

CITY OF MUSKEGON

MUSKEGON COUNTY, MI

SPLASH PAD RECONSTRUCTION

APRIL 2024



316 Morris Avenue, Suite 230
Muskegon, MI 49440
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DNR SPARK GRANT ARPA-0309

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REVISION:

CITY OF MUSKEGON
285 W. WESTERN AVE., MUSKEGON, MI 49440
SPLASH PAD RECONSTRUCTION
COVER SHEET

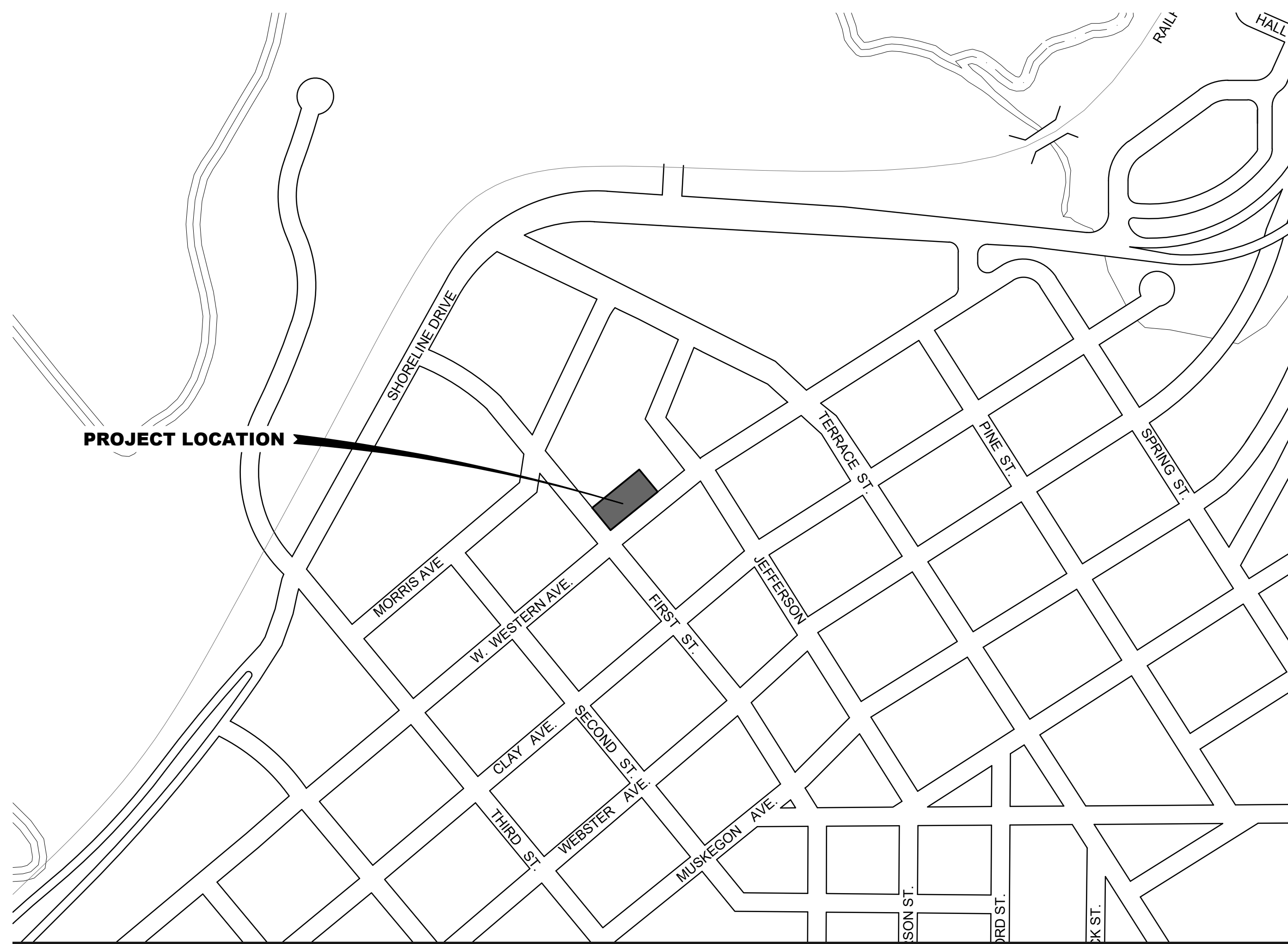
DESIGN TEAM: PROJ MGR: RVS
DESIGNED BY: JRK
DRAWN BY: JRK
CHECK BY:

DRAWING INFORMATION:
863730_G001_COVER
040424 jacob.koning

APRIL 2024

F&V PROJECT NO.
863730

G-001



LOCATION MAP



Know what's below.
Call before you dig.

EXISTING FEATURES LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	TREE (DECIDUOUS)		CABLE BOX
	BUSH		TELEPHONE RISER
	TREE (CONIFEROUS)		TELEPHONE MANHOLE
	DEAD TREE		TELEPHONE HANDHOLE
	STUMP		ELECTRICAL RISER
	MANHOLE		ELECTRICAL MANHOLE
	SANITARY CLEANOUT		ELECTRICAL HANDHOLE
	RD. CATCH BASIN		POWER POLE
	SQ. CATCH BASIN		LIGHT POLE
	FIRE HYDRANT		GUY POLE
	WATER VALVE		GUY ANCHOR
	CURB STOP & BOX		PED CROSSING SIGNAL
	WELL		YARD LIGHT
	WATER MANHOLE		SIGN
	WATER METER		MAILBOX
	SOIL BORING		POST
	MONITORING WELL		FOUND CONC. MONUMENT
	SURVEY CONTROL POINT		FOUND IRON ROD
	BENCHMARK		SET IRON ROD
	SECTION CORNER		
	BOUNDARY LINE		TELEPHONE
	PROPERTY LINE		ELECTRIC
	WATERMAIN		GAS
	SANITARY SEWER		OVERHEAD LINES
	STORM SEWER		GUARDRAIL
	CULVERT (21" AND UNDER)		FENCE
	CULVERT (24" AND UP)		WOODLINE
	CABLE T.V.		BUSH/HEDGE ROW

NOTE: ALL ITEMS LISTED ON THE LEGEND MAY NOT BE PRESENT ON DRAWING.

GENERAL NOTES:

PRIOR TO DEMOLITION AND CONSTRUCTION COMMENCEMENT, CONTRACTOR TO PLACE TEMPORARY FENCING OR SIMILAR MEASURES TO PROTECT PUBLIC FROM CONSTRUCTION AREA.

BM #W-1 EL. 614.71'
N FLANGE BOLT UNDER "CITY"
HYDRANT 23' EAST OF SE CORNER
POST OFFICE BLDG

BM #W-2 EL. 614.42'
N FLANGE BOLT UNDER "MADE"
HYDRANT @ NE QUAD OF FIRST
AND WESTERN

STORM CB 1447
RIM=612.08
INV.=606.53(12' NE)
INV.=606.53(12' NW)

STORM MH 1250
RIM=612.00
INV.=607.15(10' NE)
INV.=607.72(10' SE)
INV.=603.75(18' SW)
INV.=608.20(6' NW)
INV.=608.70(8' N)

STORM MH 1268
RIM=611.99
INV.=608.84(6' N)
INV.=603.29(18' NE)
INV.=603.29(18' SW)
INV.=608.84(6' S)

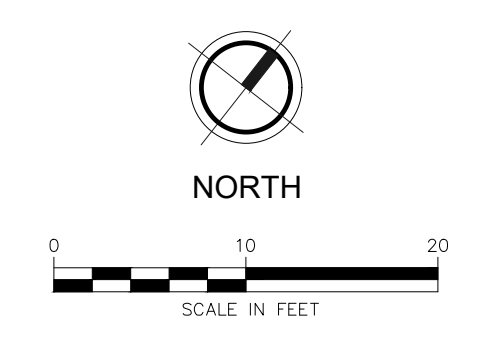
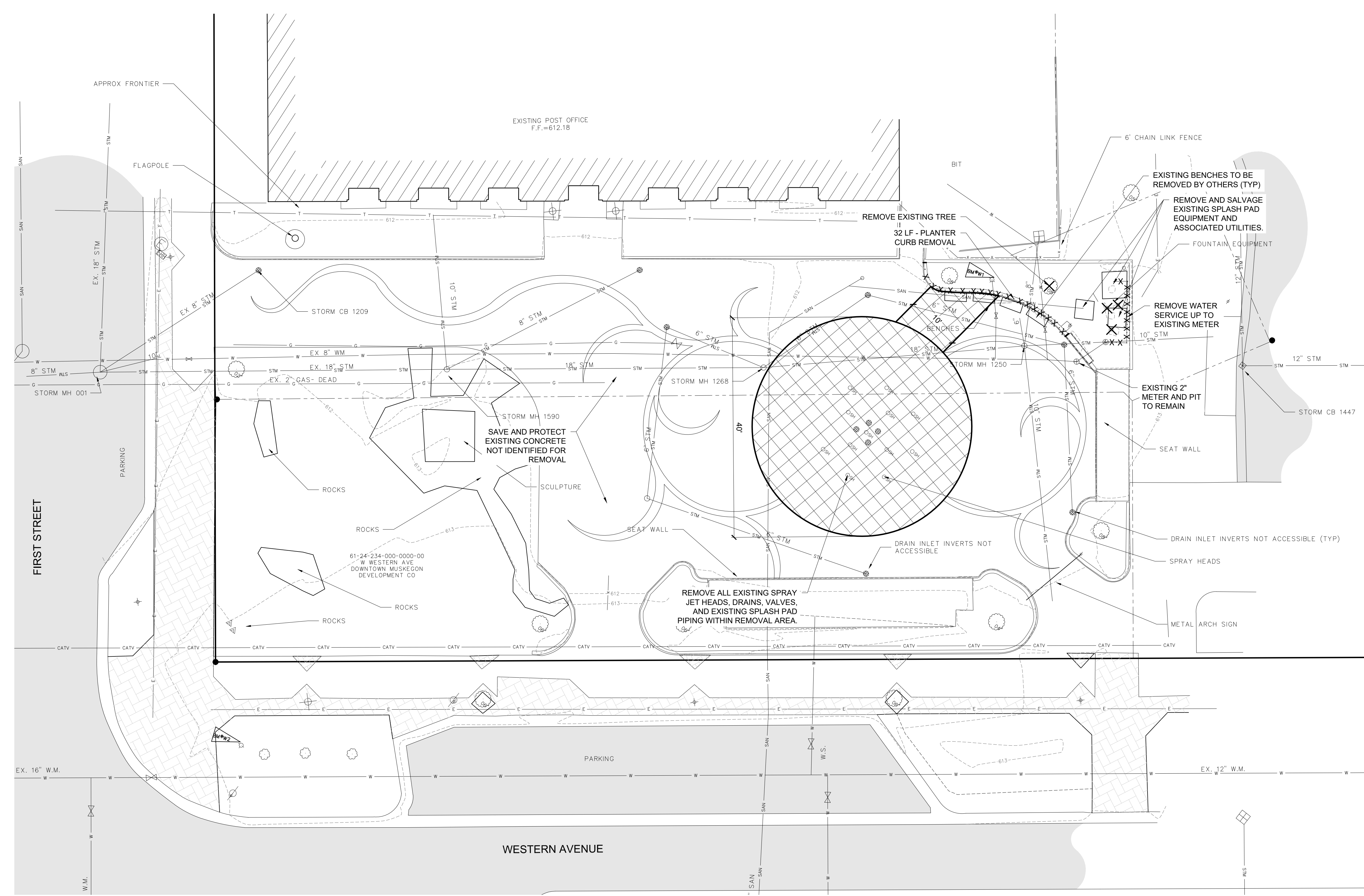
STORM MH 1590
RIM=612.05
INV.=609.50(8' N)
INV.=602.80(18' NE)
INV.=602.80(18' SW)
INV.=605.50(10' NW)

STORM CB 1209
RIM=611.88
INV.=609.07(8' SW)

STORM MH 0001
RIM=611.19
INV.=608.14(8' NE)
INV.=606.44(10' NE)
INV.=602.39(18' NE)
INV.=603.79(8' SW)
INV.=602.49(18' NW)

REMOVALS LEGEND

	CONCRETE REMOVAL
	PLANTER CURB REMOVAL
	REMOVAL ITEM



REVISION:

CITY OF MUSKEGON
285 W. WESTERN AVE., MUSKEGON, MI 49440
SPLASH PAD RECONSTRUCTION
EXISTING CONDITIONS & REMOVALS PLAN

DESIGN TEAM: [Blank]
PROJ MGR: RWS
DESIGNED BY: JRK
DRAWN BY: JRK
CHECK BY: [Blank]

DRAWING INFORMATION:
863730_C101_REM
040424 jacob.koning

APRIL 2024
F&V PROJECT NO.
863730

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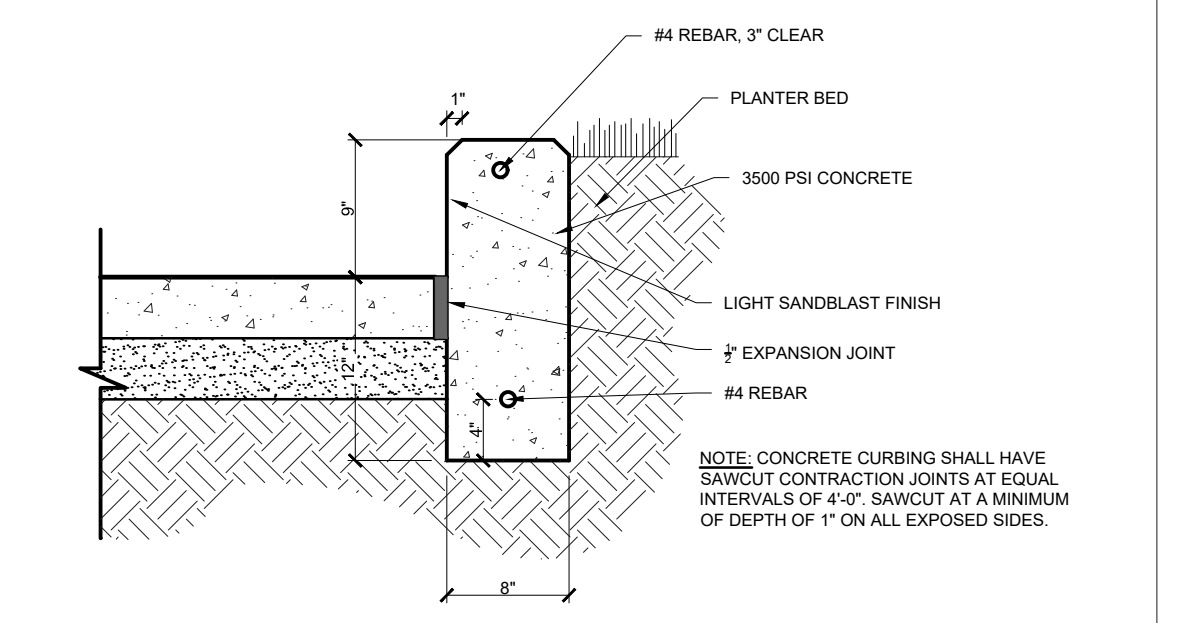
GENERAL NOTES:

BASIS OF SPLASH PAD DESIGN IS PROVIDED BY VORTEX AQUATIC STRUCTURES INTERNATIONAL.

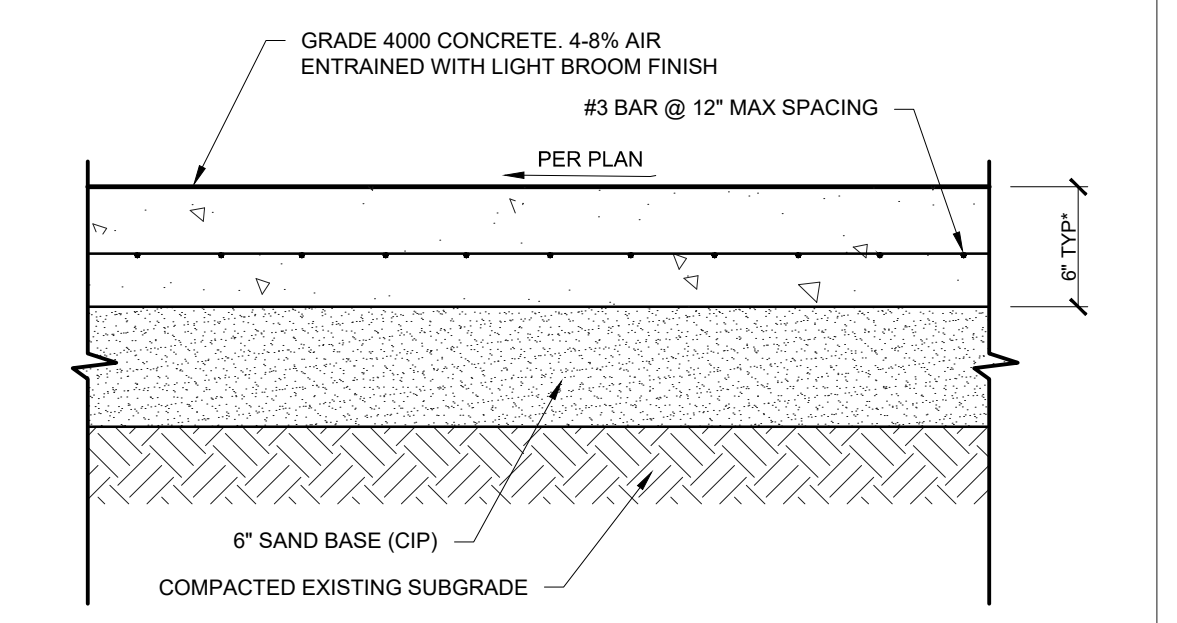
THE SPECIFICATION OR DESCRIPTION OF SPLASH PAD ITEMS IS INTENDED TO ESTABLISH THE TYPE, FUNCTION, APPEARANCE, AND QUALITY REQUIRED. UNLESS THE SPECIFICATION OR DESCRIPTION CONTAINS OR IS FOLLOWED BY WORDS READING THAT NO LIKE, EQUIVALENT, OR "OR EQUAL" ITEM IS PERMITTED, CONTRACTOR MAY REQUEST THAT ENGINEER AUTHORIZE THE USE OF OTHER ITEMS OF EQUIPMENT OR MATERIAL, OR ITEMS FROM OTHER PROPOSED SUPPLIERS, UNDER THE CIRCUMSTANCES DESCRIBED BELOW.

1. IF ENGINEER IN ITS SOLE DISCRETION DETERMINES THAT AN ITEM OF EQUIPMENT OR MATERIAL PROPOSED BY CONTRACTOR IS FUNCTIONALLY EQUAL TO THAT NAMED AND SUFFICIENTLY SIMILAR SO THAT NO CHANGE IN RELATED WORK WILL BE REQUIRED, ENGINEER WILL DEEM IT AN "OR EQUAL" ITEM. FOR THE PURPOSES OF THIS PARAGRAPH, A PROPOSED ITEM OF EQUIPMENT OR MATERIAL WILL BE CONSIDERED FUNCTIONALLY EQUAL TO AN ITEM SO NAMED IF:
 - a. IN THE EXERCISE OF REASONABLE JUDGMENT ENGINEER DETERMINES THAT THE PROPOSED ITEM:
 - 1) IS AT LEAST EQUAL IN MATERIALS OF CONSTRUCTION, QUALITY, DURABILITY, APPEARANCE, STRENGTH, AND DESIGN CHARACTERISTICS;
 - 2) WILL RELIABLY PERFORM AT LEAST EQUALLY WELL THE FUNCTION AND ACHIEVE THE RESULTS IMPOSED BY THE DESIGN CONCEPT OF THE COMPLETED PROJECT AS A FUNCTIONING WHOLE; 3) HAS A PROVEN RECORD OF PERFORMANCE AND AVAILABILITY OF RESPONSIVE SERVICE; AND 4) IS NOT OBJECTIONABLE TO OWNER.
 - b. CONTRACTOR CERTIFIES THAT, IF THE PROPOSED ITEM IS APPROVED AND INCORPORATED INTO THE WORK:
 - 1) THERE WILL BE NO INCREASE IN COST TO THE OWNER OR INCREASE IN CONTRACT TIMES; AND
 - 2) THE ITEM WILL CONFORM SUBSTANTIALLY TO THE DETAILED REQUIREMENTS OF THE ITEM NAMED IN THE CONTRACT DOCUMENTS.

CONTRACTOR'S EXPENSE: CONTRACTOR SHALL PROVIDE ALL DATA IN SUPPORT OF ANY PROPOSED "OR EQUAL" ITEM AT CONTRACTOR'S EXPENSE.



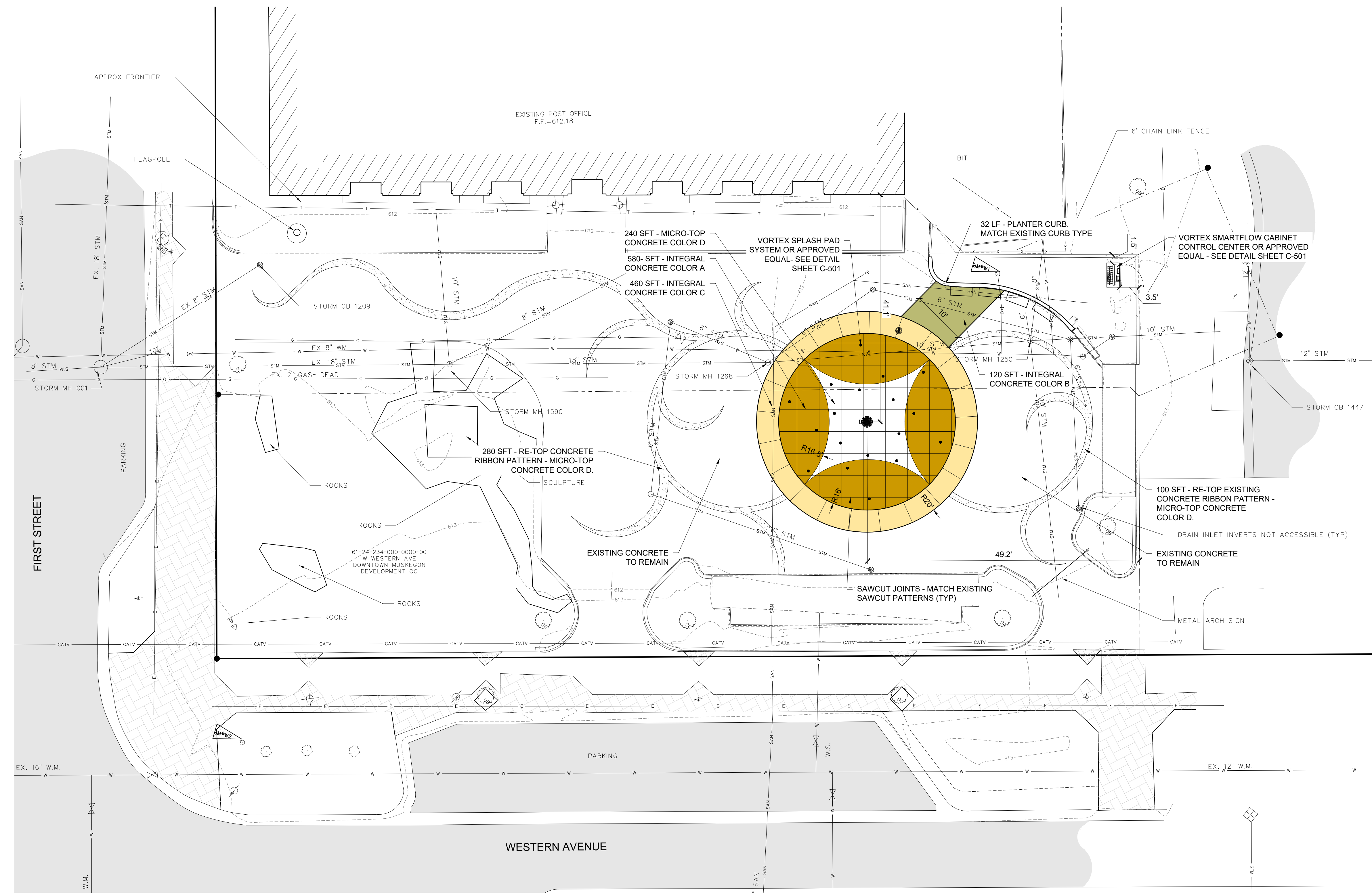
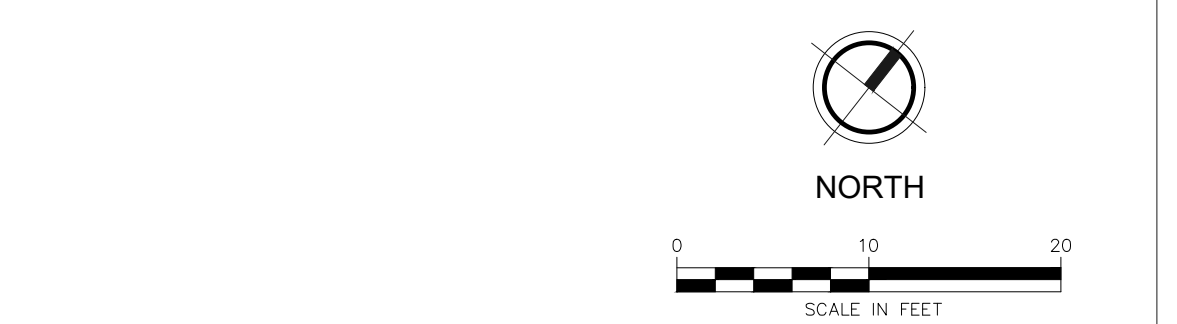
PLANTER CURB DETAIL
NOT TO SCALE



SPLASH PAD CONCRETE BASE
NOT TO SCALE

PROPOSED LEGEND

	CONCRETE COLOR A - PRISM PIGMENTS INTEGRAL COLOR NO. P2691 CORUS/BLACK OR APPROVED EQUAL WITH SAND CAST FINISH
	CONCRETE COLOR B - PRISM PIGMENTS INTEGRAL COLOR NO. P9030 SHADOW SLATE OR APPROVED EQUAL WITH LIGHT BROOM FINISH
	CONCRETE COLOR C - PRISM PIGMENTS INTEGRAL COLOR NO. P6420 SANDY BLUFF OR APPROVED EQUAL WITH LIGHT BROOM FINISH
	CONCRETE COLOR D - (MICRO TOP) - INCRETE INTEGRAL COLOR SUPER WHITE OR APPROVED EQUAL WITH TEXTURED FINISH



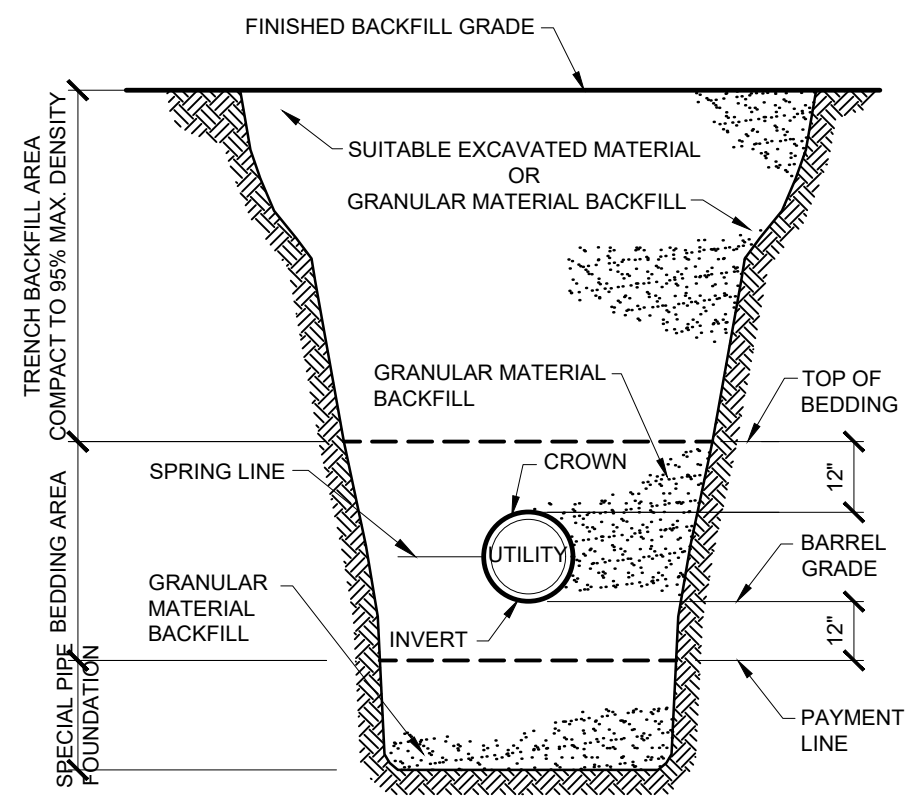
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285 W. WEESTERN AVE., MUSKEGON, MI 49440
SPLASH PAD RECONSTRUCTION
SITE LAYOUT PLAN

DESIGN TEAM: PROJ MGR: RWS
DESIGNED BY: JRK
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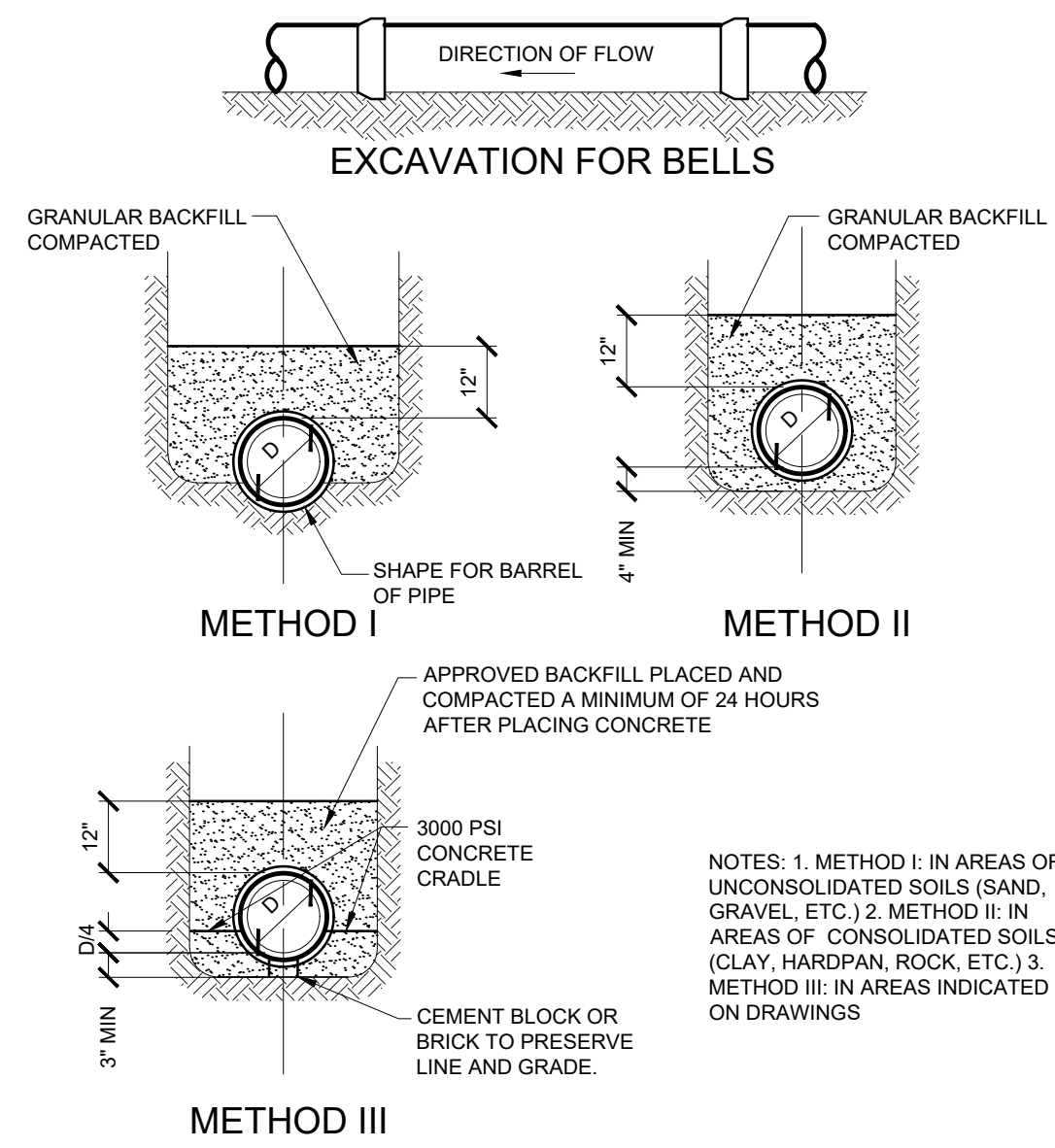
DRAWING INFORMATION:
863730_C102_SITE
040424 jacob.koning

APRIL 2024
F&V PROJECT NO.
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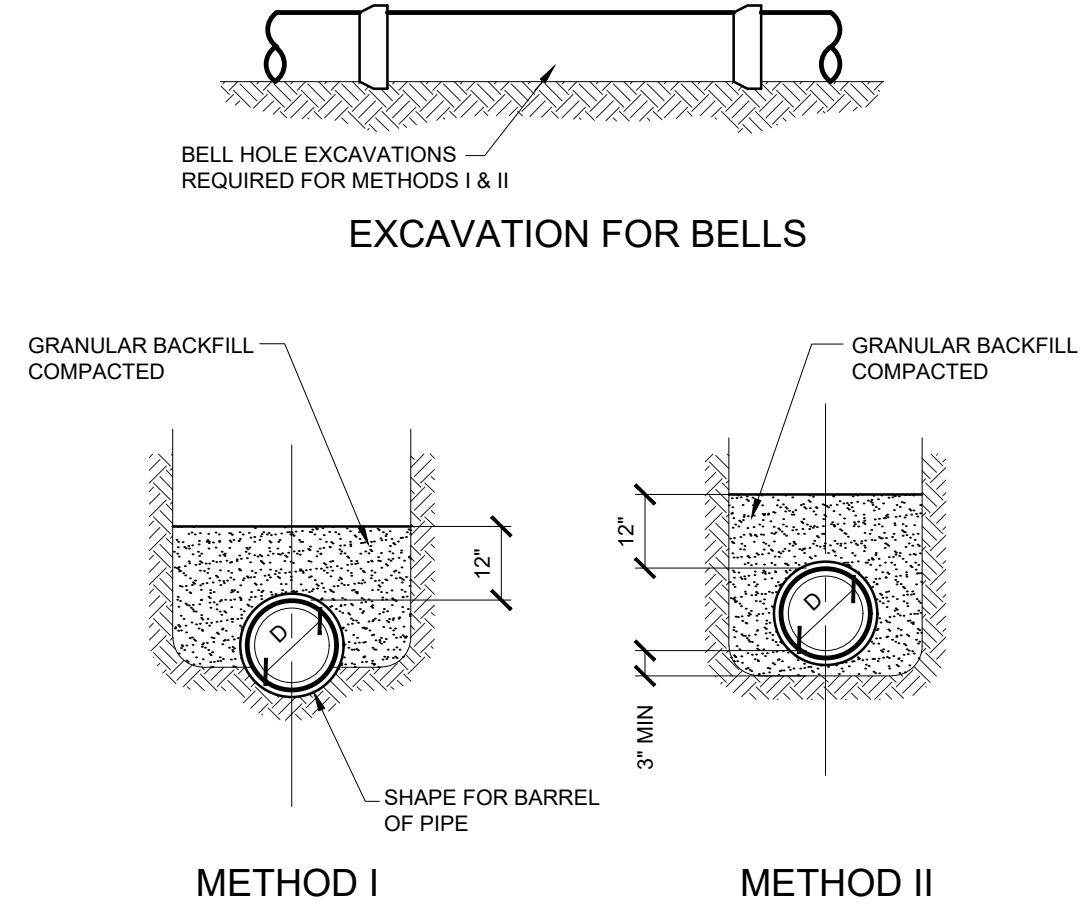
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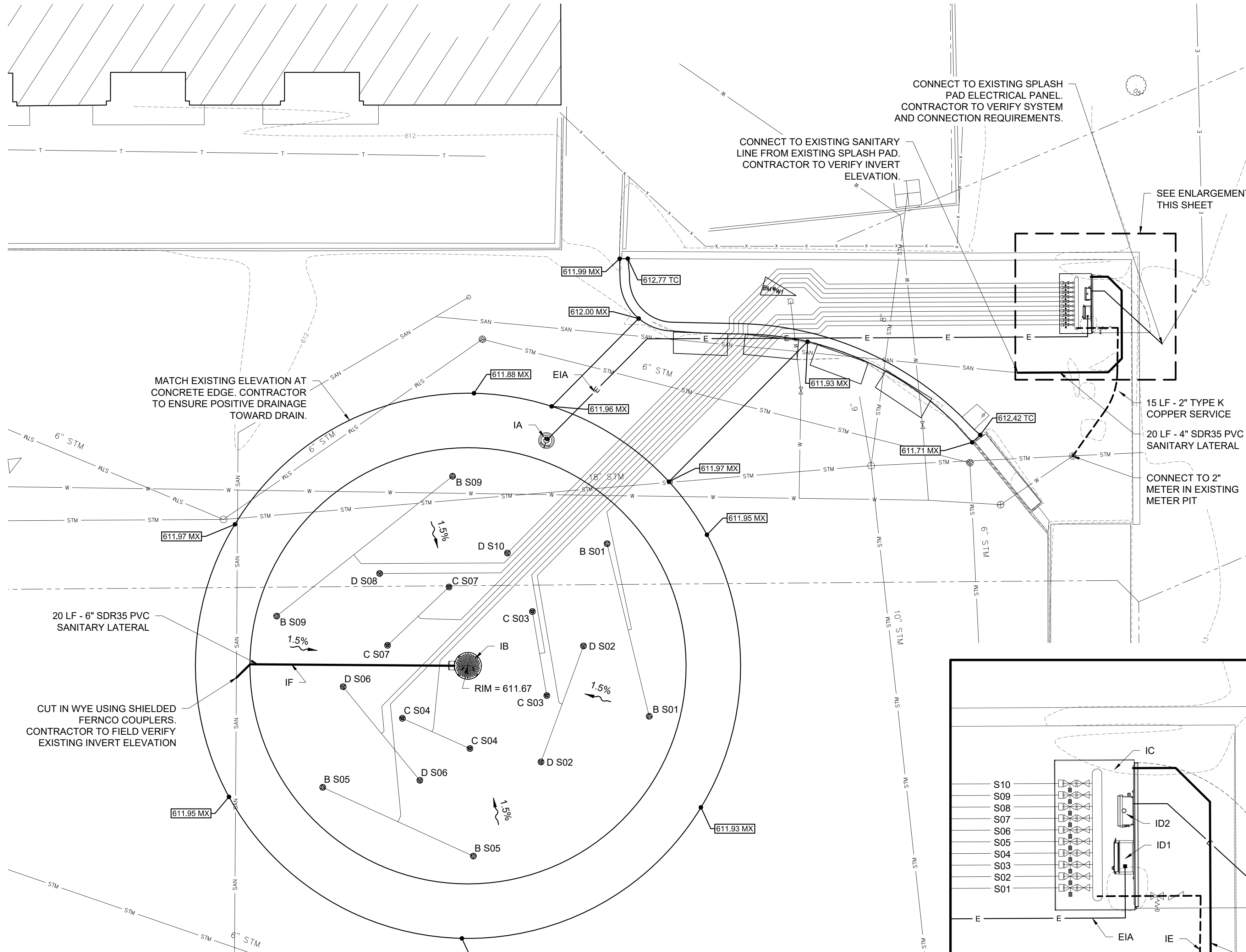
UTILITY TRENCHING, EXCAVATING AND BACKFILLING TERMINOLOGY



METHODS OF BEDDING GRAVITY PIPE



METHODS OF BEDDING PRESSURE PIPE



1. PIPING:

- 1.1 WIDS CONFIGURATION ARE SCHEMATIC AND MAY BE MOVED OR ADJUSTED ON SITE BY VORTEX CERTIFIED INSTALLER TO ADJUST FOR SITE CONDITIONS
- 1.2 ANY REQUIRED WATER METER ON THE CITY WATER MAIN SHALL BE PROVIDED BY INSTALLER. PRESSURE REGULATOR AND BACKFLOW PREVENTER WILL BE PROVIDED BY VORTEX.
- 1.3 ALL PIPE LINES TO FEATURES TO HAVE A 1% MINIMUM RECOMMENDED SLOPE FOR PROPER WINTERIZATION.
- 1.4 ALL LINE SIZING (FEATURE CONNECTION TABLE) ASSUMES A MAXIMUM DISTANCE OF 100 FEET BETWEEN THE WATER DISTRIBUTION MANIFOLD AND THE FURTHEST PLAY PRODUCT. DISTANCES ABOVE 100 FEET MAY REQUIRE AN INCREASE IN LINE SIZING. PLEASE CONTACT VORTEX.
- 1.5 QUANTITY AND LOCATION OF DRAINS BASED ON MAXIMUM FLOW FOR THE INDICATED PIPE DIAMETER AT 1% SLOPE. MODIFICATIONS MAY BE REQUIRED DUE TO SPECIFIC SITE CONDITIONS AND LOCAL CODE.
- 1.6 PRESSURE LINES ARE RECOMMENDED TO BE SCHEDULE 80 PVC OR PEX, AND NON-PRESSURE LINES TO BE SCHEDULE 40, UNLESS OTHERWISE REQUESTED BY LOCAL CODE.
- 1.7 DRAINAGE LINES ARE RECOMMENDED TO BE SDR 35, UNLESS OTHERWISE REQUESTED BY LOCAL CODE.
- 1.8 PIPING SHOULD BE INSPECTED AFTER TRANSPORTATION FOR CUTS, SCRATCHES, GOUGES OR SPLITS; DAMAGED SECTIONS MUST BE DISCARDED OR CUT OUT.
- 1.9 PIPE SHALL BE INSTALLED BELOW THE FROST LEVEL NOT LESS THAN 12" (ASTM F-645) UNLESS OTHERWISE REQUESTED BY LOCAL CODE.
- 1.10 PIPE INSTALLATION MINIMUM COVER SHOULD BE EVALUATED ACCORDING TO ASTM D-2774, UNLESS OTHERWISE REQUESTED BY LOCAL CODE.
- 1.11 SPECIAL CONSIDERATIONS SHOULD BE TAKEN FOR THERMAL CONDITIONS, EXPANSION AND CONTRACTIONS DUE TO TEMPERATURE SHOULD BE EVALUATED BEFORE THE INSTALLATION BY THE CONTRACTOR.
- 1.12 VALVE NUMBER 1 IS LOCATED TO THE LEFT OF THE MANIFOLD FACING THE SOLENOID.
- 1.13 MINIMUM 50 PSI REQUIRED AT THE INLET OF THE BACKFLOW PREVENTER AND PRESSURE REGULATING DEVICE.
- 1.14 MAXIMUM FLOW CAPACITY OF MANIFOLD IS 72 GPM.
- 1.15 TOTAL FLOW OF FEATURE IS 75 GPM.
- 1.16 FACTORY MAXIMUM SEQUENCING FLOW IS 50 GPM ACTUAL FLOW MAY VARY DUE TO SITE CONDITIONS.

2. ELECTRICAL:

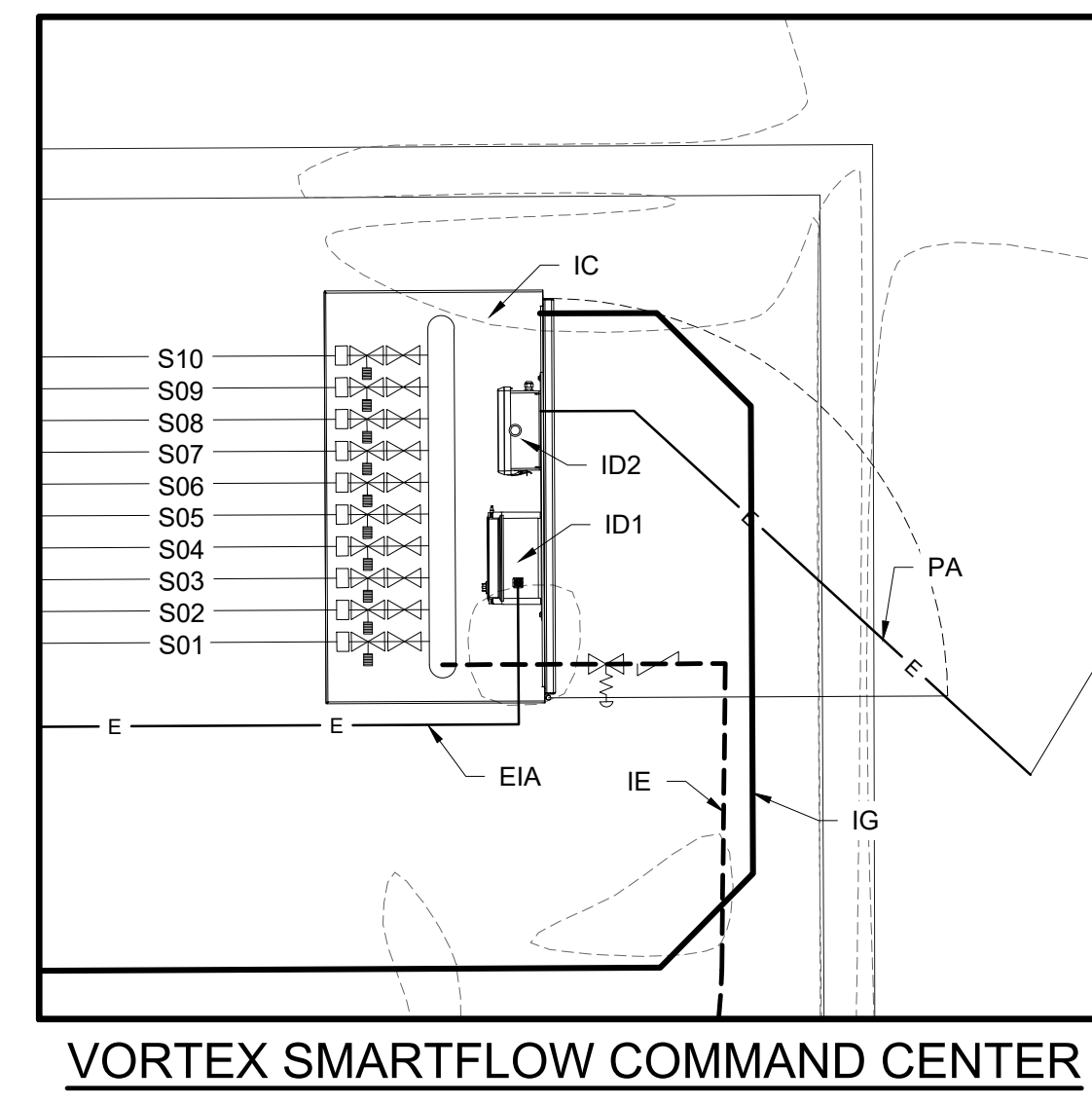
- 2.1 WIRING FROM THE CONTROLLER TO EACH ACTIVATOR SHALL BE #22 AWG. A TOTAL OF FIVE (5) CONDUCTORS PER ACTIVATOR; CABLE LENGTH UP TO 246' (75M), PROVIDED BY VORTEX.
- 2.2 ALL CONNECTIONS TO THE CONTROLLER AND OTHER VORTEX ELECTRICAL PANEL SHALL BE PERFORMED USING AN APPROVED NEMA 4X CONNECTOR.
- 2.3 WIRE FROM MAIN POWER TO VORTEX PANEL TO BE DETERMINED BY CONTRACTORS RESPECTING THE LOCAL CODE.
- 2.4 MAINTAIN A MINIMUM CLEARANCE ZONE OF 36" IN FRONT OF ELECTRICAL PANEL, UNLESS OTHERWISE REQUESTED BY LOCAL CODE.
- 2.5 USE #8 BARE SOLID COPPER BONDING WIRE BETWEEN FEATURES TO A GROUNDING ROD IN THE SOIL, TIED INTO REBAR GRID, OR AS PER LOCAL CODE. SPRAYLINKS FEATURE DO NOT REQUIRE BONDING.
- 2.6 AS PER ELECTRICAL CONSTRUCTION AND SAFETY CODES: CONTROLLER CONTROLLER AND ANY OTHER ELECTRICAL ENCLOSURES MUST BE HARD-WIRED TO A GROUND FAULT CIRCUIT INTERRUPTER (GFCI) FROM THE INPUT POWER SOURCE.
- 2.7 ALL ELECTRICAL WORK SHOULD BE PERFORMED BY A LICENSED ELECTRICIAN IN ACCORDANCE TO LOCAL ELECTRICAL CONSTRUCTION AND SAFETY CODES.
- 2.8 THE MAESTROPRO CONTROL PANEL IS POWERED THROUGH A MAESTROPRO POWER BOX.
- 2.9 THE POWER CABLE TO MAESTROPRO POWER BOX IS SUPPLIED BY INSTALLER.
- 2.10 THE MAESTROPRO CONTROL PANEL INTEGRATES 24 DIGITAL OUTPUTS WITH 24 VAC AND 12 DIGITAL INPUTS.
- 2.11 FOR REMOTE ACCESS ABILITY, A HARD CONNECTION TO AN EXISTING NETWORK IS REQUIRED USING A CAT 5 CABLE OR A CELLULAR NANO-SIM CARD WITH DATA-PLAN.

FEATURE CONNECTION TABLE							
MANIFOLD OUTPUT REF	SOLENOID VALVE	FEATURE REF	FEATURE	QTY	LINE SIZE	GPM	OUTPUT (ID1)
S01	1" STD	B	SPRAYLINK ARCH VOR 3002	2	1"	3	1
S02	1" STD	D	SPRAYLINK FOUNTAIN VOR 3005	2	1 1/2"	12	2
S03	1" STD	C	SPRAYLINK GEYSER VOR 3005	2	1"	10	3
S04	1" STD	C	SPRAYLINK GEYSER VOR 3005	2	1"	10	4
S05	1" STD	B	SPRAYLINK ARCH VOR 3002	2	1"	3	5
S06	1" STD	D	SPRAYLINK FOUNTAIN VOR 3005	2	1 1/2"	12	6
S07	1" STD	C	SPRAYLINK GEYSER VOR 3005	2	1"	10	7
S08	1" STD	D	SPRAYLINK FOUNTAIN VOR 3005	1	1"	6	8
S09	1" STD	B	SPRAYLINK ARCH VOR 3002	2	1"	3	9
S10	1" STD	D	SPRAYLINK FOUNTAIN VOR 3005	1	1"	6	10

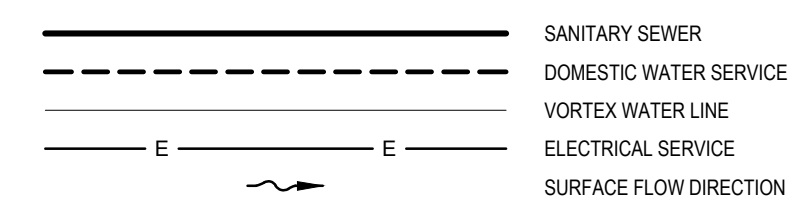
ELECTRICAL LINE CONNECTIONS POWER					
PRODUCT CODE	FROM	TO	# CONDUCTORS	GAUGE/TYPE	NOTE
PA	MAIN POWER LINE (BY CONTRACTOR)	ID2 120VAC	3	TBD (BY CONTRACTOR)	120V, 1 PHASE, 60HZ, 10AMPS BREAKER RECOMMENDED ± 5% VOLTAGE DROP IS ACCEPTABLE

ELECTRICAL LINE CONNECTIONS CONTROLLER INPUTS					
PRODUCT CODE	FROM	TO	# CONDUCTORS	GAUGE/TYPE	NOTE
EIA	ID1-INPUT 1	IA	5	22	ACTIVATOR NO. 3 24 VDC, MAX 345 mA 264' (75m) LONG CABLE

PRODUCT LEGEND		
PRODUCT REF	PRODUCT	QTY
IA	BOLLARD ACTIVATOR NO 3 VOR 0611	1
IB	PLAYSAFE DRAIN N°4 VOR 1004	1
IC	WATER DISTRIBUTION SYSTEM: ECCC CABINET COMMAND CENTER 2.0	1
ID1	MAESTROPRO CONTROLLER 24 OUT/12 IN VOR-33907.3200	1
ID2	MAESTROPRO POWER BOX VOR-33907.3200	1
IE	2" CITY WATER LINE (BY INSTALLER)	1
IF	6" DRAIN LINE TO MUNICIPAL DRAIN (BY INSTALLER)	1
IG	4" TYP DRAIN LINE WITH STRAINER CONNECTED TO DRAINAGE SYSTEM. ENSURE P-TRAP IS BELOW FROST LINE TO PREVENT FREEZING (BY INSTALLER)	1
IV	2" PRESSURE REGULATOR	1
VB	2" BACKFLOW PREVENTER	1
VS	1" SOLENOID VALVE WITH BALL VALVE & UNION	10

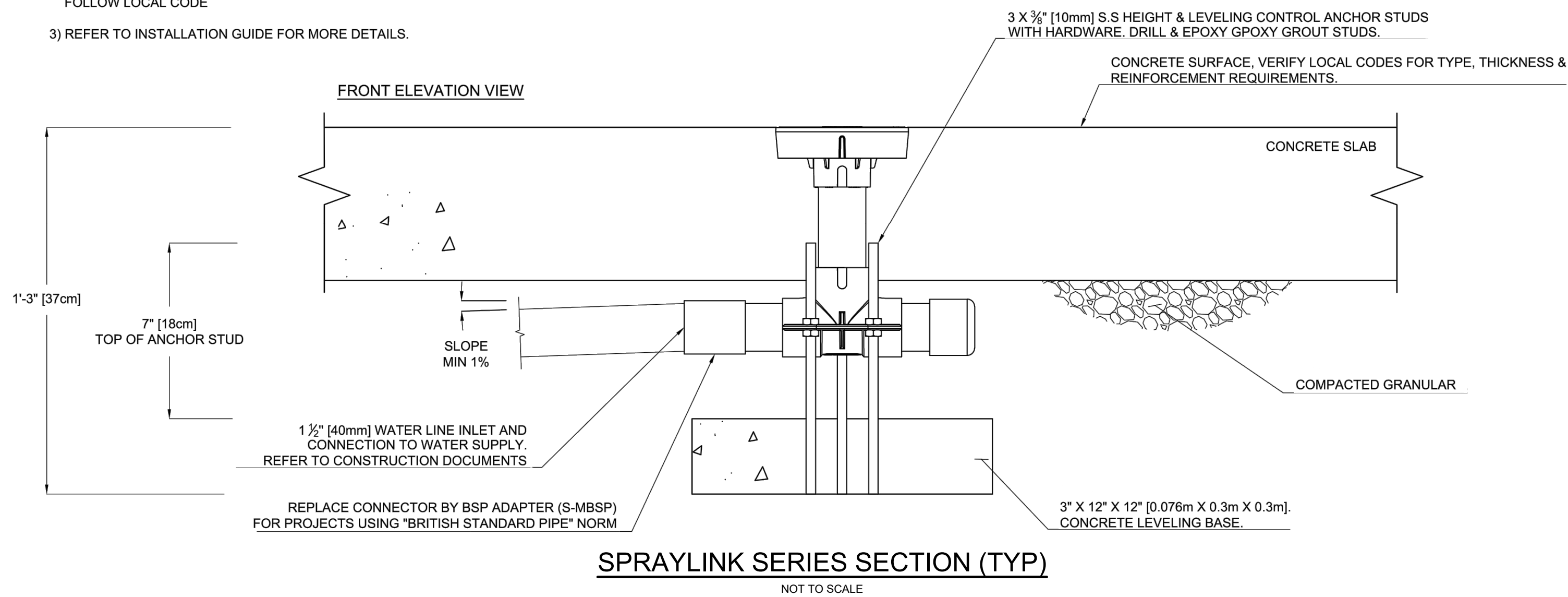


PROPOSED LEGEND



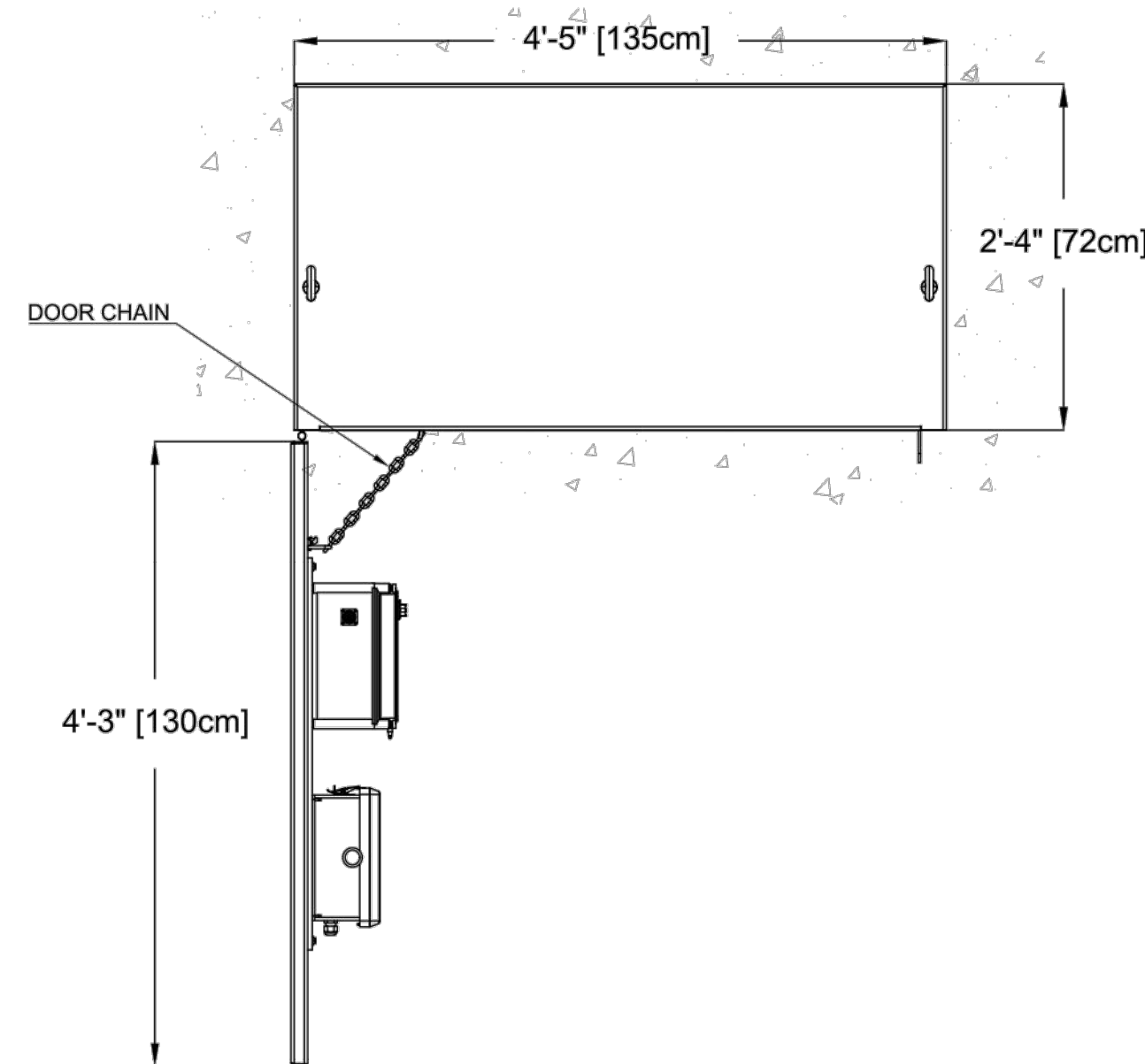
NOTES:

- 1) "BY INSTALLER/BY CONTRACTOR" MAY REFER TO SERVICE PROVIDERS OTHER THAN THE EQUIPMENT MANUFACTURER. PLEASE REFER TO PROJECT SPECIFICATION FOR DETAILS OF RESPONSIBILITY.
- 2) POLYMER ENCAPSULATED ASSEMBLY NO EARTH GROUNDING AND NO BONDING RECOMMENDED FOR SPRAYLINK™ SYSTEM FOLLOW LOCAL CODE
- 3) REFER TO INSTALLATION GUIDE FOR MORE DETAILS.



SPRAYLINK SERIES SECTION (TYP)
NOT TO SCALE

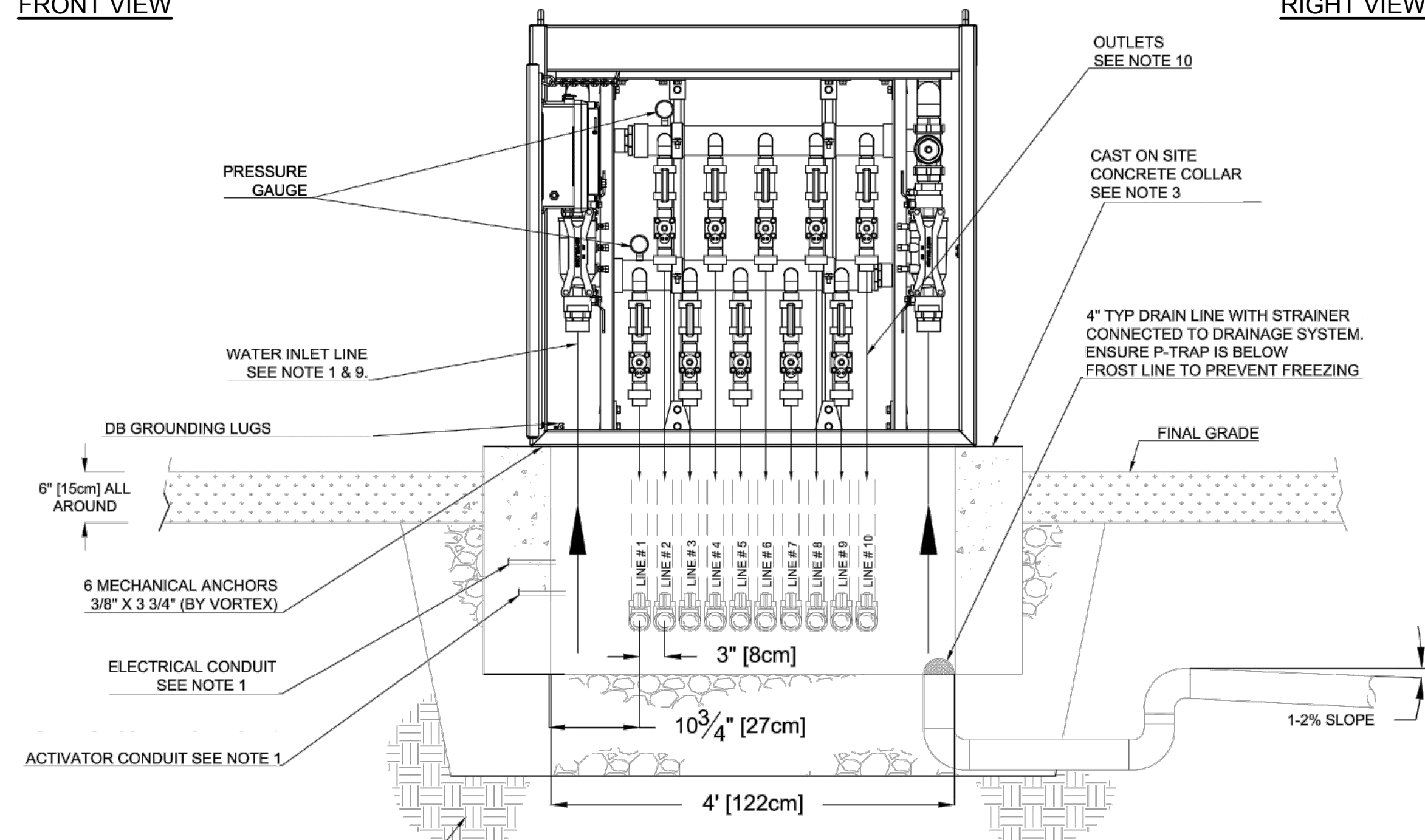
TOP VIEW



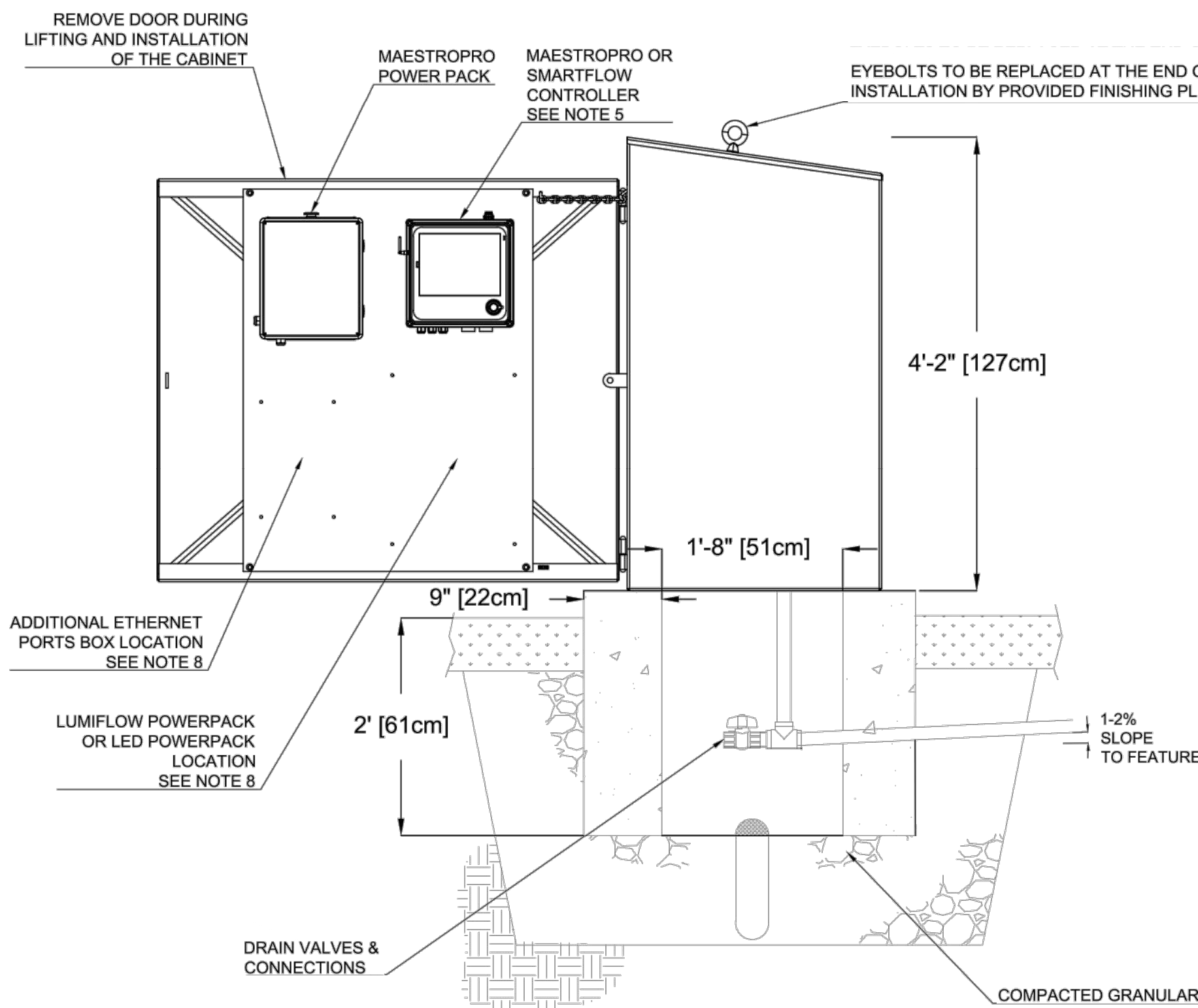
NOTES:

1. REFER TO P&E DRAWINGS FOR PIPE SIZES AND ELECTRICAL CONNECTIONS
2. REFER TO PRODUCT SPECIFICATION DOCUMENT FOR ADDITIONAL INFORMATION
3. CONCRETE SURFACE, VERIFY LOCAL CODES FOR TYPE, THICKNESS & REINFORCEMENTS REQUIREMENTS.
4. "BY INSTALLER" MAY REFER TO SERVICE PROVIDERS OTHER THAN EQUIPMENT MANUFACTURER. PLEASE REFER TO THE PROJECT SCOPE OF WORK FOR DETAILS OF RESPONSIBILITIES.
5. IF THE CONTROLLER IS REMOTE LOCATED, CONDUCTORS # 18 AWG AT 10' LONG ARE PROVIDED BY VORTEX. FOR QUANTITY SEE PIPING AND ELECTRICAL SCHEMATIC DETAIL. GROUNDING OF J-BOX DONE BY INSTALLER.
6. DIRECTION OF FLOW FOR PLUMBING SHALL BE LABELED USING DIRECTIONAL SYMBOLS.
7. VALVES AND PLUMBING LINES SHALL BE LABELED WITH DESCRIPTION OF SOURCE OR DESTINATION.
8. OPTIONAL EQUIPMENTS
9. INLETS CAN BE CONFIGURED TO:
- 1/2" INLET (WITH OR WITHOUT 2" BFP/PR)
- 2X2" INLET (WITH OR WITHOUT 2" BFP/PR)
10. OUTLETS CAN BE A COMBINATION UP TO 10 OF:
- 1" GATE VALVE
- 1" BRASS OR PVC SOLENOID VALVE WITH OR WITHOUT BALL VALVE
- 1" FAST ACTING SOLENOID VALVE
11. SEE PRODUCT INSTALLATION MANUAL FOR INSTALLATION TIPS

FRONT VIEW



RIGHT VIEW



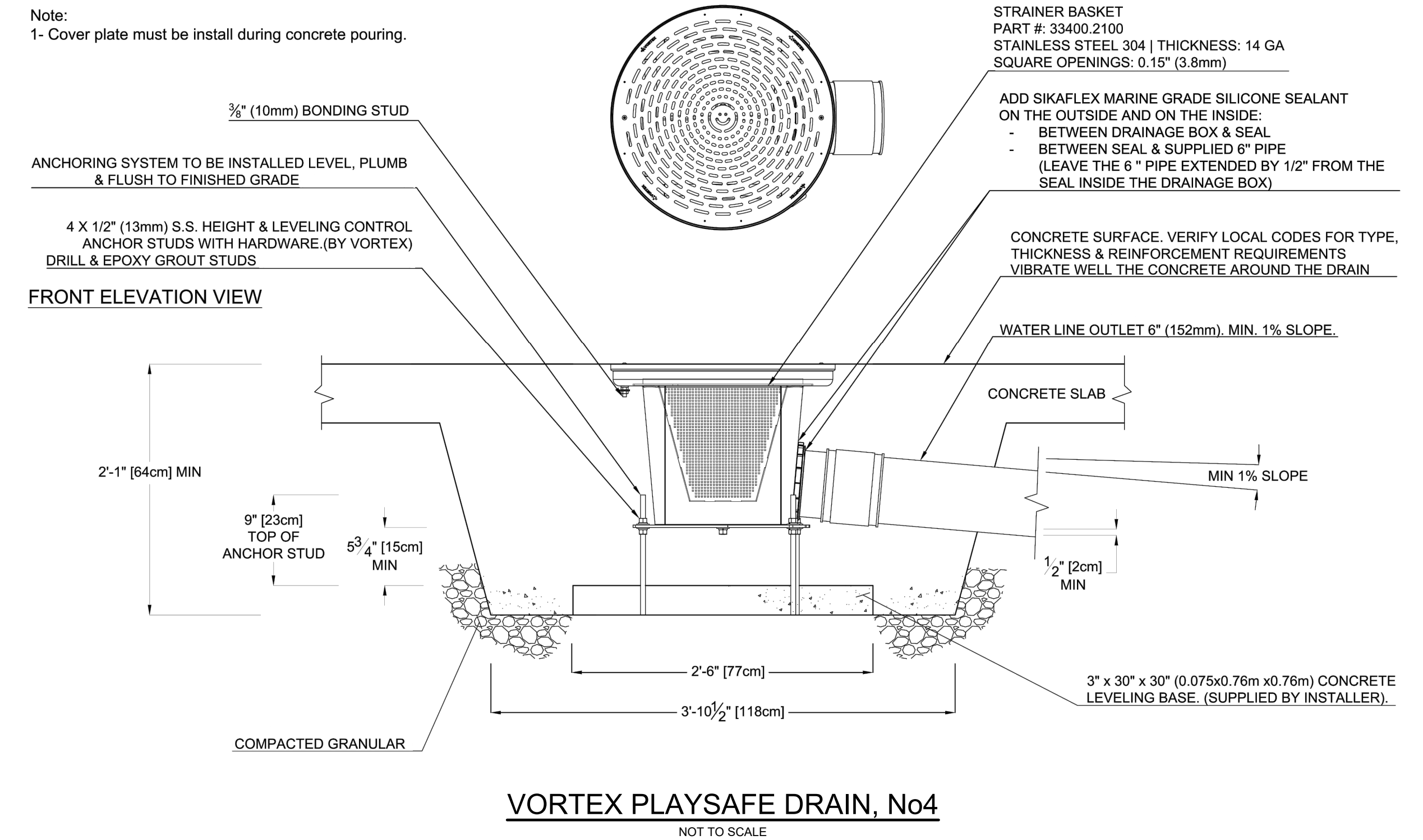
SMARTFLOW COMMAND CENTER CABINET
NOT TO SCALE

GENERAL NOTES:

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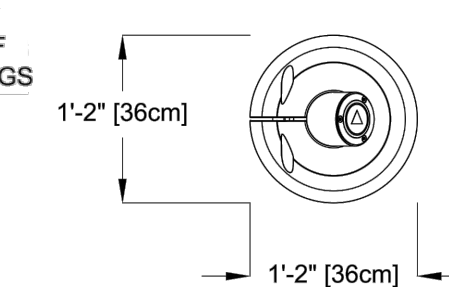
PLAN VIEW

Note:
1- Cover plate must be install during concrete pouring.

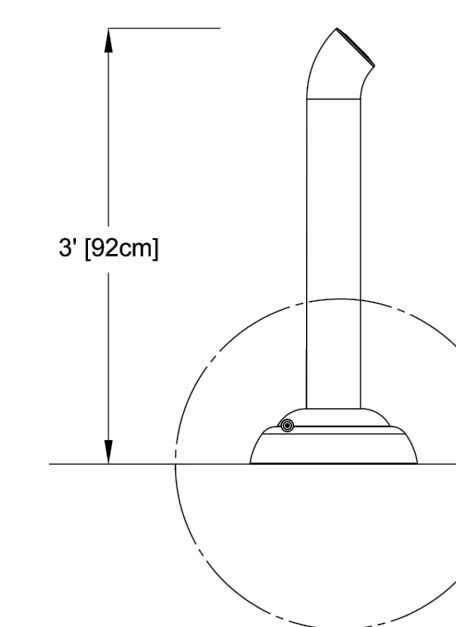


VORTEX PLAYSAFE DRAIN, No4
NOT TO SCALE

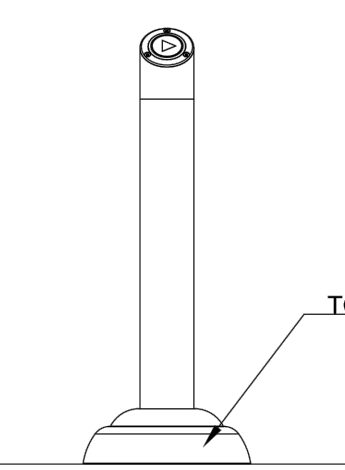
PLAN VIEW



FRONT ELEVATION VIEW



SIDE ELEVATION VIEW



VORTEX ACTIVATOR N°3 INSTALLATION
NOT TO SCALE

TYPICAL ANCHORING SAFESWAP N°1 FOR THIS APPLICATION, 2" NPT FEMALE COUPLING OF THE SAFESWAP N°1 WILL BE USED TO CONNECT THE ELECTRICAL CONDUIT, SUPPLIED BY INSTALLER, AND RUN THE ELECTRICAL CABLE.

ELECTRICAL SPECIFICATION
TYPICAL 40mA AT 24V, M12-5PIN CONNECTOR CABLE, 22AWG, MAXIMUM O.D. : 0.25" (SUPPLIED UP TO 75M WITH ACTIVATOR BY VORTEX)

REVISION: