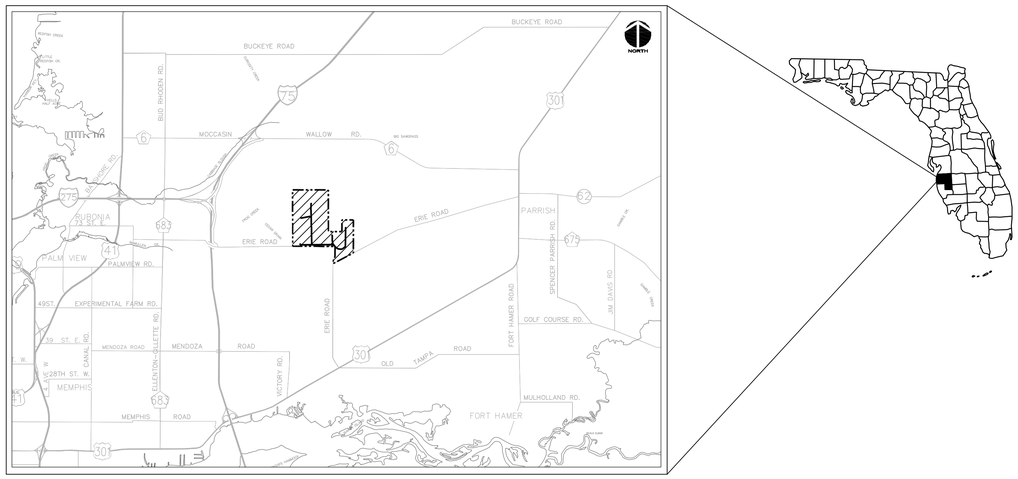
NORTH COUNTY WELLS / TREATMENT

COUNTY PROJECT #6069570

ISSUE FOR BID
FEBRUARY 2009

MANATEE COUNTY, FLORIDA



PROJECT VICINITY MAP
NTS

McKIM & CREED
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Clearwater, FL 33756
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EB0006691
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STEPHEN P. TOPOVSKI, P.E.
No. 61579

DRAWING INDEX

GENERAL

S:\1024\0117\MD-Drawings\G001-1024011 7.dwg, 2/19/2009 1:21:57 PM, Brian Nought

GENERAL ABBREVIATIONS

@	AT	LG.	LONG
AC	ASPHALTIC CONCRETE	LN.	LANE
ABD	ABANDONED	LP	LIGHT POLE
AL./ALUM.	ALUMINUM	MAX.	MAXIMUM
ANCH.	ANCHOR	MBOX	MAILBOX
APPROX.	APPROXIMATE	MCC	MOTOR CONTROL CENTER
AVE.	AVENUE	MES	MITERED END SECTION
BLDG.	BUILDING	MON.	MONUMENT
BLVD.	BOULEVARD	N.T.S.	NOT TO SCALE
BM.	BEAM	NO.	NUMBER
BOT./BOTT.	BOTTOM	ø	DIAMETER/PHASE
C	CHANNEL	OPNG.	OPENING
C.	CONDUIT	PA	PALM TREE
C.B.	CATCH BASIN	PLCS.	PLACES
CHKR	CHECKERED	POT	POTABLE
CIR.	CIRCLE	PP	POWER POLE
CL	CHAIN LINK	PROP.	PROPOSED
℄	CENTERLINE	P.S.	PUMP STATION
CMP	CORRUGATED METAL PIPE	P.V.	PLUG VALVE
COL.	COLUMN	PVMT	PAVEMENT
CONN.	CONNECTOR/CONNECTION	R.	RADIUS/RISER/RELAY
CONC.	CONCRETE	RCP	RINFORCED CONCRETE PIPE
CU.	COPPER	REF.	REFERENCE
D.	DEEP/DRAIN	REINF.	REINFORCED/REINFORCING
DAF.	DISSOLVED AIR FLOTATION	REQ'D	REQUIRED
DBL.	DOUBLE	RESTR.	RESTRAINED
DISCH.	DISCHARGE	RW;R/W	RIGHT-OF-WAY
DN.	DOWN	SAN.	SANITARY
DR.	DRIVE	SEC.	SECTION
DRWY	DRIVEWAY	SGL	SINGLE
E.W.	EACH WAY	SPRK	SPRINKLER
EA.	EACH	SQ.	SQUARE
EL./ELEV.	ELEVATION	SN	SIGN
ELEC.	ELECTRICAL CONDUIT	ST.	STREET
ETC.	AND SO FORTH	STL.	STEEL
EXIST.	EXISTING	S/W; SWK	SIDEWALK
EXP.	EXPANSION	SYM.	SYMMETRICAL
FHA	FIRE HYDRANT ASSEMBLY	TB	TOP OF BANK (DITCH)
FT.	FOOT	T. & B.	TOP & BOTTOM
FTG.	FOOTING	TEL	TELEPHONE
GALV.	GALVANIZED	TEMP.	TEMPORARY
GDRL	GUARDRAIL	THK	THICK
GEN	GENERATOR	TOS	TOE OF SLOPE (DITCH)
GI	GRATED INLET	TYP.	TYPICAL
GPM	GALLONS PER MINUTE	UG	UNDERGROUND GAS
GRTG.	GRATING	UP	UTILITY POLE
G.S.	GALVANIZED STEEL	UT	UNDERGROUND TELEPHONE
GR./GRD.	GRADE	VERT.	VERTICAL
GWP	GUY WIRE POLE	W	WIDE FLANGE/WIDE/WATT
HDD	HORIZONTAL DIRECTIONAL DRILL	W/	WITH
HDWALL	HEADWALL	W/L	WATER LINE
H.R.	HANDRAIL	W.L.	WATER LEVEL
IN.	INCH	W/M	WATER MAIN
INV.	INVERT	W.M.	WATER METER
IP	IRON PIPE	W.P.	WEATHER PROOF
IR	IRON ROD	W.S.	WALL SLEEVE/WATER STOP/WATER SERVICE
J.B.	JUNCTION BOX	WTR.	WATER
JT.	JOINT		

LEGEND

EXISTING	PROPOSED
	STORM DRAIN PIPE
	SANITARY SEWER PIPE
	WATER MAIN
	SANITARY SEWER FORCE MAIN
	RECLAIMED WATER MAIN
	GAS MAIN
	GATE VALVE
	BUTTERFLY VALVE
	BALL VALVE
	PLUG VALVE
	REDUCER
	AIR RELEASE VALVE
M.H.	MANHOLE
C.B.	CATCH BASIN
FH	FIRE HYDRANT ASSEMBLY
	TOP OR TOE OF BANK
	FENCE
	R/W OR PROPERTY LINE
OHW	OVERHEAD ELECTRICAL WIRE
UGT	UNDERGROUND TELEPHONE LINE
UGE	UNDERGROUND ELECTRICAL LINE
	POWER POLE
	LIGHT POLE
	UTILITY POLE
WM	WATER METER
	SPRINKLER
	SIGN (SN)
	TRAVERSE POINT
FCM	CONCRETE MONUMENT
FIP	FOUND IRON PIPE
FIR	FOUND IRON ROD
FOR	FOUND CAPPED IRON ROD
	EXISTING TREE
PI 8"	EXISTING TREE TO BE REMOVED
	ROOT PRUNING
	SILT FENCE/LIMITS OF CONSTRUCTION
	FLOATING TURBIDITY BARRIER

PIPING ABBREVIATIONS

CORP	CORPORATION
D.I.	DUCTILE IRON
DIA	DIAMETER
D.I.P.	DUCTILE IRON PIPE
HB	HOSE BIB
MH	MANHOLE
MJ	MECHANICAL JOINT
PE	PLAIN END
PVC	POLYVINYLCHLORIDE
RED.	REDUCER
SCH.	SCHEDULE
SS	STAINLESS STEEL
HDPE	HIGH DENSITY POLYETHYLENE

SOIL BORINGS LEGEND

HSB	HAND SOIL BORING
DSB	DEEP SOIL BORING
	SOIL BORING LOCATION

GENERAL NOTES

1. ELEVATIONS ARE BASED ON NATURAL GEODETIC VERTICAL DATUM OF 1929 (NGVD 29) AND ARE MATCHED TO MANATEE COUNTY SURVEY DIVISION BENCHMARKS 133-29-01 HAVING AN ELEVATION OF 33.501 FEET, AND 96-29-04 HAVING AN ELEVATION OF 37.304.
2. THE LOCATIONS AND ELEVATIONS OF EXISTING FACILITIES SHOWN WITHIN THE LIMITS OF CONSTRUCTION ARE PROVIDED BY McKIM & CREED, P.A. SURVEYORS SPECIFICALLY FOR THIS PROJECT, ALONG WITH RECORD DRAWINGS PROVIDED BY MANATEE COUNTY.
3. RIGHT-OF-WAY INFORMATION IS FURNISHED BY THE BEST AVAILABLE DOCUMENTATION AND AVAILABLE MONUMENTATION AND DOES NOT CONSTITUTE AN ACTUAL RIGHT-OF-WAY SURVEY.
4. PLANS ARE SOLELY TO ASSIST THE CONTRACTOR IN ASSESSING THE NATURE AND EXTENT OF THE EXISTING CONDITIONS WHICH MAY BE ENCOUNTERED DURING THE COURSE OF WORK. CONTRACTORS ARE DIRECTED, PRIOR TO BIDDING, TO CONDUCT WHATEVER INVESTIGATION THEY DEEM NECESSARY TO DETERMINE THE ACTUAL CONDITIONS THAT WILL BE ENCOUNTERED.
5. THE CONTRACTOR SHALL REVIEW AND VERIFY ALL DIMENSIONS ON THE PLANS AND REVIEW ALL FIELD CONDITIONS THAT MAY AFFECT CONSTRUCTION. SHOULD DISCREPANCIES OCCUR, THE CONTRACTOR SHALL NOTIFY THE OWNER TO OBTAIN THE OWNER'S CLARIFICATION BEFORE COMMENCING WITH CONSTRUCTION.
6. LOCATION, ELEVATIONS AND DIMENSIONS OF EXISTING UTILITIES, STRUCTURES, AND OTHER FEATURES ARE SHOWN TO THE BEST INFORMATION AVAILABLE AT THE TIME OF PREPARATION OF THESE PLANS BUT DO NOT PURPORT TO BE ABSOLUTELY CORRECT. THE CONTRACTOR SHALL VERIFY, PRIOR TO CONSTRUCTION, THE LOCATIONS, ELEVATIONS, AND DIMENSIONS OF ALL EXISTING UTILITIES, STRUCTURES, AND OTHER FEATURES (WHETHER OR NOT SHOWN ON THE PLANS) AFFECTING HIS WORK.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH THE FOLLOWING JURISDICTIONAL BODIES AND UTILITY COMPANIES:

CALL LOCAL PUBLIC UTILITY NOTIFICATION CENTER
INVESTIGATE BEFORE YOU EXCAVATE
TOLL FREE 1-800-432-4770
MIN. 48 HOURS BEFORE YOU EXCAVATE

MANATEE COUNTY
TRANSPORTATION DEPT.
ALLEN BENTLEY
2904 12TH STREET COURT E.
BRADENTON, FL 34208
(941) 708-7509

MANATEE COUNTY
UTILITY OPERATIONS
KATHY McMAHON
4422-C 66th STREET W.
BRADENTON, FL 34210

VERIZON FLORIDA, INC.
DON DURDEN
1701 RINGLING BLVD.
SARASOTA, FL 34236
(941) 952-5616

PARAGON CABLE -
BRIGHTHOUSE NETWORK, LLC
WALTER KROL
5413 S.R. 64 E.
BRADENTON, FL 34208
(941) 748-3816 Ext. 24053

PEACE RIVER ELECTRIC CO-OP
NEIL BONE
P.O. BOX 1310
WAUCHULA, FLORIDA 33873
(863) 773-4116

TECO/PEOPLES GAS
TED FELEGY
8261 VCO CT.
SARASOTA, FL 34240
(941) 342-4026

8. THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THERE WILL LIKELY BE UTILITY CONFLICTS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO LOCATE AND PROTECT ANY AND ALL EXISTING UTILITIES ON THE PROJECT.
9. THE CONTRACTOR SHALL EXCAVATE TO DETERMINE THE LOCATION OF EXISTING UTILITIES ADJACENT TO OR CROSSING PROPOSED WORK BEFORE STARTING CONSTRUCTION.
10. THE CONTRACTOR SHALL INSTALL PIPELINES AT THE DEPTH SHOWN ON THE DRAWINGS, UNLESS OTHERWISE DIRECTED BY THE OWNER OR ENGINEER.
11. THE CONTRACTOR SHALL PROTECT ALL EXISTING STRUCTURES, STORM DRAINS, SEWERS, UTILITIES, AND OTHER FACILITIES IN THE CONSTRUCTION AREA. THE CONTRACTOR SHALL REPAIR ANY DAMAGES DUE TO HIS CONSTRUCTION ACTIVITIES AT NO ADDITIONAL COST TO THE OWNER.
12. CONTRACTOR SHALL NOT BLOCK ACCESS TO ADJACENT PROPERTIES AT ANY TIME.
13. MAINTENANCE OF TRAFFIC SIGNS AND OTHER CONTROLS SHALL BE PROVIDED BY THE CONTRACTOR DURING CONSTRUCTION AS REQUIRED BY THE F.D.O.T. AND MANATEE COUNTY. ALL OPEN CUTS SHALL BE RESTORED BY THE CONTRACTOR AS REQUIRED BY F.D.O.T. AND MANATEE COUNTY.
14. THE LOCATIONS OF EXISTING AND PROPOSED FACILITIES BY THE COORDINATE SYSTEM HAVE BEEN PROVIDED SPECIFICALLY FOR THIS PROJECT. THE CONTRACTOR SHALL ENGAGE A PROFESSIONAL SURVEYOR & MAPPER, REGISTERED IN FL, TO PROVIDE ALL STRUCTURE, PIPELINE AND PROPERTY LINE STAKING, VERTICAL, AND HORIZONTAL ROADWAY AND PIPELINE ALIGNMENT, AND FINAL LOCATION DATA FOR RECORD DRAWINGS.
15. CONNECTIONS TO EXISTING FACILITIES SHALL BE ACCOMPLISHED IN A NEAT WORKMAN LIKE MANNER. WHEN FIELD CONDITIONS INDICATE ANY VARIANCE FROM DETAILED METHODS, THE CONTRACTOR SHALL PROVIDE COMPREHENSIVE AND DETAILED DRAWINGS (FOR OWNER APPROVAL) OF METHODS AND MATERIALS PROPOSED.
16. WHERE IT IS NECESSARY TO DEFLECT PIPE EITHER HORIZONTALLY OR VERTICALLY, PIPE JOINT DEFLECTION SHALL NOT EXCEED 75% OF THE MANUFACTURERS' RECOMMENDED DEFLECTION ANGLE.
17. WATER SHALL NOT BE PERMITTED IN THE TRENCH DURING CONSTRUCTION. DEWATERING IS REQUIRED TO 18" BELOW TRENCH BOTTOM.
18. ALL FITTINGS SHALL BE DUCTILE IRON.
19. ALL EXPOSED PIPING SHALL BE PAINTED WITH DESIGNATED COLORS ASSOCIATED WITH THEIR USAGE AS PROVIDED IN THE SPECIFICATIONS.
20. ALL VALVE BOX COVERS SHALL BE PAINTED TO INDICATE THEIR TYPE OF SERVICE.
21. ALL NEW PIPES SHALL BE FLUSHED, SHALL PASS REQUIRED BACTERIOLOGICAL AND PRESSURE TESTS, AND SHALL BE APPROVED BY THE MANATEE COUNTY HEALTH DEPARTMENT AND THE ENGINEER-OF-RECORD, PRIOR TO TIEING THEM IN TO EXISTING FACILITIES AND PLACING THEM IN SERVICE.
22. ALL CONCRETE THRUST BLOCKS INSTALLED FOR TESTING PURPOSES AND NOT REQUIRED FOR THE OPERATION OF THE PIPELINE SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR PRIOR TO FINAL ACCEPTANCE.
23. CONTRACTOR SHALL MAINTAIN A CLEAR PATH FOR ALL SURFACE WATER DRAINAGE STRUCTURES AND DITCHES DURING ALL PHASES OF CONSTRUCTION.
24. SEDIMENT CONTROL INCLUDES SILT DAMS, TRAPS, EROSION PROTECTION, AND ANY OTHER APPURTENANCES NEEDED BUT NOT NECESSARILY SHOWN ON THESE DRAWINGS.
25. ALL RESTORATION WORK PERFORMED THROUGHOUT THE PROJECT SHALL CONFORM TO EXISTING LINES AND GRADES UNLESS OTHERWISE DIRECTED.
26. ALL EXISTING FENCES DISTURBED DURING CONSTRUCTION SHALL BE REPAIRED OR REPLACED AND REINSTALLED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
27. CONTRACTOR SHALL MAINTAIN A SET OF PLANS WITH CURRENT FIELD CHANGES MARKED THEREON AND SHALL DELIVER THESE PLANS TO THE ENGINEER AT EACH MONTHLY PROGRESS MEETING, AND UPON COMPLETION OF CONSTRUCTION. FINAL PAYMENT SHALL NOT BE MADE UNTIL THIS REQUIREMENT IS SATISFIED.
28. THE PIPELINES SHALL BE PIGGED AS SPECIFIED. THE COST FOR PIGGING, INCLUDING THE ADDITIONAL FITTINGS REQUIRED FOR INSERTING AND RETRIEVING THE FOAM POLY PIG, SHALL BE INCLUDED IN THE COST FOR DUCTILE IRON FITTINGS.
29. THERE ARE TO BE NO "SIZE ON SIZE TAPS" OR "SIZE ON SMALLER TAPS" ON THIS PROJECT.
30. THE CONTRACTOR SHALL BE REQUIRED TO HAVE AN INTERNATIONAL SOCIETY ARBORICULTURAL (ISA) CERTIFIED ARBORIST PERFORM, OR DIRECTLY SUPERVISE ROOT PRUNING TO REDUCE THE IMPACTS OF CONSTRUCTION
31. AIR RELEASE VALVES SHALL BE LOCATED ABOVE GROUND.
32. PIPING SHALL BE RESTRAINED AS SHOWN IN THE CIVIL DETAILS, OR AS OTHERWISE INDICATED ON THE DRAWINGS.
33. ALL UTILITY CONSTRUCTION AND MATERIALS SHALL MEET OR EXCEED THE LATEST VERSION OF THE MANATEE COUNTY UTILITY STANDARDS, AVAILABLE ON MANATEE COUNTY'S PUBLIC WORKS WEBSITE.
34. ALL COORDINATES SHOWN HEREON ARE BASED ON THE FLORIDA STATE PLAN COORDINATE SYSTEM FOR THE WEST ZONE (SPC FL W), NORTH AMERICAN DATUM OF 1983 / 1999 ADJUSTMENT (NAD 83 / 99), TRANSVERSE MERCATOR PROJECTION AND ARE MATCHED TO THE FOLLOWING NATIONAL GEODETIC SURVEY (NGS) PUBLISHED CONTROL.

    ORIGINATING COORDINATES:

    STATION DESIGNATION - NORTHING - EASTING

    GIS 009 - 1188044.30 - 494782.22

    I75 84 A45 - 1171936.68 - 490517.59

35. CONTRACTOR SHALL, PRIOR TO BEGINNING CONSTRUCTION, SUBMIT A "FUELING SPILL PREVENTION PLAN" THAT SHALL CLEARLY INDICATE HOW FUEL SPILLS WILL BE PREVENTED WHEN FUELING BOTH WITHIN AND OUTSIDE OF THE STAGING AREA.
36. CONTRACTOR SHALL SUBMIT A DEWATERING PLAN PRIOR TO BEGINNING CONSTRUCTION.
37. STATIONING FOR ALL VALVES & AIR RELEASES IS APPROXIMATE. ADJUSTMENT IN THE FIELD SHALL BE APPROVED BY THE OWNER & NOTED ON THE RECORD DRAWINGS.
38. UNLESS NOTED OTHERWISE OR DIRECTED BY THE OWNER, CONTRACTOR SHALL CLEAR AND GRUB, AS NEEDED, THE AREA WITHIN THE "LIMITS OF CONSTRUCTION" IDENTIFIED, WITH THE EXCEPTION OF WELLS UFAW-4, IAW-7, AND IAW-8. FOR THESE THREE WELL SITES, THE LIMITS FOR CLEARING AND GRUBBING SHALL BE THE PERMANENT CONSTRUCTION EASEMENT IDENTIFIED. THE CONTRACTOR SHALL SEED/SOD ALL DISTURBED AREAS.
39. ACCESS TO BUFFALO CREEK GOLF COURSE, BUFFALO CREEK GOLF COURSE MAINTENANCE BUILDING, AND THE NORTH WATER RECLAMATION FACILITY TO BE MAINTAINED AT ALL TIMES.
40. THE CONTRACTOR WILL RESTORE EXCAVATED AREAS WITHIN THE LIMITS OF CONSTRUCTION TO BE PRECONSTRUCTION GRADES. RESTORED GRADES WITHIN UPLANDS AREAS WILL BE STABILIZED WITHIN 72 HOURS.

REV.NO.	DESCRIPTIONS	DATE
	REVISIONS	

SEAL

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No. 61579

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MANATEE COUNTY, FLORIDA

NORTH COUNTY WELLS / TREATMENT

GENERAL NOTES, LEGEND, & ABBREVIATIONS

DATE:	FEBRUARY 2009
MCE PROJ. #	1024-0117
DRAWN	BFN
DESIGNED	BFN
CHECKED	MAC
PROJ. MGR.	SPT

SCALE
HORIZONTAL: NA
VERTICAL: NA

M&C FILE NUMBER

DRAWING NUMBER
G2

STATUS: ISSUE FOR BID
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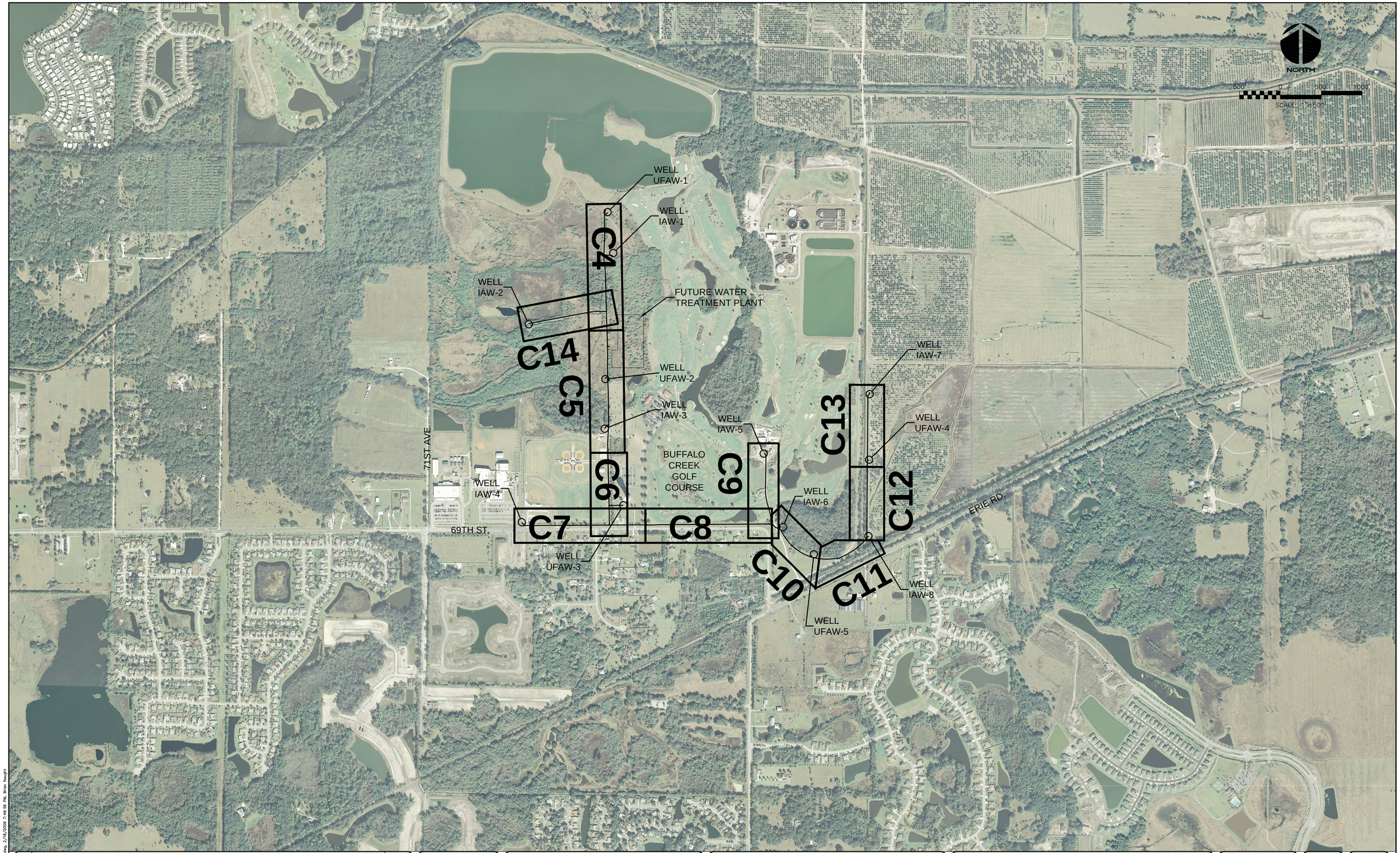

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MANATEE COUNTY, FLORIDA

NORTH COUNTY WELLS / TREATMENT

SHEET LAYOUT PLAN

DATE:	FEBRUARY 2009
MCE PROJ. #	1024-0117
DRAWN	BFN
DESIGNED	BFN
CHECKED	MAC
PROJ. MGR.	SPT

SCALE
HORIZONTAL: 1" = 500'
VERTICAL:

M&C FILE NUMBER

DRAWING NUMBER
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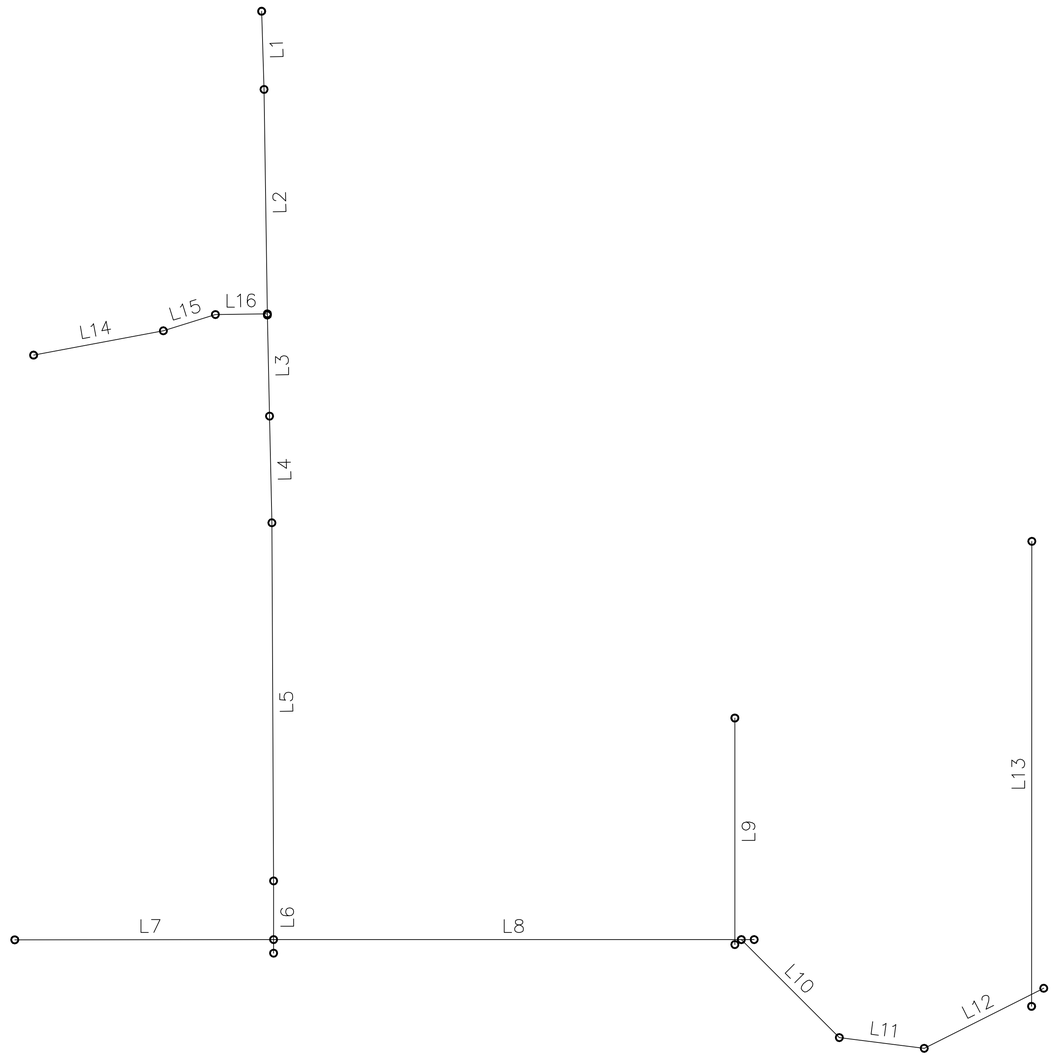

Line Table: Alignments

Line #	Length	Direction	Start Point	Start Station	End Point	End Station
L1	327.84'	S1° 50' 33.21"E	N: 1182080.60 E: 499250.62	100+00.00	N: 1181752.93 E: 499261.16	103+27.84
L2	946.64'	S0° 49' 27.73"E	N: 1181752.93 E: 499261.16	103+27.84	N: 1180806.38 E: 499274.78	112+74.49
L3	423.37'	S1° 15' 04.97"E	N: 1180806.38 E: 499274.78	112+74.49	N: 1180383.11 E: 499284.03	116+97.86
L4	447.39'	S1° 15' 04.97"E	N: 1180383.11 E: 499284.03	116+97.86	N: 1179935.83 E: 499293.80	121+45.25
L5	1501.72'	S0° 16' 43.29"E	N: 1179935.83 E: 499293.80	121+45.25	N: 1178434.12 E: 499301.11	136+46.97
L6	303.03'	S0° 00' 00.00"E	N: 1178434.12 E: 499301.11	136+46.97	N: 1178131.09 E: 499301.11	139+50.00
L7	1085.50'	N89° 57' 10.55"E	N: 1178187.05 E: 498215.61	200+00.00	N: 1178187.94 E: 499301.11	210+85.50
L8	2014.50'	S89° 59' 59.36"E	N: 1178187.94 E: 499301.11	210+85.50	N: 1178187.94 E: 501315.61	231+00.00
L9	950.00'	S0° 00' 00.00"E	N: 1179117.02 E: 501234.71	300+00.00	N: 1178167.02 E: 501234.71	309+50.00
L10	580.76'	S45° 00' 41.35"E	N: 1178187.94 E: 501262.27	400+00.00	N: 1177777.37 E: 501673.01	405+80.76
L11	358.83'	S82° 47' 32.13"E	N: 1177777.37 E: 501673.01	405+80.76	N: 1177732.35 E: 502029.01	409+39.59
L12	560.41'	N63° 21' 38.63"E	N: 1177732.35 E: 502029.01	409+39.59	N: 1177983.62 E: 502529.93	415+00.00
L13	1950.00'	N0° 02' 16.92"E	N: 1177908.10 E: 502479.01	500+00.00	N: 1179858.10 E: 502480.31	519+50.00
L14	553.51'	N79° 23' 38.21"E	N: 1180638.70 E: 498294.64	600+00.00	N: 1180740.57 E: 498838.69	605+53.51
L15	228.89'	N72° 36' 35.99"E	N: 1180740.57 E: 498838.69	605+53.51	N: 1180808.98 E: 499057.12	607+82.39
L16	217.61'	N89° 10' 32.27"E	N: 1180808.98 E: 499057.12	607+82.39	N: 1180812.11 E: 499274.70	610+00.00

NOTE:
SEE SHEET G2, NOTE 1 FOR VERTICAL CONTROL.

REV.NO.	DESCRIPTIONS	DATE
	REVISIONS	

SEAL

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MANATEE COUNTY, FLORIDA

NORTH COUNTY WELLS / TREATMENT

HORIZONTAL CONTROL PLAN

DATE:	FEBRUARY 2009
MCE PROJ. #	1024-0117
DRAWN	BFN
DESIGNED	BFN
CHECKED	BFN
PROJ. MGR.	SPT

SCALE
HORIZONTAL: 1" = 300'
VERTICAL: NA

M&C FILE NUMBER

DRAWING NUMBER
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STATUS: ISSUE FOR BID
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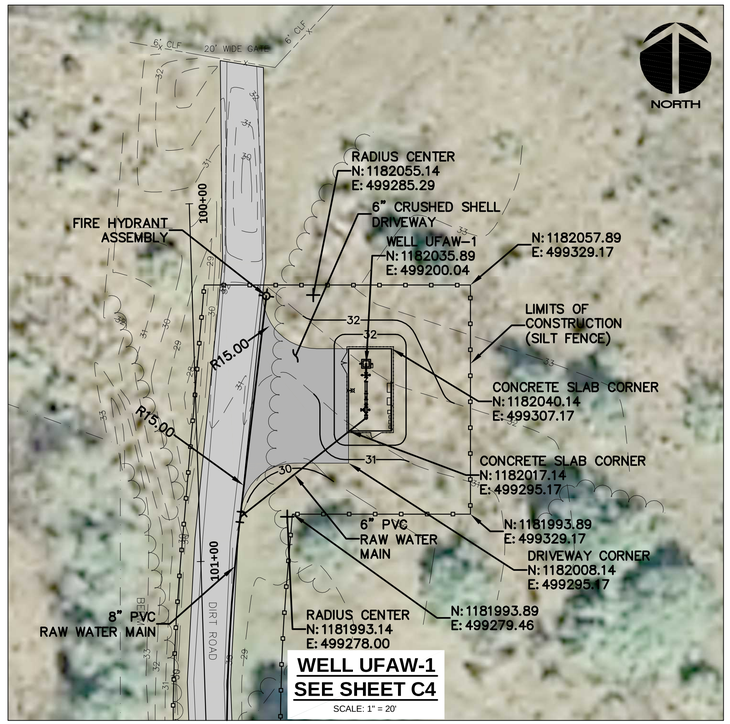

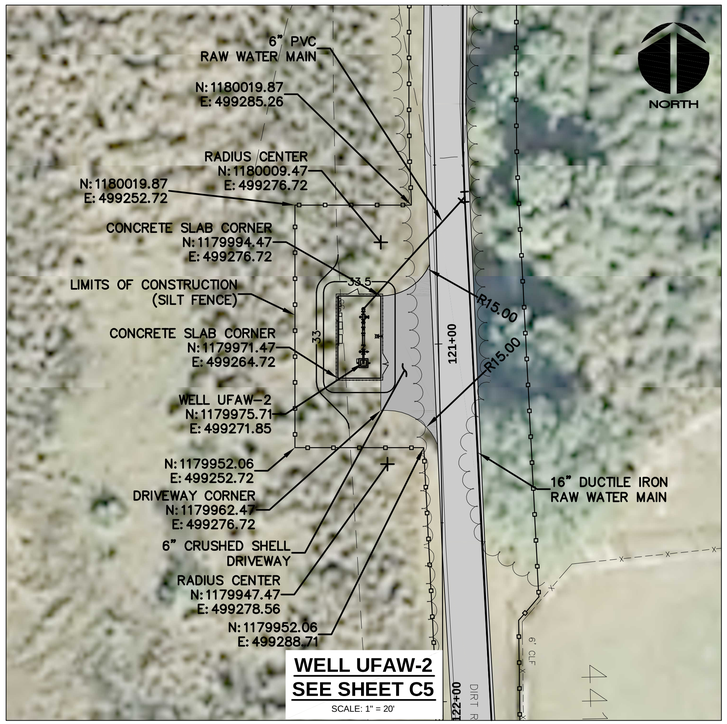

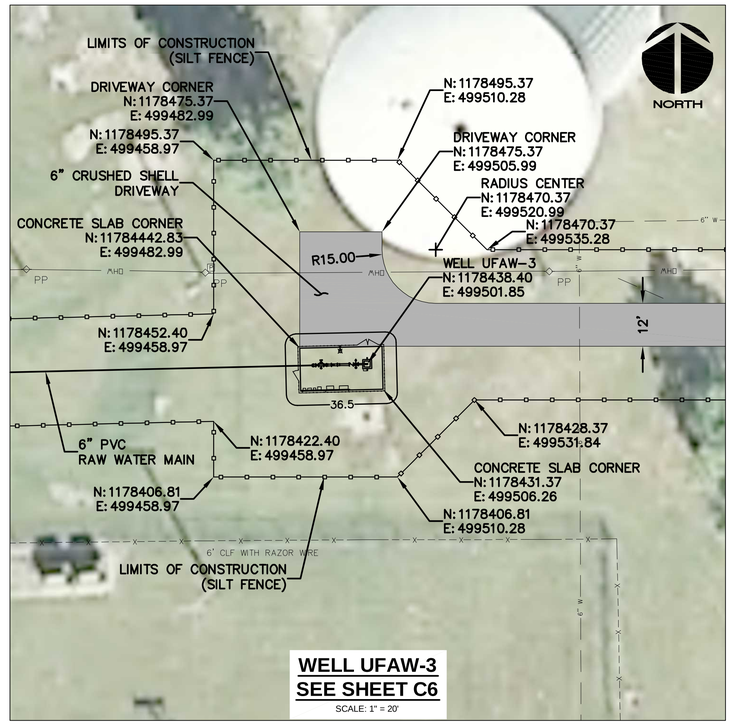

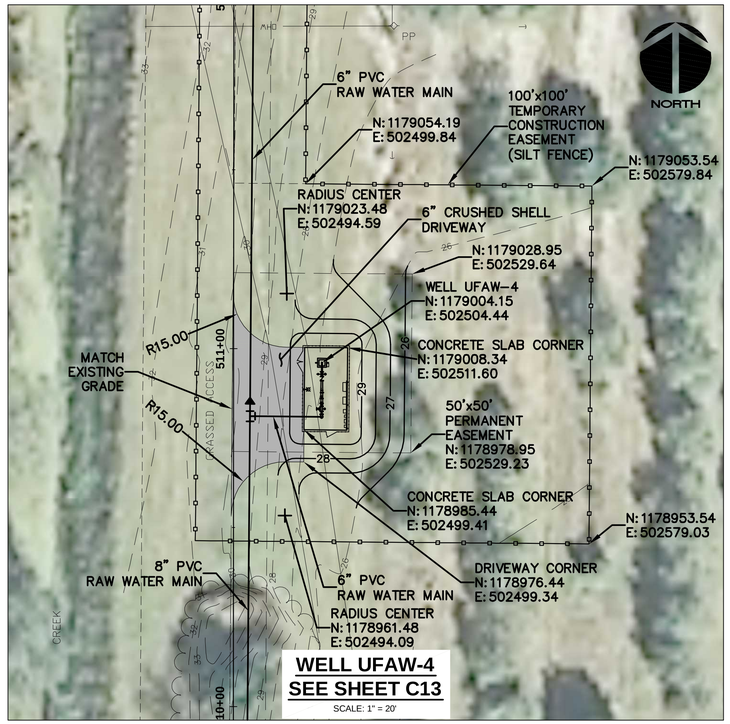

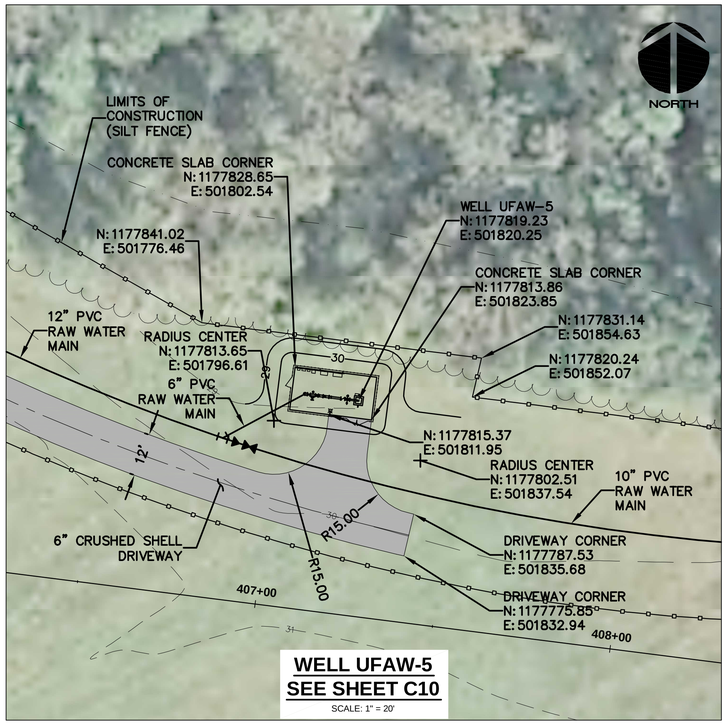

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MANATEE COUNTY, FLORIDA

NORTH COUNTY WELLS / TREATMENT

LAYOUT PLAN

UFAW WELLS

DATE:	FEBRUARY 2009
MCE PROJ. #	1024-0117
DRAWN	BFN
DESIGNED	BFN
CHECKED	MAC
PROJ. MGR.	SPT

SCALE
HORIZONTAL: 1" = 20'
VERTICAL: NA

M&C FILE NUMBER

DRAWING NUMBER
C1

STATUS: ISSUE FOR BID
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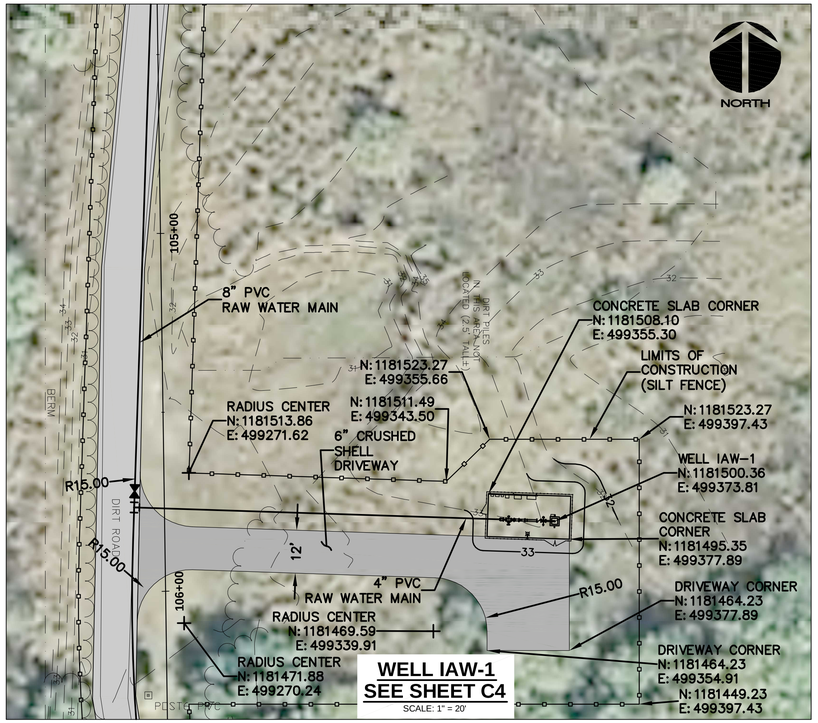

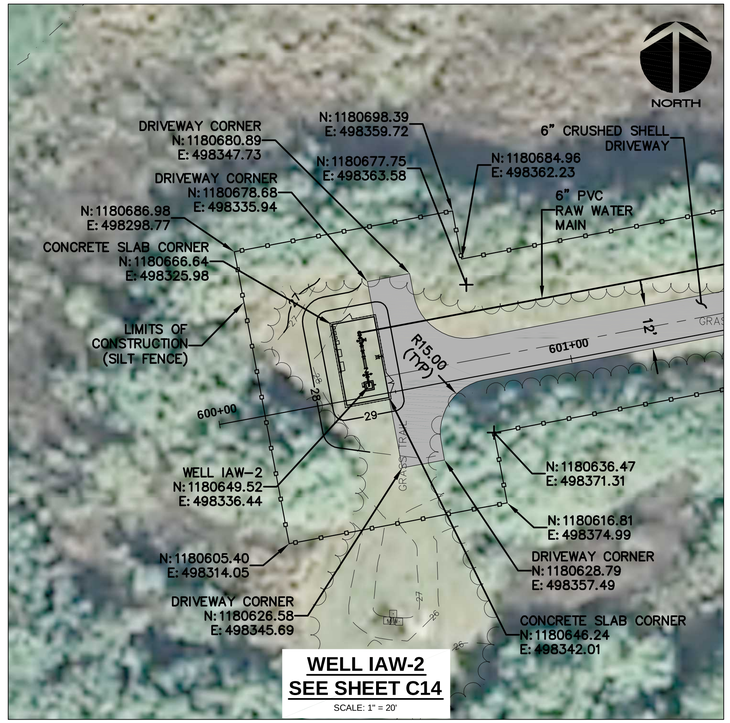

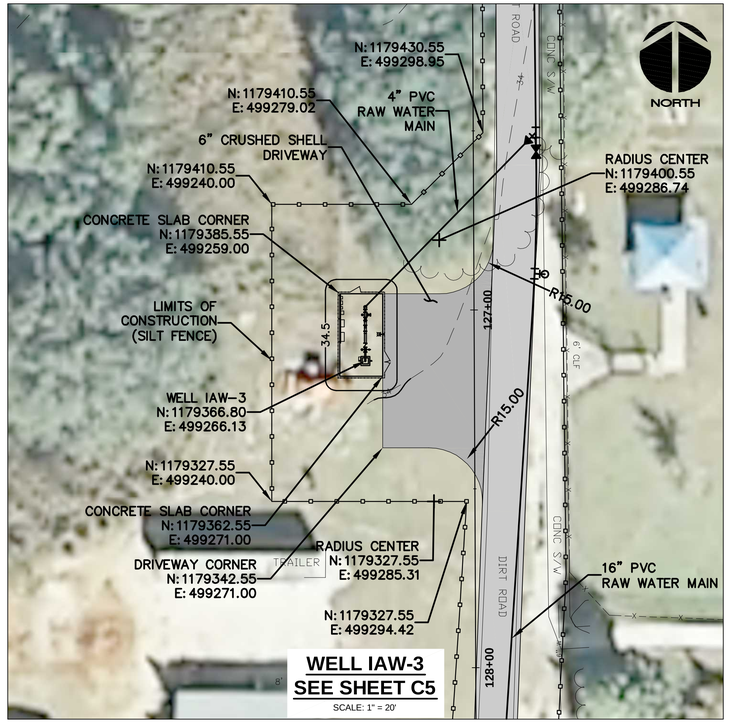

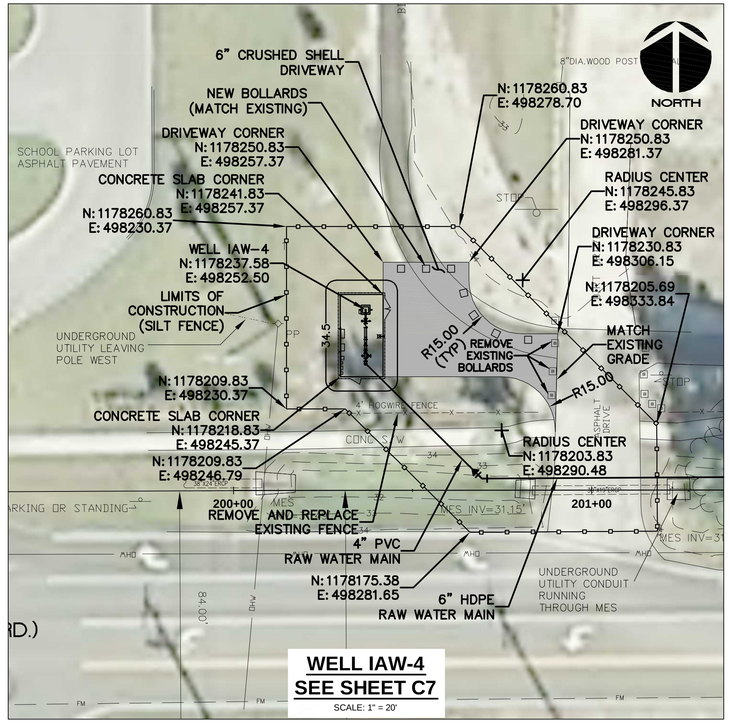

REV.NO.	DESCRIPTIONS	DATE
	REVISIONS	

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MANATEE COUNTY, FLORIDA

NORTH COUNTY WELLS / TREATMENT

LAYOUT PLAN

WELLS IAW-1, IAW-2, IAW-3 & IAW-4

DATE:	FEBRUARY 2009
MCE PROJ. #	1024-0117
DRAWN	BFN
DESIGNED	BFN
CHECKED	MAC
PROJ. MGR.	SPT

SCALE
HORIZONTAL: 1" = 20'
VERTICAL: NA

M&C FILE NUMBER

DRAWING NUMBER
C2

STATUS: ISSUE FOR BID
REVISION

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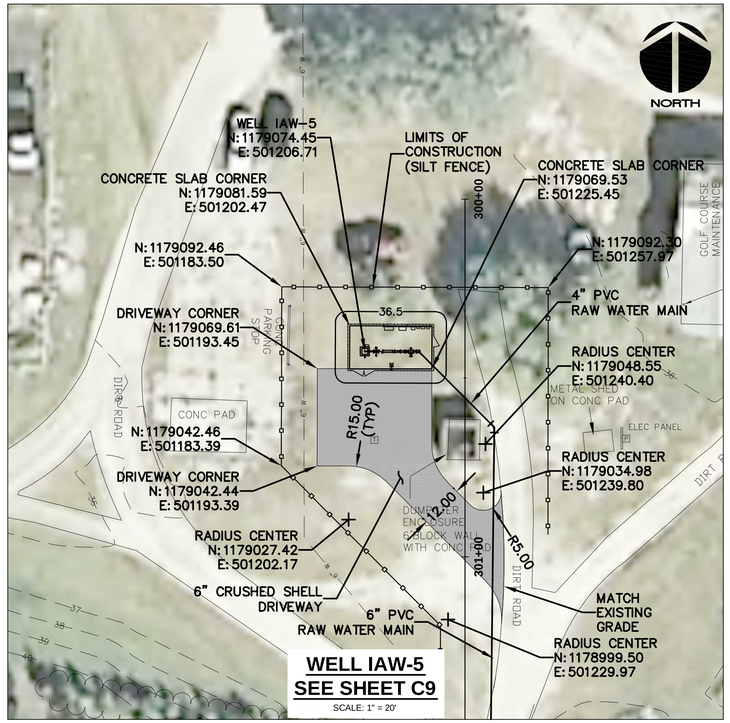

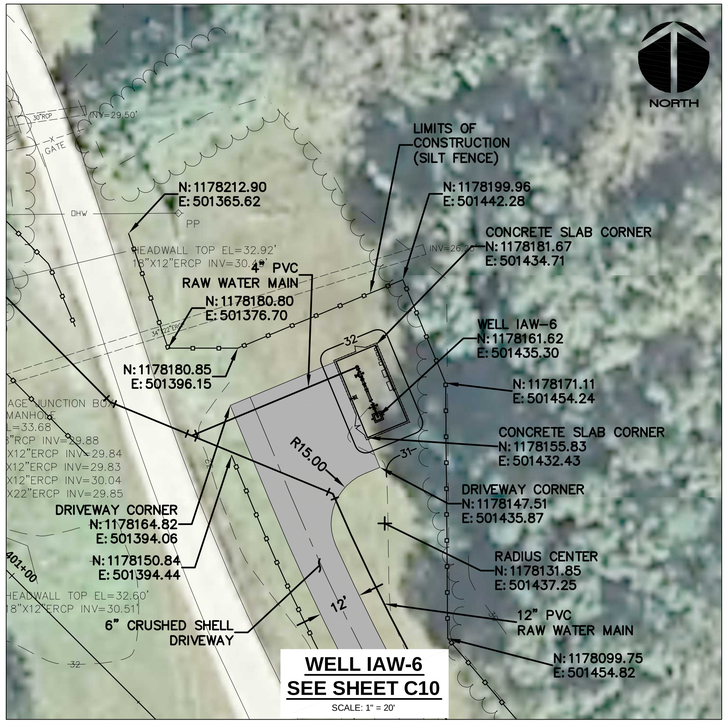

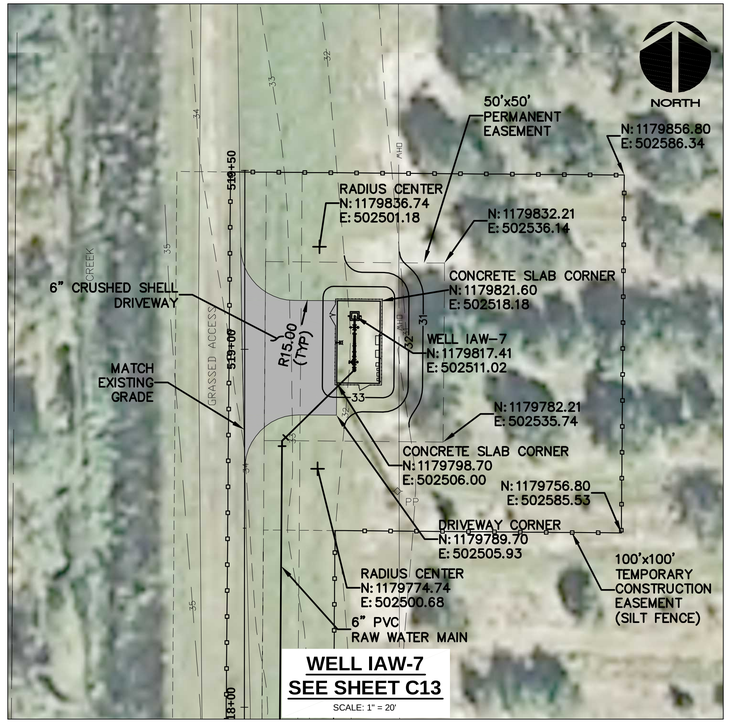

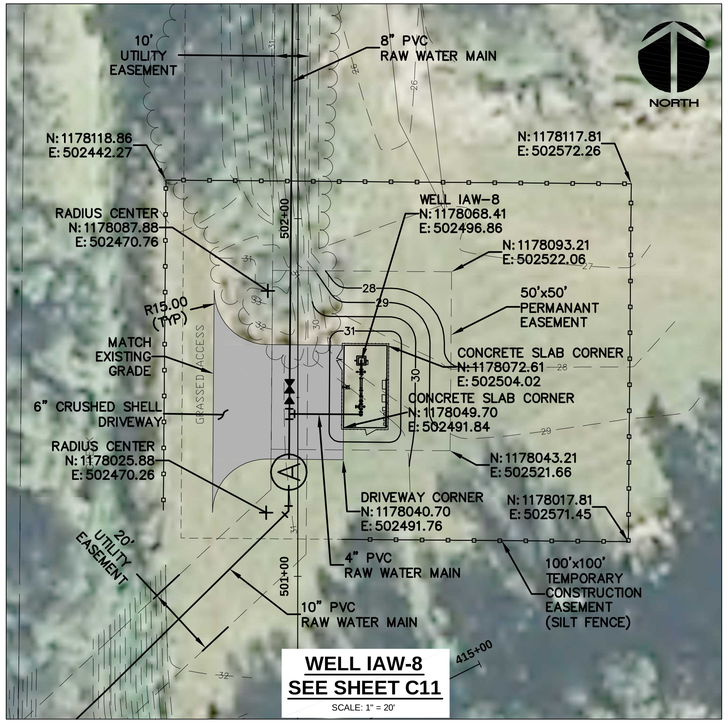

REV.NO.	DESCRIPTIONS	DATE
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MANATEE COUNTY, FLORIDA

NORTH COUNTY WELLS / TREATMENT

LAYOUT PLAN

WELLS IAW-5, IAW-6, IAW-7 & IAW-8

DATE:	FEBRUARY 2009
MCE PROJ. #	1024-0117
DRAWN	BFN
DESIGNED	BFN
CHECKED	MAC
PROJ. MGR.	SPT

SCALE
HORIZONTAL: 1" = 20'
VERTICAL: NA

M&C FILE NUMBER

DRAWING NUMBER
C3

STATUS: ISSUE FOR BID
REVISION

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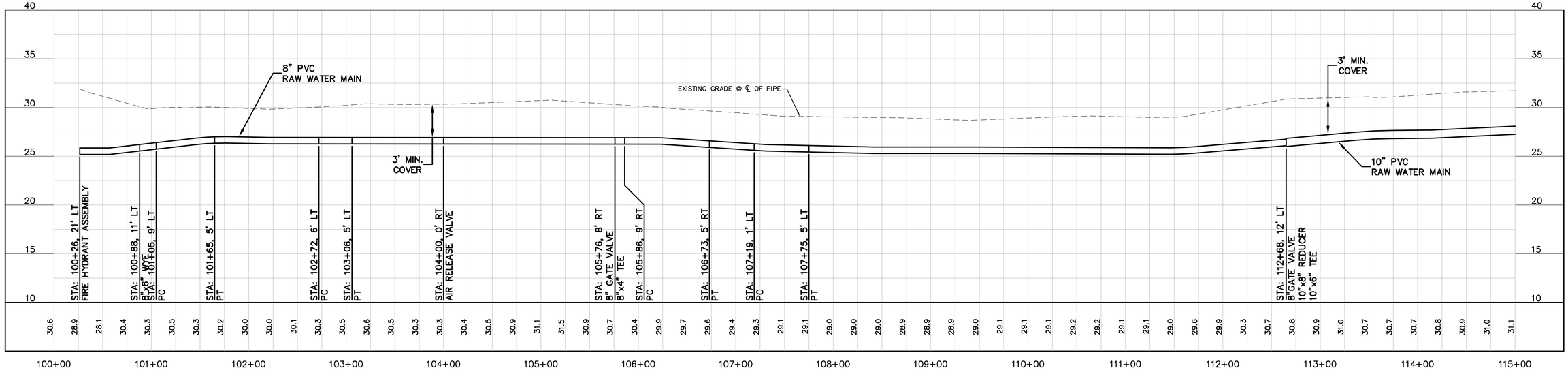

REV.NO.	DESCRIPTIONS	DATE
	REVISIONS	

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MANATEE COUNTY, FLORIDA

NORTH COUNTY WELLS / TREATMENT

PLAN & PROFILE
STA. 100+00 TO STA. 115+00

DATE:	FEBRUARY 2009
MCE PROJ. #	1024-0117
DRAWN	BFN
DESIGNED	BFN
CHECKED	MAC
PROJ. MGR.	SPT

SCALE
HORIZONTAL: 50
VERTICAL: 5

M&C FILE NUMBER

DRAWING NUMBER
C4

STATUS: ISSUE FOR BID
REVISION

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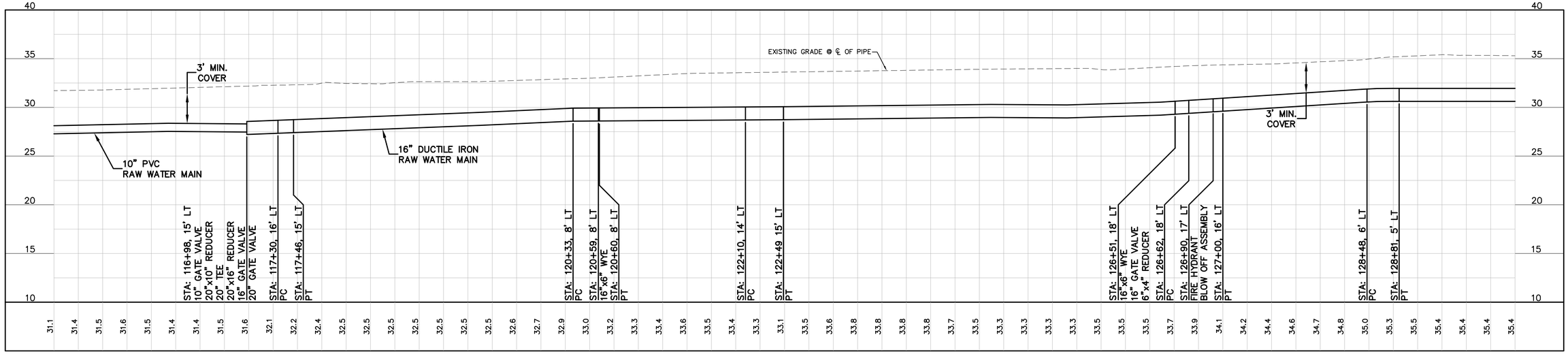

REV.NO.	DESCRIPTIONS	DATE
	REVISIONS	

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NORTH COUNTY WELLS / TREATMENT

PLAN & PROFILE
STA. 115+00 TO STA. 130+00

DATE:	FEBRUARY 2009
MCE PROJ. #	1024-0117
DRAWN	BFN
DESIGNED	BFN
CHECKED	MAC
PROJ. MGR.	SPT

SCALE
HORIZONTAL: 50
VERTICAL: 5

M&C FILE NUMBER

DRAWING NUMBER
C5

STATUS: ISSUE FOR BID

REVISION

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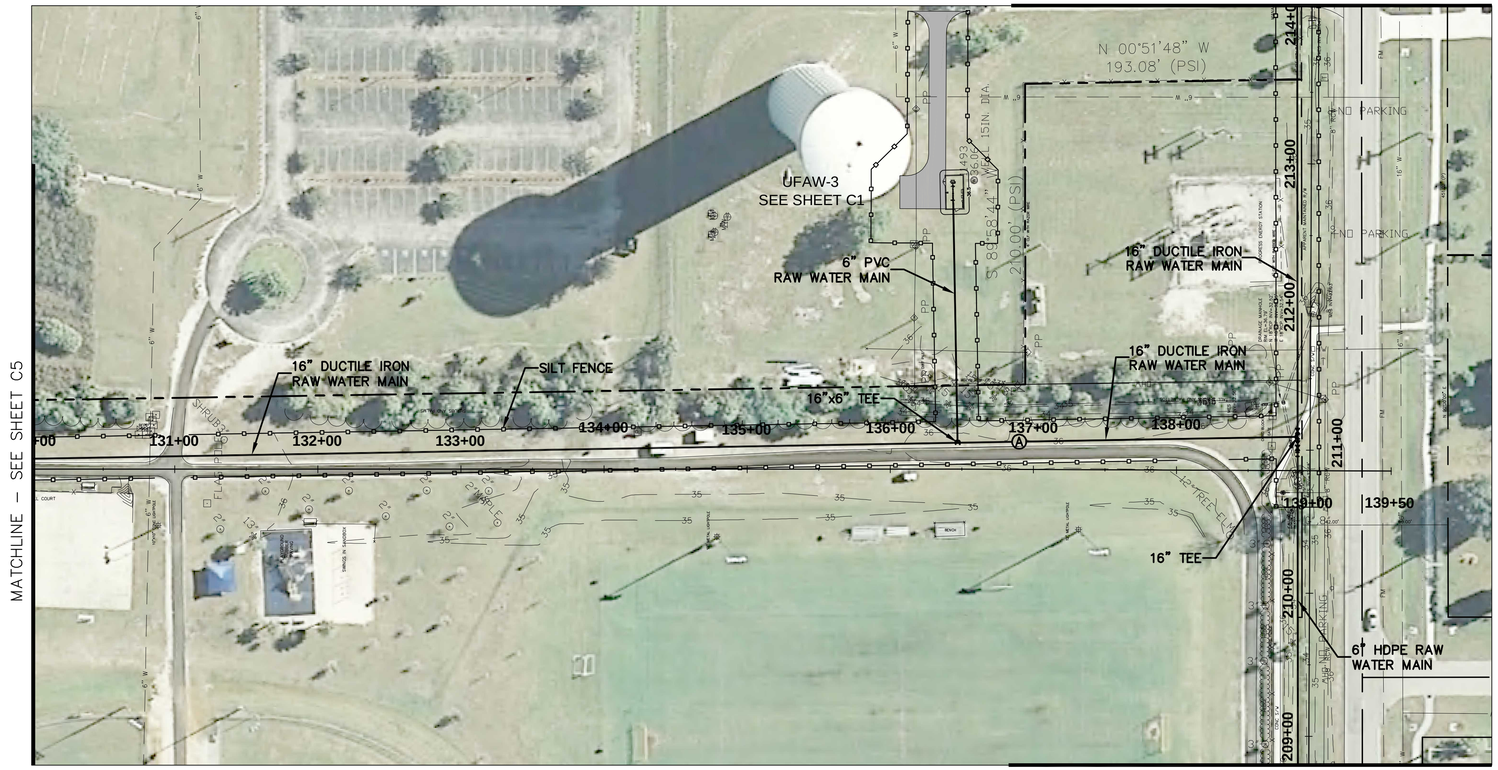
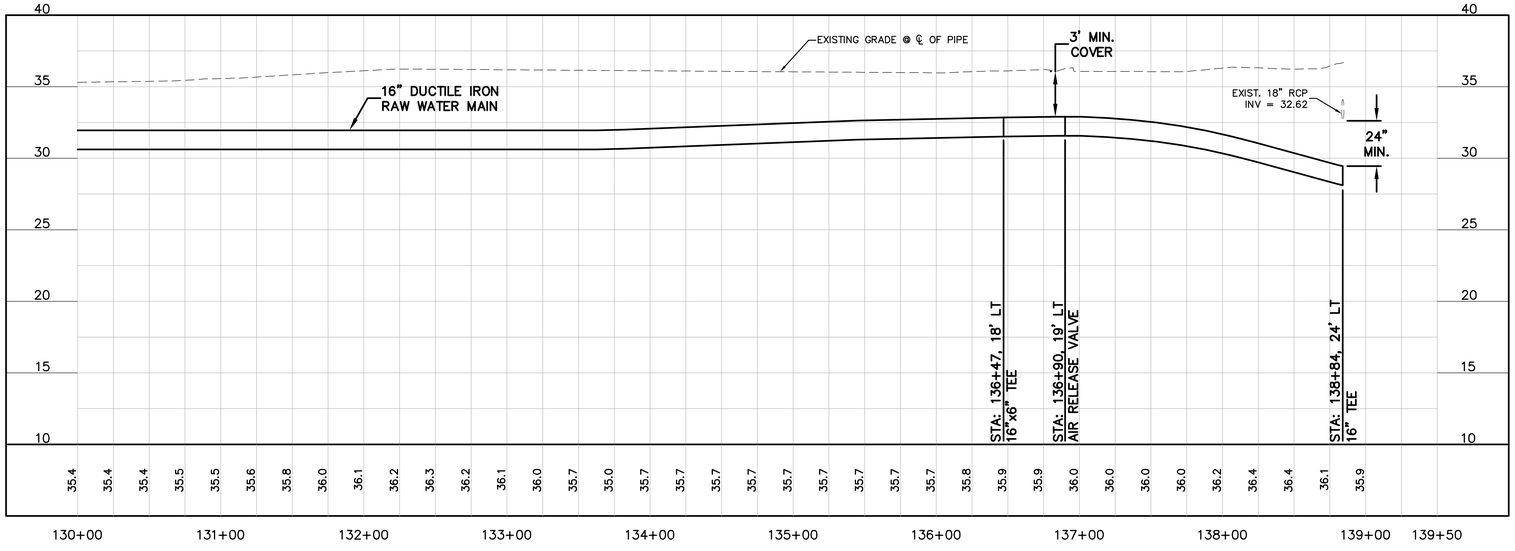
SEE SHEET C7 FOR CONTINUATION



MATCHLINE – SEE SHEET C5

SEE SHEET C7 FOR CONTINUATION



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DATE:	FEBRUARY 2009
MCE PROJ. #	1024-0117
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DESIGNED	BFN
CHECKED	MAC
PROJ. MGR.	SPT

SCALE
HORIZONTAL: 50
VERTICAL: 5

M&C FILE NUMBER

DRAWING NUMBER
C6

STATUS: ISSUE FOR BID
REVISION

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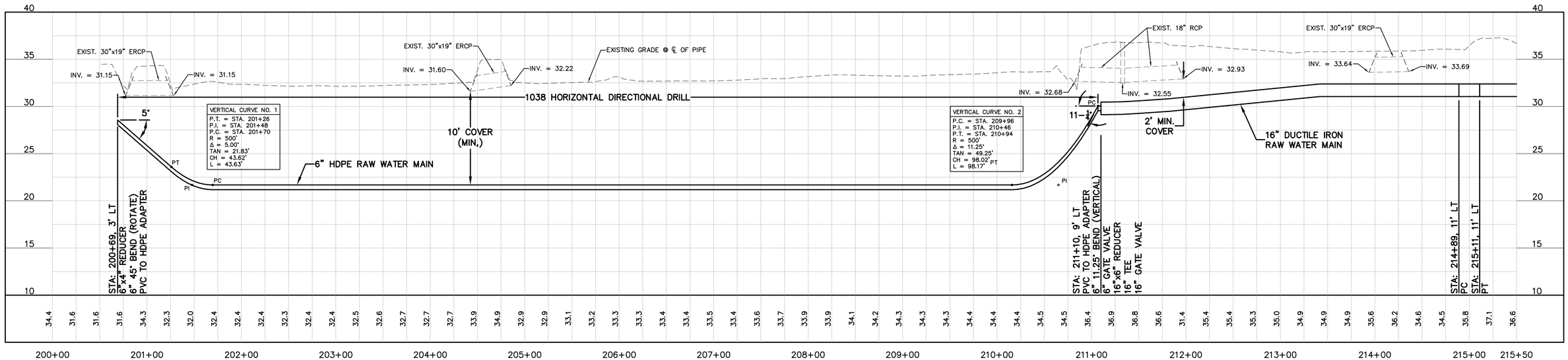
SEE SHEET C6 FOR CONTINUATION



REV.NO.	DESCRIPTIONS	DATE
	REVISIONS	

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PLAN & PROFILE
STA. 200+00 TO STA. 215+50

DATE:	FEBRUARY 2009
MCE PROJ. #	1024-0117
DRAWN	BFN
DESIGNED	BFN
CHECKED	MAC
PROJ. MGR.	SPT

SCALE
HORIZONTAL: 50
VERTICAL: 5

M&C FILE NUMBER

DRAWING NUMBER
C7

STATUS: ISSUE FOR BID
REVISION

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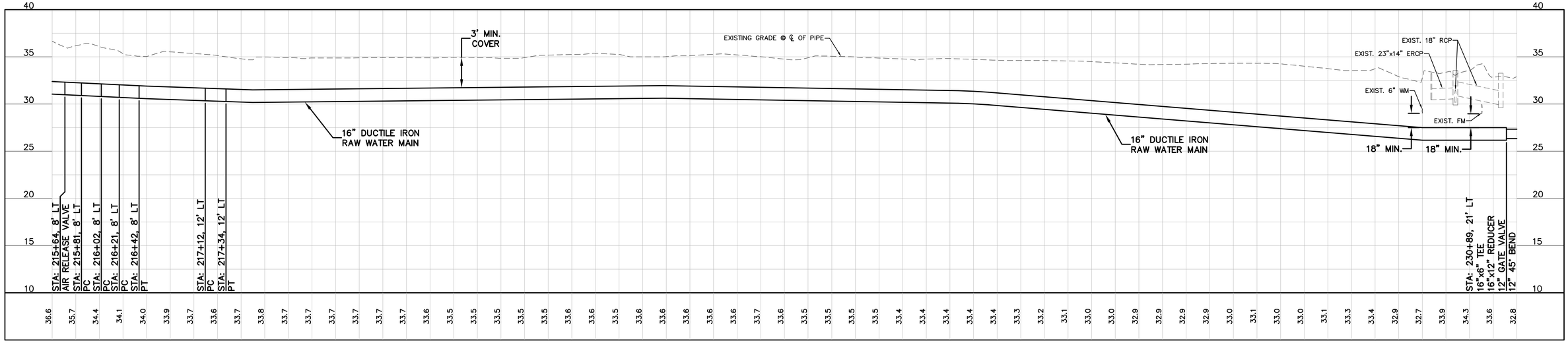
SEE SHEET C9 FOR CONTINUATION



REV.NO.	DESCRIPTIONS	DATE
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PLAN & PROFILE
STA. 215+50 TO STA. 231+00

DATE:	FEBRUARY 2009
MCE PROJ. #	1024-0117
DRAWN	BFN
DESIGNED	BFN
CHECKED	MAC
PROJ. MGR.	SPT

SCALE
HORIZONTAL: 50
VERTICAL: 5

M&C FILE NUMBER

DRAWING NUMBER
C8

STATUS: ISSUE FOR BID
REVISION

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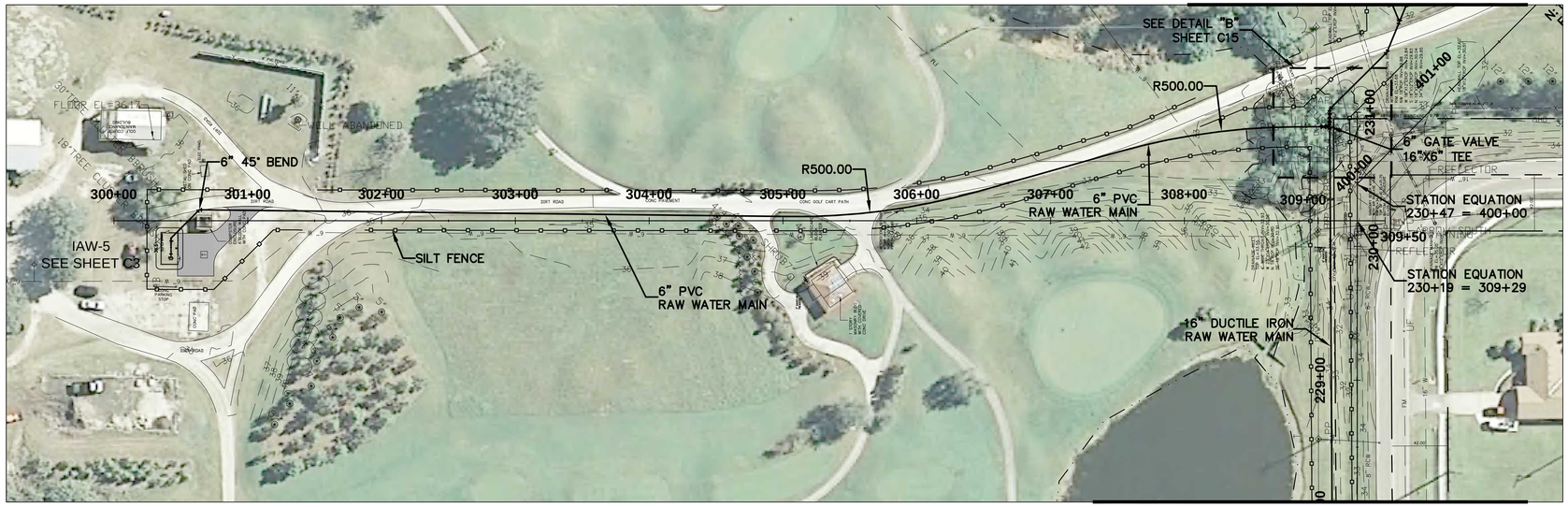
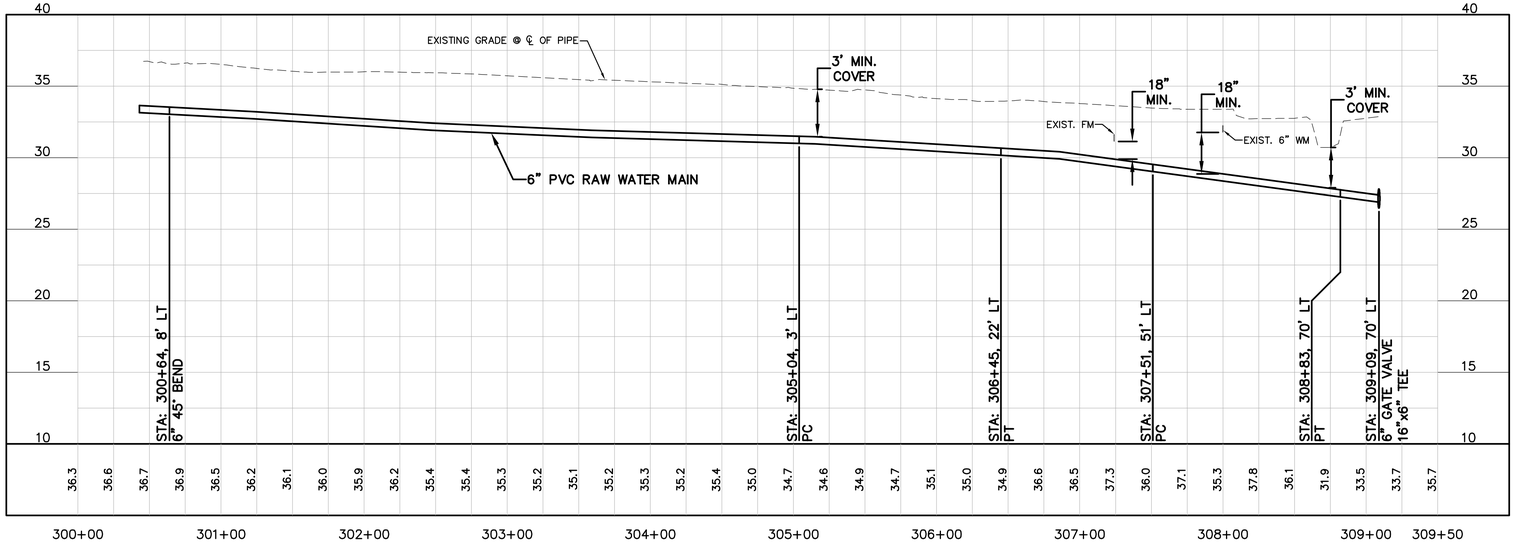
NORTH

SEE SHEET C10 FOR CONTINUATION



SEE SHEET C8 FOR CONTINUATION



REV.NO.	DESCRIPTIONS	DATE
	REVISIONS	

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MANATEE COUNTY, FLORIDA

NORTH COUNTY WELLS / TREATMENT

PLAN & PROFILE
STA. 300+00 TO STA. 309+50

DATE:	FEBRUARY 2009
MCE PROJ. #	1024-0117
DRAWN	BFN
DESIGNED	BFN
CHECKED	MAC
PROJ. MGR.	SPT

SCALE
HORIZONTAL: 50
VERTICAL: 5

M&C FILE NUMBER

DRAWING NUMBER
C9

STATUS: ISSUE FOR BID
REVISION

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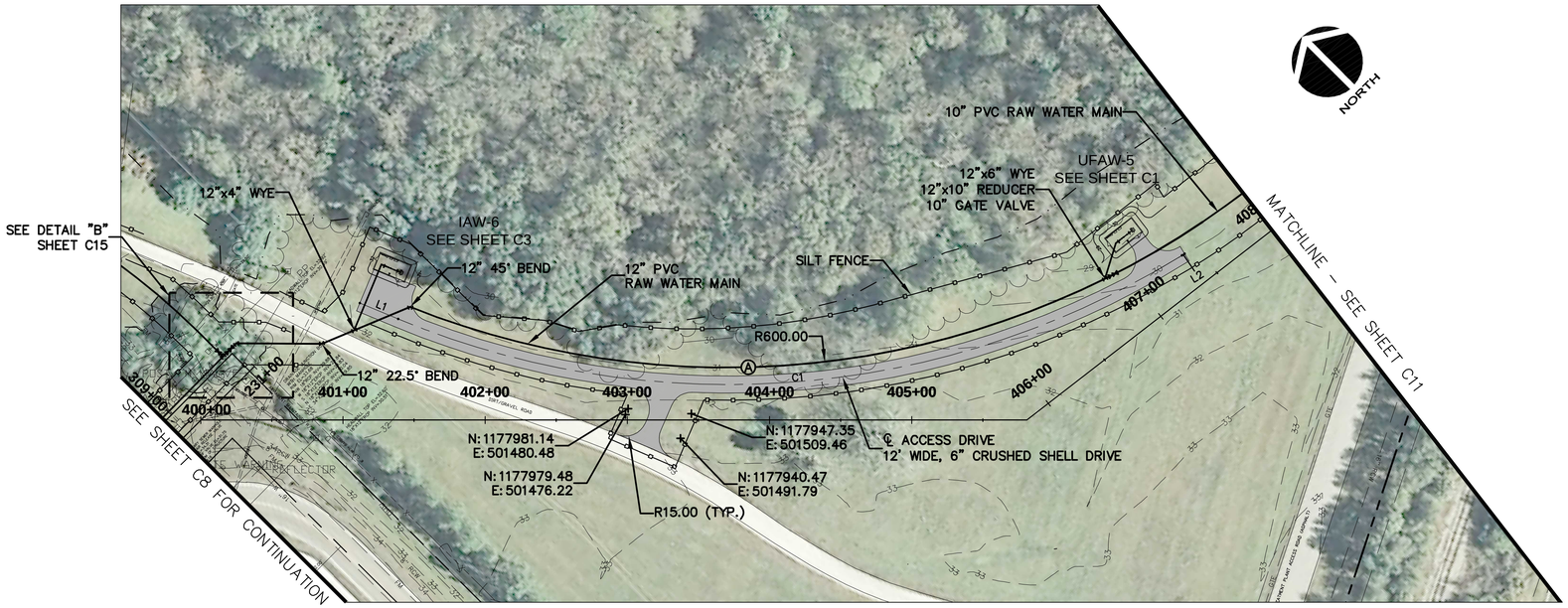
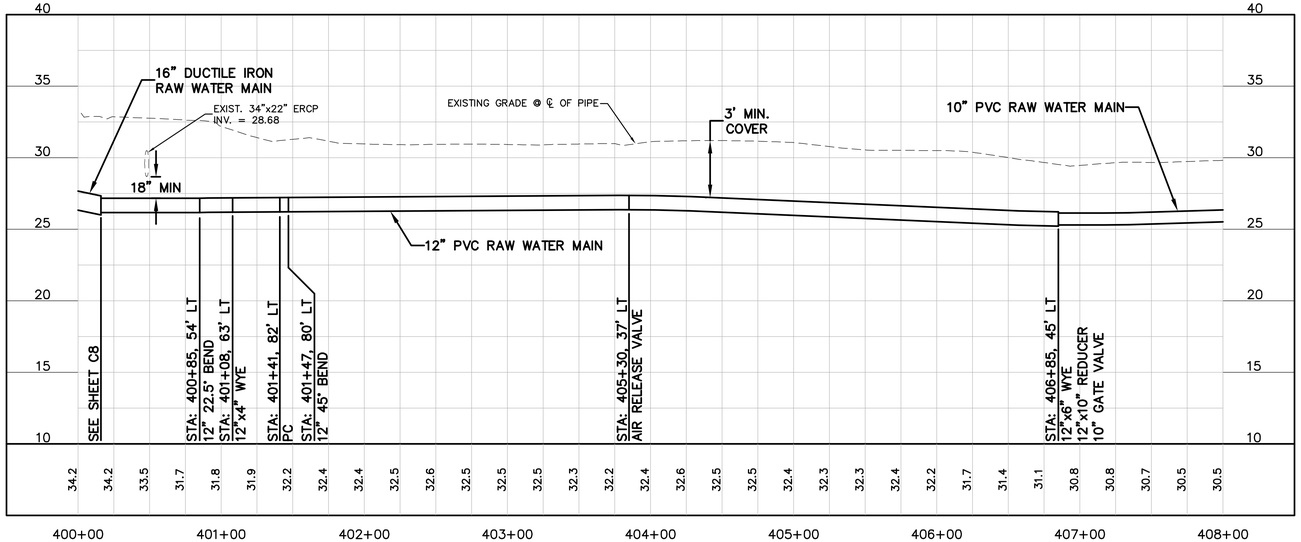


Line Table						
Line #	Length	Direction	Start Point	Start Station	End Point	End Station
L1	29.19'	S22° 30' 41"E	N: 1178167.12 E: 501399.60	401+12, 82' LT	N: 1178140.15 E: 501410.78	401+39, 71' LT
L2	2.23'	S76° 47' 32"E	N: 1177782.20 E: 501832.14	407+38, 25' LT	N: 1177781.69 E: 501834.31	407+40, 25' LT

Curve Table							
Curve #	Radius	Length	Chord Direction	Start Point	Start Station	End Point	End Station
C1	606'	574.11'	S49° 39' 7"E	N: 1178140.15 E: 501410.78	401+39, 71' LT	N: 1177782.20 E: 501832.14	407+38, 25' LT



REV.NO.	DESCRIPTIONS	DATE
	REVISIONS	

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MANATEE COUNTY, FLORIDA

NORTH COUNTY WELLS / TREATMENT

PLAN & PROFILE
STA. 400+00 TO STA. 408+00

DATE:	FEBRUARY 2009
MCE PROJ. #	1024-0117
DRAWN	BFN
DESIGNED	BFN
CHECKED	MAC
PROJ. MGR.	SPT

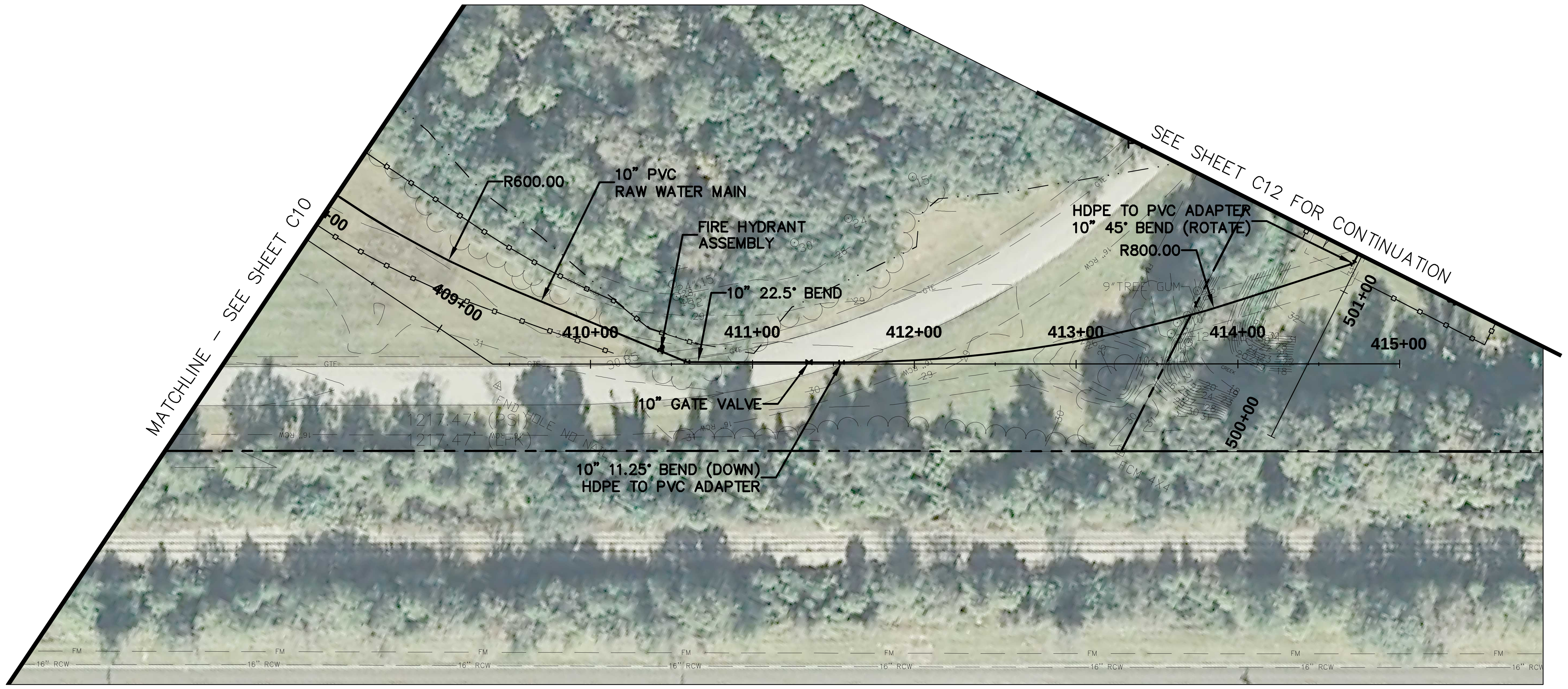
SCALE
HORIZONTAL: 50
VERTICAL: 5

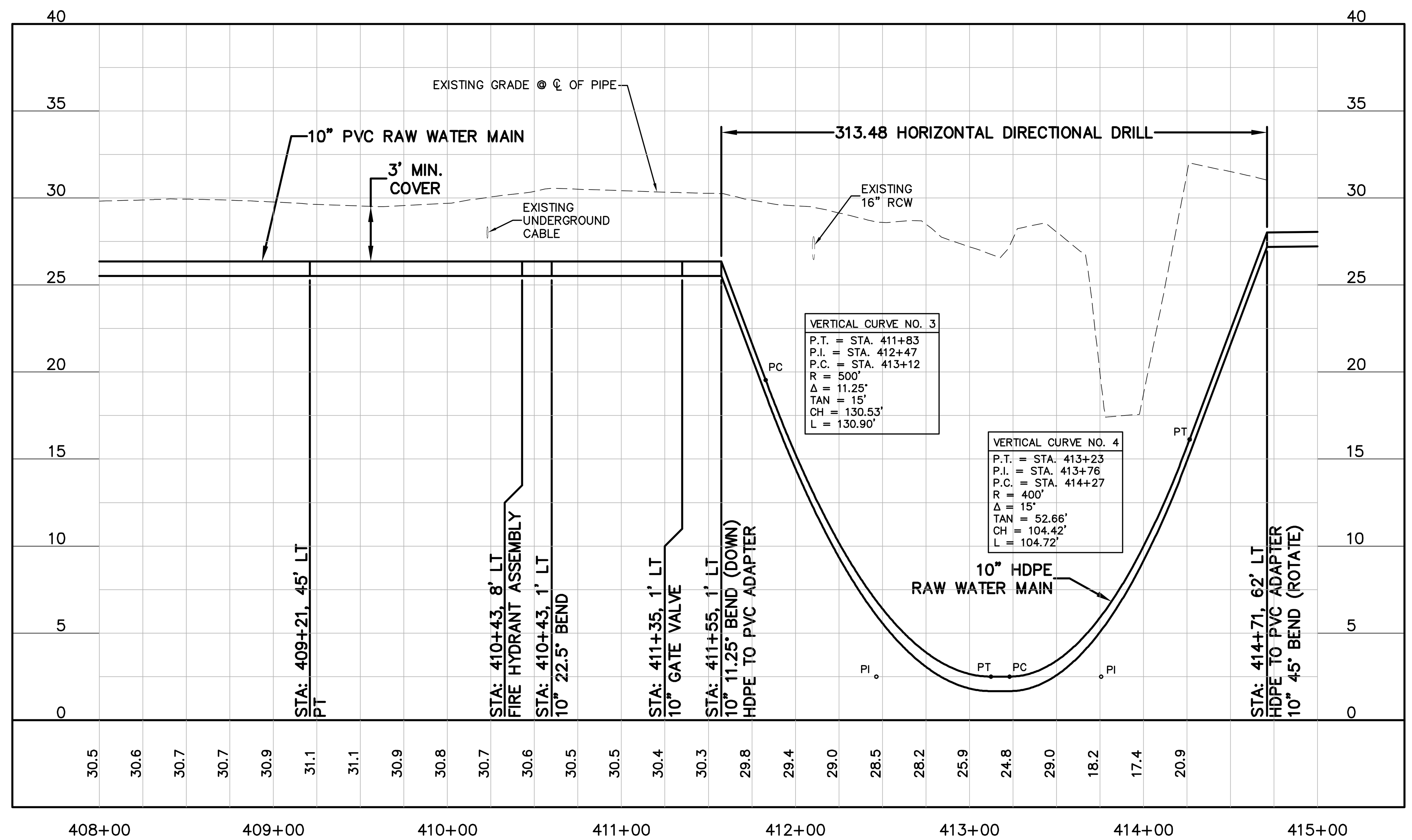
M&C FILE NUMBER

DRAWING NUMBER
C10

STATUS: ISSUE FOR BID

REVISION





REV.NO.	DESCRIPTIONS	DATE
	REVISIONS	

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NORTH COUNTY WELLS / TREATMENT

PLAN & PROFILE
STA. 408+00 TO STA. 415+00

DATE:	FEBRUARY 2009
MCE PROJ. #	1024-0117
DRAWN	BFN
DESIGNED	NJS
CHECKED	MAC
PROJ. MGR.	SPT

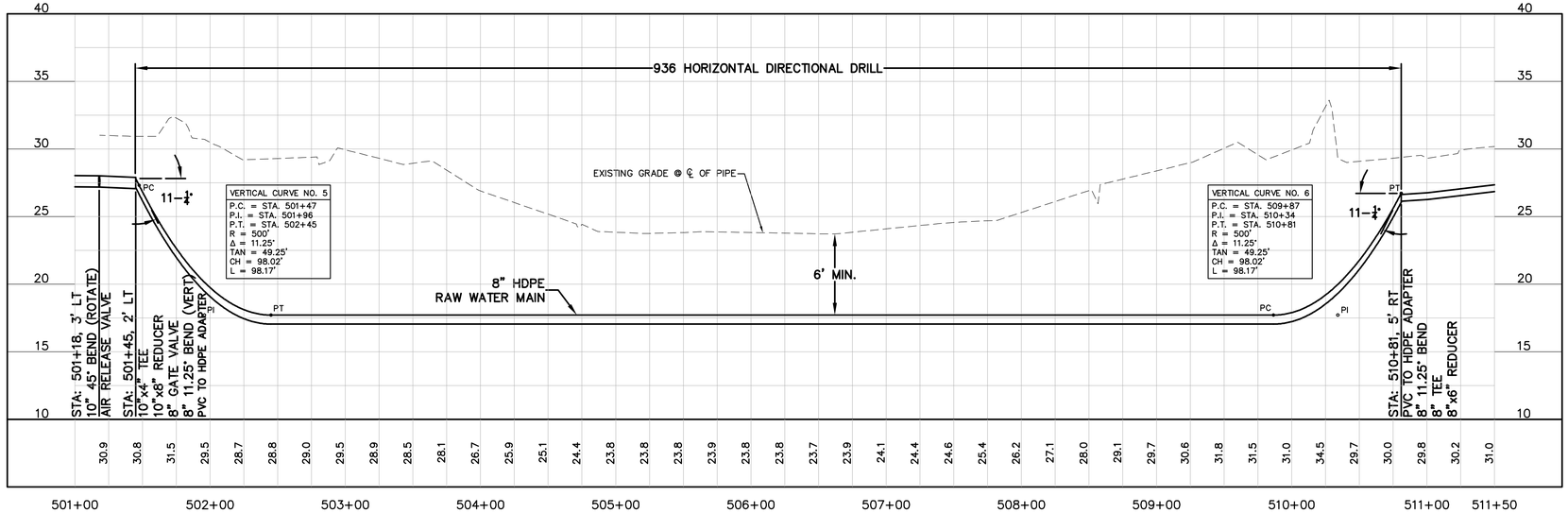
SCALE
HORIZONTAL: 50
VERTICAL: 5

M&C FILE NUMBER

DRAWING NUMBER
C11

STATUS: ISSUE FOR BID

REVISION



REV.NO.	DESCRIPTIONS	DATE
	REVISIONS	

SEAL

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MANATEE COUNTY, FLORIDA

NORTH COUNTY WELLS / TREATMENT

PLAN & PROFILE
STA. 500+00 TO STA. 511+50

DATE:	FEBRUARY 2009
MCE PROJ. #	1024-0117
DRAWN	BFN
DESIGNED	BFN
CHECKED	MAC
PROJ. MGR.	SPT

SCALE
HORIZONTAL: 50
VERTICAL: 5

M&C FILE NUMBER

DRAWING NUMBER
C12

STATUS: ISSUE FOR BID
REVISION

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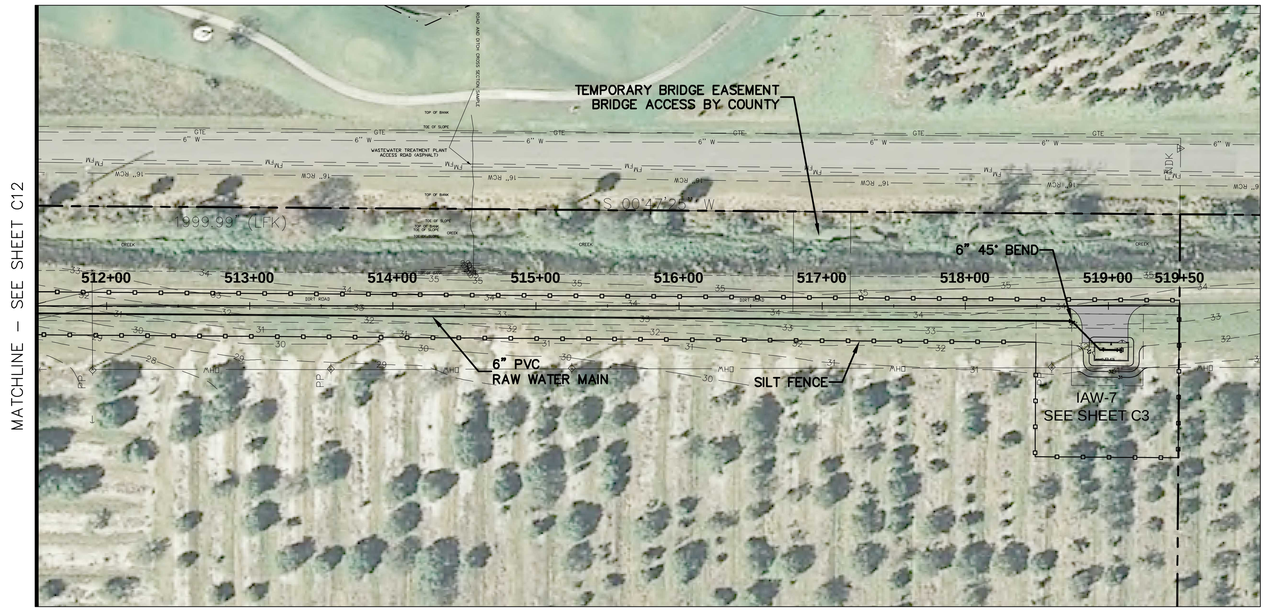

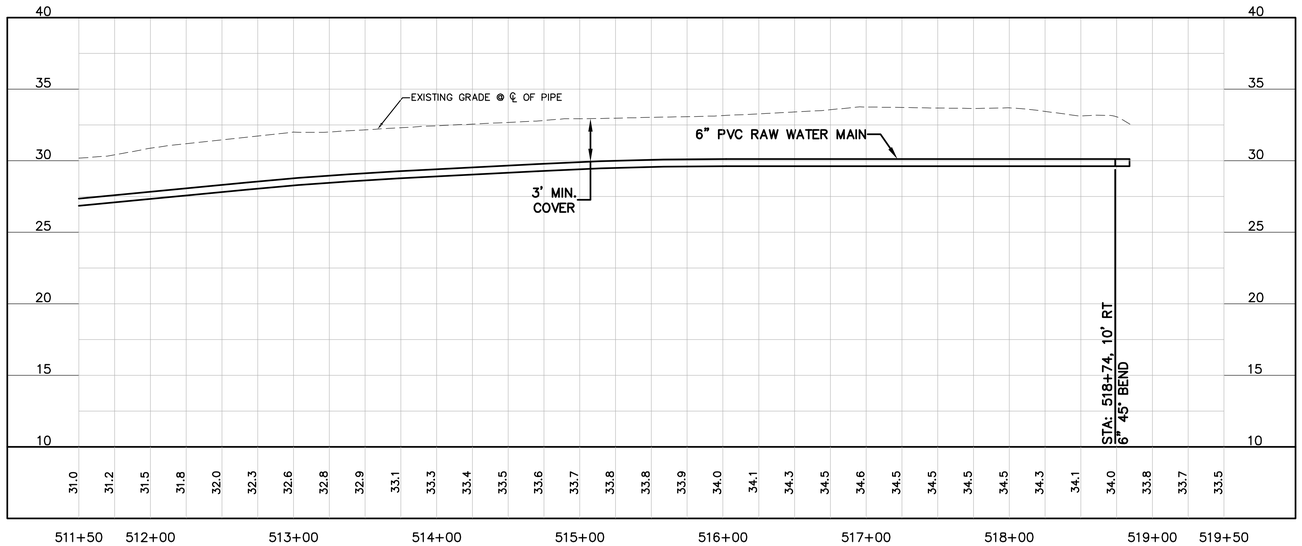

REV.NO.	DESCRIPTIONS	DATE
	REVISIONS	

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MANATEE COUNTY, FLORIDA

NORTH COUNTY WELLS / TREATMENT

PLAN & PROFILE
STA. 511+50 TO STA. 519+50

DATE:	FEBRUARY 2009
MCE PROJ. #	1024-0117
DRAWN	BFN
DESIGNED	BFN
CHECKED	MAC
PROJ. MGR.	SPT

SCALE
HORIZONTAL: 50
VERTICAL: 5

M&C FILE NUMBER

DRAWING NUMBER
C13

STATUS: ISSUE FOR BID
REVISION

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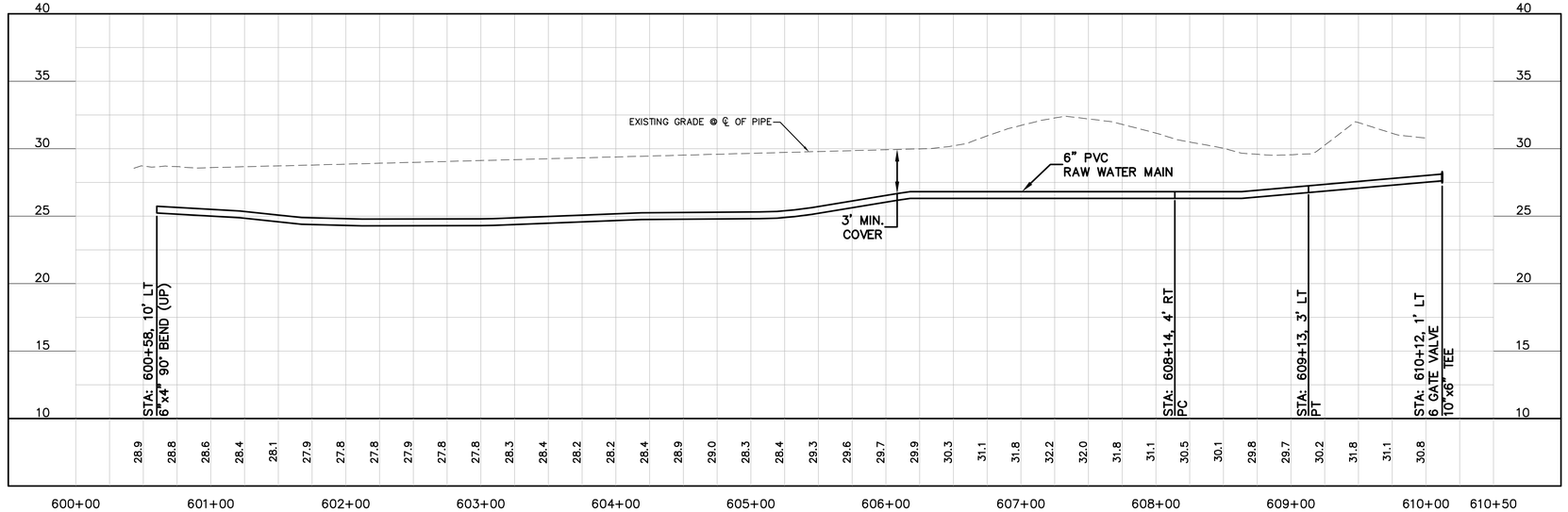
SEE SHEET C4 FOR CONTINUATION

SEE SHEET C4 FOR CONTINUATION

NORTH

Line Table						
Line #	Length	Direction	Start Point	Start Station	End Point	End Station
L3	558.03'	N79° 23' 38"E	N: 1180652.14 E: 498340.91	600+48, 5' LT	N: 1180754.85 E: 498889.40	606+06, 2' RT
L4	80.63'	N69° 51' 37"E	N: 1180765.60 E: 498928.50	606+47, 3' RT	N: 1180793.36 E: 499004.21	607+27, 1' LT
L5	186.68'	S90° 0' 0"E	N: 1180809.02 E: 499092.35	608+18, 0.5' RT	N: 1180809.02 E: 499279.03	610+04, 3' RT

Curve Table							
Curve #	Radius	Length	Chord Direction	Start Point	Start Station	End Point	End Station
C2	244'	40.60'	N74° 37' 38"E	N: 1180754.85 E: 498889.40	606+06, 2' RT	N: 1180765.60 E: 498928.50	606+47, 3' RT
C3	256'	89.99'	N79° 55' 48"E	N: 1180793.36 E: 499004.21	607+27, 1' LT	N: 1180809.02 E: 499092.35	608+18, 0.5' RT



REV.NO.	DESCRIPTIONS	DATE
	REVISIONS	

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PLAN & PROFILE
STA. 600+00 TO STA. 610+00

DATE:	FEBRUARY 2009
MCE PROJ. #	1024-0117
DRAWN	BFN
DESIGNED	BFN
CHECKED	MAC
PROJ. MGR.	SPT

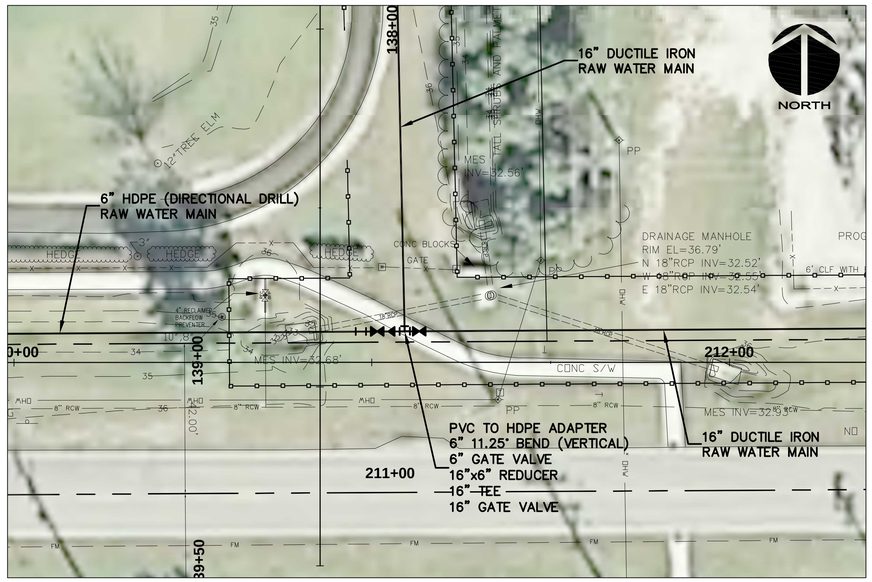
SCALE
HORIZONTAL: 50
VERTICAL: 5

M&C FILE NUMBER

DRAWING NUMBER
C14

STATUS: ISSUE FOR BID

REVISION



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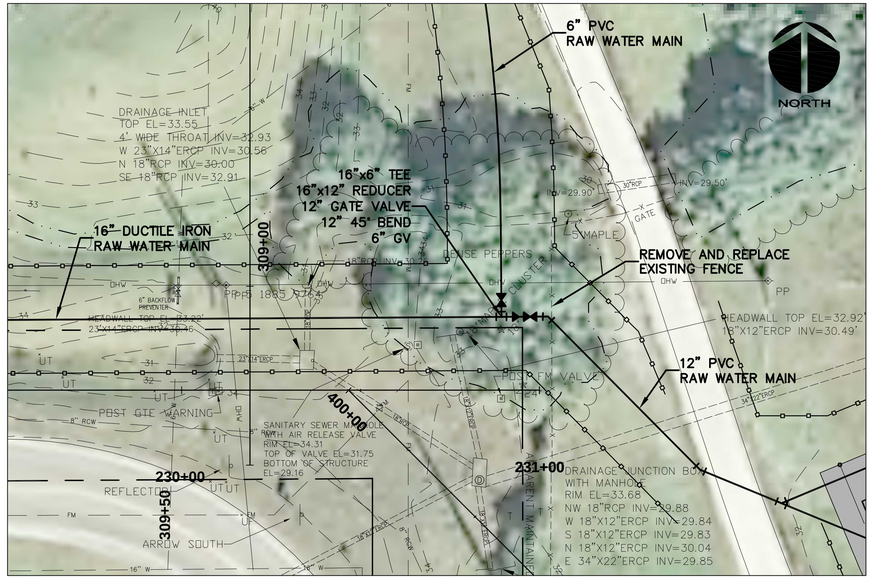

DETAIL "B"
SCALE: 1" = 20'

REV.NO.	DESCRIPTIONS	DATE
	REVISIONS	

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NORTH COUNTY WELLS / TREATMENT

PLAN DETAILS

DATE:	FEBRUARY 2009
MCE PROJ. #	1024-0117
DRAWN	BFN
DESIGNED	BFN
CHECKED	MAC
PROJ. MGR.	SPT

SCALE
HORIZONTAL: 20
VERTICAL: NA

M&C FILE NUMBER

DRAWING NUMBER
C15

STATUS: ISSUE FOR BID

REVISION

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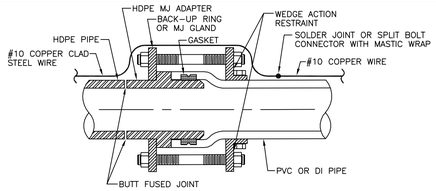
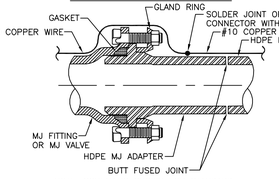
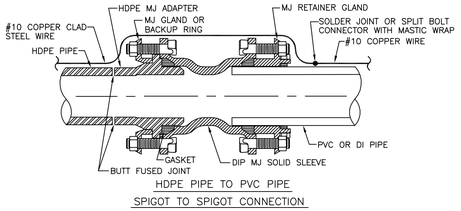


HDPE PIPE TO PVC PIPE
SPIGOT TO BELL CONNECTION



NOTE: SCHEMATIC SHOWN FOR STANDARD MJ FITTINGS AND GATE VALVES.

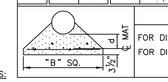
HDPE PIPE TO MJ FITTING TRANSITION



HDPE PIPE TO PVC PIPE
SPIGOT TO SPIGOT CONNECTION

MANATEE COUNTY PUBLIC WORKS DEPARTMENT			HDPE TO PVC OR DI PIPE ADAPTER	UG-6
REV.BY	DATE	DATE OF APPROVAL		
CLB/KE	8/05			

THRUST BLOCK DIMENSIONS B ft. x d inches													
PIPE SIZE	90°BEND		45°BEND		22.5°BEND		11.25°BEND		DEAD_END & TEE		45° WYE	
(IN.)	B	d	B	d	B	d	B	d	B	d	B	d
4	1.5	3½	1.1	3½	0.8	3½	0.6	3½	1.3	3½	1.1	3½
6	2.2	5¼	1.6	3¾	1.2	3½	0.8	3½	1.9	4½	1.6	3¾
8	2.9	7	2.1	5	1.5	3½	1.1	3½	2.4	5¾	2.0	4¾
10	3.5	8½	2.6	6¼	1.9	4½	1.3	3½	3.0	7¼	2.5	6
12	4.2	10	3.1	7½	2.2	5¼	1.6	3¾	3.5	8½	3.0	7¼
14	4.9	11¾	3.6	8¾	2.6	6¼	1.8	4¼	4.1	9¾	3.4	8¼
16	5.5	13¼	4.1	9¾	2.9	7	2.1	5	4.7	11¼	3.9	9¼
18	6.2	15	4.6	11	3.3	8	2.3	5½	5.2	12½	4.4	10½
20	6.9	16½	5.0	12	3.6	8¾	2.6	6¼	5.8	14	4.9	11¾
24	8.2	19¾	6.0	14½	4.3	10¼	3.1	7½	6.9	16½	5.8	14
30	10.1	24¼	7.5	18	5.3	12¾	3.8	9	8.5	20½	7.2	17¼
36	12.1	29	8.9	21¼	6.4	15¼	4.5	10¾	10.2	24½	8.6	20¾

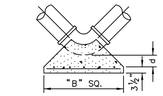


REINFORCEMENT MAT SCHEDULE

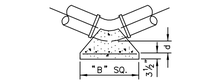
FOR DIM."B"BETWEEN 5.75' & 11.5' USE #4 @ 8" EACH WAY
FOR DIM."B"LESS THAN 5.75' USE #3 @ 8" EACH WAY

NOTES:

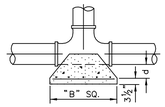
1. ALL THRUST BLOCKS SHALL BE CAST IN PLACE.
2. THIS TABLE IS BASED ON WATER PRESSURE=180 PSI WITH AN ALLOWABLE SOIL BEARING PRESSURE=2000 PSF, CONCRETE STRENGTH f_c=3000 PSI, REINFORCEMENT f_y=60.0 KSI THRUST BLOCK SHALL BE CAST AGAINST FIRM UNDISTURBED SOIL.
3. FOR LARGER"B"DIMENSIONS IT IS NECESSARY TO CHECK THAT PIPE IS SUFFICIENTLY DEEP TO ALLOW 15" MIN. SOIL COVER OVER TOP EDGE OF THRUST BLOCK.



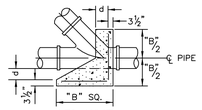
90° BEND



45°, 22.5° OR 11.25° BEND



TEE OR DEAD END



45° WYE

MANATEE COUNTY PUBLIC WORKS DEPARTMENT			CONCRETE THRUST BLOCKS	UG-7
REV.BY	DATE	DATE OF APPROVAL		
CLB/KE	2/05			

REQUIRED LENGTH OF RESTRAINED JOINT PIPE FOR DR-18 PVC PIPE

MAIN PIPE SIZE	HORIZ. BENDS			TEES						REDUCERS						PLUGS & VALVES
	90°	45°	22.5°	SIZE			LENGTH			SIZE			LENGTH			
24	90	38	18	X24 169	X20 132	X16 90	X12 38	X10 6		X20 64	X16 117	X12 158				214
20	78	32	16	X20 141	X16 101	X12 53	X10 24	X8 1		X16 65	X12 115	X10 149				184
16	66	27	13	X16 111	X12 67	X10 41	X8 12			X12 64	X10 107	X8 111				151
12	52	22	10	X12 80	X10 56	X8 31	X6 1			X10 58	X8 62	X6 86				118
10	44	18	9	X10 63	X8 40	X6 7				X8 33	X6 61	X4 81				100
8	37	15	7	X8 49	X6 18	X4 1				X6 35	X4 60					83
6	29	12	6	X6 29	X4 1					X4 33						63
4	21	8	4	X4 12												45

NOTES:

1.) RESTRAIN 11.25° BENDS 50% OF LENGTH FOR 22.5° BENDS.

2.) ALL VALVES AND FITTINGS SHALL BE RESTRAINED TO THE CONNECTING SECTIONS OF PIPE.

3.) ALL ISOLATION VALVES MUST BE PROPERLY ANCHORED OR RESTRAINED TO RESIST A 180 PSI TEST PRESSURE IN EITHER DIRECTION AS A PLUG.

4.) PIPE SIZES ARE GIVEN IN INCHES.

5.) RESTRAINED PIPE LENGTHS ARE GIVEN IN FEET.

6.) LENGTHS SHOWN ARE FOR A TEST PRESURE OF 180 PSI.

7.) THE RESTRAINED LENGTHS SHOWN IN THESE TABLES ARE BASED ON SOIL CLASSIFICATION SP WITH AWWA TYPE 3 TRENCH CONDITIONS, 180 PSI TEST PRESSURE, 3 FEET OF COVER AND 1.5 FACTOR OF SAFTEY. ACTUAL BURY CONDITIONS MUST BE DETERMINED BY THE ENGINEER OF RECORD AND THE RESTRAINED LENGTHS MODIFIED ACCORDINGLY.

MANATEE COUNTY PUBLIC WORKS DEPARTMENT			RESTRAINED LENGTHS FOR PVC PIPE	UG-8
REV.BY	DATE	DATE OF APPROVAL		
CLB/KE	2/05			

REQUIRED LENGTH OF RESTRAINED JOINT PIPE FOR DIP (POLY-WRAPPED)

MAIN PIPE SIZE	HORIZ. BENDS			TEES						REDUCERS						PLUGS & VALVES
	90°	45°	22.5°	SIZE			LENGTH			SIZE			LENGTH			
36	142	59	28	X36 193	X30 418	X24 232	X20 165	X16 84	X12 1	X30 137	X24 247	X20 309	X16 359			453
30	124	51	25	X30 333	X24 252	X20 189	X16 115	X12 23	X10 1	X24 137	X20 213	X16 276				391
24	106	44	21	X24 270	X20 211	X16 143	X12 61	X10 10	X8 1	X20 98	X16 178	X12 241				327
20	92	38	18	X20 225	X16 161	X12 85	X10 39	X8 1		X16 98	X12 176	X10 227				280
16	77	32	15	X16 177	X12 107	X10 65	X8 19	X6 1		X12 98	X10 163	X8 169				231
12	61	25	12	X12 127	X10 89	X8 50	X6 1			X10 88	X8 96	X6 131				181
10	52	22	10	X10 101	X8 64	X6 11				X8 51	X6 94	X4 125				153
8	44	18	9	X8 58	X6 30	X4 1				X6 54	X4 92					128
6	34	14	7	X6 46	X4 1					X4 50						98
4	24	10	5	X4 19												69

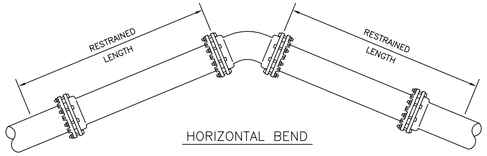
REQUIRED LENGTH OF RESTRAINED JOINT PIPE FOR DIP (NON-WRAPPED)

MAIN PIPE SIZE	HORIZ. BENDS			TEES						REDUCERS						PLUGS & VALVES
	90°	45°	22.5°	SIZE			LENGTH			SIZE			LENGTH			
36	100	42	20	X36 163	X30 132	X24 96	X20 68	X16 35	X12 1	X30 57	X24 103	X20 128	X16 149			188
30	88	37	18	X30 38	X24 104	X20 78	X16 48	X12 10	X10 1	X24 57	X20 88	X16 114				162
24	75	31	15	X24 112	X20 87	X16 59	X12 25	X10 4	X8 1	X20 40	X16 74	X12 100				135
20	65	27	13	X20 93	X16 67	X12 35	X10 16	X8 1		X16 41	X12 73	X10 94				116
16	54	22	11	X16 73	X12 44	X10 27	X8 8	X6 1		X12 41	X10 68	X8 70				96
12	43	18	8	X12 53	X10 37	X8 21	X6 1			X10 37	X8 40	X6 54				75
10	37	15	7	X10 42	X8 26	X6 5				X8 21	X6 39	X4 52				63
8	30	13	6	X8 32	X6 12	X4 1				X6 22	X4 38					53
6	24	10	5	X6 19	X4 1					X4 21						41
4	17	7	3	X4 8												29

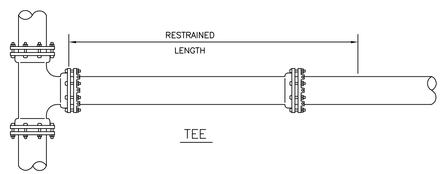
NOTE:

SEE "RESTRAINED LENGTHS FOR PVC PIPE" DETAIL FOR NOTES 1 THROUGH 7.

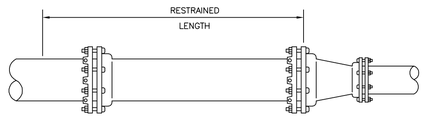
MANATEE COUNTY PUBLIC WORKS DEPARTMENT			RESTRAINED LENGTHS FOR DIP	UG-9
REV.BY	DATE	DATE OF APPROVAL		
CLB/KE	8/05			



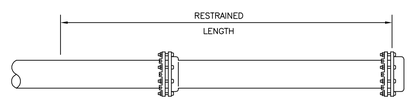
HORIZONTAL BEND



TEE



REDUCER



CAP OR PLUG

MANATEE COUNTY PUBLIC WORKS DEPARTMENT			RESTRAINED LENGTHS FOR PIPE	UG-10
REV.BY	DATE	DATE OF APPROVAL		
CLB/KE	8/05			

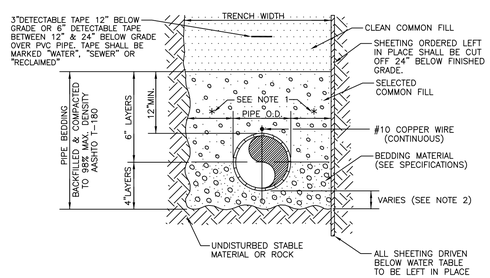
NOTES:

1.) 10" MAX. FOR PIPE DIAMETER LESS THAN 24"; 12" MAX. FOR PIPE DIAMETER 24" AND LESS THAN 42"; 24" MAX. FOR PIPE DIAMETER 42" AND OVER.

2.) 4" MAX. FOR PIPE 16" DIAMETER AND LESS; 6" MAX. FOR PIPE DIAMETER 18" TO 36" AND 9" MAX. FOR PIPE DIAMETER 42" AND OVER.

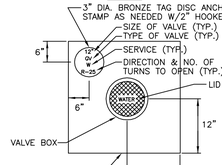
3.) INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.

4.) BACKFILL AASHTO M-145 SHALL BE PLACED IN LAYERS NOT TO EXCEED 6 INCHES. EACH LAYER SHALL BE THOROUGHLY TAMPED AND/OR ROLLED TO 98% AASHTO T-180 DENSITY.

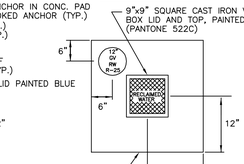


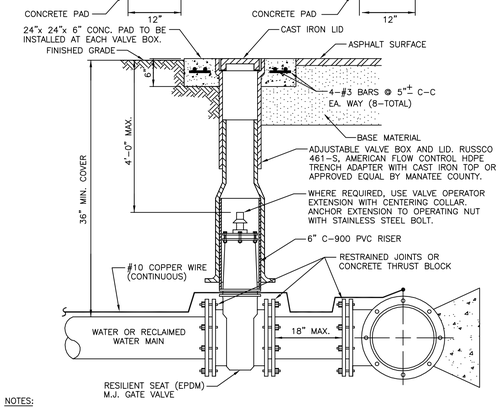
MANATEE COUNTY PUBLIC WORKS DEPARTMENT			TRENCH WITH TYPE A-2 PIPE BEDDING	UG-15
REV.BY	DATE	DATE OF APPROVAL		
CLB/KE	8/05			

WATER



RECLAIMED WATER

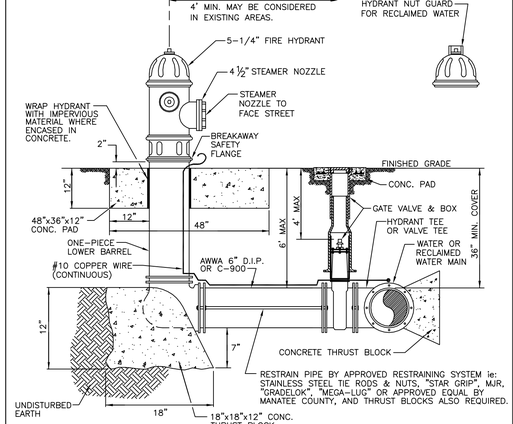




NOTES:

1. "WV" OR "RWV" TO BE IMPRESSED INTO THE NEWLY-POURED CONCRETE CURB, ALONG WITH DISTANCE IN FEET TO THE VALVE.
2. ALL EXISTING AND PROPOSED VALVE BOXES SHALL BE ADJUSTED TO FINISHED GRADES AS DETERMINED IN THE FIELD.
3. WATER VALVES SHALL NOT BE PLACED IN HANDICAPPED RAMPS.
4. PRECAST CONCRETE PADS & THRUST BLOCKS SHALL NOT BE USED.
5. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 1/2".
6. FOR VALVES 16" AND LARGER, USE BUTTERFLY VALVES.

MANATEE COUNTY PUBLIC WORKS DEPARTMENT			GATE VALVE, BOX, LID AND TAG	UW-2
REV.BY	DATE	DATE OF APPROVAL		
CLB/KE	3/06			



NOTES:

1. WEEPHOLES TO BE PLUGGED WITH BRASS PLUGS.
2. FIRE HYDRANTS SHALL BE A MINIMUM OF 6' OFF EDGE OF PAVEMENT AND 10' MAX. FROM BACK OF CURB. WHERE POSSIBLE AND WHERE SIDEWALK IS TO BE INSTALLED, FIRE HYDRANT SHALL BE LOCATED BETWEEN SIDEWALK AND RIGHT-OF-WAY LINE.
3. HYDRANTS SHALL BE FUSION BONDED EPOXY COATED SAFETY YELLOW FOR WATER AND PURPLE (PANTONE 522C) FOR RECLAIMED WATER. HYDRANT SHALL BE ALL CAST IRON OR DUCTILE IRON CONSTRUCTION.
4. FIRE HYDRANTS SHALL BE PLACED SO THAT STORM WATER FLOWS AWAY FROM THE HYDRANT.
5. FIRE HYDRANTS SHALL BE CONSTRUCTED WITH "GROUND LINE" SET TO FINISHED GRADES AS ESTABLISHED IN THE FIELD. NORMAL BURY IS 3 FEET OF COVER FOR ALL WATER LINES.
6. FIRE HYDRANTS MAY BE CONSTRUCTED WITH "GRADELOK" OFFSET FITTING.
7. RAISED REFLECTIVE PAVEMENT MARKER (BLUE) FOR POTABLE WATER SHALL BE INSTALLED AT CENTERLINE OF PAVEMENT ADJACENT TO EACH HYDRANT.
8. PRECAST CONCRETE THRUST BLOCKS & PADS SHALL NOT BE USED.
9. ALL EXPOSED EDGES OF CONCRETE SHALL HAVE 1/2" CHAMFER.
10. FIRE HYDRANT VALVE SHALL BE FASTENED DIRECTLY TO TEE.
11. IN-LINE VALVES SHOULD BE LOCATED AT HYDRANT TEES.
12. HYDRANTS SHALL BE LOCATED ON SAME SIDE OF ROAD AS WATER MAIN UNLESS APPROVED BY M.C.U.O.D.
13. THERE MUST BE A CLEARANCE OF SEVEN FEET 360 DEGREES AROUND HYDRANT FROM LANDSCAPING, FENCES, TREES, ETC.

MANATEE COUNTY PUBLIC WORKS DEPARTMENT			FIRE HYDRANT ASSEMBLY	UW-5
REV.BY	DATE	DATE OF APPROVAL		
CLB/KE	3/06			

REVISIONS			
REV.NO.	DESCRIPTIONS	DATE	

SEAL

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EB0006691
www.mckimcreed.com

MANATEE COUNTY, FLORIDA

NORTH COUNTY WELLS / TREATMENT

CIVIL DETAILS

DATE:	FEBRUARY 2009
MCE PROJ. #	1024-0117
DRAWN	BFN
DESIGNED	BFN
CHECKED	MAC
PROJ. MGR.	SPT

SCALE
HORIZONTAL: NA
VERTICAL: NA

M&C FILE NUMBER

DRAWING NUMBER
D1

STATUS: ISSUE FOR BID
REVISION

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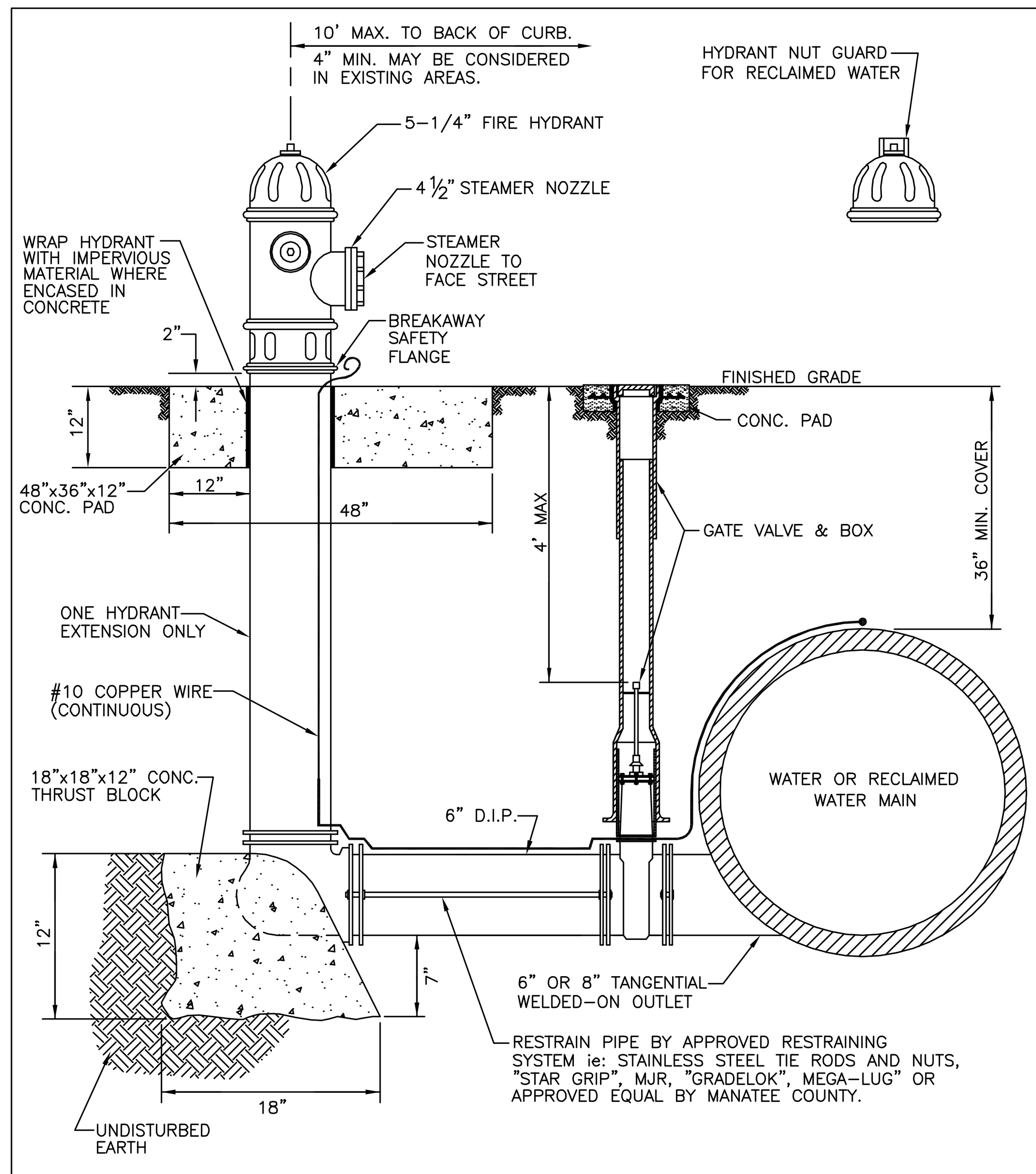
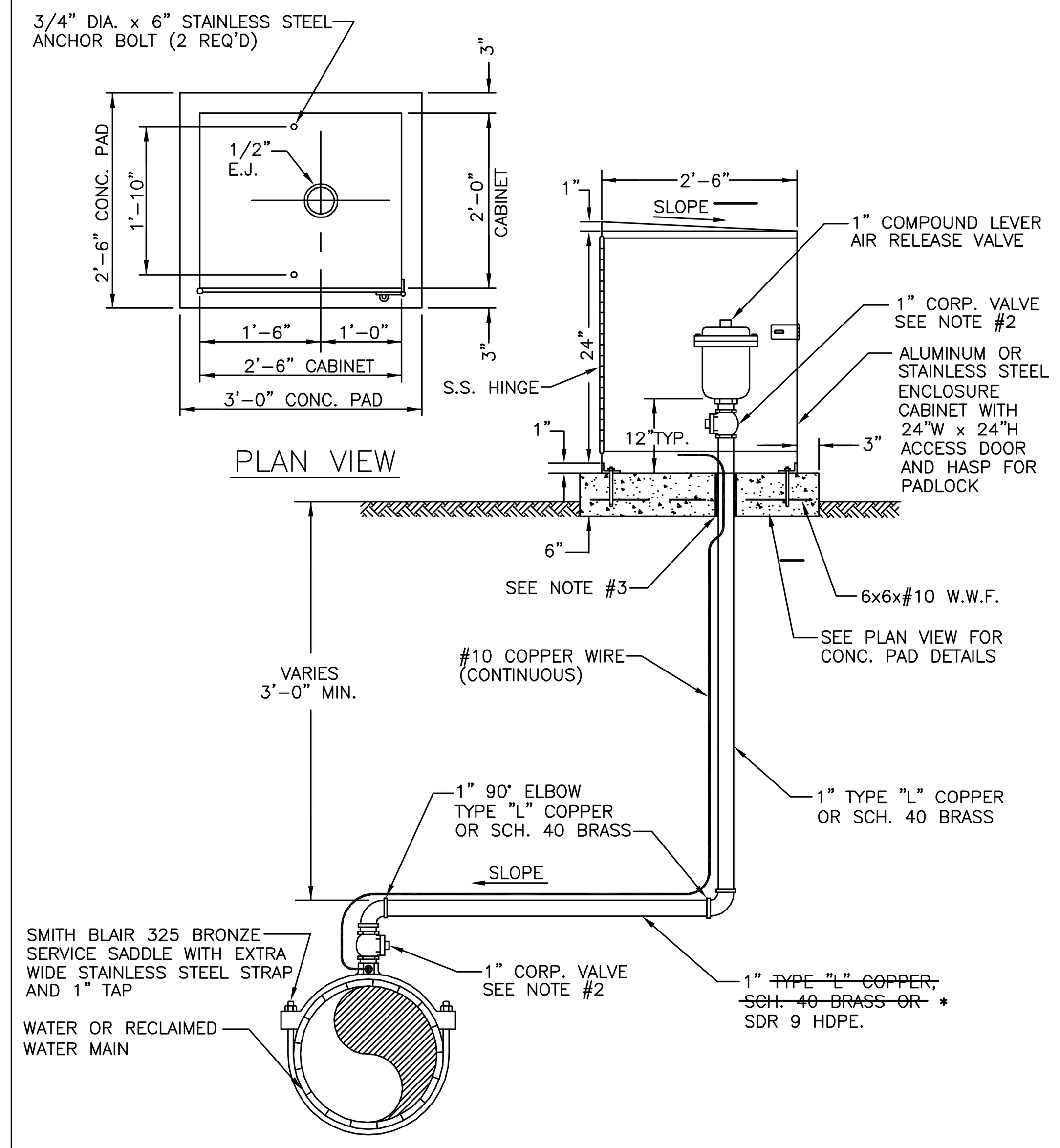


NOTES:

1. SEE FIRE HYDRANT ASSEMBLY DETAIL FOR NOTES 1 THROUGH 13.
2. TYPICAL INSTALLATION LOCATION FOR TANGENTIAL OUTLET IS AT LOW POINT ALONG THE MAIN WHERE SEDIMENTS ACCUMULATE.

MANATEE COUNTY PUBLIC WORKS DEPARTMENT	FIRE HYDRANT BLOW-OFF ASSEMBLY FOR 12" MAINS AND LARGER	UW-8
REV.BY: CLB/KE DATE: 3/06 DATE OF APPROVAL		

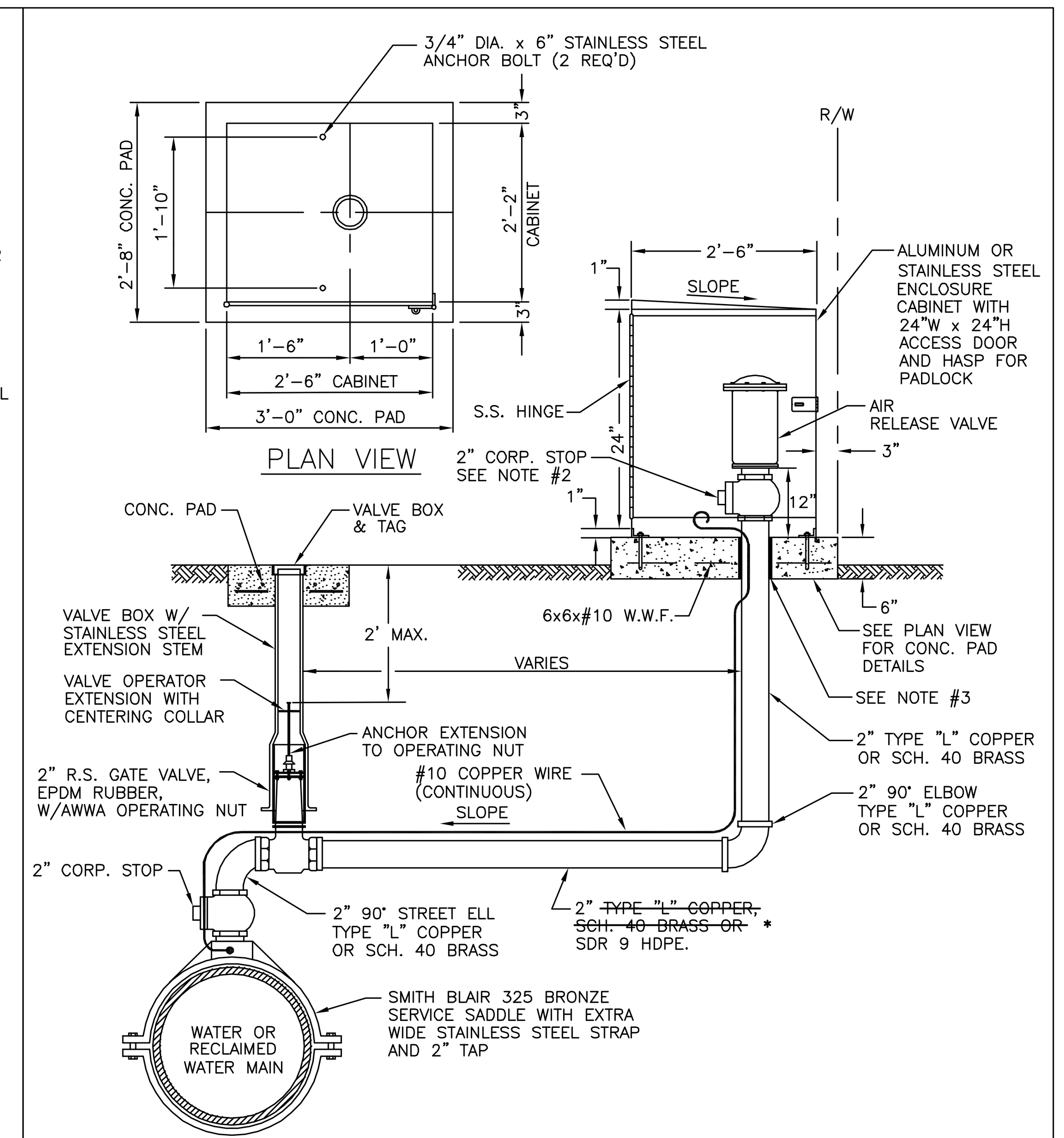


NOTES:

* MODIFIED FROM COUNTY STANDARD

1. AIR RELEASE VALVES TO BE INSTALLED AT HIGH POINTS OF MAIN AS SHOWN ON PLANS.
2. ARV TO BE SIZED ACCORDING TO MANUFACTURER'S RECOMMENDATION FOR WATER MAIN SIZE.
3. PIPE PASSING THROUGH CONCRETE SHALL BE POLYETHYLENE WRAPPED.
4. ALL EXPOSED EDGES OF CONCRETE SHALL HAVE 1/2" CHAMFER.

MANATEE COUNTY PUBLIC WORKS DEPARTMENT	AIR RELEASE ASSEMBLY FOR 12" & SMALLER MAINS	UW-9
REV.BY: CLB/KE DATE: 8/06 DATE OF APPROVAL		

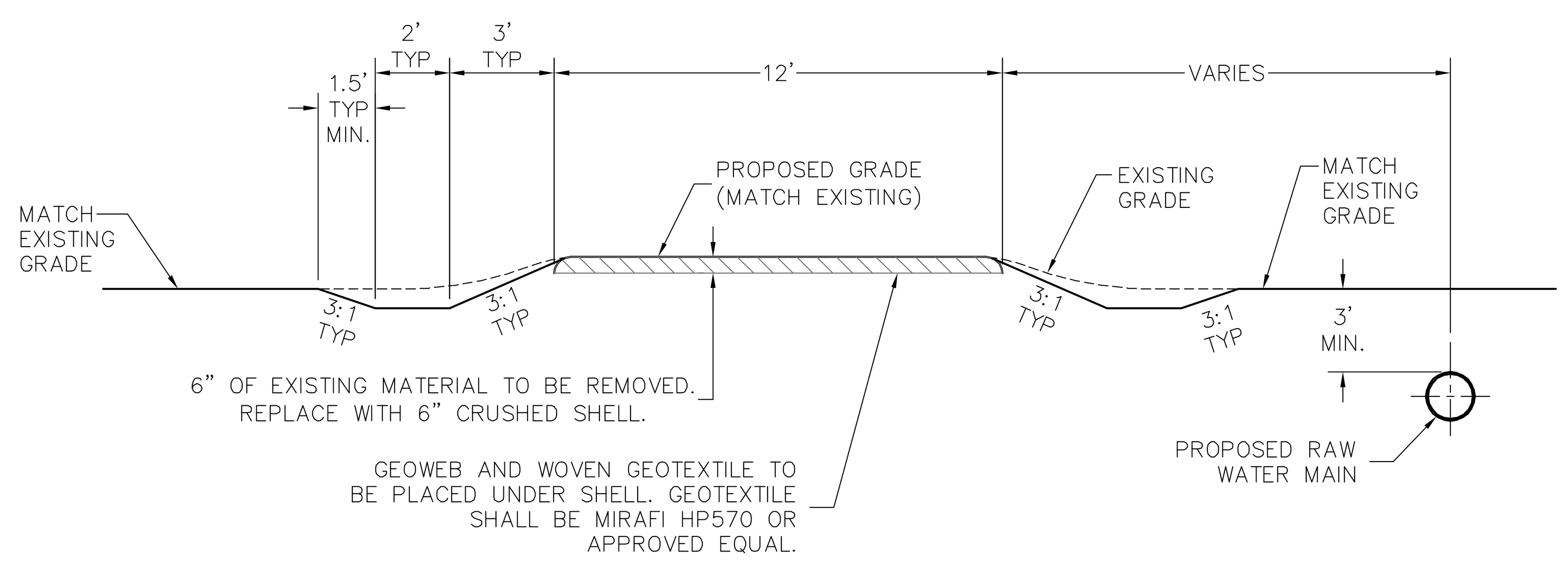


NOTES:

* MODIFIED FROM COUNTY STANDARD

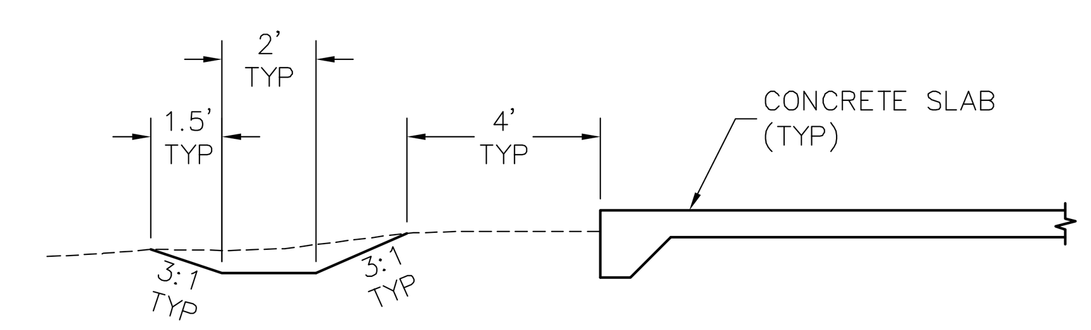
1. AIR RELEASE VALVES TO BE INSTALLED AT HIGH POINTS OF MAIN AS SHOWN ON PLANS.
2. ARV TO BE SIZED ACCORDING TO MANUFACTURER'S RECOMMENDATION FOR WATER MAIN SIZE.
3. PIPE PASSING THROUGH CONCRETE SHALL BE POLYETHYLENE WRAPPED.
4. ALL EXPOSED EDGES OF CONCRETE SHALL HAVE 1/2" CHAMFER.

MANATEE COUNTY PUBLIC WORKS DEPARTMENT	AIR RELEASE ASSEMBLY FOR 16" & LARGER MAINS	UW-10
REV.BY: CLB/KE DATE: 8/06 DATE OF APPROVAL		



TYPICAL SCRAPE AND SHELL ROAD SECTION

PIPELINE CONSTRUCTION AREA AT ROAD SIDE



CROSS-SECTION OF TYPICAL CONCRETE SLAB DRAINAGE SWALE

ALL SLAB EDGES NOT ADJACENT TO DRIVEWAY

REV.NO.	DESCRIPTIONS	DATE
	REVISIONS	

SEAL

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DESIGNED	BFN
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PROJ. MGR.	SPT

SCALE
HORIZONTAL: NA
VERTICAL: NA

M&C FILE NUMBER
DRAWING NUMBER D2

STATUS: ISSUE FOR BID
REVISION

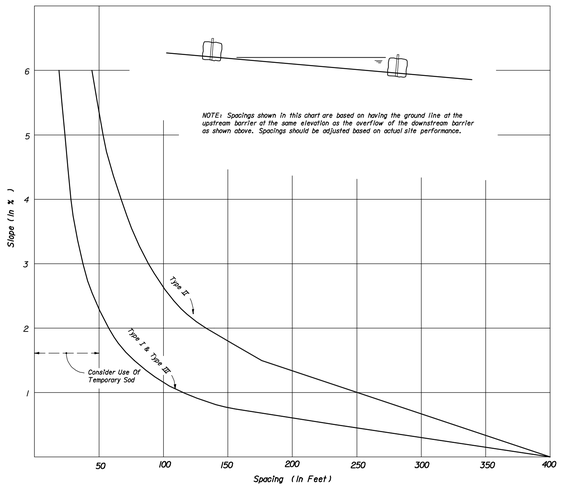
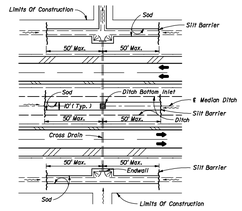
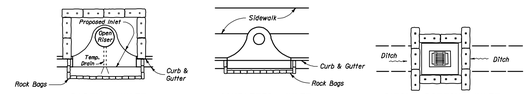


CHART I

RECOMMENDED SPACING FOR BALED HAY BARRIERS AND TYPE III SILT FENCE

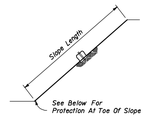


DITCH INSTALLATIONS AT DRAINAGE STRUCTURES



PARTIAL INLET COMPLETED INLET DITCH BOTTOM INLET

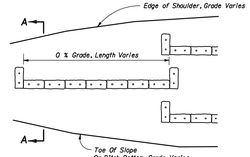
PROTECTION AROUND INLETS OR SIMILAR STRUCTURES



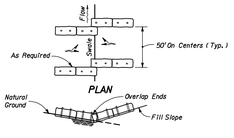
SECTION AA

Notes:
Where the slope length exceeds 25 feet, construct one row of bale barriers at 0% longitudinal grade midway up the slope. Contruct two rows of bale barriers where the slope length exceeds 50 feet.

ALONG FILL SLOPE



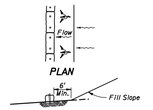
ELEVATION



PLAN

ELEVATION

TO BE USED WHERE THE NATURAL GROUND SLOPES TOWARD THE TOE OF SLOPE



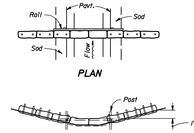
PLAN

ELEVATION

TO BE USED WHERE THE NATURAL GROUND SLOPES AWAY FROM THE TOE OF SLOPE

AT TOE OF SLOPE

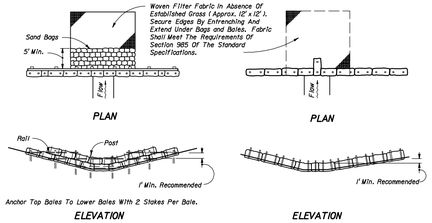
BARRIERS FOR FILL SLOPES



PLAN

ELEVATION

BARRIER FOR PAVED DITCH



PLAN PLAN

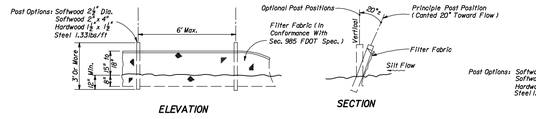
ELEVATION ELEVATION

TYPE II TYPE I

BARRIERS FOR UNPAVED DITCHES

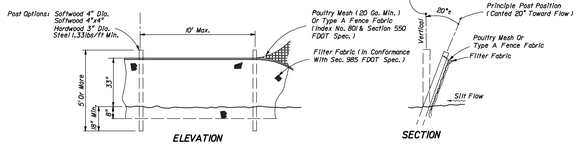
NOTES FOR BALED HAY OR STRAW BARRIERS

1. Type I and II Barriers should be spaced in accordance with Chart I, Sheet 1.
2. Hay bales shall be trenched 3" to 4" and anchored with 2 - 1" x 2" (or 1" dia.) x 4' wood stakes. Stakes of other material or shape providing equivalent strength may be used if approved by the Engineer. Stakes other than wood shall be removed upon completion of the project.
3. Rails and posts shall be 2" x 4" wood. Other materials providing equivalent strength may be used if approved by the Engineer.
4. Adjacent bales shall be butted firmly together. Unavoidable gaps shall be plugged with hay or straw to prevent silt from passing.
5. Where used in conjunction with silt fence, hay bales shall be placed on the upstream side of the fence.
6. ~~Bales to be paid for under the contract unit price for Baled Hay or Straw, EA. The unit price shall include the cost of Filter Fabric for Type I and II Barriers. Sand bags shall be paid for under the unit price for Sandbagging, CY. Rock bags to be paid for under the contract unit price for Rock Bags, EA.~~



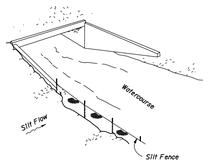
ELEVATION SECTION

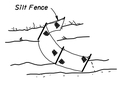
TYPE III SILT FENCE



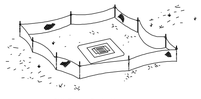
ELEVATION SECTION

TYPE IV SILT FENCE



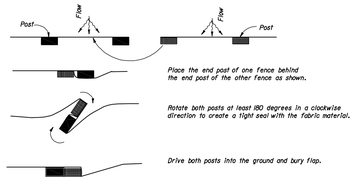


Silt Fence Protection In Ditches with Intermittent Flow



Silt Fence Protection Around Ditch Bottom Inlets.

SILT FENCE APPLICATIONS



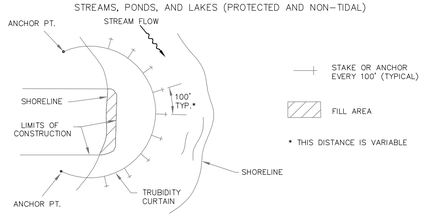
PLAN VIEW

JOINING TWO SILT FENCES

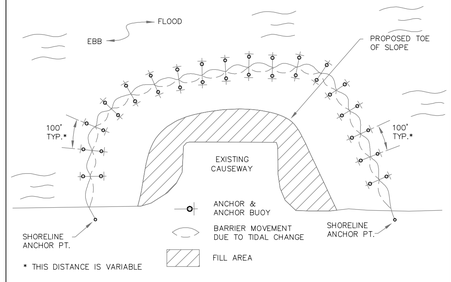
NOTES FOR SILT FENCES

1. Type III Silt Fence to be used at most locations. Where used in ditches, the spacing for Type III Silt fence shall be in accordance with Chart 1, Sheet 1.
2. Type IV Silt Fence to be used where large sediment loads are anticipated. Suggested use is where fill slope is 1:2 or steeper and length of slope exceeds 25 Feet. Avoid use where the detained water may back into travel lanes or off the right of way.
3. Do not construct silt fences across permanent flowing watercourses. Silt fences are to be at upland locations and turbidity barriers used at permanent bodies of water.
4. Where used as slope protection, Silt Fence is to be constructed on 0% longitudinal grade to avoid channelizing runoff along the length of the fence.
5. ~~Silt Fence to be paid for under the contract unit price for Staked Silt Fence, (LF).~~

TYPICAL LAYOUTS
STREAMS, PONDS, AND LAKES (PROTECTED AND NON-TIDAL)

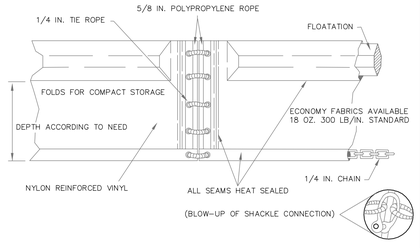


TIDAL WATERS AND/OR HEAVY WIND AND WAVE ACTION



TYPICAL INSTALLATION LAYOUTS OF FLOATING TURBIDITY BARRIERS

NOT TO SCALE



FLOATING TURBIDITY BARRIER

NOT TO SCALE

REV.NO.	DESCRIPTIONS	DATE
	REVISIONS	

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MANATEE COUNTY, FLORIDA

NORTH COUNTY WELLS / TREATMENT

EROSION CONTROL DETAILS

DATE:	FEBRUARY 2009
MCE PROJ. #	1024-0117
DRAWN	BFN
DESIGNED	BFN
CHECKED	MAC
PROJ. MGR.	SPT

SCALE
HORIZONTAL: NA
VERTICAL: NA

M&C FILE NUMBER

DRAWING NUMBER
D3

STATUS: ISSUE FOR BID
REVISION

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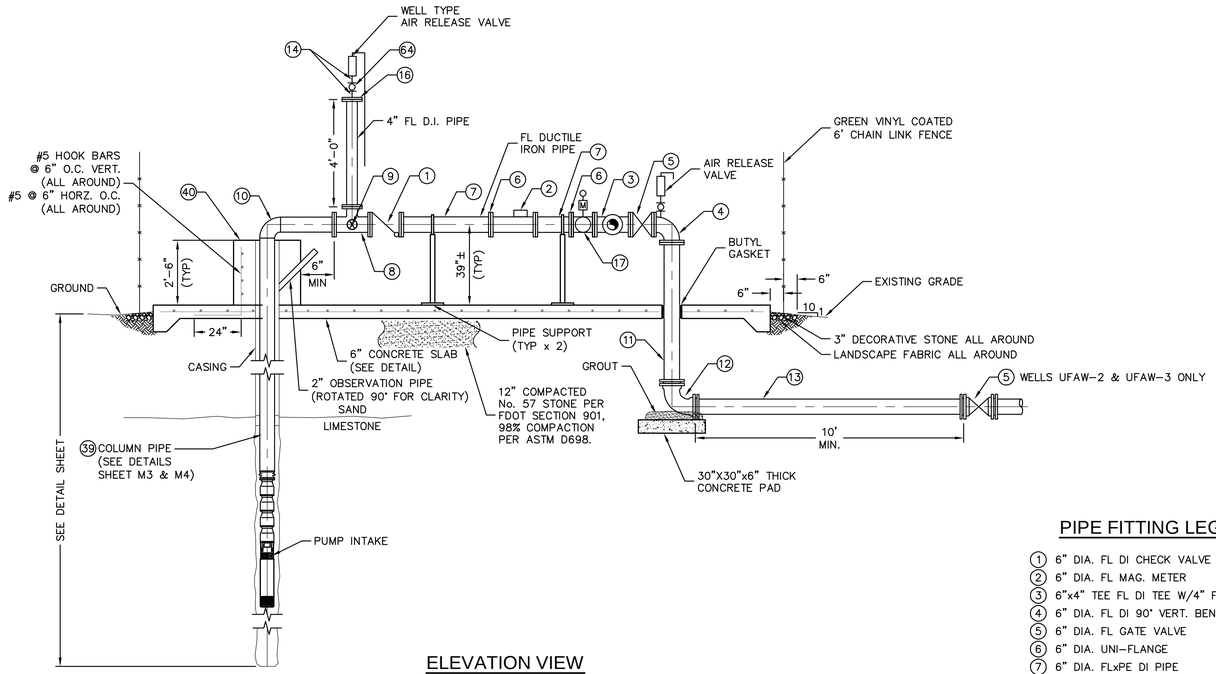
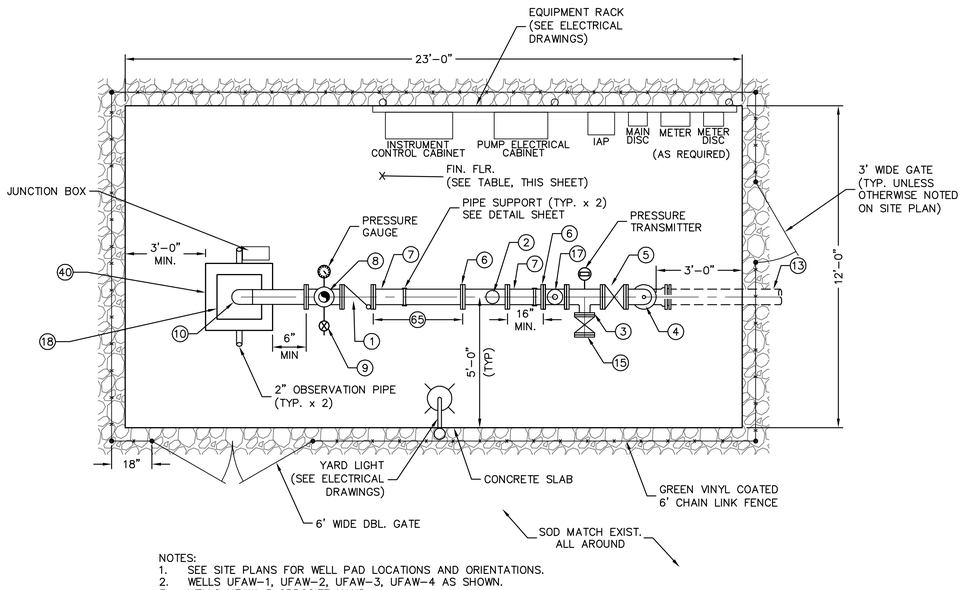


ELEVATION VIEW

3/8" = 1'



NOTES:
1. SEE SITE PLANS FOR WELL PAD LOCATIONS AND ORIENTATIONS.
2. WELLS UFAW-1, UFAW-2, UFAW-3, UFAW-4 AS SHOWN.
3. WELLS UFAW-5 OPPOSITE HAND.

PLAN VIEW

3/8" = 1'

STANDARD WELL SCHEDULE

Well Number	Column/ Discharge Pipe Size	Above Ground Pipe Size	Transmission Main Size	Finished Floor Elevation @ High Point	Pump Model	Stages	Impeller Diameter	Design GPM	Design TDH	RPM	Motor (HP)	Motor Diameter	Voltage
UFAW-1	6"	6"	8"	32.32	7TNHC	3	4.93	700		3450	60	8"	460V-3PH
UFAW-2	6"	6"	16"	33.82	7TNHC	4	4.75	700		3450	50	8"	460V-3PH
UFAW-3	6"	6"	8"	36.82	7TNHC	4	4.75	700		3450	50	8"	460V-3PH
UFAW-4	6"	6"	8"	29.32	7TNHC	5	4.75	700		3450	60	8"	460V-3PH
UFAW-5	6"	6"	12"	30.32	7TNHC	3	4.93	700		3450	60	8"	460V-3PH

*** FINAL PUMP SELECTION TO BE DETERMINED BASED ON WELL DEVELOPMENT AND FLOW TESTING.**

PIPE FITTING LEGEND

(1) 6" DIA. FL DI CHECK VALVE
(2) 6" DIA. FL MAG. METER
(3) 6"x4" TEE FL DI TEE W/4" FL GATE VALVE
(4) 6" DIA. FL DI 90° VERT. BEND (TAPPED FOR ARV)
(5) 6" DIA. FL GATE VALVE
(6) 6" DIA. UNI-FLANGE
(7) 6" DIA. FLxPE DI PIPE
(8) 6"x4" TEE FL DI TEE W/4" FL DI RISER & WELL TYPE AIR RELEASE VALVE, TEE TAPPED FOR 1/2" SAMPLE SPIGOT AND PRESSURE GAUGE
(9) 1/2" SAMPLE SPIGOT
(10) 6" DIA. SCH 40 316 SS DISCHARGE HEAD
(11) 6" DIA. FLxPE DI PIPE (RESTRAINED)
(12) 6" DIA. MJ DI 90° VERTICAL BEND (RESTRAINED)
(13) 6" DIA. MECHANICAL JOINT PVC PIPE (RESTRAINED)
(14) 2" DIA. THREADED 316 SS PIPE
(15) 4" DI BLIND FLANGE
(16) 4" DI FLANGE W/2" DIA. NPT TAP
(17) 6" DIA. MOTOR OPERATED FL V-PORT CONTROL VALVE
(18) 30"x30" SQUARE 5/8" THICK 316 S.S. BASEPLATE
(39) 6.625" O.D. CERTA-LOK SCH. 80 PVC COLUMN PIPE
(40) 36"x36" SQUARE CONCRETE PUMP BASE
(64) 2" DIA. NPT 316 S.S. BALL VALVE
(65) 36" MINIMUM LENGTH OF STRAIGHT PIPE UPSTREAM OF FLOW METER

REV.NO.	DESCRIPTIONS	DATE
	REVISIONS	

SEAL

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MANATEE COUNTY, FLORIDA

NORTH COUNTY WELLS / TREATMENT

FLORIDAN AQUIFER TEST / PRODUCTION WELL PLAN AND ELEVATION

DATE:	FEBRUARY 2009
MCE PROJ. #	1024-0117
DRAWN	BFN
DESIGNED	AR
CHECKED	MAC
PROJ. MGR.	SPT

SCALE
HORIZONTAL: N.T.S.
VERTICAL: NA

M&C FILE NUMBER

DRAWING NUMBER
M1

STATUS: ISSUE FOR BID
REVISION

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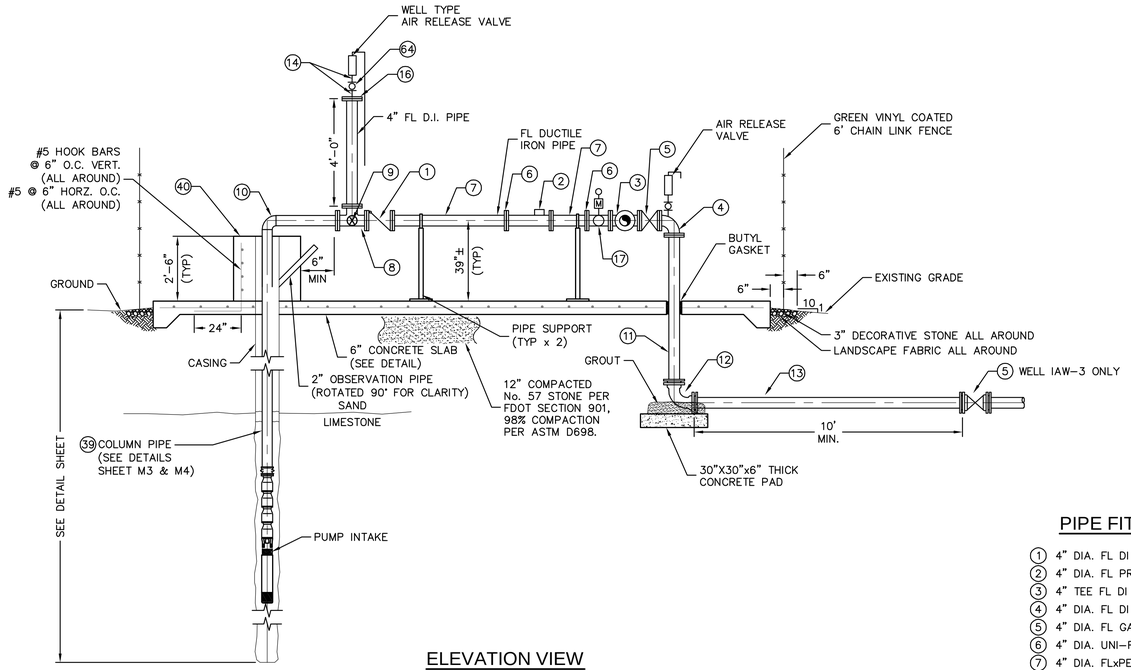
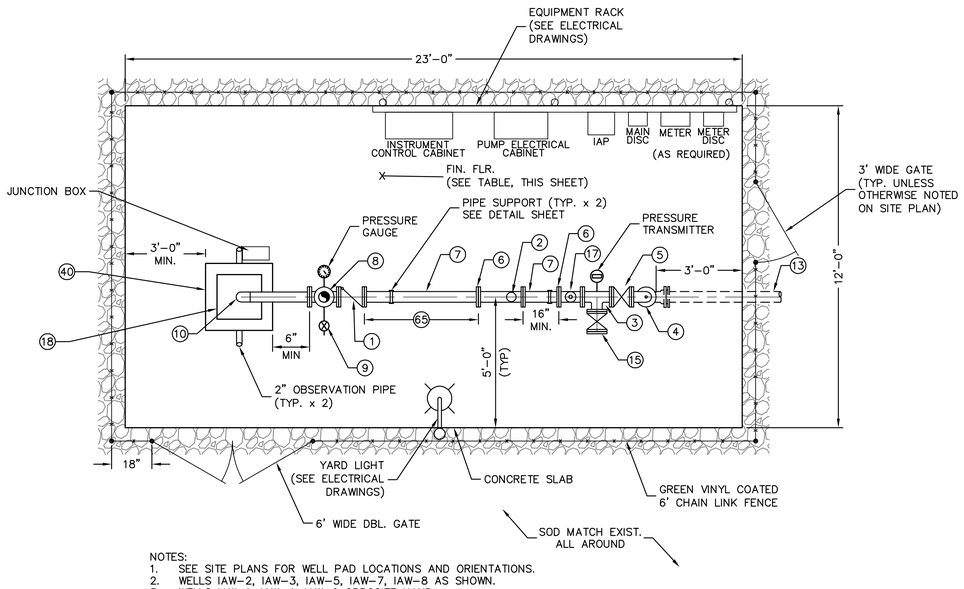


ELEVATION VIEW

3/8" = 1'



NOTES:
1. SEE SITE PLANS FOR WELL PAD LOCATIONS AND ORIENTATIONS.
2. WELLS IAW-2, IAW-3, IAW-5, IAW-7, IAW-8 AS SHOWN.
3. WELLS IAW-1, IAW-4, IAW-6 OPPOSITE HAND.

PLAN VIEW

3/8" = 1'

STANDARD WELL SCHEDULE

Well Number	Column/ Discharge Pipe Size	Above Ground Pipe Size	Transmission Main Size	Finished Floor Elevation @ High Point	Pump Model	Stages	Impeller Diameter	Design GPM	Design TDH	RPM	Motor (HP)	Motor Diameter	Voltage
IAW-1	4"	4"	8"	33.32	5CNHC	5	3.50	150		3450	15	6"	460V-3PH
IAW-2	4"	4"	10"	29.32	5CNHC	4	3.72	150		3450	15	6"	460V-3PH
IAW-3	4"	4"	16"	34.82	5CNHC	4	3.72	150		3450	15	6"	460V-3PH
IAW-4	4"	4"	6"	34.82	5CNHC	5	3.50	150		3450	15	6"	460V-3PH
IAW-5	4"	4"	6"	36.82	5CNHC	5	3.50	150		3450	15	6"	460V-3PH
IAW-6	4"	4"	12"	32.32	5CNHC	5	3.50	150		3450	15	6"	460V-3PH
IAW-7	4"	4"	6"	33.32	5CNHC	5	3.72	150		3450	15	6"	460V-3PH
IAW-8	4"	4"	10"	31.32	5CNHC	7	3.25	150		3450	15	6"	460V-3PH
*** FINAL PUMP SELECTION TO BE DETERMINED BASED ON WELL DEVELOPMENT AND FLOW TESTING.**													

PIPE FITTING LEGEND

(1) 4" DIA. FL DI CHECK VALVE
(2) 4" DIA. FL PROPELLER FLOW METER
(3) 4" TEE FL DI TEE W/4" FL GATE VALVE
(4) 4" DIA. FL DI 90° VERT. BEND (TAPPED FOR ARV)
(5) 4" DIA. FL GATE VALVE
(6) 4" DIA. UNI-FLANGE
(7) 4" DIA. FLxPE DI PIPE
(8) 4" TEE FL DI TEE W/4" FL DI RISER & WELL TYPE AIR RELEASE VALVE, TEE TAPPED FOR 1/2" SAMPLE SPIGOT AND PRESSURE GAUGE
(9) 1/2" SAMPLE SPIGOT
(10) 4" DIA. SCH 40 316 SS DISCHARGE HEAD
(11) 4" DIA. FLxPE DI PIPE (RESTRAINED)
(12) 4" DIA. MJ DI 90° VERTICAL BEND (RESTRAINED)(6"x4" FOR IAW-2)
(13) 4" DIA. MECHANICAL JOINT PVC PIPE (RESTRAINED) (6" FOR IAW-2)
(14) 1" DIA. THREADED 316 SS PIPE
(15) 4" DI BLIND FLANGE
(16) 4" DI FLANGE W/1/2" DIA. NPT TAP
(17) 4" DIA. MOTOR OPERATED FL V-PORT CONTROL VALVE
(18) 27"x27" SQUARE 5/8" THICK 316 S.S. BASEPLATE
(39) 4.5" O.D. CERTA-LOK SCH. 80 PVC COLUMN PIPE
(40) 30"x30" SQUARE CONCRETE BASE
(64) 1" DIA. NPT 316 S.S. BALL VALVE
(65) 40" MINIMUM LENGTH OF STRAIGHT PIPE UPSTREAM OF FLOW METER

REV.NO.	DESCRIPTIONS	DATE
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MANATEE COUNTY, FLORIDA

NORTH COUNTY WELLS / TREATMENT

INTERMEDIATE AQUIFER TEST / PRODUCTION WELL PLAN AND ELEVATION

DATE:	FEBRUARY 2009
MCE PROJ. #	1024-0117
DRAWN	BFN
DESIGNED	AR
CHECKED	MAC
PROJ. MGR.	SPT

SCALE
HORIZONTAL: N.T.S.
VERTICAL: NA

M&C FILE NUMBER

DRAWING NUMBER
M2

STATUS: ISSUE FOR BID

REVISION

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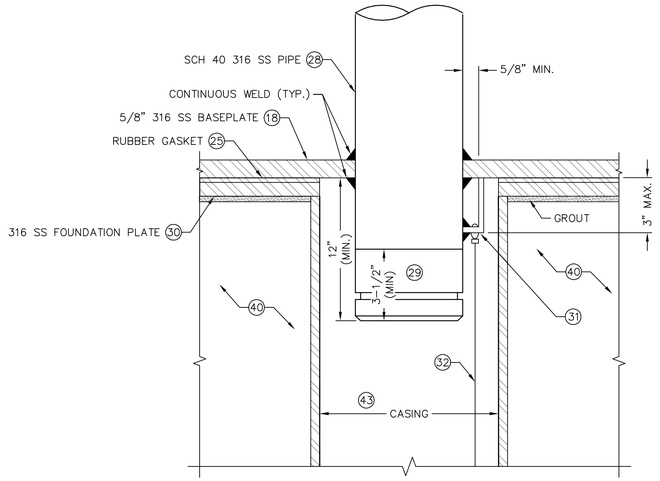

SAFETY HOOK DETAIL

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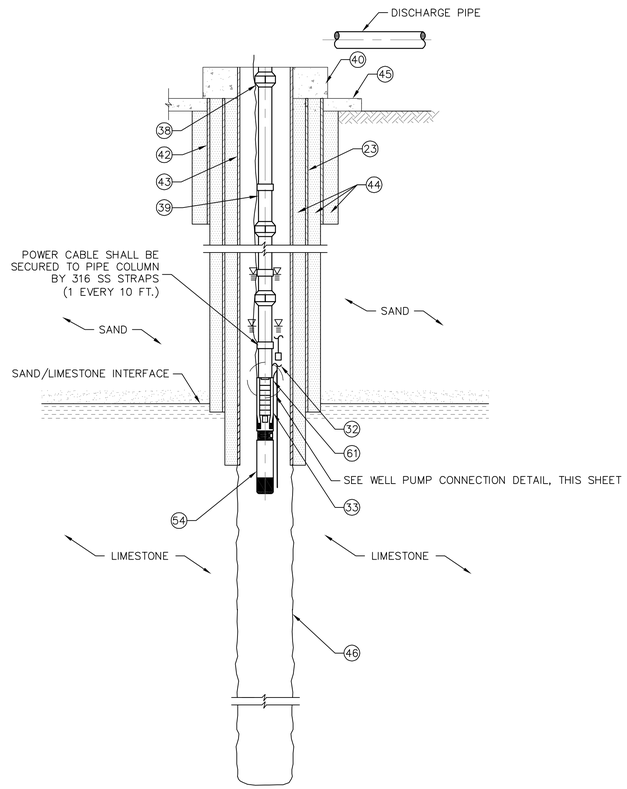

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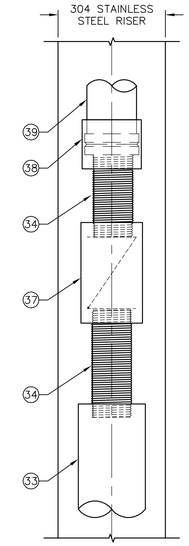
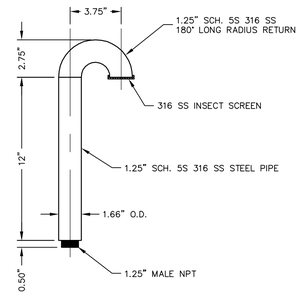


WELL PUMP CONNECTION DETAIL

NTS



AIR VENT DETAIL

NTS

LEGEND

DESCRIPTION

(18) 5/8" THICK 316 SS BASEPLATE
(19) 2"x15/16" BOLT HOLE (TYPx4)
(20) SCH 40 316 SS 90° BEND (PExPE)
(21) SCH 40 316 SS FL
(22) 1.25" DIA. FNPT WELDOLET (TYPx4)
(23) A53 GRADE B STEEL INTERMEDIATE CASING DIAMETER
(24) 316 SS EYEBOLT
(25) 1/4" THICK NEOPRENE RUBBER GASKET
(26) 3/4" DIA. x 9" 316 SS EXPANSION ANCHOR
(27) 316 SS WASHER & NUT
(28) SCH 40 316 SS PIPE (WELDED TO PLATE)
(29) SCH 40 316 SS CERTA-LOK DROP PIPE ADAPTER
(30) 5/8" THICK 316 SS FOUNDATION PLATE
(31) 1/4" DIA. 316 SS ROUND STOCK SAFETY HOOK
(32) 3/8" DIA. 316 SS SAFETY CABLE TO PUMP
(33) SUBMERSIBLE PUMP
(34) THREADED 316 SS NIPPLE (MNPTxMNPT)
(35) 1.25" DIA. – 316 SS AIR VENT (SEE DETAIL, SHEET M3)
(36) SCH. 40 316 SS PIPE
(37) 316 SS CHECK VALVE (FNPTxFNPT)
(38) CERTA-LOK PVC COUPLING O.D.
(39) CERTA-LOK SCH. 80 PVC DROP PIPE O.D.
(40) CONCRETE PUMP BASE
(41) FL DI TEE – TAPPED FOR SAMPLE SPIGOT AND PRESSURE GAUGE
(42) A53 GRADE B STEEL SURFICIAL CASING DIAMETER
(43) SDR 17 PVC FINAL WELL CASING PIPE I.D.
(44) GROUT CEMENT
(45) 6" CONCRETE SLAB
(46) OPEN BOREHOLE
(49) 4" FLANGED DUCTILE IRON PIPE
(50) 1/2" SAMPLE SPIGOT
(54) ELECTRIC MOTOR O.D.
(61) SUBMERSIBLE PUMP O.D.

UPPER FLORIDAN AQUIFER WELL

(18)(25)(30) 30"x30" SQUARE
(20)(21)(28)(29)(34)(36)(37) 6" DIA.
(23) 24" DIA. O.D.
(38) 7.84" O.D.
(39) 6.625" O.D.
(40) 36"x36" SQUARE
(41) 6"x4" TEE
(42) 30" DIA. O.D.
(43) 14.118" I.D.
(54) 8" O.D.
(61) 8.50" O.D.

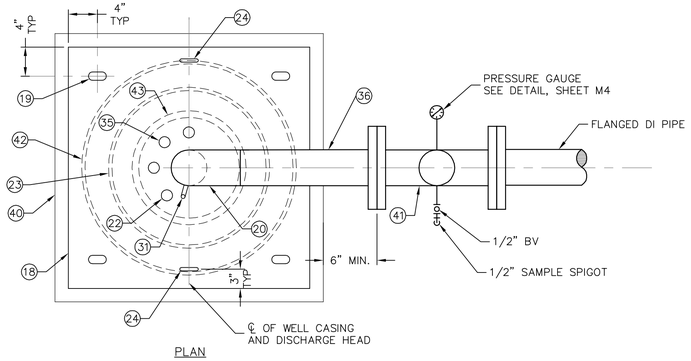
INTERMEDIATE AQUIFER WELL

(18)(25)(30) 27"x27" SQUARE
(20)(21)(28)(29)(34)(36)(37) 4" DIA.
(23) 18" DIA. O.D.
(38) 5.47" O.D.
(39) 4.50" O.D.
(40) 30"x30" SQUARE
(41) 4" TEE
(42) 24" DIA. O.D.
(43) 11.25" I.D.
(54) 6" O.D.
(61) 7.50" O.D.

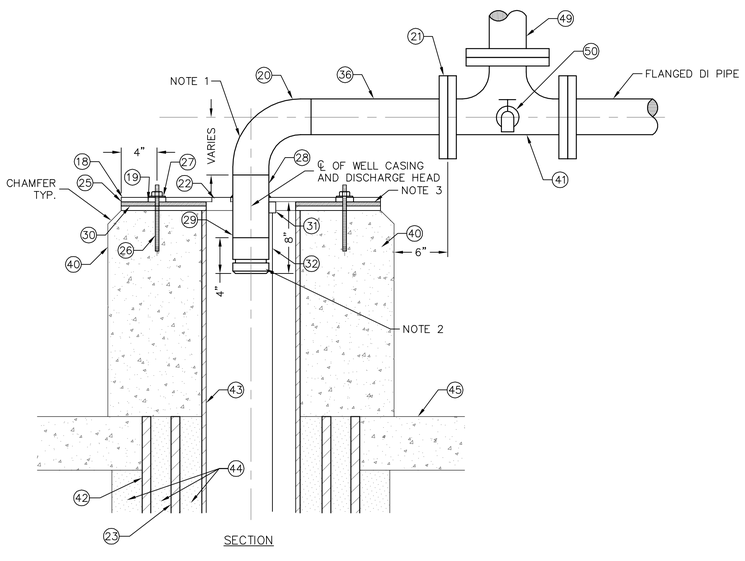
NOTE:
ORIENT WELL PER SITE PLAN.

NOTES:

1. THE 316 SS BASEPLATE, 90° BEND, FLANGE, PIPE, DROP PIPE ADAPTER, LIFTING HOOK AND SAFETY HOOK SHALL BE WELDED TOGETHER TO FORM ONE DISCHARGE HEAD ASSEMBLY.
2. CUT OFF THREADED PORTION OF DROP PIPE ADAPTER AND WELD TO SCH. 40 316 SS PIPE.
3. GRIND EXISTING TOP SURFACE OF CONCRETE PUMP PAD SMOOTH AND LEVEL FOR INSTALLATION OF THE FOUNDATION PLATE, BASEPLATE AND RUBBER GASKET,
   PLACE NON SHRINK GROUT ON THE CONCRETE PUMP PAD TO FORM A SMOOTH LEVEL SURFACE FOR THE FOUNDATION PLATE.



PLAN



SECTION

DISCHARGE HEAD ASSEMBLY

N.T.S.

REV.NO.	DESCRIPTIONS	DATE
	REVISIONS	

SEAL

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MANATEE COUNTY, FLORIDA

NORTH COUNTY WELLS / TREATMENT

STANDARD WELL CONSTRUCTION DETAILS

DATE:	FEBRUARY 2009
MCE PROJ. #	1024-0117
DRAWN	BFN
DESIGNED	AR
CHECKED	MAC
PROJ. MGR.	SPT

SCALE
HORIZONTAL: N.T.S.
VERTICAL: NA

M&C FILE NUMBER

DRAWING NUMBER
M3

STATUS: ISSUE FOR BID
REVISION

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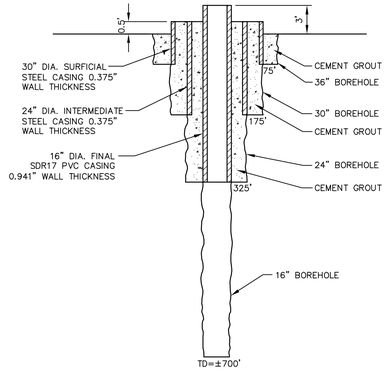
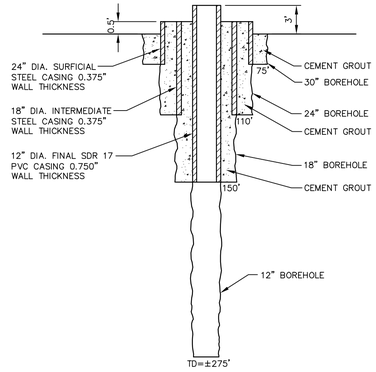


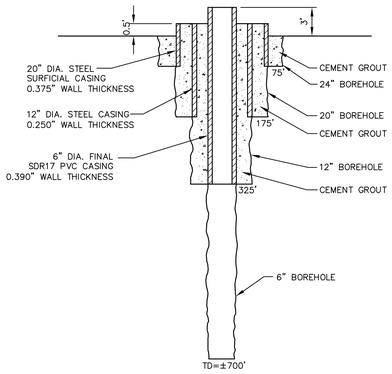
TYPICAL UPPER FLORIDAN AQUIFER PRODUCTION WELL DETAIL

NOT TO SCALE



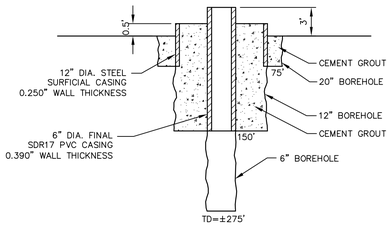
TYPICAL INTERMEDIATE AQUIFER PRODUCTION WELL DETAIL

NOT TO SCALE



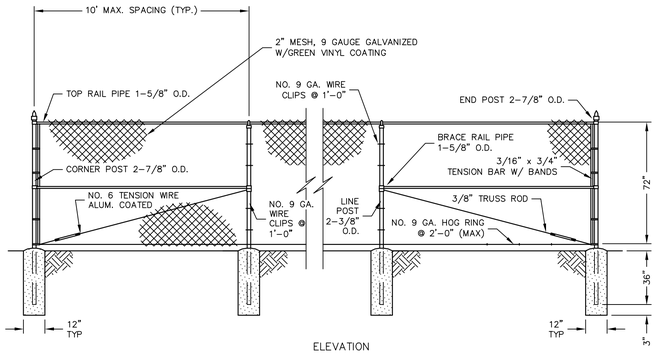
TYPICAL UPPER FLORIDAN MONITORING WELL DETAIL

NOT TO SCALE



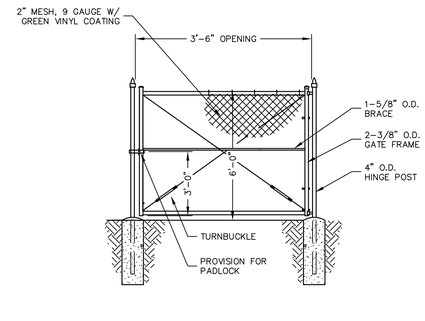
TYPICAL INTERMEDIATE AQUIFER MONITORING WELL DETAIL

NOT TO SCALE



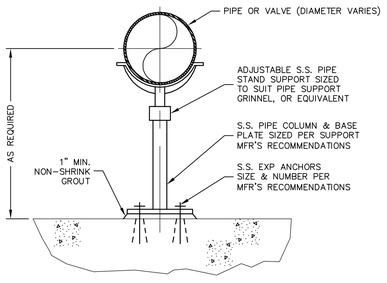
TYPICAL CHAIN LINK FENCE

NOT TO SCALE



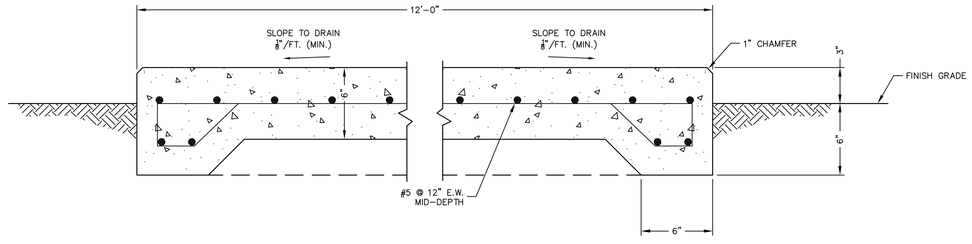
TYPICAL CHAIN LINK GATE

NOT TO SCALE



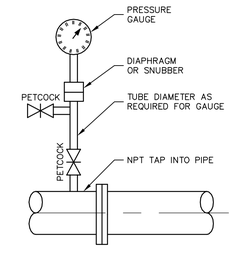
PIPE AND VALVE SUPPORT DETAIL

NOT TO SCALE



CONCRETE SLAB DETAIL

NOT TO SCALE



TYPICAL PRESSURE GAUGE INSTALLATION

NOT TO SCALE

REV.NO.	DESCRIPTIONS	DATE

REVISIONS

SEAL

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MANATEE COUNTY, FLORIDA

NORTH COUNTY WELLS / TREATMENT

STANDARD MECHANICAL DETALS

DATE:	FEBRUARY 2009
MCE PROJ. #	1024-0117
DRAWN	BFN
DESIGNED	AR
CHECKED	MAC
PROJ. MGR.	SPT

SCALE
HORIZONTAL: N.T.S.
VERTICAL: NA

M&C FILE NUMBER

DRAWING NUMBER
M4

STATUS: ISSUE FOR BID
REVISION

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FUNCTION SYMBOL SCHEDULE

	FIRST LETTER		SUCCEEDING-LETTERS		
	MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	Analysis		Alarm		
B	Burner, Combustion		Programmer		
C	Conductivity (Electrical)			Control,	Closed
D	Density or Specific Gravity	Differential			
E	Voltage		Sensor (Primary Element)	Eduction	
F	Flow Rate	Ratio (Fraction)			
G	Gaging		Glass, Viewing Device		
H	Hand				High
I	Current (Electrical)		Indicate		
J	Power	Scan			
K	Time, Time Schedule			Control Station	
L	Level		Light (Pilot)		Low
M	Motor				Middle, Intermediate
N	Vibration	Igniter			
O	Operation	Offset	Orifice, Restriction		Open
P	Pressure, Vacuum		Point (Test) Connection		
Q	Quantity, Event	Integrate, Totalize	Integrate		
R	Radiation		Record, Print	Regulate	
S	Speed, Frequency	Safety		Switch	
T	Temperature			Transmit	
U	Multivariable	Trend	Multifunction	Multifunction	Multifunction
V	Viscosity	Vacuum		Valve, Damper, Louver, Gate	
W	Weight, Force, Torque		Well		
X	Unclassified		Unclassified	Unclassified	Unclassified
Y				Relay, Compute, Convert	
Z	Position			Final Control Element	Drive, Actuator, Unclassified Final Control Element

BASIC SYMBOLS

SINGLE FUNCTION / MULTIPLE FUNCTION

- OR — FIELD MOUNTED INSTRUMENT OR DEVICE
- OR — FRONT OF PANEL MOUNTED INSTRUMENT ON UCP OR MCC, VFD
- OR — REAR OF PANEL MOUNTED INSTRUMENT ON UCP OR MCC, VFD
- OR — FRONT OF PANEL MOUNTED INSTRUMENT ON MAIN PANEL
- OR — REAR OF PANEL MOUNTED INSTRUMENT ON MAIN PANEL
- OR — PLC AND/OR COMPUTER SOFTWARE COMPONENT (OPERATOR ACCESSIBLE UNDER NORMAL CONDITIONS)
- OR — PLC AND/OR COMPUTER GENERATED COMPONENT (NOT OPERATOR ACCESSIBLE UNDER NORMAL CONDITIONS)
- PLC OR PLC RTU — PLC OR RTU IN/OUT CONNECTION

LINE CODES

- ELECTRICAL SIGNAL
- PROCESS OR MECH.
- PNEUMATIC
- CAPILLARY
- SONIC OR R.F.
- HYDRAULIC
- TELEPHONE
- NO ELECTRICAL CONNECTION
- ELECTRICAL CONNECTIONS (INDICATED BY DOTS)

VALVES, PUMPS & METERS

- FLAME ARRESTOR
- PINCH VALVE
- GATE
- NEEDLE
- BUTTERFLY
- BALL OR ROTARY
- GLOBE
- PLUG OR COCK
- DIAPHRAGM
- CHECK
- DIAPHRAGM CHECK
- CONTROL VALVE POSITIONER
- PRESSURE REGULATING VALVE
- BACKPRESSURE REGULATING VALVE
- PISTON OPERATED; S=SOLENOID OPERATED; M=MOTOR OPERATED; P=PNEUMATIC OPERATED
- DRAIN
- Y=WEIR GATE; T=SLIDE SLUICE GATE; I =STOP LOG
- BLIND FLANGE
- PULSATION DAMPENER
- PRESSURE RELIEF OR SAFETY
- 3-WAY
- 4-WAY
- TELESCOPING
- REDUCER
- HOSE CONNECTION
- WAFER/CHECK VALVE
- (ARV) AIR RELEASE VALVE; (AVV) AIR VACUUM RELEASE VALVE
- ELECTRIC MOTOR
- ORIFICE/ANNUBAR
- AIR DIFFUSER
- LIQUID DIFFUSER

- HEAT TRACED PROCESS
- LINE OR EQUIPMENT MATCHLINE
- SHEET — PROCESS LINE OR ELECTRICAL SIGNAL CONTINUATION TO/FROM SHEET NUMBER INDICATED
- CONTINUATION ON SAME SHEET
- CONTINUATION ON FACILITIES NOT SHOWN ON DRAWINGS
- LE — CAPACITANCE METER
- REGULATOR/FILTER
- SUBMERSIBLE PUMP
- MAG — MAGNETIC METER (INLINE/INSERT)
- US — SONIC METER
- VENTURI OR FLOW TUBE
- PROPELLER OR TURBINE METER
- FI — ROTAMETER
- M — PROGRESSING CAVITY PUMP
- CENTRIFUGAL PUMP
- POSITIVE DISPLACEMENT PUMP
- M — DIAPHRAGM OR METERING PUMP
- EDUCTOR
- STRAINER
- DIAPHRAGM ISOLATOR
- H — HORN
- GRADUATED MEASURING CYLINDER (CAL-CYL)
- CYLINDER HYDRAULIC OR PNEUMATIC
- LATERAL WYE
- RUPTURE DISK
- RESTRAINED FLEX CONN.
- FLEX CONN.
- FILTER AIR/WATER
- CENTRIFUGAL BLOWER
- POSITIVE DISPLACEMENT BLOWER
- MANUAL BAR RACK
- VERTICAL TURBINE PUMP
- SUBMERSIBLE AERATOR/MIXER (ELECTRIC MOTOR DRIVEN)
- UNION

MISCELLANEOUS SYMBOLS

- P — PURGE CONNECTION
- S — SAMPLE POINT
- I — INTERLOCK
- X — MULTIPLY
- ÷ — DIVIDE
- > — HIGH SELECT
- < — LOW SELECT
- √ — SQUARE ROOT
- Σ — SUM (ALGEBRAIC)
- ƒ — SPECIAL FUNCTION
- R+B — RATIO PLUS BIAS
- dL/dt — RATE OF RISE (LEVEL)

EQUIPMENT NOTATION

- B = BLOWER OR FAN
- E = ENGINE
- G = GENERATOR
- F = FILTER
- GS = GRINDER/SCREEN
- K = COMPRESSOR
- H = HOIST
- ME = MECHANICAL EQUIPMENT
- MX = MIXER
- P = PUMP
- R = HEAT EXCHANGER
- T = TANK OR SUMP

VALVE DESIGNATIONS

- HV = HAND VALVE
- FCV = FLOW CONTROL VALVE (MODULATING)
- PCV = PRESSURE CONTROL VALVE
- LCV = LEVEL CONTROL VALVE
- FV = FLOW VALVE (NON-MODULATING)
- MV = MUD VALVE
- TV = TELESCOPING VALVE
- CV = CHECK VALVE

INSTRUMENT TAG NOTATION

FIC 01 01 A

- A — QUANTITY SUFFIX
- 01 — INSTRUMENT NUMBER
- 01 — PLANT/PROCESS AREA
- FIC — ISA INSTRUMENT FUNCTION

VALVE OPERATION NOTATION

- EFC = ELECTRIC FAIL CLOSE
- AFC = AIR FAIL CLOSE
- EFO = ELECTRIC FAIL OPEN
- AFO = AIR FAIL OPEN
- AFS = AIR FAIL STATIC
- EFS = ELECTRIC FAIL STATIC

CONTROLLER NOTATION

- PV = PROCESS VARIABLE INPUT
- SP = SET POINT INPUT
- C = CONTROL OUTPUT

HAND SWITCH NOTATION

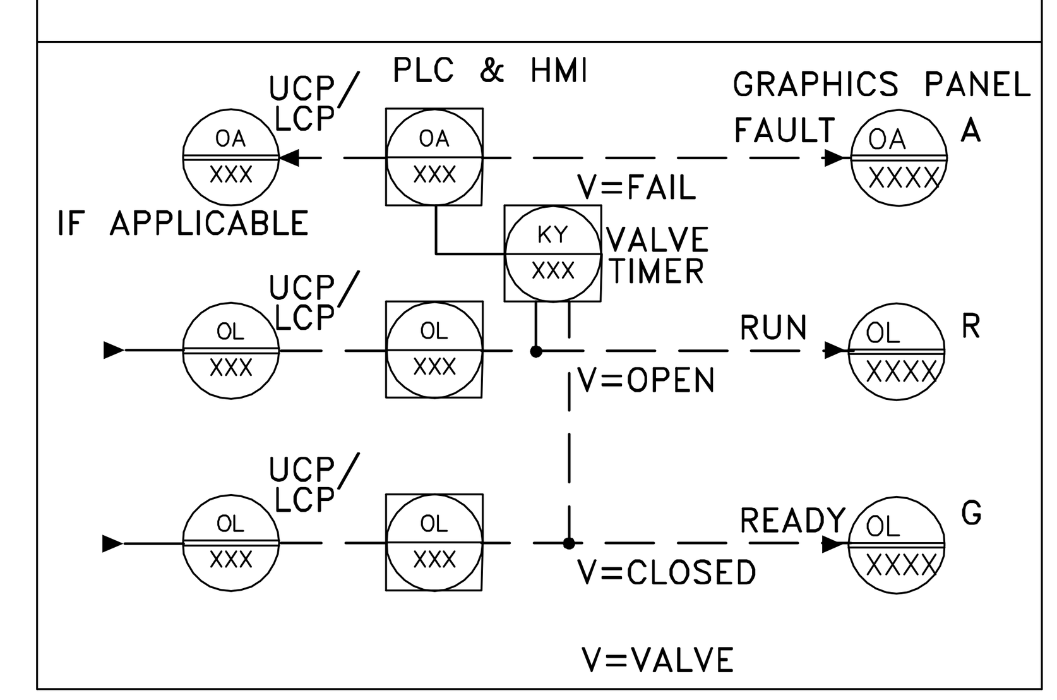
- HOA = HAND-OFF-AUTO
- S/S = START/STOP
- SEL = SELECTOR
- O/C = OPEN/CLOSE
- O/O = ON/OFF
- LOS = LOCKOUT-START
- D/S = DUTY/STANDBY
- FOS = FAST-OFF-SLOW
- OAC = OPEN-AUTO-CLOSE
- ROF = REVERSE-OFF-FORWARD
- ROL = RAISE-OFF-LOWER
- F/R = FORWARD/REVERSE
- LOR = LOCAL-OFF-REMOTE
- SAR = SILENCE-AUTO-RESET

MISCELLANEOUS NOTATIONS

- S/D = SHUTDOWN
- O/R = OVERRIDE
- MCC = MOTOR CONTROL CENTER
- VFD = VARIABLE FREQUENCY DRIVE
- UCP = UNIT CONTROL PANEL
- LCP = LOCAL CONTROL PANEL
- ES = ELECTRICAL SUPPLY (120VAC)
- IS = INLET SILENCER
- DS = DISCHARGE SILENCER
- SEQ = SEQUENCER/ALTERNATOR
- LOC = LOCAL
- ETM = ELAPSED TIME METER
- REM = REMOTE
- POS = POSITION
- RTU = REMOTE TELEMETRY UNIT
- PLC = PROGRAMMABLE LOGIC CONTROL

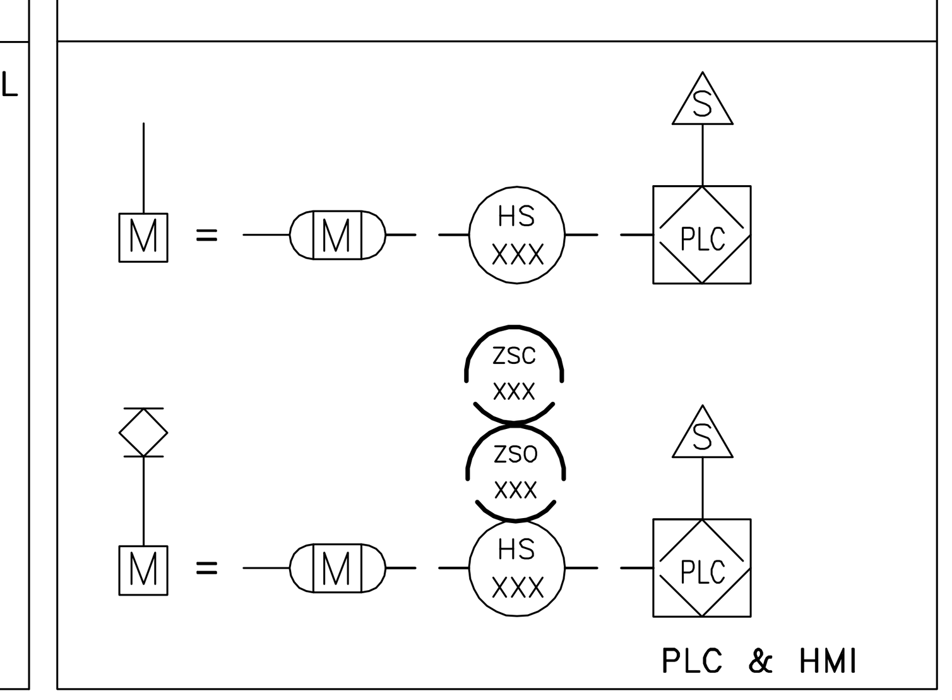
S = STATUS

THIS SYMBOL INDICATES THE FOLLOWING INSTRUMENTATION



TYPICAL FOR M

(IF NOT OTHERWISE ILLUSTRATED ON DWGS)



REV.NO.	DESCRIPTIONS	DATE

REVISIONS

SEAL

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MANATEE COUNTY, FLORIDA

NORTH COUNTY WELLS / TREATMENT

INSTRUMENTATION AND CONTROLS SCHEDULES, SYMBOLS & LEGENDS

DATE:	FEBRUARY 2009
MCE PROJ. #	1024-0117
DRAWN	
DESIGNED	
CHECKED	
PROJ. MGR.	SPT

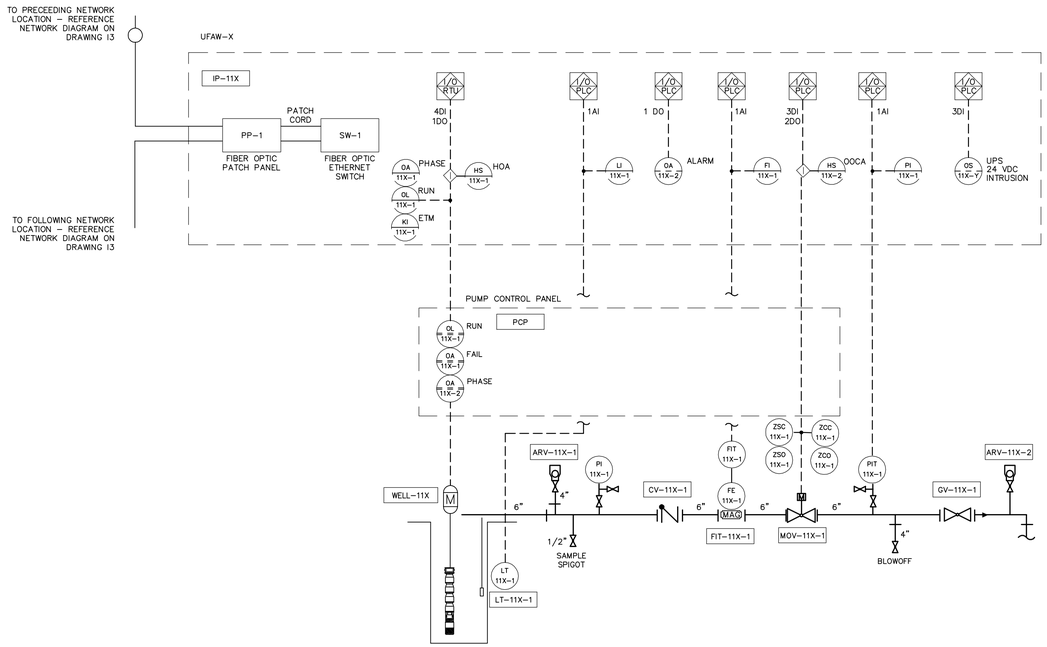
SCALE — HORIZONTAL: NA — VERTICAL: NA

M&C FILE NUMBER

DRAWING NUMBER: I1

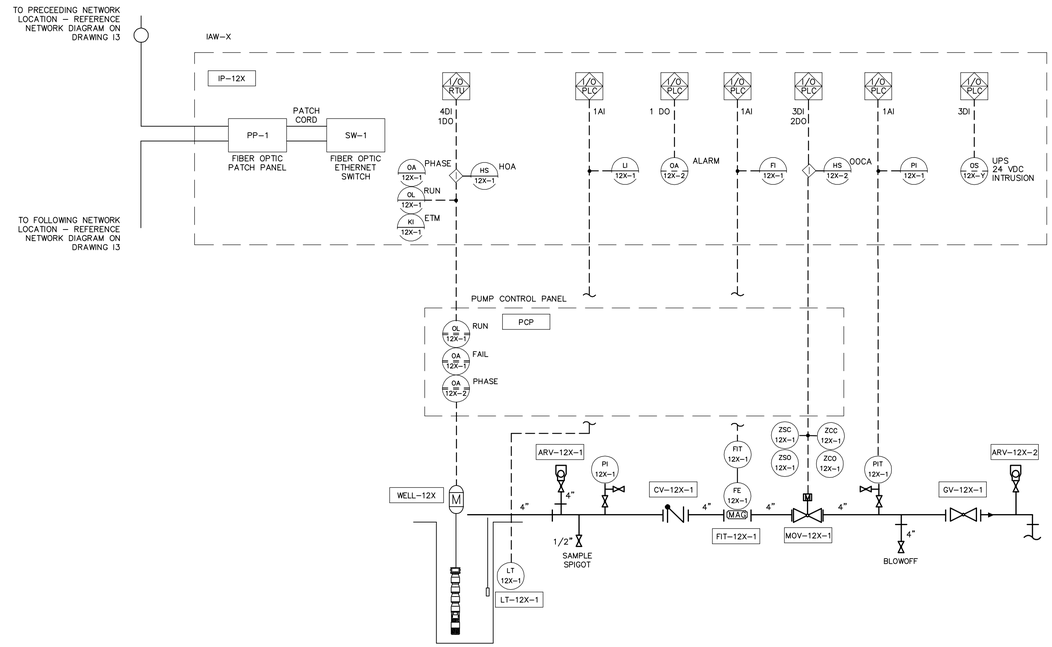
STATUS: ISSUE FOR BID

REVISION



TYPICAL UPPER FLORIDAN AQUIFER WELL

UPPER FLORIDAN AQUIFER WELLS		
NO.	DESCRIPTION	EQUIPMENT DESIGNATION
UFAW–1	WELL NO. 1	111
UFAW–2	WELL NO. 2	112
UFAW–3	WELL NO. 3	113
UFAW–4	WELL NO. 4	114
UFAW–5	WELL NO. 5	115



TYPICAL INTERMEDIATE AQUIFER WELL

INTERMEDIATE AQUIFER WELLS					
NO.	DESCRIPTION	EQUIPMENT DESIGNATION	NO.	DESCRIPTION	EQUIPMENT DESIGNATION
IAW–1	WELL NO. 1	121	IAW–5	WELL NO. 5	125
IAW–2	WELL NO. 2	122	IAW–6	WELL NO. 6	126
IAW–3	WELL NO. 3	123	IAW–7	WELL NO. 7	127
IAW–4	WELL NO. 4	124	IAW–8	WELL NO. 8	128

NOTES:

1. REFER TO DRAWING E5 FOR PUMP CONTROL PANEL ELECTRICAL SCHEMATIC DETAILS.

REV.NO.	DESCRIPTIONS	DATE
	REVISIONS	

SEAL

MICHAEL TWEEDEL, P.E.
No. 60940

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MANATEE COUNTY, FLORIDA

NORTH COUNTY WELLS / TREATMENT

PROCESS & INSTRUMENTATION DRAWING
WELLFIELD TELEMETRY

DATE:	FEBRUARY 2009
MCE PROJ. #	1024–0117
DRAWN	MDT
DESIGNED	MDT
CHECKED	
PROJ. MGR.	SPT

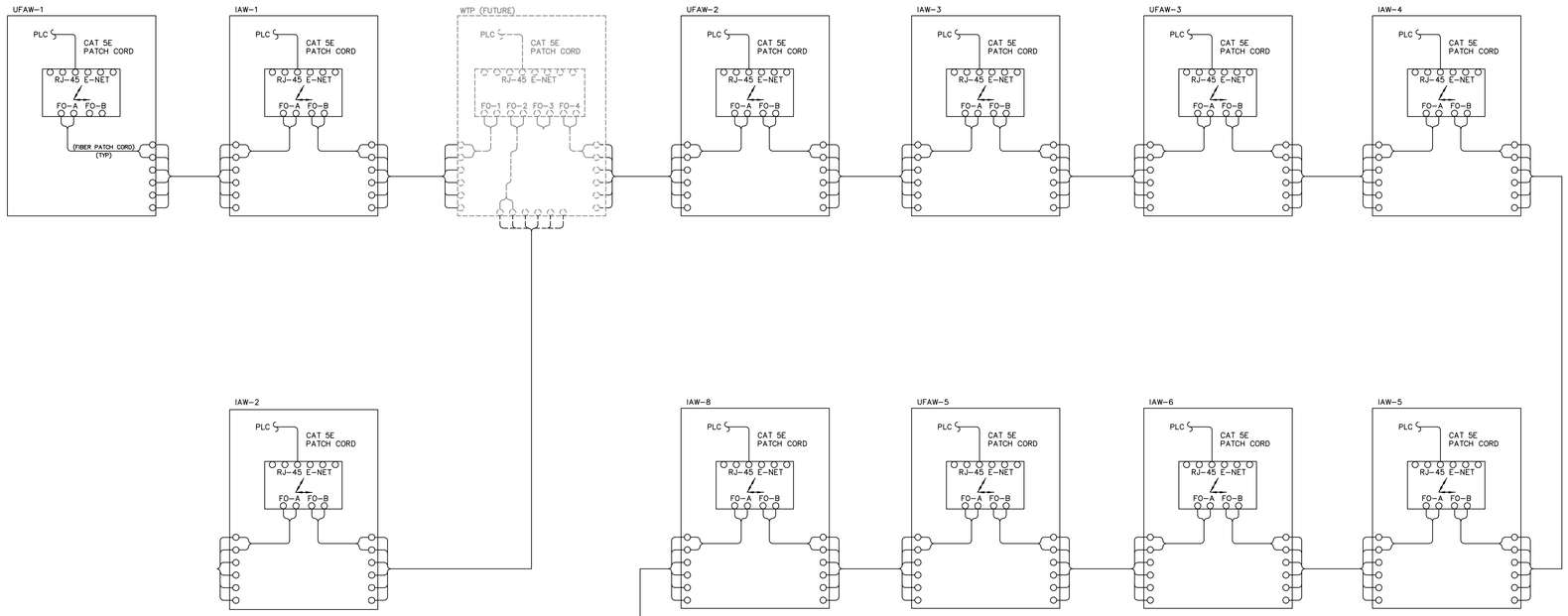
SCALE
HORIZONTAL: NA
VERTICAL: NA

M&C FILE NUMBER

DRAWING NUMBER
12

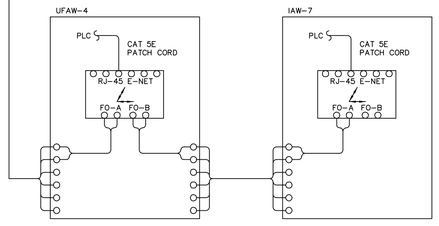
STATUS: ISSUE FOR BID

REVISION



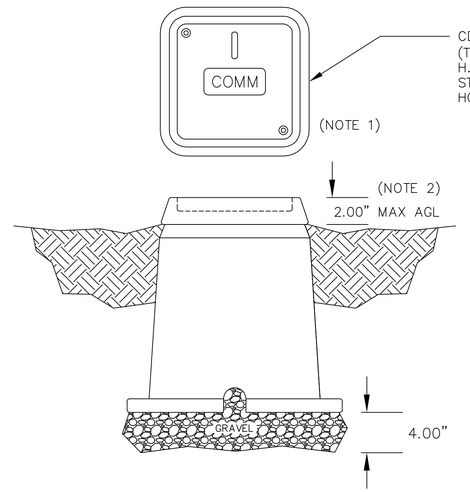
NOTES:

1. DRAWING IS FOR ILLUSTRATION PURPOSES ONLY TO SHOW THE GENERAL COMMUNICATION SYSTEM ARCHITECTURE. IT IS NOT INTENDED TO DEPICT ALL EQUIPMENT REQUIRED FOR A COMPLETE INSTALLATION. REFER TO THE PROJECT SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
2. FIBER OPTIC CABLE PATCH PANELS TO BE LOCATED WITHIN WELL RTU ENCLOSURE.
3. LOCATE ALL PATCH PANELS FOR EASE OF ACCESS AND TO ALLOW FOR INTERCONNECTION TO PLC EQUIPMENT.
4. EQUIPMENT FOR THE WATER TREATMENT PLANT WILL BE PROVIDED UNDER A SEPARATE CONTRACT. PROVIDE AN ADDITIONAL 100 FOOT OF CABLE FOR EACH SEGMENT. FIBER OPTIC CABLE WILL BE TERMINATED ON ALL STRANDS AND CAPPED. CABLE WILL BE COILED NEATLY IN THE PULL BOX FOR FUTURE CONNECTION.



FIBER OPTIC CABLE INTERCONNECTION DETAIL

SCALE: NTS



FIBER PULL BOX DETAIL

SCALE: 1/8" = 1"

NOTES:

1. FIBER PULL BOX LID SHALL BE PAINTED "SAFETY ORANGE", TO INSURE CLEAR VISIBILITY. APPLY APPROPRIATE PRIMER PRIOR TO PAINTING. COLOR SAMPLE SHALL BE SUBMITTED AND APPROVED, PRIOR TO APPLICATION.
2. HEIGHT SHOWN IS A MAXIMUM ABOVE SURROUNDING GRADE. FIBER PULL BOXES MUST BE INSTALLED SO AS TO AVOID DAMAGE FROM GRASS MOWERS, BUT ALSO SUFFICIENTLY ABOVE GRADE TO AVOID INADVERTENT BURYING.

REV.NO.	DESCRIPTIONS	DATE
	REVISIONS	

SEAL

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No. 60940

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MANATEE COUNTY, FLORIDA

NORTH COUNTY WELLS / TREATMENT

FIBER OPTIC CABLE INTERCONNECT DETAILS

DATE:	FEBRUARY 2009
MCE PROJ. #	1024-0117
DRAWN	
DESIGNED	
CHECKED	
PROJ. MGR.	SPT

SCALE
HORIZONTAL: AS SHOWN
VERTICAL: AS SHOWN

M&C FILE NUMBER

DRAWING NUMBER
I3

STATUS: ISSUE FOR BID

REVISION

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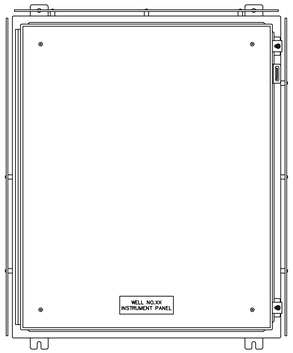
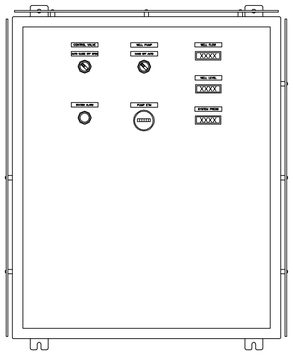
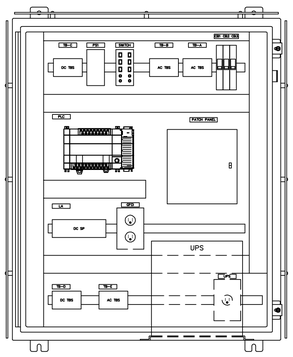


PANEL EXTERIOR LAYOUT



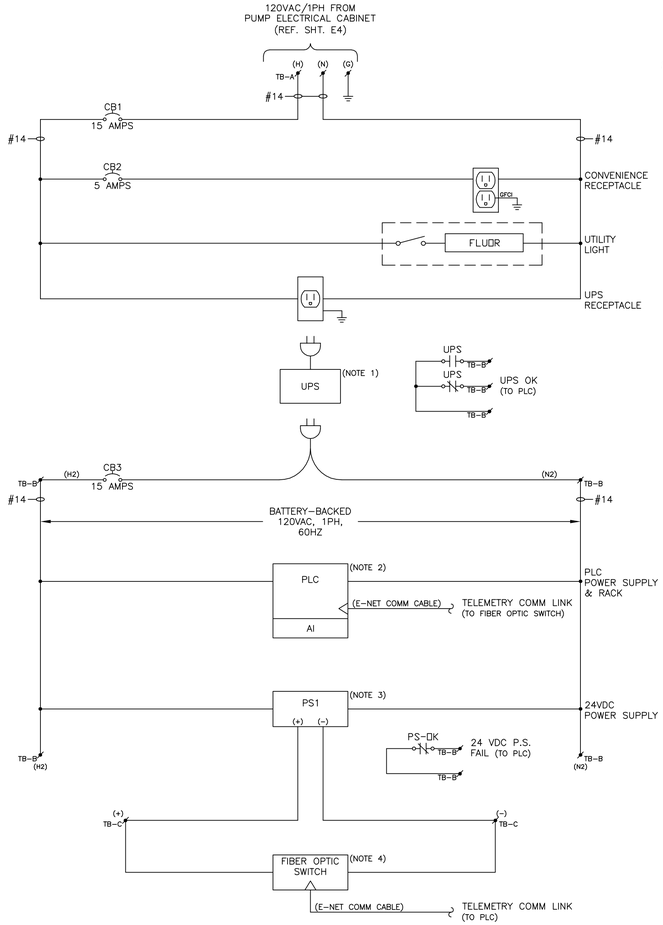
PANEL INTERIOR DOOR LAYOUT



PANEL INTERIOR LAYOUT

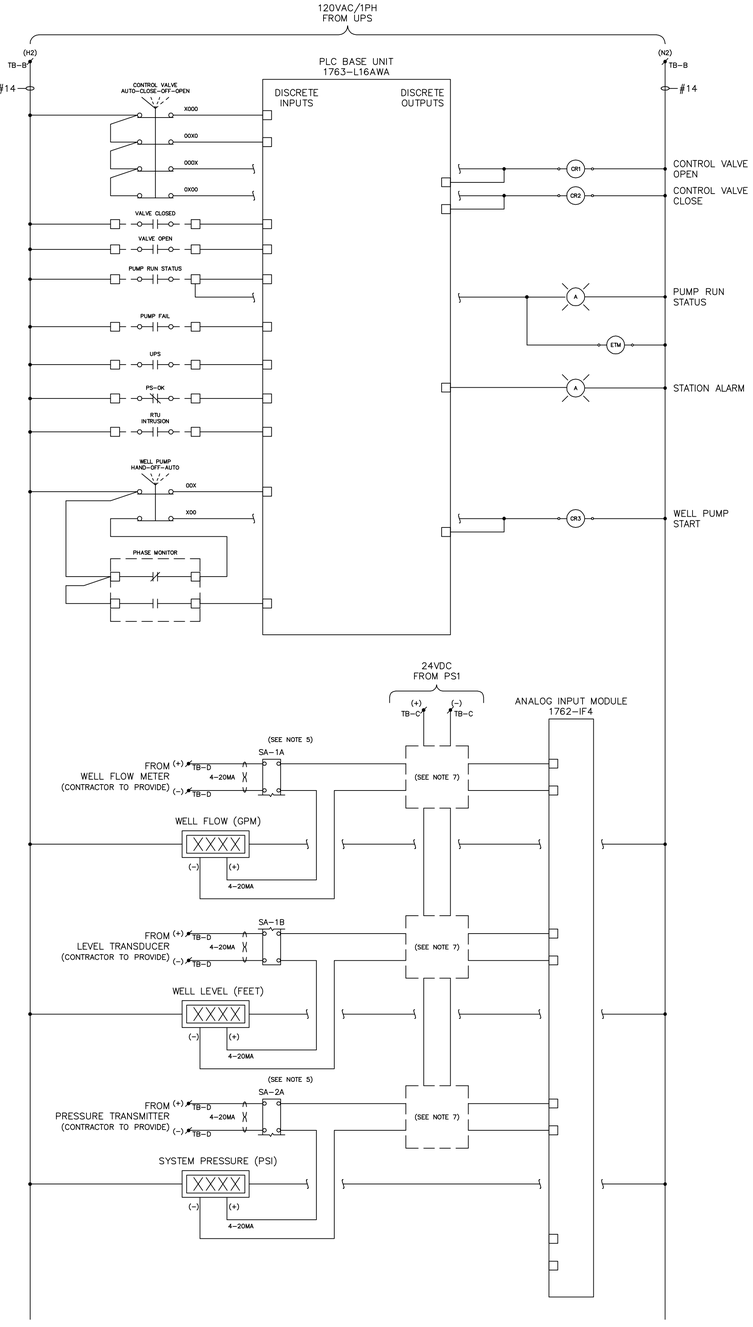
INSTRUMENTATION PANEL LAYOUT

SCALE: 1/8"=1"



CABLE AND CONDUIT SCHEDULE:

ID	FROM	TO	WIRE/CABLE	CONDUIT	COMMENTS
C001	PUMP CAB	INSTR CAB	18-#14, 1-#14GND	1-1/4"	
I001	INSTR CAB	FLOW METER	1-#16TWSH	1"	
I002	INSTR CAB	PRESS XMTR	1-#16TWSH	1"	
I003	INSTR CAB	LVL XDUCER	1-SPECIAL	1"	INCL BREATHER TUBE
I004	INSTR CAB	PULL BOX	1-SPECIAL	1-1/2"	FIBER OPTIC



ELECTRICAL SCHEMATICS FOR INSTRUMENTATION PANEL

SCALE: NOT TO SCALE

NOTES:

1. UPS:
   700VA 120VAC/120VAC BATTERY-BACKED SUPPLY.
   POWERWARE PW-5110-700, OR APPROVED EQUAL.
2. PLC COMPONENTS:
   ALLEN-BRADLEY:
   BASE UNIT: MICROLOGIX 1100, 1763-L16AWA
   ANALOG INPUT MODULE: 1762-IF4
   DISCRETE INPUT MODULE: 1762-1A8
3. 24VDC POWER SUPPLY:
   120VAC/24VDC, 5A
   PHOENIX CONTACT QUINT-PS-100-240AC/24DC/5 (2938581),
   OR APPROVED EQUAL
4. FIBER OPTIC ETHERNET SWITCH:
   PHOENIX CONTACT FL-SWITCH-SFN-6TX/2FX-ST (2891411),
   OR APPROVED EQUAL
5. ANALOG SIGNAL SURGE ARRESTER (SA-XX):
   DEVICES SHALL BE DEHN P/N:
   BXT ML4 BE 24, BXT BAS, OR APPROVED EQUAL.
6. INSTRUMENT CONTROL CABINET:
   NEMA 4X 316 STAINLESS STEEL, W/LOCKABLE HANDLES,
   W/SS SUN-SHEILDS TOP, SIDES, AND FRONT DOOR.
   HOFFMAN A36H3012SSLP/A36P30 OR APPROVED EQUAL.
7. PROVIDE LOOP POWER FOR EACH ANALOG INPUT AS NEEDED.
   FOR ANALOG SIGNALS WHICH ARE NOT LOOP POWERED,
   PROVIDE THE NEEDED WIRING INTERFACE AND COMPONENTS.

REV.NO.	DESCRIPTIONS	DATE
	REVISIONS	

SEAL

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MANATEE COUNTY, FLORIDA

NORTH COUNTY WELLS / TREATMENT

INSTRUMENTATION PANEL DETAILS

DATE:	FEBRUARY 2009
MCE PROJ. #	1024-0117
DRAWN	
DESIGNED	
CHECKED	
PROJ. MGR.	SPT

SCALE
HORIZONTAL: AS SHOWN
VERTICAL: NA

MAC FILE NUMBER

DRAWING NUMBER
I4

STATUS: ISSUE FOR BID
REVISION

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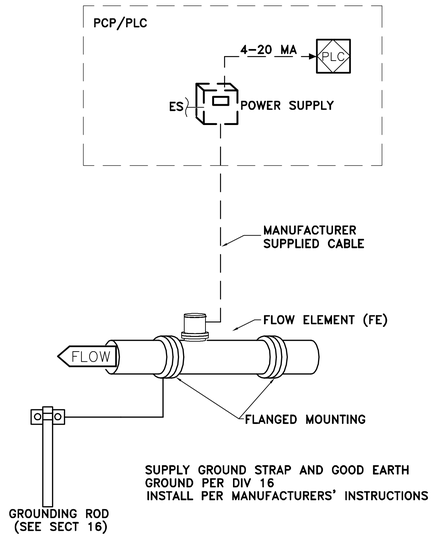
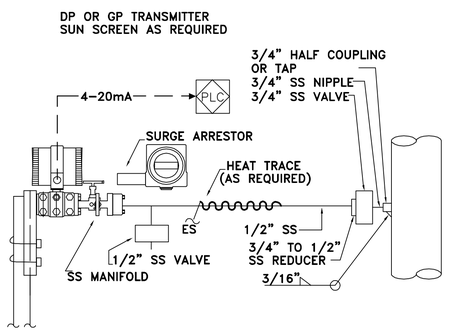


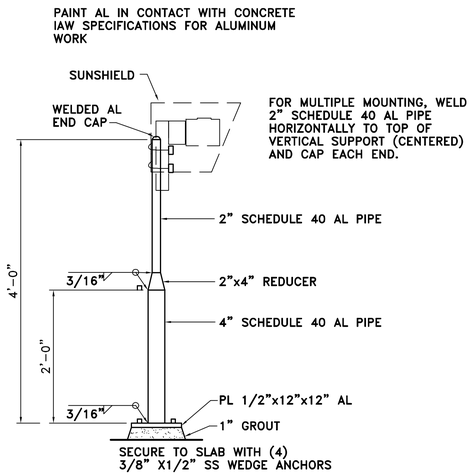
TYPICAL FLOWMETER INSTALLATION

DETAIL 1



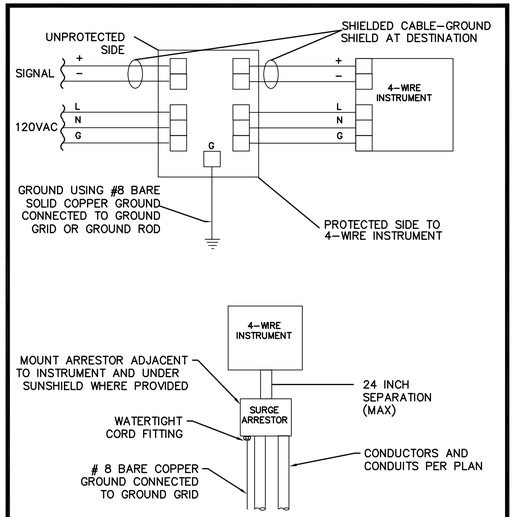
TYPICAL PRESSURE TRANSDUCER PIPING

DETAIL 7



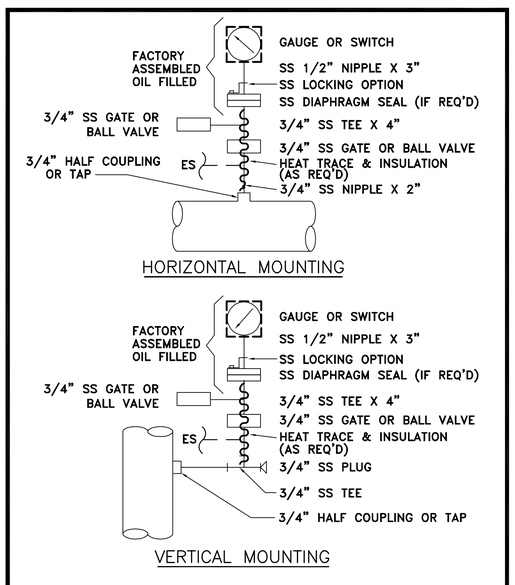
SINGLE STANCHION MOUNT

DETAIL 4



4–WIRE INSTRUMENT SURGE ARRESTOR INSTALLATION

DETAIL 5



HORIZONTAL MOUNTING

VERTICAL MOUNTING

TYPICAL PRESSURE INDICATOR/ SWITCH PIPING DETAIL

DETAIL 3

REV.NO.	DESCRIPTIONS	DATE
	REVISIONS	

SEAL

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MANATEE COUNTY, FLORIDA

NORTH COUNTY WELLS / TREATMENT

WELLFIELD TELEMETRY
LAYOUT AND INSTALLATION DETAILS

DATE:	FEBRUARY 2009
MCE PROJ. #	1024–0117
DRAWN	
DESIGNED	
CHECKED	
PROJ. MGR.	SPT

SCALE
HORIZONTAL: NA
VERTICAL: NA

M&C FILE NUMBER

DRAWING NUMBER
15

STATUS: ISSUE FOR BID

REVISION

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PLAN SYMBOLS

	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 RUN EXPOSED. RUN PARALLEL OR PERPENDICULAR TO STRUCTURE OR WALL.
	FLEXIBLE CONDUIT WITH EQUIPMENT CONNECTION.
	CONCRETE ENCASED DUCTBANK.
A	CEILING MOUNTED LIGHTING FIXTURE, LETTER INDICATES TYPE (TYPICAL).
	WALL MOUNTED LIGHTING FIXTURE.
	FLUORESCENT LIGHTING FIXTURE, CEILING MOUNTED.
	EXTERIOR LUMINAIRE AND MOUNTING STANDARD.
	EXTERIOR YARD LIGHTING
	EMERGENCY BATTERY PACK LIGHTING FIXTURE.
J	JUNCTION BOX N.E.C. SURFACE MOUNTED UNLESS INDICATED OTHERWISE.
J	JUNCTION BOX PER N.E.C., FLUSH MOUNTED UNLESS INDICATED OTHERWISE.
	FLUSH OR SURFACE MOUNTED LIGHTING PANELBOARD.
	FLUSH OR SURFACE MOUNTED POWER PANELBOARD.
??	DRY TYPE TRANSFORMER. NO. INDICATES KVA RATING.
	90A, 208V, 1ø WELDING OUTLET
	20A, 125V, 3W DUPLEX RECEPTACLE IN FLUSH OUTLET BOX, 18" ABOVE FINISHED FLOOR.
	20A, 125V, 3W DUPLEX RECEPTACLE IN FLUSH OUTLET BOX, 48" ABOVE FINISHED FLOOR OR 2" ABOVE COUNTER AS REQUIRED.
	20A, 125V, 3W DUPLEX RECEPTACLE, SURFACE MOUNTED.
WP	20A, 125V, 3W DUPLEX RECEPTACLE IN NEMA 4 SERVICE OUTLET BOX. RECEPTACLES SHALL BE GFI TYPE, EXCEPT FOR RECEPTACLES DEDICATED TO HEAT TRACING, WHICH SHALL BE POWERED FROM A GFI BREAKER.
	DISCONNECT RACK MOUNTED
	REMOTE CONTROL DEVICE AND DISCONNECT RACK MOUNTED
	30A, 250V 1Ø, 3W SINGLE RECEPTACLE IN FLUSH OUTLET BOX, 18" ABOVE FINISHED FLOOR.
S	SINGLE POLE SWITCH IN FLUSH OUTLET BOX, 48" ABOVE FINISHED FLOOR, UNLESS OTHERWISE NOTED (TYPICAL).
S_{WP}	SINGLE POLE SWITCH, SURFACE-MOUNTED NEMA 4X BOX.
$S_{}$	SINGLE POLE SWITCH, SURFACE MOUNTED.
S_{MC}	MOMENTARY CONTACT SWITCH IN FLUSH OUTLET BOX.
S_3	THREE-WAY SWITCH IN FLUSH OUTLET BOX.
S_4	FOUR-WAY SWITCH IN FLUSH OUTLET BOX.
	NON-FUSIBLE DISCONNECT SWITCH, 30A,3P UNLESS OTHERWISE INDICATED.
	NON-FUSIBLE DISCONNECT SWITCH, 30A,3P UNLESS OTHERWISE INDICATED, WITH REMOTE CONTROL STATION AS REQUIRED BY ELEMENTARY DIAGRAMS OR SPECS
??	ELECTRIC A.C. MOTOR, NO. INDICATES HORSEPOWER.
F 30/20	FUSED DISCONNECT SWITCH (30/20: 30=SWITCH RATING, 20=FUSE RATING)
M	MOTORIZED VALVE
	COMBINATION MOTOR STARTER
VFD	VARIABLE FREQUENCY DRIVE
T	THERMOSTAT
	ELECTRIC HEATER
	FLUSH OUTLET BOX AND TELEPHONE COVER PLATE 48" ABOVE FINISHED FLOOR.
C	CONTROL PULLBOX. SEE "PULL BOX DETAIL"
P	POWER MANHOLE. SEE "MANHOLE DETAIL"
TC	TERMINATION CABINET, CLASS 1, DIVISION 2
	CROUSE HINDS EYSR FITTING AND CORRESPONDING "CHICO" CEMENT. COMBINATION SHALL BE RATED TO SEPARATE A CLASS 1, DIVISION 2 INSTALLATION.
S_M	MOTOR DUTY, SINGLE PHASE DISCONNECT, NEMA 4X STAINLESS STEEL

PLAN SYMBOLS (CONTINUED)

AIT	ANALYZING INDICATING TRANSMITTER	FIT	FLOW INDICATING TRANSMITTER
FE	FLOW ELEMENT	LIT	LEVEL INDICATING TRANSMITTER
FS	FLOW SWITCH	PIT	PRESSURE INDICATING TRANSMITTER
FS	FLOW SWITCH	ZT	POSITION SWITCH
LS	LIMIT SWITCH	O/R	OFF REMOTE
XS	TORQUE SWITCH		
PS	PRESSURE SWITCH		
SH	SPACE HEATER		
SV	SOLENOID VALVE		
LLS	LIQUID LEVEL SWITCH		
LSH	HIGH LEVEL FLOAT SWITCH		
VS	VIBRATION SWITCH		

SINGLE LINE DIAGRAM SYMBOLS

	COMBINATION MOTOR STARTER
V	VOLTMETER
A	AMMETER
VS	THREE PHASE VOLT SWITCH
AS	THREE PHASE AMP SWITCH
GFR	GROUND FAULT RELAY
	FUSE
	CAPACITOR
	DRAW-OUT CIRCUIT BREAKER
	MOLDED CASE CIRCUIT BREAKER
	TYPICAL SELECTOR SWITCH AND CONTROL. SEE ELEMENTARY DIAGRAMS FOR EXACT TYPE.
??	ELECTRIC A.C. MOTOR, NO. INDICATES HORSEPOWER.
??	ELECTRIC D.C. MOTOR, NO. INDICATES HORSEPOWER.
	SERVICE OR EQUIPMENT GROUND.
	NON-FUSIBLE DISCONNECT SWITCH, 30A,3P UNLESS OTHERWISE INDICATED.
	NON-FUSIBLE DISCONNECT SWITCH, 30A,3P UNLESS OTHERWISE INDICATED, WITH REMOTE CONTROL STATION AS REQUIRED BY ELEMENTARY DIAGRAMS OR SPECS
	LIGHTING PANELBOARD
	POWER PANELBOARD
K	KIRK KEY INTERLOCK
	CURRENT TRANSFORMERS
	POTENTIAL TRANSFORMERS
	MANUAL OR AUTOMATIC TRANSFER SWITCH

CONTROL DIAGRAM SYMBOLS

	DUPLEX RECEPTACLE
	NORMALLY OPEN CONTACT
	NORMALLY CLOSED CONTACT
	LIMIT SWITCH, NORMALLY OPEN
	LIMIT SWITCH, NORMALLY CLOSED
	PRESSURE SWITCH, NORMALLY OPEN
	PRESSURE SWITCH, NORMALLY CLOSED
	FLOAT SWITCH, NORMALLY OPEN

CONTROL DIAGRAM SYMBOLS (CONTINUED)

	FLOW SWITCH, NORMALLY OPEN
	FLOW SWITCH, NORMALLY CLOSED
	TEMPERATURE SWITCH, NORMALLY OPEN
	TEMPERATURE SWITCH, NORMALLY CLOSED
	NORMALLY OPEN, TIMED TO CLOSE CONTACT
	NORMALLY CLOSED, TIMED TO OPEN CONTACT
	NORMALLY CLOSED, TIMED TO CLOSE CONTACT
	NORMALLY OPEN, TIMED TO OPEN CONTACT
LS	LIMIT SWITCH
XS	TORQUE SWITCH
PS	PRESSURE SWITCH
SS	SEAL FAIL SWITCH
SV	SOLENOID VALVE
LLS	LIQUID LEVEL SWITCH
TS	TEMPERATURE SWITCH
AR	ALARM RELAY (LOW OIL)
AT	ALARM TIMER
CR	CONTROL RELAY
M	MOTOR STARTER
TR	TIMING RELAY
A	ALARM INDICATING LIGHT
R	RUN INDICATING LIGHT
	MOMENTARY CONTACT PUSHBUTTON
	MOMENTARY BREAK PUSHBUTTON OR RESET
K	KEYED SWITCH
	MAINTAINED CONTACT ON-OFF SWITCH
	START/STOP (S/S) CONTROL SWITCH MAINTAINED CONTACT
	THREE POSITION MAINTAINED CONTACT SELECTOR SWITCH
	FUSE
	MOLDED CASE CIRCUIT BREAKER
	CONTROL POWER TRANSFORMER
	MCC OR VFD TERMINAL FOR REMOTE FIELD WIRING

ABBREVIATIONS

A	AMPERES
ACCU	AIR COOLED CONDENSING UNIT
AE	ANALYZER ELEMENT
AER	AERATOR
AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
AIC	AMPS INTERRUPTING CURRENT
AIT	ANALYZER INDICATING TRANSMITTER
ATS	AUTOMATIC TRANSFER SWITCH
AUX	AUXILIARY
BKR	BREAKER
BLDG	BUILDING
CAB	CABINET
CB	CIRCUIT BREAKER
CP	CONTROL PANEL
CU	COPPER
DH	DATA HIGHWAY
DISC	DISCONNECT
DO	DIGITAL OUTPUT
DPDT	DOUBLE POLE DOUBLE THROW
DPIT	DIFFERENTIAL PRESSURE INDICATING TRANSMITTER
DPST	DOUBLE POLE SINGLE THROW
EA	EACH
EFF	EFFLUENT
ELEC	ELECTRICAL
ELR	EMERGENCY LOCK-OUT RELAY
EM	EMERGENCY
ENCL	ENCLOSURE
EP	EXPLOSION PROOF
ESB	ENERGY SAVING BALLAST
ETM	ELAPSED TIME METER
EUH	ELECTRIC UNIT HEATER
EVA	ELECTRIC VALVE ACTUATOR
EXH	EXHAUST
EXIST	EXISTING
F&I	FINISH AND INSTALL
FE	FLOW ELEMENT
FLA	FULL LOAD AMPACITY
FSL	FLOW SWITCH LOW
FVC	FULL VOLTAGE CONTACTOR
FPL	FLORIDA POWER AND LIGHT
FVNR	FULL VOLTAGE NON-REVERSING
GEN	GENERATOR
GFI	GROUND FAULT INTERRUPTER
GND	GROUND
GRS	GALVANIZED RIGID STEEL
HOA	HAND-OFF-AUTOMATIC
HOLR	HAND-OFF-LOCAL-REMOTE
HOR	HAND-OFF-REMOTE
HP	HORSEPOWER
HPS	HIGH PRESSURE SODIUM
HWY	HIGHWAY
INSTR	INSTRUMENTATION
IAP	INTERLOCK ASSEMBLY PANEL
KVA	KILOVOLT-AMPERES
KW	KILOWATT
LDR	LOAD DUMP RELAY
LTG	LIGHTING
MAX	MAXIMUM
MCC	MOTOR CONTROL CENTER
MFR	MANUFACTURER
MH	METAL HALIDE
MIN	MINIMUM
MLO	MAIN LUGS ONLY
MR	MOTOR RUNNING
MSC	MANUFACTURER SUPPLIED CABLE
MTD	MOUNTED
MTS	MANUAL TRANSFER SWITCH
MV	MERCURY VAPOR
NEC	NATIONAL ELECTRIC CODE
NEUT	NEUTRAL
NTS	NOT TO SCALE
OC	ON CENTER
OH	OVERHEAD
P	POLE
PC	PUMP CALL
PCP	PUMP CONTROL PANEL
PEF	PROGRESS ENERGY OF FLORIDA
PIT	PRESSURE INDICATING TRANSMITTER
PM	PHASE MONITOR
PNL	PANEL
PS	PUMP STATION
PVC	POLYVINYL CHLORIDE
RA	RIGID ALUMINUM
RECPT	RECEPTACLE
RS	RAPID START
RVNR	REDUCED VOLTAGE NON-REVERSING
RWMP	RAW WATER MONITOR PANEL
SCP	STARTER CONTROL PANEL
SS	STAINLESS STEEL
SSC	SOLID STATE CONTACTOR
SSM	SOLID STATE MODE
SSS	SOLID STATE STARTER
STR	STARTER
SUPP	SUPPRESSOR
SW	SWITCH
SWGR	SWITCHGEAR
TBR	TO BE REMOVED
TC	TERMINATION CABINET
TR	TRANSFORMER
TYP	TYPICAL
UG	UNDERGROUND
UON	UNLESS OTHERWISE NOTED
UPS	UNINTERRUPTIBLE POWER SUPPLY
UV	ULTRAVIOLET
V	VOLT
VFD	VARIABLE FREQUENCY DRIVE
W	WATT
W/	WITH
WP	WEATHERPROOF
WPCP	WELL PUMP CONTROL PANEL
ø	PHASE

NOTES

1. DO NOT SCALE THE ELECTRICAL DRAWINGS. REFER TO THE MECHANICAL, STRUCTURAL DRAWINGS, AND APPROVED MANUFACTURER'S SHOP DRAWINGS FOR THE EXACT LOCATION OF ALL EQUIPMENT.
2. ALL WORK SHALL COMPLY WITH N.E.C. AND LOCAL CODES.
3. CONDUCTORS SHALL NOT BE SPLICED EXCEPT AS NOTED IN SPECS.
4. ALL CONDUITS SHALL HAVE A BOND WIRE SIZED PER TABLE 250-122 OF THE N.E.C. (UNLESS OTHERWISE NOTED).
5. SLANTED, SHADED TEXT DENOTES EXISTING EQUIPMENT OR STRUCTURES. NON-SHADED TEXT DENOTES NEW EQUIPMENT, STRUCTURES, AND WORK.
6. PROVIDE 4 INCH CONCRETE EQUIPMENT PADS FOR ALL FREE-STANDING PANELS, MCC'S ETC.
7. ALL CONTROL PANELS SHALL BE UL LISTED.

REV.NO.	DESCRIPTIONS	DATE
	REVISIONS	

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MANATEE COUNTY, FLORIDA

NORTH COUNTY WELLS/TREATMENT

ELECTRICAL NOTES AND LEGENDS

DATE:	FEBRUARY 2009
MCE PROJ. #	1024-0117
DRAWN	PDH/JAG
DESIGNED	PDH
CHECKED	ALA
PROJ. MGR.	SPT

SCALE
HORIZONTAL: AS SHOWN
VERTICAL: NA

M&C FILE NUMBER

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E1

STATUS: ISSUE FOR BID
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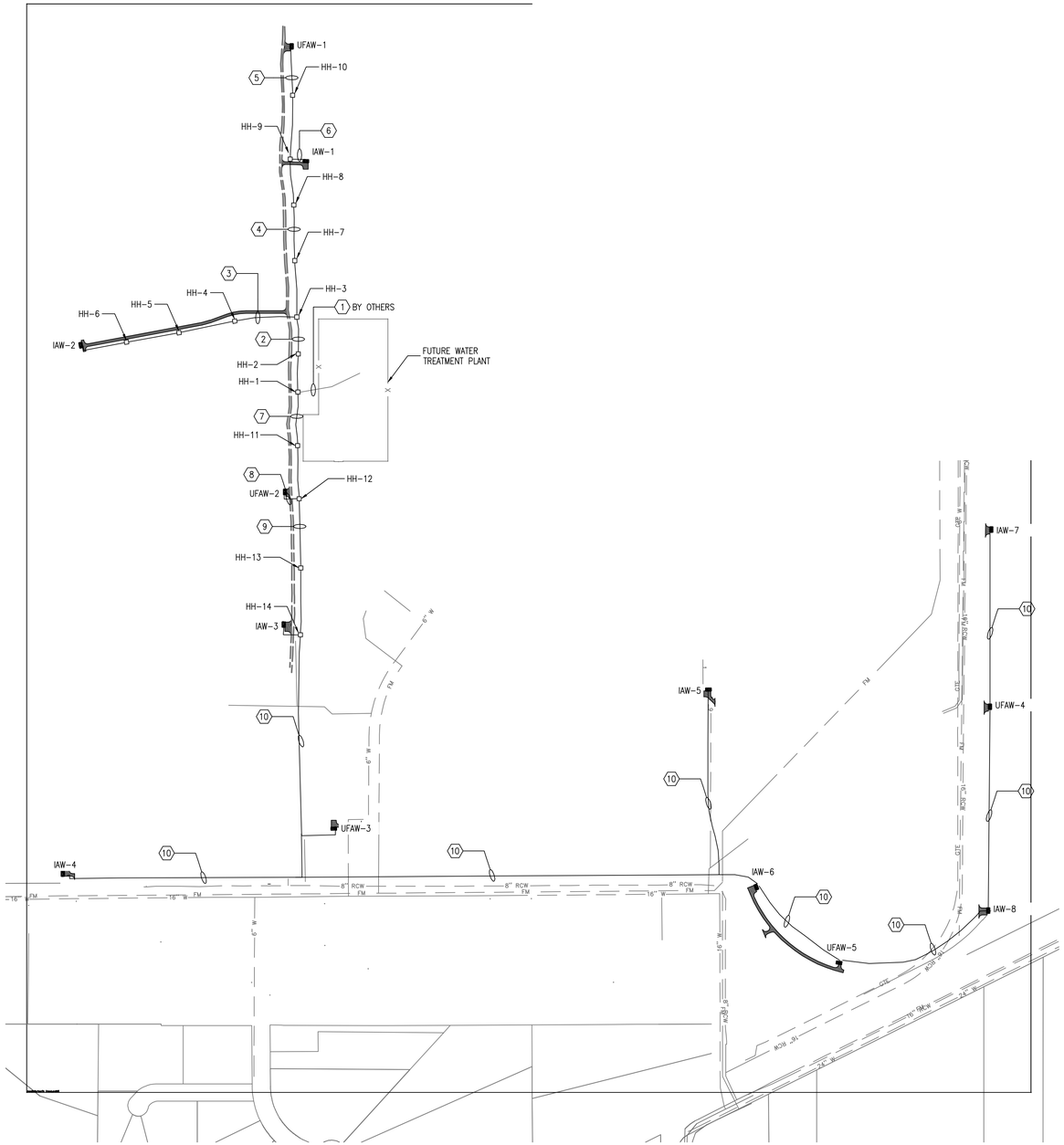

ELECTRICAL SITE PLAN

SCALE: 1"=300'

NOTES:

1. REFER TO SPECIFICATIONS, SINGLE LINE DIAGRAMS, RISER DIAGRAMS, AND ELECTRICAL DETAILS FOR WIRE AND CONDUIT REQUIREMENTS AND SIZES. ADDITIONAL REQUIREMENTS AS PER SITE PLAN AND NOTES BELOW.
2. ALL ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE AND LOCAL ELECTRICAL CODES.
3. ALL ABOVE GROUND PULL BOXES SHALL BE STAINLESS STEEL NEMA 4X WITH STAINLESS STEEL HARDWARE
4. ALL ABOVE GROUND CONDUIT AND FITTINGS OUTDOORS SHALL BE RIGID GALVANIZED STEEL (RGS).
5. SITE PLAN SHOWS ROUTING OF MAIN POWER CONDUIT RUNS FROM FUTURE WATER TREATMENT PLANT TO WELL PUMPS UFWA-1, UFWA-2, IWA-1, IWA-2, AND IWA-3.
6. WELLS UFWA-3, UFWA-4, UFWA-5, IWA-4, IWA-5, IWA-6, IWA-7 AND IWA-8 WILL EACH RECEIVE INDIVIDUAL POWER FROM THE ELECTRICAL UTILITY SERVICE.
7. SUGGESTED LOCATION FOR HANDHOLES. MAXIMUM DISTANCE BETWEEN HANDHOLES SHALL BE 300 FEET.
8. ALL CONDUIT BELOW GRADE SHALL BE CONCRETE ENCASED SCHEDULE 40 PVC.

POWER WIRING KEYNOTES:

(1) INSTALLATION OF THE FOLLOWING CONDUIT AND WIRE FROM HAND HOLE HH-1 TO THE FUTURE WATER TREATMENT PLANT SHALL BE DONE BY OTHERS.
- A. 3 #400KCMIL, 1 #4G, 3.5 INCH CONDUIT – (480V POWER TO UFAW-1)
- B. 3 #4/0, 1 #4G, 2.5 INCH CONDUIT – (480V POWER TO UFWA-2)
- C. 3 #3/0, 1 #4G, 2.5 INCH CONDUIT – (480V POWER TO IWA-1)
- D. 3 #3/0, 1 #4G, 2.5 INCH CONDUIT – (480V POWER TO IWA-2)
- E. 3 #2/0, 1 #4G, 2.5 INCH CONDUIT – (480V POWER TO IWA-3)
- F. FIBER OPTIC CABLE, 2 INCH CONDUIT – (COMMUNICATION)
- G. FIBER OPTIC CABLE, 2 INCH CONDUIT – (COMMUNITCATION)

(2) INSTALL THE FOLLOWING CONDUIT AND WIRE FROM HAND HOLE HH-1 TO HAND HOLE HH-3 THROUGH HAND HOLE HH-2.
- A. 3 #400KCMIL, 1 #4G, 3.5 INCH CONDUIT – (480V POWER TO UFAW-1)
- B. 3 #3/0, 1 #4G, 2.5 INCH CONDUIT – (480V POWER TO IWA-1)
- C. 3 #3/0, 1 #4G, 2.5 INCH CONDUIT – (480V POWER TO IWA-2)
- D. FIBER OPTIC CABLE, 2 INCH CONDUIT – (COMMUNICATION)
- E. FIBER OPTIC CABLE, 2 INCH CONDUIT – (COMMUNITCATION)

(3) INSTALL THE FOLLOWING CONDUIT AND WIRE FROM HAND HOLE HH-3 TO WELL PUMP IWA-2 THROUGH HAND HOLES HH-4, HH-5, AND HH-6.
- A. 3 #3/0, 1 #4G, 2.5 INCH CONDUIT – (480V POWER TO IWA-2)
- B. FIBER OPTIC CABLE, 2 INCH CONDUIT – (COMMUNICATION)
- C. FIBER OPTIC CABLE, 2 INCH CONDUIT – (COMMUNITCATION)

(4) INSTALL THE FOLLOWING CONDUIT AND WIRE FROM HAND HOLE HH-3 TO HAND HOLE HH-9, THROUGH HANDHOLES HH-7 AND HH-8.
- A. 3 #400KCMIL, 1 #4G, 3.5 INCH CONDUIT – (480V POWER TO UFAW-1)
- B. 3 #3/0, 1 #4G, 2.5 INCH CONDUIT – (480V POWER TO IWA-1)
- C. FIBER OPTIC CABLE, 2 INCH CONDUIT – (COMMUNICATION)
- D. FIBER OPTIC CABLE, 2 INCH CONDUIT – (COMMUNITCATION)

(5) INSTALL THE FOLLOWING CONDUIT AND WIRE FROM HAND HOLE HH-9 TO WELL PUMP UFAW-1, THROUGH HAND HOLE HH-10.
- A. 3 #400KCMIL, 1 #4G, 3.5 INCH CONDUIT – (480V POWER TO UFAW-1)
- B. FIBER OPTIC CABLE, 2 INCH CONDUIT – (COMMUNICATION)
- C. FIBER OPTIC CABLE, 2 INCH CONDUIT – (COMMUNITCATION)

(6) INSTALL THE FOLLOWING CONDUIT AND WIRE FROM HAND HOLE HH-9 TO WELL PUMP IWA-1.
- A. 3 #3/0, 1 #4G, 2.5 INCH CONDUIT – (480V POWER TO IWA-1)
- B. FIBER OPTIC CABLE, 2 INCH CONDUIT – (COMMUNICATION)
- C. FIBER OPTIC CABLE, 2 INCH CONDUIT – (COMMUNITCATION)

(7) INSTALL THE FOLLOWING CONDUIT AND WIRE FROM HAND HOLE HH-1 TO HAND HOLE HH-12, THROUGH HAND HOLE HH-11.
- A. 3 #4/0, 1 #4G, 2.5 INCH CONDUIT – (480V POWER TO UFWA-2)
- B. 3 #2/0, 1 #4G, 2.5 INCH CONDUIT – (480V POWER TO IWA-3)
- C. FIBER OPTIC CABLE, 2 INCH CONDUIT – (COMMUNICATION)
- D. FIBER OPTIC CABLE, 2 INCH CONDUIT – (COMMUNITCATION)

(8) INSTALL THE FOLLOWING CONDUIT AND WIRE FROM HAND HOLE HH-12 TO WELL PUMP UFWA-2.
- A. 3 #4/0, 1 #4G, 2.5 INCH CONDUIT – (480V POWER TO UFWA-2)
- B. FIBER OPTIC CABLE, 2 INCH CONDUIT – (COMMUNICATION)
- C. FIBER OPTIC CABLE, 2 INCH CONDUIT – (COMMUNITCATION)

(9) INSTALL THE FOLLOWING CONDUIT AND WIRE FROM HAND HOLE HH-12 TO WELL PUMP IWA-3, THROUGH HAND HOLE HH-13 AND HH-14.
- A. 3 #2/0, 1 #4G, 2.5 INCH CONDUIT – (480V POWER TO IWA-3)
- B. FIBER OPTIC CABLE, 2 INCH CONDUIT – (COMMUNICATION)
- C. FIBER OPTIC CABLE, 2 INCH CONDUIT – (COMMUNITCATION)

(10) INSTALL THE FOLLOWING CONDUIT AND WIRE FROM FUTURE WTP TO WELLS
- A. FIBER OPTIC CABLE, 2 INCH CONDUIT – (COMMUNICATION)
- B. FIBER OPTIC CABLE, 2 INCH CONDUIT – (COMMUNITCATION)

REV.NO.	DESCRIPTIONS	DATE

REVISIONS

SEAL

ARTHUR L. ANCHORS, P.E.
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MANATEE COUNTY, FLORIDA

NORTH COUNTY WELLS/TREATMENT

ELECTRICAL SITE PLAN

DATE:	FEBRUARY 2009
MCE PROJ. #	1024-0117
DRAWN	PDH/JAG
DESIGNED	PDH
CHECKED	ALA
PROJ. MGR.	SPT

SCALE
HORIZONTAL: AS SHOWN
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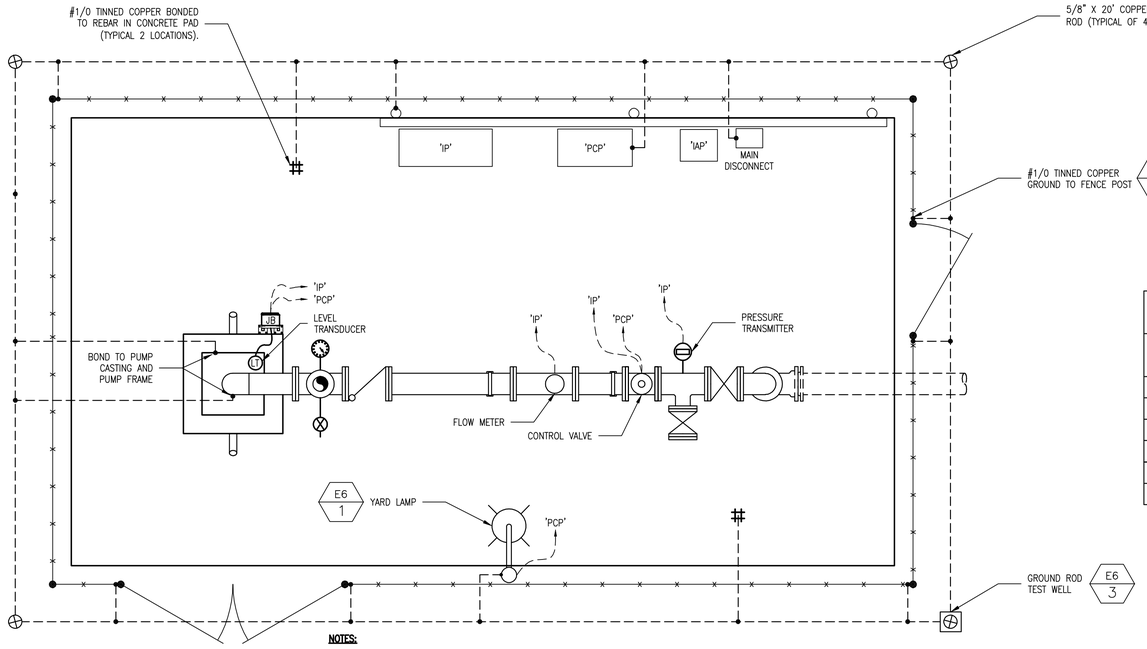
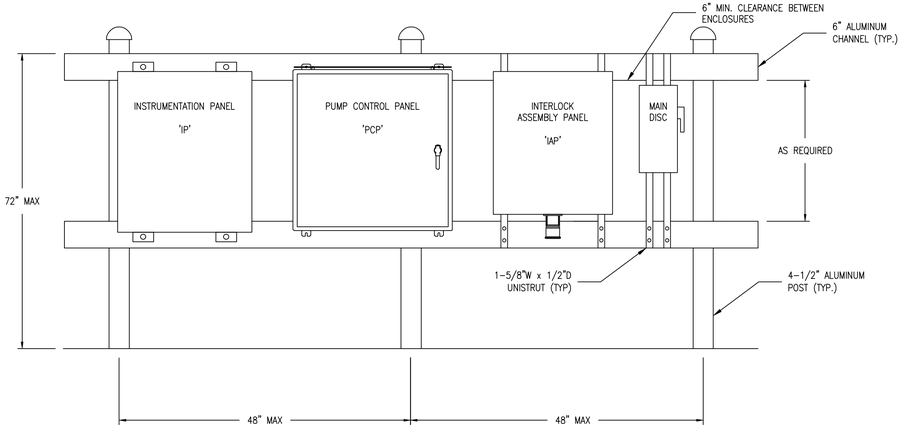


NOTES:

1. ELECTRICAL DISTRIBUTION EQUIPMENT SHALL BE TIED TO GROUND PER NEC AND OTHER APPLICABLE CODES.
2. ORIENTATION FOR WELLS: IAW-2, IAW-3, IAW-5, IAW-7, IAW-8, UFAW-1, UFAW-2, UFAW-3, UFAW-4 ARE AS SHOWN.
3. ORIENTATION FOR WELLS: IAW-1, IAW-4, IAW-6, UFAW-5 ARE OPPOSITE HAND.

SITE PLAN DETAIL TYPICAL OF WELLS POWER FROM FUTURE WATER TREATMENT PLANT

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



NOTES:

1. CONDUITS TO BE ALUMINUM ABOVE-GRADE, TRANSITION THROUGH SWEEP FITTINGS, TO PVC BELOW-GRADE. INSTRUMENTATION, CONTROL, AND POWER WIRES SHALL BE ROUTED IN SEPARATE CONDUITS.
2. WHERE ALUMINUM POSTS OR CONDUITS COME IN CONTACT WITH CONCRETE PAD, POSTS AND CONDUITS SHALL BE TREATED WITH PROTECTIVE COATING. COATING SHALL EXTEND TO 4" BEYOND POINT OF CONTACT.
3. INSTALL ADDITIONAL VERTICAL ALUMINUM POSTS AS REQUIRED MAXIMUM DISTANCE BETWEEN VERTICAL SUPPORTS SHALL BE 48 INCHES.

EQUIPMENT RACK DETAIL TYPICAL OF WELLS POWER FROM FUTURE WATER TREATMENT PLANT

SCALE: NOT TO SCALE

NOTES:

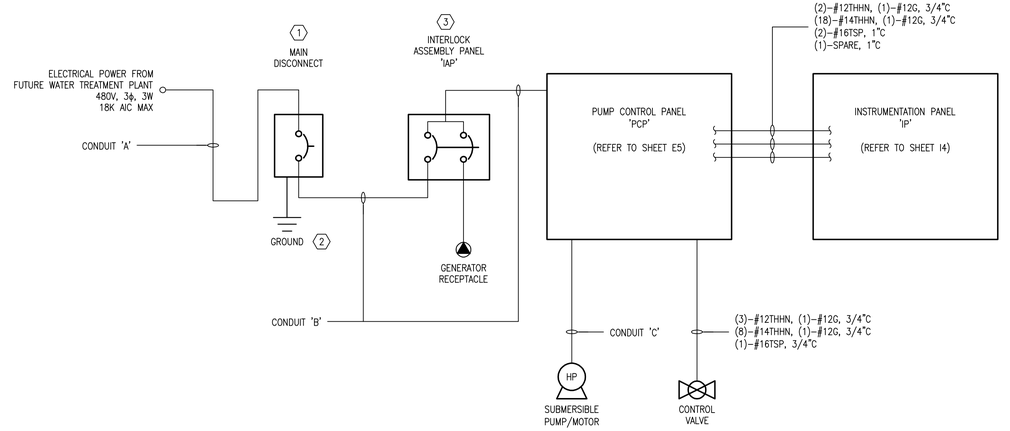
1. REFER TO DRAWING E1 AND E6 FOR ADDITIONAL NOTES AND DETAILS.
2. CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE ALL ELECTRICAL WORK WITH THE ELECTRICAL UTILITY.
3. ALL ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE AND LOCAL ELECTRICAL CODES.

KEYNOTES:

1. MAIN DISCONNECT SHALL BE 600 VOLT CLASS, 3-POLE, ENCLOSED BREAKER, 18K AIC, SERVICE ENTRANCE RATED, IN A NEMA 4X STAINLESS STEEL ENCLOSURE WITH LOCKABLE HASP. VOLT AND AMP RATINGS AT EACH WELL LOCATION SHALL BE DETERMINED BY TABLE ON THIS SHEET. METER DISCONNECT SHALL BE SQUARE-D MODEL FA DS SERIES WITH FAL34 SERIES BREAKER OR APPROVED EQUAL.
2. BOND BARE COPPER GROUND WIRE TO GROUNDING SYSTEM. SEE SITE PLAN THIS SHEET GROUND ROD LOCATIONS.
3. REFER TO SHEET E6 FOR INTERLOCK ASSEMBLY PANEL AND GENERATOR RECEPTACLE DETAIL.

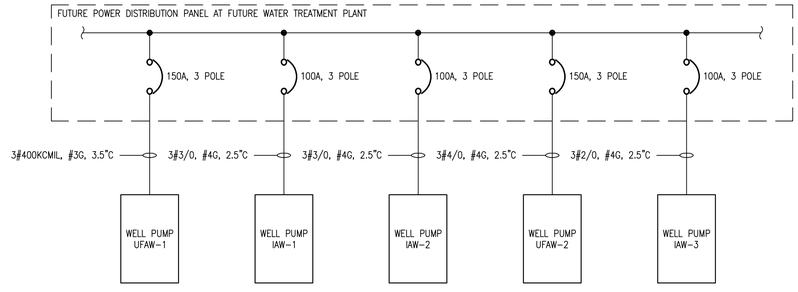
THIS SHEET IS TYPICAL FOR THE WELL SITES LISTED BELOW

WELL NUMBER	MOTOR RATING		METER DISCONNECT	MAIN DISCONNECT	CONDUIT A	CONDUIT B	CONDUIT C	GROUND WIRE	IAP BREAKERS	ORIENTATION
	VOLTS	HP								
IAW-1	480VAC, 3ϕ	15	100A	100A	(3)-#3/0, (1)-#4G, 1-1/2"C	(3)-#3, (1)-#8G, 1-1/2"C	(3)-#10, (1)-#10G, 1"C	#8	100A	OPPOSITE HAND
IAW-2	480VAC, 3ϕ	15	100A	100A	(3)-#3/0, (1)-#4G, 1-1/2"C	(3)-#3, (1)-#8G, 1-1/2"C	(3)-#10, (1)-#10G, 1"C	#8	100A	AS SHOWN
IAW-3	480VAC, 3ϕ	15	100A	100A	(3)-#2/0, (1)-#4G, 2-1/2"C	(3)-#3, (1)-#8G, 1-1/2"C	(3)-#10, (1)-#10G, 1"C	#8	100A	AS SHOWN
UFAW-1	480VAC, 3ϕ	60	200A	150A	(3)-400KCMIL, (1)-#3G, 3-1/2"C	(3)-#1/0, (1)-#6G, 2"C	(3)-#2, (1)-#6G, 1-1/2"C	#6	150A	AS SHOWN
UFAW-2	480VAC, 3ϕ	50	200A	150A	(3)-#4/0, (1)-#4G, 2-1/2"C	(3)-#1/0, (1)-#6G, 2"C	(3)-#3, (1)-#8G, 1-1/2"C	#8	150A	AS SHOWN



POWER RISER TYPICAL OF WELLS POWER FROM FUTURE WATER TREATMENT PLANT

SCALE: NOT TO SCALE



PARTIAL WELL POWER DISTRIBUTION SINGLE LINE FROM FUTURE WATER TREATMENT PLANT

SCALE: NOT TO SCALE

REV.NO.	DESCRIPTIONS	DATE
	REVISIONS	

SEAL

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MANATEE COUNTY, FLORIDA

NORTH COUNTY WELLS/TREATMENT

WELL ELECTRICAL SITE PLAN AND SINGLE LINE DIAGRAM 1 OF 2

DATE:	FEBRUARY 2009
MCE PROJ. #	1024-0117
DRAWN	PDH/JAG
DESIGNED	PDH
CHECKED	ALA
PROJ. MGR.	SPT

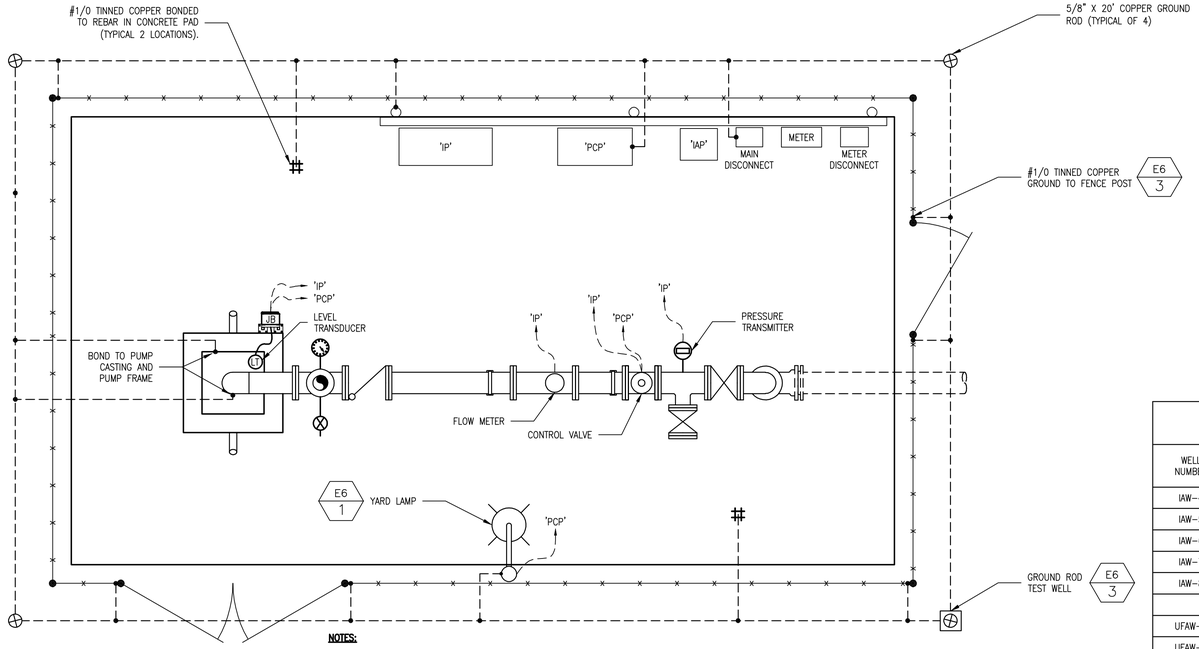
SCALE: HORIZONTAL: AS SHOWN VERTICAL: NA

M&C FILE NUMBER

DRAWING NUMBER: E3

STATUS: ISSUE FOR BID

REVISION



NOTES:

1. ELECTRICAL DISTRIBUTION EQUIPMENT SHALL BE TIED TO GROUND PER NEC AND OTHER APPLICABLE CODES.
2. ORIENTATION FOR WELLS: IAW-2, IAW-3, IAW-5, IAW-7, IAW-8, UFAW-1, UFAW-2, UFAW-3, UFAW-4 ARE AS SHOWN.
3. ORIENTATION FOR WELLS: IAW-1, IAW-4, IAW-6, UFAW-5 ARE OPPOSITE HAND.

NOTES:

1. REFER TO DRAWING E1 AND E6 FOR ADDITIONAL NOTES AND DETAILS.
2. CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE ALL ELECTRICAL WORK WITH THE ELECTRICAL UTILITY.
3. ALL ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE AND LOCAL ELECTRICAL CODES.

KEYNOTES:

(1) METER DISCONNECT SHALL BE 600 VOLT CLASS, 3-POLE, NON-FUSIBLE, IN A NEMA 4X STAINLESS STEEL ENCLOSURE. VOLT AND AMP RATINGS AT EACH WELL LOCATION SHALL BE DETERMINED BY TABLE ON THIS SHEET. METER DISCONNECT SHALL BE SQUARE-D MODEL (HUJ363DS) OR APPROVED EQUAL.

(2) PROVIDE METER PER UTILITY REQUIREMENTS.

(3) MAIN DISCONNECT SHALL BE 600 VOLT CLASS, 3-POLE, ENCLOSED BREAKER, 18K AIC, SERVICE ENTRANCE RATED, IN A NEMA 4X STAINLESS STEEL ENCLOSURE WITH LOCKABLE HASP. VOLT AND AMP RATINGS AT EACH WELL LOCATION SHALL BE DETERMINED BY TABLE ON THIS SHEET. METER DISCONNECT SHALL BE SQUARE-D MODEL FA DS SERIES WITH FAL34 SERIES BREAKER OR APPROVED EQUAL.

(4) BOND BARE COPPER GROUND WIRE TO GROUNDING SYSTEM. SEE SITE PLAN THIS SHEET GROUND ROD LOCATIONS.

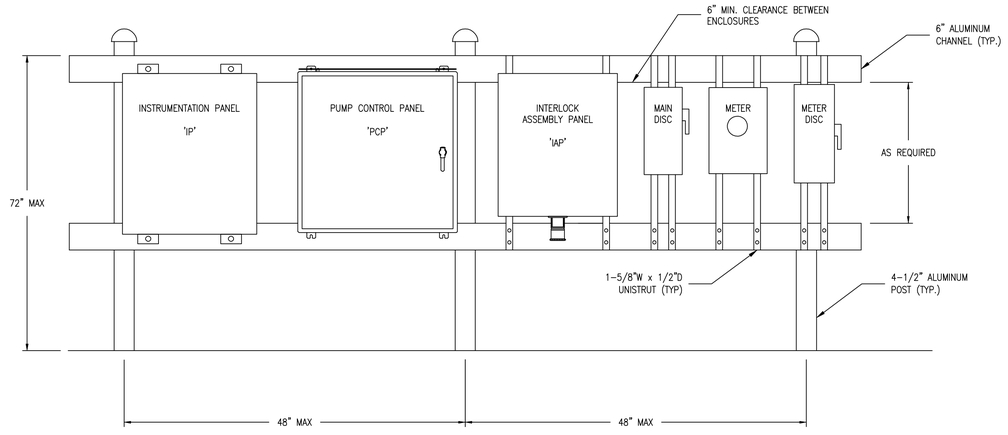
(5) REFER TO SHEET E6 FOR INTERLOCK ASSEMBLY PANEL AND GENERATOR RECEPTACLE DETAIL.

THIS SHEET IS TYPICAL FOR THE WELL SITES LISTED BELOW

WELL NUMBER	MOTOR RATING		METER DISCONNECT	MAIN DISCONNECT	CONDUIT A	CONDUIT B	CONDUIT C	GROUND WIRE	IAP BREAKERS	ORIENTATION
	VOLTS	HP								
IAW-4	480VAC, 3ϕ	15	100A	100A	(3)-#3, (1)-#8G, 1-1/2"C	(3)-#3, (1)-#8G, 1-1/2"C	(3)-#10, (1)-#10G, 1"C	#8	100A	OPPOSITE HAND
IAW-5	480VAC, 3ϕ	15	100A	100A	(3)-#3, (1)-#8G, 1-1/2"C	(3)-#3, (1)-#8G, 1-1/2"C	(3)-#10, (1)-#10G, 1"C	#8	100A	AS SHOWN
IAW-6	480VAC, 3ϕ	15	100A	100A	(3)-#3, (1)-#8G, 1-1/2"C	(3)-#3, (1)-#8G, 1-1/2"C	(3)-#10, (1)-#10G, 1"C	#8	100A	OPPOSITE HAND
IAW-7	480VAC, 3ϕ	15	100A	100A	(3)-#3, (1)-#8G, 1-1/2"C	(3)-#3, (1)-#8G, 1-1/2"C	(3)-#10, (1)-#10G, 1"C	#8	100A	AS SHOWN
IAW-8	480VAC, 3ϕ	15	100A	100A	(3)-#3, (1)-#8G, 1-1/2"C	(3)-#3, (1)-#8G, 1-1/2"C	(3)-#10, (1)-#10G, 1"C	#8	100A	AS SHOWN
UFAW-3	480VAC, 3ϕ	50	200A	150A	(3)-#1/0, (1)-#6G, 2"C	(3)-#1/0, (1)-#6G, 2"C	(3)-#3, (1)-#8G, 1-1/2"C	#8	150A	AS SHOWN
UFAW-4	480VAC, 3ϕ	60	200A	150A	(3)-#1/0, (1)-#6G, 2"C	(3)-#1/0, (1)-#6G, 2"C	(3)-#2, (1)-#6G, 1-1/2"C	#6	150A	AS SHOWN
UFAW-5	480VAC, 3ϕ	60	200A	150A	(3)-#1/0, (1)-#6G, 2"C	(3)-#1/0, (1)-#6G, 2"C	(3)-#2, (1)-#6G, 1-1/2"C	#6	150A	OPPOSITE HAND

TYPICAL WELL PUMP SITE PLAN

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

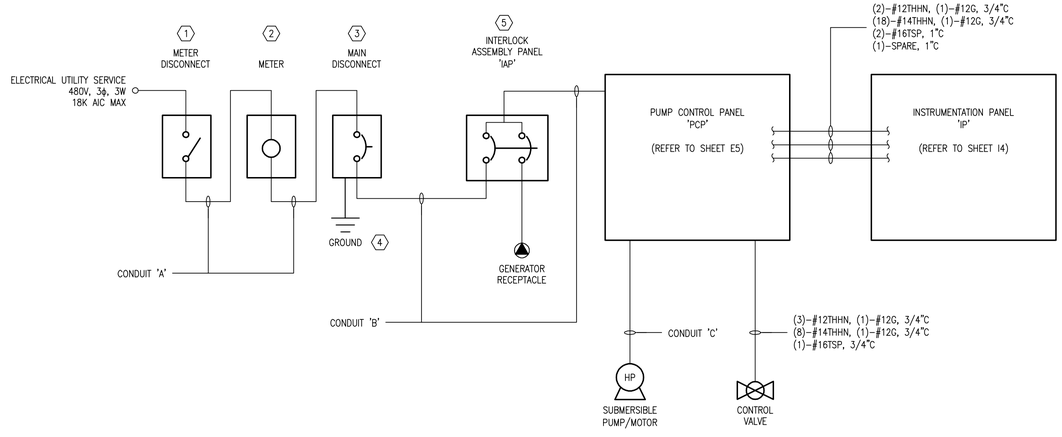


NOTES:

1. CONDUITS TO BE ALUMINUM ABOVE-GRADE, TRANSITION THROUGH SWEEP FITTINGS, TO PVC BELOW-GRADE. INSTRUMENTATION, CONTROL, AND POWER WIRES SHALL BE ROUTED IN SEPARATE CONDUITS.
2. WHERE ALUMINUM POSTS OR CONDUITS COME IN CONTACT WITH CONCRETE PAD, POSTS AND CONDUITS SHALL BE TREATED WITH PROTECTIVE COATING. COATING SHALL EXTEND TO 4" BEYOND POINT OF CONTACT.
3. INSTALL ADDITIONAL VERTICAL ALUMINUM POSTS AS REQUIRED MAXIMUM DISTANCE BETWEEN VERTICAL SUPPORTS SHALL BE 48 INCHES.

EQUIPMENT RACK DETAIL

SCALE: NOT TO SCALE



TYPICAL POWER RISER

SCALE: NOT TO SCALE

REV.NO.	DESCRIPTIONS	DATE
	REVISIONS	

SEAL

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MANATEE COUNTY, FLORIDA

NORTH COUNTY WELLS/TREATMENT

WELL ELECTRICAL SITE PLAN AND SINGLE LINE DIAGRAM 2 OF 2

DATE:	FEBRUARY 2009
MCE PROJ. #	1024-0117
DRAWN	PDH/JAG
DESIGNED	PDH
CHECKED	ALA
PROJ. MGR.	SPT

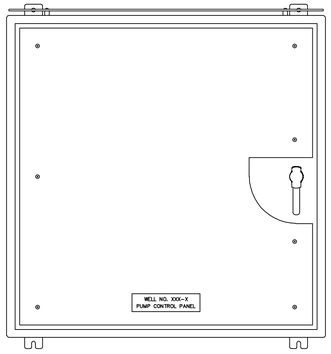
SCALE: HORIZONTAL: AS SHOWN; VERTICAL: NA

M&C FILE NUMBER

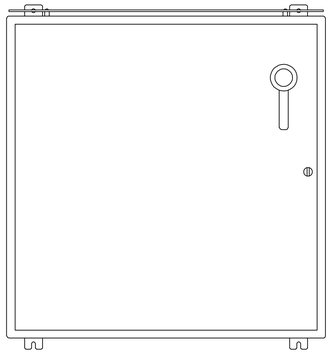
DRAWING NUMBER: E4

STATUS: ISSUE FOR BID

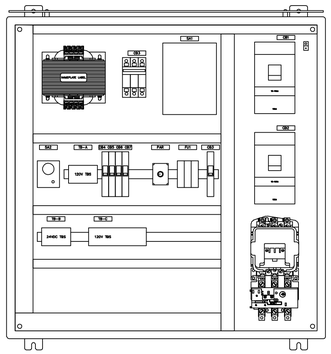
REVISION



PUMP CONTROL PANEL EXTERIOR LAYOUT

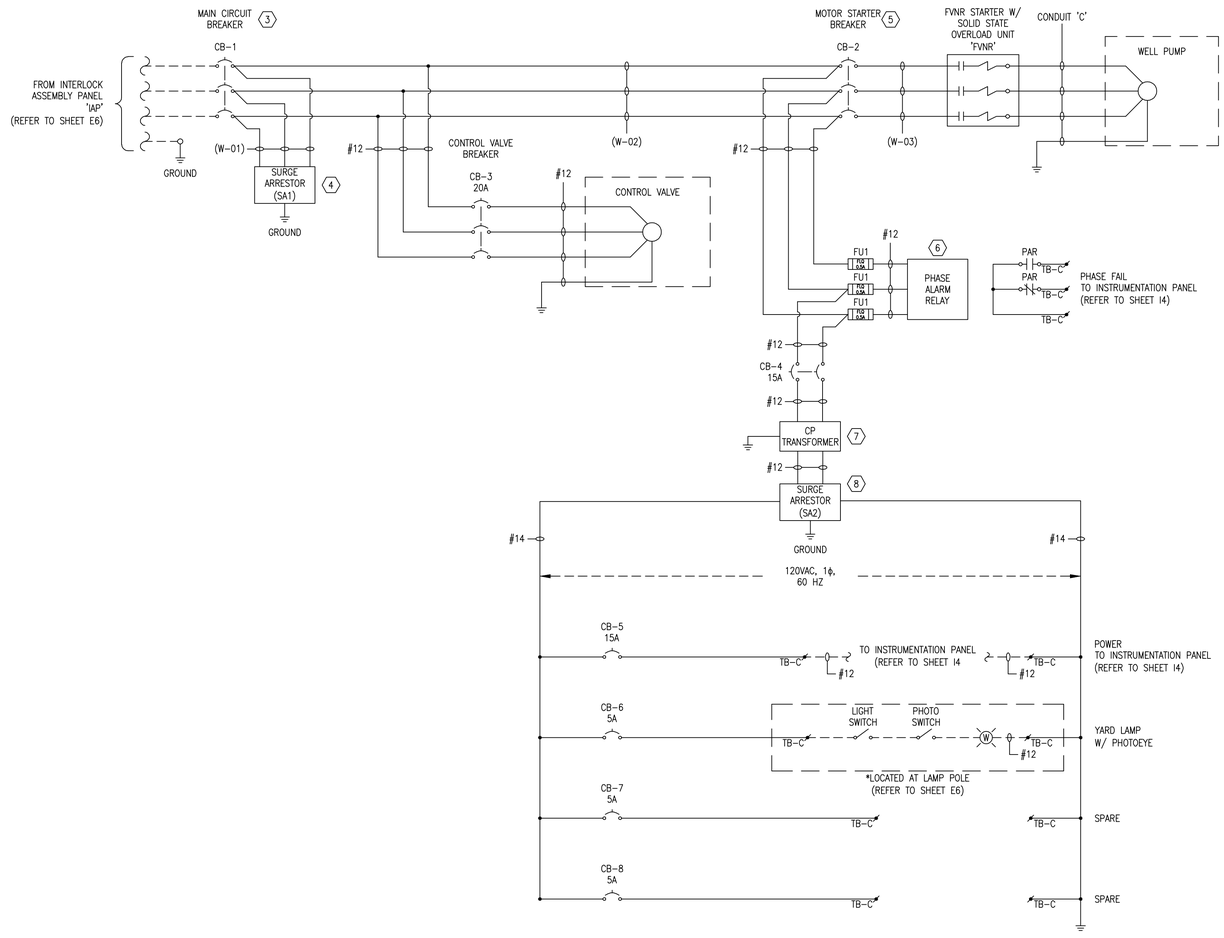


PUMP CONTROL PANEL INTERIOR DOOR LAYOUT



PUMP CONTROL PANEL INTERIOR LAYOUT

WELL NUMBER	MOTOR RATING		CB-1	W-01	W-02	FVNR STARTER	CB-2	W-03	CONDUIT C
	VOLTS	HP							
IAW-1	480VAC, 3ϕ	15	70A	#6	#4	NEMA SIZE 2	30A	#10	(3)-#10, (1)-#10G, 1"C
IAW-2	480VAC, 3ϕ	15	70A	#6	#4	NEMA SIZE 2	30A	#10	(3)-#10, (1)-#10G, 1"C
IAW-3	480VAC, 3ϕ	15	70A	#6	#4	NEMA SIZE 2	30A	#10	(3)-#10, (1)-#10G, 1"C
IAW-4	480VAC, 3ϕ	15	70A	#6	#4	NEMA SIZE 2	30A	#10	(3)-#10, (1)-#10G, 1"C
IAW-5	480VAC, 3ϕ	15	70A	#6	#4	NEMA SIZE 2	30A	#10	(3)-#10, (1)-#10G, 1"C
IAW-6	480VAC, 3ϕ	15	70A	#6	#4	NEMA SIZE 2	30A	#10	(3)-#10, (1)-#10G, 1"C
IAW-7	480VAC, 3ϕ	15	70A	#6	#4	NEMA SIZE 2	30A	#10	(3)-#10, (1)-#10G, 1"C
IAW-8	480VAC, 3ϕ	15	70A	#6	#4	NEMA SIZE 2	30A	#10	(3)-#10, (1)-#10G, 1"C
UFAW-1	480VAC, 3ϕ	60	150A	#6	#1/0	NEMA SIZE 4	150A	#2	(3)-#2, (1)-#6G, 1-1/2"C
UFAW-2	480VAC, 3ϕ	50	125A	#6	#1	NEMA SIZE 3	100A	#3	(3)-#3, (1)-#8G, 1-1/2"C
UFAW-3	480VAC, 3ϕ	50	125A	#6	#1	NEMA SIZE 3	100A	#3	(3)-#3, (1)-#8G, 1-1/2"C
UFAW-4	480VAC, 3ϕ	60	150A	#6	#1/0	NEMA SIZE 4	150A	#2	(3)-#2, (1)-#6G, 1-1/2"C
UFAW-5	480VAC, 3ϕ	60	150A	#6	#1/0	NEMA SIZE 4	150A	#2	(3)-#2, (1)-#6G, 1-1/2"C



NOTES:

1. CABINET:
   NEMA-4X 304 STAINLESS STEEL, W/LOCKABLE HANDLE, W/INNER DEAD-FRONT DOOR SUITABLE FOR MOUNTING EQUIPMENT, W/SS SUN-SHEILDS TOP, SIDES AND EXTERIOR DOOR FASTENED WITH STAND-OFFS AND BUTTON-HEAD BOLTS.
   HOFFMAN A36H3612SSLP3PT/A36P36 OR APPROVED EQUAL.
2. NAMEPLATES:
   ENGRAVED PHENOLIC PLATE, BLACK W/WHITE LETTERING.
   EXTERIOR DOOR - 2"x6" PLATE, 3/8" LETTERING.
   INTERIOR DOOR - 1/2"x3" PLATE, 1/4" LETTERING.
   INTERIOR EQUIPMENT - 1/2"x2" PLATE, 1/4" LETTERING.
3. MAIN CABINET BREAKER:
   3-POLE. VOLT & AMP RATINGS PER CHART THIS SHEET.
   SQUARE-D (TYPICAL FAL3xxxx) OR APPROVED EQUAL.
4. MAIN CABINET SURGE/LIGHTNING PROTECTION:
   DEVICES SHALL BE DEHN P/N:
   DBM 1 320
   DG S 385 OR APPROVED EQUAL
5. MOTOR STARTER BREAKER:
   3-POLE. VOLT & AMP RATINGS PER CHART THIS SHEET.
   SQUARE-D (TYPICAL MCPxxxx) OR APPROVED EQUAL.
6. PHASE FAILURE & UNDERVOLTAGE RELAY:
   SOCKET-MOUNT, ADJUSTABLE UNDERVOLTAGE TRIP, SPDT CONTACTS.
   SQUARE-D 8430-MPS, OR APPROVED EQUAL.
7. CONTROL POWER TRANSFORMER:
   2KVA, 240V/480V-120V, 1PH, OPEN-CORE.
   ACME ELECTRIC FS-2-2000, OR APPROVED EQUAL.
   CONTRACTOR TO CONFIGURE PRIMARY JUMPERS PER SITE VOLTAGE.
8. CONTROL CIRCUIT SURGE SUPPRESSOR:
   DEVICE SHALL BE DEHN P/N:
   DR M 2P 150 FM OR APPROVED EQUAL
9. MOTOR STARTER:
   NEMA RATING PER CHART THIS SHEET.
   PROVIDE SQUARE-D 8536 SERIES FVNR WITH SOLID-STATE OVERLOAD UNIT OR APPROVED EQUAL.

PUMP CONTROL PANEL LAYOUT

SCALE: 1/8"=1"

ELECTRICAL SCHEMATICS FOR PUMP CONTROL PANEL

SCALE: NOT TO SCALE

REV.NO.	DESCRIPTIONS	DATE
	REVISIONS	

SEAL

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MANATEE COUNTY, FLORIDA

NORTH COUNTY WELLS/TREATMENT

PUMP CONTROL PANEL DETAILS

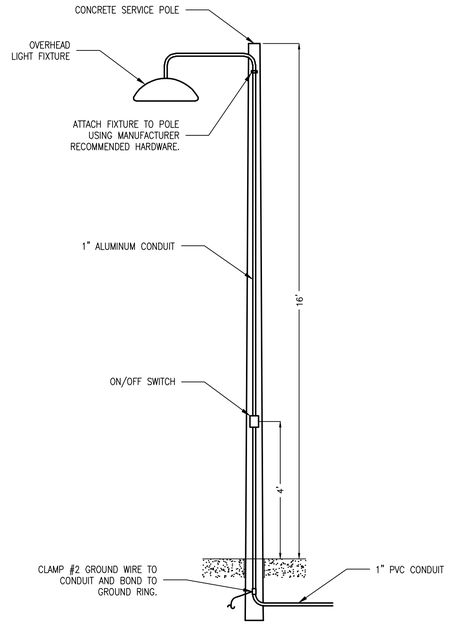
DATE:	FEBRUARY 2009
MCE PROJ. #	1024-0117
DRAWN	PDH/JAG
DESIGNED	PDH
CHECKED	ALA
PROJ. MGR.	SPT

SCALE
HORIZONTAL: AS SHOWN
VERTICAL: NA

M&C FILE NUMBER

DRAWING NUMBER
E5

STATUS: ISSUE FOR BID
REVISION

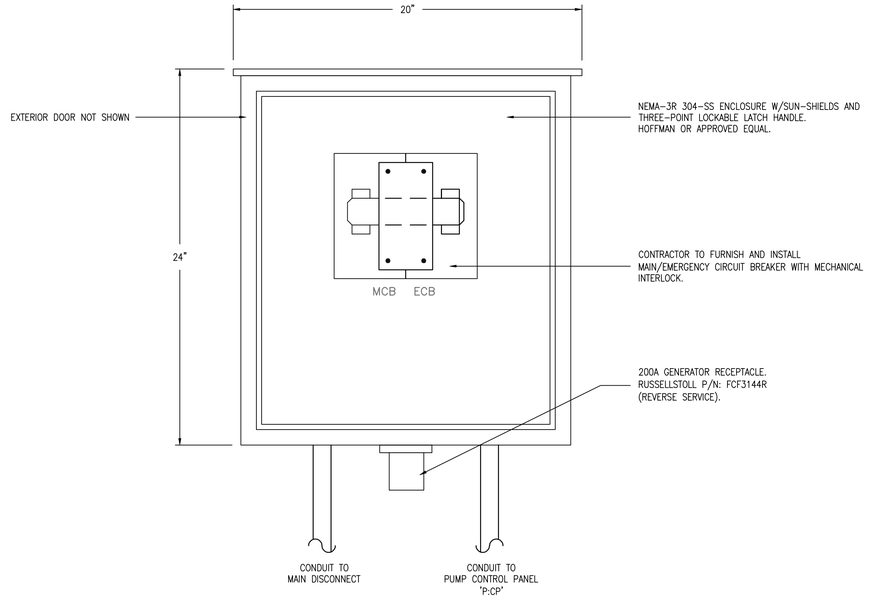


NOTES:

1. FIXTURE: 200 WATT POLE MOUNTED, 120VAC, W/ON-OFF SWITCH, W/WATER PROOF BUG-TIGHT GASKETED COVER, DIE CAST ALUMINUM W/POWDER COAT FINISH, EQUIPPED W/PHOTOEYE WIRED IN SERIES WITH SWITCH FOR AUTO OPERATION; AS MF'D BY KIM ARCHETYPE AR; G.E.; DECA SHIELD, OR APPROVED EQUAL.
2. POLE BASE DESIGN SHALL BE CERTIFIED FOR THE APPLICATION BY A FLORIDA REGISTERED PROFESSIONAL STRUCTURAL ENGINEER.

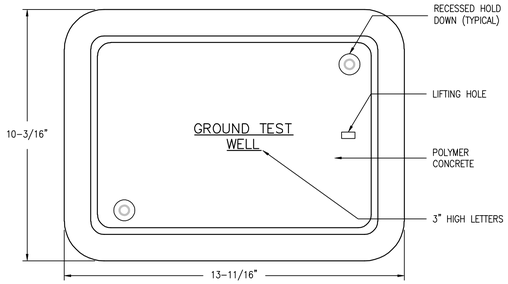
1 YARD LAMP DETAIL

SCALE: NOT TO SCALE

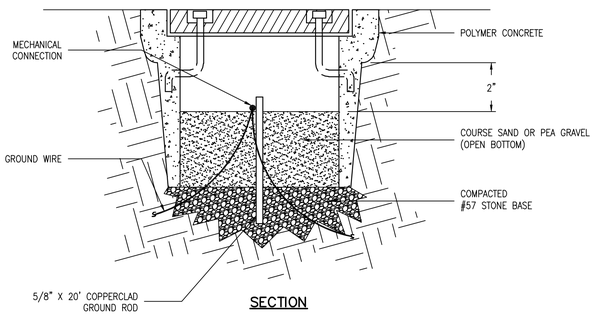


2 INTERLOCK ASSEMBLY PANEL (IAP) INTERIOR DOOR DETAIL

SCALE: NOT TO SCALE



PLAN VIEW



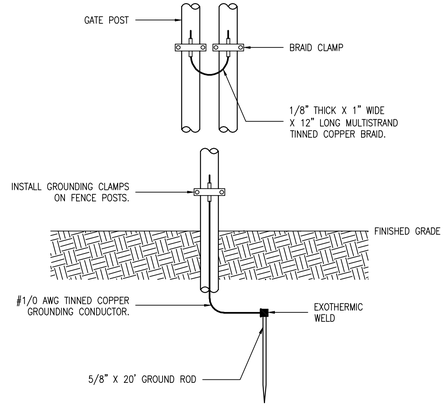
SECTION

NOTES:

1. GROUND TEST WELL AND COVER SHALL BE CONSTRUCTED FROM POLYMER CONCRETE. QUAZITE/PG-STYLE OR APPROVED EQUAL.
2. GROUND TEST WELL AND COVER SHALL COMPLY WITH ANSI/SCTE-77 2007 TIER-15 FOR UNDERGROUND ENCLOSURE INTEGRITY.
3. COVER LOGO SHALL READ "GROUND TEST WELL"

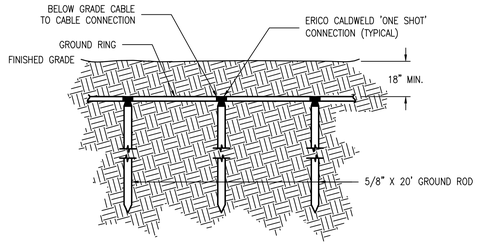
3 GROUND TEST WELL

SCALE: NOT TO SCALE



4 TYPICAL GATE OR FENCE POST GROUNDING

SCALE: NOT TO SCALE



5 BELOW GRADE CABLE TO CABLE CONNECTION DETAIL

SCALE: NOT TO SCALE

REV.NO.	DESCRIPTIONS	DATE

REVISIONS

SEAL

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MANATEE COUNTY, FLORIDA

NORTH COUNTY WELLS/TREATMENT

ELECTRICAL DETAILS

DATE:	FEBRUARY 2009
MCE PROJ. #	1024-0117
DRAWN	PDH/JAG
DESIGNED	PDH
CHECKED	ALA
PROJ. MGR.	SPT

SCALE
HORIZONTAL: AS SHOWN
VERTICAL: NA

M&C FILE NUMBER

DRAWING NUMBER
E6

STATUS: ISSUE FOR BID

REVISION