

**HIGH TECH CORRIDOR DEVELOPMENT, LLC
HARRISON COUNTY, WEST VIRGINIA**

WHITE OAKS PASE II A

ADDENDUM #1

OCTOBER 20, 2022

THRASHER PROJECT #T30-11114

TO WHOM IT MAY CONCERN:

A Pre-Bid Conference was held on Wednesday, October 20, 2022, on the above-referenced project, a copy of the sign in sheet is included in this Addendum. The following are clarifications and responses to questions posed by contractors for the above reference project.

A. GENERAL

1. THE BID ITEMS AND QUANTITIES ARE SHOWN ON SHEET 3 OF THE PLANS. A FINAL BID FORM WILL BE RELEASED WITH THE FINAL ADDENDUM ON OR BY WEDNESDAY, OCTOBER 26, 2022.

B. SPECIFICATIONS

1. Revised Specification 012200 Unit Prices
2. Revised Specification 013100 Project Management and Coordination
3. Revised Specification 034100 Precast Structural Concrete
4. Revised Specification 312000 Earth Moving
5. Revised Specification 329200 Turf and Grasses
6. Revised Specification 334200 Stormwater Conveyance

C. DRAWINGS

1. The following plan sheets have been revised, Cover, 1-4, 7-12, 30, 47, 51, 58, 60-61, 63-64, 66 and 67.

D. QUESTIONS AND RESPONSES

1. QUESTION

In the pre-bid, you stated that we do not have to follow the phasing of the project so long as we are able to control our water. Can you confirm that we do not have to follow the SWM plan as submitted to the DEP without having repercussions?

RESPONSE

To avoid conflict with the DEP the Contractor should try to follow the staged construction as submitted to the DEP as closely as possible.

2. QUESTION

Will you pay for stored materials?

RESPONSE

Yes.

3. QUESTION

Is there a location to waste asphalt millings?

RESPONSE

Yes, the millings can be used in the subbase material.

4. QUESTION

Is the stormwater pond included in the earthwork quantities?

RESPONSE

Yes.

5. QUESTION

Bid Item 14, Compost Filter Sock Inlet Protection: What diameter filter sock is required? Detail refers us to the plans, but I don't see anything shown in the plan views.

RESPONSE

10 Inch

6. QUESTION

Bid Item 15, Rock Lined Core Drain Discharge Sump (25'x50'x3'): Is the rock lining supposed to be 3' thick or is that the depth with a 1' thick rock thickness (similar to detail shown on plan sheet 58), is fabric required?

RESPONSE

This Item has been removed from the plans and is no longer part of the scope.

7. QUESTION

Bid Item 17, Rock Lined Core Drain Pad Sump (12'x 12' x 3'): Is the rock lining supposed to be 3' thick or is that the depth with a 1' thick rock thickness (similar to the detail shown on plan sheet 58), is fabric required?

RESPONSE

Depth of the sump is to be 3' and the rock thickness shall be 1'. No fabric is required.

8. QUESTION

Bid Item 16, Sediment Trap: Is the excavation associated with the sediment trap included with Bid Item 40, Earthmoving, or is the excavation to be included with Bid Item 16?

RESPONSE

This is included in the total earthwork quantity.

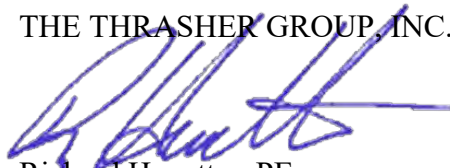
E. CLARIFICATIONS

1. Last day for questions is close of business on Monday, October 24, 2022.
2. Final Addendum will be issued on or by Wednesday, October 26, 2022.
3. The Items and Quantities shown on Sheet 3 of the plans reflect the current design. A final Bid Form will be provided in the Final Addendum on or by Wednesday, October 26, 2022.

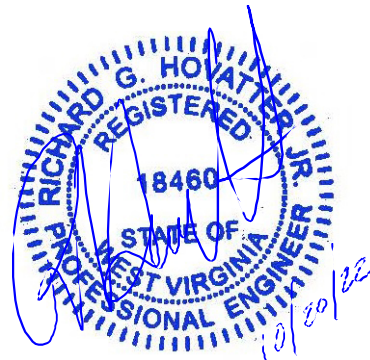
If you have any questions or comments, please feel free to contact me at your earliest convenience. As a reminder, bids will be received **until 2:00 p.m. on Wednesday, November 2, 2022**, at The Thrasher Group, 600 White Oaks Blvd, Bridgeport, WV 26330. Good luck to everyone and thank you for your interest in the project.

Sincerely,

THE THRASHER GROUP, INC.



Richard Hovatter, PE
Senior Project Manager



**HIGH TECH CORRIDOR DEVELOPMENT, LLC
HARRISON COUNTY, WEST VIRGINIA
WHITE OAKS PHASE II A**

**PRE-BID CONFERENCE
Wednesday, October 19, 2022**

Thrasher Project #T30-11114

Name	Representing	Phone #	Email Address
RJ Houatta	Thrasher	304 669 6848	rhovatta@thethrasher.com
STEVE SZARO	A.L.L. CONSTRUCTION INC	304 693 7131 Ext 102	Steve@allconstructionwv.com
MATT SELDERS	KANAWHA STONE CO INC	304 755 8271	matt.selders@kanawhastone.com
Trent Shepherd	Wolfes Excavating	304-771-7906	tshepherd@wolfesexcavating.com
Jimmy Pumphrey	Wolfes Excavating		jpumphrey@wolfesexcavating.com
Greg Miller	Doss Enterprises	304-517-6892	greg@dossenterprises.com
DERRICK SEARS	FOSTER SUPPLY	304-553-6565	dsears@fostersupply.com
Craig Howard	DOSS	304-476-8575	craig.howard@dossenterprises.com
Jeremy Wings	Brian Vandevender Contracting	304-413-3109	JeremyW@BLAllenCO.com

SECTION 012200 - UNIT PRICES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for unit prices.

1.2 DEFINITIONS

- A. Unit price is an amount incorporated into the Agreement, applicable during the duration of the Work as a price per unit of measurement for materials, equipment, or services, or a portion of the Work, added to or deducted from the Contract Sum by appropriate modification, if the scope of Work or estimated quantities of Work required by the Contract Documents are increased or decreased.

1.3 PROCEDURES

- A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, applicable taxes, overhead, and profit.
- B. Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at Owner's expense, by an independent surveyor acceptable to Contractor.
- C. List of Unit Prices: A schedule of unit prices is included in Part 3. Specification Sections referenced in the schedule contain requirements for materials described under each unit price.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF UNIT PRICES

- A. Site Clearing:
 - 1. Description: Site Clearing according to Section 311000 "Site Clearing." This payment shall constitute full compensation for labor, materials, equipment, and other costs associated with this work.
 - 2. Unit of Measurement: Lump Sum
- B. Mobilization/Demobilization:

1. Description: the mobilization item shall be paid as follows:
 1. Mobilization 50%
 2. Demobilization 50%
2. Construction Stakeout
 1. The cost of this work shall be included in the lump sum bid item for Mobilization/Demobilization. This bid item shall include both on-and-off-site construction.
 2. Contractor shall provide all stakeout for on-site construction. Those items shall verify all storm and sewer structure elevations to assure that structures will be able to be installed at the correct elevations.
 1. Any other on-site items needing verified prior to the start of construction.
 2. All discrepancies discovered by the contractor shall be disclosed to the Engineer immediately.
3. Unit of Measurement: Lump Sum

C. Demolition and Traffic Control

1. Description: Demolition according to Section 024116 "Structure Demolition."
2. Demolition shall include the work necessary to remove and dispose of the existing structures indicated on the plans and any existing utilities that may be present at their location. Demolition shall also include the work necessary to remove and dispose of any asphalt, existing pond riser and discharge structure, sanitary sewer, or other items required to complete the work and any associated traffic control requirements to complete the work. Demolition shall be paid for by the lump sum unit bid price for Demolition and Traffic Control. This shall include all labor, materials, overhead, profit, inspection, etc. for the demolition of the structures indicated on the plans.
3. Unit of Measurement: Lump Sum

D. Earth Moving:

1. Description: Earth Moving according to Section 312000 "Earth Moving."
2. All earth moving in this contract is unclassified "No Rock Clause". Earth Moving includes all excavation of materials and borrowing of suitable materials as necessary to accommodate construction and shall be paid for under the unit bid price for Earth Moving, based on the cubic yard quantity.
3. Earth Moving for all construction shall be included in the bid prices requiring excavation or fill activity.
4. The cost for topsoil removal, handling, stockpiling, waste, and re-distribution shall be incidental to the unit bid price for Earth Moving.
5. The cost of earth moving associated with the construction of the pads shall be paid for by the Earth Moving unit bid price, based on the cubic yard quantity. This shall include all labor, materials, overhead, profit, etc. for the excavation, disposal of unsuitable material, rock fill required to: adjust rough grading underneath roadways to correct bottom of subgrade elevation prior to the placement of roadway subgrade courses.
6. Earthwork will be paid based on the 352,000 cubic yard bid quantity. If the Contractor has claims for additional payment for overrun of the Earth Moving quantity, the Contractor shall provide the appropriate pre and post construction survey data justifying such claim to the satisfaction of the Engineer.
7. Unit of Measurement: Cubic Yard

E. Rock Core Drains

1. Description: The Contractor shall be responsible for removing all organic material encountered along existing ditches before installing rock core drains before commencing filling activities. This material shall be wasted on site at a location approved by the Owner or mixed with cut material and incorporated into the fill if approved by the Engineer. This material is incidental to the Rock Core Drain unit bid price.
2. The Rock Core Drains shall be installed in a manner as to provide positive drainage into the pond backfill rock.
3. Rock core drains shall be constructed in all existing water channels onsite before fill operations begin as shown on the plans. The Contractor shall supply two bid prices for this work. One price shall be reflective of performing this work using onsite material and shall include all labor, fabric, overhead, profit, etc. for the placement of the onsite rock fill and fabric required to construct the rock core drains. No cost should be include for the rock material as it is paid for under the Earth Moving pay item. This item shall be paid for under the unit bid price per linear foot for Rock Core Drains Using Onsite Material. The second price shall be reflective of performing this work using imported material and shall include all labor, materials, delivery, overhead, profit, etc. for the placement of the imported rock fill and fabric required to construct the rock core drains. This item shall be paid for under the unit bid price per linear foot for Rock Core Drains Using Imported Material.
4. Unit of Measurement: Linear Foot

F. Toe Key Bench

1. Description: A toe-key bench shall be constructed in accordance with the recommendations of the geotech report provided.
2. The excavation and construction of the keyway shall be included in the unit bid price for Toe-Key Bench. This shall include all labor, materials, overhead, profit, etc. for the excavation, disposal of unsuitable material, bench drain and conveyance pipe, bonding benches, and other work necessary to construct the Toe-Key Benches.
3. Unit of Measurement: Linear Foot

G. Pond Over Excavation

1. Description: The existing stormwater pond is to be over excavated to a depth of 5 feet. The material removed from this excavation shall be dried, mixed, and incorporated into the fill as suitable material as approved by the Engineer.
2. Pond Over Excavation shall be paid for by the cubic yard unit bid price for Pond Over Excavation. This shall include all labor, materials, overhead, profit, excavation, mixing, etc. for the removal of the pond material.
3. Unit of Measurement: Cubic Yard

H. Pond Backfill Rock

1. Description: The over excavation of the existing pond shall expose the top of the existing core drain. The pond shall be backfilled with 6" to 24" stone in a manner as to provide positive drainage to the existing rock core drain.
2. The Contractor shall supply two bid prices for this work. One price shall be reflective of performing this work using onsite material and shall include all labor, fabric, overhead, profit, etc. for the placement of the onsite rock fill required to construct the pond backfill.

No cost should be include for the rock material as it is paid for under the Earth Moving pay item. This item shall be paid for under the unit bid price per cubic yard for Pond Backfill Rock Using Onsite Material. The second price shall be reflective of performing this work using imported material and shall include all labor, materials, delivery, overhead, profit, etc. for the placement of the imported rock fill required to construct the pond backfill. This item shall be paid for under the unit bid price per cubic yard for Pond Backfill Rock Using Imported Material.

3. Unit of Measurement: Cubic Yard

I. Erosion and Sediment Control:

1. Description: Erosion and Sediment Controls will be based upon the various unit bid prices which includes, but is not limited to: construction entrances, rock lined sump, inlet protection, rock ditch check dams, grass lined ditches, rock lined ditches, sediment basins, stormwater management ponds, swale sediment cells, silt fence, pad edge berms, and other measures necessary to carry out the erosion and sediment control plan throughout the duration of the project.
2. The contractor shall be required to adjust and maintain all erosion and sediment control devices measures in accordance with the WVDEP BMP manual to prevent sediment from leaving the construction site until 70% vegetation has been established throughout the project site. No additional payment will be made for adjustments or maintenance of erosion and sediment controls regardless of weather.
3. If a notice of violation is given by the WVDEP, the Contractor shall be responsible for paying all associated fines.
4. The Contractor is responsible for complying with the intent of the erosion and sediment control plan and may be required to increase or modify erosion and sediment control measures based on field conditions and/or staging of work. No additional payment will be made for additional measures required to comply with the approved plan.
5. Stabilized Construction Entrances shall be installed as shown on the plans. Construction Entrances shall be paid for by the Stabilized Construction Entrance unit bid price for each. This shall include all labor, materials, overhead, profit, etc. for the installation of the Construction Entrances.
6. Silt Fence shall be installed at the location shown on the plans. Silt Fence shall be paid for by the linear foot unit bid price for Silt Fence. This shall include all labor, materials, overhead, profit, etc. for the installation of the Silt Fence.
7. Orange Safety Fence shall be installed at the location shown on the plans. Orange Safety Fence shall be paid for by the linear foot unit bid price for Orange Safety Fence. This shall include all labor, materials, overhead, profit, etc. for the installation of the Orange Safety Fence.
8. Compost Filter Sock Inlet Protection shall be installed at each inlet as shown on the plans. Inlet Protection shall be paid for by the unit bid price by the linear foot for Compost Filter Sock Inlet Protection installed. This shall include all labor, materials, overhead, profit, etc. for the installation of the Compost Filter Sock Inlet Protection.
9. Sediment Trap shall be installed in the locations as shown on the plans. Sediment Trap shall be paid for by the Sediment Trap unit bid price for each. This shall include all labor, materials, overhead, profit, etc. for the installation of the Sediment Trap and outlet structure.
10. Rock Lined Core Drain Pad Sump shall be installed on the pad where surface drainage will enter the rock core drains as fill progresses. This is to reduce the amount of sediment entering the rock core drains during construction. Rock Lined Core Drain Pad Sump shall

be paid for by the unit bid price for each. This shall include all labor, materials, overhead, profit, etc. for the installation and progressive relocation of the Rock Lined Core Drain Pad Sump.

11. Existing Pond Dewatering shall be necessary to dewater the existing stormwater pond prior to the over excavation. Existing Pond Dewatering shall be paid for by the lump sum unit price for Existing Pond Dewatering. This shall include all labor, materials, overhead, profit, etc. for the pumping of the existing water through a sediment filter bag.
12. Vegetated Pad Ditch shall be installed at all ditch locations less than an 8% flow slope. Vegetated Pad Ditch shall be paid for by the linear foot unit bid price for Vegetated Pad Ditch. This shall include all labor, materials, overhead, profit, etc. for the installation of the Vegetated Pad Ditch.
13. Pipe Slope Drains shall be installed at all locations shown on the plans. Pipe Slope Drains shall be paid for by the unit bid price for each. This shall include all labor, materials, overhead, profit, etc. for the installation of the Pipe Slope Drains.
14. Rip Rap Energy Dissipators shall be installed at all locations shown on the plans. Rip Rap Energy Dissipators shall be paid for by the unit bid price for each. This shall include all labor, materials, overhead, profit, etc. for the installation of the Rip Rap Energy Dissipators.
15. Pad Edge Berms shall be installed along the edges of the pads as shown on the plans. The cost for this work shall be incidental to the unit bid price for Earth Moving.

J. Stormwater Basin

1. Description: Once Pad 3 is to grade and the stormwater system is installed, Storm Basin 1 shall be installed. The basin shall be installed as shown in the plans.
2. Stormwater Basin shall be paid for by the bid unit price for each. This shall include all labor, materials, overhead, profit, etc. for the installation of Stormwater Basin. Inlet protection, riser, barrel, trash rack, and concrete base shall be incidental to this bid item.

K. Seeding and Mulching:

1. Description: Seeding and Mulching according to Section 329200 "Turf and Grasses."
2. Payment will be made on this item as reclamation on areas disturbed by the construction process and paid for by the acre unit bid price for Seed and Mulch activities.
3. Temporary seeding shall be provided during the construction in accordance with the WV BMP manual. No additional payment will be made for temporary seeding necessary to remain in compliance with the WVDEP BMP manual.
4. Permanent seeding and mulching will be provided for all disturbed areas and serve as the basis for payment of the Seed and Mulch unit bid price.

L. Asphalt Paving:

1. Description: Asphalt Paving according to Section 321216 "Asphalt Paving."
2. Traffic control shall be paid for under the Demolition lump sum unit bid price.
3. See Earth Moving for subgrade method of payment.
4. Fabric for separation shall be paid for by the unit bid price for each square yard placed.
5. Subgrade shall be paid for by the unit bid price for each cubic yard placed.
6. Milling of Existing Pavement shall be paid for by the unit bid price for each square foot milled.

7. Bituminous Tack Coat Material shall be paid for by the unit bid price for each gallon used.
8. Aggregate Base Course Class 1 and Class 10 shall be paid for by the unit price bid price for each cubic yard placed.
9. 3" Crusher Run stone shall be paid for by the unit price bid price for each cubic yard placed.
10. Hot-mix asphalt base course Type I and Type II shall be paid for by the unit bid price for each ton placed.
11. Hot-mix Skid Resistant asphalt wearing course Type I shall be paid for by the unit bid price for each ton placed.
12. No payment shall be made for unauthorized placement of asphalt.
13. No payment shall be made for temporary paving required during construction.
14. The labor, materials, and equipment for the saw cutting and removal of any existing material shall be incidental to the unit bid prices for subgrade, aggregate base course, and hot-mix asphalt base courses.

M. Concrete Paving:

1. Description: Concrete Paving according to Section 321313 "Concrete Paving."
2. Construction for concrete Curb & Gutter shall be paid for by the linear foot unit bid price. This cost shall include all materials, labor, and construction incidental to the construction of concrete curb and gutter, including any required grading and backfill of the curbs or any curb cuts at intersections with sidewalks.
3. Curb & Gutter installed along the White Oaks Boulevard shall be modified Type I, with a 6" curb height and 18" gutter pan width.

N. Drainage

1. Concrete Manhole shall be installed as shown on the plans. Concrete manholes shall be installed in both the storm network and the sewer network relocation. Concrete Manholes shall be 4' diameter paid for by the unit bid price per each manhole installed. This shall include all labor, materials, overhead, profit, etc. for the installation of the Concrete Manhole.
2. Concrete Inlets shall be installed as shown on the plans. Concrete inlets shall be WVDOH Type "G" inlets and shall be paid for by the unit bid price per each inlet installed. This shall include all labor, materials, overhead, profit, etc. for the installation of the Concrete Inlets.
3. Underdrains shall be installed in locations encountered during construction that are producing groundwater and that could be detrimental to the earth work operations. These areas shall be assessed in the field and drained appropriately. An assumed quantity is included in this bid to get a unit price for this work.
4. Stormwater Drainage Pipe shall be installed as shown on the plans. Stormwater Drainage Pipe shall be paid for by the linear foot unit bid price related to each diameter of pipe. This shall include all labor, trenching, backfill, delivery, materials, overhead, profit, etc. for the installation of the Stormwater Drainage Pipe. The inlet sumps shall be incidental to the unit bid price for the 18" HDPE Storm Pipes at entrances.
5. Concrete Stormwater Pipe Anchors shall be installed in accordance with the plans. Concrete Stormwater Pipe Anchors shall be paid for by the unit bid price for each. This shall include all labor, excavation, backfill, delivery, materials, overhead, profit, etc. for the installation of the Concrete Stormwater Pipe Anchors.

O. Light Pole Relocation

1. The existing light pole at the proposed entrance to Pad 3 shall be relocated to the location shown on the plans. The Contractor shall remove the pole and base, remove the wire from this pole to junction box before and after this pole, splice the conduit at the existing pole location, install a new pole base, reinstall the existing pole and head, rewire the system between the junction boxes. The price for wiring, base, and installation shall be included in this unit bid price. Light Pole Relocation shall be paid for by the unit bid price for each installed.

P. 8" SDR 35 Gravity Sewer Pipe

1. 8" SDR 35 Gravity Sewer Pipe shall be installed in the locations and elevations shown in the plans. The price for 8" SDR 35 Gravity Sewer Pipe shall include excavation, bedding, and backfilling, marking tape, and furnishing all materials and doing all the work herein prescribed in a workmanlike and acceptable manner, including all labor, tools, equipment, supplies, testing, and incidentals necessary to complete the work.
2. All fittings shall be incidental to the linear foot unit bid price for 8" SDR 35 Gravity Sewer Pipe.
3. All testing of the gravity sewer shall be incidental to the linear foot unit bid price for 8" SDR 35 Gravity Sewer Pipe.
4. The work done under this item shall be measured and paid for by the linear foot of pipe as specified on plans or as directed by the Engineer, and installed complete in place. The length shall be determined from measurement to the nearest foot. The measurement under this item shall be the length of pipe and fittings as installed in place and accepted and shall be measured along the horizontal centerline of each pipe installed, measured centerline of tie-in to centerline of tie-in.

Q. Sanitary Sewer Tie-In, Complete

1. Payment for Sanitary Sewer Tie-In shall be paid for by the unit bid price for each. This shall include all labor, materials, overhead, profit, etc. for the complete installation of each Sanitary Sewer Tie-In.

R. E1 Grinder Lift Station

1. The E1 Grinder Lift Station shall be installed at the location shown in the plans. The price for the E1 Grinder Lift Station shall include the pump, well, manhole, controls, wiring, and other equipment necessary to install a complete functioning station as shown in the plans. E1 Grinder Lift Station shall be paid for by the bid unit price for each. This shall include all labor, materials, overhead, profit, etc. for the installation of the E1 Grinder Lift Station.

S. 1 – ½" PVC SDR-9 Force Main Pipe

1. The force main sewers installed under this item shall be measured and paid for by the linear feet of pipe as specified on plans or as directed by the Engineer and installed complete in place. The measurement under this item shall be the length of pipe and fittings as installed in place and accepted and shall be measured in the horizontal plane along the centerline of each pipe installed, measured centerline of tie-in to centerline of tie in.

2. The force main pipe will be paid for at the unit bid prices bid for the 1-1/2" PVC SDR-9 Force Main Pipe, which prices and payments shall be full compensation for excavation, bedding, and backfilling and furnishing all materials and doing all the work herein prescribed in a workmanlike and acceptable manner, including all labor, tools, equipment, supplies, testing, and incidentals necessary to complete the work.

T. 3" PE Gas Line

1. 3" PE Gas Line installed under this item shall be measured and paid for by the linear feet as specified on plans or as directed by the Engineer and installed complete in place. The measurement under this item shall be the length of pipe and fittings as installed in place and accepted and shall be measured in the horizontal plane along the centerline of each pipe installed, measured centerline of tie-in to centerline of tie in.
2. 3" PE Gas Line pipe will be paid for at the unit bid prices bid for the 3" PE Gas Line, which prices and payments shall be full compensation for excavation, bedding, marking tape, and backfilling and furnishing all materials and doing all the work herein prescribed in a workmanlike and acceptable manner, including all labor, tools, equipment, supplies, testing, and incidentals necessary to complete the work.

U. 3" Gas Gate Valve

1. 3" Gas Gate Valve shall include the purchase and installation of the valve including the riser box and gas valve marker.
2. The payment for the 3" Gas Gate Valve shall include all labor, tools, equipment, supplies, testing, and incidentals necessary to complete the work.

V. Electric Duct Bank

1. Electric Duct Bank shall be installed at the locations and as shown in the plans. The price for Electric Duct Bank shall include excavation, conduits, bedding, backfilling, marking tape, turn-ups, nylon pull rope, reclamation, and incidentals necessary to complete the work.
2. The payment for Electric Duct Bank shall be by the linear foot unit bid price. This shall include all labor, materials, overhead, profit, etc. for the complete installation of the Electric Duct Bank.

W. 3" Electric Conduit

1. 3" Electric Conduit shall be installed at the locations and as shown in the plans. The price for 3" Electric Conduit shall include excavation, conduit, bedding, backfilling, marking tape, turn-ups, nylon pull rope, reclamation, and incidentals necessary to complete the work.
2. The payment for 3" Electric Conduit shall be by the linear foot unit bid price. This shall include all labor, materials, overhead, profit, etc. for the complete installation of the 3" Electric Conduit.

X. Switch Gear Manhole Box Installation

1. The Switch Gear Manhole Box installation shall be installed at the location and as show in the plans. This shall include the installation of the Switch Gear Manhole Box as provided by Mon Power. The electric conduit shall be installed into the switch gear box as directed by Mon Power.
2. The payment for Electric Duct Bank shall be by the unit bid price for each. This shall include all labor, materials, overhead, profit, etc. for the complete installation of the Switch Gear Manhole Box.

Y. Water Line Hot Tap Tie-In, Complete

1. Water Line Hot Tap Tie-In shall be installed at the locations and as shown in the plans. The price for Water Line Tie-In shall include the purchase and installation of all required material in order to perform the tie-in as shown. This Unit Bid Price shall include a gate valve sized the same as the new waterline, the required ductile iron mechanical joint fittings, and the necessary ductile iron solid sleeve(s) or dresser couplings.
2. The payment for Water Line Hot Tap Tie-In shall be by the unit bid price for each. This shall include all labor, materials, overhead, profit, etc. for the complete installation of the Water Line Hot Tap Tie-In.

Z. 8" PVC C-900 DR-14 Waterline

1. 8" PVC C-900 DR-14 Waterline installed under this item shall be measured and paid for by the linear feet as specified on plans or as directed by the Engineer and installed complete in place. The measurement under this item shall be the length of pipe and fittings as installed in place and accepted and shall be measured in the horizontal plane along the centerline of each pipe installed, measured centerline of tie-in to centerline of tie in.
2. 8" PVC C-900 DR-14 Waterline will be paid for at the unit bid prices bid for the 8" PVC C-900 DR-14 Waterline, which prices and payments shall be full compensation for excavation, bedding, marking tape, and backfilling and furnishing all materials and doing all the work herein prescribed in a workmanlike and acceptable manner, including all labor, tools, equipment, supplies, testing, and incidentals necessary to complete the work.

AA. 8" x 8" x 8" Water Line Tee with Thrust Block

1. 8" x 8" x 8" Water Line Tee shall be installed at the locations and as shown in the plans. The price for 8" x 8" x 8" Water Line Tee shall include the purchase and installation of all required material as shown. This Unit Bid Price shall include a tee and the concrete thrust block.
2. 8" x 8" x 8" Water Line Tee will be paid for at the unit bid prices bid for each, which prices and payments shall be full compensation for excavation, bedding, marking tape, and backfilling and furnishing all materials and doing all the work herein prescribed in a workmanlike and acceptable manner, including all labor, tools, equipment, supplies, testing, and incidentals necessary to complete the work.

BB. 8" Water Gate Valve and Cap

1. 8" Water Gate Valve and Cap shall include the purchase and installation of the valve including the riser box and gas valve marker.
2. The payment for the 8" Water Gate Valve and Cap shall include all labor, tools, equipment, supplies, testing, and incidentals necessary to complete the work.

CC. Fire Hydrant Assembly, Complete

1. Fire Hydrant Assembly shall be installed at the locations and as shown in the plans. The price for Fire Hydrant Assembly shall include the purchase and installation of the fire hydrant, 6" gate valve, 6" hydrant tee, all thread rods, valve riser box, and all appurtenances as shown on the details of the plans.
2. Fire Hydrant Assembly will be paid for at the unit bid prices bid for each, which prices and payments shall be full compensation for excavation, bedding, and backfilling and furnishing all materials and doing all the work herein prescribed in a workmanlike and acceptable manner, including all labor, tools, equipment, supplies, testing, and incidentals necessary to complete the work.

DD. 6" Steel Casing

1. 6" Steel Casing shall be installed at the locations and as shown in the plans. The 6" Steel Casing shall be used to case the 3" gas line under roadways. The price for 6" Steel Casing shall include the purchase and installation of the steel casing.
2. 6" Steel Casing shall be paid for at the unit bid price per linear foot, which prices and payments shall be full compensation for excavation, bedding, and backfilling and furnishing all materials and doing all the work herein prescribed in a workmanlike and acceptable manner, including all labor, tools, equipment, supplies, and incidentals necessary to complete the work.

EE. 16" Steel Casing

1. 16" Steel Casing shall be installed at the locations and as shown in the plans. The 6" Steel Casing shall be used to case the 8" waterline under roadways. The price for 16" Steel Casing shall include the purchase and installation of the steel casing.
2. 16" Steel Casing shall be paid for at the unit bid price per linear foot, which prices and payments shall be full compensation for excavation, bedding, and backfilling and furnishing all materials and doing all the work herein prescribed in a workmanlike and acceptable manner, including all labor, tools, equipment, supplies, and incidentals necessary to complete the work.

END OF SECTION 012200

SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
 - 1. General coordination procedures.
 - 2. Coordination drawings.
 - 3. RFIs.
 - 4. Digital project management procedures.
 - 5. Project meetings.
- B. Related Requirements:
 - 1. Section 011200 "Multiple Contract Summary" for a description of the division of work among separate contracts and responsibility for coordination activities not in this Section.
 - 2. Section 017300 "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.

1.3 DEFINITIONS

- A. RFI: Request for Information. Request from Owner, Engineer, or Contractor seeking information required by or clarifications of the Contract Documents.

1.4 INFORMATIONAL SUBMITTALS

- A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:
 - 1. Name, address, telephone number, and email address of entity performing subcontract or supplying products.
 - 2. Number and title of related Specification Section(s) covered by subcontract.
 - 3. Drawing number and detail references, as appropriate, covered by subcontract.

1.5 GENERAL COORDINATION PROCEDURES

- A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations included in different Sections that depend on each other for proper installation, connection, and operation.
1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
 2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
 3. Make adequate provisions to accommodate items scheduled for later installation.
- B. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and scheduled activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
1. Preparation of Contractor's construction schedule.
 2. Preparation of the schedule of values.
 3. Installation and removal of temporary facilities and controls.
 4. Delivery and processing of submittals.
 5. Progress meetings.
 6. Preinstallation conferences.
 7. Project closeout activities.
 8. Startup and adjustment of systems.

1.6 REQUEST FOR INFORMATION (RFI)

- A. General: Immediately on discovery of the need for additional information, clarification, or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.
1. Engineer will return without response those RFIs submitted to Engineer by other entities controlled by Contractor.
 2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.
- B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:
1. Project name.
 2. Project number.
 3. Date.
 4. Name of Contractor.
 5. Name of Engineer.
 6. RFI number, numbered sequentially.
 7. RFI subject.

8. Specification Section number and title and related paragraphs, as appropriate.
 9. Drawing number and detail references, as appropriate.
 10. Field dimensions and conditions, as appropriate.
 11. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
 12. Contractor's signature.
 13. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.
- C. RFI Forms: Software-generated form with substantially the same content as indicated above, acceptable to Engineer.
- D. Engineer's Action: Engineer will review each RFI, determine action required, and respond. Allow seven working days for Engineer's response for each RFI. RFIs received by Engineer after 1:00 p.m. will be considered as received the following working day.
1. The following Contractor-generated RFIs will be returned without action:
 - a. Requests for approval of submittals.
 - b. Requests for approval of substitutions.
 - c. Requests for approval of Contractor's means and methods.
 - d. Requests for coordination information already indicated in the Contract Documents.
 - e. Requests for adjustments in the Contract Time or the Contract Sum.
 - f. Requests for interpretation of Engineer's actions on submittals.
 - g. Incomplete RFIs or inaccurately prepared RFIs.
 2. Engineer's action may include a request for additional information, in which case Engineer's time for response will date from time of receipt by Engineer of additional information.
 3. Engineer's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Section 012600 "Contract Modification Procedures."
 - a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Engineer in writing within 7 days of receipt of the RFI response.
- E. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log monthly. Include the following:
1. Project name.
 2. Name and address of Contractor.
 3. Name and address of Engineer.
 4. RFI number including RFIs that were returned without action or withdrawn.
 5. RFI description.
 6. Date the RFI was submitted.
 7. Date Engineer's response was received.

- F. On receipt of Engineer's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Engineer within seven days if Contractor disagrees with response.

1.7 DIGITAL PROJECT MANAGEMENT PROCEDURES

- A. Use of Engineer's Digital Data Files: Digital data files of Engineer's CAD drawings will be provided by Engineer for Contractor's use during construction.
 - 1. Digital data files may be used by Contractor in preparing coordination drawings, Shop Drawings, and Project record Drawings.
 - 2. Engineer makes no representations as to the accuracy or completeness of digital data files as they relate to Contract Drawings.
 - 3. Digital Drawing Software Program: Contract Drawings are available in AutoCAD Civil 3D 2022 operating in Windows.
- B. PDF Document Preparation: Where PDFs are required to be submitted to Engineer, prepare as follows:
 - 1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
 - 2. Name file with submittal number or other unique identifier, including revision identifier.
 - 3. Certifications: Where digitally submitted certificates and certifications are required, provide a digital signature with digital certificate on where indicated.

1.8 PROJECT MEETINGS

- A. General: Schedule and conduct meetings and conferences at Project site unless otherwise indicated.
- B. Preconstruction Conference: Engineer will schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Engineer, but no later than 15 days after execution of the Agreement.
 - 1. Attendees: Authorized representatives of Owner, Engineer, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 - 2. Agenda: Discuss items of significance that could affect progress, including the following:
 - a. Responsibilities and personnel assignments.
 - b. Tentative construction schedule.
 - c. Phasing.
 - d. Critical work sequencing and long lead items.
 - e. Designation of key personnel and their duties.
 - f. Lines of communications.
 - g. Procedures for processing field decisions and Change Orders.

- h. Procedures for RFIs.
 - i. Procedures for testing and inspecting.
 - j. Procedures for processing Applications for Payment.
 - k. Distribution of the Contract Documents.
 - l. Submittal procedures.
 - m. Preparation of Record Documents.
 - n. Use of the premises.
 - o. Work restrictions.
 - p. Working hours.
 - q. Owner's occupancy requirements.
 - r. Responsibility for temporary facilities and controls.
 - s. Procedures for dust control.
 - t. Procedures for disruptions and shutdowns.
 - u. Construction waste management and recycling.
 - v. Parking availability.
 - w. Office, work, and storage areas.
 - x. Equipment deliveries and priorities.
 - y. First aid.
 - z. Security.
 - aa. Progress cleaning.
3. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.
- C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity when required by other sections and when required for coordination with other construction.
- 1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Engineer of scheduled meeting dates.
 - 2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
 - a. Contract Documents.
 - b. Options.
 - c. Related RFIs.
 - d. Related Change Orders.
 - e. Purchases.
 - f. Deliveries.
 - g. Submittals.
 - h. Possible conflicts.
 - i. Compatibility requirements.
 - j. Time schedules.
 - k. Weather limitations.
 - l. Manufacturer's written instructions.
 - m. Warranty requirements.
 - n. Compatibility of materials.
 - o. Acceptability of substrates.

- p. Temporary facilities and controls.
 - q. Space and access limitations.
 - r. Regulations of authorities having jurisdiction.
 - s. Testing and inspecting requirements.
 - t. Installation procedures.
 - u. Coordination with other work.
 - v. Required performance results.
 - w. Protection of adjacent work.
 - x. Protection of construction and personnel.
- 3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
 - 4. Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.
 - 5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.
- D. Progress Meetings: Conduct progress meetings at biweekly intervals.
- 1. Coordinate dates of meetings with preparation of payment requests.
 - 2. Attendees: In addition to representatives of Owner and Engineer, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
 - 3. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
 - 1) Review schedule for next period.
 - b. Review present and future needs of each entity present, including the following:
 - 1) Interface requirements.
 - 2) Sequence of operations.
 - 3) Status of submittals.
 - 4) Deliveries.
 - 5) Off-site fabrication.
 - 6) Access.
 - 7) Site use.
 - 8) Temporary facilities and controls.
 - 9) Progress cleaning.

- 10) Quality and work standards.
 - 11) Status of correction of deficient items.
 - 12) Field observations.
 - 13) Status of RFIs.
 - 14) Status of Proposal Requests.
 - 15) Pending changes.
 - 16) Status of Change Orders.
 - 17) Pending claims and disputes.
 - 18) Documentation of information for payment requests.
4. Minutes: Entity responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring information.
- a. Schedule Updating: Revise Contractor's construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013100

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SECTION 034100 - PRECAST STRUCTURAL CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Precast structural concrete.

1.2 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Design Mixtures: For each precast concrete mixture.
- C. Shop Drawings:
 - 1. Include member locations, plans, elevations, dimensions, shapes and sections, openings, support conditions, and types of reinforcement, including special reinforcement.
 - 2. Detail fabrication and installation of precast structural concrete units, including connections at member ends and to adjoining construction.
- D. Delegated-Design Submittal: For precast structural concrete indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For fabricator and testing agency.
- B. Welding certificates.
- C. Material certificates.
- D. Material Test Reports: For aggregates.
- E. Source quality-control reports.
- F. Field quality-control reports.

1.5 QUALITY ASSURANCE

- A. Fabricator Qualifications: A firm that assumes responsibility for engineering precast structural concrete units to comply with performance requirements. Responsibility includes preparation of Shop Drawings and comprehensive engineering analysis by a qualified professional engineer.
 - 1. Designated as a PCI-certified plant as follows:
 - a. Group C, Category C1 - Precast Concrete Products (no prestressed reinforcement).
- B. Quality-Control Standard: For manufacturing procedures, testing requirements, and quality-control recommendations for types of units required, comply with PCI MNL 116, "Manual for Quality Control for Plants and Production of Structural Precast Concrete Products."
- C. Welding Qualifications: Qualify procedures and personnel according to the following:
 - 1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
 - 2. AWS D1.4/D1.4M, "Structural Welding Code - Reinforcing Steel."

1.6 COORDINATION

- A. Furnish loose connection hardware and anchorage items to be embedded in or attached to other construction before starting that Work. Provide locations, setting diagrams, templates, instructions, and directions, as required, for installation.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design precast structural concrete units.
- B. Design Standards: Comply with ACI 318 and with design recommendations in PCI MNL 120, "PCI Design Handbook - Precast and Prestressed Concrete," applicable to types of precast structural concrete units indicated.
- C. Structural Performance: Precast structural concrete units and connections shall withstand design loads indicated within limits and under conditions indicated.
 - 1. Fire-Resistance Rating: Select material and minimum thicknesses to provide indicated fire rating.

2.2 REINFORCING MATERIALS

- A. Reinforcing Bars: ASTM A615/A615M, Grade 60, deformed.

- B. Plain-Steel Welded Wire Reinforcement: ASTM A185/A185M, fabricated from as-drawn steel wire into flat sheets.
- C. Supports: Suspend reinforcement from back of mold or use bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place according to PCI MNL 116.

2.3 PRESTRESSING TENDONS

- A. Strand: ASTM A416/A416M, Grade 270, uncoated, seven-wire, low-relaxation strand.
 - 1. Coat unbonded post-tensioning strand with post-tensioning coating complying with ACI 423.7 and sheath with polypropylene tendon sheathing complying with ACI 423.7. Include anchorage devices and coupler assemblies.

2.4 CONCRETE MATERIALS

- A. Portland Cement: ASTM C150/C150M, Type I or Type III, gray, unless otherwise indicated.
- B. Supplementary Cementitious Materials:
 - 1. Fly Ash: ASTM C618, Class C or F, with maximum loss on ignition of 3 percent.
 - 2. Ground Granulated Blast-Furnace Slag: ASTM C989, Grade 100 or 120.
- C. Normal-Weight Aggregates: Except as modified by PCI MNL 116, ASTM C33/C33M, with coarse aggregates complying with Class 4S. Stockpile fine and coarse aggregates for each type of exposed finish from a single source (pit or quarry) for Project.
- D. Water: Potable; free from deleterious material that may affect color stability, setting, or strength of concrete and complying with chemical limits of PCI MNL 116.
- E. Air-Entraining Admixture: ASTM C260, certified by manufacturer to be compatible with other required admixtures.
- F. Chemical Admixtures: Certified by manufacturer to be compatible with other admixtures and to not contain calcium chloride, or more than 0.15 percent chloride ions or other salts by weight of admixture.

2.5 STEEL CONNECTION MATERIALS

- A. Carbon-Steel Shapes and Plates: ASTM A36/A36M.
- B. Carbon-Steel Plate: ASTM A283/A283M, Grade C.
- C. Malleable-Iron Castings: ASTM A47/A47M, Grade 32510 or Grade 35028.
- D. Carbon-Steel Castings: ASTM A27/A27M, Grade 60-30.

- E. Carbon-Steel Bolts and Studs: ASTM A307, Grade A; carbon-steel, hex-head bolts and studs; carbon-steel nuts, ASTM A563; and flat, unhardened steel washers, ASTM F844.
- F. High-Strength Bolts, Nuts, and Washers: ASTM F3125/F3125M, Grade A490, Type 1, heavy-hex steel structural bolts; ASTM A563, Grade DH, heavy-hex carbon-steel nuts; and ASTM F436/F436M, Type 1, hardened carbon-steel washers; all with plain finish.
- G. Shop-Primed Finish: Prepare surfaces of nongalvanized-steel items, except those surfaces to be embedded in concrete, according to requirements in SSPC-SP 3, and shop apply SSPC-Paint 25 according to SSPC-PA 1.

2.6 BEARING PADS

- A. Provide bearing pads for precast structural concrete units as recommended by precast fabricator for application.

2.7 GROUT MATERIALS

- A. Sand-Cement Grout: Portland cement, ASTM C150/C150M, Type I, and clean, natural sand, ASTM C144 or ASTM C404. Mix at ratio of 1 part cement to 2-1/2 to 3 parts sand, by volume, with minimum water required for placement and hydration. Water-soluble chloride ion content less than 0.06 percent by weight of cement when tested according to ASTM C1218/C1218M.
- B. Nonmetallic, Non-shrink Grout: Packaged, nonmetallic, noncorrosive, non staining grout containing selected silica sands, portland cement, shrinkage-compensating agents, plasticizing and water-reducing agents, complying with ASTM C1107/C1107M, Grade A for drypack and Grades B and C for flowable grout and of consistency suitable for application within a 30-minute working time. Water-soluble chloride ion content less than 0.06 percent by weight of cement when tested according to ASTM C1218/C1218M.
- C. Epoxy-Resin Grout: Two-component, mineral-filled epoxy resin; ASTM C881/C881M, of type, grade, and class to suit requirements.

2.8 CONCRETE MIXTURES

- A. Prepare design mixtures for each type of precast concrete required.
 - 1. Use fly ash, pozzolan, ground granulated blast-furnace slag, and silica fume as needed to reduce the total amount of portland cement, which would otherwise be used, by not less than 40 percent.
- B. Normal-Weight Concrete Mixtures: Proportion by either laboratory trial batch or field test data methods according to ACI 211.1, with materials to be used on Project, to provide normal-weight concrete with the following properties:
 - 1. Compressive Strength (28 Days): 5000 psi.
 - 2. Maximum Water-Cementitious Materials Ratio: 0.45.

- C. Water Absorption: Limit water absorption to 6 percent by weight or 14 percent by volume, tested according to ASTM C642, except for boiling requirement.
- D. Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having an air content complying with PCI MNL 116.
- E. When included in design mixtures, add other admixtures to concrete mixtures according to manufacturer's written instructions.
- F. Concrete Mix Adjustments: Concrete mix design adjustments may be proposed if characteristics of materials, Project conditions, weather, test results, or other circumstances warrant.

2.9 FABRICATION

- A. Cast-in Anchors, Inserts, Plates, Angles, and Other Anchorage Hardware: Fabricate anchorage hardware with sufficient anchorage and embedment to comply with design requirements. Accurately position for attachment of loose hardware, and secure in place during precasting operations. Locate anchorage hardware where it does not affect position of main reinforcement or concrete placement.
 - 1. Weld-headed studs and deformed bar anchors used for anchorage according to AWS D1.1/D1.1M and AWS C5.4, "Recommended Practices for Stud Welding."
- B. Furnish loose hardware items including steel plates, clip angles, seat angles, anchors, dowels, cramps, hangers, and other hardware shapes for securing precast structural concrete units to supporting and adjacent construction.
- C. Cast-in reglets, slots, holes, and other accessories in precast structural concrete units as indicated on the Contract Drawings.
- D. Cast-in openings larger than 10 inches in any dimension. Do not drill or cut openings or prestressing strand without Engineer's approval.
- E. Reinforcement: Comply with recommendations in PCI MNL 116 for fabricating, placing, and supporting reinforcement.
- F. Reinforce precast structural concrete units to resist handling, transportation, and erection stresses and specified in-place loads.
- G. Prestress tendons for precast structural concrete units by either pretensioning or post-tensioning methods. Comply with PCI MNL 116.
- H. Comply with requirements in PCI MNL 116 and in this Section for measuring, mixing, transporting, and placing concrete. After concrete batching, no additional water may be added.
- I. Place concrete in a continuous operation to prevent cold joints or planes of weakness from forming in precast concrete units.

- J. Thoroughly consolidate placed concrete by vibration without dislocating or damaging reinforcement and built-in items, and minimize pour lines, honeycombing, or entrapped air voids on surfaces. Use equipment and procedures complying with PCI MNL 116.
- K. Comply with PCI MNL 116 procedures for hot- and cold-weather concrete placement.
- L. Identify pickup points of precast structural concrete units and orientation in structure with permanent markings, complying with markings indicated on Shop Drawings. Imprint or permanently mark casting date on each precast structural concrete unit on a surface that does not show in finished structure.
- M. Cure concrete, according to requirements in PCI MNL 116, by moisture retention without heat or by accelerated heat curing using live steam or radiant heat and moisture. Cure units until compressive strength is high enough to ensure that stripping does not have an effect on performance or appearance of final product.
- N. Discard and replace precast structural concrete units that do not comply with requirements, including structural, manufacturing tolerance, and appearance, unless repairs meet requirements in PCI MNL 116 and meet Engineer's approval.

2.10 FABRICATION TOLERANCES

- A. Fabricate precast structural concrete units to shapes, lines, and dimensions indicated so each finished unit complies with PCI MNL 116 product dimension tolerances as well as position tolerances for cast-in items.

2.11 COMMERCIAL FINISHES

- A. Standard Grade: Normal plant-run finish produced in molds that impart a smooth finish to concrete. Surface holes smaller than 1/2 inch caused by air bubbles, normal color variations, form joint marks, and minor chips and spalls are permitted. Fill air holes greater than 1/4 inch in width that occur more than once per 2 sq. in.. Major or unsightly imperfections, honeycombs, or structural defects are not permitted. Limit joint offsets to 1/8 inch .
- B. Screed or float finish unformed surfaces. Strike off and consolidate concrete with vibrating screeds to a uniform finish. Hand screed at projections. Normal color variations, minor indentations, minor chips, and spalls are permitted. Major imperfections, honeycombing, or defects are not permitted.

2.12 SOURCE QUALITY CONTROL

- A. Testing: Test and inspect precast structural concrete according to PCI MNL 116 requirements and ASTM C1610/C1610M, ASTM C1611/C1611M, ASTM C1621/C1621M, and ASTM C1712/C1712M.

- B. Defective Units: Discard and replace precast structural concrete units that do not comply with requirements, including strength, manufacturing tolerances, and color and texture range. Chipped, spalled, or cracked units may be repaired, subject to Engineer's approval.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install clips, hangers, bearing pads, and other accessories required for connecting precast structural concrete units to supporting members and backup materials.
- B. Erect precast structural concrete level, plumb, and square within specified allowable tolerances. Provide temporary structural framing, shoring, and bracing as required to maintain position, stability, and alignment of units until permanent connections are complete.
 - 1. Maintain horizontal and vertical joint alignment and uniform joint width as erection progresses.
 - 2. Remove projecting lifting devices and use plastic patch caps or sand-cement grout to fill voids within recessed lifting devices flush with surface of adjacent precast surfaces when recess is exposed.
 - 3. For hollow-core slab voids used as electrical raceways or mechanical ducts, align voids between units and tape butt joint at end of slabs.
- C. Connect precast structural concrete units in position by bolting, welding, grouting, or as otherwise indicated on Shop Drawings. Remove temporary shims, wedges, and spacers as soon as practical after connecting and grouting are completed.
- D. Field cutting of precast units is not permitted without approval of Engineer.
- E. Fasteners: Do not use drilled or powder-actuated fasteners for attaching accessory items to precast, prestressed concrete units.
- F. Welding: Comply with applicable requirements in AWS D1.1/D1.1M and AWS D1.4/D1.4M for welding, welding electrodes, appearance, quality of welds, and methods used in correcting welding work.
- G. At bolted connections, use lock washers, tack welding, or other approved means to prevent loosening of nuts after final adjustment.
- H. Grouting or Dry-Packing Connections and Joints: Grout connections and joints and open spaces at keyways, connections, and joints where required or indicated on Shop Drawings. Retain flowable grout in place until hard enough to support itself. Alternatively, pack spaces with stiff dry-pack grout material, tamping until voids are completely filled.

3.2 ERECTION TOLERANCES

- A. Erect precast structural concrete units level, plumb, square, and in alignment without exceeding the noncumulative erection tolerances of PCI MNL 135.
- B. Minimize variations between adjacent slab members by jacking, loading, or other method recommended by fabricator and approved by Engineer.

3.3 FIELD QUALITY CONTROL

- A. Special Inspections: Owner will engage a qualified special inspector to perform the following special inspections:
 - 1. Erection of precast structural concrete members.
- B. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.
- C. Visually inspect field welds and test according to ASTM E165 or to ASTM E709 and ASTM E1444. High-strength bolted connections are subject to inspections.
- D. Testing agency will report test results promptly and in writing to Contractor and Engineer.
- E. Repair or remove and replace work where tests and inspections indicate that it does not comply with specified requirements.
- F. Additional testing and inspecting, at Contractor's expense, shall be performed to determine compliance of replaced or additional work with specified requirements.
- G. Prepare test and inspection reports.

3.4 REPAIRS

- A. Repair precast structural concrete units if permitted by Engineer.
 - 1. Repairs may be permitted if structural adequacy, serviceability, durability, and appearance of units have not been impaired.
- B. Mix patching materials and repair units so cured patches blend with color, texture, and uniformity of adjacent exposed surfaces and show no apparent line of demarcation between original and repaired work, when viewed in typical daylight illumination from a distance of 20 feet.
- C. Prepare and repair damaged galvanized coatings with galvanizing repair paint according to ASTM A780/A780M.
- D. Wire brush, clean, and paint damaged prime-painted components with same type of shop primer.

- E. Remove and replace damaged precast structural concrete units that cannot be repaired or when repairs do not comply with requirements as determined by Engineer.

3.5 CLEANING

- A. Clean mortar, plaster, fireproofing, weld slag, and other deleterious material from concrete surfaces and adjacent materials immediately.
- B. Clean exposed surfaces of precast concrete units after erection and completion of joint treatment to remove weld marks, other markings, dirt, and stains.
 - 1. Perform cleaning procedures, if necessary, according to precast concrete fabricator's written recommendations. Protect other work from staining or damage due to cleaning operations.
 - 2. Do not use cleaning materials or processes that could change the appearance of exposed concrete finishes or damage adjacent materials.

END OF SECTION 034100

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SECTION 312000 - EARTH MOVING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Excavating and filling for rough grading the Site.
2. Preparing subgrades for pavements, turf and grasses, and plants.
3. Excavating and backfilling for buildings and structures.
4. Drainage course for concrete slabs-on-grade.
5. Subbase course for concrete pavements.
6. Subbase course and base course for asphalt paving.
7. Excavating and backfilling trenches for utilities and pits for buried utility structures.

1.2 DEFINITIONS

A. Backfill: Soil material used to fill an excavation.

1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
2. Final Backfill: Backfill placed over initial backfill to fill a trench.

B. Base Course: Aggregate layer placed between the subbase course and hot-mix asphalt paving.

C. Bedding Course: Aggregate layer placed over the excavated subgrade in a trench before laying pipe.

D. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.

E. Drainage Course: Aggregate layer supporting the slab-on-grade that also minimizes upward capillary flow of pore water.

F. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.

1. Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by Engineer. Authorized additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.
2. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by Engineer. Unauthorized excavation, as well as remedial work directed by Engineer, shall be without additional compensation.

G. Fill: Soil materials used to raise existing grades.

- H. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.
- I. Subbase Course: Aggregate layer placed between the subgrade and base course for hot-mix asphalt pavement, or aggregate layer placed between the subgrade and a cement concrete pavement or a cement concrete or hot-mix asphalt walk.
- J. Subgrade: Uppermost surface of an excavation or the top surface of a fill or backfill immediately below subbase, drainage fill, drainage course, or topsoil materials.
- K. Utilities: On-site underground pipes, conduits, ducts, and cables as well as underground services within buildings.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct preexcavation conference at Project site.

1.4 INFORMATIONAL SUBMITTALS

- A. Material test reports.

1.5 FIELD CONDITIONS

- A. Utility Locator Service: Notify utility locator service for area where Project is located before beginning earth-moving operations.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

- A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.
- B. Satisfactory Soils: Soil Classification Groups GW, GP, GM, SW, SP, and SM according to ASTM D2487 Groups A-1, A-2-4, A-2-5, and A-3 according to AASHTO M 145, or a combination of these groups; free of rock or gravel larger than 6 inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.
- C. Unsatisfactory Soils: Soil Classification Groups GC, SC, CL, ML, OL, CH, MH, OH, and PT according to ASTM D2487 Groups A-2-6, A-2-7, A-4, A-5, A-6, and A-7 according to AASHTO M 145, or a combination of these groups.
 - 1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.

- D. Subbase Material: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D2940/D2940M; with at least 90 percent passing a 1-1/2-inch (37.5-mm) sieve and not more than 12 percent passing a No. 200 (0.075-mm) sieve.
- E. Base Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D2940/D2940M; with at least 95 percent passing a 1-1/2-inch (37.5-mm) sieve and not more than 8 percent passing a No. 200 (0.075-mm) sieve.
- F. Engineered Fill: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D2940/D2940M; with at least 90 percent passing a 1-1/2-inch (37.5-mm) sieve and not more than 12 percent passing a No. 200 (0.075-mm) sieve.
- G. Bedding Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D2940/D2940M; except with 100 percent passing a 1-inch (25-mm) sieve and not more than 8 percent passing a No. 200 (0.075-mm) sieve.
- H. Drainage Course: Narrowly graded mixture of washed crushed stone, or crushed or uncrushed gravel; ASTM D448; coarse-aggregate grading Size 57; with 100 percent passing a 1-1/2-inch (37.5-mm) sieve and zero to 5 percent passing a No. 8 (2.36-mm) sieve.

2.2 ACCESSORIES

- A. Warning Tape: Acid- and alkali-resistant, polyethylene film warning tape manufactured for marking and identifying underground utilities, 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility; colored to comply with local practice or requirements of authorities having jurisdiction.
- B. Detectable Warning Tape: Acid- and alkali-resistant, polyethylene film warning tape manufactured for marking and identifying underground utilities, a minimum of 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 30 inches deep; colored to comply with local practice or requirements of authorities having jurisdiction.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth-moving operations.
- B. Protect and maintain erosion and sedimentation controls during earth-moving operations.
- C. Protect subgrades and foundation soils from freezing temperatures and frost. Remove temporary protection before placing subsequent materials.

3.2 EXCAVATION, GENERAL

- A. Unclassified Excavation: Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered. Unclassified excavated materials may include rock, soil materials, and obstructions. No changes in the Contract Sum or the Contract Time will be authorized for rock excavation or removal of obstructions.
 - 1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.

3.3 EXCAVATION FOR WALKS AND PAVEMENTS

- A. Excavate surfaces under walks and pavements to indicated lines, cross sections, elevations, and subgrades.

3.4 EXCAVATION FOR UTILITY TRENCHES

- A. Excavate trenches to indicated gradients, lines, depths, and elevations.
- B. Excavate trenches to uniform widths to provide the following clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches higher than top of pipe or conduit unless otherwise indicated.
 - 1. Clearance: As indicated.
- C. Trench Bottoms: Excavate and shape trench bottoms to provide uniform bearing and support of pipes and conduit. Shape subgrade to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits. Remove projecting stones and sharp objects along trench subgrade.
 - 1. Excavate trenches 6 inches deeper than elevation required in rock or other unyielding bearing material to allow for bedding course.

3.5 SUBGRADE INSPECTION

- A. Proof-roll subgrade with a pneumatic-tired dump truck to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.
- B. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Engineer, without additional compensation.

3.6 STORAGE OF SOIL MATERIALS

- A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.

1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

3.7 UTILITY TRENCH BACKFILL

- A. Place backfill on subgrades free of mud, frost, snow, or ice.
- B. Place and compact bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.
- C. Trenches under Roadways: Provide 4-inch- thick, concrete-base slab support for piping or conduit less than 24 inches below surface of roadways. After installing and testing, completely encase piping or conduit in a minimum of 4 inches of concrete before backfilling or placing roadway subbase course. Concrete is specified in Section 033000 "Cast-in-Place Concrete."
- D. Initial Backfill: Place and compact initial backfill of satisfactory soil, free of particles larger than 1 inch in any dimension, to a height of 12 inches over the pipe or conduit.
 1. Carefully compact initial backfill under pipe haunches and compact evenly up on both sides and along the full length of piping or conduit to avoid damage or displacement of piping or conduit. Coordinate backfilling with utilities testing.
- E. Final Backfill: Place and compact final backfill of satisfactory soil to final subgrade elevation.
- F. Warning Tape: Install warning tape directly above utilities, 12 inches below finished grade, except 6 inches below subgrade under pavements and slabs.

3.8 SOIL FILL

- A. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.
- B. Place and compact fill material in layers to required elevations as follows:
 1. Under grass and planted areas, use satisfactory soil material.
 2. Under walks and pavements, use satisfactory soil material.
 3. Under steps and ramps, use engineered fill.
 4. Under building slabs, use engineered fill.
 5. Under footings and foundations, use engineered fill.

3.9 SOIL MOISTURE CONTROL

- A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within 3 percent of optimum moisture content.

1. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.
2. Remove and replace, or scarify and air dry, otherwise satisfactory soil material that exceeds optimum moisture content by 3 percent and is too wet to compact to specified dry unit weight.

3.10 COMPACTION OF SOIL BACKFILLS AND FILLS

- A. Soil fill shall be placed in maximum 9-inch loose lifts with a maximum particle size of 6-inches in any direction. A fill should be moisture conditioned to within 3 percent of the material's optimum moisture content as determined by the standard Proctor test. Compaction of clayey soils should be accomplished using a sheeps-foot or pad-foot compactor. Compaction of granular soil or shot rock should be performed using a minimum 20-ton smooth drum vibratory roller.
- B. Rock fill should consist of fill which contains 35 percent or less (by visual inspection) of soil material. Mixtures which contain in excess of 35 percent of soil material shall be designated as soil fill. Rock fill shall be placed in 12-inch loose lifts with a maximum particle size of 6-inches in any direction. No rock fill shall be permitted in the top 5 feet of each finish pad elevation.
- C. When using soft shale or claystone as engineered fill, it is critical that the material be properly broken down to a soil-like material prior to compaction. This typically requires the application of water to the material while turning and breaking down the rock. Once the material is thoroughly broken down and moisture conditioned, it can be used successfully as fill.
- D. Place backfill and fill soil materials evenly on all sides of structures to required elevations and uniformly along the full length of each structure.
- E. Compact soil materials to not less than 98 percent of maximum dry unit weight according to ASTM D698:

3.11 GRADING

- A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
- B. Site Rough Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to elevations required to achieve indicated finish elevations, within the following subgrade tolerances:
 1. Turf or Unpaved Areas: Plus or minus 1 inch.
 2. Walks: Plus or minus 1/2 inch.
 3. Pavements: Plus or minus 1/2 inch

3.12 SUBBASE AND BASE COURSES UNDER PAVEMENTS AND WALKS

- A. Place subbase course and base course on subgrades free of mud, frost, snow, or ice.

- B. On prepared subgrade, place subbase course and base course under pavements and walks as follows:
 - 1. Shape subbase course and base course to required crown elevations and cross-slope grades.
 - 2. Place subbase course and base course that exceeds 6 inches in compacted thickness in layers of equal thickness, with no compacted layer more than 6 inches thick or less than 3 inches thick.
 - 3. Compact subbase course and base course at optimum moisture content to required grades, lines, cross sections, and thickness to not less than 98 percent of maximum dry unit weight according to ASTM D698.

3.13 FIELD QUALITY CONTROL

- A. Special Inspections: The Thrasher Group will provide a project representative to perform inspections:
- B. The project representative will perform tests and inspections.
- C. Allow the project representative to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earth moving only after test results for previously completed work comply with requirements.
- D. When project representative reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil materials to depth required; recompact and retest until specified compaction is obtained.

3.14 PROTECTION

- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
- C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
 - 1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

3.15 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Remove surplus satisfactory soil and waste materials, including unsatisfactory soil, trash, and debris, and legally dispose of them off Owner's property.

END OF SECTION 312000

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SECTION 329200 - TURF AND GRASSES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Seeding.

1.2 DEFINITIONS

- A. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. This includes insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. It also includes substances or mixtures intended for use as a plant regulator, defoliant, or desiccant.
- B. Planting Soil: Existing, on-site soil; imported soil; or manufactured soil that has been modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.4 INFORMATIONAL SUBMITTALS

- A. Certification of grass seed.
1. Certification of each seed mixture for turfgrass sod.
- B. Product certificates.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified landscape Installer whose work has resulted in successful turf establishment.
1. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.
 2. Pesticide Applicator: State licensed, commercial.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Seed and Other Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of compliance with state and Federal laws, as applicable.

PART 2 - PRODUCTS

2.1 SEED

- A. Grass Seed: Fresh, clean, dry, new-crop seed complying with AOSA's "Rules for Testing Seeds" for purity and germination tolerances.
- B. Seed Species:
 - 1. Quality: State-certified seed of grass species as listed below for solar exposure.
 - 2. Quality: Seed of grass species as listed below for solar exposure, with not less than 85 percent germination, not less than 90 percent pure seed, and not more than 0.5 percent weed seed:
 - 3. Roadside Mowed and Pad Areas: Proportioned by weight as follows:
 - a. 50 percent Kentucky Bluegrass.
 - b. 30 percent Pennlawn Red Fescue.
 - c. 20 percent Ryegrass.
 - 4. Shade: Proportioned by weight as follows:
 - a. 80 percent Kentucky 31, Fescue.
 - b. 20 percent Pennlawn Red Fescue.

2.2 FERTILIZERS

- A. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium in the following composition:
 - 1. Composition: 1 lb/1000 sq. ft. of actual nitrogen, 4 percent phosphorous, and 2 percent potassium, by weight.
- B. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:
 - 1. Composition: 20 percent nitrogen, 10 percent phosphorous, and 10 percent potassium, by weight.

2.3 MULCHES

- A. Straw Mulch: Provide air-dry, clean, mildew- and seed-free, salt hay or threshed straw of wheat, rye, oats, or barley.

2.4 PESTICIDES

- A. General: Pesticide, registered and approved by the EPA, acceptable to authorities having jurisdiction, and of type recommended by manufacturer for each specific problem and as required for Project conditions and application. Do not use restricted pesticides unless authorized in writing by authorities having jurisdiction.

PART 3 - EXECUTION

3.1 TURF AREA PREPARATION

- A. Moisten prepared area before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.
- B. Before planting, obtain Engineer's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

3.2 SEEDING

- A. Sow seed with spreader or seeding machine. Do not broadcast or drop seed when wind velocity exceeds 5 mph.
 - 1. Evenly distribute seed by sowing equal quantities in two directions at right angles to each other.
 - 2. Do not use wet seed or seed that is moldy or otherwise damaged.
 - 3. Do not seed against existing trees. Limit extent of seed to outside edge of planting saucer.
- B. Sow seed at a total rate of 5 to 8 lb/1000 sq. ft..
- C. Rake seed lightly into top 1/8 inch of soil, roll lightly, and water with fine spray.
- D. Protect seeded areas with slopes not exceeding 1:6 by spreading straw mulch. Spread uniformly at a minimum rate of 2 tons/acre to form a continuous blanket 1-1/2 inches in loose thickness over seeded areas.
 - 1. Anchor straw mulch by crimping into soil with suitable mechanical equipment.
- E. Protect seeded areas from hot, dry weather or drying winds by applying compost mulch within 24 hours after completing seeding operations. Soak areas, scatter mulch uniformly to a thickness of 3/16 inch, and roll surface smooth.

3.3 TURF MAINTENANCE

- A. General: Maintain and establish turf by watering, fertilizing, weeding, mowing, trimming, replanting, and performing other operations as required to establish healthy, viable turf. Roll, regrade, and replant bare or eroded areas and remulch to produce a uniformly smooth turf. Provide materials and installation the same as those used in the original installation.

3.4 SATISFACTORY TURF

- A. Turf installations shall meet the following criteria as determined by Engineer:
 - 1. Satisfactory Seeded Turf: At end of maintenance period, a healthy, uniform, close stand of grass has been established, free of weeds and surface irregularities, with coverage exceeding 90 percent over any 10 sq. ft. and bare spots not exceeding 5 by 5 inches.
 - 2. Satisfactory Sodded Turf: At end of maintenance period, a healthy, well-rooted, even-colored, viable turf has been established, free of weeds, open joints, bare areas, and surface irregularities.
- B. Use specified materials to reestablish turf that does not comply with requirements, and continue maintenance until turf is satisfactory.

END OF SECTION 329200

SECTION 334200 - STORMWATER CONVEYANCE

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
1. PE pipe and fittings.
 2. PVC pipe and fittings.
 3. Non-pressure transition couplings.
 4. Cleanouts.
 5. Manholes.
 6. Catch basins.
 7. Stormwater inlets.
 8. Concrete.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings:
1. Manholes: Include plans, elevations, sections, details, frames, and covers.
 2. Catch basins and stormwater inlets. Include plans, elevations, sections, details, frames, covers, and grates.

1.3 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Show pipe sizes, locations, and elevations. Show other piping in same trench and clearances from storm drainage system piping. Indicate interface and spatial relationship between manholes, piping, and proximate structures.
- B. Profile Drawings: Show system piping in elevation. Draw profiles at horizontal scale of not less than 1 inch equals 50 feet and vertical scale of not less than 1 inch equals 5 feet. Indicate manholes and piping. Show types, sizes, materials, and elevations of other utilities crossing system piping.
- C. Field quality-control reports.

1.4 QUALITY ASSURANCE

- A. Piping materials shall bear label, stamp, or other markings of specified testing agency.

PART 2 - PRODUCTS

2.1 CORRUGATED-PE PIPE AND FITTINGS

- A. Corrugated-PE Drainage Pipe and Fittings NPS 3 to NPS 10: AASHTO M 252, Type S, with smooth waterway for coupling joints.
- B. Corrugated-PE Pipe and Fittings NPS 12 to NPS 60: AASHTO M 294, Type S, with smooth waterway for coupling joints.
- C. Corrugated-PE Silttight Couplings: PE sleeve with ASTM D1056, Type 2, Class A, Grade 2 gasket material that mates with pipe and fittings.
- D. Corrugated-PE Soiltight Couplings: AASHTO M 294, corrugated, matching pipe and fittings.

2.2 PVC PIPE AND FITTINGS

- A. NSF Marking: Comply with NSF 14, "Plastics Piping Systems Components and Related Materials," for plastic piping components. Include marking with "NSF-drain" for plastic storm drain and "NSF-sewer" for plastic storm sewer piping.
- B. PVC Corrugated Sewer Piping:
 - 1. Pipe: ASTM F949, PVC, corrugated pipe with bell-and-spigot ends for gasketed joints.
 - 2. Fittings: ASTM F949, PVC molded or fabricated, socket type.
 - 3. Gaskets: ASTM F477, elastomeric seals.
- C. Adhesive Primer: ASTM F656.

2.3 NONPRESSURE TRANSITION COUPLINGS

- A. Comply with ASTM C1173, elastomeric, sleeve-type, reducing or transition coupling, for joining underground nonpressure piping. Include ends of same sizes as piping to be joined, and corrosion-resistant-metal tension band and tightening mechanism on each end.
- B. Sleeve Materials:
 - 1. For Plastic Pipes: ASTM F477, elastomeric seal or ASTM D5926, PVC.
 - 2. For Dissimilar Pipes: ASTM D5926, PVC or other material compatible with pipe materials being joined.
- C. Unshielded, Flexible Couplings:
 - 1. Description: Elastomeric sleeve with stainless-steel shear ring and corrosion-resistant-metal tension band and tightening mechanism on each end.
- D. Shielded, Flexible Couplings:

1. Description: ASTM C1460, elastomeric or rubber sleeve with full-length, corrosion-resistant outer shield and corrosion-resistant-metal tension band and tightening mechanism on each end.

E. Ring-Type, Flexible Couplings:

1. Description: Elastomeric compression seal with dimensions to fit inside bell of larger pipe and for spigot of smaller pipe to fit inside ring.

2.4 MANHOLES

A. Standard Precast Concrete Manholes:

1. Description: ASTM C478, precast, reinforced concrete, of depth indicated, with provision for sealant joints.
2. Diameter: 48 inches minimum unless otherwise indicated.
3. Ballast: Increase thickness of precast concrete sections or add concrete to base section as required to prevent flotation.
4. Base Section: 6-inch minimum thickness for floor slab and 4-inch minimum thickness for walls and base riser section, and separate base slab or base section with integral floor.
5. Riser Sections: 4-inch minimum thickness, and lengths to provide depth indicated.
6. Top Section: Eccentric-cone type unless concentric-cone or flat-slab-top type is indicated, and top of cone of size that matches grade rings.
7. Joint Sealant: ASTM C990, bitumen or butyl rubber.
8. Resilient Pipe Connectors: ASTM C923, cast or fitted into manhole walls, for each pipe connection.
9. Steps: Individual FRP steps or FRP ladder ASTM A 615/A 615M, deformed, 1/2-inch steel reinforcing rods encased in ASTM D 4101, PP, wide enough to allow worker to place both feet on one step and designed to prevent lateral slippage off step. Cast or anchor steps into sidewalls at 12 to 16-inch intervals. Omit steps if total depth from floor of manhole to finished grade is less than 60 inches.
10. Adjusting Rings: Interlocking HDPE rings with level or sloped edge in thickness and diameter matching manhole frame and cover, and of height required to adjust manhole frame and cover to indicated elevation and slope. Include sealant recommended by ring manufacturer.
11. Grade Rings: Reinforced-concrete rings, 6- to 9-inch total thickness, to match diameter of manhole frame and cover, and height as required to adjust manhole frame and cover to indicated elevation and slope.

2.5 CONCRETE

A. General: Cast-in-place concrete in accordance with ACI 318, ACI 350, and the following:

1. Cement: ASTM C150/C150M, Type II.
2. Fine Aggregate: ASTM C33/C33M, sand.
3. Coarse Aggregate: ASTM C33/C33M, crushed gravel.
4. Water: Potable.

- B. Portland Cement Design Mix: 4000 psi minimum, with 0.45 maximum water/cementitious materials ratio.
 - 1. Reinforcing Fabric: ASTM A1064/A1064M, steel, welded wire fabric, plain.
 - 2. Reinforcing Bars: ASTM A615/A615M, Grade 60 (420 MPa) deformed steel.

2.6 CATCH BASINS

A. Standard Precast Concrete Catch Basins:

- 1. Description: ASTM C 478, precast, reinforced concrete, of depth indicated, with provision for sealant joints.
- 2. Base Section: 6-inch minimum thickness for floor slab and 4-inch minimum thickness for walls and base riser section, and separate base slab or base section with integral floor.
- 3. Riser Sections: 4-inch minimum thickness, 48-inch diameter, and lengths to provide depth indicated.
- 4. Top Section: Eccentric-cone type unless concentric-cone or flat-slab-top type is indicated. Top of cone of size that matches grade rings.
- 5. Joint Sealant: ASTM C 990, bitumen or butyl rubber.
- 6. Adjusting Rings: Interlocking rings with level or sloped edge in thickness and shape matching catch basin frame and grate. Include sealant recommended by ring manufacturer.
- 7. Grade Rings: Include two or three reinforced-concrete rings, of 6- to 9-inch total thickness, that match 24-inch-diameter frame and grate.
- 8. Steps: Individual FRP steps or FRP ladder Individual FRP steps; FRP ladder; or ASTM A 615/A 615M, deformed, 1/2-inch steel reinforcing rods encased in ASTM D 4101, PP ASTM A 615/A 615M, deformed, 1/2-inch steel reinforcing rods encased in ASTM D 4101, PP, wide enough to allow worker to place both feet on one step and designed to prevent lateral slippage off step. Cast or anchor steps into sidewalls at 12- to 16-inch intervals. Omit steps if total depth from floor of catch basin to finished grade is less than 60 inches.
- 9. Pipe Connectors: ASTM C 923, resilient, of size required, for each pipe connecting to base section.

B. Frames and Grates: ASTM A 536, Grade 60-40-18, ductile iron designed for A-16, structural loading. Include flat grate with small square or short-slotted drainage openings.

- 1. Size: 24 by 24 inches minimum unless otherwise indicated.
- 2. Grate Free Area: Approximately 50 percent unless otherwise indicated.

C. Frames and Grates: ASTM A 536, Grade 60-40-18, ductile iron designed for A-16, structural loading. Include 24-inch ID by 7- to 9-inch riser with 4-inch minimum width flange, and 26-inch-diameter flat grate with small square or short-slotted drainage openings.

1. Grate Free Area: Approximately 50 percent unless otherwise indicated.

PART 3 - EXECUTION

3.1 EARTHWORK

- A. Excavation, trenching, and backfilling are specified in Section 312000 "Earth Moving-Trenching."

3.2 PIPING INSTALLATION

- A. General Locations and Arrangements: Drawing plans and details indicate general location and arrangement of underground storm drainage piping. Location and arrangement of piping layout take into account design considerations. Install piping as indicated, to extent practical. Where specific installation is not indicated, follow piping manufacturer's written instructions.
- B. Install piping beginning at low point, true to grades and alignment indicated with unbroken continuity of invert. Place bell ends of piping facing upstream. Install gaskets, seals, sleeves, and couplings in accordance with manufacturer's written instructions for use of lubricants, cements, and other installation requirements.
- C. Install manholes for changes in direction unless fittings are indicated. Use fittings for branch connections unless direct tap into existing sewer is indicated.
- D. Install proper size increasers, reducers, and couplings where different sizes or materials of pipes and fittings are connected. Reducing size of piping in direction of flow is prohibited.
- E. When installing pipe under streets or other obstructions that cannot be disturbed, use pipe-jacking process of microtunneling.
- F. Install gravity-flow, nonpressure drainage piping in accordance with the following:
 1. Install piping pitched down in direction of flow.
 2. Install piping 30-inch minimum cover.
 3. Install PE corrugated sewer piping in accordance with ASTM D2321.
 4. Install PVC sewer piping in accordance with ASTM D2321 and ASTM F1668.

3.3 PIPE JOINT CONSTRUCTION

- A. Join gravity-flow, nonpressure drainage piping in accordance with the following:
 1. Join corrugated-PE piping in accordance with ASTM D3212 for push-on joints.
 2. Join PVC corrugated sewer piping in accordance with ASTM D2321 for elastomeric-seal joints.
 3. Join dissimilar pipe materials with nonpressure-type flexible couplings.

3.4 CLEANOUT INSTALLATION

- A. Install cleanouts and riser extensions from sewer pipes to cleanouts at grade. Use cast-iron soil pipe fittings in sewer pipes at branches for cleanouts and cast-iron soil pipe for riser extensions to cleanouts. Install piping so cleanouts open in direction of flow in sewer pipe.
 - 1. Use Heavy-Duty, top-loading classification cleanouts in vehicle-traffic service areas.
- B. Set cleanout frames and covers in concrete pavement and roads with tops flush with pavement surface.

3.5 MANHOLE INSTALLATION

- A. General: Install manholes, complete with appurtenances and accessories indicated.
- B. Install precast concrete manhole sections with sealants in accordance with ASTM C891.
- C. Where specific manhole construction is not indicated, follow manhole manufacturer's written instructions.
- D. Set tops of frames and covers flush with finished surface of manholes that occur in pavements.

3.6 CATCH BASIN INSTALLATION

- A. Set frames and grates to elevations indicated.

3.7 STORMWATER INLET AND OUTLET INSTALLATION

- A. Construct inlet head walls, aprons, and sides of reinforced concrete, as indicated.
- B. Construct riprap of broken stone, as indicated.
- C. Install outlets that spill onto grade, anchored with concrete, where indicated.
- D. Install outlets that spill onto grade, with flared end sections that match pipe, where indicated.
- E. Construct energy dissipaters at outlets, as indicated.

3.8 CONCRETE PLACEMENT

- A. Place cast-in-place concrete in accordance with ACI 318.

3.9 IDENTIFICATION

- A. Materials and their installation are specified in Section 312000 "Earth Moving - Trenching." Arrange for installation of green warning tape directly over piping and at outside edge of underground structures.
1. Use warning tape or detectable warning tape over ferrous piping.
 2. Use detectable warning tape over nonferrous piping and over edges of underground structures.

3.10 FIELD QUALITY CONTROL

- A. Inspect interior of piping to determine whether line displacement or other damage has occurred. Inspect after approximately 24 inches of backfill is in place, and again at completion of Project.
1. Submit separate reports for each system inspection.
 2. Defects requiring correction include the following:
 - a. Alignment: Less than full diameter of inside of pipe is visible between structures.
 - b. Deflection: Flexible piping with deflection that prevents passage of ball or cylinder of size not less than 92.5 percent of piping diameter.
 - c. Damage: Crushed, broken, cracked, or otherwise damaged piping.
 - d. Infiltration: Water leakage into piping.
 - e. Exfiltration: Water leakage from or around piping.
 3. Replace defective piping using new materials and repeat inspections until defects are within allowances specified.
 4. Reinspect and repeat procedure until results are satisfactory.
- B. Test new piping systems, and parts of existing systems that have been altered, extended, or repaired, for leaks and defects.
1. Do not enclose, cover, or put into service before inspection and approval.
 2. Test completed piping systems in accordance with requirements of authorities having jurisdiction.
 3. Schedule tests and inspections by authorities having jurisdiction with at least 24 hours' advance notice.
 4. Submit separate report for each test.
 5. Gravity-Flow Storm Drainage Piping: Test in accordance with requirements of authorities having jurisdiction, UNI-B-6, and the following:
 - a. Exception: Piping with soiltight joints unless required by authorities having jurisdiction.
 - b. Option: Test plastic piping in accordance with ASTM F1417.
- C. Leaks and loss in test pressure constitute defects that must be repaired.
- D. Replace leaking piping using new materials and repeat testing until leakage is within allowances specified.

3.11 CLEANING

- A. Clean interior of piping of dirt and superfluous materials. Flush with water.

END OF SECTION 334200



THE THRASHER GROUP, INC.
600 WHITE OAKS BOULEVARD - BRIDGEPORT, WV 26330
PHONE (304) 624-4108 • FAX (304) 624-7831



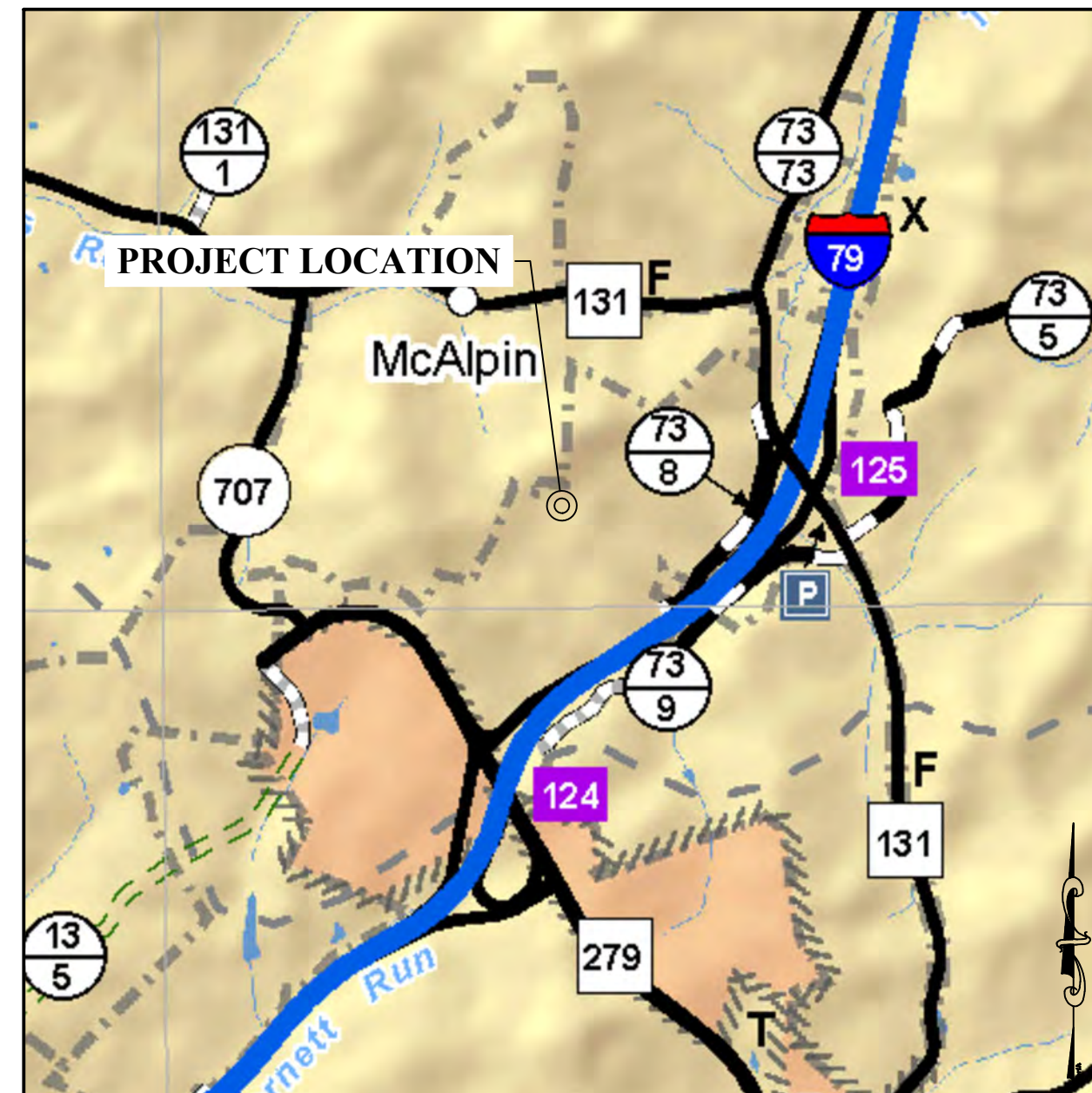
WHITE OAKS

ISSUED FOR BID PLANS FOR WHITE OAKS BUSINESS PARK PHASE II A BRIDGEPORT, HARRISON COUNTY, WV OCTOBER 2022

SHEET INDEX

SHEET	DESCRIPTION
1	COVER
2	TYPICAL SECTIONS
3	SUMMARY OF QUANTITIES
4	GENERAL NOTES
5	EXISTING CONDITIONS
6	ESC GRADING PLAN STAGE 1
7	ESC GRADING PLAN STAGE 2
8	ESC GRADING PLAN STAGE 3
9	ESC GRADING PLAN STAGE 4
10	SEDIMENT TRAP DETAILS
11	STORMWATER BASIN DETAILS
12	EARTHWORK PLAN
13	PAD BASELINES
14-19	BASELINE A PAD SECTIONS
20-29	BASELINE B PAD SECTIONS
30-33	WILDLIFE LANE PLAN & PROFILE
34-41	WILDLIFE LANE CROSS SECTION
42	PAD #2 ACCESS ROAD PLAN & PROFILE
44-46	INTERSECTION DETAILS
47	UTILITY PLAN
48	GRAVITY SEWER PLAN
49	GRAVITY SEWER PROFILE
50	FORCE MAIN PLAN AND PROFILE
51	STORMWATER PLAN
52-55	STORMWATER NETWORK PROFILES
56-68	DETAILS

2018 HARRISON COUNTY WVDOT COUNTY MAP



VICINITY MAP SCALE



- APPROVED FOR PERMITS DATE: _____ BY: _____
- APPROVED FOR BIDS DATE: _____ BY: _____
- APPROVED FOR CONSTRUCTION DATE: _____ BY: _____

CONTACTS

ENGINEER
THE THRASHER GROUP
ATTN: RICHARD G. HOVATTER JR., PE
304-205-8809

ENGINEER
THE THRASHER GROUP
ATTN: AUSTIN THRASHER, EI
304-203-8579

ONE CALL UTILITY SYSTEM CONTACT INFO



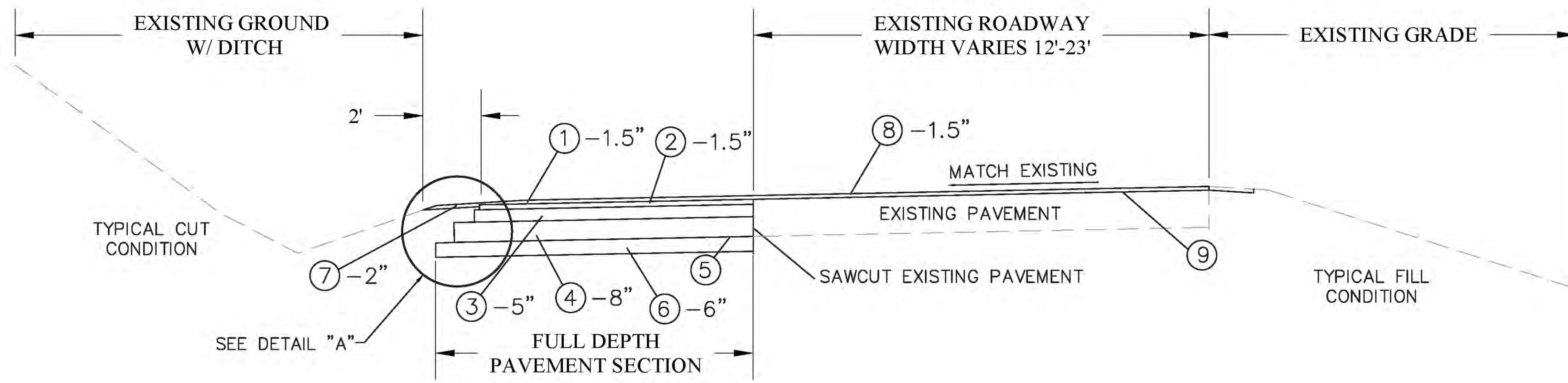
CONTRACTOR SHALL NOTIFY THE ONE-CALL SYSTEM OF THE INTENDED EXCAVATION OR DEMOLITION NOT LESS THAN FORTY-EIGHT (48) HOURS, EXCLUDING SATURDAYS, SUNDAYS AND LEGAL FEDERAL OR STATE HOLIDAYS, NOR MORE THAN TEN (10) WORK DAYS PRIOR TO THE BEGINNING OF SUCH WORK.

REVISION NUMBER	REVISED SHEETS	BY	DATE	DESCRIPTION
1	1-4,6-12,30,43,47,51,58,60,62,63,64,66,67	JCP	10/19/22	Sediment trap 1, Wildlife Lane pavement, stage 3 fill area, storm, grinder service.Details

CAD FILE: R:\030\030-10341.00-White Oaks Phase II\2021-High Tech Corridor Development, LLC\Drawing\10341-COVER-IFB.dwg PLOT DATE/TIME: 10/20/2022 11:21 AM USER: jphn pltmon

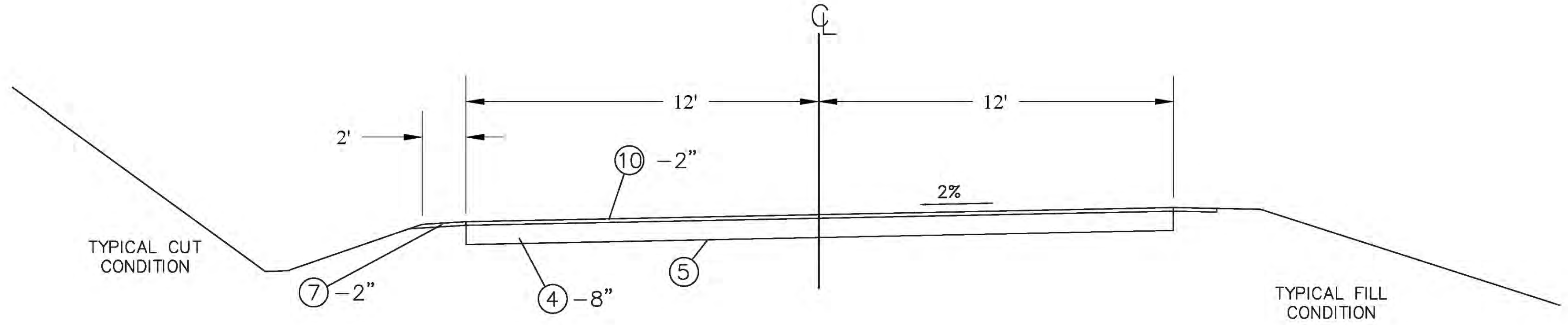
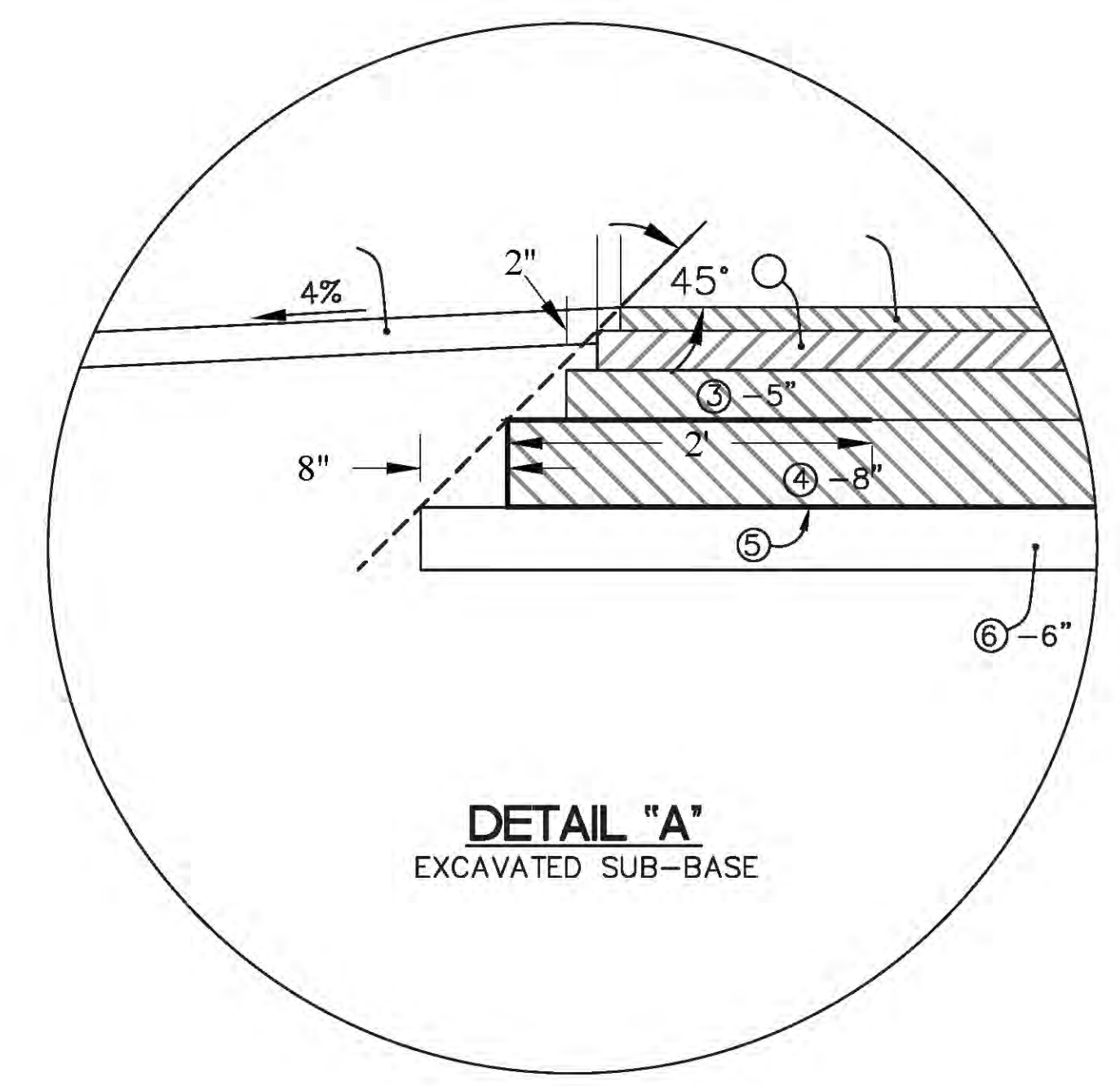
LEGEND

ITEM	DESCRIPTION	UNIT
①	401001-020 MARSHALL ASPHALT SKID PVT, SG, TY, I	TN
②	401001-023 MARSHALL ASPHALT BASE COURSE, SG, TYPE II	TN
③	401001-023 MARSHALL ASPHALT BASE COURSE, SG, TYPE I	TN
④	2" of 3" CRUSHER RUN	CY
⑤	207034-000 FABRIC FOR SEPARATION	SY
⑥	207002-000 6" SUBGRADE	CY
⑦	307005-002 AGGEGATE BASE COURSE, CLASS 10	CY
⑧	415005-001 STANDARD MILLING (1.5")	SF
⑨	408002-001 ASPHALT MATERIAL	GA
⑩	307001-001 AGGREGATE BASE COURSE, CLASS 1	CY



WILDLIFE LANE OVERLAY & WIDENING

- ① STA 100+96 TO STA 106+67 (FULL DEPTH, ENTIRE WIDTH)
- STA 106+67 TO STA 112+60 (FULL DEPTH, BOTH SIDE)
- STA 112+60 TO STA 121+20 (FULL DEPTH, RIGHT SIDE)
- STA 121+20 TO STA 122+50 (FULL DEPTH, BOTH SIDE)



PAD #2 ACCESS ROAD
STA 10+00 TO STA 14+90

NOTES:

- SEE CROSS SECTIONS FOR SPECIFIC CUT AND FILL SLOPES AND DITCH TYPES
- MATCH EXISTING GRADE AND CROSS SLOPE ON WILDLIFE LANE
- WILDLIFE LANE WIDENING BOX OUT SHALL CUT INTO EXISTING PAVEMENT AS NECESSARY TO ACHIEVE LANE WIDTH AS SPECIFIED
- MAXIMUM 4% SHOULDER CROSS SLOPE BREAK-OVER
- ASPHALT MATERIAL APPLICATION RATE = 0.03-GA/SY
- ALL DITCHES SHALL BE VEGETATED
- CONTRACTOR SHALL SAW-CUT EXISTING EDGE OF PAVEMENT AND REMOVE ALL LOOSE MATERIAL PRIOR TO INSTALLING PROPOSED FULL-DEPTH PAVEMENT. INCLUDING AREAS OF EDGE CRACKING OR OTHER SURFACE DEFECTS OCCURRING IN THE EXISTING PAVEMENT.
- WHERE PROPOSED FULL-DEPTH WIDENING MEASURES LESS THAN 5' WIDE RELATIVE TO EXISTING EDGE OF PAVEMENT, CONTRACTOR SHALL SAW-CUT EXISTING PAVEMENT AS NECESSARY TO PROVIDE A SUFFICIENT WIDTH FOR ASPHALT PLACEMENT AND COMPACTION.
- MILLINGS FROM EXISTING WILDLIFE LANE ASPHALT CAN BE USED AS PART OF SUBGRADE MATERIAL.

LAYOUT TAB: 2 TYPICAL SECTIONS
CAD FILE: R:\030\030-10341\00-White Oaks Phase II 2021-High Tech Corridor Development, LLC-Drawing\03041-TYPICAL SEC.dwg
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NO.	BY	DATE	DESCRIPTION
1	JCP	10/19/22	Pavement adjustment



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APPROVED: DATE:
SURVEY DATE:
SURVEY BY:
FIELD BOOK No.:



PHASE No.
CONTRACT No.
PROJECT No.
T30-11114

**ISSUED FOR BID PLANS FOR
WHITE OAKS BUSINESS PARK
PHASE II A
BRIDGEPORT, WEST VIRGINIA
TYPICAL SECTIONS**

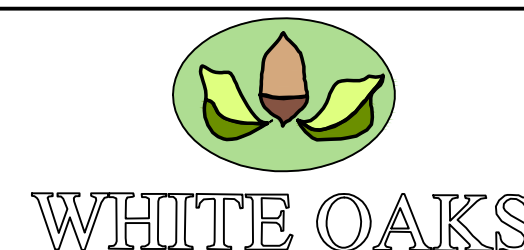
LAYOUT TAB: 3 SUMMARY OF QUANTITIES
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 PLOT DATE/TIME: 10/20/2022 1:32 PM

ITEM NUMBER	DESCRIPTION	UNIT	QUANTITY
1	SITE CLEARING	LS	1
2	MOBILIZATION/DEMOBILIZATION	LS	1
3	DEMOLITION AND TRAFFIC CONTROL	LS	1
4	EARTH MOVING	CY	352,000
5	ROCK CORE DRAIN (5'X5') - ON SITE MATERIAL	LF	1,000
6	ROCK CORE DRAIN (5'X5') - IMPORT MATERIAL	LF	1,000
7	TOE-KEY BENCH	LF	780
8	POND OVER EXCAVATION	CY	4,500
9	POND BACKFILL ROCK - ON SITE MATERIAL	CY	4,500
10	POND BACKFILL ROCK - IMPORT MATERIAL	CY	4,500
11	STABILIZED CONSTRUCTION ENTRANCE	EA	3
12	SILT FENCE	LF	3,500
13	ORANGE SAFETY FENCE	EA	100
14	COMPOST FILTER SOCK INLET PROTECTION	LF	500
15	SEDIMENT TRAP	EA	1
16	ROCK LINED CORE DRAIN PAD SUMP (12'X12'X3')	EA	1
17	EXISTING POND DEWATERING	LS	1
18	VEGETATED PAD DITCH	LF	3,445
19	PIPE SLOPE DRAIN	EA	5
20	RIP RAP ENERGY DISSIPATOR	EA	5
21	STORMWATER BASIN	EA	1
22	SEED AND MULCH	AC	31
23	FABRIC FOR SEPARATION	SY	2,790
24	SUBGRADE	CY	380
25	MILLING OF EXISTING PAVEMENT	SF	6,843
26	BITUMINOUS TACK COAT MATERIAL	GAL	100
27	AGGREGATE BASE COURSE, CLASS 1	CY	130
28	AGGREGATE BASE COURSE, CLASS 10 (SHOULDER)	CY	40
29	3" CRUSHER RUN	CY	620
30	MARSHALL HOT-MIX ASPHALT SKID RESISTANT, TYPE I	TN	380
31	MARSHALL HOT-MIX ASPHALT BASE COURSE, TYPE I	TN	620
32	MARSHALL HOT-MIX ASPHALT BASE COURSE, TYPE II	TN	190
33	CONCRETE CURB AND GUTTER	LF	100
34	CONCRETE MANHOLE (4' DIAMETER)	EA	12
35	CONCRETE INLET (WVDOH TYPE G)	EA	10
36	UNDERDRAINS	LF	100
37	18" HDPE CULVERT	LF	70
38	24" HDPE STORMWATER PIPE	LF	2,110
39	CONCRETE STORMWATER PIPE ANCHORS	EA	18
40	LIGHT POLE RELOCATION	EA	1
43	8" SDR 35 GRAVITY SEWER PIPE	LF	650
44	SANITARY SEWER TIE-IN, COMPLETE	EA	2
45	CONCRETE SEWER PIPE ANCHORS	EA	18
46	E1 GRINDER LIFT STATION	EA	1
47	3" ELECTRICAL CONDUIT	LF	145
48	1 1/2" PVC SDR-9 FORCE MAIN PIPE	LF	700
49	3" PE GAS LINE	LF	200
50	3" GAS GATE VALVE	EA	1
51	ELECTRIC DUCT BANK	LF	260
52	SWITCH GEAR MANHOLE BOX INSTALLATION	EA	3
53	WATERLINE TIE-IN/HOT TAP, COMPLETE	EA	2
54	8" PVC C-900 DR-14 WATERLINE	LF	300
55	8" X 8" X8" WATERLINE TEE W/ THRUST BLOCK	EA	2
56	8" WATER GATE VALVE AND CAP	EA	2
57	FIRE HYDRANT ASSEMBLY, COMPLETE	EA	2
58	6" STEEL CASING	LF	90
59	16" STEEL CASING	LF	30



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NO.	BY	DATE	DESCRIPTION
1	JCP	10/19/22	Revised quantities



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SURVEY DATE:	
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FIELD BOOK No.:	

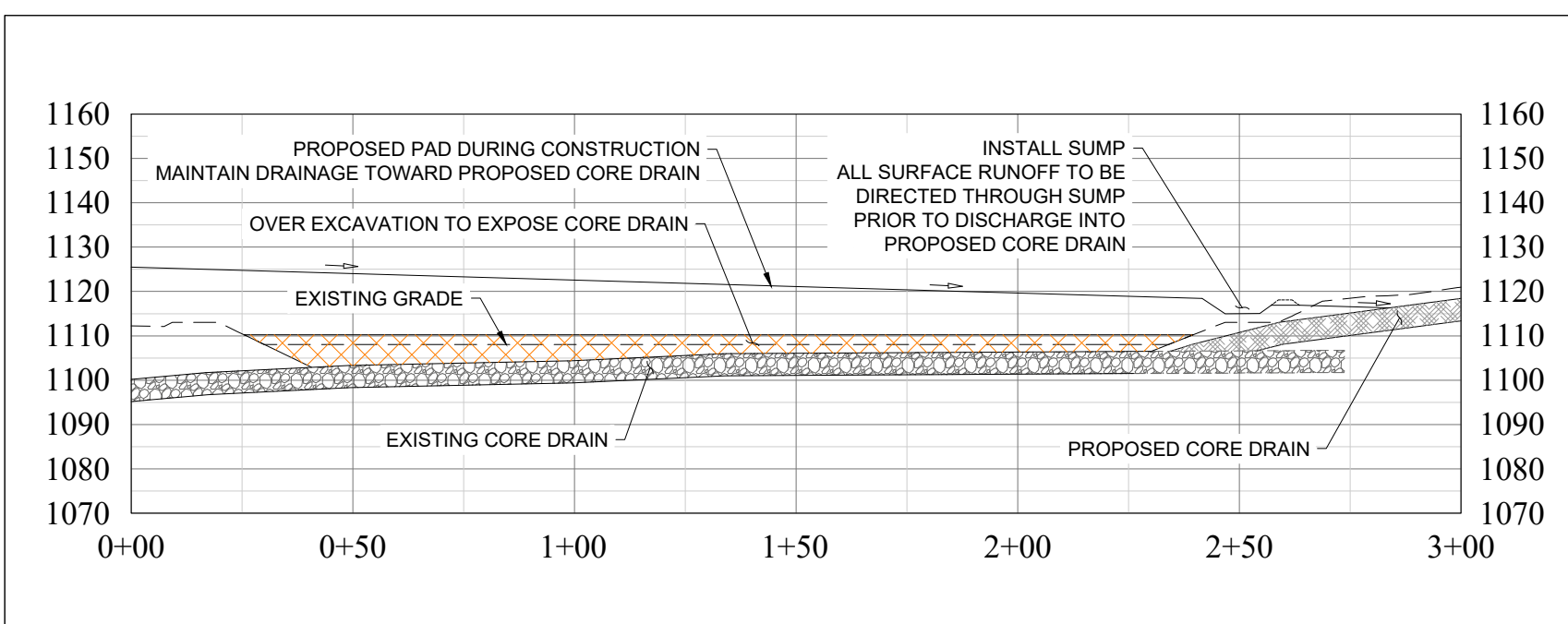


PHASE No.
CONTRACT No.
PROJECT No.
T30-11114

ISSUED FOR BID PLANS FOR
 WHITE OAKS BUSINESS PARK
 PHASE II A
 BRIDGEPORT, WEST VIRGINIA
 SUMMARY OF QUANTITIES

SHEET No.
3

LAYOUT TAB: 6 ESC GRADING PLAN - STAGE 1
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POND EXCAVATION PROCEDURES

CONTRACTOR TO EXPOSE EXISTING ROCK CORE DRAIN BELOW POND WITH OVER EXCAVATION

CONTRACTOR TO PLACE 6" TO 24" ROCK BACKFILL TO PROVIDE POSITIVE DRAINAGE TO EXISTING ROCK CORE DRAIN.

CONTRACTOR TO CONNECT PROPOSED ROCK CORE DRAIN TO ROCK BACKFILL IN EXISTING POND.

ALL RUNOFF WILL BE DIRECTED THROUGH A SUMP PRIOR TO ENTERING PROPOSED CORE DRAIN.

PLAN LEGEND

- 1240 --- PROPERTY LINE
- 1240 --- PROPOSED CONTOURS MAJOR / MINOR
- 1240 --- EXISTING CONTOURS MAJOR / MINOR
- --- EXISTING DITCH
- --- EXISTING CORE DRAIN
- --- PROPOSED ROCK CORE DRAIN
- C --- PROPOSED CUT
- F --- PROPOSED FILL
- --- PROPOSED DITCH
- SF --- PROPOSED SILT FENCE
- LOD --- PROPOSED LIMITS OF DISTURBANCE
- --- CONSERVATION EASEMENT

GPP LEGEND

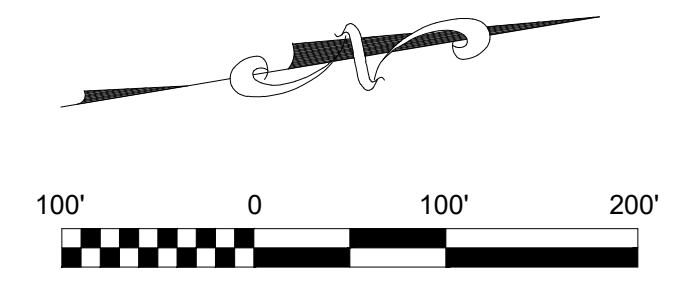
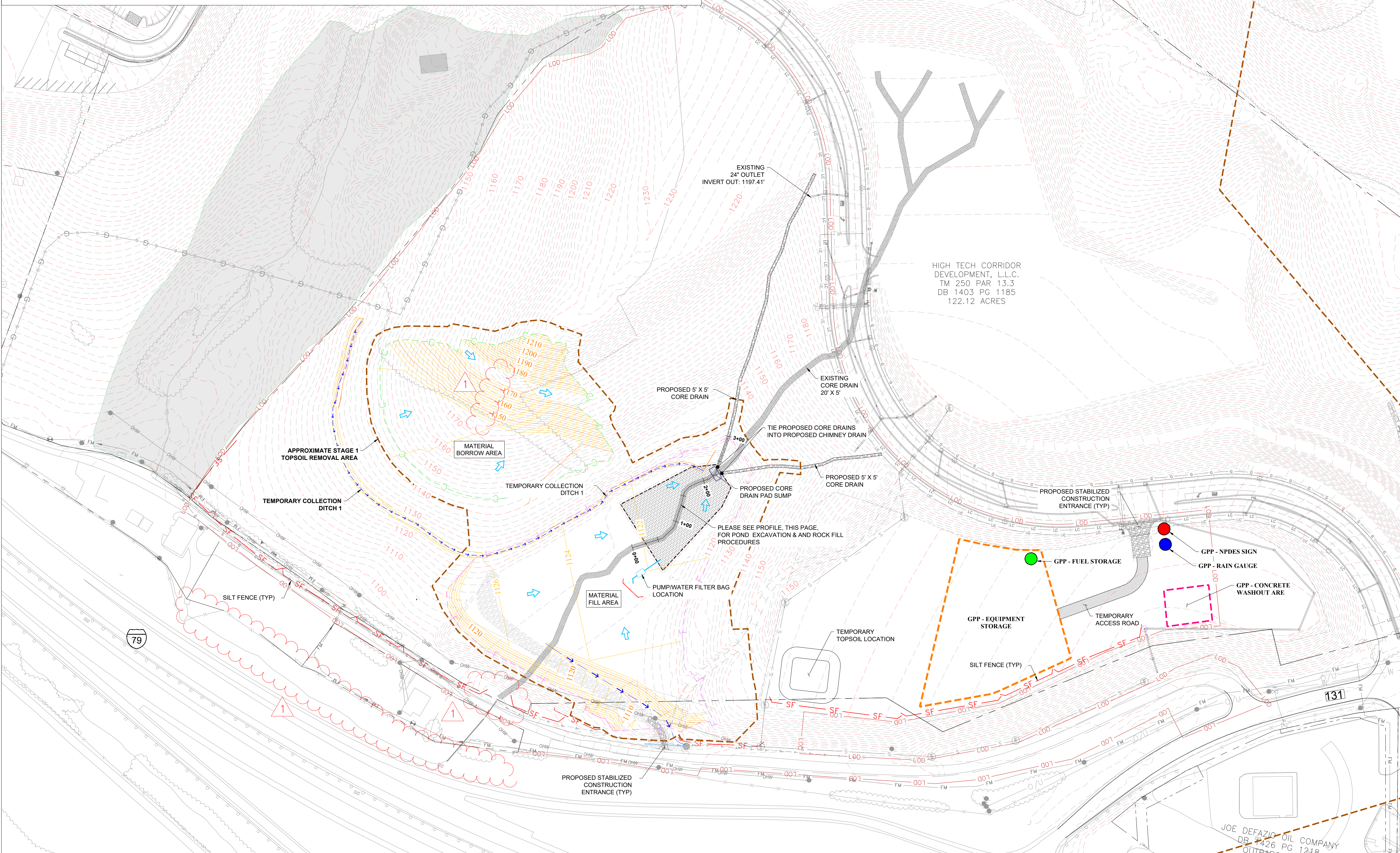
- NPDES SIGN
- RAIN GAUGE
- FUEL STORAGE AREA
- EQUIPMENT STORAGE AREA
- CONCRETE WASHOUT AREA

LOCATIONS SHOWN FOR FACILITY LOCATIONS ARE THE ENGINEERS BEST ESTIMATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATION OF FACILITIES AND ENSURING RUNOFF WILL BE DIRECTED TO A BMP DURING CONSTRUCTION. IF LOCATIONS VARY, THIS PLAN WILL BE REDLINED DURING CONSTRUCTION.

APPROXIMATE STAGE 1 EARTHWORK QTY:

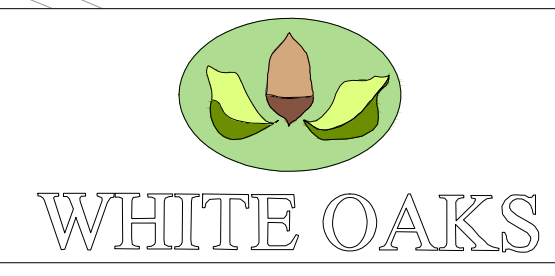
CUT = 52,990 CU YDS
 FILL = 54,100 CU YDS
 NET = 1,110 CU YDS (FILL)

- #### STAGE 1 SEQUENCE OF CONSTRUCTION
- LOCATE ALL EXISTING UTILITIES. THE CONTRACTOR SHALL NOTIFY WEST VIRGINIA 811 A MINIMUM OF (2) DAYS PRIOR TO ANY EXCAVATION OR CONSTRUCTION.
 - INSTALL STABILIZED CONSTRUCTION ENTRANCES LOCATED ON WHITE OAKS BLVD AND WILDLIFE LANE AS SHOWN ON THE ESC / GPP / GRADING PLAN - STAGE 1 DRAWING.
 - INSTALL NPDES SIGN AND RAIN GAUGE IN LOCATION AS SHOWN ON THE ESC / GPP / GRADING PLAN - STAGE 1 DRAWING.
 - INSTALL ALL SILT FENCE AS SHOWN ON THE ESC / GPP / GRADING PLAN - STAGE 1 DRAWING TO MANUFACTURERS SPECIFICATIONS.
 - INSTALL TEMPORARY COLLECTION DITCH 1
 - INSTALL TEMPORARY ACCESS ROAD AS SHOWN ON THE ESC / GPP / GRADING PLAN - STAGE 1 DRAWING. THE TEMPORARY ACCESS ROAD WILL CONSIST OF CLEARING AND GRUBBING, INSTALLATION OF GEOTEXTILE AND INSTALLATION OF 3" THICKNESS OF 1 1/2" CRUSHER RUN.
 - CLEAR AND GRUB AREAS ASSOCIATED WITH THE CONSTRUCTION OF STAGE 1.
 - DEWATER THE EXISTING POND THROUGH A WATER FILTER BAG. PLEASE SEE DETAIL SHEET FOR THE INSTALLATION OF THE WATER FILTER BAG. INSTALL SILT FENCE DOWNSLOPE OF DISCHARGE OF WATER FILTER BAG PRIOR TO PUMPING WATER FROM THIS STRUCTURE. THE CONTRACTOR IS TO REMOVE THE SATURATED SOILS FROM THE BOTTOM OF THE EXISTING POND. THIS MATERIAL CAN BE PLACED IN AN AREA THAT IS CONTROLLED BY DOWNSLOPE SILT FENCE AND MAY BE UTILIZED FOR BACKFILL FOLLOWING THE GUIDELINES OF THE ENGINEERING FILL PROCEDURES.
 - THE CONTRACTOR IS TO EXPOSE EXISTING ROCK CORE DRAIN BELOW POND DURING OVER EXCAVATION PROCEDURES.
 - THE CONTRACTOR IS TO PLACE 6" TO 24" ROCK BACKFILL TO PROVIDE POSITIVE DRAINAGE TO EXISTING ROCK CORE DRAIN.
 - BEGIN EARTHWORK PROCEDURES.
 - INSTALL SUMP. ALL RUNOFF WILL BE DIRECTED THROUGH A SUMP PRIOR TO ENTERING PROPOSED CORE DRAIN(S).
 - THE FILL MATERIAL WILL BE PLACED IN LIFTS FOLLOWING ENGINEERING FILL PROCEDURES. THE PROPOSED CORE DRAIN WILL BE EXTENDED WITH EACH LIFT OF FILL. SUMPS WILL BE PLACED UPSLOPE OF THE CORE DRAINS TO FILTER RUNOFF PRIOR TO IT ENTERING THE CORE DRAINS.
 - TOPSOIL SHALL BE INSTALLED ON ALL PAD SURFACES AND EMBANKMENT SLOPES.
 - STABILIZE EMBANKMENT SLOPES WITH TEMPORARY SEEDING AND MULCHING WITHIN THE LIMITS OF DISTURBANCE.
 - PROCEED TO STAGE 2



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NO.	BY	DATE	DESCRIPTION
1	JCP	10/19/22	Removed silt fence and slope drain, removed sump



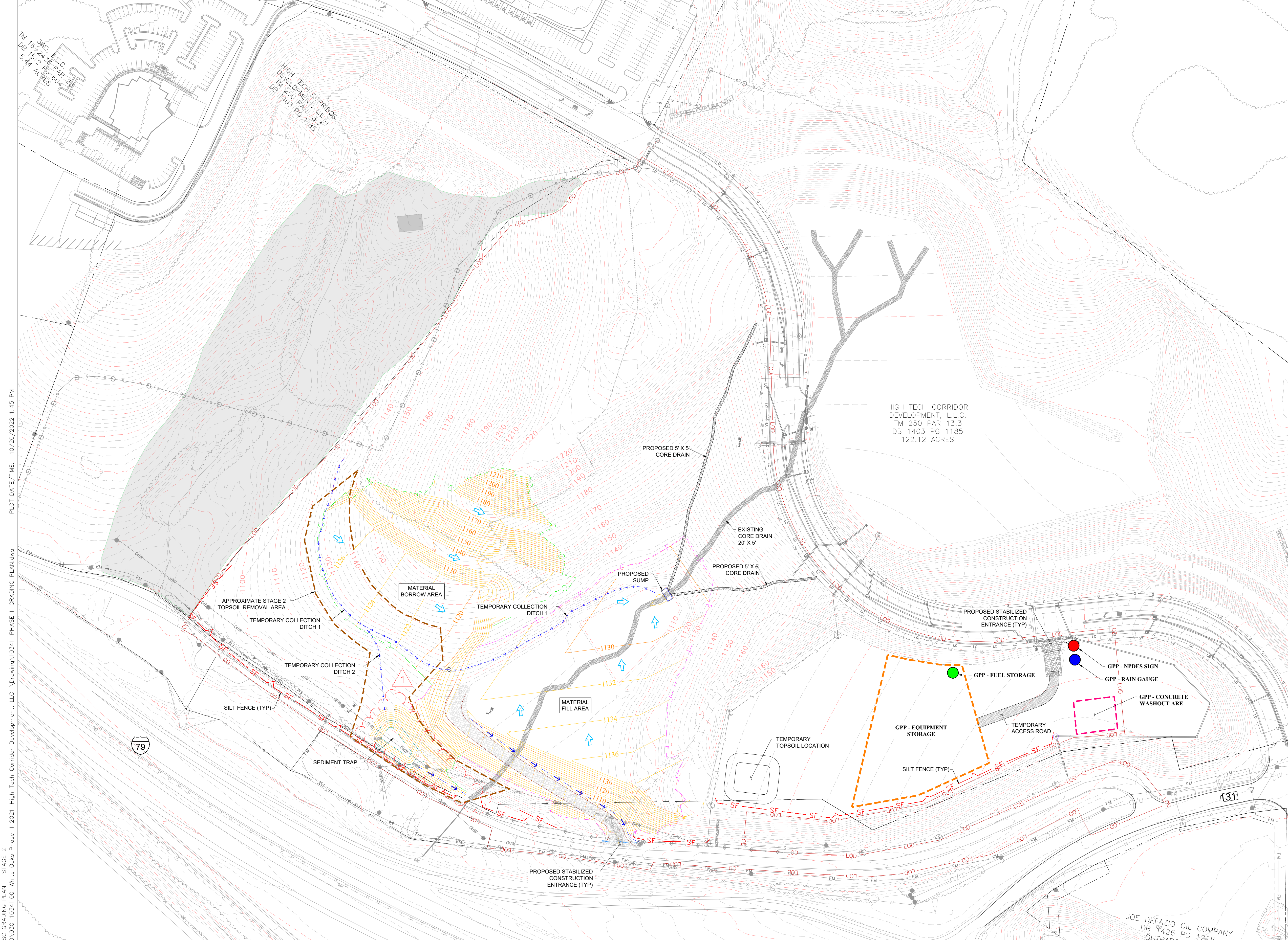
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APPROVED:	DATE:
SURVEY DATE:	
SURVEY BY:	
FIELD BOOK No.:	

THRASHER
 THE THRASHER GROUP INC.
 CIVIL • ENVIRONMENTAL • CONSULTING • FIELD SERVICES
 600 WHITE OAKS BOULEVARD, BRIDGEPORT, WV 26330
 PHONE (304) 624-4108 • FAX (304) 624-7831

CONTRACT No.	
PROJECT No.	T30-11114

ISSUED FOR BID PLANS FOR
 WHITE OAKS BUSINESS PARK
 PHASE II A
 BRIDGEPORT, WEST VIRGINIA
 ESC GRADING PLAN - STAGE 1



PLAN LEGEND

- PROPERTY LINE
- PROPOSED CONTOURS MAJOR / MINOR
- EXISTING CONTOURS MAJOR / MINOR
- EXISTING DITCH
- EXISTING CORE DRAIN
- PROPOSED CUT
- PROPOSED FILL
- PROPOSED DITCH
- PROPOSED ROCK CHECK DAM
- PROPOSED SILT FENCE
- PROPOSED LIMITS OF DISTURBANCE
- PROPOSED ROCK CORE DRAIN
- PROPOSED ROCK TOE KEY
- CONSERVATION EASEMENT

GPP LEGEND

- NPDES SIGN
- RAIN GAUGE
- FUEL STORAGE AREA
- EQUIPMENT STORAGE AREA
- CONCRETE WASHOUT AREA

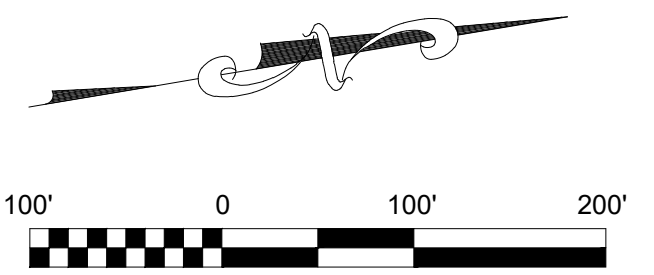
LOCATIONS SHOWN FOR FACILITY LOCATIONS ARE THE ENGINEERS BEST ESTIMATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATION OF FACILITIES AND ENSURING RUNOFF WILL BE DIRECTED TO A BMP DURING CONSTRUCTION. IF LOCATIONS VARY, THIS PLAN WILL BE REDLINED DURING CONSTRUCTION.

APPROXIMATE TOTAL EARTHWORK QTY:
 CUT = 97,850 CU YDS
 FILL = 103,140 CU YDS
 NET = 5,290 CU YDS (FILL)

APPROXIMATE STAGE 2 EARTHWORK QTY:
 CUT = 44,360 CU YDS
 FILL = 49,040 CU YDS
 NET = 4,680 CU YDS (FILL)

STAGE 2 SEQUENCE OF CONSTRUCTION

1. LOCATE ALL EXISTING UTILITIES. THE CONTRACTOR SHALL NOTIFY WEST VIRGINIA 811 A MINIMUM OF (2) DAYS PRIOR TO ANY EXCAVATION OR CONSTRUCTION.
 2. MAINTAIN STABILIZED CONSTRUCTION ENTRANCES LOCATED ON WHITE OAKS BLVD AND WILDLIFE LAKE AS SHOWN ON THE ESC / GPP / GRADING PLAN - STAGE 2 DRAWING.
 3. REVIEW ALL SILT FENCE AS SHOWN ON THE ESC / GPP / GRADING PLAN - STAGE 2 DRAWING, PERFORM REQUIRED MAINTENANCE.
 4. INSTALL SEDIMENT TRAP
- THE SEDIMENT TRAP & TEMPORARY COLLECTION DITCH 2 (EXTENSION OF TEMPORARY COLLECTION DITCH 1) WILL BE UTILIZED ONCE THE MATERIAL BORROW AREA (PAD 1) REACHES AN ELEVATION THAT NO LONGER WILL ALLOW POSITIVE DRAINAGE VIA THE TEMPORARY COLLECTION DITCH 1 FROM MATERIAL BORROW AREA.
5. INSTALL TEMPORARY COLLECTION DITCH 2.
 6. BEGIN GRADING OPERATIONS
- DURING GRADING OPERATION, THE PROPOSED CORE DRAINS WILL BE PLACED AS THE FILL MATERIAL LIFTS ARE PLACED. ALL RUNOFF WILL BE ROUTED THROUGH THE SUMPS AS SHOWN ON THE ESC / GPP / GRADING PLAN - STAGE 2 DRAWING.
7. PROCEED TO STAGE 3



LAYOUT TAB: 7 ESC GRADING PLAN - STAGE 2
 CAD FILE: R:\DSD\030-10341\00-White Oaks Phase II 2021-High Tech Corridor Development, LLC-Drawing\0341-Phase II GRADING PLAN.dwg
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NO.	BY	DATE	DESCRIPTION
1	JCP	10/19/22	Adjusted Sed Trap 1, Revised Earthwork



SCALE: AS SHOWN
 DRAWN: DATE:
 CHECKED: DATE:
 APPROVED: DATE:
 SURVEY DATE:
 SURVEY BY:
 FIELD BOOK No.:



PHASE No.
CONTRACT No.
PROJECT No.
T30-11114

ISSUED FOR BID PLANS FOR
 WHITE OAKS BUSINESS PARK
 PHASE II A
 BRIDGEPORT, WEST VIRGINIA
 ESC GRADING PLAN - STAGE 2

PLAN LEGEND

- PROPERTY LINE
- 1240 PROPOSED CONTOURS MAJOR / MINOR
- 1240 EXISTING CONTOURS MAJOR / MINOR
- EXISTING CURB INLET & PIPE
- EXISTING DITCH
- EXISTING CORE DRAIN
- EXISTING GASLINE
- PROPOSED CUT
- PROPOSED FILL
- PROPOSED DITCH
- PROPOSED SILT FENCE
- PROPOSED STORM MANHOLE & PIPE
- PROPOSED LIMITS OF DISTURBANCE
- PROPOSED ROCK CORE DRAIN
- PROPOSED ROCK TOE KEY
- CONSERVATION EASEMENT
- PROPOSED SUMP

GPP LEGEND

- NPDES SIGN
- RAIN GAUGE
- FUEL STORAGE AREA
- EQUIPMENT STORAGE AREA
- CONCRETE WASHOUT AREA

LOCATIONS SHOWN FOR FACILITY LOCATIONS ARE THE ENGINEERS BEST ESTIMATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATION OF FACILITIES AND ENSURING RUNOFF WILL BE DIRECTED TO A BMP DURING CONSTRUCTION. IF LOCATIONS VARY, THIS PLAN WILL BE REDLINED DURING CONSTRUCTION.

APPROXIMATE TOTAL EARTHWORK QTY:

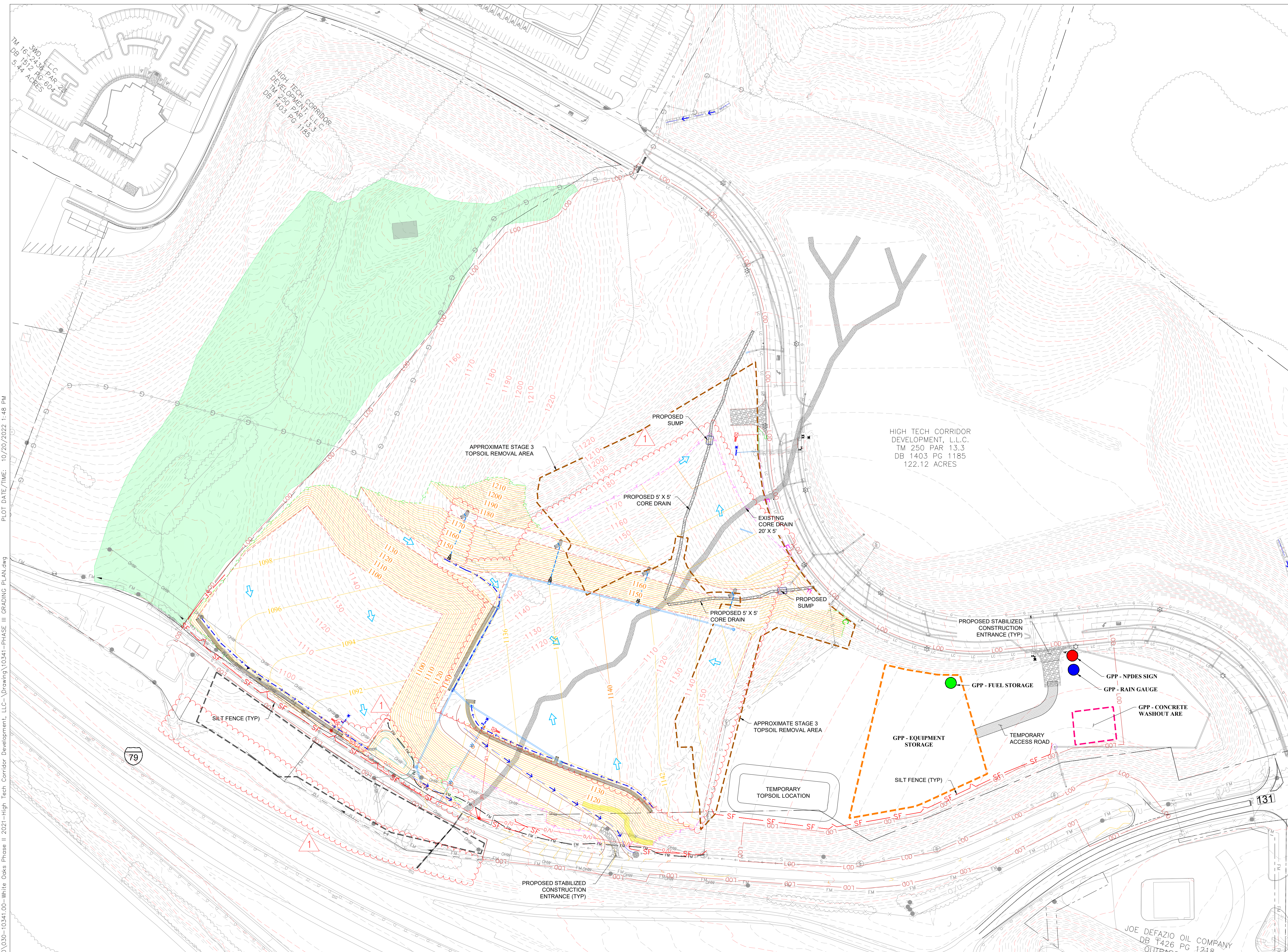
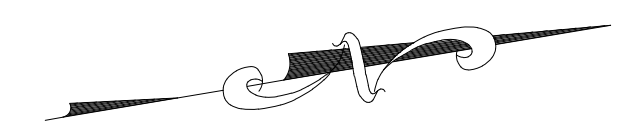
CUT = 215,250 CU YDS
 FILL = 222,320 CU YDS
 NET = 7,070 CU YDS (FILL)

APPROXIMATE STAGE 3 EARTHWORK QTY:

CUT = 117,400 CU YDS
 FILL = 119,180 CU YDS
 NET = 1,780 CU YDS (FILL)

STAGE 3 SEQUENCE OF CONSTRUCTION

1. LOCATE ALL EXISTING UTILITIES. THE CONTRACTOR SHALL NOTIFY WEST VIRGINIA 811 A MINIMUM OF 2 DAYS PRIOR TO ANY EXCAVATION OR CONSTRUCTION.
2. MAINTAIN STABILIZED CONSTRUCTION ENTRANCES LOCATED ON WHITE OAKS BLVD AND WILDLIFE LAKE AS SHOWN ON THE ESC / GPP / GRADING PLAN - STAGE 3 DRAWING.
3. REVIEW ALL SILT FENCE AS SHOWN ON THE ESC / GPP / GRADING PLAN - STAGE 3 DRAWING, PERFORM REQUIRED MAINTENANCE.
4. BEGIN GRADING OPERATIONS. DURING GRADING OPERATION, THE PROPOSED CORE DRAINS WILL BE PLACED AS THE FILL MATERIAL LIFTS ARE PLACED. ALL RUNOFF WILL BE ROUTED THROUGH THE SUMPS AS SHOWN ON THE ESC / GPP / GRADING PLAN - STAGE 3 DRAWING.
5. PROCEED TO STAGE 4



LAYOUT TAB: 8 ESC GRADING PLAN - STAGE 3
 CAD FILE: R:\030\030-10341\00-White Oaks Phase II 2021-High Tech Corridor Development, LLC-Drawing\03041-Phase III GRADING PLAN.dwg
 PLOT DATE/TIME: 10/20/2022 1:48 PM

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NO.	BY	DATE	DESCRIPTION
1	JCP	10/19/22	Revised Sed Trap, Fill area, added storm structures, removed SF, Earthwork revised



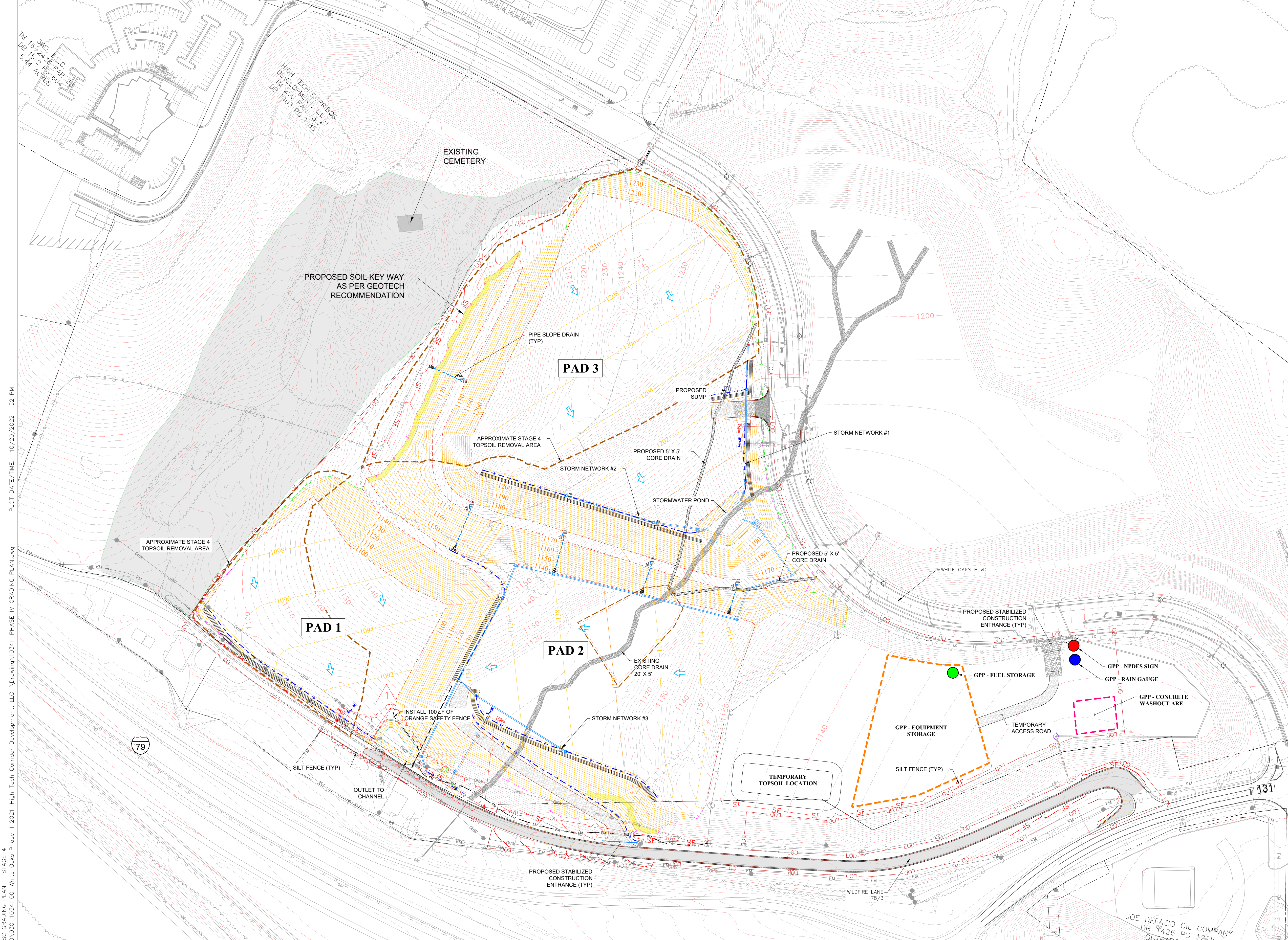
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 CHECKED: DATE:
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 SURVEY DATE:
 SURVEY BY:
 FIELD BOOK No.:



PHASE No.
CONTRACT No.
PROJECT No.
T30-11114

ISSUED FOR BID PLANS FOR
 WHITE OAKS BUSINESS PARK
 PHASE II A
 BRIDGEPORT, WEST VIRGINIA
 ESC GRADING PLAN - STAGE 3

SHEET No.
8



PLAN LEGEND

- PROPERTY LINE
- PROPOSED CONTOURS MAJOR / MINOR
- EXISTING CONTOURS MAJOR / MINOR
- EXISTING CURB INLET & PIPE
- EXISTING DITCH
- EXISTING CORE DRAIN
- EXISTING GASLINE
- PROPOSED CUT
- PROPOSED FILL
- PROPOSED DITCH
- PROPOSED SILT FENCE
- PROPOSED STORM MANHOLE & PIPE
- PROPOSED LIMITS OF DISTURBANCE
- PROPOSED ROCK CORE DRAIN
- PROPOSED ROCK TOE KEY
- CONSERVATION EASEMENT

GPP LEGEND

- NPDES SIGN
- RAIN GAUGE
- FUEL STORAGE AREA
- EQUIPMENT STORAGE AREA
- CONCRETE WASHOUT AREA

LOCATIONS SHOWN FOR FACILITY LOCATIONS ARE THE ENGINEERS BEST ESTIMATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATION OF FACILITIES AND ENSURING RUNOFF WILL BE DIRECTED TO A BMP DURING CONSTRUCTION. IF LOCATIONS VARY, THIS PLAN WILL BE REDLINED DURING CONSTRUCTION.

APPROXIMATE TOTAL EARTHWORK QTY:

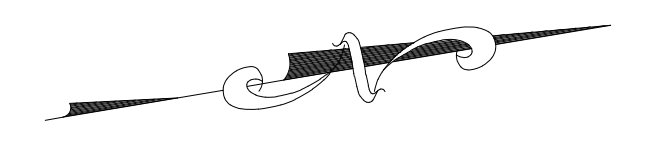
CUT = 351,100 CU YDS
 FILL = 345,340 CU YDS
 NET = 5,760 CU YDS (CUT)

APPROXIMATE STAGE 4 EARTHWORK QTY:

CUT = 135,850 CU YDS
 FILL = 128,830 CU YDS
 NET = 7,020 CU YDS (CUT)

STAGE 4 SEQUENCE OF CONSTRUCTION

1. LOCATE ALL EXISTING UTILITIES. THE CONTRACTOR SHALL NOTIFY WEST VIRGINIA 811 A MINIMUM OF (2) DAYS PRIOR TO ANY EXCAVATION OR CONSTRUCTION.
2. MAINTAIN STABILIZED CONSTRUCTION ENTRANCES LOCATED ON WHITE OAKS BLVD AND WILDLIFE LANE AS SHOWN ON THE ESC / GPP / GRADING PLAN - STAGE 3 DRAWING.
3. INSTALL ALL SILT FENCE AS SHOWN ON THE ESC / GPP / GRADING PLAN - STAGE 4 DRAWING, PERFORM REQUIRED MAINTENANCE.
4. BEGIN GRADING OPERATIONS. DURING GRADING OPERATION, THE PROPOSED CORE DRAINS WILL BE PLACED AS THE FILL MATERIAL LIFTS ARE PLACED. ALL RUNOFF WILL BE ROUTED THROUGH THE SUMPS AS SHOWN ON THE ESC / GPP / GRADING PLAN - STAGE 4 DRAWING.
5. INSTALL PROPOSED STORMWATER AND SANITARY SEWER STRUCTURES.
6. SEED MULCH AND STABILIZE ALL DISTURBED AREAS.
7. REMOVE TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES AFTER 70% GROWTH HAS BEEN ESTABLISHED OVER THE ENTIRE SITE.
8. COMPLETE PROJECT CLEANUP



LAYOUT TAB: 9 ESC GRADING PLAN - STAGE 4
 CAD FILE: R:\030\030-10341-00-White Oaks Phase II 2021-High Tech Corridor Development, LLC-Drawing\03041-Phase IV GRADING PLAN.dwg
 PLOT DATE/TIME: 10/20/2022 1:52 PM

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NO.	BY	DATE	DESCRIPTION
1	JCP	10/19/22	Revised Sed trap, Pad 1 entrance, Wildlife Ln Pavement, Earthwork



SCALE: AS SHOWN

DRAWN:	DATE:
CHECKED:	DATE:
APPROVED:	DATE:
SURVEY DATE:	
SURVEY BY:	
FIELD BOOK No.:	

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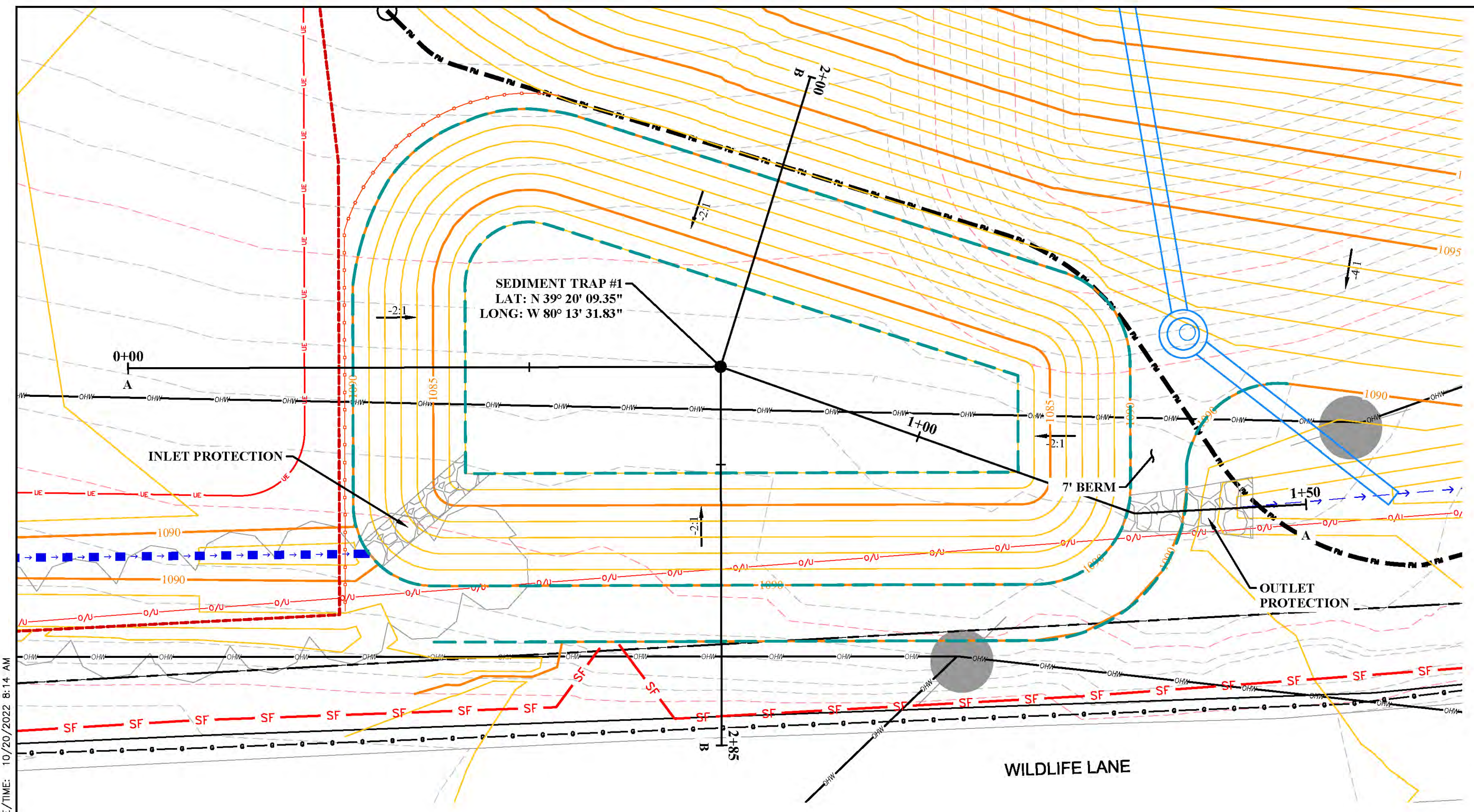
PHASE No.	
CONTRACT No.	
PROJECT No.	T30-11114

ISSUED FOR BID PLANS FOR
 WHITE OAKS BUSINESS PARK
 PHASE II A
 BRIDGEPORT, WEST VIRGINIA
 ESC GRADING PLAN - STAGE 4

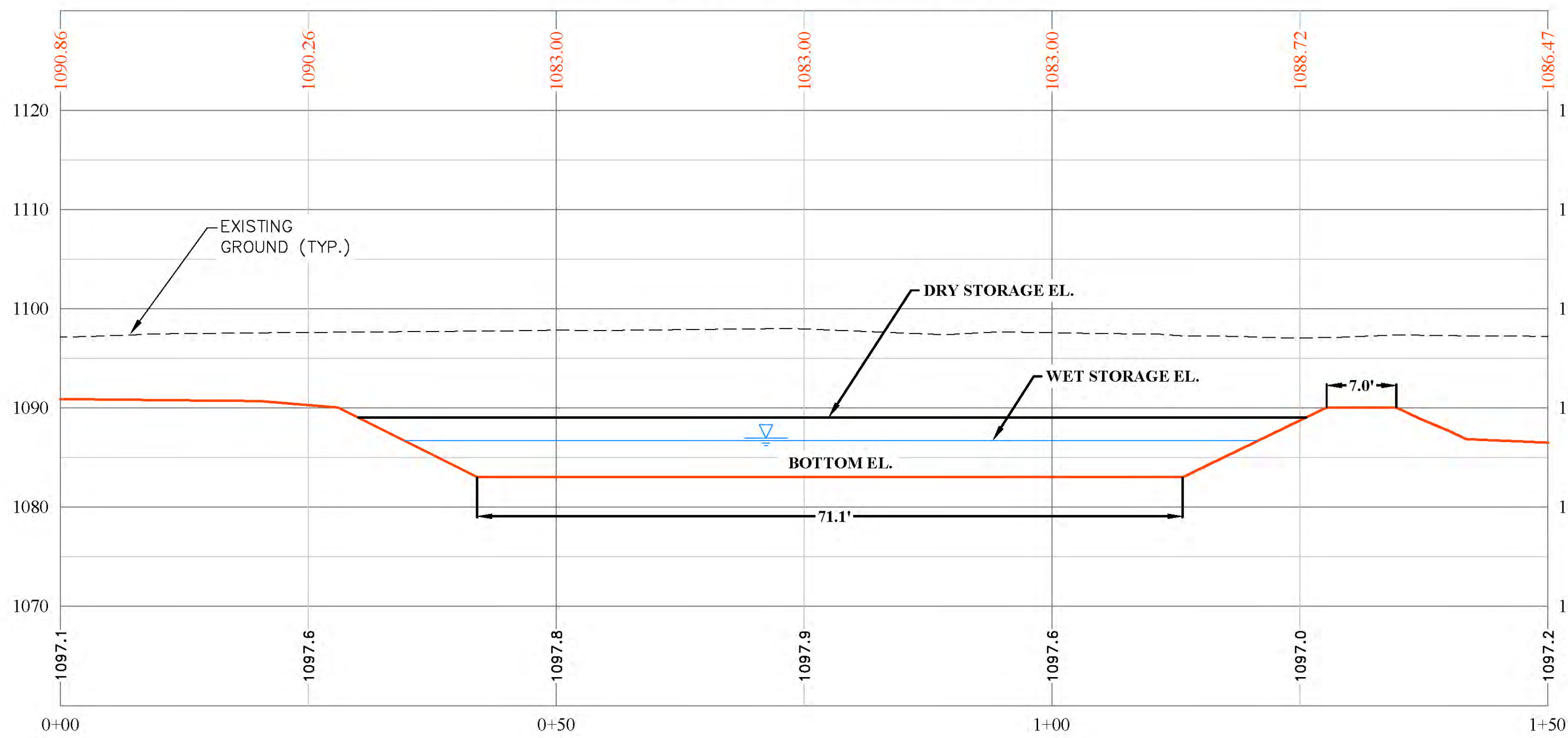
PLAN LEGEND

- PROPERTY LINE
- PROPOSED CONTOURS MAJOR / MINOR
- EXISTING CONTOURS MAJOR / MINOR
- EXISTING CURB INLET & PIPE
- EXISTING DITCH
- EXISTING CORE DRAIN
- EXISTING GASLINE
- PROPOSED CUT
- PROPOSED FILL
- PROPOSED DITCH
- PROPOSED SILT FENCE
- PROPOSED STORM MANHOLE & PIPE
- PROPOSED LIMITS OF DISTURBANCE
- PROPOSED SUMP

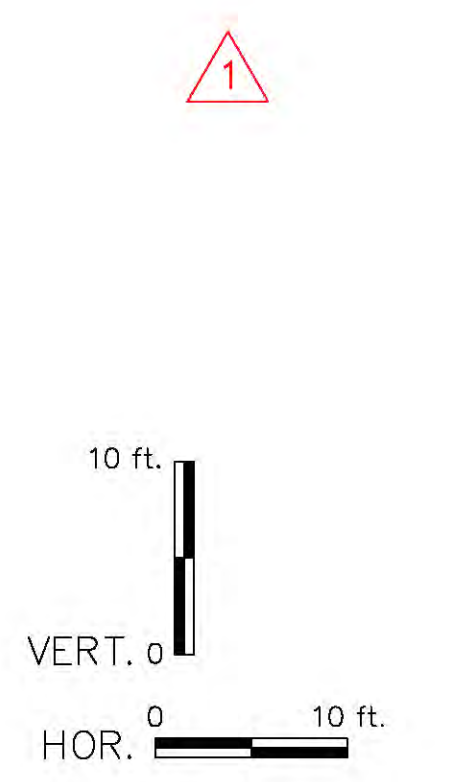
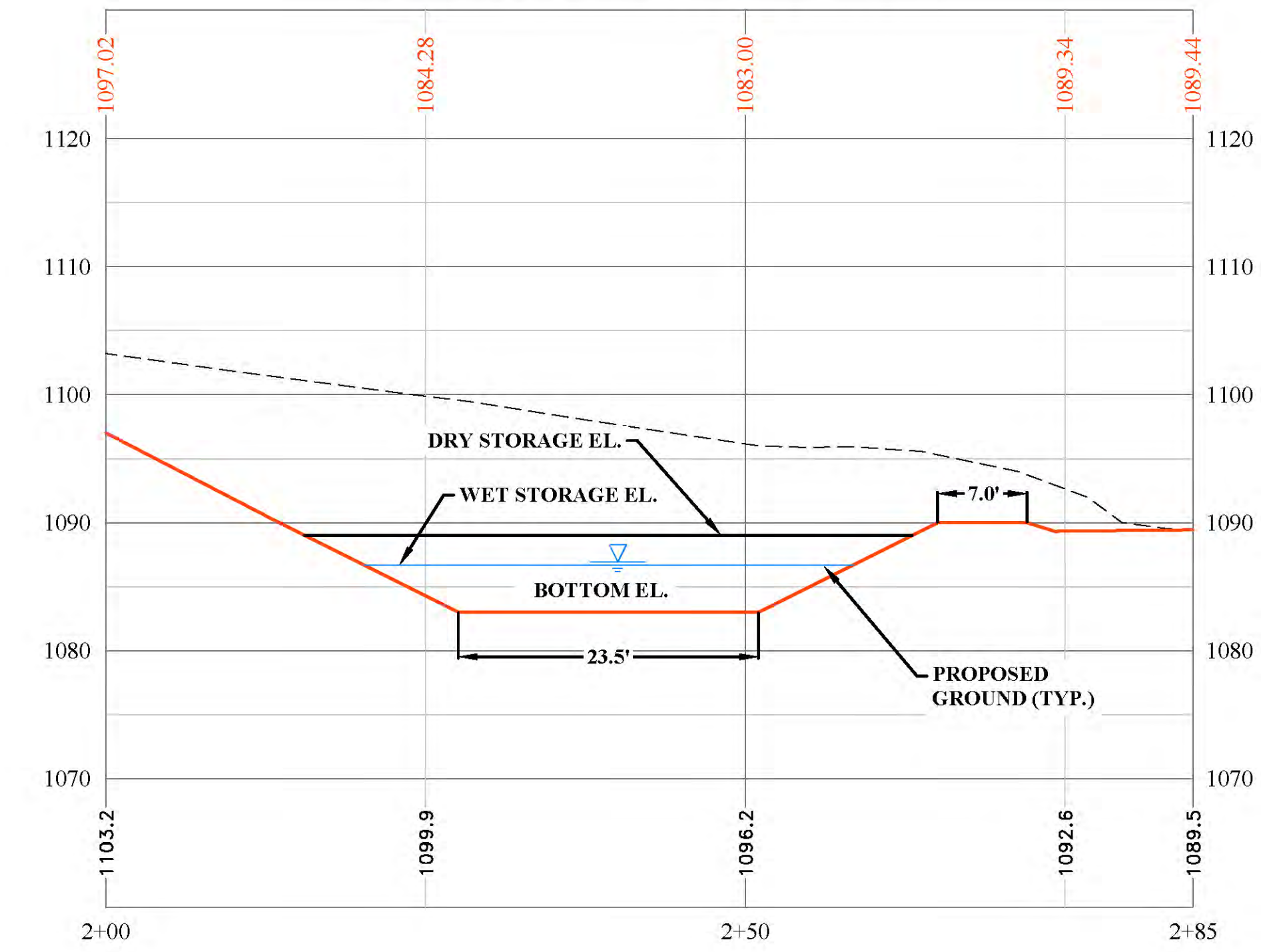
TEMPORARY SEDIMENT TRAP TABLE	
	TRAP #1
DRAINAGE AREA (AC)	4.55
REQUIRED VOLUME (CF)	16380.00
PROVIDED VOLUME (CF)	16871.00
BOTTOM EL. (FT)	1083.00
TOP OF BERM EL. (FT)	1090.00
WET STORAGE EL. (FT)	1086.70
DRY STORAGE EL. (FT)	1089.00



SEDIMENT TRAP #1 (A-A) PROFILE



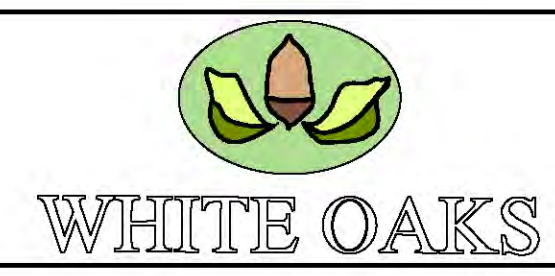
SEDIMENT TRAP #1 (B-B) PROFILE



LAYOUT TAB: 10 SEDIMENT TRAP DETAILS
 CAD FILE: R:\303\030-1034100-White Oaks Phase II 2021-High Tech Corridor Development, LLC-Drawing\10341-Sediment Trap Detail.dwg
 PLOT DATE/TIME: 10/20/2022 8:14 AM

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NO.	BY	DATE	DESCRIPTION
1	JCP	10/19/22	Revised sediment trap 1

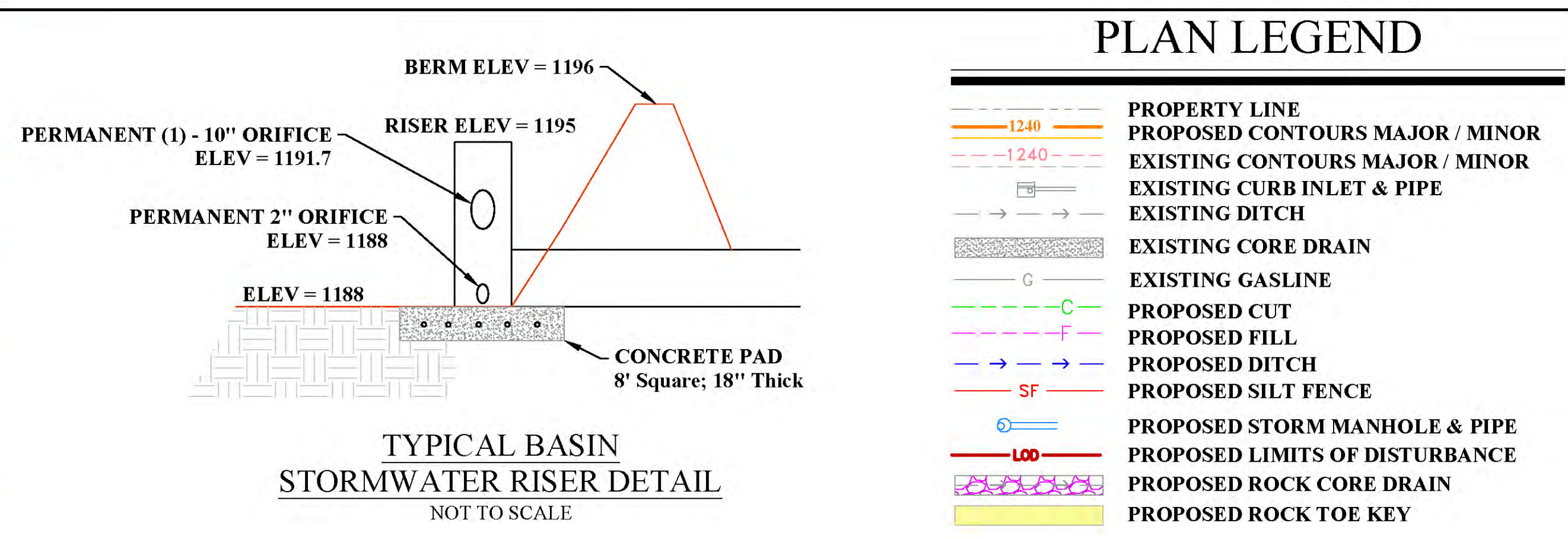
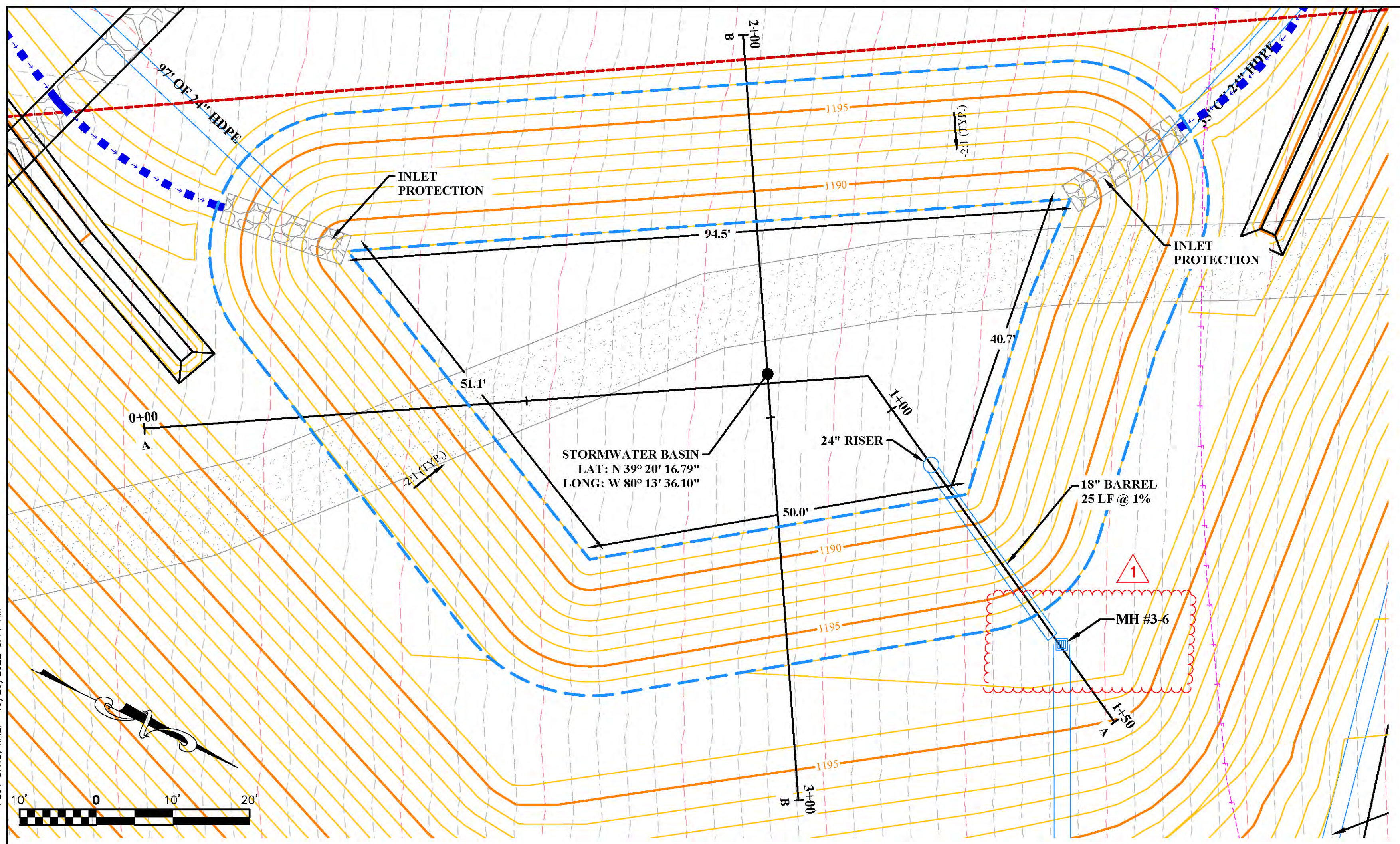


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APPROVED: _____ DATE: _____
SURVEY DATE: _____
SURVEY BY: _____
FIELD BOOK No.: _____

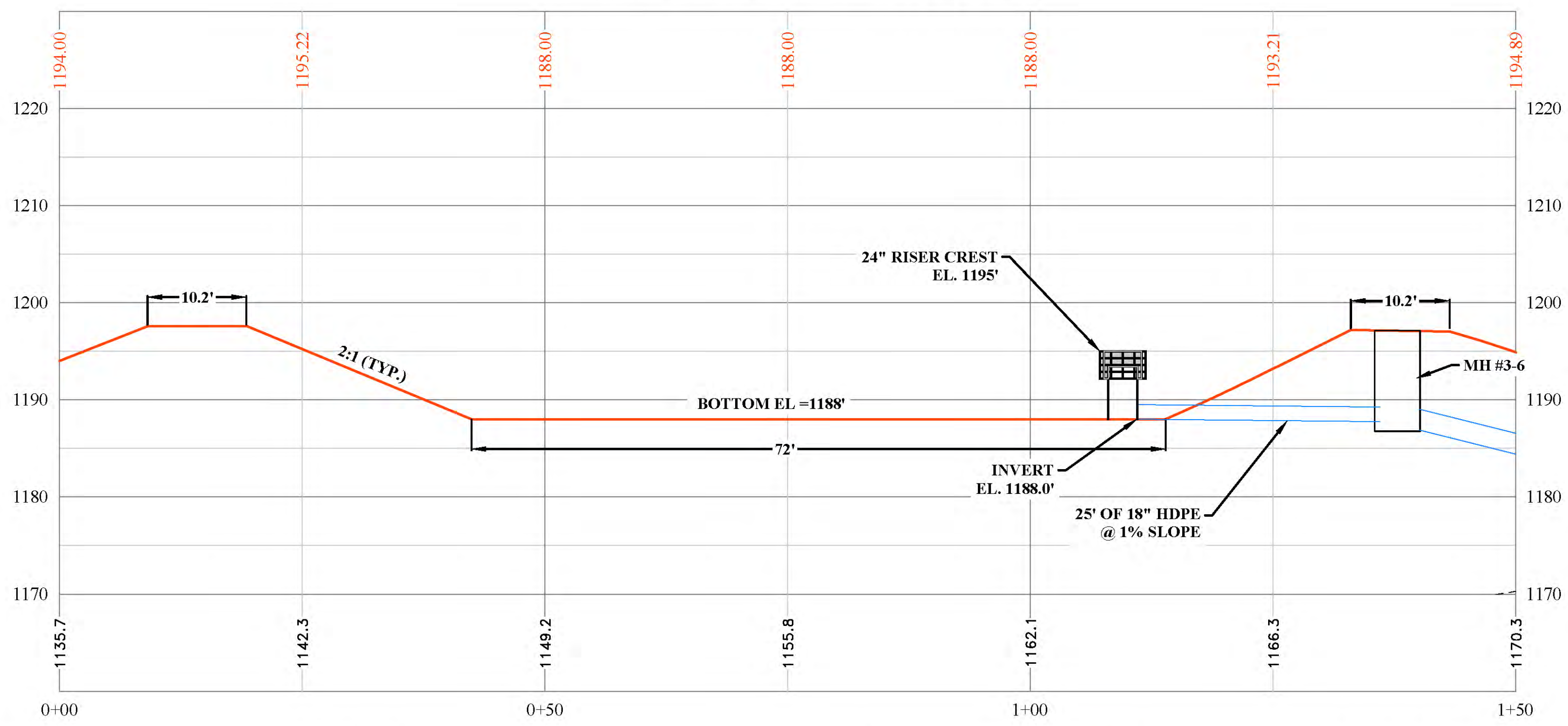
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PHASE No.
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PROJECT No.
T30-1114

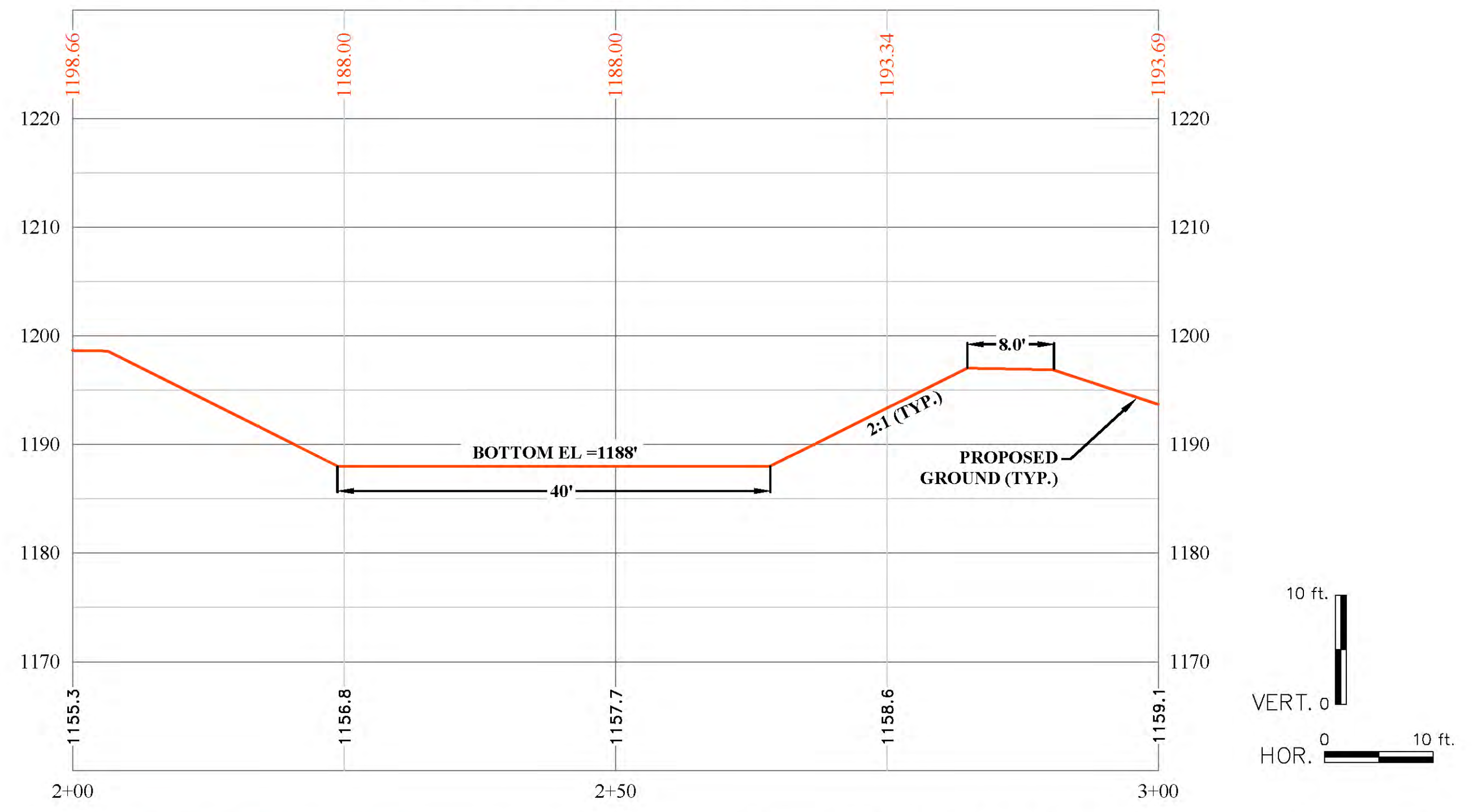
**ISSUED FOR BID PLANS FOR
 WHITE OAKS BUSINESS PARK
 PHASE II A
 BRIDGEPORT, WEST VIRGINIA
 SEDIMENT TRAP DETAILS**



STORMWATER BASIN (A-A) PROFILE



STORMWATER BASIN (B-B) PROFILE



LAYOUT TAB: 11-SWB CAD FILE: R:\030\030-10341-00-White Oaks Phase II 2021-High Tech Corridor Development, LLC-Drawing\03041-STORMWATER BASIN DETAIL.dwg PLOT DATE/TIME: 10/20/2022 8:14 AM

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NO.	BY	DATE	DESCRIPTION
1	JCP	10/19/22	Manhole 3-6

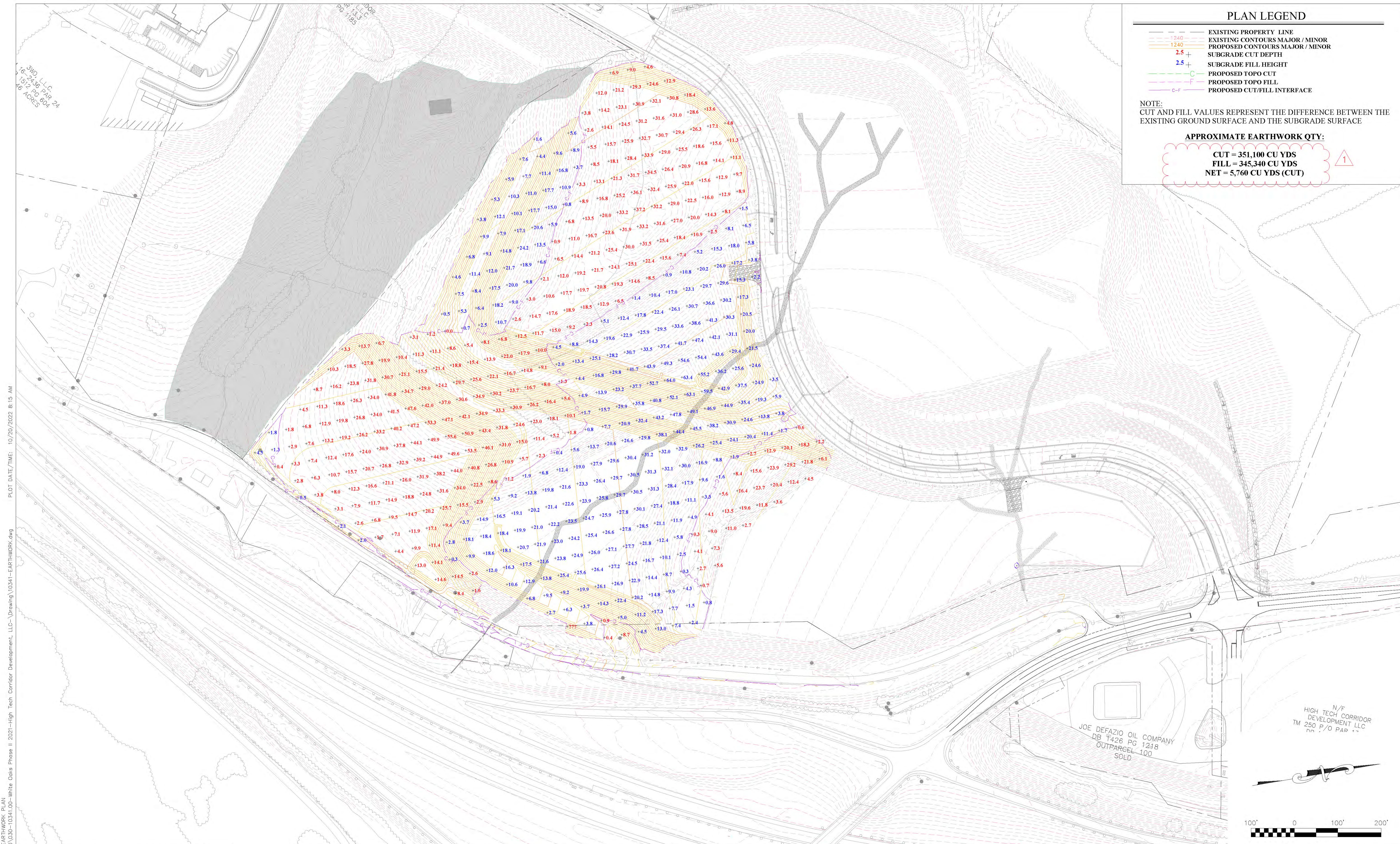


SCALE: AS SHOWN
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CHECKED: _____ DATE: _____
APPROVED: _____ DATE: _____
SURVEY DATE: _____
SURVEY BY: _____
FIELD BOOK No.: _____

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PHASE No.
CONTRACT No.
PROJECT No.
T30-11114

ISSUED FOR BID PLANS FOR
WHITE OAKS BUSINESS PARK
PHASE II A
BRIDGEPORT, WEST VIRGINIA
STORMWATER BASIN DETAIL



PLAN LEGEND

- EXISTING PROPERTY LINE
- EXISTING CONTOURS MAJOR / MINOR
- PROPOSED CONTOURS MAJOR / MINOR
- SUBGRADE CUT DEPTH
- SUBGRADE FILL HEIGHT
- PROPOSED TOPO CUT
- PROPOSED TOPO FILL
- PROPOSED CUT/FILL INTERFACE

NOTE:
CUT AND FILL VALUES REPRESENT THE DIFFERENCE BETWEEN THE EXISTING GROUND SURFACE AND THE SUBGRADE SURFACE

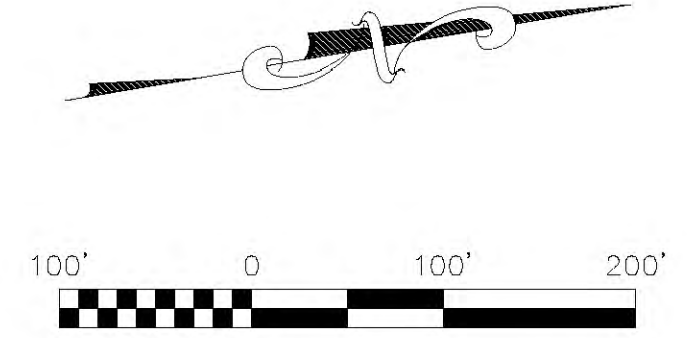
APPROXIMATE EARTHWORK QTY:

CUT = 351,100 CU YDS
FILL = 345,340 CU YDS
NET = 5,760 CU YDS (CUT)

LAYOUT TAB: 12 EARTHWORK PLAN
CAD FILE: R:\030\030-10341\00-White Oaks Phase II 2021-High Tech Corridor Development, LLC-Drawing\03041-EARTHWORK.dwg
PLOT DATE/TIME: 10/20/2022 8:15 AM

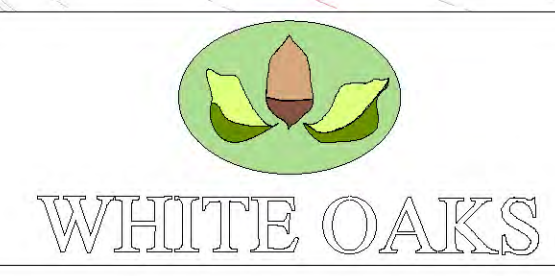
JOE DEFAZIO OIL COMPANY
DB T426 PG 1218
OUTPARCEL 100
SOLD

N/E
HIGH TECH CORRIDOR
DEVELOPMENT LLC
TM 250 P/O PAR 17



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NO.	BY	DATE	DESCRIPTION
1	JCP	10/19/22	Earthwork Quant



SCALE: AS SHOWN

DRAWN:	DATE:
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APPROVED:	DATE:
SURVEY DATE:	
SURVEY BY:	
FIELD BOOK No.:	

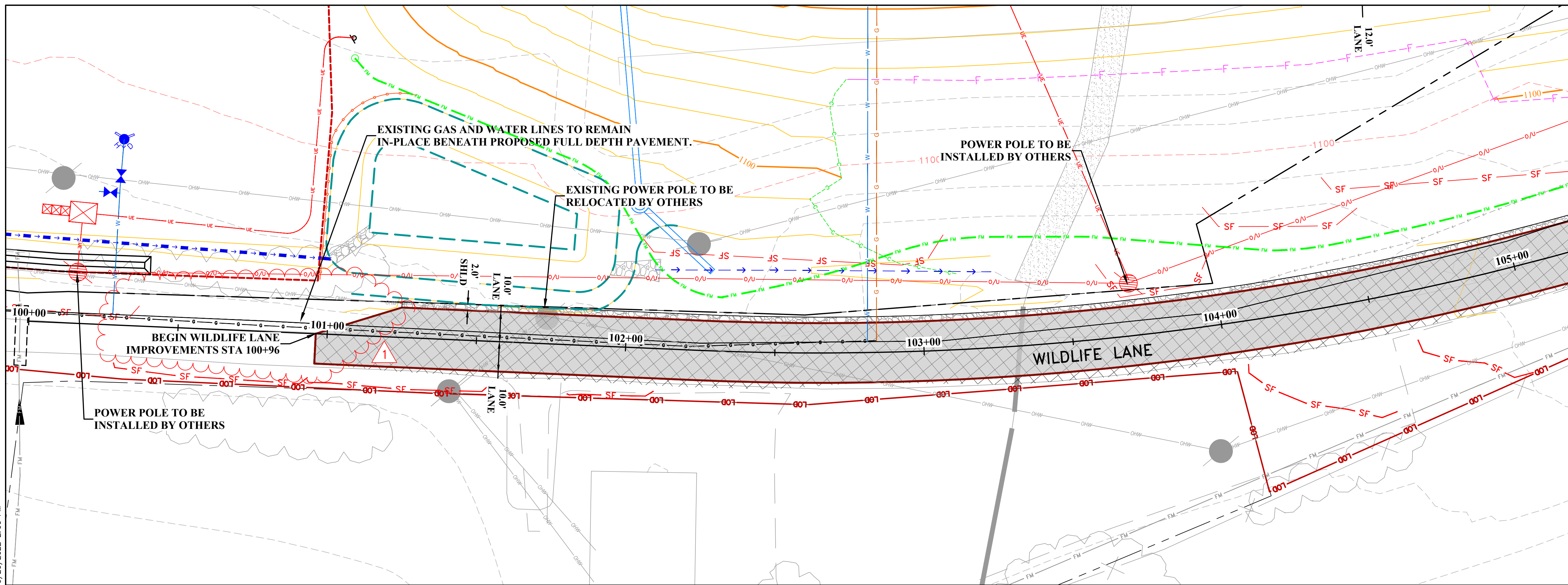
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ISSUED FOR BID PLANS FOR
WHITE OAKS BUSINESS PARK
PHASE II A
BRIDGEPORT, WEST VIRGINIA
EARTHWORK PLAN

SHEET No.
12

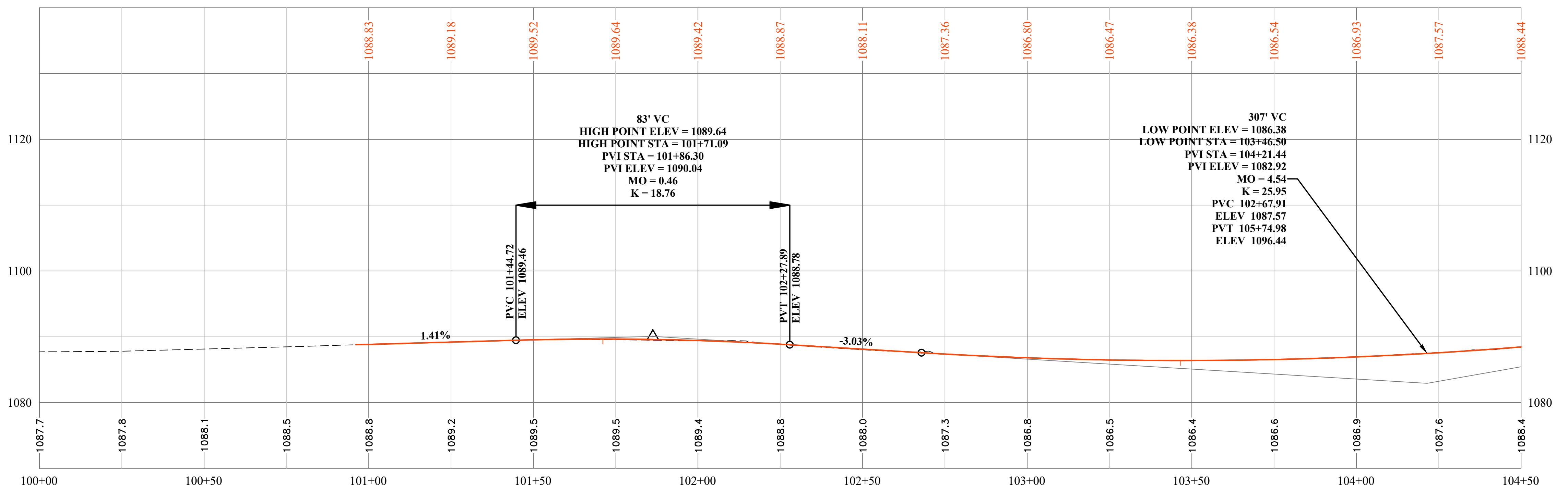
LAYOUT TAB: 30 WILDLIFE LANE PLAN & PROFILE
 CAD FILE: R:\030\030-1034100-White Oaks Phase II 2021-High Tech Corridor Development, LLC-Drawing\03041-WILDLIFE LANE-PP.dwg
 PLOT DATE/TIME: 10/20/2022 2:00 PM



PLAN LEGEND

- PROPERTY LINE
- PROPOSED CONTOURS MAJOR / MINOR
- EXISTING CONTOURS MAJOR / MINOR
- EXISTING CURB INLET & PIPE
- EXISTING DITCH
- EXISTING CORE DRAIN
- EXISTING GASLINE
- PROPOSED CUT
- PROPOSED FILL
- PROPOSED DITCH
- PROPOSED SILT FENCE
- PROPOSED STORM MANHOLE & PIPE
- PROPOSED LIMITS OF DISTURBANCE
- PROPOSED ROCK CORE DRAIN
- PROPOSED ROCK TOE KEY
- PROPOSED SUMP
- PROPOSED GRAVEL SHOULDER
- PROPOSED OVERLAY
- PROPOSED FULL DEPTH PAVEMENT

WILDLIFE LANE PROFILE

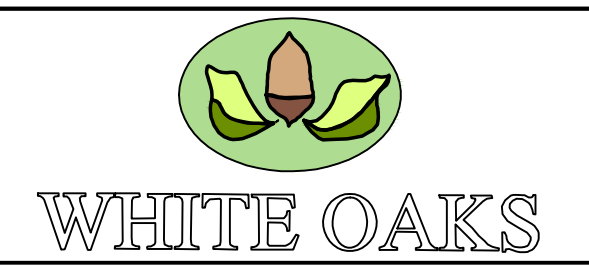


PROFILE LEGEND

- EXISTING GROUND
- PROPOSED GRADE

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NO.	BY	DATE	DESCRIPTION
1	JCP	10/19/22	Pavement adjustment



SCALE: AS SHOWN

DRAWN:	DATE:
CHECKED:	DATE:
APPROVED:	DATE:
SURVEY DATE:	
SURVEY BY:	
FIELD BOOK No.:	

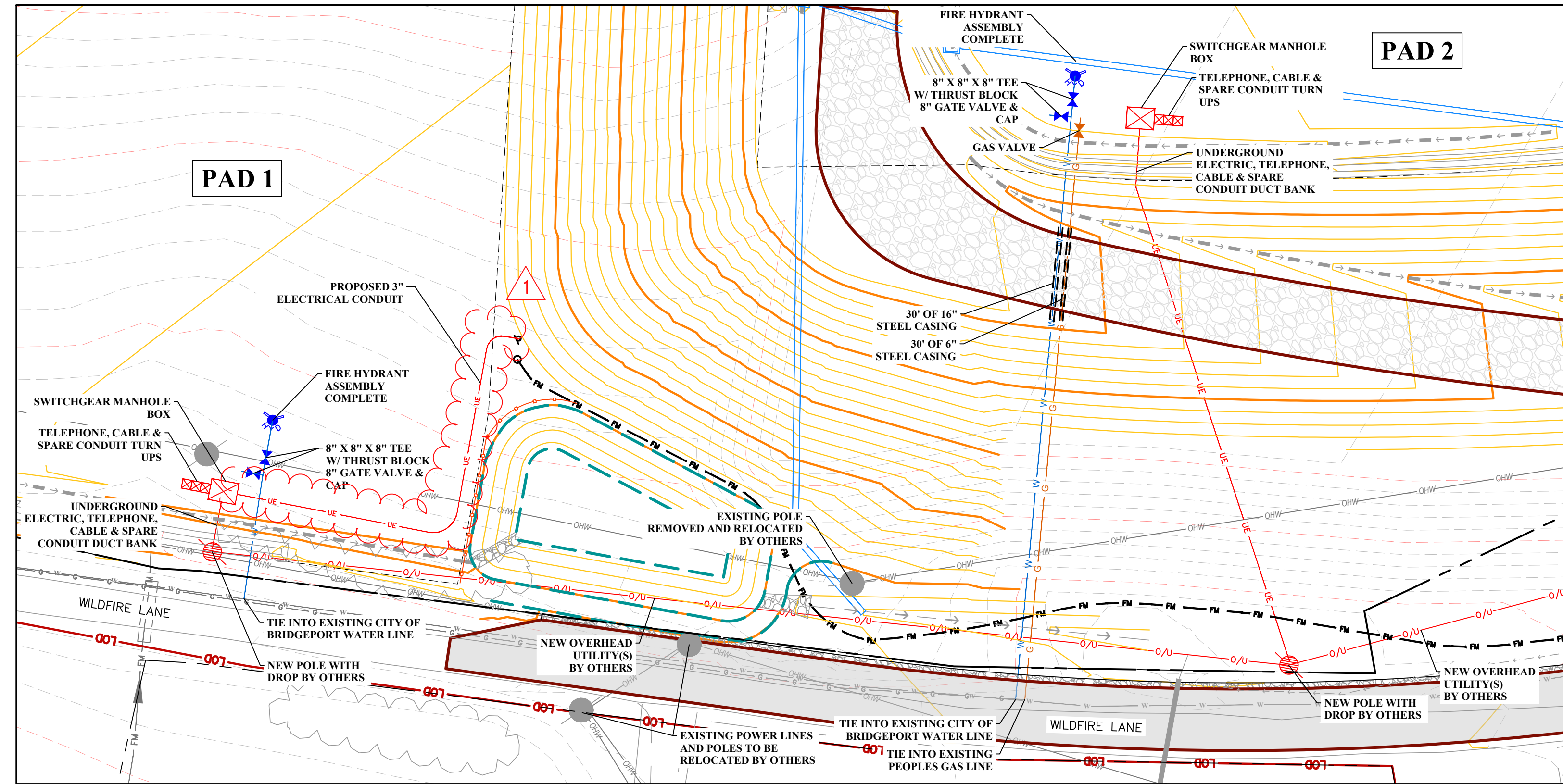
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CONTRACT No.
PROJECT No.
T30-11114

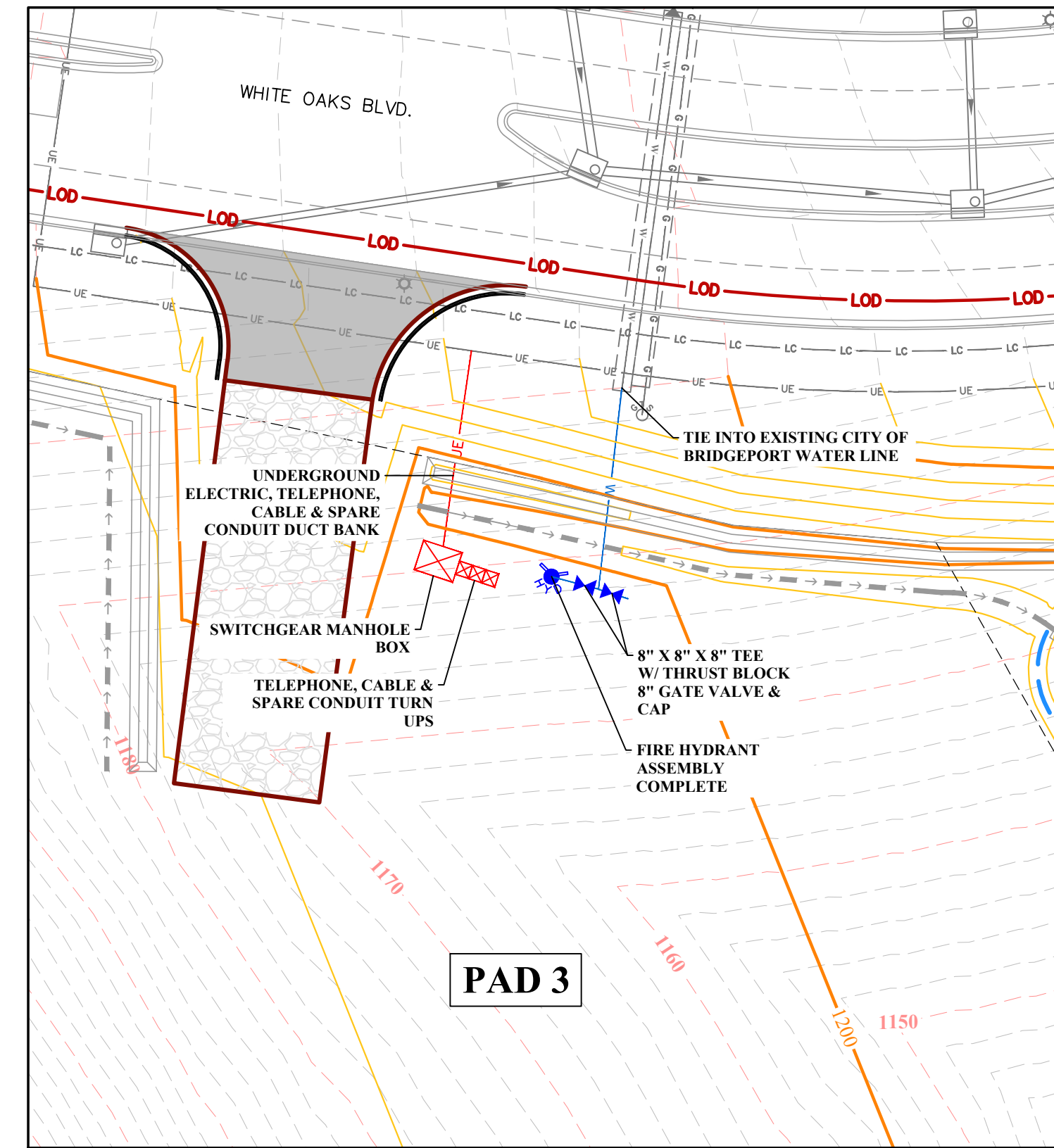
ISSUED FOR BID PLANS FOR
 WHITE OAKS BUSINESS PARK
 PHASE II A
 BRIDGEPORT, WEST VIRGINIA
 WILDLIFE LANE PLAN & PROFILE

PLAN LEGEND

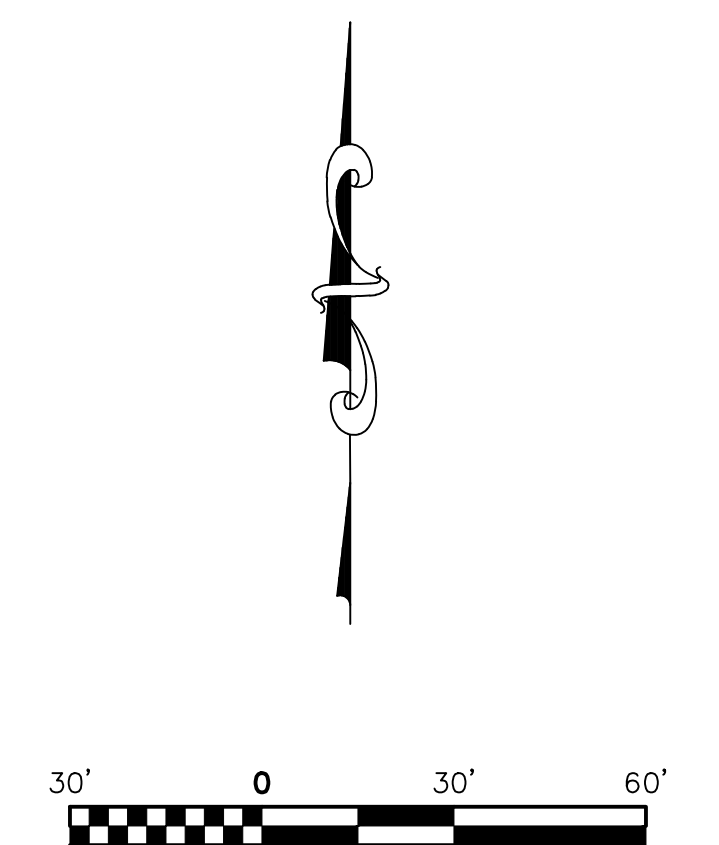
- **LOD** PROPOSED LIMITS OF DISTURBANCE
- CONSERVATION EASEMENT
- **PL** PROPERTY LINE
- **1240** PROPOSED CONTOURS MAJOR / MINOR
- **1240** EXISTING CONTOURS MAJOR / MINOR
- **→** EXISTING DITCH
- **O/U** EXISTING OVERHEAD UTILITY LINE
- **G** EXISTING GAS LINE
- **W** EXISTING WATERLINE
- **SAN** EXISTING SANITARY SEWER
- **FM** EXISTING FORCE MAIN
- **UE** EXISTING UNDERGROUND ELECTRIC
- **G** EXISTING GASLINE
- **○** EXISTING UTILITY POLE
- **—** EXISTING CULVERT
- **OHW** EXISTING OVERHEAD UTILITY LINE
- **PROPOSED UTILITY POLE**
- **O/U** **PROPOSED OVERHEAD UTILITY LINE**
- **G** **PROPOSED GAS LINE**
- **W** **PROPOSED WATERLINE**
- **SAN** **PROPOSED SANITARY SEWER**
- **FM** **PROPOSED FORCE MAIN**
- **UE** **PROPOSED UNDERGROUND ELECTRIC**
- **LC** **PROPOSED LIGHTING CONDUIT**



PAD 1 AND 2
SCALE: 1"=30'



PAD 3
SCALE: 1"=30'



LAYOUT TAB: 47 UTILITY PLAN
CAD FILE: R:\030\030-10341-00-White Oaks Phase II 2021-High Tech Corridor Development, LLC-Drawing\0304-UTILITY PLAN.dwg
PLOT DATE/TIME: 10/20/2022 2:02 PM

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NO.	BY	DATE	DESCRIPTION
1	JCP	10/19/22	Electric conduit added

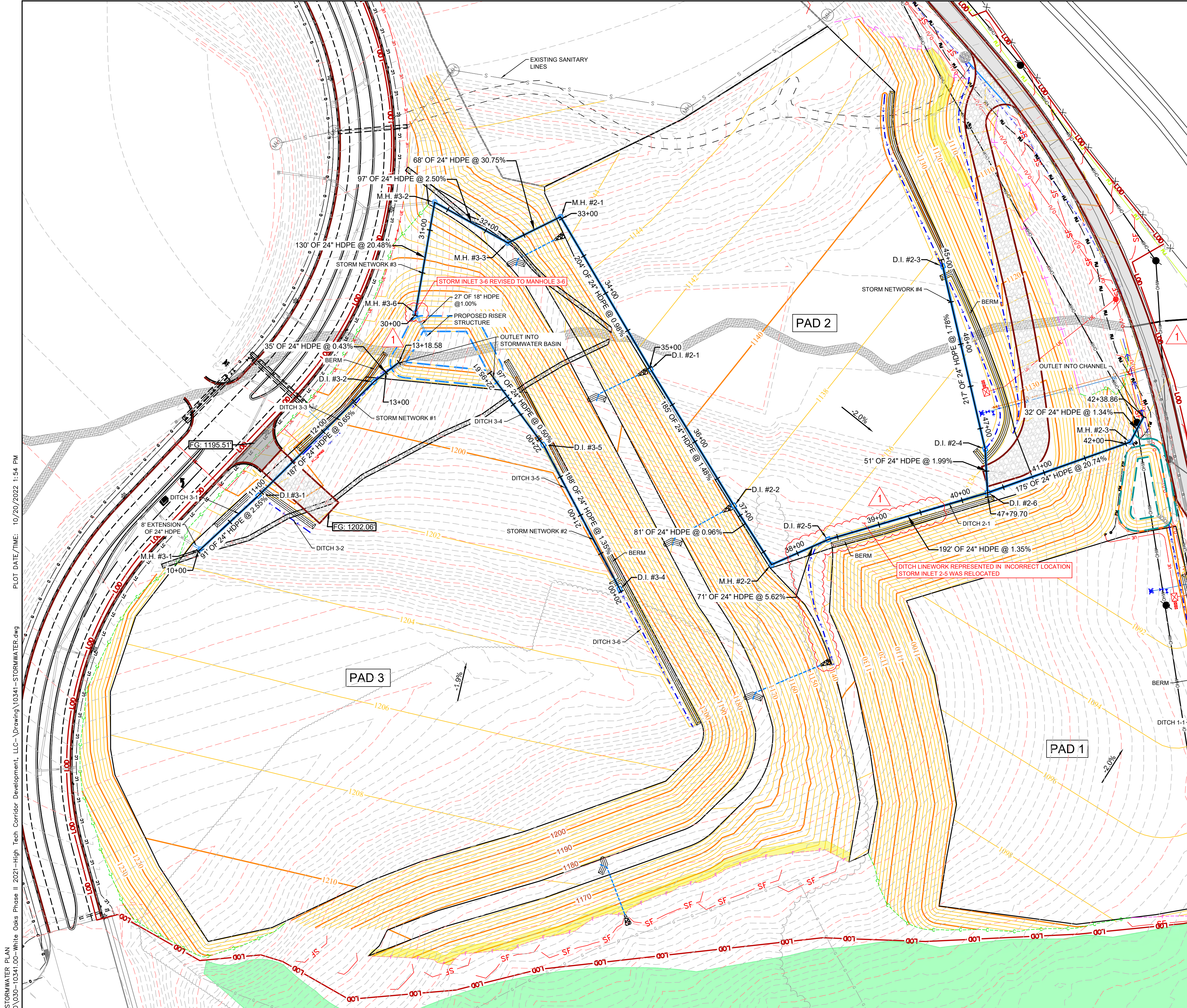


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DRAWN: DATE:
CHECKED: DATE:
APPROVED: DATE:
SURVEY DATE:
SURVEY BY:
FIELD BOOK No.:

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PHASE No.
CONTRACT No.
PROJECT No.
T30-11114

ISSUED FOR BID PLANS FOR
WHITE OAKS BUSINESS PARK
PHASE II A
BRIDGEPORT, WEST VIRGINIA
UTILITY PLAN



Structure Table	
Structure Name	Structure Details
D.I. #2-1 TYPE G INLET	RIM = 1141.48' 24" INV IN = 1134.96' 24" INV OUT = 1134.86'
D.I. #2-2 TYPE G INLET	RIM = 1138.01' 24" INV IN = 1132.13' 24" INV OUT = 1132.03'
D.I. #2-3 TYPE G INLET	RIM = 1135.88' 24" INV OUT = 1128.35'
D.I. #2-4 TYPE G INLET	RIM = 1132.59' 24" INV IN = 1124.49' 24" INV OUT = 1124.39'
D.I. #2-5 TYPE G INLET	RIM = 1133.67' 24" INV IN = 1127.13' 24" INV OUT = 1127.04'
D.I. #2-6 TYPE G INLET	RIM = 1131.86' 24" INV IN = 1124.44' 24" INV IN = 1123.38' 24" INV OUT = 1123.28'
D.I. #3-2 TYPE G INLET	RIM = 1196.79' 24" INV IN = 1193.15' 24" INV OUT = 1193.05'
D.I. #3-4 TYPE G INLET	RIM = 1200.22' 24" INV OUT = 1196.77'
D.I. #3-5 TYPE G INLET	RIM = 1198.14' 24" INV IN = 1194.23' 24" INV OUT = 1194.13'
D.I.#3-1 TYPE G INLET	RIM = 1202.04' 24" INV IN = 1194.46' 24" INV OUT = 1194.37'
M.H. #2-1 48" DIAMETER MANHOLE	RIM = 1143.35' 24" INV IN = 1137.07' 24" INV OUT = 1136.97'
M.H. #2-2 48" DIAMETER MANHOLE	RIM = 1136.47' 24" INV IN = 1131.25' 24" INV OUT = 1131.15'
M.H. #2-3 48" DIAMETER MANHOLE	RIM = 1090.29' 24" INV IN = 1087.00' 24" INV OUT = 1086.54'
M.H. #3-1 48" DIAMETER MANHOLE	RIM = 1203.55' 24" INV OUT = 1196.80'
M.H. #3-2 48" DIAMETER MANHOLE	RIM = 1165.17' 24" INV IN = 1161.00' 24" INV OUT = 1160.89'
M.H. #3-3 48" DIAMETER MANHOLE	RIM = 1166.53' 24" INV IN = 1158.47' 24" INV OUT = 1158.00'
M.H. #3-6 48" DIAMETER MANHOLE	RIM = 1197.12' 24" INV OUT = 1187.53'

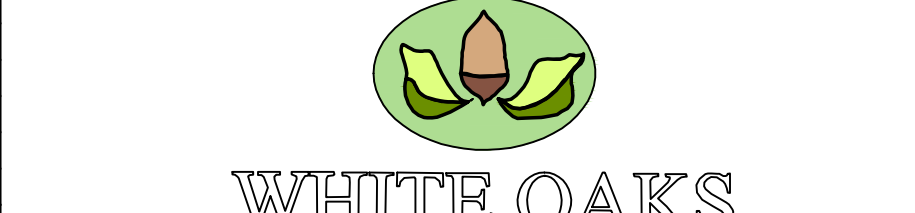
PLAN LEGEND

- PROPERTY LINE
- PROPOSED CONTOURS MAJOR / MINOR
- EXISTING CONTOURS MAJOR / MINOR
- EXISTING CURB INLET & PIPE
- EXISTING DITCH
- EXISTING CORE DRAIN
- EXISTING GASLINE
- PROPOSED CUT
- PROPOSED FILL
- PROPOSED DITCH
- PROPOSED SILT FENCE
- PROPOSED STORM MANHOLE & PIPE
- PROPOSED TYPE G INLET
- PROPOSED LIMITS OF DISTURBANCE
- PROPOSED ROCK CORE DRAIN
- PROPOSED ROCK TOE KEY
- CONSERVATION EASEMENT

LAYOUT TAB: 50 STORMWATER PLAN
 CAD FILE: R:\030\030-10341-00-White Oaks Phase II 2021-High Tech Corridor Development, LLC-Drawing\03041-00-STORMWATER.dwg
 PLOT DATE/TIME: 10/20/2022 1:54 PM

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NO.	BY	DATE	DESCRIPTION
1	DJW	10/20/22	DITCH LINENWORK REPRESENTED IN INCORRECT LOCATION
1	DJW	10/20/22	STORM INLET 2-5 WAS RELOCATED
1	DJW	10/20/22	STORM INLET 3-6 REVISED TO MANHOLE 3-6

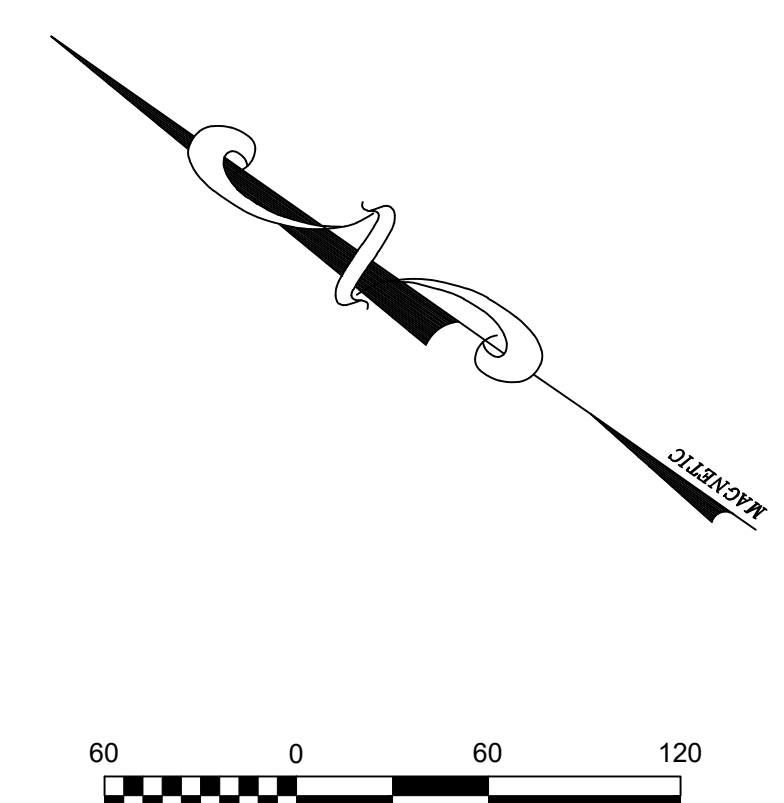


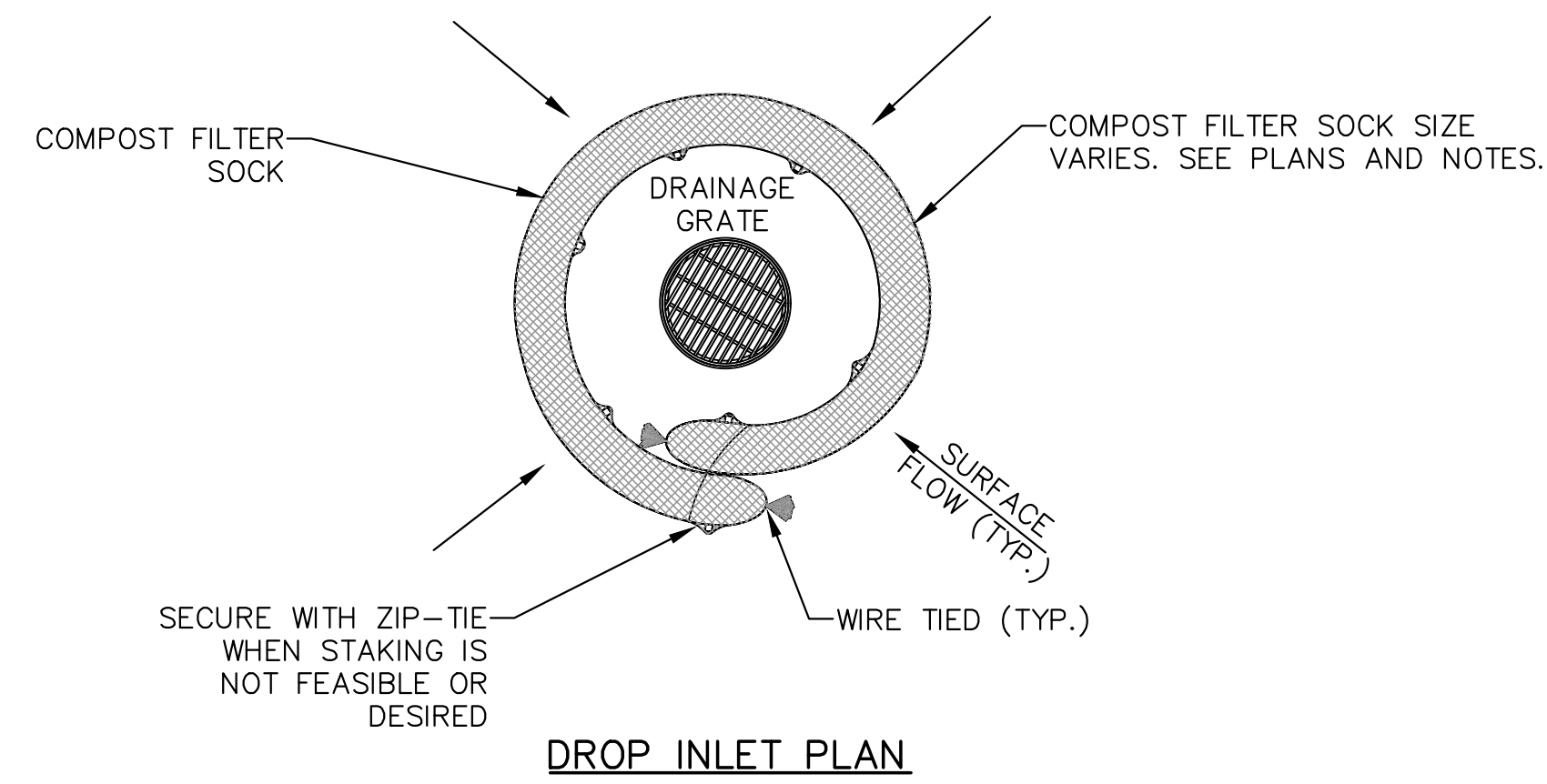
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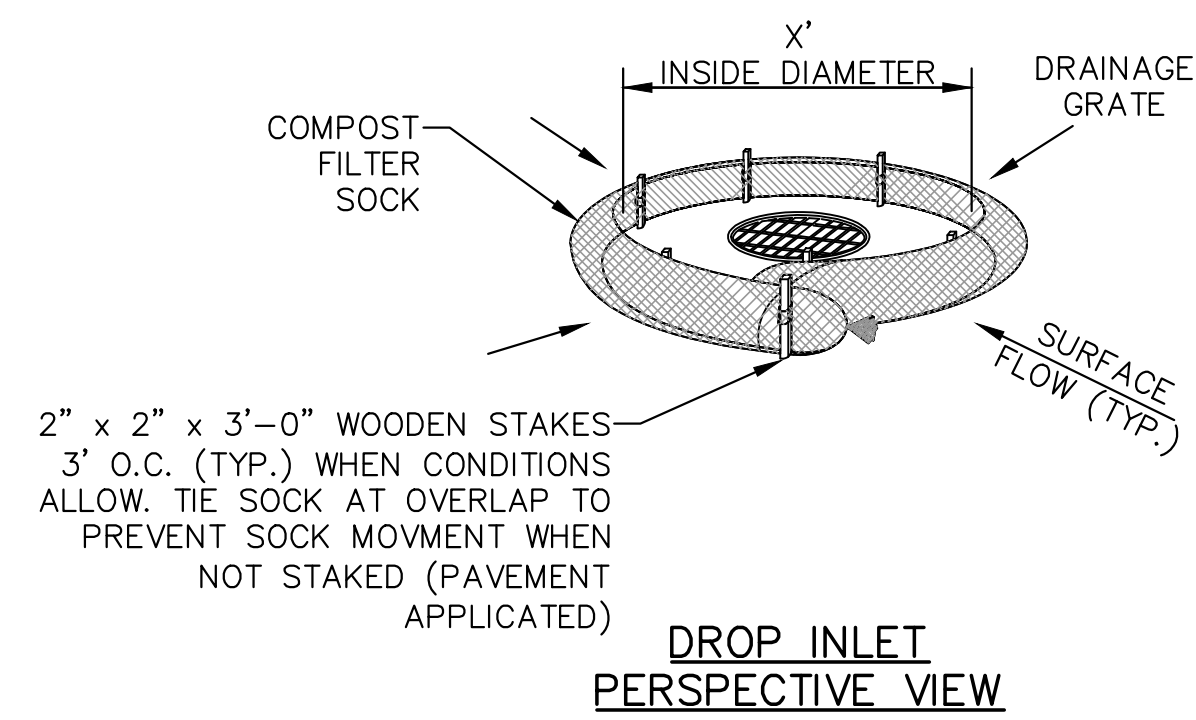
PHASE No.	
CONTRACT No.	
PROJECT No.	T30-1114

ISSUED FOR BID PLANS FOR
 WHITE OAKS BUSINESS PARK
 PHASE II A
 BRIDGEPORT, WEST VIRGINIA
 STORMWATER PLAN

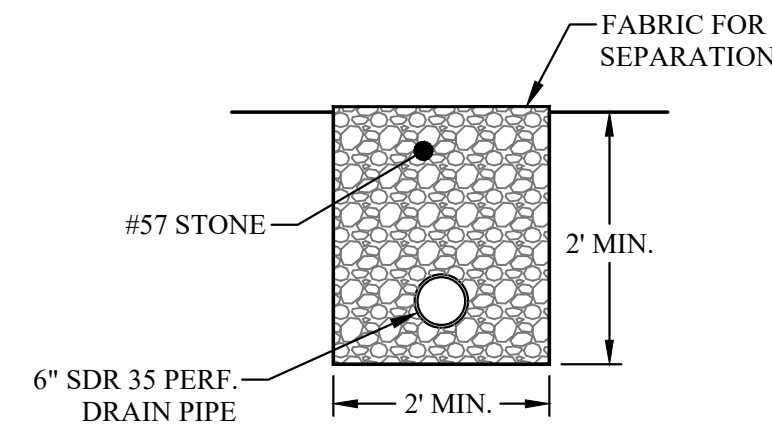




DROP INLET PLAN

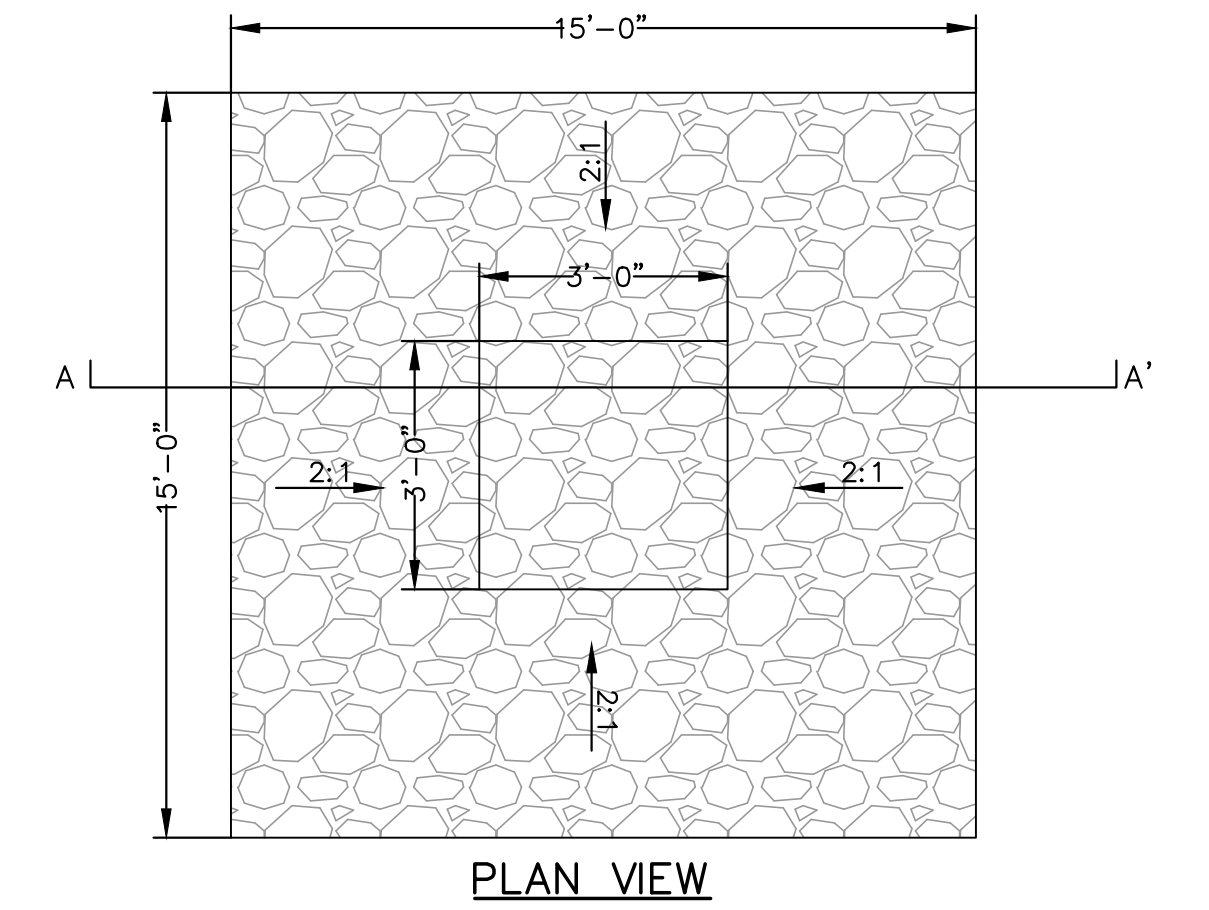


DROP INLET PERSPECTIVE VIEW



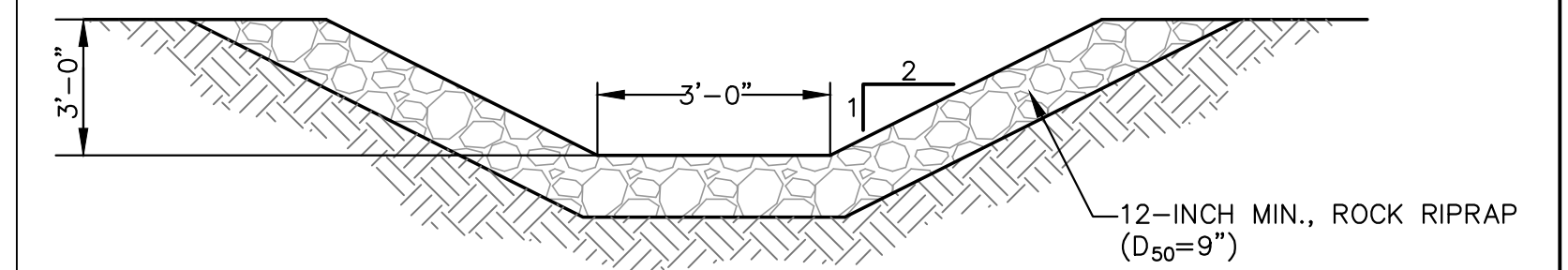
NOTE: ALL NECESSARY CONNECTIONS OR BENDS SHALL BE 45° OR LESS.

UNDERDRAIN COLLECTION PIPE DETAIL
NOT TO SCALE



PLAN VIEW

ROCK RIPRAP SIZING	
GRADATION	D ₅₀ = 9"
50%	9" - 35%
	6" - 15%
	3" - 6"

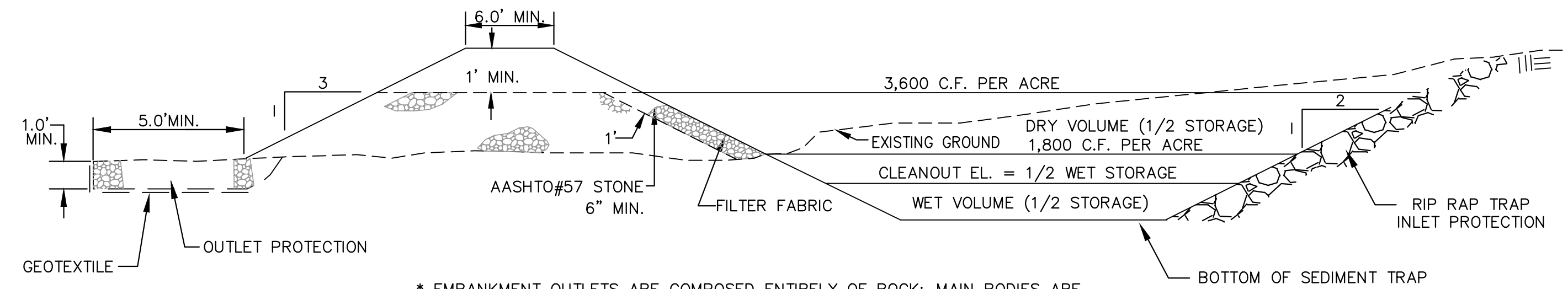


SECTION A-A' VIEW

SUMP DETAIL
NOT TO SCALE

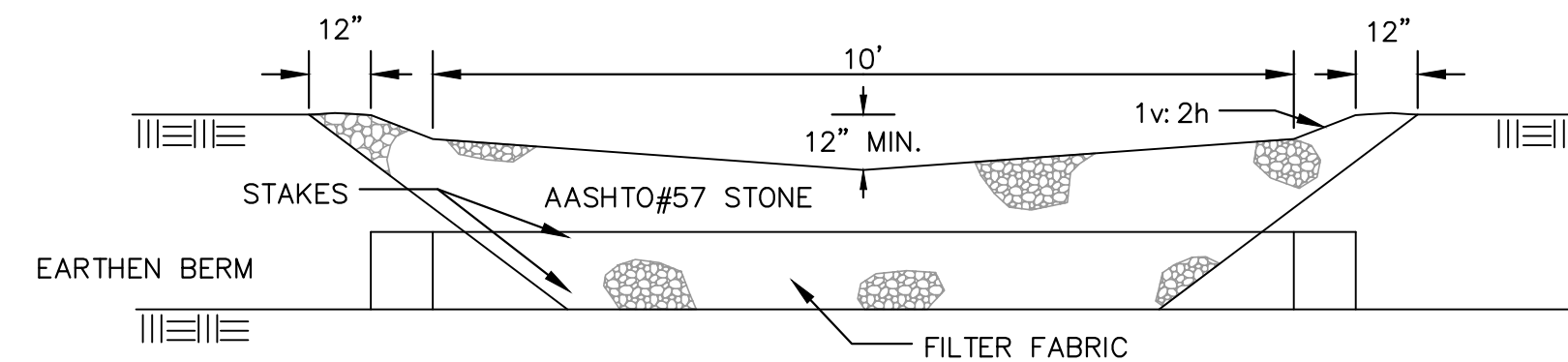
NOTES:

1. THE SEDIMENT TRAP SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE DIMENSIONS PROVIDED IN THE PLANS OR SIZED TO PROVIDE A MINIMUM 3,600-CUBIC FEET OF STORAGE PER ACRE OF DRAINAGE AREA (1,800-CF PER ACRE WET STORAGE AND 1,800-CF PER ACRE DRY STORAGE).
2. DITCH LINING SHALL BE AS CALLED FOR IN THE PLANS OR AS DESCRIBED IN THE VEGETATED AND ROCK-LINED DITCH DETAILS.
3. SEDIMENT SHALL BE REMOVED AND TRAP RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO 1/4 OF THE DESIGN WET STORAGE DEPTH OF THE TRAP. REMOVED SEDIMENT SHALL BE DEPOSITED IN A SUITABLE AREA AND IN A SUCH A MANNER THAT IT WILL NOT ERODE.
4. THE STRUCTURE SHALL BE INSPECTED AS DESCRIBED IN THE EROSION AND SEDIMENT CONTROL NOTES - MAINTENANCE AND INSPECTION NOTES CONTAINED WITHIN THESE PLANS.
5. CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT IN SUCH A MANNER THAT EROSION AND WATER POLLUTION SHALL BE MINIMIZED.
6. THE SEDIMENT TRAP SHALL BE DE-WATERED BY APPROVED METHODS, REMOVED AND THE AREA STABILIZED ONCE THE CONTRIBUTORY DRAINAGE AREA HAS BEEN PROPERLY STABILIZED. UPON REMOVAL, THE SEDIMENT TRAP SHALL BE PROPERLY BACKFILLED AND THE AREA RECONSTRUCTED TO ORIGINAL CONTOURS.
7. THE AREA UNDER THE EMBANKMENT SHALL BE CLEARED, GRUBBED AND STRIPPED OF ANY VEGETATION AND ROOT MAT. THE POOL AREA SHALL BE CLEARED.
8. THE FILL MATERIAL FOR THE EMBANKMENT SHALL BE AS DESCRIBED IN THE GENERAL NOTES CONTAINED WITHIN THESE PLANS. THE MAXIMUM HEIGHT OF EMBANKMENT SHALL BE 4-FT, MEASURED AT THE CENTERLINE OF THE EMBANKMENT.
9. ALL INTERIOR CUT AND FILL SLOPES SHALL BE 2:1 OR FLATTER AND EXTERIOR SLOPES SHALL BE 3:1 OR FLATTER.
10. ELEVATION OF THE TOP OF ANY DIKE DIRECTING WATER INTO TRAP MUST EQUAL OR EXCEED THE HEIGHT OF THE TRAP EMBANKMENT.
11. FILTER CLOTH SHALL BE INSTALLED OVER THE BOTTOM AND SIDES OF THE OUTLET CHANNEL PRIOR TO PLACEMENT OF STONE. SECTION OF FABRIC MUST OVERLAP AT LEAST 1-FT WITH SECTION NEAREST THE ENTRANCE PLACED ON TOP. FABRIC SHALL BE EMBEDDED AT LEAST 6-IN INTO EXISTING GROUND AT ENTRANCE OF OUTLET CHANNEL.
12. STONE USED IN OUTLET CHANNEL SHALL BE AS SHOWN IN OUTLET PROTECTION DETAIL.
13. AN OUTLET SHALL BE PROVIDED WHICH INCLUDES A MEANS OF CONVEYING THE DISCHARGE IN AN EROSION FREE MANNER TO AN EXISTING STABLE CHANNEL. PROTECTION AGAINST SCOUR AT THE DISCHARGE END SHALL BE PROVIDED AS NECESSARY.
14. OUTLET CHANNEL MUST HAVE POSITIVE DRAINAGE FROM THE TRAP.



* EMBANKMENT OUTLETS ARE COMPOSED ENTIRELY OF ROCK; MAIN BODIES ARE LARGER R-3 AND UP STREAM LAYERS ARE SMALLER AASHTO #57 STONE.

SEDIMENT TRAP SECTION VIEW



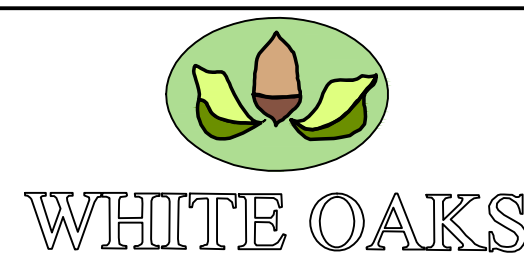
SEDIMENT TRAP EMBANKMENT SPILLWAY

SEDIMENT TRAP DETAILS
NOT TO SCALE

LAYOUT TAB: 98-DETAILS
CAD FILE: R:\030\030-10341-00-White Oaks Phase II 2021-High Tech Corridor Development, LLC-Drawing\03041-DETAILED.dwg
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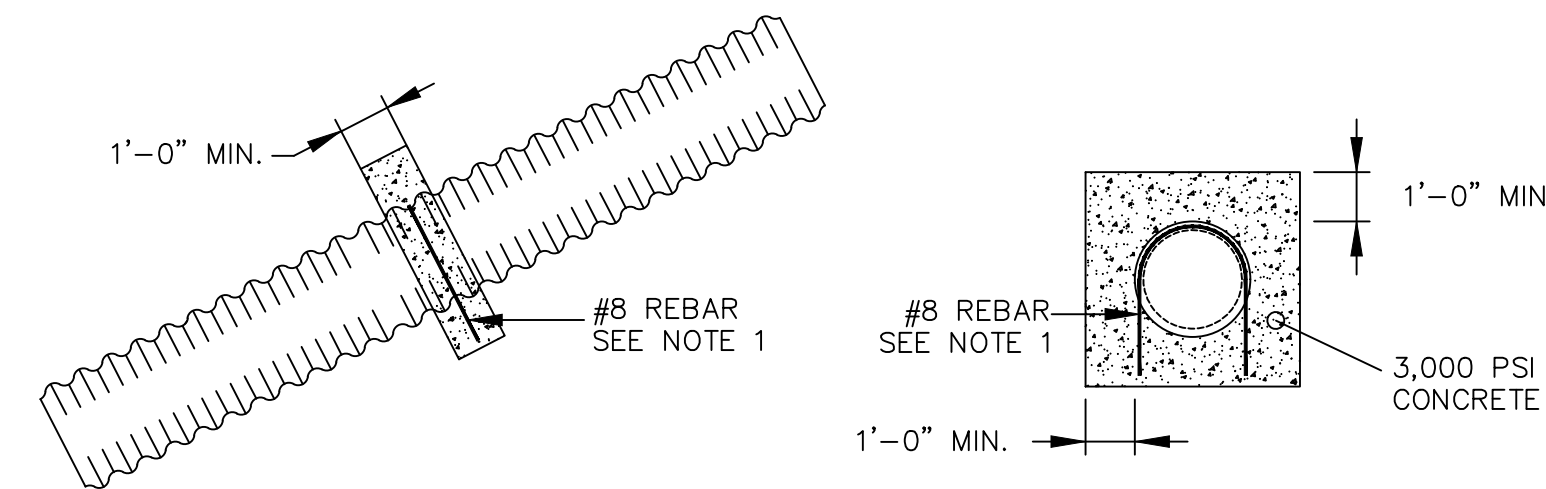
PHASE No.
CONTRACT No.
PROJECT No.
T30-11114

ISSUED FOR BID PLANS FOR
WHITE OAKS BUSINESS PARK
PHASE II A
BRIDGEPORT, WEST VIRGINIA
DETAILS

SHEET No.
58

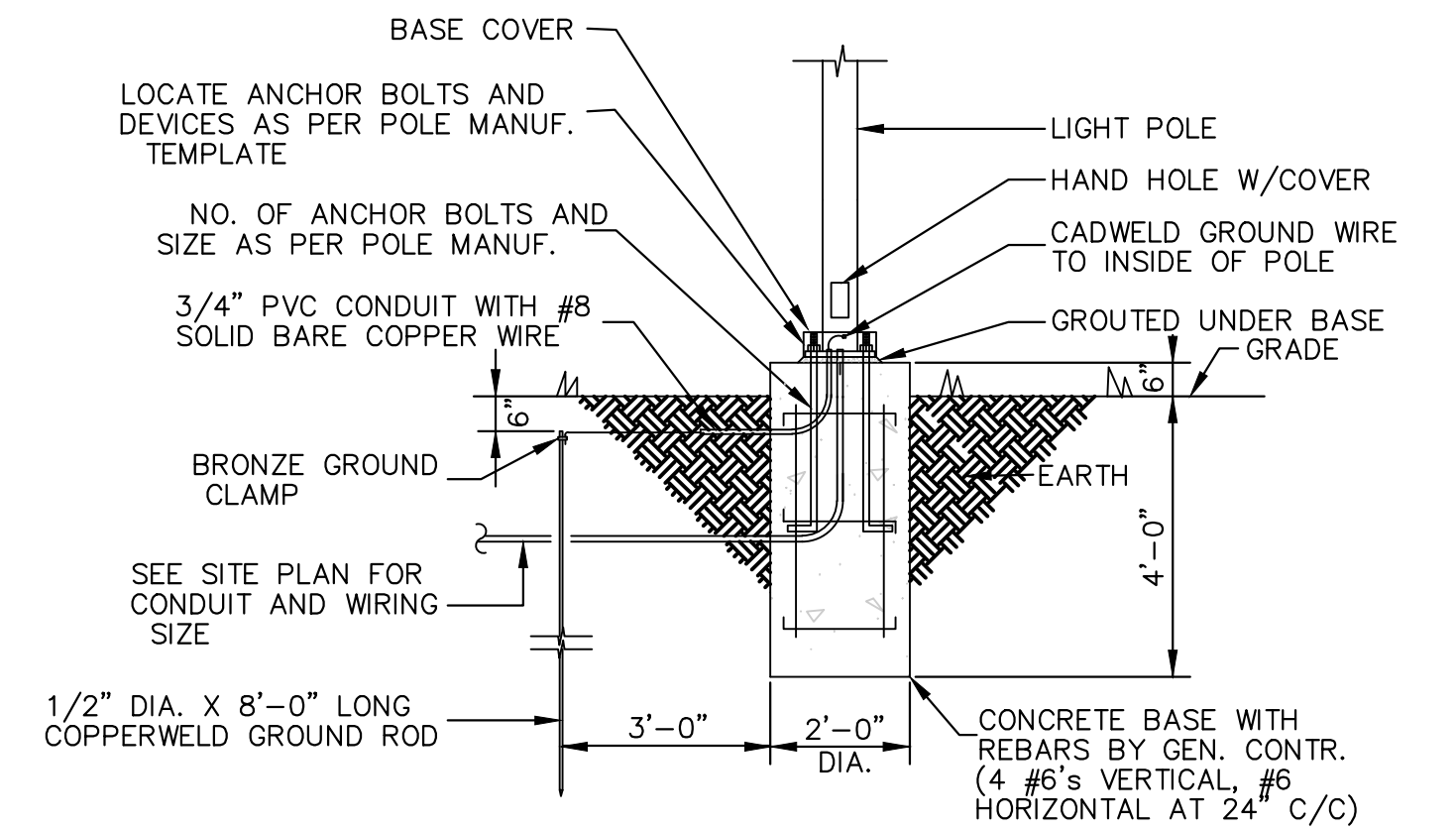
NOTES:

- IN ALL CASES, WATER REMOVED FROM THE BASIN SHALL BE DISCHARGED SO THAT IT PASSES THROUGH THE FILTER BAG DEVICE PRIOR TO ENTERING RECEIVING WATERS.
- REGARDLESS OF THE TYPE OF TREATMENT ALWAYS USE A FLOATING SUCTION HOSE TO PUMP THE CLEANER WATER FROM THE TOP OF THE BASIN. AS THE CLEANER WATER IS PUMPED, THE SUCTION HOSE WILL LOWER AND EVENTUALLY ENCOUNTER SEDIMENT-LADEN WATER. AT THIS POINT CEASE PUMPING OPERATIONS AND REMOVE THE REMAINDER OF THE TRAPPED SEDIMENT WITH MACHINERY. EVEN WHEN PUMPING FROM THE TOP OF THE WATER COLUMN, PROVISIONS MUST STILL BE MADE TO FILTER WATER AS REQUIRED IN THIS SECTION PRIOR TO DISCHARGING TO A STREAM. DURING THE DEWATERING, PERSONNEL SHOULD BE ASSIGNED TO MONITOR PUMPING SEDIMENT-LADEN WATER INTO THE WATERS OF THE STATE WITHOUT FILTRATION IS PROHIBITED.
- FILTER BAGS SHALL BE MADE FROM NON-WOVEN GEOTEXTILE MATERIAL SOWN WITH HIGH STRENGTH, DOUBLE STITCHED "J" TYPE SEAMS. THEY SHALL BE CAPABLE OF TRAPPING PARTICLES LARGER THAN 150 MICRONS.
- THE FOLLOWING FORMULA CAN BE USED TO DETERMINE THE STORAGE VOLUME FOR DEWATERING STRUCTURES:
PUMP DISCHARGE (G.P.M.) X 16 = CUBIC FEET OF STORAGE REQUIRED.
- SUITABLE MEANS OF ACCESSING THE BAG WITH MACHINERY REQUIRED FOR DISPOSAL PURPOSES MUST BE PROVIDED. FILTER BAGS SHALL BE REPLACED WHEN THEY BECOME 1/2 FULL. SPARE BAGS SHALL BE KEPT AVAILABLE FOR REPLACEMENT OF THOSE THAT HAVE FAILED OR ARE FILLED.
- BAGS SHALL BE LOCATED IN WELL-VEGETATED (GRASSY) AREAS, AND DISCHARGE ONTO STABLE, EROSION RESISTANT AREAS. WHERE THIS IS NOT POSSIBLE, A GEOTEXTILE FLOW PATH SHALL BE PROVIDED. BAGS SHALL NOT BE PLACED ON SLOPES GREATER THAN 5%.
- THE PUMP DISCHARGE HOSE SHALL BE INSERTED INTO THE BAGS IN THE MANNER SPECIFIED BY THE MFR. AND SECURELY CLAMPED.
- THE PUMPING RATE SHALL BE NO GREATER THAN 750 GPM OR 1/2 THE MAX. SPECIFIED BY THE MFR., WHICHEVER IS LESS. PUMP INTAKES SHOULD BE FLOATED AND SCREENED.
- FILTER BAGS SHALL BE INSPECTED DAILY. IF ANY PROBLEM IS DETECTED, PUMPING SHALL CEASE IMMEDIATELY AND NOT RESUME UNTIL THE PROBLEM IS CORRECTED.

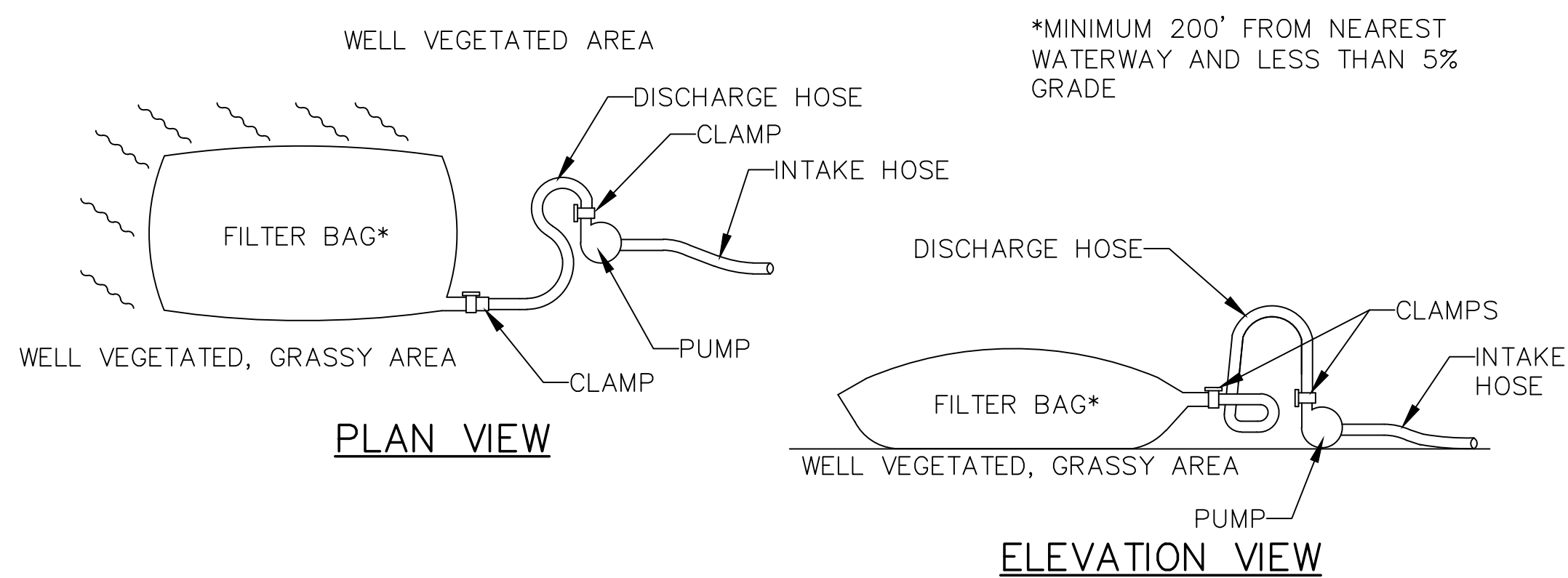


- NOTE:
1. REBAR TO BE BENT AROUND THE INSIDE RIB OF THE PIPE.
 2. USE ANCHORS WHEN SLOPES ARE GREATER THAN 19%. ANCHORS TO BE PLACED AT 20' INTERVALS

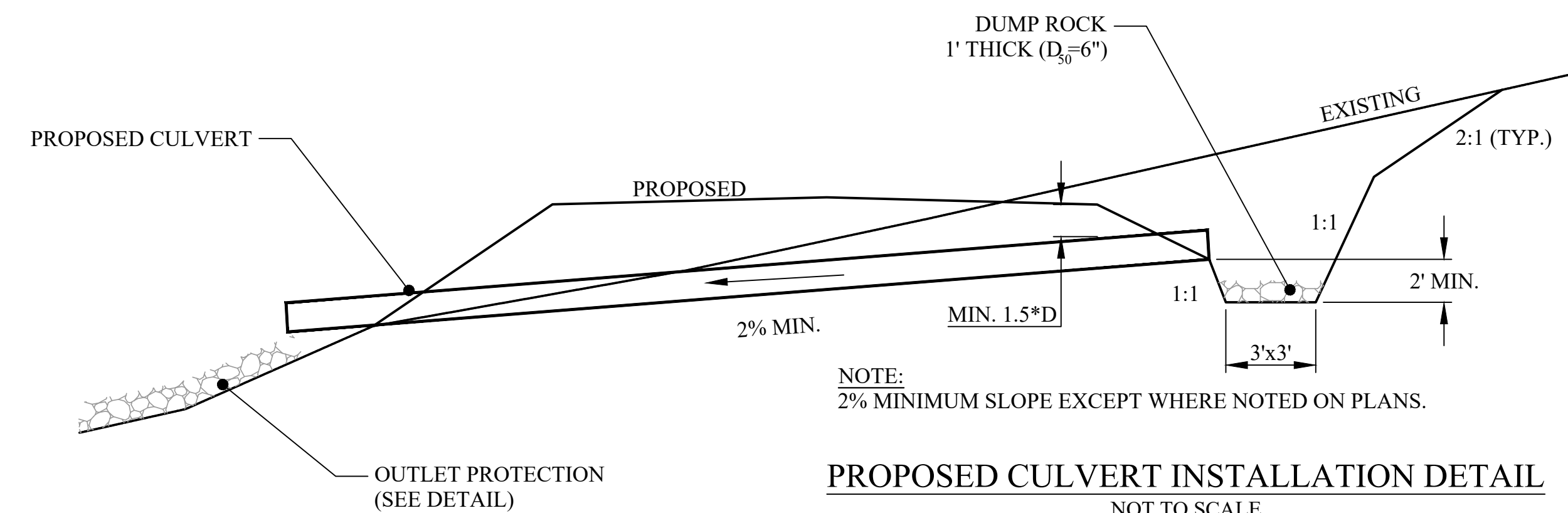
HDPE STORMWATER PIPE ANCHOR
NOT TO SCALE



POLE BASE DETAIL



PUMPED WATER FILTER BAG DETAIL
NOT TO SCALE

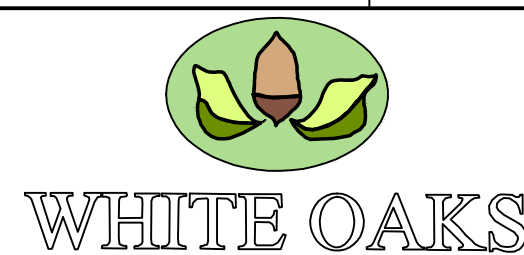


PROPOSED CULVERT INSTALLATION DETAIL
NOT TO SCALE

LAYOUT TAB: 60 DETAILS
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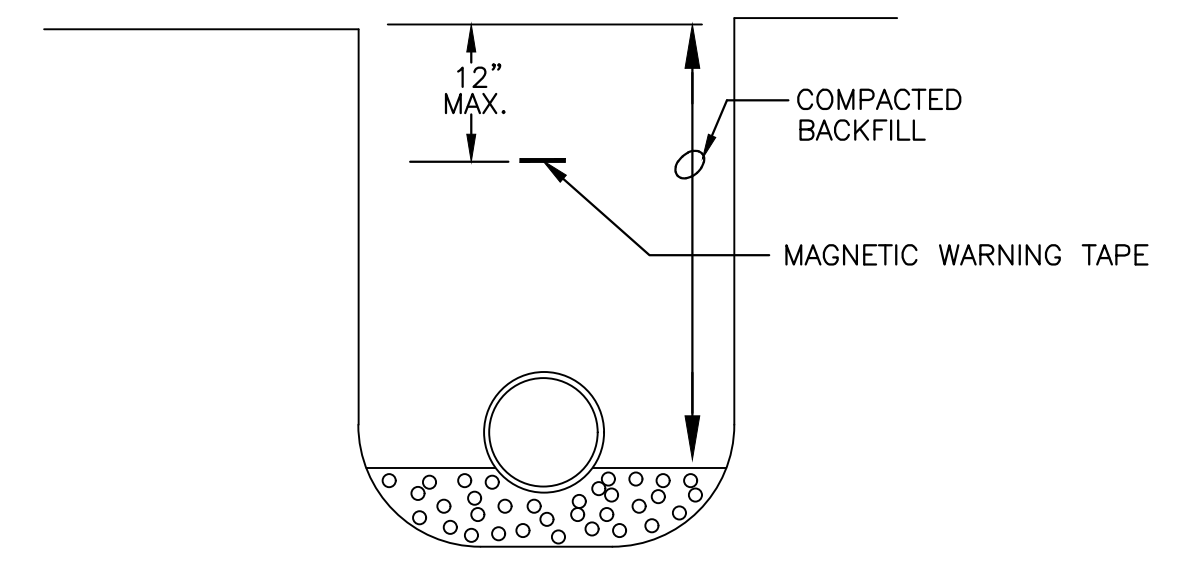
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T30-11114

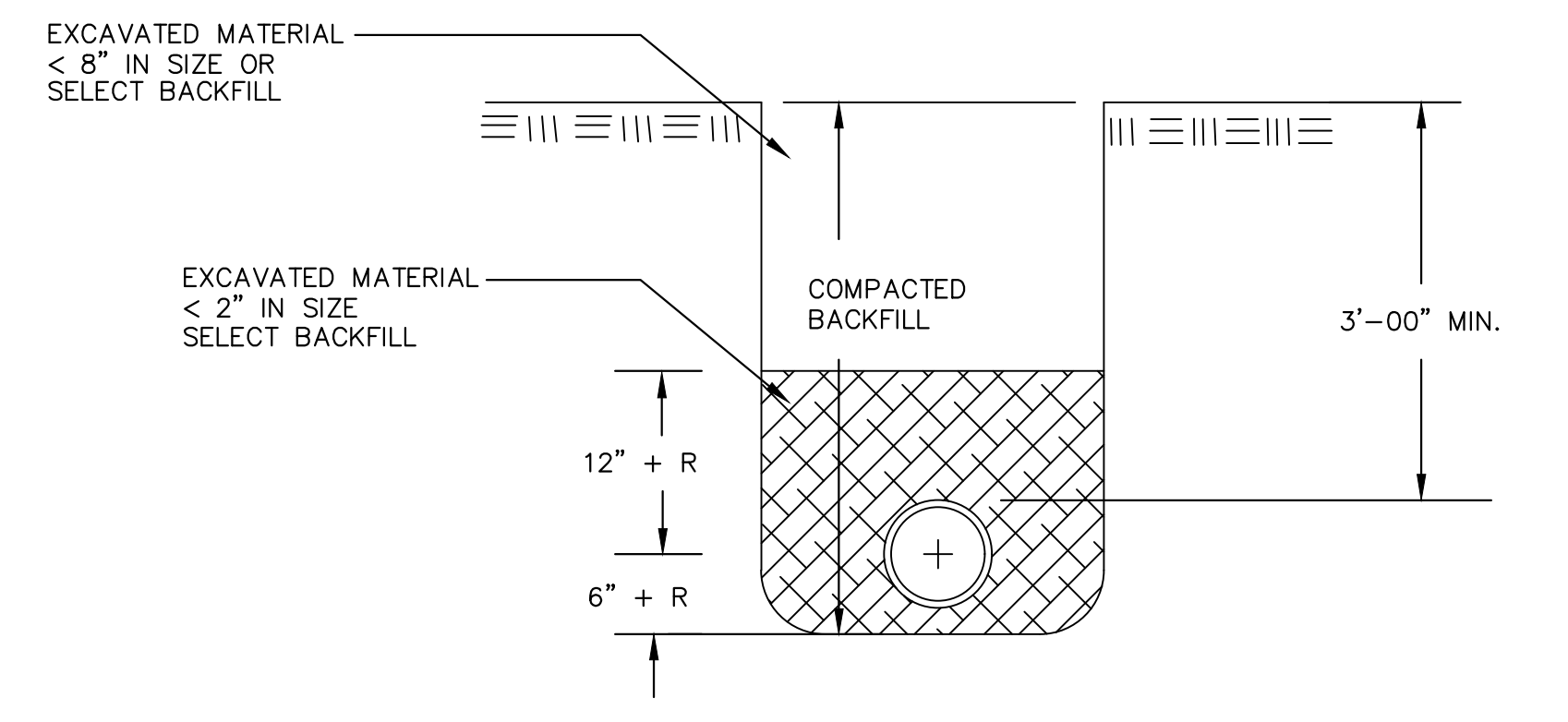
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PHASE II A
BRIDGEPORT, WEST VIRGINIA
DETAILS

RED	ELECTRIC
YELLOW	GAS - OIL
ORANGE	TELEPHONE
BLUE	WATER
GREEN	SEWER

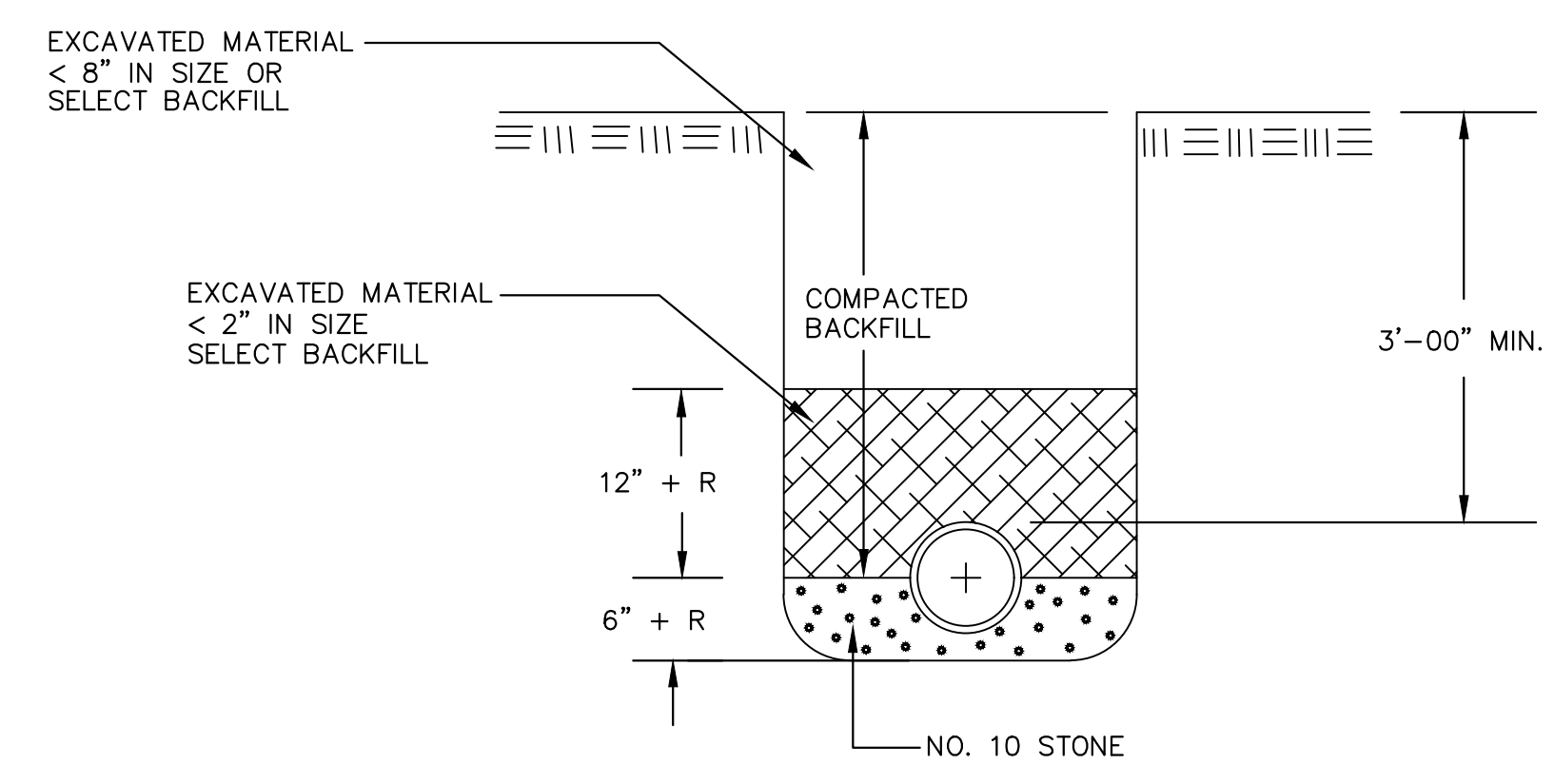
COLOR CODES FOR UTILITY LOCATING MAGNETIC WARNING TAPE



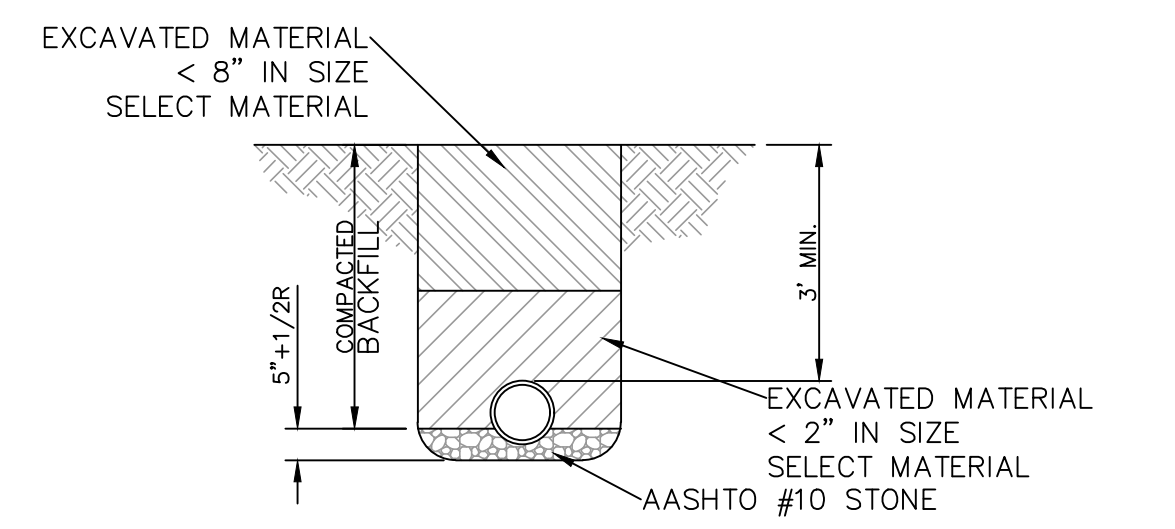
UTILITY MAGNETIC WARNING TAPE



BEDDING FOR GAS SLEEVE

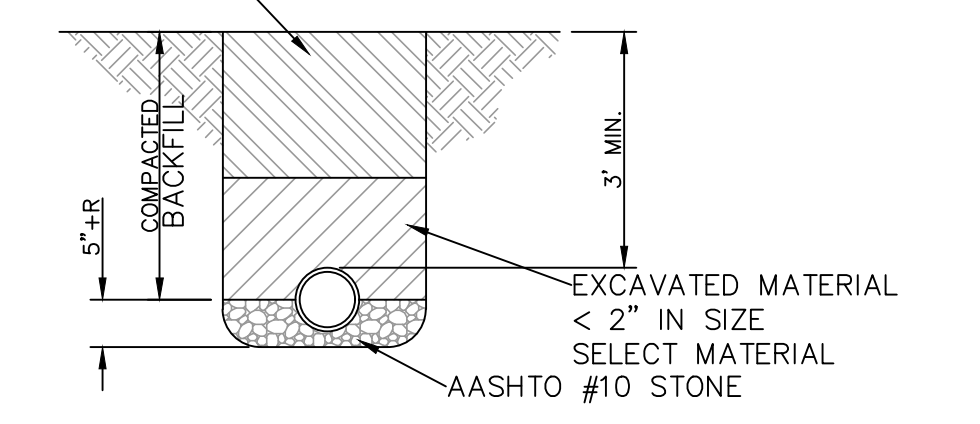


BEDDING FOR SEWER SLEEVE



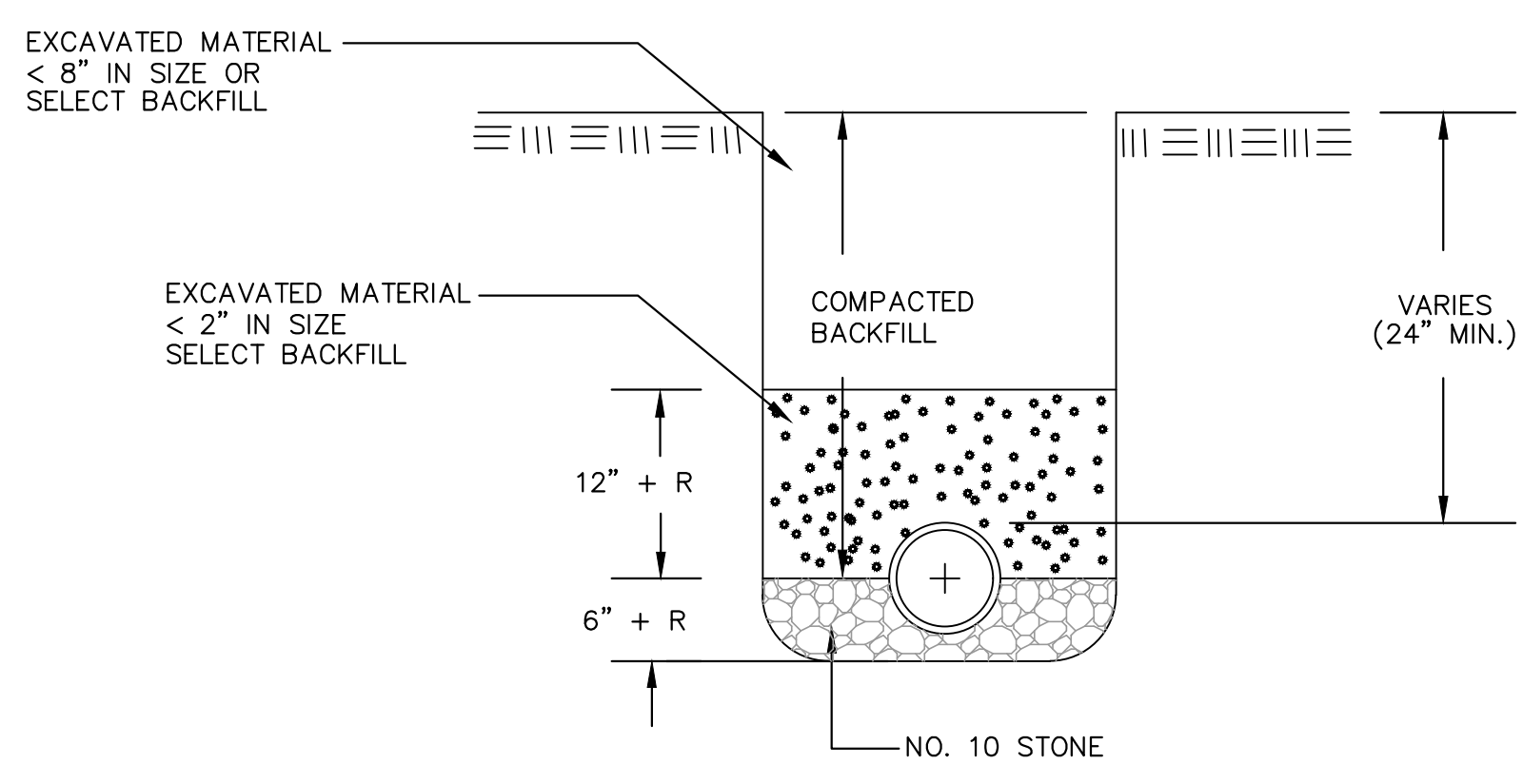
BEDDING FOR RIGID PIPE

NOTE: ALL LINES AND/OR CASINGS SHALL BE INSTALLED UNDER OR AROUND DRAINAGE STRUCTURES IN A MANNER THAT WILL NOT OBSTRUCT THE MAINTENANCE, REPLACEMENT, OR FREE FLOW OF WATER.

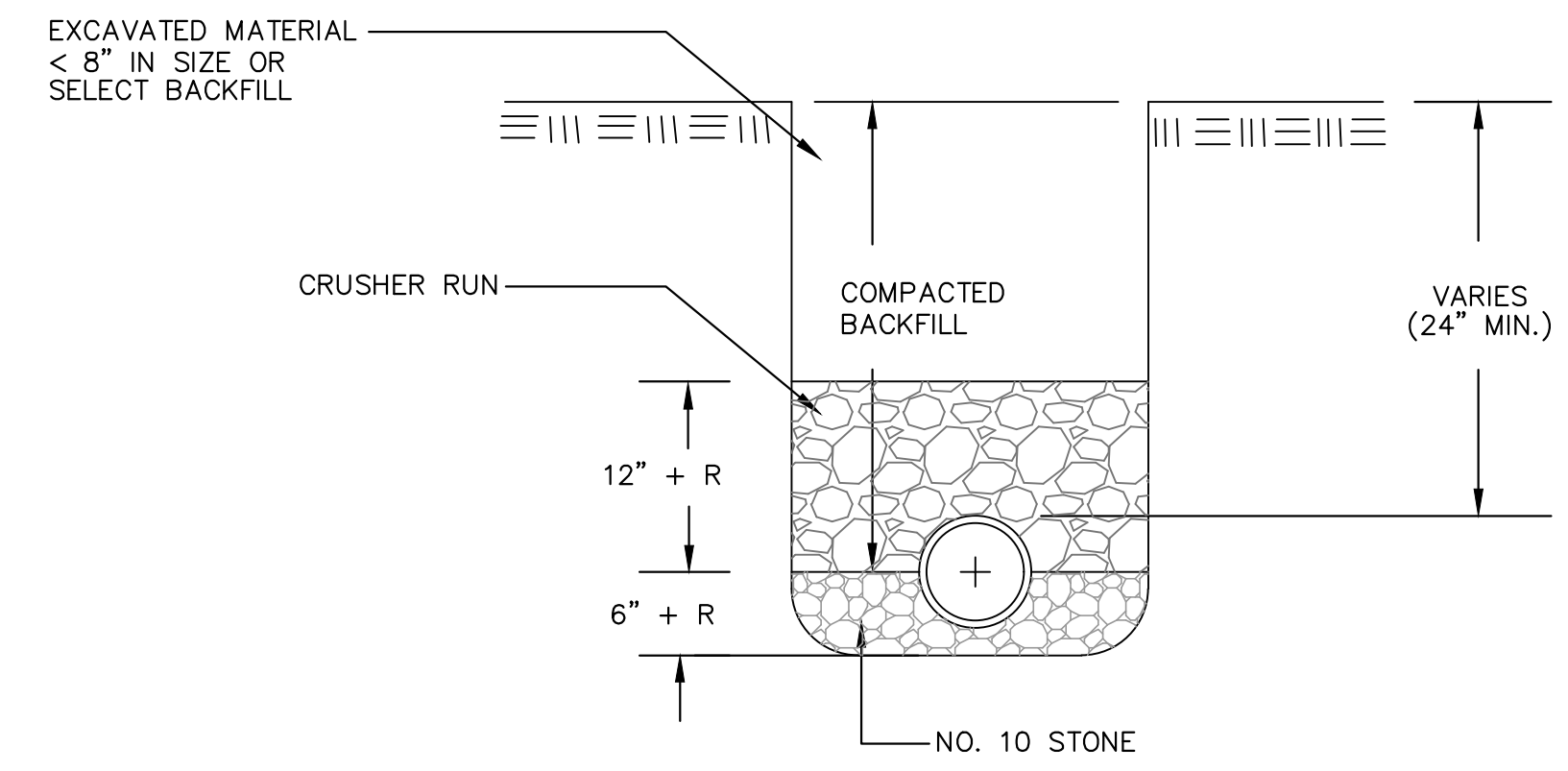


BEDDING FOR NON-RIGID PIPE

TYPICAL WATER PIPE CROSS SECTION OF TRENCHES
NOT TO SCALE



BEDDING FOR TYPICAL STORM SEWER PIPE



BEDDING FOR 10FT DEEP STORM SEWER PIPE

LAYOUT TAB: 61 DETAILS
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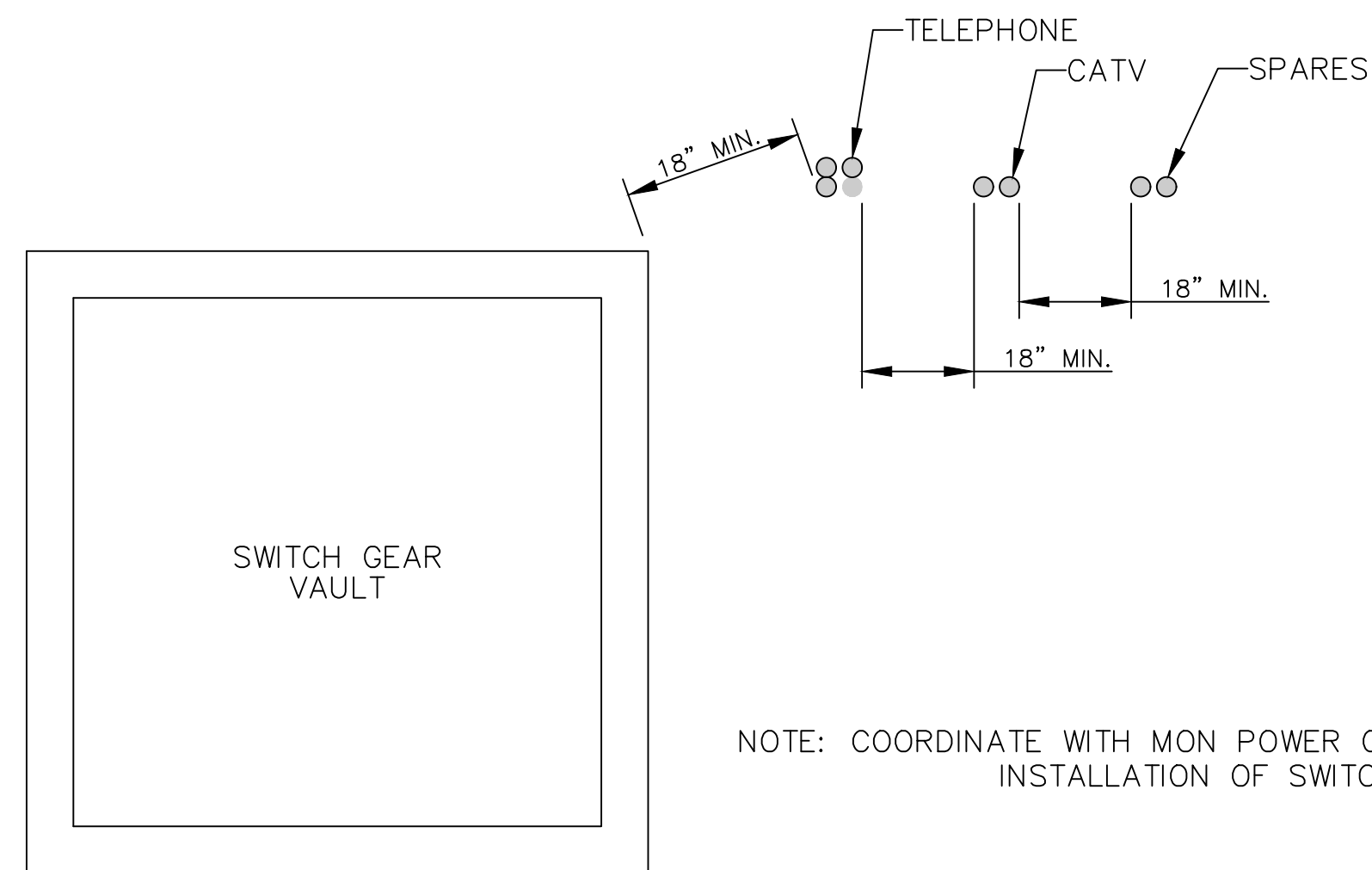
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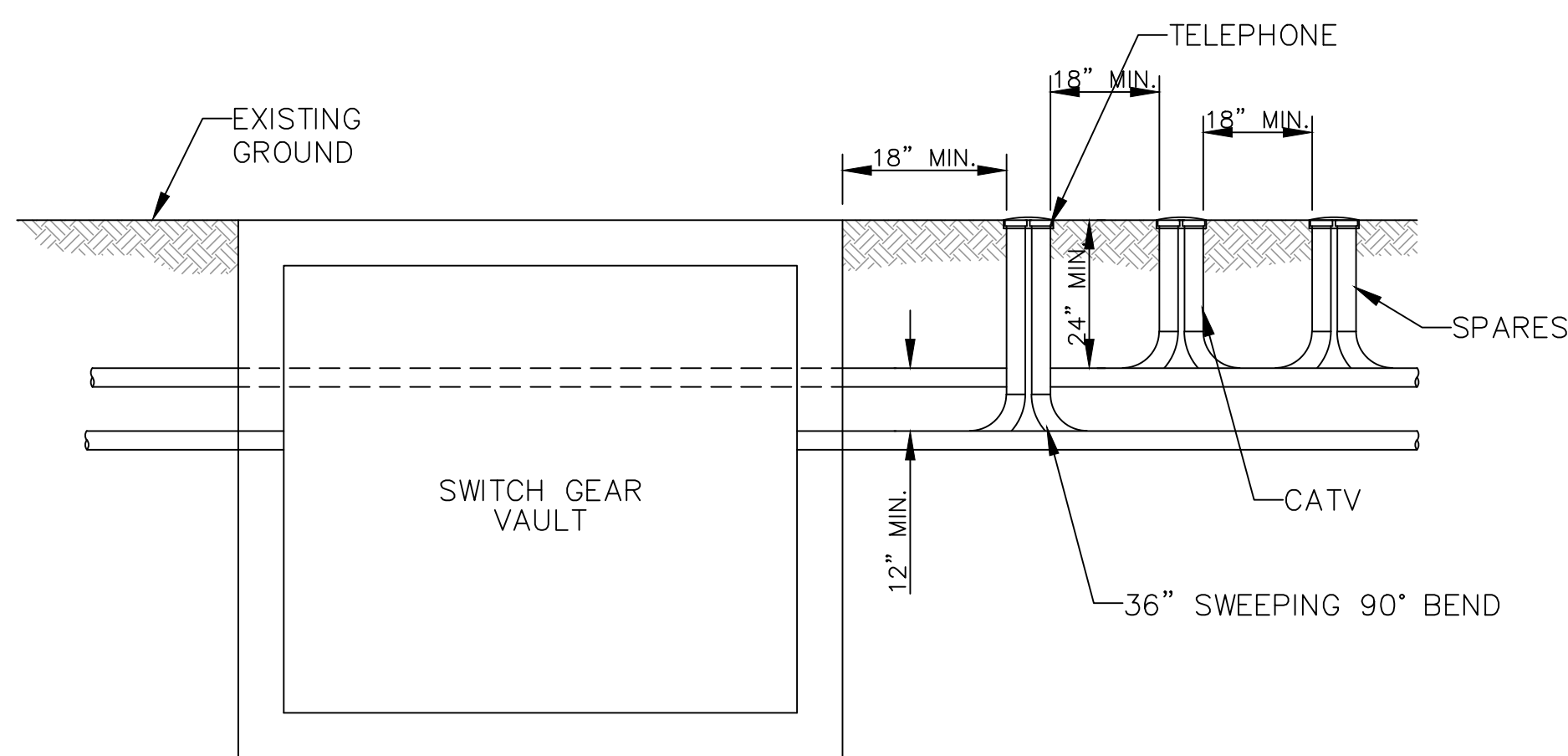
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PHASE II A
BRIDGEPORT, WEST VIRGINIA
DETAILS

LAYOUT TAB: 63 DETAILS
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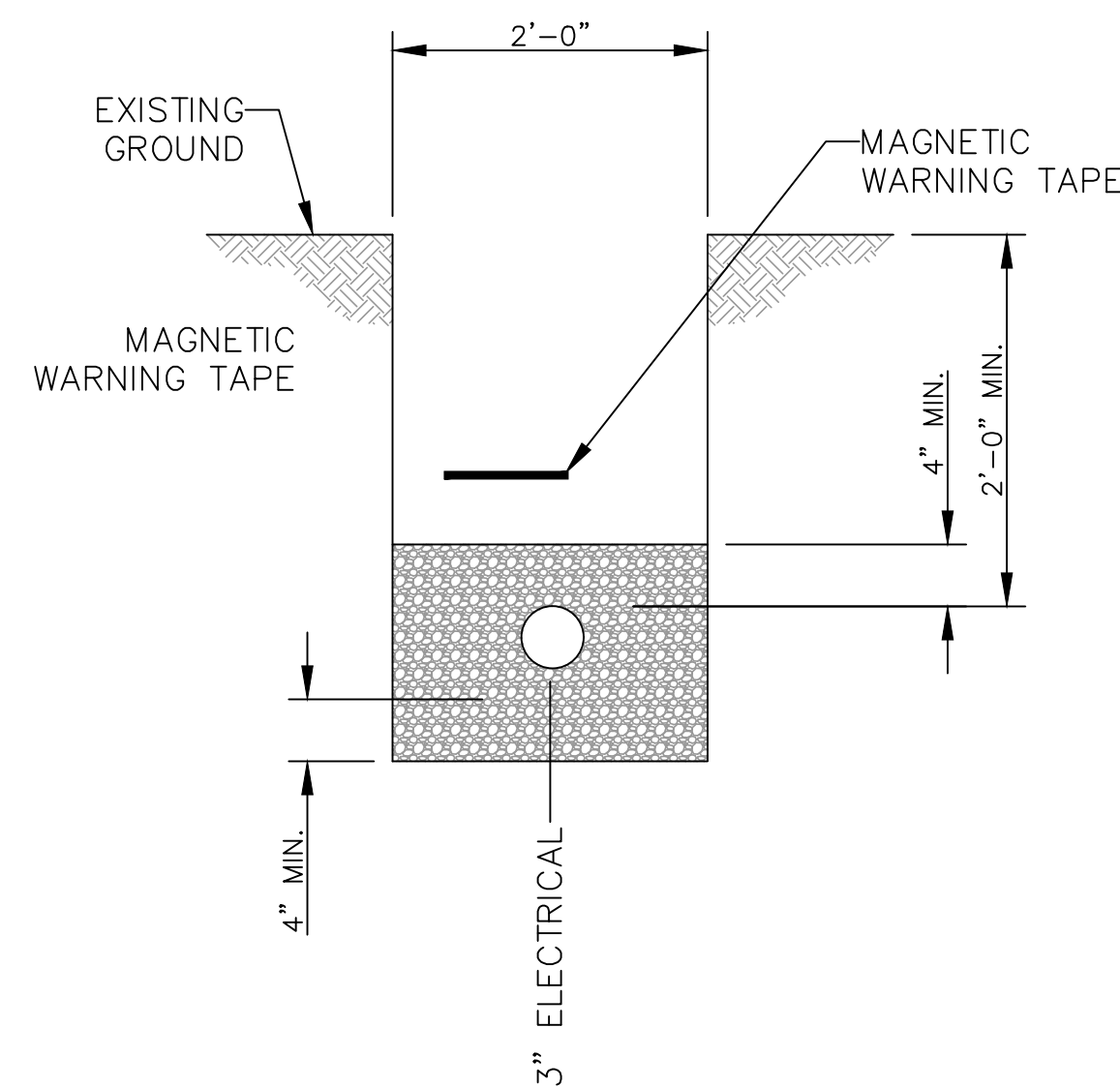


NOTE: COORDINATE WITH MON POWER ON INSTALLATION OF SWITCH GEAR VAULT.

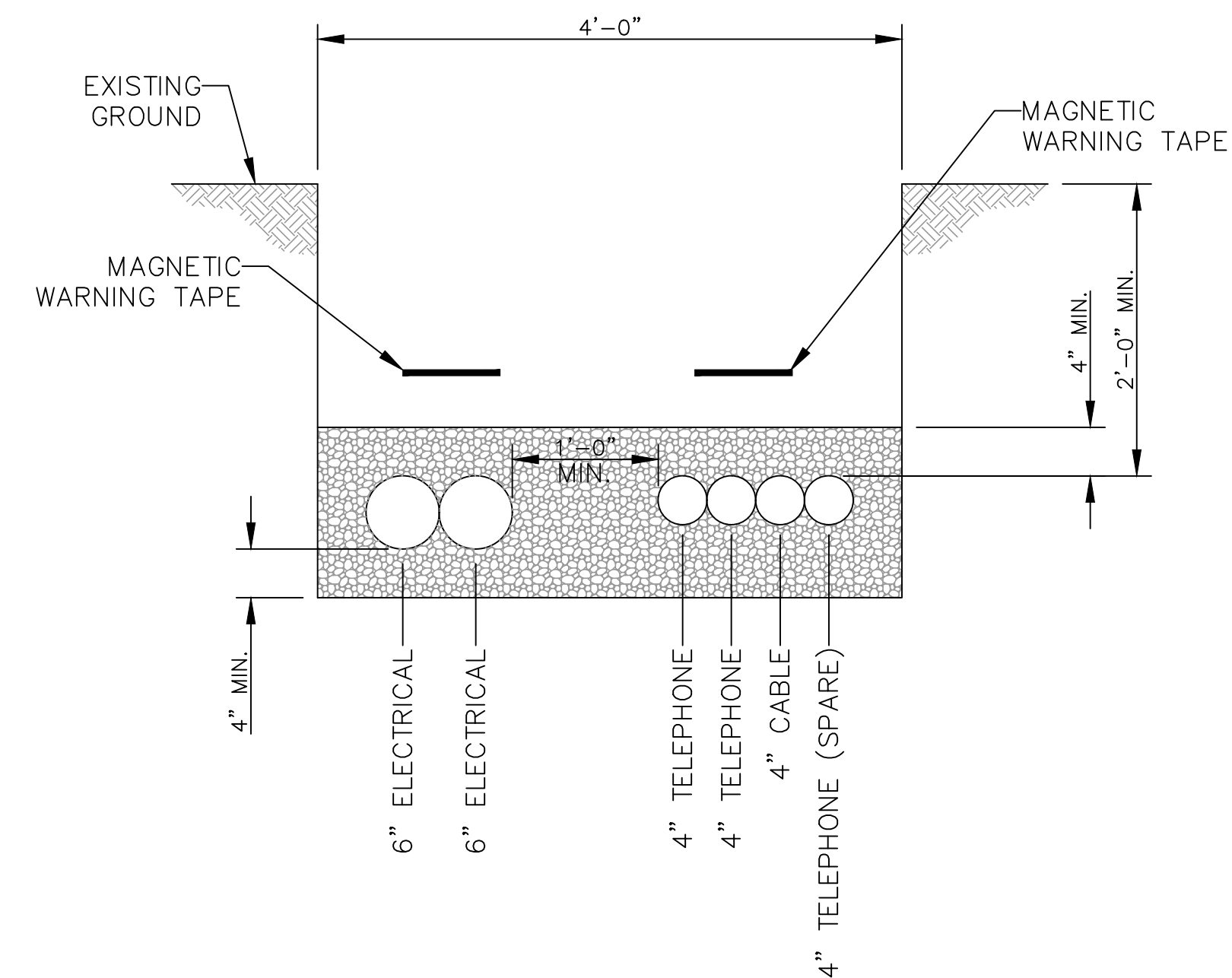
PLAN VIEW



SECTION VIEW
 CONDUIT SWEEPS AT
 PEDESTAL LOCATION DETAIL
 NOT TO SCALE



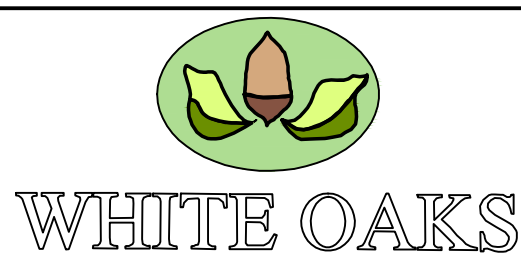
UNDERGROUND ELECTRIC CONDUIT
 NOT TO SCALE



UNDERGROUND ELECTRIC, TELEPHONE,
 CABLE & SPARE CONDUIT BANK TRENCH DETAIL
 NOT TO SCALE

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1	JCP	10/20/22	added underground electric conduit detail



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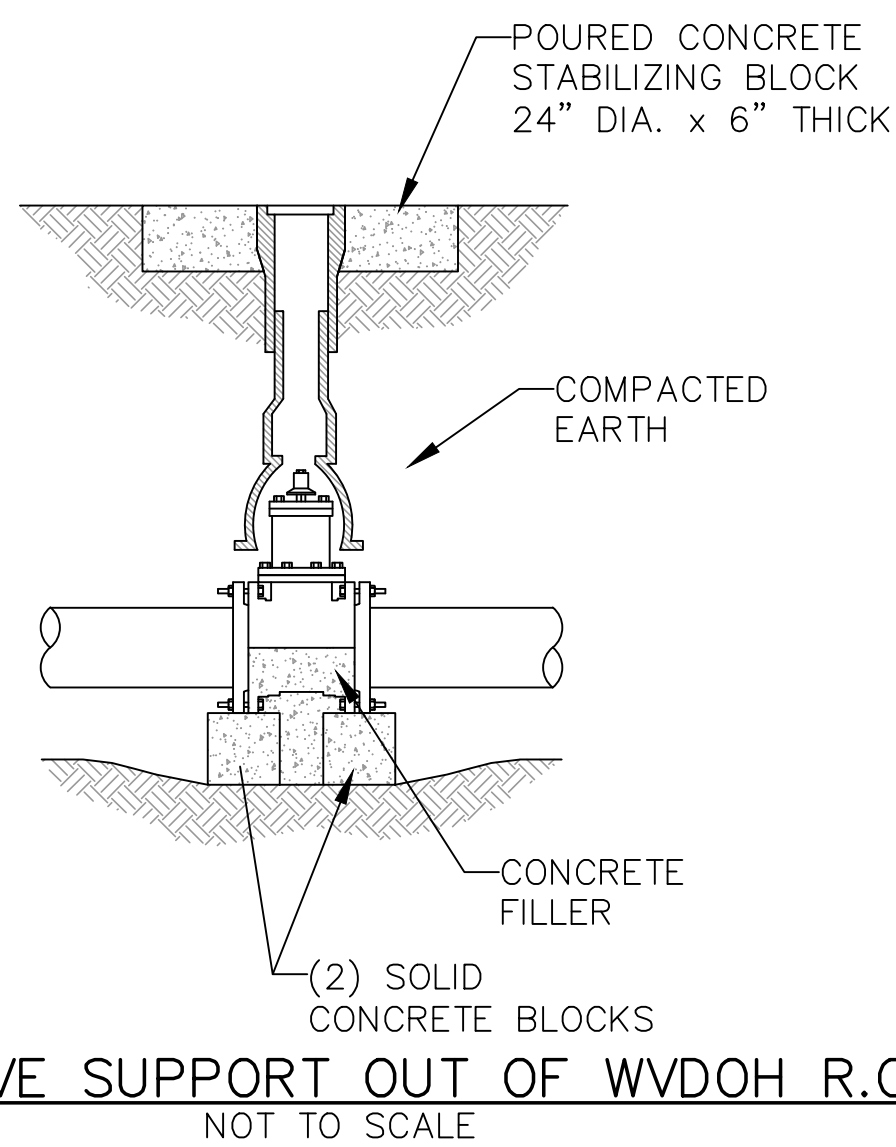
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 PHASE II A
 BRIDGEPORT, WEST VIRGINIA
 DETAILS

SHEET No.
63

LAYOUT TAB: 64-DETAILS
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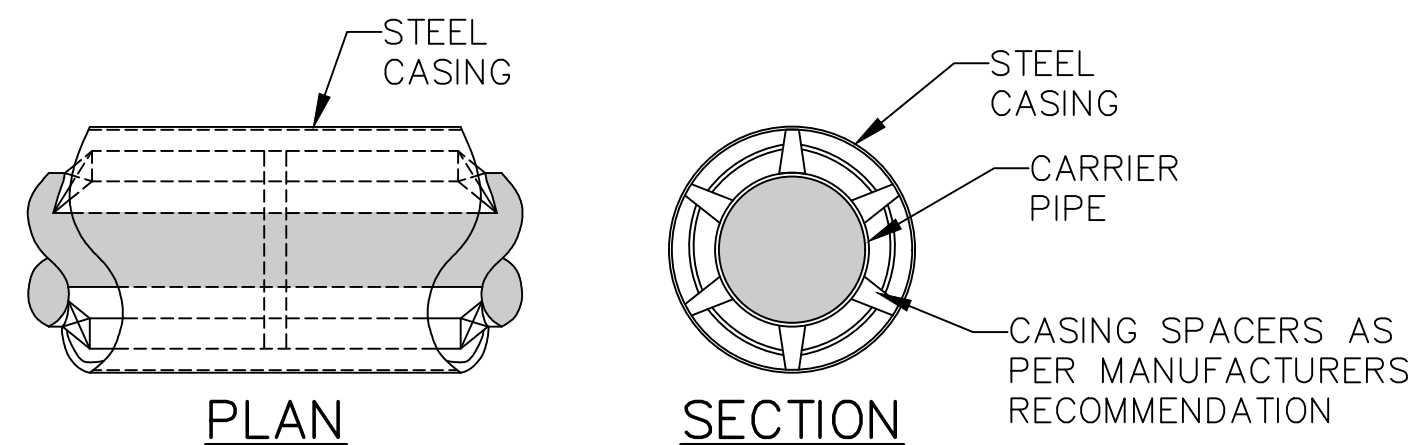
GATE VALVE SUPPORT OUT OF WVDH R.O.W
 NOT TO SCALE

CASING BLOCKING NOTES:

MINIMUM WALL THICKNESS FOR STEEL CASING PIPE (COOPER E-80 LOADING)

NOMINAL DIAMETER IN INCHES	WITH PROTECTIVE COATING IN INCHES	WITHOUT PROTECTIVE COATING IN INCHES
UNDER 14	0.188	0.251
14 & 16	0.219	0.282
18	0.250	0.313
20	0.281	0.344
30	0.312	0.375

STEEL CASING PIPE SHALL HAVE A MINIMUM YIELD STRENGTH OF 35,000 PSI

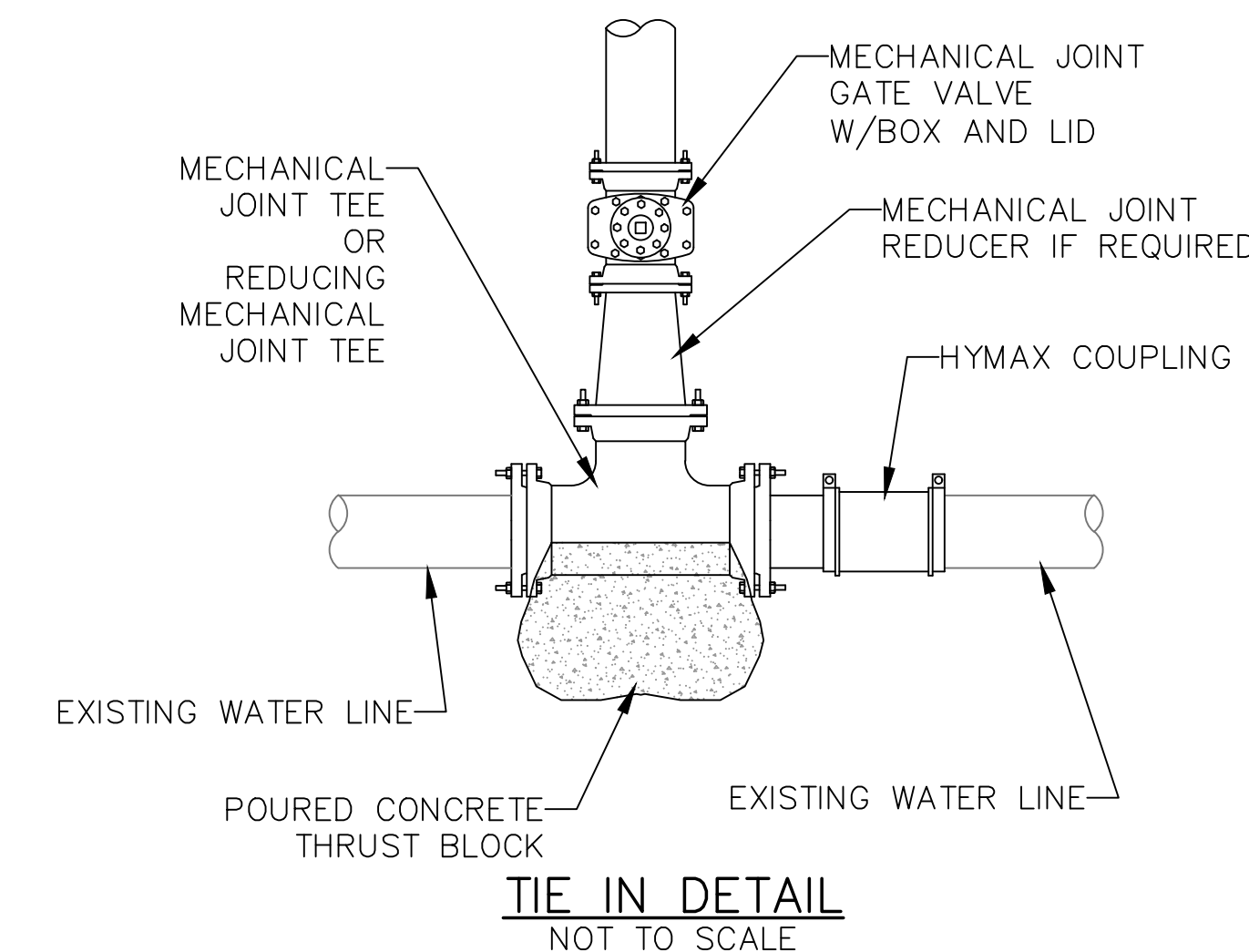


PLAN
SECTION

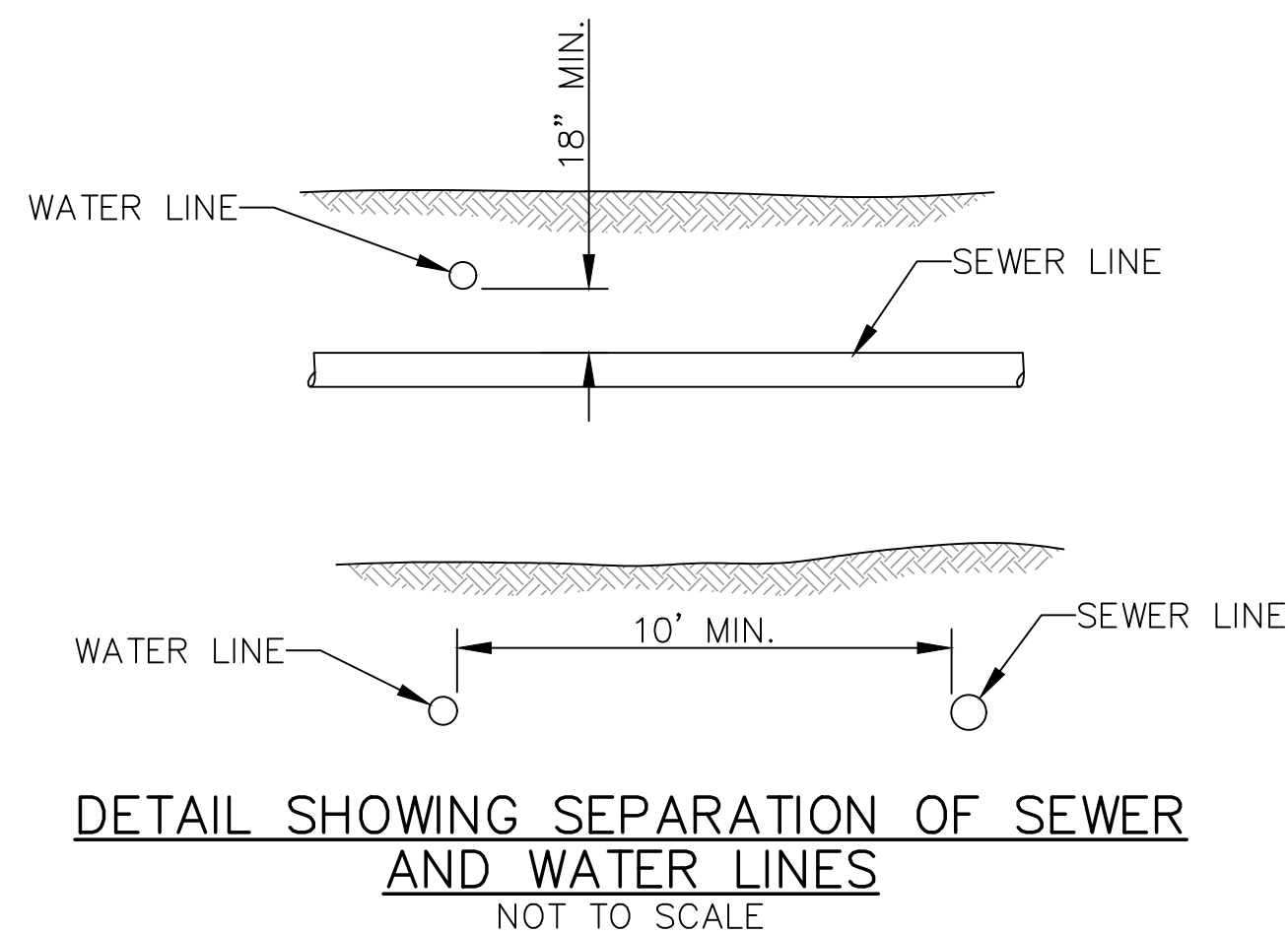
NOTE: SUPPORTS VARY, DUE TO VARIATION OF INSIDE DIAMETER OF SUPPORT CASING.

NOTE: ALL LINES AND/OR CASINGS SHALL BE INSTALLED UNDER OR AROUND DRAINAGE STRUCTURES IN A MANNER THAT WILL NOT OBSTRUCT THE MAINTENANCE, REPLACEMENT, OR FREE FLOW OF WATER.

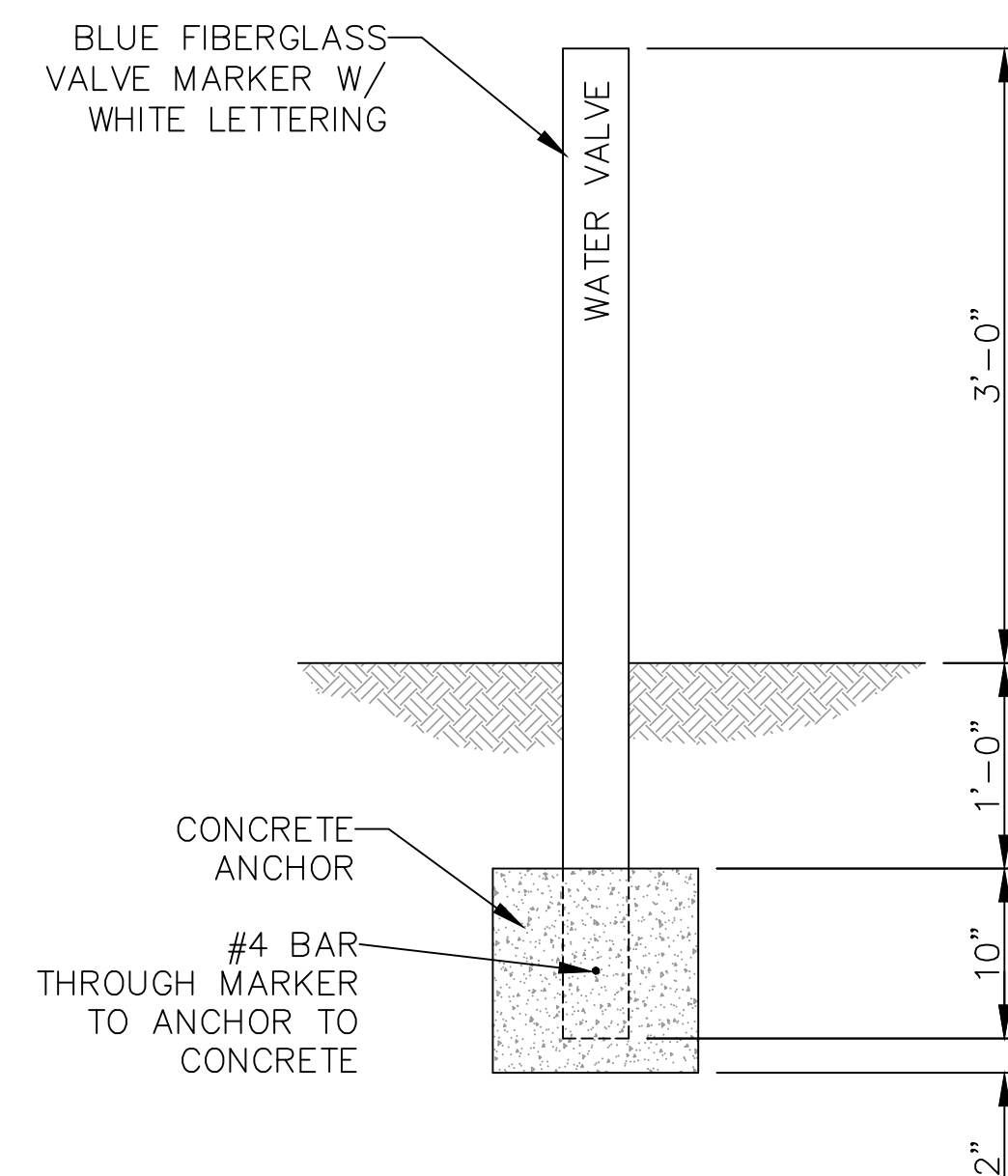
CASING BLOCKING DETAIL
 NOT TO SCALE



TIE IN DETAIL
 NOT TO SCALE



DETAIL SHOWING SEPARATION OF SEWER AND WATER LINES
 NOT TO SCALE

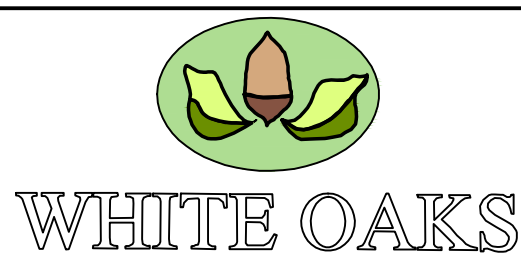


NOTES: 1) 3" x 3" x 1/4" ANGLE IRON VALVE MARKER PAINTED BLUE WITH WHITE LETTERS MAY BE SUBSTITUTED. (ANGLE AND PLATE SHALL BE PAINTED WITH TWO (2) COATS OF BLUE ENAMEL WITH WHITE LETTERING).
 2) MARKERS SHALL BE LOCATED AT EACH VALVE, EACH SHALL BE LOCATED TO AVOID FUTURE DAMAGE.
 3) MARKERS SHALL BE LOCATED OUT OF WVDH MAINTENANCE AREAS.

FIBERGLASS VALVE MARKER DETAIL
 NOT TO SCALE

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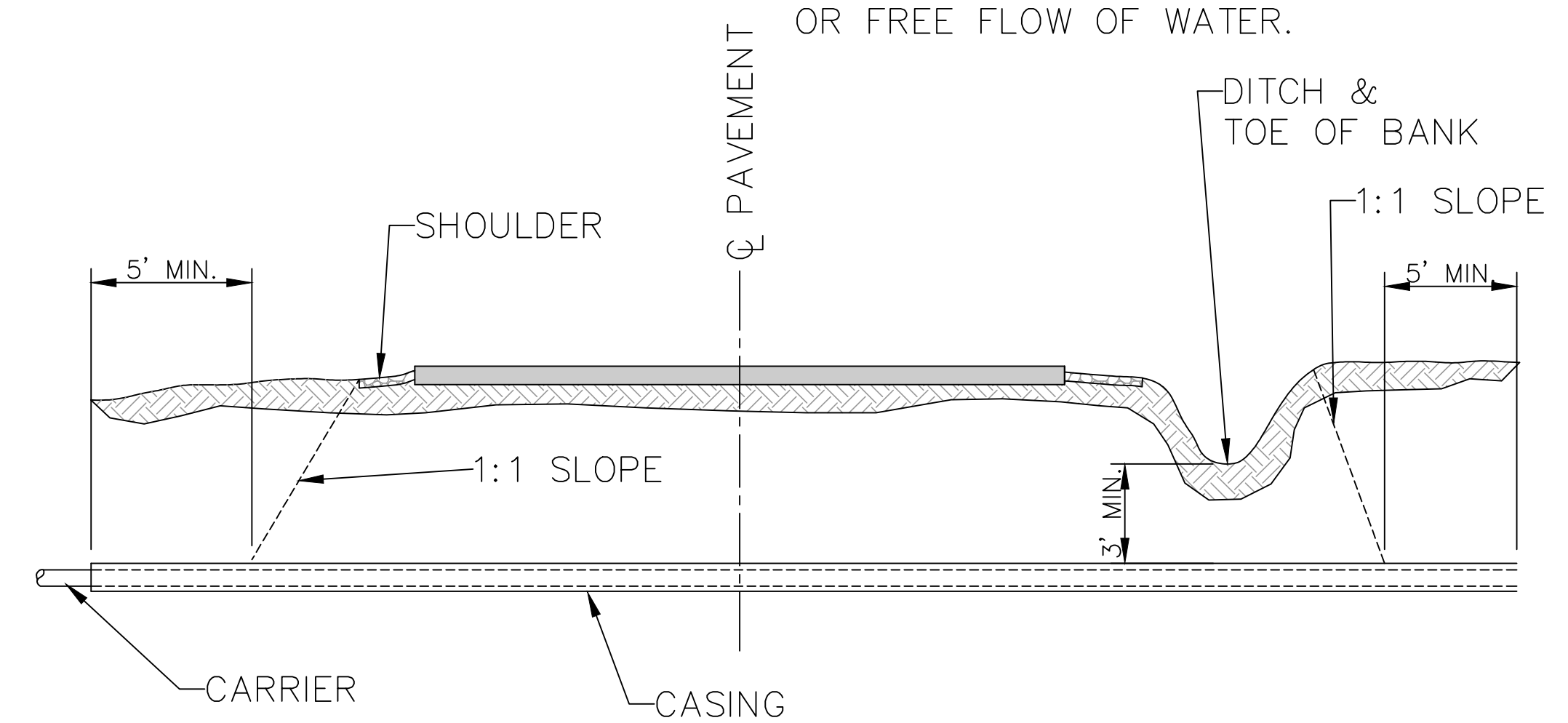
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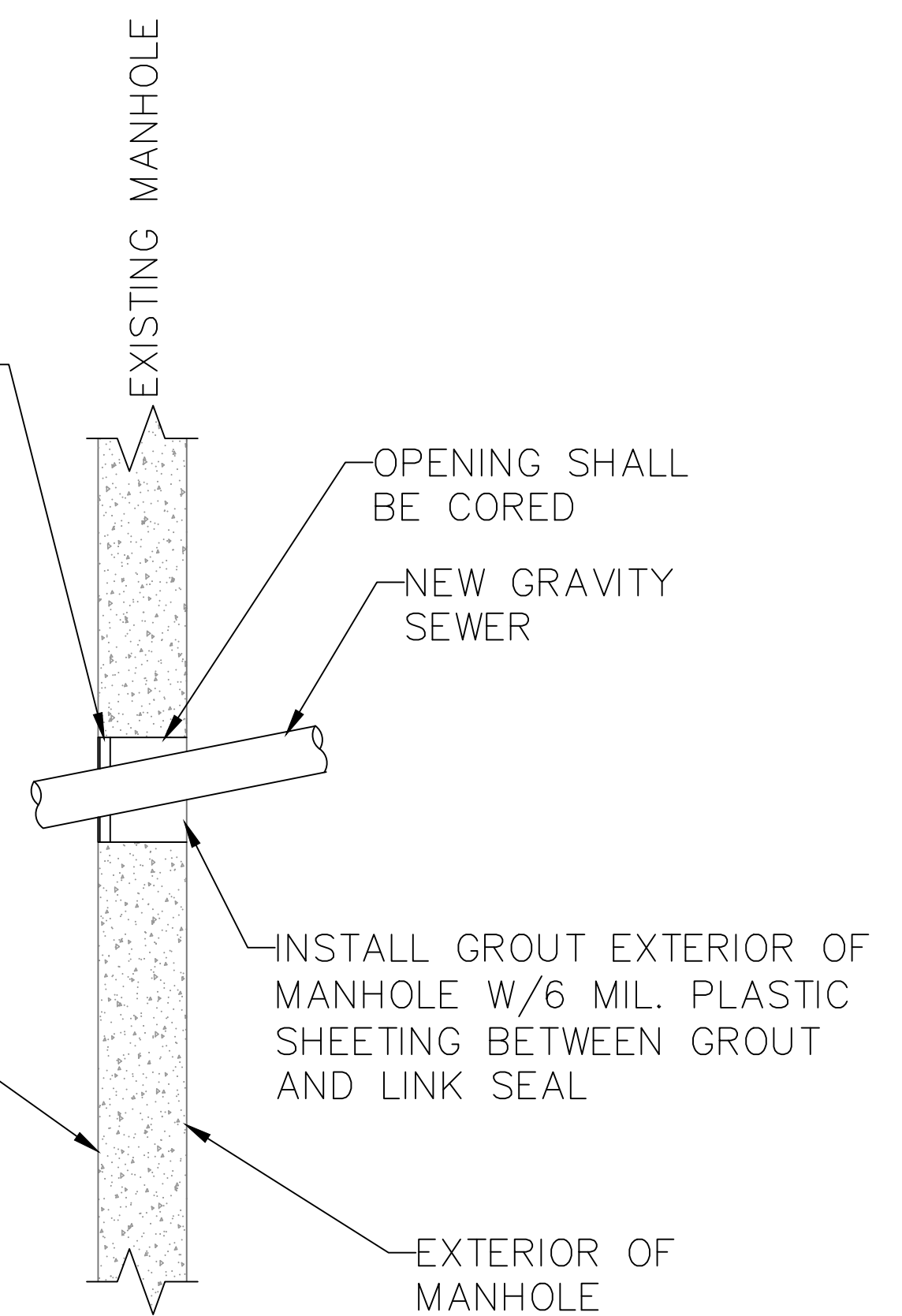
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 BRIDGEPORT, WEST VIRGINIA
 DETAILS

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TYPICAL CASING DETAIL FOR ROAD CROSSING
NOT TO SCALE

PIPE TO BOOT CONNECTOR SYSTEM OR ENGINEER'S APPROVED EQUAL. INSTALL AS PER MANUFACTURER'S RECOMMENDATION. OR LINK SEAL W/BOLT HEADS EXPOSED TO INTERIOR OF MANHOLE (ALL BOLTS, NUT, AND FASTENERS SHALL BE STAINLESS STEEL).



CONNECTION TO EXISTING MANHOLE DETAIL
NOT TO SCALE

LAYOUT TAB: 66 DETAILS
CAD FILE: R:\030\030-10341-00-White Oaks Phase II 2021-High Tech Corridor Development, LLC-Drawing\03041-DETAILS.dwg
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1	JCP	10/20/22	Deleted details

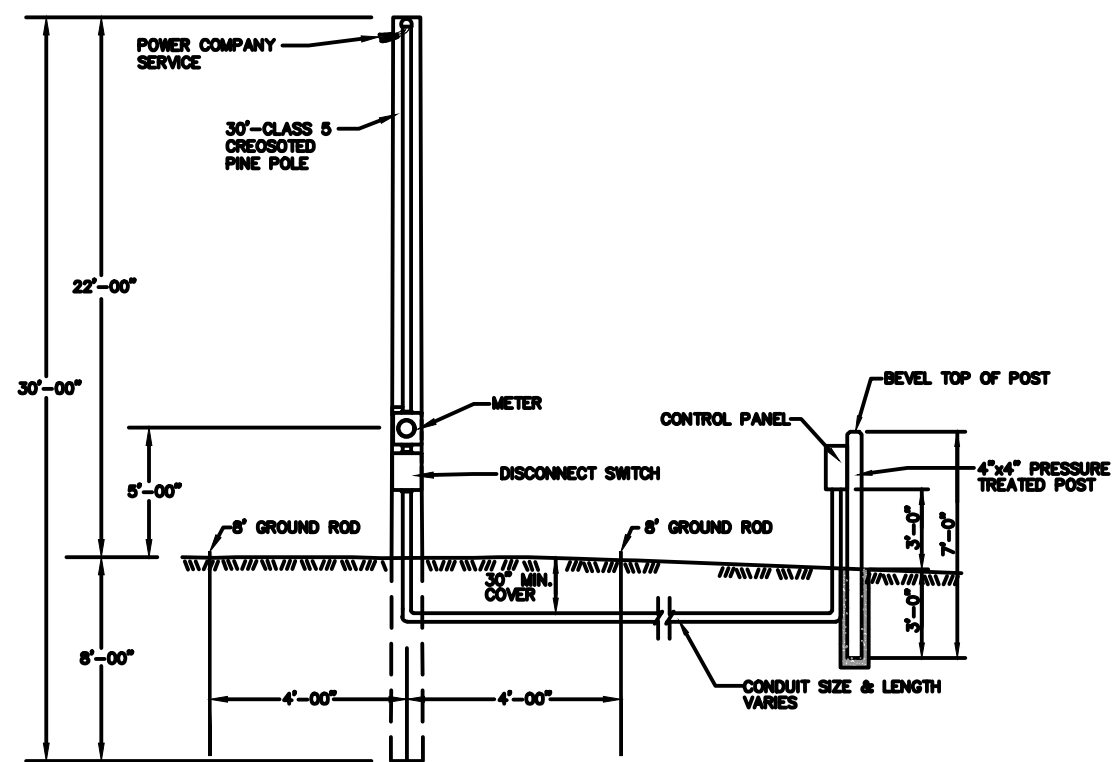


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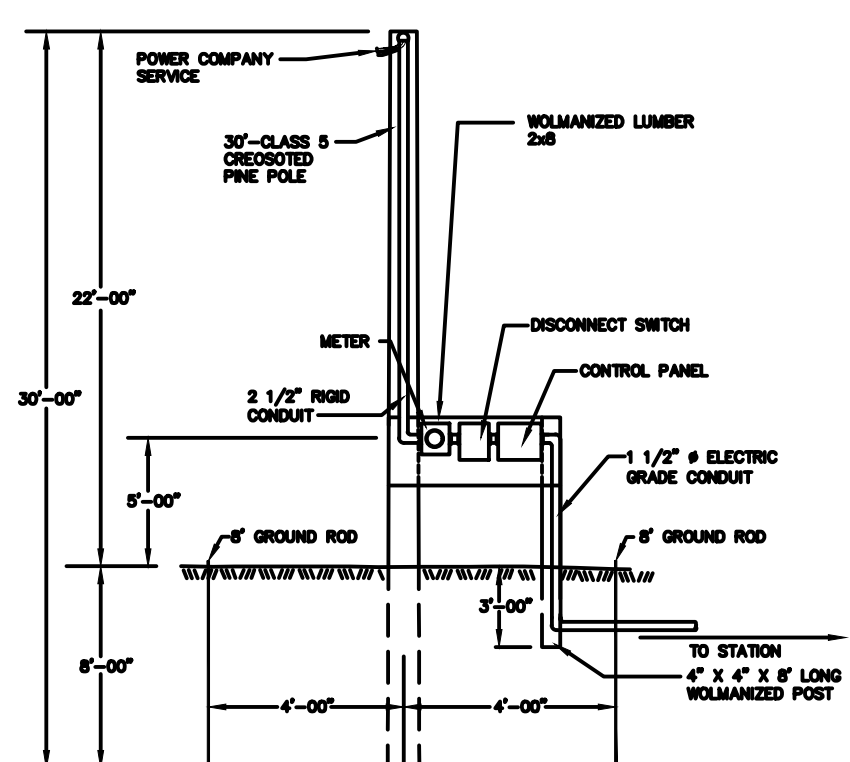
THRASHER
THE THRASHER GROUP INC.
CIVIL • ENVIRONMENTAL • CONSULTING • FIELD SERVICES
600 WHITE OAKS BOULEVARD, BRIDGEPORT, WV 26330
PHONE (304) 624-4108 • FAX (304) 624-7831

PHASE No.
CONTRACT No.
PROJECT No.
T30-11114

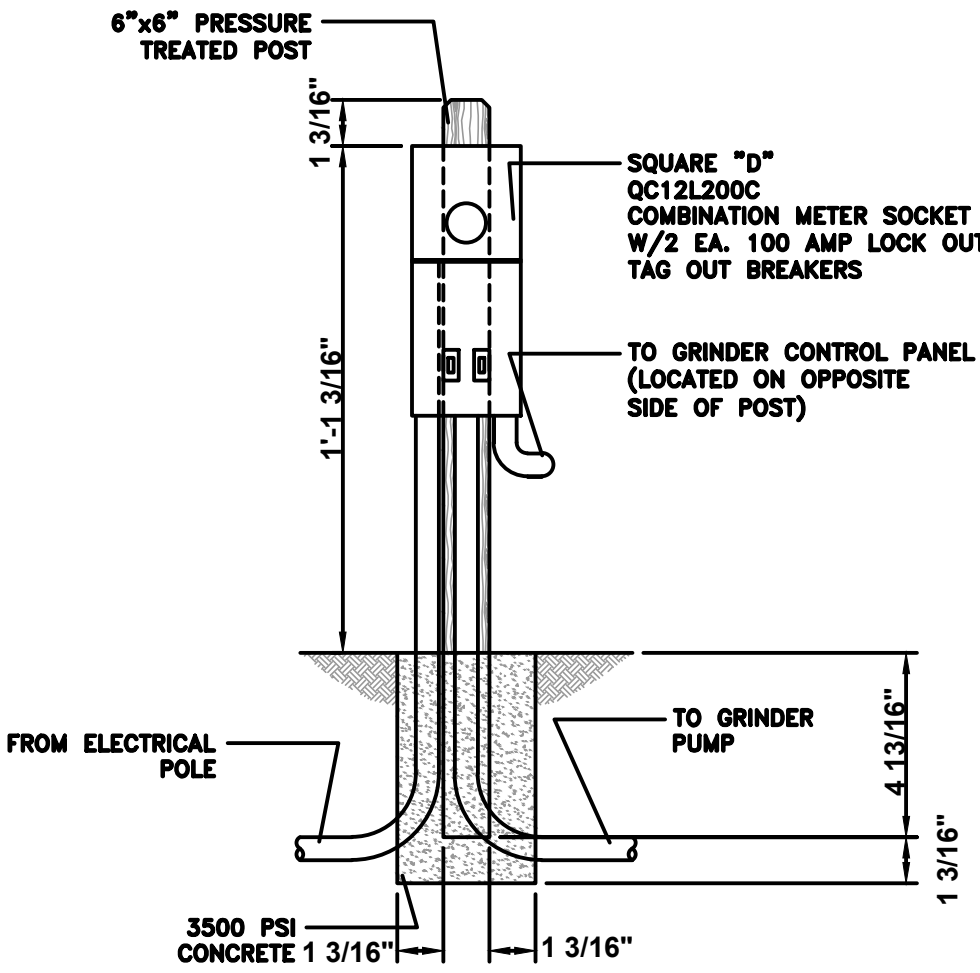
ISSUED FOR BID PLANS FOR
WHITE OAKS BUSINESS PARK
PHASE II A
BRIDGEPORT, WEST VIRGINIA
DETAILS



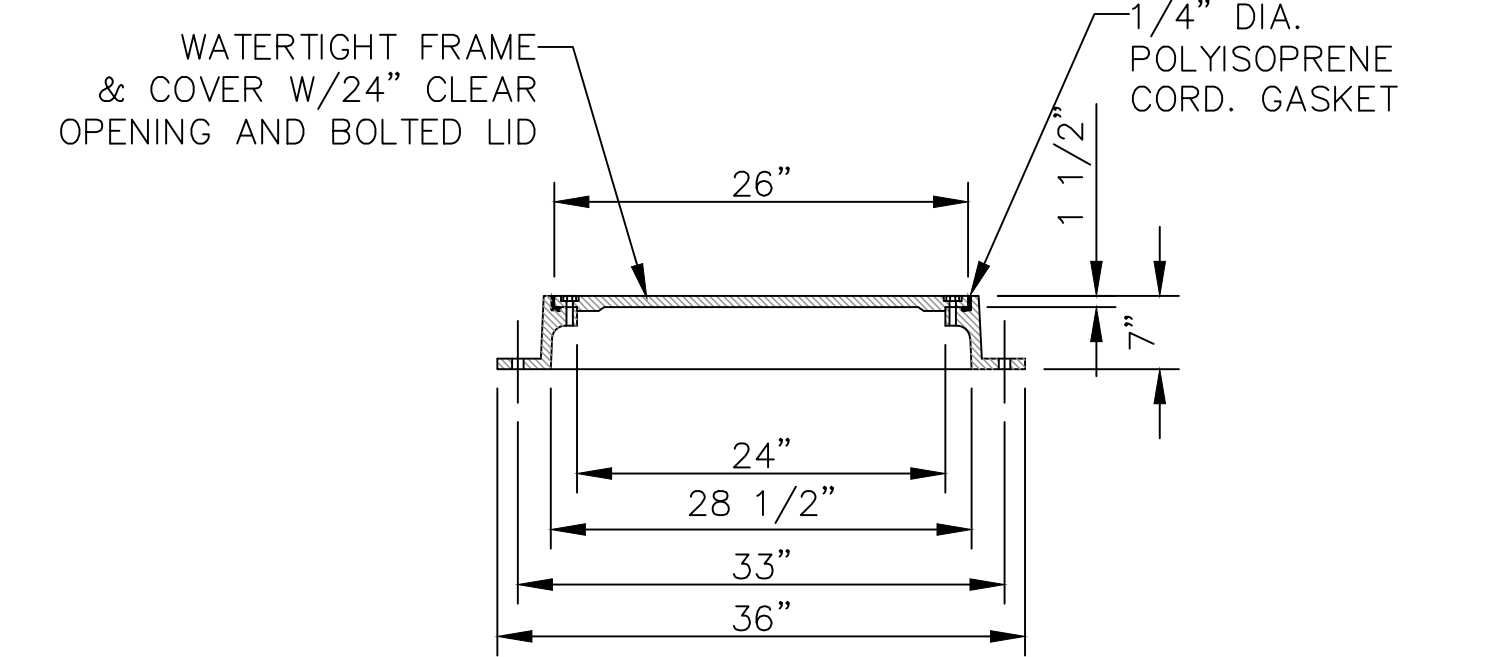
TYPICAL UNDERGROUND ELECTRIC SERVICE



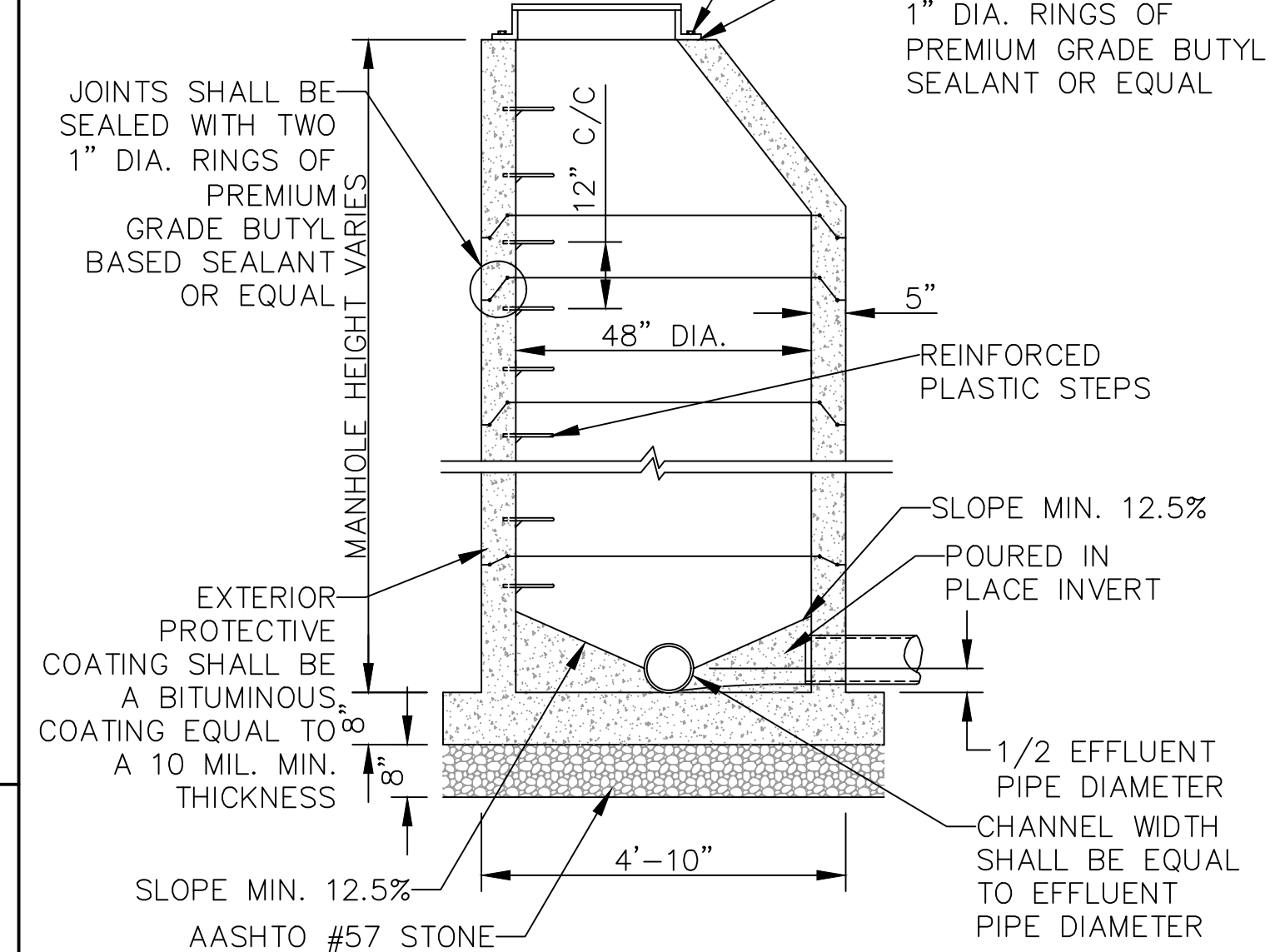
SERVICE ENTRANCE POLE



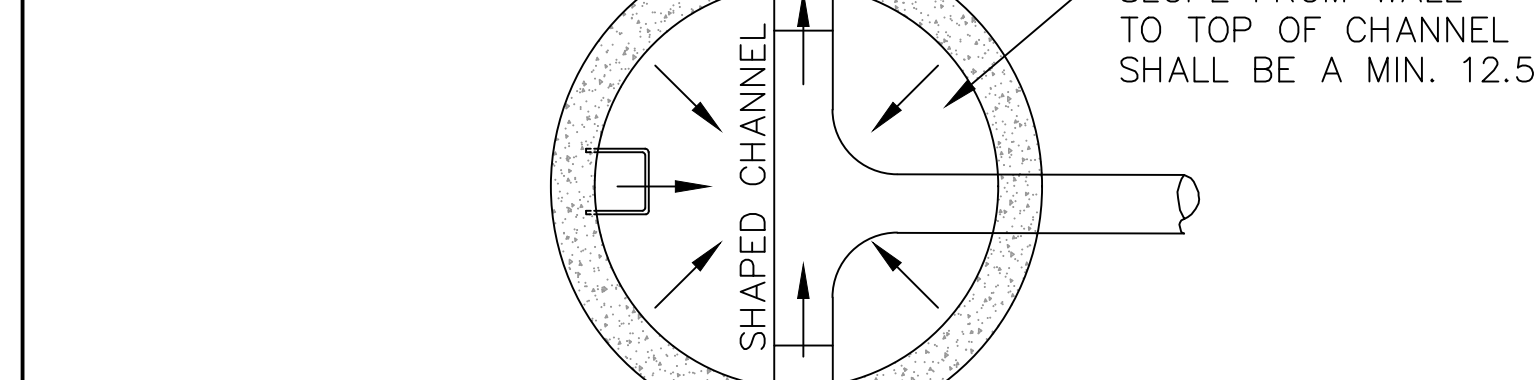
GRINDER PUMP STATION CONTROL PANEL BOARD (TYP.)



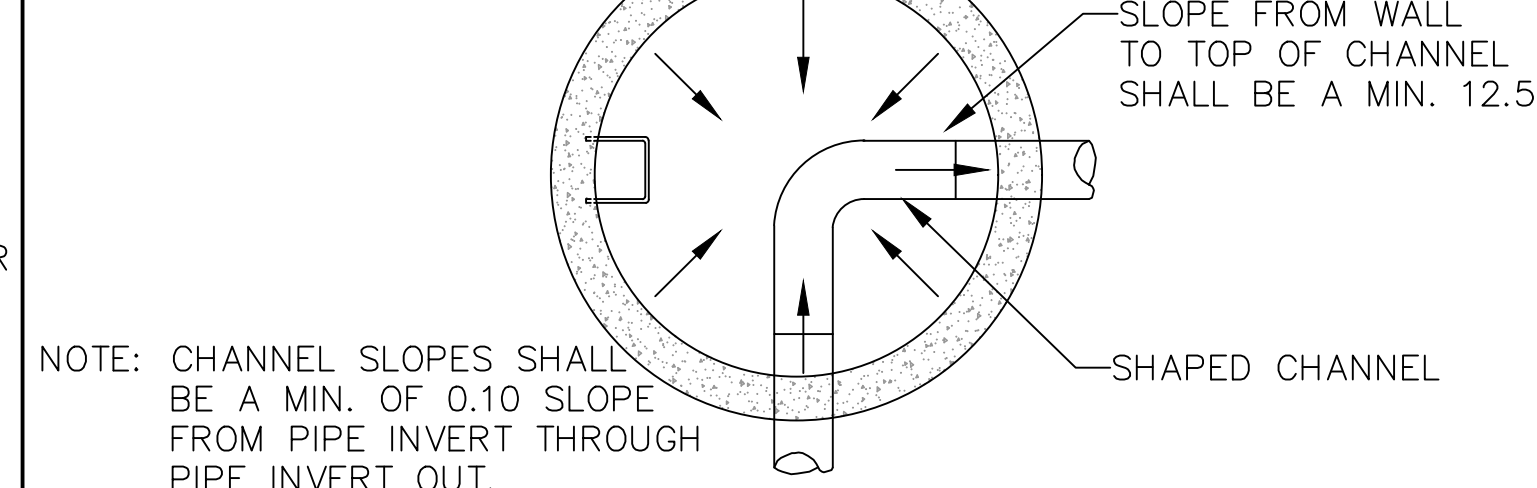
NOTE: MANHOLES & CLEANOUTS TO BE BURIED 1' MIN. UNDER WDOH ROADWAY DITCHES & 6" MIN. IN THE SHOULDER AREAS.



NOTE: CHANNEL SLOPES SHALL BE A MIN. OF 0.10 SLOPE FROM PIPE INVERT THROUGH PIPE INVERT OUT.



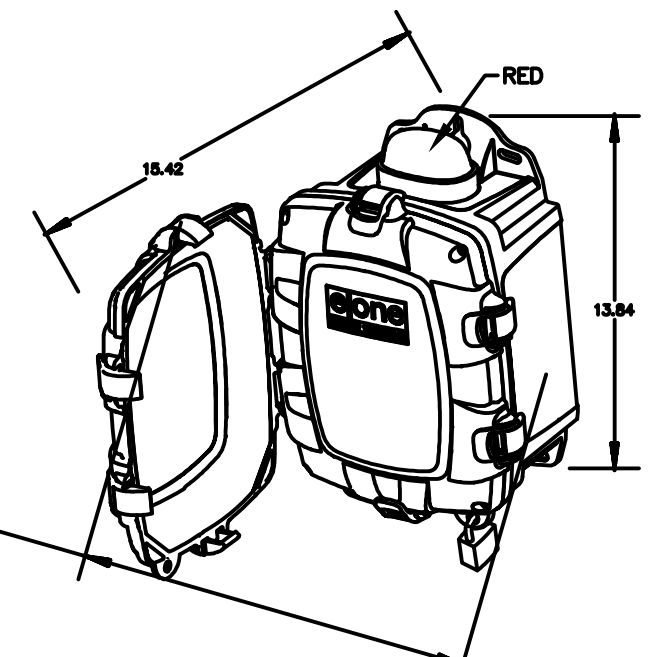
NOTE: ALL MANHOLES SHALL BE PRECAST CONSTRUCTION, AND SHALL INCLUDE CAST IN PLACE FLEXIBLE PIPE TO MANHOLE CONNECTORS AT ALL PIPE PENETRATIONS.



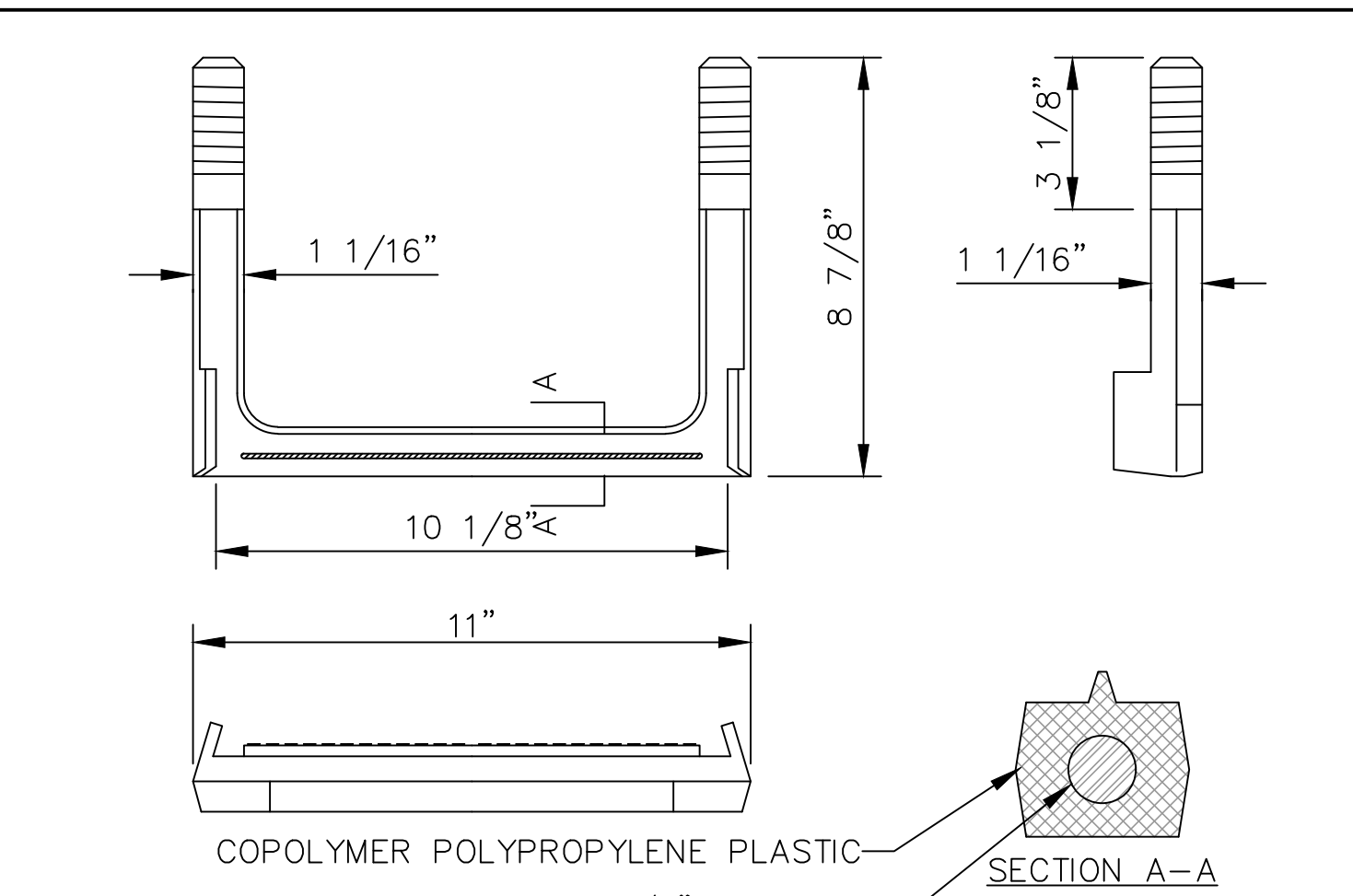
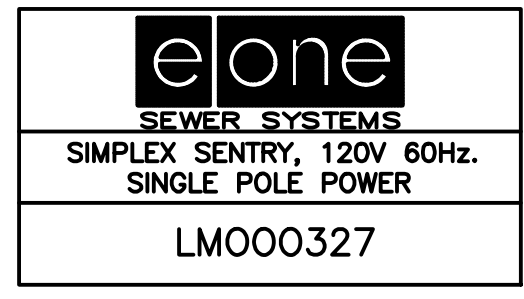
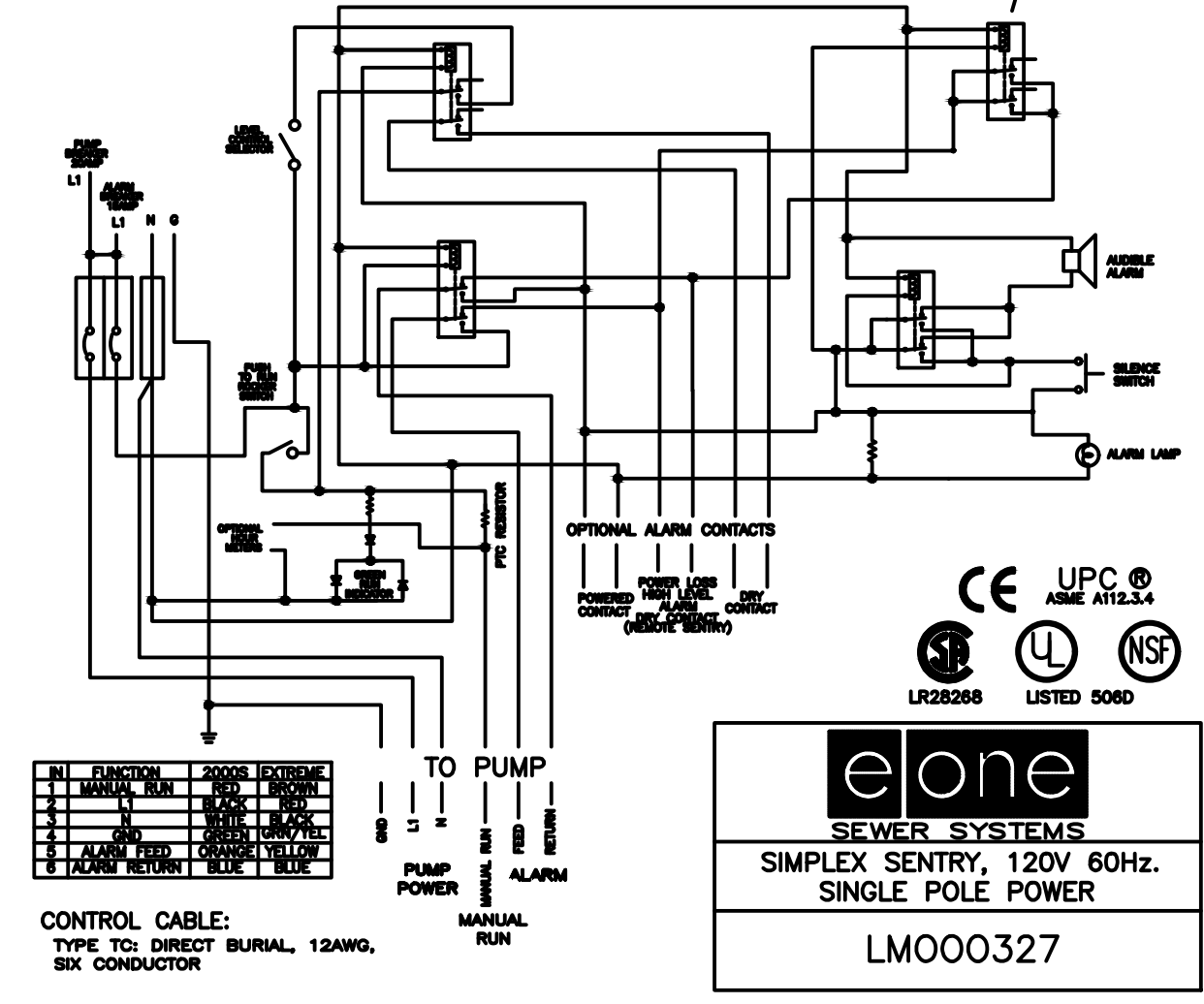
NOTE: CHANNEL SLOPES SHALL BE A MIN. OF 0.10 SLOPE FROM PIPE INVERT THROUGH PIPE INVERT OUT.

SIMPLEX SENTRY

- EDUNDANT RUN (HIGH LEVEL)
- XTERNAL VISUAL & AUDIBLE ALARM
- XTERNAL LATCHING MANUAL SILENCE
- ANUAL RUN
- UMP RUN INDICATOR
- ONFORMAL COATED CIRCUIT BOARD
- ADLOCK
- EMA 4X ENCLOSURE ASSEMBLY
- CORROSION PROOF THERMOPLASTIC POLYESTER APPROVED BY UL FOR ELECTRICAL CONTROL ENCLOSURE



- OPTIONS:
- ALARM CONTACTS
 - HOUR METER



NOTES: 1) MANHOLE STEPS SHALL BE IMPACT RESISTANT CO-POLYMER POLYPROPYLENE PLASTIC MOLDED AROUND 1/2\"/>

MANHOLE STEP DETAIL NOT TO SCALE

LAYOUT TAB: 67 DETAILS
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BRIDGEPORT, WEST VIRGINIA
DETAILS