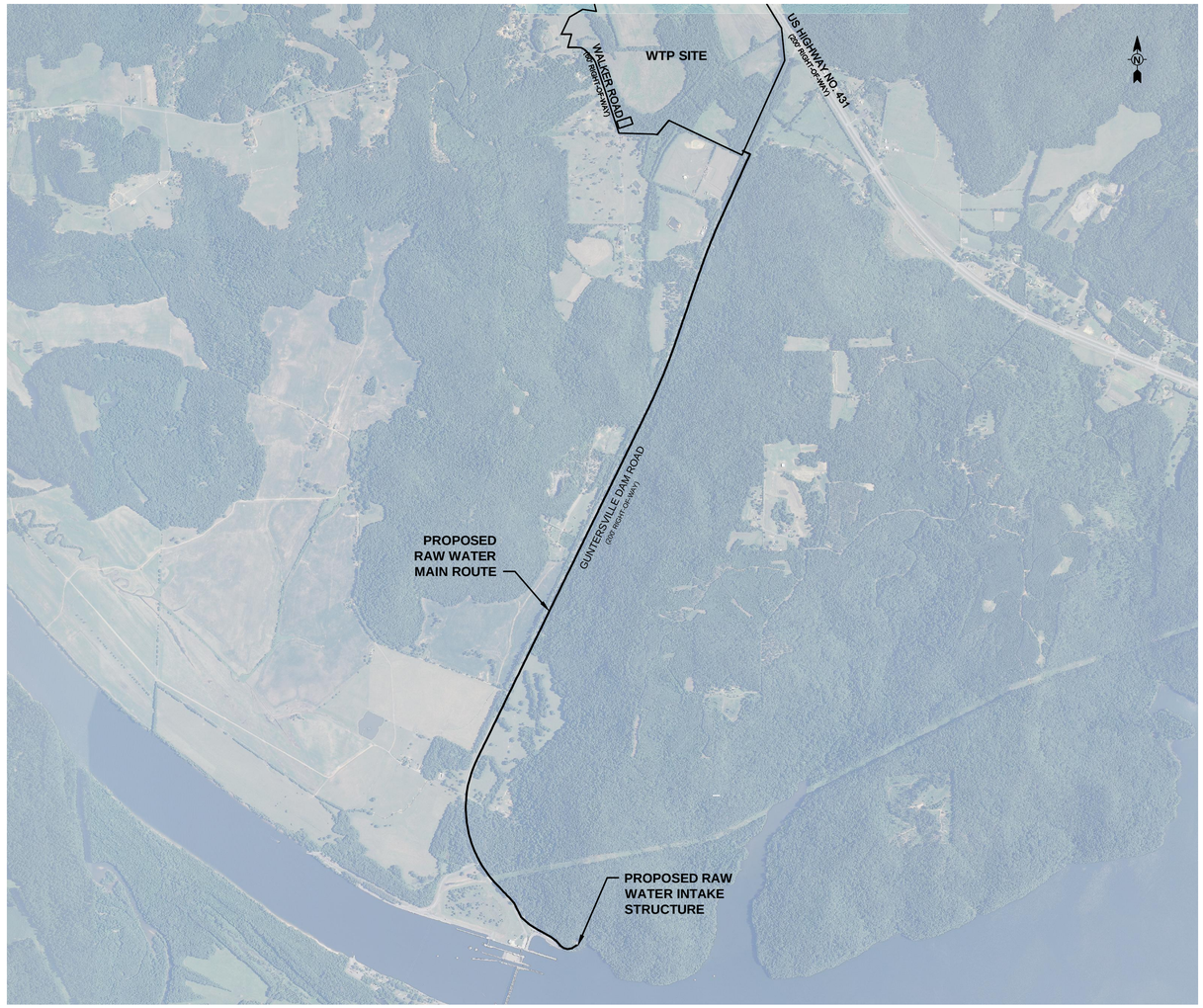
HUNTSVILLE UTILITIES
RAW WATER INTAKE STRUCTURE
AND TRANSMISSION FACILITIES

101 QUALITY CIRCLE, SUITE 140
HUNTSVILLE, ALABAMA 35806
PHONE: (256) 424-4077 FAX: (256) 424-4097
www.tetratech.com

TETRA TECH



PROJECT LOCATION:

GUNTERSVILLE DAM ROAD
HUNTSVILLE, ALABAMA

CLIENT INFORMATION:

HUNTSVILLE UTILITIES
112 SPRAGINS STREET
HUNTSVILLE, ALABAMA 35801

Tt PROJECT No.:

200-11740-10003

CLIENT PROJECT No.:

PROJECT DESCRIPTION / NOTES:

THE PROJECT CONSISTS OF THE CONSTRUCTION OF A 24 MGD RAW WATER INTAKE STRUCTURE AND 42" RAW WATER MAINS. THE WORK INCLUDES THE INTAKE CHANNEL, INTAKE STRUCTURE, PUMP BUILDING WITH ELECTRICAL ROOM, RAW WATER PIPING, ACCESS DRIVE, YARD PIPING, SITE WORK AND ALL NECESSARY APPURTENANCES.

ISSUED:

BID SET - OCTOBER 2014
VOLUME 3A

ALABAMA LICENSED PROFESSIONAL ENGINEER
CHRISTIAN R. DUMAS
10/24/14

VICINITY MAP:

GENERAL NOTES

1. THE INTENT OF THE DRAWINGS IS THAT THE CONTRACTOR SHALL FURNISH ALL LABOR, MATERIALS, TOOLS, EQUIPMENT, AND TRANSPORTATION NECESSARY FOR THE PROPER EXECUTION OF THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND ALL INCIDENTAL WORK NECESSARY TO COMPLETE THE PROJECT IN AN ACCEPTABLE MANNER, READY FOR USE, OCCUPANCY, OR OPERATION BY THE OWNER.

2. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO COMPLETE WORK ON ALL APPLICABLE DRAWINGS AND THE APPROPRIATE SPECIFICATIONS AS A UNIT. ANY OMISSIONS, DELETIONS, OR CONFLICTS ARISING AS A RESULT OF FAILURE TO INCORPORATE ALL DRAWINGS AND SPECIFICATIONS WHICH APPLY SHALL BE CORRECTED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER AND/OR ENGINEER.

3. EFFORTS HAVE BEEN MADE TO INDICATE LOCATIONS OF EXISTING STRUCTURES, PIPING, UTILITIES AND TOPOGRAPHY. HOWEVER, THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING EXACT SIZES AND LOCATIONS OF ALL EXISTING ITEMS BEFORE INITIATING ANY CONSTRUCTION OPERATIONS. ENGINEER SHALL BE NOTIFIED IMMEDIATELY OF ANY CONFLICTS OR DEVIATIONS FROM PLANS THAT MAY AFFECT WORK. ANY EXISTING STRUCTURE, PIPING, OR UTILITY DISTURBED OR DAMAGED BY THE CONTRACTOR DURING CONSTRUCTION OPERATIONS SHALL BE REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER AND/OR ENGINEER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COORDINATION ACTIVITIES WITH THE OWNER OF ANY FACILITY DISTURBED OR PLANNED TO BE DISTURBED.

4. THE CONTRACTOR SHALL COORDINATE IN ADVANCE AND DURING CONSTRUCTION OPERATIONS WITH THE OWNER OF ANY FIBER OPTIC COMMUNICATION CABLES IN THE AREAS WHERE THESE UTILITIES EXIST.

5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL LINES AND GRADES REQUIRED FOR THE CONSTRUCTION OF THE PROPOSED FACILITIES. HORIZONTAL AND VERTICAL CONTROL POINTS AND TEMPORARY BENCHMARKS HAVE BEEN PROVIDED BY THE ENGINEER AND ARE SHOWN ON THESE DRAWINGS.

6. THE CONTRACTOR SHALL VERIFY ALL HORIZONTAL AND VERTICAL BENCHMARKS SHOWN. THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY OF ANY CONFLICTS.

7. THE CONTRACTOR SHALL VERIFY COORDINATES AND ELEVATIONS OF ALL EXISTING STRUCTURES SHOWN ON THESE PLANS. THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY OF ANY CONFLICTS.

8. DIMENSIONS OF EXISTING STRUCTURES AND/OR SIZE RESTRICTIONS ARE APPROXIMATE. ALL NECESSARY DIMENSIONS AND ELEVATIONS OF EXISTING STRUCTURES AND TOPOGRAPHY SHALL BE VERIFIED BY THE CONTRACTOR IN THE FIELD PRIOR TO CONSTRUCTION OPERATIONS.

9. THE LIMITS OF CONSTRUCTION SHALL BE THE PROPERTY, RIGHT-OF-WAY, OR EASEMENT LINES AS SHOWN ON THE PLANS. ANY ADDITIONAL EASEMENTS REQUIRED FOR CONSTRUCTION SHALL BE ACQUIRED BY THE CONTRACTOR AT NO ADDITIONAL EXPENSE TO THE OWNER AND/OR ENGINEER.

10. EXISTING GRADING AND DRAINAGE ELEVATIONS AND ALL EXISTING CONDITIONS SHALL BE MAINTAINED AFTER CONSTRUCTION UNLESS OTHERWISE SHOWN ON PLANS.

11. THE CONTRACTOR IS RESPONSIBLE FOR FOLLOWING ALL APPLICABLE OSHA REGULATIONS.

12. ALL APPLICABLE CONSTRUCTION SHALL BE IN ACCORDANCE WITH HUNTSVILLE UTILITIES' "WATER DEPARTMENT FACILITIES SPECIFICATIONS", LATEST EDITION; OR THE REQUIREMENTS SET FORTH IN THE DRAWINGS AND SPECIFICATIONS. IN CASE OF A CONFLICT THE MORE STRINGENT REQUIREMENT SHALL GOVERN.

13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLYING WITH ALL APPLICABLE NPDES STORMWATER PERMITS DURING THE ENTIRE CONSTRUCTION PERIOD. A COPY OF ALL APPLICABLE PERMITS SHALL BE MAINTAINED ON SITE AT ALL TIMES.

14. THE CONTRACTOR SHALL MAINTAIN COPY OF ALDOT APPROVED SPECS. AND PERMIT ON SITE THROUGHOUT CONSTRUCTION.

15. THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF RECORD DRAWINGS (AS-BUILTS) IN AUTOCAD FORMAT AND HARDCOPY FORMAT, AND THE CONTRACTOR/INSPECTOR RED-LINED DRAWINGS UPON COMPLETION OF CONSTRUCTION. DRAWINGS SHALL BE REFERENCED TO THE ALABAMA STATE PLANE COORDINATE SYSTEM, NAD83 ALABAMA, AS DESCRIBED IN THE APPLICABLE SECTION OF THE "CODE OF ALABAMA" (1975). SURVEYS SHALL BE TIED TO A MINIMUM OF TWO ACCEPTED GPS MONUMENTS OR ONE GPS TIE POINT PLUS AN ASTRONOMIC OBSERVATION TO DETERMINE GRID NORTH. THE SURVEY SHALL BE COMPLETED BY A LAND SURVEYOR LICENSED IN THE STATE OF ALABAMA. IN ADDITION, THE RECORD DRAWINGS SHALL SHOW FINAL VERTICAL AND HORIZONTAL ALIGNMENT OF ALL BURIED UTILITIES ADDED OR MOVED AS A RESULT OF CONSTRUCTION. THEY SHALL INCLUDE ALL LINES, ACTUAL FIELD ANGLES BETWEEN LINES, SERVICE LINES AND TEE LOCATIONS, VALVE VAULTS AND VALVE BOXES, AND STUBOUTS. THEY SHALL REFLECT ALL ALIGNMENT AND GRADE CHANGES FROM THE DESIGN DRAWINGS MADE DURING CONSTRUCTION. RECORD DRAWINGS MUST BE COMPLETED AND SUBMITTED PRIOR TO ACCEPTANCE OF THE FACILITIES.

16. THE RAW WATER MAIN SHALL BE TESTED PER THE PROJECT SPECIFICATIONS.

17. TRAFFIC CONTROL SHALL BE MAINTAINED IN ACCORDANCE WITH THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", LATEST EDITION.

18. ALL CONCRETE AND ASPHALT DRIVEWAYS AND OTHER ROAD ACCESSES SHALL BE SAWCUT AND REPAIRED TO A POINT WHERE THEY ARE IN AS GOOD OR BETTER CONDITION AS BEFORE CONSTRUCTION. PROPERTY OWNERS SHALL HAVE ACCESS TO PROPERTY AT ALL TIMES DURING CONSTRUCTION.

19. THE CONTRACTOR SHALL MAINTAIN A 15' MINIMUM EXCAVATION CLEARANCE AT ALL TRANSMISSION LINE TOWER SUPPORTS AND DOWN GUY ANCHORS. CONTRACTOR SHALL COORDINATE WITH UTILITIES IF POLES NEED TO BE HELD.

20. MAILBOXES MAY BE REMOVED FOR CONSTRUCTION PURPOSES ONLY. MAILBOXES SHALL BE REINSTALLED IN THEIR ORIGINAL POSITIONS AND BE IN AS GOOD OR BETTER CONDITION THAN PRIOR TO CONSTRUCTION. IF MAILBOXES ARE TO BE REMOVED FOR CONSTRUCTION PURPOSES, THE MAILBOXES SHALL BE REPLACED BEFORE THE END OF THE WORKING DAY.

21. FENCING MAY BE REMOVED FOR CONSTRUCTION PURPOSES ONLY. TEMPORARY FENCING IS REQUIRED TO RETAIN ALL LIVESTOCK. FENCES SHALL BE REINSTALLED IN THEIR ORIGINAL POSITIONS AND IN AS GOOD OR BETTER CONDITION THAN PRIOR TO CONSTRUCTION.

22. ALL BURIED PIPES SHALL HAVE A MINIMUM OF 3'-0" COVER AS MEASURED VERTICALLY FROM FINISHED GRADE TO THE TOP OF PIPE, UNLESS OTHERWISE NOTED. ADDITIONAL COVER WILL BE NECESSARY AT AIR RELEASE VALVES.

23. BEST MANAGEMENT PRACTICES AND SEDIMENT AND EROSION CONTROL METHODS SHALL BE MAINTAINED THROUGHOUT PROJECT. THE SEDIMENT AND EROSION CONTROL METHODS SHOWN ON THESE PLANS ARE MEANT TO BE A GUIDE AND ARE ONLY MINIMUM REQUIREMENTS. THE OWNER MAY REQUIRE ADDITIONAL SEDIMENT AND EROSION CONTROL DURING THE CONSTRUCTION PERIOD IF NECESSARY. ALL SEDIMENT AND EROSION CONTROL METHODS SHALL BE INSTALLED AND MAINTAINED ACCORDING TO THESE DRAWINGS, THE TECHNICAL SPECIFICATIONS, AND THE NPDES PERMIT.

24. THE CONTRACTOR SHALL INSTALL SILT FENCE ALONG THE DOWNHILL SIDE OF ALL DISTURBED AREAS AND TAKE ALL NECESSARY EFFORTS TO MINIMIZE SEDIMENTATION AT ALL CREEK CROSSINGS.

25. SEED, FERTILIZE, AND MULCH ALL AREAS DISTURBED DURING CONSTRUCTION. VEGETATIVE COVER SHALL BE RE-ESTABLISHED AS SOON AS POSSIBLE AFTER LAND DISTURBANCE

26. TOPSOIL IN AREAS OF EXCAVATION MAY BE STRIPPED AND SEPARATELY STOCKPILED ON SITE FOR FINISH LANDSCAPING AND/OR GRADING USE ONLY.

27. RESTORE ALL GRAVEL AND/OR DIRT DRIVES TO ORIGINAL OR BETTER CONDITION.

NOTICE TO CONTRACTOR

ALL EVIDENT EXISTING UTILITIES ARE SHOWN. HOWEVER, IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY EXACT SIZES AND LOCATIONS OF ALL EXISTING UTILITIES BEFORE INITIATING ANY CONSTRUCTION OPERATIONS. ANY EXISTING STRUCTURE, PIPING OR UTILITY DISTURBED OR DAMAGED BY THE CONTRACTOR DURING CONSTRUCTION OPERATIONS SHALL BE REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER AND/OR ENGINEER. THE CONTRACTOR SHALL CALL:

ALABAMA LINE LOCATION CENTER, INC.
1-800-292-8525
AND
HUNTSVILLE UTILITIES
1-256-882-8255

TWO (2) DAYS BEFORE ANY EXCAVATION ON THIS PROJECT.

DRAWING INDEX

TETRA TECH
www.tetratech.com
101 QUALITY CIRCLE, SUITE 140
HUNTSVILLE, ALABAMA 35806
PHONE: (256) 424-4077 FAX: (256) 424-4097

BID SET

ALABAMA LICENSED PROFESSIONAL ENGINEER CHRISTIAN P. DUNAWAY 10 OF 14

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

GENERAL NOTES AND DRAWING INDEX

Project No.:	200-11740-10003
Designed By:	KLW
Drawn By:	PD
Checked By:	JPT

G-0001

Bar Measures 1 inch

LIST OF STANDARD ABBREVIATIONS

A		
AAP	ALARM ANNUNCIATOR PANEL	
AARV	AUTOMATIC AIR RELEASE VALVE	
AAV	AUTOMATIC AIR VENT	
AB	ANCHOR BOLT	
ABAN	ABANDON(ED)	
ABRSV	ABRASIVE	
ABS	ACRYLONITRILE BUTADIENE STYRENE	
ABV	ABOVE	
AC	ALTERNATING CURRENT	
ACCMP	ASPHALT-COATED CORRUGATED METAL PIPE	
ACP	ASBESTOS CEMENT PIPE	
ADDM	ADDENDUM	
ADH	ADHESIVE	
AFF	ABOVE FINISHED FLOOR	
AFG	ABOVE FINISHED GRADE	
AFS	ABOVE FINISHED SLAB	
AHD	AHEAD	
AL	ALUMINUM	
ALT	ALTERNATE	
AMP	AMPERE	
AMT	AMOUNT	
APPROX	APPROXIMATE(LY)	
ARCH	ARCHITECT(URAL)	
ARV	AIR RELEASE VALVE	
AS	ALUM SOLUTION	
ASPH	ASPHALT	
ASSY	ASSEMBLY	
AVE	AVENUE	
A/C	AIR CONDITIONING	
A/VV	AIR/VACUUM AIR VALVE	
B		
BAF	BAFFLE	
BCV	BALL CHECK VALVE	
BF	BLIND FLANGE	
BFP	BACKFLOW PREVENTER	
BFV	BUTTERFLY VALVE	
BHP	BRAKE HORSEPOWER	
BI	BLACK IRON	
BITUM	BITUMINOUS OR BITUMASTIC	
B/L	BASELINE	
BLDG	BUILDING	
BLK	BLOCK	
BM	BENCHMARK	
BOC	BACK OF CURB	
BOT	BOTTOM	
BP	BASE PLATE	
BRG	BEARING	
BSP	BLACK STEEL PIPE	
BV	BALL VALVE	
BW	BOTH WAYS	
BWW	BACKWASH WATER	
C		
CAP	CAPACITY	
CA	COMPRESSED AIR	
CAV	COMBINATION AIR VALVE	
CB	CATCH BASIN	
CCC	CHLORINE CONTACT CHAMBER	
CE	CHLORINATED EFFLUENT	
CFM	CUBIC FEET PER MINUTE	
CFS	CUBIC FEET PER SECOND	
CV	CHECK VALVE	
CI	CAST IRON	
CIP	CAST IRON PIPE	
CISP	CAST IRON SOIL PIPE	
CJ	CONSTRUCTION JOINT	
CKT	CIRCUIT	
C/L	CENTER LINE	
CL2	CHLORINE GAS	
CLF	CHAIN LINK FENCE	
CLR	CLEAR OR CLEARANCE	
CLVT	CULVERT	
CM	CONCRETE MONUMENT	
CMP	CORRUGATED METAL PIPE	
CMPA	CORRUGATED METAL PIPE ARCH	
CMU	CONCRETE MASONRY UNIT	
CND	CONDUIT	
CNR	CORNER	
CO	CLEAN OUT	
CO2	CARBON DIOXIDE	
COAG	COAGULANT	
COL	COLUMN	
COM	COMMON	
CONC	CONCRETE	
CONN	CONNECTION	
CONST	CONSTRUCT(ION)	
CONT	CONTINUOUS	
CONTR	CONTRACT(OR)	
COORD	COORDINATE	
CO	COMPANY	
CP	CONCRETE PIPE	
CPP	CORRUGATED PLASTIC PIPE	
CPA	CONCRETE PIPE ARCH	
CPLG	COUPLING	
CPVC	CHLORINATED POLYVINYL CHLORIDE	
CR	CONCENTRIC REDUCER	
CS	CHLORINE SOLUTION	
CSG	CASING	
CTV	CABLE TELEVISION	
CY	CUBIC YARD	
CYL	CYLINDER	
C&G	CURB AND GUTTER	
C/C	CENTER TO CENTER	
D		
DAT	DATUM	
DBL	DOUBLE	
DC	DIRECT CURRENT	
DEMO	DEMOLITION	
DEPT	DEPARTMENT	
DESC	DESCRIPTION	
DET	DETAIL	
DF	DIESEL FUEL	
DI	DUCTILE IRON	
DIA	DIAMETER	
DIFF	DIFFUSER	
DIM	DIMENSION	
DIP	DUCTILE IRON PIPE	
DISCH	DISCHARGE	
DIR	DIRECTION	
DMH	DROP MANHOLE	
DN	DOWN	
DR	DRAIN	
DV	DIAPHRAGM VALVE	
DW	DRIVEWAY	
DWG	DRAWING	
DWV	DRAIN, WASTE, AND VENT	

E		
E	EAST	
EA	EACH	
EB	ELECTRIC RISER	
ECC	ECCENTRIC	
EF	EACH FACE	
EFF	EFFLUENT	
E/L	EASEMENT LINE	
EL	ELEVATION	
ELAST	ELASTOMERIC	
ELEC	ELECTRICAL	
EMER	EMERGENCY	
EMC	ENCASE(MENT)	
ENGR	ENGINEER	
EP	EDGE OF PAVEMENT	
EPDM	ETHYLENE PROPYLENE DIENE MONOMER	
EPRF	EXPLOSION PROOF	
EQUIP	EQUIPMENT	
ER	ECCENTRIC REDUCER	
ESTM	EASEMENT	
EST	ESTIMATE(D)	
ET	ELECTRIC TRANSFORMER	
EW	EACH WAY	
EXC	EXCAVATE	
EXP	EXPANSION	
EXST	EXISTING	
EXST GR	EXISTING GRADE	
EXT	EXTERIOR	
EXTN	EXTENSION	
F		
FAB	FABRICATE(D)	
FCA	FLANGED COUPLING ADAPTER	
FB	FLAT BAR	
FCV	FLOW-CONTROL VALVE	
FD	FLOOR DRAIN	
FDN	FOUNDATION	
FE	FILTER(ED) EFFLUENT	
FHY	FIRE HYDRANT	
FIG	FIGURE	
FIN	FINISH(ED)	
FIN FLR	FINISH FLOOR	
FIN GR	FINISH GRADE	
FL	FLUORIDE	
FLG	FLANGE(D)	
FLL	FLOW LINE	
FLTR	FILTER	
FM	FORCE MAIN	
FO	FIBER OPTIC	
FPM	FEET PER MINUTE	
FPS	FEET PER SECOND	
FRP	FIBERGLASS REINFORCED PLASTIC	
FT	FOOT OR FEET	
FUT	FUTURE	
FV	FOOT VALVE	
FW	FINISHED WATER	
FWP	FACTORY WIRED PANEL	
F/F	FACE TO FACE	
G		
GA	GAUGE	
GAL	GALLON(S)	
GALV	GALVANIZED	
GIP	GALVANIZED IRON PIPE	
GJ	GROOVE JOINT	
GND	GROUND	
GPD	GALLONS PER DAY	
GPH	GALLONS PER HOUR	
GPM	GALLONS PER MINUTE	
GPS	GALLONS PER SECOND	
GR	GRADE	
GRTG	GRATING	
GS	GALVANIZED STEEL	
GSP	GALVANIZED STEEL PIPE	
GSR	GROUND STORAGE RESERVOIR	
GST	GROUND STORAGE TANK	
GT	GROUT	
GV	GATE VALVE	
H		
HB	HOSE BIBB	
HD	HEAVY-DUTY	
HDPE	HIGH-DENSITY POLYETHYLENE	
HDR	HYDRAULIC	
HFA	HYDROFLUOSILICIC ACID	
HGR	HANGER	
HGT	HEIGHT	
HNDRL	HAND RAIL	
HOA	HAND-OFF-AUTO	
HORIZ	HORIZONTAL	
HP	HORSEPOWER	
HPA	HIGH PRESSURE AIR	
HR	HOUR	
HVAC	HEATING, VENTILATION, AND AIR CONDITIONING	
HWL	HIGH WATER LEVEL	
HWY	HIGHWAY	
HZ	HERTZ	
I		
ID	INSIDE DIAMETER	
IN	INCH(ES)	
INF	INFLUENT	
INT	INTERSECTION	
INTR	INTERIOR	
INV	INVERT	
IP	IRON PIPE	
IPS	INTERNATIONAL PIPE STANDARD	
IR	INTERNAL RECYCLE	
IW	IRRIGATION WATER	
J		
JB	JUNCTION BOX	
JT	JOINT	
K		
K	KIP (1,000 LB)	
KPL	KICK PLATE	
KV	KILOVOLT	
KVA	KILOVOLT-AMPERE	
KW	KILOWATT	
KWH	KILOWATT-HOUR	
L		
L	LEFT	
LAB	LABORATORY	
LAM	LAMINATE OR LAMINATION	
LATL	LATERAL	
LAV	LAVATORY	
LEN	LENGTH	

LB	POUND(S)	
LF	LINEAR FEET	
LP	LIGHT POLE	
LS	LIME SLURRY	
LSS	LIME STABILIZED SLUDGE	
LVR	LOUVER	
LWL	LOW WATER LEVEL	
M		
M	METER	
MAINT	MAINTAIN OR MAINTENANCE	
MAN	MANUAL(LY)	
MAS	MASONRY	
MATL	MATERIAL	
MAX	MAXIMUM	
MB	MAILBOX	
MCC	MOTOR CONTROL CENTER	
ME	MITERED END	
MECH	MECHANICAL	
MEG	MATCH EXISTING GRADE	
MFR	MANUFACTURE(R)	
MG	MILLION GALLONS	
MGD	MILLION GALLONS PER DAY	
MH	MANHOLE	
MI	MILE(S)	
MIN	MINIMUM, MINUTE(S)	
MISC	MISCELLANEOUS	
MJ	MECHANICAL JOINT	
ML	MIXED LIQUOR	
MO	MASONRY OPENING	
MON	MONUMENT	
MOT	MAINTENANCE OF TRAFFIC	
MPH	MILES PER HOUR	
MPT	MALE PIPE THREAD	
MS	MOTOR STARTER	
MSP	MOTOR STARTER PANEL	
MTD	MOUNTED	
MV	MOTORIZED VALVE	
MW	MANWAY	
MWL	MEAN WATER LEVEL	
MWP	MAXIMUM WORKING PRESSURE	
N		
N	NORTH	
NaOCl	SODIUM HYPOCHLORITE	
ND	NAIL DISK	
NE	NORTHEAST	
NIC	NOT IN CONTRACT	
NO	NUMBER	
NOM	NOMINAL	
NPF	NATIONAL PIPE THREAD	
NPT	NATIONAL PIPE TAPER (THREAD)	
NPW	NON-POTABLE WATER	
NRS	NON-RISING SYSTEM	
NTS	NOT TO SCALE	
NW	NORTHWEST	
N/A	NOT APPLICABLE	
O		
O2	OXYGEN	
OC	ON CENTER	
OD	OUTSIDE DIAMETER	
ODP	OPEN DRIP PROOF	
OF	OUTSIDE FACE	
OH	OVER HEAD	
OHW	OVER HEAD WIRE	
OPP	OPPOSITE	
OPT	OPTIONAL	
OR	OFFICIAL RECORDS	
OSY	OUTSIDE SCREW AND YOKE	
O&M	OPERATION AND MAINTENANCE	
P		
PA	PROCESS AIR	
PC	POINT OF CURVE	
PCM	PERMANENT CONTROL MONUMENT	
PE	PLAIN END	
PG	PRESSURE GAGE	
PI	POINT OF INTERSECTION	
PL	PLATE	
P/L	PROPERTY LINE	
PNV	PINCH VALVE	
POB	POINT OF BEGINNING	
POJ	PUSH-ON JOINT	
POL	POLYMER	
PP	POWER POLE	
PPD	POUNDS PER DAY	
PPM	PARTS PER MILLION	
PREFAB	PREFABRICATED	
PRESS	PRESSURE	
PRV	PRESSURE REDUCING VALVE	
PRW	PROCESS WATER	
PSF	POUNDS PER SQUARE FOOT	
PSI	POUNDS PER SQUARE INCH	
PSIA	POUNDS PER SQUARE INCH ABSOLUTE	
PSIG	POUNDS PER SQUARE INCH GAGE	
PT	POINT OF TANGENCY	
PV	PLUG VALVE	
PVC	POLYVINYL CHLORIDE	
PVMT	PAVEMENT	
PW	POTABLE WATER	
PWR	POWER	
Q		
Q	FLOW	
QTY	QUANTITY	
R		
RAD	RADIUS	
RAS	RETURN ACTIVATED SLUDGE	
RC	REINFORCED CONCRETE	
RCB	REINFORCED CONCRETE BOX	
RCP	REINFORCED CONCRETE PIPE	
RCPA	REINFORCED CONCRETE PIPE ARCH	
RD	ROAD	
RDCR	REDUCER	
REBAR	REINFORCING STEEL	
REF	REFERENCE	
REINF	REINFORCE(D)(ING)(MENT)	
REM	REMOVE(ABLE)	
REQ'D	REQUIRED	
RF	RAISED FACE	
RJ	RESTRAINED JOINT	
RM	ROOM	
RPBP	REDUCED PRESSURE BACKFLOW PREVENTER	
RPM	REVOLUTIONS PER MINUTE	
RR	RAILROAD	

RT	RIGHT	
RVT	RIVETED	
RW	RAW WATER	
RWW	RAW WASTEWATER	
R/W	RIGHT-OF-WAY	
S		
S	SOUTH	
SA	SAMPLE LINE	
SAN	SANITARY	
SCHED	SCHEDULE	
SD	STORM DRAIN	
SE	SOUTHEAST	
SECT	SECTION	
SEFF	SECONDARY EFFLUENT	
SF	SQUARE FOOT OR FEET	
SHT	SHEET(ED)(ING)	
SIG	SIGNAL	
SIM	SIMILAR	
SL	SLUDGE	
SLV	SLEEVE	
SM	SHEET METAL	
SOLN	SOLUTION	
SP	SOIL PIPE, SPACE(ING)	
SPEC	SPECIFICATION	
SPRT	SUPPORT	
SQ	SQUARE	
SS	SANITARY SEWER	
SSE	SUBSTANDARD EFFLUENT	
SST	STAINLESS STEEL	
ST	STREET	
STA	STATION	
STD	STANDARD	
STK	STAKE	
STL	STEEL	
STR	STRAIGHT	
STRUCT	STRUCTURAL	
SURF	SURFACE	
SV	SOLENOID VALVE	
SVCE	SERVICE	
SVW	SERVICE WATER	
SW	SOUTHWEST	
SWD	SIDEWATER DEPTH	
SWSH	SURFACE WASH	
SYM	SYMBOL	
SYMM	SYMMETRICAL	
S/W	SIDEWALK	
T		
TAN	TANGENT	
TB	TOP OF BEAM	
TBM	TEMPORARY BENCH MARK	
TB-xx	TEST BORING-xx (e.g. TB-1)	
TD	TRENCH DRAIN	
TDH	TOTAL DYNAMIC HEAD	
TE	TOTALLY ENCLOSED	
TEFC	TOTALLY ENCLOSED FAN COOLED	
TEL	TELEPHONE	
TENV	TOTALLY ENCLOSED NON-VENTILATED	
THD	THREAD(ED)	
THK	THICK(NESS)	
TLM	TELEMETRY	
TOB	TOP OF BANK	
TOC	TOP OF CURB	
TOS	TOE OF SLOPE	
TOT	TOTAL	
TP	TELEPHONE POLE	
TS	THICKENED SLUDGE	
TV	TELEVISION	
TYP	TYPICAL	
T&B	TOP AND BOTTOM	
U		
UD	UNDERDRAIN	
UE	UNDERGROUND ELECTRIC	
UG	UNDERGROUND	
ULT	ULTIMATE	
UN	UNION	
UON	UNLESS OTHERWISE NOTED	
UT	UNDERGROUND TELEPHONE	
UTIL	UTILITY	
V		
V	VOLT(S)	
VAC	VACUUM	
VAR	VARIES	
VC	VERTICAL CURVE	
VCP	VITRIFIED CLAY PIPE	
VEL	VELOCITY	
VERT	VERTICAL	
VFD	VARIABLE FREQUENCY DRIVE	
VOL	VOLUME	
W		
W	EXISTING WATER	
WAS	WASTE ACTIVATED SLUDGE	
WCO	WALL CLEAN OUT	
WF	WIDE FLANGE	
WH	WALL HYDRANT	
WL	WATER LINE	
WM	WATER MAIN	
WP	WATER PROOF(ING), WORKING POINT	
WPR	WORKING PRESSURE	
WS	WATER SURFACE	
WSP	WELDED STEEL PIPE	
WT	WEIGHT	
WTP	WATER TREATMENT PLANT	
WW	WASH WATER	
WWF	WELDED WIRE FABRIC	
WWM	WELDED WIRE MESH	
WWTP	WASTEWATER TREATMENT PLANT	
W/	WITH	
W/O	WITHOUT	
WV	WATER VALVE	
X		
XFER	TRANSFER	
Y		
YD	YARD(S)	
YH	YARD HYDRANT	
YR	YEAR(S) YR	

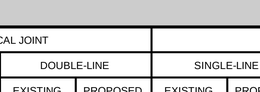
PIPING LEGEND

FITTING/ APPURTENANCE	FLANGED				MECHANICAL JOINT				GROOVE JOINT				SOLVENT WELD			
	SINGLE-LINE		DOUBLE-LINE		SINGLE-LINE		DOUBLE-LINE		SINGLE-LINE		DOUBLE-LINE		SINGLE-LINE		DOUBLE-LINE	
	EXISTING	PROPOSED	EXISTING	PROPOSED	EXISTING	PROPOSED	EXISTING	PROPOSED	EXISTING	PROPOSED	EXISTING	PROPOSED	EXISTING	PROPOSED	EXISTING	PROPOSED
BEND																
TEE																
WYE																
REDUCER																
CAP/ BLIND FLANGE					N/A	N/A	N/A	N/A								
PLUG	N/A	N/A	N/A	N/A					N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
BUTTERFLY VALVE																
BALL VALVE					N/A	N/A	N/A	N/A								
CHECK VALVE					N/A	N/A	N/A	N/A								
GATE VALVE																
PLUG VALVE																
AUTOMATIC CONTROL VALVE					N/A	N/A	N/A	N/A								
PINCH VALVE					N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A				

CIVIL LEGEND

- PROPERTY LINE
- RIGHT OF WAY LINE (R-O-W)
- LIMITS OF CONSTRUCTION
- 130 — PROPOSED CONTOUR MAJOR
- 129 — PROPOSED CONTOUR MINOR
- 130 — EXISTING CONTOUR MAJOR
- 129 — EXISTING CONTOUR MINOR
- W — EXISTING WATER
- W — POTABLE WATER
- PROPOSED RAW WATER (RJ)
- PROPOSED RAW WATER
- DB — PROPOSED DUCT BANK
- PROP SWALE CENTERLINE
- SS — SANITARY SEWER (GRAVITY)
- PROPOSED GUARD RAIL
- xx xx xx xx — PROPOSED FENCE
- SF — PROPOSED SILT FENCE
- FTB — FLOATING TURBIDITY BARRIER
- EXISTING VEGETATION
- T XXX / B YYY — T = TOP ELEVATION, B = BOTTOM ELEVATION
- XXX — SOFT SPOT ELEVATION
- XXX — HARD SPOT ELEVATION
- TOP / BOTTOM — EMBANKMENT

REFERENCE SYMBOLS



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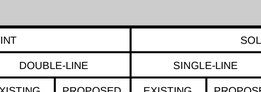
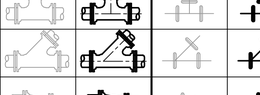


DETAIL REFERENCE



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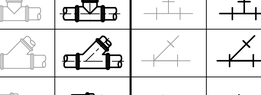

DETAIL TITLE

HATCHING LEGEND

- ASPHALT SURFACE
- CAST-IN-PLACE CONCRETE
- ROADWAY/SIDEWALK OPEN CUT RESURFACE
- RIP RAP
- MILL EXISTING AND OVERLAY NEW PAVEMENT
- CRUSHED AGGREGATE
- SODDED OR SEEDED AND MULCHED AREA
- STEEL
- EXISTING PIPES, STRUCTURES, EQUIPMENT TO BE REMOVED
- ALUMINUM
- EARTH
- GRATING

MECHANICAL/DRAFTING LEGEND

	EXISTING	PROPOSED
VISIBLE LINE		
HIDDEN LINE		
CENTER LINE		
PHANTOM LINE		
MATCHLINE		
BREAK LINE		
DIMENSION LINES AND LEADERS	1 3/32"	NOTE

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BID SET

ALABAMA LICENSED PROFESSIONAL ENGINEER CHRISTIAN P. DUNLAP 10 OCT 14

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

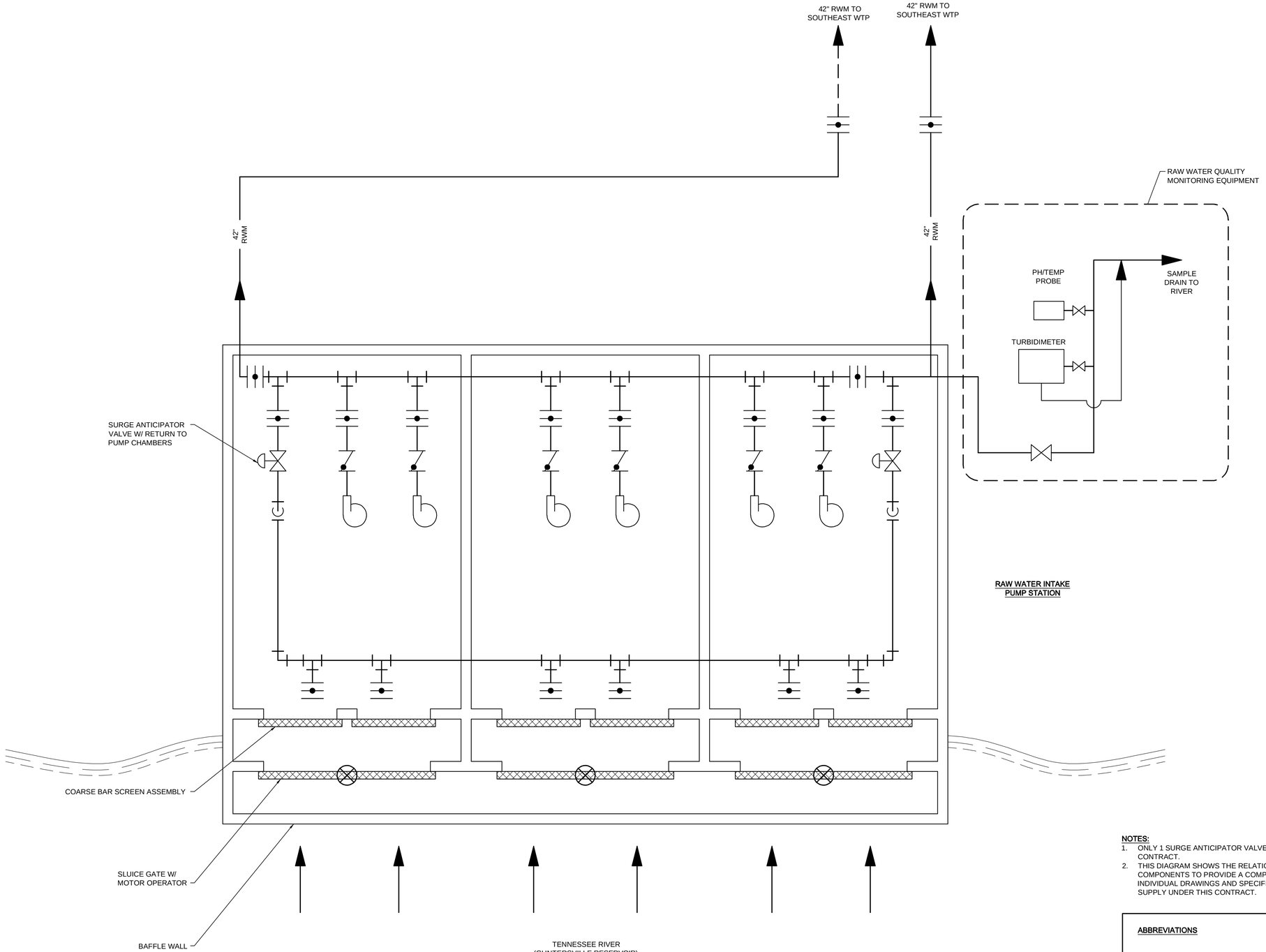
RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

LEGEND AND ABBREVIATIONS

Project No.:	200-11740-10003
Designed By:	KLW
Drawn By:	PD
Checked By:	JPT

G-0002

Bar Measures 1 inch



RAW WATER INTAKE PUMP STATION

NOTES:

1. ONLY 1 SURGE ANTICIPATOR VALVE WILL BE INSTALLED UNDER THIS CONTRACT.
2. THIS DIAGRAM SHOWS THE RELATIONSHIP BETWEEN THE VARIOUS COMPONENTS TO PROVIDE A COMPLETE FUNCTIONAL FACILITY. REFER TO INDIVIDUAL DRAWINGS AND SPECIFICATION SECTIONS FOR THE SCOPE OF SUPPLY UNDER THIS CONTRACT.

ABBREVIATIONS

RWM - RAW WATER MAIN

WTP - WATER TREATMENT PLANT

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BID SET

ALABAMA LICENSED PROFESSIONAL ENGINEER CHRISTIAN P. DUNAWAY 10 OF 14

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

PROCESS FLOW DIAGRAM

Project No.:	200-11740-10003
Designed By:	
Drawn By:	SGN
Checked By:	

G-0003

Bar Measures 1 inch

10/20/2014 9:52:04 AM - \\ERS181FS1\PROJECTS\ER\117401\200-11740-10003\CAD\SHEETFILES\INTAKE AND TRANSMISSION\RW-G-0003 PROCESS FLOW DIAGRAM.DWG - EVANS, JON

ASSET ATTRIBUTE DATA TABLE

STATION	DESCRIPTION	NORTHING	EASTING	SERVICE TYPE
121+46.86, 37.35'L	42" 90° BEND	1444815.95	492452.54	RAW WATER
126+25.00, 37.30'L	AIR RELEASE AND VACUUM VALVE	1444380.24	492255.60	RAW WATER
136+50.40, 37.89'L	AIR RELEASE AND VACUUM VALVE	1443445.87	491833.95	RAW WATER
137+65.79, 37.65'L	42" 22.5 ° BEND	1443340.66	491787.32	RAW WATER
137+80.20, 37.67'L	42" 22.5 ° BEND	1443327.43	491781.62	RAW WATER
138+06.51, 37.68'L	42" 22.5 ° BEND	1443303.54	491771.35	RAW WATER
138+19.27, 37.66'L	42" 22.5 ° BEND	1443291.80	491766.36	RAW WATER
139+70.00, 37.49'L	AIR RELEASE AND VACUUM VALVE	1443153.08	491707.95	RAW WATER
147+88.00, 37.64'L	AIR RELEASE AND VACUUM VALVE	1442389.29	491422.18	RAW WATER
147+95.39, 37.64'L	42" 11.25° BEND	1442382.30	491419.77	RAW WATER
149+22.20, 37.62'L	42" 11.25° BEND	1442262.48	491377.97	RAW WATER
149+79.66, 37.58'L	42" 11.25° BEND	1442208.27	491359.10	RAW WATER
153+10.00, 37.78'L	AIR RELEASE AND VACUUM VALVE	1441895.80	491252.56	RAW WATER
164+50.48, 37.66'L	42" 45 ° BEND	1440816.99	490879.57	RAW WATER
164+53.58, 37.67'L	42" 45 ° BEND	1440814.08	490878.51	RAW WATER
178+50.00, 37.97'L	AIR RELEASE AND VACUUM VALVE	1439529.74	490322.93	RAW WATER
192+50.00, 37.35'L	AIR RELEASE AND VACUUM VALVE	1438271.11	489709.59	RAW WATER
216+00.00, 36.93'L	AIR RELEASE AND VACUUM VALVE	1436159.74	488677.80	RAW WATER
257+80.00, 36.68'L	AIR RELEASE AND VACUUM VALVE	1432399.09	486867.17	RAW WATER
261+19.10, 31.94'L	42" WYE	1432075.96	486784.08	RAW WATER
261+25.34, 38.19'L	42" RS BUTTERFLY VALVE	1432068.89	486789.27	RAW WATER
261+30.00, 32.01'L	42" RS BUTTERFLY VALVE	1432065.33	486782.45	RAW WATER
261+31.63, 44.43'L	42" WYE	1432061.81	486794.46	RAW WATER
261+36.22, 44.44'L	42" RS BUTTERFLY VALVE	1432057.37	486793.77	RAW WATER
274+000, 36.92'L	AIR RELEASE AND VACUUM VALVE	1430841.52	486940.85	RAW WATER

ASSET ATTRIBUTE DATA TABLE

STATION	DESCRIPTION	NORTHING	EASTING	SERVICE TYPE
274+00.00, 44.92'L	AIR RELEASE AND VACUUM VALVE	1430844.69	486948.19	RAW WATER
287+00.00, 52.39'L	42" 11.25° BEND	1429822.73	487727.39	RAW WATER
287+00.37, 44.36'L	42" 11.25° BEND	1429818.07	487720.83	RAW WATER
290+40.98, 26.11'R	42" 22.5° BEND	1429529.45	487867.03	RAW WATER
290+49.53, 21.87'R	42" 22.5° BEND	1429534.41	487873.50	RAW WATER
292+96.03, 39.66'R	AIR RELEASE AND VACUUM VALVE	1429388.44	488025.23	RAW WATER
293+01.52, 30.56'R	AIR RELEASE AND VACUUM VALVE	1429389.65	488035.79	RAW WATER
293+08.27, 29.37'R	42" 11.25° BEND	1429385.04	488040.86	RAW WATER
293+10.44, 37.11'R	42" 11.25° BEND	1429378.59	488036.07	RAW WATER
295+50.00, 1.00'R	42" 22.5° BEND	1429254.09	488251.47	RAW WATER
295+50.00, 7.00'L	42" 22.5° BEND	1429261.29	488254.97	RAW WATER
295+65.80, 1.00'L	42" 22.5° BEND	1429254.37	488269.18	RAW WATER
295+65.80, 1.00'R	42" 22.5° BEND	1429247.18	488265.68	RAW WATER
300+54.05, 3.63'L	42" 22.5° BEND	1428962.62	488656.36	RAW WATER
300+54.37, 4.52'R	42" 22.5° BEND	1428957.03	488650.42	RAW WATER
301+39.86, 2.84'R	42" 22.5° BEND	1428906.92	488720.82	RAW WATER
301+39.86, 5.32'L	42" 22.5° BEND	1428914.36	488724.17	RAW WATER
302+17.10, 5.37'L	42" 22.5° BEND	1428897.63	488796.95	RAW WATER
302+17.12, 2.78'R	42" 22.5° BEND	1428889.48	488796.71	RAW WATER
303+03.17, 4.47'R	42" 22.5° BEND	1428903.91	488882.45	RAW WATER
303+03.50, 3.68'L	42" 22.5° BEND	1428911.54	488879.55	RAW WATER
303+56.56, 2.00'R	42" 45° BEND	1428932.56	488928.18	RAW WATER
303+84.12, 29.56'R	42" 90° BEND	1428923.83	488966.17	RAW WATER
304+18.36, 6.00'L	42" 45° BEND	1428972.14	488976.32	RAW WATER
304+53.92', 29.56'R	42" 90° BEND	1428960.87	489025.33	RAW WATER

BENCHMARK DATA TABLE

TBM	DESCRIPTION	NORTHING	EASTING	EL.
TBM # 1	CDG IRON	1429109.37	488495.01	609.61'
TBM # 2	NAIL AND DISC	1429307.10	488142.50	617.62'
TBM # 3	NAIL AND DISC	1429444.83	488013.76	616.21'
TBM # 4	CDG IRON	1429667.63	487778.66	606.98'
TBM # 5	8"x8" TVA MONUMENT	1430058.97	487530.49	594.19'
TBM # 6	NAIL AND DISC	1430648.49	486944.61	588.60'
TBM # 7	NAIL AND DISC	1432011.91	486725.70	595.98'
TBM # 8	CDG IRON	1432400.31	486866.83	597.86'
TBM # 9	CDG IRON	1434440.36	487810.37	608.58'
TBM # 10	CDG IRON	1434747.67	487960.12	611.36'
TBM # 11	NAIL AND DISC	1436855.19	488963.91	636.48'
TBM # 12	CDG IRON	1437164.91	489140.31	637.38'
TBM # 13	CDG IRON	1438920.17	489998.08	639.65'
TBM # 14	CDG IRON	1439434.76	490250.24	642.83'
TBM # 15	CDG IRON	1440963.14	490903.66	646.79'
TBM # 16	CDG IRON	1441406.30	491057.67	652.31'
TBM # 17	CDG IRON	1446674.82	493236.81	596.59'
TBM # 18	CDG IRON	1446902.58	493373.81	602.64'

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BID SET

ALABAMA LICENSED PROFESSIONAL ENGINEER CHRISTIAN P. DUNAWAY 10/20/14

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

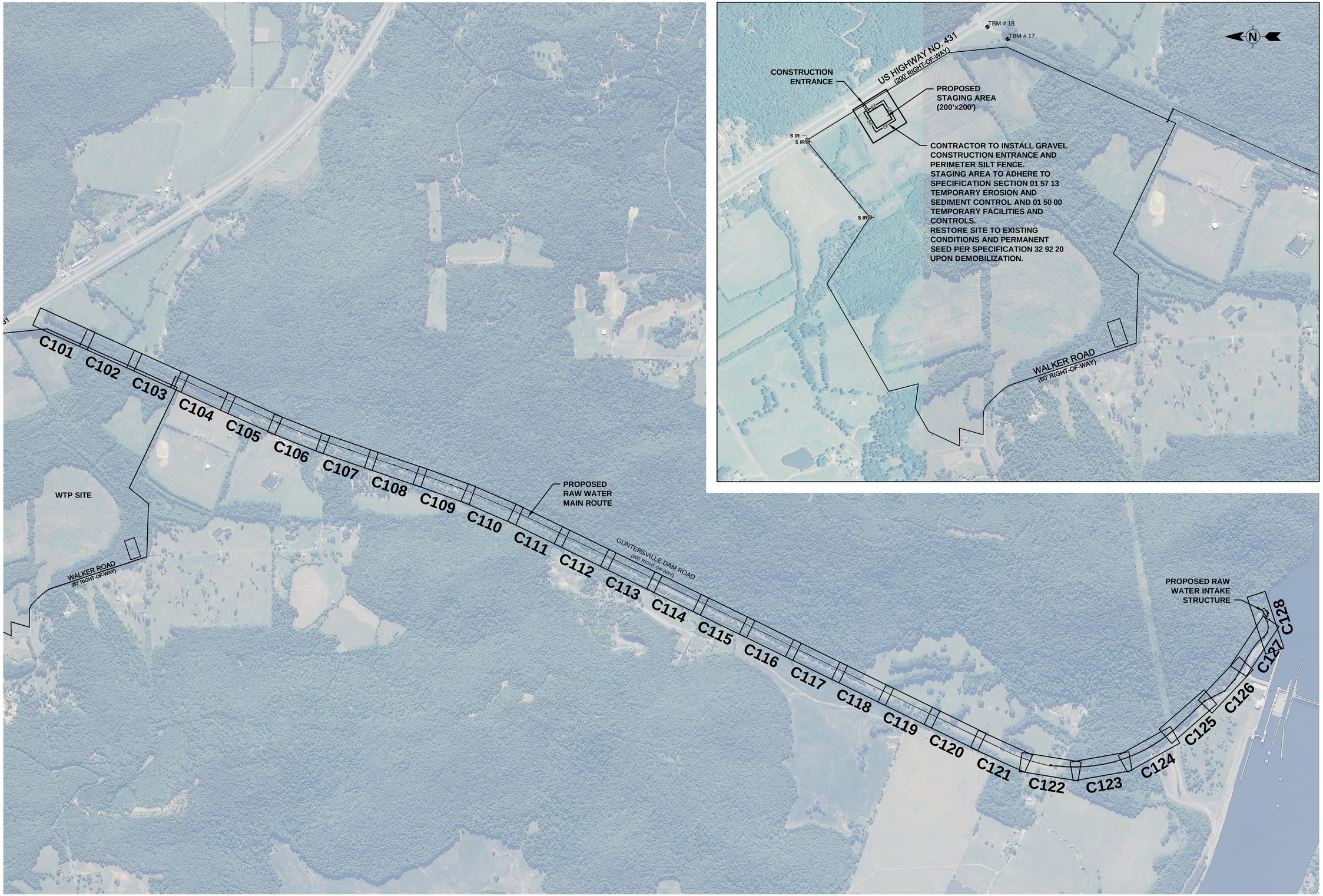
TRANSMISSION PIPELINE ASSET ATTRIBUTE TABLE

Project No.:	200-11740-10003
Designed By:	KLW
Drawn By:	PD
Checked By:	JPT

G-0004

Bar Measures 1 inch

10/20/2014 9:52:43 AM - \\ERS181FS1\PROJECTS\ER\11740\200-11740-10003\CAD\SHEETFILES\INTAKE AND TRANSMISSION\RW-G-0004 ASSET TABLE.DWG - EVANS, JON



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BID SET

ALABAMA LICENSED PROFESSIONAL ENGINEER
CHRISTIAN P. DUNAWAY
10 | 24 | 14

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

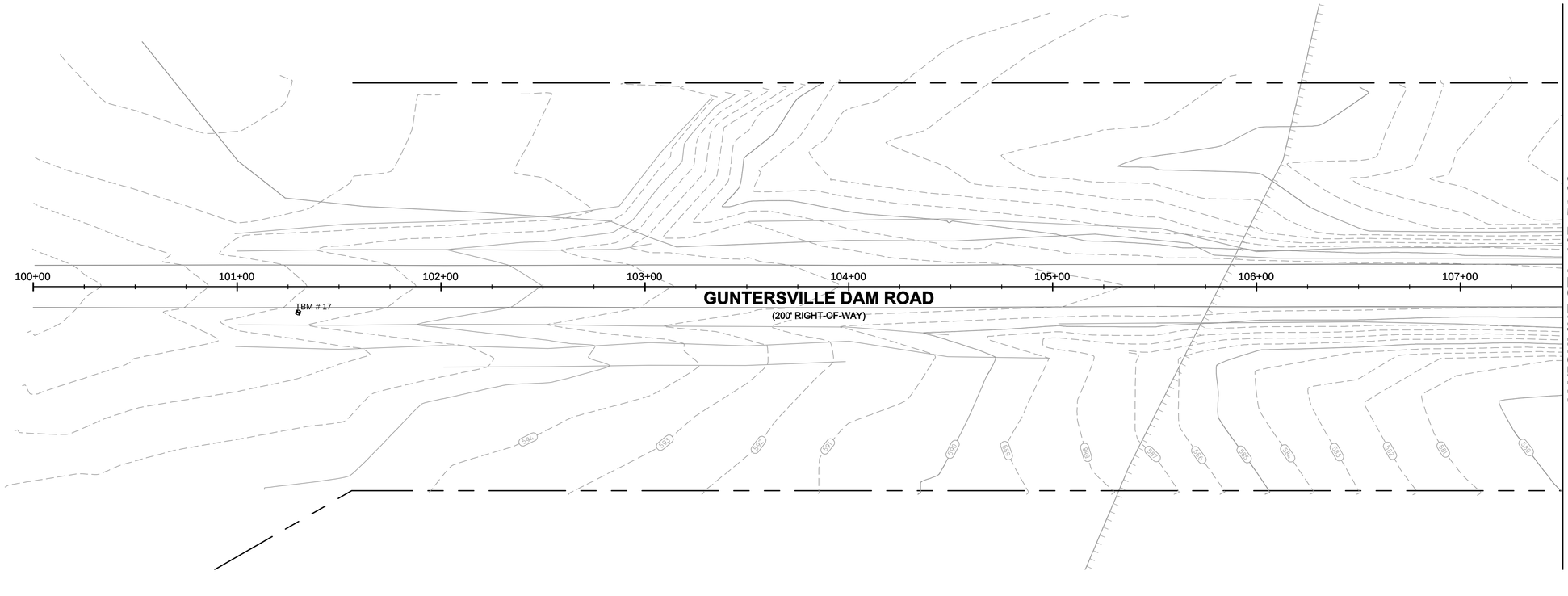
KEY PLAN

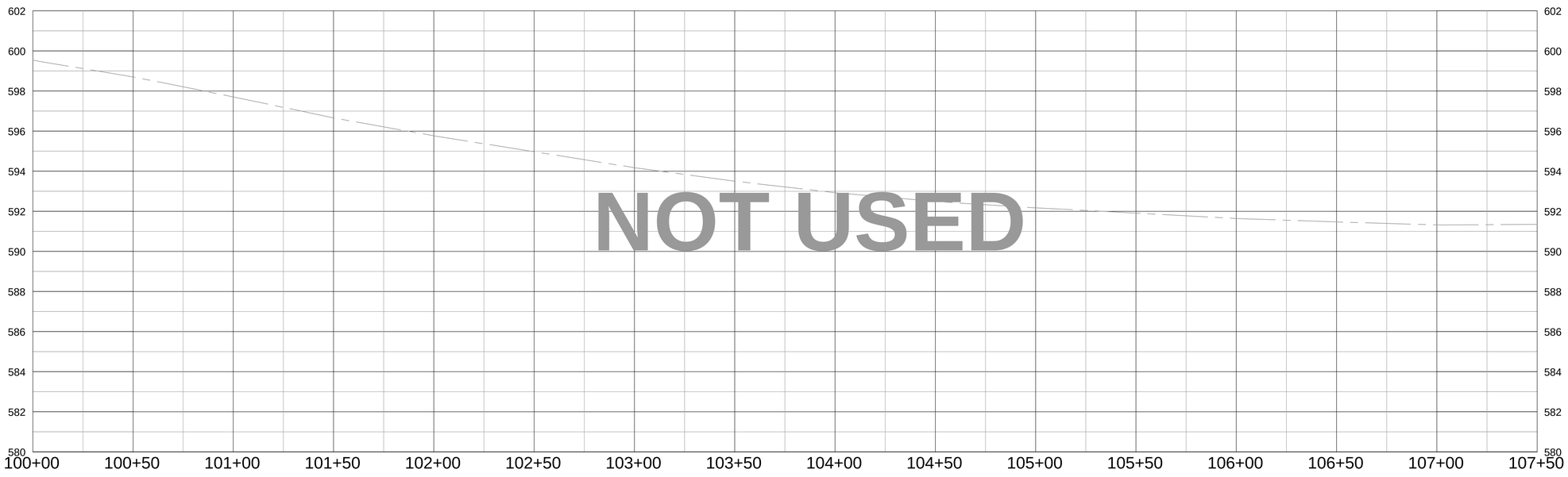
Project No.:	200-11740-10003
Designed By:	KLW
Drawn By:	PD
Checked By:	JPT

C-1100

Bar Measures 1 inch

9/30/2014 10:34:16 AM - P:\IER\11740\200-11740-10003\CAD\SHEETFILES\INTAKE AND TRANSMISSIONRW-C-1100 KEY PLAN.DWG - DAVALOS, PAULA





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BID SET

ALABAMA LICENSED PROFESSIONAL ENGINEER CHRISTIAN P. DUNAWAY 10124

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

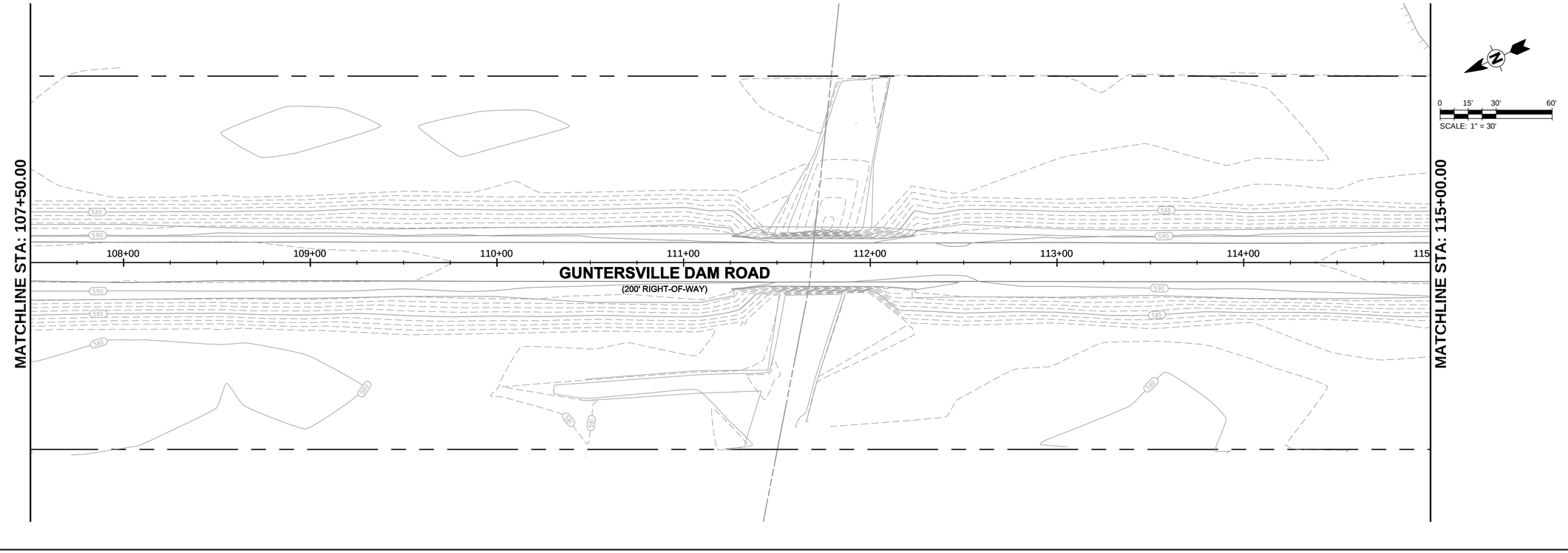
RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

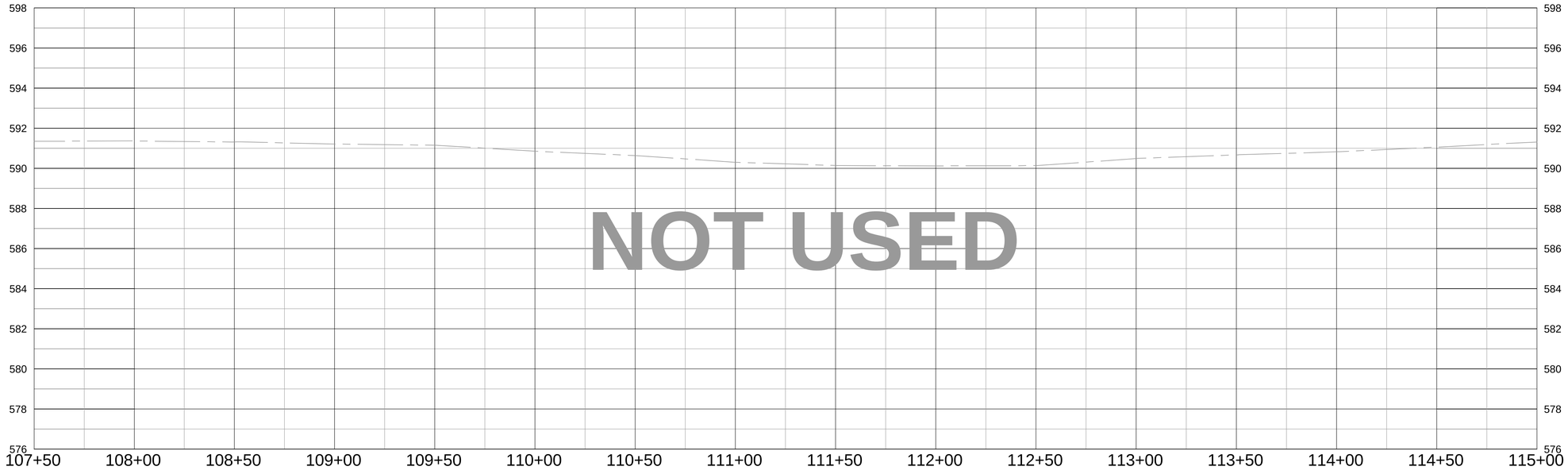
PLAN AND PROFILE STA: 100+00 TO 107+50

Project No.:	200-11740-10003
Designed By:	KLW
Drawn By:	PD
Checked By:	JPT

C-1101

Bar Measures 1 inch





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BID SET

ALABAMA LICENSED PROFESSIONAL ENGINEER
CHRISTIAN P. CLINKSCALES
10126714

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

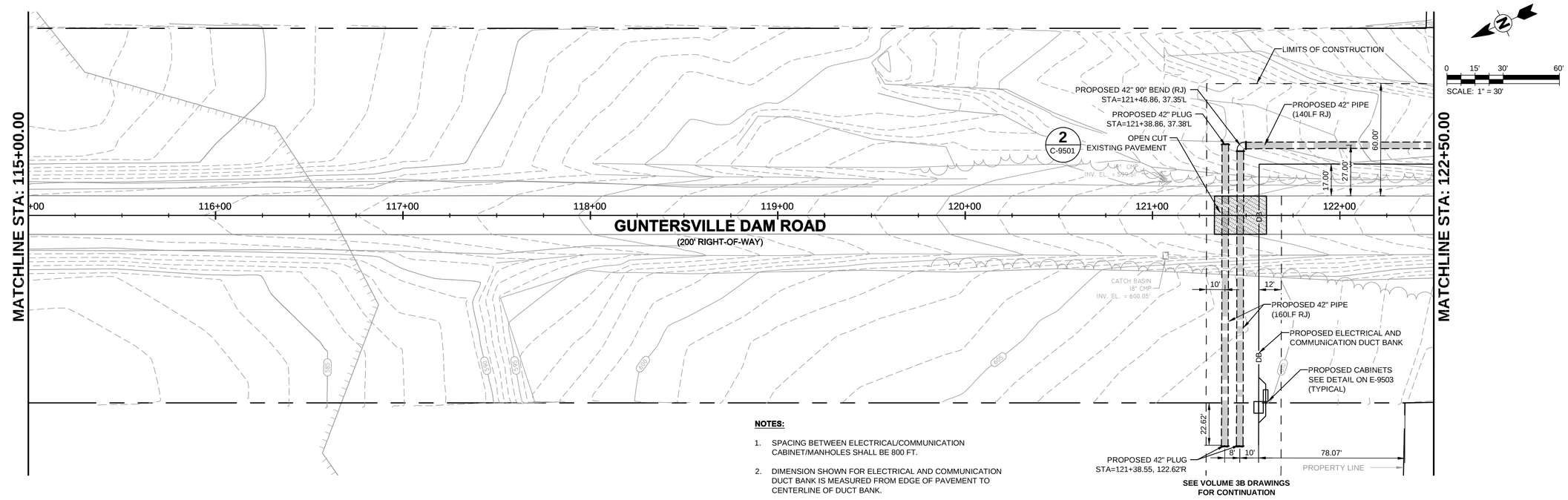
RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

PLAN AND PROFILE STA: 107+50 TO 115+00

Project No.:	200-11740-10003
Designed By:	KLW
Drawn By:	PD
Checked By:	JPT

C-1102

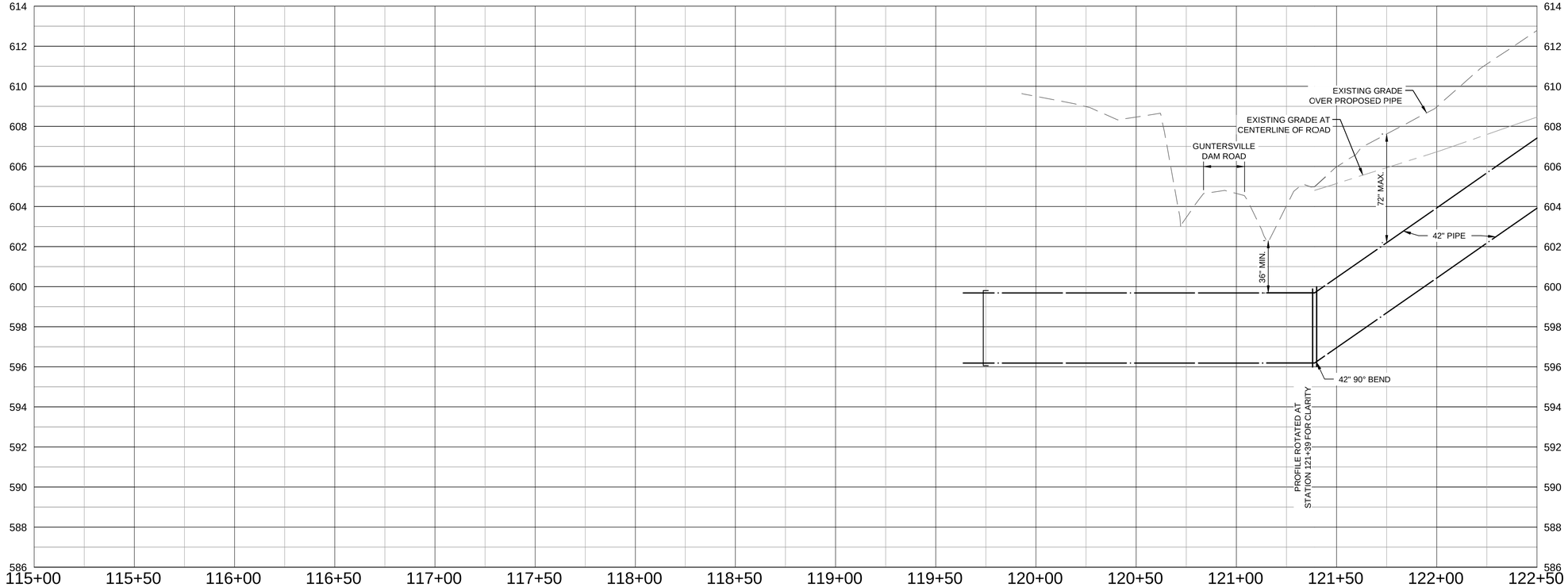
Bar Measures 1 inch



NOTES:

1. SPACING BETWEEN ELECTRICAL/COMMUNICATION CABINET/MANHOLES SHALL BE 800 FT.
2. DIMENSION SHOWN FOR ELECTRICAL AND COMMUNICATION DUCT BANK IS MEASURED FROM EDGE OF PAVEMENT TO CENTERLINE OF DUCT BANK.

SCALE
HORIZ. 1" = 30'
VERT. 1" = 3'



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BID SET

ALABAMA LICENSED PROFESSIONAL ENGINEER
CHRISTIAN P. DUNAWAY
10 | 24 | 14

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

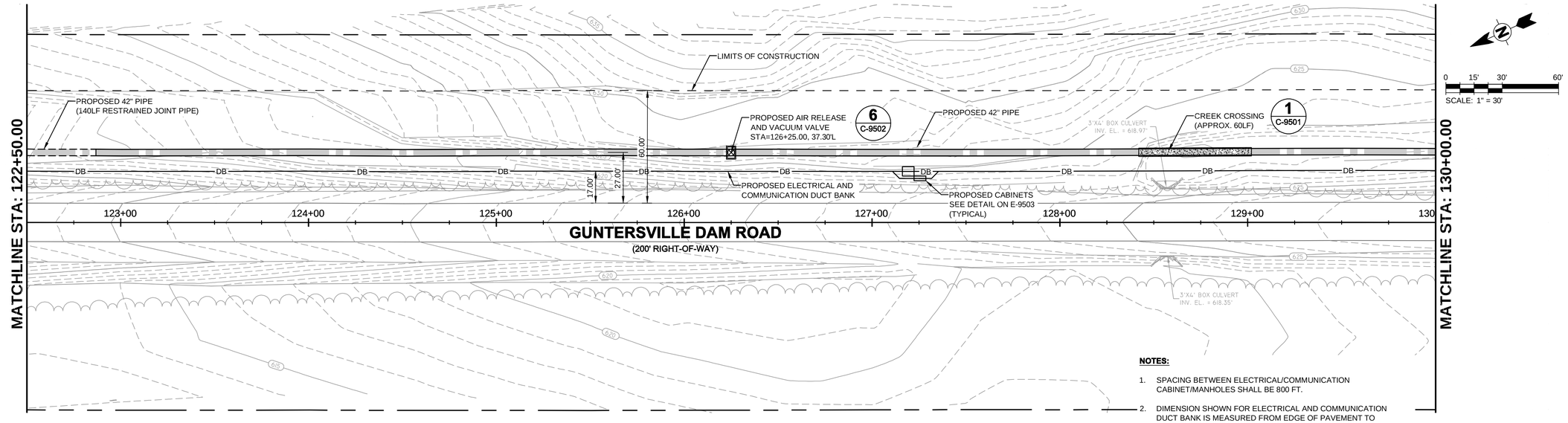
RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

PLAN AND PROFILE STA: 115+00 TO 122+50

Project No.:	200-11740-10003
Designed By:	KLW
Drawn By:	PD
Checked By:	JPT

C-1103

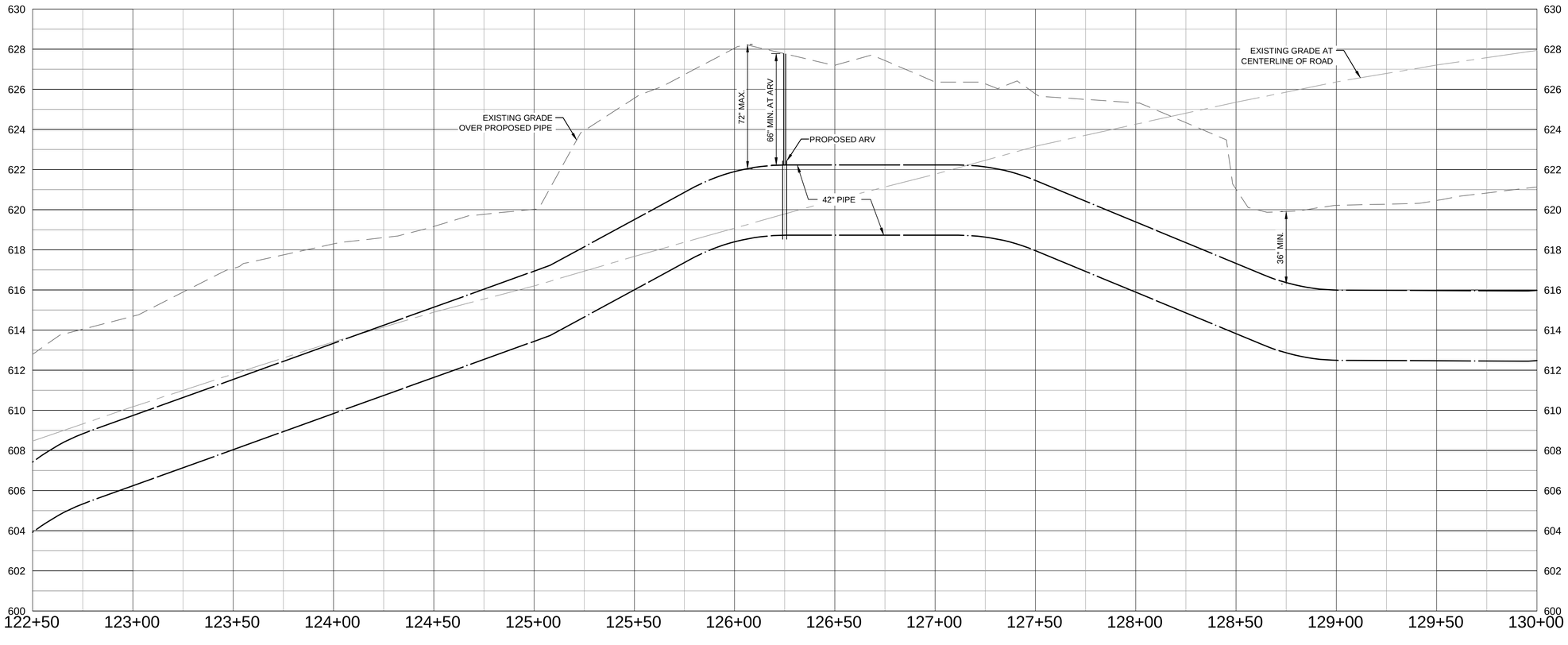
Bar Measures 1 inch



NOTES:

1. SPACING BETWEEN ELECTRICAL/COMMUNICATION CABINET/MANHOLES SHALL BE 800 FT.
2. DIMENSION SHOWN FOR ELECTRICAL AND COMMUNICATION DUCT BANK IS MEASURED FROM EDGE OF PAVEMENT TO CENTERLINE OF DUCT BANK.

SCALE
HORIZ. 1" = 30'
VERT. 1" = 3'



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BID SET

ALABAMA LICENSED PROFESSIONAL ENGINEER
CHRISTIAN P. DUNAWAY
10126 '14

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

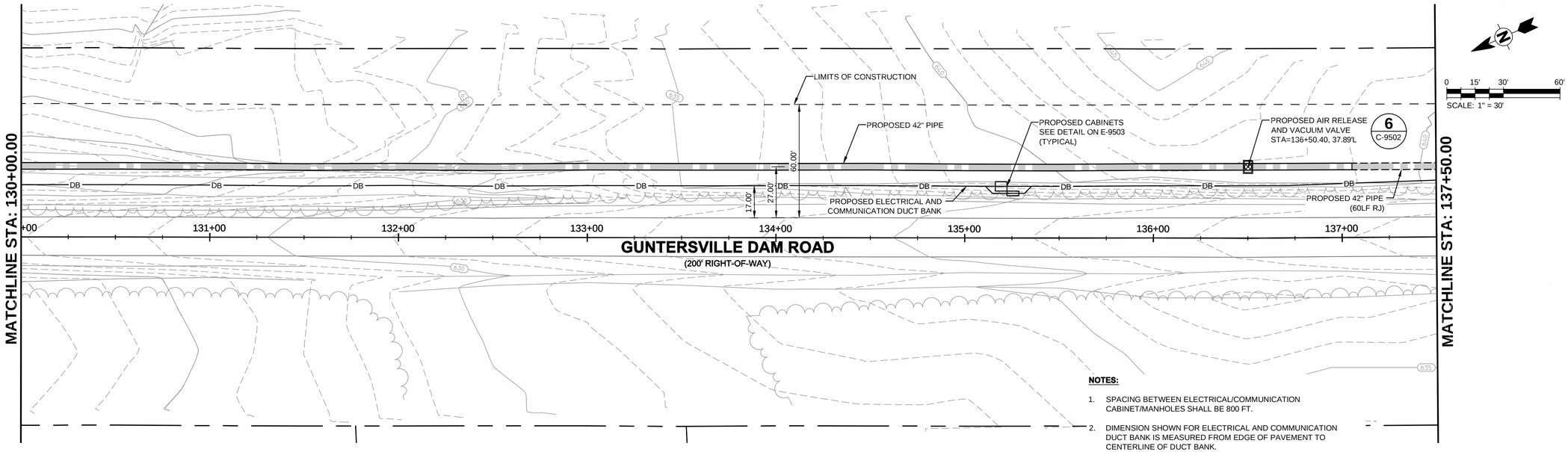
RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

PLAN AND PROFILE
STA: 122+50 TO 130+00

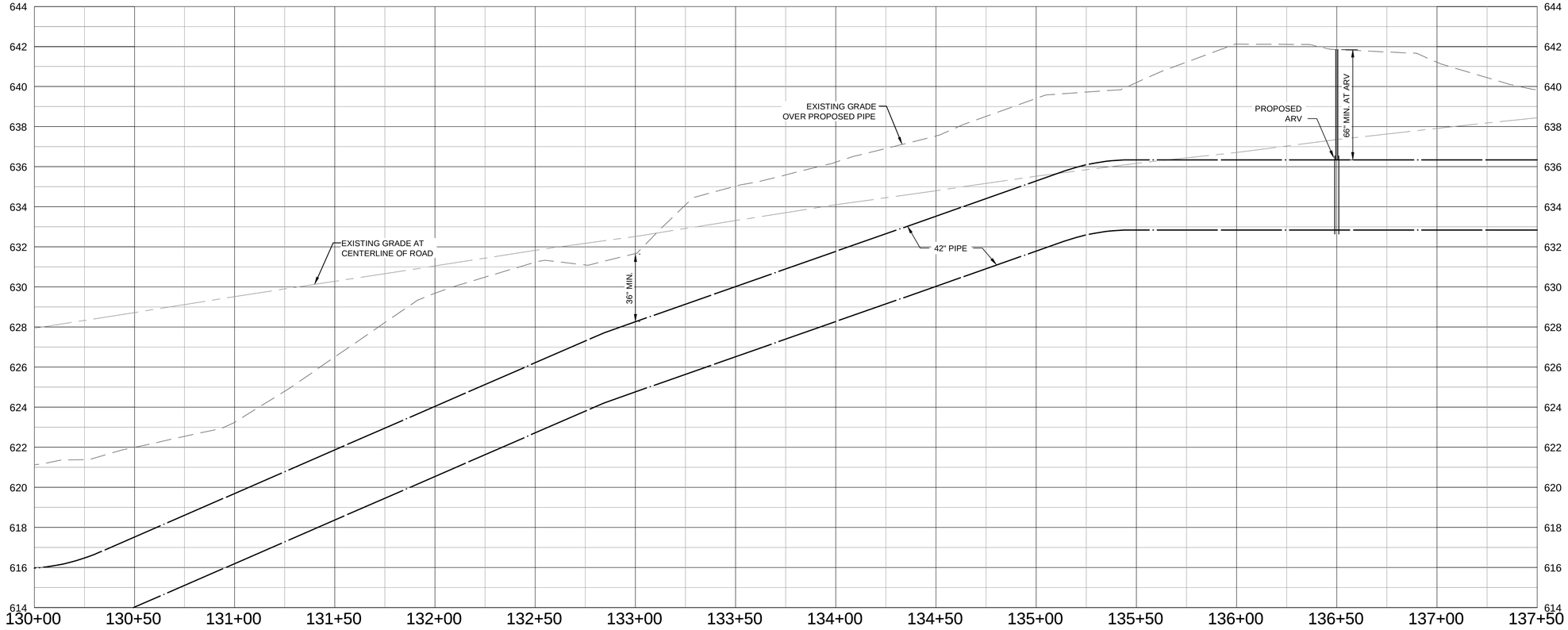
Project No.:	200-11740-10003
Designed By:	KLW
Drawn By:	PD
Checked By:	JPT

C-1104

Bar Measures 1 inch



SCALE
HORIZ. 1" = 30'
VERT. 1" = 3'



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BID SET

ALABAMA LICENSED PROFESSIONAL ENGINEER
CHRISTIAN P. DUNAWAY
10124

MARK	DATE	DESCRIPTION	BY

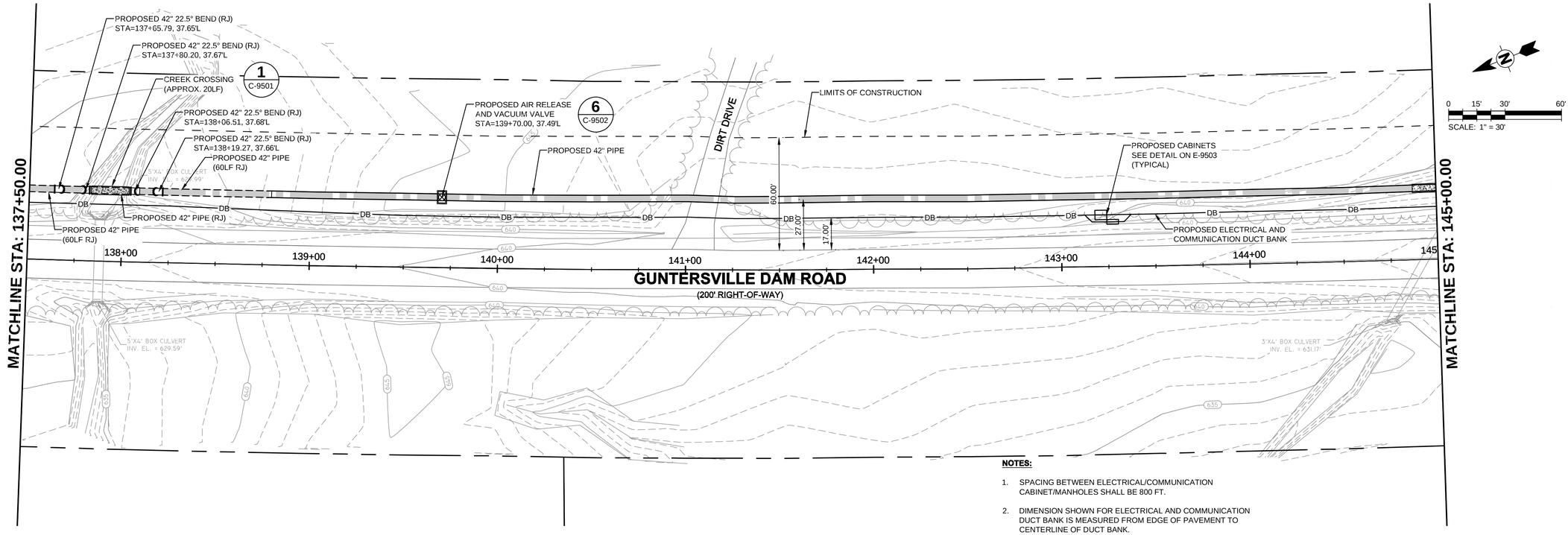
HUNTSVILLE UTILITIES
RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

PLAN AND PROFILE
STA: 130+00 TO 137+50

Project No.:	200-11740-10003
Designed By:	KLW
Drawn By:	PD
Checked By:	JPT

C-1105

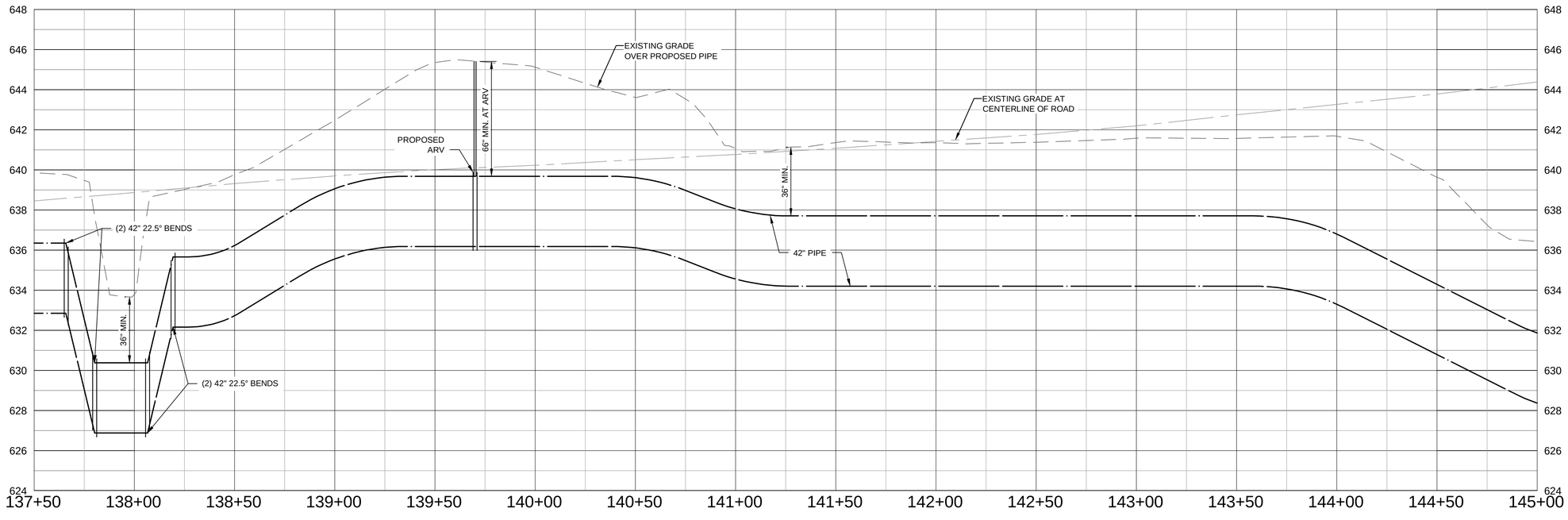
Bar Measures 1 inch



NOTES:

1. SPACING BETWEEN ELECTRICAL/COMMUNICATION CABINET/MANHOLES SHALL BE 800 FT.
2. DIMENSION SHOWN FOR ELECTRICAL AND COMMUNICATION DUCT BANK IS MEASURED FROM EDGE OF PAVEMENT TO CENTERLINE OF DUCT BANK.

SCALE
HORIZ. 1" = 30'
VERT. 1" = 3'



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ALABAMA LICENSED PROFESSIONAL ENGINEER
CHRISTIAN P. DUNAWAY
10126 14

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

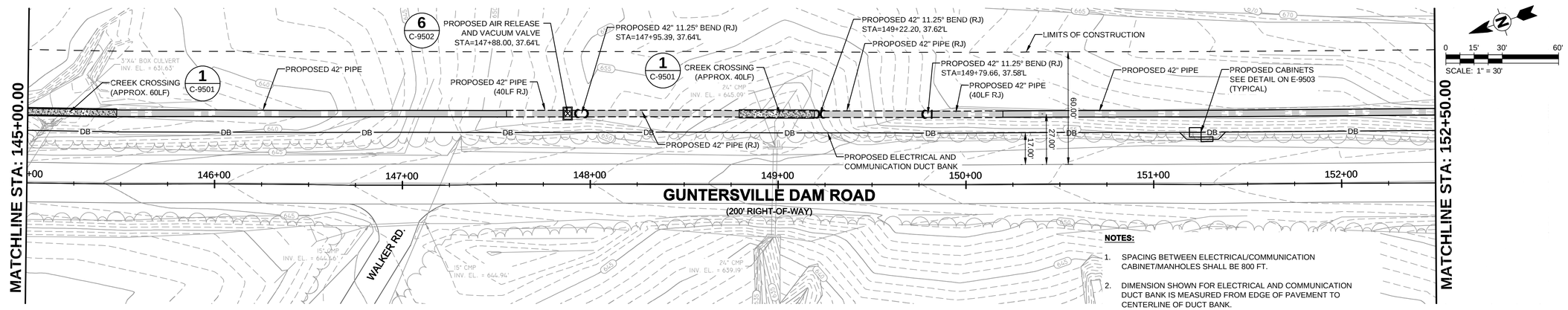
RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

PLAN AND PROFILE STA: 137+50 TO 145+00

Project No.:	200-11740-10003
Designed By:	KLW
Drawn By:	PD
Checked By:	JPT

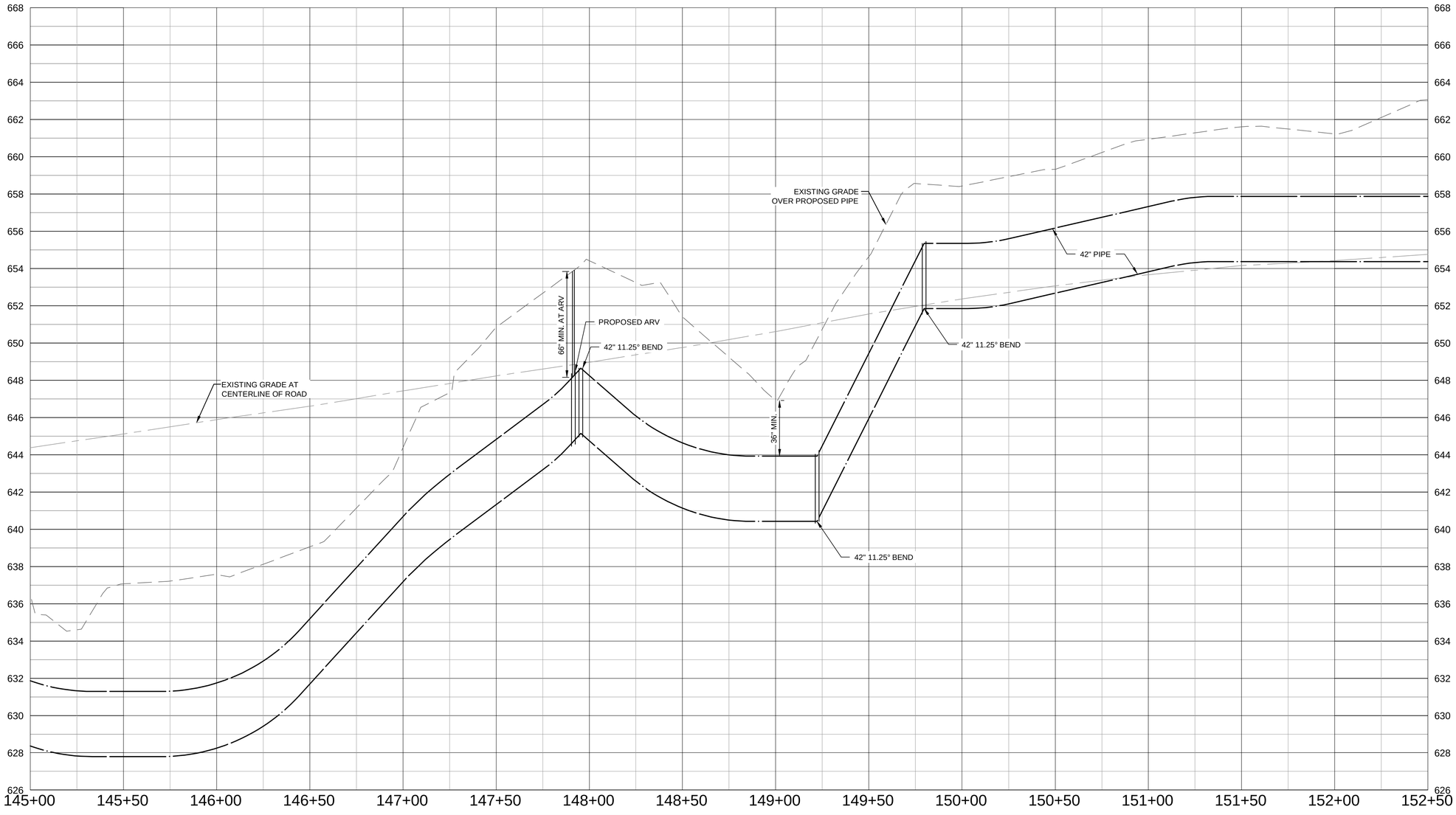
C-1106

Bar Measures 1 inch



NOTES:

1. SPACING BETWEEN ELECTRICAL/COMMUNICATION CABINET/MANHOLES SHALL BE 800 FT.
2. DIMENSION SHOWN FOR ELECTRICAL AND COMMUNICATION DUCT BANK IS MEASURED FROM EDGE OF PAVEMENT TO CENTERLINE OF DUCT BANK.



SCALE
HORIZ. 1" = 30'
VERT. 1" = 3'

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ALABAMA LICENSED PROFESSIONAL ENGINEER CHRISTIAN P. DUNAWAY 10 OF 14

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

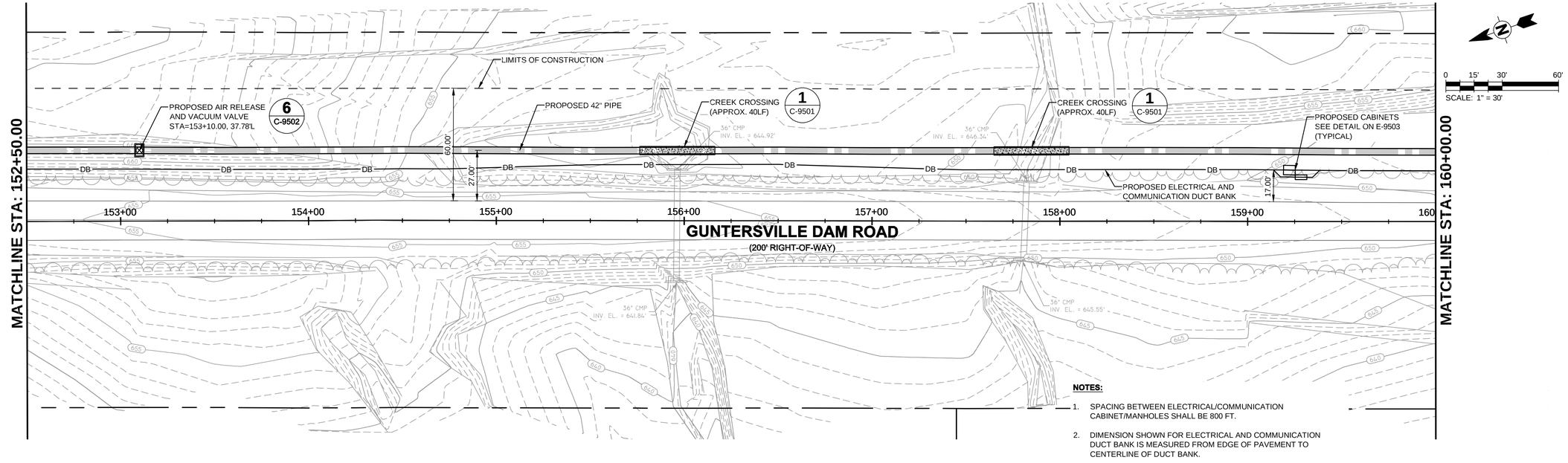
RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

PLAN AND PROFILE STA: 145+00 TO 152+50

Project No.:	200-11740-10003
Designed By:	KLW
Drawn By:	PD
Checked By:	JPT

C-1107

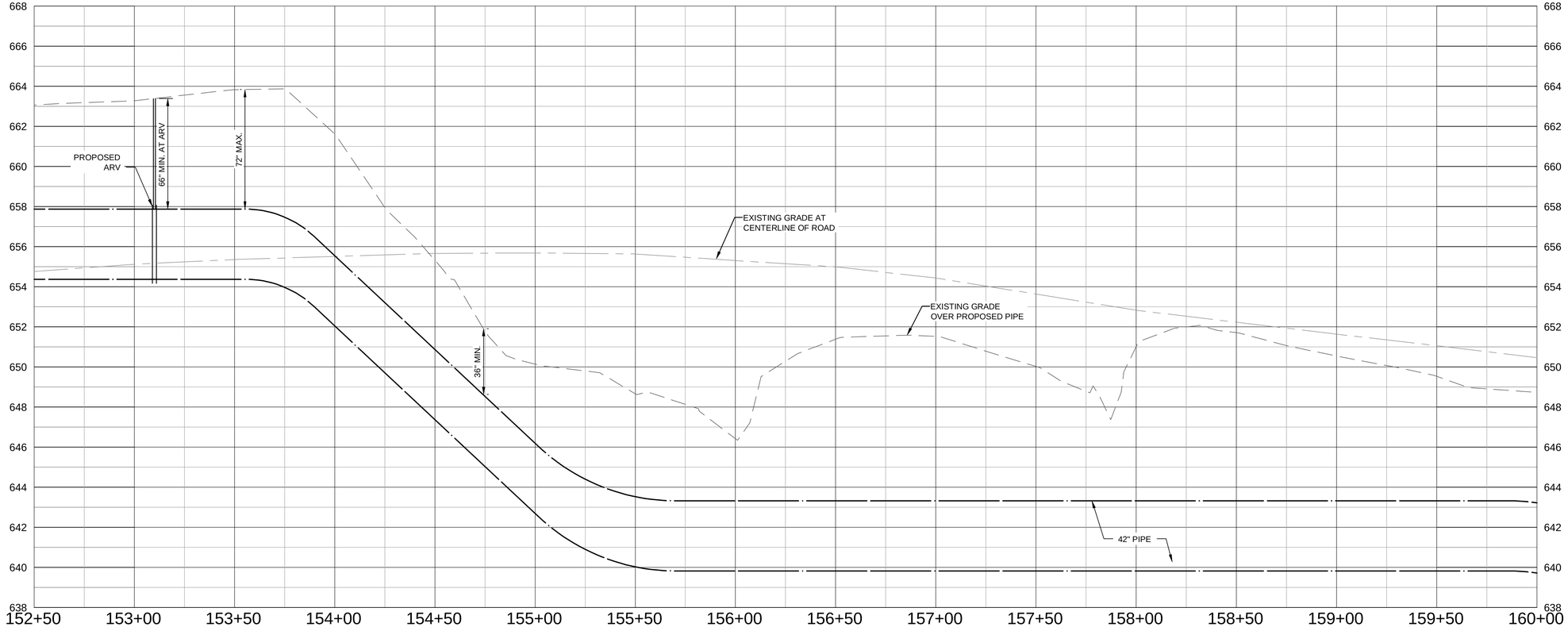
Bar Measures 1 inch



NOTES:

1. SPACING BETWEEN ELECTRICAL/COMMUNICATION CABINET/MANHOLES SHALL BE 800 FT.
2. DIMENSION SHOWN FOR ELECTRICAL AND COMMUNICATION DUCT BANK IS MEASURED FROM EDGE OF PAVEMENT TO CENTERLINE OF DUCT BANK.

SCALE
HORIZ. 1" = 30'
VERT. 1" = 3'



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CHRISTIAN P. DUNAWAY
10126 19

MARK	DATE	DESCRIPTION	BY

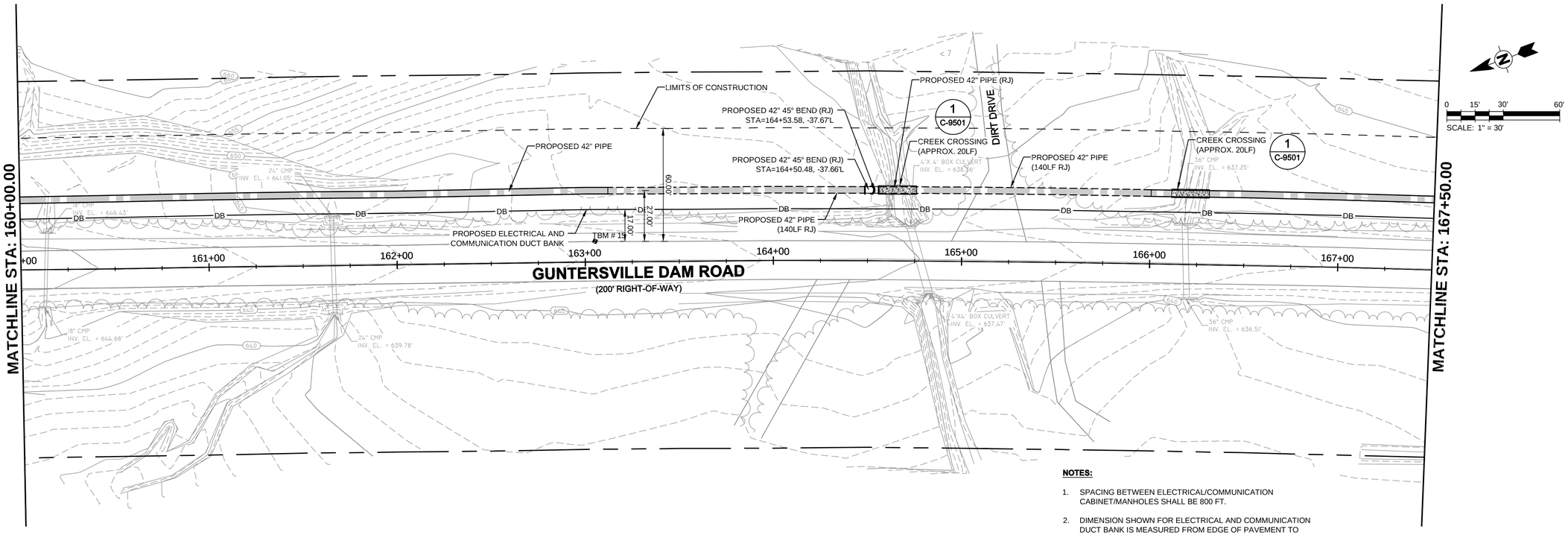
HUNTSVILLE UTILITIES
RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

PLAN AND PROFILE STA: 152+50 TO 160+00

Project No.:	200-11740-10003
Designed By:	KL
Drawn By:	PD
Checked By:	JPT

C-1108

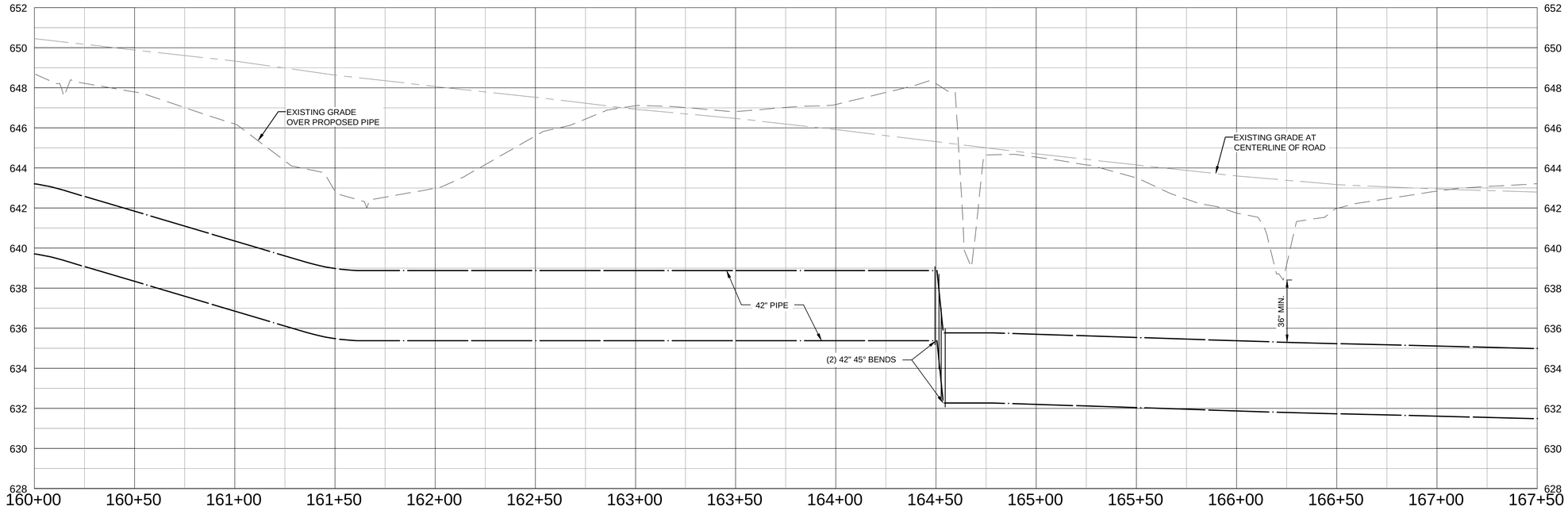
Bar Measures 1 inch



NOTES:

1. SPACING BETWEEN ELECTRICAL/COMMUNICATION CABINET/MANHOLES SHALL BE 800 FT.
2. DIMENSION SHOWN FOR ELECTRICAL AND COMMUNICATION DUCT BANK IS MEASURED FROM EDGE OF PAVEMENT TO CENTERLINE OF DUCT BANK.

SCALE
HORIZ. 1" = 30'
VERT. 1" = 3'



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MARK	DATE	DESCRIPTION	BY

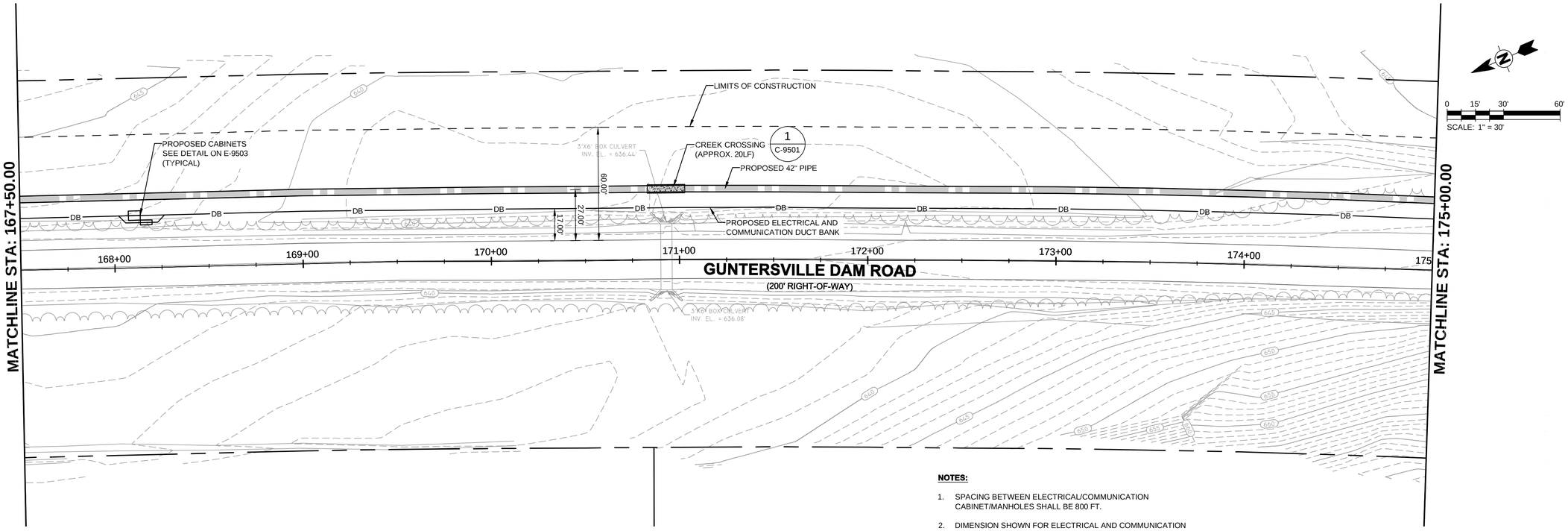
HUNTSVILLE UTILITIES
RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

PLAN AND PROFILE STA: 160+00 TO 167+50

Project No.:	200-11740-10003
Designed By:	KLW
Drawn By:	PD
Checked By:	JPT

C-1109

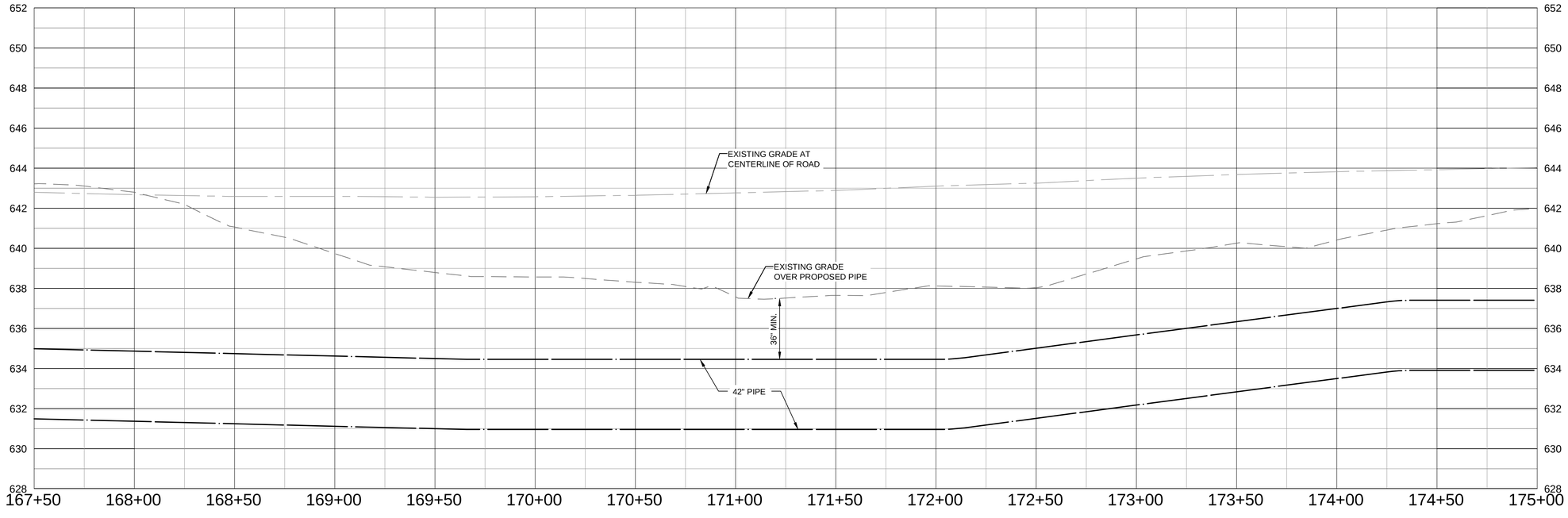
Bar Measures 1 inch



NOTES:

1. SPACING BETWEEN ELECTRICAL/COMMUNICATION CABINET/MANHOLES SHALL BE 800 FT.
2. DIMENSION SHOWN FOR ELECTRICAL AND COMMUNICATION DUCT BANK IS MEASURED FROM EDGE OF PAVEMENT TO CENTERLINE OF DUCT BANK.

SCALE
HORIZ. 1" = 30'
VERT. 1" = 3'



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10126

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

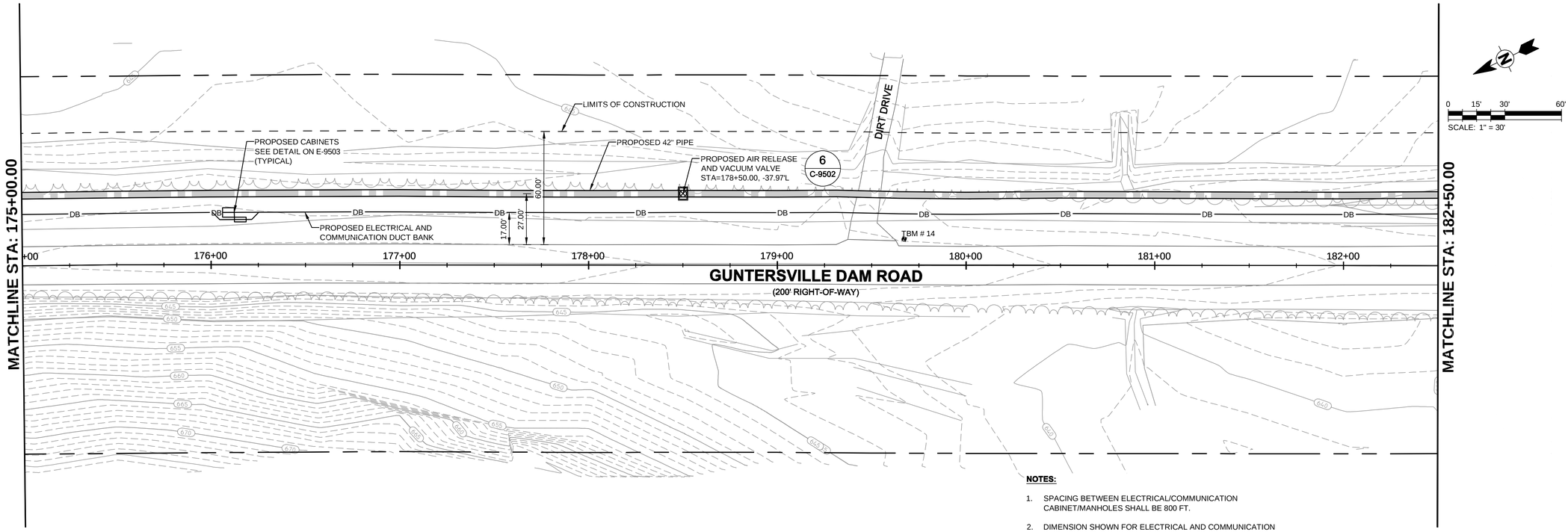
RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

PLAN AND PROFILE STA: 167+50 TO 175+00

Project No.:	200-11740-10003
Designed By:	KLW
Drawn By:	PD
Checked By:	JPT

C-1110

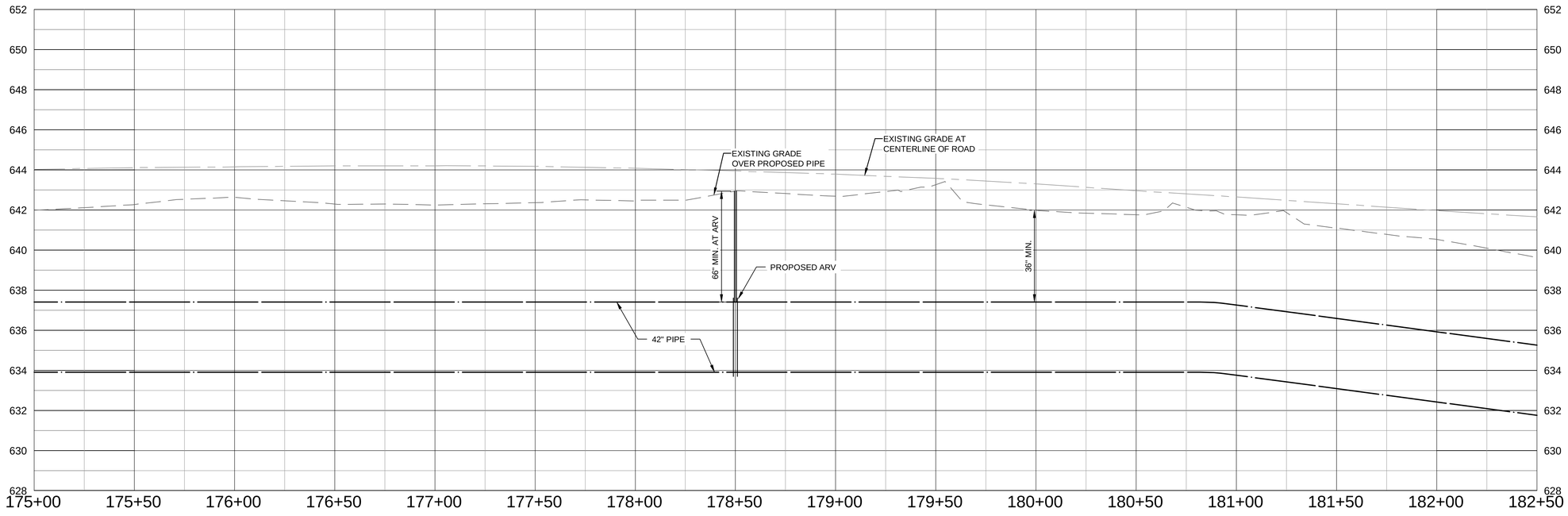
Bar Measures 1 inch



NOTES:

1. SPACING BETWEEN ELECTRICAL/COMMUNICATION CABINET/MANHOLES SHALL BE 800 FT.
2. DIMENSION SHOWN FOR ELECTRICAL AND COMMUNICATION DUCT BANK IS MEASURED FROM EDGE OF PAVEMENT TO CENTERLINE OF DUCT BANK.

SCALE
HORIZ. 1" = 30'
VERT. 1" = 3'



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MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

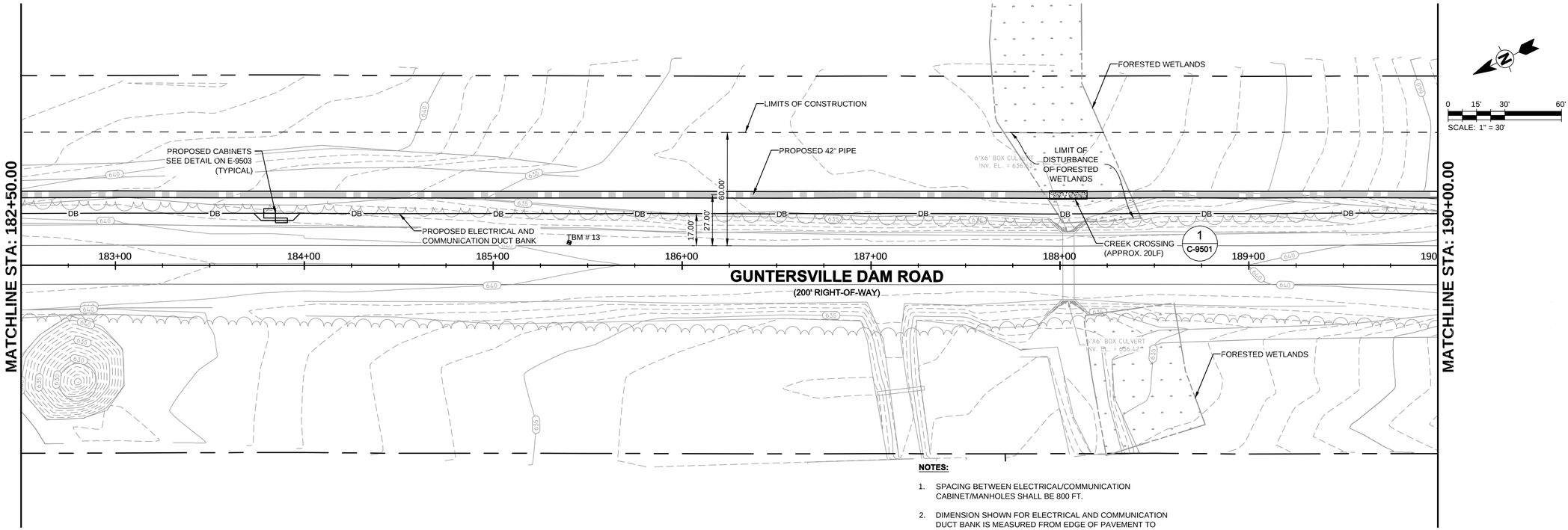
RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

PLAN AND PROFILE STA: 175+00 TO 182+50

Project No.:	200-11740-10003
Designed By:	KLW
Drawn By:	PD
Checked By:	JPT

C-1111

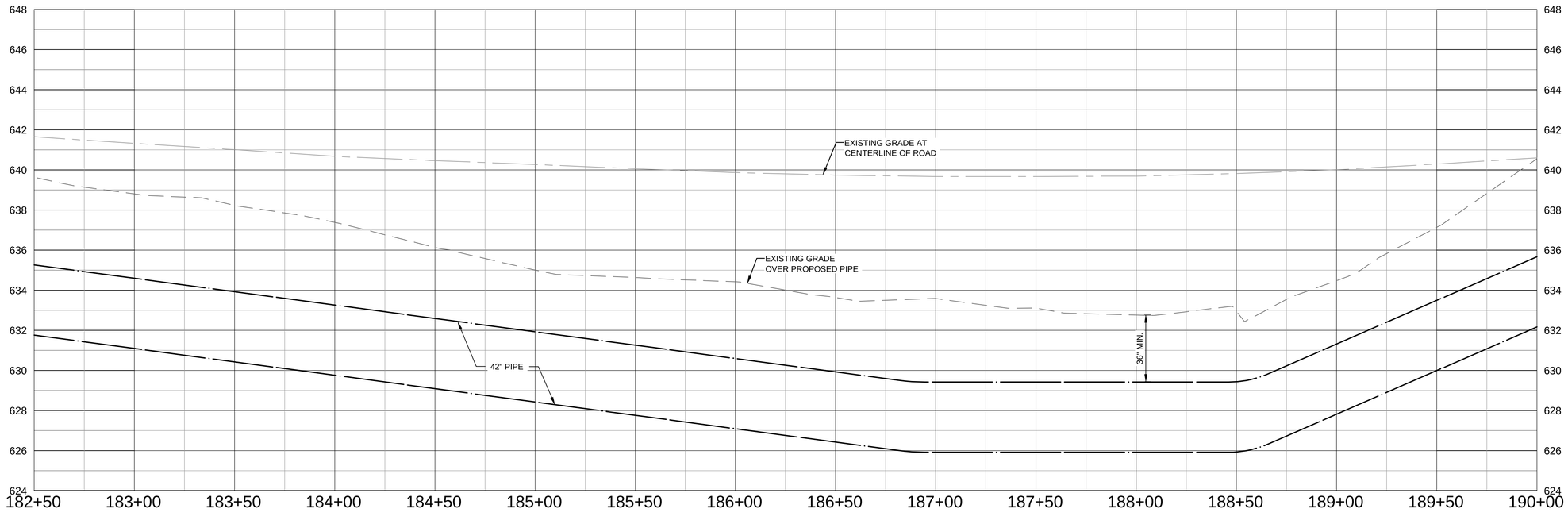
Bar Measures 1 inch



NOTES:

1. SPACING BETWEEN ELECTRICAL/COMMUNICATION CABINET/MANHOLES SHALL BE 800 FT.
2. DIMENSION SHOWN FOR ELECTRICAL AND COMMUNICATION DUCT BANK IS MEASURED FROM EDGE OF PAVEMENT TO CENTERLINE OF DUCT BANK.

SCALE
HORIZ. 1" = 30'
VERT. 1" = 3'



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MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

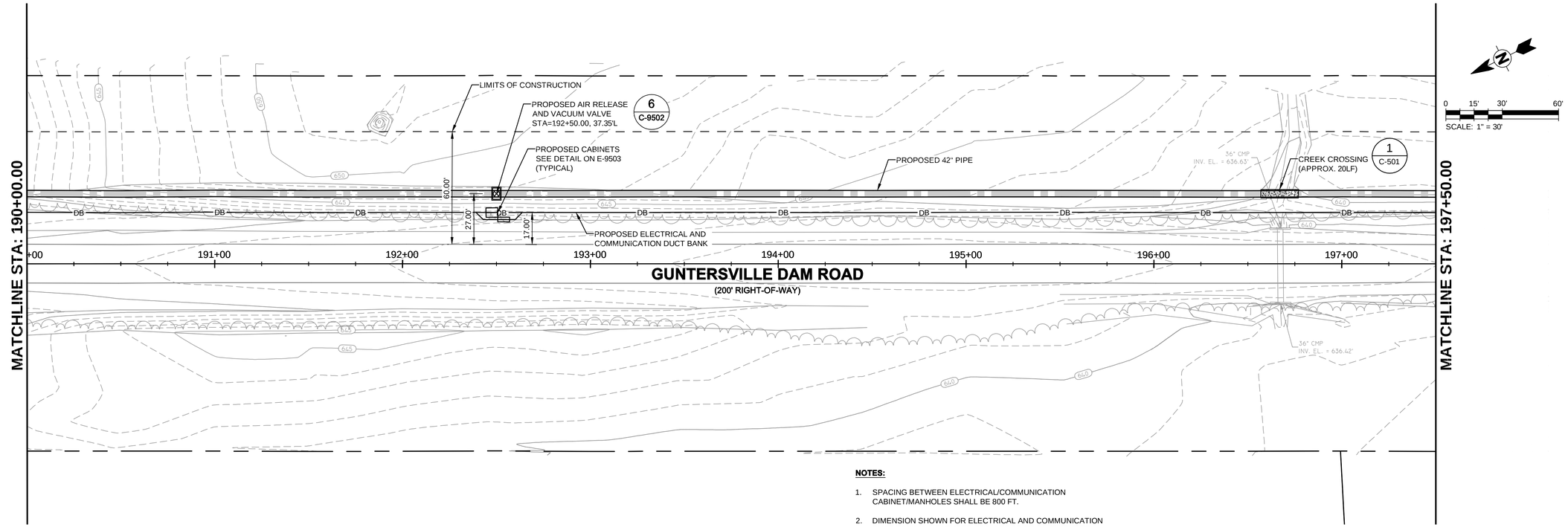
PLAN AND PROFILE STA: 182+50 TO 190+00

Project No.:	200-11740-10003
Designed By:	KLW
Drawn By:	PD
Checked By:	JPT

C-1112

Bar Measures 1 inch

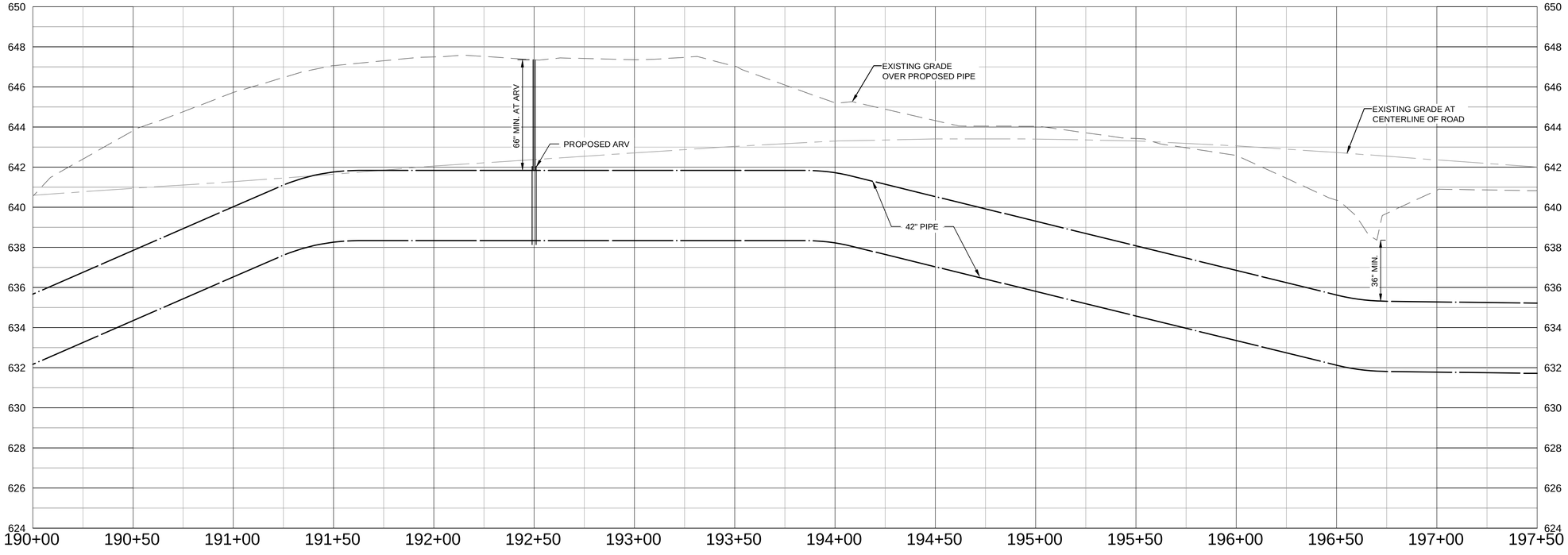
9/30/2014 10:47:32 AM - P:\IER\117\40\200-11740-10003\CAD\SHEETFILES\INTAKE AND TRANSMISSION\RW-C-1109 TO C-1112.DWG - DAVALOS, PAULA



NOTES:

1. SPACING BETWEEN ELECTRICAL/COMMUNICATION CABINET/MANHOLES SHALL BE 800 FT.
2. DIMENSION SHOWN FOR ELECTRICAL AND COMMUNICATION DUCT BANK IS MEASURED FROM EDGE OF PAVEMENT TO CENTERLINE OF DUCT BANK.

SCALE
HORIZ. 1" = 30'
VERT. 1" = 3'



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CHRISTIAN P. DUNAWAY
10124 14

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

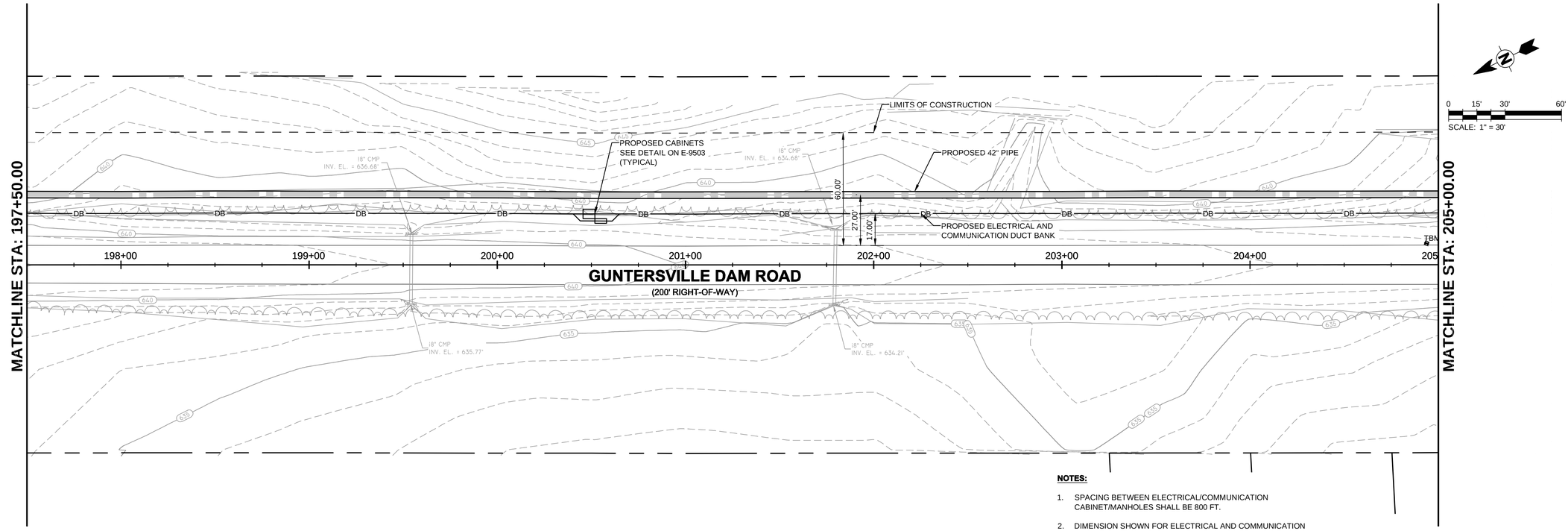
RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

PLAN AND PROFILE STA: 190+00 TO 197+50

Project No.:	200-11740-10003
Designed By:	KLW
Drawn By:	PD
Checked By:	JPT

C-1113

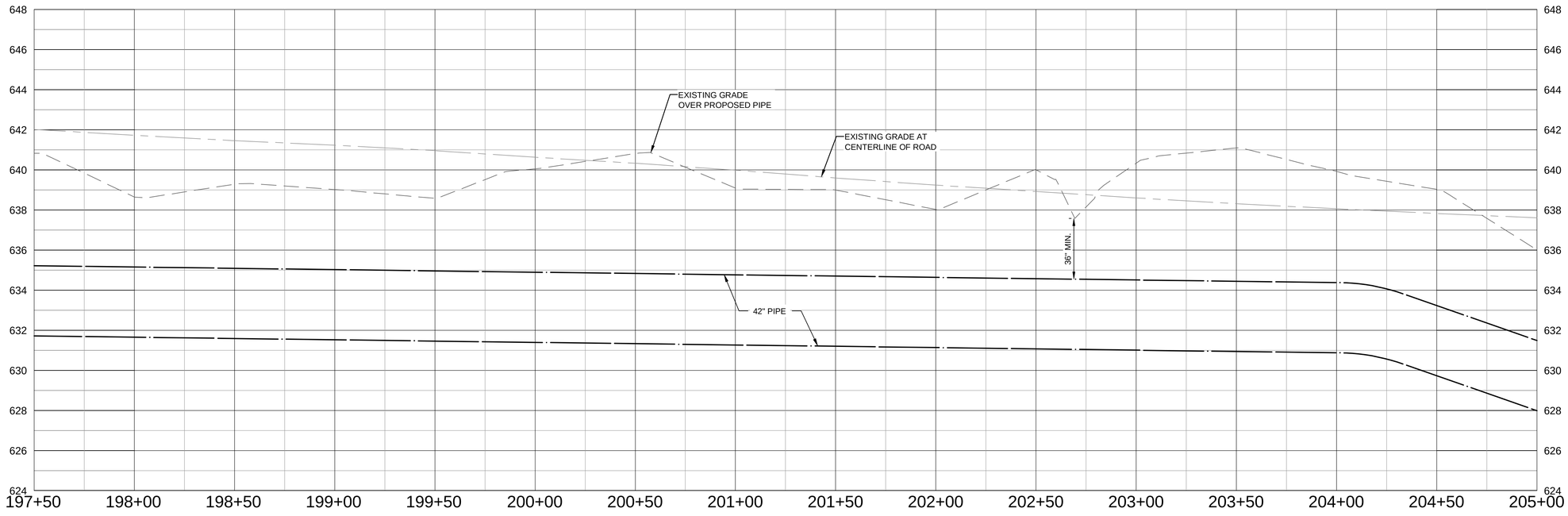
Bar Measures 1 inch



NOTES:

1. SPACING BETWEEN ELECTRICAL/COMMUNICATION CABINET/MANHOLES SHALL BE 800 FT.
2. DIMENSION SHOWN FOR ELECTRICAL AND COMMUNICATION DUCT BANK IS MEASURED FROM EDGE OF PAVEMENT TO CENTERLINE OF DUCT BANK.

SCALE
HORIZ. 1" = 30'
VERT. 1" = 3'



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CHRISTIAN P. DUNIGAN
10124 14

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

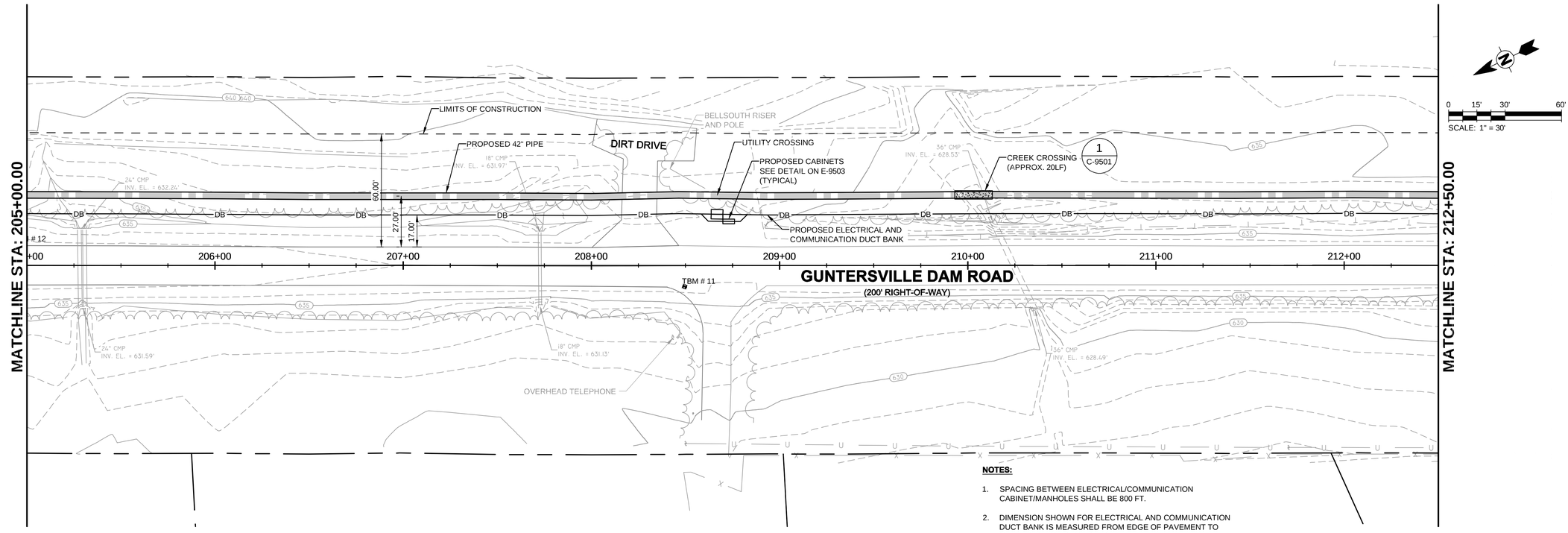
RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

PLAN AND PROFILE STA: 197+50 TO 205+00

Project No.:	200-11740-10003
Designed By:	KLW
Drawn By:	PD
Checked By:	JPT

C-1114

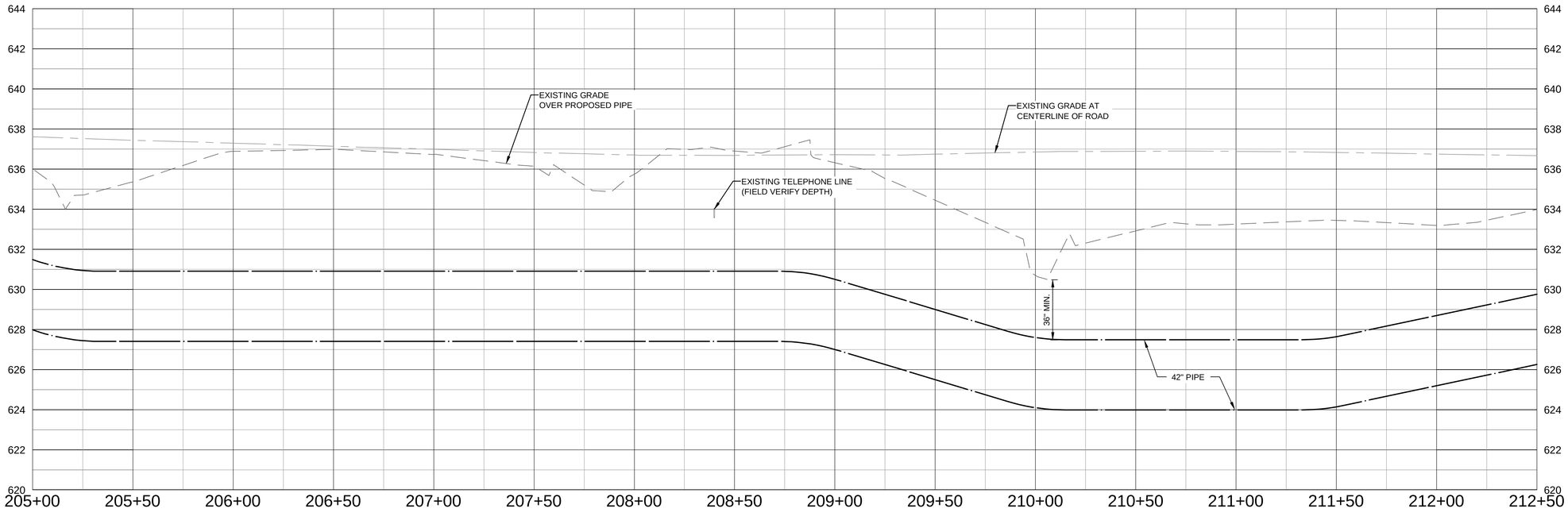
Bar Measures 1 inch



NOTES:

1. SPACING BETWEEN ELECTRICAL/COMMUNICATION CABINET/MANHOLES SHALL BE 800 FT.
2. DIMENSION SHOWN FOR ELECTRICAL AND COMMUNICATION DUCT BANK IS MEASURED FROM EDGE OF PAVEMENT TO CENTERLINE OF DUCT BANK.

SCALE
HORIZ. 1" = 30'
VERT. 1" = 3'



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MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

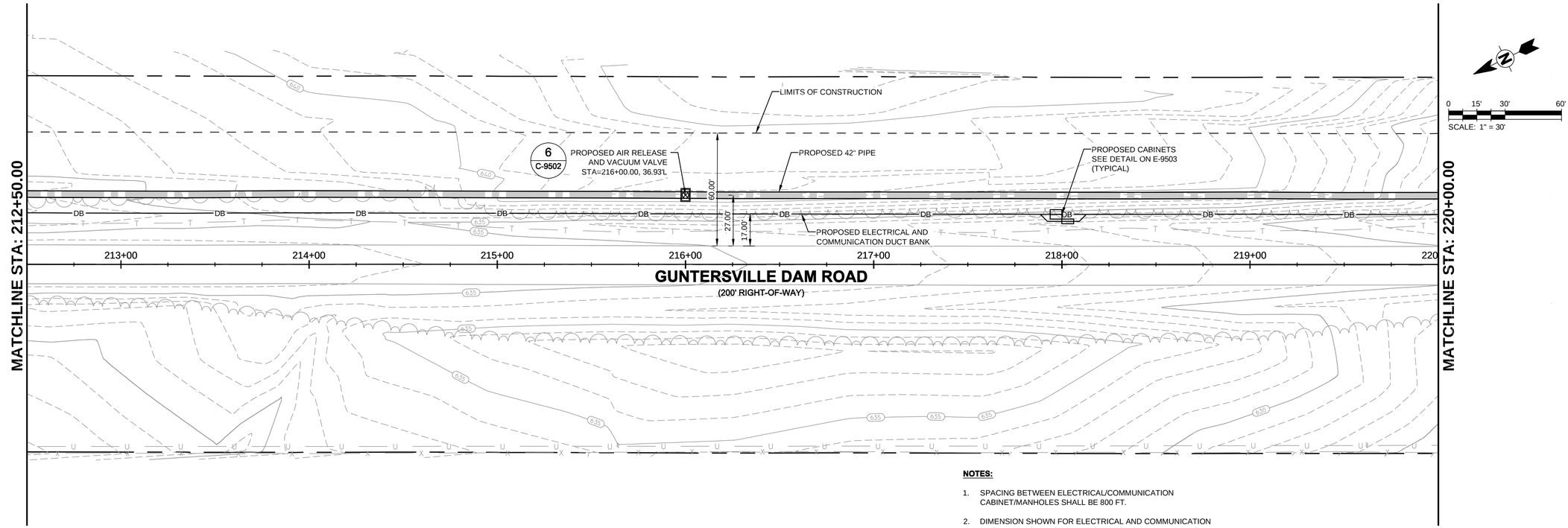
PLAN AND PROFILE STA: 205+00 TO 212+50

Project No.:	200-11740-10003
Designed By:	KLW
Drawn By:	PD
Checked By:	JPT

C-1115

Bar Measures 1 inch

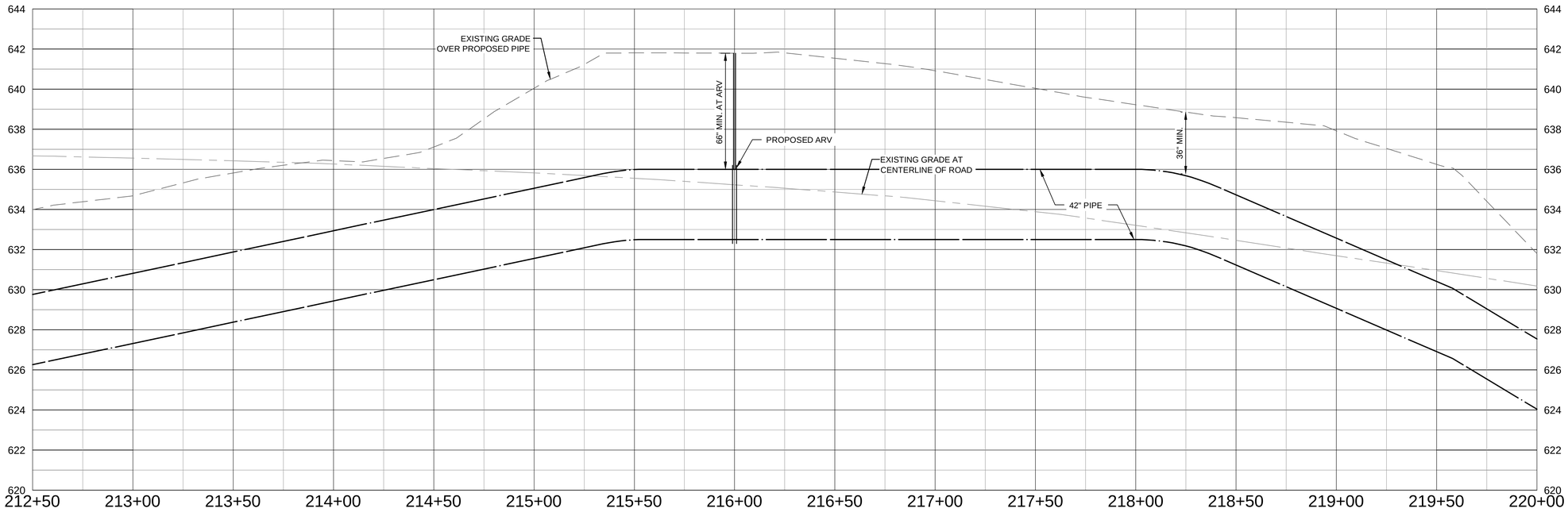
9/30/2014 10:51:14 AM - P:\IER\11740\200-11740-10003\CAD\SHEETFILES\INTAKE AND TRANSMISSION\RW-C-1113 TO C-1116.DWG - DAVALOS, PAULA



NOTES:

1. SPACING BETWEEN ELECTRICAL/COMMUNICATION CABINET/MANHOLES SHALL BE 800 FT.
2. DIMENSION SHOWN FOR ELECTRICAL AND COMMUNICATION DUCT BANK IS MEASURED FROM EDGE OF PAVEMENT TO CENTERLINE OF DUCT BANK.

SCALE
HORIZ. 1" = 30'
VERT. 1" = 3'



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MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

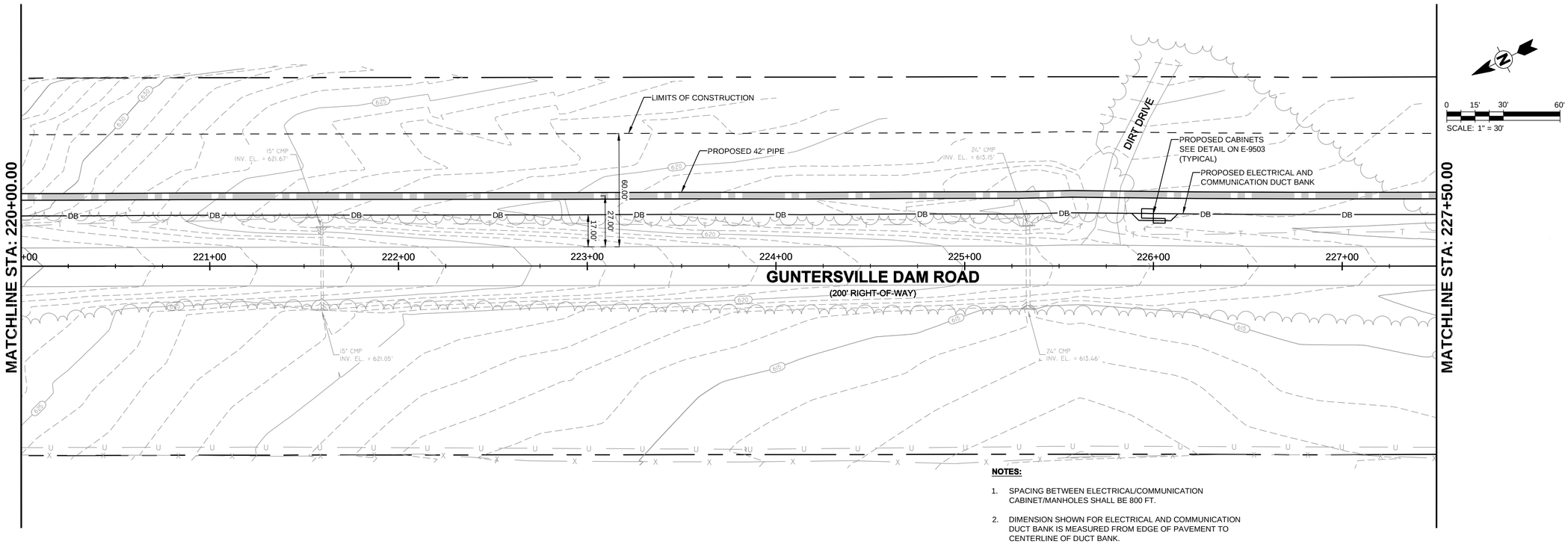
RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

PLAN AND PROFILE
STA: 212+50 TO 220+00

Project No.:	200-11740-10003
Designed By:	KLW
Drawn By:	PD
Checked By:	JPT

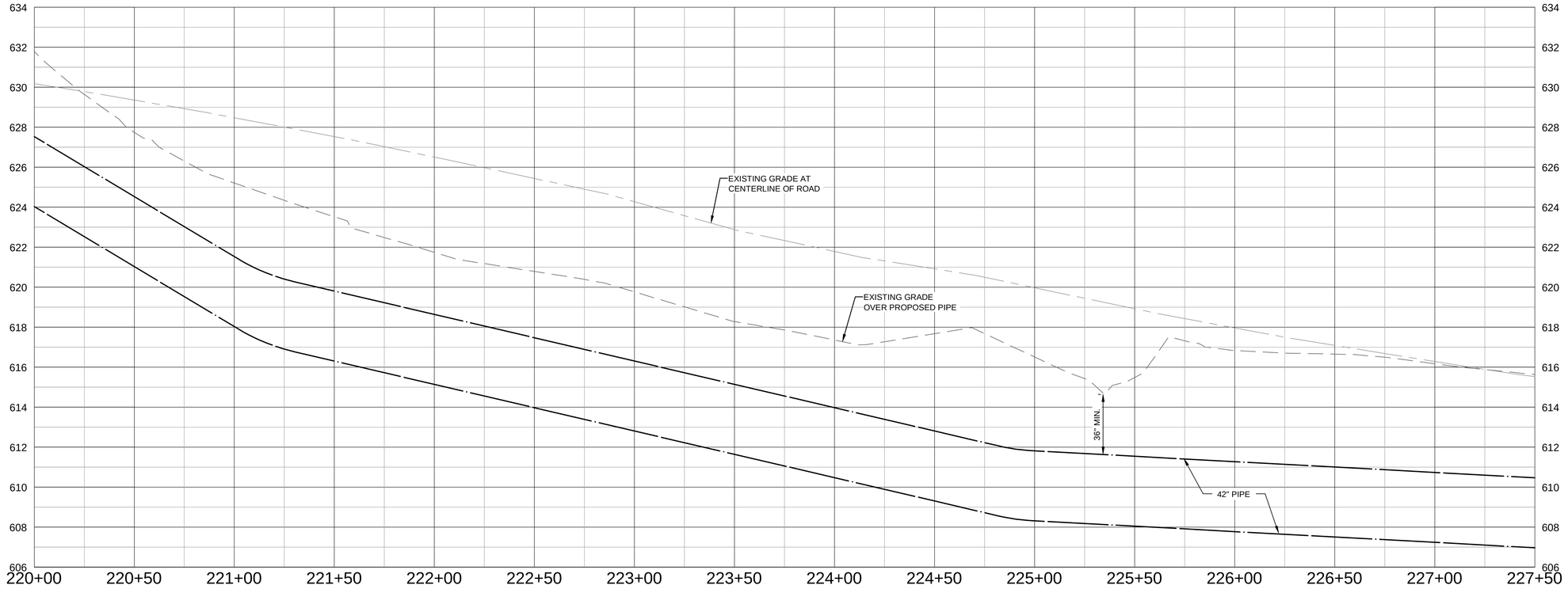
C-1116

Bar Measures 1 inch



NOTES:

1. SPACING BETWEEN ELECTRICAL/COMMUNICATION CABINET/MANHOLES SHALL BE 800 FT.
2. DIMENSION SHOWN FOR ELECTRICAL AND COMMUNICATION DUCT BANK IS MEASURED FROM EDGE OF PAVEMENT TO CENTERLINE OF DUCT BANK.



SCALE
HORIZ. 1" = 30'
VERT. 1" = 3'

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10126 14

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

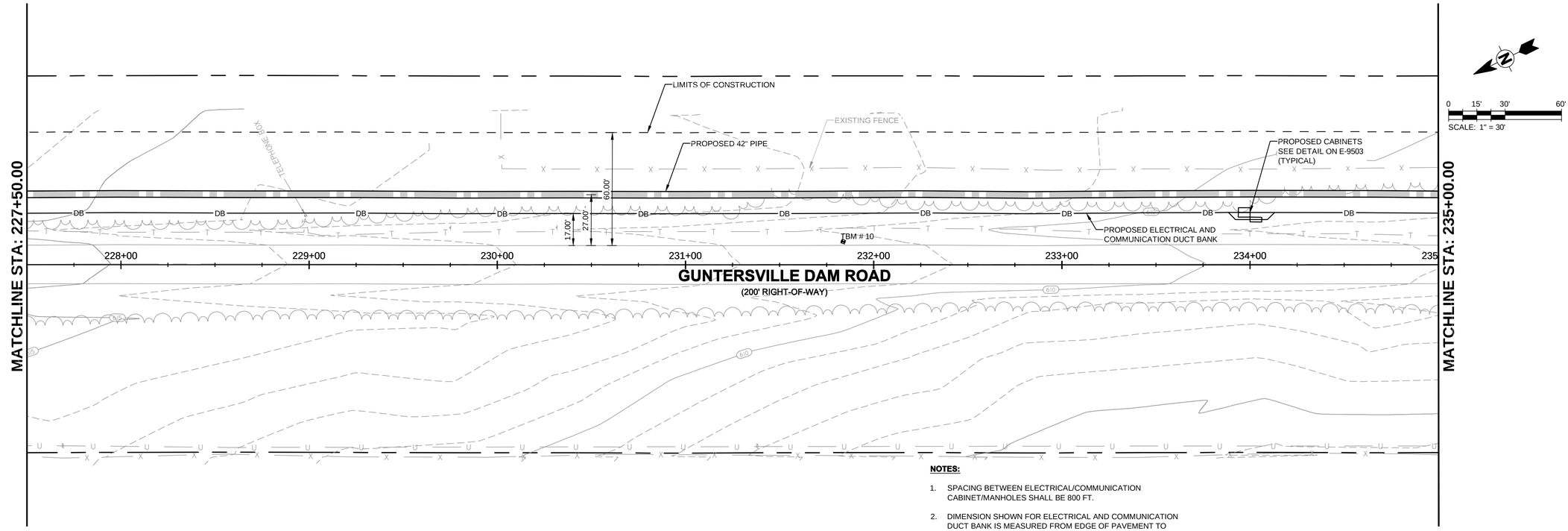
RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

PLAN AND PROFILE STA: 220+00 TO 227+50

Project No.:	200-11740-10003
Designed By:	KLW
Drawn By:	PD
Checked By:	JPT

C-1117

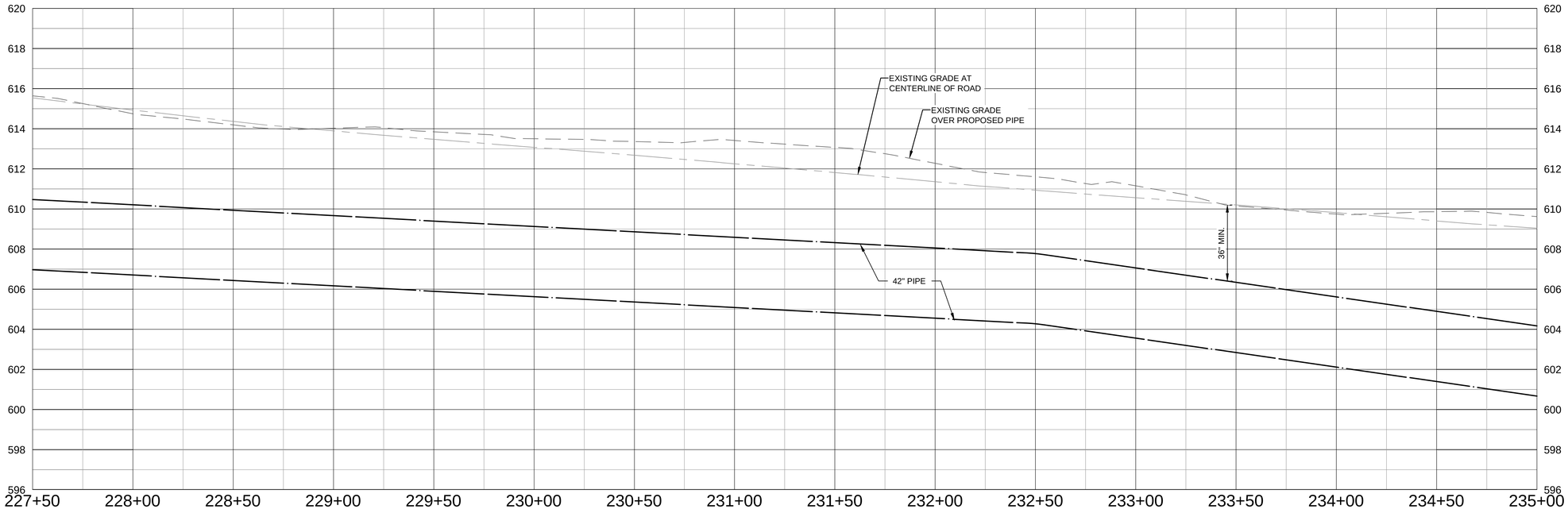
Bar Measures 1 inch



NOTES:

1. SPACING BETWEEN ELECTRICAL/COMMUNICATION CABINET/MANHOLES SHALL BE 800 FT.
2. DIMENSION SHOWN FOR ELECTRICAL AND COMMUNICATION DUCT BANK IS MEASURED FROM EDGE OF PAVEMENT TO CENTERLINE OF DUCT BANK.

SCALE
HORIZ. 1" = 30'
VERT. 1" = 3'



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MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

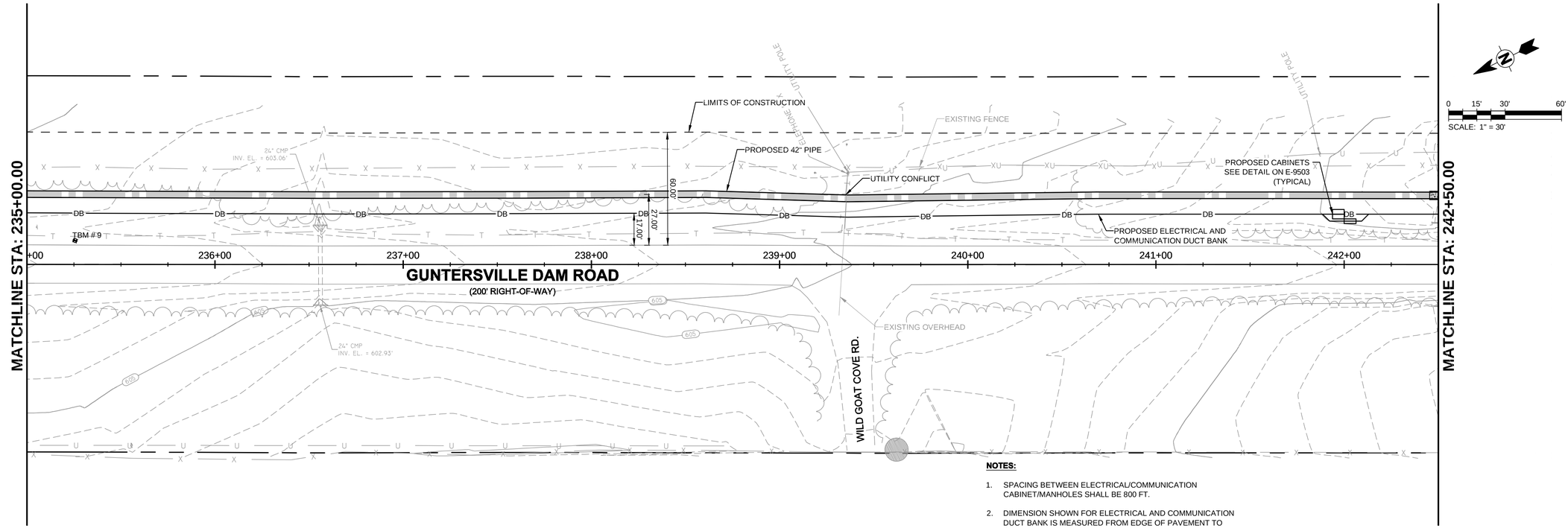
RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

PLAN AND PROFILE STA: 227+50 TO 235+00

Project No.:	200-11740-10003
Designed By:	KLW
Drawn By:	PD
Checked By:	JPT

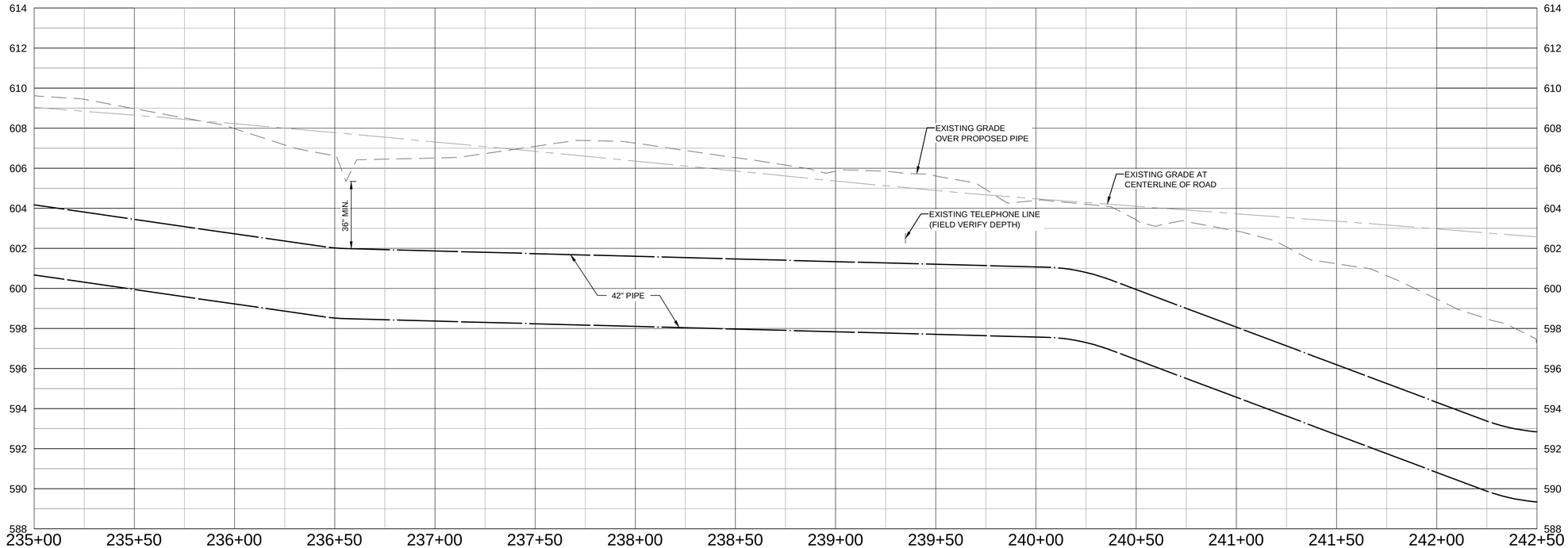
C-1118

Bar Measures 1 inch



NOTES:

1. SPACING BETWEEN ELECTRICAL/COMMUNICATION CABINET/MANHOLES SHALL BE 800 FT.
2. DIMENSION SHOWN FOR ELECTRICAL AND COMMUNICATION DUCT BANK IS MEASURED FROM EDGE OF PAVEMENT TO CENTERLINE OF DUCT BANK.



SCALE
HORIZ. 1" = 30'
VERT. 1" = 3'

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CHRISTIAN P. DUNAWAY
10 | 24 | 14

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

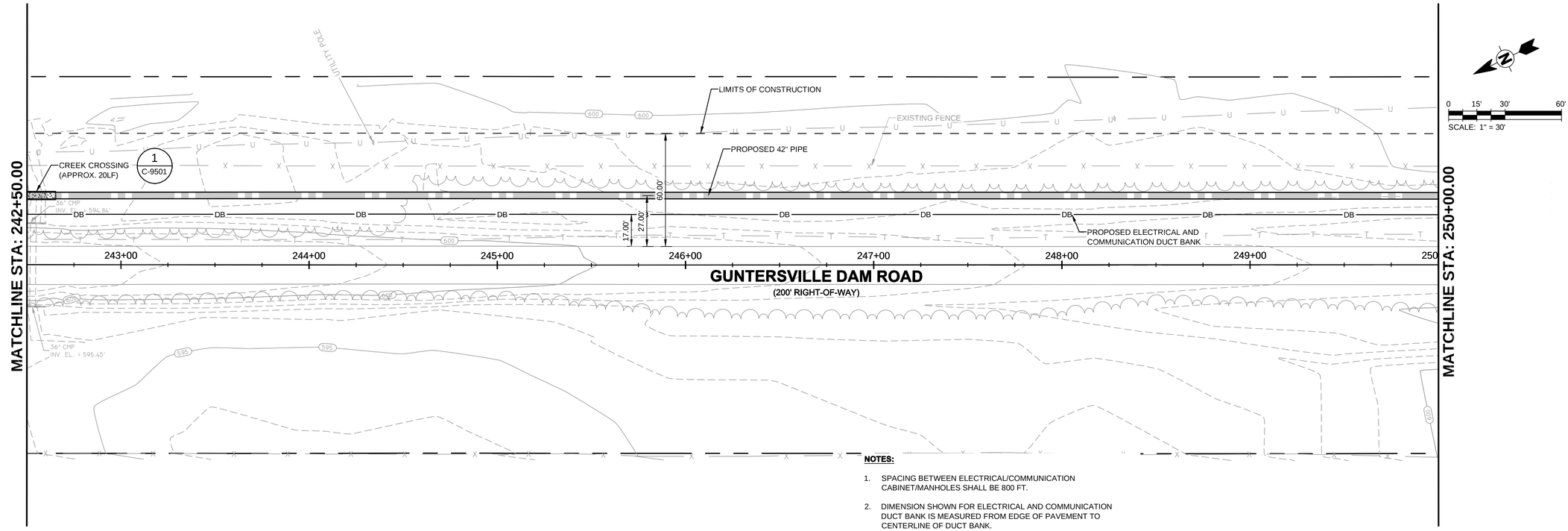
RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

PLAN AND PROFILE STA: 235+00 TO 242+50

Project No.:	200-11740-10003
Designed By:	KLW
Drawn By:	PD
Checked By:	JPT

C-1119

Bar Measures 1 inch



NOTES:

1. SPACING BETWEEN ELECTRICAL/COMMUNICATION CABINET/MANHOLES SHALL BE 800 FT.
2. DIMENSION SHOWN FOR ELECTRICAL AND COMMUNICATION DUCT BANK IS MEASURED FROM EDGE OF PAVEMENT TO CENTERLINE OF DUCT BANK.

SCALE
HORIZ. 1" = 30'
VERT. 1" = 3'

TETRA TECH
www.tetratech.com
101 QUALITY CIRCLE, SUITE 140
HUNTSVILLE, ALABAMA 35806
PHONE: (256) 424-4077 FAX: (256) 424-4097

BID SET

ALABAMA LICENSED PROFESSIONAL ENGINEER
CHRISTIAN P. DUNLAP
10126

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

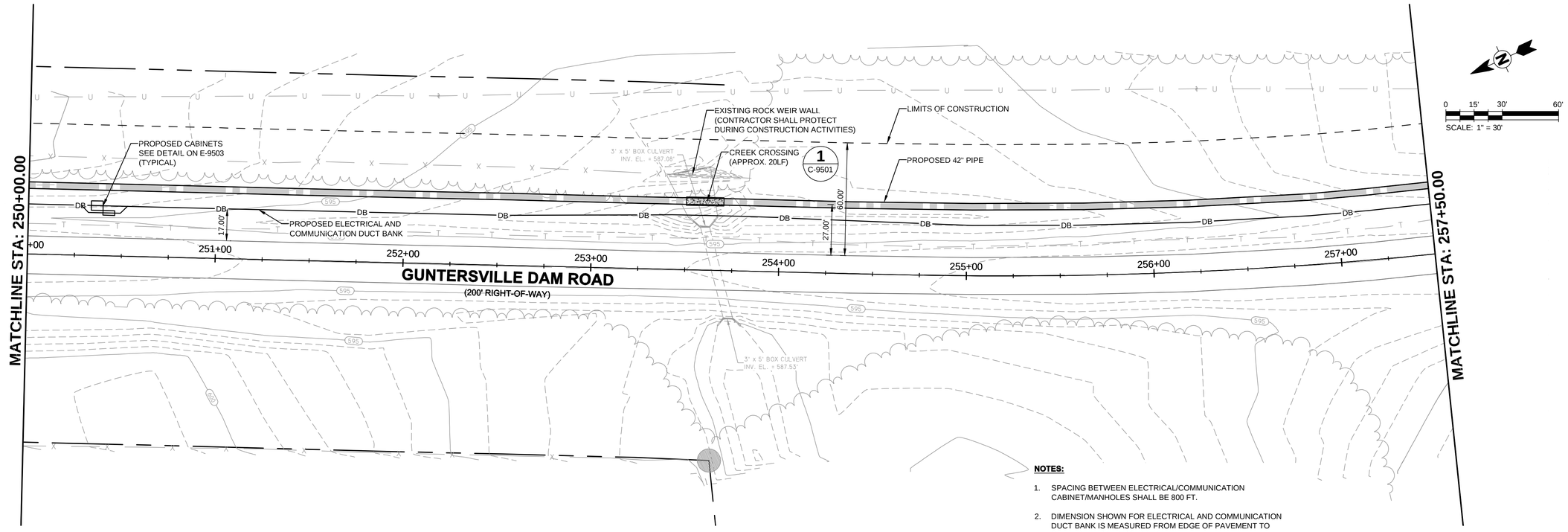
RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

PLAN AND PROFILE
STA: 242+50 TO 250+00

Project No.:	200-11740-10003
Designed By:	KLW
Drawn By:	PD
Checked By:	JPT

C-1120

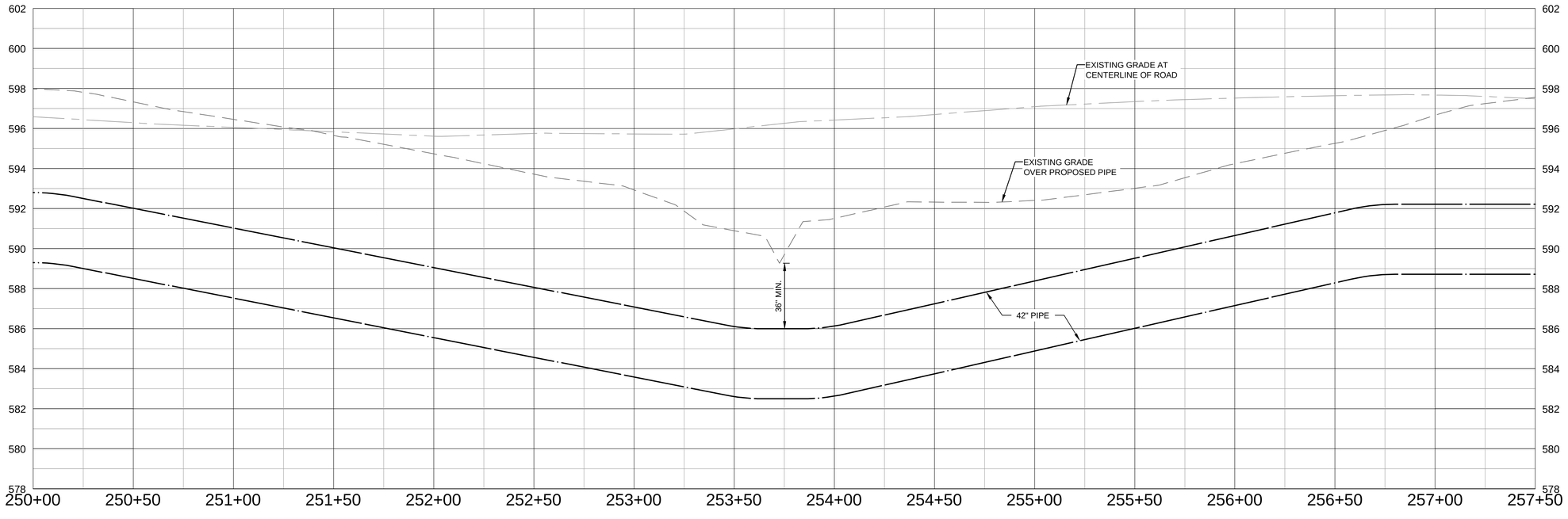
Bar Measures 1 inch



NOTES:

1. SPACING BETWEEN ELECTRICAL/COMMUNICATION CABINET/MANHOLES SHALL BE 800 FT.
2. DIMENSION SHOWN FOR ELECTRICAL AND COMMUNICATION DUCT BANK IS MEASURED FROM EDGE OF PAVEMENT TO CENTERLINE OF DUCT BANK.

SCALE
HORIZ. 1" = 30'
VERT. 1" = 3'



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BID SET

ALABAMA LICENSED PROFESSIONAL ENGINEER
CHRISTIAN P. DUNAWAY
10 DEC 14

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

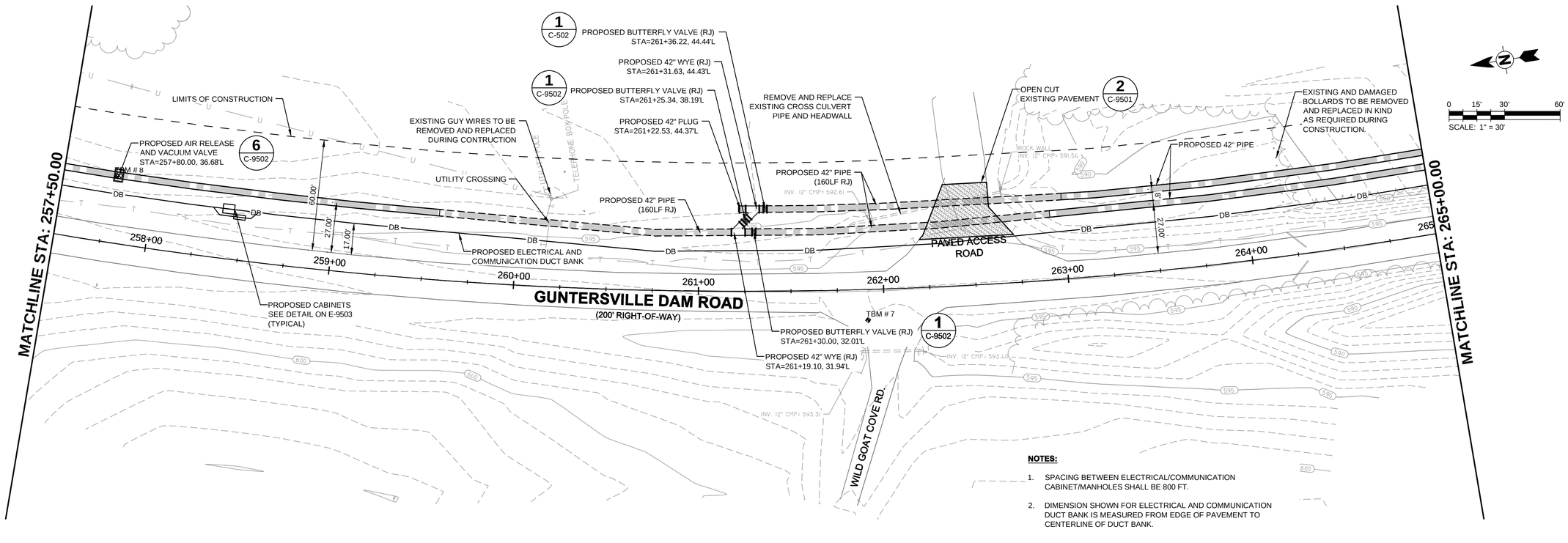
RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

PLAN AND PROFILE STA: 250+00 TO 257+50

Project No.:	200-11740-10003
Designed By:	KLW
Drawn By:	PD
Checked By:	JPT

C-1121

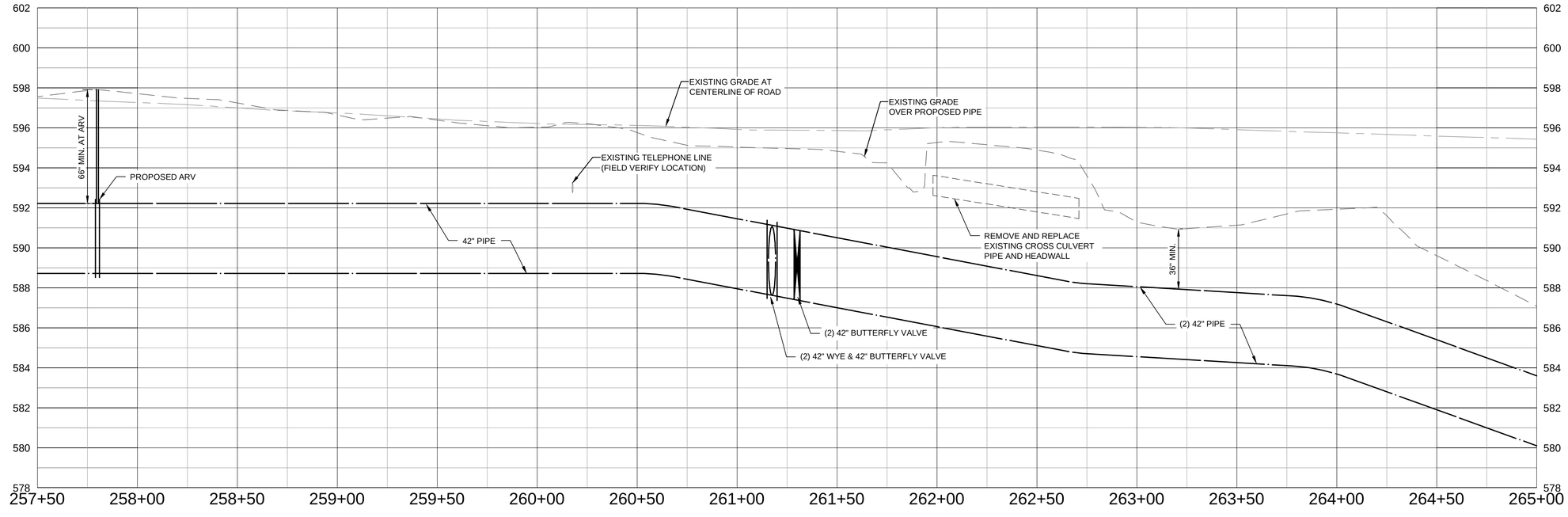
Bar Measures 1 inch



NOTES:

1. SPACING BETWEEN ELECTRICAL/COMMUNICATION CABINET/MANHOLES SHALL BE 800 FT.
2. DIMENSION SHOWN FOR ELECTRICAL AND COMMUNICATION DUCT BANK IS MEASURED FROM EDGE OF PAVEMENT TO CENTERLINE OF DUCT BANK.

SCALE
HORIZ. 1" = 30'
VERT. 1" = 3'



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101 QUALITY CIRCLE, SUITE 140
HUNTSVILLE, ALABAMA 35806
PHONE: (256) 424-4077 FAX: (256) 424-4097

BID SET

ALABAMA LICENSED PROFESSIONAL ENGINEER CHRISTIAN P. DUNAWAY 10124

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

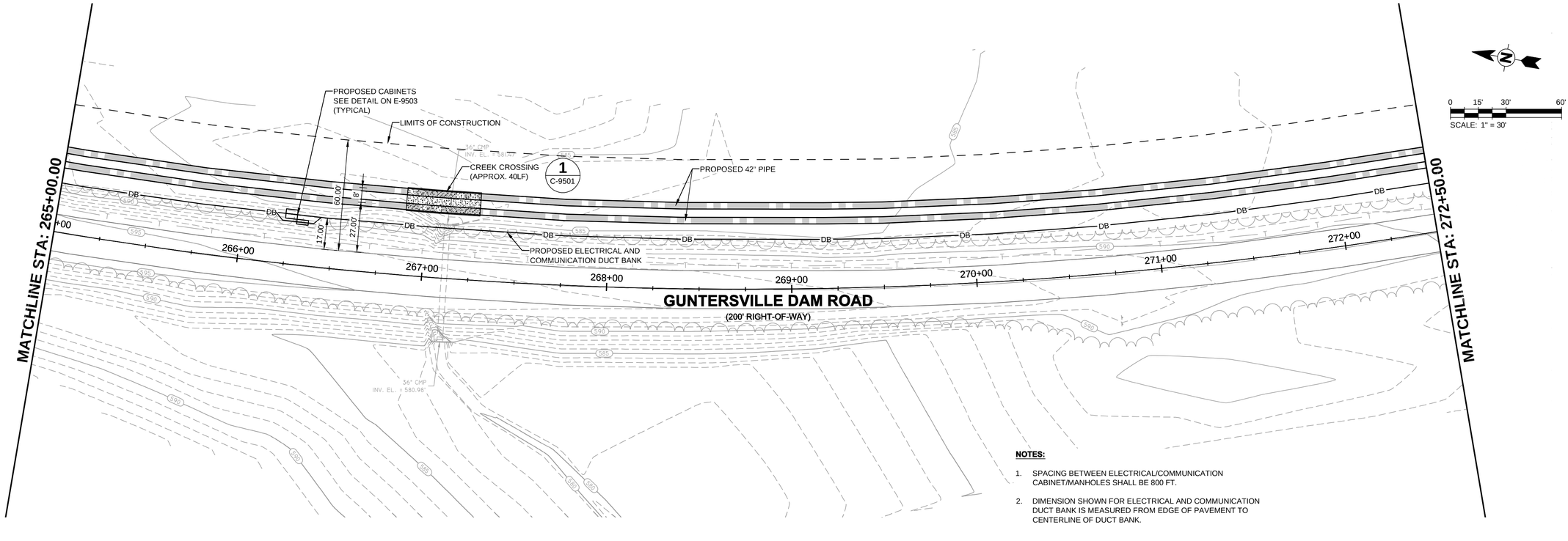
RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

PLAN AND PROFILE STA: 257+50 TO 265+00

Project No.:	200-11740-10003
Designed By:	KLW
Drawn By:	PD
Checked By:	JPT

C-1122

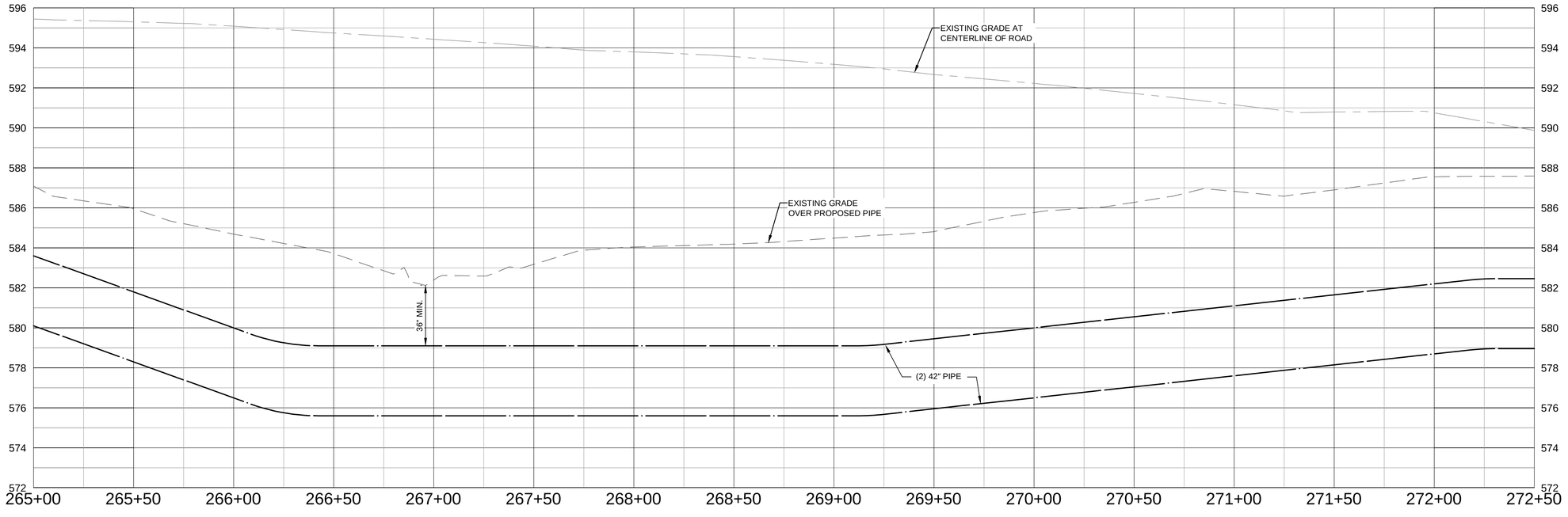
Bar Measures 1 inch



NOTES:

1. SPACING BETWEEN ELECTRICAL/COMMUNICATION CABINET/MANHOLES SHALL BE 800 FT.
2. DIMENSION SHOWN FOR ELECTRICAL AND COMMUNICATION DUCT BANK IS MEASURED FROM EDGE OF PAVEMENT TO CENTERLINE OF DUCT BANK.

SCALE
HORIZ. 1" = 30'
VERT. 1" = 3'



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PHONE: (256) 424-4077 FAX: (256) 424-4097

BID SET

ALABAMA LICENSED PROFESSIONAL ENGINEER CHRISTIAN P. DUNIGAN 10124

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

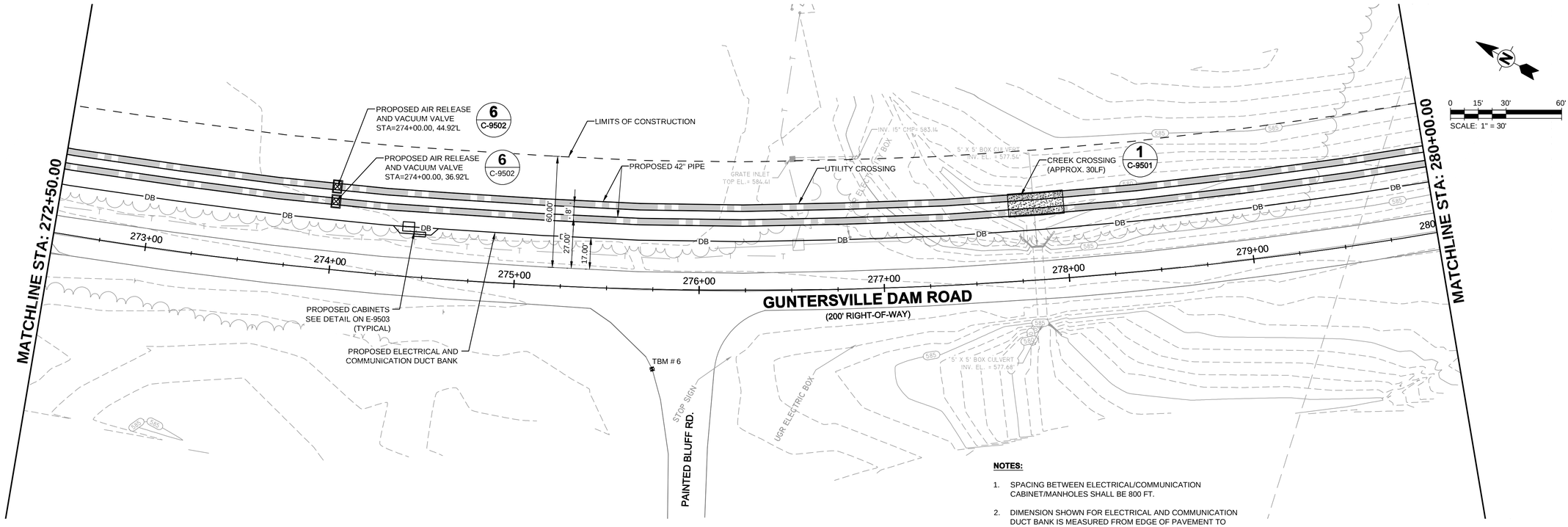
RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

PLAN AND PROFILE STA: 265+00 TO 272+50

Project No.:	200-11740-10003
Designed By:	KLW
Drawn By:	PD
Checked By:	JPT

C-1123

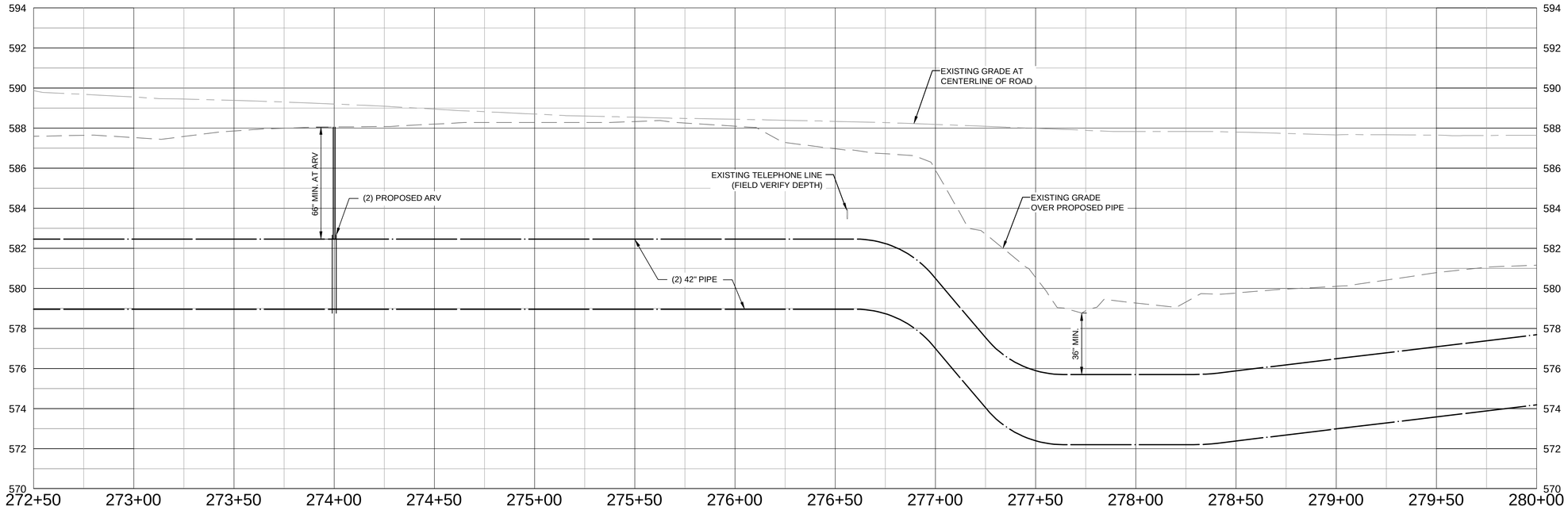
Bar Measures 1 inch



NOTES:

1. SPACING BETWEEN ELECTRICAL/COMMUNICATION CABINET/MANHOLES SHALL BE 800 FT.
2. DIMENSION SHOWN FOR ELECTRICAL AND COMMUNICATION DUCT BANK IS MEASURED FROM EDGE OF PAVEMENT TO CENTERLINE OF DUCT BANK.

SCALE
HORIZ. 1" = 30'
VERT. 1" = 3'



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BID SET

ALABAMA LICENSED PROFESSIONAL ENGINEER CHRISTIAN P. DUNAWAY 10124 19

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

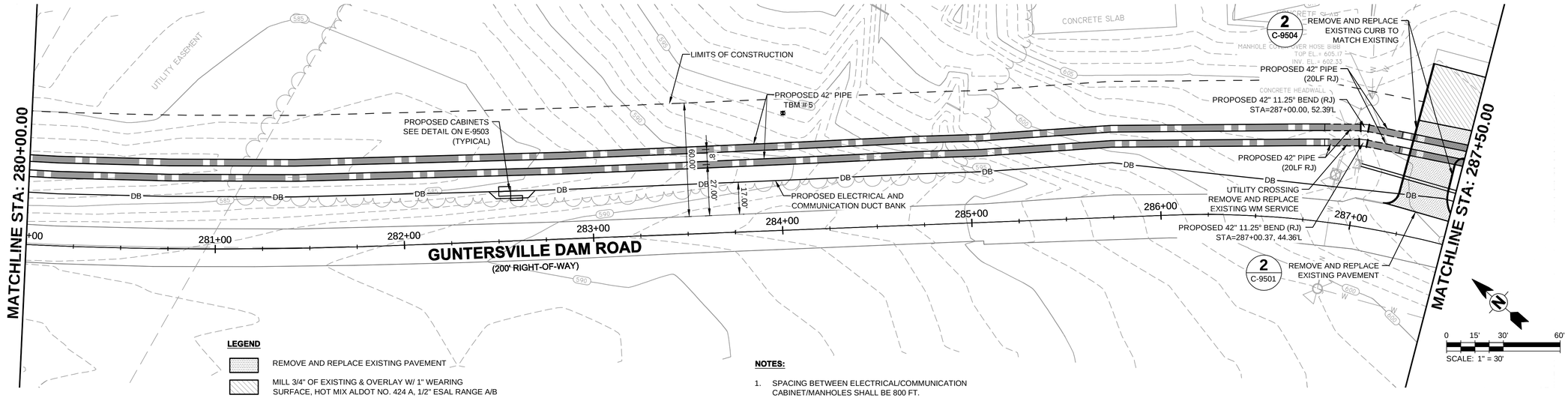
RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

PLAN AND PROFILE
STA: 272+50 TO 280+00

Project No.:	200-11740-10003
Designed By:	KLW
Drawn By:	PD
Checked By:	JPT

C-1124

Bar Measures 1 inch



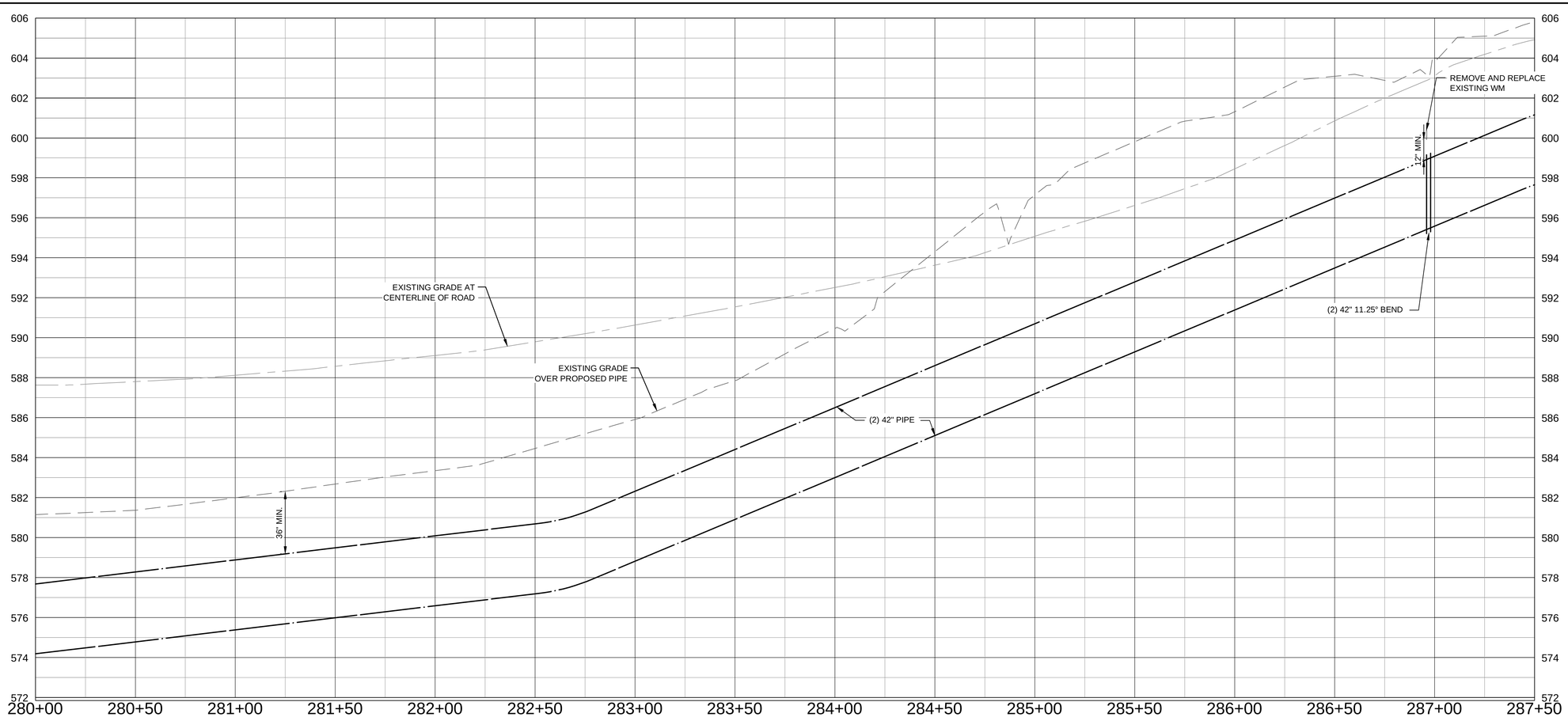
LEGEND

REMOVE AND REPLACE EXISTING PAVEMENT

MILL 3/4" OF EXISTING & OVERLAY W/ 1" WEARING SURFACE, HOT MIX ALDOT NO. 424 A, 1/2" ESAL RANGE A/B (OVERLAY TO BE FLUSH W/ NEW PAVEMENT)

NOTES:

1. SPACING BETWEEN ELECTRICAL/COMMUNICATION CABINET/MANHOLES SHALL BE 800 FT.
2. DIMENSION SHOWN FOR ELECTRICAL AND COMMUNICATION DUCT BANK IS MEASURED FROM EDGE OF PAVEMENT TO CENTERLINE OF DUCT BANK.



SCALE
HORIZ. 1" = 30'
VERT. 1" = 3'

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BID SET

ALABAMA LICENSED PROFESSIONAL ENGINEER CHRISTIAN P. DUNIGAN 10 | 07 | 14

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

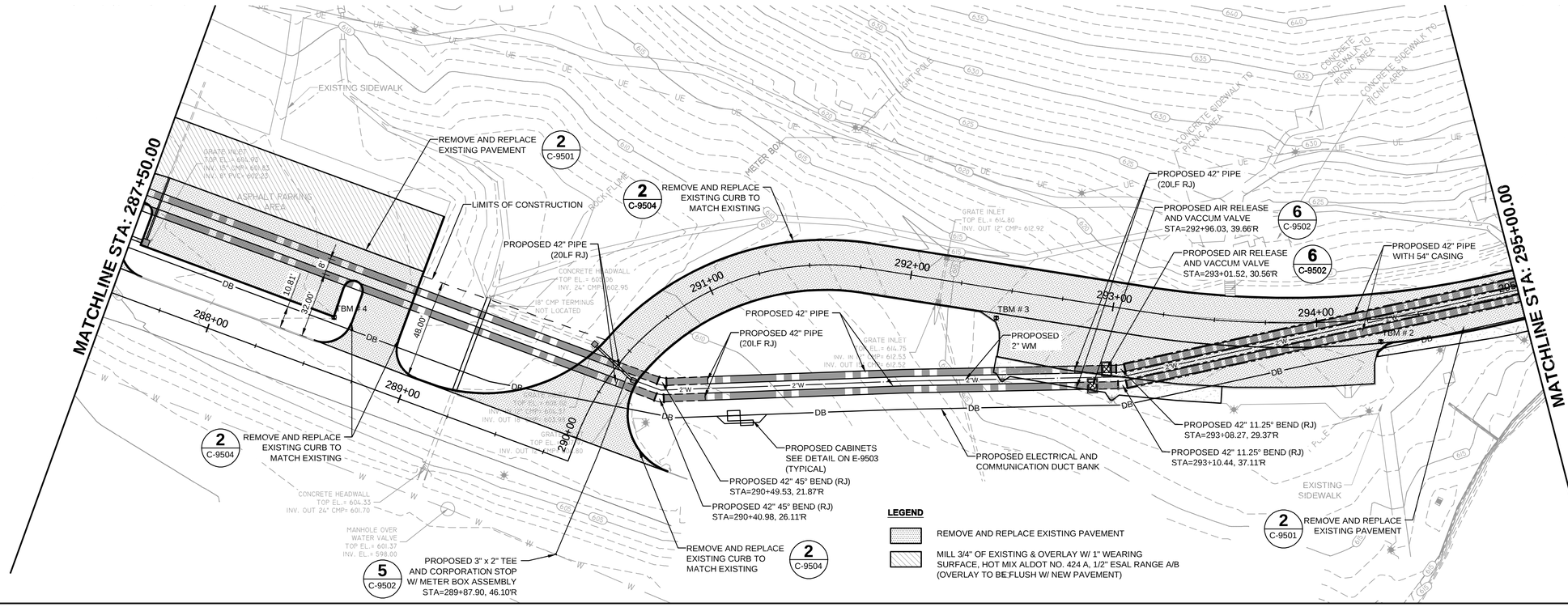
RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

PLAN AND PROFILE
STA: 280+00 TO 287+50

Project No.:	200-11740-10003
Designed By:	KLW
Drawn By:	PD
Checked By:	JPT

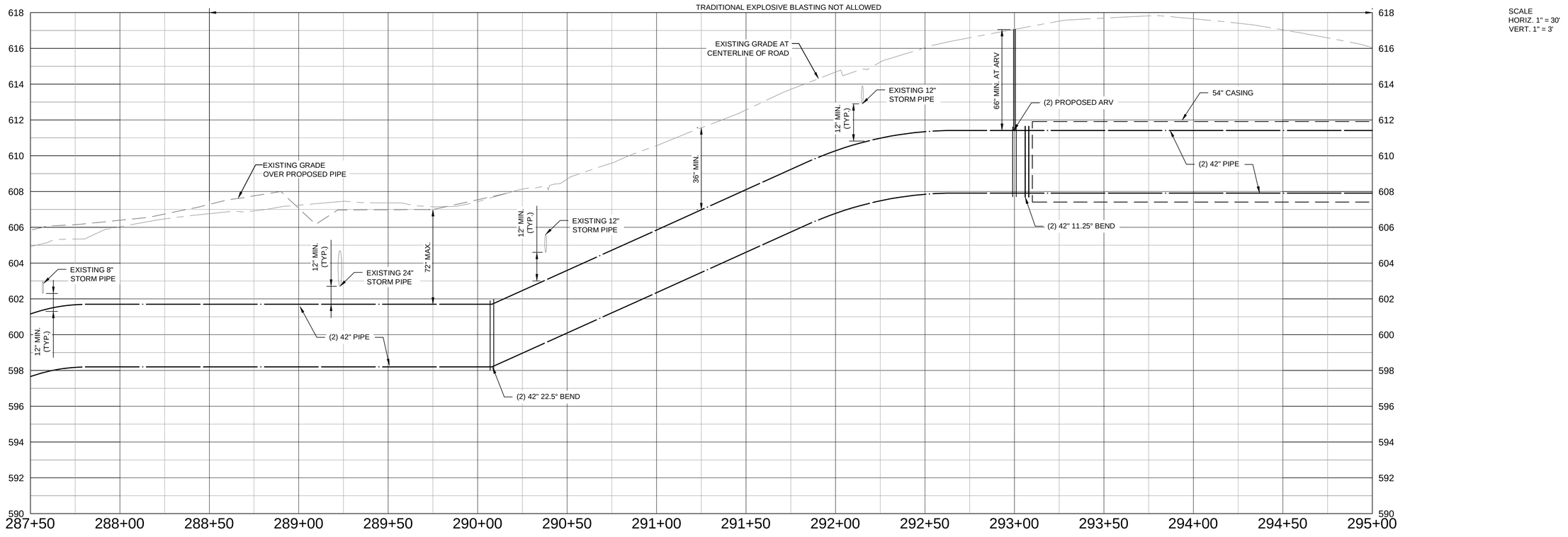
C-1125

Bar Measures 1 inch



NOTE:

1. TRADITIONAL EXPLOSIVE BLASTING METHODS MAY NOT BE USED FROM STATION 288+50 TO 301+00.
2. SEE SHEETS C-1129 & C-1130 FOR DEMOLITION AND EROSION CONTROL.



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BID SET

ALABAMA LICENSED PROFESSIONAL ENGINEER CHRISTIAN P. DUNAWAY 10 DEC 14

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

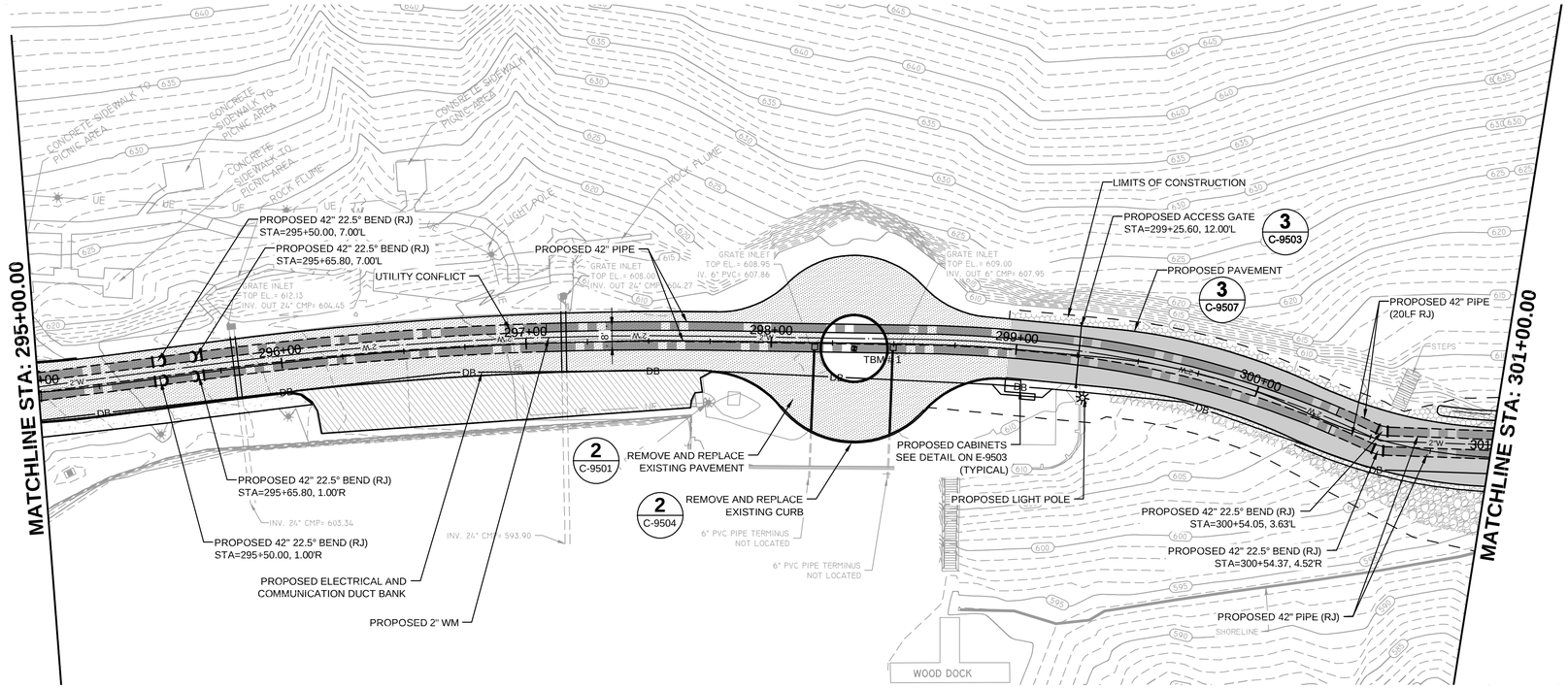
PLAN AND PROFILE STA: 287+50 TO 295+00

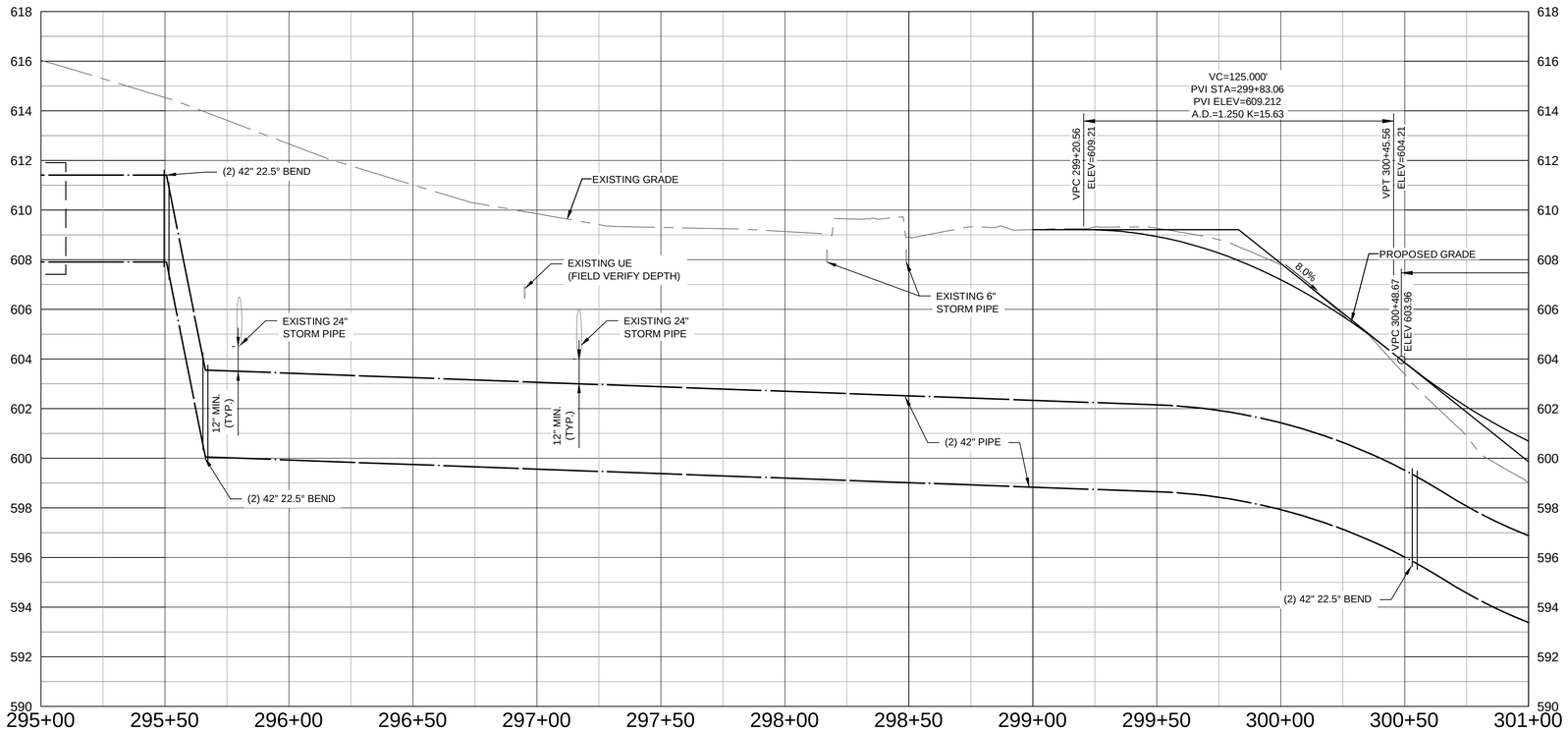
Project No.:	200-11740-10003
Designed By:	KLW
Drawn By:	PD
Checked By:	JPT

C-1126

Bar Measures 1 inch

9/30/2014 11:04:36 AM - P:\IER\117402\200-11740-10003\CAD\SHEETFILES\INTAKE AND TRANSMISSION\MRW-C-1125 TO C-1128-NEW.DWG - DAVALOS, PAULA





0 15' 30' 60'

SCALE: 1" = 30'

SCALE
HORIZ. 1" = 30'
VERT. 1" = 3'

NOTE:

1. TRADITIONAL EXPLOSIVE BLASTING METHODS MAY NOT BE USED FROM STATION 288+50 TO 301+00.
2. SEE SHEETS C-1129 & C-1130 FOR DEMOLITION AND EROSION CONTROL.

LEGEND

- REMOVE AND REPLACE EXISTING PAVEMENT
- MILL 3/4" OF EXISTING & OVERLAY W/ 1" WEARING SURFACE, HOT MIX ALDOT NO. 424 A, 1/2" ESAL RANGE A/B (OVERLAY TO BE FLUSH W/ NEW PAVEMENT)
- PROPOSED ASPHALT PAVEMENT
- PROPOSED RIP RAP (MATCH EXISTING, CLASS 3 ASSUMED)
- PROPOSED CRUSHED AGGREGATE (ALDOT NO. 825B STONE BASE)

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101 QUALITY CIRCLE, SUITE 140
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PHONE: (256) 424-4077 FAX: (256) 424-4097

BID SET

ALABAMA LICENSED PROFESSIONAL ENGINEER CHRISTIAN P. DUNLAP 10124 14

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

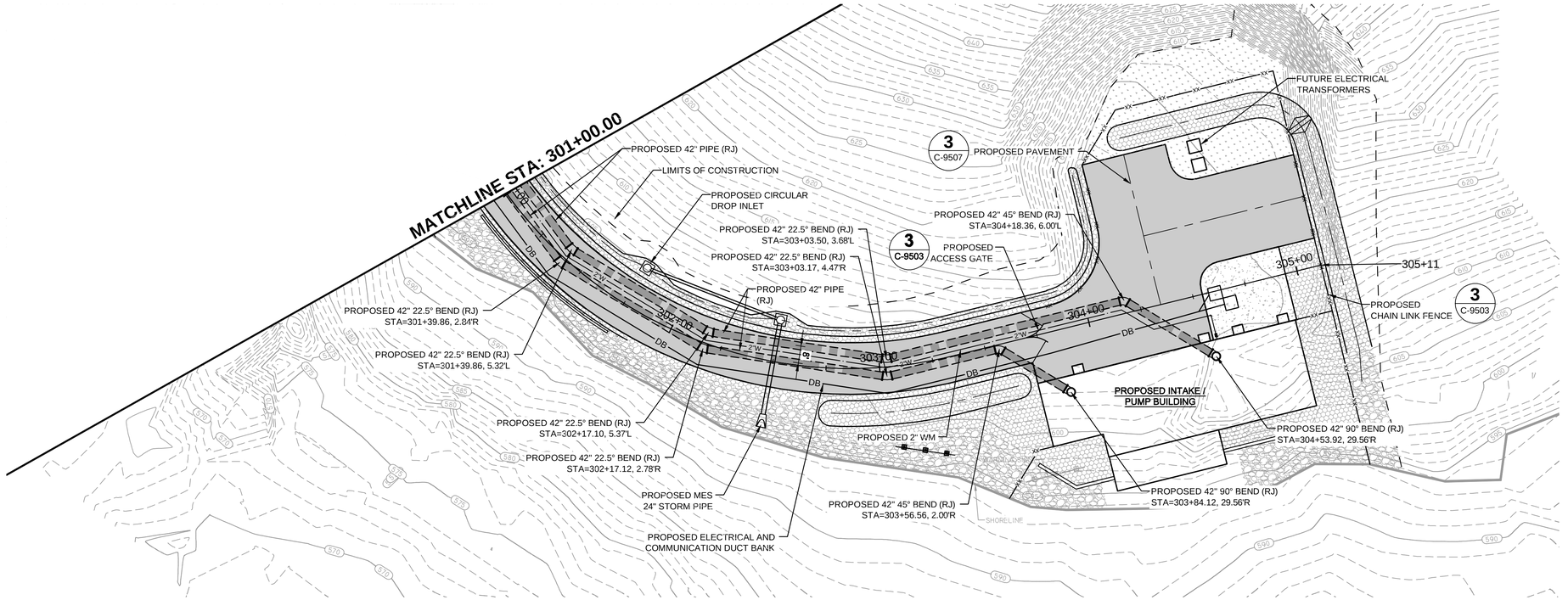
PLAN AND PROFILE STA: 295+00 TO 301+00

Project No.:	200-11740-10003
Designed By:	KLW
Drawn By:	PD
Checked By:	JPT

C-1127

Bar Measures 1 inch

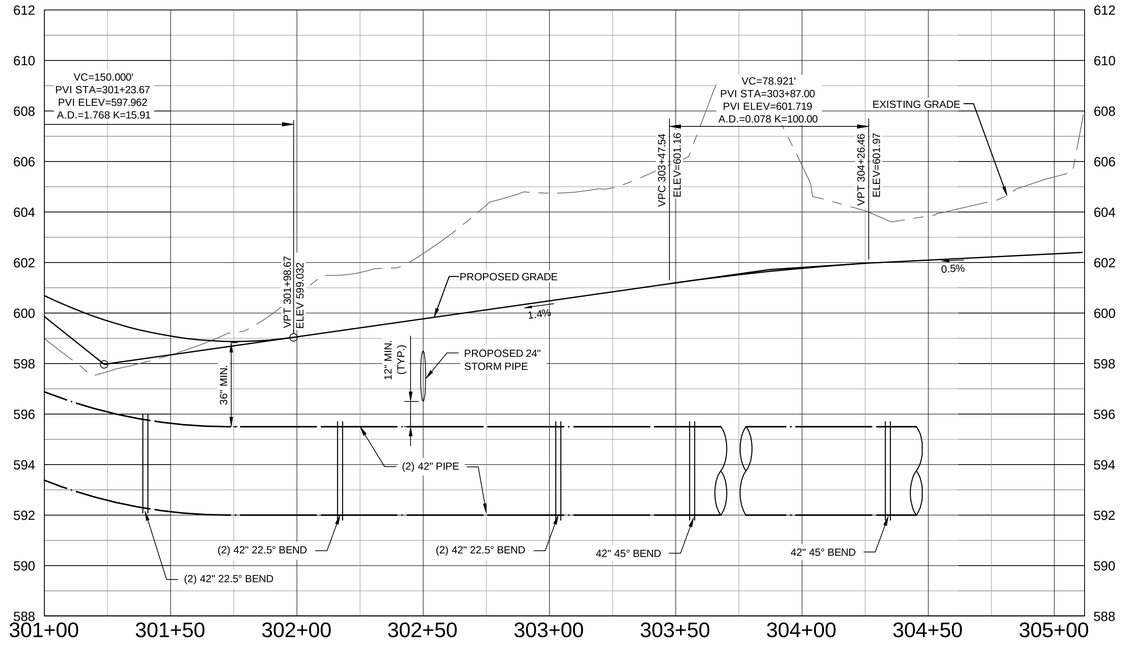
9/30/2014 11:06:09 AM - P:\IER\117740\200-11740-10003\CAD\SHEETFILES\INTAKE AND TRANSMISSION\NRW-C-1125 TO C-1128-NEW.DWG - DAVALOS, PAULA



LEGEND

- REMOVE AND REPLACE EXISTING PAVEMENT
- MILL 3/4" OF EXISTING & OVERLAY W/ 1" WEARING SURFACE, HOT MIX ALDOT NO. 424 A, 1/2" ESAL RANGE A/B (OVERLAY TO BE FLUSH W/ NEW PAVEMENT)
- PROPOSED ASPHALT PAVEMENT
- PROPOSED RIP RAP (MATCH EXISTING, CLASS 3 ASSUMED)
- PROPOSED CRUSHED AGGREGATE (ALDOT NO. 825B STONE BASE)
- SEED AND MULCH

SCALE
HORIZ. 1" = 30'
VERT. 1" = 3'



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BID SET

ALABAMA LICENSED PROFESSIONAL ENGINEER CHRISTIAN P. DUNPHY 10126 14

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

PLAN AND PROFILE STA: 301+00 TO 305+50

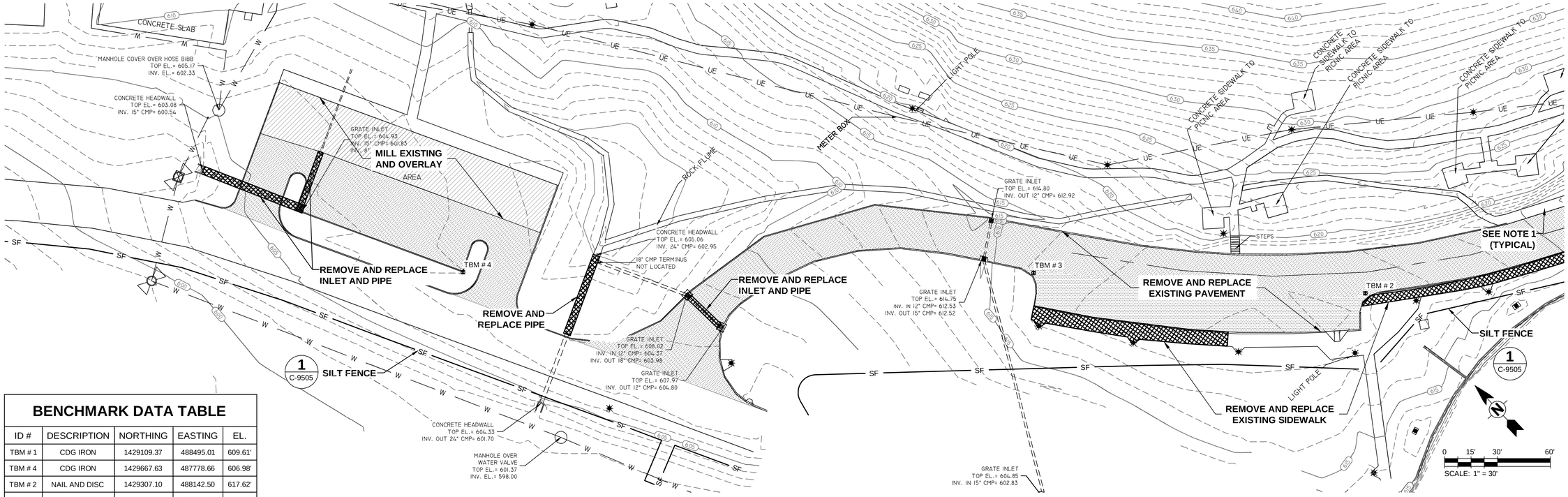
Project No.:	200-11740-10003
Designed By:	KLW
Drawn By:	PD
Checked By:	JPT

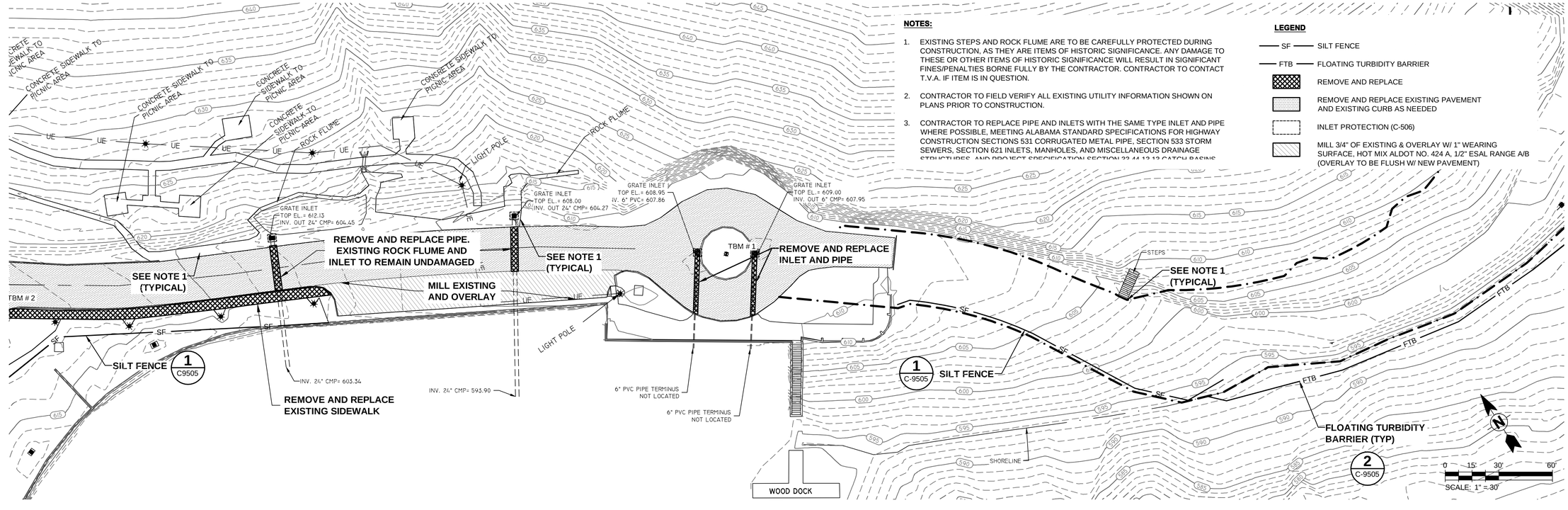
C-1128

Bar Measures 1 inch

BENCHMARK DATA TABLE

ID #	DESCRIPTION	NORTHING	EASTING	EL.
TBM # 1	CDG IRON	1429109.37	488495.01	609.61'
TBM # 4	CDG IRON	1429667.63	487778.66	606.98'
TBM # 2	NAIL AND DISC	1429307.10	488142.50	617.62'
TBM # 3	NAIL AND DISC	1429444.83	488013.76	616.21'





NOTES:

1. EXISTING STEPS AND ROCK FLUME ARE TO BE CAREFULLY PROTECTED DURING CONSTRUCTION, AS THEY ARE ITEMS OF HISTORIC SIGNIFICANCE. ANY DAMAGE TO THESE OR OTHER ITEMS OF HISTORIC SIGNIFICANCE WILL RESULT IN SIGNIFICANT FINES/PENALTIES BORNE FULLY BY THE CONTRACTOR. CONTRACTOR TO CONTACT T.V.A. IF ITEM IS IN QUESTION.
2. CONTRACTOR TO FIELD VERIFY ALL EXISTING UTILITY INFORMATION SHOWN ON PLANS PRIOR TO CONSTRUCTION.
3. CONTRACTOR TO REPLACE PIPE AND INLETS WITH THE SAME TYPE INLET AND PIPE WHERE POSSIBLE, MEETING ALABAMA STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION SECTIONS 531 CORRUGATED METAL PIPE, SECTION 533 STORM SEWERS, SECTION 621 INLETS, MANHOLES, AND MISCELLANEOUS DRAINAGE STRUCTURES, AND PROJECT SPECIFICATION SECTION 33 44 13 13 CATCH BASINS

LEGEND

- SF — SILT FENCE
- FTB — FLOATING TURBIDITY BARRIER
- REMOVE AND REPLACE
- REMOVE AND REPLACE EXISTING PAVEMENT AND EXISTING CURB AS NEEDED
- INLET PROTECTION (C-506)
- MILL 3/4" OF EXISTING & OVERLAY W/ 1" WEARING SURFACE, HOT MIX ALDOT NO. 424 A, 1/2" ESAL RANGE A/B (OVERLAY TO BE FLUSH W/ NEW PAVEMENT)

TETRA TECH
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HUNTSVILLE, ALABAMA 35806
PHONE: (256) 424-4077 FAX: (256) 424-4097

BID SET

ALABAMA LICENSED 10/31/14 No. 31402-E PROFESSIONAL ENGINEER BRIAN DEAN READDOCK

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

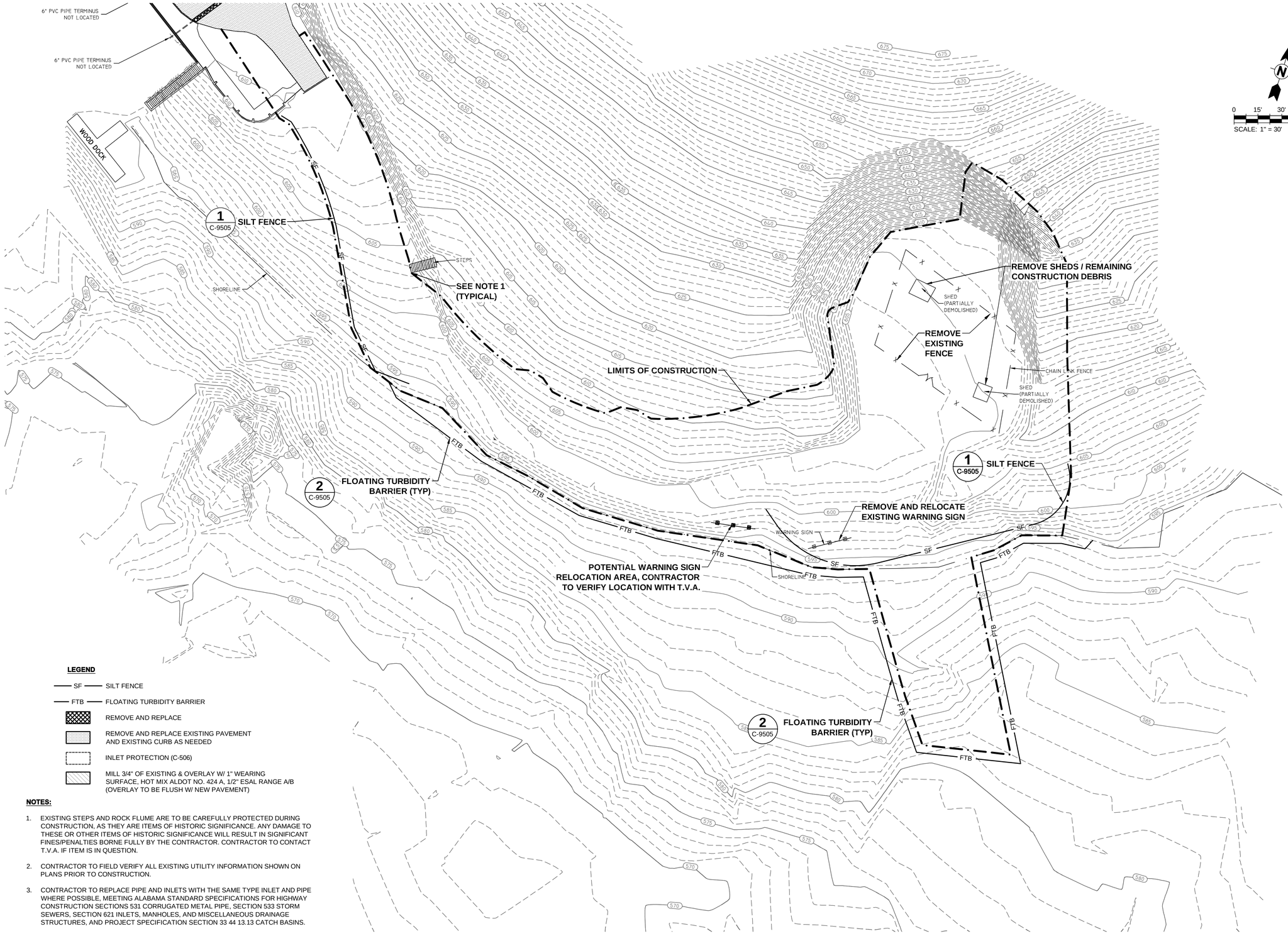
INTAKE ROAD EXISTING CONDITIONS, DEMOLITION & EROSION CONTROL

Project No.:	200-11740-10003
Designed By:	BDR
Drawn By:	PD
Checked By:	JPT

C-1129

Bar Measures 1 inch

9/30/2014 12:26:43 PM - P:\HER\11740\200-11740-10003\CAD\SHEETFILES\INTAKE AND TRANSMISSION\RW-C-1129 & C-1130 INTAKE EXIST.DWG - DAVALOS, PAULA



LEGEND

- SF — SILT FENCE
- FTB — FLOATING TURBIDITY BARRIER
- REMOVE AND REPLACE
- REMOVE AND REPLACE EXISTING PAVEMENT AND EXISTING CURB AS NEEDED
- INLET PROTECTION (C-506)
- MILL 3/4" OF EXISTING & OVERLAY W/ 1" WEARING SURFACE, HOT MIX ALDOT NO. 424 A, 1/2" ESAL RANGE A/B (OVERLAY TO BE FLUSH W/ NEW PAVEMENT)

NOTES:

1. EXISTING STEPS AND ROCK FLUME ARE TO BE CAREFULLY PROTECTED DURING CONSTRUCTION, AS THEY ARE ITEMS OF HISTORIC SIGNIFICANCE. ANY DAMAGE TO THESE OR OTHER ITEMS OF HISTORIC SIGNIFICANCE WILL RESULT IN SIGNIFICANT FINES/PENALTIES BORNE FULLY BY THE CONTRACTOR. CONTRACTOR TO CONTACT T.V.A. IF ITEM IS IN QUESTION.
2. CONTRACTOR TO FIELD VERIFY ALL EXISTING UTILITY INFORMATION SHOWN ON PLANS PRIOR TO CONSTRUCTION.
3. CONTRACTOR TO REPLACE PIPE AND INLETS WITH THE SAME TYPE INLET AND PIPE WHERE POSSIBLE, MEETING ALABAMA STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION SECTIONS 531 CORRUGATED METAL PIPE, SECTION 533 STORM SEWERS, SECTION 621 INLETS, MANHOLES, AND MISCELLANEOUS DRAINAGE STRUCTURES, AND PROJECT SPECIFICATION SECTION 33 44 13.13 CATCH BASINS.

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HUNTSVILLE, ALABAMA 35806
PHONE: (256) 424-4077 FAX: (256) 424-4097

BID SET

ALABAMA LICENSED 10/31/14 No. 31402-E PROFESSIONAL ENGINEER BRIAN DEAN REARDON

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

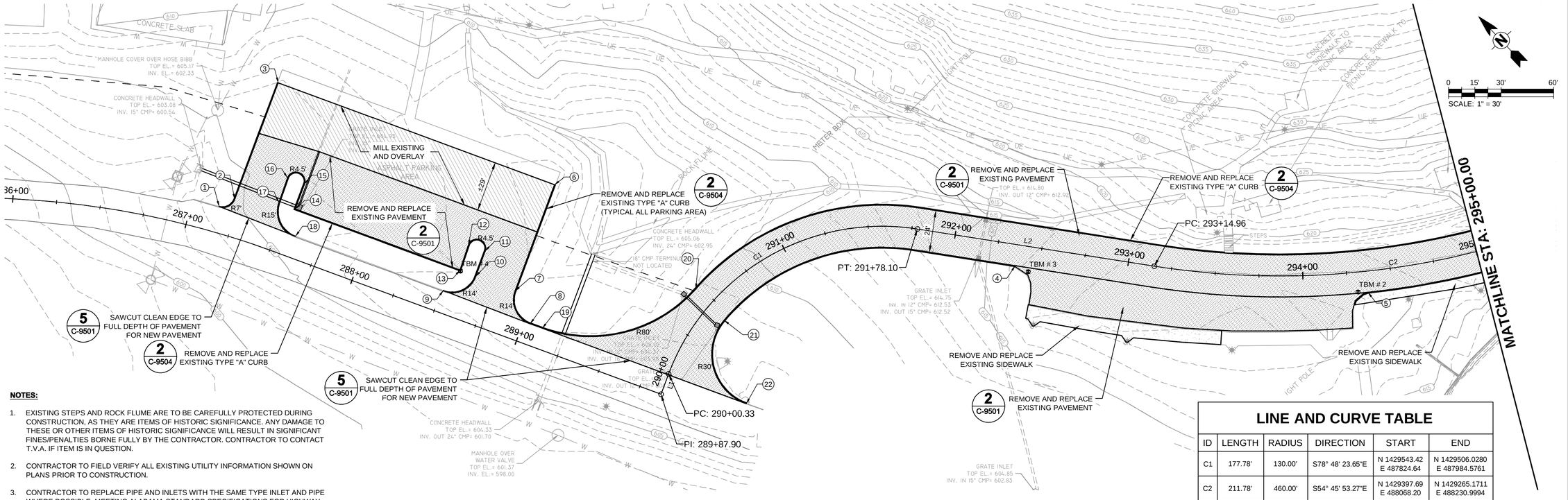
INTAKE ROAD EXISTING CONDITIONS, DEMOLITION & EROSION CONTROL

Project No.:	200-11740-10003
Designed By:	BDR
Drawn By:	PD
Checked By:	JPT

C-1130

Bar Measures 1 inch

9/30/2014 12:26:59 PM - P:\IER\11740\200-11740-10003\CAD\SHEETFILES\INTAKE AND TRANSMISSION\RW-C-1129 & C-1130 INTAKE EXIST.DWG - DAVALOS, PAULA



NOTES:

1. EXISTING STEPS AND ROCK FLUME ARE TO BE CAREFULLY PROTECTED DURING CONSTRUCTION, AS THEY ARE ITEMS OF HISTORIC SIGNIFICANCE. ANY DAMAGE TO THESE OR OTHER ITEMS OF HISTORIC SIGNIFICANCE WILL RESULT IN SIGNIFICANT FINES/PENALTIES BORNE FULLY BY THE CONTRACTOR. CONTRACTOR TO CONTACT T.V.A. IF ITEM IS IN QUESTION.
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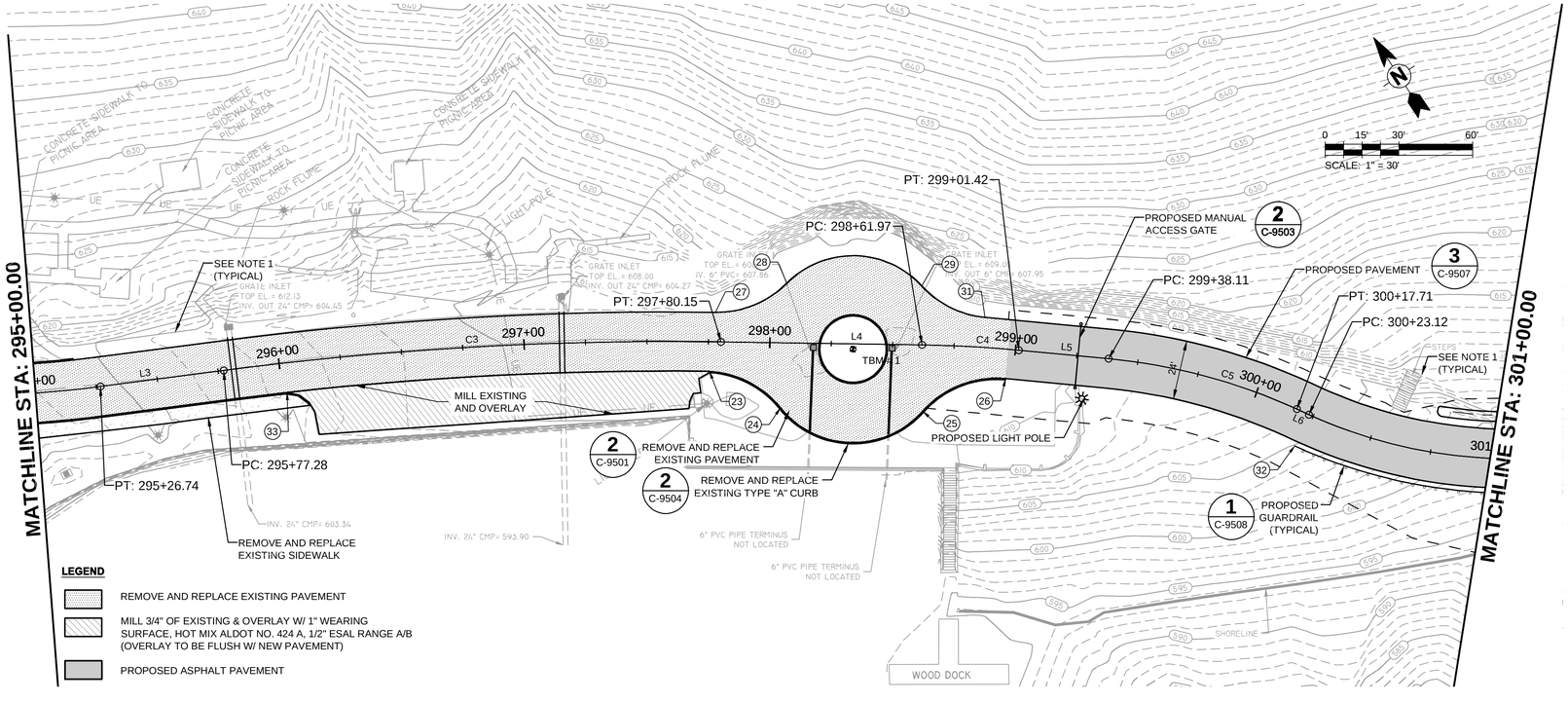

LEGEND

- REMOVE AND REPLACE EXISTING PAVEMENT
- MILL 3/4" OF EXISTING & OVERLAY W/ 1" WEARING SURFACE, HOT MIX ALDOT NO. 424 A, 1/2" ESAL RANGE A/B (OVERLAY TO BE FLUSH W/ NEW PAVEMENT)
- PROPOSED ASPHALT PAVEMENT

LINE AND CURVE TABLE

ID	LENGTH	RADIUS	DIRECTION	START	END
C1	177.78'	130.00'	S78° 48' 23.65"E	N 1429543.42 E 487824.64	N 1429506.0280 E 487984.5761
C2	211.78'	460.00'	S54° 45' 53.27"E	N 1429397.69 E 488068.20	N 1429265.1711 E 488230.9994
C3	202.88'	1400.00'	S59° 52' 45.13"E	N 1429243.05 E 488276.44	N 1429141.3731 E 488451.7861
C4	39.44'	500.00'	S52° 55' 04.58"E	N 1429095.31 E 488519.41	N 1429071.8470 E 488551.1007
C5	79.60'	238.00'	S39° 31' 09.57"E	N 1429048.86 E 488579.71	N 1428989.6502 E 488632.3517
L1	12.43'	-	N63° 58' 58.20"E	N 1429537.97 E 487813.47	N 1429543.4196 E 487824.6444
L2	136.86'	-	S37° 39' 51.71"E	N 1429506.03 E 487984.58	N 1429397.6929 E 488068.1993
L3	50.53'	-	S64° 02' 36.18"E	N 1429265.17 E 488231.00	N 1429243.0528 E 488276.4359
L4	81.82'	-	S55° 44' 26.15"E	N 1429141.37 E 488451.79	N 1429095.3132 E 488519.4104
L5	36.70'	-	S51° 13' 14.78"E	N 1429071.85 E 488551.10	N 1429048.8641 E 488579.7070
L6	5.41'	-	S32° 03' 26.33"E	N 1428989.65 E 488632.35	N 1428985.0683 E 488635.2211

GEOMETRY TABLE

ID	NORTHING	EASTING	TYPE
1	1429789.14	487703.98	BEGIN CURB
2	1429785.95	487713.32	PARKING BOC
3	1429817.18	487777.01	END CURB
4	1429452.47	488010.76	END CURB
5	1429303.09	488146.59	BEGIN CURB
6	1429666.60	487851.51	BEGIN CURB
7	1429637.96	487793.43	PARKING BOC
8	1429618.45	487786.89	EOP/BOC
9	1429666.25	487763.96	END CURB
10	1429659.44	487782.96	PARKING BOC
11	1429666.31	487796.80	PARKING BOC
12	1429675.33	487792.19	PARKING BOC
13	1429668.31	487778.89	PARKING BOC
14	1429758.27	487734.57	PARKING BOC
15	1429764.94	487748.15	PARKING BOC
16	1429774.10	487743.53	PARKING BOC

GEOMETRY TABLE

ID	NORTHING	EASTING	TYPE
17	1429767.24	487730.25	PARKING BOC
18	1429746.76	487723.95	BEGIN CURB
19	1429611.80	487790.23	EOP/BOC
20	1429568.05	487869.25	EOP/BOC
21	1429543.88	487868.67	EOP/BOC
22	1429500.60	487845.16	BEGIN CURB
23	1429133.99	488441.25	BEGIN CURB
24	1429105.73	488457.18	EOP/BOC
25	1429072.66	488504.83	EOP/BOC
26	1429065.20	488540.22	END CURB
27	1429152.66	488456.54	EOP
28	1429146.56	488487.24	EOP
29	1429115.40	488532.53	EOP
31	1429090.56	488546.97	EOP
32	1428977.63	488623.36	BEGIN GUARDRAIL
33	1429221.39	488293.03	END CURB

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MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES
RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES
INTAKE ROAD SITE PLAN

Project No.:	200-11740-10003
Designed By:	BDR
Drawn By:	PD
Checked By:	JPT

C-1131

Bar Measures 1 inch

9/30/2014 12:28:34 PM - P:\IER\11740\200-11740-10003\CAD\SHEETFILES\INTAKE AND TRANSMISSION\RW-C-1131 & C-1132 SITE PLAN.DWG - DAVALOS, PAULA

GEOMETRY TABLE

ID	NORTHING	EASTING	TYPE
34	1428988.43	489055.08	BLDG. CORNER
35	1428953.47	489076.98	BLDG. CORNER
36	1428935.36	489109.21	FENCE CORNER
37	1429061.39	489030.28	EOP
38	1429036.45	488990.45	EOP
39	1429039.61	488976.67	EOP
40	1429047.24	488971.89	EOP
41	1429026.01	488937.99	EOP
42	1429055.32	488944.72	FENCE CORNER
43	1429095.52	489008.91	FENCE CORNER
44	1428944.29	489082.73	BEGIN WALL
45	1428886.17	488962.45	BEGIN WALL
46	1428881.55	488982.55	WALL CORNER
47	1428959.24	488944.41	EOP
48	1429002.54	489011.68	EOP
49	1428988.76	489008.51	EOP

GEOMETRY TABLE

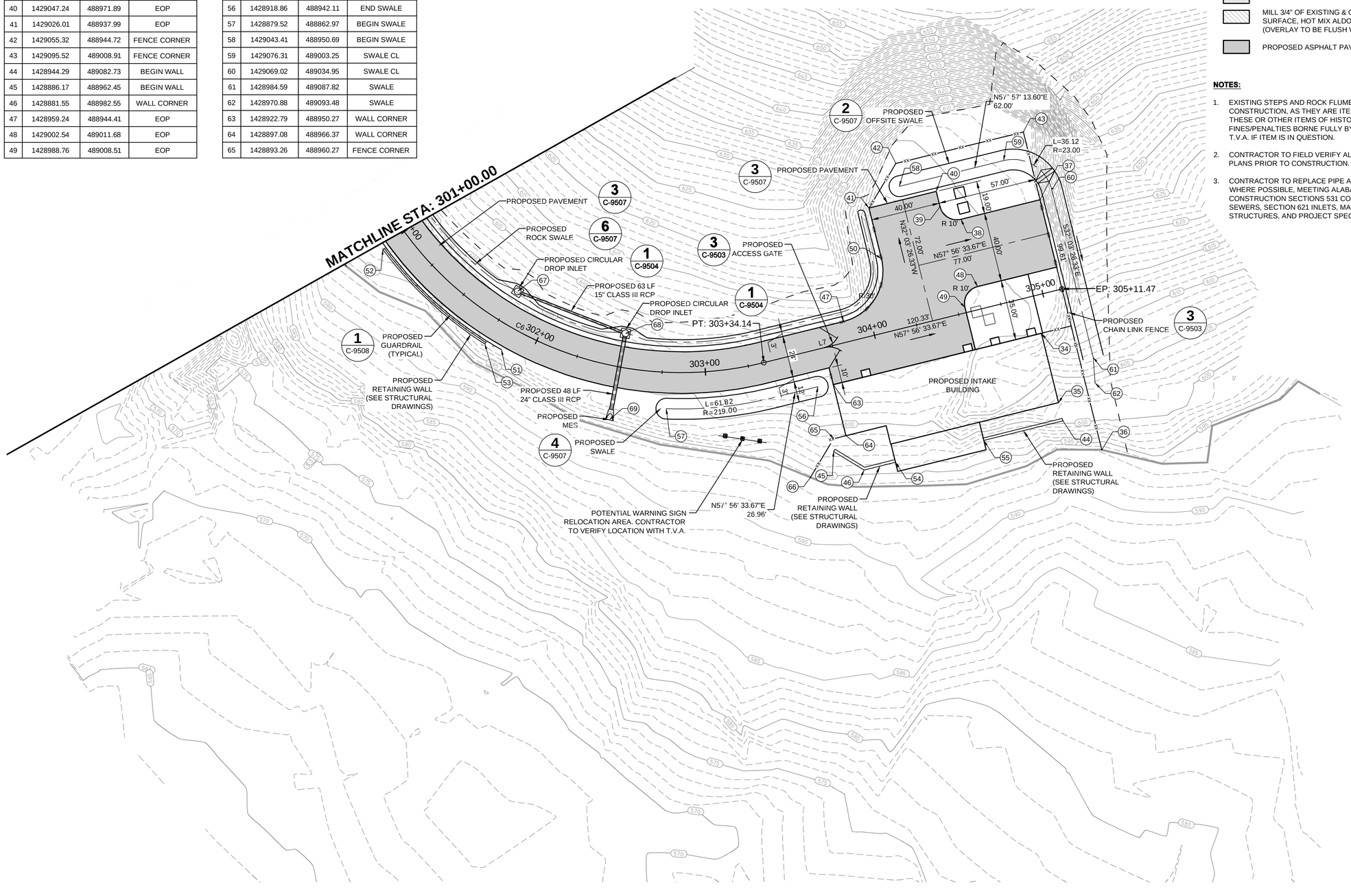
ID	NORTHING	EASTING	TYPE
50	1429000.58	488953.91	EOP
51	1428882.17	488761.98	END GUARDRAIL
52	1428915.78	488678.98	BEGIN WALL
53	1428882.38	488751.81	END WALL
54	1428891.43	488998.33	END WALL
55	1428919.30	489042.82	END WALL
56	1428918.86	488942.11	END SWALE
57	1428879.52	488862.97	BEGIN SWALE
58	1429043.41	488950.69	BEGIN SWALE
59	1429076.31	489003.25	SWALE CL
60	1429069.02	489034.95	SWALE CL
61	1428984.59	489087.82	SWALE
62	1428970.88	489093.48	SWALE
63	1428922.79	488950.27	WALL CORNER
64	1428897.08	488966.37	WALL CORNER
65	1428893.26	488960.27	FENCE CORNER

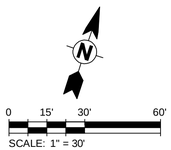
GEOMETRY TABLE

ID	NORTHING	EASTING	TYPE
66	1428867.81	488954.42	FENCE CORNER
67	1428917.01	488760.36	INLET
68	1428913.45	488827.02	INLET
69	1428863.12	488833.77	MES

LINE AND CURVE TABLE

ID	LENGTH	RADIUS	DIRECTION	START	END
C6	311.02'	198.00'	S79° 40' 00.54"E	N 1428985.07 E 488635.22	N 1428922.3518 E 488908.1215
L7	177.33'	-	N57° 56' 33.67"E	N 1428922.35 E 488908.12	N 1429016.4733 E 489058.4127





LEGEND

- REMOVE AND REPLACE EXISTING PAVEMENT
- MILL 3/4" OF EXISTING & OVERLAY W/ 1" WEARING SURFACE, HOT MIX ALDOT NO. 424 A, 1/2" ESAL RANGE A/B (OVERLAY TO BE FLUSH W/ NEW PAVEMENT)
- PROPOSED ASPHALT PAVEMENT

NOTES:

1. EXISTING STEPS AND ROCK FLUME ARE TO BE CAREFULLY PROTECTED DURING CONSTRUCTION, AS THEY ARE ITEMS OF HISTORIC SIGNIFICANCE. ANY DAMAGE TO THESE OR OTHER ITEMS OF HISTORIC SIGNIFICANCE WILL RESULT IN SIGNIFICANT FINES/PENALTIES BORNE FULLY BY THE CONTRACTOR. CONTRACTOR TO CONTACT T.V.A. IF ITEM IS IN QUESTION.
2. CONTRACTOR TO FIELD VERIFY ALL EXISTING UTILITY INFORMATION SHOWN ON PLANS PRIOR TO CONSTRUCTION.
3. CONTRACTOR TO REPLACE PIPE AND INLETS WITH THE SAME TYPE INLET AND PIPE WHERE POSSIBLE, MEETING ALABAMA STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION SECTIONS 531 CORRUGATED METAL PIPE, SECTION 533 STORM SEWERS, SECTION 621 INLETS, MANHOLES, AND MISCELLANEOUS DRAINAGE STRUCTURES, AND PROJECT SPECIFICATION SECTION 33 44 13.13 CATCH BASINS.

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BID SET

ALABAMA LICENSED 10/24/14 No. 31402-E PROFESSIONAL ENGINEER BRIAN DEAN READNOUR

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

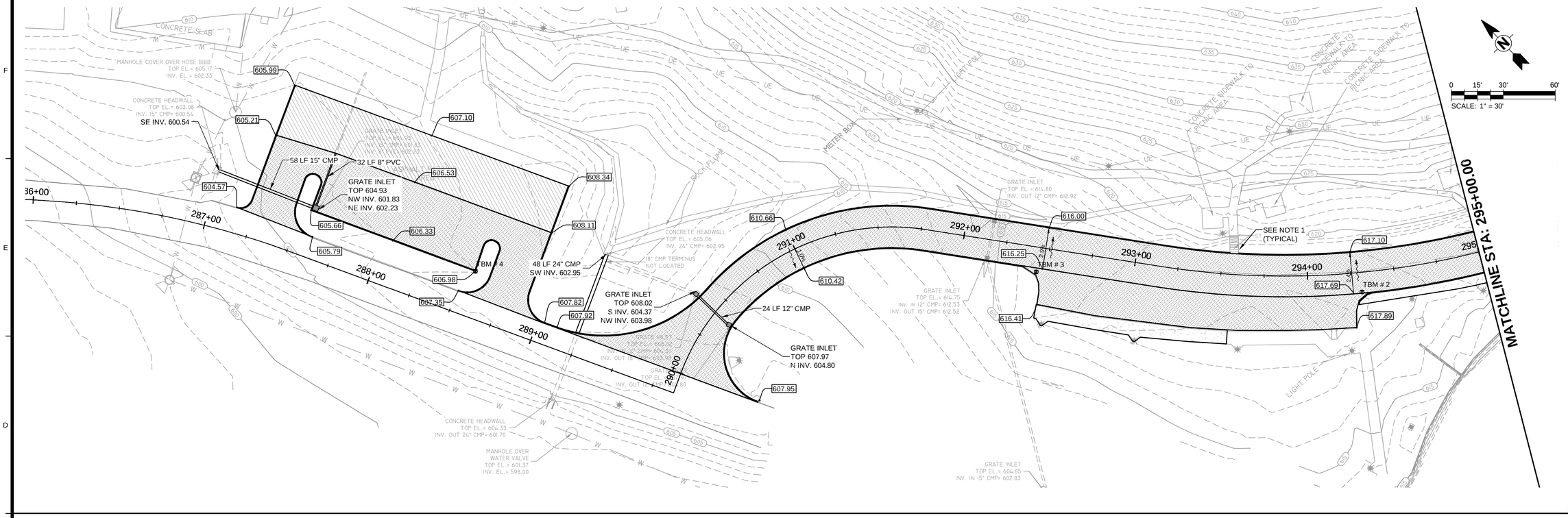
INTAKE ROAD & STRUCTURE SITE PLAN

Project No.:	200-11740-10003
Designed By:	BDR
Drawn By:	PD
Checked By:	JPT

C-1132

Bar Measures 1 inch

9/30/2014 12:29:26 PM - P:\IER\11740\200-11740-10003\CAD\SHEETFILES\INTAKE AND TRANSMISSION\RW-C-1131 & C-1132 SITE PLAN.DWG - DAVALOS, PAULA



LEGEND

- REMOVE AND REPLACE EXISTING PAVEMENT
- MILL 3/4" OF EXISTING & OVERLAY W/ 1" WEARING SURFACE, HOT MIX ALDOT NO. 424 A, 1/2" ESAL RANGE A/B (OVERLAY TO BE FLUSH W/ NEW PAVEMENT)
- PROPOSED ASPHALT PAVEMENT
- PROPOSED RIP RAP (MATCH EXISTING, CLASS 3 ASSUMED)
- PROPOSED CRUSHED AGGREGATE (ALDOT NO. 825B STONE BASE)
- SEED AND MULCH
- T XXX / B YYY — T = TOP ELEVATION, B = BOTTOM ELEVATION
- XXX — SOFT SPOT ELEVATION
- XXX — HARD SPOT ELEVATION

NOTES:

1. EXISTING STEPS AND ROCK FLUME ARE TO BE CAREFULLY PROTECTED DURING CONSTRUCTION, AS THEY ARE ITEMS OF HISTORIC SIGNIFICANCE. ANY DAMAGE TO THESE OR OTHER ITEMS OF HISTORIC SIGNIFICANCE WILL RESULT IN SIGNIFICANT FINES/PENALTIES BORNE FULLY BY THE CONTRACTOR. CONTRACTOR TO CONTACT T.V.A. IF ITEM IS IN QUESTION.
2. CONTRACTOR TO FIELD VERIFY ALL EXISTING UTILITY INFORMATION SHOWN ON PLANS PRIOR TO CONSTRUCTION.
3. CONTRACTOR TO REPLACE PIPE AND INLETS WITH THE SAME TYPE INLET AND PIPE WHERE POSSIBLE, MEETING ALABAMA STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION SECTIONS 531 CORRUGATED METAL PIPE, SECTION 533 STORM SEWERS, SECTION 621 INLETS, MANHOLES, AND MISCELLANEOUS DRAINAGE STRUCTURES, AND PROJECT SPECIFICATION SECTION 33 44 13.13 CATCH BASINS.

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BID SET

ALABAMA LICENSED No. 31402-E PROFESSIONAL ENGINEER BRIAN DEAN REARDON 10/24/14

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

INTAKE ROAD GRADING PLAN

Project No.:	200-11740-10003
Designed By:	BDR
Drawn By:	PD
Checked By:	JPT

C-1133

Bar Measures 1 inch

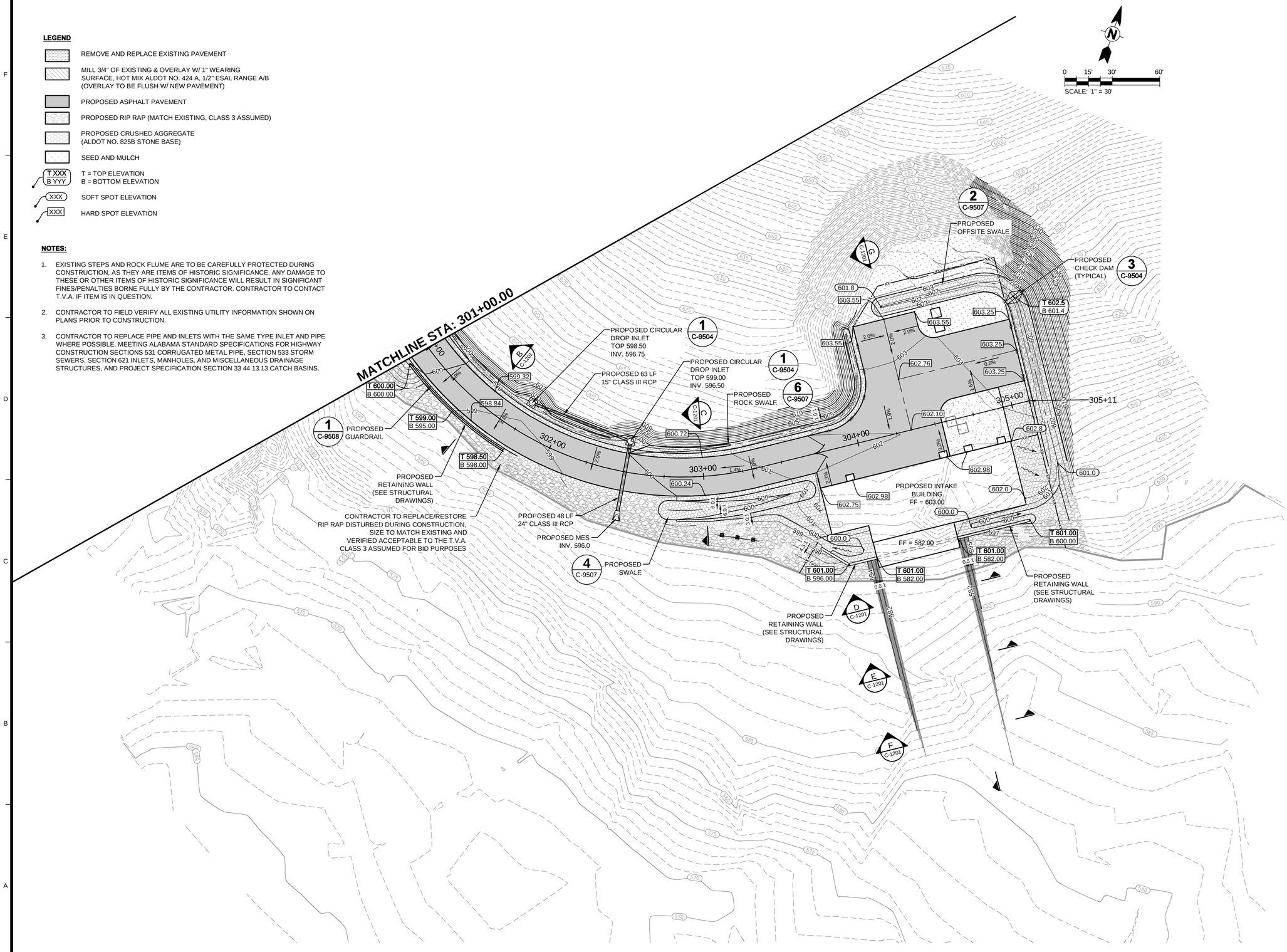
9/30/2014 12:30:42 PM - P:\IER\117740\200-11740-10003\CAD\SHEETFILES\INTAKE AND TRANSMISSION\NRW-C-1133 & C-1134 GRADING.DWG - DAVALOS, PAULA

LEGEND

- REMOVE AND REPLACE EXISTING PAVEMENT
- MILL 3/4" OF EXISTING & OVERLAY W/ 1" WEARING SURFACE, HOT MIX ALDOT NO. 424 A, 1/2" ESAL RANGE A/B (OVERLAY TO BE FLUSH W/ NEW PAVEMENT)
- PROPOSED ASPHALT PAVEMENT
- PROPOSED RIP RAP (MATCH EXISTING, CLASS 3 ASSUMED)
- PROPOSED CRUSHED AGGREGATE (ALDOT NO. 825B STONE BASE)
- SEED AND MULCH
- T XXX / B YYY — T = TOP ELEVATION, B = BOTTOM ELEVATION
- XXX — SOFT SPOT ELEVATION
- XXX — HARD SPOT ELEVATION

NOTES:

1. EXISTING STEPS AND ROCK FLUME ARE TO BE CAREFULLY PROTECTED DURING CONSTRUCTION, AS THEY ARE ITEMS OF HISTORIC SIGNIFICANCE. ANY DAMAGE TO THESE OR OTHER ITEMS OF HISTORIC SIGNIFICANCE WILL RESULT IN SIGNIFICANT FINES/PENALTIES BORNE FULLY BY THE CONTRACTOR. CONTRACTOR TO CONTACT T.V.A. IF ITEM IS IN QUESTION.
2. CONTRACTOR TO FIELD VERIFY ALL EXISTING UTILITY INFORMATION SHOWN ON PLANS PRIOR TO CONSTRUCTION.
3. CONTRACTOR TO REPLACE PIPE AND INLETS WITH THE SAME TYPE INLET AND PIPE WHERE POSSIBLE, MEETING ALABAMA STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION SECTIONS 531 CORRUGATED METAL PIPE, SECTION 533 STORM SEWERS, SECTION 621 INLETS, MANHOLES, AND MISCELLANEOUS DRAINAGE STRUCTURES, AND PROJECT SPECIFICATION SECTION 33 44 13.13 CATCH BASINS.



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BID SET

ALABAMA LICENSED 10/24/14 No. 31402-E PROFESSIONAL ENGINEER BRIAN DEAN READNOUR

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES
RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

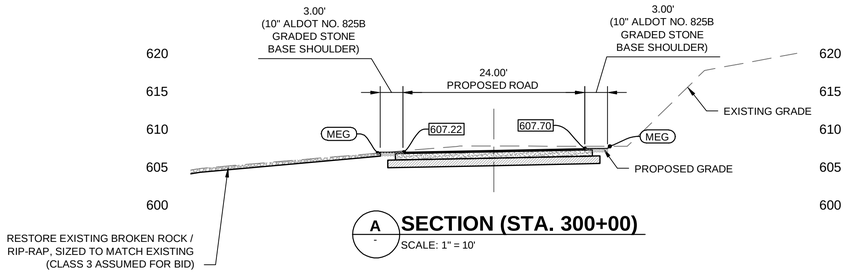
INTAKE ROAD & STRUCTURE GRADING PLAN

Project No.:	200-11740-10003
Designed By:	BDR
Drawn By:	PD
Checked By:	JPT

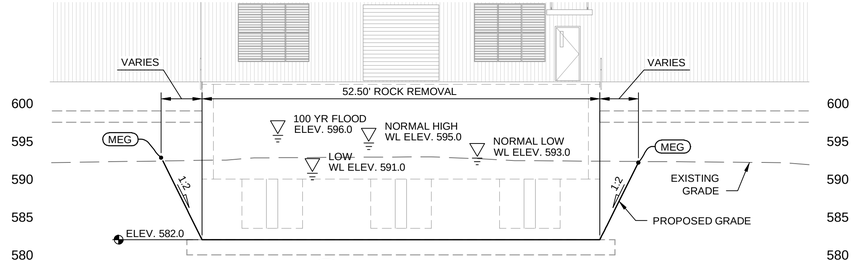
C-1134

Bar Measures 1 inch

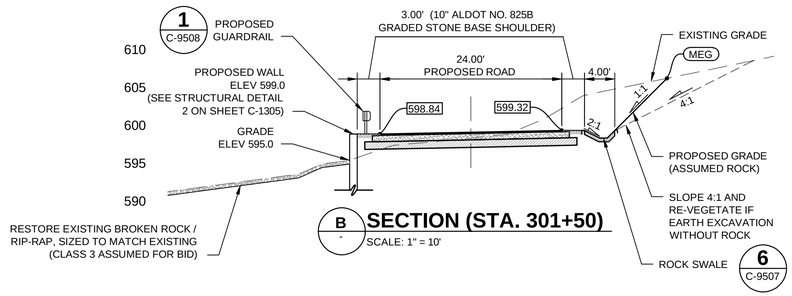
9/30/2014 12:31:06 PM - P:\IER\11740\200-11740-10003\CADSHEETFILES\INTAKE AND TRANSMISSIONRW-C-1133 & C-1134 GRADING.DWG - DAVALOS, PAULA



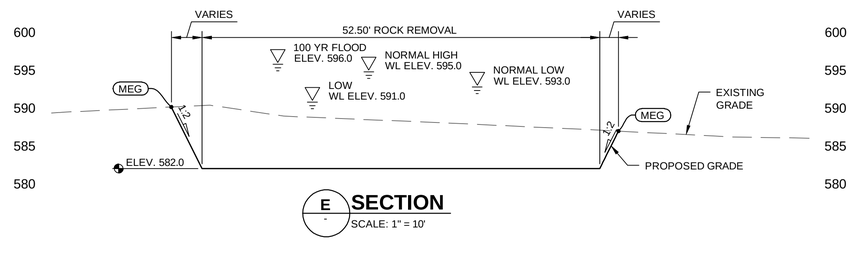
A SECTION (STA. 300+00)
SCALE: 1" = 10'



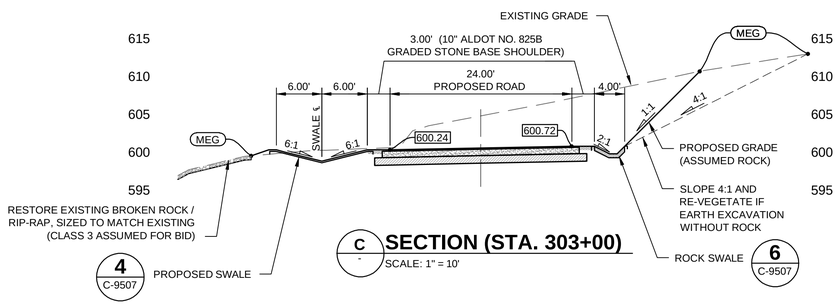
D SECTION
SCALE: 1" = 10'



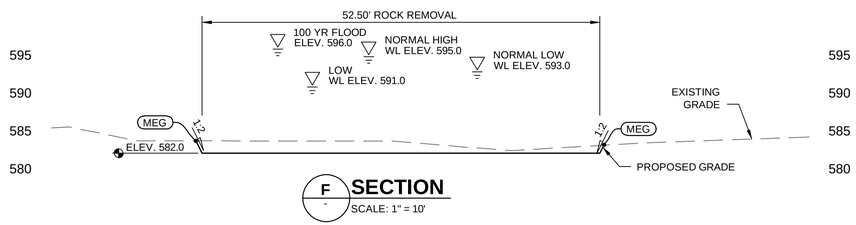
B SECTION (STA. 301+50)
SCALE: 1" = 10'



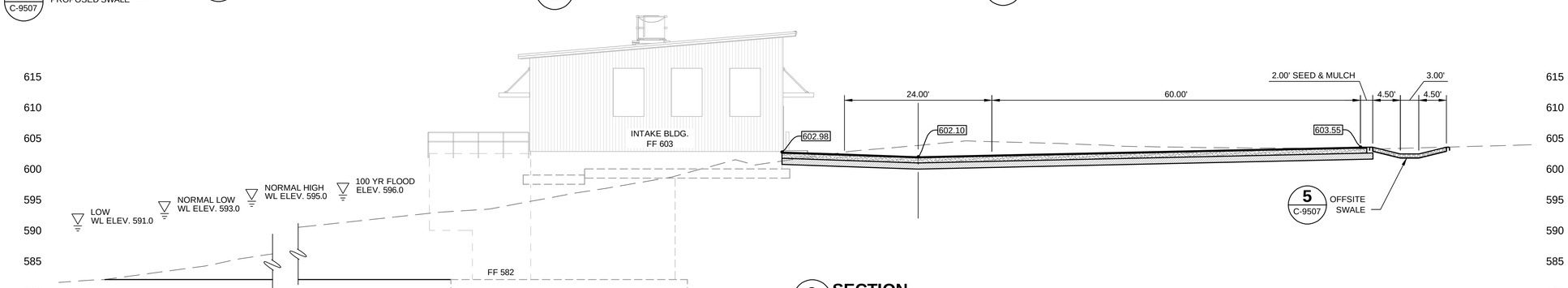
E SECTION
SCALE: 1" = 10'



C SECTION (STA. 303+00)
SCALE: 1" = 10'



F SECTION
SCALE: 1" = 10'



G SECTION
SCALE: 1" = 10'

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PHONE: (256) 424-4077 FAX: (256) 424-4097

BID SET

ALABAMA LICENSED 10/24/14 No. 31402-E PROFESSIONAL ENGINEER BRIAN DEAN REARDON

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES
RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

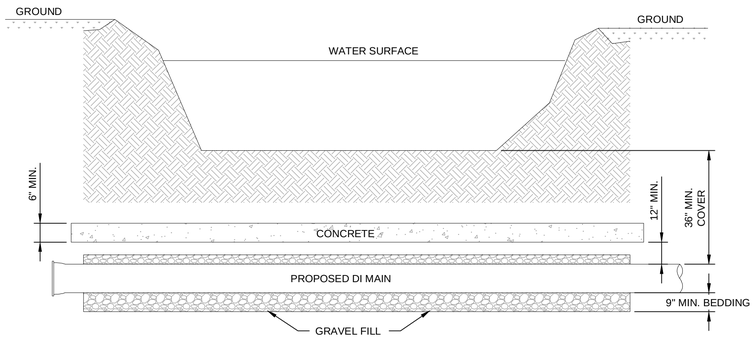
SECTIONS

Project No.:	200-11740-10003
Designed By:	BDR
Drawn By:	PD
Checked By:	JPT

C-1201

Bar Measures 1 inch

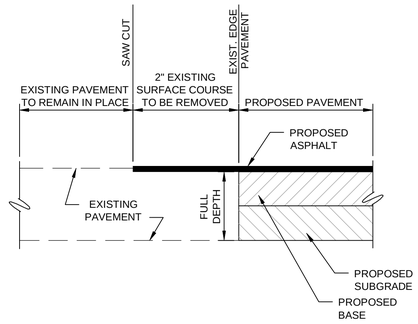
9/30/2014 2:12:15 PM - P:\HER\11740\200-11740-10003\CAD\SHEETFILES\INTAKE AND TRANSMISSION\RW-C-1201 SECTIONS.DWG - DAVALOS, PAULA



CREEK CROSSING

1 DETAIL
SCALE: N.T.S.

HUNTSVILLE UTILITIES
WATER DEPARTMENT
SPEC # 3D

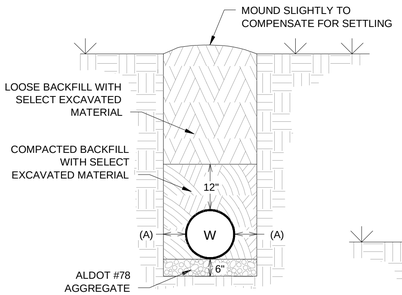


SAW CUT

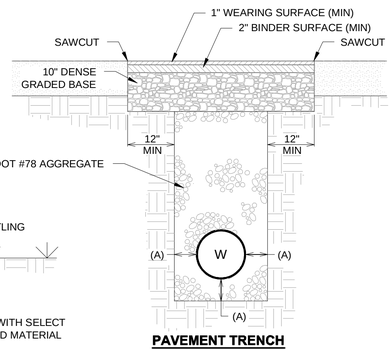
3 DETAIL
SCALE: N.T.S.

NOT USED

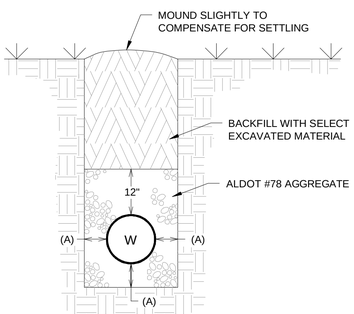
5 DETAIL
SCALE: N.T.S.



EARTH TRENCH



PAVEMENT TRENCH



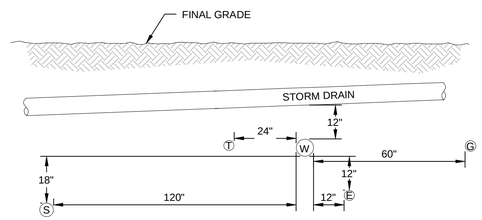
ROCK TRENCH

NOTES:

1. ALL DIMENSIONS SHOWN ARE MINIMUM REQUIREMENTS. IN NO CASE SHALL NEW PAVEMENT THICKNESS BE LESS THAN EXISTING PAVEMENT.
2. DIMENSION (A) SHALL BE 6" MIN. FOR PIPES LESS THAN 30" DIA. DIMENSION (A) SHALL BE 9" MIN. FORPIPES 30" AND LARGER.

STANDARD TRENCH

2 DETAIL
SCALE: N.T.S.



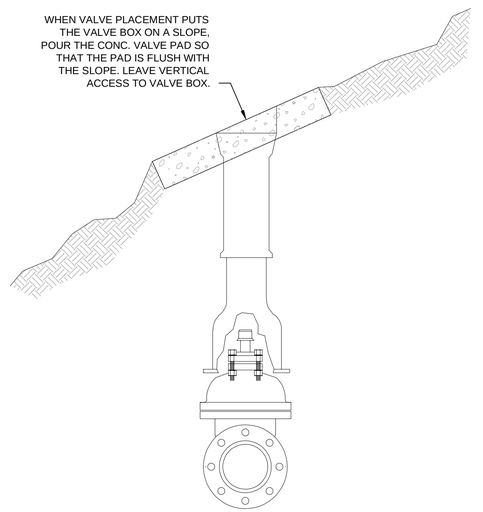
NOTES:

1. MEASUREMENTS ARE FROM EDGE OF WATER PIPE TO EDGE OF OTHER UTILITIES.
2. ALL DIMENSIONS SHOWN ARE MINIMUMS REQUIRED AND MAY BE GREATER DUE TO DIFFERENT CONDUIT CONFIGURATIONS.

MINIMUM SPACING REQUIREMENTS

4 DETAIL
SCALE: N.T.S.

HUNTSVILLE UTILITIES
WATER DEPARTMENT
SPEC # 4A



VALVE BOX PAD (SLOPE CONDITIONS)

6 DETAIL
SCALE: N.T.S.

HUNTSVILLE UTILITIES
WATER DEPARTMENT
SPEC # 10B

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BID SET

ALABAMA LICENSED PROFESSIONAL ENGINEER CHRISTIAN P. DUNAWAY 10/24/14

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

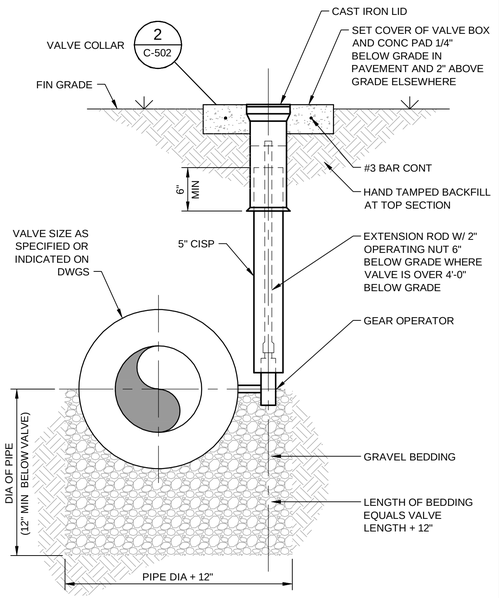
DETAILS

Project No.:	200-11740-10003
Designed By:	KLW
Drawn By:	PD
Checked By:	JPT

C-9501

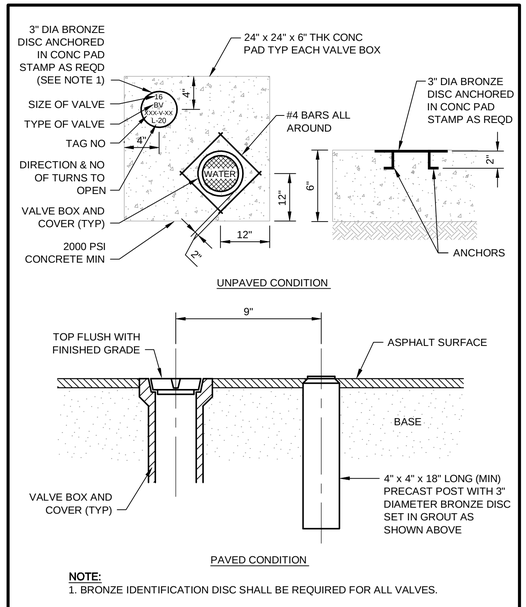
Bar Measures 1 inch

9/30/2014 2:12:26 PM - P:\HER\11740\200-11740-10003\CAD\SHEETFILES\INTAKE AND TRANSMISSION\RW-C-9501 TO C-9503 DETAILS.DWG - DAVALOS, PAULA



BUTTERFLY VALVE

1 DETAIL
SCALE: N.T.S.



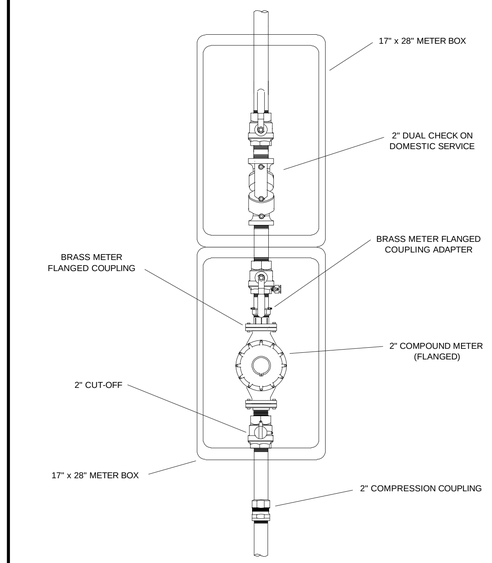
NOTE:
1. BRONZE IDENTIFICATION DISC SHALL BE REQUIRED FOR ALL VALVES.

VALVE COLLAR

2 DETAIL
SCALE: N.T.S.

NOT USED

4 DETAIL
SCALE: N.T.S.



2" COMPOUND METER

5 DETAIL
SCALE: N.T.S.

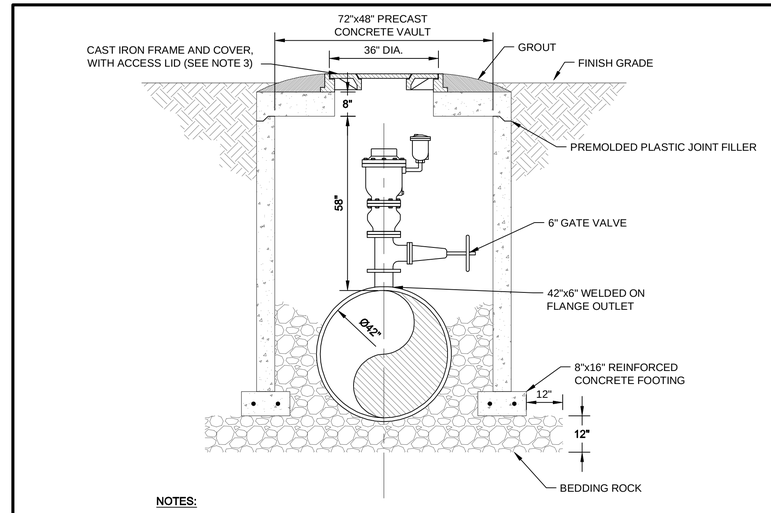
HUNTSVILLE UTILITIES
WATER DEPARTMENT
SPEC # 13F

NOT USED

DETAIL
SCALE: N.T.S.

NOT USED

DETAIL
SCALE: N.T.S.



NOTES:
1. ABOVE DETAIL IS BASED ON 6" AIR RELEASE VALVE. CHANGE PIPE AND FITTINGS ACCORDINGLY FOR THE OTHER VALVE SIZES AND TYPES. VALVE SIZES TO BE DETERMINED BY THE ENGINEER AND APPROVED BY HUNTSVILLE UTILITIES PRIOR TO INSTALLATION.
2. THE MINIMUM DIMENSION FROM TOP OF PIPE TO FINISHED GRADE SHALL BE 5.5 FEET. UNLESS APPROVED BY THE ENGINEER.
3. LID TO BE LETTERED WITH THE APPROPRIATE WORDS "RAW WATER".

AIR RELEASE AND VACUUM VALVE

6 DETAIL
SCALE: N.T.S.

TETRA TECH
www.tetratech.com
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HUNTSVILLE, ALABAMA 35806
PHONE: (256) 424-4077 FAX: (256) 424-4097

BID SET

ALABAMA LICENSED PROFESSIONAL ENGINEER CHRISTIAN P. DUNAWAY 10 DEC 14

MARK	DATE	DESCRIPTION	BY

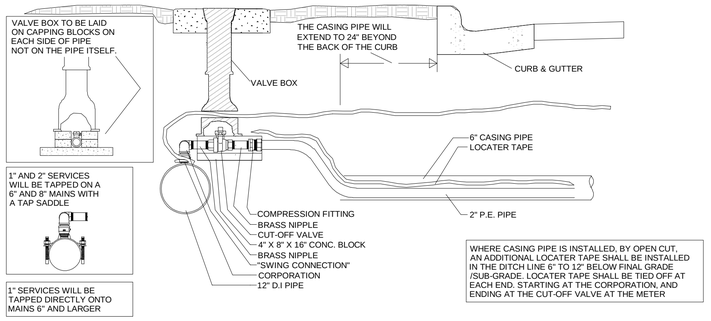
HUNTSVILLE UTILITIES
RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES
DETAILS

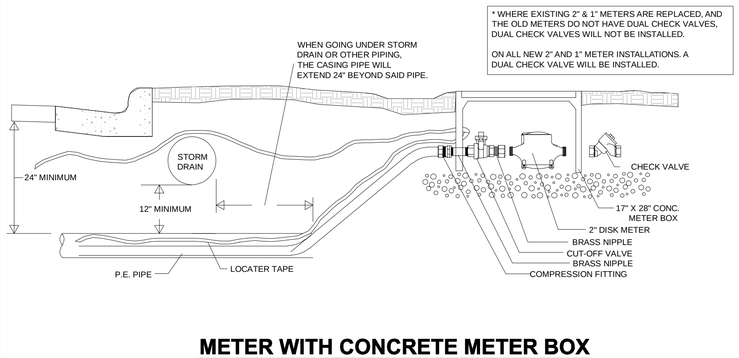
Project No.:	200-11740-10003
Designed By:	KLW
Drawn By:	PD
Checked By:	JPT

C-9502

Bar Measures 1 inch

9/30/2014 2:12:33 PM - P:\IER\11740\200-11740-10003\CAD\SHEETFILES\INTAKE AND TRANSMISSION\RW-C-9501 TO C-9503 DETAILS.DWG - DAVALOS, PAULA



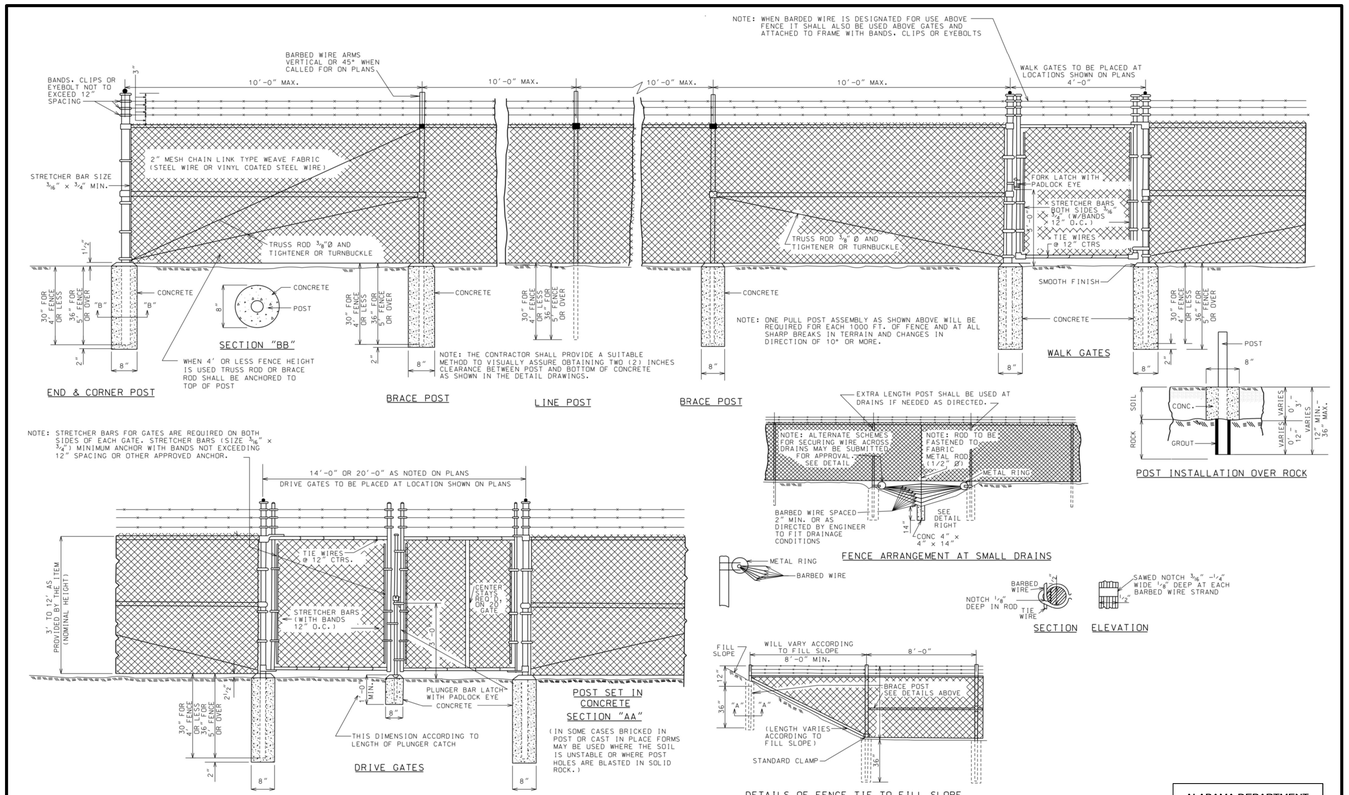


METER WITH CONCRETE METER BOX

1 DETAIL

SCALE: N.T.S.

HUNTSVILLE UTILITIES
WATER DEPARTMENT
SPEC # 13B



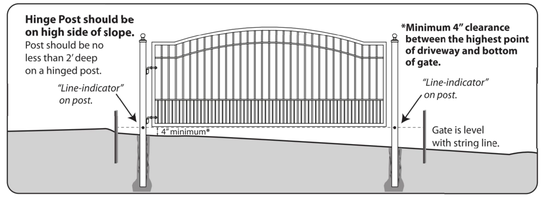
CHAIN LINK FENCE AND ACCESS GATE

3 DETAIL

SCALE: N.T.S.

ALABAMA DEPARTMENT OF TRANSPORTATION

SPECIAL DRAWING NO.
IF-634
INDEX NO.
210



Size the Gate to Match Your Driveway

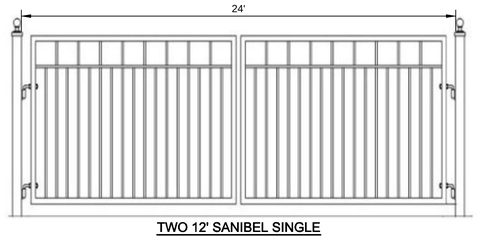
Driveway Width	Gate Size	Distance Between Center of Gate Posts		
		Sanibel	St. Augustine	Biscayne
Up to 114" (2.9 m)	10' Single	129" (3.3 m)	126" (3.2 m)	129" (3.3 m)
115"–141" (2.9-3.6m)	12' Single	153" (3.9 m)	153" (3.9 m)	153" (3.9 m)
Up to 138" (3.5 m)	12' Dual	157" (4 m)	150" (3.8 m)	157" (4 m)
139"–167" (3.5-4.2m)	14' Dual	181" (4.6 m)	179" (4.5 m)	181" (4.6 m)
167"–193" (4.2-4.9m)	16' Dual	205" (5.2 m)	207" (5.3 m)	205" (5.2 m)

Note: 10 ft. = 3.5 m; 12 ft. = 3.7 m; 14 ft. = 4.3 m; 16 ft. = 4.9 m.

MANUAL GATE

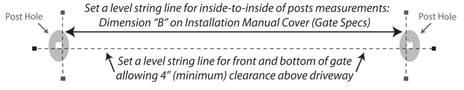
2 DETAIL

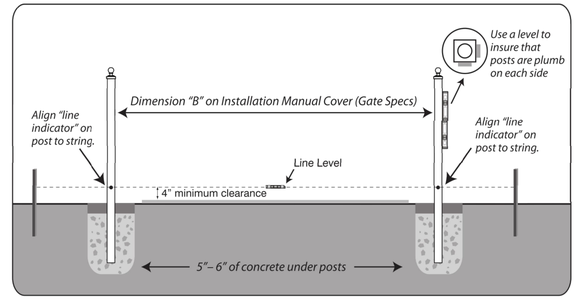
SCALE: N.T.S.



TWO 12' SANIBEL SINGLE

Setting Stakes and Level Lines (*Overhead View*)





MIGHTY MULE E-Z GATES DRIVEWAY
GATE SANIBEL MODEL 12FT. GATE
G1612-KIT (OR APPROVED EQUAL)

TETRA TECH
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101 QUALITY CIRCLE, SUITE 140
HUNTSVILLE, ALABAMA 35806
PHONE: (256) 424-4077 FAX: (256) 424-4097

BID SET

ALABAMA LICENSED PROFESSIONAL ENGINEER CHRISTIAN P. DUNCAN 10 DEC 14

MARK	DATE	DESCRIPTION	BY

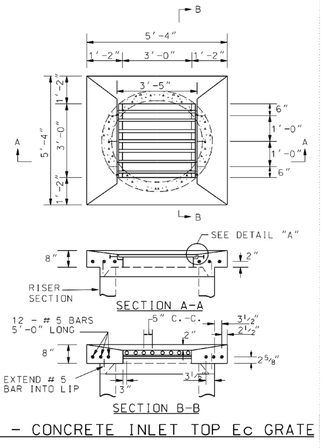
HUNTSVILLE UTILITIES
RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES
DETAILS

Project No.:	200-11740-10003
Designed By:	KLW
Drawn By:	PD
Checked By:	JPT

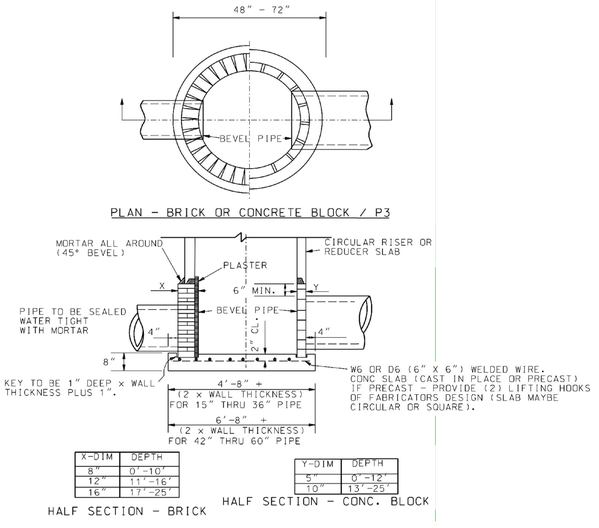
C-9503

Bar Measures 1 inch

9/30/2014 2:12:43 PM - P:\HER\11740\200-11740-10003\CAD\SHEETFILES\INTAKE AND TRANSMISSION\MRW-C-9501 TO C-9503 DETAILS.DWG - DAVALOS, PAULA



PLAN - CONCRETE INLET TOP Ec GRATE



X-DIM	DEPTH
8"	0'-10'
12"	11'-16'
16"	17'-25'

HALF SECTION - BRICK

Y-DIM	DEPTH
5"	0'-12'
10"	13'-25'

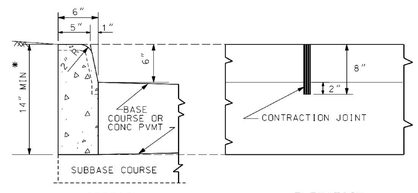
HALF SECTION - CONC. BLOCK

CIRCULAR DROP INLET FOR 15" - 60" PIPE / P3

1 DETAIL
SCALE: N.T.S.

ALABAMA DEPARTMENT OF TRANSPORTATION

SPECIAL DRAWING NO.
I-621-P
INDEX NO.
641



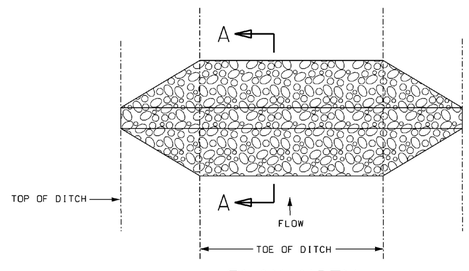
TYPE "A"
VERTICAL TYPE

TYPE "A" CURB

2 DETAIL
SCALE: N.T.S.

ALABAMA DEPARTMENT OF TRANSPORTATION

SPECIAL DRAWING NO.
623-XY
INDEX NO.
703

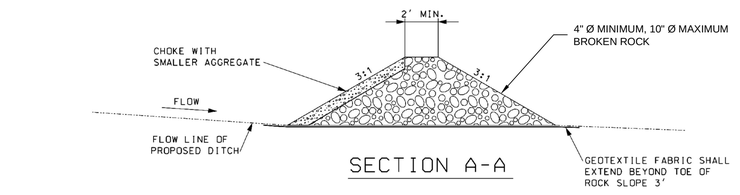


PLAN VIEW

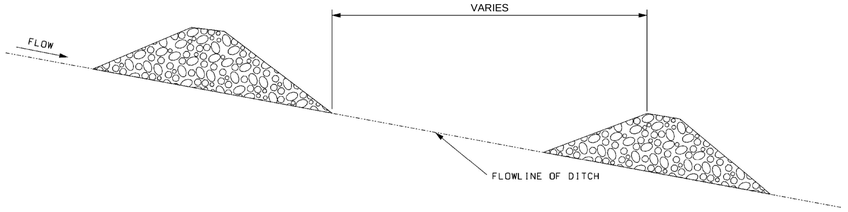
DETAIL FOR TRIANGULAR DITCH

NOTE:

1. DITCH CHECKS CAN BE REMOVED FOR MAINTENANCE AND/OR REPLACEMENT BUT MUST REMAIN IN PLACE UNTIL UPSLOPE AREAS HAVE BEEN PERMANENTLY STABILIZED. MAINTENANCE INCLUDES REMOVAL OF SEDIMENT BEGINNING WHEN SEDIMENT ACCUMULATION REACHES $\frac{1}{3}$ THE CAPACITY OR HEIGHT OF THE STRUCTURE AND NEVER ALLOWING FOR SEDIMENT TO ACCUMULATE MORE THAN $\frac{1}{2}$ THE VOLUME OR HEIGHT OF THE DITCH CHECK STRUCTURE.



TEMPORARY ROCK DITCH CHECKS IN ROADSIDE DITCHES



DETAIL FOR SPACING BETWEEN DITCH CHECKS

DITCH CHECK STRUCTURE

3 DETAIL
SCALE: N.T.S.

ALABAMA DEPARTMENT OF TRANSPORTATION

SPECIAL DRAWING NO.
ESC-300
INDEX NO.
1162-E

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BID SET

ALABAMA LICENSED PROFESSIONAL ENGINEER CHRISTIAN P. DUNAWAY 10/24/14

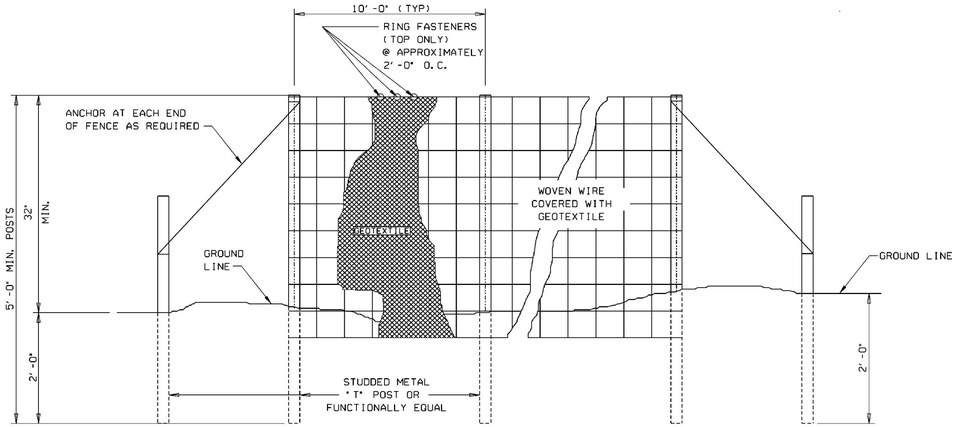
MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES
RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES
DETAILS

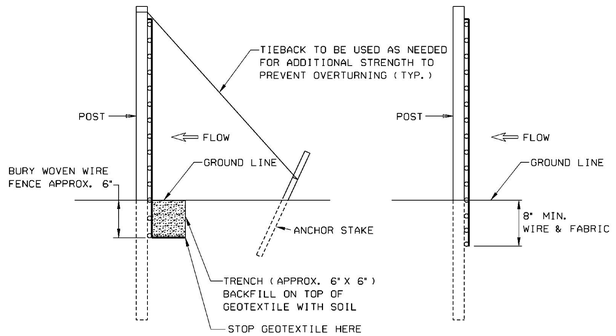
Project No.:	200-11740-10003
Designed By:	KLW
Drawn By:	PD
Checked By:	JPT

C-9504

Bar Measures 1 inch

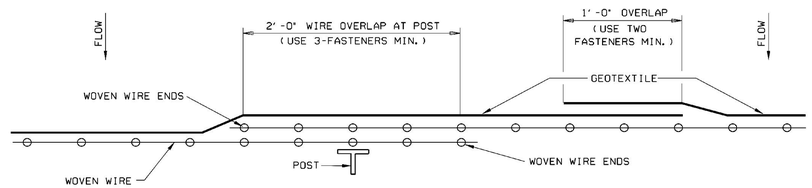


ELEVATION VIEW



METHOD I

METHOD II
MECHANICAL INSTALLATION



PLAN VIEW

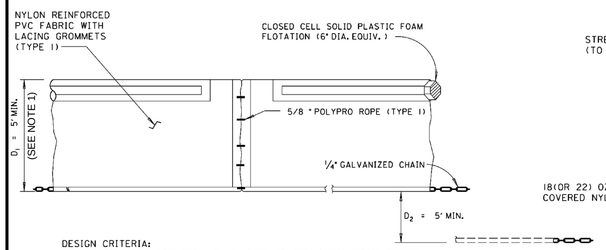
REQUIRED LAPPING

NOTES:
1. METHOD II FENCE INSTALLATION ALSO TO INCLUDE ANCHORS AND TIEBACKS AS REQUIRED.
2. SILT FENCE SHALL BE USED IN AREAS WHERE FLOW IS NOT SEVERE OR AS DIRECTED BY THE ENGINEER.
3. SILT FENCES ARE TEMPORARY SEDIMENT CONTROL ITEMS THAT SHALL BE ERECTED OPPOSITE ERODIBLE AREAS SUCH AS NEWLY GRADED FILL SLOPES AND ADJACENT TO STREAMS AND CHANNELS.
4. SILT FENCE SHOULD BE PLACED WELL INSIDE RIGHT-OF-WAY AND ALONG EDGE OF CLEARING LIMITS. THIS WILL ALLOW ROOM FOR A BACK-UP FENCE IF FIRST BECOMES FULL.
5. WHEREVER POSSIBLE SILT FENCES SHALL BE CONSTRUCTED ACROSS A LEVEL AREA IN THE SHAPE OF A SMILE. THIS AIDS IN PONDING OF RUNOFF AND FACILITATES SEDIMENTATION.
6. THE CONTRACTOR MAY ELECT TO USE EITHER METHOD I OR METHOD II. COST TO BE LINEAR FEET OF SILT FENCE.
7. METHOD II INSTALLATION SHALL BE ACCOMPLISHED USING AN IMPLEMENT THAT IS MANUFACTURED FOR THE APPLICATION AND PROVIDES A CONFIGURATION MEETING THE REQUIREMENTS OF THE DETAIL.

SILT FENCE

1 - **DETAIL**
SCALE: N.T.S.

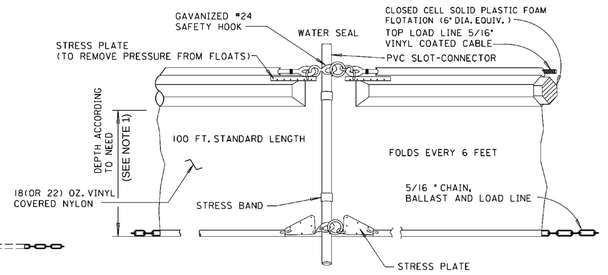
ALABAMA DEPARTMENT OF TRANSPORTATION
SPECIAL DRAWING NO.
ESC-200
INDEX NO.
1161-C



DESIGN CRITERIA:
TYPE 1 CONFIGURATION SHOULD BE USED IN PROTECTED AREAS WHERE THERE IS NO CURRENT AND THE AREA IS SHELTERED FROM WIND AND WAVES.

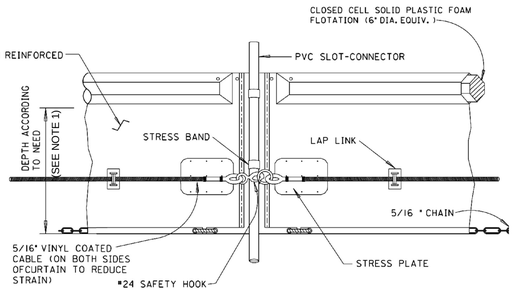
D_1 = (SINGLE PANEL FOR DEPTHS 5' OR LESS).
D_2 = (ADDITIONAL PANEL FOR DEPTHS > 5').
CURTAIN TO REACH BOTTOM UP TO DEPTHS OF 10 FEET. TWO(2) PANELS TO BE USED FOR DEPTHS GREATER THAN 10 FEET UNLESS SPECIAL DEPTH CURTAINS SPECIFICALLY CALLED FOR IN THE PLANS OR AS DETERMINED BY THE ENGINEER.

TYPE 1



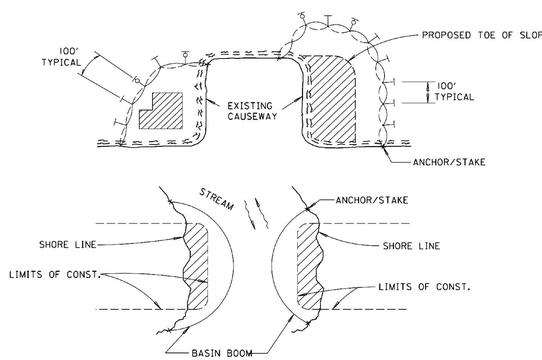
TYPE 2 CONFIGURATION SHOULD BE USED IN PROTECTED AREAS WHERE THERE MAY BE SMALL TO MODERATE CURRENT RUNNING (≤ 3.5' PER SECOND) AND/OR WIND AND WAVE ACTION CAN AFFECT THE CURTAIN.

TYPE 2



TYPE 3 CONFIGURATION SHOULD BE USED IN AREAS WHERE CONSIDERABLE CURRENT (≤ 5' PER SECOND) MAY BE PRESENT, WHERE TIDAL ACTION MAY BE PRESENT, AND/OR WHERE THE CURTAIN IS POTENTIALLY SUBJECT TO WIND AND WAVE ACTION.

TYPE 3



NOTES:

1. PER T.V.A. PERMIT, A FLOATING SILT SCREEN EXTENDING FROM THE SURFACE TO THE BOTTOM IS TO BE IN PLACE DURING EXCAVATION OR DREDGING.
2. THE CONTRACTOR IS RESPONSIBLE FOR SELECTION OF THE APPROPRIATE TYPE OF FLOATING BASIN BOOM AND INSTALLATION METHODS BASED ON WATER BODY CONDITIONS.
3. FLOATING BASIN BOOMS ARE TO BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS DIRECTIONS.
4. FLOATING BASIN BOOMS CAN BE STAKED AND/OR ANCHORED IN STILL OR MOVING WATERS.
5. FLOATING BASIN BOOMS ARE INTENDED TO PREVENT SEDIMENT MIGRATION WITHIN THE WATER BODY. THEY ARE NOT INTENDED TO BE INSTALLED AS THE PRIMARY SEDIMENT CONTROL METHOD, OR TO CAPTURE SEDIMENT FROM UPLAND AREAS AS A PRIMARY FUNCTION. OTHER UPLAND EROSION AND SEDIMENT CONTROL MEASURES SHOULD BE INCORPORATED AS PROVIDED IN THE PLANS AND STANDARD DRAWINGS.
6. FLOATING BASIN BOOM SHOWN MAY BE SIMILAR TO PROPRIETARY DESIGN FUNCTIONALLY EQUIVALENT DESIGNS MEETING CONTRACT REQUIREMENTS MAY ALSO BE USED.

FLOATING BASIN BOOM APPLICATIONS

LEGEND

- DREDGE, FILL OR WORK AREA
- MOORING BOUY W/ ANCHOR
- ANCHOR

FLOATING BASIN BOOM

2 - **DETAIL**
SCALE: N.T.S.

ALABAMA DEPARTMENT OF TRANSPORTATION
SPECIAL DRAWING NO.
ESC-501
INDEX NO.
1164

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BID SET

ALABAMA LICENSED PROFESSIONAL ENGINEER CHRISTIAN P. TURNIPSEED 10 DEC 14

MARK	DATE	DESCRIPTION	BY

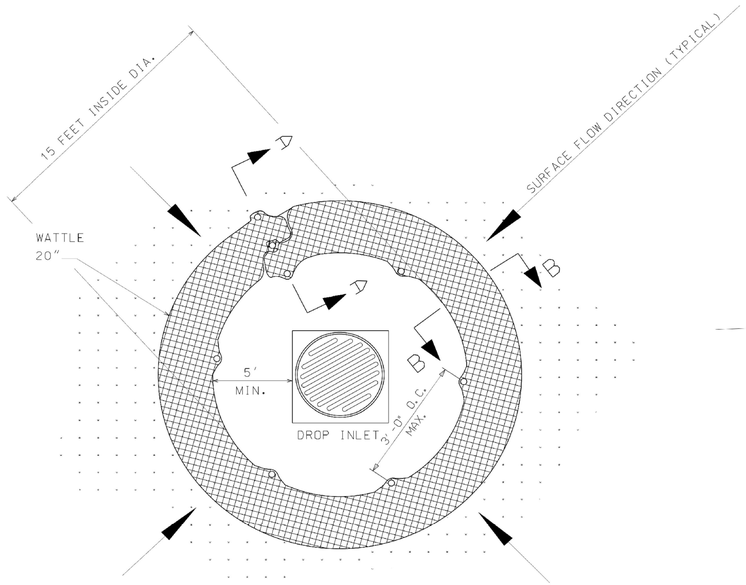
HUNTSVILLE UTILITIES
RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES
DETAILS

Project No.:	200-11740-10003
Designed By:	KLW
Drawn By:	PD
Checked By:	JPT

C-9505

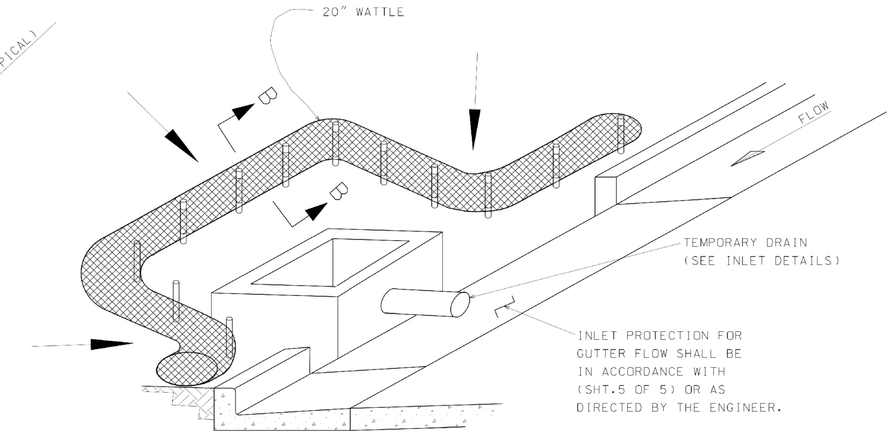
Bar Measures 1 inch

9/30/2014 2:13:11 PM - P:\HER\11740\200-11740-10003\CAD\SHEETFILES\INTAKE AND TRANSMISSION\RW-C-9504 TO C-9508 DETAILS.DWG - DAVALOS, PAULA

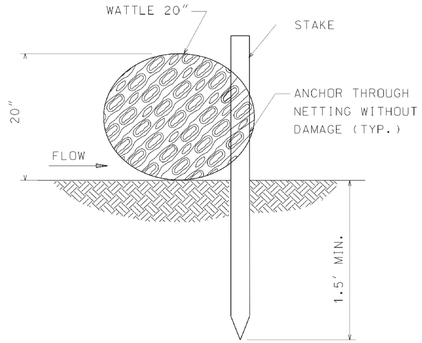


PLAN VIEW

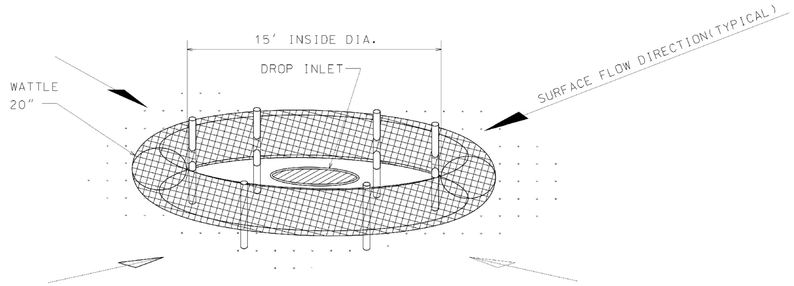
NOTE:
SILT FENCE OR SAND BAGS MAY ALSO BE USED FOR THIS APPLICATION.
HAY BALES NOT ACCEPTABLE DURING THIS STAGE.



CURB INLET PROTECTION (STAGE 2)
SINGLE OR DOUBLE WING INLET



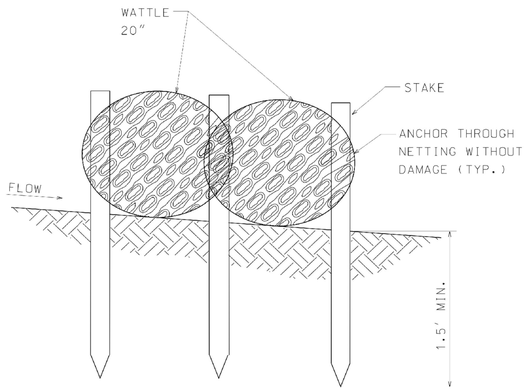
SECTION B-B



DROP INLET PROTECTION

NOTES:

1. ANCHORING STAKES SHALL BE SIZED, SPACED, AND BE OF A MATERIAL THAT EFFECTIVELY SECURES THE WATTLE. STAKE SPACING SHALL BE A MAXIMUM OF THREE FEET.
2. OVERLAP ENDS OF WATTLES PER MANUFACTURERS RECOMMENDATIONS (1'MIN.,3'MAX.).
3. TRENCHING OF WATTLES MAY BE NECESSARY IF PIPING BECOMES EVIDENT.



SECTION A-A

INLET PROTECTION

1 - DETAIL
SCALE: N.T.S.

ALABAMA DEPARTMENT
OF TRANSPORTATION

SPECIAL DRAWING NO.
ESC-400
INDEX NO.
1163-B

TETRA TECH
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101 QUALITY CIRCLE, SUITE 140
HUNTSVILLE, ALABAMA 35806
PHONE: (256) 424-4077 FAX: (256) 424-4097

BID SET

ALABAMA LICENSED PROFESSIONAL ENGINEER
CHRISTIAN P. DUNIGAN
10/24/14

MARK	DATE	DESCRIPTION	BY

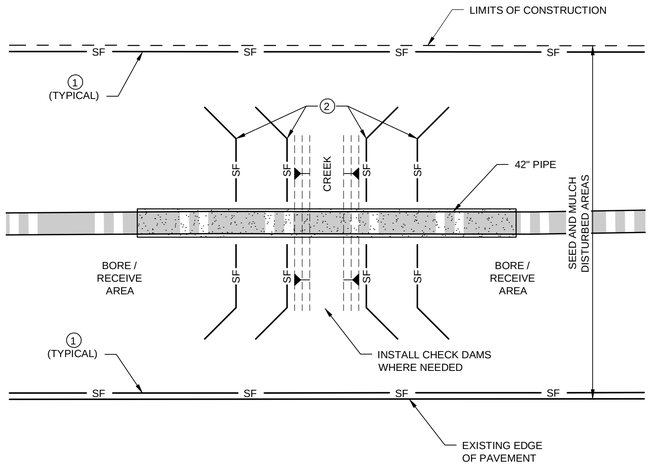
HUNTSVILLE UTILITIES
RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES
DETAILS

Project No.:	200-11740-10003
Designed By:	KLW
Drawn By:	PD
Checked By:	JPT

C-9506

Bar Measures 1 inch

9/30/2014 2:13:21 PM - P:\HER\11740\200-11740-10003\CAD\SHEETFILES\INTAKE AND TRANSMISSION\RW-C-9504 TO C-9508 DETAILS.DWG - DAVALOS, PAULA

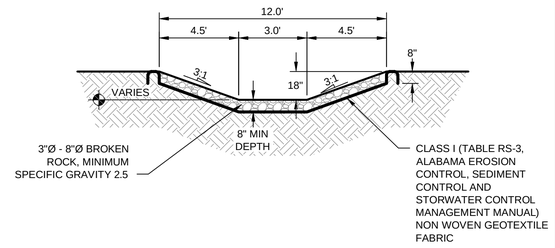


NOTES:

1. CONTRACTOR TO INSTALL SILT FENCE AND OTHER APPLICABLE EROSION CONTROL MEASURE TO PREVENT TURBIDITY AND SEDIMENT ESCAPE FROM LIMITS OF CONSTRUCTION, AS A MINIMUM MEASURE, PRIOR TO CLEANING AND GRUBBING OPERATIONS.
2. ADDITIONAL SILT FENCING INCLUDING BUT NOT LIMITED TO CHECK DAMS, FLOATING TURBIDITY BARRIERS, OR OTHER PROTECTIVE MEASURES TO BE REQUIRED AT STEEP SLOPES, ADJACENT TO EXISTING WATER BODIES, AND OTHER APPLICABLE LOCATIONS TO PREVENT TURBIDITY AND SEDIMENT ESCAPE FROM CONSTRUCTION OPERATIONS.
3. CONTRACTOR TO RESTORE LIMITS OF CONSTRUCTION TO EXISTING GRADE AND SEED AND MULCH PER PROJECT SPECIFICATION 32 92 20 UPON COMPLETION OF PIPE INSTALLATION.

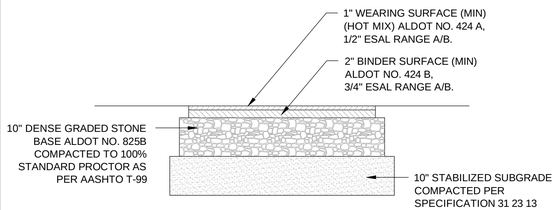
EROSION CONTROL

1 DETAIL
SCALE: N.T.S.



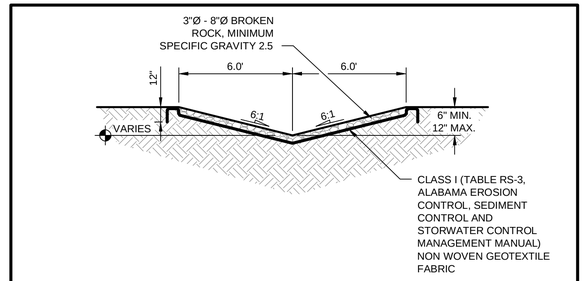
OFFSITE SWALE

2 DETAIL
SCALE: N.T.S.



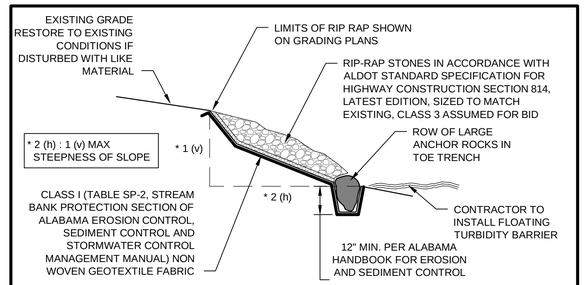
PROPOSED PAVEMENT

3 DETAIL
SCALE: N.T.S.



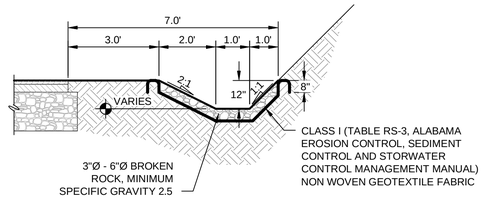
PROPOSED SPREADER SWALE

4 DETAIL
SCALE: N.T.S.



RIP-RAP INSTALLATION

5 DETAIL
SCALE: N.T.S.



ROCK SWALE

6 DETAIL
SCALE: N.T.S.

TETRA TECH
www.tetratech.com
101 QUALITY CIRCLE, SUITE 140
HUNTSVILLE, ALABAMA 35806
PHONE: (256) 424-4077 FAX: (256) 424-4097

BID SET

ALABAMA LICENSED PROFESSIONAL ENGINEER CHRISTIAN P. TURNIPSEED 10/24/14

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

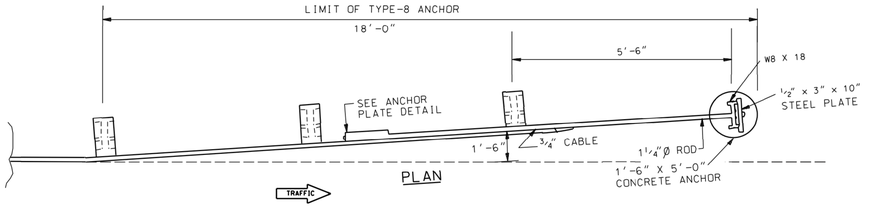
DETAILS

Project No.:	200-11740-10003
Designed By:	KLW
Drawn By:	PD
Checked By:	JPT

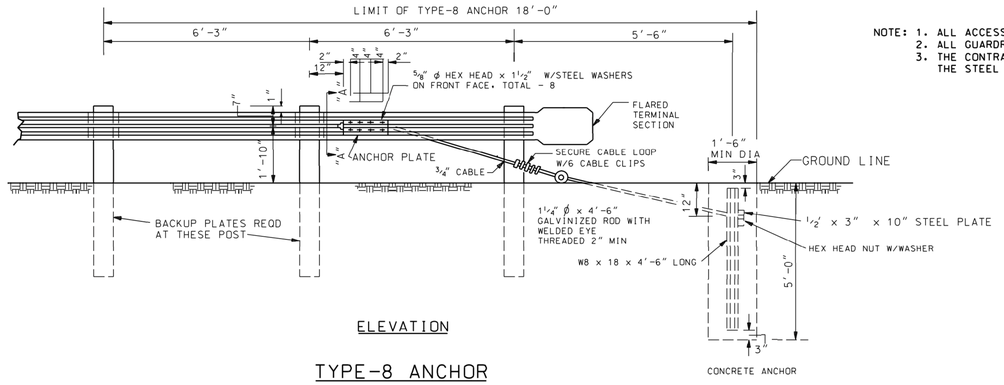
C-9507

Bar Measures 1 inch

NOTE: CABLE TO BE PARALLEL TO GUARDRAIL FOR STRAIGHT RUNS OF RAIL. CABLE MAY HAVE ANGLE POINT AT ANCHOR PLATE IF GUARD-RAIL IS CURVED.

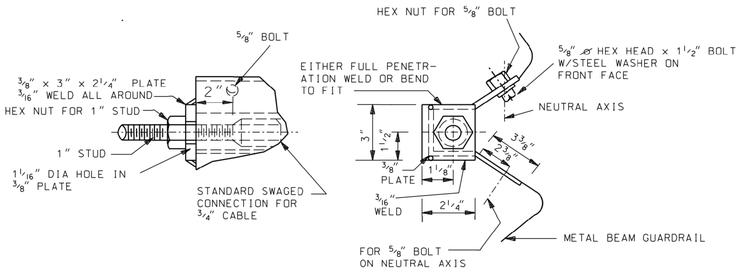


PLAN



ELEVATION

TYPE-8 ANCHOR

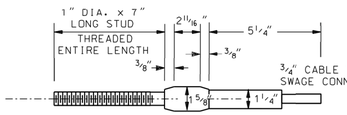


SECTION "AA"

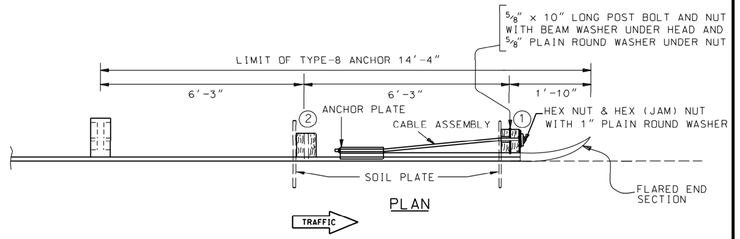
ANCHOR PLATE DETAILS

GENERAL NOTES

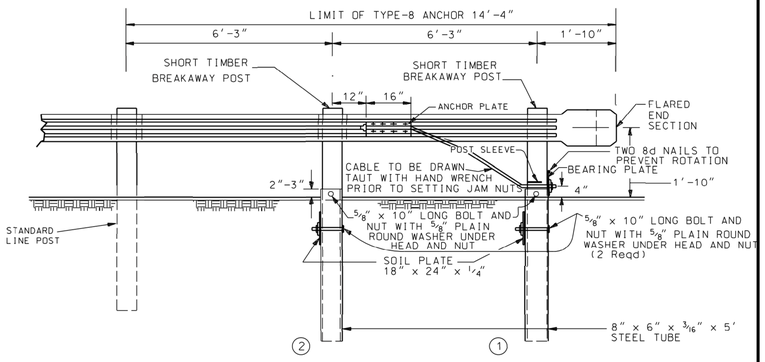
NOTE: 1. ALL ACCESSORIES REQUIRED FOR MOUNTING THE RAIL SHALL BE GALVANIZED.
2. ALL GUARDRAIL SHALL BE GALVANIZED.
3. THE CONTRACTOR MAY SUPPLY EITHER THE CONCRETE ANCHOR OPTION OR THE STEEL TUBE OPTION UNLESS SPECIFIED ON THE PLANS.



STANDARD SWAGED FITTING AND STUD



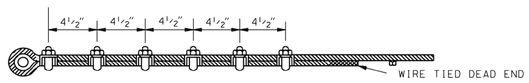
PLAN



ELEVATION

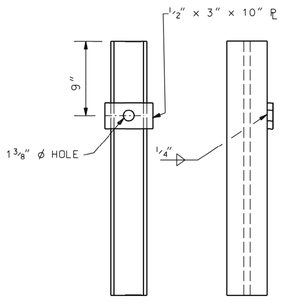
TYPE 8 ANCHOR

STEEL TUBE OPTION

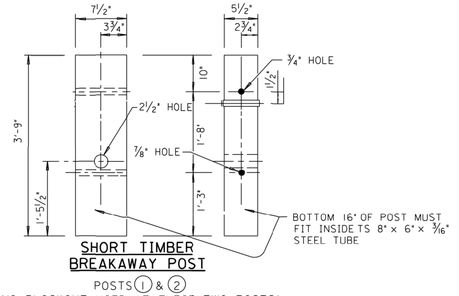


NOTE: THE BASE OF THE CLIP BEARS AGAINST THE LIVE END OF THE WIRE ROPE. WHILE THE "U" OF THE BOLT PRESSES AGAINST THE DEAD END.

PROPER METHOD OF APPLYING WIRE ROPE CLIPS



DETAIL OF WELDED PLATE ON 8" BEAM



SHORT TIMBER BREAKAWAY POST

POSTS (1) & (2)

(NO BLOCKOUT USED AT THESE TWO POSTS)

NTS

CONCRETE ANCHOR OPTION

GUARD RAIL

1 - DETAIL

SCALE: N.T.S.

ALABAMA DEPARTMENT OF TRANSPORTATION

SPECIAL DRAWING NO.
GA-630-8
INDEX NO.
303

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HUNTSVILLE, ALABAMA 35806
PHONE: (256) 424-4077 FAX: (256) 424-4097

BID SET

ALABAMA LICENSED PROFESSIONAL ENGINEER CHRISTIAN P. DUNIGAN 10126 19

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES
RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES
DETAILS

Project No.:	200-11740-10003
Designed By:	KLW
Drawn By:	PD
Checked By:	JPT

C-9508

Bar Measures 1 inch

9/30/2014 2:13:42 PM - P:\IER\11740\200-11740-10003\CAD\SHEETFILES\INTAKE AND TRANSMISSION\RW-C-9504 TO C-9508 DETAILS.DWG - DAVALOS, PAULA

GENERAL NOTES

A. THESE GENERAL NOTES PRESENT AND/OR SUMMARIZE KEY PROJECT INFORMATION FOR THE DRAWING READER'S CONVENIENCE. SEE ALSO INDIVIDUAL DRAWING NOTES AND PROJECT SPECIFICATIONS FOR FURTHER DETAILS AND REQUIREMENTS.

B. ALL REFERENCES TO REFERENCE STANDARDS HEREIN ARE TO MOST RECENT ISSUE IN EFFECT AS OF THE DATE OF THESE DOCUMENTS, UNLESS NOTED OTHERWISE IN PROJECT SPECIFICATIONS OR ON THE DRAWINGS.

C. ABBREVIATIONS:

A.B.	- ANCHOR BOLT	F.D.	- FLOOR DRAIN	N.T.S.	- NOT TO SCALE
ADD'L	- ADDITIONAL	F.F.	- FAR FACE	O/C	- ON CENTER
A.R.	- ANCHOR ROD	FLG	- FLANGE	O.D.	- OUTSIDE DIAMETER
ALT.	- ALTERNATE	FLR	- FLOOR	OPN'G	- OPENING
ALUM.	- ALUMINUM	FND.	- FOUNDATION	PEMB	- PRE ENGINEERED MTL. BLDG.
APPROX.	- APPROXIMATE	F.S.	- FAR SIDE	PL	- PLATE
ARCH.	- ARCHITECT(URAL)	FT.	- FOOT, FEET	PLF	- POUNDS PER LINEAR FOOT
@	- AT	FTG.	- FOOTING	PSF	- POUNDS PER SQUARE FOOT
BLDG.	- BUILDING	F.V.	- FIELD VERIFY	PSI	- POUNDS PER SQUARE INCH
BM.	- BEAM	GA.	- GAGE	RAD.	- RADIUS
B.O.	- BOTTOM OF	GALV.	- GALVANIZED	REINF	- REINFORCEMENT
B.O.S	- BOTTOM OF STEEL	GR.	- GRADE	REQ'D.	- REQUIRED
BRG.	- BEARING	GRTG.	- GRATING	REV.	- REVISED/REVISION
c/c	- CENTER TO CENTER	HORIZ.	- HORIZONTAL	SEC.	- SECTION
CFS	- COLD FORMED STEEL	H.P.	- HIGH POINT	SCHED.	- SCHEDULE
CJ	- CONTROL JOINT	H.R.	- HANDRAIL	SHT	- SHEET
CL	- CENTERLINE	HT.	- HEIGHT	S.J.I.	- STRUCTURAL JOIST INSTITUTE
CLR.	- CLEAR	I.D.	- INSIDE DIAMETER	SIM.	- SIMILAR
CMU	- CONCRETE MASONRY UNIT	I.F.	- INSIDE FACE	SPA.	- SPACE
COL.	- COLUMN	I.J.	- ISOLATED JOINT	SPEC.	- SPECIFICATION
CONC.	- CONCRETE	IN.	- INCH	SQ.	- SQUARE
CONST.	- CONSTRUCTION	INV.	- INVERT	S.S	- STAINLESS STEEL
CONT.	- CONTINUOUS	JNT.	- JOINT	STAG.	- STAGGER
CTR.	- CENTER	JST.	- JOIST	STD.	- STANDARD
DBA	- DEFORMED BAR ANCHOR	L	- ANGLE	STL.	- STEEL
DET.	- DETAIL	LLH	- LONG LEG HORIZ.	STR.	- STRAIGHT
DEMO	- DEMOLITION	LLV	- LONG LEG VERT.	STRUCT.	- STRUCTURAL
DIA.	- DIAMETER	LG.	- LONG	S.W.	- SHEAR WALL
DIM.	- DIMENSION	LONGIT.	- LONGITUDINAL	TEMP.	- TEMPERATURE
DN	- DOWN	L.P.	- LOW POINT	T/	- TOP OF
do	- DITTO	LYR.	- LAYER	T.O.C.	- TOP OF CONCRETE
DWG.	- DRAWING	LWR.	- LOWER	T.O.S.	- TOP OF STEEL
DWL.	- DOWEL	MAT'L.	- MATERIAL	TRANSV.	- TRANSVERSE
EA.	- EACH	MAX.	- MAXIMUM	TYP.	- TYPICAL
E.F.	- EACH FACE	MDF	- MAXIMUM DESIGN FLOOD	U.N.O.	- UNLESS NOTED OTHERWISE
E.J.	- EXPANSION JOINT	MECH.	- MECHANICAL	VERT.	- VERTICAL
EL./ELEV.	- ELEVATION	MFR.	- MANUFACTURER	V.I.F.	- VERIFY IN FIELD
ELEC.	- ELECTRICAL	MID.	- MIDDLE / MIDPOINT	VS.	- VALLEY SET
EMB.	- EMBED / EMBEDMENT	MIN.	- MINIMUM	w/	- WITH
EQ.	- EQUAL	MISC.	- MISCELLANEOUS	WD.	- WOOD
E.W.	- EACH WAY	MTL.	- METAL	W/O	- WITHOUT
EXP.	- EXPANSION	NEC.	- NECESSARY	W.P.	- WORK POINT
EXTG	- EXISTING	N.F.	- NEAR FACE	WWF	- WELDED WIRE FABRIC

D. ALL EXISTING DIMENSIONS SHOWN WITH THE ± SYMBOL ARE APPROXIMATE AND SHALL BE FIELD VERIFIED BY THE CONTRACTOR BEFORE FABRICATION AND CONSTRUCTION.

E. SUBMIT EXCAVATION SEQUENCE AS PART OF THE BLASTING PLAN

F. SUBMIT SHOP DRAWINGS, PROJECT DATA AND SAMPLES AS SPECIFIED IN PROJECT SPECIFICATIONS.

DESIGN CRITERIA

A. REFERENCES:
1. BUILDING CODE: 2012 ALABAMA BUILDING CODE
2. ICC INTERNATIONAL BUILDING CODE, 2012 EDITION
3. ASCE/SEI 7 MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES
4. ER 1110-2-1806, EARTHQUAKE DESIGN AND ELEVATION FOR CIVIL WORKS PROJECT, 31 JULY, 1995
5. EM 1110-2-2100, STABILITY ANALYSIS OF CONCRETE STRUCTURES, 1 DEC, 2005

RISK CATEGORY III IN ACCORDANCE WITH 1604.5

B. DEAD LOADS:

SELF WEIGHT PER VERTICAL PUMP: 15,000 LBS EACH
ROOF DEAD LOAD (SELF WEIGHT) = 7 PSF
ROOF COLLATERAL* LOAD = 3 PSF
AVAILABLE TO RESIST UPLIFT = 3 PSF

* COLLATERAL LOAD INCLUDES PROVISION FOR HANGING LOADS INCLUDING SPRINKLERS, DUCTWORK, PLUMBING, CEILING AND OTHER COMPONENTS. REFER TO DRAWINGS FOR CONCENTRATED LOADING.

C. LIVE LOADS (U.N.O.):

VERTICAL THRUST PER PUMP: 21,000 LBS EACH
SLABS, WALKWAYS, AND PLATFORMS = 200 PSF

D. FLOOD LOADS

LAKE GUNTERSVILLE
100 YEAR - MAXIMUM DESIGN FLOOD (MDF) = 596.00
NORMAL HIGH WATER LEVEL = 595.00
NORMAL LOW WATER LEVEL = 593.00
LOW WATER LEVEL = 591.00
LOW WATER LEVEL (WET WELL) = 590.75

E. ROOF SNOW LOAD:

GROUND SNOW LOAD, Pg = 10 PSF
UNIFORM ROOF DESIGN SNOW LOAD, Pf = 10 PSF
SNOW EXPOSURE FACTOR, Ce = 1.0
SNOW LOAD IMPORTANCE FACTOR, I = 1.2
THERMAL FACTOR, Ct = 1.1

F. WIND LOAD:

BASIC WIND SPEED, V= 120 MPH
WIND EXPOSURE = C
DIRECTIONALITY FACTOR, Kd = 0.85
TOPOGRAPHY = 1.0
INTERNAL PRESSURE COEFFICIENT, GCpi = ± 0.18
BUILDING ENCLOSURE CLASSIFICATION = ENCLOSED
FOR COMPONENTS & CLADDING PRESSURES, REFER TO CHART, SHEET S-002

G. SEISMIC DESIGN DATA:

SEISMIC IMPORTANCE FACTOR, I = 1.25
SDS = 0.207
SD1 = 0.070
OBE = 0.0217G (PGA)
MCE = 0.1482G (PGA)
SITE CLASS = 'B'
SEISMIC DESIGN CATEGORY = 'C'
PEMB SEISMIC RESISTING SYSTEM: STRUCTURAL STEEL SYSTEMS NOT SPECIFICALLY DETAILED FOR SEISMIC RESISTANCE
RESPONSE MODIFICATION COEFFICIENT (R) = 3.0
OVER-STRENGTH FACTOR (Ω_0) = 2.5; DEFLECTION AMPLIFICATION FACTOR (CD) = 3.0
PEMB DESIGN BASE SHEAR: V = 3 KIPS

FOUNDATIONS

A. SEE GEOTECHNICAL/SUBSURFACE INVESTIGATION REPORT BY ARDAMAN & ASSOCIATES, DATED SEPTEMBER 19, 2011, FILE NO. 113-11-40-1019A
IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE WHETHER OR NOT ADDITIONAL GEOTECHNICAL INFORMATION IS REQUIRED AND TO PROVIDE SUCH INFORMATION AS HE DEEMS NECESSARY.

B. ALLOWABLE BEARING PRESSURES AS FOLLOWS:

FOUNDATIONS SUPPORTED ON STRUCTURAL BACKFILL = 2,500 PSF
FOUNDATIONS SUPPORTED ON SOUND ROCK = 10,000 PSF

C. GEOTECHNICAL ENGINEER SHALL BE RETAINED BY THE CONTRACTOR TO PROVIDE OBSERVATION AND TESTING SERVICES DURING THE GRADING AND FOUNDATION PHASE OF CONSTRUCTION. INSPECTION AND TESTING REPORTS SHALL BE SUBMITTED TO THE STRUCTURAL ENGINEER.

D. THERE WILL BE NO BACKFILLING OPERATIONS UNTIL THE CONCRETE WALLS HAVE REACHED THEIR 28 DAY DESIGN STRENGTH, UNLESS NOTED OTHERWISE OR APPROVED BY THE ENGINEER.

E. THERE WILL BE NO BACKFILLING OPERATIONS AROUND THE INTAKE STRUCTURE UNTIL THE TOP SLAB IS PLACED AND HAS REACHED 70% OF IT'S 28 DAY COMPRESSIVE DESIGN STRENGTH, UNLESS APPROVED BY THE ENGINEER.

F. CONTRACTOR SHALL DESIGN AND FURNISH MICROPILE (ROCK ANCHORS) AS SPECIFIED ON THE DRAWINGS. MICROPILE SYSTEM SHALL BE FURNISHED BY CTS/TITAN IBO ® HOLLOW BAR ANCHORS OR APPROVED EQUAL. SUBMIT SHOP DRAWINGS AND CALCULATIONS SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF ALABAMA. THE ANCHOR SYSTEM SHALL BE DESIGNED TO RESIST THE FOLLOWING WORKING LOADS WITH A 2.0 FACTOR OF SAFETY: TENSION = 75 KIPS. THE BASIS OF DESIGN SHALL USE 15 FT MINIMUM EMBEDMENT LENGTHS FOR TENSION RESISTANCE. REFER TO SPECIFICATIONS.

G. DEWATERING: CONTRACTOR SHALL DESIGN, FURNISH, INSTALL, TEST, OPERATE, MONITOR, AND MAINTAIN A DEWATERING SYSTEM TO CONTROL HYDROSTATIC PRESSURE AND GROUND WATER ENTERING THE EXCAVATION.

STRUCTURAL CONCRETE

A. REFERENCES:
1. ACI 318-11 BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
2. ACI 350-06 CODE REQUIREMENTS FOR ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES
3. ACI SP-66 ACI DETAILING MANUAL
4. CRSI MSP-2-01 MANUAL OF STANDARD PRACTICE
5. CRSI REINFORCING BAR DETAILING
6. CRSI PLACING REINFORCING BARS

B. MATERIALS:

1. STRUCTURAL CONCRETE:

MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS (F'C)

INTAKE WALLS, MAT FOUNDATION	5,000 PSI
ALL OTHER CONCRETE	4,000 PSI

a. ALL CONCRETE EXPOSED TO THE ELEMENTS SHALL BE AIR-ENTRAINED IN ACCORDANCE WITH ASTM C260 SEE SPECIFICATIONS. ALL CONCRETE AGGREGATE SHALL COMPLY WITH ASTM C33 (NORMAL WEIGHT)
b. ALL CONCRETE IN 8" WALLS OR COLUMNS WITH TWO PLANES OF REINFORCEMENT SHALL HAVE MAXIMUM 3/4" AGGREGATE. IT IS RECOMMENDED THAT THE CONTRACTOR CONSIDER SUPER-PLASTICIZED CONCRETE PER SPECIFICATIONS.

2. REINFORCEMENT:

a. REINFORCING BARS: ASTM A615, GRADE 60
b. REINFORCING DOWELS: ASTM A1035
c. DEFORMED BAR ANCHORS (DBA): ASTM A706, GRADE 60
d. WELDED SMOOTH WIRE FABRIC (WWF) - ASTM A185 (SHEETS ONLY, ROLL FABRIC NOT ALLOWED)

1. ACCESSORIES:

BAR SUPPORTS CLASS 1, MAXIMUM PROTECTION (CRSI MANUAL OF STANDARD PRACTICE) FOR ALL SLABS AND BEAMS WITH SOFFITS EXPOSED TO VIEW

2. ANCHOR RODS:

SHALL BE GALVANIZED, FURNISHED WITH CHAMFERED ENDS, AND SHALL MEET STRENGTH AND DUCTILITY REQUIREMENTS EQUIVALENT ASTM A36 MATERIAL.

3. MECHANICAL (TORQUE-CONTROLLED) ANCHORS:

APPROVED SYSTEMS INCLUDE HILTI KWIK BOLT TZ (ICC ESR 1917) OR HILTI KWIK HUS-EZ (ICC ESR 3027) OR EQUAL CONSIDERING LOAD RESISTANCE. MECHANICAL ANCHORS SHALL BE APPROVED FOR USE WITH CRACKED CONCRETE PER AC 193. CURRENT ICC-ESR SHALL BE SUBMITTED. (NOTE: HILTI'S HSL-3 AND HDA ALSO MEET THESE CRITERIA). ALL PERSONNEL INSTALLING ANCHORS SHALL BE TRAINED BY THE MANUFACTURE ON PROPER INSTALLATION TECHNIQUE. TRAINING DOCUMENTATION FROM THE MANUFACTURE SHALL BE AVAILABLE ON REQUEST

4. ADHESIVE ANCHORS:

APPROVED SYSTEMS INCLUDE HILTI RE 500-SD (ICC ESR 2322) OR HIT-HY 200 (ICC ESR 3187) OR EQUAL CONSIDERING LOAD RESISTANCE, IN-SERVICE AND INSTALLATION TEMPERATURE, AVAILABILITY OR COMPREHENSIVE INSTALLATION INSTRUCTIONS, AND CREEP. ADHESIVE ANCHORS SHALL BE APPROVED FOR USE WITH CRACKED CONCRETE PER AC 308. CURRENT ICC-ESR SHALL BE SUBMITTED. ALL PERSONNEL INSTALLING ANCHORS SHALL BE TRAINED BY THE MANUFACTURE ON PROPER INSTALLATION TECHNIQUE. TRAINING DOCUMENTATION FROM THE MANUFACTURE SHALL BE AVAILABLE ON REQUEST

5. GROUT: HIGH STRENGTH, NON-SHRINK STRUCTURAL GROUT. SEE SPECIFICATIONS.

C. REINFORCEMENT DETAILING:

1. ALL REINFORCING STEEL DETAILS SHALL BE IN ACCORDANCE WITH THE ACI CODE REQUIREMENTS (ACI 318 OR 350 - CURRENT EDITIONS).

2. REINFORCING STEEL PLACING DRAWINGS AND BAR LISTS SHALL CONFORM TO THE ACI OR CRSI DETAILING MANUALS. ALL BAR AND MESH SUPPORTS MUST BE CLEARLY DETAILED.

3. CONCRETE COVER FOR REINFORCING SHALL BE INDICATED ON THE APPLICABLE REINFORCING STEEL SHOP DRAWINGS. HOWEVER, NO REINFORCING IN AREAS EXPOSED TO EARTH, WEATHER ,SEWAGE OR WATER SHALL HAVE COVER LESS THAN TWO INCHES.

SPECIFIED COVER FOR REINFORCING:

FOOTINGS (TOP)	2.0"
FOOTINGS (BOTTOM & SIDE)	3.0"
COLUMNS (TIES)	2.0"
WALLS	2.0
SLABS (BOTTOM STEEL)	2.0"
SLABS (TOP STEEL-INTERIOR)	1.5"
SLABS (TOP STEEL-EXTERIOR)	2.0"
BEAMS (TIES)	2.0"

4. REINFORCEMENT IN WALLS SHALL BE CONTINUOUS. HORIZONTAL BAR LAP SPLICES SHALL BE STAGGERED.

5. PROVIDE CORNER BARS AT ALL CONCRETE WALL CORNERS TO BE LAPPED WITH THE HORIZONTAL BARS. CORNER BARS ARE TO MATCH THE HORIZONTAL BARS IN SIZE, GRADE AND SPACING UNLESS OTHERWISE SHOWN.

6. HOOKS AND BENDS SHALL BE ACI STANDARD UNLESS OTHERWISE INDICATED.

7. SPLICES: CONTINUOUS REINFORCING BARS SHALL BE PROVIDED WITH TENSION LAPS AT ALL SPLICES, U.N.O., INCLUDING CORNER BARS. ALL STEEL REINFORCING LAPS SHALL BE TENSION B LAPS TYPICAL, UNLESS NOTED OTHERWISE.

STRUCTURAL CONCRETE

8. MECHANICAL SPLICES SHALL NOT BE PERMITTED UNLESS SHOWN ON THE DRAWINGS OR APPROVED BY THE ENGINEER

9. REINFORCING STEEL FABRICATION AND PLACEMENT SHALL BE IN ACCORDANCE WITH CRSI MANUAL OF STANDARD PRACTICE AND CRSI PLACING REINFORCING BARS (LATEST EDITIONS).

10. REINFORCING STEEL IN FOOTINGS SHALL BE ASSEMBLED IN MAT GRILLES EQUALLY SPACED AND SECURELY WIRED TOGETHER BEFORE THE CONCRETE IS POURED.

11. WALL FOOTING DOWELS ARE TO HAVE A FULL TENSION LAP SPLICE WITH THE WALL STEEL UNLESS NOTED OTHERWISE.

12. PIER REINFORCEMENT SHALL BE DOWELED TO THE FOOTING. PROVIDE DOWELS EQUAL IN SIZE, NUMBER AND GRADE TO THE PIER REINFORCEMENT UNLESS OTHERWISE INDICATED. DOWELS SHALL BE HOOKED 90 DEGREES AT THE BOTTOM LEVEL OF FOOTING REINFORCEMENT. DOWELS SHALL BE LAPPED WITH THE PIER REINFORCEMENT.

13. SPREAD BARS AROUND SMALL OPENINGS AND SLEEVES IN SLABS AND WALLS WHERE POSSIBLE AND WHERE BAR SPACING WILL NOT EXCEED 1.5 TIMES THE NORMAL SPACING. DISCONTINUE BARS AT LARGE OPENINGS WHERE NECESSARY AND PROVIDE AN AREA OF REINFORCEMENT EQUAL TO THE INTERRUPTED REINFORCEMENT DISTRIBUTING ONE-HALF OF THIS REINFORCEMENT EACH SIDE OF THE OPENING (TENSION LAP SPLICED). HOLES LARGER THAN 12 INCHES IN ANY DIRECTION SHALL HAVE (1) #6 X 4'-0" DIAGONAL BARS IN BOTH FACES AT EACH CORNER.

14. ALL REINFORCING SHALL BE HELD SECURELY IN POSITION WITH STANDARD ACCESSORIES IN CONCRETE.

15. NO REINFORCING STEEL SHALL BE FIELD BENT WITHOUT THE APPROVAL OF THE STRUCTURAL ENGINEER. FIELD BENDING OF PLAIN REINFORCEMENT, IF PERMITTED, SHALL BE PERFORMED USING AN APPROVED AND APPROPRIATE SIZED PORTABLE HYDRAULIC DEVICE THAT MAKES ACI STANDARD RADIUS BENDS. NO OTHER FIELD BENDING METHOD SHALL BE PERMITTED.

16. WELDING, INCLUDING TACK WELDING, FOR REINFORCING STEEL IS PROHIBITED. WELDING OF REINFORCING STEEL AND HIGH STRENGTH BOLTS (A325, A490) WILL BE PERMITTED ONLY BY WRITTEN APPROVAL OF THE ENGINEER.

17. ALL OPENINGS THROUGH WALLS, SLABS OR OTHER STRUCTURAL ELEMENTS NOT DETAILED ON THE STRUCTURAL DRAWINGS MUST BE LOCATED BY THE CONTRACTOR AND SHOWN ON THE APPLICABLE REINFORCING STEEL SHOP DRAWINGS. THE FINAL LOCATION OF ALL OPENINGS MUST BE REVIEWED BY THE ENGINEER BEFORE THE CONCRETE IS POURED.

18. MODIFICATION AND REPAIR TO EXISTING CONCRETE: (A) SEE CONCRETE SPECIFICATIONS FOR COMPLETE EXPLANATION. (B) CONNECTION METHODS - METHOD A - BONDING TO SATURATED SURFACE METHOD B - BONDING BY USING BONDING AGENT METHOD C - DOWELS USING EPOXY BONDING AGENT

D. FOOTINGS:

1. PROVIDE SHEAR KEYS IN THE TOPS OF WALL FOOTINGS SUPPORTING CONCRETE WALLS AND IN THE TOPS OF COLUMN FOOTINGS AT CONCRETE WALLS.
2. CENTER ALL FOOTINGS ON WALL, PIER OR COLUMN ABOVE UNLESS OTHERWISE INDICATED.

E. FORMWORK:

1. SEE SPECIFICATIONS.
2. KEYS INDICATED ARE TO BE CONTINUOUS, U.N.O.
3. CAMBER: PROVIDE CAMBER TO COMPENSATE FOR DISPLACEMENT OF FORMS (SEE ALSO SPECS.) AND TO PROVIDE AS-CAST MEMBER CAMBER AS NOTED ON DRAWINGS.
4. RUSTICATION STRIPS, CHAMFERS, DRIPS, MISC. EMBEDS, ETC. SEE DRAWINGS AND/OR ARCHITECTURAL DRAWINGS.
5. PROVIDE 1" CHAMFER AT ALL EXPOSED CORNERS OF BEAMS, WALLS ETC. UNLESS OTHERWISE NOTED.
6. OPENINGS FOR MEP TRADES ARE TO BE INCLUDED IN THE BID. ALL HOLES FOR OTHER TRADES WHICH MUST BE CUT OR FORMED AND WHICH ARE NOT SHOWN ON THE STRUCTURAL DESIGN(S) DRAWINGS SHALL BE SUBMITTED TO THE STRUCTURAL ENGINEER DESIGNER FOR REVIEW AND APPROVAL. ANY STRENGTHENING OR ADDITIONAL REINFORCEMENT REQUIRED SHALL BE FURNISHED BY THE CONTRACTOR WITHOUT ADDITIONAL COST TO THE OWNER.

F. CONCRETE FINISHES: SEE SPECIFICATIONS.

1. FORMED SURFACES:
   a. EXPOSED TO VIEW: APPLY SIKAGARD 550W OVER GROUT-CLEANED FINISH SURFACES (NON TRAFFIC) PER MANUFACTURER'S SPECIFICATIONS.
   b. COVERED OR AS NOTED ON PLANS: AS-CAST
2. FLATWORK SURFACES:
   a EXPOSED TO VIEW: TROWELED
   b TILED OR CARPETED: TROWELED
   c. STAIRS OR RAMPS: BROOMED
   d. SIDEWALKS, DRIVEWAYS: BROOMED

G. CURING AND PROTECTION: SEE SPECIFICATIONS.

H. SEE THE MECHANICAL, ELECTRICAL AND SUPPLIERS DRAWINGS AND THE SPECIFICATIONS FOR THE LOCATIONS OF SPECIAL ANCHORS, CHAMFERS, SLEEVES, PIPES, CONDUITS AND OTHER DETAILS NOT SHOWN ON THE STRUCTURAL DRAWINGS.

J. EMBEDDED PIPES OR CONDUIT. MAXIMUM DIAMETER ONE THIRD X SLAB OR WALL THICKNESS, SPACED MINIMUM OF 3 TIMES DIAMETER ON CENTER.

K. SIZE AND LOCATION OF EQUIPMENT PADS AND ANCHOR BOLTS SHALL BE AS REQUIRED BY THE EQUIPMENT MANUFACTURER.

L. PROVIDE WATERSTOPS IN CONSTRUCTION JOINTS WHERE INDICATED. WATERSTOPS SHALL BE COMPRISED OF THE FOLLOWING TYPES.

1. TYPE 1: 6" PVC RIBBED WITH CENTERBULB, GREENSTREAK 705 OR EQUIVALENT IN STRENGTH ELONGATION CHARACTERISTICS, MATERIAL PROPERTIES AND GEOMETRY.
2. TYPE2: 6" PVC RIBBED, GRENSTREAK 783 OR EQUIVALENT IN STRENGTH ELONGATION CHARACTERISTICS, MATERIAL PROPERTIES AND GEOMETRY.

TENSION DEVELOPMENT / LAP SPLICE SCHEDULE (UNCOATED BARS)

DEVELOPMENT / LAP SPLICE LENGTH IN CONCRETE (f'c = 4000 PSI)

BAR SIZE	DEVELOPMENT LENGTH (IN)		CLASS 'B' LAP SPLICE LENGTH (IN)	
	BAR TYPE 1	BAR TYPE 2	BAR TYPE 1	BAR TYPE 2
3	15	22	19	28
4	19	29	25	37
5	24	36	31	47
6	29	43	37	56
7	42	63	54	81
8	48	72	62	93
9	54	81	70	105

BAR TYPE 1 - CLEAR SPACING OF BARS BEING DEVELOPED OR SPLICED NOT LESS THAN Db, CLEAR COVER NOT LESS THAN Db, AND STIRRUPS OR TIES THROUGHOUT Ld NOT LESS THAN CODE MINIMUM
OR
CLEAR SPACING OF BARS BEING DEVELOPED OR SPLICED NOT LESS THAN 2*Db AND CLEAR COVER NOT LESS THAN Db

BAR TYPE 2 - TOP BARS WITH MORE THAN 12" OF FRESH CONCRETE CAST BELOW AND OTHER CASES.

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BID SET

ALABAMA LICENSED PROFESSIONAL ENGINEER No. 32158-E CHRISTOPHER D. COLEMAN
10/31/17

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES
RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES
GENERAL STRUCTURAL NOTES

Project No.:	200-11740-10003
Designed By:	MSP
Drawn By:	BRF
Checked By:	CDC

S-0001

Bar Measures 1 inch

9/29/2014 4:26:40 PM C:\Users\brent.fox\Documents\RW-11740-S-INTAKE_brent.fox.rvt

MISCELLANEOUS METALS

A. REFERENCES:

1. AISC STEEL CONSTRUCTION MANUAL, 13TH EDITION
2. AWS D1.1 STRUCTURAL WELDING CODE - STEEL

B. MATERIALS:

1. GRADE STEEL

WIDE FLANGES:	ASTM A992, (GRADE 50)
CHANNELS, ANGLES AND PLATES:	ASTM A36
SHEAR CONNECTOR PLATES	ASTM A572, GRADE 50
STRUCTURAL PIPE	ASTM A 53, GRADE B, Fy=35 KSI
ROUND HSS:	ASTM A500, GRADE B, Fy=42 KSI
SQUARE OR RECTANGLE HSS:	ASTM A500, GRADE B, Fy=46 KSI

2. WELDED STUDS: ASTM A108, GRADE 60
3. ANCHOR RODS: ASTM F593
4. STRUCTURAL BOLTS: ASTM A325-N
5. WELDS: E70XX ELECTRODES

C. SHOP DRAWINGS.

1. SUBMIT ERECTION AND FABRICATION SHOP DRAWINGS. SEE SPECS.

D. COATINGS :

1. ALL STEEL MATERIAL SHALL BE HOT-DIPPED GALVANIZED, UNLESS NOTED OTHERWISE.

CONCRETE MASONRY

A. REFERENCES:

1. TMS 402/ACI 530-11/ASCE 5-11 BUILDING CODE REQUIREMENTS AND SPECIFICATIONS FOR MASONRY STRUCTURES.

B. MATERIALS:

1. MASONRY WALLS SHALL CONSIST OF ASTM C-90, GRADE N-1, HOLLOW CONCRETE MASONRY UNITS
2. MASONRY SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH f'm =1,500 PSI.
3. MORTAR SHALL COMPLY WITH ASTM C-270, AND SHALL BE TYPE N (1800 PSI).
4. CORE FILL GROUT SHALL COMPLY WITH ASTM C-476, WITH A MINIMUM COMPRESSIVE STRENGTH OF 2000 PSI.

C. MASONRY SHALL BE LAID IN A RUNNING BOND PATTERN UNLESS OTHERWISE NOTED. NO CONTINUOUS VERTICAL JOINTS ARE PERMITTED AT WALL CORNERS, INTERSECTIONS, AND OPENING EDGES. SAW TOOTH BLOCK EACH ALTERNATE COURSE AT THESE LOCATIONS TO ACHIEVE MONOLITHIC CONSTRUCTION.

D. VERTICAL REINFORCEMENT: LOCATION, SIZE AND SPACING SHALL BE AS INDICATED ON THE STRUCTURAL DRAWINGS. WALLS SHALL BE REINFORCED FULL HEIGHT IN GROUT FILLED CELLS AT ALL WALL CORNERS, INTERSECTIONS, ENDS, AND ADJACENT TO OPENINGS.

E. PROVIDE REINFORCING STEEL DOWELS INTO STRUCTURE ABOVE AND BELOW WITH SIZE AND SPACING TO MATCH VERTICAL REINFORCEMENT, UNLESS OTHERWISE NOTED.

F. DOWELS TO THE FOUNDATIONS WITH SIZE AND SPACING TO MATCH VERTICAL REINFORCING.

G. VERTICAL REINFORCEMENT SHALL BE CENTERED IN GROUT FILLED CELLS UNLESS NOTED OTHERWISE. REINFORCEMENT SHALL BE HELD SECURELY IN POSITION AT THE TOP AND BOTTOM OF WALL.

H. HORIZONTAL JOINT REINFORCEMENT: SHALL BE 9 GAGE GALVANIZED DUR-O-WAL LADDER TYPE OR ENGINEER APPROVED SUBSTITUTE, LOCATED AT SIXTEEN (16) INCHES VERTICALLY.

J. PROVIDE HORIZONTAL JOINT REINFORCING IN PARAPETS AND FREE STANDING WALLS AT EIGHT (8) INCHES VERTICALLY.

K. CONTROL JOINTS: SHALL BE PROVIDED AS SPECIFIED BY THE ARCHITECT. TERMINATE REINFORCEMENT EACH SIDE OF CONTROL JOINTS. SEE ARCHITECTURAL DRAWINGS FOR SEALANT REQUIREMENTS AT CONTROL JOINTS.

L. GROUTING: CONTRACTOR SHALL SUBMIT PROPOSED GROUT MIX DESIGN FOR ENGINEER REVIEW AND APPROVAL PRIOR TO CONSTRUCTION. GROUT SLUMP SHALL BE BETWEEN 8 AND 11 INCHES. USE OF SUPERPLASTICIZER IS PROHIBITED. CELLS WHICH ARE TO RECEIVE GROUT SHALL BE VERTICALLY ALIGNED WITH A CLEAR, UNOBSTRUCTED AND CONTINUOUS VERTICAL SPACE. CELLS SHALL BE FILLED COMPLETELY AND VIBRATION CONSOLIDATED. GROUTING OPERATIONS SHALL BE CONTINUOUS AND SHALL NOT BE STOPPED FOR A PERIOD EXCEEDING ONE HOUR. WALL SHALL BE CONSTRUCTED IN MAXIMUM 12'-8" LIFTS BETWEEN GROUT POURS.

M. GROUTING AND REINFORCING: ALL MASONRY AND GROUTING AND REINFORCING WORK SHALL BE PERFORMED BY MASONRY CRAFTWORKERS WHO HAVE SUCCESSFULLY COMPLETED THE INTERNATIONAL MASONRY INSTITUTE (1-800-IMI-0988) TRAINING COURSE FOR GROUTING AND REINFORCED MASONRY CONSTRUCTION, OR EQUAL."

DEVELOPMENT / LAP SPLICE LENGTH IN MASONRY

BAR SIZE	DEVELOPMENT LENGTH (IN)	LAP SPLICE LENGTH (IN)
3	14	18
4	18	24
5	23	30
6	27	36
7	32	42
8	36	48

PRE- ENGINEERED METAL BUILDING

A. THE STRUCTURAL DRAWINGS FOR THIS PROJECT SPECIFY FOUNDATION REQUIREMENTS TO ACCOMMODATE A PRE-ENGINEERED METAL BUILDING. FOUNDATIONS HAVE BEEN DESIGNED FOR PINNED CONDITIONS, WITHOUT COLUMN BASE MOMENTS. LATERAL BRACING SHALL BE DESIGNED AND PROVIDED BY THE MANUFACTURER WHERE INDICATED ON THE CONTRACT DRAWINGS. THE CONTRACTOR SHALL SUBMIT THE DESIGN REACTIONS FROM THE METAL BUILDING MANUFACTURER TO CONFIRM THE FOUNDATION CAPACITY.

B. ENGINEER IS NOT RESPONSIBLE FOR THE DESIGN OF ANY ASPECTS OF THIS BUILDING OTHER THAN ITS SLAB ON GRADE AND FOOTING AS SHOWN. OTHER STRUCTURAL ELEMENTS INCLUDING ROOF FRAMING, WIND FRAMES AND BRACING, METAL BUILDING COLUMNS, ANCHOR BOLTS, BRIDGE CRANE SUPPORTS, AND METAL BUILDING COLUMN BASE PLATES ARE TO BE DESIGNED BY THE METAL BUILDING ENGINEER.

C. SUBMIT SHOP DRAWINGS AND CALCULATIONS FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION. SHOP DRAWINGS SHALL BE SIGNED AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER IN THE STATE WHERE THE BUILDING IS INSTALLED. SHOP DRAWING SUBMITTALS SHALL INCLUDE DRAWINGS OF THE FRAMING MEMBERS WITH THE CONNECTIONS, THE ANCHOR BOLT PLAN, AND REACTIONS.

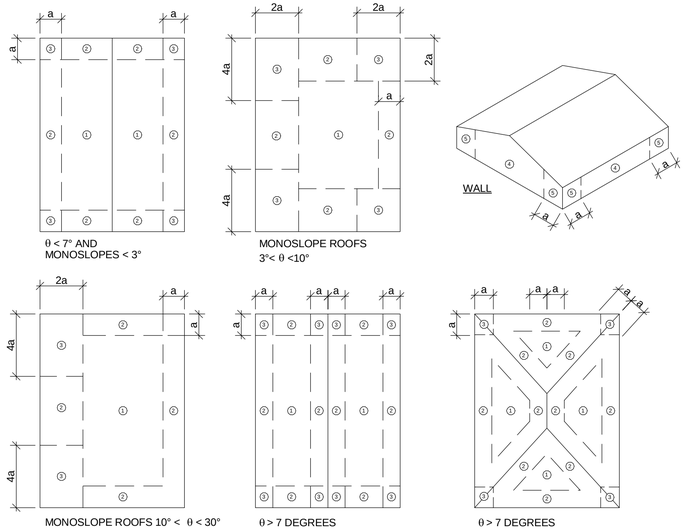
D. THE PRE- ENGINEERED METAL BUILDING SYSTEM SHALL BE DESIGNED AND DETAILED BY THE MANUFACTURER TO SUSTAIN THE LOADS SPECIFIED IN THE DESIGN CRITERIA. THE DESIGN SHALL BE IN ACCORDANCE WITH "AISC" AND "AISI" SPECIFICATIONS AND MBMA "METAL BUILDING SYSTEMS MANUAL" DESIGN PRACTICES, LATEST EDITIONS. THE MANUFACTURER SHALL BE REGULARLY ENGAGED IN METAL BUILDING DESIGN AND MANUFACTURING. CURRENT MBMA MEMBERS ARE APPROVED, OTHER MANUFACTURERS SHALL SUBMIT PRODUCT DATA FOR APPROVAL.

E. THE PRE- ENGINEERED METAL BUILDING SHALL BE DESIGNED SUCH THAT LATERAL DRIFT SHALL BE LIMITED TO H/240 FOR 10-YEAR WIND OCCURRENCE. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.

SPECIAL INSPECTIONS

A. SPECIAL INSPECTION SHALL BE PROVIDED IN ACCORDANCE WITH THE 2012 ALABAMA BUILDING CODE. REFER TO SPEC SECTION 01 40 00 FOR THE STATEMENT OF SPECIAL INSPECTION.

LOCATION OF WIND PRESSURE ZONES



COMPONENTS & CLADDING			
ROOF			
EFFECTIVE AREA*	SURFACE PRESSURE (PSF)		
	10 SF	50 SF	100 SF
NEGATIVE ZONE 1	35	35	35
NEGATIVE ZONE 2	40	38	38
NEGATIVE ZONE 3	54	42	38
ALL ZONES POSITIVE	13	11	10
OVERHANG ZONE 2	48	46	45
OVERHANG ZONE 3	75	56	48

NOTE: NEGATIVE VALUE DENOTES PRESSURE ACTING AWAY FROM THE SURFACE

WALL			
EFFECTIVE AREA*	SURFACE PRESSURE (PSF)		
	10 SF	50 SF	100 SF
NEGATIVE ZONE 4	32	27	24
NEGATIVE ZONE 5	39	30	24
POSITIVE ZONE 4 & 5	29	25	22

* EFFECTIVE AREA: SPAN LENGTH MULTIPLIED BY AN EFFECTIVE WIDTH THAT NEED NOT BE LESS THAN 1/3 THE SPAN LENGTH

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BID SET

ALABAMA LICENSED PROFESSIONAL ENGINEER No. 32158-E CHRISTOPHER D. COLEMAN
10/31/14

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

GENERAL STRUCTURAL NOTES

Project No.:	200-11740-10003
Designed By:	MSP
Drawn By:	BRF
Checked By:	CDC

S-0002

Bar Measures 1 inch

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STRUCTURAL TESTING & INSPECTION REQUIREMENTS

	REQUIRED INSPECTION VERIFICATION, OR TEST	VERIFICATION MONITORING FREQUENCY	TYPE AND/OR FREQUENCY OF TESTING	IBC SECTION & REFERENCE CRITERIA	INSPECTOR QUALIFICATIONS
1. SOILS					
A.	SITE PREPARATION			IBC 1704.7.1	
B.	DURING FILL PLACEMENT	CONTINUOUS OR PERIODIC	VISUAL OBSERVATION: DURING PLACEMENT AND COMPACTION OF FILL, SPECIAL INSPECTOR SHALL DETERMINE THAT THE MATERIAL BEING USED AND THE MAXIMUM LIFT THICKNESS COMPLY WITH THE PROJECT REQUIREMENTS. PIT RUN MATERIALS SHALL BE VISUALLY MONITORED BY THE TESTING LAB WITH ADDITIONAL SAMPLES TESTED EACH DAY, OR MORE OFTEN IF MATERIAL APPEARS TO VARY.	IBC 1704.7.2 GEOTECHNICAL REPORT; STRUCTURAL NOTES	QUALIFICATIONS BASED ON ASTM D3740
C.	EVALUATION OF IN-PLACE DENSITY OF FILL	CONTINUOUS OR PERIODIC	PROVIDE (1) ONE DENSITY TEST FOR EACH 2000 SQ. FT. REFER TO NOTES ON BUILDING PAD FOR TESTING SPECIFICATIONS.	IBC 1704.7.3 GEOTECHNICAL REPORT; STRUCTURAL NOTES	QUALIFICATIONS BASED ON ASTM D3740
D.	CLAY CAP	CONTINUOUS OR PERIODIC	PLACEMENT OF CLAY CAP SHALL BE MONITORED BY GEOTECHNICAL ENGINEER WITH A WRITTEN REPORT SENT TO STRUCTURAL ENGINEER.	IBC 1704.7.3 GEOTECHNICAL REPORT; STRUCTURAL NOTES	QUALIFICATIONS BASED ON ASTM D3740
2. CONCRETE CONSTRUCTION					
A.	REINFORCING STEEL	PERIODIC	PROVIDE PERIODIC INSPECTION OF REINFORCING SIZES, SPACING, GRADE OF REBAR; AND PLACEMENT AT THE FOLLOWING FREQUENCY: RANDOMLY @ 20%	IBC 1704.4 ACI 318: CH. 3.5, 7.1-7.7; STRUCTURAL NOTES.	QUALIFICATIONS BASED ON ASTM E329
B.	REINFORCING STEEL WELDING.		NO FIELD WELDING PERMITTED.	AWS D1.4 ACI 318: 3.5.2	CWI
C.	BOLTS TO BE INSTALLED IN CONCRETE PRIOR TO & DURING PLACEMENT OF CONCRETE WHERE ALLOWABLE LOADS HAVE BEEN INCREASED.	CONTINUOUS		IBC1704.4	TRAINED FIELD TECHNICIAN WITH ONE YEAR MIN. EXPERIENCE
D.	VERIFY USE OF CONCRETE MIX DESIGN	PERIODIC	EACH CONCRETE POUR	ACI 318 - CH. 4, 5.2 - 5.4	QUALIFICATIONS BASED ON ASTM C1077
E.	SAMPLING OF FRESH CONCRETE.	CONTINUOUS EACH CONCRETE POUR	1. ALL CONCRETE TESTING IS TO BE MADE AFTER WATER, IF ANY, IS ADDED ATSITE. 2. PROVIDE A SET OF (4) FOUR CYLINDERS TO BE TAKEN FOR EVERY 75 CUBIC YARDS OF CONCRETE, OR FRACTION THEREOF, BY TESTING LAB. 3. MONITOR SLUMP AND AIR CONTENT OF CONCRETE AND NOTIFY DELIVERY DRIVER IF SLUMP DEVIATES MORE THAN PERMITTED BY STRUCTURAL NOTES. CONTACT SUPPLIER FOR FURTHER DIRECTIONS.	ASTM C172 ASTM C31 ACI 318 - CH. 5.6, 5.8	QUALIFICATIONS BASED ON ASTM C1077
F.	PLACEMENT OF CONCRETE	CONTINUOUS		ACI 318 - CH. 5.9, 5.10	QUALIFICATIONS BASED ON ASTM C1077
G.	MAINTENANCE OF SPECIFIED CURING TEMPERATURE TECHNIQUES.	PERIODIC	EACH CONCRETE POUR	ACI 318 - CH. 5.11, 5.13.	QUALIFICATIONS BASED ON ASTM C1077
H.	REMOVAL OF SHORES AND FORMS FROM STRUCTURAL SLABS.	PERIODIC	VERIFY IN-SITU CONCRETE STRENGTH PRIOR TO REMOVAL.	ACI 318: CH. 6.1.1; STRUCTURAL NOTES.	QUALIFICATIONS BASED ON ASTM E329
3. STEEL CONSTRUCTION					
A.	MATERIAL VERIFICATION OF STRUCTURAL STEEL	PERIODIC	1. IDENTIFICATION MARKINGS TO CONFORM TO ASTM STANDARDS SPECIFIED IN THE APPROVED CONSTRUCTION DOCUMENTS.	IBC 1708.4; STRUCTURAL NOTES	FIELD TECHNICIAN WITH ONE YEAR MINIMUM EXPERIENCE
		PERIODIC	2. MANUFACTURERS' CERTIFIED MILL TEST REPORTS.	ASTM A6 OR ASTM A568	
B.	MATERIAL VERIFICATION OF WELD FILLER MATERIALS	PERIODIC	1. IDENTIFICATION MARKINGS TO CONFORM TO SPECIFICATION IN THE APPROVED CONSTRUCTION DOCUMENTS.	STRUCTURAL NOTES	CWI
C.	WELDING OF STRUCTURAL STEEL	PERIODIC	1. SINGLE PASS FILLET WELDS 5/16" ≤	AWS D1.1	CWI
		PERIODIC	2. ROOF DECK WELDS	AWS D1.3	CWI

STRUCTURAL TESTING & INSPECTION REQUIREMENTS (CONT'D)

	REQUIRED INSPECTION VERIFICATION, OR TEST	VERIFICATION MONITORING FREQUENCY	TYPE AND/OR FREQUENCY OF TESTING	IBC SECTION & REFERENCE CRITERIA	INSPECTOR QUALIFICATIONS
4. MASONRY CONSTRUCTION					
A.	COMPLIANCE WITH CONSTRICTION DOCUMENTS AND APPROVED SUBMITTALS	PERIODIC		ACI-530 ART 1.5	FIELD TECHNICIAN WITH ONE YEAR MINIMUM EXPERIENCE
B.	VERIFICATION OF f'm	PERIODIC		ACI-530-1 ART 1.4B	FIELD TECHNICIAN WITH ONE YEAR MINIMUM EXPERIENCE
C.	VERIFICATION OF SLUMP FLOW AND VSI AS DELIVERED TO THE SITE FOR SELF CONSOLIDATING GROUT	CONTINUOUS		ACI-530-1 ART 1.5B.1.b3	FIELD TECHNICIAN WITH ONE YEAR MINIMUM EXPERIENCE
D.	VERIFICATION TO ENSURE COMPLIANCE	PERIODIC PERIODIC PERIODIC	1. PROPORTIONS OF SITE-PREPARED MORTAR 2. CONSTRUCTION OF MORTAR JOINTS 3. LOCATION OF REINFORCEMENT	ACI 530-1, ART 2.6A ACI 530-1, ART 3.3B ACI 530.I, ART 3.4, & 3.6A	FIELD TECHNICIAN WITH ONE YEAR MINIMUM EXPERIENCE
E.	INSPECTION PROGRAM DURING CONSTRUCTION	PERIODIC	1. TYPE, SIZE AND LOCATION OF ANCHORS	ACI 530, SEC 1.2.2(e), & 1.16.1	FIELD TECHNICIAN WITH ONE YEAR MINIMUM EXPERIENCE
		PERIODIC	2. SPECIFIED SIZE, GRADE AND TYPE OF REINFORCEMENT AND ANCHOR BOLTS	ACI 530, SEC 1.15, & ACI 530-1, ART 2.4, 3.4	
		PERIODIC	3. PREPARATION, CONSTRUCTION AND PROTECTION OF MASONRY DURING COLD WEATHER (TEMP. BELOW 40° F) OR HOT WEATHER (TEMP. ABOVE 90° F)	IBC SEC. 2104.3, 2104.4 & ACI 530.1 ART 1.8C, 1.8D	
F.	VERIFICATION PRIOR TO GROUTING	PERIODIC	1. GROUT SPACE	ACI 530-1, ART 3.2D	FIELD TECHNICIAN WITH ONE YEAR MINIMUM EXPERIENCE
		PERIODIC	2. PLACEMENT OF REINFORCEMENT	ACI 530, SEC 1.13 & ACI 530-1, ART 3.4	
		PERIODIC	3. PROPORTIONS OF SITE PREPARED GROUT	ACI 530-1, ART 2.6B	
		PERIODIC	4. CONSTRUCTION OF MORTAR JOINTS	ACI 530-1, ART 3.3B ACI 530-1, ART 3.5	
G.	VERIFY GROUT PLACEMENT TO ENSURE COMPLIANCE	CONTINUOUS		ACI 530-1, ART 3-5	FIELD TECHNICIAN WITH ONE YEAR MINIMUM EXPERIENCE
H.	PREPARATION OF ANY REQUIRED GROUT SPECIMENS, MORTAR SPECIMENS AND/OR PRISMS SHALL BE OBSERVED	PERIODIC		IBC SECTION 2105-2-2 & 2105-3, ACI 530-1, ART 1-4	FIELD TECHNICIAN WITH ONE YEAR MINIMUM EXPERIENCE

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BID SET

ALABAMA LICENSED PROFESSIONAL No. 32158-E CHRISTOPHER D. COLEMAN ENGINEER
10/31/14

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

GENERAL STRUCTURAL NOTES

Project No.:	200-11740-10003
Designed By:	MSP
Drawn By:	BRF
Checked By:	CDC

S-0003

Bar Measures 1 inch

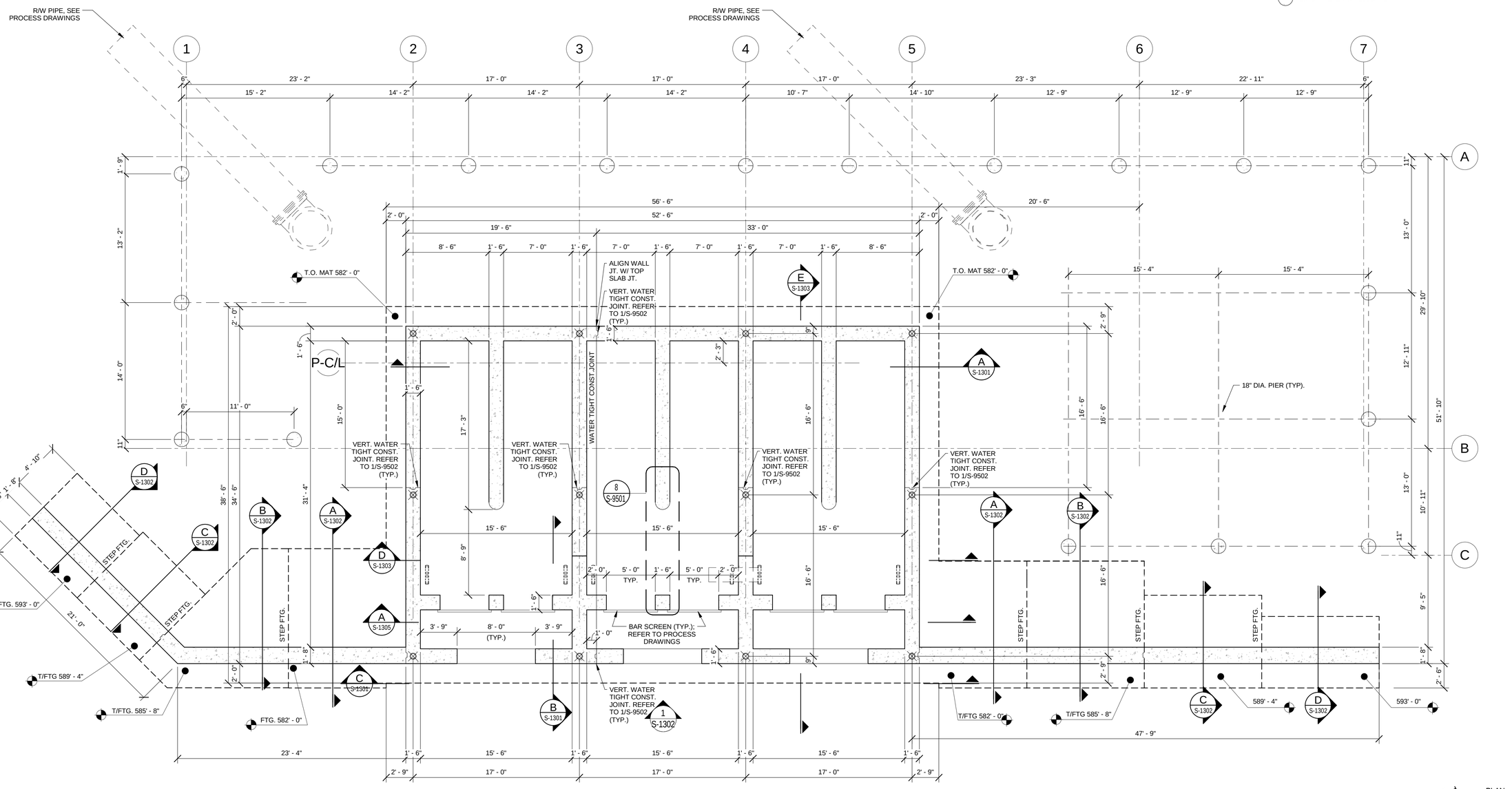
FOUNDATION PLAN NOTES:

1. REFER TO SHEET S-0001 AND S-0002 FOR GENERAL STRUCTURAL NOTES.

LEGEND

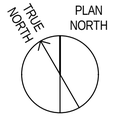
MICROPILE (ROCK ANCHOR); REFER TO DETAIL 11/S-9501

18" DIAMETER DRILLED PIER



FOUNDATION PLAN

SCALE: 3/16" = 1'-0"



SCALE: 3/16" = 1'-0"

0' 2'-8" 5'-4" 10'-8" 21'-4"

Bar Measures 1 inch

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BID SET

ALABAMA LICENSED PROFESSIONAL ENGINEER No. 32158-E CHRISTOPHER D. COLEMAN
10/31/14

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

RAW WATER INTAKE STRUCTURE LOWER FOUNDATION PLAN

Project No.:	200-11740-10003
Designed By:	MSP
Drawn By:	BRF
Checked By:	CDC

S-1101

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LEGEND

DENOTES 8" CMU WALL; REINFORCE w/ # 5 VERT. BARS @ 32" O.C.

DENOTES 2" x 3/16" ALUMIMUM BAR GRATING. GRATING SHALL BE DESIGNED FOR 200 POUNDS PER SQUARE FOOT UNIFORM OR 1,000 POUND CONCENTRATED, SERVICE LOADS; MAX DEFLECTION = 0.25"

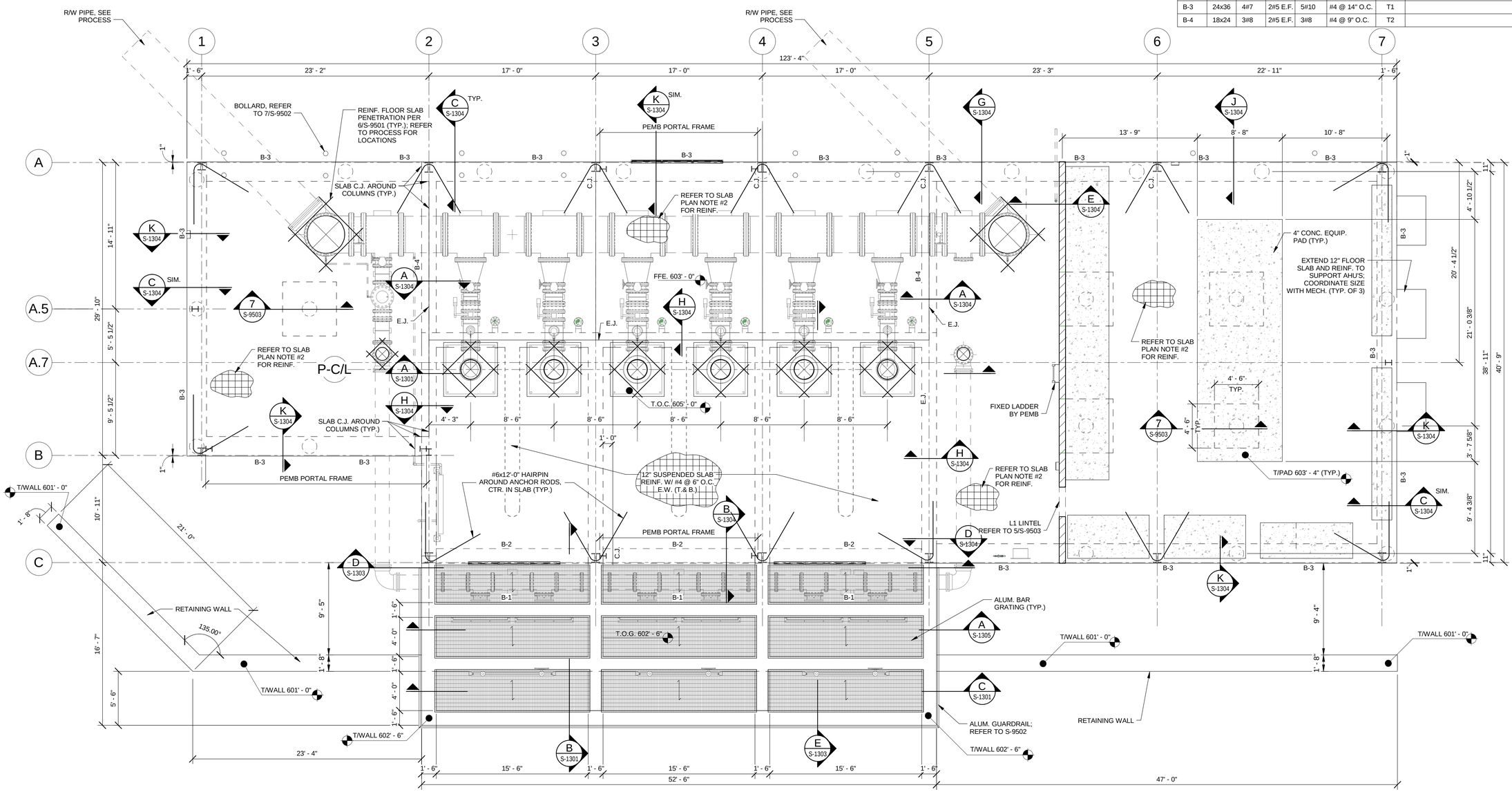
DENOTES LOCATIONS OF 4" CONCRETE EQUIPMENT PADS. REFER TO DETAIL 10/S-9501. TOP OF PAD ELEVATIONS = 603'-4" U.N.O.

UPPER SLAB PLAN NOTES:

1. REFER TO SHEET S-0001 & S-0002 FOR GENERAL NOTES
2. SLAB OUTSIDE PUMP PIT SHALL BE A 12" THICK REINFORCED WITH #4 @ 6" O.C., E.W., TOP & BOTTOM. PROVIDE 12" #78 STONE WITH A 10 MIL VAPOR BARRIER UNDER SLAB.
3. REFER TO CIVIL DRAWINGS FOR THE RETAINING WALL LAYOUT
4. REFER TO PLAN FOR RIGID PORTAL FRAME LOCATIONS BY PEMB MFR.
5. REFER TO ARCHITECTURAL ROOF PLAN FOR ROD BRACING AT ROOF PLANE
6. REFER TO CIVIL FOR BACKFILL REQUIREMENTS AROUND PUMP PIT AND UNDER FLOOR SLAB.
7. B-X: INDICATES CONCRETE BEAM, SEE SCHEDULE ON THIS SHEET. REFER TO SHEET S-9502 FOR CONCRETE BEAM DIAGRAM

CONCRETE BEAM SCHEDULE

MARK	W x D	REINF. TOP	REINF. MID	REINF. BOT	STIRRUPS	TIE TYPE	REMARKS
B-1	18x24	3#6	#5 E.F.	3#6	#4 @ 10" O.C.	T1	4 #5 STIRRUPS @ 4" O.C. CTR'D ON COL.(TYP.)
B-2	18x36	3#6	2#5 E.F.	3#6	#4 @ 16" O.C.	T1	4 #5 STIRRUPS @ 4" O.C. CTR'D ON COL.(TYP.)
B-3	24x36	4#7	2#5 E.F.	5#10	#4 @ 14" O.C.	T1	
B-4	18x24	3#8	2#5 E.F.	3#8	#4 @ 9" O.C.	T2	



UPPER SLAB PLAN

SCALE: 3/16" = 1'-0"

SCALE: 3/16" = 1'-0"

0' 2'-8" 5'-4" 10'-8" 21'-4"

Bar Measures 1 inch

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HUNTSVILLE, ALABAMA 35806
PHONE: (256) 424-4077 FAX: (256) 424-4097

BID SET

ALABAMA LICENSED PROFESSIONAL ENGINEER CHRISTOPHER D. COLEMAN No. 32158-E PROFESSIONAL

10/31/14

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

RAW WATER INTAKE STRUCTURE UPPER SLAB/FOUNDATION PLAN

Project No.:	200-11740-10003
Designed By:	MSP
Drawn By:	BRF
Checked By:	CDC

S-1102

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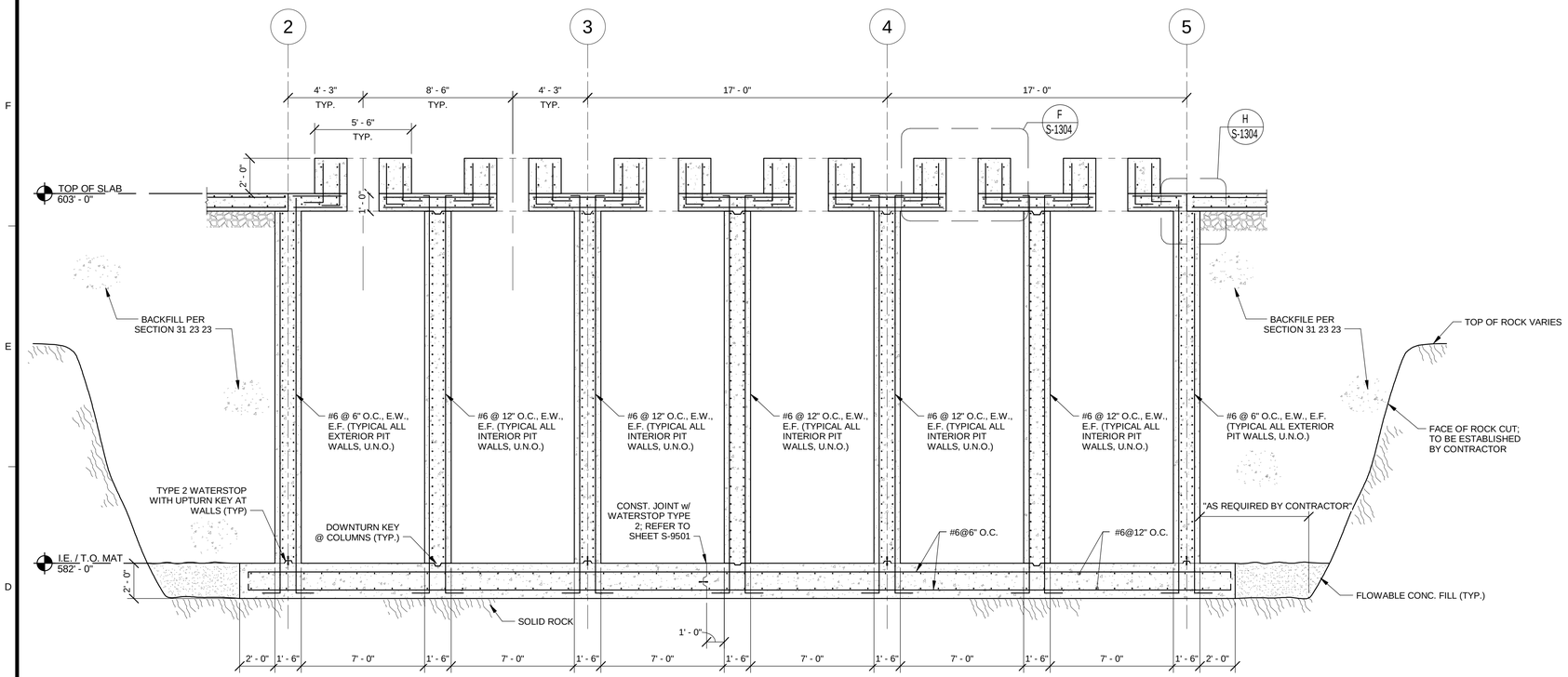
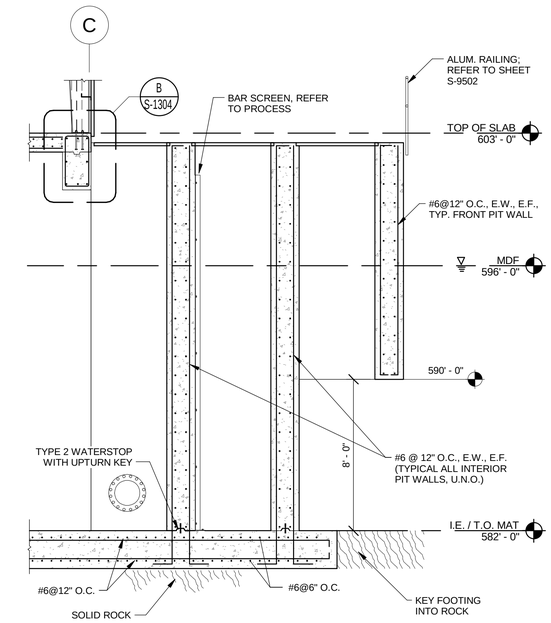
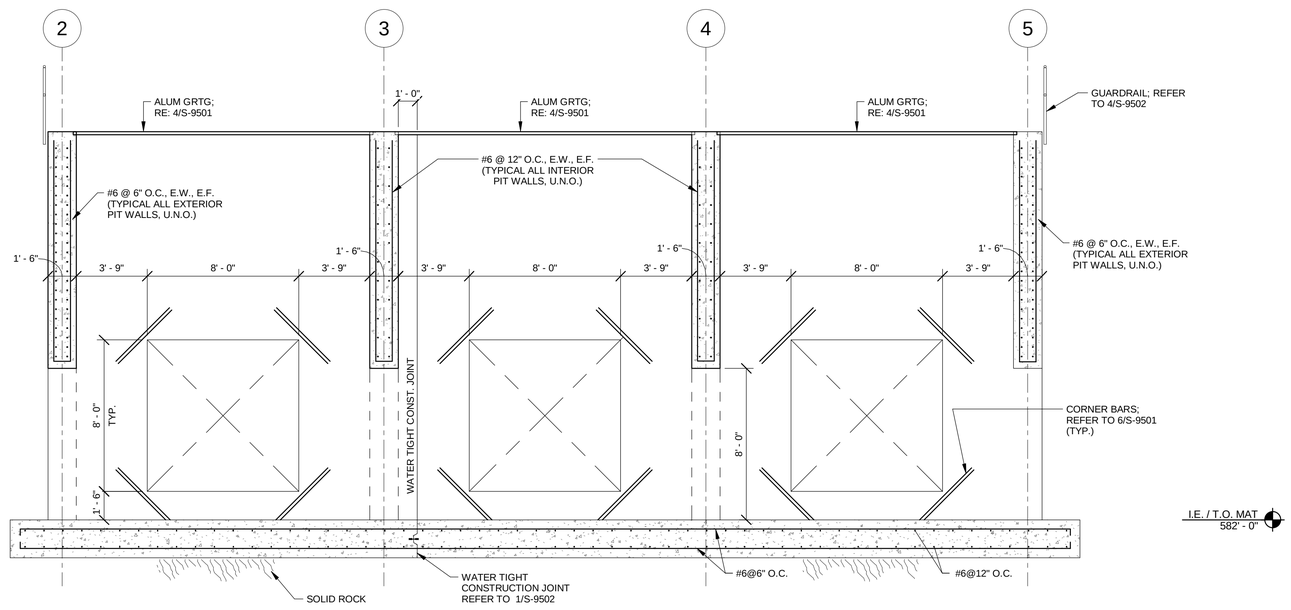


A S-1101 SECTION AT PUMP SUPPORT
SCALE: 1/4" = 1'-0"



B S-1101 INTAKE PIT
SCALE: 1/4" = 1'-0"



C S-1101 WALL SECTION
SCALE: 1/4" = 1'-0"

SCALE: 1/4" = 1'-0"
0' 2' 4' 8' 16'

Bar Measures 1 inch

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BID SET

ALABAMA LICENSED CHRISTOPHER D. COLEMAN No. 32158-E PROFESSIONAL ENGINEER
10/31/14

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

RAW WATER INTAKE STRUCTURE INTAKE PIT SECTIONS

Project No.:	200-11740-10003
Designed By:	MSP
Drawn By:	BRF
Checked By:	CDC

S-1301

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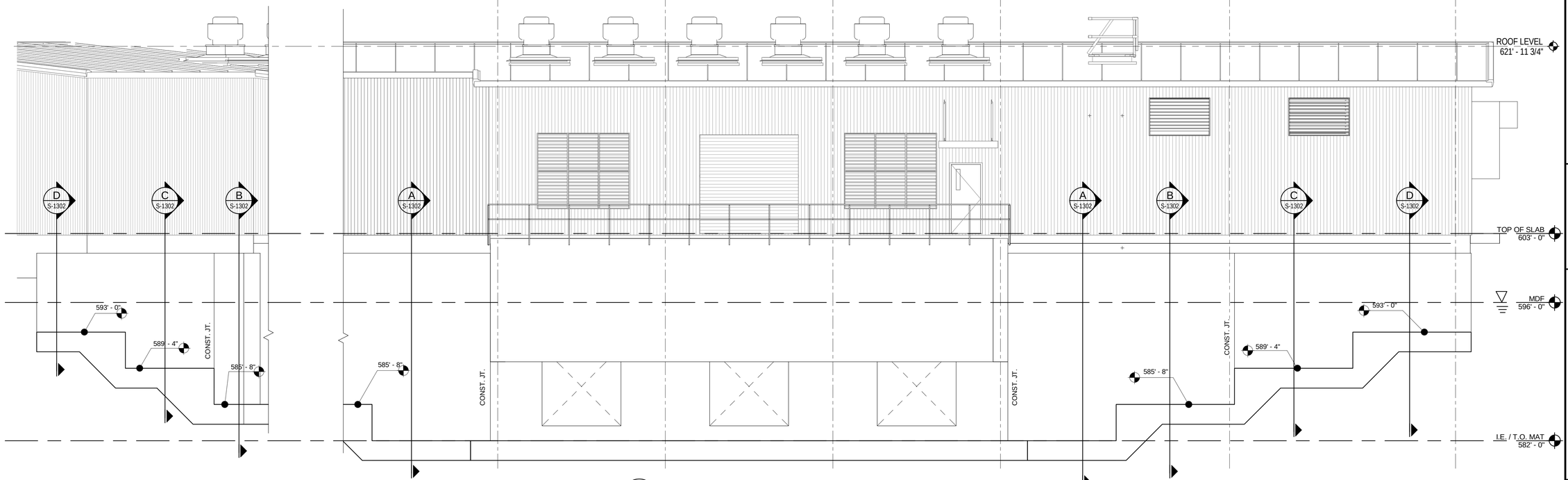
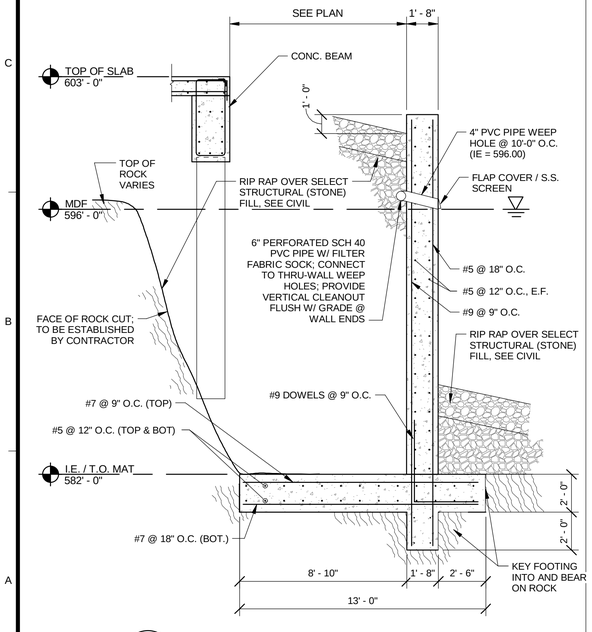
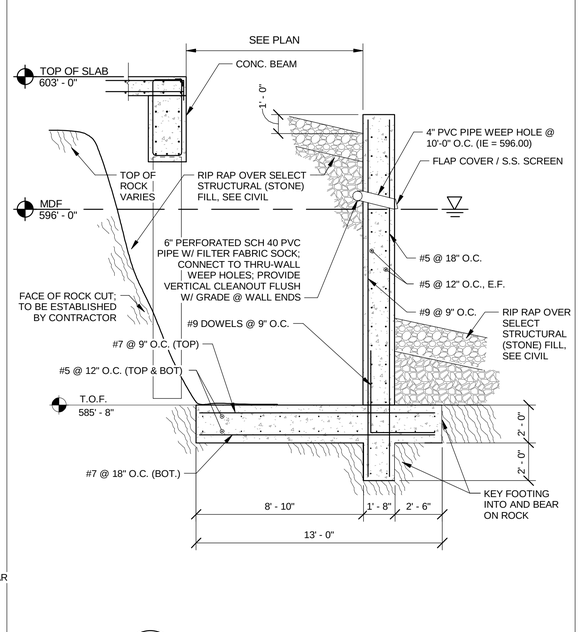


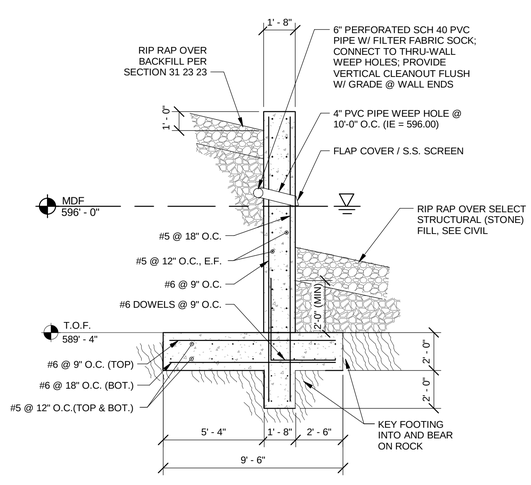
1 A-1101 **SOUTH ELEVATION VIEW**
SCALE: 3/16" = 1'-0"



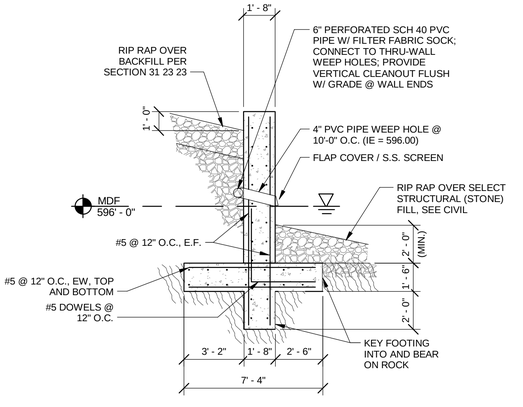
A S-1101 **RETAINING WALL (TYPE 1)**
SCALE: 1/4" = 1'-0"



B S-1101 **RETAINING WALL (TYPE 2)**
SCALE: 1/4" = 1'-0"



C S-1101 **RETAINING WALL (TYPE 3)**
SCALE: 1/4" = 1'-0"



D S-1101 **RETAINING WALL (TYPE 4)**
SCALE: 1/4" = 1'-0"

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HUNTSVILLE, ALABAMA 35806
PHONE: (256) 424-4077 FAX: (256) 424-4097

BID SET

ALABAMA LICENSED PROFESSIONAL ENGINEER
No. 32158-E PROFESSIONAL
CHRISTOPHER EDWARD COLEMAN
10/31/14

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

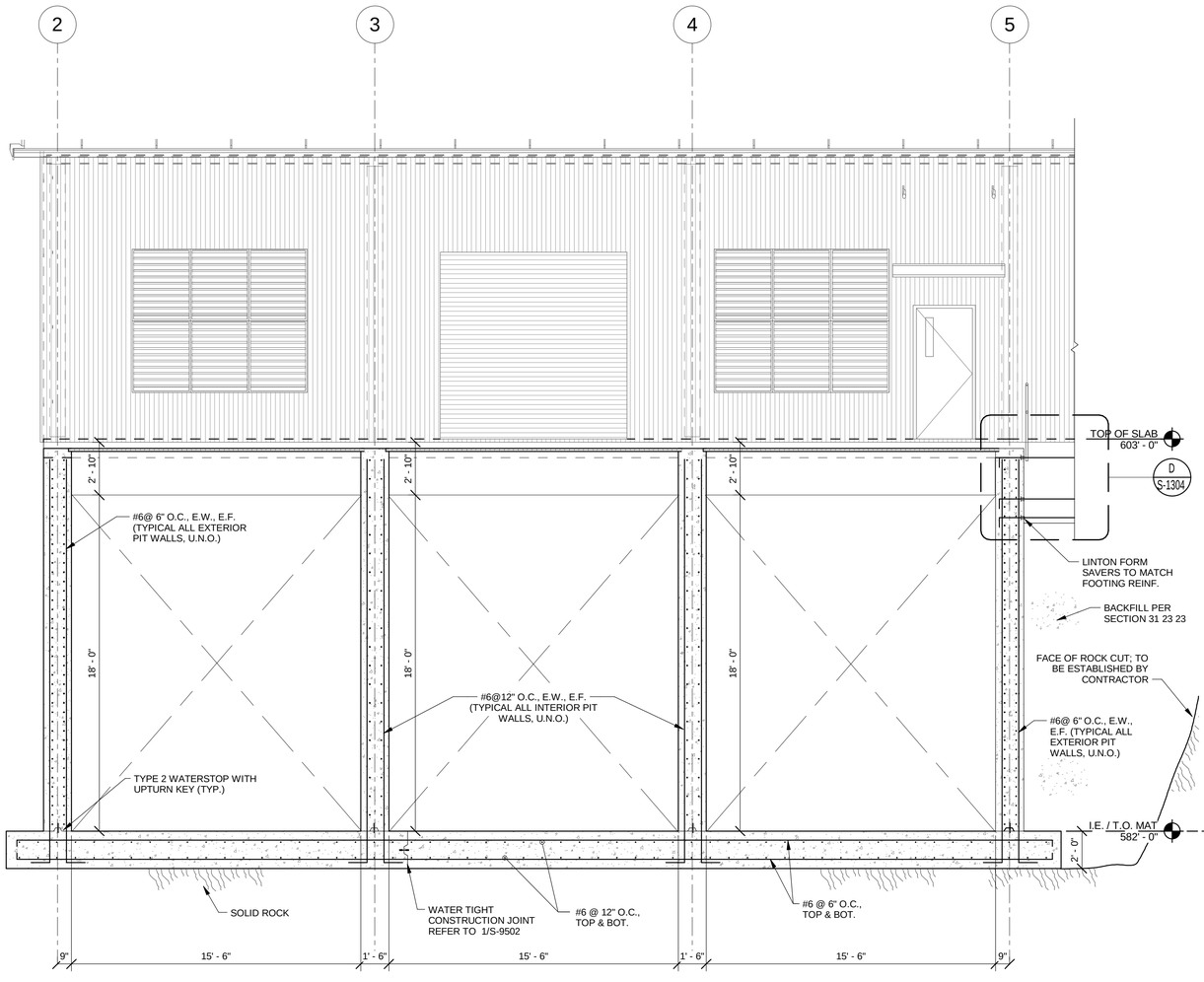
RAW WATER INTAKE STRUCTURE RETAINING WALL DETAILS

Project No.:	200-11740-10003
Designed By:	Designer
Drawn By:	Author
Checked By:	Checker

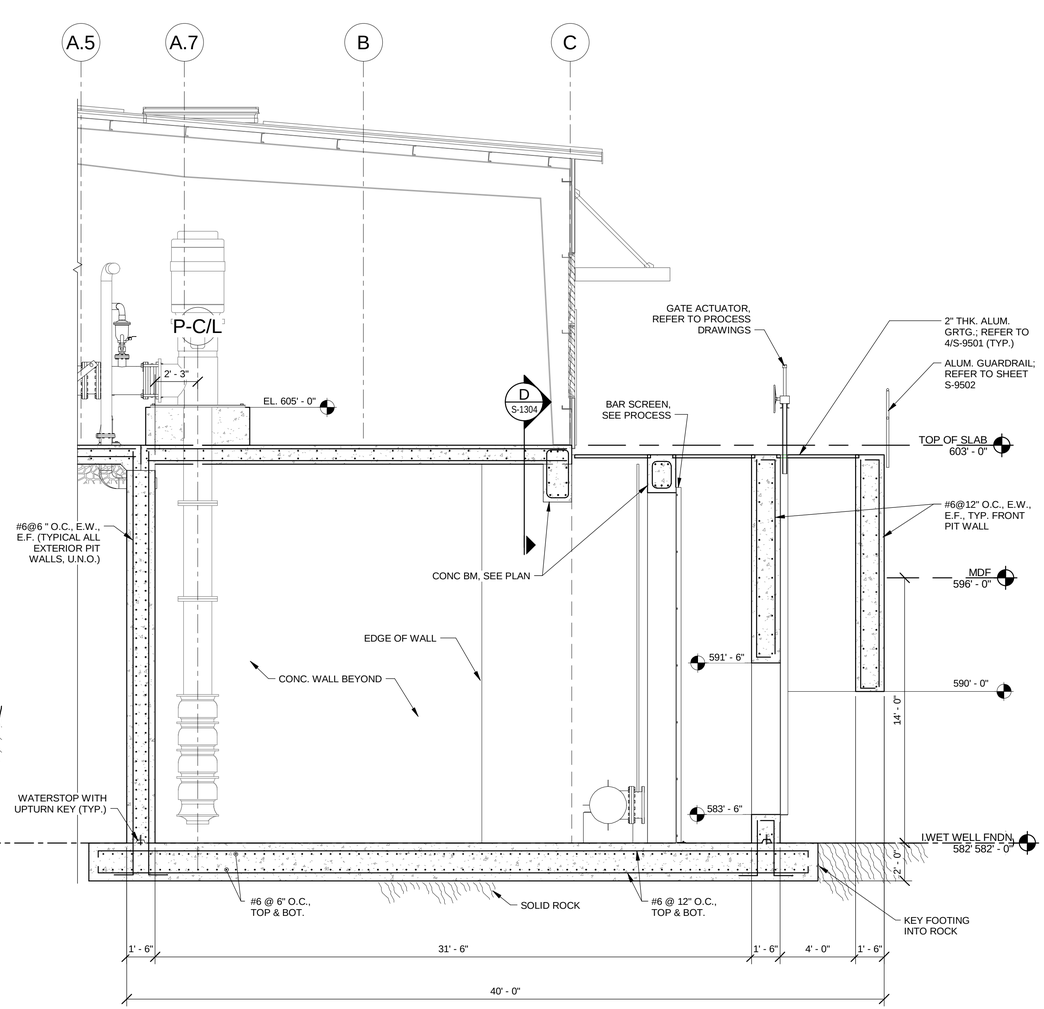
S-1302

Bar Measures 1 inch

10/20/2014 11:10:18 AM C:\Users\jon.evans\Desktop\Active Projects\Revit\RW-11740-S-INTAKE_jon.evans.rvt



D S-1101 SECTION @ WEST ELEVATION
SCALE: 1/4" = 1'-0"



E S-1101 INTAKE PIT SECTION - EAST WALL
SCALE: 1/4" = 1'-0"

SCALE: 1/4" = 1'-0"
0' 2' 4' 8' 16'

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HUNTSVILLE, ALABAMA 35806
PHONE: (256) 424-4077 FAX: (256) 424-4097

BID SET

ALABAMA LICENSED PROFESSIONAL ENGINEER
No. 32158-E
CHRISTOPHER D. COLEMAN
10/31/14

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

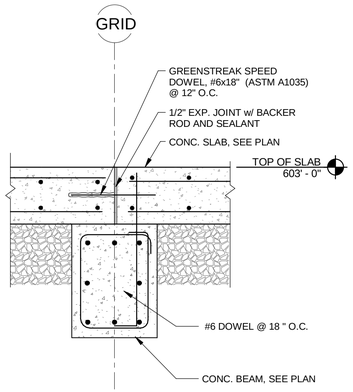
RAW WATER INTAKE STRUCTURE INTAKE PIT SECTIONS

Project No.:	200-11740-10003
Designed By:	MSP
Drawn By:	BRF
Checked By:	CDC

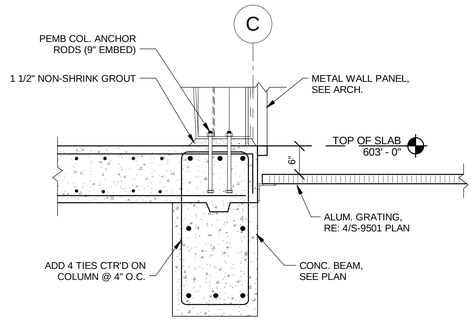
S-1303

9/29/2014 4:26:50 PM C:\Users\brent.fox\Documents\RW-11740-S-INTAKE_brent.fox.rvt

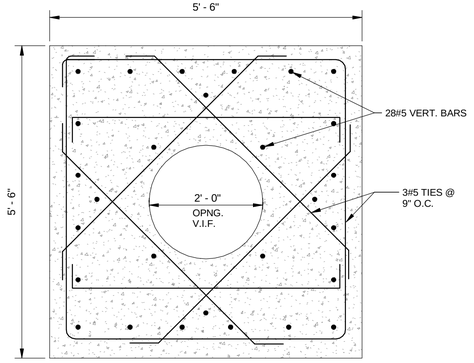
Bar Measures 1 inch



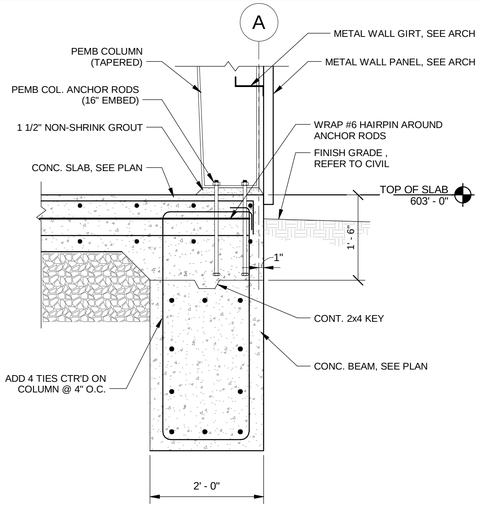
A S-1102 SECTION
SCALE: 3/4" = 1'-0"



B S-1102 SECTION @ INTAKE PIT
SCALE: 3/4" = 1'-0"

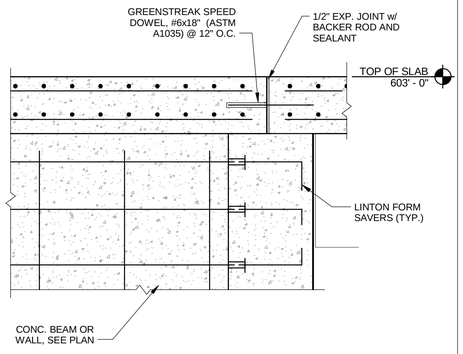


PLAN VIEW

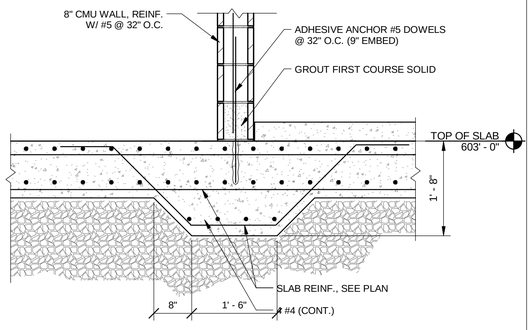


NOTE: CONC. PIER NOT SHOWN FOR CLARITY

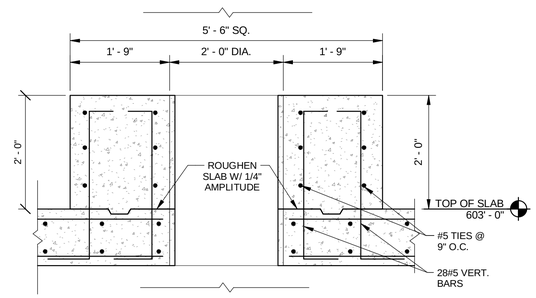
C S-1102 FOUNDATON @ COLUMN
SCALE: 3/4" = 1'-0"



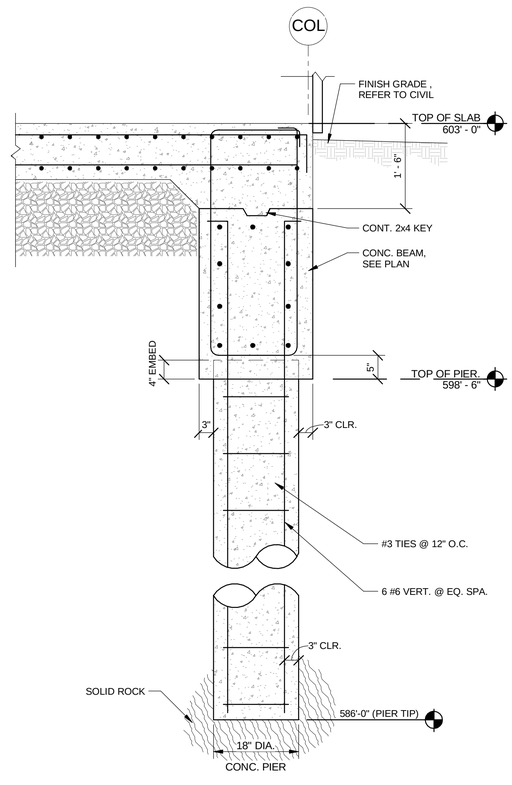
D S-1102 BEAM TO WALL CONN.
SCALE: 3/4" = 1'-0"



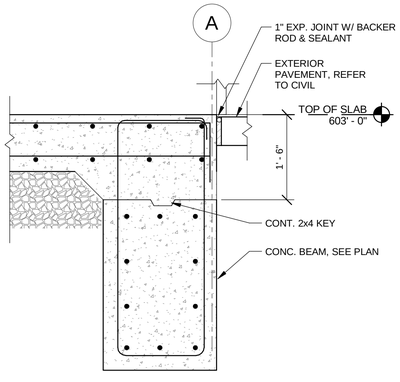
E S-1102 TRENCH SECTION
SCALE: 3/4" = 1'-0"



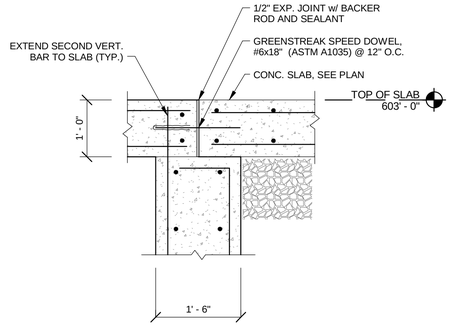
F S-1301 PUMP PAD SECTION
SCALE: 3/4" = 1'-0"



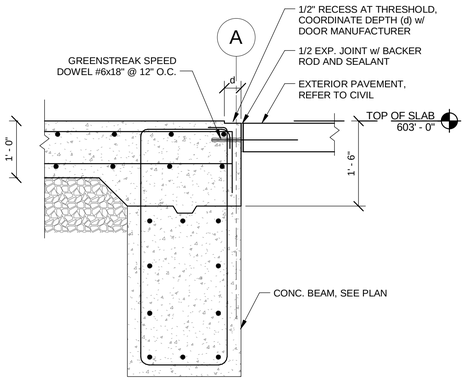
K S-1102 TYP. BLDG. FOUNDATION SECTION
SCALE: 3/4" = 1'-0"



G S-1102 SECTION @ DOORWAY
SCALE: 3/4" = 1'-0"



H S-1102 SLAB SECTION
SCALE: 3/4" = 1'-0"



J S-1102 SECTION @ OVERHEAD DOOR
SCALE: 3/4" = 1'-0"

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BID SET

ALABAMA LICENSED No. 32158-E PROFESSIONAL CHRISTOPHER D. COLEMAN ENGINEER
10/31/14

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

RAW WATER INTAKE STRUCTURE INTAKE PIT SECTIONS

Project No.:	200-11740-10003
Designed By:	MSP
Drawn By:	BRF
Checked By:	CDC

S-1304

Bar Measures 1 inch

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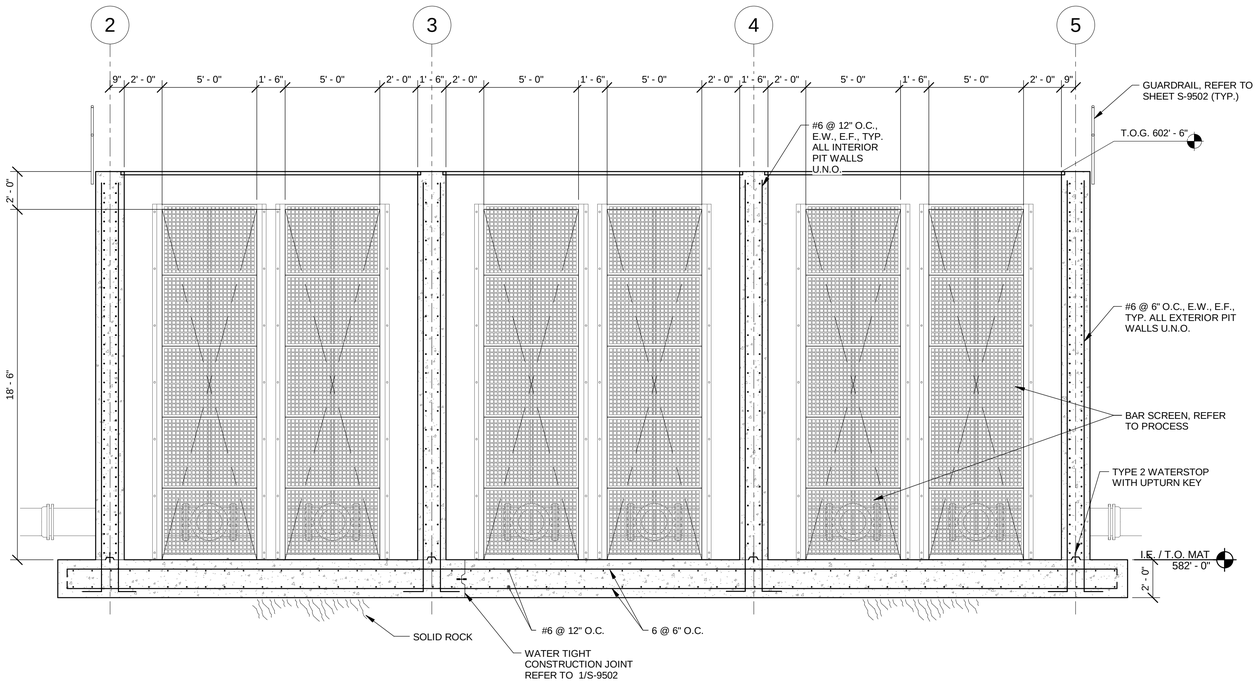
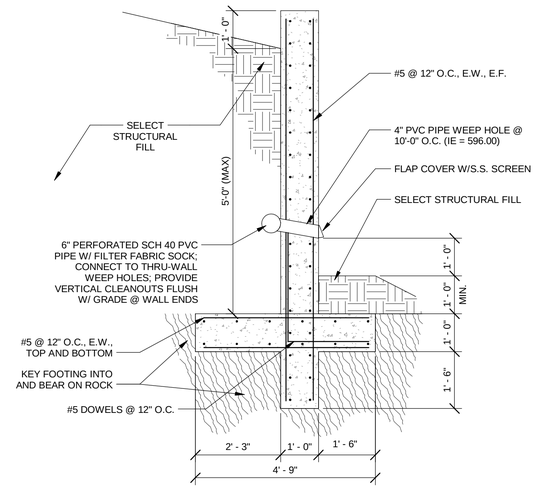


A S-1101 INTAKE PIT SECTION
SCALE: 1/4" = 1'-0"



2 RETAINING WALL AT ACCESS ROAD
SCALE: 1/2" = 1'-0"

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101 QUALITY CIRCLE, SUITE 140
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PHONE: (256) 424-4077 FAX: (256) 424-4097

BID SET

ALABAMA LICENSED PROFESSIONAL ENGINEER No. 32158-E CHRISTOPHER D. COLEMAN
10/31/14

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

RAW WATER INTAKE STRUCTURE INTAKE PIT SECTIONS

Project No.:	200-11740-10003
Designed By:	MSP
Drawn By:	BRF
Checked By:	CDC

S-1305

Bar Measures 1 inch

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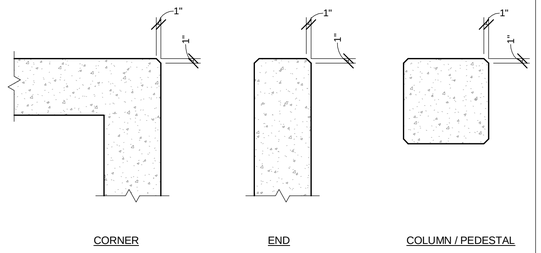
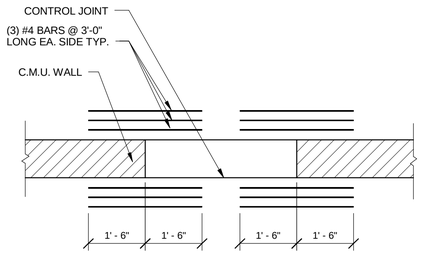
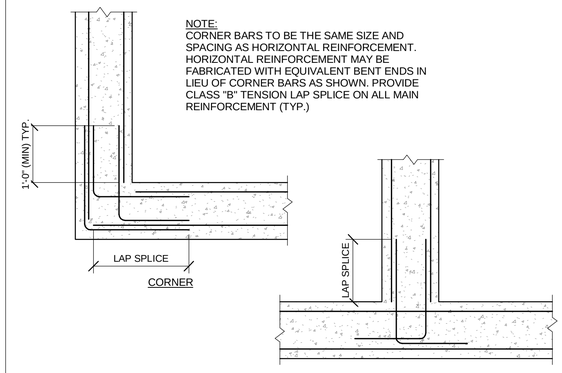


CORNER END COLUMN / PEDESTAL

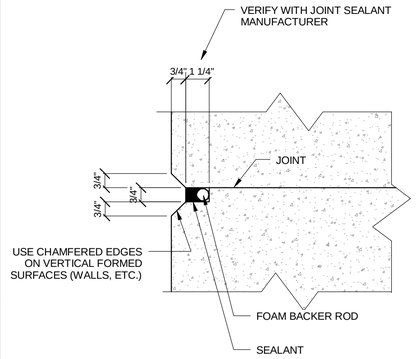
1 CHAMFER DETAILS
SCALE: 3/4" = 1'-0"

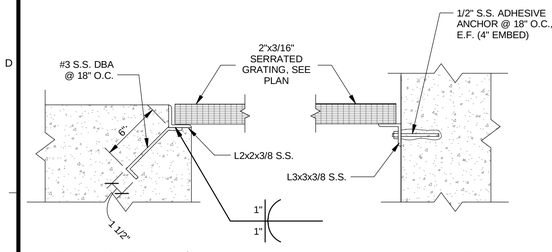


2 SLAB REINF. @ DOOR OPENING
SCALE: 1/2" = 1'-0"



3 WALL AND FOUNDATION CORNERS
SCALE: 3/4" = 1'-0"

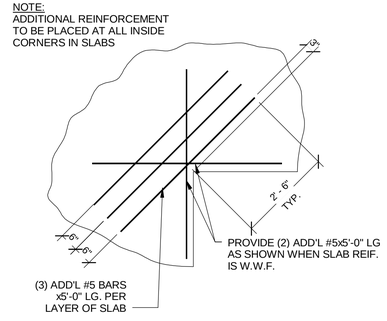




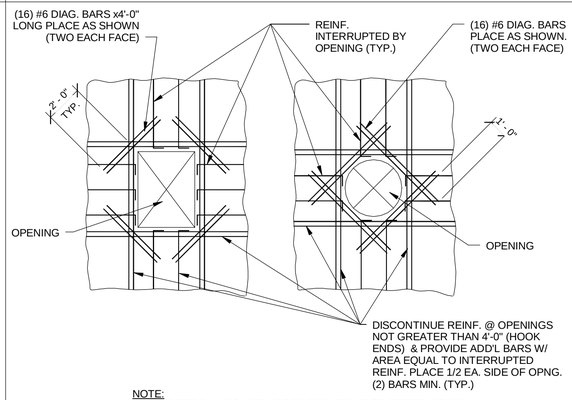
GRATING AT SLAB/WALL GRATING AT WALL

NOTE: ALL ALUM. GRATING SHALL BE DESIGNED FOR 200 PSF UNIFORM LOAD OR 1000 LB CONCENTRATED LOAD, WHICHEVER IS GREATER.

4 GRATING DETAIL
SCALE: 1 1/2" = 1'-0"

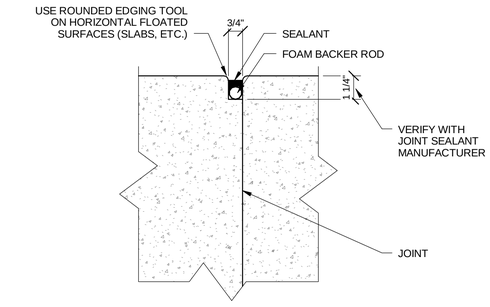


5 REINF. SLAB RE-ENTRANT CORNER
SCALE: 1/2" = 1'-0"

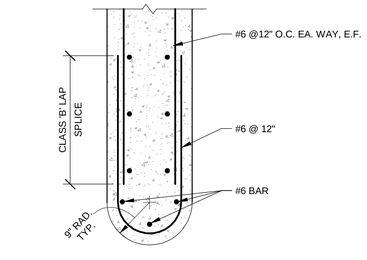


NOTE:
WHERE REQ'D. LAPS ARE NOT POSSIBLE DUE TO PRESENCE OF ADJACENT HOLES OR CORNERS, PROVIDE STANDARD END HOOK

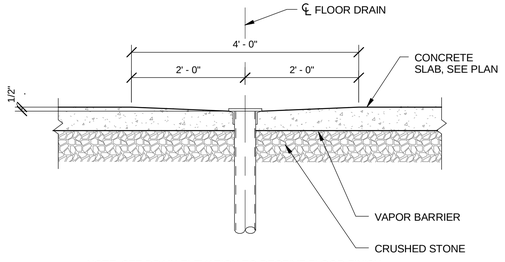
6 REINF. STEEL @ OPENING
SCALE: 1/4" = 1'-0"



7 CONTROL JOINT SEALANT
SCALE: 3" = 1'-0"

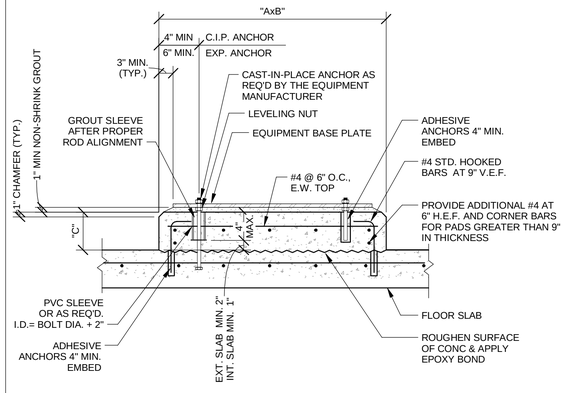


8 COLUMN DETAILS
S-1101 SCALE: 3/4" = 1'-0"



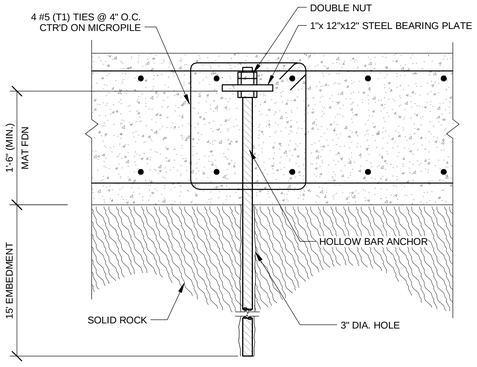
NOTE: SET DRAIN ELEVATION TO RECEIVE FLOOR FINISH. SEE ARCHITECTURAL AND MECHANICAL DRAWINGS FOR SIZE AND LOCATION OF FLOOR DRAIN

9 DETAIL FLOOR DRAIN
SCALE: 3/4" = 1'-0"



NOTE:
"A","B" & "C" DIMS. AS REQ'D TO SUIT EQUIPMENT.
("C" = 6" TYP. U.N.O.)

10 TYP. EQUIPMENT PAD
SCALE: 3/4" = 1'-0"



11 MICROPILE (ROCK ANCHOR) DETAIL
SCALE: 1" = 1'-0"

TETRA TECH
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HUNTSVILLE, ALABAMA 35806
PHONE: (256) 424-4077 FAX: (256) 424-4097

BID SET

ALABAMA LICENSED CHRISTOPHER D. COLEMAN No. 32158-E PROFESSIONAL ENGINEER
10/31/14

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

RAW WATER INTAKE STRUCTURE INTAKE PIT - TYPICAL DETAILS

Project No.:	200-11740-10003
Designed By:	MSP
Drawn By:	BRF
Checked By:	CDC

S-9501

Bar Measures 1 inch

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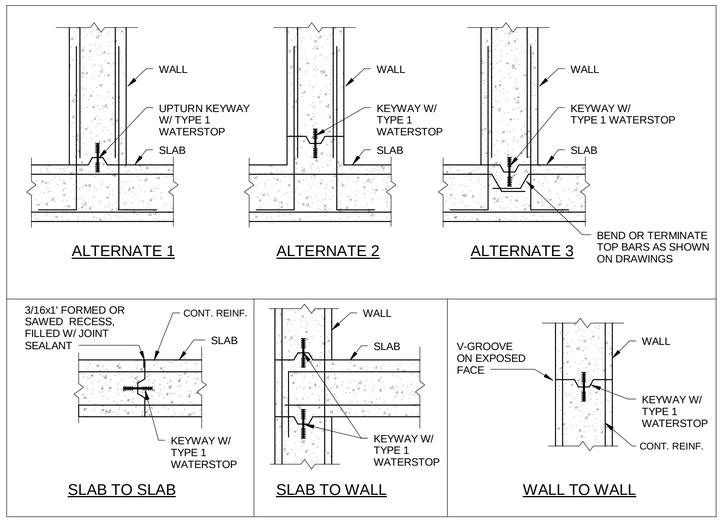
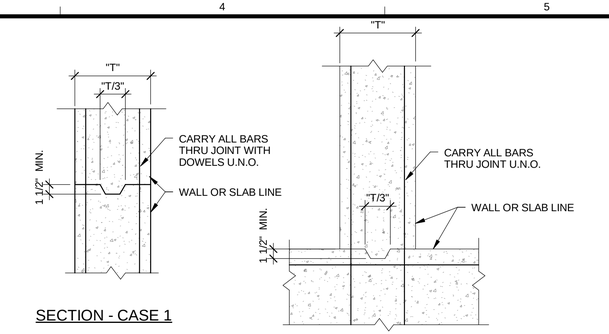
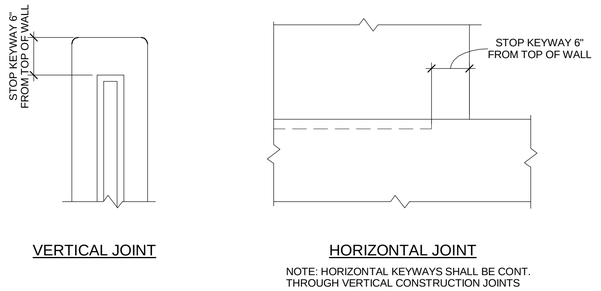


PVC WATERTIGHT CONSTRUCTION JOINTS

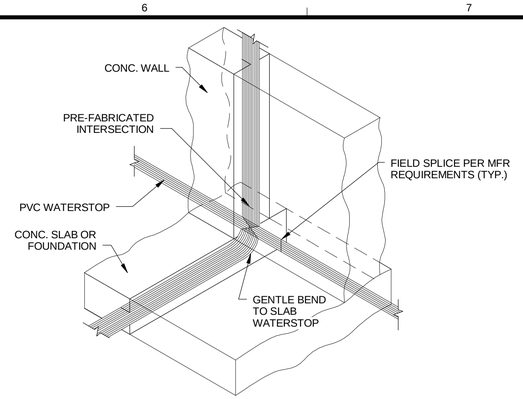
1 WATER TIGHT CONSTRUCTION JOINTS
SCALE: 3/4" = 1'-0"



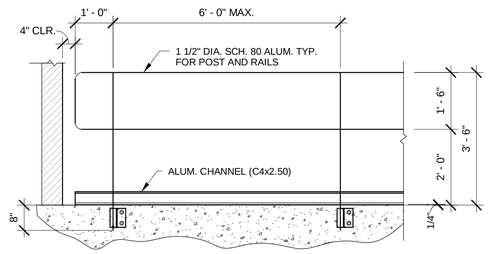


NOTE: HORIZONTAL KEYWAYS SHALL BE CONT. THROUGH VERTICAL CONSTRUCTION JOINTS

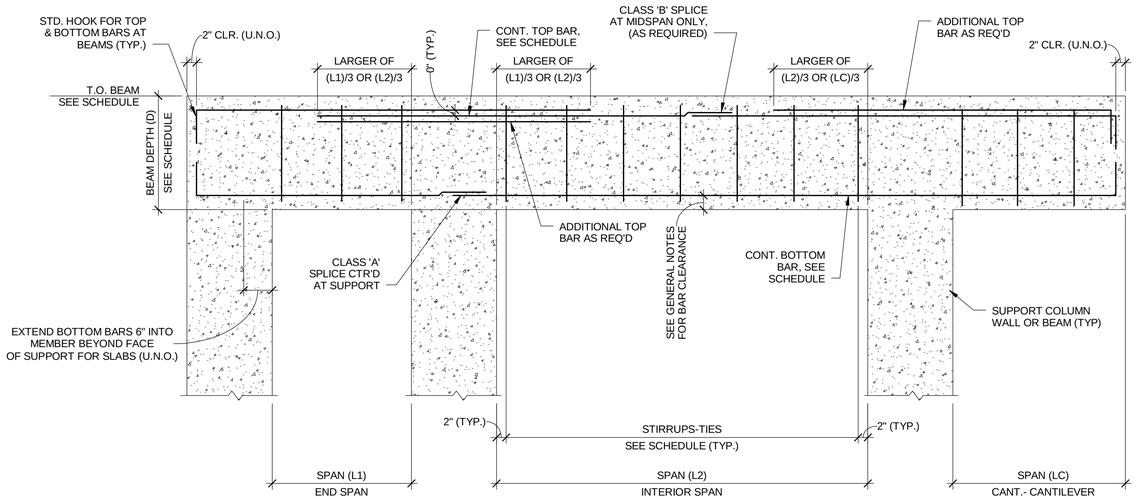
2 TYP. STANDARD CONSTRUCTION JOINT
SCALE: 1" = 1'-0"



3 WATERSTOP AT SLAB & WALL
SCALE: 3/4" = 1'-0"



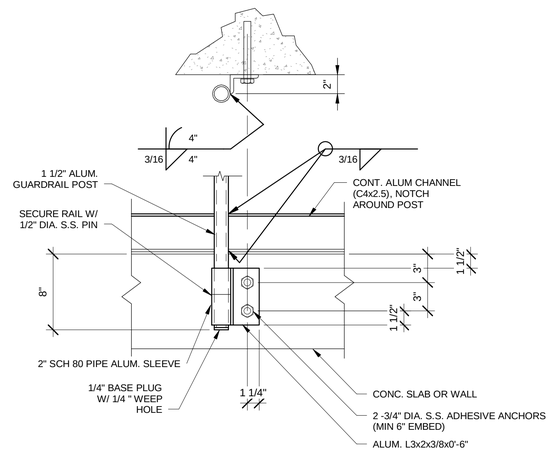
4 GUARDRAIL DETAIL
SCALE: 1/2" = 1'-0"



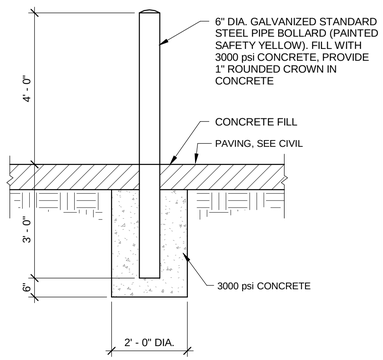
CONCRETE BEAM DIAGRAM NOTES:

1. TEMPERATURE REINFORCING FOR SLABS SHALL BE PLACED PERPENDICULAR TO BOTTOM AND TOP REINFORCING AS INNER LAYER.
2. REFER TO CONCRETE BEAM SCHEDULE FOR REINFORCING SIZE AND SPACING.

5 CONCRETE BEAM DIAGRAM
SCALE: 3/4" = 1'-0"



6 GUARDRAIL CONNECTION
SCALE: 1 1/2" = 1'-0"



7 BOLLARD DETAIL
SCALE: 1/2" = 1'-0"

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BID SET

ALABAMA LICENSED PROFESSIONAL ENGINEER No. 32158-E CHRISTOPHER D. COLEMAN
10/31/14

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

RAW WATER INTAKE STRUCTURE INTAKE PIT - TYPICAL DETAILS

Project No.:	200-11740-10003
Designed By:	MSP
Drawn By:	BRF
Checked By:	CDC

S-9502

Bar Measures 1 inch

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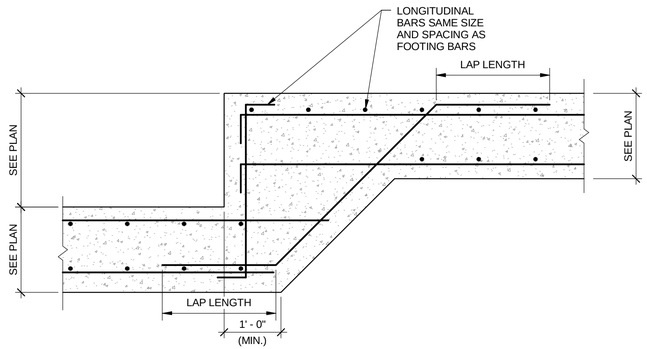
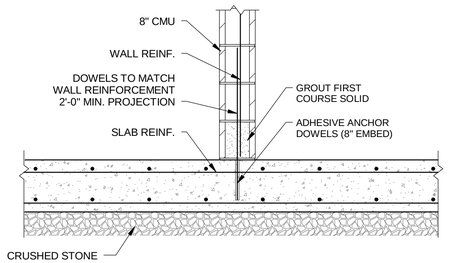
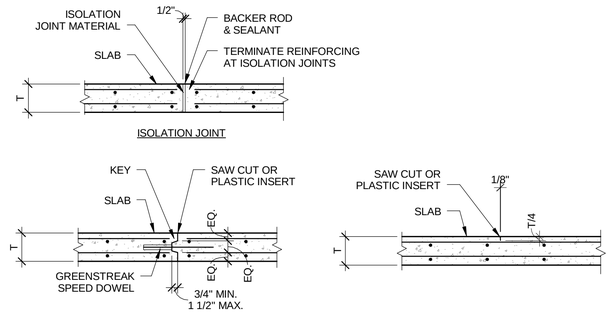


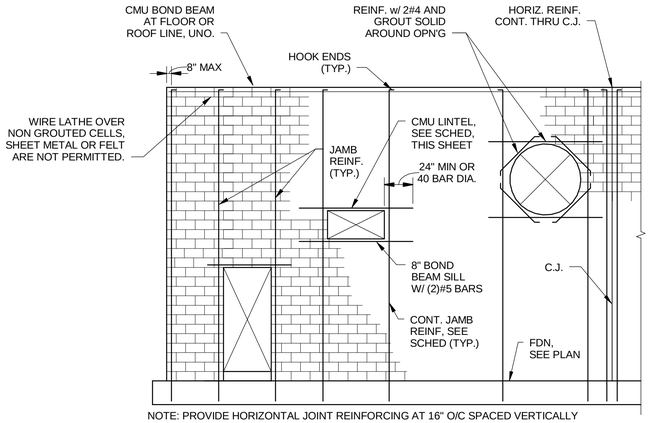
1 STEP FOOTING DETAIL
SCALE: 3/4" = 1'-0"



2 MASONRY WALL TO SLAB
SCALE: 3/4" = 1'-0"



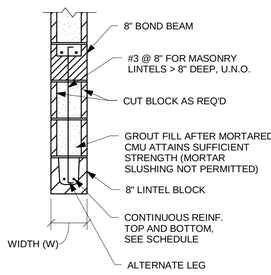
3 TYP. REINF SLAB DETAILS
SCALE: 3/4" = 1'-0"



NOTE: PROVIDE HORIZONTAL JOINT REINFORCING AT 16" O/C SPACED VERTICALLY

4 TYPICAL CMU WALL REINFORCING
SCALE: 3/16" = 1'-0"

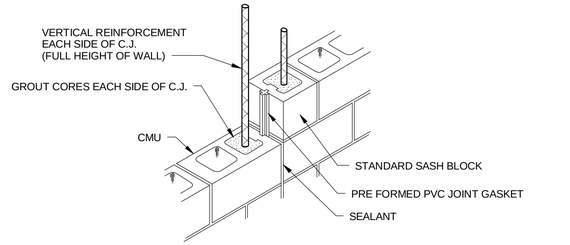
MASONRY LINTEL SCHEDULE				
MARK	SIZE (WxD)	CLEAR SPAN*	REINF.	NOTES
L1	8x8	UP TO 3'-4"	(2) #4 BOT.	



MASONRY LINTEL NOTES:

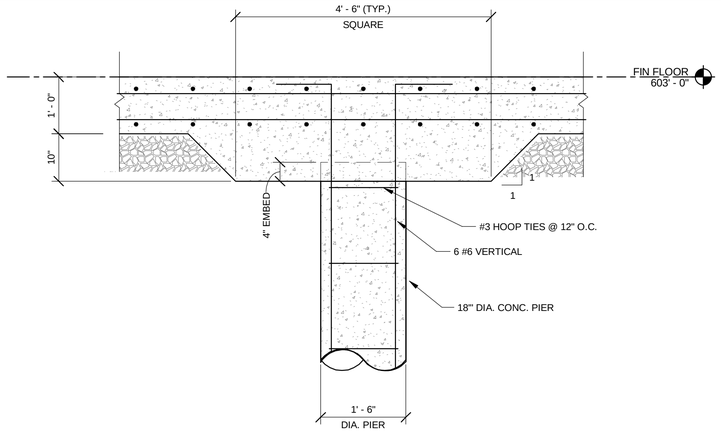
1. LINTEL MUST BE SHORED UNTIL MORTAR AND GROUT ATTAIN DESIGN STRENGTH.
2. SPECIAL INSPECTOR MUST VERIFY PROPER REINFORCEMENT PLACEMENT PRIOR TO GROUTING, AND VERIFY PROPER GROUT PLACEMENT.
3. MASONRY LINTELS SHALL HAVE A MINIMUM BEARING OF 8", U.N.O.
4. SHEAR TIES SHALL HOOK AROUND TOP AND BOTTOM REINF. ALTERNATE LEG.
5. LINTEL REINFORCING SHALL EXTEND OUTSIDE THE OPENING FORTY (40) BAR DIAMETERS, EACH DIRECTION OR PROVIDE STANDARD HOOK TO TERMINATE ENDS.
6. NON-LOAD BEARING PARTITION WALL OPENINGS OR OPENINGS NOT SHOWN ON PLAN SHALL FOLLOW THE MINIMUM REINFORCING AND SPAN REQUIREMENTS PER SCHEDULE.

5 MASONRY LINTEL CHART
SCALE: 3/4" = 1'-0"



NOTE:
1. MAXIMUM MASONRY CONTROL JOINT SPACING 20'-0" O.C.
2. BOND BEAM HORIZONTAL REINFORCEMENT RUNS CONTINUOUS THROUGH CONTROL JOINT
3. COORDINATE CONTROL JOINT LOCATIONS WITH ARCHITECT.
4. PROVIDE DOWELS IN FOUNDATION TO MATCH VERTICAL BARS

6 MASONRY CONTROL JOINT
SCALE: 3/4" = 1'-0"



7 TYP- PIER TO INTERIOR SLAB CONN.
S-1102 SCALE: 3/4" = 1'-0"

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BID SET

ALABAMA LICENSED PROFESSIONAL ENGINEER
No. 32158-E
CHRISTOPHER D. COLEMAN
10/31/14

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

RAW WATER INTAKE STRUCTURE INTAKE PIT - TYPICAL DETAILS

Project No.:	200-11740-10003
Designed By:	MSP
Drawn By:	BRF
Checked By:	CDC

S-9503

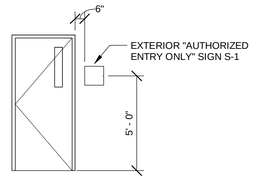
Bar Measures 1 inch

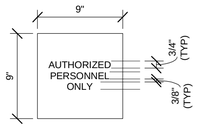
ABBREVIATIONS

AB	ANCHOR BOLT
ACOUST	ACOUSTICAL
ACT	ACOUSTICAL CEILING TILE
AFF	ABOVE FINISHED FLOOR
AIB	AIR INFILTRATION BARRIER
ALUM	ALUMINUM
ARCH	ARCHITECT (URAL)
ATFP	ANTI-TERRORISM FORCE PROTECTION
BD	BOARD
BET	BETWEEN
BLDG	BUILDING
BLKG	BLOCKING
BOT	BOTTOM
CBB	CEMENTITIOUS BACKER BOARD
CEM	CEMENT
CFCI	CONTRACTOR FURNISHED, CONTRACTOR INSTALLED
CG	CORNER GUARD
CIP	CAST IN PLACE CONCRETE
CLG	CEILING
CLR	CLEAR (ANCE)
CT	CERAMIC TILE
CTR	CENTER
COL	COLOR
COMM	COMMUNICATIONS
CONC	CONCRETE
CONT	CONTINUOUS OR CONTINUE
COORD	COORDINATE
CMU	CONCRETE MASONRY UNIT
CPT	CARPET
DBL	DOUBLE
DET	DETAIL
DF	DRINKING FOUNTAIN
DIA	DIAMETER
DIM	DIMENSION
DK	DECK
DR	DOOR
DS	DOWNSPOUT
DWG(S)	DRAWING(S)
E	EAST
EA	EACH
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC	ELECTRIC(AL)
EPS	EXPANDED POLYSTYRENE
EPT	EXTERIOR PAINT
EQ	EQUAL
EQUIP	EQUIPMENT
EW	EACH WAY
EXIST	EXISTING
EXP	EXPOSED, EXPANDED, EXPANSION
EXT	EXTERIOR, EXTENSION
FD	FLOOR DRAIN
FEC	FIRE EXTINGUISHER CABINET
FF	FINISHED FLOOR OR FACTORY FINISH
FIN	FINISH (ED)
FLR	FLOOR (ING)
FRTW	FIRE RETARDANT TREATED WOOD
FTG	FOOTING
FOC	FACE OF CONCRETE
FOM	FACE OF MASONRY
FOS	FACE OF STUD/STEEL
FURR	FURRING
GA	GAGE, GAUGE
GALV	GALVANIZED
GB	GRAB BAR
GL	GRID LINE
GYPBD, GWB	GYPSUM WALL BOARD
GYP	GYPSUM
HM	HOLLOW METAL
HORIZ	HORIZONTAL
HT	HEIGHT
HW, HDWR	HARDWARE
HYD	HYDRAULIC
IJ	ISOLATION JOINT
ICF	INSULATED CONCRETE FORM
INSUL	INSULATION
IRP	INSULATED ROOM PANEL
IWP	INSULATED WALL PANEL
JST	JOIST
JT	JOINT
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
M	METERS
MAT	MATERIAL
MAX	MAXIMUM
MB	MOISTURE BARRIER, BROOM HOLDER
MBH	
MECH	MECHANIC (AL)
MET, MTL	METAL
MFR	MANUFACTURER
MG	MIRROR, GLASS
MIN	MINIMUM
MM (mm)	MILLIMETERS
MO	MASONRY OPENING
MR	MOISTURE RESISTANT
MTD	MOUNTED
N	NORTH
NE	NORTHEAST
NIC	NOT IN CONTRACT
NO	NUMBER
NTS	NOT TO SCALE
NW	NORTHWEST
OC	ON CENTER (S)
OD	OUTSIDE DIAMETER
OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED, OWNER INSTALLED
OPH	OPPOSITE HAND
OPP	OPPOSITE
OSB	ORIENTED STRAND BOARD
OTS	OPEN TO STRUCTURE
PLAM	PLASTIC LAMINATE
PERP	PERPENDICULAR
PLYWD, PWD	PLYWOOD
PNL	PANEL
POLY	POLYSTYRENE
PT	PAINT
PTDWR	PAPER TOWEL DISPENSER/ WASTE RECEPTACLE
PTWD	PRESSURE TREATED WOOD
QT	QUARRY TILE
R	RISER
RB	RUBBER BASE
RCP	REFLECTED CEILING PLAN
REC	RECESSED
REF	REFERENCE
REQ'D	REQUIRED
RES	RESILIENT
REV	REVISION (S), REVISED
RH	ROBE HOOK
RM	ROOM
RO	ROUGH OPENING
RR	RESTROOM
S	SOUTH
SCWD	SOLID CORE WOOD (DOOR)
SD	SOAP DISPENSER
SE	SOUTHEAST
SH	SOAP HOLDER
SHR	SHOWER
SIM	SIMILAR
SLR	SEALER
SM	SQUARE METER
SMHD	SHELF, METAL, HEAVY DUTY
SND	SANITARY NAPKIN & TAMPON DISPOSER
SPEC	SPECIFICATION
SQ	SQUARE
SS	STAINLESS STEEL
SSMR	STANDING SEAM METAL ROOF
ST, STL	STEEL
STC	SOUND TRANSMISSION CLASS
STRUCT	STRUCTURAL
SUSP	SUSPENDED
SW	SOUTHWEST
S2S	SURFACED TWO SIDES
S4S	SURFACED FOUR SIDES
T	TREAD
TB	TOWEL BAR
T & G	TONGUE AND GROOVE
TLT	TOILET
TOS	TOP OF SLAB OR STEEL
TRT	TREATED
TS	TUBE STEEL
TSCD	TOILET SEAT COVER DISPENSER
TTD	TOILET TISSUE DISPENSER
TV	TELEVISION
TYP	TYPICAL
UNF	UNFINISHED
UNO	UNLESS NOTED OTHERWISE
VCT	VINYL COMPOSITION TILE
VERT	VERTICAL
VR	VAPOR RETARDER
VTC	VIDEO-TELECONFERENCE
W/	WITH
W	WIDE, WAY, WEST
WOM	WALK OFF MAT
WF	WIDE FLANGE
WD	WOOD
WR	WATER RESISTANT
WRB	WEATHER RESISTIVE BARRIER

SYMBOLS

L	ANGLE
&	AND
@	AT
℄	DIAMETER
°	DEGREE





SIGN S-1

SIGNAGE NOTES:
PROVIDE SIGNAGE AT EACH EXTERIOR PASSAGE DOOR.
LETTER SIZE 1" HELVETICA MEDIUM
SIGN MATERIAL: ALUMINUM, ENAMEL COATED

SIGNAGE

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

GENERAL NOTES

1. REPETITIVE FEATURES NOT NOTED ON THE DRAWINGS SHALL BE COMPLETELY PROVIDED AS IF DRAWN IN FULL.
2. DIMENSIONS ON DRAWINGS ARE TAKEN TO/FROM THE LOCATIONLISTED BELOW UNLESS OTHERWISE INDICATED:

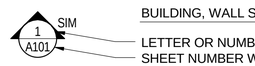
   CENTERLINES OF WALLS
   CENTERLINES OF WINDOWS
   CENTERLINES OF DOORS
   GRID LINES
   MASONRY OPENINGS

   DIMENSIONS ON INTERIOR ELEVATIONS ARE TAKEN TO/FROM THE:

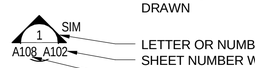
   FINISHED GYPSUM WALLBOARD
   PLASTIC LAMINATE
   CABINETRY
   CENTERLINES OF FIXTURES
3. GRID LINES INDICATE THE CENTERLINE OF PRIMARY COLUMNS ONLY. SEE STRUCTURAL FOR EXACT LOCATION AND SIZE OF INDIVIDUAL COLUMNS.
4. CHAMFER EXTERNAL CORNERS ON EXPOSED CONCRETE WALLS 3/4" (20mm) TYPICAL, UNLESS OTHERWISE NOTED.
5. MECHANICAL AND ELECTRICAL INFORMATION SHOWN ON THE ARCHITECTURAL DRAWINGS IS PROVIDED FOR CLARITY AND/OR LOCATIONAL PURPOSES ONLY. SEE MECHANICAL AND ELECTRICAL DRAWINGS.
6. FLASHING COLOR TO MATCH ADJACENT WALL COLOR UNLESS OTHERWISE NOTED.
7. BUILDING HEIGHTS AND ELEVATIONS ARE BASED UPON PROJECTFINISH ELEVATION OF 0'-0" AT THE FIRST FLOOR. REFERENCE CIVILDRAWINGS FOR FIRST FLOOR ELEVATIONS RELATIVE TO SEA LEVEL.
8. ALL WORK SHALL COMPLY WITH 2009 INTERNATIONAL BUILDING CODE (IBC) AND NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) 101 LIFE SAFETY CODE, 2009 EDITION.
9. ALL DOORS IN STUD WALLS NOT LOCATED BY DIMENSION ON PLANS OR DETAILS SHALL BE 4" (100mm) FROM FRAMING OF ADJACENT PERPENDICULAR WALL TO EDGE OF DOOR OPENING.
10. ROOM AND DOOR NUMBERS SHOWN ON DRAWINGS ARE FOR CONSTRUCTION PURPOSES ONLY.
11. ALL WOOD IN CONTACT WITH CONCRETE OR MASONRY SHALL BE PRESERVATIVE-TREATED WOOD.
12. LOCATE SIGN S-1 AT ALL EXTERIOR PASSAGE DOORS.
13. ROOF PITCHES INDICATED ARE NOMINAL. SEE STRUCTURAL DRAWINGS FOR BEARING HEIGHTS.

PLAN SYMBOLS

CALLLOUTS



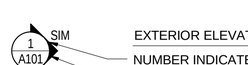
BUILDING, WALL SECTION SYMBOL
LETTER OR NUMBER INCATES SECTION
SHEET NUMBER WHERE SECTION IS DRAWN



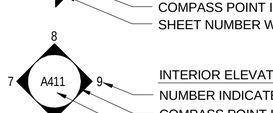
LETTER OR NUMBER INCATES SECTION
SHEET NUMBER WHERE FIRST KEYED
SHEET NUMBER WHERE SECTION IS DRAWN

DETAIL SYMBOL
LETTER OR NUMBER INCATES
SHEET NUMBER WHERE SECTION IS DRAWN

LETTER OR NUMBER INCATES
SHEET NUMBER WHERE FIRST KEYED
SHEET NUMBER WHERE SECTION IS DRAWN



EXTERIOR ELEVATION SYMBOL
NUMBER INDICATES EXTERIOR ELEVATION
COMPASS POINT INDICATES WHICH ELEVATIONS ARE DRAWN
SHEET NUMBER WHERE EXTERIOR ELEVATION IS DRAWN



INTERIOR ELEVATION SYMBOL
NUMBER INDICATES EXTERIOR ELEVATION
COMPASS POINT INDICATES WHICH ELEVATIONS ARE DRAWN
SHEET NUMBER WHERE EXTERIOR ELEVATION IS DRAWN

VERTICAL OR SPOT ELEVATION

IDENTIFICATON

ROOM NAME AND NUMBER

FIRE EXTINGUISHER CABINET - SEMI RECESSED

NORTH ARROW

WALL TYPE IDENTIFICATION

KEYED NOTE IDENTIFICATION

WINDOW IDENTIFICATION

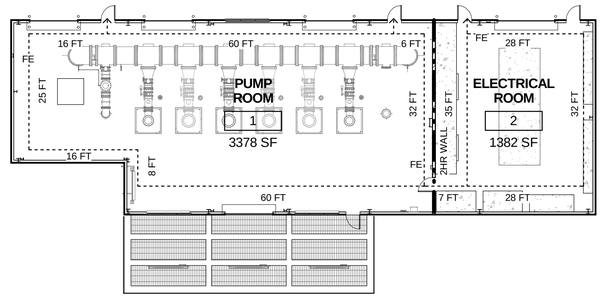
REVISION IDENTIFICATION

DOOR IDENTIFICATION

SUPPLY & RETURN AIR GRILLES

2'-0" X 4'-0" FLUORESCENT LIGHT FIXTURE

SURFACE-MOUNTED FLUORESCENT LIGHT FIXTURE



LIFE SAFETY PLAN

SCALE: 1/16" = 1'-0"

BUILDING CODE ANALYSIS

THE CODES AND STANDARDS CURRENTLY ADOPTED AND ENFORCED BY THE ALABAMA BUILDING COMMISSION AS THE STATE BUILDING CODE ARE:
2009 INTERNATIONAL BUILDING CODE
2009 INTERNATIONAL PLUMBING CODE
2009 INTERNATIONAL MECHANICAL CODE
2009 INTERNATIONAL FUEL, GAS CODE
2009 INTERNATIONAL FIRE CODE
2011 NATIONAL ELECTRICAL CODE
2009 INTERNATIONAL ENERGY CONSERVATION CODE
AMERICANS WITH DISABILITY ACT ACCESSIBILITY GUIDELINES
ANSI/ASHRAE/IESNA STANDARD 90.1-2007 E ENERGY STANDARD FOR BUILDINGS EXCEPT LOW RISE RESIDENTIAL

BUILDING DESCRIPTION:

1 STORY PUMP BUILDING, STRUCTURAL STEEL FRAME, INSULATED WALL AND ROOF PANELS.

OCCUPANCY GROUP FORIS "F-1" FACTORY INDUSTRIAL

TABLE 306.2
FACTORY INDUSTRIAL F-1 4,756 SF

CONSTRUCTION TYPE PER 602.2 TYPE IIB

NO AUTOMATED FIRE SUPPRESSION SYSTEM PROVIDED

GROSS SQUARE FOOTAGE
4,756 GSF PROVIDED
GROUP F-1 15,500 SF PERMITTED

NUMBER OF STORIES
1 PROVIDED
2 PERMITTED

MINIMUM FIRE RESISTANCE RATING (TABLE 601)	REQUIRED	PROVIDED
EXTERIOR WALLS UNLIMITED OPENINGS, CLEAR AREA>30 FT	0HR	0HR
ROOF CONSTRUCTION	0HR	0HR
STRUCTURAL FRAME	0HR	0HR
BEARING WALLS (INTERIOR/EXTERIOR)	0HR	0HR
ROOF CONSTRUCTION	0HR	0HR

OCCUPANCY PER TABLE 1004.1.1
300 GROSS SQUARE FEET PER OCCUPANT FOR MECHANICAL EQUIPMENT ROOMS
15 OCCUPANTS PERMITTED

MEANS OF EGRESS -NFPA 101
EGRESS WIDTH PER PERSON SERVED (NFPA TABLE 7.3.3.1)
LEVEL COMPONENTS AND RAMPS 0.2 INCHES
MINIMUM CLEAR OPENING OF EXIT DOORS (NFPA 7.2.1.2.4) = 32"
EGRESS WIDTH PROVIDED (NFPA 7.2.1.2.3)
DOORS 4 EXITS @ 34" / 0.2 INCHES PER PERSON = 680

NUMBER OF EXITS REQUIRED: 2
NUMBER OF EXITS PROVIDED: 4

MAXIMUM ALLOWABLE COMMON PATH OF TRAVEL: 100 FT
MAXIMUM TRAVEL DISTANCE TO AN EXIT: 250 FT

FIRE EXTINGUISHER SIZE AND PLACEMENT FOR CLASS A HAZARDS (NFPA 10 3-2)
MNIMUM RATED SINGLE EXTINGUISHER 2-A
MAXIMUM FLOOR AREA PER UNIT OF A = 3,000 SF LIGHT, 1,500 SF MODERATE
MAXIMUM FLOOR AREA FOR AN EXTINGUISHER = 11,250 SF
MAXIMUM TRAVEL DISTANCE TO FIRE EXTINGUISER = 75 FT

FIRE EXTINGUISHER PROVED: (3) 10B:C-15 FIRE EXTINGUISHER

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HUNTSVILLE, ALABAMA 35806
PHONE: (256) 424-4077 FAX: (256) 424-4097

BID SET

STATE OF ALABAMA
J. QUINTIN BIAGI JR
ARCHITECT
6512
REGISTERED ARCHITECT
10/24/14

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES
RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES
GENERAL NOTES AND LIFE SAFETY PLAN

Project No.:	200-11740-10003
Designed By:	JQB
Drawn By:	JQB
Checked By:	DG

A-0001

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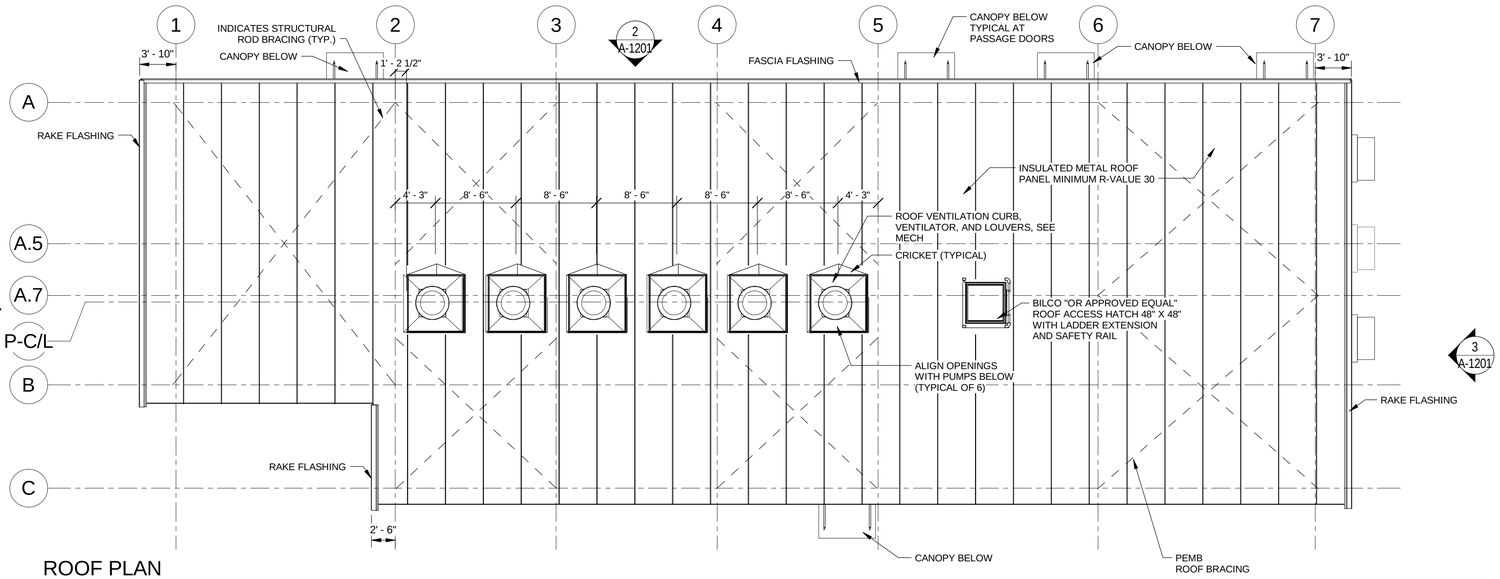
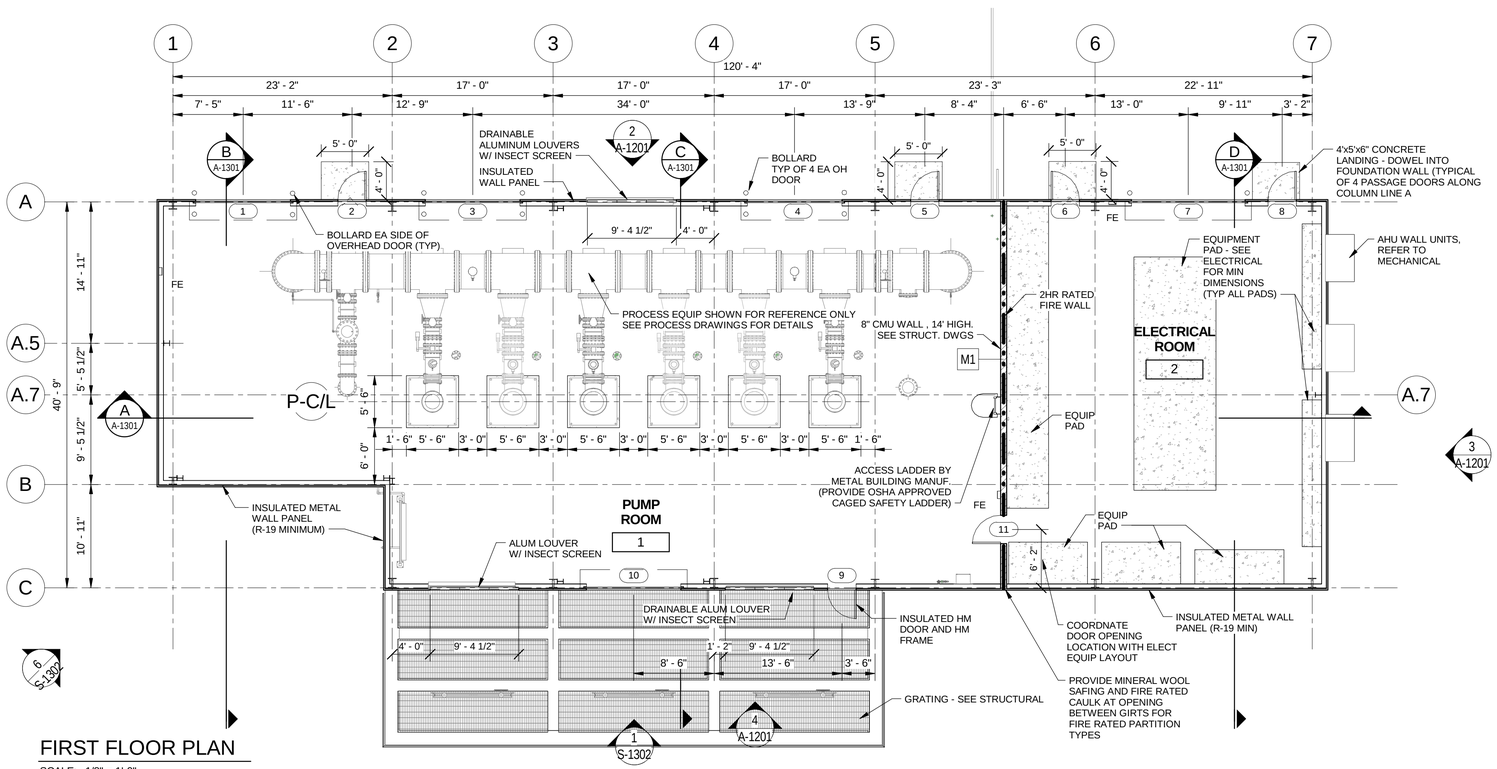
Bar Measures 1 inch



ROOF PLAN

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



FIRST FLOOR PLAN

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

ROOF PANEL GENERAL NOTES

RP1. R-30 MIN. INSULATION VALUE FOR ROOF PANEL ASSEMBLY.

RP2. STANDING SEAM JOINT CONFIGURATION 24 GA AZ50 PREFINISHED STEEL

RP3. 26 GA AZ50 PREFINISHED STEEL INTERIOR PANEL

RP4. POLYISOCYANURATED CORE MATERIAL 4" MINIMUM

RP5. 42" PANEL WIDTHS

WALL PANEL GENERAL NOTES

WP1. R-19 MIN. INSULATION VALUE FOR WALL PANEL ASSEMBLY.

WP2. INTERLOCKING TONGUE AND GROOVE JOINT CONFIGURATION WITH INTEGRAL AIR BARRIER IN SEAMS

WP3. 24 GA STRIATED PROFILE EMBOSSED G-90 GALVANIZED PREFINISHED STEEL

WP4. POLYISOCYANURATE CORE MATERIAL 2 3/4" MINIMUM

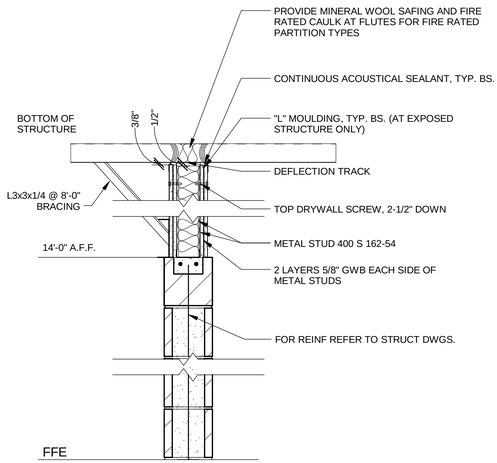
WP5. 42" PANEL WIDTHS

WP6. VERTICAL ORIENTATION

AIR BARRIER GENERAL NOTES

AB1. CONTINUOUS AIR BARRIER PER ASHRAE 90.1 ADDENDUM D

AB2. AIR BARRIER NOTES PERTAIN TO ALL BUILDING ENVELOPE SYSTEMS, INCLUDING BUT NOT LIMITED TO: SLAB, WALLS, FENESTRATION, AND ROOF SYSTEMS.



PARTITION TYPE M1

SCALE: 1" = 1'-0"

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BID SET

STATE OF ALABAMA
J. QUINTIN BIAGI JR
ARCHITECT
6512
REGISTERED ARCHITECT
10/24/14

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

RAW WATER INTAKE STRUCTURE FLOOR AND ROOF PLANS

Project No.:	200-11740-10003
Designed By:	QLB
Drawn By:	QLB
Checked By:	DG

SCALE: 3/4" = 1'-0"
0' 8" 1'-4" 2'-8" 5'-4"

SCALE: 1/8" = 1'-0"
0' 4' 8' 16' 32'

Bar Measures 1 inch

A-1101

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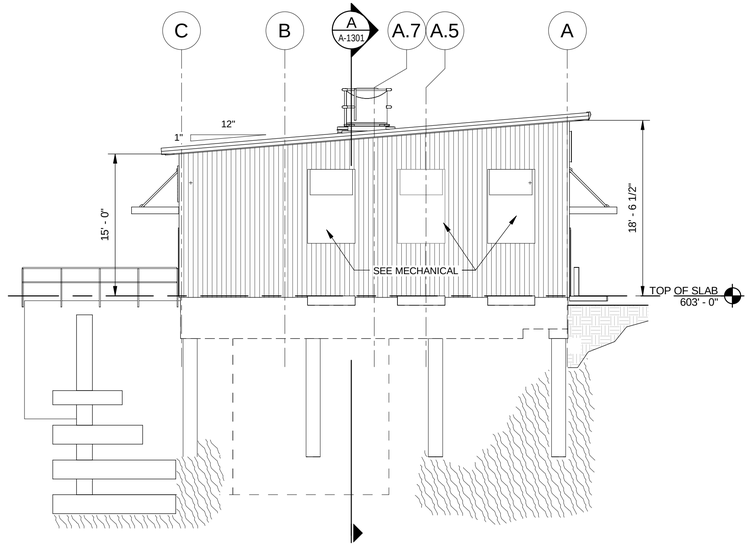
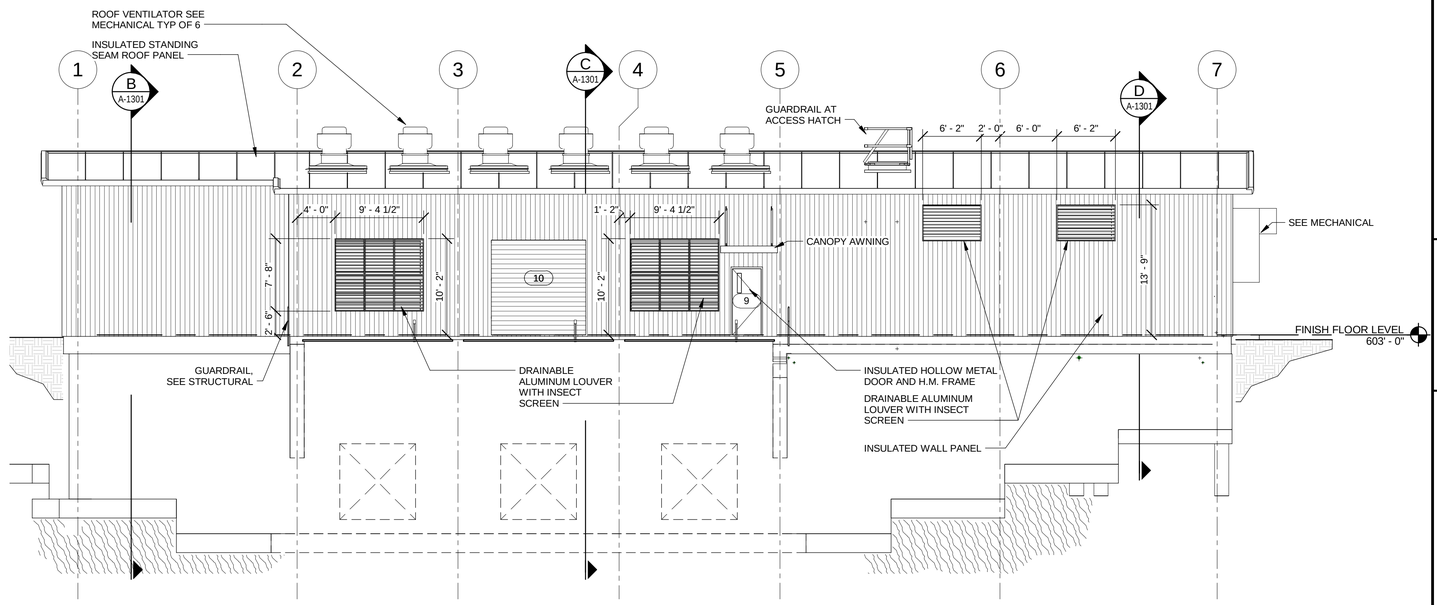


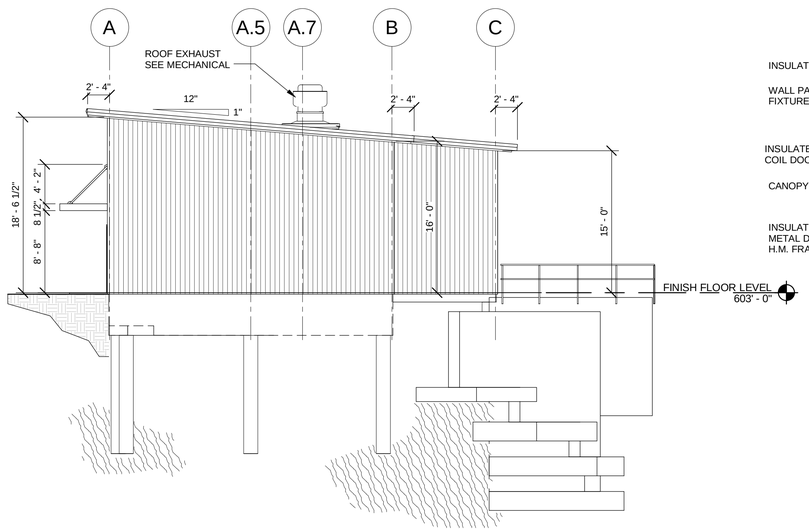
3 A-1101 ELEVATION - EAST

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



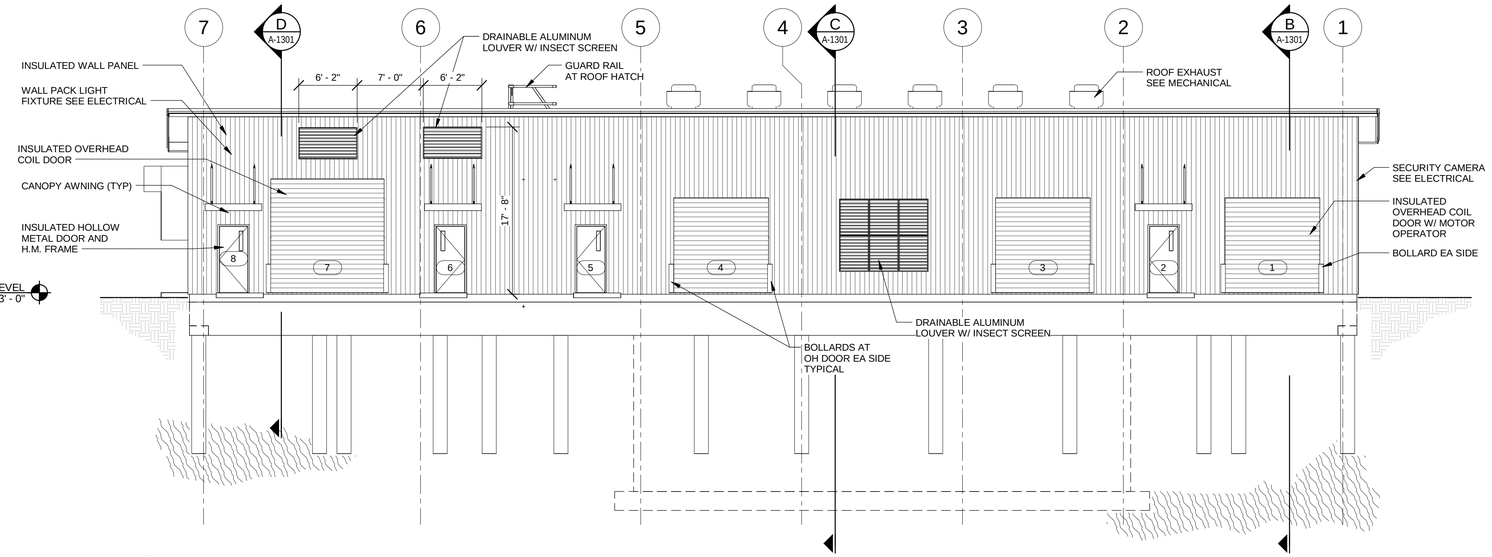
4 A-1101 ELEVATION - SOUTH

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



1 A-1101 ELEVATION - WEST

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



2 A-1101 ELEVATION - NORTH

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

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

0' 4' 8' 16' 32'

Bar Measures 1 inch

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BID SET

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ARCHITECT
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REGISTERED ARCHITECT
10/24/14

MARK	DATE	DESCRIPTION	BY

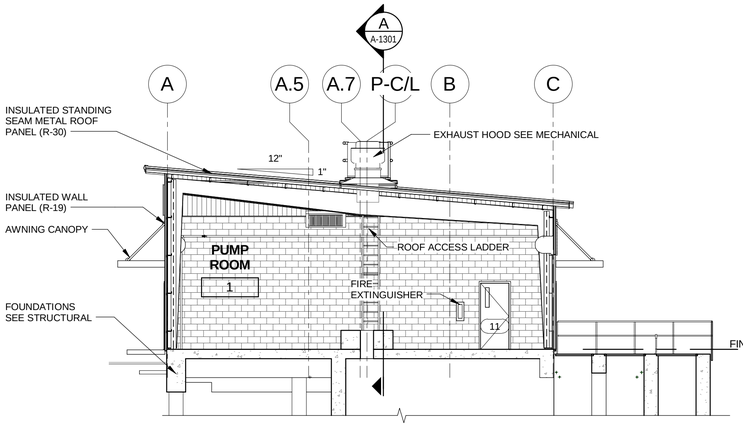
HUNTSVILLE UTILITIES

RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

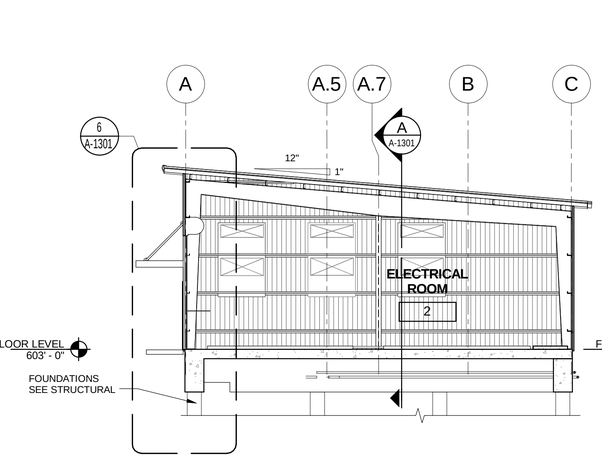
RAW WATER INTAKE STRUCTURE EXTERIOR ELEVATIONS

Project No.:	200-11740-10003
Designed By:	QLB
Drawn By:	QLB
Checked By:	DG

A-1201



C A-1101 BUILDING SECTION
SCALE: 1/8" = 1'-0"



D A-1101 BUILDING SECTION
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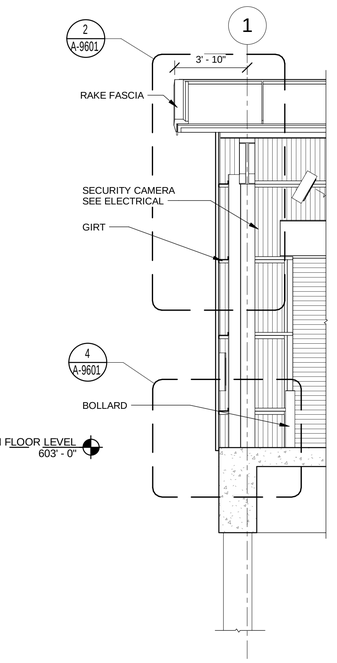
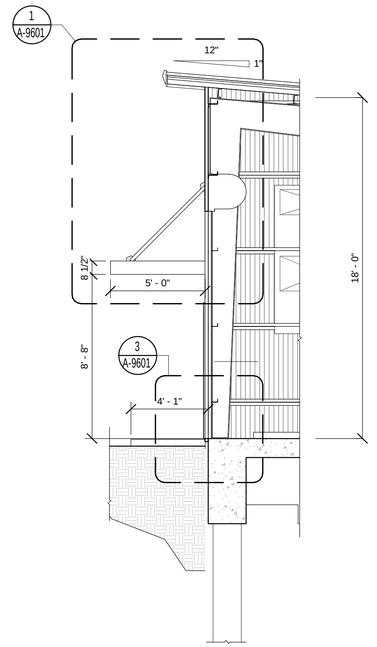
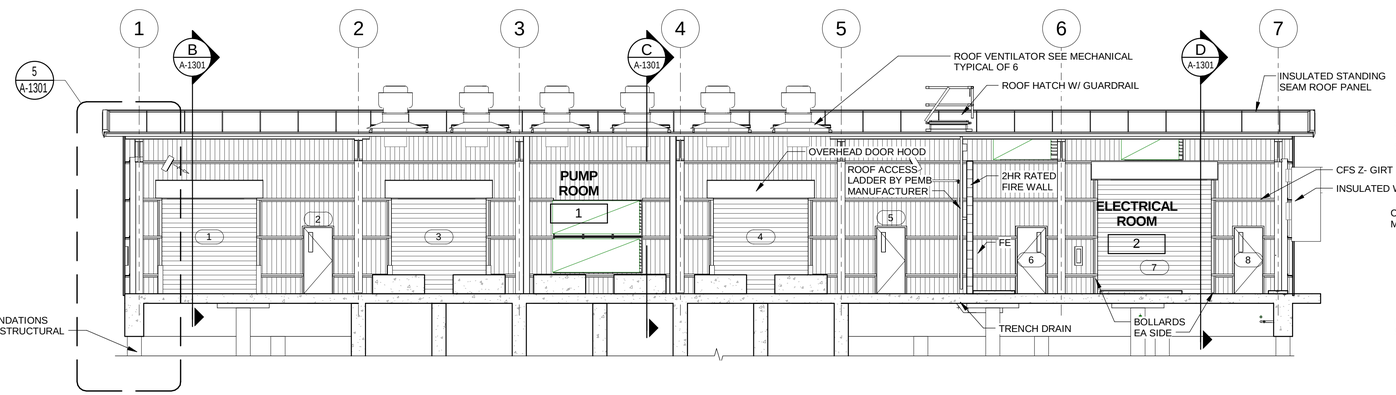


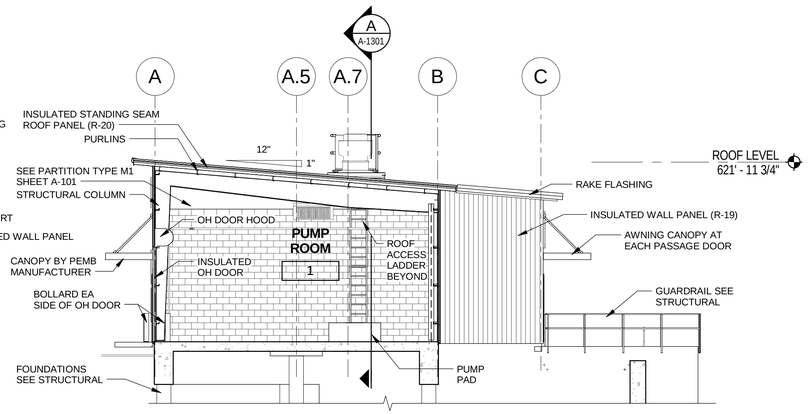
5 A-1301 WALL SECTION AT COL LINE 1
SCALE: 1/4" = 1'-0"



6 A-1301 WALL SECTION COL LINE A
SCALE: 1/4" = 1'-0"



A A-1101 BUILDING SECTION
SCALE: 1/8" = 1'-0"



B A-1101 BUILDING SECTION
SCALE: 1/8" = 1'-0"

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10/24/14

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

RAW WATER INTAKE STRUCTURE SECTIONS

Project No.:	200-11740-10003
Designed By:	QLB
Drawn By:	QLG
Checked By:	DG

A-1301

Bar Measures 1 inch

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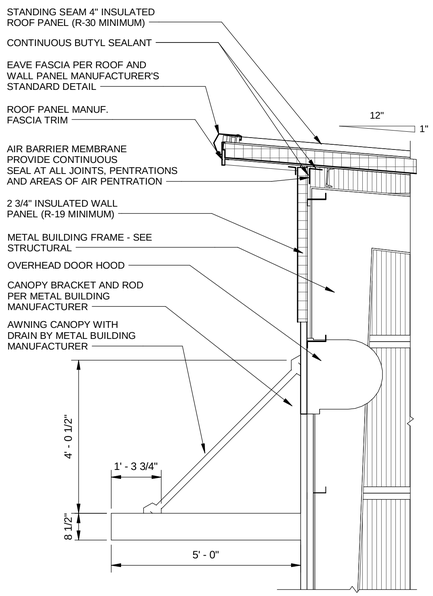
Room Schedule

Name	Number	Floor Finish	Base Finish	East Wall Material	East Wall Finish	North Wall Material	North Wall Finish	West Wall Material	West Wall Finish	South Wall Material	South Wall Finish	Ceiling Finish	Comments
PUMP ROOM	1	SEALED CONCRETE	RBC-1	5/8" TYPE X GWB	PAINT PC-3	INSUL. MTL WALL PANEL	FACTORY	INSUL. MTL WALL PANEL	FACTORY	INSUL. MTL WALL PANEL	FACTORY	FACTORY	
ELECTRICAL ROOM	2	SEALED CONCRETE	RBC-1	INSUL. MTL WALL PANEL	FACTORY	INSUL. MTL WALL PANEL	FACTORY	5/8" TYPE X MRGWB	PAINT PC-3	INSUL. MTL WALL PANEL	FACTORY	FACTORY	

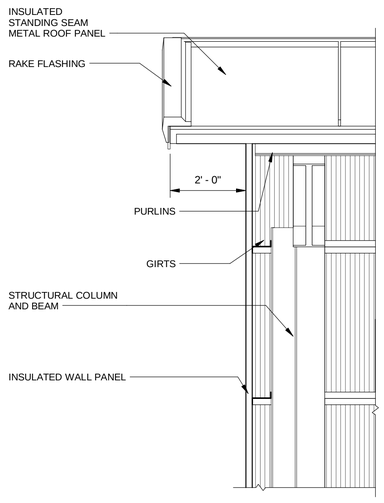
Door Schedule

Mark	Width	Height	Thickness	Type	Material	Finish	Glazing Type	Fire Rating	Frame Type	Frame Material	Frame Finish	Fire Rating	Head	Jamb	Hardware Set	Comments
1	10' - 0"	10' - 0"	2"	10' x 10'	INSUL STEEL	PAINT			A	STEEL	PAINT		1	1	HW-1	
2	3' - 0"	7' - 0"	2"	36" x 84"	INSUL. HM	ANODIZED	TEMPERED		B	HM	ANODIZED		2	2	HW-2	
3	10' - 0"	10' - 0"	2"	10' x 10'	INSUL STEEL	PAINT			A	STEEL	PAINT		1	1	HW-1	
4	10' - 0"	10' - 0"	2"	10' x 10'	INSUL STEEL	PAINT			A	STEEL	PAINT		1	1	HW-1	
5	3' - 0"	7' - 0"	2"	36" x 84"	INSUL. HM	ANODIZED	TEMPERED		B	HM	ANODIZED		2	2	HW-2	
6	3' - 0"	7' - 0"	2"	36" x 84"	INSUL. HM	ANODIZED	TEMPERED		B	HM	ANODIZED		2	2	HW-2	
7	12' - 0"	12' - 0"	2"	12' x 12'	INSUL STEEL	PAINT			A	STEEL	PAINT		1	1	HW-1	
8	3' - 0"	7' - 0"	2"	36" x 84"	INSUL. HM	ANODIZED	TEMPERED		B	HM	ANODIZED		2	2	HW-2	
9	3' - 0"	7' - 0"	2"	36" x 84"	INSUL. HM	ANODIZED	TEMPERED		B	HM	ANODIZED		2	2	HW-2	"NOT AN EXIT" SIGNAGE
10	10' - 0"	10' - 0"	2"	10' x 10'	INSUL STEEL	PAINT			A	STEEL	PAINT				HW-1	
11	3' - 0"	7' - 0"	2"	36" x 84" 2	HM	PAINT	1/4" WIRE	90 MIN	C	HM	PAINTED	90 MIN	4	4	HW-4	DOORS AND FRAMES PC-4

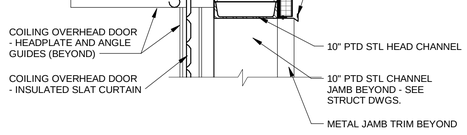
SCHEDULE NOTES:
1. PC-3 (PAINT COLOR 3) = SHERMAN WILLIAMS ALABASTER SW7008 - GYPSUM WALLBOARD
2 PC-4 (PAINT COLOR 4) = SHERMAN WILLIAMS EVERYDAY WHITE SW6077 -HOLLOW METAL DOORS AND FRAMES



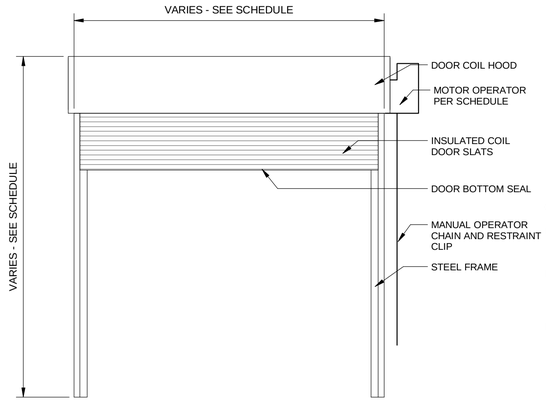
1 A-1301 DETAIL AT EAVE
SCALE: 1/2" = 1'-0"



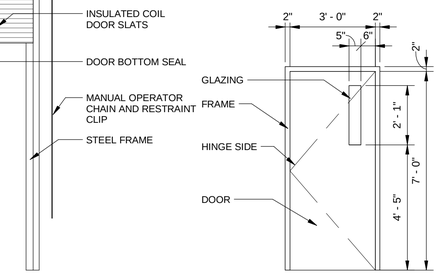
2 A-1301 DETAIL AT RAKE
SCALE: 1/2" = 1'-0"



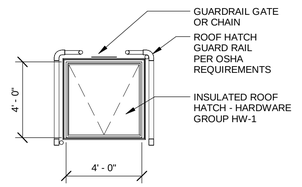
HEAD 1
DOORS: 1, 3, 4, 7, AND 10



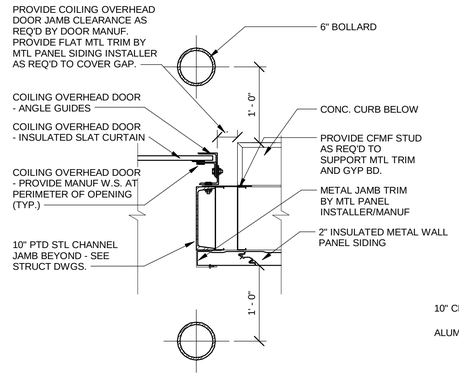
TYPE A



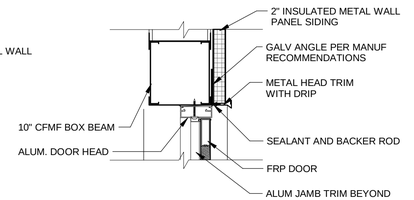
TYPE B
TYPE C SIMILAR



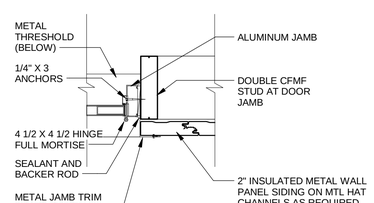
ROOF HATCH
SCALE: 1/4" = 1'-0"



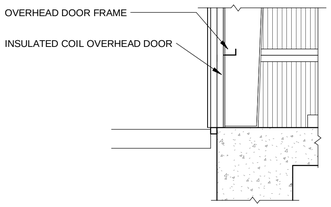
JAMB 1
DOORS: 1, 3, 4, 7, AND 10



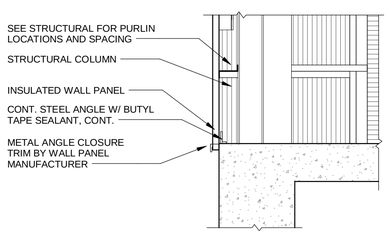
HEAD 2
DOORS: 2, 5, 6, 8 & 9



JAMB 2
DOORS: 2, 5, 6, 8 & 9



3 A-1301 DETAIL AT OH DOOR
SCALE: 1/2" = 1'-0"



4 A-1301 DETAIL AT BASE
SCALE: 1/2" = 1'-0"

5 OVERHEAD DOOR DETAILS
SCALE: 1" = 1'-0"

6 FRP DOOR DETAILS
SCALE: 1/4" = 1'-0"

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BID SET

STATE OF ALABAMA
J. QUINTIN BIAGI JR
ARCHITECT
6512
REGISTERED ARCHITECT
10/24/14

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES
RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES
DETAILS AND SCHEDULES

Project No.:	200-11740-10003
Designed By:	QLB
Drawn By:	QLB
Checked By:	DG

A-9601

Bar Measures 1 inch

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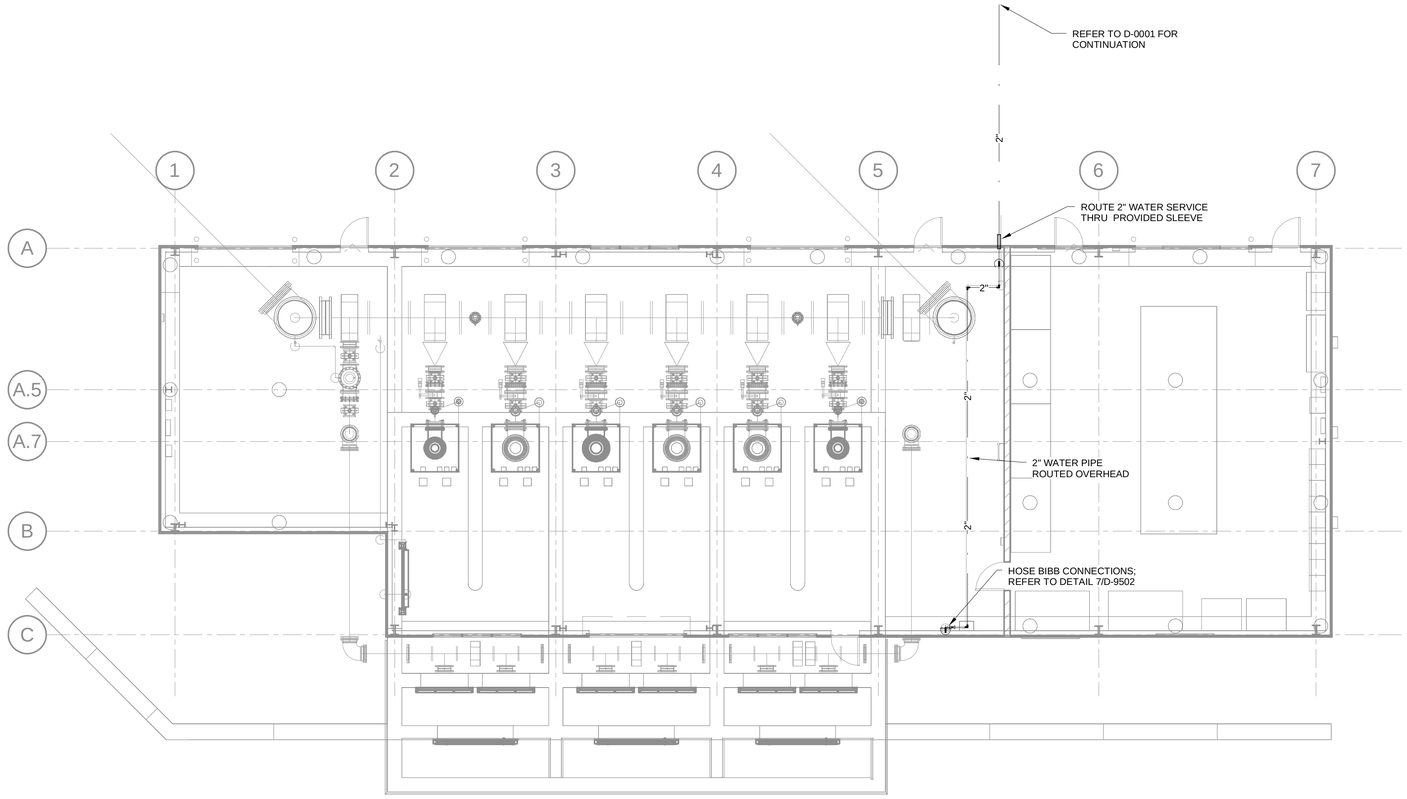
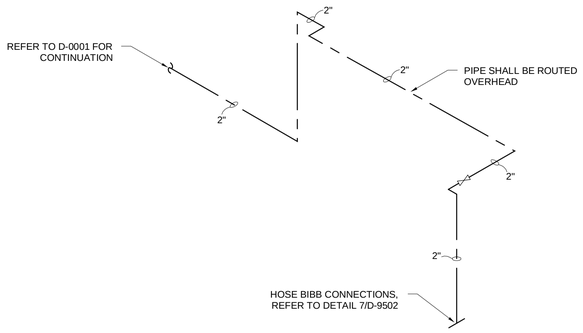


PLUMBING FLOOR PLAN

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



2 / P-101 PLUMBING RISER DIAGRAM

N.T.S.

GENERAL PLUMBING NOTES:

1. ALL EQUIPMENT AND PIPING SHALL BE INSTALLED IN COMPLIANCE WITH THE INTERNATIONAL PLUMBING CODE AND LOCAL UTILITIES.
2. WATER LINES SHALL NOT BE ROUTED ABOVE ANY ELECTRICAL ROOM OR ELECTRICAL PANELS OR TELEPHONE ROOMS.
3. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATION WITH OTHER CRAFTS TO MINIMIZE SPATIAL CONFLICTS.
4. INSTALL BOTTOM OF ALL EXTERIOR WALL HYDRANTS AT 24" ABOVE FINISH GRADE ELEVATION.
5. CONTRACTOR SHALL VERIFY ALL FIELD CONDITIONS AND DIMENSIONS BEFORE CONSTRUCTION BEGINS, INCLUDING SEWER INV. ELEV. CONTACT CONTRACTING OFFICER SHOULD DISCREPANCIES OCCUR.

N

0 4' 8' 16'

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

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HUNTSVILLE, ALABAMA 35806
PHONE: (256) 424-4088 FAX: (256) 424-4097

BID SET

ALABAMA REGISTERED No. 16533 PROFESSIONAL ENGINEER DONALD S. BOSSEN
10/24/2014

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

RAW WATER INTAKE STRUCTURE PLUMBING PLAN AND RISER DIAGRAM

Project No.:	200-11740-10003
Designed By:	JWM
Drawn By:	JWM
Checked By:	DSB

P-1101

Bar Measures 1 inch

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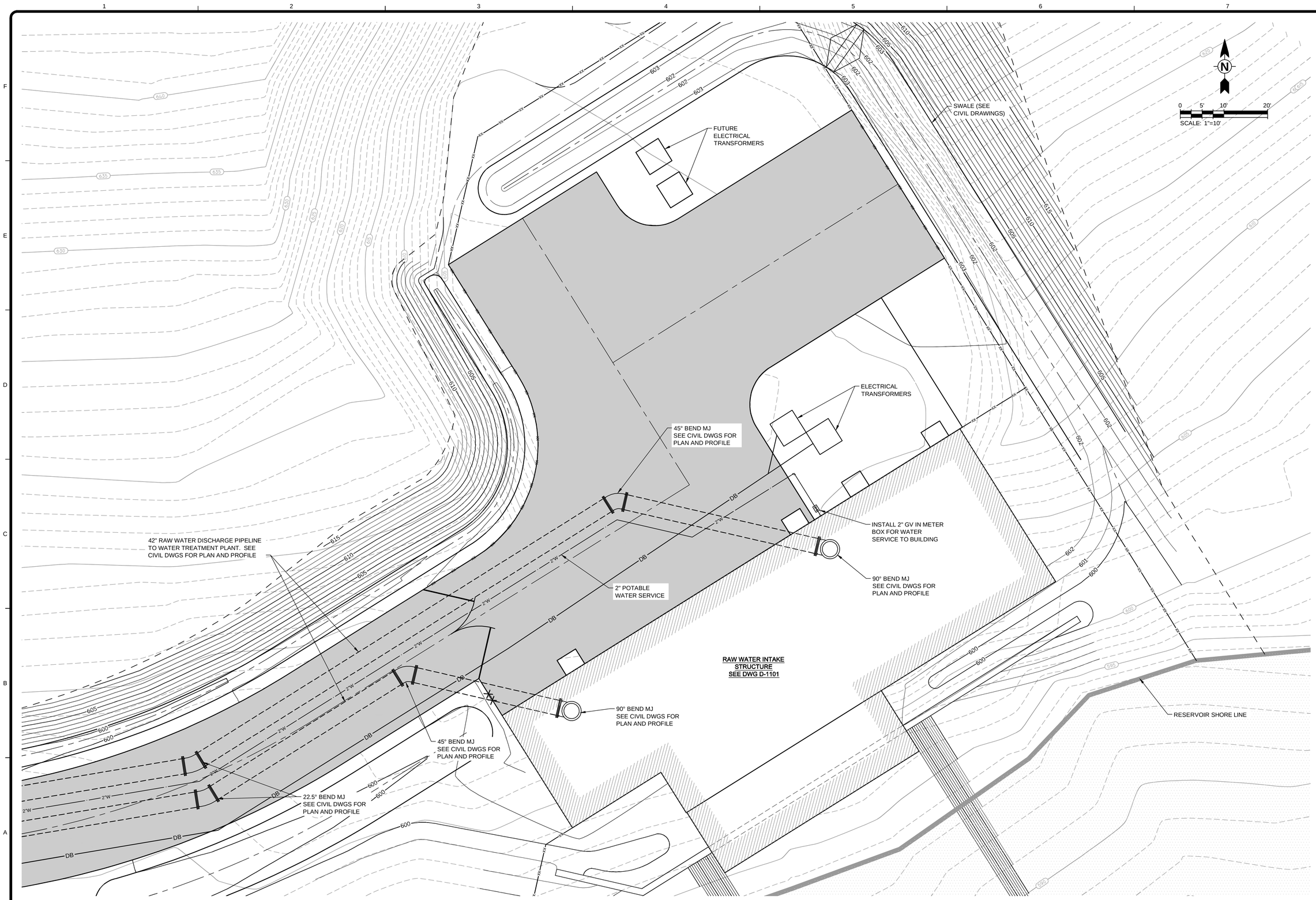

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PHONE: (256) 424-4077 FAX: (256) 424-4097

BID SET

ALABAMA LICENSED PROFESSIONAL ENGINEER CHRISTIAN P. DUNAWAY 10 OCT 14

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

SITE YARD PIPING

Project No.:	200-11740-10003
Designed By:	
Drawn By:	JTE
Checked By:	

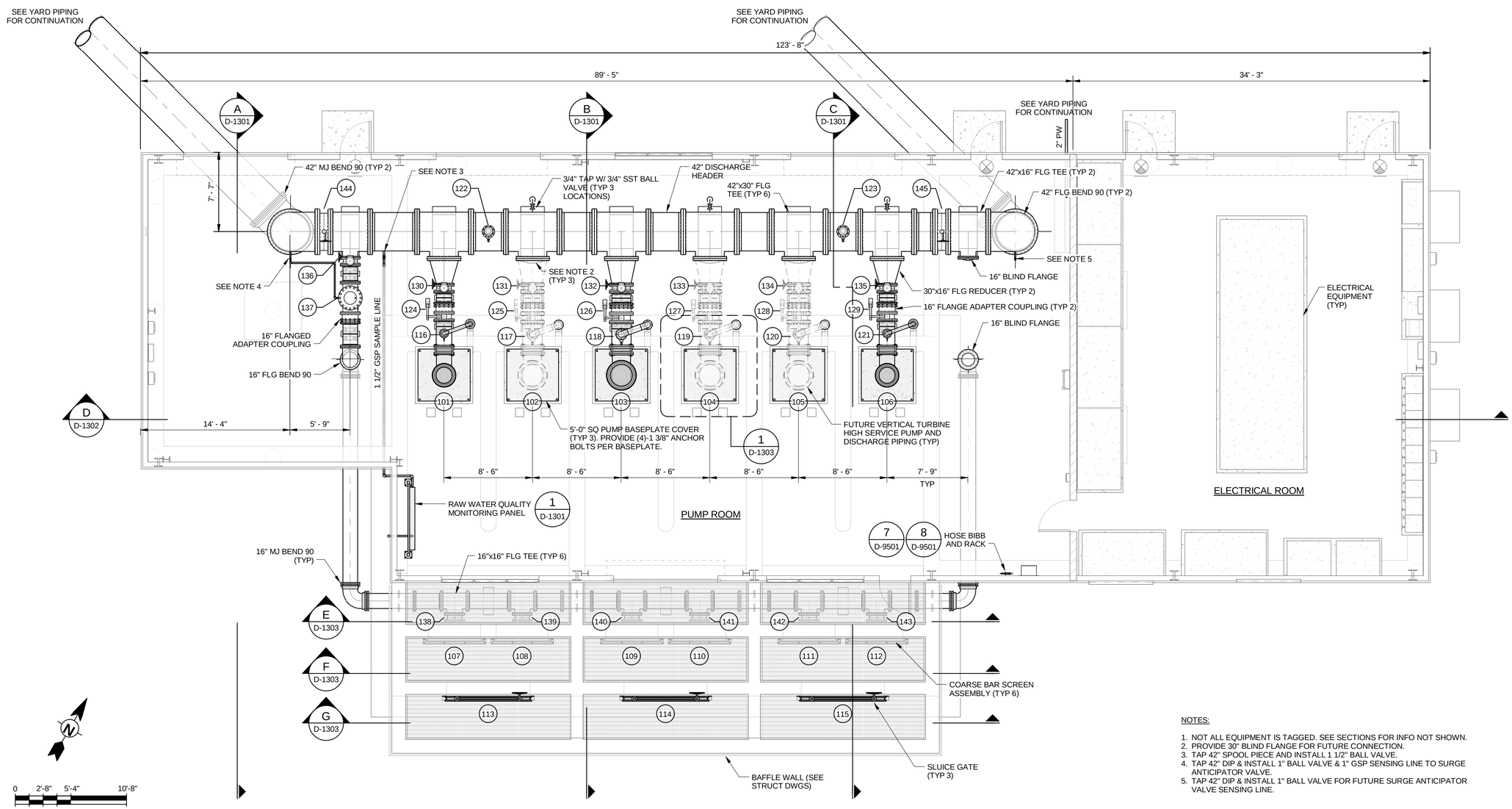
D-0001

Bar Measures 1 inch

EQUIPMENT SCHEDULE			
NUMBER	DESCRIPTION	TAG NUMBER	COMMENTS
101	6 MGD HIGH SERVICE VERTICAL TURBINE PUMP	10-P-1A	
102	12 MGD HIGH SERVICE VERTICAL TURBINE PUMP	10-P-1B	FUTURE (PHASE II)
103	12 MGD HIGH SERVICE VERTICAL TURBINE PUMP	10-P-2A	
104	12 MGD HIGH SERVICE VERTICAL TURBINE PUMP	10-P-2B	FUTURE (PHASE II)
105	12 MGD HIGH SERVICE VERTICAL TURBINE PUMP	10-P-3A	FUTURE (PHASE II)
106	6 MGD HIGH SERVICE VERTICAL TURBINE PUMP	10-P-3B	
107	5'-0" BAR SCREEN ASSEMBLY	10-SCR-1A	
108	5'-0" BAR SCREEN ASSEMBLY	10-SCR-1B	
109	5'-0" BAR SCREEN ASSEMBLY	10-SCR-2A	
110	5'-0" BAR SCREEN ASSEMBLY	10-SCR-2B	
111	5'-0" BAR SCREEN ASSEMBLY	10-SCR-3A	
112	5'-0" BAR SCREEN ASSEMBLY	10-SCR-3B	
113	8'-0" x 8'-0" SLUICE GATE	10-SG-1	
114	8'-0" x 8'-0" SLUICE GATE	10-SG-2	
115	8'-0" x 8'-0" SLUICE GATE	10-SG-3	

VALVE AND PIPE ACCESSORY SCHEDULE			
NUMBER	DESCRIPTION	TAG NUMBER	COMMENTS
116	3" AIR RELEASE VALVE ASSEMBLY	10-ARV-1A	
117	6" AIR RELEASE VALVE ASSEMBLY	10-ARV-1B	FUTURE (PHASE II)
118	6" AIR RELEASE VALVE ASSEMBLY	10-ARV-2A	
119	6" AIR RELEASE VALVE ASSEMBLY	10-ARV-2B	FUTURE (PHASE II)
120	6" AIR RELEASE VALVE ASSEMBLY	10-ARV-3A	FUTURE (PHASE II)
121	3" AIR RELEASE VALVE ASSEMBLY	10-ARV-3B	
122	6" COMBINATION AIR VALVE ASSEMBLY	10-ARV-4	
123	6" COMBINATION AIR VALVE ASSEMBLY	10-ARV-5	
124	16" FLG WAFER CHECK VALVE	10-CV-1A	
125	20" FLG WAFER CHECK VALVE	10-CV-1B	FUTURE (PHASE II)
126	20" FLG WAFER CHECK VALVE	10-CV-2A	
127	20" FLG WAFER CHECK VALVE	10-CV-2B	FUTURE (PHASE II)
128	20" FLG WAFER CHECK VALVE	10-CV-3A	FUTURE (PHASE II)
129	16" FLG WAFER CHECK VALVE	10-CV-3B	
130	16" FLG BUTTERFLY VALVE	10-BFV-1A-1	

VALVE AND PIPE ACCESSORY SCHEDULE			
NUMBER	DESCRIPTION	TAG NUMBER	COMMENTS
131	20" FLG BUTTERFLY VALVE	10-BFV-1B-1	FUTURE (PHASE II)
132	20" FLG BUTTERFLY VALVE	10-BFV-2A-1	
133	20" FLG BUTTERFLY VALVE	10-BFV-2B-1	FUTURE (PHASE II)
134	20" FLG BUTTERFLY VALVE	10-BFV-3A-1	FUTURE (PHASE II)
135	16" FLG BUTTERFLY VALVE	10-BFV-3B-1	
136	16" FLG BUTTERFLY VALVE	10-BFV-6	
137	16" FLG SURGE CONTROL VALVE	10-PRV-1	
138	16" FLG BUTTERFLY VALVE	10-BFV-1A-2	
139	16" FLG BUTTERFLY VALVE	10-BFV-1B-2	
140	16" FLG BUTTERFLY VALVE	10-BFV-2A-2	
141	16" FLG BUTTERFLY VALVE	10-BFV-2B-2	
142	16" FLG BUTTERFLY VALVE	10-BFV-3A-2	
143	16" FLG BUTTERFLY VALVE	10-BFV-3B-2	
144	42" FLG BUTTERFLY VALVE	10-BFV-4	
145	42" FLG BUTTERFLY VALVE	10-BFV-5	



EQUIPMENT PLAN

SCALE: 3/16" = 1'-0"

NOTES:

1. NOT ALL EQUIPMENT IS TAGGED. SEE SECTIONS FOR INFO NOT SHOWN.
2. PROVIDE 30" BLIND FLANGE FOR FUTURE CONNECTION.
3. TAP 42" SPOOL PIECE AND INSTALL 1 1/2" BALL VALVE.
4. TAP 42" DIP & INSTALL 1" BALL VALVE & 1" GSP SENSING LINE TO SURGE ANTICIPATOR VALVE.
5. TAP 42" DIP & INSTALL 1" BALL VALVE FOR FUTURE SURGE ANTICIPATOR VALVE SENSING LINE.

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BID SET

ALABAMA LICENSED PROFESSIONAL ENGINEER CHRISTIAN P. DUNAWAY 10 | 24 | 14

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

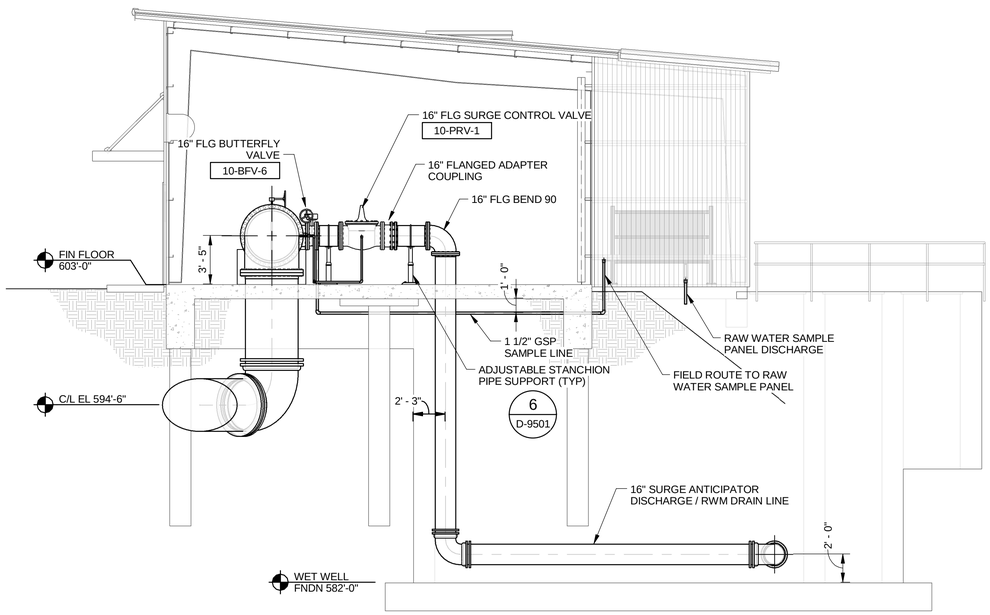
RAW WATER INTAKE STRUCTURE EQUIPMENT PLAN

Project No.:	200-11740-10003
Designed By:	JPT
Drawn By:	JTE
Checked By:	-

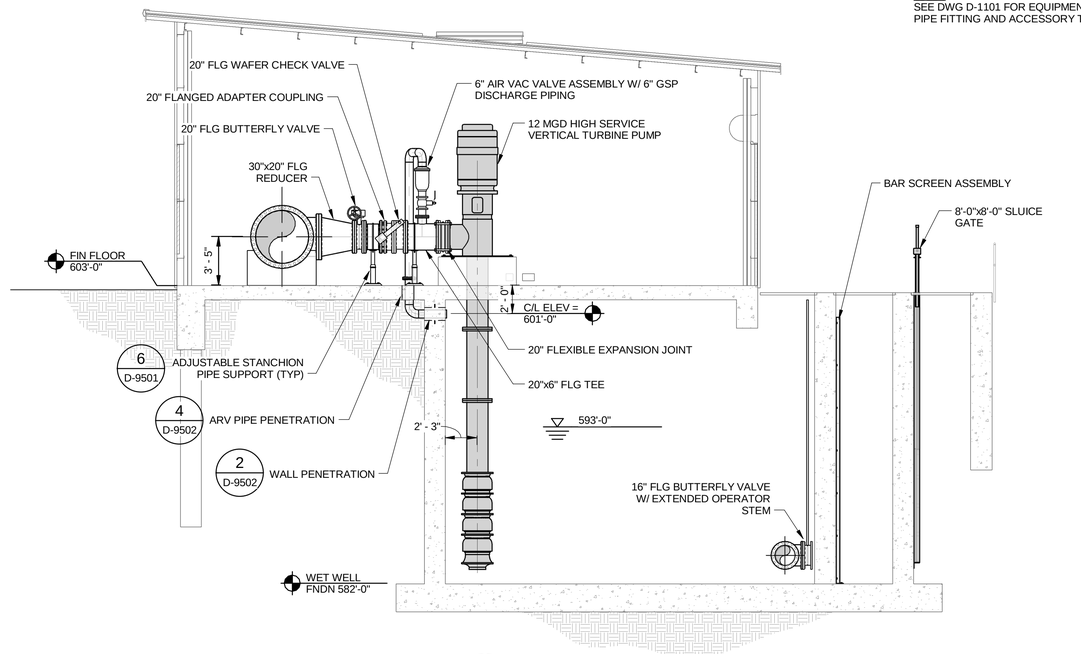
D-1101

Bar Measures 1 inch

10/2/2014 3:41:10 PM C:\Users\jon.evans\Desktop\Active Projects\Revit\RW-11740-D-INTAKE_jon.evans.rvt

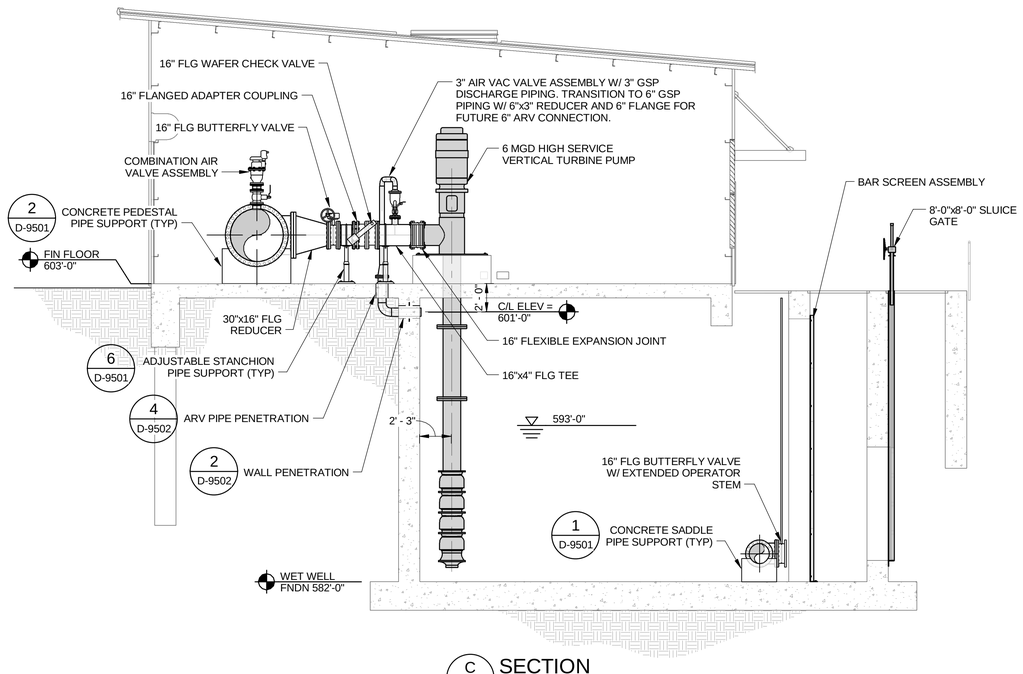


A SECTION
D-1101 SCALE: 3/16" = 1'-0"

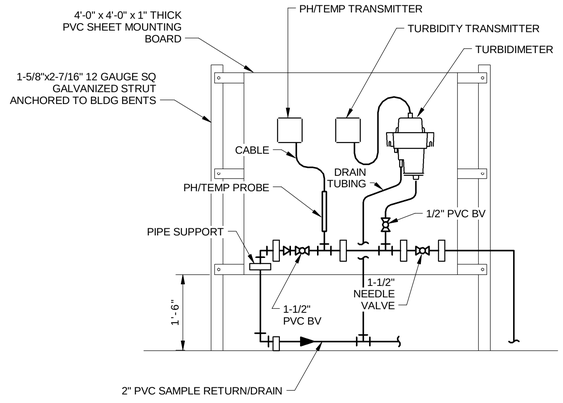


B SECTION
D-1101 SCALE: 3/16" = 1'-0"

NOTE:
SEE DWG D-1101 FOR EQUIPMENT TAG AND PIPE FITTING AND ACCESSORY TABLES.



C SECTION
D-1101 SCALE: 3/16" = 1'-0"



RAW WATER QUALITY MONITORING STATION
1 SCALE: NTS

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BID SET

ALABAMA LICENSED PROFESSIONAL ENGINEER CHRISTIAN P. DUNAWAY 10/2/14

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

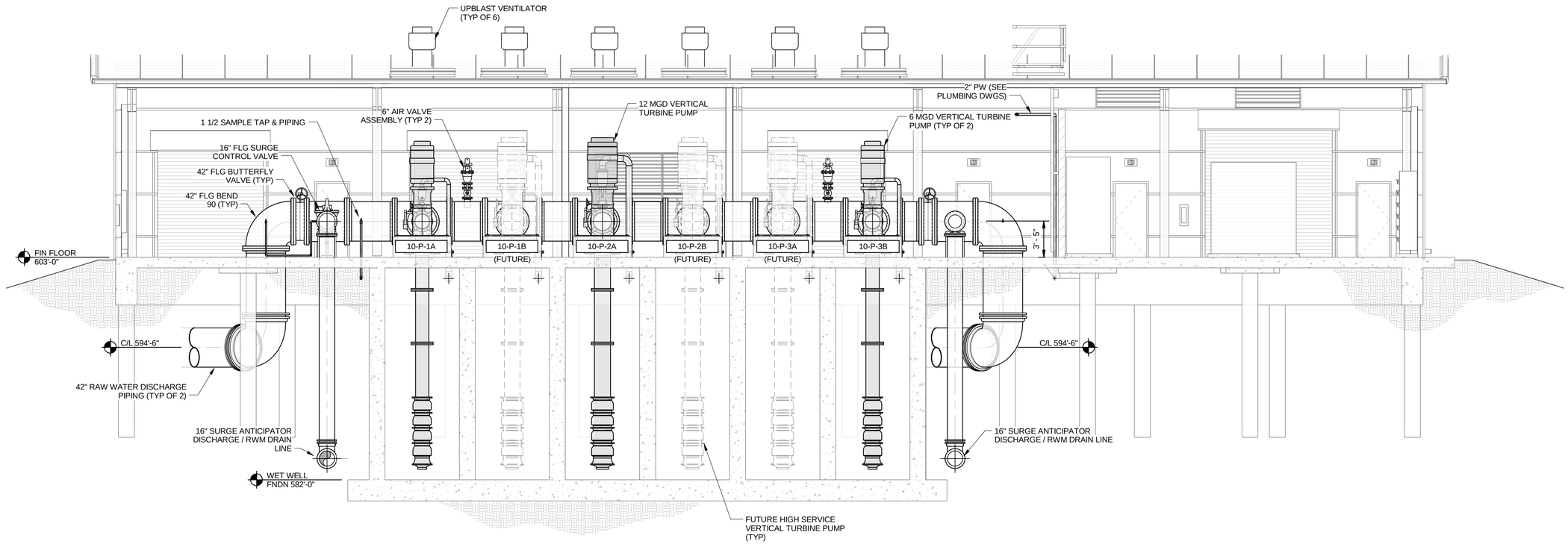
RAW WATER INTAKE STRUCTURE EQUIPMENT SECTIONS

Project No.:	200-11740-10003
Designed By:	JPT
Drawn By:	JTE
Checked By:	-

D-1301

Bar Measures 1 inch

10/2/2014 7:40:02 AM C:\Users\jon.evans\Desktop\Active Projects\Revit\RW-11740-D-INTAKE_jon.evans.rvt



D / D-1101 SECTION
SCALE: 3/16" = 1'-0"

NOTES:

1. SEE DWG D-1101 FOR PIPE FITTING AND VALVE SCHEDULES.

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BID SET

ALABAMA LICENSED PROFESSIONAL ENGINEER
CHRISTIAN P. DUNAWAY
10/24/14

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

RAW WATER INTAKE STRUCTURE EQUIPMENT SECTIONS

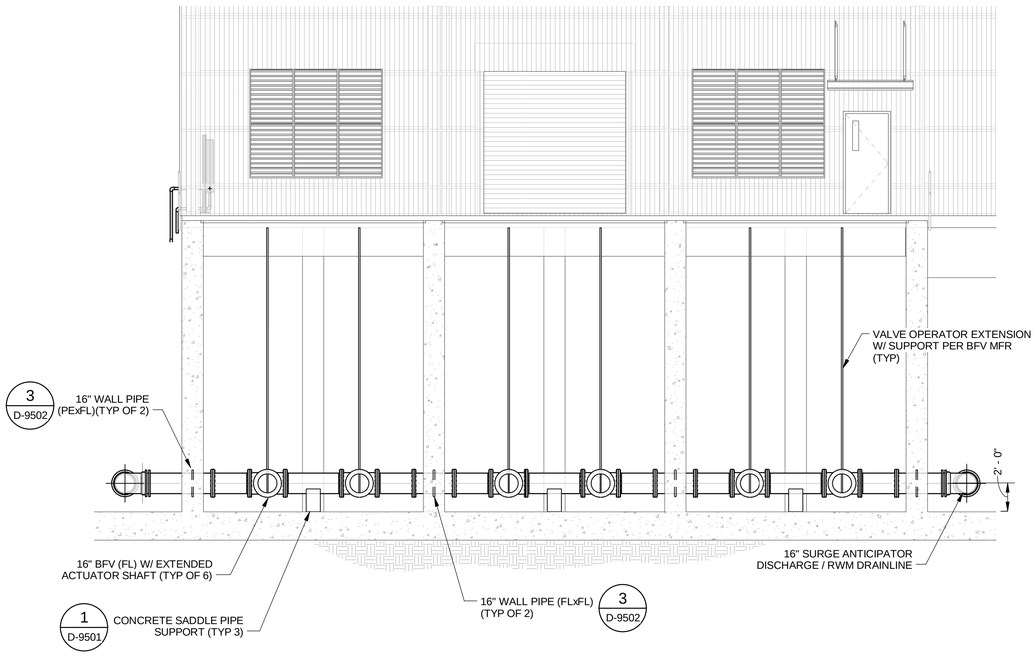
Project No.:	200-11740-10003
Designed By:	JPT
Drawn By:	JTE
Checked By:	-

D-1302

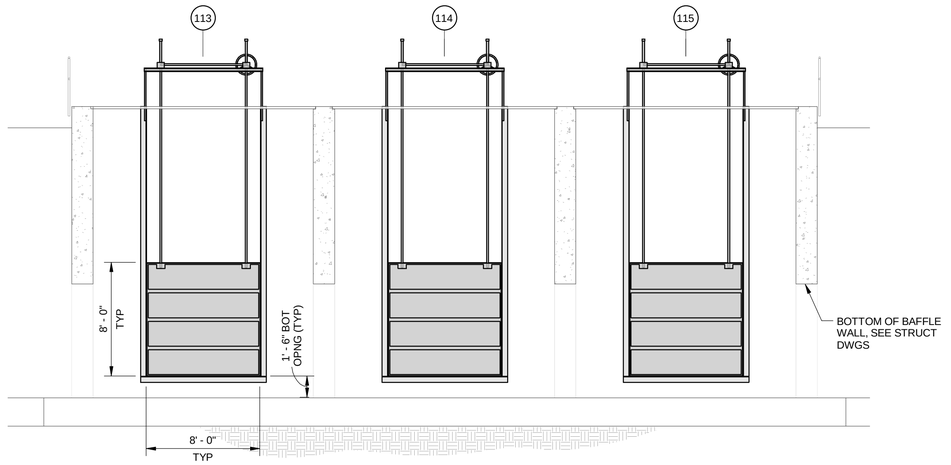
10/2/2014 7:40:11 AM C:\Users\jon.evans\Desktop\Active Projects\Revit\RW-11740-D-INTAKE_jon.evans.rvt

Bar Measures 1 inch

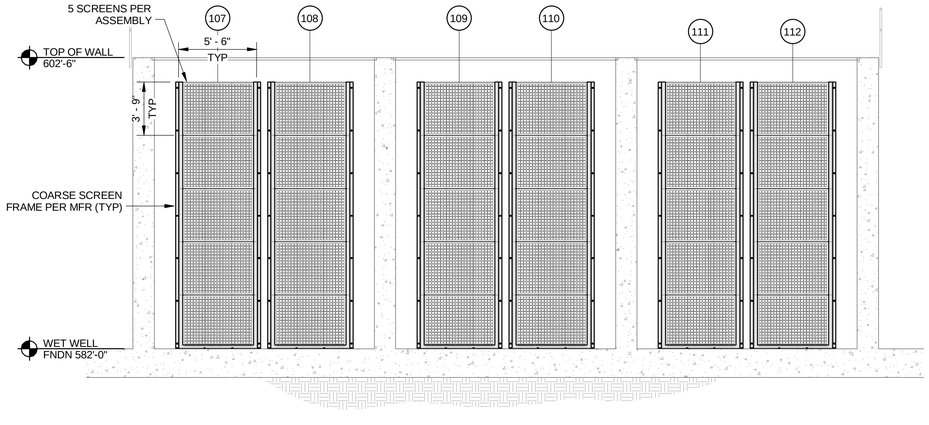
NOTE:
SEE DWG D-1101 FOR EQUIPMENT TAG AND PIPE FITTING AND ACCESSORY TABLES.



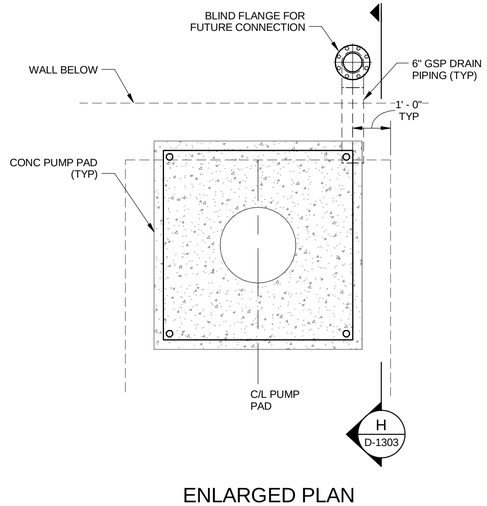
E SECTION
D-1101 SCALE: 3/16" = 1'-0"



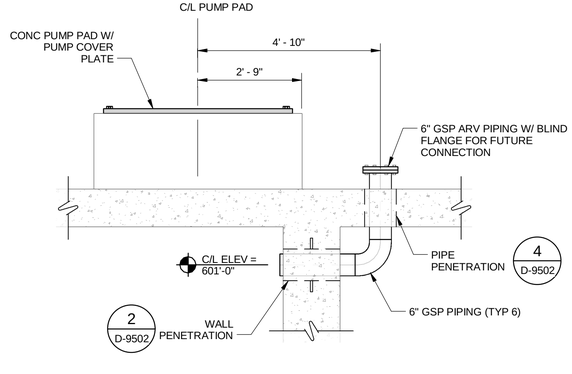
G SECTION
D-1101 SCALE: 3/16" = 1'-0"



F SECTION
D-1101 SCALE: 3/16" = 1'-0"



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



H SECTION
D-1303 SCALE: 1/2" = 1'-0"

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BID SET

ALABAMA LICENSED PROFESSIONAL ENGINEER CHRISTIAN P. DUNSMORE 10/2/14

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

RAW WATER INTAKE STRUCTURE EQUIPMENT SECTIONS

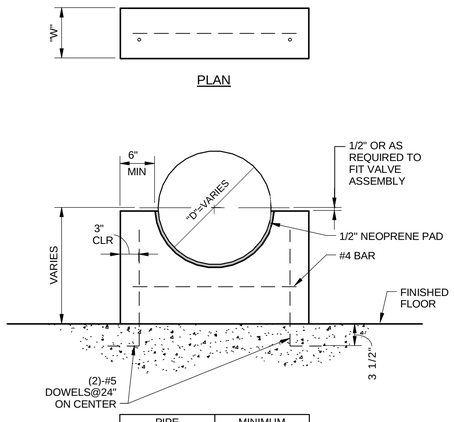
Project No.:	200-11740-10003
Designed By:	JPT
Drawn By:	JTE
Checked By:	-

D-1303

10/2/2014 7:40:23 AM C:\Users\jon.evans\Desktop\Active Projects\Revit\RW-11740-D-INTAKE_jon.evans.rvt

Bar Measures 1 inch

PIPE SUPPORT - CONCRETE SADDLE



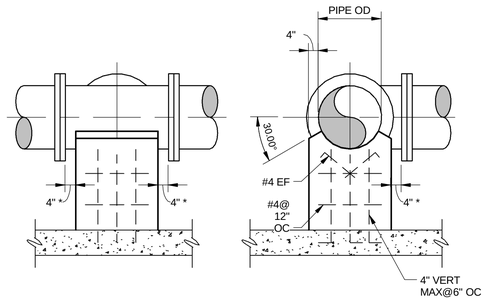
NOTE:
PROVIDE CONCRETE FOOTING BELOW GRADE FOR ALL FINISHED GRADE APPLICATIONS

PIPE DIAMETER "D" IN INCHES	MINIMUM SUPPORT WIDTH "W" INCHES
12≤	6
16≤	8
24≤	12
30≤	16
36≥	18

1 DETAIL
SCALE: NTS

PIPE SUPPORT - CONCRETE PEDESTAL FOR VALVES AND TEES

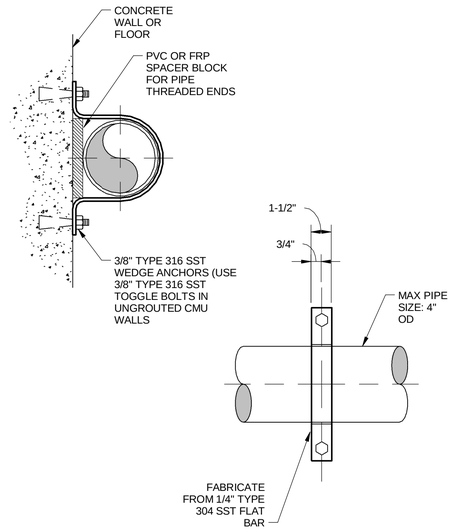
NOTE:
SUPPORT SIMILAR FOR VALVES AND ELBOWS



* INCREASE 4" CLEARANCE AS REQUIRED IF BOLT HAS TO BE INSERTED FROM THE SUPPORT SIDE OF THE CONNECTION

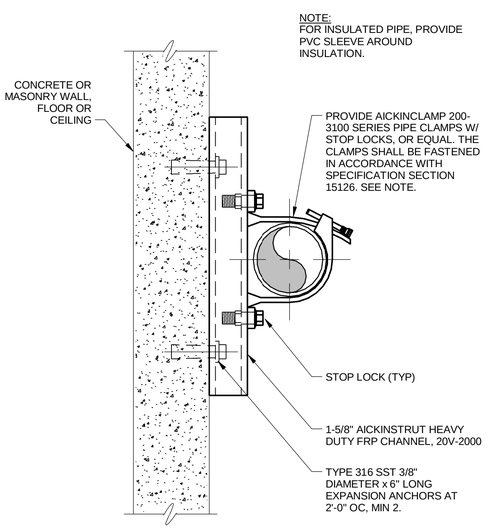
2 DETAIL
SCALE: NTS

PIPE SUPPORT - FLUSH



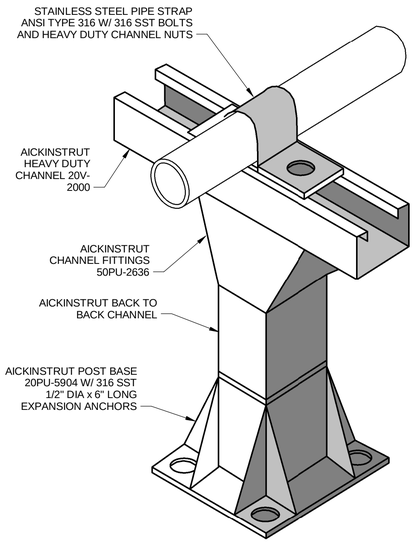
3 DETAIL
SCALE: NTS

PIPE SUPPORT - NON-METALLIC



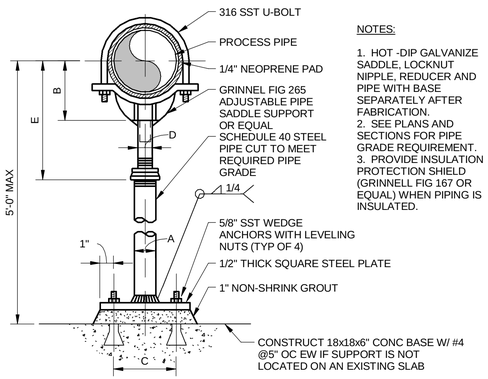
4 DETAIL
SCALE: NTS

PIPE SUPPORT - NON-METALLIC STANCHION



5 DETAIL
SCALE: NTS

PIPE SUPPORT - ADJUSTABLE STANCHION SADDLE W/ U-BOLT



NOTES:

1. HOT -DIP GALVANIZE SADDLE, LOCKNUT NIPPLE, REDUCER AND PIPE WITH BASE SEPARATELY AFTER FABRICATION.
2. SEE PLANS AND SECTIONS FOR PIPE GRADE REQUIREMENT.
3. PROVIDE INSULATION PROTECTION SHIELD (GRINNELL FIG 167 OR EQUAL) WHEN PIPING IS INSULATED.

PIPE SIZE	A	B	C	D	E	
					MIN	MAX
4	4	4-3/16	7	3	9-1/2	14
6	4	5-7/16	7	3	10-3/4	15-1/4
8	4	6-15/16	7	3	12-1/4	16-3/4
10	4	8-7/16	7	3	13-3/4	18-1/4
12	4	9-15/16	7	3	14-5/8	19-1/8
16	4	11-1/2	7	3	16-13/16	21-15/16
18	6	13-1/2	9	3-1/2	19-1/8	23-5/8
20	6	14-1/2	9	3-1/2	20-1/8	24-5/8
24	6	17-1/2	9	4	23-5/16	27-13/16

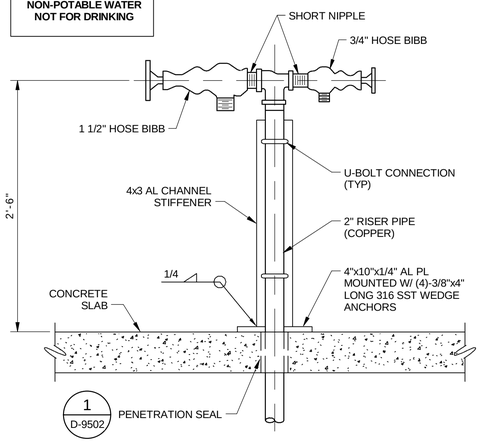
* ALL DIMENSIONS IN INCHES

6 DETAIL
SCALE: NTS

HOSE VALVE - POST MOUNTED

IF LOCATION OF HOSE CONNECTION IS AFTER BACKFLOW PREVENTER, PROVIDE 10"x14"X1/8" FRP SIGN READING (MOUNT TO HANDRAIL, WALL OR POST-MOUNT)

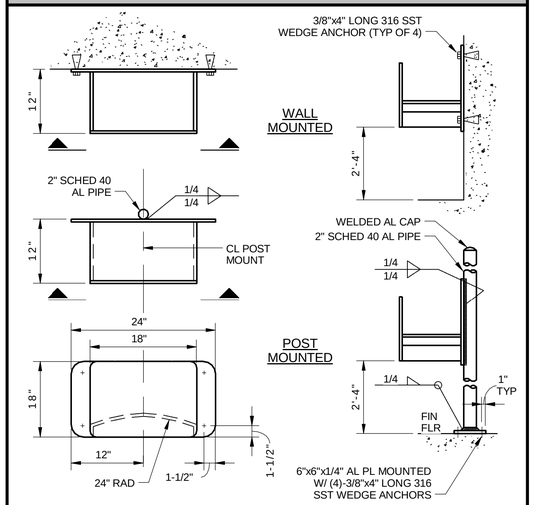
NOTICE
NON-POTABLE WATER
NOT FOR DRINKING



PROVIDE 50' LONG, 1 1/2" DIA INDUSTRIAL HOSE WITH BANDED ON MALE AND FEMALE PIPE THREADED ENDS. HOSE SHALL BE RATED FOR A MINIMUM OF 200 PSI.

7 DETAIL
SCALE: NTS

HOSE RACK



SECTION

NOTES:
1. FABRICATE UNIT FROM 1/4" 6061-T6 AL ALLOY PLATE.
2. MOUNT 10"x14"x1/8" FRP WARNING SIGN (BRADY MODEL BY OR EQUAL) TO POST OR WALL W/ 316 SST FASTENING HARDWARE READING:

NOTICE
NON-POTABLE WATER
NOT FOR DRINKING

8 DETAIL
SCALE: NTS

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BID SET

ALABAMA LICENSED PROFESSIONAL ENGINEER CHRISTIAN P. DUNKER 10124 14

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

PROCESS DETAILS

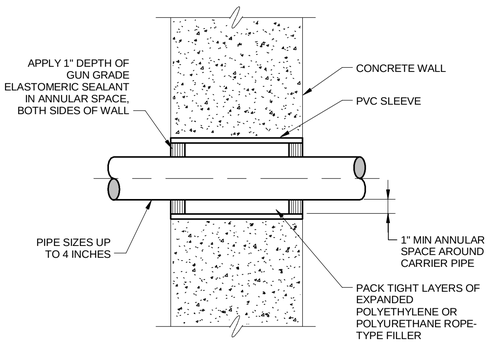
Project No.:	200-11740-10003
Designed By:	JPT
Drawn By:	JTE
Checked By:	-

D-9501

Bar Measures 1 inch

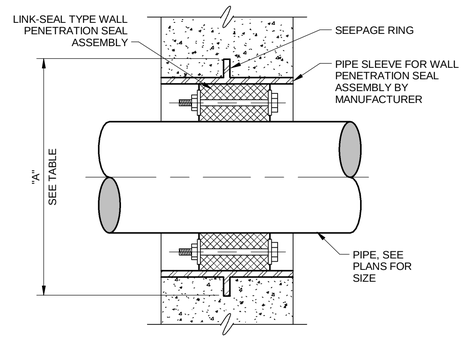
10/2/2014 7:40:27 AM C:\Users\jon.evans\Desktop\Active Projects\Revit\RW-11740-D-INTAKE_jon.evans.rvt

WALL PENETRATION - CONCRETE (SMALL DIAMETER)



1 DETAIL
SCALE: NTS

WALL PENETRATION - LINK SEAL (CAST)



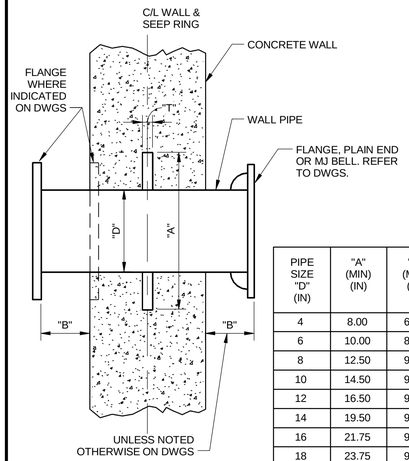
PIPE SIZE	NOMINAL SLEEVE DIA.	"A"
2	4	6
2-1/2	4	7
3	5	7-1/2
4	6	9
6	10	13
8	12	14
10	14	17

PIPE SIZE	NOMINAL SLEEVE DIA.	"A"
12	16	19
14	18	21
16	20	23-1/2
18	24	25
20	24	27-1/2
24	30	32

NOTE: ALL DIMENSIONS ARE GIVEN IN INCHES

2 DETAIL
SCALE: NTS

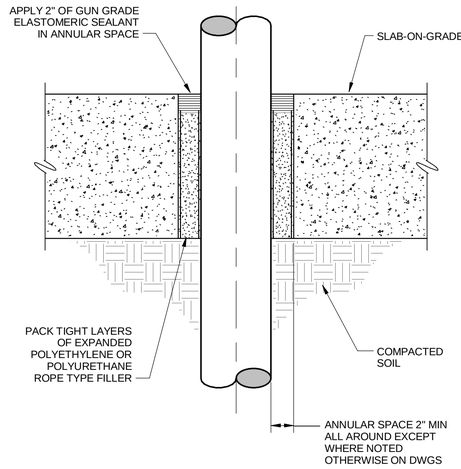
WALL PENETRATION - WALL PIPE



PIPE SIZE "D" (IN)	"A" (MIN) (IN)	"B" (MIN) (IN)	"T" (MIN) (IN)
4	8.00	6.00	0.50
6	10.00	8.00	0.50
8	12.50	9.00	0.50
10	14.50	9.00	0.50
12	16.50	9.00	0.50
14	19.50	9.00	0.75
16	21.75	9.00	0.75
18	23.75	9.00	0.75
20	25.75	9.00	0.75
24	30.25	12.00	0.75
30	36.50	12.00	1.00
36	43.00	12.00	1.00
42	49.50	12.00	1.25
48	56.50	12.00	1.25

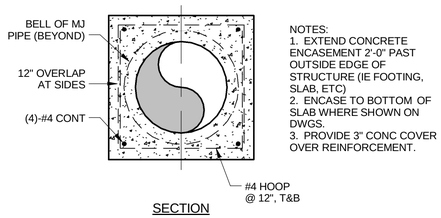
3 DETAIL
SCALE: NTS

PIPE PENETRATION - SLAB-ON-GRADE



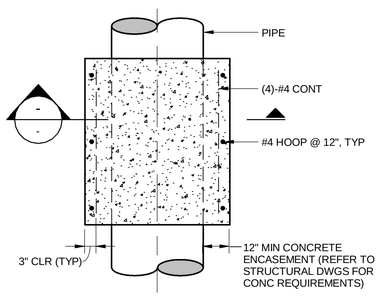
4 DETAIL
SCALE: NTS

CONCRETE ENCASEMENT



NOTES:
1. EXTEND CONCRETE ENCASEMENT 2'-0" PAST OUTSIDE EDGE OF STRUCTURE (IE FOOTING, SLAB, ETC)
2. ENCASE TO BOTTOM OF SLAB WHERE SHOWN ON DWGS.
3. PROVIDE 3" CONC COVER OVER REINFORCEMENT.

SECTION



PLAN

5 DETAIL
SCALE: NTS

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BID SET

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

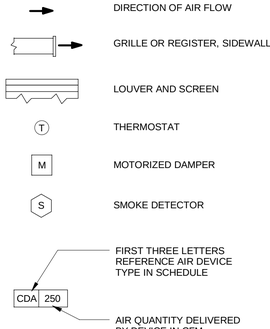
PROCESS DETAILS

Project No.:	200-11740-10003
Designed By:	JPT
Drawn By:	JTE
Checked By:	-

D-9502

Bar Measures 1 inch

MECHANICAL LEGEND



NOTE:
THIS LEGEND IS FOR REFERENCE ONLY.
ALL SYMBLOLS WHICH APPEAR WITHIN THE LEGEND MAY NOT APPLY TO THIS PROJECT.

MECHANICAL ABBREVIATIONS

SYMBOL	DESCRIPTION
ADJ	ADJUSTABLE
AFG	ABOVE FINISH GRADE
AFF	ABOVE FINISH FLOOR
APD	AIR PRESSURE DROP
ARCH	ARCHITECTURAL
BHP	BRAKE HORSEPOWER
CONC	CONCRETE
CONN	CONNECTION
CONT	CONTINUATION
DIA	DIAMETER
DN	DOWN
DWG	DRAWING
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EF	EXHAUST FAN
ESP	EXTERNAL STATIC PRESSURE
F	FAHRENHEIT
FPM	FEET PER MINUTE
HP	HORSEPOWER
LAT	LEAVING AIR TEMPERATURE
MAX	MAXIMUM
MIN	MINIMUM
L	LOUVER
N.T.S.	NOT TO SCALE
OA	OUTDOOR AIR
PD	PRESSURE DROP
RA	RETURN AIR
SA	SUPPLY AIR
SP	STATIC PRESSURE
SPEC	SPECIFICATIONS
STD	STANDARD
TEMP	TEMPERATURE
T STAT	THERMOSTAT
TYP	TYPICAL
UH	UNIT HEATER
V	VOLTS
W	WATTS
WG	WATER GUAGE

MECHANICAL GENERAL NOTES:

1. THESE DRAWINGS ARE SCHEMATIC IN NATURE AND ARE NOT INTENDED TO SHOW ALL POSSIBLE CONDITIONS. IT IS INTENDED THAT A COMPLETE SYSTEM BE PROVIDED WITH ALL NECESSARY EQUIPMENT, APPURTENANCES, AND CONTROLS, COMPLETELY COORDINATED WITH ALL DISCIPLINES. ALL PARAMETERS GIVEN IN THESE DOCUMENTS SHALL BE STRICTLY CONFORMED WITH. ANY ITEMS AND LABOR REQUIRED FOR A COMPLETE SYSTEM IN ACCORDANCE WITH ALL APPLICABLE CODES, STANDARDS, AND THESE CONTRACT DOCUMENTS SHALL BE FURNISHED WITHOUT OCCURING ANY ADDITIONAL COST TO THE OWNER. CAREFULLY REVIEW ALL CONTRACT DOCUMENTS AND THE DESIGN OF OTHER TRADES BEFORE PREPARING SHOP DRAWINGS.
2. COORDINATE EQUIPMENT AND DUCTWORK WITH ALL OTHER DISCIPLINES AND TRADES. MAKE ALL OFFSETS AND TRANSITIONS TO COORDINATE ITH OTHER TRADES WITHOUT ANY ADDITIONAL EXPENSE TO THE OWNER.
3. COORDINATE THE EXACT LOCATION AND SIZE OF ALL ROOF, WALL, AND SLAB PENETRATIONS WITH THE ARCHITECTURAL DRAWINGS.
4. MOUNT THERMOSTATS WHERE INDICATED ON PLANS, 4'-0" A.F.F. UNLESS NOTED OTHERWISE.
5. COORDINATE WITH ELECTRICAL CONTRACTOR TO VERIFY CONTROL VOLTAGES WITH EQUIPMENT AND PROVIDE ACCORDINGLY.

DUCTWORK NOTES:

1. ALL DUCTWORK IS SHOWN AS FREE AREA INSIDE DIMENSIONS.
2. ALLOW FOR FIELD MEASURED OFFSETS OR TRANSITIONS, ELBOWS ETC.
3. DO NOT USE FLEX DUCT IN EXPOSED AREAS. MAXIMUM FLEX DUCT LENGTH TO DIFFUSERS SHALL NOT EXCEED FIVE FEET. MAXIMUM FLEX DUCT LENGTH AT ANY OTHER CONNECTION SHALL NOT EXCEED TWO FEET. FLEX DUCT SHALL NOT BE USED FOR ELBOWS.
4. ELBOWS SHALL BE 90 DEG. ELLS WITH DOUBLE THICKNESS TURNING VANES OR WHERE SPACE PERMITS RADIUS FITTING WITH CENTERLINE RADIUS EQUAL TO 1.5 TIMES THE DUCT WIDTH CENTERLINE. NO OTHERS WILL BE ALLOWED.
5. COORDINATE FINAL LOCATION OF ALL REGISTERS, GRILLES, DIFFUSERS ETC. WITH ARCHITECTURAL DRAWINGS AND LIGHTING PLANS.

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BID SET

ALABAMA REGISTERED No. 16533 PROFESSIONAL ENGINEER DONALD S. BOSSERT
10/24/2014

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

MECHANICAL HVAC LEGEND, ABBREVIATIONS, AND NOTES

Project No.:	200-11740-10003
Designed By:	SBR
Drawn By:	BJZ
Checked By:	DSB

M-0001

Bar Measures 1 inch

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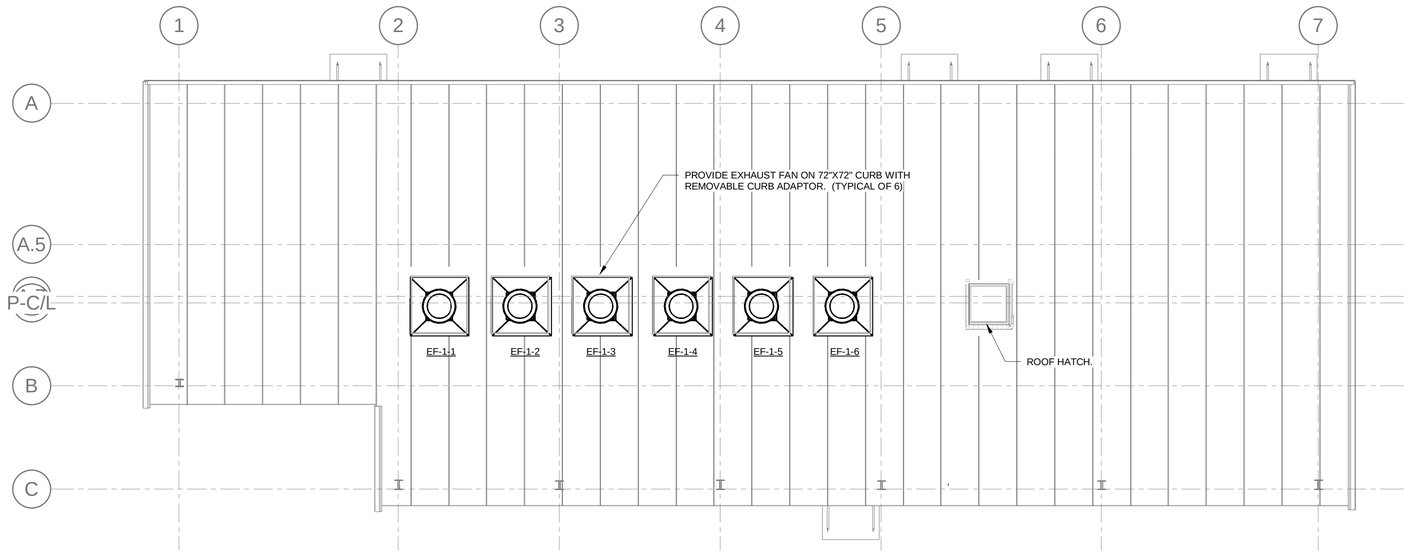
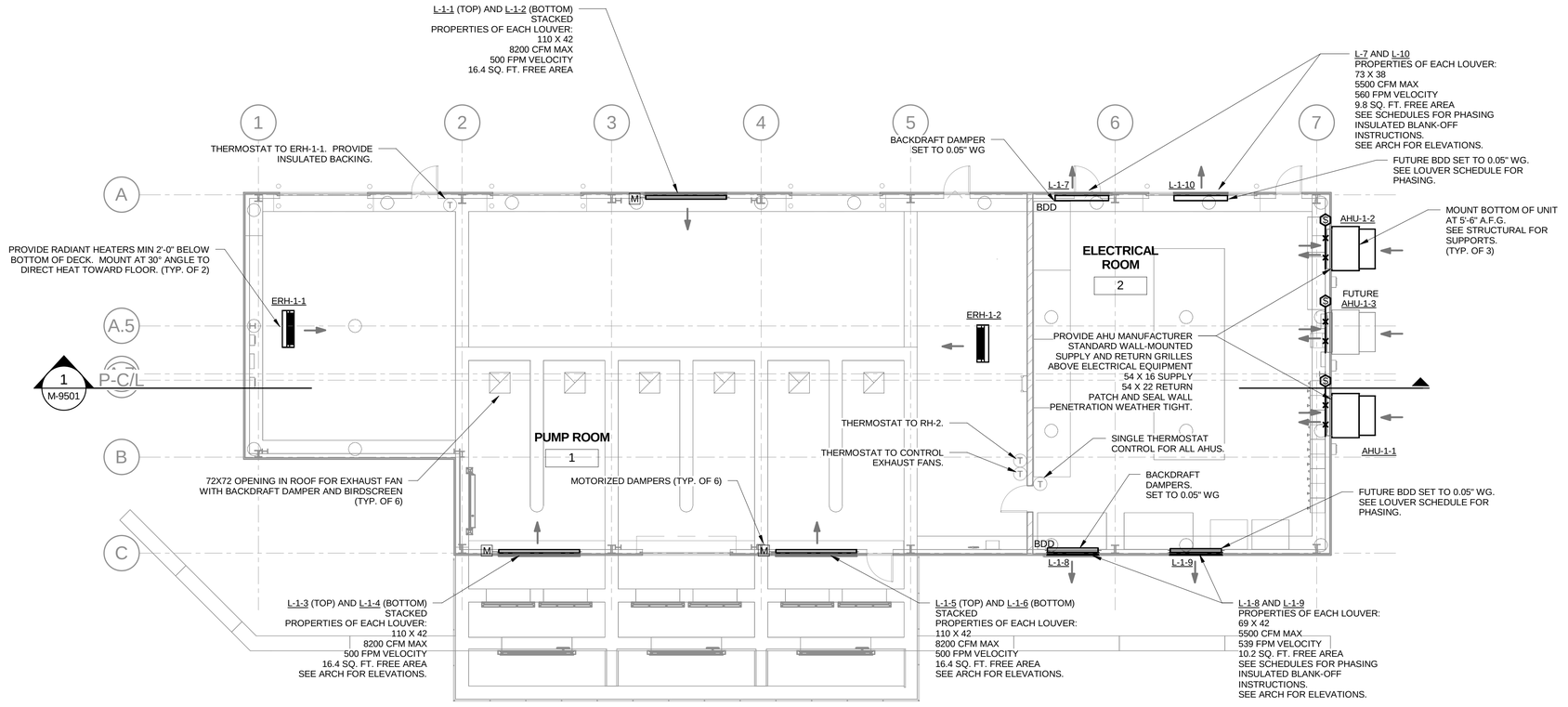


PHASE 1 MECHANICAL HVAC ROOF PLAN

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



PHASE 1 MECHANICAL HVAC FLOOR PLAN

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

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BID SET

ALABAMA REGISTERED No. 16533 PROFESSIONAL ENGINEER DONALD S. BOSSERT
10/24/2014

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

RAW WATER INTAKE STRUCTURE MECHANICAL HVAC PLANS

Project No.:	200-11740-10003
Designed By:	SBR
Drawn By:	SBR/BJZ/MEL
Checked By:	DSB

M-1101

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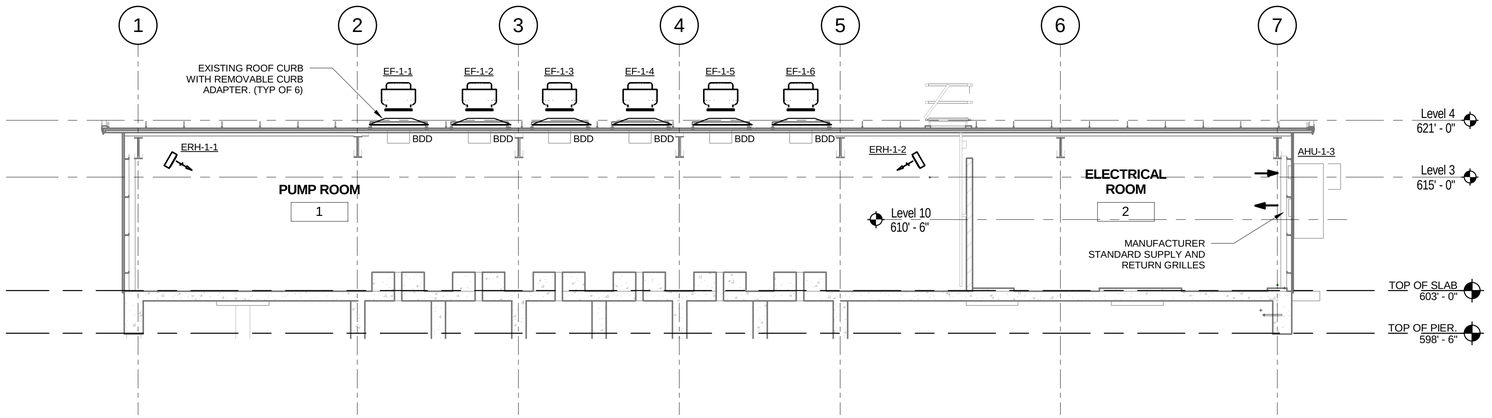
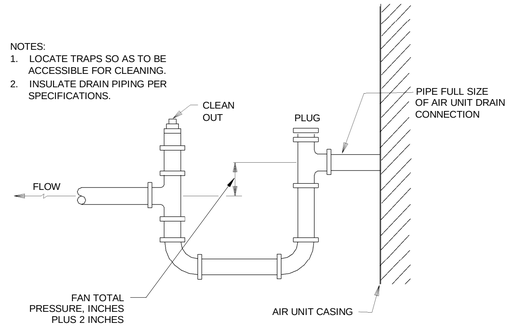
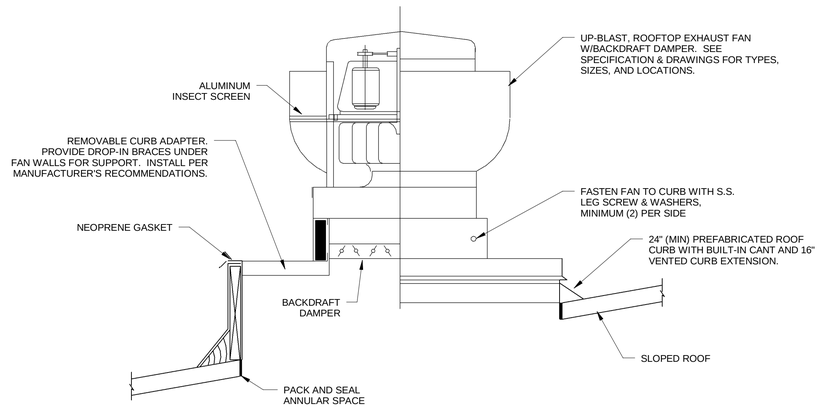
Bar Measures 1 inch



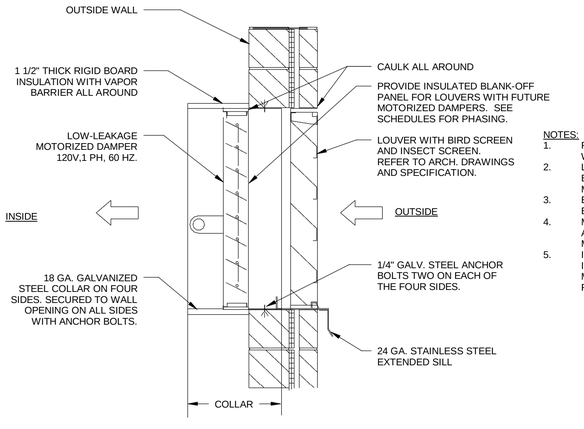
1 HVAC SECTION
M-9501 — 1/8" = 1'-0"



2 CONDENSATE DRAIN DETAIL
M-9501 — N.T.S.

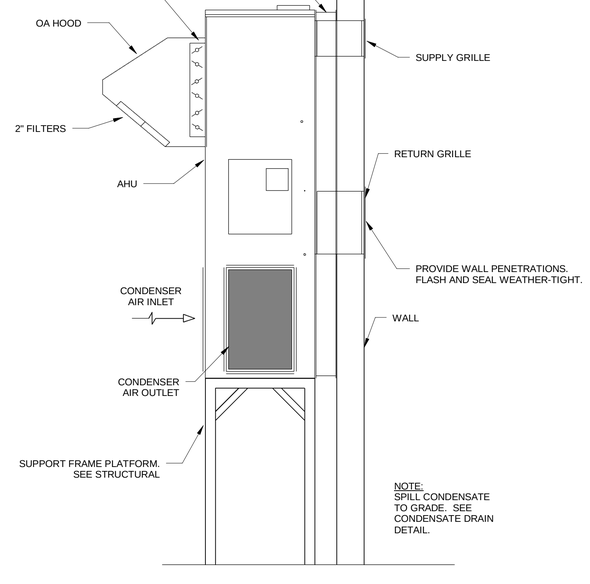


3 UPBLAST EXHAUST FAN DETAIL
M-9501 — N.T.S.



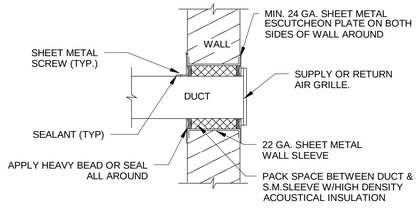
NOTES:
1. FOR LOCATION AND SIZE OF THE WALL OPENINGS, SEE PLANS.
2. LOUVER/DAMPER ASSEMBLIES TO BE ASSEMBLED AT LOUVER MANUFACTURER FACTORY.
3. EXTENDED SILL TO BE PROVIDED BY LOUVER MANUFACTURER.
4. MOTOR ACTUATORS TO BE SIZED AND INSTALLED BY LOUVER MANUFACTURER.
5. INSTALLATION OF LOUVER TO BE IN ACCORDANCE WITH LOUVER MANUFACTURER'S RECOMMENDATIONS.

5 LOUVER/DAMPER DETAIL
M-9501 — N.T.S.



6 THROUGH-WALL AHU DETAIL
M-9501 — N.T.S.

NOTE:
AT EXTERIOR WALLS FLASH & SEAL PENETRATION WEATHERTIGHT



4 DUCT PENETRATION THROUGH WALL WITH GRILLE
M-9501 — N.T.S.

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BID SET

ALABAMA REGISTERED No. 16533 PROFESSIONAL ENGINEER DONALD S. BOSSERT 10/24/2014

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES
RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES
MECHANICAL DETAILS

Project No.:	200-11740-10003
Designed By:	SBR
Drawn By:	SBR/BJZ/MEL
Checked By:	DSB

M-9501

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Bar Measures 1 inch

THROUGH-WALL AIR HANDLING UNIT SCHEDULE															
MARK	BUILDING	SERVES	AIR FLOW (CFM)	MIN. OA (CFM)	E.S.P. (IN W.C.)	TOTAL COOLING CAPACITY (MBH)	SENSIBLE COOLING CAPACITY (MBH)	COOLING E.A.T. DB/WB (°F)	COOLING L.A.T. DB/WB (°F)	ELECTRIC HEAT CAPACITY (kW)	AMBIENT TEMP. (°F)	REFRIG.	ELECTRICAL V/PH/HZ	MANUFACTURER	MODEL	NOTES
AHU-1-1	INTAKE	ELECTRICAL ROOM	5500	90	0.20	170.8	115.4	80 / 67	52 / 52	20	95	R-410A	480 / 3 / 60	SPECIFIC SYSTEMS	APK-180-C-WHD	SEE NOTES
AHU-1-2	INTAKE	ELECTRICAL ROOM	5500	90	0.20	170.8	115.4	80 / 67	52 / 52	20	95	R-410A	480 / 3 / 60	SPECIFIC SYSTEMS	APK-180-C-WHD	SEE NOTES

NOTES:
1. PROVIDE WITH SPECIFIC SYSTEMS MULTIPLEXER AUTOMATIC MULTI-UNIT CONTROLLER SUITABLE FOR THE NUMBER OF UNITS TO BE INSTALLED PER BUILDING.
2. UNIT SHALL MOUNT ON 5'-6" PLATFORM.
3. PROVIDE WITH ECONOMIZER, 2-STAGE COOLING, FILTERS, FREEZESTAT AND LOW-AMBIENT CONTROL.

FUTURE THROUGH-WALL AIR HANDLING UNIT SCHEDULE															
MARK	BUILDING	SERVES	AIR FLOW (CFM)	MIN. OA (CFM)	E.S.P. (IN W.C.)	TOTAL COOLING CAPACITY (MBH)	SENSIBLE COOLING CAPACITY (MBH)	COOLING E.A.T. DB/WB (°F)	COOLING L.A.T. DB/WB (°F)	ELECTRIC HEAT CAPACITY (kW)	AMBIENT TEMP. (°F)	REFRIG.	ELECTRICAL V/PH/HZ	MANUFACTURER	MODEL	NOTES
AHU-1-3	INTAKE	ELECTRICAL ROOM	5500	90	0.20	170.8	115.4	80 / 67	52 / 52	20	95	R-410A	480 / 3 / 60	SPECIFIC SYSTEMS	APK-180-C-WHD	INSTALL IN PHASE 2. SEE NOTES

NOTES:
1. PROVIDE WITH SPECIFIC SYSTEMS MULTIPLEXER AUTOMATIC MULTI-UNIT CONTROLLER SUITABLE FOR THE NUMBER OF UNITS TO BE INSTALLED.
2. UNIT SHALL MOUNT ON 5'-6" PLATFORM.
3. PROVIDE WITH ECONOMIZER, 2-STAGE COOLING, FILTERS, FREEZESTAT AND LOW-AMBIENT CONTROL.

LOUVER SCHEDULE													
MARK	BUILDING	LOCATION	TYPE	MOUNTING	MATERIAL	AIR FLOW (CFM)	SIZE (W X H)	FREE AREA (SQ. FT)	AIR PRESSURE DROP (IN. W.C.)	FREE AREA VELOCITY (FT/MIN)	INSULATED BLANK-OFF	MANUFACTURER	MODEL	NOTES
L-1-1	INTAKE	PUMP ROOM	OA INTAKE	WALL	ALUMINUM	8200	110 X 42	16.4	0.042	500	N/A	GREENHECK	ESD-603	SEE NOTE 3
L-1-2	INTAKE	PUMP ROOM	OA INTAKE	WALL	ALUMINUM	8200	110 X 42	16.4	0.042	500	N/A	GREENHECK	ESD-603	SEE NOTE 3
L-1-3	INTAKE	PUMP ROOM	OA INTAKE	WALL	ALUMINUM	8200	110 X 42	16.4	0.042	500	N/A	GREENHECK	ESD-603	SEE NOTE 3
L-1-4	INTAKE	PUMP ROOM	OA INTAKE	WALL	ALUMINUM	8200	110 X 42	16.4	0.042	500	N/A	GREENHECK	ESD-603	SEE NOTE 3
L-1-5	INTAKE	PUMP ROOM	OA INTAKE	WALL	ALUMINUM	8200	110 X 42	16.4	0.042	500	N/A	GREENHECK	ESD-603	SEE NOTE 3
L-1-6	INTAKE	PUMP ROOM	OA INTAKE	WALL	ALUMINUM	8200	110 X 42	16.4	0.042	500	N/A	GREENHECK	ESD-603	SEE NOTE 3
L-1-7	INTAKE	ELECTRICAL ROOM	RELIEF	WALL	ALUMINUM	5500	73 X 38	9.8	0.049	560	N/A	GREENHECK	ESD-603	SEE NOTE 4
L-1-8	INTAKE	ELECTRICAL ROOM	RELIEF	WALL	ALUMINUM	5500	69 X 42	10.2	0.049	540	N/A	GREENHECK	ESD-603	SEE NOTE 4
L-1-9	INTAKE	ELECTRICAL ROOM	RELIEF	WALL	ALUMINUM	5500	69 X 42	10.2	0.049	540	N/A	GREENHECK	ESD-603	SEE NOTE 1
L-1-10	INTAKE	ELECTRICAL ROOM	RELIEF	WALL	ALUMINUM	5500	73 X 38	9.8	0.049	560	N/A	GREENHECK	ESD-603	SEE NOTE 2

NOTES:
1. INSULATED BLANK-OFF TO REMAIN UNTIL PHASE 2. AFTER INSULATED BLANK-OFF IS REMOVED, PROVIDE ALUMINUM FLAT EXPANDED BIRD SCREEN, INTERNAL ALUMINUM INSECT SCREEN, AND BAROMETRIC BACKDRAFT DAMPER SET TO 0.05 IN WC FOR L-1-9.
2. INSULATED BLANK-OFF TO REMAIN UNTIL PHASE 3. AFTER INSULATED BLANK-OFF IS REMOVED, PROVIDE ALUMINUM FLAT EXPANDED BIRD SCREEN, INTERNAL ALUMINUM INSECT SCREEN, AND BAROMETRIC BACKDRAFT DAMPER SET TO 0.05 IN WC.
3. PROVIDE LOW-LEAKAGE MOTORIZED DAMPER, INTERNAL ALUMINUM INSECT SCREEN, AND ALUMINUM FLAT EXPANDED BIRD SCREEN.
4. PROVIDE BAROMETRIC BACKDRAFT DAMPER SET TO 0.05 IN WC, INTERNAL ALUMINUM INSECT SCREEN, AND ALUMINUM FLAT EXPANDED BIRD SCREEN.

FAN SCHEDULE													
MARK	BUILDING	LOCATION	CFM	S.P. (IN. W.C.)	FAN RPM	ELECTRICAL				TYPE	DRIVE	MANUFACTURER	MODEL	REMARKS
						HP	VOLTS	PH.	HZ.					
EF-1-1	INTAKE	PUMP ROOM ROOF	5500	0.40	789	2	480	3	60	ROOF MOUNTED UPBLAST	BELT	GREENHECK	CUBE-220-15	SEE NOTES
EF-1-2	INTAKE	PUMP ROOM ROOF	5500	0.40	789	2	480	3	60	ROOF MOUNTED UPBLAST	BELT	GREENHECK	CUBE-220-15	SEE NOTES
EF-1-3	INTAKE	PUMP ROOM ROOF	5500	0.40	789	2	480	3	60	ROOF MOUNTED UPBLAST	BELT	GREENHECK	CUBE-220-15	SEE NOTES
EF-1-4	INTAKE	PUMP ROOM ROOF	5500	0.40	789	2	480	3	60	ROOF MOUNTED UPBLAST	BELT	GREENHECK	CUBE-220-15	SEE NOTES
EF-1-5	INTAKE	PUMP ROOM ROOF	5500	0.40	789	2	480	3	60	ROOF MOUNTED UPBLAST	BELT	GREENHECK	CUBE-220-15	SEE NOTES
EF-1-6	INTAKE	PUMP ROOM ROOF	5500	0.40	789	2	480	3	60	ROOF MOUNTED UPBLAST	BELT	GREENHECK	CUBE-220-15	SEE NOTES

NOTES:
1. PROVIDE BACKDRAFT DAMPER.
2. PROVIDE ALUMINUM INSECT SCREEN.
3. PROVIDE ALL ALUMINUM CONSTRUCTION. PROVIDE NEMA 1 TOGGLE SWITCH.
4. PROVIDE (2) SPARE BELTS AND EXTENDED LUBE LINES.
5. PROVIDE TWO-SPEED FAN FOR STAGED COOLING.
6. PROVIDE PATE ROOF CURB WITH 72"X72" CLEAR OPENING. PROVIDE CURB ADAPTER FOR INSTALLATION OF FAN.

ELECTRIC RADIANT HEATER								
MARK	BUILDING	LOCATION	INPUT (KW)	ELECTRICAL V/PH/HZ	MOUNTING HEIGHT (FT)	MANUFACTURER	MODEL	NOTES
ERH-1-1	INTAKE	PUMP ROOM	13.5	480 / 3 / 60	14	MARKEL	CH-13	SEE NOTES
ERH-1-2	INTAKE	PUMP ROOM	13.5	480 / 3 / 60	14	MARKEL	CH-13	SEE NOTES

NOTES:
1. RADIANT HEATERS SHALL BE MOUNTED AT THE HEIGHT SPECIFIED IN SCHEDULE. THE HEATERS SHALL BE MOUNTED AT AN OPTIMUM ANGLE TOWARD THE FLOOR SUCH THAT AS MUCH FLOOR AREA AS POSSIBLE IS REACHED BY EACH HEATER.

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BID SET

ALABAMA REGISTERED No. 16533 PROFESSIONAL ENGINEER DONALD S. BOSCH
10/24/2014

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

MECHANICAL SCHEDULES

Project No.:	200-11740-10003
Designed By:	SBR
Drawn By:	SBR/BJZ/MEL
Checked By:	DSB

M-9601

Bar Measures 1 inch

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AIR SOURCE HEAT PUMP - SPECIFIC SYSTEMS

APPLICABLE UNITS:
AHU-1-1
AHU-1-2
AHU-1-3 (FUTURE)

RUN CONDITIONS:
THE UNIT SHALL RUN CONTINUOUSLY DURING OCCUPIED MODE AND SHALL MAINTAIN:

- A 74°F (ADJ.) COOLING SETPOINT
- A 70°F (ADJ.) HEATING SETPOINT.
- UNIT SHALL RUN ONLY TO MAINTAIN SETPOINTS DURING UNOCCUPIED HOURS.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- HIGH ZONE TEMP: IF THE ZONE TEMPERATURE IS GREATER THAN THE COOLING SETPOINT BY A USER DEFINABLE AMOUNT (ADJ.).
- LOW ZONE TEMP: IF THE ZONE TEMPERATURE IS LESS THAN THE HEATING SETPOINT BY A USER DEFINABLE AMOUNT (ADJ.).

SMOKE DETECTION:
THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING A SMOKE DETECTOR STATUS.

FAN:
THE FAN SHALL RUN ANYTIME THE UNIT IS COMMANDED TO RUN, UNLESS SHUTDOWN ON SAFETIES.

HEATING AND COOLING - 2 COMPRESSOR STAGES:
THE CONTROLLER SHALL MEASURE THE ZONE TEMPERATURE AND STAGE THE COMPRESSORS TO MAINTAIN ITS SETPOINT. TO PREVENT SHORT CYCLING, THERE SHALL BE A USER DEFINABLE (ADJ.) DELAY BETWEEN STAGES, AND EACH STAGE SHALL HAVE A USER DEFINABLE (ADJ.) MINIMUM RUNTIME. THE COMPRESSOR SHALL RUN SUBJECT TO ITS OWN INTERNAL SAFETIES AND CONTROLS.

THE HEATING SHALL BE ENABLED WHENEVER:

- OUTSIDE AIR TEMPERATURE IS LESS THAN 60°F (ADJ.).
- AND ZONE TEMPERATURE IS LESS THAN 65°F (ADJ.).
- AND THE FAN STATUS IS ON.
- AND THE REVERSING VALVE IS IN HEAT MODE.

THE COOLING SHALL BE ENABLED WHENEVER:

- OUTSIDE AIR TEMPERATURE IS GREATER THAN 45°F (ADJ.).
- AND ZONE TEMPERATURE IS GREATER THAN 76°F (ADJ.).
- AND THE FAN STATUS IS ON.
- AND THE REVERSING VALVE IS IN COOL MODE.

ON MODE CHANGE, THE COMPRESSOR SHALL BE DISABLED AND REMAIN OFF UNTIL AFTER THE REVERSING VALVE HAS CHANGED POSITION.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- COMPRESSOR 1 RUNTIME EXCEEDED: COMPRESSOR 1 RUNTIME EXCEEDS A USER DEFINABLE LIMIT (ADJ.).
- COMPRESSOR 2 RUNTIME EXCEEDED: COMPRESSOR 2 RUNTIME EXCEEDS A USER DEFINABLE LIMIT (ADJ.).

THE CONTROLLER SHALL MEASURE THE ZONE TEMPERATURE AND MODULATE THE MIXED AIR DAMPERS IN SEQUENCE TO MAINTAIN THE ZONE COOLING SETPOINT. THE OUTSIDE AIR DAMPER SHALL MAINTAIN A MINIMUM ADJUSTABLE POSITION TO OBTAIN MINIMUM OUTDOOR AIR FLOWS AS INDICATED IN THE EQUIPMENT SCHEDULES.

ECONOMIZER:
THE ECONOMIZER SHALL BE ENABLED WHENEVER:

- OUTSIDE AIR TEMPERATURE IS AT LEAST 3°F (ADJ.) LESS THAN THE ZONE TEMPERATURE.
- AND THE OUTSIDE AIR TEMPERATURE IS LESS THAN 60°F (ADJ.)

THE OUTSIDE AIR DAMPER SHALL CLOSE AND THE RETURN AIR DAMPER SHALL OPEN WHEN THE UNIT IS OFF.

MINIMUM OUTSIDE AIR VENTILATION - FIXED PERCENTAGE:
THE OUTSIDE AIR DAMPERS SHALL MAINTAIN A MINIMUM POSITION (ADJ.) DURING BUILDING OCCUPIED HOURS AND BE CLOSED DURING UNOCCUPIED HOURS.

SUPPLEMENTAL ELECTRIC HEATING STAGES:
THE CONTROLLER SHALL MEASURE THE ZONE TEMPERATURE AND STAGE THE HEATING TO MAINTAIN ITS HEATING SETPOINT SHOULD THE COMPRESSORS NOT MEET THE HEATING DEMAND. TO PREVENT SHORT CYCLING, THERE SHALL BE A USER DEFINABLE (ADJ.) DELAY BETWEEN STAGES, AND EACH STAGE SHALL HAVE A USER DEFINABLE (ADJ.) MINIMUM RUNTIME.

THE HEATING SHALL BE ENABLED WHENEVER:

- THE HEAT PUMP IS IN HEATING MODE.
- AND THE ZONE TEMPERATURE IS BELOW HEATING SETPOINT.
- AND THE FAN IS ON.

FILTER DIFFERENTIAL PRESSURE MONITOR:
THE CONTROLLER SHALL MONITOR THE DIFFERENTIAL PRESSURE ACROSS THE FILTER.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- FILTER CHANGE REQUIRED: FILTER DIFFERENTIAL PRESSURE EXCEEDS A USER DEFINABLE LIMIT (ADJ.).

DISCHARGE AIR TEMPERATURE:
THE CONTROLLER SHALL MONITOR THE DISCHARGE AIR TEMPERATURE.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- HIGH DISCHARGE AIR TEMP: IF THE DISCHARGE AIR TEMPERATURE IS GREATER THAN 120°F (ADJ.).
- LOW DISCHARGE AIR TEMP: IF THE DISCHARGE AIR TEMPERATURE IS LESS THAN 40°F (ADJ.).

FAN STATUS:
THE CONTROLLER SHALL MONITOR THE FAN STATUS.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- FAN FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
- FAN IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.
- FAN RUNTIME EXCEEDED: FAN STATUS RUNTIME EXCEEDS A USER DEFINABLE LIMIT (ADJ.).

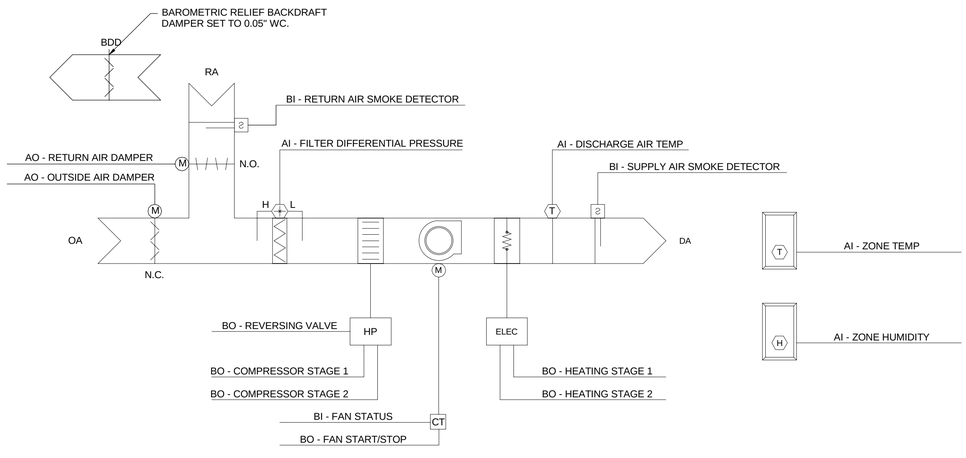
ZONE HUMIDITY:
THE CONTROLLER SHALL MONITOR THE ZONE HUMIDITY.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- HIGH ZONE HUMIDITY: IF THE ZONE HUMIDITY IS GREATER THAN 70% (ADJ.).
- LOW ZONE HUMIDITY: IF THE ZONE HUMIDITY IS LESS THAN 35% (ADJ.).

AIR SOURCE HEAT PUMP - SPECIFIC SYSTEMS

	HARDWARE POINTS				SOFTWARE POINTS					
POINT NAME	AI	AO	BI	BO	AV	BV	SCHED	TREND	ALARM	SHOW ON GRAPHIC
ZONE TEMP	X							X		X
FILTER DIFFERENTIAL PRESSURE	X							X		X
DISCHARGE TEMP	X							X		X
ZONE HUMIDITY	X							X		X
RETURN AIR DAMPERS		X						X		X
OUTSIDE AIR DAMPERS		X						X		X
SUPPLY AIR SMOKE DETECTOR			X					X	X	X
RETURN AIR SMOKE DETECTOR			X					X	X	X
FAN STATUS			X					X		X
FAN START/STOP				X				X		X
REVERSING VALVE				X				X		X
COMPRESSOR STAGE 1				X				X		X
COMPRESSOR STAGE 2				X				X		X
HEATING STAGE 1				X				X		X
HEATING STAGE 2				X				X		X
SCHEDULE							X			
HEATING SETPOINT								X		X
COOLING SETPOINT								X		X
HIGH ZONE TEMP									X	
LOW ZONE TEMP									X	
COMPRESSOR 1 RUNTIME EXCEEDED									X	
COMPRESSOR 2 RUNTIME EXCEEDED									X	
FILTER CHANGE REQUIRED									X	
HIGH DISCHARGE AIR TEMP									X	
LOW DISCHARGE AIR TEMP									X	
FAN FAILURE									X	
FAN IN HAND									X	
FAN RUNTIME EXCEEDED									X	
HIGH ZONE HUMIDITY									X	
LOW ZONE HUMIDITY									X	
TOTALS	4	2	3	6	0	0	1	17	14	17
	TOTAL HARDWARE (15)				TOTAL SOFTWARE (32)					



1 M-9901 AIR SOURCE HEAT PUMP - SPECIFIC SYSTEMS
N.T.S.

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10/24/2014

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

MECHANICAL CONTROLS

Project No.:	200-11740-10003
Designed By:	SBR
Drawn By:	SBR/BJZ
Checked By:	DSB

M-9901

Bar Measures 1 inch

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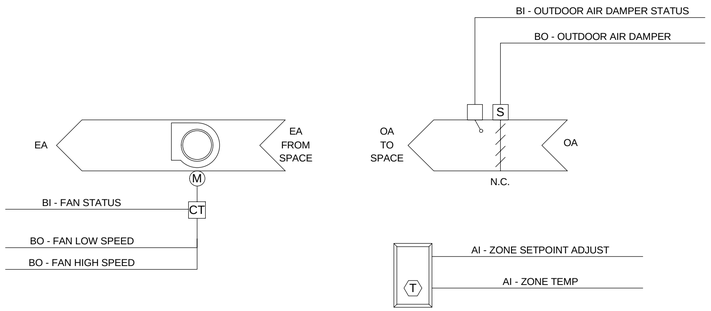
EXHAUST FAN - 2-STAGE COOLING

APPLICABLE UNITS:
EF-1-1 INTERLOCKED W/ L-1-1, L-1-2, L-1-3, L-1-4, L-1-5, L-1-6
EF-1-2 INTERLOCKED W/ L-1-1, L-1-2, L-1-3, L-1-4, L-1-5, L-1-6
EF-1-3 INTERLOCKED W/ L-1-1, L-1-2, L-1-3, L-1-4, L-1-5, L-1-6
EF-1-4 INTERLOCKED W/ L-1-1, L-1-2, L-1-3, L-1-4, L-1-5, L-1-6
EF-1-5 INTERLOCKED W/ L-1-1, L-1-2, L-1-3, L-1-4, L-1-5, L-1-6
EF-1-6 INTERLOCKED W/ L-1-1, L-1-2, L-1-3, L-1-4, L-1-5, L-1-6



1 M-9902 EXHAUST FAN - 2-STAGE COOLING
N.T.S.

RUN CONDITIONS - CONTINUOUS:
THE UNIT SHALL RUN TO MAINTAIN A ZONE TEMPERATURE COOLING SETPOINT OF 80°F (ADJ.).

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- HIGH ZONE TEMP: IF THE ZONE TEMPERATURE IS GREATER THAN THE COOLING SETPOINT BY A USER DEFINABLE AMOUNT (ADJ.).

ZONE SETPOINT ADJUST:
THE OCCUPANT SHALL BE ABLE TO ADJUST THE ZONE COOLING SETPOINT AT THE ZONE TEMPERATURE SENSOR.

FAN:
THE FAN SHALL RUN ANYTIME THE ZONE TEMPERATURE RISES ABOVE COOLING SETPOINT, UNLESS SHUTDOWN ON SAFETIES. THE FAN SHALL RUN UNTIL ZONE TEMPERATURE DROPS TO 75°F (ADJ.) TO PREVENT SHORT CYCLING. THE FAN SPEEDS SHALL BE INDEXED AS FOLLOWS:

- LOW SPEED SHALL RUN ANYTIME THE ZONE TEMPERATURE RISES ABOVE SETPOINT.
- HIGH SPEED SHALL RUN ANYTIME THE ZONE TEMPERATURE RISES FURTHER ABOVE SETPOINT BY A USER DEFINABLE AMOUNT (ADJ.).

FAN OVERRIDE SWITCH:
OCCUPANT SHALL BE ABLE TO TURN FAN ON AND OFF AND SWITCH FAN SPEEDS WITH A HAND-OFF-AUTO SWITCH MOUNTED ON THE WALL.

MULTIPLE FAN OPERATION:
CONTROLLER SHALL OPERATE FANS IN A LEAD/LAG FASHION, STAGING ADDITIONAL FANS ON AS ZONE COOLING REQUIRES. LEAD FAN SHALL ALTERNATE ON A WEEKLY (ADJ.) BASIS.

OUTDOOR AIR DAMPER:
THE OUTDOOR AIR DAMPER SHALL OPEN ANYTIME THE UNIT RUNS AND SHALL CLOSE ANYTIME THE UNIT STOPS. THE OUTDOOR AIR DAMPER SHALL CLOSE 30 SEC (ADJ.) AFTER THE FAN STOPS. ALL INTERLOCKED DAMPERS SHALL OPEN ANYTIME ANY FAN RUNS, AND SHALL CLOSE ONLY WHEN ALL FANS HAVE STOPPED.

OUTDOOR AIR DAMPER STATUS:
THE FAN SHALL BE ENABLED AFTER THE DAMPER STATUS HAS PROVEN.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- DAMPER FAILURE: COMMANDED OPEN, BUT THE STATUS IS CLOSED.
- DAMPER IN HAND: COMMANDED CLOSED, BUT THE STATUS IS OPEN.

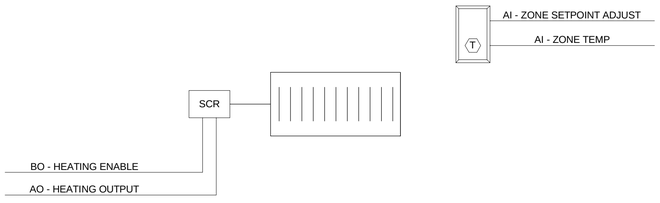
FAN STATUS:
THE CONTROLLER SHALL MONITOR THE FAN STATUS.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- FAN FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
- FAN IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.
- FAN RUNTIME EXCEEDED: FAN STATUS RUNTIME EXCEEDS A USER DEFINABLE LIMIT (ADJ.).

EXHAUST FAN - 2-STAGE COOLING

POINT NAME	HARDWARE POINTS AI	AO	BI	BO	SOFTWARE POINTS AV	BV	SCHED	TREND	ALARM	SHOW ON GRAPHIC
ZONE TEMP	X							X		X
ZONE SETPOINT ADJUST	X									X
OUTDOOR AIR DAMPER STATUS			X					X		X
FAN STATUS			X					X		X
FAN LOW SPEED				X				X		X
FAN HIGH SPEED				X				X		X
OUTDOOR AIR DAMPER				X				X		X
COOLING SETPOINT					X			X		X
HIGH ZONE TEMP									X	
OUTDOOR AIR DAMPER FAILURE									X	
OUTDOOR AIR DAMPER IN HAND									X	
FAN FAILURE									X	
FAN IN HAND									X	
FAN RUNTIME EXCEEDED									X	
TOTALS	2	0	2	3	1	0	0	7	6	8
	TOTAL HARDWARE (7)				TOTAL SOFTWARE (14)					



2 M-9902 ELECTRIC INFRARED RADIANT HEATER
N.T.S.

ELECTRIC INFRARED RADIANT HEATER

APPLICABLE UNITS:
ERH-1-1
ERH-1-2

RUN CONDITIONS - CONTINUOUS:
THE UNIT SHALL RUN CONTINUOUSLY AND SHALL MAINTAIN A HEATING SETPOINT OF 60°F (ADJ.).

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- LOW ZONE TEMP: IF THE ZONE TEMPERATURE IS LESS THAN 50°F (ADJ.)

ZONE SETPOINT ADJUST:
THE OCCUPANT SHALL BE ALLOWED TO ADJUST THE ZONE HEATING SETPOINT AT THE ZONE TEMPERATURE SENSOR.

ELECTRIC HEATING WITH SCR:
THE CONTROLLER SHALL MEASURE THE ZONE TEMPERATURE AND MODULATE THE HEATING TO MAINTAIN ITS HEATING SETPOINT.

THE HEATING SHALL BE ENABLED WHENEVER:

- OUTSIDE AIR TEMPERATURE IS LESS THAN 65°F(ADJ.).
- AND THE ZONE TEMPERATURE IS BELOW HEATING SETPOINT BY 5°F (ADJ.).
- AND THE FAN IS ON.

ELECTRIC INFRARED RADIANT HEATER

POINT NAME	HARDWARE POINTS AI	AO	BI	BO	SOFTWARE POINTS AV	BV	SCHED	TREND	ALARM	SHOW ON GRAPHIC
ZONE TEMP	X							X		X
ZONE SETPOINT ADJUST	X									X
HEATING OUTPUT		X						X		X
HEATING ENABLE				X				X		X
HEATING SETPOINT								X		X
LOW ZONE TEMP									X	
TOTALS	2	1	0	1	0	0	0	4	1	5
	TOTAL HARDWARE (4)				TOTAL SOFTWARE (5)					

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BID SET

ALABAMA REGISTERED No. 16533 PROFESSIONAL ENGINEER DONALD S. BOSSEN
10/24/2014

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES
RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES
MECHANICAL CONTROLS

Project No.:	200-11740-10003
Designed By:	SBR
Drawn By:	SBR/BJZ/MEL
Checked By:	DSB

M-9902

Bar Measures 1 inch

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BACKGROUND PLAN AND ONE LINE SYMBOLS

SYMBOL	DESCRIPTION
	CONTROL SWITCH (SEL. OR P.B.) SEE CIRCUITS FOR SPECIFIC TYPE
F FL	SEE CIRCUITS FOR SPECIFIC TYPE FLOAT SWITCH - FLOW SWITCH, FIRE ALARM PULL STATION
T M	TEMPERATURE - HUMIDISTAT SWITCH (SUBSCRIPT = NO. OF STAGES)
L P V	LIMIT - PRESSURE - VACUUM SWITCH
ALT	ELECTRICAL OR MECHANICAL ALTERNATOR (SEE WIRING)
OS	OVERLOAD SWITCH OR DEVICE
TB	TERMINAL BOX
	SOLENOID VALVE
PC	PHOTOCELL LINE VOLTAGE
M	ITEM NO. INTERCOM EQUIPMENT
A WS LB	INTERCOMMUNICATION SYSTEM AMPLIFIER - WALL STATION - LINE BALANCE
DS	INTERCOMMUNICATION DESK SET
	INTERCOM. SPEAKER (CEILING LAY-IN)
	TELEPHONE OUTLET OR JUNCTION BOX
	WELDING RECEPTACLE - NEMA L9-50R 600V, 2P, 3W, SIMPLEX
HS	INTERCOM HANDSET - SURFACE MOUNTED WITH REMOTE SPEAKER AMPLIFIER
VC	INTERCOM VOLUME CONTROL
	INTERCOM SPEAKER - SURFACE MOUNTED
HS	INTERCOM HANDSET - FLUSH MOUNTED WITH REMOTE SPEAKER AMPLIFIER
	AS NOTED (LIGHTING PANEL, CONTROL PANEL, DISTRIBUTION PANEL ETC.) WALL MOUNTED
JB	JUNCTION BOX
	HEATER
H	HEATER
	TRANSFORMER
	CONDUIT WITH CONDUIT SEAL FITTING
	CONDUIT EXPOSED
	CONDUIT CONCEALED
E	DIRECT BURIED CONDUIT
UG	DIRECT BURIED CABLE
OH	OVERHEAD LINE
DB	UNDERGROUND DUCT BANK
1 2 3 4 5 6	CONCRETE ENCASED DUCT BANK, WITH CABLE LOCATIONS AND SPARE DUCTS AS INDICATED ON DRAWINGS
	DUCT BANK CONDUIT WITH 2-4" 3-CELL MAXCELL FABRIC INNERDUCT
	CABLE REEL
CH	COMMUNICATION HANDHOLE
EH	ELECTRICAL HANDHOLE
	POWER FACTOR CORRECTION CAPACITOR

SYMBOL	DESCRIPTION
	LOW VOLTAGE DISCONNECT SWITCH
	LOW VOLTAGE FUSE (BELOW 600V)
1 RV 2 FVR 3 2S,2W	ALL STARTERS SHALL BE FULL VOLTAGE NON-REVERSING UNLESS OTHERWISE INDICATED (FVR) FULL VOLTAGE REVERSING (RV) REDUCED VOLTAGE (2S,2W) TWO SPEED, TWO WINDING
	600V, 3 POLE MOLDED CASE CIRCUIT BREAKER, FRAME & RATING AS SHOWN
1/2 A-3	SINGLE PHASE, FRACTIONAL HP MOTOR TO LOCATION INDICATED (SEE GEN. NOTE 4)
A 1	THREE PHASE LOAD WITH IDENTIFICATION AT MOTOR CONTROL CENTER OR SWITCH BOARD
	HIGH VOLTAGE FUSE (ABOVE 600 V)
T1 10	TAG NO. (BALLOON) FOR DEVICE INDICATED
A-3 T1 10 MCP OR CP-1	FOR POWER (SEE GEN. NOTE 4) 3/4"C(2/C#18 SHLD.)CONDUIT AND WIRE RUN FROM DEVICE INDICATED TO LOCATION INDICATED
	CAPACITOR, 3 PHASE, SIZE AS INDICATED
F C	DISCONNECT SWITCH (F) = FUSED (C) = CIRCUIT BREAKER, POLE QUANTITY, RATING AND FUSING AS INDICATED
	MAGNETIC STARTER (BACKGROUND DRAWINGS ONLY)
SIZE 2	COMBINATION MAGNETIC STARTER FUSED UNLESS NOTED (CIRCUIT BREAKER)
LG	COMBINATION LIGHTING CONTACTOR WITH HAND-OFF-AUTO SWITCH
F M	MANUAL STARTER (R) = REVERSING, (M) = DIVISION 23 PROVIDED INTERLOCK AND DISCONNECT
CP	CONTROL PANEL
TCP	TEMPERATURE CONTROL PANEL
1/8 UH-19	UNIT HEATER, 1/8 HORSEPOWER
BUS DUCT	600 VOLT FEEDER BUS DUCT (AMPERAGE AS INDICATED)
	LIGHTNING ARRESTOR
A-3	LOW VOLTAGE HOME RUNS 120/208 V 120/240 V (SEE GEN. NOTE 4)
NEMA 4	WATERTIGHT
NEMA 4X	WATERTIGHT AND CORROSION PROOF
NEMA 7	EXPLOSION PROOF - CLASS I, DIVISION I, GROUP D
NEMA 9	EXPLOSION PROOF - CLASS II, DIVISION 1
K	KEYLOCK
SD	SMOKE DETECTOR
	LIGHT FIXTURE
	LIGHT FIXTURE BATTERY BACK-UP
	LIGHT FIXTURE
	EXIT LIGHT
EM EXIT	EMERGENCY BATTERY PACK/EXIT
	TELEPHONE / DATA JACK
	GROUND FRAME TO REBAR
	AIR TERMINAL / GROUND ROD

FIRE ALARM AND SECURITY:

1. FIRE ALARM AND SECURITY SYSTEMS WILL BE PROVIDED BY OWNER'S DESIGNATED CONTRACTOR. THIS CONTRACT IS RESPONSIBLE FOR COORDINATION WITH FIRE ALARM AND SECURITY CONTRACTOR AND FOR PROVIDING COMPLETE RACEWAY SYSTEMS AND DEVICE BOXES.
2. ALL 120 VOLT POWER CIRCUITS ARE TO BE PROVIDED COMPLETE, INCLUDING TERMINATIONS AT BOTH ENDS, BY THIS CONTRACT.

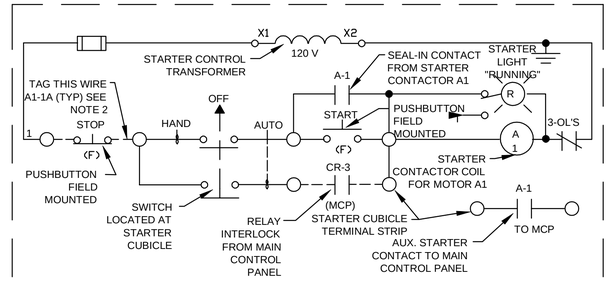
CONTROL CIRCUIT & PILOT DEVICE LEGEND

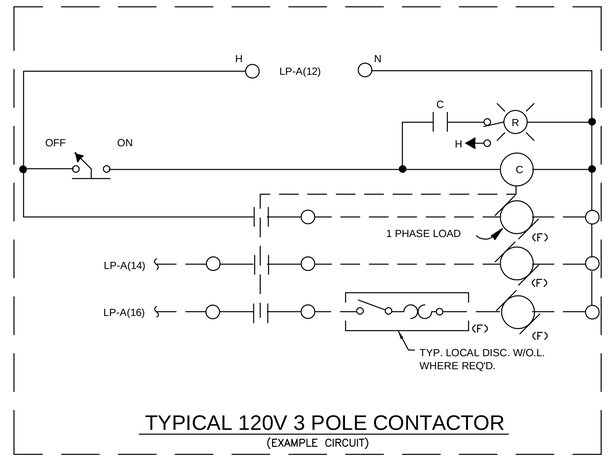
SYMBOL	DESCRIPTION
	PRESS. ACTUATED SWITCH
	FLOAT ACTUATED SWITCH
	FLOW ACTUATED SWITCH
	TEMP. ACTUATED SWITCH
	LIMIT SWITCH-NORMALLY OPEN
	LIMIT SWITCH-NORMALLY CLOSED
	LIMIT SWITCH-NORMALLY CLOSED-HELD OPEN
	LIMIT SWITCH-NORMALLY OPEN-HELD CLOSED
	LATCHING CABLE SWITCH
	TIME-DELAY FUSE
CR	CONTROL RELAY COIL
	CONTROL RELAY CONTACT-NORMALLY OPEN
	CONTROL RELAY CONTACT-NORMALLY CLOSED
CR L CR U	TWO COIL LATCHING RELAY
T	TIMING RELAY COIL
	TIMED CLOSED CONTACT ON ENERGIZATION
	TIMED OPEN CONTACT ON ENERGIZATION
	TIMED OPEN CONTACT ON DE-ENERGIZATION
	TIMED CLOSED CONTACT ON DE-ENERGIZATION
X1 X2	120 VAC TRANSFORMER

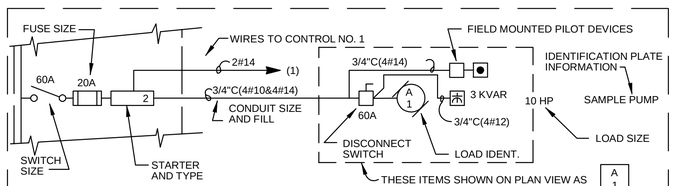
SYMBOL	DESCRIPTION
H O A	SELECTOR SWITCH OPERATOR WITH FUNCTION SHOWN
	MOMENTARY PUSHBUTTON OPERATOR-NORMALLY OPEN
	MOMENTARY PUSHBUTTON OPERATOR-NORMALLY CLOSED
	PUSHBUTTON OPERATOR WITH MUSHROOM HEAD
(F)	FIELD LOCATED STOP BUTTON
	MAINTAINED PUSH-PULL OPERATOR
	MAINTAINED STOP-START PUSHBUTTON OPERATOR
	SOLENOID OR CLUTCH
1 R	PUSH-TO-TEST INDICATING LIGHT
	MAINTAINED STOP-MOMENTARY START PUSHBUTTON (JOG)
	ZERO SPEED OR ANTI-PLUGGING SWITCH
	LOCAL TERMINALS WITH EXTERNAL WIRING
ET	ELAPSED TIME INDICATOR
INST. INST.	TIMING RELAY INSTANTANEOUS CONTACTS

WIRING DEVICE SCHEDULE

SYMBOL	DESCRIPTION	NEMA TYPE
	125V, 2P, SIMPLEX, CLOCK HANGER	1-15 R
	125V, 2P, SIMPLEX, 3W	5-20 R
	125V, 2P, DUPLEX, 3W	5-20 R
	125/250V, 3P, SIMPLEX, 3W, RANGE TYPE	10-50 R
S	20A, 120/277 V SWITCH	SPST
S 2P	20A, 120/277 V SWITCH	2PDT
S 3	20A, 120/277 V SWITCH	3 WAY
S 4	20A, 120/277 V SWITCH	4 WAY
S D	20A, 120/277 V DIMMER SWITCH	
S WP	20A, 120/277 V WEATHERPROOF SWITCH	
	250V, 2P, SIMPLEX, 3W, 50A	6-50R
	125V, 2P, MULTI-RECEPTACLE	5-15R
	250V, 2P, SIMPLEX, 3W, 20A	6-20R
	600V, 2P, 3W, SIMPLEX WELDING	L9-50R
	208V, 3P, SIMPLEX, 4W, LOCKING	L14-20R
	277V, 2P, DUPLEX, 3W	7-15R







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BID SET

ALABAMA LICENSED No. 21938 PROFESSIONAL ENGINEER TIMOTHY ANDREW CALZARETTA

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES
RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES
ELECTRICAL LEGEND

Project No.:	200-11740-10003
Designed By:	DAB
Drawn By:	TAC
Checked By:	DAB

E-0001

Bar Measures 1 inch

ELECTRICAL NOTES:

GENERAL NOTES:

1. THE FOLLOWING COMPONENT IDENTIFICATION SHALL BE USED AS APPROPRIATE:
   - 1.1. (F) FIELD MOUNTED NOT AT STARTER OR OTHER CONTROL PANELS.
   - 1.2. (S) STARTER PANEL MOUNTED.
   - 1.3. (TCP) AT TEMPERATURE CONTROL PANEL.
   - 1.4. (MCP) AT MAIN CONTROL PANEL.
2. ELECTRICAL MATERIALS AND EQUIPMENT ITEMS SHOWN IN LIGHT LINE WEIGHTS ON THE DRAWINGS ARE FUTURE. ELECTRICAL MATERIALS AND EQUIPMENT ITEMS SHOWN IN HEAVY LINE WEIGHTS ARE NEW TO THIS CONTRACT.
3. FOR ITEMS INDICATED AS 'FIELD LOCATE' CHECK DRAWINGS OF OTHER TRADES (IN PARTICULAR PIPING AND STRUCTURAL) FOR INTERFERENCES AND FOR LOCATIONS OF MOUNTING FLANGES, CONNECTION POINTS, ETC.
4. INSTALL A SINGLE CONDUCTOR INSULATED (RHW, THHN OR XHHW) COPPER GROUND WIRE IN EACH CONDUIT, SIZE AS SHOWN ON DRAWINGS OR AS A MINIMUM PER THE NATIONAL ELECTRICAL CODE. THIS GROUND WIRE SHALL BE CONNECTED AT EACH END TO THE EQUIPMENT GROUND. CONDUIT SHALL BE 3/4" MINIMUM.
5. WIRE NUMBERS (1,3 & 5) ETC. SHALL BE PREFIXED WITH STARTER TAG NUMBERS. THE WIRE NUMBER AFTER THE PREFIX, MAY BE THE MANUFACTURERS WIRE NUMBERING SYSTEM. WIRE MARKERS MAY BE USED AT EACH WIRE TERMINATION POINT.
6. PROVIDE SIGNAGE/PLACARD/TAGS AS INDICATED ON THE DRAWINGS DETAILS.
7. OUTSIDE EQUIPMENT MUST BE RATED FOR -40 TO 150 DEG F.
8. CONDUIT FILL MUST MEET NFPA REQUIREMENTS. (WHERE NFPA IS SILENT CONDUIT FILL MUST NOT EXCEED 40%)
   - 8.1. INSTRUMENT SIGNAL CONDUIT: SHIELDED SIGNAL WIRES FOR 4-20 MA TYPE INSTRUMENTS OR THERMOCOUPLE WIRES ASSIGNED TO THE SAME CONTROL PANEL MAY BE RUN IN THE SAME CONDUIT. NO OTHER WIRES WILL BE PERMITTED IN AN INSTRUMENT SIGNAL/2-WIRE CONDUIT.
   - 8.2. CONTROL CIRCUIT CONDUIT (120VAC). 120VAC CONTROL CIRCUIT WIRES USED FOR DISCRETE PLC INPUT OR MCC CONTROL ASSIGNED TO THE SAME CONTROL PANEL/MCC MAY BE RUN IN THE SAME CONDUIT. NO OTHER WIRES WILL BE PERMITTED IN THE CONTROL CIRCUIT CONDUIT.
   - 8.3. CONTROL CIRCUIT CONDUIT (24VDC). 24VDC CONTROL CIRCUIT WIRES USED FOR DISCRETE PLC INPUT OR MCC CONTROL ASSIGNED TO THE SAME CONTROL PANEL/MCC MAY BE RUN IN THE SAME CONDUIT. NO OTHER WIRES WILL BE PERMITTED IN THE CONTROL CIRCUIT CONDUIT.
   - 8.4. COMMUNICATION CONDUIT (ETHERNET). COMMUNICATION WIRE USED FOR ETHERNET, FIBER OPTIC, OR MODBUS MAY BE RUN IN THE SAME CONDUIT. NO OTHER WIRES WILL BE PERMITTED IN THE COMMUNICATION CONDUIT (ETHERNET).
   - 8.5. COMMUNICATION CONDUIT (FIELD BUS). FIELD BUS WIRE USED FOR CONTROLNET OR DEVICENET MAY BE RUN IN THE SAME CONDUIT. NO OTHER WIRES WILL BE PERMITTED IN THE COMMUNICATION CONDUIT (FIELD BUS).
9. EQUIPMENT SHOWN INSIDE SHALL BE RATED NEMA 12 AND EQUIPMENT SHOWN OUTSIDE SHALL BE RATED NEMA 4X, UNLESS OTHERWISE INDICATED.
10. MINIMUM CONTROL WIRE SIZE SHALL BE EITHER #14 AWG OR 2/C#18SH AND MINIMUM POWER WIRE SIZE SHALL BE #12 AWG.
11. MINIMUM CONDUIT SIZE SHALL BE 3/4".
12. PROVIDE INSULATED CONDUCTOR (RHW) FOR EXTERIOR WORK AND (THHN) FOR INTERIOR WORK

ABBREVIATIONS:

Ø	PHASE
A	AMPERE(S)
A/C	AIR CONDITIONING
AI	ANALOG INPUT
ALT	ALTERNATE
AO	ANALOG OUTPUT
ARV	AIR RELEASE VALVE
ASB	ALARM SILENCE BUTTON
AWG	AMERICAN WIRE GAUGE
BFV	BUTTERFLY VALVE
C	CONDUIT
CAT	CATEGORY
CB	CIRCUIT BREAKER
CLAR	CLARIFIER
CMR	CAMERA
CP	CONTROL PANEL
CR	CONTROL RELAY
CSF	CARBON STORAGE & FEED
CT	CURRENT TRANSFORMER
DB	DUCTBANK
DI	DISCRETE INPUT
DO	DISCRETE OUTPUT
DWG	DRAWING
EFF	EFFLUENT
EM	EMERGENCY
ENET	ETHERNET
ETI	ELAPSED TIME INDICATOR
FACP	FIRE ALARM CONTROL PANEL
FB	FUSE BLOCK / FEEDER BREAKER
FIT	FLOW INDICATING TRANSMITTER
FO	FIBER OPTIC
FOC	FIBER OPTIC CONVERTER
FOPP	FIBER OPTIC PATCH PANEL
FVNR	FULL VOLTAGE NON-REVERSING
FWP	FINISHED WATER PUMP
G / GND	GROUND
GA	GAUGE
GAL	GALLON(S)
GALV	GALVANIZED
GEN	GENERATOR
GFCI/GFI	GROUND FAULT CIRCUIT INTERRUPTER
HOA	HAND-OFF-AUTO
HORIZ	HORIZONTAL
HP	HORSEPOWER
HSP	HIGH SERVICE PUMP (FINISHED WATER)
HTR	HEATER
HTS-X	HEAT TRACE SYSTEM
HZ	HERTZ
I/O	INPUT/OUTPUT
INC	IN-USE COVER
IWH	EYE WASH HEATER
KVA	KILO-VOLT-AMPS
LC-X	LIGHTING CONTROL PANEL
LP-XX	LOW VOLTAGE 120/208V PANEL
LCP	LOCAL CONTROL PANEL (I/O)
M	MOTOR
MA	MILLIAMP
MB	MAIN BREAKER
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MCP	MAIN CONTROL PANEL
MH	MAN HOLE
MIN	MINIMUM
MLO	MAIN LUG ONLY
MM	MULTI-MODE
MP	METERED PUMP
MS	MOTOR STARTER
MTR	MASTER
N	NEUTRAL
NO.	NUMBER
O.C.	ON CENTER
OL	OVERLOAD
ORP	OXIDATION REDUCTION POTENTIAL
P	POLE
P.B.	PUSHBUTTON
PDB	POWER DISTRIBUTION BLOCK
PDIT	PRESSURE DIFFERENTIAL CURRENT TRANSMITTER
PEP	PRE-ENGINEERED PANEL
PLC	PROGRAMMABLE LOGIC CONTROLLER
PM	PHASE MONITOR
PP-XX	POWER PANEL
PVC	POLYVINYL CHLORIDE
RAD	RADIANT
RCP	REMOTE CONTROL PANEL (R I/O)
RL	RUNNING LIGHT
RPM	ROTATIONS PER MINUTE
RTD	RESISTANCE TEMPERATURE DETECTOR
RW/RWI	RAW WATER/RAW WATER INTAKE
RWP	RAW WATER PUMP
SCHED	SCHEDULE
SEL	SELECTOR
SH	SHIELDED
SKD	SKID
SS	STAINLESS STEEL
SPD	SURGE PROTECTIVE DEVICE
STA	STATION
T	THERMOSTAT
TB-X	TIE BREAKER
TNK	TANK
TRN	TRAIN
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSION
TYP.	TYPICAL
UPS	UNINTERRUPTIBLE POWER SUPPLY
V	VOLTAGE
VA	VOLT AMPS
VAC	VOLTAGE ALTERNATING CURRENT
VDC	VOLTAGE DIRECT CURRENT
VDS	VIDEO DISPLAY STATION
VERT	VERTICLE
VFD	VARIABLE FREQUENCY DRIVE
W	WATT / WIRE
W/	WITH
WP	WEATHERPROOF
WTP	WATER TREATMENT PLANT
WTP-AC-	ACCESS CONTROL PANEL
WTP-PP-	PATCH PANEL/NETWORK PANEL
XFMR	TRANSFORMER

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BID SET

ALABAMA LICENSED No. 21938 PROFESSIONAL ENGINEER DAVID ANDREW DUNBAR

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

ELECTRICAL NOTES AND ABBREVIATIONS

Project No.:	200-11740-10003
Designed By:	DAB
Drawn By:	TAC
Checked By:	DAB

E-0002

Bar Measures 1 inch

(2) (4)
(1) (3)

DUCTBANK SECTION A

NO SCALE

1. 6"C(PULL-STRING)	1. PRIMARY SWITCH TO ELECTRICAL MANHOLE (RWI-EM-1)
2. 6"C(PULL-STRING)	2. PRIMARY SWITCH TO ELECTRICAL MANHOLE (RWI-EM-1)
3. 2"C(PULL-STRING)	3. WTP-LCP-1 TO RWI-LCP-1
4. 2"C(PULL-STRING)	4. WTP-LCP-1 TO RWI-LCP-1

* SEE WATER TREATMENT PLANT SHEET E-8601 FOR ADDITIONAL INFORMATION AND CABLING.

(1) (2)

DUCTBANK SECTION B

NO SCALE

1. 6"C(PULL-STRING)	1. PRIMARY SWITCH TO ELECTRICAL MANHOLE (RWI-EM-1)
2. 6"C(PULL-STRING)	2. PRIMARY SWITCH TO ELECTRICAL MANHOLE (RWI-EM-1)

* SEE WATER TREATMENT PLANT SHEET E-8601 FOR ADDITIONAL INFORMATION AND CABLING.

(2) (4) (6) (8)
(1) (3) (5) (7)

DUCTBANK SECTION C

SCALE: NTS

1. 4"C(SEE NOTE 3)	1. RWI-T-1 TO RWI-SWGR-1
2. 4"C(SEE NOTE 3)	2. RWI-T-1 TO RWI-SWGR-1
3. 4"C(PULL-STRING)	3. RWI-T-1 TO RWI-SWGR-1
4. 4"C(PULL-STRING)	4. RWI-T-1 TO RWI-SWGR-1
5. 4"C(SEE NOTE 3)	5. RWI-T-2 TO RWI-SWGR-2
6. 4"C(SEE NOTE 3)	6. RWI-T-2 TO RWI-SWGR-2
7. 4"C(PULL-STRING)	7. RWI-T-2 TO RWI-SWGR-2
8. 4"C(PULL-STRING)	8. RWI-T-2 TO RWI-SWGR-2

(3)
(1) (2)

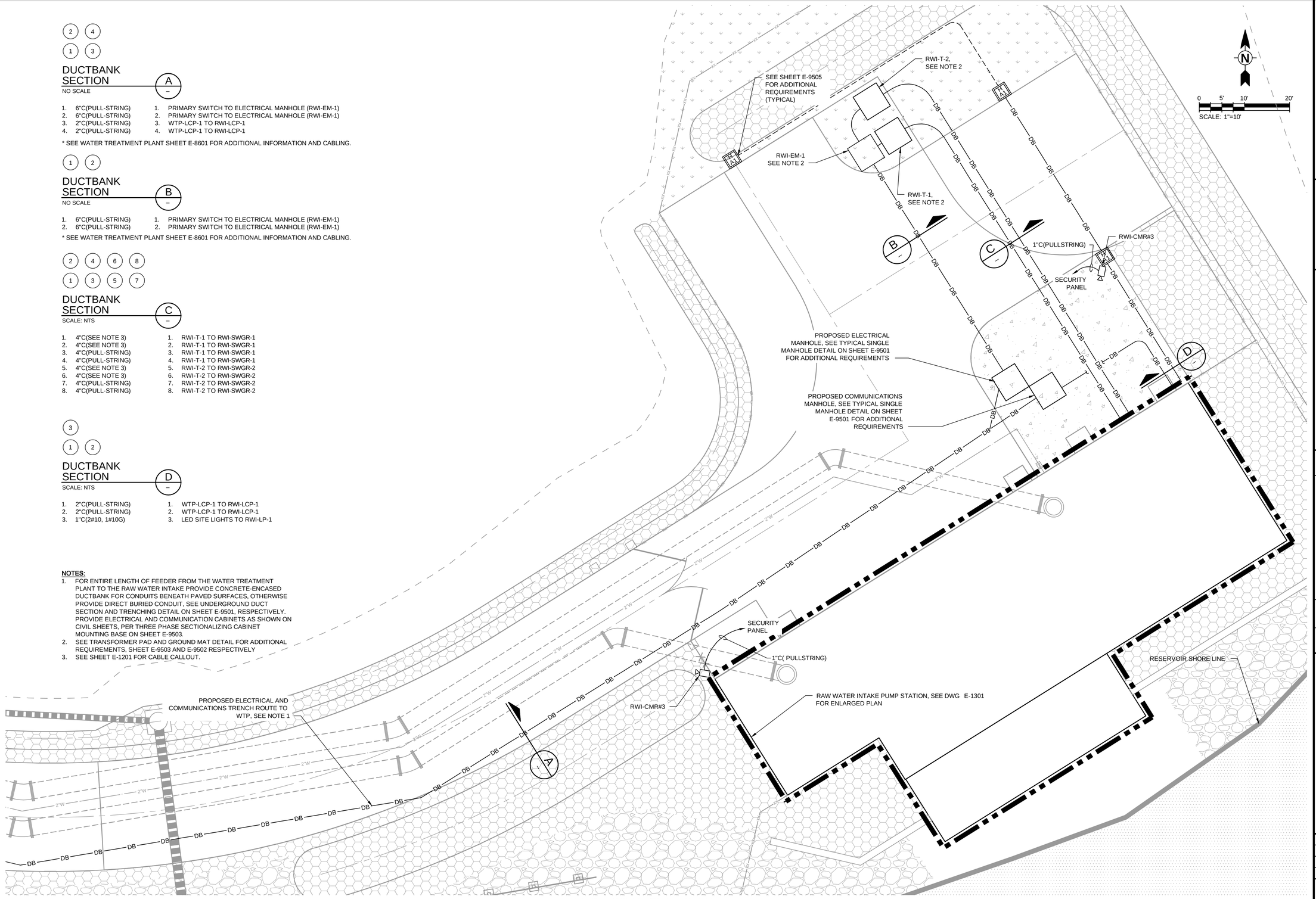
DUCTBANK SECTION D

SCALE: NTS

1. 2"C(PULL-STRING)	1. WTP-LCP-1 TO RWI-LCP-1
2. 2"C(PULL-STRING)	2. WTP-LCP-1 TO RWI-LCP-1
3. 1"C(2#10, 1#10G)	3. LED SITE LIGHTS TO RWI-LP-1

NOTES:

1. FOR ENTIRE LENGTH OF FEEDER FROM THE WATER TREATMENT PLANT TO THE RAW WATER INTAKE PROVIDE CONCRETE-ENCASED DUCTBANK FOR CONDUITS BENEATH PAVED SURFACES, OTHERWISE PROVIDE DIRECT BURIED CONDUIT, SEE UNDERGROUND DUCT SECTION AND TRENCHING DETAIL ON SHEET E-9501, RESPECTIVELY. PROVIDE ELECTRICAL AND COMMUNICATION CABINETS AS SHOWN ON CIVIL SHEETS, PER THREE PHASE SECTIONALIZING CABINET MOUNTING BASE ON SHEET E-9503.
2. SEE TRANSFORMER PAD AND GROUND MAT DETAIL FOR ADDITIONAL REQUIREMENTS, SHEET E-9503 AND E-9502 RESPECTIVELY
3. SEE SHEET E-1201 FOR CABLE CALLOUT.



ELECTRICAL SITE PLAN

SCALE: 1"=10'

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BID SET

ALABAMA LICENSED No. 21838 PROFESSIONAL ENGINEER DAVID ANDREW BARKER

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

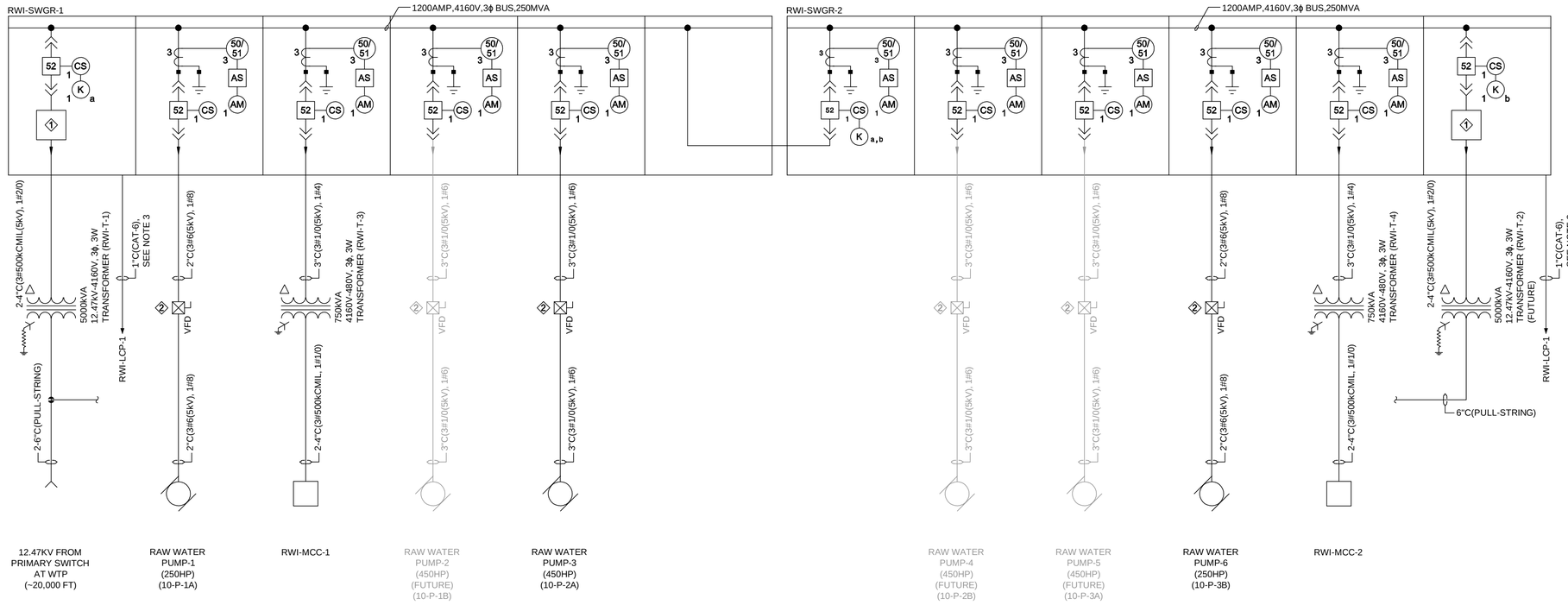
ELECTRICAL SITE PLAN

Project No.:	200-11740-10003
Designed By:	DAB
Drawn By:	TAC
Checked By:	DAB

E-1101

Bar Measures 1 inch

10/17/2014 10:26:49 AM - P:\HER\11740\200-11740-10003\CAD\SHEETFILES\INTAKE AND TRANSMISSION\RW-E-1101 ELECTRICAL SITE PLAN.DWG - CALZARETTA, TIMOTHY

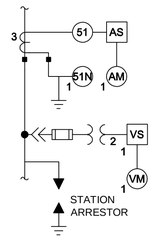


RWI-SWGR-1 AND RWI-SWGR-2 SINGLE-LINE

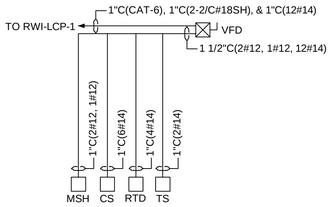
NO SCALE

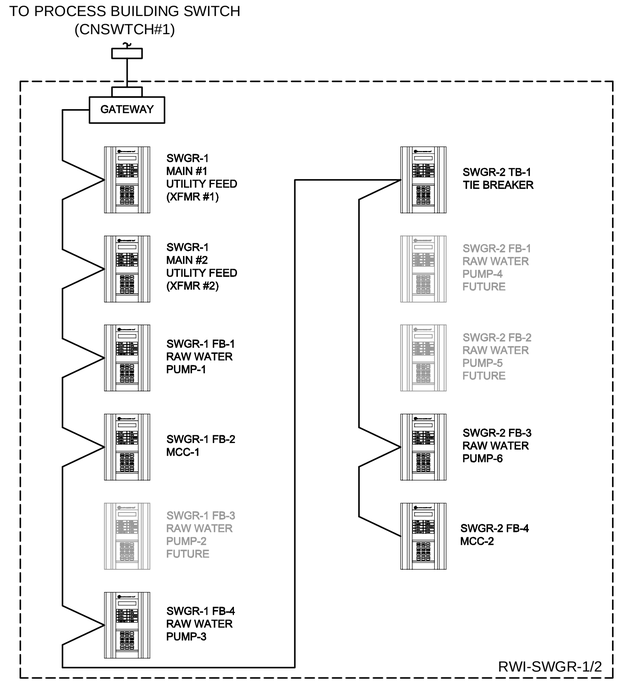
SPECIFIC NOTES:

1. PROTECTIVE RELAY METERING FOR INCOMING FEEDERS SHALL BE REPRESENTED AS FOLLOWS:



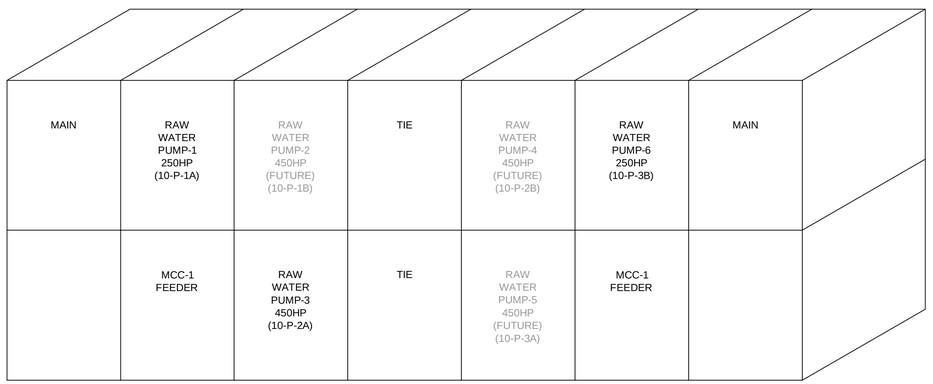
2. CONTROL WIRES BETWEEN VFD AND MOTOR SHALL BE REPRESENTED AS FOLLOWS:





RWI-SWGR-1 AND 2 POWER MONITORING NETWORK DIAGRAM

NO SCALE



RWI-SWGR-1 AND RWI-SWGR-2 FRONT VIEW

NO SCALE

NOTES:

1. PROVIDE 1" CONDUIT AND (5#14AWG) WIRE TO RWI-LCP-1
2. PROVIDE ETHERNET CAPABLE POWER QUALITY METER AND CONNECT TO SWITCH WITHIN RWI-LCP-1.

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ALABAMA LICENSED No. 21938 PROFESSIONAL ENGINEER DAVID ANDREW BARKER

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

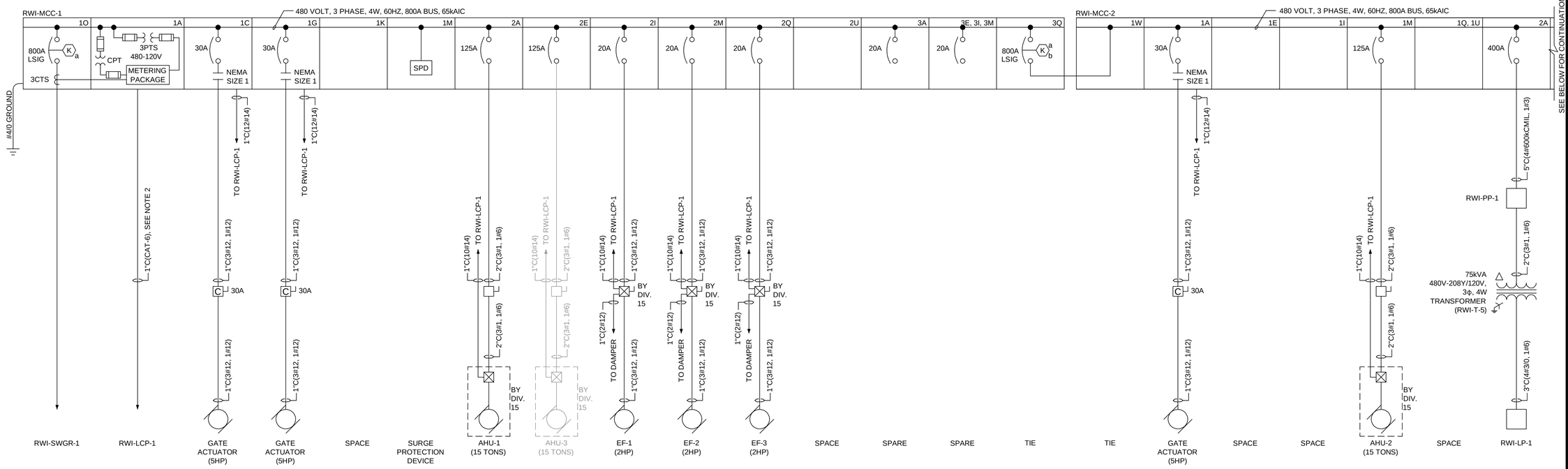
RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

INTAKE STRUCTURE SINGLE-LINE SWITCHGEAR

Project No.:	200-11740-10003
Designed By:	DAB
Drawn By:	TAC
Checked By:	DAB

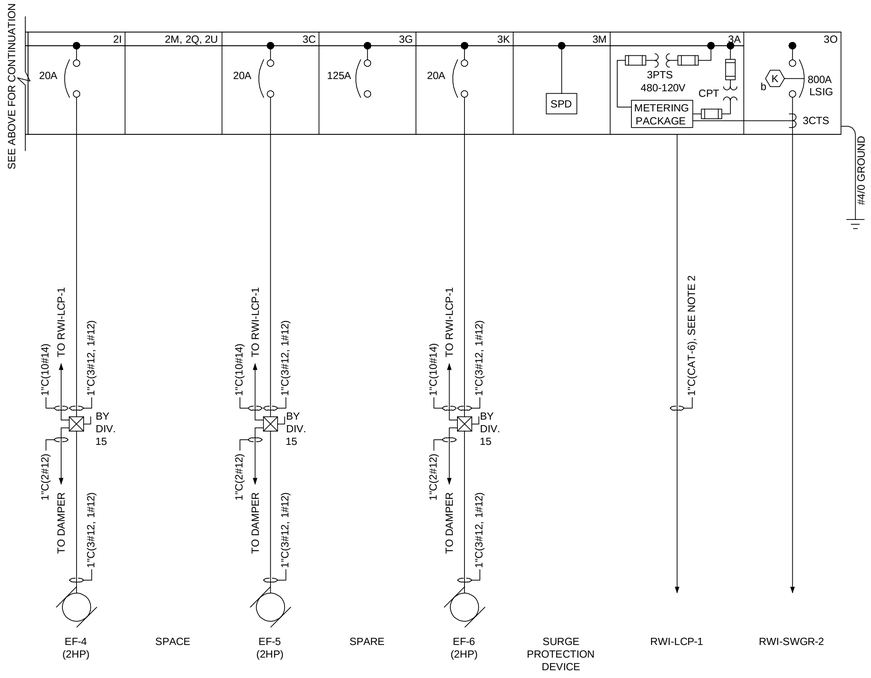
E-1201

Bar Measures 1 inch



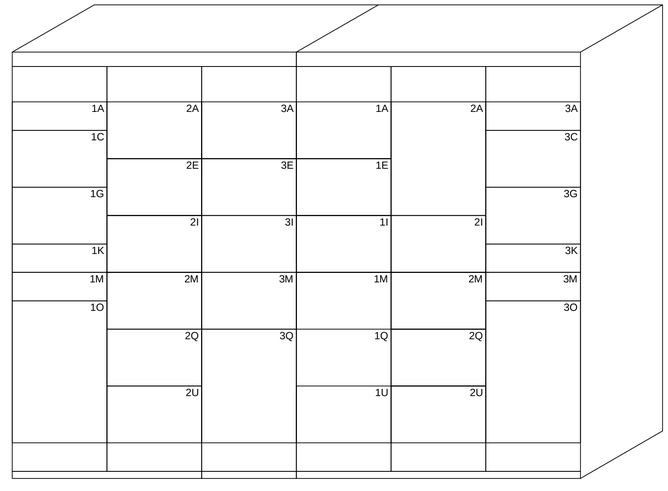
RWI-MCC-1 AND RWI-MCC-2 SINGLE-LINE

NO SCALE



RWI-MCC-1 AND RWI-MCC-2 SINGLE-LINE

NO SCALE



RWI-MCC-1 AND RWI-MCC-2 FRONT VIEW

NO SCALE

NOTES:

1. PROVIDE ETHERNET CAPABLE POWER QUALITY METER AND CONNECT TO SWITCH WITHIN RWI-LCP-1.

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BID SET

ALABAMA LICENSED No. 21938 PROFESSIONAL ENGINEER DAVID ANDREW BARKER

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

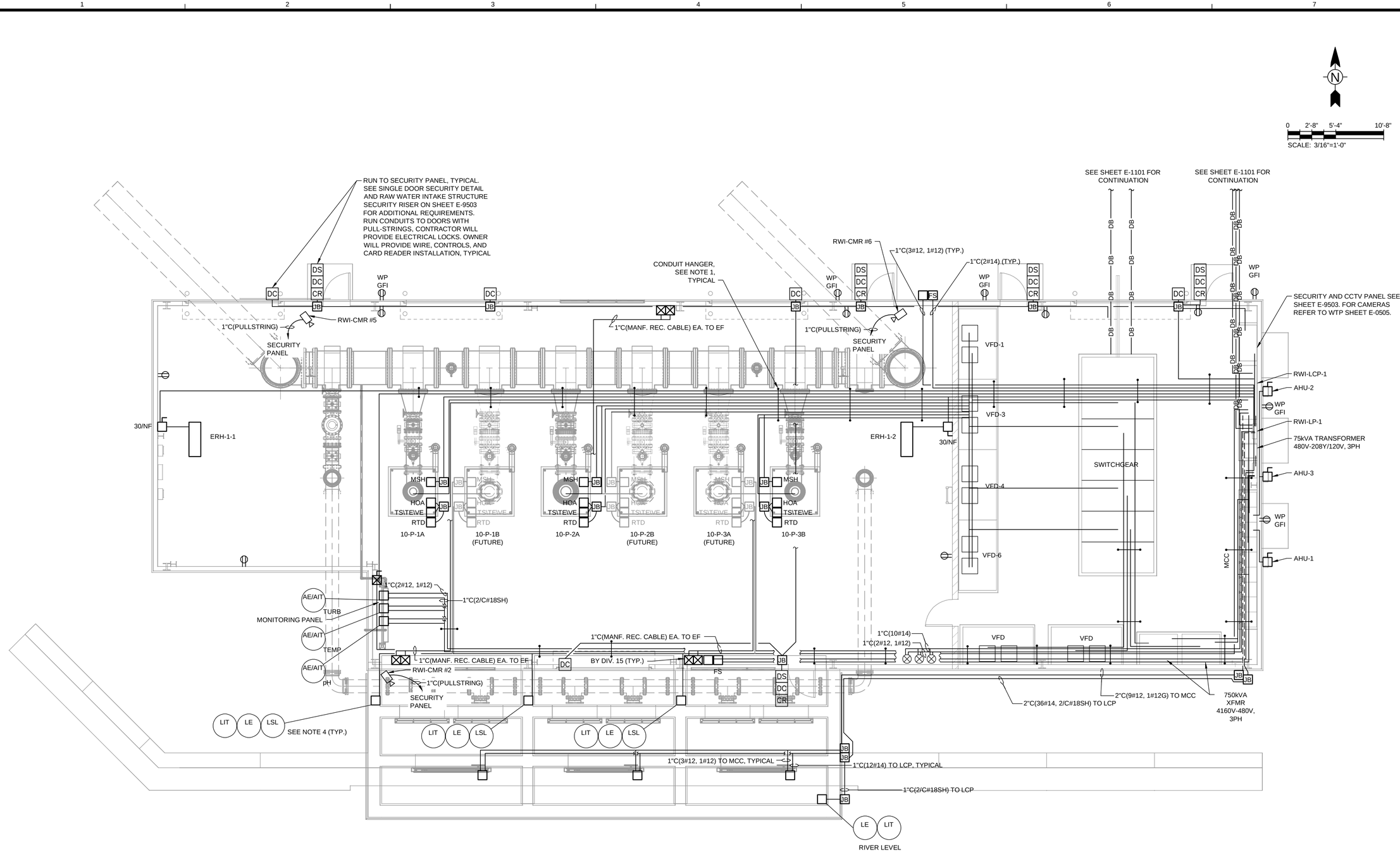
RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

INTAKE STRUCTURE SINGLE-LINE RWI MCC-1 & MCC-2

Project No.:	200-11740-10003
Designed By:	DAB
Drawn By:	TAC
Checked By:	DAB

E-1202

Bar Measures 1 inch



POWER PLAN

SCALE: 3/16"=1'-0"

NOTES:

1. ROUTE CONDUITS OVERHEAD. PROVIDE STEEL STRUT HANGERS ON ALL-THREAD, USE STAINLESS-STEEL THROUGHOUT. CONDUIT HANGERS SHALL COMPLY WITH N.E.C. FOR REQUIRED SUPPORT SPACING. SEE SHEET E-9503 FOR ADDITIONAL REQUIREMENTS.
2. TERMINATE FINAL 6'-0" WITH FLEX CONDUIT.
3. REFER TO SHEET E-1305 FOR CIRCUITING AND LOAD IDENTIFICATION
4. TRANSMITTER AND SENSOR LOCATED IN WET WELL BELOW, PROVIDE SLEEVED PENETRATION SEAL WITH NON-HARDENING ELECTRICIANS PUTTY. SEE DETAIL SHEET E-9504.

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BID SET

ALABAMA LICENSED No. 21938 PROFESSIONAL ENGINEER DAVID ANDREW BARKER

MARK	DATE	DESCRIPTION
A		
B		

HUNTSVILLE UTILITIES

RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

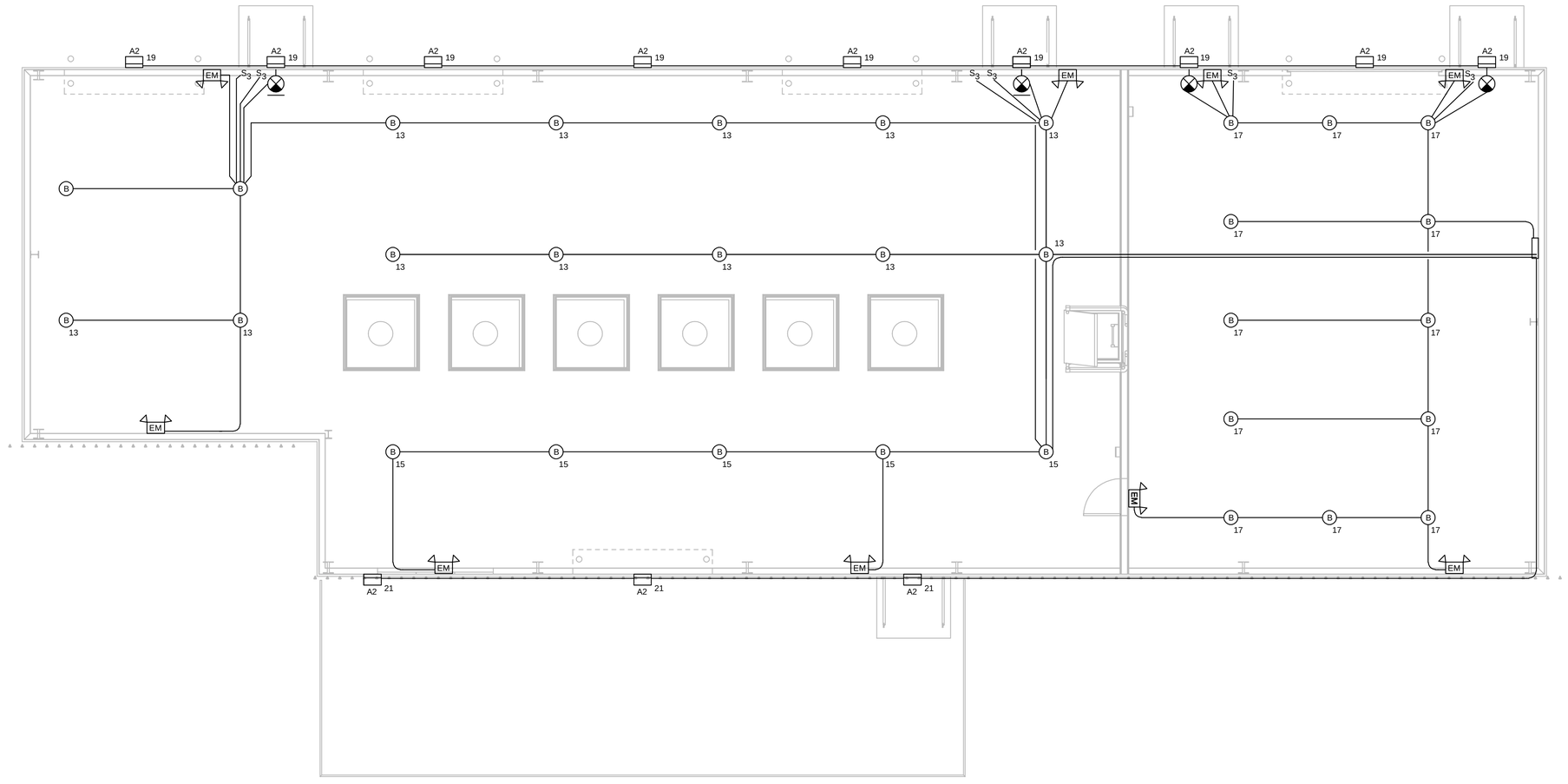
RAW WATER INTAKE STRUCTURE POWER PLAN

Project No.:	200-11740-10003
Designed By:	DAB
Drawn By:	TAC
Checked By:	DAB

E-1301

Sheet

Bar Measures 1 inch



LIGHTING PLAN

SCALE: 3/16"=1'-0"

0 2'-8" 5'-4" 10'-8"

SCALE: 3/16"=1'-0"

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BID SET

ALABAMA LICENSED No. 21938 PROFESSIONAL ENGINEER DAVID ANDREW BARKER

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

RAW WATER INTAKE STRUCTURE LIGHTING PLAN

Project No.:	200-11740-10003
Designed By:	DAB
Drawn By:	TAC
Checked By:	DAB

E-1302

Sheet

Bar Measures 1 inch

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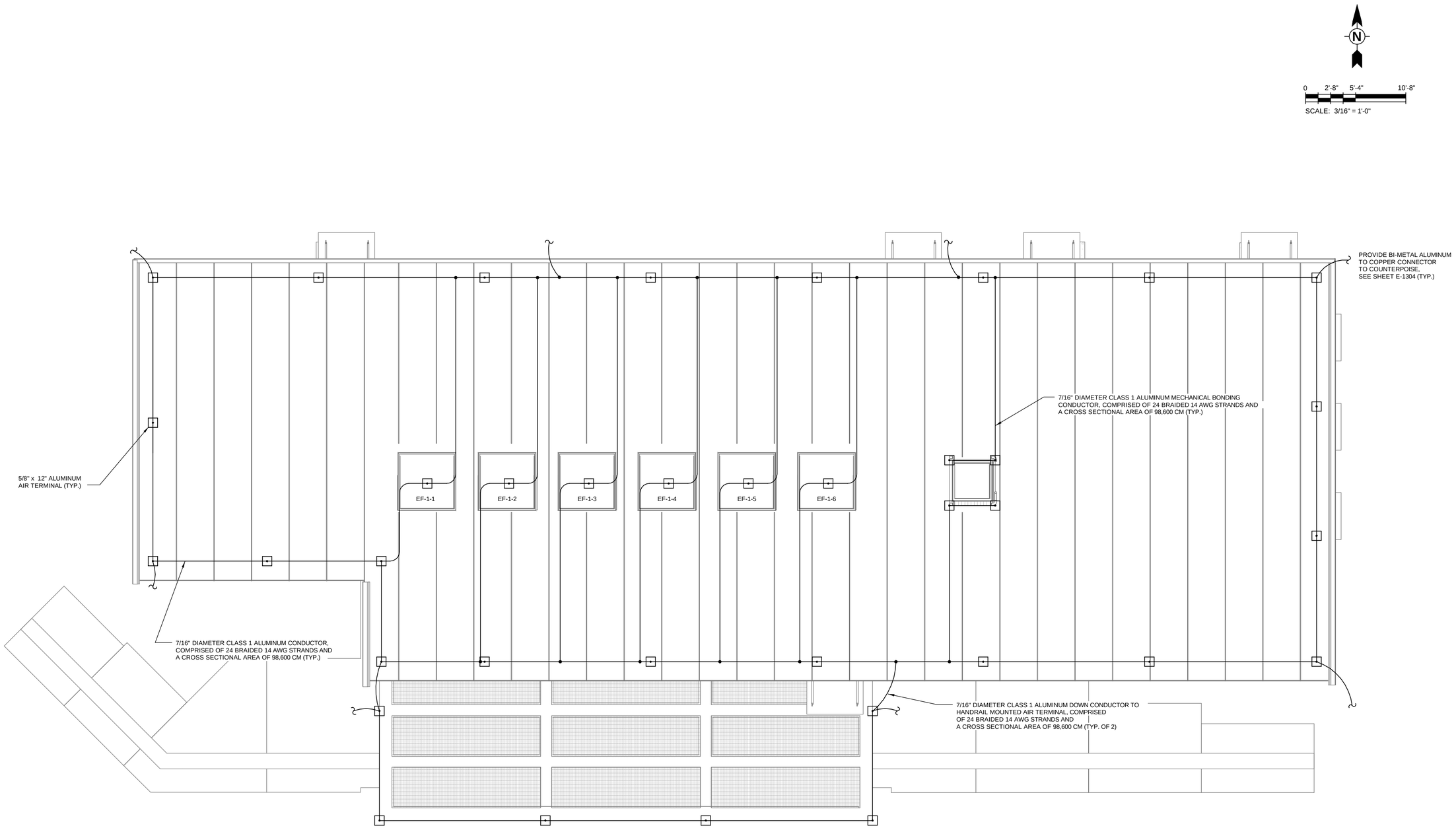

LIGHTNING PROTECTION

SCALE: 3/16" = 1'-0"

NOTES:
1. ROUTE DOWN CONDUCTORS WITHIN 1" PVC CONDUIT.

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BID SET

ALABAMA LICENSED No. 21938 PROFESSIONAL ENGINEER TIMOTHY ANDREW CALZARETTA

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

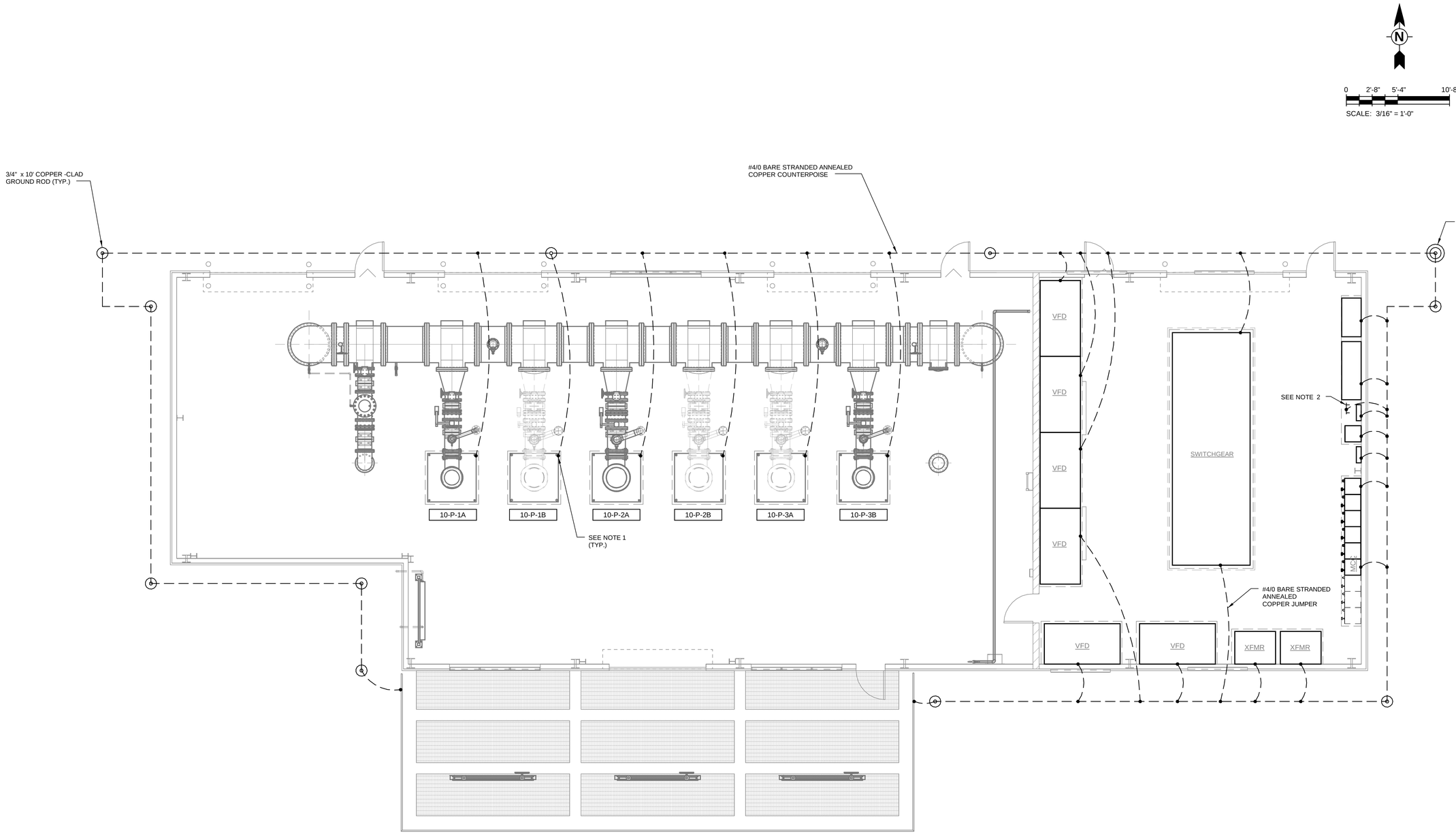
RAW WATER INTAKE STRUCTURE LIGHTNING PROTECTION

Project No.:	200-11740-10003
Designed By:	DAB
Drawn By:	TAC
Checked By:	DAB

E-1303

10/2/2014 1:00:24 PM C:\Users\tim.calzaretta\Documents\RW-11740-E-INTAKE_tim.calzaretta.rvt

Bar Measures 1 inch



GROUNDING PLAN

SCALE: 3/16" = 1'-0"

NOTES:
1. STUB-UP #4/0 JUMPER 36" AFF. PROVIDE MECHANICAL CONNECTOR FOR EQUIPMENT TO BE INSTALLED IN A LATER PHASE.
2. PROVIDE GROUND BAR BENEATH PANELBOARD, SEE GROUND BAR DETAIL ON SHEET E-9502 FOR ADDITIONAL REQUIREMENTS.

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BID SET

ALABAMA LICENSED No. 21938 PROFESSIONAL ENGINEER DAVID ANDREW BARKER

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

RAW WATER INTAKE STRUCTURE GROUNDING PLAN

Project No.:	200-11740-10003
Designed By:	DAB
Drawn By:	TAC
Checked By:	DAB

E-1304

10/2/2014 1:00:52 PM C:\Users\tim.calzaretta\Documents\RW-11740-E-INTAKE_tim.calzaretta.rvt

Bar Measures 1 inch

PANELBOARD: RWI-LP-1

SERVICE: 208/120V, 3 PH, 4 W + GND

BUS SIZE: 200A | **LOAD:** | **NOTES:**
MAIN DEVICE: 200A | **CONN 11.7 kVA**
SFC RATING: 10,000A | **DEM. 11.7 kVA** | **LOCATION:** INTAKE STRUCTURE ELECTRICAL ROOM
MOUNTING: SURFACE | **DEM. 32.4 Amps**

CKT #	TRIP/ POLE	NOTES	CIRCUIT DESCRIPTION	CONNECTED LOAD (VA) PHASE A		PHASE B		PHASE C		CIRCUIT DESCRIPTION	NOTES	TRIP/ POLE	CKT #
1	20/1		TURBIDITY METER	120	120					SECURITY PANEL		20/1	2
3	20/1		pH /TEMP METER			120	750			PLC CONTROL PANEL		20/1	4
5	20/1		LE/LIT							SPARE		20/1	6
7	20/1		LE/LIT	120	1,920					LCP-1		20/1	8
9	20/1		LE/LIT			120	0			SPARE		20/1	10
11	40/1		SPARE					0	0	SPARE		20/1	12
13	20/1		LIGHTS - PUMP ROOM	1,204	0					SPARE		20/2	14
15	20/1		LIGHTS - PUMP ROOM			1,032	0						16
17	20/1		LIGHTS - ELEC ROOM					1,720	0	SPARE		20/2	18
19	20/1		LIGHTS - EXT FLOOD	1,260	0								20
21	20/1		LIGHTS - EXT FLOOD			420	900			RECEPTA CLES PUMP ROOM		20/1	22
23	20/1		LIGHTS - SITE					420	360	RECEPTA CLES - ELEC ROOM		20/1	24
25	20/1		SPARE		1,080					RECEPTA CLES - EXTERIOR		20/1	26
27	20/1		SPARE				0			SPARE		20/1	28
29	20/1		SPARE						0	SPARE		20/1	30
31	20/1		SPARE							SPARE		20/1	32
33	20/1		SPARE							SPARE		20/1	34
35	20/1		SPARE							SPARE		20/1	36
37			SPACE										38
39			SPACE							SURGE PROTECTION DEVICE		30/3	40
41			SPACE										42
TOTAL CONNECTED LOADS:				2,704	3,120	1,692	1,650	2,140	360				

PANELBOARD: RWI-PP-1

SERVICE: 480/277V, 3 PH, 4 W + GND

BUS SIZE: 400A | **LOAD:** | **NOTES:**
MAIN DEVICE: 400A | **CONN. 57.6 kVA**
SFC RATING: 22,000AIC | **DEM. 64.6 kVA** | **LOCATION:** INTAKE STRUCTURE ELECTRICAL ROOM
MOUNTING: RECESSED | **DEM. 69.3 Amps**

CKT #	TRIP/ POLE	NOTES	CIRCUIT DESCRIPTION	CONNECTED LOAD (VA) PHASE A		PHASE B		PHASE C		CIRCUIT DESCRIPTION	NOTES	TRIP/ POLE	CKT #
1				10,624									2
3	110/3		PANEL RWI-LP-1			9,162				SPARE		20/3	4
5			VIA RWI-T-5					10,780					6
7				4,500									8
9	20/3		ERH-1-1			4,500				SPARE		20/3	10
11								4,500					12
13				4,500									14
15	20/3		ERH-1-2			4,500				SPACE			16
17								4,500					18
19													20
21	20/3		SPARE							SPACE			22
23													24
25													26
27	20/3		SPARE							SPACE			28
29													30
31													32
33			SPACE							SPACE			34
35													36
37													38
39			SPACE							SPACE			40
41													42
TOTAL CONNECTED LOADS:				19,624	0	18,162	0	19,780	0				

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ALABAMA LICENSED No. 21938 PROFESSIONAL ENGINEER DAVID ANDREW BURMER

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

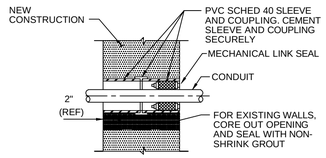
RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

PANEL SCHEDULES

Project No.:	200-11740-10003
Designed By:	DAB
Drawn By:	TAC
Checked By:	DAB

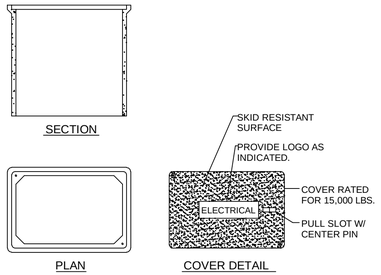
E-1305

Bar Measures 1 inch



EXTERIOR WALL CONDUIT SLEEVE DETAIL

NO SCALE DO NOT USE BELOW GRADE



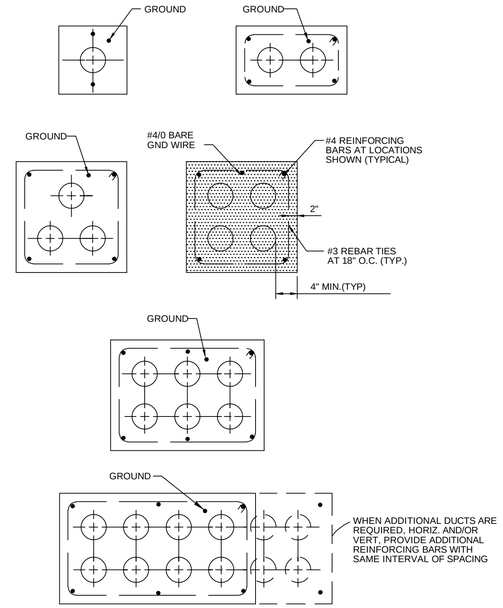
NOTES:

1. HANDHOLES FOR LOW VOLTAGE CABLES INSTALLED IN PARKING LOTS, SIDEWALKS, AND TURFED AREAS SHALL BE FABRICATED FROM AN AGGREGATE CONSISTING OF SAND AND WITH CONTINUOUS WOVEN GLASS STRANDS HAVING AN OVERALL COMPRESSIVE STRENGTH OF AT LEAST 10,000 PSI AND A FLEXURAL STRENGTH OF AT LEAST 5,000 PSI. PULLBOX AND HANDHOLE COVERS IN SIDEWALKS, AND TURFED AREAS SHALL BE OF THE SAME MATERIAL AS THE BOX. CONCRETE PULLBOXES SHALL CONSIST OF PRECAST REINFORCED CONCRETE BOXES, EXTENSIONS, BASES, AND COVERS.
2. IN PAVED AREAS, FRAMES AND COVERS FOR HANDHOLE ENTRANCES IN VEHICULAR TRAFFIC AREAS SHALL BE FLUSH WITH THE FINISHED SURFACE OF THE PAVING. IN UNPAVED AREAS, THE TOP OF MANHOLE COVERS SHALL BE APPROXIMATELY 1/2" ABOVE THE FINISHED GRADE.

QUAZITE COMPOSOLITE OR EQUAL

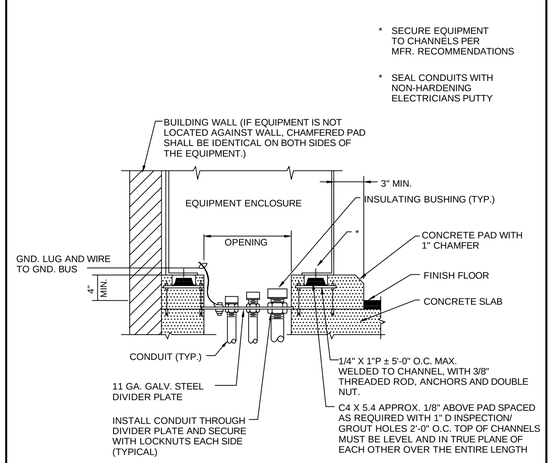
HANDHOLE DETAIL

NO SCALE



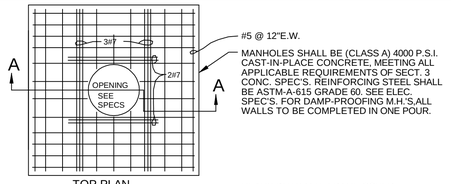
UNDERGROUND DUCT SECTIONS

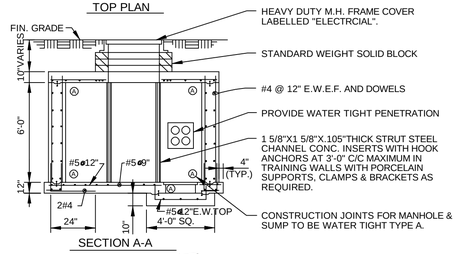
NO SCALE

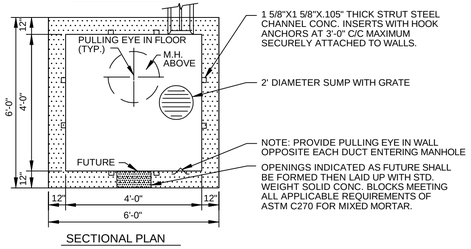


INTERIOR PAD MOUNTED EQUIPMENT DETAIL

NO SCALE

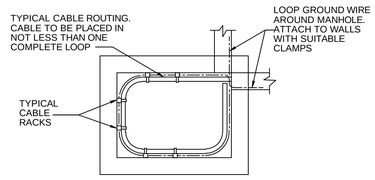






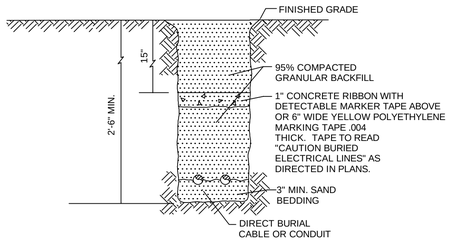
TYPICAL SINGLE MANHOLE DETAILS

NO SCALE HIGH WATER TABLE APPLICATION



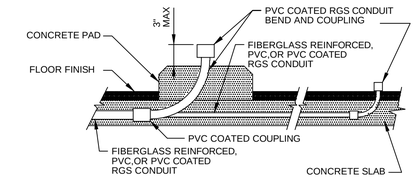
CABLE ROUTING & PULLING EYE DETAIL

NO SCALE



TRENCHING WITH CONCRETE COVER DETAIL

NO SCALE



NOTE:
PVC COATED CONDUIT BENDS AND FITTINGS SHALL BE USED WHERE CONCEALED CONDUIT RUNS ARE STUBBED UP FROM THE SLAB. RISERS ON POLES SHALL BE PVC COATED RGS INCLUDING WEATHERHEADS.

CONDUIT STUB-UP DETAIL

NO SCALE

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BID SET

ALABAMA LICENSED No. 21938 PROFESSIONAL ENGINEER TIMOTHY ANDREW CALZARETTA

MARK	DATE	DESCRIPTION	BY

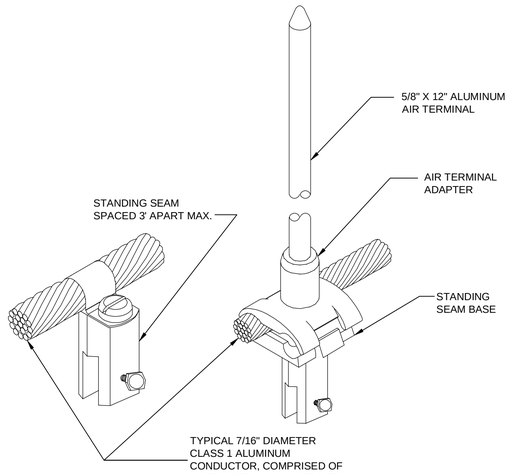
HUNTSVILLE UTILITIES
RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES
ELECTRICAL DETAILS

Project No.:	200-11740-10003
Designed By:	DAB
Drawn By:	TAC
Checked By:	DAB

E-9501

Bar Measures 1 inch

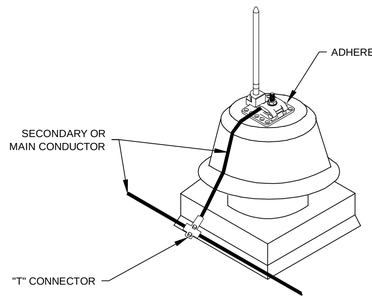
10/17/2014 10:28:08 AM - P:\HER\11740\200-11740-10003\CAD\SHEETFILES\INTAKE AND TRANSMISSION\RW-E-9501_E-9505 ELECTRICAL DETAILS.DWG - CALZARETTA, TIMOTHY



NOTES:
1. ANY MATERIAL THAT COMES IN CONTACT WITH THE ROOF (DEVICES, ADHESIVES, ETC.) SHALL BE APPROVED BY THE ROOFING SUBCONTRACTOR TO MAINTAIN ROOFING INTEGRITY AND WARRANTY. LIGHTNING PROTECTION SUBCONTRACTOR TO PROVIDE DOCUMENTATION OF ROOFING SUBCONTRACTOR'S ACCEPTANCE OF REQUIRED DEVICES.

STANDING SEAM LIGHTNING PROTECTION DETAIL

NO SCALE



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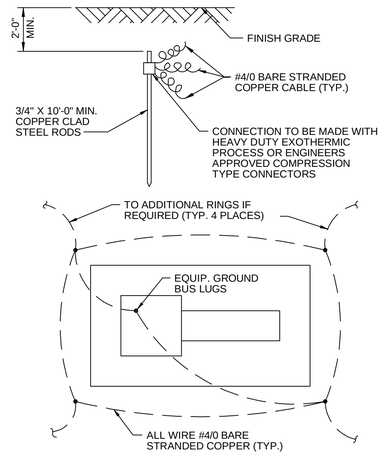
2. IF METAL IS LESS THAN 3/16" THICK FULL PROTECTION IS REQUIRED.

MECHANICAL EQUIPMENT GROUNDING DETAIL

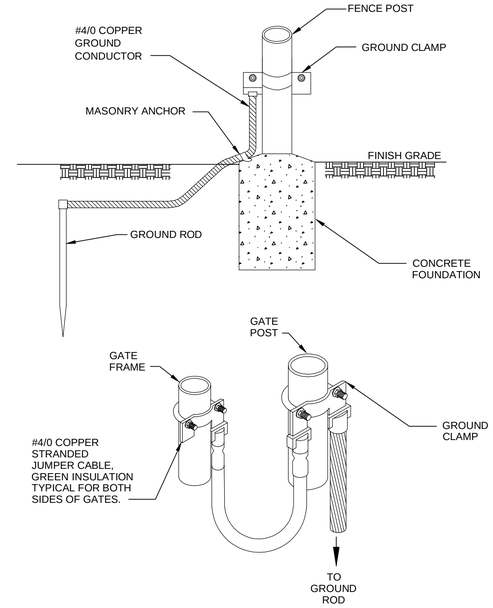
NO SCALE



NOTES:
1. ADDITIONAL CONCENTRIC RINGS SHALL BE ADDED AS REQUIRED TO MEET THE (5) OHM SPECIFIED RESISTANCE. EACH RING TO HAVE 4 GROUND RODS AND SPACED 10 FEET FROM THE INNER RING.

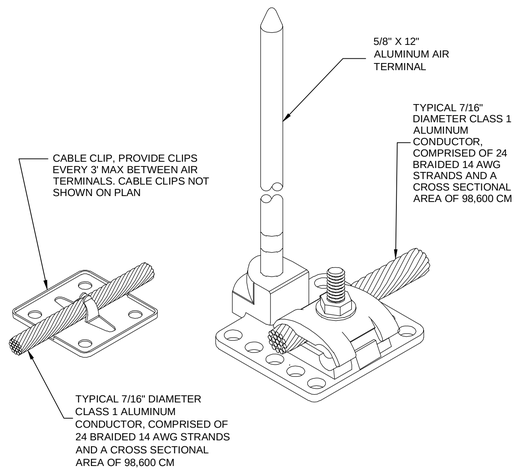
GROUND MAT DETAIL

NO SCALE



FENCE POST/GATE BONDING DETAIL

NO SCALE



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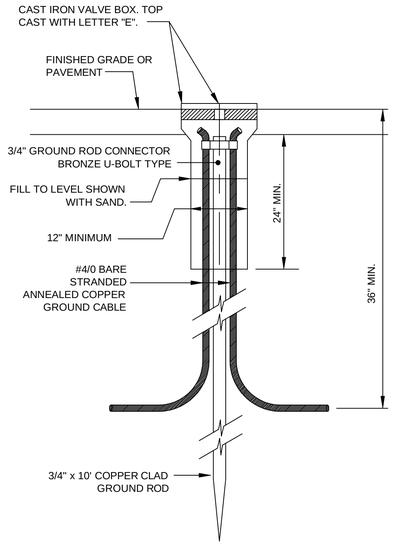
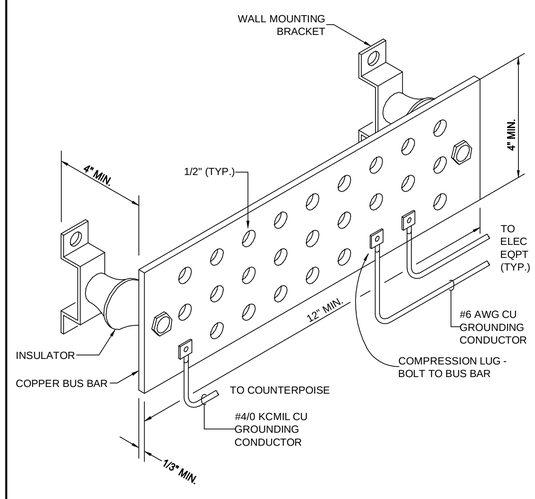
AIR TERMINAL AND BASE DETAIL

NO SCALE



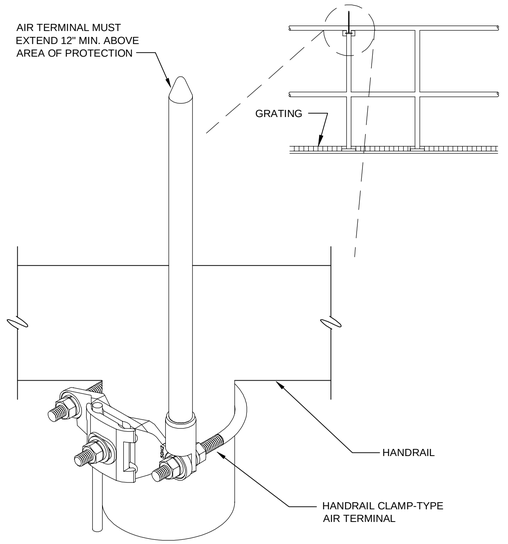
GROUND ROD INSPECTION AND TEST WELL INSTALLATION DETAIL

NO SCALE



GROUND BAR DETAIL

NO SCALE



HANDRAIL MOUNTED AIR TERMINAL DETAIL

NO SCALE

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www.tetratech.com
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HUNTSVILLE, ALABAMA 35806
PHONE: (256) 424-4077 FAX: (256) 424-4097

BID SET

ALABAMA LICENSED No. 21938 PROFESSIONAL ENGINEER TIMOTHY ANDREW CALZARETTA

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

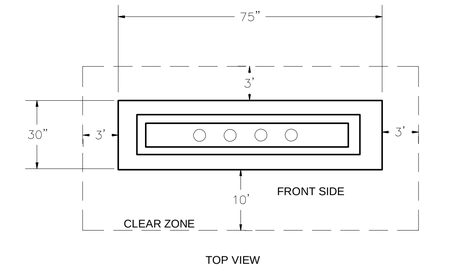
RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

ELECTRICAL DETAILS

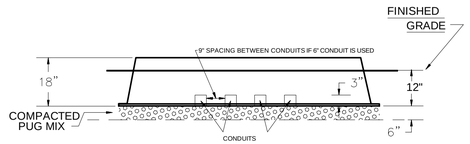
Project No.:	200-11740-10003
Designed By:	DAB
Drawn By:	TAC
Checked By:	DAB

E-9502

Bar Measures 1 inch



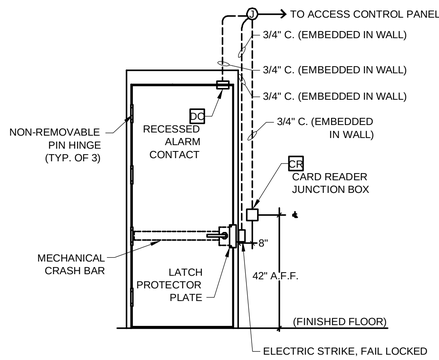
TOP VIEW



NOTE:
1. BOTTOM OF BASE TO BE BURIED 12" BELOW FINISHED GRADE.
2. CONDUIT TO BE STUBBED UP 3 INCHES ABOVE COMPACTED PUG MIX.
3. UNIT TO BE PLACED ON A 6 INCH COMPACTED PUG MIX BASE.
4. UNIT TO BE UPRIGHT AND PLUMB.
5. FOR NUMBER AND SIZE OF CONDUITS, CONSULT JOB DRAWING. AT FINISHED GRADE.

THREE PHASE SECTIONALIZING CABINET MOUNTING BASE DETAIL

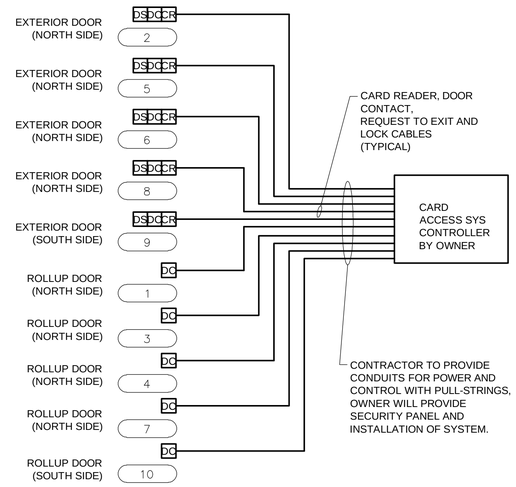
NO SCALE



NOTE:
THE OWNER WILL PROVIDE THE WIRING, CARD READER AND SECURITY PANEL INSTALLATION, CONTRACTOR TO PROVIDE CONDUITS WITH PULL-STRINGS.

SINGLE DOOR SECURITY DETAIL

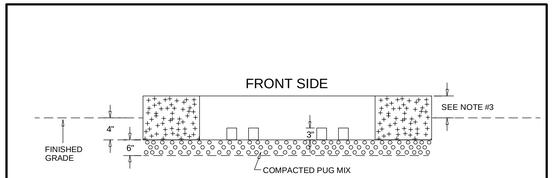
NO SCALE

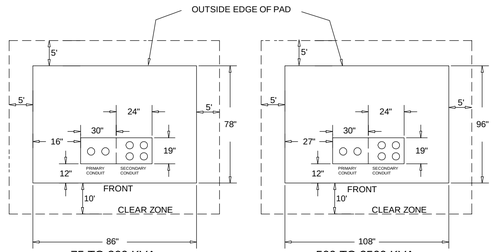


NOTE:
THE OWNER WILL PROVIDE THE WIRING, CARD READER AND SECURITY PANEL INSTALLATION, CONTRACTOR TO PROVIDE CONDUITS WITH PULL-STRINGS.

RAW WATER INTAKE STRUCTURE SECURITY RISER

NO SCALE



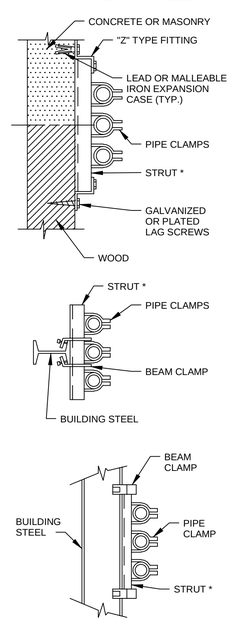


NOTES:
1. FOR NUMBER AND SIZE OF PRIMARY CONDUITS, CONSULT JOB DRAWING. MORE THAN SIX SECONDARY CONDUITS REQUIRES SPECIAL PERSISSION HUNTSVILLE UTILITIES
2. PADS MUST HAVE A BRUSHED OUTSIDE FINISH.
3. HEIGHT OF PAD WILL BE DETERMINED AT INITIAL JOB MEETING.
4. REBAR REQUIRED PER SPEC #UP-7.
5. GUARD POSTS MAY BE REQUIRED (AS DETERMINED BY A HUNTSVILLE UTILITES REPRESENTATIVE) SEE SPEC GP-1
6. NO SECONDARY CABLES MAY BE PULLED UNTIL TRANSFORMER IS PLACED.

TRANSFORMER PAD DETAIL

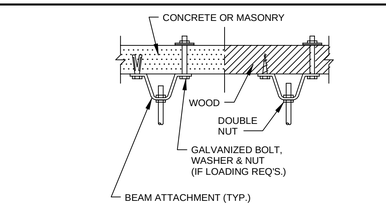
NO SCALE

NOTE: * = STRUT SHALL HAVE A MIN. THICKNESS OF .105 INCH OR 12 GA.

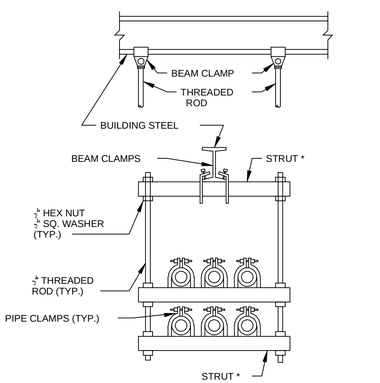


CONDUIT - VERTICALLY STACKED AND VERTICAL RUNS

NO SCALE



NOTE: * = STRUT SHALL HAVE A MIN. THICKNESS OF .105 INCH OR 12 GA.



CONDUIT - HORIZ. RACKED SUSPENDED RUN

NO SCALE

TETRA TECH
www.tetratech.com
101 QUALITY CIRCLE, SUITE 140
HUNTSVILLE, ALABAMA 35806
PHONE: (256) 424-4077 FAX: (256) 424-4097

BID SET

ALABAMA LICENSED No. 21938 PROFESSIONAL ENGINEER DAVID ANDREW BARKER

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

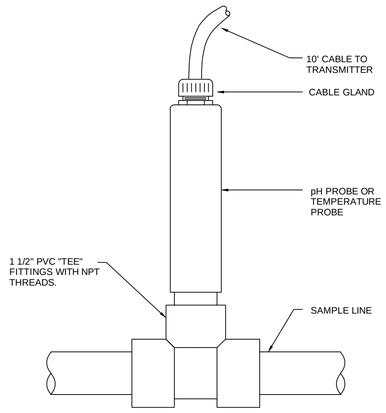
RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

ELECTRICAL DETAILS

Project No.:	200-11740-10003
Designed By:	DAB
Drawn By:	TAC
Checked By:	DAB

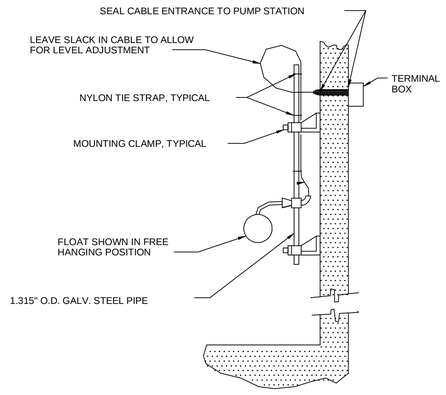
E-9503

Bar Measures 1 inch



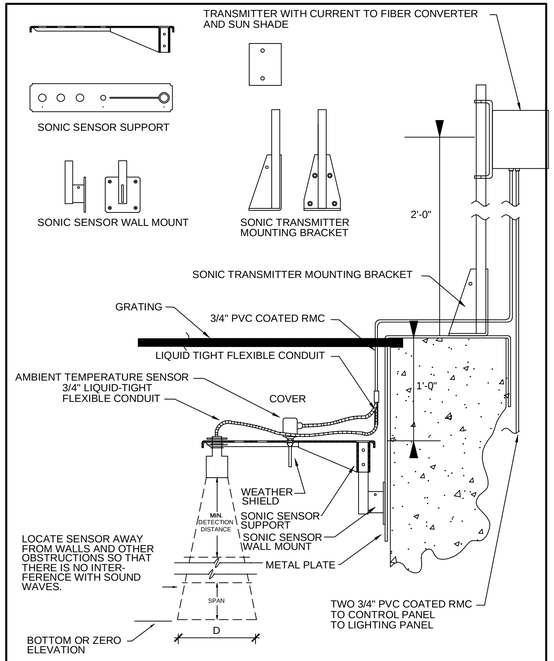
pH PROBE & TEMPERATURE PROBE MOUNTING DETAIL (IN-LINE TYPE)

NO SCALE



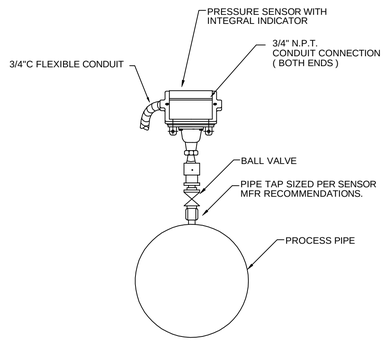
CORD TYPE-SINGLE FLOAT SWITCH

NO SCALE



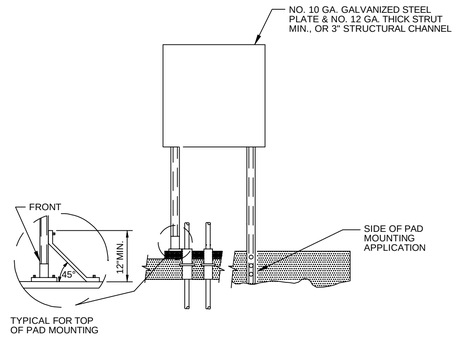
SONIC LEVEL SENSOR

NO SCALE



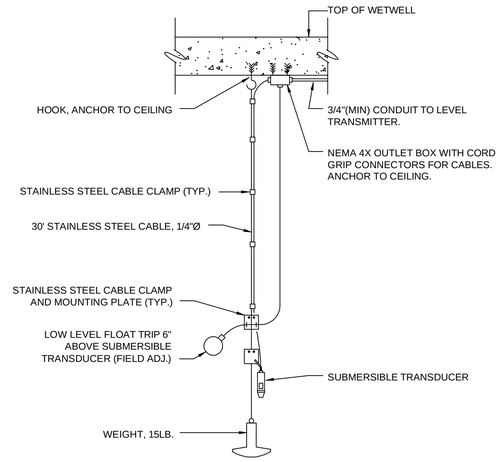
PRESSURE SENSOR DETAIL

NO SCALE



RACK MOUNTED EQUIPMENT DETAIL

NO SCALE



SUBMERSIBLE LEVEL SENSOR DETAIL

NO SCALE

TETRA TECH
www.tetratech.com
101 QUALITY CIRCLE, SUITE 140
HUNTSVILLE, ALABAMA 35806
PHONE: (256) 424-4077 FAX: (256) 424-4097

BID SET

ALABAMA LICENSED No. 21938 PROFESSIONAL ENGINEER DAVID ANDREW BARKER

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

ELECTRICAL DETAILS

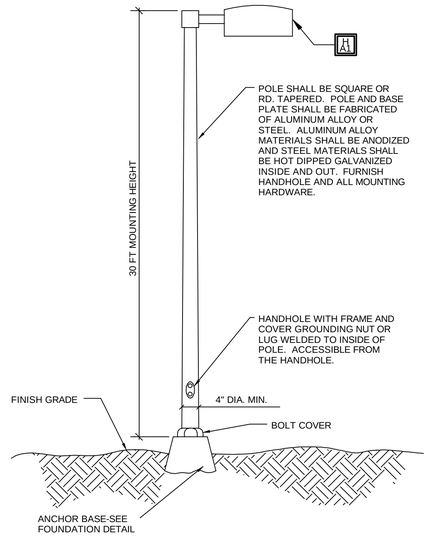
Project No.:	200-11740-10003
Designed By:	DAB
Drawn By:	TAC
Checked By:	DAB

E-9504

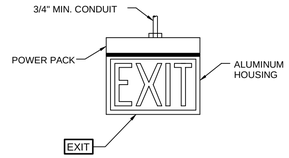
Bar Measures 1 inch

LUMINAIRE SCHEDULE

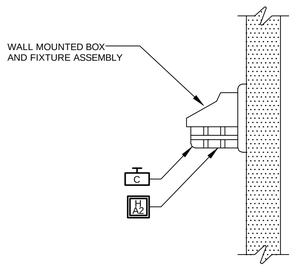
SYMBOL	DESCRIPTION	MOUNTING	LAMPS			MANUFACTURERS (OR EQUAL)	
			NO.	WATTAGE	TYPE	NAME	MODEL OR SERIES
H A1	60 HIGH BRIGHTNESS LED'S SITE LIGHT MOUNTED VIA A MOUNTING ARM TO A 30' POLE WITH PHOTOCELL, RATED NEMA 4X OR IP66	POLE	60	140W	LED	SPAULDING -	CL1-A-60L-U-5K-4-DB AND SSS-30-60-A2-DB -
H A2	60 HIGH BRIGHTNESS LED'S, WALL-MOUNTED FLOODLIGHT, RATED NEMA 4X OR IP66	SURFACE - WALL	60	140W	LED	SPAULDING -	CL1-A-60L-U-5K-4-DB -
B	36 LEDs, RATED IP-65, 92-100 LUMENS PER WATT, AND CAST ALUMINUM HOUSING FIXTURE	SURFACE - CEILING	36	86W	LED	SEDONA -	SCP-36L-U-5K-5M -
C	EXTERIOR CAST ALUMINUM WALL PACK, WITH GLASS REFRACTOR, AND PHOTOCELL	SURFACE - WALL	9	21W	LED	HUBBELL -	LNC-9LU-5K-4-1 -
	WET LOCATION, RATED NEMA 4X OR IP66, DIE-CAST ALUMINUM HOUSING, WHITE, NI-CAD BATTERY	SURFACE - WALL	-	3.2W	LED	DUAL LITE -	SEWLDRWE-4X -
EM	EMERGENCY LIGHT UNIT, WALL MOUNTED, SEALED & GASKETED, TIME DELAY, RATED NEMA 4X OR IP66	SURFACE - WALL	4	30W	LED	DUAL LITE -	PG-W -



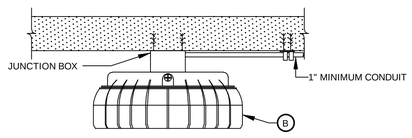
SITE LIGHT DETAIL
NO SCALE



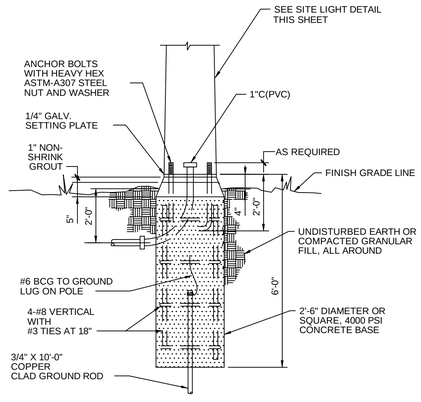
EXIT SIGN
NO SCALE
SIDE, BACK, CEILING OR PENDANT MOUNTING DETAIL



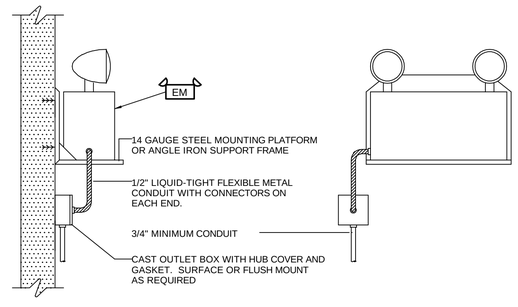
VAPORTIGHT WEATHER PROOF FIXTURE
NO SCALE WALL MOUNTING DETAIL



CEILING MOUNTED LED LIGHT DETAIL
NO SCALE



STANDARD POLE FOUNDATION DETAIL
NO SCALE



EMERGENCY LIGHT MOUNTING DETAIL
NO SCALE

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BID SET

ALABAMA LICENSED No. 21938 PROFESSIONAL ENGINEER TIMOTHY ANDREW CALZARETTA

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES
RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES
ELECTRICAL DETAILS

Project No.:	200-11740-10003
Designed By:	DAB
Drawn By:	TAC
Checked By:	DAB

E-9505

Bar Measures 1 inch

GRAPHIC SYMBOL FOR INSTRUMENTATION ITEMS

	DEVICE MOUNTED ON PANEL		CONTROL RELAY CONTACT-NORMALLY OPEN
	BOARD OR PANEL MOUNTED DEVICE- DEVICE MOUNTED INSIDE PANEL		CONTROL RELAY CONTACT-NORMALLY CLOSED
	FIELD OR LOCALLY MOUNTED DEVICE		LIGHTNING ARRESTOR
	PROGRAMMED FUNCTION NOT NORMALLY ACCESSIBLE TO OPERATOR	ETI	ELAPSED TIME INDICATOR
	PROGRAMMED FUNCTION ACCESSIBLE THROUGH OPERATOR'S INTERFACE DEVICE	T	TIMING RELAY COIL
	COMPUTER SYSTEM INPUT OR OUTPUT POINT	T	TIMED RELAY COIL (OFF-DELAY)
	INTERLOCKING	G	INDICATING LIGHT
XOR	EXCLUSIVE OR		PUSH-TO-TEST INDICATING LIGHT
A	ALTERNATOR		BATTERY
OR	OR	X1 X2	SECONDARY TRANSFORMER
AND	AND		VARIABLE RESISTOR
S	MOTOR STARTER		RESISTOR
P	PURGE		MOLDED CASE CIRCUIT BREAKER
L	COMPLEX LOGIC		SPEED SWITCH
	COMPUTER LOGIC SYSTEM		MOMENTARY PUSHBUTTON OPERATOR- NORMALLY CLOSED
	TERMINAL OR TRANSITION POINT		MOMENTARY PUSHBUTTON OPERATOR- NORMALLY OPEN
	FLOAT SWITCH		SELECTOR SWITCH-NORMALLY OPEN
	PARSHALL FLUME		PUSHBUTTON OPERATOR WITH MUSHROOM HEAD
	MIXER		SOLENOID OR CLUTCH
	SEAL		THERMAL OVERLOAD
	OFF PAGE CONNECTOR		A-C SURGE PROTECTOR
	PROCESS MACHINERY MOTOR		HORN
	VENTURI OR INSERT FLOW TUBE	(F)	FIELD LOCATED
	IN-LINE FLOW ELEMENT (PROPELLER TYPE)		TERMINAL POINT
	IN-LINE FLOW ELEMENT (MAGNETIC TYPE)		TERMINAL POINT ARROW
	IN-LINE FLOW ELEMENT (ULTRA SONIC)		LOW VOLTAGE FUSE
	FLOW ORIFICE		CIRCUIT BREAKER WITH STAB CONNECTION
	TURBIDIMETER		CONTROL POWER TRANSFORMER
	ROTAMETER	CR L	TWO COIL LATCHING RELAY
	PUMP	CR U	
	BLOWER	Y	RECEPTACLE
	GENERAL USE DISCONNECTING SWITCH		SELECTOR SWITCH OPERATOR WITH FUNCTION SHOWN
	TIMED CLOSED CONTACT ON ENERGIZATION		
	TIMED OPEN CONTACT ON ENERGIZATION		MAINTAINED PUSH-PULL OPERATOR
	TIMED OPEN CONTACT ON DE-ENERGIZATION		
	TIMED CLOSED CONTACT ON DE-ENERGIZATION		MAINTAINED STOP-START PUSHBUTTON OPERATOR
	FLOAT ACTUATED SWITCH-NO		
	FLOAT ACTUATED SWITCH-NC		LIMIT SWITCH - NORMALLY OPEN - HELD CLOSED
	PRESSURE ACTUATED SWITCH-NC		LIMIT SWITCH - NORMALLY CLOSED - HELD OPEN
	PRESSURE ACTUATED SWITCH-NO		LIMIT SWITCH - NORMALLY CLOSED
	FLOW ACTUATED SWITCH-NO		DIODE RECTIFIER OR D-C SURGE PROTECTOR
	FLOW ACTUATED SWITCH-NC		DIGITAL INPUT
	TEMPERATURE SWITCH-NO		DIGITAL OUTPUT
	TEMPERATURE SWITCH-NC		ANALOG INPUT
	LIMIT SWITCH - NORMALLY OPEN		ANALOG OUTPUT

GRAPHIC SYMBOLS FOR VALVES

SYMBOL	DESCRIPTION
	STROKE OR POSITION ACTUATOR CYLINDER (OPEN-SHUT)
	STROKE OR POSITION ACTUATOR CYLINDER (THROTTLING)
	PNEUMATIC DIAPHRAGM OR POSITIONER (OPEN-SHUT)
	PNEUMATIC DIAPHRAGM OR POSITIONER (THROTTLING)
M	MOTOR OPERATED (THROTTLING)
M	MOTOR OPERATED (OPEN-SHUT)
	SLIDE-STOP GATE
	SLUICE GATE
	AIR SET ASSEMBLY
	BALL VALVE
	GLOBE VALVE
	GATE VALVE OR KNIFE GATE
	CHECK VALVE
	PLUG VALVE
	BUTTERFLY VALVE, DAMPER OR LOUVER
S	TWO-WAY SOLENOID VALVE OPERATOR
S	ELECTRONICALLY CONTROLLED CHECK VALVE
S D	TWO-WAY SOLENOID VALVE OPERATOR-DETENTED
S	THREE-WAY SOLENOID VALVE OPERATOR
S	FOUR-WAY SOLENOID VALVE OPERATOR

ABBREVIATIONS

SYMBOL	DESCRIPTION
R	RESET
T	TRIP
AS	AIR SUPPLY
DO	DISSOLVED OXYGEN
GS	GAS SUPPLY
HS	HYDRAULIC SUPPLY
NS	NITROGEN SUPPLY
ORP	OXYGEN REDUCTION POTENTIAL
SS	STEAM SUPPLY
SP	SET POINT
WS	WATER SUPPLY
PV	PROCESS VARIABLE
F.O.	FAIL OPEN
F.C.	FAIL CLOSE
%	GAIN OR PROPORTIONAL CONTROL
∫	INTEGRAL OR RESET CONTROL
D	DERIVATIVE OR RATE CONTROL
V	VELOCITY ALGORITHM
1-0	ON-OFF CONTROL
√	SQUARE ROOT EXTRACTOR
Σ	ADD OR TOTALIZE
Δ	SUBTRACT OR DIFFERENCE
>	HIGHEST MEASURED VARIABLE
<	LOWEST MEASURED VARIABLE
E/I , I/P	CONVERT ONE TO ANOTHER
X , ÷	MULTIPLY , DIVIDE
	BIAS OR REVERSING
f(x)	CHARACTERIZE - (EQUATION / ID,%/ETC.)

INSTRUMENTATION LINE SYMBOLS

SYMBOL	DESCRIPTION
	ELECTRICAL SIGNAL
	AIR LINE
	HYDRAULIC SIGNAL
	ELECTROMAGNETIC OR SONIC SIGNAL
	SOFTWARE SIGNAL
	CONNECTION TO PROCESS, OR MECHANICAL LINK

I.S.A. STANDARD LETTER FUNCTIONS

SYMBOL	FIRST LETTER	SUCEEDING LETTERS
A	ANALYSIS , ANALOG	ALARM
B	BURNER , FLAME	BATCH
C	CONDUCTIVITY , COMMAND	CONTROL (FEEDBACK TYPE)
D	DENSITY , SPECIFIC GRAVITY	
E	VOLTAGE	PRIMARY ELEMENT, VOLTAGE
F	FLOW RATE	RATIO
G	GAGING	GLASS
H	HAND , MANUAL	HIGH
I	CURRENT	INDICATE
J	POWER	SCAN
K	TIME , TIME SCHEDULE	CONTROL (NO FEEDBACK)
L	LEVEL , LIGHT	LOW
M	MOISTURE , HUMIDITY	MIDDLE , MODULATE
N		
O	OVERLOAD	ORIFICE
P	PRESSURE , VACUUM	POINT
Q	QUANTITY	TOTALIZE , INTEGRATE
R	RADIOACTIVITY	RECORD , PRINT , RECEIVE
S	SPEED , FREQUENCY , SOLENOID	SWITCH
T	TEMPERATURE , TURBIDITY	TRANSMIT , TRANSFORM
U	MULTIVARIABLE	MULTIFUNCTION
V	VIBRATION , VISCOSITY	VALVE , DAMPER , LOUVER
W	WEIGHT , FORCE	
X		
Y		RELAY , COMPUTE
Z	POSITION	DRIVE , ACTUATE

GENERAL NOTES:

1. ALL EXTERIOR PANELS SHALL HAVE SUN SHADES.
2. PROVIDE AS-BUILTS OF ALL I/O LAYOUTS AFTER ADDED WIRES COMPLETED IN FIELD.
3. PROVIDE ETHERNET CARDS TO READ SWITCHGEAR CIRCUIT BREAKER DATA AS FOLLOWS:
   - 3.1. SWGR #1 TOTAL REAL POWER
   - 3.2. SWGR #1 POWER USAGE
   - 3.3. SWGR #1 PHASE TRUE POWER FACTOR
   - 3.4. SWGR #1 VOLTAGE
   - 3.5. SWGR #1 AVERAGE CURRENT
   - 3.6. SWGR #1 WAVEFORM
   - 3.7. SWGR #1 REACTIVE POWER
   - 3.8. SWGR #2 TOTAL REAL POWER
   - 3.9. SWGR #2 POWER USAGE
   - 3.10. SWGR #2 PHASE TRUE POWER FACTOR
   - 3.11. SWGR #2 VOLTAGE
   - 3.12. SWGR #2 AVERAGE CURRENT
   - 3.13. SWGR #2 WAVEFORM
   - 3.14. SWGR #2 REACTIVE POWER

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BID SET

ALABAMA LICENSED No. 21938 PROFESSIONAL ENGINEER DAVID ANDREW BARBER

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

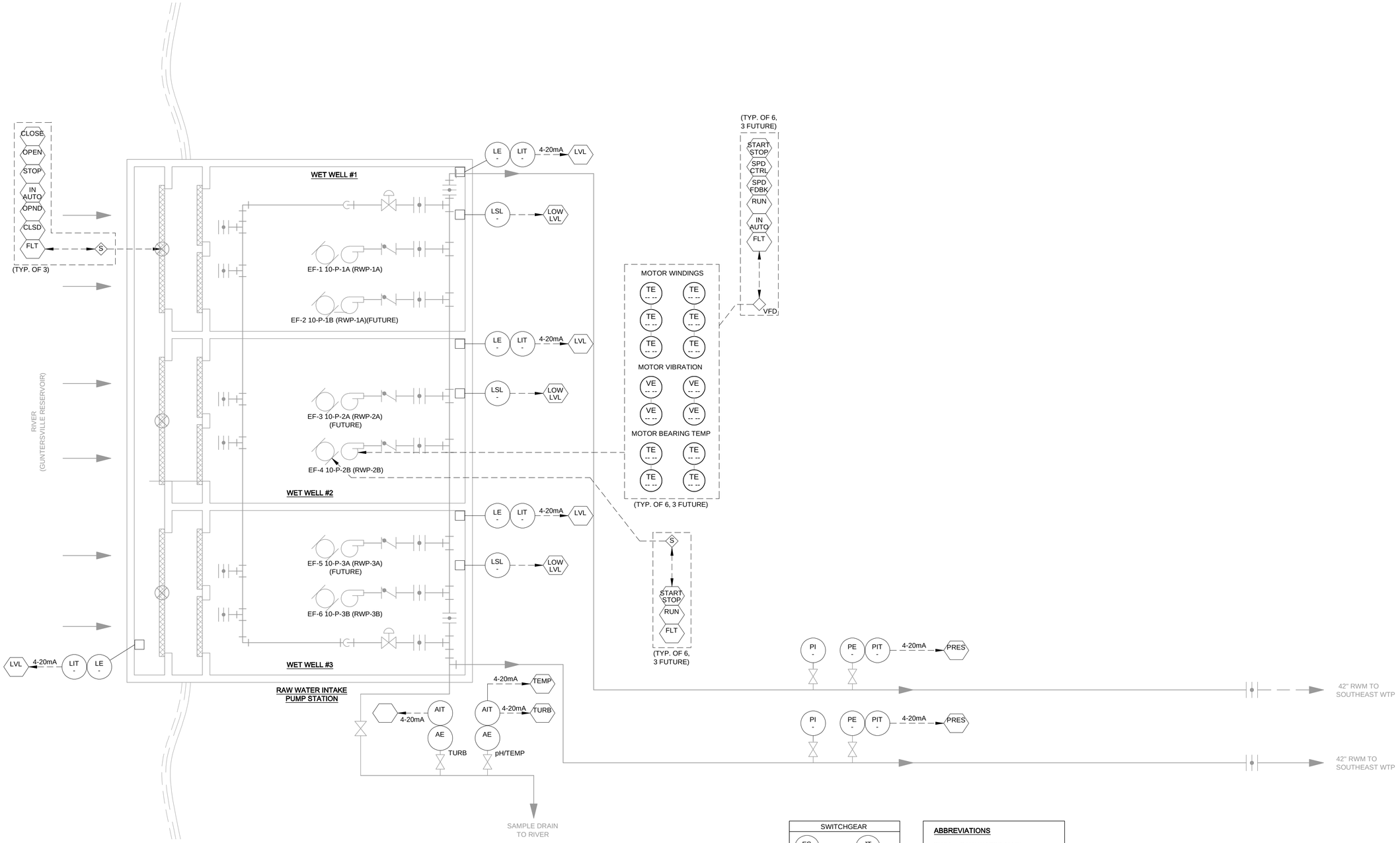
RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

INSTRUMENTATION LEGEND

Project No.:	200-11740-10003
Designed By:	DAB
Drawn By:	TAC
Checked By:	DAB

I-0001

Bar Measures 1 inch



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BID SET

ALABAMA LICENSED No. 21938 PROFESSIONAL ENGINEER TIMOTHY ANDREW CALZARETTA

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

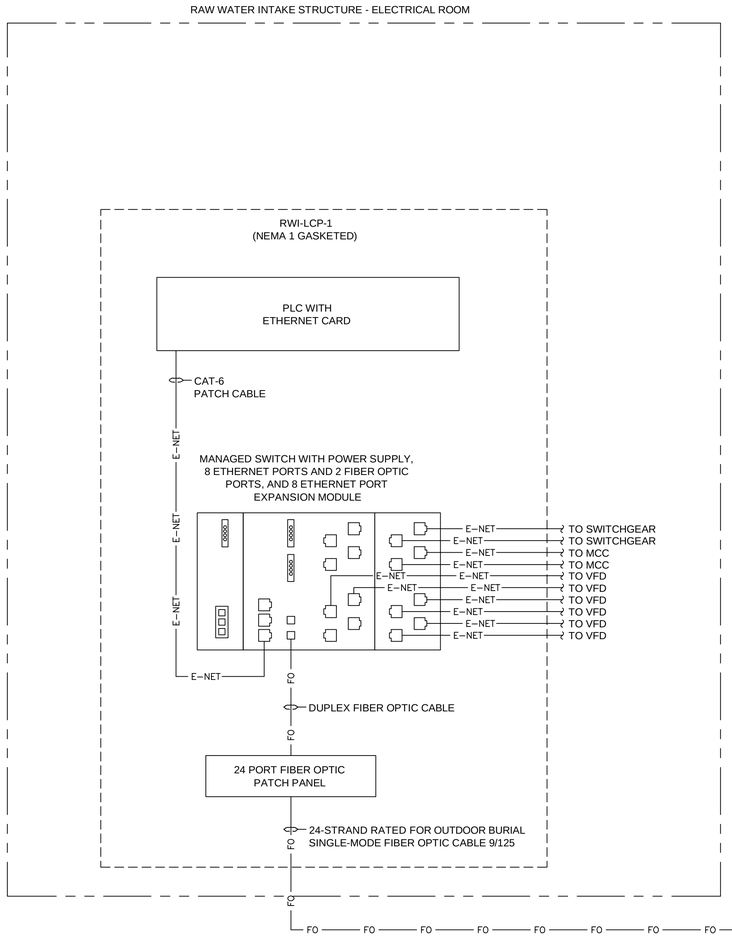
RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

INTAKE STRUCTURE P & ID

Project No.:	200-11740-10003
Designed By:	DAB
Drawn By:	TAC
Checked By:	DAB

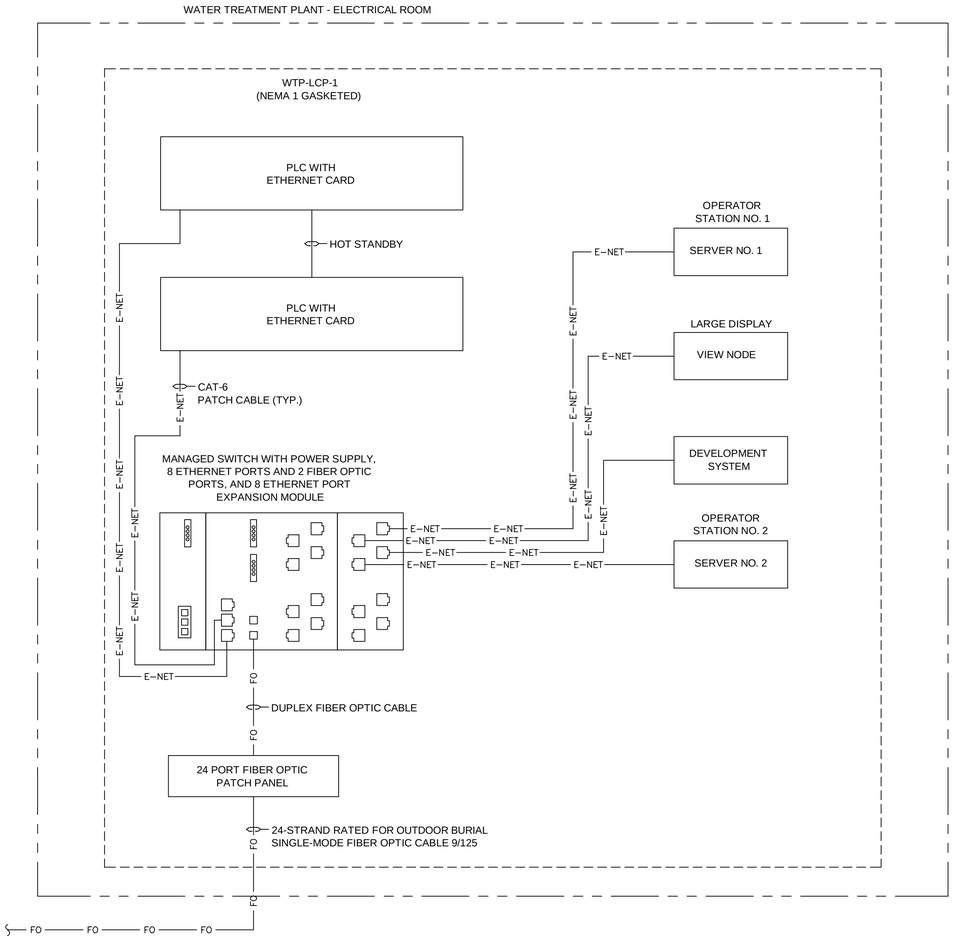
I-1101

Bar Measures 1 inch



PANEL RWI-LCP-1

SCALE: NTS



PANEL WTP-LCP-1

SCALE: NTS

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MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

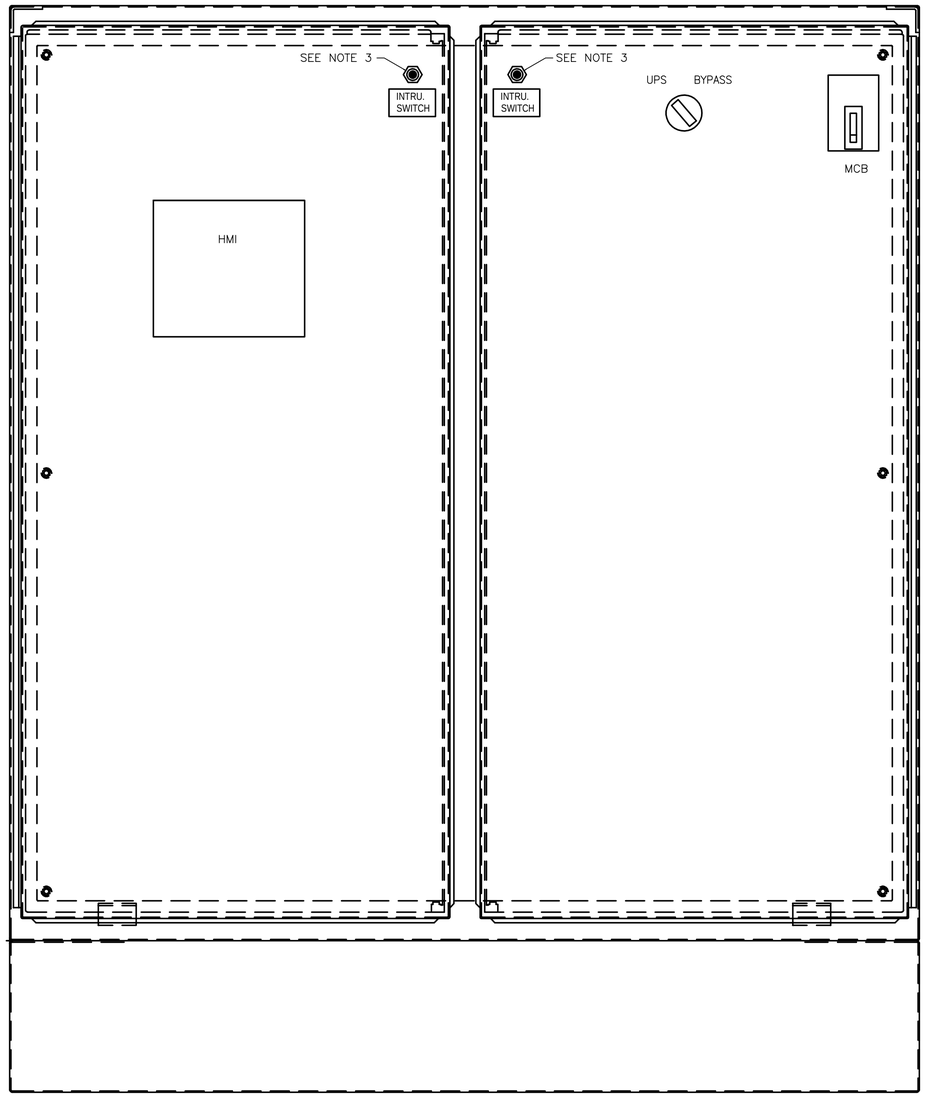
RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

SYSTEM ARCHITECTURE

Project No.:	200-11740-10003
Designed By:	DAB
Drawn By:	TAC
Checked By:	DAB

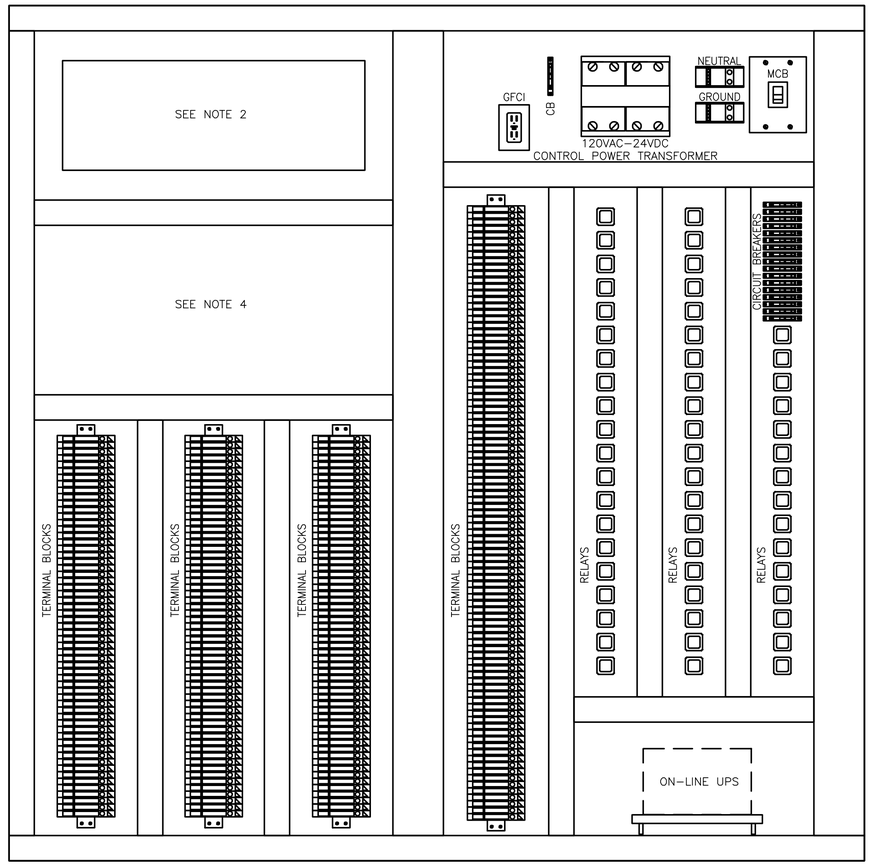
I-1102

Bar Measures 1 inch



PROPOSED PANEL RWI-LCP-1

SCALE: NTS (SEE NOTE 1)



PROPOSED SUBPLATE LAYOUT

SCALE: NTS

NOTES:
1. OUTER DOOR REMOVED TO SHOW DEADFRONT LAYOUT. ENCLOSURE SHALL BE NEMA 1 WITH CONTINUOUS HINGE AND 3–POINT LATCHING HANDLES.
2. PROVIDE PROTECTIVE COVERS FOR UNUSED SLOTS WITHIN PLC RACK.
3. PROVIDE A PLUNGER–TYPE INTRUSION SWITCH TIED TO EACH CONTROL PANEL EXTERIOR DOOR OPEN/CLOSE.
4. SPACE RESERVED FOR FUTURE PLC RACK.

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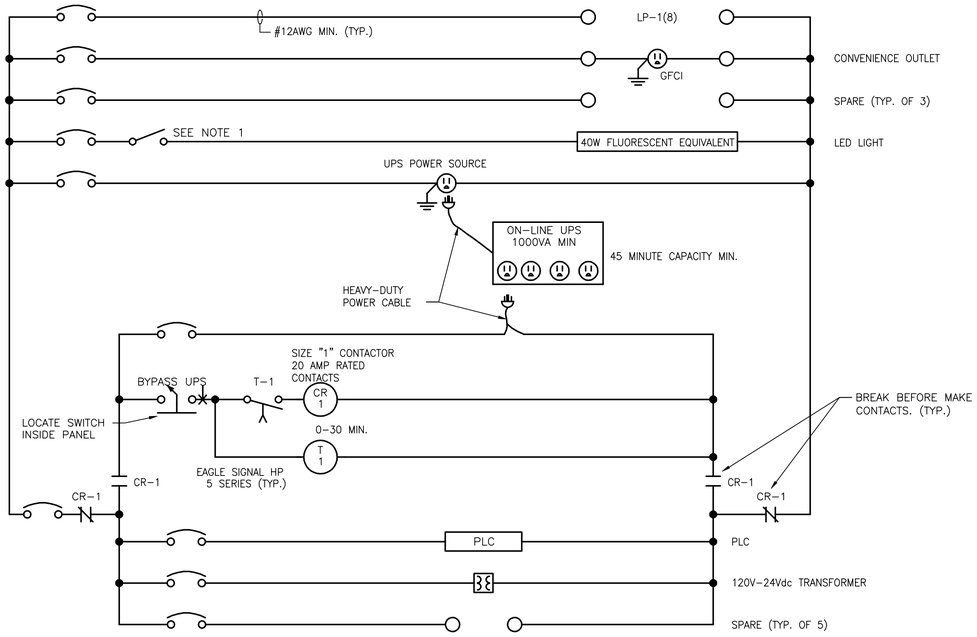
RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

LCP-1 CONTROL PANEL LAYOUT

Project No.:	200-11740-10003
Designed By:	DAB
Drawn By:	TAC
Checked By:	DAB

I-1201

Bar Measures 1 inch



LCP-1 WIRING DIAGRAM

SCALE: NO SCALE

NOTES:
1. LIGHT SWITCH SHALL BE PLUNGER-TYPE TIED TO DEADFRONT DOOR OPEN/CLOSE.

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MARK	DATE	DESCRIPTION	BY

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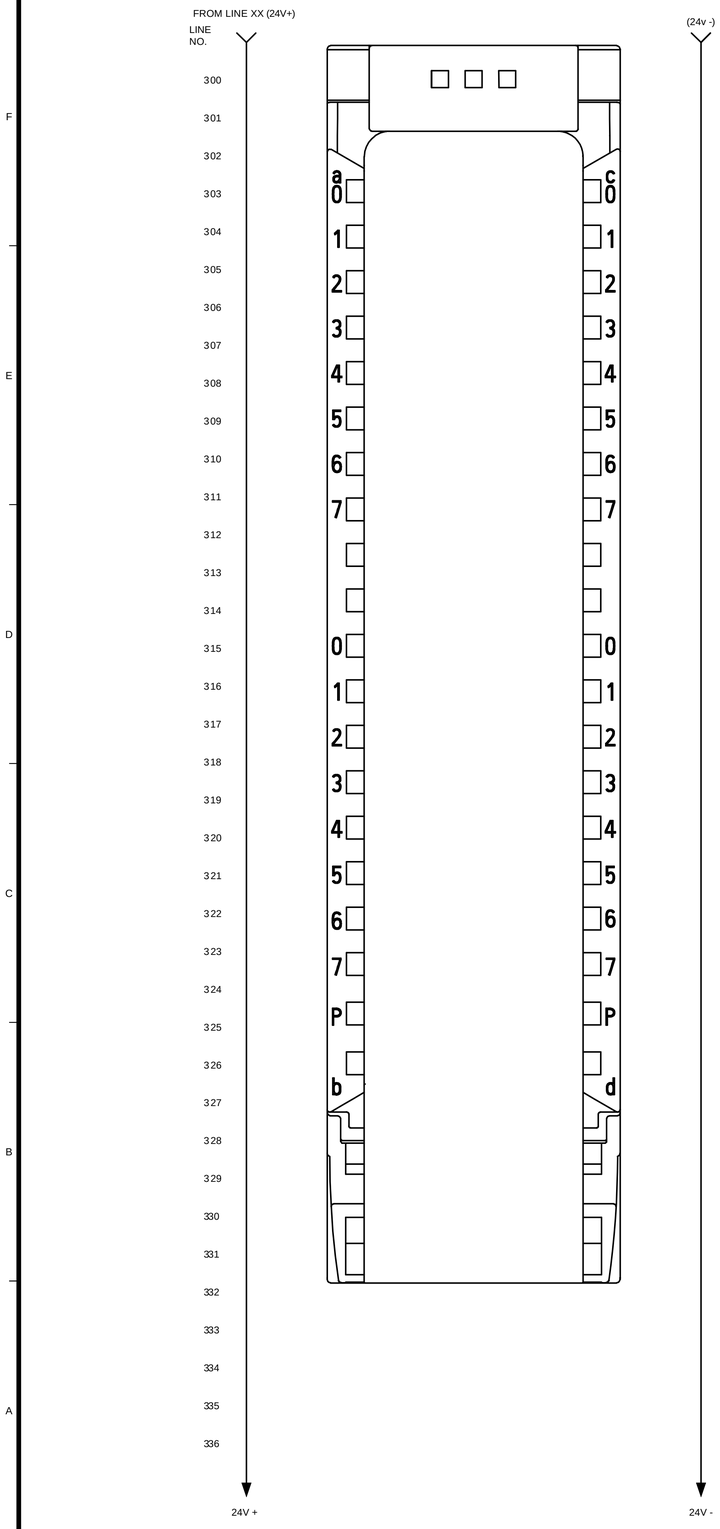
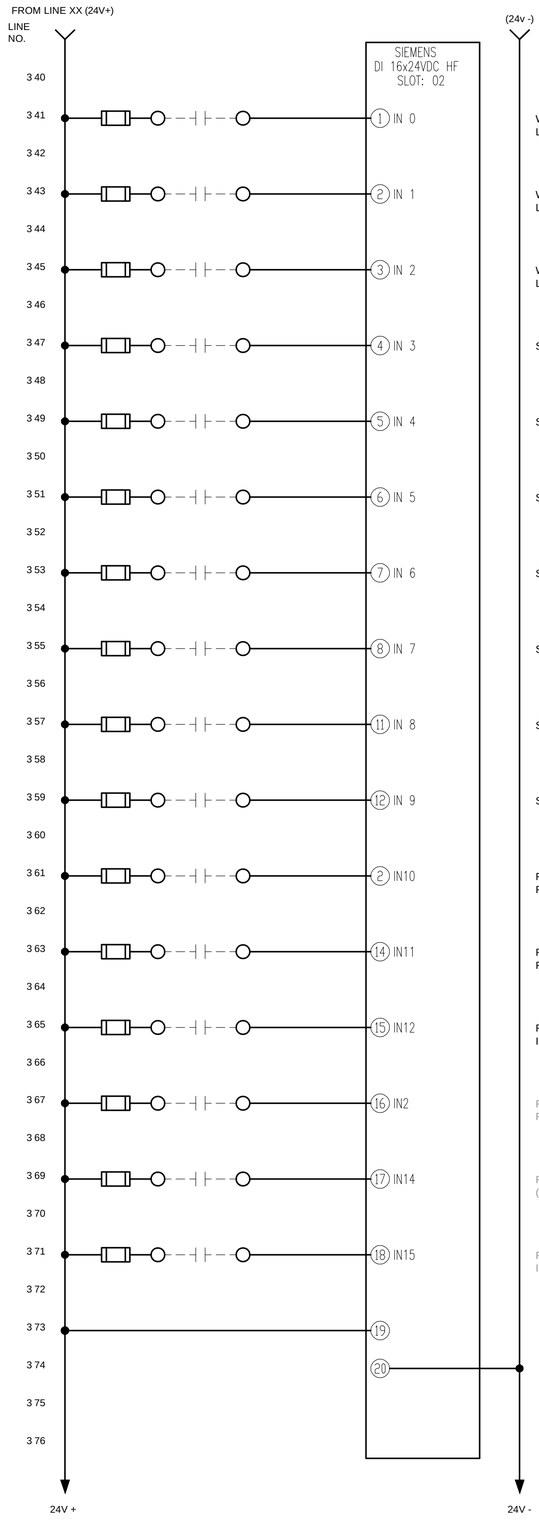
LCP-1 WIRING DIAGRAM

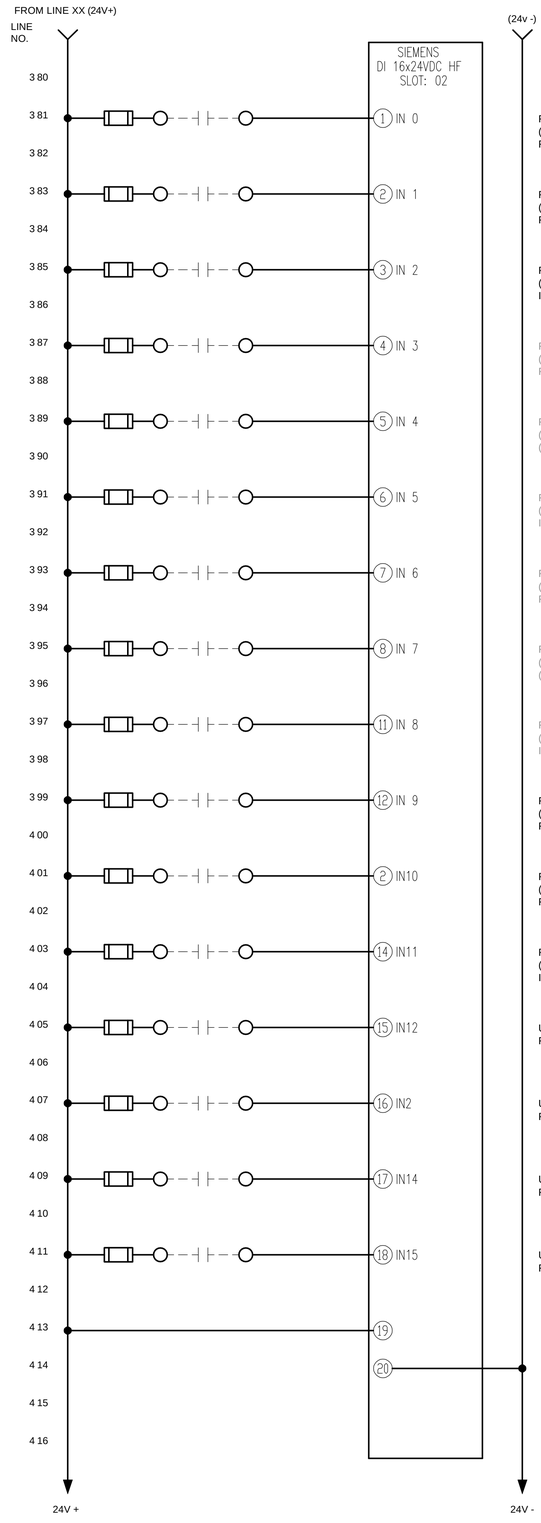
Project No.:	200-11740-10003
Designed By:	DAB
Drawn By:	TAC
Checked By:	DAB

I-1202

Bar Measures 1 inch







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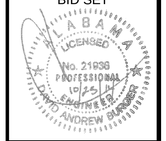
BID SET



MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

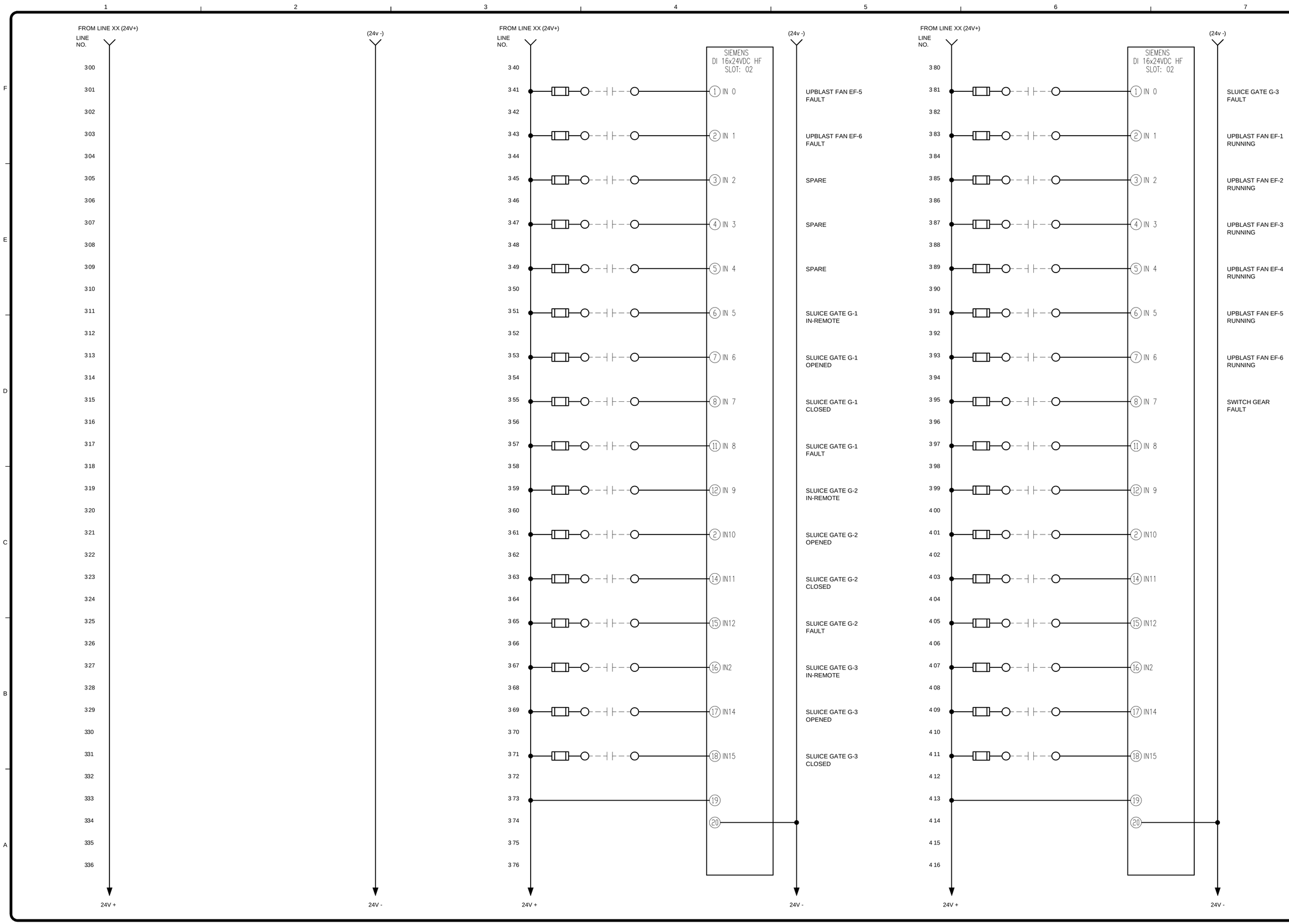
RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

CONTROL PANEL RWI-LCP-1

Project No.:	200-11740-10003
Designed By:	DAB
Drawn By:	TAC
Checked By:	DAB

I-1203

Bar Measures 1 inch



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MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

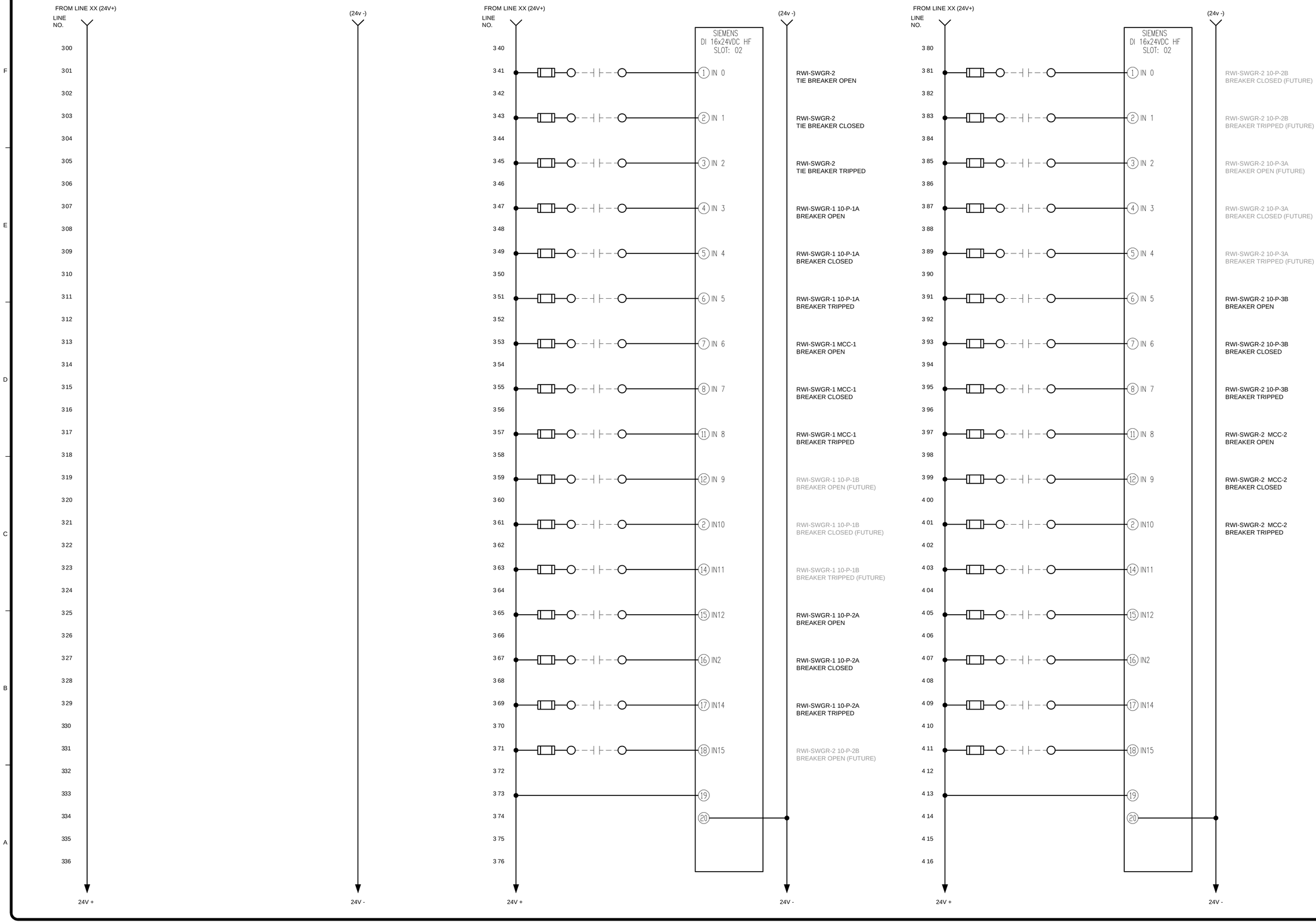
RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

I-O LAYOUT

Project No.:	200-11740-10003
Designed By:	DAB
Drawn By:	TAC
Checked By:	DAB

I-1204

Bar Measures 1 inch



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BID SET

ALABAMA LICENSED No. 21938 PROFESSIONAL ENGINEER TIMOTHY ANDREW CALZARETTA

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

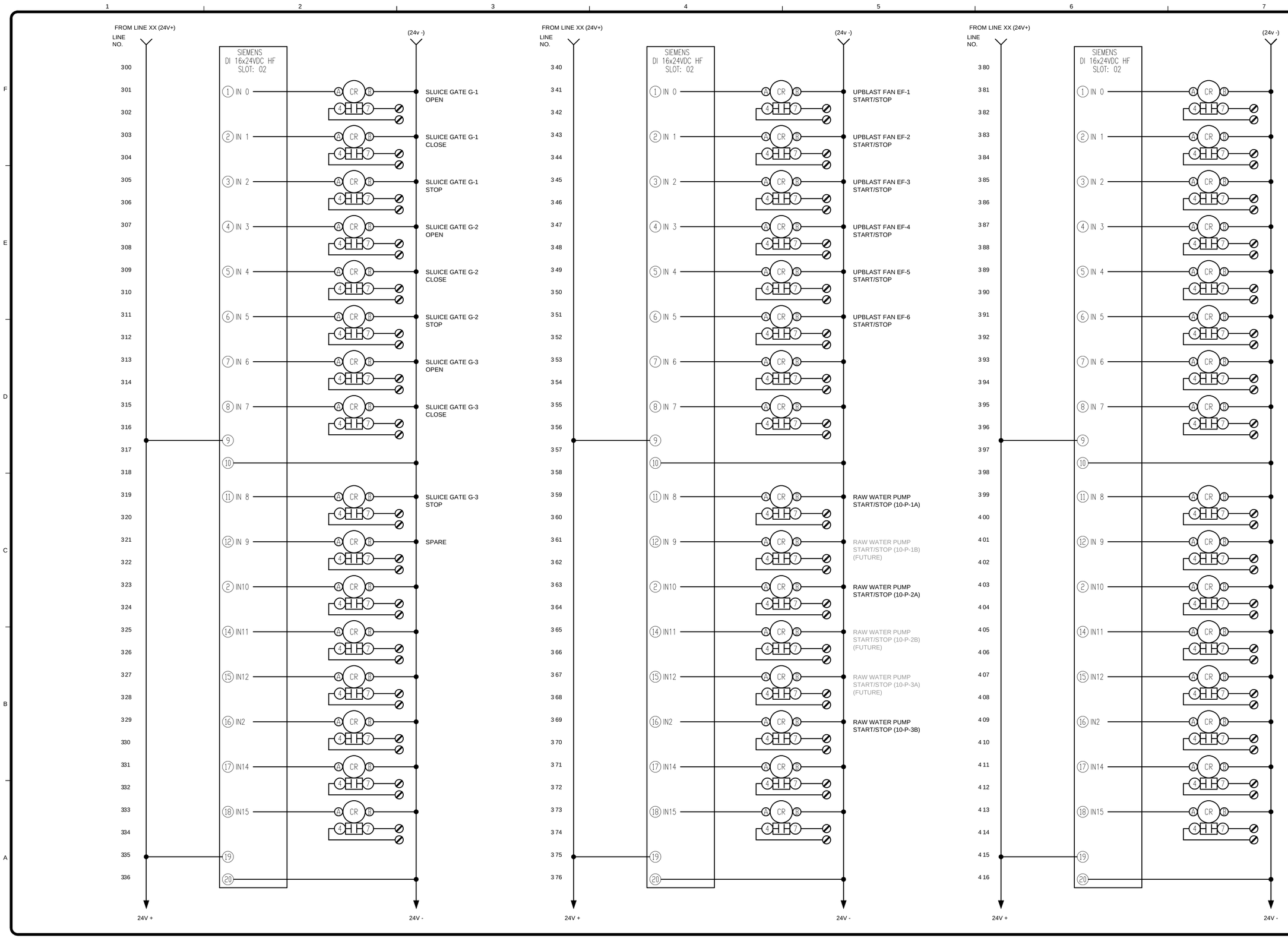
I-O LAYOUT

Project No.:	200-11740-10003
Designed By:	DAB
Drawn By:	TAC
Checked By:	DAB

I-1205

Bar Measures 1 inch

10/17/2014 10:23:30 AM - P:\HER\11740\200-11740-10003\CAD\SHEETFILES\INTAKE AND TRANSMISSION\RW\I-1205 I-O LAYOUT.DWG - CALZARETTA, TIMOTHY



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MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES
RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

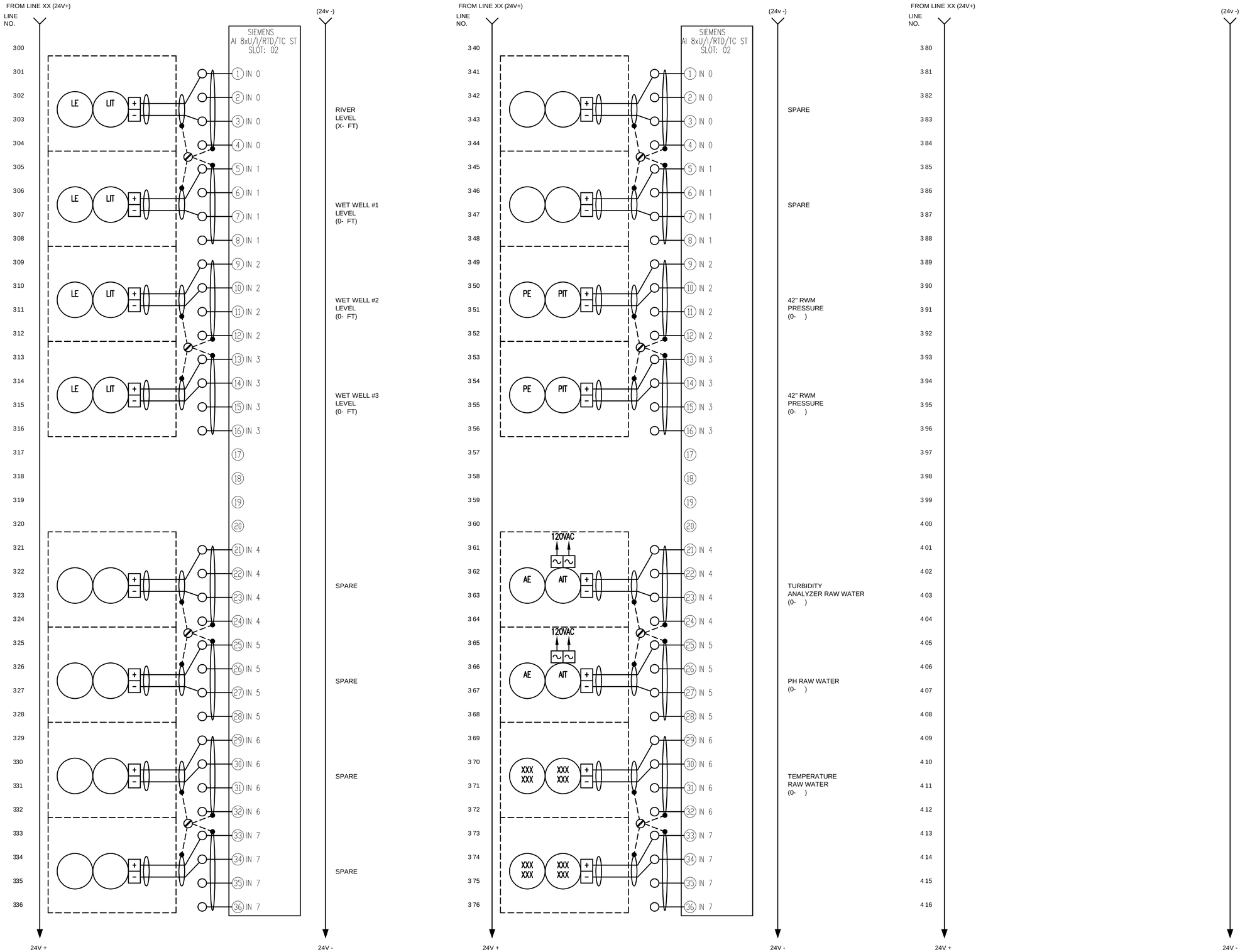
I-O LAYOUT

Project No.:	200-11740-10003
Designed By:	DAB
Drawn By:	TAC
Checked By:	DAB

I-1206

Bar Measures 1 inch

10/17/2014 10:23:35 AM - P:\IER\11740\200-11740-10003\CAD\SHEETFILES\INTAKE AND TRANSMISSIONRWI-I-1206 I-O LAYOUT.DWG - CALZARETTA, TIMOTHY



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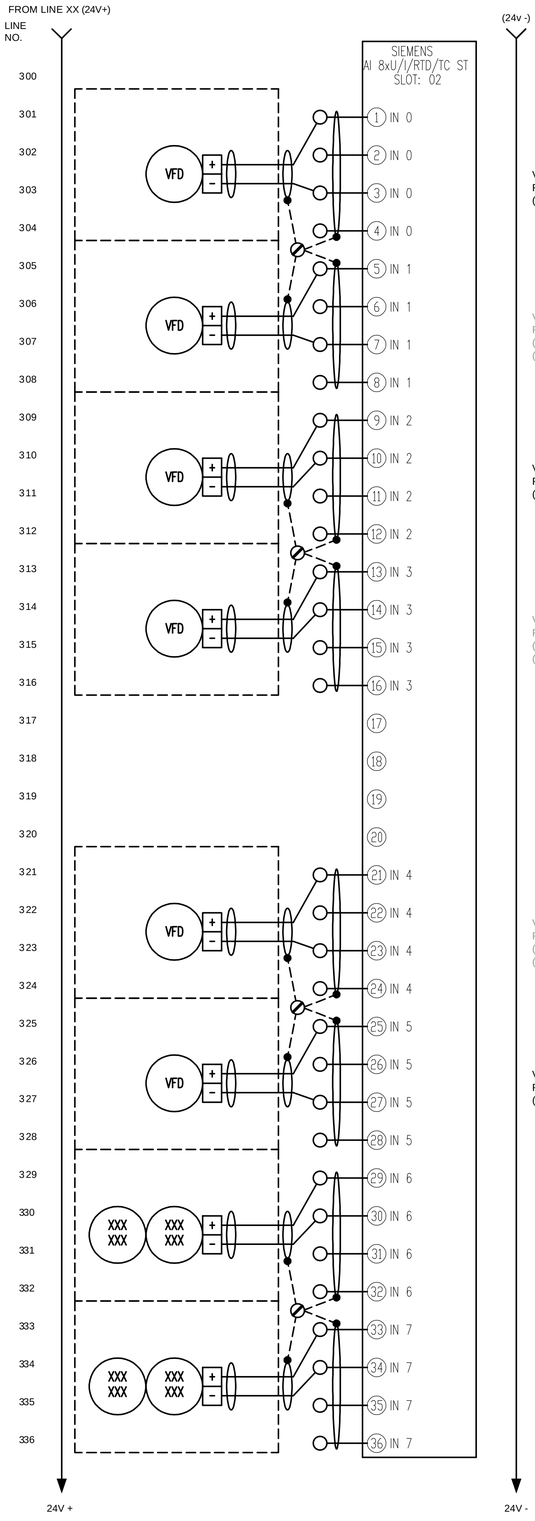
RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

I-O LAYOUT

Project No.:	200-11740-10003
Designed By:	DAB
Drawn By:	TAC
Checked By:	DAB

I-1207

Bar Measures 1 inch



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MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES
RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

I-O LAYOUT

Project No.:	200-11740-10003
Designed By:	DAB
Drawn By:	TAC
Checked By:	DAB

I-1208

Bar Measures 1 inch

10/17/2014 10:24:05 AM - P:\IER\117400\200-11740-10003\CAD\SHEETFILES\INTAKE AND TRANSMISSION\MRW-I-1208 CONTROL PANEL RW-LCP-1.DWG - CALZARETTA, TIMOTHY

FROM LINE XX (24V+)

LINE NO.

SIEMENS AQ 8xU/I HS SLOT: 02

300	1 IN 0	
301	2 IN 0	
302	3 IN 0	
303	4 IN 0	
304	5 IN 1	
305	6 IN 1	
306	7 IN 1	
307	8 IN 1	
308	9 IN 2	
309	10 IN 2	
310	11 IN 2	
311	12 IN 2	
312	13 IN 3	
313	14 IN 3	
314	15 IN 3	
315	16 IN 3	
316	17	
317	18	
318	19	
319	20	
320	21 IN 4	
321	22 IN 4	
322	23 IN 4	
323	24 IN 4	
324	25 IN 5	
325	26 IN 5	
326	27 IN 5	
327	28 IN 5	
328	29 IN 6	
329	30 IN 6	
330	31 IN 6	
331	32 IN 6	
332	33 IN 7	
333	34 IN 7	
334	35 IN 7	
335	36 IN 7	
336		

(24v -)

340	RAW WATER PUMP (10-P-1A) SPEED CMD (0-100%)
345	RAW WATER PUMP (10-P-1B) SPEED CMD (0-100%) (FUTURE)
350	RAW WATER PUMP (10-P-2A) SPEED CMD (0-100%)
355	RAW WATER PUMP (10-P-2B) SPEED CMD (0-100%) (FUTURE)
360	SPARE
365	SPARE
370	SPARE
375	SPARE

24V +

24V -

FROM LINE XX (24V+)

LINE NO.

SIEMENS AQ 8xU/I HS SLOT: 02

340	1 IN 0	
341	2 IN 0	
342	3 IN 0	
343	4 IN 0	
344	5 IN 1	
345	6 IN 1	
346	7 IN 1	
347	8 IN 1	
348	9 IN 2	
349	10 IN 2	
350	11 IN 2	
351	12 IN 2	
352	13 IN 3	
353	14 IN 3	
354	15 IN 3	
355	16 IN 3	
356	17	
357	18	
358	19	
359	20	
360	21 IN 4	
361	22 IN 4	
362	23 IN 4	
363	24 IN 4	
364	25 IN 5	
365	26 IN 5	
366	27 IN 5	
367	28 IN 5	
368	29 IN 6	
369	30 IN 6	
370	31 IN 6	
371	32 IN 6	
372	33 IN 7	
373	34 IN 7	
374	35 IN 7	
375	36 IN 7	
376		

(24v -)

340	RAW WATER PUMP (10-P-3A) SPEED CMD (0-100%) (FUTURE)
345	RAW WATER PUMP (10-P-3B) SPEED CMD (0-100%)
350	SPARE
355	SPARE
360	SPARE
365	SPARE
370	SPARE
375	SPARE

24V +

24V -

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MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES

RAW WATER INTAKE STRUCTURE AND TRANSMISSION FACILITIES

I-O LAYOUT

Project No.:	200-11740-10003
Designed By:	DAB
Drawn By:	TAC
Checked By:	DAB

I-1209

Bar Measures 1 inch