

PS 3116 MARTIN Co
PS 3117 MILLAY DR
PS 3216 PADGETT CIR

PUMP STATION R/R PACKAGE 10 IMPROVEMENTS

JUNE 2017



BOARD OF COUNTY COMMISSIONERS

MAYOR: TERESA JACOBS

DISTRICT 1: COMMISSIONER BETSY VANDERLEY

DISTRICT 2: COMMISSIONER BRYAN NELSON

DISTRICT 3: COMMISSIONER PETE CLARKE

DISTRICT 4: COMMISSIONER JENNIFER THOMPSON

DISTRICT 5: COMMISSIONER EMILY BONILLA

DISTRICT 6: COMMISSIONER VICTORIA P. SIPLIN

ORANGE COUNTY ADMINISTRATOR

AJIT LALCHANDANI, P.E.

DIRECTOR ORANGE COUNTY UTILITIES DEPARTMENT

RAYMOND E HANSON, P.E.

OCU FILE No : 77465

CIP FUNDING CODE : 1503-89 (PS 3116)

1502-45 (PS 3117)

1503-92 (PS 3216)

ATTENTION IS DIRECTED TO THE FACT THAT THESE PLANS MAY HAVE BEEN REDUCED IN SIZE BY REPRODUCTION. THIS MUST BE CONSIDERED WHEN OBTAINING SCALED DATA. DIMENSION INFORMATION SHOULD NOT BE OBTAINED BY SCALING THE PLANS.

PREPARED BY:

BFA Environmental Consultants
Barnes, Ferland and Associates, Inc.
1230 E. Hillcrest Street, Orlando, FL, 32803
PH: (407) 896-8608 FAX: (407) 896-1822
ENGINEERING BUSINESS No. 6899

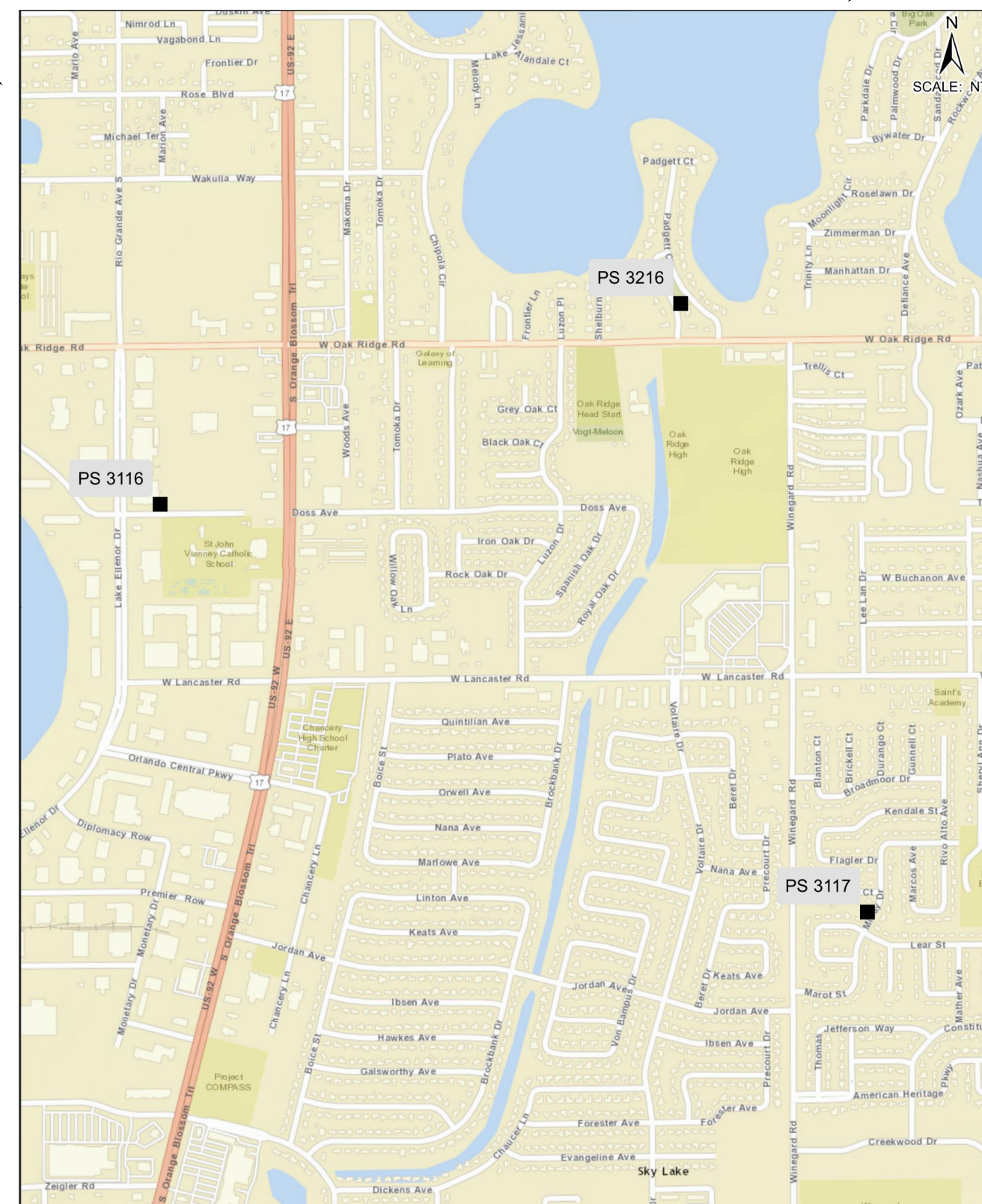
ENGINEER OF RECORD
GEOFFREY J. HENNESSY, P.E.
FLORIDA REGISTRATION No.
58637



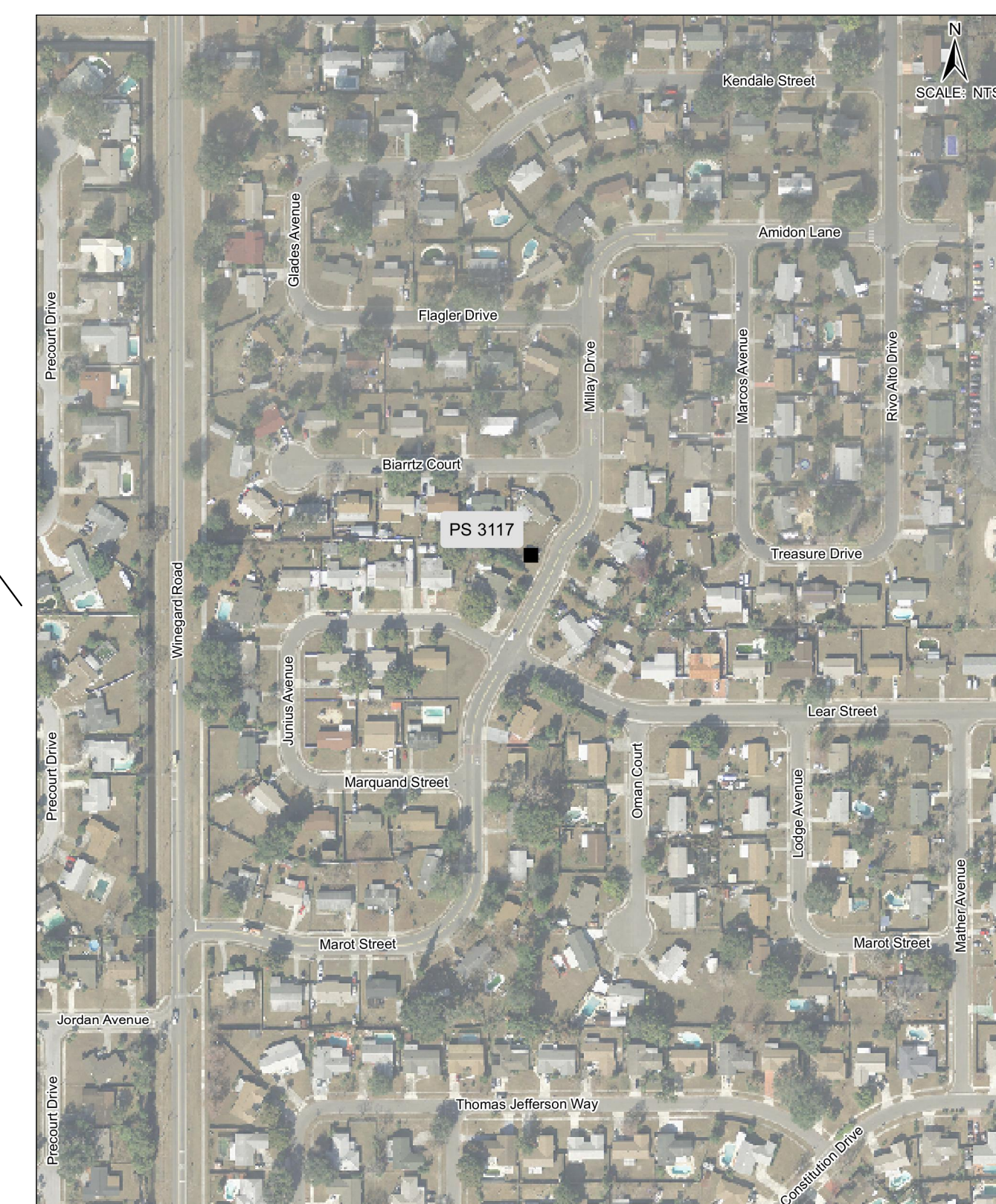
PS # 3116 MARTIN CO. LOCATION MAP
 ADDRESS:
 6041 S. RIO GRANDE AVE
 ORLANDO, FL 32809



PS # 3216 PADGETT CIR LOCATION MAP
 ADDRESS:
 5815 PADGETT CIR
 ORLANDO, FL 32839



GENERAL PROJECT LOCATION MAP



PS # 3117 MILLAY DR LOCATION MAP
 ADDRESS:
 6698 MILLAY DR
 ORLANDO, FL 32802

No.	REVISIONS	BY	DATE
BID SET		GJH	5/24/2017

LINE IS 2 INCHES
 AT FULL SIZE
 (IF NOT SCALE ACCORDINGLY)
 SCALE: AS NOTED



ORANGE COUNTY UTILITIES
 9150 CURRY FORD ROAD
 ORLANDO, FLORIDA 32825

BFA Environmental Consultants
Barnes, Ferland and Associates, Inc.
 1230 E. Hillcrest Street, Orlando, FL, 32803
 P.O. 4407185-8608 FAX: 407/895-1282
 ENGINEERING BUSINESS No. 6899

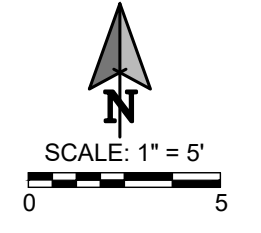
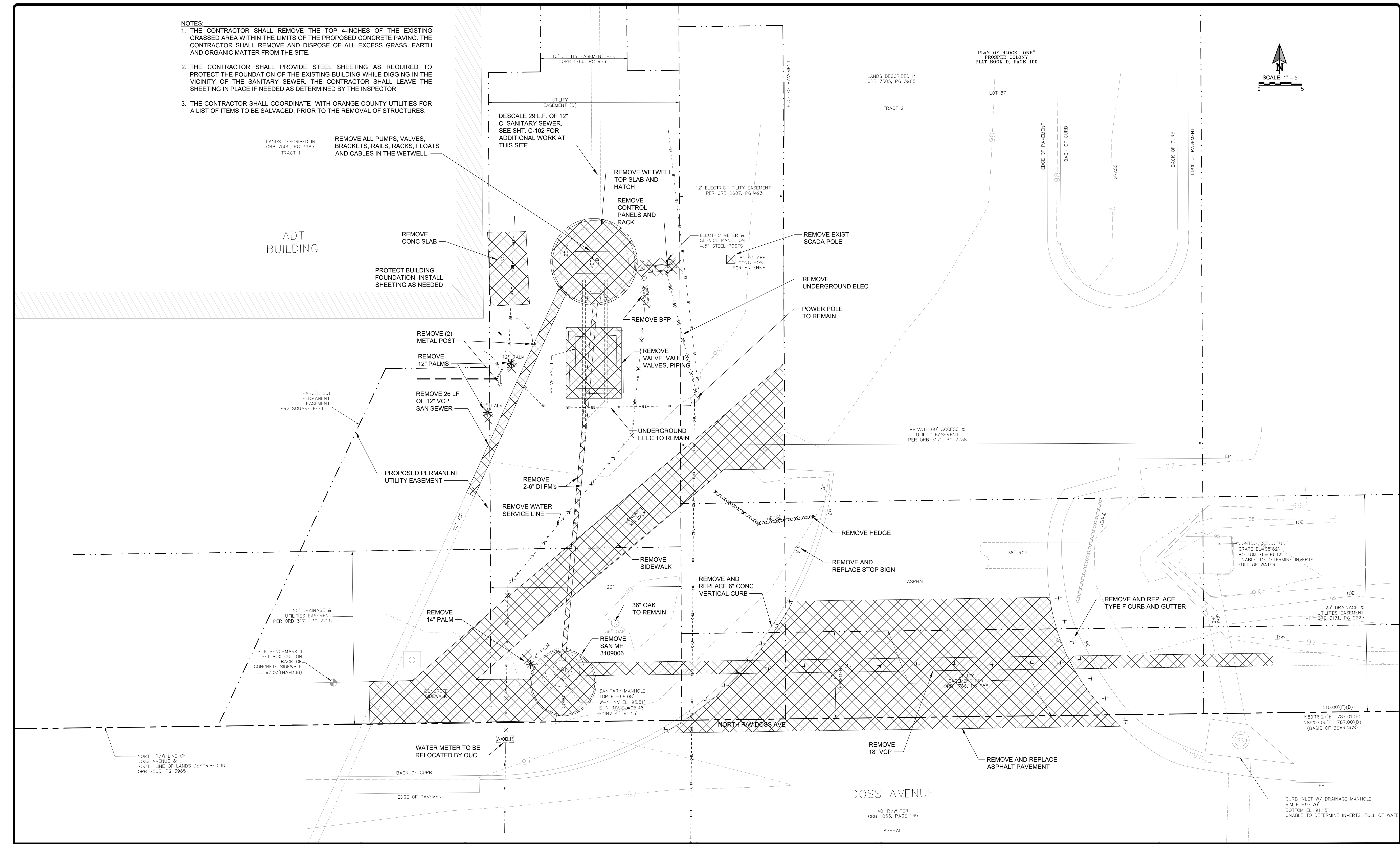
PUMP STATION R/R PACKAGE 10 IMPROVEMENTS
LOCATION MAPS

DESIGN ENGINEER
 GEOFFREY J. HENNESSY, P.E.
 FLORIDA REGISTRATION No.
 58637

PROJECT No.: 2014-28-02
 PROJECT DATE: JUNE 2017
 DESIGNED BY: RGB
 DRAWN BY: JAB
 CHECKED BY: GJH
 DRAWING FILE: SEE MARGIN

DRAWING No.
G-103
 SHEET
 4 OF 34

- NOTES:**
1. THE CONTRACTOR SHALL REMOVE THE TOP 4-INCHES OF THE EXISTING GRASSED AREA WITHIN THE LIMITS OF THE PROPOSED CONCRETE PAVING. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL EXCESS GRASS, EARTH AND ORGANIC MATTER FROM THE SITE.
 2. THE CONTRACTOR SHALL PROVIDE STEEL SHEETING AS REQUIRED TO PROTECT THE FOUNDATION OF THE EXISTING BUILDING WHILE DIGGING IN THE VICINITY OF THE SANITARY SEWER. THE CONTRACTOR SHALL LEAVE THE SHEETING IN PLACE IF NEEDED AS DETERMINED BY THE INSPECTOR.
 3. THE CONTRACTOR SHALL COORDINATE WITH ORANGE COUNTY UTILITIES FOR A LIST OF ITEMS TO BE SALVAGED, PRIOR TO THE REMOVAL OF STRUCTURES.



No.	REVISIONS	BY	DATE
BID SET		GJH	5/24/2017

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 (IF NOT SCALE ACCORDINGLY)

SCALE: AS NOTED

ORANGE COUNTY UTILITIES
 9150 CURRY FORD ROAD
 ORLANDO, FLORIDA 32825

BFA Environmental Consultants
Barnes, Ferland and Associates, Inc.
 1230 E. Hillcrest Street, Orlando, FL, 32803
 P.O. BOX 1038, ORLANDO, FL 32816
 ENGINEERING BUSINESS No. 6899

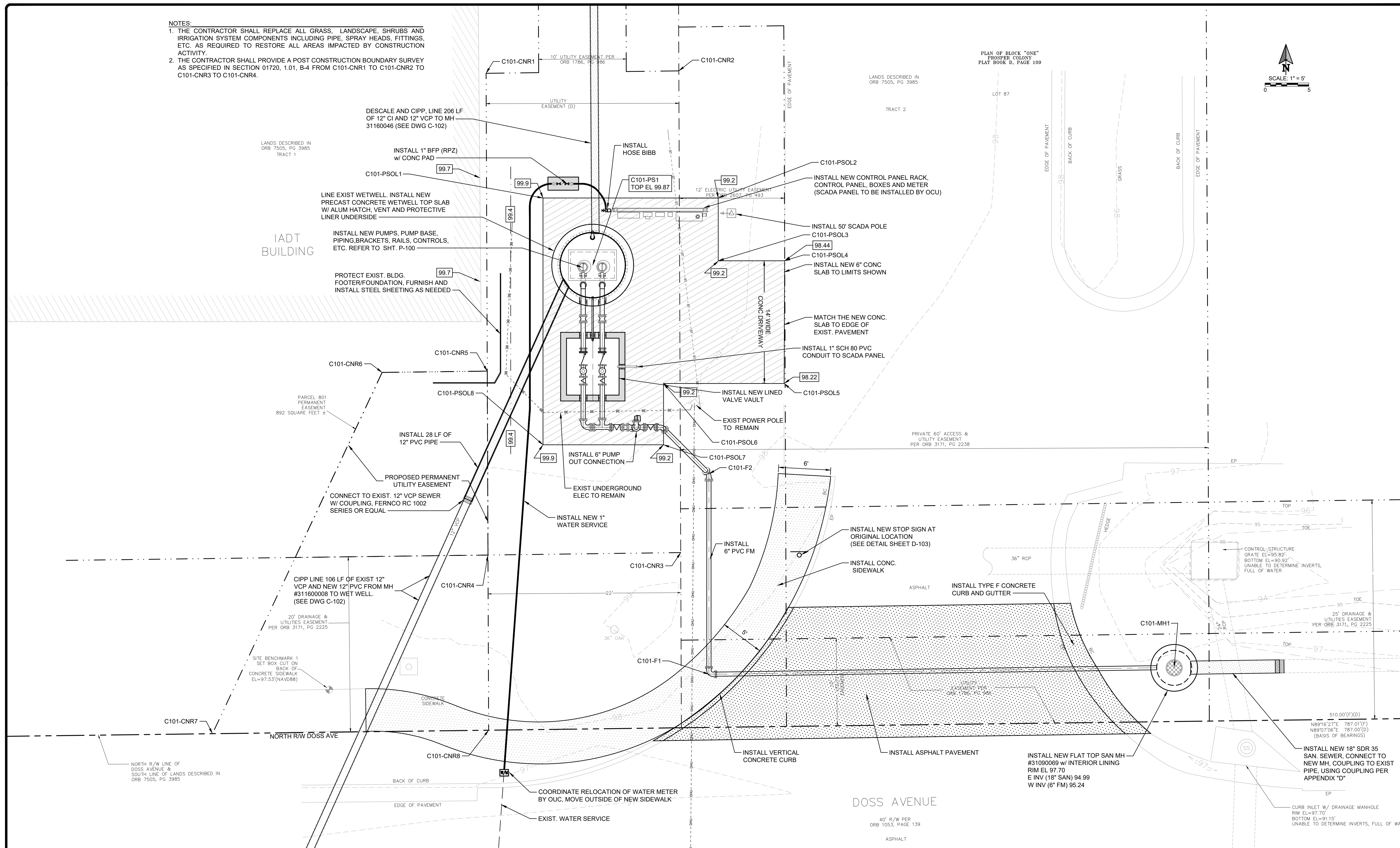
PUMP STATION R/R PACKAGE 10 IMPROVEMENTS

PS 3116 MARTIN Co

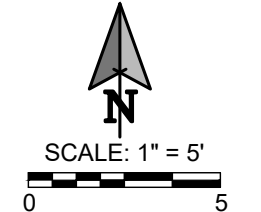
EXISTING SITE AND DEMOLITION PLAN

DESIGN ENGINEER GEOFFREY J. HENNESSY, P.E.	PROJECT No.: 2014-28-02	DRAWING No. C-100
FLORIDA REGISTRATION No. 58637	PROJECT DATE: JUNE 2017	SHEET 9 OF 34
	DESIGNED BY: RGB	
	DRAWN BY: JAB	
	CHECKED BY: GJH	
	DRAWING FILE: SEE MARGIN	

- NOTES:**
1. THE CONTRACTOR SHALL REPLACE ALL GRASS, LANDSCAPE, SHRUBS AND IRRIGATION SYSTEM COMPONENTS INCLUDING PIPE, SPRAY HEADS, FITTINGS, ETC. AS REQUIRED TO RESTORE ALL AREAS IMPACTED BY CONSTRUCTION ACTIVITY.
 2. THE CONTRACTOR SHALL PROVIDE A POST CONSTRUCTION BOUNDARY SURVEY AS SPECIFIED IN SECTION 01720, 1.01, B-4 FROM C101-CNR1 TO C101-CNR2 TO C101-CNR3 TO C101-CNR4.



PLAN OF BLOCK "ONE"
PROSPER COLONY
PLAT BOOK D, PAGE 109



IADT
BUILDING

DOSS AVENUE

No.	REVISIONS	BY	DATE

LINE IS 2 INCHES
AT FULL SIZE
(IF NOT SCALE ACCORDINGLY)

SCALE: AS NOTED

ORANGE COUNTY
GOVERNMENT
FLORIDA

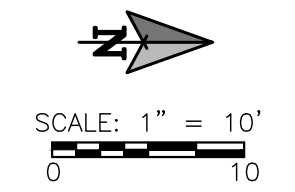
ORANGE COUNTY UTILITIES
9150 CURRY FORD ROAD
ORLANDO, FLORIDA 32825

BFA Environmental Consultants
Barnes, Ferland and Associates, Inc.
1230 E. Hillcrest Street, Orlando, FL 32803
Tel: (407) 896-8838 Fax: (407) 896-1822
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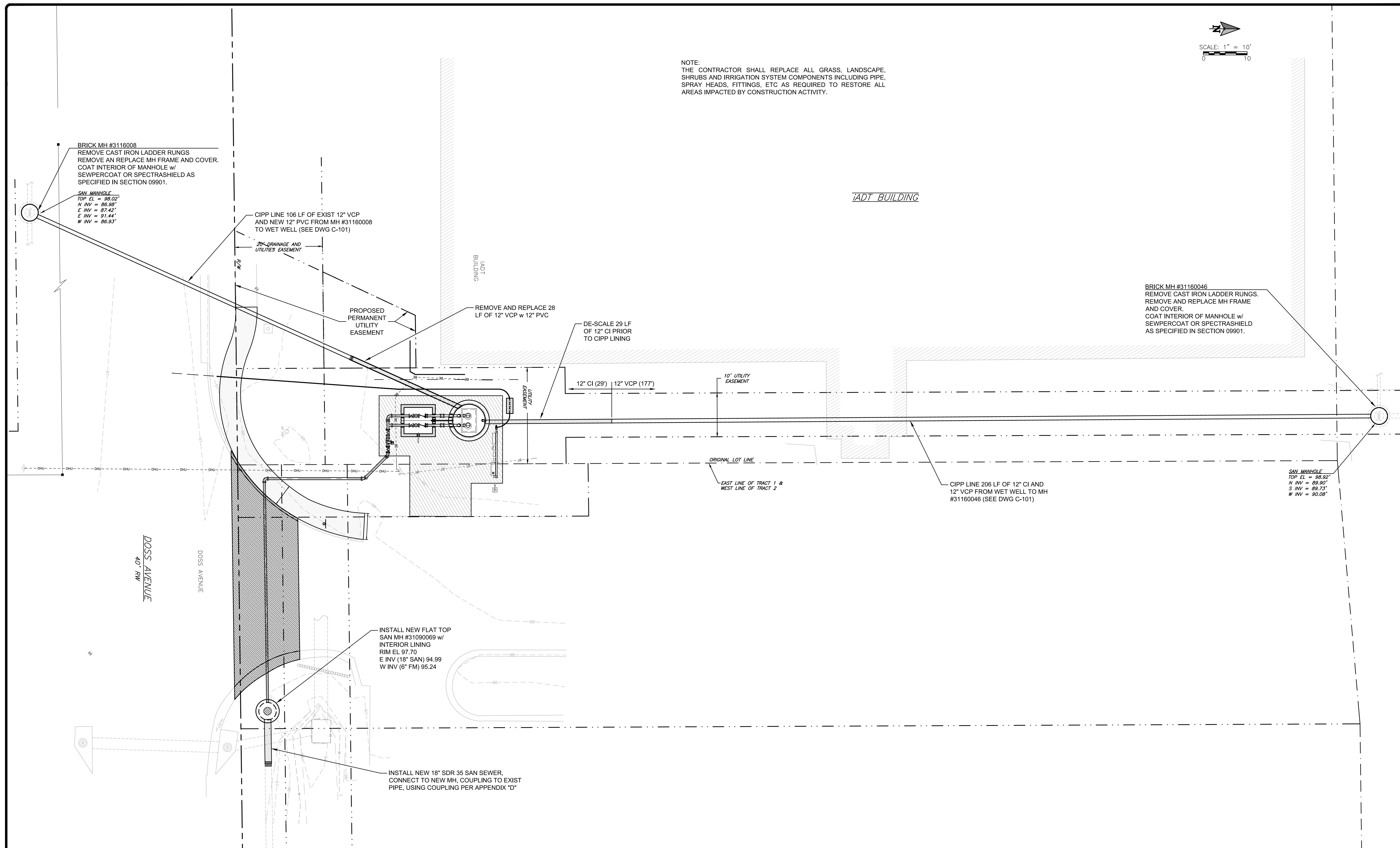
PUMP STATION R/R PACKAGE 10 IMPROVEMENTS

PS 3116 MARTIN Co PUMP STATION IMPROVEMENTS PLAN

DESIGN ENGINEER GEOFFREY J. HENNESSY, P.E.	PROJECT No.: 2014-28-02	DRAWING No. C-101
FLORIDA REGISTRATION No. 58637	PROJECT DATE: JUNE 2017	SHEET OF 34
	DESIGNED BY: RGB	10 OF 34
	DRAWN BY: JAB	
	CHECKED BY: GJH	
	DRAWING FILE: SEE MARGIN	



NOTE:
THE CONTRACTOR SHALL REPLACE ALL GRASS, LANDSCAPE, SHRUBS AND IRRIGATION SYSTEM COMPONENTS INCLUDING PIPE, SPRAY HEADS, FITTINGS, ETC AS REQUIRED TO RESTORE ALL AREAS IMPACTED BY CONSTRUCTION ACTIVITY.



No.	REVISIONS	BY	DATE
BID SET		GJH	5/24/2017

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ORANGE COUNTY
GOVERNMENT

ORANGE COUNTY UTILITIES
9150 CURRY FORD ROAD
ORLANDO, FLORIDA 32825

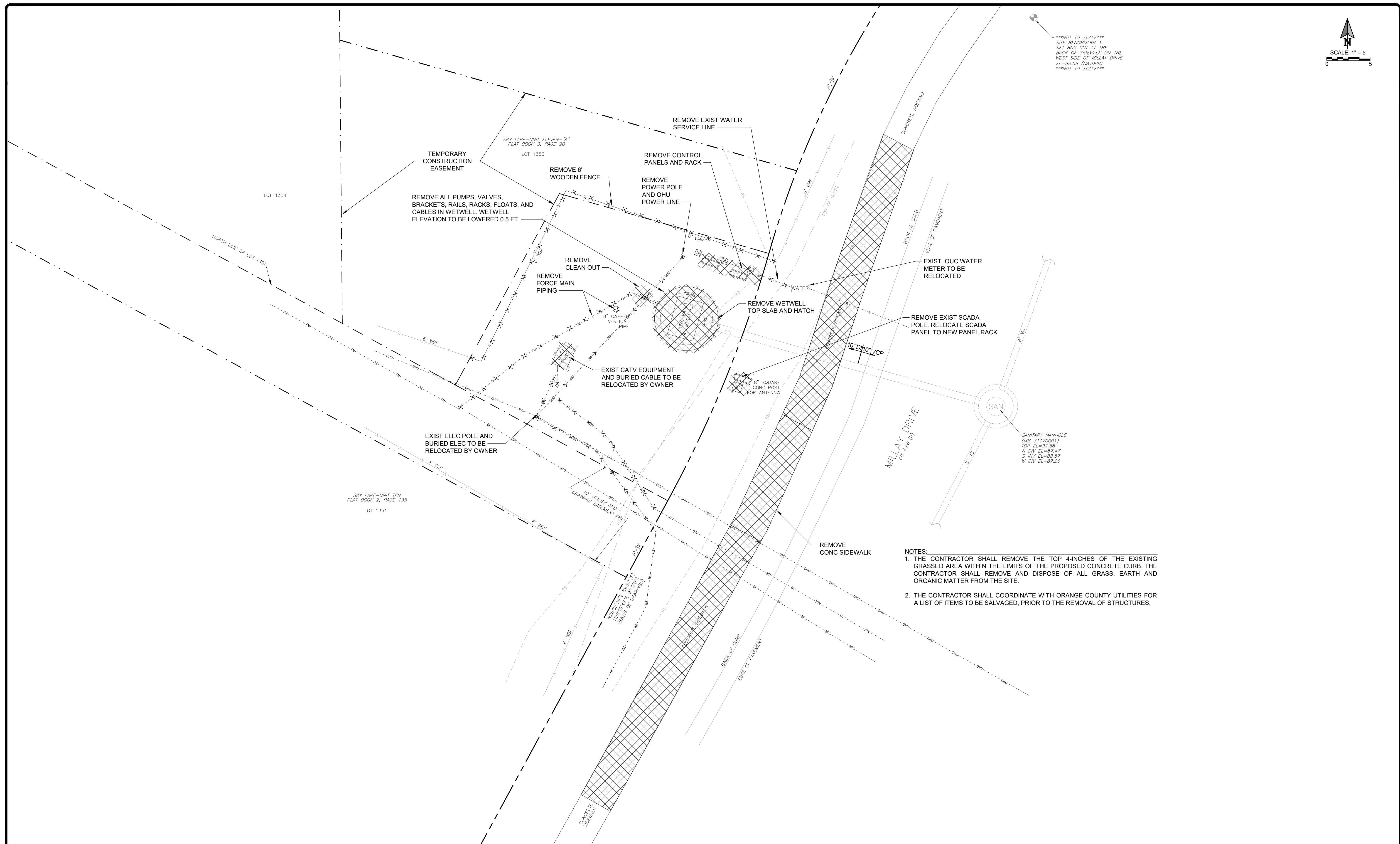
BFA Environmental Consultants
Barnes, Ferland and Associates, Inc.
1230 E. Hillcrest Street, Orlando, FL, 32803
TEL: (407) 896-8626 FAX: (407) 896-1822
ENGINEERING BUSINESS No. 6899

PUMP STATION R/R PACKAGE 10 IMPROVEMENTS

PS 3116 MARTIN Co OFFSITE IMPROVEMENTS PLAN

DESIGN ENGINEER GEOFFREY J. HENNESSY, P.E.	PROJECT No.: 2014-28-02 PROJECT DATE: JUNE 2017	DRAWING No. C-102
FLORIDA REGISTRATION No. 58637	DESIGNED BY: RGB DRAWN BY: JAB CHECKED BY: GJH DRAWING FILE: SEE MARGIN	SHEET 11 OF 34

NOT TO SCALE
SITE BENCHMARK 1
SET BOX CUT AT THE
BACK OF SIDEWALK ON THE
WEST SIDE OF MILLAY DRIVE
EL=98.09 (NAVD83)
NOT TO SCALE



- NOTES:**
1. THE CONTRACTOR SHALL REMOVE THE TOP 4-INCHES OF THE EXISTING GRASSED AREA WITHIN THE LIMITS OF THE PROPOSED CONCRETE CURB. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL GRASS, EARTH AND ORGANIC MATTER FROM THE SITE.
 2. THE CONTRACTOR SHALL COORDINATE WITH ORANGE COUNTY UTILITIES FOR A LIST OF ITEMS TO BE SALVAGED, PRIOR TO THE REMOVAL OF STRUCTURES.

No.	REVISIONS	BY	DATE
BID SET		GJH	5/24/2017

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SCALE: AS NOTED

ORANGE COUNTY GOVERNMENT

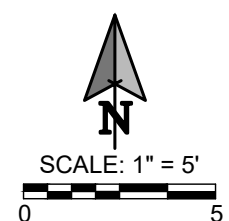
ORANGE COUNTY UTILITIES
9150 CURRY FORD ROAD
ORLANDO, FLORIDA 32825

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TEL: (407) 896-8628 FAX: (407) 896-1822
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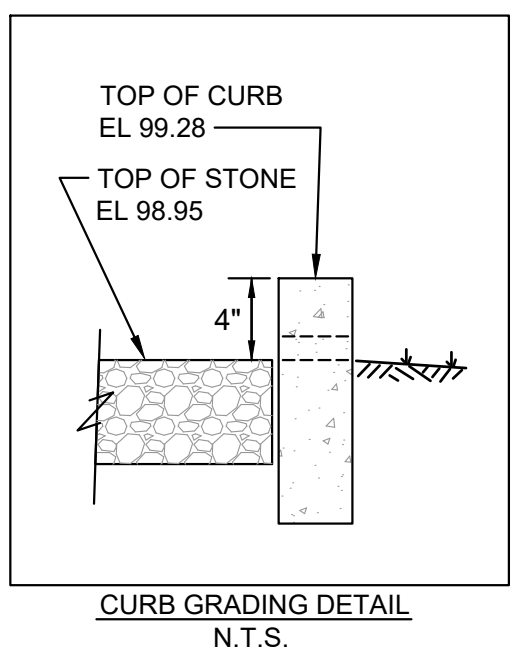
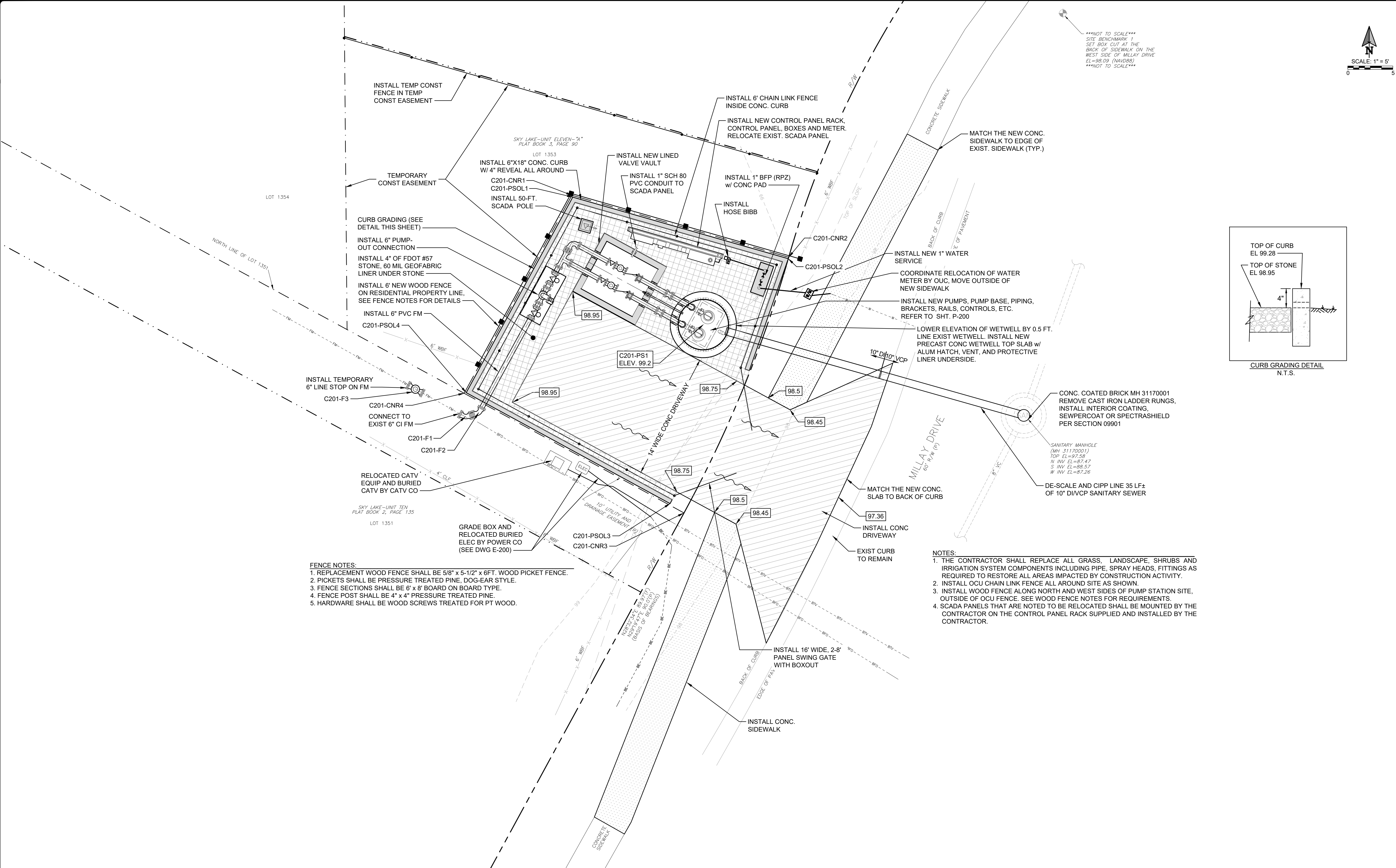
PUMP STATION R/R PACKAGE 10 IMPROVEMENTS

PS 3117 MILLAY DR EXISTING SITE AND DEMOLITION PLAN

DESIGN ENGINEER GEOFFREY J. HENNESSY, P.E.	PROJECT No.: 2014-28-02 PROJECT DATE: JUNE 2017	DRAWING No. C-200
FLORIDA REGISTRATION No. 58637	DESIGNED BY: RGB DRAWN BY: JAB CHECKED BY: GJH DRAWING FILE: SEE MARGIN	SHEET 12 OF 34



NOT TO SCALE
SITE BENCHMARK 1
SET BOX CUT AT THE
BACK OF SIDEWALK ON THE
WEST SIDE OF MILLAY DRIVE
EL=98.09 (NAVD83)
NOT TO SCALE



- FENCE NOTES:
1. REPLACEMENT WOOD FENCE SHALL BE 5/8" x 5-1/2" x 6FT. WOOD PICKET FENCE.
 2. PICKETS SHALL BE PRESSURE TREATED PINE, DOG-EAR STYLE.
 3. FENCE SECTIONS SHALL BE 6" x 8" BOARD ON BOARD TYPE.
 4. FENCE POST SHALL BE 4" x 4" PRESSURE TREATED PINE.
 5. HARDWARE SHALL BE WOOD SCREWS TREATED FOR PT WOOD.

- NOTES:
1. THE CONTRACTOR SHALL REPLACE ALL GRASS, LANDSCAPE, SHRUBS AND IRRIGATION SYSTEM COMPONENTS INCLUDING PIPE, SPRAY HEADS, FITTINGS AS REQUIRED TO RESTORE ALL AREAS IMPACTED BY CONSTRUCTION ACTIVITY.
 2. INSTALL OCU CHAIN LINK FENCE ALL AROUND SITE AS SHOWN.
 3. INSTALL WOOD FENCE ALONG NORTH AND WEST SIDES OF PUMP STATION SITE, OUTSIDE OF OCU FENCE. SEE WOOD FENCE NOTES FOR REQUIREMENTS.
 4. SCADA PANELS THAT ARE NOTED TO BE RELOCATED SHALL BE MOUNTED BY THE CONTRACTOR ON THE CONTROL PANEL RACK SUPPLIED AND INSTALLED BY THE CONTRACTOR.

No.	REVISIONS	BY	DATE
BID SET		GJH	5/24/2017

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PUMP STATION R/R PACKAGE 10 IMPROVEMENTS

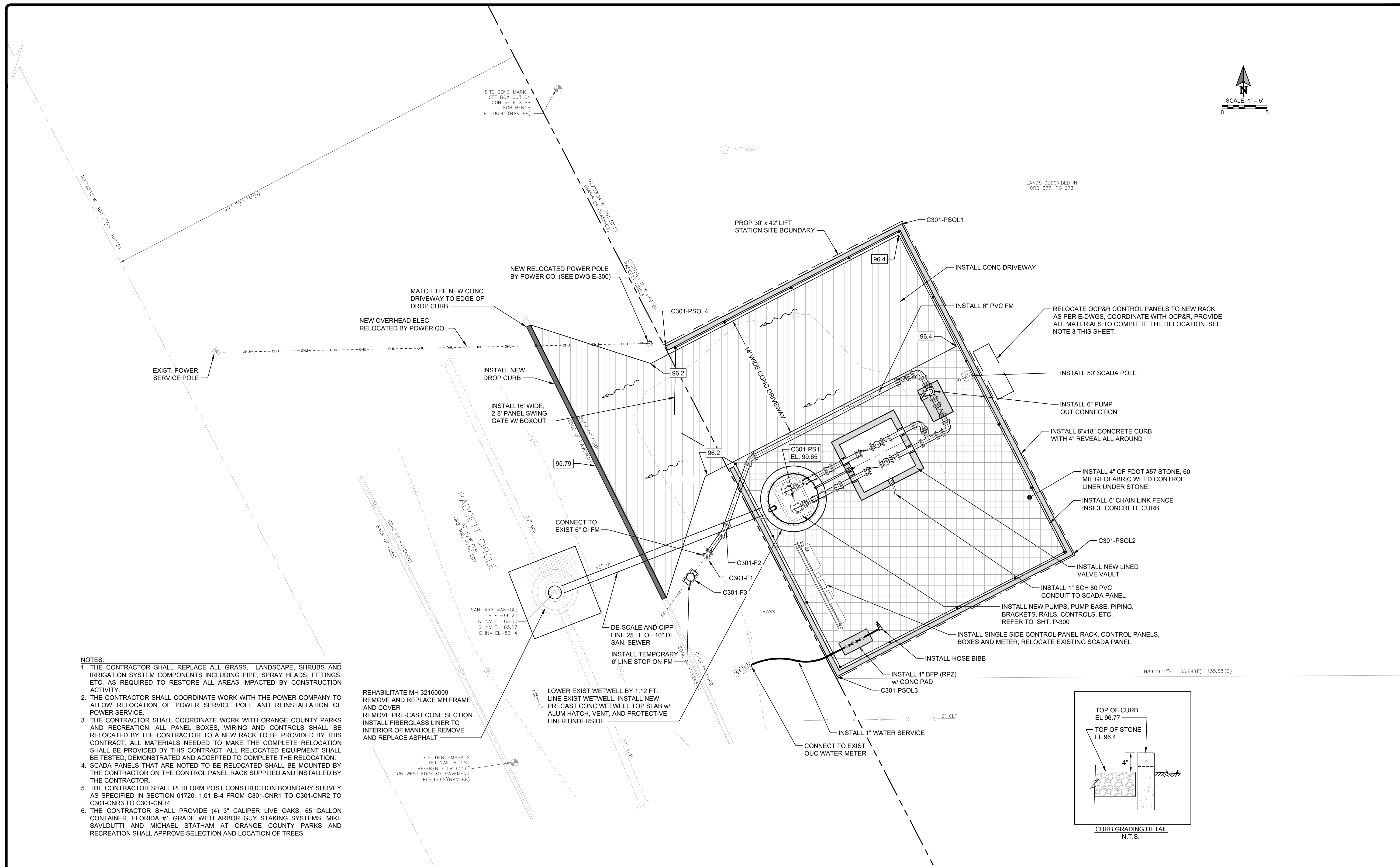
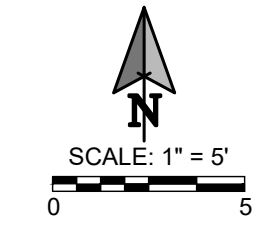
PS 3117 MILLAY DR PUMP STATION
IMPROVEMENTS PLAN

DESIGN ENGINEER
GEOFFREY J. HENNESSY, P.E.

PROJECT No.: 2014-28-02
PROJECT DATE: JUNE 2017
DESIGNED BY: RGB
DRAWN BY: JAB
CHECKED BY: GJH
DRAWING FILE: SEE MARGIN

FLORIDA REGISTRATION No.
58637

DRAWING No.
C-201
SHEET
13 OF 34



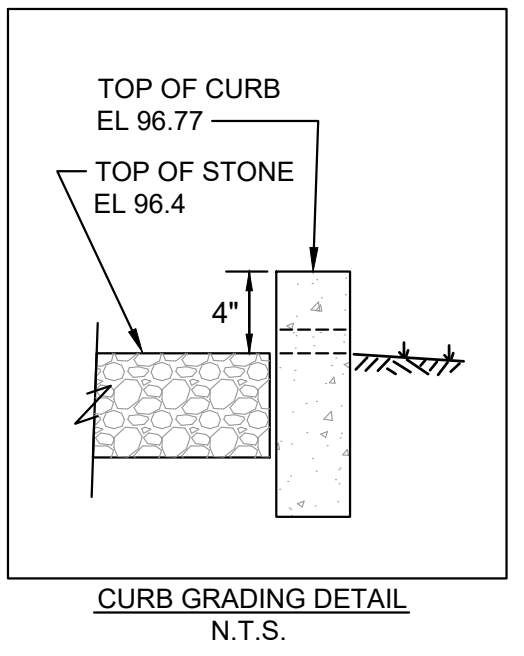
- NOTES:**
- 1. THE CONTRACTOR SHALL REPLACE ALL GRASS, LANDSCAPE, SHRUBS AND IRRIGATION SYSTEM COMPONENTS INCLUDING PIPE, SPRAY HEADS, FITTINGS, ETC. AS REQUIRED TO RESTORE ALL AREAS IMPACTED BY CONSTRUCTION ACTIVITY.
 - 2. THE CONTRACTOR SHALL COORDINATE WORK WITH THE POWER COMPANY TO ALLOW RELOCATION OF POWER SERVICE POLE AND REINSTALLATION OF POWER SERVICE.
 - 3. THE CONTRACTOR SHALL COORDINATE WORK WITH ORANGE COUNTY PARKS AND RECREATION. ALL PANEL BOXES, WIRING AND CONTROLS SHALL BE RELOCATED BY THE CONTRACTOR TO A NEW RACK TO BE PROVIDED BY THIS CONTRACT. ALL MATERIALS NEEDED TO MAKE THE COMPLETE RELOCATION SHALL BE PROVIDED BY THIS CONTRACT. ALL RELOCATED EQUIPMENT SHALL BE TESTED, DEMONSTRATED AND ACCEPTED TO COMPLETE THE RELOCATION.
 - 4. SCADA PANELS THAT ARE NOTED TO BE RELOCATED SHALL BE MOUNTED BY THE CONTRACTOR ON THE CONTROL PANEL RACK SUPPLIED AND INSTALLED BY THE CONTRACTOR.
 - 5. THE CONTRACTOR SHALL PERFORM POST CONSTRUCTION BOUNDARY SURVEY AS SPECIFIED IN SECTION 01720, 1.01 B-4 FROM C301-CNR1 TO C301-CNR2 TO C301-CNR3 TO C301-CNR4.
 - 6. THE CONTRACTOR SHALL PROVIDE (4) 3" CALIBER LIVE OAKS, 65 GALLON CONTAINER, FLORIDA #1 GRADE WITH ARBOR GUY STAKING SYSTEMS, MIKE SAVEDUTTI AND MICHAEL STATHAM AT ORANGE COUNTY PARKS AND RECREATION SHALL APPROVE SELECTION AND LOCATION OF TREES.

REHABILITATE MH 32160009
REMOVE AND REPLACE MH FRAME AND COVER
REMOVE PRE-CAST CONE SECTION
INSTALL FIBERGLASS LINER TO INTERIOR OF MANHOLE REMOVE AND REPLACE ASPHALT

SITE BENCHMARK 2
SET NAIL & DISK
REFERENCE LB 6556
ON WEST EDGE OF PAVEMENT
EL=95.92 (NAVD88)

DE-SCALE AND CIPP LINE 25 LF OF 10" DI SAN. SEWER
INSTALL TEMPORARY 6" LINE STOP ON FM

LOWER EXIST WETWELL BY 1.12 FT.
LINE EXIST WETWELL. INSTALL NEW PRECAST CONC WETWELL TOP SLAB W/ ALUM HATCH, VENT, AND PROTECTIVE LINER UNDERSIDE.



No.	REVISIONS	BY	DATE

LINE IS 2 INCHES
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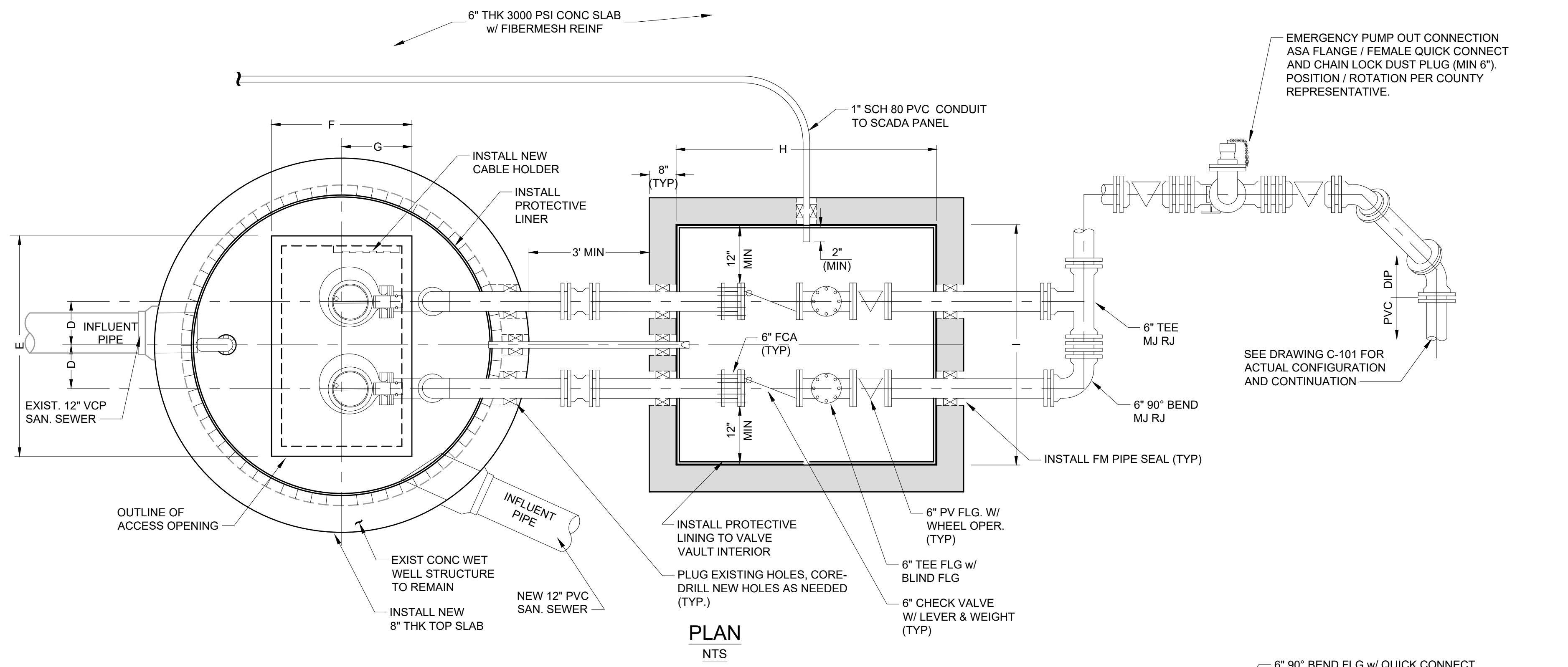
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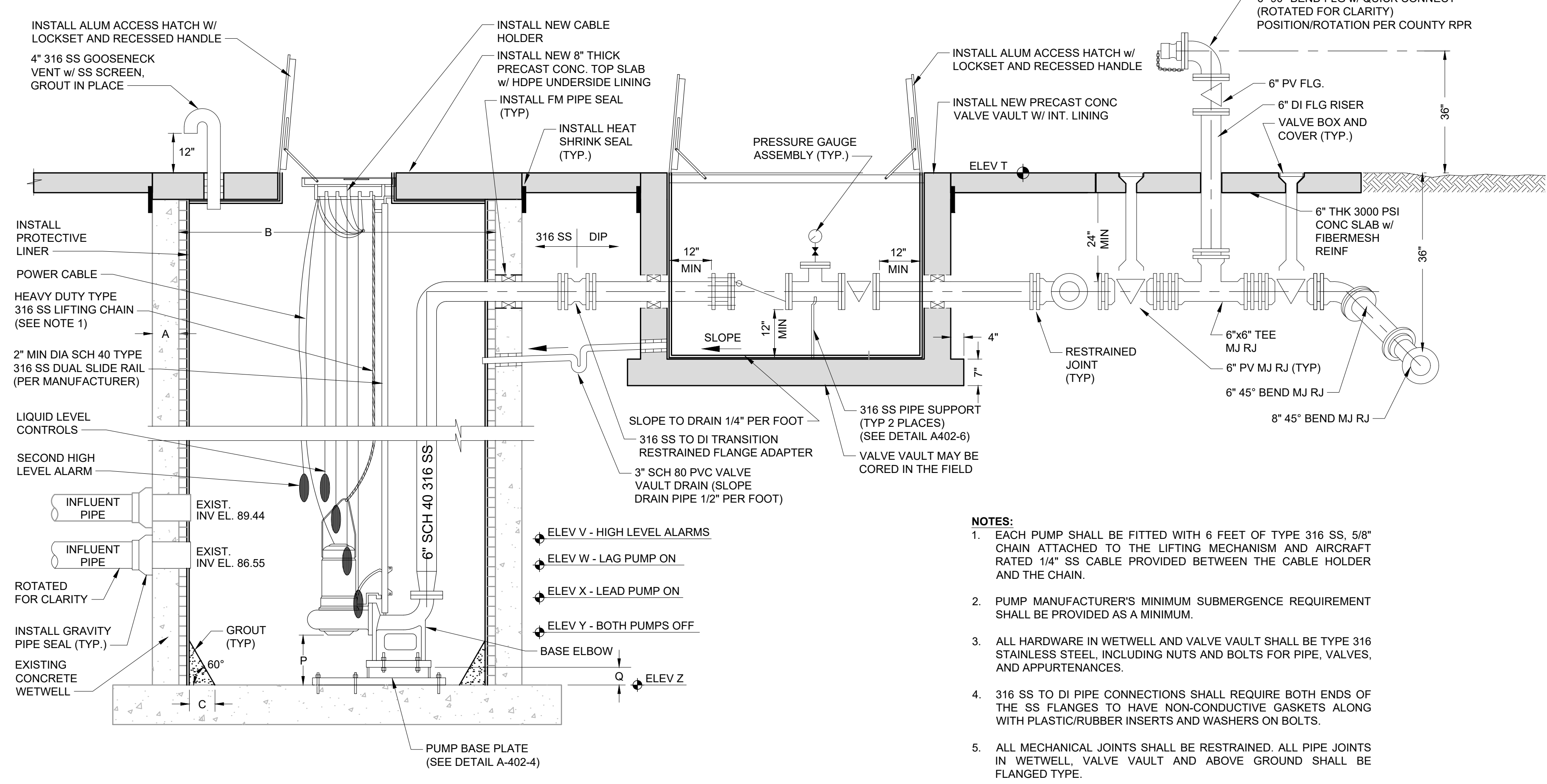
PUMP STATION R/R PACKAGE 10 IMPROVEMENTS
PS 3216 PADGETT CIR PUMP STATION IMPROVEMENTS PLAN

DESIGN ENGINEER GEOFFREY J. HENNESSY, P.E.	PROJECT No.: 2014-28-02 PROJECT DATE: JUNE 2017 DESIGNED BY: RGB DRAWN BY: JAB CHECKED BY: GJH DRAWING FILE: SEE MARGIN	DRAWING No. C-301 SHEET 15 OF 34
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GENERAL NOTES:

- ALL MATERIALS AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE ORANGE COUNTY UTILITIES STANDARDS AND SPECIFICATIONS MANUAL (LATEST EDITION), AND/OR AS SPECIFIED HEREIN.
- ALL EXPOSED METAL OUTSIDE OF THE WET WELL SHALL BE IN ACCORDANCE WITH ORANGE COUNTY STANDARDS AND SPECIFICATIONS MANUAL (LATEST EDITION).
- A CRYSTALLINE WATER PROOFING ADMIXTURE SHALL BE ADDED TO THE CONCRETE DURING THE MIXING CYCLE FOR THE WET WELL AND VALVE VAULT PRECAST STRUCTURES. THE CRYSTALLINE WATER PROOFING ADMIXTURE SHALL BE APPROVED PRODUCT AS LISTED IN OCU APPENDIX D.
- FOR EXISTING WET WELLS, VALVE VAULTS AND MANHOLES, THE INSIDE SHALL BE LINED WITH A FIBERGLASS REINFORCED POLYESTHER (FRP) LINER. FINAL SEALS AND SEALING TO BE MADE IN THE FIELD. FOR NEW CONSTRUCTION, THE INSIDE OF WET WELLS, VALVE VAULTS AND MANHOLES SHALL BE LINED WITH EITHER A HIGH DENSITY POLYETHYLENE (HDPE) LINER, A FIBERGLASS REINFORCED POLYESTHER (FRP) LINER, OR AN ACCEPTABLE EQUAL AS LISTED IN OCU APPENDIX D. FINAL SEALS AND SEALING TO BE MADE IN THE FIELD.
- WET WELL ACCESS OPENING SHALL BE COVERED ON ALL FOUR VERTICAL SIDES WITH A PROTECTIVE LINER.
- WET WELL ACCESS HATCH AND COVER SHALL BE ALUMINUM WITH 316 STAINLESS STEEL HARDWARE AND LOCK BRACKET PLATE WITH THE WORDS "CONFINED SPACE" STAMPED (ETCHED) ON THE TOP SIDE. EACH DOOR WILL BE EQUIPPED WITH RECESSED HASP ENCLOSURE.
- ALL PIPING AND HARDWARE IN THE WET WELL SHALL BE 316 STAINLESS STEEL SCHEDULE 40.
- THERE SHALL BE NO VALVES OR ELECTRICAL JUNCTION BOXES IN THE WET WELL.
- ALL PIPING AND CONDUIT PENETRATIONS THROUGH CONCRETE SHALL BE WATERTIGHT. CAST-IN-PLACE SLEEVES SHALL BE PLACED IN ALL OPENINGS WHERE PRESSURE PIPE ENTER OR LEAVE THE WET WELL AND/OR VALVE VAULT. PENETRATIONS THROUGH WET WELL AND VALVE VAULT SHALL BE A COMPRESSION TYPE SEAL, SUCH AS "LINK-SEAL", OR AN ACCEPTABLE EQUAL AS LISTED IN OCU APPENDIX D.
- ALL CONNECTIONS WITHIN THE WET WELL, VALVE VAULT, AND ABOVE GRADE SHALL BE FLANGED JOINTS. ALL REMAINING JOINTS BETWEEN THE WET WELL AND THE CONNECTION TO THE EXISTING FORCE MAIN SHALL BE RESTRAINED MECHANICAL JOINTS. (SEE TABLE ON DETAIL SHEET D100).
- PIPE SUPPORTS SHALL BE 316 STAINLESS STEEL, PROVIDED AND INSTALLED TO SUPPORT AND ANCHOR THE PIPING SECURELY IN THE VALVE VAULT.
- VALVE VAULT SHALL BE SIZED TO PERMIT EASY REMOVAL OF CHECK VALVE SPINDLES, WITH MINIMUM CLEARANCE, AS SHOWN FOR 8" DIAMETER PIPE, OR SMALLER.
- CONTRACTOR SHALL, AS DIRECTED BY THE COUNTY REPRESENTATIVE, REMOVE AND SALVAGE TO THE COUNTY, ALL EXISTING PUMP STATION EQUIPMENT, INCLUDING PUMPS, CHECK VALVES, SHUTOFF VALVES, AND CONTROL PANEL.
- CONTRACTOR SHALL DEMOLISH AND REMOVE FROM SITE ALL DEBRIS RESULTING FROM THE REMOVAL OF THE EXISTING STRUCTURES.
- CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND ELEVATIONS PRIOR TO ORDERING ANY MATERIALS OR EQUIPMENT.
- CONTRACTOR SHALL GROUT FLOOR OF WET WELL, AS REQUIRED BY MANUFACTURER'S SPECIFICATIONS, TO ACCOMMODATE INSTALLATION OF THE NEW PUMPS.
- STRUCTURAL DESIGN OF THE PRECAST WET WELL, TOP, AND VALVE VAULT SHALL BE THE RESPONSIBILITY OF THE PRECAST MANUFACTURER. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR THE PRECAST WET WELL, THE PRECAST WET WELL TOP AND HATCH COVER, RISERS AND THE VALVE VAULT, TO THE ENGINEER.
- 100-YEAR FLOOD ELEVATION: N.A., SURVEY AREA IS OUTSIDE THE (FIRM) FLOODPLAIN.
- ALL EXTERNAL JOINTS SHALL BE COVERED WITH A HIGH STRENGTH, WATER TIGHT, PRESS-TO-SEAL TYPE TAPE/AS LISTED IN OCU APPENDIX D.
- A SECOND HIGH LEVEL ALARM LIQUID FLOAT SHALL BE INSTALLED TO PROVIDE DRY CONTACT FOR SCADA. REFER TO PUMP CONTROL SCHEMATIC.
- ALL SPOOLS SHALL BE MINIMUM OF SIX INCHES WHERE SPACE ALLOWS.
- CONTRACTOR SHALL BE RESPONSIBLE FOR ALIGNMENT FROM THE BASE PLATE TO THE RISER PLATE AT NO EXTRA COST TO OCU.



- NOTES:**
- EACH PUMP SHALL BE FITTED WITH 6 FEET OF TYPE 316 SS, 5/8" CHAIN ATTACHED TO THE LIFTING MECHANISM AND AIRCRAFT RATED 1/4" SS CABLE PROVIDED BETWEEN THE CABLE HOLDER AND THE CHAIN.
 - PUMP MANUFACTURER'S MINIMUM SUBMERSION REQUIREMENT SHALL BE PROVIDED AS A MINIMUM.
 - ALL HARDWARE IN WETWELL AND VALVE VAULT SHALL BE TYPE 316 STAINLESS STEEL, INCLUDING NUTS AND BOLTS FOR PIPE, VALVES, AND APPURTENANCES.
 - 316 SS TO DI PIPE CONNECTIONS SHALL REQUIRE BOTH ENDS OF THE SS FLANGES TO HAVE NON-CONDUCTIVE GASKETS ALONG WITH PLASTIC/RUBBER INSERTS AND WASHERS ON BOLTS.
 - ALL MECHANICAL JOINTS SHALL BE RESTRAINED. ALL PIPE JOINTS IN WETWELL, VALVE VAULT AND ABOVE GROUND SHALL BE FLANGED TYPE.

PS 3116 MARTIN CO. - DESIGN SPECIFICATIONS

DESIGN A SPECIFICATIONS			DESIGN B SPECIFICATIONS		
MANUFACTURER:	ABS (SULZER)		MANUFACTURER:	FLYGT (XYLEM)	
MODEL:	XFP100C CB1		MODEL:	CP 3102 MT3	
IMP:	PE 35-4		IMP:	432	
DIA:	7.09 INCH		DIA:	7.2	
SPEED:	1730 RPM		SPEED:	1745 RPM	
DISCHARGE SIZE:	4 INCH		DISCHARGE SIZE:	4 IN.	
DESIGN COND.:	400 GPM @ 29 FT.		DESIGN COND.:	400 GPM @ 29 FT.	
HIGH HEAD COND.:	N.A.		HIGH HEAD COND.:	N.A.	
MIN. HEAD COND.:	550 GPM @ 22 FT.		MIN. HEAD COND.:	550 GPM @ 22 FT.	
SHUTOFF HEAD:	48 FT.		SHUTOFF HEAD:	48 FT.	
DESCRIPTION	SYMBOL	DIM	ELEV.	DIMENSION	ELEV
THICKNESS OF WALL	A	EXIST.		EXIST.	
DIAMETER OF WET WELL	B	8'-0"		8'-0"	
WIDTH OF BOTTOM FILLET	C	* 1		* 1	
CIL OF WET WELL TO CIL OF PIPES	D	* 1		* 1	
LENGTH OF PUMP ACCESS OPENING	E	* 1		* 1	
WIDTH OF PUMP ACCESS OPENING	F	* 1		* 1	
CENTER OF WET WELL TO EDGE OF HATCH	G	* 1		* 1	
VALVE BOX HATCH OPENING	H	5'-6"		5'-6"	
VALVE BOX HATCH OPENING	I	5'-0"		5'-0"	
LIP WIDTH OF WET WELL BASE	R	N.A.		N/A	
THICKNESS OF WET WELL BASE	S	N.A.		N/A	
TOP OF WET WELL	T		99.87		99.87
FINISHED GRADE (SEE C-101)	U		NA		NA
HIGH LEVEL ALARMS	V		86.3		86.3
LAG PUMP ON	W		85.8		85.8
LEAD PUMP ON	X		85.3		85.3
PUMPS OFF (TOP OF PUMP VOLUTE)	Y		82.3	SEE NOTE 2	82.3
BOTTOM OF PUMP TO FLOOR OF WET WELL	P	4.2		3.37	
STEP HEIGHT (IF REQUIRED)	Q	0.83		N/A	
FLOOR OF WET WELL	Z		81.36	SEE NOTE 2	81.36

- DESIGN A & B SPECIFICATION NOTES**
- (*) PER PUMP MANUFACTURER REQUIREMENTS
 - DIMENSION P AND ELEVATION Y AND Z MUST MEET BOTH PUMP MFR'S REQUIREMENTS
 - EL X - EL Z ≥ 5 FEET
 - TOP ELEVATION OF WETWELL SHALL BE A MIN OF 1 FT ABOVE 100 YR FLOOD ELEVATION AND THE ELEVATION OF THE CROWN OF THE ROAD
 - SYMBOLS SHOWN IN THE TABLE ARE USED IN THE ADJACENT PUMP STATION PLAN AND SECTION VIEWS

No.	REVISIONS	BY	DATE

LINE IS 2 INCHES
AT FULL SIZE
(IF NOT SCALE ACCORDINGLY)

SCALE: AS NOTED

ORANGE COUNTY UTILITIES
9150 CURRY FORD ROAD
ORLANDO, FLORIDA 32825

BFA Environmental Consultants
Barnes, Ferland and Associates, Inc.
1230 E. Hillcrest Street, Orlando, FL, 32803
TEL: (407) 896-8828 FAX: (407) 896-1822
ENGINEERING BUSINESS No. 6899

PUMP STATION R/R PACKAGE 10 IMPROVEMENTS

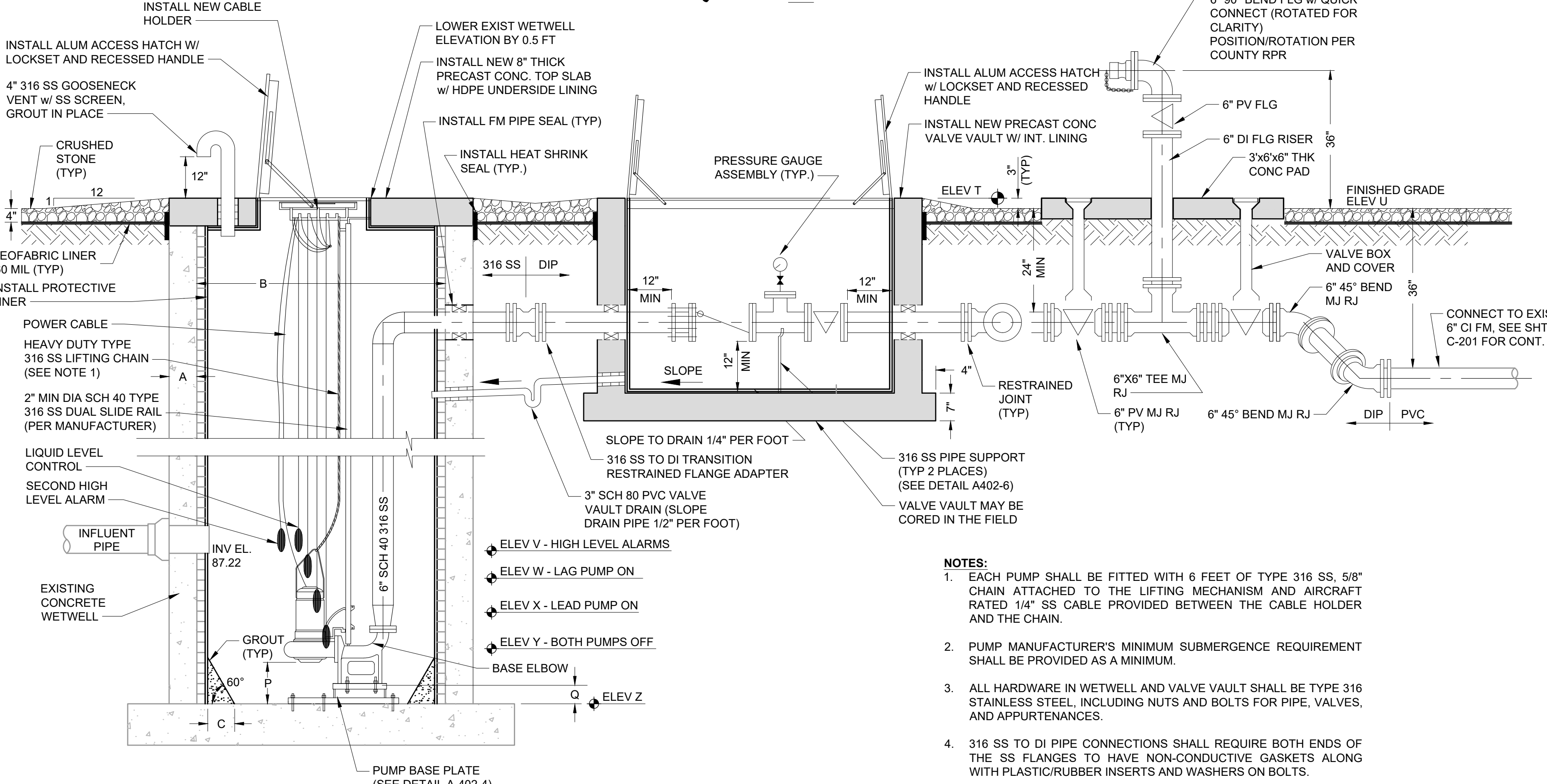
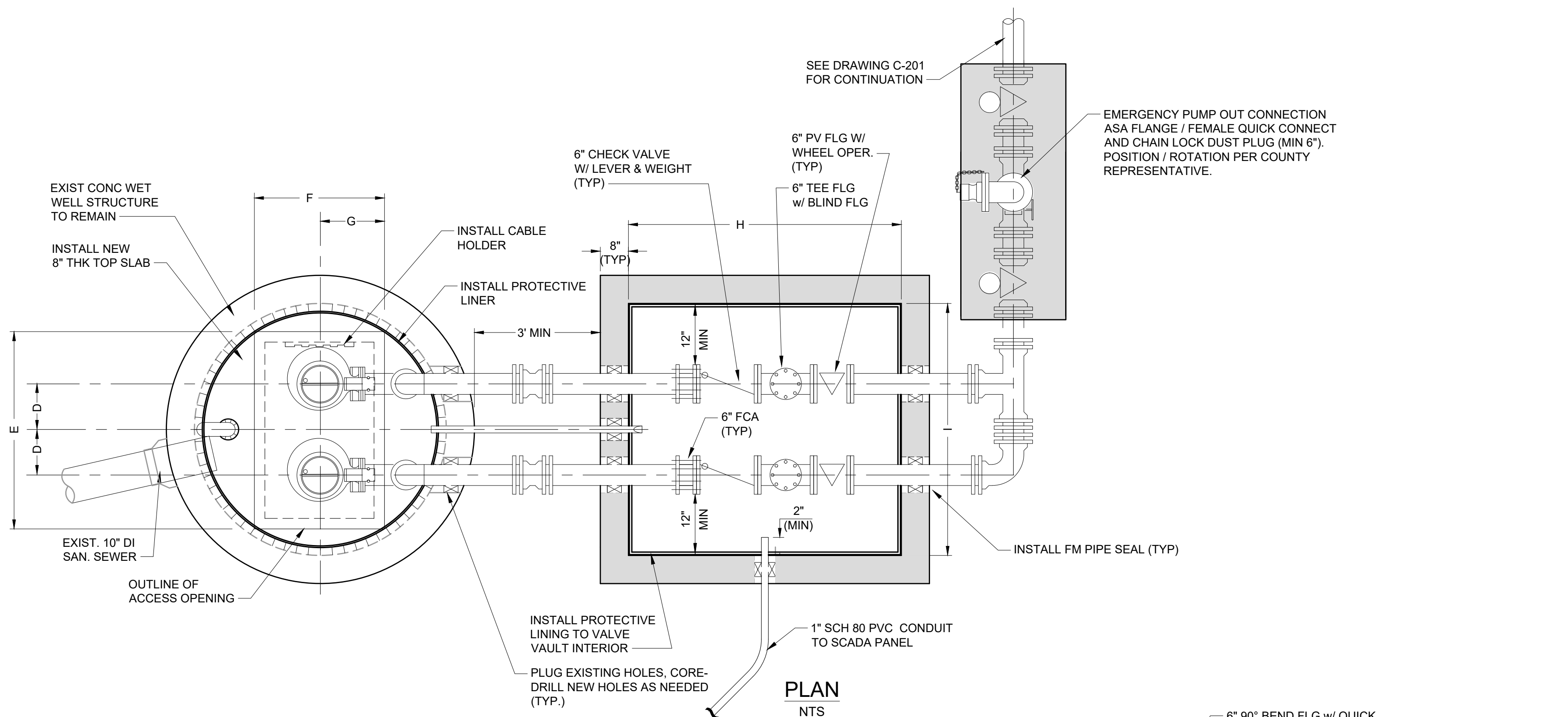
PS 3116 MARTIN Co PUMP STATION
PLAN, SECTION, AND DETAILS

DESIGN ENGINEER
GEOFFREY J. HENNESSY, P.E.

PROJECT No.: 2014-28-02
PROJECT DATE: JUNE 2017
DESIGNED BY: RGB
DRAWN BY: JAB
CHECKED BY: GJH
DRAWING FILE: SEE MARGIN

FLORIDA REGISTRATION No.
58637

P-100
SHEET
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- NOTES:**
- EACH PUMP SHALL BE FITTED WITH 6 FEET OF TYPE 316 SS, 5/8" CHAIN ATTACHED TO THE LIFTING MECHANISM AND AIRCRAFT RATED 1/4" SS CABLE PROVIDED BETWEEN THE CABLE HOLDER AND THE CHAIN.
 - PUMP MANUFACTURER'S MINIMUM SUBMERSION REQUIREMENT SHALL BE PROVIDED AS A MINIMUM.
 - ALL HARDWARE IN WETWELL AND VALVE VAULT SHALL BE TYPE 316 STAINLESS STEEL, INCLUDING NUTS AND BOLTS FOR PIPE, VALVES, AND APPURTENANCES.
 - 316 SS TO DI PIPE CONNECTIONS SHALL REQUIRE BOTH ENDS OF THE SS FLANGES TO HAVE NON-CONDUCTIVE GASKETS ALONG WITH PLASTIC/RUBBER INSERTS AND WASHERS ON BOLTS.
 - ALL MECHANICAL JOINTS SHALL BE RESTRAINED. ALL PIPE JOINTS IN WETWELL, VALVE VAULT AND ABOVE GROUND SHALL BE FLANGED TYPE.

- GENERAL NOTES:**
- ALL MATERIALS AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE ORANGE COUNTY UTILITIES STANDARDS AND SPECIFICATIONS MANUAL (LATEST EDITION), AND/OR AS SPECIFIED HEREIN.
 - ALL EXPOSED METAL OUTSIDE OF THE WET WELL SHALL BE IN ACCORDANCE WITH ORANGE COUNTY STANDARDS AND SPECIFICATIONS MANUAL (LATEST EDITION).
 - A CRYSTALLINE WATER PROOFING ADMIXTURE SHALL BE ADDED TO THE CONCRETE DURING THE MIXING CYCLE FOR THE WET WELL AND VALVE VAULT PRECAST STRUCTURES. THE CRYSTALLINE WATER PROOFING ADMIXTURE SHALL BE APPROVED PRODUCT AS LISTED IN OCU APPENDIX D.
 - FOR EXISTING WET WELLS, VALVE VAULTS AND MANHOLES, THE INSIDE SHALL BE LINED WITH A FIBERGLASS REINFORCED POLYESTHER (FRP) LINER. FINAL SEALS AND SEALING TO BE MADE IN THE FIELD. FOR NEW CONSTRUCTION, THE INSIDE OF WET WELLS, VALVE VAULTS AND MANHOLES SHALL BE LINED WITH EITHER A HIGH DENSITY POLYETHYLENE (HDPE) LINER, A FIBERGLASS REINFORCED POLYESTHER (FRP) LINER, OR AN ACCEPTABLE EQUAL AS LISTED IN OCU APPENDIX D. FINAL SEALS AND SEALING TO BE MADE IN THE FIELD.
 - WET WELL ACCESS OPENING SHALL BE COVERED ON ALL FOUR VERTICAL SIDES WITH A PROTECTIVE LINER.
 - WET WELL ACCESS HATCH AND COVER SHALL BE ALUMINUM WITH 316 STAINLESS STEEL HARDWARE AND LOCK BRACKET PLATE WITH THE WORDS "CONFINED SPACE" STAMPED (ETCHED) ON THE TOP SIDE. EACH DOOR WILL BE EQUIPPED WITH RECESSED HASP ENCLOSURE.
 - ALL PIPING AND HARDWARE IN THE WET WELL SHALL BE 316 STAINLESS STEEL SCHEDULE 40.
 - THERE SHALL BE NO VALVES OR ELECTRICAL JUNCTION BOXES IN THE WET WELL.
 - ALL PIPING AND CONDUIT PENETRATIONS THROUGH CONCRETE SHALL BE WATERTIGHT. CAST-IN-PLACE SLEEVES SHALL BE PLACED IN ALL OPENINGS WHERE PRESSURE PIPE ENTER OR LEAVE THE WET WELL AND/OR VALVE VAULT. PENETRATIONS THROUGH WET WELL AND VALVE VAULT SHALL BE A COMPRESSION TYPE SEAL, SUCH AS "LINK-SEAL", OR AN ACCEPTABLE EQUAL AS LISTED IN OCU APPENDIX D.
 - ALL CONNECTIONS WITHIN THE WET WELL, VALVE VAULT, AND ABOVE GRADE SHALL BE FLANGED JOINTS. ALL REMAINING JOINTS BETWEEN THE WET WELL AND THE CONNECTION TO THE EXISTING FORCE MAIN SHALL BE RESTRAINED MECHANICAL JOINTS. (SEE TABLE ON DETAIL SHEET D100).
 - PIPE SUPPORTS SHALL BE 316 STAINLESS STEEL, PROVIDED AND INSTALLED TO SUPPORT AND ANCHOR THE PIPING SECURELY IN THE VALVE VAULT.
 - VALVE VAULT SHALL BE SIZED TO PERMIT EASY REMOVAL OF CHECK VALVE SPINDLES, WITH MINIMUM CLEARANCE, AS SHOWN FOR 8" DIAMETER PIPE, OR SMALLER.
 - CONTRACTOR SHALL, AS DIRECTED BY THE COUNTY REPRESENTATIVE, REMOVE AND SALVAGE TO THE COUNTY, ALL EXISTING PUMP STATION EQUIPMENT, INCLUDING PUMPS, CHECK VALVES, SHUTOFF VALVES, AND CONTROL PANEL.
 - CONTRACTOR SHALL DEMOLISH AND REMOVE FROM SITE ALL DEBRIS RESULTING FROM THE REMOVAL OF THE EXISTING STRUCTURES.
 - CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND ELEVATIONS PRIOR TO ORDERING ANY MATERIALS OR EQUIPMENT.
 - CONTRACTOR SHALL GROUT FLOOR OF WET WELL, AS REQUIRED BY MANUFACTURER'S SPECIFICATIONS, TO ACCOMMODATE INSTALLATION OF THE NEW PUMPS.
 - STRUCTURAL DESIGN OF THE PRECAST WET WELL, TOP, AND VALVE VAULT SHALL BE THE RESPONSIBILITY OF THE PRECAST MANUFACTURER. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR THE PRECAST WET WELL, THE PRECAST WET WELL TOP AND HATCH COVER, RISERS AND THE VALVE VAULT, TO THE ENGINEER.
 - 100-YEAR FLOOD ELEVATION: N.A., SURVEY AREA IS OUTSIDE THE (FIRM) FLOODPLAIN.
 - ALL EXTERNAL JOINTS SHALL BE COVERED WITH A HIGH STRENGTH, WATER TIGHT, PRESS-TO-SEAL TYPE TAPE/AS LISTED IN OCU APPENDIX D.
 - A SECOND HIGH LEVEL ALARM LIQUID FLOAT SHALL BE INSTALLED TO PROVIDE DRY CONTACT FOR SCADA. REFER TO PUMP CONTROL SCHEMATIC.
 - ALL SPOOLS SHALL BE MINIMUM OF SIX INCHES WHERE SPACE ALLOWS.
 - CONTRACTOR SHALL BE RESPONSIBLE FOR ALIGNMENT FROM THE BASE PLATE TO THE RISER PLATE AT NO EXTRA COST TO OCU.

PS 3117 MILLAY DRIVE - DESIGN SPECIFICATIONS						
DESIGN A SPECIFICATIONS			DESIGN B SPECIFICATIONS			
MANUFACTURER:	ABS (SULZER)	MANUFACTURER:	FLYGT (XYLEM)			
MODEL:	XFP100E CB1	MODEL:	CP 3102 MT3			
IMP:	PE45-4-E	IMP:	432			
DIA:	7.28 IN.	RATED POWER:	6.03 HP			
SPEED:	1770 RPM	IMPELLER THROUGHLET:	3.15 IN.			
DISCHARGE SIZE:	4 IN.	CURVE NUMBER:	N.A.			
DESIGN CONDITIONS:	320 GPM @ 35 FT.	DESIGN CONDITIONS:	320 GPM @ 35 FT.			
HIGH HEAD CONDITION:	N.A.	HIGH HEAD CONDITION:	N.A.			
MINIMUM HEAD CONDITION:	500 GPM @ 22 FT.	MINIMUM HEAD CONDITIONS:	500 GPM @ 22 FT.			
SHUTOFF HEAD:	53 FT.	SHUTOFF HEAD:	53 FT.			
DESCRIPTION	SYMBOL	DIM	ELEV.	DIMENSION	ELEV	DESIGN A & B SPECIFICATION NOTES
THICKNESS OF WALL	A	EXIST.		EXIST.		1. (*) PER PUMP MANUFACTURER REQUIREMENTS
DIAMETER OF WET WELL	B	6'-0"		6'-0"		2. DIMENSION P AND ELEVATION Y AND Z MUST MEET BOTH PUMP MFR'S REQUIREMENTS
WIDTH OF BOTTOM FILLET	C	* 1		SEE NOTE 1		3. EL X - EL Z ≥ 5 FEET
CIL OF WET WELL TO CIL OF PIPES	D	* 1		SEE NOTE 1		4. TOP ELEVATION OF WETWELL SHALL BE A MIN OF 1 FT ABOVE 100 YR FLOOD ELEVATION AND THE ELEVATION OF THE CROWN OF THE ROAD
LENGTH OF PUMP ACCESS OPENING	E	* 1		SEE NOTE 1		5. SYMBOLS SHOWN IN THE TABLE ARE USED IN THE ADJACENT PUMP STATION PLAN AND SECTION VIEWS
WIDTH OF PUMP ACCESS OPENING	F	* 1		SEE NOTE 1		
CENTER OF WET WELL TO EDGE OF HATCH	G	* 1		SEE NOTE 1		
VALVE BOX HATCH OPENING	H	5'-6"		5'-6"		
VALVE BOX HATCH OPENING	I	5'-0"		5'-0"		
LIP WIDTH OF WET WELL BASE	R	N.A.		N.A.		
THICKNESS OF WET WELL BASE	S	N.A.		N.A.		
TOP OF WET WELL	T		99.2		99.2	
FINISHED GRADE	U		98.95		98.95	
HIGH LEVEL ALARMS	V		87.0		87.0	
LAG PUMP ON	W		86.5		86.5	
LEAD PUMP ON	X		86.0		86.0	
PUMPS OFF (TOP OF PUMP VOLUTE)	Y		82.0	SEE NOTE 2	82.0	
BOTTOM OF PUMP TO FLOOR OF WET WELL	P	4.6		3.34		
STEP HEIGHT (IF REQUIRED)	Q	1.26		N.A.		
FLOOR OF WET WELL	Z		80.96	SEE NOTE 2	80.96	

No.	REVISIONS	BY	DATE
BID SET		GJH	5/24/2017

LINE IS 2 INCHES
AT FULL SIZE
(IF NOT SCALE ACCORDINGLY)

SCALE: AS NOTED

ORANGE COUNTY UTILITIES
9150 CURRY FORD ROAD
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PUMP STATION R/R PACKAGE 10 IMPROVEMENTS

PS 3117 MILLAY DR PUMP STATION
PLAN, SECTION, AND DETAILS

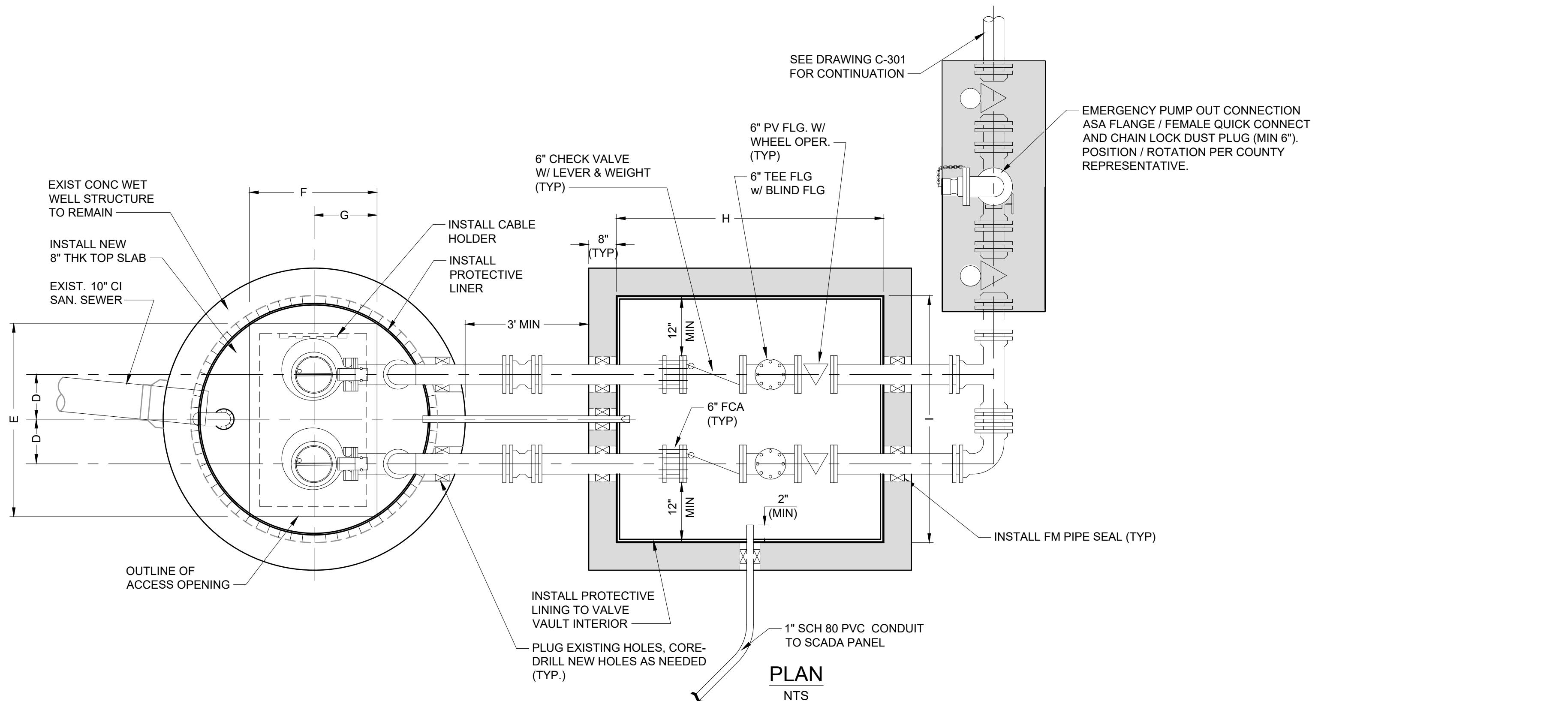
DESIGN ENGINEER
GEOFFREY J. HENNESSY, P.E.

PROJECT No.: 2014-28-02
PROJECT DATE: JUNE 2017
DESIGNED BY: RGB
DRAWN BY: JAB
CHECKED BY: GJH
DRAWING FILE: SEE MARGIN

FLORIDA REGISTRATION No.
58637

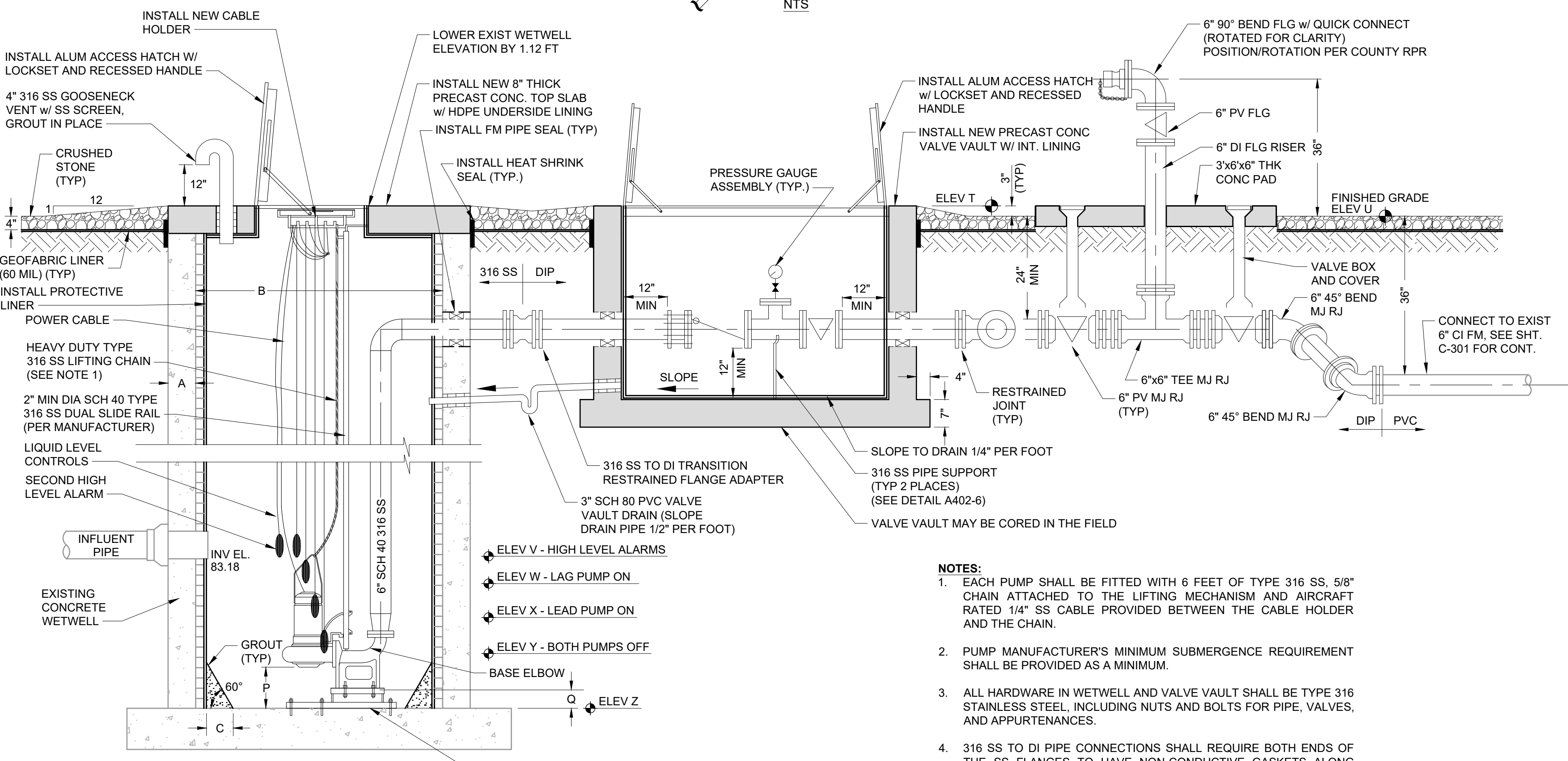
DRAWING No.
P-200

SHEET
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GENERAL NOTES:

- ALL MATERIALS AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE ORANGE COUNTY UTILITIES STANDARDS AND SPECIFICATIONS MANUAL (LATEST EDITION), AND/OR AS SPECIFIED HEREIN.
- ALL EXPOSED METAL OUTSIDE OF THE WET WELL SHALL BE IN ACCORDANCE WITH ORANGE COUNTY STANDARDS AND SPECIFICATIONS MANUAL (LATEST EDITION).
- A CRYSTALLINE WATER PROOFING ADMIXTURE SHALL BE ADDED TO THE CONCRETE DURING THE MIXING CYCLE FOR THE WET WELL AND VALVE VAULT PRECAST STRUCTURES. THE CRYSTALLINE WATER PROOFING ADMIXTURE SHALL BE APPROVED PRODUCT AS LISTED IN OCU APPENDIX D.
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- PIPE SUPPORTS SHALL BE 316 STAINLESS STEEL, PROVIDED AND INSTALLED TO SUPPORT AND ANCHOR THE PIPING SECURELY IN THE VALVE VAULT.
- VALVE VAULT SHALL BE SIZED TO PERMIT EASY REMOVAL OF CHECK VALVE SPINDLES, WITH MINIMUM CLEARANCE, AS SHOWN FOR 8" DIAMETER PIPE, OR SMALLER.
- CONTRACTOR SHALL, AS DIRECTED BY THE COUNTY REPRESENTATIVE, REMOVE AND SALVAGE TO THE COUNTY, ALL EXISTING PUMP STATION EQUIPMENT, INCLUDING PUMPS, CHECK VALVES, SHUTOFF VALVES, AND CONTROL PANEL.
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- 100-YEAR FLOOD ELEVATION: N.A., SURVEY AREA IS OUTSIDE THE (FIRM) FLOODPLAIN.
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- A SECOND HIGH LEVEL ALARM LIQUID FLOAT SHALL BE INSTALLED TO PROVIDE DRY CONTACT FOR SCADA. REFER TO PUMP CONTROL SCHEMATIC.
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- NOTES:**
- EACH PUMP SHALL BE FITTED WITH 6 FEET OF TYPE 316 SS, 5/8" CHAIN ATTACHED TO THE LIFTING MECHANISM AND AIRCRAFT RATED 1/4" SS CABLE PROVIDED BETWEEN THE CABLE HOLDER AND THE CHAIN.
 - PUMP MANUFACTURER'S MINIMUM SUBMERGENCE REQUIREMENT SHALL BE PROVIDED AS A MINIMUM.
 - ALL HARDWARE IN WETWELL AND VALVE VAULT SHALL BE TYPE 316 STAINLESS STEEL, INCLUDING NUTS AND BOLTS FOR PIPE, VALVES, AND APPURTENANCES.
 - 316 SS TO DI PIPE CONNECTIONS SHALL REQUIRE BOTH ENDS OF THE SS FLANGES TO HAVE NON-CONDUCTIVE GASKETS ALONG WITH PLASTIC/RUBBER INSERTS AND WASHERS ON BOLTS.
 - ALL MECHANICAL JOINTS SHALL BE RESTRAINED. ALL PIPE JOINTS IN WETWELL, VALVE VAULT AND ABOVE GROUND SHALL BE FLANGED TYPE.

PS 3216 PADGETT CIRCLE - DESIGN SPECIFICATIONS						
DESIGN A SPECIFICATIONS			DESIGN B SPECIFICATIONS			
MANUFACTURER:	ABS (SULZER)		MANUFACTURER:	FLYGT (XYLEM)		
MODEL:	XFP100 E CB1		MODEL:	CP 3127 MT3		
IMP:	PE 75-4-E		IMP:	484		
DIA:	8.19 IN.		DIA:	8.54 IN.		
SPEED:	1760 RPM		SPEED:	1720 RPM		
DISCHARGE SIZE:	4 IN.		DISCHARGE SIZE:	4 IN.		
DESIGN CONDITIONS:	360 GPM @ 48 FT.		DESIGN CONDITIONS:	360 GPM @ 48 FT.		
HIGH HEAD CONDITION:	N.A.		HIGH HEAD CONDITION:	N.A.		
MINIMUM HEAD CONDITION:	500 GPM @ 42 FT.		MINIMUM HEAD CONDITIONS:	500 GPM @ 42 FT.		
SHUTOFF HEAD:	80 FT.		SHUTOFF HEAD:	80 FT.		
DESCRIPTION	SYMBOL	DIM	ELEV.	DIMENSION	ELEV	DESIGN A & B SPECIFICATION NOTES
THICKNESS OF WALL	A	Exist.		Exist.		
DIAMETER OF WET WELL	B	6'-0"		6'-0"		
WIDTH OF BOTTOM FILLET	C	*1		SEE NOTE 1		
C/L OF WET WELL TO C/L OF PIPES	D	*1		SEE NOTE 1		
LENGTH OF PUMP ACCESS OPENING	E	*1		SEE NOTE 1		
WIDTH OF PUMP ACCESS OPENING	F	*1		SEE NOTE 1		
CENTER OF WET WELL TO EDGE OF HATCH	G	*1		SEE NOTE 1		
VALVE BOX HATCH OPENING	H	6'-6"		6'-6"		
VALVE BOX HATCH OPENING	I	6'-0"		6'-0"		
LIP WIDTH OF WET WELL BASE	R	N.A.		N.A.		
THICKNESS OF WET WELL BASE	S	N.A.		N.A.		
TOP OF WET WELL	T		96.65		96.95	
FINISHED GRADE	U		96.4		96.4	
HIGH LEVEL ALARMS	V		83.10		83.10	
LAG PUMP ON	W		82.60		82.60	
LEAD PUMP ON	X		82.10		82.10	
PUMPS OFF (TOP OF PUMP VOLUTE)	Y		79.85	SEE NOTE 2	79.85	
BOTTOM OF PUMP TO FLOOR OF WET WELL	P	4.6"		5.7"		
STEP HEIGHT (IF REQUIRED)	Q	1.1"		N.A.		
FLOOR OF WET WELL	Z		78.62	SEE NOTE 2	78.62	

No.	REVISIONS	BY	DATE
BID SET		GJH	5/24/2017

LINE IS 2 INCHES
AT FULL SIZE
(IF NOT SCALE ACCORDINGLY)

SCALE: AS NOTED

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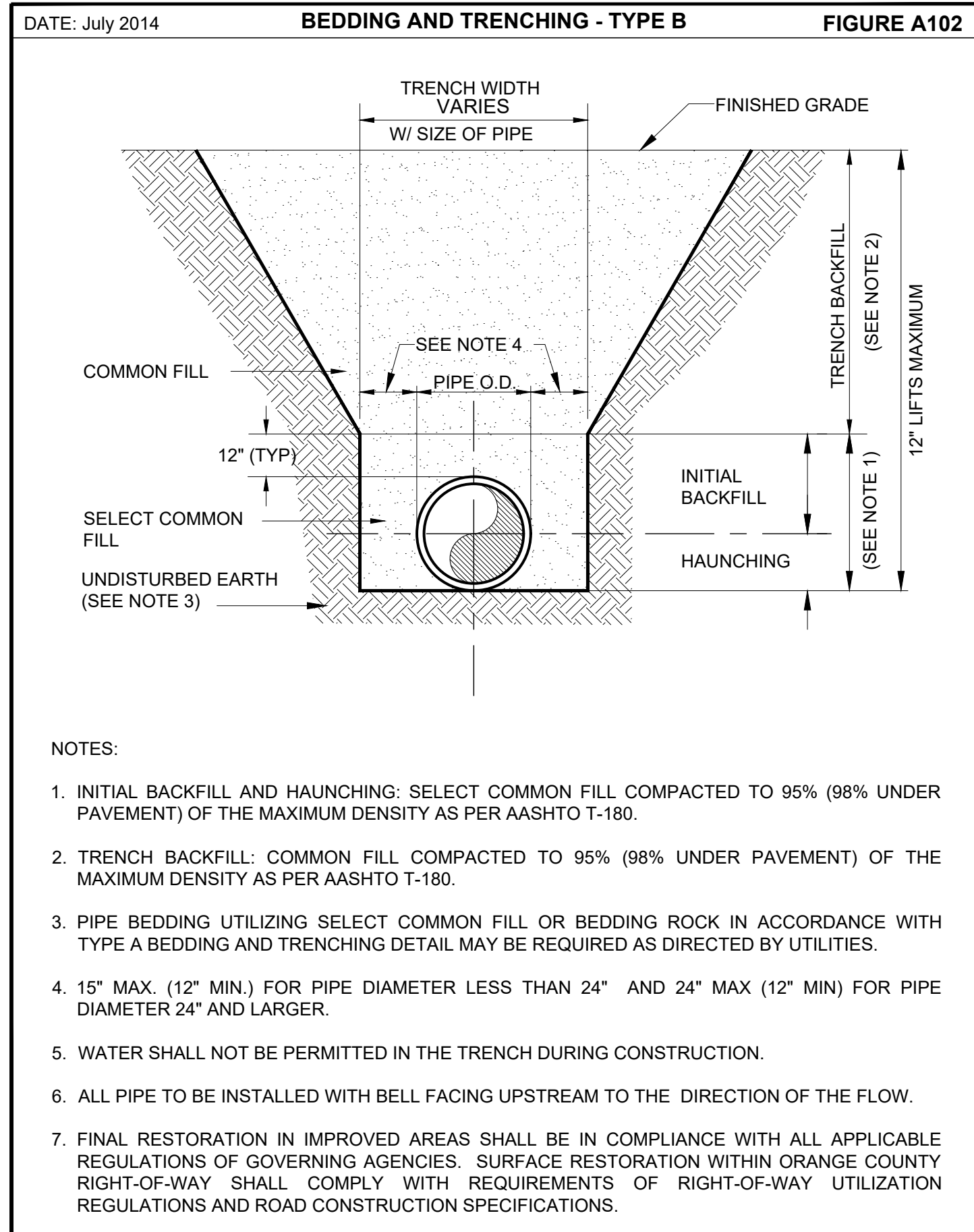
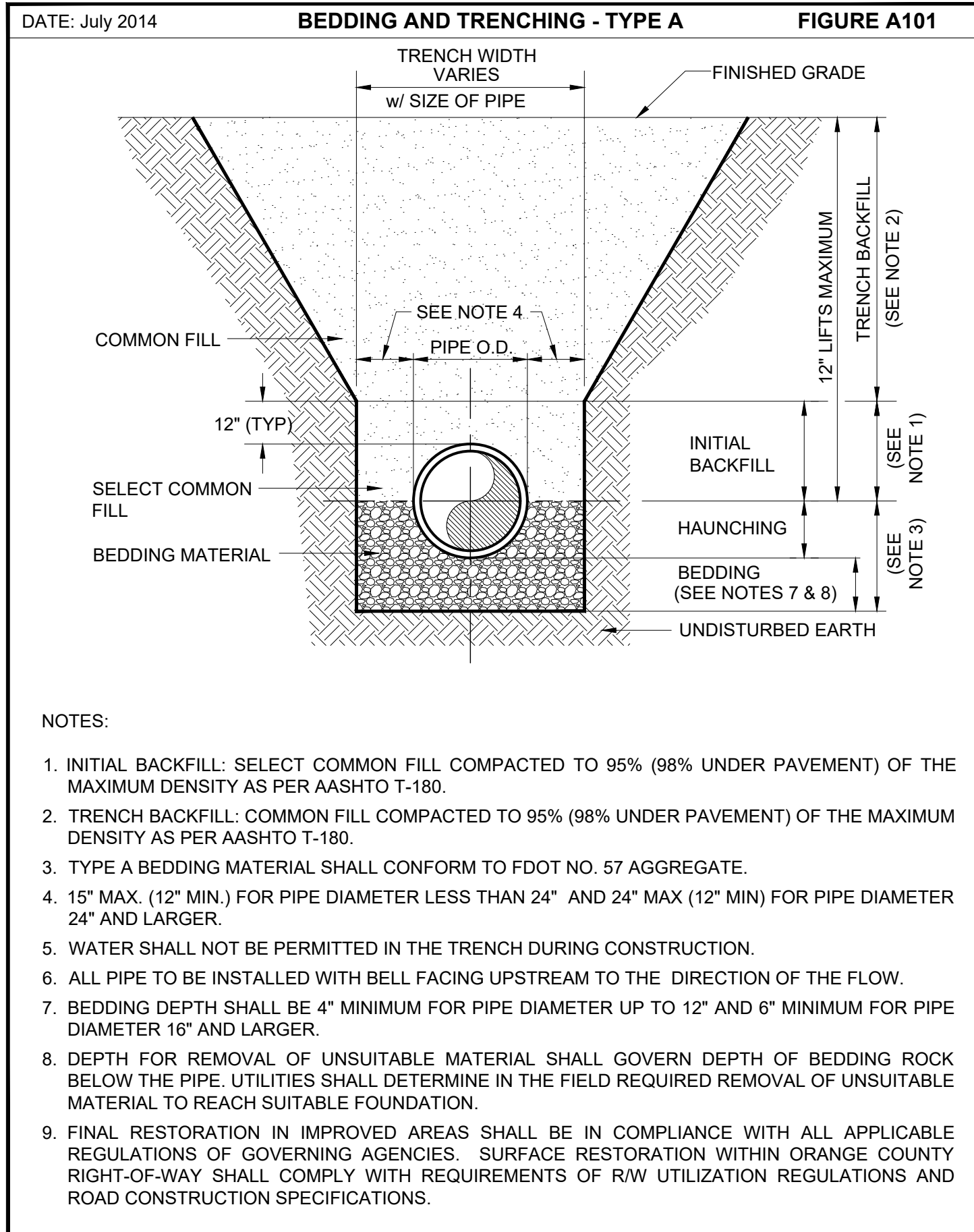
PUMP STATION R/R PACKAGE 10 IMPROVEMENTS

PS 3216 PADGETT CIR PUMP STATION PLAN, SECTION, AND DETAILS

DESIGN ENGINEER: GEOFFREY J. HENNESSY, P.E.
PROJECT No.: 2014-28-02
PROJECT DATE: JUNE 2017
DESIGNED BY: RGB
DRAWN BY: JAB
CHECKED BY: GJH
DRAWING FILE: SEE MARGIN

FLORIDA REGISTRATION No. 58637

P-300
SHEET 18 OF 34



DATE: July 2014 **RESTRAINED PIPE TABLE** **WASTEWATER FORCE MAINS** **FIGURE A104-2**

TYPE	PVC PIPE SIZE									
	4"	6"	8"	10"	12"	16"	20"	24"	30"	36"
90° BEND	18	24	31	38	43	55	65	75	88	100
45° BEND	8	10	13	15	18	23	26	31	38	43
22-1/2° BEND	4	5	6	8	9	11	13	15	18	20
11-1/4° BEND	2	3	4	5	6	8	9	10	11	13
PLUG OR BRANCH OF TEE	38	50	65	79	90	117	139	163	194	223
VALVE	19	25	32	40	45	59	70	82	98	112
REDUCER	VARIES BY SIZE. TO BE DETERMINED BY THE DESIGN ENGINEER.									

NOTES:

- FITTINGS SHALL HAVE RESTRAINED JOINTS UNLESS OTHERWISE INDICATED.
- INSTALL FULL LENGTH JOINTS WITH TOTAL LENGTH EQUAL TO OR GREATER THAN LENGTH SHOWN IN THE TABLE.
- WHERE TWO OR MORE FITTINGS ARE IN SERIES, SELECT FITTING RESTRAINT LENGTH THAT YIELDS THE LONGEST RESTRAINT DISTANCE.
- ALL INLINE VALVES SHALL BE RESTRAINED.
- WHERE INTERNAL RESTRAINED JOINTS ARE USED, THE ENTIRE BELL SHALL BE PAINTED RED.
- LENGTHS SHOWN IN THE TABLE WERE CALCULATED IN ACCORDANCE WITH PROCEDURES OUTLINED IN "THRUST RESTRAINT DESIGN FOR DUCTILE IRON PIPE" GUIDELINES PUBLISHED BY DIPRA, USING THE ASSUMPTIONS SHOWN BELOW:

WORKING PRESSURE: 100 PSI
 SOIL DESIGNATION: SM (SAND SILT)
 LAYING CONDITIONS: 3
 DEPTH OF COVER: 3 FT
 SAFETY FACTOR: 1.5
 CONVERSION FACTOR FOR PVC PIPE: 1.25

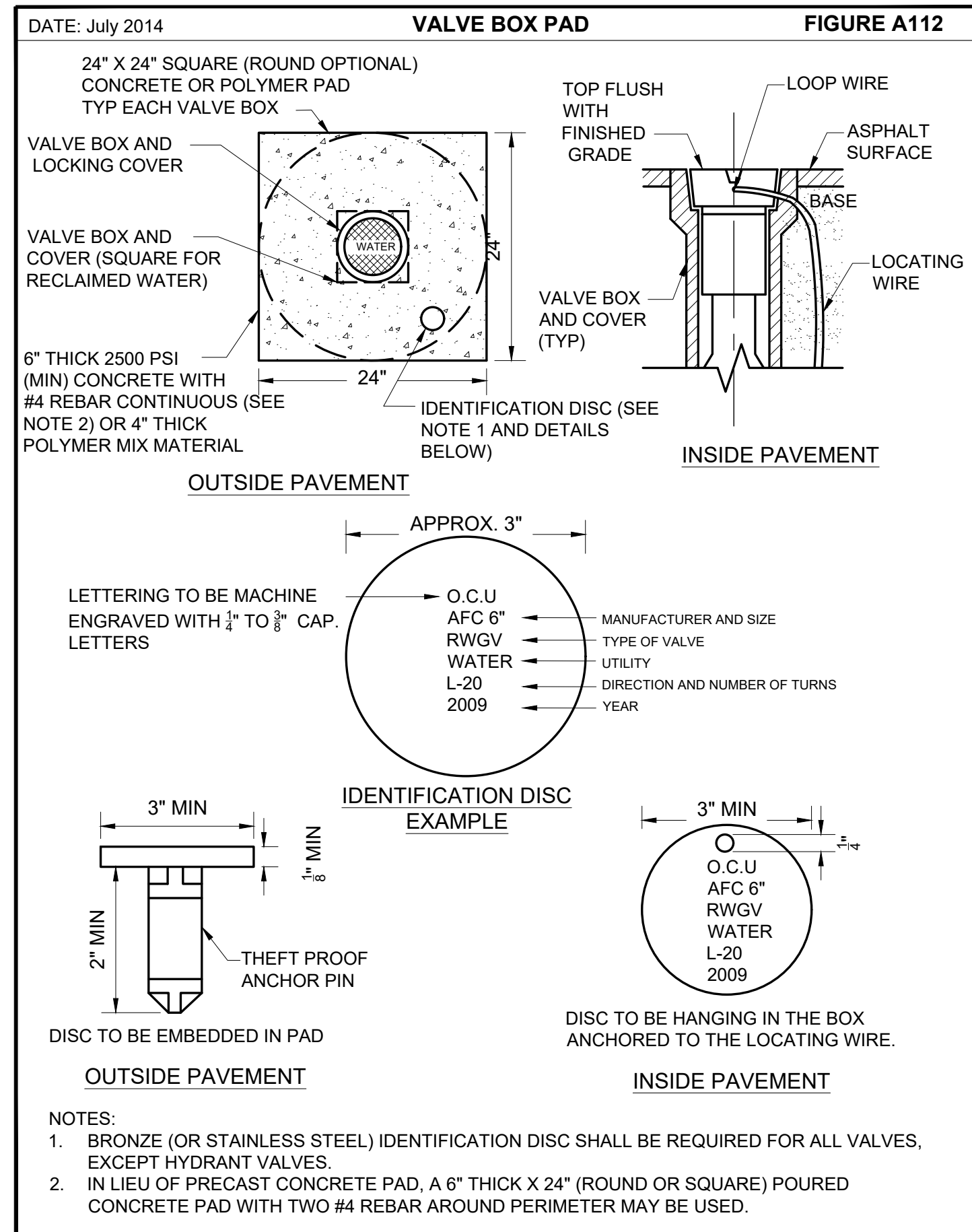
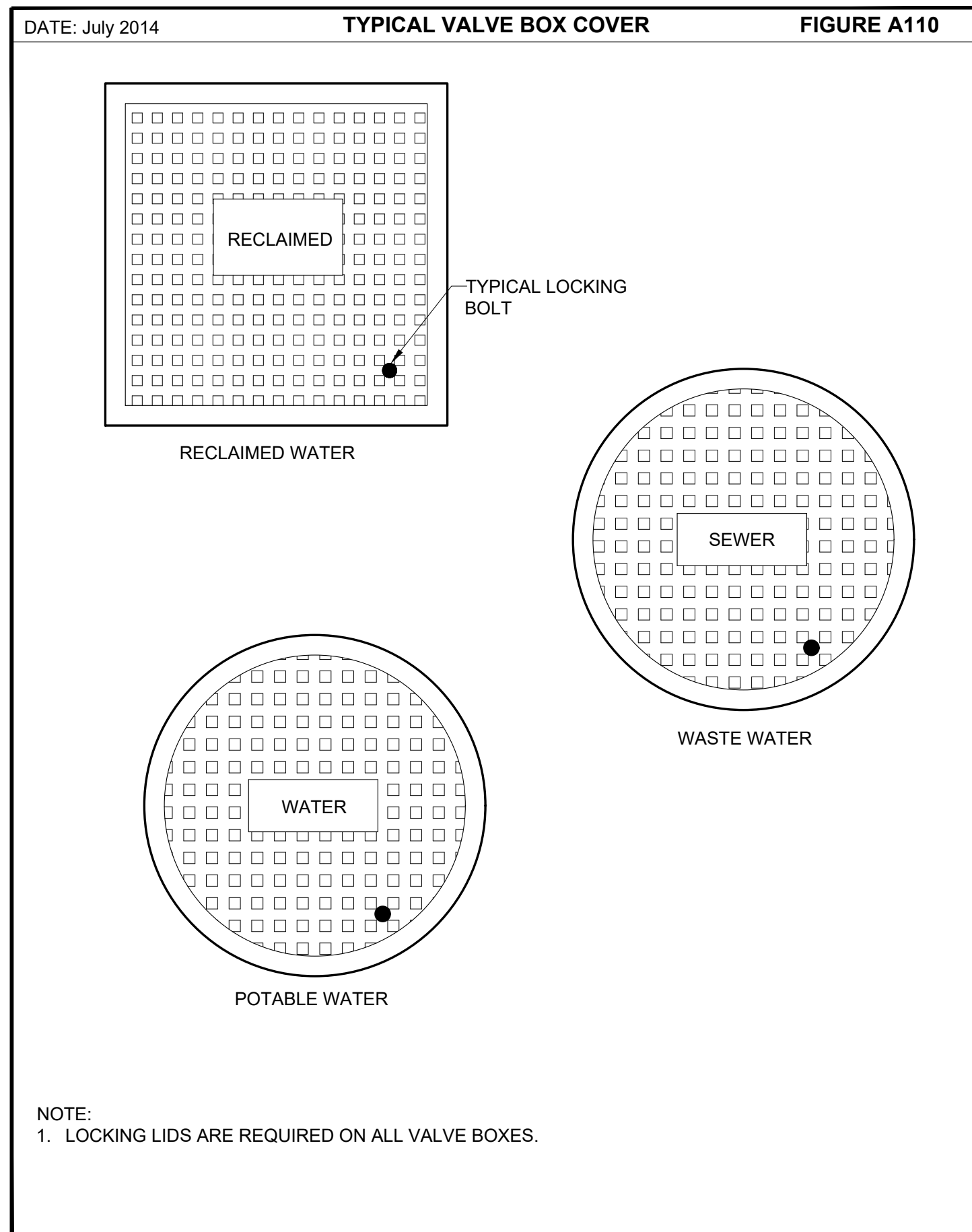
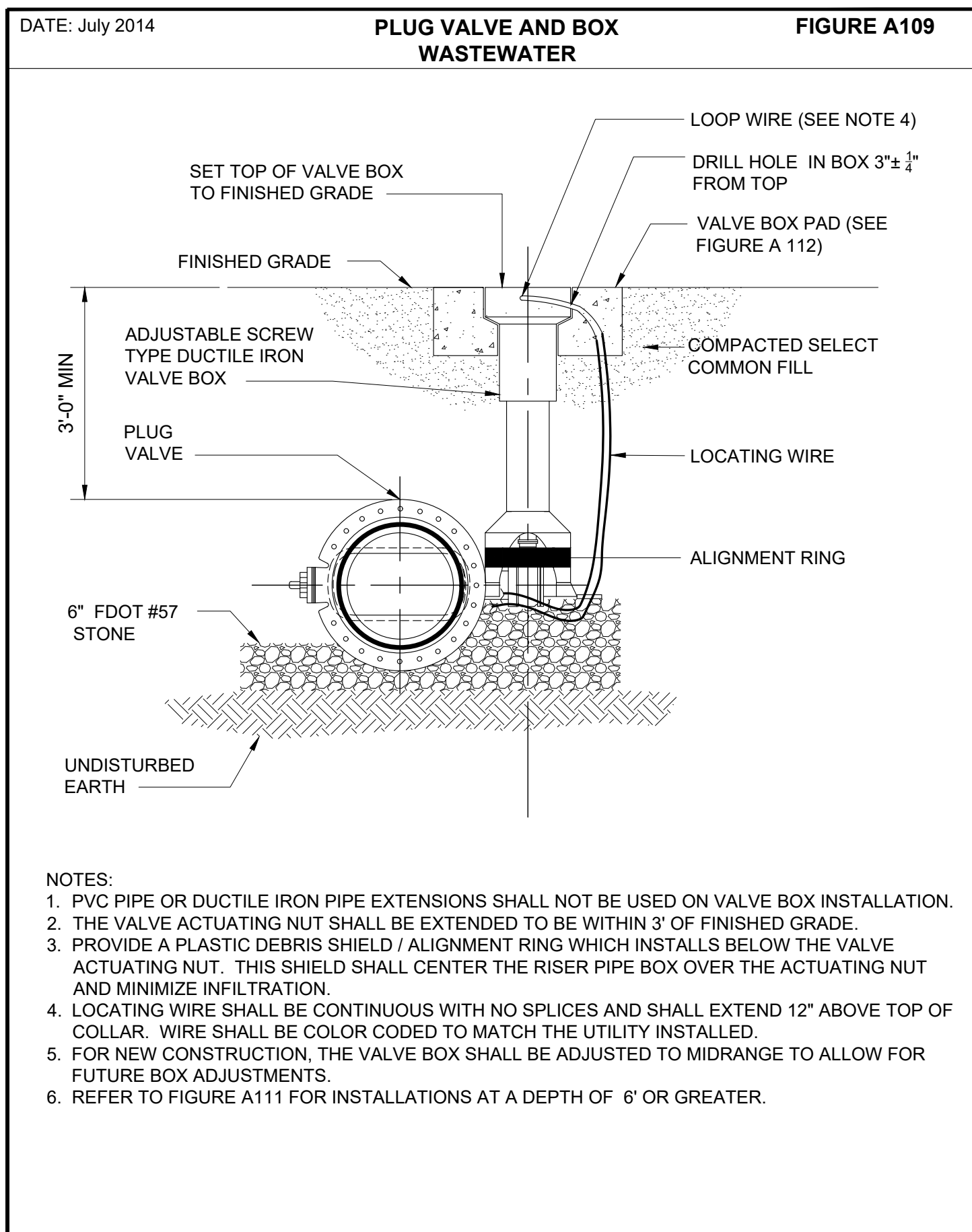
THE DESIGN ENGINEER SHALL INCREASE THE VALUES IN THE TABLE AS WARRANTED BY SITE-SPECIFIC PARAMETERS, SUCH AS SOIL DESIGNATIONS AND LAYING CONDITIONS.

DATE: July 2014 **SEPARATION REQUIREMENTS FOR WATER, WASTEWATER AND RECLAIMED WATER MAINS** **FIGURE A116**

PROPOSED UTILITY	HORIZONTAL & VERTICAL SEPARATION REQUIREMENTS							
	POTABLE WATER		RECLAIMED WATER		WASTEWATER (GRAVITY & FM)		STORM SEWER	
	HORIZ	VERT	HORIZ	VERT	HORIZ	VERT	HORIZ	VERT
POTABLE WATER	3' NOTE 1	12"	3' NOTE 1 & 3	12" NOTE 3	6' NOTE 3	12" NOTE 3	3' NOTE 1 & 3	12"/18" NOTE 2 & 3
RECLAIMED WATER	3' NOTE 1 & 3	12" NOTE 3	3' NOTE 1	12"	3' NOTE 1	12"	3' NOTE 1	12"/18" NOTE 2
WASTEWATER (GRAVITY AND FM)	6' NOTE 3	12" NOTE 3	3' NOTE 1	12"	3' NOTE 1	12"	3' NOTE 1	12"/18" NOTE 2
RIGHT OF WAY	3' NOTE 1	N/A	3' NOTE 1	N/A	3' NOTE 1	N/A	N/A	N/A

NOTES:

- THIS SEPARATION REQUIREMENT IS TO PROVIDE ACCESSIBILITY FOR CONSTRUCTION AND MAINTENANCE. THREE FEET OF HORIZONTAL SEPARATION IS THE MINIMUM FOR PIPES WITH THREE FEET OF COVER. FOR PIPES INSTALLED AT GREATER DEPTHS, PROVIDE AN ADDITIONAL FOOT OF SEPARATION FOR EACH ADDITIONAL FOOT OF DEPTH.
- THE 18-INCH SEPARATION REQUIREMENT APPLIES WHEN THE STORM PIPE CROSSES ABOVE THE OCU MAIN, AND WHEN THE STORM PIPE HAS A DIAMETER EQUAL TO OR GREATER THAN 24 INCHES. OTHERWISE, THE REQUIRED SEPARATION IS 12 INCHES.
- THIS SEPARATION REQUIREMENT COMPLIES WITH MINIMUM FDEP SEPARATION REQUIREMENTS OUTLINED IN 62-555.314, FAC. VARIANCES FROM THE FDEP REQUIREMENTS MUST COMPLY WITH 62-555.314(5), FAC AND MUST BE APPROVED INDIVIDUALLY BY BOTH FDEP AND OCU.
- DISTANCES GIVEN ARE FROM OUTSIDE OF PIPE TO OUTSIDE OF PIPE.
- NO WATER PIPE SHALL PASS THROUGH OR COME IN CONTACT WITH ANY PART OF SANITARY OR STORM WATER MANHOLE OR STRUCTURE.



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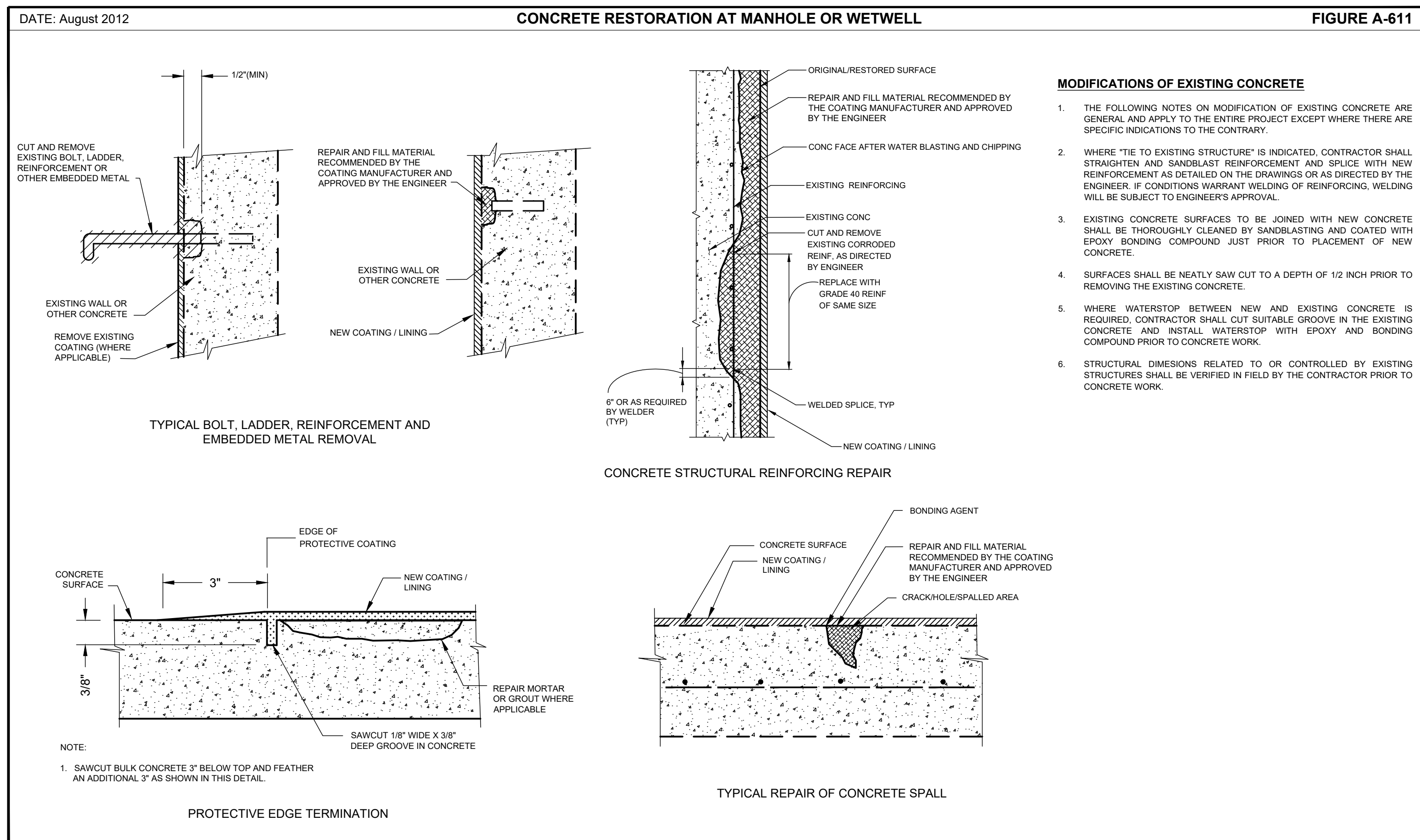
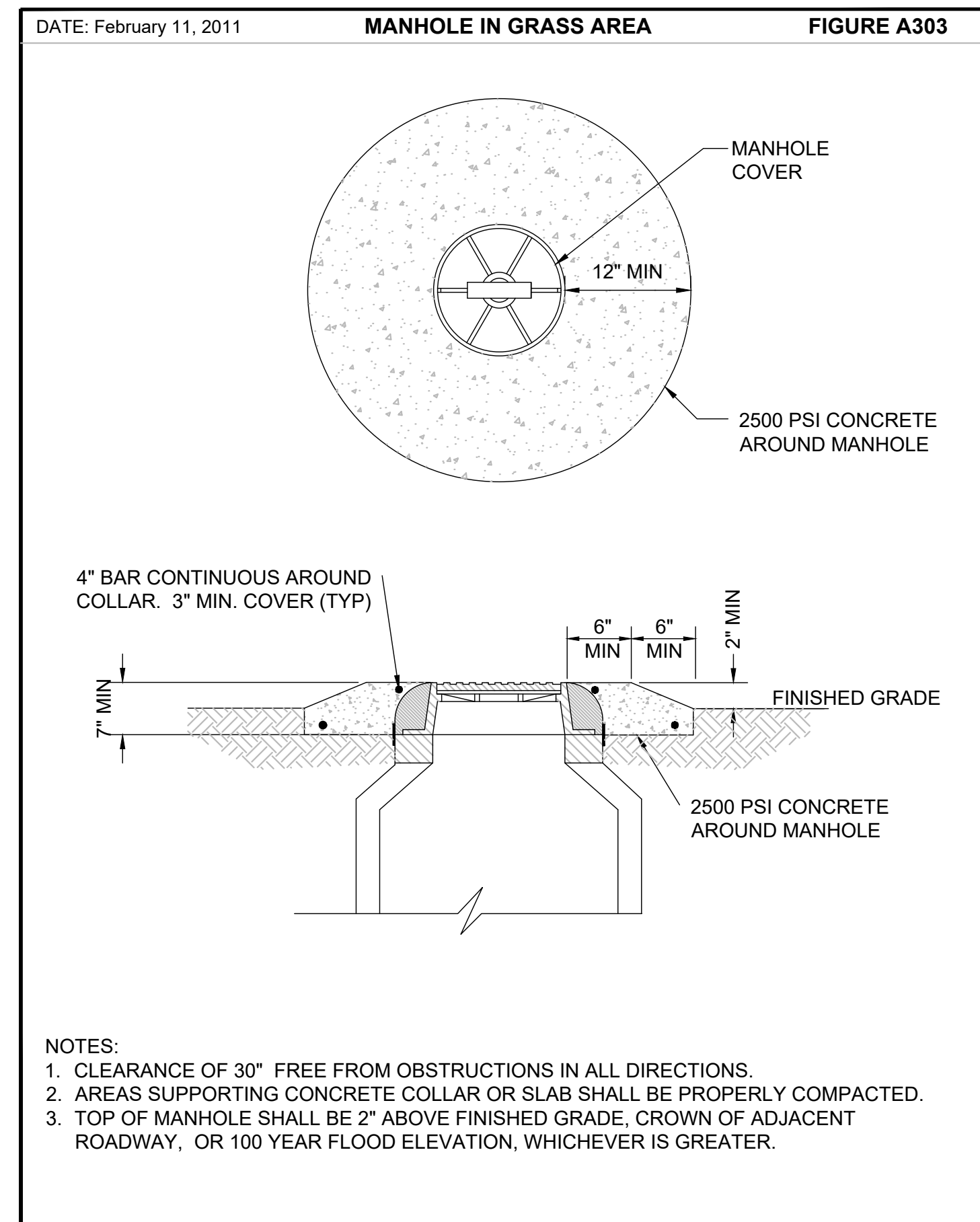
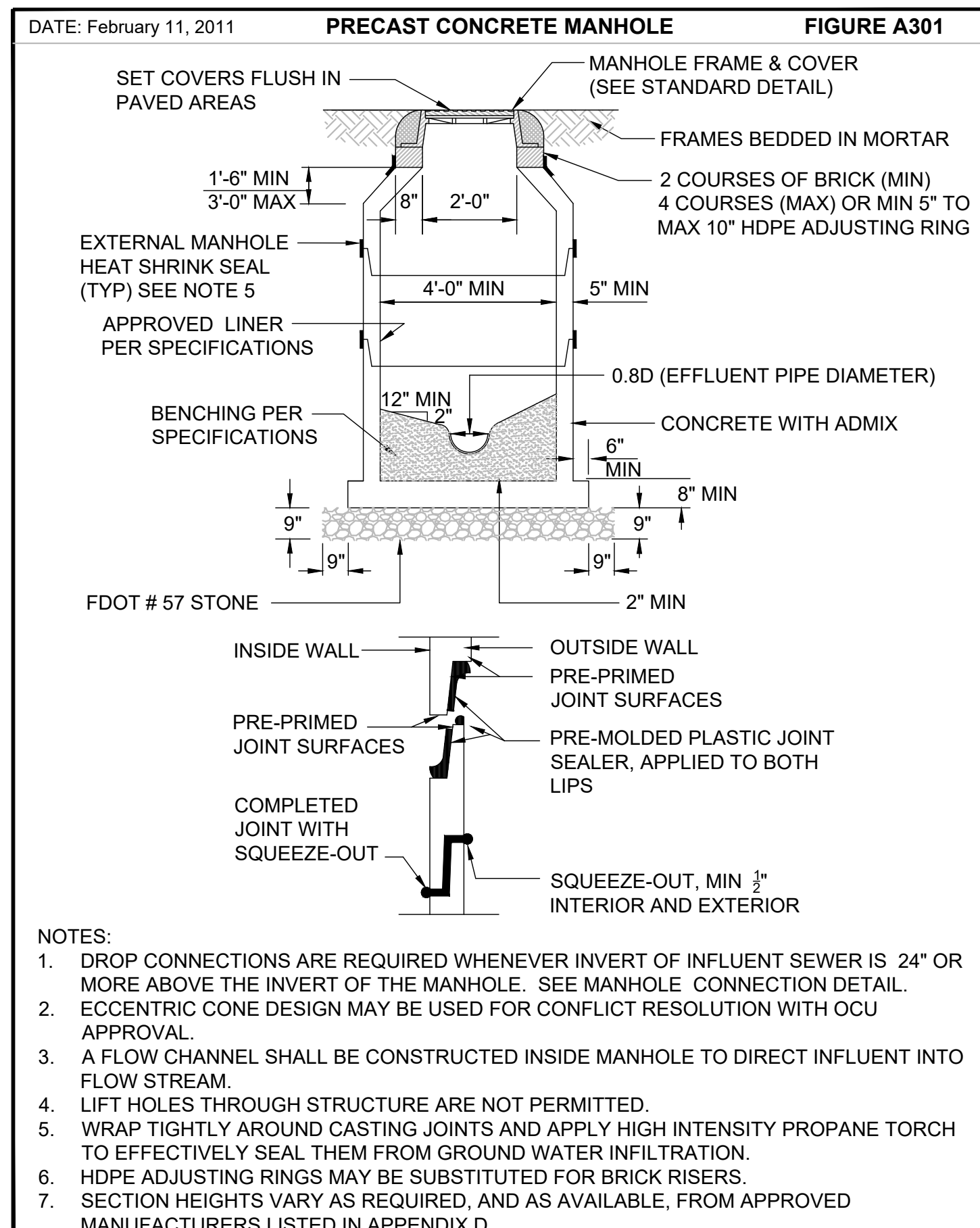
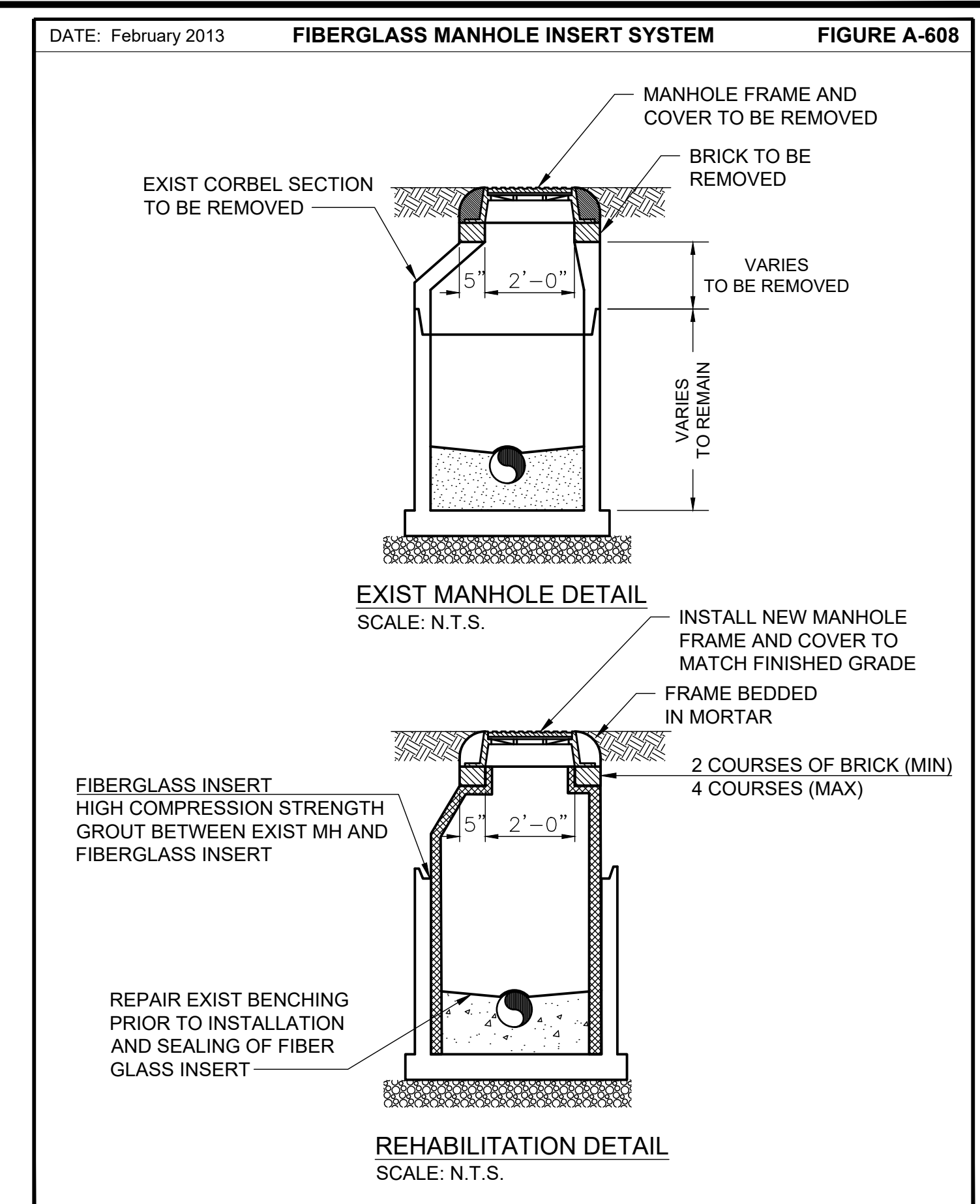
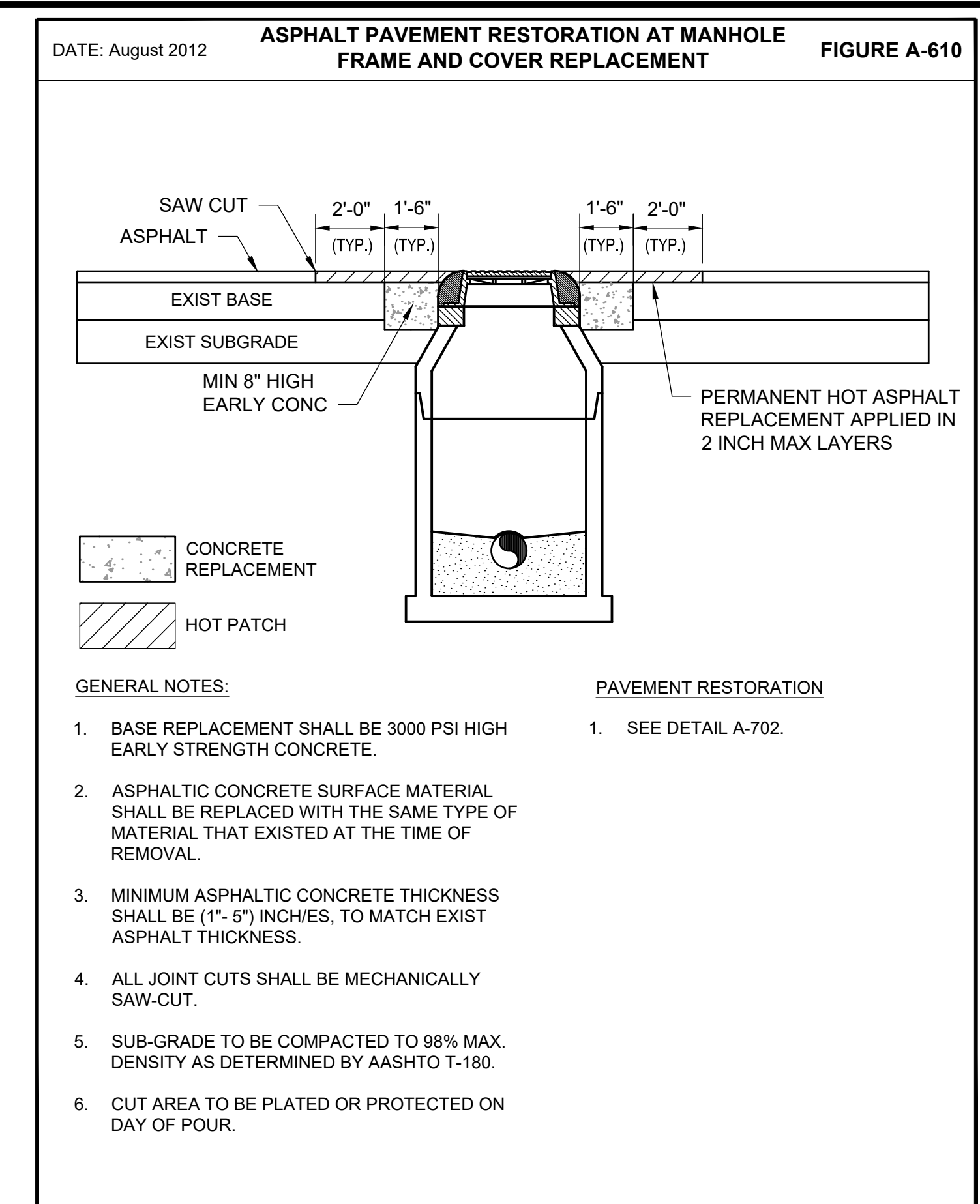
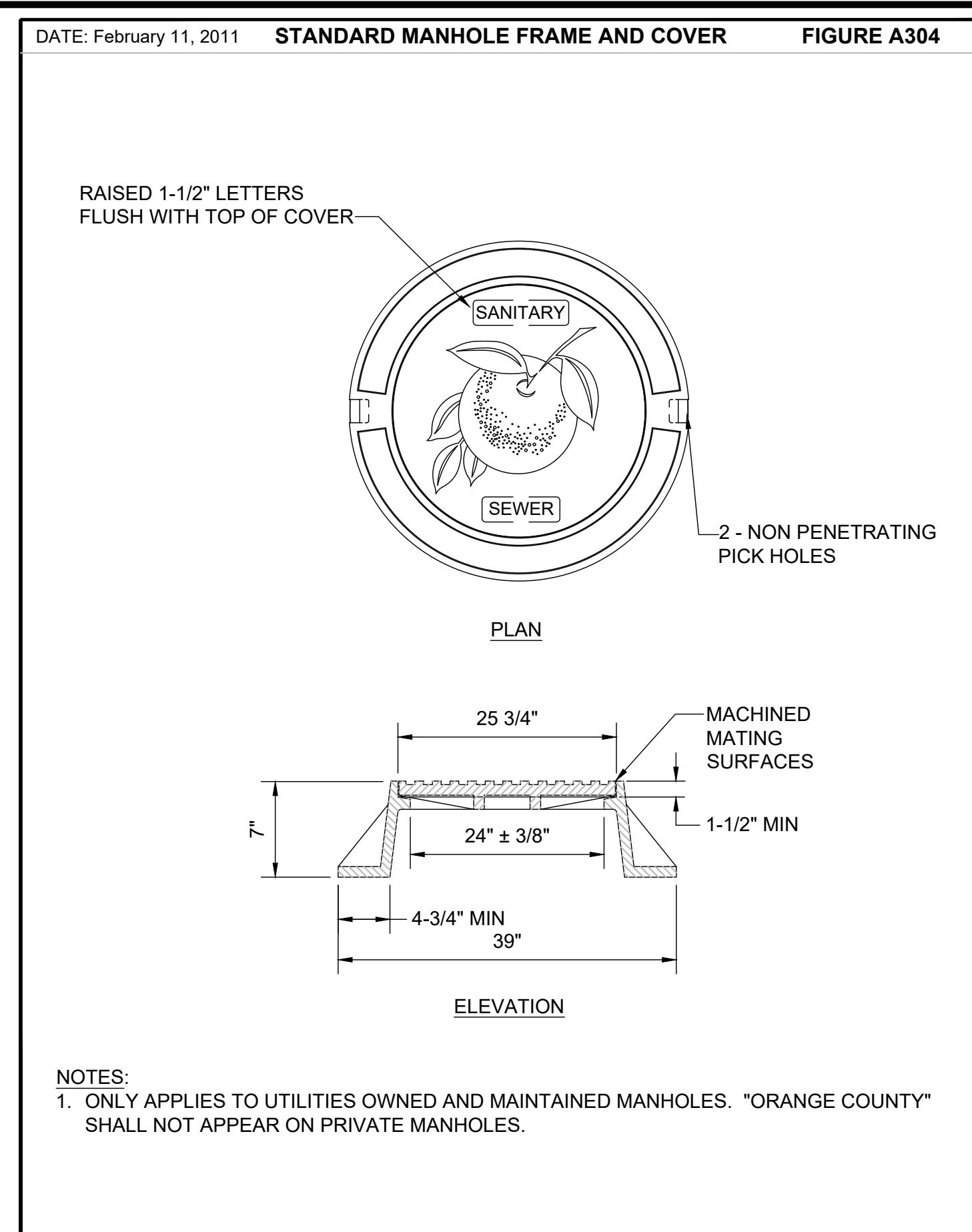
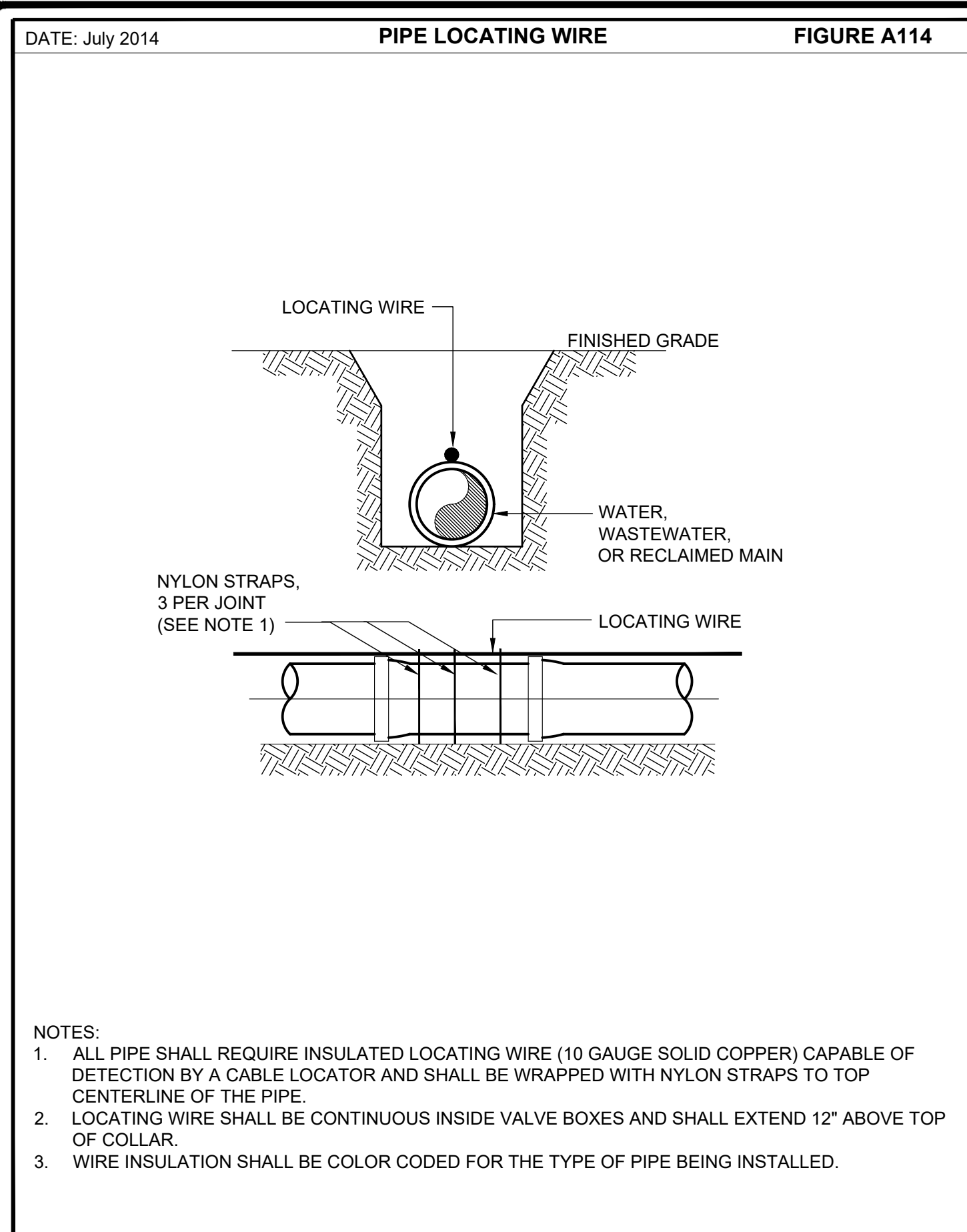
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 9150 CURRY FORD ROAD
 ORLANDO, FLORIDA 32825

BFA Environmental Consultants
 Barnes, Ferland and Associates, Inc.
 1230 E. Hillcrest Street, Orlando, FL, 32803
 P.O. Box 14077, Orlando, FL 32816
 ENGINEERING BUSINESS No. 6899

PUMP STATION R/R PACKAGE 10 IMPROVEMENTS

CONSTRUCTION DETAILS

DESIGN ENGINEER GEOFFREY J. HENNESSY, P.E.	PROJECT No.: 2014-28-02 PROJECT DATE: JUNE 2017	DRAWING No. D-100
DESIGNED BY: RGB	DRAWN BY: JAB	SHEET 19 OF 34
FLORIDA REGISTRATION No. 58637	CHECKED BY: GJH	DRAWING FILE: SEE MARGIN



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Tel: (407) 896-8828 Fax: (407) 896-1822
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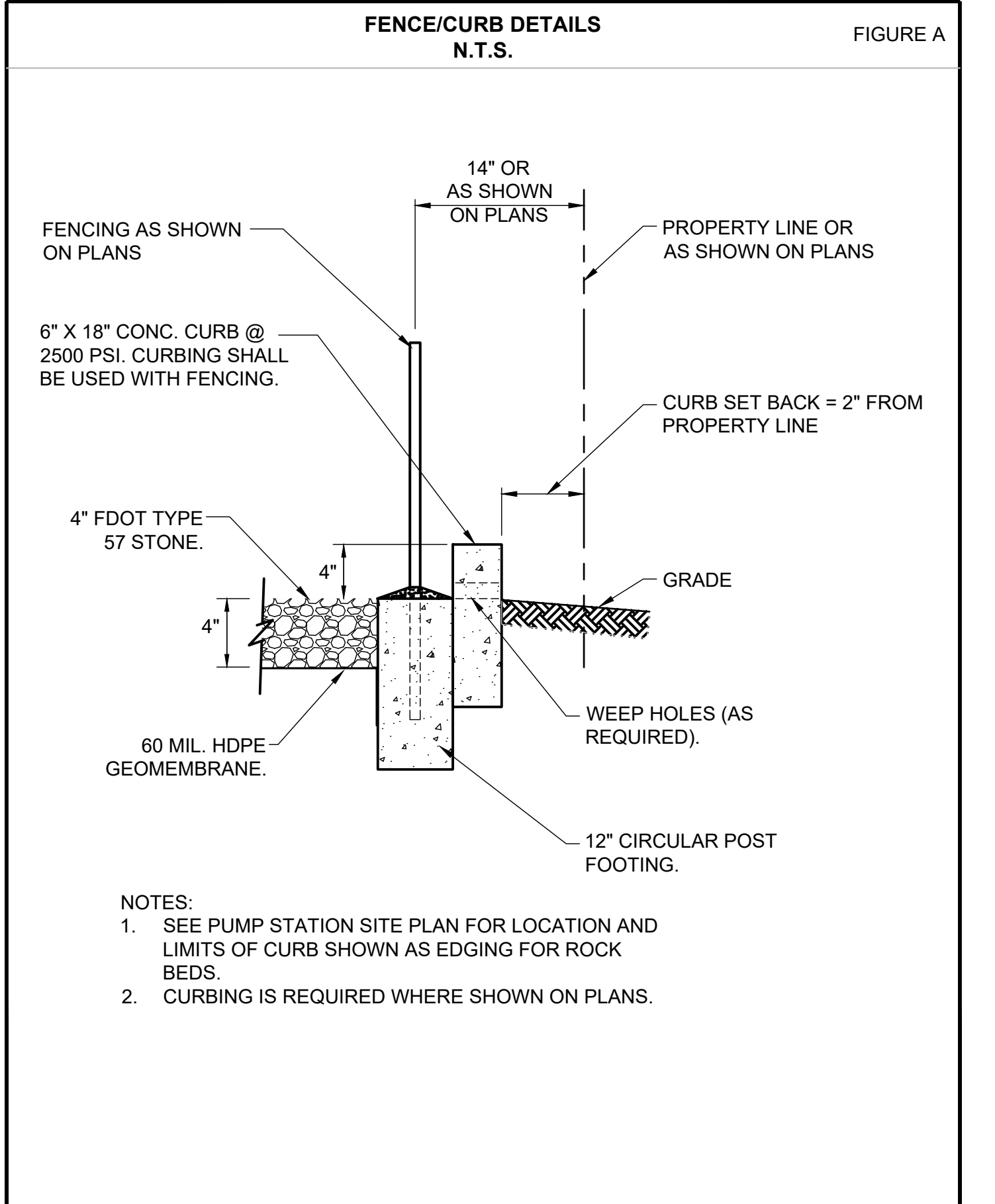
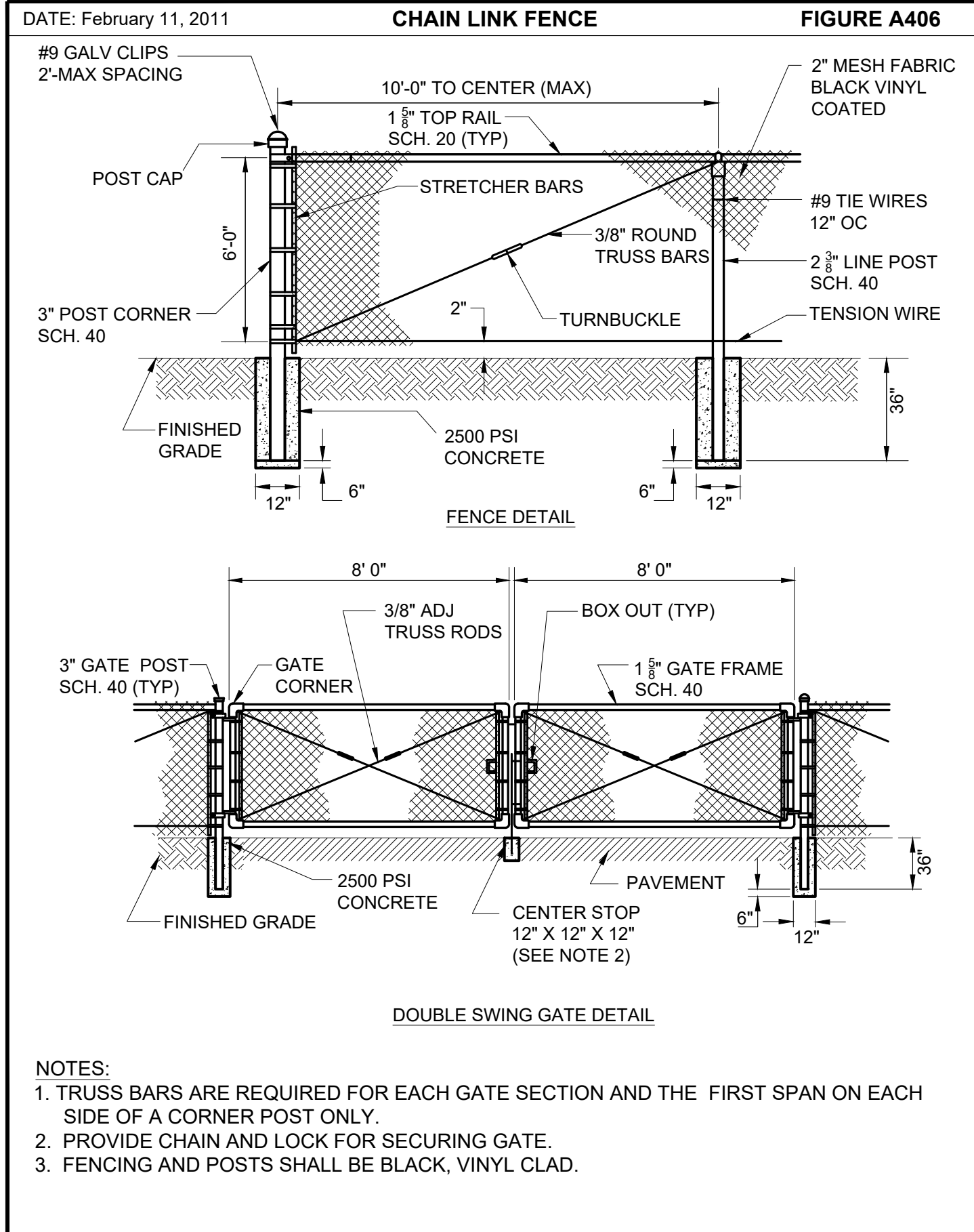
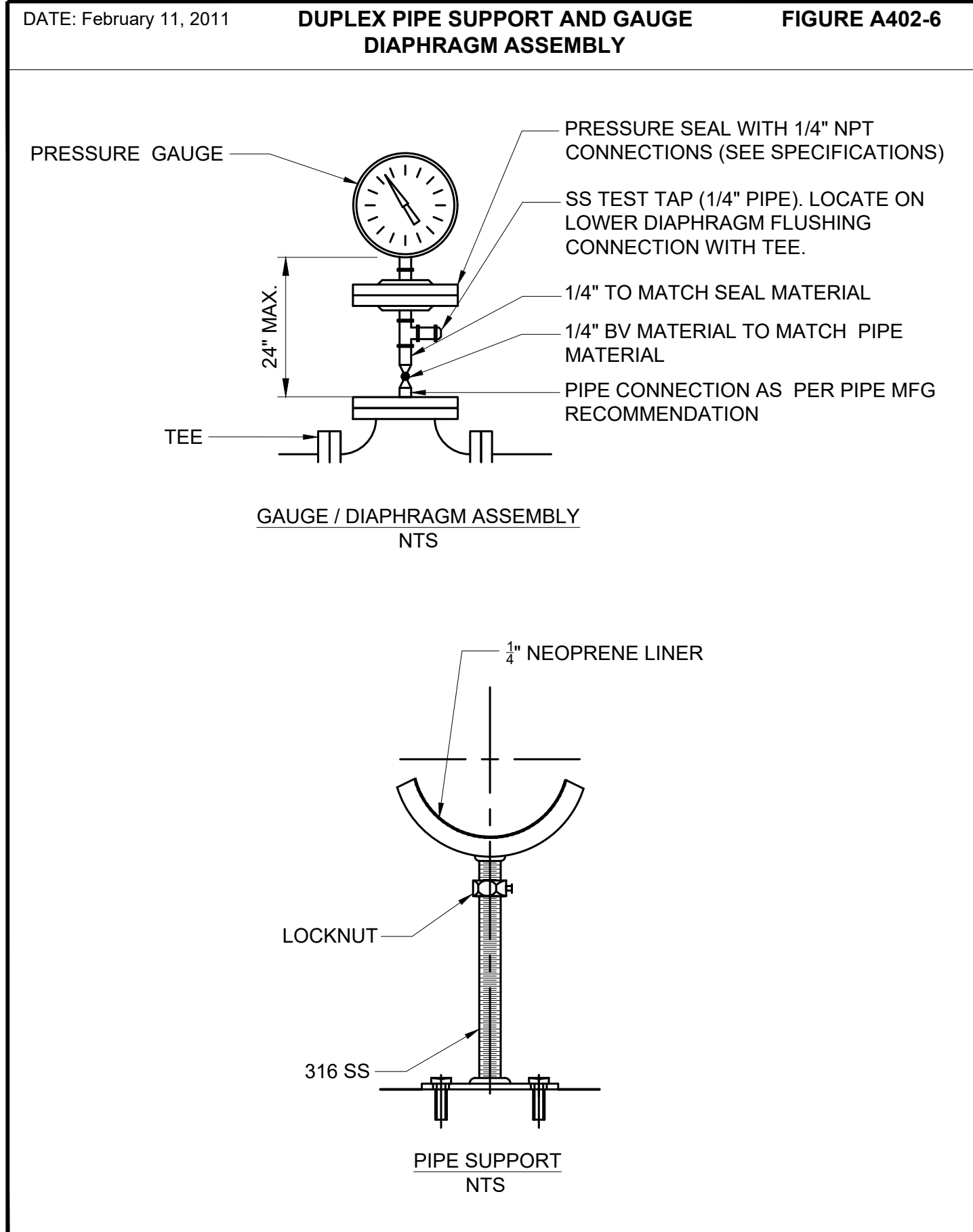
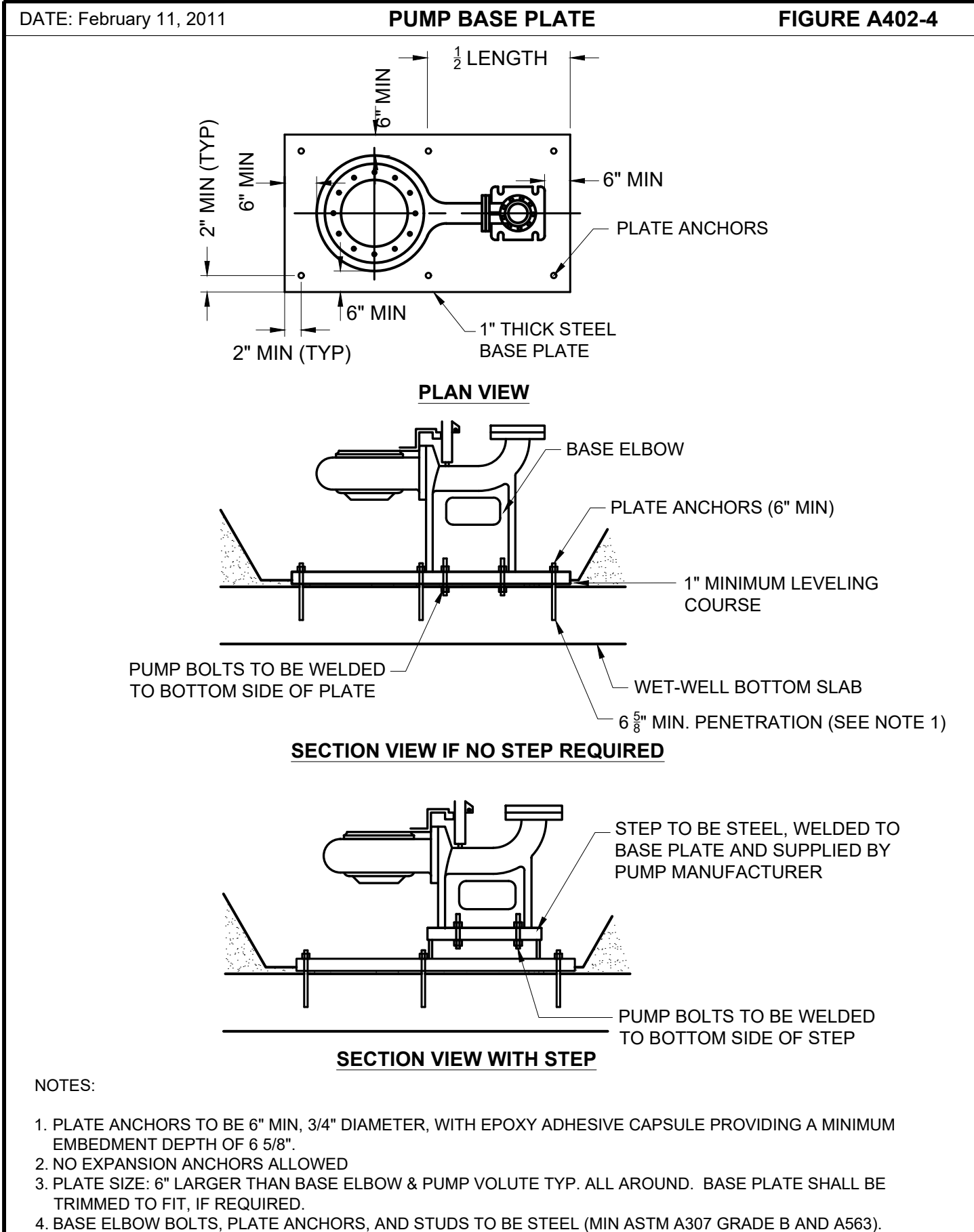
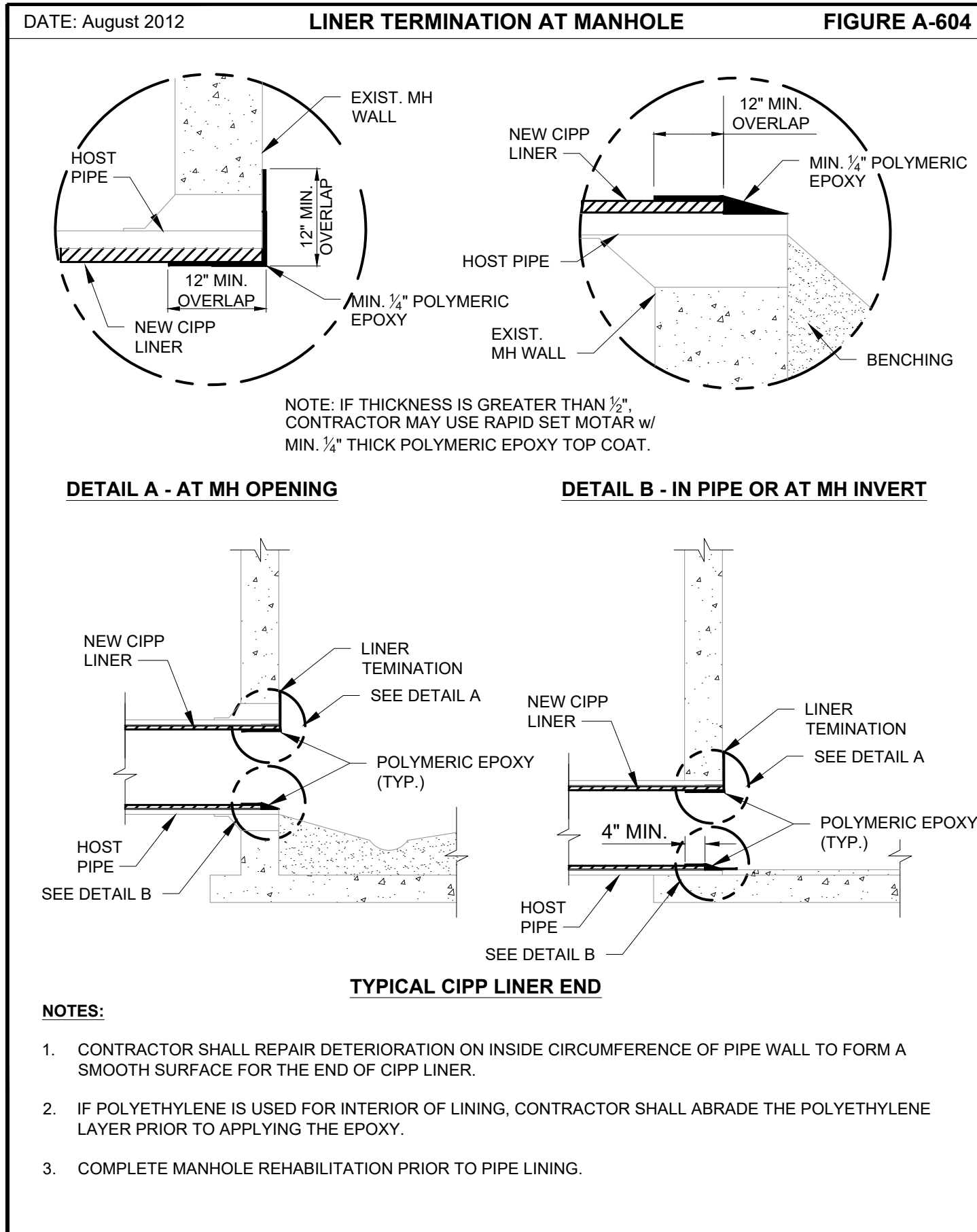
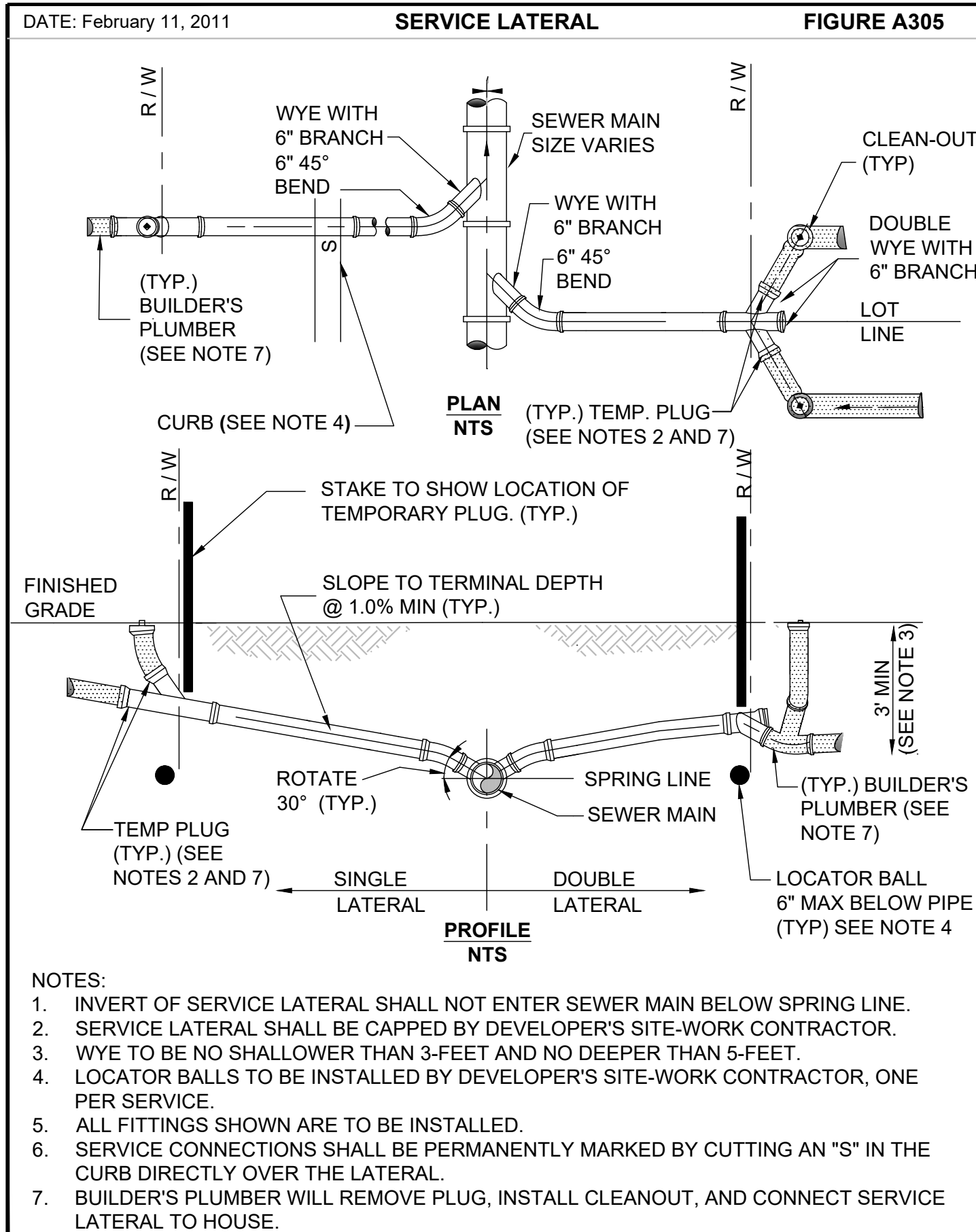
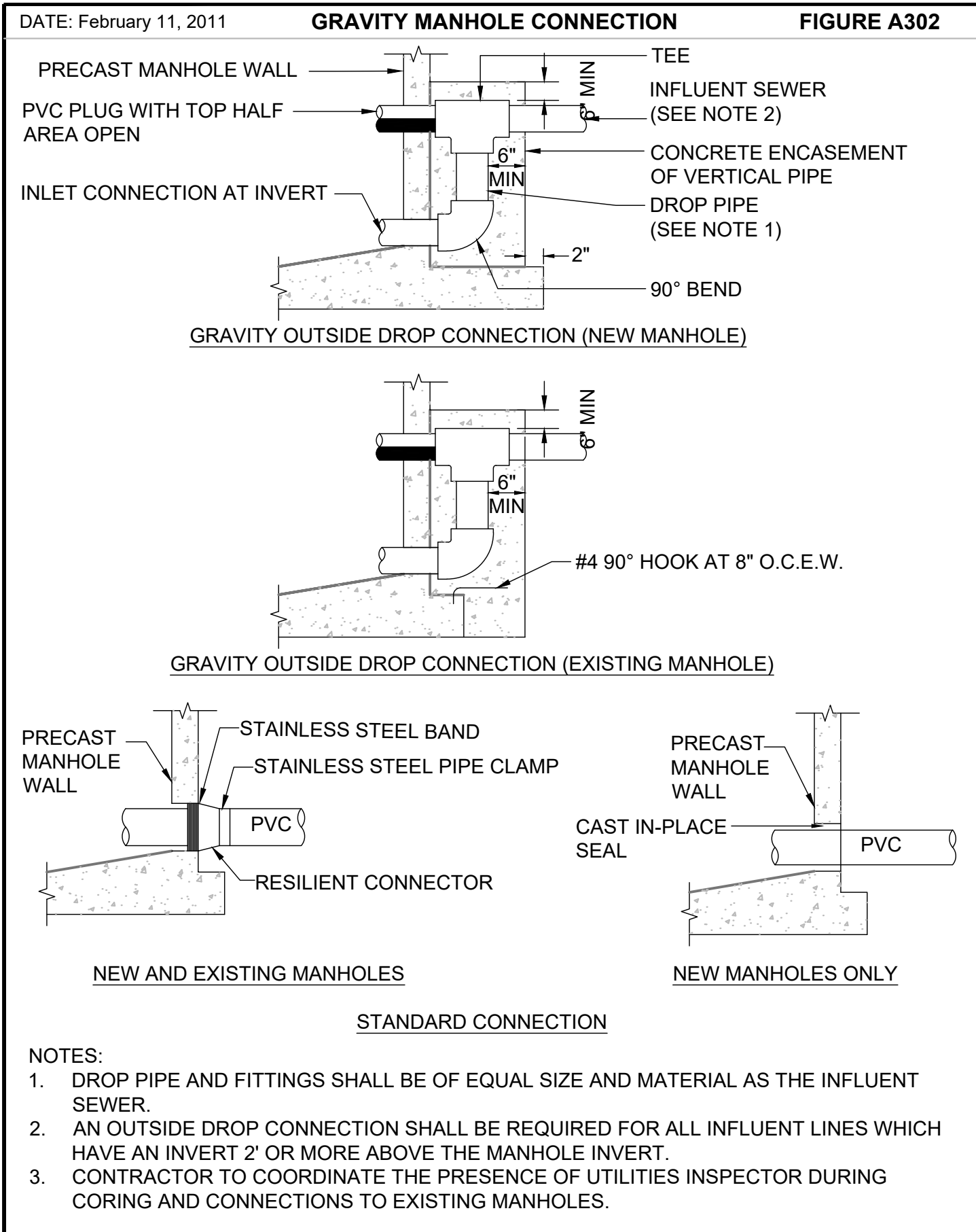
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SHEET 20 OF 34



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1230 E. Hillcrest Street, Orlando, FL, 32803
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ENGINEERING BUSINESS No. 6899

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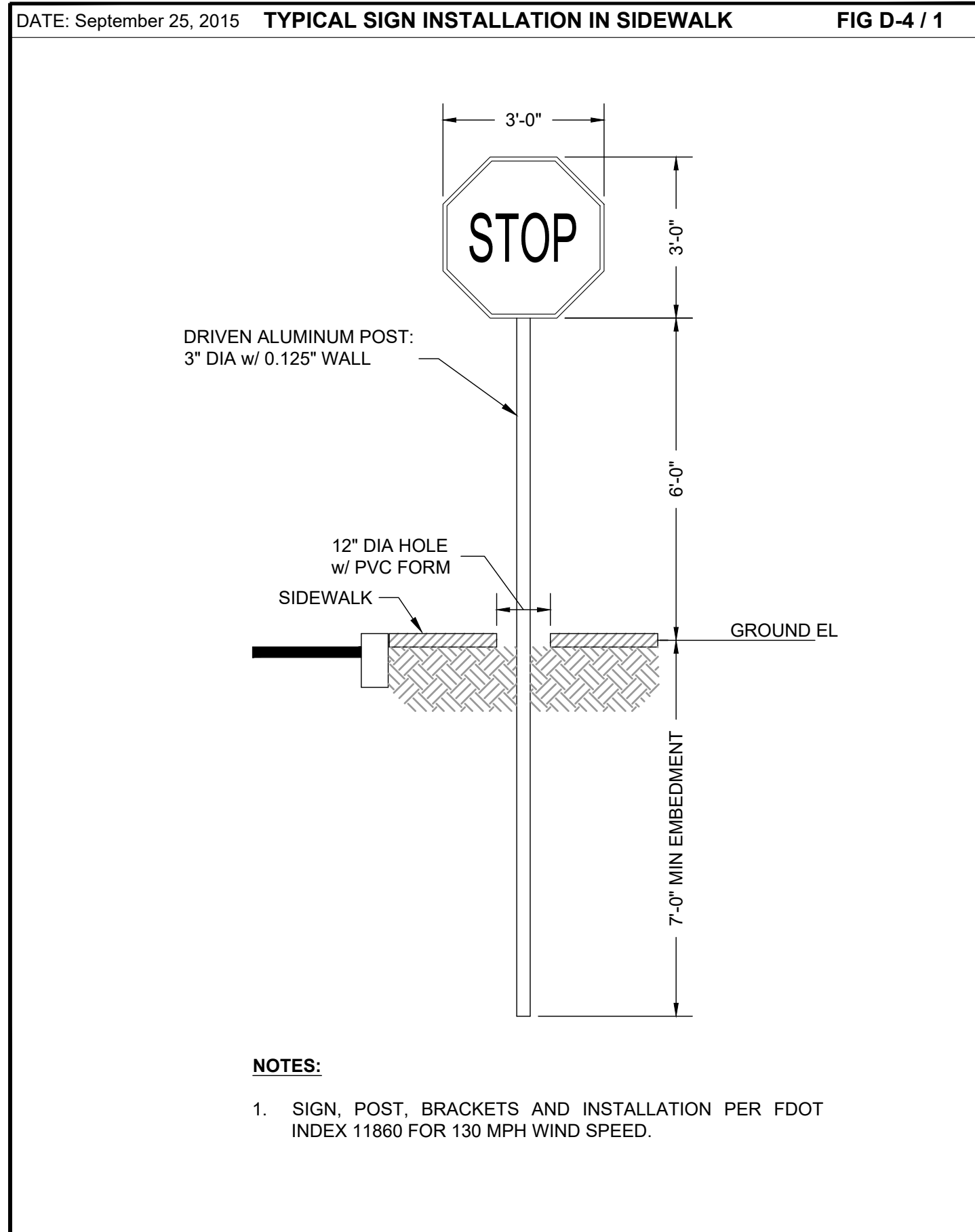
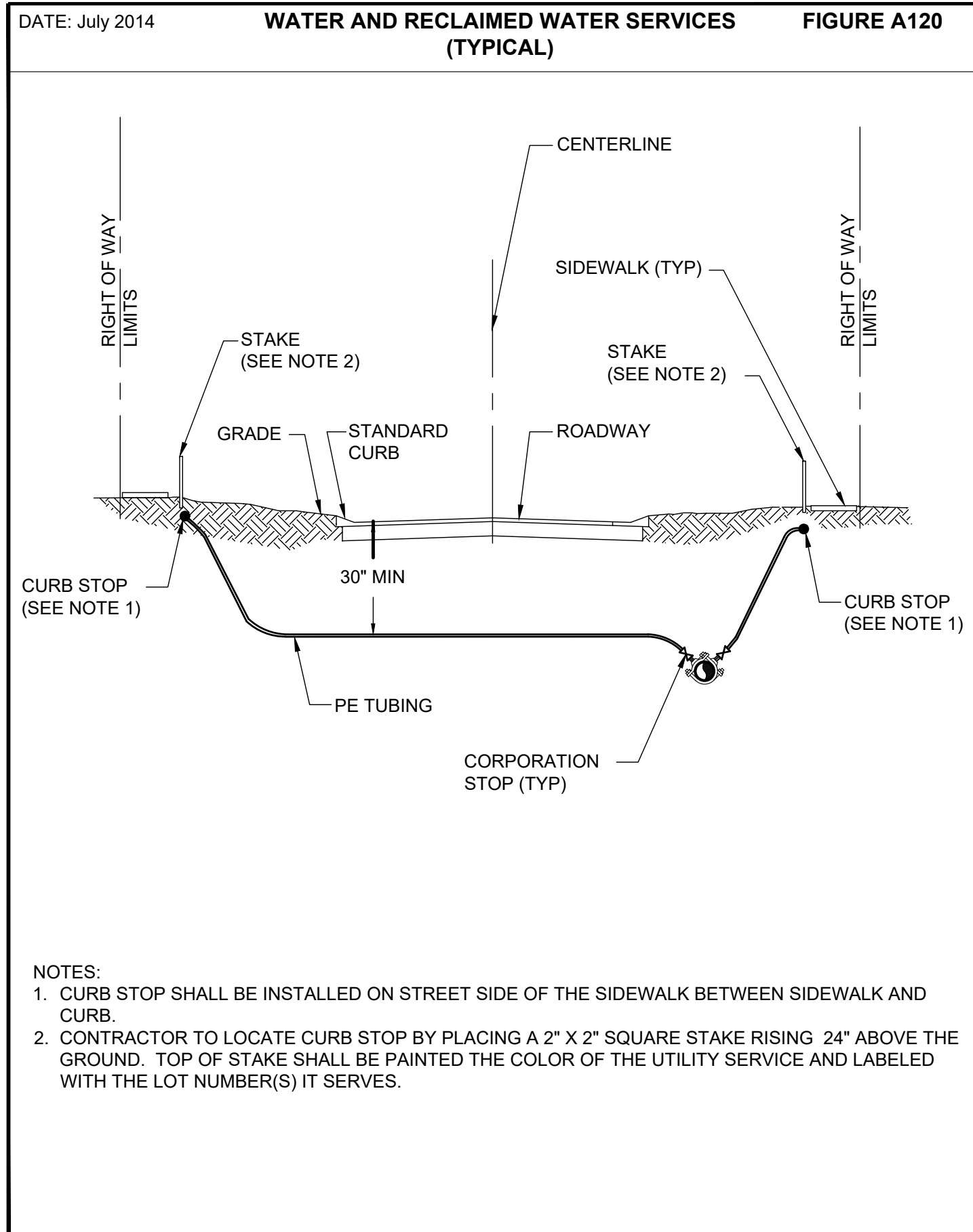
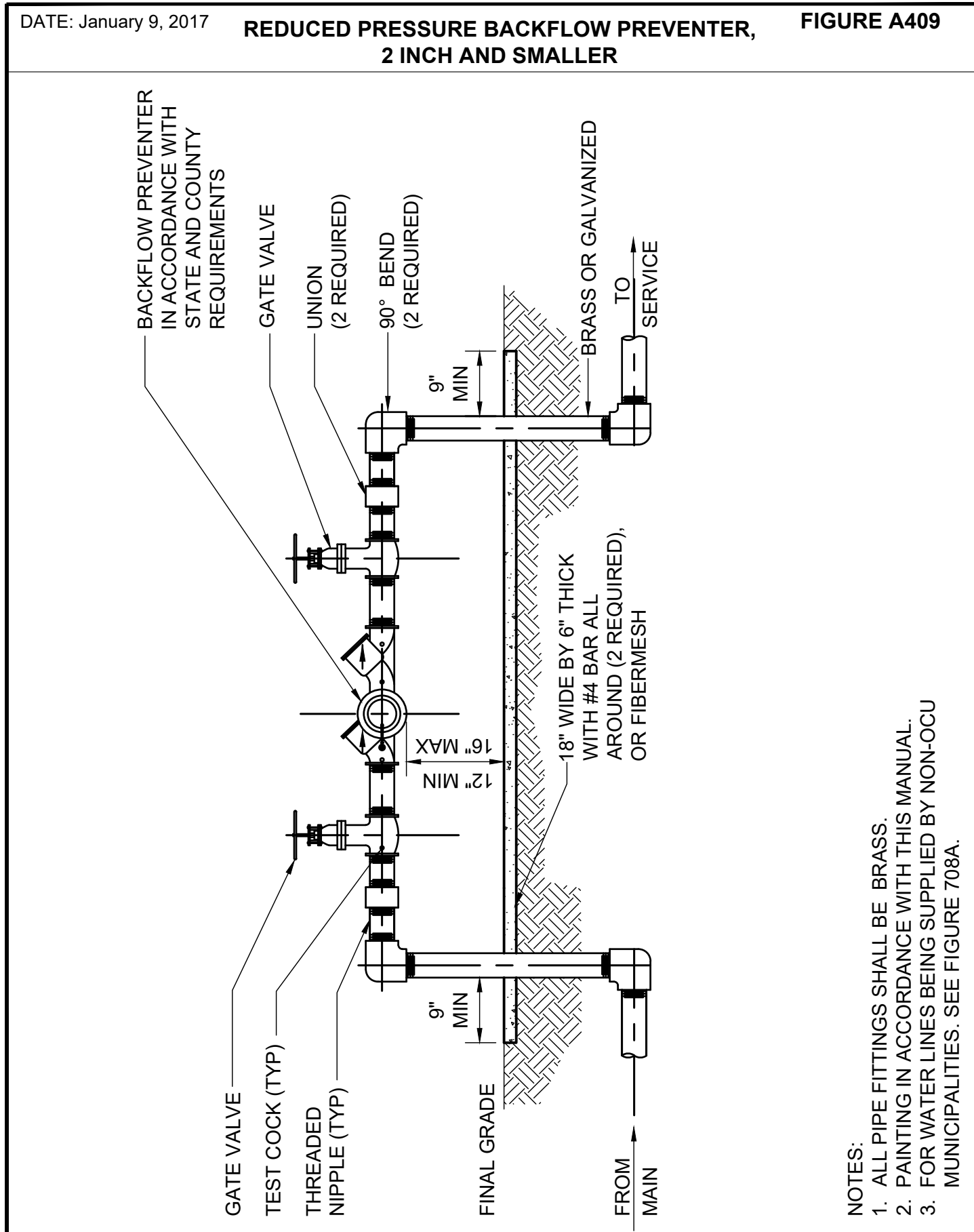
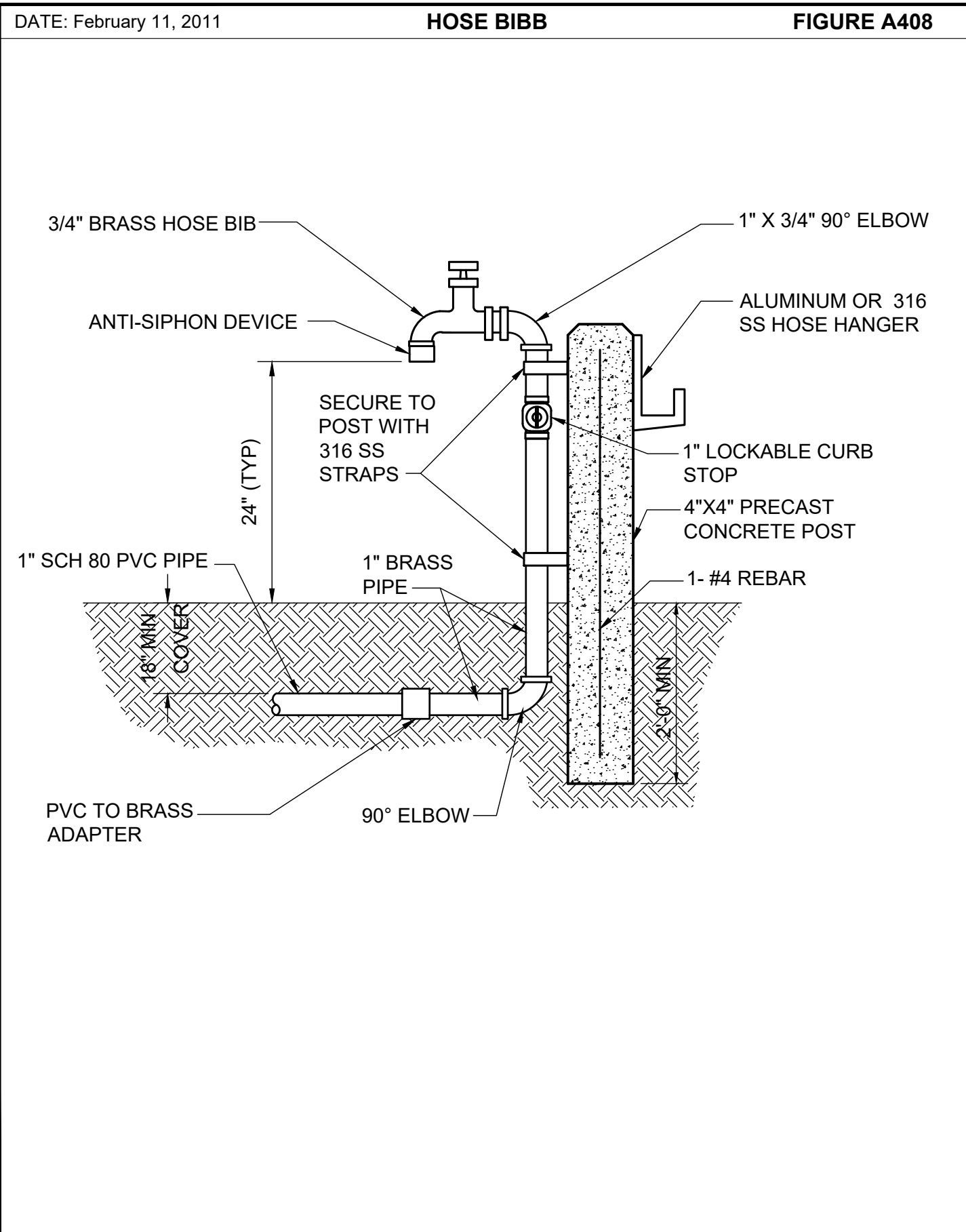
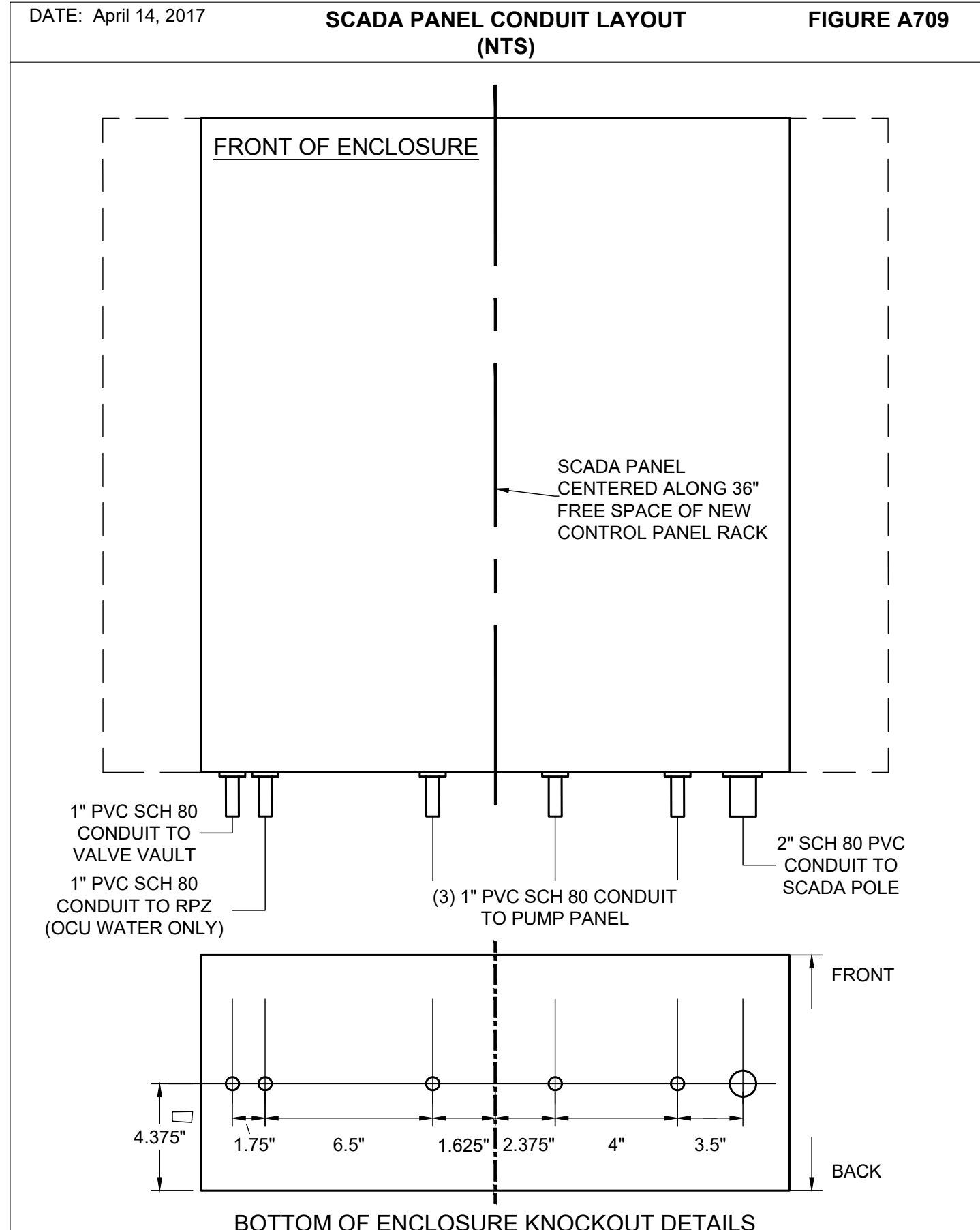
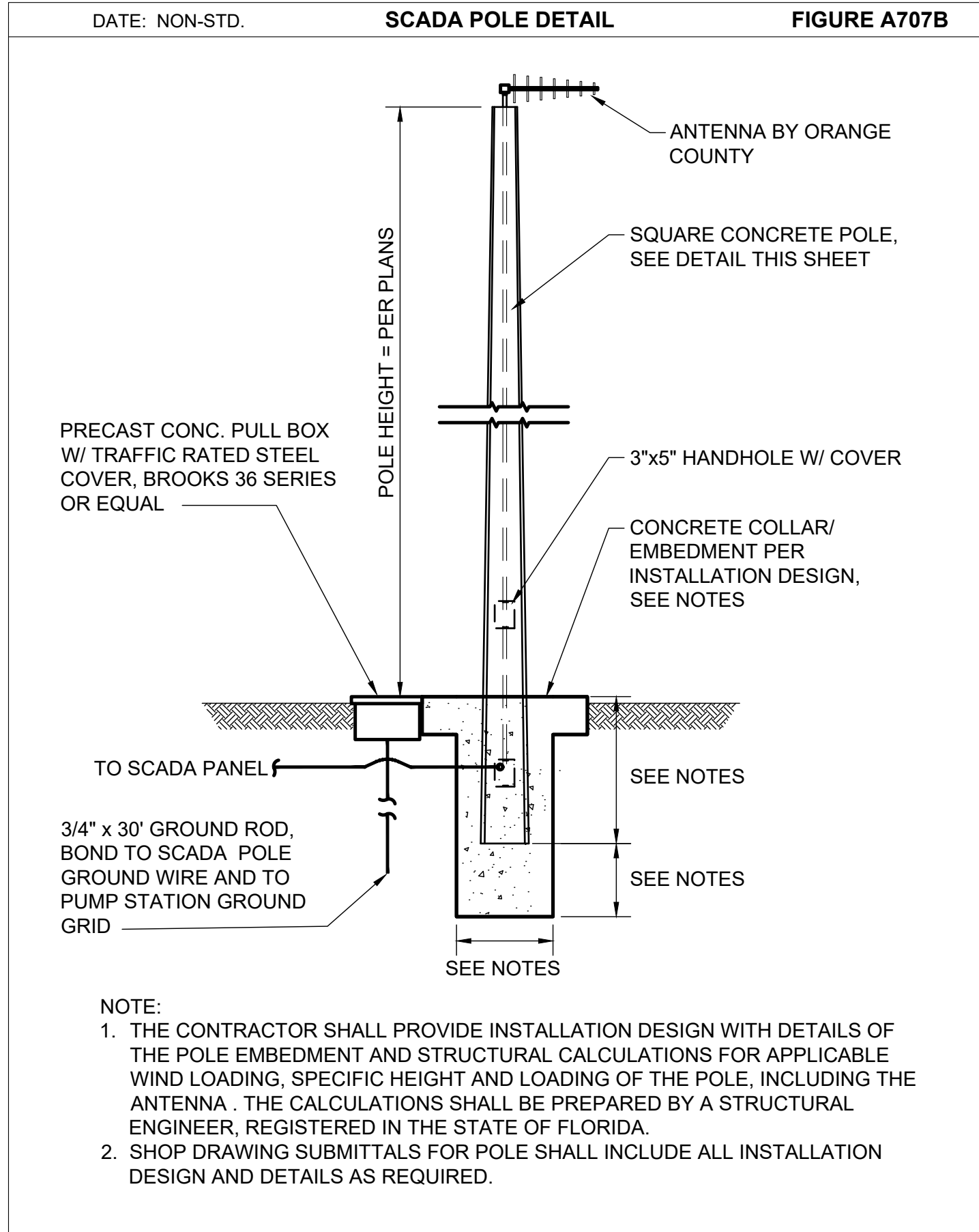
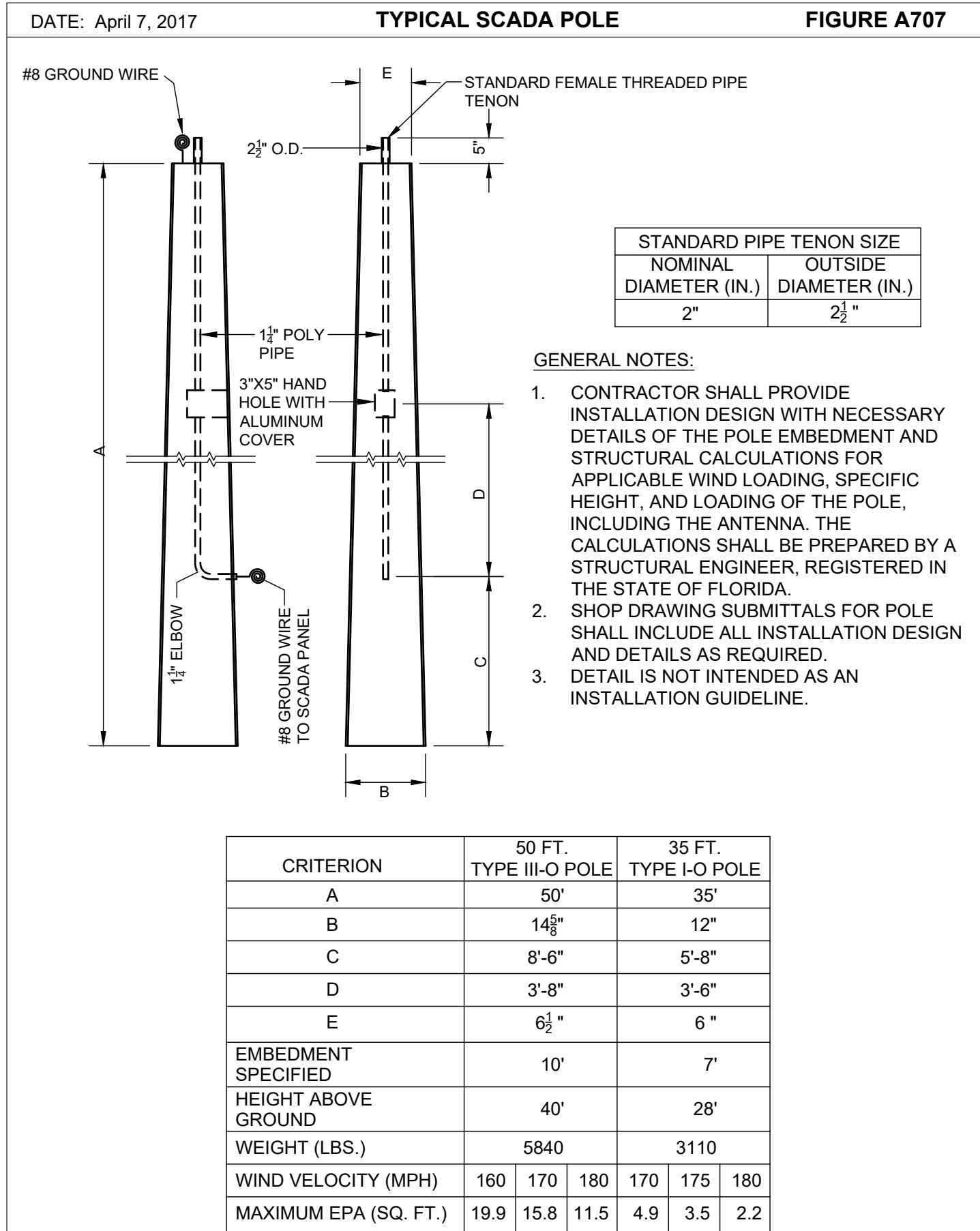
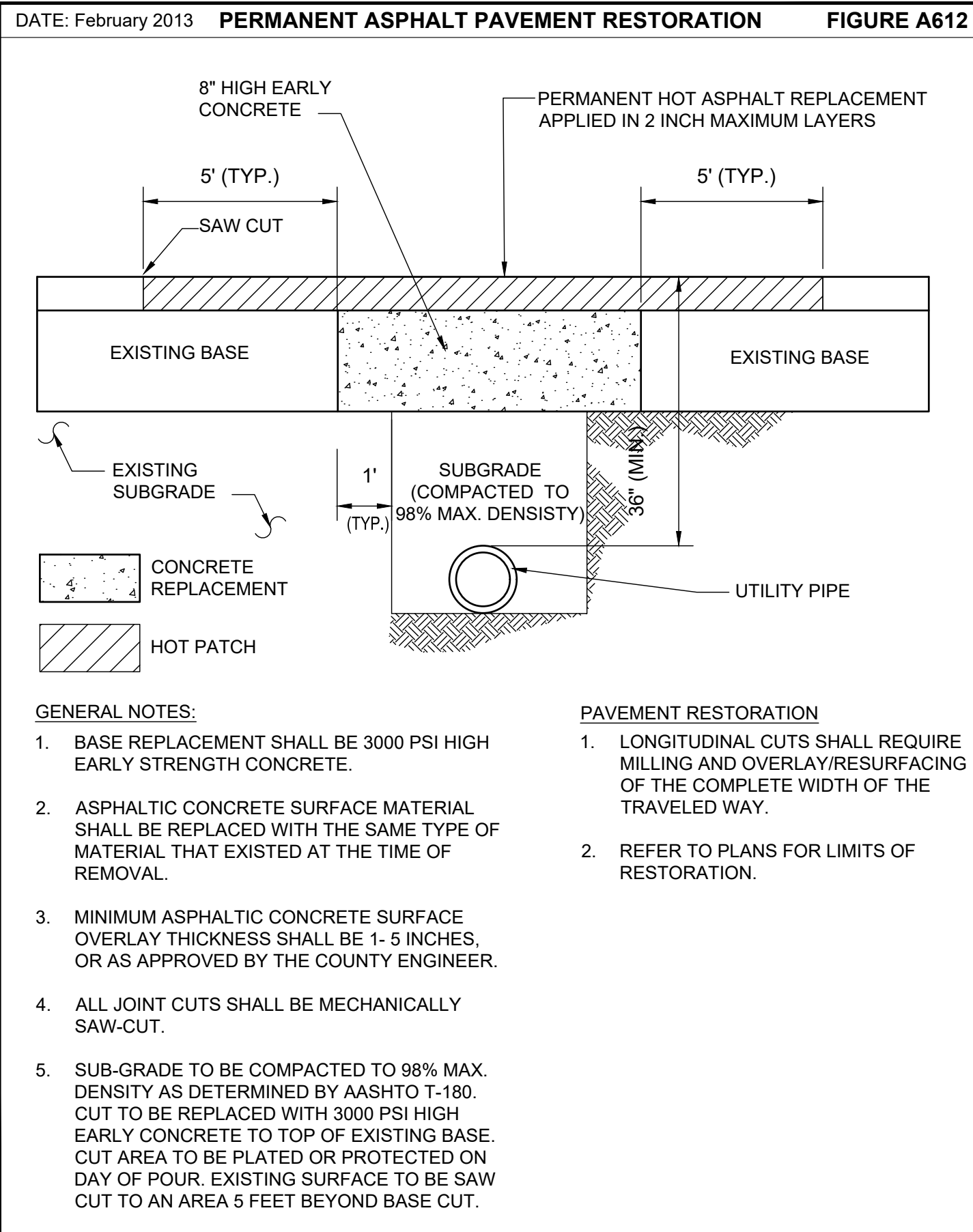
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DRAWING No. **D-102**
SHEET 21 OF 34



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 Barnes, Ferland and Associates, Inc.
 1230 E. Hillcrest Street, Orlando, FL, 32803
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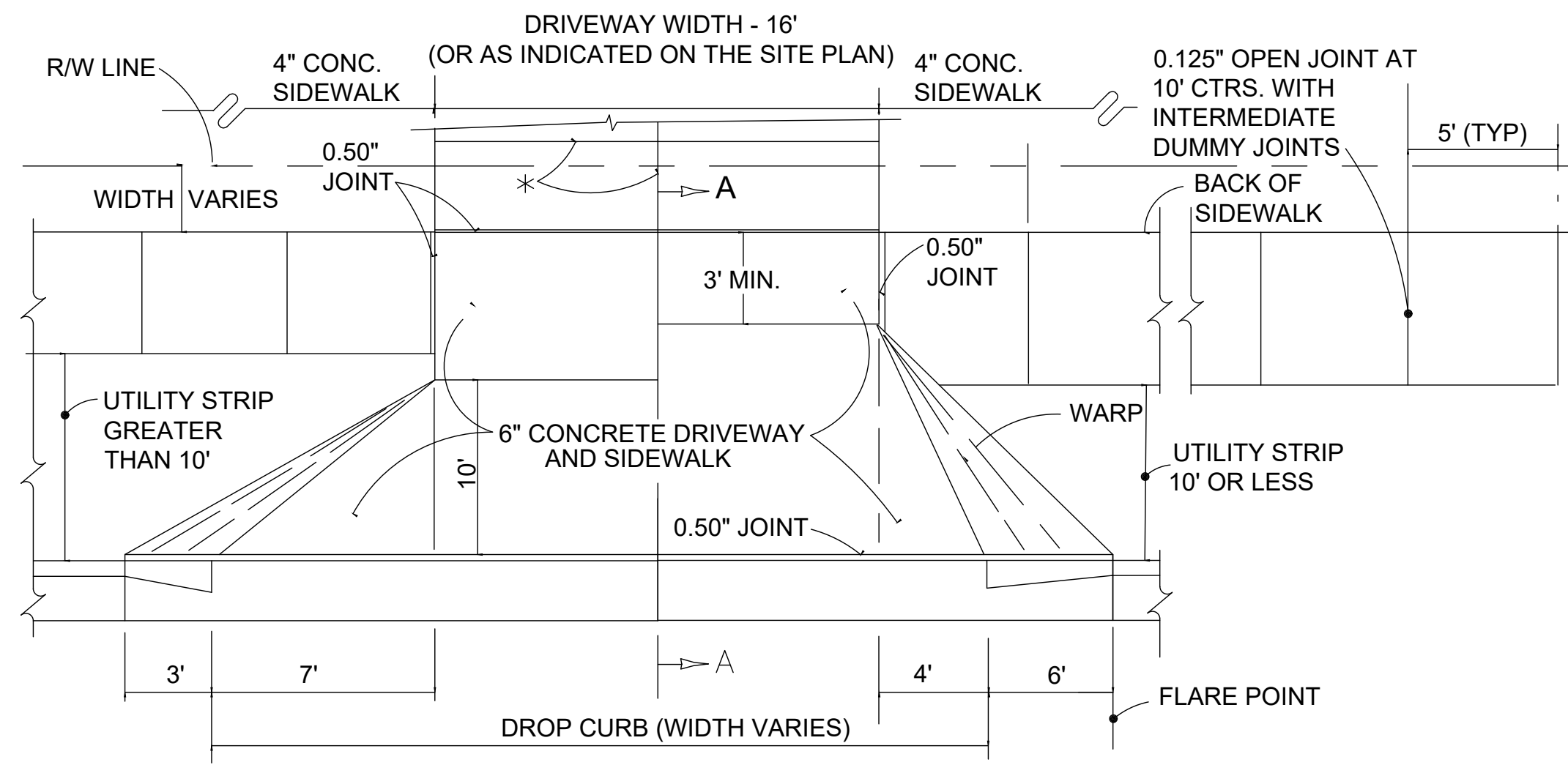
CONSTRUCTION DETAILS

DESIGN ENGINEER
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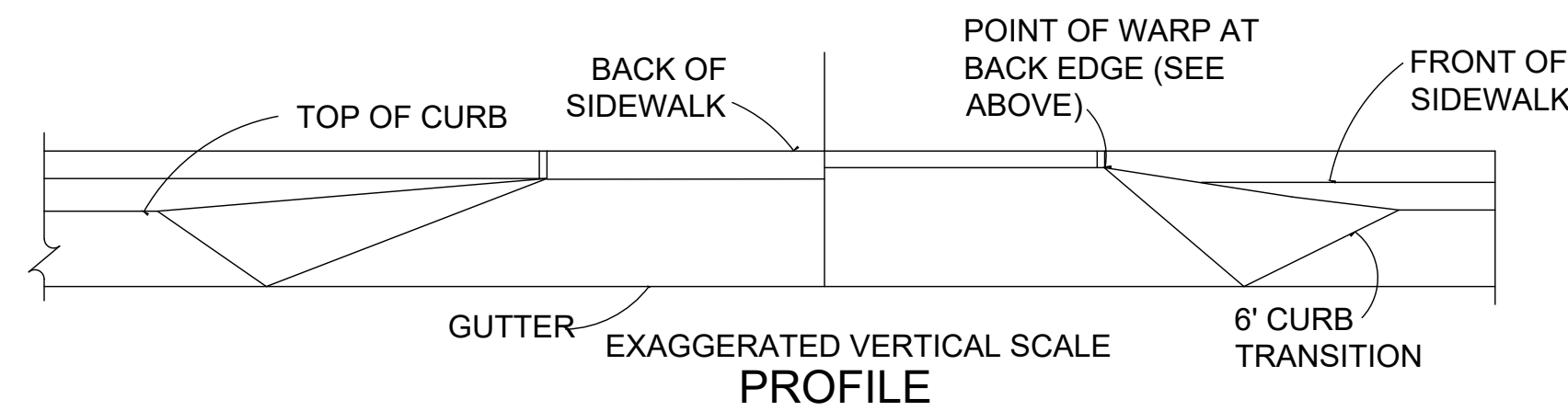
PROJECT No.: 2014-28-02
 PROJECT DATE: JUNE 2017
 DESIGNED BY: RGB
 DRAWN BY: JAB
 CHECKED BY: GJH
 DRAWING FILE: SEE MARGIN

FLORIDA REGISTRATION No. 58637

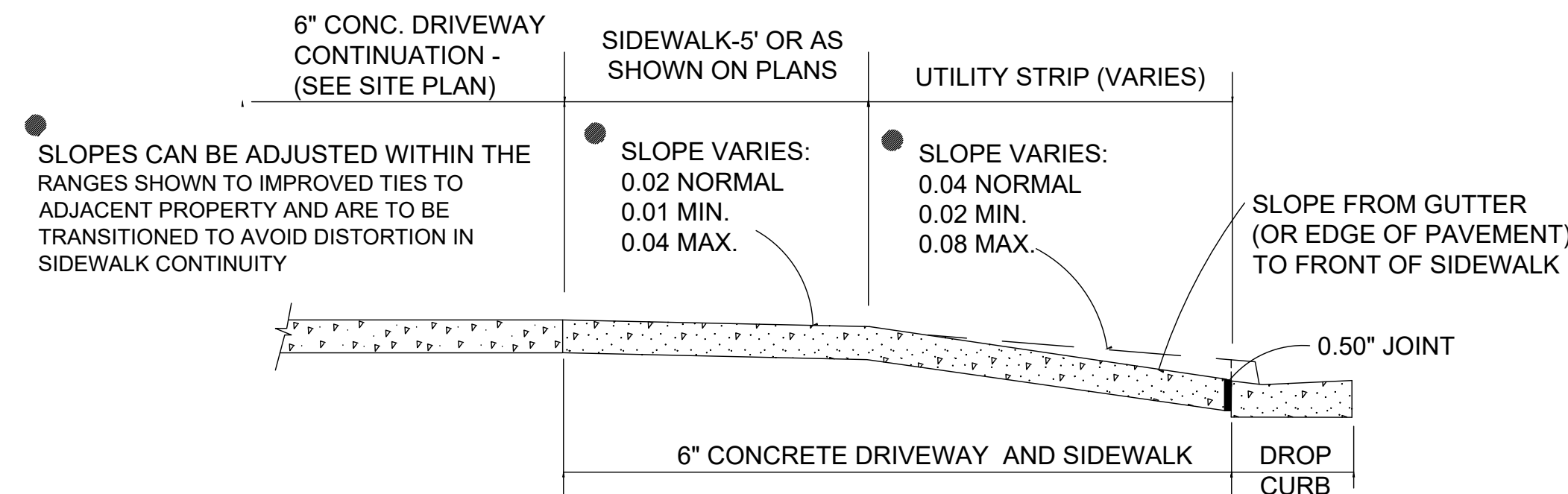
DRAWING No. **D-103**
 SHEET 22 OF 34



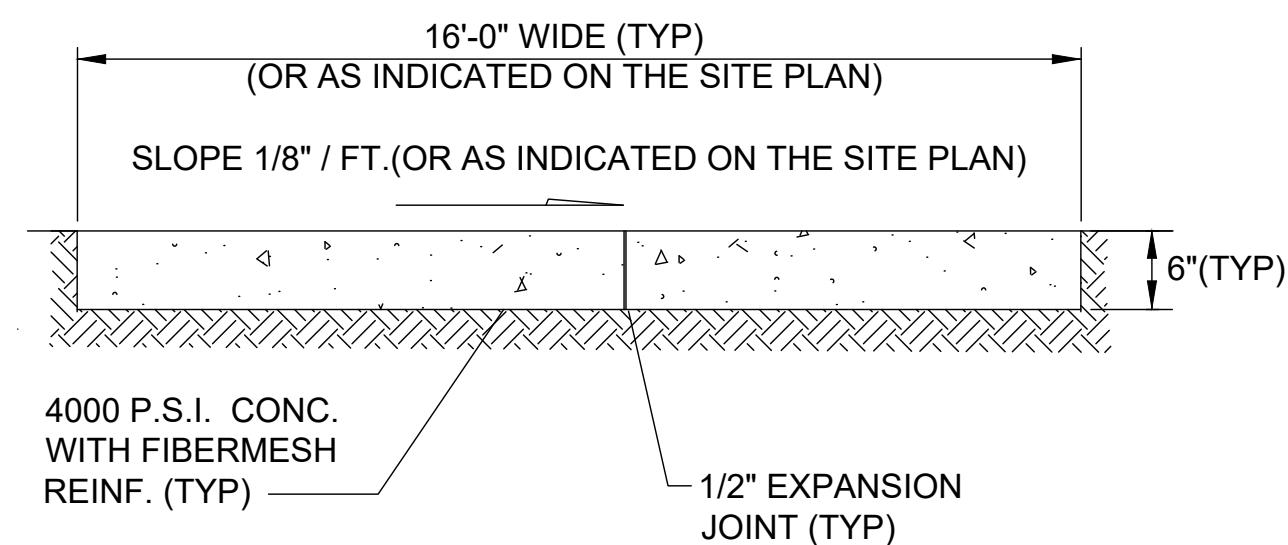
PLAN



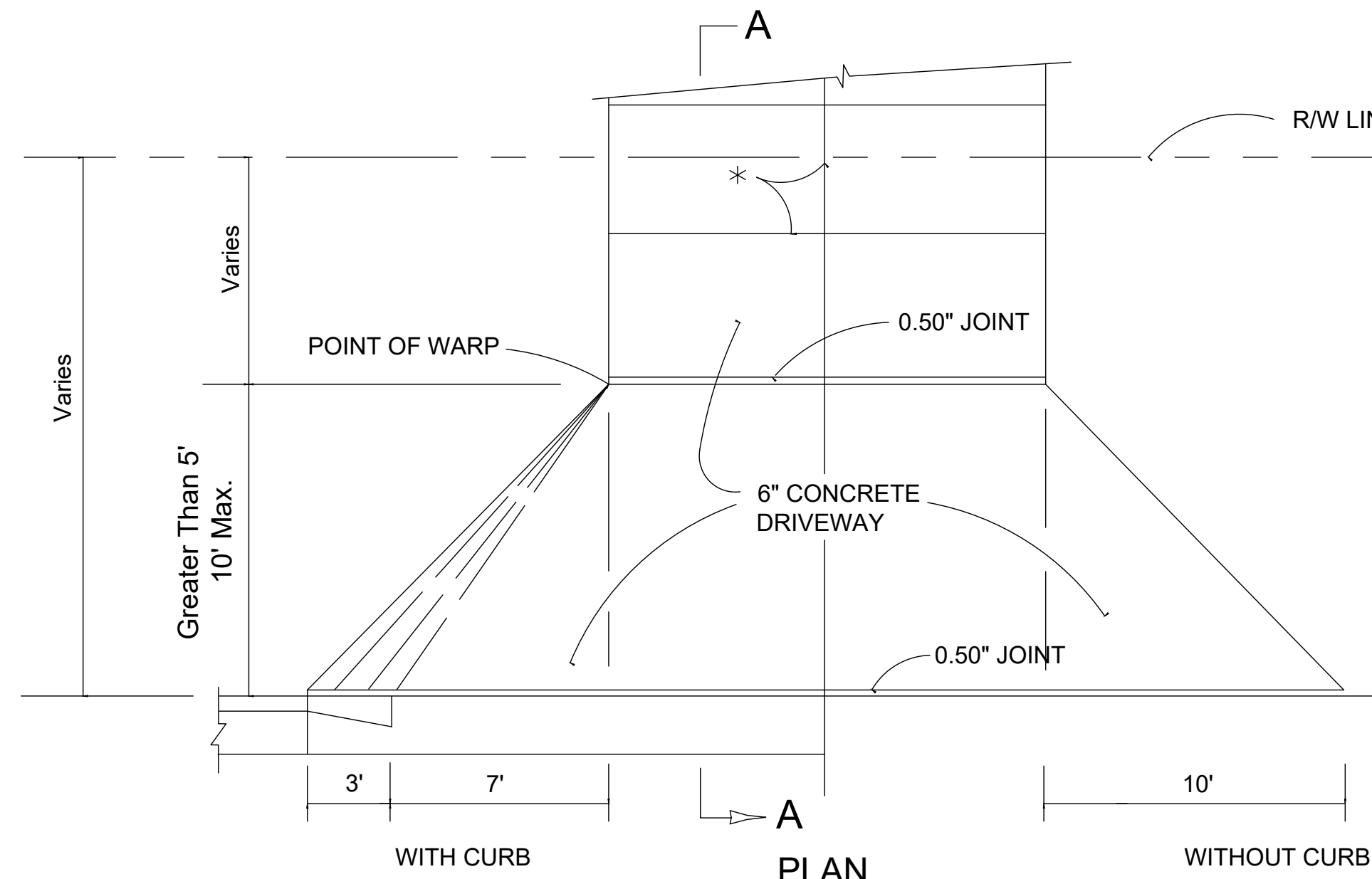
PROFILE



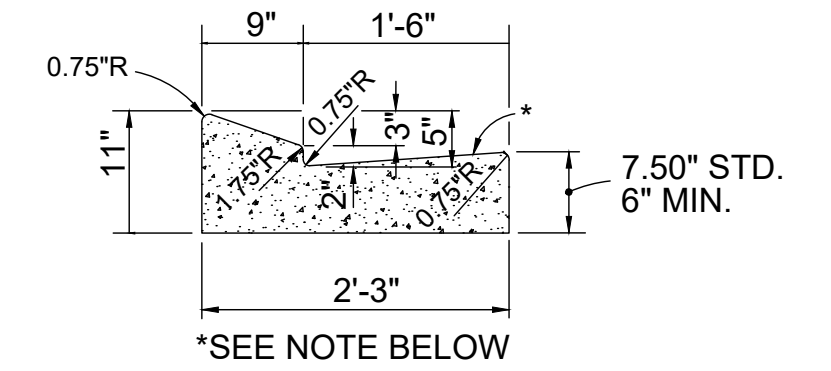
SECTIONAL VIEW A-A
(ALONG C/L OF DRIVEWAY)



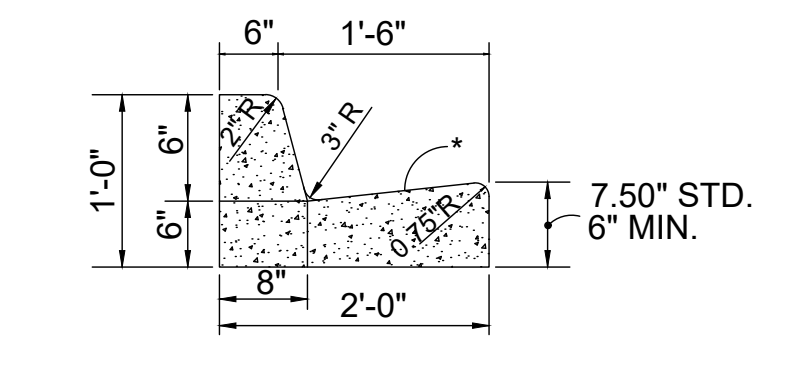
CONCRETE DRIVEWAY
CROSS SECTION



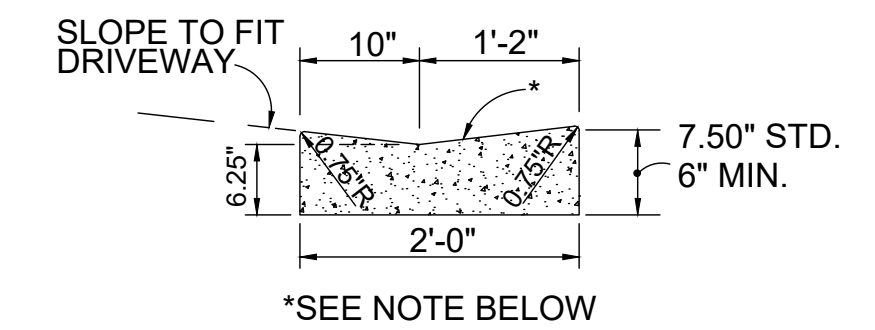
PLAN
WITHOUT SIDEWALK



TYPE E



TYPE F

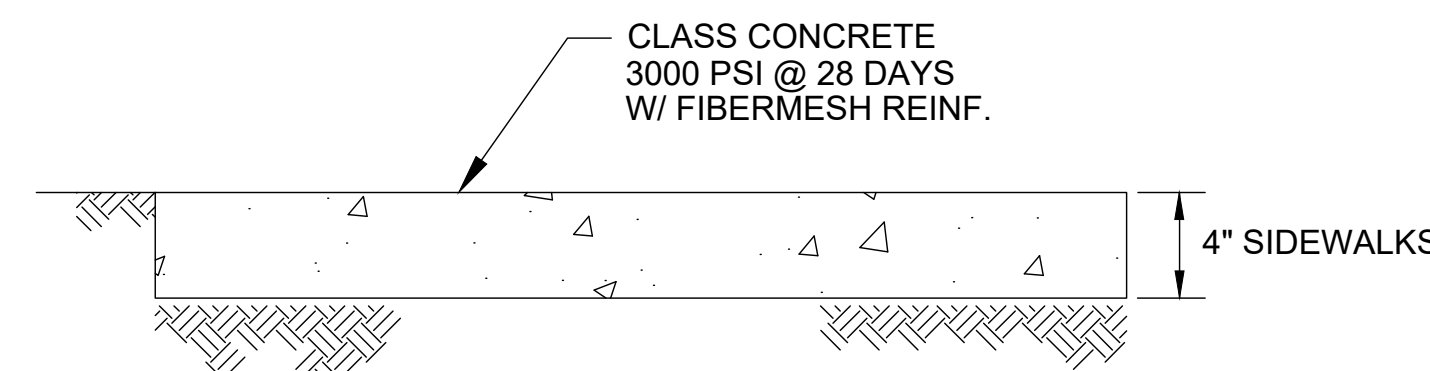


DROP CURB

NOTES

1. CONCRETE DRIVEWAY, SIDEWALKS, PAVEMENT AND DROP CURB SHALL MEET THE MATERIAL REQUIREMENTS OF SECTION 02576 AND CONSTRUCTION REQUIREMENTS OF INDEX NO. 515, ROADWAY AND TRAFFIC DESIGN STANDARDS, STATE OF FLORIDA, DEPARTMENT OF TRANSPORTATION. CONCRETE SHALL BE REINFORCED WITH FIBERMESH REINFORCEMENT FIBERS, 2 TO 3 INCHES COLLATED POLYPROPYLENE, PER ASTM C94, TYPE III 4.13 AND APPLICABLE BUILDING CODES.
2. CONSTRUCT DRIVEWAY ON COMPACTED SUB GRADE COMPACTED TO 98 % MAX. DENSITY AS DETERMINED BY AASHTO T-180.
3. WHERE TURNOUTS ARE CONSTRUCTED WITHIN EXISTING CURB AND GUTTER, THE EXISTING CURB AND GUTTER SHALL BE REMOVED EITHER TO THE NEAREST JOINT BEYOND THE FLARE POINT OR TO THE EXTENT THAT NO REMAINING SECTION IS LESS THAN 5 FEET LONG.
4. REFER TO SITE PLANS FOR LIMITS OF CONCRETE DRIVEWAY. CONSTRUCTION OF CONCRETE WET WELL APRON AND/OR EQUIPMENT PADS SHALL BE IN ACCORDANCE WITH THE ABOVE DETAILS.
5. ALL 0.50" JOINTS SHALL BE CONSTRUCTED WITH PREFORMED JOINT FILLER. 0.50" JOINT FILLER SHALL BE PLACED IN JOINTS BETWEEN DRIVEWAY AND CONCRETE APRONS, WET WELLS, VALVE VAULTS, OR ANY OTHER CONCRETE STRUCTURE.
6. JOINTS IN CURB AND GUTTER ARE TO BE PLACED TO MATCH JOINTS IN DRIVEWAYS.
7. DRIVEWAYS SHALL BE OF A UNIFORM WIDTH FROM THE POINT OF WARP TO THE RIGHT OF WAY LINE.
8. WHERE NOTED (*) OPEN JOINTS ARE TO BE 0.125" WIDE AND PLACED AT 5' CTRS. IF REQUIRED, THE 5TH JOINT IS TO BE 0.50" WIDE.

*NOTE: WHEN USED ON HIGH SIDE OF ROADWAYS, THE CROSS SLOPE OF THE GUTTER SHALL MATCH THE CROSS SLOPE OF THE ADJACENT PAVEMENT. THE THICKNESS OF THE LIP SHALL BE 6", UNLESS OTHERWISE SHOWN ON PLANS.



NOTES:

1. SAW CUT ALL JOINTS IN EXIST. SIDEWALKS
2. MATCH EXIST. SIDEWALK WIDTH
3. EXPANSION JTS. @ 15' O.C. CONTROL JTS @ 5' O.C.

SIDEWALK REPAIR DETAIL
N.T.S.

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PUMP STATION R/R PACKAGE 10 IMPROVEMENTS

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FLORIDA REGISTRATION No. 58637

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DRAWING No.
D-104
SHEET 23 OF 34

ABBREVIATIONS

GENERAL NOTES

A	AMBER, AMPERE, ALARM	GALV	GALVANIZED	R	RED, RAISE, RELAY OR REVERSE
AC	ALTERNATING CURRENT	GB	GENERATOR BREAKER	RECP	RECEPTACLE
ACB	AIR CIRCUIT BREAKER	GD	GROUND DETECTOR	RES	RESISTOR
ACCU	AIR COOLED CONDENSING UNIT	GEN	GENERATOR	RGS	RIGID GALVANIZED STEEL
AF	AMPERE FRAME	GFI	GROUND FAULT INTERRUPTER	RMS	ROOT-MEAN-SQUARE
AFF	ABOVE FINISHED FLOOR	GND	GROUND	RS	RAPID START
AFG	ABOVE FINISHED GRADE	GFR	GROUND FAULT RELAY	RT	REPEATING TIMER
AHU	AIR HANDLING UNIT	H	HIGH OR HUMIDISTAT	RTD	RESISTANCE TYPE TEMP DETECTOR
AIC	AMPS INTERRUPTING CAPACITY	HC	HOT CIRCUIT	RTU	REMOTE TERMINAL UNIT
ALUM	ALUMINUM	HH	HANDHOLE	SCH	SCHEDULE
AM	AMMETER	HMT	HIGH MOTOR TEMPERATURE	SEC	SECONDARY
ANN	ANNUNCIATOR	HOA	HAND-OFF-AUTO	SH	SPACE HEATER OR SHIELD
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE	HOR	HAND-OFF-REMOTE	SN	SOLID NEUTRAL
AR	ALARM RELAY	HP	HORSE POWER	SP	SINGLE POLE
ASA	AMERICAN STANDARDS ASSOCIATION	HPS	HIGH PRESSURE SODIUM	SPDT	SINGLE POLE DOUBLE THROW
AS	AMMETER SWITCH	HR	HOUR	SPST	SINGLE POLE SINGLE THROW
AT	AMPERE TRIP	HWC	HIGH WATER CUTOFF	SS	SELECTOR SWITCH OR STAINLESS STEEL
ATS	AUTOMATIC TRANSFER SWITCH	HWO	HIGH WATER CUTOFF	ST	STATION TIE BREAKER
AUX	AUXILIARY	HZ	HERTZ (CYCLE)	SUPV	SUPERVISORY CONTROL
AWG	AMERICAN WIRE GAGE	I/O	INPUT/OUTPUT	SV	SOLENOID VALVE
B	BLUE	IEEE	INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS	SW	SWITCH
BC	BARE COPPER OR BATTERY CHARGER	IES	ILLUMINATING ENGINEERING SOCIETY	SWBD	SWITCHBOARD
BIL	BASIC IMPULSE LEVEL	ISO	ISOLATION	SWGR	SWITCHGEAR
BKR	BREAKER	J	JUNCTION BOX	T	THERMOSTAT, TIMER, OR TOTALIZER
BLDG	BUILDING	K	KEY INTERLOCK	TACH	TACHOMETER
BR	BRAKE	KV	KILOVOLT	TB	TERMINAL BLOCK
BT	BEARING TEMPERATURE	KVA	KILOVOLT AMPERE	TC	TIMER CLUTCH OR TIME CLOCK
C	CLOSE, COUNTER, CONTACTOR OR CONDUIT	KVAR	KILOVOLT AMPERE REACTIVE	TD	TIME DELAY RELAY
C	DEGREES CENTIGRADE	KW	KILOWATT	TEL	TELEPHONE
CAB	CABINET	KWH	KILOWATT HOUR	TEMP	TEMPERATURE
CAP	CAPACITOR	L	LOW LEVEL	TM	TIMER MOTOR
CB	CIRCUIT BREAKER	LA	LIGHTING ARRESTED	TQ	TORQUE
CB*A	CIRCUIT BREAKER AUXILIARY CONTACT (OPEN WHEN BREAKER IS OPEN AND CLOSED WHEN BREAKER IS CLOSED OR TRIPPED)	LC	LIGHTING CONTRACTOR	TTB	TELEPHONE TERMINAL BOX OR BOARD
CB*B	CIRCUIT BREAKER AUXILIARY CONTACT (CLOSED WHEN BREAKER IS OPEN AND OPEN WHEN BREAKER IS CLOSED OR TRIPPED)	LOR	LOCAL-OFF-REMOTE	TTC	TELEPHONE TERMINAL CABINET
CBM	CERTIFIED BALLAST MANUFACTURERS	LS	LIMIT OR LEVEL SWITCH	Typ	TYPICAL
CI	CELL INTERLOCK	LTG	LIGHTING	UL	UNDERWRITERS LABORATORIES
CKT	CIRCUIT	LWCO	LOW WATER CUTOFF	UG	UNDERGROUND
CL2	CHLORINE	M	MAGNETIC MOTOR STARTER	UON	UNLESS OTHERWISE NOTED
CLG	CEILING	MA	MILLIAMPERE	UV	UNDER VOLTAGE
CONC	CONCRETE	MAX	MAXIMUM	UPS	UNINTERRUPTIBLE POWER SUPPLY
COND	CONDUCTOR	MCB	MAIN CIRCUIT BREAKER	V	VOLTS
CONN	CONNECTION	MCC	MOTOR CONTROL CENTER	VA	VOLT AMPERE
COS	CABLE OPERATED SWITCH	MCM	THOUSAND CIRCULAR MIL	VAR	VARIABLE FREQUENCY DRIVE
CP	CONTROL PANEL	MCP	MOTOR CIRCUIT PROTECTOR	VFD	VARIABLE FREQUENCY DRIVE
CPT	CONTROL POWER TRANSFORMER	MD	MOISTURE DETECTOR	VLS	VALVE LIMIT SWITCH
CR	CURRENT OR CONTROL RELAY	MFM	MAGNETIC FLOW METER	VM	VOLTMETER
CS	CONTROL STATION	MFR	MANUFACTURER	VPI	VALVE POSITION INDICATOR
CT	CYCLE TIMER OR CURRENT TRANSFORMER	MH	MANHOLE, MOUNTING HEIGHT OR METAL HALIDE	VS	VOLTMETER SWITCH
CTC	CYCLE TIMER CLUTCH	MIN	MINIMUM	VSC	VARIABLE SPEED CONTROLLER
CTM	CYCLE TIMER MOTOR	MLO	MAIN LUGS ONLY	VSD	VARIABLE SPEED DRIVE
CU	COPPER	MOV	MOTOR OPERATED VALVE	W	WHITE, WATTS OR WIRE
CWP	COLD WATER PIPE	MPR	MOTOR PROTECTION RELAY	WH	WATTHOUR METER
DC	DIRECT CURRENT	MS	MANUAL MOTOR STARTER	WM	WATT METER
DIA	DIAMETER	MSH	MOTOR SPACE HEATER	WP	WEATHER PROOF
DI	DOOR INTERLOCK	MTD	MOUNTED	WT	WATER TIGHT
DM	DAMPER MOTOR OR DEMAND METER	MTS	MANUAL TRANSFER SWITCH	X	AUXILIARY RELAY
DN	DOWN	MV	MILLIVOLT OR MERCURY VAPOR	XFMR	TRANSFORMER
DO	DRAW OUT	MVA	MEGA VOLT AMPERE	XTMR	TRANSFORMER
DPDT	DOUBLE POLE DOUBLE THROW	N	NEUTRAL	Y	YELLOW
DPST	DOUBLE POLE SINGLE THROW	NC	NORMALLY CLOSED	ZS	POSITION SWITCH
DPR	DIFFERENTIAL PRESSURE REGULATOR	NECA	NATIONAL ELECTRICAL CONTRACTORS ASSOCIATION	ø	PHASE
DPS	DIFFERENTIAL PRESSURE SWITCH	NEC	NATIONAL ELECTRICAL CODE		
DS	DISCONNECT SWITCH	NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION		
DVLS	DISCHARGE VALVE LIMIT SWITCH	NF	NON-FUSED		
EC	EMPTY CONDUIT	NFPA	NATIONAL FIRE PROTECTION ASSOCIATION		
EF	EXHAUST FAN	NIC	NOT IN CONTRACT		
ELEC	ELECTRICAL	NO	NORMALLY OPEN, NUMBER		
EL	ELEVATION	NTS	NOT TO SCALE		
ELR	EMERGENCY LOCKOUT RELAY	O	OPEN		
EM	EMERGENCY	OC	ON CENTER		
EMH	ELECTRICAL MANHOLE	OFCI	OWNER FURNISHED CONTRACTOR INSTALLED		
EMT	ELECTRICAL METALLIC TUBING	OH	OVERHEAD		
ENCL	ENCLOSURE	OL	OVERLOAD		
EO	ELECTRICALLY OPERATED	OLS	OVERLOADS		
EP	EXPLOSION PROOF	OSHA	OCCUPATIONAL SAFETY AND HEALTH ACT		
ER	ELECTRODE RELAY	P	POLE		
ES	END SWITCH	PB	PUSH BUTTON OR PULL BOX		
ESB	ENERGY SAVING BALLAST	PC	PHOTO CONTROL		
ETM	ELAPSED TIME METER	PLC	PROGRAMMABLE LOGIC CONTROLLER		
EUH	ELECTRIC UNIT HEATER	PF	POWER FACTOR		
EVA	ELECTRIC VALVE ACTUATOR	PH	PHASE, CHEMICAL TERM		
EWC	ELECTRIC WATER COOLER	PNL	PANEL		
EWI	ELECTRIC WATER HEATER	PR	PAIR		
EXH	EXHAUST	PRGS	PVC COATED RIGID GALVANIZED STEEL		
EXIST	EXISTING	PRI	PRIMARY		
F	FORWARD	PRS	PROXIMITY SWITCH		
F	DEGREES FAHRENHEIT	PS	PRESSURE SWITCH		
FAAP	FIRE ALARM ANNUNCIATION PANEL	PT	POTENTIAL TRANSFORMER, PROGRAM TIMER		
FACP	FIRE ALARM CONTROL PANEL	PVC	POLYVINYL CHLORIDE		
FIT	FLOW INDICATING TRANSMITTER	PWR	POWER		
FLA	FULL LOAD AMPERES				
FM	FACTORY MANUAL				
FS	FLOW SWITCH				
FT	FEET				

- ALL WORK SHALL COMPLY WITH THE 2011 NEC.
- DO NOT SCALE THE ELECTRICAL DRAWINGS. REFER TO THE MECHANICAL, STRUCTURAL, CIVIL AND ARCHITECTURAL DWGS AND APPROVED SHOP DRAWINGS FOR THE EXACT LOCATION OF ALL EQUIPMENT.
- THE CONTRACTOR SHALL VERIFY EXACT LOCATION OF TERMINAL BOXES, PANELBOARDS, CONDUITS, CONTROL PANELS ETC, AGAINST SHOP DRAWINGS BEFORE STUBBING UP CONDUITS.
- EXPOSED FLEXIBLE CONDUITS SHALL NOT EXCEED 30 INCHES IN LENGTH FOR SIZES 2 INCHES AND LARGER, MAXIMUM OF 18 INCHES FOR SIZES 1-1/2 INCHES AND SMALLER
- CONTRACTOR SHALL PROVIDE ADDITIONAL PULLBOXES WHERE REQUIRED BY THE NEC AND/OR TO MAKE A WORKABLE INSTALLATION.
- CONDUIT ENTRY INTO ELECTRICAL EQUIPMENT SHALL BE DIRECTLY BELOW OR ABOVE AND BE LOCATED EQUALLY SPACED FROM EQUIPMENT CENTERLINE

OCU ELECTRICAL NOTES

- ALL WORK SHALL COMPLY WITH THE 2011 NEC.
- THE ELECTRICAL DRAWINGS ARE DIAGRAMMATIC AND DO NOT NECESSARILY INDICATE EXACT LOCATIONS OF EQUIPMENT OR ALL REQUIRED FITTINGS AND HARDWARE. PROVIDE ALL EQUIPMENT, MATERIALS, AND LABOR REQUIRED FOR A COMPLETE OPERATING SYSTEM. COORDINATE EQUIPMENT LOCATIONS AND WIRING WITH ACTUAL FIELD CONDITIONS AND EQUIPMENT ACTUALLY PROVIDED.
- CIRCUIT BREAKER SHALL BE AS LISTED IN APPENDIX D.
- UNDERGROUND CONDUITS SHALL BE SCHEDULE 80 PVC BELOW GRADE. MINIMUM CONDUIT SIZE SHALL BE 0.75" ABOVE GRADE, AND 1.00" BELOW GRADE. UNDERGROUND CONDUIT SHALL BE RUN A MINIMUM OF 24" BELOW BELOW GRADE.
- CABLE AND WIRE SHALL BE COPPER, DUAL RATED, TYPE THHN/THWN, EXCEPT GROUND CONDUCTORS SHALL BE SOFT DRAWN COPPER.
- GROUND RODS SHALL BE COPPER CLAD STEEL, 0.75" BY 10 FT., DRIVEN SO TOP OF ROD IS BELOW GRADE. ALL GROUNDING CONDUCTORS ARE 30" BELOW GRADE. ALL CONNECTIONS TO GROUND RODS SHALL BE EXOTHERMIC WELDS, ERICO "CADWELD" OR EQUAL, UNLESS OTHERWISE NOTED.
- INSTALL AND CONNECT ALL ELECTRICAL EQUIPMENT FURNISHED UNDER OTHER SECTIONS.
- WARRANTEE ENTIRE ELECTRICAL INSTALLATION FOR A PERIOD OF ONE YEAR FROM THE FINAL ACCEPTANCE DATE. PROMPTLY REPLACE AND/OR REPAIR ANY EQUIPMENT OR WIRING PROVIDED UNDER DIVISION 16 DURING THE WARRANTEE PERIOD WITH NO ADDITIONAL COSTS TO THE OWNER.
- PUMP CONTROL PANEL WILL BE FURNISHED BY MECHANICAL CONTRACTOR AND INSTALLED AND WIRED BY ELECTRICAL CONTRACTOR. CIRCUIT DIAGRAM AND DETAILS ARE PROVIDED FROM DATA RECEIVED FROM THE VENDOR, AND ARE PROVIDED FOR THE CONTRACTOR'S CONVENIENCE. ACTUAL CIRCUITRY AND SPECIFIC DETAILS OF EQUIPMENT PROVIDED MAY VARY. PUMP CONTROL PANEL SPARE PARTS ARE NOT REQUIRED.
- CONTRACTOR TO INSTALL ADDITIONAL 1" PVC CONDUIT FROM RPZ TO SCADA PANEL WHEN ORANGE COUNTY UTILITIES IS THE WATER SERVICE PROVIDER.



EB: 6160

No.	REVISIONS	BY	DATE
BID SET		GJH	5/24/2017

LINE IS 2 INCHES
AT FULL SIZE
(IF NOT SCALE ACCORDINGLY)

SCALE: AS NOTED

ORANGE COUNTY UTILITIES
9150 CURRY FORD ROAD
ORLANDO, FLORIDA 32825

BFA Environmental Consultants
Barnes, Ferland and Associates, Inc.
1230 E. Hillcrest Street, Orlando, FL, 32803
PH: (407) 896-8899 FAX: (407) 896-1822
ENGINEERING BUSINESS No. 6899

PUMP STATION R/R PACKAGE 10 IMPROVEMENTS

ELECTRICAL NOTES SYMBOLS AND ABBREVIATIONS

DESIGN ENGINEER WILLARD HOANSHELT P.E.	PROJECT No.: 2014-28-02 PROJECT DATE: JUNE 2017	DRAWING No. E-001
DESIGNED BY: WCH DRAWN BY: DJK	CHECKED BY: WCH	SHEET 24 OF 34
FLORIDA REGISTRATION No. 42593	DRAWING FILE: SEE MARGIN	

ELEMENTARY SYMBOLS	ELEMENTARY SYMBOLS (CON'T)	SWITCH SYMBOLS	SERVICE AND DISTRIBUTION	LIGHTING OUTLETS
<ul style="list-style-type: none"> WIRE INTERSECTION POINT EXTERNAL CONNECTION POINT NORMALLY OPEN CONTACT NORMALLY CLOSED CONTACT STARTER, CONTACTOR OR RELAY COIL NORMALLY OPEN PUSH BUTTON NORMALLY CLOSED PUSH BUTTON MAINTAINED PUSH BUTTON MOMENTARY MUSHROOM HEAD NORMALLY CLOSED GEARED LIMIT SWITCH NORMALLY OPEN GEARED LIMIT SWITCH INDICATING LIGHT FUSE POTENTIOMETER CAPACITOR DIODE RESISTOR CONTROL POWER TRANSFORMER SWITCH MANUAL STARTER ELECTRODE FLOAT SWITCH (CLOSING ON RISING LEVEL) FLOAT SWITCH (OPENING ON RISING LEVEL) PRESSURE SWITCH (CLOSING ON RISING PRESSURE) PRESSURE SWITCH (OPENING ON RISING PRESSURE) VACUUM SWITCH (CLOSING ON INCREASING VACUUM) VACUUM SWITCH (OPENING ON INCREASING VACUUM) TEMPERATURE SWITCH (CLOSING ON RISING TEMPERATURE) TEMPERATURE SWITCH (OPENING ON RISING TEMPERATURE) FLOW ACTUATED SWITCH (CLOSING ON INCREASE IN FLOW) FLOW ACTUATED SWITCH (OPENING ON INCREASE IN FLOW) ON TIME DELAY SWITCH (NORMALLY OPEN WITH TIME DELAY CLOSING AFTER COIL IS ENERGIZED) OFF TIME DELAY SWITCH (NORMALLY OPEN WITH TIME DELAY OPENING AFTER COIL IS DE-ENERGIZED) ON TIME DELAY SWITCH (NORMALLY CLOSED WITH TIME DELAY OPENING AFTER COIL IS ENERGIZED) OFF TIME DELAY SWITCH (NORMALLY CLOSED WITH TIME DELAY CLOSING AFTER COIL IS DE-ENERGIZED) TORQUE SWITCH (NORMALLY OPEN) TORQUE SWITCH (NORMALLY CLOSED) LIMIT SWITCH (NORMALLY OPEN) LIMIT SWITCH (NORMALLY OPEN, HELD CLOSED) 	<ul style="list-style-type: none"> LIMIT SWITCH (NORMALLY CLOSED) LIMIT SWITCH (NORMALLY CLOSED, HELD OPEN) DIFFERENTIAL PRESSURE SWITCH (NORMALLY OPEN, CLOSING ON INCREASING DIFF.) DIFFERENTIAL PRESSURE SWITCH (NORMALLY CLOSED, OPENING ON INCREASING DIFF.) 	<ul style="list-style-type: none"> S SINGLE POLE SWITCH S₂ DOUBLE POLE SWITCH S₃ THREE-WAY SWITCH S₄ FOUR-WAY SWITCH S_{WP} WEATHERPROOF SWITCH S_p SWITCH WITH PILOT LAMP S_K KEY OPERATED SWITCH S_H HAZARDOUS AREA SWITCH D DIMMER SWITCH S_L SWITCH FOR LOW VOLTAGE SWITCHING SYSTEM S_{LM} MASTER SWITCH FOR LOW VOLTAGE SWITCHING SYSTEM S_{OS} SWITCH AND SINGLE RECEPTACLE S_{DS} SWITCH AND DOUBLE RECEPTACLE S_D DOOR SWITCH S_T TIME SWITCH S_{CB} CIRCUIT BREAKER SWITCH S_{MC} MOMENTARY CONTACT SWITCH OR PUSHBUTTON FOR OTHER THAN SIGNALING SYSTEM S₁ START/STOP SWITCH S₂ SPEED CONTROL S₃ LOCAL CONTROL SWITCH 	<ul style="list-style-type: none"> MAGNETIC MOTOR STARTER OR CONTACTOR SIZE AS NOTED MOTOR CONNECTION, AS NOTED MOTOR CONNECTION, FUTURE OR EXISTING AS NOTED DISCONNECT SWITCH, SIZE AS NOTED COMBINATION MAGNETIC MOTOR STARTER, SIZE AS NOTED BRANCH CIRCUIT PANELBOARD, UNDER 250 VOLTS, SURFACE MOUNTED BRANCH CIRCUIT PANEL BOARD, UNDER 250 VOLTS, FLUSH MOUNTED BRANCH CIRCUIT PANELBOARD, OVER 250 VOLTS, SURFACE MOUNTED TRANSFORMER, SIZE AS NOTED SYSTEMS CABINET TELEPHONE TERMINAL BOARD 	<p>CEILING WALL</p> <ul style="list-style-type: none"> ○₁ ○₁ SURFACE OR PENDANT MOUNTED FIXTURE Ⓜ₁ Ⓜ₁ RECESSED FIXTURE ○₁ ○₁ SURFACE OR PENDANT MOUNTED FLUORESCENT FIXTURE ○_{R1} ○_{R1} RECESSED FLUORESCENT FIXTURE ○₁ R ○₁ TANDEM FLUORESCENT FIXTURE ○₁ RECESSED TANDEM FLUORESCENT FIXTURE — BARE LAMP FLUORESCENT STRIP WITH GUARD — FLUORESCENT TROFFER ⊗ ⊗ SURFACE OR PENDANT MOUNTED EXIT LIGHT ⊗_R ⊗_R RECESSED EXIT LIGHT ⊙ ⊙ BLANKED OUTLET ⊙ JUNCTION BOX ⊙ POLE MOUNTED FIXTURE ⊗ EMERGENCY LIGHT FIXTURE <p>NOTE 1: LETTER SUBSCRIPT INDICATES FIXTURE TYPE AS DESCRIBED IN THE LIGHTING FIXTURE SCHEDULE.</p>
	<p>FIRE ALARM SYSTEM</p> <ul style="list-style-type: none"> PULL STATION HORN/LIGHT COMBINATION SMOKE DETECTOR DUCT SMOKE DETECTOR 		<p>LIGHTNING/GROUNDING SYSTEM</p> <ul style="list-style-type: none"> AIR TERMINAL WITH CAST ADHESIVE BASE MOUNT BONDING PLATE TEE SPLICE CONDUCTOR TURNED DOWN ROOFTOP MAIN CONDUCTOR ROOFTOP BONDING CONDUCTOR MAIN CONDUCTOR CONCEALED BELOW ROOFTOP BURIED COUNTERPOISE CONDUCTOR AIR TERMINAL WITH CAST ADHESIVE BASE MOUNT FOR USE ON TOP OF EXHAUST FAN HOUSING. GROUND ROD 	<p>PLAN SYMBOLS</p> <ul style="list-style-type: none"> TT TEMPERATURE TRANSMITTER PT PRESSURE TRANSMITTER FIT FLOW INDICATING TRANSMITTER FE FLOW ELEMENT DIT DENSITY INDICATING TRANSMITTER LIT LEVEL INDICATING TRANSMITTER LE LEVEL ELEMENT VM VOLT METER VS VOLT SWITCH AM AMPMETER AS AMP SWITCH MS MOTION SWITCH FT FLOAT SWITCH FS FLOW SWITCH LS LIMIT SWITCH TS TORQUE SWITCH PS PRESSURE SWITCH T THERMOSTAT VS VIBRATION SWITCH SV SOLENOID VALVE ZS ZERO SPEED SWITCH TR TIMING RELAY
	<p>SINGLE LINE POWER DIAGRAM SYMBOLS</p> <ul style="list-style-type: none"> CIRCUIT BREAKER COMBINATION MOTOR STARTER WITH MOTOR CIRCUIT PROTECTOR. FULL VOLTAGE, NON-REVERSING, SINGLE SPEED REDUCE VOLTAGE NON-REVERSING AUTOTRANSFORMER (CLOSED TRANSITION), SINGLE SPEED OR SOLID STATE SOFT START FULL VOLTAGE REVERSING SINGLE SPEED FULL VOLTAGE, TWO SPEED TWO WINDING THERMAL OVERLOADS AC MOTOR, NUMBER INDICATES HORSEPOWER DC MOTOR, NUMBER INDICATES HORSEPOWER GENERATOR, SIZE AS NOTED LOW VOLTAGE CIRCUIT BREAKER DRAW-OUT TYPE MEDIUM VOLTAGE CIRCUIT BREAKER DRAW-OUT TYPE LIGHTNING ARRESTOR SURGE SUPPRESSOR SURGE CAPACITOR FUSE POTENTIAL TRANSFORMER, QUANTITY AS NOTED MCP MOTOR CIRCUIT PROTECTOR NO. INDICATES FRAME SIZE CURRENT TRANSFORMER, QUANTITY AS NOTED KEY INTERLOCK POWER PANEL LIGHTING PANEL 	<p>RECEPTACLE OUTLET SYMBOLS</p> <ul style="list-style-type: none"> SINGLE RECEPTACLE OUTLET DUPLEX RECEPTACLE OUTLET-SPLIT WIRED TRIPLEX RECEPTACLE OUTLET-SPLIT WIRED SINGLE SPECIAL PURPOSE RECEPTACLE OUTLET (SEE NOTE 1) DUPLEX RECEPTACLE SPECIAL PURPOSE OUTLET (SEE NOTE 1) RANGE OUTLET (SEE NOTE 1) SPECIAL PURPOSE CONNECTION OR PROVISION FOR CONNECTION (SEE NOTE 1) MULTIOUTLET ASSEMBLY (SEE NOTE 1) CLOCK HANGER RECEPTACLE (SEE NOTE 1) FAN HANGER RECEPTACLE (SEE NOTE 1) FLOOR SINGLE RECEPTACLE OUTLET FLOOR DUPLEX RECEPTACLE FLOOR SPECIAL PURPOSE OUTLET (SEE NOTE 1) <p>NOTE 1: NUMERICAL SUBSCRIPT INDICATES THE SHEET NOTE WHERE THE TYPE OF RECEPTACLE AND USAGE IS NOTED.</p>	<p>RACEWAY SYSTEM</p> <ul style="list-style-type: none"> JUNCTION BOX HOME RUN TO PANELBOARD. NO. OF ARROWS INDICATE NO. OF CIRCUITS, HASH MARKS INDICATE NO. OF #12 AWG. CONDUCTORS. NO HASH MARKS INDICATE 2#12 CONDUCTORS. CONDUIT CONCEALED IN WALL OR ABOVE CEILING CONDUIT CONCEALED IN OR BELOW FLOOR OR UNDERGROUND CONDUIT RUN EXPOSED. RUN PARALLEL OR PERPENDICULAR TO STRUCTURE OR WALL 	
			<p>COMMUNICATIONS</p> <ul style="list-style-type: none"> INTERIOR CEILING SPEAKER EXTERIOR HORN SPEAKER WALL MOUNTED SPEAKER EXTERIOR HANDSET DESKTOP HANDSET FLOOR TELEPHONE OUTLET-PUBLIC FLOOR TELEPHONE OUTLET-PRIVATE FLUSH OUTLET BOX AND COVER PLATE FLUSH FLOOR MOUNTED OUTLET BOX AND COVER PLATE 	<p>EM I EB: 6160</p>

No.	REVISIONS	BY	DATE
BID SET		GJH	5/24/2017

LINE IS 2 INCHES
AT FULL SIZE
(IF NOT SCALE ACCORDINGLY)

SCALE: AS NOTED

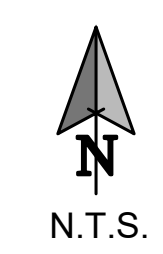
ORANGE COUNTY UTILITIES
9150 CURRY FORD ROAD
ORLANDO, FLORIDA 32825

BFA Environmental Consultants
Barnes, Ferland and Associates, Inc.
1230 E. Hillcrest Street, Orlando, FL, 32803
Tel: (407) 896-8828 Fax: (407) 896-1822
ENGINEERING BUSINESS No. 6899

PUMP STATION R/R PACKAGE 10 IMPROVEMENTS

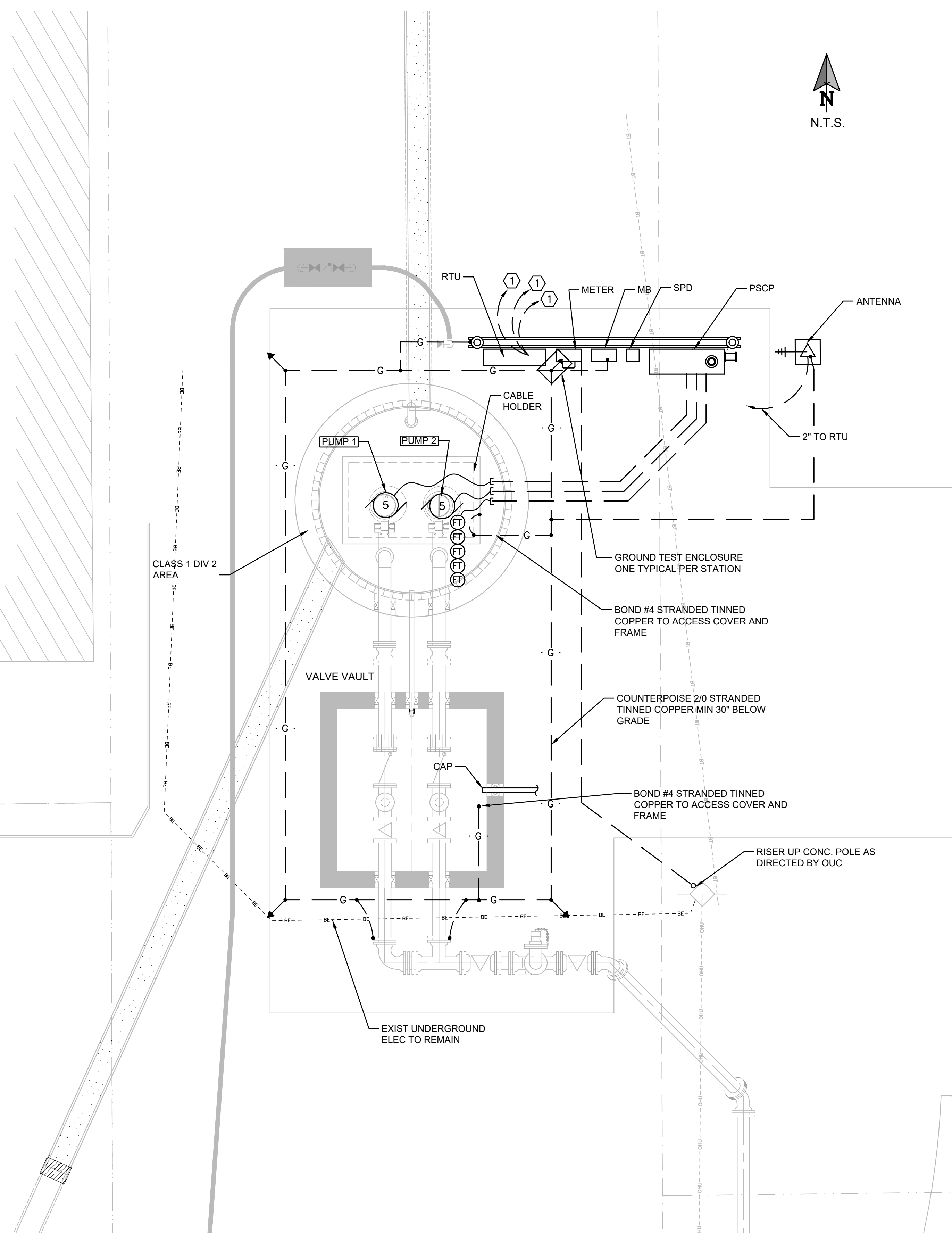
ELECTRICAL SYMBOLS

DESIGN ENGINEER WILLARD HOANSHELT P.E.	PROJECT No.: 2014-28-02 PROJECT DATE: JUNE 2017	DRAWING No. E-002
DESIGNED BY: WCH	DRAWN BY: DJK	SHEET 25 OF 34
FLORIDA REGISTRATION No. 42593	CHECKED BY: WCH	DRAWING FILE: SEE MARGIN



DESCRIBED IN
15, PG 3985
ACT 1

ADT
LOADING



SHEET NOTES
① TO CONTROL PANEL (SEE RISER)

SCADA POLE COORDINATION

1. CONTRACTOR SHALL INSTALL CONDUIT AND PULL STRING BETWEEN SCADA PANEL AND PUMP CONTROL PANEL.
2. SCADA SECTION WILL ACTIVATE SCADA PANEL AFTER STATION ACCEPTANCE BY ORANGE COUNTY.

SPECIFIC NOTES

1. IF GRAPHIC SCALE DOES NOT MATCH INDICATED SCALE, DRAWING IS REDUCED AND ADJUSTMENT SHALL BE MADE AS REQUIRED
2. CONTRACTOR TO REMOVE EXISTING ELECTRICAL EQUIPMENT AND DISPOSE OF AS DIRECTED BY OWNER'S REPRESENTATIVE.
3. SEE ELECTRICAL DETAILS 240 VAC FOR ELEVATIONS OF EQUIPMENT RACK.
4. 3-1" CONDUIT TO BE INSTALLED BETWEEN PUMP CONTROL PANEL AND SCADA PANEL. CONTRACTOR TO INSTALL CONDUIT AND PULL STRING ONLY - FINAL CONNECTIONS BETWEEN PUMP CONTROL PANEL AND SCADA PANEL BY OTHERS. SEE SCADA POLE COORDINATION NOTES.

UTILITY: OUC
METER #: 52R20064
ADDRESS: 1635 DOSS AVE
ORLANDO, FL 32809
VOLT: 240V



No.	REVISIONS	BY	DATE
BID SET		GJH	5/24/2017

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SCALE: AS NOTED

ORANGE COUNTY
GOVERNMENT
FLORIDA

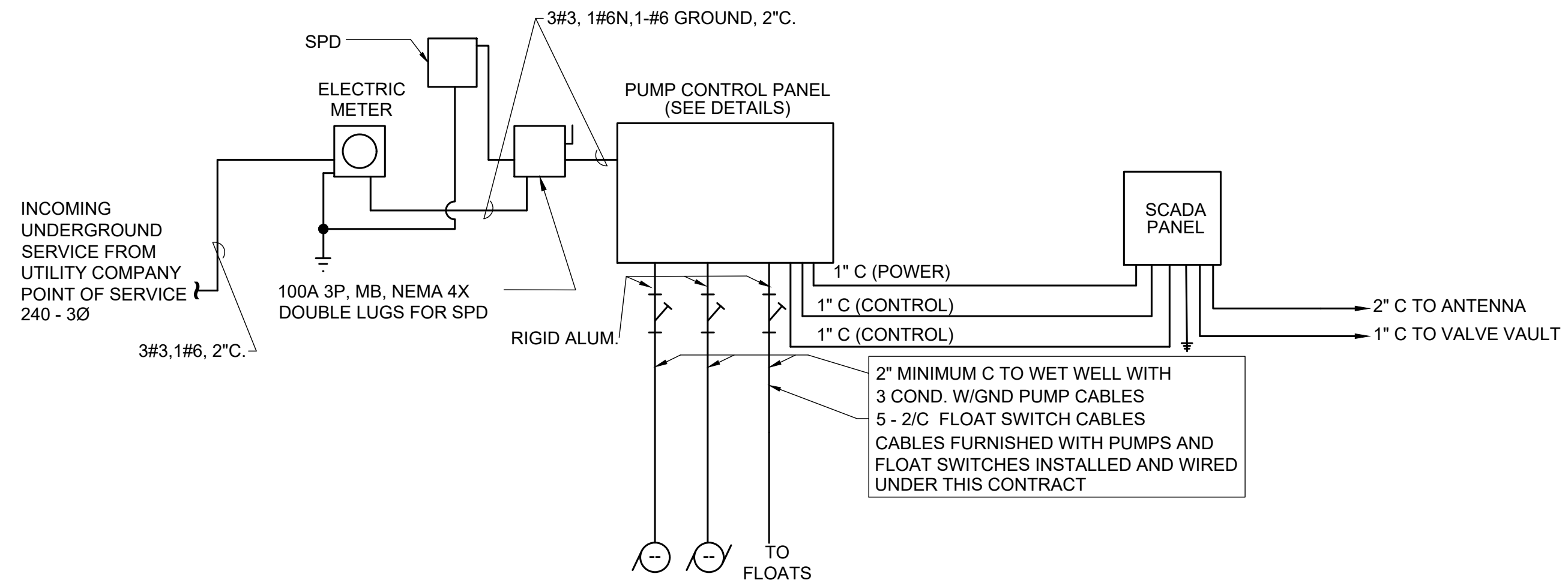
ORANGE COUNTY UTILITIES
9150 CURRY FORD ROAD
ORLANDO, FLORIDA 32825

BFA Environmental Consultants
Barnes, Ferland and Associates, Inc.
1230 E. Hillcrest Street, Orlando, FL, 32803
P: (407) 896-8609 F: (407) 896-1822
ENGINEERING BUSINESS No. 6899

PUMP STATION R/R PACKAGE 10 IMPROVEMENTS

PS 3116 MARTIN Co
ELECTRICAL POWER SITE PLAN

DESIGN ENGINEER WILLARD HOANSHELT P.E.	PROJECT No.: 2014-28-02 PROJECT DATE: JUNE 2017	DRAWING No. E-100
DESIGNED BY: WCH DRAWN BY: DJK	CHECKED BY: WCH DRAWING FILE: SEE MARGIN	SHEET 26 OF 34
FLORIDA REGISTRATION No. 42593		



ELECTRICAL ONE-LINE DIAGRAM

MARTIN #3116			
Electrical Load Calculations			
Available Voltage 120/240V - 3 Phase, 4W, Solid Ground			
Maximum Available Fault Current = 13,021 Amperes at Transformer Secondary			
Load	Phase A Amps	Phase B Amps	Phase C Amps
Pump #1-5.0 HP	15	15	15
Pump #2-5.0 HP	15	15	15
Misc. Controls (At 240 Volts)	1	1	
25% Largest Motor	4	4	4
Total	35	35	34
NEC Service Size = 100 Amperes			



EB: 6160

No.	REVISIONS	BY	DATE
BID SET		GJH	5/24/2017

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SCALE: AS NOTED



ORANGE COUNTY UTILITIES
9150 CURRY FORD ROAD
ORLANDO, FLORIDA 32825

BFA Environmental Consultants
Barnes, Ferland and Associates, Inc.
1230 E. Hillcrest Street, Orlando, FL, 32803
Ph: (407) 836-8839 Fax: (407) 836-1822
ENGINEERING BUSINESS No. 6899

PUMP STATION R/R PACKAGE 10 IMPROVEMENTS

PS 3116 MARTIN Co
SINGLE LINE DIAGRAM

DESIGN ENGINEER
WILLARD HOANSHELT P.E.

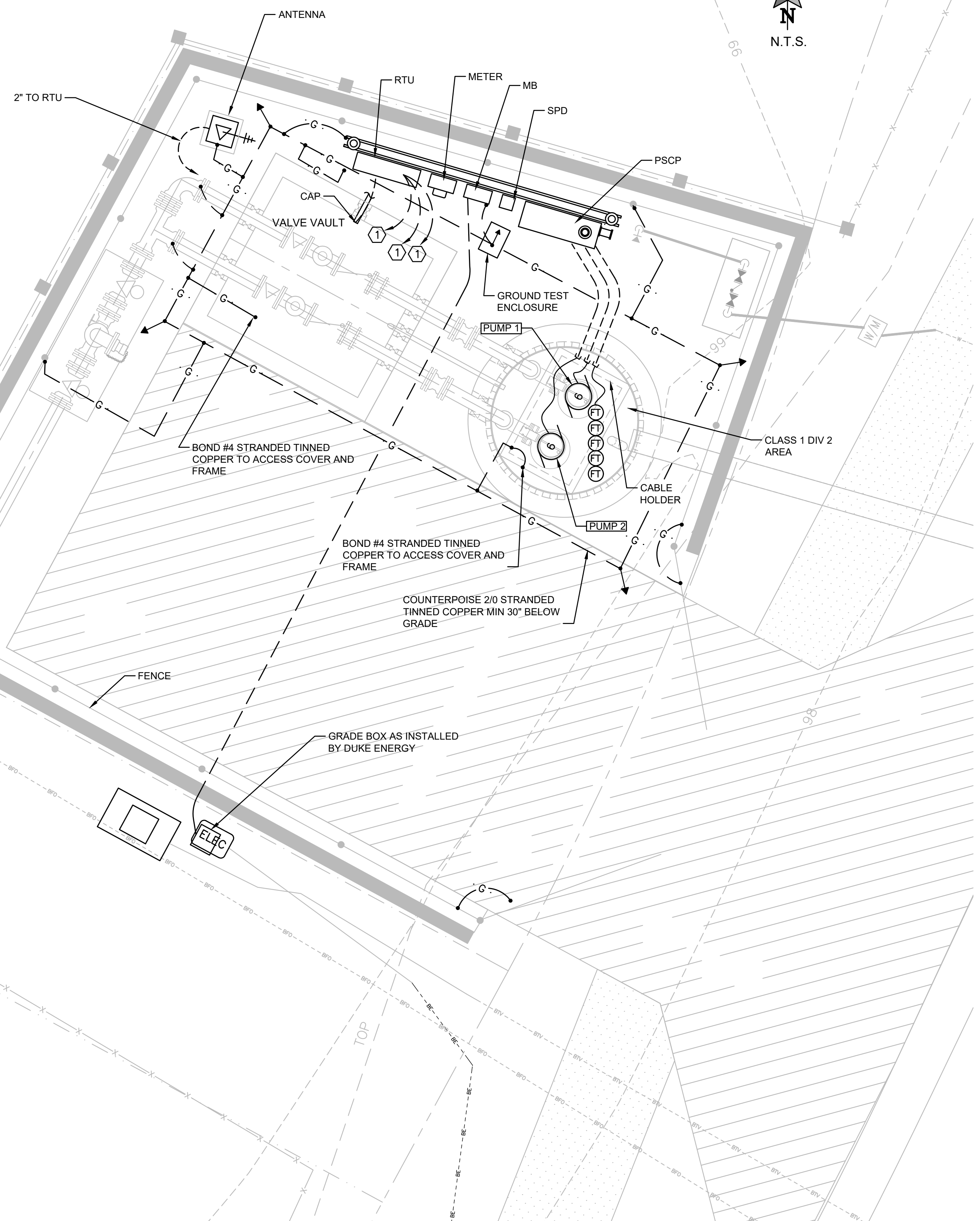
FLORIDA REGISTRATION No.
42593

PROJECT No.: 2014-28-02
PROJECT DATE: JUNE 2017
DESIGNED BY: WCH
DRAWN BY: DJK
CHECKED BY: WCH
DRAWING FILE: SEE MARGIN

DRAWING No.
E-101

SHEET
27 OF 34

LOT 1353



SHEET NOTES

① TO CONTROL PANEL (SEE RISER)

SCADA POLE COORDINATION

1. CONTRACTOR SHALL INSTALL CONDUIT AND PULL STRING BETWEEN SCADA PANEL AND PUMP CONTROL PANEL.
2. SCADA SECTION WILL ACTIVATE SCADA PANEL AFTER STATION ACCEPTANCE BY ORANGE COUNTY.

SPECIFIC NOTES

1. IF GRAPHIC SCALE DOES NOT MATCH INDICATED SCALE, DRAWING IS REDUCED AND ADJUSTMENT SHALL BE MADE AS REQUIRED
2. CONTRACTOR TO REMOVE EXISTING ELECTRICAL EQUIPMENT AND DISPOSE OF AS DIRECTED BY OWNER'S REPRESENTATIVE.
3. SEE ELECTRICAL DETAILS 240 VAC FOR ELEVATIONS OF EQUIPMENT RACK.
4. 3-1" CONDUIT TO BE INSTALLED BETWEEN PUMP CONTROL PANEL AND SCADA PANEL. CONTRACTOR TO INSTALL CONDUIT AND PULL STRING ONLY - FINAL CONNECTIONS BETWEEN PUMP CONTROL PANEL AND SCADA PANEL BY OTHERS. SEE SCADA POLE COORDINATION NOTES.

UTILITY: DUKE ENERGY
 METER #: 6648025
 ADDRESS: 6698 MILLAY DR
 ORLANDO, FL 32802
 VOLT: 240V

SKY LAKE--UNIT TEN
PLAT BOOK 2, PAGE 135

LOT 1351



No.	REVISIONS	BY	DATE
BID SET		GJH	5/24/2017

LINE IS 2 INCHES
 AT FULL SIZE
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SCALE: AS NOTED



ORANGE COUNTY UTILITIES
 9150 CURRY FORD ROAD
 ORLANDO, FLORIDA 32825

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 Barnes, Ferland and Associates, Inc.
 1230 E. Hillcrest Street, Orlando, FL, 32803
 P: (407) 896-8808 F: (407) 896-1822
 ENGINEERING BUSINESS No. 6899

PUMP STATION R/R PACKAGE 10 IMPROVEMENTS

**PS 3117 MILLAY DR ELECTRICAL
 POWER SITE PLAN**

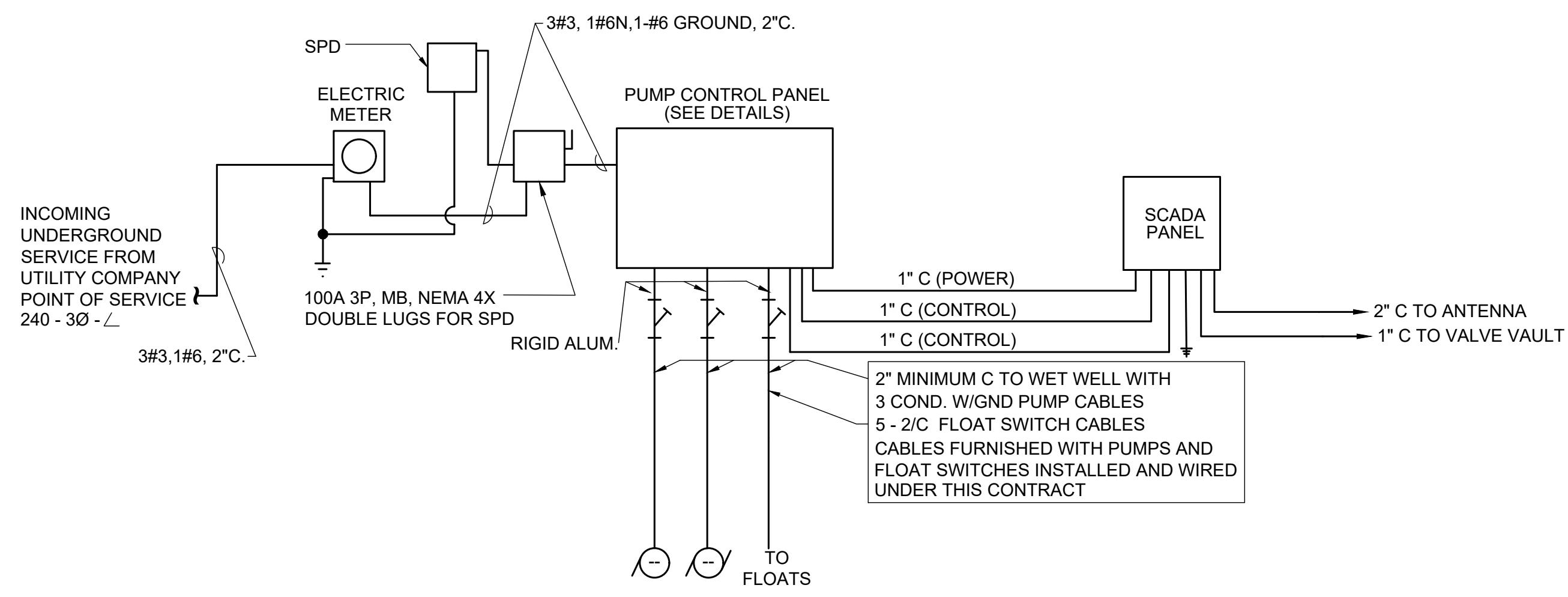
DESIGN ENGINEER
 WILLARD HOANSHELT P.E.

FLORIDA REGISTRATION No.
 42593

PROJECT No.: 2014-28-02
 PROJECT DATE: JUNE 2017
 DESIGNED BY: WCH
 DRAWN BY: DJK
 CHECKED BY: WCH
 DRAWING FILE: SEE MARGIN

DRAWING No.
E-200

SHEET
 28 OF 34



ELECTRICAL ONE-LINE DIAGRAM

MILLAY DR #3117
Electrical Load Calculations

Available Voltage 120/240V - 3 Phase, 4W, Solid Ground
Maximum Available Fault Current = 13,888 Amperes at Transformer Secondary

Load	Phase A Amps	Phase B Amps	Phase C Amps
Pump #1- 6.0 HP	22	22	22
Pump #2- 6.0 HP	22	22	22
Misc. Controls (At 240 Volts)	1	1	
25% Largest Motor	6	6	6
Total	51	51	50

NEC Service Size = 100 Amperes



EB: 6160

No.	REVISIONS	BY	DATE
BID SET		GJH	5/24/2017

LINE IS 2 INCHES
AT FULL SIZE
(IF NOT SCALE ACCORDINGLY)

SCALE: AS NOTED

ORANGE COUNTY
GOVERNMENT
FLORIDA

ORANGE COUNTY UTILITIES
9150 CURRY FORD ROAD
ORLANDO, FLORIDA 32825

BFA Environmental Consultants
Barnes, Ferland and Associates, Inc.
1230 E. Hillcrest Street, Orlando, FL, 32803
Ph: (407) 856-8600 Fax: (407) 856-1822
ENGINEERING BUSINESS No. 6899

PUMP STATION R/R PACKAGE 10 IMPROVEMENTS

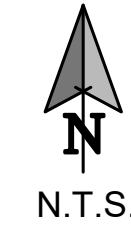
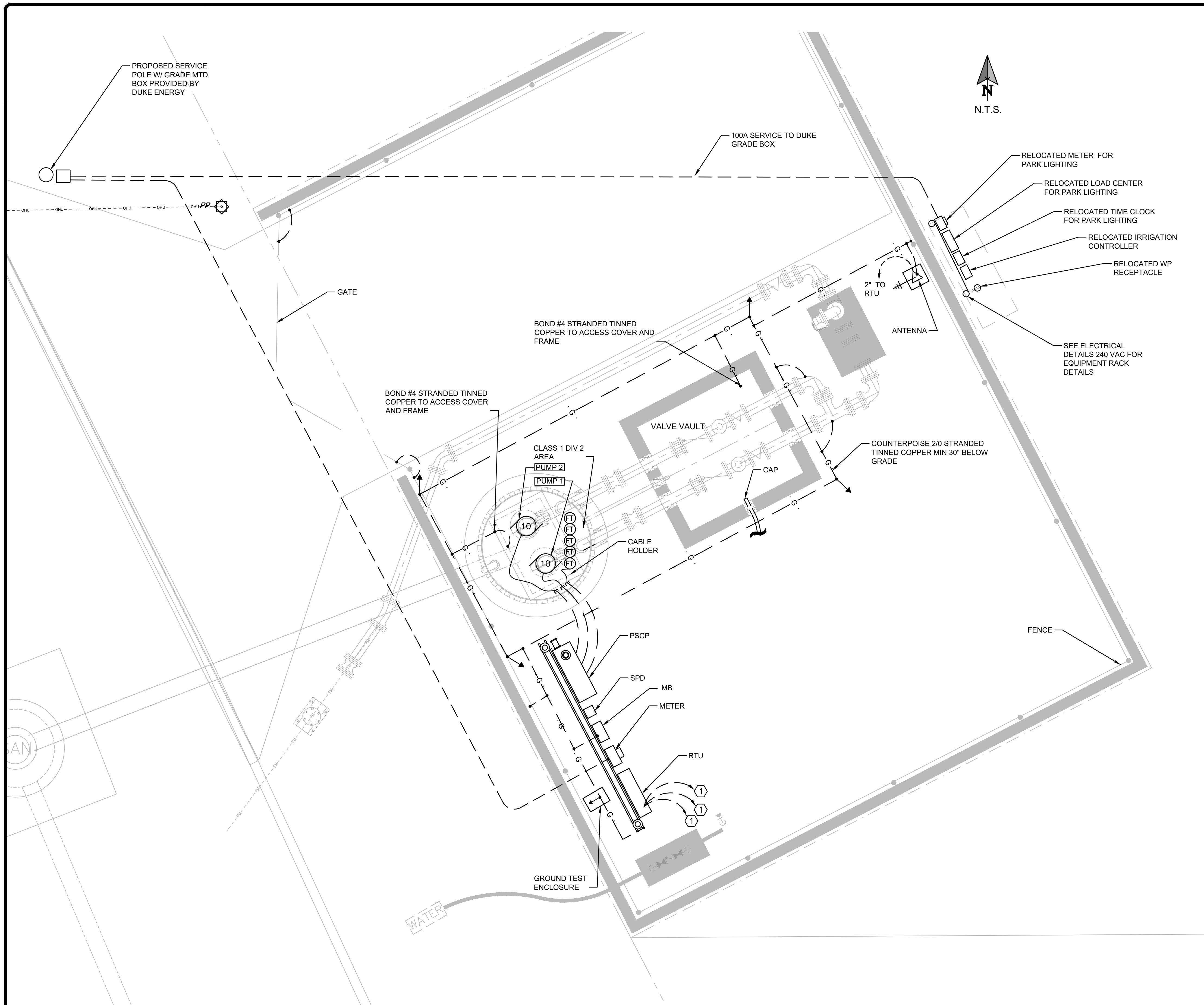
PS 3117 MILLAY DR
SINGLE LINE DIAGRAM

DESIGN ENGINEER
WILLARD HOANSHELT P.E.

FLORIDA REGISTRATION No.
42593

PROJECT No.: 2014-28-02
PROJECT DATE: JUNE 2017
DESIGNED BY: WCH
DRAWN BY: RGB
CHECKED BY: WCH
DRAWING FILE: SEE MARGIN

DRAWING No.
E-201
SHEET
29 OF 34



SHEET NOTES

- ① TO CONTROL PANEL (SEE RISER)

SCADA POLE COORDINATION

1. CONTRACTOR SHALL INSTALL CONDUIT AND PULL STRING BETWEEN SCADA PANEL AND PUMP CONTROL PANEL.
2. SCADA SECTION WILL ACTIVATE SCADA PANEL AFTER STATION ACCEPTANCE BY ORANGE COUNTY.

SPECIFIC NOTES

- ① IF GRAPHIC SCALE DOES NOT MATCH INDICATED SCALE, DRAWING IS REDUCED AND ADJUSTMENT SHALL BE MADE AS REQUIRED
- ② CONTRACTOR TO REMOVE EXISTING ELECTRICAL EQUIPMENT AND DISPOSE OF AS DIRECTED BY OWNER'S REPRESENTATIVE.
- ③ SEE ELECTRICAL DETAILS 240 VAC FOR ELEVATIONS OF EQUIPMENT RACK.
- ④ 3-1" CONDUIT TO BE INSTALLED BETWEEN PUMP CONTROL PANEL AND SCADA PANEL. CONTRACTOR TO INSTALL CONDUIT AND PULL STRING ONLY - FINAL CONNECTIONS BETWEEN PUMP CONTROL PANEL AND SCADA PANEL BY OTHERS. SEE SCADA POLE COORDINATION NOTES.

UTILITY: DUKE ENERGY
 METER #: 6643609
 ADDRESS: 5828 PADGETT CIR
 ORLANDO, FL 32839
 VOLT: 240V

No.	REVISIONS	BY	DATE
BID SET		GJH	5/24/2017

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 SCALE: AS NOTED

ORANGE COUNTY
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 UTILITIES
 ORANGE COUNTY UTILITIES
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 ORLANDO, FLORIDA 32825

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 1230 E. Hillcrest Street, Orlando, FL, 32803
 P: (407) 856-8828 FAX: (407) 856-1822
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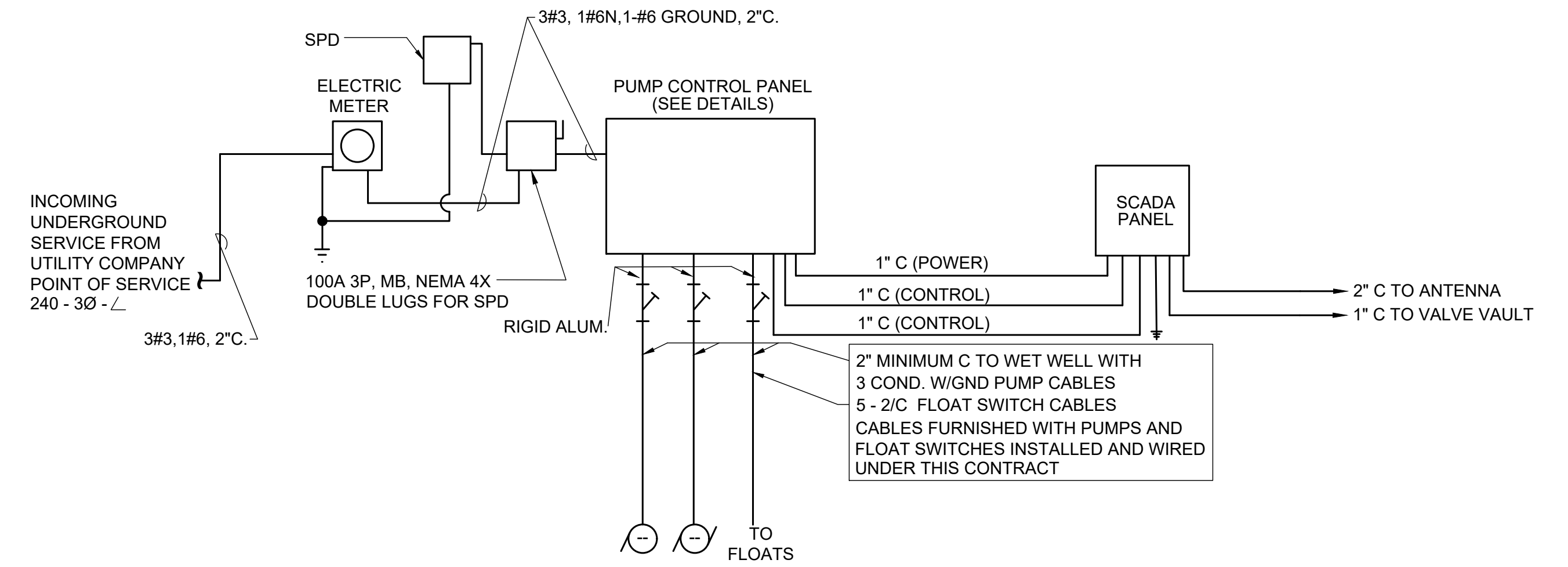
PUMP STATION R/R PACKAGE 10 IMPROVEMENTS
**PS 3216 PADGETT CIR
 ELECTRICAL POWER SITE PLAN**



DESIGN ENGINEER
 WILLARD HOANSHELT P.E.
 FLORIDA REGISTRATION No.
 42593

PROJECT No.: 2014-28-02
 PROJECT DATE: JUNE 2017
 DESIGNED BY: WCH
 DRAWN BY: DJK
 CHECKED BY: WCH
 DRAWING FILE: SEE MARGIN

DRAWING No.
E-300
 SHEET
 30 OF 34



ELECTRICAL ONE-LINE DIAGRAM

PADGETT CIR. #3216
Electrical Load Calculations

Available Voltage 120/240V - 3 Phase, 4W, Solid Ground
Maximum Available Fault Current = 13,888 Amperes at Transformer Secondary

Load	Phase A Amps	Phase B Amps	Phase C Amps
Pump #1-10.0 HP	28	28	28
Pump #2-10.0 HP	28	28	28
Misc. Controls (At 240 Volts)	1	1	
25% Largest Motor	7	7	7
	-	-	-
Total	64	64	63

NEC Service Size = 100 Amperes

File: .\E-301 EQUIP DETAIL.pdf

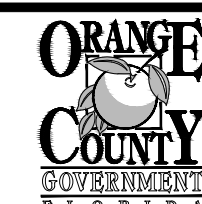
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EB: 6160

No.	REVISIONS	BY	DATE
BID SET		GJH	5/24/2017

LINE IS 2 INCHES
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ORANGE COUNTY UTILITIES
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ORLANDO, FLORIDA 32825

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Ph: (407) 896-8699 Fax: (407) 896-1822
ENGINEERING BUSINESS No. 6899

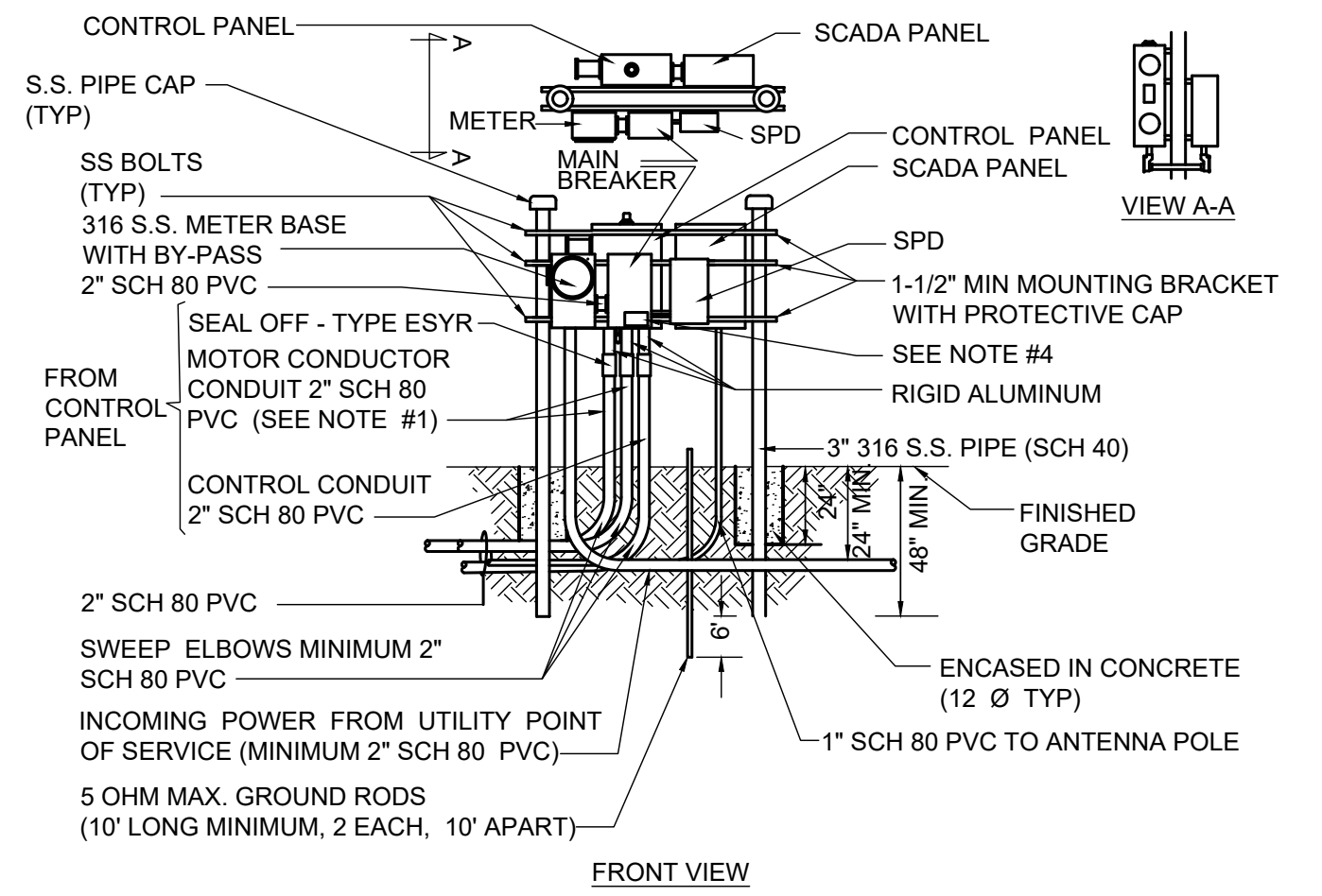
PUMP STATION R/R PACKAGE 10 IMPROVEMENTS

PS 3216 PADGETT CIR
SINGLE LINE DIAGRAM

DESIGN ENGINEER
WILLARD HOANSHELT P.E.
FLORIDA REGISTRATION No.
42593

PROJECT No.: 2014-28-02
PROJECT DATE: JUNE 2017
DESIGNED BY: WCH
DRAWN BY: DJK
CHECKED BY: WCH
DRAWING FILE: SEE MARGIN

DRAWING No.
E-301
SHEET
31 OF 34



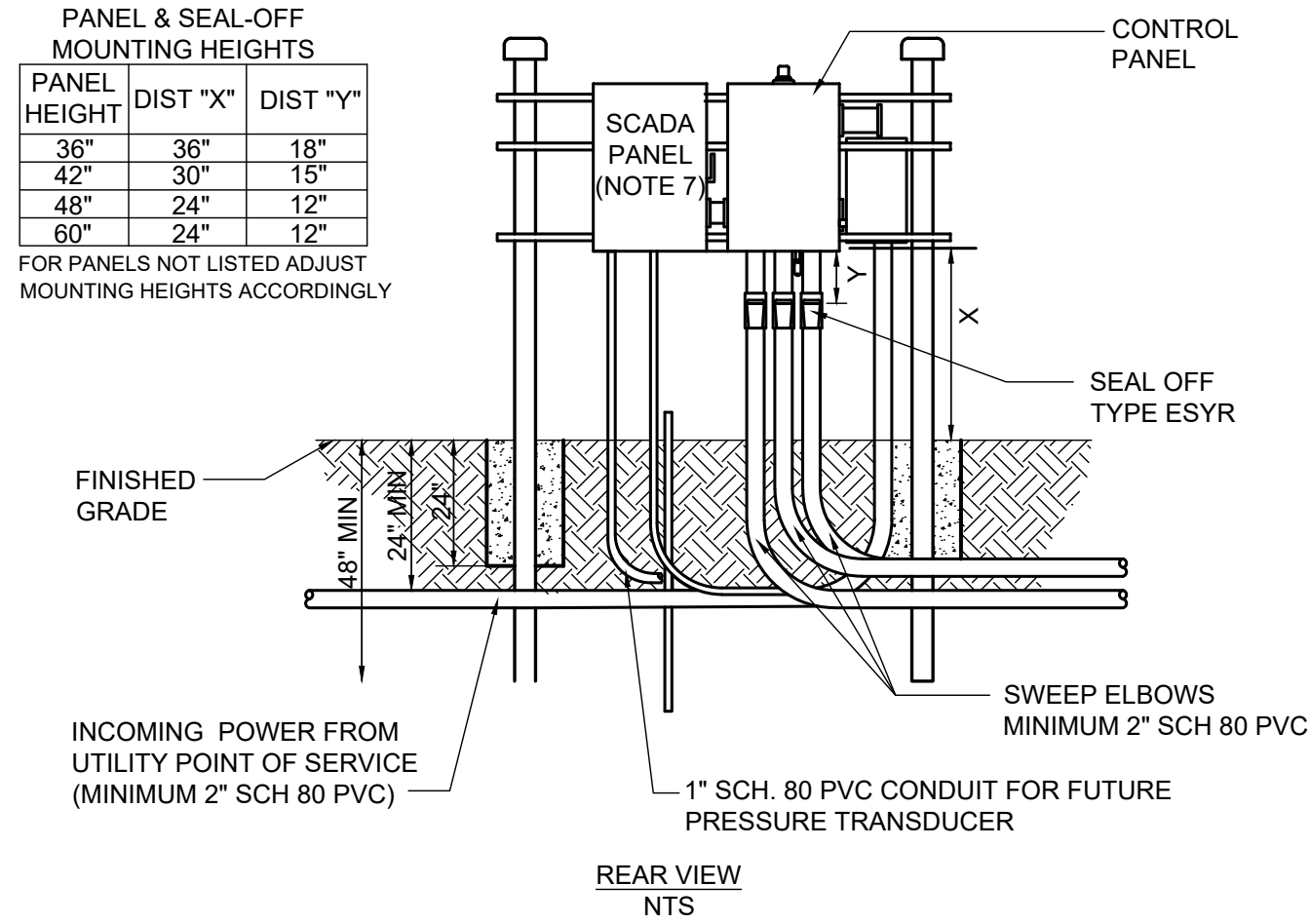
PANEL INSTALLATION NOTES:

1. PUMP MOTOR CONDUIT SHALL BE SIZE TO ACCOMMODATE 40% CONDUIT FILL. MINIMUM CONDUIT SIZE TO BE 2" SCH 80 PVC.
2. POWER SUPPLY SHALL BE UNDERGROUND ON THE LIFT STATION SITE AND SHALL BE 3-PHASE, FROM A 3-PHASE SOURCE ONLY. 100 AMP SERVICE MINIMUM.
3. AN ELECTRICAL GROUNDING SYSTEM SHALL BE INSTALLED AS PER THE NATIONAL ELECTRICAL CODE, LOCAL CODES AND ORDINANCES. AN UNDERGROUND PERIMETER CABLE GROUNDING SYSTEM SHALL BE INSTALLED WITH CONNECTIONS TO AT LEAST WET WELL COVER, VALVE VAULT COVER, CONTROL PANELS, GENERATOR, UTILITY COMPANY TRANSFORMER, MANUAL DISCONNECT SWITCH AND METAL FENCE. REFER TO GROUNDING DETAILS.
4. THE STATION NAME, UTILITIES I.D. NUMBER AND ADDRESS SHALL BE AFFIXED TO THE FRONT OF THE METER CABINET.
5. ALL MOUNTING HARDWARE & BRACKETS AND ELECTRICAL ENCLOSURES SHALL BE 316 STAINLESS STEEL.
6. ON A 4-WIRE, DELTA SYSTEM, THE HIGH-LEG SHALL BE IDENTIFIED WITH ORANGE COLOR TAPE AT ALL CONNECTION POINTS AND SHALL BE LOCATED ON THE "B" PHASE AT THE LINE SIDE OF THE MAIN DISCONNECT.
7. THE SCADA PANEL SHALL BE RELOCATED AND MOUNTED ON THE PANEL RACK BY CONTRACTOR.
8. A MINIMUM OF 36-INCH CLEARANCE SHALL BE PROVIDED FOR SCADA PANEL REGARDLESS OF SIZE OF EXISTING SCADA PANEL.

**PUMP STATION CONTROL PANEL (240V)
BACK TO BACK FRONT & PLAN VIEW**

ELECTRICAL NOTES

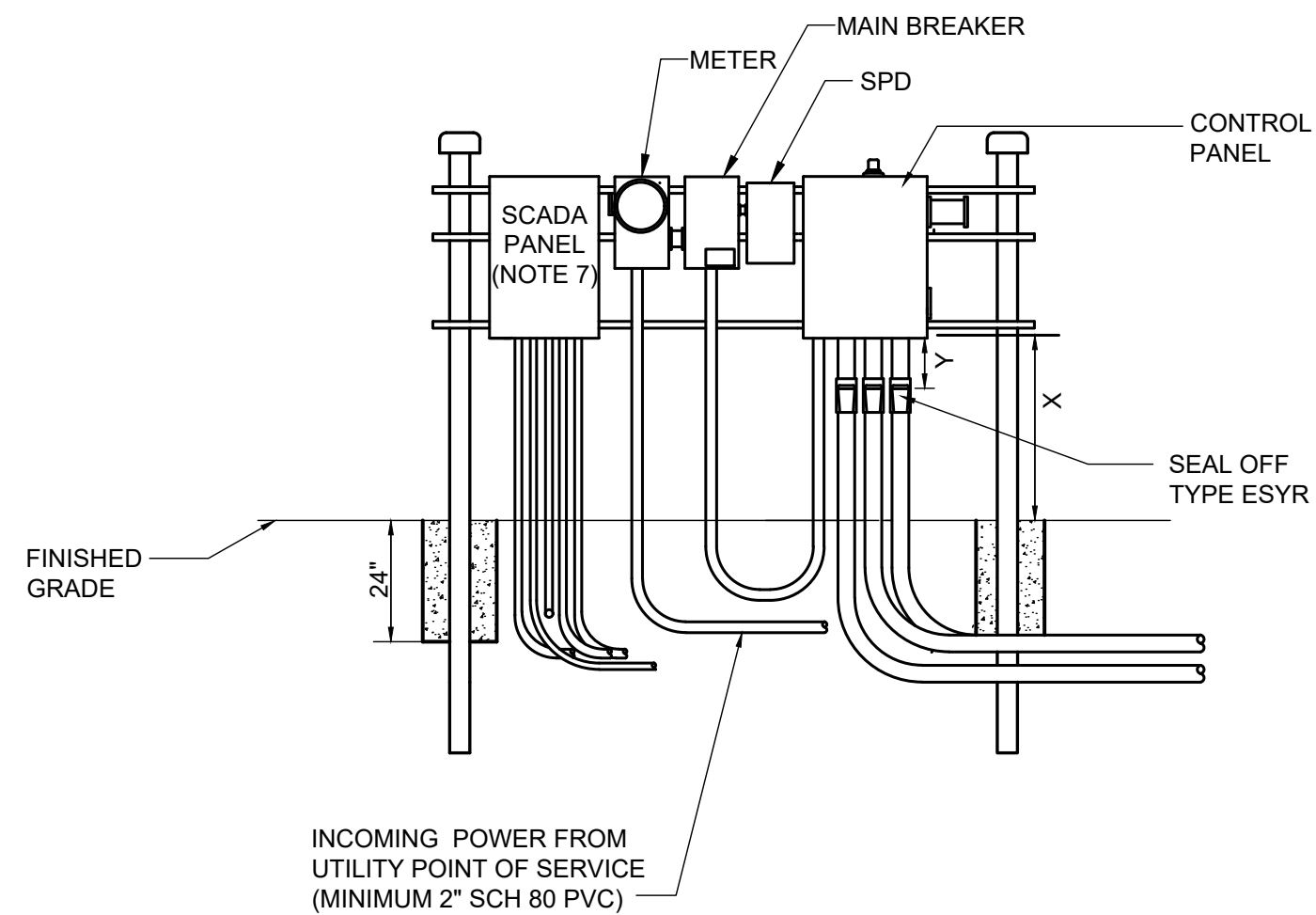
1. ALL WORK SHALL COMPLY WITH THE 2011 NEC.
2. THE ELECTRICAL DRAWINGS ARE DIAGRAMMATIC AND DO NOT NECESSARILY INDICATE EXACT LOCATIONS OF EQUIPMENT OR ALL REQUIRED FITTINGS AND HARDWARE. PROVIDE ALL EQUIPMENT, MATERIALS, AND LABOR REQUIRED FOR A COMPLETE OPERATING SYSTEM. COORDINATE EQUIPMENT LOCATIONS AND WIRING WITH ACTUAL FIELD CONDITIONS AND EQUIPMENT ACTUALLY PROVIDED.
3. CIRCUIT BREAKER SHALL BE SQ-D, OR EQUAL (AS LISTED IN APPENDIX D).
4. UNDERGROUND CONDUITS SHALL BE SCHEDULE 80 PVC BELOW GRADE. MINIMUM CONDUIT SIZE SHALL BE 0.75" ABOVE GRADE, AND 1.00" BELOW GRADE. UNDERGROUND CONDUIT SHALL BE RUN A MINIMUM OF 24" BELOW GRADE.
5. CABLE AND WIRE SHALL BE COPPER, DUAL RATED, TYPE THHN/THWN, EXCEPT GROUND CONDUCTORS SHALL BE SOFT DRAWN COPPER.
6. GROUND RODS SHALL BE COPPER CLAD STEEL, 0.75" BY 10 FT., DRIVEN SO TOP OF ROD IS 12" BELOW GRADE. ALL GROUNDING CONDUCTORS ARE 30" BELOW GRADE. ALL CONNECTIONS TO GROUND RODS SHALL BE EXOTHERMIC WELDS, ERICO "CADWELD" OR EQUAL, UNLESS OTHERWISE NOTED.
7. INSTALL AND CONNECT ALL ELECTRICAL EQUIPMENT FURNISHED UNDER OTHER SECTIONS.
8. WARRANTEE ENTIRE ELECTRICAL INSTALLATION FOR A PERIOD OF ONE YEAR FROM THE FINAL ACCEPTANCE DATE. PROMPTLY REPLACE AND/OR REPAIR ANY EQUIPMENT OR WIRING PROVIDED UNDER DIVISION 16 DURING THE WARRANTEE PERIOD WITH NO ADDITIONAL COSTS TO THE OWNER.
9. PUMP CONTROL PANEL WILL BE FURNISHED BY MECHANICAL CONTRACTOR AND INSTALLED AND WIRED BY ELECTRICAL CONTRACTOR. CIRCUIT DIAGRAM AND DETAILS ARE PROVIDED FROM DATA RECEIVED FROM THE VENDOR, AND ARE PROVIDED FOR THE CONTRACTOR'S CONVENIENCE. ACTUAL CIRCUITRY AND SPECIFIC DETAILS OF EQUIPMENT PROVIDED MAY VARY.



PANEL INSTALLATION NOTES:

1. PUMP MOTOR CONDUIT SHALL BE SIZE TO ACCOMMODATE 40% CONDUIT FILL. MINIMUM CONDUIT SIZE TO BE 2" SCH 80 PVC.
2. POWER SUPPLY SHALL BE UNDERGROUND ON THE LIFT STATION SITE AND SHALL BE 3-PHASE, FROM A 3-PHASE SOURCE ONLY. 100 AMP SERVICE MINIMUM.
3. AN ELECTRICAL GROUNDING SYSTEM SHALL BE INSTALLED AS PER THE NATIONAL ELECTRICAL CODE, LOCAL CODES AND ORDINANCES. AN UNDERGROUND PERIMETER CABLE GROUNDING SYSTEM SHALL BE INSTALLED WITH CONNECTIONS TO AT LEAST WET WELL COVER, VALVE VAULT COVER, CONTROL PANELS, GENERATOR, UTILITY COMPANY TRANSFORMER, MANUAL DISCONNECT SWITCH, AND METAL FENCE. REFER TO GROUNDING DETAILS.
4. THE STATION NAME, UTILITIES ID NUMBER, AND ADDRESS SHALL BE AFFIXED TO THE FRONT OF THE METER CABINET.
5. ALL MOUNTING HARDWARE AND BRACKETS AND ELECTRICAL ENCLOSURES SHALL BE 316 STAINLESS STEEL.
6. ON A 4-WIRE, DELTA SYSTEM, THE HIGH-LEG SHALL BE IDENTIFIED WITH ORANGE COLOR TAPE AT ALL CONNECTION POINTS AND SHALL BE LOCATED ON THE "B" PHASE AT THE LINE SIDE OF THE MAIN DISCONNECT.
7. THE SCADA PANEL SHALL BE RELOCATED AND MOUNTED ON THE PANEL RACK BY CONTRACTOR.
8. A MINIMUM OF 36-INCH CLEARANCE SHALL BE PROVIDED FOR SCADA PANEL REGARDLESS OF SIZE OF EXISTING SCADA PANEL.

**PUMP STATION CONTROL PANEL (240V)
BACK TO BACK REAR VIEW**



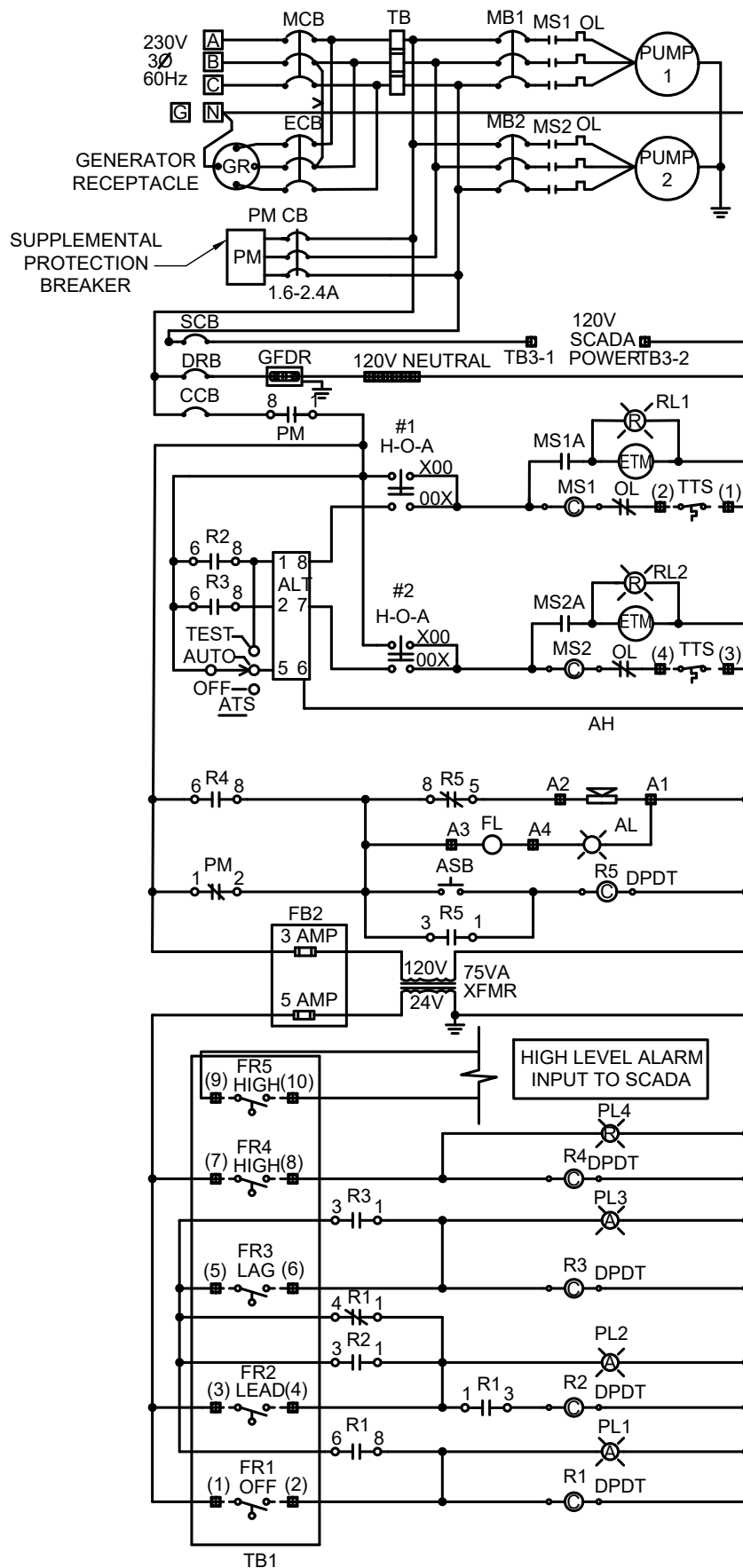
**PUMP STATION CONTROL PANEL (240V)
SIDE BY SIDE FRONT VIEW**

ALL NOTES ON THIS SHEET APPLY TO THIS VIEW

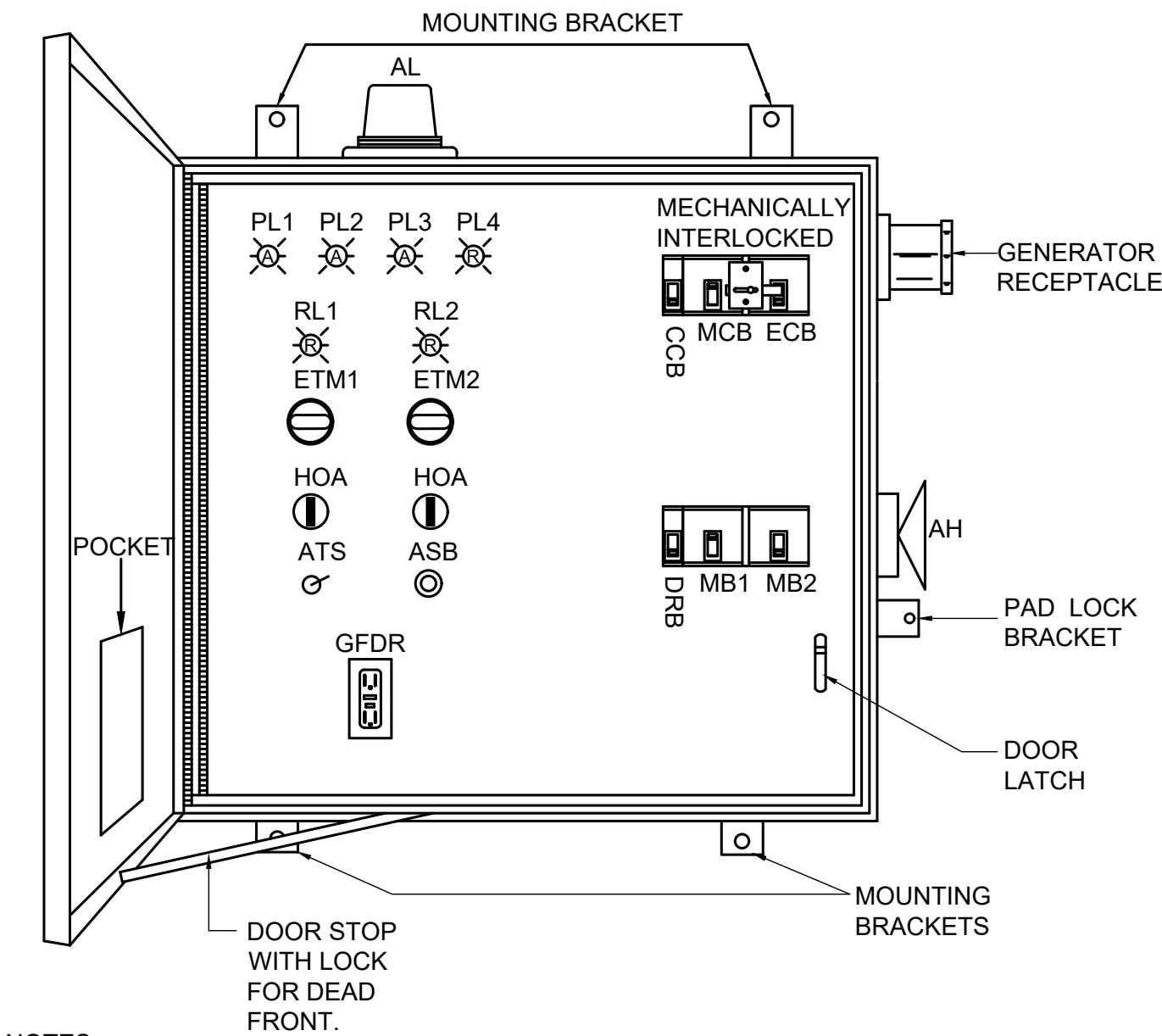
PANEL & SEAL-OFF MOUNTING HEIGHTS

PANEL HEIGHT	DIST "X"	DIST "Y"
36"	36"	18"
42"	30"	15"
48"	24"	12"
60"	24"	12"

FOR PANELS NOT LISTED ADJUST MOUNTING HEIGHTS ACCORDINGLY



DUPLEX PUMP CONTROL SCHEMATIC (240V)



NOTES:

1. DEADFRONT LAYOUT NEMA TYPE 3R SS ENCLOSURE W/CONTINUOUS HINGE. ALL HARDWARE TYPE 316 SS TYPICAL. ACTUAL LAYOUT MAY VARY WITH HORSEPOWER.
2. THIS CONTROL PANEL, INCLUDING THE GENERATOR RECEPTACLE, COMPLIES WITH THE STANDARD LIST OF COMPONENTS REQUIRED BY UTILITIES.
3. ALL CONTROL WIRE TO BE #14 AWG MINIMUM.
4. CONTROL PANEL SHALL BE UL LISTED AND LABELED.
5. 30 SPARE TERMINALS (TB2).
6. PHASE MONITOR CIRCUIT BREAKER TO BE SEIMENS P/N: MSP10G, OR SQ-D P/N: MG24532.

**DUPLEX CONTROL PANEL ENCLOSURE
DEAD FRONT LAYOUT**



No.	REVISIONS	BY	DATE
BID SET		GJH	5/24/2017

LINE IS 2 INCHES
AT FULL SIZE
(IF NOT SCALE ACCORDINGLY)
SCALE: AS NOTED



ORANGE COUNTY UTILITIES
9150 CURRY FORD ROAD
ORLANDO, FLORIDA 32825

BFA Environmental Consultants
Barnes, Ferland and Associates, Inc.
1230 E. Hillcrest Street, Orlando, FL, 32803
Ph: (407) 896-8828 Fax: (407) 896-1222
ENGINEERING BUSINESS No. 6899

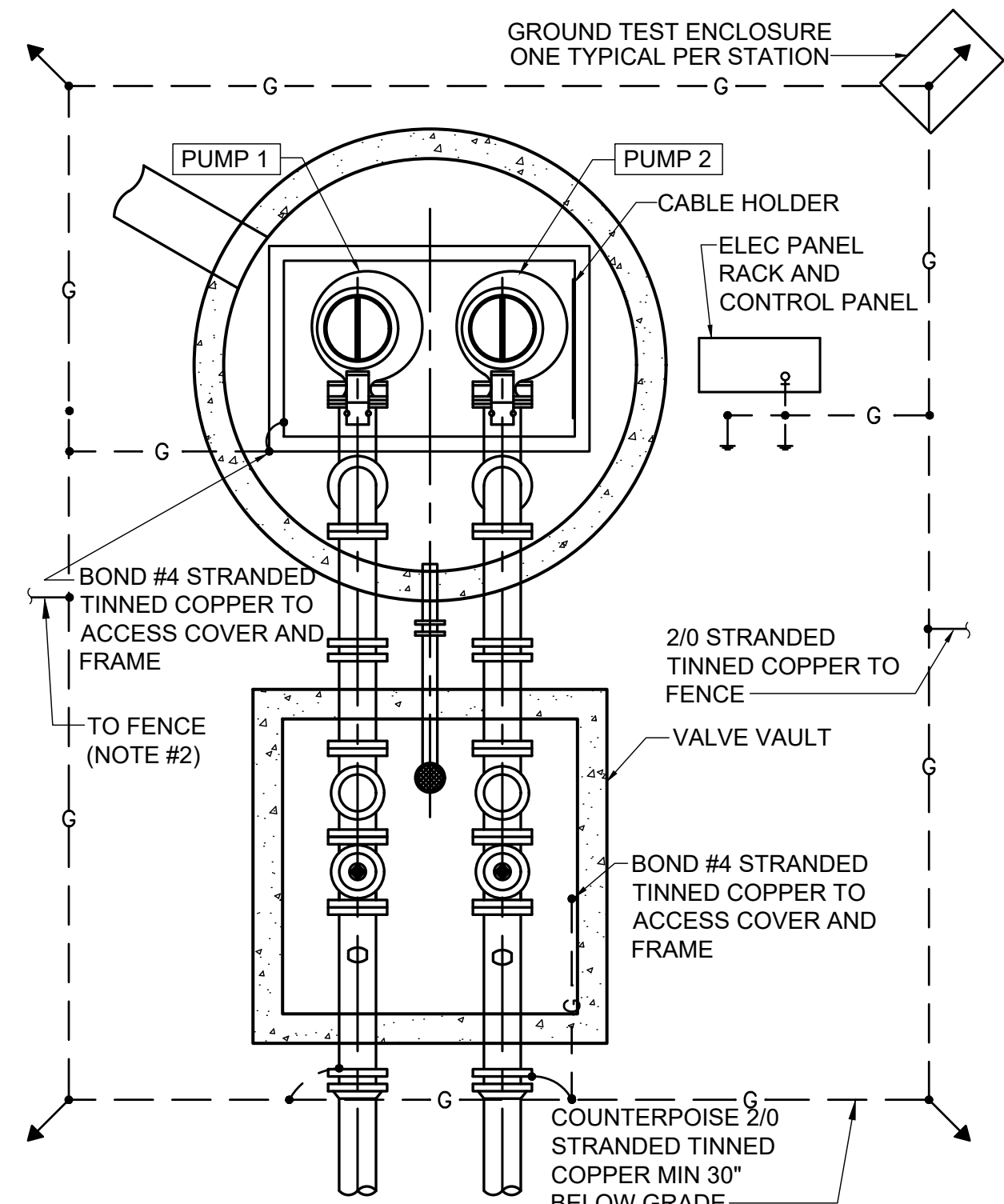
PUMP STATION R/R PACKAGE 10 IMPROVEMENTS

ELECTRICAL DETAILS

DESIGN ENGINEER
WILLARD HOANSHELT P.E.
FLORIDA REGISTRATION No.
42593

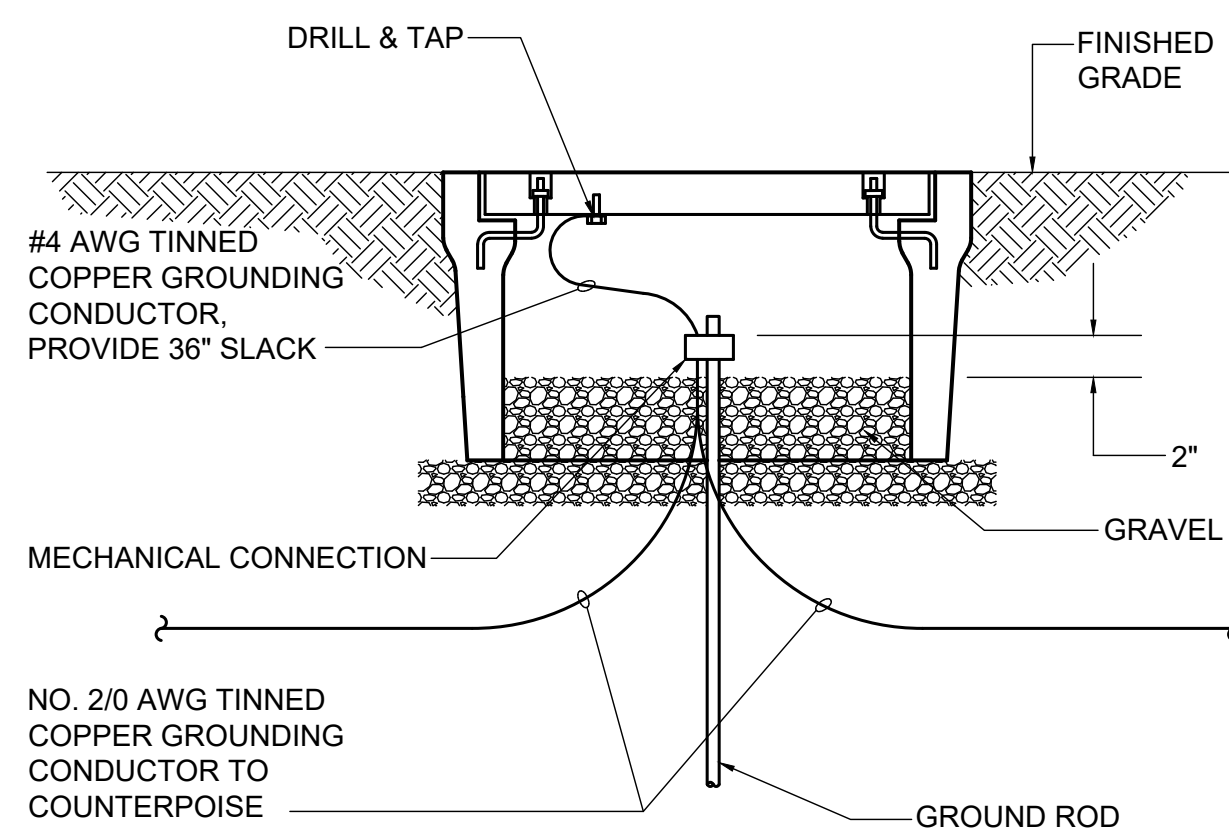
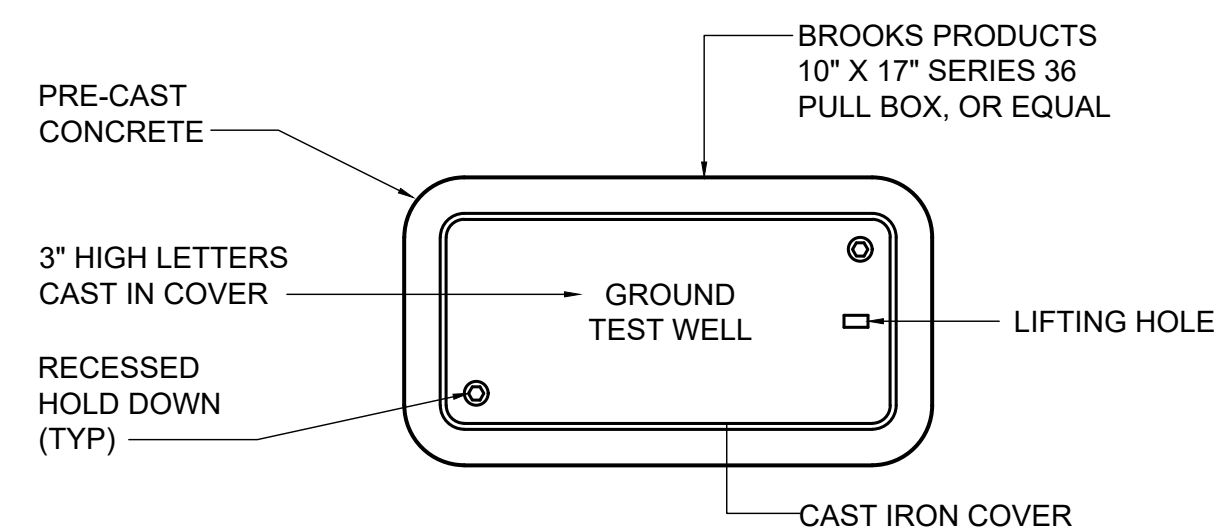
PROJECT No.: 2014-28-02
PROJECT DATE: JUNE 2017
DESIGNED BY: WCH
DRAWN BY: DJK
CHECKED BY: WCH
DRAWING FILE: SEE MARGIN

DRAWING No.
ED-100
SHEET
32 OF 34

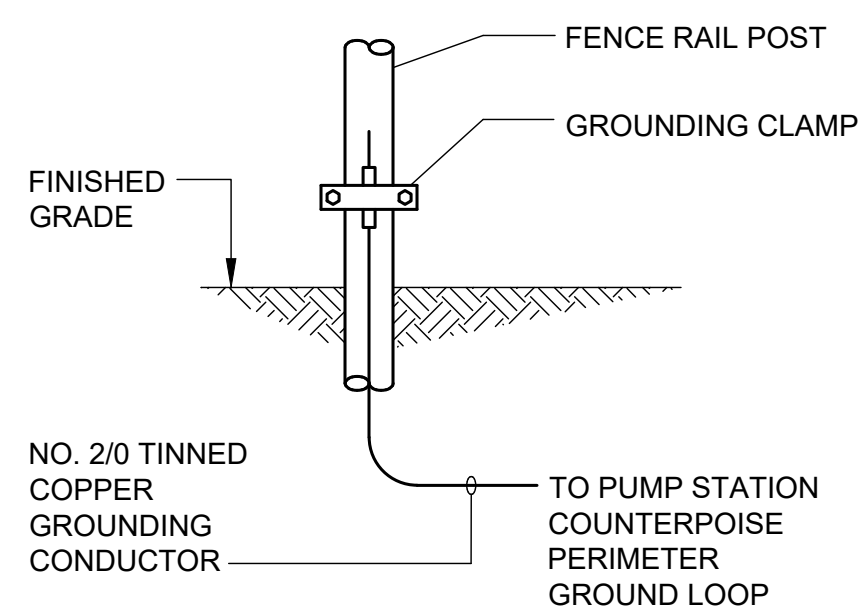
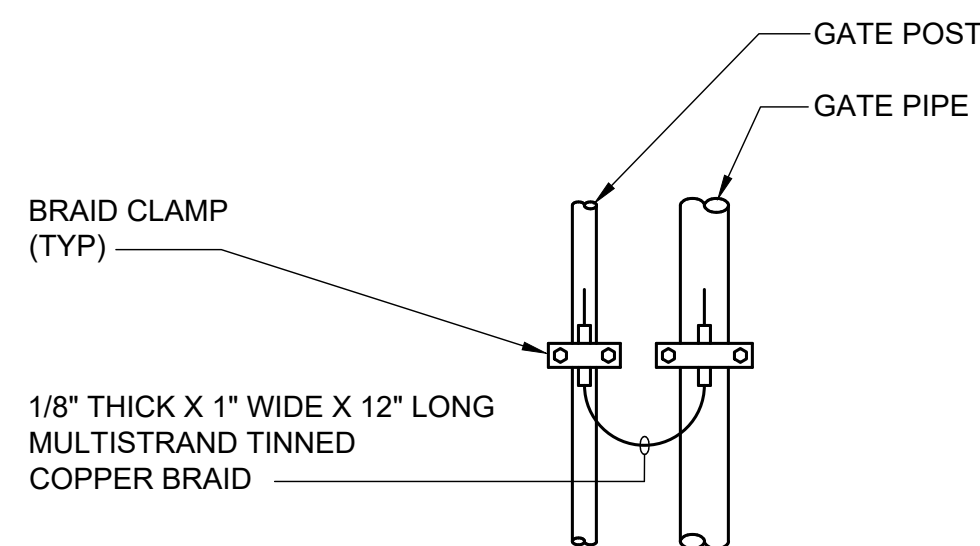


- NOTES:
1. DETAIL IS GENERIC. SPECIFIC LOCATIONS OF EQUIPMENT MAY VARY.
 2. TIE TO FENCE, MINIMUM 2 LOCATIONS. NOT REQUIRED WHERE PVC COATED, BLOCK, OR WOOD FENCE IS INSTALLED.
 3. PROVIDE EXOTHERMIC WELDS UNLESS NOTED OTHERWISE.

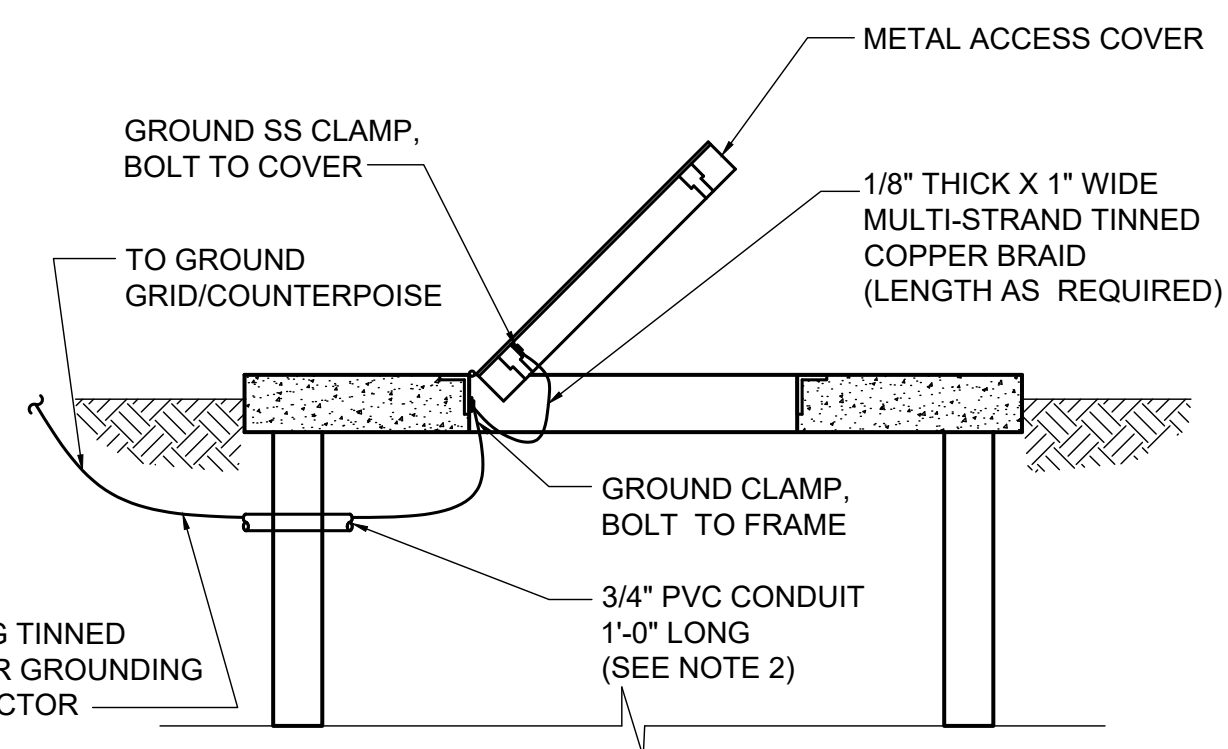
PUMP STATION GROUNDING (TYPICAL)



GROUND TEST WELL



FENCE POST GROUNDING (TYPICAL)



- NOTES:
1. ON COVERS WITH MULTIPLE DOORS, PROVIDE BRAID FROM FRAME TO DOOR ON EACH DOOR PROVIDE WATERPROOF CAULKING WHERE GROUND CABLE AND CONDUIT PENETRATES WETWELL TO PREVENT INTRUSION OF GROUNDWATER AND ESCAPE OF VAPOURS FROM WETWELL.
 2. INSTALL GROUND WIRE SO THAT IT WILL NOT CROSS CLEAR OPENING OR PREVENT OR IMPEDE NORMAL METHOD OF REMOVING FLOATS OR PUMPS.



EB: 6160

No.	REVISIONS	BY	DATE
BID SET		GJH	5/24/2017

LINE IS 2 INCHES
AT FULL SIZE
(IF NOT SCALE ACCORDINGLY)

SCALE: AS NOTED



ORANGE COUNTY UTILITIES
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PH: (407) 836-8838 FAX: (407) 836-1822
ENGINEERING BUSINESS No. 6899

PUMP STATION R/R PACKAGE 10 IMPROVEMENTS

ELECTRICAL DETAILS

DESIGN ENGINEER WILLARD HOANSHELT P.E.	PROJECT No.: 2014-28-02 PROJECT DATE: JUNE 2017 DESIGNED BY: WCH DRAWN BY: DJK	DRAWING No. ED-101
FLORIDA REGISTRATION No. 42593	CHECKED BY: WCH DRAWING FILE: SEE MARGIN	SHEET 33 OF 34

FITTING							
ID NUMBER	PLAN SHEET #	EASTING	NORTHING	ELEVATION	MAIN TYPE	FITTING TYPE	COMMENTS
C101-F1	C-101				FORCE MAIN	6" 90° BEND	PS 3116
C101-F2	C-101				FORCE MAIN	6" 45° BEND	PS 3116
C201-F1	C-201				FORCE MAIN	6" 45° BEND	PS 3117
C201-F2	C-201				FORCE MAIN	6" 45° BEND	PS 3117
C201-F3	C-201				FORCE MAIN	LINE STOP	PS 3117
C301-F1	C-301				FORCE MAIN	6" SLEEVE	PS 3216
C301-F2	C-301				FORCE MAIN	6" 11.25° BEND	PS 3216
C301-F3	C-301				FORCE MAIN	LINE STOP	PS 3216

PUMP STATION					
ID NUMBER	PLAN SHEET #	EASTING	NORTHING	ELEVATION	COMMENTS
C101-PS1	C-101				PS 3116
C201-PS1	C-201				PS 3117
C301-PS1	C-301				PS 3216

PROPERTY OR EASEMENT CORNER						
ID NUMBER	PLAN SHEET #	EASTING	NORTHING	ELEVATION	BOUNDARY CORNER TYPE	COMMENTS
C101-CNR1	C-101					PS 3116
C101-CNR2	C-101					PS 3116
C101-CNR3	C-101					PS 3116
C101-CNR4	C-101					PS 3116
C101-CNR5	C-101					PS 3116
C101-CNR6	C-101					PS 3116
C101-CNR7	C-101					PS 3116
C101-CNR8	C-101					PS 3116
C201-CNR1	C-201					PS 3117
C201-CNR2	C-201					PS 3117
C201-CNR3	C-201					PS 3117
C201-CNR4	C-201					PS 3117


MANHOLE														
ID NUMBER	PLAN SHEET #	EASTING	NORTHING	RIM ELEVATION	INVERT ELV N	INVERT ELV NE	INVERT ELV E	INVERT ELV SE	INVERT ELV S	INVERT ELV SW	INVERT ELV W	INVERT ELV NW	MANUFACTURER	COMMENTS
C101-MH1	C-101													PS 3116

PUMP STATION OUTER LIMITS					
ID NUMBER	PLAN SHEET #	EASTING	NORTHING	ELEVATION	COMMENTS
C101-PSOL1	C-101				PS 3116
C101-PSOL2	C-101				PS 3116
C101-PSOL3	C-101				PS 3116
C101-PSOL4	C-101				PS 3116
C101-PSOL5	C-101				PS 3116
C101-PSOL6	C-101				PS 3116
C101-PSOL7	C-101				PS 3116
C101-PSOL8	C-101				PS 3116
C201-PSOL1	C-201				PS 3117
C201-PSOL2	C-201				PS 3117
C201-PSOL3	C-201				PS 3117
C201-PSOL4	C-201				PS 3117
C301-PSOL1	C-301				PS 3216
C301-PSOL2	C-301				PS 3216
C301-PSOL3	C-301				PS 3216
C301-PSOL4	C-301				PS 3216

No.	REVISIONS	BY	DATE
BID SET		GJH	5/24/2017

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PUMP STATION R/R PACKAGE 10 IMPROVEMENTS

AS-BUILT COORDINATE ASSET TABLES

DESIGN ENGINEER GEOFFREY J. HENNESSY, P.E.	PROJECT No.: 2014-28-02 PROJECT DATE: JUNE 2017	DRAWING No. X-100
DESIGNED BY: RGB	DRAWN BY: JAB	SHEET OF 34
CHECKED BY: GJH	DRAWING FILE: SEE MARGIN	
FLORIDA REGISTRATION No. 58637		