



**COMMONWEALTH OF KENTUCKY
TRANSPORTATION CABINET**

Frankfort, Kentucky 40622
www.transportation.ky.gov/

Matthew G. Bevin
Governor

Greg Thomas
Secretary

December 5, 2017

CALL NO. 106
CONTRACT ID NO. 171050
ADDENDUM # 2

Subject: Clay County, STP 6000 (112)
Letting December 8, 2017

- (1) Added - Special Notes - Pages 1-10 of 10
- (2) Revised - Bid Items - Pages 217-222 (a) of 222
- (3) Revised - Plan Sheets - R2L, DWG 27581 (S1, S8, S9, S11)

Proposal revisions are available at <http://transportation.ky.gov/Construction-Procurement/>.

Plan revisions are available at <https://www.kytcplanroom.com/View/Default.aspx>

If you have any questions, please contact us at 502-564-3500.

Sincerely,

A handwritten signature in cursive script that reads "Rachel Mills".

Rachel Mills, P.E.
Director
Division of Construction Procurement

RM:mw
Enclosures



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SPECIAL NOTE FOR DRILLED SHAFTS

1.0 DESCRIPTION. Furnish all equipment, materials and labor necessary for constructing reinforced concrete drilled shafts in cylindrically excavated holes according to the details shown on the plans or as the Engineer directs. Construct the shaft to the lines and dimensions shown on the plans, or as the Engineer directs. Section references herein are to the Department's 2012 Standard Specifications for Road and Bridge Construction.

2.0 MATERIALS.

2.1 Concrete. Use Class A Modified concrete unless otherwise shown on the plans. The slump at the time of placement shall be 6.5 to 9.5 inches, the coarse aggregate shall be size 67, 68, 78, 8 or 9M, and the water/cementitious material ratio shall not exceed 0.45. Include water reducing and retarding admixtures. Type F high range water reducers used in combination with retarding admixtures or Type G high range water reducers fully meeting trial batch requirements are permitted and Class F fly ash is permitted in conformance with Section 601. Design the mix such that the concrete slump exceeds 4 inches at 4 hours after batching. If the estimated concrete transport, plus time to complete placement, exceeds 4 hours, design the concrete to have a slump that exceeds 4 inches or more for the greater time after batching and demonstrate that the slump requirement can be achieved after the extended time period using a trial batch.

Perform trial batches prior to beginning drilled shaft construction in order to demonstrate the adequacy of the proposed concrete mix. Demonstrate that the mix to be used will meet the requirements for temperature, slump, air content, water/cementitious material ratio, and compressive strength. Use the ingredients, proportions and equipment (including batching, mixing, and delivery) to be used on the project. Make at least 2 independent consecutive trial batches of 3 cubic yards each using the same mix proportions and meeting all specification requirements for mix design approval. Submit a report containing these results for slump, air content, water/cement ratio, temperature, and compressive strength and mix proportions for each trial batch to the Engineer for review and approval. Failure to demonstrate the adequacy of the concrete mix, methods, or equipment to the Engineer is cause for the Engineer to require appropriate alterations in concrete mix, equipment, and/or method by the Contractor to eliminate unsatisfactory results. Perform additional trial batches required to demonstrate the adequacy of the concrete mix, method, or equipment.

2.2 Steel Reinforcement. Provide Grade 60 deformed bars conforming to Section 811 of the Standard Specifications. Rail steel is permitted for straight bars only. Place according to Section 602 of the Standard Specifications, this Special Note, and the plans. Use non-corrosive centering devices and feet to maintain the specified reinforcement clearances.

2.3 Casings. Provide casing meeting the requirements of ASTM A 252 Grade 2 or better unless otherwise specified. Ensure casing is smooth, clean, watertight, true and straight, and of ample strength to withstand handling, installation, and extraction stresses and the pressure of both concrete and the surrounding earth materials. Ensure the outside diameter of casing is not less than the specified diameter of shaft.

Use only continuous casings. Cut off the casing at the prescribed elevation and trim to within tolerances prior to acceptance. Extend casing into bedrock a sufficient distance to stabilize the shaft excavation against collapse, excessive deformation, and/or flow of water if required and/or shown on the plans.

Install from the work platform continuous casing meeting the design thickness requirements, but not less than 3/8 inch, to the elevations shown on the plans. When drilled

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shafts are located in open water areas, extend casings above the water elevation to the plan tip elevation to protect the shaft concrete from water action during concrete placement and curing. All casing is permanent unless temporary casing is specified in the contract drawings or documents. Permanent casing is incidental to the applicable drilled shaft unit bid price unless noted otherwise in the contract. Temporary casing may be required for drilled shafts not socketed into bedrock. If temporary surface casings are used, extend each casing up to the work platform. Remove all temporary surface casing prior to final acceptance unless otherwise permitted by the Central Office Construction Engineer.

Ensure casing splices have full penetration butt welds conforming to the current edition of AWS D1.1 with no exterior or interior splice plates and produce true and straight casing.

2.4 Slurry. When slurry is to be used for installation of the Drilled Shaft, submit a detailed plan for its use and disposal. The plan should include, but not be limited to the following:

- 1) Material properties
- 2) Mixing requirements and procedures
- 3) Testing requirements
- 4) Placement procedures
- 5) Disposal techniques

Obtain the Central Office Division of Construction's approval for the slurry use and disposal plan before installing drilled shafts.

2.5 Tremies. Provide tremies of sufficient length, weight, and diameter to discharge concrete at the shaft base elevation. Ensure the tremie diameter is least 6 times the maximum size coarse aggregate to be used in the concrete mix and no less than 10 inches. Provide adequate wall thickness to prevent crimping or sharp bends that restrict concrete placement. Support tremies used for depositing concrete in a dry drilled shaft excavation so that the free fall of the concrete does not cause the shaft excavation to cave or slough. Maintain a clean and smooth tremie surface to permit both flow of concrete and unimpeded withdrawal during concrete placement. Do not allow any aluminum parts to contact the concrete. Construct tremies used to deposit concrete for wet excavations so that they are watertight and will readily discharge concrete.

2.6 Concrete Pumps. Provide pump lines with a minimum diameter of 5 inches and watertight joints.

2.7 Drop Chutes. Do not use aluminum drop chutes.

3.0 CONSTRUCTION.

3.1 Preconstruction.

3.1.1 Prequalification. The Department will require prequalification by the Division of Construction Procurement before accepting a bid for the construction of Drilled Shafts.

3.1.2 Pre-Bid Inspection. Inspect both the project site and all subsurface information, including any soil or rock samples, prior to submitting a bid. Contact the Geotechnical Branch (502-564-2374) to schedule a viewing of the subsurface information. Failure to inspect the project site and view the

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subsurface information will result in the forfeiture of the right to file a claim based on site conditions and may result in disqualification from the project.

3.1.3 Drilled Shaft Installation Plan. Upon request, the Department will review a Drilled Shaft Installation Plan. Submit the plan no later than 45 calendar days prior to constructing drilled shafts. Items covered in this plan should include, but not be limited to the following:

- 1) Name and experience record of jobsite drilled shaft superintendent and foremen in charge of drilled shaft operations for each shift.
- 2) List and size of proposed equipment including cranes, drills, augers, bailing buckets, final cleaning equipment, de-sanding equipment, slurry pumps, core sampling equipment, tremies or concrete pumps, casings, etc.
- 3) Details of overall construction operation sequence and the sequence of shaft construction in the bents or groups.
- 4) Details of shaft excavation methods including methods to over-ream or roughen shaft walls, if necessary.
- 5) Details of slurry when the use of slurry is anticipated. Include methods to mix, circulate, and de-sand the proposed slurry. Provide details of proposed testing, test methods, sampling methods, and test equipment.
- 6) Details of proposed methods to clean shaft and inside of casing after initial excavation.
- 7) Details of reinforcement handling, lifting, and placement including support and method to center in shaft. Also include rebar cage support during concrete placement and temporary casing removal.
- 8) Details of concrete placement including procedures for concrete tremie or pump. Include initial placement, raising during placement, and overfilling of the shaft to expel contaminated concrete.
- 9) Required submittals including shop drawings and concrete design mixes.
- 10) Other information shown in the plans or requested by the Engineer.
- 11) Special considerations for wet construction.
- 12) Details of environmental control procedures to protect the environment from discharge of excavation spoil, slurry (natural and mineral), and concrete over-pour.

The Division of Construction will review the submitted procedure and provide comments and recommendations. The Contractor is responsible for satisfactory construction and ultimate performance of the Drilled Shaft.

3.2 General Construction. Construct drilled shafts as indicated in the plans or described in this Special Note by either the dry or wet method. When the plans describe a particular method of construction, use this method unless the Engineer permits otherwise. When the plans do not describe a particular method, propose a method on the basis of its suitability to the site conditions. Approval of this proposed method is contingent upon the satisfactory results of the technique shaft.

The construction of the first drilled shaft or technique shaft will be used to determine if the methods and equipment used by the contractor are sufficient to produce a completed shaft meeting the requirements of the plans and specifications. Ability to control dimensions and alignment of excavations within tolerances; to seal the casing into impervious materials; to prevent caving or deterioration of subsurface materials by the use of slurry or other means; to

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properly clean the completed shaft excavation; to construct excavations in open water areas when required by the plans; to establish methods for bellling or over-reaming when required by the plans; to determine the elevation of ground water; to satisfactorily handle, lift, place, and support the reinforcement cage; to satisfactorily place concrete meeting the specifications within the prescribed time frame; and to satisfactorily execute any other necessary construction operations will be evaluated during construction of the first shaft(s). Revise the methods and equipment as necessary at any time during the construction of the first shaft when unable to satisfactorily carry out any of the necessary operations described above or unable to control the dimensions and alignment of the shaft excavation within tolerances. Accurately locate technique so they may be used in the finished structure unless directed otherwise in the contract document or by the Engineer.

If at any time the Contractor fails to satisfactorily demonstrate, to the satisfaction of the Engineer, the adequacy of methods or equipment and alterations are required, additional technique shafts will be required at no additional cost to the Department and with no extension of contract time. Additional technique shafts shall be located as near as possible to the proposed production shafts but in a location as not to interfere with other construction activities. Once approval has been given to construct production shafts, no changes will be permitted in the methods or equipment used to construct the satisfactory shaft without written approval of the Engineer.

Do not make a claim against the Department for costs of construction delays, or any materials, labor, or equipment that may be necessary due to the Contractor's failure to furnish drilled shafts of a length sufficient to obtain the required bearing values, or for variations in length due to subsurface conditions that may be encountered. Soundings, boring logs, soil profiles, or other subsurface data included in the Contract documents are used by the Department for design and making preliminary estimates of quantities and should be used only at the risk of the Contractor for determining equipment, materials, or labor necessary for drilling shafts as required by the contract.

When necessary, set temporary removable surface casing. Use surface casing of sufficient length to prevent caving of the surface soils and to aid in maintaining shaft position and alignment. Pre-drilling with slurry and/or over-reaming to the outside diameter of the casing may be required to install the surface casing at some sites.

Provide equipment capable of constructing shafts to the deepest shaft depth shown in the plans plus 15 feet, 20 percent greater than the longest shaft (measured from the ground or water surface to the tip of the shaft), or 3 times the shaft diameter, whichever is greater. Blasting excavation methods are not permitted.

Use permanent casing unless otherwise noted in the Contract. Place casing as shown on the plans before beginning excavation. If full penetration cannot be attained, the Engineer may direct that excavation through the casing be accomplished and the casing advanced until reaching the plan tip elevation. In some cases, over-reaming to the outside diameter of the casing may be required before placing the casing. Cut off the casing at the prescribed elevation and leave the remainder of the casing in place. Do not use vibratory hammers for casing installation within 50 feet of shafts that have been completed less than 24 hours.

3.2.1 Dry Construction Method. Use the dry construction method only at sites where the ground water table and soil conditions (generally stiff to hard clays or rock above the water table) make it feasible to construct the shaft in a relatively dry excavation and where the sides and bottom of the shaft are stable and may be visually inspected by the Engineer prior to placing the concrete. The dry construction method consists of drilling the shaft excavation, removing accumulated seepage water and loose material from the excavation, and placing the shaft concrete in a relatively dry excavation.

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3.2.2 Wet Construction Method. Use the wet construction method at all sites where it is impractical to excavate by the dry method. The wet construction method consists of drilling the shaft excavation below the water table, keeping the shaft filled with water (including natural slurry formed during the drilling process) or slurry as defined in part 2.4 of this Special Note, desanding and cleaning the slurry as required, final cleaning of the excavation by means of a bailing bucket, air lift, submersible pump or other approved devices and placing the shaft concrete (with a tremie or concrete pump beginning at the shaft bottom) which displaces the water or slurry as concrete is placed.

Where drilled shafts are located in open water areas, construct the shafts by the wet method using casings extending from above water elevation to the plan casing tip elevation to protect the shaft concrete from water action during placement and curing. Install the casing in a manner that will produce a positive seal at the bottom of the casing.

3.3 Slurry. When the Contractor elects to use slurry, adjust construction operations so that the slurry is in contact with the bottom 5 feet of the shaft for less than 4 hours unless the Engineer approves otherwise. If the 4-hour limit is exceeded, over-ream the bottom 5 feet of shaft.

3.4 Cleaning. Over-reaming, cleaning, or wire brushing the sidewalls of the shaft excavation and permanent casings may be necessary to remove the depth of softening or to remove excessive slurry cake buildup as indicated by sidewall samples or other test methods employed by the Engineer. Over-ream around the perimeter of the excavation a minimum depth of 1/2 inch and maximum depth of 3 inches.

3.5 Subsurface Exploration. Take subsurface exploration borings when shown on the plans or as the Engineer directs to determine the character of the material that the shaft extends through and the material directly below the shaft excavation. Complete subsurface exploration borings prior to beginning excavation for any drilled shaft in a group. Unless directed otherwise, extend subsurface exploration borings a minimum depth of 3 shaft diameters but not less than 10 feet below the bottom of the anticipated tip of drilled shaft excavation as shown on the plans. For subsurface exploration borings where soil sampling is required use thin-wall tube samples and perform standard penetration tests according to the Department's current Geotechnical Manual. When shafts extend into bedrock, soil samples are not required unless otherwise specified. Perform rock core drilling according to the Department's Geotechnical Manual. When the Engineer directs, perform additional subsurface exploration borings prior to drilled shaft construction. Measure soil samples and/or rock cores and visually identify and describe them on the subsurface log according to the Department's current Geotechnical Manual. Subsurface exploration borings must be performed by contractors/consultants prequalified by the Department's Division of Professional Services for Geotechnical Drilling Services at the time that field work begins.

The Engineer or geotechnical branch representative may be on-site during the subsurface exploration process to evaluate the soil and/or rock core samples. The Engineer or geotechnical branch representative will determine the need to extend the borings to depths greater than the depths previously specified. Handle, label, identify, and store soil and/or rock samples according to the Department's current Geotechnical Manual and deliver them with the subsurface logs to the geotechnical branch's rock core lab in Frankfort within 24-hours of completing the borings, unless directed otherwise.

The Engineer will inspect the soil samples and/or cores and determine the final depth of required excavation (final drilled shaft tip elevation) based on evaluation of the material's suitability. The Engineer will establish the final tip elevations for shaft locations, other than

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those for which subsurface exploration borings have been performed, based on the results of the subsurface exploration. Within 15 calendar days after completion of the subsurface exploration borings, the Engineer will notify the contractor of the final tip elevations for shaft locations.

3.6 Excavations. The plans indicate the expected depths, the top of shaft elevations, and the estimated bottom of shaft elevations between which the drilled shaft are to be constructed. Drilled shafts may be extended deeper when the Engineer determines that the material encountered while drilling the shaft excavation is unsuitable and/or is not the same as anticipated in the design of the drilled shaft. Drilled shafts may be shortened when the Engineer determines the material encountered is better than that anticipated.

Begin drilled shaft excavation the excavation, excavation inspection, reinforcement placement, and concrete placement can be completed as one continuous operation. Do not construct new shafts within 24 hours adjacent to recently completed shafts if the center-to-center spacing is less than 3 shaft diameters.

Dispose of excavated material removed from the shaft according to the Standard Specifications or the contract documents.

Do not allow workmen to enter the shaft excavation for any reason unless both a suitable casing has been installed and adequate safety equipment and procedures have been provided to the workmen entering the excavation. Recommended Procedures for the Entry of Drilled Shaft Foundation Excavations, prepared by ADSC: The International Association of Foundation Drilling provides guideline recommendations for down-hole entry of drilled excavations.

3.7 Obstructions. Remove subsurface obstructions at drilled shaft locations. Such obstructions may include man-made materials such as old concrete foundations or natural materials such as boulders. Blasting is not permitted.

3.8 Inspections of Excavations. Provide equipment for checking the dimensions and alignment of each shaft excavation. Determine the dimensions and alignment of the shaft excavation under the observation and direction of the Engineer. Provide equipment necessary to verify shaft cleanliness for the method of inspection selected by the Engineer.

Measure final shaft depths with a weighted tape or other approved methods after final cleaning. Ensure the base of each shaft has less than ½ inch of sediment at the time of concrete placement. For dry excavations, do not allow the depth of water to exceed 3 inches for tremie or pump methods of concrete placement. Verify shaft cleanliness to the Engineer using direct visual inspection or other method the Engineers determines acceptable. Video camera or underwater inspection procedures may be used if specified in the plans. Inspect the side surfaces of rock sockets to ensure they are rough and of such condition to ensure bond between the shaft concrete and the rock. Calipers, bent rods, or other devices may be used to inspect the diameter and roughness of rock sockets. When the Engineer directs, mechanically roughen surfaces found to be smooth.

3.9 Reinforcing Steel Cage Fabrication and Placement. Assemble the reinforcing steel cage, consisting of longitudinal bars, ties, spirals, cage stiffener bars, spacers, centering devices, and other necessary appurtenances and place as a prefabricated unit immediately after the shaft excavation is inspected and accepted, and just prior to concrete placement.

Tie the reinforcing steel with 100 percent double-wire ties and provide support so that it will remain within allowable tolerances for position. Locate splices as shown on the plans. Splice no more than 50 percent of the longitudinal reinforcing within 2-lap splice lengths of any location or within 3 feet of the splice location if approved mechanical connectors are used. All splices are to be in accordance with plan details. Use bands, temporary cross ties,

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etc. as required to provide a reinforcement cage of sufficient rigidity to prevent racking, permanent deformations, etc. during installation.

Use concrete centering devices or other approved non-corrosive centering devices at sufficient intervals along the length of the reinforcement cage to ensure concentric spacing for the entire cage length. As a minimum, provide a set of non-corrosive centering devices at intervals not exceeding 5 feet throughout the length of the shaft. When the size of the longitudinal reinforcement exceeds one inch in diameter the minimum spacing may be increased to 10 feet. As a minimum, provide a set of centering devices within 2 feet of the top and 2 feet of the bottom of the shaft. In addition provide one set of centering devices 2 feet above and 2 feet below each change in shaft diameter. Provide feet (bottom supports) at the bottom of the shaft on vertical bars. As a minimum, provide non-corrosive centering devices at 60 degree intervals around the circumference of the shaft to maintain the required reinforcement clearances. Ensure the centering devices maintain the specified annular clearance between the outside of the reinforcing cage and the side of the excavated hole or casing.

Concrete centering devices and feet will be constructed of concrete equal in quality and durability to the concrete specified for the shaft. Use epoxy coated centering devices fabricated from reinforcing steel. Use feet (bottom supports) of adequate size and number to assure the rebar cage is the proper distance above the bottom as determined by part 3.11 3) of this Special Note. The feet are not intended to support the weight of the cage. In the event that the shaft has been excavated below the anticipated tip elevation, extend the reinforcing cage at the tip (low) end by lap splices, mechanical connectors, or welded splices conforming to the Standard Specifications. In this instance, splices need not be staggered and 100 percent of the reinforcing bars may be spliced at a given location. The bottom 12 inches of the shaft may not be reinforced when below plan tip elevation.

During concrete placement, support the reinforcing cage at or near the top of shaft such that the concrete feet are positioned approximately one inch above the bottom of shaft excavation. Not sooner than 24 hours after the completion of concrete placement, remove temporary supports. Provide the needed equipment, including extra cranes if necessary, to provide this cage support.

Prior to placing the reinforcement cage, demonstrate to the satisfaction of the Engineer that the fabrication and handling methods to be used will result in a reinforcing cage placed in the proper position, with the proper clearances, and without permanent bending, squashing, or racking of the reinforcement cage. During this demonstration bring the cage to an upright position, lower into a shaft excavation, and support as if for concrete placement.

Check the elevation of the top of the reinforcing cage before and after the concrete is placed. If the reinforcing cage is not maintained within the specified tolerances, correct to the satisfaction of the Engineer. Do not construct additional shafts until the contractor has modified his reinforcing cage support to obtain the required tolerances.

3.10 Concrete Placement. Place concrete according to the applicable portions of the Standard Specifications and with the requirements set forth herein. Do not apply the provisions of the Special Note 6U for Structural Mass Concrete.

Place concrete as soon as practical after reinforcing steel placement but no later than 4 hours after completion of the shaft excavation. Place concrete continuously from the bottom to above the top elevation of the shaft. For shafts that extend above ground or water surface, place concrete continuously after the shaft is full until good quality concrete is evident at the top of the shaft. Form any portion of the shaft above ground with a removable form or other approved method to the dimensions shown on the plans.

For shafts constructed in the wet with the top of the shaft below the water surface and below top of casing, place concrete to approximately one shaft diameter but no less than 2 feet above the top of shaft elevation. Remove contaminated concrete and deleterious material, as

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determined by the Engineer, accumulated above the top of shaft elevation immediately after completing concrete placement. Deleterious material and contaminated concrete may be airlifted under a head of water or slurry provided that the head is maintained at or near the exterior water surface elevation. Carefully remove any concrete remaining above plan top of shaft after curing and excess casing removal.

Place concrete either by free fall, through a tremie, or concrete pump. Use the free fall placement method in dry holes only. The maximum height of free fall placement is 20 feet. Do not allow concrete placed by free fall to contact either the reinforcing cage or hole sidewall. Drop chutes may be used to direct concrete to the base during free fall placement.

Place concrete in the shaft in one continuous operation. Maintain a minimum slump of 4 inches or more throughout the placement for 4 hours after batching. Adjust approved admixtures in the concrete mix for the conditions encountered on the job so that the concrete remains in a workable plastic state throughout the placement. Perform slump loss tests to demonstrate that the concrete will maintain a 4-inch or greater slump for a period of time equal to the estimated transport plus the 2-hour placement time, but not less than 4 hours.

When the Engineer determines the concrete placement methods and/or equipment during construction of any technique and/or production shafts to be inadequate, make appropriate alterations to eliminate unsatisfactory results.

Drilled shafts not meeting the concrete placement requirements of this Special Note or contract plans are unacceptable. Correct all unacceptable completed shafts to the satisfaction of the Engineer.

3.10.1 Tremie Placement. Tremies may be used for concrete placement in either wet or dry holes. Extend the tremie to the shaft base elevation before starting underwater placement. Valves, bottom plates, or plugs may be used only if concrete discharge can begin approximately 2 inches above the excavation bottom. Remove plugs from the excavation unless otherwise approved by the Engineer. Maintain tremie discharge at or near the bottom of excavation as long as practical during concrete placement. Immerse tremie discharge end as deep as practical in the concrete but not less than 10 feet.

If at any time during the concrete pour the tremie line orifice is removed from the fluid concrete column and discharges concrete above the rising concrete surface, the entire drilled shaft is considered defective. In such case, remove the reinforcing cage and concrete, complete any necessary sidewall cleaning or over-reaming as directed by the Engineer, and repour the shaft.

3.10.2 Pumped Concrete. Concrete pumps and lines may be used for concrete placement in either wet or dry excavations. Do not begin concrete placement until the pump line discharge orifice is at the shaft base elevation.

For wet excavations, use a plug or similar device to separate the concrete from the fluid in the hole until pumping begins. Remove the plug unless otherwise approved by the engineer.

Ensure the discharge orifice remains at least 10 feet below the surface of the fluid concrete. When lifting the pump line during concrete placement, reduce the line pressure until the orifice has been repositioned at a higher level in the excavation.

If at any time during the concrete pour the pump line orifice is removed from the fluid concrete column and discharges concrete above the rising concrete level, the Department will consider the shaft defective. In such case, remove the reinforcing cage and concrete, complete any necessary sidewall cleaning or over-reaming as the Engineer directs, and repour the shaft.

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3.10.3 Drop Chutes. Drop chutes may be used to direct placement of free fall concrete in excavations where the maximum depth of water does not exceed one inch. Do not use the free fall method of placement in wet excavations. Concrete may be placed through either a hopper at the top of the tube or side openings as the drop chute is retrieved during concrete placement. Reduce the height of free fall and/or reduce the rate of concrete flow into the excavation if the concrete placement causes the shaft excavation to cave or slough, or if the concrete strikes the reinforcing cage or sidewall. When the Engineer determines free fall placement cannot be accomplished satisfactorily, use either tremie or pumping to accomplish the pour.

3.11 Construction Tolerances. The following construction tolerances apply to drilled shafts unless otherwise stated in the contract document:

- 1) Construct drilled shaft within 3 inches of plan position in the horizontal plane at the top of the shaft.
- 2) Do not vary the vertical alignment of a shaft excavation from the plan alignment by more than 1/4 inch per foot of depth or 6 inches total.
- 3) Maintain the top of the reinforcing steel cage no more than 6 inches above and no more than 3 inches below plan position.
- 4) All casing diameters shown on the plans refer to O.D. (outside diameter) dimensions. The casing dimensions are subject to American Pipe Institute tolerances applicable to regular steel pipe. A casing larger in diameter than shown in the plans may be used, at no additional cost, with prior approval by the Department.
- 5) Maintain the top of shaft concrete within ± 3 inches from the plan top of shaft elevation, measured after excess shaft concrete has been removed.
- 6) Design excavation equipment and methods so that the completed shaft excavation will have a planar bottom. Maintain the cutting edges of excavation equipment normal to the vertical axis of the equipment within a tolerance of $\pm 3/8$ inch per foot of diameter. The tip elevation of the shaft has a tolerance of ± 6 inches from final shaft tip elevation unless otherwise specified in the plans.

Drilled shaft excavations and completed shafts not constructed within the required tolerances are unacceptable. Correct all unacceptable shaft excavations and completed shafts to the satisfaction of the Engineer. When a shaft excavation is completed with unacceptable tolerances, present corrective measures designed by a registered Professional Engineer for approval.

4.0 MEASUREMENT.

4.1 Drilled Shafts. The Department will not measure for payment any trial batches required to demonstrate the adequacy of the concrete mix, method, or equipment; concrete required to fill an oversized casing or oversized excavation; obstruction removal; over-reaming or sidewall cleaning; inspection work or inspection equipment; materials or work necessary, including engineering analyses and redesign, to alter unacceptable work methods or to complete corrections for unacceptable work; and will consider them incidental to the Drilled Shaft. Unless noted otherwise in the contract documents, casing is incidental to the drilled shaft.

4.1.1 Drilled Shaft, Common. The Department will measure the length, in linear feet, of drilled shaft above the top of rock elevation shown on the plans. The

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Department will consider this quantity Drilled Shaft, Common regardless of the character of material actually encountered.

4.1.2 Drilled Shafts, Solid Rock. The Department will measure the length, in linear feet, of drilled shaft below the top of rock elevation shown on plans. The Department will consider this quantity Drilled Shafts, Solid Rock regardless of the character of material actually encountered during excavation.

4.2 Technique Shaft. The Department will pay for technique shaft at the contract unit price per each as detailed on the plans or as directed by the Engineer. This will constitute full compensation for all costs incurred during installation as described herein for 'Drilled Shaft' or in the contract documents. No additional compensation beyond the number of technique shafts allowed for in the plans will be permitted for additional technique shafts required because of failure to demonstrate adequacy of methods.

4.3 Rock Coring and Rock Sounding. The Department will measure Rock Sounding and Rock Coring shown on the plans, as specified in part 3.5 of this Special Note, and as the Engineer directs, in linear feet to the nearest 0.1-foot. If soil samples are specified in the contract documents they will be incidental to the unit price bid for Rock Sounding. The Department will not measure or pay for subsurface exploration performed deeper than the elevations indicated on the plans and/or in this Special Note, unless directed by the Engineer, and will consider it incidental to these items of work. Additionally, the Department will consider all mobilization, equipment, labor, incidental items, and operations necessary to complete the boring operations incidental to these items of work.

5.0 PAYMENT. The Department will make payment for the completed and accepted quantities under the following:

<u>Code</u>	<u>Pay Item</u>	<u>Pay Unit</u>
----	Drilled Shaft, Diameter*, Common	Linear Foot
----	Drilled Shaft, Diameter*, Solid Rock	Linear Foot
----	Technique Shaft	Each
20745ED	Rock Sounding	Linear Foot
20746ED	Rock Coring	Linear Foot

* See Plan Sheets for sizes of shafts.

The Department will consider payment as full compensation for all work required in this note.

June 15, 2012

PROPOSAL BID ITEMS

REVISED ADDENDUM #2: 12-5-17

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Report Date 12/5/17

Section: 0001 - PAVING

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0010	00003		CRUSHED STONE BASE	22,680.00	TON		\$	
0020	00020		TRAFFIC BOUND BASE	500.00	TON		\$	
0030	00100		ASPHALT SEAL AGGREGATE	59.00	TON		\$	
0040	00103		ASPHALT SEAL COAT	8.00	TON		\$	
0050	00190		LEVELING & WEDGING PG64-22	328.00	TON		\$	
0060	00212		CL2 ASPH BASE 1.00D PG64-22	15,185.00	TON		\$	
0070	00301		CL2 ASPH SURF 0.38D PG64-22	4,760.00	TON		\$	
0080	02101		CEM CONC ENT PAVEMENT-8 IN	359.00	SQYD		\$	
0090	24780EC		INTELLIGENT COMPACTION FOR AGGREGATE	42,953.00	TON		\$	
0100	24781EC		INTELLIGENT COMPACTION FOR ASPHALT	42,953.00	TON		\$	
0110	24891EC		PAVE MOUNT INFRARED TEMP EQUIPMENT	545,967.00	SF		\$	
0120	24966EC		RUBBER PAVEMENT 0.5 IN	847.00	SQYD		\$	

Section: 0002 - ROADWAY

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0390	00078		CRUSHED AGGREGATE SIZE NO 2	1,037.00	TON		\$	
0400	01000		PERFORATED PIPE-4 IN	1,463.00	LF		\$	
0410	01005		PERFORATED PIPE EDGE DRAIN-4 IN	7,978.00	LF		\$	
0420	01006		PERFORATED PIPE EDGE DRAIN-6 IN	572.00	LF		\$	
0430	01010		NON-PERFORATED PIPE-4 IN	469.00	LF		\$	
0440	01015		INSPECT & CERTIFY EDGE DRAIN SYSTEM	1.00	LS		\$	
0450	01020		PERF PIPE HEADWALL TY 1-4 IN	19.00	EACH		\$	
0460	01022		PERF PIPE HEADWALL TY 1-8 IN	8.00	EACH		\$	
0470	01028		PERF PIPE HEADWALL TY 3-4 IN	8.00	EACH		\$	
0480	01740		CORED HOLE DRAINAGE BOX CON-4 IN	55.00	EACH		\$	
0490	01741		CORED HOLE DRAINAGE BOX CON-6 IN	1.00	EACH		\$	
0500	01810		STANDARD CURB AND GUTTER	13,096.00	LF		\$	
0510	01875		STANDARD HEADER CURB	1,080.00	LF		\$	
0520	01987		DELINEATOR FOR GUARDRAIL BI DIRECTIONAL WHITE	72.00	EACH		\$	
0530	02014		BARRICADE-TYPE III	30.00	EACH		\$	
0540	02091		REMOVE PAVEMENT	8,057.00	SQYD		\$	
0550	02159		TEMP DITCH	4,513.00	LF		\$	
0560	02160		CLEAN TEMP DITCH	2,256.00	LF		\$	
0570	02165		REMOVE PAVED DITCH	12.00	SQYD		\$	
0580	02200		ROADWAY EXCAVATION	930,485.00	CUYD		\$	
0590	02242		WATER	342.00	MGAL		\$	
0600	02351		GUARDRAIL-STEEL W BEAM-S FACE	5,912.50	LF		\$	
0610	02360		GUARDRAIL TERMINAL SECTION NO 1	14.00	EACH		\$	
0620	02363		GUARDRAIL CONNECTOR TO BRIDGE END TY A	3.00	EACH		\$	
0630	02371		GUARDRAIL END TREATMENT TYPE 7	3.00	EACH		\$	
0640	02381		REMOVE GUARDRAIL	433.00	LF		\$	
0650	02391		GUARDRAIL END TREATMENT TYPE 4A	11.00	EACH		\$	
0660	02429		RIGHT-OF-WAY MONUMENT TYPE 1	121.00	EACH		\$	

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LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0670	02432		WITNESS POST	3.00	EACH		\$	
0680	02482		CHANNEL LINING CLASS IA	68.00	TON		\$	
0690	02488		CHANNEL LINING CLASS IV	5,563.00	CUYD		\$	
0700	02545		CLEARING AND GRUBBING 49 ACRES	1.00	LS		\$	
0710	02551		CONCRETE-CLASS A FOR STEPS	2.20	CUYD		\$	
0720	02562		TEMPORARY SIGNS	3,445.00	SQFT		\$	
0730	02598		FABRIC-GEOTEXTILE TYPE III	900.00	SQYD		\$	
0740	02599		FABRIC-GEOTEXTILE TYPE IV	52,556.00	SQYD		\$	
0750	02600		FABRIC GEOTEXTILE TY IV FOR PIPE	12,487.00	SQYD	\$2.00	\$	\$24,974.00
0760	02611		HANDRAIL-TYPE A-1	22.00	LF		\$	
0770	02650		MAINTAIN & CONTROL TRAFFIC	1.00	LS		\$	
0780	02651		DIVERSIONS (BY-PASS DETOURS) DIVERSION #1	1.00	LS		\$	
0790	02651		DIVERSIONS (BY-PASS DETOURS) DIVERSION #2	1.00	LS		\$	
0800	02671		PORTABLE CHANGEABLE MESSAGE SIGN	4.00	EACH		\$	
0810	02676		MOBILIZATION FOR MILL & TEXT	1.00	LS		\$	
0820	02677		ASPHALT PAVE MILLING & TEXTURING	477.00	TON		\$	
0830	02701		TEMP SILT FENCE	4,513.00	LF		\$	
0840	02703		SILT TRAP TYPE A	49.00	EACH		\$	
0850	02704		SILT TRAP TYPE B	49.00	EACH		\$	
0860	02705		SILT TRAP TYPE C	49.00	EACH		\$	
0870	02706		CLEAN SILT TRAP TYPE A	49.00	EACH		\$	
0880	02707		CLEAN SILT TRAP TYPE B	49.00	EACH		\$	
0890	02708		CLEAN SILT TRAP TYPE C	49.00	EACH		\$	
0900	02720		SIDEWALK-4 IN CONCRETE	7,085.00	SQYD		\$	
0910	02721		REMOVE CONCRETE SIDEWALK	84.00	SQYD		\$	
0920	02726		STAKING	1.00	LS		\$	
0930	02731		REMOVE STRUCTURE COAL HOLLOW RD. BRIDGE	1.00	LS		\$	
0940	02731		REMOVE STRUCTURE GOOSE CREEK BRIDGE	1.00	LS		\$	
0950	02731		REMOVE STRUCTURE KY 2432 HART BRANCH BRIDGE	1.00	LS		\$	
0960	02775		ARROW PANEL	2.00	EACH		\$	
0970	05950		EROSION CONTROL BLANKET	38,917.00	SQYD		\$	
0980	05952		TEMP MULCH	158,155.00	SQYD		\$	
0990	05953		TEMP SEEDING AND PROTECTION	118,616.00	SQYD		\$	
1000	05963		INITIAL FERTILIZER	2.00	TON		\$	
1010	05964		20-10-10 FERTILIZER	10.60	TON		\$	
1020	05985		SEEDING AND PROTECTION	146,640.00	SQYD		\$	
1030	05990		SODDING	18,555.00	SQYD		\$	
1040	05992		AGRICULTURAL LIMESTONE	91.00	TON		\$	
1050	06510		PAVE STRIPING-TEMP PAINT-4 IN	50,249.00	LF		\$	
1060	06514		PAVE STRIPING-PERM PAINT-4 IN	50,249.00	LF		\$	
1070	06566		PAVE MARKING-THERMO X-WALK-12 IN	1,510.00	LF		\$	
1080	06568		PAVE MARKING-THERMO STOP BAR-24IN	322.00	LF		\$	
1090	06569		PAVE MARKING-THERMO CROSS-HATCH	648.00	SQFT		\$	
1100	06574		PAVE MARKING-THERMO CURV ARROW	19.00	EACH		\$	
1110	10020NS		FUEL ADJUSTMENT	232,797.00	DOLL	\$1.00	\$	\$232,797.00
1120	10030NS		ASPHALT ADJUSTMENT	76,472.00	DOLL	\$1.00	\$	\$76,472.00

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LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1130	20206EC		PAVE MARK HANDICAP SYMBOL	7.00	EACH		\$	
1140	20430ED		SAW CUT	2,326.00	LF		\$	
1150	23158ES505		DETECTABLE WARNINGS	875.00	SQFT		\$	
1160	24489EC		INLAID PAVEMENT MARKER	51.00	EACH		\$	
1170	24540		R/W MONUMENT TYPE 3	11.00	EACH		\$	
1180	24805ED		OBJECT MARKER TYPE 4	3.00	EACH		\$	

Section: 0003 - DRAINAGE

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1200	00440		ENTRANCE PIPE-15 IN	207.00	LF		\$	
1210	00441		ENTRANCE PIPE-18 IN	274.00	LF		\$	
1220	00443		ENTRANCE PIPE-24 IN	254.00	LF		\$	
1230	00461		CULVERT PIPE-15 IN	84.00	LF		\$	
1240	00462		CULVERT PIPE-18 IN	95.00	LF		\$	
1250	00464		CULVERT PIPE-24 IN	460.00	LF		\$	
1260	00466		CULVERT PIPE-30 IN	178.00	LF		\$	
1270	00468		CULVERT PIPE-36 IN	332.00	LF		\$	
1280	00469		CULVERT PIPE-42 IN	52.00	LF		\$	
1290	00470		CULVERT PIPE-48 IN	80.00	LF		\$	
1300	00521		STORM SEWER PIPE-15 IN	2,355.00	LF		\$	
1310	00522		STORM SEWER PIPE-18 IN	1,726.00	LF		\$	
1320	00524		STORM SEWER PIPE-24 IN	735.00	LF		\$	
1330	01202		PIPE CULVERT HEADWALL-15 IN	4.00	EACH		\$	
1340	01204		PIPE CULVERT HEADWALL-18 IN	9.00	EACH		\$	
1350	01208		PIPE CULVERT HEADWALL-24 IN	7.00	EACH		\$	
1360	01210		PIPE CULVERT HEADWALL-30 IN	2.00	EACH		\$	
1370	01212		PIPE CULVERT HEADWALL-36 IN	4.00	EACH		\$	
1380	01216		PIPE CULVERT HEADWALL-48 IN	2.00	EACH		\$	
1390	01396		METAL END SECTION TY 3-42 IN	2.00	EACH		\$	
1400	01410		METAL END SECTION TY 4-15 IN	1.00	EACH		\$	
1410	01432		SLOPED BOX OUTLET TYPE 1-15 IN	3.00	EACH		\$	
1420	01433		SLOPED BOX OUTLET TYPE 1-18 IN	2.00	EACH		\$	
1430	01434		SLOPED BOX OUTLET TYPE 1-24 IN	1.00	EACH		\$	
1440	01450		S & F BOX INLET-OUTLET-18 IN	1.00	EACH		\$	
1450	01451		S & F BOX INLET-OUTLET-24 IN	3.00	EACH		\$	
1460	01452		S & F BOX INLET-OUTLET-30 IN	2.00	EACH		\$	
1470	01456		CURB BOX INLET TYPE A	50.00	EACH		\$	
1480	01496		DROP BOX INLET TYPE 3	2.00	EACH		\$	
1490	01577		DROP BOX INLET TYPE 14	6.00	EACH		\$	
1500	20098NC		CAP BOX INLET	1.00	EACH		\$	
1510	24575ES610		HEADWALL 3X36	2.00	EACH		\$	
1520	24814EC		PIPELINE INSPECTION	4,438.00	LF		\$	

Section: 0004 - BRIDGE-GOOSE CREEK - DRAWING #27581

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
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LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1530	02231		STRUCTURE GRANULAR BACKFILL	250.00	CUYD		\$	
1540	02998		MASONRY COATING	957.20	SQYD		\$	
1550	03299		ARMORED EDGE FOR CONCRETE	93.00	LF		\$	
1560	08001		STRUCTURE EXCAVATION-COMMON	134.00	CUYD		\$	
1570	08019		CYCLOPEAN STONE RIP RAP	2,065.00	TON		\$	
1580	08033		TEST PILES	48.00	LF		\$	
1590	08039		PRE-DRILLING FOR PILES	70.00	LF		\$	
1600	08050		PILES-STEEL HP14X73	225.00	LF		\$	
1610	08095		PILE POINTS-14 IN	14.00	EACH		\$	
1620	08100		CONCRETE-CLASS A	276.60	CUYD		\$	
1630	08104		CONCRETE-CLASS AA	655.70	CUYD		\$	
1640	08150		STEEL REINFORCEMENT (REVISED: 12-5-17)	49,919.00	LB		\$	
1650	08151		STEEL REINFORCEMENT-EPOXY COATED	108,849.00	LB		\$	
1660	08633		PRECAST PC I BEAM TYPE 3	968.00	LF		\$	
1670	08635		PRECAST PC I BEAM TYPE 6	873.00	LF		\$	
1680	20637ED		DRILLED SHAFT-ROCK 48 IN	60.00	LF		\$	
1685	20745ED		ROCK SOUNDINGS (ADDED: 12-5-17)	88.00	LF		\$	
1686	20746ED		ROCK CORINGS (ADDED: 12-5-17)	156.00	LF		\$	
1690	21119ED		CONCRETE FORM LINER	732.00	SQYD		\$	
1700	21777EN		DRILLED SHAFT COMMON-54 IN	86.00	LF		\$	
1710	23168ED		CONCRETE STAINING	937.00	SQYD		\$	
1720	23813EC		DECK DRAIN	22.00	EACH		\$	

Section: 0005 - BRIDGE-CULVERT-HART BRANCH - DRAWING #27582

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1730	08001		STRUCTURE EXCAVATION-COMMON	894.00	CUYD		\$	
1740	08002		STRUCTURE EXCAV-SOLID ROCK	277.00	CUYD		\$	
1750	08100		CONCRETE-CLASS A	1,410.00	CUYD		\$	
1760	08150		STEEL REINFORCEMENT	127,845.00	LB		\$	

Section: 0006 - BRIDGE-CULVERT-COAL HOLLOW - DRAWING #27583

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1770	08001		STRUCTURE EXCAVATION-COMMON	432.00	CUYD		\$	
1780	08002		STRUCTURE EXCAV-SOLID ROCK	161.00	CUYD		\$	
1790	08100		CONCRETE-CLASS A	423.00	CUYD		\$	
1800	08150		STEEL REINFORCEMENT	34,039.00	LB		\$	

Section: 0007 - BRIDGE- RETAINING WALL - KY 2432 - DRAWING #27606

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1810	02203		STRUCTURE EXCAV-UNCLASSIFIED	307.00	CUYD		\$	
1820	02555		CONCRETE-CLASS B	352.00	CUYD		\$	

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LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1830	02599		FABRIC-GEOTEXTILE TYPE IV (REVISED: 12-5-17)	460.00	SQYD		\$	
1840	02611		HANDRAIL-TYPE A-1	325.00	LF		\$	
1850	21119ED		CONCRETE FORM LINER	175.00	SQYD		\$	
1860	23168ED		CONCRETE STAINING	211.00	SQYD		\$	
1870	24596EN		GRANULAR BACKFILL	488.00	CUYD		\$	

Section: 0008 - BRIDGE-RETAINING WALL - KY 2432 - DRAWING #27605

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1880	02203		STRUCTURE EXCAV-UNCLASSIFIED	311.00	CUYD		\$	
1885	02555		CONCRETE-CLASS B (ADDED: 12-5-17)	359.00	CUYD		\$	
1890	02611		HANDRAIL-TYPE A-1	195.00	LF		\$	
1900	21119ED		CONCRETE FORM LINER	158.00	SQYD		\$	
1910	23168ED		CONCRETE STAINING	180.00	SQYD		\$	

Section: 0009 - UTILITY-WATER-SEWER-GAS (ADDED: 11-22-17)

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1920	14003		W CAP EXISTING MAIN	2.00	EACH		\$	
1930	14005		W ENCASEMENT CONCRETE	500.00	LF		\$	
1940	14007		W ENCASEMENT STEEL BORED RANGE 2 10 IN	20.00	LF		\$	
1950	14008		W ENCASEMENT STEEL BORED RANGE 3 12 IN	80.00	LF		\$	
1960	14009		W ENCASEMENT STEEL BORED RANGE 4	185.00	LF		\$	
1970	14010		W ENCASEMENT STEEL BORED RANGE 5 24 IN	30.00	LF		\$	
1980	14014		W ENCASEMENT STEEL OPEN CUT RANGE 3 12 IN	295.00	LF		\$	
1990	14016		W ENCASEMENT STEEL OPEN CUT RANGE 5 24 IN	435.00	LF		\$	
2000	14019		W FIRE HYDRANT ASSEMBLY	16.00	EACH		\$	
2010	14028		W METER 3/4 INCH	9.00	EACH		\$	
2020	14030		W METER RELOCATE RECONNECT	1.00	EACH		\$	
2030	14037		W PIPE DUCTILE IRON 08 INCH	4,690.00	LF		\$	
2040	14039		W PIPE DUCTILE IRON 12 INCH	4,320.00	LF		\$	
2050	14060		W PIPE PVC 08 INCH	2,000.00	LF		\$	
2060	14071		W PIPE POLYETHYLENE/PLASTIC 10 INCH	2,235.00	LF		\$	
2070	14073		W PIPE POLYETHYLENE/PLASTIC SPECIAL 18 IN	1,540.00	LF		\$	
2080	14080		W SERV PE/PLST LONG SIDE 3/4 IN	9.00	EACH		\$	
2090	14089		W TAPPING SLEEVE AND VALVE SIZE 1	11.00	EACH		\$	
2100	14090		W TAPPING SLEEVE AND VALVE SIZE 2	4.00	EACH		\$	
2110	14094		W TIE-IN 06 INCH	1.00	EACH		\$	
2120	14095		W TIE-IN 08 INCH	5.00	EACH		\$	
2130	14097		W TIE-IN 12 INCH	4.00	EACH		\$	
2140	14106		W VALVE 08 INCH	12.00	EACH		\$	

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LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
2150	14108		W VALVE 12 INCH	1.00	EACH		\$	
2160	14126		W ENCASEMENT SPECIAL 16 IN-DIRECTIONAL BORE	805.00	LF		\$	
2170	14126		W ENCASEMENT SPECIAL 16 IN-OPEN CUT	1,030.00	LF		\$	
2180	14126		W ENCASEMENT SPECIAL 2 IN-DIRECTIONAL BORE	448.00	LF		\$	
2190	14126		W ENCASEMENT SPECIAL 2 IN-OPEN CUT	541.00	LF		\$	
2200	14126		W ENCASEMENT SPECIAL 24 IN -DIRECTIONAL BORE	435.00	LF		\$	
2210	14126		W ENCASEMENT SPECIAL 5 IN-DIRECTIONAL BORE	297.00	LF		\$	
2220	14126		W ENCASEMENT SPECIAL 8 IN-OPEN CUT	165.00	LF		\$	
2230	15051		S FORCE MAIN PE/PLASTIC 04 INCH 4 IN	185.00	LF		\$	
2240	15059		S FORCE MAIN PVC 04 INCH	90.00	LF		\$	
2250	15068		S FORCE MAIN SPECIAL 14 IN	305.00	LF		\$	
2260	15073		S FORCE MAIN TIE-IN 04 INCH	1.00	EACH		\$	
2270	15092		S MANHOLE	13.00	EACH		\$	
2280	15093		S MANHOLE ABANDON/REMOVE	5.00	EACH		\$	
2290	15094		S MANHOLE ADJUST TO GRADE	15.00	EACH		\$	
2300	15112		S PIPE PVC 08 INCH	1,252.00	LF		\$	
2310	15119		S PUMP STATION	1.00	EACH		\$	
2320	15122		S STRUCTURE REMOVAL	1.00	EACH		\$	
2330	16015		G PIPE POLYETHYLENE/PLASTIC 02 INCH	310.00	LF		\$	
2340	16048		G TIE-IN SPECIAL	2.00	EACH		\$	
2350	16049		G VALVE POLYETHYLENE/PLASTIC 02 INCH	2.00	EACH		\$	
2360	16056		G VALVE SPECIAL	4.00	EACH		\$	
2370	16057		G VALVE STEEL 02 INCH	4.00	EACH		\$	
2380	16110		G PIPE POLYETHYLENE/PLASTIC 01 INCH	235.00	LF		\$	
2390	21233ED		ASPHALT PAVING REPLACEMENT	430.00	LF		\$	
2400	23667EC		WATER MAIN CREEK CROSSING 16 IN	240.00	LF		\$	
2410	23667EC		WATER MAIN CREEK CROSSING 24 IN	480.00	LF		\$	
2420	24441EC		GRAVEL REPLACEMENT DRIVEWAYS	130.00	LF		\$	

Section: 0010 - SIGNALIZATION

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0130	04792		CONDUIT-1 IN	50.00	LF		\$	
0140	04795		CONDUIT-2 IN	200.00	LF		\$	
0150	04820		TRENCHING AND BACKFILLING	100.00	LF		\$	
0160	04830		LOOP WIRE	1,650.00	LF		\$	
0170	04844		CABLE-NO. 14/5C	2,700.00	LF		\$	
0180	04850		CABLE-NO. 14/1 PAIR	1,000.00	LF		\$	
0190	04885		MESSENGER-10800 LB	400.00	LF		\$	
0200	04895		LOOP SAW SLOT AND FILL	620.00	LF		\$	

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LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0210	04931		INSTALL CONTROLLER TYPE 170	1.00	EACH		\$	
0220	04932		INSTALL STEEL STRAIN POLE	4.00	EACH		\$	
0230	20093NS835		INSTALL PEDESTRIAN HEAD-LED	8.00	EACH		\$	
0240	20188NS835		INSTALL LED SIGNAL-3 SECTION	8.00	EACH		\$	
0250	20266ES835		INSTALL LED SIGNAL- 4 SECTION	2.00	EACH		\$	
0260	21743NN		INSTALL PEDESTRIAN DETECTOR	8.00	EACH		\$	
0270	23157EN		TRAFFIC SIGNAL POLE BASE	17.00	CUYD		\$	
0280	23235EC		INSTALL PEDESTAL POST	4.00	EACH		\$	
0290	23982EC		INSTALL ANTENNA	1.00	EACH		\$	
0300	24955ED		REMOVE SIGNAL EQUIPMENT	1.00	EACH		\$	

Section: 0011 - LIGHTING

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0310	04740		POLE BASE	14.00	EACH		\$	
0320	04795		CONDUIT-2 IN	340.00	LF		\$	
0330	04820		TRENCHING AND BACKFILLING	2,600.00	LF		\$	
0340	20391NS835		ELECTRICAL JUNCTION BOX TYPE A	6.00	EACH		\$	
0350	21543EN		BORE AND JACK CONDUIT	200.00	LF		\$	
0360	24901EC		PVC CONDUIT-2 IN-SCHEDULE 80	2,800.00	LF		\$	

Section: 0012 - DEMOBILIZATION &/OR MOBILIZATION

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0370	02568		MOBILIZATION	1.00	LS		\$	
0380	02569		DEMOBILIZATION	1.00	LS		\$	

TRANSPORTATION CABINET DEPARTMENT OF HIGHWAYS

CLAY COUNTY

KY 2432 OVER GOOSE CREEK

STA. 52+38.55

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S8	PIER #1
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69 Embankment at Bridge End Bent Structures

STANDARD DRAWINGS

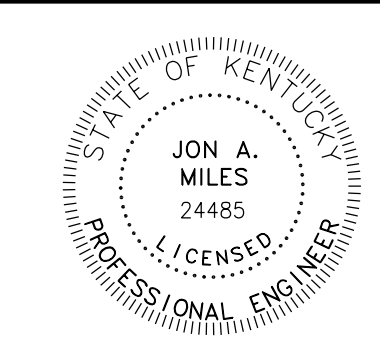
BBP-001-12	Elastomeric Bearing Pads for Prestressed Beams
BBP-002-04	Bearing Details
BGX-006-10	Stencils for Structures
BGX-012-02	Geotechnical Legend
BGX-015-03	Bridge Drains
BJE-001-13	Neoprene Expansion Dams and Armored Edges
BPS-009-08	HP14x73 Steel Pile

SPECIFICATIONS

2012 Standard Specifications for Road and Bridge Construction.
2010 AASHTO LRFD Bridge Design Specifications with Current Interims.

ESTIMATE OF QUANTITIES

BID ITEM CODE	02231		02998		03299		08001		08019		08033		08039		08050		08095		08100		08104		08150		08151		08633		08635		23813EC		20637ED		21119ED		23168ED		217777EM		20745ED		20746ED			
	BID ITEM	Structure Granular Backfill	Masonry Coating	Armored Edge for Concrete	Structure Excavation, Common	Cyclopean Stone Rip Rap	Test Piles	Pre-Drilling for Piles	Piles - Steel HP 14 x 73	Pile Points 14"	Concrete Class "A"	Concrete Class "AA"	Steel Reinforcement	Steel Reinforcement, Epoxy Coated	Precast PC I Beam Type 3	Precast PC I Beam Type 6	Deck Drains	Drilled Shaft Rock - 48 in.	Concrete Form Liner	Concrete Staining	Drilled Shaft Common - 54 in.	Rock Sounding	Rock Coring																							
UNIT	C.Y.	S.Y.	L.F.	C.Y.	Tons	L.F.	L.F.	L.F.	EACH	C.Y.	C.Y.	LBS.	LBS.	LF.	LF.	EACH	LF.	S.Y.	S.Y.	LF.	LF.	LF.	LF.																							
Substructure	END BENT #1	125	14.3		119	1094	15	70		60	7	31.4	3604	1286																																
	PIER #1		146.8		15							77.1	17705					28	129	129	52	52	76																							
	PIER #2		147.8									96.0	21663					32	178	178	34	36	80																							
	END BENT #2	125	14.3			971	33			165	7	31.4	3604	1280																																
Superstructure			634	93							40.7	655.7	3343	106283	968	873	22		425	630																										
BRIDGE TOTALS		250	957.2	93	134	2065	48	70	225	14	276.6	655.7	49919	108849	968	873	22	60	732	937	86	88	156																							



QUANTITY ADDITION/REVISION		12/01/2017
REVISION		DATE
DATE: 9-29-2017	CHECKED BY	
DESIGNED BY: D. CARPENTER	J. MILES	
DETAILED BY: J. BURT	J. MILES	

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY
CLAY

ROUTE **KY 2432** CROSSING **GOOSE CREEK**

TITLE

PREPARED BY
AEI
2500 Nelson Miller Parkway
Louisville, KY 40223
(502) 245-3813
AMERICAN ENGINEERS, INC.
PROFESSIONAL ENGINEERING

SHEET NO.
S1
DRAWING NO.
27581

ITEM NUMBER
11-8001

FILE NAME: T:\KYTC\13 PROJECTS\213-217 CLAY CO KY 2432 ITEM 11-8001\STRUCTURES\STA. 52+00 KY 2432 BRIDGE\FINAL PLANS\1-TITLE.DGN
 USER: sbr/rls DATE PLOTTED: September 28, 2017
 E-SHEET NAME: MicroStation v8.11.7.443
 CONSTRUCTION PROJECT NO.
 LETTING DATE

TRANSPORTATION CABINET DEPARTMENT OF HIGHWAYS

CLAY COUNTY

KY 2432 OVER GOOSE CREEK

STA. 52+38.55

INDEX OF SHEETS

Sheet No.	Description
S1	TITLE
S2	GENERAL NOTES
S3	LAYOUT
S4-S5	SOUNDING LAYOUT
S6	FOUNDATION LAYOUT
S7	ENDBENT #1
S8	PIER #1
S9	PIER #2
S10	ENDBENT #2
S11	BILL OF REINFORCEMENT
S12	FRAMING PLAN
S13-S15	FRAMING DETAILS
S16-S17	BEAM SHEET
S18	SUPERSTRUCTURE SLAB
S19	SUPERSTRUCTURE DIAPHRAGM E.B. #1
S20	SUPERSTRUCTURE DIAPHRAGM E.B. #2
S21	SUPERSTRUCTURE BILL OF REINFORCEMENT
S22-S23	CONSTRUCTION ELEVATIONS
S24-S25	ARCHITECTURAL FEATURES
S26	BARRIER WALL

SPECIAL NOTES

SPECIAL NOTE FOR DRILLED SHAFTS

SPECIAL PROVISIONS

69 Embankment at Bridge End Bent Structures

STANDARD DRAWINGS

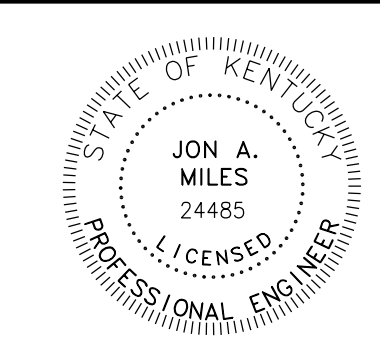
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DATE: 9-29-2017	CHECKED BY	
DESIGNED BY: D. CARPENTER	J. MILES	
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Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY
CLAY

ROUTE **KY 2432** CROSSING **GOOSE CREEK**

TITLE

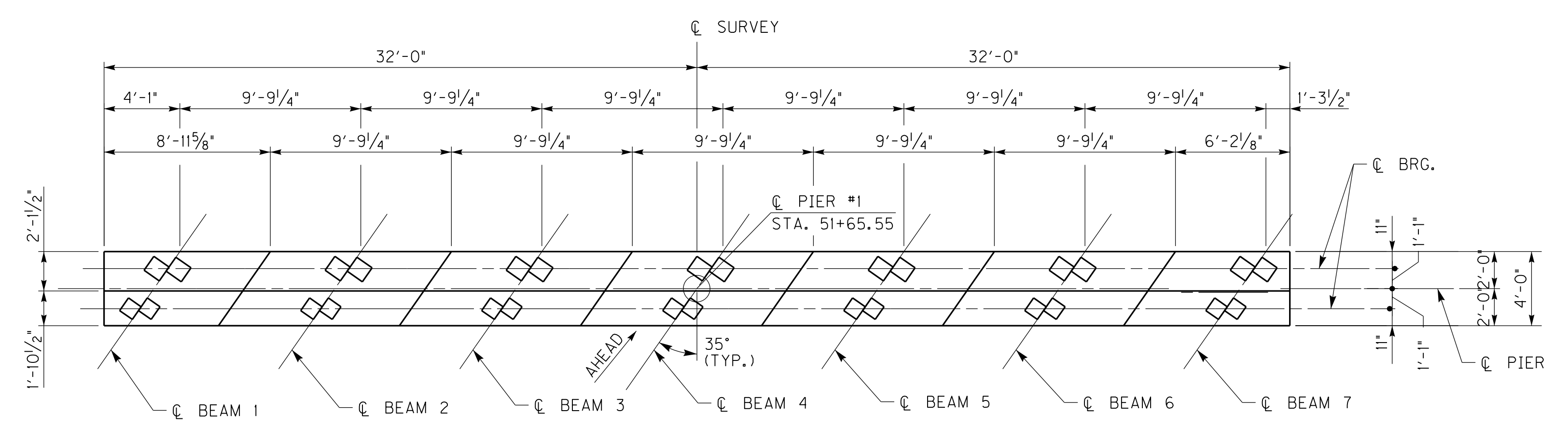
ITEM NUMBER
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PREPARED BY
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2500 Nelson Miller Parkway
Louisville, KY 40223
(502) 245-3813
AMERICAN ENGINEERS, INC.
PROFESSIONAL ENGINEERING
www.aei.cc

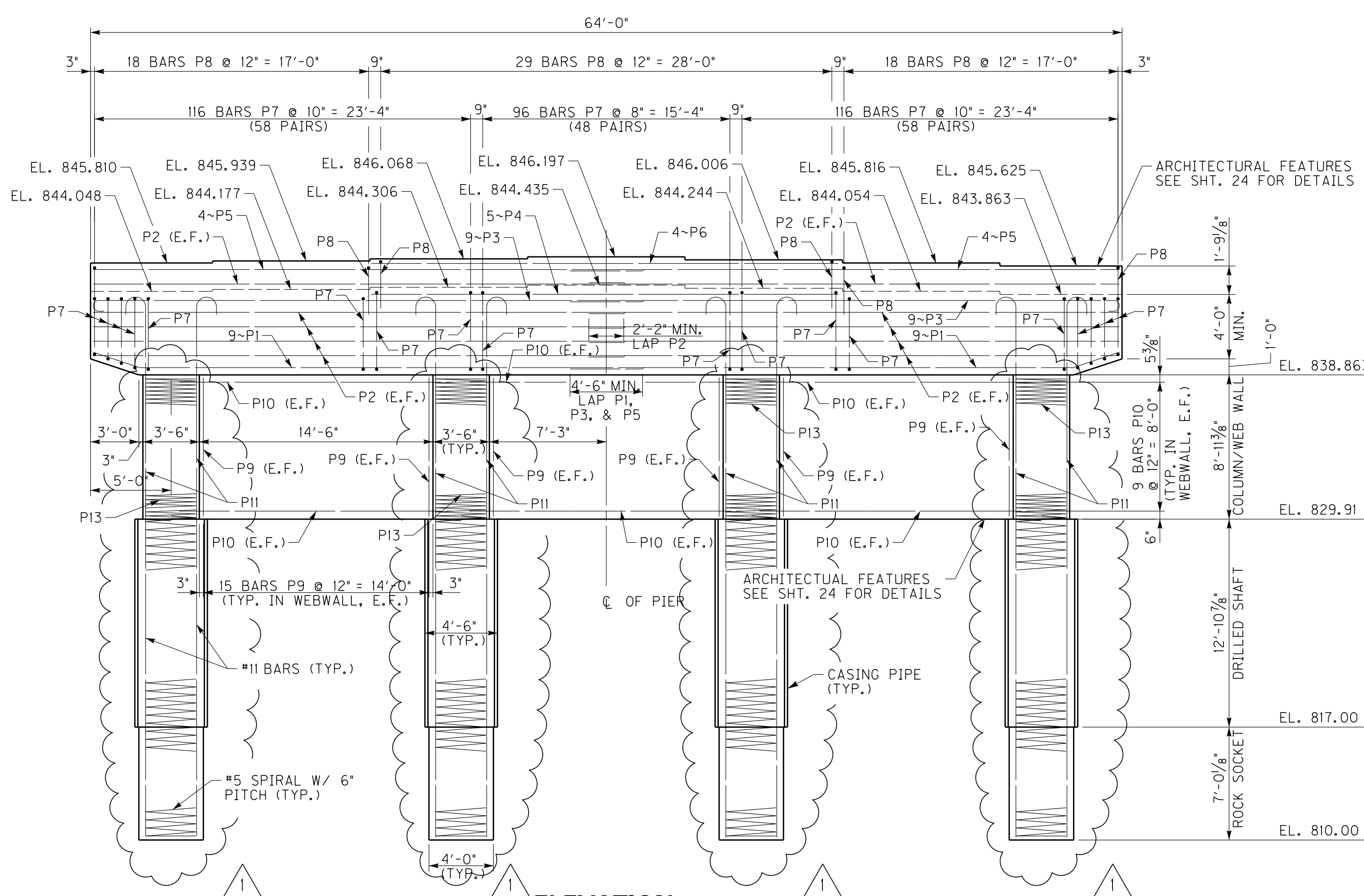
SHEET NO.
S1
DRAWING NO.
27581

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 DATE PLOTTED: December 5, 2017
 E-SHEET NAME:
 MicroStation v8.11.7.443
 CONSTRUCTION PROJECT NO.
 LETTING DATE

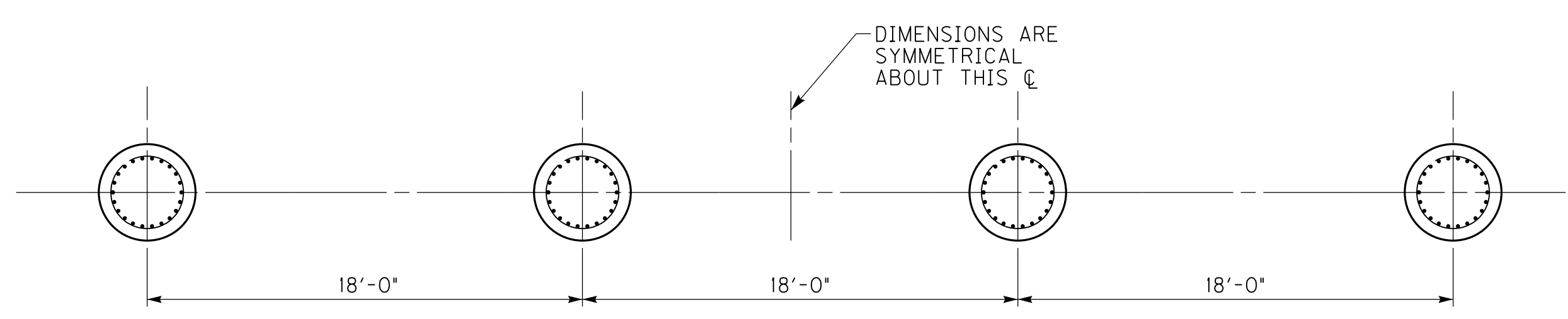
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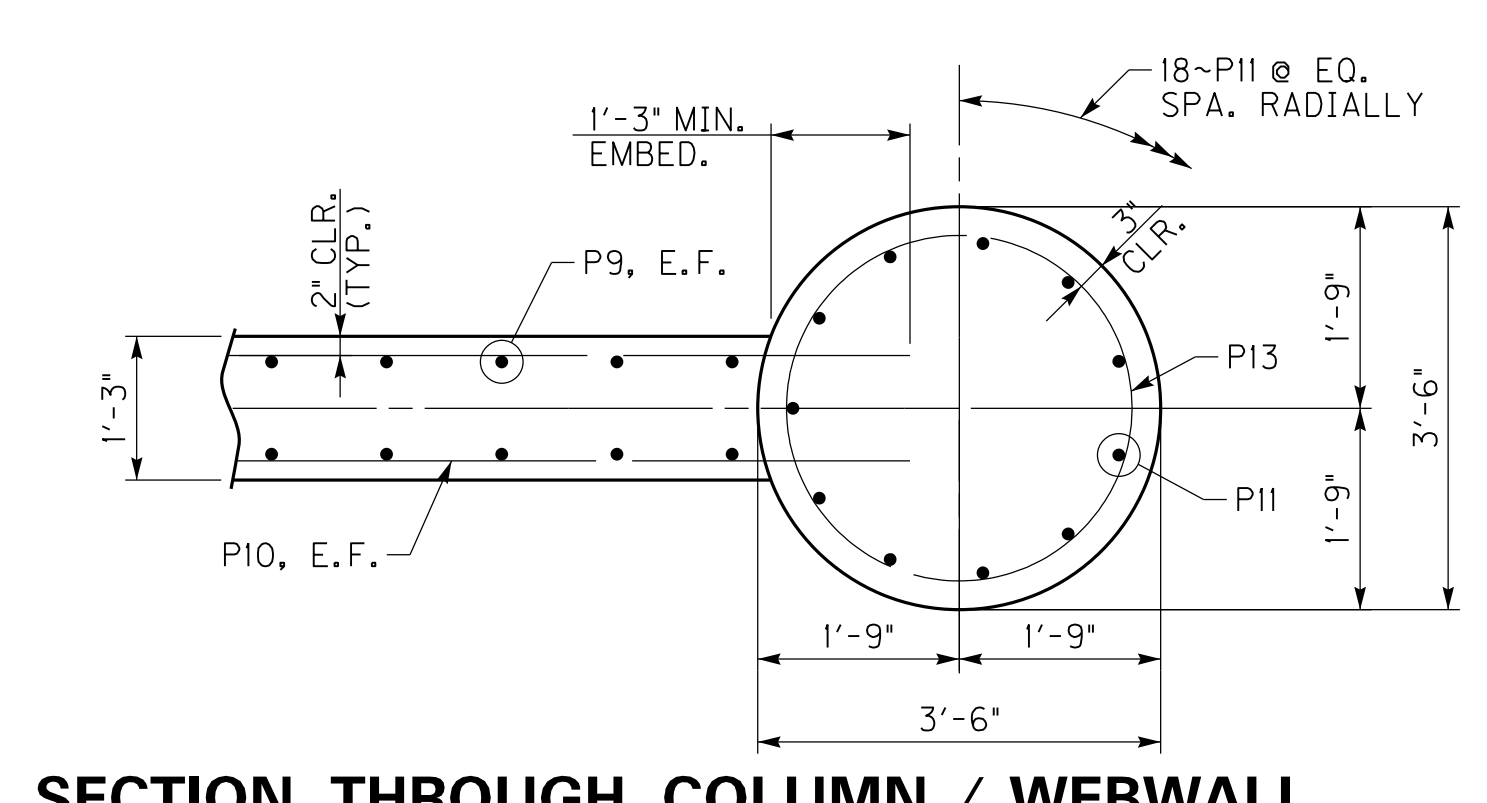
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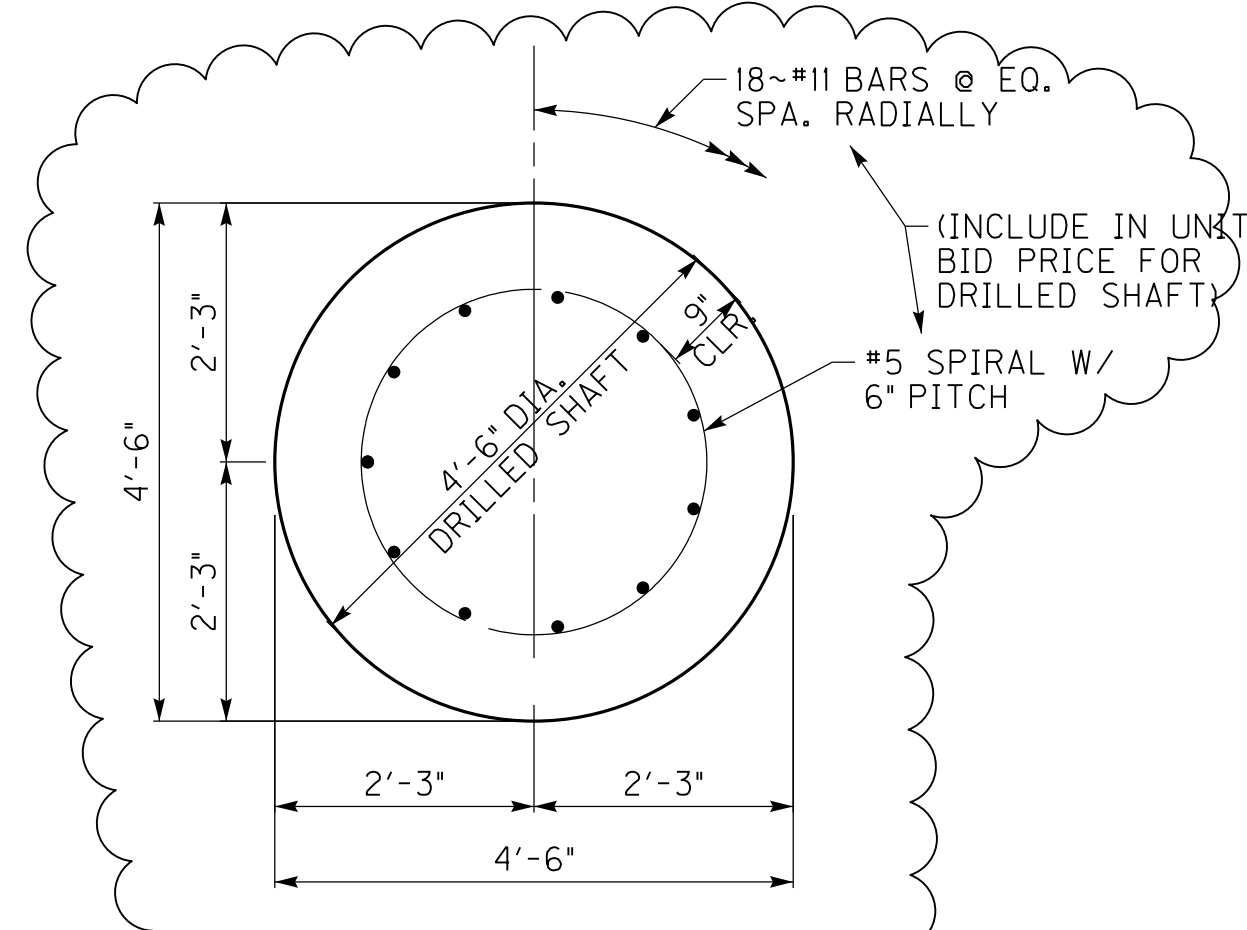
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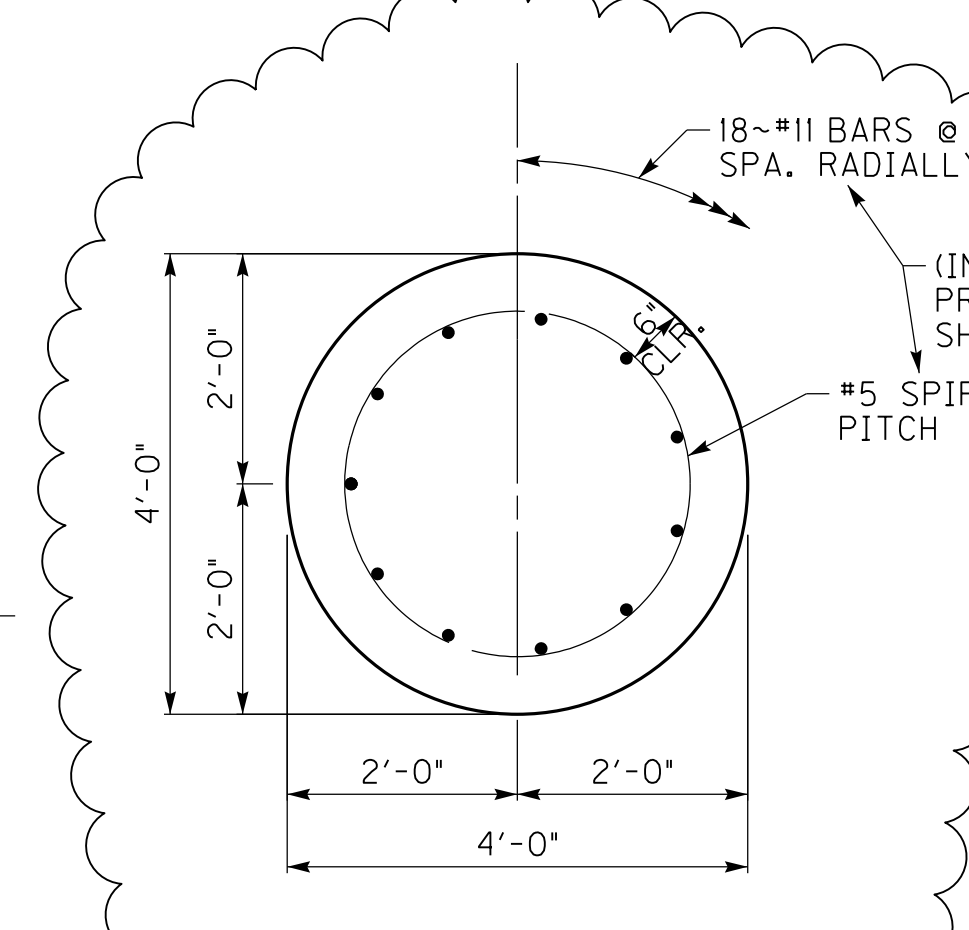
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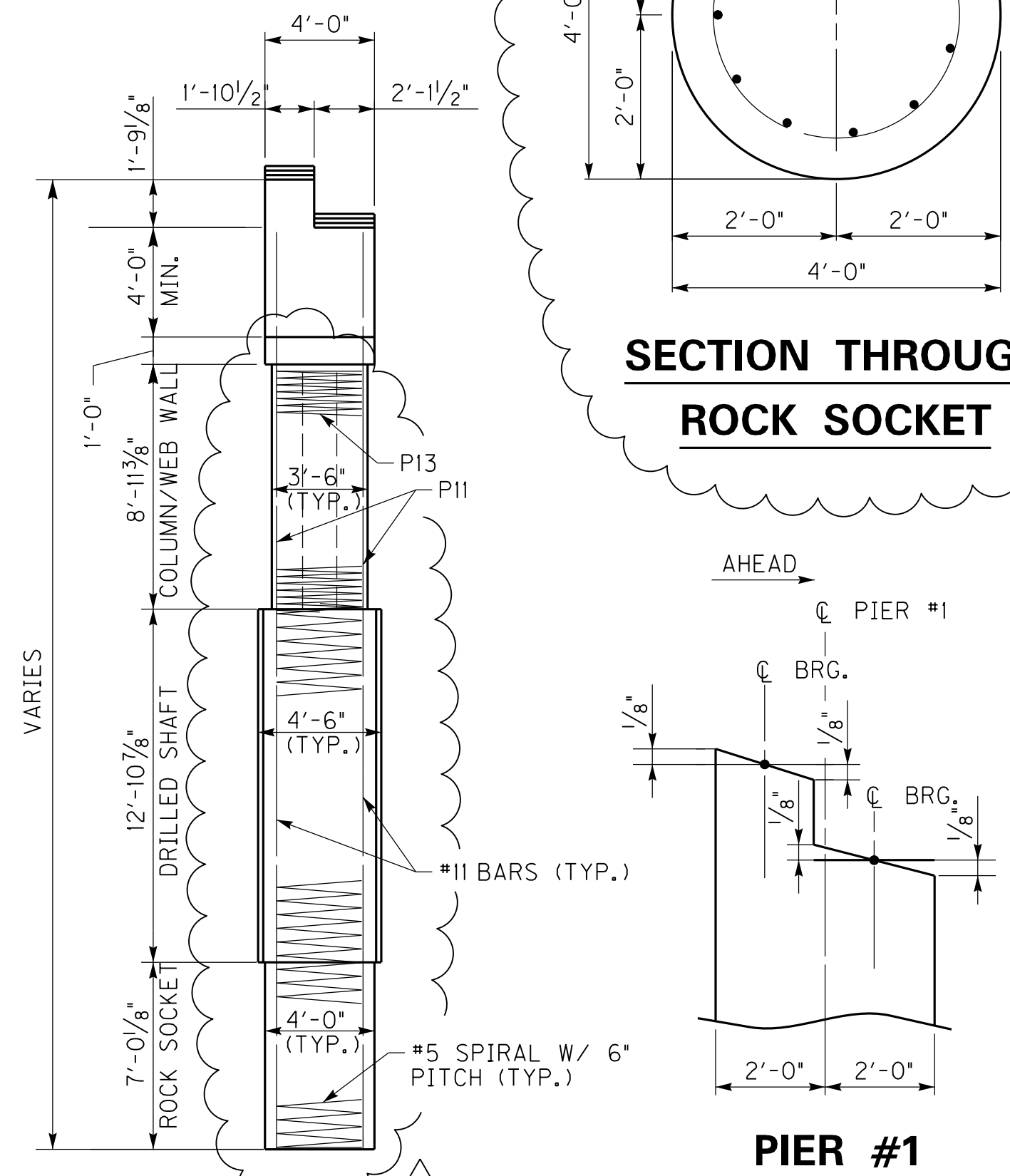
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SECTION THROUGH DRILLED SHAFTS

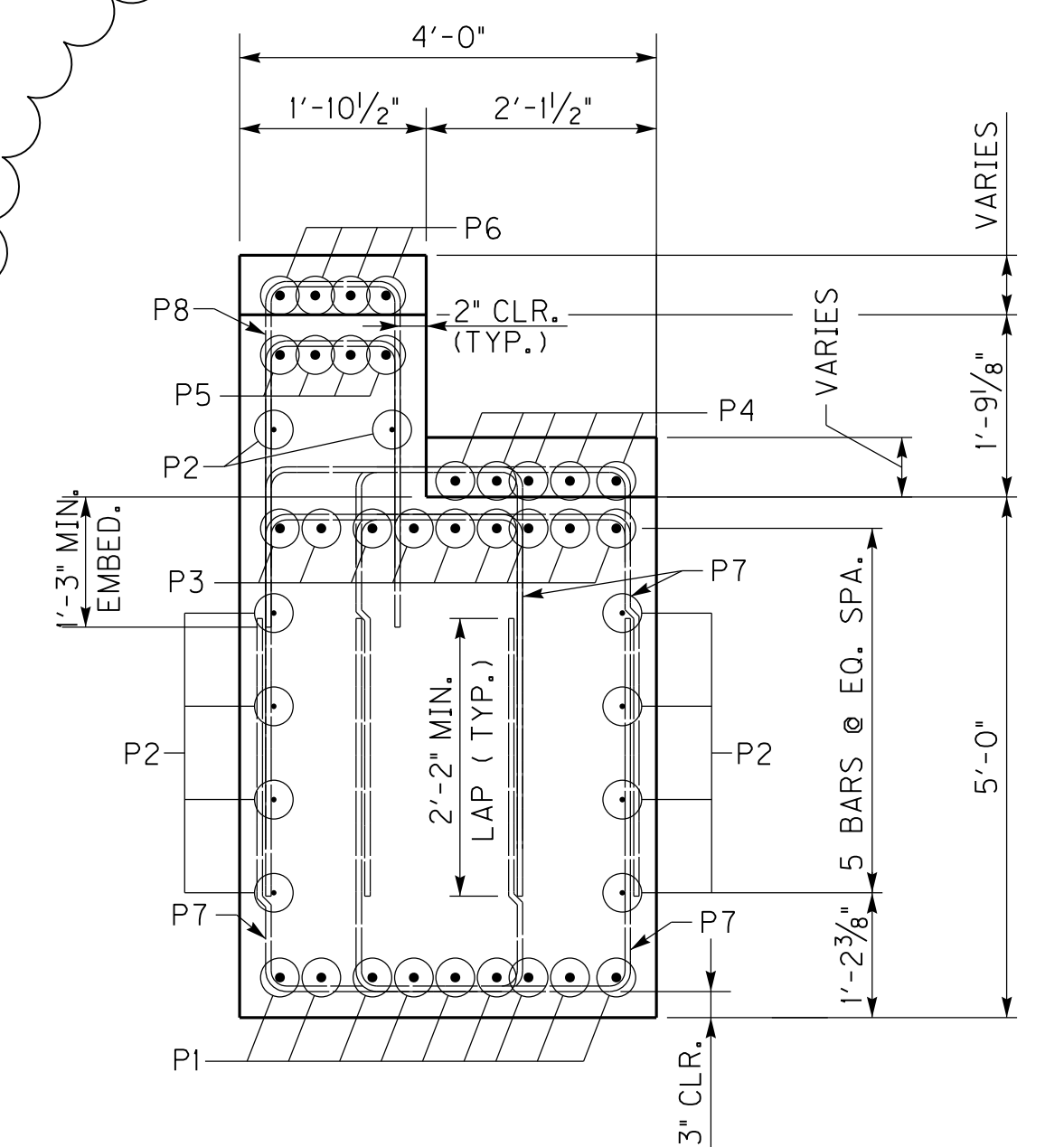


SECTION THROUGH ROCK SOCKET



END ELEVATION

PIER #1 SLOPE DETAIL



CAP SECTION

WHERE FABRICATION, TRANSPORTATION OR CONSTRUCTION CONDITIONS NECESSITATE BAR LENGTHS SHORTER THAN SHOWN IN PLANS, BARS SHALL BE SPLICED USING MECHANICAL COUPLERS. WHERE USED, NO MORE THAN 1/3 OF THE BARS SHALL BE SPLICED IN ANY ONE PLANE AND MINIMUM OF 36 INCHES CLEAR BETWEEN COUPLERS IN PARALLEL PLANES SHALL BE MAINTAINED. COUPLERS SHALL BE INCIDENTAL TO THE REINFORCEMENT.

DRILLED SHAFT CONSTRUCTION METHOD: THE CONTRACTOR SHALL CONSTRUCT THE DRILLED SHAFTS ACCORDING TO THE SPECIAL NOTE FOR DRILLED SHAFTS.

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Δ	DRILLED SHAFT REVISION	12/01/2017
	REVISION	DATE
	DATE: 09/29/2017	CHECKED BY: J. MILES
	DESIGNED BY: D. CARPENTER	J. MILES
	DETAILED BY: J. BURT	J. MILES

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY
CLAY

ROUTE: **KY 2432** CROSSING: **GOOSE CREEK**

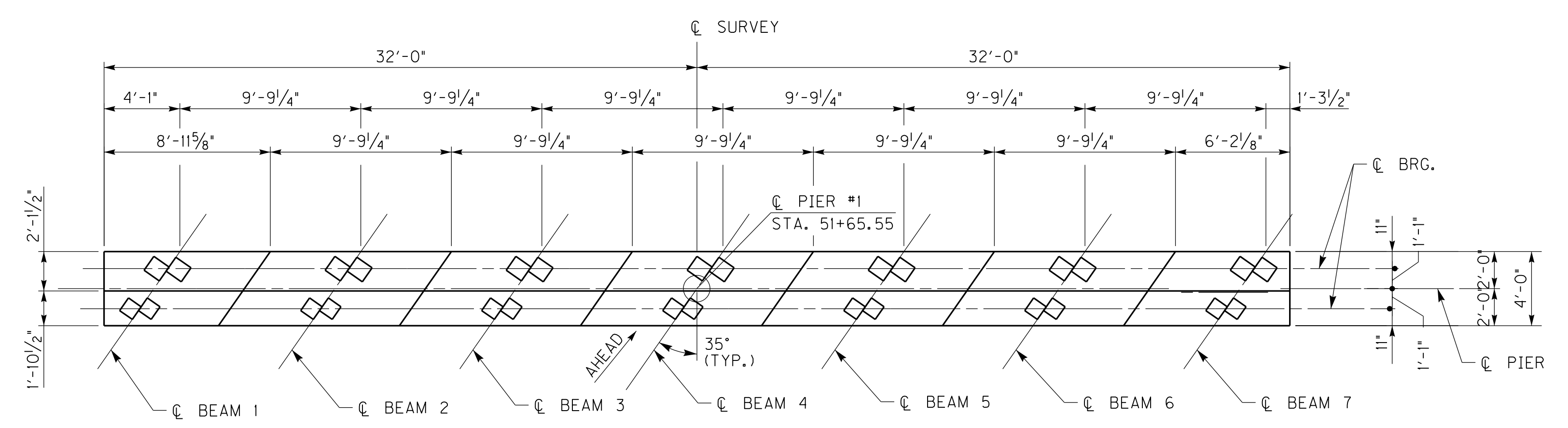
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ITEM NUMBER
11-8001

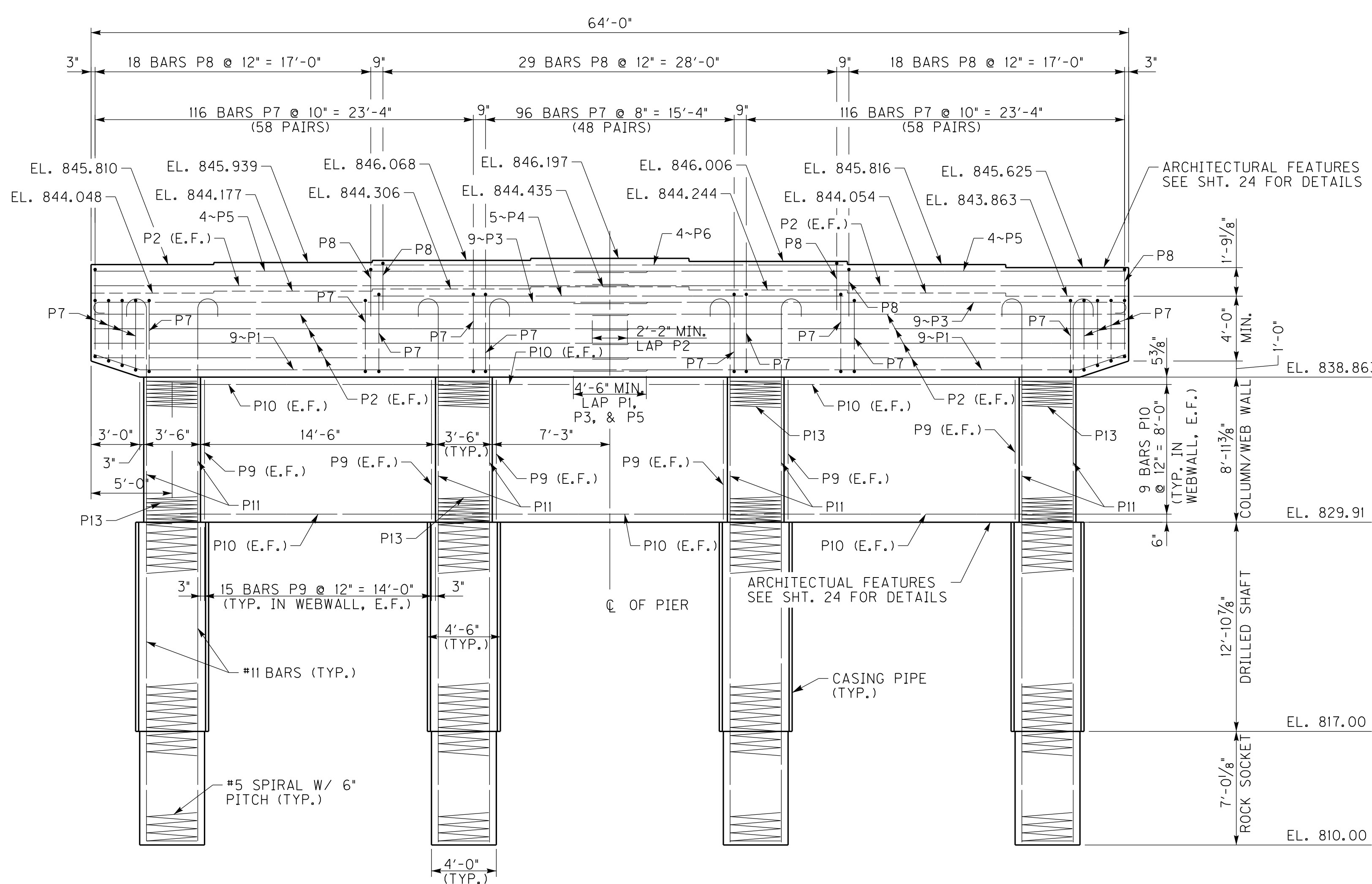
PREPARED BY
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 2500 Nelson Miller Parkway
 Louisville, KY 40223
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AMERICAN ENGINEERS, INC.
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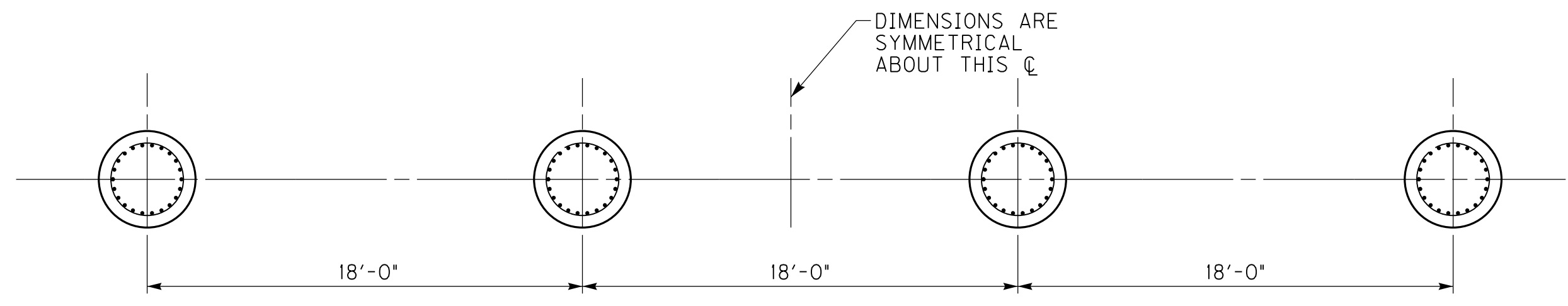
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 USER: jbur+
 DATE PLOTTED: December 5, 2017
 E-SHEET NAME: MicroStation v8.11.7.443



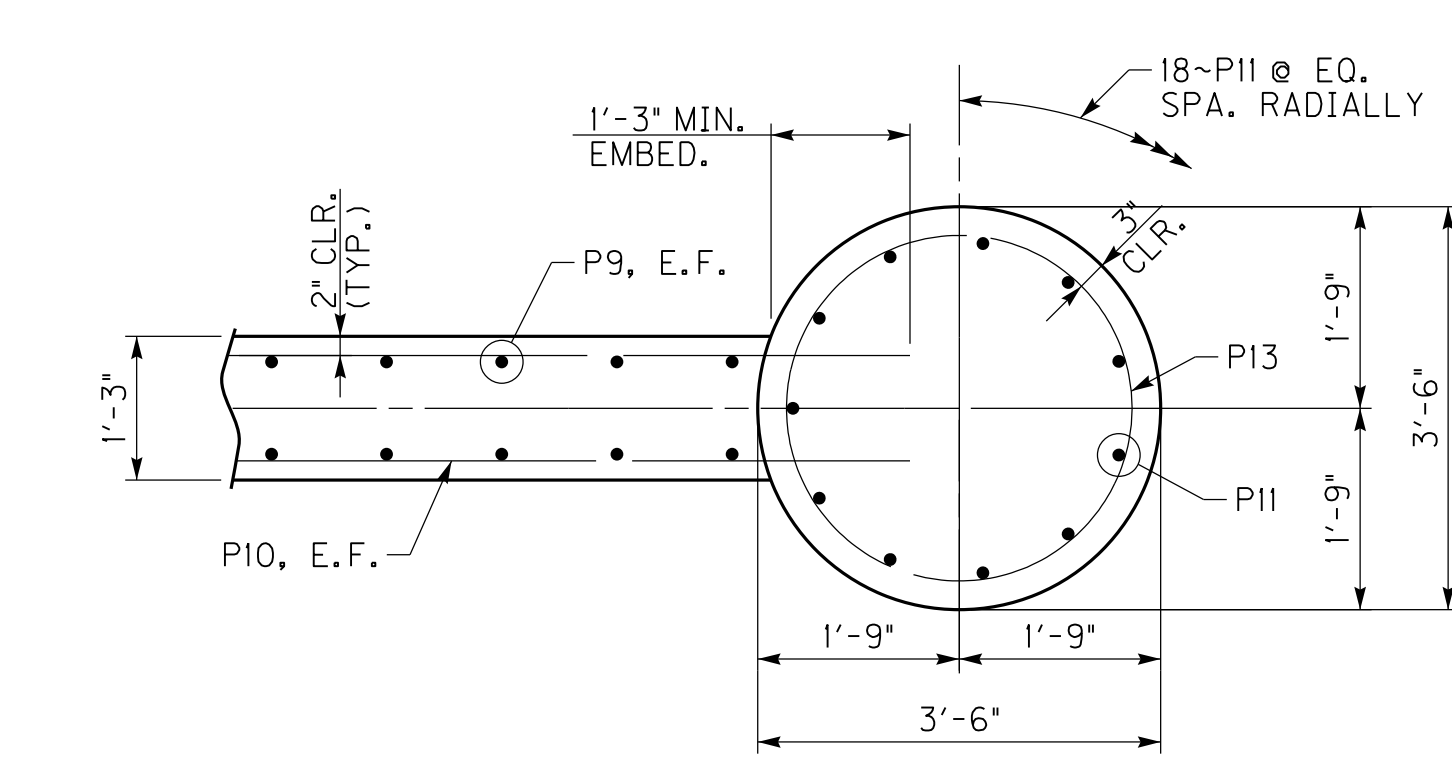
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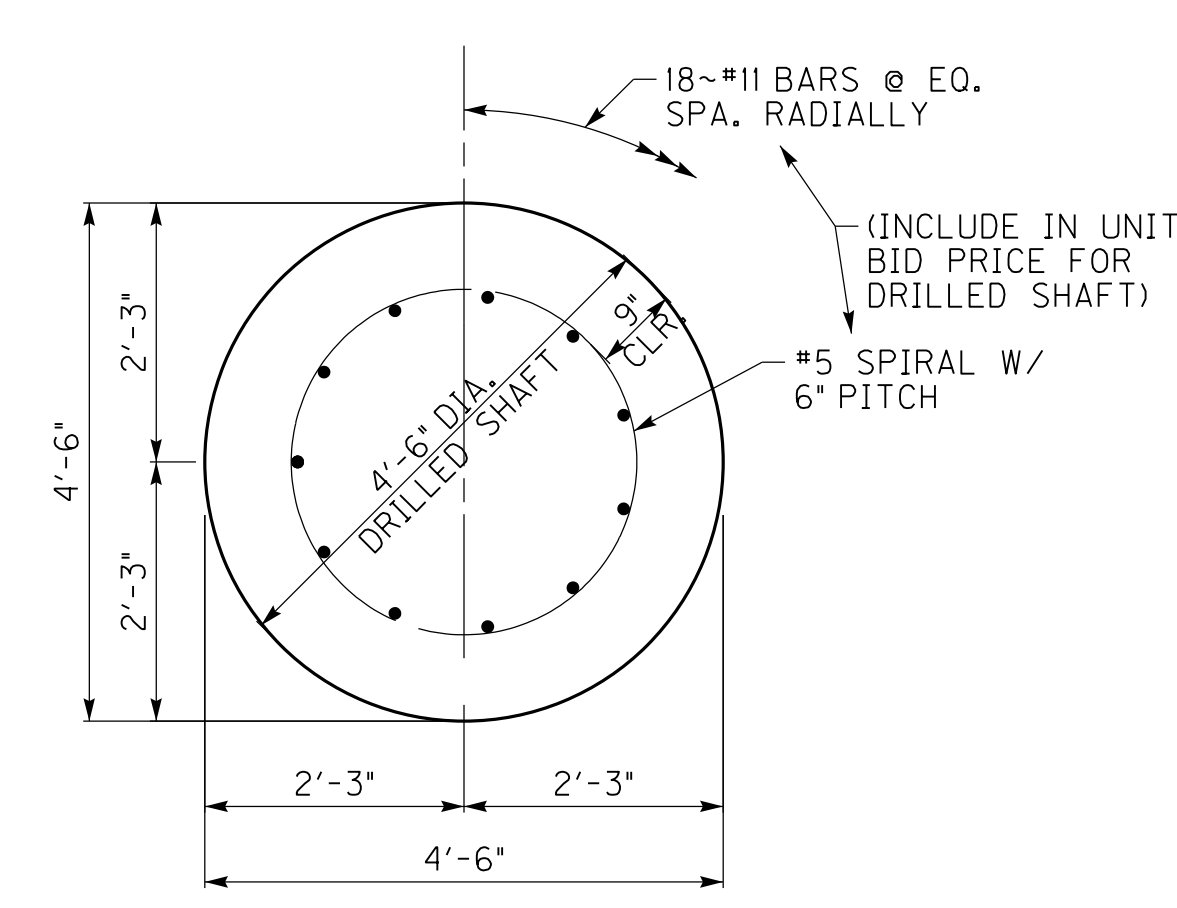
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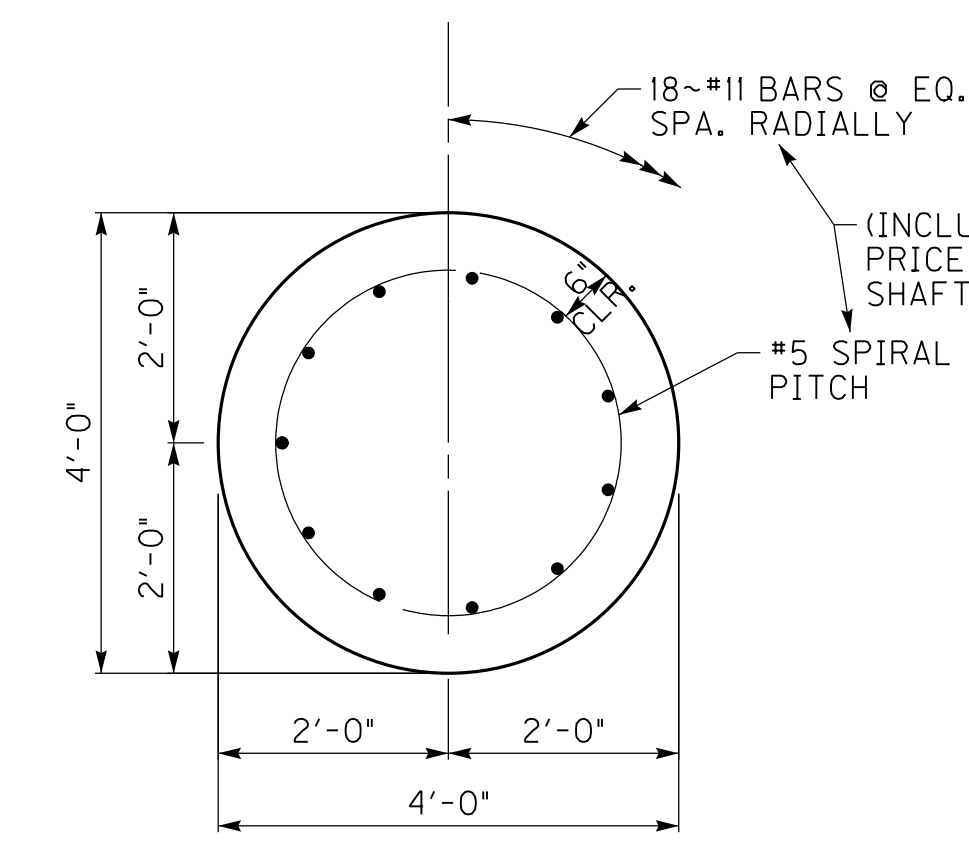
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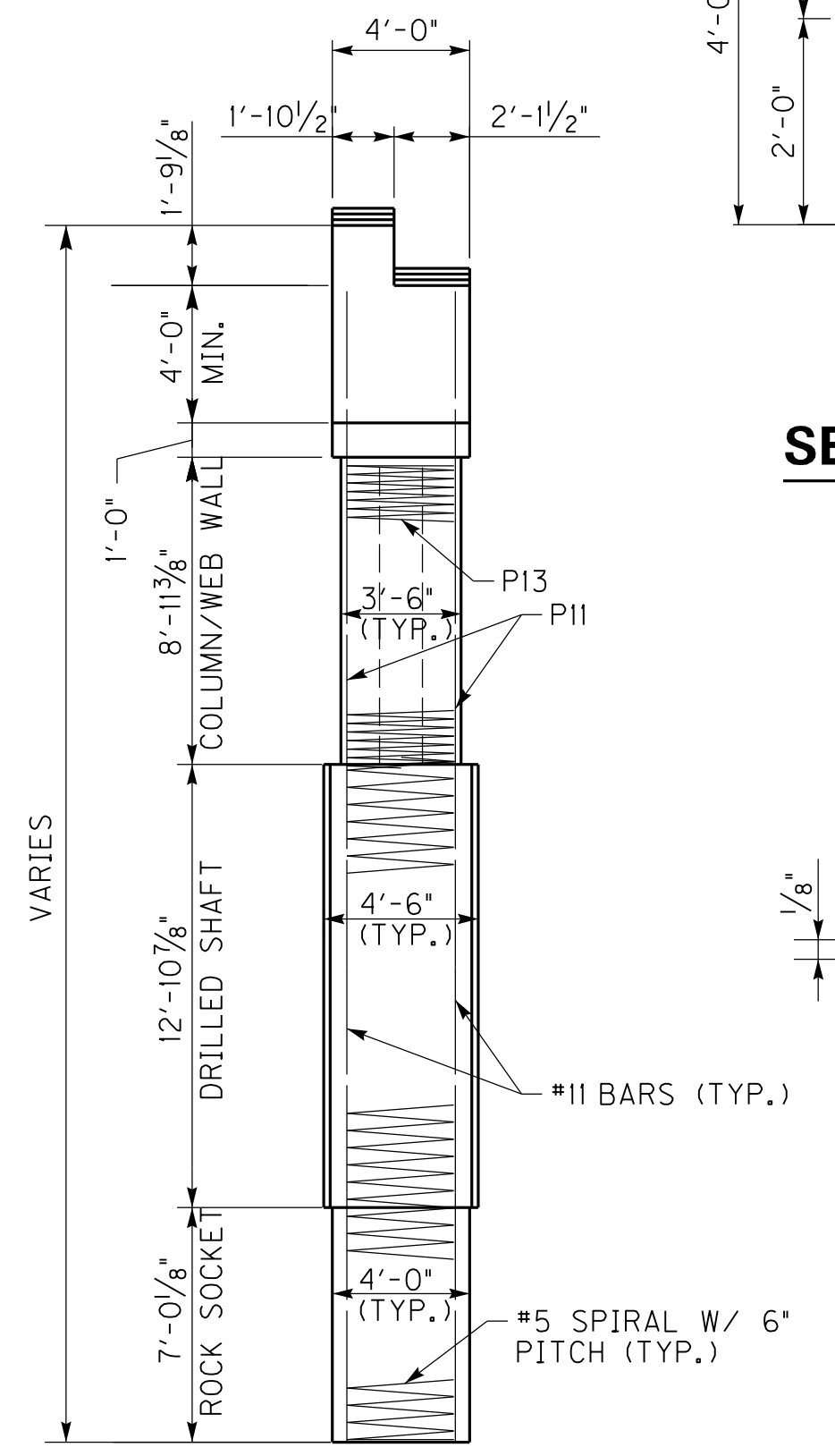
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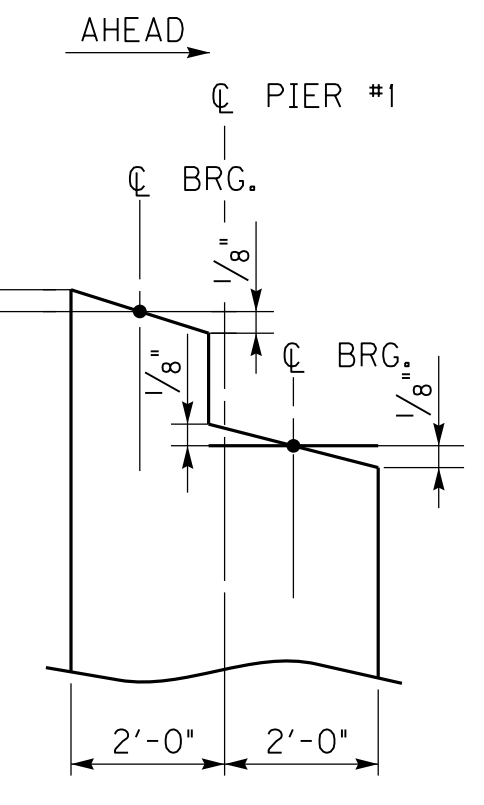
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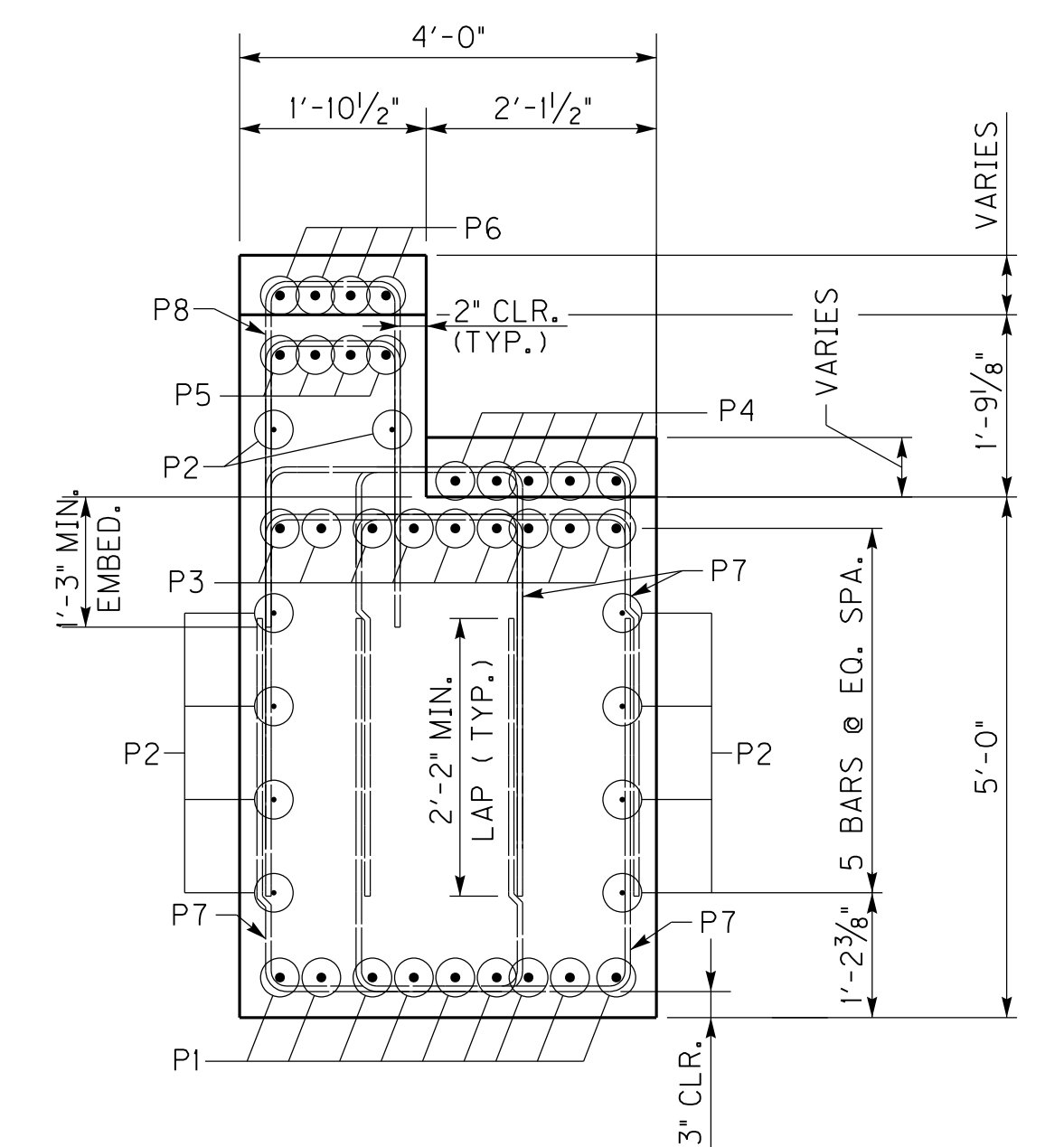
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END ELEVATION



PIER #1 SLOPE DETAIL



CAP SECTION

WHERE FABRICATION, TRANSPORTATION OR CONSTRUCTION CONDITIONS NECESSITATE BAR LENGTHS SHORTER THAN SHOWN IN PLANS, BARS SHALL BE SPLICED USING MECHANICAL COUPLERS. WHERE USED, NO MORE THAN 1/3 OF THE BARS SHALL BE SPLICED IN ANY ONE PLANE AND MINIMUM OF 36 INCHES CLEAR BETWEEN COUPLERS IN PARALLEL PLANES SHALL BE MAINTAINED. COUPLERS SHALL BE INCIDENTAL TO THE REINFORCEMENT.

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ITEM NUMBER	11-8001
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DATE: 09/29/2017	CHECKED BY: J. MILES
DESIGNED BY: D. CARPENTER	J. MILES
DETAILED BY: J. BURT	J. MILES

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY
CLAY

ROUTE
KY 2432

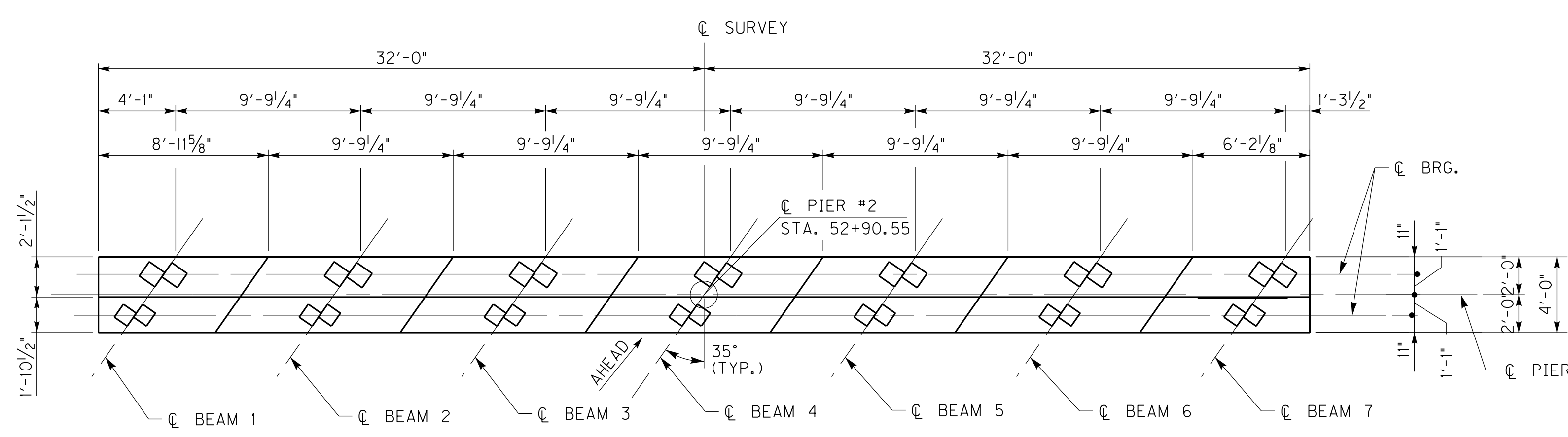
CROSSING
GOOSE CREEK

PIER #1

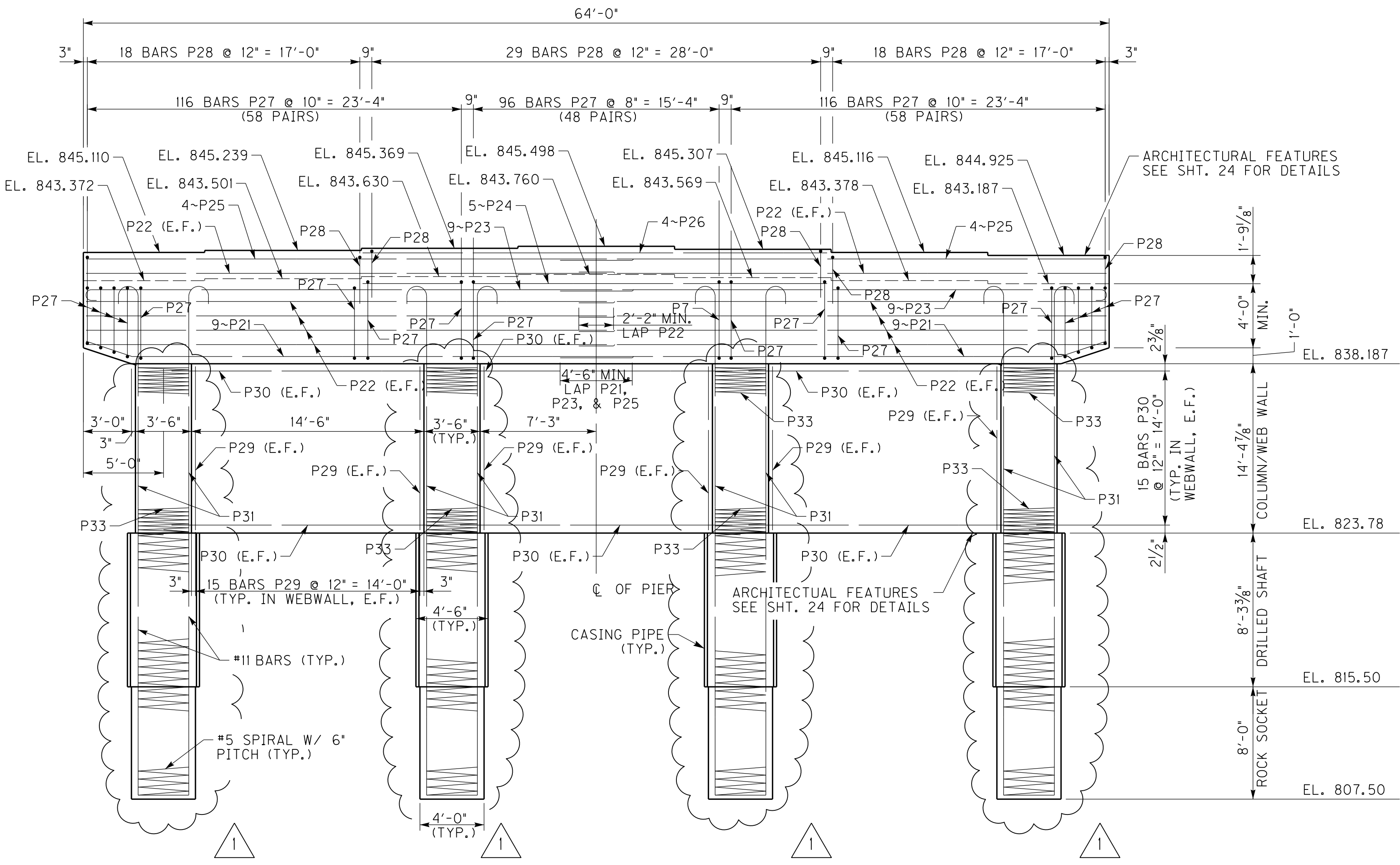
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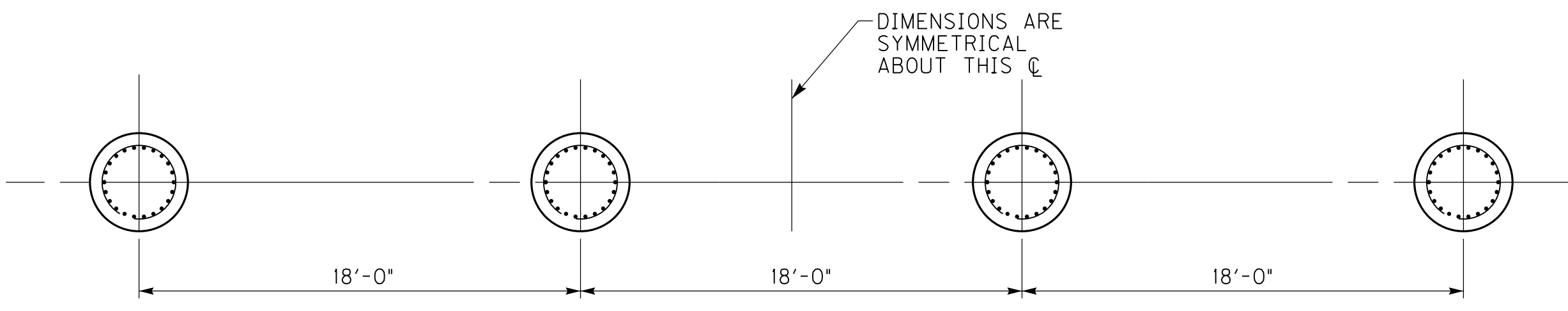
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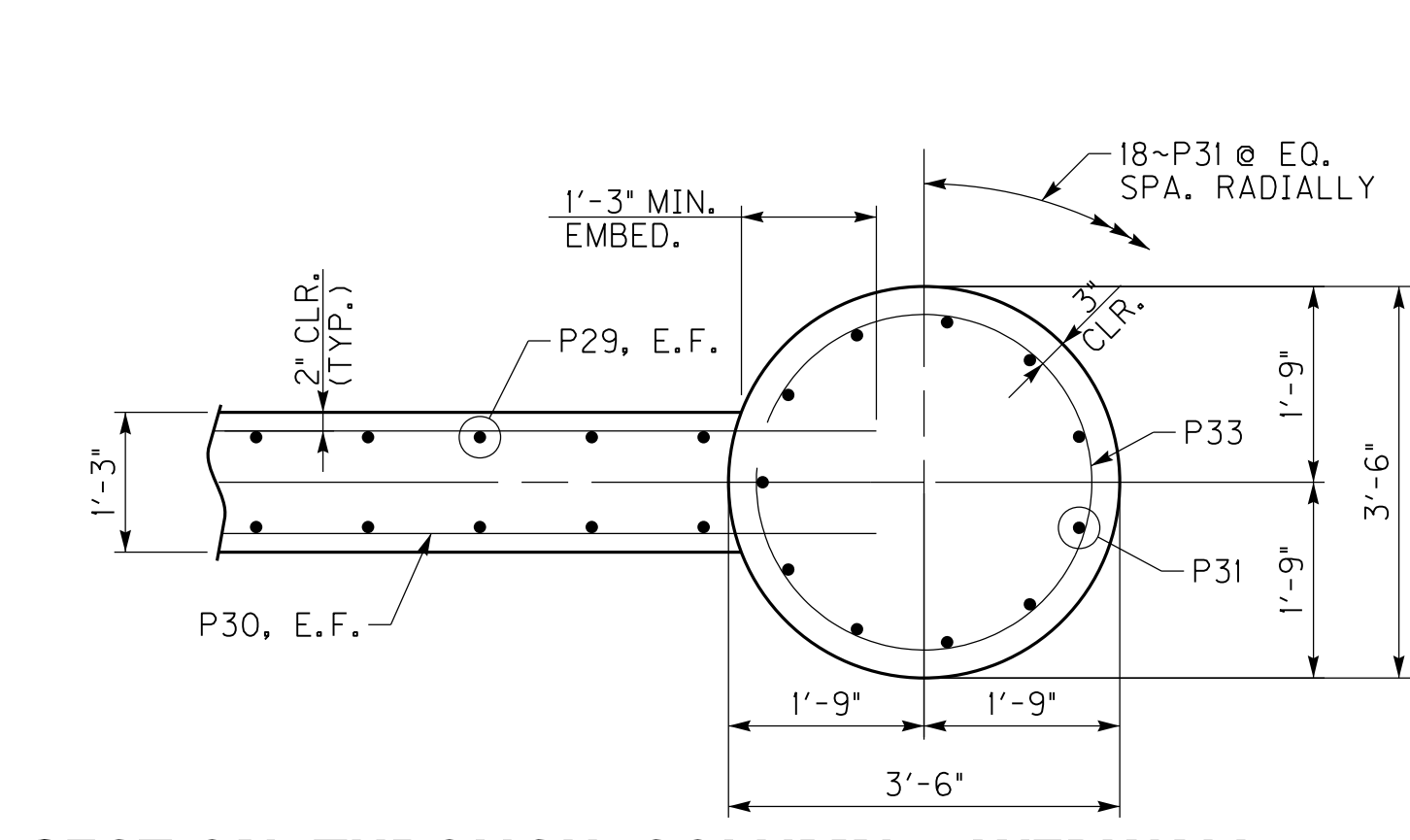
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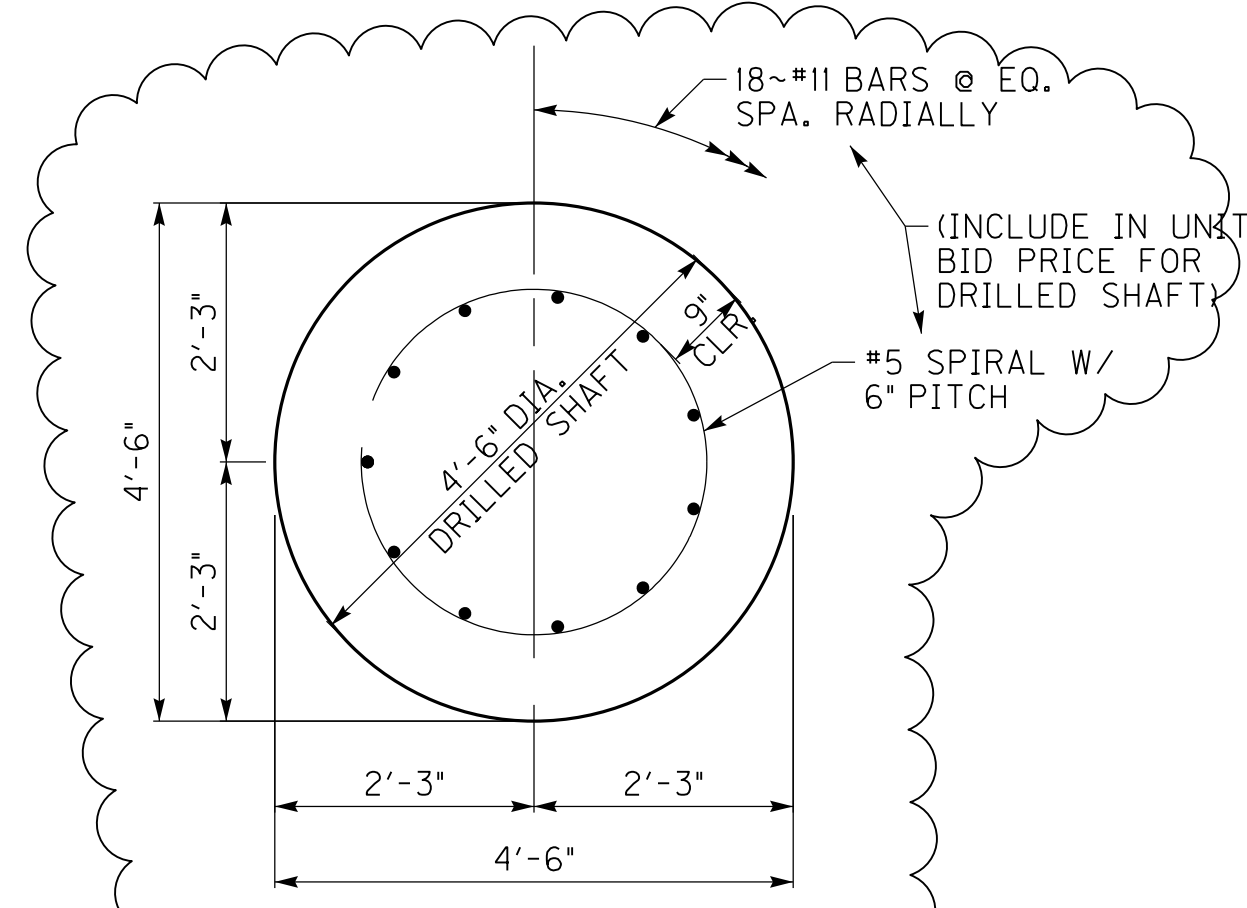
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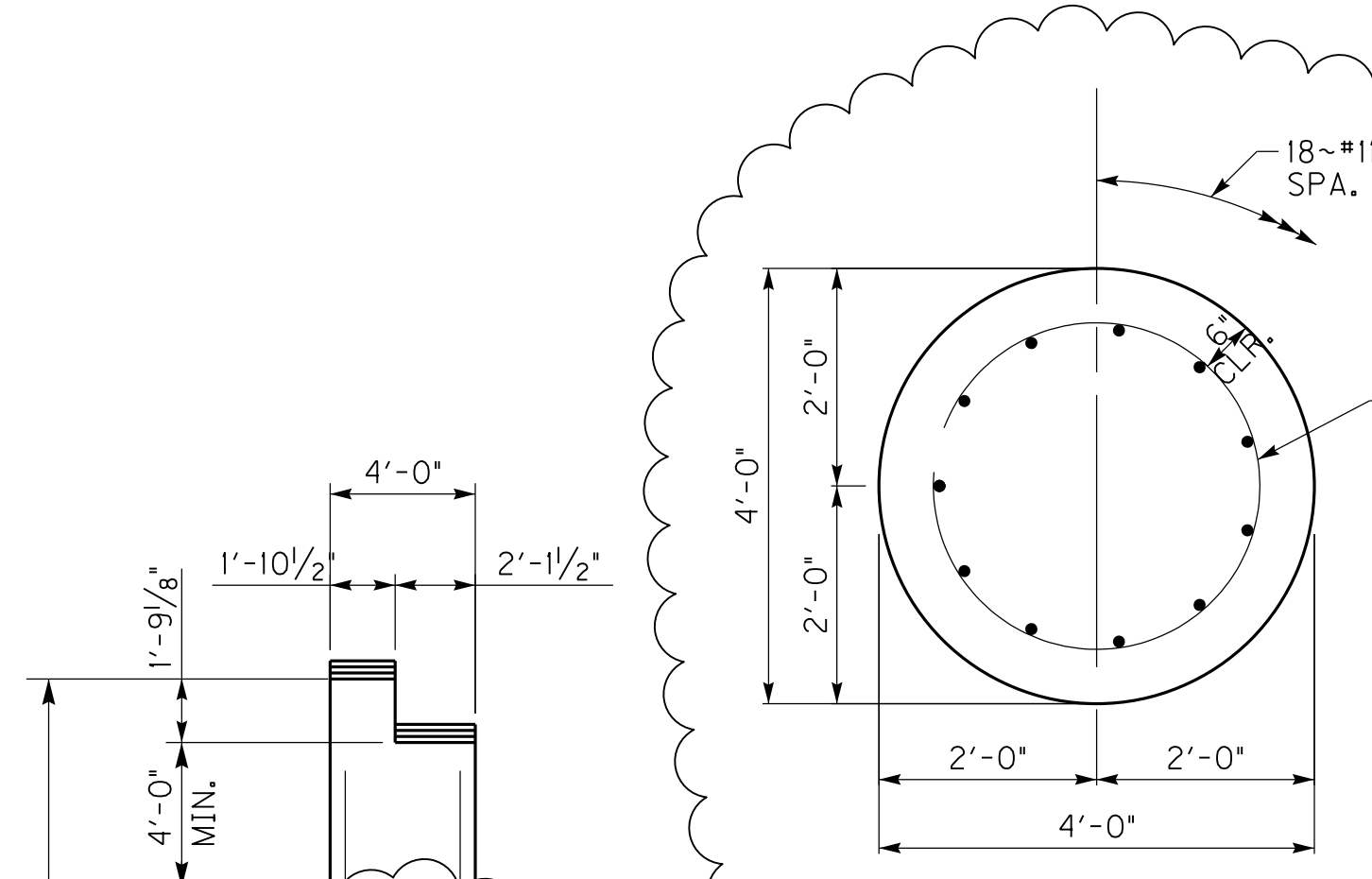
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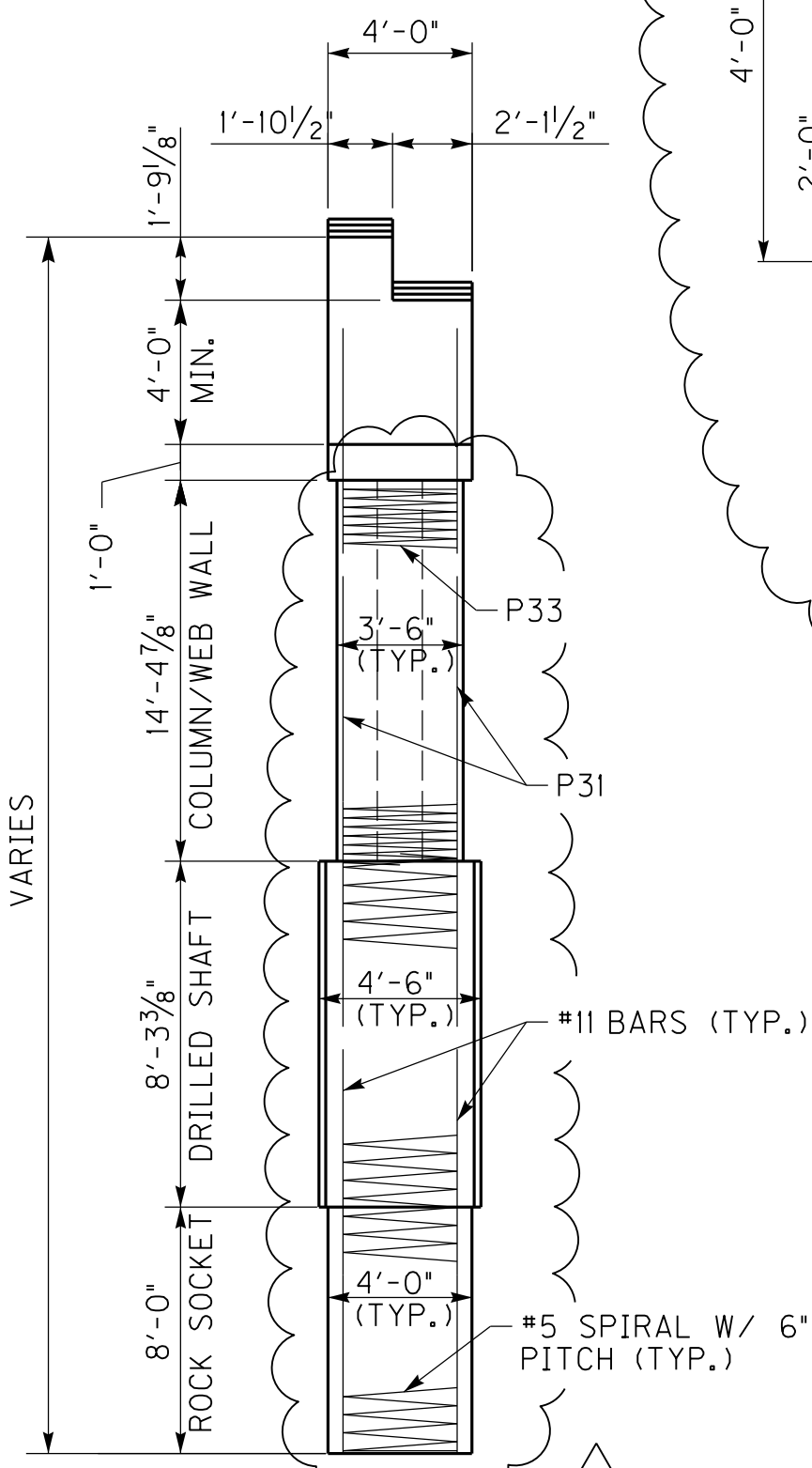
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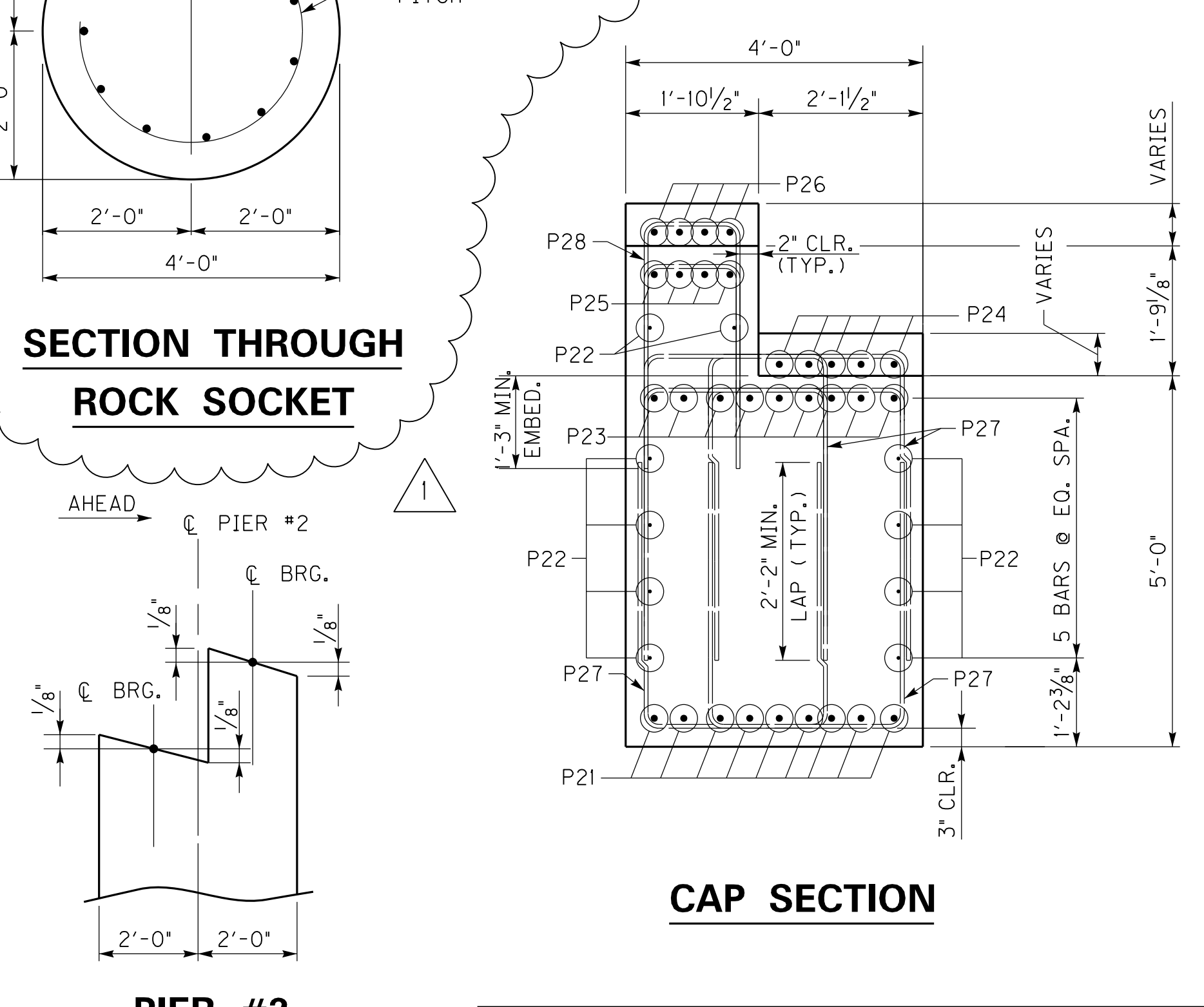
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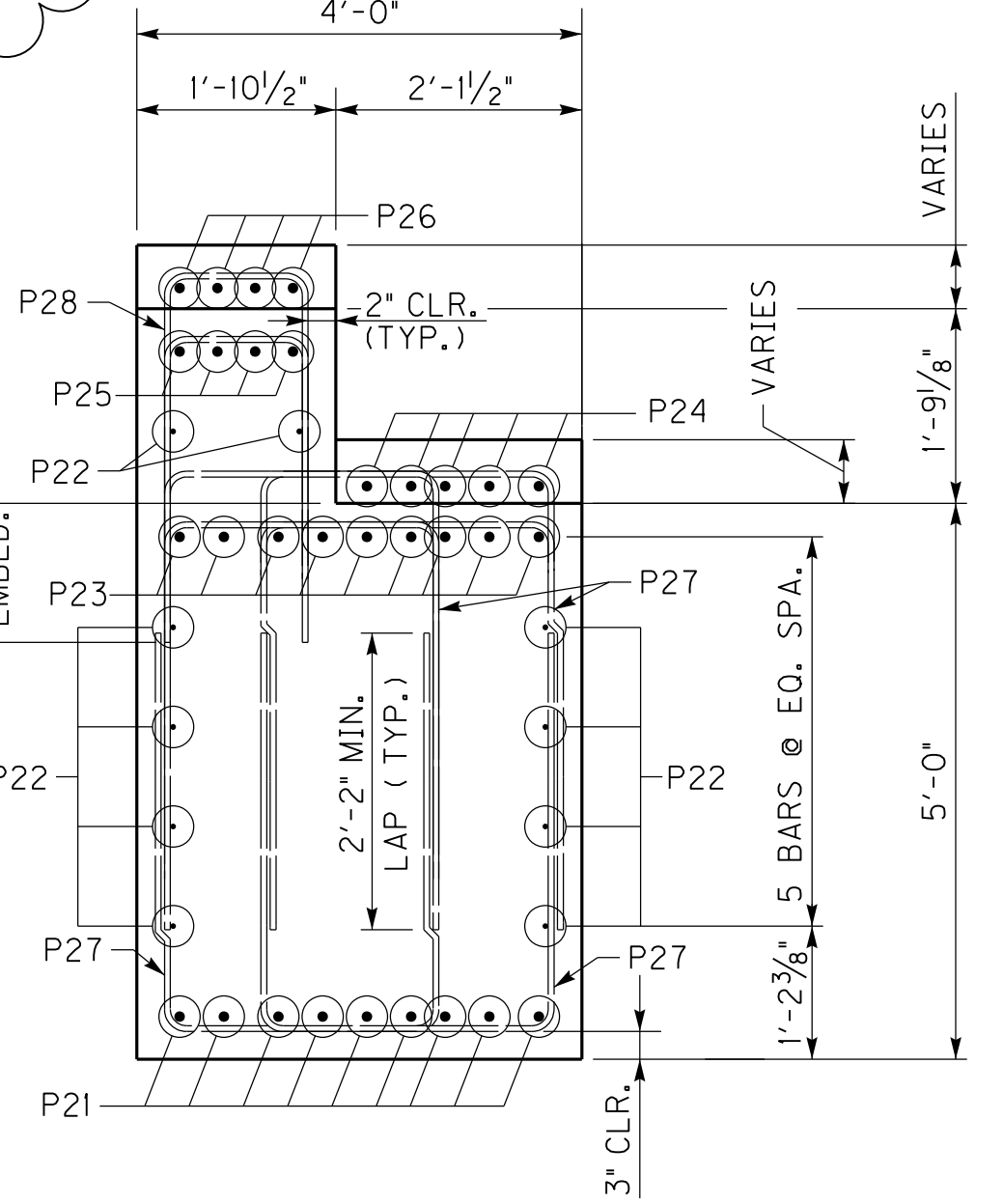
SECTION THROUGH ROCK SOCKET



END ELEVATION



PIER #2 SLOPE DETAIL



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COMMONWEALTH OF KENTUCKY DEPARTMENT OF HIGHWAYS COUNTY CLAY	
ROUTE KY 2432	CROSSING GOOSE CREEK
PIER #2	
PREPARED BY AEI AMERICAN ENGINEERS, INC. PROFESSIONAL ENGINEERING	SHEET NO. 27581 DRAWING NO.

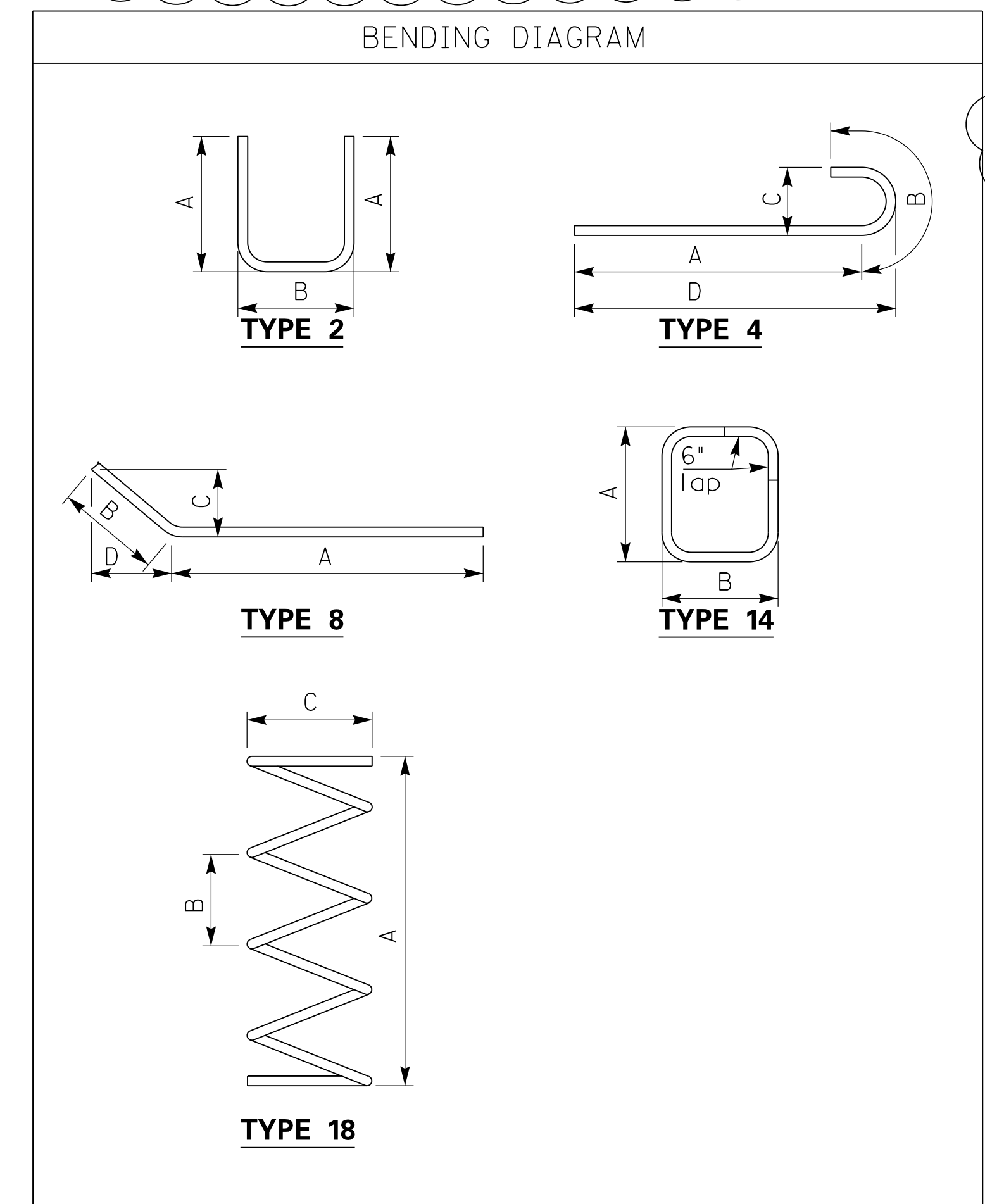
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 USER: sbr/iles DATE PLOTTED: September 28, 2017
 E-SHEET NAME: MicroStation v8.11.7.443

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A4	STR	5	4	28	10	CAP								
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A7(E)	STR	5	6	5	7	WING WALL 1								
A8(E)	STR	5	2	5	1	WING WALL 1								
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A34	STR	5	4	28	10	CAP								
A35	②	5	30	5	2	CAP	1	3	2	8				
A36(E)	STR	5	106	7	3	DIAPHRAGM								
A37(E)	STR	5	6	5	7	WING WALL 1								
A38(E)	STR	5	2	5	1	WING WALL 1								
A39(E)	STR	5	2	4	5	WING WALL 1								
A40(E)	STR	5	2	3	9	WING WALL 1								
A41(E)	STR	5	2	4	9	WING WALL 1								
A42(E)	STR	5	2	5	9	WING WALL 1								
A43(E)	STR	5	8	6	7	WING WALL 1								
A44(E)	⑧	5	2	7	2	WING WALL 1	4	2	2	8	1	10 ⁵ / ₈	1	10 ⁵ / ₈
A45(E)	STR	5	6	13	2	WING WALL 2								
A46(E)	STR	5	2	10	9	WING WALL 2								
A47(E)	STR	5	2	7	11	WING WALL 2								
A48(E)	STR	5	2	3	8	WING WALL 2								
A49(E)	STR	5	2	4	0	WING WALL 2								
A50(E)	STR	5	2	4	1	WING WALL 2								
A51(E)	STR	5	2	4	9	WING WALL 2								
A52(E)	STR	8	2	5	1	WING WALL 2								
A53(E)	STR	5	2	5	5	WING WALL 2								
A54(E)	STR	5	2	5	9	WING WALL 2								
A55(E)	STR	5	2	6	2	WING WALL 2								
A56(E)	STR	5	2	6	6	WING WALL 2								
A57(E)	STR	5	10	6	7	WING WALL 2								
A58(E)	⑧	5	2	13	8	WING WALL 2	8	10	4	10	1	7 ¹ / ₂	4	6 ³ / ₄

BILL OF REINFORCEMENT - PIER #1														
MARK	TYPE	SIZE	NUMBER	LENGTH		LOCATION	A		B		C		D	
				FT	IN		FT	IN	FT	IN	FT	IN		
P1	⑧	8	18	34	3	CAP	31	2	3	0	0	11 ¹ / ₂	2	10 ¹ / ₈
P2	STR	5	20	32	11	CAP								
P3	④	8	18	35	2	CAP	33	9	1	5	0	8	34	1 ¹ / ₂
P4	STR	5	5	28	11	CAP								
P5	STR	8	8	34	1	CAP								
P6	STR	5	4	28	11	CAP								
P7	②	5	328	9	8	CAP	3	7	2	6				
P8	②	5	65	7	4 ¹ / ₂	CAP	2	11	1	6 ¹ / ₂				
P9	STR	5	90	8	7	WEB WALL								
P10	STR	5	54	17	0	WEB WALL								
P11	④	11	72	15	2 ⁵ / ₈	COLUMN/DRILLED SHAFT/ROCK SOCKET	12	9 ⁵ / ₈	2	5	1	2 ³ / ₄	13	5
P12						NOT USED								
P13	⑧	5	4	305	11	COLUMN	8	9	0	3	3	0	38	10

BILL OF REINFORCEMENT - PIER #2														
MARK	TYPE	SIZE	NUMBER	LENGTH		LOCATION	A		B		C		D	
				FT	IN		FT	IN	FT	IN	FT	IN		
P21	⑧	8	18	34	3	CAP	31	2	3	0	0	11 ¹ / ₂	2	10 ¹ / ₈
P22	STR	5	20	32	11	CAP								
P23	④	8	18	35	2	CAP	33	9	1	5	0	8	34	1 ¹ / ₂
P24	STR	5	5	28	11	CAP								
P25	STR	8	8	34	1	CAP								
P26	STR	5	4	28	11	CAP								
P27	②	5	328	9	8	CAP	3	7	2	6				
P28	②	5	65	7	4 ¹ / ₂	CAP	2	11	1	6 ¹ / ₂				
P29	STR	5	90	14	0	WEB WALL								
P30	STR	5	90	17	0	WEB WALL								
P31	④	11	72	20	7 ⁵ / ₈	COLUMN/DRILLED SHAFT/ROCK SOCKET	18	2 ⁵ / ₈	2	5	1	2 ³ / ₄	18	10
P32						NOT USED								
P33	⑧	5	4	483	0	COLUMN	14	2	0	3	3	0	60	10



COLUMN BARS AND SPIRAL REINFORCEMENT ARE DETAILED FOR THE COLUMN PORTION ONLY. SPIRAL IS TO BE SPLICED WITH 1/2 TURNS MINIMUM. COLUMN AND SPIRAL REINFORCEMENT BELOW THE COLUMN PORTION ARE TO BE INCLUDED IN THE UNIT BID PRICES FOR DRILLED SHAFT.

△ DRILLED SHAFT REVISION		12/01/2017
REVISION		DATE
DATE: 09/29/2017	CHECKED BY	
DESIGNED BY: D. CARPENTER	J. MILES	
DETAILED BY: J. BURT	J. MILES	
Commonwealth of Kentucky		
DEPARTMENT OF HIGHWAYS		
COUNTY		
CLAY		
ROUTE	CROSSING	
KY 2432	GOOSE CREEK	
SUBSTRUCTURE REINFORCEMENT		
ITEM NUMBER	PREPARED BY	SHEET NO.
11-8001	2500 Nelson Miller Parkway Louisville, KY 40223 (502) 245-3813	S11
	AMERICAN ENGINEERS, INC. PROFESSIONAL ENGINEERING	DRAWING NO.
	www.aei.cc	27581

ITEM NUMBER
11-8001

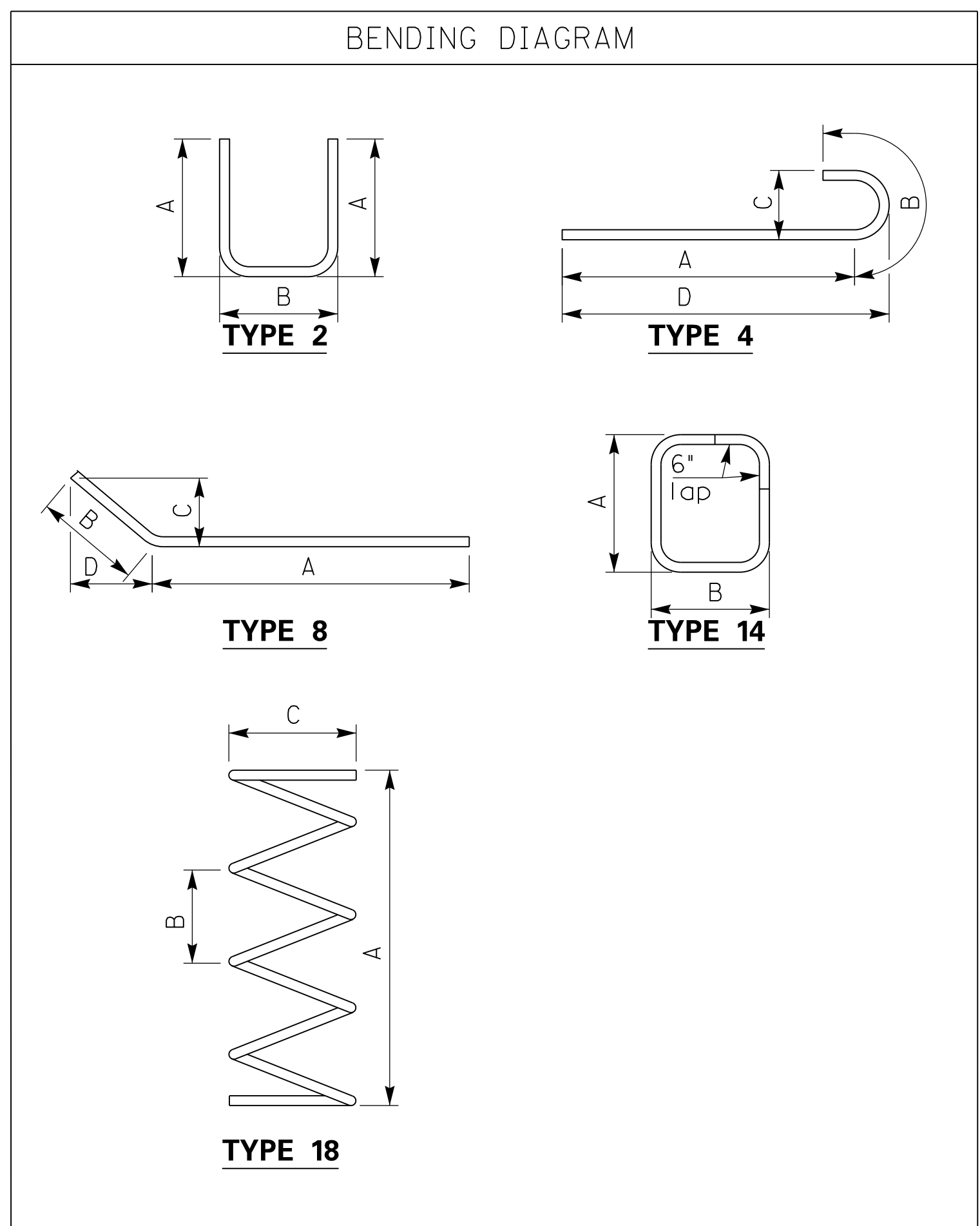
FILE NAME: T:\KYTC\13 PROJECTS\213-217 CLAY CO KY 2432 ITEM 11-8001\STRUCTURES\STA. 52+00 KY 2432 BR\11-SH-BILL OF REINFORCEMENT
 USER: jbur+
 DATE PLOTTED: September 28, 2017
 E-SHEET NAME:
 MicroStation v8.11.7.443

BILL OF REINFORCEMENT - END BENT 1														
MARK	TYPE	SIZE	NUMBER	LENGTH		LOCATION	A		B		C		D	
				FT	IN		FT	IN	FT	IN	FT	IN		
A1	④	8	16	46	2	CAP	44	9	1	5	0	8	45	1
A2	STR	5	8	43	10	CAP								
A3	⑭	5	82	11	6	CAP	2	7	2	8				
A4	STR	5	4	28	10	CAP								
A5	②	5	30	5	2	CAP	1	3	2	8				
A6(E)	STR	5	106	7	3	DIAPHRAGM								
A7(E)	STR	5	6	5	7	WING WALL 1								
A8(E)	STR	5	2	5	1	WING WALL 1								
A9(E)	STR	5	2	4	5	WING WALL 1								
A10(E)	STR	5	2	3	9	WING WALL 1								
A11(E)	STR	5	2	4	9	WING WALL 1								
A12(E)	STR	5	2	5	9	WING WALL 1								
A13(E)	STR	5	8	6	7	WING WALL 1								
A14(E)	⑧	5	2	7	2	WING WALL 1	4	2	2	8	1	10 ⁵ / ₈	1	10 ⁵ / ₈
A15(E)	STR	5	6	13	2	WING WALL 2								
A16(E)	STR	5	2	10	9	WING WALL 2								
A17(E)	STR	5	2	7	11	WING WALL 2								
A18(E)	STR	5	2	3	8	WING WALL 2								
A19(E)	STR	5	2	4	0	WING WALL 2								
A20(E)	STR	5	2	4	1	WING WALL 2								
A21(E)	STR	5	2	4	9	WING WALL 2								
A22(E)	STR	8	2	5	1	WING WALL 2								
A23(E)	STR	5	2	5	5	WING WALL 2								
A24(E)	STR	5	2	5	9	WING WALL 2								
A25(E)	STR	5	2	6	2	WING WALL 2								
A26(E)	STR	5	2	6	6	WING WALL 2								
A27(E)	STR	5	10	6	7	WING WALL 2								
A28(E)	⑧	5	2	13	8	WING WALL 2	8	10	4	10	1	7 ¹ / ₂	4	6 ³ / ₄

BILL OF REINFORCEMENT - END BENT 2														
MARK	TYPE	SIZE	NUMBER	LENGTH		LOCATION	A		B		C		D	
				FT	IN		FT	IN	FT	IN	FT	IN		
A31	④	8	16	46	2	CAP	44	9	1	5	0	8	45	1
A32	STR	5	8	43	10	CAP								
A33	⑭	5	82	11	6	CAP	2	7	2	8				
A34	STR	5	4	28	10	CAP								
A35	②	5	30	5	2	CAP	1	3	2	8				
A36(E)	STR	5	106	7	3	DIAPHRAGM								
A37(E)	STR	5	6	5	7	WING WALL 1								
A38(E)	STR	5	2	5	1	WING WALL 1								
A39(E)	STR	5	2	4	5	WING WALL 1								
A40(E)	STR	5	2	3	9	WING WALL 1								
A41(E)	STR	5	2	4	9	WING WALL 1								
A42(E)	STR	5	2	5	9	WING WALL 1								
A43(E)	STR	5	8	6	7	WING WALL 1								
A44(E)	⑧	5	2	7	2	WING WALL 1	4	2	2	8	1	10 ⁵ / ₈	1	10 ⁵ / ₈
A45(E)	STR	5	6	13	2	WING WALL 2								
A46(E)	STR	5	2	10	9	WING WALL 2								
A47(E)	STR	5	2	7	11	WING WALL 2								
A48(E)	STR	5	2	3	8	WING WALL 2								
A49(E)	STR	5	2	4	0	WING WALL 2								
A50(E)	STR	5	2	4	1	WING WALL 2								
A51(E)	STR	5	2	4	9	WING WALL 2								
A52(E)	STR	8	2	5	1	WING WALL 2								
A53(E)	STR	5	2	5	5	WING WALL 2								
A54(E)	STR	5	2	5	9	WING WALL 2								
A55(E)	STR	5	2	6	2	WING WALL 2								
A56(E)	STR	5	2	6	6	WING WALL 2								
A57(E)	STR	5	10	6	7	WING WALL 2								
A58(E)	⑧	5	2	13	8	WING WALL 2	8	10	4	10	1	7 ¹ / ₂	4	6 ³ / ₄

BILL OF REINFORCEMENT - PIER #1														
MARK	TYPE	SIZE	NUMBER	LENGTH		LOCATION	A		B		C		D	
				FT	IN		FT	IN	FT	IN	FT	IN		
P1	⑧	8	18	34	3	CAP	31	2	3	0	0	11 ¹ / ₂	2	10 ¹ / ₈
P2	STR	5	20	32	11	CAP								
P3	④	8	18	35	2	CAP	33	9	1	5	0	8	34	1 ¹ / ₂
P4	STR	5	5	28	11	CAP								
P5	STR	8	8	34	1	CAP								
P6	STR	5	4	28	11	CAP								
P7	②	5	328	9	8	CAP	3	7	2	6				
P8	②	5	65	7	4 ¹ / ₂	CAP	2	11	1	6 ¹ / ₂				
P9	STR	5	90	8	7	WEB WALL								
P10	STR	5	54	17	0	WEB WALL								
P11	④	11	72	15	2 ⁵ / ₈	COLUMN/DRILLED SHAFT/ROCK SOCKET	12	9 ⁵ / ₈	2	5	1	2 ³ / ₄	13	5
P12						NOT USED								
P13	⑧	5	4	305	11	COLUMN	8	9	0	3	3	0	38	TURNS

BILL OF REINFORCEMENT - PIER #2														
MARK	TYPE	SIZE	NUMBER	LENGTH		LOCATION	A		B		C		D	
				FT	IN		FT	IN	FT	IN	FT	IN		
P21	⑧	8	18	34	3	CAP	31	2	3	0	0	11 ¹ / ₂	2	10 ¹ / ₈
P22	STR	5	20	32	11	CAP								
P23	④	8	18	35	2	CAP	33	9	1	5	0	8	34	1 ¹ / ₂
P24	STR	5	5	28	11	CAP								
P25	STR	8	8	34	1	CAP								
P26	STR	5	4	28	11	CAP								
P27	②	5	328	9	8	CAP	3	7	2	6				
P28	②	5	65	7	4 ¹ / ₂	CAP	2	11	1	6 ¹ / ₂				
P29	STR	5	90	14	0	WEB WALL								
P30	STR	5	90	17	0	WEB WALL								
P31	④	11	72	20	7 ⁵ / ₈	COLUMN/DRILLED SHAFT/ROCK SOCKET	18	2 ⁵ / ₈	2	5	1	2 ³ / ₄	18	10
P32						NOT USED								
P33	⑧	5	4	483	0	COLUMN	14	2	0	3	3	0	60	TURNS



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△ DRILLED SHAFT REVISION		12/01/2017
REVISION		DATE
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DESIGNED BY: D. CARPENTER	J. MILES	
DETAILED BY: J. BURT	J. MILES	
Commonwealth of Kentucky		
DEPARTMENT OF HIGHWAYS		
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CLAY		
ROUTE	CROSSING	
KY 2432	GOOSE CREEK	
SUBSTRUCTURE REINFORCEMENT		
ITEM NUMBER	PREPARED BY	
11-8001	2500 Nelson Miller Parkway Louisville, KY 40223 (502) 245-3813	
	SHEET NO. S11	
	DRAWING NO. 27581	

