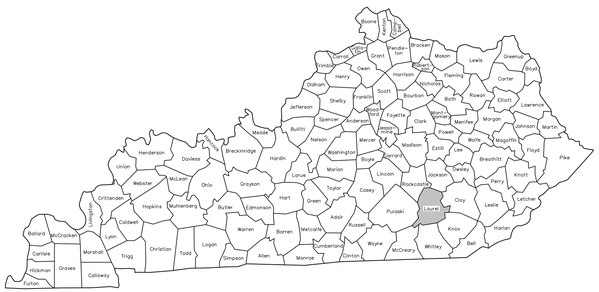
WOOD CREEK WATER DISTRICT
KY 490/US 25N WATERLINE REPLACEMENT
LAUREL COUNTY, KENTUCKY



BOARD OF DIRECTORS

Glenn Williams, Chairman
Carl Keller, Treasurer
Earl Bailey, Secretary

Donta Evans, Superintendent
Dewayne Lewis, Manager

INDEX OF SHEETS

JULY 2020

Prepared By:

KENVIRONS
Civil & Environmental Engineers

STATE OF KENTUCKY
EDDIE W. BROWN
19574
LICENSED
PROFESSIONAL ENGINEER
Date: 2020.07.07 22:53:04'00'

QA/QC: _____ DATE: _____

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GENERAL NOTES

1. Stations shown on the water line are for reference only and do not reflect the actual linear lengths of pipe required for construction.
2. The Contractor shall be responsible for coordinating all construction work with local utility companies and other concerned parties.
3. Existing buried utilities are shown on the drawings in their general location utilizing 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. The Contractor shall contact BUD at telephone no. 1–800–752–6007 or 811.
4. 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.
5. 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.
6. Pipe joint deflection shall not exceed 2°. Bending of PVC pipe will not be allowed.
7. 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.
8. 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.
9. 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.
10. 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.
11. Ductile iron pipe shall be installed in accordance with Standard AWWA C150/ANSI A21.50 Laying Condition Type 3 unless otherwise noted.
12. 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.
13. 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.
14. 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 for methods of sterilization and for disposing of heavily chlorinated water.
15. The time period for pressure testing in this project shall be 6 hours.
16. Detectable marking tape and Tracer wire shall be installed with all pipe. See Technical Specification 15100, and the miscellaneous details drawings. Tracer wire shall be installed a minimum of six inches directly above the pipe. Under no circumstances shall the tracer wire come in contact with the pipe.
17. 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.
18. 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 the field locations for transitions between private easements, and state and county road rights of way.
19. The pipeline trench width will be strictly enforced. See Technical Specification 15100 for trench width requirements.
20. 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.
21. Do not cut fences except where specifically shown and noted.
22. 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).
23. All work shall be provided in compliance with all applicable local, state and national building codes.
24. 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.).
25. 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.
26. 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.
27. 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.
28. 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.
29. 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.
30. All water main fittings shall be anchored with poured concrete thrust blocks as shown in the miscellaneous details. Wrap fittings in minimum 5–mil plastic wrap prior to forming and pouring the block.

GENERAL NOTES (CONT.)

31. 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.
32. 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.
33. 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.
34. 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.
35. There are sanitary sewers known to exist in the vicinity of the proposed new water main and known locations are shown on the plans. The Contractor shall maintain a minimum of 10 feet horizontally from any sanitary sewer pipeline. 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.
36. 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.

PROJECT SPECIFIC NOTES

1. All fire hydrants located on existing pipelines to be abandoned shall be removed by the Contractor and delivered to the Owner at a predetermined location.

ENVIRONMENTAL NOTES

1. 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.
2. Contractor shall not disturb any trees with a diameter at breast height greater than three (3) inches.
3. 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

1. 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.
2. 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.
3. 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.
4. Underground utilities shall not be installed in embankment fills or between edge of pavement and ditchline unless specifically noted on permitted plans.
5. 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.
6. Contact KTC–DOH District Office prior to beginning work.
7. 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.
8. All necessary steps shall be taken to prevent erosion or siltation of the public right of way, adjoining property and waterways.
9. 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.
10. 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*.

GENERAL NOTES

WOOD CREEK WATER DISTRICT
KY 490/US 25N WATERLINE REPLACEMENT
LAUREL COUNTY, KENTUCKY

STATE OF KENTUCKY
EDDIE W. BROWN
19574
LICENSED PROFESSIONAL ENGINEER

DRAWN BY: JKP
CHECKED BY: EWB
CHECKED BY: 2018
DATE: Dec.
SCALE: N/A
REVISIONS

KENVIRONS
Civil & Environmental Engineers

PROJECT NO.
2017036

SHEET NO.
1

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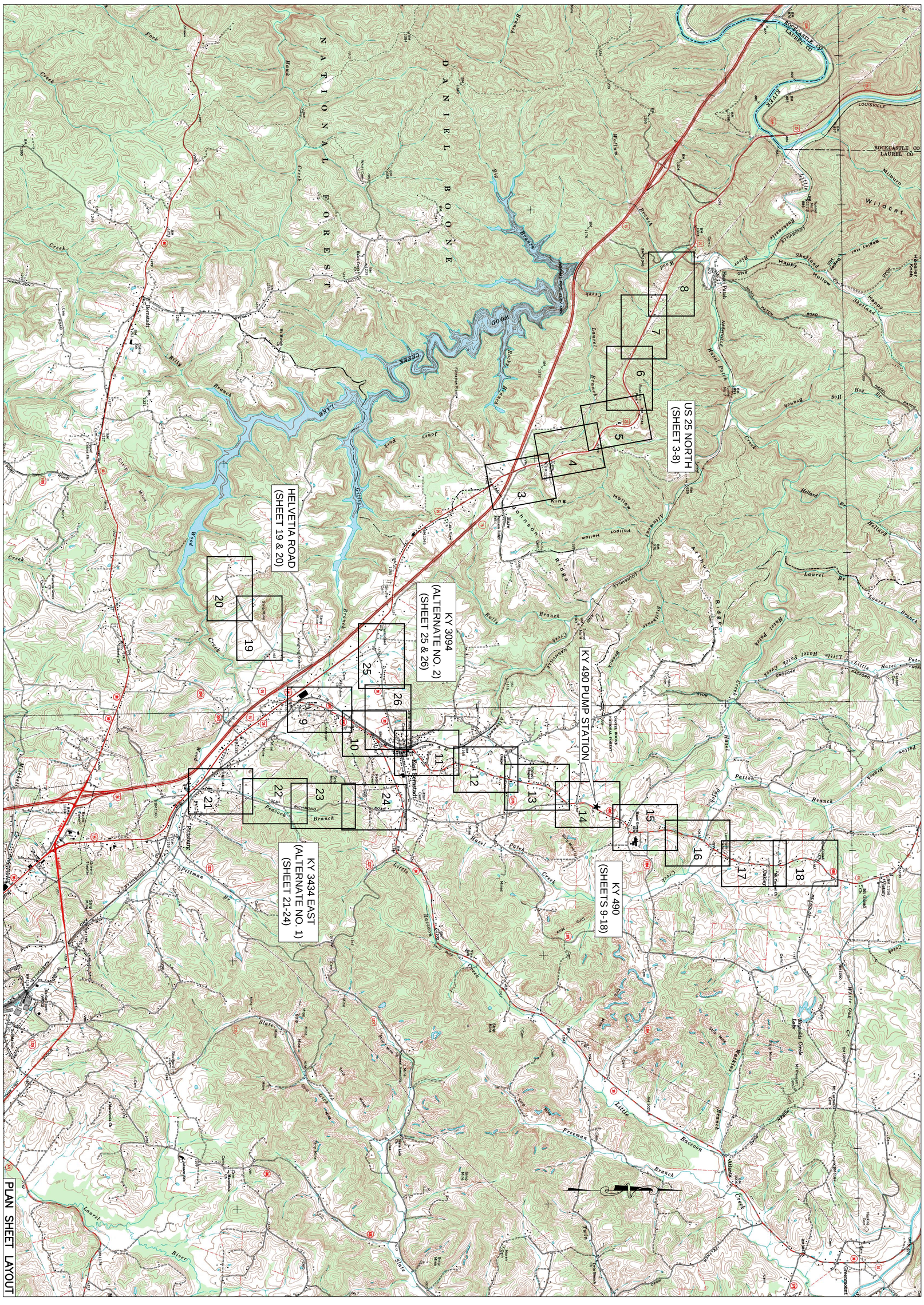

PLAN SHEET LAYOUT

SHEET NO. 2	PROJECT NO. 2017036	**KENVIRONS, INC.** FRANKFORT, KENTUCKY	DRAWN BY: PTH CHECKED BY: EWB CHECKED BY: DATE: May 2017 SCALE: 1"=2,000' REVISIONS	STATE OF KENTUCKY EDDIE W. BROWN 19574 LICENSED PROFESSIONAL ENGINEER	**WOOD CREEK WATER DISTRICT** **KY 490 / US 25 N. WATERLINE REPLACEMENT** **LAUREL COUNTY, KENTUCKY**

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SHEET NO. 3	PROJECT NO. 2017036	**KENVIRONS, INC.** FRANKFORT, KENTUCKY	DRAWN BY: JKP CHECKED BY: EWB CHECKED BY: DATE: May 2017 SCALE: 1"=100' REVISIONS	STATE OF KENTUCKY EDDIE W. BROWN 19574 LICENSED PROFESSIONAL ENGINEER	**WOOD CREEK WATER DISTRICT** **KY 490 / US 25 N. WATERLINE REPLACEMENT** **LAUREL COUNTY, KENTUCKY**

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SHEET NO. 4	PROJECT NO. 2017036	**KENVIRONS, INC.** FRANKFORT, KENTUCKY	DRAWN BY: JKP CHECKED BY: EWB CHECKED BY: DATE: May 2017 SCALE: 1"=100' REVISIONS	STATE OF KENTUCKY EDDIE W. BROWN 19574 LICENSED PROFESSIONAL ENGINEER	**WOOD CREEK WATER DISTRICT** **KY 490 / US 25 N. WATERLINE REPLACEMENT** **LAUREL COUNTY, KENTUCKY**

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SHEET NO. 5	PROJECT NO. 2017036	KENVIRONS, INC. FRANKFORT, KENTUCKY	DRAWN BY: JKP CHECKED BY: EWB CHECKED BY: DATE: May 2017 SCALE: 1"=100' REVISIONS	STATE OF KENTUCKY EDDIE W. BROWN 19574 LICENSED PROFESSIONAL ENGINEER	**WOOD CREEK WATER DISTRICT** **KY 490 / US 25 N. WATERLINE REPLACEMENT** **LAUREL COUNTY, KENTUCKY**

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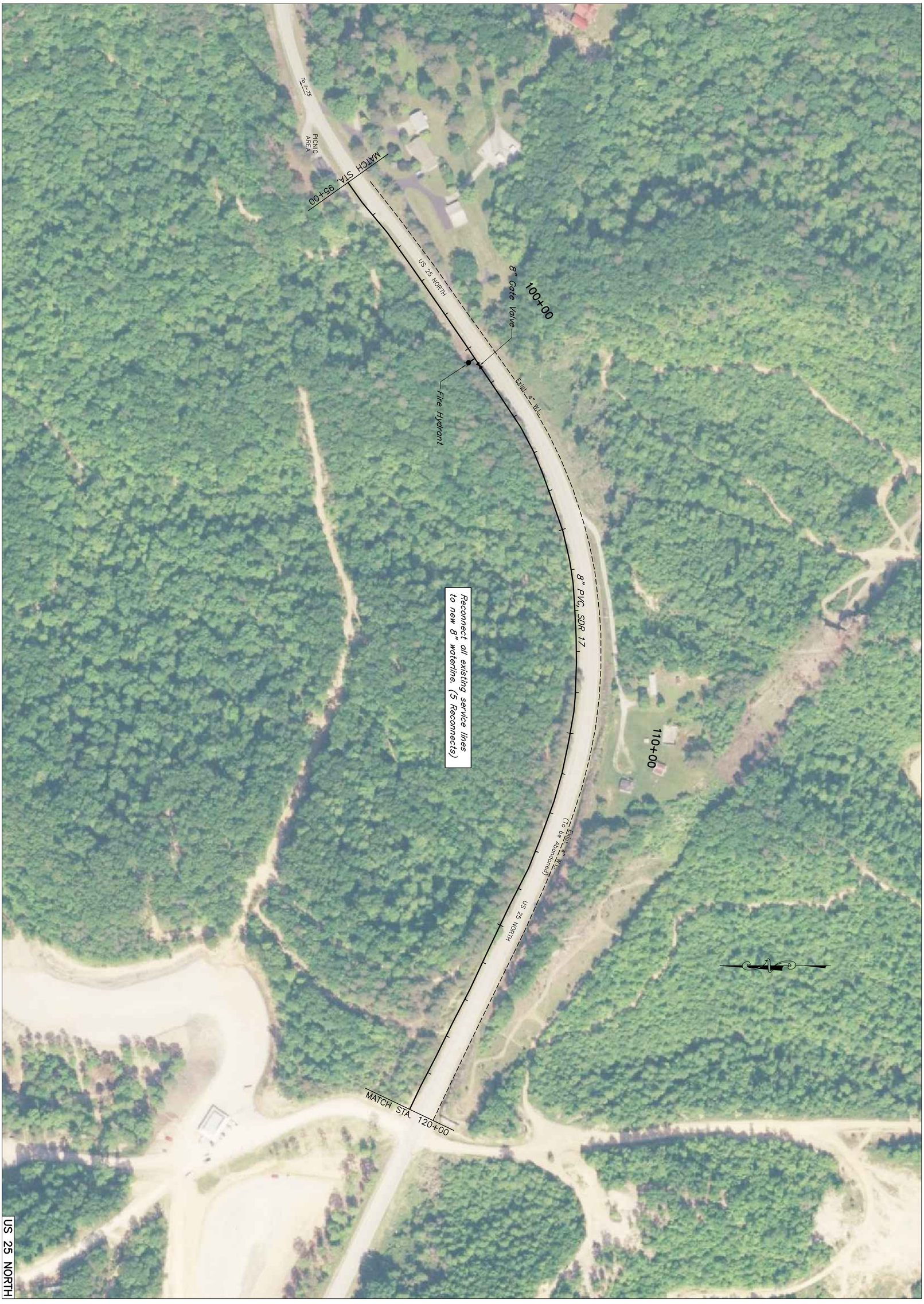

SHEET NO. 6	PROJECT NO. 2017036	KENVIRONS, INC. FRANKFORT, KENTUCKY	DRAWN BY: JKP CHECKED BY: EWB CHECKED BY: DATE: May 2017 SCALE: 1"=100' REVISIONS	STATE OF KENTUCKY EDDIE W. BROWN 19574 LICENSED PROFESSIONAL ENGINEER	**WOOD CREEK WATER DISTRICT** **KY 490 / US 25 N. WATERLINE REPLACEMENT** **LAUREL COUNTY, KENTUCKY**

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SHEET NO. 7	PROJECT NO. 2017036	**KENVIRONS, INC.** FRANKFORT, KENTUCKY	DRAWN BY: JKP CHECKED BY: EWB CHECKED BY: DATE: May 2017 SCALE: 1"=100' REVISIONS	STATE OF KENTUCKY EDDIE W. BROWN 19574 LICENSED PROFESSIONAL ENGINEER	**WOOD CREEK WATER DISTRICT** **KY 490 / US 25 N. WATERLINE REPLACEMENT** **LAUREL COUNTY, KENTUCKY**

SKYVIEW DRIVE

To I-75

MATCH STA. 150+00

Exist. 4" W.L. (To be Abandoned)

8" PVC, SDR 17

US 25 NORTH

160+00

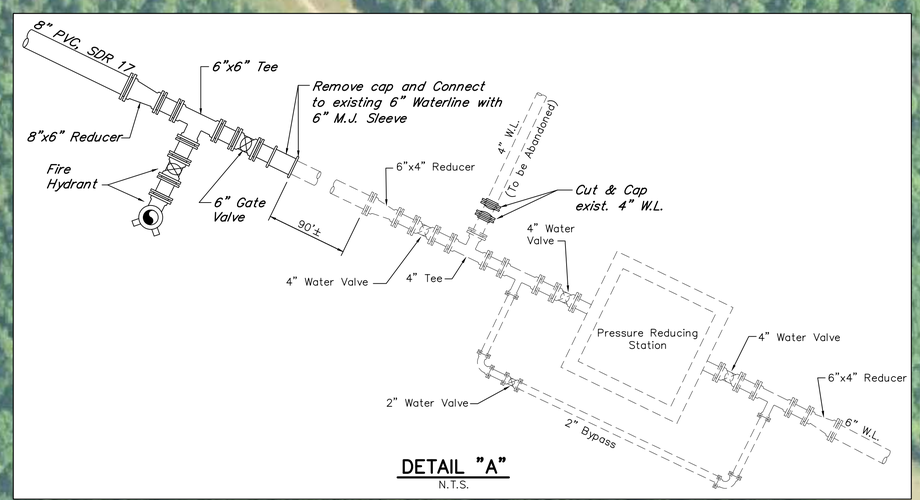
Reconnect all existing service lines to new 8" waterline. (5 Reconnects)

STA. 160+30 END
US 25 NORTH
Connect to existing 6" Stubout. See Detail "A" on this sheet

Exist. 6" W.L.

US 25 NORTH

Exist. 4" W.L. (Abandoned)



DETAIL "A"
N.T.S.

US 25 NORTH

WOOD CREEK WATER DISTRICT
KY 490 / US 25 N. WATERLINE REPLACEMENT
LAUREL COUNTY, KENTUCKY

STATE OF KENTUCKY
EDDIE W. BROWN
9574
LICENSED PROFESSIONAL ENGINEER

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KENVIRONS, INC.
FRANKFORT, KENTUCKY

PROJECT NO.
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SHEET NO.
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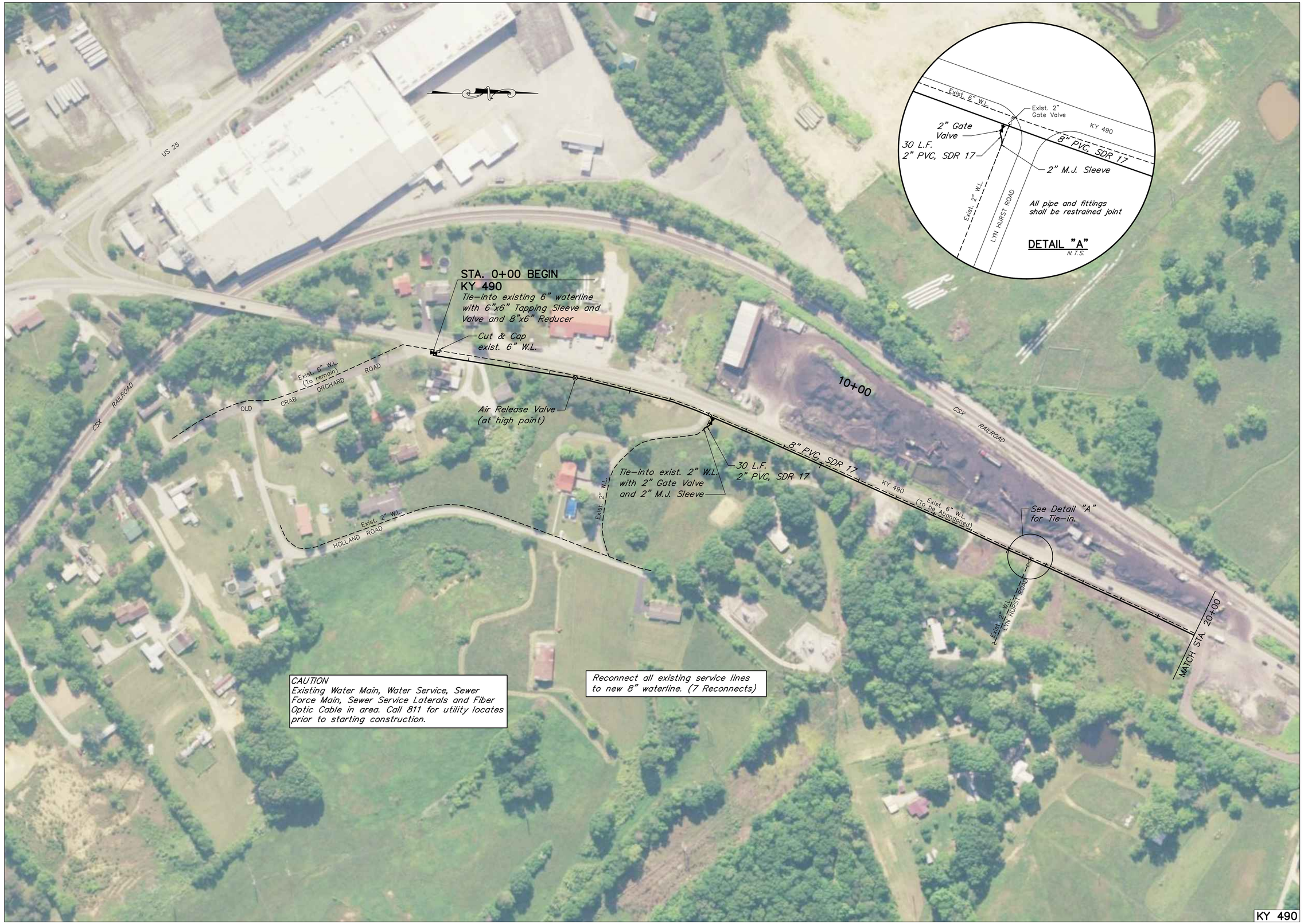
WOOD CREEK WATER DISTRICT
KY 490 / US 25 N. WATERLINE REPLACEMENT
LAUREL COUNTY, KENTUCKY



DETAIL "A"
N.T.S.

STATE OF KENTUCKY
EDDIE W. BROWN 19574
LICENSED PROFESSIONAL ENGINEER

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CHECKED BY: EWB	
DATE: May 2017	
SCALE: 1"=100'	
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KENVIRONS, INC.
FRANKFORT, KENTUCKY

PROJECT NO.
2017036

SHEET NO.
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WOOD CREEK WATER DISTRICT
KY 490 / US 25 N. WATERLINE REPLACEMENT
LAUREL COUNTY, KENTUCKY

Sta. 20+50:
8" Gate Valve
End PVC, SDR 17;
Begin D.I. CL. 350
w/ Nitrile Gaskets

MATCH STA. 20+00

8" D.I., CL 350
(Nitrile Gaskets)

CAUTION
Existing Water Main, Water Service, Sewer Force Main, Sewer Service Laterals and Fiber Optic Cable in area. Call 811 for utility locates prior to starting construction.

Sta. 24+50:
End D.I. CL 350
w/ Nitrile Gaskets
Begin PVC, SDR 17

Underground Fuel Tanks

8" Gate Valve

Tie-into existing 2" W.L. with
2" Gate Valve & M.J. Sleeve

Fire Hydrant

30+00

CSX RAILROAD

8" PVC, SDR 17

Exist. 2" W.L.

BRIDGESTONE ROAD

Air Release Valve
(at high point)

Exist. 6" Waterline
(To be Abandoned)

KY 3434

Reconnect all existing service lines
to new 8" waterline. (8 Reconnects)

KY 490

40+00

WV

Cut & Cap
exist. 6" W.L.

Tie-into existing 6" W.L. with
20 L.F. 6" PVC, SDR 17 &
6"x6" Tapping Sleeve & Valve

3" Blowoff Assembly

Exist. 6" Waterline
(To remain in service)

Bored Encasement
for 8" PVC, 60 L.F.

70 L.F.
8" PVC, SDR 17
(Restrained Joint)

Sta. 47+30:
8" Gate Valve
End PVC, SDR 17;
Begin D.I. CL. 350
w/ Nitrile Gaskets

8" D.I., CL 350
(Nitrile Gaskets)

Cut & Cap
exist. 6" W.L.

Exist. 6" Waterline
(To be Abandoned)

Fire Hydrant

MATCH STA. 50+00

SHELL
FOOD MART

Underground Fuel Tanks

SCHOOL ROAD

KY 3094

Exist. 3" W.L.

Exist. 4" W.L.

KY 490

STATE OF KENTUCKY
EDDIE W. BROWN
19574
LICENSED PROFESSIONAL ENGINEER

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FRANKFORT, KENTUCKY

PROJECT NO.
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SHEET NO.
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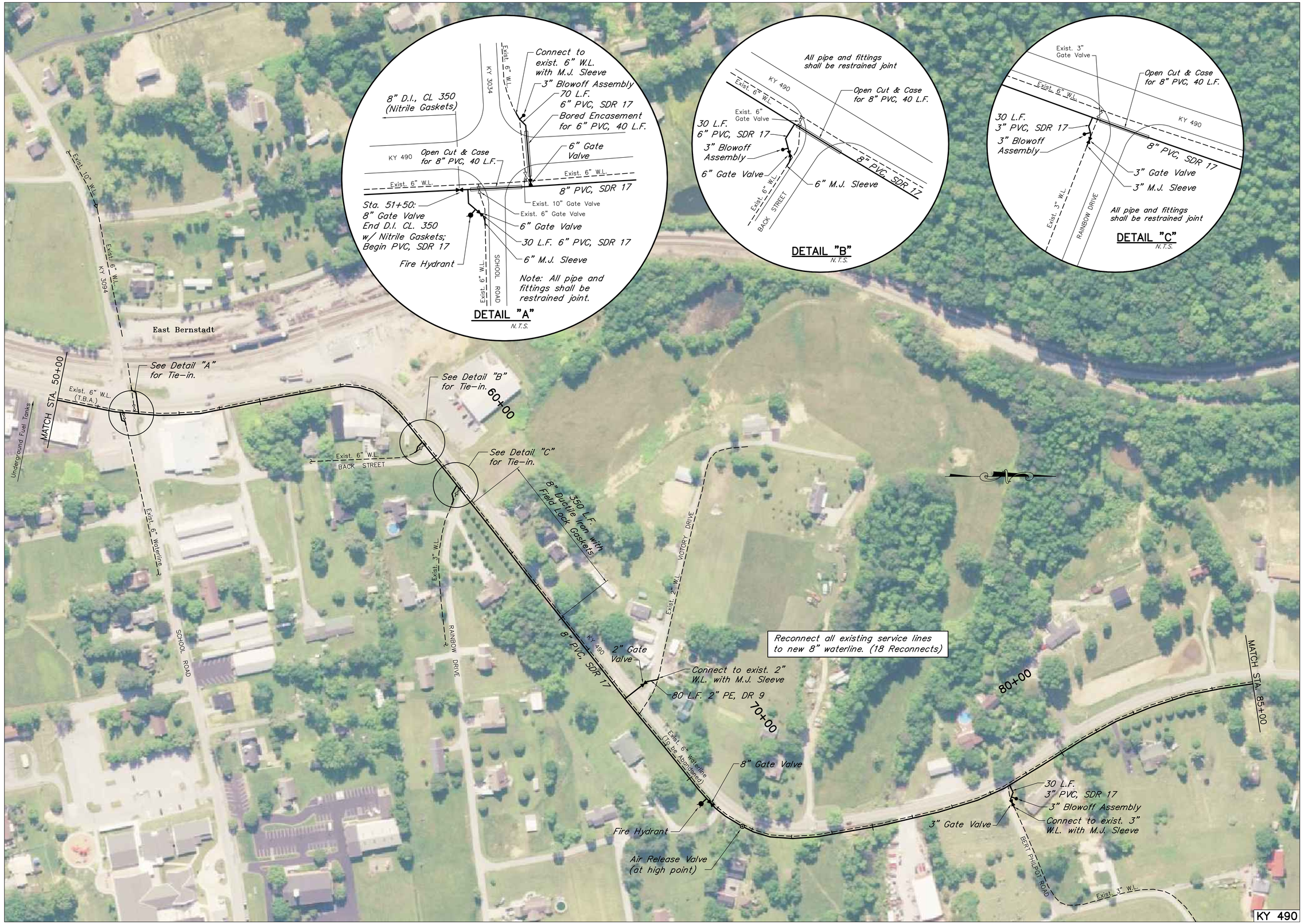
WOOD CREEK WATER DISTRICT
KY 490 / US 25 N. WATERLINE REPLACEMENT
LAUREL COUNTY, KENTUCKY



STATE OF KENTUCKY
EDDIE W. BROWN
19574
LICENSED PROFESSIONAL ENGINEER

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REVISIONS

KENVIRONS, INC.
FRANKFORT, KENTUCKY

PROJECT NO.
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SHEET NO.
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WOOD CREEK WATER DISTRICT
KY 490 / US 25 N. WATERLINE REPLACEMENT
LAUREL COUNTY, KENTUCKY

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FRANKFORT, KENTUCKY

PROJECT NO.
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SHEET NO.
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WOOD CREEK WATER DISTRICT
KY 490 / US 25 N. WATERLINE REPLACEMENT
LAUREL COUNTY, KENTUCKY

STATE OF KENTUCKY
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19574
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KENVIRONS, INC.
FRANKFORT, KENTUCKY

PROJECT NO.
2017036

SHEET NO.
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WOOD CREEK WATER DISTRICT
KY 490 / US 25 N. WATERLINE REPLACEMENT
LAUREL COUNTY, KENTUCKY

All pipe and fittings shall be restrained joint

Connect to exist. 4" W.L. with 4"x4" Tapping Sleeve & Valve

4" Cap

Remove exist. Hydrant

Bore and Case for 4" PVC, 40 L.F.

Jackson Road Zone Meter

Fire Hydrant

8" PVC, SDR 17

8" Gate Valve

DETAIL "A"
N.T.S.

All pipe and fittings shall be restrained joint

Open Cut and Case for 8" PVC, 40 L.F.

2" Gate Valve

2" PE, DR 9

2" M.J. Sleeve

DETAIL "B"
N.T.S.

MATCH STA. 140+00

Exist. 6" W.L.

8" PVC, SDR 17

Top of Casing Elev. 1176.0

Open Cut Encasement for 8" PVC, 200 L.F.

Top of Casing Elev. 1174.0

RIVER OF LIFE CHURCH

KY 3434

Ex. 4" W.L.

Connect to existing 4" W.L. with 4" M.J. Sleeve 60' west of driveway

300 L.F. 4" PVC, SDR 17

3" Blowoff Assemby

4" Gate Valve

JACKSON ROAD

Ex. 4" W.L.

150+00

Ex. 6" W.L. (To be Abandoned)

See Detail "A"

CALVARY TABERNACLE OF HAZEL

KY 490

Open Cut and Case for 8" PVC, 40 L.F.

See Detail "B"

160+00

Proposed KY 490 Pump Station. See Sheet PS-1 for work in this area and Pump Station Site Plan

Exist. Pump Station

8" PVC, SDR 17

Ex. 2" W.L.

DOUGLAS LANE

MATCH STA. 170+00

Reconnect all existing service lines to new 8" waterline. (17 Reconnects)

KY 490

STATE OF KENTUCKY
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PROJECT NO.
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SHEET NO.
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WOOD CREEK WATER DISTRICT
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LAUREL COUNTY, KENTUCKY

Connect to existing 3" W.L. with 3"x3" Tapping Sleeve & Valve

Existing 3" W.V.

3" PRV Station No. 1

Connect to existing 3" W.L. with 3"x3" Tapping Sleeve & Valve

HENSLEY ROAD

MATCH STA. 170+00

8" PVC, SDR 17

(To be Abandoned) Ex. 6" W.L.

Fire Hydrant

8" Gate Valve

Existing Groundwater Monitoring Well

Cut & Cap exist. 4" W.L.

Connect to existing 4" W.L. with 4"x4" Tapping Sleeve & Valve

Ex. 4" W.L.

180+00

3" Blowoff Assembly

220 L.F. 4" PVC, SDR 17

Bored Encasement for 4" PVC, 40 L.F.

Existing Sign & Electric Service

KY 490

Ex. 4" W.L. (To be Abandoned)

See Detail "A" on this sheet

Ex. 6" AC W.L.

KY 1394

Reconnect all existing service lines to new 8" waterline. (15 Reconnects)

190+00

All reconnects on the PVC, C900 pipe shall be tandem setters with Individual PRV's.

8" Gate Valve; End PVC SDR 16; Begin PVC, C900 DR 18

8" PVC, C900 DR 18

MATCH STA. 200+00

Fire Hydrant

8" PVC, SDR 17

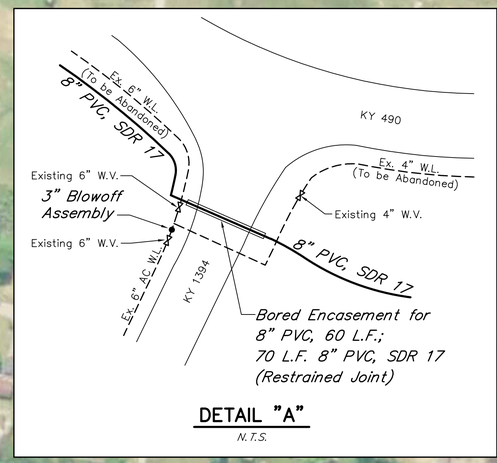
Private Easement

BUCKLES ROAD

HAZEL GREEN HOLINESS CHURCH

HAZEL GREEN ELEMENTARY SCHOOL

KY 490



DETAIL "A"

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STATE OF KENTUCKY
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LICENSED PROFESSIONAL ENGINEER

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FRANKFORT, KENTUCKY

PROJECT NO.
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SHEET NO.
15

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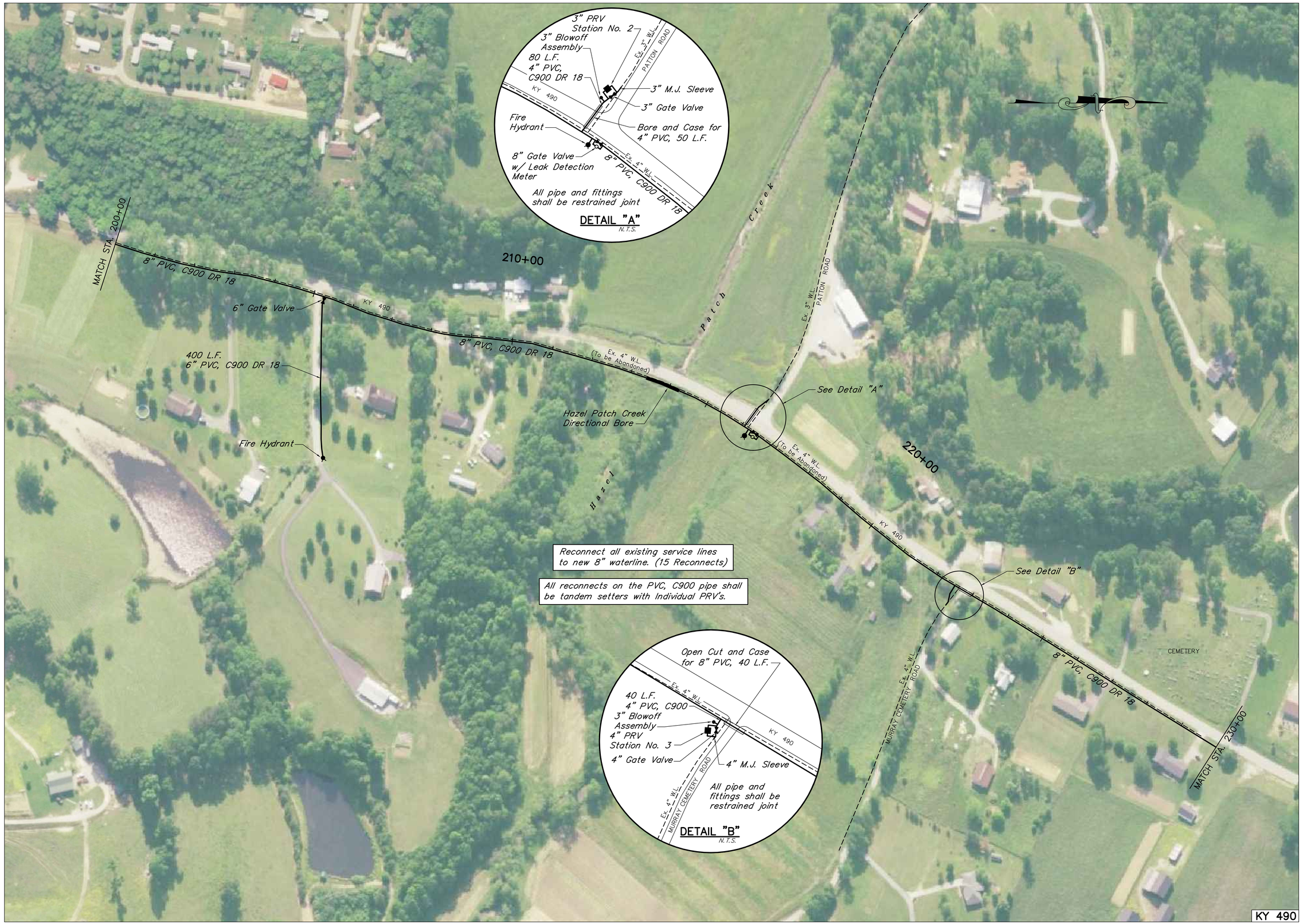
WOOD CREEK WATER DISTRICT
KY 490 / US 25 N. WATERLINE REPLACEMENT
LAUREL COUNTY, KENTUCKY



STATE OF KENTUCKY
EDDIE W. BROWN
19574
LICENSED PROFESSIONAL ENGINEER

DRAWN BY: CPH	
CHECKED BY: EWB	
DATE: May 2017	
SCALE: 1"=100'	
REVISIONS	

KENVIRONS, INC.
FRANKFORT, KENTUCKY

PROJECT NO.
2017036

SHEET NO.
16

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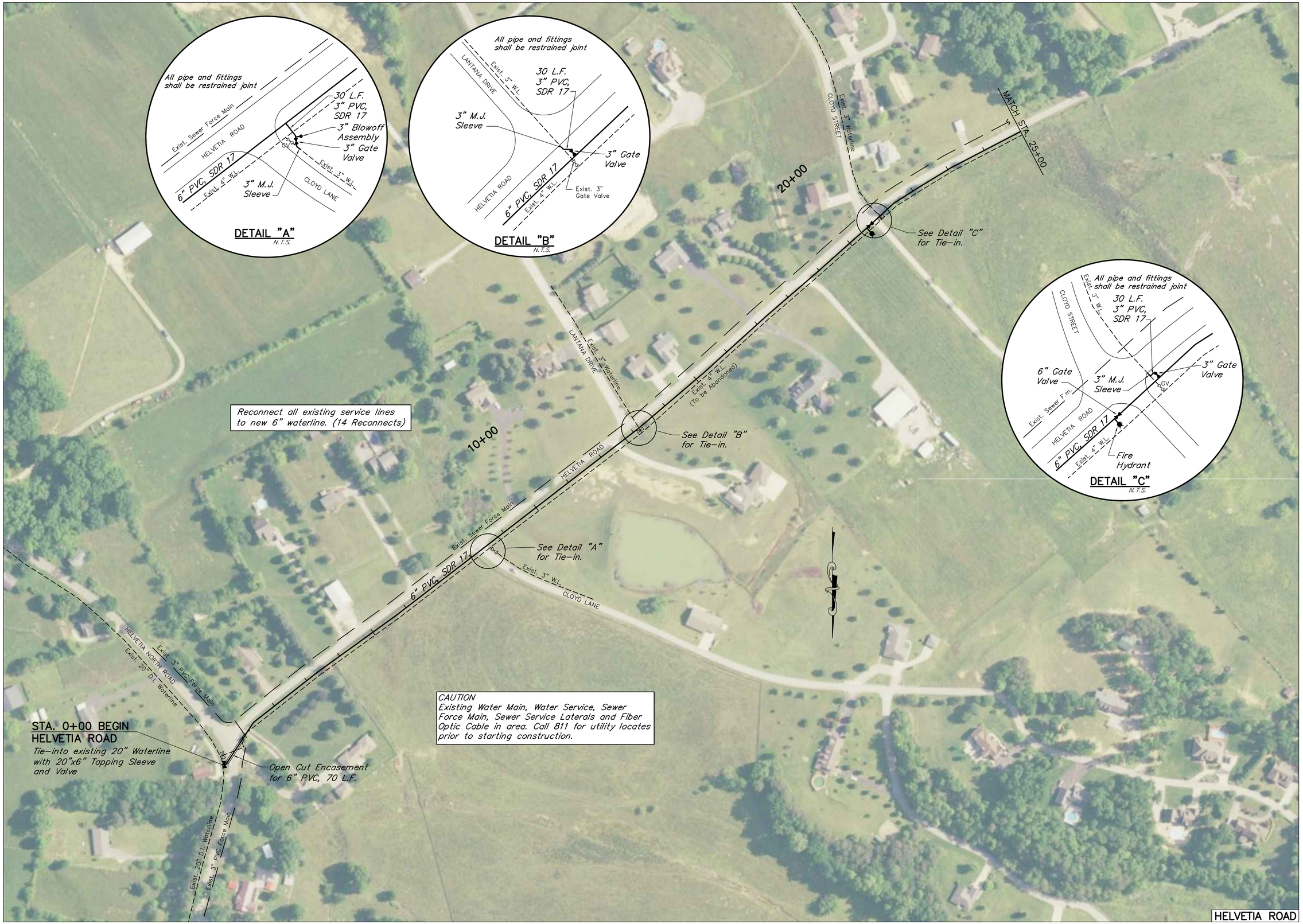
SHEET NO. 17	PROJECT NO. 2017036	KENVIRONS, INC. FRANKFORT, KENTUCKY	DRAWN BY: PTH CHECKED BY: EWB CHECKED BY: DATE: May 2017 SCALE: 1"=100' REVISIONS	STATE OF KENTUCKY EDDIE W. BROWN 19574 LICENSED PROFESSIONAL ENGINEER	**WOOD CREEK WATER DISTRICT** **KY 490 / US 25 N. WATERLINE REPLACEMENT** **LAUREL COUNTY, KENTUCKY**

N:\P\2017036\Plans\18 KY 490 NORTH.dwg, 7/7/2020 1:59:06 PM, JKP

SHEET NO. 18	PROJECT NO. 2017036	**KENVIRONS, INC.** FRANKFORT, KENTUCKY	DRAWN BY: PTH CHECKED BY: EWB CHECKED BY: DATE: May 2017 SCALE: 1"=100' REVISIONS	STATE OF KENTUCKY EDDIE W. BROWN 19574 LICENSED PROFESSIONAL ENGINEER	**WOOD CREEK WATER DISTRICT** **KY 490 / US 25 N. WATERLINE REPLACEMENT** **LAUREL COUNTY, KENTUCKY**

WOOD CREEK WATER DISTRICT
KY 490 / US 25 N. WATERLINE REPLACEMENT
LAUREL COUNTY, KENTUCKY



STATE OF KENTUCKY
EDDIE W. BROWN
19574
LICENSED PROFESSIONAL ENGINEER

DRAWN BY: PTH	
DESIGNED BY: EWB	
CHECKED BY: EWB	
DATE: May 2017	
SCALE: 1"=100	
REVISIONS	

KENVIRONS, INC.
FRANKFORT, KENTUCKY

PROJECT NO.
2017036

SHEET NO.
19

N:\P\2017036\Plans\19 HELVETIA.dwg, 7/7/2020 1:59:16 PM, JKP

WOOD CREEK WATER DISTRICT
KY 490 / US 25 N. WATERLINE REPLACEMENT
LAUREL COUNTY, KENTUCKY

All pipe and fittings shall be restrained joint

Fire Hydrant

6" Gate Valve & Stub-out

HELVETIA ROAD

6" PVC, SDR 17

Exist. 4" W.L.

Cut & Cap exist. W.L.

Tie into exist. 4" W.L. with 4"x4" Tapping Sleeve & Valve and 6"x4" Reducer

DETAIL "A"
N.T.S.

CAUTION
Existing Water Main, Water Service, Sewer Force Main, Sewer Service Laterals and Fiber Optic Cable in area. Call 811 for utility locates prior to starting construction.

40+00

CHANEY RIDGE ROAD

CEMETERY

STA. 42+00 END
HELVETIA ROAD
See Detail "A"

30+00

HELVETIA ROAD

6" PVC, SDR 17

Exist. Sewer Force Main

Exist. 4" Waterline (To be Abandoned)

Reconnect all existing service lines to new 6" waterline. (4 Reconnects)

MATCH STA. 25+00

CLOYD STREET

HELVETIA ROAD

STATE OF KENTUCKY
EDDIE W. BROWN
19574
LICENSED PROFESSIONAL ENGINEER

DRAWN BY: PTH	
CHECKED BY: EWB	
DATE: May 2017	
SCALE: 1"=100	
REVISIONS	

KENVIRONS, INC.
FRANKFORT, KENTUCKY

PROJECT NO.
2017036

SHEET NO.
20

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WOOD CREEK WATER DISTRICT
KY 490 / US 25 N. WATERLINE REPLACEMENT
LAUREL COUNTY, KENTUCKY

STATE OF KENTUCKY
EDDIE W. BROWN
19574
LICENSED PROFESSIONAL ENGINEER

DRAWN BY:	PTH
CHECKED BY:	EWB
DATE:	May 2017
SCALE:	1"=100
REVISIONS	

KENVIRONS, INC.
FRANKFORT, KENTUCKY

PROJECT NO.
2017036

SHEET NO.
21

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WOOD CREEK WATER DISTRICT
KY 490 / US 25 N. WATERLINE REPLACEMENT
LAUREL COUNTY, KENTUCKY

KY 3434 EAST – ALTERNATE NO. 1

STATE OF KENTUCKY
EDDIE W. BROWN
19574
LICENSED PROFESSIONAL ENGINEER

DRAWN BY: EPTH
CHECKED BY: EWB
DATE: May 2017
SCALE: 1"=100

REVISIONS

KENVIRONS, INC.
FRANKFORT, KENTUCKY

PROJECT NO.
2017036

SHEET NO.
22

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WOOD CREEK WATER DISTRICT
KY 490 / US 25 N. WATERLINE REPLACEMENT
LAUREL COUNTY, KENTUCKY

KY 3434 EAST – ALTERNATE NO. 1

STATE OF KENTUCKY
EDDIE W. BROWN
19574
LICENSED PROFESSIONAL ENGINEER

DRAWN BY: PTH
DESIGNED BY: EWB
CHECKED BY: EWB
DATE: May 2017
SCALE: 1"=100'

REVISIONS			

KENVIRONS, INC.
FRANKFORT, KENTUCKY

PROJECT NO.
2017036

SHEET NO.
23

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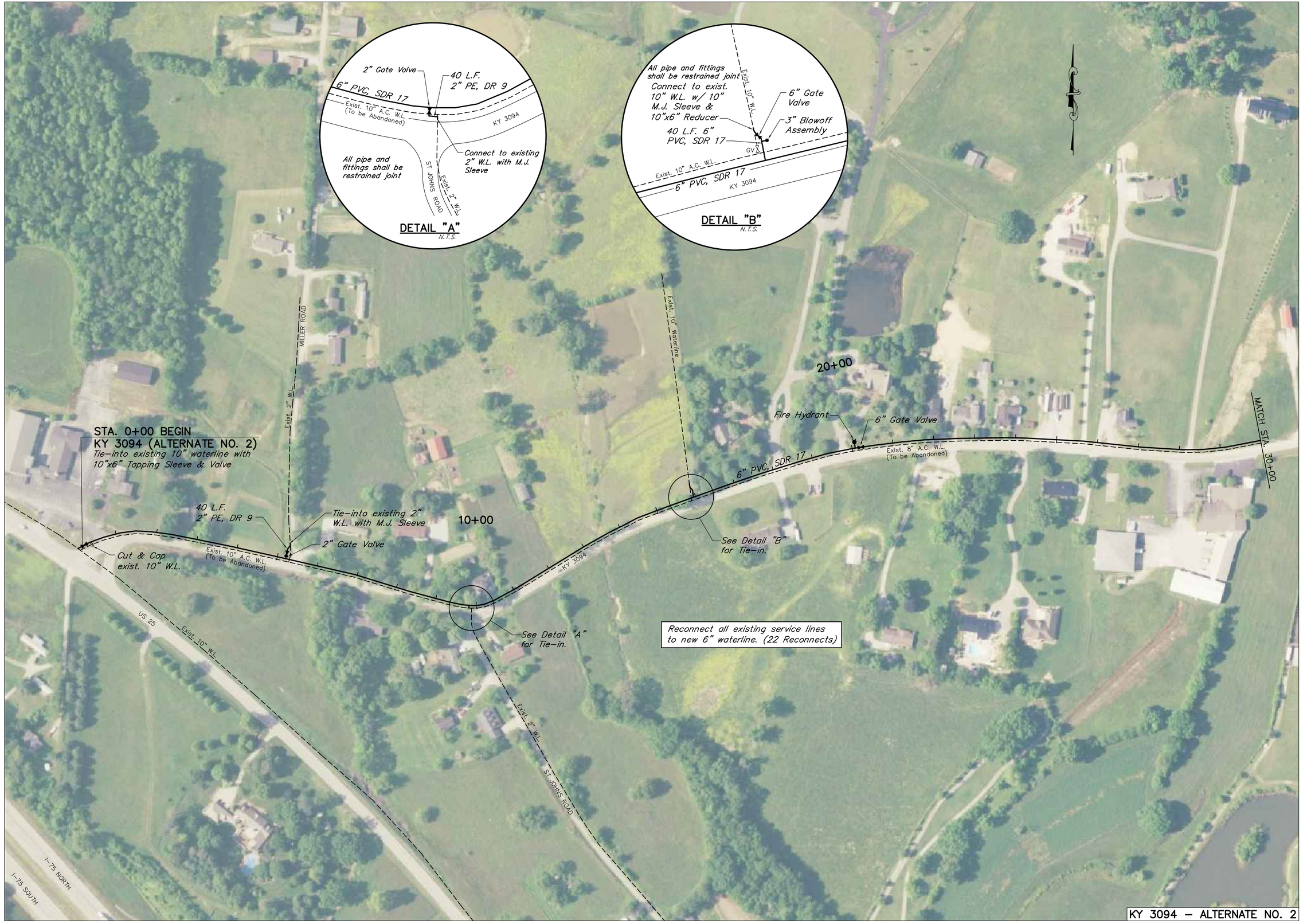
KY 3434 EAST – ALTERNATE NO. 1

SHEET NO. 24	PROJECT NO. 2017036	KENVIRONS, INC. FRANKFORT, KENTUCKY	DRAWN BY: PTH CHECKED BY: EWB CHECKED BY: DATE: May 2017 SCALE: 1"=100 REVISIONS	STATE OF KENTUCKY EDDIE W. BROWN 19574 LICENSED PROFESSIONAL ENGINEER	WOOD CREEK WATER DISTRICT KY 490 / US 25 N. WATERLINE REPLACEMENT LAUREL COUNTY, KENTUCKY

WOOD CREEK WATER DISTRICT
KY 490 / US 25 N. WATERLINE REPLACEMENT
LAUREL COUNTY, KENTUCKY



STATE OF KENTUCKY
EDDIE W. BROWN
19574
LICENSED PROFESSIONAL ENGINEER

DRAWN BY:	BLH
CHECKED BY:	WFB
CHECKED BY:	BRW
DATE:	May 2018
SCALE:	1"=100'
REVISIONS	

KENVIRONS, INC.
FRANKFORT, KENTUCKY

PROJECT NO.
2017036

SHEET NO.
25

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WOOD CREEK WATER DISTRICT
KY 490 / US 25 N. WATERLINE REPLACEMENT
LAUREL COUNTY, KENTUCKY

Reconnect all existing service lines to new 6" waterline. (14 Reconnects)

40+00

50+00

MATCH STA. 30+00

Fire Hydrant

6" Gate Valve

6" PVC, SDR 17

Exist. 8" A.C. W.L. (To be Abandoned)

KY 3094

MUSTER HILL

Exist. 3" W.L.

See Detail "A" for Tie-in.

See Detail "B" for Tie-in.

See Detail "C" for Tie-in.

LITTON TOWN ROAD

Exist. 4" W.L.

CHAN McCLURE ROAD

Fire Hydrant

Exist. 6" A.C. W.L.

STA. 59+50 END
KY 3094 (ALTERNATE NO. 2)
Connect to existing 6" W.L. at existing Valve with M.J. Sleeve

CSX RAILROAD

KY 490

KY 3434

DETAIL "A"
N.T.S.

All pipe and fittings shall be restrained joint

3" M.J. Sleeve

3" Blowoff Assembly

3" Gate Valve

40 L.F. 3" PVC, SDR 17

6" PVC, SDR 17

Exist. 6" A.C. W.L.

DETAIL "B"
N.T.S.

All pipe and fittings shall be restrained joint

Bore & Case for 4" PVC, 35 L.F.

80 L.F. 4" PVC, SDR 17

3" Blowoff Assembly

4" Gate Valve

4" M.J. Sleeve

Exist. 4" W.L.

DETAIL "C"
N.T.S.

4" M.J. Sleeve

Exist. 4" Gate Valve

3" Blowoff Assembly

40 L.F. 4" PVC, SDR 17

4" Gate Valve

6" PVC, SDR 17

All pipe and fittings shall be restrained joint

KY 3094 – ALTERNATE NO. 2

STATE OF KENTUCKY
EDDIE W. BROWN
19574
LICENSED PROFESSIONAL ENGINEER

DRAWN BY: EDH	
CHECKED BY: JWB	
CHECKED BY: BRW	
DATE: May 2016	
SCALE: 1"=100'	
REVISIONS	

KENVIRONS, INC.
FRANKFORT, KENTUCKY

PROJECT NO.
2017036

SHEET NO.
26

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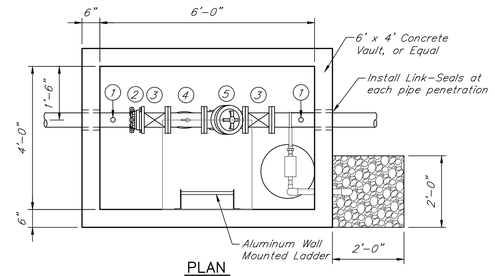
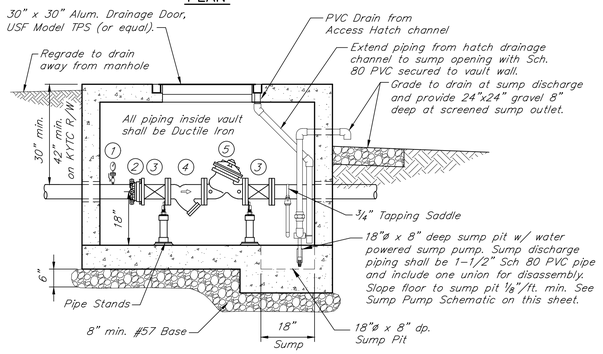


PLAN

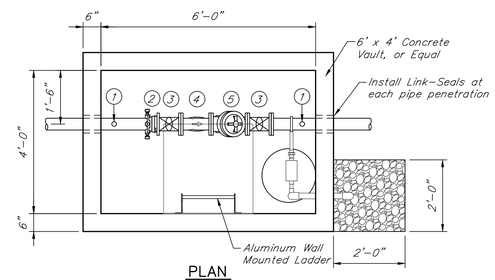


ELEVATION

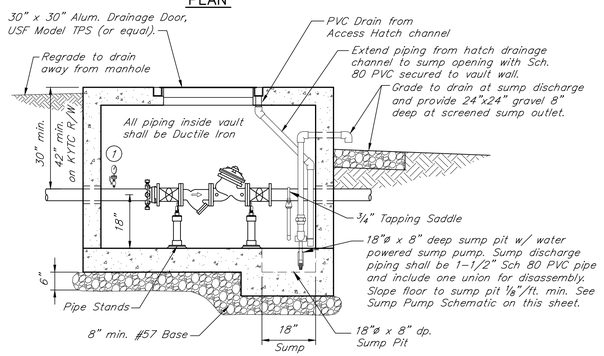
1. Pressure Gauge Connection w/ Ball Valve
2. 4" Gate Valve
3. 4" FCA
4. 4" Strainer
5. 4" Pressure Reducing Valve

4" PRESSURE REDUCING STATION

June 2020 Scale: 1/2"=1'-0"



PLAN

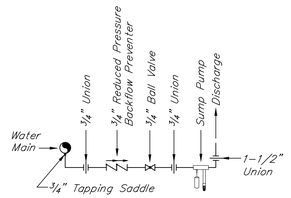


ELEVATION

1. Pressure Gauge Connection w/ Ball Valve
2. 3" FCA
3. 3" Gate Valve
4. 3" Strainer
5. 3" Pressure Reducing Valve

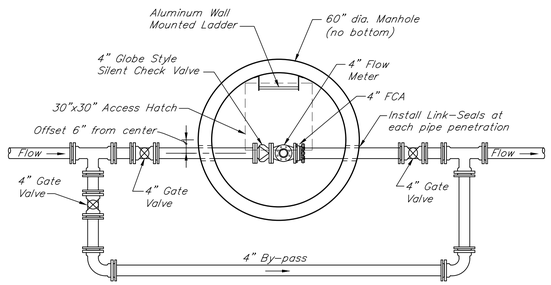
3" PRESSURE REDUCING STATION

June 2020 Scale: 1/2"=1'-0"

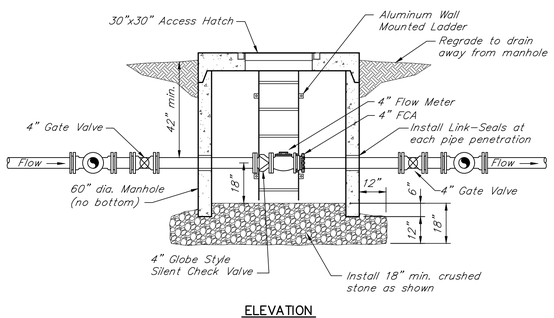


SUMP PUMP SCHEMATIC

N.T.S.



PLAN VIEW



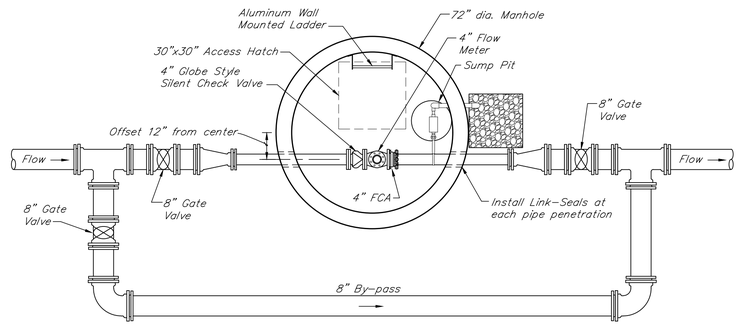
ELEVATION

NOTES:

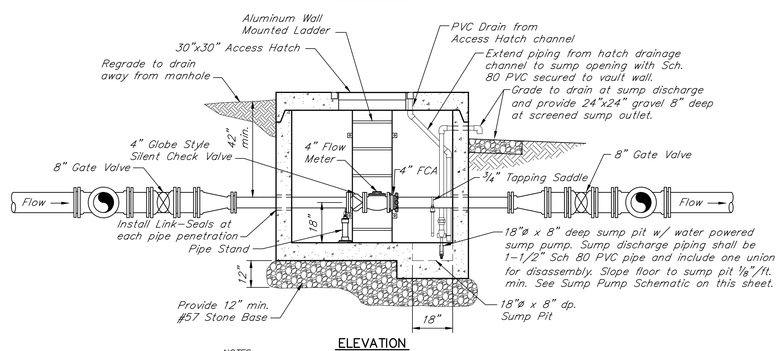
1. All by-pass piping outside of vault shall be D.I., Restrained Joint.
2. All piping inside vault shall be D.I. or Steel.

JACKSON ROAD ZONE METER

3/8" = 1'-0"



PLAN VIEW



ELEVATION

NOTES:

1. All by-pass piping outside of vault shall be D.I., Restrained Joint.
2. All piping inside vault shall be D.I. or Steel.

KY 490 ZONE METER

3/8" = 1'-0"

WOOD CREEK WATER DISTRICT
KY 490 / US 25 N. WATERLINE REPLACEMENT
LAUREL COUNTY, KENTUCKY

STATE OF KENTUCKY — EDDIE W. BROWN 19574 — LICENSED PROFESSIONAL ENGINEER

DRAWN BY: JKP
CHECKED BY: EWB
CHECKED BY:
DATE: May 2020
SCALE: As Noted
REVISIONS

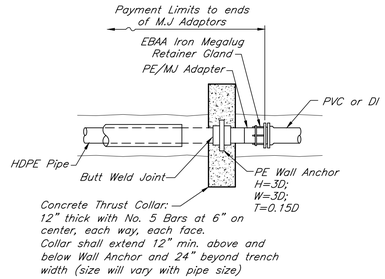
KENVIRONS, INC.
FRANKFORT, KENTUCKY

PROJECT NO.
2017036

SHEET NO.
27

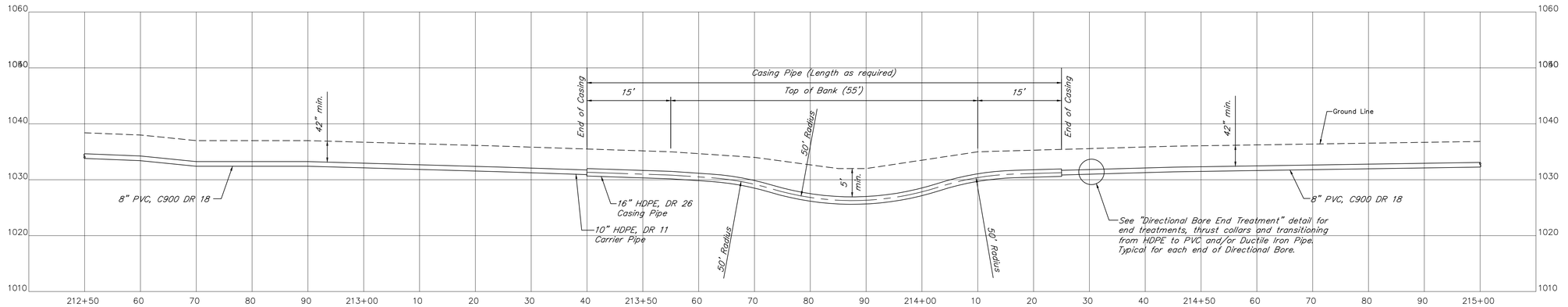
ZONE METERS & PRV STATIONS

N:\P\2017036\Plans\27 Zone Meters and PRVs.dwg, 7/7/2020 2:01:44 PM, JKP



DIRECTIONAL BORE END TREATMENT

June 2020 *N.T.S.*



HAZEL PATCH CREEK DIRECTIONAL BORE

Scale: 1"=10'

HAZEL PATCH CREEK DIRECTIONAL BORE

WOOD CREEK WATER DISTRICT
KY 490 / US 25 N. WATERLINE REPLACEMENT
LAUREL COUNTY, KENTUCKY

STATE OF KENTUCKY
EDDIE W. BROWN 19574
LICENSED PROFESSIONAL ENGINEER

DRAWN BY: JKP
CHECKED BY: EWB
DATE: May 2017
SCALE: As Shown
REVISIONS

KENVIRONS, INC.
FRANKFORT, KENTUCKY

PROJECT NO.
2017036

SHEET NO.
28

N:\PJ\2017036\Plans\28 Directional Bore.dwg, 7/7/2020 2:01:56 PM, JKP

WILLIAM TREVOR GEORGE
D.B. 685 PG. 459

WILLIAM TREVOR GEORGE
D.B. 685 PG. 459

JAMES EVANS
D.B. 644 PG. 289

WOOD CREEK WATER DISTRICT
D.B. 741 PG. 782

TBM #1 = Nail in Power Pole
Elev. 1181.32

TBM #1

49.88'

49.95'

50.07'

50.09'

Antenna Tower
and base. See
Electrical Details

Pump Station Building
FFE 1181.0

3" Blowoff
Assembly

Approximate
Boundary

6" D.I., CL 350

6" D.I., CL 350

12'
Gravel Drive

Fire Hydrant

End D.I.
(Yard Piping);
Begin PVC

End D.I.
(Yard Piping);
Begin PVC

R=10'

I.I. 1177.8

R=10'

I.O. 1177.50

20 L.F. 18" CMP @ 1.5%

Remove existing
12" Ceramic Tile

Pump Station Bid Item shall include everything on the west side of KY 490 except for the Bores and 6" PVC Piping which end at the KY 490 Right of Way.

To be Lump Sum
with Pump Station

Individual Bid Items

STATE ROUTE 490 R/W

STATE ROUTE 490 R/W

STATE ROUTE 490

Bored Encasement
for 6" PVC, 35 L.F.

Bored Encasement
for 6" PVC, 35 L.F.

50' R/W

24'± Road Width

Exist. 6" Waterline (To be Abandoned)

Exist. 6" Waterline (To be Abandoned)

4.0'

4.0'

8" PVC, SDR 17

8" PVC, SDR 17

6" Gate Valve

6" Gate Valve

8" Gate Valve

STATE ROUTE 490 R/W

STATE ROUTE 490 R/W

Base Map provided by:
Turner Land Surveying, Inc.
P.O. Box 2156
London, KY 40743
(606) 878-8286

PUMP STATION SITE PLAN

N:\P\2017036\Plans\PS-1 KY 490 Site Plan.dwg, 7/7/2020 2:04:56 PM, JKP

WOOD CREEK WATER DISTRICT
KY 490 / US 25 N. WATERLINE REPLACEMENT
LAUREL COUNTY, KENTUCKY

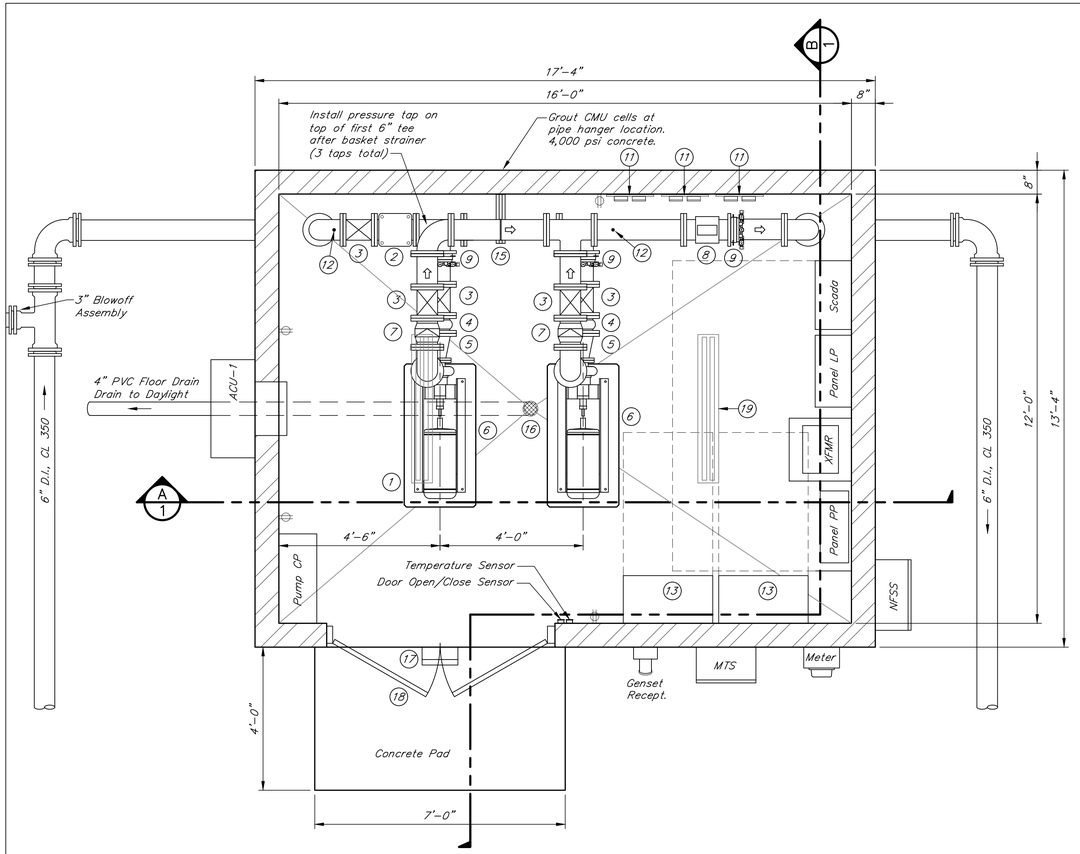
STATE OF KENTUCKY
EDDIE W. BROWN
19574
LICENSED PROFESSIONAL ENGINEER

DRAWN BY: JKP
CHECKED BY: EWB
DATE: June 2019
SCALE: 1"=5'
REVISIONS

KENVIRONS, INC.
FRANKFORT, KENTUCKY

PROJECT NO.
2017036

SHEET NO.
PS-1



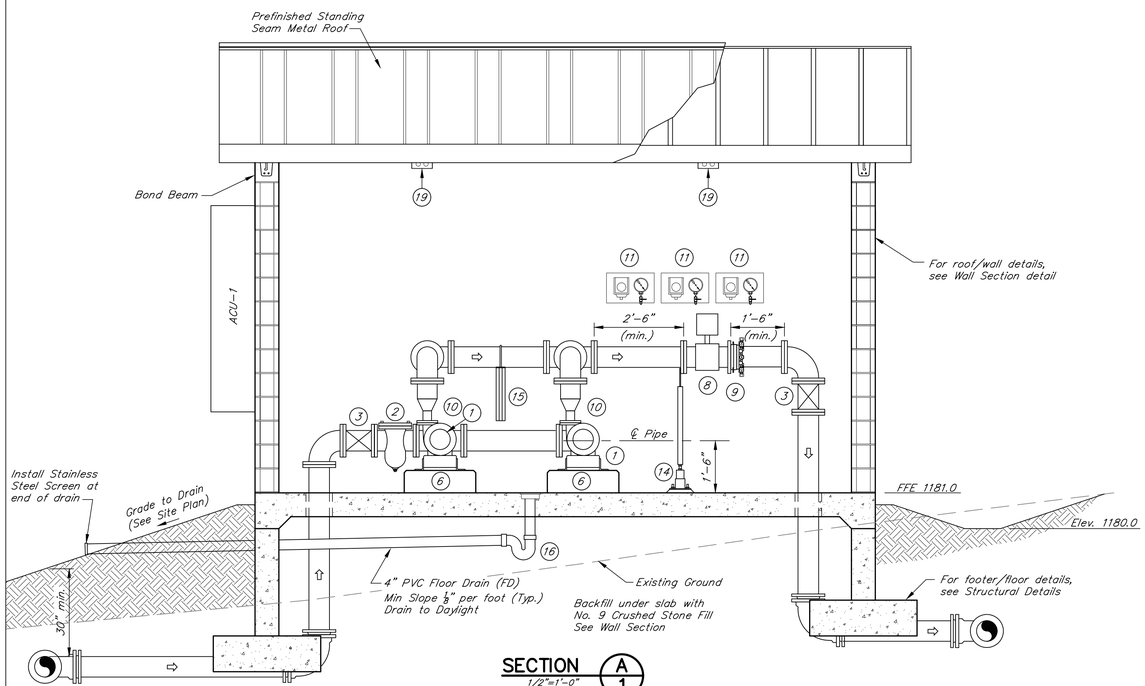
PUMP STATION PLAN VIEW

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

GENERAL NOTES

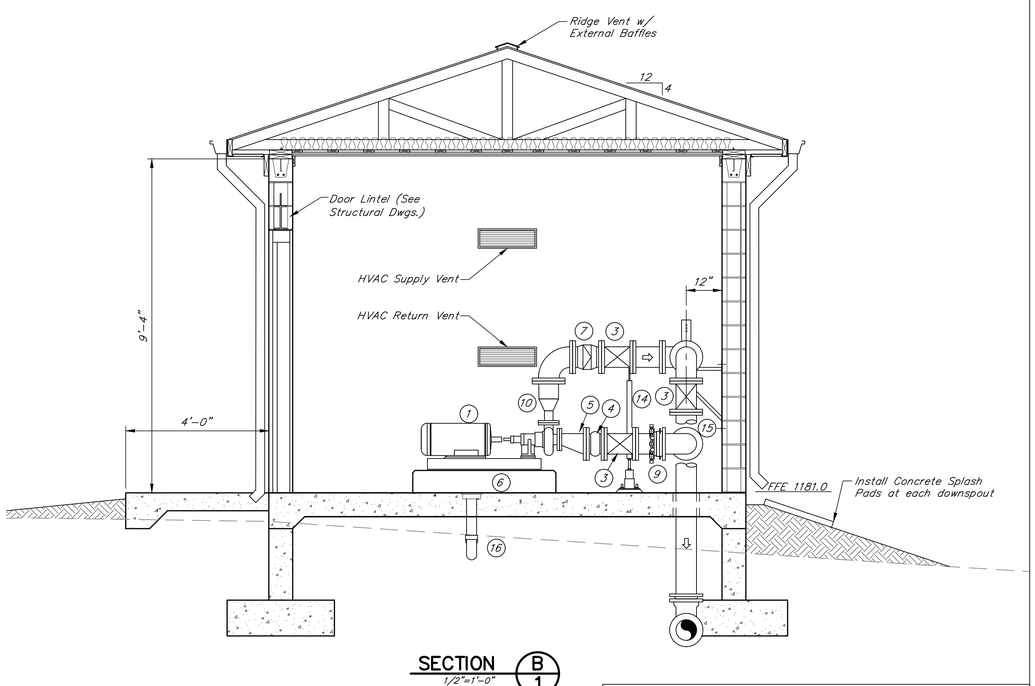
1. The Contractor shall coordinate with the pump Supplier and Engineer regarding the base and other pump dimensions. This coordination is absolutely necessary to assure that the concrete pump pedestals are constructed to the desired dimensions.
2. All Yard Piping, fittings and valves shall utilize locking gaskets and Mechanical Joint Pipe Restraints (Wedge Type).
3. Pump Bases shall be anchored to pump pads with stainless steel foundation bolts with 4 ½" embedment through pump pedestal into floor slab. Diameter of anchor bolts per pump supplier's recommendation.
4. All couplings and flanged coupling adaptors shall be rodded through the adjacent flanges and bolted securely.
5. Provide pipe sleeves for all penetrations of walls and floor.
6. Pipe drainage from any pump, valve, or device within the pump station shall utilize PVC conduit through the floor slab to the floor drain piping below slab.
7. Caulk all control joints, construction joints including slab to wall joint, and frame installations.
8. All conduits shall be aluminum. Seal the tubing raceways.
9. Use shark bite fittings with tubing.
10. Apply acrylic tinted floor sealer to concrete floor after all construction is complete inside pump station. See specification for details.
11. Construct a ¾" chamfer at all construction joints and corners.
12. The flanged pipe gaskets shall be full face gaskets, ⅛ inch thick equal to TORUSEAL as manufactured by American Cast Iron Pipe Company (or equal).
13. All interior piping, valves, pump and metal surfaces shall receive two (2) coats of Tnemec 66 HB Epoxoline or approved equal.
14. Floor shall be sloped to drains between ¼" & ⅛".

KY 490 PUMP STATION	
ITEM	DESCRIPTION
1	Pumps: 15 Hp, 460V/3PH/60Hz 360 GPM @ 100' TDH; 3,530 RPM
2	6" Basket Strainer
3	6" Gate Valve
4	6" Metrasphere Coupling w/ Control Rods (or equal)
5	6"x3" Eccentric Reducer
6	Pump Pedestal (Cast in Place)
7	6" Globe Style Silent Check Valve
8	6" Mag Meter
9	6" Flanged Coupling Adapter (FCA)
10	Pump Discharge Connection (Victaulic: 2 ½" Flanged Nipple Adapter; No. 41, 6"x2 ½" Reducer; No. 50, 6" Flanged Nipple Adapter; No. 41)
11	Pressure Gauge w/ Pressure Transducer
12	1/4" Stop Cock
13	Variable Frequency Drives
14	Pipe Supports
15	Wall Mount Pipe Support Bracket w/ U-bolt
16	Floor Drain and 4" PVC Sch. 80 Drain Pipe w/ Trap
17	Outdoor Light Fixture w/ Dusk to Dawn Sensor
18	36" Insulated Steel Doors
19	Light Fixtures



SECTION A 1

1/2"=1'-0"



SECTION B 1

1/2"=1'-0"

PUMP STATION FLOOR PLAN AND SECTIONS

WOOD CREEK WATER DISTRICT
KY 490 / US 25 N. WATERLINE REPLACEMENT
LAUREL COUNTY, KENTUCKY

COMMONWEALTH OF KENTUCKY — EDDIE W. BROWN 19574 — LICENSED PROFESSIONAL ENGINEER

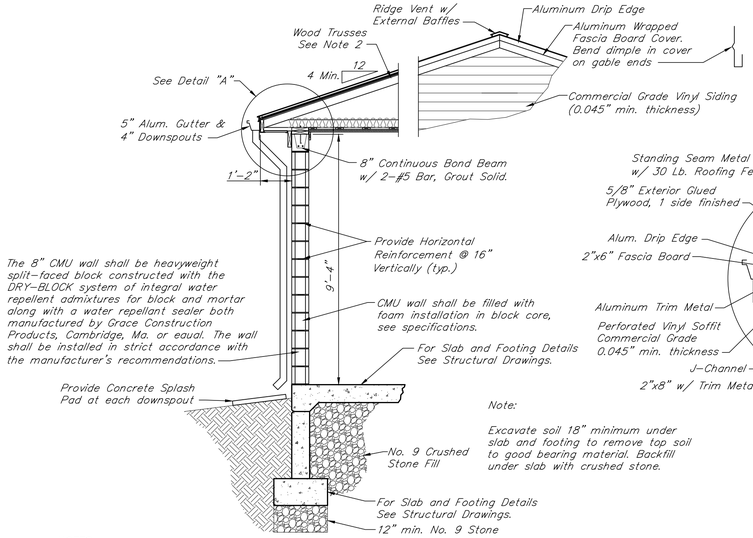
DRAWN BY: JKP
CHECKED BY: EWB
DATE: June 2019
SCALE: As Noted
REVISIONS

KENVIRONS, INC.
FRANKFORT, KENTUCKY

PROJECT NO.
2017036

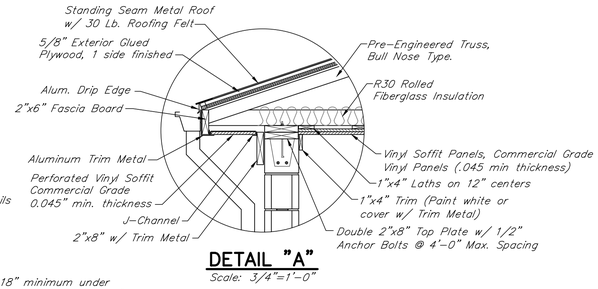
SHEET NO.
PS-2

N:\PJ\2017036\Plans\PS-2 KY 490 Floor Plan.dwg, 7/7/2020 2:05:06 PM, JKP



Note:

Excavate soil 18" minimum under slab and footing to remove top soil to good bearing material. Backfill under slab with crushed stone.



DETAIL "A"
Scale: 3/4"=1'-0"

NOTES:

1. CONCRETE BLOCK WALL

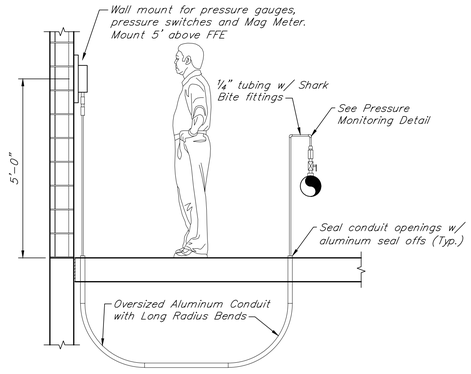
   All 8" concrete block walls shall be reinforced with #5 bars grouted solid into block cells at the following locations:
   4'-0" o.c. for length of walls, corners and window jams.
   Control joints utilizing pre-molded joint keys, shall be placed at the folowing locations:
   Changes in wall height, 20' o.c. for length of wall, along one side of openings.

2. WOOD TRUSSES

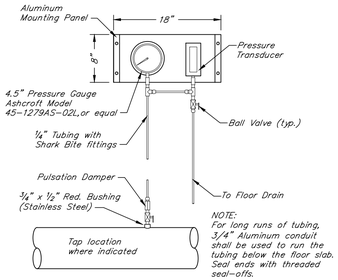
   Wood trusses to be designed by the manufacturer. Trusses shall meet all applicable building codes and the standards of the Truss Plate Institute. Design criteria shall be as follows:
   Span..... 13'-4" (Out to out of bearing)
   Spacing..... 24" o.c.
   Max Deflection... L/240 (where L=span)
   Top dead load... 15psf
   Bottom dead load... 15psf
   Top live load... 30psf

3. Provide lintels over all openings with lintel block grouted solid with 2-#5 Bars. Length of lintels shall be at least equal to the rough opening plus 8-inch bearing on each side of opening. The lintel block shall have the same face as the wall block.

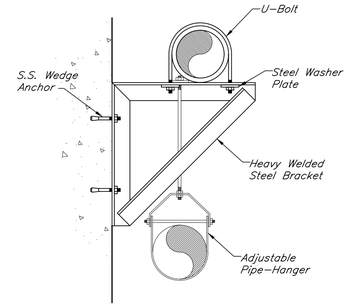
WALL SECTION
Scale: 3/8"=1'-0"



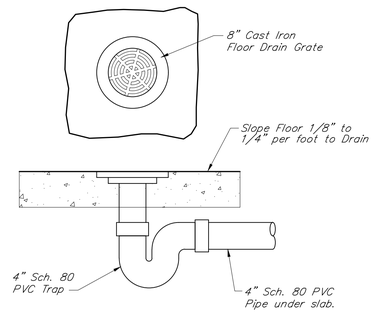
PRESSURE TAP CONNECTION
N.T.S.



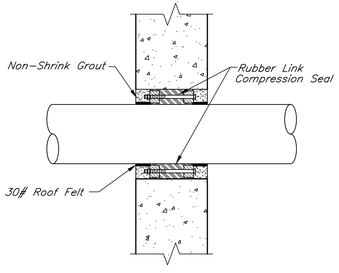
PRESSURE MONITORING DETAIL
1"=1'-0"



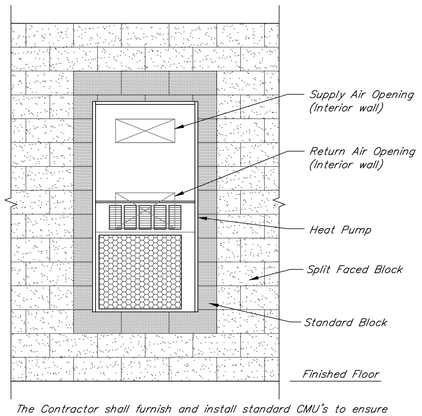
PIPE BRACKET AND HANGER DETAIL
N.T.S.



FLOOR DRAIN
1" = 1'-0"

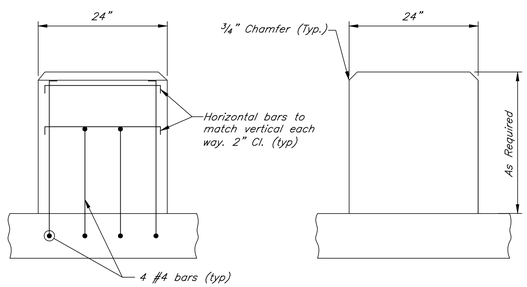


WALL/FLOOR PENETRATION SEAL
N.T.S.

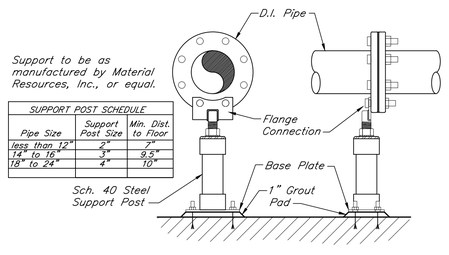


The Contractor shall furnish and install standard CMU's to ensure flush mounting of the heat pump. The Contractor shall use a minimal amount of standard CMU's required for installation for aesthetic appeal. Coordinate mounting height and penetration locations with manufacturer dimensions and recommendations.

CMU DETAIL AT HEAT PUMP
Scale: 1/2"=1'-0"

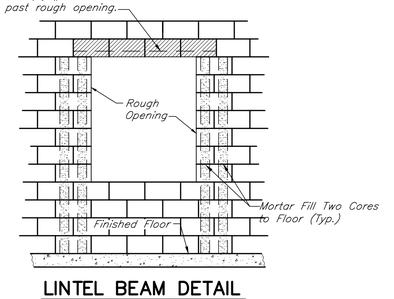


TYPICAL PUMP PEDESTAL CONCRETE SUPPORT REINFORCEMENT
N.T.S.



SUPPORT POST SCHEDULE		
Pipe Size	Support Post Size	Min. Dist. to Floor
less than 12"	2"	7"
14" to 16"	3"	9.5"
18" to 24"	4"	10"

FLANGED PIPE SUPPORT
N.T.S.



LINTEL BEAM DETAIL
Scale: 3/8"=1'-0"

PUMP STATION DETAILS

N:\PJ\2017036\Plans\PS-3 Pump Station Details.dwg, 7/7/2020 2:05:15 PM, JKP

WOOD CREEK WATER DISTRICT
KY 490 / US 25 N. WATERLINE REPLACEMENT
LAUREL COUNTY, KENTUCKY

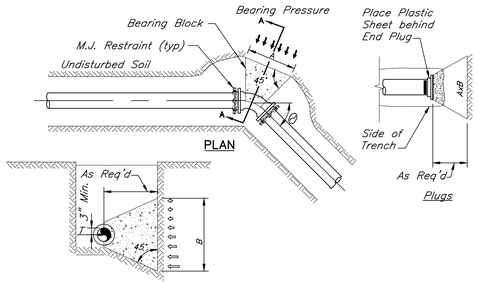
STATE OF KENTUCKY
EDDIE W. BROWN
19574
LICENSED PROFESSIONAL ENGINEER

DRAWN BY: JKP
CHECKED BY: EWB
CHECKED BY:
DATE: June 2019
SCALE: As Noted
REVISIONS

KENVIRONS, INC.
FRANKFORT, KENTUCKY

PROJECT NO.
2017036

SHEET NO.
PS-3



SECTION A–A

NOTES:

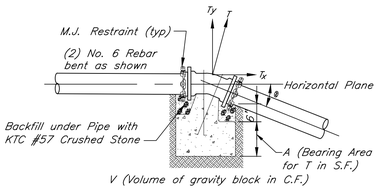
1. Thrust restraint table is based on pipeline pressure of 200 psi and earthbearing capacity of 1500 psf. During construction, the specific soil type may be evaluated and concrete thrust block size revised at the discretion of the Engineer.
2. On large diameter pipes where space limitations or constuction 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. Restraint length 20' minimum in both directions.
4. Concrete shall be 3000 psi minimum conforming to KTC Specifications 601.
5. Accessibility to fittings and bolts must be maintained.
6. 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'–6"	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"



GRAVITY THRUST BLOCK

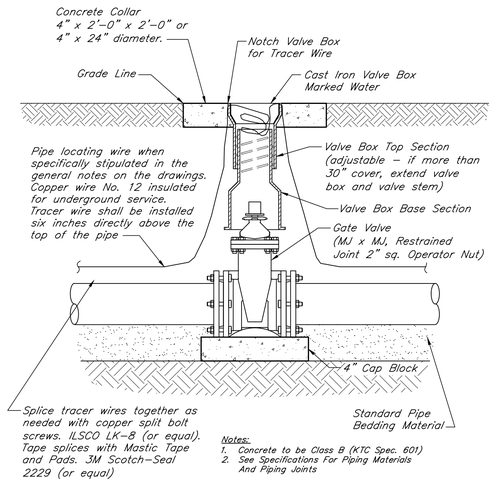
NOTES:

1. Thrust restraint table is based on pipeline pressure of 200 psi and earth bearing capacity of 1500psf. 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 constuction 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. Restraint length 20' minimum in both directions.
4. Concrete shall be 3000 psi minimum conforming to KTC Specifications 601.
5. Accessibility to fittings and bolts must be maintained.
6. 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

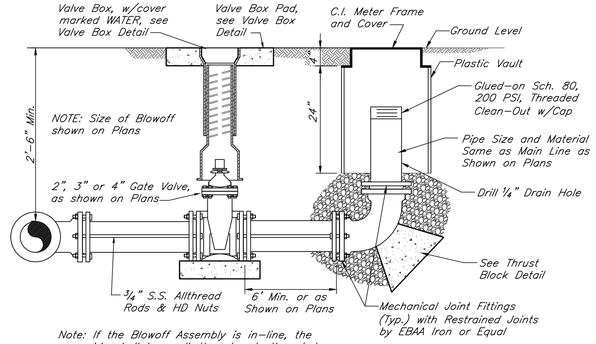
VERTICAL THRUST BLOCK



Notes:
1. Concrete to be Class B (KTC Spec. 601)
2. See Specifications For Piping Materials And Piping Joints

VALVE BOX INSTALLATION

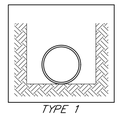
July 2015 Scale: 1"=1'–0"



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

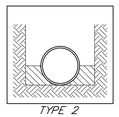
BLOWOFF ASSEMBLY DETAIL

Feb. 2015 Scale: 3/4"=1'–0"



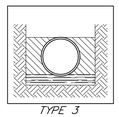
TYPE 1

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).

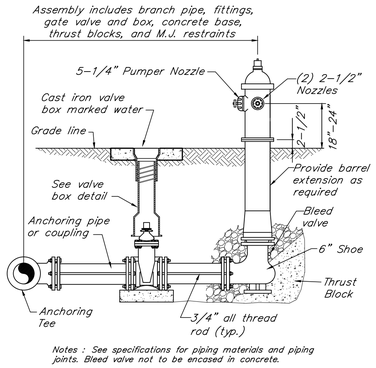
TYPE 5

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

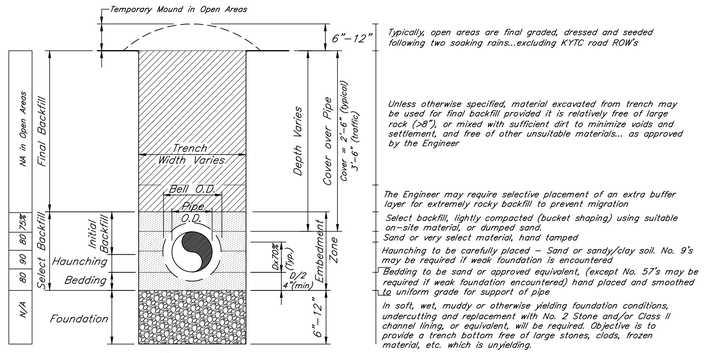


Notes : See specifications for piping materials and piping joints. Bleed valve not to be encased in concrete.

FIRE HYDRANT

Scale: 1/2"–1'–0"

Dec. 2014



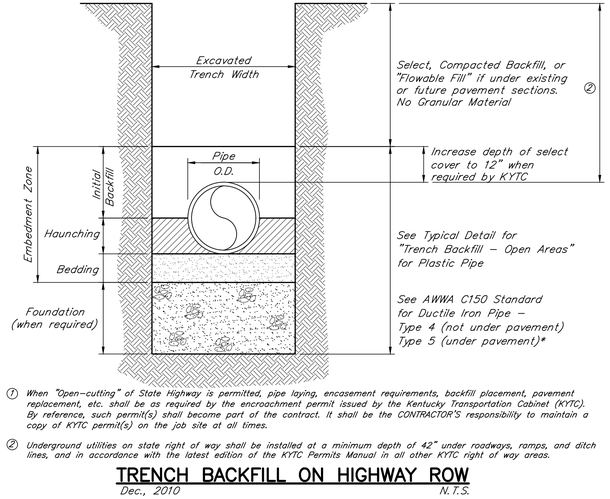
NOTES: No rocks larger than 1–1/2" allowed in embedment zone.

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.

TRENCH BACKFILL OPEN AREAS

Oct. 2016 Scale: 3/4"=1'–0"



① When "Open–cutting" of State Highway is permitted, pipe laying, encasement requirements, backfill placement, pavement replacement, etc. shall be as required by the encroachment permit issued by the Kentucky Transportation Cabinet (KYTC). By reference, such permit(s) shall become part of the contract. It shall be the CONTRACTOR'S responsibility to maintain a copy of KYTC permit(s) on the job site at all times.

② Underground utilities on state right of way shall be installed at a minimum depth of 42" under roadways, ramps, and ditch lines, and in accordance with the latest edition of the KYTC Permits Manual in all other KYTC right of way areas.

TRENCH BACKFILL ON HIGHWAY ROW

Dec., 2010 N.T.S.

WOOD CREEK WATER DISTRICT
KY 490 / US 25 N. WATERLINE REPLACEMENT
LAUREL COUNTY, KENTUCKY

STATE OF KENTUCKY — EDDIE W. BROWN 19574 — LICENSED PROFESSIONAL ENGINEER

DRAWN BY: JKP
CHECKED BY: BWB
CHECKED BY:
DATE: Dec. 2018
SCALE: As Noted
REVISIONS

KENVIRONS, INC.
FRANKFORT, KENTUCKY

PROJECT NO.
2017036

SHEET NO.
D–1

MISCELLANEOUS DETAILS

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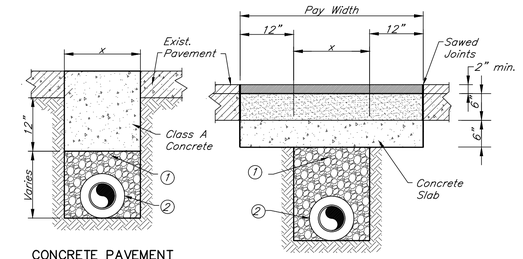
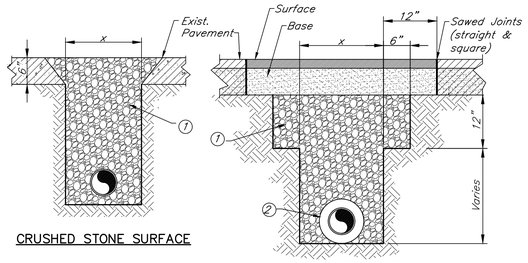


CONCRETE PAVEMENT

HEAVY DUTY BITUMINOUS SURFACE



CRUSHED STONE SURFACE

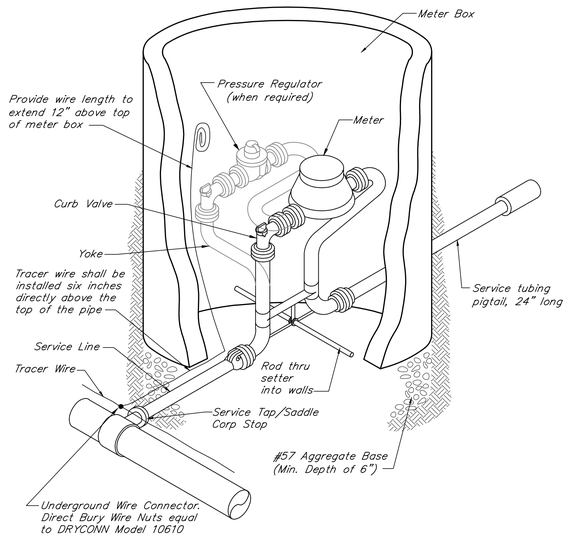
LIGHT DUTY BITUMINOUS

NOTES:
1. The max. allowable distance for dimension "X" shall be calculated as follows: X= 24" + 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"

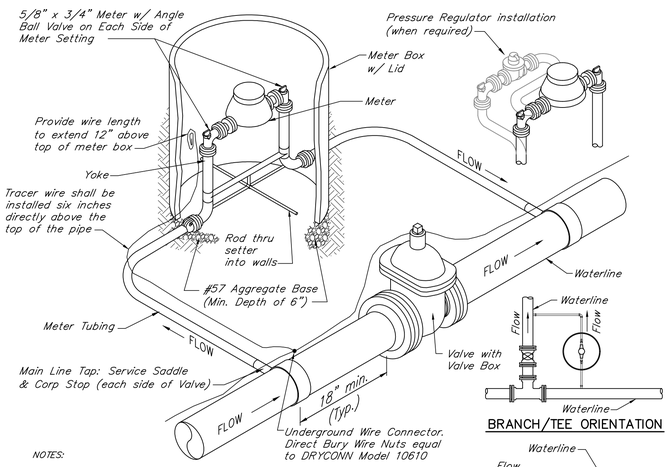


NOTES

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. Service tubing pigtail to be incidental to Meter Setting.

METER SETTING

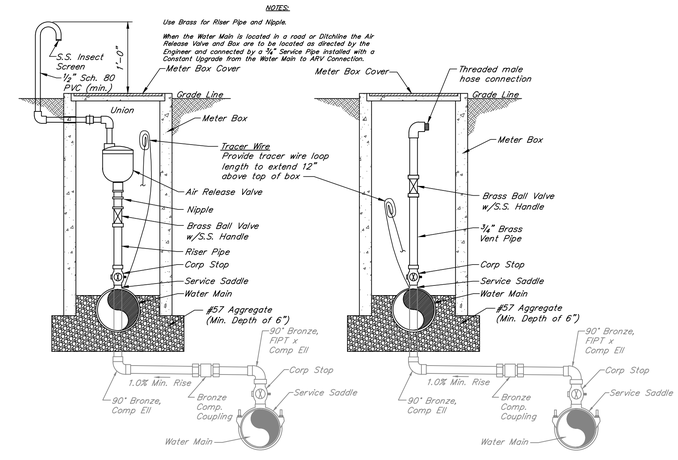
Mar., 2011 N.T.S.



NOTES:
1. Leak detection Meters shall be installed where indicated on the Plans.
2. 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.
3. When installed for Creek Crossings, a second Gate Valve shall be installed on the water main a minimum of 500 feet from the Leak Detection Meter.

LEAK DETECTION METER

December 2016 N.T.S.

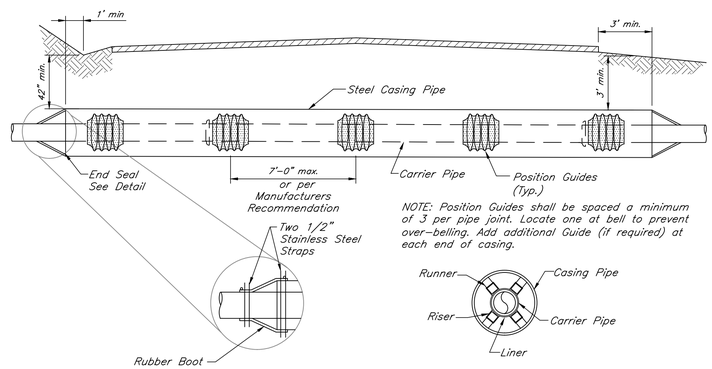


AUTOMATIC ARV INSTALLATION

March 2015 N.T.S.

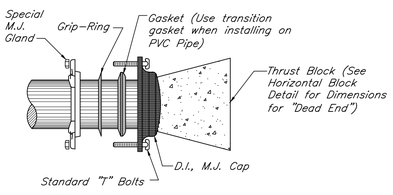
MANUAL ARV INSTALLATION

March 2015 N.T.S.



ROADWAY CROSSING INSTALLATION

Jan. 2018 Scale: 1/4"=1'-0"



NOTE:
Restraint system to be as manufactured by Star Pipe Products, Inc., Romac Industries, Inc., or equivalent

END CAP

Dec., 2010 N.T.S.

MISCELLANEOUS DETAILS

WOOD CREEK WATER DISTRICT
KY 490 / US 25 N. WATERLINE REPLACEMENT
LAUREL COUNTY, KENTUCKY

COMMONWEALTH OF KENTUCKY EDDIE W. BROWN 19574 LICENSED PROFESSIONAL ENGINEER

DRAWN BY: JKP
CHECKED BY: EWB
DATE: Dec. 2016
SCALE: As Noted
REVISIONS

KENVIRONS, INC.
FRANKFORT, KENTUCKY

PROJECT NO.
2017036

SHEET NO.
D-2

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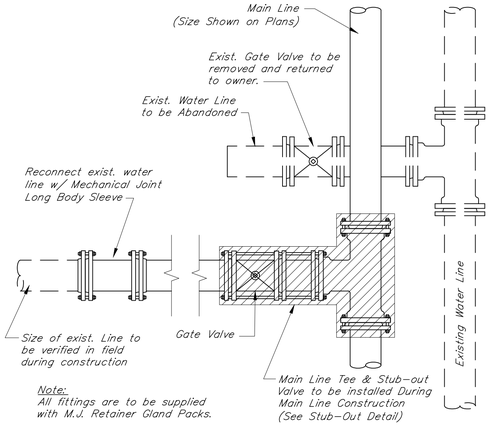
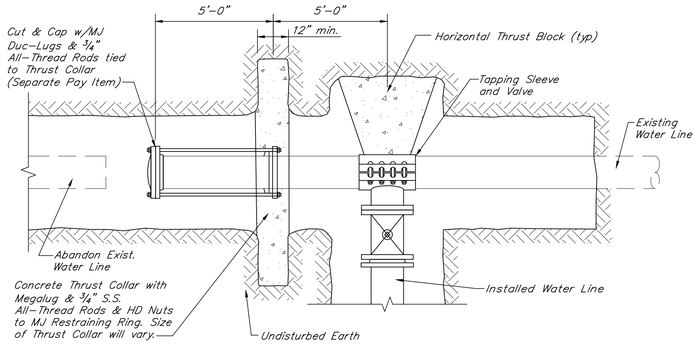


Note:
All fittings are to be supplied with M.J. Retainer Gland Packs.

SLEEVED TIE-IN

Scale: 3/4"=1'-0"
Oct. 2017

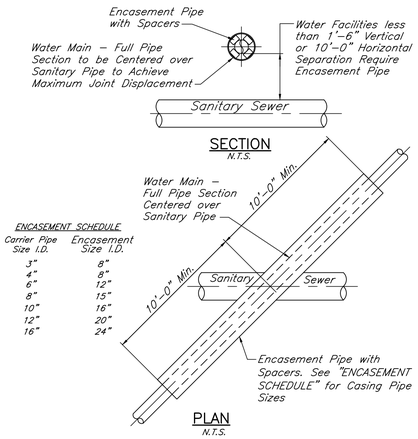


NOTES:

1. Number of All-Thread Rods and type of Duc-Lugs depends on pressure on line.
2. Vertical offsets: All-Thread Rod fitting to fitting and bore if applicable.

TAPPING SLEEVE & VALVE TIE-IN

Oct. 2017 N.T.S.

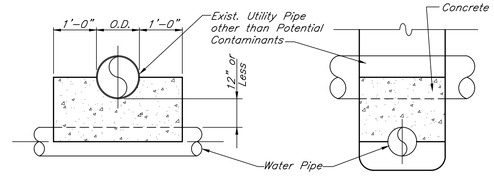


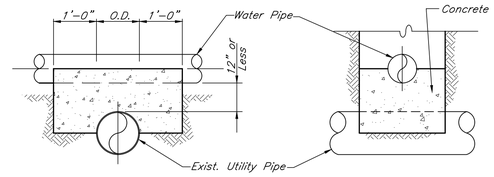
ENCASEMENT SCHEDULE

Carrier Pipe Size I.D.	Encasement Size I.D.
3"	8"
4"	8"
6"	12"
8"	15"
10"	16"
12"	20"
16"	24"

SANITARY SEWER CROSSING

Dec., 2015 N.T.S.



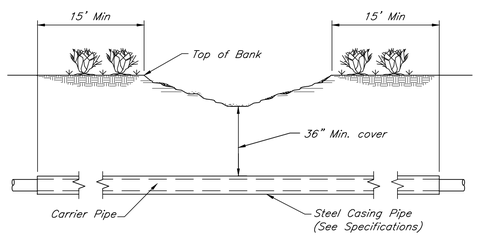


NOTES:

1. Concrete shall be used when clearance between Water Line and Utility Pipe is 12" or less.
2. "Utility Pipe" includes underground Water, Natural Gas, Telephone, Electrical Conduits, Storm Sewer, or Typically Non-Contaminating Facilities. When crossing Sanitary Sewer or Potential Contaminants, See Detail "WATER/SANITARY SEWER CROSSING".

UTILITY CROSSING

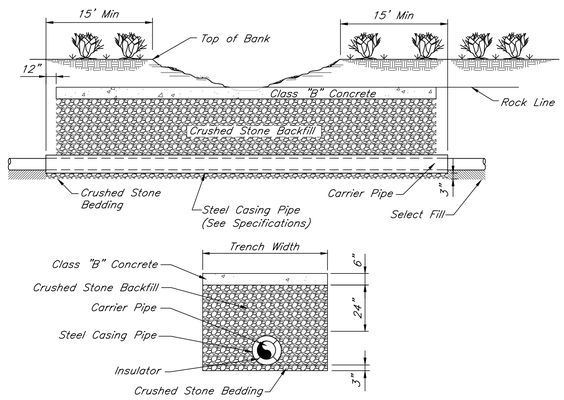
July 2015 N.T.S.



Note: 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. Allowable Deflection of Pipe may not be exceeded under any situation. See typ. Roadway Crossing Installation Detail for Insulator placement.

SPECIAL STREAM CROSSING IN EARTH (TYPE A)

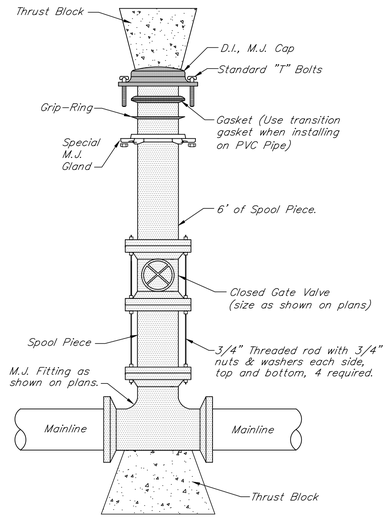
Mar. 2017 N.T.S.



NOTE: 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. Allowable Deflection of Pipe may not be exceeded under any situation. See Typ. Roadway Crossing Installation Detail for Insulator Placement

STREAM CROSSING IN SOLID ROCK (TYPE B)

Dec., 2010 N.T.S.



STUB-OUT DETAIL

Jan., 2015 N.T.S.

MISCELLANEOUS DETAILS

WOOD CREEK WATER DISTRICT
KY 490 / US 25 N. WATERLINE REPLACEMENT
LAUREL COUNTY, KENTUCKY

STATE OF KENTUCKY
EDDIE W. BROWN
19574
LICENSED PROFESSIONAL ENGINEER

DRAWN BY: JKP
CHECKED BY: EWB
CHECKED BY: Dec. 2016
DATE: As Noted
SCALE:
REVISIONS

KENVIRONS, INC.
FRANKFORT, KENTUCKY

PROJECT NO.
2017036

SHEET NO.
D-3

N:\PJ\2017036\Plans\Misc Details.dwg, 7/7/2020 2:07:43 PM, AP

DESIGN CRITERIA

Building Code: ASCE 7 / 2018 Kentucky Building Code, 1st Edition
Each as only as applicable

County: Laurel

Occupancy Category: III

Floor Loads

Floor live load	100 psf
Floor dead load	actual weight of floor system plus weight of equipment

ROOF LOADS

Roof live load	20 psf
Roof dead load (superimposed)	15 psf
Roof snow load	
Ground snow load	Pg = 15 psf
Snow exposure factor	Ce = 1.0
Thermal factor	Ct = 1.2
Importance factor	Is = 1.10
Rain on snow surcharge	Pr = 0 psf
Flat-roof snow load	Pf = 13.9 psf
Sloped-roof snow load	Ps = 13.9 psf
Minimum roof snow load	Pm = 16.5 psf
Snow drift	no snow drift locations

WIND LOAD DATA

Basic wind speed (3 second gust)	120 mph (ultimate) 90 mph (service)
Wind exposure category	C
Wind importance factor	Iw = 1.15 (service)
Components and cladding wind design pressures	28 psf (service)

EARTHQUAKE LOAD DATA

Seismic site class	C
Mapped short period spectral response acceleration	Ss = 0.206
Mapped 1 second spectral response acceleration	S1 = 0.096
Design short period spectral response acceleration	Sds = 0.165
Design 1 second period spectral response acceleration	Sd1 = 0.108
Seismic design category	B
Seismic importance factor	Ie = 1.25
Basic structural system	Bearing Wall System
Seismic force resisting system	Intermediate Reinforced Masonry Shear Walls
Seismic response factor	R=2
Method of analysis	Equivalent Lateral Force Procedure
Seismic coefficient	Cs = 0.068

MATERIAL STRENGTHS USED IN DESIGN

(for reference in calculations – see specifications or notes for actual material specifications)

Concrete:

Class A (structural)(see specifications)	28 day f'c = 4,500 psi
class b (non-struct)(see specifications)	28 day f'c = 3,500 psi
Reinforcing bars (ASTM A615 OR A706 GRADE 60)	fy = 60,000 psi
Welded wire fabric (ASTM A185)	fy = 65,000 psi
Prestressing strand (ASTM A416 GRADE 270 LO LAX)	fu = 270,000 psi
Deformed bar anchors (ASTM A496)	fy = 80,000 psi
Structural steel sections W AND WT (ASTM A992)	fy = 50,000 psi
Structural steel sections C, L, M, S, HP, MT and ST (ASTM A36)	fy = 36,000 psi
Structural steel plates bars, and rods u.n.o. (ASTM A36)	fy = 36,000 psi
Structural steel sections HSS (ASTM A500 GRADE B)	fy = 46,000 psi
Structural steel pipe (ASTM A53 GRADE B)	fy = 35,000 psi
Structural bolts (ASTM A325)	fu = 120,000 psi
Concrete masonry (VARIOUS)	f'm = 1,500 psi
Soil allowable bearing pressure for foundations	qa = 3,000 psf
Rock allowable bearing pressure	qa = 30,000 psf

GENERAL

1. The requirements of these general notes apply unless otherwise noted on plans or in specifications.
2. All dimensions of existing conditions shall be verified prior to commencing work. Discrepancies between existing conditions or between the drawings and specifications shall be communicated to the structural engineer and architect.
3. This structure is designed to be stable and self-supporting only when fully completed. Stability of the structure during construction is the responsibility of the contractor. All necessary temporary bracing required to stabilize and support the structure during all construction phases shall be furnished and installed by the contractor. If required, temporary bracing shall be designed by a licensed engineer employed by the contractor.
4. Construction loads imposed on the structural framing shall not exceed the design capacity of the framing at the time such loads are imposed.
5. Non-structural elements of the building (architectural finishes, masonry veneer and associated ties, insulation, sheathing, ductwork, piping, etc.) are generally not shown on these structural drawings. Certain non-structural elements that are shown on the structural drawings are shown for reference only. Non-structural elements shall be constructed as shown on the architectural and trade drawings.
6. Any material ordered or work performed prior to the engineer's review and approval of the shop drawings is at the contractor's sole risk.

FOUNDATIONS

1. The foundations have been designed based on the recommendations in the report No. 218-027 by American Engineers, Inc. dated March 5, 2018.
2. Foundation design is based on a net allowable bearing capacity of 500 psf.
3. If required, a qualified testing company shall be engaged by the contractor to verify bearing capacities prior to installing foundations.
4. All footings shall be supported on existing undisturbed soil or engineered fill or competent bedrock where indicated.
5. Fill shall be compacted to 98% of optimum laboratory density in accordance with ASTM D 698 Standard Proctor Method in maximum 8" lifts unless noted otherwise.
6. All piers and spread footings are centered on column centerlines and all wall footings are centered under walls unless indicated otherwise.
7. Location of existing foundations, if any are shown on drawings, are approximate. exact condition shall be verified at time of construction.
8. The structural engineer shall be notified if soft, loose or lower bearing capacity soils or rock are encountered.
9. Existing underground utilities in areas of foundation construction shall be located prior to construction of foundations. appropriate measures shall be taken to avoid damage to existing utilities and to ensure adequate foundation bearing around utilities.
10. Foundations shall not be placed on mud or muck, soft or loose soil, in standing water or on frozen ground.
11. All non-cantilever walls shall be be adequately braced prior to backfill.
12. Cantilever retaining walls shall not be backfilled until the concrete has developed 100% of the required 28-day compressive strength for the class of concrete specified.

CAST-IN-PLACE CONCRETE

1. All concrete construction shall be performed in accordance with aci 301-10, aci 318-11, ACI 117-10, ACI 308.1-11, and ACI SP-66, the ACI Detailing Manual-2004. Hot and cold weather concrete construction shall be performed in accordance with ACI 305 and ACI 306 as required. Shoring and reshoring of concrete structures shall be performed in accordance with ACI 347. Structural design and removal of concrete formwork, shores and reshores shall be the responsibility of the contractor.
2. Shop drawings showing the size, length, quantity, location and mark of all reinforcing bars, supports and accessories shall be submitted for approval prior to fabrication.
3. Mix designs and admixture product data shall be submitted for approval prior to ordering concrete.
4. Concrete properties shall be in accordance with the specifications.
5. Reinforcement and accessory properties shall be in accordance with the specifications.
6. Reinforcement compression splices shall be lapped 30 bar diameters of the larger bar.
7. Reinforcement tension splices shall be lapped in accordance with the following table:

bar size	3,000 psi conc. lap length	>=4,000 psi conc. lap length
#3	17"	15"
#4	23"	20"
#5	28"	24"
#6	34"	29"
#7	49"	43"
#8	56"	49"
#9	69"	60"

add 30% for horizontal top bars with more than 12" of concrete below.
add 50% for bar spacing less than two bar diameters.
lap length adds are cumulative.

8. Concrete protection for reinforcement shall be in accordance with the following table:

condition	clear cover over bars
concrete cast against and permanently exposed to earth	3"
concrete exposed to earth or weather	
#6 through #18 bars	2"
#5 bar, W31 or D31 wire and smaller	1 1/2"
concrete not exposed to weather or in contact with ground	
slabs, walls, and joists	
#14 and #18 bars	1 1/2"
#11 bar and smaller	3/4"

9. The typical details on these drawings contain additional general concrete construction notes and information.
10. All concrete shall be reinforced unless noted otherwise.
11. supports to adequately position reinforcing bars during construction shall be installed.
12. Foundation dowels of the same size and spacing as vertical steel shall be installed for all walls, piers, and columns.
13. All reinforcing at wall and footing corners and intersections shall be continuous by the use of bent bars or corner bars unless indicated otherwise.
14. Construction joints shall be positioned so as not to adversely affect the structural performance. Construction joint locations not indicated on the structural drawings shall be approved by the structural engineer.
15. Pipe sleeves and inserts shall be installed in concrete work at all penetrations. penetrations of beams, joists, columns or structural slabs not indicated on the structural drawings shall be approved by the structural engineer.
16. Only weldable reinforcing bars may be welded.
17. Admixtures containing chloride or other corrosive chemicals shall not be used in concrete.
18. Aggregates shall be free of deleterious or non-durable materials such as cherts.
19. reinforcing shall be adequately tied and supported to hold it in the correct position during construction.
20. Concrete shall be consolidated adequately during placement by mechanical vibration in accordance with published practices.
21. Unshored slab construction shall be finished level and have the minimum required thickness of concrete at the thinnest section. Beam camber shall be verified prior to placing unshored concrete slabs.
22. Plastic chairs shall be used in all concrete that will be exposed to view in the completed structure.
23. Exposed concrete corners shall be chamfered minimum 3/4".
24. Fill pockets around connections with concrete flush and smooth unless indicated otherwise.
25. Concrete finishes shall be in accordance with the specifications.
26. Concrete slab-on-grade flatness and levelness shall be in accordance with the specifications.

CONCRETE MASONRY

1. Concrete masonry walls shown on the structural drawings are structural walls. concrete masonry walls not shown on the structural drawings are partitions. Refer to architectural drawings for details of partitions unless indicated otherwise on the structural drawings.
2. Concrete masonry walls shown on structural drawings shall be constructed in accordance with ACI 530.1 "Specifications for Masonry Structures".
3. Installation drawings, product data and material certifications shall be submitted for approval. The submittals shall conform to the specifications.
4. Concrete masonry materials shall conform to the requirements of the specifications.
5. Minimum compressive strength of concrete masonry (f'm) shall be 1,500 psi determined in accordance with the specifications.
6. Mortar cement shall be portland-lime cement. Masonry cement shall not be used.
7. The typical details on the drawings contain additional general masonry notes and details.
8. Bearing walls shall be anchored at intersections by galvanized steel straps 1 1/2" x 1/4" x 24" with 2" bend at 90 degrees each end. Install straps into grouted cores of c.m.u. at 24" maximum vertical spacing. do not install anchors at control joints or where non-bearing partitions abut bearing walls.
9. Corners of load bearing concrete masonry walls shall be laid in running bond.
10. Provide solid grouted concrete masonry around bearing ends of all beams and joists.
11. No openings for trades shall occur in concrete masonry walls within 16 inches of beam bearing centerlines.
12. Pipe sleeves and inserts shall be installed in concrete work at all penetrations.
13. Embedded item locations shall be coordinated with the approved shop drawings of the trades.
14. Only weldable reinforcing bars may be welded.
15. Concrete masonry is supposed to absorb water from mortar and grout. do not place or grout wet concrete masonry units.
16. Webs of masonry units for piers, columns, pilasters, and the starter course shall be mortared. webs of masonry units shall also be mortared where required to confine grout.
17. Cells of masonry in piers, columns, pilasters and where otherwise indicated shall align. this may require the use of block styles other than stretchers (e.g. square-end block).
18. Spaces to be filled with grout shall be kept clean and free from protrusions of masonry or mortar.
19. All cells of below-grade concrete masonry units shall be grouted .
20. The maximum grout pour height for each specific type and size of concrete masonry unit shall not exceed the limits specified in ACI 530.1.
21. Masonry grouting shall conform to the specifications.
22. Vertical control joints are indicated on the civil or architectural drawings.
23. Vertical control joints shall be installed between all non-loadbearing partitions and bearing walls.
24. Spacing of control joints shall not exceed 24 feet unless noted otherwise.
25. Splice lap lengths for reinforcing shall be in accordance with the following table:

bar size	lap length
#3	18"
#4	25"
#5	31"
#6	57"

26. Do not embed any non-structural items in structural masonry without written permission from the structural engineer.

STRUCTURAL STEEL

1. Detailing, fabrication, and erection of structural steel shall conform to the AISC "Specification for Structural Steel", (ANSI/AISC 360-10), AISC "Code of Standard Practice for Structural Steel Buildings and Bridges", AISC / RCSC "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" and AWS D1.1 "Structural Welding Code."
2. Shop drawings shall be submitted for approval prior to fabrication of structural steel. Shop drawings shall conform to requirements in the specifications.
3. Structural steel members shall conform to the following specifications:

member type	specification
wide flange	ASTM A 992
standard beam	ASTM A 36
channel	ASTM A 36
angle	ASTM A 36
plate	ASTM A 36
bar and rod	ASTM A 36
rectangular, square & round tube (hss)	ASTM A 500 Gr B
pipe	ASTM A 53 Gr B
threaded rod	ASTM A 36
anchor rod	ASTM F 1554 Gr 36
common bolts	ASTM A 307 Gr A
high strength bolts (twist off)	ASTM F 1582
high strength bolts (snug tight)	ASTM A 325
direct tension indicating washers	ASTM F 959
hardened washers	ASTM F 436
nuts	ASTM A 563
shear connectors (studs)	ASTM A 108
welding electrode	AWS D1.1 E70XX (except as otherwise req'd)

4. Grout shall conform to requirements in the specifications.
5. The typical details on the drawings contain additional general steel construction notes and details.
6. High-strength bolted connections shall be fully pretensioned unless noted as snug tight on the drawings.
7. Hardened washers shall be installed under all nuts for fully pretensioned bolts.
8. Hardened washers shall be installed over all oversized holes, standard slots and short slotted holes. plate washers 5/16" thick shall be welded over large holes and long slots.
9. Bolted joints where relative movement is allowed shall have jam nuts to prevent unthreading.
10. Structural steel surface preparation and finishes shall conform to the requirements in the specifications.

PREFABRICATED WOOD TRUSS CONSTRUCTION

1. Truss design and manufacture shall conform to the current building code authorized edition of ANSI TPI-1, "National Design Standard for Metal-Plate Connected Wood Truss Construction."
2. Truss handling and erection shall conform to the latest edition of BCSI guides. See www.sbcindustry.com.
3. Truss layout and truss shop drawings shall be submitted for approval. These drawings shall include:
   - 3.7. a copy of the bcsi jobsite package, which are instructions for safe handling and erection of wood trusses.
   - 3.8. truss layout showing dimensioned location and shipping mark of each truss and locations of all compression web and chord bracing.
   - 3.7. truss configuration, including span, pitch and location of all member intersections.
   - 3.8. species, stress grade, and nominal size of lumber used.
   - 3.9. design loads including point loads and reactions and load combinations used in design.
   - 3.10. printout of member axial and flexural stresses plus interaction of combined stresses for the controlling load combination.
   - 3.11. printout of truss deflections under service load combinations.
   - 3.12. joint, splice, and truss to truss girder connection design and details.
4. Truss shop drawings, and calculations shall be sealed by a professional engineer licensed in the state of Kentucky.
5. Trusses shall be designed for a maximum vertical deflection of 1/480 of the span for 100% live load and 1/240 of the span for 100% total load.
6. Truss framing members shall be Southern Pine No. 2 or better.
7. All connections plates shall be hot-dipped galvanized according to ASTM A 153.
8. Trusses shall be spaced at 2'-0" o.c. maximum. Web arrangement shall be manufacturer's standard unless otherwise indicated. See all drawings for openings that may be required in trusses.
9. Permanent bracing for individual members of a wood truss shall be shown on the truss design drawings and shall be installed by the building contractor. Permanent bracing shall be installed as indicated on the truss manufacturer's drawings and instructions.
10. All bracing that terminates at or is interrupted by structural bearing walls shall be attached thereto.
11. Lateral brace splices shall be lapped at least two trusses.
12. Trusses delivered to the project in more than one piece and all multi-ply trusses shall be connected before installation or according to truss design drawings if indicated otherwise.
13. Concentrated loads from construction materials (e.g. roof sheathing bundles) shall not be placed on trusses until all required bracing has been installed and roof sheathing is permanently nailed in place. Trusses shall not be overloaded with construction materials.
14. Temporary bracing to prevent lateral movement during erection shall be installed according to the handling and installation guidelines.
15. Work points, overhangs and other dimensions not indicated on the structural drawings should be determined from the appropriate drawings. Conflicting dimensions shall be clarified in writing.

ROOF AND WALL PLYWOOD SHEATHING

1. All sheathing shall be plywood (not OSB) manufactured in accordance with industry specification PS-1 and shall bear the stamp of either the American Plywood Association (APA) or Timberco inc. (TECO).
2. All sheathing shall be exterior grade.
3. All roof and wall sheathing shall have veneer grade C-C or better.
4. Roof sheathing shall have tongue and groove edges and be either APA "Sturd-i-Floor" or TECO "Floor Span" with thickness and/or span rating as indicated on the drawings or as required.
5. Wall sheathing shall have plain square edges and be APA "Rated Sheathing" or TECO "Sheathing Span" with thickness and/or span rating as indicated on the drawings or as required.
6. All edges of wall sheathing shall be blocked with a 2x wood member and nailed.
7. Minimum nailing for roof and wall plywood sheathing shall be 10d common nails at 12" o.c. in the panel interior and 6" o.c. at panel edges and boundaries.

STRUCTURAL WOOD

1. All structural wood dimension lumber shall be Southern Pine No. 2 species stress grade and shall bear a stamp by the southern pine inspection bureau (SPIB) indicating this.
2. All structural composite lumber (LVLs) shall have the following allowable design stresses:

Fb =	2,750 psi	FcPERP =	750 psi
Fv =	285 psi	E =	2.0 Mpsi
Ft =	1,150 psi	Fc =	2,600 psi

3. Submit product data of structural composite lumber for approval prior to ordering.
4. Two-ply and three-ply LVLs shall be fastened together with two rows of Simpson SDS25312 screws at 12 inches on center on each face.
5. All structural wood construction shall be in conformance with the AF&PA National Design Specification for Wood Construction (NDS).
6. All horizontal lumber members shall be fabricated and installed with natural camber (crown) upwards.
7. Nails shall be common wire nails unless noted otherwise. Nails exposed to weather or in preservative treated wood shall be hot dipped galvanized to ASTM A 153. Wood members shall be nailed as indicated in the wood nailing schedule of the International Building Code if not indicated otherwise.
8. Bolts in wood members shall be ASTM A 307 with factory zinc coating. Holes in wood for bolts shall be 1/16" oversize. USS flat washers conforming to ASTM F 844 shall be used under bolt heads and nuts against wood. Bolts, nuts and washers exposed to weather or in preservative treated wood shall be hot dipped galvanized to ASTM A 153.
9. Connectors indicated as "Simpson" on the drawings shall be manufactured by Simpson Strong-tie, Inc.
10. Simpson connectors shall be hot-dipped galvanized to ASTM A 123 where indicated or where exposed to weather. Simpson connectors shall be galvanized to ASTM A 653 G180 where in contact with preservative treated wood and not exposed to weather and shall be ASTM A 653 G90 otherwise or unless indicated otherwise.
11. Product data and a plan and schedule of Simpson connectors showing the model number, quantity, finish and type and number of fasteners for all connections shall be submitted for approval prior to ordering Simpson connectors.
12. Simpson anchors shall be installed in accordance with all of the manufacturer's instructions.
13. Preservative treated wood appropriate for the service shall be used where in direct contact with concrete or masonry or where exposed to weather.
14. Cutting structural lumber members other than as indicated on the structural drawings requires approval of the structural engineer. Notching of lumber will not be permitted.
15. Nominal 1x3 wood crossed bridging with beveled ends or Simpson TB36 steel joist bridging shall be installed at maximum 8'-0" spacing on all joists with a minimum of one row of bridging on all joists longer than 10 feet.
16. Structural wood members shall be protected from dirt, moisture, sunlight and damage during manufacture, fabrication, shipping, storage and construction.

SDG LLC
306 W Main St Ste 410
Frankfort, KY 40601
(859) 351-9169

STRUCTURAL GENERAL NOTES

WOOD CREEK WATER DISTRICT
WATER SYSTEM IMPROVEMENTS
LAUREL COUNTY, KENTUCKY

COMMONWEALTH OF KENTUCKY
MATTHEW W. CRAIG
24113
LICENSED PROFESSIONAL ENGINEER

DRAWN BY: MWC
CHECKED BY: PWB
DATE: March 2019
SCALE: As Noted

REVISIONS

KENVIRONS, INC.
FRANKFORT, KENTUCKY

PROJECT NO.
2017036

SHEET NO.
S1

TESTING & INSPECTION

1. Testing & Inspection shall be performed in accordance with Chapter 17 of the Kentucky Building Code, however, because this building is not intended primarily for human occupancy, the testing & inspection shall not be considered "Special Inspection."
2. Testing & Inspection shall be performed for the following work as required above:
   - 2.1. Contractor's statement of responsibility in accordance with section 1704.4
     - 2.1.1. Contractor shall submit a statement that:
       - 2.1.1.1. acknowledges the requirements stated in this statement of inspections.
       - 2.1.1.2. acknowledges that control will be exercised over the quality of construction to conform to the approved construction documents.
       - 2.1.1.3. acknowledges that there are organizational procedures in place for exercising control of quality of the construction including:
         - 2.1.1.3.1. appointment of a person within the contractor's organization to exercise control quality of construction
         - 2.1.1.3.2. the persons within the contractor's organization to whom the quality control reports are distributed
         - 2.1.1.3.3. the method and frequency of reporting the quality control results within the contractor's organization.
   - 2.2. Fabricators in accordance with section 1704.2
     - 2.2.1. Submit report of inspector's approval of fabricator's qc plan or fabricator's nationally recognized qc certification.
     - 2.2.2. Submit fabricator's certificate of compliance stating that the work was performed in accordance with the approved construction documents. submitted at the completion of such work.
   - 2.3. Steel construction in accordance with section 1705.2
     - 2.3.1. Submit mill test reports and material certifications for all steel members, fasteners, bolts, nuts, washers, deck, and reinforcement steel for concrete and masonry.
   - 2.4. Concrete construction in accordance with section 1705.3
     - 2.4.1. Submit material certifications of cement, aggregate, admixtures and reinforcement.
     - 2.4.2. Submit report of compressive strength, slump and air content test results. sample and test concrete at least once per day and once for every additional 100 cubic yards of concrete per day thereafter.
     - 2.4.3. Submit report of inspection of forms, reinforcement, and concrete delivery tickets prior to each placement of concrete.
     - 2.5.4. Submit report of inspection of installation of all wedge and chemical adhesive anchors in concrete.
   - 2.4. Masonry construction in accordance with section 1705.4
     - 2.4.1. Submit material certifications of cement, aggregate, admixtures and reinforcement.
     - 2.4.2. Submit report of test of mortar aggregate ratio and air content and observation of mortar proportioning. Test once at beginning of project and once every 5,000 s.f. of wall thereafter.
     - 2.4.3. Submit report of placement of masonry, reinforcement and grout prior to and during each placement of grout.
     - 2.4.4. Submit report of installation of chemical adhesive anchorage in concrete at base of masonry walls. Inspect installation of 10% of anchorage installations.
   - 2.5. Wood construction in accordance with section 1705.5
     - 2.5.1. See "Inspection of Fabricators" for inspection of prefabricated wood trusses.
     - 2.5.2. Submit material certifications for wood members, sheathing and fasteners.
     - 2.5.3. Submit report of inspection of connection of roof roof trusses to structure.
     - 2.5.4. Submit report of inspection of all wood framing members and their connections. verify all wood framing members are the correct size and grade and are installed in the correct locations, and are connected in accordance with the construction documents.
     - 2.5.5. Submit report of inspection of nailing of roof sheathing to trusses and structure.
   - 2.6. Soils construction in accordance with section 1705.6
     - 2.6.1. Submit report that soil bearing capacity is adequate according to the geotechnical report prior to each placement of foundation concrete.
     - 2.6.2. Submit report of density and moisture content of controlled fill for each lift under building structure.
3. The type and extent of each test and inspection required for each type of work shall be as indicated in the specifications and/or the building code and the references incorporated therein.
4. Inspection shall be performed by a qualified inspector acceptable to the authority having jurisdiction and the Engineer.
5. Testing shall be performed by a qualified, independent testing company acceptable to the authority having jurisdiction and the Engineer. The testing company shall be employed by the contractor and the cost of testing shall be included in the Contractor's lump–sum price for the project.
8. The inspector shall observe activities, actions, and procedures performed before and during execution of the work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
9. Work requiring inspection shall be inspected by the inspector for conformance with the approved drawings and specifications. Testing reports prepared by the testing company shall be reviewed by the inspector and discrepancies from requirements shall be indicated on the inspection reports.
10. The inspector shall prepare inspection reports. Inspection reports shall include:
    - 10.1. the name, address, and telephone number of inspector performing the inspection and making the report.
    - 10.2. dates and locations of samples and tests or inspections, date of report.
    - 10.3. records of temperature and weather conditions at time of sample taking and testing and inspecting.
    - 10.4. descriptions of the work, identification of products, specification sections, and inspection methods.
    - 10.5. photographs of the work inspected for that report
    - 10.6. complete test or inspection data, including notations of reviews of testing reports including any discrepancies from the requirements.

TESTING & INSPECTION – CONTINUED

11. Inspection reports indicating the results of inspections shall be promptly submitted to the contractor, the Engineer, and the structural consultant.
12. All inspections indicating non–conforming work shall be reported immediately to the contractor, the Engineer and the structural consultant. Impending construction work that would impede economical correction of non–conforming work shall not proceed without written approval. The contractor shall maintain a discrepancy log on the site. This log shall list each discrepancy documented by the inspector, state the date of discovery and inspector's report number, and room for the inspector to sign and date when said discrepancy is corrected.
13. A final report certifying completion of all required inspections and correction of any non–conforming work noted in the inspections shall be submitted by the inspector at the completion of the project, or if not, detailing non–inspected and/or unresolved non–conformances.
14. The contractor shall notify the inspector when construction is ready to be inspected. contractor shall give timely and adequate notice to the inspector.
15. The contractor shall provide the inspector access to plans, shop drawings, and change orders at the jobsite.
16. The contractor shall retain at the jobsite all inspection records submitted by the inspector and provide these records for review by the engineer and building inspector upon request.

EXPANSION ANCHORS

1. Expansion anchors shall be one of the following products:
   Kwik Bolt TZ by HILTI
   Trubolt+ by ITW Red Head
   Strong–bolt by Simpson Strong–tie
2. All expansion anchors for the project shall be produced by the same manufacturer unless approved by the structural engineer.
3. Expansion anchor product data and a keyed plan showing the location, diameter, length, material and finish of each expansion anchor shall be submitted for approval.
4. The expansion anchor manufacturer's installation instructions shall be strictly followed, particularly with regard to drilling and cleaning out the hole.
5. If any of the following minimum distances are not indicated or available then verify the detail and field conditions with the structural engineer prior to installing:

anchor dia	c to c distance	edge distance	embed distance	mat'l thickness
1/2"	3 1/2"	4"	3 1/2"	5 1/2"
5/8"	4"	5"	4"	6"
3/4"	6"	6"	5"	8"

6. If any of the following conditions are indicated or present then verify acceptability of expansion anchor type, material or finish with the structural engineer prior to installing:
   cracked concrete or masonry near installation (see edge distance above)
   corrosive, chemical or abnormal temperature environment
   vibratory or fatigue loading of anchor
   impact or shock loading of anchor
   continuous tension (e.g. hanging loads from ceilings)

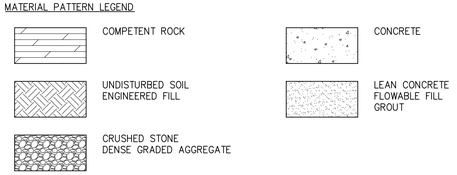
CHEMICAL ADHESIVE AND PROPRIETARY ADHESIVE ANCHORS

1. Chemical adhesives and proprietary adhesive anchors shall be produced by one of the following manufacturers:
   HILTI, Inc.
   ITW Red Head
   Simpson Strong–tie
2. All chemical adhesives and proprietary adhesive anchors for the project shall be produced by the same manufacturer unless approved by the structural engineer.
3. Proprietary adhesive anchors shall be fastened with compatible chemical adhesive from the same manufacturer.
4. Chemical adhesive and proprietary adhesive anchor product data and a keyed plan showing the location, type of chemical adhesive and installation conditions of each adhesive anchor shall be submitted for approval. installation conditions are:
   dry, damp or wet hole
   cored hole or hammer drilled hole
   standard (per manufacturer) or oversize hole
   horizontal, vertical or overhead surface
   temperature range of installation.
5. The chemical adhesive and proprietary adhesive anchor manufacturer's installation instructions shall be strictly followed, particularly with regard to drilling and cleaning out the hole and the installation conditions.
6. If any of the following minimum distances are not indicated or available then verify the detail and field conditions with the structural engineer prior to installing:

anchor dia	c to c distance	edge distance	embed distance	mat'l thickness
1/2"	3 1/2"	4"	3 1/2"	5 1/2"
5/8"	4"	5"	4"	6"
3/4"	6"	6"	5"	8"

7. If any of the following conditions are indicated or present then verify acceptability of chemical adhesive or proprietary adhesive anchor type, material or finish with the structural engineer prior to installing:
   corrosive, chemical or abnormal temperature environment
   vibratory or fatigue loading of anchor
   impact or shock loading of anchor
   continuous tension (e.g. hanging loads from ceilings).

MATERIAL PATTERN LEGEND



SDG LLC
306 W Main St Ste 410
Frankfort, KY 40601
(859) 351-9169

STRUCTURAL GENERAL NOTES

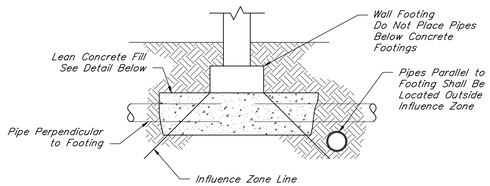
WOOD CREEK WATER DISTRICT
WATER SYSTEM IMPROVEMENTS
LAUREL COUNTY, KENTUCKY

DRAWN BY: MWC
CHECKED BY: PWB
DATE: March 2019
SCALE: As Noted
REVISIONS

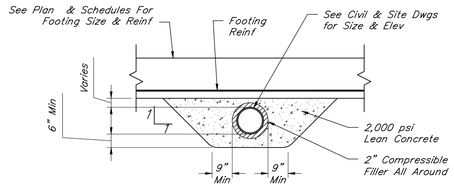
KENVIRONS, INC.
FRANKFORT, KENTUCKY

PROJECT NO.
2017036

SHEET NO.
S1



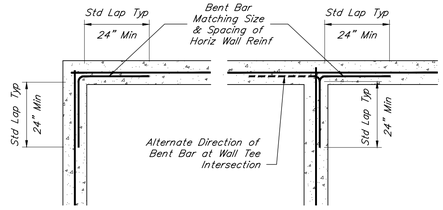
INFLUENCE ZONE



NOTE:
Provide concrete protection around utility line when line is within footing influence zone. See detail above for influence zone definition.

TYPICAL UTILITY LINE BELOW FOOTING

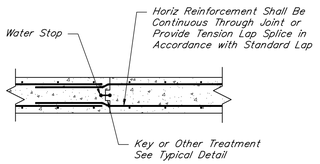
Not to Scale



NOTES:
1. Where bar sizes differ, lap for larger size.
2. If bend radius creates problems fitting hairpins in wall, provide more smaller hairpins with equal total area to main bars.
3. Construction joints shall not occur within 5'–0" of a corner or tee unless indicated otherwise on the drawings.

TYPICAL WALL INTERSECTION REINF

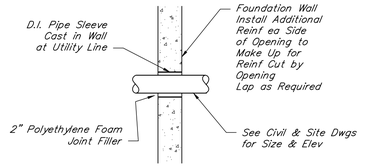
Not to Scale



NOTES:
1. Maximum Length of Wall Pour = 40'–0".
2. Minimum 48 Hours Between Adjacent Pours.
3. See Plans for Additional Joint Locations.
4. Submit Construction Joint Location Plan For Approval Prior to Construction.
5. Do Not Form Joints Within 5'–0" of a Corner or Tee Intersection.

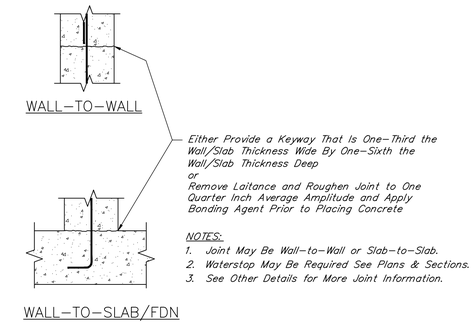
TYPICAL WALL CONSTRUCTION JOINT

Not to Scale



TYPICAL UTILITY LINE THRU FDN WALL

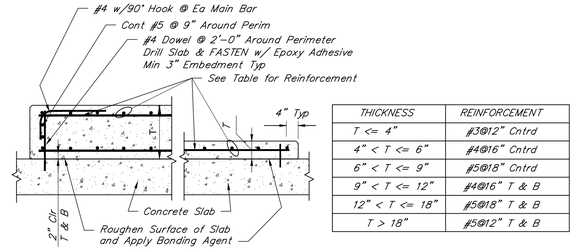
Not to Scale



NOTES:
1. Joint May Be Wall–to–Wall or Slab–to–Slab.
2. Waterstop May Be Required See Plans & Sections.
3. See Other Details for More Joint Information.

TYPICL CONSTRUCTION JOINT CONCRETE PREPARATION

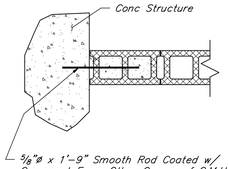
Not to Scale



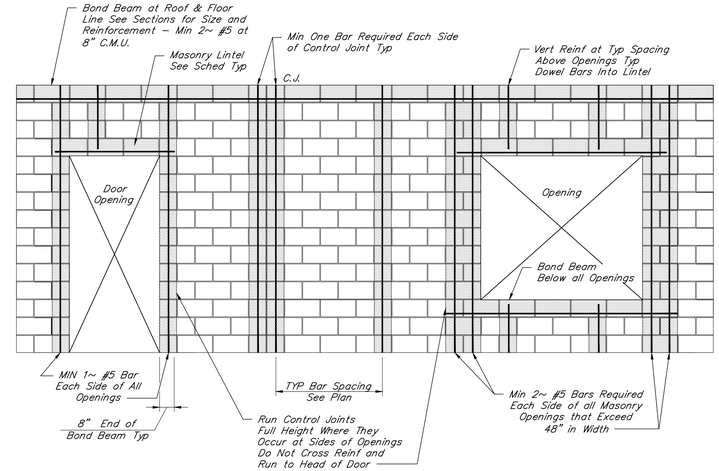
THICKNESS	REINFORCEMENT
T <= 4"	#3@12" Cntrd
4" < T <= 6"	#4@16" Cntrd
6" < T <= 9"	#5@18" Cntrd
9" < T <= 12"	#4@16" T & B
12" < T <= 18"	#5@18" T & B
T > 18"	#5@12" T & B

TYPICAL CONCRETE EQUIPMENT PAD

Not to Scale



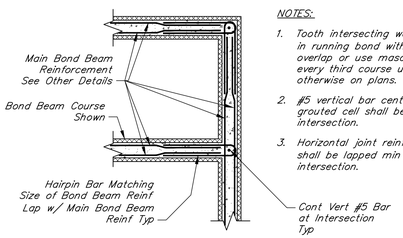
PLAN VIEW



NOTES:
1. Minimum vertical wall reinforcing shall be #5 @ 2'–0" unless noted otherwise.
2. Vertical wall reinforcing shall be continuous.
3. See typical detail for dowels required at base of walls.
4. Center reinforcing bars in grouted cells unless noted otherwise.
5. Use bar positioners at minimum 4'–0" spacing to support reinforcing bars.
6. Follow specified grouting procedures.
7. Clean mortar from edges of cells so grout can flow smoothly and fill entire cell.
8. Use lintel block over openings and continue with open–bottom bond beam from edge of opening into wall so that vertical reinforcing at jamb can pass.
9. Control joints shall extend full height of wall and align from floor to floor.
10. Where a control joint occurs through a bond beam or lintel bearing, provide 2~ ½" dowels across joint with grease on one side. Do not continue horizontal reinforcing across control joint.

TYPICAL C.M.U.WALL REINFORCEMENT DETAILS

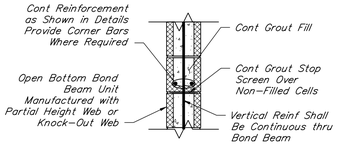
Not to Scale



NOTES:
1. Tooth intersecting walls together in running bond with min 6" overlap or use masonry strap every third course unless noted otherwise on plans.
2. #5 vertical bar centered in grouted cell shall be installed at intersection.
3. Horizontal joint reinforcement shall be lapped min 6" at wall intersection.

TYPICAL MASY WALL INTERSECTION DETAIL

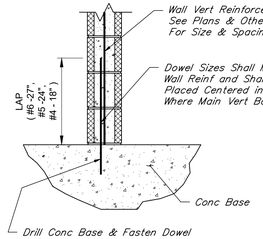
Not to Scale



NOTE:
Reinforcing shall have 3/4" minimum grout cover to all c.m.u. surfaces.

TYPICAL C.M.U. BOND BEAM DETAIL

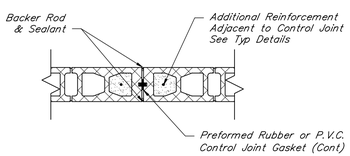
Not to Scale



SECTION VIEW

TYPICAL C.M.U. WALL DOWEL DETAIL

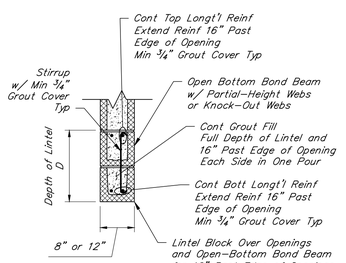
Not to Scale



NOTES:
1. See architectural drawings for control joint locations.
2. Discontinue horizontal joint reinforcing at control joints.
3. Unless otherwise shown or noted, spacing of control joints shall not exceed 24 feet.

TYPICAL C.M.U. CONTROL JOINT DETAIL

Not to Scale



MASONRY LINTEL SCHEDULE

MARK	MAX. OPENING SIZE	D	BOTTOM REINF	TOP REINF	STIRRUPS
ML–1	5'–0"	8"	2~#5	None	None
ML–2	8'–0"	16"	2~#5	None	None
ML–3	11'–8"	24"	2~#5 (8" C.M.U.) 2~#6 (12" C.M.U.)	None	None
ML–4	18'–0"	24"	2~#5 (8" C.M.U.) 2~#6 (12" C.M.U.)	2~#5	#3@8"

NOTES:
1. Do not use this schedule if concentrated load is applied to the lintel at a height less than half the span above the lintel or if stack bond is specified.
2. In lieu of using lintel block on the bottom of lintels which, requires shoring during construction, contractor may use prestressed, precast concrete lintels by "cast–crete" (www.castcrete.com) or approved equal. submit product data and a plan and schedule of lintel locations and sizes for approval for this option.

TYPICAL C.M.U. LINTEL DETAIL

Not to Scale

WOOD CREEK WATER DISTRICT
WATER SYSTEM IMPROVEMENTS
LAUREL COUNTY, KENTUCKY

LICENSED PROFESSIONAL ENGINEER
MATTHEW W. CRAIG
24113
Licensed Professional Engineer

DRAWN BY: MWC
CHECKED BY: EWB
DATE: March 2019
SCALE: As Noted
REVISIONS

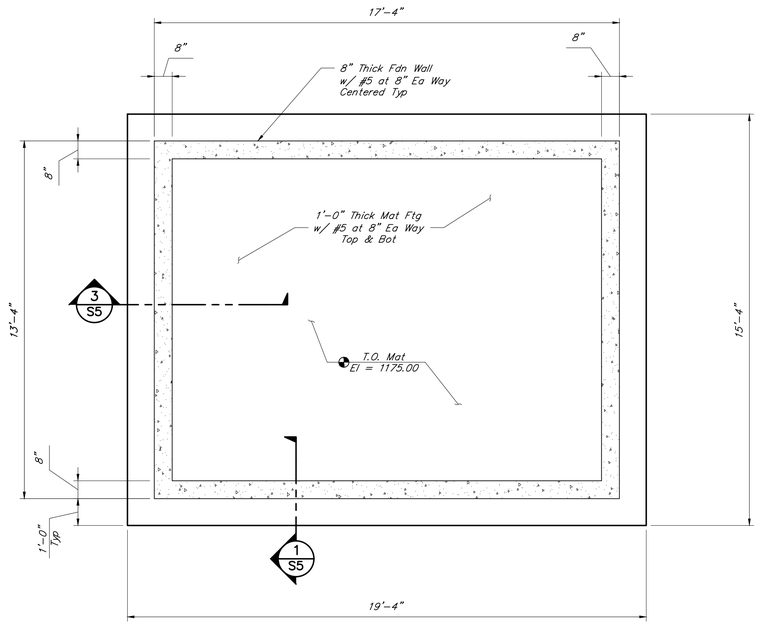
KENVIRONS, INC.
FRANKFORT, KENTUCKY

PROJECT NO.
2017036

SHEET NO.
S3

SDG
SDG LLC
306 W Main St Ste 410
Frankfort, KY 40601
(859) 351-9169

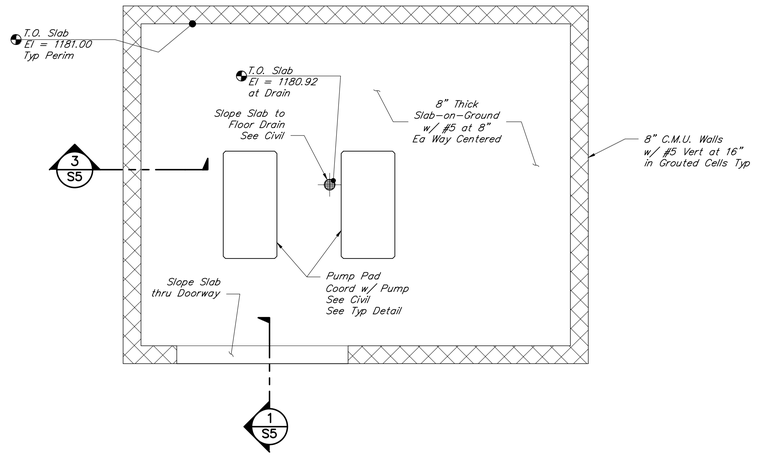
STRUCTURAL TYPICAL DETAILS



FOUNDATION PLAN

3/8"=1'-0"

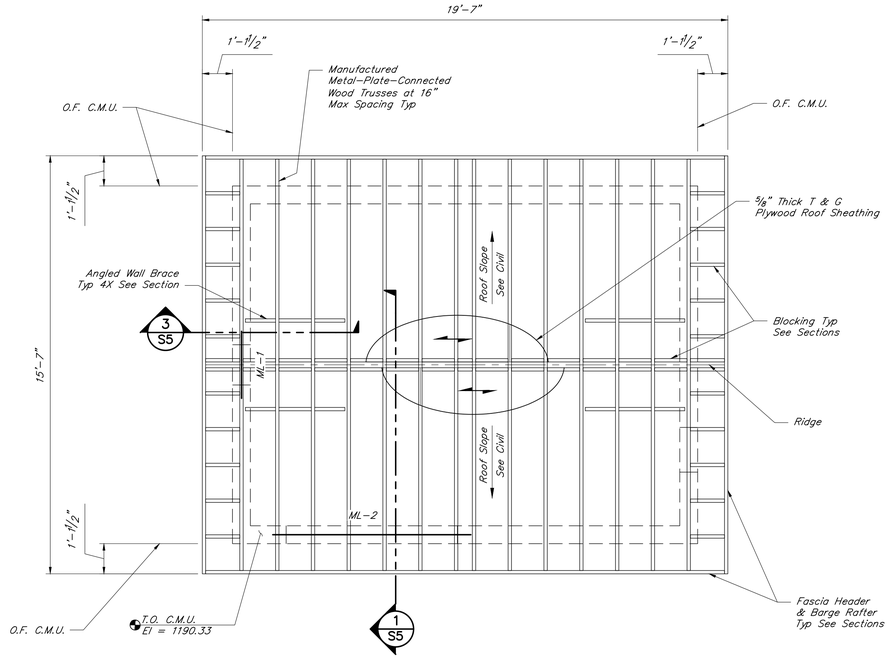
Note:
Backfill foundation walls balanced inside and out so that the grade elevation difference on either side of the walls is no more than 24" at any time.



SLAB PLAN

3/8"=1'-0"

Note:
Coordinate location of pedestals and hoist beam with actual final locations of equipment. Confirm with Engineer and Owner if necessary.



ROOF FRAMING PLAN

3/8"=1'-0"

WOOD CREEK WATER DISTRICT
WATER SYSTEM IMPROVEMENTS
LAUREL COUNTY, KENTUCKY

MATTHEW W. CRAIG
LICENSED PROFESSIONAL ENGINEER
24113

DRAWN BY: MWC
CHECKED BY: EWB
DATE: March 2019
SCALE: As Noted
REVISIONS

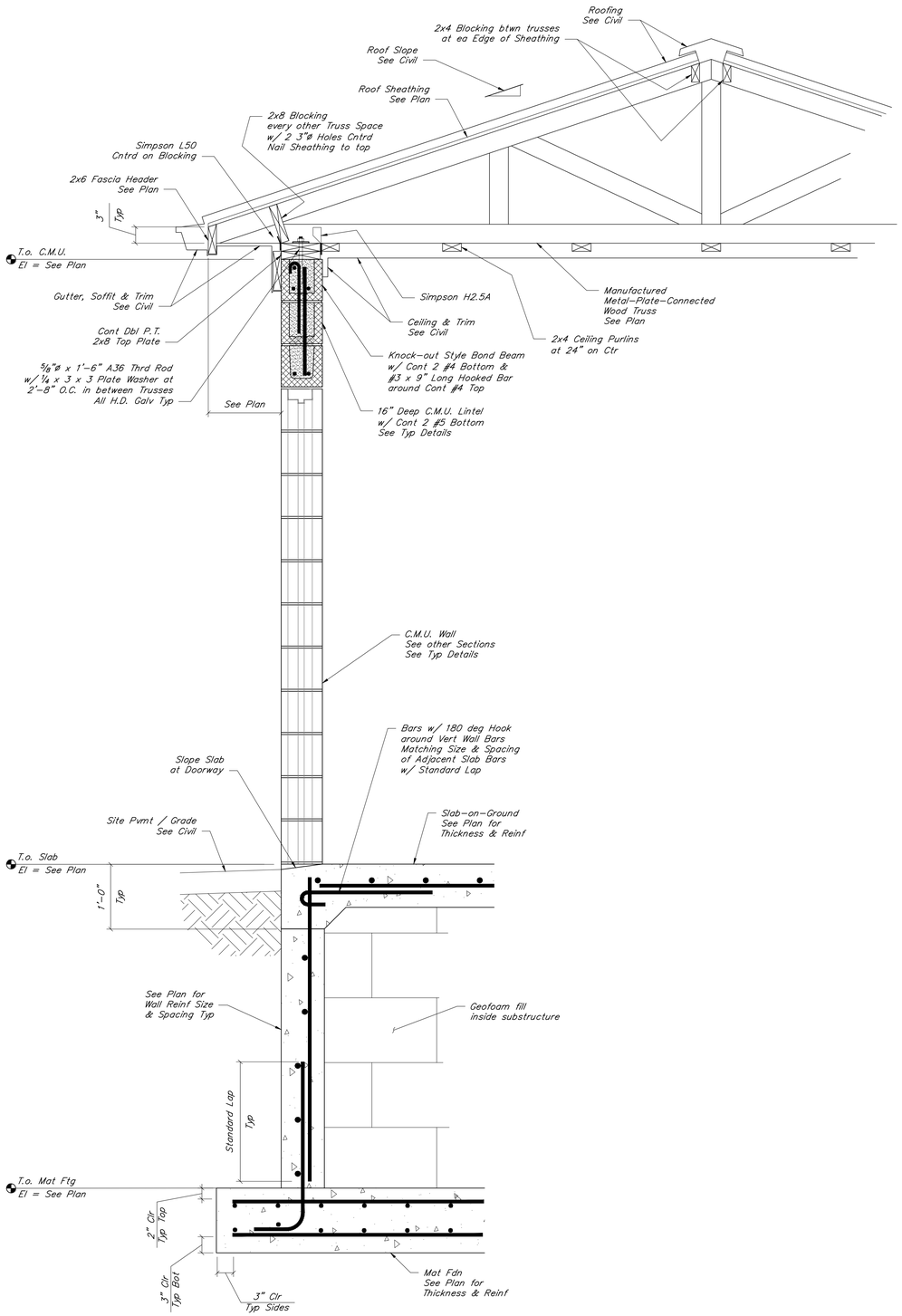
KENVIRONS, INC.
FRANKFORT, KENTUCKY

PROJECT NO.
2017036

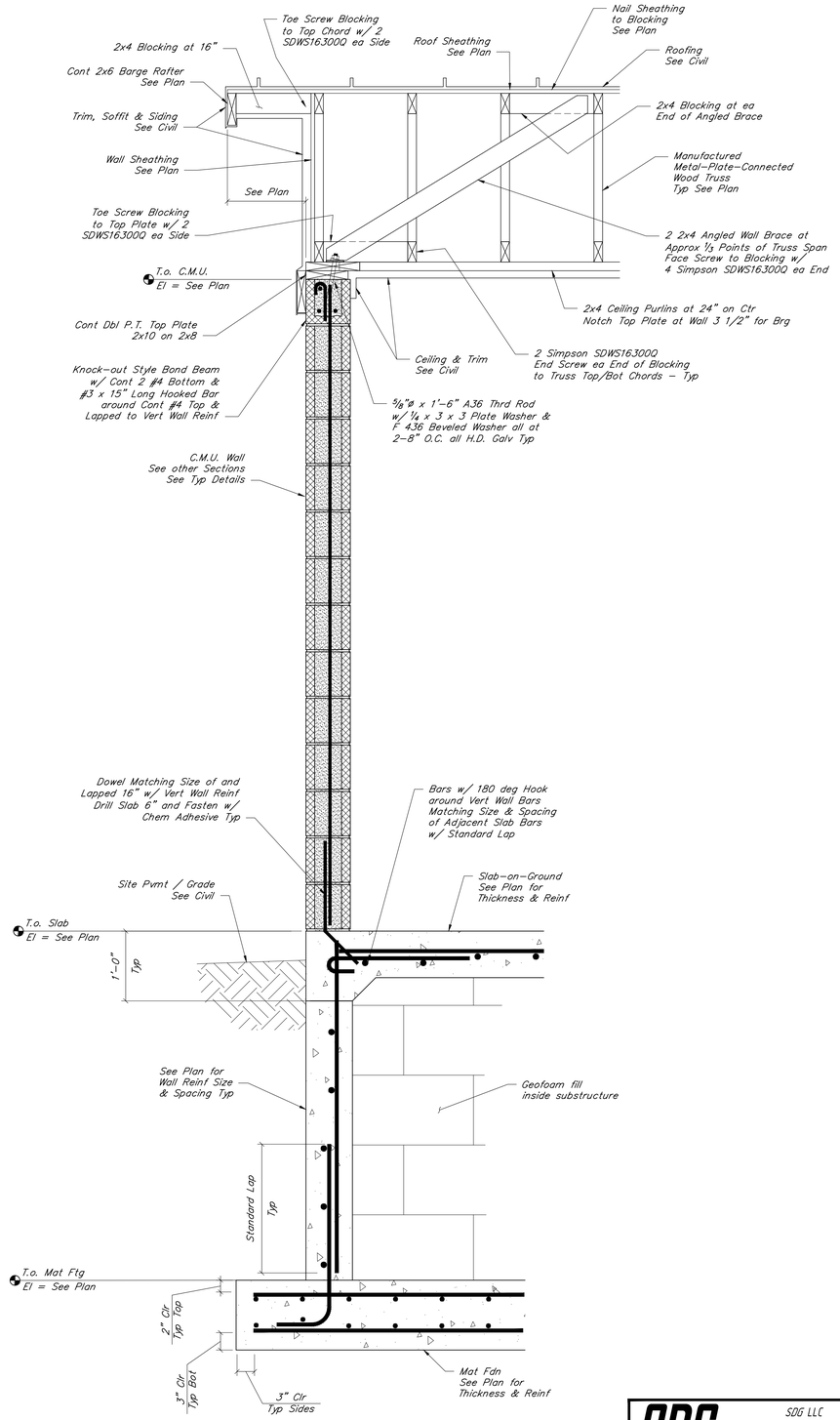
SHEET NO.
S4

SDG LLC
306 W Main St Ste 410
Frankfort, KY 40601
(859) 351-9169

KY 490 P.S. – STRUCTURAL PLANS



1 S5 SECTION 1"=1'-0"

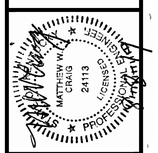


3 S5 SECTION 1"=1'-0"

SDG LLC
306 W Main St Ste 410
Frankfort, KY 40601
(859) 351-9169

STRUCTURAL DETAILS

WOOD CREEK WATER DISTRICT
WATER SYSTEM IMPROVEMENTS
LAUREL COUNTY, KENTUCKY



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KENVIRONS, INC.
FRANKFORT, KENTUCKY

PROJECT NO.
2017036

SHEET NO.
S5

ELECTRICAL ABBREVIATIONS

A	AMPERE
AF	AMPERE FRAME
AFF	ABOVE FINISHED FLOOR
AFD	ADJUSTABLE FREQUENCY DRIVE
AT	AMPERE TRIP
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
BC	BARE COPPER
C	CONDUIT (RACEWAY)
@	AT
CB	CIRCUIT BREAKER
CCTV	CLOSED CIRCUIT TELEVISION
CKT	CIRCUIT
C/L	CENTERLINE
CLG	CEILING
CP	CONTROL PANEL
CT	CURRENT TRANSFORMER OR CONSTANT TORQUE
CTL	CONTROL
CU	COPPER OR CONDENSING UNIT
Δ/Y	DELTA/WYE
DB	DIRECT BURIAL
DN	DOWN
DPST	DOUBLE POLE-SINGLE THROW
EC	EMPTY CONDUIT
EF	EXHAUST FAN
EG	EQUIPMENT GROUND
EGC	EQUIPMENT GROUND CONDUCTOR
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC	ELECTRIC
EOL	END-OF-LINE
EMERG	EMERGENCY
EUH	ELECTRIC UNIT HEATER
EWC	ELECTRIC WATER COOLER
EWH	ELECTRIC WALL HEATER/WATER HEATER
EX	EXISTING
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
FO	FIBER OPTIC
FVNR	FULL VOLTAGE, NON-REVERSING
GEC	GROUNDING ELECTRODE CONDUCTOR
GFCI OR GFI	GROUND FAULT CURRENT INTERRUPTING
GND	GROUND
HOA	HAND-OFF-AUTO SELECTOR SWITCH
HP	HORSEPOWER
J OR JB	JUNCTION BOX
KVA	KILOVOLT-AMPERES
KWH	KILOWATT-HOUR
KCMIL	THOUSAND CIRCULAR MILS
LF	LIGHTING FIXTURE (LUMINAIRE)
LTG	LIGHTING
LTS	LIGHTS
LS	LIMIT SWITCH
LV	LOW VOLTAGE
MCB	MAIN CIRCUIT BREAKER
MCP	MOTOR CIRCUIT PROTECTOR
MCC	MOTOR CONTROL CENTER
MDP	MAIN DISTRIBUTION PANEL
MFR	MANUFACTURER
MH	MANHOLE
MIN	MINIMUM
MLO	MAIN LUGS ONLY
MTD	MOUNTED
MV	MEDIUM VOLTAGE
NA	NOT APPLICABLE
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NL	NON LINEAR
NO	NORMALLY OPEN
NTS	NOT TO SCALE
OH	OVERHEAD
OL	OVERLOAD
P	POLE
OT	OVER TEMPERATURE
PH OR Ø	PHASE
PNL	PANEL
PVC	POLY-VINYL CHLORIDE
PWR	POWER
RECEPT.	RECEPTACLE
SHT	SHEET
S/N	SOLID NEUTRAL
SP	SINGLE POLE
SPD	SURGE PROTECTION DEVICE
SS	STAINLESS STEEL
STA	STATION
STD	STANDARD
STIC	SHIELDED TWISTED INSTRUMENT CABLE
SW	SWITCH
TB	TERMINAL BOX
TEL	TELEPHONE
TM	THERMAL MAGNETIC
TS	TAMPER SWITCH
TV	TELEVISION
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
UG	UNDERGROUND
UH	UNIT HEATER
V	VOLTAGE OR VOLTS
W	WIRE
WP	WEATHERPROOF
W/	WITH
XFMR	TRANSFORMER

ELECTRICAL PLAN SYMBOLS

	ELECTRICAL CIRCUIT: SHORT=PHASE CONDUCTOR; LONG = NEUTRAL, DASHED = EQUIPMENT GROUND
	EMERGENCY CIRCUIT
$_3$	SWITCH: 3=3 WAY; 4=4 WAY; K=KEY; WP= WEATHERPROOF; M=MOTOR STARTER; PL=PILOT LT
	DUPLEX RECEPTACLE: WP = WEATHERPROOF; GFI = GROUND FAULT; NUMBER = MOUNTING HEIGHT
	SINGLE RECEPTACLE
	208 or 240 VOLT RECEPTACLE
	DUPLEX RECEPTACLE, FLUSH FLOORBOX MOUNTED
	SPECIAL PURPOSE RECEPTACLE OUTLET
T	THERMOSTAT
M	MOTOR
J	JUNCTION BOX - SMALL
J	JUNCTION BOX - FLUSH-MOUNTED
	SAFETY SWITCH - NONFUSED UNLESS NOTED OTHERWISE
	MAGNETIC COMBINATION STARTER - THREE PHASE
	MAGNETIC COMBINATION STARTER - SINGLE PHASE
	TELECOM OUTLET: D = DATA; T = TELEPHONE; C = CABLE; NUMBER = QTY OF CABLES & JACKS
	CONDUIT TURNED UP
	CONDUIT TURNED DOWN
S	WALL MOUNTED SPEAKER OR ALARM HORN
	PANELBOARD (SURFACE MOUNTED)
	PANELBOARD (FLUSH MOUNTED IN WALL)
	HEATER-WALL MOUNTED
EF	EXHAUST FAN/VENTILATOR
S	SPEAKER GENERAL
C	CLOCK
	EXISTING POWER POLE
	NEW POWER POLE
OR	LIGHTING POLE
	PHOTO CELL
MH	MANHOLE
PB	PULLBOX
	MUSHROOM HEAD EMERGENCY SWITCH
	DUCT SMOKE DETECTOR
	HEAT DETECTOR
	SMOKE DETECTOR
P	FIRE ALARM MANUAL PULL STATION
	FIRE ALARM HORN/STROBE
	FIRE ALARM STROBE
ZAM	FIRE ALARM ZONE ADDRESSABLE MODULE
	SPRINKLER SYSTEM FLOW SWITCH
	TAMPER SWITCH
	MAGNETIC DOOR HOLDER
XX	KEYNOTE
C	CALL SWITCH
M	PASSIVE INFRARED MOTION DETECTOR
NEMA XX	ALL WORK IN THE ROOM/AREA SHALL CONFORM TO THE NEMA RATING INDICATED
EU	ELECTRICAL LINE UNDERGROUND
EO	ELECTRICAL LINE OVERHEAD
IU	INSTRUMENTATION LINE UNDERGROUND
IO	INSTRUMENTATION LINE OVERHEAD
TU	TELEPHONE LINE UNDERGROUND
TO	TELEPHONE LINE OVERHEAD

ELECTRICAL DIAGRAM SYMBOLS

	TRANSFORMER
	CAPACITOR
	GROUND
	CURRENT TRANSFORMER
	POTENTIAL TRANSFORMER
	CIRCUIT BREAKER (GENERAL)
	CIRCUIT BREAKER, THERMAL-MAGNETIC
	CIRCUIT BREAKER, MAGNETIC-ONLY
	CIRCUIT BREAKER (DRAWOUT)
GF	GROUND FAULT PROTECTED CIRCUIT BREAKER
	RELAY CONTACTS (NORMALLY OPENED)
	RELAY CONTACTS (NORMALLY CLOSED)
	THERMAL OVERLOAD PROTECTION
	FUSE
	DOT INDICATES A CONNECTION OF TWO WIRES
	TERMINALS FOR CONNECTION OF REMOTE WIRING
R	RELAY/CONTACTOR COIL: C = CONTRACTOR; CR = CONTROL RELAY; TR = TIMING RELAY; M = MOTOR
H O A	HAND-OFF-AUTOMATIC SWITCH
X	FULL VOLTAGE NON-REVERSING MOTOR STARTER; X = NEMA SIZE
X	PILOT LIGHT: R = RED; G = GREEN; A = AMBER; W = WHITE
X	PILOT LIGHT - PUSH-TO-TEST
	MOTOR
	FUSED DISCONNECT SWITCH
	FLOAT SWITCH
	TEMPERATURE SWITCH (THERMOSTAT)
	PRESSURE SWITCH
	LIMIT SWITCH
	FLOW SWITCH
SV OR	SOLENOID VALVE COIL
ETM	ELAPSED TIME METER
K	KEY INTERLOCK
	BATTERY
	PUSHBUTTONS, N.C. & N.O. RESPECTIVELY
	SELECTOR SWITCH - TWO POSITION
	FUSED CUTOUT
	SECTIONALIZING SWITCH (3 PHASE)
	TIMER RELAY CONTACT: NORMALLY OPEN - TIMED OPEN UPON DEENERGIZATION
	TIMER RELAY CONTACT: NORMALLY CLOSED - TIMED CLOSE UPON DEENERGIZATION
	TIMER RELAY CONTACT: NORMALLY OPEN - TIMED CLOSE UPON ENERGIZATION
	TIMER RELAY CONTACT: NORMALLY CLOSED - TIMED OPEN UPON ENERGIZATION
	TRANSFER SWITCH
Y	GENERATOR
	EXTERNAL WIRING

ELECTRICAL DEVICE MOUNTING HEIGHT SCHEDULE

DEVICE	HEIGHT AFF	REMARKS
RECEPTACLE - LOW	1'-4"	TO BOTTOM OF DEVICE BOX
RECEPTACLE - MEDIUM	4'-0"	TO TOP OF DEVICE BOX
LIGHT SWITCH	4'-0"	TO BOTTOM OF DEVICE BOX
CONTROL STATIONS & PUSH-BUTTONS	4'-0"	TO BOTTOM OF DEVICE BOX
PANELBOARDS & CONTROL PANELS	6'-6"	TO TOP OF BOX
SAFETY SWITCH	4'-0"	TO TOP OF BOX
THERMOSTAT	4'-8"	TO BOTTOM OF DEVICE BOX
EMERGENCY LIGHT FIXTURES	7'-4"	TO BOTTOM OF DEVICE BOX

WALL MOUNT PACKAGED HEAT PUMP SCHEDULE

TAG	MODEL	COOLING		TOTAL COOLING MBH	SENSIBLE COOLING MBH	EER ARI-390	HEATING @ 17°F MBH	VOLTAGE / PHASE	COP @ 17°F	OA CFM	FAN			ELEC. HEAT KW
		EAT DB/WB	OAT DB								CFM	ESP	RPM	
HPU	BARD W24HB	85/72	95	26.1	17.6	11.0	13.6	230/1ø	2.33	20	800	0.2	A/R	4.0

NOTES:
1. REFER TO HEAT PUMP SPECIFICATION FOR ADDITIONAL REQUIREMENTS
2. BASIS OF DESIGN IS BARD
3. PROVIDE MOTORIZED FRESH AIR DAMPER
4. PROVIDE DIGITAL PROGRAMMABLE AUTO-CHANGEOVER THERMOSTAT
5. PROVIDE CUSTOM COLOR- OWNER TO SELECT THE COLOR DURING SUBMITTAL REVIEW

LIGHT FIXTURE SCHEDULE

TYPE	MANUFACTURER	CATALOG SERIES	LAMPS	VOLTAGE	MOUNTING	DESCRIPTION	SYMBOL
LF-1	HOLOPHANE	EMS LED	LED	120V	SURFACE	LINEAR ENCLOSED, 6000 LUMEN, 5000K, 90 CRI, ACRYLIC CLEAR LOW PROFILE LENS, 48" LENGTH, 5-YEAR WARRANTY	
LF-1E	HOLOPHANE	EMS LED	LED	120V	SURFACE	SAME AS LF-1 WITH EMERGENCY BATTERY PACK, 90 MINUTE	
LF-2	HOLOPHANE	W4GLED	LED	120V	SURFACE	WALLPACK, 3400 LUMEN, 5000K, WITH PHOTOCELL, POWDER-COATED ALUMINUM, VANDAL-RESISTANT POLYCARBONATE LENS, WET LOCATION, FULL CUTOFF, 5YR WARRANTY, COLOR TO BE SELECTED BY OWNER	
LF-3	HOLOPHANE	LRNX	2-12W	12VDC	SURFACE	LR SERIES EMERGENCY REMOTE LAMP HEADS, LEXAN SEALED BEAM, PAR 36, HALOGEN, NEMA 4X, COLOR TO BE SELECTED BY OWNER	
LF-4	HOLOPHANE	C4224	N/A	120V	SURFACE	EMERGENCY BATTERY PACK, 24 WATT, 90 MINUTE, 12V NICKEL CADMIUM, 25W, 12V NICKEL-CADMIUM, LOW VOLTAGE DISCONNECT, 3 YEAR WARRANTY	B

PANEL: LP
ENCLOSURE: NEMA 1
MOUNTING: SURFACE
LOCATION: KY490 PUMP STATION
VOLTAGE: 120/240V, 1Ø, 3W
MAINS AMPACITY: 100A
MAIN C.B. SIZE: 100A
TOTAL SPACES: 18

CIRCUIT DESCRIPTION	VA	POLES	BREAKER	NO	PHASE A VA	PHASE B VA	NO.	BREAKER	POLES	VA	CIRCUIT DESCRIPTION
DEHUMIDIFIER RECEPT.	1000	1	20A	1	5000	---	2	45A	2	4000	HEAT PUMP UNIT HPU
PUMP CONTROL PANEL	500	1	20A	3	---	4500	4			4000	
FRONT RECEPTS.	600	1	20A	5	1200	---	6	20A	1	600	REAR RECEPTS.
SCADA RTU	500	1	15A	7	---	600	8	15A	1	100	FLOWMETER
SPARE		1	20A	9	500	---	10	20A	1	500	LIGHTING
SPARE		1	20A	11	---	0	12	20A	1		SPARE
SPARE		1	20A	13	0	---	14	20A	1		SPARE
SPD		2	30A	15	---	0	16	15A	1		SPARE
				17	0	---	18	15A	1		SPARE
TOTAL VA PER PHASE:					6700	5100					
TOTAL AMPS PER PHASE:					55.8	42.5	TOTAL PANEL VA:		11800		

NOTES:
1. PROVIDE INTEGRAL SURGE PROTECTION DEVICE

PANEL: PP
ENCLOSURE: NEMA 1
MOUNTING: SURFACE
LOCATION: KY490 PUMP STATION
VOLTAGE: 480/277V, 3Ø, 4W
MAINS AMPACITY: 100A
MAIN C.B. SIZE: 100A
TOTAL SPACES: 18

CIRCUIT DESCRIPTION	VA	POLES	BREAKER	NO	PHASE A VA	PHASE B VA	PHASE C VA	NO.	BREAKER	POLES	VA	CIRCUIT DESCRIPTION
SPD		3	30A	1	6200	---	---	2	30A	3	6200	PUMP VFD #2
				3	---	6200	---	4			6200	
				5	---	---	6200	6			6200	
PUMP #1 AFD	6200	3	30A	7	11200	---	---	8	80A	2	5000	XFMR / PANEL LP
	6200			9	---	11200	---	10			5000	
	6200			11	---	---	6200	12	80A	2		SPARE
SPARE		3	30A	13	0	---	---	14				
				15	---	0	---	16				
				17	---	---	0	18				
TOTAL VA PER PHASE:					17400	17400	12400					
TOTAL AMPS PER PHASE					62.8	62.8	44.8	TOTAL PANEL VA: 47200				

NOTES:
1. PROVIDE INTEGRAL SURGE PROTECTION DEVICE

LoVo SYSTEMS

ELECTRICAL SYMBOLS, ABBREVIATIONS AND SCHEDULES

WOOD CREEK WATER DISTRICT
KY 490 / US 25 N. WATERLINE REPLACEMENT
LAUREL COUNTY, KENTUCKY

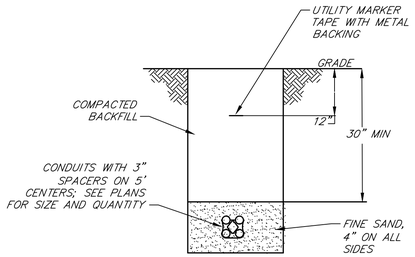
BENJAMIN L MURPHY 25348 LICENSED PROFESSIONAL ENGINEER

DRAWN BY: CA
CHECKED BY: BLM
DATE: OCTOBER 2019
SCALE: AS NOTED
REVISIONS

KENVIRONS, INC.
FRANKFORT, KENTUCKY

PROJECT NO.
2017036

SHEET NO.
E-1

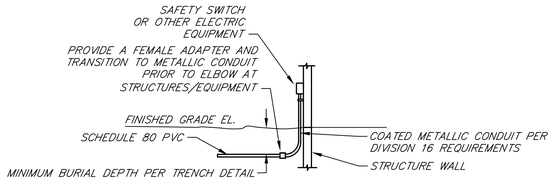


TRENCH DETAIL, TYP.

NO SCALE

TRENCHING NOTES:

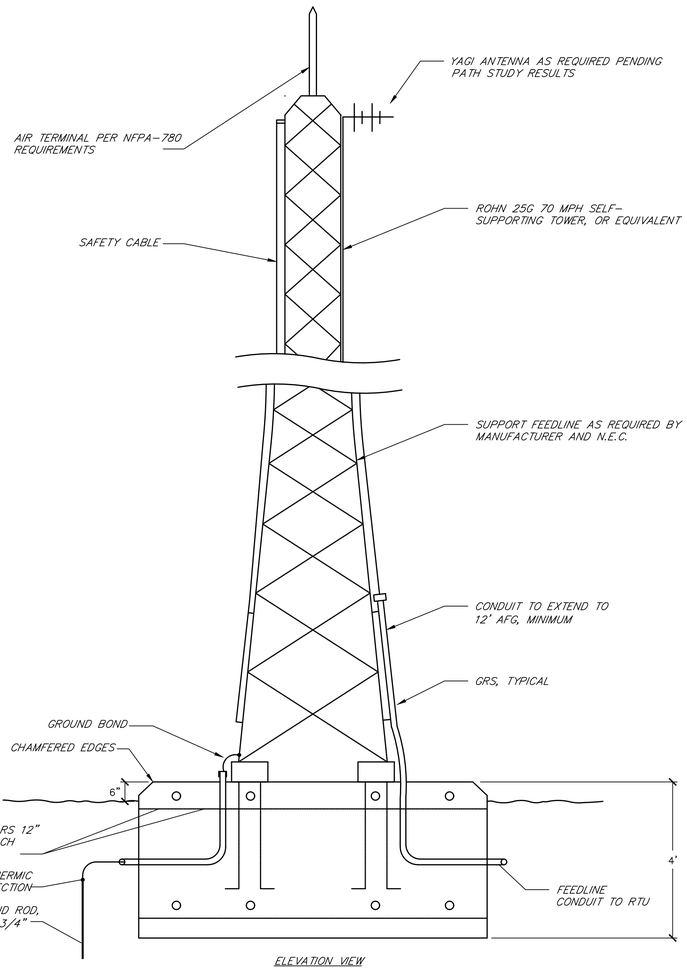
- PROVIDE PULL CORD IN ALL CONDUITS.
- UTILITY MARKER TAPE SHALL RUN THE ENTIRE LENGTH OF DUCT BANK.
- MAINTAIN MINIMUM 12" SPACING BETWEEN INSTRUMENTATION AND POWER.
- MAINTAIN MINIMUM 36" SPACING BETWEEN OTHER SITE PIPING, INCLUDING WATER PIPING.



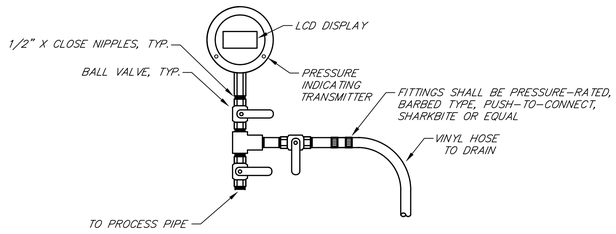
NOTE:
ALL UNDERGROUND PVC CONDUITS SHALL TRANSITION TO METALLIC PRIOR TO EMERGING FROM GRADE OR SLAB.

TYPICAL UNDERGROUND PVC CONDUIT TRANSITION TO METALLIC CONDUIT

NO SCALE

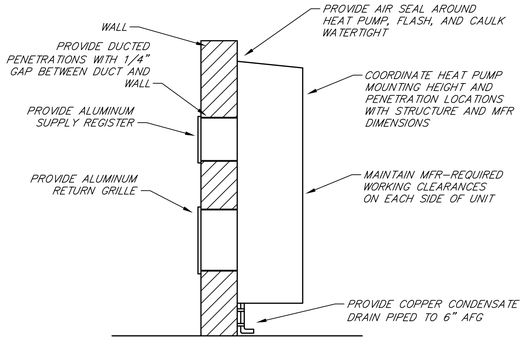


ELEVATION VIEW



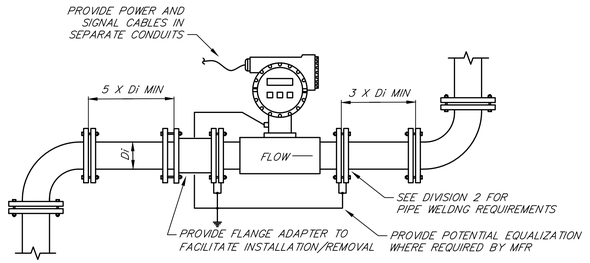
PRESSURE TRANSMITTER DETAIL

NO SCALE



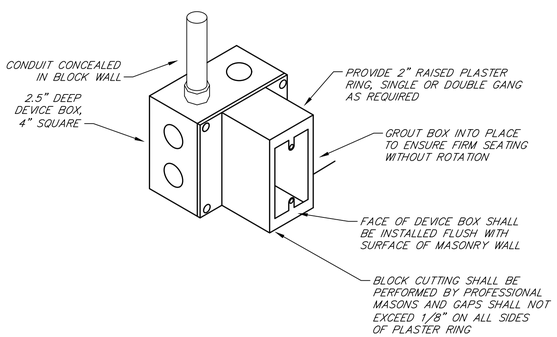
HEAT PUMP INSTALLATION DETAIL, TYP.

NO SCALE



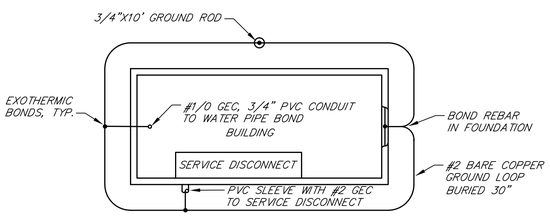
MAGMETER INSTALLATION DETAIL, TYP.

NO SCALE



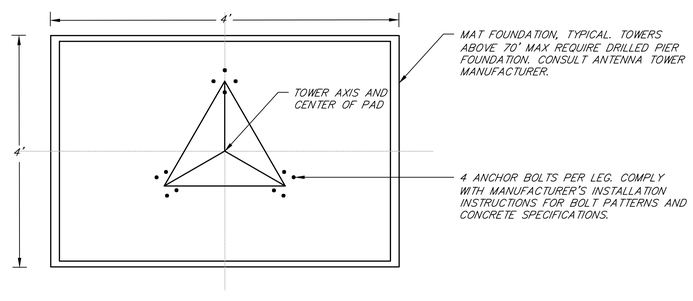
MASONRY DEVICE BOX DETAIL

NOT TO SCALE



BUILDING GROUND DETAIL

NO SCALE



PLAN VIEW

ANTENNA TOWER DETAIL

NOT TO SCALE

WOOD CREEK WATER DISTRICT
KY 490 / US 25 N. WATERLINE REPLACEMENT
LAUREL COUNTY, KENTUCKY

Ben Murphy 6/15/2020

COMMONWEALTH OF KENTUCKY
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FRANKFORT, KENTUCKY

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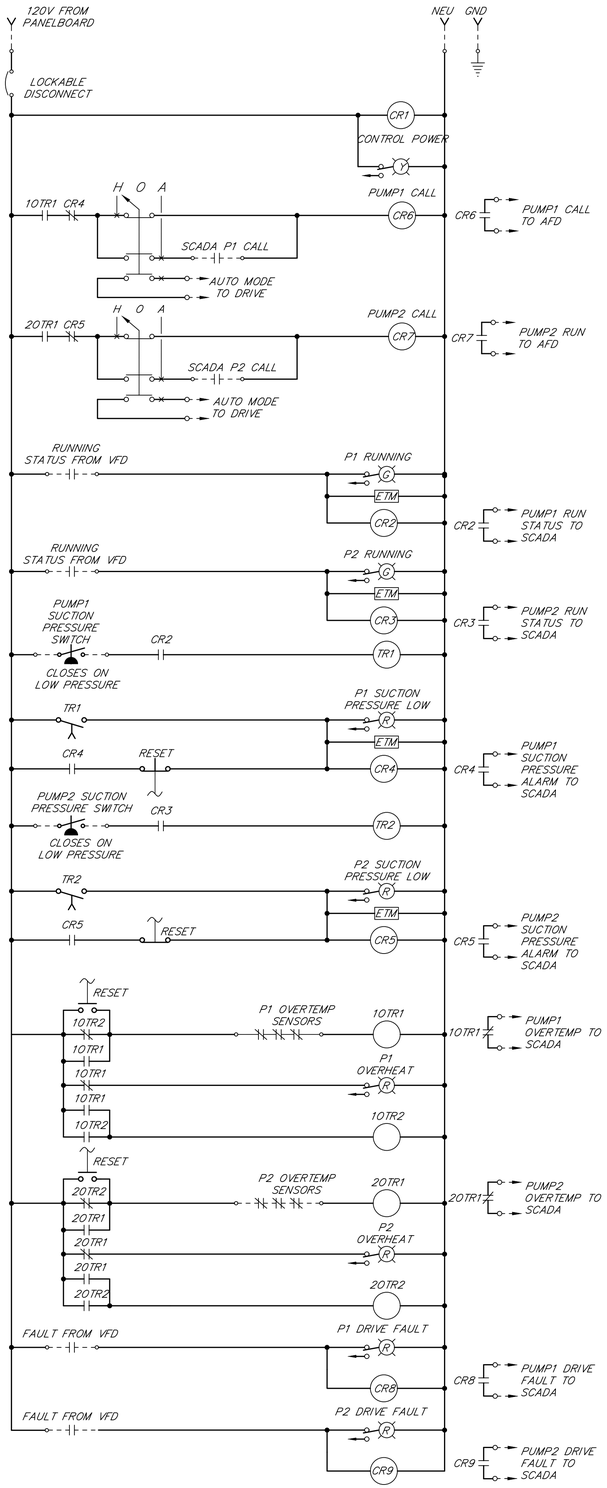
SHEET NO.
E-2

LoVo SYSTEMS

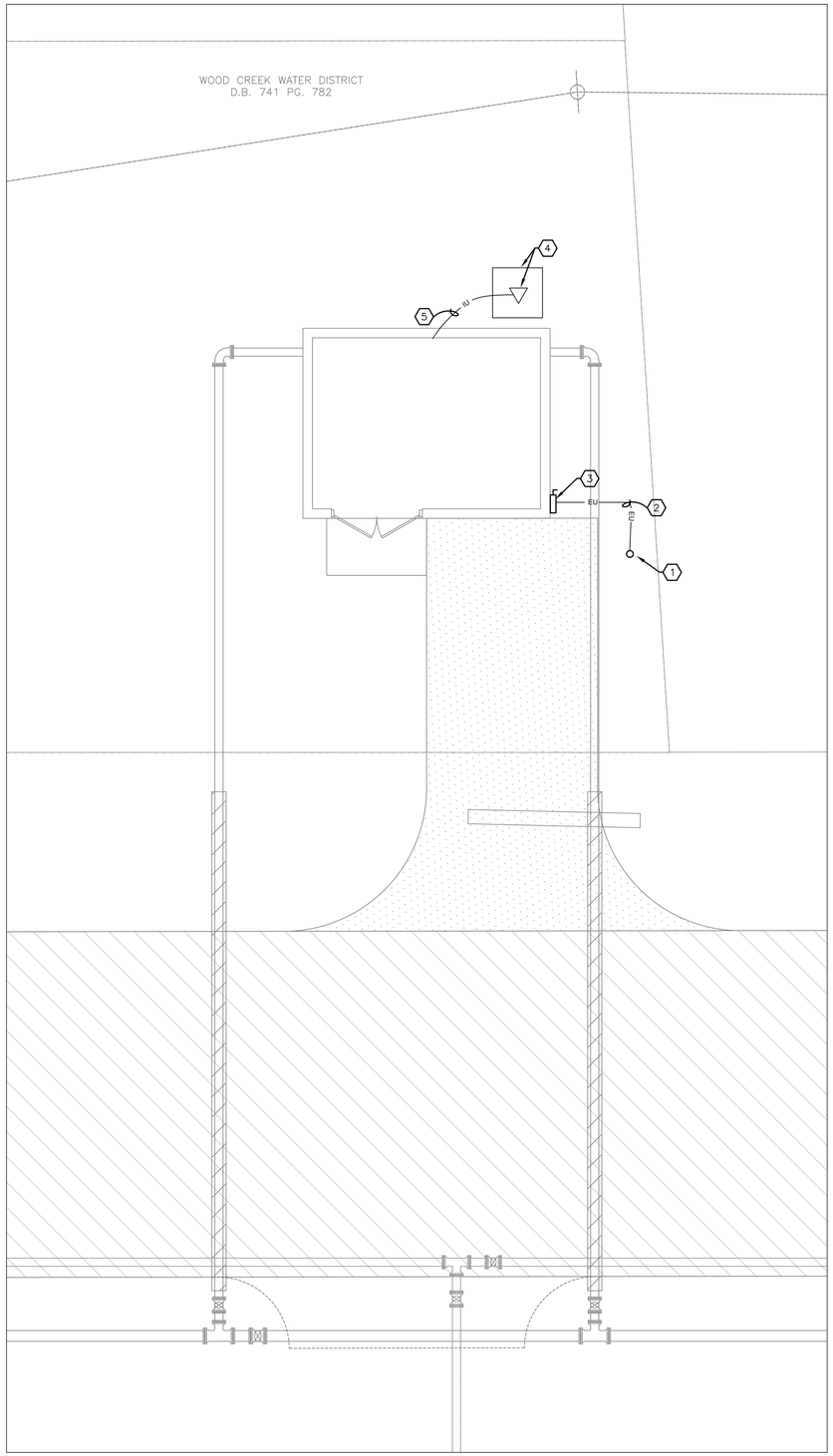
ELECTRICAL DETAILS



PUMP STATION CONTROL PANEL

NOT TO SCALE

- *SEE PLANS, SPECIFICATIONS AND SCADA I/O TABLE FOR FURTHER REQUIREMENTS.*
- *IN HAND MODE, SPEED SHALL BE SET FROM DRIVE INTERFACE MODULE. IN AUTO MODE, SPEED SHALL BE CONTROLLED FROM SCADA RTU*
- *DRIVES SHALL BE WALL-MOUNTED SEPARATE FROM PANEL AS INDICATED ON PLANS*



PUMP STATION ELECTRICAL SITE PLAN

SCALE: 1" = 5'

SHEET NOTES:

1. *NEW TRANSFORMER POLE BY UTILITY, APPROXIMATE LOCATION. COORDINATE ACTUAL LOCATION WITH UTILITY*
2. *PROVIDE UTILITY SERVICE CONDUIT WITH RISER UP POLE PER UTILITY REQUIREMENTS*
3. *PROVIDE NEW LINE-SIDE NON-FUSED SAFETY SWITCH PER UTILITY REQUIREMENTS*
4. *PROVIDE 20' ANTENNA TOWER WITH CONCRETE MAT FOUNDATION PER DETAIL*
5. *PROVIDE ANTENNA CABLE,1.5"C TO SCADA RTU*

WOOD CREEK WATER DISTRICT
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6/5/2020

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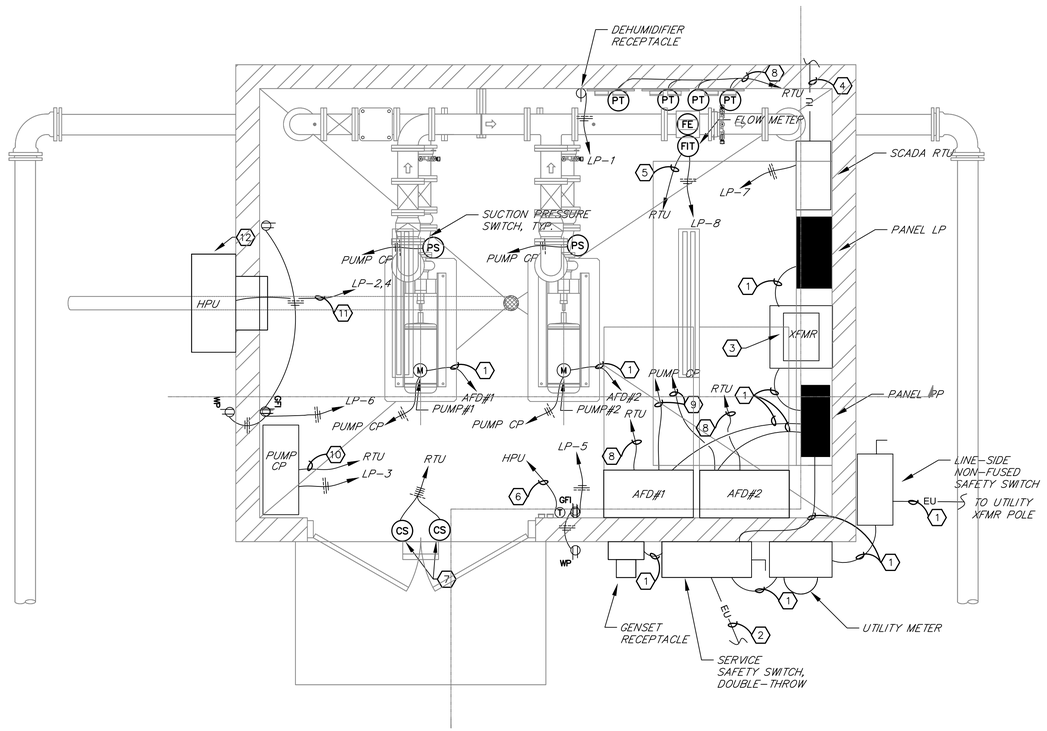
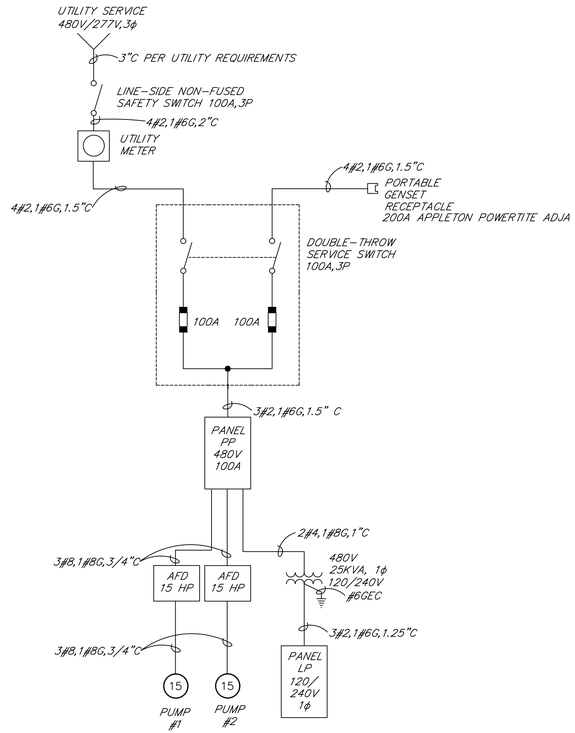
LoVo SYSTEMS

ELECTRICAL SITE PLAN



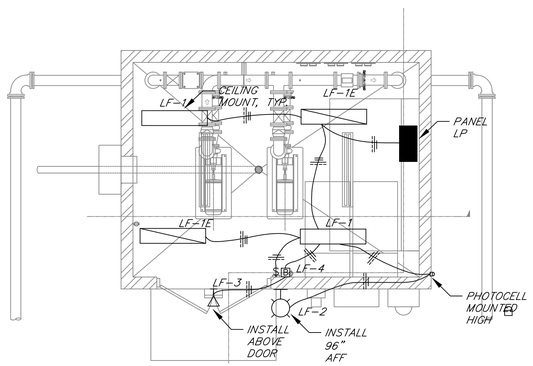
PUMP STATION POWER PLAN

SCALE: 1/2" = 1'



PUMP STATION ONE-LINE DIAGRAM

NO TO SCALE



PUMP STATION LIGHTING PLAN

SCALE: 1/4" = 1'

GENERAL NOTES:

- INTERIOR ELECTRICAL EQUIPMENT SHALL BE NEMA 1 MINIMUM. EXTERIOR ELECTRICAL EQUIPMENT SHALL BE NEMA 4X S.S.

SHEET NOTES:

1. SEE ONE-LINE DIAGRAM FOR REQUIREMENTS
2. PROVIDE #2 GEC,3/4" AND PROVIDE GROUND LOOP PER BUILDING GROUND DETAIL
3. PROVIDE TRANSFORMER MOUNTED ON 4" CONCRETE PAD. SEE ONE-LINE DIAGRAM FOR REQUIREMENTS
4. PROVIDE ANTENNA CABLE CONDUIT. SEE ELECTRICAL SITE PLAN FOR CONTINUATION TO ANTENNA TOWER
5. PROVIDE 2-2#18 STIC,1#14G,3/4"C
6. PROVIDE THERMOSTAT CABLE,1#14G,3/4"C
7. PROVIDE MAGNETIC DOOR CONTACT SWITCHES INSTALLED TO SEND A SIGNAL WHEN DOOR IS OPENED
8. PROVIDE 4-2#18 STIC,1#14G,1"C
9. PROVIDE 10#14,4#14 SPARE,1#14G,3/4"C
10. PROVIDE 20#14,6#14 SPARE,1#14G,1"C
11. PROVIDE 2#8,1#10G,3/4"C
12. PROVIDE WALL-MOUNTED HEAT PUMP INSTALLED PER DETAIL

CONDUCTORS	I/O TAG	TYPE	UNIT	CONTROL	MONITOR	TREND	HISTORIZE	TOTALIZE	AVERAGE	ALARM	REPORT	NOTES
2#14	POWER LOSS ALARM	DI								X		
2#14	DOOR OPEN ALARM	DI								X		
2#14	PUMP 1 CALL-TO-RUN	DO		X								
2#14	PUMP 1 RUNNING STATUS	DI			X		X				X	REPORT # STARTS & RUNTIMES
2#14	PUMP 1 OVERTEMP	DI								X		
2#14	PUMP1 DRIVE FAULT	DI								X		
2#14	PUMP 1 SUCTION PRESSURE ALARM	DI								X		
2#14	PUMP 2 CALL-TO-RUN	DO		X								
2#14	PUMP 2 RUNNING STATUS	DI			X		X					REPORT # STARTS & RUNTIMES
2#14	PUMP 2 OVERTEMP	DI								X		
2#14	PUMP 2 DRIVE FAULT	DI								X		
2#18 STIC	PUMP 2 SUCTION PRESSURE ALARM	DI								X		
2#18 STIC	FLOWRATE	AI	GPM		X	X	X					
2#18 STIC	FLOW TOTAL PULSE	DI	GAL					X			X	REPORT DAILY & MONTHLY FLOW
2#18 STIC	SUCTION PRESSURE PUMP 1	AI	PSIG		X	X	X			X		
2#18 STIC	SUCTION PRESSURE PUMP 2	AI	PSIG		X	X	X			X		
2#18 STIC	DISCHARGE PRESSURE	AI	PSIG		X	X	X			X		
2#18 STIC	SUCTION PRESSURE PRE-STRAHER	AI	PSIG		X	X	X			X		
2#18 STIC	PUMP #1 SPEED COMMAND	AO	HZ	X								
2#18 STIC	PUMP #2 SPEED COMMAND	AO	HZ	X								
2#18 STIC	PUMP #1 SPEED FEEDBACK	AI	HZ		X	X	X					
2#18 STIC	PUMP #2 SPEED FEEDBACK	AI	HZ		X	X	X					

SCADA IO TABLE

LoVo SYSTEMS

ELECTRICAL FLOOR PLAN

WOOD CREEK WATER DISTRICT
KY 490 / US 25 N. WATERLINE REPLACEMENT
LAUREL COUNTY, KENTUCKY

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