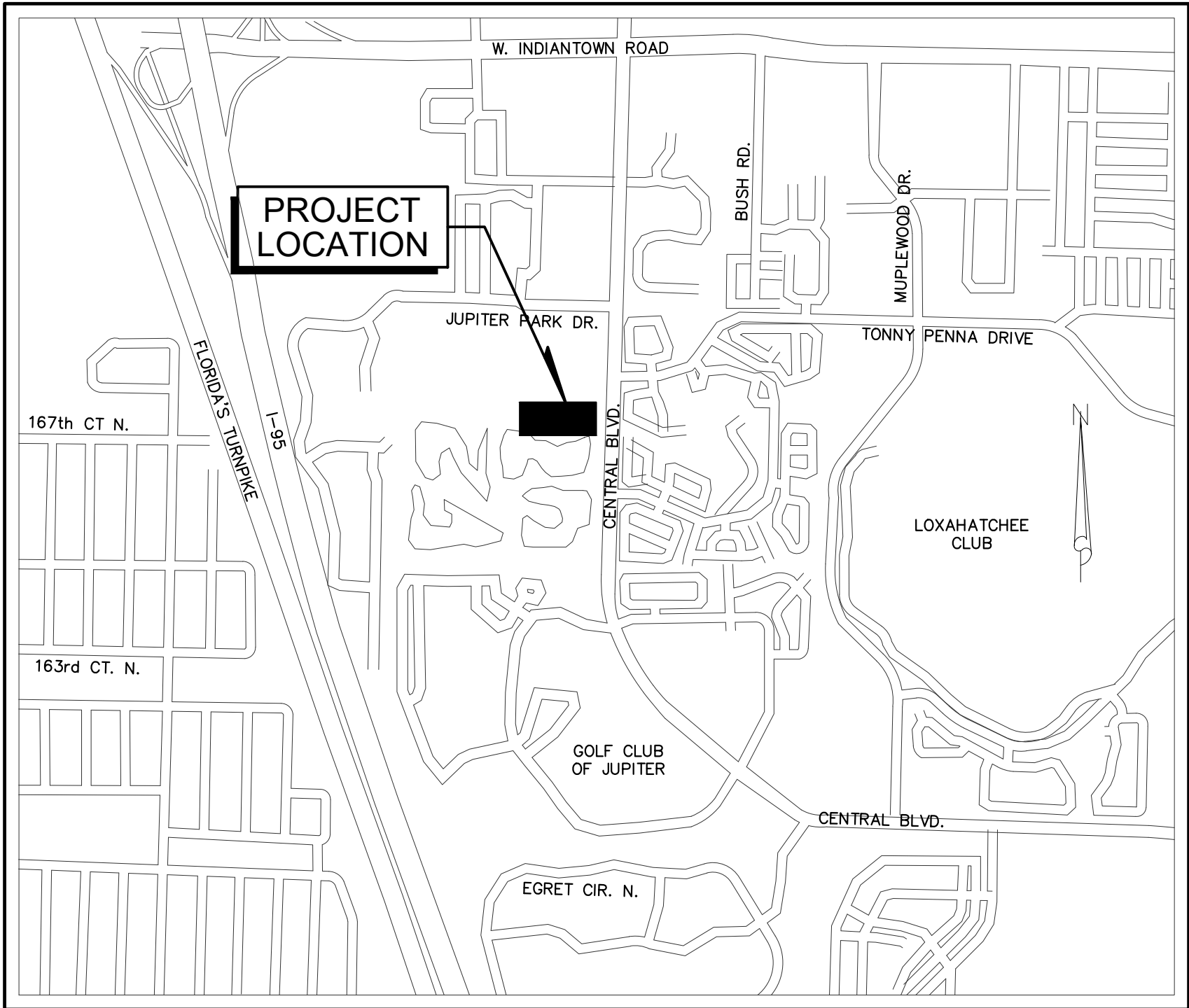
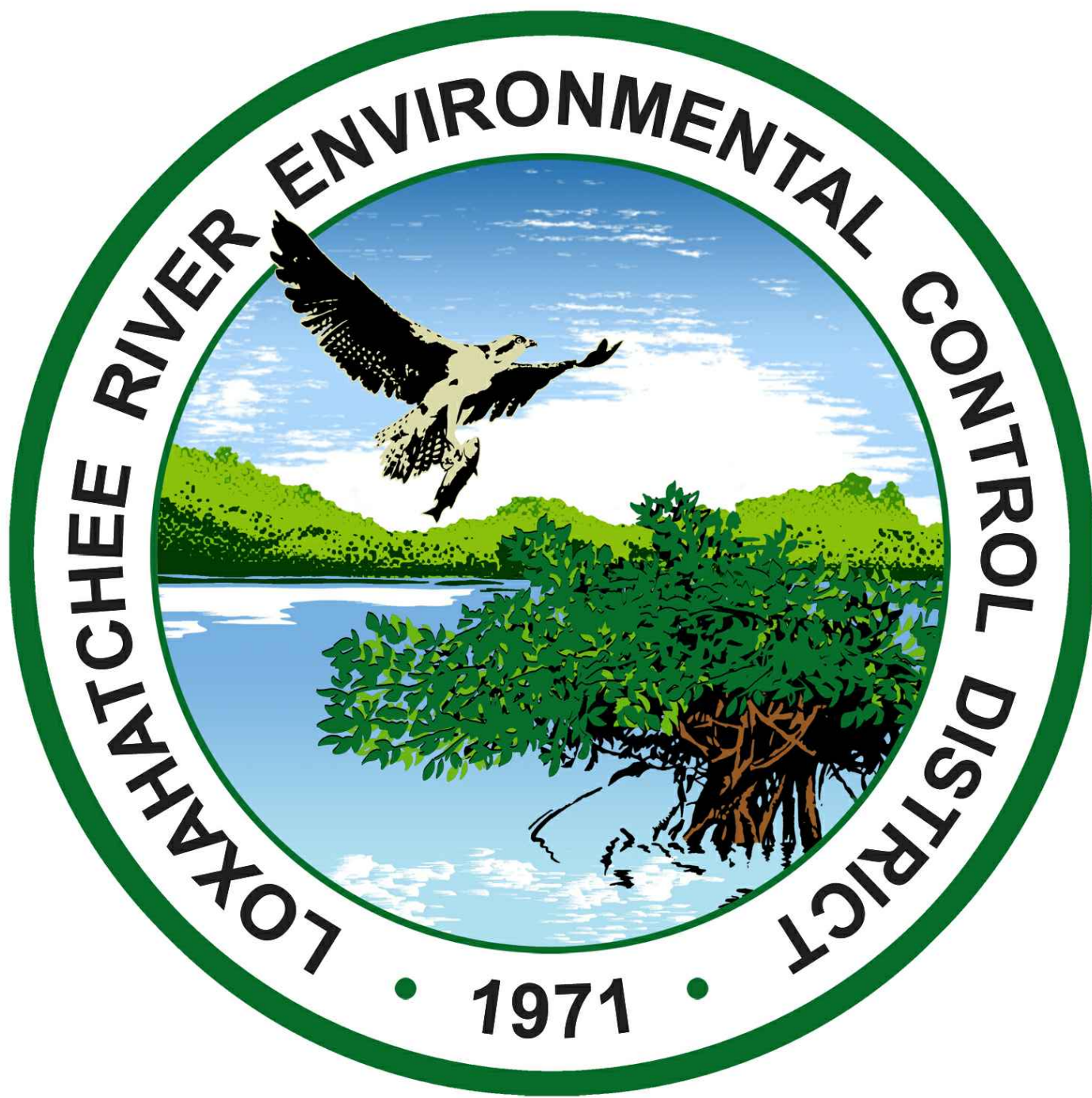


LOXAHATCHEE RIVER ENVIRONMENTAL CONTROL DISTRICT IQ-511 PUMP STATION PIPING IMPROVEMENTS



LOCATION MAP
NTS



GOVERNING BOARD

CHAIRMAN	STEPHEN B. ROCKOFF
VICE CHAIRMAN	GORDON M. BOGGIE
TREASURER	HARVEY M. SILVERMAN
SECRETARY	JAMES D. SNYDER
ASST. SEC'Y/TREASURER	DR. MATT H. ROSTOCK

**100% DESIGN
NOVEMBER 2020**

DRAWING LIST

SHEET	DRAWING	TITLE
GENERAL		
1	G-1	TITLE SHEET, LOCATION MAP AND DRAWING LIST
2	G-2	SURVEY LEGEND AND GENERAL NOTES
3	G-3	SYSTEM HYDRAULIC PROFILE
CIVIL		
4	C-1	SITE PLAN
5	C-2	BYPASS PIPE PLAN AND PROFILE
6	C-3	STANDARD DETAILS - SHEET 1
7	C-4	STANDARD DETAILS - SHEET 2
MECHANICAL		
8	M-1	DIVERSION STRUCTURE 'B' MODIFICATIONS
9	M-2	IQ-511 PUMP STATION MODIFICATIONS
STRUCTURAL		
10	S-1	STRUCTURAL PLAN AND SECTION
11	S-2	STRUCTURAL DETAILS AND NOTES
ELECTRICAL		
12	E-1	ELECTRICAL LEGEND AND NOTES
13	E-2	ELECTRICAL SITE PLAN
14	E-3	ELECTRICAL DEMOLITION
15	E-4	PROPOSED ELECTRICAL PLAN, ONE LINE AND RISER
16	E-5	NEW BREAKER PANEL LAYOUT
17	E-6	ELECTRICAL DETAILS
18	I-1	INSTRUMENTATION LEGEND AND SYMBOLS
19	I-2	P&ID
20	I-3	EXISTING RIO PANEL AND DETAILS

FOR INFORMATION REGARDING THIS PROJECT, CONTACT:

JEFFREY G. HISCOCK, P.E.

BAXTER & WOODMAN, INC.
477 S. ROSEMARY AVENUE, SUITE 330
WEST PALM BEACH, FL 33401
561-655-6175

BAXTER & WOODMAN
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JEFFREY G. HISCOCK, P.E.
No. 43984 (CIVIL, MECHANICAL)

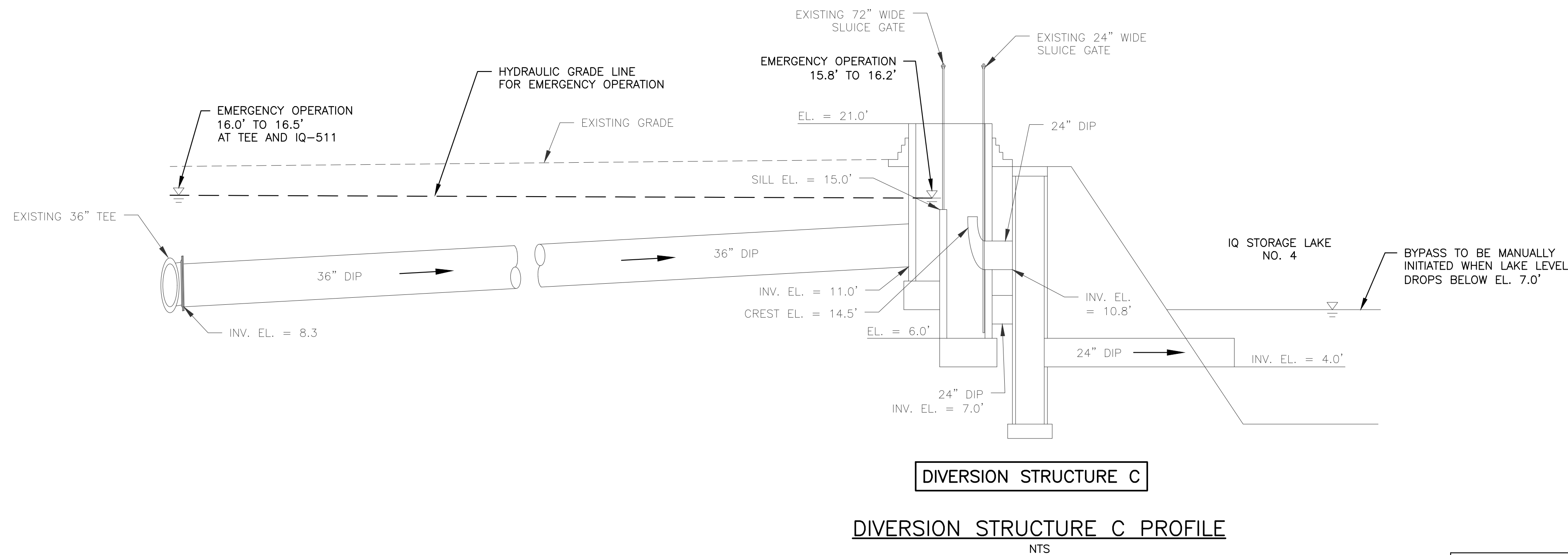
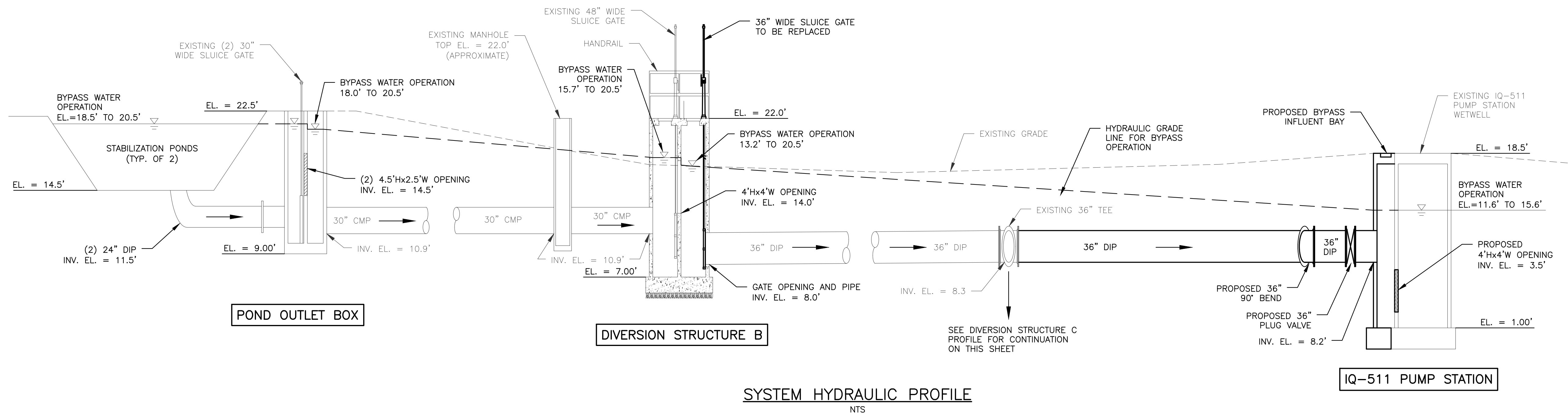
CHARLES BRUNNER, P.E.
No. 81536 (STRUCTURAL)

TITLE SHEET, LOCATION MAP
AND DRAWING LIST

SHEET: 1 of 20

DRAWING: G-1

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- NOTES:
1. BYPASS WATER OPERATIONAL STAGES ARE BASED ON TYPICAL DAILY OPERATION OF THE PUMPS AT THE IQ-511 PUMP STATION WHICH RANGE IN FLOW RATES FROM 0 TO 12,000 GPM.
 2. EMERGENCY OPERATION STAGES ARE BASED ON BYPASS OPERATION STAGES AT STABILIZATION PONDS, GATE MALFUNCTION AT DIVERSION STRUCTURE B, NO PUMPING AT IQ-511 PUMP STATION AND 72" GATE MANUALLY OPENED AT DIVERSION STRUCTURE C.

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				DRAWN: D.D.P.
				CHECKED: S.J.P.
				APPROVED: M.R.T.

JEFFREY G. HISCOCK, P.E.
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VERIFY SCALE
1"
BAR IS ONE INCH ON FULL SIZE (22x34) ORIGINAL DRAWING. ADJUST SCALES AS NECESSARY.

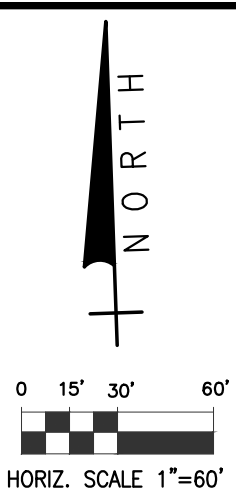
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CLIENT PROJECT NO.:
CAD REF.:200453G03.DWG

LOXAHATCHEE RIVER
ENVIRONMENTAL CONTROL DISTRICT
IQ-511 BYPASS PIPING
SYSTEM HYDRAULIC PROFILE

DATE: NOVEMBER 2020
SHEET: 3 of 20
DRAWING: G-3

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Date/Time : Thu, 05 Nov 2020 -- 10:22am
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Current Plotstyle : ByColor
Layout Tab: C-1



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DRAWN:	D.D.P.
CHECKED:	M.R.T./A.C.
APPROVED:	M.R.T.

JEFFREY G. HISCOCK, P.E.
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CLIENT PROJECT NO.:
CAD REF.: 200453C01.DWG

LOXAHATCHEE RIVER
ENVIRONMENTAL CONTROL DISTRICT
IQ-511 BYPASS PIPING

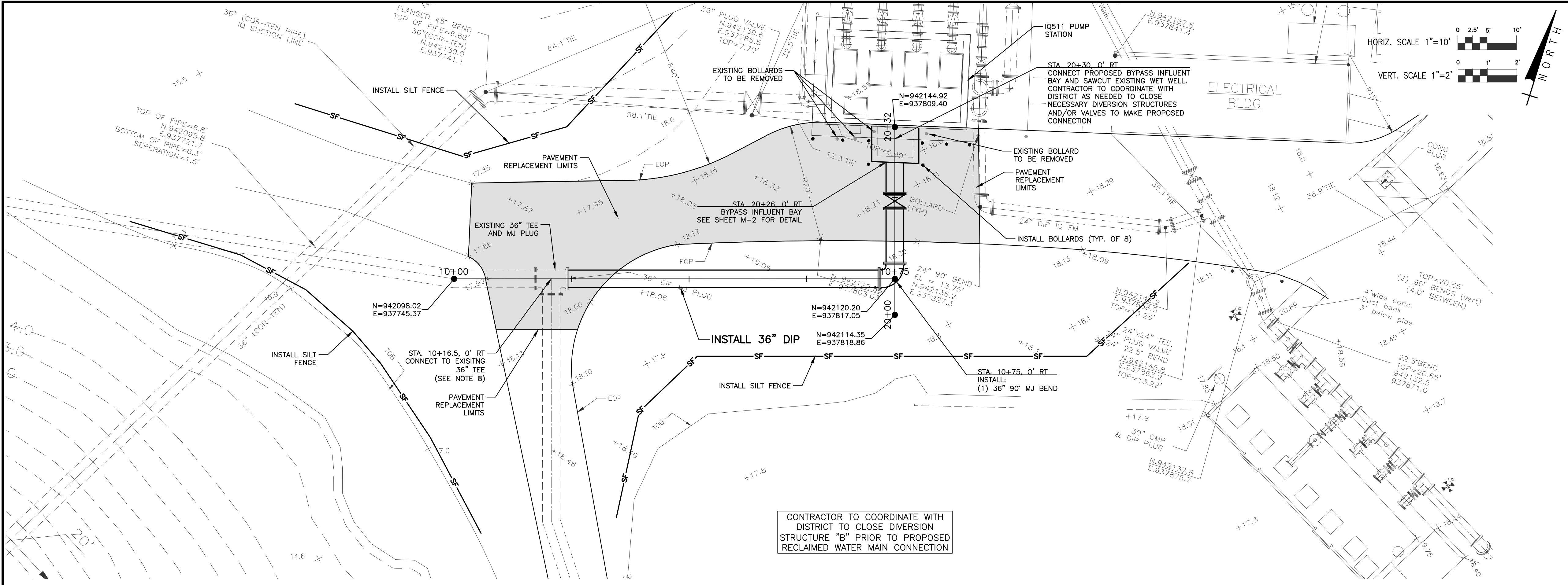
SITE PLAN

DATE: NOVEMBER 2020
SHEET: 4 of 20
DRAWING: C-1

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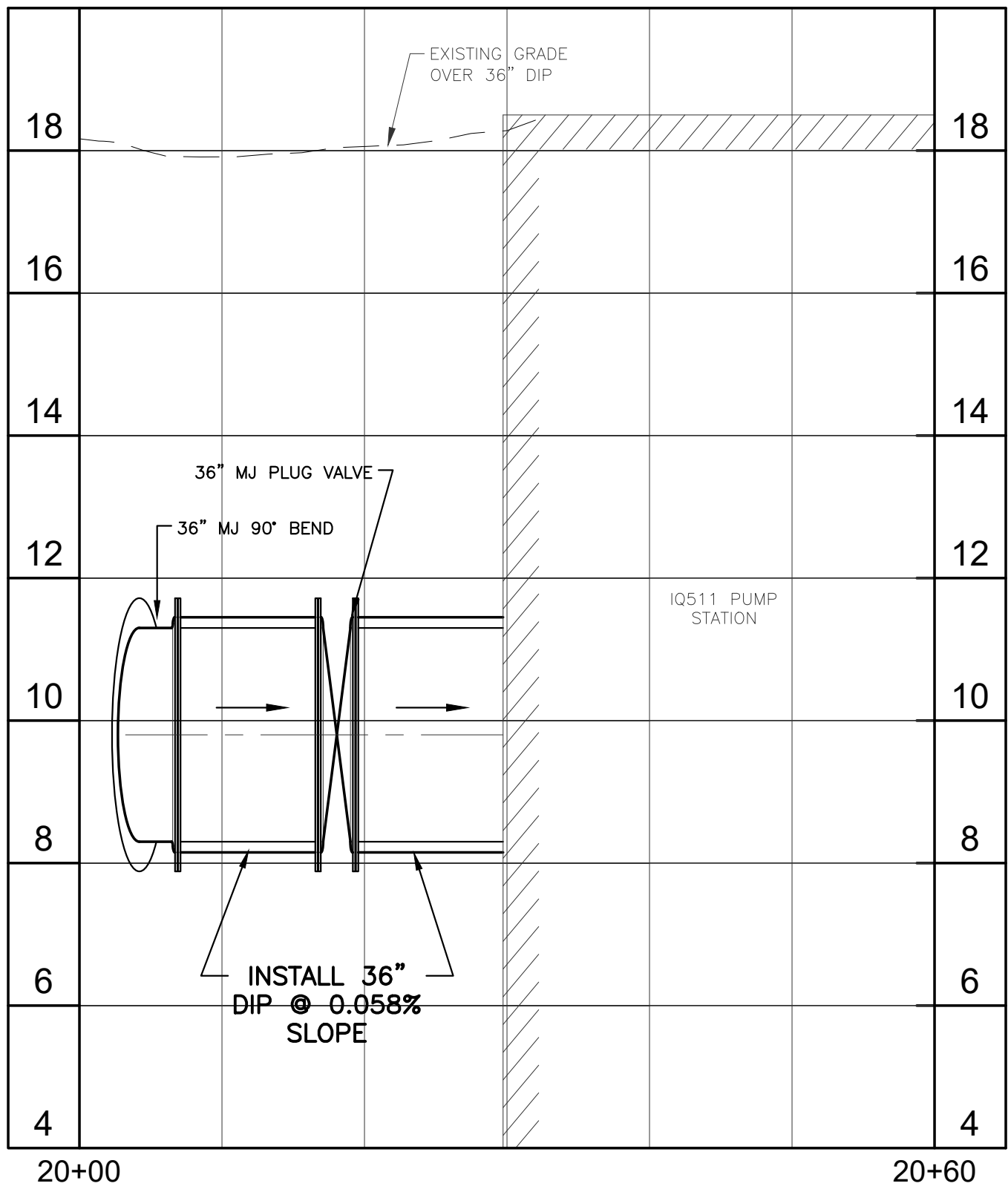
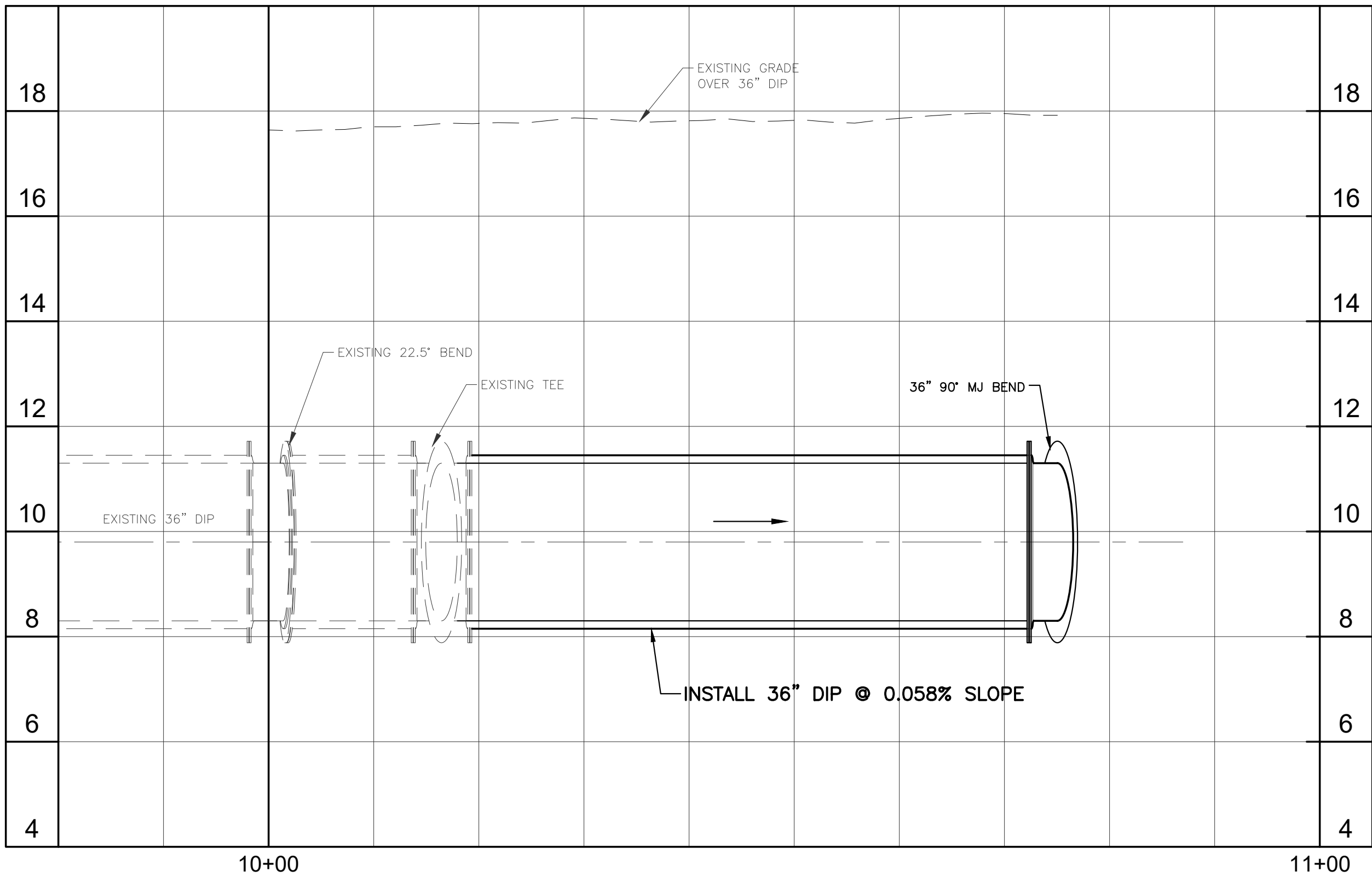
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- NOTES:
1. CONTRACTOR SHALL FIELD VERIFY LOCATION OF ALL UTILITY CROSSINGS, INCLUDING PARALLELING OF UTILITIES, PRIOR TO CONSTRUCTION OF PROPOSED RECLAIMED WATER MAIN.
 2. IRRIGATION SYSTEMS NOT SHOWN, BUT DO EXIST THROUGHOUT PROJECT AREA. CONTRACTOR SHALL REPLACE ALL DAMAGED IRRIGATION PIPING, HEADS AND CONTROL LINES IN KIND, SO THAT SYSTEM PROVIDES ORIGINAL COVERAGE. ZONES TO BE CAPPED OFF AT CONSTRUCTION LINE. BALANCE OF IRRIGATION ZONES TO REMAIN ACTIVE AND MAINTAINED.
 3. ALL RECLAIMED WATER MAIN FITTINGS SHALL HAVE RESTRAINED JOINTS. SEE STANDARD DETAIL DRAWING C-3 FOR MECHANICAL THRUST RESTRAINT - MINIMUM PIPE LENGTHS DETAIL.
 4. CONTRACTOR SHALL REFER TO DETAILS ON DRAWINGS C-3 FOR STANDARD DETAIL CONSTRUCTION INFORMATION.
 5. ALL AREAS DISTURBED BY CONSTRUCTION ACTIVITIES SHALL BE RESTORED IN KIND.
 6. IN AREAS OF UNDERGROUND UTILITIES CONTRACTOR SHALL HAND-DIG AS NECESSARY TO AVOID DAMAGING EXISTING UTILITIES. CONTRACTOR IS RESPONSIBLE FOR REPLACING ANY DAMAGED UTILITIES AS A RESULT OF CONSTRUCTION ACTIVITIES. CONTRACTOR SHALL TEMPORARILY SUPPORT ALL UNDERGROUND UTILITIES AS REQUIRED TO COMPLETE THE WORK AS SHOWN.
 7. POTABLE WATER SERVICE LINES NOT SHOWN, BUT DO EXIST THROUGHOUT PROJECT AREA. IF SHOWN, THEY ARE APPROXIMATE LOCATIONS ONLY. CONTRACTOR SHALL LOCATE ALL WATER SERVICE LINES PRIOR TO DIGGING. CONTRACTOR SHALL REPAIR ANY WATER SERVICE LINES DAMAGED DURING CONSTRUCTION IMMEDIATELY (**THIS IS A NON-PAY ITEM**).
 8. CONTRACTOR SHALL MAKE CONNECTION TO EXISTING 36" TEE PRIOR TO CONNECTING PIPE TO BYPASS INFLUENT BAY.

LEGEND

PROPOSED 1" ASPHALT MILLING & PAVEMENT RESTORATION (1" FC 9.5)



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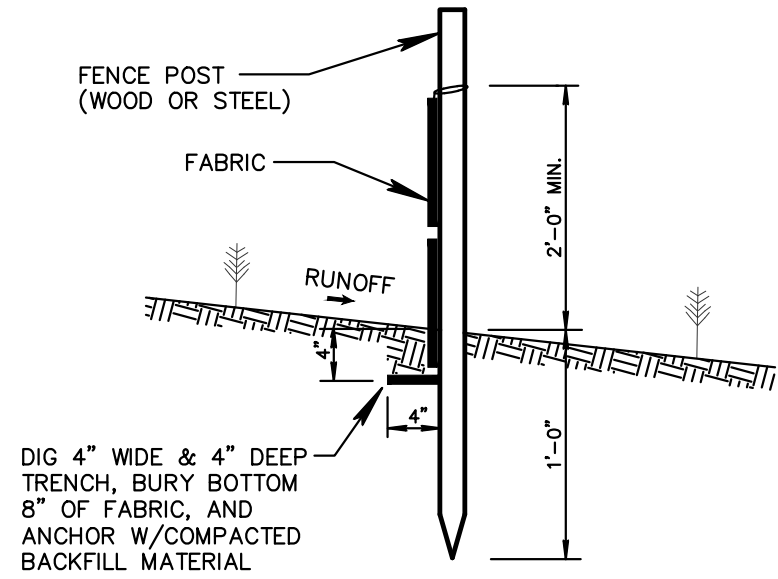
ENGINEER NO.: 200453
CLIENT PROJECT NO.:
CAD REF.: 200453002.DWG

LOXAHATCHEE RIVER
ENVIRONMENTAL CONTROL DISTRICT
IQ-511 BYPASS PIPING
BYPASS PIPE PLAN AND PROFILE

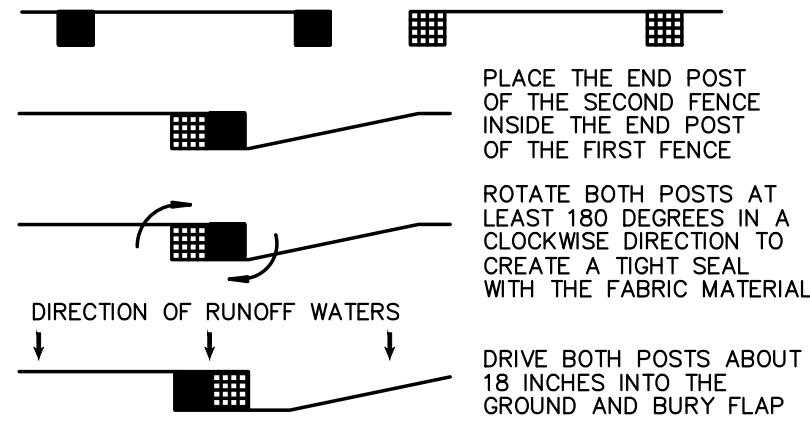
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DRAWING: C-2

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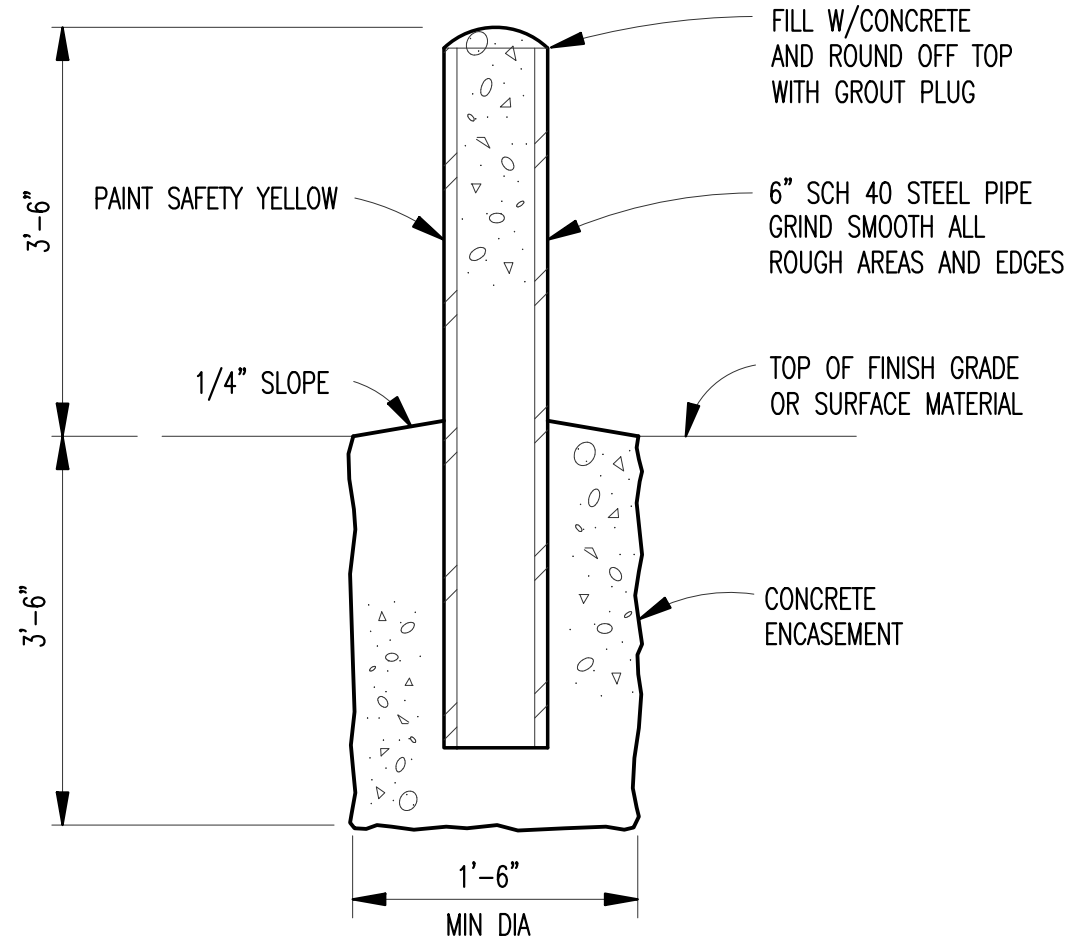
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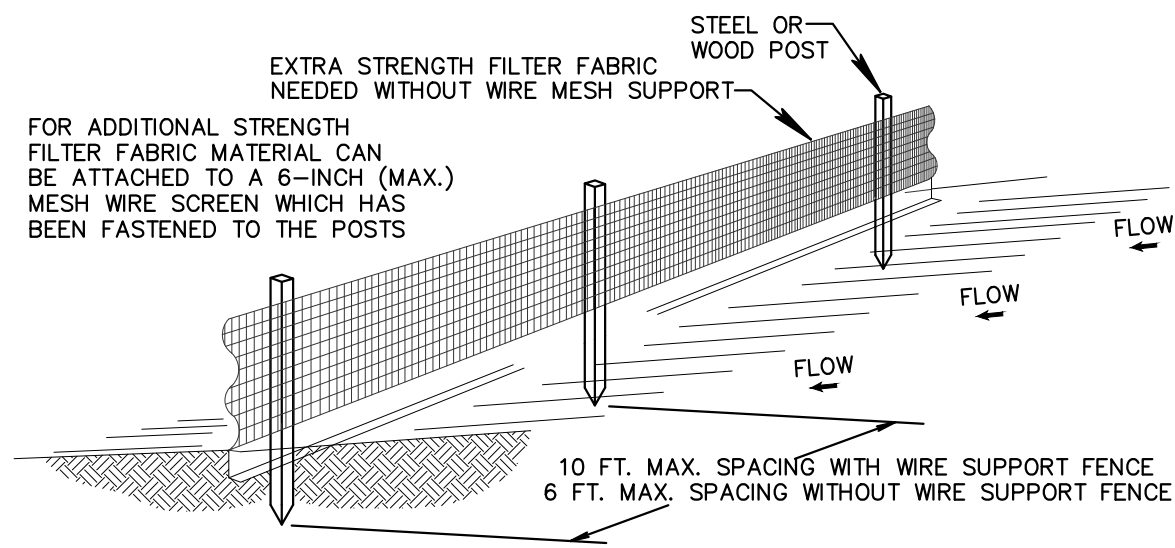
SILT FENCE SECTION
NOT TO SCALE



ATTACHING TWO SILT FENCES
NOT TO SCALE



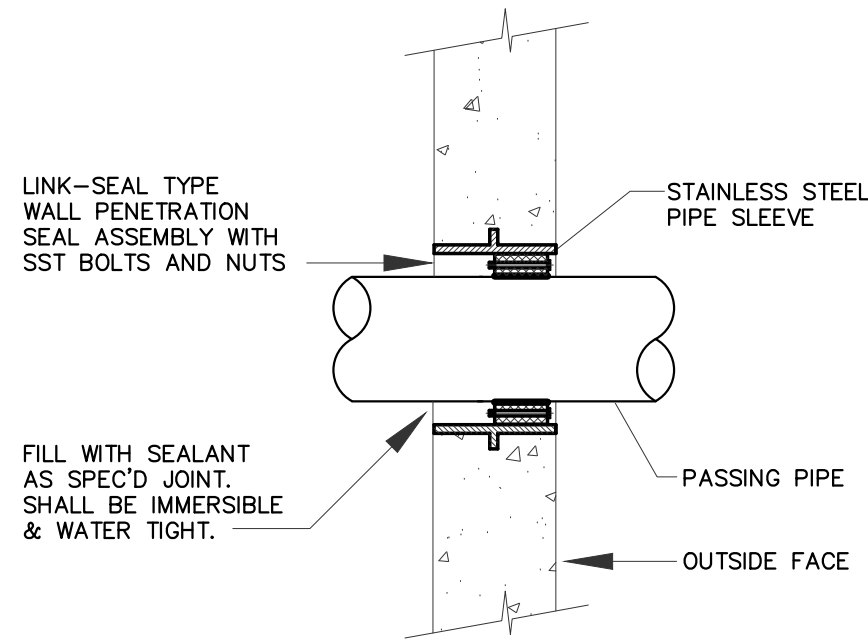
PIPE BOLLARD
NTS



NOTES:

1. THE HEIGHT OF A SILT FENCE SHALL NOT EXCEED 36 INCHES (90 CM).
2. THE FILTER FABRIC SHALL BE PURCHASED IN A CONTINUOUS ROLL CUT TO THE LENGTH OF THE BARRIER TO AVOID THE USE OF JOINTS.
3. POSTS SHALL BE SPACED A MAXIMUM OF 10 FEET (3 M) APART AT THE BARRIER LOCATION AND DRIVEN SECURELY INTO THE GROUND A MINIMUM OF 12 INCHES (30 CM). WHEN EXTRA STRENGTH FABRIC IS USED WITHOUT THE WIRE SUPPORT FENCE, POST SPACING SHALL NOT EXCEED 6 FEET (1.8 M).
4. A TRENCH SHALL BE EXCAVATED APPROXIMATELY 4 INCHES (10 CM) WIDE AND 4 INCHES (10 CM) DEEP ALONG THE LINE OF POSTS AND UPSLOPE FROM THE BARRIER.
5. WHEN STANDARD STRENGTH FILTER FABRIC IS USED, A WIRE MESH SUPPORT FENCE SHALL BE FASTENED SECURELY TO THE UPSLOPE SIDE OF THE POSTS USING HEAVY DUTY WIRE STAPLES AT LEAST 1 INCH (25 MM) LONG, TIE WIRES, OR HOG RINGS. THE WIRE SHALL EXTEND INTO THE TRENCH A MINIMUM OF 2 INCHES (5 CM) AND SHALL NOT EXTEND MORE THAN 36 INCHES (90 CM) ABOVE THE ORIGINAL GROUND SURFACE.
6. THE STANDARD STRENGTH FILTER FABRIC SHALL BE STAPLED OR WIRED TO THE FENCE, AND 8 INCHES (20 CM) OF THE FABRIC SHALL BE EXTENDED INTO THE TRENCH. THE FABRIC SHALL NOT EXTEND MORE THAN 36 INCHES (90 CM) ABOVE THE ORIGINAL GROUND SURFACE.
7. THE TRENCH SHALL BE BACKFILLED AND THE SOIL COMPACTED OVER THE FILTER FABRIC.
8. ALL PROJECTS REQUIRE SUBMITTAL OF POLLUTION PREVENTION PLAN (PPP).
9. ALL PROJECTS 1 AC. OR MORE MUST SUBMIT NOTICE OF INTENT (NOI) TO FDEP.

SILT FENCE INSTALLATION DETAIL
N.T.S.



PIPE SIZE (Nom.)	ACTUAL O.D. (Inches)	MODEL NUMBER	LINK-SEAL* SIZE	LINK'S PER SEAL
2	2.500	WS-3-1/2-22-S-*	LS-200-***	8
2-1/4	2.750	WS-4-23-S-*	LS-200-***	9
3	3.960	WS-6-28-S-*	LS-340-***	9
4	4.800	WS-8-32-S-*	LS-410-***	7
6	6.900	WS-10-36-S-*	LS-410-***	10
8	9.050	WS-12-37-S-*	LS-400-***	9
10	11.100	WS-14-37-S-*	LS-340-***	24
12	13.200	WS-18-37-S-*	LS-475-***	18
14	15.300	WS-20-37-S-*	LS-575-***	17
16	17.400	WS-22-37-S-*	LS-475-***	23
18	19.500	WS-24-37-S-*	LS-575-***	21
20	21.600	WS-26-37-S-*	LS-475-***	27
24	25.800	WS-30-37-S-*	LS-400-***	23
30	32.000	WS-36-37-S-*	LS-400-***	29
36	38.300	WS-44-1/2-37-S-*	LS-500-***	33
42	44.500	WS-50-37-S-*	LS-500-***	38
48	50.800	WS-57-37-S-*	LS-500-***	43

* = Specify sleeve length in inches.
*** = Specify LS Model C, S-316, L... etc when ordering.
(Example LS-475-C-17)

WALL PENETRATION SEAL DETAIL
N.T.S

NO.	DATE	ISSUED FOR	APRV'D BY

DESIGNED: J.G.H.
DRAWN: D.D.P.
CHECKED: S.J.P.
APPROVED: M.R.T.

JEFFREY G. HISCOCK, P.E.
No.43984

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ENGINEER NO.: 200453
CLIENT
PROJECT NO.:
CAD REF.:200453C03.DWG

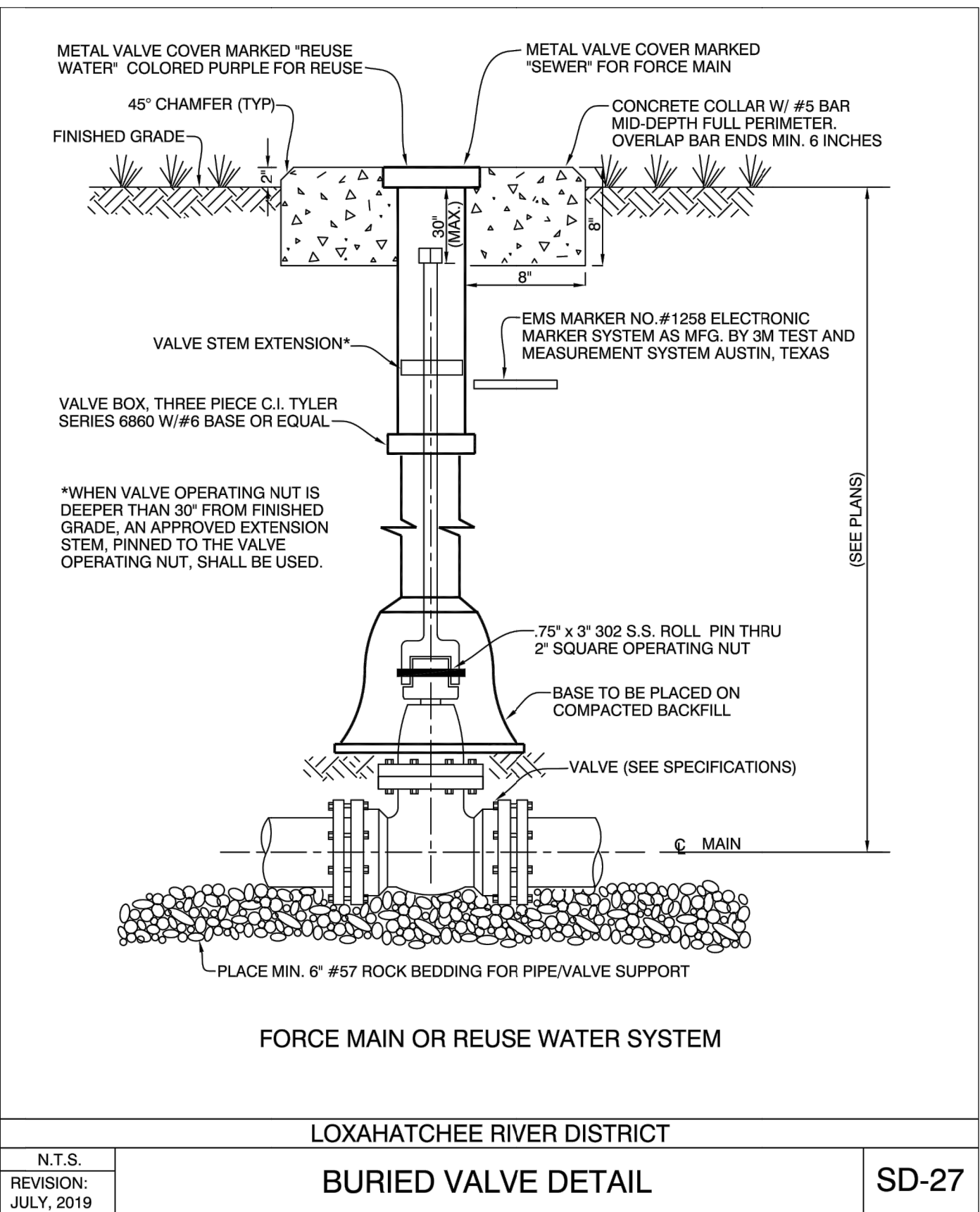
LOXAHATCHEE RIVER
ENVIRONMENTAL CONTROL DISTRICT
IQ-511 BYPASS PIPING

STANDARD DETAILS - SHEET 1

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DATE: NOVEMBER 2020
SHEET: 6 of 20
DRAWING: C-3

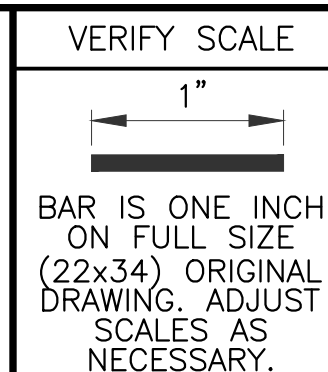
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<u>REQUIRED INFORMATION ON RECORD DRAWINGS</u>	
<u>GENERAL</u>	<ol style="list-style-type: none"> 1. DRAWINGS ON 24" X 36" BOND PAPER THAT WILL REPRODUCE LEGIBLY. 2. LABEL DRAWINGS "RECORD DRAWINGS" WITH DATE, COMPLETE TITLE BLOCK WITH CURRENT FILE NAME. 3. DRAWINGS SHALL BE SIGNED / SEALED BY A FLORIDA LICENSED PROFESSIONAL LAND SURVEYOR. 4. CORRECT STREET/ROAD NAMES AND LOT AND BLOCK NUMBERS. 5. SHOW AS-BUILT CONSTRUCTED SEWER FACILITIES HEAVIED UP, BOLD OR BOXED OUT TO STAND OUT FROM REST OF EACH DRAWING. 6. ALL ITEMS LISTED BELOW MUST BE CORRECTLY GEOREFERENCED WITH NORTHINGS/EASTINGS CLEARLY SHOW. THE AS BUILT SHALL BE GEOREFERENCED TO THE STATE PLANE COORDINATES IN NAD 83, FLORIDA EAST ZONE, WHILE THE VERTICAL DATUM SHALL BE NGVD 29.
<u>GRAVITY SEWER</u>	<ol style="list-style-type: none"> 1. AS-BUILT DISTANCE OF GRAVITY MAIN FROM CENTER LINE OF ROAD OR EASEMENT RIGHT- OF-WAY LINE, BUILDINGS, OR AS DETERMINED BY THE LOXAHATCHEE RIVER DISTRICT. EXTENSIONS OF AN IMAGINARY LINE WILL NOT BE ACCEPTABLE AS REFERENCED POINTS. 2. TYPE OF MATERIALS INSTALLED - MAINS AND SERVICES. 3. SHOW EACH SEWER SERVICE LINE AND LOCATIONS OF THE CONNECTION TO THE MAIN AND PROVIDE THE NORTHING & EASTING POINTS FOR EACH CLEANOUT & INDICATE CLEANOUT DIAMETER. 4. AS-BUILT LOCATIONS OF MANHOLES WITH A NORTHING & EASTING PROVIDED. 5. AS-BUILT ELEVATIONS, RIM ELEVATION, EACH INVERT AND PIPE SLOPE. 6. UPDATE LIFT STATION DETAILS/ELEVATIONS/ INCLUDING START UP DATA. 7. LIFT STATION AND UTILITY EASEMENTS, INCLUDING LOCATION OF F.P.&L. SERVICE TO CONTROL PANEL.
<u>PRESSURE PIPE</u>	<ol style="list-style-type: none"> 1. AS-BUILT DISTANCE OF MAINS AT 100' INTERVALS FROM CENTER LINE OF ROAD, EASEMENT, RIGHT-OF-WAY LINE, BUILDING, OR SEWER MARKS OR AS DETERMINED BY THE LOXAHATCHEE RIVER DISTRICT. EXTENSIONS OF AN IMAGINARY LINE WILL NOT BE ACCEPTABLE AS REFERENCED POINTS. 2. SHOW ELEVATIONS, NORTHING/EASTING OF EACH VALVE, FITTING, AIR RELEASE VALVE, SERVICE LINE, TAP, ETC., AND RADIAL DIMENSIONS (TIES) FROM A NEARBY PERMANENT OBJECT WHERE POSSIBLE. (SEE NOTE NO. 6 IN GENERAL). 3. TYPE OF MATERIALS INSTALLED - PIPE AND PURTRENANCES. INDICATE ALL LOCATIONS OF CHANGE OF MATERIAL INCLUDING JOINT TYPE (W.J. SUP. RESTRAINED). 4. VALVE TYPE (BUTTERFLY, GATE, PLUG) INCLUDING THE NORTHING & EASTING POINT. 5. AS-BUILT LENGTH OF ALL JACK AND BORE CASINGS INDICATING DISTANCE FROM CENTER LINE OF PAVING TO EACH END OF CASING. THE AS-BUILT INVERT ELEVATION OF EACH END OF CASING. (INCLUDING NORTHING/EASTING) AND AS-BUILT DISTANCE FROM END OF CASING TO LIMITS OF MECHANICAL JOINT PIPE IS ALSO REQUIRED. 6. AS-BUILT ELEVATIONS AT 100' INTERVALS AS WELL AS ANY MAJOR CHANGES IN DIRECTION AND/OR ELEVATION. ELEVATIONS SHOWN AT THESE INTERVALS AND CHANGES MUST SHOW TOP OF PIPE ELEVATION, NORTHING/EASTING AND FINISHED GRADE ELEVATION AT THAT LOCATION. SHOW LOCATION OF EMS MARKERS. 7. UTILITY EASEMENTS SHALL BE CORRECTLY SHOWN AND DIMENSIONED WITH REFERENCED SEWER FACILITY.
LOXAHATCHEE RIVER DISTRICT	
N.T.S.	
REVISION: _____	RECORD DRAWING SUBMITTAL GUIDE
APRIL, 2012	SD-29



NO.	DATE	ISSUED FOR	APRVD BY	DESIGNED: J.G.H.	JEFFREY G. HISCOCK, P.E. No.43984
				DRAWN: D.D.P.	
				CHECKED: S.J.P.	
				APPROVED: M.R.T.	



ENGINEER NO.: 200453

CLIENT

PROJECT NO.: _____

CAD REF.:200453C03.DWG

LOXAHATCHEE RIVER
ENVIRONMENTAL CONTROL DISTRICT
IQ-511 BYPASS PIPING

STANDARD DETAILS - SHEET 2

DATE: NOVEMBER 2020

SHEET: 7 of 20

DRAWING: C-4

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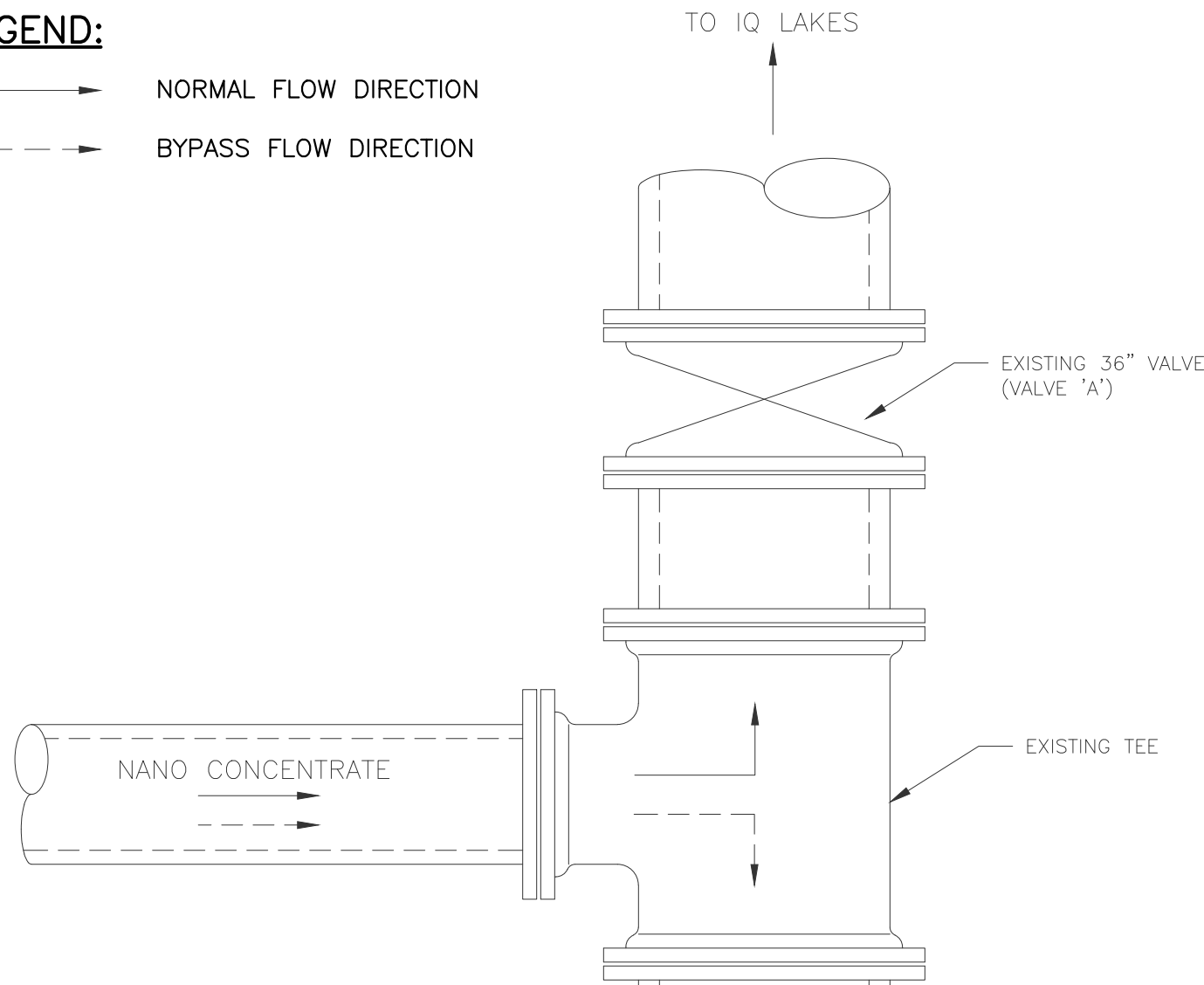
NORMAL OPERATION
GATE 'A' CLOSED
GATE 'B' OPEN
VALVE 'A' OPEN
VALVE 'B' OPEN (SEE SHEET M-2 FOR LOCATION)
30" SLUICE GATES AT POND OUTLET BOX OPEN
72" SLUICE GATE AT DIVERSION STRUCTURES 'C' CLOSED

BYPASS OPERATION
GATE 'A' OPEN (SEE NOTE 1)
GATE 'B' OPEN
VALVE 'A' CLOSED (SEE NOTE 2)
VALVE 'B' CLOSED (SEE SHEET M-2 FOR LOCATION)
30" SLUICE GATES AT POND OUTLET BOX OPEN
72" SLUICE GATE AT DIVERSION STRUCTURES 'C' OPEN AS NECESSARY IN CASE OF EMERGENCY

- NOTES:**
- GATE 'A' SHALL BE AUTOMATED TO MAINTAIN WATER LEVELS IN THE IQ-511 PUMP STATION WET WELL BETWEEN ELEVATION 12.0' AND 16.0'.
 - VALVE 'A', VALVE 'B', GATE 'B' AND SLUICE GATES IN OUTLET BOX AND DIVERSION STRUCTURE 'C' ARE EXISTING AND WILL BE OPERATED MANUALLY.
 - GATES IN POND OUTLET STRUCTURE SHALL BE LOWERED TO THE FULLY OPEN POSITION PRIOR TO ACTIVATING THE BY-PASS OPERATION.
 - CONTRACTOR SHALL REPAIR CONCRETE PER SPECIFICATIONS WHERE NEEDED AFTER REMOVAL EXISTING SLUICE GATE AND RELATED MOUNTING HARDWARE.

LEGEND:

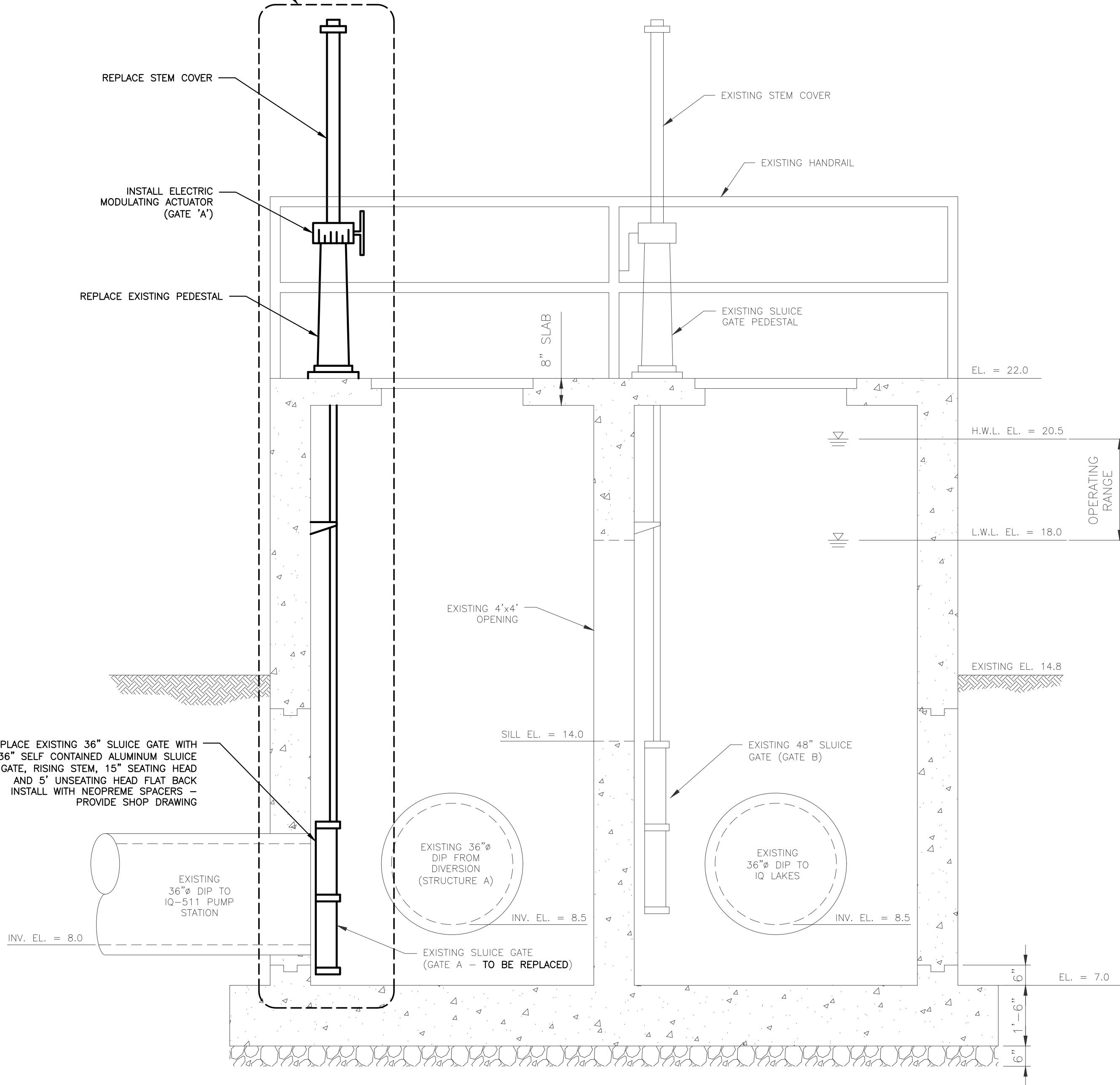
—→ NORMAL FLOW DIRECTION
- - -→ BYPASS FLOW DIRECTION



PLAN

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

PROPOSED MODIFICATONS



SECTION A-A

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

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DESIGNED: J.G.H.
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CHECKED: S.J.P.
APPROVED: M.R.T.

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VERIFY SCALE

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ENGINEER NO.: 200453

CLIENT PROJECT NO.:

CAD REF.:200453M01.DWG

LOXAHATCHEE RIVER
ENVIRONMENTAL CONTROL DISTRICT
IQ-511 BYPASS PIPING

DIVERSION STRUCTURE 'B' MODIFICATONS

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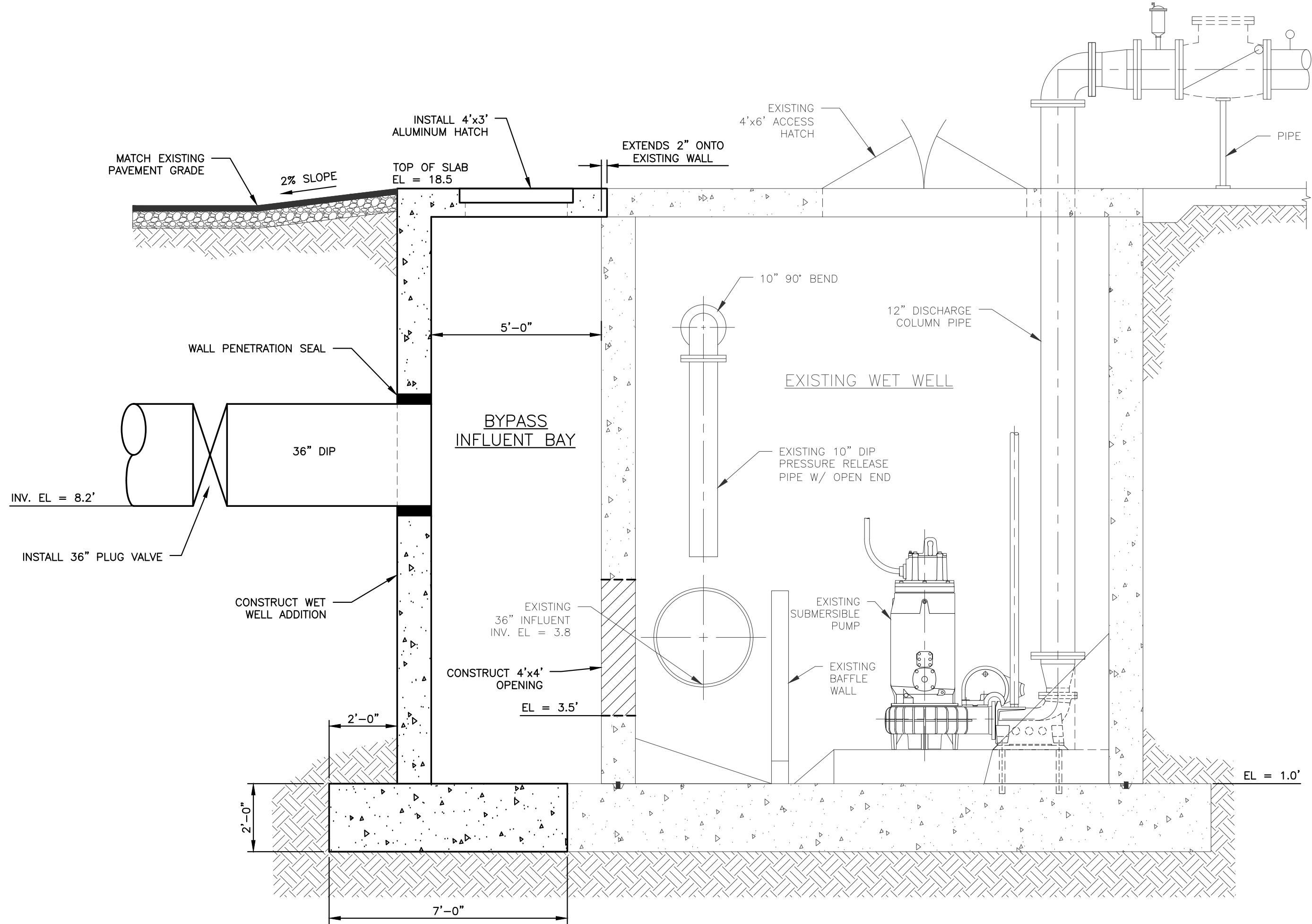
DATE: NOVEMBER 2020

SHEET: 8 of 20

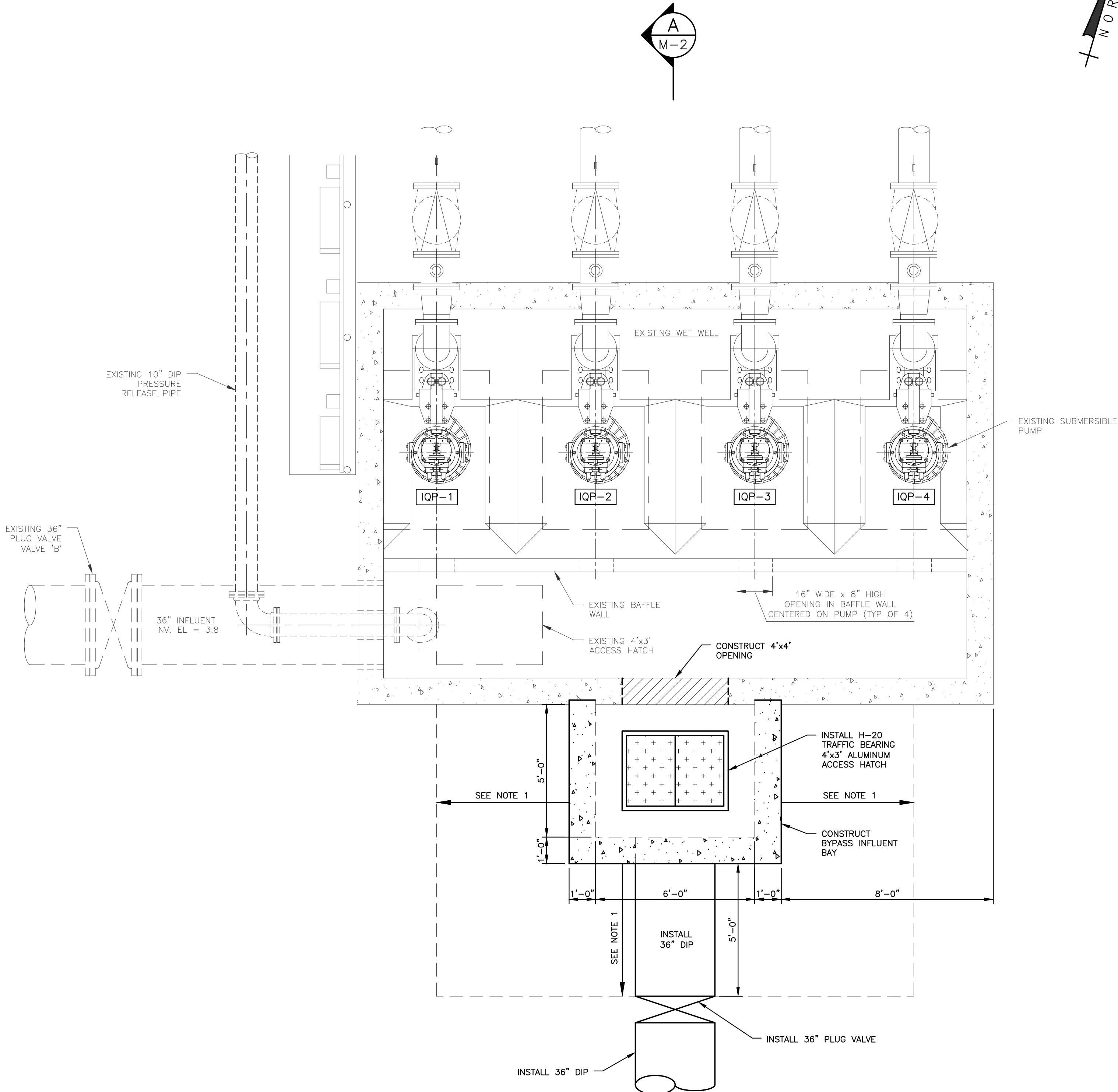
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SECTION A-A
SCALE: 3/8" = 1'-0"



PLAN
SCALE: 3/8" = 1'-0"

NOTES:

1. TRANSITION PAVEMENT TO EXISTING GRADE WITH MAX 2% SLOPE.
2. END OF 36" DIP SHALL BE FLUSH WITH INTERIOR WALL OF BYPASS INFLUENT BAY.

NO.	DATE	ISSUED FOR	APR'V'D BY

DESIGNED: J.G.H.
DRAWN: D.D.P.
CHECKED: S.J.P.
APPROVED: M.R.T.

JEFFREY G. HISCOCK, P.E.
No.43984

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477 S. Rosemary Avenue, Suite 330, West Palm Beach, Florida 33401
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VERIFY SCALE
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BAR IS ONE INCH ON FULL SIZE (22x34) ORIGINAL DRAWING. ADJUST SCALES AS NECESSARY.

ENGINEER NO.: 200453
CLIENT PROJECT NO.:
CAD REF.:200453M02.dwg

LOXAHATCHEE RIVER
ENVIRONMENTAL CONTROL DISTRICT
IQ-511 BYPASS PIPING

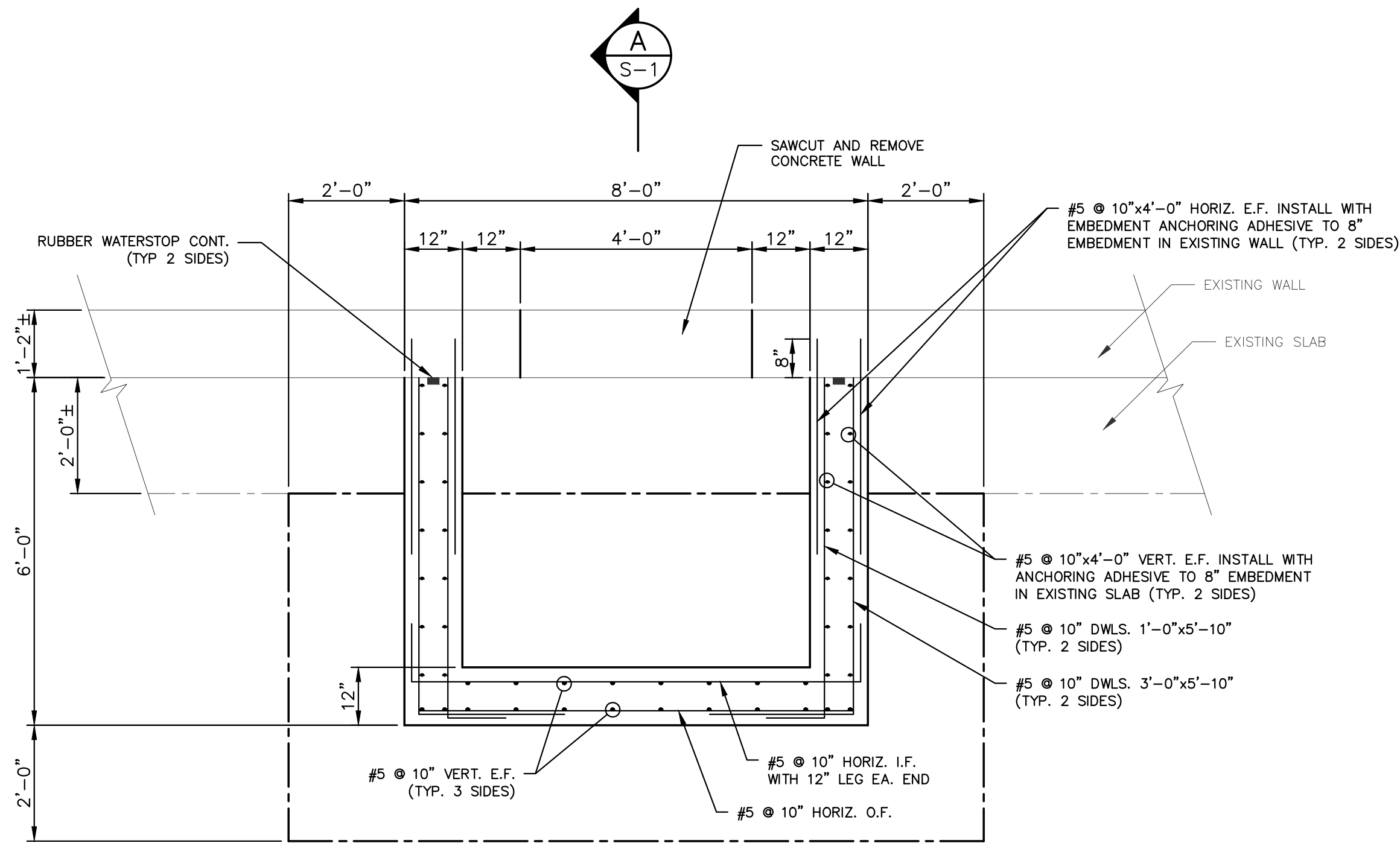
IQ-511 PUMP STATION MODIFICATIONS

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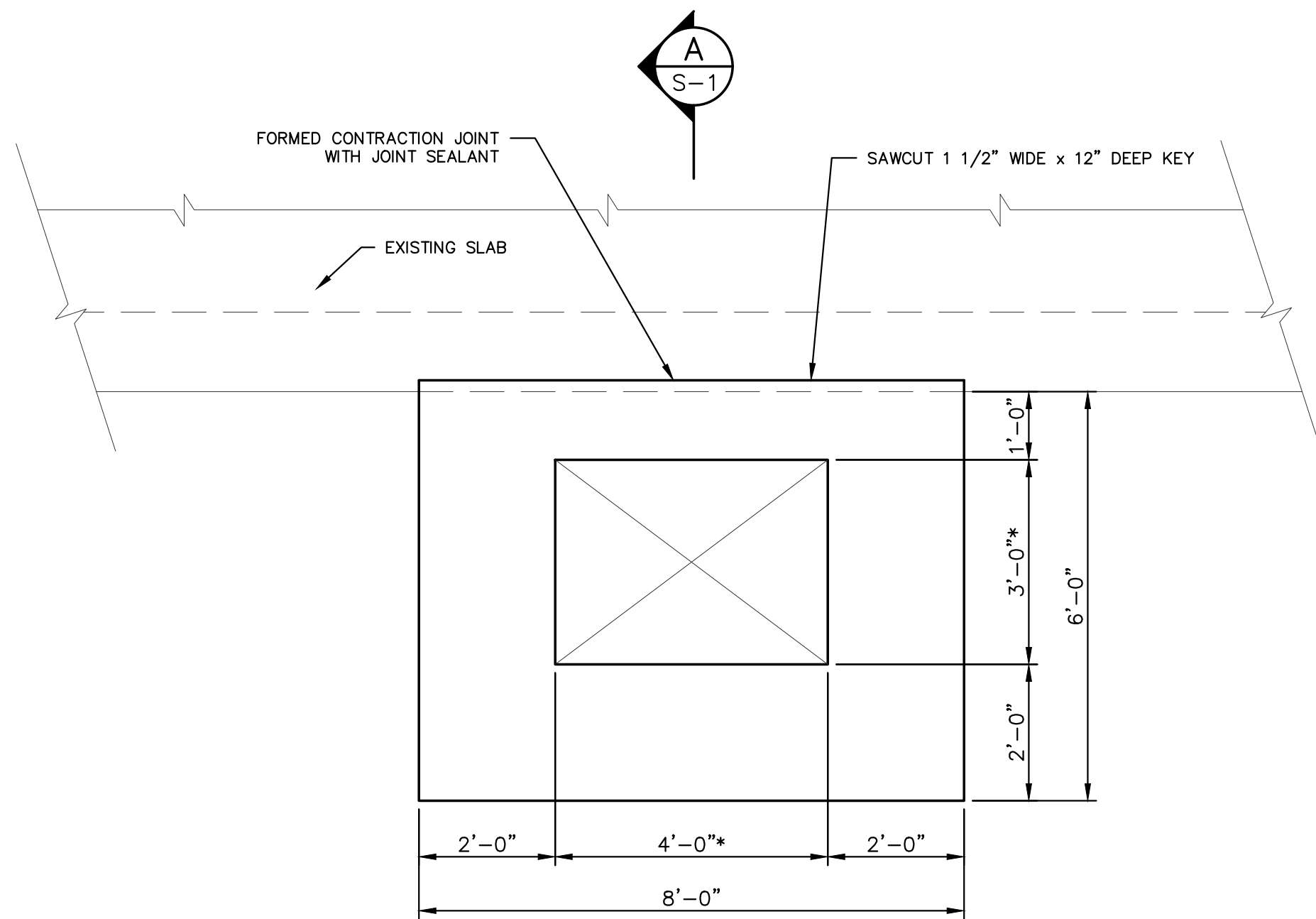
DATE: NOVEMBER 2020
SHEET: 9 of 20
DRAWING: M-2

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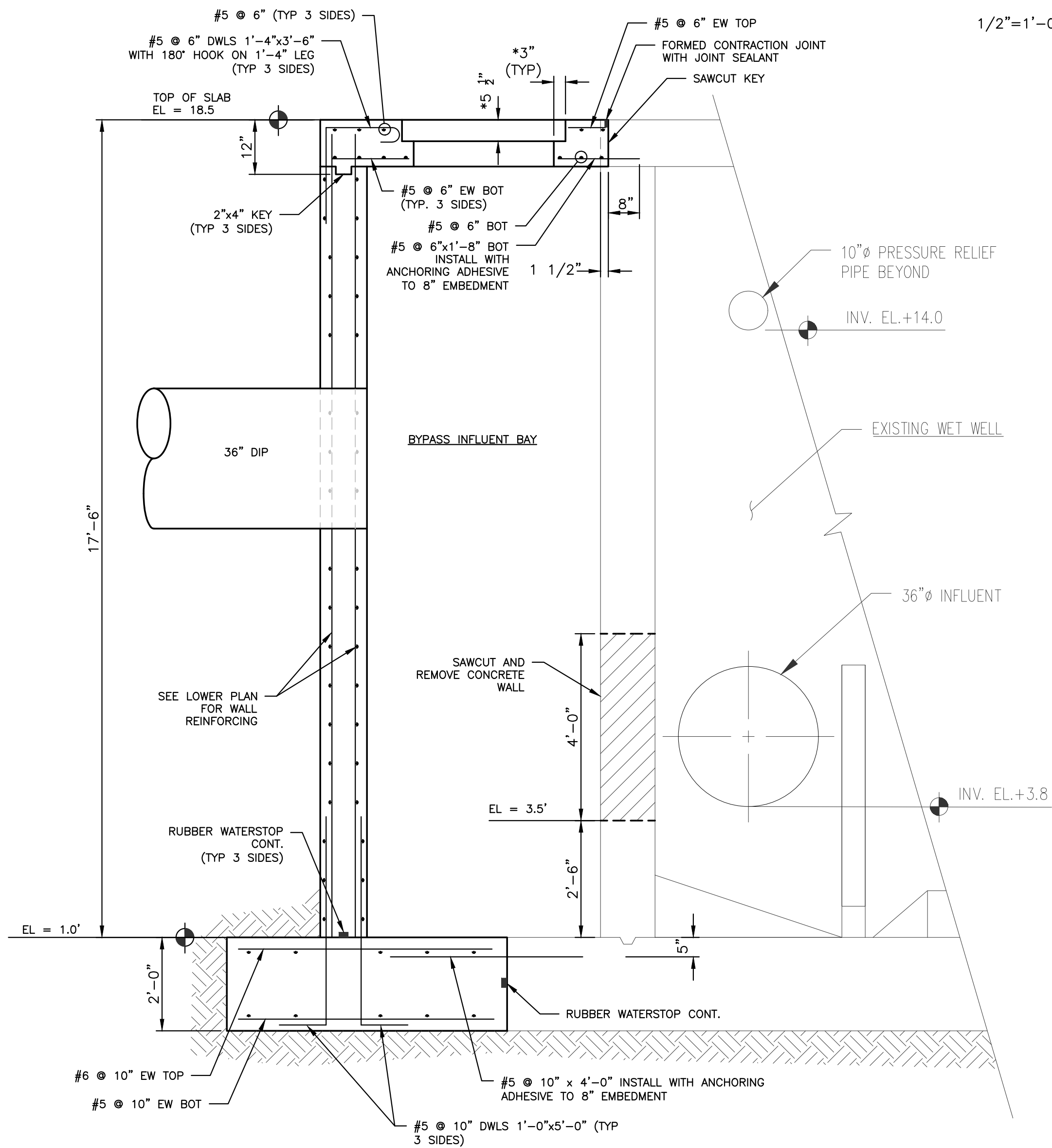


LOWER PLAN



UPPER PLAN

* INDICATES MIN. CLEAR OPENING DIMENSIONS



SECTION A-A

* DIMENSION TO BE DETERMINED BASED ON SELECTED HATCH

NO.	DATE	ISSUED FOR	APR'V'D BY

DESIGNED:	C.B.
DRAWN:	D.D.P.
CHECKED:	S.J.P.
APPROVED:	M.R.T.

CHARLES BRUNNER, P.E.
No. 81536

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LOXAHATCHEE RIVER
ENVIRONMENTAL CONTROL DISTRICT
IQ-511 BYPASS PIPING

STRUCTURAL PLAN AND SECTION

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DATE: NOVEMBER 2020

SHEET: 10 of 20

DRAWING: S-1

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DESIGNED:	C.B.
DRAWN:	D.D.P.
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APPROVED:	M.R.T.

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CLIENT PROJECT NO.: _____
CAD REF.:200453S02.dwg

LOXAHATCHEE RIVER ENVIRONMENTAL CONTROL DISTRICT IQ-511 BYPASS PIPING
STRUCTURAL DETAILS AND NOTES

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DATE: NOVEMBER 2020

SHEET: 11 of 20

DRAWING: S-2

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STRUCTURAL GENERAL NOTES:

EARTH WORK:

- ALLOWABLE NET SOIL BEARING PRESSURE = 3,000 P.S.F. MINIMUM UNLESS OTHERWISE SHOWN ON THE DRAWINGS.
- UNDERCUT AREAS BELOW PROPOSED STRUCTURES TO SUITABLE SOIL MATERIAL. EXTEND WIDTH OF EXCAVATION BEYOND OUTER LIMITS OF PROPOSED STRUCTURES 12 INCHES FOR EVERY FOOT OF UNDERCUT.
- DENSIFY EXPOSED GRANULAR SOILS ENCOUNTERED AT BASE OF EXCAVATIONS USING A MINIMUM TWO PASSES WITH VIBRATORY PLATE COMPACTION EQUIPMENT.
- BACKFILL AND FILL AREAS BELOW PROPOSED STRUCTURES WITH WASHED GRAVEL COMPLYING WITH REQUIREMENTS OF FDOT NUMBER 57 STONE TO THE REQUIRED SUBGRADE ELEVATION UNLESS OTHERWISE SHOWN ON THE DRAWINGS.
- PLACE SAND BACKFILL IN 12 INCH LIFTS COMPACTED TO AT LEAST 95 PERCENT OF MAXIMUM DENSITY (ASTM D1557).
- SEE INDIVIDUAL STRUCTURE DRAWINGS FOR ADDITIONAL EXCAVATION, BACKFILL AND FILL REQUIREMENTS.

CONCRETE WORK:

- COMPLY WITH SECTION 03301.
- PROVIDE CONCRETE HAVING A MINIMUM 28 DAY COMPRESSIVE STRENGTH $f'c$ = 4000 P.S.I.
- PROVIDE REINFORCING BARS IN COMPLIANCE WITH ASTM A615 GRADE 60.
- REINFORCING BAR DOWELS ARE DIMENSIONED WITH THE HORIZONTAL LEG FIRST.
- STAGGER ALL REINFORCING BAR SPLICES PROVIDING A LAP LENGTH LISTED IN THE FOLLOWING TABLE UNLESS OTHERWISE SHOWN ON THE DRAWINGS:

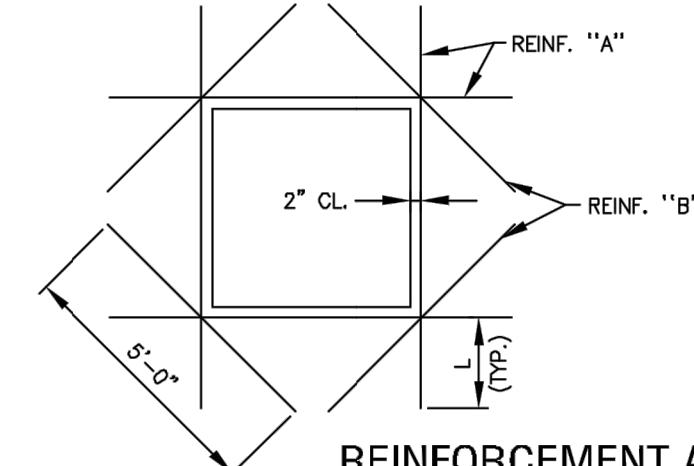
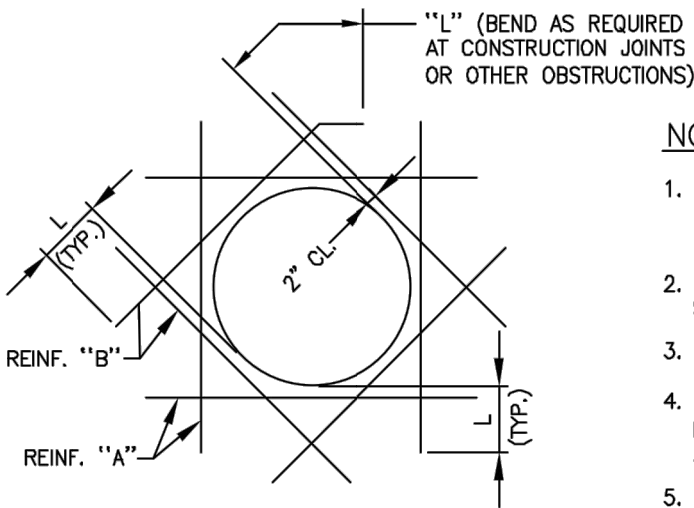
BAR SIZE	LAP SPLICE IN BAR DIAMETERS	
	TOP BARS (EPOXY)*	OTHER BARS (EPOXY)
#6 AND SMALLER	64 (77)	49 (59)
LARGER THAN #6	80 (96)	62 (74)

* TOP BARS ARE HORIZONTAL BARS PLACED ABOVE MORE THAN 12 INCHES OFF FRESH CONCRETE. HORIZONTAL WALL REINFORCING BARS ARE CONSIDERED TO BARS.

- PROVIDE ADDITIONAL REINFORCING AT OPENINGS IN ACCORDANCE WITH TYPICAL DETAIL UNLESS OTHERWISE SHOWN ON THE DRAWINGS.
- REFER TO MECHANICAL AND ELECTRICAL DRAWINGS FOR OPENINGS AND EMBEDDED ITEMS IN CONCRETE WORK NOT SHOWN.

REMODELING WORK:

- EXISTING FACILITY DIMENSIONS AND ELEVATIONS ARE SHOWN FOR REFERENCE ONLY. FIELD VERIFY AS BUILT CONDITIONS PRIOR TO CONSTRUCTION.
- REMOVE AND DISPOSE OF EXISTING CONCRETE AND EMBEDDED ITEMS AS REQUIRED FOR PROPOSED WORK.
- SAWCUT OPENINGS IN EXISTING WALLS WITHOUT OVERCUTTING AT CORNERS.
- CLEAN AND REMOVE BOND INHIBITING CONTAMINATES ON NEWLY EXPOSED CONCRETE SURFACES.
- REINFORCING STEEL INSTALLATION WITH ANCHORING ADHESIVE:
 - DO NOT CUT OR DAMAGE EXISTING EMBEDDED ITEMS OR REINFORCING STEEL WHEN DRILLING HOLES.
 - USE A PACHOMETER OR ANOTHER APPROVED METHOD TO LOCATE EXISTING EMBEDDED ITEMS AND REINFORCING STEEL PRIOR TO DRILLING HOLES. OBTAIN ENGINEER'S APPROVAL TO ADJUST LOCATION WHERE EXISTING EMBEDDED ITEMS OR REINFORCING STEEL INTERFERE WITH INSTALLATION.
 - HAMMER DRILL AND CLEAN HOLES, INJECT ADHESIVE AND INSTALL REINFORCING STEEL IN ACCORDANCE WITH THE ADHESIVE MANUFACTURER'S WRITTEN INSTRUCTIONS.
- GRIND SURFACES TO REMAIN EXPOSED SMOOTH AND FLUSH WITH EXISTING ADJACENT SURFACES.
- PATCH OPENINGS TO BE ABANDONED IN CONCRETE WALLS AND SLABS WITH NON-SHRINK GROUT UNLESS OTHERWISE SHOWN ON THE DRAWINGS.



NOTES:

- PROVIDE ADDITIONAL REINFORCEMENT AT CONCRETE OPENINGS IN ACCORDANCE WITH THIS DETAIL UNLESS OTHERWISE SHOWN ON THE DRAWINGS
- RELOCATE REINFORCING STEEL A MAXIMUM OF 2" AND CUT REMAINING STEEL WITHIN OPENING.
- PROVIDE MINIMUM #4 BAR SIZE FOR REINFORCING "A" AND "B".
- PROVIDE REINFORCING "A" ON EACH SIDE OF OPENING EQUAL TO MINIMUM $\frac{1}{2}$ TOTAL AREA OF INTERRUPTED STEEL AND EXTEND STEEL A DISTANCE "L" BEYOND OPENING EDGES.
- PROVIDE REINFORCING "B" WITH SIZE EQUAL TO THE LARGEST BAR CUT AND PLACE AS FOLLOWS:
 - CENTER OF WALL WHERE ONE LAYER OF REINFORCING IS PROVIDED.
 - EACH FACE OF WALL WHERE TWO LAYERS OF REINFORCING ARE PROVIDED.
 - TOP AND BOTTOM FOR ALL SLABS.

BAR SIZE	"L" DIMENSION
#4	26"
#5	32"
#6	39"
#7	45"
#8	52"

REINFORCEMENT AT CONCRETE OPENINGS
NO SCALE

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ELECTRICAL LEGEND			
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	CONNECTION POINT TO EQUIPMENT SPECIFIED, FURNISHED AND INSTALLED UNDER OTHER SECTIONS, RACEWAY, CONDUCTOR AND CONNECTION IN THIS SECTION.		PUSH-BUTTON SWITCH, MOMENTARY CONTACT, NORMALLY OPEN
			PUSH-BUTTON SWITCH, MOMENTARY CONTACT, NORMALLY CLOSED
			REMOTE DEVICE
			SELECTOR SWITCH: MAINTAINED CONTACT WITH CONTACT POSITION INDICATED, CHART IDENTIFIES OPERATION
			INDICATING LIGHT - LETTER INDICATES COLOR A - AMBER G - GREEN B - BLUE R - RED C - CLEAR W - WHITE
			PUSH TO TEST AND CONNECT INDICATING LIGHT
			CONTACT - NORMALLY OPEN WITH COIL INDICATED
			CONTACT - NORMALLY CLOSED WITH COIL INDICATED
			OVERLOAD RELAY HEATER
			MAGNETIC STARTER WITH NEMA SIZE INDICATED
			MOTOR CIRCUIT PROTECTOR, MAGNETIC, 3 POLE UNLESS INDICATED OTHERWISE.
			CIRCUIT BREAKER, THERMAL MAGNETIC TRIP SHOWN, 3 POLE UNLESS INDICATED OTHERWISE.
			FUSED SWITCH, SWITCH AND FUSE CURRENT RATING INDICATED, 3 POLE UNLESS INDICATED OTHERWISE.
			SWITCH - CURRENT RATING INDICATED, 3 POLE UNLESS INDICATED OTHERWISE.
			TRANSIENT VOLTAGE SURGE SUPPRESSION
			DEMOLITION TO BE REMOVED OR DELETED
			FUSE
			CONTROL RELAY, X=SEQUENTIAL NUMBER
			LATCHING RELAY, X=SEQUENTIAL NUMBER L - LATCH, U - UNLATCH
ABBREVIATIONS			
ABBREVIATIONS	DESCRIPTION	ABBREVIATIONS	DESCRIPTION
AFF	ABOVE FINISHED FLOOR	MCC	MOTOR CONTROL CENTER
AFG	ABOVE FINISHED GRADE	MDP	MAIN DISTRIBUTION PANEL
ATS	AUTOMATIC TRANSFER SWITCH	MH	MOTOR HEATER, MANHOLE
BC	BYPASS CONTACTOR	MLO	MAIN LUGS ONLY
C	CONDUIT, CONTACTOR	MPZ	MINI POWER ZONE
CB	CIRCUIT BREAKER	MTD	MOTOR TEMPERATURE DETECTOR
CKT	CIRCUIT	N	NEUTRAL
CPT	CONTROL POWER TRANSFORMER	NC	NORMALLY CLOSED
CR	CONTROL RELAY	NEMA	NATIONAL ELECTRIC MANUFACTURER'S ASSOCIATION
CT	CURRENT TRANSFORMER	NO	NORMALLY OPEN
DIV	DIVISION	NTS	NOT TO SCALE
ETM	ELAPSED TIME METER	OL	OVERLOAD RELAY
EXST	EXISTING	PB	PULL BOX
F, FU	FUSE	PC	PHOTOCELL
FI	FLOW INDICATOR	PH	PHASE MONITOR
FM	FLOW METER	PM	POWER MONITOR
FS	FLOAT SWITCH	PNL	PANEL
FT	FLOW TRANSMITTER	PP	POWER PANEL (480VAC)
FUT	FUTURE	PS	PRESSURE SWITCH
FVNR	FULL VOLTAGE NON-REVERSING STARTER	PVC	POLYVINYL CHLORIDE CONDUIT
G	GREEN, GROUND	RTU	REMOTE TELEMETRY UNIT
GALV	GALVANIZED	RGS	RIGID GALVANIZED STEEL
GEN	GENERATOR	SF	SUPPLY FAN
GFI	GROUND FAULT INTERRUPTER	SH	SPACE HEATER
GFR	GROUND FAULT RELAY	SSRVS	SOLID STATE REDUCED VOLTAGE STARTER
GND	GROUND	SST	STAINLESS STEEL
HH	HANDHOLE	SV	SOLENOID VALVE
HOA	HAND/OFF/AUTO	SW	SWITCH
HOR	HAND/OFF/REMOTE	T	THERMOSTAT
HVAC	HEATING, VENTILATING & AIR CONDITIONING	TB	TERMINAL BOARD
IC	INTERRUPTING CAPACITY	TDR	TIME DELAY RELAY
I & C	INSTRUMENTATION AND CONTROL	TJB	TERMINAL JUNCTION BOX
IP	INSTRUMENT PANEL (PANELBOARD)	TS	THERMAL SWITCH
J, J-BOX	JUNCTION BOX	TSP	TWISTED SHIELDED PAIR
LC	LIGHTING CONTACTOR	TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSION
LP	LIGHTING PANEL (PANELBOARD)	TYP	TYPICAL
LR	LOCAL/REMOTE	V	VOLTMETER, VOLT
LS	LIMIT SWITCH	VFD	VARIABLE FREQUENCY DRIVE
LTG	LIGHTING	WP	WEATHERPROOF - NEMA 4X
M	MAGNETIC CONTACTOR COIL OR MOTOR	XFMR	TRANSFORMER

GENERAL NOTES AND SPECIFICATIONS:

1. THE SCOPE OF WORK IS DESCRIBED IN SPECIFICATIONS AND AS SHOWN ON DRAWINGS.
2. THE CONTRACTOR SHALL PROVIDE ALL MATERIALS AND LABOR TO INSTALL THE ELECTRICAL SYSTEMS AS INDICATED ON THE DRAWINGS. ITEMS NOT SHOWN BUT OBVIOUSLY NECESSARY FOR COMPLETION OF THE WORK SHALL BE INCLUDED.
3. THE INSTALLATION SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (NEC), LOCAL CODES, CITY CODES, AND THE FLORIDA BUILDING CODE WITH AMENDMENTS.
4. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS, INSPECTIONS AND APPROVALS AND TO INCLUDE ALL FEES AS PART OF HIS BID IF NOT OTHERWISE NOTED. THE CONTRACTOR SHALL COORDINATE HIS WORK WITH THE ENGINEER AND OWNER.
5. THE CONTRACTOR SHALL, BEFORE SUBMITTING HIS BID, VISIT THE SITE OF THE PROJECT AND BECOME FAMILIAR WITH THE EXISTING CONDITIONS. NO ALLOWANCE WILL BE MADE FOR EXISTING CONDITIONS OR FAILURE OF THE CONTRACTOR TO OBSERVE THEM.
6. GROUNDING SHALL BE INSTALLED IN ACCORDANCE WITH NEC, ARTICLE 250. THE GROUNDING SYSTEM TEST SHALL NOT EXCEED A 48 HOUR SPAN DRY RESISTANCE OF 10 OHMS. ADDITIONAL GROUNDING TO MEET THIS REQUIREMENT SHALL BE INSTALLED AT NO EXTRA COST. GROUNDING AND BONDING CONNECTIONS SHALL NOT BE PAINTED. ALL GROUNDING CONNECTIONS SHALL BE EXOTHERMIC UNLESS SPECIFICALLY INDICATED OTHERWISE. AN EQUIPMENT GROUND WIRE SIZED PER NEC SHALL BE PULLED IN ALL ELECTRICAL CONDUITS, POWER AND CONTROL, WHETHER OR NOT INDICATED ON THE PLANS. GROUND SURROUNDING YARD FENCE AND ALL YARD LIGHTING FIXTURES WITH MINIMUM #4 STRANDED COPPER CONDUCTORS BELOW GRADE TO SITE GROUNDING GRID PER NFPA 54/70.
7. ALL EQUIPMENT AND MATERIAL SHALL BE UNUSED AND U.L. LISTED.
8. THE CONTRACTOR IS RESPONSIBLE TO TEST ALL SYSTEMS INSTALLED OR MODIFIED UNDER THIS PROJECT AND REPAIR OR REPLACE ALL DEFECTIVE WORK TO THE SATISFACTION OF THE ENGINEER AND OWNER.
9. ALL EQUIPMENT FURNISHED AND INSTALLED BY THE CONTRACTOR SHALL BE GUARANTEED AGAINST DEFECTS IN MATERIAL AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM DATE OF ACCEPTANCE.
10. COORDINATE ALL ELECTRICAL EQUIPMENT LOCATIONS AND VERIFY ALL OBSTRUCTIONS WITH ALL SUBCONTRACTORS AND EQUIPMENT SUPPLIERS PRIOR TO ANY INSTALLATION.
11. NOT ALL CONDUITS SHOWN ON RISER AND ONE-LINE DIAGRAMS ARE SHOWN ON BUILDING OR SITE LAYOUTS. CONTRACTOR SHALL SUPPLY ALL CONDUITS AND CABLES AS SHOWN ON RISER AND ONE-LINE DIAGRAMS. THE DRAWINGS ARE NOT INTENDED TO SHOW THE EXACT LOCATION OF CONDUIT RUNS. THESE ARE TO BE COORDINATED WITH THE OTHER TRADES SO THAT CONFLICTS ARE AVOIDED PRIOR TO INSTALLATIONS. ALL LOCATIONS OF EQUIPMENT, PANELS ETC. ARE SHOWN FOR ILLUSTRATION PURPOSES. CONTRACTOR SHALL VERIFY EXACT LOCATION AND SIZE AND INSTALL AS SUCH WITH CORRESPONDING CONDUIT STUB-UPS. SEE OTHER DISCIPLINE DRAWINGS FOR COORDINATION OF ALL DRAWINGS. ANY CONFLICTS SHALL BE BROUGHT TO THE ENGINEER'S ATTENTION AND MOVEMENT OF CONDUITS OR OTHER ELECTRICAL EQUIPMENT SHALL BE ACCOMPLISHED WITHOUT ANY ADDITIONAL COST FOR THE OWNER. DRAWINGS ARE SCHEMATIC AND SHOWN FOR CLARITY.
12. ALL REFERENCES TO A PARTICULAR MANUFACTURER ARE GIVEN ON AN "APPROVED EQUAL" BASIS, UNLESS OTHERWISE NOTED.
13. ALL EXCAVATIONS FOR CONDUITS AND HANDHOLES, NEAR EXISTING PIPING, CONDUIT AND EQUIPMENT SHALL BE HAND EXCAVATED AND COORDINATED WITH PLANT ENGINEER.
14. MINIMUM DEPTH FROM TOP OF DUCTBANKS OR CONDUITS TO FINISHED GRADE SHALL BE 24" UNLESS OTHERWISE NOTED.
15. CONDUCTOR PULLING TENSIONS SHALL NET EXCEED MANUFACTURER'S RECOMMENDATION. CONTRACTOR SHALL INSTALL PULL BOXES TO MEET MANUFACTURER'S REQUIREMENTS.
16. MINIMUM DISTANCE ALLOWED BETWEEN POWER CONDUITS AND INSTRUMENTATION CONDUITS SHALL BE:

VOLTAGE	DISTANCE
4160V	3 FT
480V	2 FT
120V	1 FT
17. PROVIDE CONDUIT DUCT SEAL AT ALL CONDUIT ENDS.
18. ALL CONDUCTORS MEDIA SHALL BE COPPER. NO ALUMINUM ALLOWED UNLESS SPECIFICALLY INDICATED ON DRAWINGS.
19. ALL UNDERGROUND CONDUITS SHALL BE DIRECT BURIED WITH WARNING TAPE ON TOP AS PER DETAILS. COLORED WARNING TAPE 6" WIDE SHALL BE INSTALLED 8" BELOW FINISHED GRADE DIRECTLY ABOVE ALL UNDERGROUND YARD CONDUITS ACCORDING TO THE FOLLOWING SCHEDULE:
POWER: RED
ALL OTHER CONDUITS: GREEN
20. FLEXIBLE CONDUITS SHALL BE USED TO TERMINATE ALL MOTORS AND OTHER VIBRATING EQUIPMENT AND SHALL BE BETWEEN 18" AND 3' IN LENGTH.
21. SEE DRAWINGS AND SPECIFICATION 16001 FOR CONDUIT REQUIREMENTS . ALL CIRCUITS SHALL BE IDENTIFIED IN JUNCTION BOXES, CONTROLLERS AND PANELBOARDS. IDENTIFICATION SHALL MATCH PANELBOARD SCHEDULES. EXPOSED RUNS OF CONDUITS SHALL BE INSTALLED WITH RUNS PARALLEL OR PERPENDICULAR TO WALLS, STRUCTURAL MEMBERS OR INTERSECTIONS OF VERTICAL PLANES AND CEILINGS, WITH RIGHT ANGLE TURNS CONSISTING OF SYMMETRICAL BENDS OR PULL BOXES AS INDICATED ON THE DRAWINGS. BENDS AND OFFSETS SHALL BE AVOIDED WHERE POSSIBLE.
22. ALL SPARE CONDUITS SHALL BE CAPPED WITH A PVC CAP AND A NYLON PULL STRING INSTALLED WITH IDENTIFICATION ON BOTH ENDS.
23. CONTRACTOR SHALL RESTORE SIDEWALKS, ROADWAYS, SOD AND SPRINKLER SYSTEM PIPING TO MATCH EXISTING, AFTER THE COMPLETION OF THE CONDUIT AND PULLBOX INSTALLATION.
24. ALL MATERIAL IN DESIGNATED CORROSIVE AREAS SHALL BE NEMA 4X 316 STAINLESS STEEL OR NON-METALLIC.
25. ALL CONTROL PANELS SHALL BE CONSTRUCTED BY A UL 508A APPROVED PANEL VENDOR AND SHALL BEAR A UL 508A LABEL ON THE PANEL.
26. INSTRUMENTATION IS LOW VOLTAGE SIGNALS SUCH AS 4-20MA, TELEPHONE COMMUNICATION, FIRE ALARM COMMUNICATION. POWER CONDUIT SHALL ONLY CROSS INSTRUMENTATION CONDUIT PERPENDICULARLY AT RIGHT ANGLES WITH 6" SEPARATION.
27. ALL REFERENCES TO STAINLESS STEEL OR SS SHALL BE CONSTRUED AS 316 STAINLESS STEEL.
28. ALL LOCATIONS OF EQUIPMENT, PANELS, ETC. ARE SHOWN FOR ILLUSTRATION PURPOSES. CONTRACTOR SHALL VERIFY EXACT LOCATION AND SIZE AND INSTALL AS SUCH WITH CORRESPONDING CONDUIT STUB-UPS.
29. ALUMINUM CONDUIT SHALL BE INSTALLED NOT TO COME INTO DIRECT CONTACT WITH CONCRETE OR EARTH. PAINT ALUMINUM CONDUIT WITH BITUMASTIC PAINT FOR THE PORTION CONTACT WITH CONCRETE OR EARTH.

NO.	DATE	ISSUED FOR	APRV'D BY	DESIGNED: T.W.	HILLERS ELECTRICAL ENGINEERING, INC. 23257 STATE ROAD 7, SUITE 100 BOCA RATON, FLORIDA 33428 (561) 451-9165 (561) 451-4886 FAX LICENSE NO: EB 0006877
				DRAWN: T.N.	THEIN WIN, P.E. No.65722
				CHECKED: S.F.C	
				APPROVED: P.F.H	



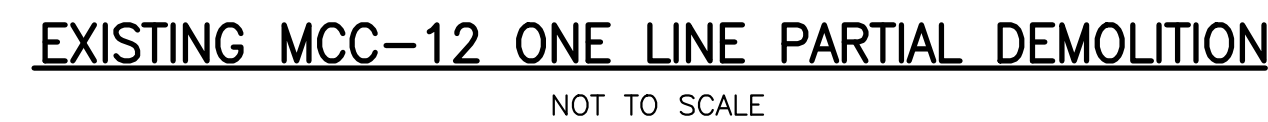
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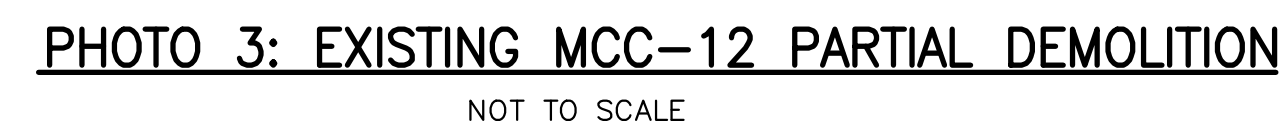
ENGINEER NO.: 200453	LOXAHATCHEE RIVER ENVIRONMENTAL CONTROL DISTRICT IQ-511 BYPASS PIPING	DATE: NOVEMBER 2020
CLIENT PROJECT NO.: _____	ELECTRICAL LEGEND AND NOTES	SHEET: 12 of 20
CAD REF.: MA32E01.dwg		DRAWING: E-1



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- 1 CONTRACTOR SHALL REPLACE THE EXISTING BREAKER BUCKET WITH A NEW BREAKER BUCKET. RETURN THE EXISTING BREAKER BUCKET TO THE OWNER. NEW BREAKER BUCKET SHALL MATCH MANUFACTURER, STYLE AND AIC RATING WITH EXISTING UNITS.
- 2 CONTRACTOR SHALL DISCONNECT AND REMOVE THE EXISTING CONCENTRATE BREAKER PANEL. REMOVE THE EXISTING POWER CABLES BACK TO THE EXISTING MCC-12. EXTEND THE EXISTING 2" POWER CONDUIT TO THE CONCENTRATE PULL BOX AND PROVIDE CONDUIT CAP.
- 3 CONTRACTOR SHALL DISCONNECT THE EXISTING CONCENTRATE MOV CONTROL CABLES FROM BOTH ENDS. REMOVE THE EXISTING CONTROL CABLES FROM MOV TO THE EXISTING CONCENTRATE PULL BOX. ROLL AND TAPE THE CABLE ENDS IN THE EXISTING CONCENTRATE PULL BOX. LABEL THE EXISTING CABLES AS SPARE.
- 4 REMOVE TWO EXISTING CONCRETE LIGHT POLES WITH SOLAR PANELS AND LIGHT FIXTURES. DELIVER THE EXISTING CONCRETE POLES TO THE STORAGE IN THE SAME FACILITY, IF OWNER WANTS TO KEEP THEM. OTHERWISE DISPOSE AS NEEDED.



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				DRAWN: T.N.
				CHECKED: S.F.C
				APPROVED: P.F.H

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VERIFY SCALE

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DRAWING. ADJUST
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ENGINEER NO.: 200453
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CAD REF.: MA32E03.dwg

LOXAHATCHEE RIVER
ENVIRONMENTAL CONTROL DISTRICT
IQ-511 BYPASS PIPING

ELECTRICAL DEMOLITION

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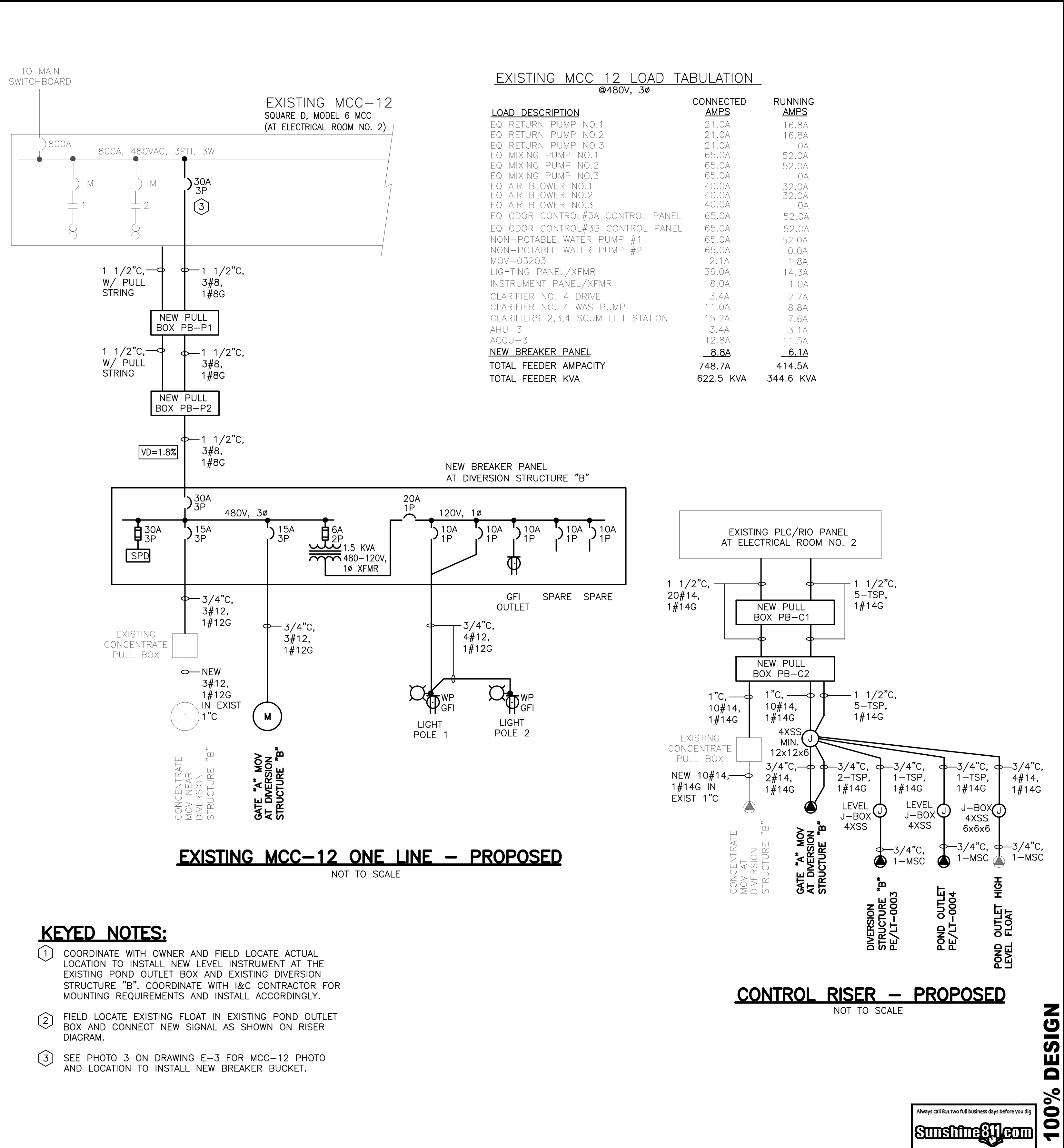
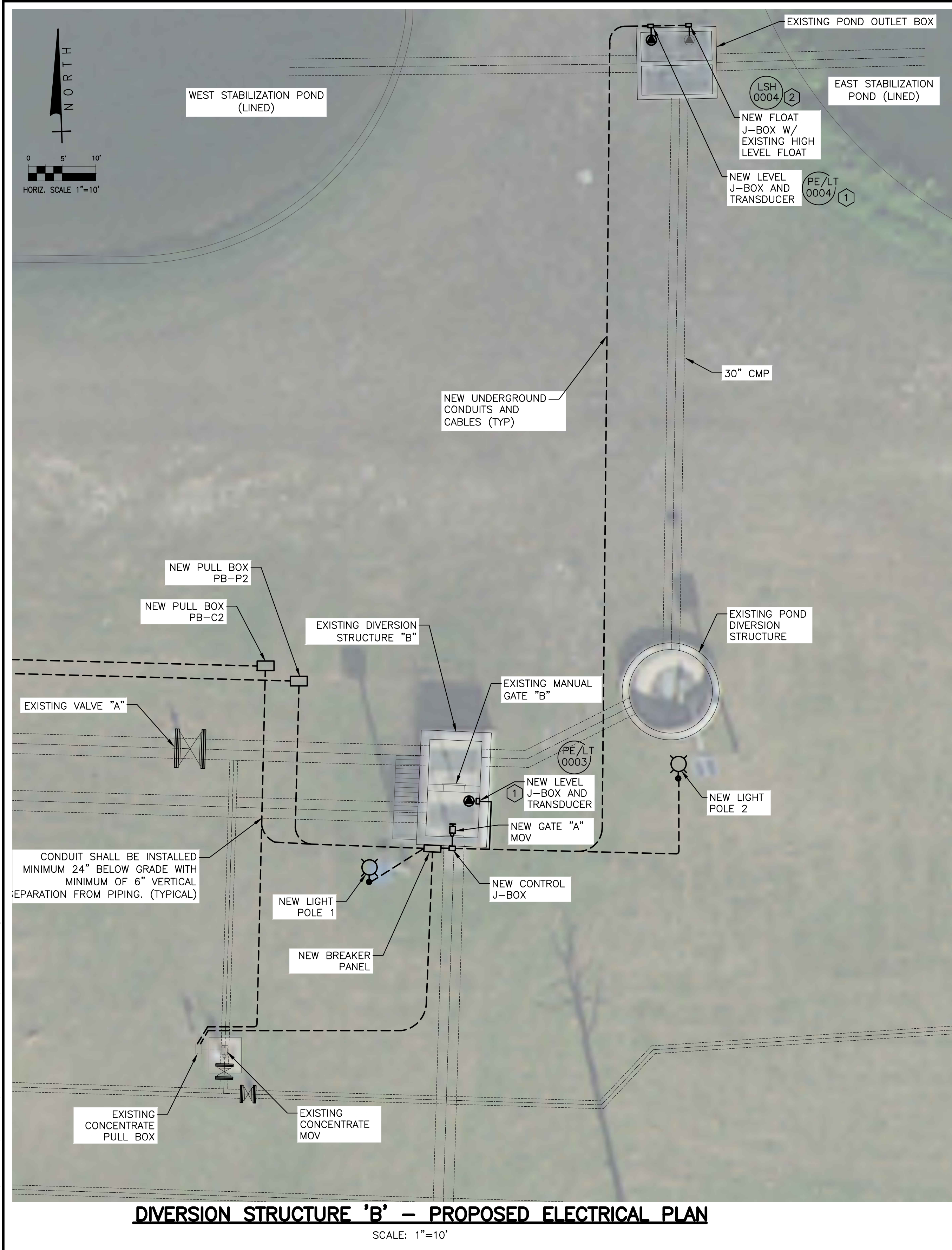
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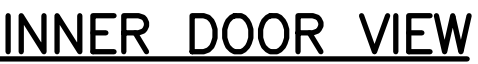
DRAWING: E-3

Acad Version : R23.1s (LMS Tech) User Name : lwn Date/Time : Fri, 30 Oct 2020 - 3:36pm Path Name : E:\PROJECTS\WA\MA32 - LRD IQ-511\DWG\MA32E04.dwg Current Plotstyle : ByColor Layout Tab: E-3



NO.	DATE	ISSUED FOR	APRV'D BY	DESIGNED: T.W.	HILLERS ELECTRICAL ENGINEERING, INC. 23257 STATE ROAD 7, SUITE 100 BOCA RATON, FLORIDA 33428 (561) 451-9165 (561) 451-4886 FAX LICENSE NO: EB 0006877	BAXTER & WOODMAN Consulting Engineers 477 S. Rosemary Avenue, Suite 330, West Palm Beach, Florida 33401 Phone: 561-655-6175 • Fax: 561-655-6179 www.baxterwoodman.com EB-31795	VERIFY SCALE <div><div>1"</div></div> BAR IS ONE INCH ON FULL SIZE (22x34) ORIGINAL DRAWING. ADJUST SCALES AS NECESSARY.	ENGINEER NO.: 200453 CLIENT PROJECT NO.: _____ CAD REF.: <u>MA32E04.dwg</u>	LOXAHATCHEE RIVER ENVIRONMENTAL CONTROL DISTRICT IQ-511 BYPASS PIPING	DATE: NOVEMBER 2020
				DRAWN: T.N.						SHEET: 15 of 20
				CHECKED: S.F.C						DRAWING: E-4
				APPROVED: P.F.H			THEIN WIN, P.E. No.65722			

100% DESIGN



NOTES:

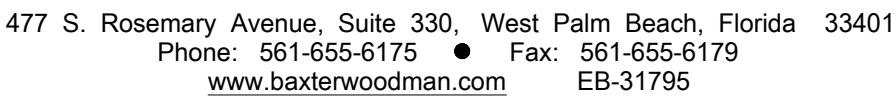
1. NEW BREAKER PANEL SHALL BE NEMA 3R, 304 STAINLESS STEEL POWDER COATED WHITE, WITH DRIP SHIELD KIT AND 3-POINT LATCH WITH LOCKABLE HANDLE. DIMENSION SHALL BE 30"Wx30"Hx12"D.
2. PANEL SHALL BE BUILT BY UL 508A PANEL BUILDER.
3. SEE ONE LINE DRAWINGS FOR BREAKER SIZES.
4. PROVIDE ALL NECESSARY COMPONENTS INCLUDING BREAKERS, SURGE ARRESTER, FUSES, TRANSFORMER, WIRE, GROUND BUS, POWER DISTRIBUTION BLOCK, TERMINALS, RECEPTACLE AND STAINLESS STEEL VENT DRAIN. ADJUST PANEL LAYOUT AS REQUIRED.

BREAKER PANEL LAYOUT

NOT TO SCALE

NO.	DATE	ISSUED FOR	APRVD BY	DESIGNED: T.W.
				DRAWN: T.N.
				CHECKED: S.F.C
				APPROVED: P.F.H

THEIN WIN, P.E.
No.65722



BAR IS ONE INCH
ON FULL SIZE
(22x34) ORIGINAL
DRAWING. ADJUST
SCALES AS
NECESSARY.

CAD REF.: MA32E05.dwg

NEW BREAKER PANEL LAYOUT

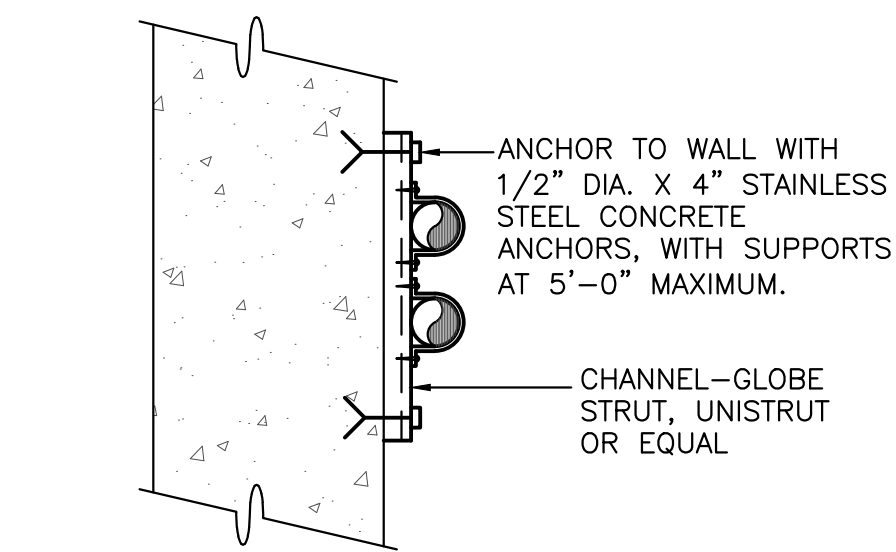
DATE: NOVEMBER 2020

SHEET: 16 of 20

DRAWING: E-5

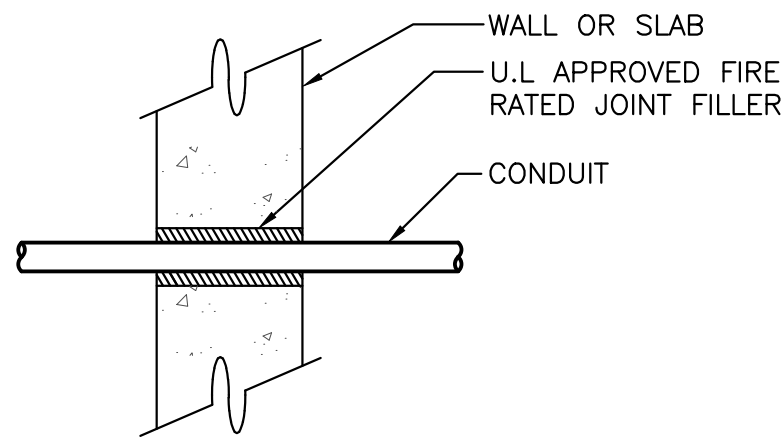
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Acad Version : R23.1s (LMS Tech) User Name : lwri Date/Time : Fri, 30 Oct 2020 - 3:36pm Current Plotstyle : ByColor Path Name : E:\PROJECTS\WA\MA32 - LRD IQ-511\DWG\MA32E06.dwg Layout Tab: E-6



CONDUIT SUPPORT ON WALL

NOT TO SCALE



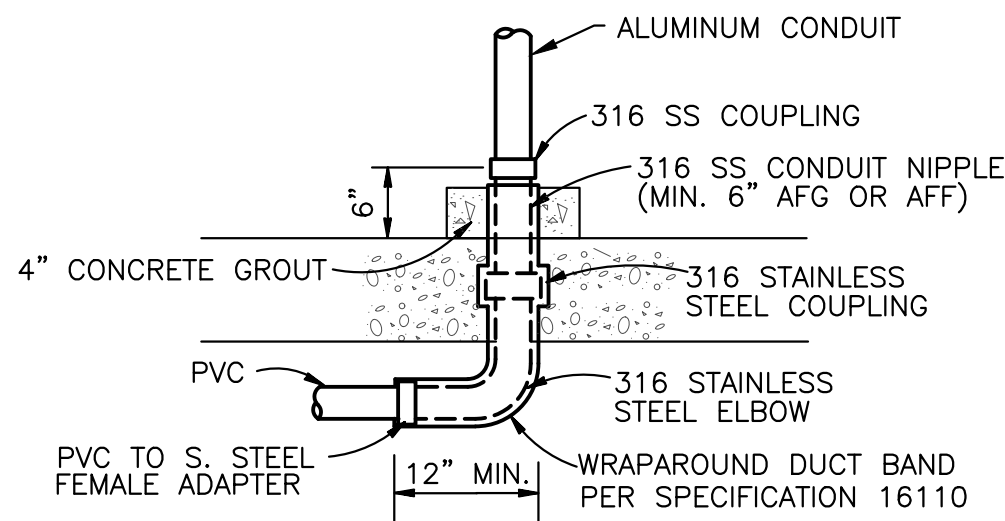
CONDUIT PENETRATION AT WALL OR SLAB

NOT TO SCALE

NOTE: ALL UNDERGROUND CONDUIT TRANSITION TO ABOVE GROUND OR VICE VERSA SHALL HAVE 316 STAINLESS STEEL ELBOW WITH WRAPAROUND DUCT BAND AND CONDUIT MINIMUM 2" ABOVE FINISHED GROUND OR ABOVE FINISHED FLOOR AND 12" BELOW GROUND IN LENGTH, NO EXCEPTION. PROVIDE DISSIMILAR METAL CONNECTOR AS NEEDED.

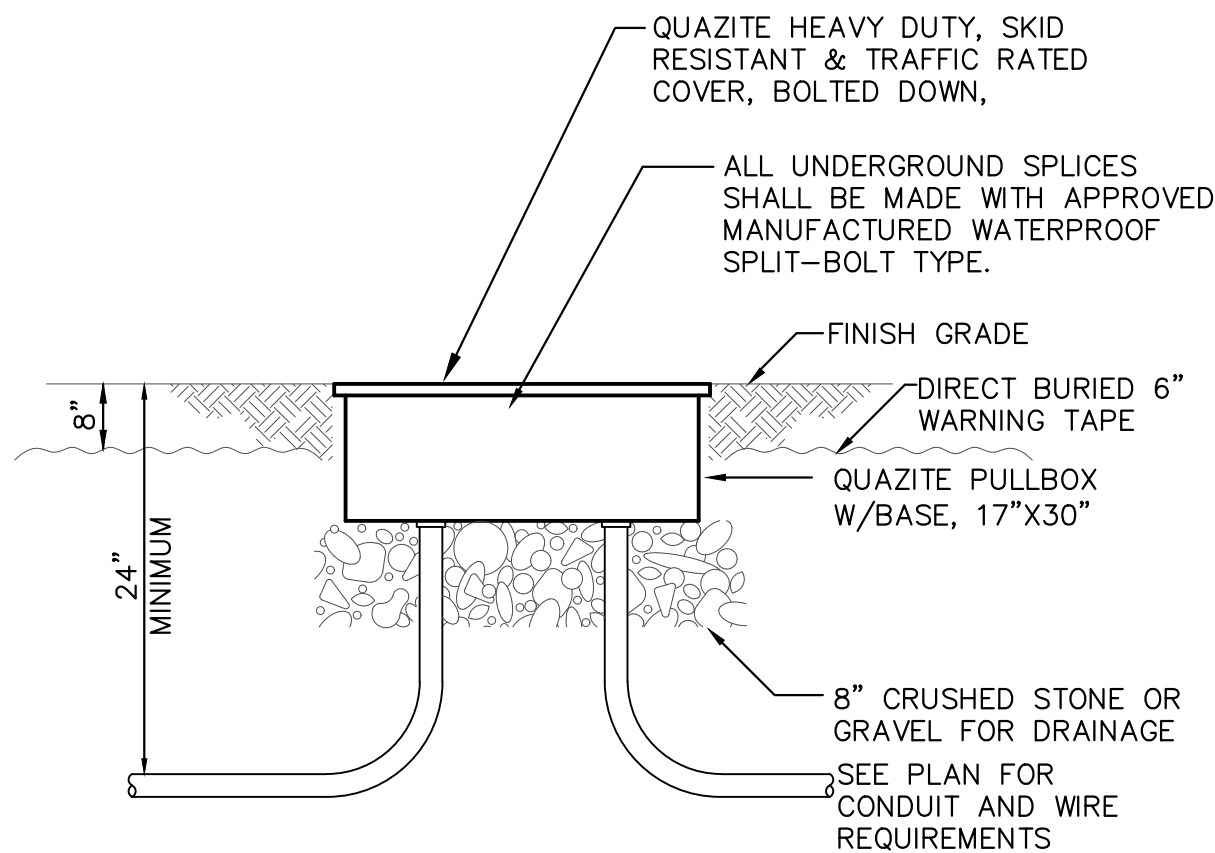
FOR ALL CONDUITS STUB-UP INTO THE FLOOR MOUNTED PANELS OR ELECTRICAL EQUIPMENT, 316 STAINLESS STEEL CONDUIT NIPPLE AFTER ELBOW SHALL ONLY NEED TO BE 2" ABOVE FINISHED GRADE OR FLOOR.

ALL CONDUITS NOT ENTERING INTO THE FLOOR MOUNTED PANELS OR ELECTRICAL EQUIPMENT, PROVIDE 4" GROUTING AROUND CONDUIT.



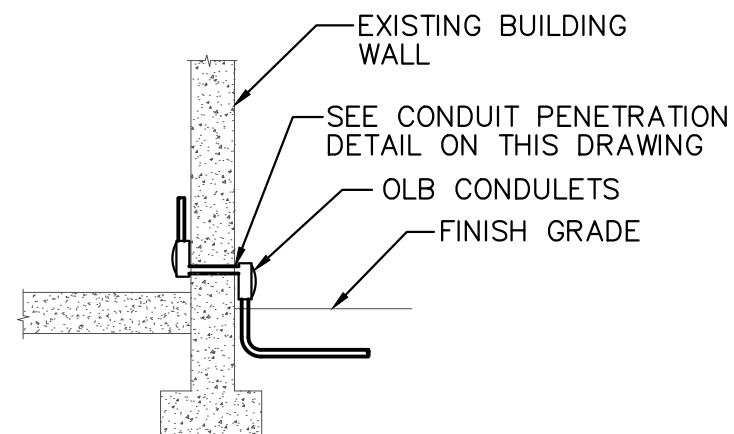
CONDUIT TRANSITION AND SUPPORT DETAIL

NOT TO SCALE



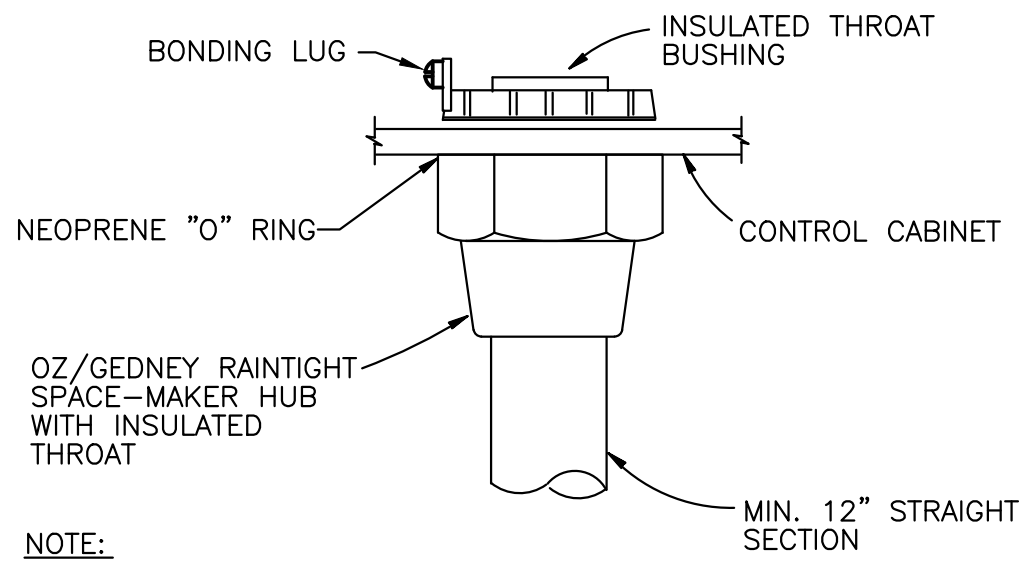
QUAZITE PULLBOX DETAIL

NOT TO SCALE



CONDUIT ENTRANCE

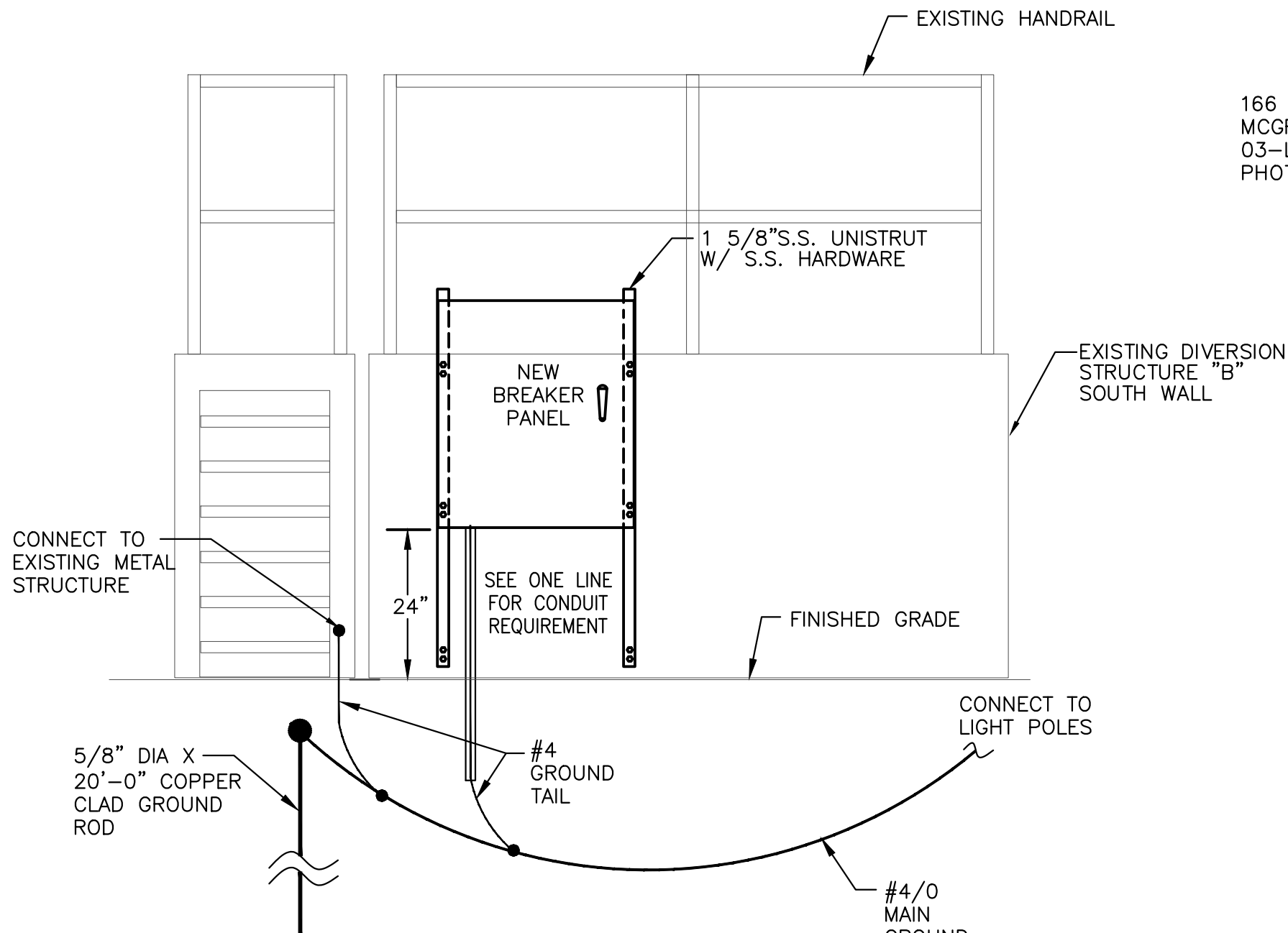
NOT TO SCALE



CONDUIT HUB

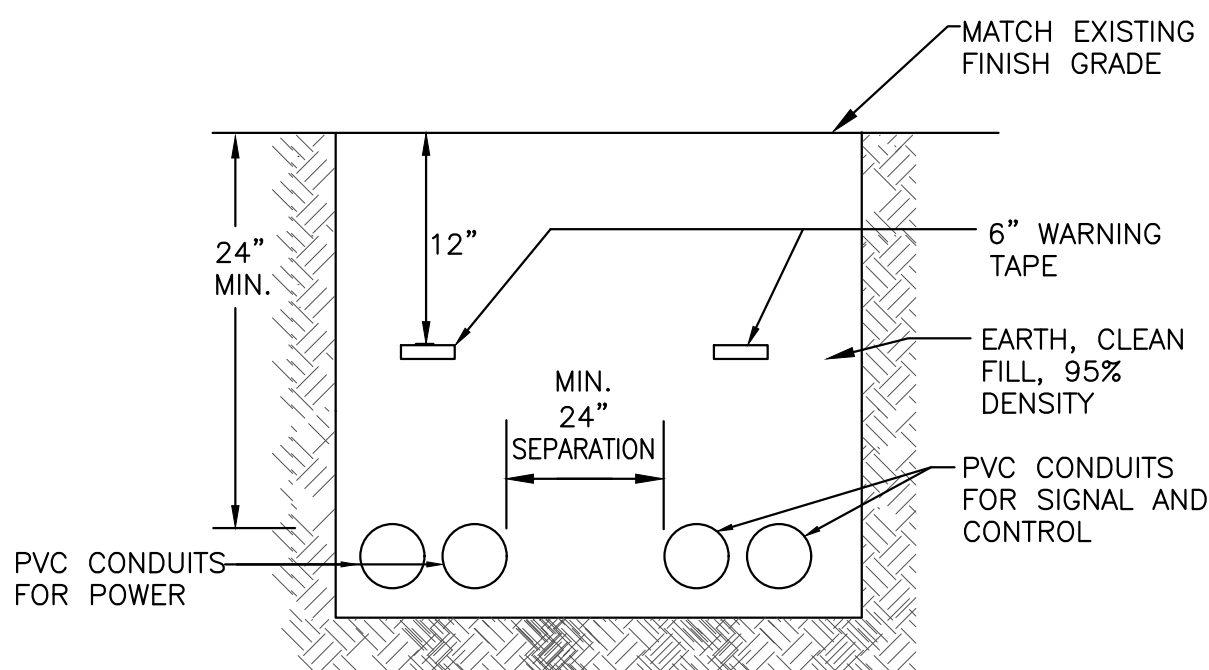
NOT TO SCALE

NOTE:
1. TYPICAL FOR ALL CONDUIT ENTRANCES INTO NEMA 3R, NEMA 4, OR NEMA 4X ENCLOSURES.



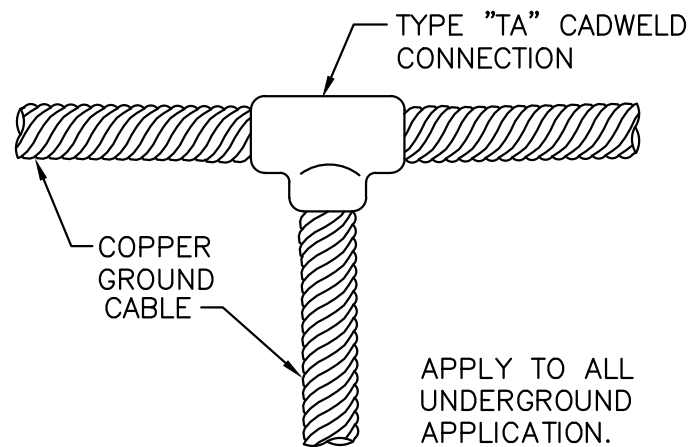
BREAKER PANEL MOUNTING DETAIL

NOT TO SCALE



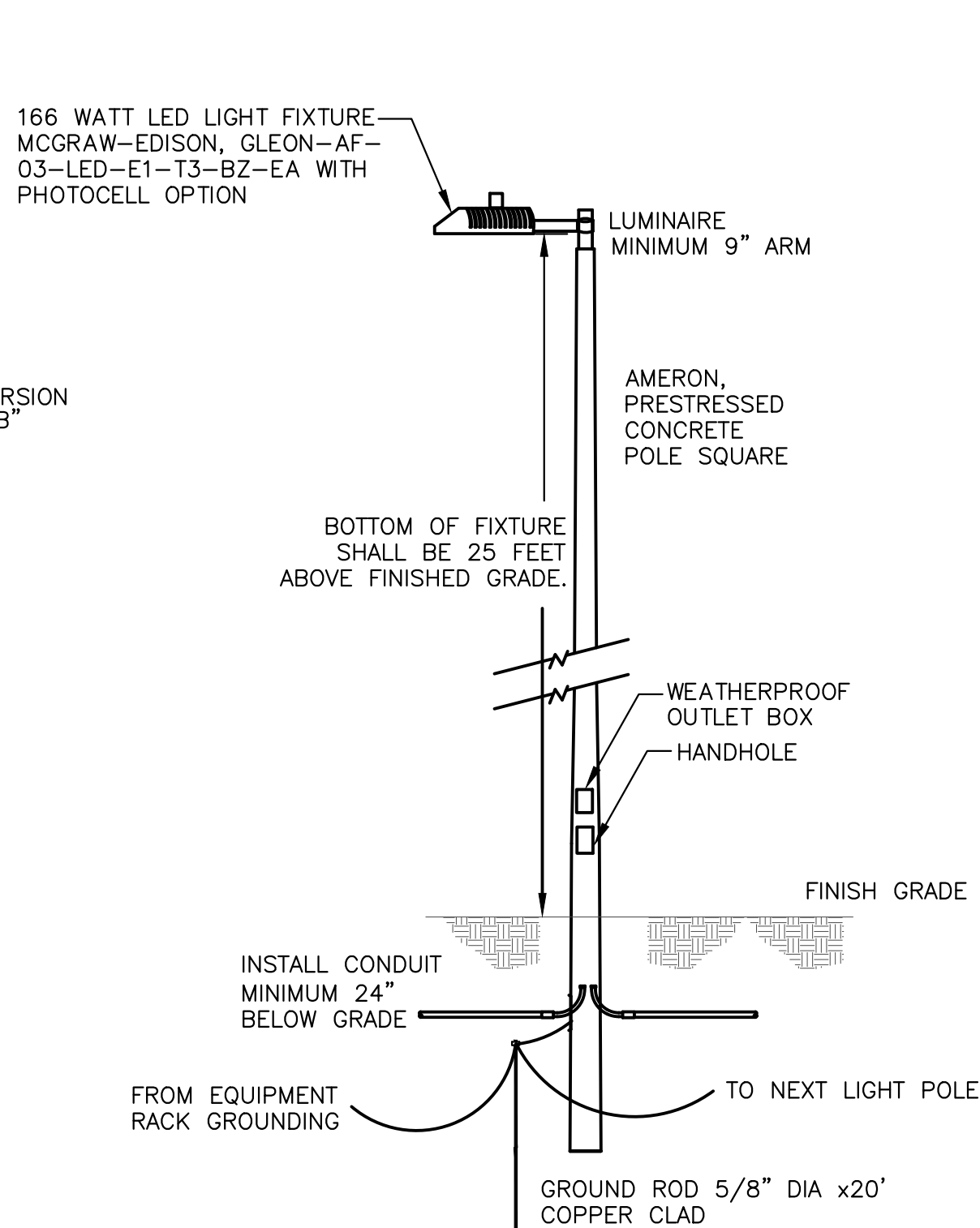
TYPICAL DIRECT BURIED CONDUIT DETAIL

NOT TO SCALE



GROUND CABLE CONNECTION

NOT TO SCALE

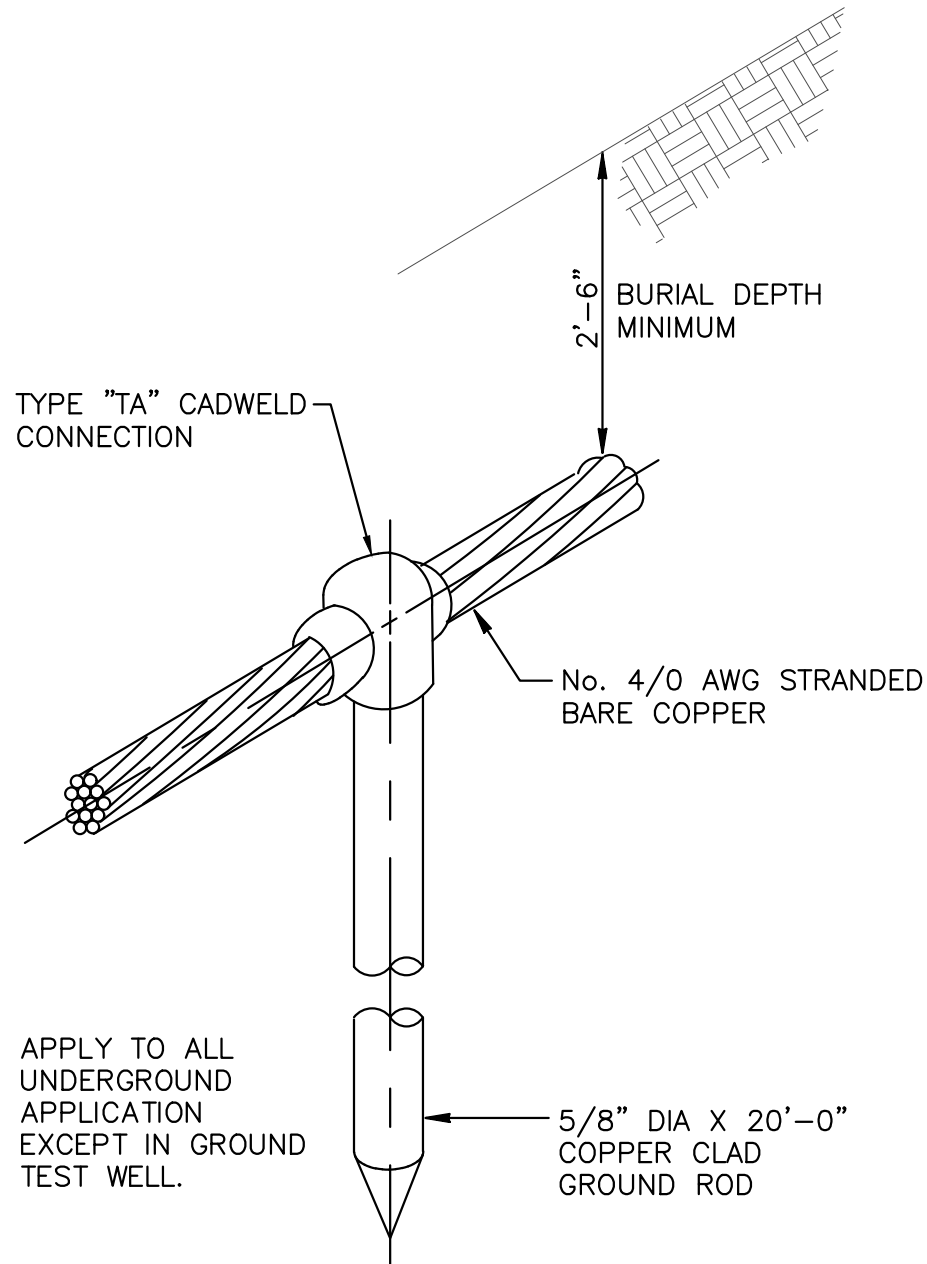


SITE LIGHT POLE DETAIL

NOT TO SCALE

WINDLOADING NOTE FOR ALL LIGHT POLES:

1. ALL POLE INSTALLATIONS MUST MEET FLORIDA BUILDING CODE WIND LOADING REQUIREMENT WITH APPROPRIATE WIND GUST FACTOR FOR THE LOCATION OF INSTALLATION. THE CONTRACTOR SHALL INCLUDE WITH THE SHOP DRAWING SUBMITTAL, A POLE WIND LOADING CALCULATION SIGNED & SEALED BY A STRUCTURAL ENGINEER REGISTERED IN THE STATE OF FLORIDA SHOWING THAT THE PROPOSED POLE AND INSTALLATIONS WILL MEET THE GIVEN WIND LOADING REQUIREMENT.



GROUND ROD DETAIL

NOT TO SCALE

NO.	DATE	ISSUED FOR	APRVD BY	DESIGNED: T.W.
				DRAWN: T.N.
				CHECKED: S.F.C
				APPROVED: P.F.H

HILLERS ELECTRICAL ENGINEERING, INC.
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VERIFY SCALE
1"
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ENGINEER NO.: 200453
CLIENT PROJECT NO.:
CAD REF.: MA32E06.dwg

LOXAHATCHEE RIVER ENVIRONMENTAL CONTROL DISTRICT
IQ-511 BYPASS PIPING

ELECTRICAL DETAILS

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DATE: NOVEMBER 2020
SHEET: 17 of 20
DRAWING: E-6

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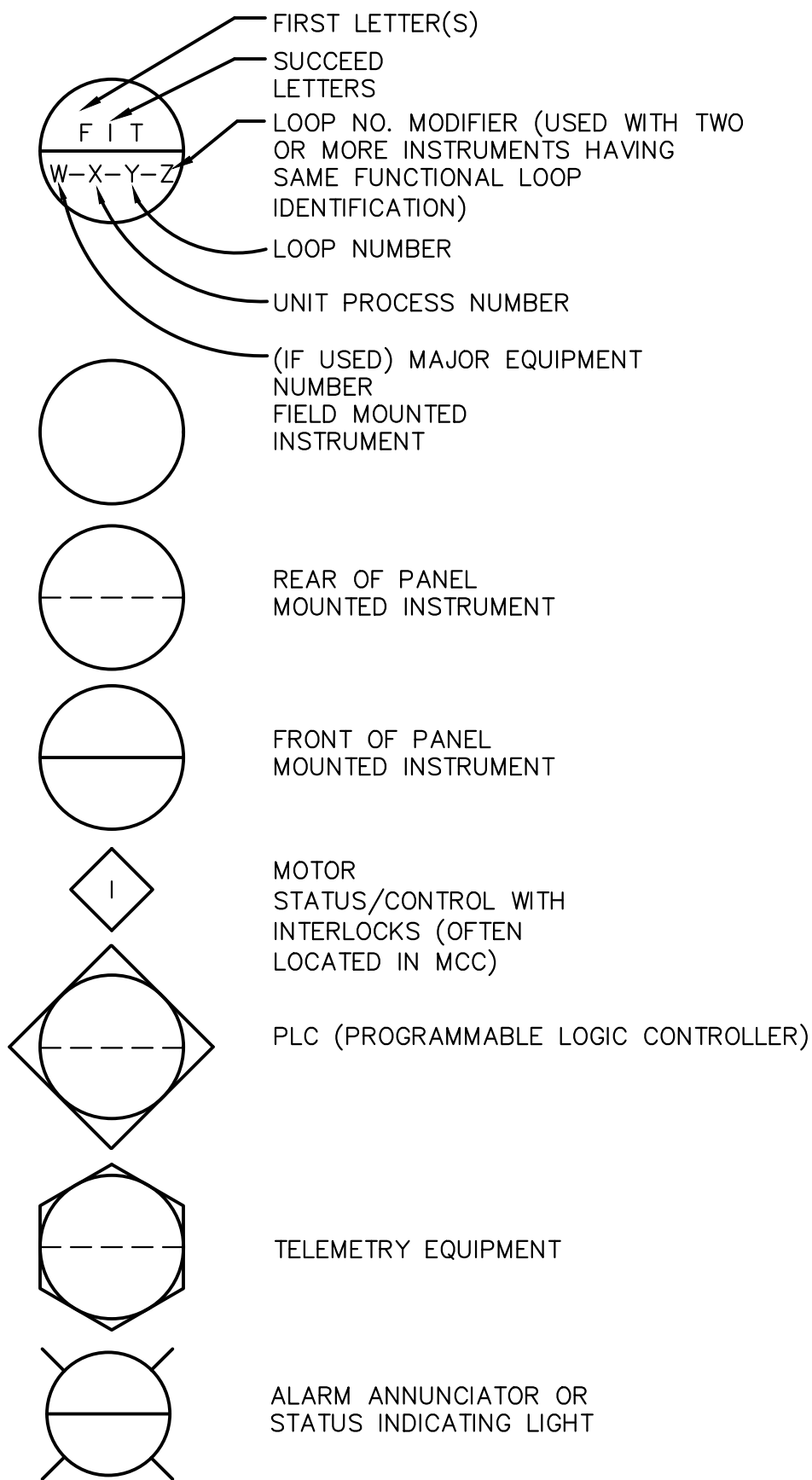
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INSTRUMENT SOCIETY OF AMERICA TABLE

LETTER	FIRST LETTER		SUCCEEDING LETTERS		
	PROCESS OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS (*)		ALARM		USERS CHOICE (*)
B	BURNER FLAME		USERS CHOICE (*)	USERS CHOICE (*)	
C	CONDUCTIVITY			CONTROL	CLOSE
D	DENSITY (S.G.)	DIFFERENTIAL			
E	VOLTAGE		PRIMARY ELEMENT		
F	FLOW RATE	RATIO			
G	GAUGE		GLASS	GATE	
H	HAND (MANUAL)				HIGH
I	CURRENT		INDICATE		
J	POWER	SCAN			
K	TIME OR SCHEDULE			CONTROL STATION	
L	LEVEL		LIGHT (PILOT)		LOW
M	MOTION				MIDDLE
N	STROKE		USERS CHOICE (*)	USERS CHOICE (*)	NORMAL
O	LOOP VEH. DETECTOR		OFFICE		OPEN
P	PRESSURE OR VACUUM		POINT (TEST CONNECTION)		
Q	QUANTITY OR EVENT		INTEGRATE		
R	RATIO		RECORD OR PRINT		
S	SPEED OR FREQUENCY	SAFETY		SWITCH	
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE (*)		MULTIFUNCTION (*)		
V	VIBRATION			VALVE	
W	WEIGHT OR FORCE		WELL		
X	UNCLASSIFIED (*)		UNCLASSIFIED (*)	UNCLASSIFIED (*)	UNCLASSIFIED (*)
Y	PHOTO CELL		LIGHT SOURCE	RELAY OR COMPUTE (*)	
Z	POSITION			DRIVE, ACTUATE OR UNCLASSIFIED FINAL CONTROL ELEMENT	

(*) WHEN USED, EXPLANATION IS SHOWN ADJACENT TO INSTRUMENT SYMBOL

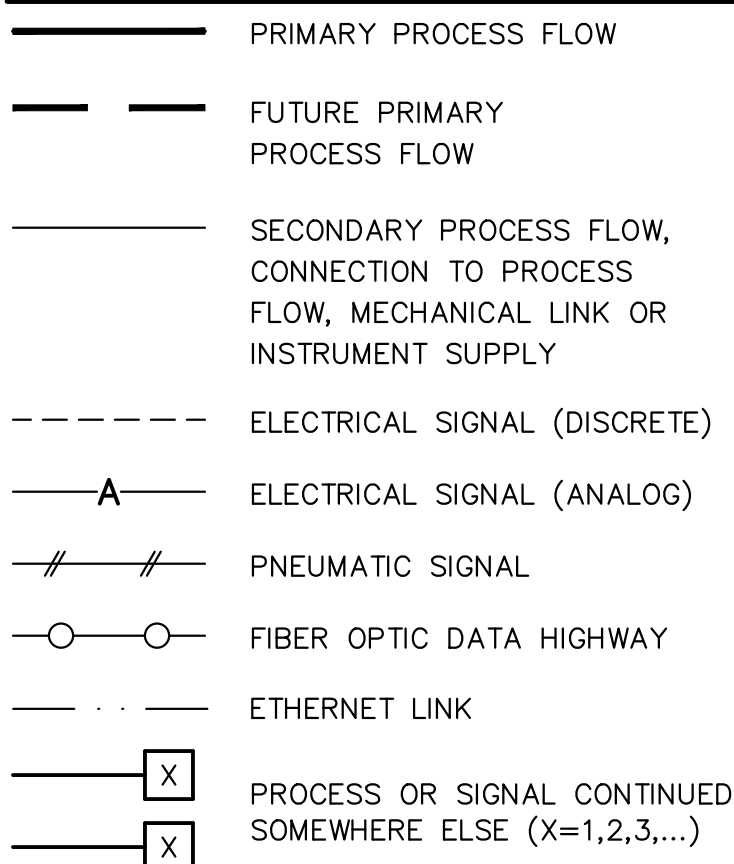
INSTRUMENT IDENTIFICATION



NOTES:

- COMPONENTS AND PANELS SHOWN WITH A DIAMOND (◆) ARE TO BE PROVIDED UNDER SECTION "INSTRUMENTATION & CONTROLS".
- COMPONENTS AND PANELS SHOWN WITH A DOUBLE ASTERISK (**) ARE TO BE PROVIDED AS PART OF A PACKAGED OR MECHANICAL SYSTEM.
- COMPONENTS AND PANELS SHOWN WITH A TRIANGLE (▲) ARE EXISTING. COMPONENTS AND PANELS WHICH HAVE NO SYMBOL ATTACHED TO IT ARE EXISTING.
- COMPONENTS AND PANELS SHOWN WITH A HEXAGON (●) ARE EXISTING TO BE MODIFIED AND/OR RELOCATED.
- COMPONENTS AND PANELS SHOWN WITH A SQUARE (■) ARE FUTURE.
- DURING SHOP DRAWING PREPARATION, THE CONTRACTOR SHALL FIELD VERIFY ALL THE EXISTING ANALOG AND DISCRETE POINTS FOR DETAILED INTERFACE AND INCLUDE IT AS PART OF SUBMITTAL.
- THE SINGLE INSTRUMENT & CONTROL SUPPLIER SHALL HAVE A U.L. APPROVED SHOP.
- ALL PROCESS TUBING AND ISOLATION VALVES SHALL BE 1/4"- 316 S.S., UNLESS OTHERWISE NOTED.
- ALL CONTROL PANELS SHALL BE FURNISHED AND INSTALLED WITH A 1P-15A CIRCUIT BREAKER.
- SEE MECHANICAL PLANS AND SPECIFICATIONS FOR EQUIPMENT NUMBERS.

INSTRUMENT LINE SYMBOLS

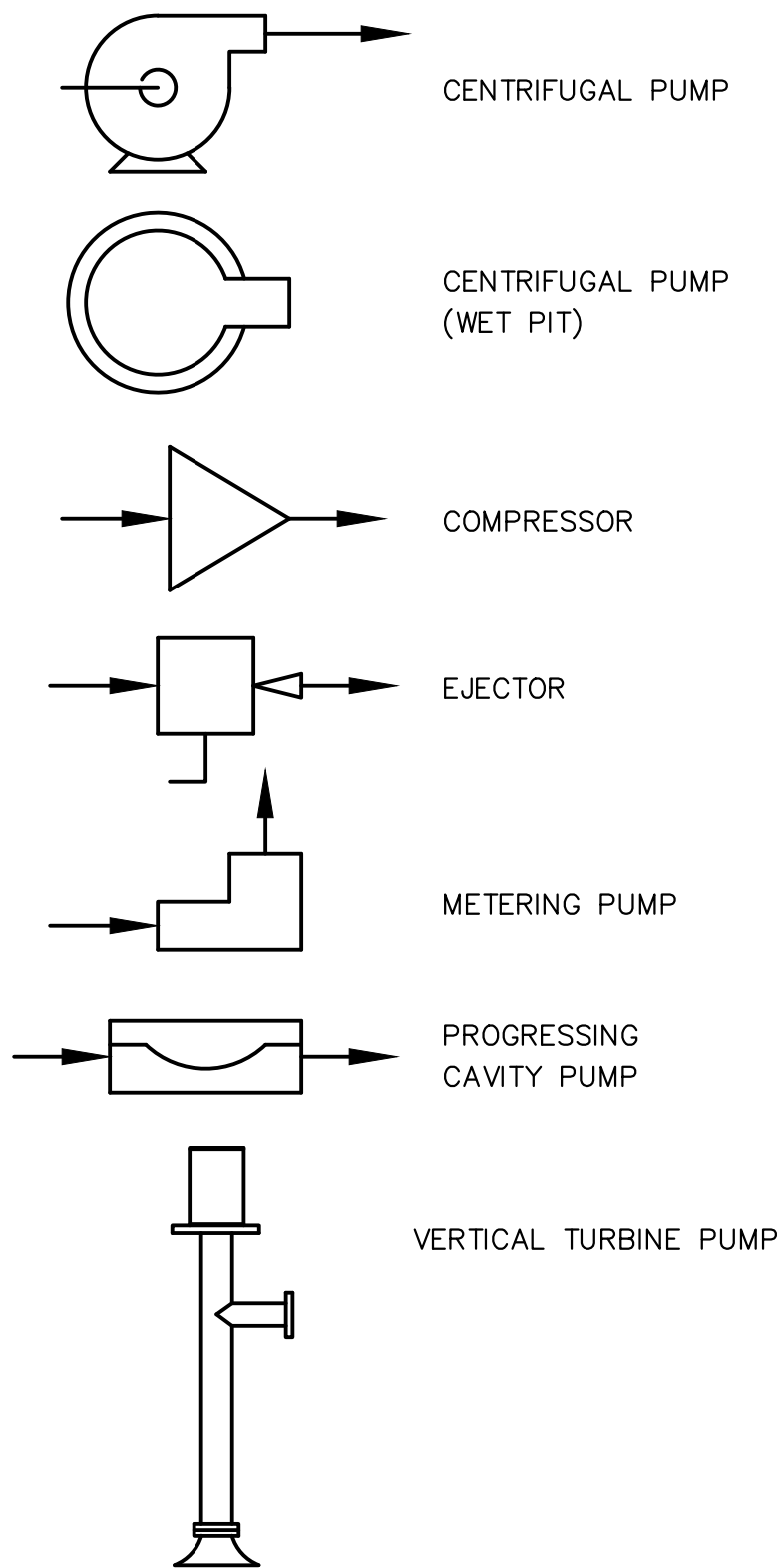


INSTRUMENT ABBREVIATION

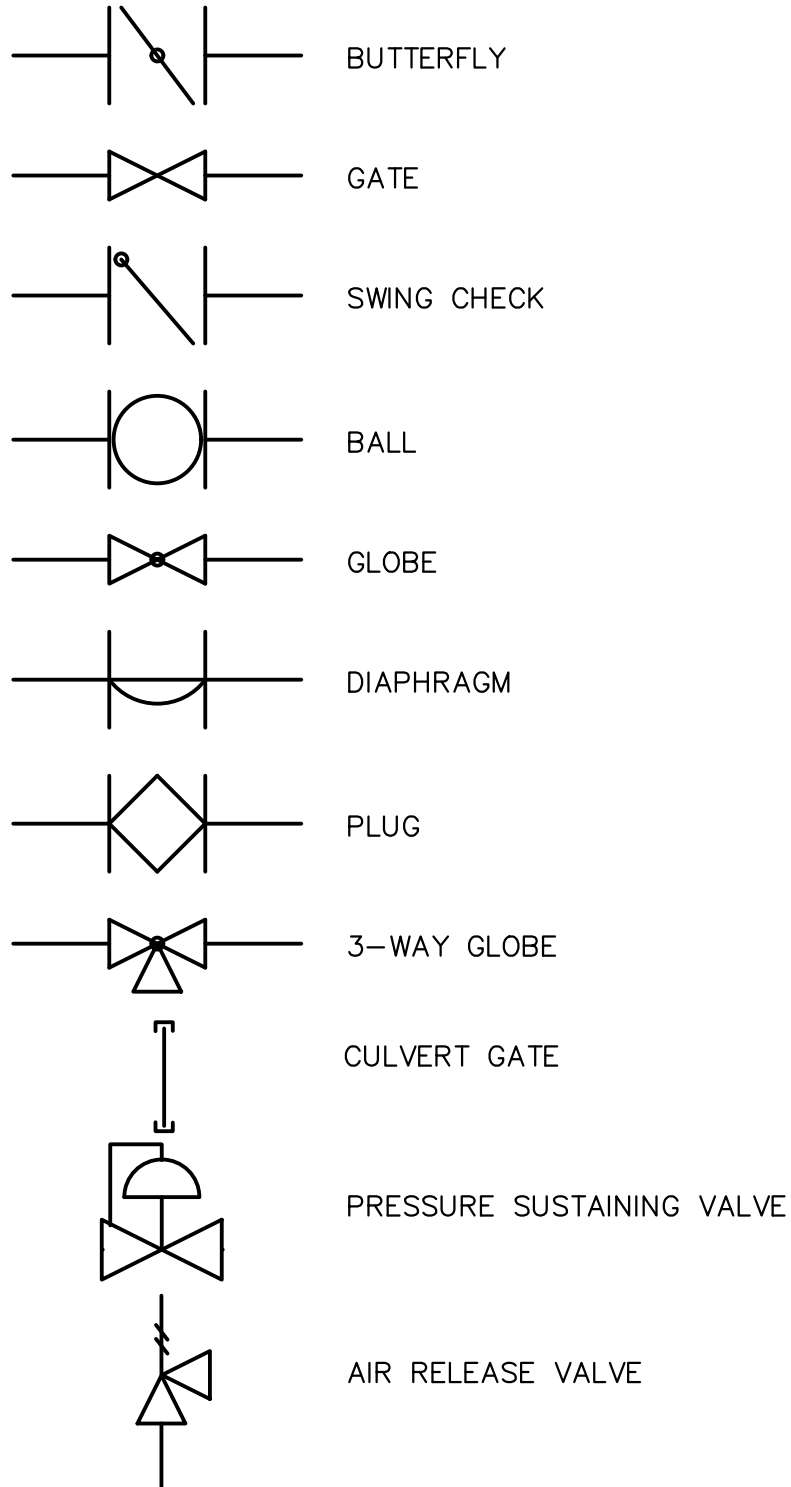
ACC	ACCELERATOR
BFP	BELT FILTER PRESS
CL2	CHLORINE
CLW	CLEARWELL
COM	COMMON
COND	CONDUCTIVITY
CP	CONTROL PANEL
DI, AI	DISCRETE INPUT, ANALOG INPUT
DO, AO	DISCRETE OUTPUT, ANALOG OUTPUT
D.O.	DISSOLVED OXYGEN
DR	DISTANCE RELAY
EFFL	EFFLUENT
EP	ELECTRICAL PANEL
ES	EMERGENCY STOP
ETM	ELAPSED TIME METER
FD	CHEMICAL FEEDER
FIL	FILTER
GEN	GENERATOR
HLO	HIGH-LOW-OFF
HLOR	HIGH-LOW-OFF-REMOTE
HOA	HAND-OFF-AUTO
HOR	HAND-OFF-REMOTE
HOTC	HAND-OFF-TIMER-COMPUTER
H/L	HIGH/LOW
HSP	HIGH SERVICE PUMP
INFL	INFLUENT
JP	JOCKEY PUMP
LOS	LOCK-OUT-STOP
LPU	LINE PROTECTION UNIT
MCC	MOTOR CONTROL CENTER
MCP	MAIN CONTROL PANEL
ME	MISCELLANEOUS EQUIPMENT
M.G.	MILLION GALLON
MOV	MOTOR OPERATED VALVE
OCA	OPEN-CLOSE-AUTO
OC	OPEN-CLOSE
OO	ON-OFF
ORP	OXIDATION REDUCTION POTENTIAL
OSC	OPEN-STOP-CLOSE
OSCR	OPEN-STOP-CLOSE-REMOTE
PH	HYDROGEN ION CONCENTRATION
PRES	PRESSURE
RES	RESTORE
RF	RF (ADMITTANCE) LEVEL MONITOR
RIP, RIO	REMOTE I/O PANEL
R/L	REMOTE/LOCAL
RSP	REMOTE SETPOINT
SA	SURGE ARRESTER
SEC	SECONDARY
SL	SLAKER
SF	SONIC FLOWMETER
SP	SETPOINT
SS	START/STOP
ST	STEP
STOR	STORAGE
SUS	SUSPENDED SOLIDS
SSRVS	SOLID STATE REDUCED VOLTAGE STARTER
TD	THERMAL DISPERSION
TP	TRANSFER PUMP
TURB	TURBIDITY
VFD	VARIABLE FREQUENCY DRIVE

INSTRUMENTATION LEGEND

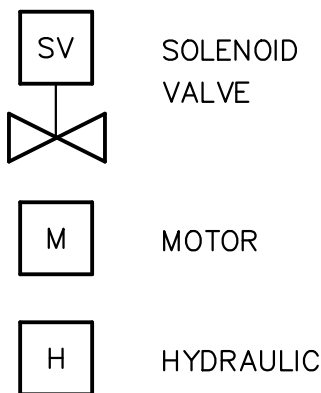
PUMPS & COMPRESSORS



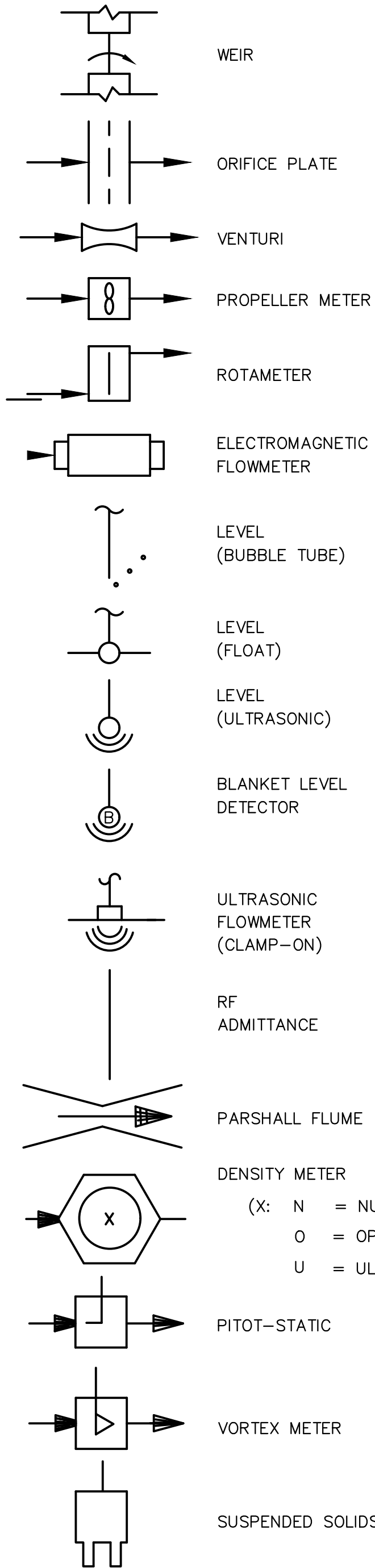
VALVES & GATES



ACTUATOR OR OPERATORS



PRIMARY ELEMENTS



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DESIGNED:	T.W.
DRAWN:	T.N.
CHECKED:	S.F.C
APPROVED:	P.F.H

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VERIFY SCALE
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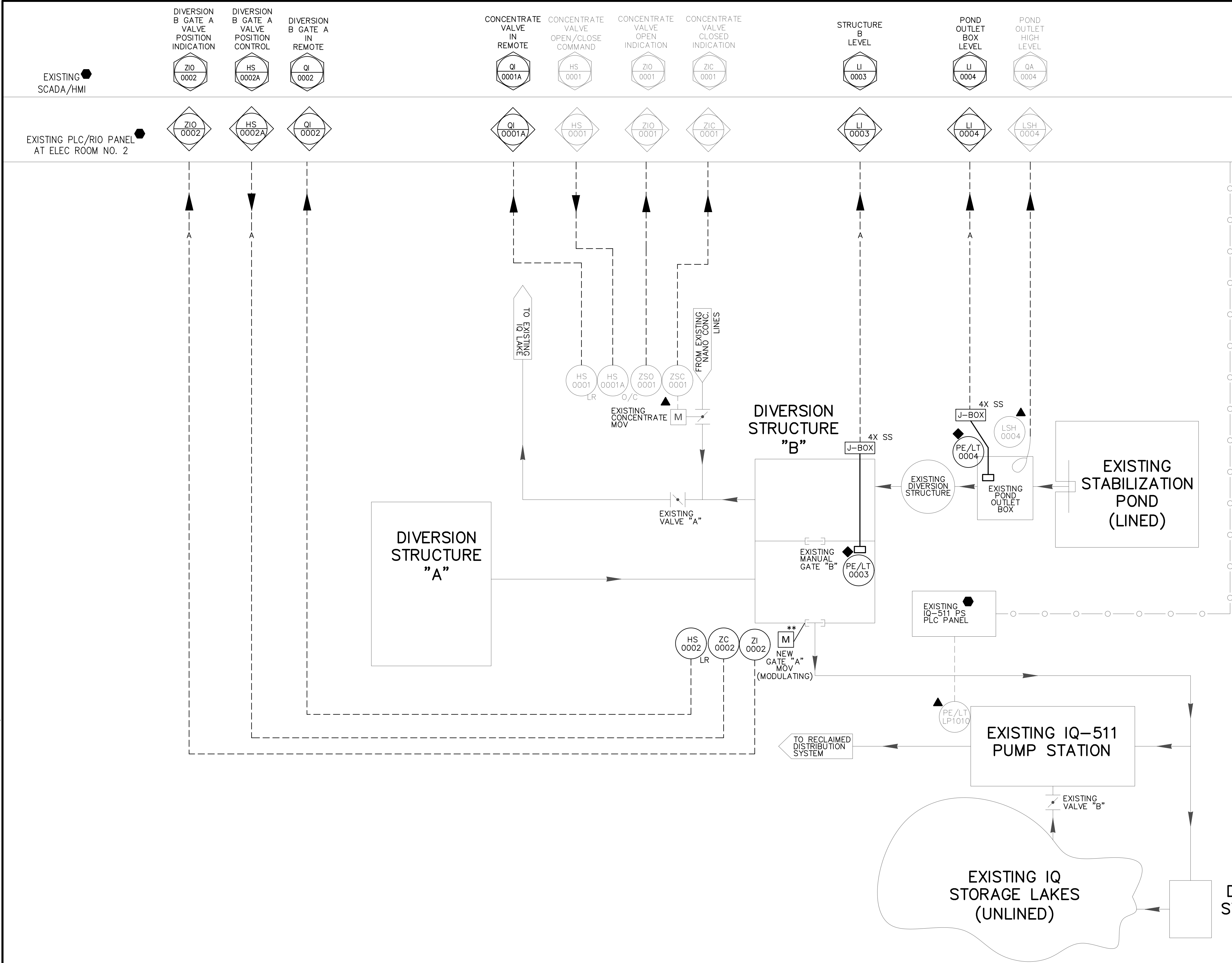
ENGINEER NO.: 200453
CLIENT
PROJECT NO.:
CAD REF.: MA3201.dwg

LOXAHATCHEE RIVER
ENVIRONMENTAL CONTROL DISTRICT
IQ-511 BYPASS PIPING

INSTRUMENTATION LEGEND AND SYMBOLS

DATE: NOVEMBER 2020
SHEET: 18 of 20
DRAWING: I-1

Acad Version : R23.1s (LMS Tech) User Name : lwn Date/Time : Fri, 30 Oct 2020 - 3:36pm Current Plotstyle : ByColor Path Name : E:\PROJECTS\MA32\ - LRD IQ-511\DWG\MA32I02.dwg Layout Tab: I-2



EXISTING PLC/RIO - MODIFIED PARITAL I/O LISTS

EXISTING RACK 1, SLOT 6 - DISCRETE INPUT	
STRUCTURE "B" CONCENTRATE MOV OPENED POSITION	DIGITAL INPUT 14
STRUCTURE "B" CONCENTRATE MOV CLOSED POSITION	DIGITAL INPUT 15
EXISTING RACK 1, SLOT 10 - DISCRETE OUTPUT	
STRUCTURE "B" CONCENTRATE MOV OPEN/CLOSE COMMAND	DIGITAL OUTPUT 6
EXISTING RACK 1, SLOT 9 - DISCRETE INPUT	
SPARE STRUCTURE "B" CONCENTRATE MOV IN REMOTE	DIGITAL INPUT 4
SPARE STRUCTURE "B" HIGH LEVEL	DIGITAL INPUT 5
SPARE STRUCTURE "B" NEW GATE "A" MOV IN REMOTE	DIGITAL INPUT 6
NEW RACK 2, SLOT 9 - ANALOG INPUT	
STRUCTURE "B" NEW GATE "A" MOV POSITION INDICATION	ANALOG INPUT 0
DIVERSION STRUCTURE "B" LEVEL	ANALOG INPUT 1
POND OUTLET BOX LEVEL	ANALOG INPUT 2
EXISTING RACK 2, SLOT 10 - ANALOG OUTPUT	
SPARE STRUCTURE "B" NEW GATE "A" MOV POSITION CONTROL	ANALOG OUTPUT 4

NOTES:

1. THE EXISTING I/O FOR CONCENTRATE MOV SHALL BE RE-USED AND RE-CONNECTED WITH THE NEW REPLACEMENT CABLES. NEW ADDITIONAL "IN REMOTE" SIGNAL FOR EXISTING CONCENTRATE MOV SHALL BE CONNECTED TO THE SPARE I/O.
2. THE SPARE I/O ON THE EXISTING PLC/RIO CARDS SHALL BE USED FOR NEW GATE "A" MOV AS SHOWN IN MODIFIED I/O LISTS.
3. REFER TO SPECIFICATION 13300 FOR CONTROL STRATEGY MODIFICATION REQUIREMENT FOR IQ-511 BYPASS PIPING IN EXISTING PLC/RIO AT ELECTRICAL ROOM NO. 2. CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE WITH OWNER FOR PLC/RIO AND SCADA MODIFICATION RELATING THIS BYPASS PIPING MODIFICATION.
4. ADD A NEW ANALOG INPUT CARD FOR ALL NEW ANALOG INPUTS ADDED IN THIS PROJECT. NEW ANALOG INPUT CARD SHALL BE 6-CHANNEL, ISOLATED TYPE, ALLEN BRADLEY MODEL 1756-IF6I, PROVIDE NECESSARY CABLE WIRING SYSTEM WITH TERMINAL INTERFACE MODULE ALLEN BRADLEY MODEL 1492-AIFM6S-3 AND SIGNAL SURGE ARRESTORS, MODIFY THE EXISTING PANEL AS REQUIRED TO MAKE SPACE FOR NEW COMPONENTS.
5. CONTRACTOR SHALL FIELD VERIFY THE EXISTING AND SPARE I/O.

NO.	DATE	ISSUED FOR	APRV'D BY	DESIGNED: T.W.
				DRAWN: T.N.
				CHECKED: S.F.C
				APPROVED: P.F.H

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ENGINEER NO.: 200453
CLIENT PROJECT NO.:
CAD REF.: MA32I02.dwg

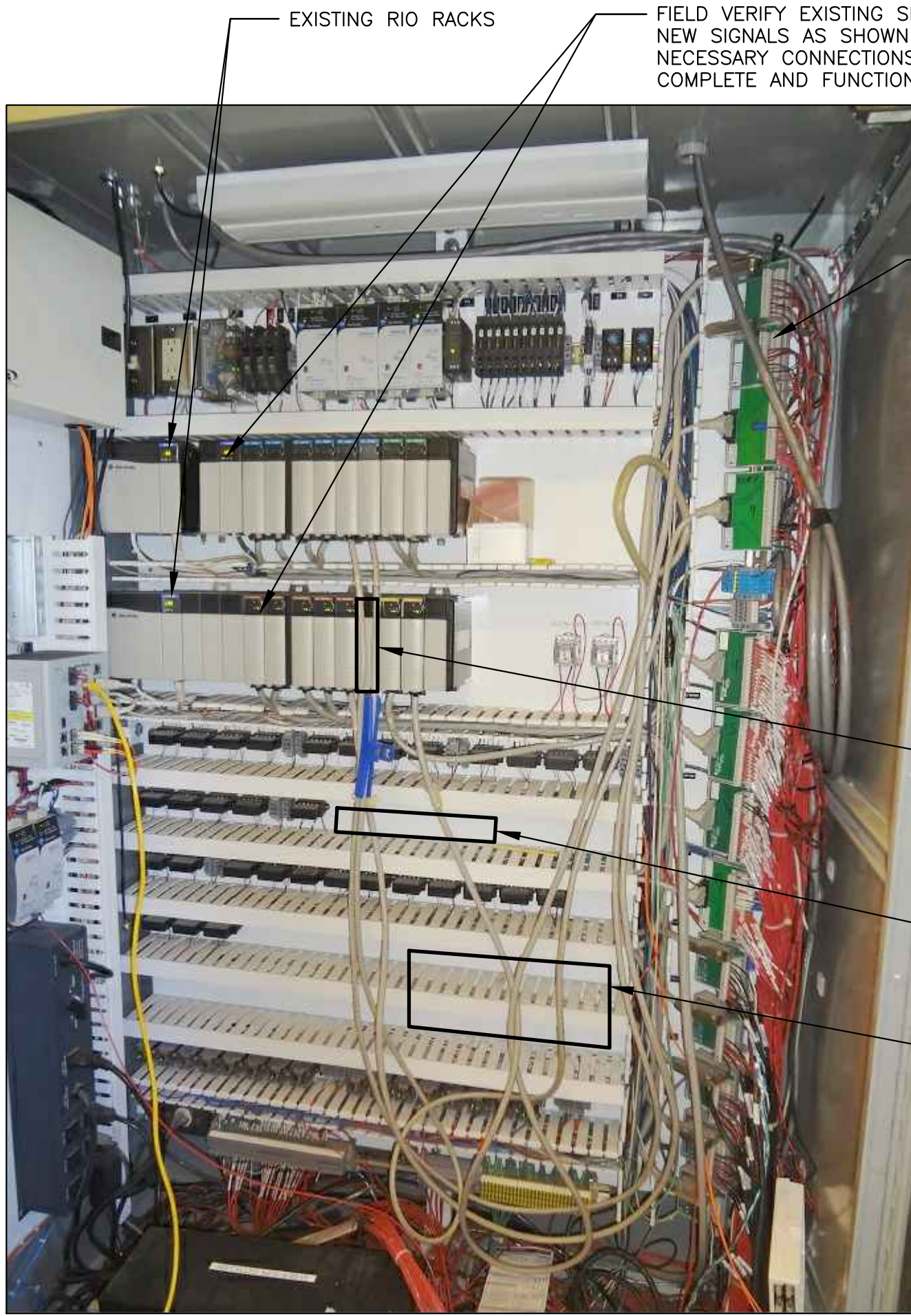
LOXAHATCHEE RIVER
ENVIRONMENTAL CONTROL DISTRICT
IQ-511 BYPASS PIPING

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DATE: NOVEMBER 2020
SHEET: 19 of 20
DRAWING: I-2

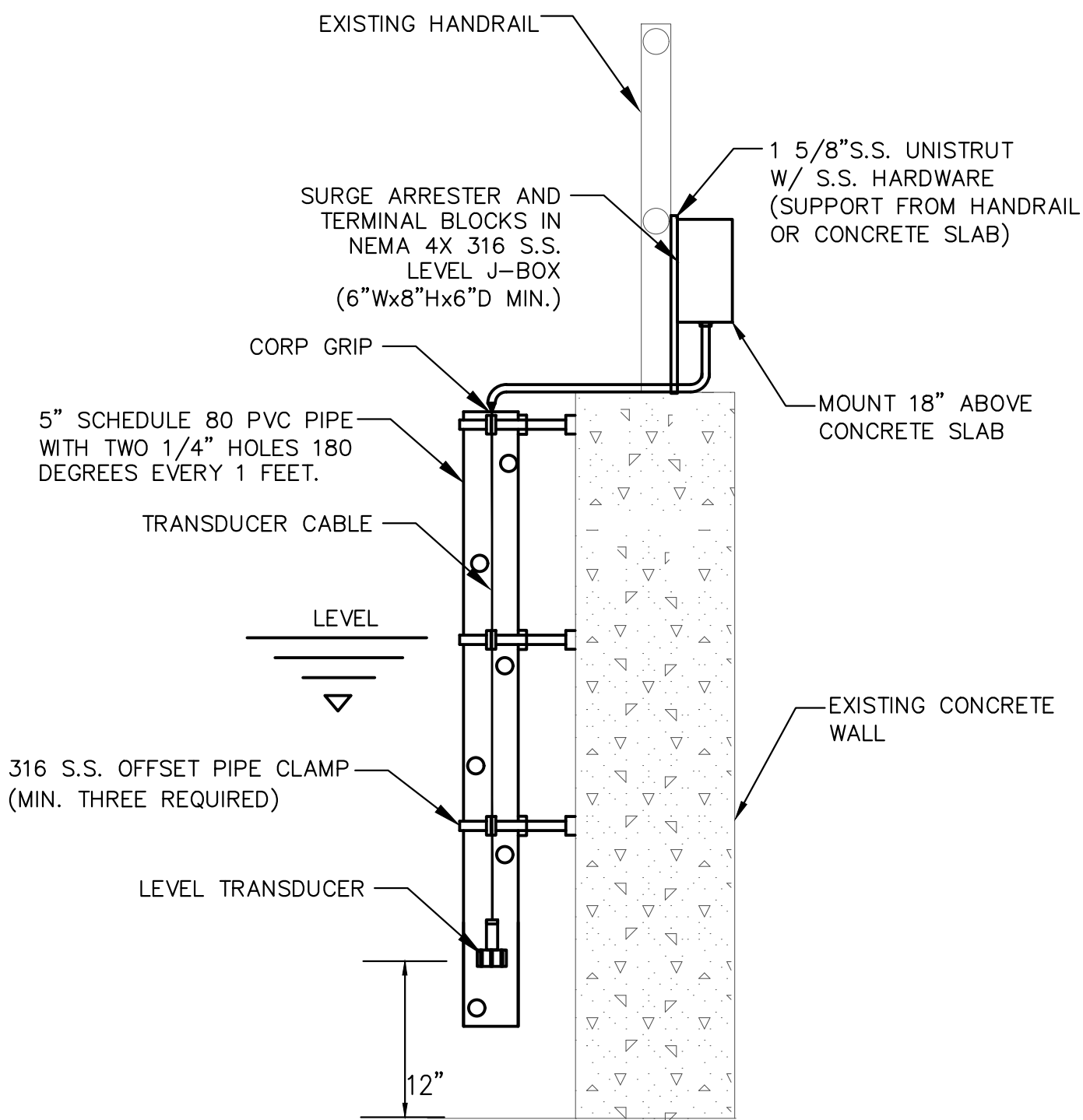
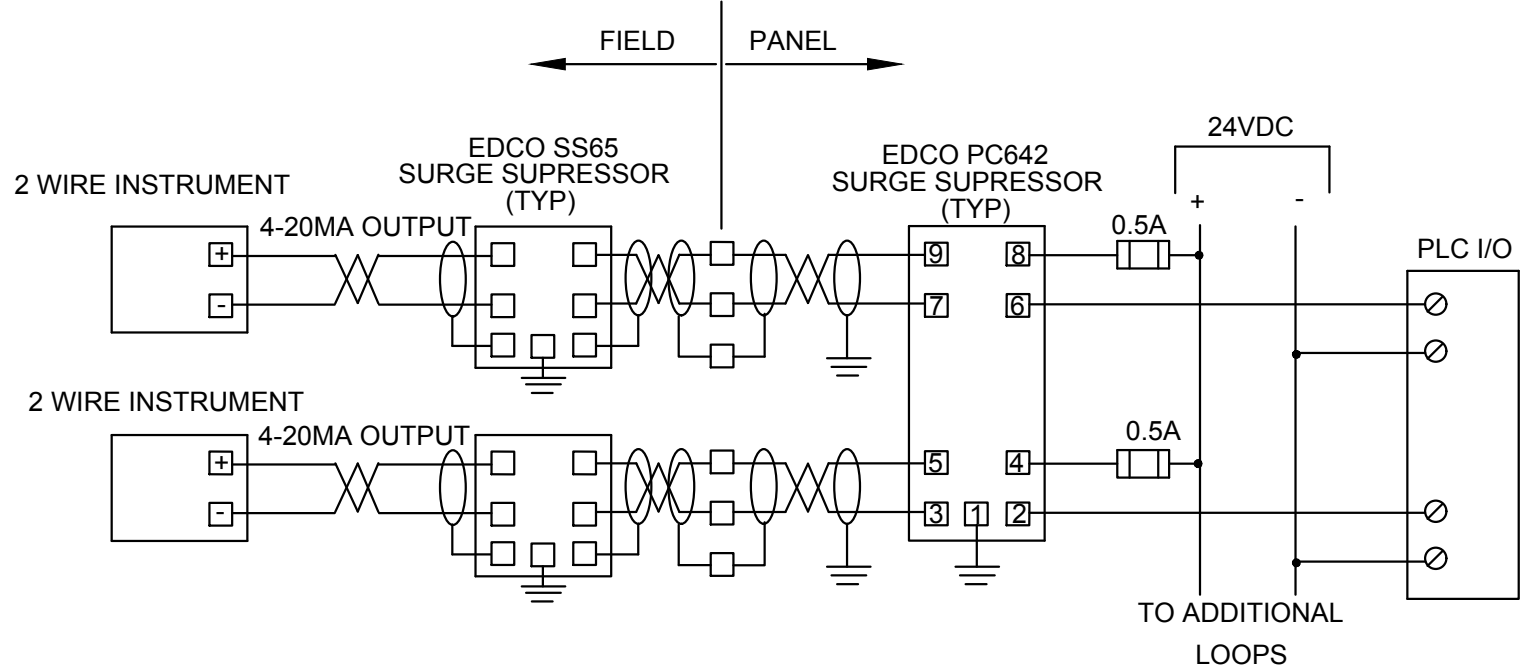
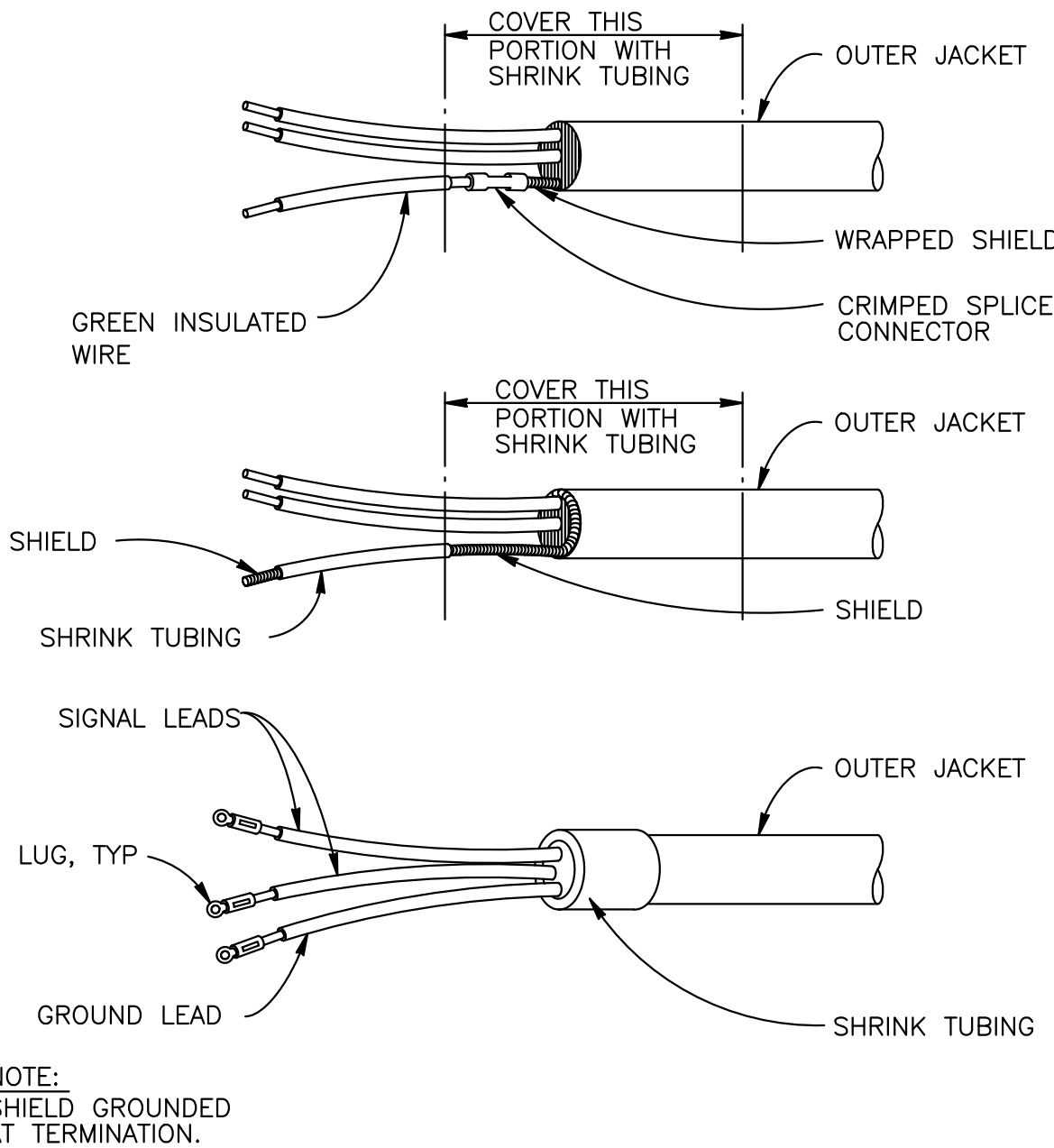
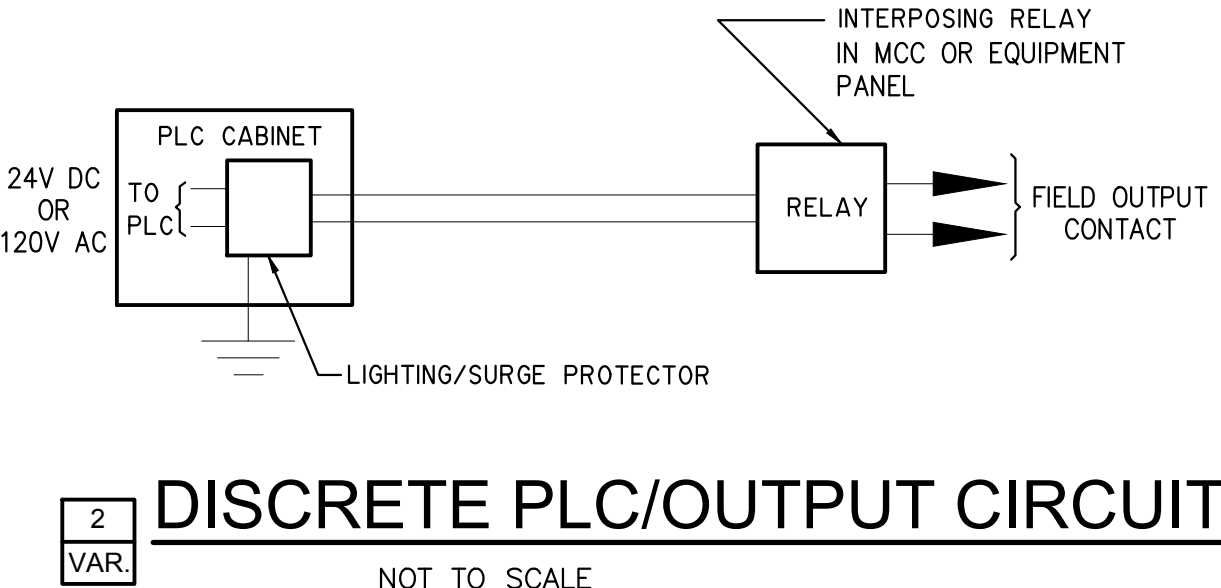
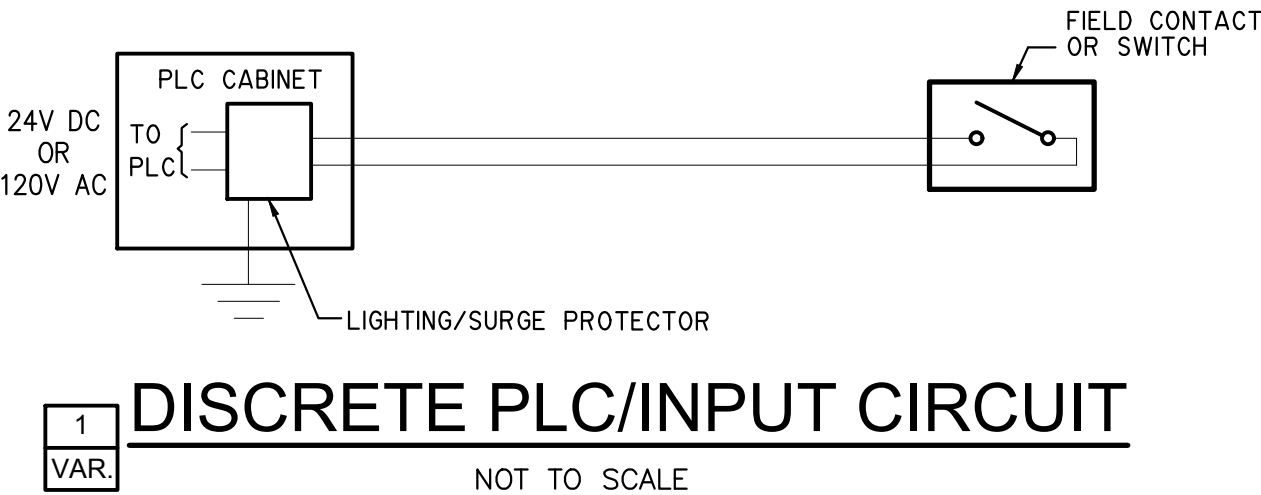
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EXISTING PLC/RIO PANEL AT ELECTRICAL ROOM NO. 2
NOT TO SCALE

NOTES:

1. THE EXISTING I/O FOR CONCENTRATE MOV SHALL BE RE-USED AND RE-CONNECTED WITH THE NEW REPLACEMENT CABLES. NEW ADDITIONAL "IN REMOTE" SIGNAL FOR EXISTING CONCENTRATE MOV SHALL BE CONNECTED TO THE SPARE I/O.
2. THE SPARE I/O ON THE EXISTING PLC/RIO CARDS SHALL BE USED FOR NEW GATE "A" MOV AS SHOWN IN MODIFIED I/O LISTS.
3. REFER TO SPECIFICATION 13300 FOR CONTROL STRATEGY MODIFICATION REQUIREMENT FOR IQ-511 BYPASS PIPING IN EXISTING PLC/RIO AT ELECTRICAL ROOM NO. 2. CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE WITH OWNER FOR PLC/RIO AND SCADA MODIFICATION RELATING THIS BYPASS PIPING MODIFICATION.
4. ADD A NEW ANALOG INPUT CARD FOR ALL NEW ANALOG INPUTS ADDED IN THIS PROJECT. NEW ANALOG INPUT CARD SHALL MATCH EXISTING. NEW ANALOG INPUT CARD SHALL BE 6-CHANNEL, ISOLATED TYPE, ALLEN BRADLEY MODEL 1756-IF6I. PROVIDE NECESSARY CABLE WIRING SYSTEM WITH TERMINAL INTERFACE MODULE ALLEN BRADLEY MODEL 1492-AIF6S-3 AND SIGNAL SURGE ARRESTORS. MODIFY THE EXISTING PANEL AS REQUIRED AND PROVIDE NECESSARY COMPONENTS FOR A COMPLETE WORKING SYSTEM.
5. CONTRACTOR SHALL FIELD VERIFY THE EXISTING AND SPARE I/O. REFER TO DRAWING I-2 FOR I/O LIST.



NO.	DATE	ISSUED FOR	APRV'D BY
		DESIGNED: T.W.	
		DRAWN: T.N.	
		CHECKED: S.F.C	
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ENGINEER NO.: 200453
CLIENT
PROJECT NO.:
CAD REF.: MA32103.dwg

LOXAHATCHEE RIVER
ENVIRONMENTAL CONTROL DISTRICT
IQ-511 BYPASS PIPING

EXISTING RIO PANEL AND DETAILS

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DATE: NOVEMBER 2020
SHEET: 20 of 20
DRAWING: I-3

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