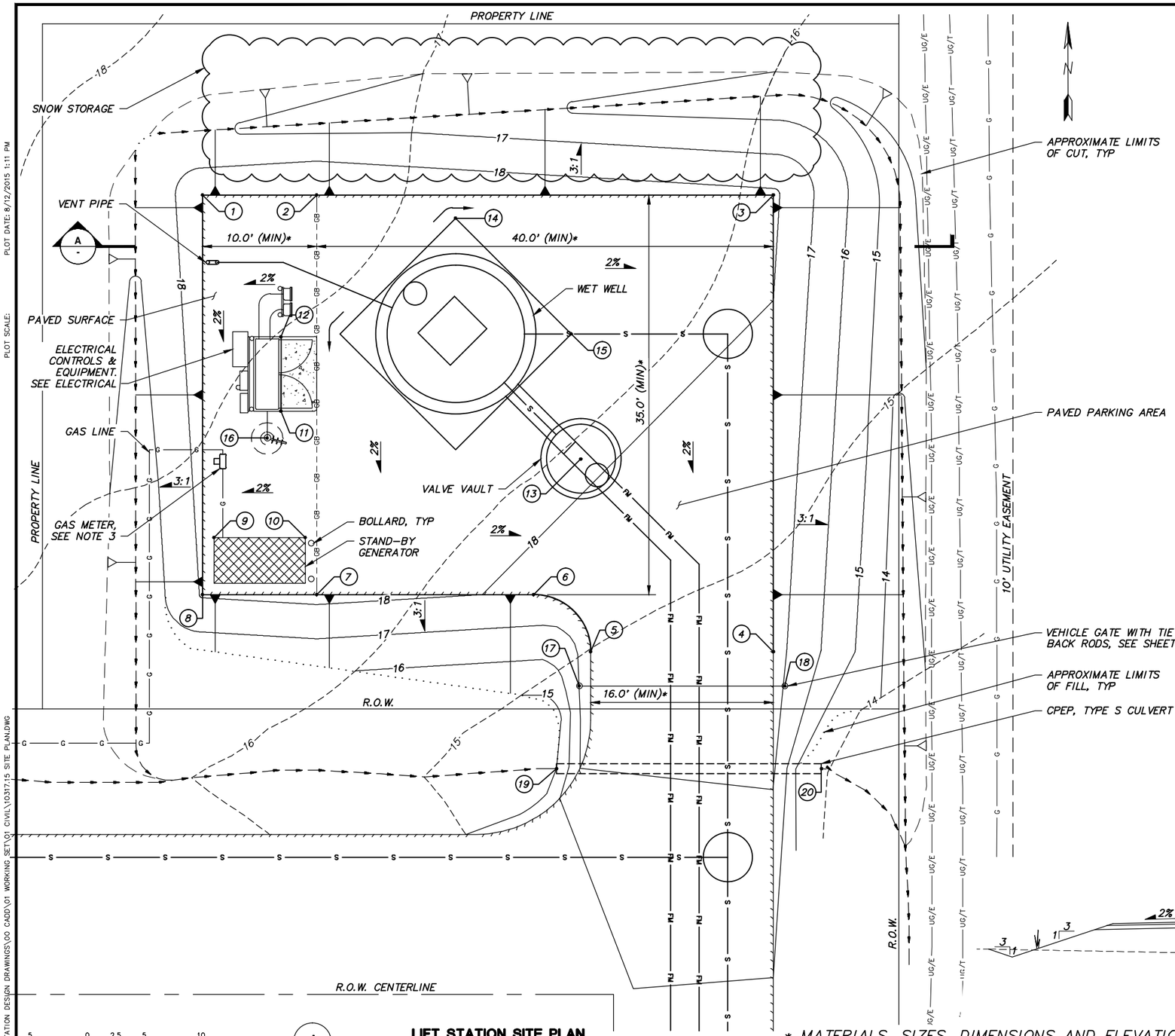

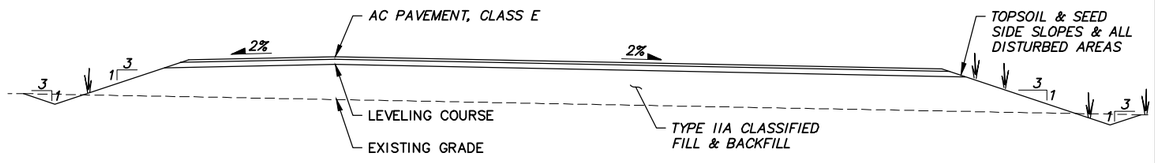

5 0 2.5 5 10
GRAPHIC SCALE (FEET)

1 LIFT STATION SITE PLAN
SCALE: AS SHOWN

SECTION A
SCALE: NTS

TYPICAL GENERAL NOTES:

1. *SLOPE AT 3:1 FROM PROPOSED LIFT STATION SITE PAD TO EXISTING GRADE.*
2. *CONTRACTOR SHALL TRANSITION BETWEEN GIVEN ELEVATIONS TO PROVIDE A SMOOTH TRANSITION TO PROPOSED SWALE. CONTRACTOR SHALL GRADE SWALE WITH A UNIFORM SLOPE THROUGHOUT.*
3. *GAS METER SHALL BE 36-INCHES FROM GENERATOR OR SOURCE OF IGNITION. GAS METER SHALL BE 72" FROM GENERATOR COMBUSTION AIR/INTAKE.*
4. *SEE SHEET C2 FOR WET WELL AND VALVE VAULT DETAILS.*
5. *SEE SHEET L1 FOR LANDSCAPING REQUIREMENTS.*

** COORDINATE ACCESS AND PARKING AREA REQUIREMENTS WITH AWWU.*

COORDINATE TABLE

Point #	Elevation*	Northing*	Easting*	Description
1	18.79	382660.98	403263.63	FG – LEVELING COURSE
2	18.99	382660.98	403273.63	FG – ASPHALT
3	18.19	382660.98	403313.63	FG – ASPHALT
4	17.39	382620.98	403313.63	FG – ASPHALT
5	17.75	382620.98	403297.63	FG – ASPHALT
6	17.91	382625.98	403292.63	FG – ASPHALT
7	18.29	382625.98	403273.63	FG – ASPHALT
8	18.09	382625.98	403263.63	FG – LEVELING COURSE
9	--	382630.98	403264.63	GENERATOR PAD, NW CORNER
10	--	382630.98	403272.63	GENERATOR PAD, NE CORNER
11	--	382642.06	403270.51	SCADA PANEL, SE CORNER
12	--	382648.57	403270.51	SCADA PANEL, NE CORNER
13	18.06	382637.87	403296.77	FG – ASPHALT, CENTER OF VALVE VAULT
14	18.50	382658.95	403285.80	FG – ASPHALT, N CORNER TOP SLAB
15	18.50	382648.82	403295.93	FG – ASPHALT, E CORNER TOP SLAB
16	--	382639.69	403269.31	SCADA ANTENNA
17	--	382617.98	403296.63	GATE POST
18	--	382617.98	403314.63	GATE POST
19	15.00	382610.75	403294.65	CULVERT INVERT
20	13.89	382610.75	403317.84	CULVERT INVERT

** MATERIALS, SIZES, DIMENSIONS AND ELEVATIONS SHALL BE DESIGNED BY THE ENGINEER.*

AWWU PLAN SET NO. XXXX

PLOT DATE: 8/12/2015 1:11 PM
PLOT SCALE:
ACAD FILE: J:\JOBS\DATA\10317.15 LIFT STATION DESIGN DRAWINGS\00 CADD\01 WORKING SET\01 CIVIL\10317.15 SITE PLAN.DWG

VERIFY SCALE THIS BAR REPRESENTS ONE INCH ON ORIGINAL DRAWING. 0" 1" IF BAR IS NOT ONE INCH, ADJUST DRAWING SCALE ACCORDINGLY. FULL SIZE SCALE HORZ SCALE: 1"=5' VERT SCALE: N/A

DATA	DRAWN BY	CHECKED BY	DATA	DRAWN BY	CHECKED BY
BASE	---		TELEPHONE	---	
TOPOGRAPHY	---		ELECTRIC	---	
PROFILE	---		CABLE TV	---	
SANITARY SEWER	---		TRAFFIC SIGNAL	---	
STORM SEWER	---		DESIGN	---	
WATER	---		QUANTITIES	---	
GAS	---		MUN. FINAL CHECK	---	

PLAN CHECK

REV	DATE	DESCRIPTION	BY

REVISIONS

RECORD DRAWING Note: To be filled out on original drawings upon project completion.

1. DATA PROVIDED BY: _____
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   BY: _____ TITLE: _____
   DATE: _____
2. DATA TRANSFERRED BY: _____
   COMPANY: _____
   DATE: _____
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   DATA TRANSFER CHECKED BY: _____
   COMPANY: _____
   BY: _____ TITLE: _____
   DATE: _____

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WATER & WASTEWATER UTILITY

STANDARD LIFT STATION DESIGN DRAWINGS

DWG C1

LIFT STATION
SITE PLAN & GRADING PLAN

HORZ SCALE: 1" = 5'
VERT SCALE: N/A
DATE: 4/2015
GRID: 1
PROJ. ID.: XXX (WTR) / XXX (SWR)
SHEET 1 of 32

PLOT DATE: 8/12/2015 1:11 PM

PLOT SCALE:

ACAD FILE: K:\JOBSDATA\10317.15 LIFT STATION DESIGN DRAWINGS\00 CADD\01 WORKING SET\01 CIVIL\10317.15_LIFT STATION_DETAILS.DWG

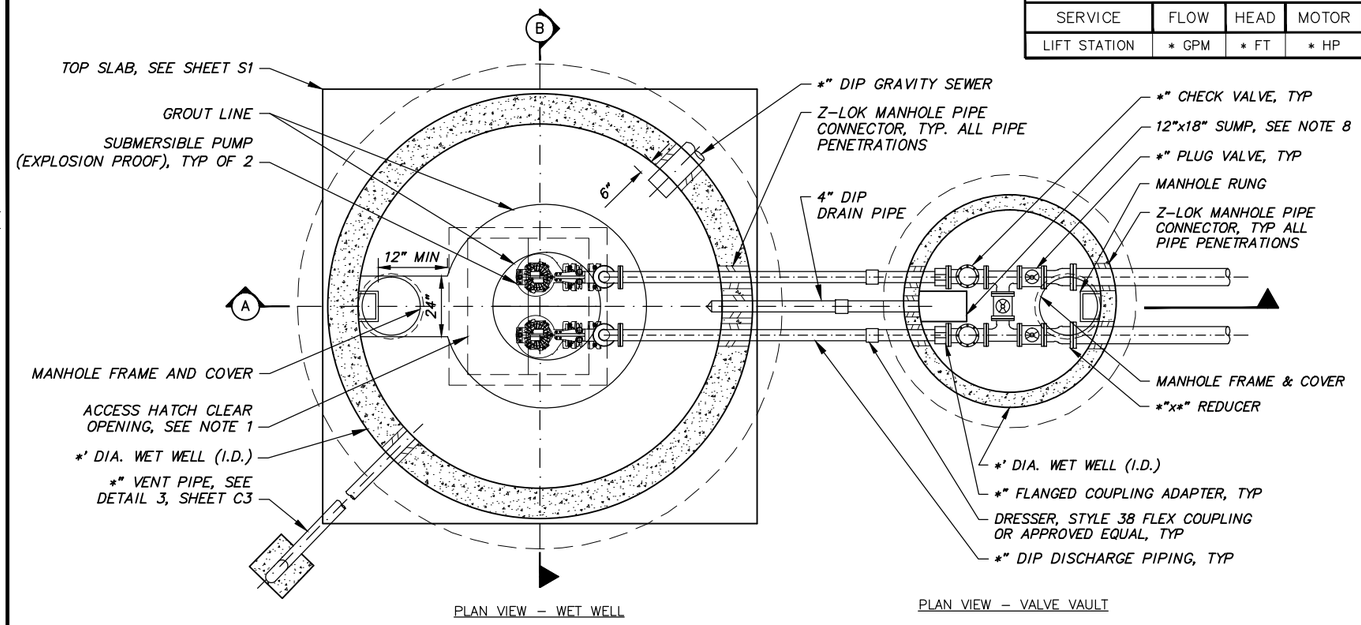
AWWU PLAN SET NO. XXXX

PUMP DATA							
SERVICE	FLOW	HEAD	MOTOR	RPM	ELECTRICAL	MANUF/MODEL	IMPELLER DIAMETER
LIFT STATION	* GPM	* FT	* HP	*	* PH	FLYGT – CP *	*mm

** PUMP DATA SUBMITTAL IS REQUIRED

DIMENSION	DESCRIPTION	ELEVATION
A	WET WELL FLOOR	*
B	PUMPS OFF REDUNDANT	*
C	ALL PUMPS OFF	*
D	LEAD PUMP ON	*
E	LAG PUMP ON	*
F	HIGH LEVEL ALARM	*
G	DRAIN PIPE TO VALVE VAULT	*
H	DISCHARGE PIPE	*
I	INFLUENT PIPE	*
J	VENT PIPE	*
K	TOP OF WET WELL	*

EQUIPMENT IDENTIFICATION		
DESCRIPTION	MAXIMO	
	LOCATION	ASSET ID
PUMP 1		
PUMP 2		
LEVEL TRANSDUCER		
SCADA PANEL		
GENERATOR		
CHECK VALVE 1		
CHECK VALVE 2		
PLUG VALVE 1		
PLUG VALVE 2		
PLUG VALVE 3		



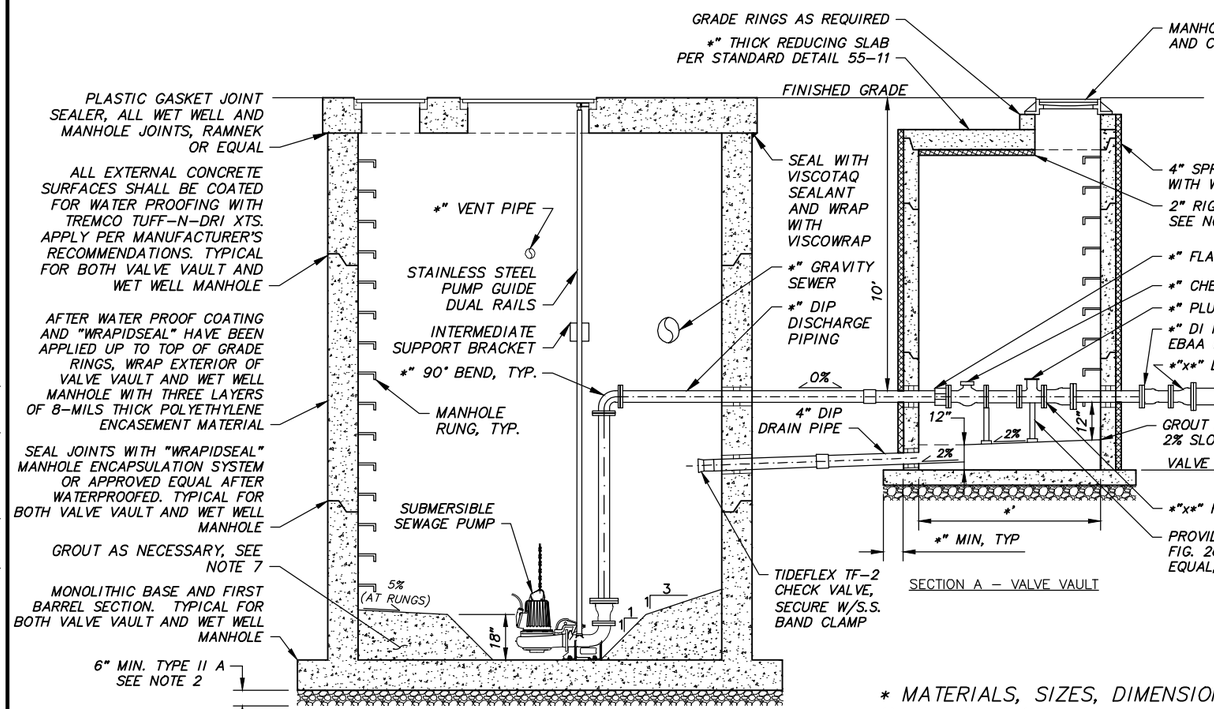
PLAN VIEW – WET WELL

PLAN VIEW – VALVE VAULT

TYPICAL LIFT STATION NOTES:

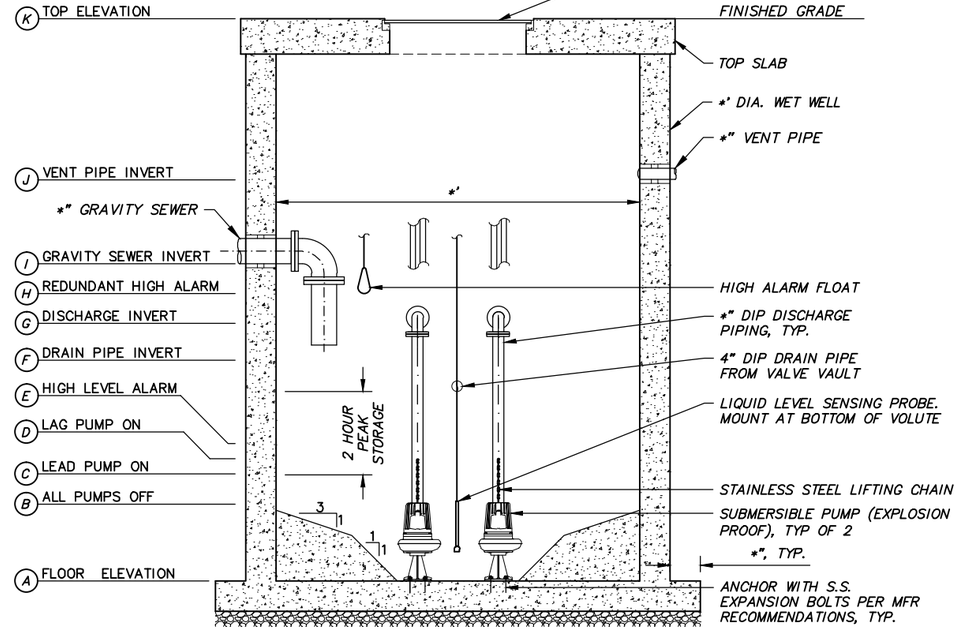
1. *LOCATIONS AND DIMENSIONS OF ACCESS HATCH, PUMP GUIDE RAILS, AND PUMP ANCHOR BOLTS ARE BASED ON SPECIFIED MATERIALS. CONTRACTOR SHALL VERIFY FINAL LOCATIONS AND DIMENSIONS BASED ON SUPPLIED MATERIALS.*
2. *IF UNSUITABLE MATERIAL IS FOUND BELOW THE BASE OF STRUCTURES, ENGINEER MAY DIRECT CONTRACTOR TO OVEREXCAVATE, PLACE TYPE A GEOTEXTILE SEPARATION FABRIC AND REPLACE WITH TYPE IIA MATERIAL COMPACTED TO A MINIMUM OF 95% OF MAXIMUM DENSITY.*
3. *SEE SHEET C3 FOR FOUNDATION AND BACKFILL REQUIREMENTS ADJACENT TO WET WELL.*
4. *ALL LIFT STATION PIPING SHALL BE CLASS 52 DIP. ALL FITTINGS INSIDE WET WELL AND VALVE VAULT SHALL BE FLANGED. ALL FITTINGS OUTSIDE WET WELL AND VALVE VAULT SHALL CONTAIN A RESTRAINED RETAINER GLAND, EBAA IRON "MEGALUG" OR EQUAL, UNLESS SHOWN OTHERWISE.*
5. *INSTALL ANODES ON DIP PIPING BETWEEN LIFT STATION AND VALVE VAULT.*
6. *PUMP GUIDE RAILS SHALL BE CONSTRUCTED OF A SINGLE LENGTH OF STAINLESS STEEL PIPE. IF MULTIPLE LENGTHS OF PIPE ARE NECESSARY, THE JOINTS SHALL BE LOCATED NEAR THE TOP OF THE VAULT.*
7. *GROUT BOTTOM OF WET WELL TO PROVIDE MINIMUM 1:1 SLOPE TO PUMP SUCTION TO A HEIGHT OF 18–INCHES AND THEN TRANSITION TO 3:1 TO WALL OF WET WELL.*
8. *PROVIDE GROUT TO CREATE SUMP. SLOPE FLOOR TO SUMP AT 1% MIN., 2% MAX.*
9. *INTERNAL CONCRETE SURFACE OF WET WELL AND RECEIVING STRUCTURE SHALL BE COATED WITH ELASTOMERIC COATING FOR PROTECTION FROM H2S.*
10. *MOUNT 2" RIGID INSULATION ON UNDERSIDE OF LID. ATTACH WITH ADHESIVE MOUNTED STICK PINS AND SPEED WASHERS AT 18" O.C. EACH WAY.*
11. *INSULATE VALVE VAULT PIPING AND VALVES. SEE SPECIAL PROVISIONS.*

** MAXIMUM DEPTH OF WET WELL SHALL NOT EXCEED 30–FEET.*



SECTION A – WET WELL

SECTION A – VALVE VAULT



SECTION B – WET WELL

** MATERIALS, SIZES, DIMENSIONS AND ELEVATIONS SHALL BE DESIGNED BY THE ENGINEER.*

VERIFY SCALE THIS BAR REPRESENTS ONE INCH ON ORIGINAL DRAWING. 0" ——— 1" IF BAR IS NOT ONE INCH, ADJUST DRAWING SCALE ACCORDINGLY. FULL SIZE SCALE HORZ SCALE: N/A VERT SCALE: N/A

DATA	DRAWN BY	CHECKED BY	DATA	DRAWN BY	CHECKED BY	REV	DATE	DESCRIPTION	BY
BASE	---		TELEPHONE	---					
TOPOGRAPHY	---		ELECTRIC	---					
PROFILE	---		CABLE TV	---					
SANITARY SEWER	---		TRAFFIC SIGNAL	---					
STORM SEWER	---		DESIGN	---					
WATER	---		QUANTITIES	---					
GAS	---		MUN. FINAL CHECK	---					
PLAN CHECK						REVISIONS			

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   BY: _____ TITLE: _____
   DATE: _____

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WATER & WASTEWATER UTILITY

STANDARD LIFT STATION DESIGN DRAWINGS

DWG C2

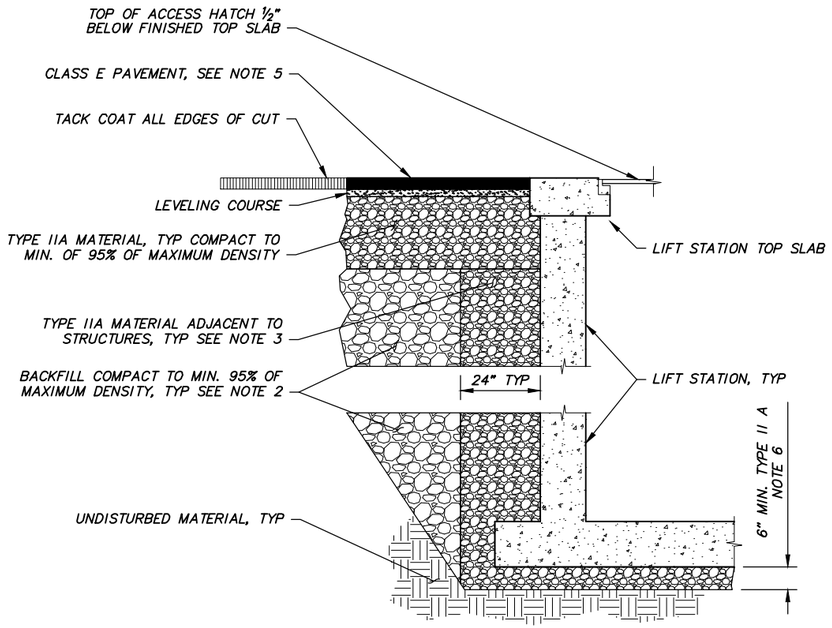
LIFT STATION DETAIL & SECTIONS

HORZ SCALE: N/A VERT SCALE: N/A | DATE: 4/2015 | GRID: 1 | PROJ. ID.: XXX (WTR) / XXX (SWR) | SHEET 2 of 32

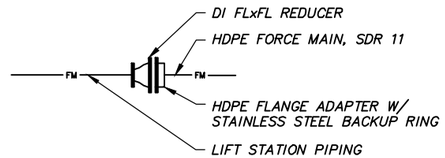
PLOT DATE: 8/12/2015 1:11 PM
PLOT SCALE:
ACAD FILE: J:\JOBS\DATA\10317.15 LIFT STATION DESIGN DRAWINGS\00 CADD\01 WORKING SET\01 CIVIL\10317.15_LIFT STATION_DETAILS.DWG

TYPICAL BACKFILL NOTES:

1. EXCAVATION AND SHORING SHALL COMPLY WITH ALL LOCAL, STATE AND OSHA REGULATIONS AND REQUIREMENTS. CONTRACTOR SHALL SHORE EXCAVATIONS AS NECESSARY KEEP EXCAVATIONS WITHIN EXISTING RIGHT-OF-WAY AND EASEMENTS AND TO PROTECT EXISTING UTILITIES AND STRUCTURES.
2. BACKFILL SHALL BE NATIVE MATERIAL, MEETING TYPE III CLASSIFICATION (MINIMUM) AS APPROVED BY THE ENGINEER. NATIVE MATERIAL NOT MEETING TYPE III CLASSIFICATION SHALL BE REMOVED AND REPLACED WITH MATERIAL MEETING TYPE II CLASSIFICATION (MINIMUM) AS DIRECTED BY ENGINEER.
3. FILL AND BACKFILL MATERIAL WITHIN 24-INCHES OF STRUCTURES SHALL BE TYPE II-A CLASSIFIED FILL AND BACKFILL PLACE IN 6-INCH LIFTS AND COMPACT TO 95% OF MAXIMUM DENSITY. USE LIGHT HAND-OPERATED COMPACTION EQUIPMENT TO AVOID DAMAGE TO STRUCTURES AND APPURTENANCES.
4. REMOVE AND PROPERLY DISPOSE OF ALL ORGANIC MATERIALS IN ACCORDANCE WITH MASS SECTION 20.04.
5. PROVIDE TACK COAT AT AC PAVEMENT AND CONCRETE SLAB INTERFACE.
6. IF UNSUITABLE MATERIAL IS FOUND BELOW THE BASE OF STRUCTURES, ENGINEER MAY DIRECT CONTRACTOR TO OVEREXCAVATE AND REPLACE WITH TYPE IIA MATERIAL COMPACTED TO A MINIMUM OF 95% MAXIMUM DENSITY.



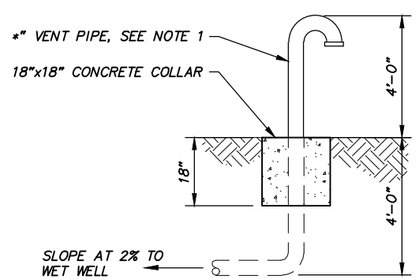
1 TYPICAL BACKFILL SECTION ADJACENT TO STRUCTURES
SCALE: NTS



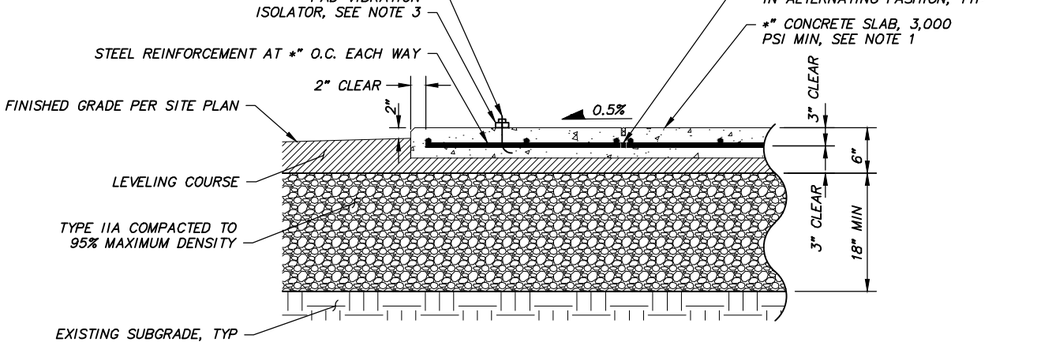
2 TYPICAL DIP PRESSURE SEWER PIPING/HDPE FORCE MAIN CONNECTION DETAIL
SCALE: NTS

TYPICAL VENT PIPE NOTES

1. VENT PIPE SHALL BE HOT DIP GALVANIZED, SCHEDULE 40 STEEL PIPE WITH PIPE COLLAR. TERMINATE VENT 4' ABOVE GRADE WITH 180° RETURN BEND. INSTALL 1/4-INCH GALVANIZED MESH BIRD SCREEN OVER BEND OPENING.
2. CONTRACTOR SHALL ENSURE THAT 5' MINIMUM SEPARATION DISTANCE IS MAINTAINED BETWEEN VENT PIPE OPENING AND ELECTRICAL CONTROLS OR EQUIPMENT.



3 LIFT STATION VENT PIPE DETAIL
SCALE: NTS



TYPICAL GENERATOR SLAB NOTES:

1. REFER TO LIFT STATION SITE PLAN DRAWINGS, FOR SLAB LOCATION.
2. PROVIDE A BRUSH FINISH ON THE SLAB SURFACE IN A LONGITUDINAL DIRECTION WITH A FIBER HAIR BRUSH OF AN APPROVED TYPE.
3. PLACE ANCHOR BOLTS AND VIBRATION ISOLATORS AS REQUIRED BY GENERATOR MANUFACTURER

4 CONCRETE GENERATOR SLAB SECTION
SCALE: NTS

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BASE	---		TELEPHONE	---					
TOPOGRAPHY	---		ELECTRIC	---					
PROFILE	---		CABLE TV	---					
SANITARY SEWER	---		TRAFFIC SIGNAL	---					
STORM SEWER	---		DESIGN	---					
WATER	---		QUANTITIES	---					
GAS	---		MUN. FINAL CHECK	---					
PLAN CHECK						REVISIONS			

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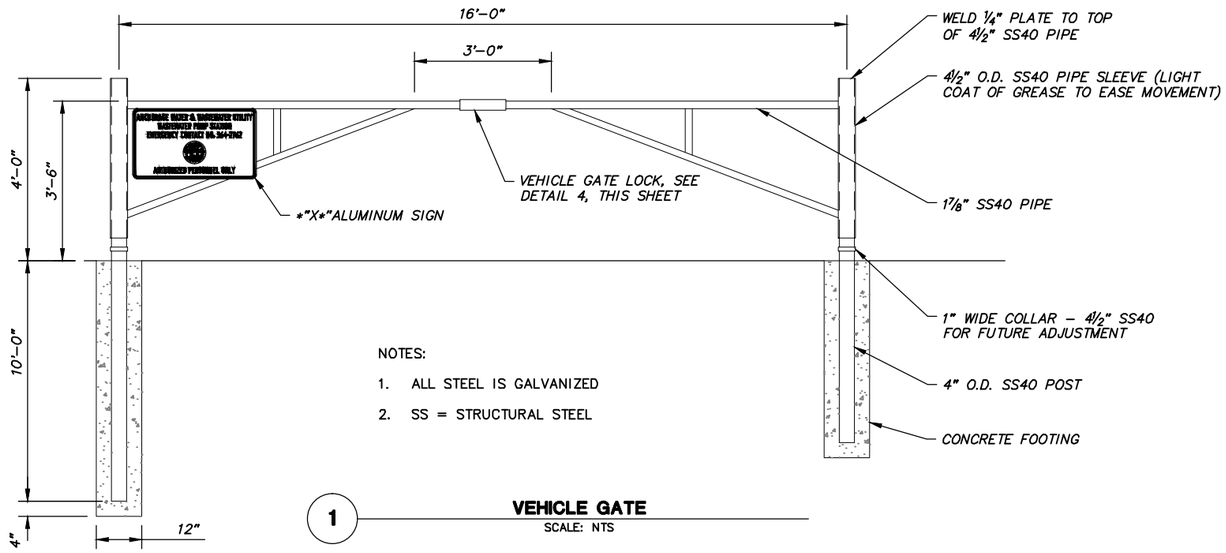
WATER & WASTEWATER UTILITY

STANDARD LIFT STATION DESIGN DRAWINGS

LIFT STATION MISC DETAILS

DWG C3

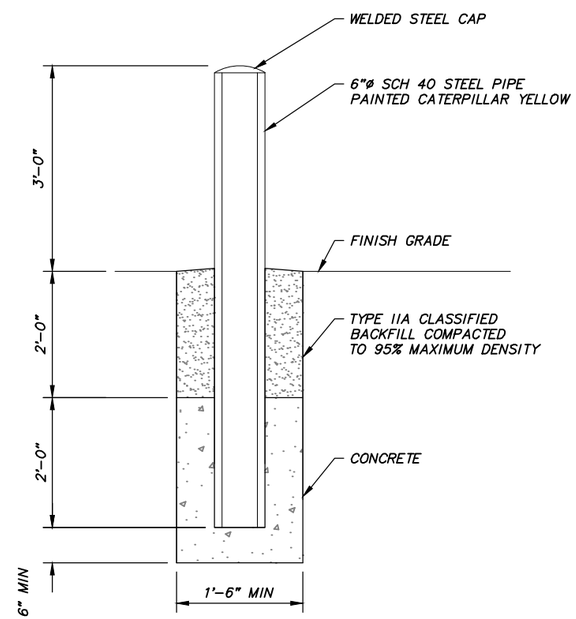
HORZ SCALE: N/A | VERT SCALE: N/A | DATE: 4/2015 | GRID: 1 | PROJ. ID.: XXX (WTR) / XXX (SWR) | SHEET 3 of 32



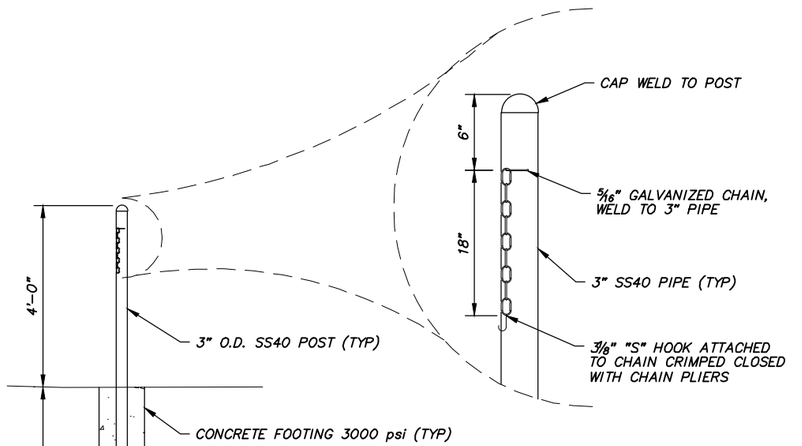
NOTES:

1. ALL STEEL IS GALVANIZED
2. SS = STRUCTURAL STEEL

1 VEHICLE GATE
SCALE: NTS



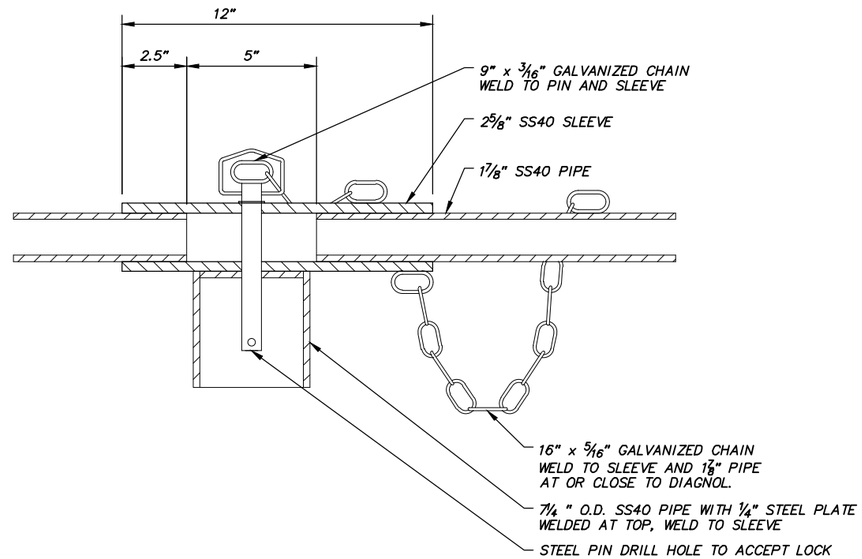
2 TYPICAL BOLLARD
SCALE: NTS



NOTES:

1. ALL STEEL IS GALVANIZED
2. SS = STRUCTURAL STEEL
3. SET GATE TIE BACK POST SO THAT THE CHAIN CAN LOOP AROUND THE GATE ARM AND SECURE WITH S HOOK
4. NOTE GRADES VARY AND POST HEIGHT MAY NEED TO BE ALTERED TO ALLOW GATE ARM AND CHAIN TO MEET PROPERLY.
5. GATE TIEBACK POSTS SHALL BE FIELD LOCATED.

3 TIE BACK POST
SCALE: NTS



4 VECHILE GATE LOCK
SCALE: NTS

** MATERIALS, SIZES, DIMENSIONS AND ELEVATIONS SHALL BE DESIGNED BY THE ENGINEER.*

AWWU PLAN SET NO. XXXX

PLOT SCALE:
PLOT DATE: 8/12/2015 1:11 PM
ACAD FILE: J:\JOBSDATA\10317.15 LIFT STATION DESIGN DRAWINGS\00 CADD\01 WORKING SET\01 CIVIL\10317.15_LIFT STATION_DETAILS.DWG

VERIFY SCALE — THIS BAR REPRESENTS ONE INCH ON ORIGINAL DRAWING. 0" ■■■■■ 1" — IF BAR IS NOT ONE INCH, ADJUST DRAWING SCALE ACCORDINGLY. — FULL SIZE SCALE HORZ SCALE: N/A VERT SCALE: N/A

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BASE	---		TELEPHONE	---					
TOPOGRAPHY	---		ELECTRIC	---					
PROFILE	---		CABLE TV	---					
SANITARY SEWER	---		TRAFFIC SIGNAL	---					
STORM SEWER	---		DESIGN	---					
WATER	---		QUANTITIES	---					
GAS	---		MUN. FINAL CHECK	---					
PLAN CHECK						REVISIONS			

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   DATE: _____

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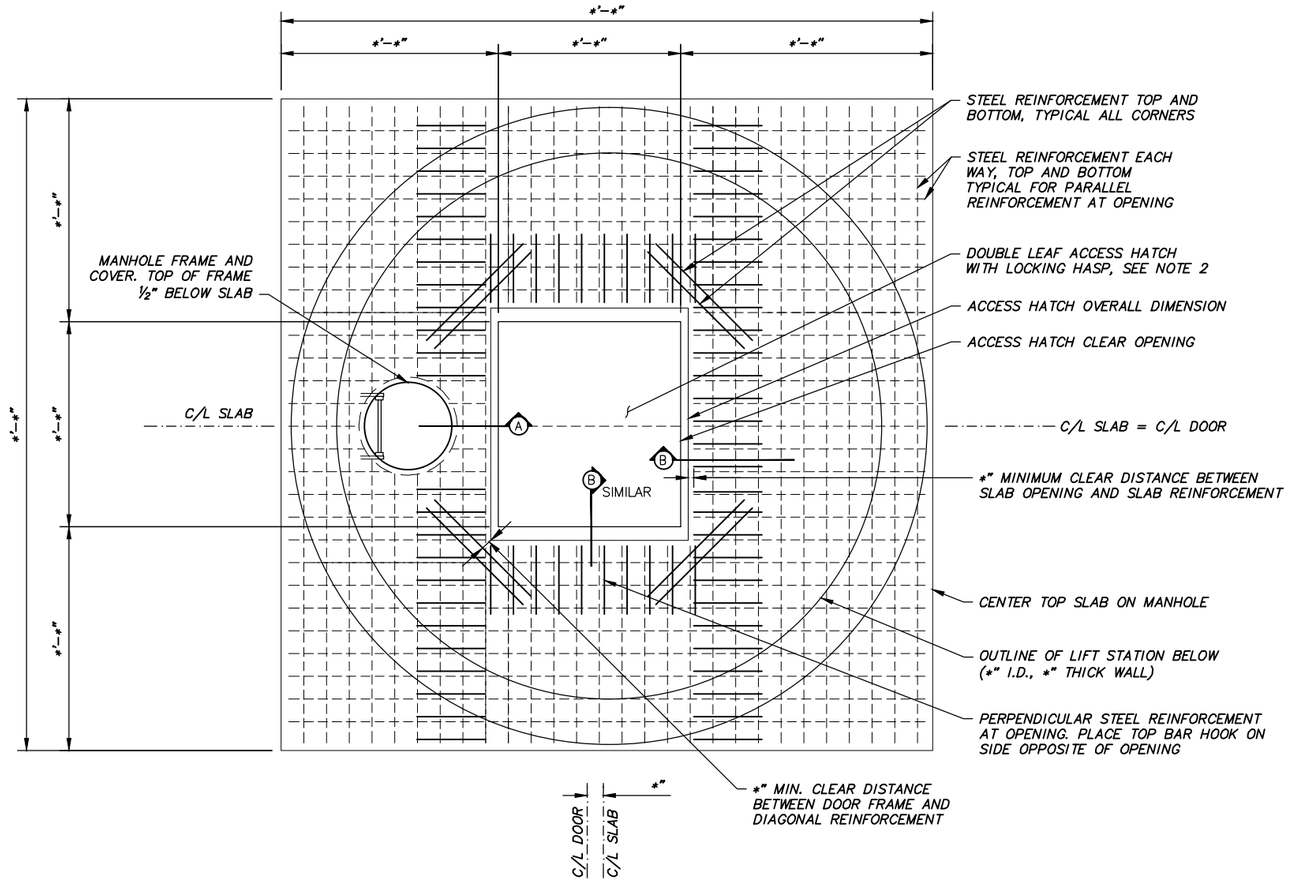
WATER & WASTEWATER UTILITY

STANDARD LIFT STATION DESIGN DRAWINGS

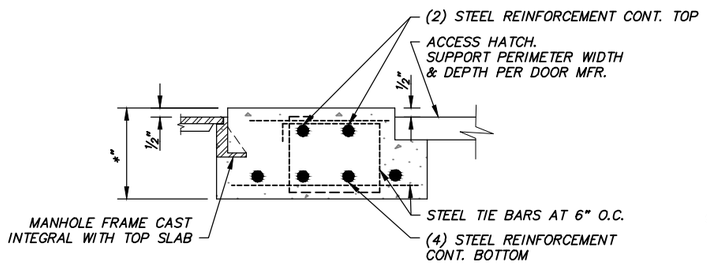
LIFT STATION MISC DETAILS

DWG **C4**

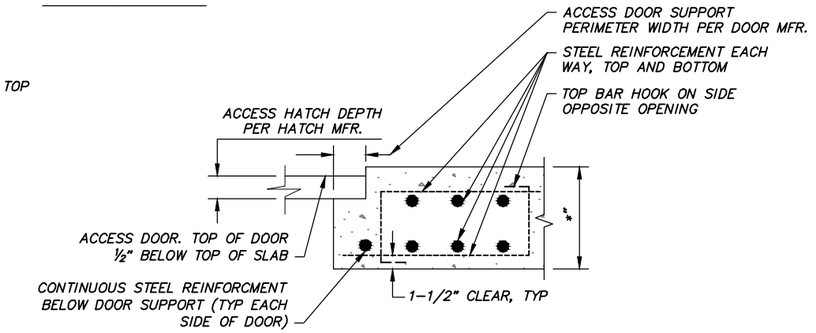
HORZ SCALE: N/A | VERT SCALE: N/A | DATE: 4/2015 | GRID: 1 | PROJ. ID.: XXX (WTR) / XXX (SWR) | SHEET 4 of 32



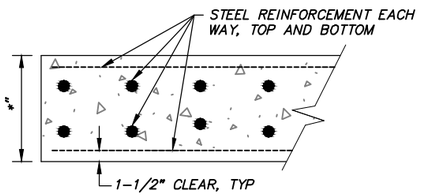
PLAN



SECTION A



SECTION B



TYPICAL SLAB SECTION

1 **LIFT STATION TOP SLAB**
SCALE: NTS

TYPICAL STRUCTURAL NOTES:

1. *CONCRETE AND REINFORCEMENT SHALL CONFORM TO THE LATEST EDITION OF MUNICIPALITY OF ANCHORAGE STANDARD SPECIFICATIONS (MASS) 2009 AND AS FOLLOWS:*
   CONCRETE–CUSTOM CLASS WITH:
   COMPRESSIVE STRENGTH..... 4,000 PSI AT 28 DAYS
   CEMENT..... ASTM C150, TYPE I OR III
   WATER CEMENT RATIO..... 0.45 MAX BY WEIGHT
   SLUMP RANGE..... 2–4 INCHES
   AIR ENTRAINMENT..... 3–7%
   COURSE AGGREGATE..... NO. 4 & NO. 67 AASHTO
   FINE AGGREGATE..... AASHTO M–6

   REINFORCEMENT:
   DEFORMED STEEL BAR..... ASTM A615, GRADE 60
   YIELD STRENGTH..... Fy = 60 KSI
   MINIMUM COVER..... 1½"
2. *CAST SLAB WITH ACCESS HATCH FRAME IN PLACE. ACCESS HATCH CLEAR OPENING = *"x*". SAFETY GRATING HINGES SHALL ALIGN WITH ACCESS HATCH HINGES. LIFT STATION HATCH AND FRAME SHALL BE OF ALUMINUM CONSTRUCTION AND SHALL BE DESIGNED FOR H20–44 WHEEL LOADS, NOT SUBJECT TO HIGH DENSITY TRAFFIC.*
3. *PROVIDE FERRULE LOOP INSERTS WITH BOLTS AS REQUIRED FOR LIFTING AND PLACEMENT. REMOVE BOLTS PRIOR TO PAVING.*
4. *HATCH AND FRAME RECESSED 0.5" BELOW TOP OF CONCRETE TOP SLAB.*

** MATERIALS, SIZES, DIMENSIONS AND ELEVATIONS SHALL BE DESIGNED BY THE ENGINEER.*

VERIFY SCALE THIS BAR REPRESENTS ONE INCH ON ORIGINAL DRAWING. 0" ■■■■■■■■ 1" IF BAR IS NOT ONE INCH, ADJUST DRAWING SCALE ACCORDINGLY. FULL SIZE SCALE HORZ SCALE: N/A VERT SCALE: N/A

DATA	DRAWN BY	CHECKED BY	DATA	DRAWN BY	CHECKED BY
BASE	---		TELEPHONE	---	
TOPOGRAPHY	---		ELECTRIC	---	
PROFILE	---		CABLE TV	---	
SANITARY SEWER	---		TRAFFIC SIGNAL	---	
STORM SEWER	---		DESIGN	---	
WATER	---		QUANTITIES	---	
GAS	---		MUN. FINAL CHECK	---	

PLAN CHECK

REV	DATE	DESCRIPTION	BY

REVISIONS

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3. Based on periodic field observations by the Engineer (or an individual under his/her direct supervision), the Contractor–provided data appears to represent the project as constructed.
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   BY: _____ TITLE: _____
   DATE: _____

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MUNICIPALITY OF ANCHORAGE
WATER & WASTEWATER UTILITY

STANDARD LIFT STATION DESIGN DRAWINGS

LIFT STATION TOP SLAB DETAILS

DWG **S1**

HORZ SCALE: N/A | VERT SCALE: N/A | DATE: 4/2015 | GRID: 1 | PROJ. ID.: XXX (WTR) / XXX (SWR) | SHEET 5 of 32

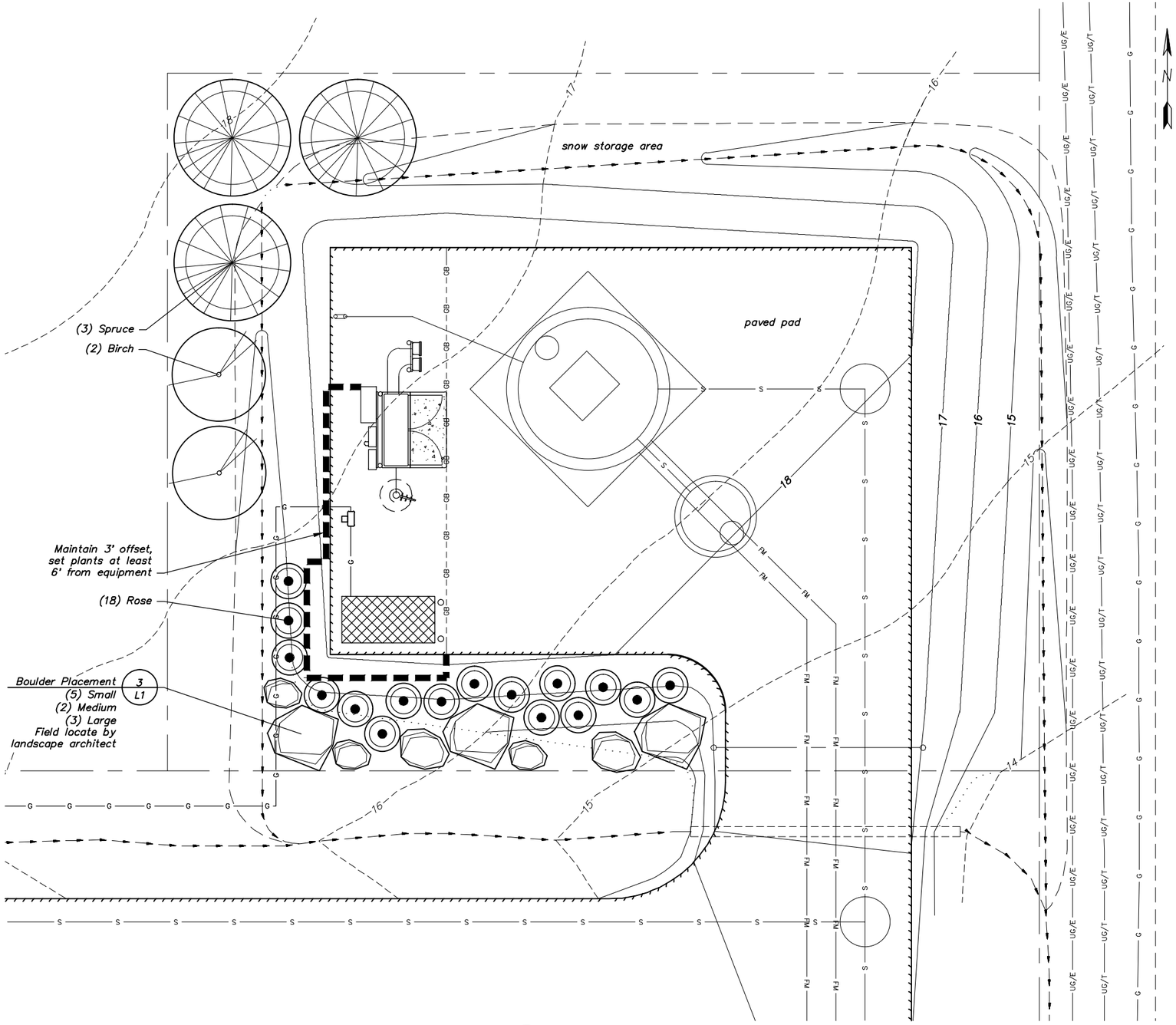
PLOT DATE: 8/12/2015 1:12 PM
PLOT SCALE:
ACAD FILE: J:\JOBSDATA\10317.15 LIFT STATION DESIGN DRAWINGS\00 CADD\01 WORKING SET\01 CIVIL\10317.15 TOP SLAB DETAILS.DWG

PLOT DATE: 8/12/2015 1:12 PM

PLOT SCALE:

ACAD FILE: K:\JOBSDATA\10317.15 LIFT STATION DESIGN DRAWINGS\00 CADD\01 WORKING SET\01 CIVIL\10317.15 LANDSCAPING.DWG

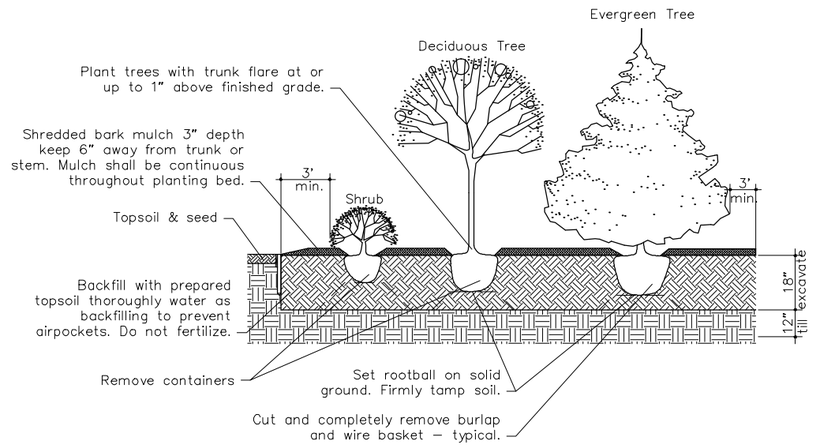
AWWU PLAN SET NO. XXXX



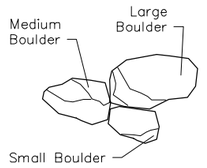
5 0 2.5 5 10
GRAPHIC SCALE (FEET)

1 LANDSCAPING PLAN
SCALE: AS SHOWN

Typical Landscaping Notes:
1. *Developer shall obtain approval from the Urban Development Commission as required.*
2. *Prepare planting bed as shown on plans:*
   a. *Excavate and remove soil*
   b. *Till subgrade*
   c. *Backfill with topsoil*
   d. *Plant trees and shrubs after landscape architect has approved staked locations*
2. *Contractor to verify location of utilities prior to excavation.*

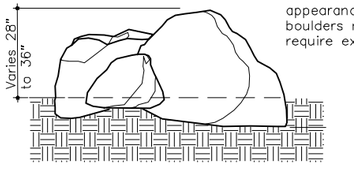


2 PLANTING SCHEDULE
NOT TO SCALE



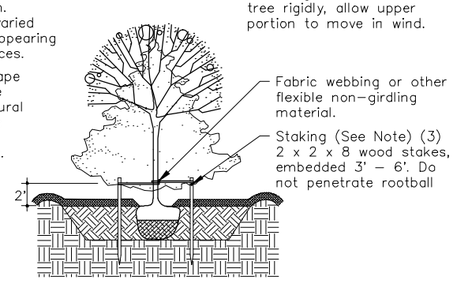
Bury Boulders 1/3 –1/2. Place boulders as shown on plans. All boulders to abut one another. Landscape Architect to supervise placement and orientation. Boulders to be angular, varied diameters, with natural appearing fractures and exposed faces.

Work with Landscape Architect to place boulders in a natural appearance, some boulders may not require excavation.

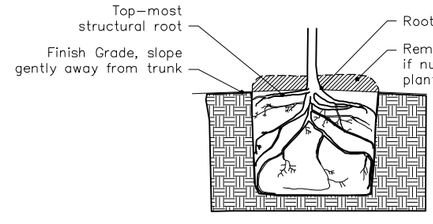


3 BOULDER PLACEMENT
NOT TO SCALE

Staking Note:
Ties must be soft, flexible material and must not girdle trees. Tie at 1/3 tree height. Do not stake tree rigidly, allow upper portion to move in wind.



4 TREE STAKING DETAIL
NOT TO SCALE



5 PLANTING DEPTH
NOT TO SCALE

** MATERIALS, SIZES, DIMENSIONS AND ELEVATIONS SHALL BE DESIGNED BY THE LANDSCAPE ARCHITECT.*

VERIFY SCALE THIS BAR REPRESENTS ONE INCH ON ORIGINAL DRAWING. 0" ——— 1"
IF BAR IS NOT ONE INCH, ADJUST DRAWING SCALE ACCORDINGLY.
FULL SIZE SCALE
HORZ SCALE: 1"=5'
VERT SCALE: N/A

DATA	DRAWN BY	CHECKED BY	DATA	DRAWN BY	CHECKED BY
BASE	---		TELEPHONE	---	
TOPOGRAPHY	---		ELECTRIC	---	
PROFILE	---		CABLE TV	---	
SANITARY SEWER	---		TRAFFIC SIGNAL	---	
STORM SEWER	---		DESIGN	---	
WATER	---		QUANTITIES	---	
GAS	---		MUN. FINAL CHECK	---	

PLAN CHECK

REV	DATE	DESCRIPTION	BY

REVISIONS

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2. DATA TRANSFERRED BY: _____
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   DATE: _____

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WATER & WASTEWATER UTILITY

STANDARD LIFT STATION DESIGN DRAWINGS

DWG L1

LIFT STATION LANDSCAPING PLAN & DETAILS

HORZ SCALE: 1" = 5'
VERT SCALE: N/A
DATE: 4/2015
GRID: 1
PROJ. ID.: XXX (WTR) / XXX (SWR)
SHEET 6 of 32

AWWU PLAN SET NO. XXXX

GENERAL NOTES

1. ALL RACEWAYS AND EQUIPMENT SHALL BE INSTALLED AND GROUNDED IN ACCORDANCE WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE AND APPLICABLE LOCAL CODES.
2. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF TERMINAL BOXES AND CONDUIT ENTRANCES OF ALL EQUIPMENT AGAINST APPROVED SHOP DRAWINGS BEFORE STUBBING UP CONDUITS.
3. REFER TO SPECIFICATIONS FOR REQUIREMENTS RELATED TO FLEXIBLE METALLIC CONDUIT INSTALLATION. ALL LFMC SHALL BE NEW AND FITTINGS SHALL BE EVACUATED.
4. RACEWAY ALIGNMENTS SHOWN ARE THE INTENDED ROUTING AND CONFIGURATION DESIRED. ROUTING ALONG WALLS AND CEILINGS SHALL BE MADE TO MINIMIZE CROSSING. ALTERNATE RACEWAY LAYOUTS SHALL BE SUBMITTED FOR APPROVAL TO ENGINEER PRIOR TO ROUGH-IN.
5. CONDUIT STUB-UPS SHALL NOT BE MORE THEN 6" FROM THE CENTER LINE OF TERMINAL BOXES.
6. IN THE EVENT OF INTERFERENCE BETWEEN ELECTRICAL EQUIPMENT SHOWN ON THE DRAWINGS AND OTHER EQUIPMENT, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IN WRITING AND THE ENGINEER SHALL APPROVE PROPOSED CHANGES BEFORE THEY ARE MADE.
7. ALL SURFACE MOUNTED PANELS AND PANELBOARDS ON THE INTERIOR OF EXTERIOR WALLS ABOVE GRADE OR IN OTHER LOCATIONS CONSIDERED DAMP OR WET SHALL BE MOUNTED SO AS TO MAINTAIN A 1/4 " (MINIMUM) AIR SPACE BETWEEN THE ENCLOSURE AND THE WALL.
8. LOCATION OF PULLBOXES ARE APPROXIMATE. THE CONTRACTOR SHALL COORDINATE EXACT LOCATION OF PULLBOXES WITH MECHANICAL PIPING AND SHALL BE 6" (MINIMUM) AWAY FROM MECHANICAL PIPING FLOW LINES.
9. THE CONTRACTOR SHALL PROVIDE ADDITIONAL PULLBOXES OR FITTINGS WHERE REQUIRED TO MAKE A WORKABLE INSTALLATION.
10. THE WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE DETAILS WHETHER OR NOT THEY ARE REFERENCED ON THE DRAWINGS.
11. ALL CONDUIT RUNS CROSSING EXPANSION JOINTS SHALL HAVE EXPANSION OR EXPANSION AND DEFLECTION TYPE FITTINGS. FOR LOCATIONS OF EXPANSION JOINTS, REFER TO THE STRUCTURAL DRAWINGS.
12. CONNECTIONS BETWEEN RIGID CONDUIT AND MOTOR TERMINAL BOXES OR SIMILAR EQUIPMENT SUBJECT TO VIBRATION SHALL BE FLEXIBLE LIQUID-TIGHT CONDUIT.
13. CONDUITS SHALL BE TERMINATED SO AS TO PERMIT NEAT CONNECTION TO MOTORS AND OTHER EQUIPMENT.
14. CONDUITS FOR FUTURE EQUIPMENT OR EXTENSION SHALL BE TERMINATED AS SHOWN IN DETAIL OR AS SPECIFIED.
15. SEPARATE POWER, CONTROL AND INSTRUMENTATION WIRING. PROVIDE SEPARATE CONDUIT, PULL AND JUNCTION BOXES. PROVIDE SUITABLE CABLE BARRIER WITHIN PULL OR JUNCTION BOXES WHERE SEPARATION OF WIRING IS NOT SHOWN ON THE DRAWINGS.
16. ALL RECEPTACLES IN OUTDOOR AND ANTICIPATED WET AREAS SHALL BE GROUND FAULT CIRCUIT INTERRUPTER RECEPTACLES WITH WEATHERPROOF COVERS.
17. ELECTRICAL CONTRACTOR SHALL VISIT THE SITE PRIOR TO BIDDING THE PROJECT TO VERIFY THE SCOPE OF WORK WITH FIELD CONDITIONS. PARTICULAR ATTENTION SHOULD BE GIVEN TO NEW CONDUIT RUNS IN EXISTING BUILDING.
18. EQUIPMENT LOCKOUTS SHALL BE IN STRICT ACCORDANCE WITH OWNER'S REQUIREMENTS.
19. ELECTRICAL DEMOLITION NOTES, WHERE APPLICABLE

    BIDDING CONTRACTORS SHALL VISIT THE SITE TO ASSESS THE SCOPE OF DEMOLITION, REMOVAL AND MODIFICATION WORK.

    ELECTRICAL CONTRACTOR SHALL DE-ENERGIZE ALL WIRING PRIOR TO REMOVAL OF EQUIPMENT. DEVICES, MOTORS, INSTRUMENTATION CONTROL PANELS, ETC. CONTRACTOR SHALL OBTAIN PRIOR APPROVAL FROM THE OWNER.

    ELECTRICAL CONTRACTOR SHALL FIELD VERIFY CONDUIT RUNS PRIOR TO DEMOLITION AND REMOVAL.

    EXPOSED RACEWAYS: REMOVE CONDUIT, WIRES AND BOXES. PATCH TO MATCH EXISTING FINISH-ALL OPENINGS IN WALLS AND FLOORS.

    CONCEALED CONDUITS IN THE SLAB: REMOVE EXISTING WIRES TO THE EXTENT POSSIBLE AND ABANDON CONDUITS IN THE SLAB. CUT CONDUIT FLUSH AND PATCH THE FLOOR TO MATCH EXISTING.

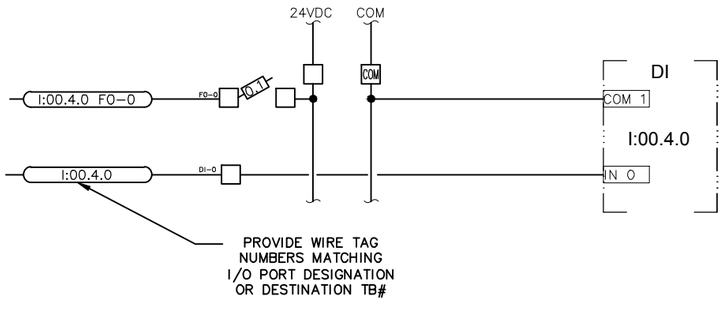
    CONTROL PANEL: ELECTRICAL CONTRACTOR SHALL DE-ENERGIZE AND REMOVE ALL CONDUIT AND WIRE AS DESCRIBED ABOVE. CONTRACTOR SHALL REMOVE PANELS AS NOTED ON THE CONTRACT DRAWINGS. REFER TO NOTE ABOVE FOR DISPOSITION OF ENCASED CONDUITS.

    REFER TO SPECIFICATIONS FOR ADDITIONAL ELECTRICAL DEMOLITION AND REMOVAL REQUIREMENTS.

20. SPLICES ARE NOT ALLOWED UNLESS APPROVED IN ADVANCE BY THE ENGINEER. THIS INCLUDES CASES WHERE ADDITIONAL CONDUCTORS MAY BE REQUIRED TO COMPLY.

ELECTRICAL SCOPE

I/O WIRE TAGS



PROJECT LINE SYMBOLOGY

UNLESS OTHERWISE NOTED THE FOLLOWING SYMBOLOGY APPLIES TO ALL DRAWINGS

- EXISTING WIRING/RACEWAY
- EXISTING WIRING/RACEWAY TO BE REMOVED
- NEW WIRING/RACEWAY
- OBJECT BORDER

CONTROL WIRING CONDUIT FILL (BELOW GRADE)

MINIMUM TRADE SIZE CONDUIT SIZE SHALL BE 3/4". BELOW LISTED ARE THE MAXIMUM WIRE FILLS ALLOWED FOR THIS PROJECT. CONTRACTOR SHALL PROVIDE SEPARATE RACEWAY SYSTEMS PER THE SPECIFICATIONS AND THIS FILL CHART.

	14 GAUGE XHHW	18 GAUGE TWISTED SHIELDED PAIR
3/4"	8	2
1"	16	4
1 1/4"	32	7
1 1/2"	48	10
2"	72	17

CONTROL & ELECTRICAL WIRING

1. PROVIDE GROUNDING CONDUCTORS IN ALL RACEWAYS IN ACCORDANCE WITH MOA ELECTRICAL CODE AMENDMENTS TO THE NEC.
2. ALL POWER AND LIGHTING WIRING SHALL BE #12 COPPER AWG MINIMUM.
3. ALL DISCRETE CONTROL WIRING SHALL BE #14 COPPER AWG MINIMUM.

FLASH PROTECTION FIELD MARKING

CONTRACTOR TO PROVIDE LABELS ON ALL SWITCHBOARDS, PANELBOARDS, INDUSTRIAL CONTROL PANELS AND MOTOR CONTROL CENTERS IN ACCORDANCE WITH NEC 110.16 REQUIREMENTS.

VERIFY SCALE THIS BAR REPRESENTS ONE INCH ON ORIGINAL DRAWING. 0" ——— 1" IF BAR IS NOT ONE INCH, ADJUST DRAWING SCALE ACCORDINGLY. FULL SIZE SCALE HORZ SCALE: N/A VERT SCALE: N/A

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SANITARY SEWER	---		TRAFFIC SIGNAL	---	
STORM SEWER	---		DESIGN	---	
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PLAN CHECK					

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		REVISIONS	

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STANDARD LIFT STATION DESIGN DRAWINGS

GENERAL ELECTRICAL NOTES

DWG **GE1**

HORZ SCALE: N/A
VERT SCALE: N/A
DATE:
GRID: 1
PROJ. ID.: **XXX (SWR)**
SHEET 7 of 32

SCHEMATIC DIAGRAM

CR 100 # #
CONTROL RELAY OR COIL
* INDICATES DEVICE
CR · · CONTROL RELAY
TD · · TIME DELAY RELAY
(TIMING RANGE AS INDICATED)
M · · MOTOR STARTER
PC · · PHOTOCELL
SV · · SOLENOID VALVE

DEVICE — NORMALLY OPEN CONTACT

DEVICE — NORMALLY CLOSED CONTACT

TIMED CONTACTS — CONTACT ACTION DELAYED AFTER COIL IS:

ENERGIZED

DEVICE — NORMALLY OPEN WITH TIME DELAY CLOSING

DEVICE — NORMALLY CLOSED WITH TIME DELAY OPENING

DE–ENERGIZED

DEVICE — NORMALLY OPEN WITH INSTANT CLOSING AND TIME DELAY OPENING

DEVICE — NORMALLY CLOSED WITH INSTANT OPENING AND TIME DELAY CLOSING

DEVICE — NORMALLY OPEN PUSHBUTTON

DEVICE — NORMALLY CLOSED PUSHBUTTON

DEVICE DEVICE — NC/NO MAINTAINED PUSHBUTTON

L O R L R — THREE–POSITION SELECTOR SWITCH.
H · · HAND
M · · MANUAL
R · · REMOTE
L · · LOCAL
A · · AUTOMATIC
O · · OFF

L O R R L L R

F1 F2 F1 F2 — TWO–POSITION SELECTOR SWITCH

L O R F1L1 F3L1 — THREE POSITION SPRING RETURN–TO–CENTER MOMENTARY CONTACT SWITCH

DEVICE — VACUUM OR PRESSURE SWITCH, CLOSE ON RISING PRESSURE

DEVICE — VACUUM OR PRESSURE SWITCH, OPEN ON RISING PRESSURE

DEVICE — FLOAT LEVEL SWITCH, CLOSE ON RISING LEVEL

DEVICE — FLOAT LEVEL SWITCH, OPEN ON RISING LEVEL

DEVICE — NORMALLY OPEN

DEVICE — NORMALLY CLOSED

DEVICE — NORMALLY OPEN HELD CLOSED

DEVICE — NORMALLY CLOSED HELD OPEN

DEVICE — MAINTAINED POSITION

DEVICE — TEMPERATURE SWITCH, CLOSE ON RISING TEMPERATURE

DEVICE — TEMPERATURE SWITCH, OPEN ON RISING TEMPERATURE

DEVICE — FLOW SWITCH, CLOSE ON INCREASING FLOW

DEVICE — FLOW SWITCH, OPEN ON INCREASING FLOW

DEVICE — TORQUE SWITCH OPENS ON INCREASING TORQUE

CIRCUIT INTERRUPTER

DEVICE — SINGLE POLE TOGGLE SWITCH

DEVICE — SOLENOID

DI — DIGITAL INPUT TO PLC/RTU/DCS

DIGITAL OUTPUT FROM PLC/RTU/DCS NORMALLY OPEN

DIGITAL OUTPUT FROM PLC/RTU/DCS NORMALLY CLOSED

AI — ANALOG INPUT TO PLC/RTU/DCS 4–20 mA UNLESS OTHERWISE NOTED

AO — ANALOG OUTPUT FROM PLC/RTU/DCS 4–20 mA UNLESS OTHERWISE NOTED

LED PILOT LIGHT
* INDICATES LENS COLOR
R · · RED
G · · GREEN
A · · AMBER
W · · WHITE

LED PILOT LIGHT PUSH–TO–TEST
SEE ABOVE FOR LENS COLORS

HORN

ETM — ELAPSED TIME METER

HEATER

GROUND CONNECTION

CROSSING OF CONDUCTORS–NOT CONNECTED

CONDUCTORS CONNECTED

2A — FUSE

FIELD	SCADA PANEL	
		TERMINAL BLOCK
0.1	.25	FUSED TERMINAL BLOCK
0.1		FUSED TERMINAL BLOCK

V — CONTINUATION

INTERRUPTION

J — JUNCTION BOX

4 — PLAN PAGE NOTE

IT 431 — DEVICE TAG SYMBOL

X.XX.XX.X — WIRE TAG

POWER PANEL

M — MOTOR – SINGLE PHASE

HP — MOTOR – THREE PHASE

FLOAT SWITCH

INTRUSION SWITCH

VFD STARTER

VERIFY SCALE THIS BAR REPRESENTS ONE INCH ON ORIGINAL DRAWING. 0" 1" IF BAR IS NOT ONE INCH, ADJUST DRAWING SCALE ACCORDINGLY.

FULL SIZE SCALE
HORZ SCALE: N/A
VERT SCALE: N/A

DATA	DRAWN BY	CHECKED BY	DATA	DRAWN BY	CHECKED BY	REV	DATE	DESCRIPTION	BY
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PROFILE	---		CABLE TV	---					
SANITARY SEWER	---		TRAFFIC SIGNAL	---					
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WATER	---		QUANTITIES	---					
GAS	---		MUN. FINAL CHECK	---					
PLAN CHECK						REVISIONS			

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WATER & WASTEWATER UTILITY

STANDARD LIFT STATION DESIGN DRAWINGS

ELECTRICAL LEGEND

DWG **GE2**

HORZ SCALE: N/A
VERT SCALE: N/A
DATE:
GRID: 1
PROJ. ID.: **XXX (SWR)**

PLOT DATE: 8/12/2015 1:12 PM
ACAD FILE: J:\JOBSDATA\10317.15 LIFT STATION DESIGN DRAWINGS\00 CADD\01 WORKING SET\03 ELECTRICAL\10317.15 GEX-AWWU ELECTRICAL LEGENDS.DWG

ABBREVIATIONS

A	AMPERE, AUTOMATIC
AC	ALTERNATING CURRENT
AF	CIRCUIT BREAKER FRAME SIZE
AM	AMMETER
ANN	ANNUNCIATOR
AS	ADJUSTABLE SPEED
AT	AMPERE TRIP
ATS	AUTOMATIC TRANSFER SWITCH
AUTO	AUTOMATIC
AWG	AMERICAN WIRE GAUGE
BATT	BATTERY
BC	BARE COPPER
BKR	BREAKER
C	CONDUIT, CLOSED
CAP	CAPACITOR
CB	CIRCUIT BREAKER
CGB	CORD GRIP BOX CONNECTOR
CKT	CIRCUIT
CLF	CURRENT LIMITING FUSE
COM	COMMON
COMP	COMPARTMENT
CP	CONTROL PANEL
CPT	CONTROL POWER TRANSFORMER
CR	CONTROL RELAY, CARD READER
CT	CURRENT TRANSFORMER
DCS	DISTRIBUTED CONTROL SYSTEM
DISC	DISCONNECT
DISTR	DISTRIBUTION
DPDT	DOUBLE POLE DOUBLE THROW
DPST	DOUBLE POLE SINGLE THROW
E	EMERGENCY
EM	ELECTRIC (UTILITY) METER
EMT	ELECTRICAL METALLIC TUBING
ENCL	ENCLOSURE
ETM	ELAPSED TIME METER
F	FREQUENCY, FUSE, FIXED
FDR	FEEDER
FLA	FULL LOAD AMPS
FLUOR	FLUORESCENT
FM	FREQUENCY METER
FO	FIBER OPTIC
FVR	FULL VOLTAGE REVERSING
FVNR	FULL VOLTAGE NON-REVERSING
GEN	GENERATOR
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GND, G	GROUND
GRC	GALVANIZED RIGID METAL CONDUIT
H	HOT, HAND
HD	HEAT DETECTOR
HDPE	HIGH-DENSITY POLYETHYLENE
HH	HAND HOLE
HID	HIGH INTENSITY DISCHARGE
HOA	HAND-OFF-AUTOMATIC
HPS	HIGH PRESSURE SODIUM
HS	HAND SWITCH
HZ	HERTZ
IMC	INTERMEDIATE METALLIC CONDUIT
INCAND	INCANDESCENT
IND	INDICATION
INST	INSTANTANEOUS
I/O	INPUT/OUTPUT
Isc	SHORT CIRCUIT CURRENT, AMPS
ISO	ISOLATION
J	JUNCTION BOX
KA	THOUSAND AMPERES
KAIC	THOUSAND AMP INTERRUPTING CURRENT
KCMIL	THOUSAND CIRCULAR MILS
KVA	KILOVOLT AMPERE
L	LOCAL
LCP	LOCAL CONTROL PANEL
LCS	LOCAL CONTROL STATION
LOC	LOCAL
LOR	LOCAL-OFF-REMOTE
LOS	STOP LOCKOUT PUSHBUTTON LIGHTING
LP	PANEL
LRA	LOCKED ROTOR AMPS
LS	LEVEL SWITCH
LTFMC	LIGHTING
LTG	LIQUID TIGHT FLEXIBLE METAL CONDUIT
LTS	LIGHTS
M	MOTOR CONTACTOR COIL
mA	MILLIAMPERE
MCP	MOTOR CIRCUIT PROTECTOR
MLO	MAIN LUGS ONLY
MOA	MUNICIPALITY OF ANCHORAGE
MOV	MOTOR OPERATED VALVE
MS	MANUAL MOTOR STARTER
MTS	MANUAL TRANSFER SWITCH
N,NEUT	NEUTRAL
NEC	NATIONAL ELECTRIC CODE
NP	NAMEPLATE
O	OPEN, OFF
OL	OVERLOAD
PA	PUBLIC ADDRESS
PB	PUSHBUTTON, PULLBOX
PC	PHOTOCELL
PCM	PROCESS CONTROL MODULE
PF	POWER FACTOR
PFM	POWER FACTOR METER
PH	PHASE
PCV	PRESSURE CONTROL VALVE
PL	PILOT LIGHT
PLC	PROGRAMMABLE LOGIC CIRCUIT
PNLBD	PANELBOARD
PP	POWER PANELBOARD
POS	POSITION
POT	POTENTIOMETER
PRI	PRIMARY
PS	POWER SUPPLY
PT	POTENTIAL TRANSFORMER
PTZ	PAN-TILT-ZOOM
PWR	POWER
R	REMOTE
RECPT	RECEPTACLE
RGS	RIGID GALVANIZED STEEL
RMS	ROOT MEAN SQUARE
RTU	REMOTE TERMINAL UNIT
RVSS	REDUCED VOLTAGE SOLID STATE
SEL SW	SELECTOR SWITCH
SEQ	SEQUENCE
SHLD	SHIELDED
SIG	SIGNAL
SP	SPARE
SPDT	SINGLE POLE DOUBLE THROW
SSM	SOLID STATE METER
SSMP	SOLID STATE MOTOR PROTECTOR
SP HTR	SPACE HEATER
SPST	SINGLE POLE SINGLE THROW
ST, SH	SHUNT TRIP
STR	STARTER
SW	SWITCH
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
TACH	TACHOMETER
TB	TERMINAL BOX
TERM	TERMINAL
TM	REPEAT CYCLE TIMER
TD	TIME DELAY RELAY
TS	TEMPERATURE SWITCH
TWSP	TWISTED SHIELDED PAIR
UPS	UNINTERRUPTIBLE POWER SUPPLY
V	VOLTAGE, VOLTS
VA	VOLT AMPERE
VAR	VOLT AMPERE REACTIVE
VFD	VARIABLE FREQUENCY DRIVE
VM	VOLTMETER
VP	VAPOR PROOF
W	WATTS, WIRE
WM	WATT METER
WP	WEATHERPROOF
XFMR	TRANSFORMER
XMTR	TRANSMITTER
XP	EXPLOSION PROOF

AWWU PLAN SET NO. XXXX

PLOT DATE: 8/12/2015 1:12 PM

ACAD FILE: J:\JOBSDATA\10317.15 LIFT STATION DESIGN DRAWINGS\00 CADD\01 WORKING SET\03 ELECTRICAL\10317.15 GEX-AWWU ELECTRICAL LEGENDS.DWG

VERIFY SCALE THIS BAR REPRESENTS ONE INCH ON ORIGINAL DRAWING. 0" 1" IF BAR IS NOT ONE INCH, ADJUST DRAWING SCALE ACCORDINGLY. FULL SIZE SCALE HORZ SCALE: N/A VERT SCALE: N/A

DATA	DRAWN BY	CHECKED BY	DATA	DRAWN BY	CHECKED BY	REV	DATE	DESCRIPTION	BY
BASE	---		TELEPHONE	---					
TOPOGRAPHY	---		ELECTRIC	---					
PROFILE	---		CABLE TV	---					
SANITARY SEWER	---		TRAFFIC SIGNAL	---					
STORM SEWER	---		DESIGN	---					
WATER	---		QUANTITIES	---					
GAS	---		MUN. FINAL CHECK	---					
PLAN CHECK						REVISIONS			

RECORD DRAWING Note: To be filled out on original drawings upon project completion.

1. DATA PROVIDED BY: _____
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   BY: _____ TITLE: _____
   DATE: _____
2. DATA TRANSFERRED BY: _____
   COMPANY: _____
   DATE: _____
3. Based on periodic field observations by the Engineer (or an individual under his/her direct supervision), the Contractor-provided data appears to represent the project as constructed.
   DATA TRANSFER CHECKED BY: _____
   COMPANY: _____
   BY: _____ TITLE: _____
   DATE: _____

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WATER & WASTEWATER UTILITY

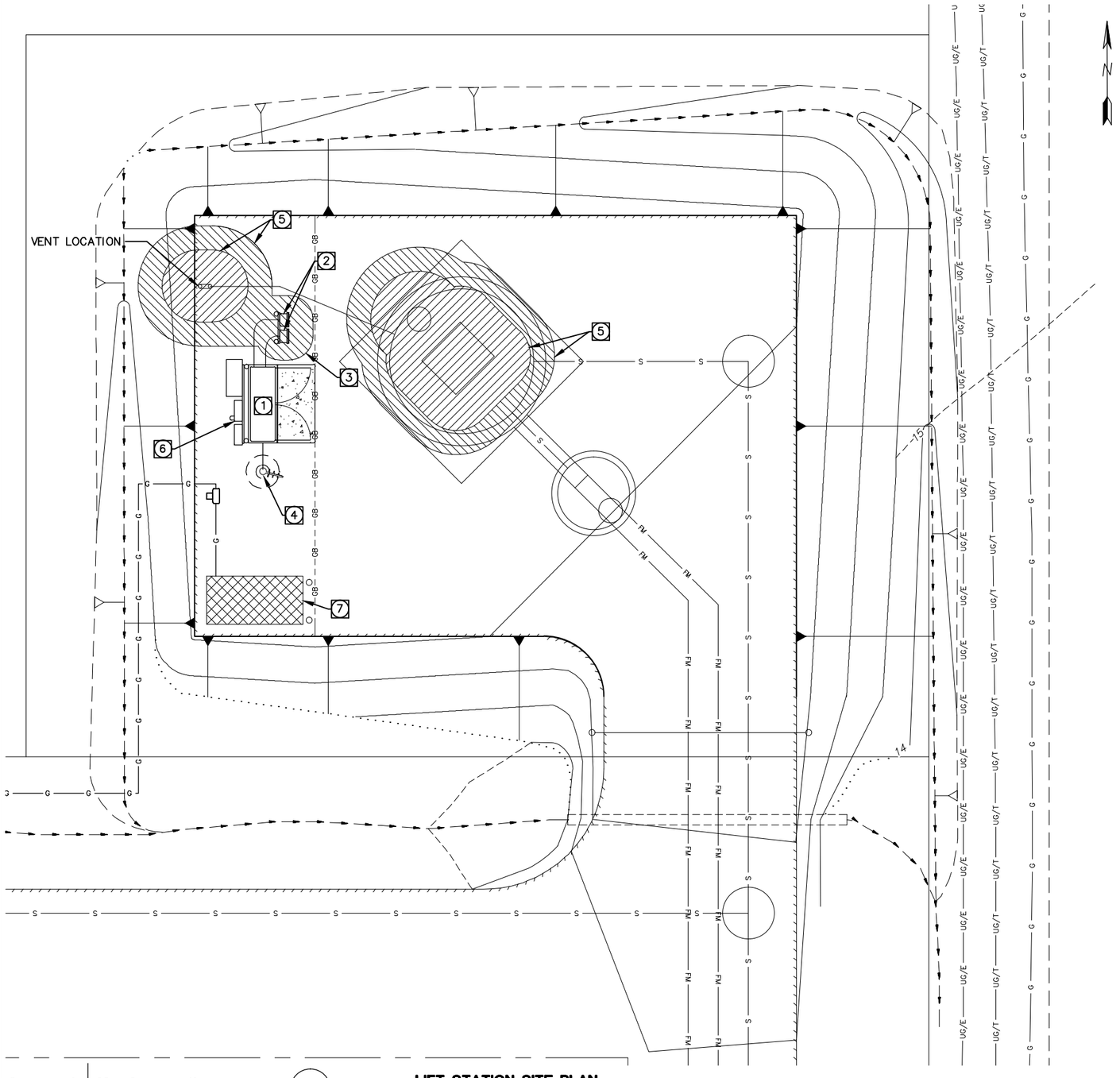
STANDARD LIFT STATION DESIGN DRAWINGS

ELECTRICAL ABBREVIATIONS

DWG **GE3**

HORZ SCALE: N/A VERT SCALE: N/A | DATE: | GRID: 1

PROJ. ID.: **XXX (SWR)**



1 **LIFT STATION SITE PLAN**
SCALE: AS SHOWN

NOTES:

1. PROPOSED LOCATION OF SCADA ENCLOSURE, METER BASE, DISTRIBUTION PANEL, AND AUTOMATIC TRANSFER SWITCH. SEE SHEET E5 FOR DETAILS.
2. PROPOSED LOCATION OF INTERMEDIATE POWER AND CONTROL JUNCTION BOXES. SEE 1/E6 AND 2/E6.
3. CLASSIFICATION BUBBLE AROUND THE INTERMEDIATE POWER AND CONTROL JUNCTION BOXES EXTEND 2' DEFINING LIMITS OF CLASS 1 DIVISION 2 AREA. SEE 2/E4 AND 3/E4.
4. PROPOSED LOCATION OF SCADA ANTENNA. TO BE VERIFIED BY AWWU. SEE 1/E8 FOR DETAILS.
5. CLASSIFICATION BUBBLE AROUND WETWELL OPENINGS EXTEND 3' DEFINING LIMITS OF CLASS 1 DIVISION 1 AREA, AND AN ADDITIONAL 2' DEFINING LIMITS OF CLASS 1 DIVISION 2 AREA. SEE B/E4.
6. COORDINATE UTILITY SERVICE TO METER MAIN.
7. GENERATOR.

AWWU PLAN SET NO. XXXX

VERIFY SCALE THIS BAR REPRESENTS ONE INCH ON ORIGINAL DRAWING. 0" ■ 1"
IF BAR IS NOT ONE INCH, ADJUST DRAWING SCALE ACCORDINGLY.
FULL SIZE SCALE
HORZ SCALE: 1"=5'
VERT SCALE: N/A

DATA	DRAWN BY	CHECKED BY	DATA	DRAWN BY	CHECKED BY
BASE	---		TELEPHONE	---	
TOPOGRAPHY	---		ELECTRIC	---	
PROFILE	---		CABLE TV	---	
SANITARY SEWER	---		TRAFFIC SIGNAL	---	
STORM SEWER	---		DESIGN	---	
WATER	---		QUANTITIES	---	
GAS	---		MUN. FINAL CHECK	---	
PLAN CHECK					

REV	DATE	DESCRIPTION	BY
REVISIONS			

RECORD DRAWING Note: To be filled out on original drawings upon project completion.

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   DATE: _____
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   COMPANY: _____
   DATE: _____
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   COMPANY: _____
   BY: _____ TITLE: _____
   DATE: _____

REUSE OF DOCUMENTS

THIS DOCUMENT AND THE IDEAS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF AWWU AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT WRITTEN AUTHORIZATION OF AWWU.

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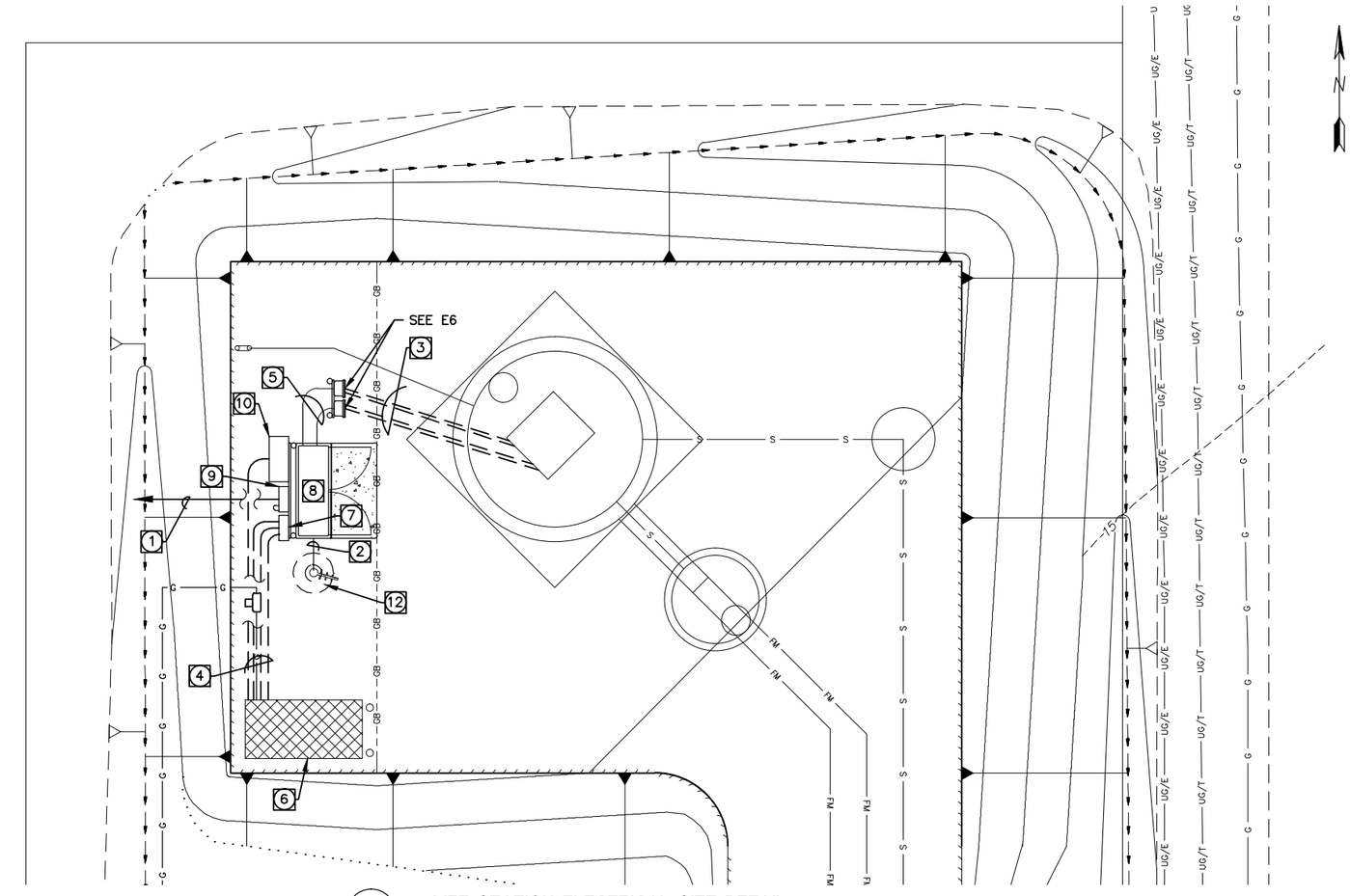
WATER & WASTEWATER UTILITY

STANDARD LIFT STATION DESIGN DRAWINGS

DWG E1

LIFT STATION ELECTRICAL SITE PLAN

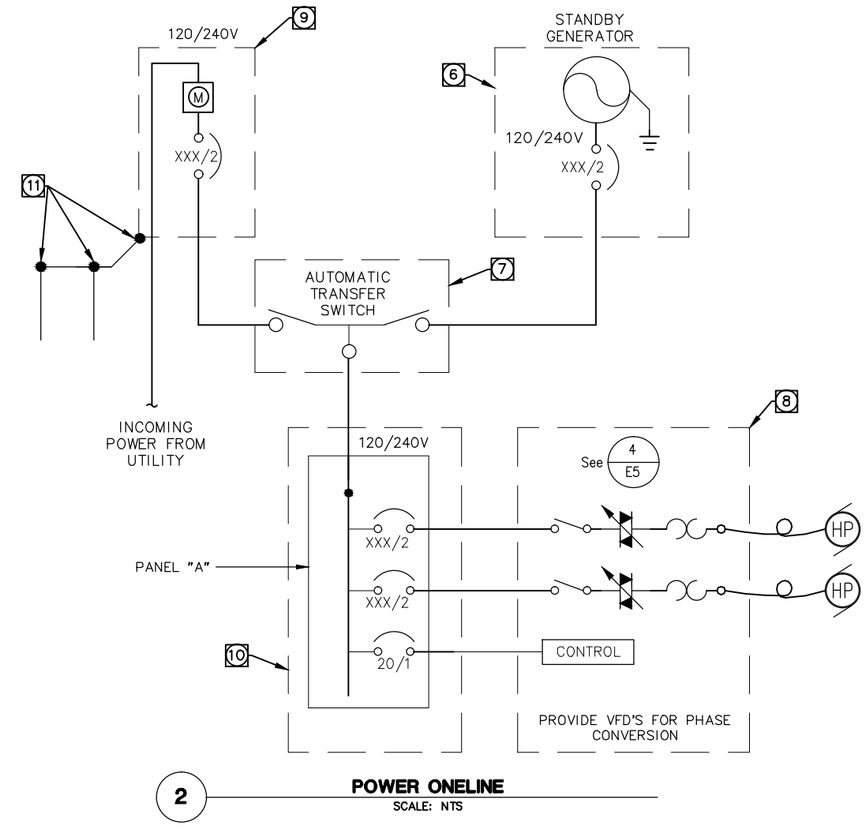
HORZ SCALE: 1"=5'
VERT SCALE: N/A
DATE:
GRID: 1
PROJ. ID.: XXX (SWR)
SHEET 10 of 32



1 LIFT STATION ELECTRICAL SITE DETAIL
SCALE: AS SHOWN

NOTES:

1. 2"C PVC COATED GRC FOR INCOMING POWER. COORDINATE WITH LOCAL UTILITY.
2. 1-1/2"C PVC COATED GRC FOR ANTENNA CABLE. SEE 1/E8 FOR DETAILS.
3. POWER & CONTROL CIRCUITS TO WETWELL. SEE 1/E4.
4. POWER & CONTROL CIRCUITS TO GENERATOR. SEE 4/E5 & 2/E5.
5. POWER & CONTROL CIRCUITS TO INTERMEDIATE POWER AND CONTROL JUNCTION BOXES. SEE 1/E6. AND 2/E6.
6. LOCATION OF GENERATOR. GENERATOR SIZE BASED ON 100% OF LOAD (INCLUDING MOTOR STARTING ALLOWANCE).
7. ATS, SEE NOTE 1, SHEET E5.
8. SCADA ENCLOSURE AND BASE. SEE 3/E5 & 1/E7.
9. METER MAIN. NEMA 3R, SIZE PER NEC AND PROVIDE SERVICE PER SERVING UTILITY STANDARDS.
10. NEMA 4X DISTRIBUTION ENCLOSURE WITH 120/240V PANELBOARD SEE PANEL SCHEDULE THIS SHEET.
11. BOND SEPARATELY DERIVED SERVICE TO SYSTEM GROUND.
12. APPROXIMATE LOCATION OF SCADA ANTENNA. ACTUAL LOCATION AND HEIGHT TO BE DETERMINED BY RADIO SURVEY TO BE REQUESTED BY ENGINEER.



2 POWER ONELINE
SCALE: NTS

PANEL "A" SCHEDULE

PANEL A			120/240V				1ø 3 WIRE	XXXA MAINS	
LOCATION: LIFT STATION			MLO				NEMA 4X	10,000 AIC	
POLE	AMP TRIP	LOAD DESCRIPTION	POLE kVA	A ø	B ø	POLE kVA	LOAD DESCRIPTION	AMP TRIP	POLE
1	20/1	LIGHTING		0.0			PUMP #1	XX/X**	2
3	20/1*	SCADA RECEPTACLE			0.0				4
5	20/1	SCADA POWER		0.0			PUMP #2	XX/X**	6
7	20/1	ENCLOSURE HEATER			0.0				8
9	20/1	BATTERY CHARGER		0.0					10
11	20/1	ENCLOSURE FAN			0.0				12
13	20/1	GENERATOR ACCESSORIES		0.0					14
15	20/1	SPARE			0.0				16
17	20/1	SPARE		0.0					18
* = GFCI CIRCUIT BREAKER ** = SIZE PER PUMP				0.0	0.0		TOTAL kVA =	0.0	
							AMPS =	0.0	

VERIFY SCALE THIS BAR REPRESENTS ONE INCH ON ORIGINAL DRAWING. 0" ■■■■■■■■ 1"
IF BAR IS NOT ONE INCH, ADJUST DRAWING SCALE ACCORDINGLY.
FULL SIZE SCALE
HORZ SCALE: 1"=5'
VERT SCALE: N/A

DATA	DRAWN BY	CHECKED BY	DATA	DRAWN BY	CHECKED BY
BASE	---		TELEPHONE	---	
TOPOGRAPHY	---		ELECTRIC	---	
PROFILE	---		CABLE TV	---	
SANITARY SEWER	---		TRAFFIC SIGNAL	---	
STORM SEWER	---		DESIGN	---	
WATER	---		QUANTITIES	---	
GAS	---		MUN. FINAL CHECK	---	

PLAN CHECK

REV	DATE	DESCRIPTION	BY

REVISIONS

RECORD DRAWING Note: To be filled out on original drawings upon project completion.

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   CONTRACTOR: _____
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   DATE: _____
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   COMPANY: _____
   DATE: _____
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   DATA TRANSFER CHECKED BY: _____
   COMPANY: _____
   BY: _____ TITLE: _____
   DATE: _____

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WATER & WASTEWATER UTILITY

STANDARD LIFT STATION DESIGN DRAWINGS

LIFT STATION SINGLE PHASE ELECTRICAL SITE DETAIL

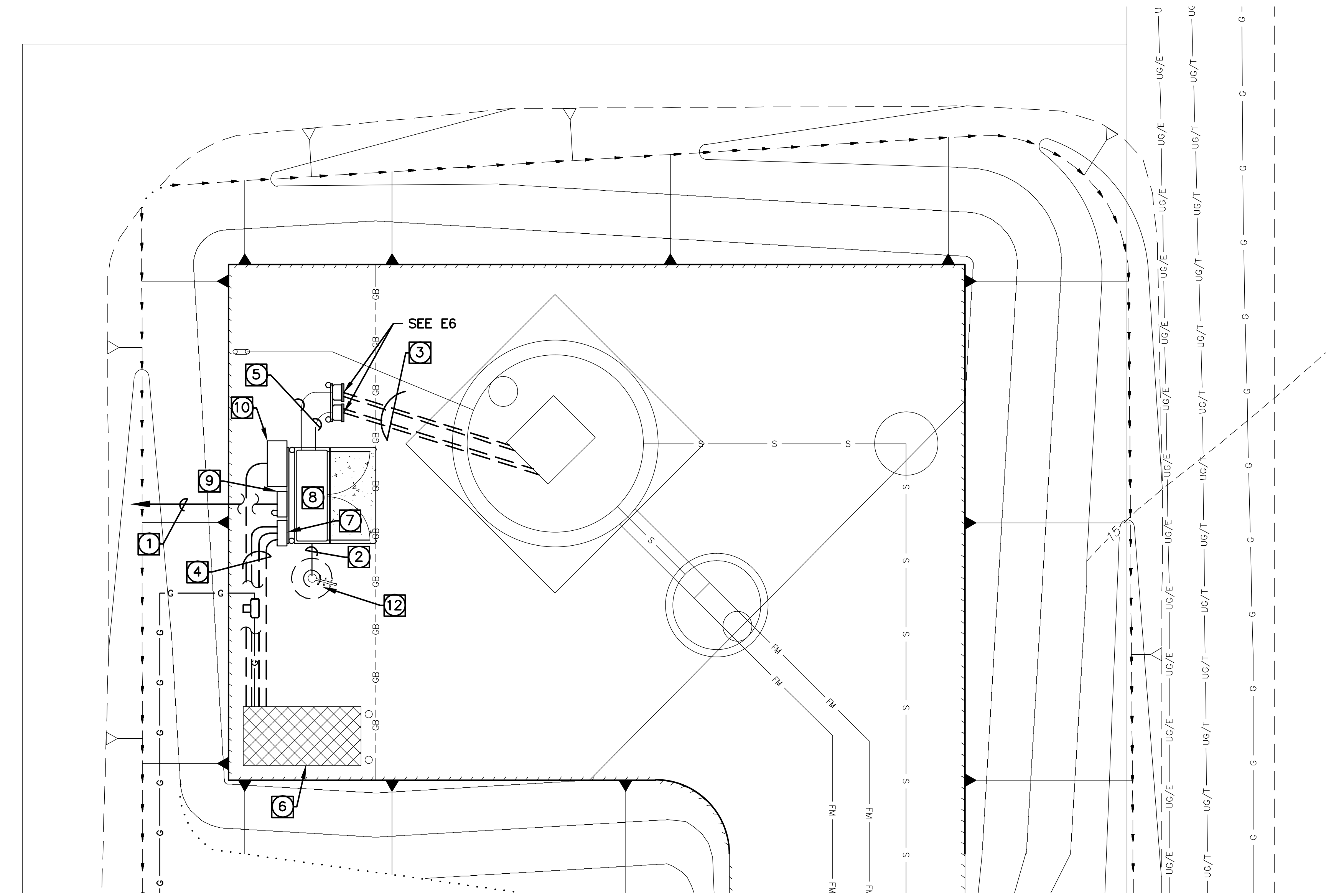
DWG **E2**

HORZ SCALE: 1"=5'
VERT SCALE: N/A
DATE:
GRID: 1
PROJ. ID.: XXX (SWR)
SHEET 11 of 32

PLOT DATE: 8/12/2015 1:13 PM

ACAD FILE: J:\JOBSDATA\10317.15 LIFT STATION DESIGN DRAWINGS\00 CADD\01 WORKING SET\03 ELECTRICAL\10317.15 E2-ELECTRICAL SITE DETAIL.DWG

AWWU PLAN SET NO. XXXX



GRAPHIC SCALE (FEET): 5 0 2.5 5 10

1 LIFT STATION ELECTRICAL SITE DETAIL

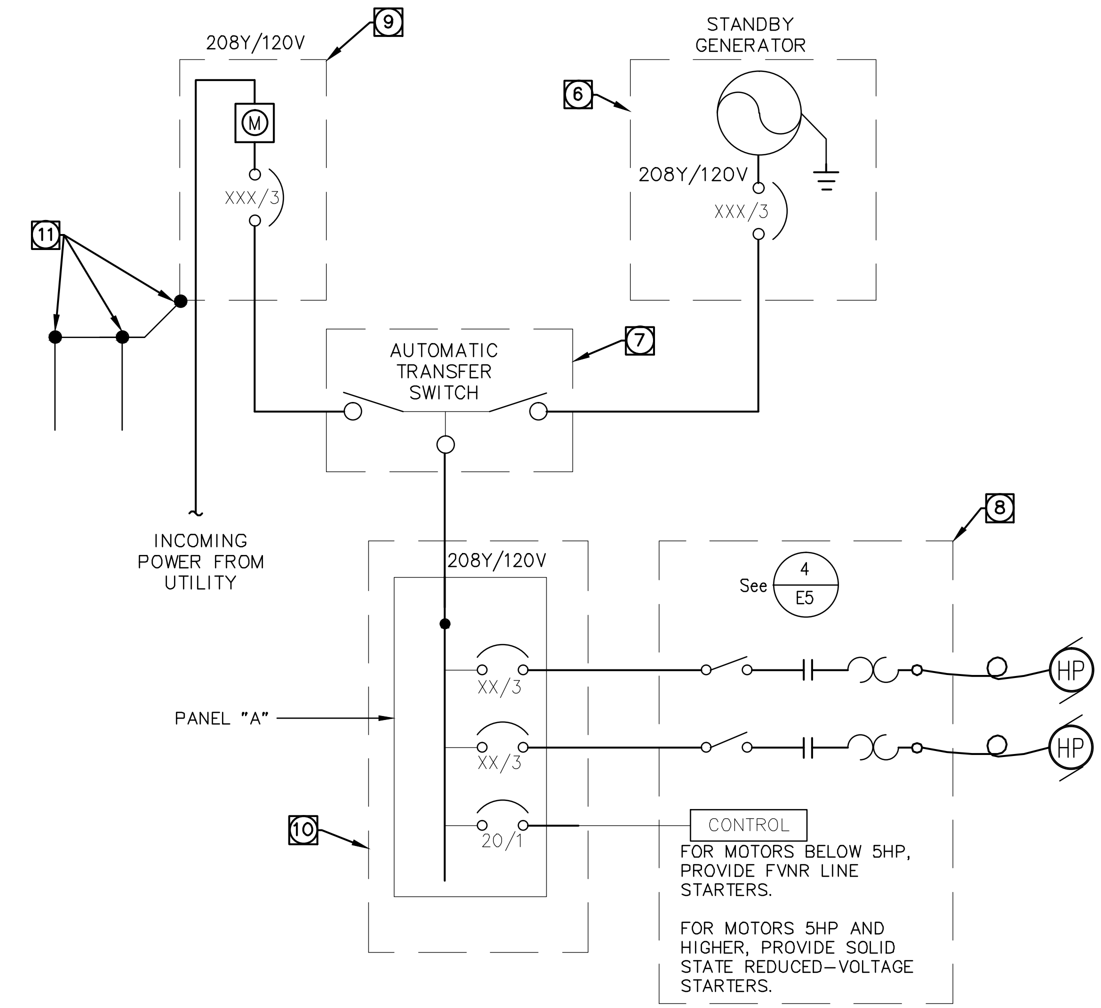
SCALE: AS SHOWN

NOTES:

1. 2"C PVC COATED GRC FOR INCOMING POWER. COORDINATE WITH LOCAL UTILITY.
2. 1-1/2"C PVC COATED GRC FOR ANTENNA CABLE. SEE 1/E8 FOR DETAILS.
3. POWER & CONTROL CIRCUITS TO WETWELL. SEE 1/E4.
4. POWER & CONTROL CIRCUITS TO GENERATOR. SEE 2/E5 & 4/E5.
5. POWER & CONTROL CIRCUITS TO INTERMEDIATE POWER AND CONTROL JUNCTION BOXES. SEE 1/E6. AND 2/E6.
6. LOCATION OF GENERATOR. SIZE AS REQUIRED.
7. SEE NOTE 1, SHEET E5.
8. SCADA ENCLOSURE AND BASE. SEE 3/E5 & 1/E7.
9. METER MAIN. NEMA 3R, SIZE PER NEC. PROVIDE SERVICE PER SERVING UTILITY STANDARDS.
10. NEMA 4X DISTRIBUTION ENCLOSURE WITH 208Y/120V PANELBOARD SEE PANEL SCHEDULE THIS SHEET.
11. BOND SEPARATELY DERIVED SERVICE TO SYSTEM GROUND.
12. APPROXIMATE LOCATION OF SCADA ANTENNA. ACTUAL LOCATION AND HEIGHT TO BE DETERMINED BY AWWU. RADIO SURVEY TO BE REQUESTED BY ENGINEER.

PANEL "A" SCHEDULE

Location: LIFT STATION			208Y/120VAC					3 φ, 4 Wire	10,000 AIC	
Served From: TRANSFER SWITCH			MLO						NEMA 4X	
POLE	AMP	LOAD DESCRIPTION	kVA	A	B	C	kVA	LOAD DESCRIPTION	AMP	POLE
1	20/1	LIGHTING	0.4	0.4						2
3	20/1*	SCADA RECPT	0.5		0.5			PUMP #1	XX/3**	4
5	20/1	SCADA POWER	0.2			0.2				6
7	20/1	ENCLOSURE HEATER	0.2	0.2						8
9	20/1	BATTERY CHARGER	0.2		0.2			PUMP #2	XX/3**	10
11	20/1	ENCLOSURE FAN	0.2			0.2				12
13	20/1	GENERATOR ACCESSORIES	1.2	1.2			0.0			14
15	20/1	SPARE	0.0		0.0		0.0			16
17	20/1	SPARE	0.0			0.0	0.0			18
				1.8	0.7	0.4		TOTAL kVA =	2.9	
* = GFCI CIRCUIT BRAKER **=SIZE PER PUMP								AMPS =	8.1	



2 POWER ONELINE

SCALE: NTS

VERIFY SCALE THIS BAR REPRESENTS ONE INCH ON ORIGINAL DRAWING. 0" ▬ 1" IF BAR IS NOT ONE INCH, ADJUST DRAWING SCALE ACCORDINGLY.

FULL SIZE SCALE
HORZ SCALE: 1"=5'
VERT SCALE: N/A

DATA	DRAWN BY	CHECKED BY	DATA	DRAWN BY	CHECKED BY
BASE	---		TELEPHONE	---	
TOPOGRAPHY	---		ELECTRIC	---	
PROFILE	---		CABLE TV	---	
SANITARY SEWER	---		TRAFFIC SIGNAL	---	
STORM SEWER	---		DESIGN	---	
WATER	---		QUANTITIES	---	
GAS	---		MUN. FINAL CHECK	---	

PLAN CHECK

REV	DATE	DESCRIPTION	BY

REVISIONS

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COMPANY: ____
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DATE: ____

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WATER & WASTEWATER UTILITY

STANDARD LIFT STATION DESIGN DRAWINGS

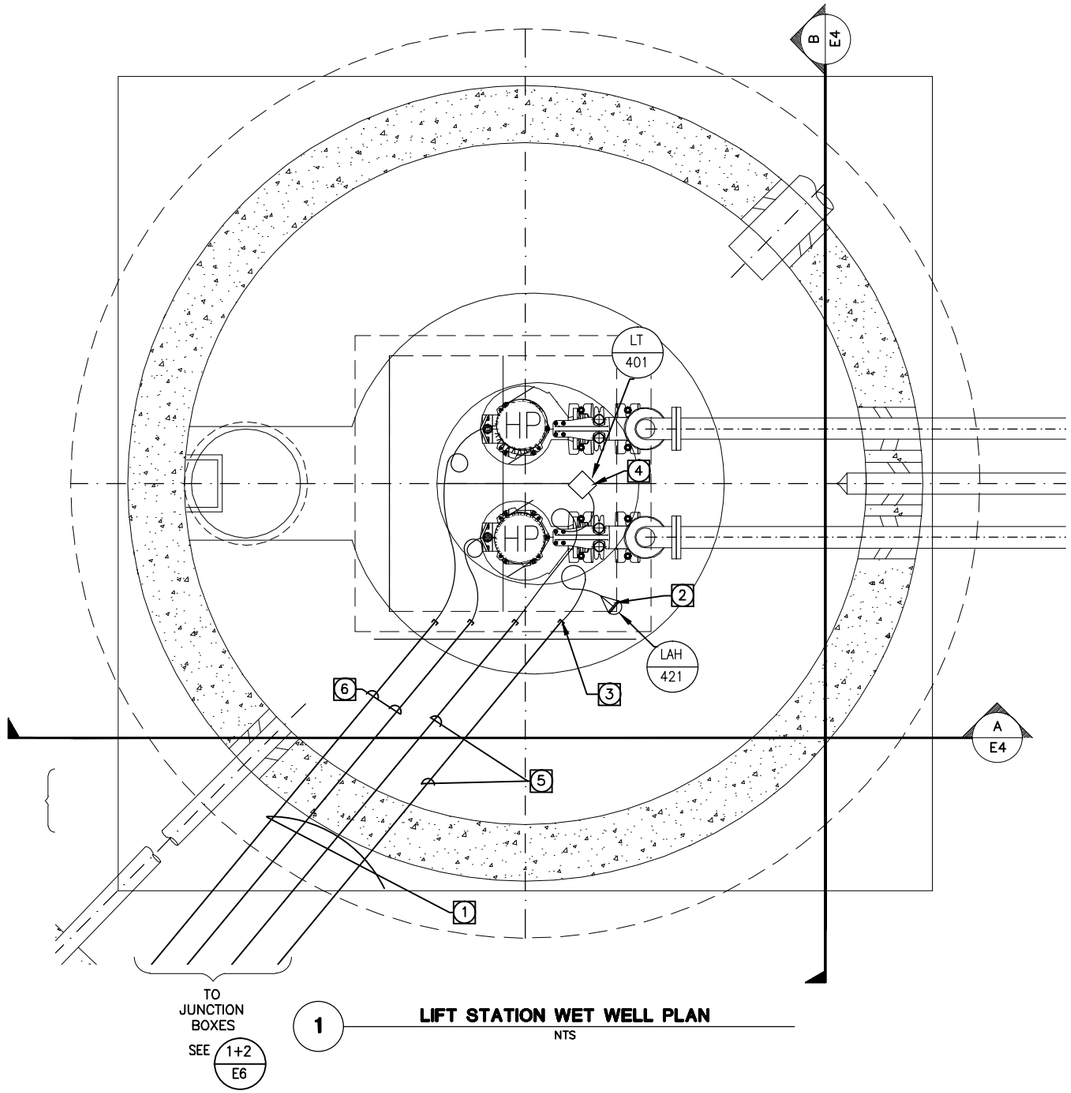
LIFT STATION THREE PHASE ELECTRICAL SITE DETAIL

DWG **E3**

HORZ SCALE: 1"=5'
VERT SCALE: N/A
DATE:
GRID: 1
PROJ. ID.: XXX (SWR)

PLOT DATE: 8/12/2015 1:13 PM

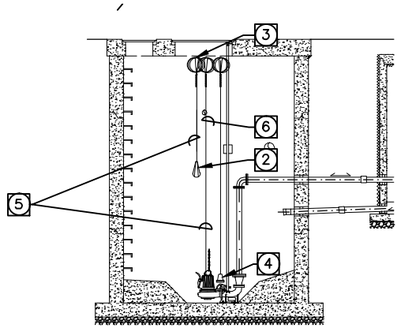
ACAD FILE: K:\JOBSDATA\10317.15 LIFT STATION DESIGN DRAWINGS\00 CADD\01 WORKING SET\03 ELECTRICAL\10317.15 E3-ELECTRICAL.DWG



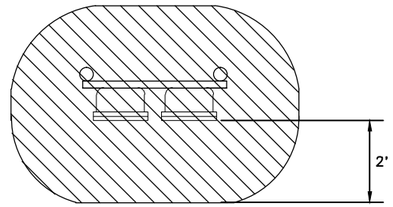
1 **LIFT STATION WET WELL PLAN**
NTS

NOTES:

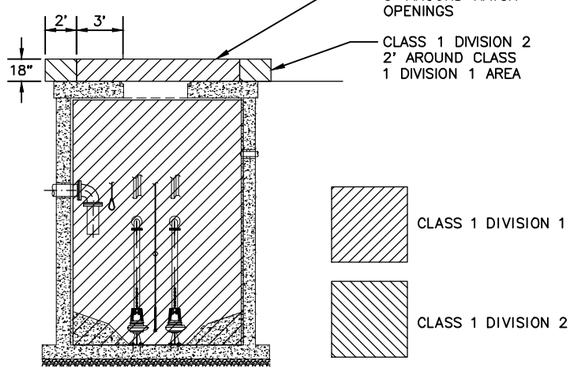
1. ALL CONDUITS ARE AT SAME ELEVATION. FOLLOW SPEC DRAINAGE. INSTALL A 1/4" NYLON PULL STRING IN EACH OF THE CONDUITS.
2. PROVIDE HIGH WETWELL FLOAT. THE HIGH WETWELL LEVEL FLOAT CONTACTS OPEN THE CIRCUIT TO CREATE THE ALARM.
3. PROVIDE CABLE STRAIN RELIEFS AND BUSHING AT CONDUIT ENDS IN WET WELL. (KELLUM GRIPS)
4. PROVIDE LEVEL TRANSDUCER. THE CABLE MUST BE LONG ENOUGH TO REACH THE CONTROL JUNCTION BOX WITHOUT SPLICES. LEVEL TRANSDUCER SHALL BE PLACED AT BOTTOM OF VOLUTE.
5. TERMINATE SENSOR & HWW FLOAT CONDUCTORS IN THE CONTROL JUNCTION BOX. SEE 2/E6.
6. TERMINATE PUMP CABLES IN POWER JUNCTION BOX. SEE 2/E6.



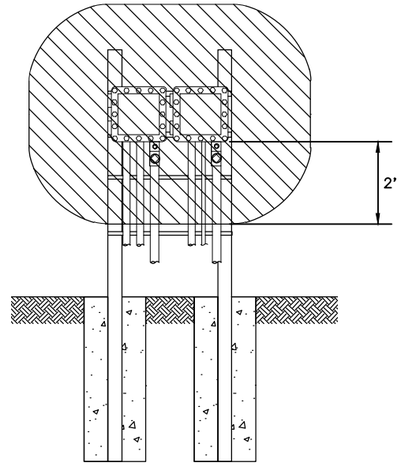
A **LIFT STATION WET WELL SECTION**
NTS



2 **POWER AND CONTROL JUNCTION BOX CLASSIFICATION**
NTS



B **WET WELL CLASSIFICATION**
NTS



3 **POWER AND CONTROL JUNCTION BOX CLASSIFICATION**
NTS

VERIFY SCALE THIS BAR REPRESENTS ONE INCH ON ORIGINAL DRAWING. 0" ——— 1" IF BAR IS NOT ONE INCH, ADJUST DRAWING SCALE ACCORDINGLY. FULL SIZE SCALE HORZ SCALE: N/A VERT SCALE: N/A

DATA	DRAWN BY	CHECKED BY	DATA	DRAWN BY	CHECKED BY
BASE	---		TELEPHONE	---	
TOPOGRAPHY	---		ELECTRIC	---	
PROFILE	---		CABLE TV	---	
SANITARY SEWER	---		TRAFFIC SIGNAL	---	
STORM SEWER	---		DESIGN	---	
WATER	---		QUANTITIES	---	
GAS	---		MUN. FINAL CHECK	---	

PLAN CHECK

REV	DATE	DESCRIPTION	BY

REVISIONS

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   COMPANY: _____
   BY: _____ TITLE: _____
   DATE: _____

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MUNICIPALITY OF ANCHORAGE
WATER & WASTEWATER UTILITY

STANDARD LIFT STATION DESIGN DRAWINGS

LIFT STATION ELECTRICAL

DWG **E4**

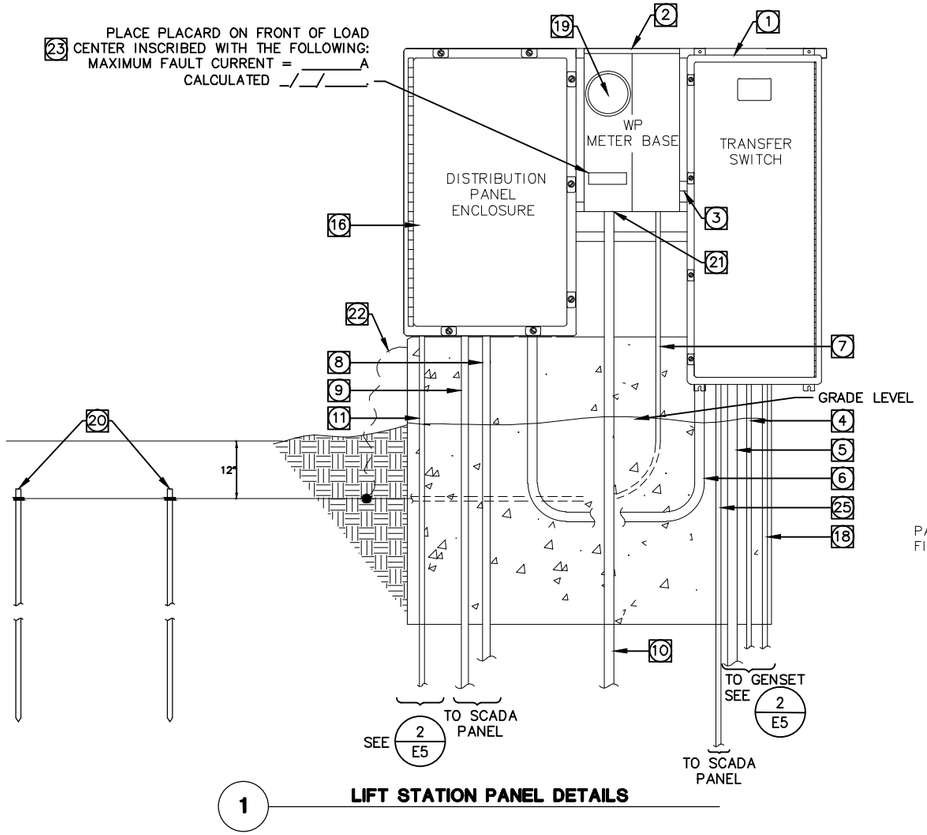
HORZ SCALE: N/A
VERT SCALE: N/A

DATE:

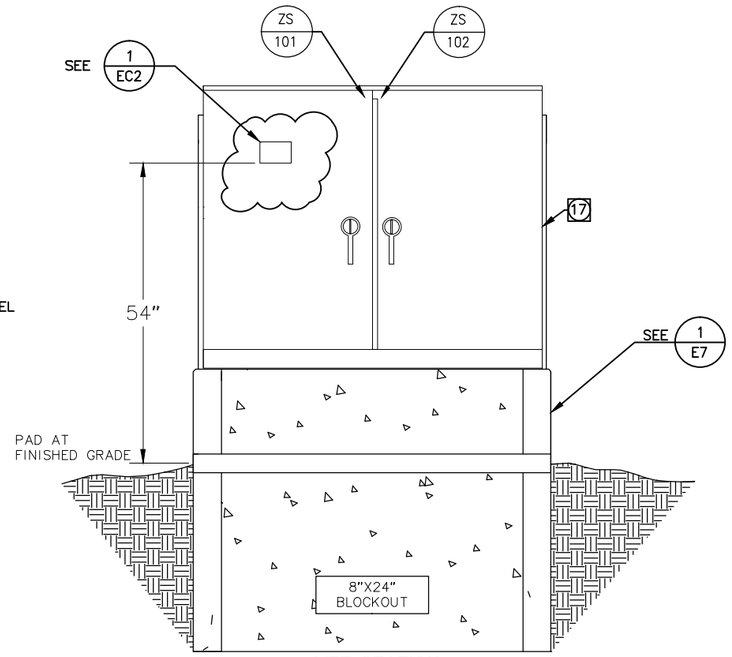
GRID: 1

PROJ. ID.: XXX (SWR)

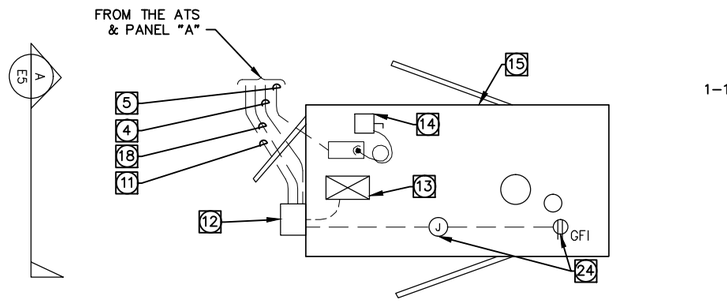
SHEET 13 of 32



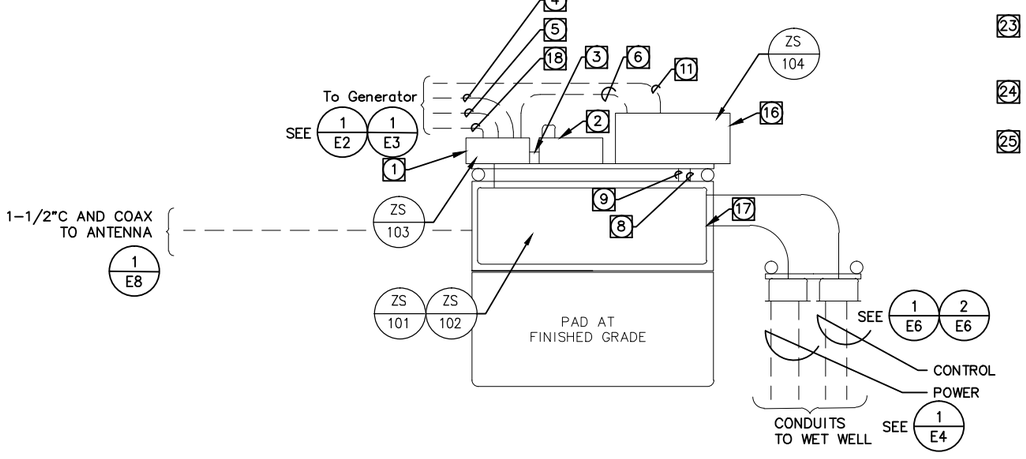
1 LIFT STATION PANEL DETAILS



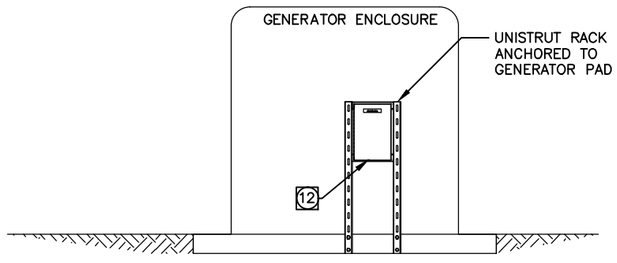
3 LIFT STATION SCADA ENCLOSURE INSTRUMENT LOCATION
NTS



2 LIFT STATION GENERATOR ENCLOSURE
NTS



4 LIFT STATION SCADA PLAN
NTS



A E5 SCADA/ATS JUNCTION BOX
NTS

NOTES:

1. PROVIDE ASCO AUTOMATIC TRANSFER SWITCH. SIZE TO SERVICE/GENSET. SEE E2.
2. METER/MAIN COMBINATION, NEMA 3R. SEE 1/E2 OR 1/E3.
3. 2"C NIPPLE, X#X XHHW-2, 1#X GND (XH, N, G) FROM THE UTILITY METER.
4. 1"C, 3#14 (2SIG, 1G) TO THE GENERATOR CONTROL PANEL FOR REMOTE START OF THE GENERATOR.
5. 2"C, X#X XHHW-2, 1#X GND (XH, N, G) FROM THE STANDBY GENERATOR.
6. 2"C, X#X XHHW-2, 1#X GND (XH, N, G) TO THE DISTRIBUTION PANEL.
7. 3/4"C, PVC, 1#4 BCU SOLID GROUND WIRE.
8. 1-1/2"C, X#X TO THE PUMP CONTROLLERS.(SCADA ENCLOSURE)
9. 1-1/2"C, 13#10 (6H, 6N, G) TO SCADA ENCLOSURE CIRCUITS.
10. INCOMING POWER FROM UTILITY. COORDINATE WITH AWWU BEFORE POWERING UP THE SCADA ENCLOSURE AND ALL OTHER DEVICES.
11. 3/4"C, 3#12 (H, N, G) POWER FOR GENERATOR ACCESSORIES.
12. SCADA/ATS JUNCTION BOX. ENCLOSURE MUST BE OF THE LOCKABLE TYPE.
13. GENERATOR CONTROL PANEL.
14. GENERATOR BREAKER.
15. GENERATOR ENCLOSURE.
16. DISTRIBUTION PANEL. SEE E2 OR E3 FOR PANEL SCHEDULE.
17. SCADA ENCLOSURE. SEE 1/EC1.
18. 1"C, 9#14 (4 POWER, 4 SIGNAL, GND) SEE EC6.
19. METER FACE EXPOSED OUTSIDE CABINETS.
20. 2EA 3/4"X10' GROUND RODS. 8'-0" MIN. HORIZONTAL SPACING. DO NOT DRIVE GROUND RODS WITHIN 3'-0" OF ANY UNDERGROUND FACILITIES. CALL FOR LOCATE.
21. INSULATED GROUNDING BUSHING.
22. BOND CONCRETE BASE REBAR TO SYSTEM GROUND WITH #4 BCU. USE CONCRETE ENCASED APPROVED FITTINGS.
23. PLACARD FOR METER MAIN SHALL HAVE SUFFICIENT DURABILITY TO WITHSTAND THE ENVIRONMENT INVOLVED. CONTACT ENGINEER PRIOR TO ORDER OF PLACARD TO VERIFY MAXIMUM FAULT CURRENT.
24. COORDINATE BLOCK HEAT AND CHARGER RECEPTACLE LOCATION/INSTALLATION WITH GENERATOR VENDOR.
25. 1-1/4"C, 20#14 FOR ATS, GENERATOR BATTERY, INTRUSION SWITCH AND REMOTE TEST/TRANSFER POWER.

AWWU PLAN SET NO. XXXX

VERIFY SCALE THIS BAR REPRESENTS ONE INCH ON ORIGINAL DRAWING. 0" 1" IF BAR IS NOT ONE INCH, ADJUST DRAWING SCALE ACCORDINGLY. FULL SIZE SCALE HORZ SCALE: N/A VERT SCALE: N/A

DATA	DRAWN BY	CHECKED BY	DATA	DRAWN BY	CHECKED BY
BASE	---		TELEPHONE	---	
TOPOGRAPHY	---		ELECTRIC	---	
PROFILE	---		CABLE TV	---	
SANITARY SEWER	---		TRAFFIC SIGNAL	---	
STORM SEWER	---		DESIGN	---	
WATER	---		QUANTITIES	---	
GAS	---		MUN. FINAL CHECK	---	
PLAN CHECK					

REV	DATE	DESCRIPTION	BY
REVISIONS			

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STANDARD LIFT STATION DESIGN DRAWINGS

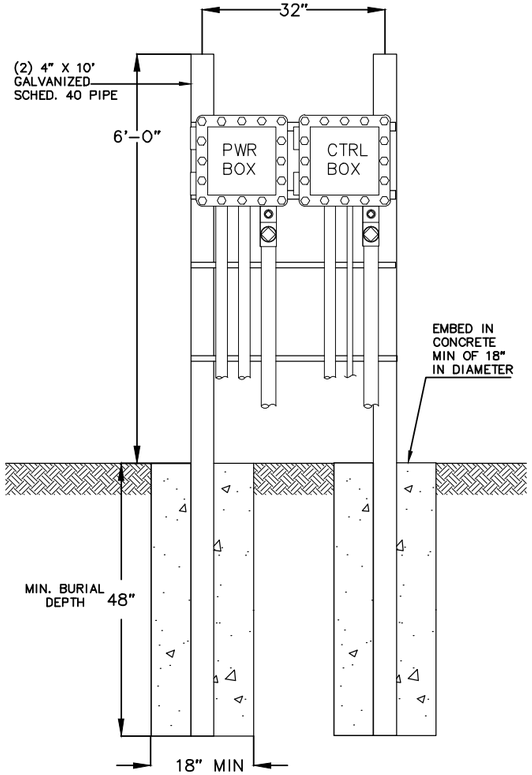
LIFT STATION GENERATOR & SCADA PLAN

DWG **E5**

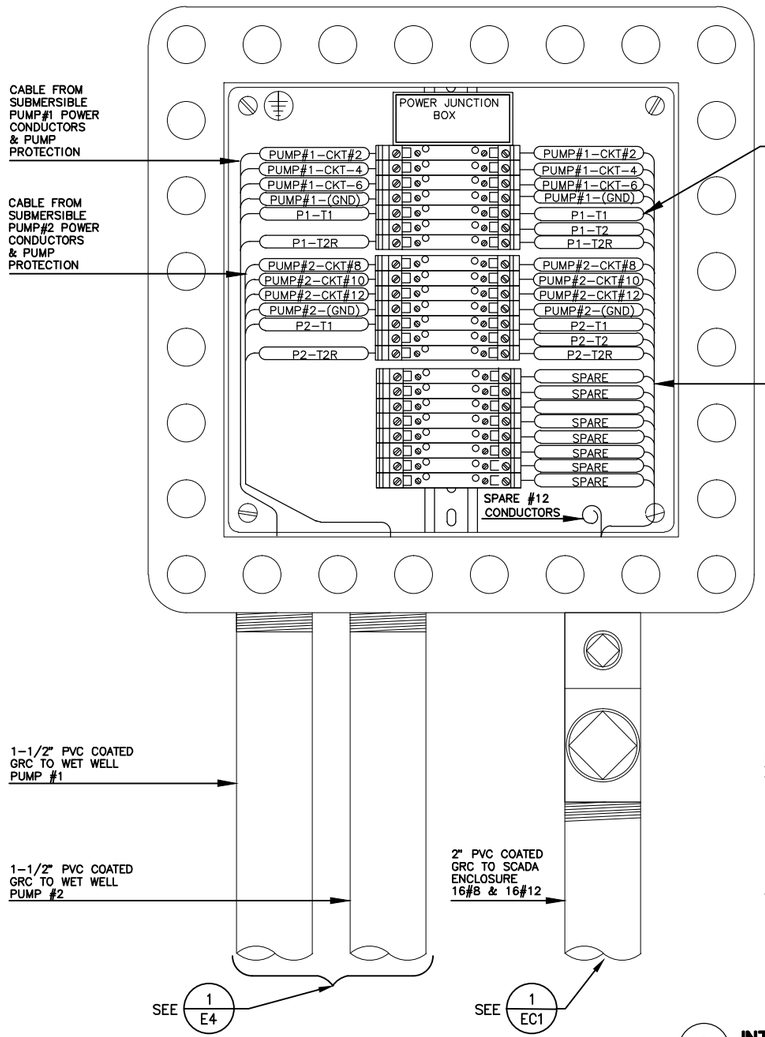
HORZ SCALE: N/A VERT SCALE: N/A | DATE: | GRID: 1 | SHEET 14 of 32

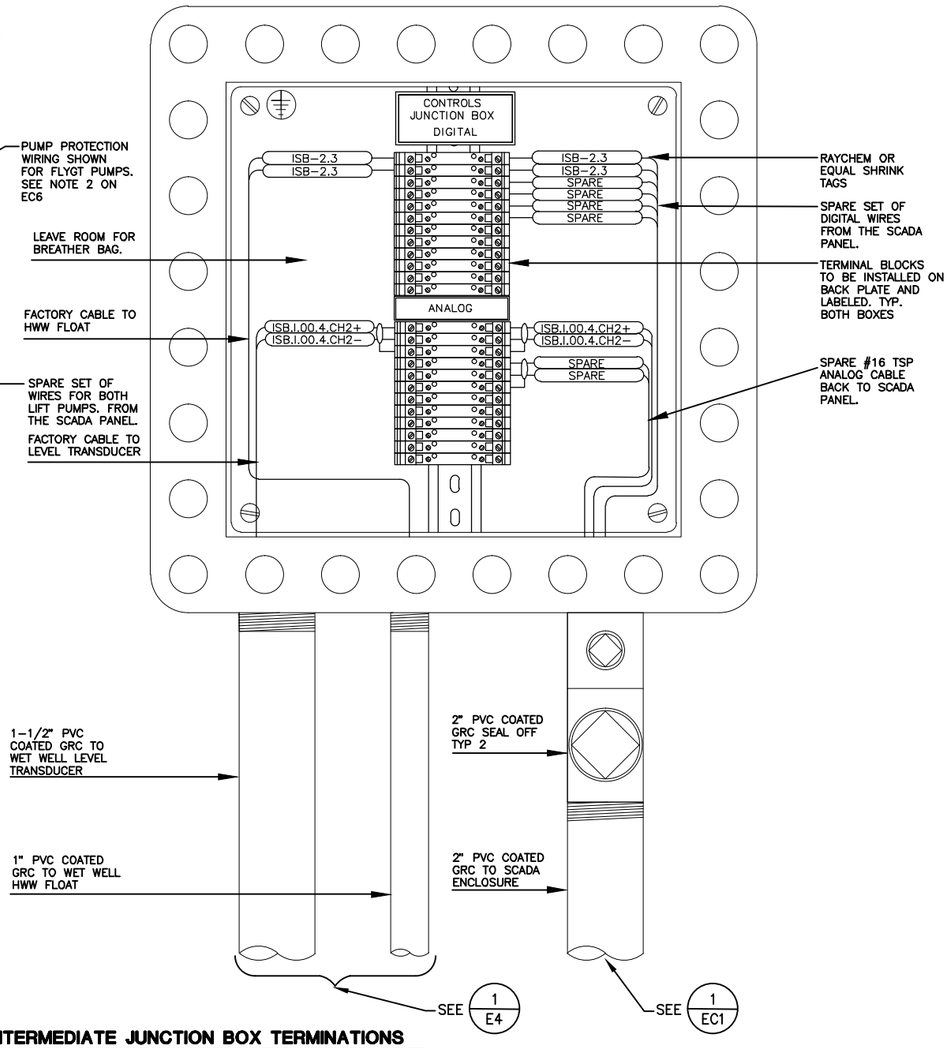
PROJ. ID.: XXX (SWR)

EXPLOSION PROOF J-BOX STAND



1 **INTERMEDIATE JUNCTION BOX SECTION**
NTS





2 **INTERMEDIATE JUNCTION BOX TERMINATIONS**
NTS

VERIFY SCALE THIS BAR REPRESENTS ONE INCH ON ORIGINAL DRAWING. 0" — 1" IF BAR IS NOT ONE INCH, ADJUST DRAWING SCALE ACCORDINGLY. FULL SIZE SCALE HORZ SCALE: N/A VERT SCALE: N/A

DATA	DRAWN BY	CHECKED BY	DATA	DRAWN BY	CHECKED BY	REV	DATE	DESCRIPTION	BY
BASE	---		TELEPHONE	---					
TOPOGRAPHY	---		ELECTRIC	---					
PROFILE	---		CABLE TV	---					
SANITARY SEWER	---		TRAFFIC SIGNAL	---					
STORM SEWER	---		DESIGN	---					
WATER	---		QUANTITIES	---					
GAS	---		MUN. FINAL CHECK	---					
PLAN CHECK						REVISIONS			

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WATER & WASTEWATER UTILITY

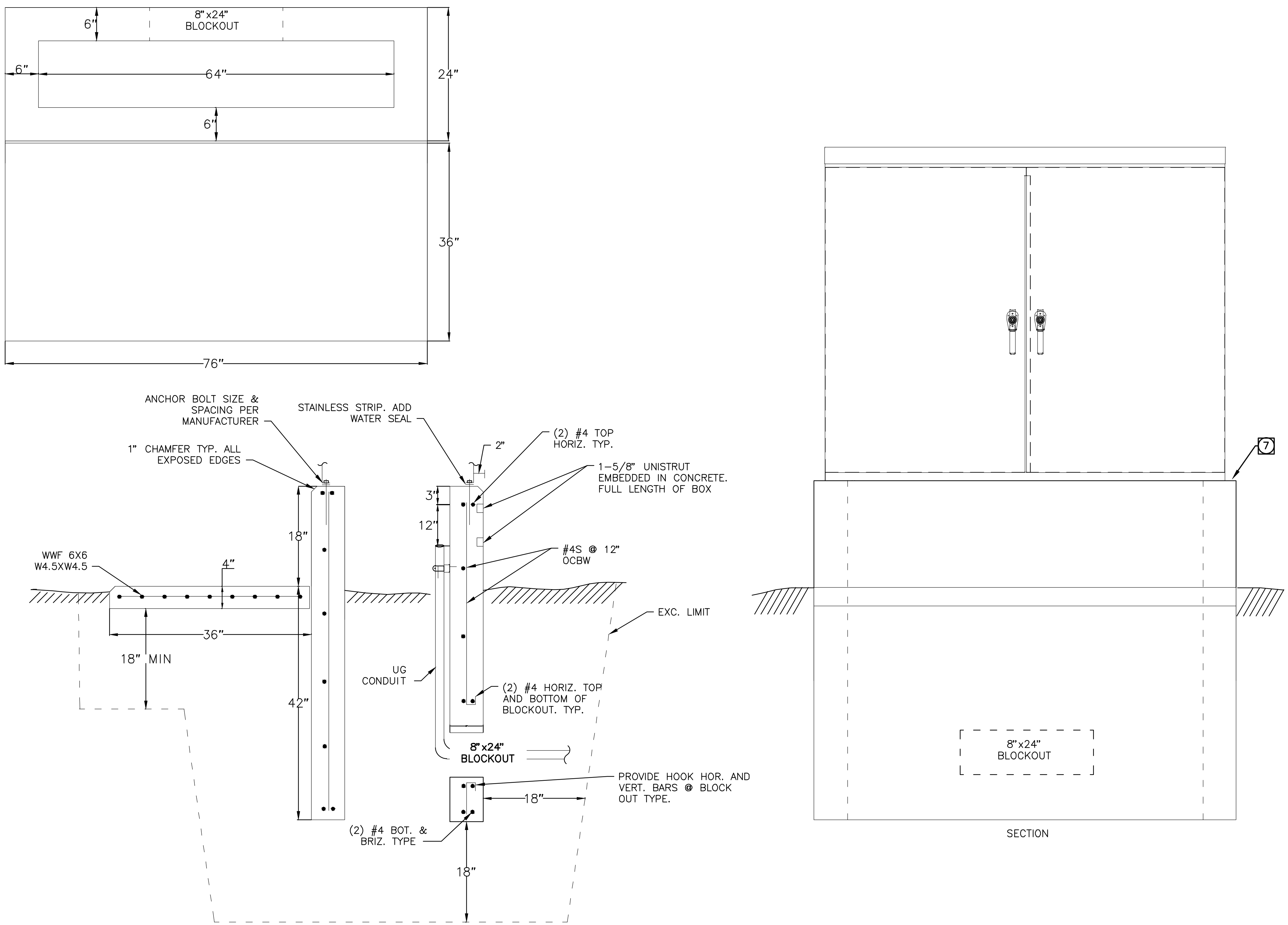
STANDARD LIFT STATION DESIGN DRAWINGS

DWG E6

LIFT STATION INTERMEDIATE JUNCTION BOXES

HORZ SCALE: N/A VERT SCALE: N/A | DATE: | GRID: 1

PROJ. ID.: XXX (SWR)



1 **SCADA CONCRETE BASE STRUCTURE**
NTS

AWWU PLAN SET NO. XXXX

NOTES:

1. CALL FOR GROUND LOCATES PRIOR TO ANY UNDERGROUND WORK.
2. EXCAVATE EXISTING SOIL AS SHOWN. PROVIDE 18" MINIMUM CLASSIFIED BACKFILL BELOW CONCRETE. COMPACT ALL BACKFILL MATERIAL TO 95% OF MAXIMUM DENSITY. CLASSIFIED BACKFILL SHALL BE MASS TYPE II-A.
3. REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO THE REQUIREMENTS OF ASTM 615, GRADE 60. BEND BARS COLD. LAP BARS 40 BAR DIAMETER MINIMUM. RUN STEEL REINFORCING BARS CONTINUOUS THROUGH COLD JOINTS. SECURELY ANCHOR AND TIE REINFORCING BARS AND DOWELS PRIOR TO PLACING CONCRETE.
4. CONCRETE MIX SHALL BE 4,000 PSI MINIMUM COMPRESSION STRENGTH. MATERIALS AND PLACING SHALL BE IN ACCORDANCE WITH MASS, IBC 2000, AND ACI 318. AIR ENTRAINMENT SHALL BE 4% TO 6% BY VOLUME
5. CONCRETE COVER REQUIREMENT SHALL BE 2-INCH MINIMUM AND 3-INCH MINIMUM AGAINST SOIL.
6. ANCHOR BOLTS SHALL BE AS SPECIFIED BY THE CABINET MANUFACTURE AND SHALL BE PLACED BEFORE CONCRETE IS POURED.

7. SET PANEL ON 12GA STAINLESS STEEL STRIP 2" WIDE. STAINLESS STEEL STRIP SHALL RUN UNDER THE FRONT, BACK AND TWO SIDES OF THE CABINET.

PLOT DATE: 8/12/2015 1:13 PM

ACAD FILE: J:\JOBSDATA\10317.15 LIFT STATION DESIGN DRAWINGS\00 CADD\01 WORKING SET\03 ELECTRICAL\10317.15 E7-SCADA CONCRETE BASE DETAIL.DWG

VERIFY SCALE THIS BAR REPRESENTS ONE INCH ON ORIGINAL DRAWING. 0" ▬ 1" IF BAR IS NOT ONE INCH, ADJUST DRAWING SCALE ACCORDINGLY.

FULL SIZE SCALE
HORZ SCALE: N/A
VERT SCALE: N/A

DATA	DRAWN BY	CHECKED BY	DATA	DRAWN BY	CHECKED BY	REV	DATE	DESCRIPTION	BY
BASE	---		TELEPHONE	---					
TOPOGRAPHY	---		ELECTRIC	---					
PROFILE	---		CABLE TV	---					
SANITARY SEWER	---		TRAFFIC SIGNAL	---					
STORM SEWER	---		DESIGN	---					
WATER	---		QUANTITIES	---					
GAS	---		MUN. FINAL CHECK	---					
PLAN CHECK						REVISIONS			

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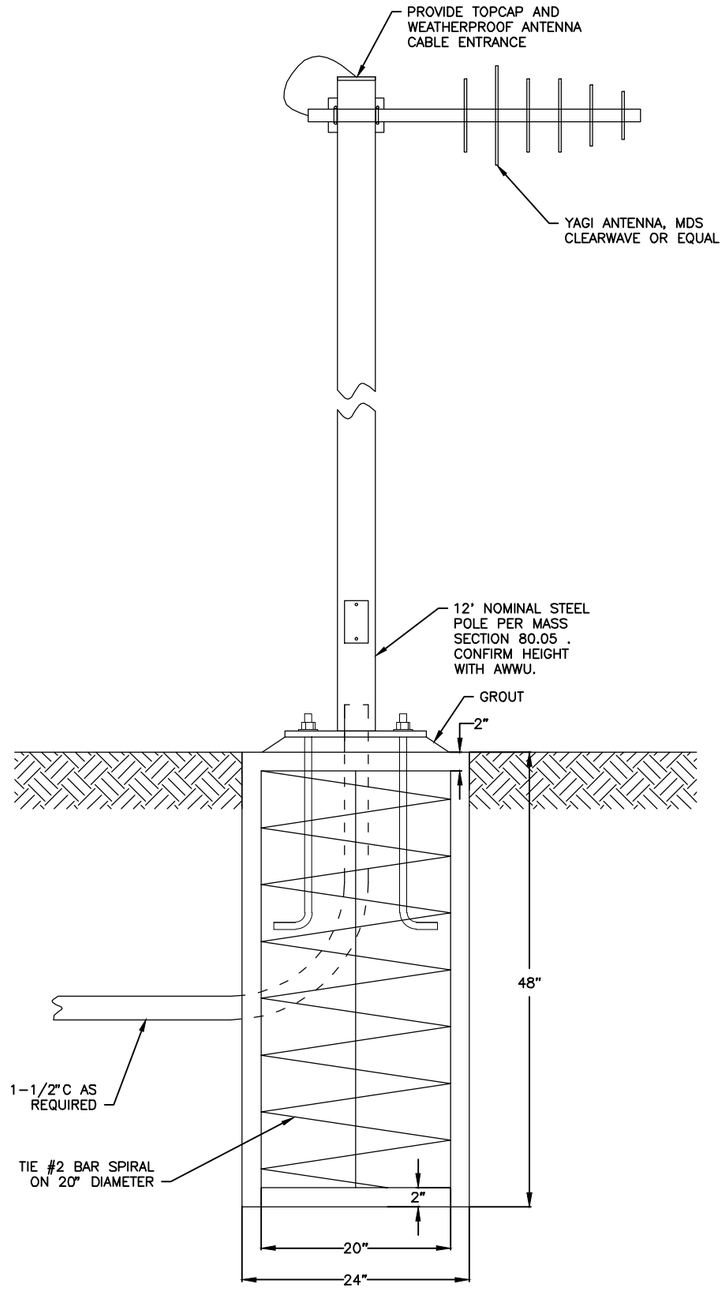
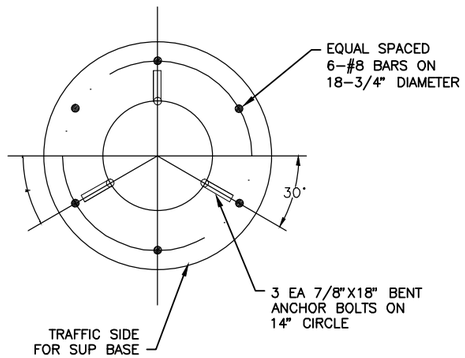
STANDARD LIFT STATION DESIGN DRAWINGS

LIFT STATION
SCADA CONCRETE BASE DETAIL

DWG **E7**

HORZ SCALE: N/A
VERT SCALE: N/A
DATE:
GRID: 1
PROJ. ID.: **XXX (SWR)**
SHEET 16 of 32





1 **SCADA ANTENNA POLE DETAIL**
NTS

NOTES:

1. CALL FOR LOCATES PRIOR TO ANY UNDERGROUND WORK.
2. PROVIDE DRAINAGE AT POLE BASE.
3. REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO THE REQUIREMENTS OF ASTM 615, GRADE 60. BEND BARS COLD. LAP BARS 40 BAR DIAMETERS MINIMUM. RUN STEEL REINFORCING BARS CONTINUOUS THROUGH COLD JOINTS. SECURELY ANCHOR AND TIE REINFORCING BARS AND DOWELS PRIOR TO PLACING CONCRETE.
4. CONCRETE MIX SHALL BE 4,000 PSI MINIMUM COMPRESSIVE STRENGTH. MATERIALS AND PLACING SHALL BE IN ACCORDANCE WITH MASS, IBC 2000 , AND ACI 318. AIR ENTRAINMENT SHALL BE 4% TO 6% BY VOLUME.
5. COORDINATE WITH AWWU TO ARRANGE & PERFORM A RADIO ANTENNA SIGNAL STRENGTH TEST PRIOR TO INSTALLING THE ANTENNA CONCRETE BASE. THIS IS TO DETERMINE THE BEST POSSIBLE SIGNAL TO THE NEAREST ACCESS POINT RADIO.

AWWU PLAN SET NO. XXXX

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TOPOGRAPHY	---		ELECTRIC	---					
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SANITARY SEWER	---		TRAFFIC SIGNAL	---					
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PLAN CHECK			REVISIONS						

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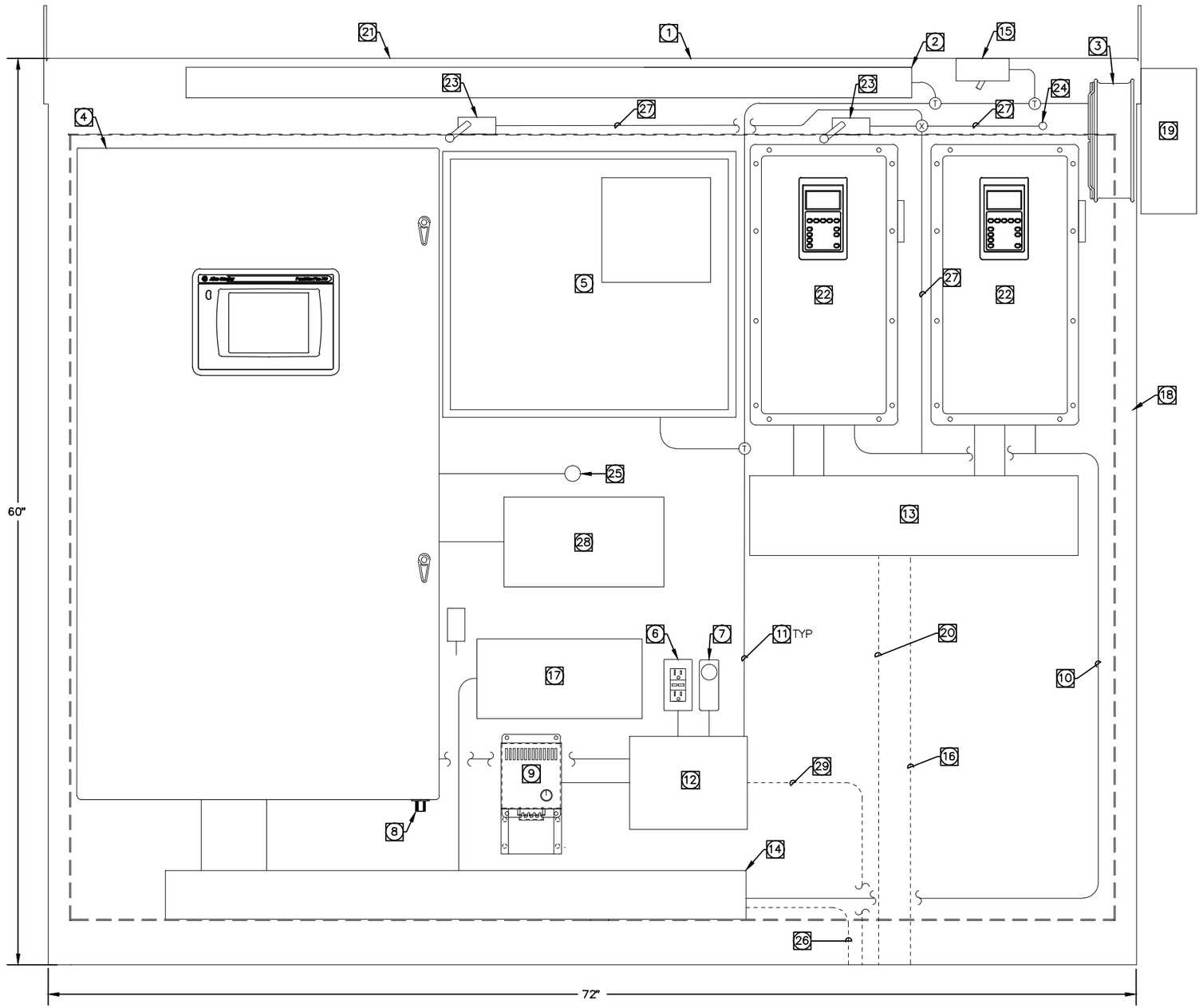
STANDARD LIFT STATION DESIGN DRAWINGS

LIFT STATION
SCADA ANTENNA DETAIL

DWG **E8**

HORZ SCALE: N/A VERT SCALE: N/A | DATE: | GRID: 1

PROJ. ID.: **XXX (SWR)** | SHEET 17 of 32



1 **LIFT STATION SCADA ENCLOSURE LAYOUT**
NTS

NOTES:

1. PAINTED STEEL NEMA–4 ENCLOSURE. INSULATE WITH 1/2" RIGID FOAM ON ALL SIDES, MOUNT ON CONCRETE BASE AS SHOWN ON 1/E7.
2. 4' FLUORESCENT LUMINAIRE WITH COLD WEATHER BALLAST.
3. EXHAUST FAN WITH LOUVER, WIRE TO THERMOSTAT.
4. INSTALL NEMA 1 SCADA PANEL INSIDE OF FREE STANDING PANEL.
5. BATTERY CHARGER.
6. 120VAC CONVENIENCE RECEPTACLE.
7. COOLING THERMOSTAT.
8. LOCATE LIGHTNING ARRESTER TO ALLOW FOR ANTENNA CABLE ROUTING.
9. HEATER. MAKE OR PROVIDE A MOUNTING BRACKET FOR HEATER.
10. DEVICENET AND INTRUSION CABLE.
11. ALL 120VAC & 208VAC CIRCUITS SHALL BE RUN IN EITHER CONDUIT OR LIQUID TIGHT FLEXIBLE METAL CONDUIT.
12. 120V POWER J–BOX.
13. 208V POWER WIREWAY 4" WIDE BY 4" DEEP SMSC.
14. 24VDC POWER WIREWAY 4" WIDE BY 4" DEEP SMSC.
15. PROVIDE SP SNAP SWITCH FOR THE ENCLOSURE 4' LUMINAIRE.
16. CONDUIT TO DISTRIBUTION PANEL. SEE NOTE 8 ON E5.
17. PUMP PROTECTION PANEL.
18. PROVIDE 14 GA ALUMINUM PROTECTION OVER RIGID FOAM ON DOORS AND WALLS.
19. EXTERIOR FAN COVER 14 GA. STAINLESS STEEL.
20. CONDUIT TO POWER INTERMEDIATE J–BOX SEE 2/E6.
21. PROVIDE PHENOLIC TAG 12" X 12" ON OUTSIDE OF ENCLOSURE STATING "WARNING!! VENTILATE WET WELL BEFORE ENTERING". LETTERS WILL BE WHITE ON A RED BACKGROUND. ATTACH WITH ADHESIVES AND 10–32 SCREWS WITH WASHERS AND NUTS.
22. PROVIDE ALLEN–BRADLEY VFD, FVNR, OR RVSS ENCLOSED STARTER AS REQUIRED WITH H–O–A AND GREEN RUNNING LIGHT. (VFD SHOWN)
23. INTRUSION DETECTION SWITCH.
24. 1/2" CONDUIT PENETRATION TO THE POWER PANEL LIMIT SWITCH.
25. 1/2" CONDUIT PENETRATION TO THE MICRO POSITION SWITCH IN THE TRANSFER SWITCH AND 2#14 BACK TO SCADA PANEL.
26. CONDUIT TO CONTROL INTERMEDIATE J–BOX SEE 2/E6. MAINTAIN SEPARATION BETWEEN INTRINSICALLY SAFE CIRCUITS AND OTHER CONTROL WIRING.
27. 1/2" LFMC, 3#14 (INTRUSION)
28. POWER MONITOR (TBD)
29. CONDUIT TO DISTRIBUTION PANEL. SEE NOTE 9 ON E5.

AWWU PLAN SET NO. XXXX

PLOT DATE: 8/12/2015 1:14 PM

ACAD FILE: J:\JOBSDATA\10317.15 LIFT STATION DESIGN DRAWINGS\00 CADD\01 WORKING SET\03 ELECTRICAL\10317.15 EC1–SCADA ENCLOSURE LAYOUT.DWG

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PLAN CHECK

REV	DATE	DESCRIPTION	BY

REVISIONS

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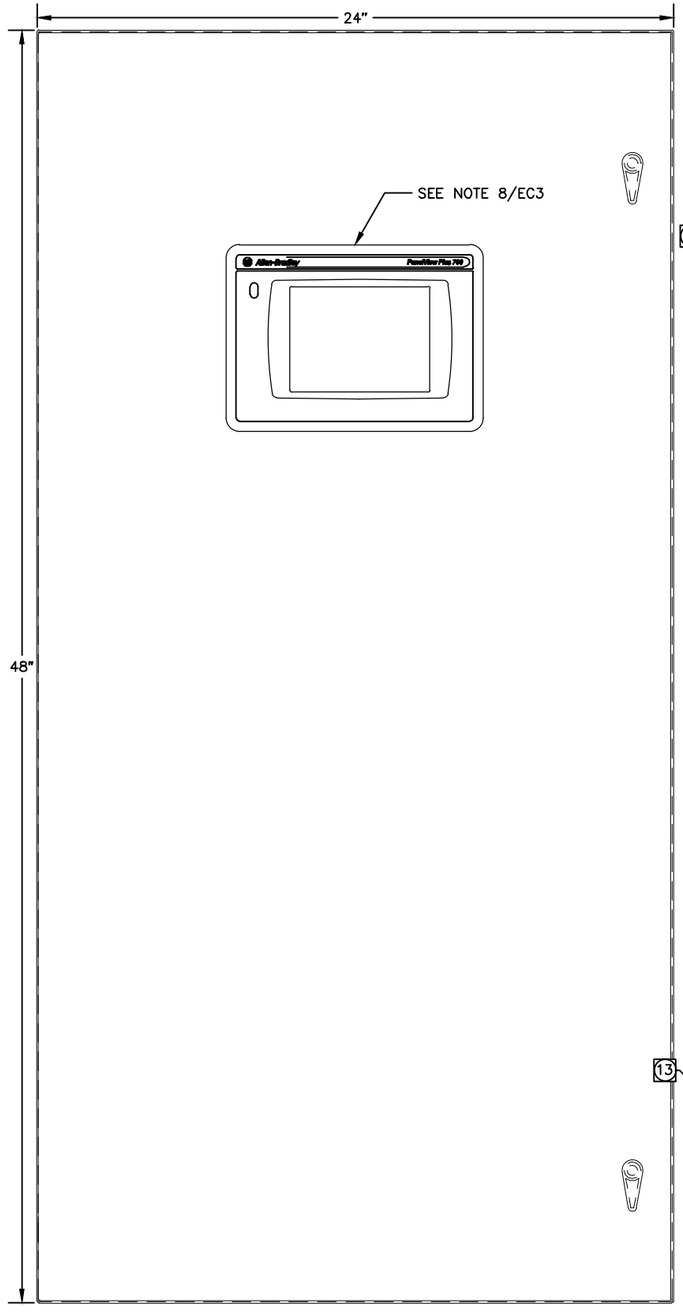
LIFT STATION
SCADA ENCLOSURE LAYOUT

DWG **EC1**

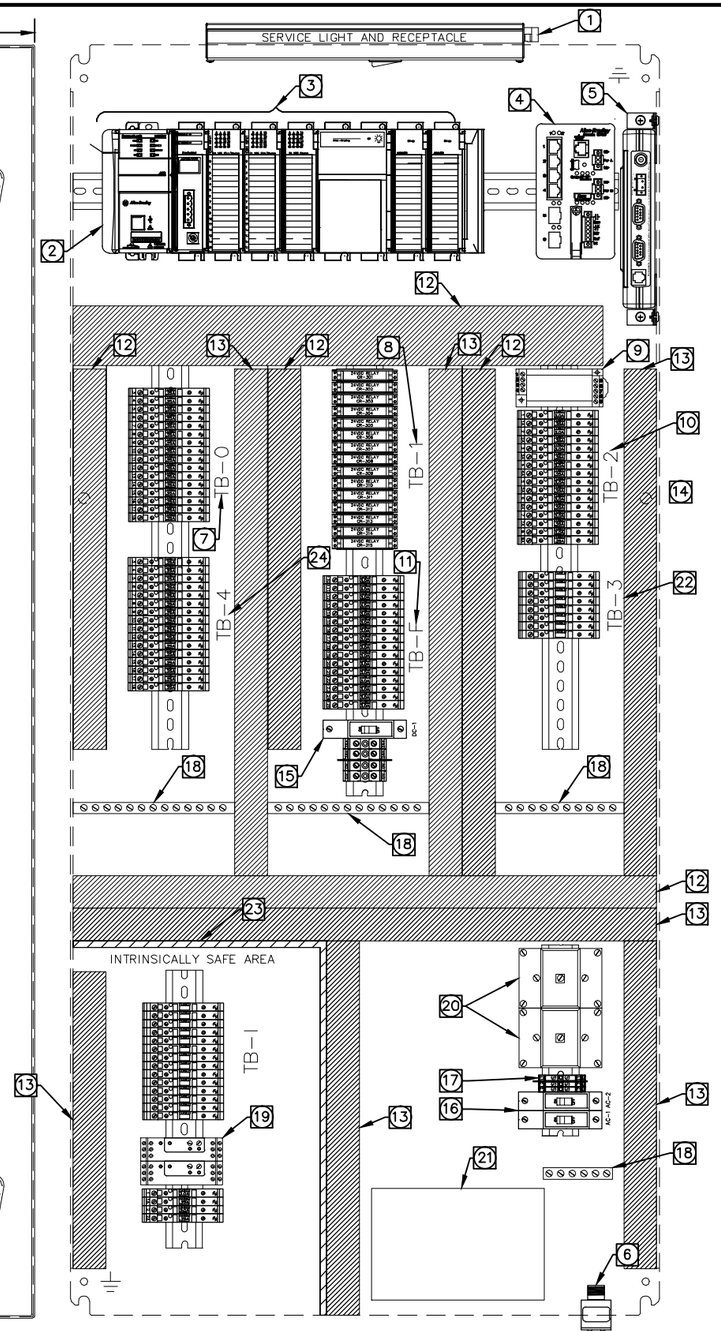
HORZ SCALE: N/A
VERT SCALE: N/A
DATE:
GRID: 1

PROJ. ID.: **XXX (SWR)**

SHEET 18 of 32



1 **LIFT STATION SCADA FRONT PANEL VIEW**
NTS



1 **LIFT STATION SCADA BACK PANEL ELEVATION**
NTS

NOTES:

1. HOFFMAN 120VAC PANEL LIGHTING AND CONVENIENCE RECEPTACLE WITH MANUAL SWITCH.
2. ETHERNET COMMUNICATIONS ON PROCESSOR.
3. RACK 00 PLC HARDWARE, INSTALL PER MANUFACTURER'S REQUIREMENTS, PROVIDE 4 INCHES OF CLEAR TOP PANEL SPACE FOR WIRING AND 2 INCHES OF COOLING SPACE BELOW PLC. SEE EC3 FOR ADDITIONAL RACK DETAILS.
4. DIN RAIL MOUNTED ETHERNET SWITCH. PROVIDE THE NECESSARY ETHERNET CABLES TO CONNECT TO THE PLC, OI AND OTHER ETHERNET DEVICES.
5. 900 MHZ ETHERNET MODEM, PROVIDE MDS DIN RAIL MOUNTING BRACKET, DIN RAIL AND ROUTE ANTENNA CABLE TO LIGHTNING ARRESTER THROUGH DC BLOCK, SEE EC3 FOR ADDITIONAL DETAILS.
6. ANTENNA LIGHTNING SURGE ARRESTER, MOUNT THROUGH PANEL SIDE WALL. PROVIDE EARTH GROUND CONNECTION PER THE MANUFACTURER'S RECOMMENDATIONS.
7. TB-0, DISCRETE INPUTS (16), FUSED & FEED THROUGH TERMINAL BLOCKS.
8. TB-1, DISCRETE OUTPUTS, (15) 24VDC RELAY BLOCKS. RELAYS, PANEL DEVICE SPACING AND DESIGN BASED ON THESE SPECIFIC PARTS.
9. 24VDC BATTERY VOLTAGE POWER MONITOR.
10. TB-2, ANALOG INPUTS AND POWER (24) & OUTPUTS AND POWER (4); FUSED & FEED THROUGH W/GROUND TERMINAL BLOCKS. SEE TYPICAL ANALOG IO WIRING DETAILS AND PROVIDE JUMPERS AS NEEDED AT THE TERMINALS AND ON THE PLC WIRING ARM. COORDINATE WITH EC DRAWINGS AND RELATED DETAILS.
11. TB-F 24VDC CARD SUPPLY FUSES AND OTHER PANEL POWER DISTRIBUTION FUSES, (14) FUSED & FEED THROUGH TERMINAL BLOCKS, SEE EC4 FOR ADDITIONAL DETAILS AND TO CONFIRM QUANTITIES.
12. PANEL WIRING RACEWAY, PROVIDE WIRE TRAYS AND COVERS FOR PANEL AND FIELD WIRING. DO NOT FILL ABOVE 40% CROSS SECTIONAL AREA, ALLOWING FOR 20% SPARE WIRING. PROVIDE DEEPER TRAYS PRIOR TO WIDER TRAYS.
13. FIELD WIRING RACEWAY, PROVIDE WIRE TRAYS AND COVERS FOR PANEL AND FIELD WIRING. DO NOT FILL ABOVE 40% CROSS SECTIONAL AREA, ALLOWING FOR 20% SPARE WIRING. PROVIDE DEEPER TRAYS PRIOR TO WIDER TRAYS.
14. NEATLY TERMINATE AND BUNDLE ANALOG WIRING SEPARATELY FROM OTHER FIELD WIRING IN THE PANEL.
15. 24VDC MAIN BREAKER AND FIELD CONNECTIONS SUITABLE FOR 6 GAGE WIRE TERMINATIONS. PROVIDE SEPARATOR AS SHOWN.
16. 120VAC BREAKERS, BATTERY CHARGER, LIGHT WITH RECEPTACLE, POWER SUPPLY. KEEP AC WIRING OUT OF TRAYS AND AWAY FROM DC WIRING. ROUTE 120VAC WIRING TO LIGHT FIXTURE NEATLY TIE WRAPPED TO PANEL INTERIOR WITH STICKY BLOCKS. PROVIDE 14 GAGE WIRE FOR ALL AC WIRING.
17. INCOMING 120VAC MAIN PANEL POWER CONNECTION. 120VAC L1 TO TERMINATE DIRECTLY ON BREAKER. PROVIDE FACTORY JUMPER AND ACCESSORIES TO JOIN BREAKERS AND FOR TERMINATION POINT AS NEEDED. TERMINATE NEUTRAL ON L2 TERMINAL. ADDITIONAL L1 AND L2 TERMINALS TO BE WIRED FOR BATTERY CHARGER SUPPLY. BATTERY CHARGER AC CONTROL RELAY; SIEMENS 15 AMP 3TX7110-5JC03 WITH 3TX7144-1E7 BASE, WIRE PER 1/EC4.
18. GROUND BAR FOR PANEL AND CONDUIT GROUND WIRE CONNECTIONS. PROVIDE 2 INCHES OF CLEAR SPACE BELOW THE GROUND BAR.
19. INTRINSIC SAFETY BARRIER RELAYS.
20. 120VAC CONTROL POWER MONITORING RELAY (CR-100) WITH (2) 20A RATED CONTACTS AND 24VDC BATTERY SYSTEM TEST RELAY (CR-300) WITH (2) 20A RATED CONTACTS.
21. PROVIDE SEALED LEAD-ACID BATTERIES WITH ELECTROLYTE IN GEL FORM.
22. TB-3, DEVICENET TERMINAL BLOCKS (8).
23. DO NOT BRING ANY CONDUIT PENETRATIONS OR OTHER CONDUCTORS THROUGH THE INTRINSICALLY SAFE AREA. THIS SPACE IS DEDICATED FOR INTRINSICALLY SAFE CONDUCTORS AND ASSOCIATED CONDUITS ONLY.
24. TB-4, DISCRETE INPUTS (16), FUSED & FEED THROUGH TERMINAL BLOCKS.

AWWU PLAN SET NO. XXXX

PLOT DATE: 8/12/2015 1:14 PM

ACAD FILE: I:\JOBSDATA\10317.15 LIFT STATION DESIGN DRAWINGS\00 CADD\01 WORKING SET\03 ELECTRICAL\10317.15 EC2-SCADA FRONT PANEL VIEW.DWG

VERIFY SCALE THIS BAR REPRESENTS ONE INCH ON ORIGINAL DRAWING. 0" 1" IF BAR IS NOT ONE INCH, ADJUST DRAWING SCALE ACCORDINGLY. FULL SIZE SCALE HORZ SCALE: N/A VERT SCALE: N/A

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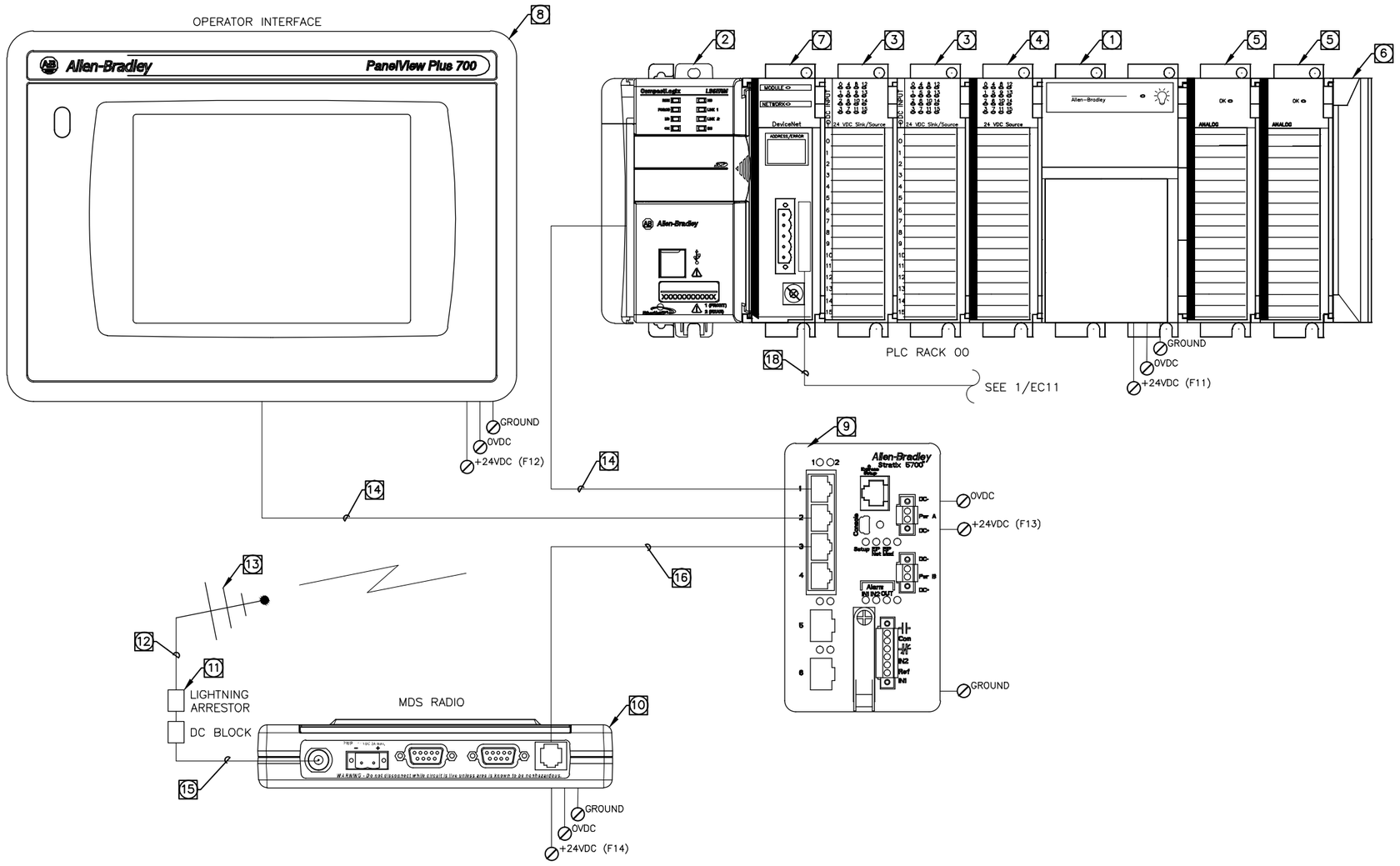
STANDARD LIFT STATION DESIGN DRAWINGS

LIFT STATION SCADA FRONT PANEL VIEW

DWG **EC2**

HORZ SCALE: N/A VERT SCALE: N/A | DATE: | GRID: 1 | SHEET 19 of 32

PROJ. ID.: XXX (SWR)



	PART NUMBER	MANUFACTURER	MODULE USE / TYPE
1	1769-PB4	ALLEN-BRADLEY	24VDC POWER SUPPLY
2	1769-L33ER	ALLEN-BRADLEY	COMPACT LOGIX PROCESSOR (CPU)
3	1769-IQ16	ALLEN-BRADLEY	16 DISCRETE INPUT MODULE
4	1769-OB16	ALLEN-BRADLEY	16 DISCRETE OUTPUT MODULE
5	1769-IF4	ALLEN-BRADLEY	4 POINT ANALOG INPUT MODULE
6	1769-ECR	ALLEN-BRADLEY	RIGHT END CAP
7	1769-SDN	ALLEN-BRADLEY	DEVICENET SCANNER

	PART NUMBER	MANUFACTURER	MODULE USE / TYPE
8	2711P-T7C4D8	ALLEN-BRADLEY	PANELVIEW PLUS 700 TOUCH SCREEN
9	1783-BMS06TL	ALLEN-BRADLEY	STRATIX 5700 ETHERNET SWITCH
10	MDS ENTRANET 900	MDS	ENTRANET 900mHZ TRANSCEIVER
11	DSX	POLYPHASER	BULKHEAD MOUNTED FILTER PROTECTOR
12	-----	-----	COAX CABLE WITH 'N' CONNECTORS
13	-----	-----	YAGI ANTENNA
14	-----	-----	CAT5 ETHERNET CABLE, 2PR RJ45 ENDS

	PART NUMBER	MANUFACTURER	MODULE USE / TYPE
15	-----	-----	JUMPER CABLE W/ 'TNC' & 'N' CONNECTORS
16	-----	-----	CAT5 ETHERNET CROSSOVER CABLE 2PR, RJ45 ENDS
17	-----	-----	-----
18	-----	ALLEN-BRADLEY	(THIN) 600V YELLOW DEVICENET CABLE/CONDUCTORS

VERIFY SCALE THIS BAR REPRESENTS ONE INCH ON ORIGINAL DRAWING. 0" ——— 1"

IF BAR IS NOT ONE INCH, ADJUST DRAWING SCALE ACCORDINGLY.

FULL SIZE SCALE
HORZ SCALE: N/A
VERT SCALE: N/A

DATA	DRAWN BY	CHECKED BY	DATA	DRAWN BY	CHECKED BY
BASE	---		TELEPHONE	---	
TOPOGRAPHY	---		ELECTRIC	---	
PROFILE	---		CABLE TV	---	
SANITARY SEWER	---		TRAFFIC SIGNAL	---	
STORM SEWER	---		DESIGN	---	
WATER	---		QUANTITIES	---	
GAS	---		MUN. FINAL CHECK	---	
PLAN CHECK					

REV	DATE	DESCRIPTION	BY
REVISIONS			

RECORD DRAWING Note: To be filled out on original drawings upon project completion.

1. DATA PROVIDED BY: _____
   This will serve to certify that these Record Drawings are a true and accurate representation of the project as constructed.
   CONTRACTOR: _____
   BY: _____ TITLE: _____
   DATE: _____
2. DATA TRANSFERRED BY: _____
   COMPANY: _____
   DATE: _____
3. Based on periodic field observations by the Engineer (or an individual under his/her direct supervision), the Contractor-provided data appears to represent the project as constructed.
   DATA TRANSFER CHECKED BY: _____
   COMPANY: _____
   BY: _____ TITLE: _____
   DATE: _____

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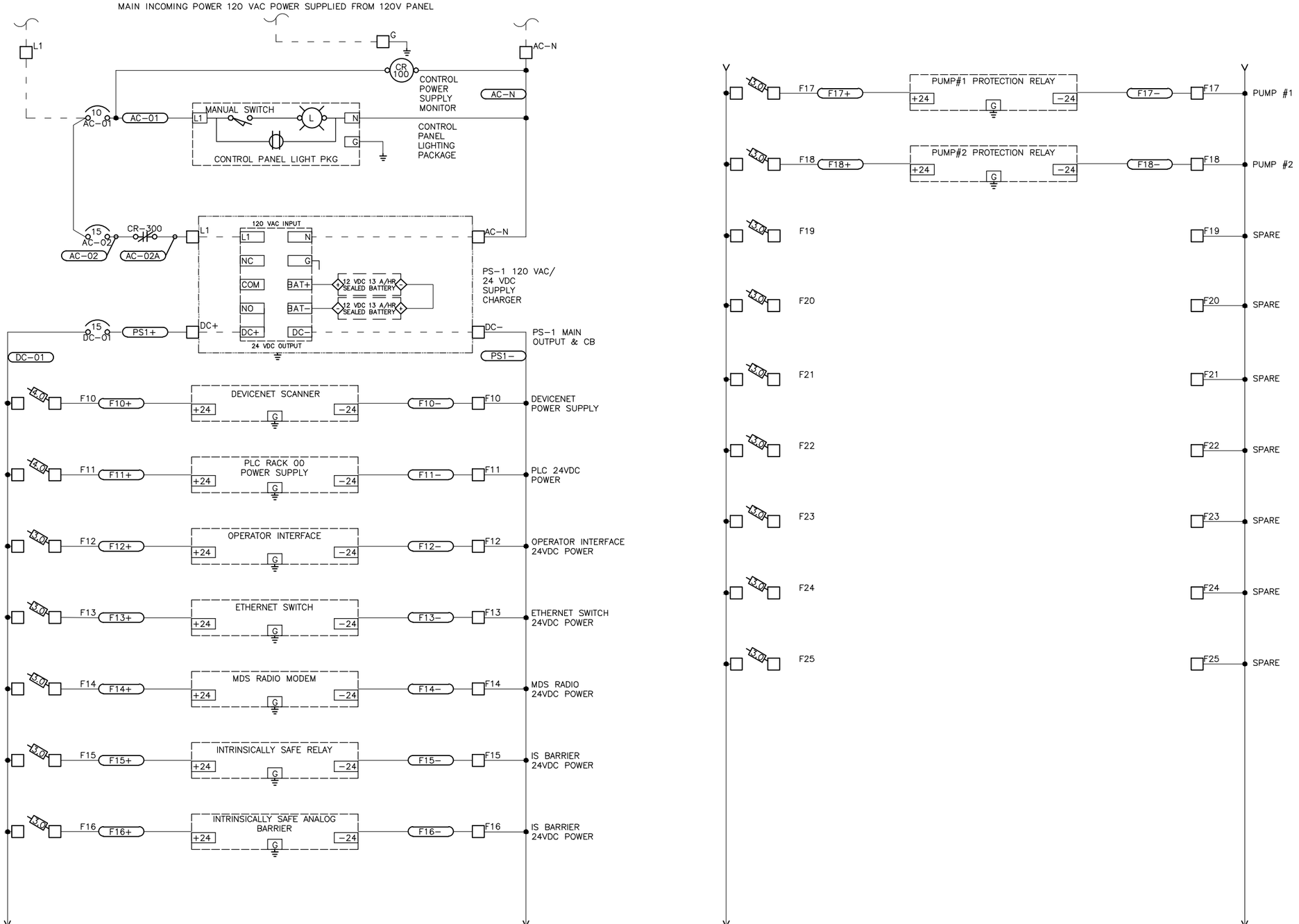
WATER & WASTEWATER UTILITY

STANDARD LIFT STATION DESIGN DRAWINGS

DWG EC3

LIFT STATION PLC RACK VIEW

HORZ SCALE: N/A
VERT SCALE: N/A
DATE:
GRID: 1
PROJ. ID.: XXX (SWR)
SHEET 20 of 32



1 **LIFT STATION SCADA PLC WIRING**
NTS

AWWU PLAN SET NO. XXXX

PLOT DATE: 8/12/2015 1:14 PM

ACAD FILE: J:\JOBSDATA\10317.15 LIFT STATION DESIGN DRAWINGS\00 CADD\01 WORKING SET\03 ELECTRICAL\10317.15 EC4-SCADA PANEL WIRING_1.DWG

VERIFY SCALE THIS BAR REPRESENTS ONE INCH ON ORIGINAL DRAWING. 0" ■■■■■■■■ 1"
IF BAR IS NOT ONE INCH, ADJUST DRAWING SCALE ACCORDINGLY.
FULL SIZE SCALE
HORZ SCALE: N/A
VERT SCALE: N/A

DATA	DRAWN BY	CHECKED BY	DATA	DRAWN BY	CHECKED BY
BASE	---		TELEPHONE	---	
TOPOGRAPHY	---		ELECTRIC	---	
PROFILE	---		CABLE TV	---	
SANITARY SEWER	---		TRAFFIC SIGNAL	---	
STORM SEWER	---		DESIGN	---	
WATER	---		QUANTITIES	---	
GAS	---		MUN. FINAL CHECK	---	

PLAN CHECK

REV	DATE	DESCRIPTION	BY

REVISIONS

RECORD DRAWING Note: To be filled out on original drawings upon project completion.

1. DATA PROVIDED BY: _____
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   CONTRACTOR: _____
   BY: _____ TITLE: _____
   DATE: _____
2. DATA TRANSFERRED BY: _____
   COMPANY: _____
   DATE: _____
3. Based on periodic field observations by the Engineer (or an individual under his/her direct supervision), the Contractor-provided data appears to represent the project as constructed.
   DATA TRANSFER CHECKED BY: _____
   COMPANY: _____
   BY: _____ TITLE: _____
   DATE: _____

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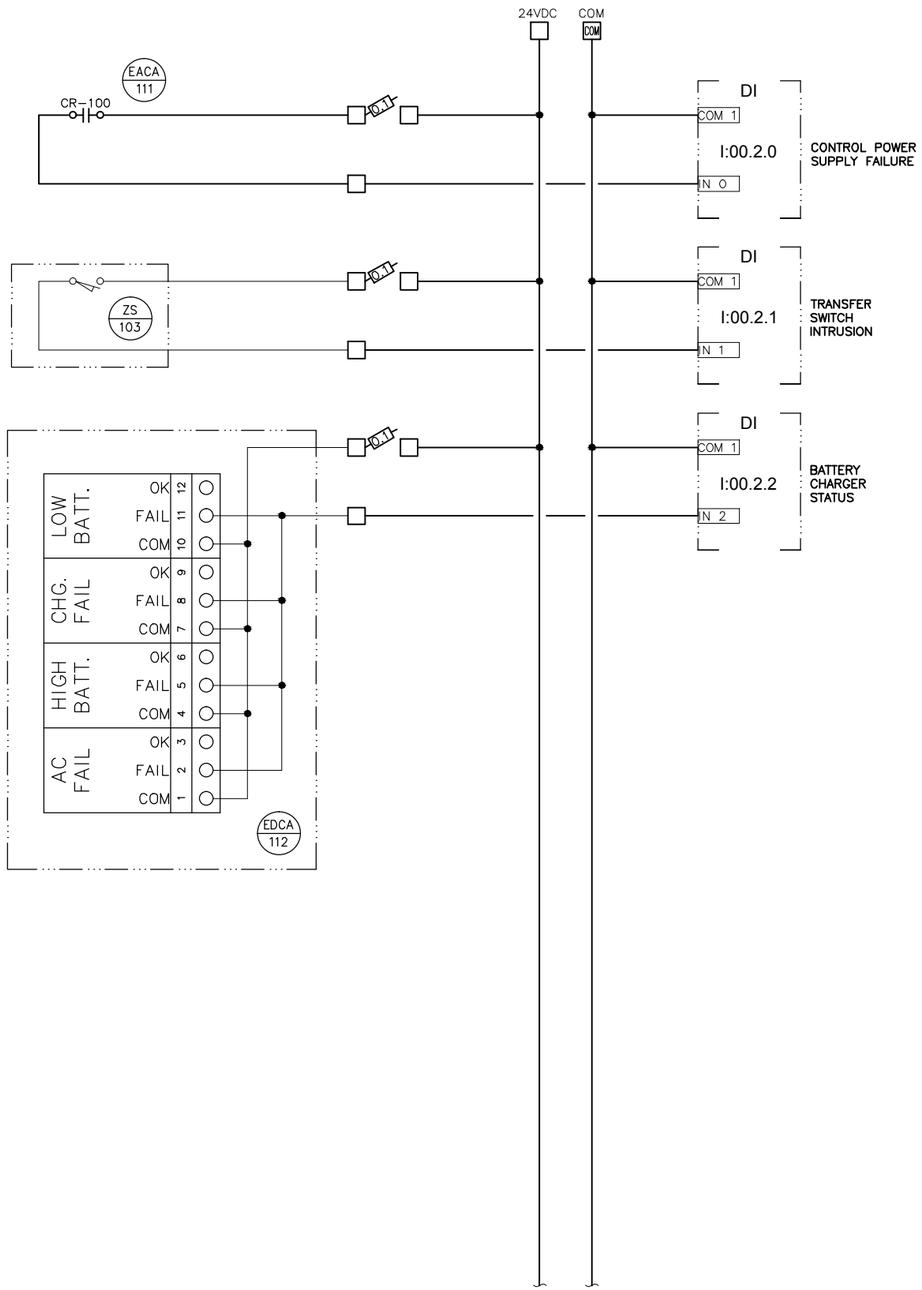
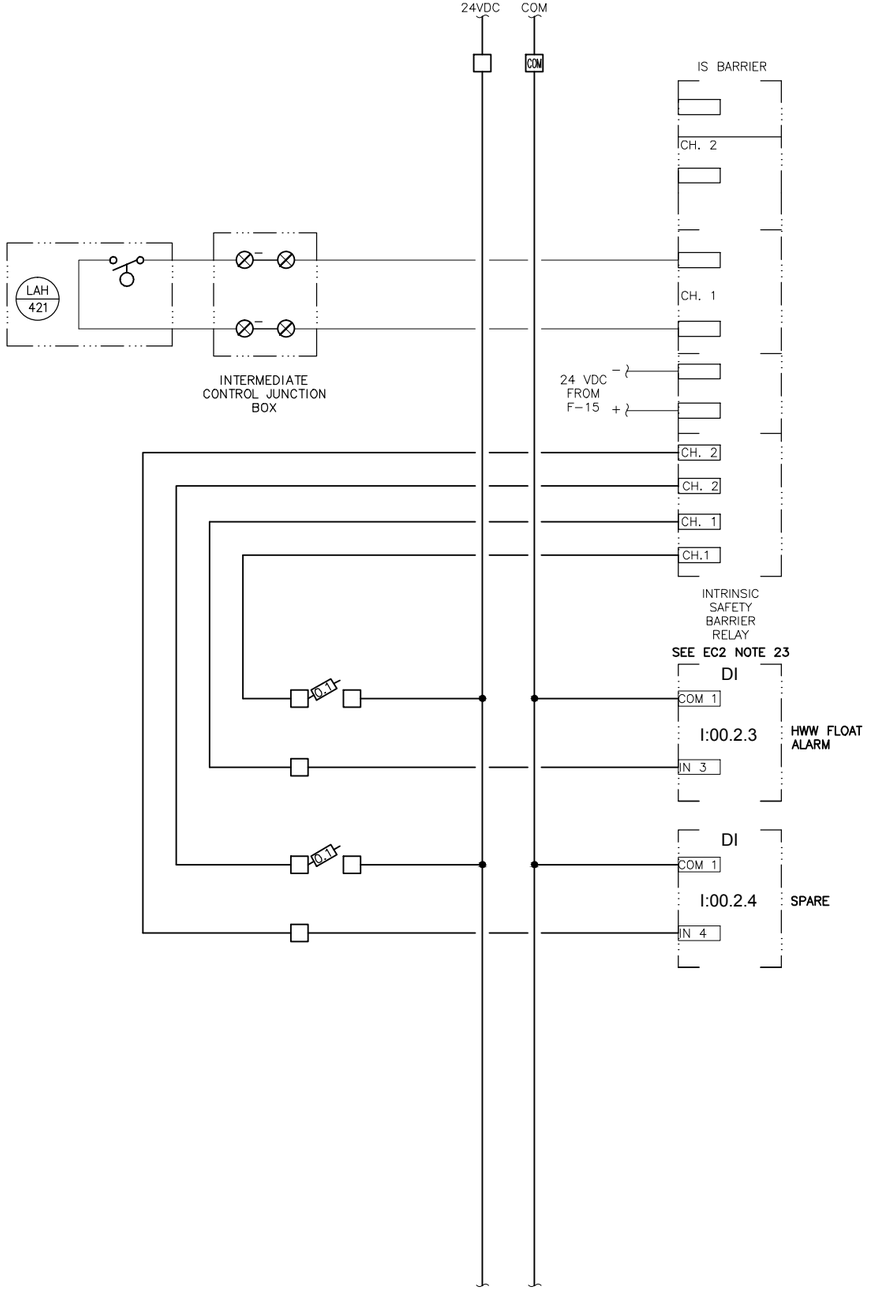
STANDARD LIFT STATION DESIGN DRAWINGS

SCADA PANEL WIRING
PLC WIRING

DWG **EC4**

HORZ SCALE: N/A
VERT SCALE: N/A
DATE:
GRID: 1
PROJ. ID.: **XXX (SWR)**
SHEET 21 of 32





PLOT DATE: 8/12/2015 1:14 PM

ACAD FILE: J:\JOBSDATA\10317.15 LIFT STATION DESIGN DRAWINGS\00 CADD\01 WORKING SET\03 ELECTRICAL\10317.15 EC5-SCADA PANEL WIRING_2.DWG

VERIFY SCALE THIS BAR REPRESENTS ONE INCH ON ORIGINAL DRAWING. 0" ■■■■■ 1" IF BAR IS NOT ONE INCH, ADJUST DRAWING SCALE ACCORDINGLY. FULL SIZE SCALE HORZ SCALE: N/A VERT SCALE: N/A

DATA	DRAWN BY	CHECKED BY	DATA	DRAWN BY	CHECKED BY
BASE	---		TELEPHONE	---	
TOPOGRAPHY	---		ELECTRIC	---	
PROFILE	---		CABLE TV	---	
SANITARY SEWER	---		TRAFFIC SIGNAL	---	
STORM SEWER	---		DESIGN	---	
WATER	---		QUANTITIES	---	
GAS	---		MUN. FINAL CHECK	---	

PLAN CHECK

REV	DATE	DESCRIPTION	BY

REVISIONS

RECORD DRAWING Note: To be filled out on original drawings upon project completion.

1. DATA PROVIDED BY: _____ This will serve to certify that these Record Drawings are a true and accurate representation of the project as constructed.
   CONTRACTOR: _____
   BY: _____ TITLE: _____
   DATE: _____
2. DATA TRANSFERRED BY: _____
   COMPANY: _____
   DATE: _____
3. Based on periodic field observations by the Engineer (or an individual under his/her direct supervision), the Contractor-provided data appears to represent the project as constructed.
   DATA TRANSFER CHECKED BY: _____
   COMPANY: _____
   BY: _____ TITLE: _____
   DATE: _____

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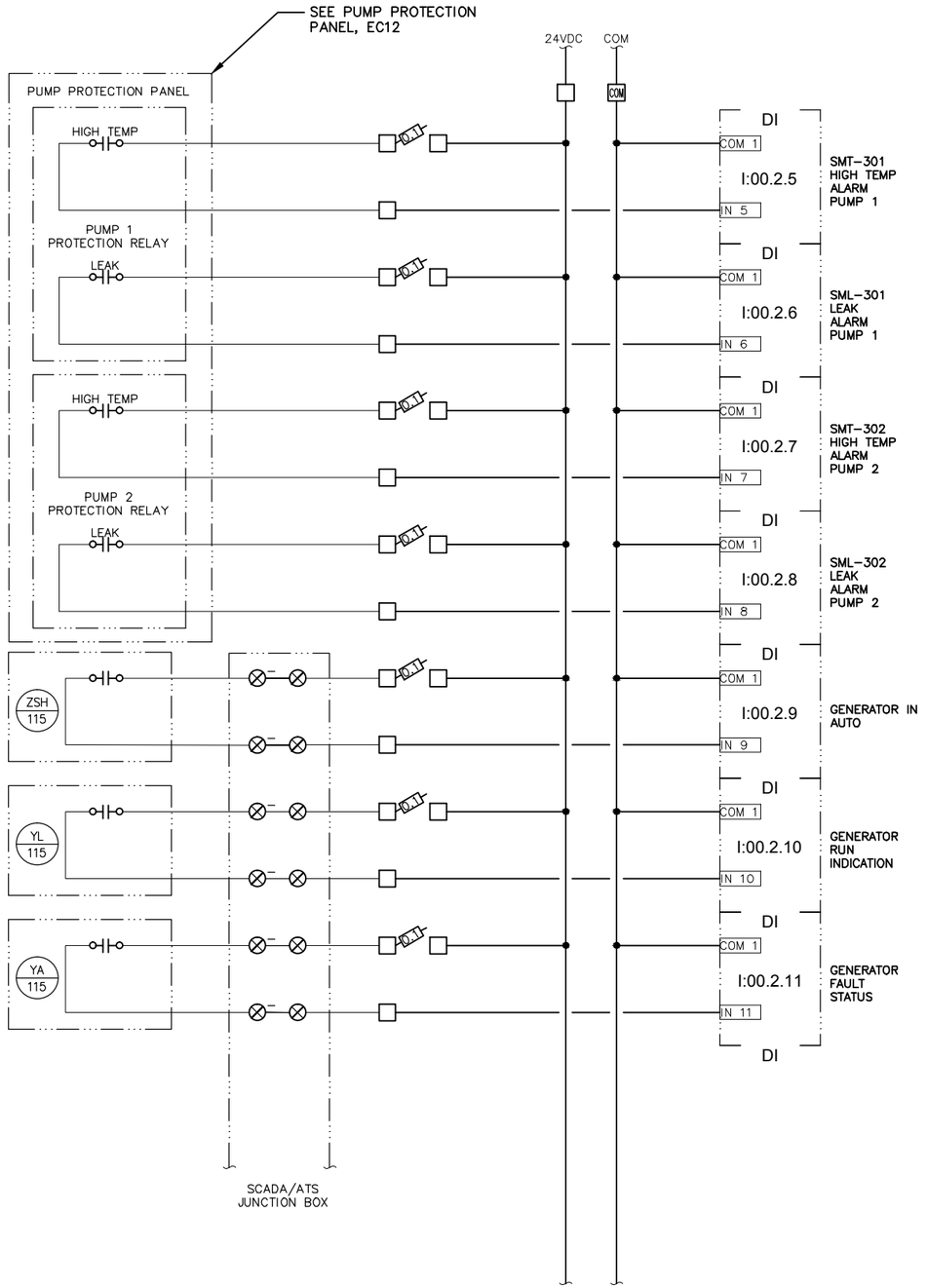
STANDARD LIFT STATION DESIGN DRAWINGS

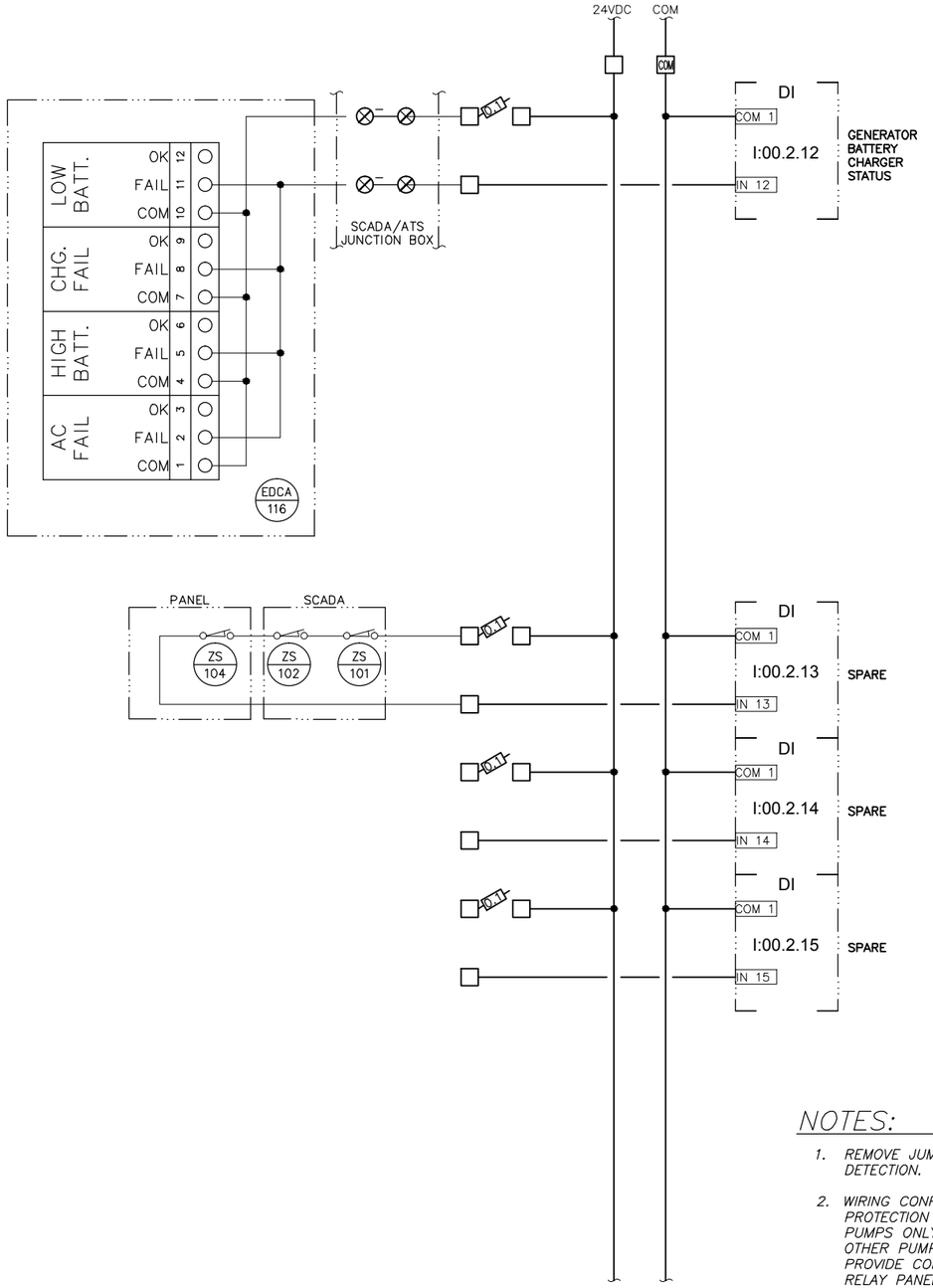
SCADA PANEL WIRING
DI 1.00.2.0 - 1.00.2.4

DWG **EC5**

HORZ SCALE: N/A VERT SCALE: N/A | DATE: | GRID: 1 | SHEET 22 of 32

PROJ. ID.: XXX (SWR)





NOTES:

1. *REMOVE JUMPER TO PROVIDE LEAK DETECTION.*
2. *WIRING CONFIGURATION FOR THIS PUMP PROTECTION RELAY PANEL IS FOR FLYGT PUMPS ONLY. IF ABS PUMPS, OR ANY OTHER PUMPS ARE TO BE USED, THAN PROVIDE CORRECT PUMP PROTECTION RELAY PANEL, SCADA WIRING & INTERMEDIATE JUNCTION BOX WIRING.*

VERIFY SCALE THIS BAR REPRESENTS ONE INCH ON ORIGINAL DRAWING. 0" ■■■■■ 1" IF BAR IS NOT ONE INCH, ADJUST DRAWING SCALE ACCORDINGLY. FULL SIZE SCALE HORZ SCALE: N/A VERT SCALE: N/A

DATA	DRAWN BY	CHECKED BY	DATA	DRAWN BY	CHECKED BY
BASE	---		TELEPHONE	---	
TOPOGRAPHY	---		ELECTRIC	---	
PROFILE	---		CABLE TV	---	
SANITARY SEWER	---		TRAFFIC SIGNAL	---	
STORM SEWER	---		DESIGN	---	
WATER	---		QUANTITIES	---	
GAS	---		MUN. FINAL CHECK	---	

PLAN CHECK

REV	DATE	DESCRIPTION	BY

REVISIONS

RECORD DRAWING Note: To be filled out on original drawings upon project completion.

1. DATA PROVIDED BY: _____
   This will serve to certify that these Record Drawings are a true and accurate representation of the project as constructed.
   CONTRACTOR: _____
   BY: _____ TITLE: _____
   DATE: _____
2. DATA TRANSFERRED BY: _____
   COMPANY: _____
   DATE: _____
3. Based on periodic field observations by the Engineer (or an individual under his/her direct supervision), the Contractor-provided data appears to represent the project as constructed.
   DATA TRANSFER CHECKED BY: _____
   COMPANY: _____
   BY: _____ TITLE: _____
   DATE: _____

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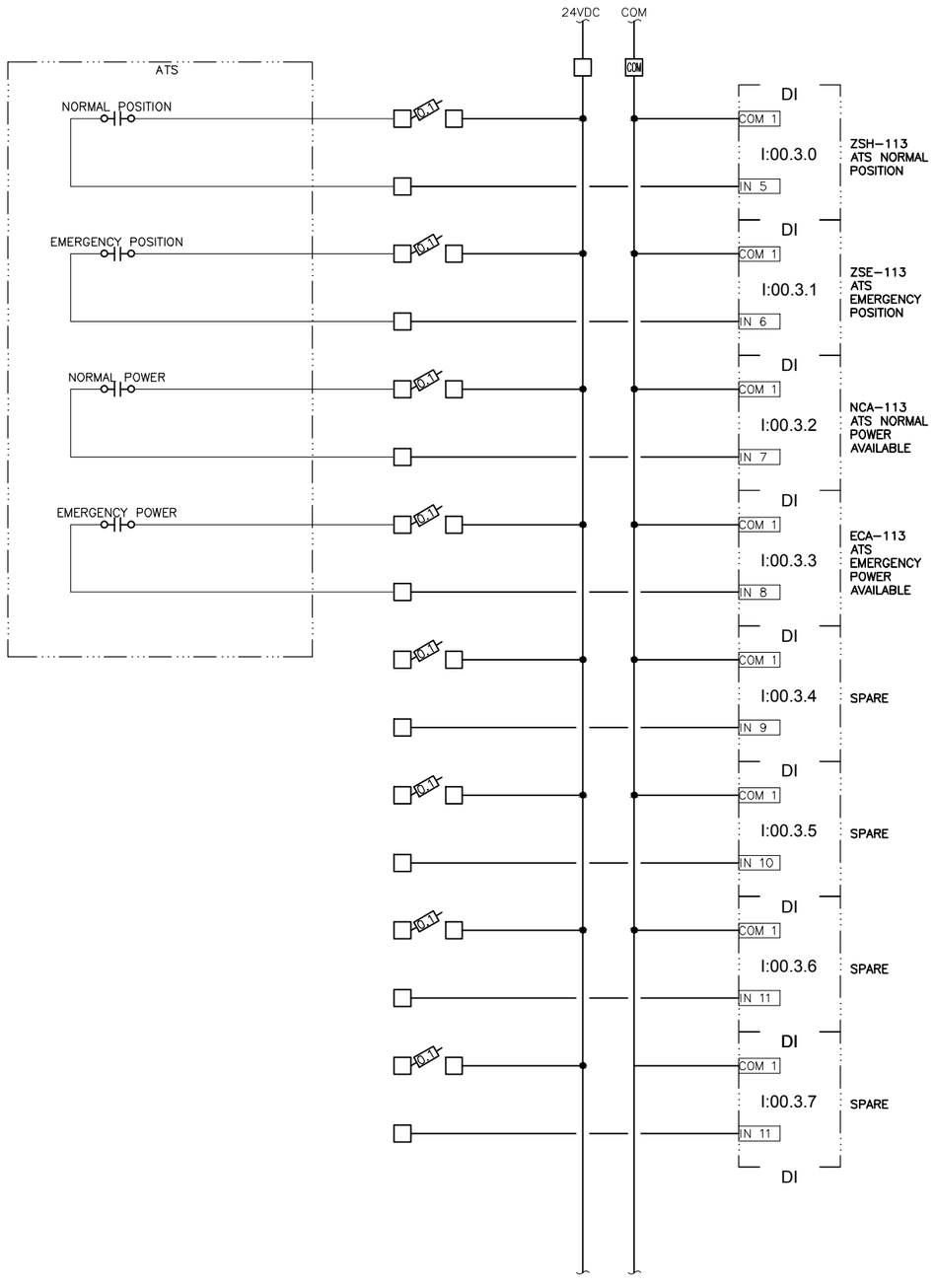
WATER & WASTEWATER UTILITY

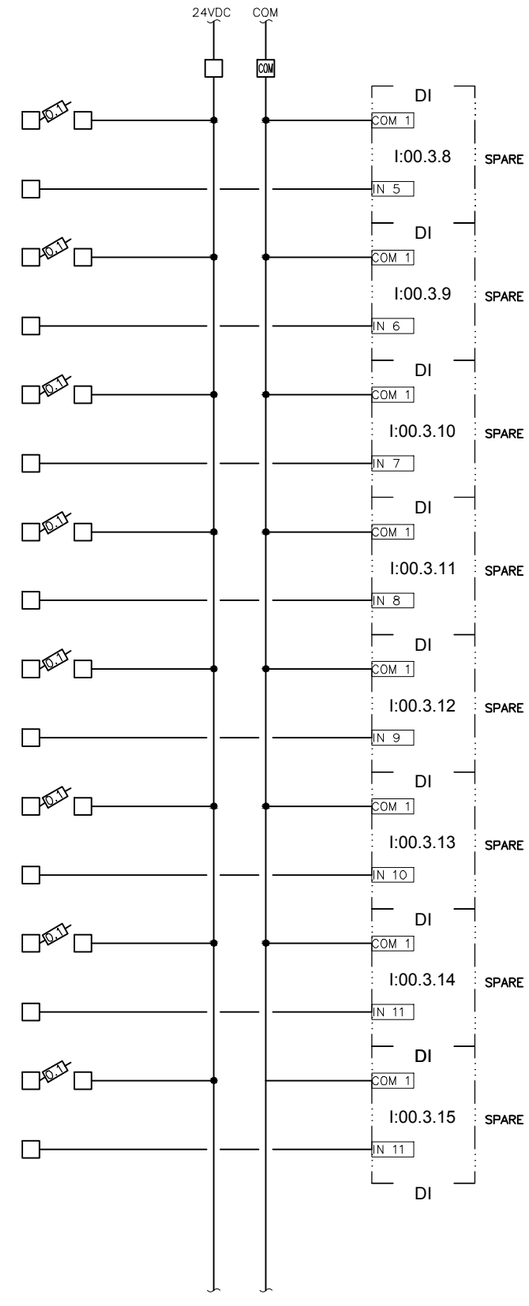
STANDARD LIFT STATION DESIGN DRAWINGS

DWG EC6

SCADA PANEL WIRING
DI 1.00.2.5 - 1.00.2.15

HORZ SCALE: N/A
VERT SCALE: N/A
DATE:
GRID: 1
PROJ. ID.: XXX (SWR)
SHEET 23 of 32





PLOT DATE: 8/12/2015 1:15 PM

ACAD FILE: J:\JOBSDATA\10317.15 LIFT STATION DESIGN DRAWINGS\00 CADD\01 WORKING SET\03 ELECTRICAL\10317.15 EC6-SCADA PANEL WIRING_3.DWG

VERIFY SCALE THIS BAR REPRESENTS ONE INCH ON ORIGINAL DRAWING. 0" ——— 1"

IF BAR IS NOT ONE INCH, ADJUST DRAWING SCALE ACCORDINGLY.

FULL SIZE SCALE
HORZ SCALE: N/A
VERT SCALE: N/A

DATA	DRAWN BY	CHECKED BY	DATA	DRAWN BY	CHECKED BY
BASE	---		TELEPHONE	---	
TOPOGRAPHY	---		ELECTRIC	---	
PROFILE	---		CABLE TV	---	
SANITARY SEWER	---		TRAFFIC SIGNAL	---	
STORM SEWER	---		DESIGN	---	
WATER	---		QUANTITIES	---	
GAS	---		MUN. FINAL CHECK	---	

PLAN CHECK

REV	DATE	DESCRIPTION	BY

REVISIONS

RECORD DRAWING Note: To be filled out on original drawings upon project completion.

1. DATA PROVIDED BY: _____
   This will serve to certify that these Record Drawings are a true and accurate representation of the project as constructed.
   CONTRACTOR: _____
   BY: _____ TITLE: _____
   DATE: _____
2. DATA TRANSFERRED BY: _____
   COMPANY: _____
   DATE: _____
3. Based on periodic field observations by the Engineer (or an individual under his/her direct supervision), the Contractor-provided data appears to represent the project as constructed.
   DATA TRANSFER CHECKED BY: _____
   COMPANY: _____
   BY: _____ TITLE: _____
   DATE: _____

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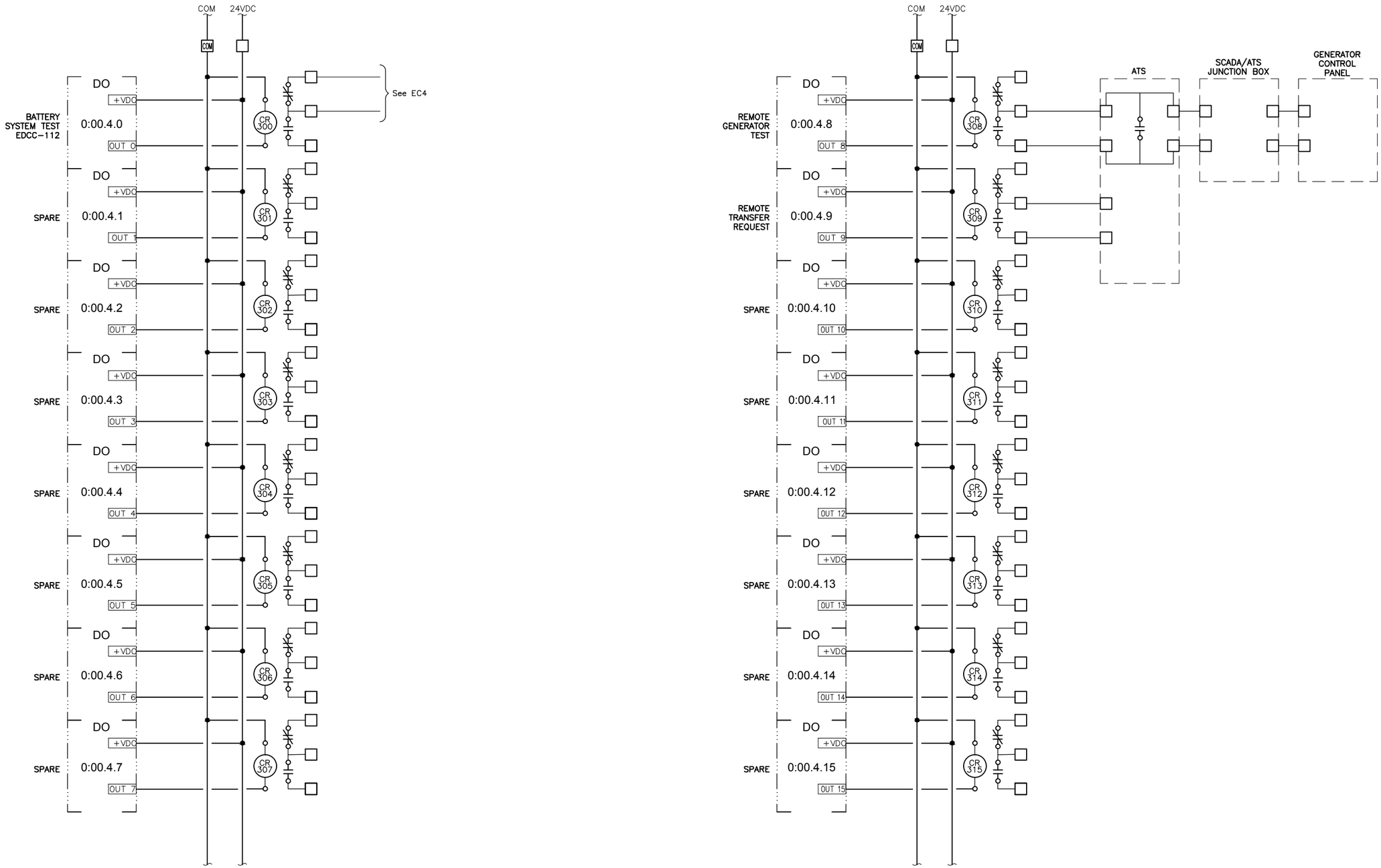
WATER & WASTEWATER UTILITY

STANDARD LIFT STATION DESIGN DRAWINGS

DWG EC7

SCADA PANEL WIRING
DI 1.00.3.0 - 1.00.3.15

HORZ SCALE: N/A
VERT SCALE: N/A
DATE:
GRID: 1
PROJ. ID.: XXX (SWR)
SHEET 24 of 32



AWWU PLAN SET NO. XXXX

PLOT DATE: 8/12/2015 1:15 PM

ACAD FILE: L:\JOBSDATA\10317.15 LIFT STATION DESIGN DRAWINGS\00 CADD\01 WORKING SET\03 ELECTRICAL\10317.15 EC7-SCADA PANEL WIRING_4.DWG

VERIFY SCALE THIS BAR REPRESENTS ONE INCH ON ORIGINAL DRAWING. 0" 1" IF BAR IS NOT ONE INCH, ADJUST DRAWING SCALE ACCORDINGLY. FULL SIZE SCALE HORZ SCALE: N/A VERT SCALE: N/A

DATA	DRAWN BY	CHECKED BY	DATA	DRAWN BY	CHECKED BY
BASE	---		TELEPHONE	---	
TOPOGRAPHY	---		ELECTRIC	---	
PROFILE	---		CABLE TV	---	
SANITARY SEWER	---		TRAFFIC SIGNAL	---	
STORM SEWER	---		DESIGN	---	
WATER	---		QUANTITIES	---	
GAS	---		MUN. FINAL CHECK	---	

PLAN CHECK

REV	DATE	DESCRIPTION	BY

REVISIONS

RECORD DRAWING Note: To be filled out on original drawings upon project completion.

1. DATA PROVIDED BY: _____
   This will serve to certify that these Record Drawings are a true and accurate representation of the project as constructed.
   CONTRACTOR: _____
   BY: _____ TITLE: _____
   DATE: _____
2. DATA TRANSFERRED BY: _____
   COMPANY: _____
   DATE: _____
3. Based on periodic field observations by the Engineer (or an individual under his/her direct supervision), the Contractor-provided data appears to represent the project as constructed.
   DATA TRANSFER CHECKED BY: _____
   COMPANY: _____
   BY: _____ TITLE: _____
   DATE: _____

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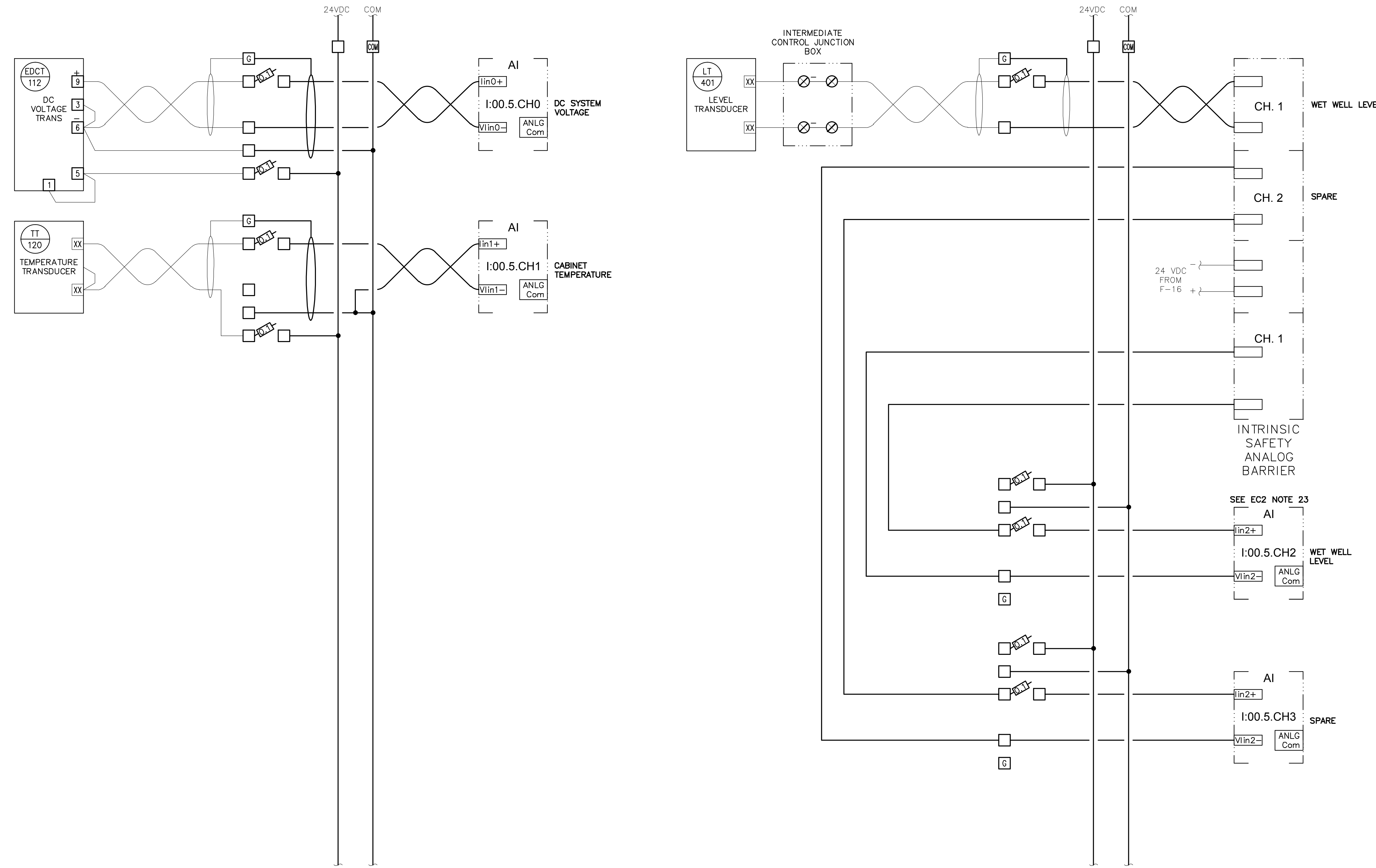
STANDARD LIFT STATION DESIGN DRAWINGS

SCADA PANEL WIRING
DO: 0:00.4.0 - 0.00.4.15

DWG **EC8**

HORZ SCALE: N/A
VERT SCALE: N/A
DATE:
GRID: 1
PROJ. ID.: XXX (SWR)
SHEET 25 of 32

AWWU PLAN SET NO. XXXX



VERIFY SCALE	THIS BAR REPRESENTS ONE INCH ON ORIGINAL DRAWING. 0" ▬ 1"	IF BAR IS NOT ONE INCH, ADJUST DRAWING SCALE ACCORDINGLY.	FULL SIZE SCALE HORZ SCALE: N/A VERT SCALE: N/A

DATA	DRAWN BY	CHECKED BY	DATA	DRAWN BY	CHECKED BY	REV	DATE	DESCRIPTION	BY
BASE	---		TELEPHONE	---					
TOPOGRAPHY	---		ELECTRIC	---					
PROFILE	---		CABLE TV	---					
SANITARY SEWER	---		TRAFFIC SIGNAL	---					
STORM SEWER	---		DESIGN	---					
WATER	---		QUANTITIES	---					
GAS	---		MUN. FINAL CHECK	---					
PLAN CHECK						REVISIONS			

RECORD DRAWING Note: To be filled out on original drawings upon project completion.

1. DATA PROVIDED BY: ____
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   CONTRACTOR: ____
   BY: ____ TITLE: ____
   DATE: ____
2. DATA TRANSFERRED BY: ____
   COMPANY: ____
   DATE: ____
3. Based on periodic field observations by the Engineer (or an individual under his/her direct supervision), the Contractor–provided data appears to represent the project as constructed.
   DATA TRANSFER CHECKED BY: ____
   COMPANY: ____
   BY: ____ TITLE: ____
   DATE: ____

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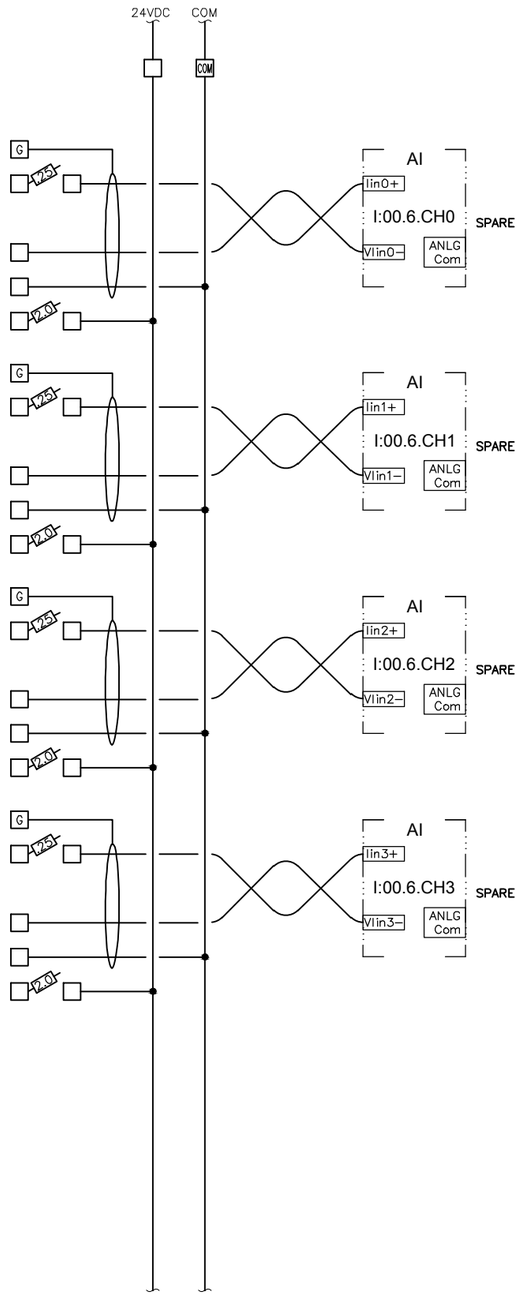
WATER & WASTEWATER UTILITY

STANDARD LIFT STATION DESIGN DRAWINGS

SCADA PANEL WIRING
AI I:00.5.CH0 - AI I:00.5.CH2

DWG **EC9**

HORZ SCALE: N/A
VERT SCALE: N/A
DATE:
GRID: 1
PROJ. ID.: **XXX (SWR)**



PLOT DATE: 8/12/2015 1:15 PM

ACAD FILE: K:\OBSDATA\10317.15 LIFT STATION DESIGN DRAWINGS\00 CADD\01 WORKING SET\03 ELECTRICAL\10317.15 EC9-SCADA PANEL WIRING_6.DWG

VERIFY SCALE THIS BAR REPRESENTS ONE INCH ON ORIGINAL DRAWING. 0" ■■■■■ 1" IF BAR IS NOT ONE INCH, ADJUST DRAWING SCALE ACCORDINGLY. FULL SIZE SCALE HORZ SCALE: N/A VERT SCALE: N/A

DATA	DRAWN BY	CHECKED BY	DATA	DRAWN BY	CHECKED BY	REV	DATE	DESCRIPTION	BY
BASE	---		TELEPHONE	---					
TOPOGRAPHY	---		ELECTRIC	---					
PROFILE	---		CABLE TV	---					
SANITARY SEWER	---		TRAFFIC SIGNAL	---					
STORM SEWER	---		DESIGN	---					
WATER	---		QUANTITIES	---					
GAS	---		MUN. FINAL CHECK	---					
PLAN CHECK						REVISIONS			

RECORD DRAWING Note: To be filled out on original drawings upon project completion.

1. DATA PROVIDED BY: _____
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   CONTRACTOR: _____
   BY: _____ TITLE: _____
   DATE: _____
2. DATA TRANSFERRED BY: _____
   COMPANY: _____
   DATE: _____
3. Based on periodic field observations by the Engineer (or an individual under his/her direct supervision), the Contractor-provided data appears to represent the project as constructed.
   DATA TRANSFER CHECKED BY: _____
   COMPANY: _____
   BY: _____ TITLE: _____
   DATE: _____

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STANDARD LIFT STATION DESIGN DRAWINGS

DWG EC10

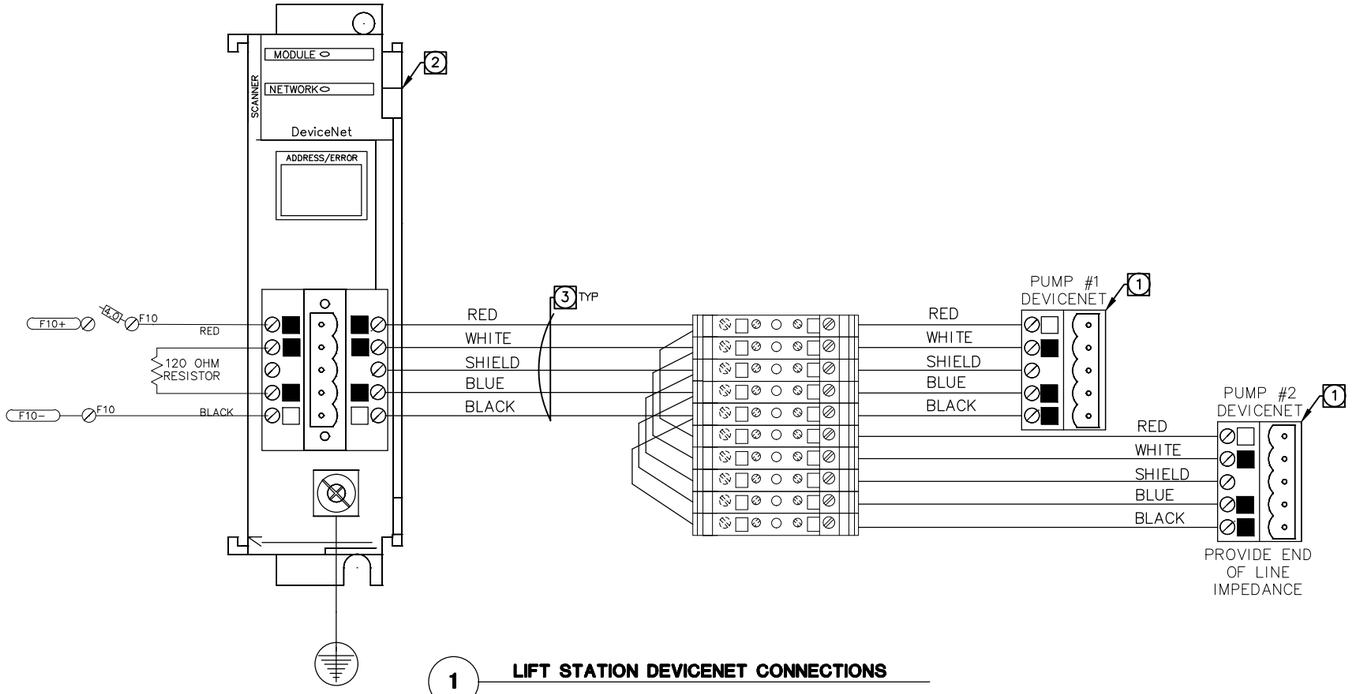
SCADA PANEL WIRING
AI I.006.CH0 - I.00.6.CH3

HORZ SCALE: N/A VERT SCALE: N/A | DATE: | GRID: 1 | SHEET 27 of 32

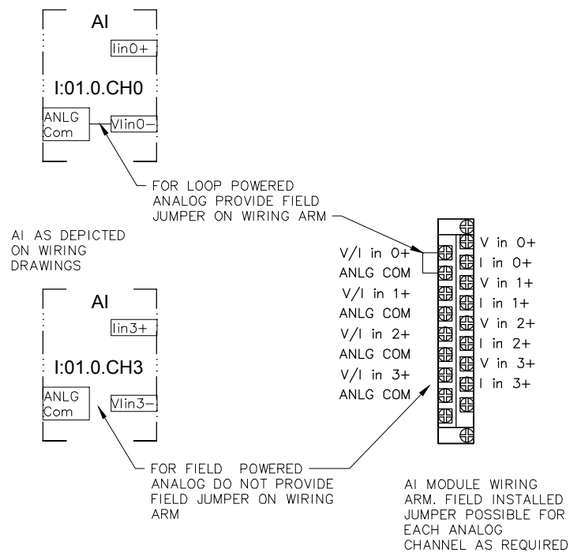
PROJ. ID.: XXX (SWR)

NOTES:

1. SINGLE TAP DEVICENET ADAPTERS.
2. ALLEN BRADLEY 1769-SDN COMPACT LOGIX DEVICENET SCANNER.
3. ALLEN BRADLEY (THIN) 600V YELLOW DEVICENET CABLE/CONDUCTORS.

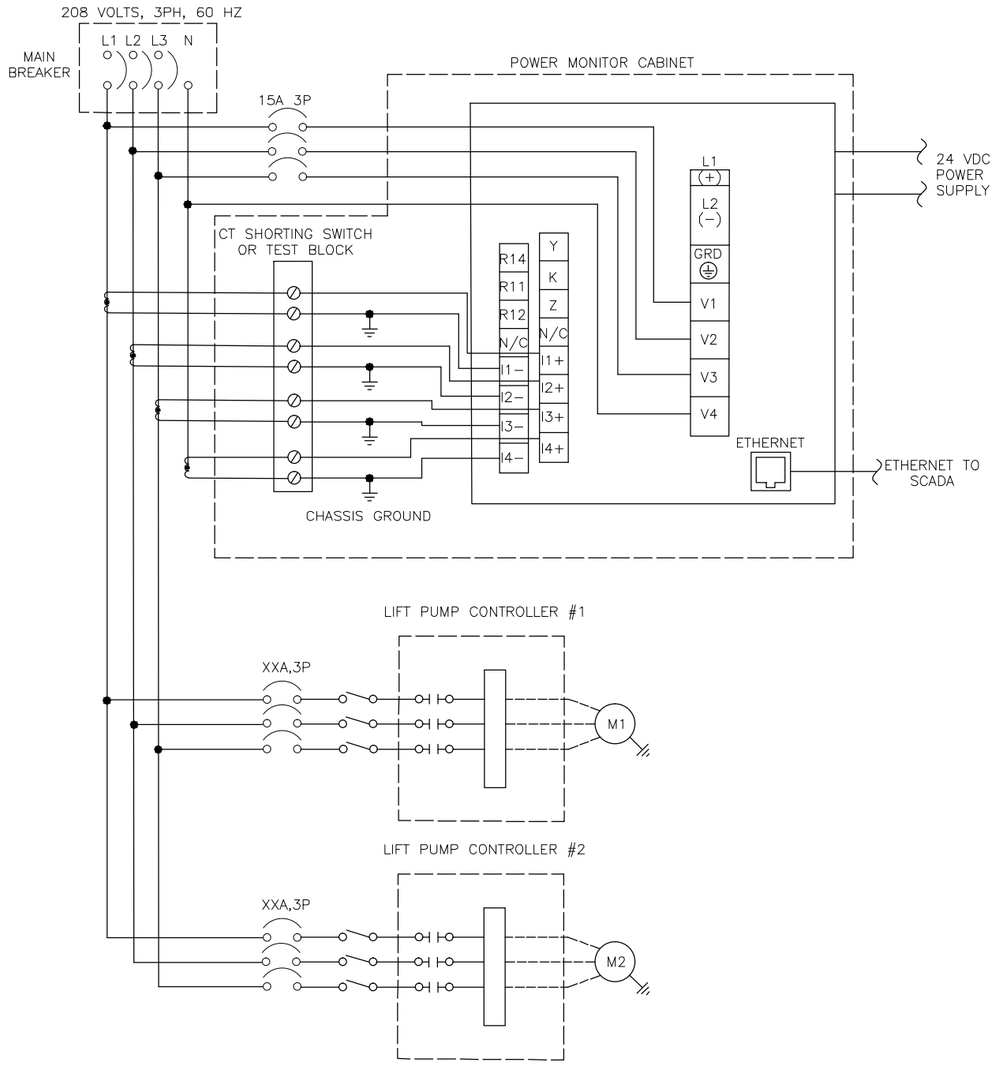


1 LIFT STATION DEVICENET CONNECTIONS



2 ANALOG INPUT WIRIING DETAIL

NTS



3 SCADA POWER MONITOR WIRING DIAGRAM

NTS

VERIFY SCALE THIS BAR REPRESENTS ONE INCH ON ORIGINAL DRAWING. 0" —— 1" IF BAR IS NOT ONE INCH, ADJUST DRAWING SCALE ACCORDINGLY. FULL SIZE SCALE HORZ SCALE: N/A VERT SCALE: N/A

DATA	DRAWN BY	CHECKED BY	DATA	DRAWN BY	CHECKED BY
BASE	---		TELEPHONE	---	
TOPOGRAPHY	---		ELECTRIC	---	
PROFILE	---		CABLE TV	---	
SANITARY SEWER	---		TRAFFIC SIGNAL	---	
STORM SEWER	---		DESIGN	---	
WATER	---		QUANTITIES	---	
GAS	---		MUN. FINAL CHECK	---	

PLAN CHECK

REV	DATE	DESCRIPTION	BY

REVISIONS

RECORD DRAWING Note: To be filled out on original drawings upon project completion.

1. DATA PROVIDED BY: _____
   This will serve to certify that these Record Drawings are a true and accurate representation of the project as constructed.
   CONTRACTOR: _____
   BY: _____ TITLE: _____
   DATE: _____
2. DATA TRANSFERRED BY: _____
   COMPANY: _____
   DATE: _____
3. Based on periodic field observations by the Engineer (or an individual under his/her direct supervision), the Contractor-provided data appears to represent the project as constructed.
   DATA TRANSFER CHECKED BY: _____
   COMPANY: _____
   BY: _____ TITLE: _____
   DATE: _____

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MUNICIPALITY OF ANCHORAGE
WATER & WASTEWATER UTILITY

STANDARD LIFT STATION DESIGN DRAWINGS

DWG EC11

SCADA PANEL WIRING I/O AND DEVICENET DETAILS

HORZ SCALE: N/A
VERT SCALE: N/A
DATE:
GRID: 1
PROJ. ID.: XXX (SWR)
SHEET 28 of 32

SCADA PANEL | FIELD WIRING | WETWELL

24VDC FROM DC-01 (−, +)

SMT-301 HIGH TEMP ALARM PUMP 1 — DI COM 1 / I:00.2.5 / IN 5

SML-301 LEAK ALARM PUMP 1 — DI COM 1 / I:00.2.6 / IN 6

SMT-302 HIGH TEMP ALARM PUMP 2 — DI COM 1 / I:00.2.7 / IN 7

SML-302 LEAK ALARM PUMP 2 — DI COM 2 / I:00.2.8 / IN 8

F0-5, F-18, F0-7, F-19

PUMP PROTECTION RELAY (HI TEMP, LEAK)

MPR-1, PSI−, MPR 1

MPR2, PSI−, MPR 2

P1-T1, P1-T2R, P1-T2

P2-T1, P2-T2, P2-T2R

INTERMEDIATE CONTROL JUNCTION BOX

PUMP 1 MOTOR

PUMP 2 MOTOR

PUMP PROTECTION PANEL [2]

NOTES:

1. Remove jumper to provide leak detection.
2. Wiring configuration for this Pump Protection Relay Panel is for Flygt Pumps only. If ABS pumps, or any other pumps are to be used, than provide correct Pump Protection Relay Panel, SCADA wiring & Intermediate junction box wiring.

AWWU PLAN SET NO. XXXX

PLOT DATE: 8/12/2015 1:15 PM

ACAD FILE: J:\JOBSDATA\10317.15 LIFT STATION DESIGN DRAWINGS\00 CADD\01 WORKING SET\03 ELECTRICAL\EX PUMP PROTECTION PANEL DIGITAL INPUT.DWG

VERIFY SCALE — THIS BAR REPRESENTS ONE INCH ON ORIGINAL DRAWING. 0" — 1". IF BAR IS NOT ONE INCH, ADJUST DRAWING SCALE ACCORDINGLY. FULL SIZE SCALE. HORZ SCALE: N/A. VERT SCALE: N/A

DATA	DRAWN BY	CHECKED BY	DATA	DRAWN BY	CHECKED BY	REV	DATE	DESCRIPTION	BY
BASE	---		TELEPHONE	---					
TOPOGRAPHY	---		ELECTRIC	---					
PROFILE	---		CABLE TV	---					
SANITARY SEWER	---		TRAFFIC SIGNAL	---					
STORM SEWER	---		DESIGN	---					
WATER	---		QUANTITIES	---					
GAS	---		MUN. FINAL CHECK	---					
PLAN CHECK						REVISIONS			

RECORD DRAWING Note: To be filled out on original drawings upon project completion.

1. DATA PROVIDED BY: _____ This will serve to certify that these Record Drawings are a true and accurate representation of the project as constructed.
   CONTRACTOR: _____
   BY: _____ TITLE: _____
   DATE: _____
2. DATA TRANSFERRED BY: _____
   COMPANY: _____
   DATE: _____
3. Based on periodic field observations by the Engineer (or an individual under his/her direct supervision), the Contractor-provided data appears to represent the project as constructed.
   DATA TRANSFER CHECKED BY: _____
   COMPANY: _____
   BY: _____ TITLE: _____
   DATE: _____

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WATER & WASTEWATER UTILITY

STANDARD LIFT STATION DESIGN DRAWINGS

PUMP PROTECTION PANEL

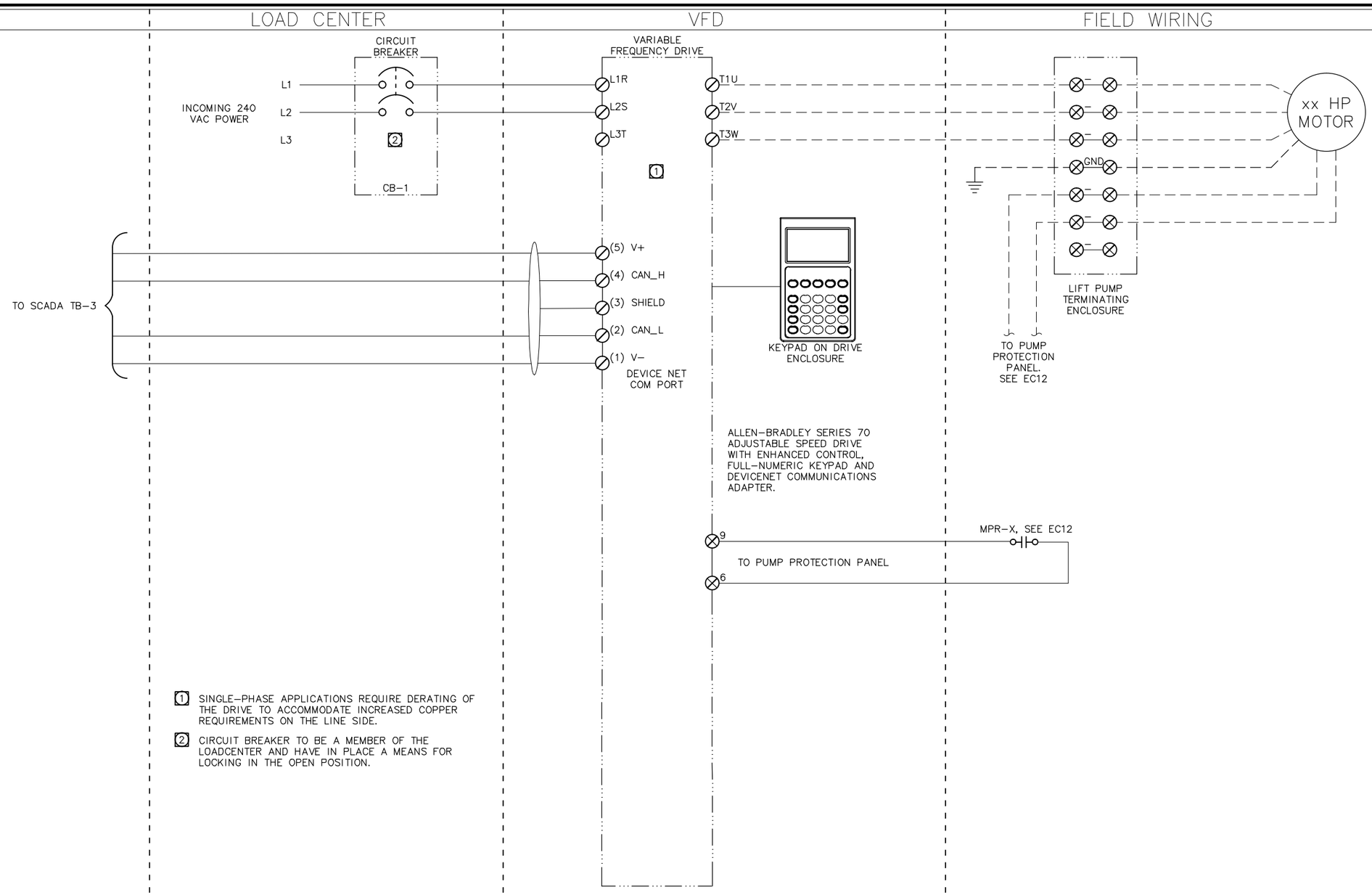
DWG **EC12**

HORZ SCALE: N/A. VERT SCALE: N/A. DATE: GRID: 1

PROJ. ID.: XXX (SWR)

PLOT DATE: 8/12/2015 1:16 PM

ACAD FILE: J:\JOBSDATA\10317.15 LIFT STATION DESIGN DRAWINGS\05 REFERENCE DATA\ELECTRIC\DWGTYPICALLIFTPUMPASD_LS DESIGN.DWG



[1] SINGLE-PHASE APPLICATIONS REQUIRE DERATING OF THE DRIVE TO ACCOMMODATE INCREASED COPPER REQUIREMENTS ON THE LINE SIDE.

[2] CIRCUIT BREAKER TO BE A MEMBER OF THE LOADCENTER AND HAVE IN PLACE A MEANS FOR LOCKING IN THE OPEN POSITION.

NOTE TO DESIGNER:
PROVIDE SEPARATE DRAWING FOR EACH PUMP.

VERIFY SCALE THIS BAR REPRESENTS ONE INCH ON ORIGINAL DRAWING. 0" ■■■■■■■■ 1" IF BAR IS NOT ONE INCH, ADJUST DRAWING SCALE ACCORDINGLY.

FULL SIZE SCALE
HORZ SCALE: N/A
VERT SCALE: N/A

DATA	DRAWN BY	CHECKED BY	DATA	DRAWN BY	CHECKED BY
BASE	---		TELEPHONE	---	
TOPOGRAPHY	---		ELECTRIC	---	
PROFILE	---		CABLE TV	---	
SANITARY SEWER	---		TRAFFIC SIGNAL	---	
STORM SEWER	---		DESIGN	---	
WATER	---		QUANTITIES	---	
GAS	---		MUN. FINAL CHECK	---	

PLAN CHECK

REV	DATE	DESCRIPTION	BY

REVISIONS

RECORD DRAWING Note: To be filled out on original drawings upon project completion.

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   DATA TRANSFER CHECKED BY: _____
   COMPANY: _____
   BY: _____ TITLE: _____
   DATE: _____

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WATER & WASTEWATER UTILITY

STANDARD LIFT STATION DESIGN DRAWINGS

VFD FOR SINGLE PHASE SITES

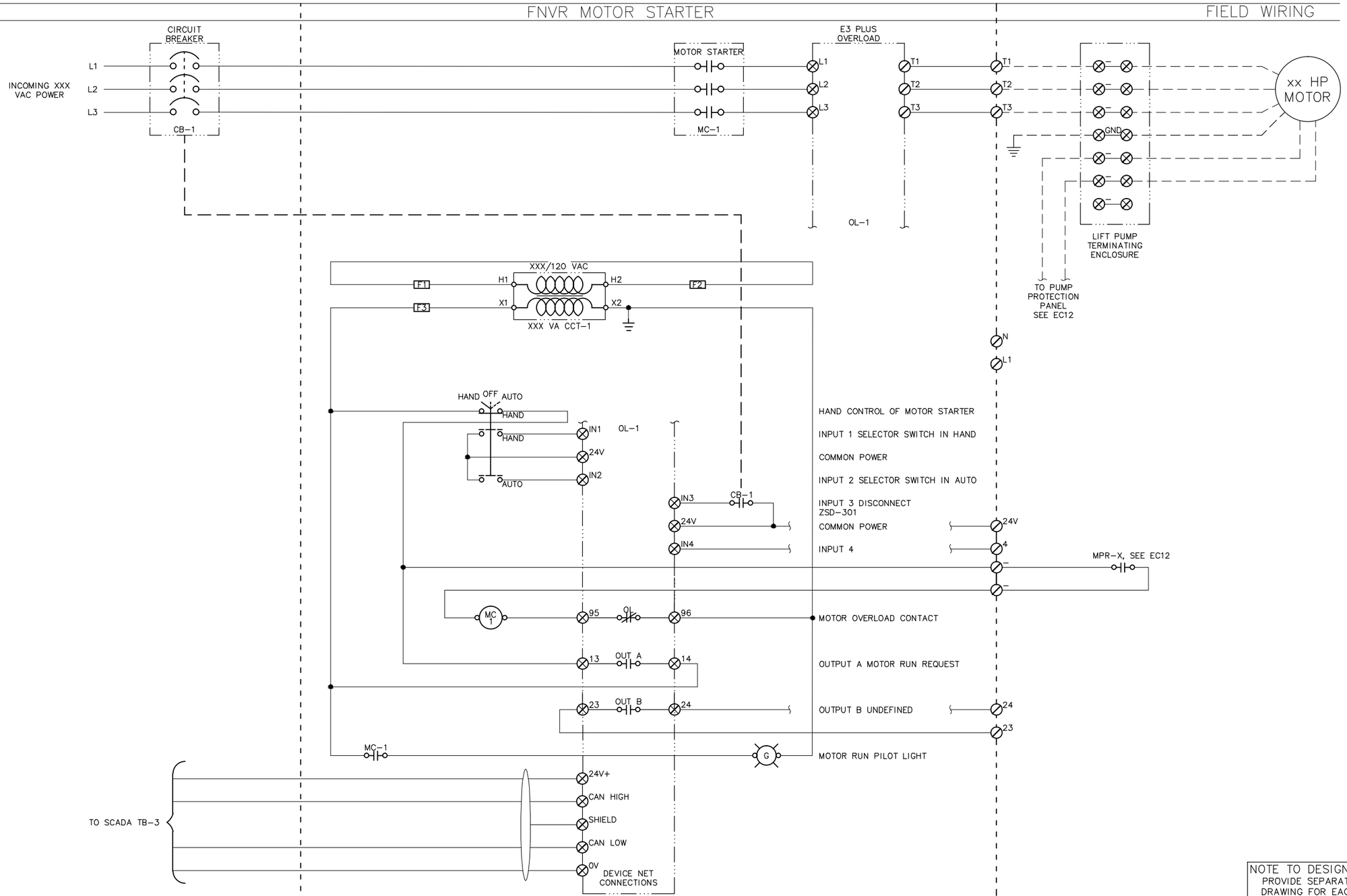
DWG EC13

HORZ SCALE: N/A
VERT SCALE: N/A
DATE:
GRID: 1
PROJ. ID.: XXX (SWR)
SHEET 30 of 32

PLOT DATE: 8/12/2015 1:16 PM

ACAD FILE: k:\JOBSDATA\10317.15 LIFT STATION DESIGN DRAWINGS\05 REFERENCE DATA\ELECTRIC\DWGTYP\CALLIFTPUMPATL LS DESIGN.DWG

AWWU PLAN SET NO. XXXX



NOTE TO DESIGNER:
PROVIDE SEPARATE DRAWING FOR EACH PUMP.

VERIFY SCALE THIS BAR REPRESENTS ONE INCH ON ORIGINAL DRAWING. 0" — 1"

IF BAR IS NOT ONE INCH, ADJUST DRAWING SCALE ACCORDINGLY.

FULL SIZE SCALE
HORZ SCALE: N/A
VERT SCALE: N/A

DATA	DRAWN BY	CHECKED BY	DATA	DRAWN BY	CHECKED BY	REV	DATE	DESCRIPTION	BY
BASE	---		TELEPHONE	---					
TOPOGRAPHY	---		ELECTRIC	---					
PROFILE	---		CABLE TV	---					
SANITARY SEWER	---		TRAFFIC SIGNAL	---					
STORM SEWER	---		DESIGN	---					
WATER	---		QUANTITIES	---					
GAS	---		MUN. FINAL CHECK	---					
PLAN CHECK						REVISIONS			

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   COMPANY: _____
   BY: _____ TITLE: _____
   DATE: _____

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WATER & WASTEWATER UTILITY

STANDARD LIFT STATION DESIGN DRAWINGS

FVNR FOR 3-PHASE SITES

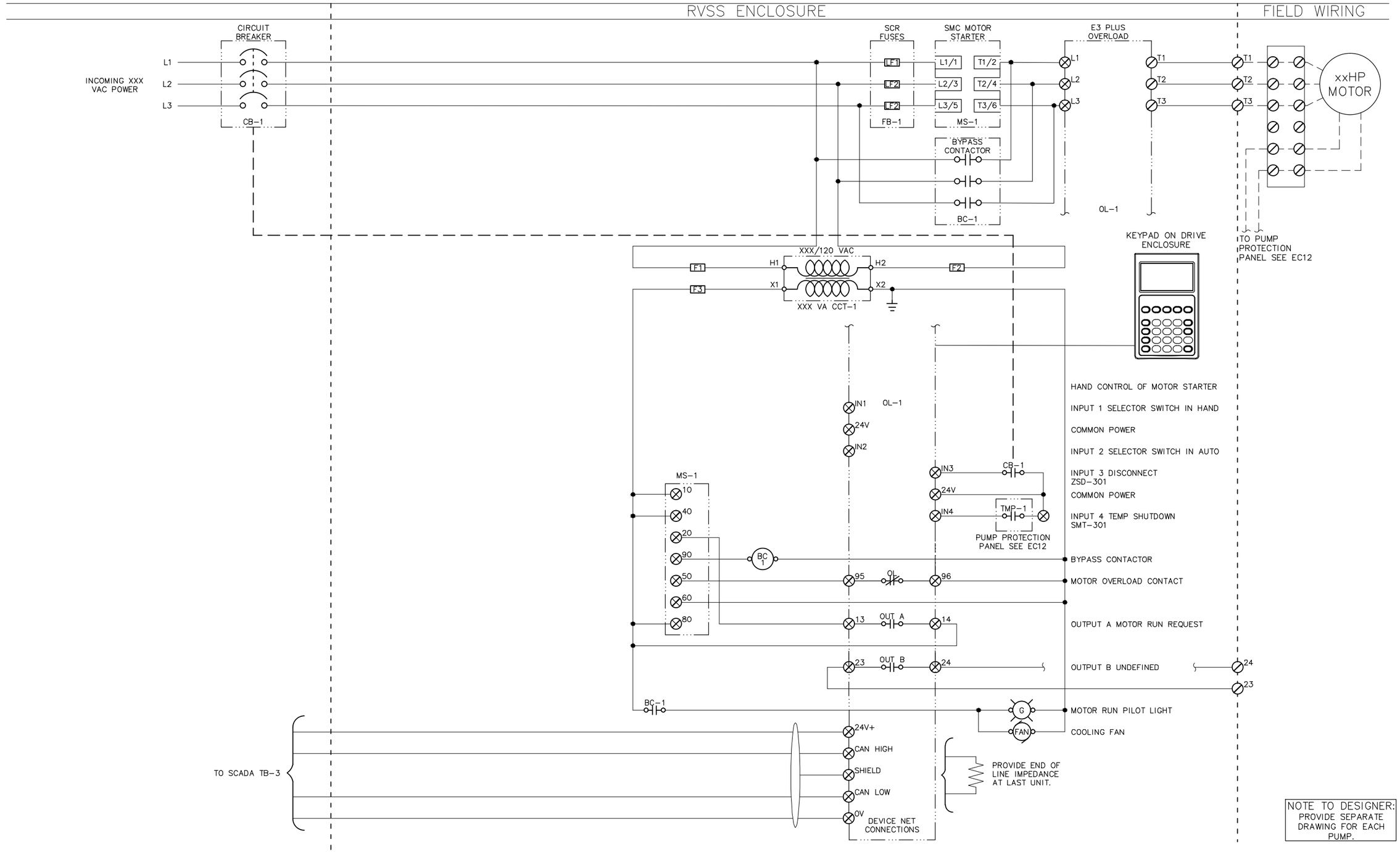
DWG **EC14**

HORZ SCALE: N/A
VERT SCALE: N/A
DATE:
GRID: 1
PROJ. ID.: **XXX (SWR)**
SHEET 31 of 32

PLOT DATE: 8/12/2015 1:16 PM

ACAD FILE: J:\JOBSDATA\10317.15 LIFT STATION DESIGN DRAWINGS\05 REFERENCE DATA\ELECTRIC\DWGTYP\CALLIFTPUMPSMC LS DESIGN.DWG

AWWU PLAN SET NO. XXXX



VERIFY SCALE THIS BAR REPRESENTS ONE INCH ON ORIGINAL DRAWING. 0" ——— 1"

IF BAR IS NOT ONE INCH, ADJUST DRAWING SCALE ACCORDINGLY.

FULL SIZE SCALE
HORZ SCALE: N/A
VERT SCALE: N/A

DATA	DRAWN BY	CHECKED BY	DATA	DRAWN BY	CHECKED BY
BASE	---		TELEPHONE	---	
TOPOGRAPHY	---		ELECTRIC	---	
PROFILE	---		CABLE TV	---	
SANITARY SEWER	---		TRAFFIC SIGNAL	---	
STORM SEWER	---		DESIGN	---	
WATER	---		QUANTITIES	---	
GAS	---		MUN. FINAL CHECK	---	

PLAN CHECK

REV	DATE	DESCRIPTION	BY

REVISIONS

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   COMPANY: _____
   BY: _____ TITLE: _____
   DATE: _____

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MUNICIPALITY OF ANCHORAGE
WATER & WASTEWATER UTILITY

STANDARD LIFT STATION DESIGN DRAWINGS

REDUCED VOLTAGE FOR PUMPS 5HP AND OVER

DWG EC15

HORZ SCALE: N/A
VERT SCALE: N/A
DATE:
GRID: 1

PROJ. ID.: XXX (SWR)

SHEET 32 of 32