SOUTHEASTERN WATER ASSOCIATION KY 192 / KY 1003 IMPROVEMENTS & VARIOUS PUMP STATION REPLACEMENTS PULASKI COUNTY, KENTUCKY

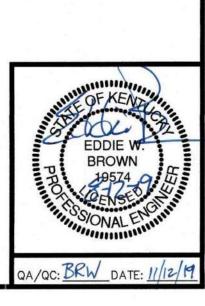
Built Neison By Frenking Core Magnington By Frenking Core

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Prepared By:





- 3. Existing buried utilities are shown on the drawings in their general location utilizing the best available information. Before construction begins near or through existing utilities (i.e. Gas Co., Telephone Co., etc.) each utility company shall be notified, a request for the exact location of the utility shall be made, and permission to proceed with construction. 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. All fittings are incidental to project construction. Contractor will NOT be compensated for any fitting necessary to complete the project.
- 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.
- 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 restraints 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 driveways that are cut shall be backfilled with KYTC #8 or 9-M and shall be included in the unit price for pavement replacement.
- 13. 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.
- 14. 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.
- 15. It is the responsibility of the Contractor to comply with all regulations regarding the effect on the environment from the discharge of chlorinated water. See Technical Specification 15103 Subsection 2 for methods of sterilization and for disposing of heavily chlorinated water.
- 16. The time period for pressure testing in this project shall be 6 hours.
- 17. Marking tape and tracer wire shall be installed with all pipe and all service tubing. See Technical Specification 15100, and the miscellaneous details drawings.
- 18. 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.
- 19. Locations where pipeline is to be installed on state road right of way are approximately delineated on the drawings. The Contractor shall determine the field locations for transitions between private easements, and state and county road rights of way.
- 20. All pipelines installed in the ditchline on state or county rights of way shall have 42" minimum cover over top of pipe.
- 21. The pipeline trench width will be strictly enforced. See Technical Specification 15100 for trench width requirements.
- 22. 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.
- 23. Do not cut fences except where specifically shown and noted.
- 24. The Contractor shall obtain and pay for all grading, storm water, etc. permits, if any are 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. All work shall be provided in compliance with all applicable local, state and national building codes.
- 25. 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.).
- 26. 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.
- 27. 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.
- 28. The Contractor shall be responsible for all traffic control measures necessary for 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.
- 29. 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.
- 30. All water main fittings shall be ductile iron, restrained mechanical joint compact fittings for water service complying with AWWA Standard C153. Unless otherwise specifically shown or noted, no PVC fitting, other than in—line repair couplings, will be accepted.

GENERAL NOTES (CONT.)

- 31. All water main fittings in addition to joint restraints shall be anchored with poured concrete thrust blocks as shown in the miscellaneous details drawings. Wrap fittings in minimum 5-mil plastic (PVC) wrap prior to forming and pouring the block.
- 32. 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.
- 33. 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.
- 34. 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.
- 35. 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.
- 36. If sewer or other sanitary facilities are 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.
- 37. 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.

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 reseded 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).

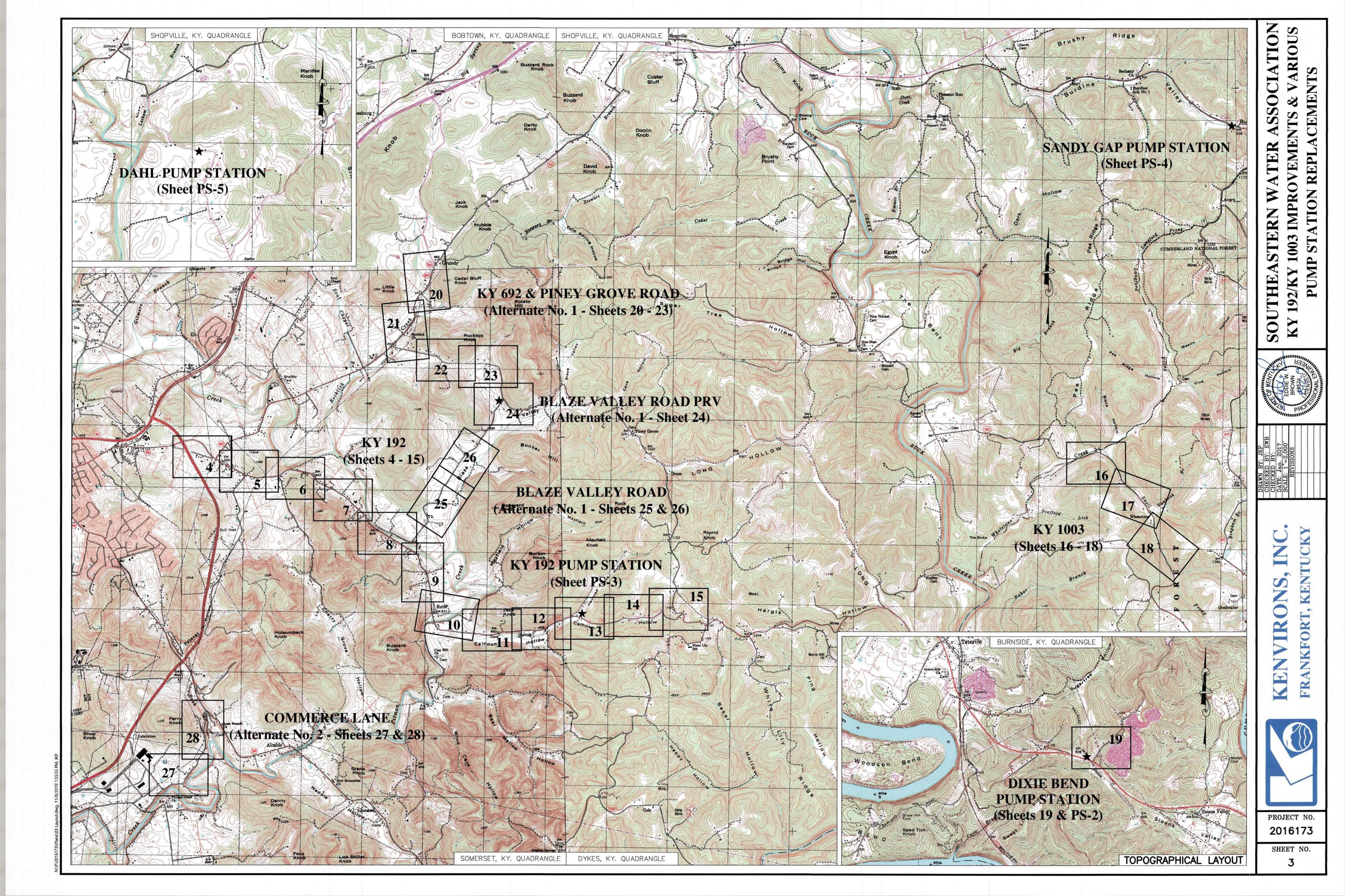
HIGHWAY DEPARTMENT NOTES

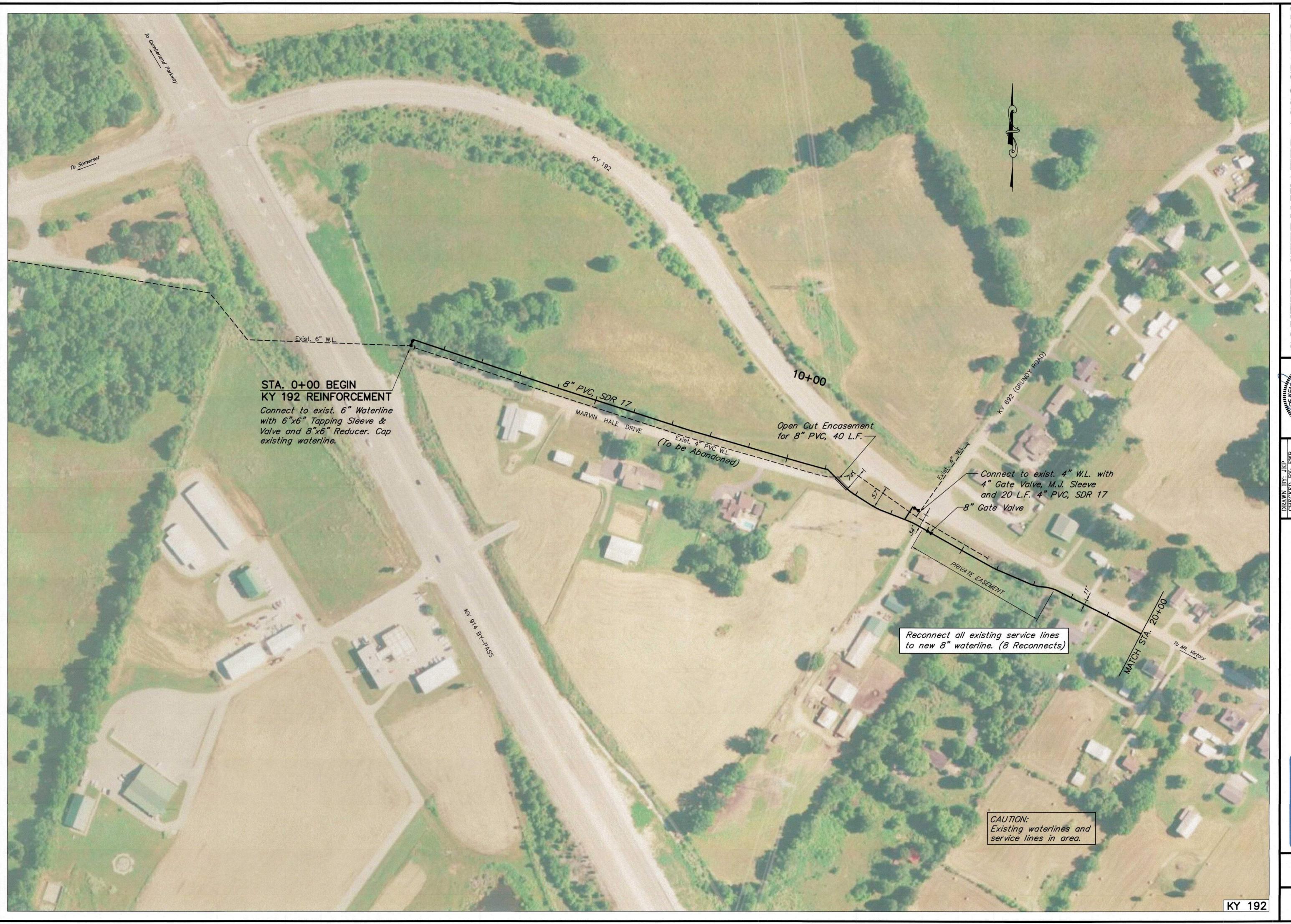
- 1. Underground utilities installed inside state right of way shall be located within 3—5 feet from the edge of the right of way unless otherwise shown on the plans.
- 2. Underground utilities on state right of way shall be installed at a minimum depth of 42" (under roadways, ramps, ditch lines and in all other areas within state right of way), as mandated by KYTC District 8.
- 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 KYTC-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.
- 11. All machinery shall use steel plates to protect the existing pavement of state highways while installing utilities parallel to said state highways.
- 12. When installing utilities around existing drainage structures, the utility shall be cased along the entire length of the drainage structure to protect the utility and drainage structure.



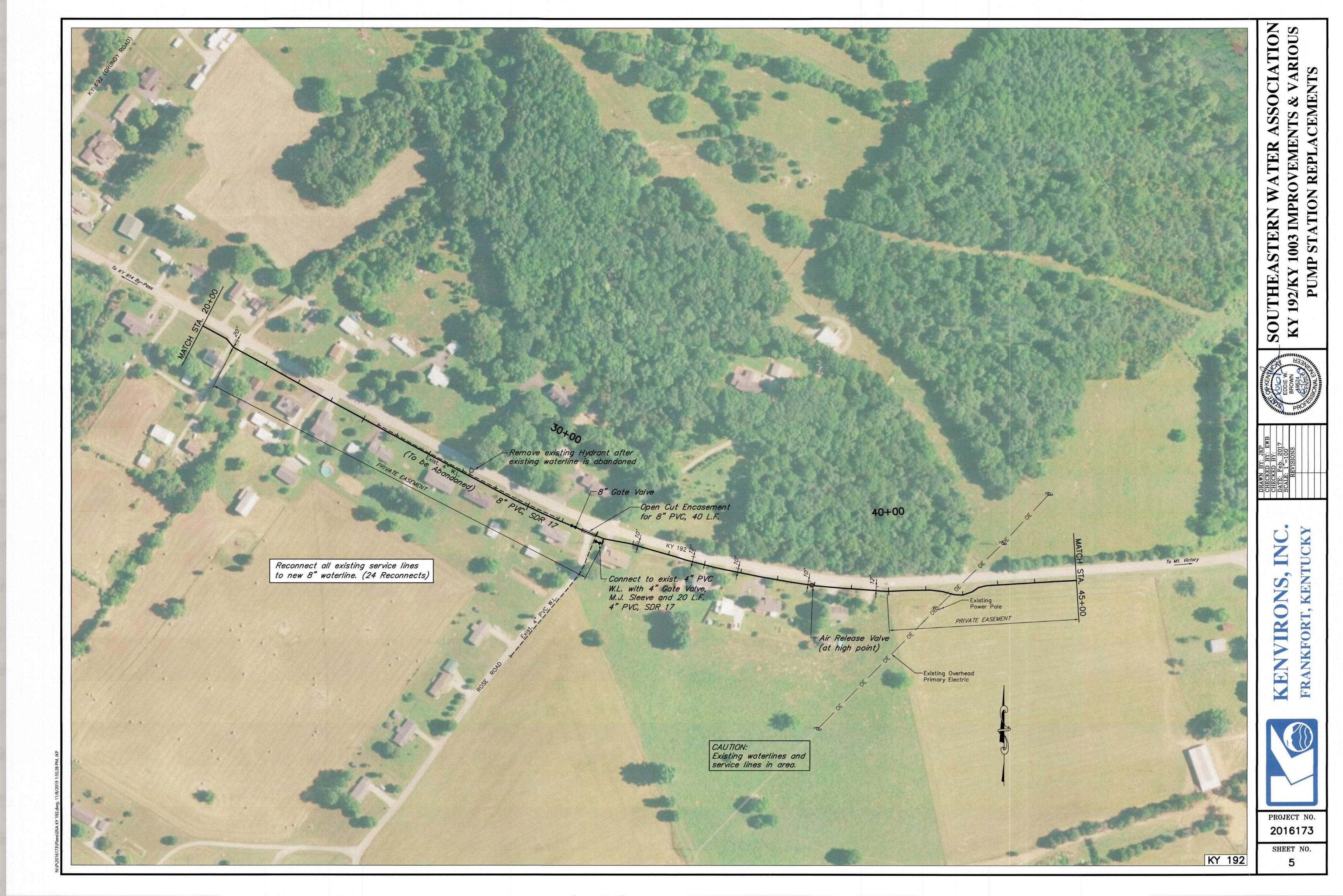
SOUTHEASTERN WATER ASSOCIATION KY 192/KY 1003 IMPROVEMENTS & VARIOUS PUMP STATION REPLACEMENTS

PROJECT NO. 2016173











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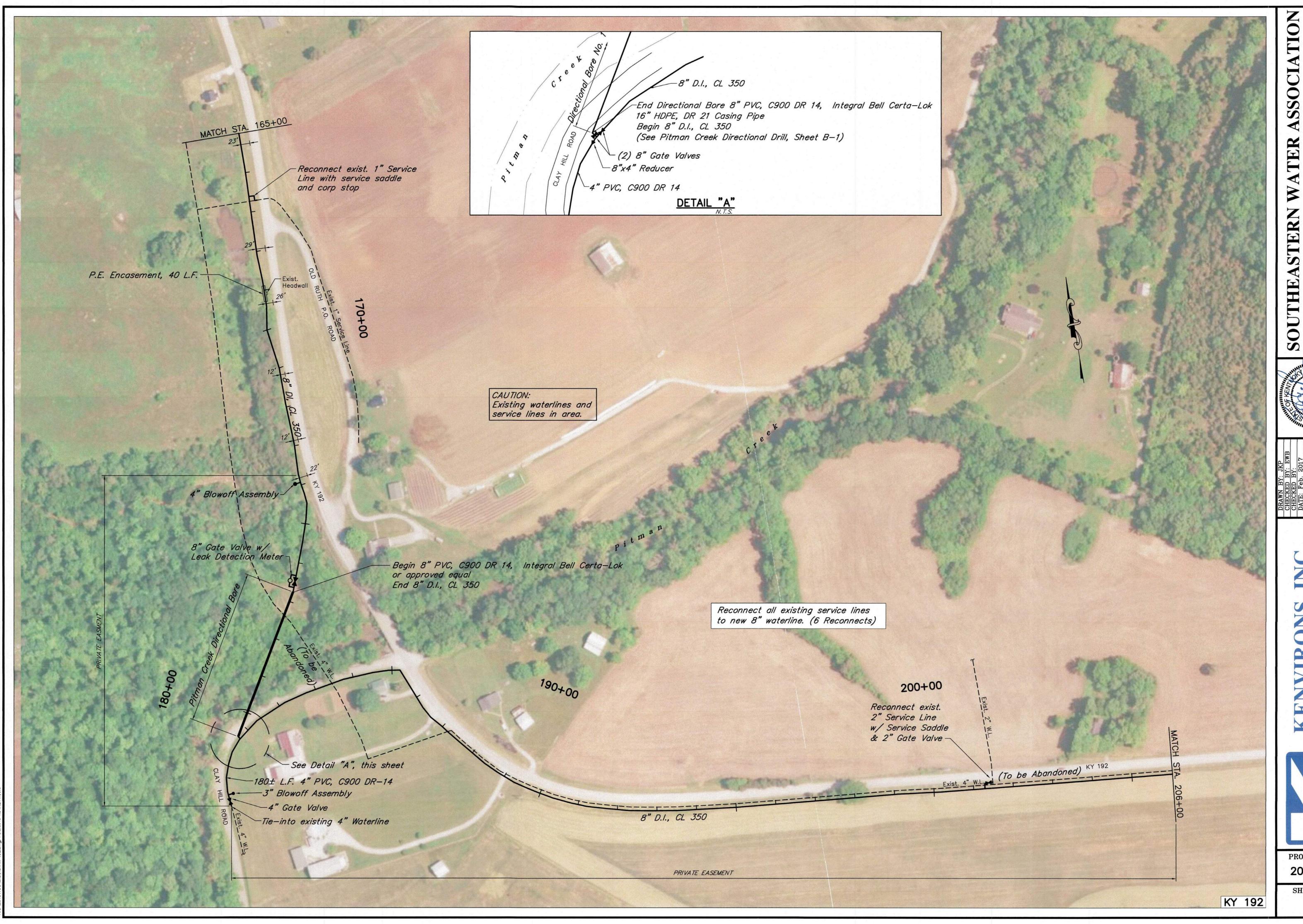
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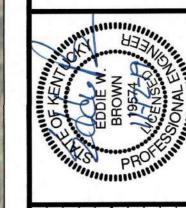


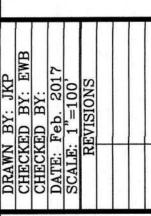
PROJECT NO. 2016173

PUMP STATION REPLACEMENTS









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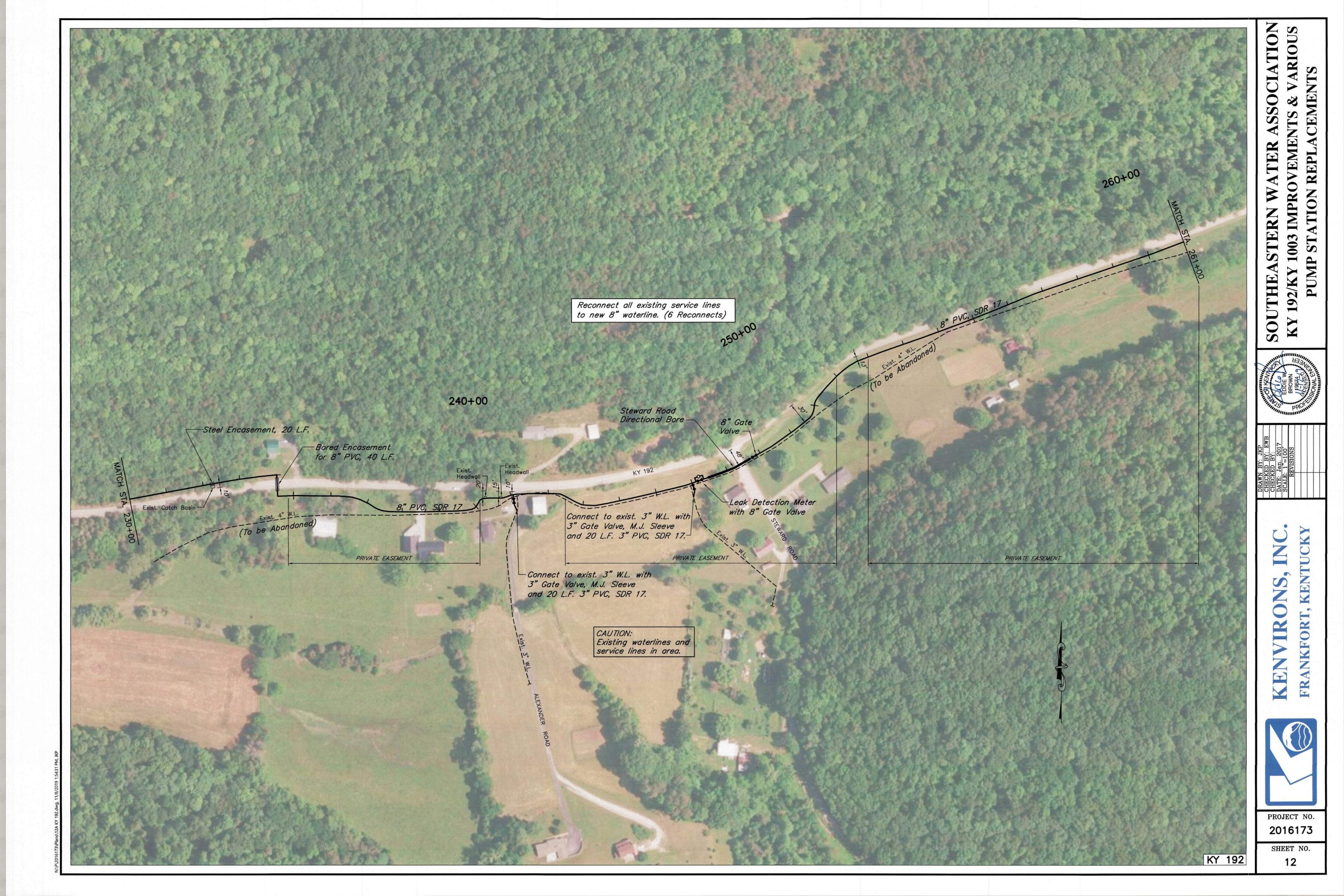


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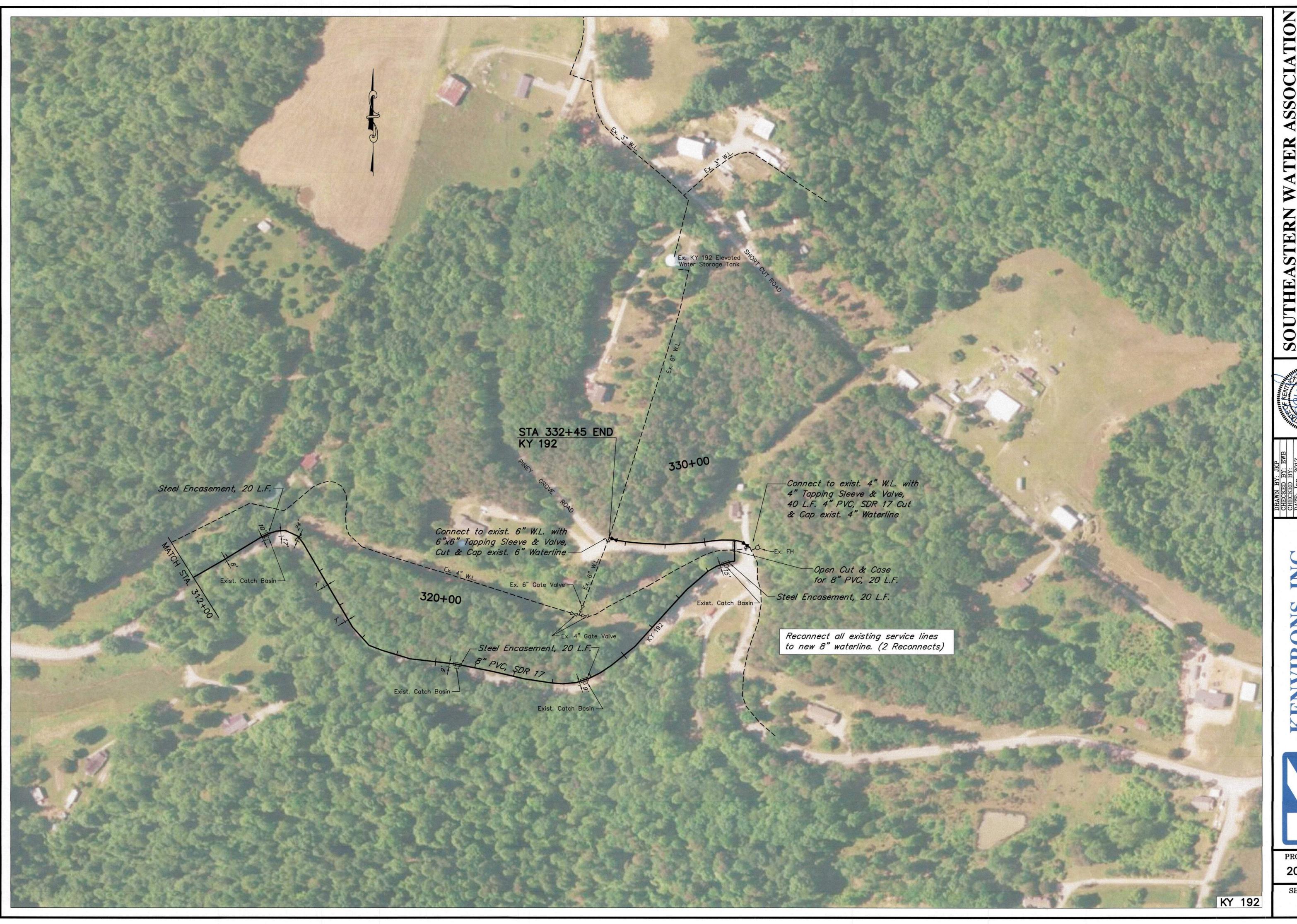


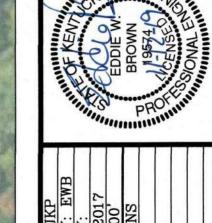


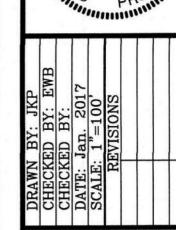
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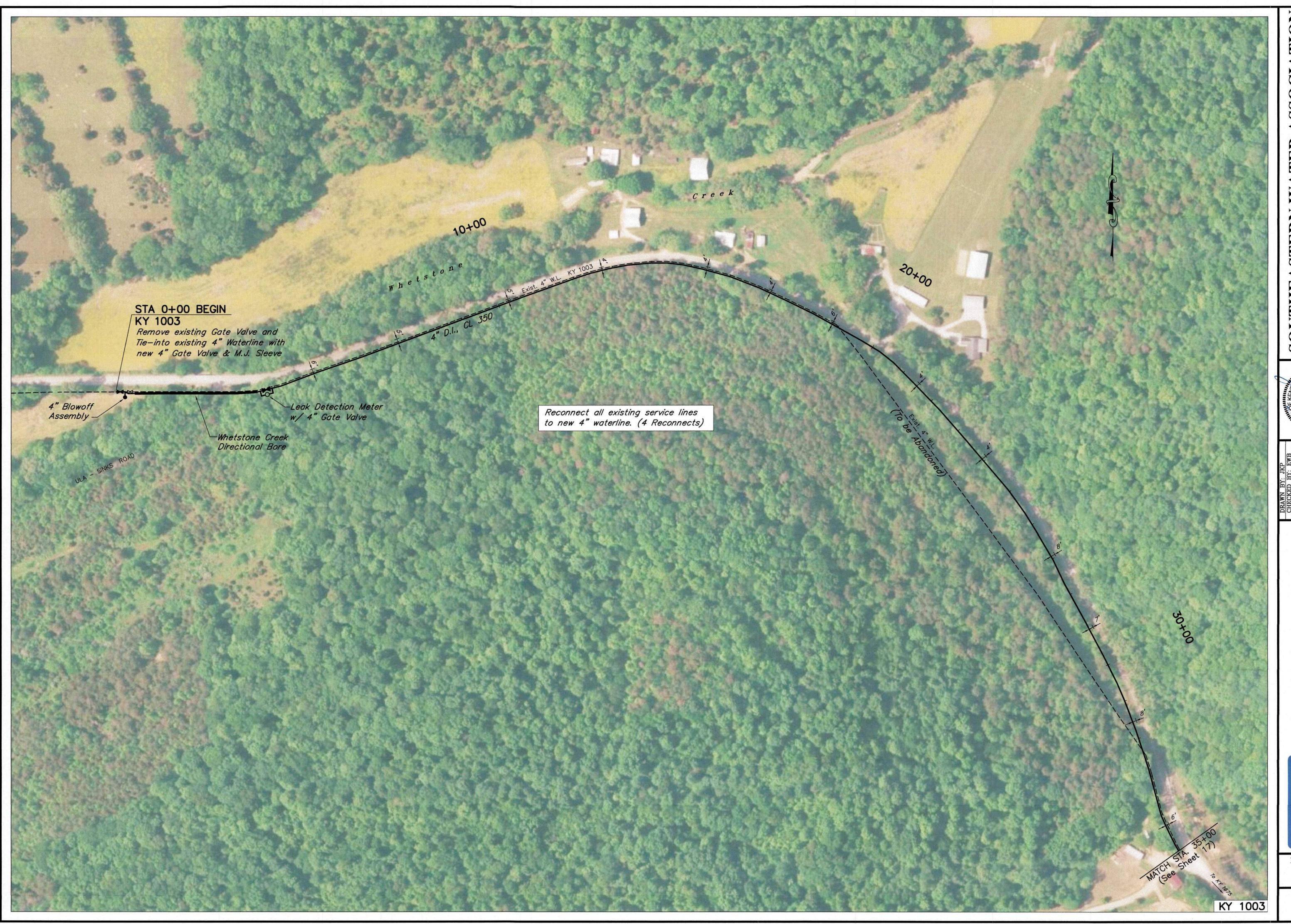




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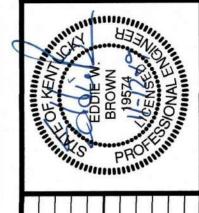


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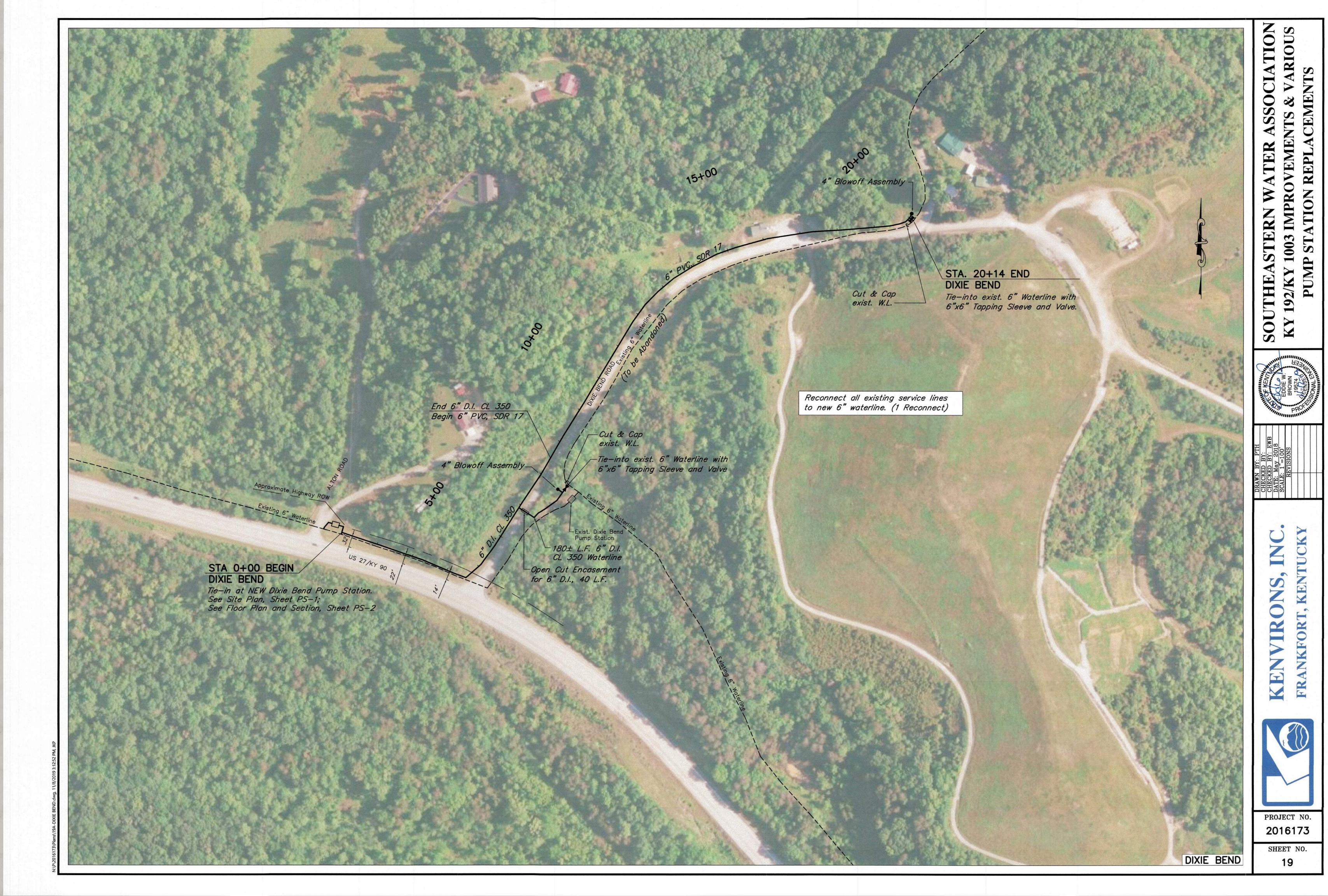






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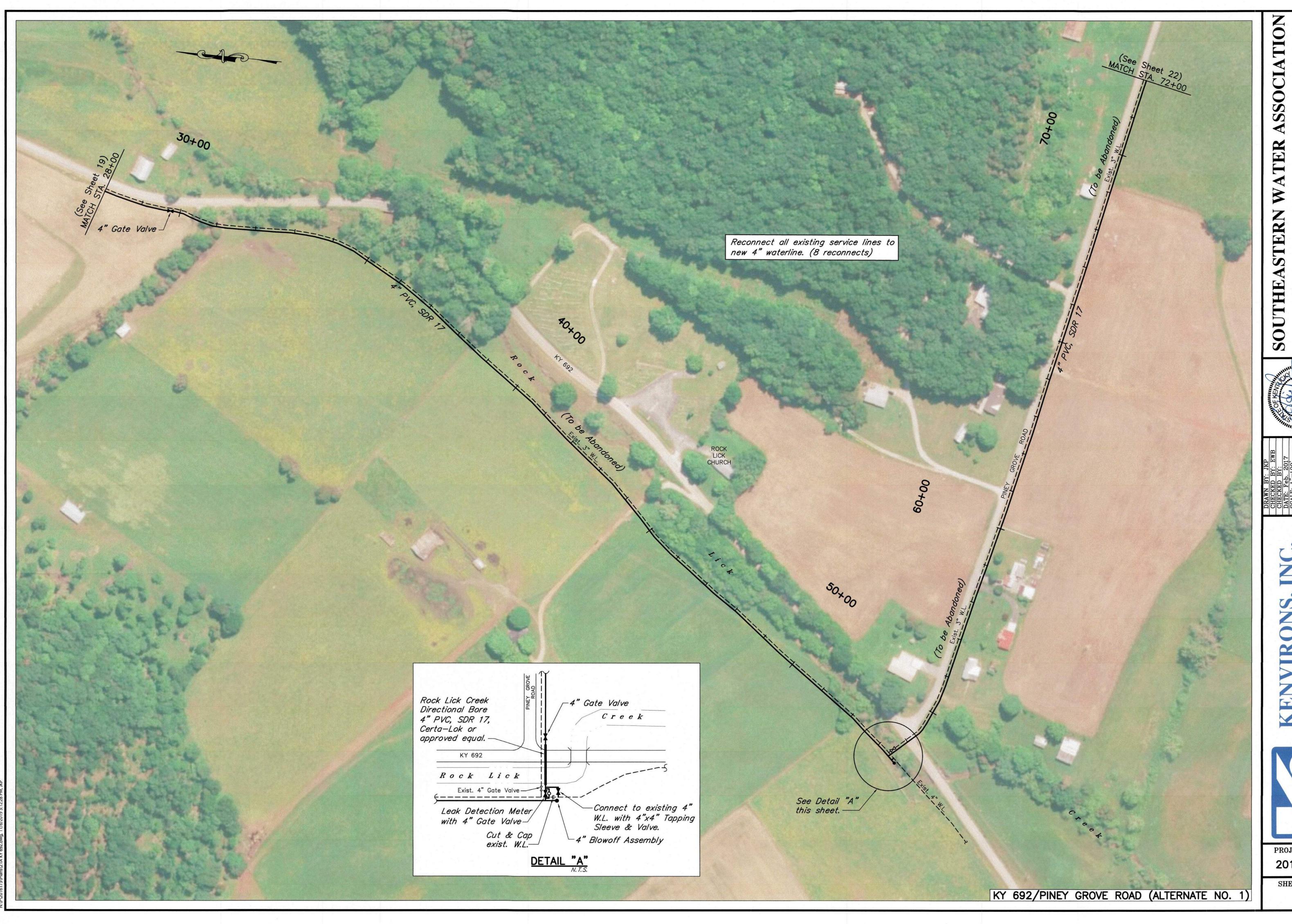
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PUMP STATION REPLACEMENTS



PROJECT NO. 2016173





SHEET NO.

21

SOUTHEASTERN WATER ASSOCIATION KY 192/KY 1003 WATERLINES & SANDY GAP/DIXIE BEND PUMP STATION REPLACEMENTS

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ENVIRONS, INC.
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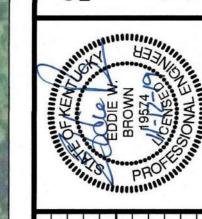
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SOUTHEASTERN WATER ASSOCIATION

KY 192/KY 1003 WATERLINES & SANDY GAP/

DIXIE BEND PUMP STATION REPLACEMENTS



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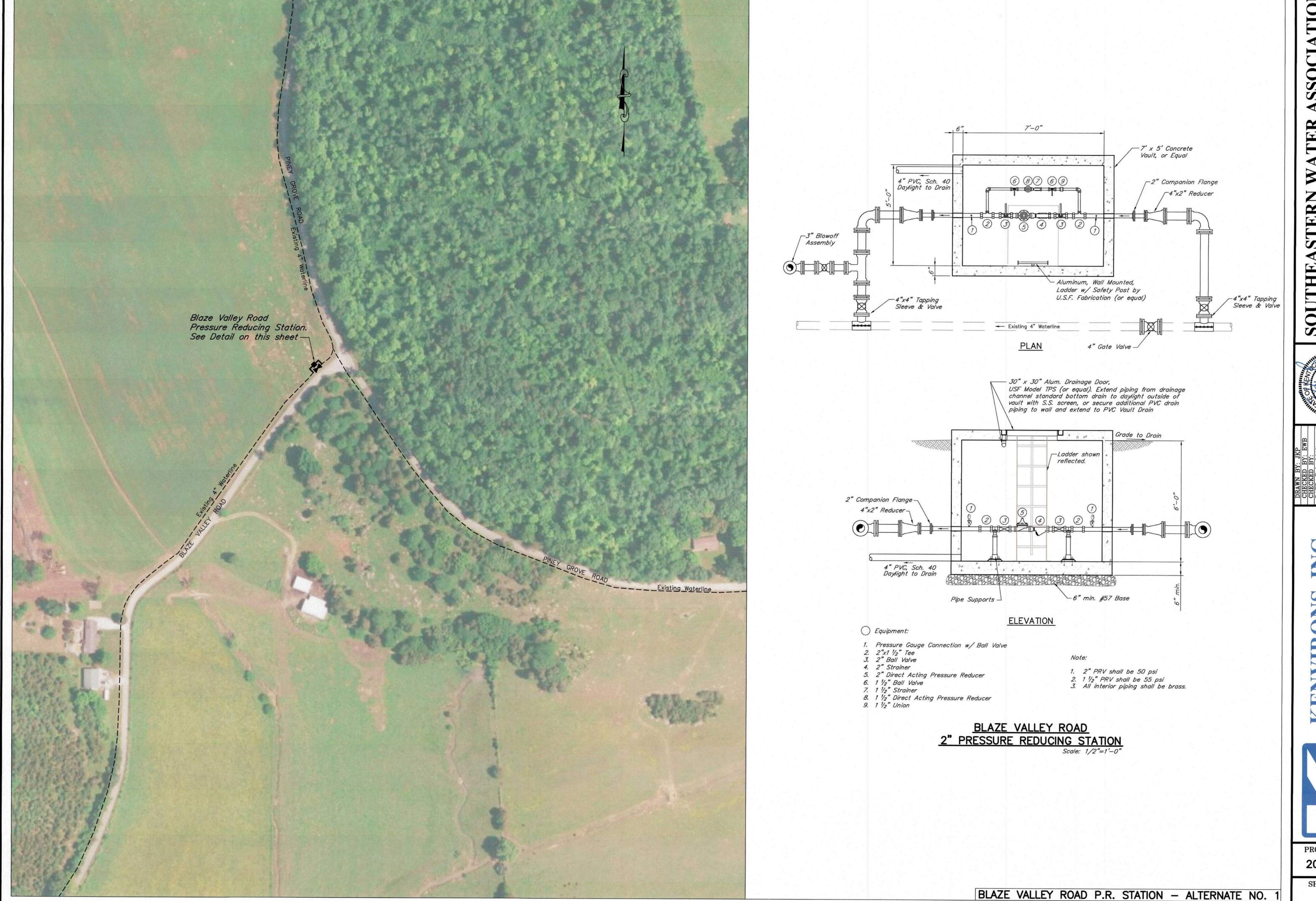
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PROJECT NO. 2016173

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SCALE: 1"=100'
REVISIONS

RONS, INC.

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PROJECT NO. 2016173

SHEET NO.

24



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10NS
TO 19574
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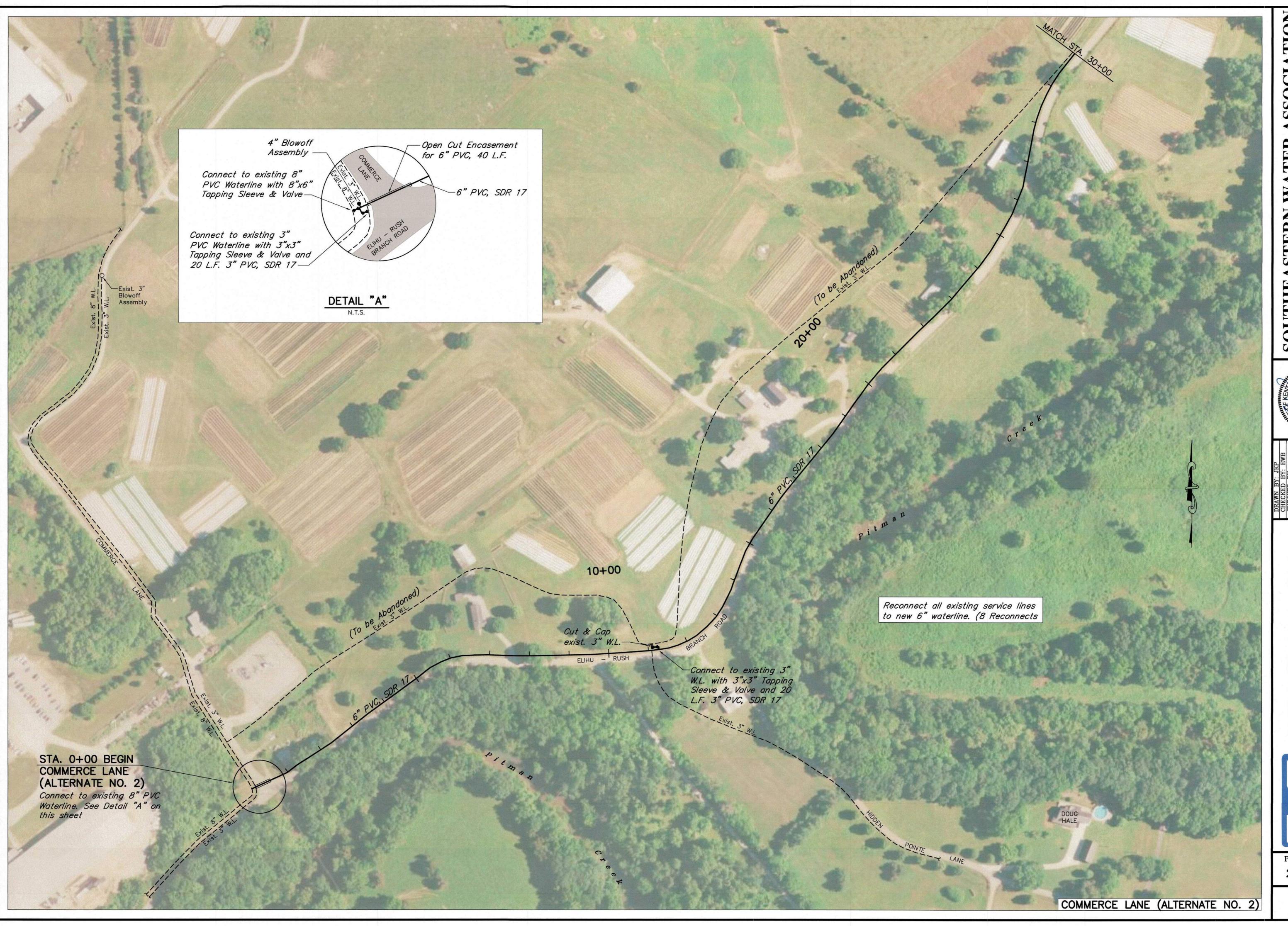
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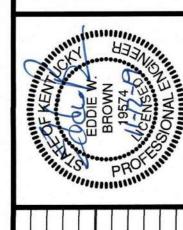
VIRONS, INC.

PROJECT NO. 2016173

SHEET NO.

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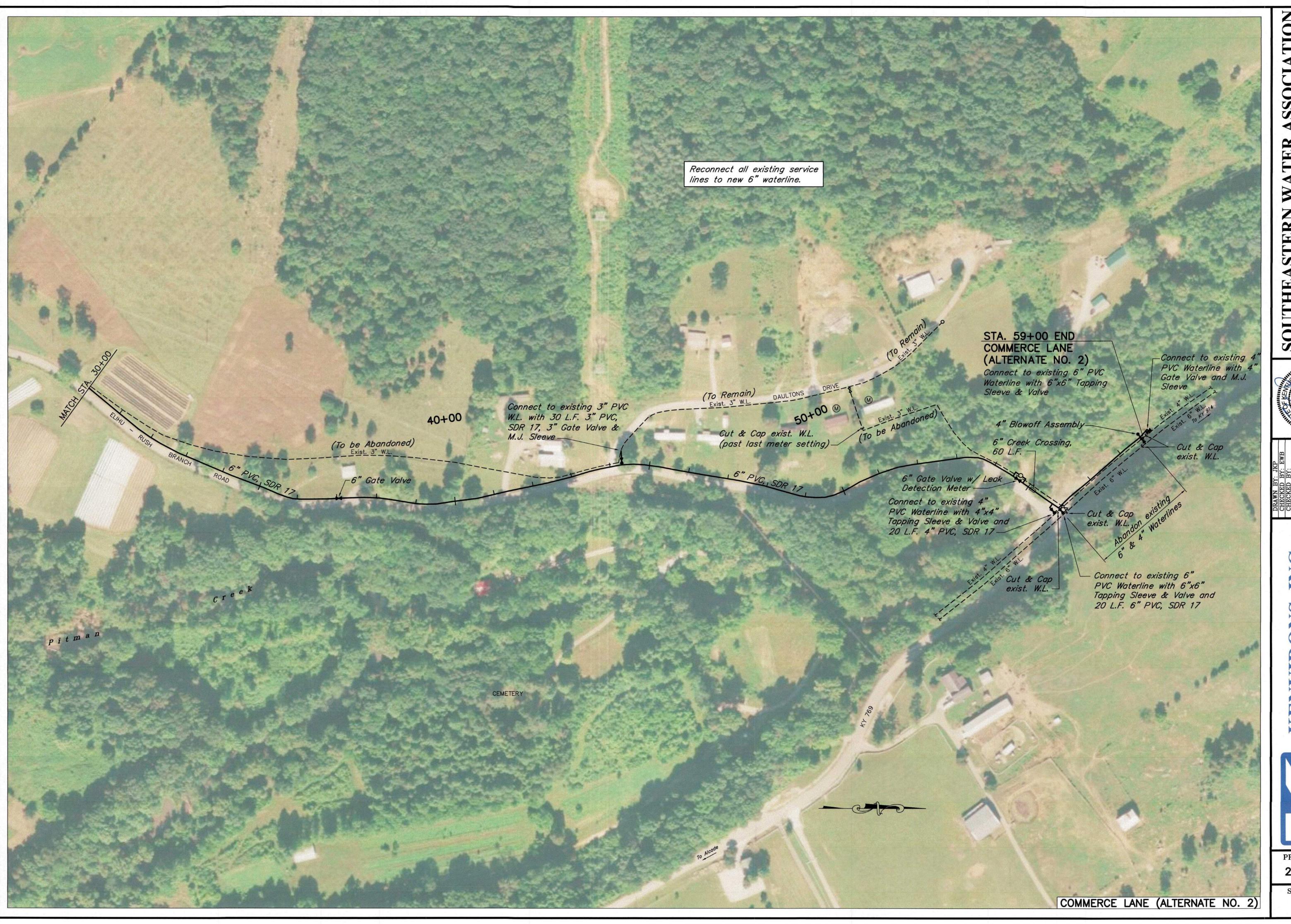


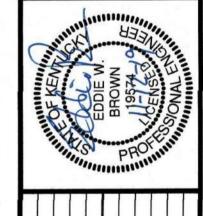
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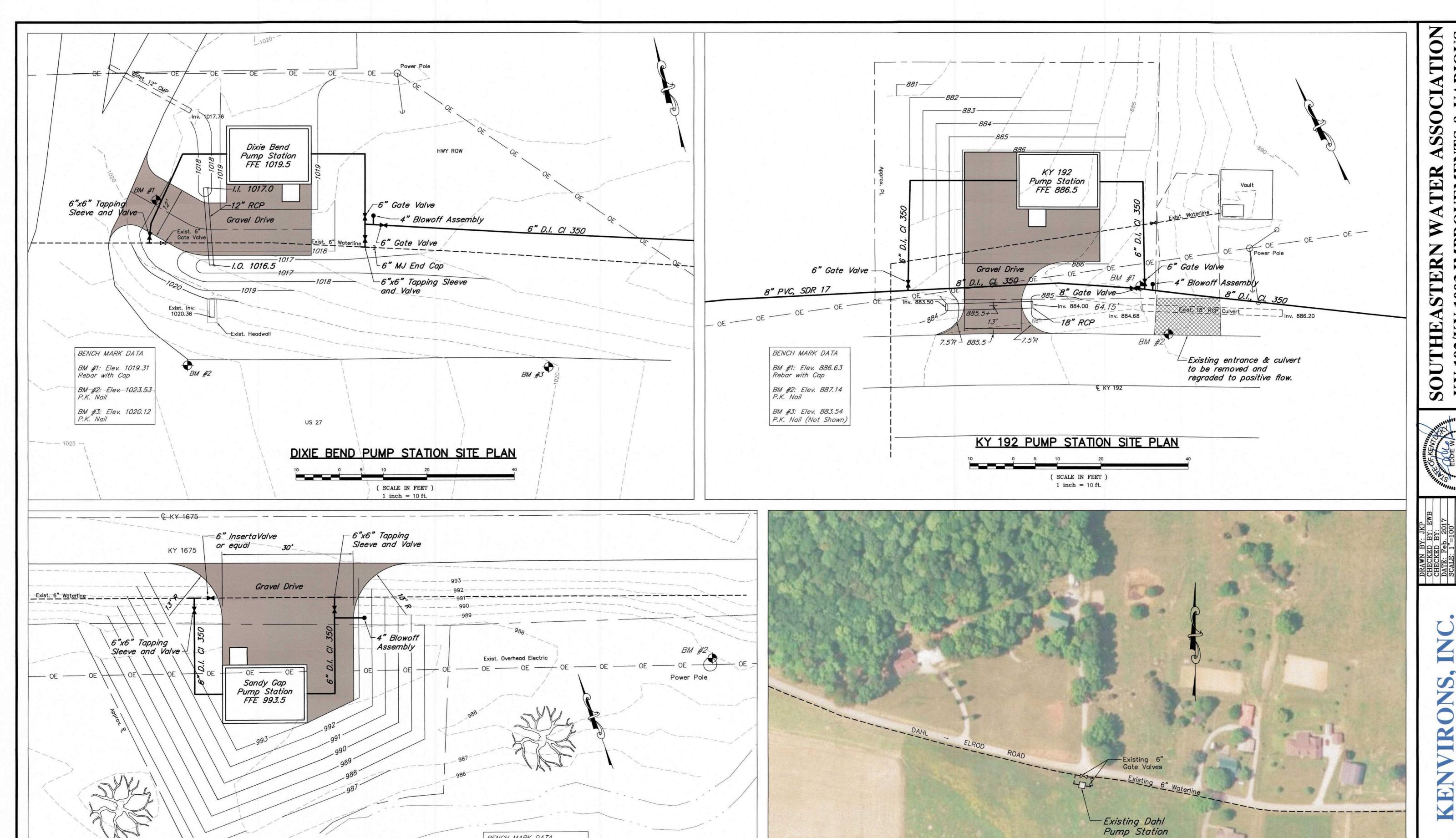


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KENVIRONS, INC. FRANKFORT, KENTUCKY



PROJECT NO. 2016173



BENCH MARK DATA

BM #2: Elev. 988.91 Rebar with Cap

BM #4: Elev. 996.83 P.K. Nail (Not Shown)

BM #3: Elev. 994.51 Control Nail (Not Shown)

SANDY GAP PUMP STATION SITE PLAN

(SCALE IN FEET)
1 inch = 10 ft.

BM #1: Elev. 995.04 Rebar with Cap (Not Shown)

REPLA

DAHL PUMP STATION REHAB

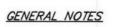
1 inch = 100ft.

PROJECT NO. 2016173

SHEET NO. PS-1

PUMP STATION SITE PLANS

SHEET NO. PS-2



- 1. All flanged piping shall be rated for 350 psi. Standard flat gaskets will not be allowed. Gaskets, such as American's Toruseal, rated for 350 psi
- 2. All yard piping shall be ductile iron, CL 350 pipe. All Ductile Iron Piping shall have restrained gaskets. All M.J. fittings, valves, etc. shall be restrained with EBAA IRON MEGALUG Series 1100 or approved equal.
- 3. 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.
- 4. All couplings and flanged coupling adaptors shall be rodded through the adjacent flanges and bolted securely.
- 5. 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
- 6. Caulk all control joints, construction joints including slab to wall joint, and frame installations.
- 7. All conduits shall be aluminum. Seal the tubing raceways.
- 8. Use shark bite fittings with all tubing.
- 9. Apply acrylic tinted floor sealer to concrete floor after all construction is complete inside pump station. Sherwin Williams HC 132, H and C siliconized acrylic, gull grey (or equal).
- 10. Construct a 3/4" chamfer at all construction joints and corners.
- 11. All interior piping, valves, pumps and metal surfaces shall receive one (1) coat of Tnemec 66 HB Epoxoline and one (1) finish coat of Tnemec EnduraShield Polyurethane or approved equal.
- 12. Floor shall be sloped to drain between 1/4" & 1/8" per foot.
- 13. Tubular Skylight shall be 14" in diameter with a Tube Reflectivity of 98%. The short shaft installation shall include a severe weather roof dome, a formable leak-proof roof flashing, mirror finish adjustable tubes, a ceiling trim ring, and a standard diffuser lens assembly. The tubular skylight shall be as manufactured by ODL (or approved equal). The diffuser lens assembly shall be located as close to the center of the ceiling as
- 14. The Contractor shall provide a heavy duty wagon with a 24"x36" 12-gauge steel deck with a 1-1/2" retaining lip. The wagon shall have a deck capacity of 1,200 pounds. See specifications for a more detailed description.

Pump-

- 4" Flanged Adapter Nipple,

Victaulic (Class 150)

4" Grooved Pipe Coupling,

Victaulic Style 31

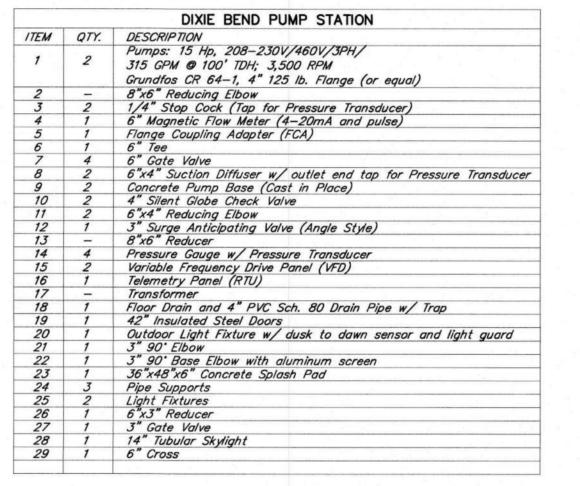
DIXIE BEND-FLOOR PLAN & SECTIONS

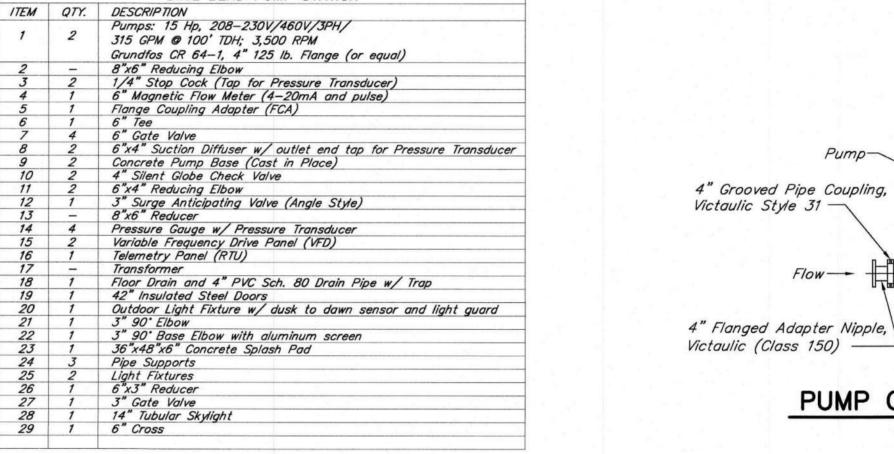
PUMP CONNECTIONS

4" Grooved Pipe Coupling,

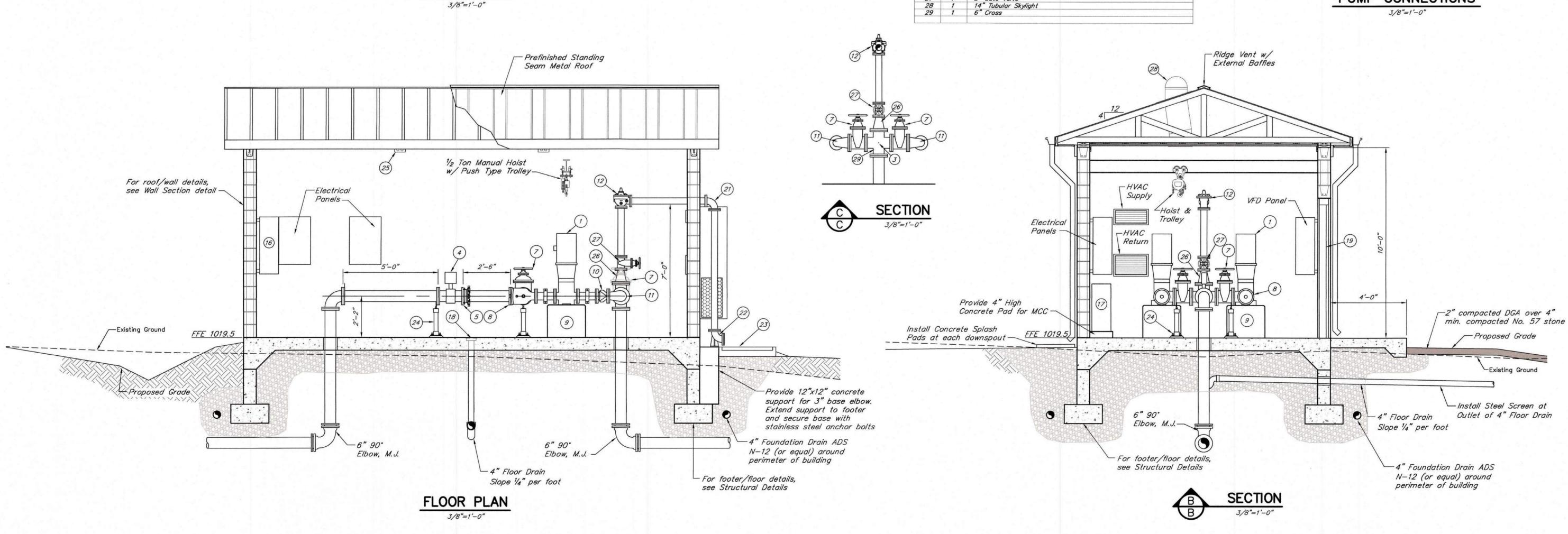
Flow-

Victaulic Style 31 -









- HVAC Unit

3'-0"

Class 2 Channel

Lining, 3'x3'x18" thick →

24'-0"

22'-8"

Temperature Sensor

-Door Open/

Concrete Stoop

4'-0"

FLOOR PLAN

Close Sensor

Electrical

Panels

Pump

6" D.I., CL 350

(16)

Genset Recept .-

15

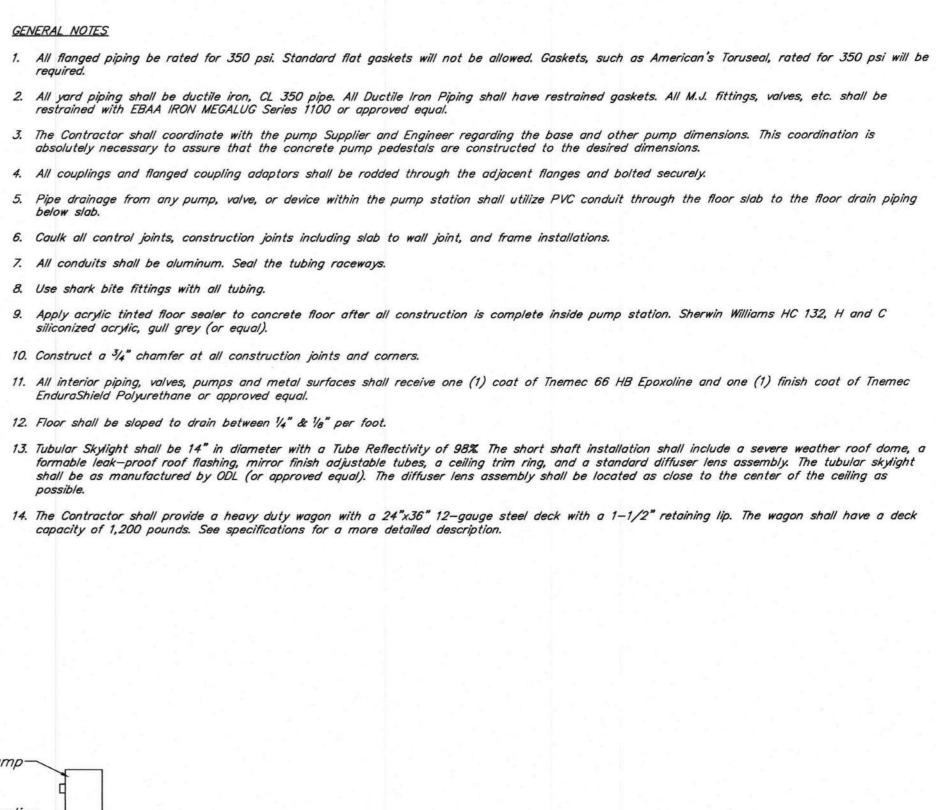
MTS

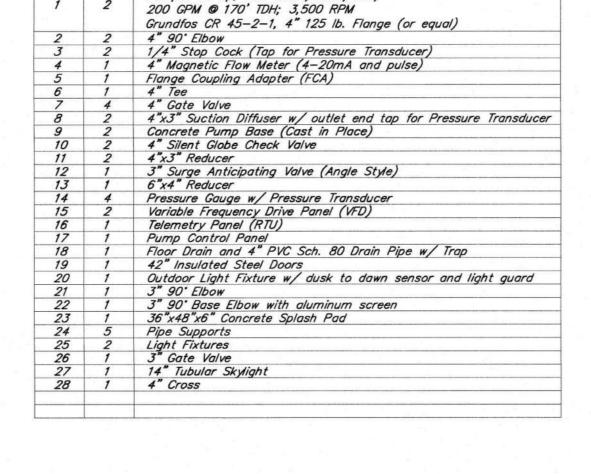
Control

Splash Pad-

6'-4 1/4"

> SHEET NO. PS-3





KY 192 PUMP STATION

Pumps: 15 Hp, 208-230V/460V/3PH/

-HVAC Unit 1 14 1

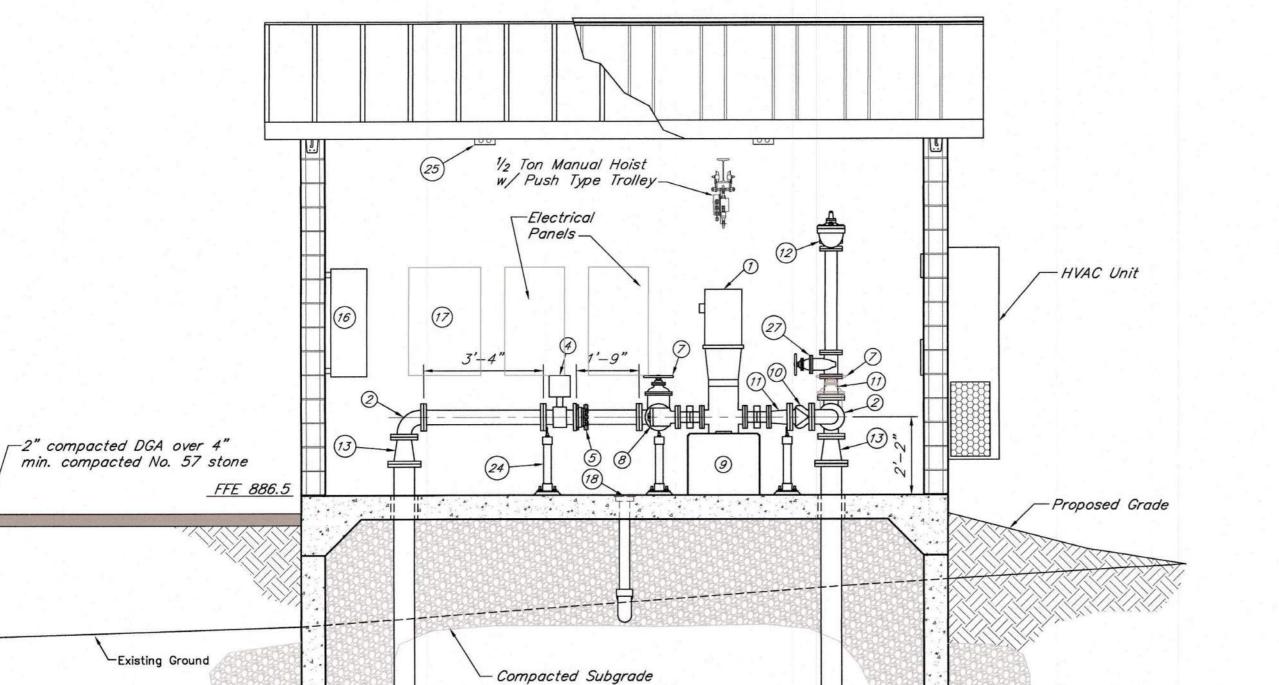
ITEM QTY.

DESCRIPTION

3" Grooved Pipe Coupling, Victaulic Style 31 -3" Flanged Adapter Nipple, Victaulic (Class 150) Flow--3" Grooved Pipe Coupling, 3" Flanged Adapter Nipple, Victaulic Style 31 Victaulic (Class 150) —

PUMP CONNECTIONS

Ridge Vent w/ -External Baffles HVAC Return 4'-0" —2" compacted DGA over 4" min. compacted No. 57 stone FFE 886.5 Proposed Grade Class 2 Channel Lining, 3'x3'x18" thick—— Existing Ground -4" Floor Drain - Install Steel Screen at Outlet Slope 1/4" per foot - Compacted Subgrade of 4" Floor Drain (No. 57 stone) 4" Foundation Drain ADS N-12 (or equal) around perimeter of building 6" 90° Elbow, M.J. – Stone under footers



6" 90°

Elbow, M.J.

Class 2 Channel

Lining, 3'x3'x18"

23

Wagon

-Genset Recept.

Meter

Flow -

6" D.I., CL 350

-4" Foundation Drain ADS

N-12 (or equal) around

perimeter of building

Flow -

thick -

18'-0"

16'-8"

Electrical

(14)

Panels

-Temperature Sensor

Door Open/

Close Sensor

4'-0"

Flow - 6" D.I., CL 350

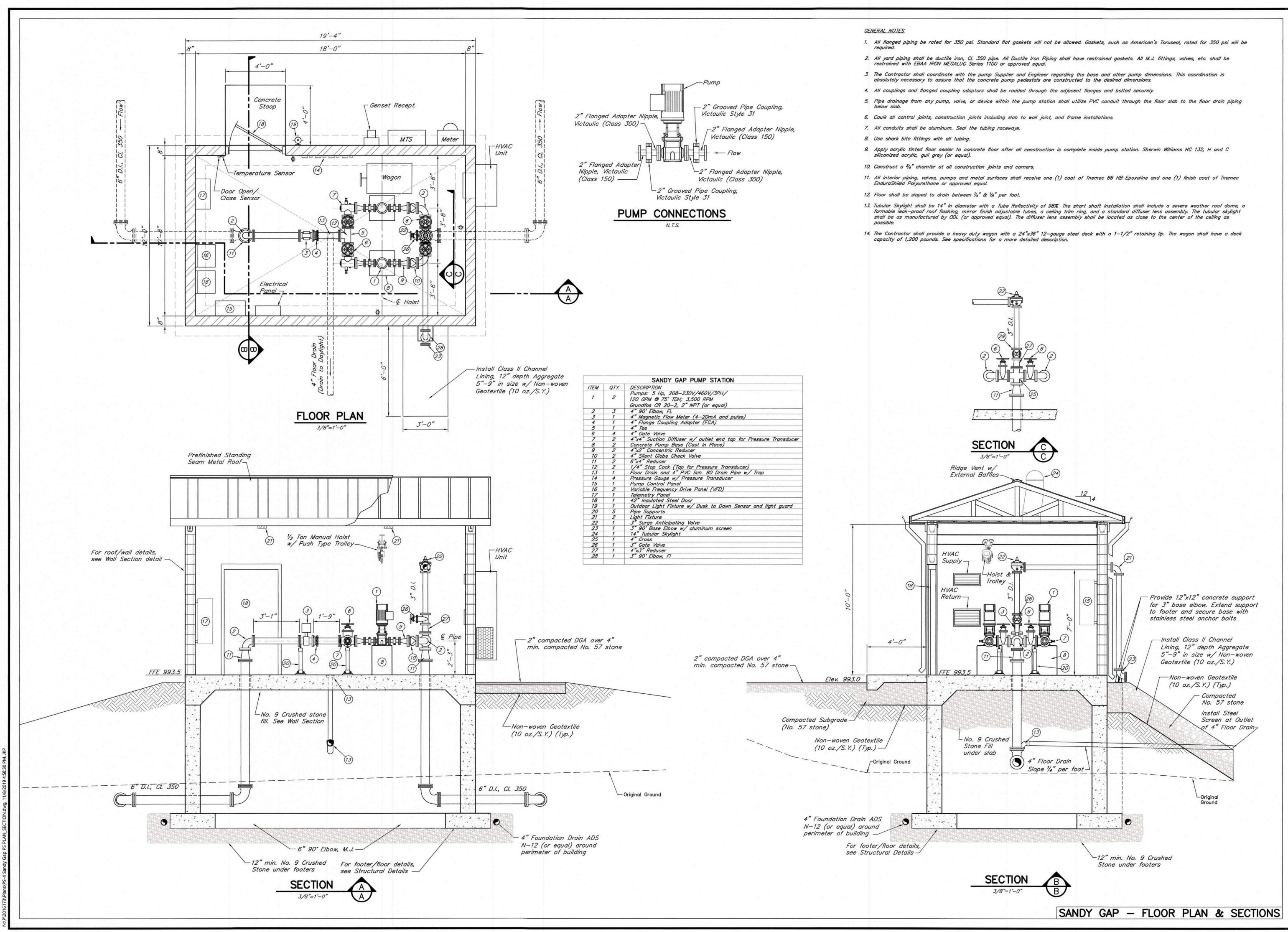
Flow -- 8

12" min. No. 9 Crushed Stone under footers

(No. 57 stone)

Elbow, M.J.

KY 192 - FLOOR PLAN & SECTIONS





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CHECKED BY: EWB
CHECKED BY:
DATE: Oct. 2016
SCALE: As Noted
REVISIONS

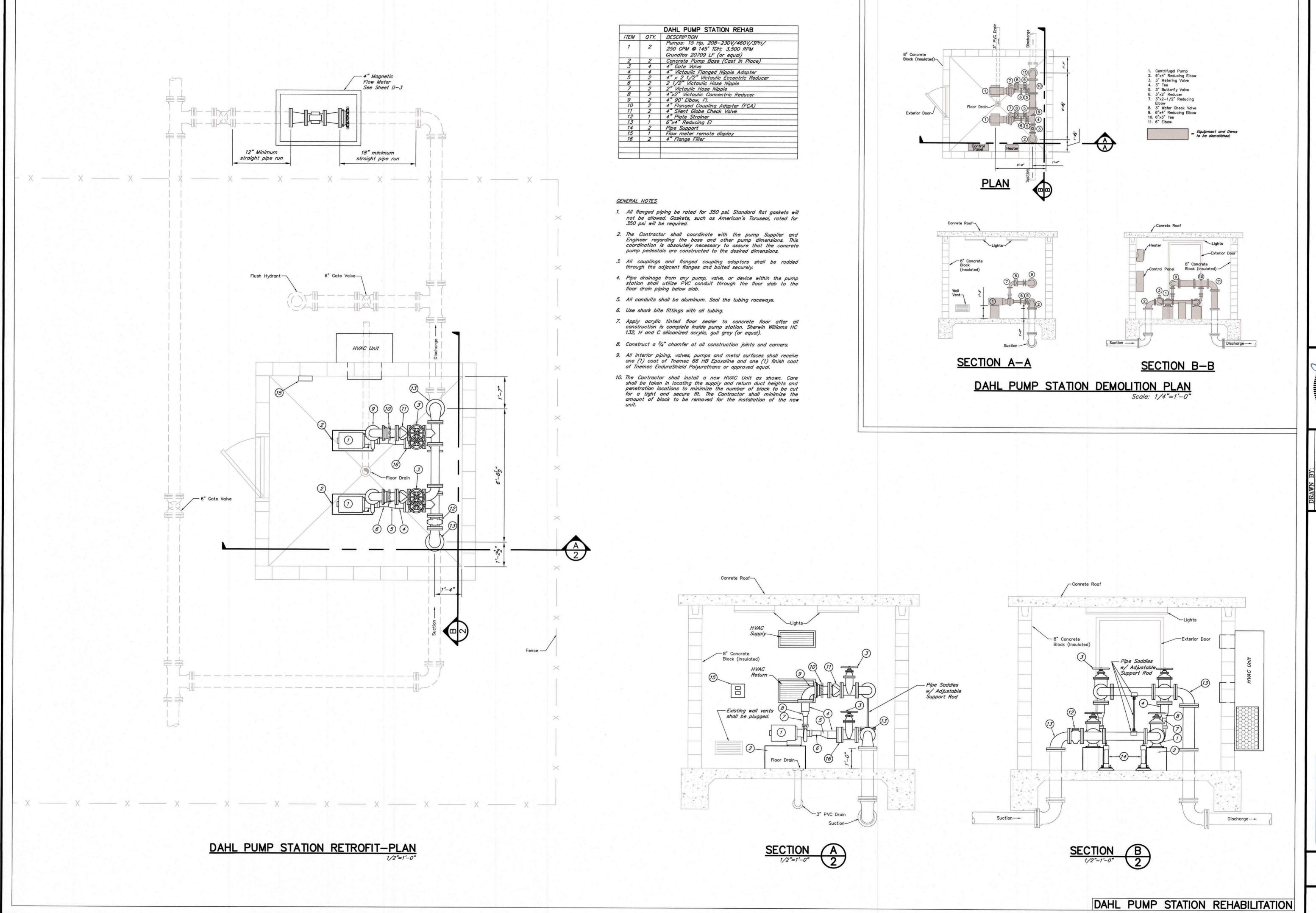
KENVIRONS, INC FRANKFORT, KENTUCK



PROJECT NO. 2016173

SHEET NO.

PS-4



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PROJECT NO. 2016173

SHEET NO. PS-5

PROJECT NO. 2016173 SHEET NO.

PS-6

-Wall mount for pressure gauges, Ridge Vent w/ -Aluminum Drip Edge pressure switches and Mag Meter. External Baffles --Aluminum Wrapped Mount 5' above FFE Wood Trusses Fascia Board Cover. See Note 2 -Bend dimple in cover on gable ends ----4 Min. 1/4" tubing w/ Shark See Detail "A"-Bite fittings--Commercial Grade Vinyl Siding - See Pressure (0.045" min. thickness) Mounting Panel -Monitoring Detail 5" Alum. Gutter & 4" Downspouts -Standing Seam Metal Roof 8" Continuous Bond Beam w/ 30 Lb. Roofing Feltw/ 2-#5 Bar, Grout Solid. 4.5" Pressure Gauge 5/8" Exterior Glued _Pre-Engineered Truss, Plywood, 1 side finished -45-1279AS-02L, or equal -- Provide Horizontal Bull Nose Type. -Ball Valve (typ.) Reinforcement @ 16" - Seal conduit openings w/ 1/4" Tubing with Shark Bite fittings— Vertically (typ.) -R30 Rolled aluminum seal offs (Typ.) Alum. Drip Edge -Fiberglass Insulation The 8" CMU wall shall be heavyweight 2"x6" Fascia Board split-faced block constructed with the Pulsation Damper — DRY-BLOCK system of integral water -CMU wall shall be filled with 3/4" x 1/2" Red. Bushing To Floor Drain repellent admixtures for block and mortar foam installation in block core, - Oversized Aluminum Conduit (Stainless Steel) --Vinyl Soffit Panels, Commercial Grade along with a water repellant sealer both Aluminum Trim Metalsee specifications. with Long Radius Bendsmanufactured by Grace Construction Vinyl Panels (.045 min thickness) For long runs of tubing, Perforated Vinyl Soffit 3/4" Aluminum conduit Products, Cambridge, Ma. or equal. -- For Slab and Footing Details -1"x4" Laths on 12" centers Tap location shall be used to run the Commercial Grade See Structural Drawings. where indicated tubing below the floor slab. Seal ends with threaded -1"x4" Trim (Paint white or 0.045" min. thickness cover w/ Trim Metal) seal-offs. J-Channel-Provide Concrete Splash Double 2"x8" Top Plate w/ 1/2" Pad at each downspout 2"x8" w/ Trim Metal-PRESSURE TAP CONNECTION PRESSURE MONITORING DETAIL Anchor Bolts @ 4'-0" Max. Spacing Filter Fabric -No. 9 Crushed Stone --No. 9 Crushed Stone Fill

WALL SECTION

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

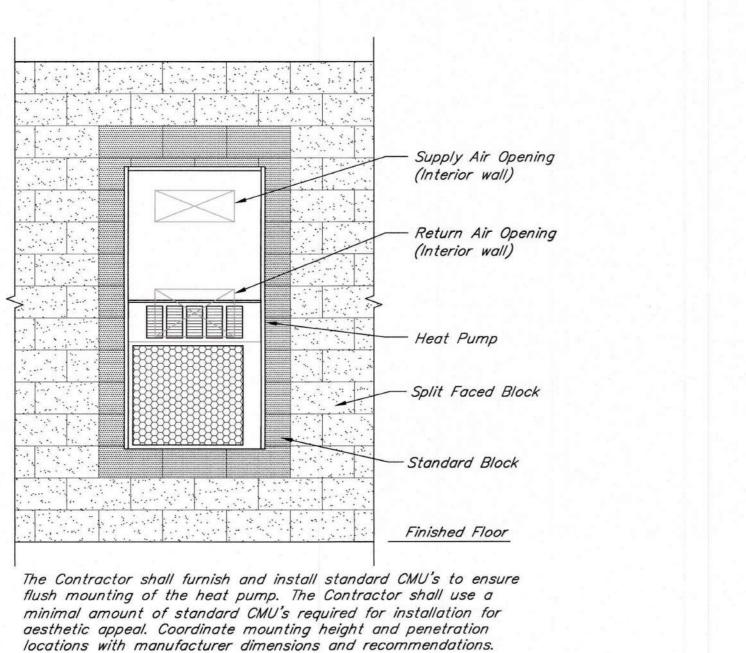
For Slab and Footing Details

See Structural Drawings.

-12" min. No. 9 Stone

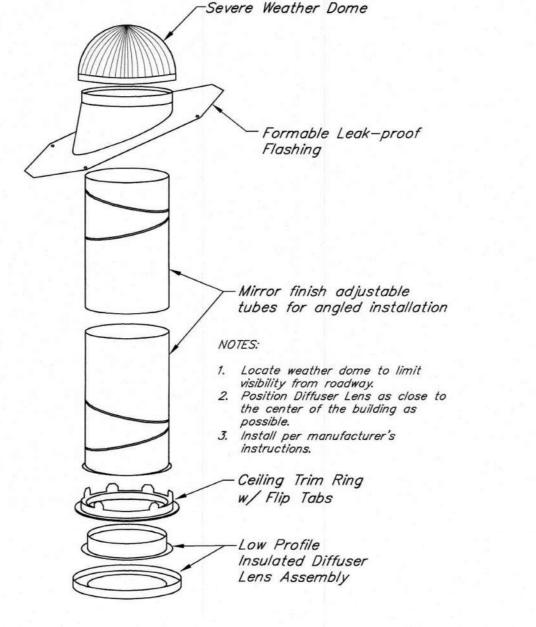
4" Sch. 40 PVC

Foundation Drain-

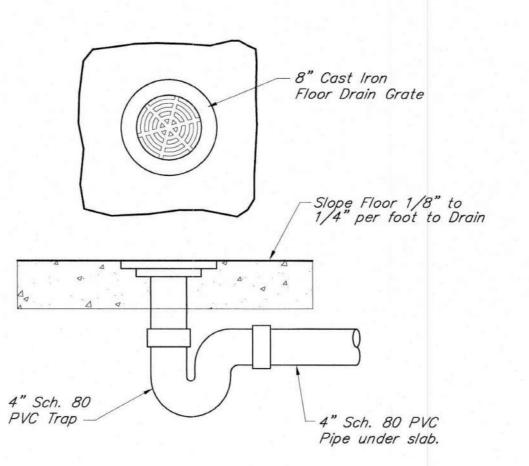


CMU DETAIL AT HEAT PUMP

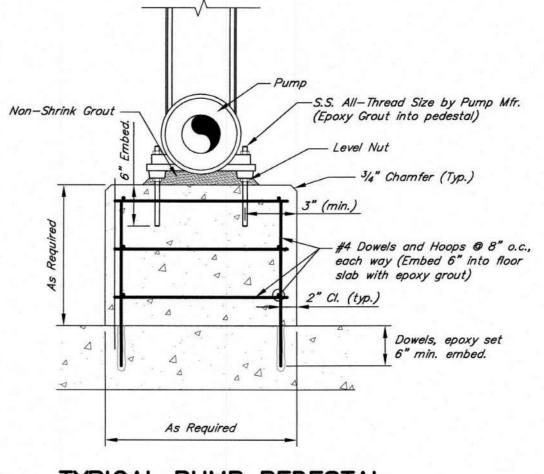
Scale: 1/2"=1'-0"

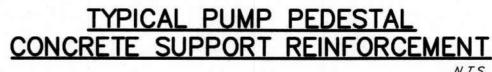


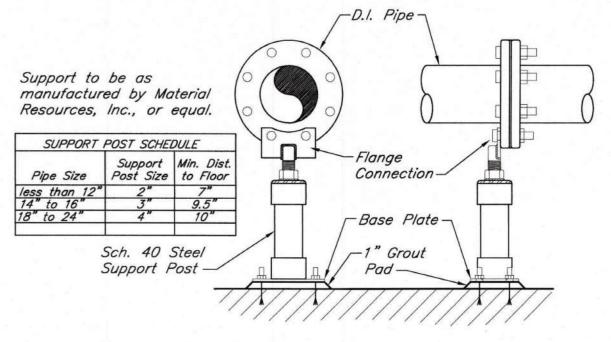
TUBULAR SKYLIGHT



FLOOR DRAIN

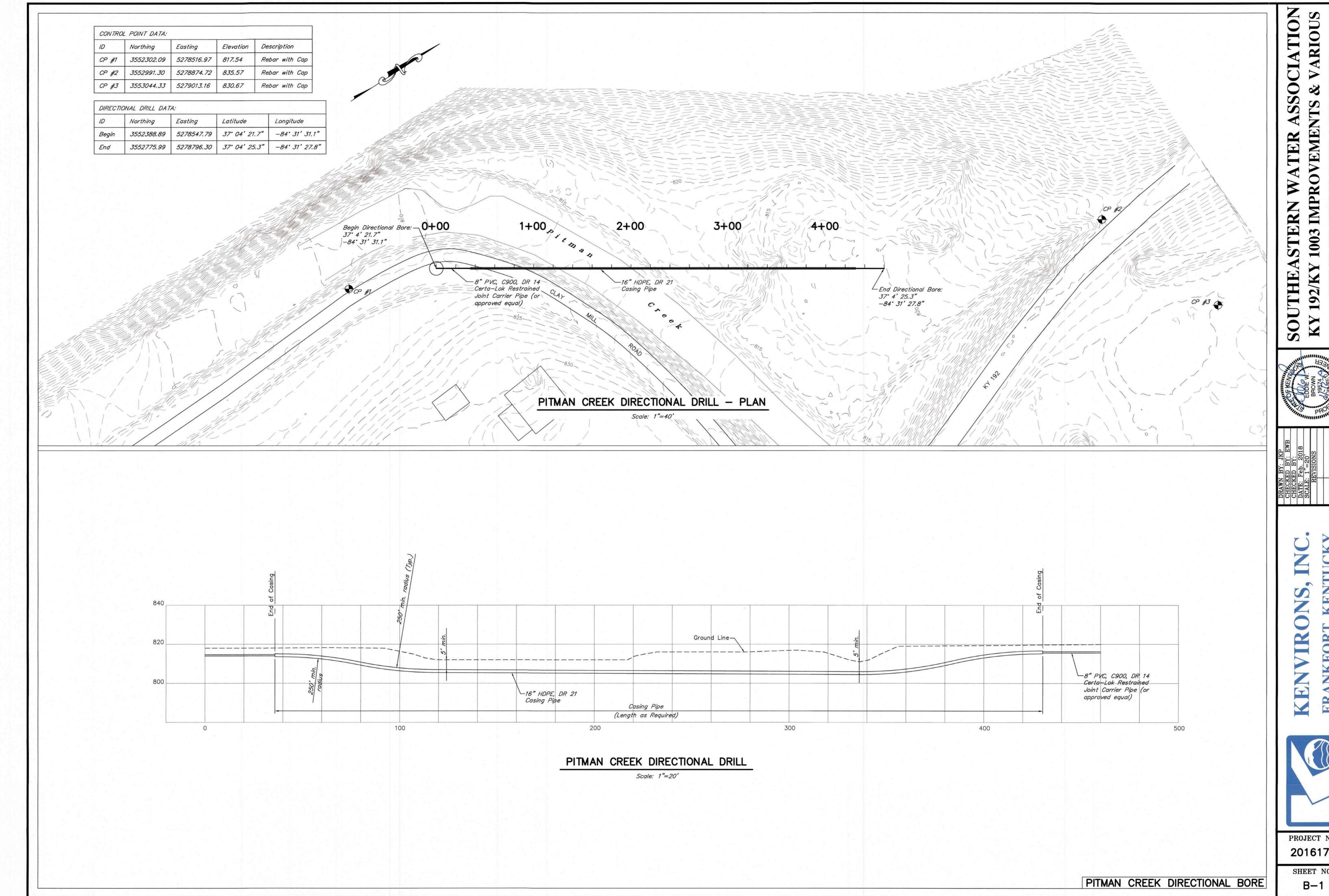






FLANGED PIPE SUPPORT

PUMP STATION DETAILS



1003 IMPROVEMENTS STATION REPLA

FRANKFORT, KENTUCKY

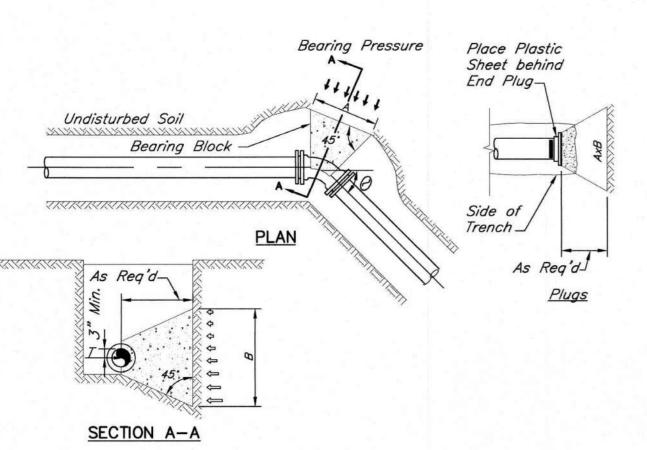


PROJECT NO. 2016173

2016173 SHEET NO.

PROJECT NO.

MISCELLANEOUS DETAILS D-1



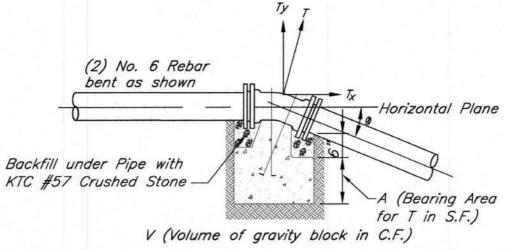
NOTES:

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. Concrete shall be 3000 psi minimum conforming to KTC Specifications 601.
- 4. Accessibility to fittings and bolts must be maintained.
- 5. Wrap fittings in plastic prior to placing concrete.

HORIZONTAL THRUST BLOCK SCHEDULE

PIPE SIZE (INCHES)	90° BEND		45° BEND		22 1/2° BEND		11 1/4° BEND		TEE, DEAD END	
	Α	В	Α	В	Α	В	Α	В	Α	В
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"



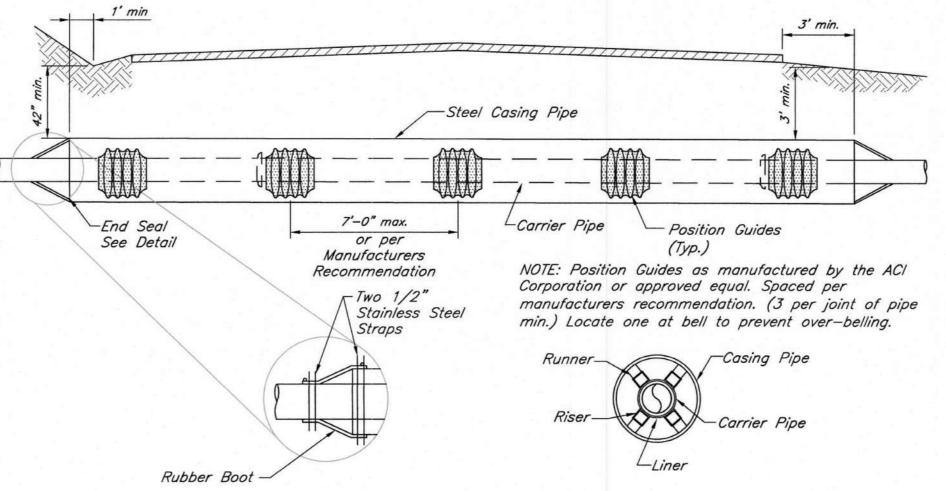
GRAVITY THRUST BLOCK

- 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.
- 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. Concrete shall be 3000 psi minimum conforming to KTC Specifications 601.
- 4. Accessibility to fittings and bolts must be maintained.
- 5. Wrap fittings in plastic prior to placing concrete.

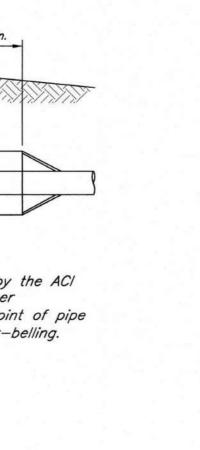
VERTICAL	THRUST	BLOCK	SCHEDULE	

PIPE SIZE	90° BEND		45° BEND		22 1/2° BEND		11 1/4" BEND	
(INCHES)	٧	Α	٧	Α	٧	Α	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



ROADWAY CROSSING INSTALLATION



1. Leak detection Meters shall be installed where indicated on the Plans.

STRAIGHT RUN

-Main Line Tap

BRANCH/TEE

Waterline

Waterline -

Waterline -

(each side of Valve)

5/8" x 3/4" Meter w/

side of Meter Setting

-Valve w/ Valve Box

-Main Line Tap

-5/8" x 3/4" Meter w/

Side of Meter Setting

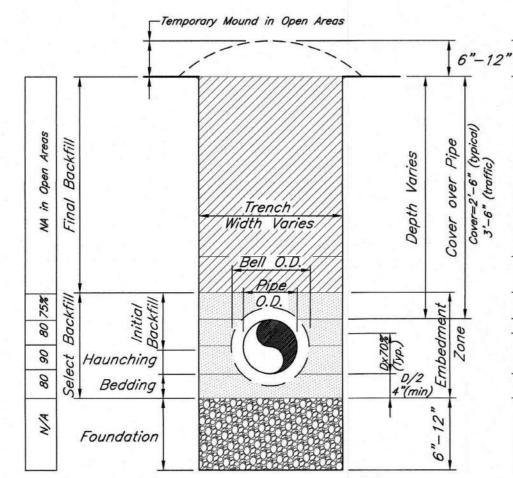
Angle Ball Valve on Each

(each side of Valve)

Angle Ball Valve on each

- 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
June 2016



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

Unless otherwise specified, material excavated from trench may be used for final backfill provided it is relatively free of large rock (>8"), or mixed with sufficient dirt to minimize voids and settlement, and free of other unsuitable materials... as approved by the Engineer

The Engineer may require selective placement of an extra buffer layer for extremely rocky backfill to prevent migration Select backfill, lightly compacted (bucket shaping) using suitable on-site material, or dumped sand. Sand or very select material, hand tamped

Haunching to be carefully placed - Sand or sandy/clay soil. No. 9's may be required if weak foundation is encountered Bedding to be sand or approved equivalent, (except No. 57's may be required if weak foundation encountered) hand placed and smoothed to uniform grade for support of pipe

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

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

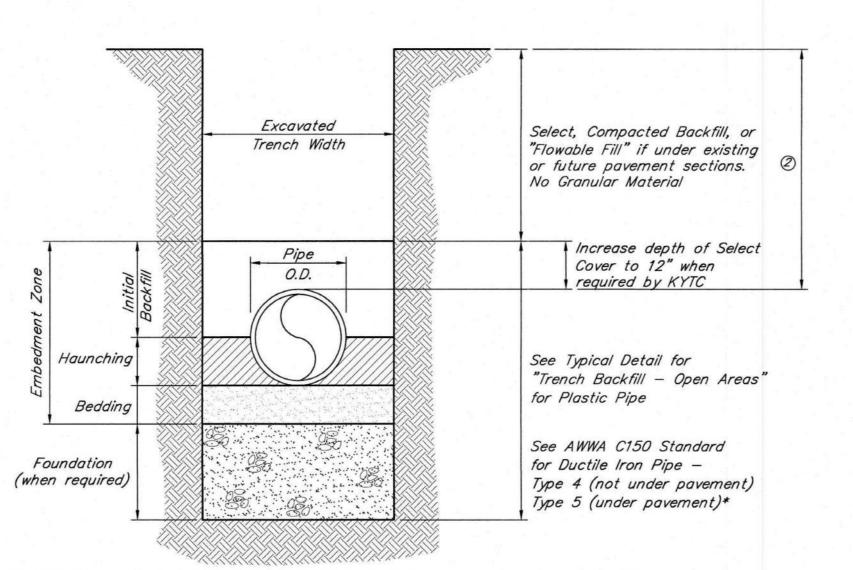
Typical desired densities in open areas are depicted above in the boxes to the left of the figure. In other laying situations, more stringent selection,

Trench width should be no wider than necessary for adequate work room and to assure safe working conditions. Nominal outside diameter (0.D.) pipe plus 6" on each side is typically considered minimal, with 8" minimum on each side for gravity sewer installation. For gravity sewer, pipe to be bedded on No. 9 stone and remainder of embedment zone to be backfilled with sand.

TRENCH BACKFILL OPEN AREAS — PLASTIC PIPE

Mar., 2011

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

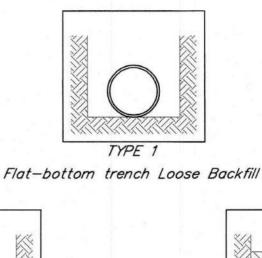


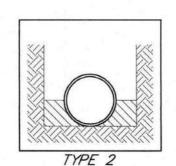
- (1) When "Open-cutting" of State Highway is permitted, pipe laying, encasement requirements, backfill placement, pavement replacement, etc. shall be as required by the encroachment permit issued by the Kentucky Transportation Cabinet (KYTC). By reference, such permit(s) shall become part of the contract. 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 30" in all other areas within state right of way.

 TRENCH BACKFILL ON HIGHWAY ROW

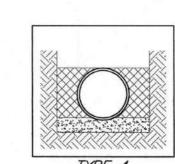
 Dec., 2010

 N.T.S.

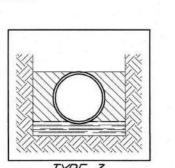




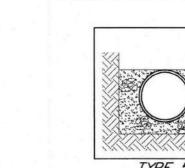
Flat-bottom trench in undisturbed earth. Backfill lightly consolidated to centerline of pipe



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).



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



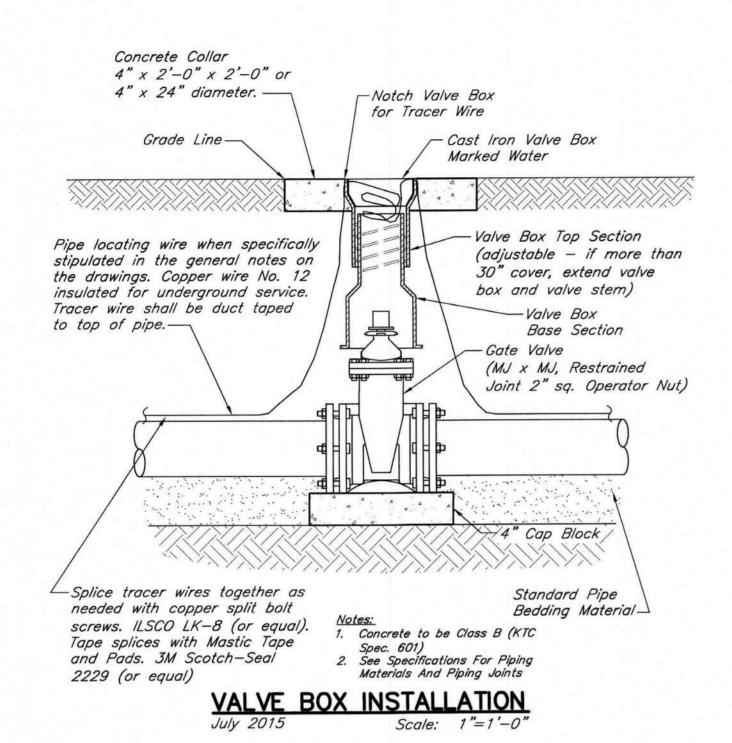
Pipe bedded in compacted granular material to centerline of pipe, 4" minimum under pipe. Compacted granular or select material to top of pipe (approximately 90 percent Standard Proctor).

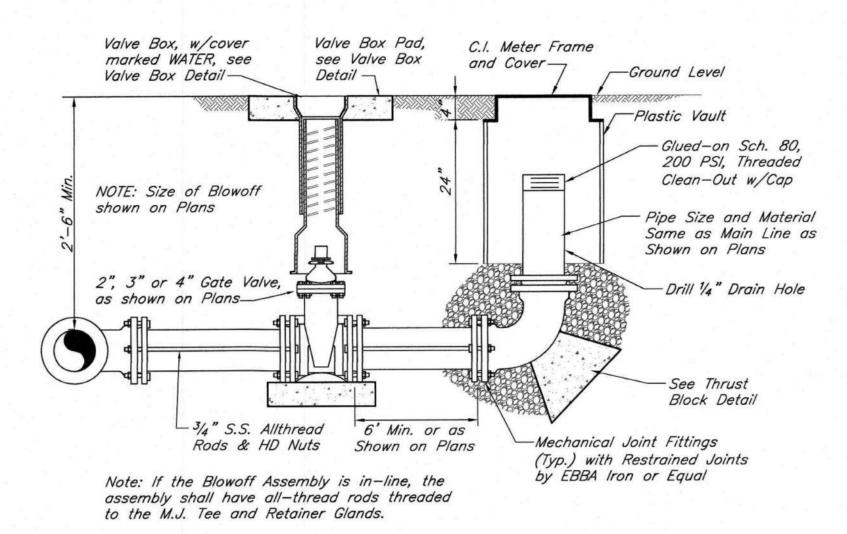
LAYING CONDITIONS FOR DUCTILE IRON PIPE Dec., 2010

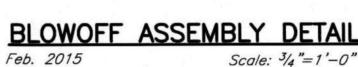
Ref. AWWA C150

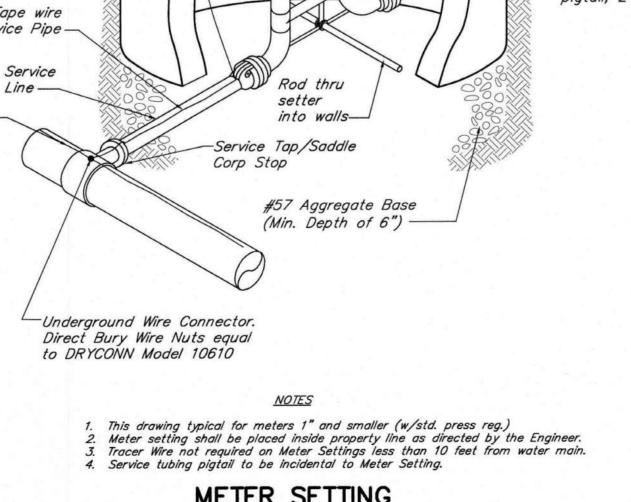
PROJECT NO. 2016173

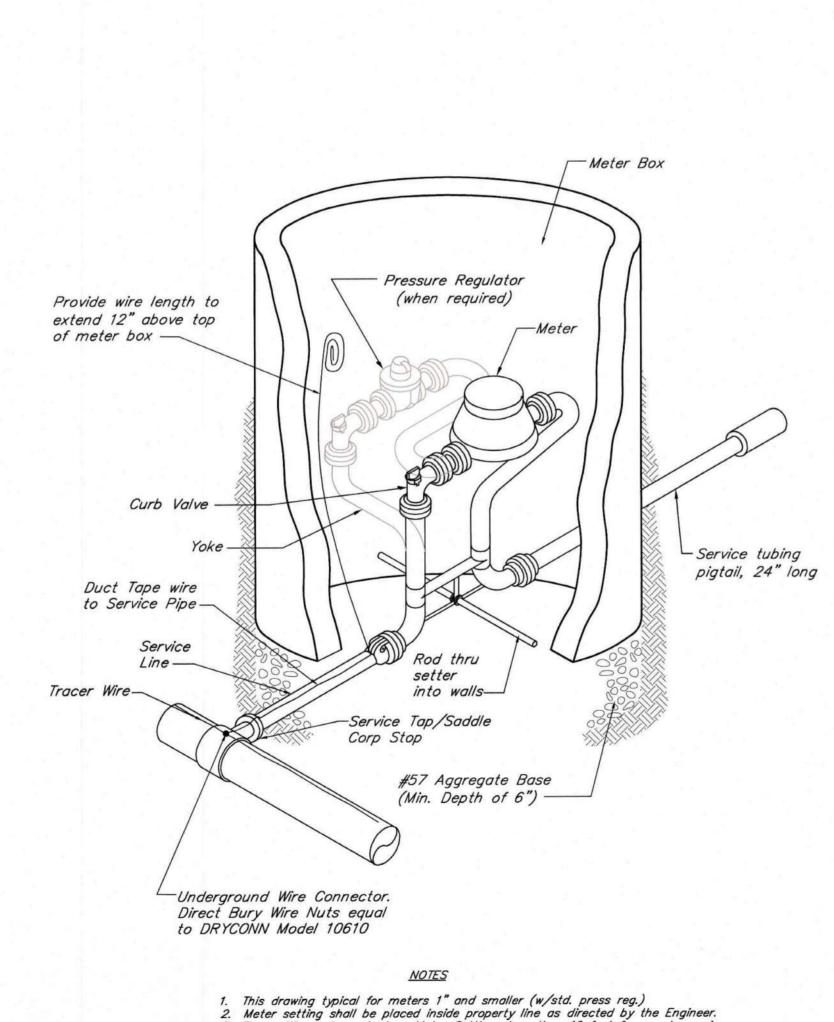
SHEET NO. D-2











Concrete CONCRETE PAVEMENT HEAVY DUTY BITUMINOUS SURFACE -Sawed Joints (straight & Pavementsquare)

Joints

Exist.

r Pavement

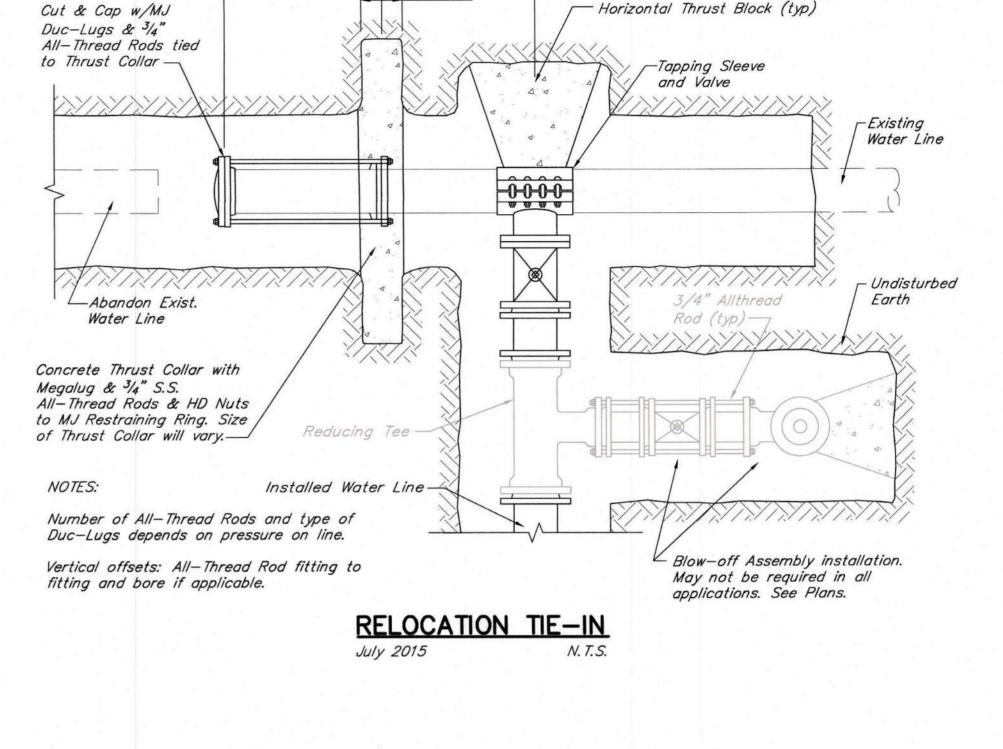
Concrete

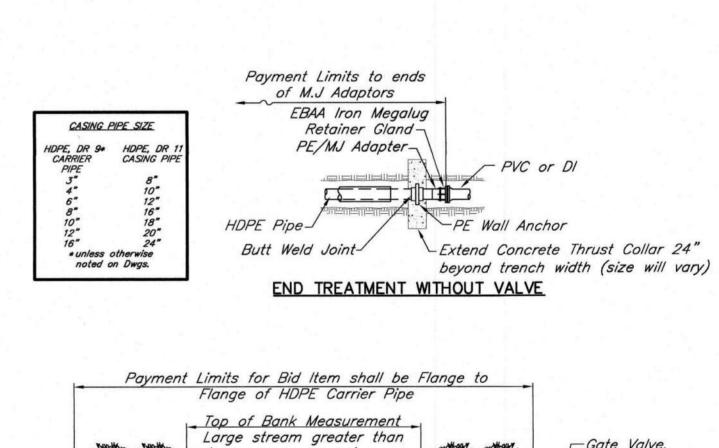
1. The max. allowable distance for dimension "X" shall be calculated as follows: X= 24" + Pipe Dia. 2. Concrete slab under Bituminous surface to extend 12-inches on each side to trench 3. Replace Concrete or Bit. Pavement with new pavement same thickness as existing pavement. 4. Casing Pipe is not required under private driveways.

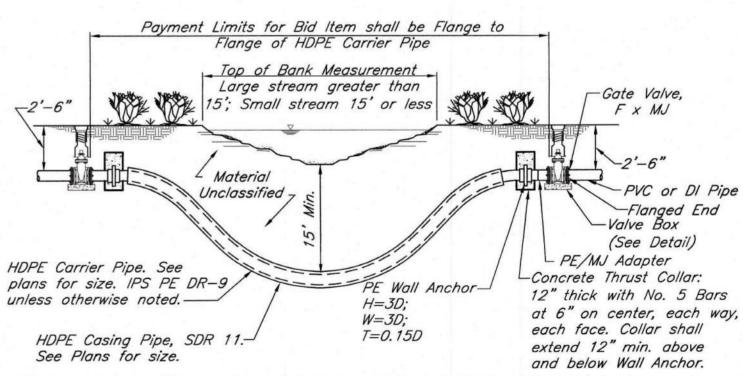
LIGHT DUTY BITUMINOUS

(f) 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.

CRUSHED STONE SURFACE







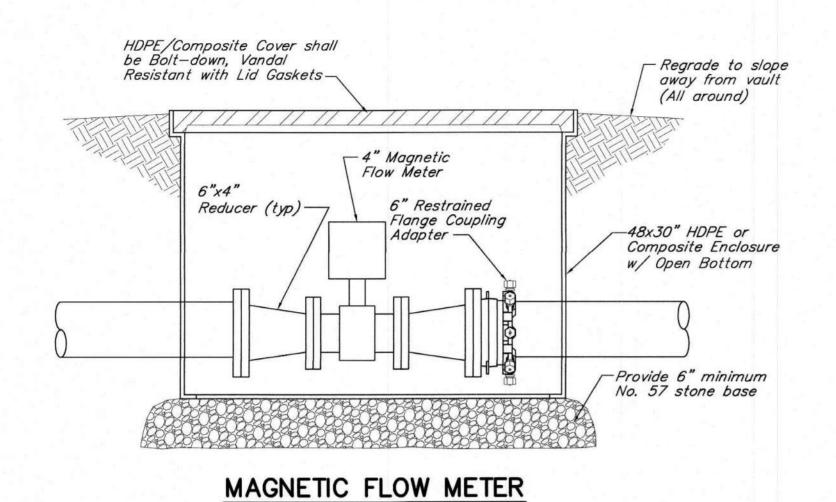
NOTE: Payment shall be "Lump Sum" for specific individual Bid Items for Directional Bores of large stream crossings and/or some classified small streams where the physical crossing characteristics differ significantly from the other small streams in the project. Determination of required length is responsibility of Contractor. When a creek crossing test meter is shown on the drawings and it is necessary to tap the HDPE pipe for the meter connection, the tapping saddle specifically manufactured for HDPE pipe shall be

Payment shall be "each" for directional bores of small stream crossings unless contained in an individual specific bid item. All small stream crossings in the project shall be considered the same regardless of width (up to 15 L.F.) or depth. It is the responsibility of the Contractor to determine an average unit price that will be used for payment for each instance a blue line stream is crossed. Stream crossings may be added, for extended lines beyond those shown on the plans, at the same unit price providing the crossings are reasonably similar to those in the initial project. Stream crossings may be deleted, without affecting the unit price, if a line is deleted or shortened.

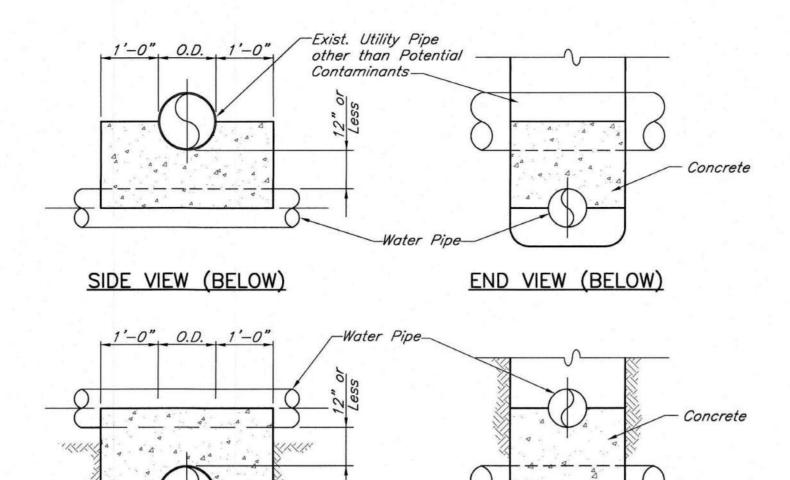
DIRECTIONAL BORE FOR STREAM CROSSINGS

PROJECT NO. 2016173 SHEET NO.

D-3



1"=1'-0"

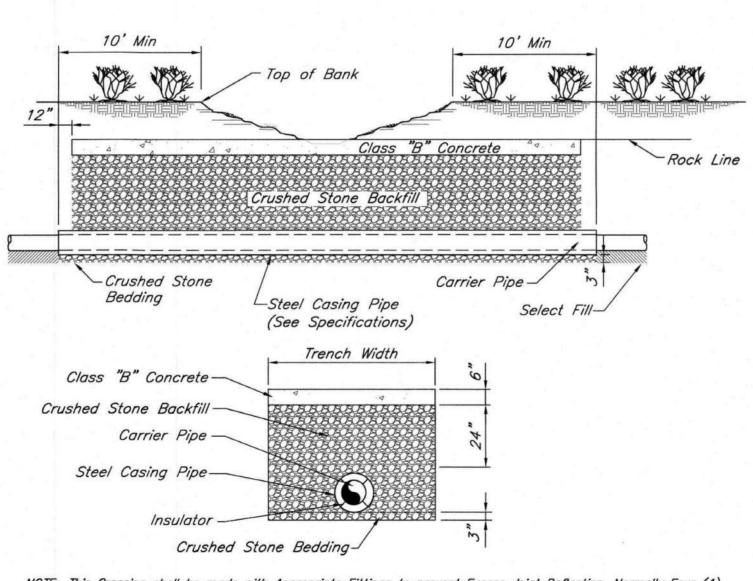


-Exist. Utility Pipe-SIDE VIEW (ABOVE)

END VIEW (ABOVE)

NOTES:

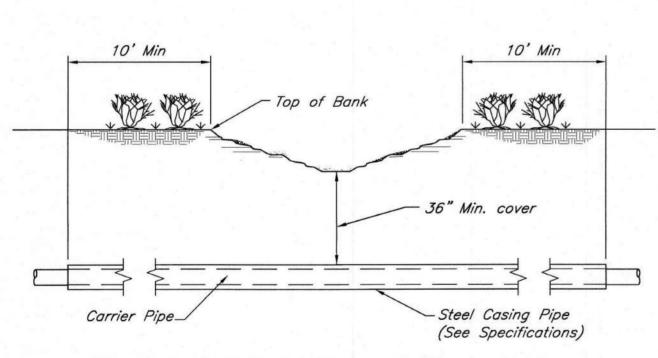
- 1. Concrete shall be used when clearance between Water Line and Utility Pipe is 12" or
- "Utility Pipe" includes underground Water, Natural Gas, Telephone, Electrical Conduits, Storm Sewer, or Typically Non-Contaminating Facilities. When crossing Sanitary Sewer or Potential Contaminants, See Detail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



<u>NOTE:</u> 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

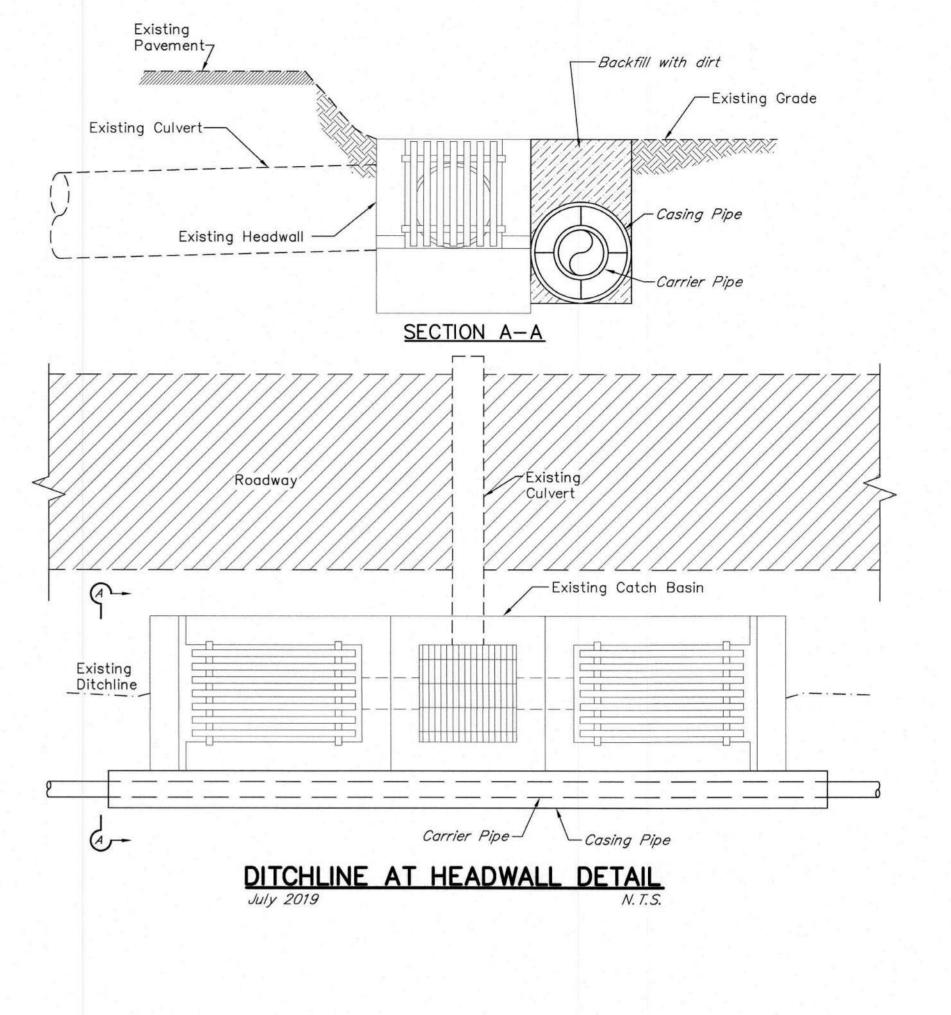
STREAM CROSSING IN SOLID ROCK (TYPE B)
Dec., 2010

N.T.S.



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)
> Dec., 2010
> N.T.S.



Use Brass for Riser Pipe and Nipple.

-Air Release Valve

w/S.S. Handle

-Service Saddle

Meter Box Cover

Grade Line

When the Water Main is located in a road or Ditchline the Air Release Valve and Box are to be located as directed by the Engineer and connected by a 34" Service Pipe installed with a Constant Upgrade from the Water Main to ARV Connection.

<u>Tracer Wire</u> Provide tracer wire loop

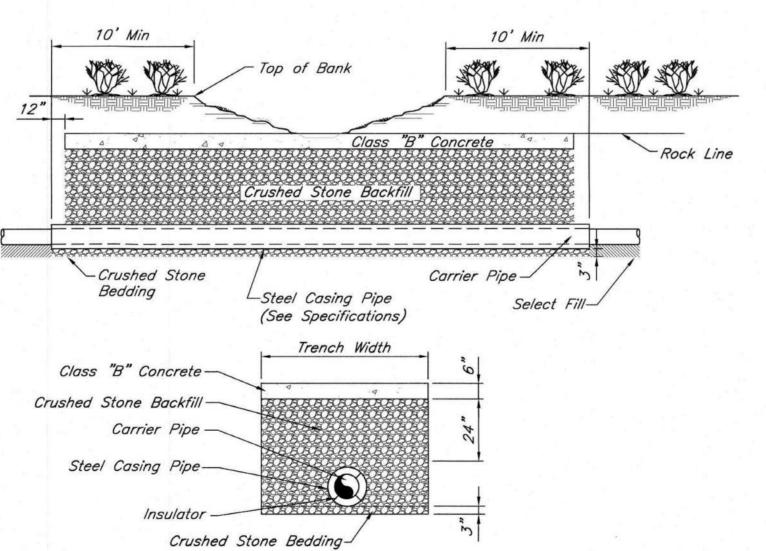
Comp Ell

-Corp Stop

-Service Saddle

length to extend 12"

above top of box



AUTOMATIC ARV INSTALLATION
March 2015

└ 90° Bronze,

Comp Ell

1.0% Min. Rise

Water Main-

Screen

-1/2" Sch. 80

PVC (min.)

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

Pm = 16.5 psf

no snow drift locations

28 psf (service)

County

Occupancy Category

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

20 psf Roof live load Roof dead load (superimposed) 15 psf Roof snow load Ground snow load Pq = 15 psfCe = 1.0Snow exposure factor Ct = 1.2Thermal factor ls = 1.10Importance factor Pr = 0 psfRain on snow surcharge Flat-roof snow load Pf = 13.9 psfSloped-roof snow load Ps = 13.9 psf

Minimum roof snow load

Components and cladding wind design pressures

Snow drift

WIND LOAD DATA

120 mph (ultimate) 90 mph (service) Basic wind speed (3 second gust) Wind exposure category lw = 1.15 (service) Wind importance factor

EARTHQUAKE LOAD DATA

Seismic site class Ss = 0.183Mapped short period spectral response acceleration S1 = 0.094Mapped 1 second spectral response acceleration Sds = 0.146Design short period spectral response acceleration Design 1 second period spectral response acceleration Sd1 = 0.107Seismic design category Seismic importance factor le = 1.25Bearing Wall System Basic structural system Seismic force resisting system Intermediate Reinforced Masonry Shear Walls Seismic response factor Method of analysis Equivalent Lateral Force Procedure Seismic coefficient Cs = 0.091

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 psl
Prestressing strand (ASTM A416 GRADE 270 LO LAX)	fu =	270,000 psl
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		3,000 psf
Rock allowable bearing pressure	qa =	30,000 psf

- 1. The requirements of these general notes apply unless otherwise noted on plans or in
- 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 assumed begring capacities.
- 2. Foundation design is based on an allowable bearing capacity of 2,000 psf for native soil (undercut as may be required) and controlled fill and 6,000 psf for bedrock.
- 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 undisturbed soil, 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
- 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: har size 3,000 psi cono lan length >=4,000 psi cono lan length

bar size	3,000 psi conc. I	ap length	\geq =4,000 psi conc. lo	ip 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 bar	s with more	than 12" of concrete t	nelow

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: clear cover over bars

> concrete cast against and permanently exposed to earth concrete exposed to earth or weather #6 through #18 bars #5 bar, W31 or D31 wire and smaller

concrete not exposed to weather or in contact with ground slabs, walls, and joists 1 1/2" #14 and #18 bars

3/4" #11 bar and smaller 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
- 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 34".
- 24. Fill pockets around connections with concrete flush and smooth unless indicated
- 25. Concrete finishes shall be in accordance with the specifications.
- 26. Concrete slab-on-grade flatness and levelness shall be in accordance with the

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 ground begring ends of all beams and joists. 11. No openings for trades shall occur in concrete masonry walls within 16 inches of beam bearing
- 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

- 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
- 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
A STATE OF THE STA	(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
- 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 \(\frac{5}{16} \) thick shall be welded over large holes and long slots. 9. Bolted joints where relative movement is allowed shall have jam nuts to prevent
- 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 basi 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

 - 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
- 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.

ordering Simpson connectors.

- 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.
- FcPERP = 750 psi Fb =2,750 psi

2. All structural composite lumber (LVLs) shall have the following allowable design stresses:

- 2.0 Mpsi 285 psi 2,600 psi Ft =1,150 psi Fc =
- 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) 7. Nails shall be common wire nails unless noted otherwise. Nails exposed to weather or in
- nailed as indicated in the wood nailing schedule of the International Building Code if not indicated 8. Bolts in wood members shall be ASTM A 307 with factory zinc coating. Holes in wood for bolts shall be 1/6" 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, 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

preservative treated wood shall be hot dipped galvanized to ASTM A 153. Wood members shall be

- 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
- 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.



PROJECT NO. 2016173 306 W Main St Ste 410 SHEET NO.

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SPECIAL INSPECTION

- 1. Special inspection is required according to section 1704 of the building code.
- 2. Special inspection on this project applies only to the following construction:
 - 2.1. the superstructure (c.m.u. and up) of the filter building addition,
 - 2.2. the chemical feed building addition.
- All other structures shall be inspected according to these notes, but those inspections are not considered "special inspections" as required by the building code because these structures are not primarily for human occupancy and are not in the scope of the building code. The inspector shall keep special inspections and non-"special" inspections reports and tests separate and identifiable for record keeping purposes.
- 3. Special inspections shall be performed for the following work as required in the building
 - 3.1. Contractor's statement of responsibility in accordance with section 1704.4 3.1.1. Contractor shall submit a statement that:
 - 3.1.1.1. acknowledges the requirements stated in this statement of special
 - inspections. 3.1.1.2. acknowledges that control will be exercised over the quality of
 - construction to conform to the approved construction documents. acknowledges that there are organizational procedures in place for
 - exercising control of quality of the construction including: 3.1.1.3.1. appointment of a person within the contractor's organization to
 - exercise control quality of construction 3.1.1.3.2. the persons within the contractor's organization to whom the quality
 - control reports are distributed 3.1.1.3.3. the method and frequency of reporting the quality control results
 - within the contractor's organization.
 - 3.2. Fabricators in accordance with section 1704.2 3.2.1. Submit report of inspector's approval of fabricator's ac plan or fabricator's
 - nationally recognized qc certification. 3.2.2. 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. 3.3. Steel construction in accordance with section 1705.2
 - 3.3.1. Submit mill test reports and material certifications for all steel members, fasteners, bolts, nuts, washers, deck, and reinforcement steel for concrete
 - 3.3.2. Submit report of inspection of marking and connection details for all members and connections. verify all steel members and steel deck are installed in the correct locations and are connected in accordance with the construction documents and approved erection drawings.
 - 3.3.3. Submit report of inspection of bolt tensioning for each applicable
 - connection. 3.3.4. Submit report of visual inspection of all field welds.
 - 3.4. Concrete construction in accordance with section 1705.3
 - 3.4.1. Submit material certifications of cement, aggregate, admixtures and reinforcement.
 - 3.4.2. 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.
 - 3.4.3. Submit report of inspection of forms, reinforcement, and concrete delivery tickets prior to each placement of concrete.
 - 3.5.4. Submit report of inspection of installation of all wedge and chemical
 - adhesive anchors in concrete. 3.4. Masonry construction in accordance with section 1705.4
 - 3.4.1. Submit material certifications of cement, aggregate, admixtures and reinforcement.
 - 3.4.2. 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.
 - 3.4.3. Submit report of placement of masonry, reinforcement and grout prior to and during each placement of grout.
 - 3.4.4. Submit report of installation of chemical adhesive anchorage in concrete at base of masonry walls. inspect installation of 10% of anchorage
 - 3.5. Wood construction in accordance with section 1705.5
 - 3.5.1. See "Inspection of Fabricators" for inspection of prefabricated wood trusses. 3.5.2. Submit material certifications for wood members, sheathing and fasteners.
 - 3.5.3. Submit report of inspection of connection of roof roof trusses to structure.
 - 3.5.4. 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.
 - 3.5.5. Submit report of inspection of nailing of roof sheathing to trusses and structure.
 - 3.6. Soils construction in accordance with section 1705.6
 - 3.6.1. Submit report that soil bearing capacity is adequate according to the geotechnical report prior to each placement of foundation concrete.
 - 3.6.2. Submit report of density and moisture content of controlled fill for each lift under building structure.
 - 3.7. Cast-in-place deep foundations in accordance with section 1705.8
 - 3.7.1. Submit report of continuous observation of all drilling operations including complete and accurate records for each drilled shaft.
 - 3.7.2. Submit report indicating the location, plumbness, diameter, length, concrete volume, embedment into bedrock, and adequate end-bearing strata capacity of each pier.
 - 3.7.3. For concrete, perform tests & inspections as required by the concrete
- special inspection requirements. 4. 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
- 5. Inspection reports shall include the:
 - 5.1. name, address, and telephone number of special inspector performing the inspection and making the report.
 - 5.2. dates and locations of samples and tests or inspections, date of report. 5.3. record of temperature and weather conditions at time of sample taking and
 - testing and inspecting. 5.4. description of the work, identification of products, specification section, tests,
 - and inspection methods.
 - 5.5. photographs of the work inspected for that report 5.6. complete test or inspection data.

- 6. Special inspection shall be performed by a qualified inspection and testing agency approved by the building official and the structural engineer.
- 7. Work requiring special inspection shall be inspected by the special inspector for conformance with the approved drawings and specifications. Inspection reports indicating the results of special inspections shall be promptly submitted to the contractor, the civil engineer, the structural engineer.
- 8. The special 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. All special inspections indicating non-conforming work shall be reported immediately to the contractor, the civil engineer and the structural engineer. 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. log shall list each discrepancy documented by the special inspector, state the date of discovery and special inspector's report number, and room for the special inspector to sign and date when said discrepancy is corrected. Cost of additional retesting that are required due to non-conforming work may be charged to the contractor.
- 10. A final report certifying completion of all required special inspections and correction of any non-conforming work noted in the inspections shall be submitted by the special inspector at the completion of the project, or if not, detailing non-inspected and/or unresolved non-conformances.
- 11. The contractor shall notify the inspector when construction is ready to be inspected.
- contractor shall give timely and adequate notice to the special inspector.
- 12. The contractor shall provide the special inspector access to plans, shop drawings, and change orders at the jobsite.
- 13. The contractor shall retain at the jobsite all special inspection records submitted by the special 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:

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

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.

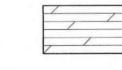
6. If any of the following minimum distances are not indicated or available then verify the detail and field conditions with the structural engineer prior to installing:

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

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





COMPETENT ROCK

UNDISTURBED SOIL

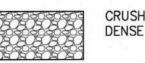
ENGINEERED FILL



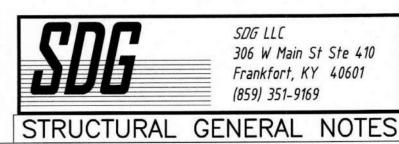
CONCRETE



LEAN CONCRETE FLOWABLE FILL GROUT



CRUSHED STONE DENSE GRADED AGGREGATE





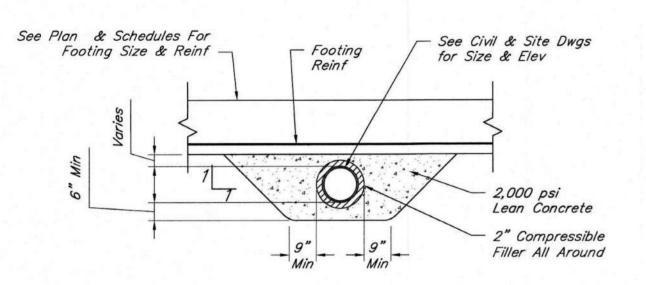




2016173

SHEET NO.

S1



TYPICAL UTILITY LINE BELOW FOOTING

influence zone. See detail above for influence zone definition.

- Bond Beam at Roof & Floor

8" C.M.U.

Door

Opening

Line See Sections for Size and

Reinforcement - Min 2~ #5 at

Masonry Lintel

See Sched Typ

Provide concrete protection around utility line when line is within footing

Not to Scale

Min One Bar Required Each Side

of Control Joint Typ

TYP Bar Spacing
See Plan

Run Control Joints

Full Height Where They

Occur at Sides of Openings

Do Not Cross Reinf and

Run to Head of Door -

Bent Bar Std Lap Typ Std Lap Typ Matching Size & Spacing of 24" Min Horiz Wall Reinf ----Alternate Direction of Bent Bar at Wall Tee Intersection -

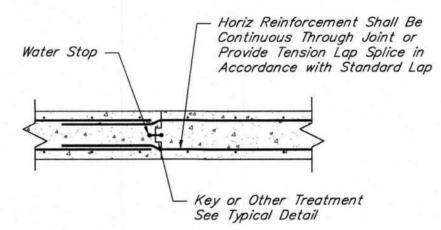
1. Where bar sizes differ, lap for larger size. 2. If bend radius creates problems fitting hairpins in wall, provide more

unless indicated otherwise on the drawings.

smaller hairpins with equal total area to main bars. 3. Construction joints shall not occur within 5'-0" of a corner or tee

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.

or Tee Intersection.

4. Submit Construction Joint Location Plan For Approval Prior to Construction. 5. Do Not Form Joints Within 5'-0" of a Corner

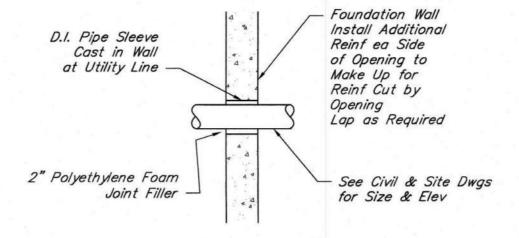
TYPICAL WALL CONSTRUCTION JOINT

Not to Scale

Hairpin Bar Matching

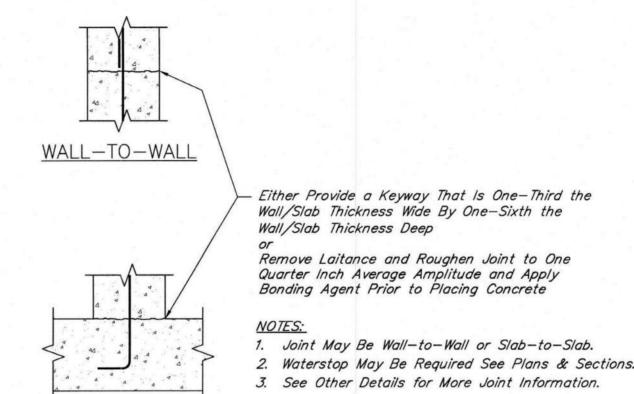
Size of Bond Beam Reinf

Lap w/ Main Bond Beam



TYPICAL UTILITY LINE THRU FDN WALL

Not to Scale



WALL-TO-SLAB/FDN

TYPICL CONSTRUCTION JOINT CONCRETE PREPARATION

Not to Scale

Cont Reinforcement Tooth intersecting walls together as Shown in Details in running bond with min 6" Cont Grout Fill Provide Corner Bars overlap or use masonry strap Main Bond Beam Where Required every third course unless noted Reinforcement otherwise on plans. See Other Details -Cont Grout Stop Open Bottom Bond 2. #5 vertical bar centered in Screen Over Bond Beam Course

grouted cell shall be installed at

Horizontal joint reinforcement

shall be lapped min 6" at wall

intersection.

intersection.

- Cont Vert #5 Bar

at Intersection

Not to Scale

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

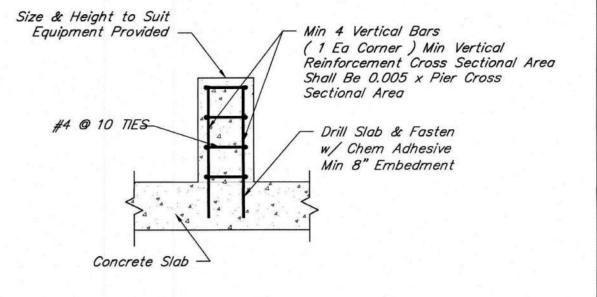
Beam Unit

Manufactured with

Knock-Out Web

Partial Height Web or

TYPICAL C.M.U. BOND BEAM DETAIL Not to Scale



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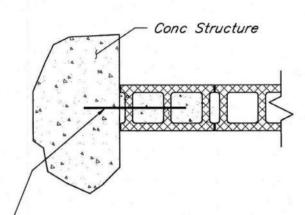
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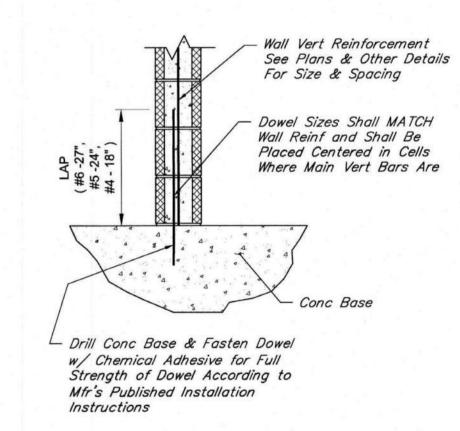
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TYPICL CONCRETE EQUIPMENT PEDESTAL Not to Scale



- 5/8"ø x 1'-9" Smooth Rod Coated w/ Grease at Every Other Course of C.M.U. Drill Concrete 9" to Accept Dowel Chip Webs of C.M.U. & Grout First Two Cells Adjacent to Wall Full Height

PLAN VIEW



SECTION VIEW

TYPICAL C.M.U. WALL DOWEL DETAIL

Not to Scale

NOTES:

∠ MIN 1~ #5 Bar

Each Side of All

Openings ---

8" End of

Bond Beam Typ

- 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.

Vert Reinf at Typ Spacing

Above Openings Typ

Opening

Bond Beam

Below all Openings

Min 2~ #5 Bars Required

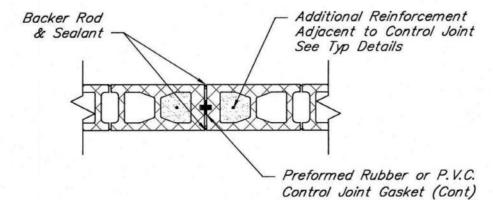
Each Side of all Masonry Openings that Exceed

48" in Width -

Dowel Bars Into Lintel

- 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~ 1/2" 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

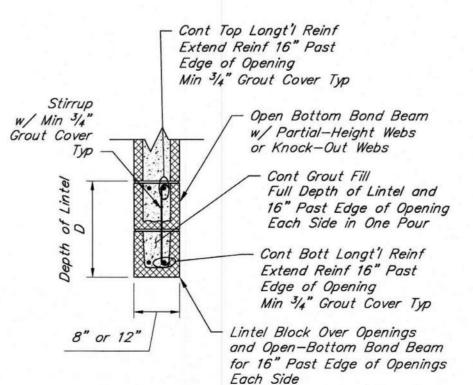


TYPICAL MASY WALL

INTERSECTION DETAIL

- 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



		MASON	RY LINTEL SCHEDUL	LE	
MARK	MAX OPENING SIZE	D	BOTTOM REINF	TOP REINF	STIRRUP
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	#308"

Non-Filled Cells

Vertical Reinf Shall

Bond Beam

Be Continuous thru

- 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

SDG LLC 306 W Main St Ste 410 Frankfort, KY 40601 (859) 351-9169 STRUCTURAL TYPICAL DETAILS PROJECT NO. 2016173

SHEET NO.

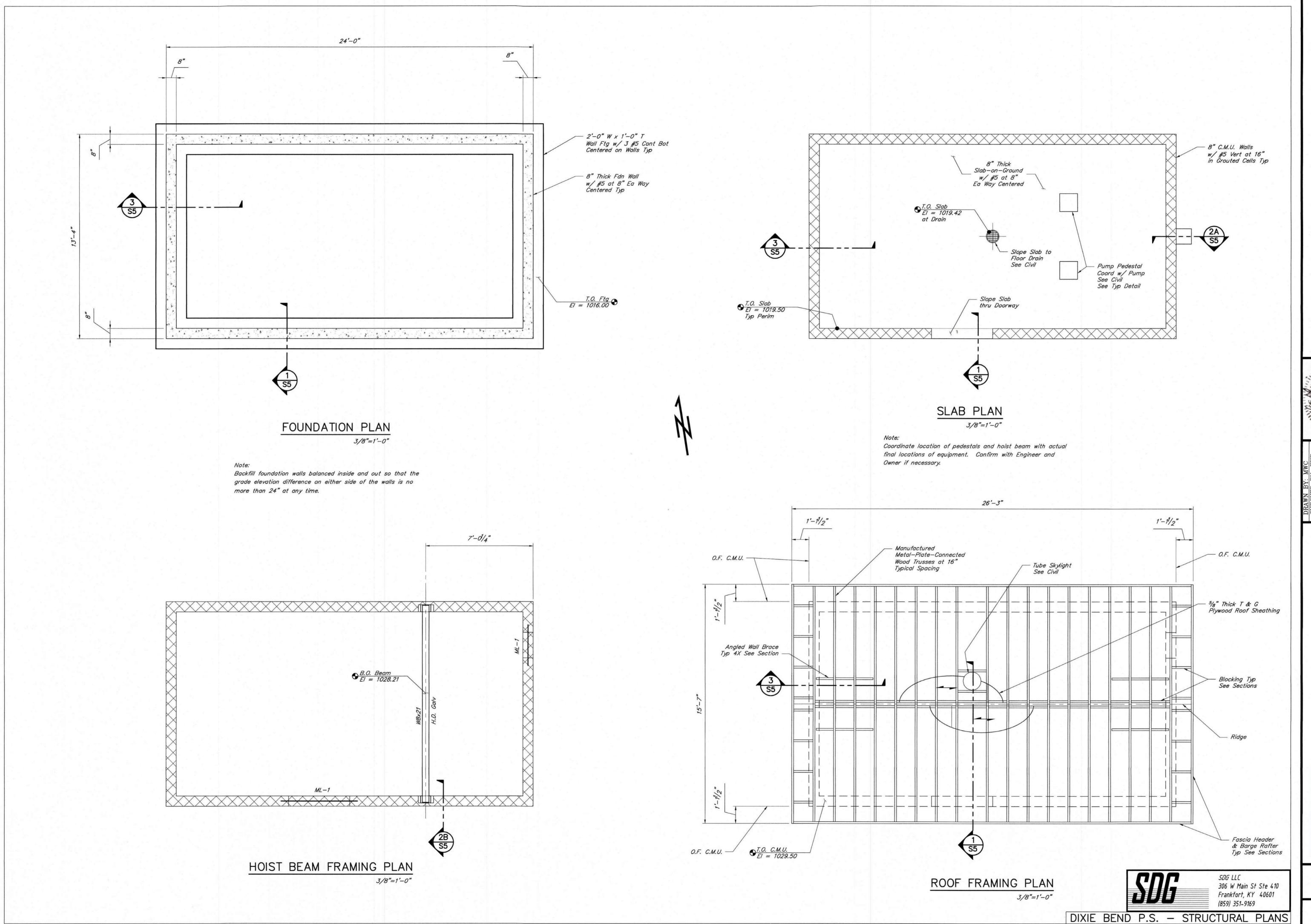
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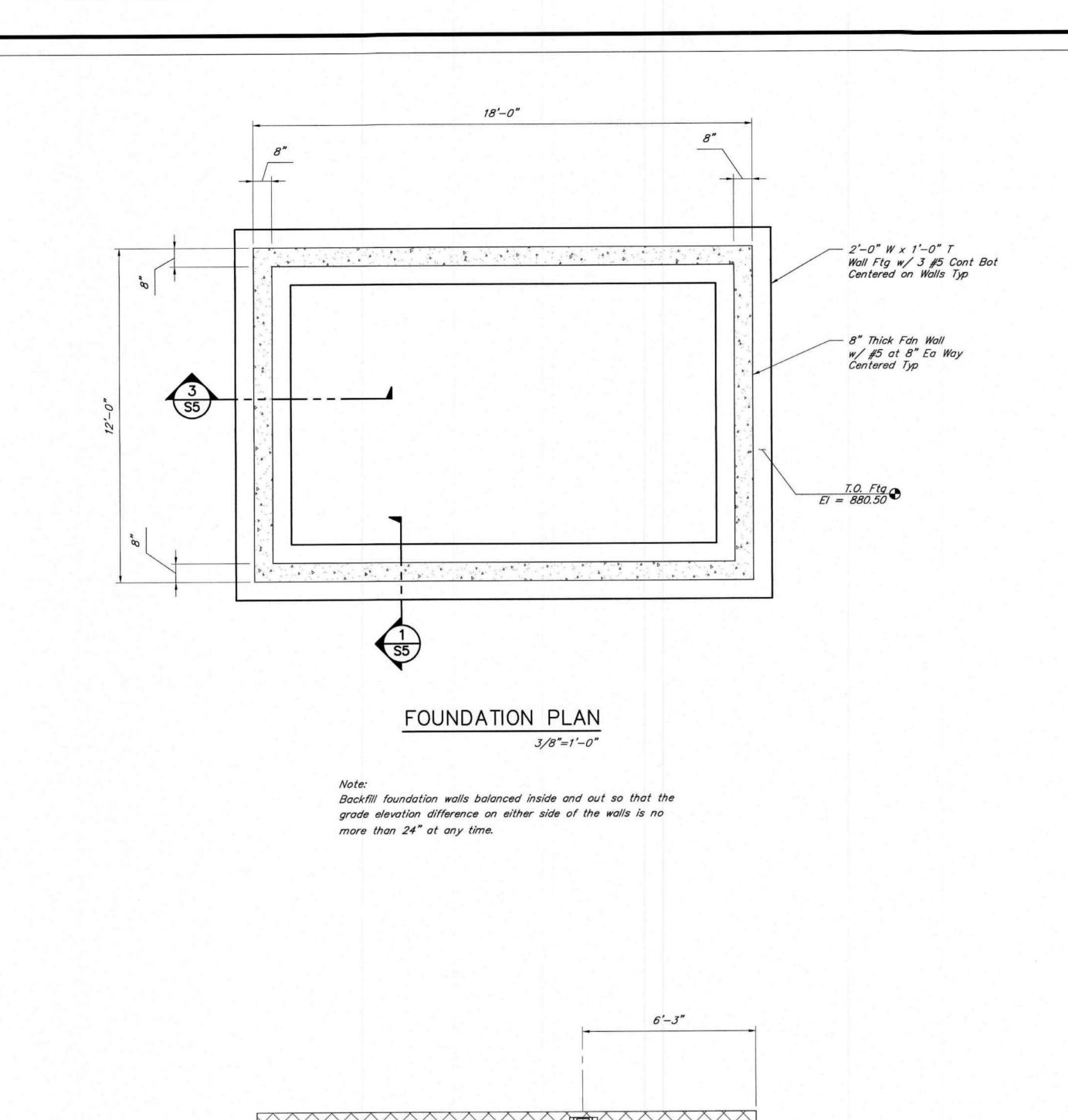


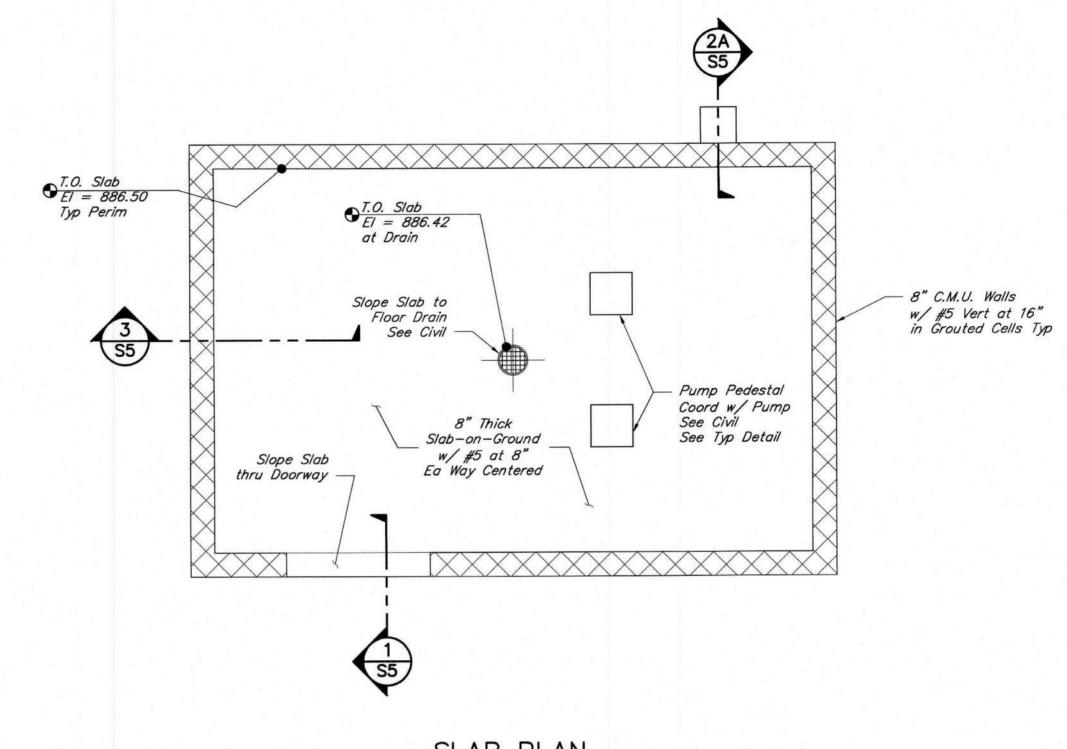
SSOCIATION ATERLINES STATION R WATER STERN 1003 SOUTHEA Y 192 / DIXIE

FRANKFORT, KENTUCKY

KEN

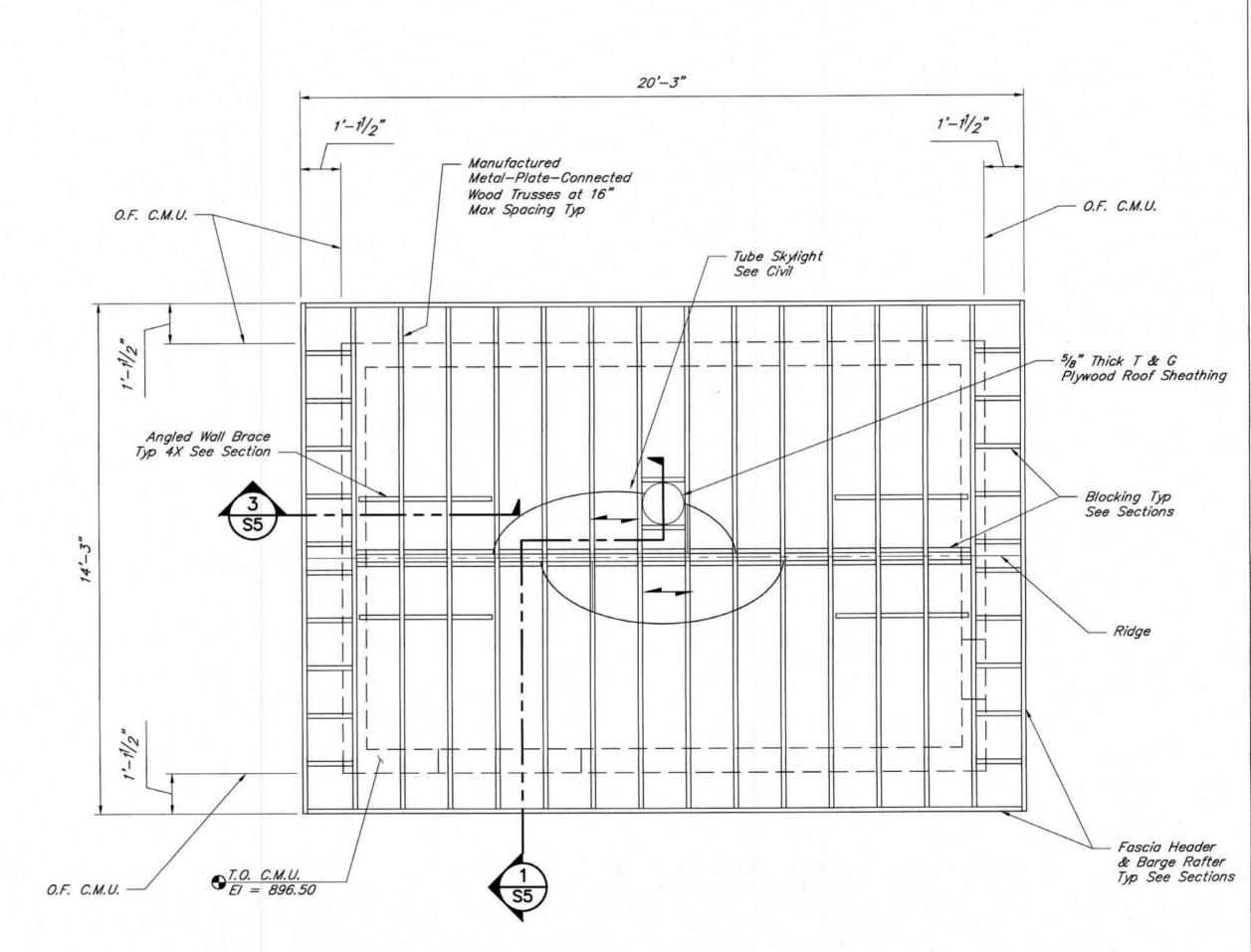
PROJECT NO. 2016173 SHEET NO. S4 - 1





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"

PROJECT NO.

Main St Ste 410

ort, KY 40601

SSOCIATION

WATER

STERN

SOUTHEA

VES & SANDY GAP /

ATERLINES STATION RE

1003

SHEET NO. S4-2

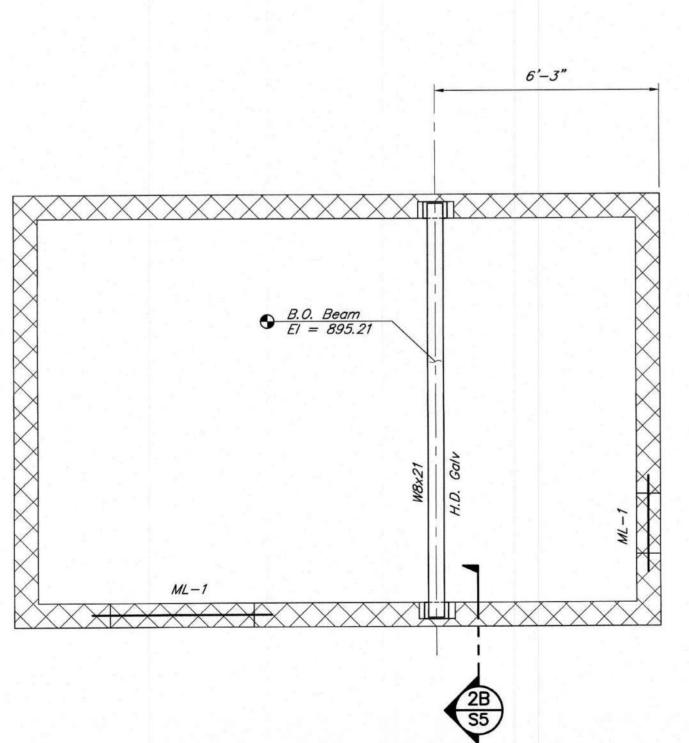
KENTUCKY

FRANKFORT,

KEN

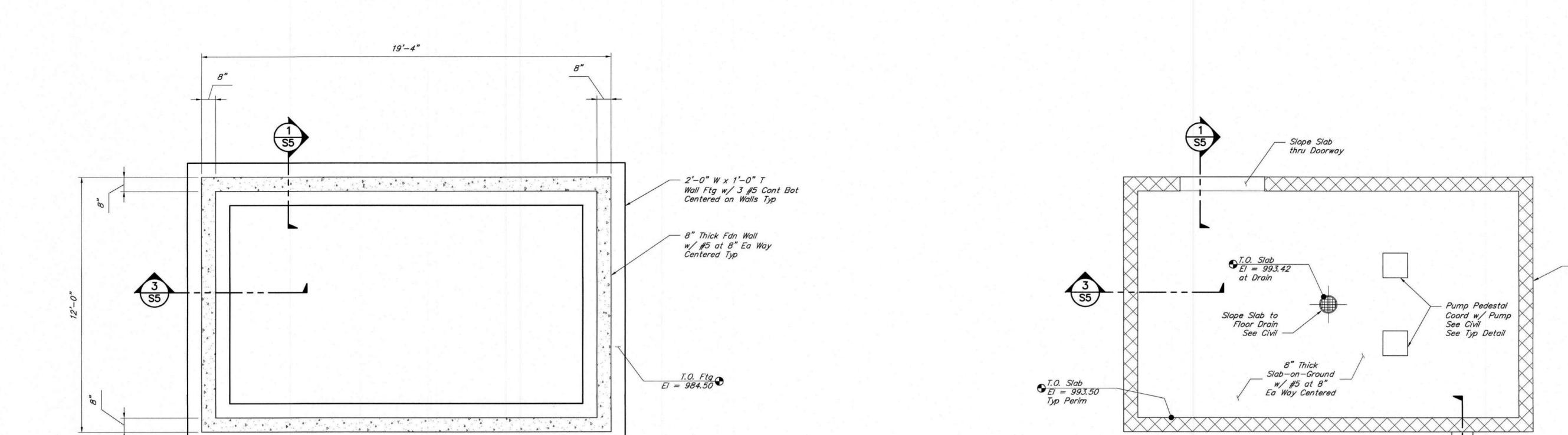
SDG LLC 306 W Main St Ste 410 Frankfort, KY 40601 (859) 351-9169 KY 192 P.S. – STRUCTURAL PLANS





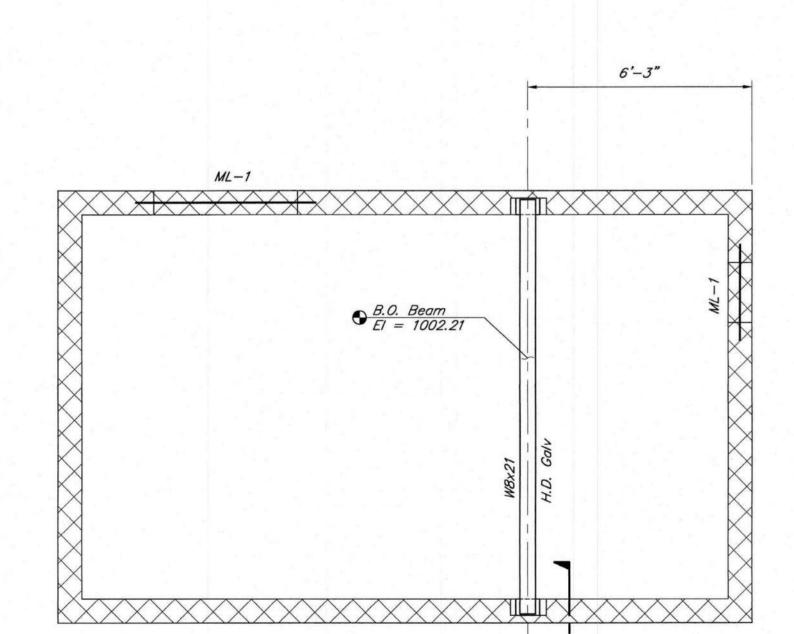
HOIST BEAM FRAMING PLAN
3/8"=1'-0"

PROJECT NO.
2016173
SHEET NO.
S4-3



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.



HOIST BEAM FRAMING PLAN
3/8"=1'-0"

2B \$55 H

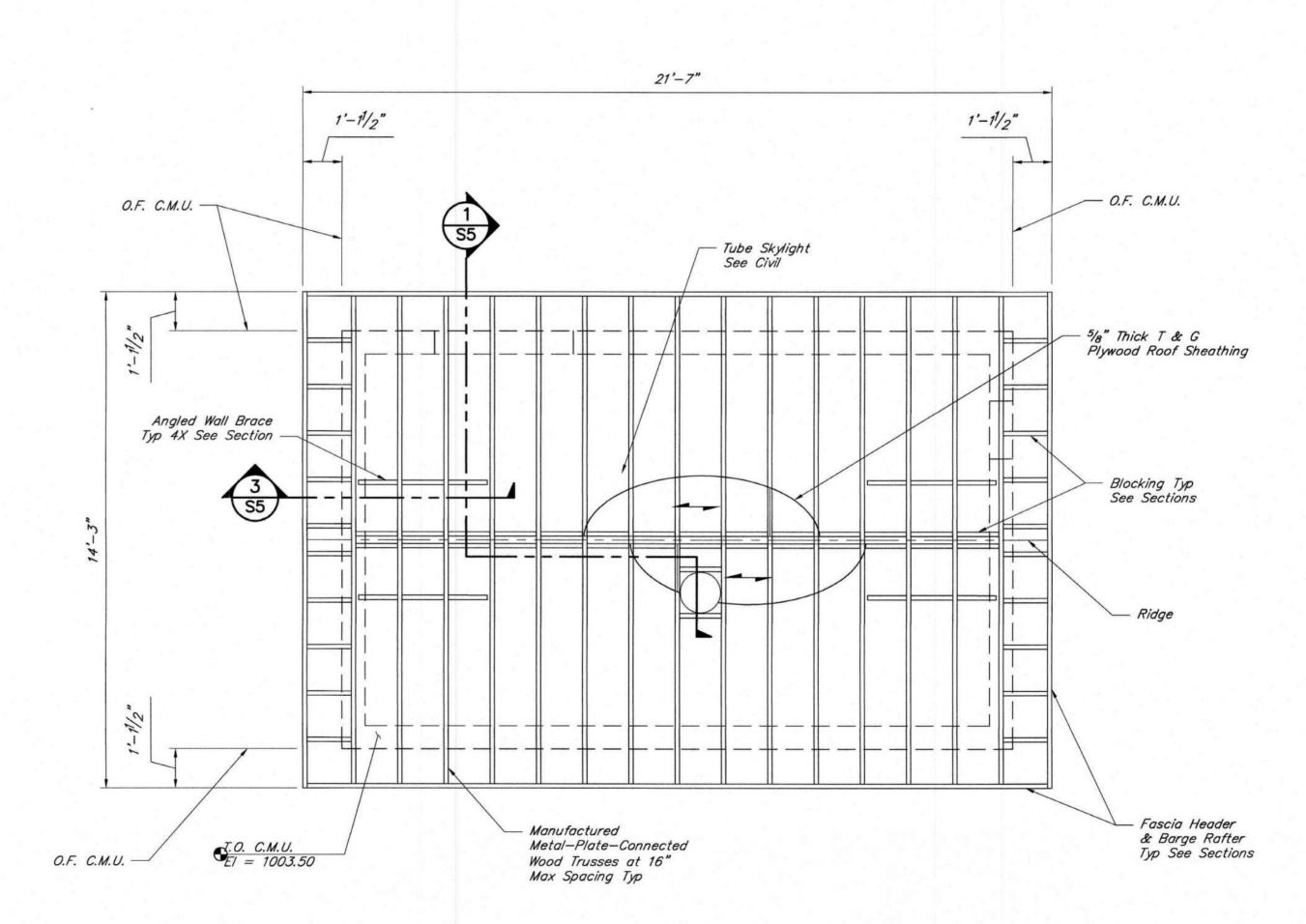
3/8"=1'-0"

Note:

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

SLAB PLAN

2A \$5

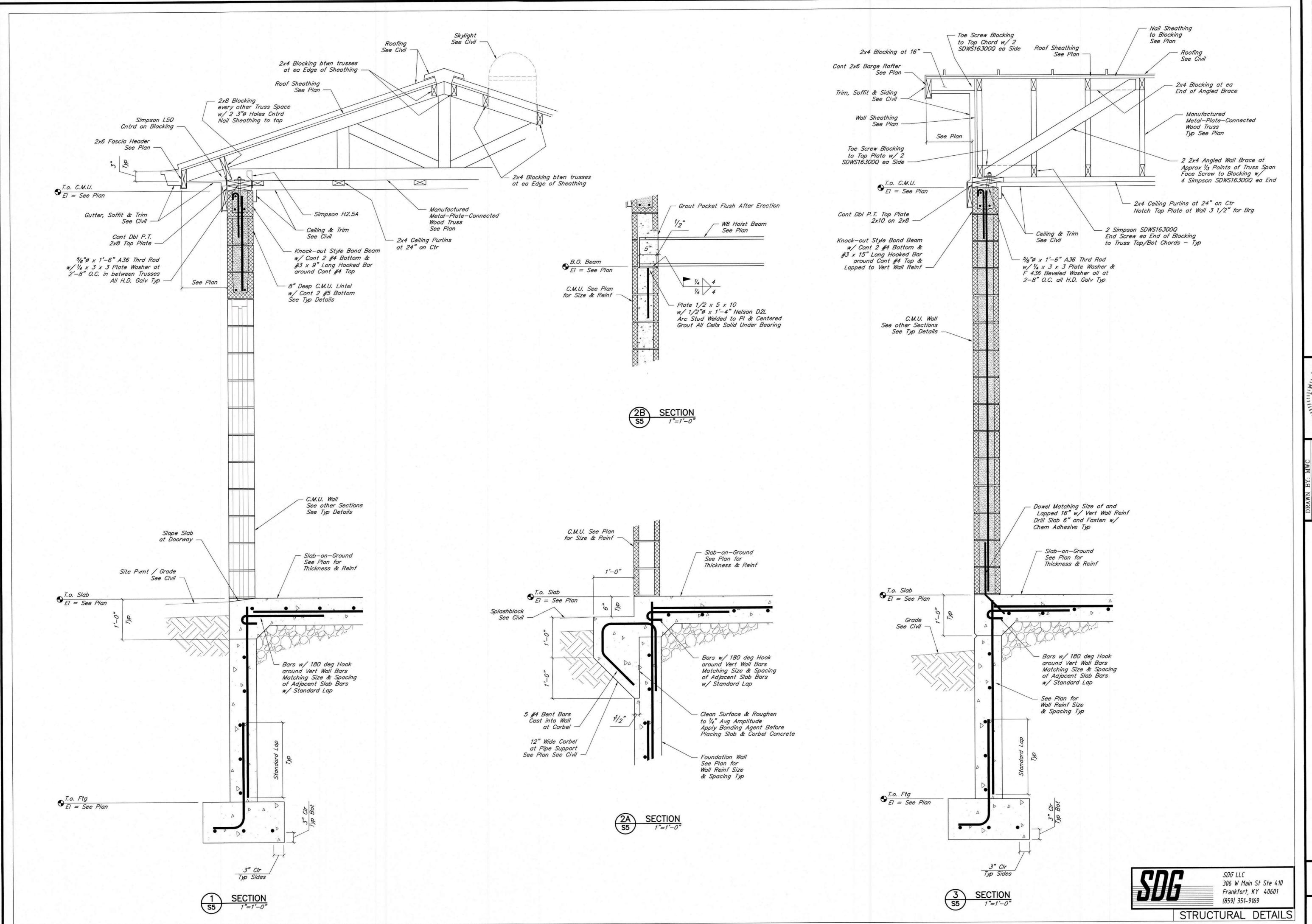


ROOF FRAMING PLAN
3/8"=1'-0"



8" C.M.U. Walls
 w/ #5 Vert at 16"
 in Grouted Cells Typ

SANDY GAP P.S. – STRUCTURAL PLANS



SOUTHEASTERN WATER ASSOCIATION
KY 192 / KY 1003 WATERLINES & SANDY GAP /
DIXIE BEND PUMP STATION REPLACEMENTS

MATTHEW W. CRAIG CRAIG CANSED

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

KENVIRONS, INC. FRANKFORT, KENTUCKY



PROJECT NO. 2016173

SHEET NO.

ELEC	CTRICAL ABBREVIATIONS	ELE	ECTRICAL PLAN SYMBOLS	ELEC	TRICAL DIAGRAM SYMBOLS
A AF	AMPERE AMPERE FRAME	-11-	ELECTRICAL CIRCUIT: SHORT=PHASE CONDUCTOR; LONG = NEUTRAL, DASHED = EQUIPMENT GROUND	* ****	TRANSFORMER
AFF	ABOVE FINISHED FLOOR	, i	EMERGENCY CIRCUIT		TRANSFORMER
AFD AT	ADJUSTABLE FREQUENCY DRIVE AMPERE TRIP		SWITCH: 3=3 WAY; 4=4 WAY; K=KEY; WP=	∦ ホ	CAPACITOR
475	AUTOMATIC TRANSFER SWITCH	\$3	WEATHERPROOF; M=MOTOR STARTER; PL=PILOT LT DUPLEX RECEPTACLE: WP = WEATHERPROOF; GFI =	÷	GROUND
4WG BC	AMERICAN WIRE GAUGE BARE COPPER	×₩	GROUND FAULT; NUMBER = MOUNTING HEIGHT	- €	CURRENT TRANSFORMER
2	CONDUIT (RACEWAY)	₩	SINGLE RECEPTACLE	Lx	POTENTIAL TRANSFORMER
CB	AT CIRCUIT BREAKER	Ь	208 or 240 VOLT RECEPTACLE	 X	
CTV KT	CLOSED CIRCUIT TELEVISION CIRCUIT				CIRCUIT BREAKER (GENERAL)
1	CENTERLINE		DUPLEX RECEPTACLE, FLUSH FLOORBOX MOUNTED	o oha	CIRCUIT BREAKER, THERMAL-MAGNETIC
LG P	CEILING CONTROL PANEL	•	SPECIAL PURPOSE RECEPTACLE OUTLET	6-04	CIRCUIT BREAKER, MAGNETIC-ONLY
Τ	CURRENT TRANSFORMER OR CONSTANT TORQUE	•	THERMOSTAT	≪6 0₩	CIRCUIT BREAKER (DRAWOUT)
7.	CONTROL COPPER OR CONDENSING UNIT	M	MOTOR	rGF	GROUND FAULT PROTECTED CIRCUIT BREAKER
/Y	DELTA/WYE	1	JUNCTION BOX - SMALL	6	
7 V	DIRECT BURIAL DOWN			十	RELAY CONTACTS (NORMALLY OPENED)
PST C	DOUBLE POLE—SINGLE THROW EMPTY CONDUIT	J	JUNCTION BOX — FLUSH—MOUNTED SAFETY SWITCH — NONFUSED UNLESS NOTED	#	RELAY CONTACTS (NORMALLY CLOSED)
	EXHAUST FAN	4	OTHERWISE	ģ	THERMAL OVERLOAD PROTECTION
GC	EQUIPMENT GROUND EQUIPMENT GROUND CONDUCTOR	452	MAGNETIC COMBINATION STARTER - THREE PHASE		FUSE
/	EXPANSION JOINT	40	MAGNETIC COMBINATION STARTER - SINGLE PHASE	_	
EC	ELEVATION ELECTRIC	⊲x	TELECOM OUTLET: D = DATA; T = TELEPHONE; C =		DOT INDICATES A CONNECTION OF TWO WIRES
Z	END-OF-LINE EMERGENCY	70	CABLE; NUMBER = QTY OF CABLES & JACKS		TERMINALS FOR CONNECTION OF REMOTE WIRING
MERG JH	ELECTRIC UNIT HEATER	°	CONDUIT TURNED UP	—R—	RELAY/CONTACTOR COIL: $C = CONTRACTOR$; $CR = CONTROL$ RELAY; $TR = TIMING$ RELAY; $M = MOTOR$
VC VH	ELECTRIC WATER COOLER ELECTRIC WALL HEATER/WATER HEATER		CONDUIT TURNED DOWN	H O A	HAND-OFF-AUTOMATIC SWITCH
r	EXISTING	SN	WALL MOUNTED SPEAKER OR ALARM HORN		
4 4 <i>CP</i>	FIRE ALARM FIRE ALARM CONTROL PANEL		PANELBOARD (SURFACE MOUNTED)	₩ - ±×	FULL VOLTAGE NON BEVERSING MOTOR STARTER.
,	FIBER OPTIC	_ _	PANELBOARD (FLUSH MOUNTED IN WALL)	β	FULL VOLTAGE NON—REVERSING MOTOR STARTER; X = NEMA SIZE
NR C	FULL VOLTAGE, NON—REVERSING GROUNDING ELECTRODE CONDUCTOR	 -	HEATER-WALL MOUNTED	\boxtimes	PILOT LIGHT: $R = RED$; $G = GREEN$; $A = AMBER$; WHITE
TCI OR GFI ID	GROUND FAULT CURRENT INTERRUPTING GROUND	(F)	EXHAUST FAN/VENTILATOR	<u> </u>	PILOT LIGHT - PUSH-TO-TEST
DA .	HAND-OFF-AUTO SELECTOR SWITCH				MOTOR
OR JB	HORSEPOWER JUNCTION BOX	(S)	SPEAKER GENERAL		FUSED DISCONNECT SWITCH
/A	KILOVOLT-AMPERES	(C)	CLOCK		
WH CMIL	KILOWATT-HOUR THOUSAND CIRCULAR MILS	0	EXISTING POWER POLE		FLOAT SWITCH
	LIGHTING FIXTURE (LUMINAIRE)	•	NEW POWER POLE		TEMPERATURE SWITCH (THERMOSTAT)
rs	LIGHTING LIGHTS	DHX OR —□—	LIGHTING POLE	000	
,	LIMIT SWITCH LOW VOLTAGE				PRESSURE SWITCH
CB	MAIN CIRCUIT BREAKER		PHOTO CELL	0-0	LIMIT SWITCH
CP CC	MOTOR CIRCUIT PROTECTOR MOTOR CONTROL CENTER	MH	MANHOLE	~ ~	FLOW SWITCH
IDP	MAIN DISTRIBUTION PANEL	РВ	PULLBOX	(SV) OR o-1/-o	SOLENOID VALVE COIL
FR 4	MANUFACTURER MANHOLE	□	MUSHROOM HEAD EMERGENCY SWITCH		
W	MINIMUM		DUCT SMOKE DETECTOR	— <u>ETM</u> —	ELAPSED TIME METER
LO TD	MAIN LUGS ONLY MOUNTED			к	KEY INTERLOCK
1	MEDIUM VOLTAGE NOT APPLICABLE	①	HEAT DETECTOR		BATTERY
С	NORMALLY CLOSED	①	SMOKE DETECTOR	-0100 0-	PUSHBUTTONS, N.C. & N.O. RESPECTIVELY
EC L	NATIONAL ELECTRICAL CODE NON LINEAR	P	FIRE ALARM MANUAL PULL STATION		SELECTOR SWITCH — TWO POSITION
10	NORMALLY OPEN		FIRE ALARM HORN/STROBE	0 0	
TS 4	NOT TO SCALE OVERHEAD		FIRE ALARM STROBE	-8	FUSED CUTOUT
	OVERLOAD POLE	(ZAM)	FIRE ALARM ZONE ADDRESSABLE MODULE		SECTIONALIZING SWITCH (3 PHASE)
<i>r</i>	POLE OVER TEMPERATURE	Ϋ́		~~	TIMER RELAY CONTACT: NORMALLY OPEN — TIMED
I OR Ø	PHASE PANEL	₩	SPRINKLER SYSTEM FLOW SWITCH		OPEN UPON DEENERGIZATION
C	POLY-VINYL CHLORIDE	HXH	TAMPER SWITCH	□ • • • •	TIMER RELAY CONTACT: NORMALLY CLOSED — TIMED CLOSE UPON DEENERGIZATION
WR ECEPT	POWER RECEPTACLE	l b	MAGNETIC DOOR HOLDER	• •	TIMER RELAY CONTACT: NORMALLY OPEN - TIMED
T	SHEET		KEYNOTE		CLOSE UPON ENERGIZATION
N	SOLID NEUTRAL SINGLE POLE		CALL SWITCH		TIMER RELAY CONTACT: NORMALLY CLOSED — TIMED OPEN UPON ENERGIZATION
PD S	SURGE PROTECTION DEVICE STAINLESS STEEL			م م	TRANSFER SWITCH
4	STATION STATION	M	PASSIVE INFRARED MOTION DETECTOR		GENERA TOR
D IC	STANDARD SHIELDED TWISTED INSTRUMENT CABLE	NEMA XX	ALL WORK IN THE ROOM/AREA SHALL CONFORM TO THE NEMA RATING INDICATED		
v	SWITCH	EU	ELECTRICAL LINE UNDERGROUND		EXTERNAL WIRING
Z.	TERMINAL BOX TELEPHONE	E0	ELECTRICAL LINE OVERHEAD		
u l	THERMAL MAGNETIC				
5	TAMPER SWITCH TELEVISION	10	INSTRUMENTATION LINE UNDERGROUND		
	CALLED MINISTER, NO DOCTOR AND ADMINISTRATION.			1 7 1	
V VSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR	10	INSTRUMENTATION LINE OVERHEAD		
/ /SS G	TRANSIENT VOLTAGE SURGE SUPPRESSOR UNDERGROUND UNIT HEATER	10 / TU /	INSTRUMENTATION LINE OVERHEAD TELEPHONE LINE UNDERGROUND		
V	TRANSIENT VOLTAGE SURGE SUPPRESSOR UNDERGROUND	TU			

TRANSFORMER

XFMR

DEVICE	HEIGHT AFF	REMARKS
RECEPTACLE - LOW	1'-4"	TO BOTTOM OF DEVICE BOX
RECEPTACLE MEDIUM	4'-0"	TO TOP OF DEVICE BOX
IGHT 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

TAG		COOL	LING	TOTAL	SENSIBLE	EER	HEATING	VOLTAGE /	COP	OA		FAN		ELEC
	MODEL	EAT DB/WB	OAT DB	COOLING MBH	COOLING MBH	ARI-390	@ 5°F MBH	PHASE	@ 5F	CFM	CFM	ESP	RPM	HEAT KW
HPU-DB	BARD WH	85/72	95	27.4	17.8	10.0	11.0	480/3ø	1.62	20	860	0.2	A/R	6.0
HPU-SG	BARD WH	85/72	95	18.9	12.9	10.0	7.7	240/10	1.55	20	850	0.2	A/R	8.0
HPU-192	BARD WH	85/72	95	27.4	17.8	10.0	11.0	480/3ø	1.62	20	860	0.2	A/R	6.0

REFER TO HEAT PUMP SPECIFICATION FOR ADDITIONAL REQUIREMENTS

BASIS OF DESIGN IS BARD

ROVIDE 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	VOL TAGE	MOUNTING	DESCRIPTION	SYMBOL							
LF-1	CANLET	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	Ю							
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	Y							
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	В							

LOCATION	CONDUCTORS	I/O TAG	TYPE	UNIT	CONTROL	MONITOR	TREND	HISTORIZE	TOTALIZE	AVERAGE	ALARM	REPORT	NOTES
TYPICAL	2#14	POWER LOSS ALARM	DI								X		
FOR EACH	2#14	DOOR OPEN ALARM	DI								Х		
PUMP	2#14	PUMP 1 CALL-TO-RUN	D0		Х								
STATION	2#14	PUMP 1 RUNNING STATUS	DI			X		X				Х	REPORT # STARTS & RUNTIMES
	2#14	PUMP 1 OVERTEMP	DI		7						Х		
	2#14	PUMP1 DRIVE FAULT	DI								Х		
	2#14	PUMP 1 SUCTION PRESSURE ALARM	DI								Х		
	2#14	PUMP 2 CALL-TO-RUN	DO		X								I A A A
	2#14	PUMP 2 RUNNING STATUS	DI			Х		X					REPORT # STARTS & RUNTIMES
	2#14	PUMP 2 OVERTEMP	DI								Х		
	2#14	PUMP 2 DRIVE FAULT	DI								Х		I a language
	2#18 STIC	PUMP 2 SUCTION PRESSURE ALARM	DI								X		
	2#18 STIC	FLOWRATE	Al	GPM		X	X	X					
	2#18 STIC	FLOW TOTAL PULSE	DI	GAL					X			X	REPORT DAILY & MONTHLY FLOW
	2#18 STIC	SUCTION PRESSURE PRE-STRAINER	Al	PSIG		X	X	X			X		
	2#18 STIC	SUCTION PRESSURE PUMP 1	Al	PSIG		X	Х	X			Х		
	2#18 STIC	SUCTION PRESSURE PUMP 2	Al	PSIG		X	X	X			X		
	2#18 STIC	DISCHARGE PRESSURE	Al	PSIG		X	Х	X			Х		

SCADA I-O TABLE, TYPICAL

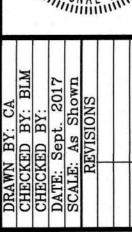
NOTE: THIS I-O IS REQUIRED FOR EACH OF THE (4) PUMP STATIONS



ELECTRICAL ABBREVIATIONS AND SYMBOLS

TER STERN SOUTHE





KENTUCKY NKFORT, A E

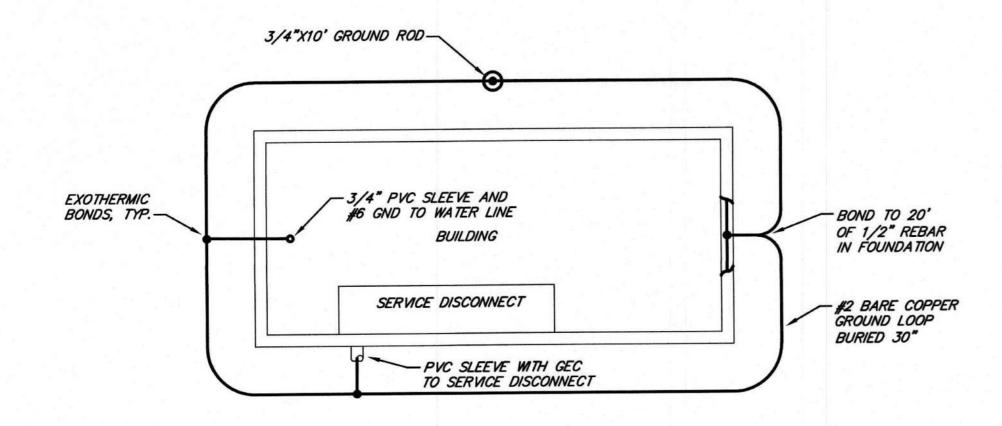


SHEET NO.

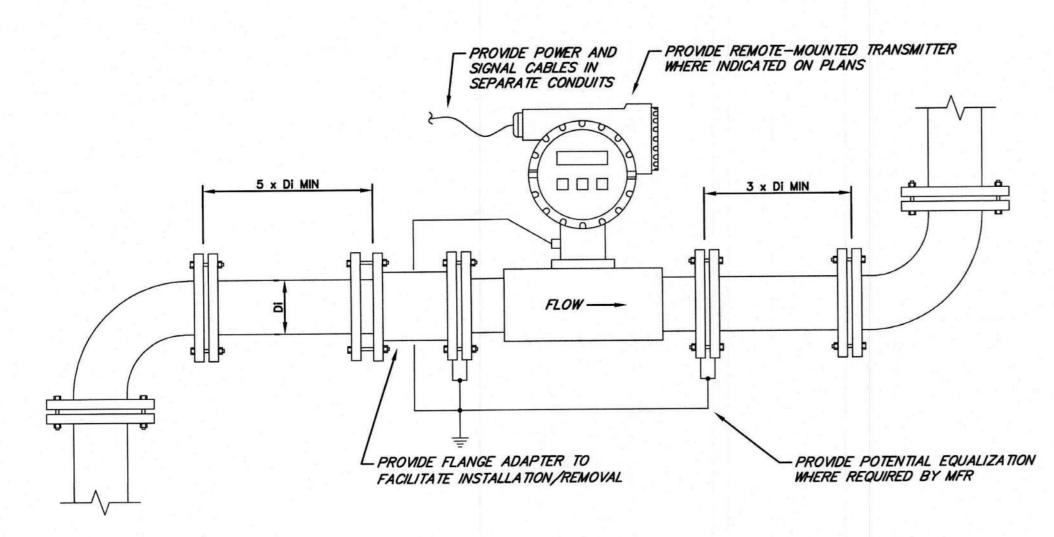
E-1

NOTE: ALL UNDERGROUND PVC CONDUITS SHALL TRANSITION TO METALLIC PRIOR TO EMERGING FROM GRADE OR SLAB. SEE SECTION 16020 FOR ACCEPTABLE CONDUIT TYPES

TYPICAL UNDERGROUND PVC CONDUIT TRANSITION TO METALLIC CONDUIT

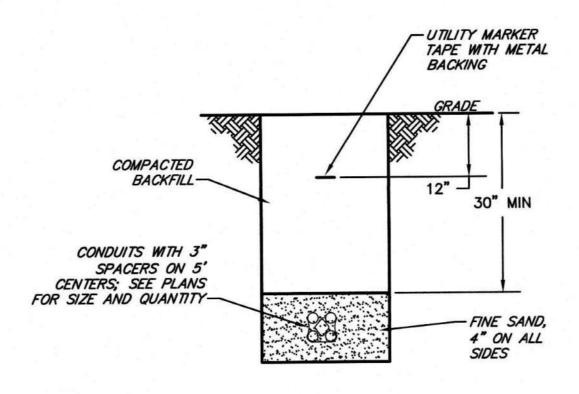


TYPICAL BUILDING GROUNDING DETAIL



MAGMETER INSTALLATION DETAIL

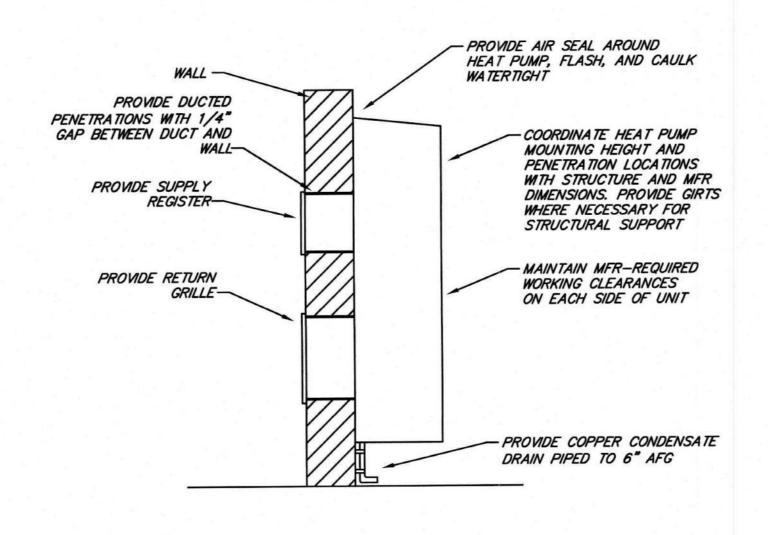
N. T.S.



TYPICAL TRENCH DETAIL

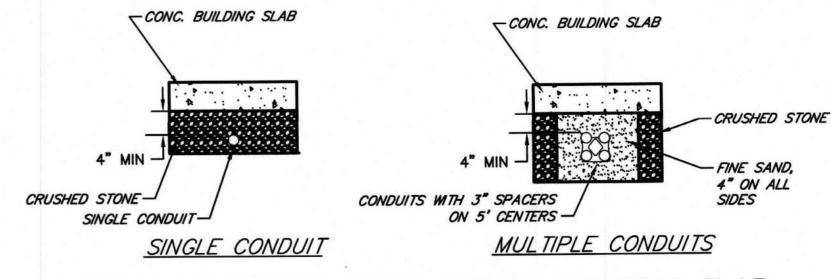
TRENCHING NOTES:

- 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, AND GAS.



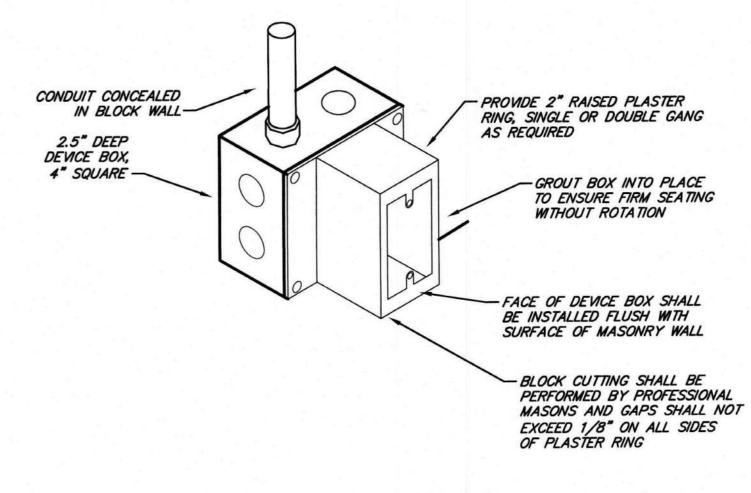
WALL-MOUNT HEAT PUMP INSTALLATION DETAIL

N. T. S.



CONDUIT INSTALLATION UNDER BUILDING SLAB

NOTE: CONDUITS SHALL BE INSTALLED DEEPER WHERE NECESSARY TO
PREVENT CURVED PORTION OF ELBOW FROM BEING EXPOSED ABOVE GRADE



MASONRY DEVICE BOX DETAIL

N. T. S.



ELECTRICAL DETAILS

SOUTHEASTERN WATER ASSOCIAT

KY 192/KY 1003 WATERLINES & SANDY G

KY 192/KY 10003 WATERLINES & SANDY G

DIXIE BEND PUMP STATION REPLACEME

BENJAMIN L.

BY: BLM
BY: BLM

BY:

DY:

Stock

Stoc

NS, INC. CHECKED DATE SCALE

KENVIRONS, I FRANKFORT, KENT



2016173

SHEET NO. E-2

NOTES:	
1. PROVID	E INTEGRAL SURGE SUPPRESSION SPD

PP-DB

WALL

NEMA 1

4700

SANDY GAP

ENCLOSURE:

MOUNTING:

LOCATION:

HPU-DB

CIRCUIT DESCRIPTION

PANEL LP-DB / TRANSFORMER | 3000

ANEL: INCLOSURE: MOUNTING: OCATION:	LP-DB NEMA WALL DIXIE	1						VOLTAGE: MAINS AMPACITY: MAIN C.B. SIZE: TOTAL SPACES:			120/240V, 1Ø, 3W 100A 80A 18
CIRCUIT DESCRIPTION	VA	POLES	BREAKER	NO		PHASE B VA	NO.	BREAKER	POLES	VA	CIRCUIT DESCRI
PD		2	30A	1	0		2	30A	2		
				3		0	4				
IGHTING - INTERIOR	700	1	20A	5	1200		6	15A	1	500	SC
EOFDTA OLFO	000		204	***		700	0	454		400	FLOV

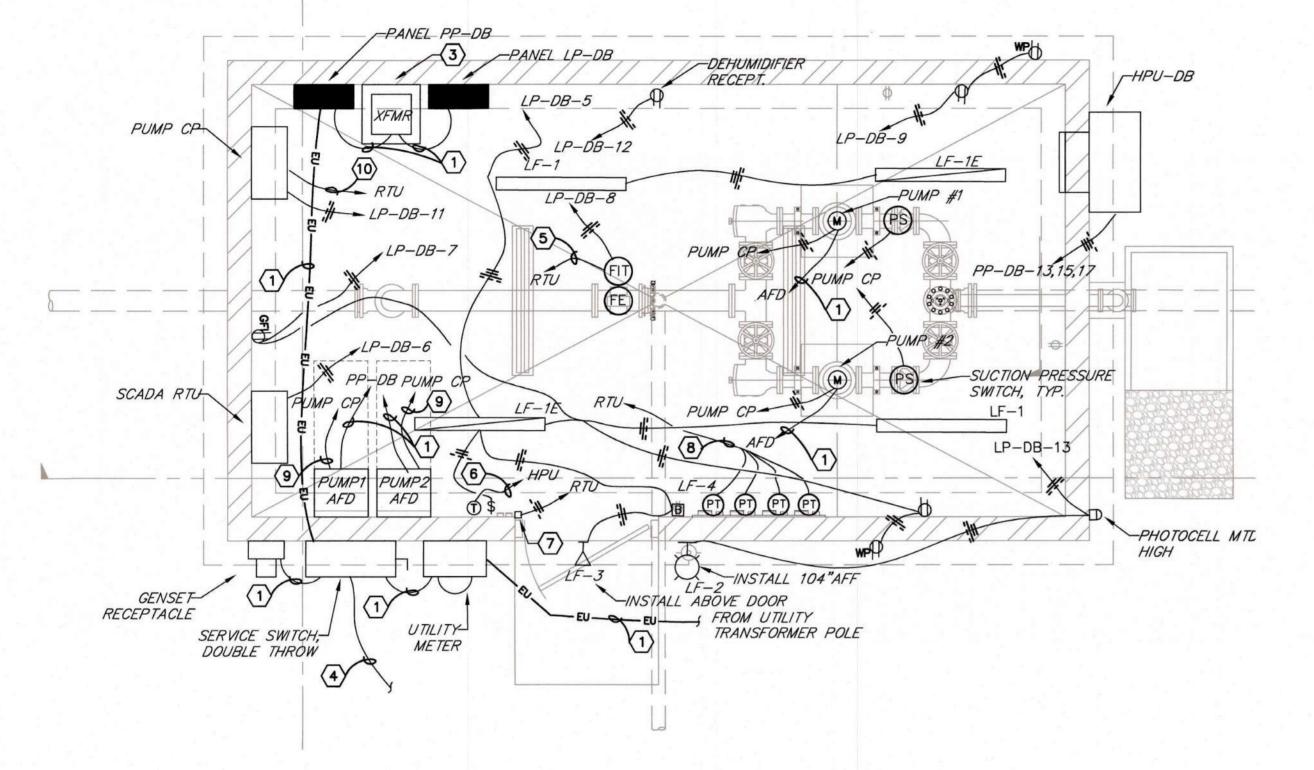
TOTAL VA PER PHASE: 21700 21700 18700

7000

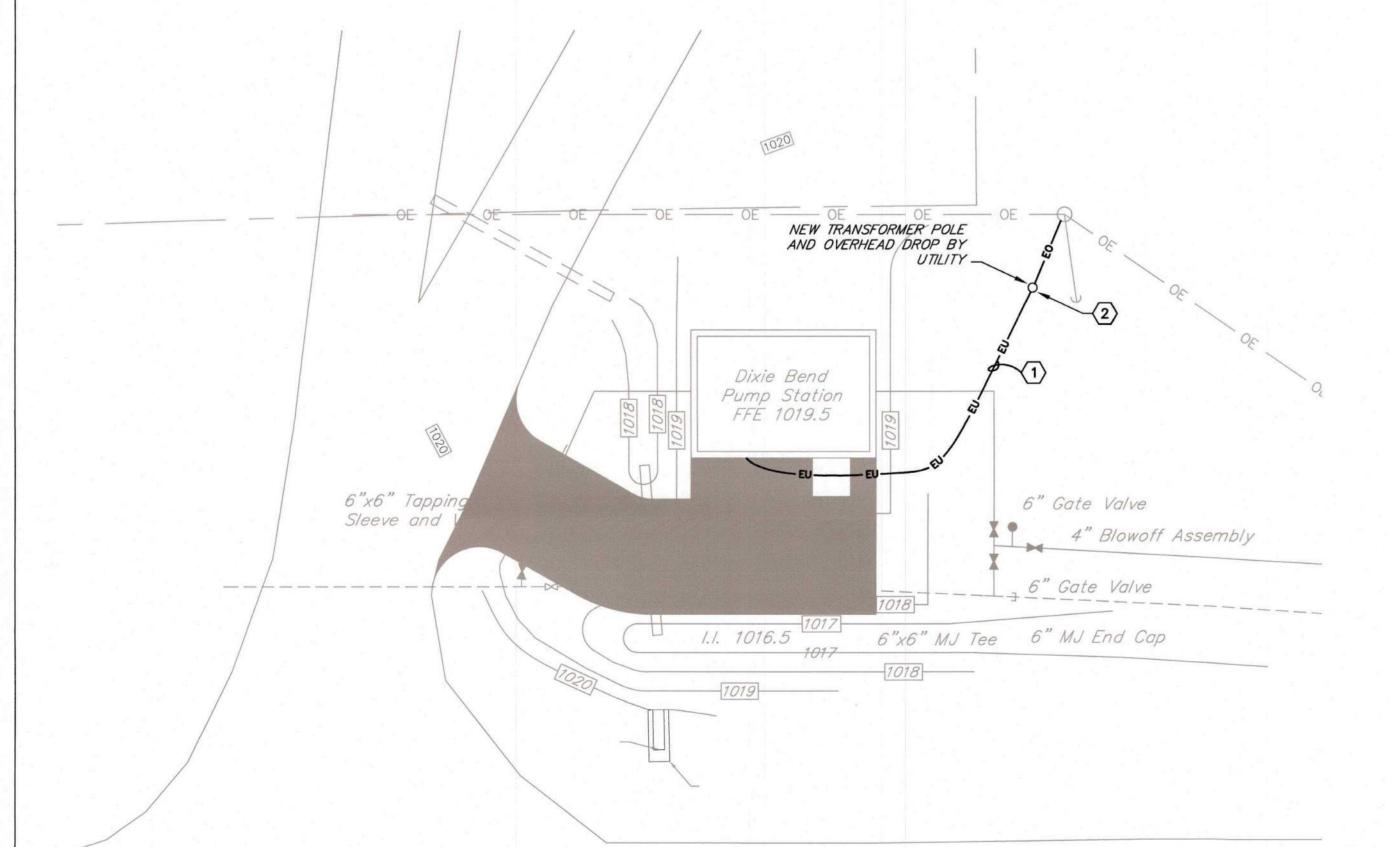
4700 18

CIRCUIT DESCRIPTION	VA	POLES	BREAKER	NO	VA	VA	NO.	BREAKER	POLES	VA	CIRCUIT DESCRIPTION
SPD		2	30A	1	0		2	30A	2		SPARE
				3		0	4				
LIGHTING - INTERIOR	700	1	20A	5	1200		6	15A	1	500	SCADA RTU
RECEPTACLES	600	1	20A	7		700	8	15A	1	100	FLOW METER
RECEPTACLES	600	1	20A	9	600		10	15A	1		SPARE
PUMP CP	200	1	20A	11		1700	12	20A	1	1500	DEHUMIDIFIER
LIGHTING - EXTERIOR	100	1	20A	13	100		14	15A	1		SPARE
SPARE		1	20A	15		0	16	15A	1		SPARE
SPARE		1	20A	17	0		18	15A	1		SPARE
		TOTAL	VA PER PH	ASE:	1900	2400					
	TOTAL AMPS PER PHASE:							TAI PANEL VA-	4300		

1. PROVIDE INTEGRAL SURGE SUPPRESSION SPD

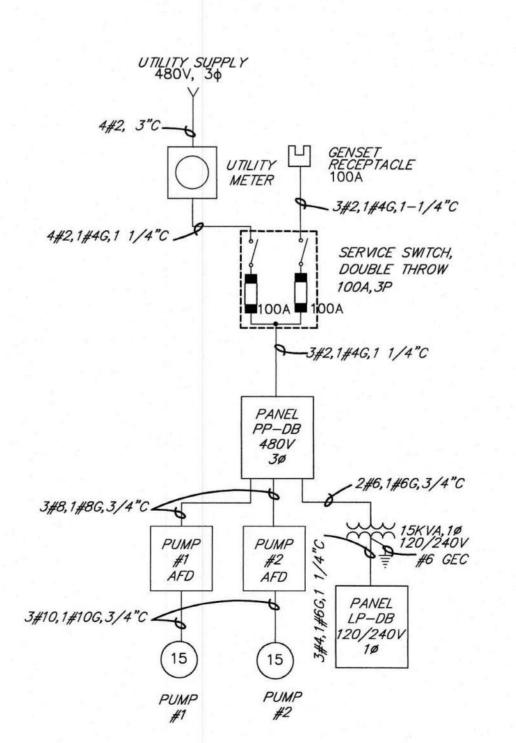






DIXIE BEND PUMP STATION ELECTRICAL SITE PLAN

SCALE: 1"-1"0"



DIXIE BEND ONE-LINE DIAGRAM

GENERAL NOTES:

- 3 PROVIDE TRANSFORMER MOUNTED ON 4"
 CONCRETE PAD. SEE ONE-LINE DIAGRAM FOR
 REQUIREMENTS
- 4 PROVIDE #4 GEC,3/4"C AND PROVIDE BUILDING GROUND LOOP PER DETAIL
- 5 PROVIDE 2-2#18 STIC,1#14G,3/4"C
- 6 PROVIDE THERMOSTAT CABLE, 1#14G, 3/4"C

- 10 PROVIDE 20#14, 1#14G, 1"C

• EXTERIOR ELECTRICAL EQUIPMENT SHALL BE NEMA 4X STAINLESS TYPE 316. INTERIOR ELECTRICAL EQUIPMENT SHALL BE NEMA1 OR NEMA 12

SSOCIA

TER

STERN

SOUTHE

MURPHY

KENTUCKY

NKFORT,

FRA

KEN

SHEET NOTES:

- SEE ONE-LINE DIAGRAM, THIS SHEET, FOR REQUIREMENTS
- 2 COORDINATE WITH UTILITY FOR ACTUAL LOCATION OF TRANSFORMER POLE. PROVIDE RISER PER UTILITY REQUIREMENTS

- 7 PROVIDE DOOR CONTACT SWITCH
- 8 PROVIDE 4-2#18 STIC,1#14G,1"C
- 9 PROVIDE 10#14, 1#14G, 3"C

PS-2 DIXIE BEND ELECTRICAL



SHEET NO. E-3

4 PROVIDE #4 GEC,3/4"C AND PROVIDE BUILDING GROUND LOOP PER DETAIL

5 PROVIDE 2-2#18 STIC,1#14G,3/4"C

GENERAL NOTES:

SHEET NOTES:

• EXTERIOR ELECTRICAL EQUIPMENT SHALL BE NEMA 4X STAINLESS TYPE 316. INTERIOR ELECTRICAL EQUIPMENT SHALL BE NEMA1 OR NEMA 12

SEE ONE-LINE DIAGRAM, THIS SHEET, FOR REQUIREMENTS

2 COORDINATE WITH UTILITY FOR ACTUAL LOCATION OF TRANSFORMER POLE. PROVIDE RISER PER UTILITY REQUIREMENTS

3 PROVIDE TRANSFORMER MOUNTED ON 4"
CONCRETE PAD. SEE ONE-LINE DIAGRAM FOR
REQUIREMENTS

6 PROVIDE THERMOSTAT CABLE, 1#14G, 3/4"C 7 PROVIDE DOOR CONTACT SWITCH

8 PROVIDE 4-2#18 STIC,1#14G,1"C

9 PROVIDE 10#14, 1#146 , 3"c

10 PROVIDE 20#14, 1#14G, 1"C

VOLTAGE: 480, 3Ø, 3W **ENCLOSURE:** NEMA 1 MAINS AMPACITY: 100 MOUNTING: WALL MAIN C.B. SIZE: LOCATION: TOTAL SPACES: KY-192 CIRCUIT DESCRIPTION CIRCUIT DESCRIPTION PUMP #1 AFD PANEL LP-192 / TRANSFORMER 7500 2 HPU-192 4700 3 TOTAL VA PER PHASE: 26200 26200 18700 TOTAL AMPS PER PHASE 94.6 94.6 67.5 TOTAL PANEL VA: 71100 1. PROVIDE INTEGRAL SURGE SUPPRESSION SPD

PANEL: ENCLOSURE: MOUNTING: LOCATION:	NEMA WALL KY-192	1						VOLTAGE: MAINS AMPACITY MAIN C.B. SIZE: TOTAL SPACES:		120/240V, 1Ø, 3W 100A 80A 18	
CIRCUIT DESCRIPTION	VA	POLES	BREAKER	NO	and the property of the same of	PHASE B VA	NO.	BREAKER	POLES	VA	CIRCUIT DESCRIPTION
SPD		2	30A	1	0		2	30A	2		SPARE
				3		0	4				
LIGHTING - INTERIOR	700	1	20A	5	1200		6	15A	1	500	SCADA RTU
RECEPTACLES	600	1	20A	7		700	8	15A	1	100	FLOW METER
RECEPTACLES	600	1	20A	9	600		10	15A	1		SPARE
PUMP CP	200	1	20A	11		1700	12	20A	1	1500	DEHUMIDIFIER
LIGHTING - EXTERIOR	100	1	20A	13	100		14	15A	1	conversation of	SPARE
SPARE		1	20A	15		0	16	15A	1		SPARE
SPARE		1	20A	17	0		18	15A	1		SPARE
		TOTAL V	A PER PHA	ASE:	1900	2400			E L		
TOTAL AMPS PER PHASE						20	TOTAL PANEL VA: 4300				

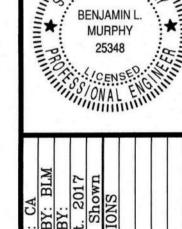
UTILITY SUPPLY 480V, 3¢ 4#2, 3"C-UTILITY H GENSET RECEPTACLE 100A - 3#2,1#4G,1-1/4"C 4#2,1#4G,1 1/4"C ~ SERVICE SWITCH, DOUBLE THROW 100A, 3P 3#2,1#4G,1 1/4"C PANEL PP-192 480V 3ø 2#6,1#6G,3/4"C 3#8,1#8G,3/4"C 159#1.4 120/240V 10 3#10,1#10G,3/4"C ~ PUMP #1

KY-192 ONE-LINE DIAGRAM

KY 192 PS ELECTRICAL

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KENTUCK NKFORT, KEN



2016173

SHEET NO. E-4

KY-192 ELECTRICAL FLOOR PLAN NEW TRANSFORMER POLE AND OVERHEAD DROP BY UTILITY — KY 192 Pump Station FFE 886.5 6" Gate Valve -8" PVC, SDR 17 Inv. 884.68 $7.5'R \rightarrow 885.5 \rightarrow -7.5'R$

GENSET-/

RECEPTACLE
SERVICE SWITCH,

DOUBLE THROW

LP-192-13

UTILITY

METER

-PHOTOCELL MTD

FROM UTILITY
TRANSFORMER POLE

Existing entrance to be removed.

SCADA RTU

INSTALL FIXTURE-

OVER DOOR

INSTALL 104"AFF

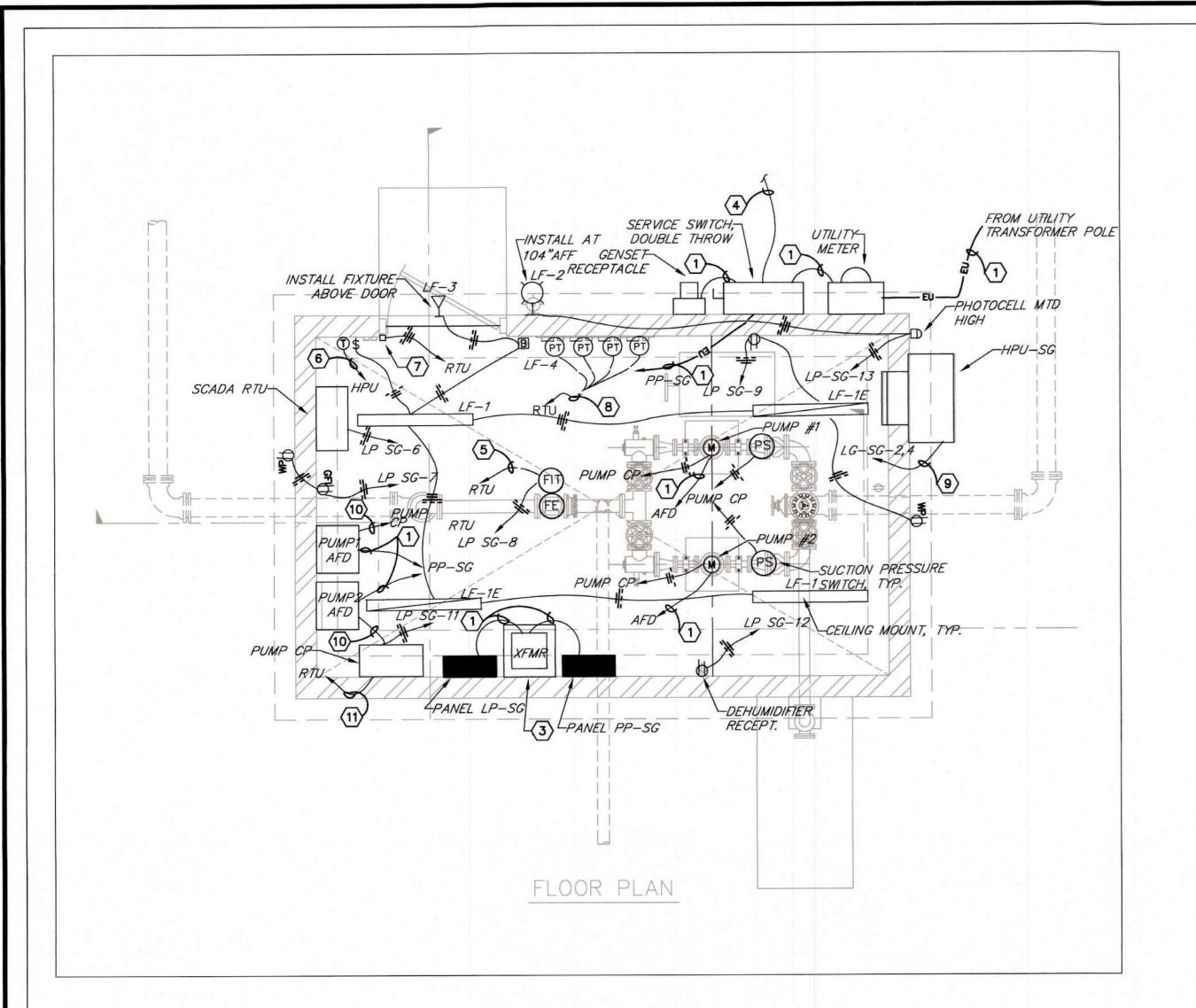
KY192 ELECTRICAL SITE PLAN

SCALE: 1"-1'0"

€ KY 192

PUMP #2 AFD SPARE

PANEL: ENCLOSURE: MOUNTING: LOCATION:	NEMA WALL KY-192	1						VOLTAGE: MAINS AMPACITY MAIN C.B. SIZE: TOTAL SPACES:	<i>(</i> :		120/240V, 1Ø, 3W 100A 80A 18
CIRCUIT DESCRIPTION	VA	POLES	BREAKER	NO	The state of the s	PHASE B VA	NO.	BREAKER	POLES	VA	CIRCUIT DESCRIPTION
SPD		2	30A	1	0		2	30A	2		SPA
				3		0	4				
LIGHTING - INTERIOR	700	1	20A	5	1200		6	15A	1	500	SCADA F
RECEPTACLES	600	1	20A	7		700	8	15A	1	100	FLOW MET
RECEPTACLES	600	1	20A	9	600		10	15A	1		SPA
PUMP CP	200	1	20A	11		1700	12	20A	1	1500	DEHUMIDIF
LIGHTING - EXTERIOR	100	1	20A	13	100		14	15A	1	en contra	SPA
SPARE		1	20A	15		0	16	15A	1		SPA
SPARE		1	20A	17	0		18	15A	1		SPA
		TOTAL	/A PER PHA	SF	1900	2400					



PANEL: ENCLOSURE: MOUNTING: LOCATION:	PP-SG NEMA 1 WALL SANDY G						VOLTAGE: MAINS AMPACITY: MAIN C.B. SIZE: TOTAL SPACES:				480, 3Ø, 3W 100 100 30		
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	7000	*********		2	15A	3	2100	PUMP #1 AFD	
				3		7000		4			2100		
				5			7000	6			2100		
PANEL LP-SG / TRANSFORMER	7500	2	60A	7	14500			8	15A	3	2100	PUMP #2 AFD	
750	7500			9		14500		10			2100		
				11	*********		7000	12			2100		
SPARE		3	30A	13	4700			14	15A	3		SPARE	
				15		4700		16					
				17			4700	18					
				19	0		********	20					
				21		0		22			-1000		
				23			0	24					
				25	0		*******	26					
				27		0		28					
				29	********		0	30					
		TO	TAL VA PER P	HASE:	26200	26200	18700						
TOTAL AMPS PER PHASE					94.6	94.6	67.5	TOTA	TOTAL PANEL VA: 71100				

PANEL: ENCLOSURE: MOUNTING: LOCATION:	NEMA WALL SAND	1					V	OLTAGE: MAINS AMPACITY MAIN C.B. SIZE: TOTAL SPACES:		120/240V, 1Ø, 3W 100A 80A 18	
CIRCUIT DESCRIPTION	VA	POLES	BREAKER	NO	PHASE A	PHASE B VA	NO.	BREAKER	POLES	VA	CIRCUIT DESCRIPTION
SPD		2	30A	1	5000		2	60A	2	5000	SPARE
				3		5000	4			5000	
LIGHTING - INTERIOR	700	1	20A	5	1200		6	15A	1	500	SCADA RTU
RECEPTACLES	600	1	20A	7		700	8	15A	1	100	FLOW METER
RECEPTACLES	600	1	20A	9	600		10	15A	1		SPARE
PUMP CP	200	1	20A	11		1700	12	20A	1	1500	DEHUMIDIFIER
LIGHTING - EXTERIOR	100	1	20A	13	100		14	15A	1		SPARE
SPARE		1	20A	15		0	16	15A	1		SPARE
SPARE		1	20A	17	0		18	15A	1	34	SPARE
	6900	7400									
	57.5	61.7	TO	TAL PANEL VA:	14300						

GENERAL NOTES:

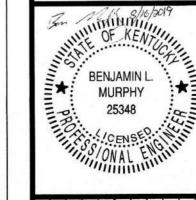
• EXTERIOR ELECTRICAL EQUIPMENT SHALL BE NEMA 4X STAINLESS TYPE 316. INTERIOR ELECTRICAL EQUIPMENT SHALL BE NEMA1 OR NEMA 12

SHEET NOTES:

- 1 SEE ONE-LINE DIAGRAM, THIS SHEET, FOR REQUIREMENTS
- (2) COORDINATE WITH UTILITY FOR ACTUAL LOCATION OF TRANSFORMER POLE. PROVIDE RISER PER UTILITY REQUIREMENTS
- 3 PROVIDE TRANSFORMER MOUNTED ON 4"
 CONCRETE PAD. SEE ONE-LINE DIAGRAM FOR
 REQUIREMENTS
- 4 PROVIDE #4 GEC,3/4°C AND PROVIDE BUILDING GROUND LOOP PER DETAIL
- (5) PROVIDE 2-2#18 STIC,1#14G,3/4"C
- 6 PROVIDE THERMOSTAT CABLE, 1#14G, 3/4"C
- 7 PROVIDE DOOR CONTACT SWITCH
- 8 PROVIDE 4-2#18 STIC,1#14G,1"C

10 PROVIDE 10#14, 1#149,3/4"C

- 9 PROVIDE 2#6, 1#10G,3/4°C
- (11) PROVIDE 20#14, 1#14G,1"c



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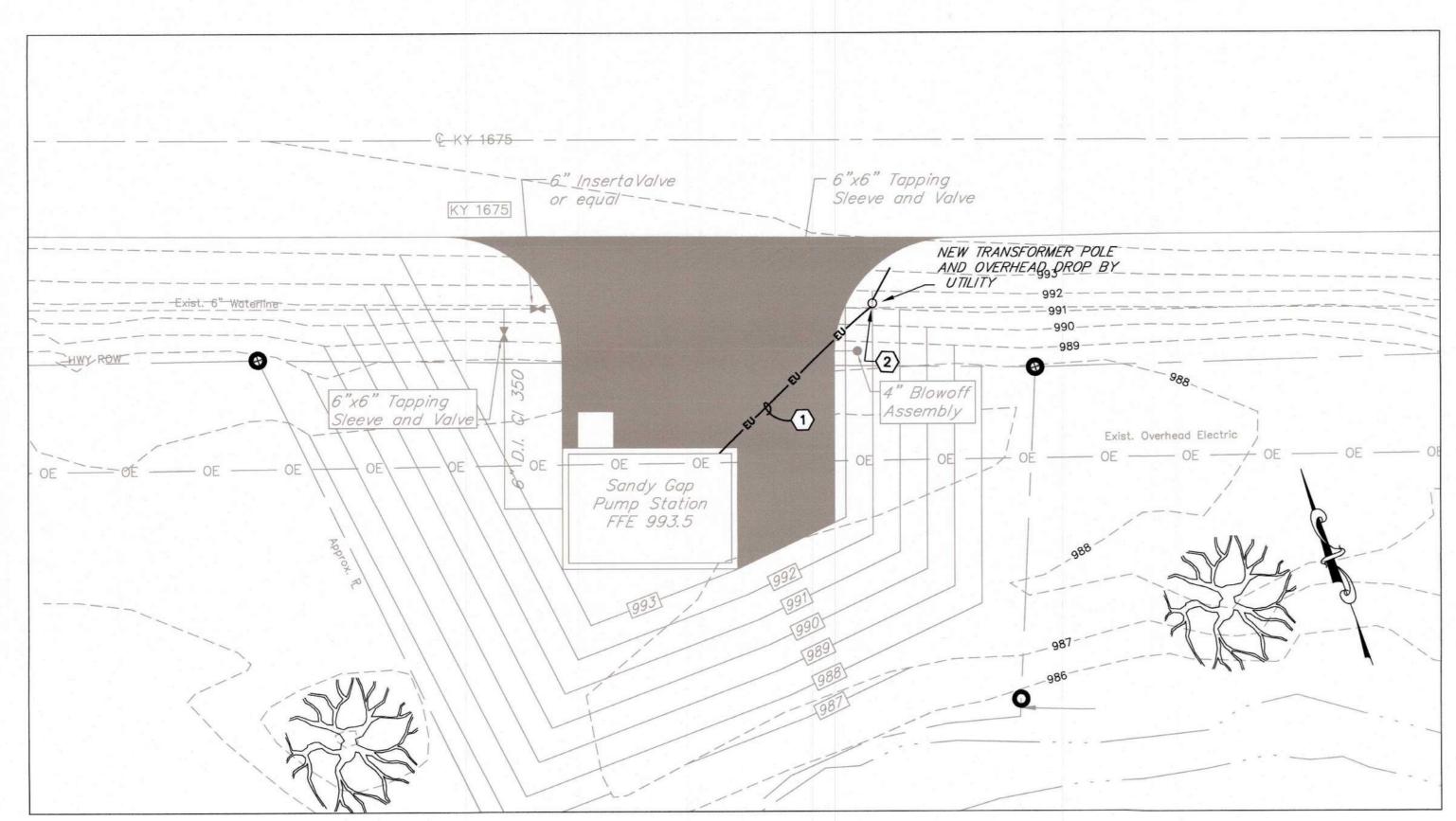


PROJECT NO. 2016173

SHEET NO. E-5

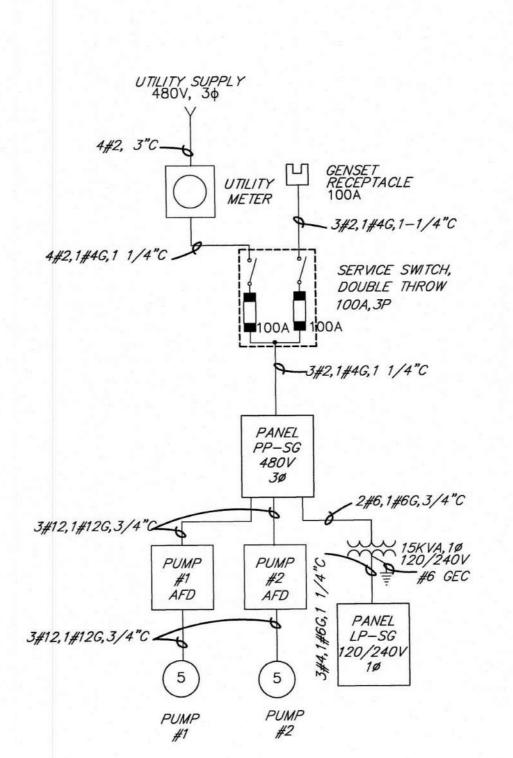
SANDY GAP ELECTRICAL FLOOR PLAN

SCALE: 3/8"=1"0"



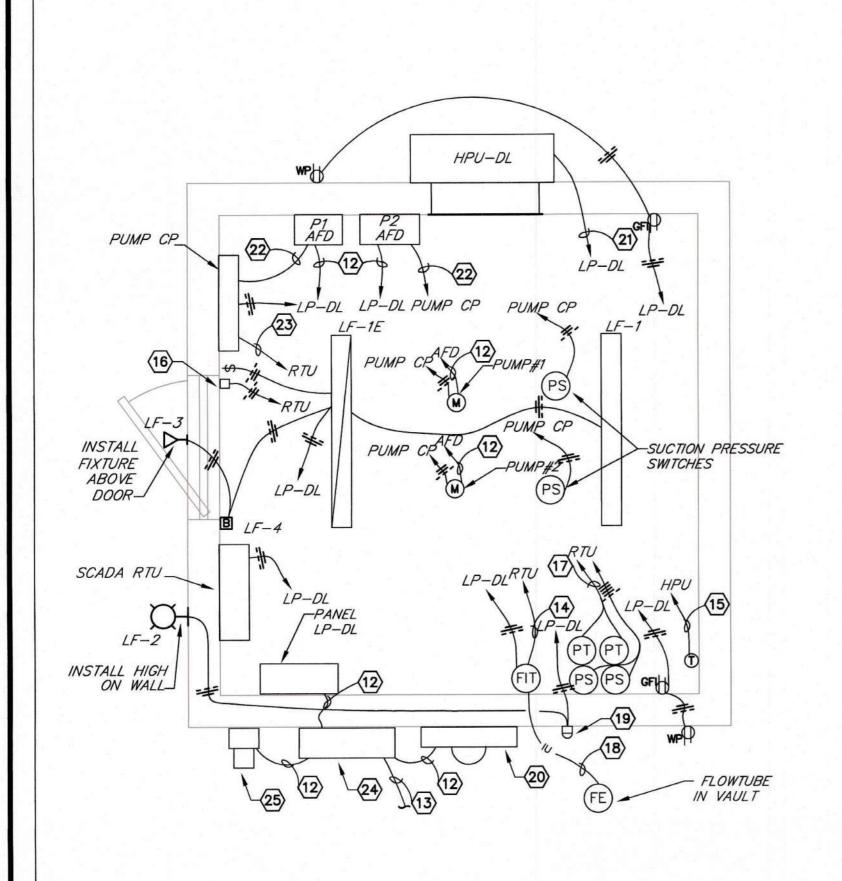
SANDY GAP ELECTRICAL SITE PLAN

SCALE: 1"0": 10'

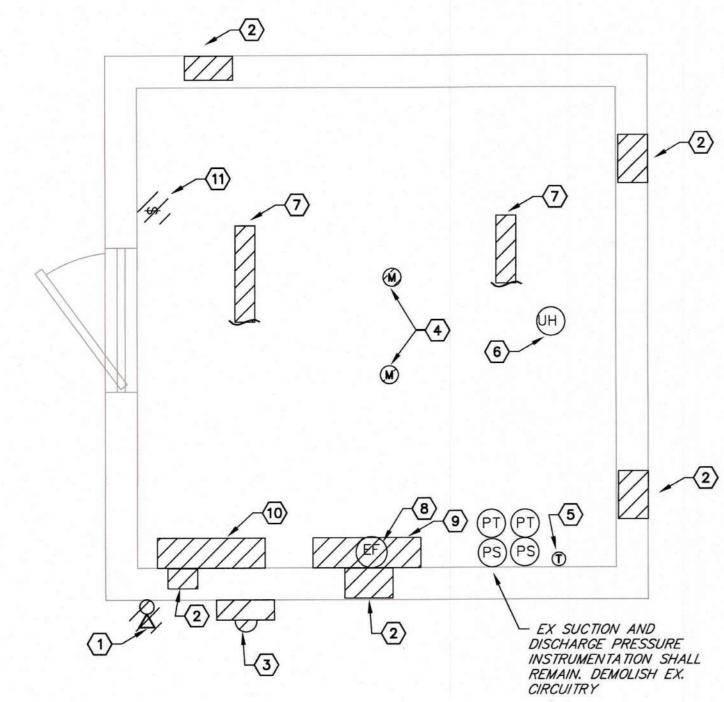


SANDY GAP ONE-LINE DIAGRAM

SANDY GAP ELECTRICAL

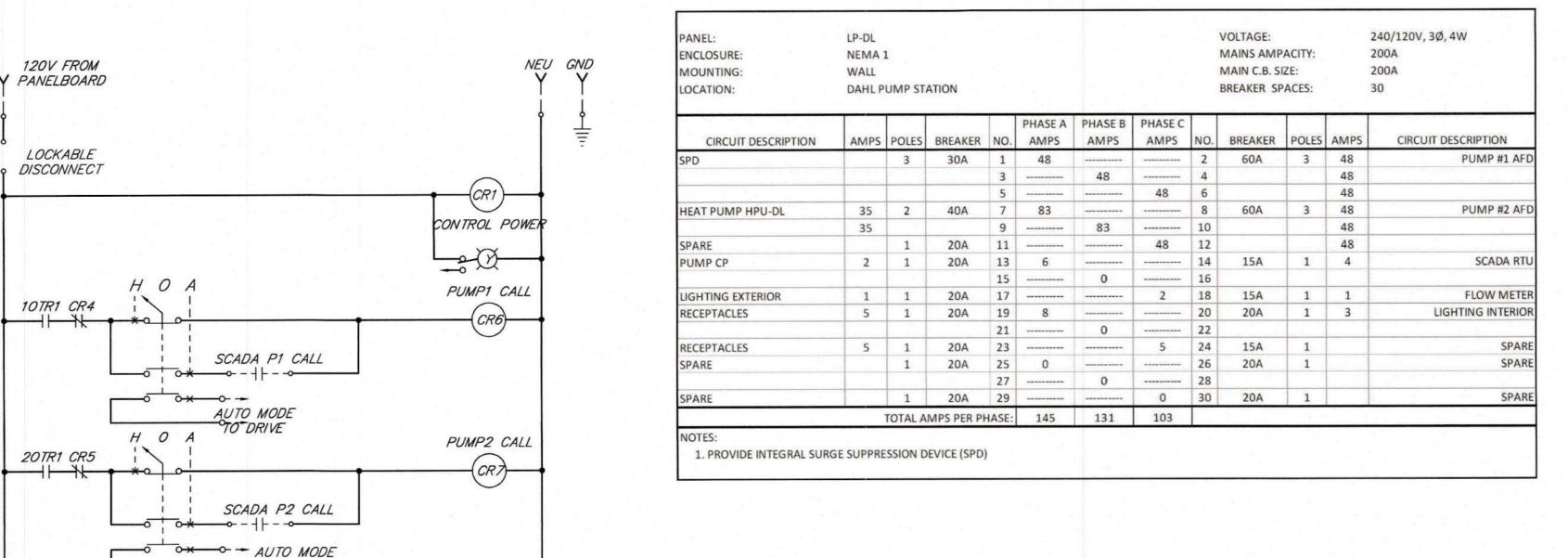


DAHL ELECTRICAL NEW WORK PLAN SCALE: 1/2" = 1'-0"



DAHL ELECTRICAL DEMOLITION PLAN

FAULT FROM VFD SCALE: 1/2" = 1'-0"



PUMP1 RUN

PUMP2 RUN

SUCTION

SCADA TO

SUCTION PRESSURE

OVERTEMP TO

PUMP2
OVERTEMP TO

SCADA

PUMP1 DRIVE

PUMP2 DRIVE FAULT TO SCADA

FAULT TO SCADA

Lo_ ALARM TO SCADA

Lo_ SCADA

Lo- SCADA

STATUS TO

Lo_ SCADA

STATUS TO

_ TO DRIVE

P1 RUNNING

P2 RUNNING

P1 SUCTION

PRESSURE LOW

P2 SUCTION PRESSURE LOW

OVERHEAT

P2 OVERHEAT

20TR2

P1 DRIVE FAULT

P2 DRIVE FAULT

-

P1 OVERTEMP SENSORS

P2 OVERTEMP SENSORS

--0

-

RUNNING

STATUS FROM VFD

RUNNING

STATUS FROM VFD

PUMP1

SUCTION

PRESSURE

SWITCH

CLOSES ON

LOW PRESSURE

CR4

CLOSES ON LOW PRESSURE

TR2

CR5

10TR2

10TR1

10TR1

10TR1

10TR2

Y

20TR2

20TR1

20TR1

20TR1

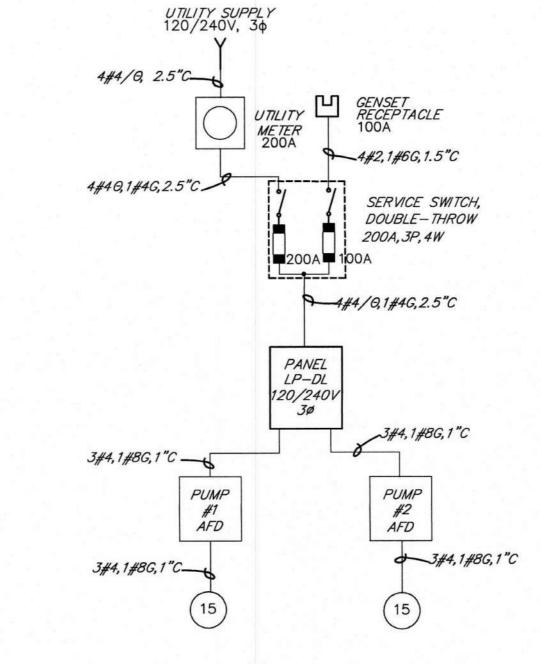
20TR2

FAULT FROM VFD

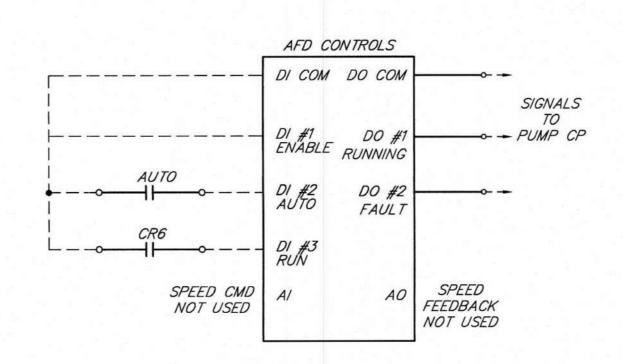
RESET

PUMP2 SUCTION ~ PRESSURE SWITCH CR3

RESET



DAHL ONE-LINE DIAGRAM NOT TO SCALE



PUMP STATION CONTROL PANEL, TYP.

NOT TO SCALE

- TYPICAL FOR ALL FOUR PUMP STATIONS.
- 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 SET IN PRESET FREQUENCY PARAMETER
- DRIVES SHALL BE WALL-MOUNTED SEPARATE FROM PANEL AS INDICATED ON PLANS

GENERAL NOTES:

• EXTERIOR ELECTRICAL EQUIPMENT SHALL BE NEMA 4X STAINLESS TYPE 316. INTERIOR ELECTRICAL EQUIPMENT SHALL BE NEMA1 OR

SHEET NOTES:

- (1) DEMO EX. ANTENNA MAST AND ANTENNAE
- DEMO EX. BRICK VENT, REPLACE WITH NEW CMU BLOCK, AND PATCH TO MATCH EX. WALL
- (3) DEMO EX. METER AND SERVICE RISER
- 4 DEMO EX. PUMP MOTOR CIRCUITRY
- (5) DEMO EX. THERMOSTAT AND CIRCUITRY
- (6) DEMO EX. UNIT HEATER AND CIRCUITRY
- 7 DEMO EX. LIGHT FIXTURE AND CIRCUITRY
- (8) DEMO EX. EXHAUST FAN
- (9) DEMO EX. PUMP CP AND CIRCUITRY
- (10) DEMO EX. SCADA RTU AND CIRCUITRY 11) DEMO ALL EX. LIGHT SWITCHES AND RECEPTACLES
- 12) SEE ONE-LINE DIAGRAM, THIS SHEET, FOR REQUIREMENTS
- PROVIDE #2 GEC,1'C AND PROVIDE BUILDING GROUND LOOP PER DETAIL
- (14) PROVIDE 2-2#18 STIC,1#14G,3/4"C
- (15) PROVIDE THERMOSTAT CABLE, 1#14G, 3/4"C
- (16) PROVIDE DOOR CONTACT SWITCH
- (17) PROVIDE 2-2#18 STIC,1#14G,3/4"C
- (18) PROVIDE FLOWMETER PRIMARY CABLE, 1#14G, 1"C
- (19) PROVIDE PHOTOCELL MOUNTED HIGH ON WALL
- PROVIDE UTILITY METER BASE AND OVERHEAD SERVICE RISER WITH WEATHERHEAD PER UTILITY REQUIREMENTS
- 21) PROVIDE 2#8,1#10G,3/4"C
- 22) PROVIDE 10#14,1#14G,3/4"C
- PROVIDE DOUBLE-THROW SERVICE SWITCH PER ONE-LINE DIAGRAM
- PROVIDE GENSET RECEPTACLE PER ONE-LINE DIAGRAM

23) PROVIDE 20#14,1#14G,1"C

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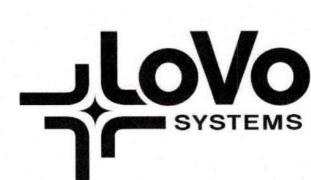
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DAHL PUMP STATION ELECTRICAL



SHEET NO.

E-6

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