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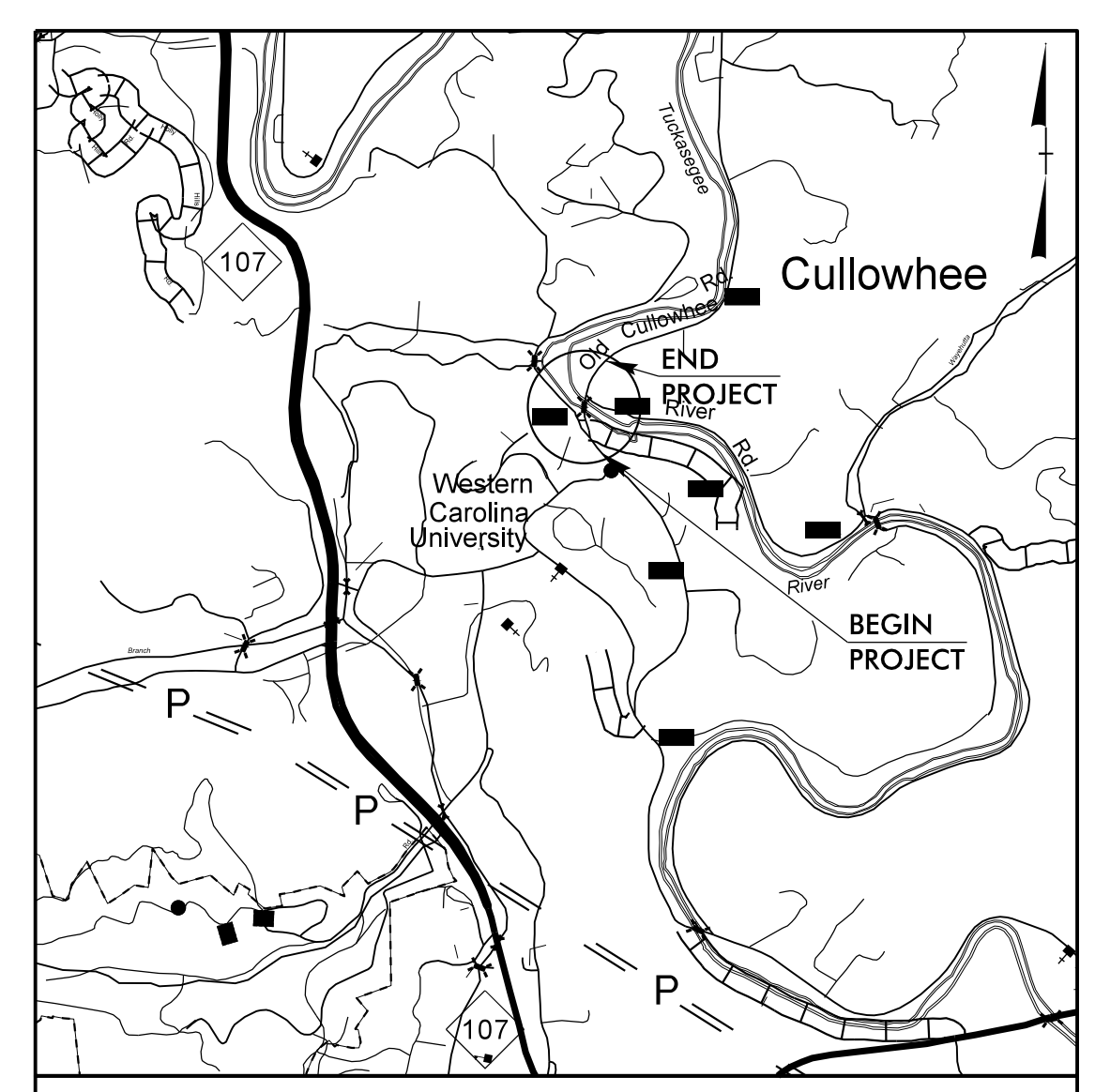
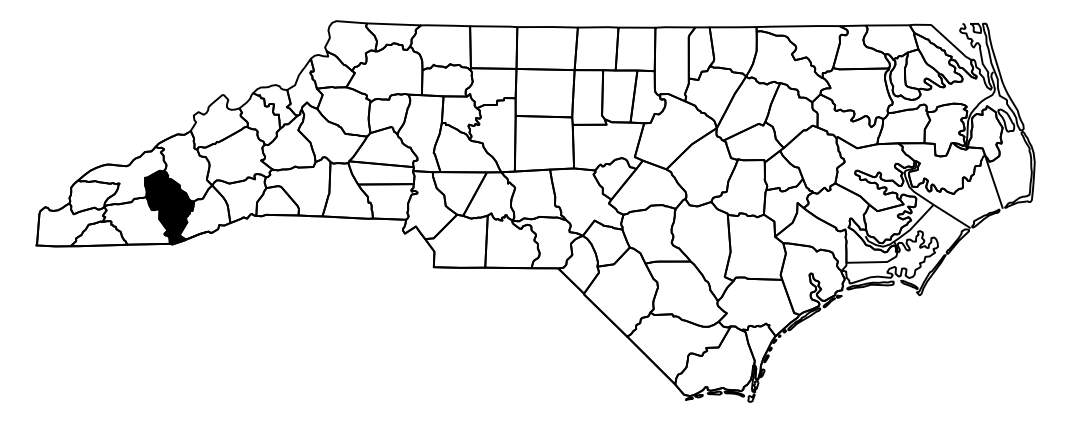
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STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

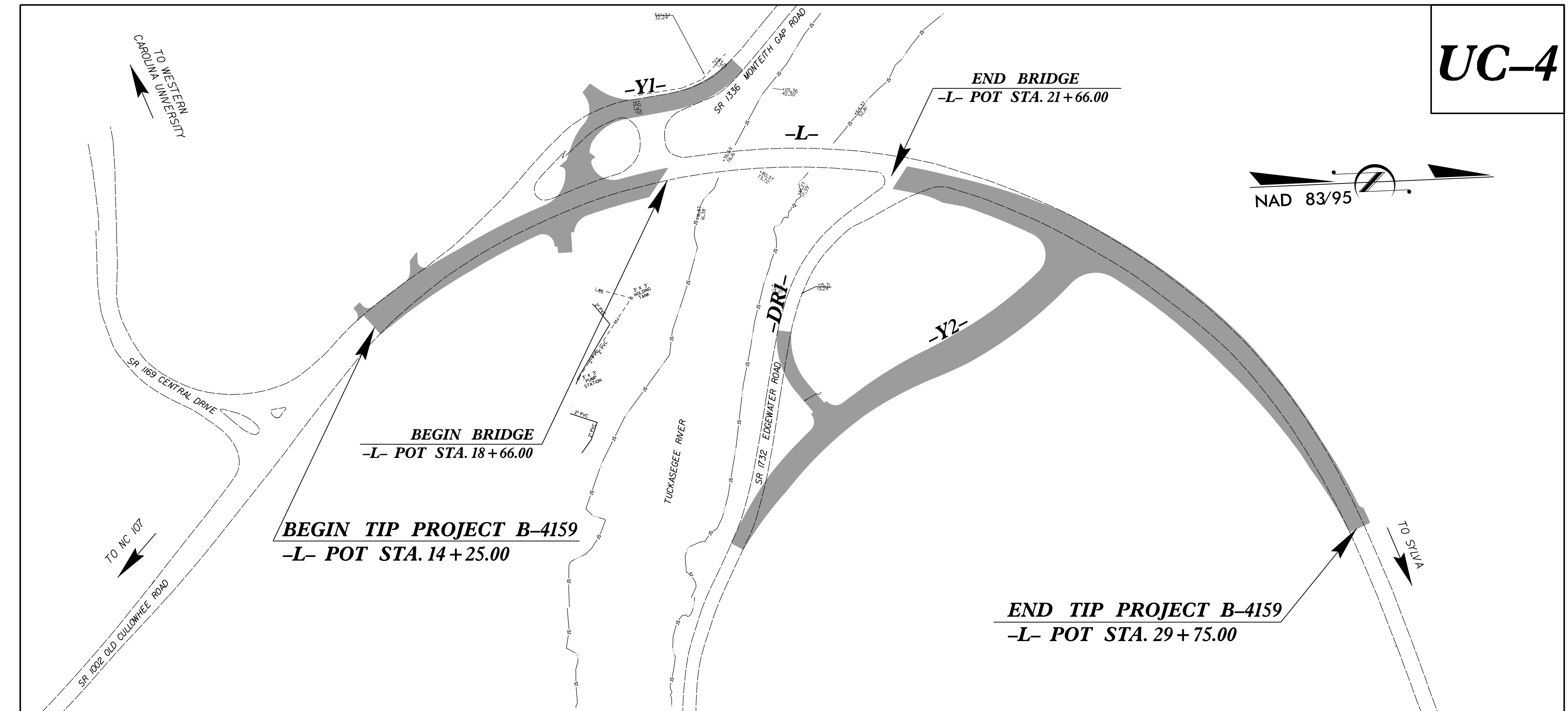
UTILITY CONSTRUCTION PLANS JACKSON COUNTY

LOCATION: BRIDGE NO. 108 OVER THE TUCKASEGEE RIVER
ON SR 1002 (OLD CULLOWHEE RD.)
TYPE OF WORK: SEWER LINE RELOCATION

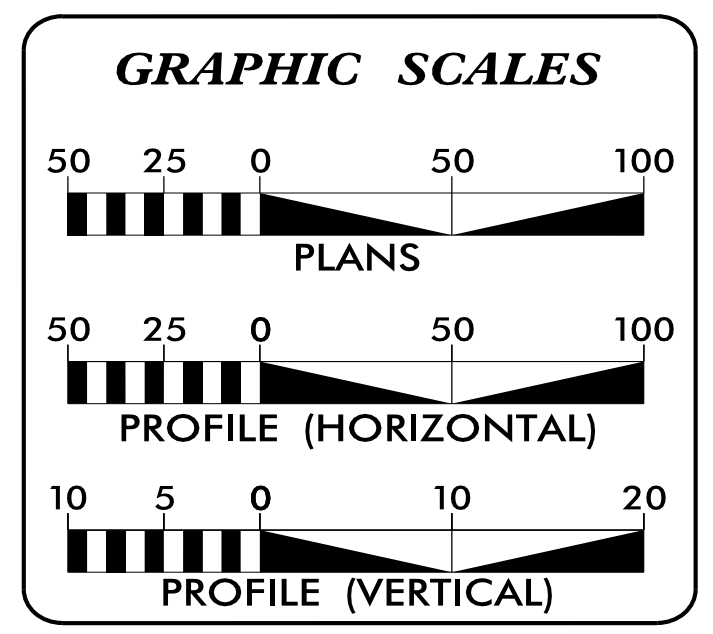


VICINITY MAP SHOWING
LOCATION OF PROJECT B-4159

TIP PROJECT: B-4159



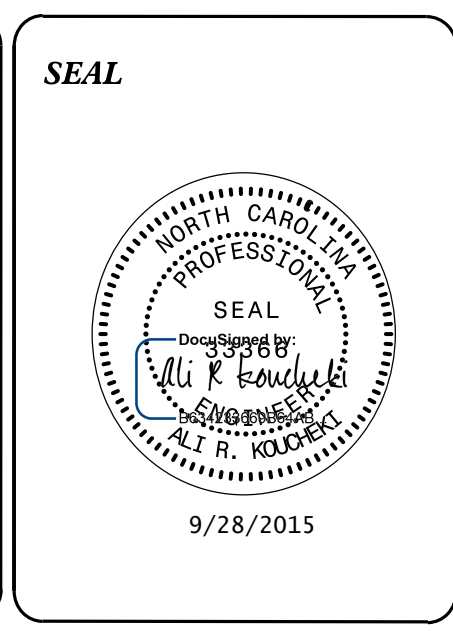
UC-4



INDEX OF SHEETS

SHEET NO.	DESCRIPTION
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UC-2	UTILITY SYMBOLOLOGY
UC-3	NOTES
UC-4	SEWER LINE PLAN SHEET
UC-5	SEWER LINE PROFILE SHEET
UC-6 THRU UC-13	WATER LINE SHEETS

- WATER AND SEWER OWNERS ON PROJECT**
- (1) WATER: TUCKASEEGEE WATER AND SEWER AUTHORITY
 - (2) SANITARY SEWER: TUCKASEEGEE WATER AND SEWER AUTHORITY
 - (3) RAW WATER: WESTERN CAROLINA UNIVERSITY
 - (4) SANITARY SEWER: WESTERN CAROLINA UNIVERSITY



PREPARED IN THE OFFICE OF:
**DIVISION OF HIGHWAYS
UTILITIES UNIT
UTILITIES ENGINEERING**

1555 MAIL SERVICES CENTER
RALEIGH NC 27699-1555
PHONE (919) 707-6690
FAX (919) 250-4151

Roger Worthington, P.E. UTILITIES SECTION ENGINEER
Carl Barclay, P.E. UTILITIES SQUAD LEADER PROJECT ENGINEER
Ali Kouchehi, P.E. UTILITIES PROJECT DESIGNER

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITIES PLAN SHEET SYMBOLS

PROPOSED WATER SYMBOLS

Water Line (Sized as Shown)	
11¼ Degree Bend	
22½ Degree Bend	
45 Degree Bend	
90 Degree Bend	
Plug	
Tee	
Cross	
Reducer	
Gate Valve	
Butterfly Valve	
Tapping Valve	
Line Stop	
Line Stop with Bypass	
Blow Off	
Fire Hydrant	
Relocate Fire Hydrant	
Remove Fire Hydrant	REM FH
Water Meter	
Relocate Water Meter	
Remove Water Meter	REM WM
Water Pump Station	
RPZ Backflow Preventer	
DCV Backflow Preventer	
Relocate RPZ Backflow Preventer	
Relocate DCV Backflow Preventer	

PROPOSED SEWER SYMBOLS

Gravity Sewer Line (Sized as Shown)	
Force Main Sewer Line (Sized as Shown)	
Manhole (Sized per Note)	
Sewer Pump Station	

PROPOSED MISCELLANEOUS UTILITIES SYMBOLS

Power Pole	
Telephone Pole	
Joint Use Pole	
Telephone Pedestal	
Utility Line by Others (Type as Shown)	
Trenchless Installation	
Encasement by Open Cut	
Encasement	

Thrust Block	
Air Release Valve	
Utility Vault	
Concrete Pier	
Steel Pier	
Plan Note	
Pay Item Note	

NOTE
PAY ITEM

EXISTING UTILITIES SYMBOLS

Power Pole		*Underground Power Line	
Telephone Pole		*Underground Telephone Cable	
Joint Use Pole		*Underground Telephone Conduit	
Utility Pole		*Underground Fiber Optics Telephone Cable	
Utility Pole with Base		*Underground TV Cable	
H-Frame Pole		*Underground Fiber Optics TV Cable	
Power Transmission Line Tower		*Underground Gas Pipeline	
Water Manhole		Aboveground Gas Pipeline	
Power Manhole		*Underground Water Line	
Telephone Manhole		Aboveground Water Line	
Sanitary Sewer Manhole		*Underground Gravity Sanitary Sewer Line	
Hand Hole for Cable		Aboveground Gravity Sanitary Sewer Line	
Power Transformer		*Underground SS Forced Main Line	
Telephone Pedestal		Underground Unknown Utility Line	
CATV Pedestal		SUE Test Hole	
Gas Valve		Water Meter	
Gas Meter		Water Valve	
Located Miscellaneous Utility Object		Fire Hydrant	
Abandoned According to Utility Records	AATUR	Sanitary Sewer Cleanout	
End of Information	E.O.I.		

*For Existing Utilities
Utility Line Drawn from Record (Type as Shown)
Designated Utility Line (Type as Shown)

5/14/99
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REV: 2/1/2012

PROJECT REFERENCE NO.	SHEET NO.
B-4159	UC-3
DESIGNED BY: ARK	
DRAWN BY: ARK	
CHECKED BY: CAB	
APPROVED BY: CAB	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
UTILITY CONSTRUCTION PLANS ONLY	

UTILITY CONSTRUCTION

GENERAL NOTES:

1. THE PROPOSED UTILITY CONSTRUCTION SHALL MEET THE APPLICABLE REQUIREMENTS OF THE NC DEPARTMENT OF TRANSPORTATION'S "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" DATED JANUARY 2012.
2. THE EXISTING UTILITIES BELONG TO TUCKASEIGEE WATER AND SEWER AUTHORITY
3. ALL WATER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL AND NATURAL RESOURCES, DIVISION OF WATER RESOURCES, PUBLIC WATER SUPPLY SECTION. ALL SEWER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES, DIVISION OF WATER RESOURCES, WATER QUALITY SECTION. PERFORM ALL WORK IN ACCORDANCE WITH THE APPLICABLE PLUMBING CODES.
4. THE UTILITY OWNER OWNS THE EXISTING UTILITY FACILITIES AND WILL OWN THE NEW UTILITY FACILITIES AFTER ACCEPTANCE BY THE DEPARTMENT. THE DEPARTMENT OWNS THE CONSTRUCTION CONTRACT AND HAS ADMINISTRATIVE AUTHORITY. COMMUNICATIONS AND DECISIONS BETWEEN THE CONTRACTOR AND UTILITY OWNER ARE NOT BINDING UPON THE DEPARTMENT OR THIS CONTRACT UNLESS AUTHORIZED BY THE ENGINEER. AGREEMENTS BETWEEN THE UTILITY OWNER AND CONTRACTOR FOR THE WORK THAT IS NOT PART OF THIS CONTRACT OR IS SECONDARY TO THIS CONTRACT ARE ALLOWED, BUT ARE NOT BINDING UPON THE DEPARTMENT.
5. PROVIDE ACCESS FOR THE DEPARTMENT PERSONNEL AND THE OWNER'S REPRESENTATIVES TO ALL PHASES OF CONSTRUCTION. NOTIFY DEPARTMENT PERSONNEL AND THE UTILITY OWNER TWO WEEKS PRIOR TO COMMENCEMENT OF ANY WORK AND ONE WEEK PRIOR TO SERVICE INTERRUPTION. KEEP UTILITY OWNERS' REPRESENTATIVES INFORMED OF WORK PROGRESS AND PROVIDE OPPROTUNITY FOR INSPECTION OF CONSTRUCTION AND TESTING.

6. THE PLANS DEPICT THE BEST AVAILABLE INFORMATION FOR THE LOCATION, SIZE, AND TYPE OF MATERIAL FOR ALL EXISTING UTILITIES. MAKE INVESTIGATIONS FOR DETERMINING THE EXACT LOCATION, SIZE, AND TYPE MATERIAL OF THE EXISTING FACILITIES AS NECESSARY FOR THE CONSTRUCTION OF THE PROPOSED UTILITIES AND FOR AVOIDING DAMAGE TO EXISTING FACILITIES. REPAIR ANY DAMAGE INCURRED TO EXISTING FACILITIES TO THE ORIGINAL OR BETTER CONDITION AT NO ADDITIONAL COST TO THE DEPARTMENT.

7. MAKE FINAL CONNECTIONS OF THE NEW WORK TO THE EXISTING SYSTEM WHERE INDICATED ON THE PLANS, AS REQUIRED TO FIT THE ACTUAL CONDITIONS, OR AS DIRECTED.

8. MAKE CONNECTIONS BETWEEN EXISTING AND PROPOSED UTILITIES AT TIMES MOST CONVENIENT TO THE PUBLIC, WITHOUT ENDANGERING THE UTILITY SERVICE, AND IN ACCORDANCE WITH THE UTILITY OWNER'S REQUIREMENTS. MAKE CONNECTIONS ON WEEKENDS, AT NIGHT, AND ON HOLIDAYS IF NECESSARY.

9. ALL UTILITY MATERIALS SHALL BE APPROVED PRIOR TO DELIVERY TO THE PROJECT. SEE 1500-7, " SUBMITTAL'S AND RECORDS" IN SECTION 1500 OF THE STANDARD SPECIFICATIONS.
10. REVISE THE 2012 STANDARD SPECIFICATIONS AS FOLLOWS: PAGE 15-11, SUB -ARTICLE 1520-3(A)(2) TESTING, LINE 5, REPLACE THE SECOND PARAGRAPH WITH THE FOLLOWING:

TEST ALL 24" AND SMALLER GRAVITY SEWER LINES FOR LEAKAGE USING INFILTRATION, EX FILTRATION, OR AIR TEST. PERFORM LINE AND GRADE TESTING AND DEFLECTION TESTING ON ALL GRAVITY LINES.

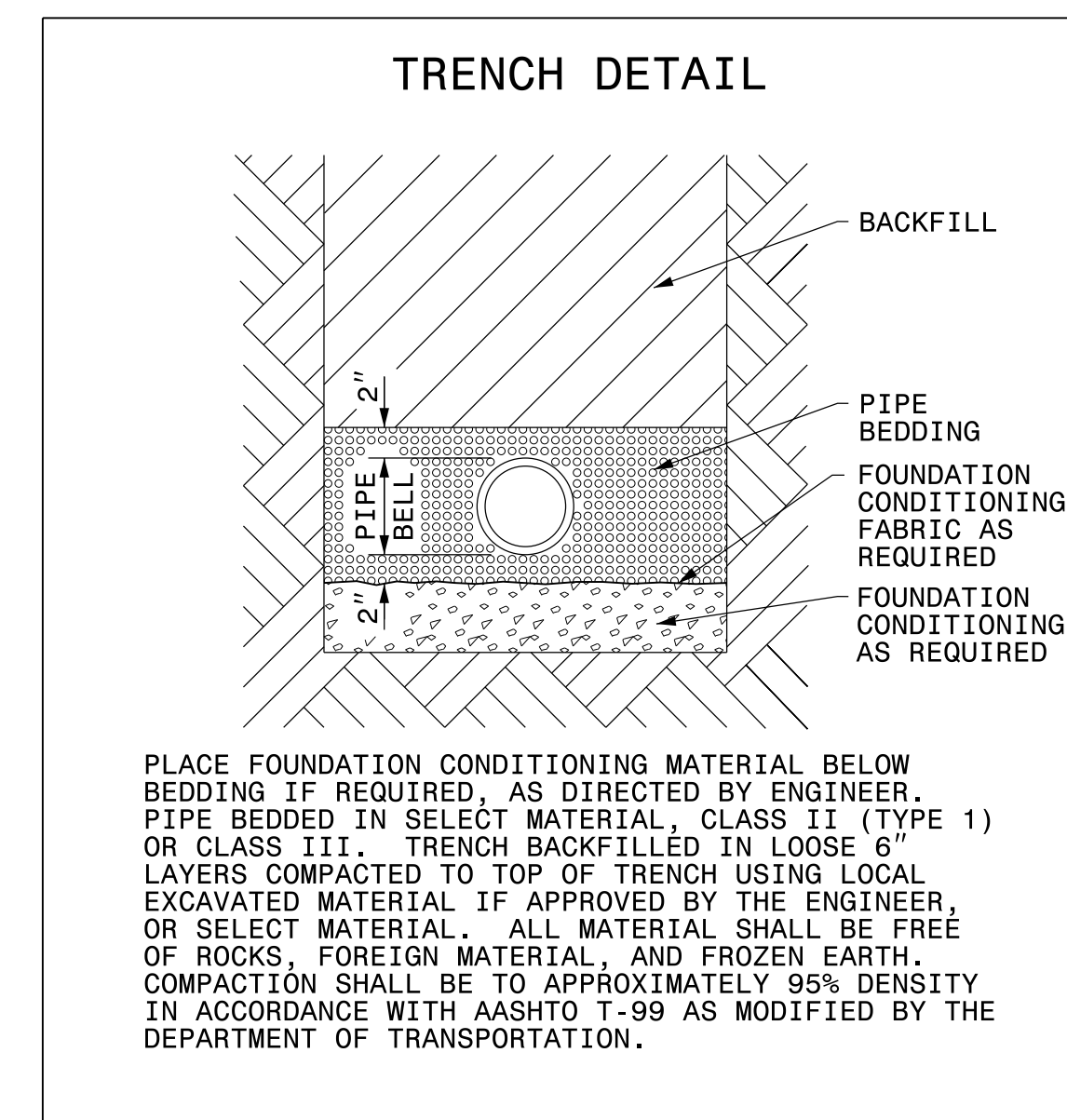
PROJECT SPECIFIC NOTES:

1. PROPOSED TEMPORARY WATER MAIN FROM -L- LINE STATION 12+75 TO -L- LINE STATION 18+00 SHALL BE RIVER CROSSING D.I.R.J. (DUCTILE IRON RESTRAINED JOINT) PIPE.
2. ALL PROPOSED PERMANENT 6" THRU 16" WATER MAIN TO BE D.I.R.J. DUCTILE IRON PIPE.

LIST OF STANDARD DRAWINGS

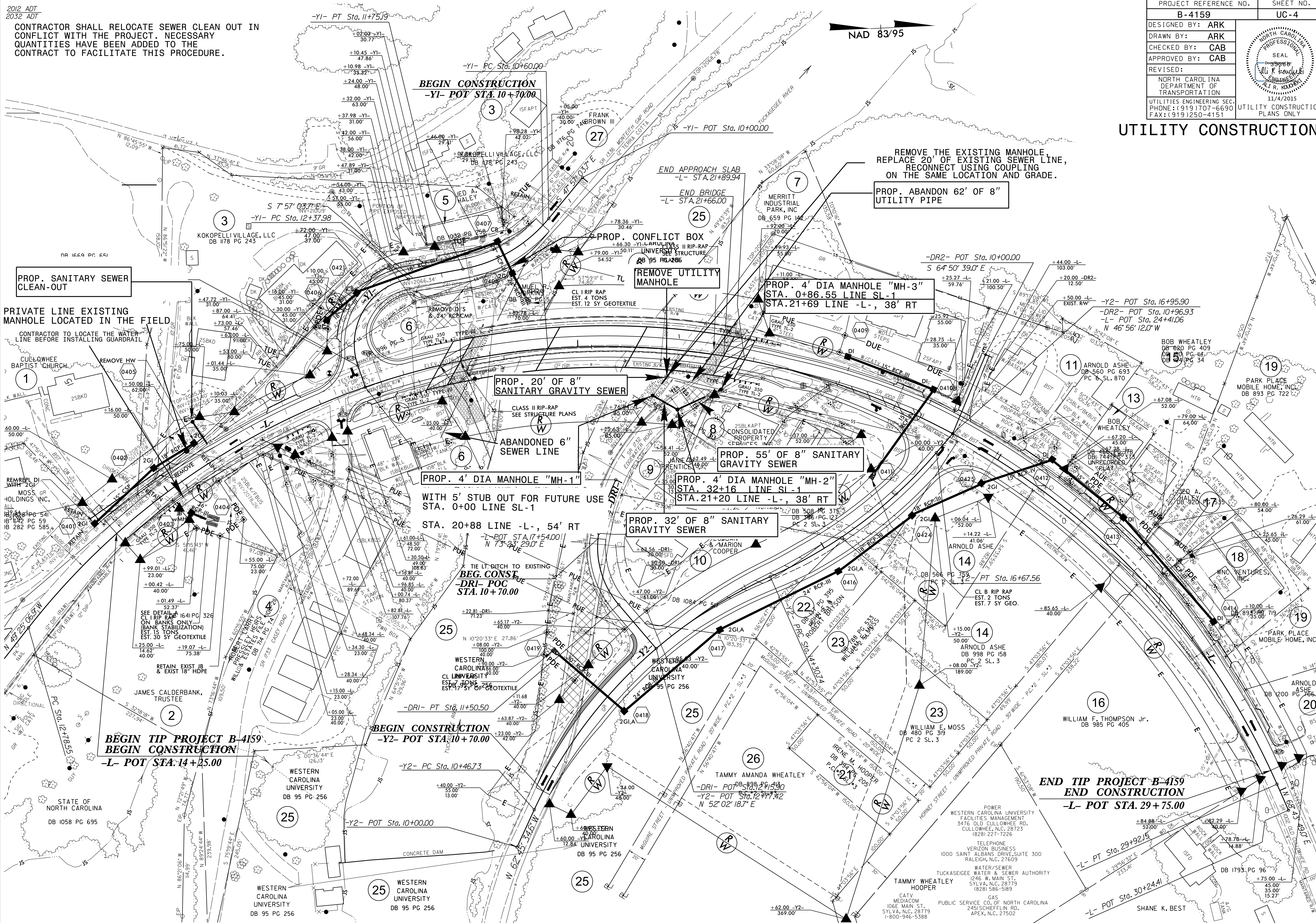
- 1515.01 WATER METER
- 1515.02 FIRE HYDRANT
- 1520.01 SEWER CLEAN OUT
- 1525.06 PRECAST CONCRETE SANITARY SEWER MANHOLE WITH CAST-IN-PLACE BOTTOM

PROJECT TYPICAL DETAILS



PROJECT REFERENCE NO.	SHEET NO.
B-4159	UC-4
DESIGNED BY: ARK	
DRAWN BY: ARK	
CHECKED BY: CAB	
APPROVED BY: CAB	
REVIEWED:	NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION



CONTRACTOR SHALL RELOCATE SEWER CLEAN OUT IN CONFLICT WITH THE PROJECT. NECESSARY QUANTITIES HAVE BEEN ADDED TO THE CONTRACT TO FACILITATE THIS PROCEDURE.

NAD 83/95

PROP. SANITARY SEWER CLEAN-OUT

PRIVATE LINE EXISTING MANHOLE LOCATED IN THE FIELD.

CONTRACTOR TO LOCATE THE WATER LINE BEFORE INSTALLING GUARDRAIL

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BEGIN TIP PROJECT B-4159
BEGIN CONSTRUCTION
-L- POT STA. 14+25.00

BEGIN CONSTRUCTION
-Y2- POT STA. 10+70.00

END TIP PROJECT B-4159
END CONSTRUCTION
-L- POT STA. 29+75.00

STATE OF NORTH CAROLINA
DB 1058 PG 695

WESTERN CAROLINA UNIVERSITY
DB 95 PG 256

WESTERN CAROLINA UNIVERSITY
DB 95 PG 256

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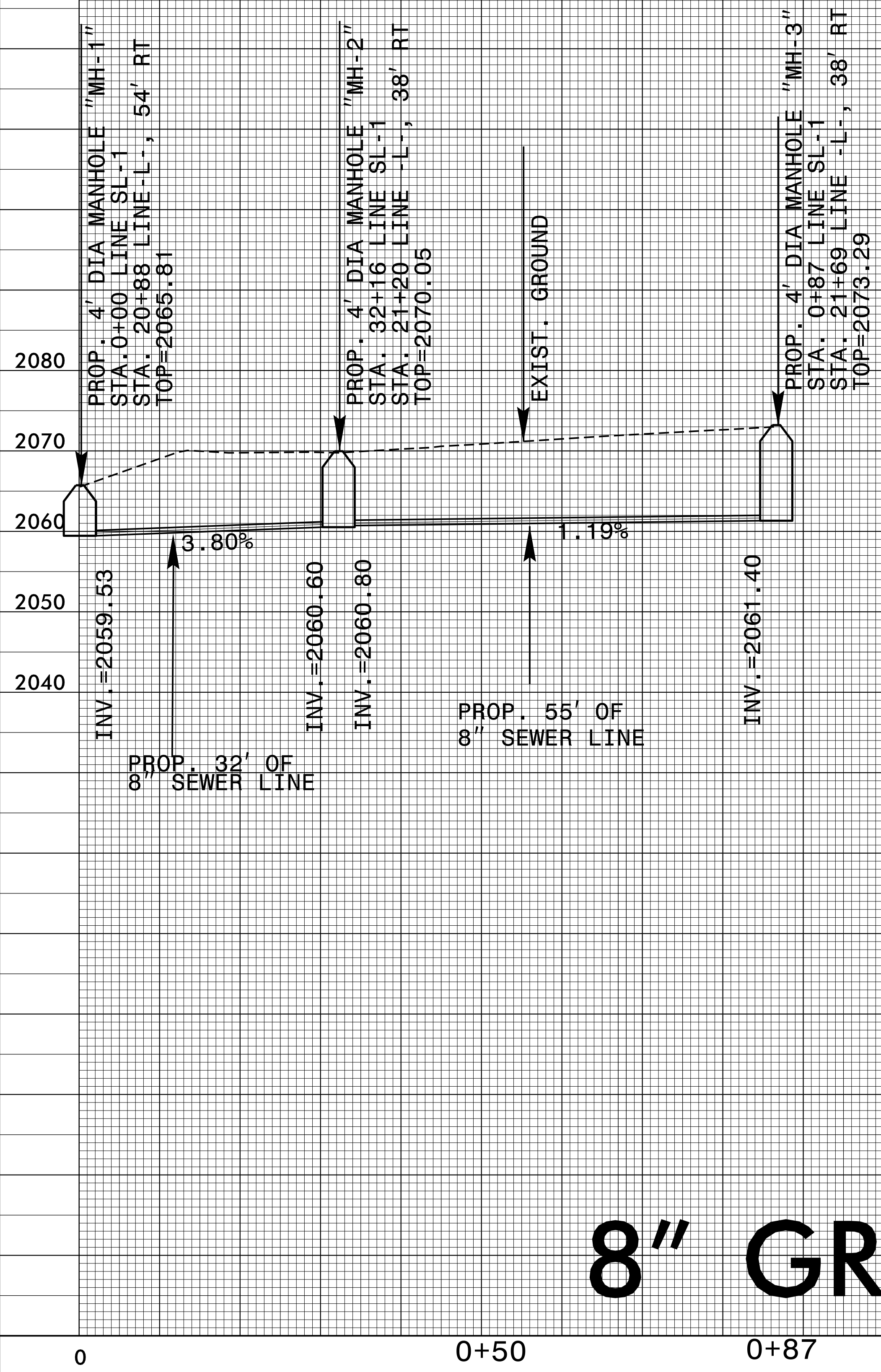
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PROJECT REFERENCE NO.	SHEET NO.
B-4159	UC-5
DESIGNED BY: ARK	
DRAWN BY: ARK	
CHECKED BY: CAB	
APPROVED BY: CAB	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. 9/28/2015	
PHONE: (919) 707-6690 FAX: (919) 250-4151	

UTILITY CONSTRUCTION

5/14/99

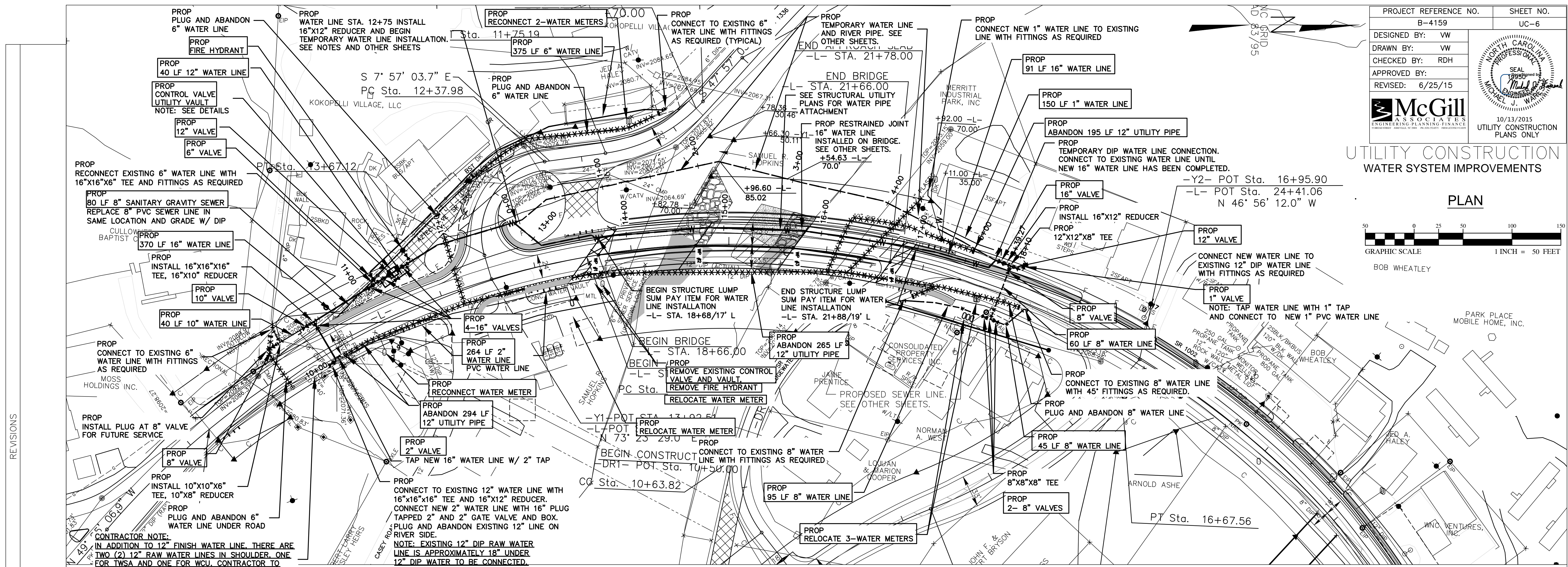
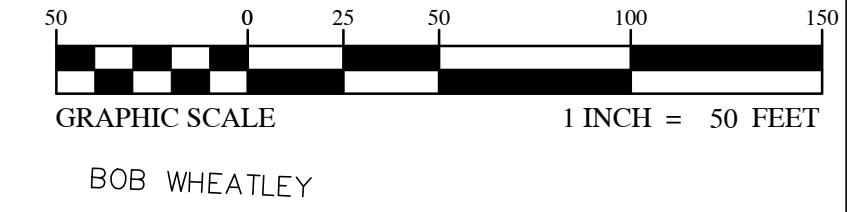
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8" GRAVITY SEWER LINE

UTILITY CONSTRUCTION
WATER SYSTEM IMPROVEMENTS

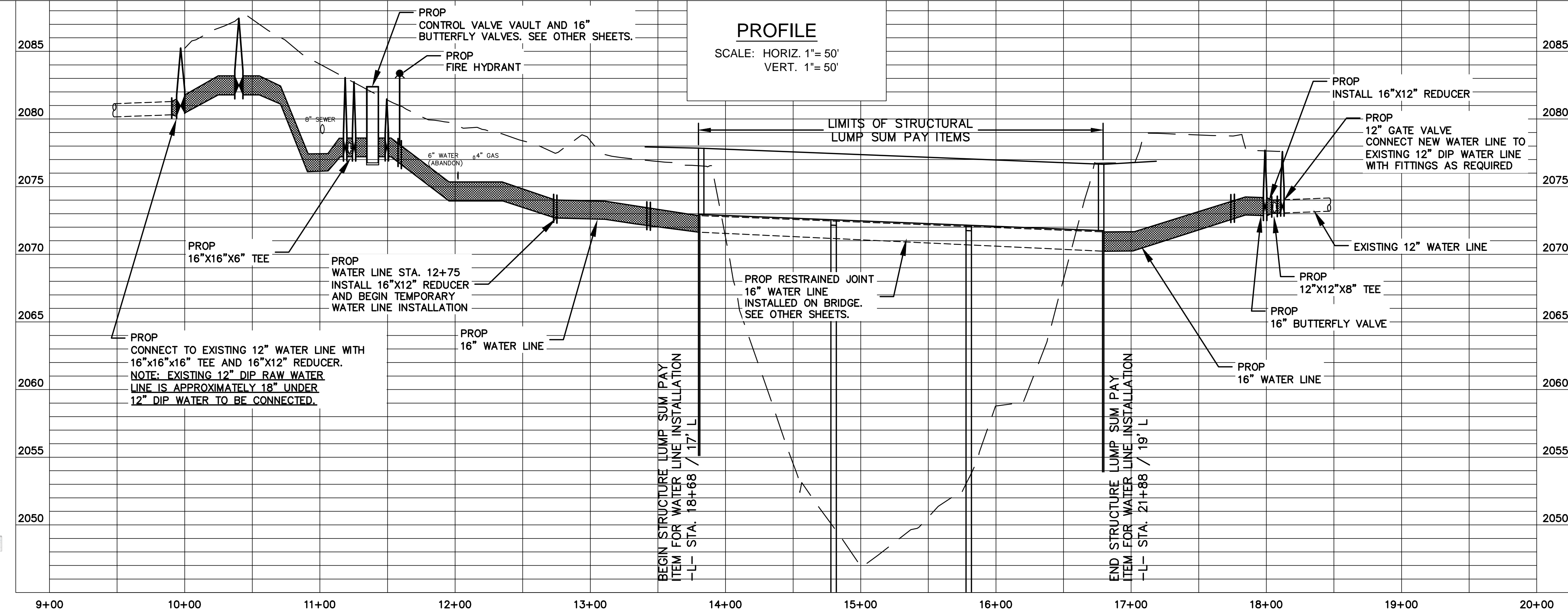
PLAN



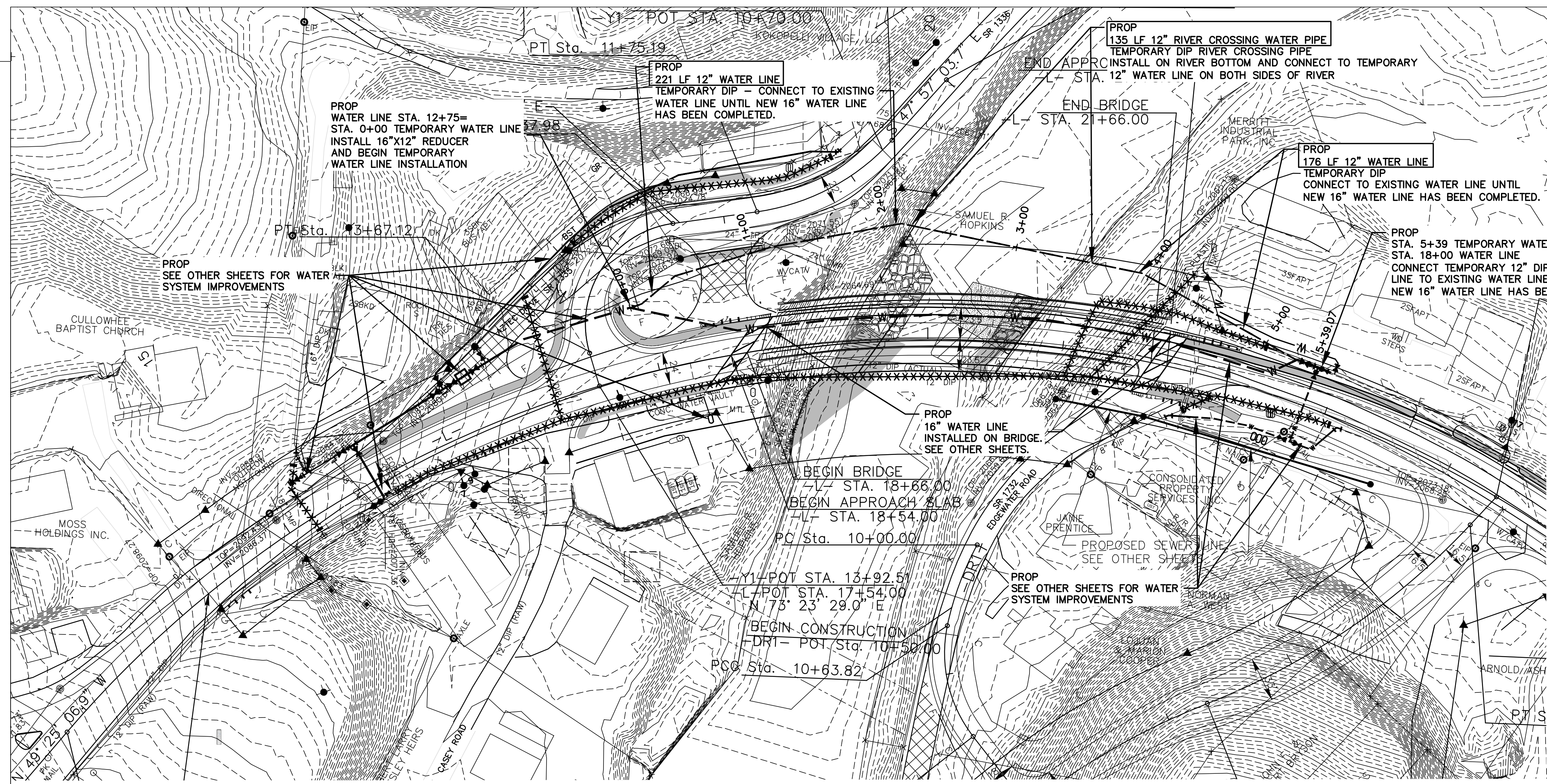
REVISIONS

PROFILE

SCALE: HORIZ. 1" = 50'
VERT. 1" = 50'



NOTE: ALL WATER LINES GREATER THAN 2" DIAMETER SHALL BE CLASS 350 DUCTILE IRON. ALL WATER LINES 2" OR SMALLER SHALL BE SDR 13.5 PVC.

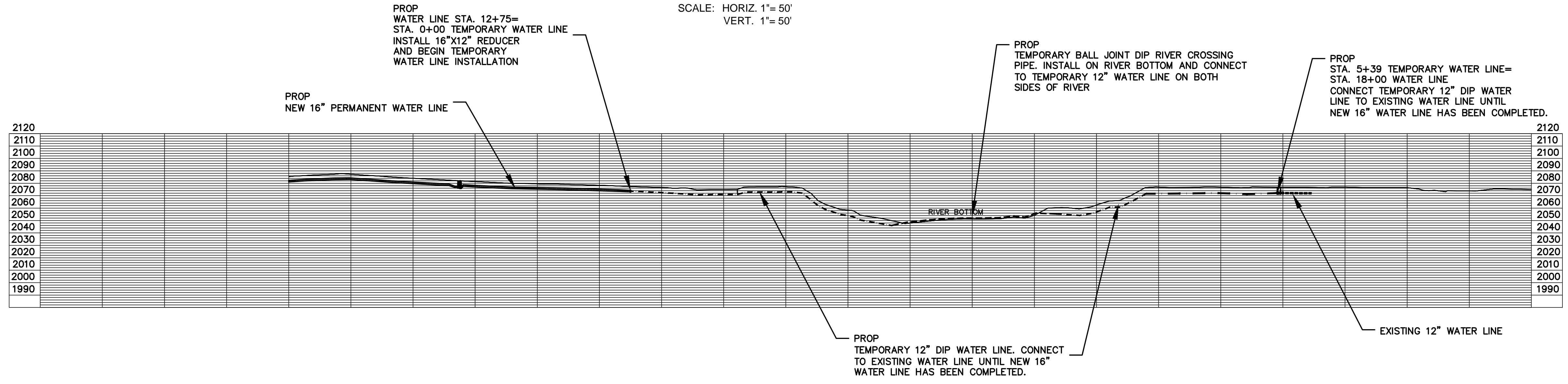


- GENERAL NOTES FOR TEMPORARY AND RIVER CROSSING PIPE INSTALLATION**
1. ALL TEMPORARY PIPING MATERIALS SHALL CONFORM TO NORTH CAROLINA DEPARTMENT OF TRANSPORTATION 2012 STANDARD SPECIFICATIONS.
 2. ALL RIVER CROSSING PIPE SHALL CONFORM TO THE RIVER CROSSING PIPE SPECIAL PROVISION.
 3. CONNECTIONS TO EXISTING WATER DISTRIBUTION SYSTEMS WILL BE ALLOWED WHEN PROPER PRECAUTIONS ARE TAKEN TO PROTECT THE EXISTING SYSTEM. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING AND UTILIZING ALL MEASURES REQUIRED BY THE WATER UTILITY OWNER IN TAPPING EXISTING WATER MAINS. THE CONTRACTOR SHALL ALSO MAKE APPROPRIATE ARRANGEMENTS WITH THE WATER UTILITY OWNER BASED ON THE SIZE AND LOCATION OF THE TAP INDICATED ON THE DRAWINGS.
 4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING ALL BACKFLOW PREVENTION DEVICES OR OTHER "JUMPERS" AS MAY BE REQUIRED BY THE PLANS OR THE WATER UTILITY OWNER AT THE POINT OF CONNECTION WITH THE EXISTING WATER SYSTEM. FOR EXTENSIONS OF THE EXISTING SYSTEM, THE VALVE ISOLATING THE NEW SYSTEM FROM THE EXISTING SYSTEM WILL NOT BE OPENED UNTIL ALL OTHER WATER SYSTEM CONSTRUCTION HAS BEEN COMPLETED AND SATISFACTORILY PASSED ALL TESTING IN COMPLIANCE WITH THESE SPECIFICATIONS UNLESS SPECIFICALLY AUTHORIZED BY THE WATER UTILITY OWNER.
 5. THE TEMPORARY WATER LINE SHALL BE PLACED IN SERVICE AFTER ALL TESTING HAS BEEN COMPLETED AND THE LINE ACCEPTED BY THE OWNER. AFTER THE NEW PERMANENT WATER LINE HAS BEEN TESTED AND ACCEPTED BY THE OWNER, ALL OF THE TEMPORARY WATER LINE AND THE RIVER CROSSING PIPE SHALL BE REMOVED BY THE CONTRACTOR.

REVISIONS

PROFILE

SCALE: HORIZ. 1"= 50'
VERT. 1"= 50'

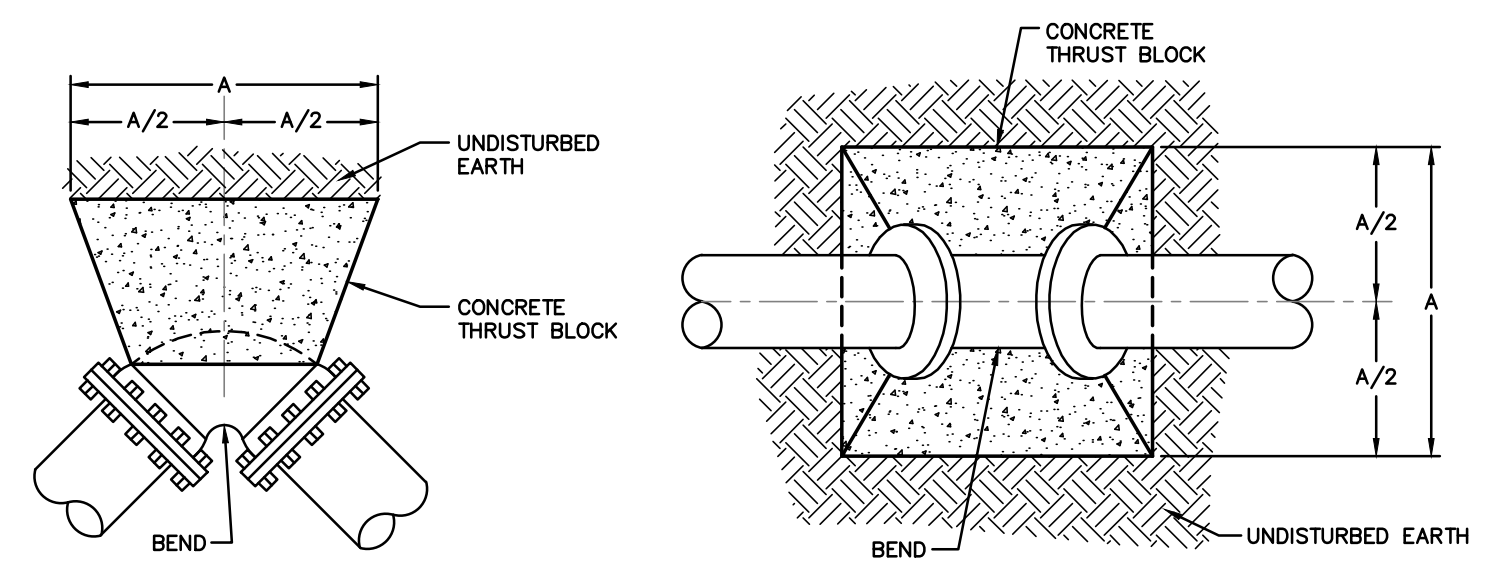


UTILITY CONSTRUCTION DETAILS

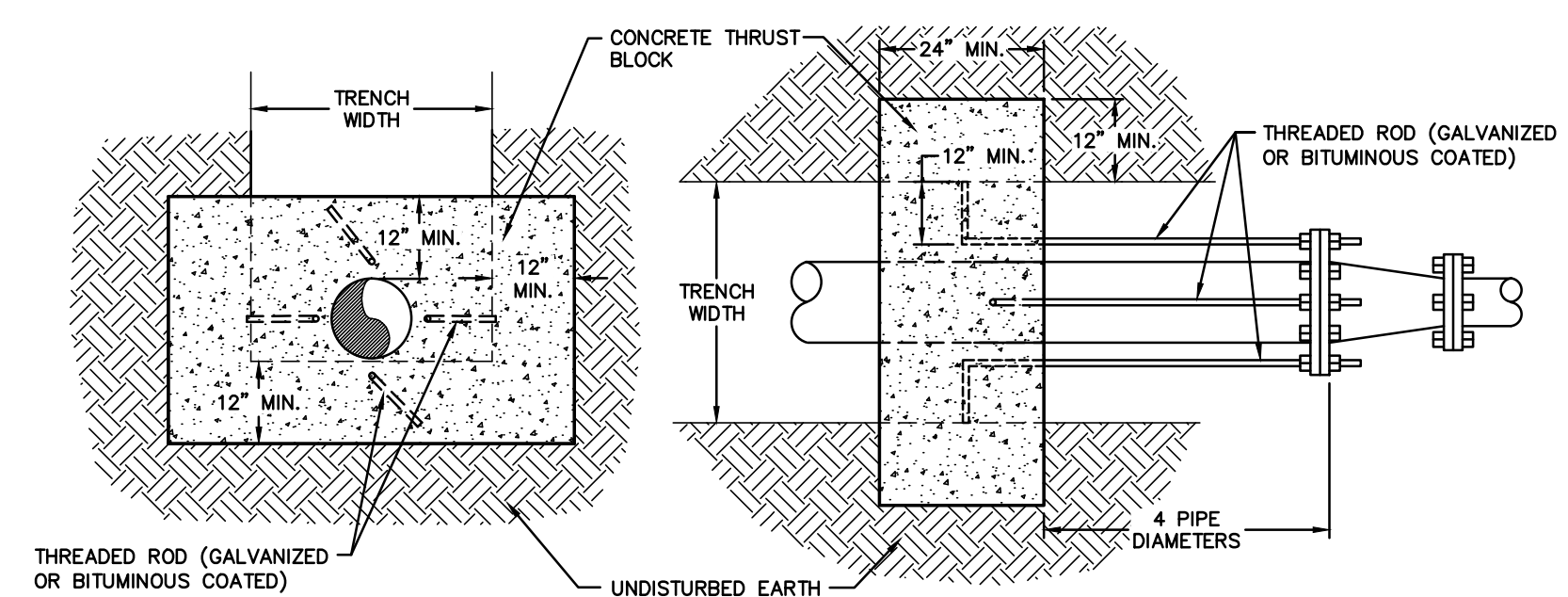
GENERAL WATER NOTES

REVISION DATE - OCTOBER, 2014

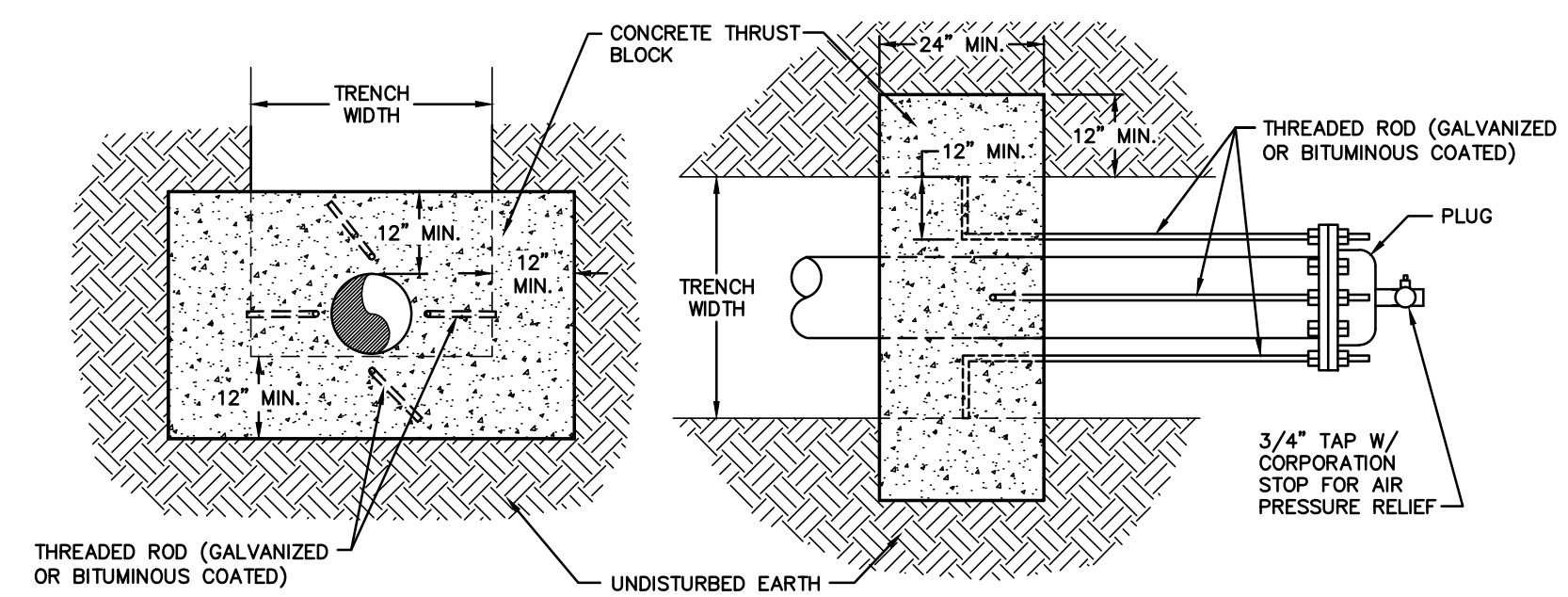
- ALL CONSTRUCTION OUTSIDE RIGHTS-OF-WAY SHALL TAKE PLACE WITHIN THE PERMANENT AND TEMPORARY ACCESS EASEMENTS SHOWN.
- CONTRACTOR SHALL REPAIR ALL DISTURBED AREAS TO EQUAL OR BETTER CONDITION THAN THE ORIGINAL SITE, OR AS NOTED.
- LOCATIONS OF EXISTING UTILITIES AS SHOWN ARE APPROXIMATE ONLY. EXACT LOCATIONS ARE TO BE VERIFIED IN THE FIELD BY THE CONTRACTOR. AT LEAST THREE DAYS PRIOR TO CONSTRUCTION, CONTRACTOR MUST NOTIFY EXISTING UTILITY OWNERS. CALL 811 BEFORE YOU DIG.
- ALL WORK NEAR AND AROUND WATERWAYS MUST CONFORM TO THE RULES OF THE STATE OF NORTH CAROLINA.
- CONTRACTOR MUST PROVIDE EROSION CONTROL DEVICES TO CONTROL RUNOFF FROM THE CONSTRUCTION SITE. CONTRACTOR WILL BE RESPONSIBLE FOR ANY FINES THAT MAY BE LEVIED DUE TO POLLUTION CREATED DURING CONSTRUCTION.
- CONTRACTOR SHALL FOLLOW ALL FEDERAL, STATE AND LOCAL HEALTH AND SAFETY REGULATIONS PERTAINING TO CONSTRUCTION OPERATIONS.
- WATER LINES SHALL HAVE 3'-0" MINIMUM COVER UNLESS OTHERWISE SHOWN ON THE DRAWINGS.
- WATER AND SEWER LINES SHALL HAVE A MINIMUM 10' HORIZONTAL SEPARATION OR A MINIMUM 18" VERTICAL SEPARATION WITH THE WATER OVER SEWER, OR BOTH WATER AND SEWER LINES SHALL BE DUCTILE IRON PIPE 10' EITHER SIDE OF THE CROSSING.
- WATER AND STORM SEWER LINES SHALL HAVE A MINIMUM 18" SEPARATION EXCEPT UNDER NCDOT STORM DRAINS WHICH SHALL HAVE 24" VERTICAL SEPARATION. IF SEPARATION IS NOT OBTAINABLE, DUCTILE IRON PIPE SHALL BE USED FOR THE WATER LINE OR A SUPPORTING MATERIAL SUCH AS FLOWABLE FILL SHALL BE INSTALLED BETWEEN THE PIPES.
- SEE PROJECT SPECIFICATIONS FOR ADDITIONAL INFORMATION.
- LEGAL DESCRIPTIONS FOR PROPOSED EASEMENTS BY OTHERS.
- CONTRACTOR SHALL NOTIFY THE PROPER LOCAL AUTHORITIES 24 HOURS PRIOR TO ANY ROAD BEING CLOSED FOR CONSTRUCTION, INCLUDING BUT NOT LIMITED TO LOCAL NEWSPAPER, RADIO STATION, FIRE DEPARTMENT, COUNTY SHERIFF'S DEPARTMENT, AMBULANCE, AND COUNTY EMERGENCY AGENCY. ALL TRAFFIC CONTROL SHALL CONFORM TO THE REQUIREMENTS OF THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION.
- CONTRACTOR SHALL NOTIFY THE ENGINEER AFTER EXISTING BURIED UTILITIES HAVE BEEN LOCATED AND 24 HOURS PRIOR TO CONSTRUCTION.
- ALL FENCE DAMAGED DURING CONSTRUCTION SHALL BE REPLACED WITH LIKE MATERIALS IN A WORKMANLIKE MANNER AND IN ACCORDANCE WITH STANDARD FENCE CONSTRUCTION PRACTICES AT THE CONTRACTOR'S EXPENSE.
- CONTRACTOR SHALL FIELD LOCATE ALL BURIED TELEPHONE LINE IN CONFLICT WITH THE PROPOSED WATER LINE. WHERE NECESSARY, EXISTING BURIED TELEPHONE LINE SHALL BE TEMPORARILY MOVED DURING CONSTRUCTION OF THE PROPOSED WATER LINE AND RE-LAID AT NO ADDITIONAL COST TO THE OWNER.
- CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO EXISTING ROADS DURING CONSTRUCTION AND SHALL REPAIR ROADS PER REQUIREMENTS OF THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION. NO OPEN CUTS OF EXISTING ROADS SHALL BE ALLOWED EXCEPT WHERE INDICATED ON THE DRAWINGS OR WHERE SPECIFIC PERMISSION IS GRANTED BY THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION. SAND OR A SIMILAR MATERIAL APPROVED BY THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION SHALL BE PLACED ON THE ROAD TO AID IN THE CLEAN UP AFTER CONSTRUCTION. A MINIMUM OF 2" OF SAND SHALL BE PLACED ON THE ROAD PRIOR TO STOCKPILING SPOIL MATERIAL ON THE ROAD SURFACE TO FACILITATE CLEANUP.



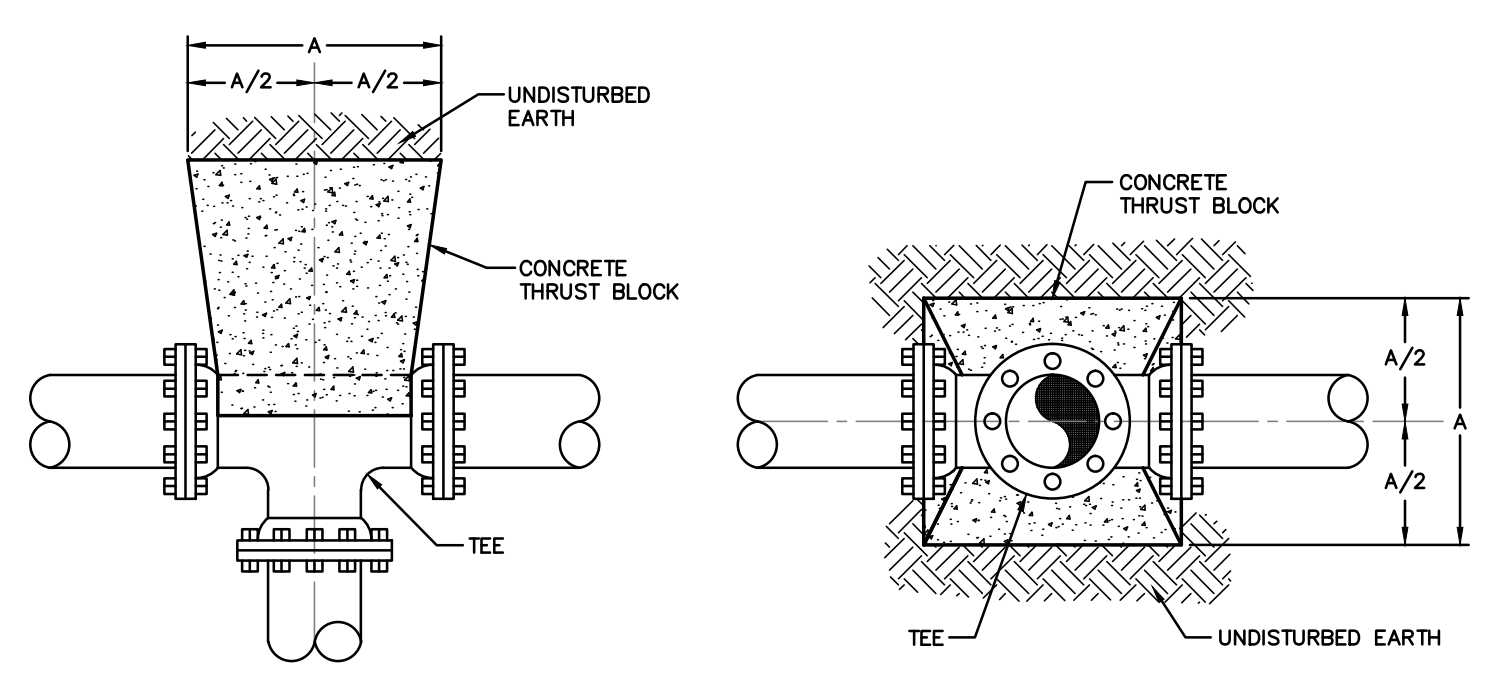
TYPICAL THRUST BLOCKS FOR BENDS
REVISION DATE - JANUARY 27, 2011



TYPICAL THRUST BLOCK FOR REDUCERS
REVISION DATE - JANUARY 27, 2011



TYPICAL THRUST BLOCK FOR PLUGS
REVISION DATE - JANUARY 27, 2011

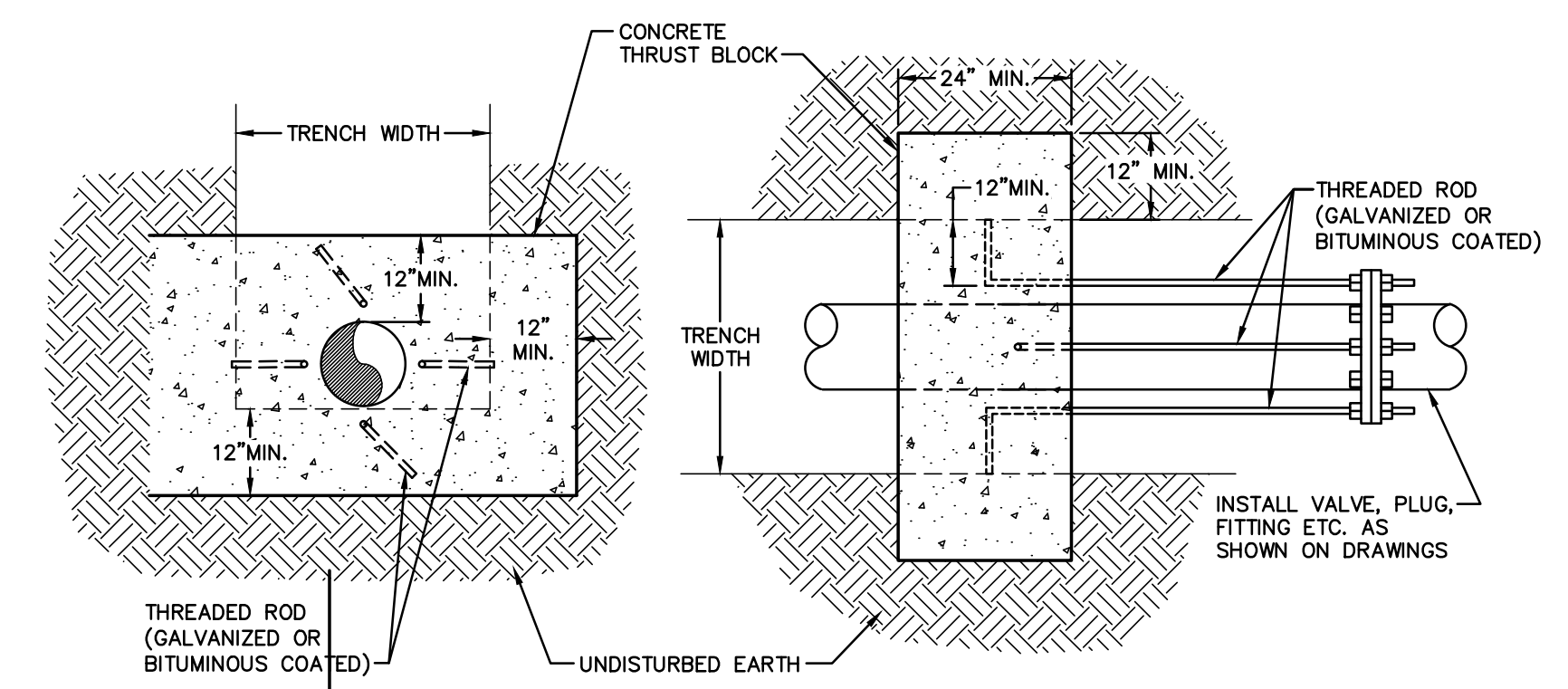


TYPICAL THRUST BLOCKS FOR TEES
REVISION DATE - JANUARY 27, 2011

- NOTES:**
- FITTING JOINTS SHALL NOT BE POURED IN CONCRETE OR HAVE CONCRETE SPILLED ON THE BOLTS OR NUTS. THE FITTING SHALL BE WRAPPED IN A LAYER OF POLYETHYLENE PLASTIC PRIOR TO POURING THE THRUST BLOCK.
 - ROD AND EYE BOLT DIAMETER SHALL BE A MINIMUM OF 3/4" AND SHALL MATCH THE SIZE OF THE BOLT PROVIDED WITH THE FITTING.
 - CONTRACTOR SHALL REPLACE FITTING BOLTS WITH THREADED ROD FOR 1/2 OF THE BOLTS SUPPLIED WITH EACH FITTING. RODS SHALL BE EQUALLY SPACED.

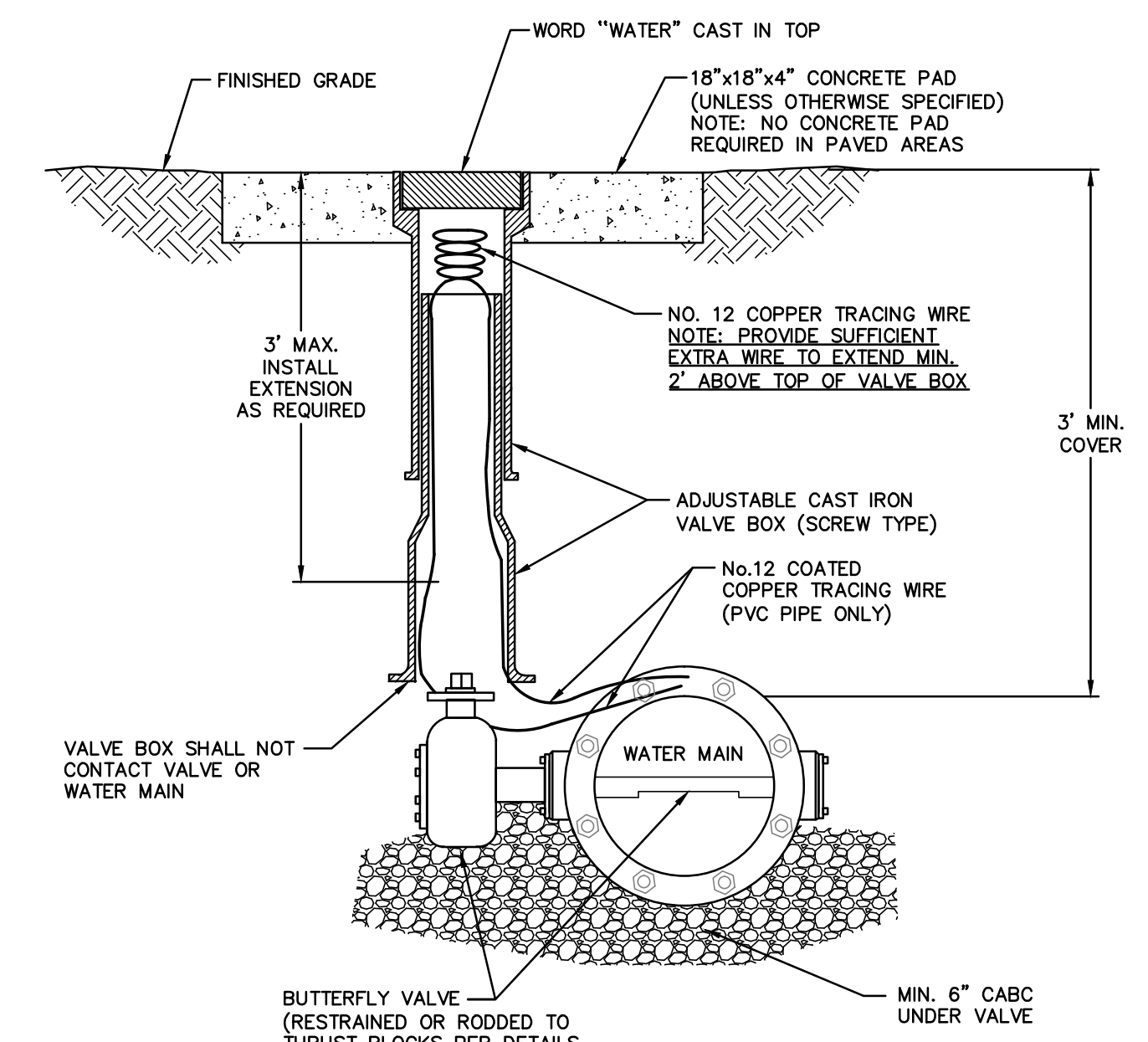
SIZE	TYPE					
	11-1/4" BEND	22-1/2" BEND	45° BEND	90° BEND	TEE	PLUG
2-6	12	12	12	16	16	14
8	12	12	16	22	22	18
10	12	14	20	28	28	22
12	12	18	24	32	32	28
14	14	20	28	38	38	32
16	16	22	32	42	42	36
18	18	26	36	48	48	40
20	20	28	40	52	52	44
24	24	34	46	64	64	54
30	30	42	58	78	78	66
36	36	50	70	94	94	80
42	40	58	80	108	108	92
48	46	66	90	124	124	104

THRUST BLOCK DIMENSION "A"
REVISION DATE - JANUARY 27, 2011

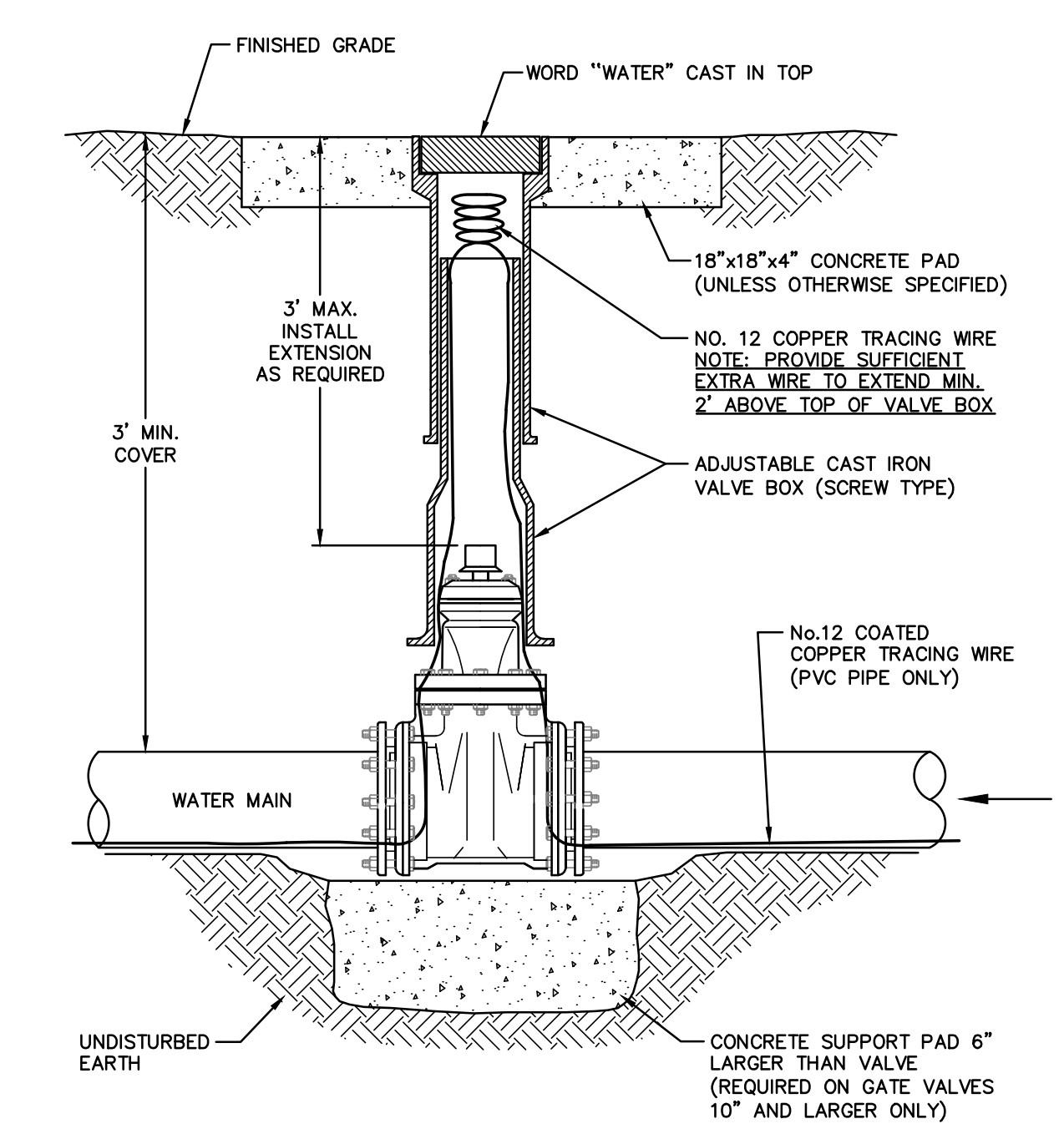


- NOTES:**
- FITTING JOINTS SHALL NOT BE POURED IN CONCRETE OR HAVE CONCRETE SPILLED ON THE BOLTS OR NUTS. THE FITTING SHALL BE WRAPPED IN A LAYER OF POLYETHYLENE PLASTIC PRIOR TO POURING THE THRUST BLOCK.
 - ROD AND EYE BOLT DIAMETER SHALL BE A MINIMUM OF 3/4" AND SHALL MATCH THE SIZE OF THE BOLT PROVIDED WITH THE FITTING.
 - CONTRACTOR SHALL REPLACE FITTING BOLTS WITH THREADED ROD FOR 1/2 OF THE BOLTS SUPPLIED WITH EACH FITTING. RODS SHALL BE EQUALLY SPACED.

TYPICAL DEADMAN
REVISION DATE - NOVEMBER 3, 2008



TYPICAL BUTTERFLY VALVE INSTALLATION
REVISION DATE - OCTOBER 15, 2012

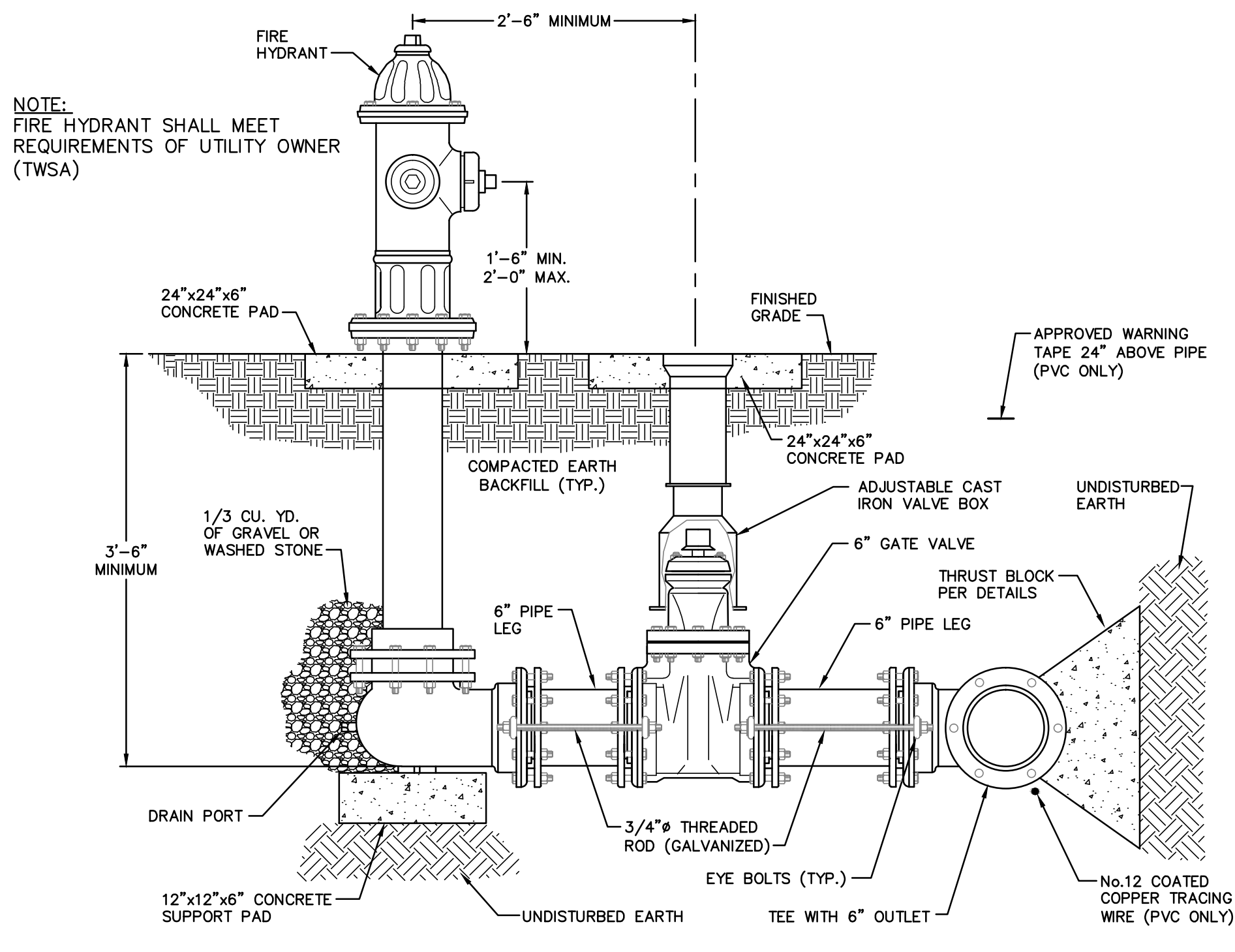


TYPICAL VERTICAL GATE VALVE INSTALLATION
REVISION DATE - NOVEMBER 3, 2008

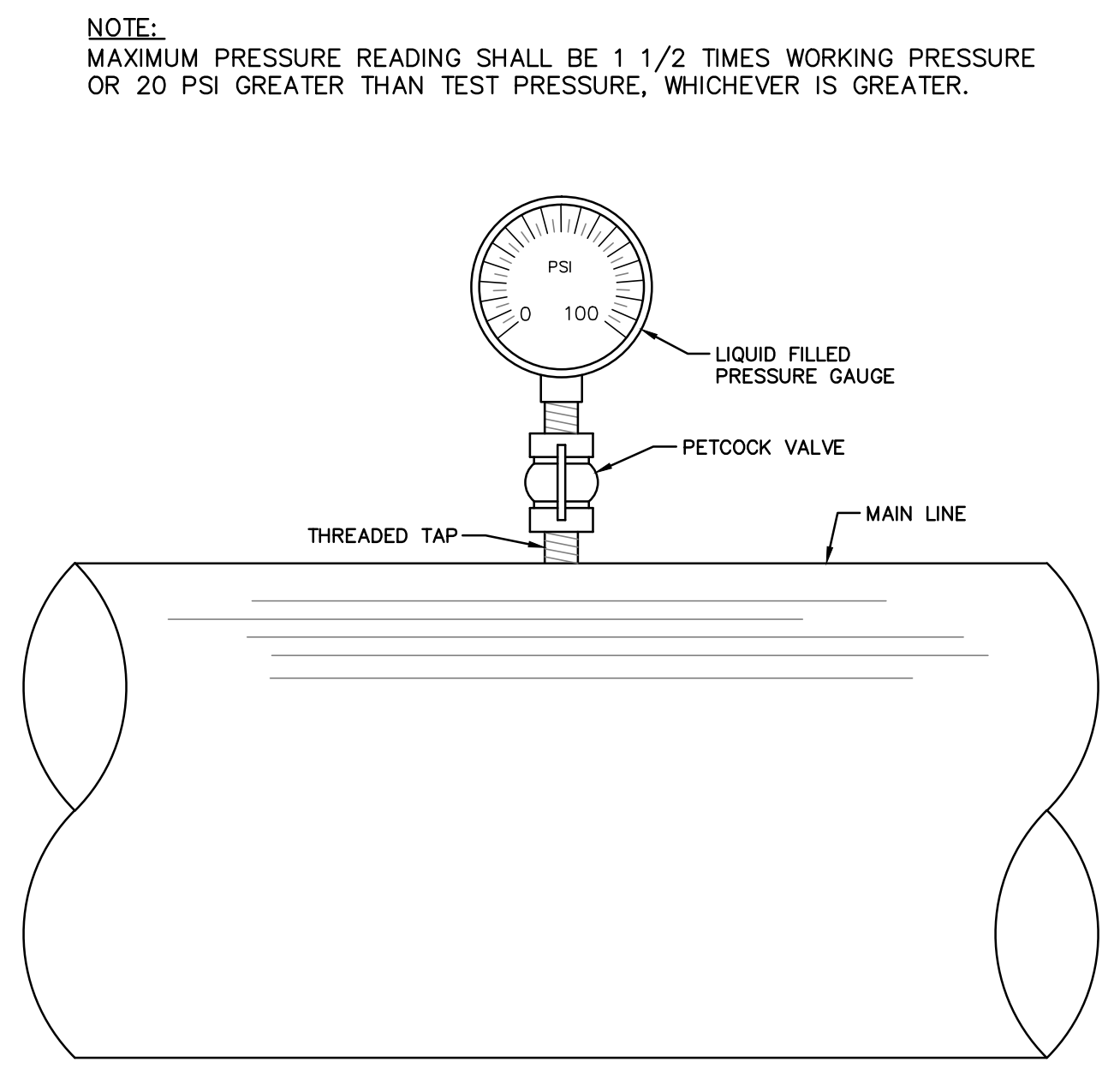
REVISIONS

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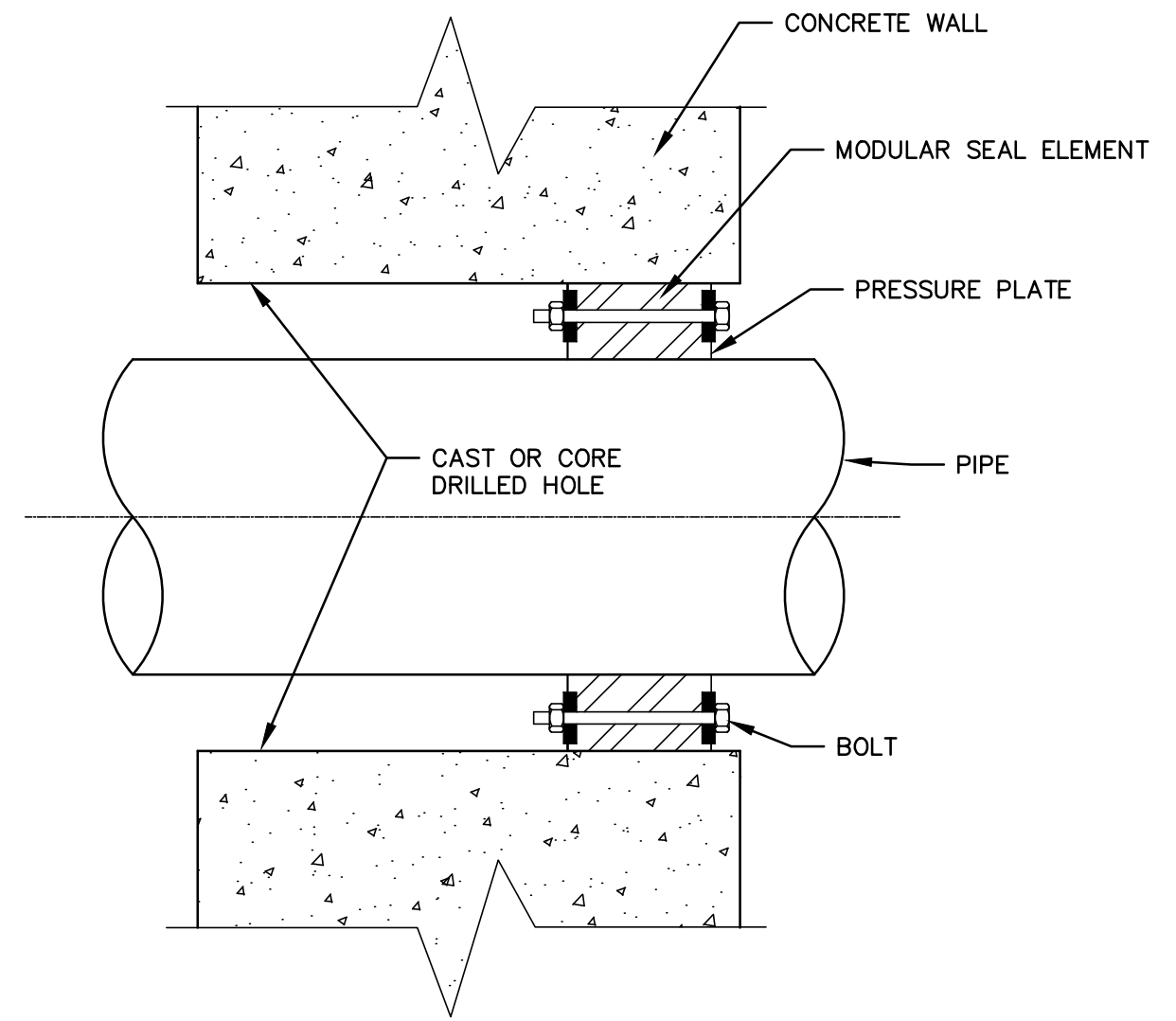
UTILITY CONSTRUCTION
DETAILS



TYPICAL FIRE HYDRANT ASSEMBLY DETAIL
REVISION DATE - NOVEMBER 3, 2008



PRESSURE GAUGE DETAIL
REVISION DATE - NOVEMBER 3, 2008



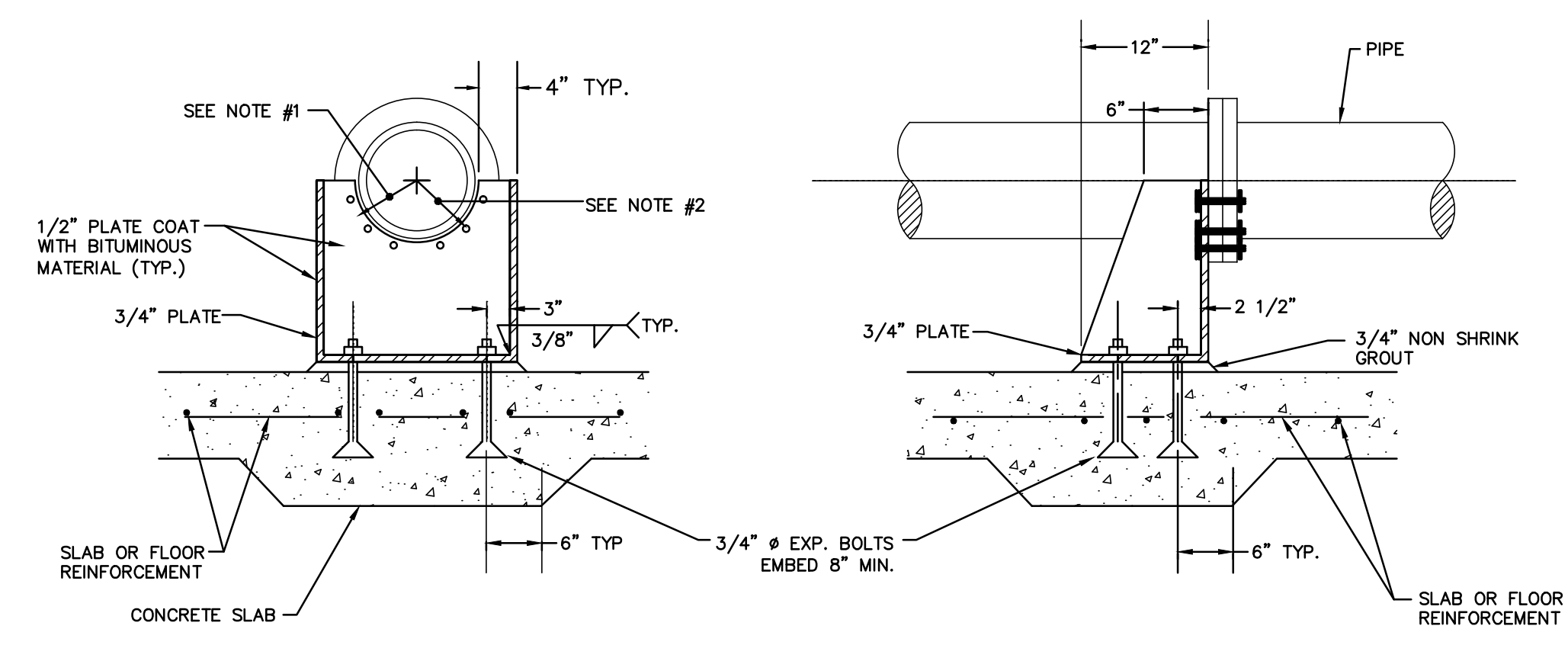
CAST OR CORE DRILLED HOLE INSTALLATION

- GENERAL NOTES:
1. TYPE OF SLEEVE SHALL BE AS NOTED ON PLANS.
 2. SIZING OF SEAL AND TYPE OF MATERIALS SHALL BE ACCORDING TO MANUFACTURER'S RECOMMENDATIONS FOR SIZE AND MATERIAL OF PIPE AND SIZE AND TYPE OF OPENING. BOLTS AND HARDWARE SHALL BE STAINLESS STEEL UNLESS APPROVED BY ENGINEER.

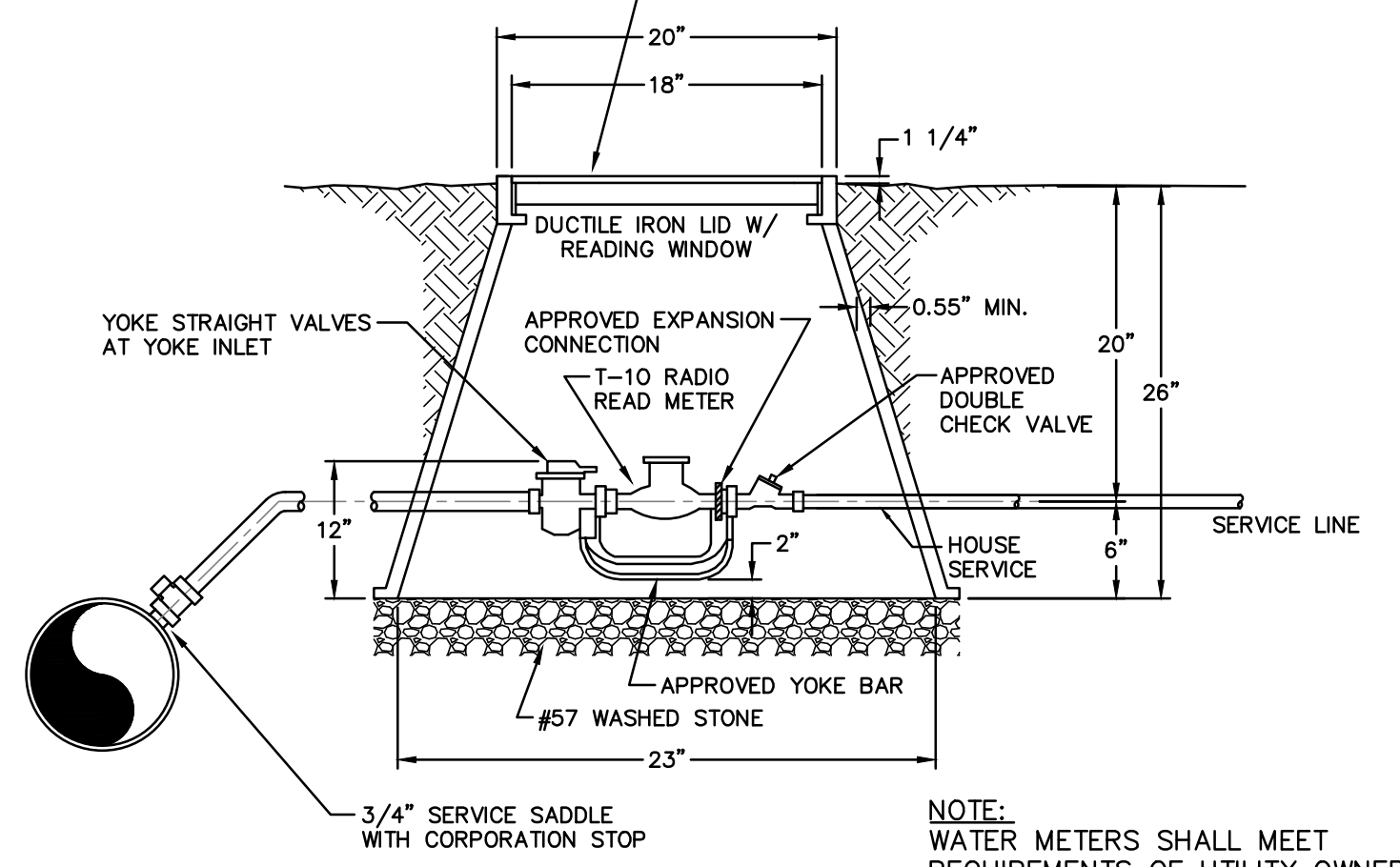
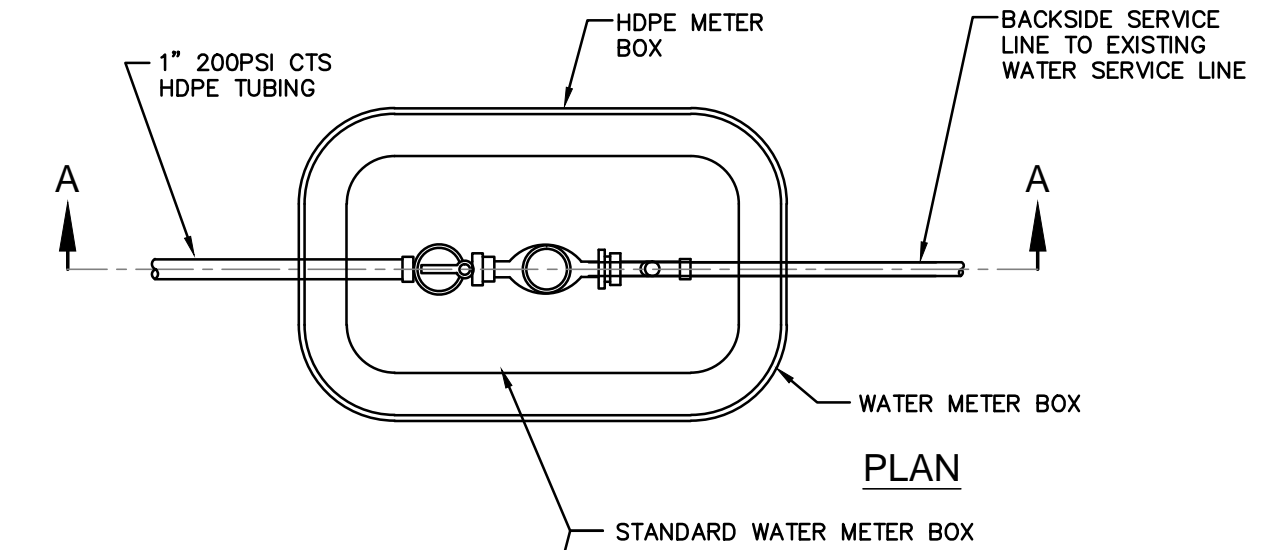
MODULAR SEAL DETAIL
REVISED FOR THIS PROJECT

REVISIONS

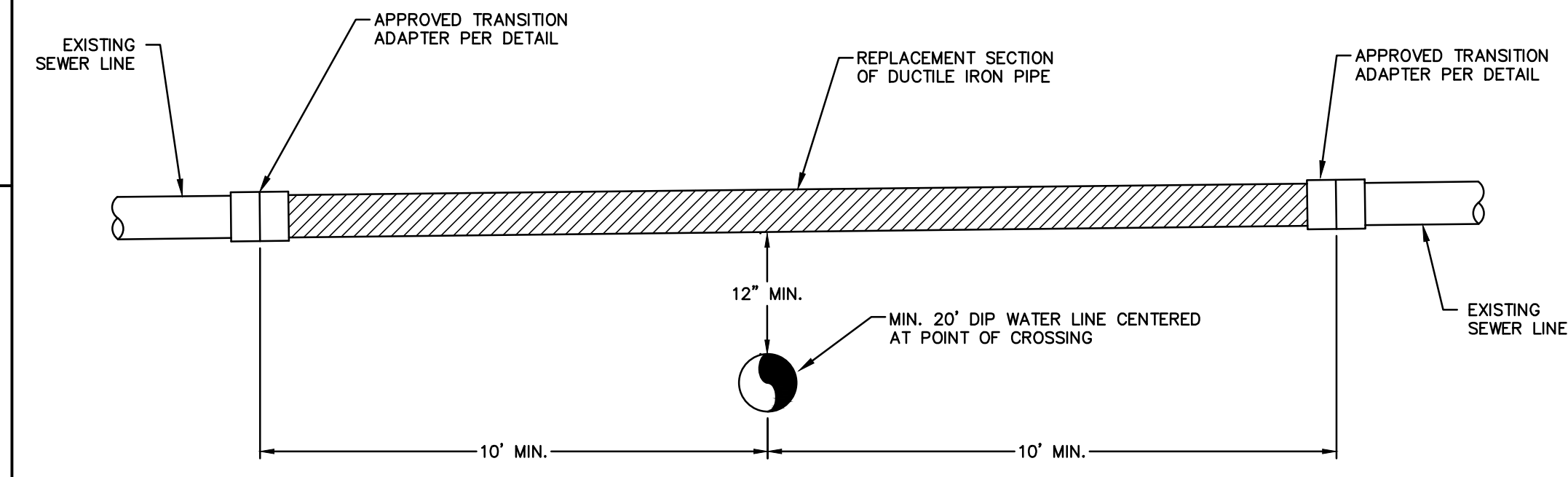
- NOTES:
1. BOLT CIRCLE IN 1/2" PLATE AND BOLT DIAMETER SHALL BE SET IN ACCORDANCE WITH BOLT CIRCLE OF PIPE FLANGE AND FLANGE BOLTS.
 2. RADIUS OF 1/2" PLATE SHALL BE SET BY RADIUS OF PIPE O.D.
 3. ALL WELDS SHALL BE GROUND SMOOTH.



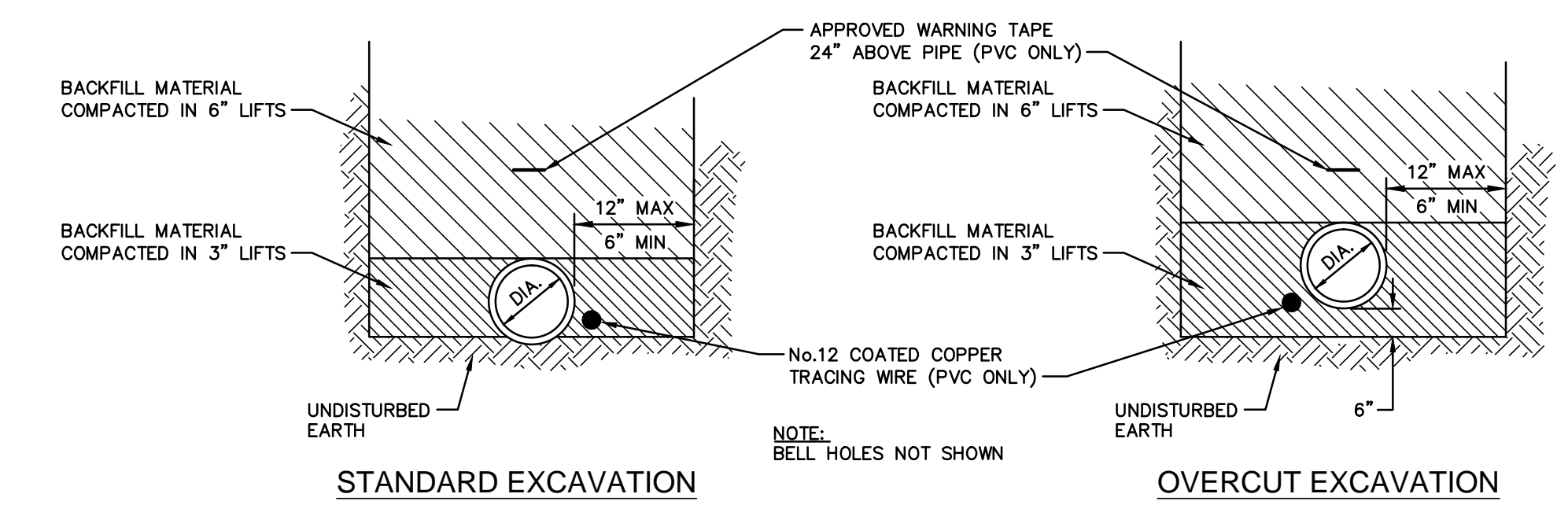
METAL PIPE SUPPORT DETAIL
REVISION DATE - NOVEMBER 3, 2008



STANDARD 5/8" WATER METER BOX DETAIL
REVISED FOR THIS PROJECT



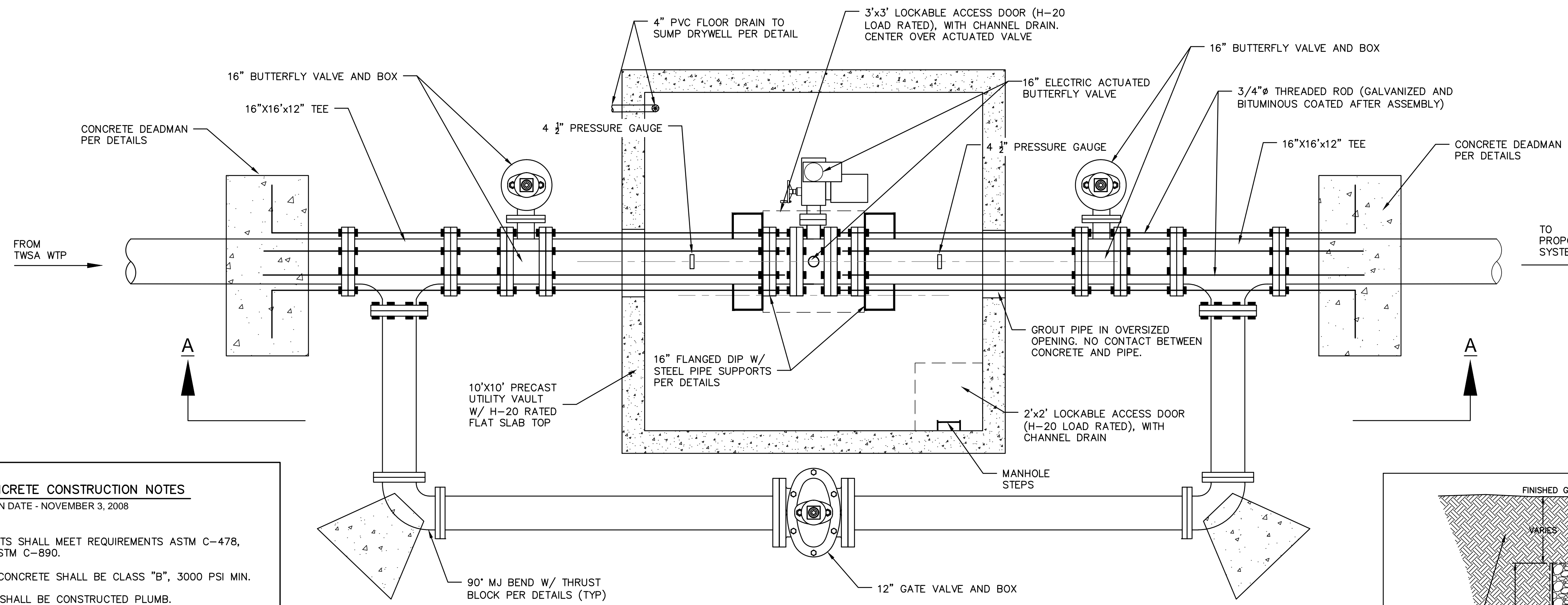
SEWER REPLACEMENT DETAIL FOR WATER CROSSINGS
(WATER CROSSING UNDER SEWER)
REVISION DATE - APRIL, 2012



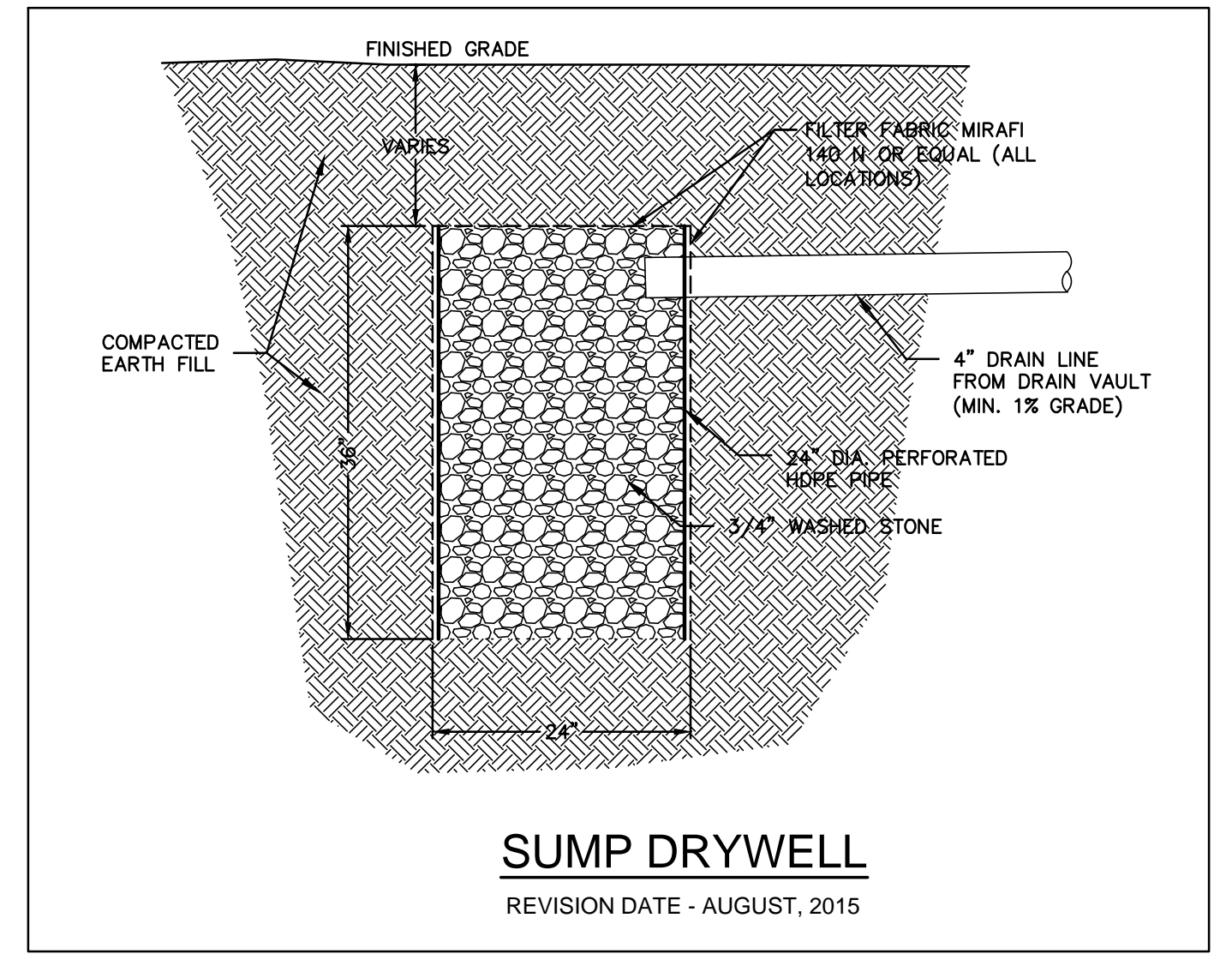
- NOTE:
1. CONSTRUCTION OF TRENCHES SHALL COMPLY WITH ALL FEDERAL, STATE AND LOCAL SAFETY AND HEALTH REGULATIONS WHICH HAVE JURISDICTION AT THE PROJECT SITE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO BE FAMILIAR WITH THE APPLICABLE REGULATIONS AND FOLLOW THEM ACCORDINGLY.

TYPICAL TRENCHING DETAILS WATER LINES
REVISION DATE - NOVEMBER 3, 2008

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PLAN



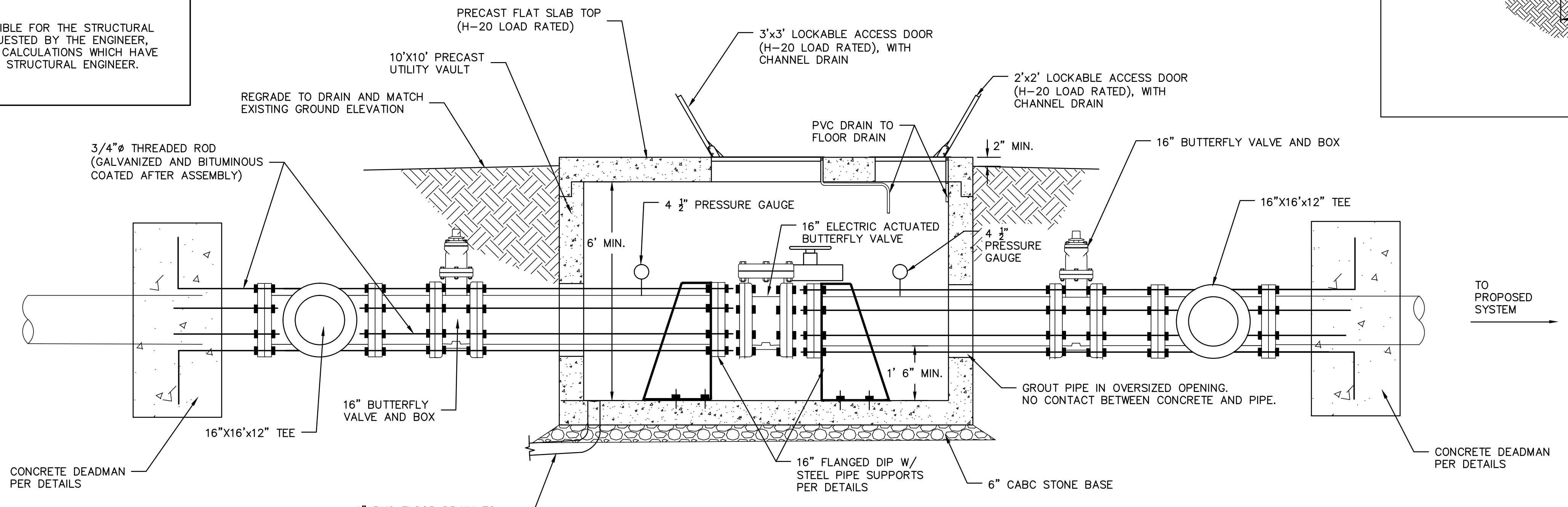
SUMP DRYWELL
REVISION DATE - AUGUST, 2015

PRECAST CONCRETE CONSTRUCTION NOTES
REVISION DATE - NOVEMBER 3, 2008

1. ALL PRE CAST COMPONENTS SHALL MEET REQUIREMENTS ASTM C-478, LATEST REVISION, AND ASTM C-890.
2. ALL "FORMED IN PLACE" CONCRETE SHALL BE CLASS "B", 3000 PSI MIN.
3. ALL PRE CAST SECTIONS SHALL BE CONSTRUCTED PLUMB.
4. ALL GRADES SHOWN ON THE PLANS ARE FOR THE CENTER OF INVERT.
5. IF MANHOLES OR VAULTS ARE SET IN LOCATION OF HIGH WATER TABLE OR UNDERGROUND WATER IS ENCOUNTERED, THE CONTRACTOR SHALL INSTALL UNDER DRAINS AND STONE AS DIRECTED IN THE FIELD BY THE ENGINEER.
6. STEPS SHALL BE INSTALLED ON STRAIGHT SIDE OF MANHOLES. STEPS IN EACH VAULT SECTION SHALL LINE UP VERTICALLY AND STEPS BETWEEN MANHOLE AND VAULT SECTIONS SHALL LINE UP VERTICALLY.
7. IF DEPTH OF VAULT DOES NOT REQUIRE USE OF MANHOLE SECTIONS, MANHOLE LID AND FRAME TO BE SET ON BRICK RISERS OR DIRECTLY ON FLAT SLAB TOP.
8. THE PRE CAST SUPPLIER SHALL BE RESPONSIBLE FOR THE STRUCTURAL DESIGN OF THE STRUCTURE AND, WHEN REQUESTED BY THE ENGINEER, SHALL SUBMIT SHOP DRAWINGS AND DESIGN CALCULATIONS WHICH HAVE BEEN SIGNED AND SEALED BY A REGISTERED STRUCTURAL ENGINEER.

NOTES:

1. ALL FITTINGS, VALVE AND PIPING WITHIN 50' OF VALVE VAULT SHALL BE RESTRAINED JOINT
2. INSTALL FLAP VALVE AT VAULT DRAIN OUTLET
3. SEE ELECTRICAL PLAN FOR ACTUATED VALVE POWER AND SCADA TELEMTRY



SECTION A-A

PROPOSED CONTROL VALVE UTILITY VAULT
NTS

REVISIONS

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LIGHTING MOUNTING AS NOTED

SYMBOL	DESCRIPTION
	CEILING MOUNTED FLUORESCENT FIXTURE; LETTER INSIDE OR BESIDE DENOTES FIXTURE TYPE
	CEILING MOUNTED FLUORESCENT LIGHTING FIXTURE, WIRED FOR NORMAL/STANDBY POWER OPERATION; LETTER INSIDE OR BESIDE DENOTES FIXTURE TYPE
	WALL MOUNTED FLUORESCENT FIXTURE
	CEILING MOUNTED INCANDESCENT OR H.I.D. FIXTURE
	WALL MOUNTED INCANDESCENT OR H.I.D. FIXTURE
	POLE STANDARD LIGHT FIXTURE UNIT - SINGLE ARM
	POLE STANDARD LIGHT FIXTURE UNIT - DOUBLE ARM
	POLE LANTERN TYPE LIGHT FIXTURE UNIT
	EXIT SIGN
	EXIT SIGN (DOUBLE FACE)
	EXIT SIGN WITH DIRECTIONAL ARROW
	EMERGENCY BATTERY PACK UNIT
	REMOTE HEAD FOR EMERGENCY BATTERY PACK UNIT

SWITCHING

SYMBOL	MOUNTING	DESCRIPTION
S	48" AFF	SWITCH, SINGLE POLE
S ₂	48" AFF	SWITCH, DPDT
S	48" AFF	SWITCH, 3-WAY
S ₄	48" AFF	SWITCH, 4-WAY
S _{DM}	48" AFF	SWITCH, DIMMER
S	48" AFF	SWITCH WITH PILOT LIGHT
S _M	48" AFF	SWITCH, MANUAL MOTOR STARTER, RATING AND THERMAL OVERLOADS TO MATCH MOTOR NAME PLATE DATA
S _{MI}	48" AFF	SWITCH, MANUAL MOTOR STARTER WITH IVORY, ILLUMINATED HANDLE
S _{PL}	48" AFF	SWITCH, MANUAL MOTOR STARTER WITH PILOT LIGHT
S	48" AFF	MANUAL MOTOR STARTER SWITCH FRACTIONAL HORSEPOWER
	AS NOTED	PHOTOELECTRIC CONTROL
	48" AFF	LIGHTING CONTACTOR
	AS NOTED	LIGHTING CONTACTOR REMOTE PUSH-BUTTON "ON-OFF" CONTROL
	AS NOTED	REPRESENTS LIGHTING CONTACTOR BEING CONTROLLED
	AS NOTED	DOOR SWITCH
	AS NOTED	MOTION CONTROL
	CEILING	MOTION SENSOR
	CEILING	OCCUPATION SENSOR

INTRUSION ALARM SYSTEM

SYMBOL	MOUNTING	DESCRIPTION
	AS NOTED	INTRUSION ALARM MAGNETIC DOOR CONTACTS
	48" AFF	INTRUSION ALARM KEY PAD
	AS NOTED	INTRUSION ALARM MOTION DETECTOR
	AS NOTED	INTRUSION ALARM MAGNETIC DOOR CONTACTS, EXPLOSION PROOF
	AS NOTED	INTRUSION ALARM BELL
	48" AFF	INTRUSION ALARM CONTROL PANEL

TELECOMMUNICATION

SYMBOL	MOUNTING	DESCRIPTION
	AS NOTED	AUTO DIALER
	36" AFF	PHONE PORT (# = NUMBER OF VOICE PORTS)
	36" AFF	DATA PORT (# = NUMBER OF DATA PORTS)
	36" AFF	COMBINATION DATA/PHONE PORT (# = NUMBER OF DATA PORTS/VOICE PORTS)
	FLOOR	PHONE PORT- FLOOR BOX-FLUSH (# = NUMBER OF DATA PORTS/VOICE PORTS)

PANELBOARDS

SYMBOL	MOUNTING	DESCRIPTION
	TOP BREAKER 6'-0" AFF	NEW PANELBOARD - SURFACE MOUNTED
	TOP BREAKER 6'-0" AFF	NEW PANELBOARD - FLUSH MOUNTED
	---	EXISTING PANELBOARD - SURFACE MOUNTED
	---	EXISTING PANELBOARD - FLUSH MOUNTED

POWER

SYMBOL	MOUNTING	DESCRIPTION
	36" AFF	DUPLEX RECEPTACLE, 20A RATED FOOTNOTE DELINEATES SPECIFIC DEVICE
		DENOTES MOUNTED 6" ABOVE COUNTERTOP REQUIREMENT - SEE ABBREVIATIONS
	36" AFF	SPECIAL PURPOSE OUTLET (SIZE INDICATED ON PLANS)
	36" AFF	SINGLE RECEPTACLE, 20A RATED
	36" AFF	DUPLEX RECEPTACLE-FLUSH-WITH GROUND FAULT CIRCUIT INTERRUPTER
	36" AFF	DOUBLE DUPLEX RECEPTACLE, 20A RATED
	18" AFF	DUPLEX RECEPTACLE-FLUSH - SURGE-PROTECTIVE DEVICE (SPD)
	FLOOR	DUPLEX RECEPTACLE- FLOOR BOX-FLUSH
	FLOOR	DUPLEX RECEPTACLE- FLOOR BOX-FLUSH - SURGE-PROTECTIVE DEVICE (SPD)
	FLOOR	COMBINATION DUPLEX RECEPTACLE (SPD)/VOICE OUTLET PORT- (# DESIGNATES NUMBER OF VOICE PORTS) - FLOOR BOX-FLUSH
	48" AFF	COMBINATION DISCONNECT SWITCH/MOTOR STARTER DESIGNATION
	AS NOTED	MOTOR (HORSEPOWER INDICATED ON PLANS)
	AS NOTED	JUNCTION BOX
	T-1	TRANSFORMER DESIGNATION
	AS NOTED	CIRCUIT MONITOR
	AS NOTED	VOLTAGE REGULATOR
	AS NOTED	SURGE-PROTECTIVE DEVICE
	48" AFF	EMERGENCY POWER SHUT-OFF SWITCH
	48" AFF	LOCKABLE ON-OFF-AUTO SELECTOR SWITCH W/RED INDICATOR LIGHT
	48" AFF	DISCONNECT SWITCH DESIGNATION
	480V	TRANSFORMER
	50KVA	SIZE
	120V	VOLTAGES
		SHIELDED ISOLATION TYPE TRANSFORMER

TYPICAL ANNOTATION

	DRAWING KEYNOTE
	DEMOLITION KEYNOTE
	REVISION TAG
	REVISION CLOUD
	INSTRUMENTATION TAG
	PROCESS EQUIPMENT TAG
	HVAC EQUIPMENT TAG
	AREA NEMA DESIGNATION TAG

PROCESS & INSTRUMENTATION LEGEND

CIRCUIT TAG DESCRIPTIONS:

SBRCP300-15: 8 (4) #14 3/4"

CONDUIT SIZE

SIZE OF CONDUCTORS

OF SPARE CONDUCTORS

OF ACTIVE CONDUCTORS

ADD FOR TOTAL # OF CONDUCTORS (EX. 8 + 4 = 12 TOTAL CONDUCTORS)

SAFETY SWITCH DESIGNATOR

240/30/3/15 D.E./1

VOLTAGE

AMPERAGE

#POLES

FUSE SIZE AND TYPE

NF=NON-FUSED

NEMA RATING

SAFETY SWITCH

- NOTES:
- INSTALL ALL FUSES SO THAT LABELS ARE RIGHT-SIDE UP AND FACING OUTWARD.
 - INSTALL OXIDATION INHIBITING COMPOUND SUCH AS PENETROX IN ALL FUSE CLIPS OF SAFETY SWITCHES LOCATED OUTDOORS OR IN WET ENVIRONMENTS.

CONDUIT FEEDERS AND BRANCH CIRCUITS

SYMBOL	DESCRIPTION
	OVERHEAD ELECTRIC SERVICE
	OVERHEAD PRIMARY ELECTRIC SERVICE
	OVERHEAD SECONDARY ELECTRIC SERVICE
	OVERHEAD TELEPHONE SERVICE
	OVERHEAD FIBER OPTIC
	OVERHEAD TELEVISION SERVICE
	CONDUIT - EMBEDDED IN FLOOR OR EARTH
	UNDERGROUND ELECTRIC SERVICE
	UNDERGROUND PRIMARY ELECTRIC SERVICE
	UNDERGROUND SECONDARY ELECTRIC SERVICE
	UNDERGROUND TELEPHONE SERVICE
	UNDERGROUND FIBER OPTIC
	UNDERGROUND TELEVISION SERVICE
	CONDUIT - IN WALL, CEILING OR EXPOSED
	CONDUIT WITH IDENTIFIER
	CONDUIT TURNED UP
	CONDUIT TURNED DOWN
	CONDUIT CAPPED
	BRANCH CIRCUIT WIRING
	CIRCUIT HOME RUN
	IN-LINE HOME RUN
	CIRCUIT NUMBER
	EMERGENCY ONLY CIRCUIT
	NORMAL EMERGENCY CIRCUIT
	DEVICES ON SAME CIRCUIT, SEPARATELY CONTROLLED
	ELECTRIC FEEDER LEGEND INDICATION

PROCESS EQUIPMENT TAGGING

PROCESS SUB AREA

DEVICE NUMBER

SUB-DEVICE NUMBER

PROCESS MAIN AREA

EQUIPMENT

B-100A

EQUIPMENT:

A	AUGER	G	GRINDER
AC	AIR COMPRESSOR	ICS	INDENTED CYLINDER SEPARATOR
ASC	AIR SCREEN CLEANER	MX	MIXER
B	BLOWER	P	PUMP
C	CONVEYOR	PR	PRESS
CFD	CHEMICAL FEEDER	S	SAMPLER
CP	CONTROL PANEL	SC	SCREEN
D	DRIVER	SV	SOLENOID VALVE
DPC	DEFINITE PURPOSE CONTACTOR	T	TANK
E	ELEVATOR	V	VALVE
EX	EXPELLER	ZS	POSITION SWITCH

INSTRUMENT & FUNCTION TAGGING

LLL = FUNCTIONAL INSTRUMENT IDENTIFICATION LETTERS FROM INSTRUMENT IDENTIFICATION TABLE.

NNNg = LETTER SUFFIX TO DISTINGUISH BETWEEN INSTRUMENTS IN LOOP WITH SAME FUNCTIONAL IDENTIFICATION. (USED AS REQ'D.)

NNN = LOOP NUMBER

DUCTBANK SYMBOL KEY

NEW CONDUIT, TYP.

EXISTING CONDUIT, TYP.

NOTE: REFER TO DUCTBANK SCHEDULE & PLANS FOR EXACT NUMBER & SIZE OF CONDUITS.

GENERAL NOTES:

- DRAWINGS ARE DIAGRAMMATIC IN NATURE, CONTRACTOR SHALL VERIFY DIMENSIONS PRIOR TO INSTALLATION. CONTRACTOR SHALL COORDINATE ALL WORK WITH OTHER DIVISION TRADES TO PROVIDE A COMPLETE AND OPERABLE SYSTEM. LOCATE FIXTURES, DEVICES, ETC. IN ORDER TO AVOID INTERFERENCES.
- ALL WORK SHALL BE PERFORMED AS REQUIRED BY APPLICABLE SECTION OF THE NATIONAL ELECTRICAL CODE, LATEST EDITION, AND ALL GOVERNING LOCAL CODES, LAWS, AND/OR REGULATIONS.
- SYSTEM AND EQUIPMENT GROUNDING CONTINUITY SHALL BE ASSURED AS REQUIRED BY APPLICABLE SECTIONS OF THE NATIONAL ELECTRICAL CODE.
- ALL WIRING SHALL BE TYPE "THIN-THIN" U.O.N.; MINIMUM WIRING SHALL BE #12 (POWER WIRE). ALL WIRE SHALL BE COPPER. MINIMUM CONDUIT SIZE FOR METALLIC CONDUIT TO BE 3/4" AND 1" FOR PVC.
- ALL CIRCUIT PROTECTIVE DEVICES SHALL HAVE THE REQUIRED RATING INTERRUPTING CAPACITY EQUAL TO OR GREATER THAN THE AVAILABLE SHORT-CIRCUIT CURRENT AT ITS SUPPLY TERMINAL; MINIMUM INTERRUPTING CAPACITY SHALL BE 10,000 AMPS. SYMMETRICAL A.I.C. FOR 120/208V SYSTEMS AND 14,000 AMPS, SYMMETRICAL A.I.C. FOR 277/480V SYSTEMS. REFER TO PANEL SCHEDULES FOR A.I.C. RATINGS.
- ALL OUTDOOR EXPOSED CONDUIT TO BE RIGID STEEL CONDUIT. TRANSITION FROM UNDERGROUND TO EXPOSED SHALL BE RIGID STEEL CONDUIT.
- ALL UNDERGROUND CONDUITS TO BE SCHEDULE 40 PVC UNLESS OTHERWISE INDICATED. ALL CONDUITS SHALL INCLUDE A NYLON PULL CORD.

ABBREVIATIONS

A OR AMP	AMPERE	GFCI	GROUND FAULT CIRCUIT INTERRUPTER	NPT	NOMINAL PIPE THREADS
A.C.	ALTERNATING CURRENT	GND. OR GRD.	GROUND	OE	OVERHEAD ELECTRIC
AF	FRAME AMPERE	H.I.D.	HIGH INTENSITY DISCHARGE	P	# OF POLES IN CIRCUIT BREAKER
A.F.F.	ABOVE FINISHED FLOOR	HP	HORSEPOWER	PH OR #	PHASE
A.F.G.	ABOVE FINISHED GRADE	H.P.S.	HIGH PRESSURE PUMP STATION	PM	POWER MONITOR
A.I.C.	AMPERE INTERRUPTING CURRENT	HSPS	HIGH SERVICE PUMP STATION	PMT	PAD MOUNTED TRANSFORMER
AS	AMMETER SELECTOR SWITCH	HVAC	HEAT-VENT-AIR CONDITIONING	PNL	PANEL
AT	TRIP AMPERE	I.G.	ISOLATED GROUND	PSI	POUNDS PER SQUARE INCH
A.T.S.	AUTOMATIC TRANSFER SWITCH	I.D.	INNER DIAMETER	PT	POTENTIAL TRANSFORMER
AUTO	AUTOMATIC	IMC	INTERMEDIATE METAL CONDUIT	PVC	POLYVINYL CHLORIDE
AWG	AMERICAN WIRE GAUGE	IND.	INDUSTRIAL	QTY.	QUANTITY
B.F.G.	BELOW FINISHED GRADE	JB	JUNCTION BOX	RGS	RIGID GALVANIZED STEEL
BLDG.	BUILDING	J.I.C.	JOINT INDUSTRIAL COUNCIL	RVSS	REDUCED VOLTAGE SOLID STATE SURGE CAPACITOR
C	COUNTERTOP RECEPTACLE	KA	KILOAMPERE	SC	SYSTEM CONTROL CENTER
C OR COND.	CONDUIT	KCMIL	1000 CIRCULAR MILS	SCC	SURGE CAPACITOR
CB	CIRCUIT BREAKER	KV	KILOVOLT	SER	SERVICE ENTRANCE RATED
CKT	CIRCUIT	KVA	KILOVOLT AMPERE	SM	SUB-METER
CP	CONTROL PANEL	KW	KILOWATT	SP	SPARE
CPT	CONTROL PANEL TRANSFORMER	LA	LIGHTNING ARRESTOR	SPD	SURGE-PROTECTIVE DEVICE
CR	CONTROL RELAY	LC	LIGHTING CONTACTOR	S.S.	STAINLESS STEEL
DESIG	DESIGNATION	LTG	LIGHTING	SWBD	SWITCHBOARD
DIA.	DIAMETER	MAX	MAXIMUM	TBA	TO BE ABANDONED
DIV.	DIVISION	MCB	MAIN CIRCUIT BREAKER	TBR	TO BE REMOVED
DPDT	DOUBLE POLE, DOUBLE THROW	mA	MILI-AMP	TCC	TELECOMMUNICATIONS CLOSET
DS	DISCONNECT SWITCH	MC	MANUFACTURER'S CABLE	TDC	TELECOMMUNICATIONS DISTRIBUTION CLOSET
E.C.	ELECTRICAL CONTRACTOR	MCC	MOTOR CONTROL CENTER	TYP.	TYPICAL
E.H.	ELECTRIC HANDHOLE	MFR	MANUFACTURER	UE	UNDERGROUND ELECTRIC
EMH	ELECTRIC MANHOLE	MIN.	MINIMUM	UH	UNIT HEATER
EP	EXPLOSION PROOF	M.L.O.	MAIN LUG ONLY	UL	UNDERWRITERS LABORATORY
E.T.R.	EXISTING TO REMAIN	M.O.D.	MOTOR OPERATED DAMPER	U.O.N.	UNLESS OTHERWISE NOTED
EUH	ELECTRIC UNIT HEATER	MS	MOTOR STARTER	UE	UNDERGROUND ELECTRIC
E.W.	EACH WAY	MTD.	MOUNTED	UT	UNDERGROUND TELEPHONE
EX	EXAMPLE	N/A	NOT APPLICABLE	UV	ULTRAVIOLET
EXH	EXHAUST FAN	N.C.	NORMALLY CLOSED	V	VOLT
FU	FUSE	NEMA	NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION	VAC	VOLTS ALTERNATING CIRCUIT
FRE	FIBERGLASS REINFORCED EPOXY	NID	NETWORK INTERFACE DEVICE (4 POSITION)	VS	VOLTMETER SELECTOR SWITCH
G.C.	GENERAL CONTRACTOR	N.O.	NORMALLY OPEN	W	WIRE
GEN	GENERATOR	NO.	NUMBER	WP	WEATHERPROOF
				XMR	TRANSFORMER

INSTRUMENT IDENTIFICATION TABLE

ANSI/ISA-5.1-2009

LETTER	FIRST LETTERS		SUCCEEDING LETTERS		
	MEASURED OR INITIATING VARIABLE	VARIABLE MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT/ACTIVE FUNCTION	FUNCTION MODIFIER
A	ANALYSIS (2)		ALARM		
B	BURNER, COMBUSTION		(1)	CLOSE, STOP, DECREASE (1)	OFF (1)
C	(1)			CONTROL	CLOSE
D	(1)	DIFFERENCE, DIFFERENTIAL		OPEN, START, INCREASE (1)	
E	VOLTAGE		SENSOR, PRIMARY ELEMENT		ENABLED (1)
F	FLOW, FLOW RATE	RATIO			FAIL (1)
G	(1)		GLASS, GAUGE, VIEWING DEVICE		
H	HAND				HIGH (OPENED)
I	CURRENT (ELECTRICAL)		INDICATE		
J	POWER		SCAN		
K	TIME, TIME SCHEDULE	TIME RATE OF CHANGE		CONTROL STATION	
L	LEVEL		LIGHT		
M	MOTOR, MOTION (1)			MOTOR (1)	MIDDLE, INTERMEDIATE
N	(1)		(1)	(1)	ON OR OPERATE (1)
O	(1)		ORIFICE, RESTRICTION		
P	PRESSURE, VACUUM		POINT (TEST CONNECTION)	PUMP (1)	OPEN
Q	QUANTITY (2)	INTEGRATE, TOTALIZE			
R	RADIATION	RECORD			RUN
S	SPEED, FREQUENCY	SAFETY OR SOLENOID		SWITCH	STOP
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE (2)		MULTIFUNCTION (2)	MULTIFUNCTION (2)	
V	VIBRATION, MECHANICAL ANALYSIS			VALVE, DAMPER, LOUVER	
W	WEIGHT, FORCE		WELL, PROBE		
X	UNCLASSIFIED, (2)	X-AXIS	ACCESSORY DEVICES, UNCLASSIFIED (2)	UNCLASSIFIED (2)	UNCLASSIFIED (2)
Y	EVENT, STATE, PRESENCE	Y-AXIS		AUXILIARY DEVICES	
Z	POSITION, DIMENSION	Z-AXIS, SAFETY INSTRUMENTED SYSTEM		DRIVER, ACTUATOR, UNCLASSIFIED FINAL CONTROL ELEMENT	

- USER'S CHOICE
- WHEN USED, SYMBOL OR SIGNAL LINE IS INDICATED.

UTILITY CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
B-4159	UC-11
DESIGNED BY: DLG	
DRAWN BY: SAR	
CHECKED BY: PAF	
APPROVED BY:	
REVISED:	

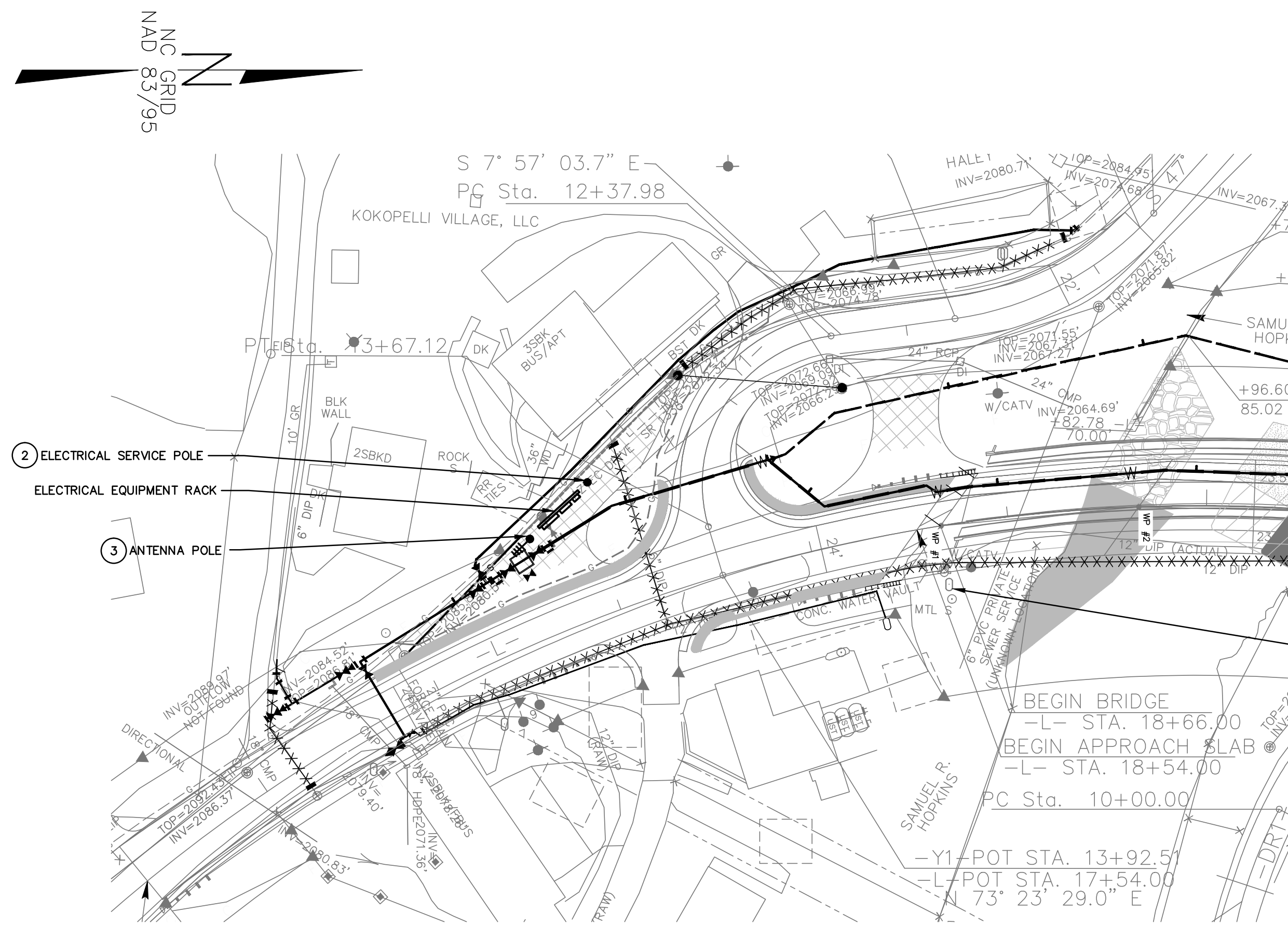
McGill ASSOCIATES ENGINEERING-PLANNING-FINANCE

UTILITY CONSTRUCTION PLANS ONLY

DRAWING NOTES:

- CONTRACTOR TO COORDINATE ELECTRICAL SERVICE INSTALLATION WITH POWER COMPANY.
- EXACT LOCATION OF ELECTRICAL SERVICE POLE TO BE DETERMINED IN FIELD. POLE BY POWER COMPANY.
- SEE ANTENNA POLE DETAILS ON SHEET E003.

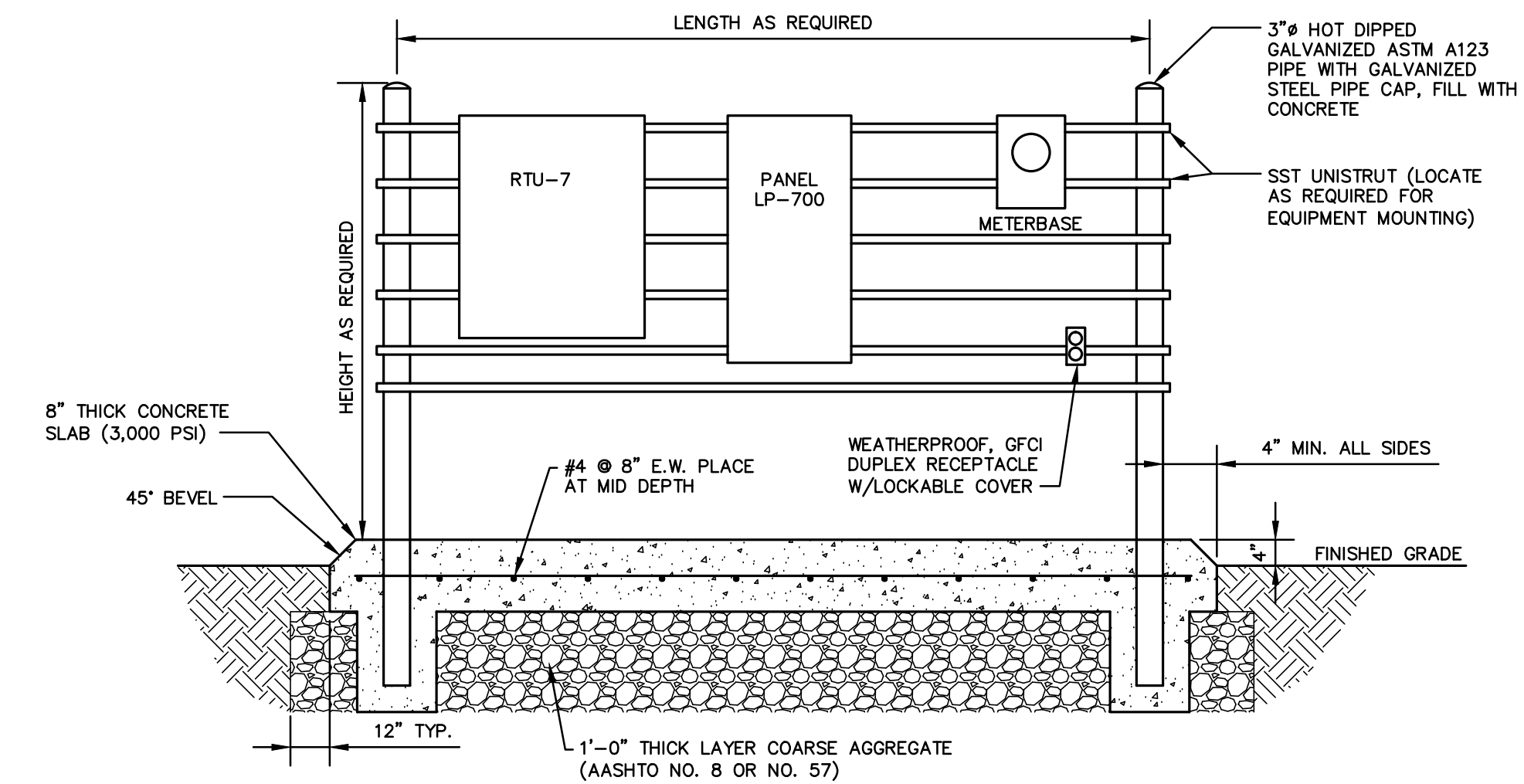
UTILITY CONSTRUCTION



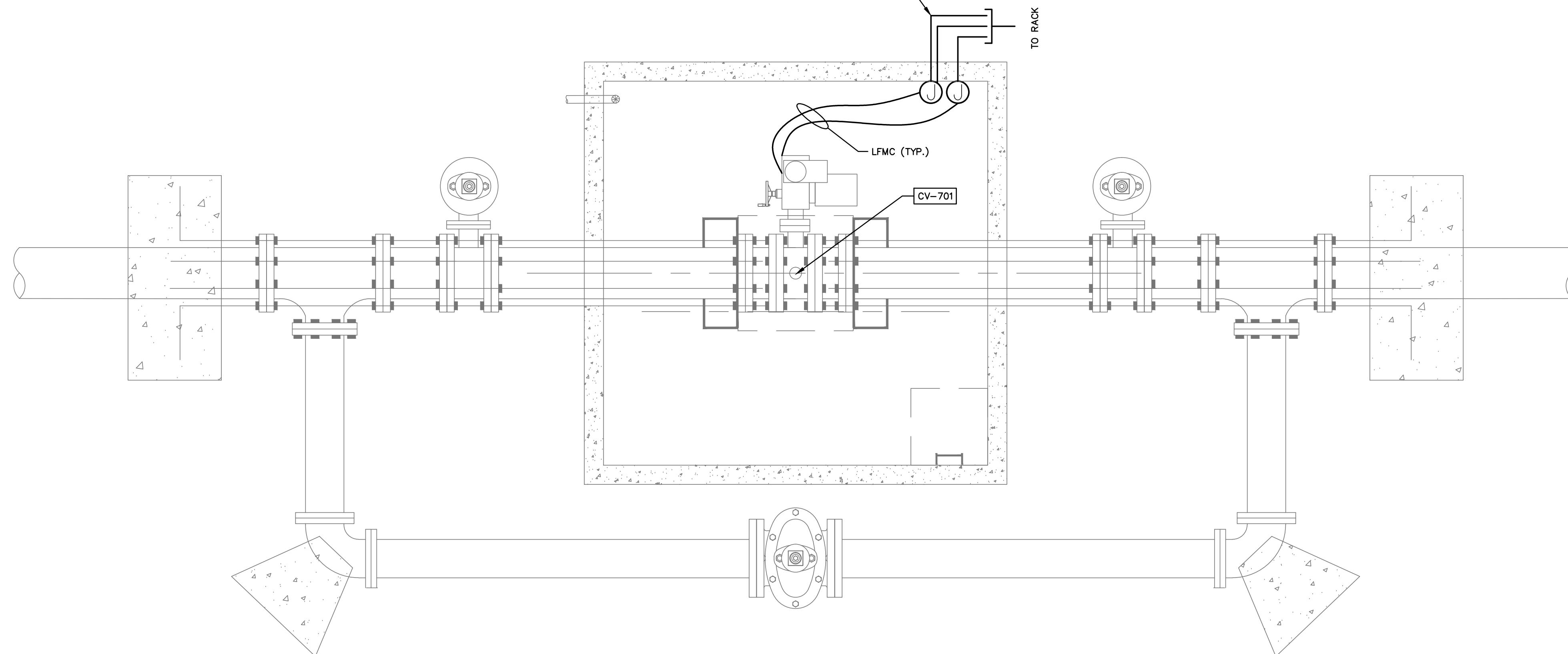
ELECTRICAL SITE PLAN
SCALE: 1"=50'-0"

CORE DRILL PRECAST CONCRETE FOR CONDUIT PENETRATIONS. GROUT SOLID ANNULAR SPACE AROUND PENETRATION. ANNULAR SPACE NOT TO EXCEED 1/4".

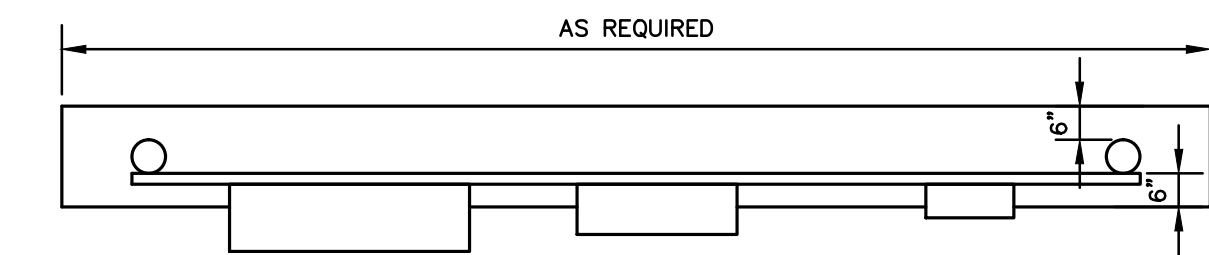
REMOVE EXISTING ELECTRICAL AND CONTROLS EQUIPMENT AT THE EXISTING CONTROL VALVE SITE. ALL ELECTRICAL EQUIPMENT SHALL BE TURNED OVER TO OWNER INCLUDING CONTROL VALVE AND ACTUATOR.



CONTROL VALVE SITE ELECTRICAL EQUIPMENT RACK LAYOUT
NOT TO SCALE



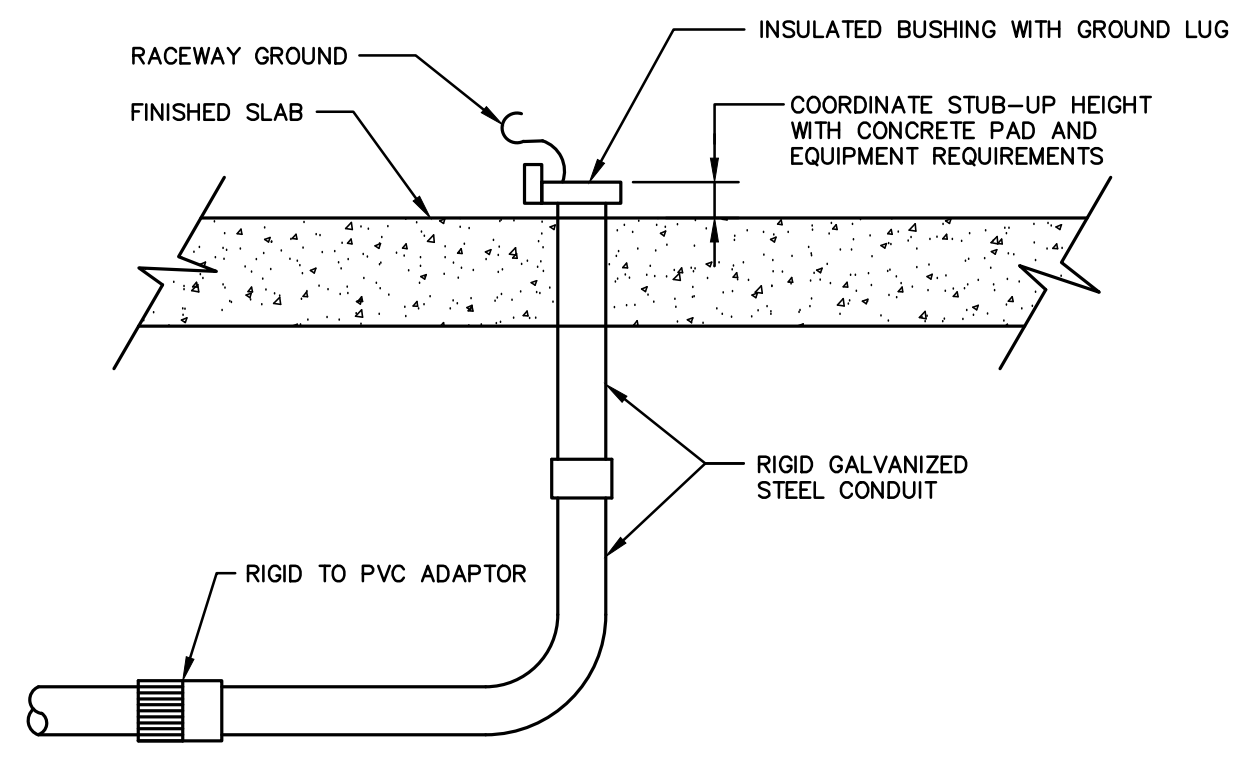
CONTROL VALVE VAULT ELECTRICAL PLAN
NOT TO SCALE



CONTROL VALVE SITE ELECTRICAL EQUIPMENT RACK PLAN VIEW
NOT TO SCALE

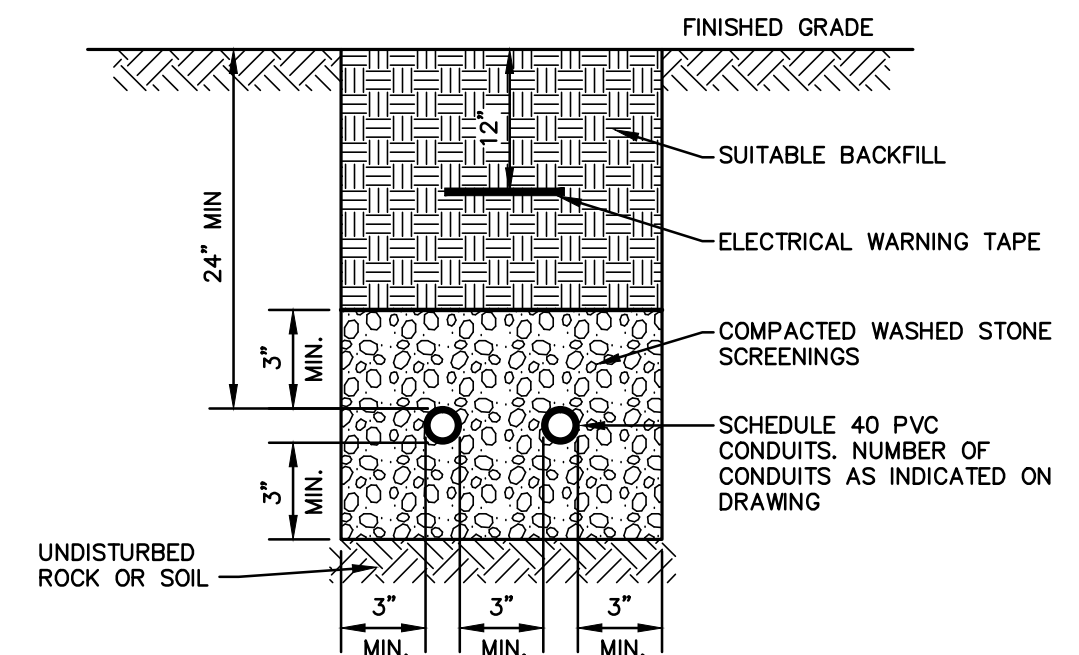
REVISIONS

UTILITY CONSTRUCTION



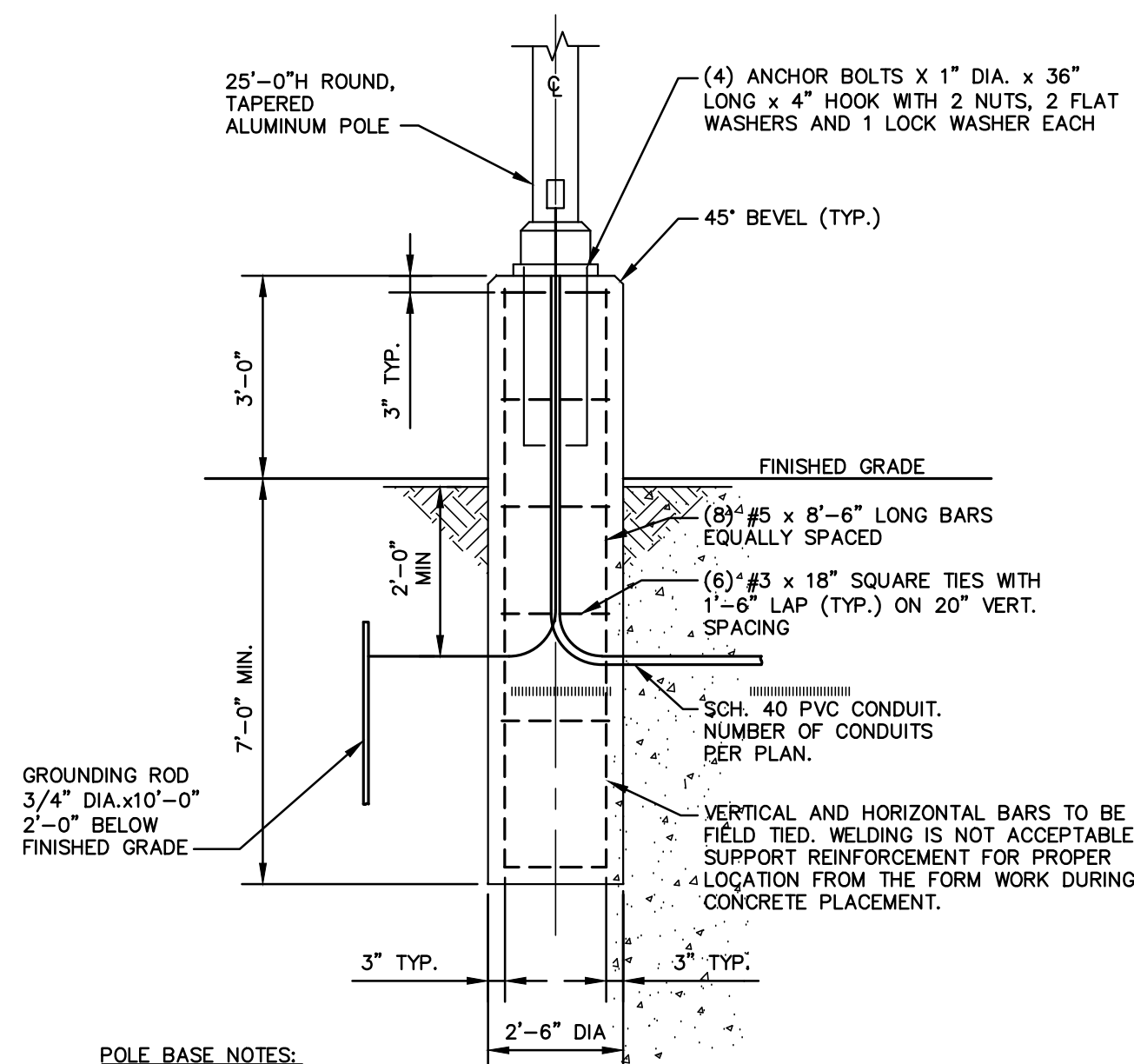
NOTES TO SPECIFIER:
 1. THIS DETAIL APPLIES TO ALL UNDERGROUND CONDUITS WHERE PVC IS UTILIZED. PVC SHALL NOT BE EXTENDED ABOVE GRADE UNLESS SPECIFICALLY APPROVED. PVC MAY BE EXTENDED THROUGH SLAB INTO BOTTOM OF SWITCHBOARD.

TYPICAL CONDUIT STUB-UP
 NOT TO SCALE



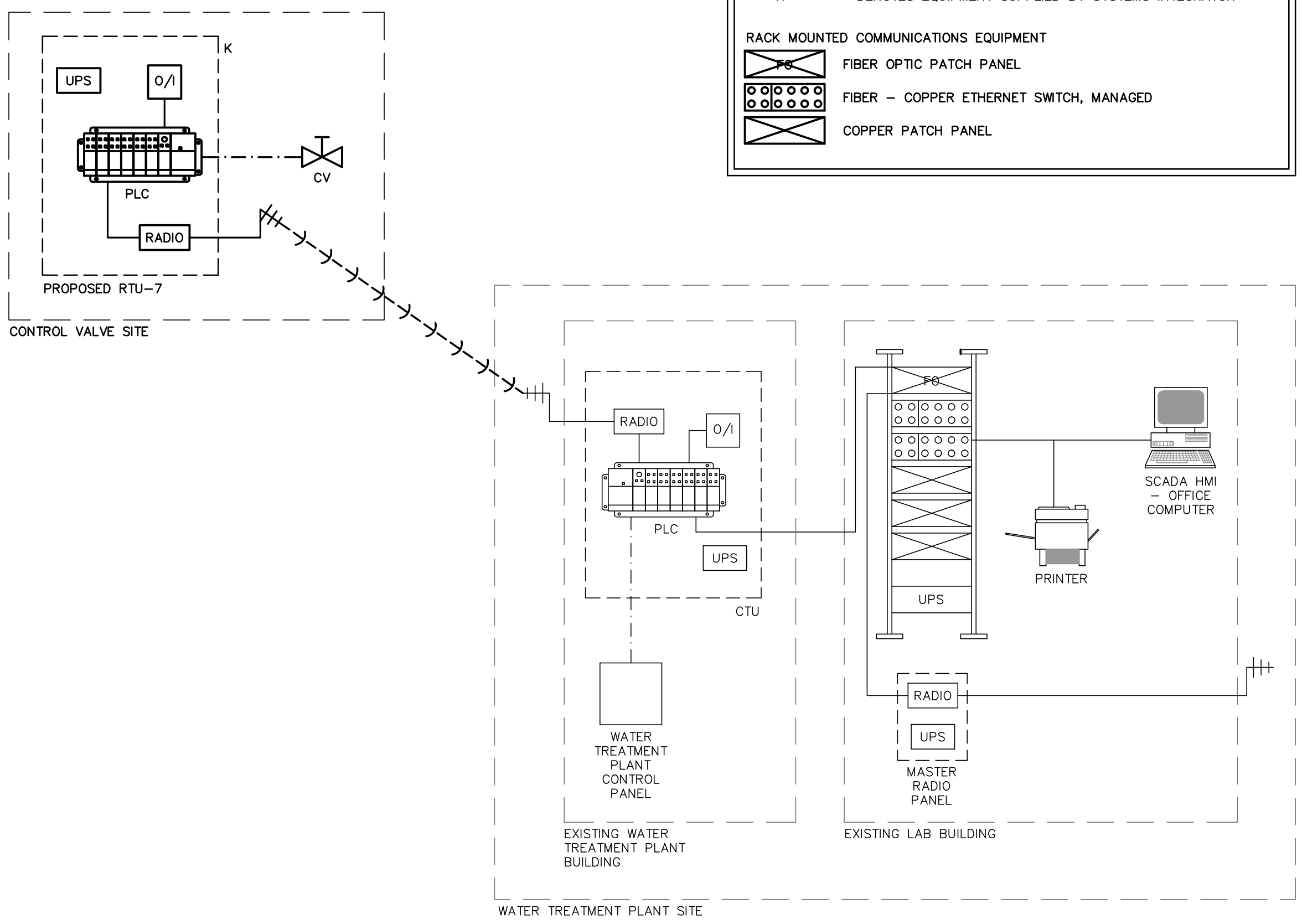
NOTES:
 1. CONTRACTOR TO RESTORE SITE TO EXISTING CONDITION.

TYPICAL SITE ELECTRICAL TRENCH DETAIL
 NOT TO SCALE



POLE BASE NOTES:
 1. 3500 PSI MIN 28 DAY COMPRESSIVE STRENGTH CONCRETE WITH GRADE 60 REINFORCING STEEL.

ANTENNA POLE BASE DETAIL
 NOT TO SCALE



SYSTEM ARCHITECTURE
 NOT TO SCALE

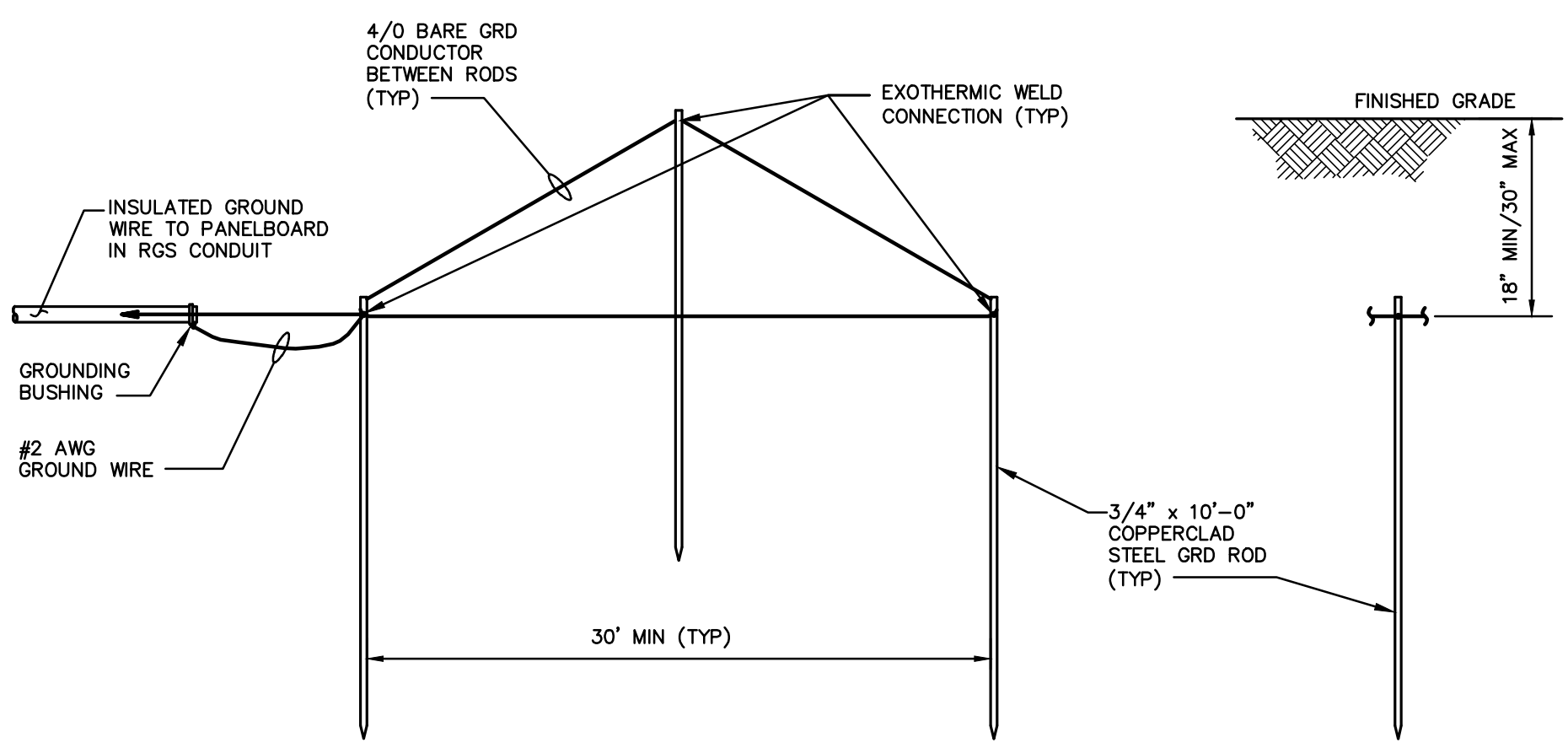
LEGEND

- [Symbol] BUILDING/STRUCTURE
- [Symbol] OR PROGRAMMABLE LOGIC CONTROLLER (PLC) REMOTE I/O RACK (RIO)
- [Symbol] CAT 5 SHIELDED CABLE TWISTED PAIR
- [Symbol] 62.5 MICRON FIBER OPTIC CABLE (12-COUNT FIBER, # ACTIVE DETERMINED BY SOURCE AND DESTINATION)
- [Symbol] I/O SIGNALS
- [Symbol] CABLE LINE COAX CABLE OR CAT 5 AS DETERMINED BY ISP.
- [Symbol] K DENOTES EQUIPMENT SUPPLIED BY SYSTEMS INTEGRATOR
- [Symbol] RACK MOUNTED COMMUNICATIONS EQUIPMENT
- [Symbol] FIBER OPTIC PATCH PANEL
- [Symbol] FIBER - COPPER ETHERNET SWITCH, MANAGED
- [Symbol] COPPER PATCH PANEL

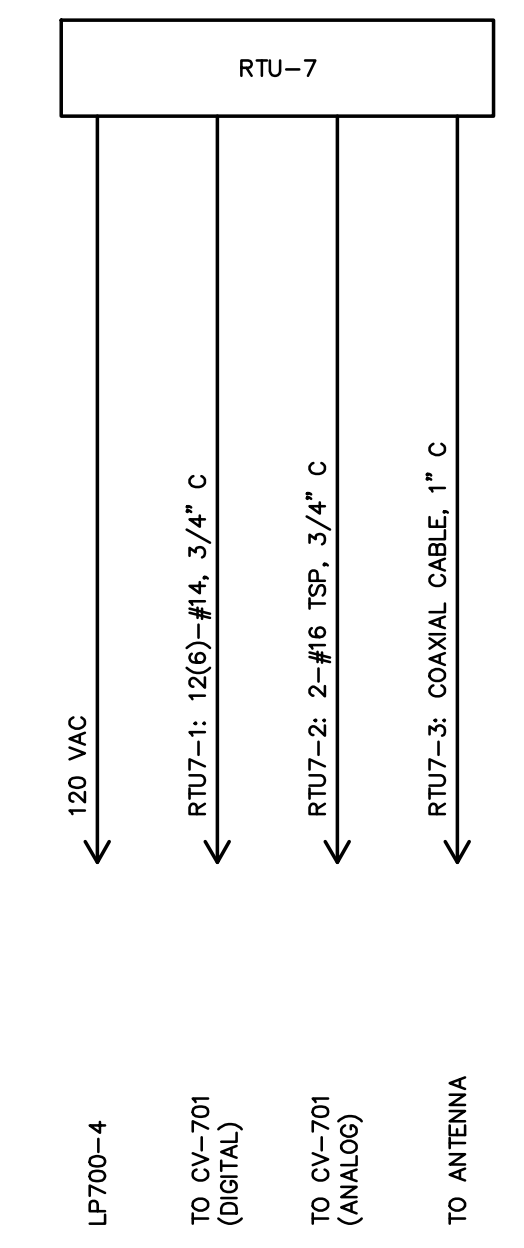
PANEL LP-700 BUS AMP 100A MIN. A.I.C. 10,000 MAIN BREAKER 100A
 MOUNTING SURFACE PHASE 1 WIRE 3 VOLTAGE 120/240
 LOCATION VALVE VAULT SITE NEMA TYPE 4X SS NOTE PROVIDE PANEL WITH INTEGRAL 240 KA SPD

CKT	DESCRIPTION	BREAKER AMP	POLES	LOAD (KW)		WIRE			GND.			COND.			DESCRIPTION	CKT			
				A	B	NO	SIZE	SIZE	SIZE	SIZE	NO	A	B	POLES			AMP		
1	CV-701	20	1	1.2	-	2	12	12	3/4	3/4	12	12	2	0.2	1	20	RACK RECEPTACLES	2	
3	SPARE	20	1	-	-	-	-	-	-	3/4	12	12	2	-	0.6	1	20	RTU-7	4
5	SPARE	20	1	-	-	-	-	-	-	-	-	-	-	-	1	20	SPARE	6	
7	SPARE	20	1	-	-	-	-	-	-	-	-	-	-	-	1	20	SPARE	8	
9	SPARE	20	1	-	-	-	-	-	-	-	-	-	-	-	1	20	SPARE	10	
11	SPARE	20	1	-	-	-	-	-	-	-	-	-	-	-	1	20	SPARE	12	
13	SPARE	20	1	-	-	-	-	-	-	-	-	-	-	-	1	20	SPARE	14	
15	SPARE	20	1	-	-	-	-	-	-	-	-	-	-	-	1	20	SPARE	16	
17	SPARE	20	1	-	-	-	-	-	-	-	-	-	-	-	1	20	SPARE	18	
SUB-TOTAL LOAD KW						1.2	0	SUB-TOTAL LOAD KW				0.2	0.6						
TOTAL LOAD KW								TOTAL LOAD KW				1.4	0.6						

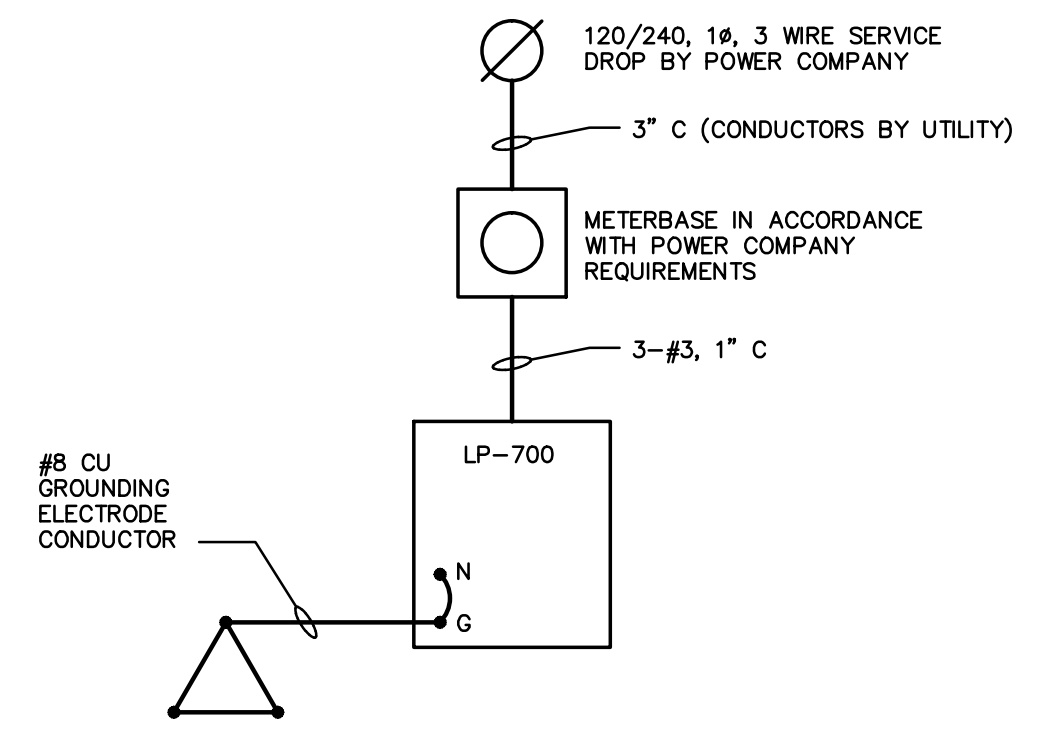
REVISIONS



GROUNDING COUNTERPOISE DETAIL
 NOT TO SCALE



RTU-7 CONTROL ONE-LINE
 NOT TO SCALE



CONTROL VALVE POWER ONE-LINE
 NOT TO SCALE