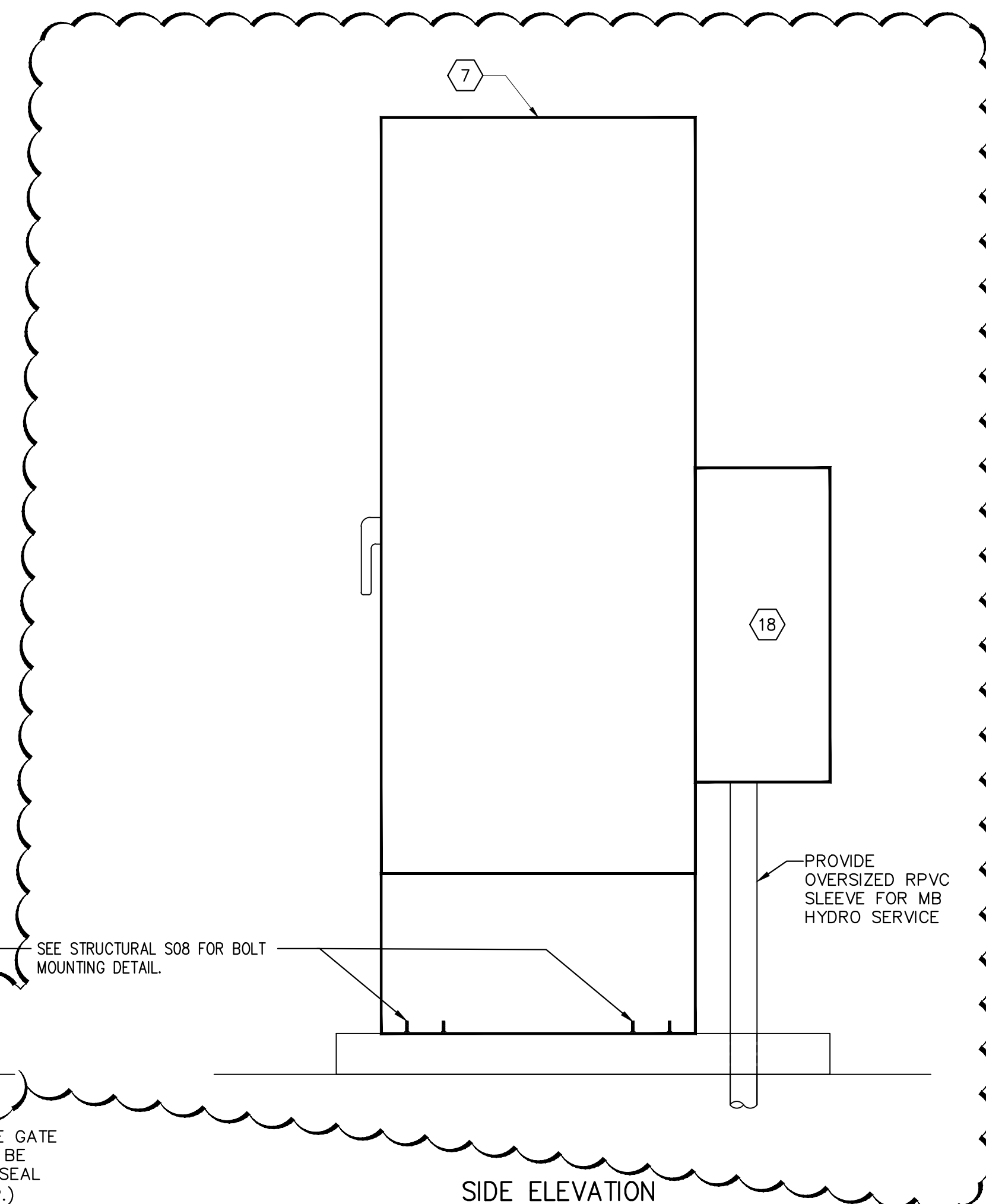
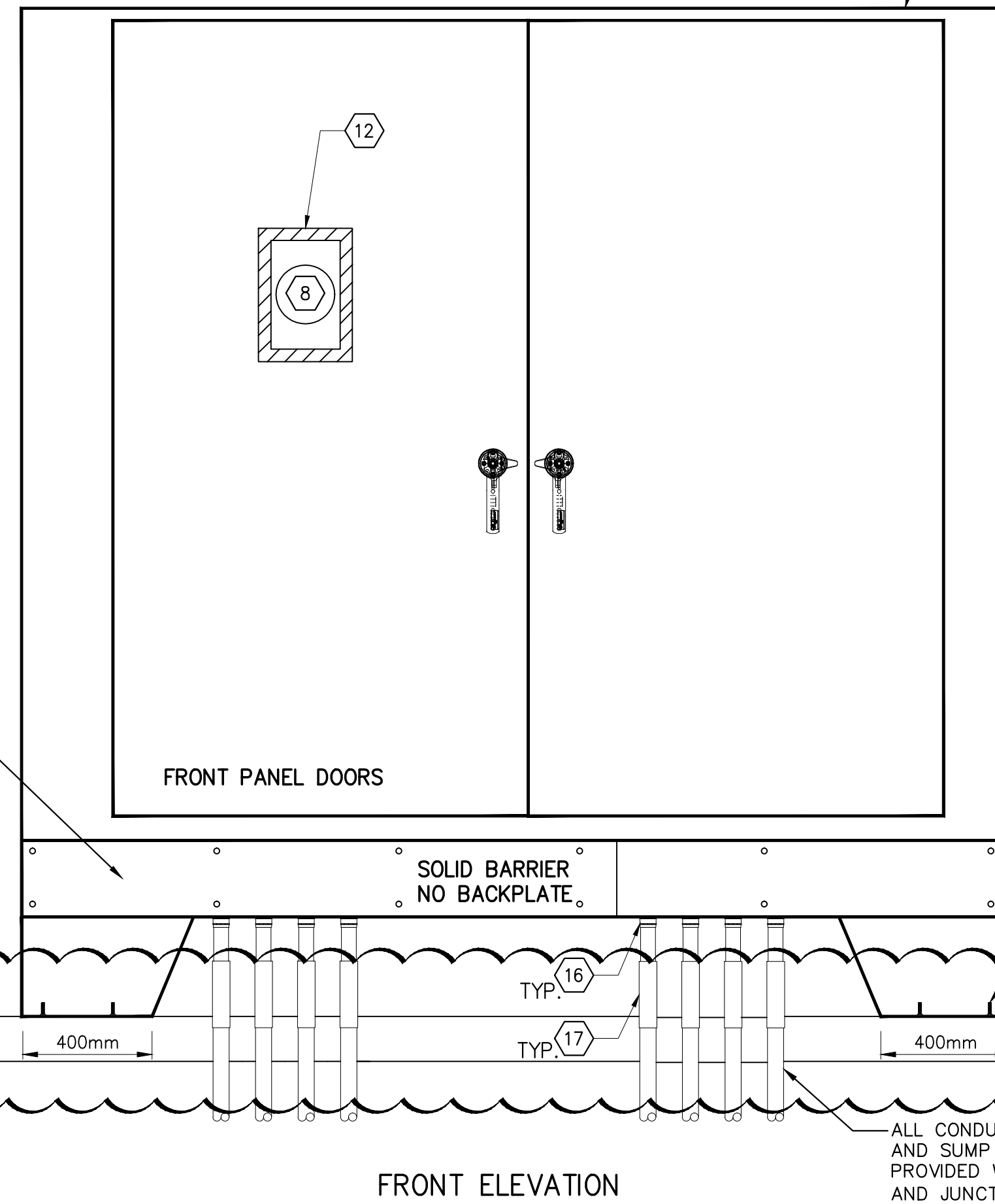
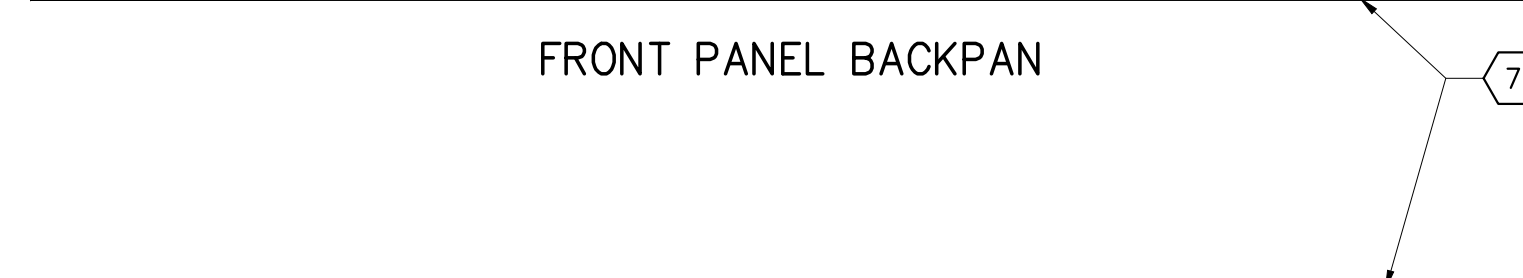
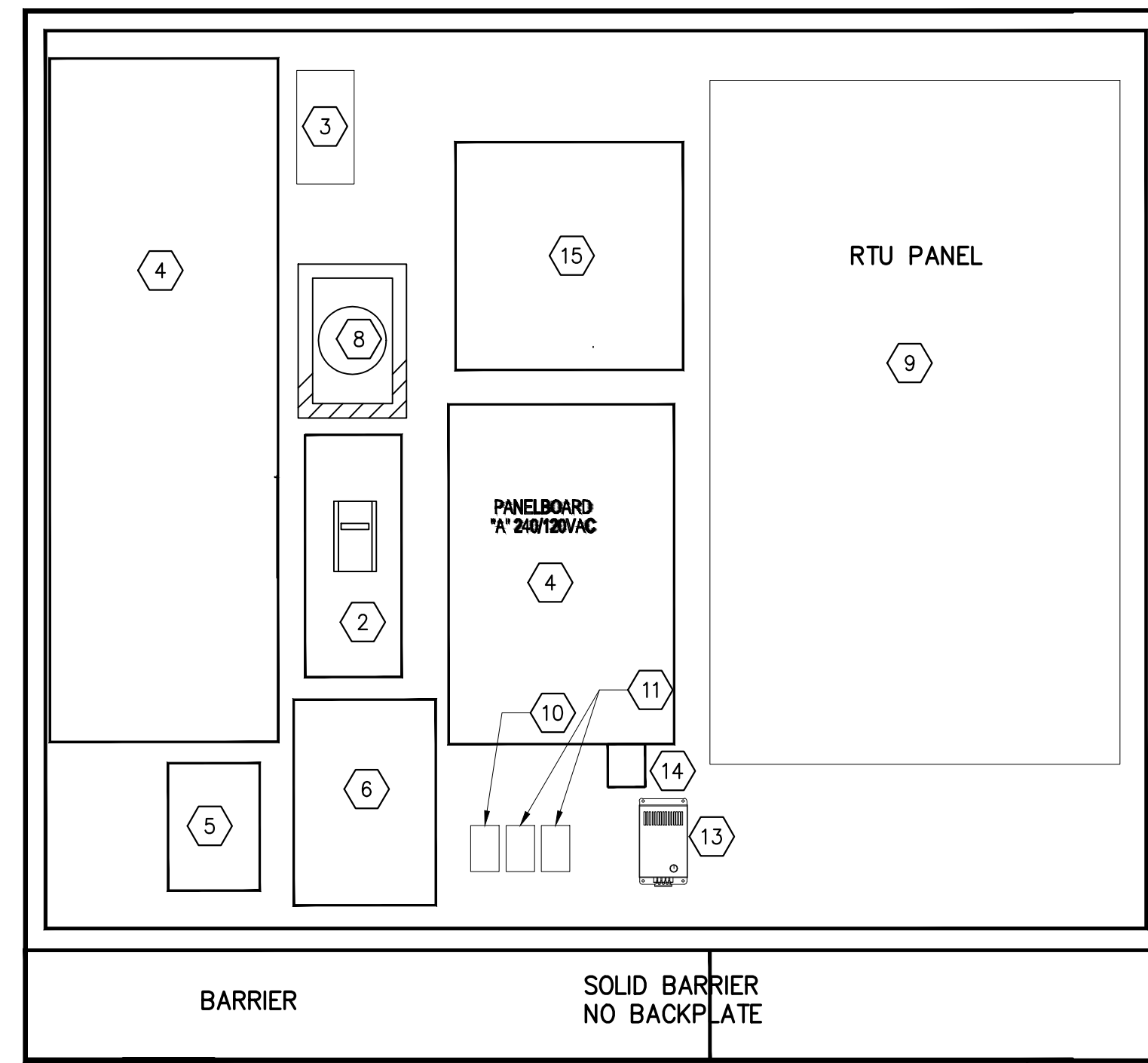


ELECTRICAL & INSTRUMENTATION GENERAL NOTES

1. GENERAL
 - 1.1 ALL WORK SHALL CONFORM WITH WINNEPEG ELECTRICAL BYLAW AND TO LOCAL ORDINANCES HAVING JURISDICTION
 - 1.2 OBTAIN ELECTRICAL PERMIT AND PAY ALL FEES LEVIED.
 - 1.3 PROVIDE CERTIFICATION AT COMPLETION OF WORK.
 - 1.4 ALL EQUIPMENT SHALL BE NEW AND BEAR CSA APPROVAL STICKER UNLESS NOTED OTHERWISE.
 - 1.5 EXAMINE THE SITE THOROUGHLY FOR SERVICE POINT LOCATIONS.
 - 1.6 CARRY OUT THE WORK IN ACCORDANCE WITH DRAWINGS, SPECIFICATIONS AND CONTRACTOR REQUIREMENTS
 - 1.7 COMPLY WITH REGULATIONS AND REQUIREMENTS OF LOCAL INSPECTION AUTHORITY HAVING JURISDICTION.
 - 1.8 COORDINATE THE WORK WITH ALL TRADES. KEEP CLEAR OFF ALL MECHANICAL, ARCHITECTURAL AND STRUCTURAL FEATURES.
 - 1.8 REFER TO OTHER DESIGN DISCIPLINE DRAWINGS AND VERIFY ALL DIMENSIONS PRIOR TO INSTALLATION.
 - 1.9 CONFIRM EXACT LOCATION OF ELECTRICAL EQUIPMENT AND REPORT ANY CONFLICT TO CONTRACT ADMINISTRATOR
 - 1.10 PROVIDE SHOP DWGS OF ALL ELECTRICAL AND INSTRUMENTATION PRODUCTS FOR REVIEW BY CONTRACT ADMINISTRATOR.
 - 1.11 THERE ARE EXISTING ELECTRICAL SERVICES AT THE PUMPING STATION, WW TREATMENT PLANT AND LAGOON SITES. THE SERVICES SHALL BE LOCATED AND PROTECTED, AS THEY WILL CONTINUE TO BE USED DURING INTERIM OPERATION OF THE PUMPING STATION.
2. SCOPE OF WORK
 - 2.1 PROVIDE ALL LABOUR, MATERIAL AND TOOLS REQUIRED TO COMPLETE ELECTRICAL WORKS IN THE SPECIFICATION.
 - 2.2 GENERALLY, THE EXTENT OF WORK SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING:
 - a. PROVIDE POWER AND CONTROL (P&C) NEMA 3R FREE STANDING PANEL, C/W INTERIOR LIGHTING, HEATER/ THERMOSTAT, POWER PANELS, LV TRANSFORMER, RTU SYSTEM, DISTRIBUTION PANELS, MOTOR STARTERS AND CONTROLLER.
 - b. ARRANGE WITH THE MANUFACTURERS TO PROVIDE SHOP DWGS AND FAT RESULTS.
 - c. PROVIDE 200A CSTE WEATHERPROOF WALL MOUNTED AND HYDRO METER & SOCKET.
 - d. PROVIDE OUTDOOR RACK FOR MOUNTING P&C PANEL, AND HYDRO METER ON CONCRETE PAD.
 - e. PROVIDE ALL POWER AND CONTROL WIRING IN P&C PANEL, BETWEEN P&C AND ACTUATOR CHAMBER AND PUMP CHAMBER AND HYDRO TL.
 - f. PROVIDE RTU CONTROL PANEL.
- 2.3 COORDINATE, MAKE ARRANGEMENTS AND PROVIDE POWER TO THE SITE.
3. WIRING SYSTEM
 - 3.1 ALL WIRING SHALL BE:
 - a. WIRES IN RIGID CONDUITS THROUGHOUT
 - b. RIGID CONDUITS WITH ROXTEC RG M63 SEALS, POWER AND/OR CONTROL WIRES FOR WIRING IN HAZARDOUS AREAS AND AREAS SUBJECT TO MECHANICAL DAMAGE SUCH AS ABOVE GROUND.
 - c. EMT CONDUITS WITH RAINIGHT FITTINGS, POWER AND/OR CONTROL WIRES FOR WIRING IN P&C PANEL.
 - 3.2 UNDERGROUND (UG) PORTION OF THE WIRING MAY BE PVC CONDUITS.
 - 3.3 THE PUMP AND ACTUATOR SUPPLIER MAY PROVIDE SEALED POWER AND CONTROL CABLES THE CONTRACTOR SHALL VERIFY AND INSTALL THESE AND REMAINING CABLES W/O ANY SPLICE IN CONDUITS AS REQUIRED.
 - 3.4 RUN CABLES AND/OR WIRES IN CONDUIT FOR INCOMING SERVICES, POWER AND CONTROL SERVICES, ETC CONCRETE ENCASED IN VEHICULAR AREAS AND DIRECTLY BURIED ELSEWHERE.
 - 3.5 WHERE THERE IS VEHICULAR AREAS, THE UG WIRING SHALL BE INSTALLED IN CONCRETE ENCASED SLEEVES.
 - 3.6 PROVIDE ALL SUPPORTS AND MOUNTING HARDWARE FOR WIRING AND EQUIPMENT TO GENERAL AND STANDARD PRACTICES.
 - 3.7 ALL UG WIRES IN CONDUIT SHALL BE COPPER WITH RW90 XLPE INSULATION AND COLOUR-CODED TO MATCH PHASES.
 - 3.8 RW90 XLPE WIRES IN CONDUIT WILL BE ACCEPTED ONLY IN AG APPLICATION.
 - 3.9 PROVIDE A SEPARATE GREEN INSULATED GROUND WIRE IN EVERY RACEWAY.
 - 3.10 FOR CLARITY, THE SKETCHES DO NOT SHOW ANY WIRING AND THOSE SHOWN ARE DIAGRAMMATIC ONLY.
 - 3.11 RUN WIRING IN PARALLEL OR PERPENDICULAR TO BUILDING AXIS.
4. INCOMING POWER SERVICE
 - 4.1 PROVIDE 200A, 3P, 600V WALL MOUNTED TYPE CSTE IN OUTDOOR SERVICE ENTRANCE TYPE ENCLOSURE AS MANUFACTURED BY ECH OR PRAIRIE.
 - 4.2 PROVIDE 100A, 600V ELECTRIC METER AND SOCKET TO MANITOBA HYDRO STANDARDS.
 - 4.3 PAY, COORDINATE AND ARRANGE WITH MANITOBA HYDRO FOR 600VAC SERVICE TO THE SITE.
5. POWER & CONTROL PANEL
 - 5.1 THE P&C PANEL SHALL BE MADE FROM CODE GAUGE STAINLESS STEEL SHEETS WITH STIFFENERS, DOUBLE LEAF LOCKABLE DOORS.
 - 5.2 THE P&C PANEL SHALL BE SIZED WITH ALL EQUIPMENT AS INDICATED + 20% SPARE CAPACITY. PROVIDE SHOP DWGS FOR REVIEW.
6. POWER PANELS
 - 6.1 PROVIDE 600VAC PANEL.
 - 6.2 PROVIDE 240VAC PANEL.
 - 6.3 ALL PANELS SHALL BE FULLY RATED C/W MOLDED CASE BOLT-ON BREAKERS, COPPER BUS, NEUTRAL BAR AND GROUND LUG IN SURFACE MOUNTED, FULLY ENCLOSED CSA 1 ENCLOSURE WITH HINGED COVER AND DIRECTORY.
7. TRANSFORMER
 - 7.1 PROVIDE LOW VOLTAGE TRANSFORMER WITH RESIN ENCAPSULATED WINDINGS AND RATING IN CSA 1 ENCLOSURE TO BE MOUNTED INSIDE WEATHER ENCLOSURE P&C PANEL.
8. LEVEL FLOAT SWITCHES AND ISB RELAYS
 - 8.1 PROVIDE LEVEL FLOATS WITH CABLES, JB, MOUNTING RAIL, ETC MANUFACTURED BY MILLTRONICS.
 - 8.2 PROVIDE INTRINSICALLY SAFE BARRIER RELAYS.
 - 8.3 PROVIDE WIRING FOR FLOATS IN PUMP AND ACTUATOR CHAMBERS AND ISB RELAYS IN DEDICATED JB INSIDE P&C PANEL.
9. REMOTE TERMINAL UNIT
 - 9.1 PROVIDE RTU PANEL, C/W PLC CONTROLLER, EXPANSION MODULES, PANEL HEATERS.
 - 9.2 TERMINAL BLOCKS AND ETC. REFER SPECIFICATION AND DRAWING 01-118 FOR DETAILS.
 - 9.3 THE ELECTRICAL TRADE WILL COORDINATE SHOP DWGS AND FAT OF AND INFORM THE OWNER OF THE SCHEDULE.
 - 9.3 PROVIDE ALL COMPONENTS, CONTROL WIRING AND MAKE CONNECTIONS.
10. LIGHTING AND HEATER
 - 10.1 PROVIDE LIGHTING, HEATER AND RELATED CONTROLS INSIDE P&C PANEL, GATE AND CHAMBERS.
 - 10.1 PROVIDE LED LUMINAIRE 120VAC LIGHTING IN CHAMBERS. REFER TO LUMINAIRE SCHEDULE.
 - 10.1 PROVIDE 26W, 120VAC, TUBE TYPE LED LIGHTING IN RTU PANEL AND P&C PANEL AS MANUFACTURED BY OMNILUMEN/ HUBBELL.
11. GROUNDING
 - 11.1 PROVIDE A SEPARATE AND CONTINUOUS GROUND WIRE SYSTEM THROUGHOUT.
 - 11.2 BOND ALL NON-CURRENT CARRYING EQUIPMENT ADEQUATELY TO SATISFACTION OF INSPECTION AUTHORITY AND MANUFACTURER.
 - 11.3 PROVIDE 3 x 20mm x 3M GROUND RODS OUTSIDE P&C PANEL AND INTERCONNECTING GROUND WIRE.
12. SHOP DRAWINGS - ELECTRICAL
 - 12.1 PROVIDE SHOP DRAWINGS OF ALL ELECTRICAL PRODUCTS SUCH AS CSTE PANEL, METER, POWER PANELS, TRANSFORMER, SWITCHES, POWER & CONTROL PANEL, ETC FOR REVIEW AND APPROVAL PRIOR TO ANY PURCHASE.
13. AS BUILT DRAWING
 - 13.1 RECORD ACCURATELY ALL AS-BUILT REVISIONS TO ELECTRICAL SYSTEMS AS JOB PROGRESS.
 - 13.2 HAND OVER A SET TO CONTRACTOR AT THE COMPLETION OF PROJECT.
14. SHOP DRAWINGS - INSTRUMENTATION
 - 14.1 PROVIDE SHOP DRAWINGS OF ALL INSTRUMENTATION PRODUCTS SUCH AS RTU, MODEM, FLOAT, PUMP CONTROLLER, ACTUATOR CONTROLLER AND RTU CONTROL PANEL, COMPLETE WITH WIRING DIAGRAM AND LOOP DIAGRAM, ETC FOR REVIEW AND APPROVAL PRIOR TO ANY PURCHASE.
15. COMMISSIONING AND HANDOVER
 - 15.1 IDENTIFY ALL EQUIPMENT USING LAMICOID NAMEPLATE WITH NAME, NUMBER, VOLTAGE, AMPS, SOURCE (FED FROM), ETC.
 - 15.2 AT THE END OF THE CONSTRUCTION AND IN COOPERATION WITH THE MECHANICAL TRADE, COMMISSION THE ALL SYSTEMS IN ACCORDANCE WITH SPEC#1500 AND AS FOLLOWS:
 - a. JOG EVERY EQUIPMENT THAT HAS MOTOR, ONE AT A TIME, FOR CORRECT ROTATION AND OPERATION.
 - b. START-UP THE PUMP AND ACTUATOR MANUALLY FROM FROM THE CONTROLLERS AND RTU; ENSURE THAT THEY OPERATE PER MANUFACTURER'S REQUIREMENTS.
 - c. SIMULATE THE OPERATION OF LEVEL FLOATS AND CHECK IF THE PUMPS START CORRECTLY.
 - d. SIMULATE THE OPERATION OF CONTROLLING DEVICE AND CHECK IF THEY SEND/ RECEIVE SIGNALS SATISFACTORY.
 - e. ENSURE THAT REMOTE ALARMS AND STATUS ARE WELL RECEIVED AT THE RTU AND AT REMOTE LOCATION.
 - f. FINALLY STARTUP THE ENTIRE ELECTRICAL AND INSTRUMENTATION SYSTEMS.
 - 15.3 CLEAN THE AREA AND REMOVE DEBRIS OFF SITE.

KEYNOTES:

1	PANELBOARD 'AA' 347/600VAC COMPLETE WITH CIRCUIT BREAKERS.
2	100A-3P SERVICE ENTRANCE RATED MAIN BREAKER IN TYPE 1 ENCL.
3	600VAC, 120 KA TVSS/SPD.
4	PANELBOARD 'A' 240/120 C/W 100A MAIN BREAKER AND BRANCH CIRCUIT BREAKERS.
5	30 A SLUICE GATE ACTUATOR LOCKABLE DISCONNECT SWITCH BY ALLEN BRADLEY 194E-GA32.
6	7.5 KVA 600-240/120VAC TRANSFORMER BY HAMMOND.
7	NEMA 3R CUSTOM MADE POWER AND CONTROL (P&C) FREE STANDING ENCLOSURE C/W BACKPAN AND SOLID BARRIER. MINIMUM APPROXIMATE SIZE 92"H x 116"W x 24"D WITH DRIP SHIELD.
8	METER SOCKET WITH NEUTRAL KIT, MOUNTED AT 70" AFF AS PER MB HYDRO STANDARD.
9	RTU CONTROL PANEL. REFER TO DRAWING 101 TO 118 FOR DETAILS.
10	GFCI DUPLEX RECEPTACLE
11	CHAMBER AND GATE LIGHT SWITCHES
12	VIEWING WINDOW.
13	400W PANEL HEATER BY HOFFMAN DAH-4001B
14	TVSS/SPD 240VAC BY SCHNEIDER TVS120XR50S
15	SP-01 SUMP PUMP CONTROL PANEL
16	ROXTEC GLAND RG M63 COMPLETE WITH ROXTEC GLAND M63 CONDUIT ADAPTER. SIZE AS REQUIRED.
17	CONDUIT EXPANSION JOINT FITTING.
18	200A, 3P, 4W, 600V, WALL MOUNTED TYPE WEATHERPROOF CSTE, MOUNTED TO CONTROL PANEL, INSTALLED AS PER MB HYDRO STANDARD.



REFER TO E02 DRAWING, DETAIL 5 FOR BARRIER INTERIOR VIEW.

REFER TO STRUCTURAL DRAWING S08 FOR CONCRETE PAD REINFORCING AND MOUNTING BOLTS DETAIL

SEE STRUCTURAL S08 FOR BOLT MOUNTING DETAIL.

ALL CONDUITS TO SLUICE GATE AND SUMP PUMP SHALL BE PROVIDED WITH ROXTEC SEAL AND JUNCTION BOX (TYP.)

PROVIDE OVERSIZED RPVC SLEEVE FOR MB HYDRO SERVICE

METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

APEGM
Certificate of Authorization
WSP Canada Inc.
No. 5750 Date: SEP. 07, 2016

G.M.M. ELEV.					
DESIGNED BY	DG	CHECKED BY	HP		
DRAWN BY	DG	APPROVED BY	HP		
HOR. SCALE	AS NOTED	RELEASED FOR CONSTRUCTION			
VERTICAL	AS NOTED				
DATE	2016/09/07	DATE			
NO.	REVISIONS	DATE	BY		
2	ISSUED FOR ADDENDUM 1	09/28/16	HP		
1	ISSUED FOR TENDER	09/07/16	HP		

ENGINEER'S SEAL

PROVINCE OF MANITOBA
09/28/2016
P. PROCYSHYN
MEMBER 4055
REGISTERED PROFESSIONAL ENGINEER

BID OPPORTUNITY: 789-2016
PLOT DATE: 2016/09/07

THE CITY OF WINNEPEG
WATER AND WASTE DEPARTMENT

OUTFALL GATE CHAMBER UPGRADES
RUBY STREET
SRS OUTFALL GATE CHAMBER

CONTROL PANEL DETAIL
GENERAL NOTES

CONSULTANT DRAWING NUMBER: 5516047 - E01
SHEET 13 OF 34
CITY DRAWING NUMBER: LD-7934

Sep 28, 2016 - 4:12pm
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NOTE:
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