

CUMBERLAND FALLS HIGHWAY WATER DISTRICT LINE REPLACEMENT AND REINFORCEMENT PROJECT CONTRACT 3 WHITLEY COUNTY, KENTUCKY



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Prepared By:



GENERAL NOTES

- Stations shown on the water line are for reference only and do not reflect the actual linear lengths of pipe required for construction.
- The Contractor shall be responsible for coordinating all construction work with local utility companies and other concerned parties.
- Existing buried utilities are shown on the drawings in their general location utilizing the best available information. Before construction begins near or through existing utilities (i.e. Gas Co., Telephone Co., etc.) each utility company shall be notified, a request for the exact location of the utility shall be made, and permission to proceed with construction obtained. The Contractor shall contact BUD at telephone no. 1-800-752-6007 or 811.
- Before construction begins through any property, the Contractor shall make himself aware of the exact location of construction through the property and the bounds of the permanent and temporary construction easements.
- The Contractor shall have on hand at the job site 11 1/4', 22 1/2', 45' and 90' bends for use where necessary for proper installation.
- Pipe joint deflection shall not exceed 2'. Bending of PVC pipe will not be allowed.
- At some locations, the Contractor may be required to provide extra cover over line. Cost of extra cover is to be included in unit price bid for line installation and no separate payment will be made for such extra cover. All such locations are shown on the plans.
- Connecting new lines to existing lines or to work in other contracts is subsidiary to the contract unless specifically itemized in the Bid Schedule. It includes fittings, sleeves, etc., but does not include gate valves, which are an extra pay item.
- All fittings, thrust restraint and appurtenances to construct the pipelines as shown shall be included in the unit cost for the pipe and are not separate pay items.
- The pipe lengths have been estimated as close as possible. The Contractor shall be responsible for ordering pipe quantities necessary for installation to the limits as shown on the Drawings unless otherwise instructed. Any left-over pipe quantities shall be the property of the Contractor unless other arrangements are made. The Owner shall not be responsible for re-stocking or other charges associated with the left over pipe.
- Ductile iron pipe shall be installed in accordance with Standard AWWA C150/ANSI A21.50 Laying Condition Type 3 unless otherwise noted.
- All driveways that are cut shall be backfilled with KTC #8 or 9-M and shall be included in the unit price for pipe installation.
- All open cut streets and roads and trenches cut in existing pavements shall be backfilled with compacted crushed stone or DGA in accordance with the miscellaneous details drawings.
- Paved driveways shall be free-bored. Free bore unit prices are contained in Bid Schedule. The material in which the free bore is made is unclassified.
- It is the responsibility of the Contractor to comply with all regulations regarding the effect on the environment from the discharge of chlorinated water. See Technical Specification 15103 Subsection 3 for methods of sterilization and for disposing of heavily chlorinated water.
- The time period for pressure testing in this project shall be 6 hours.
- Tracer tape and wire shall be installed with PVC and PE pipe. See Technical Specification 15100, and the miscellaneous details drawings.
- During the process of tapping asbestos cement mains, the contractor shall conform to OSHA regulations governing the handling of hazardous waste. Pieces of asbestos cement resulting from the tap shall be double bagged, placed in a rigid container and disposed of in an approved landfill.
- Locations where pipeline is to be installed on state road right-of-way are approximately delineated on the drawings. The Contractor, along with the Engineer's Representative, shall determine, precisely, the field locations for transitions between private easements, and state and county road rights-of-way.
- All pipelines installed in the ditchline on state or county rights-of-way shall have 42" minimum cover over top of pipe.
- The pipeline trench width will be strictly enforced. See Technical Specification 15100 for trench width requirements.
- Rough cleanup must be performed as the pipe is laid or as soon thereafter as possible. Failure to keep rough cleanup current with the pipe laying may be grounds for additional retainage.
- Do not cut fences except where specifically shown and noted.
- The Contractor shall obtain and pay for all grading, storm water, etc. permits, if any required to complete the work. The contractor shall maintain compliance with all conditions, limitations and stipulations of all permits. The contractor shall not commence work, except mobilization, until he has obtained all required permits for said work. The contractor shall supply the owner with copies of all permits within 24 hours of receipt. A KPDES Storm Water Discharge Permit will be required for this project. The contractor shall fill out, sign and submit the Notice of Intent (NOI) and the Notice of Termination (NOT).
- All work shall be provided in compliance with all applicable local, state and national building codes.
- All work shall be executed in compliance with the current workplace safety regulations of the U.S. Department of Labor, Occupational Safety and Health Administration (O.S.H.A.).
- The Contractor shall restrict all construction activities to within the limits of the public right-of-way and the private easements and fee parcels unless otherwise approved by the Owner in writing. The Contractor shall be solely liable for any and all Work he performs outside of the boundaries of the public road right-of-way and the private easements and fee parcels provided by the Owner.
- The Contractor is solely responsible for determination of the existence and location of any and all other buried utilities in the vicinity of his Work. Utilities shown on the Project Drawings are purported to be approximate only and not warranted to be complete nor accurately located. Additional buried utility lines, other than as shown on the Project Drawings, may exist in the vicinity of the Project work. The Contractor shall contact local utilities and/or locating service at least 48 hours prior to commencing work on the Project.
- The Contractor shall be responsible for all traffic control measures necessary to the safe execution of his work, including but not limited to flaggers, traffic signage, barricades, construction fencing and nighttime warning lights. Traffic safety provisions shall be employed by the Contractor in accordance with the Standards of the appropriate State and local public highway authorities.
- All excavation and all boring shall be considered unclassified excavation and unclassified boring. No additional payment shall be due and payable to the Contractor for dewatering of pipe trenches/excavations or for excavation and removal of rock or for boring casing through rock.
- All water main fittings shall be ductile iron, mechanical joint compact fittings for water service complying with AWWA Standard C153. Unless otherwise specifically shown or noted, no PVC fitting, other than in-line repair couplings, will be accepted.

GENERAL NOTES (CONT.)

- All water main fittings shall be anchored with poured concrete thrust blocks as shown in the miscellaneous details drawings. Wrap fittings in minimum 5-mil plastic (PVC) wrap prior to forming and pouring the block.
- Prior to cutting existing driveways, the Contractor shall notify the property owner/occupant at least 24 hours in advance and shall schedule his Work such to restrict access to not more than 2 hours in one (1) day.
- The Contractor shall repair/replace any and all existing utility lines and equipment damaged by the Contractor's Work, to the satisfaction of the damaged utility and at no additional cost to the Owner.
- The Contractor shall protect all drainage culverts in the vicinity of his work and shall repair or replace all culverts damaged by his Work and at no additional cost to the Owner. All existing culverts may not be shown/noted on the Project Drawings.
- Existing utility lines may be cathodically protected. The installation of all ductile iron pipe, fittings and appurtenances within 100' of cathodically protected utility lines shall comply with AWWA Standard C105 (Polyethylene Encasement), latest revision, and at no additional cost to the Owner. This requirement will be specifically applicable to all new iron pipe located within 100' of the cathodically protected new primary booster station.
- There are no sanitary sewers or drains known to exist in the vicinity of the proposed new water main. If unforeseen sewer or other sanitary facility is encountered, the Engineer shall direct the relocation of the water main to provide separation and/or other protection of the water main in accordance with terms of the Kentucky Department for Environmental Protection, Division of Water Construction Permit. The Contractor shall provide relocation of the water main as directed by the Engineer and the Contract Price adjusted only by/to the number of Bid Item units actually provided.
- No water service shall be activated until the new work has been completed, sterilized, and tested in accordance with the Contract Documents and accepted in writing by the Owner.
- The locations of the existing water meters to be reconnected, relocated or replaced are generally depicted on the plans. There may be additional meters not shown on the plans which require reconnection, relocation or replacement. A determination as to whether a meter is to be reconnected, relocated or replaced will be made in the field by the ENGINEER. All active water services and those likely to be returned to service in the future will be either reconnected, relocated or replaced with service from newly installed waterlines once they are approved for service. If the meter is relocated or replaced in a different location, the existing meter setting shall be removed and the area reclaimed as part of the relocation or replacement. These activities shall be scheduled and performed in a manner which minimizes the amount of time the customers are without water service.
- The location and size of existing water lines are generally depicted on the plans using the best available information. This information is not guaranteed. The existing lines will be abandoned in place.

ENVIRONMENTAL NOTES

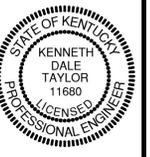
- When crossing all streams and ditches, silt barriers, ie. straw bales or silt fences, shall be put in place to prevent sediment runoff into stream. Conventional stream crossings shall be accomplished during low flow periods. Stream banks shall be reseeded with native vegetation beneficial to wildlife immediately following completion of the stream crossing. Disturbed surfaces shall be restored to original contours and excess materials removed to a properly confined area.
- Contractor shall not disturb any trees with a diameter at breast height greater than three (3) inches.
- Any excavation by the Contractor that uncovers a historical or archaeological artifact shall be immediately reported to the Owner and Engineer. Construction shall be temporarily halted pending the notification process and further directions after consultation with the State Historic Preservation Officer (SHPO).

HIGHWAY DEPARTMENT NOTES

- Underground utilities installed inside state right of way shall be located within 3-5 feet from the edge of the right of way unless otherwise shown on the plans.
- Underground utilities on state right of way shall be installed at a minimum depth of 42" under roadways, ramps, and ditch lines and 30" in all other areas within state right of way.
- Underground utilities crossing any paved driveway inside state right of way shall be installed by boring unless written permission to open cut is obtained from the property owner.
- Underground utilities shall not be installed in embankment fills or between edge of pavement and ditchline unless specifically noted on permitted plans.
- Fire Hydrants or utility service boxes should be located within 2 feet from the edge of right of way line, or off right of way.
- Contact KTC-DOH District Office prior to beginning work.
- All affected KYTC ditchlines shall remain free of excess silt or erosion and constructed to the normal typical section of the roadway with a minimum depth of 18 inches from the shoulder break point.
- All necessary steps shall be taken to prevent erosion or siltation of the public right of way, adjoining property and waterways.
- All traffic control for construction and maintenance operations will conform to the *Manual on Uniform Traffic Control Devices*. All construction and maintenance operations must be planned with full regard to safety to keep traffic interference to an absolute minimum. Closure of intersecting streets, road approaches or other access points is to be held to a minimum.
- All areas disturbed by utility installation should be kept to a minimum and restoration methods should be in accordance with Kentucky Transportation Cabinet's *2012 Standard Specifications for Road and Bridge Construction*.



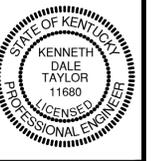
In compliance with the Kentucky Dig Law, the Contractor shall call (800) 752-6007 (Kentucky811) toll free or dial 811 a minimum of two and no more than ten business days prior to excavation for information of the location of existing underground utilities. It will be the Contractors responsibility to coordinate excavation with all Utility Owners.



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REVISIONS	



CUMBERLAND FALLS HIGHWAY WATER DISTRICT
 WATER SYSTEM EXTENSIONS, REPLACEMENTS
 AND REINFORCEMENTS - CONTRACT 3
 WHITLEY COUNTY, KENTUCKY

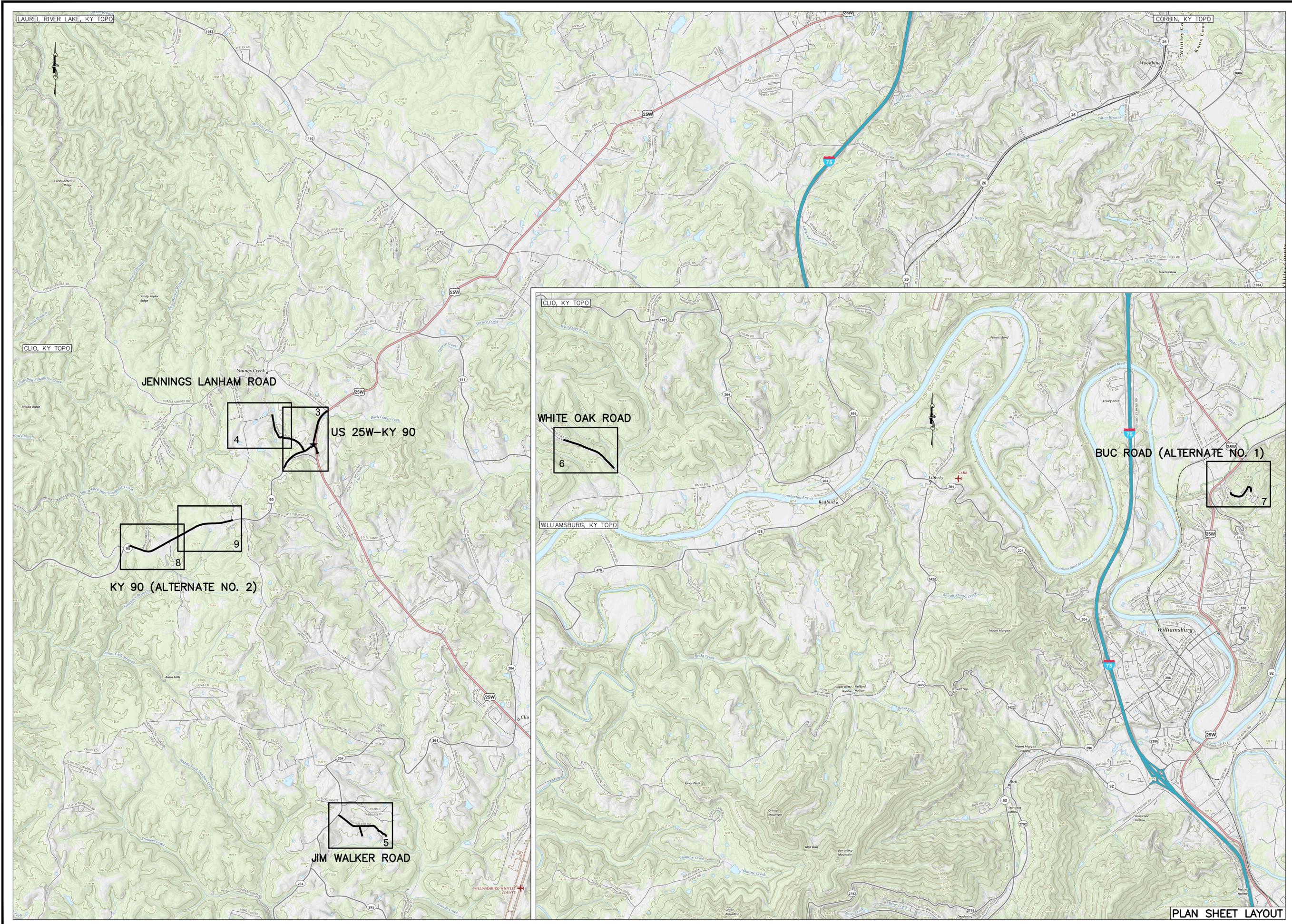


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KENVIRONS
 Civil & Environmental Engineers



PROJECT NO.
 2006234
 SHEET NO.
 2



PLAN SHEET LAYOUT

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CUMBERLAND FALLS HIGHWAY WATER DISTRICT
WATER SYSTEM EXTENSIONS, REPLACEMENTS
AND REINFORCEMENTS - CONTRACT 3
WHITLEY COUNTY, KENTUCKY



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PROJECT NO.
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 SHEET NO.
3

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**CUMBERLAND FALLS HIGHWAY WATER DISTRICT
 WATER SYSTEM EXTENSIONS, REPLACEMENTS
 AND REINFORCEMENTS - CONTRACT 3
 WHITLEY COUNTY, KENTUCKY**



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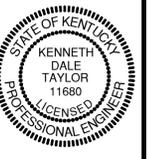
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SHEET NO.
4

JENNINGS LANHAM ROAD



**CUMBERLAND FALLS HIGHWAY WATER DISTRICT
 WATER SYSTEM EXTENSIONS, REPLACEMENTS
 AND REINFORCEMENTS - CONTRACT 3
 WHITLEY COUNTY, KENTUCKY**



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PROJECT NO.
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SHEET NO.
5

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JIM WALKER ROAD



STA. 0+00 BEGIN
WHITE OAK ROAD
Tie-in to exist. 4" Waterline

5+00

10+00

15+00

20+00

WHITE OAK ROAD

4" PVC, SDR 17

4" Gate Valve

4" Blowoff Assembly

STA. 21+00 END
WHITE OAK ROAD

10 L.F. 4" PVC, SDR 17,
4" Gate Valve, 4" End
Cap, & Thrust block

WHITE OAK ROAD

CUMBERLAND FALLS HIGHWAY WATER DISTRICT
WATER SYSTEM EXTENSIONS, REPLACEMENTS
AND REINFORCEMENTS - CONTRACT 3
WHITLEY COUNTY, KENTUCKY

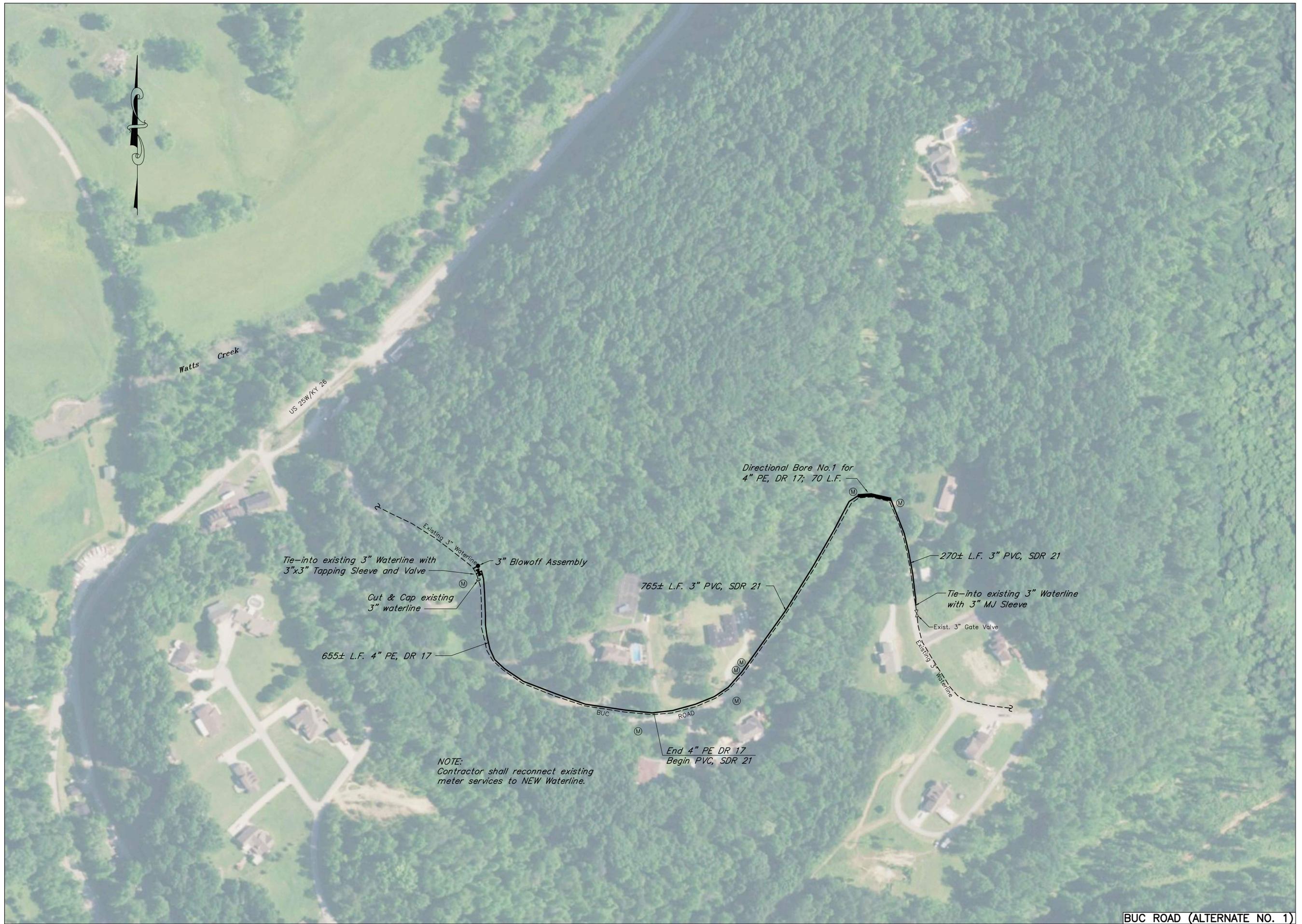


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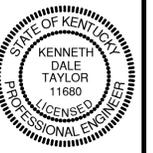


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**CUMBERLAND FALLS HIGHWAY WATER DISTRICT
WATER SYSTEM EXTENSIONS, REPLACEMENTS
AND REINFORCEMENTS - CONTRACT 3
WHITLEY COUNTY, KENTUCKY**



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DATE: Sept. 2021
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PROJECT NO.
2006234

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7

BUC ROAD (ALTERNATE NO. 1)

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**CUMBERLAND FALLS HIGHWAY WATER DISTRICT
 WATER SYSTEM EXTENSIONS, REPLACEMENTS
 AND REINFORCEMENTS - CONTRACT 3
 WHITLEY COUNTY, KENTUCKY**



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PROJECT NO. 2006234
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KY 90 (ALTERNATE NO. 2)

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**CUMBERLAND FALLS HIGHWAY WATER DISTRICT
 WATER SYSTEM EXTENSIONS, REPLACEMENTS
 AND REINFORCEMENTS - CONTRACT 3
 WHITLEY COUNTY, KENTUCKY**



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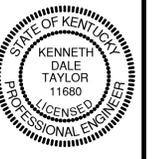
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9

KY 90 (ALTERNATE NO. 2)

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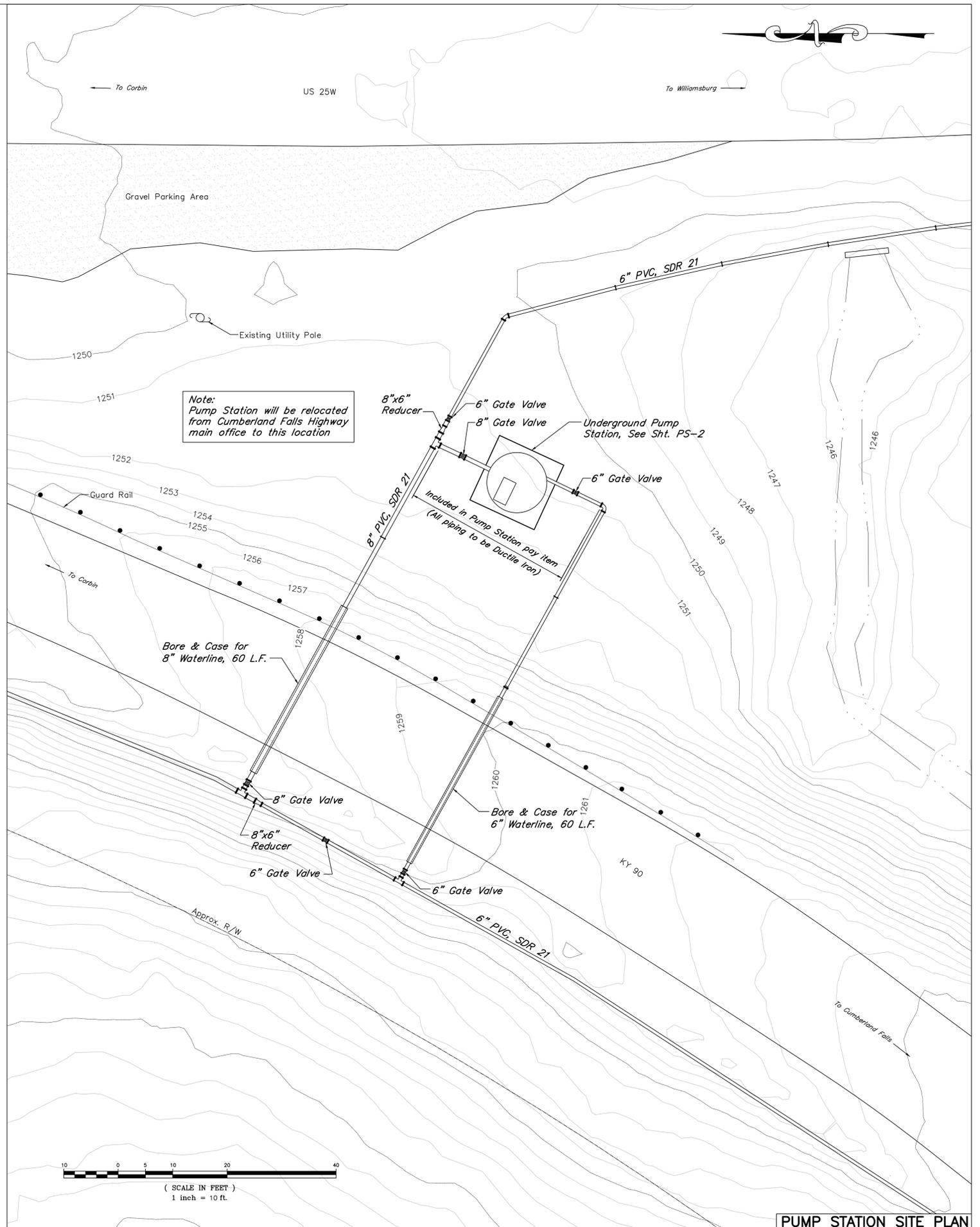
**CUMBERLAND FALLS HIGHWAY WATER DISTRICT
 WATER SYSTEM EXTENSIONS, REPLACEMENTS
 AND REINFORCEMENTS - CONTRACT 3
 WHITLEY COUNTY, KENTUCKY**



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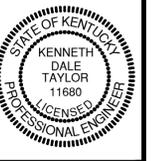


PROJECT NO.
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PS-1

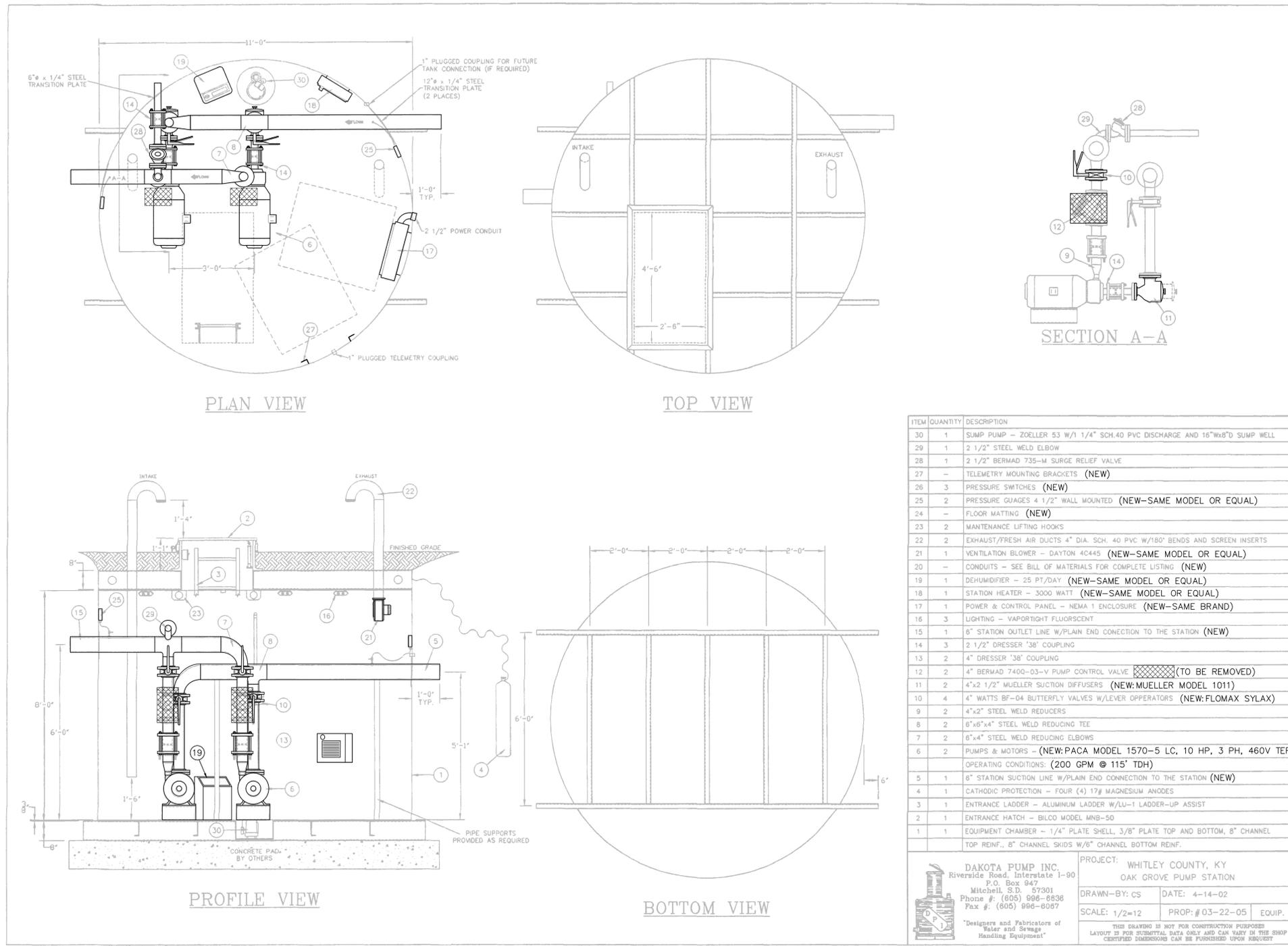


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PUMP STATION SITE PLAN



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ITEM	QUANTITY	DESCRIPTION
30	1	SUMP PUMP - ZOELLER 53 W/1 1/4" SCH.40 PVC DISCHARGE AND 16"Wx8"D SUMP WELL
29	1	2 1/2" STEEL WELD ELBOW
28	1	2 1/2" BERMAD 735-M SURGE RELIEF VALVE
27	-	TELEMETRY MOUNTING BRACKETS (NEW)
26	3	PRESSURE SWITCHES (NEW)
25	2	PRESSURE GAUGES 4 1/2" WALL MOUNTED (NEW-SAME MODEL OR EQUAL)
24	-	FLOOR MATTING (NEW)
23	2	MAINTENANCE LIFTING HOOKS
22	2	EXHAUST/FRESH AIR DUCTS 4" DIA. SCH. 40 PVC W/180° BENDS AND SCREEN INSERTS
21	1	VENTILATION BLOWER - DAYTON 4C445 (NEW-SAME MODEL OR EQUAL)
20	-	CONDUITS - SEE BILL OF MATERIALS FOR COMPLETE LISTING (NEW)
19	1	DEHUMIDIFIER - 25 PT/DAY (NEW-SAME MODEL OR EQUAL)
18	1	STATION HEATER - 3000 WATT (NEW-SAME MODEL OR EQUAL)
17	1	POWER & CONTROL PANEL - NEMA 1 ENCLOSURE (NEW-SAME BRAND)
16	3	LIGHTING - VAPORTIGHT FLUORESCENT
15	1	6" STATION OUTLET LINE W/PLAIN END CONNECTION TO THE STATION (NEW)
14	3	2 1/2" DRESSER '38' COUPLING
13	2	4" DRESSER '38' COUPLING
12	2	4" BERMAD 7400-03-V PUMP CONTROL VALVE (TO BE REMOVED)
11	2	4"x2 1/2" MUELLER SUCTION DIFFUSERS (NEW:MUELLER MODEL 1011)
10	4	4" WATTS BF-04 BUTTERFLY VALVES W/LEVER OPERATORS (NEW:FLOMAX SYLAX)
9	2	4"x2" STEEL WELD REDUCERS
8	2	6"x6"x4" STEEL WELD REDUCING TEE
7	2	6"x4" STEEL WELD REDUCING ELBOWS
6	2	PUMPS & MOTORS - (NEW:PACA MODEL 1570-5 LC, 10 HP, 3 PH, 460V TEFC MOTOR)
OPERATING CONDITIONS: (200 GPM @ 115' TDH)		
5	1	8" STATION SUCTION LINE W/PLAIN END CONNECTION TO THE STATION (NEW)
4	1	CATHODIC PROTECTION - FOUR (4) 17# MAGNESIUM ANODES
3	1	ENTRANCE LADDER - ALUMINUM LADDER W/LU-1 LADDER-UP ASSIST
2	1	ENTRANCE HATCH - BILCO MODEL MNB-50
1	1	EQUIPMENT CHAMBER - 1/4" PLATE SHELL, 3/8" PLATE TOP AND BOTTOM, 8" CHANNEL TOP REINF., 8" CHANNEL SKIDS W/6" CHANNEL BOTTOM REINF.

DAKOTA PUMP INC.
 Riverside Road, Interstate 1-90
 P.O. Box 947
 Mitchell, S.D. 57301
 Phone #: (605) 996-6838
 Fax #: (605) 996-6867

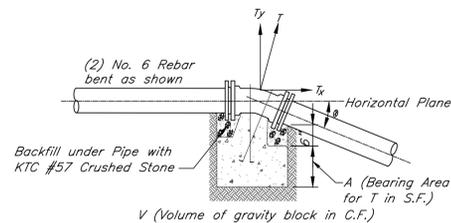
PROJECT: WHITLEY COUNTY, KY
 OAK GROVE PUMP STATION

DRAWN-BY: CS DATE: 4-14-02
 SCALE: 1/2"=1' PROP.# 03-22-05 EQUIP.

DESIGNERS AND FABRICATORS OF
 WATER AND SEWAGE
 HANDLING EQUIPMENT

THIS DRAWING IS NOT FOR CONSTRUCTION PURPOSES
 LAYOUT IS FOR SUBMITTAL DATA ONLY AND CAN VARY IN THE SHOP
 CERTIFIED DIMENSIONS CAN BE FURNISHED UPON REQUEST

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GRAVITY THRUST BLOCK

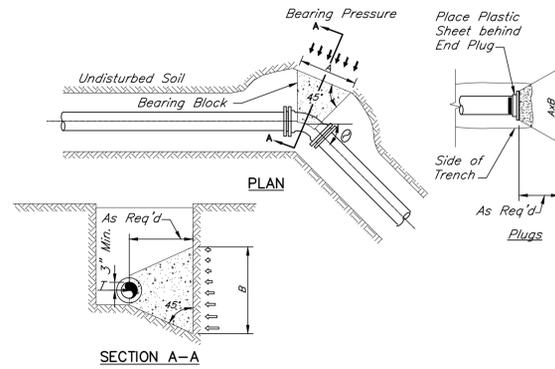
- NOTES:**
1. Thrust restraint table is based on pipeline pressure of 200 psi and earth bearing capacity of 1500psi. During construction, the specific soil type may be evaluated and concrete thrust block size revised at the discretion of the Engineer.
 2. On large diameter pipes where space limitations or construction difficulties render concrete thrust blocks not feasible or impractical, a joint restraint system may be used. This restrained joint system must be approved by the Engineer.
 3. Concrete shall be 3000 psi minimum conforming to KTC Specifications 601.
 4. Accessibility to fittings and bolts must be maintained.
 5. Wrap fittings in plastic prior to placing concrete.

VERTICAL THRUST BLOCK SCHEDULE

PIPE SIZE (INCHES)	90° BEND		45° BEND		22 1/2° BEND		11 1/4° BEND	
	V	A	V	A	V	A	V	A
3 & 4	29	2	20	1	11	1	6	1
6	64	5	46	2	25	1	13	1
8	114	8	81	4	43	1	23	1
10	174	12	123	5	66	2	35	1
12	248	17	176	8	95	2	50	1
14	337	23	238	10	128	3	67	1
16	439	29	311	13	167	4	88	1
18	555	37	393	16	211	5	111	1
20	685	46	484	20	260	6	137	2
24	985	66	696	29	374	8	197	2

VERTICAL THRUST BLOCK

July, 2015 Scale: 1/2"=1'-0"



SECTION A-A

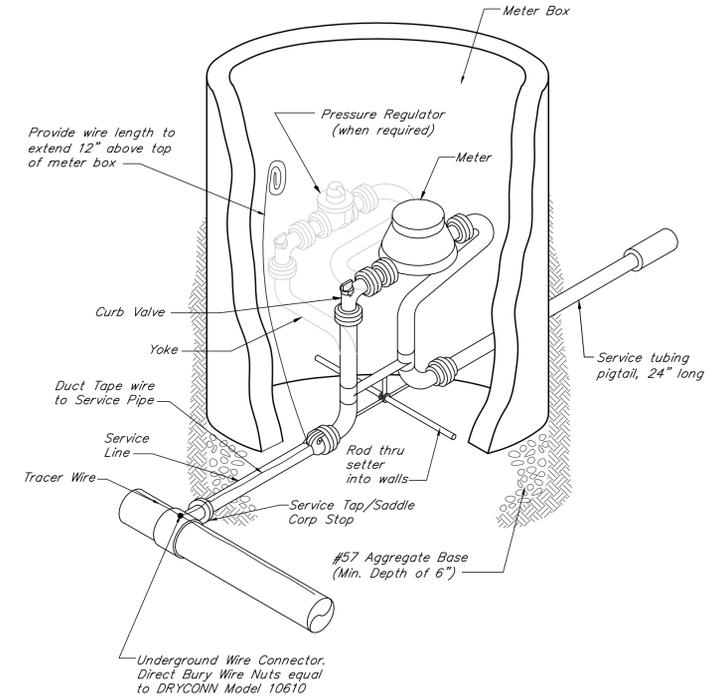
- NOTES:**
1. Thrust restraint table is based on pipeline pressure of 200 psi and earthbearing capacity of 1500 psi. During construction, the specific soil type may be evaluated and concrete thrust block size revised at the discretion of the Engineer.
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 3. Concrete shall be 3000 psi minimum conforming to KTC Specifications 601.
 4. Accessibility to fittings and bolts must be maintained.
 5. Wrap fittings in plastic prior to placing concrete.

HORIZONTAL THRUST BLOCK SCHEDULE

PIPE SIZE (INCHES)	90° BEND		45° BEND		22 1/2° BEND		11 1/4° BEND		TEE, DEAD END	
	A	B	A	B	A	B	A	B	A	B
3 & 4	3'-3"	1'-8"	2'-4"	1'-2"	1'-8"	1'-0"	1'-0"	1'-0"	2'-8"	1'-4"
6	4'-8"	2'-4"	3'-5"	1'-8"	2'-6"	1'-3"	1'-0"	1'-0"	3'-10"	2'-0"
8	6'-0"	3'-0"	4'-5"	2'-3"	3'-2"	1'-7"	2'-3"	1'-2"	5'-0"	2'-6"
10	7'-6"	3'-9"	5'-5"	2'-9"	3'-10"	2'-0"	2'-9"	1'-5"	6'-3"	3'-2"
12	8'-10"	4'-5"	6'-6"	3'-3"	4'-8"	2'-4"	3'-4"	1'-8"	7'-5"	3'-9"
14	10'-3"	5'-2"	7'-6"	3'-9"	5'-4"	2'-8"	3'-10"	2'-0"	8'-8"	4'-4"
16	11'-8"	5'-10"	8'-7"	4'-4"	6'-1"	3'-0"	4'-4"	2'-2"	9'-9"	4'-11"
18	13'-0"	6'-6"	9'-7"	4'-9"	6'-10"	3'-5"	4'-10"	2'-5"	11'-0"	5'-6"
20	14'-5"	7'-3"	10'-7"	5'-4"	7'-7"	3'-9"	5'-4"	2'-8"	12'-2"	6'-1"
24	17'-3"	8'-8"	12'-8"	6'-4"	9'-0"	4'-6"	6'-5"	3'-3"	14'-6"	7'-3"

HORIZONTAL THRUST BLOCK

July, 2015 Scale: 3/8"=1'-0"

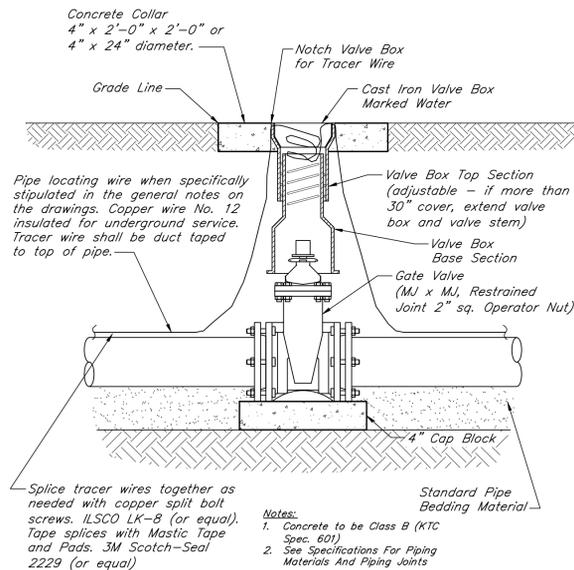


NOTES:

1. This drawing typical for meters 1" and smaller (w/std. press reg.)
2. Meter setting shall be placed inside property line as directed by the Engineer.
3. Tracer Wire not required on Meter Settings less than 10 feet from water main.
4. Pigtail Service Tubing to be incidental to Meter Setting.

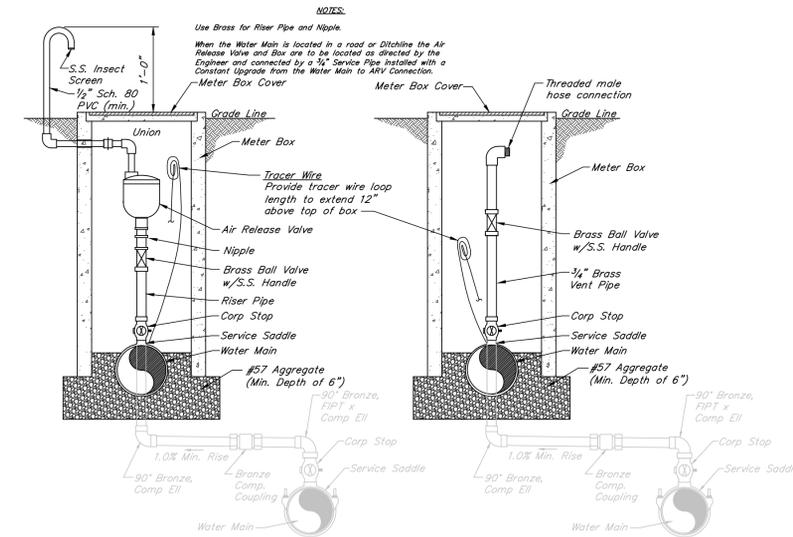
METER SETTING

Mar., 2011 N.T.S.



VALVE BOX INSTALLATION

July 2015 Scale: 1"=1'-0"

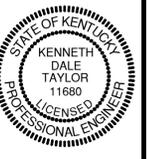


AUTOMATIC ARV INSTALLATION

March 2015 N.T.S.

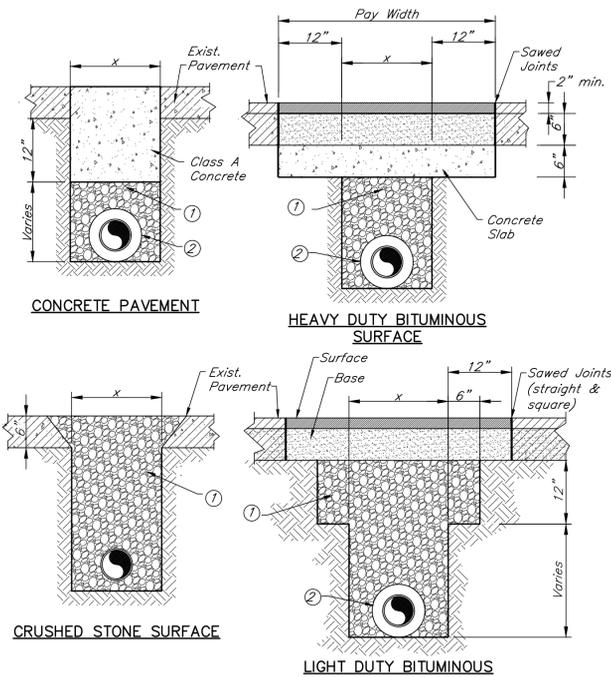
MANUAL ARV INSTALLATION

March 2015 N.T.S.



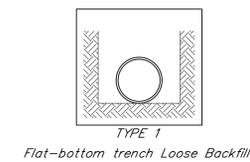
DRAWN BY: PH	CHECKED BY: KDT
CHECKED BY: JDS	DATE: Sept. 2021
SCALE: As Noted	REVISIONS



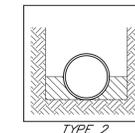


- NOTES:**
1. The max. allowable distance for dimension "X" shall be calculated as follows: $X = 24" + \text{Pipe Dia.}$
 2. Concrete slab under Bituminous surface to extend 12-inches on each side to trench.
 3. Replace Concrete or Bit. Pavement with new pavement same thickness as existing pavement.
 4. Casing Pipe is not required under private driveways.
- ① Mechanically tamped #57 crushed stone aggregate in layers not to exceed 6".
 ② Casing pipe to be 4" in diameter greater than the greatest dimension of the carrier pipe.

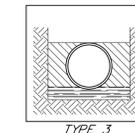
PAVEMENT REPLACEMENT
 Mar., 2011 Scale: 3/4"=1'-0"



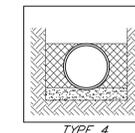
TYPE 1
 Flat-bottom trench Loose Backfill



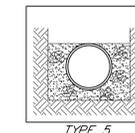
TYPE 2
 Flat-bottom trench in undisturbed earth. Backfill lightly consolidated to centerline of pipe



TYPE 3
 Pipe bedded in 4" minimum loose soil, as approved. Backfill lightly consolidated to top of pipe

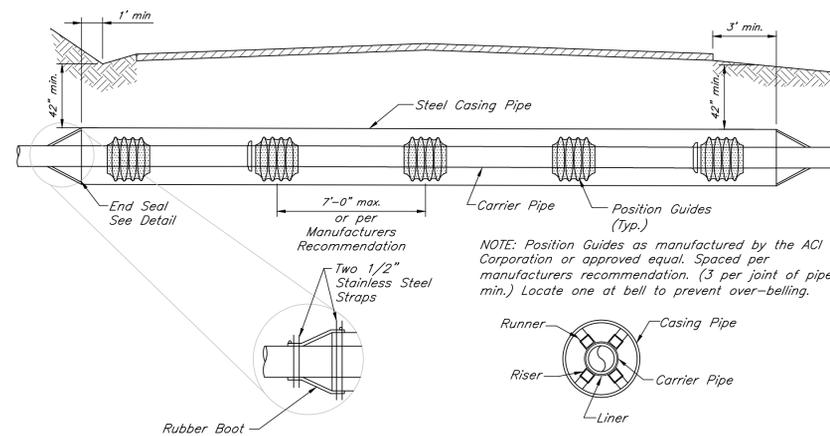


TYPE 4
 Pipe bedded in sand, gravel, or crushed stone to depth of 4" minimum. Backfill hand compacted to top of pipe (approximately 80 percent Standard Proctor).

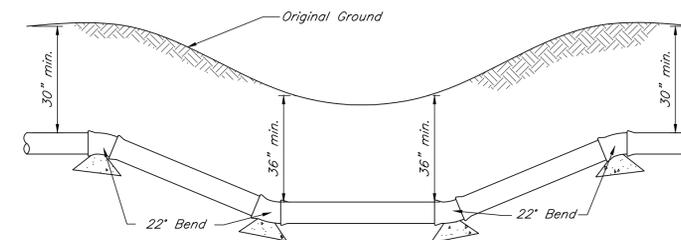


TYPE 5
 Pipe bedded in compacted granular material to centerline of pipe, 4" minimum under pipe. Compacted granular or select material to top of pipe (approximately 90 percent Standard Proctor).

LAYING CONDITIONS FOR DUCTILE IRON PIPE
 Dec., 2010 N.T.S. Ref. AWWA C150

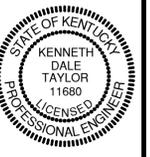


ROADWAY CROSSING INSTALLATION
 July 2015 Scale: 1/4"=1'-0"



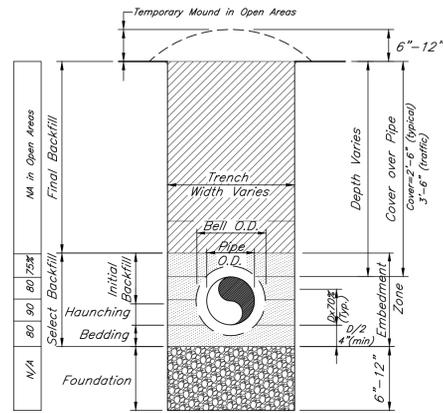
- NOTES:** This crossing shall be made with appropriate fittings to prevent excess joint deflection. Normally four (4) fittings will be required. The Contractor, at his option, may provide extra approach trench depth to avoid use of bends and thrust blocks. Allowable deflection of pipe may not be exceeded under any situation.
- Thrust blocking for vertical bends shall be anchored to pipe in accordance with the Detail for Vertical Thrust Blocks.

NORMAL DITCH CROSSING WITHOUT ENCASEMENT
 Dec., 2010 N.T.S.



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Typically, open areas are final graded, dressed and seeded following two soaking rains...excluding KYTC road ROW's

Unless otherwise specified, material excavated from trench may be used for final backfill provided it is relatively free of large rock (>2"), or mixed with sufficient dirt to minimize voids and settlement, and free of other unsuitable materials... as approved by the Engineer

The Engineer may require selective placement of an extra buffer layer for extremely rocky backfill to prevent migration

Select backfill, lightly compacted (bucket shaping) using suitable on-site material, or dumped sand.

Sand or very select material, hand tamped

Haunching to be carefully placed - Sand or sandy/clay soil. No. 9's may be required if weak foundation is encountered

Bedding to be sand or approved equivalent, (except No. 57's may be required if weak foundation encountered) hand placed and smoothed to uniform grade for support of pipe

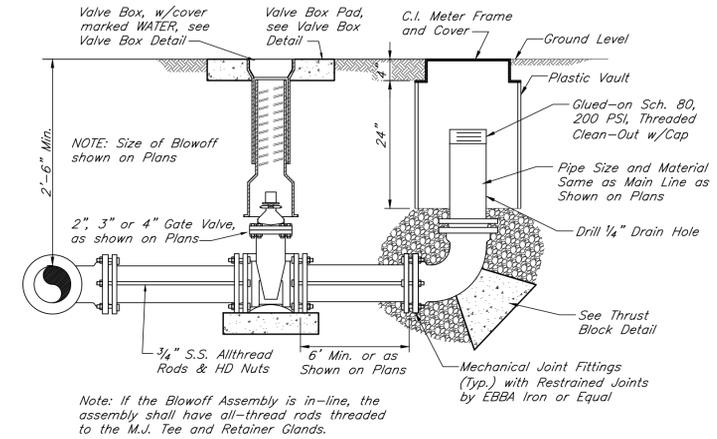
In soft, wet, muddy or otherwise yielding foundation conditions, undercutting and replacement with No. 2 Stone and/or Class II channel lining, or equivalent, will be required. Objective is to provide a trench bottom free of large stones, clods, frozen material, etc. which is unyielding.

NOTES: No rocks larger than 1-1/2" allowed in embedment zone.

Typical desired densities in open areas are depicted above in the boxes to the left of the figure. In other laying situations, more stringent selection, placement and compaction will be required.

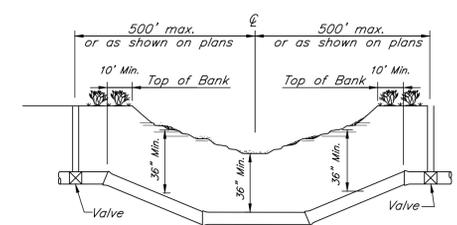
Trench width should be no wider than necessary for adequate work room and to assure safe working conditions. Nominal outside diameter (O.D.) pipe plus 6" on each side is typically considered minimal, with 8" minimum on each side for gravity sewer installation. For gravity sewer, pipe to be bedded on No. 9 stone and remainder of embedment zone to be backfilled with sand.

TRENCH BACKFILL OPEN AREAS - PLASTIC PIPE
Mar., 2011 Scale: 3/4"=1'-0"

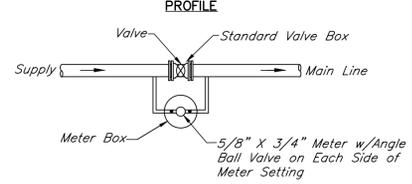


Note: If the Blowoff Assembly is in-line, the assembly shall have all-thread rods threaded to the M.J. Tee and Retainer Glands.

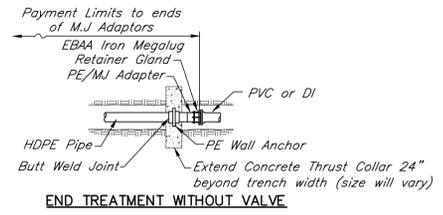
BLOWOFF ASSEMBLY DETAIL
Feb. 2015 Scale: 3/4"=1'-0"



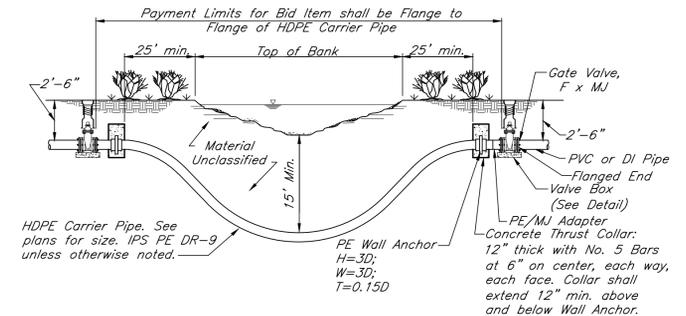
NOTES: Leak detection Meters shall be installed at the locations indicated on the Plans. Gate Valves are a Separate Pay Item, Bid Item for Leak Detection Meters shall include the Main Line Taps, Piping, Meter Box, Setter, Ball Valves, and Meter in accordance with the Detail Shown on this drawing.



LEAK DETECTION METER
Dec., 2010 N.T.S.



END TREATMENT WITHOUT VALVE



NOTE: Payment shall be "Lump Sum" for specific individual Bid Items for Directional Bores of stream crossings. Determination of required length is responsibility of Contractor. When a creek crossing test meter is shown on the drawings and it is necessary to tap the HDPE pipe for the meter connection, the tapping saddle specifically manufactured for HDPE pipe shall be used.

DIRECTIONAL BORE FOR STREAM CROSSINGS
March 2015 Scale: 3/16"=1'-0"



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