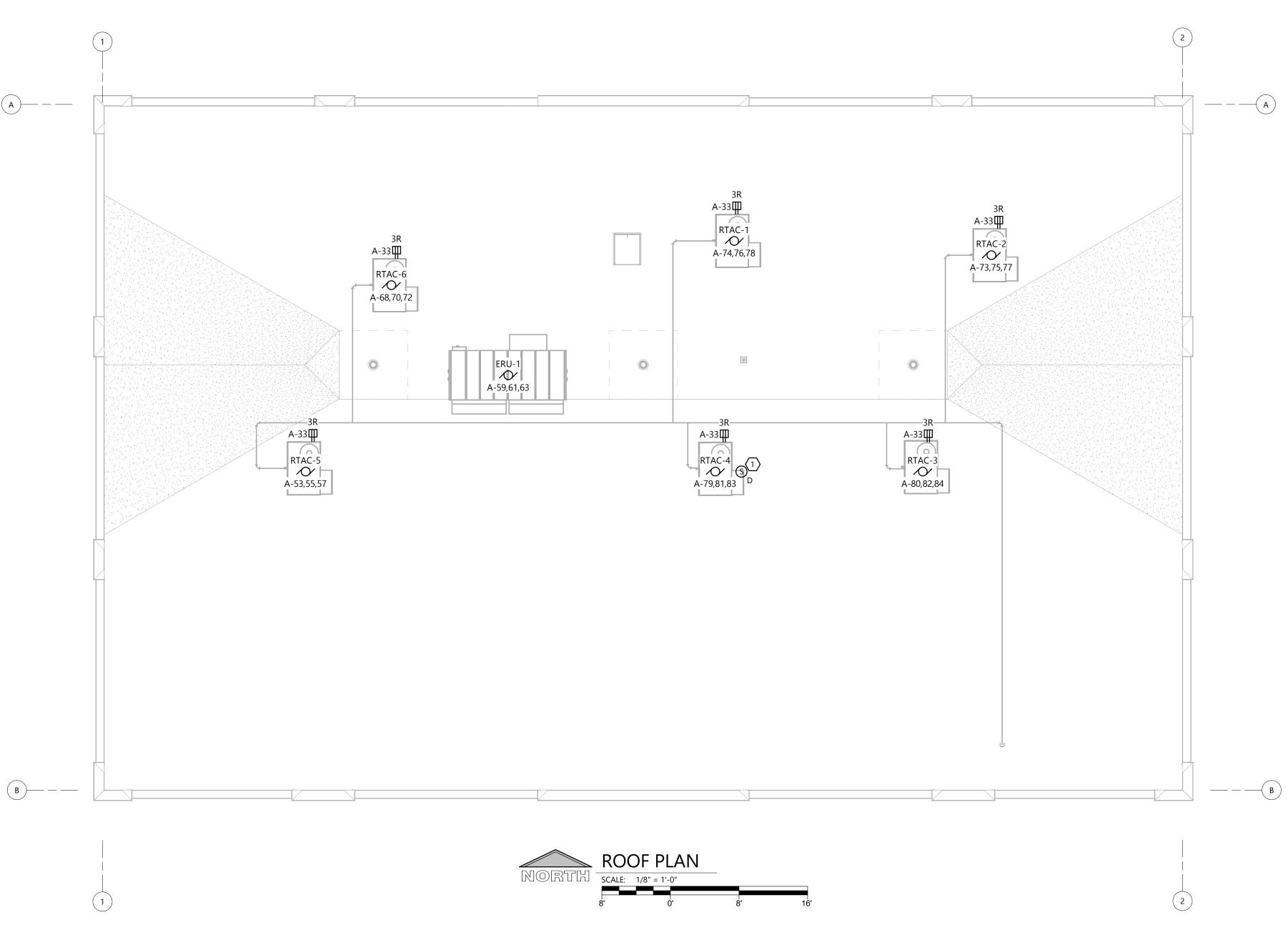
- VERIFY ALL EXPOSED CONDUIT ROUTING WITH ARCHITECT/ENGINEER WHERE CONDUIT IS EXPOSED IN FINISHED ROOMS.
- EXTERIOR RECEPTACLES SHALL BE GFI TYPE. PROVIDE PASS &
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- SEE SHEET E4.0 FOR BRANCH CIRCUIT FEEDER SIZES.
- DEVICE LOCATIONS MAY BE DISTORTED FOR CLARITY. LOCATE DEVICES SYMMETRICALLY WITH THE ARCHITECTURAL ELEMENTS.
- SEE HVAC AND PLUMBING PLANS FOR LOCATIONS OF HEATING, VENTILATING, AIR CONDITIONING AND PLUMBING EQUIPMENT. DO NOT REFERENCE ELECTRICAL DRAWINGS FOR EXACT LOCATION.

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# **KEYNOTES**

SMOKE DETECTOR PROVIDED WITH RTAC TO SHUT DOWN UNIT ON SMOKE DETECTION. EC SHALL MONITOR SMOKE DETECTOR THRU FIRE ALARM PANEL.





PROJECT INFORMATION

/ELOPMENT
• ROSEVILLE, MN 5511

PROPOSED EARLY CHILDHOOD SCHOOL FOR: QUATTRO
TWIN LAKES STATION -

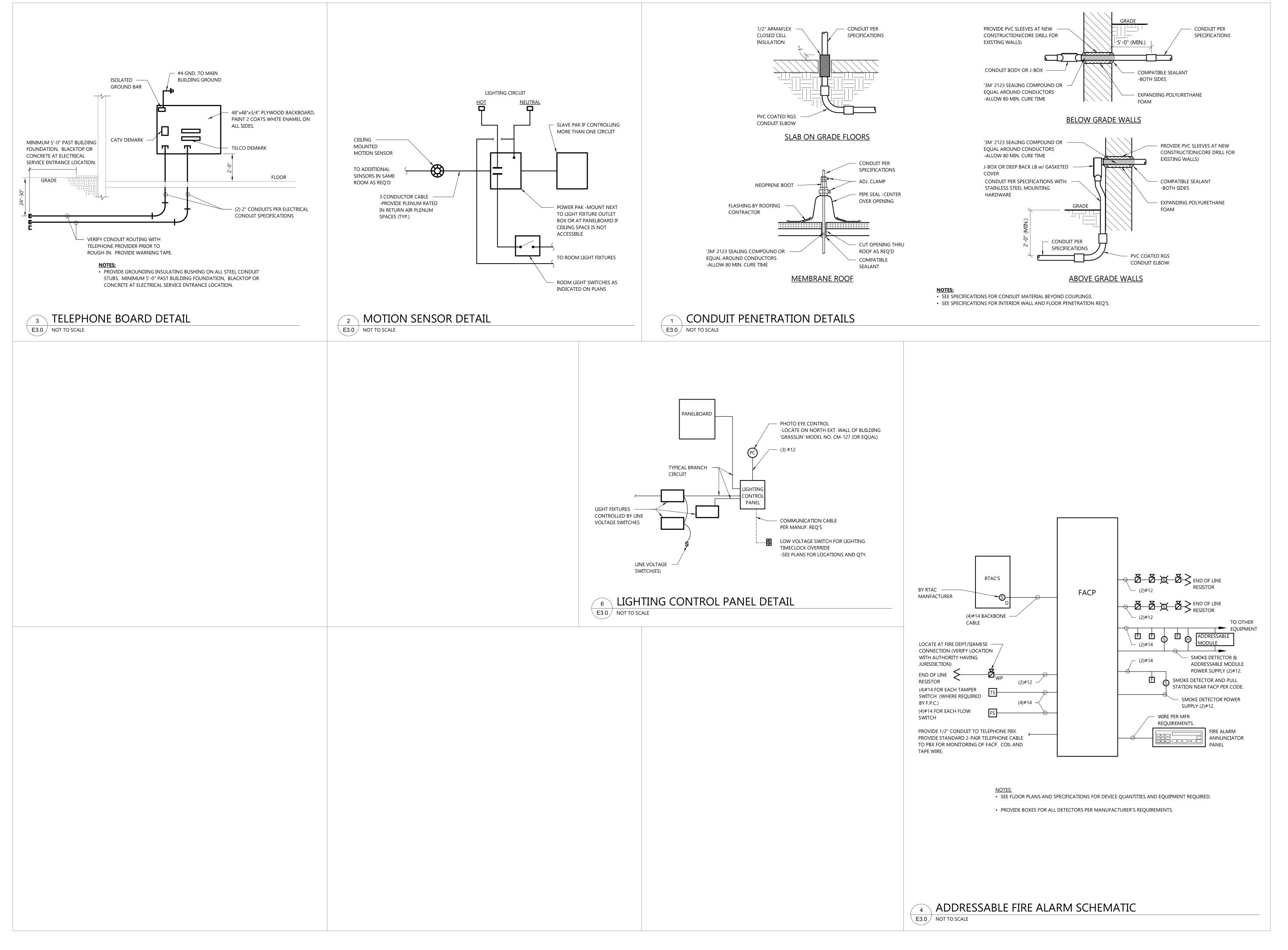
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SHEET DATES SHEET ISSUE FEB. 14, 2023 REVISIONS

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2255300

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EXCEL

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COLLABORATION

Quattro
Development

PROJECT INFORMATION

CHILDHOOD SCHOOL FOR: **DEVELOPMENT**LOT 2 • ROSEVILLE, MN 55113

QUATTRO DEVE
TWIN LAKES STATION - LOT 2 •

PROFESSIONAL SEAL

SHEET DATES

SHEET ISSUE FEB. 14, 2023

REVISIONS

JOB NUMBER 2255300

E3.0

**PANELBOARD: A** 

LOAD CLASSIFICATION

Receptacle

**LOCATION:** ELECTRICAL 121 SUPPLY FROM: **MOUNTING:** SURFACE

**ENCLOSURE:** NEMA 1

**VOLTS:** 120/208 WYE **PHASES:** 3 WIRES: 4

**A.I.C. RATING:** 22,000 **MAINS TYPE:** MLO **BUS RATING:** 400A MCB RATING: -

PANEL TOTALS

TOTAL CONN. LOAD 102255 VA

TOTAL CONN. 284 A

**TOTAL EST. DEMAND** 99400 VA

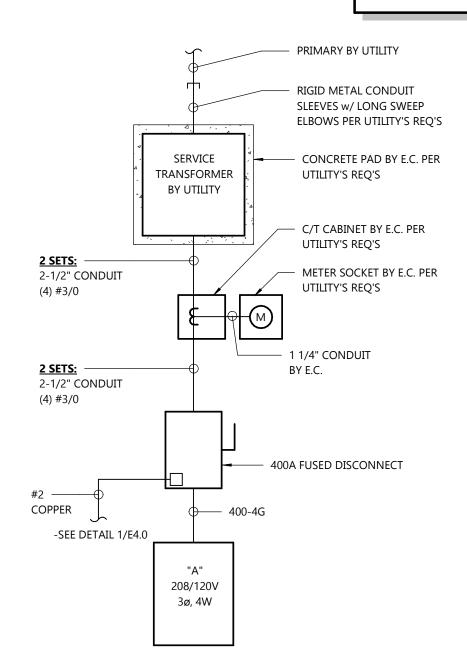
**TOTAL EST. DEMAND** 276 A

SEE BRANCH CIRCUIT FEEDER SCHEDULE FOR FEEDER DESIGNATIONS. (G) SUFFIX DENOTES GFI TYPE BREAKER.

					1	4	l	В	(	<b>C</b>					
СКТ	CIRCUIT DESCRIPTION		RIP	POLES							POLES	TRIP		CIRCUIT DESCRIPTION	СКТ
	TING - NIGHT LIGHTS		0 A	1	192	988					1	20 A		LIGHTING - RECEP./HALLWAY/REST RMS/KITCHEN	
	TING - CLASSROOMS / RESTROOMS		0 A	1			1568	1592			1	20 A		LIGHTING - CLASSROOMS	
	PTACLE - RESTROOMS		0 A	1					900	264	1	20 A		LIGHTING - EXTERIOR BUILDING LIGHTS	
	PTACLE - TODDLER 136		0 A	1	1260	1080					1	20 A		RECEPTACLE - TODDLER 139	
	PTACLE - NIDO 129		0 A	1			1080	1080			1	20 A		RECEPTACLE - CHILDRENS HOUSE 126	1
	PTACLE - GMA 115		0 A	1					720	1080	1	20 A		RECEPTACLE - CHILDRENS HOUSE 116	1
	PTACLE - CHILDRENS HOUSE 115		0 A	1	1080	1080					1	20 A		RECEPTACLE - CHILDRENS HOUSE 112	1
	PTACLE - TODDLER 132		0 A	1			1080	1080	700	000	1	20 A		RECEPTACLE - CHILDRENS HOUSE 109	ļ.
	PTACLE - RESTROOMS		0 A	1					720	900	1	20 A		RECEPTACLE - RESTROOMS 117/118/120/123/124	
	PTACLE - HALL 128		0 A	1	540	360					1	20 A		RECEPTACLE - STAFF BREAK 113	1
	PTACLE - OUTDOOR STOR. / ELEC. FIRE /		0 A	1			180	900			1	20 A		RECEPTACLE - STAFF BREAK 113 REF.	2
	PTACLE - KITCHEN 104		0 A	1					180	500	1	20 A		RECEPTACLE - WS1 / WS2	2
	PTACLE - KITCHEN 104 / STAFF PREP 103		0 A	1	180	900					1	20 A		RECEPTACLE - KITCHEN 104 REF.	2
	PTACLE - KITCHEN 104 REF.		0 A	1			900	720			1	20 A		RECEPTACLE - OFFICE 105	í
	PTACLE - RECEPTION/WAITING 101		0 A	1					1080	600	1	20 A		RECEPTACLE - EWC-1	3
	ER - GWH-1		0 A	1	500	180					1	20 A	G	RECEPTACLE - DISHWASHER	_ :
	PTACLE - ROOFTOP GFI		0 A	1			1080	55			1	20 A		MOTOR - P-1	_ :
	PTACLE - NIDO REF.		0 A	1					900	180	<u>~∱~</u>	50-Y	~~	RECEPTACLE - EXTERIOR GEL	
	PTACLE - WASHER		0 A	1	500	1200				- {	1	20 A	<del></del>	OTHER - EXTERIOR SIGNAGE	
	PTACLE - TELEPHONEBOARD		0 A	1			360	0		_	1	20 A		SPARE	7
	ER - MONUMENT SIGN		0 A	1	_	_			1200	0	1	20 A		SPARE	
43 SPAR			0 A	1	0	0	_				1	20 A		SPARE	4
45 SPAR			0 A	1			0	0	_	-	1	20 A		SPARE	
47 SPAR			0 A	1	_	_			0	0	1	20 A		SPARE	4
49 SPAR			0 A	1	0	0	_				1	20 A		0.7	!
51 SPAR			0 A	1			0	0		-	1	20 A		SPARE	!
	OR - RTAC-5	4	0 A	3		_			3720	0	1	20 A		SPARE	!
55					3720	0					1			SPARE	!
57							3720	0			1			SPARE	!
	OR - ERU-1	4	5 A	3					3912	250	2	20 A	G	RECEPTACLE - DRYER	(
61					3912	250									1
63							3912	1000			2	20 A		ELECTRIC HEAT - EWH-1	(
	TRIC HEAT - EWH-2		0 A	2					1000	1000					1
67~~	$\cdots$	~~~		~~~	1000	3120					3	30 A		MOTOR - RTAC-6	1
69 SPAR			0 A	1	?		0	3120							1
71 SPAR	₹E	2	0 A	1	)				0	3120					7
	OR - RTAC-2	3	υA	<del></del>	2400	2400					3	30 A		MOTOR - RTAC-1	7
75							2400	2400							7
77									2400	2400					1
	OR - RTAC-4	4	5 A	3	3360	3360					3	40 A		MOTOR - RTAC-3	1
81							3360	3360							1
83										3360					
			TOT/	AL LOAD:	3356	Ω \/ Δ	3/19/	17 VA	227/	6 VA					

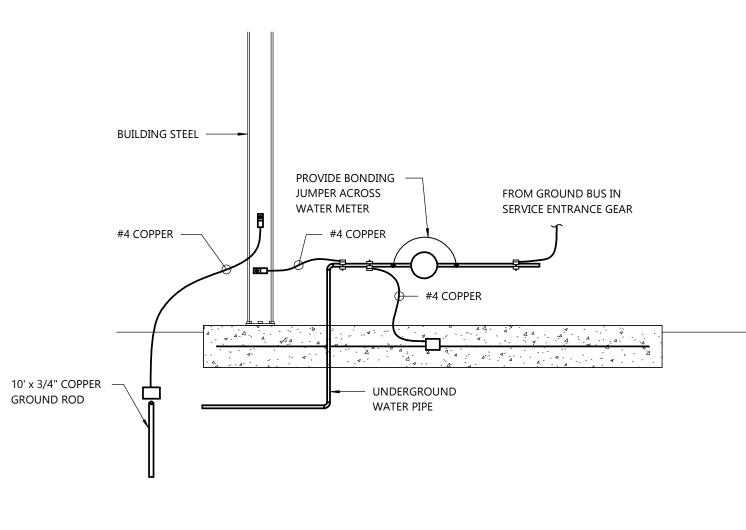
# **GENERAL NOTES**

- ALL ITEMS OR DEVICES SHOWN "HEAVY DASHED" ARE TO BE DEMOLISHED. ALL ITEMS OR DEVICES SHOWN "LIGHTER" ARE EXISTING TO REMAIN.
- ONELINE DIAGRAMS AND RISER DIAGRAMS ARE A DIAGRAMMATIC REPRESENTATION TO AID THE CONTRACTOR IN UNDERSTANDING THE FUNCTION AND OPERATION OF THE SYSTEMS. EC SHALL REVIEW THE ONELINES, RISERS AND FLOOR PLANS FOR THE LOCATION OF ALL EQUIPMENT.



ONELINE DIAGRAM NOT TO SCALE

BRANCH CI	RCUIT FEI	EDER SCHEDULE
AMP / POLE	CONDUIT SIZE	CONDUCTORS & GROUNDING CONDUCTOR SIZES
15A/1P OR 15A/2P	1/2"	(2) #12 & #12 GND
20A/1P OR 20A/2P	1/2"	(2) #12 & #12 GND
15A/3P OR 20A/3P	1/2"	(3) #12 & #12 GND
25A/1P OR 25A/2P	3/4"	(2) #10 & #10 GND
30A/1P OR 30A/2P	3/4"	(2) #10 & #10 GND
25A/3P OR 30A/3P	3/4"	(3) #10 & #10 GND
35A/1P OR 35A/2P	3/4"	(2) # 8 & #10 GND
40A/1P OR 40A/2P	3/4"	(2) # 8 & #10 GND
35A/3P OR 40A/3P	3/4"	(3) #8 & #10 GND
45A/1P OR 45A/2P	1"	(2) #6 & #10 GND
45A/3P OR 50A/3P	1"	(3) #6 & #10 GND
50A/1P OR 50A/2P	1"	(2) #6 & #10 GND
60A/1P OR 60A/2P	1"	(2) #4 & #8 GND
60A/3P	1-1/4"	(3) #4 & #8 GND
70A/3P OR 80A/3P	1-1/4"	(3) #4 & #8 GND
90A/3P	1-1/4"	(3) #3 & #8 GND
100A/3P OR 110A/3P	1-1/2"	(3) #2 & #6 GND
125A/3P	1-1/2"	(3) #1 & #6 GND
- PROVIDE BRANCH CIRCL NOTED OTHERWISE.	IIT FEEDERS A	S NOTED ABOVE, UNLESS



GROUNDING SYSTEM RISER DETAIL E4.0 NOT TO SCALE

3 ø FEEDER SCHEDULES - COPPER

	3 WIF	RE FEEDERS		4	WIRE FEEDERS
FEEDER DESIGNATION	CONDUIT SIZE(S)	CONDUCTORS & GROUNDING CONDUCTOR(S) SIZES	FEEDER DESIGNATION	CONDUIT SIZE(S)	CONDUCTORS & GROUNDING CONDUCTOR(S) SIZES
20 - 3G	3/4"	(3) #12 & #12 GND	20 - 4G	3/4"	(4) #12 & #12 GND
25 - 3G	3/4"	(3) #10 & #10 GND	25 - 4G	3/4"	(4) #10 & #10 GND
30 - 3G	3/4"	(3) #10 & #10 GND	30 - 4G	3/4"	(4) #10 & #10 GND
35 - 3G	3/4"	(3) #10 & #10 GND	35 - 4G	3/4"	(4) #10 & #10 GND
40 - 3G	1"	(3) #8 & #10 GND	40 - 4G	1"	(4) #8 & #10 GND
45 - 3G	1"	(3) #8 & #10 GND	45 - 4G	1"	(4) #8 & #10 GND
50 - 3G	1"	(3) #8 & #10 GND	50 - 4G	1"	(4) #8 & #10 GND
60 - 3G	1"	(3) #6 & #8 GND	60 - 4G	1"	(4) #6 & #8 GND
65 - 3G	1"	(3) #6 & #8 GND	65 - 4G	1"	(4) #6 & #8 GND
70 - 3G	1"	(3) #4 & #8 GND	70 - 4G	1-1/4"	(4) #4 & #8 GND
80 - 3G	1"	(3) #4 & #8 GND	80 - 4G	1-1/4"	(4) #4 & #8 GND
90 - 3G	1-1/4"	(3) #3 & #8 GND	90 - 4G	1-1/4"	(4) #3 & #8 GND
100 - 3G	1-1/4"	(3) #3 & #8 GND	100 - 4G	1-1/4"	(4) #3 & #8 GND
110 - 3G	1-1/4"	(3) #2 & #6 GND	110 - 4G	1-1/2"	(4) #2 & #6 GND
125 - 3G	1-1/4"	(3) #1 & #6 GND	125 - 4G	1-1/2"	(4) #1 & #6 GND
150 - 3G	1-1/2"	(3) #1/0 & #6 GND	150 - 4G	2"	(4) #1/0 & #6 GND
175 - 3G	2"	(3) #2/0 & #6 GND	175 - 4G	2"	(4) #2/0 & #6 GND
200 - 3G	2"	(3) #3/0 & #4 GND	200 - 4G	2"	(4) #3/0 & #4 GND
225 - 3G	2"	(3) #4/0 & #4 GND	225 - 4G	2-1/2"	(4) #4/0 & #4 GND
250 - 3G	2-1/2"	(3) 250 KCMIL & #4 GND	250 - 4G	3"	(4) 250 KCMIL & #4 GND
300 - 3G	2-1/2"	(3) 350 KCMIL & #3 GND	300 - 4G	3"	(4) 350 KCMIL & #3 GND
350 - 3G	3"	(3) 500 KCMIL & #3 GND	350 - 4G	3-1/2"	(4) 500 KCMIL & #3 GND
400 - 3G	(2) 2"	2 SETS OF (3) #3/0 & #2 GND	400 - 4G	(2) 2-1/2"	2 SETS OF (4) #3/0 & #2 GND
450 - 3G	(2) 2-1/2"	2 SETS OF (3) #4/0 & #2 GND	450 - 4G	(2) 2-1/2"	2 SETS OF (4) #4/0 & #2 GND
500 - 3G	(2) 2-1/2"	2 SETS OF (3) 250 KCMIL & #2 GND	500 - 4G	(2) 3"	2 SETS OF (4) 250 KCMIL & #2 GND
550 - 3G	(2) 2-1/2"	2 SETS OF (3) 300 KCMIL & #1 GND	550 - 4G	(2) 3"	2 SETS OF (4) 300 KCMIL & #2 GND
600 - 3G	(2) 3"	2 SETS OF (3) 350 KCMIL & #1 GND	600 - 4G	(2) 3"	2 SETS OF (4) 350 KCMIL & #1 GND
700 - 3G	(2) 3"	2 SETS OF (3) 500 KCMIL & #1/0 GND	700 - 4G	(2) 3-1/2"	2 SETS OF (4) 500 KCMIL & #1/0 GND
800 - 3G	(3) 3"	3 SETS OF (3) 300 KCMIL& #1/0 GND	800 - 4G	(3) 3"	3 SETS OF (4) 300 KCMIL & #1/0 GND
900 - 3G	(3) 3"	3 SETS OF (3) 350 KCMIL & #2/0 GND	900 - 4G	(3) 3"	3 SETS OF (4) 350 KCMIL & #2/0 GND
1000 - 3G	(3) 3"	3 SETS OF (3) 400 KCMIL & #2/0 GND	1000 - 4G	(3) 3-1/2"	3 SETS OF (4) 400 KCMIL & #2/0 GND
1200 - 3G	(4) 3"	4 SETS OF (3) 350 KCMIL & #3/0 GND	1200 - 4G	(4) 3"	4 SETS OF (4) 350 KCMIL & #3/0 GND
1600 - 3G	(4) 4"	4 SETS OF (3) 600 KCMIL& #4/0 GND	1600 - 4G	(4) 4"	4 SETS OF (4) 600 KCMIL & #4/0 GND
2000 - 3G	(6) 3"	6 SETS OF (3) 400 KCMIL & 250 KCMIL GND	2000 - 4G	(6) 3-1/2"	6 SETS OF (4) 400 KCMIL & 250 KCMIL GND

- CONDUCTOR SIZES LISTED ABOVE ARE FOR COPPER THHN/XHHW. CONTRACTOR SHALL ADJUST ACCORDINGLY FOR DIFFERENT WIRING TYPES.

WHERE PARALLEL CONDUCTORS ARE INDICATED, THE CONTRACTOR SHALL VERIFY LUG CONFIGURATIONS OF EQUIPMENT BEING CONNECTED.

EQUIPMENT GROUNDING CONDUCTOR SIZE MAY BE REDUCED BASE ON OVERCURRENT AND/OR GROUND FAULT PROTECTION EQUIPMENT (NEC 250).

- CONTRACTOR SHALL MAKE ADJUSTMENTS TO FEEDERS SIZES FOR AMBIENT TEMPERATURES AND VOLTAGE DROP ACCORDINGLY.

					LICUT FIVELING CO	CHEDINE				
					LIGHT FIXTURE SO	1				
TYPE	DESCRIPTION	VOLTAGE	LIGHT SOURCE	ССТ	FIXTURE WATTS	MIN. LUMENS	MANUFACTURER/MODEL NUMBER	MANUFACTURER/MODEL NUMBER	MANUFACTURER/MODEL NUMBER	REMARKS
C16	6" ROUND RECESSED OPEN DOWNLIGHT - 0-10V DIMMABLE - CLEAR REFLECTOR - WHITE PAINTED FLANGE	120 V	LED	3,500K	11 VA	1,000	LIGHTOLIER / 6RN / Z6RDL10835WOCDZ10U	HALO / HC610D010-HM612835-61MDHWF	LITHONIA / LDN6 35/10 LO6AR LSS	
C16E	6" ROUND RECESSED OPEN DOWNLIGHT - 0-10V DIMMABLE - CLEAR REFLECTOR - WHITE PAINTED FLANGE - 10W EMERGENCY	120 V	LED	3,500K	11 VA	1,000	LIGHTOLIER / 6RNEM6 / Z6RDL10835WOCDZ10U	HALO / HC610D010REM7-HM612835-61MDHWF	LITHONIA / LDN6 35/10 LO6AR LSS EL	
	BATTERY									
L2	2X4 ARCHITECTURAL LAY-IN TROFFER - 0-10V DIMMABLE - WHITE HOUSING - SMOOTH FROSTED LENS	120 V	LED	3,500K	30 VA	4,200	DAY-BRITE / 2FGXG42B835-4-RS-UNV-DIM	METALUX / 24FPSL2SCT3	LITHONIA / 2BLT4 40L ADSM GZ10 LP835	
L2E	2X4 ARCHITECTURAL LAY-IN TROFFER - 0-10V DIMMABLE - WHITE HOUSING - SMOOTH FROSTED LENS - INTEGRAL EM BATTERY	120 V	LED	3,500K	30 VA	4,200	DAY-BRITE / 2FGXG42B835-4-RS-UNV-DIM-EMLED	METALUX / 24FPSL2SCT3EL7W	LITHONIA / 2BLT4 40L ADSM GZ10 LP835 E10WLCP	
L5	2X2 FLAT PANEL LAY-IN TROFFER - 0-10V DIMMABLE - WHITE HOUSING	120 V	LED	3,500K	32 VA	3,800	DAY-BRITE / 2FGXG38B835-2-RS-UNV-DIM	METALUX / 22FPSL2SCT3	LITHONIA / 2BLT2 40L ADSM GZ10 LP835	
L5E	2X2 FLAT PANEL LAY-IN TROFFER - 0-10V DIMMABLE - WHITE HOUSING - INTEGRAL EM BATTERY	120 V	LED	3,500K	32 VA	3,800	DAY-BRITE / 2FGXG38B835-2-RS-UNV-DIM-BSL10LST	METALUX / 22FPSL2SCT3EL7W	LITHONIA / 2BLT2 40L ADSM GZ10 LP835 E10WLCP	
WP1	EXTERIOR LED WALL PACK - FULL CUT-OFF - BRONZE FINISH	120 V	LED	4,000K	22 VA	2,600	GARDCO / 121-16L-400-NW-G4-3-UNV-BZ	MCGRAW / ISC-SA1-A-740-U-T3-BZ	LITHONIA / WST LED P2 40K VW MVOLT DDBXD	
X1	SINGLE FACE POLYCARBONATE EXIT - W/ BATTERY - RED LETTERS - SELF-DIAGNOSTICS	120 V	LED	-	5 VA	-	CHLORIDE / VERWEM	SURE-LITES / LPX-7-SD	LITHONIA - LQM S W 3 R MVOLT EL N SD	

### **GENERAL NOTES**

CONNECTED LOAD 4000 VA

4604 VA

66871 VA

2900 VA

23880 VA

- FIXTURE MODEL NUMBER MAY NOT REFLECT ALL MOUNTING HARDWARE. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL NECESSARY MOUNTING EQUIPMENT, LENSES, STEMS, SAFETY CHAINS, END PLATES, AND ALL OTHER HARDWARE NECESSARY FOR A COMPLETE FIXTURE INSTALLATION. SEE MOUNTING DETAILS WHEN APPLICABLE.
- LINE VOLTAGE DRIVERS MAY BE SUBSTITUTED FOR "UNIVERSAL" OR "MULTI-VOLTAGE" DRIVERS.

DEMAND FACTOR ESTIMATED DEMAND

125.00%

104.39%

100.00%

70.94%

4000 VA

5755 VA

69805 VA

2900 VA

16940 VA

- ALL LIGHT FIXTURE POLES SHALL BE RATED FOR WIND ZONE SITE IS LOCATED IN OR 100 MPH WINDS WHICHEVER IS GREATER.
- ALL FIXTURES SHALL BE UL OR ETL LISTED.
- ALL FIXTURES IN DIRECT CONTACT WITH INSULATION SHALL BE IC RATED OR INSULATION SHALL BE KEPT A MINIMUM OF 3"
- REFER TO PANEL SCHEDULE SHEETS FOR EMERGENCY LIGHTING BATTERY INVERTER REQUIREMENTS.

# **LED REQUIREMENTS**

- ALL LED FIXTURES SHALL HAVE A MINIMUM 80 PERCENT COLOR RENDERING INDEX UNLESS NOTED OTHERWISE.
- PROVIDE DIMMABLE DRIVERS FOR ALL FIXTURE TYPES SHOWN TO BE "DIMMABLE".
- CONTRACTOR SHALL VERIFY WITH THEIR SUPPLIER(S) THAT ALL DIMMERS AND DIMMABLE FIXTURES ARE 100% COMPATIBLE.
- PROVIDE DUAL CIRCUIT TYPE DRIVERS OR TWO DRIVERS PER FIXTURES WHEN FIXTURES ARE SHOWN ON PLANS TO BE "DUAL LEVEL" SWITCHED.
- ALL LED FIXTURES SHALL HAVE MINIMUM 50,000 L70.

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_	COLLABORATION
	Quattro Development

PROJECT INFORMATION

SCHOOL FOR: OPM

CHILDHOOD O OSED PROPC LAKE

PROFESSIONAL SEAL

**SHEET DATES** SHEET ISSUE FEB. 14, 2023 REVISIONS CB2 JUNE 5, 2023

**JOB NUMBER** 2255300

SHEET NUMBER

# FIRE ALARM SPECIFICATIONS

#### **DIVISION 28 ELECTRONIC SAFETY, SECURITY, FIRE ALARM**

#### 28 31 10 DIGITAL, ADDRESSABLE FIRE ALARM SYSTEM

- A. THIS SPECIFICATION IS A DESIGN BUILD PERFORMANCE BASED SPECIFICATION. THE CONTRACT DOCUMENTS ARE TO RELAY THE MINIMUM DESIGN INTENT. THE FIRE ALARM SYSTEM MATRIX ESTABLISHES MINIMUM REQUIREMENT FOR THIS PROJECT. THE MINIMUM REQUIREMENT MAY BE MORE STRINGENT THAN CODE. IT IS THE CONTRACTORS
- RESPONSIBILITY TO PROVIDE A COMPLETE APPROVED AND OPERABLE SYSTEM. B. IN THE EVENT OF ANY INCONSISTENCY, CONFLICT, OR AMBIGUITY BETWEEN OR AMONG THE REQUIREMENTS OF THE CONTRACT DOCUMENTS, THE MORE STRINGENT REQUIREMENT SHALL TAKE PRECEDENCE WITH NO ADDITIONAL
- C. MANUFACTURERS: SIMPLEXGRINNELL, EDWARDS SYSTEM TECHNOLOGY, NOTIFIER, OR EQUAL. SIEMENS, HONEYWELL, GAMEWELL, GE, HOCHIKI. ADJUSTED LANGUAGE FOR MANUFACTURER.
- D. CONTRACTOR SHALL PROVIDE ALL REQUIRED STATE SUBMITTALS FOR FIRE ALARM INSTALLATION, AND INCLUDE ALL ASSOCIATED PLAN APPROVAL FEES. FIRE ALARM SYSTEM DRAWINGS SHALL BE REVIEWED AND APPROVED BY ENGINEERING PRIOR TO SUBMITTING STATE REVIEW DOCUMENTS.
- E. FIRE ALARM CONTRACTOR IS RESPONSIBLE FOR FINAL DESIGN AND LAYOUT OF DEVICES TO MEET CODE. F. PROVIDE UNIT PRICING FOR THE FOLLOWING DEVICE CONNECTIONS TO THE FIRE ALARM CONTROL SYSTEM. PRICE SHALL INCLUDE ALL NECESSARY EQUIPMENT NEEDED TO COMPLETE THE CONNECTION. THESE UNIT PRICES SHALL BE PROVIDED AT THE TIME OF THE BID. FAILURE TO SUBMIT THESE UNIT PRICES IS SUBJECT TO HAVING THE
- FLOW SWITCH TAMPER SWITCH
- 3. NOTIFICATION APPLIANCE CIRCUIT PANELS
- G. SUBMITTALS:
- SHOP DRAWINGS: a. THE FOLLOWING INFORMATION SHALL BE SUBMITTED:
  - 1) FIRE ALARM SYSTEM RISER DIAGRAM INDICATING ALL DEVICES, CIRCUIT TYPE, WIRE SIZE AND TYPE, AND SYSTEM ADDRESSING
  - 2) FIRE ALARM SYSTEM BATTERY CALCULATIONS
  - 3) FIRE ALARM SYSTEM VOLTAGE DROP CALCULATION FOR EACH CIRCUIT
  - 4) BUILDING FLOOR PLAN INDICATING DEVICE LOCATIONS 5) FIRE ALARM SYSTEM OPERATION MATRIX.
  - 6) PRODUCT CUTSHEETS FOR ALL SPECIFIED DEVICES.

CONTRACTOR'S BID REJECTED. PROVIDE UNIT PRICING FOR CONNECTING:

- H. OUALITY ASSURANCE
- 1. EQUIPMENT AND INSTALLATION SHALL CONFORM TO THE NFPA 72, NEC, AND LOCAL AUTHORITIES HAVING
- 2. ALL FIRE ALARM EQUIPMENT AND INSTALLATION SHALL COMPLY WITH THE AMERICANS WITH DISABILITIES ACT
- 3. ALL TECHNICIANS PERFORMING WORK ON THIS PROJECT SHALL BE FACTORY TRAINED AND AT MINIMUM, NICET LEVEL TWO CERTIFIED IN FIRE ALARM SYSTEMS. THE SYSTEM'S VENDOR MUST EMPLOY FACTORY TRAINED

TECHNICIANS AND MAINTAIN A SERVICE ORGANIZATION WITHIN 100 MILES OF THE JOB SITE, HAVE A MINIMUM

OF 10 YEARS EXPERIENCE SERVICING FIRE ALARM SYSTEMS AND PROVIDE 24 HOUR EMERGENCY SERVICE. 4. ALL FIRE SUPPRESSION DEVICES THAT REQUIRE CONNECTION TO THE FIRE ALARM CONTROL PANEL SHALL BE COORDINATED WITH THE GENERAL CONTRACTOR AND FIRE SUPPRESSION CONTRACTOR AND INCORPORATED INTO THE BID.

- 1. THE COMPLETED SYSTEM SHALL BE TESTED IN ACCORDANCE WITH NFPA STANDARD 72H. PROVIDE A CERTIFIED TEST REPORT FROM THE MANUFACTURER'S REPRESENTATIVE THAT THE SYSTEM COMPLIES WITH NFPA AND
- 2. PROVIDE A "FIRE ALARM SYSTEM RECORD OF COMPLETION" PER NFPA 72, CHAPTER 4.
- 3. SEE "BASIC ELECTRICAL REQUIREMENTS" FOR OPERATING INSTRUCTION REQUIREMENTS
- 4. THE EQUIPMENT AND WIRING SHALL BE WARRANTED TO BE FREE FROM ELECTRICAL AND MECHANICAL DEFECTS FOR A PERIOD OF ONE (1) YEAR. THE YEAR SHALL COMMENCE UPON COMPLETE INSTALLATION AND SUCCESSFUL START-UP OF THE SYSTEM.
- J. SYSTEM WIRING 1. SEE SCHEMATICS AND DETAILS ON DRAWINGS FOR ADDITIONAL REQUIREMENTS.
- 2. THE SYSTEM WIRING AND INSTALLATION SHALL BE IN COMPLIANCE WITH APPLICABLE CODES, PROJECT DRAWINGS AND AS REQUIRED BY THE MANUFACTURER. ALL WIRING SHALL BE COLOR CODED, TAGGED AND CHECKED TO ASSURE THAT IT IS FREE FROM SHORTS AND GROUNDS. PROVIDE RECORD DRAWINGS OF
- 3. PROVIDE DUCT SEAL COMPOUND AT EACH SMOKE DETECTOR TO SEAL THE CONDUIT. 4. ALL FIRE ALARM CABLE SHALL BE INSTALLED FREE AIR UNLESS NOTED OTHERWISE. ALL FIRE ALARM CABLES SHALL BE INSTALLED IN CONDUIT IN ANY EXPOSED FINISHED AREAS. REFER TO SPEC SECTION "26 05 30" FOR SPECIFIC CONDUIT REQUIREMENTS. WHEN CONDUIT AND/OR JUNCTION BOXES ARE REQUIRED BY LOCAL
- ORDINANCES OR AHJ, PAINT THE BOX COVERS AND CONDUIT BODIES RED AND LABEL "F.A.". K. WHEN REMOTE POWER SUPPLIES (NOTIFICATION PANELS) ARE REQUIRED, POWER SUPPLIES ARE TO BE MOUNTED IN MECHANICAL ROOMS OR OTHER AREAS ADJACENT TO PANELBOARDS AND WHERE EASILY ACCESSIBLE. PROVIDE BATTERY BACK-UP FOR EACH REMOTE POWER SUPPLY. PROVIDE ONE DEDICATED 120 VOLT BRANCH CIRCUIT PER POWER SUPPLY. INCLUDE COST OF BRANCH CIRCUITS IN BID.
- L. FIRE ALARM CONTROL PANEL (FACP) 1. SOLID STATE, MICROPROCESSOR BASED MASTER CONTROL UNIT.
- 2. CAPABLE OF ON-SITE PROGRAMMING TO ACCOMMODATE AND FACILITATE EXPANSION, BUILDING PARAMETER CHANGES OR CHANGES AS REQUIRED BY LOCAL CODES WITHOUT THE NEED TO REPLACE IC CHIPS. ALL SOFTWARE OPERATIONS ARE TO BE STORED IN A NON-VOLATILE PROGRAMMABLE MEMORY WITHIN THE FIRE
- 3. THE SYSTEM SHALL HAVE THE CAPABILITY TO BE FIELD PROGRAMMED BY OWNER'S PERSONNEL TRAINED BY THIS
- 4. TO ACCOMMODATE AND FACILITATE JOB SITE CHANGES, INITIATION CIRCUITS SHALL BE INDIVIDUALLY CONFIGURABLE ON SITE TO PROVIDE EITHER ALARM/TROUBLE OPERATION, ALARM ONLY, TROUBLE ONLY, CURRENT LIMITED ALARM, NO ALARM, NORMALLY CLOSED DEVICE MONITORING A NON-LATCHING CIRCUIT FOR AN ALARM VERIFICATION CIRCUIT.
- 5. NO LIMIT TO THE NUMBER OF STATIONS, DETECTORS OR ZONE ADAPTER MODULES, WHICH MAY BE ACTIVATED OR "IN ALARM" SIMULTANEOUSLY
- 6. THE SYSTEM SHALL BE CAPABLE OF PROVIDING MULTIPLEX OPERATION BY USING THE FIRE ALARM CONTROL PANEL AS A CENTRAL PROCESSING UNIT (CPU) THAT PROVIDES STYLE 4 OR STYLE 7 COMMUNICATIONS TO REMOTE TRANSPONDERS.
- 7. ALL DATA COMMUNICATIONS WIRING BETWEEN THE CPU AND TRANSPONDERS SHALL BE SUPERVISED FOR OPENS, SHORTS, AND GROUNDS. ANY DISARRANGEMENT OF SYSTEM WIRING SHALL ACTIVATE THE AUDIBLE AND VISUAL TROUBLE INDICATORS AT THE CONTROL PANEL AND AT THE REMOTE ANNUNCIATOR PANELS. ACTUATION OF THE TROUBLE SILENCE SWITCH SHALL SILENCE THE AUDIBLE TROUBLE INDICATOR, BUT THE TROUBLE LED WILL REMAIN LIT. THE TROUBLE LED SHALL BE NON-CANCELING, EXCEPT BY AN ACTUAL CLEARING
- OF THE TROUBLE CONDITION AND RESTORING THE TROUBLE SILENCE SWITCH TO NORMAL. 8. THE INCOMING POWER TO THE SYSTEM SHALL BE SUPERVISED SO THAT ANY POWER FAILURE IS AUDIBLY AND
- VISUALLY INDICATED AT THE CONTROL PANEL AND THE REMOTE ANNUNCIATOR. 9. PROVIDE RELAYS TO INTERFACE TO HVAC, DESTRATIFICATION FANS, ELEVATOR, AND DOOR CONTROLS.
- 10. THE CONTROL PANEL IS TO HAVE A DEDICATED SYSTEM TROUBLE LED AND A DEDICATED TROUBLE ACKNOWLEDGE SWITCH.
- 11. WHERE REQUIRED BY LOCAL AUTHORITY HAVING JURISDICTION, PROVIDE A MANUAL EVACUATION SWITCH TO OPERATE THE SYSTEMS ALARM NOTIFICATION APPLIANCES. OTHER CONTROL CIRCUITS SHALL NOT BE ACTIVATED. HOWEVER, A FIRE ALARM SHALL TAKE PRECEDENCE AND SHALL BE PROCESSED AS DESCRIBED IN THIS SECTION.
- 12. THE CONTROL PANEL SHALL OBTAIN ITS PRIMARY OPERATING POWER FROM A 120 VAC SINGLE-PHASE 60 HZ SUPPLY PROVIDED WITH A DEDICATED AND SECURED DISCONNECT SWITCH.
- 13. OBTAIN SECONDARY OPERATING POWER FROM BATTERIES. BATTERIES TO MAINTAIN SYSTEM OPERATION FOR 24 HOURS IN THE NORMAL SUPERVISORY MODE PLUS HAVE SUFFICIENT CAPACITY TO OPERATE IN THE ALARM MODE FOR 5 MINUTES AT THE CONCLUSION OF THIS SUPERVISORY TIME PERIOD. BATTERIES SHALL BE SUPERVISED FOR CONNECTION TO SYSTEM. PROVIDE AUTOMATIC BATTERY CHARGER CAPABLE OF CHARGING FULLY DISCHARGED BATTERIES TO 100% IN 8 HOURS.
- 14. ALARM AND TROUBLE CONDITIONS SHALL BE IMMEDIATELY DISPLAYED ON THE CONTROL PANEL ALPHANUMERIC DISPLAY. IF MORE ALARMS OR TROUBLES ARE IN THE SYSTEM, THE OPERATOR MAY SCROLL TO 15. SYSTEM RESET:
- a. THE "SYSTEM RESET" BUTTON SHALL BE USED TO RETURN TO ITS NORMAL STATE AFTER AN ALARM CONDITION HAS BEEN REMEDIED.
- b. SHOULD AN ALARM CONDITION CONTINUE TO EXIST, THE SYSTEM WILL REMAIN IN AN ABNORMAL STATE. SYSTEM CONTROL RELAYS SHALL NOT RESET. THE PANEL PRIORITY ALARM LED SHALL REMAIN ON.
- M. EMERGENCY VOICE ALARM & DIGITAL AMPLIFIER VOICE EVACUATION SYSTEMS ONLY PROVIDE AN EMERGENCY VOICE ALARM COMMUNICATION SYSTEM. DIGITALLY STORED MESSAGE SEQUENCES SHALL NOTIFY THE BUILDING OCCUPANTS THAT A FIRE OR LIFE SAFETY CONDITION HAS BEEN REPORTED.
- MESSAGE GENERATOR(S) SHALL BE CAPABLE OF AUTOMATICALLY DISTRIBUTING UP TO EIGHT (8) SIMULTANEOUS, UNIQUE MESSAGES TO APPROPRIATE AUDIO ZONES WITHIN THE FACILITY BASED ON THE TYPE AND LOCATION OF THE INITIATING EVENT
- 2. AUDIO AMPLIFIERS AND TONE GENERATING EQUIPMENT SHALL BE ELECTRICALLY SUPERVISED FOR NORMAL AND ABNORMAL CONDITIONS
- 3. AUDIO AMPLIFIERS AND TONE GENERATING EQUIPMENT SHALL BE ELECTRICALLY SUPERVISED FOR ABNORMAL CONDITIONS. DIGITAL AMPLIFIERS SHALL PROVIDE BUILT-IN SPEAKER CIRCUITS. FIELD CONFIGURABLE AS FOUR
- 4. DIGITAL AMPLIFIERS SHALL BE CAPABLE OF STORING UP TO TWO MINUTES OF DIGITALLY RECORDED AUDIO MESSAGES AND TONES. THE DIGITAL AMPLIFIERS SHALL ALSO BE CAPABLE OF SUPERVISING THE CONNECTION TO THE ASSOCIATED DIGITAL MESSAGE GENERATOR, AND UPON LOSS OF THAT CONNECTION SHALL BE CAPABLE OF ONE OF THE FOLLOWING SYSTEM RESPONSES:
- a. THE DIGITAL AMPLIFIER SHALL AUTOMATICALLY BROADCAST THE STORED AUDIO MESSAGE.

- b. THE DIGITAL AMPLIFIER SHALL SWITCH TO A MODE WHERE A LOCAL BUS INPUT ON THE DIGITAL AMPLIFIER WILL ACCEPT AN INPUT TO INITIATE A BROADCAST OF THE STORED MESSAGE. THIS BUS INPUT SHALL BE CONNECTED TO A NAC ON A LOCAL FACP FOR THE PURPOSE OF PROVIDING AN ALTERNATE MEANS OF INITIATING AN EMERGENCY MESSAGE DURING A COMMUNICATION FAULT CONDITION.
- c. SPEAKER CIRCUITS SHALL BE EITHER 25 VRMS OR 70VRMS. SPEAKER CIRCUITS SHALL HAVE 20% SPACE CAPACITY FOR FUTURE EXPANSION OR INCREASED POWER OUTPUT REQUIREMENTS.
- 1. ANNUNCIATOR SHALL COMMUNICATE TO THE CONTROL PANEL OVER ONE TWISTED PAIR OF WIRE.
- 2. OPERATING POWER SHALL BE 24 VDC AND BE FUSED AT THE CONTROL PANEL. 3. PROVIDE A COMMON ALARM AND TROUBLE CIRCUIT CONSISTING OF:
- a. CONTROL PUSHBUTTON SWITCHES FOR ALARM SILENCE, ALARM ACKNOWLEDGE, SUPERVISORY ACKNOWLEDGE, TROUBLE ACKNOWLEDGE, SYSTEM RESET, DISPLAY TIME AND UP TO FOUR CONTROL KEYS FOR PROGRAMMABLE OPERATION DUPLICATING THE CONTROL PANEL SWITCHES. A KEY "ENABLE" SWITCH OR PASSWORD CONTROL FUNCTION SHALL BE PROVIDED TO ACTIVATE OR DEACTIVATE THE CONTROL
- b. TONE ALERT DUPLICATES THE CONTROL PANEL TONE ALERT DURING ALARM AND TROUBLE CONDITIONS. c. SYSTEM TROUBLE LED.
- e. DISPLAY THE SAME AS THE FACP WITH THE SAME FUNCTIONS AND CHARACTERISTICS AS THE CONTROL
- f. ALARM SILENCE LED.
- 4. WHEN POLLED AND UNDER NORMAL CONDITIONS, THE FRONT PANEL SHALL DISPLAY A "SYSTEM IS NORMAL" MESSAGE AND THE CURRENT TIME AND DATE 5. SHOULD AN ABNORMAL CONDITION BE DETECTED, THE APPROPRIATE LED (ALARM, SUPERVISORY, OR TROUBLE)

SHALL FLASH. THE PANEL AUDIBLE SIGNAL SHALL PULSE FOR ALARM CONDITIONS AND SOUND STEADY FOR

- TROUBLE AND SUPERVISORY CONDITIONS 6. THE CONTROL SWITCHES SHALL HAVE THE CAPABILITY TO BE PROGRAMMED ON SITE TO PROVIDE FOR MANUAL SWITCH INPUT OPERATION OTHER THAN THEIR STANDARD PURPOSE.
- O. MULTIPLE ADDRESSABLE PERIPHERAL NETWORK 1. PROVIDE COMMUNICATION WITH ALL INITIATING AND CONTROL DEVICES INDIVIDUALLY AND INDIVIDUALLY ANNUNCIATE AT THE CONTROL PANEL. ANNUNCIATION SHALL INCLUDE THE FOLLOWING CONDITIONS FOR
- a. ALARM
- b. TROUBLE c. OPEN
- d. SHORT
- e. GROUND f. DEVICE FAIL/OR INCORRECT SERVICE/DETECTOR IN NEED OF CLEANING
- 2. ALL ADDRESSABLE DEVICES CAPABLE OF BEING INDIVIDUALLY DISABLED OR ENABLED.
- 3. EACH ADDRESSABLE DEVICE MUST BE UNIQUELY IDENTIFIED BY AN ADDRESS CODE ENTERED ON EACH DEVICE AT TIME OF INSTALLATION.
- 4. THE EQUIPMENT MANUFACTURER SHALL APPROVE WIRING TYPES.

#### P. DEVICES

- a. UL LISTED VANDAL RESISTANT SOLID STATE XENON FLASHTUBE CAPABLE OF EITHER CEILING OR WALL
- b. PYRAMIDAL SHAPED LEXAN LENS WITH "FIRE" LETTERING VISIBLE FROM A 180 DEGREE FIELD OF VIEW.
- c. CANDELA REQUIREMENTS DETERMINED BY CONTRACTOR'S VENDOR. d. Strobe location on Plan is approximate. The indicator shall be visible from all usable spaces
- WITHIN THE ROOM. MOUNT VISUAL INDICATOR WHERE IT DOES NOT CONFLICT WITH OTHER WALL FINISHES OR EOUIPMENT e. PROVIDE SYNCHRONIZED STROBES WHERE THREE OR MORE STROBES CAN BE VIEWED FROM ONE LOCATION
- OR WHERE INDICATED BY AHJ. 2. HORN/ STROBE:
- a. STROBE AS SPECIFIED ABOVE WITH A COMMON ENCLOSURE FOR THE HORN DEVICE.
- b. SOUND OUTPUT LEVELS DETERMINED BY CONTRACTOR'S VENDOR. c. EXTERNAL: PROVIDE WEATHERPROOF AUDIBLE / VISIBLE SIGNAL EQUIVALENT TO FARR-LARM SERIES 3300 AT EXTERIOR OF BUILDING NEAR SIAMESE CONNECTION. SHIELD SHALL STATE "WHEN ALARM SOUNDS CALL
- a. STROBE AS SPECIFIED ABOVE WITH A COMMON ENCLOSURE FOR THE SPEAKER DEVICE. b. INITIALLY TAP SPEAKER DEVICES AT 1 OHM AND ADJUST AS REQUIRED.
- c. SOUND OUTPUT LEVELS DETERMINED BY CONTRACTOR'S VENDOR.
- 4. MAGNETIC DOOR HOLDERS: a. APPROXIMATE HOLDING FORCE OF 35 POUNDS.

POLICE OR FIRE DEPARTMENT" OR SIMILAR VERBIAGE.

- b. DOOR PORTION SHALL HAVE A STAINLESS STEEL PIVOTAL MOUNTED ARMATURE WITH SHOCK ABSORBING
- c. MOUNTING TYPE SHALL BE COORDINATED WITH GENERAL CONTRACTOR AND DOOR SUPPLIER AND SHALL
- d. UL LISTED AND OPERATE AT 24 VOLT DC. PROVIDE SEPARATE 24 VOLT WIRING FROM THE FIRE ALARM CONTROL PANEL FOR ALL MAGNETIC DOOR HOLDERS.
- 5. ADDRESSABLE PULL STATIONS: a. U.L. LISTED.
- b. COMMUNICATE THE STATION'S STATUS (ALARM/NORMAL) TO THE CONTROL PANEL OVER TWO WIRES WHICH ALSO PROVIDE POWER TO THE PULL STATION.
- c. MECHANICALLY LATCH UPON OPERATION AND REMAIN SO UNTIL MANUALLY RESET BY OPENING WITH A KEY COMMON TO ALL SYSTEMS LOCKS AND CONTROL PANEL.
- d. Double action and identified for local use by raised white local lettering. e. HINGED FRONT TO A BACKPLATE ASSEMBLY.

d. PHOTOELECTRIC SENSOR SHALL HAVE A FINE 30 MESH INSECT SCREEN.

- f. CAPABLE OF FIELD PROGRAMMING IT'S "ADDRESS" LOCATION ON AN ADDRESSABLE SIGNALING LINE
- 6. SMOKE DETECTORS:
- a. SMOKE SENSORS SHALL BE SOLID STATE PHOTOELECTRIC SMOKE DENSITY MEASURING DEVICES HAVING NO SELF-CONTAINED ALARM SET POINT (FIXED THRESHOLD) AND SHALL COMMUNICATE ACTUAL CHAMBER VALUES TO THE SYSTEM CONTROL PANEL.
- b. SMOKE SENSORS AND BASES SHALL BE LISTED TO UL STANDARD 268 AND DOCUMENTED COMPATIBLE WITH THE CONTROL EQUIPMENT TO WHICH THEY ARE CONNECTED, AND FOR BOTH CEILING AND WALL MOUNT c. EACH SENSOR WILL BE CAPABLE OF SENSING UP TO (7) SENSITIVITY LEVELS RANGING BETWEEN .6% AND
- e. SENSOR ELECTRONICS SHALL BE COMPLETELY SHIELDED TO PROTECT AGAINST FALSE ALARMS FROM EMI
- f. SMOKE DETECTORS SHALL NOT BE INSTALLED UNTIL FINAL ROOM FINISHES AND CARPETING HAVE BEEN COMPLETED, OR PROTECT BY A PLASTIC BAG TO PREVENT DUST ENTERING THE SMOKE DETECTOR. 7. PHOTOELECTRIC DUCT SMOKE DETECTOR:
- a. SOLID STATE PHOTOELECTRIC SAMPLING TUBE TYPE AND OPERATING ON THE LIGHT SCATTERING, PHOTODIODE PRINCIPLE. PROVIDE 30 MESH INSECT SCREEN. THE DETECTOR SHALL BE DESIGNED TO IGNORE INVISIBLE PARTICLES OR SMOKE DENSITIES THAT ARE BELOW THE FACTORY SET POINT. OBTAIN OPERATING POWER FROM THE SUPERVISORY CURRENT IN THE FIRE ALARM DETECTION LOOP.

b. ABILITY TO CLEAN THE DUCT HOUSING SAMPLING TUBES BY ACCESSING THEM THROUGH THE DUCT

- c. DUCT SMOKE DETECTOR SAMPLING TUBE SHALL EXTEND TO WITHIN 18INCHES OF THE ADJACENT INTERIOR
- d. PROVIDE DUCT SMOKE DETECTOR REMOTE TEST SWITCH. 8. ADDRESSABLE SENSOR BASES:

2. SMOKE DETECTION OPERATION:

TO THE STORED VALUES.

- a. EACH SENSOR BASE SHALL CONTAIN A LED THAT WILL FLASH EACH TIME IT IS SCANNED BY THE CONTROL PANEL. WHEN THE CONTROL PANEL DETERMINES THAT A SENSOR IS IN THE ALARM OR A TROUBLE CONDITION, THE CONTROL PANEL SHALL COMMAND THE LED ON THAT SENSOR'S BASE TO TURN ON STEADY INDICATING THE ABNORMAL CONDITION.
- b. CONTAIN A MAGNETICALLY ACTUATED TEST SWITCH TO PROVIDE FOR EASY ALARM TESTING AT THE SENSOR
- 1) PROVIDE FOR ELEVATOR SMOKE DETECTORS, AND FOR SMOKE DETECTORS ASSOCIATED WITH SMOKE
- 2) THE RELAY SHALL NOT IMPEDE ON THE CAPACITY OF THE ADDRESSABLE DEVICE. 3) THE RELAY SHALL PROVIDE (2) SETS OF FORM C CONTACTS RATED 3 AMPS AND POWERED FROM THE
- SYSTEM 24 VDC AND OPERATE IN BATTERY STANDBY. 4) PROVIDE FOR DESTRATIFICATION FANS CONTROL. DESTRATIFICATION FANS SHALL SHUT DOWN UPON FIRE ALARM PANEL DETECTION OF WATER FLOW IN SPRINKLER SYSTEM.
- SUPPRESSION SYSTEMS, AND NON-ADDRESSABLE DEVICES. THE MODULES SHALL PROVIDE AN AUTOMATIC

a. ADAPTER MODULES SHALL BE USED FOR MONITORING OF WATERFLOW, VALVE TAMPER, HOOD

- b. THE MODULE SHALL BE PROVIDED FOR INTERFACING NORMALLY OPEN DIRECT CONTACT DEVICES TO AN ADDRESSABLE SIGNALING LINE CIRCUIT. THE UNIT SHALL BE SUPERVISED. c. E.C. SHALL VERIFY THE NUMBER OF FLOW AND TAMPER SWITCHES WITH THE FIRE PROTECTION
- CONTRACTOR (FPC). Q. SYSTEM OPERATION 1. PROVIDE REQUIRED PROGRAMMING. VENDOR SHALL MEET WITH THE OWNER TO DETERMINE IF THERE ARE ANY EXTRAORDINARY PROGRAMMING CIRCUMSTANCES.
  - a. CONTROL PANEL SHALL MAKE THE ALARM DECISION FOR EACH SENSOR. b. CONTROL PANEL SHALL DETERMINE THE CONDITION OF EACH SENSOR BY COMPARING THE SENSOR VALUE

- c. CONTROL PANEL SHALL MAINTAIN A MOVING AVERAGE OF THE SENSORS' SMOKE CHAMBER VALUE TO AUTOMATICALLY COMPENSATE (MOVE THE THRESHOLD) FOR DUST AND DIRTY CONDITIONS THAT COULD AFFECT DETECTION OPERATIONS. THE SYSTEM SHALL AUTOMATICALLY MAINTAIN A CONSTANT SMOKE OBSCURATION SENSITIVITY FOR EACH SENSOR (VIA THE FLOATING THRESHOLD) BY COMPENSATING FOR
- d. THE SYSTEM SHALL AUTOMATICALLY INDICATE WHEN AN INDIVIDUAL SENSOR NEEDS CLEANING. WHEN A SENSOR'S AVERAGE VALUE REACHES A PREDETERMINED VALUE, A "DIRTY SENSOR" TROUBLE CONDITION SHALL BE AUDIBLY AND VISUALLY INDICATED AT THE CONTROL PANEL. THE LED ON THE SENSOR BASE SHALL GLOW STEADY. IF A "DIRTY SENSOR" IS LEFT UNATTENDED, AND ITS AVERAGE VALUE INCREASES TO A SECOND PREDETERMINED VALUE, AN "EXCESSIVELY DIRECT SENSOR" TROUBLE CONDITION SHALL BE INDICATED AT THE CONTROL PANEL. TO PREVENT FALSE ALARMS, THESE "DIRTY" CONDITIONS SHALL IN NO WAY DECREASE THE AMOUNT OF SMOKE OBSCURATION NECESSARY FOR SYSTEM ACTIVATION.
- e. CONTROL PANEL SHALL CONTINUOUSLY PERFORM AN AUTOMATIC SELF-TEST ROUTINE ON EACH SENSOR WHICH WILL FUNCTIONALLY CHECK SENSOR ELECTRONICS AND ENSURE THE ACCURACY OF THE VALUES BEING TRANSMITTED TO THE CONTROL PANEL. ANY SENSOR THAT FAILS THIS TEST SHALL INDICATE A "SELF TEST ABNORMAL" TROUBLE CONDITION.
- f. THE ACTIVATION OF ANY SYSTEM SMOKE DETECTOR IN ALL PUBLIC AND COMMON AREAS SHALL INITIATE AN ALARM VERIFICATION OPERATION WHEREBY THE PANEL WILL RESET THE ACTIVATED DETECTOR AND WAIT FOR A SECOND ALARM ACTIVATION. IF, WITHIN ONE MINUTE AFTER RESETTING, A SECOND ALARM IS REPORTED FROM THE SAME OR ANY OTHER SMOKE DETECTOR, THE SYSTEM SHALL PROCESS THE ALARM AS DESCRIBED PREVIOUSLY. IF NO SECOND ALARM OCCURS WITHIN ONE MINUTE, THE SYSTEM IS TO RESUME NORMAL OPERATION. THE ALARM VERIFICATION OPERATION IS TO BE U.L. LISTED.
- a. ANY INITIATION OF SMOKE DETECTORS, PULL STATIONS OR FLOW SWITCHES SHALL PUT THE SYSTEM INTO
- b. EXTERNAL AUDIBLE / VISIBLE SIGNAL AT FIRE DEPARTMENT CONNECTION SHALL ONLY ALARM ON FLOW
- c. ALL AUDIBLE ALARM INDICATING APPLIANCES SHALL SOUND UNTIL SILENCED BY THE ALARM SILENCE SWITCH AT THE CONTROL PANEL. SIGNALS SHALL NOT BE SILENCED DURING ALARM SILENCE INHIBIT MODE. d. XENON STROBES SHALL DISPLAY A CONTINUOUS PATTERN UNTIL SYSTEM IS RESET.
- 4. RTAC/AHU SHUT DOWN (ROOFTOP AIR CONDITIONING UNIT/AIR HANDLING UNIT) a. NEW RTAC: RETURN AIR SMOKE DETECTOR AND INTERLOCK TO SHUTDOWN RTAC BY RTAC MANUFACTURER. PROVIDE AN ADAPTER MODULE WITH ADDRESS TO MONITOR THE DUCT TYPE SMOKE
- b. EXISTING RTAC UNIT: RETURN AIR SMOKE DETECTOR AND INTERLOCK TO SHUTDOWN RTAC BY EC.
- c. AHU: RETURN AIR SMOKE DETECTOR AND INTERLOCK TO STARTER TO SHUTDOWN AHU BY EC. d. EC SHALL COORDINATE DUCT SMOKE DETECTOR INSTALLATION WITH THE HVAC CONTRACTOR. FURNISH THE APPROPRIATE MOUNTING BRACKETS, CLEARANCES AND SAMPLING TUBE LENGTH TO PROVIDE AN
- SPRINKLER SYSTEM a. COORDINATE THE CONNECTION TO THE SPRINKLER FLOW AND TAMPER SWITCHES WITH THE FIRE PROTECTION CONTRACTOR. PROVIDE ADEQUATE NUMBER OF DRY CONTACTS IN THE SPRINKLER PANEL FOR THE SWITCHES. PROVIDE WIRING FROM THE SPRINKLER PANEL TO THE SWITCHES AND ANNUNCIATORS.
- b. PROVIDE CONNECTION TO DRY SYSTEM PANEL AND MONITOR AND ALARM LOW PRESSURE. c. PROVIDE SHUT DOWN OF DESTRATIFICATION FANS UPON DETECTION OF WATER FLOW. FACP SHALL OPERATE SHUNT TRIP BREAKERS OR INTERFACE WITH FAN CONTROLLER TO INSURE THE FANS ARE TURNED OFF ONCE FLOW IS DETECTED IN THE SPRINKLER SYSTEM.
- 6. MOUNTING HEIGHTS a. FIRE PULL STATION, STROBES AND COMBINATION HORN/STROBE DEVICES: SEE FLOOR PLANS LEGEND FOR
- b. FIRE ALARM REMOTE ANNUNCIATOR PANEL: 48" TO BOTTOM c. FIRE ALARM CONTROL PANEL - MOUNT SUCH THAT THE TOP OF THE FIRE ALARM CONTROL PANEL IS NOT
- d. FLOOR PLAN GRAPHIC, ADJACENT TO FIRE ALARM ANNUNCIATORS.
- 7. INTERCONNECTION OF FIRE ALARM TO OTHER SYSTEMS a. THE FIRE ALARM SYSTEM SHALL BE INTERCONNECTED TO THE FOLLOWING SYSTEMS:
- 1) ALARM DIALER FOR CONNECTION TO OFF-SITE MONITORING. 2) HVAC AIR HANDLING EQUIPMENT SHUT DOWN UPON DUCT TYPE SMOKE DETECTION.
- b. TO ACCOMMODATE JOB SITE CHANGES, THE TYPE OF "OFF-SITE MONITORING" IS TO BE ON SITE CONFIGURABLE TO PROVIDE EITHER A "REVERSE POLARITY", "LOCAL ENERGY", "SHUNT" OR DRY CONTACT CONNECTION.

#### **ALTERNATE BIDS**

SEE SHEET T2.0

# LEGEND

	SYMBOLS SHOWN MAY NOT APPEAR ON DRAWINGS. A		
SYM.	<u>IDENTIFICATION</u>	SYM.	<u>IDENTIFICATION</u>
	RM / LIFE SAFETY  STROBE. MOUNT 84" AFF. TO TOP OR 6" BELOW		
$\mathfrak{Q}$	CEILING WHICHEVER IS LOWER	M	MAGNETIC DOOR HOLDER
Image: Control of the	SPEAKER. CEILING MOUNTED  W = WALL MOUNTED	FS	SPRINKLER FLOW SWITCH
Ž	HORN/STROBE. MOUNT 84" AFF. TO TOP OR	TS	SPRINKLER TAMPER SWITCH
	6" BELOW CEILING WHICHEVER IS LOWER		SPRINKLIK TAMPLIK SWITCH
V ()	SPEAKER/STROBE. MOUNT 84" AFF. TO TOP OR 6" BELOW CEILNG WHICHEVER IS LOWER	윤	SPRINKLER BELL
	HORN (SOUNDER). MOUNT 84" AFF. TO TOP OR 6" BELOW CEILING WHICHEVER IS LOWER	FACP	FIRE ALARM CONTROL PANEL
F	PULL STATION. MOUNT 46" AFF. TO CENTER	FAA	FIRE ALARM ANNUNCIATOR PANEL
$\overline{\mathbb{H}}$	HEAT DETECTOR	ARS	AREA OF REFUGE STATION
<u>S</u>	SMOKE DETECTOR	ARL	AREA OF REFUGE LIGHTING
(S) _D	DUCT SMOKE DETECTOR	ARM	AREA OF REFUGE MASTER PANEL
(S) _F	ELEVATOR SMOKE DETECTOR	ECM	EMERGENCY COMMUNICATIONS MASTER
(S) _{SB}	SMOKE DETECTOR WITH SOUNDER BASE	ECS	EMERGENCY COMMUNICATIONS STATION
6	CARBON MONOXIDE DETECTOR		
ABBREVIA	<u>ations</u>	I	
AC	ABOVE COUNTER	НС	HVAC CONTRACTOR
AFF.	ABOVE FINISHED FLOOR	IG	ISOLATED GROUND
AFG	ABOVE FINISHED GRADE	IMP	INSULATED METAL PANEL
BZ	BUG ZAPPER	LCP	LIGHTING CONTROL PANEL
DISC	DISCONNECT	NL	NIGHT LIGHT
DW	DISHWASHER	NTS	NOT TO SCALE
EC	ELECTRICAL CONTRACTOR	ОС	ON CENTER
ELEV	ELEVATION	PC	PLUMBING CONTRACTOR
EM	EMERGENCY	PNL	PANELBOARD
ETR	EXISTING TO REMAIN	REF	REFRIGERATOR
EWC	ELECTRIC WATER COOLER	UC	UNDER COUNTER
FF	FOOT FOAMER	UNO	UNLESS NOTED OTHERWISE
FPC	FIRE PROTECTION CONTRACTOR	3R	NEMA 3R
GC	GENERAL CONTRACTOR/CONSTRUCTION MANAGER	4X	NEMA 4X
GDSP	GARBAGE DISPOSAL	WT	WATER TIGHT
GFI	GROUND FAULT CIRCUIT INTERRUPTER	XFMR	TRANSFORMER
FIRE RATE	ED WALLS		
	FIRE - 1 HOUR		FIRE - 3 HOUR
	FIRE - 2 HOUR		FIRE - 4 HOUR

# FIRE ALARM SHEET INDEX

NUMBER	SHEET NAME
FIRE ALARM	
FA0.1	FIRE ALARM LEGEND AND SPECIFICATIONS
FA1.1	OVERALL FIRST FLOOR PLAN - FIRE ALARM

Fond du Lac, WI 54935 920-926-9800 excelengineer.com **COLLABORATION** 

Always a Better Plan

100 Camelot Drive

**PROJECT INFORMATION** 

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PROFESSIONAL SEAL

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**SHEET DATES** FEB. 14, 2023 REVISIONS

**JOB NUMBER** 2255300

SHEET NUMBER





			FIRE A	LARM MATI	RIX					NOTES:
	VOICE	SMOKE	HEAT	PULL	DUCT	СО	FLOW	TAMPER		- FIRE ALARM SYSTEM IS DESIGN BUILD. DRAWINGS AND SPECIFICATIONS ARE FOR GENERAL INTENT ON
AREAS	NOTIFICATI	DETECTORS	DETECTORS	STATION	DETECTORS	DETECTORS	SWITCH	SWITCH	REMARKS	- FIRE ALARM CONTRACTOR SHALL PROVIDE AND LOCATE FIRE ALARM DEVICES IN ACCORDANCE WITH
HALLWAYS	Х			Х						FIRE ALARM MATRIX, LOCAL, STATE, AND FEDERAL CODES AND GUIDELINES.
OFFICE AREAS										- FIRE ALARM SHOP DRAWING PLANS WILL BE REVIEWED BY OWNER FOR COORDINATION PRIOR TO
TOILET ROOMS	X									FIRE ALARM DRAWINGS BEING SUBMITTED FOR APPROVAL TO ANY LOCAL OR STATE AGENCIES.
CLASSROOMS	Х			Х		Х				- CONTRACTOR SHALL RELOCATE DEVICES AND PROVIDE ADDITIONAL DEVICES IF NEEDED DUE TO OWNER
FIRE							Х	Х		- FIRE ALARM MATRIX APPLIES TO SHADED AREAS ON SHEET FA1.1.
RECEPTION / WAITING	Х			Х						
STORAGE AREAS										<u>REMARKS</u>
ELECTRICAL		X		Х						(1) SEE ROOF PLAN SHEET E1.3 FOR LOCATIONS OF DUCT SMOKE DETECTORS.
ROOF									(1)	
"X" INDICATES MINIMUM [	EVICES AS REOU	JESTED BY CUST	TOMER.							



PROJECT INFORMATION

PROPOSED EARLY CHILDHOOD SCHOOL FOR:

QUATTRO
TWIN LAKES STATION -

PROFESSIONAL SEAL

SHEET DATES SHEET ISSUE FEB. 14, 2023 REVISIONS MAR. 23, 2023 APR. 19, 2023 ARCH. PLAN CHANGES

> JOB NUMBER 2255300

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