



COMMONWEALTH OF KENTUCKY
TRANSPORTATION CABINET
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Andy Beshear
GOVERNOR

Jim Gray
SECRETARY

March 9, 2020

CALL NO. 100
CONTRACT ID NO. 201015
ADDENDUM # 1

Subject: LIVINGSTON COUNTY, STP BRO 0601 (196)
Letting March 20, 2020

- (1) Revised - Special Note for Instrumentation on Existing Bridge -
Pages 99-108 of 318
- (2) Revised - Special Note for Mitigation of Impacts to the Cumberland River -
Page 151 of 318
- (3) Revised - Special Note for Steel Erection - Pages 156-163(a) of 318
- (4) Added - Special Note for Ahead Station Embankment Construction -
Page 175(a)-175(b) of 318
- (5) Added - Special Note for Engineering-Related Consulting Services -
Page 175(c) of 318
- (6) Revised - Proposal Bid Items - Pages 313-318 of 318
- (7) Revised - Plan Sheets - Pages S26, S30, S35, S55, S87, S97, S98, S99,
S100, U3, U5, U12, U13, and U15

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

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:mr
Enclosures

SPECIAL NOTE FOR INSTRUMENTATION ON EXISTING BRIDGE

Livingston County – US 60 Bridge over the Cumberland River Item No. 1-1142.0

Sections 6.2 and 9.0 Modified for Addendum # 1

Construction activities (including but not limited to pile driving, drilled shaft construction, blasting, excavation, or operation of other heavy construction equipment) which could potentially damage the existing bridge will be required during bridge construction activities. The Contractor is advised that the existing bridge structure is located close to the proposed work and that construction activities are to be conducted so as to preclude damage to the existing bridge. Any damage caused by construction activities on this contract is the responsibility of the Contractor. The instrumentation program will begin when foundation construction activities at proposed Piers 2 - 9 are started and conclude when traffic is moved to the new bridge.

1.0 DESCRIPTION

This work consists of furnishing all instrumentation, tools, materials, and labor necessary to install and monitor bridge instrumentation and perform surveys of the pre-foundation construction and post-foundation construction (proposed Piers 2 – 9) condition of the existing Cumberland River Bridge located adjacent to the new bridge, and performing tiltmeter and crackmeter monitoring during the construction activities as specified in this Special Note to evaluate whether construction activities are impacting the existing bridge piers. Provide access and traffic control as required for personnel to conduct the condition surveys and instrumentation work. Schedule and coordinate activities that will impact traffic with the Engineer in accordance with project protocols including required advance notifications to the traveling public. Instrument and monitor the piers on the existing Cumberland River Bridge identified in Table 1 below.

Table 1 – Schedule of Piers on Existing Bridge to be Instrumented	
Pier	Primary Reason(s) for Instrumenting
SP3	Location of an emergency bearing retrofit performed in 2019
SP1	Location of bearing retrofit to be performed as part of this project Location of scour repair project performed in 2013
A	Main truss pier founded on spread footings
B	Main truss pier founded on spread footings Issues with rotation soon after construction forcing a retrofit
NP1	Location of bearing retrofit to be performed Issues with rotation soon after construction forcing a retrofit
NP2	Founded on soil bearing footing
NP5	Location of bearing retrofit to be performed as part of this project
NP7	Location with a noted rocking of the bearings

Establish specific recommended monitoring locations in the Pre-Construction Condition Survey and Instrumentation Plan. During the course of construction, the Contractor and/or its consultant(s) will be responsible for taking tiltmeter and crackmeter readings and providing website access of data to Department personnel. Any monitoring data that indicates excessive structure deflections, the potential for unstable conditions, or damage to adjacent facilities, as determined by the Engineer, is cause for preventative measures to be taken in the affected area until the causes are identified and resolved to the satisfaction of the Engineer. Provide equipment for tiltmeter and crackmeter monitoring as outlined in Section 6 below.

Carry out the monitoring program in two phases as indicated below:

- Phase 1 - foundation construction activities at Piers 2 – 9. Depending on the project schedule, the Contractor may propose to break Phase 1 into Phases 1a and 1b to separate foundation construction on each side of the river.
- Phase 2 - remainder of construction until traffic is moved to the new bridge

2.0 PERSONNEL QUALIFICATIONS

Perform the services described below using the services of qualified personnel assigned to this project as described below. Personnel who meet the requirements for both descriptions below may perform the duties of both positions. Note that at least two people are required for both positions described below.

2.1 Pre-Construction and Post-Foundation Construction Surveys

Use licensed Professional Engineers to conduct pre-construction and post-foundation construction condition surveys who meet the requirements below.

- Documented completion of at least one of the instructor-led National Highway Institute (NHI) courses below within the last five (5) years:
 - FHWA-NHI-130053 - “Bridge Inspection Refresher Training”
 - FHWA-NHI-130053A - “Bridge Inspection Refresher Training”
 - FHWA-NHI-130055 - “Safety Inspection of In-Service Bridges”
 - FHWA-NHI-130056 - “Safety Inspection of In-Service Bridges for Professional Engineers”
- At least three (3) years of experience conducting pre- and/or post-construction condition surveys on structures and/or conventional bridge maintenance inspections
- Experience on a minimum of three (3) projects which include structural pre- and/or post-construction condition surveys and/or conventional bridge maintenance inspections

Include one primary person and at least one backup who meets the same requirements.

2.2 Tiltmeter Instrumentation Installation and Monitoring

Use qualified Instrumentation Engineer or Specialists who are licensed Professional Engineers and meet the requirements below to supervise the Contractor's tiltmeter monitoring program.

- At least three (3) years of experience in the installation and use of instrumentation to monitor deformations of structures and/or slopes
- Experience on a minimum of three (3) projects using tiltmeters to monitor deformations of structures

Include one primary person and at least one backup who meets the same requirements.

3.0 SUBMITTALS AND REPORTS

Make submittals in accordance with applicable Project requirements for submittals. See Table 2 for a list and schedule of required Submittals and Reports. The Department will respond to the Contractor regarding acceptability of Submittals and Reports within 10 business days. A "Business Day" is defined as any day except Saturdays, Sundays and Holidays, as defined in Section 101.03 of the Standard Specifications.

Table 2 – Schedule of Submittals and Reports

Submittal Number	Submittal Item	Deadline (Calendar Days)	Event
1	Proposed personnel as defined in Section 2.0. Also include a listing of other assigned personnel and their experience and qualifications.	30 After	Notice to Begin Work
2	Pre-Construction Condition Survey Report as defined in Section 4.0 of this Special Note	60 Before	Anticipated Start of Foundation Construction (Prop. Piers 2 - 9)
3	Instrumentation Monitoring Plan	7 After	Submittal of Pre-Construction Condition Survey Report
4	Tiltmeter and Crackmeter Monitoring Monthly* Reports as defined in Section 7. * The frequency may be reduced to bi-monthly during Phase 2.	30 After	Start of Foundation Construction (Prop. Piers 2 - 9)
5	Post-Foundation Construction Condition Survey Report as defined in Section 4.0 of this Special Note	30 After	Completion of Foundation Construction (Prop. Piers 2 - 9)
6	Phase 1 Instrumentation Monitoring Summary Report	15 After	Completion of Foundation Construction (Prop. Piers 2 - 9)
7	Phase 2 Instrumentation Monitoring Summary Report	15 After	Traffic is Moved to New Bridge

Provide all submittals and reports in .pdf format

4.0 CONDITION SURVEYS

Conduct Pre-Construction and Post-Foundation Installation (proposed Piers 2 - 9) Condition Surveys on the piers identified in Table 1 prior to the commencement and after the completion of foundation construction activities at the referenced piers. Include documentation of the substructure and bearings. Detail (by engineering sketches, video, photographs, and/or notes) any existing structural or cosmetic damage.

Submit Pre-Construction and Post-Foundation (proposed Piers 2 - 9) Condition Survey reports for the piers identified in Table 1 that summarizes the pre- and post-construction conditions of the referenced pier substructures and identifies areas of concern, including potential personnel hazards (falling debris) and structural elements that may require support or repair such as, but not limited to, existing visible cracks. Submit full reports in digital form condensed to a .pdf file. If higher resolution photographs or other records resulting in larger file sizes are required for detail, submit higher resolution versions CD, USB-drive media or internet uploads.

5.0 INSTRUMENTATION MONITORING PLAN

Based on observations from the Pre-Construction Condition Survey, submit a written Instrumentation Monitoring Plan to the Engineer, which includes, but is not necessarily limited to the following:

- planned monitoring activities
- proposed monitoring equipment with supporting documentation that it meets the requirements specified in Section 6 below
- proposed specific locations of tiltmeters and crackmeters including drawings, sketches, photographs, etc.
- discussion of anticipated effects of temperature on monitoring data including possible methods to reduce notifications that may occur as the result of thermal expansion and contraction.
- examples of format for reporting the data via electronically-submitted written reports and a website accessible to Department and Contractor personnel
- proposed communications protocols with Contractor and Department personnel for the levels defined below
- tilt values (degrees) associated with deformations at the top of the piers identified in Table 1 as defined below

Level	Deformation at Top of Pier (Longitudinal and Transverse)
Alert	0.125 inch (1/8")
Threshold	0.188 inch (3/16")
Limiting	0.250 inch (1/4")

- proposed crack gage criteria for alert, threshold and limiting criteria based on the pre-construction condition survey

6.0 EQUIPMENT AND INSTALLATION

All instrumentation equipment including associated ancillaries referenced in Sections 6.1 and 6.2 below will immediately become property of the Department after use on this project.

6.1 Tiltmeters

Provide and install new instrumentation designed, fabricated, and assembled in proper operating condition and in full conformity with the manufacturer's requirements and this Special Note. Furnish items complete with all components specified herein, all accessories required for proper operation, and all additional materials required by the design of the system.

Provide new tiltmeter monitoring equipment with an instrumentation system expressly designed for the purpose of measuring tilt on structural elements that meets the following requirements:

- tiltmeters capable of measuring both longitudinal and transverse tilt as well as temperature
- tiltmeters with a range of up to +/-10 degrees from the vertical, with a minimum resolution of approximately 0.001 degrees in a temperature range of 0 to 150 degrees Fahrenheit
- includes data loggers, cabling, solar panels to recharge the data logger batteries, a cellular modem and is capable of:
 - capturing, storing and downloading time-stamped tiltmeter readings in retrievable memory
 - collecting, storing and transmitting data via cellular modem
 - uploading data in real time to a website accessible by Department and Contractor personnel and available for "near real time" review at any time

Install tiltmeters with data loggers and solar panels in accordance with the manufacturer's specifications, one set each on the west side of the piers identified in Table 1 of the existing bridge on or near the pier caps. In all cases, provide equipment conforming to the requirements herein.

Position the transverse axis of each tiltmeter so that a tilt to the west (toward the new bridge alignment) is in the "positive" direction. Similarly, position the longitudinal axis of each tiltmeter so that tilt to the north (toward End Bent 2) is in the "positive" direction. Set the tiltmeter data loggers to send alerts when the change in tilt exceeds the value associated with the levels defined in Section 5.0 above. Send alerts to applicable personnel according to agreed-upon protocols.

Install the tiltmeters on Piers SP3, SP1 and A of the existing bridge a minimum of 30 calendar days prior to beginning foundation construction activities at proposed Piers 2 & 3. Install the tiltmeters on Piers B, NP1, NP2, NP5 and NP7 of the existing bridge a minimum of 30 calendar days prior to beginning foundation construction activities at proposed Piers 4 - 9. On each side of the river, perform any trouble shooting so that a minimum of 21 days of baseline data is obtained prior to the beginning of foundation construction.

6.2 Crackmeters (Modified for Addendum # 1 to Change Number of Crackmeters)

Provide and install remote sensing crack displacement monitoring gages on the piers identified in Table 1 of the existing bridge across any significant existing cracks as defined by the Pre-Construction Condition Survey Engineer to help verify any additional structure distress if it should develop. The location, number, and type of gages will be established by the Contractor and the Department based on the pre-construction condition survey. Provide a minimum of three (3) crackmeters per pier monitored (average). If more than an average of three (3) crackmeters per pier monitored are deemed necessary, proposed and agreed upon by the Engineer, the Department will compensate the Contractor for the additional crackmeters via change order. An average of less than three (3) crackmeters per pier monitored may result in a deduction.

Provide new crackmeter instrumentation such as Durham Geo Slope Indicator (DGSI) VW, GEOKON VW Model 4420 or approved comparable devices that are designed, fabricated, and assembled in proper operating condition and in full conformity with the manufacturer's requirements and this Special Note. Furnish items complete with all components specified herein, all accessories required for proper operation, and all additional materials required by the design of the system.

Install the crackmeters a minimum of 30 calendar days prior to beginning proposed Piers 2 - 9 foundation construction activities and perform any trouble shooting so that a minimum of 21 days of baseline data is obtained prior to the beginning of foundation construction at proposed Piers 2 – 9.

7.0 MONITORING AND REPORTING

If requested by the Engineer, provide a minimum of one day of in-person on-site training (by the Instrumentation Specialist) to the Department's and Contractor's personnel in the use of the instrumentation system including all ancillary equipment and accessing data from the website. Coordinate the scheduling of this training with the Engineer.

Protect all instrumentation until it is removed and ensure that the system is functioning at all times. If the system is found not to be functioning take applicable action to ensure the capability to obtain data is restored as soon as possible. Replace or restore any defective or damaged instrumentation at no expense to the Department. Coordinate and cooperate as necessary with the Engineer.

7.1 Tiltmeters

Set each data logger to record tiltmeter readings on nominal 15-minute intervals. At night and/or when cloudy weather prevents solar recharging, the units may be switched to low power mode to collect data on nominal one-hour intervals. Provide an information guide relative to accessing the website to review the tiltmeter data.

Submit monthly reports including plots of tilt (in degrees) and corresponding deformations (inches) at the top of the pier in both the longitudinal, transverse directions and temperature vs. time and a log of construction activities prepared by the Contractor for the monthly period. Additionally, include separate plots of the same parameters for the cumulative time since installation. Include a brief summary with explanations of data anomalies, significant construction activities or other events and any other observations. In the first monthly report include photographs of the installed tiltmeters and verification that the tiltmeters were installed according to the accepted Instrumentation Monitoring Plan or explanations for any deviations.

As provided in Section 5.0 above, the Department has established the criteria below. The Department reserves the right to modify the deformation values based on baseline readings and/or field observations, bridge inspections, etc. If the criteria are modified provide tilt values (degrees) associated with the modified deformations.

Level	Deformation at Top of Pier (Either Longitudinal or Transverse)
Alert	0.125 inch (1/8")
Threshold	0.188 inch (3/16")
Limiting	0.250 inch (1/4")

If the Alert level is reached perform the actions below unless modifications are agreed upon by the Department.

1. Review the data to see if the value seems reasonable or if there may be an explanation for the observed tilt.
2. Notify the Engineer and other applicable Department personnel.

If a Threshold Value is reached, perform the actions below unless modifications are agreed upon by the Department.

1. Review the data to see if the value seems reasonable or if there may be an explanation for the observed tilt.
2. Notify the Engineer and other applicable Department personnel (The Section Engineer will notify the District Bridge Maintenance Engineer to request an inspection.)
3. Meet with the Section Engineer and District Bridge Maintenance Engineer to discuss the need for response action(s).
4. If directed by the Engineer, implement response action(s) within 24 hours of submitting a detailed specific plan of action to reduce the potential for exceeding the Limiting Value.

If a Limiting Value is reached, perform the actions below unless modifications are agreed upon by the Department.

1. Suspend construction activities in the affected area.
2. Immediately notify the Engineer and other applicable Department personnel and close the bridge to traffic, unless directed otherwise by the Engineer. (The Section Engineer will notify the District Bridge Maintenance Engineer to request an immediate inspection.)

3. Review the data to see if the value seems reasonable or if there may be an explanation for the observed tilt.
4. Meet with the Section Engineer and District Bridge Maintenance Engineer to discuss the need for response action(s).
5. If directed by the Engineer, implement response action(s) within 24 hours of submitting a detailed specific plan of action as required to re-open the bridge.

Notifications are not required prior to the commencement of foundation construction activities when baseline readings are being obtained.

7.2 Crackmeters

Remotely monitor the crackmeters and provide an information guide relative to accessing the website to review the tiltmeter data. Notify the Department of any significant movement detected by the crackmeters according to the criteria in the accepted instrumentation monitoring plan. Based on the proposed and accepted criteria for alert, threshold and limiting values, perform the actions described for tiltmeters in Section 7.1 unless modifications are agreed upon by the Department.

Submit monthly reports which include plots of remote crackmeter data and documentation of the crack widths. Include these reports with the monthly tiltmeter report submittals. Additionally, include separate plots of the same parameters for the cumulative time since installation. Include a brief summary with explanations of data anomalies, significant construction activities or other events and any other observations. In the first monthly report include photographs of the installed crackmeters and verification that the crackmeters were installed according to the accepted Instrumentation Monitoring Plan or explanations for any deviations.

7.3 Summary Reports

Submit Phase 1 and Phase 2 Monitoring Summary Reports which summarizes the data collected in each phase. As a minimum include the following sections: Introduction, Tiltmeter and Crackmeter Monitoring Description, Findings, General Comments and Appendix that includes installation records including drawings/sketches, photographs, plots, equipment manufacturer's specifications.

Interpret the data collected, including making correlations between tiltmeter data and specific construction activities. Evaluate the data to determine whether the measured deformations can be reasonably attributed to construction activities. Include these evaluations in the final report.

Include all tiltmeter and crack gage records such as daily event logs and associated construction activity data in the final report, submitted to the Engineer, in a format allowed by the Engineer. Submit a full report in digital form condensed to a .pdf file. If higher resolution photographs or other records resulting in larger file sizes are required for detail, submit higher

resolution versions using a CD, USB-drive media, or uploaded to an online site accessible by applicable Department personnel.

8.0 INSTRUMENTATION REMOVAL

Upon completion of tiltmeter monitoring and prior to demolition remove the instrumentation systems and all ancillary equipment under the direction of the Instrumentation Specialist. Exercise caution so that all equipment remains in working order for the Department’s use on subsequent projects. The Department will immediately take custody of these items.

9.0 METHOD OF MEASUREMENT (Modified for Addend. # 1 to Change Payment Schedule)

Payment for instrumenting the existing bridge is for all work and equipment described in this special note including but not necessarily limited to furnishing and installing instrumentation, condition surveys, monitoring, and providing access and traffic control as required to install, monitor and remove the instrumentation. The Department will make partial payments according to the schedule below.

SCHEDULE OF LUMP SUM PARTIAL PAYMENTS	
Milestone	Cumulative %
Acceptance of Pre-Foundation Construction (proposed Piers 2 – 9) Condition Survey Report & Instrumentation Monitoring Plan	15
Installation of Tiltmeters & Crackmeters with Confirmation that all Instrumentation is Functional	*
Completion of Phase 1 Monitoring & Acceptance of all Monthly Reports	*
Acceptance of Post-Foundation Construction (proposed Piers 2 – 9) Condition Survey Report	*
Acceptance of Phase 1 Instrumentation Monitoring Summary Report	*
Completion of Phase 2 Monitoring Program and Acceptance of all Bi-Monthly Reports	95
Acceptance of Phase 2 Instrumentation Monitoring Summary Report & Transfer of Entire Instrumentation System to the Department	100
* Cumulative percentages will be based on documentation of expenditures.	

10.0 PAYMENT

The Department will pay for the completed and accepted work under the following:

Code	Pay Item	Pay Unit
20610NC	Instrumentation	Lump Sum

The Department will consider payment as full compensation for all work required herein.

SPECIAL NOTE FOR MITIGATION OF IMPACTS TO THE CUMBERLAND RIVER IN ACCORDANCE WITH THE BIOLOGICAL OPINION CONCERNING FAT POCKETBOOK MUSSELS

Livingston County Item No. 1-1142 US 60 Bridge over Cumberland River

1. KYTC is bound by the tenets of Kentucky Pollution Discharge System (KPDES), permit number KYR10, to reduce erosion and sedimentation effects from projects involving soil disturbance. As required under Section 213 of the KYTC Standard Specifications, a site-specific Erosion Control Plan, including Best Management Practices (BMP), will be developed prior to on-site activities to ensure continuous erosion control throughout the construction and post-construction period. The plan will identify individual Disturbed Drainage Areas (DDA) where stormwater from the construction area will be discharged off site or into waters of the Commonwealth. This measure will reduce the amount of sediment and other contaminants introduced into the Action Area, minimizing impacts to mussels.
2. During demolition of the existing bridge, if the concrete deck is removed prior to demolition of the truss, the contractor will be responsible for assuring that decking debris falling into the river will be kept to a minimum.
3. Removal of the existing piers will be conducted as outlined in the U.S. Coast Guard permit dated January 28, 2020. To the maximum extent practicable, all material from the demolition of the existing piers will be removed from the river bed.
4. Once the new truss has been set and coffer cells/barge slips are no longer needed, any dredged areas along the riverbank and/or channel will be filled with natural stable material (not demolition debris), graded back to original contours, stabilized to prevent erosion, and re-vegetated.
5. All materials excavated from dredging or during truss removal will be stored at an upland site and precluded from re-entry into any aquatic resource. Sediment and erosion control measures should be installed at the upland site to prevent any material from entering the adjacent waterways.
6. The contractor will conduct daily turbidity monitoring 100-foot upstream of the existing US Highway 60 bridge, as well as 500-foot and 1,000-foot downstream at both the substrate level and mid-water column during riverbed/riverbank disturbance activities such as dredging, cofferdam installation/removal, as well as pre-and post truss demolition. Monitoring results will be provided to the KYTC inspector on site for inclusion in the daily KYTC work reports. Costs associated with turbidity monitoring will be incidental to the work.
7. Should the contractor propose alternate construction/demolition methodologies, a proposed plan will be submitted to the Department for coordination with the appropriate resource and permitting agencies.

SPECIAL NOTE FOR STEEL ERECTION

Livingston County Item No. 1-1142 US 60 Bridge over Cumberland River – Drawing No. 27458

1.0 DESCRIPTION

This work shall consist of fabricating, furnishing and installing the truss span superstructure, including truss main members, connections, floor beams, stringers and bracing.

Materials and workmanship shall be in accordance with the KYTC Standard Specifications for Road and Bridge Construction, 2019 Edition (KYTC); AASHTO/AWS D1.5M/D1.5 "Bridge Welding Code"; AWS D1.1/D1.1M "Structural Welding Code - Steel"; the Contract Drawings; and this Special Note.

Where a conflict exists between this Special Note and KYTC Section 607, the provisions herein shall govern.

2.0 MATERIALS

Materials shall conform to the Contract Drawings and KYTC Section 607.

3.0 ERECTION ANALYSIS AND STABILITY

3.1 Steel Erection Responsibility. The stability of the structure during erection, and the final geometry of the structure, is the responsibility of the Contractor. The Contractor shall retain an erection engineer for the purpose of evaluating the stability, state of stress and geometry of the structure during and after erection. The erection engineer shall evaluate and propose wind loads during construction which are appropriate for the proposed erection scheme chosen. The Contractor shall erect the bridge in a safe manner without overstressing the structural components during erection and shall leave the structure in a state of stress compatible with the design.

Structural steel shall be in conformance with KYTC Section 607. Steel erection shall be in conformance with the AASHTO/NSBA "Steel Bridge Erection Guide Specification," S10.1-2014.

3.2 Conceptual Erection Sequence. The assumed erection sequence, as described in the Contract Drawings, is that a portion of the truss and floor system is constructed on blocking in the "no-load condition." This would require floating in of the fully completed steel superstructure for placement on top of the constructed piers. The Contractor may choose and develop any sequence that can safely erect the bridge without overstress or damage to

the structural steel subject to approval by the Engineer and United States Coast Guard (USCG). The design of any necessary shoring / falsework and its foundations is the responsibility of the contractor.

- 3.3 Truss Erection and Camber.** In addition to full analysis of the completed structure, load capacity and stability of the truss structure has been verified by the Engineer of Record for the completely erected steel superstructure, prior to deck placement. The Contract Drawings details the assumed erection and deck pour sequence that is consistent with the camber shown on the Contract Drawings and the load capacity of the fully-erected structure. No provision in either the camber or structural capacity of the members has been included for erection stresses.

The load capacity and stability verification of a partially completed truss span in the various stages of erection prior to installation of all steel members is the responsibility of the Contractor. The Contractor shall evaluate the partially completed structure in accordance with the same design provisions used for the permanent structure except as indicated herein. Wind loads for the final structure are given on the Contract Drawings. The erection engineer shall evaluate wind loads during construction which are appropriate for the proposed erection scheme chosen.

No uplift at bearings shall be allowed in any construction phase.

- 3.4 Changes to the Structure.** Any changes to the structural steel system shown in the Contract Plans require reanalysis for load capacity and stability for both construction and permanent load conditions, including seismic. Diaphragm action of the stay-in-place forms shall be neglected in all analyses.

Dead load deflection, camber and stringer haunch thickness are based on the erection and slab pouring sequences as shown in the plans. Any deviation from this sequence will need to be evaluated by the Contractor's engineer to determine the effect on camber, dead load deflection and structural member stresses. This evaluation must be submitted to the Engineer for review and approval by the Engineer of Record.

4.0 QUALIFICATIONS AND SUBMITTALS

- 4.1 Erector Qualifications.** Structural steel shall be erected by a qualified, competent erection contractor. To establish qualification the erection contractor shall submit to the Department proof of their experience on previous projects of equivalent complexity which, at a minimum, include the following:

- A. Any one lift using two or more cranes/derricks/poles,
- B. Steel truss spans over water,
- C. Erection with floating equipment,
- D. Field splicing primary members while held in place by erection equipment.

The Department shall determine whether the submitted evidence is satisfactory to establish qualification and competency.

4.2 Erection Procedure. The Contractor shall submit a detailed erection procedure to the Engineer, prepared and sealed by a professional engineer licensed in Kentucky. The professional engineer who prepares the erection procedure and calculations shall have experience in steel erection of similar size, complexity, and scope. The procedure shall address all requirements for erection of the structural steel into the final designed configuration and satisfy all written comments from the Engineer of Record and the Department or its agents prior to the start of erection. The procedure, as a minimum, shall include the following information:

Drawings.

- A. Plan of the work area showing permanent support structures (piers and abutments), roads, waterways (including navigational channel), overhead and underground utilities, and other information pertinent to erection.
- B. Erection sequence for all members noting any temporary support conditions, such as holding crane positions, temporary supports, falsework, etc. Member reference marks, when reflected on the erection plans, should be the same as used on shop detail drawings.
- C. Primary member delivery location and orientation.
- D. Location of each crane for each primary member pick, showing radius and crane support (barges, mats, etc.).
- E. Capacity chart for each crane configuration and boom length used in the work.
- F. Center of gravity locations for primary members.
- G. Detail, weight, capacity, and arrangement of all rigging for primary member picks.
- H. Lifting weight of primary member picks, including all rigging and pre-attached elements.
- I. Details of any temporary lifting devices to be bolted or welded to permanent members, including: method and place (shop or field) of attachment; capacity; and method, time and crew responsible for removal.
- J. Bolted splice assembly requirements.
- K. Lifting/handling procedure for any primary member that has a lifted length-to-width ratio (l/b) greater than 85.
- L. Blocking details for bridge bearings.

Calculations.

- A. Design calculations indicating the load capacity and verifying the stability of temporary supports for structure and crane(s) for each pick and release.

- B. Calculations to substantiate structural adequacy and stability of all steel members for each step of bridge assembly, including documentation of the wind loads and other construction loads assumed to be applied.
- C. Calculations to verify adequate capacity of contractor-fabricated rigging such as lift beams, welded lugs, spreader beams, beam clamps, etc. Submit manufacturers' certification or catalog cuts for pre-engineered devices.
- D. Geometrical information that will be used to monitor the structure during erection to ensure that the final geometry of the structure is as indicated on the plans.

Coordination Items.

- A. Review / approval by other agencies as required (e.g., US Coast Guard, US Army Corp of Engineers, etc.).
- B. Construction activities that occur concurrently with steel erection, such as setting forms or concrete deck pours.

4.3 Shop Drawings. Shop drawings for truss and components shall conform to KYTC Section 607. The following replaces Subsection 607.03.01 of the Department's 2012 Standard Specifications for Road and Bridge Construction in its entirety.

607.03.01 Shop Drawings and Welding Procedures. Submit detailed shop drawings and welding procedures to the Division of Structural Design or their designated representative ("Reviewer"). The Department will furnish plans showing sufficient details for the Contractor to prepare detailed shop drawings. Include welding procedures and details, when required, as part of the shop drawings. The Department will not consider the shop drawing submittal process to be complete without the submittal of welding procedures.

Submit a shop drawing submittal schedule (Schedule) for review and approval no later than thirty calendar days prior to the first submittal. List all anticipated shop drawing packages for the project by component and superstructure unit, span or pier, and show the estimated submittal dates for each package. Update the Schedule and resubmit to the Engineer, for review but not approval, on the first day of each calendar month until all required shop drawing submittals have been approved.

Submit shop drawings in substantial conformance with the latest Schedule submitted to the Engineer and include all relevant drawings and construction procedures necessary for a thorough review. Allow sufficient lead time to permit a complete review.

Submit shop drawings in electronic format. Make all drawing submittals in a 22 inch by 36 inch Portable Document Format (PDF) that will produce clear prints and sharp lines on both 11 inch by 17 inch prints and 22 inch by 36 inch prints ("PDF Prints"). The Department reserves the right to require hard copy prints on a case-by-case basis.

Submission of two or three-dimensional computer modeling data will not by itself constitute a complete shop drawing submittal. The use of two- or three-dimensional computer modeling techniques to facilitate fabrication will not relieve the fabricator from providing detailed shop drawings of all bridge members and components for the Department's records.

Submit to the Reviewer PDF Print Files of the detailed shop drawings and welding

procedures. Electronically stamp all shop drawings and procedures with the Contractor's stamp as an acknowledgment that the Contractor has reviewed the submittal for completeness and appropriateness. Each sheet will be electronically stamped by the Reviewer. The Reviewer will return one PDF file of reviewed shop drawings with all required corrections noted. When corrections and resubmittal are required, submit PDF Print Files of the corrected drawings. After the final review, when additional resubmittal is unnecessary, the Reviewer will forward the reviewed shop drawing PDF Print files with the Reviewer's Stamp indicating approval (or conditional approval) and any final comments to the DOSD Shop Plan Coordinator for distribution. Only plans submitted directly to the Shop Plan Coordinator by the Reviewer will be distributed, and only plans electronically stamped "distributed by the Division of Structural Design" are to be used for fabrication.

After fabrication is complete and the Engineer has approved the structural steel for shipment, furnish to the Engineer one electronic set of the as-built shop drawings, including the welding procedures, as PDF Prints.

Review cycles will begin the first Business Day after a submittal is received ("logged"), or the next Business Day after the submittal date indicated on the most recently submitted Schedule, whichever occurs later. Submittals received after 2:00 PM Eastern Time will be logged as the next Business Day following receipt of the submission. 'Business Days' are weekdays, Monday through Friday except official Department holidays.

The Reviewer will determine if all relevant drawings and construction procedures have been submitted. If a submission is incomplete or otherwise requires additional information or data to properly complete the review, the review cycle for the submission will be reset and the cycle will begin as specified in the previous paragraph once all required information is received (logged.)

Review cycle durations for shop drawing submittal packages deemed complete by the Reviewer are as follows:

- Allow at minimum 30 Business Days for review of shop drawing submissions of welded plate girders or rolled steel sections.
- Allow at minimum 30 Business Days for review of shop drawing submissions for disc bearings, truss members, lateral bracing, floor beams, and their respective connections.
- Allow at minimum 15 Business Days for review of other shop drawing packages.

No claims for delay will be considered for shop drawing reviews when the Engineer has indicated that relevant drawings or construction procedures are insufficient for a thorough review. No claims for delay will be considered for shop drawing reviews when information relevant to the submittal review is still in the process of being developed. Additional time to review requested changes to any relevant drawings and construction procedures will not be considered cause for delay claims.

Do not make changes to any drawing after the Engineer has reviewed it without the Engineer's written approval or written direction.

Only make substitutions of sections different from those shown on the drawings when the Engineer approves in writing.

Although the drawings may have been reviewed, take responsibility for the correctness of the drawings and for shop fits and field connections.

Take responsibility for any material ordered or work done before the Engineer reviews the drawings and welding procedures.

When design drawings differ from the shop drawings, the design drawings govern. When the requirements of this section differ from the shop drawings, the requirements of this section govern.

When the design drawings differ from the requirements of this section, the design drawings govern.

5.0 TRANSPORTATION, HANDLING AND SUPPORT

5.1 Transportation.

Responsibility. The Contractor is responsible for coordinating delivery from the fabricator to the jobsite and for providing adequate site access.

Shipping plan. The Contractor is responsible for preparing a shipping plan indicating support, lateral bracing, and tie-down points for primary members during transportation to the jobsite.

Handling. Ship primary members upright, unless otherwise approved by the Department. Load, support, and unload primary members in a manner that will not damage, excessively stress or permanently deform the steel or cause repeated stress reversals in the members.

5.2 Lifting and Assembly.

General. Lift, position and assemble all members in accordance with the approved erection procedures. The proposed crane location(s) and member delivery location(s) may require modification in the field to suit changing jobsite conditions. However, cranes and material must be located such that the lift is safe and within the crane manufacturer's rated capacity for all required positions.

Lifting device. Install lifting devices, including bolted assemblies using existing bolt holes (splices, cross frame connection plates, etc.), using Department-approved details. Welded lugs are not permitted without approval of the Engineer.

Erection stability. All structural members shall be stabilized with falsework, temporary bracing and/or holding cranes until the structure is complete and has the necessary lateral stability to make the structure self-supporting.

Falsework and temporary supports. Falsework and temporary supports shall be detailed to ensure that the temporary elevation of supported steel accommodates the deflections expected to occur as the structure is completed.

Pins. Pins are normally used to align holes for bolted field connections. Field reaming to facilitate fit-up will only be allowed with the Department's prior approval. Any abnormal distortion of the member or of the holes during the alignment process shall be immediately reported to the Engineer.

Connections. For splice connections of primary members, fill at least 50 percent of the holes prior to crane release. The 50 percent may be either erection bolts in a snug tight condition or full-size erection pins. At least half (25 percent of all holes) shall be filled with bolts, and sufficient pins shall be used near outside corners of splice plates and at member ends near splice plate edges to ensure alignment. Uniformly distribute the filled holes.

The 50 percent requirement may be waived if a reduced percentage is calculated as sufficient and shown on the approved erection procedure. Permanent bolts may be used as erection bolts, provided they are installed in accordance with the specifications.

Primary member splice connections that are assembled on the ground (prior to erection) shall be 100 percent complete, in the no-load condition, prior to any lifting operation.

Abnormalities. Any abnormal member deformation or brace deflection after crane release or temporary support removal shall be immediately reported to the Engineer for swift resolution. Further work affecting the area, except for restoring support or adding bracing, shall be stopped until the deformation/deflection is resolved.

6.0 REPAIR

- 6.1 **Documentation.** The Contractor is responsible for documenting damage due to handling, removal of erection aids, aligning members and other actions, uncorrected misfits at connections, and misalignments exceeding tolerances in erected members. As-received damage attributable to transport or fabrication shall also be documented.
- 6.2 **Implementation.** The Contractor shall propose a method of repair and basis for acceptance for the Department's review.
- 6.3 **Repair Procedures.** Submit repair procedures for damaged or misaligned steel in the form of sketches and/or written procedures as applicable and as requested by the Department. Information must provide sufficient detail for the Department to adequately review the repair application. After repairs are complete, the Contractor shall provide as-built detailed drawings, NDT results, and procedures/materials used to the Engineer for inclusion in the project file.
- 6.4 **Welds.** Field or shop welds that are unacceptable must be repaired in accordance with AWS D1.5. Responsibility for the cost of the repair and subsequent inspection shall be at the Contractor's expense.

7.0 CONSTRUCTION STAGING AREA

Beyond the limits of acquired Right-of-Way, the Cabinet has completed environmental clearance activities on a construction staging/erection area. This area, defined as *Potential Staging Area* in the Construction Plans (Sheet S87) along the southern bank of the Cumberland River immediately west of the bridge, is available for the Contractor's use without additional environmental clearance activities required. The Contractor should note that the Cabinet has not acquired an easement for

this area. Use of the *Potential Staging Area* will require a Right-of-Entry or Construction Easement agreement between the Contractor and Landowner, and any such agreements shall be provided to the Cabinet prior to any activity or disturbance.

The Potential Staging Area has received all necessary environmental clearances. If the Contractor elects to utilize or disturb any areas outside of the Right-of-Way or *Potential Staging Area* limits, the Contractor shall submit the proposed activity and limits to the Cabinet for review. The Contractor will be responsible for performing all field investigations for archaeological, historical, ecological, and other environmental clearances for the proposed area. The Contractor shall use KYTC pre-qualified firms for the work performed. The results of these investigations shall be provided to the Cabinet for coordination with the appropriate Agencies to evaluate and provide environmental clearance for the proposed area. Outside of the *Potential Staging Area*, it is the Contractor's responsibility to provide a staging/erection area that meets all environmental requirements and/or any commitments that result from clearance activities at no additional cost to the Cabinet.

8.0 NAVIGATION CONSIDERATIONS

The Contractor shall comply with all requirements of the US Coast Guard Bridge Permit and any subsequent Coast Guard requirements providing during approvals of Contractor submittals to the Coast Guard. These submittals may include, at a minimum, any Cofferdam Plans, Construction/Falsework Plans, and Demolition Plans.

While developing the work plans noted above, the Contractor is advised that the USCG will require a continuous helper boat during all activities that involve the Contractor utilizing construction equipment in the river. Thus, if the Contractor elects to perform construction activities for Piers 3 or 4, or utilize a truss erection scheme, that relies on a marine floating plant, a helper boat with pilot must be provided upon request by and at the discretion of the commercial barge pilots transiting under the bridge. The equivalent utility of an 1800 horsepower tow boat shall be provided. The helper boat may be used by the Contractor for other construction activities but shall be made available to assist tows when requested without delay to the needs of commercial navigation. The helper boat shall be moored or docked on-site, or within one mile of the project site, at all times. Additional requirements may be provided by KYTC or the USCG upon review of any plan that requires a helper boat.

The project limits are located in a tight S-curved section of the Cumberland River that can be challenging to navigation. Commercial navigation often utilizes most of the width of the river to traverse the project site. The Contractor may utilize temporary shoring or falsework to erect the truss. The Contractor is advised that the USCG will likely not allow falsework or shoring towers to be placed in a manner that reduces the current navigation clearance.

9.0 MEASUREMENT

The cost of fabricating, furnishing and installing the truss span superstructure, including truss main members, connections, floor beams, stringers, bracing, and truss disc bearing masonry plates and

masonry plate studs; and all material, labor, equipment, tools and incidentals necessary to complete the work as specified in the Contract Documents; shall be included in the lump sum unit price for Structural Steel. The cost of performing environmental clearance activities required for a staging/erection area outside of that previously cleared for the project shall be included in the lump sum unit price for Structural Steel. Impacts to the project schedule related to any additional environmental clearance coordination shall be the responsibility of the Contractor.

As noted on Sheet S87 and the SPECIAL NOTE FOR MITIGATION OF IMPACTS TO THE CUMBERLAND RIVER IN ACCORDANCE WITH THE BIOLOGICAL OPINION CONCERNING FAT POCKETBOOK MUSSELS, all work associated with meeting environmental commitments for any staging area shall be included in the lump sum unit price for Structural Steel. This includes backfilling excavated/dredged areas, grading backfilled areas to original ground conditions, and providing slope protection of backfilled areas.

10.0 PAYMENT

<u>Code</u>	<u>Pay Item</u>	<u>Pay Unit</u>
08160	STRUCTURAL STEEL	LS

SPECIAL NOTE FOR AHEAD STATION EMBANKMENT CONSTRUCTION

**Livingston County; Item No. 1-1142.0
US 60 Bridge over Cumberland River**

Settlement analysis performed at Station 134+00 predicted approximately 16 inches of settlement with approximately 90% of the settlement predicted to occur in approximately 1000 days or about 33 months. The plot on page 2 of this Special Note represents a graphical summary of estimated settlement vs. time. It should be noted that this plot does not consider that some settlement will occur during embankment construction. Because of the estimated settlement magnitude and time, construct the ahead station embankment (Stations 133+50 to 142+00) as one of the first construction operations on the project. Complete embankment construction in this station interval (in accordance with the project roadway drawings and Division 200 of the Standard Specifications for Road and Bridge Construction) to final subgrade elevation by no later than December 31, 2020. Failure to meet this date may result in liquidated damages as defined in the Special Note for Completion Date if such failure is the controlling event that results in not meeting the specified completion date.

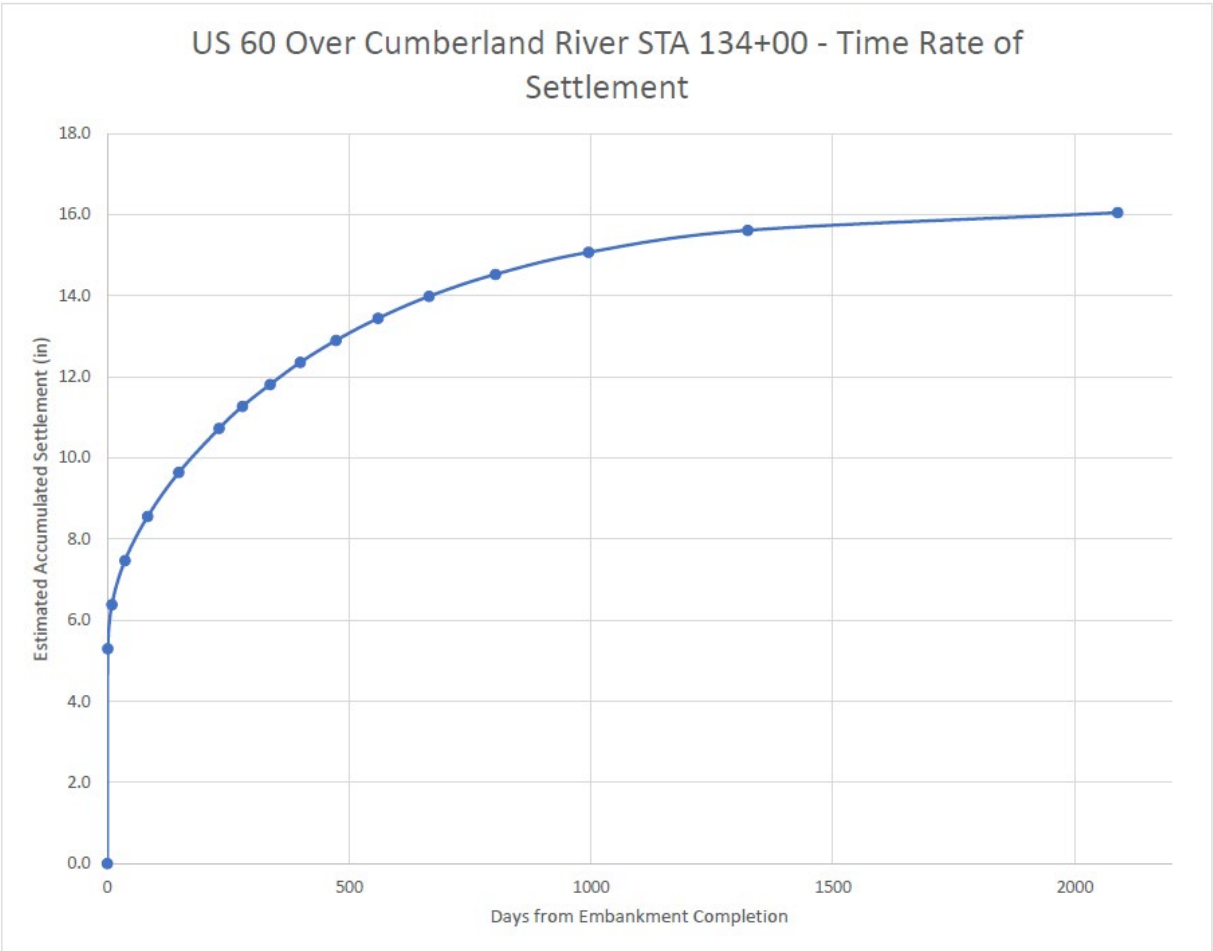
The referenced plot is only an estimate and the actual field results are likely to vary. Therefore, furnish and install a settlement platform at Sta. 134+50, 25 ft. left of centerline, prior to the placement of the embankment fill from Station 133+50 to 142+00. Install the settlement platform in accordance with Section 216 of Standard Specifications for Road and Bridge Construction, current edition, and Standard Drawing RGX-015. Replace any settlement monitoring equipment destroyed or damaged by the Contractor at no additional cost to the Department.

Perform paving operations including: chemical stabilization and placement of crushed stone base and asphalt only after being directed to do so by the Engineer based on evaluation of the settlement data in conjunction with the project schedule.

Pile installation at Abutment 2 will not be dependent on evaluation of the settlement data.

The Department will measure and pay for the settlement platform items in accordance with Section 216 of the Standard Specifications. The estimated quantities are in the table below. These quantities are not included in the roadway or bridge drawings.

Bid Item Code	02692	03340	03343
Bid Item	Settlement Platform	Steel Pipe, 2 1/2-inch	Steel Pipe, 4-inch
Unit	EACH	LINEAR FOOT	LINEAR FOOT
Bid Quantity	1	35	35



SPECIAL NOTE FOR ENGINEERING-RELATED CONSULTING SERVICES

Livingston County; Item No. 1-1142.0 US 60 Bridge over Cumberland River

Because of their ongoing involvement with this project as consultants to the Department; Stantec Consulting Services Inc.; American Engineers, Inc.; Bacon, Farmer, Workman Engineering & Testing, Inc.; Cultural Resource Analysts, Inc.; and Third Rock Consultants, LLC will not be permitted to perform any consulting services (including but not limited to geotechnical drilling and/or environmental services) for the Prime Contractor or Subcontractors on this project due to the potential for conflict of interest. Other firms who have previously performed consulting services for the Department on this project may perform such services, subject to meeting applicable pre-qualification, experience, and/or other requirements.

PROPOSAL BID ITEMS

Report Date 3/9/20

Section: 0001 - PAVING

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0010	00003		CRUSHED STONE BASE	12,047.00	TON		\$	
0020	00008		CEMENT STABILIZED ROADBED	11,123.00	SQYD		\$	
0030	00078		CRUSHED AGGREGATE SIZE NO 2	4,626.00	TON		\$	
0040	00100		ASPHALT SEAL AGGREGATE	84.00	TON		\$	
0050	00103		ASPHALT SEAL COAT	10.10	TON		\$	
0060	00190		LEVELING & WEDGING PG64-22	1,030.00	TON		\$	
0070	00214		CL3 ASPH BASE 1.00D PG64-22	5,339.00	TON		\$	
0080	00324		CL3 ASPH SURF 0.50B PG64-22	2,084.00	TON		\$	
0090	00356		ASPHALT MATERIAL FOR TACK	14.30	TON		\$	
0100	00358		ASPHALT CURING SEAL	11.00	TON		\$	
0110	02223		GRANULAR EMBANKMENT	1,481.00	CUYD		\$	
0120	02542		CEMENT	223.00	TON		\$	
0130	02602		FABRIC-GEOTEXTILE CLASS 1	10,407.00	SQYD		\$	
0140	02604		FABRIC-GEOTEXTILE CLASS 1A	8,157.00	SQYD		\$	
0150	02677		ASPHALT PAVE MILLING & TEXTURING	100.00	TON		\$	
0160	02702		SAND FOR BLOTTER	28.00	TON		\$	
0170	20071EC		JOINT ADHESIVE	15,913.00	LF		\$	

Section: 0002 - ROADWAY

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0180	01000		PERFORATED PIPE-4 IN	267.00	LF		\$	
0190	01010		NON-PERFORATED PIPE-4 IN	64.00	LF		\$	
0200	01020		PERF PIPE HEADWALL TY 1-4 IN	1.00	EACH		\$	
0210	01024		PERF PIPE HEADWALL TY 2-4 IN	2.00	EACH		\$	
0220	01028		PERF PIPE HEADWALL TY 3-4 IN	1.00	EACH		\$	
0230	01310		REMOVE PIPE	368.00	LF		\$	
0240	01740		CORED HOLE DRAINAGE BOX CON-4 IN	2.00	EACH		\$	
0250	01987		DELINEATOR FOR GUARDRAIL BI DIRECTIONAL WHITE	22.00	EACH		\$	
0260	02014		BARRICADE-TYPE III	4.00	EACH		\$	
0270	02091		REMOVE PAVEMENT	2,347.00	SQYD		\$	
0280	02159		TEMP DITCH	3,774.00	LF		\$	
0290	02160		CLEAN TEMP DITCH	1,887.00	LF		\$	
0300	02200		ROADWAY EXCAVATION	11,352.00	CUYD		\$	
0310	02230		EMBANKMENT IN PLACE	57,270.00	CUYD		\$	
0320	02242		WATER	250.00	MGAL		\$	
0330	02275		FENCE-8 FT CHAIN LINK	30.00	LF		\$	
0340	02287		DOUBLE VEHICULAR CHAIN LINK GATE	1.00	EACH		\$	
0350	02351		GUARDRAIL-STEEL W BEAM-S FACE	2,187.50	LF		\$	
0360	02360		GUARDRAIL TERMINAL SECTION NO 1	2.00	EACH		\$	
0370	02371		GUARDRAIL END TREATMENT TYPE 7	2.00	EACH		\$	
0380	02391		GUARDRAIL END TREATMENT TYPE 4A	2.00	EACH		\$	
0390	02429		RIGHT-OF-WAY MONUMENT TYPE 1	29.00	EACH		\$	
0400	02432		WITNESS POST	3.00	EACH		\$	
0410	02483		CHANNEL LINING CLASS II	81.00	TON		\$	

PROPOSAL BID ITEMS

Report Date 3/9/20

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0420	02484		CHANNEL LINING CLASS III	9.00	TON		\$	
0430	02545		CLEARING AND GRUBBING APPROX. 25 ACRES	1.00	LS		\$	
0440	02555		CONCRETE-CLASS B	1.00	CUYD		\$	
0450	02562		TEMPORARY SIGNS	362.00	SQFT		\$	
0460	02570		PROJECT CPM SCHEDULE	1.00	LS		\$	
0470	02585		EDGE KEY	241.00	LF		\$	
0480	02650		MAINTAIN & CONTROL TRAFFIC	1.00	LS		\$	
0490	02671		PORTABLE CHANGEABLE MESSAGE SIGN	2.00	EACH		\$	
0500	02676		MOBILIZATION FOR MILL & TEXT	1.00	LS		\$	
0510	02690		SAFELOADING	17.00	CUYD		\$	
0515	02692		SETTLEMENT PLATFORM (ADDED: 3-9-20)	1.00	EACH		\$	
0520	02696		SHOULDER RUMBLE STRIPS	5,434.00	LF		\$	
0530	02701		TEMP SILT FENCE	3,774.00	LF		\$	
0540	02703		SILT TRAP TYPE A	25.00	EACH		\$	
0550	02704		SILT TRAP TYPE B	25.00	EACH		\$	
0560	02705		SILT TRAP TYPE C	25.00	EACH		\$	
0570	02706		CLEAN SILT TRAP TYPE A	25.00	EACH		\$	
0580	02707		CLEAN SILT TRAP TYPE B	25.00	EACH		\$	
0590	02708		CLEAN SILT TRAP TYPE C	25.00	EACH		\$	
0600	02726		STAKING	1.00	LS		\$	
0610	02731		REMOVE STRUCTURE REMOVE EXISTING US60 BRIDGE OVER CUMBERLAND RIVER	1.00	LS		\$	
0620	02775		ARROW PANEL	2.00	EACH		\$	
0625	03340		STEEL PIPE-2 1/2 IN (ADDED: 3-9-20)	35.00	LF		\$	
0627	03343		STEEL PIPE-4 IN (ADDED: 3-9-20)	35.00	LF		\$	
0630	05950		EROSION CONTROL BLANKET	6,811.00	SQYD		\$	
0640	05952		TEMP MULCH	79,404.00	SQYD		\$	
0650	05953		TEMP SEEDING AND PROTECTION	59,553.00	SQYD		\$	
0660	05963		INITIAL FERTILIZER	17.00	TON		\$	
0670	05964		MAINTENANCE FERTILIZER	9.00	TON		\$	
0680	05985		SEEDING AND PROTECTION	83,727.00	SQYD		\$	
0690	05992		AGRICULTURAL LIMESTONE	74.00	TON		\$	
0700	06510		PAVE STRIPING-TEMP PAINT-4 IN	5,000.00	LF		\$	
0710	06542		PAVE STRIPING-THERMO-6 IN W	13,459.00	LF		\$	
0720	06543		PAVE STRIPING-THERMO-6 IN Y	15,344.00	LF		\$	
0730	06568		PAVE MARKING-THERMO STOP BAR-24IN	52.00	LF		\$	
0740	06574		PAVE MARKING-THERMO CURV ARROW	4.00	EACH		\$	
0750	10020NS		FUEL ADJUSTMENT	51,125.00	DOLL	\$1.00	\$	\$51,125.00
0760	10030NS		ASPHALT ADJUSTMENT	27,786.00	DOLL	\$1.00	\$	\$27,786.00
0770	20166ES810		TEMPORARY PIPE	129.00	LF		\$	
0780	20191ED		OBJECT MARKER TY 3	2.00	EACH		\$	
0790	21289ED		LONGITUDINAL EDGE KEY	2,870.00	LF		\$	
0800	23189EC		REMOVE GATE	1.00	EACH		\$	
0810	23912EC		WEB CAMERA CONST MONITORING SYSTEM	1.00	LS		\$	
0820	24605ED		RELOCATE RELOCATE EXISTING FLAGPOLE	1.00	EACH		\$	

PROPOSAL BID ITEMS

Report Date 3/9/20

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0830	25078ED		THRIE BEAM GUARDRAIL TRANSITION TL-3 TL-3	4.00	EACH		\$	
0840	25086EC		AUTOMATED SLIDE GATE 30' SLIDE GATE FOR 8-FOOT-HIGH GATE WITH 3 STRANDS BARBED WIRE	1.00	EACH		\$	
0850	25087EC		V BARBED WIRE ARMS WITH THREE ADDITIONAL STRANDS	30.00	LF		\$	
0860	25088EC		AUTOMATED SLIDING GATE OPERATOR	1.00	EACH		\$	

Section: 0003 - DRAINAGE

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0870	00440		ENTRANCE PIPE-15 IN	199.00	LF		\$	
0880	00462		CULVERT PIPE-18 IN	340.00	LF		\$	
0890	00521		STORM SEWER PIPE-15 IN	335.00	LF		\$	
0900	00522		STORM SEWER PIPE-18 IN	58.00	LF		\$	
0910	00524		STORM SEWER PIPE-24 IN	588.00	LF		\$	
0920	01450		S & F BOX INLET-OUTLET-18 IN	10.00	EACH		\$	
0930	01451		S & F BOX INLET-OUTLET-24 IN	1.00	EACH		\$	
0940	01496		DROP BOX INLET TYPE 3	8.00	EACH		\$	
0950	01691		FLUME INLET TYPE 2	2.00	EACH		\$	
0960	01761		MANHOLE TYPE B	2.00	EACH		\$	
0970	02600		FABRIC GEOTEXTILE TY IV FOR PIPE	2,368.00	SQYD	\$2.00	\$	\$4,736.00
0980	23952EC		DRAINAGE JUNCTION BOX TY B 18 IN	1.00	EACH		\$	
0990	24575ES610		HEADWALL 15 IN MITERED	8.00	EACH		\$	
1000	24575ES610		HEADWALL 18 IN MITERED	1.00	EACH		\$	
1010	24814EC		PIPELINE INSPECTION	1,027.00	LF		\$	

Section: 0004 - BRIDGE-EXISTING STRUCTURE REPAIR

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1020	02650		MAINTAIN & CONTROL TRAFFIC	1.00	LS		\$	
1030	02671		PORTABLE CHANGEABLE MESSAGE SIGN	2.00	EACH		\$	
1040	22146EN		CONCRETE PATCHING REPAIR	400.00	SQFT		\$	
1050	23853EC		BEARING REPAIR	6.00	EACH		\$	
1060	25015EC		FRP WRAP	2,234.00	SQFT		\$	

Section: 0005 - BRIDGE-MAINTAIN EXISTING BRIDGE

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1070	24755EC		MAINTAIN EXISTING BRIDGE (REVISED: 3-9-20)	500,000.00	DOLL	\$1.00	\$	\$500,000.00

Section: 0006 - BRIDGE

PROPOSAL BID ITEMS

Report Date 3/9/20

SECTION: 0000 - BRIDGE

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1080	02231		STRUCTURE GRANULAR BACKFILL	500.00	CUYD		\$	
1090	02555		CONCRETE-CLASS B	75.00	CUYD		\$	
1100	02998		MASONRY COATING	11,557.00	SQYD		\$	
1110	03299		ARMORED EDGE FOR CONCRETE	80.00	LF		\$	
1120	04775		NAVIGATION LIGHT 360 DEG GREEN	2.00	EACH		\$	
1130	04776		NAVIGATION LIGHT 180 DEG RED	4.00	EACH		\$	
1140	04793		CONDUIT-1 1/4 IN	180.00	LF		\$	
1150	04797		CONDUIT-3 IN	4,022.00	LF		\$	
1160	04799		CONDUIT-4 IN	4,028.00	LF		\$	
1170	06406		SBM ALUM SHEET SIGNS .080 IN	16.00	SQFT		\$	
1180	08001		STRUCTURE EXCAVATION-COMMON	3,350.00	CUYD		\$	
1190	08002		STRUCTURE EXCAV-SOLID ROCK	310.00	CUYD		\$	
1200	08003		FOUNDATION PREPARATION	1.00	LS		\$	
1210	08019		CYCLOPEAN STONE RIP RAP	3,780.00	TON		\$	
1220	08020		CRUSHED AGGREGATE SLOPE PROT	220.00	TON		\$	
1230	08033		TEST PILES	809.00	LF		\$	
1240	08037		COFFERDAM	1.00	LS		\$	
1250	08051		PILES-STEEL HP14X89	3,826.00	LF		\$	
1260	08095		PILE POINTS-14 IN	42.00	EACH		\$	
1270	08100		CONCRETE-CLASS A	8,751.20	CUYD		\$	
1280	08104		CONCRETE-CLASS AA	2,540.00	CUYD		\$	
1290	08137		MECHANICAL REINF COUPLER #14	1,080.00	EACH		\$	
1300	08150		STEEL REINFORCEMENT	1,229,769.00	LB		\$	
1310	08151		STEEL REINFORCEMENT-EPOXY COATED	995,365.00	LB		\$	
1320	08160		STRUCTURAL STEEL 5,198,270 LBS	1.00	LS		\$	
1330	08170		SHEAR CONNECTORS 13,760 EACH	1.00	LS		\$	
1340	08470		EXPANSION DAM-2 IN NEOPRENE	40.00	LF		\$	
1350	08471		EXPANSION DAM-2.5 IN NEOPRENE	40.00	LF		\$	
1360	08500		APPROACH SLAB	224.00	SQYD		\$	
1370	08752		PAINT CLEARANCE GAUGES	1.00	LS		\$	
1380	20410ED		MAINTAIN LIGHTING	1.00	LS		\$	
1390	20610NC		INSTRUMENTATION	1.00	LS		\$	
1400	20745ED		ROCK SOUNDINGS	1,243.00	LF		\$	
1410	20746ED		ROCK CORINGS	810.00	LF		\$	
1420	23233EC		DYNAMIC PILE TESTING	5.00	EACH		\$	
1430	23365EC		LIGHTING-NAV MONITORING SYSTEM	1.00	LS		\$	
1440	23859EC		FINGER EXPANSION JOINT	40.00	LF		\$	
1450	23868EC		STRUCTURE LIGHTNING PROTECTION	1.00	LS		\$	
1460	24098EC		PPC I-BEAM TYPE HN 66-49	1,452.00	LF		\$	
1470	24534ED		PIPE PILE-30"	6,634.00	LF		\$	
1480	24537ED		OPEN END INSIDE FIT CUTTING SHOE-30"	65.00	EACH		\$	
1490	24614EC		DISC EXPANSION BEARING	2.00	EACH		\$	
1500	24741EC		SONAR CALIPER TESTING	18.00	EACH		\$	
1510	24804EC		PPC I-BEAM 4N 78 49	3,336.00	LF		\$	
1520	24838EC		SOLAR POWERED NAV LIGHTING SYSTEM	6.00	EACH		\$	
1530	24874EC		TIP TESTING PIER 3	8.00	EACH		\$	

PROPOSAL BID ITEMS

Report Date 3/9/20

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1540	24874EC		TIP TESTING PIER 4	8.00	EACH		\$	
1550	24875EC		CSL TESTING (8 TUBES) PIER 3	16.00	EACH		\$	
1560	24875EC		CSL TESTING (8 TUBES) PIER 4	16.00	EACH		\$	
1570	25003EC		DRILLED SHAFT - 96 IN (COMMON) PIER 3	267.00	LF		\$	
1580	25003EC		DRILLED SHAFT - 96 IN (COMMON) PIER 4	603.00	LF		\$	
1590	25004EC		DRILLED SHAFT - 90 IN (SOLID ROCK) PIER 3	285.00	LF		\$	
1600	25004EC		DRILLED SHAFT - 90 IN (SOLID ROCK) PIER 4	165.00	LF		\$	
1610	25027ED		RAIL SYSTEM SINGLE SLOPE - 36 IN	3,826.00	LF		\$	
1620	25029ED		STEEL HANDRAIL	3,826.00	LF		\$	
1630	25046EC		DISC FIXED BEARING	2.00	EACH		\$	
1640	25085EC		STRIP SEAL EXPANSION JOINT - 5 INCH	40.00	LF		\$	

Section: 0007 - UTILITIES- WATER AND SEWER

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1650	01314		PLUG PIPE	4.00	EACH		\$	
1660	02690		SAFELoading	16.00	CUYD		\$	
1670	05985		SEEDING AND PROTECTION	1,374.00	SQYD		\$	
1680	14000		W AIR RELEASE VALVE 1 INCH	2.00	EACH		\$	
1690	14008		W ENCAsEMENT STEEL BORED RANGE 3	255.00	LF		\$	
1700	14019		W FIRE HYDRANT ASSEMBLY (REVISED: 3-9-20)	3.00	EACH		\$	
1710	14021		W FIRE HYDRANT REMOVE	3.00	EACH		\$	
1712	14022		W FLUSH HYDRANT ASSEMBLY (ADDED: 3-9-20)	2.00	EACH		\$	
1720	14025		W METER 1 INCH	10.00	EACH		\$	
1730	14058		W PIPE PVC 04 INCH	652.00	LF		\$	
1740	14059		W PIPE PVC 06 INCH	778.00	LF		\$	
1750	14074		W PLUG EXISTING MAIN	4.00	EACH		\$	
1760	14077		W SERV PE/PLST LONG SIDE 1 IN	2.00	EACH		\$	
1770	14082		W SERV PE/PLST SHORT SIDE 1 IN	8.00	EACH		\$	
1780	14089		W TAPPING SLEEVE AND VALVE SIZE 1	2.00	EACH		\$	
1790	14094		W TIE-IN 06 INCH	3.00	EACH		\$	
1800	14105		W VALVE 06 INCH	6.00	EACH		\$	
1810	14156		W METER REMOVE	7.00	EACH		\$	
1820	15000		S BYPASS PUMPING	1.00	EACH		\$	
1830	15017		S ENCAsEMENT STEEL BORED RANGE 4	86.00	LF		\$	
1840	15023		S ENCAsEMENT STEEL OPEN CUT RANGE 4	130.00	LF		\$	
1850	15090		S LATERAL SHORT SIDE 06 INCH	8.00	EACH		\$	
1860	15092		S MANHOLE	7.00	EACH		\$	
1870	15093		S MANHOLE ABANDON/REMOVE	4.00	EACH		\$	
1880	15094		S MANHOLE ADJUST TO GRADE	1.00	EACH		\$	
1890	15096		S MANHOLE CASTING WATERTIGHT	10.00	EACH		\$	
1900	15097		S MANHOLE RECONSTRUCT INVERT	1.00	EACH		\$	

PROPOSAL BID ITEMS

Report Date 3/9/20

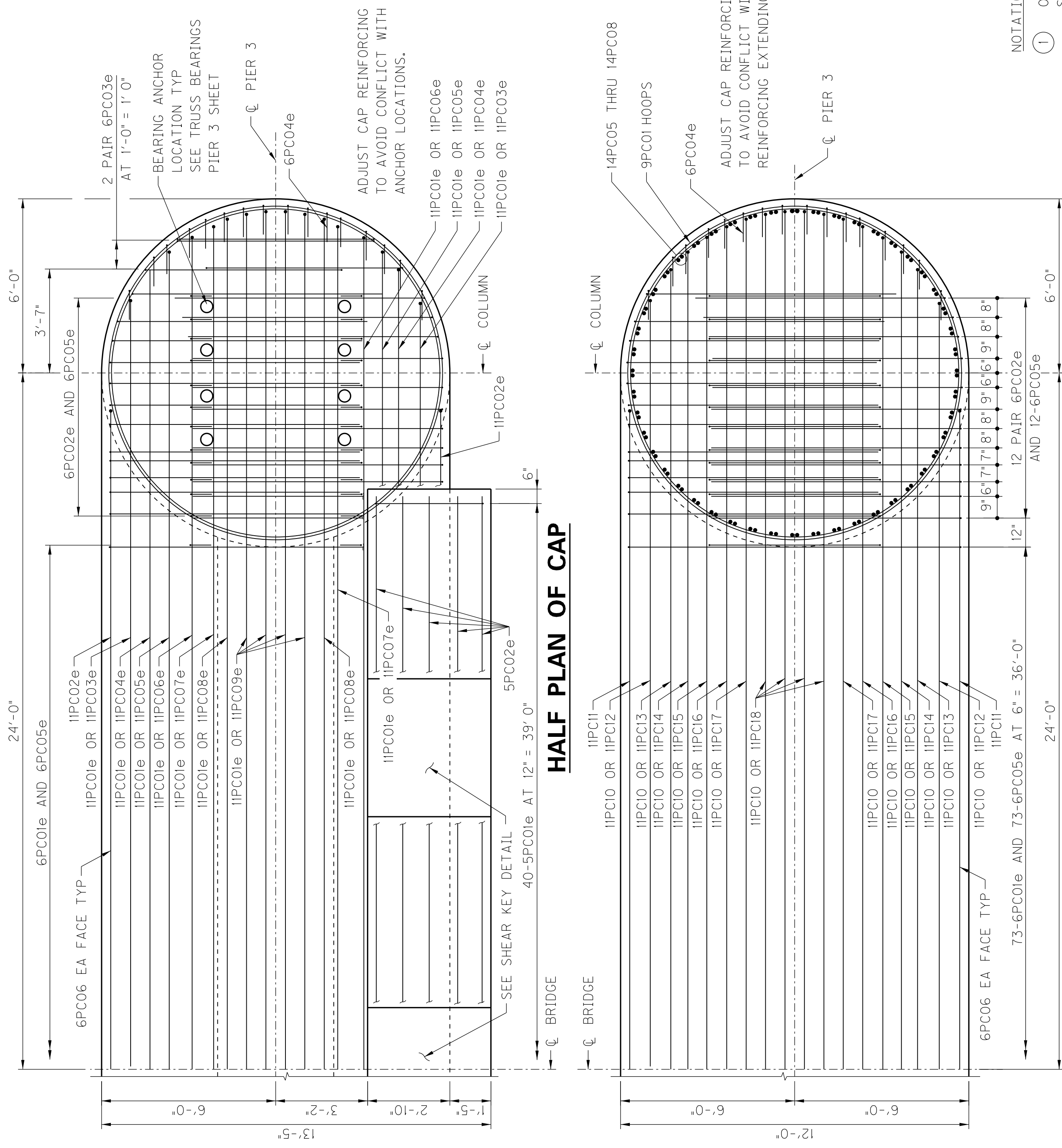
LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1910	15099		S MANHOLE TAP EXISTING	2.00	EACH		\$	
1920	15101		S MANHOLE WITH DROP	1.00	EACH		\$	
1930	15112		S PIPE PVC 08 INCH	1,169.00	LF		\$	
1940	15136		S LATERAL LOCATE	8.00	EACH		\$	

Section: 0008 - TRAINEE

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1950	02742		TRAINEE PAYMENT REIMBURSEMENT 1 - IRONWORKER	1,400.00	HOUR		\$	

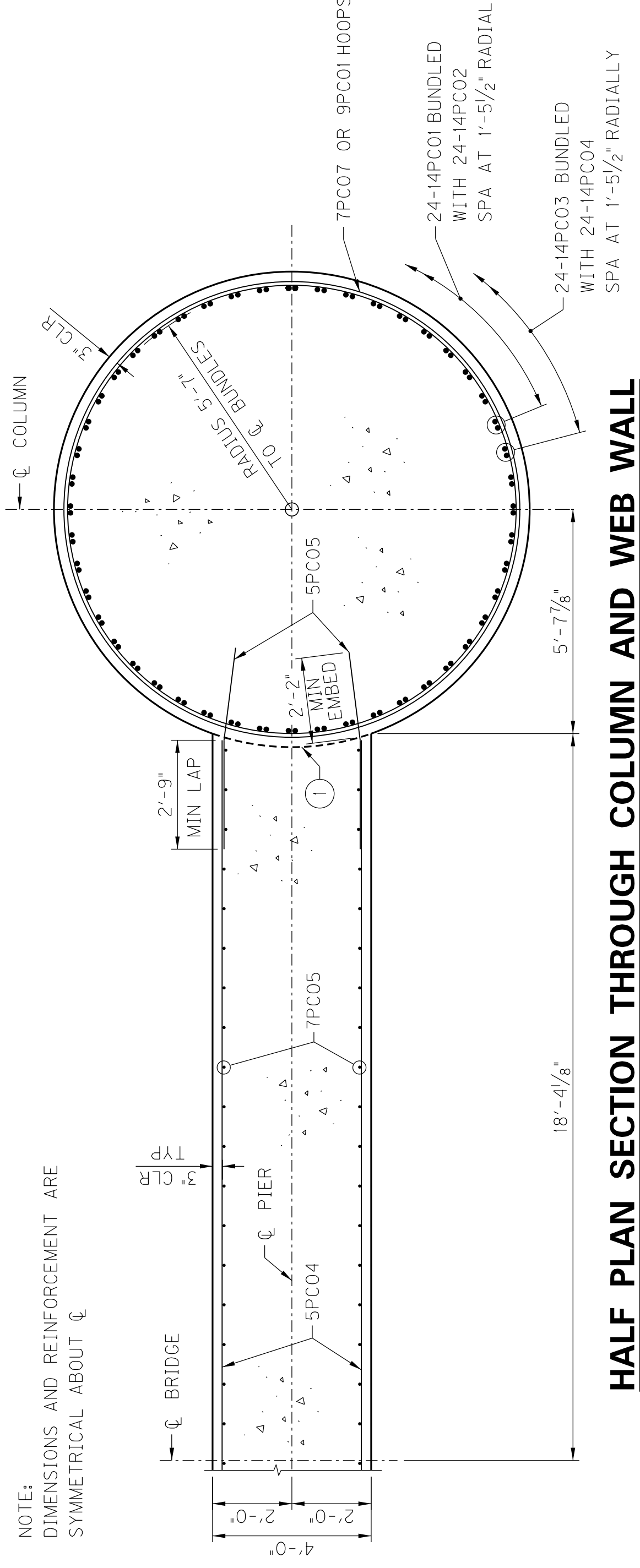
Section: 0009 - DEMOBILIZATION &/OR MOBILIZATION

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1960	02568		MOBILIZATION	1.00	LS		\$	
1970	02569		DEMOBILIZATION	1.00	LS		\$	

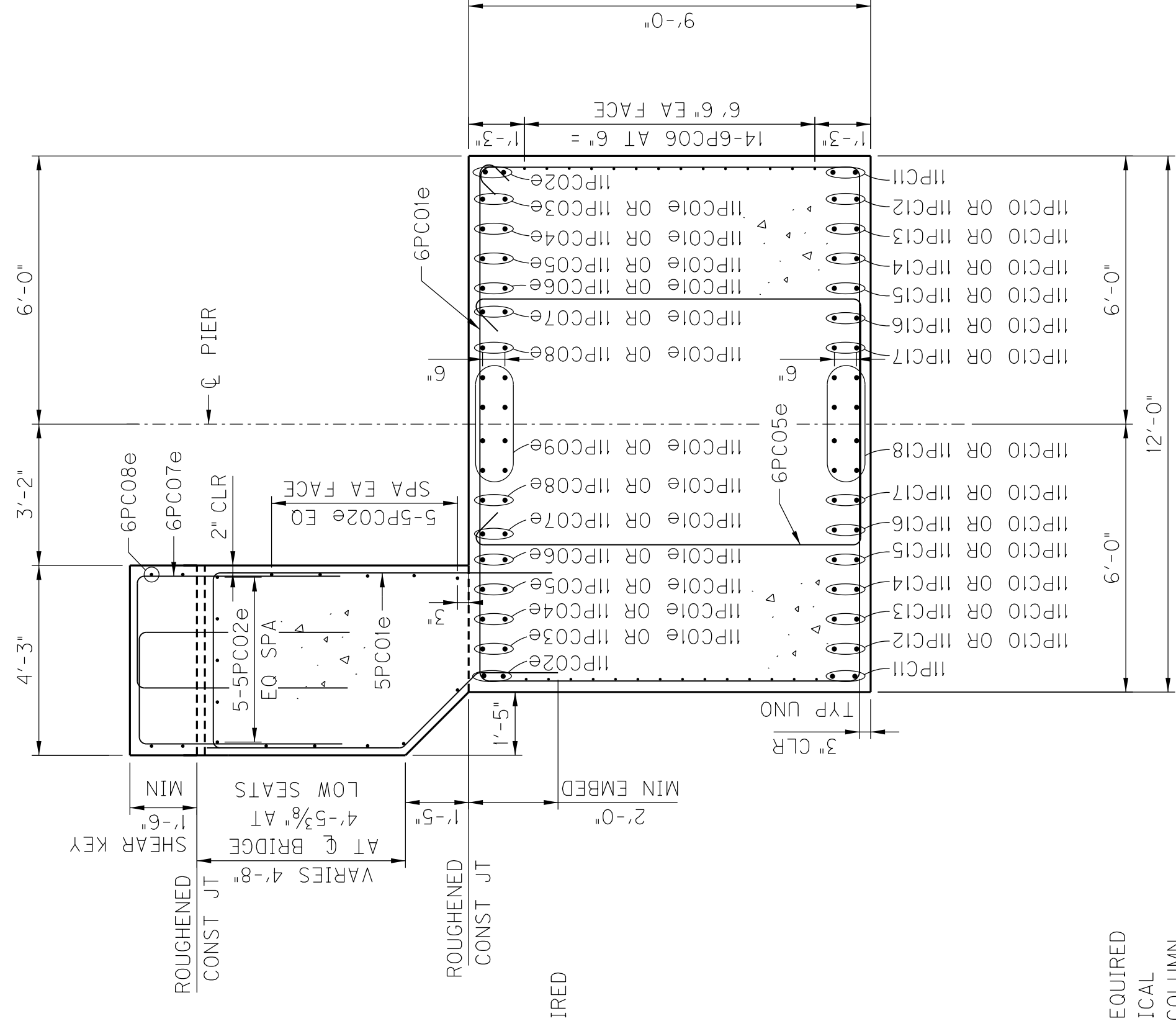


HALF PLAN SECTION THROUGH BOTTOM OF CAP

NOTE:
DIMENSIONS AND REINFORCEMENT ARE
SYMMETRICAL ABOUT \bar{C}

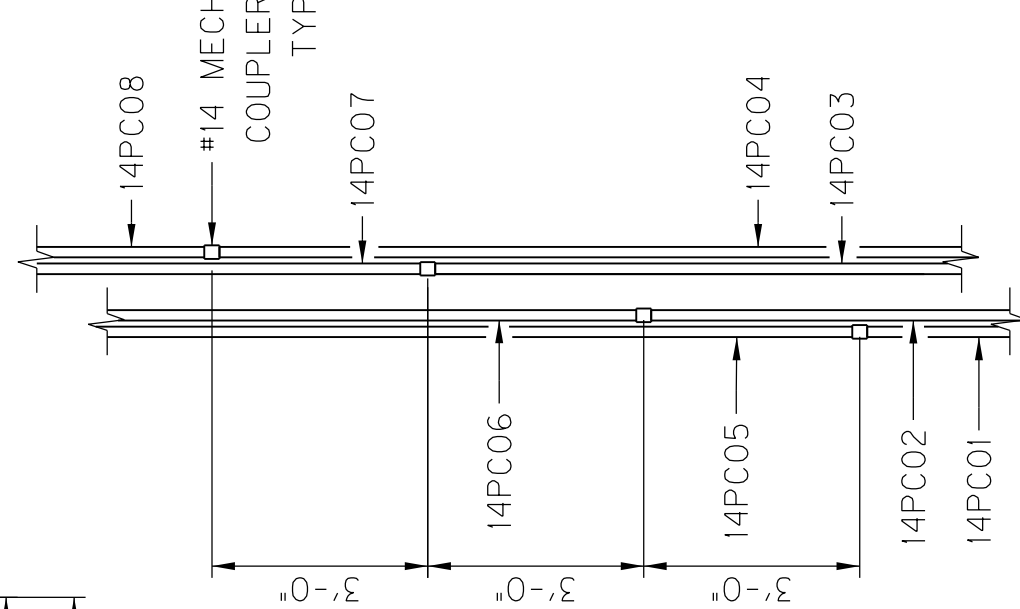


HALF PLAN SECTION THROUGH COLUMN AND WEB WALL

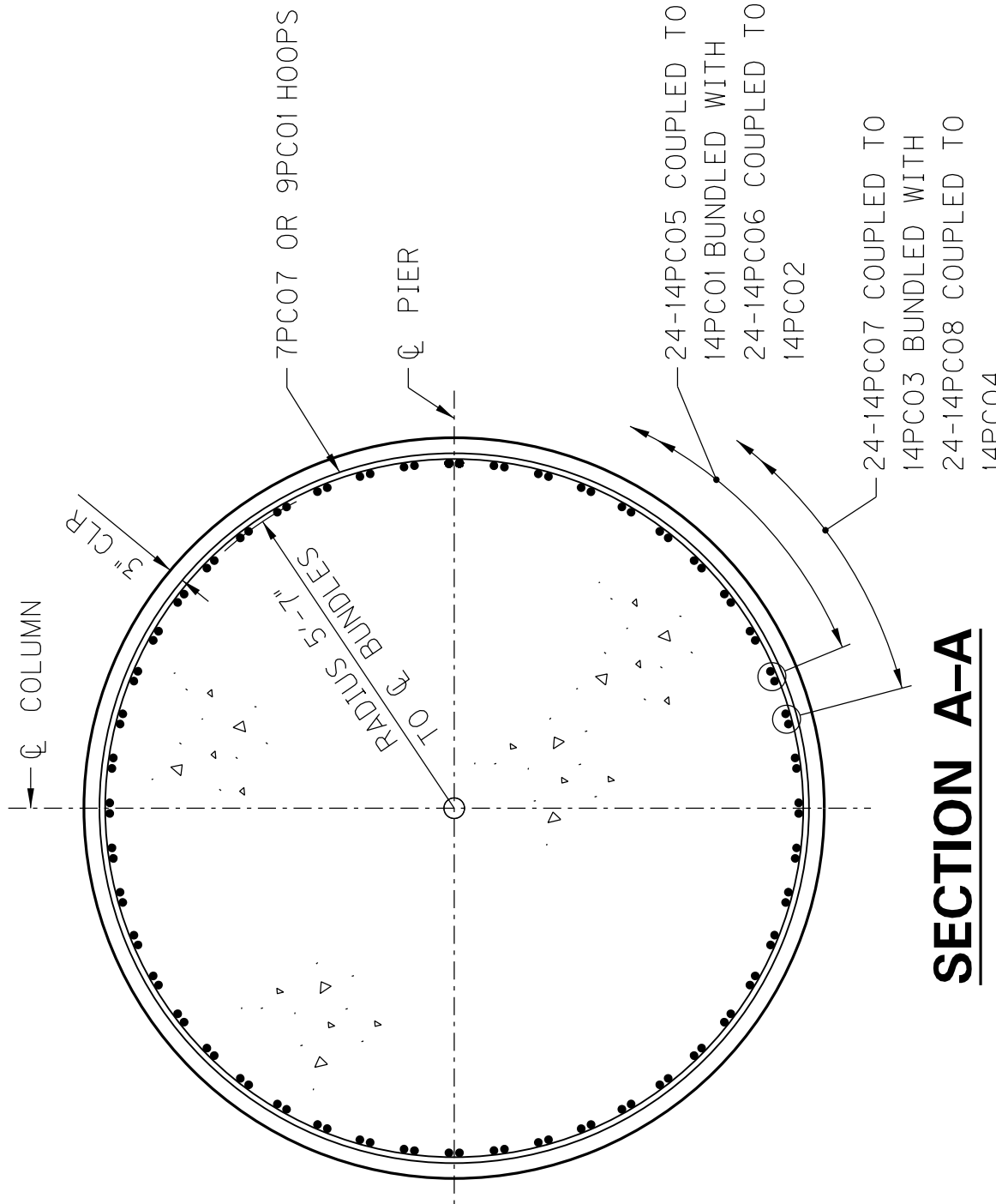


SECTION THROUGH CAP
AT \bar{C} BRIDGE

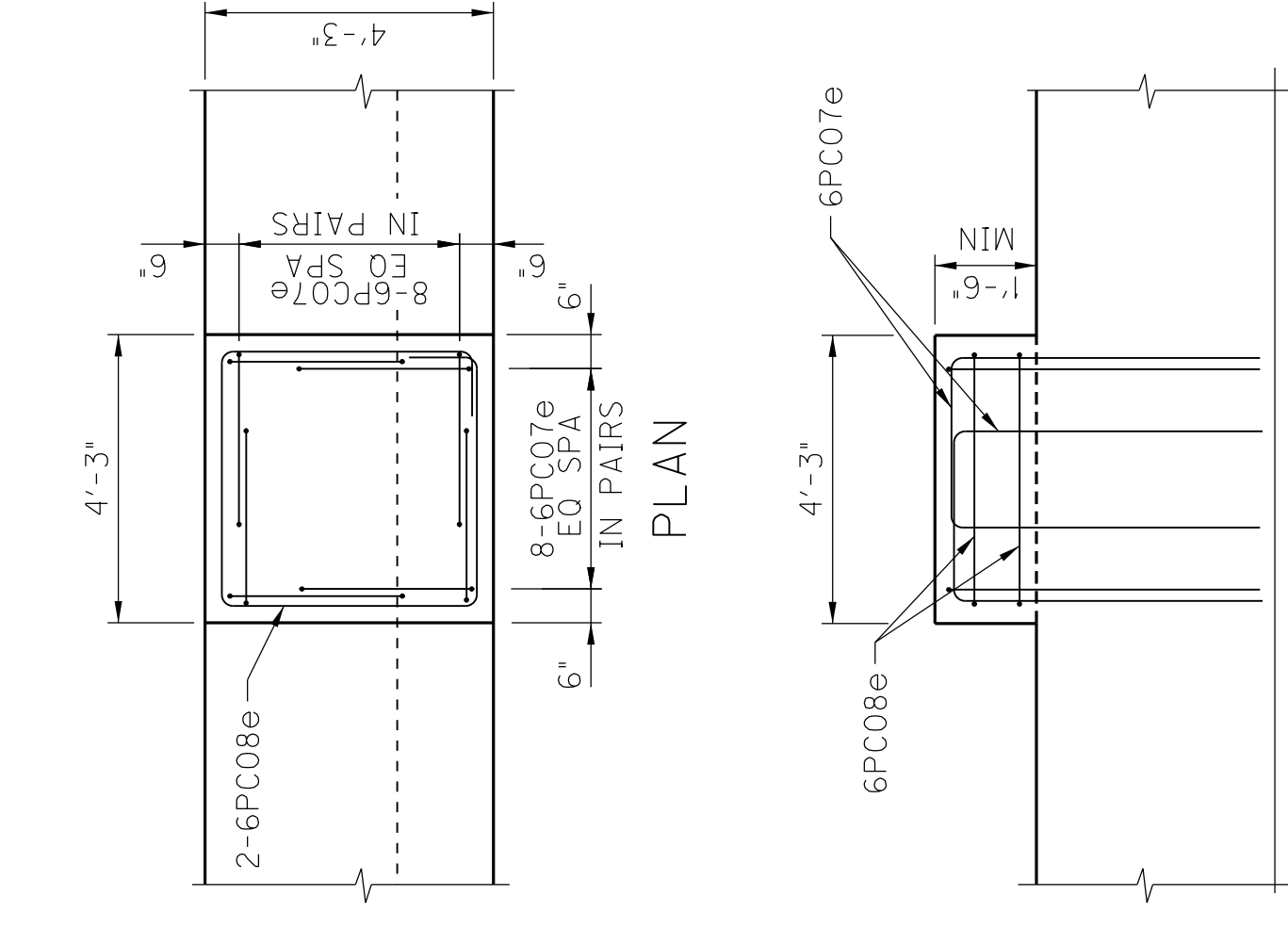
NOTATIONS
① OPTIONAL CONSTRUCTION JOINT. CONSTRUCTION JOINT SHALL INCLUDE 2"x4" DEPRESSED KEY.



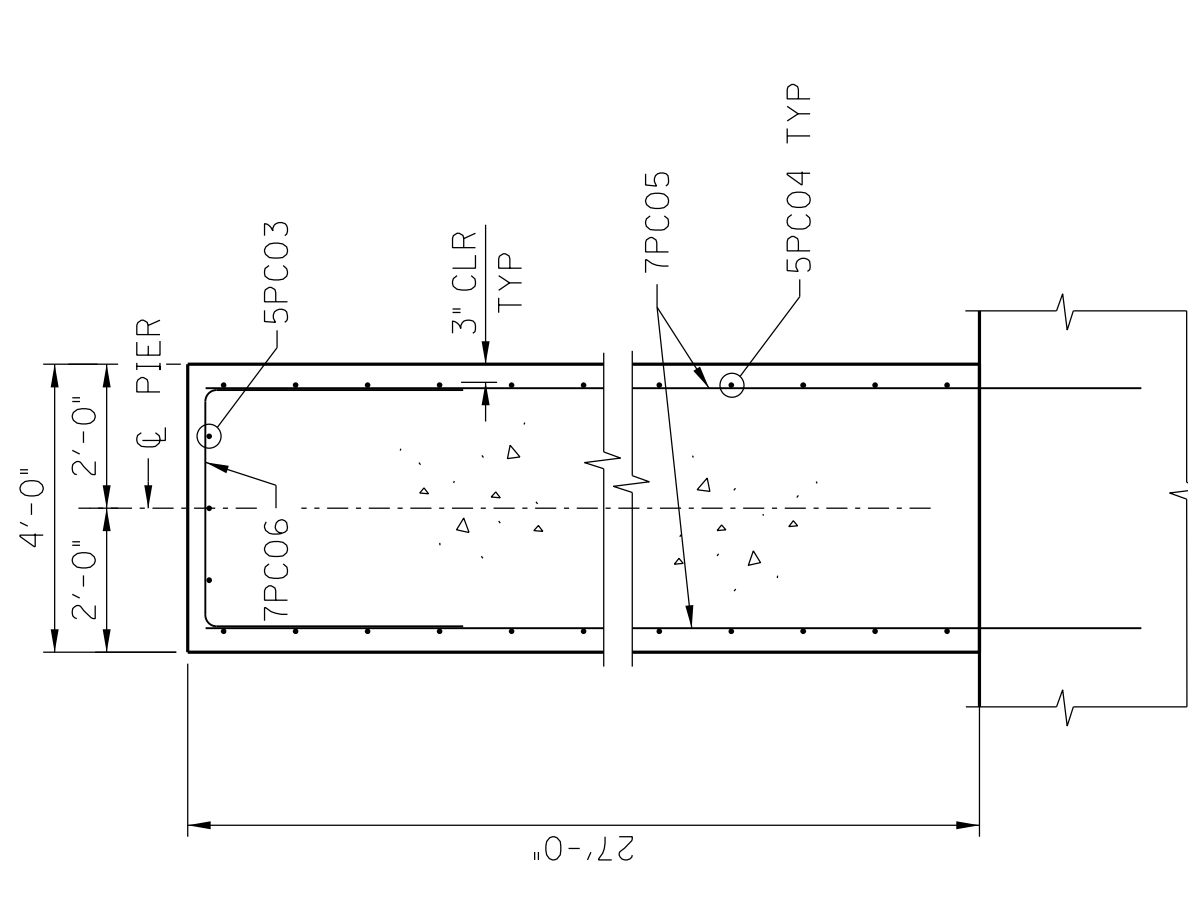
**COLUMN BAR
COUPLING DETAIL**



SECTION A-A



SHEAR KEY DETAIL



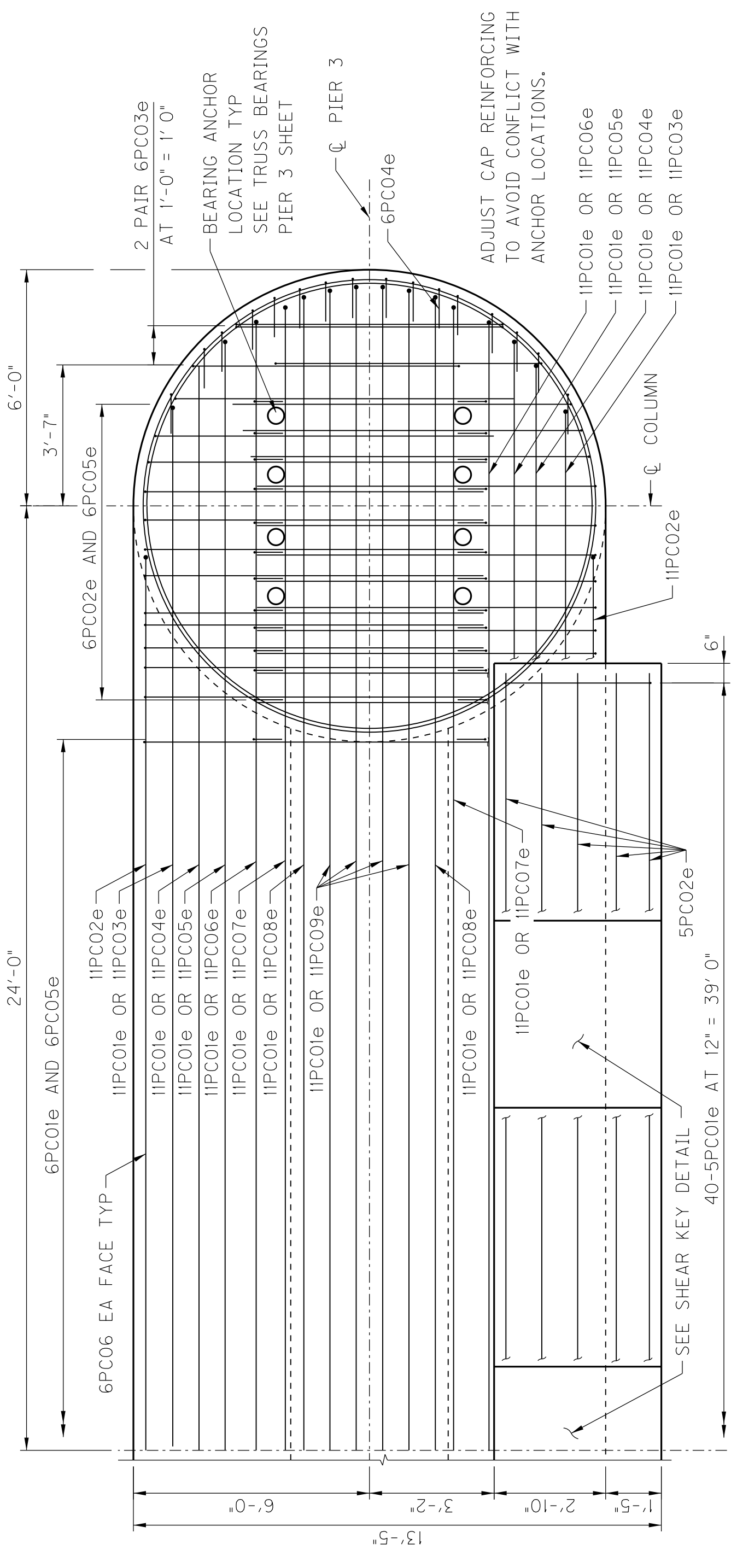
SECTION THROUGH WEB WALL

DATE: MARCH 2020	CHECKED BY: C. GREENWELL
DESIGNED BY: J. HUDSON	DETAILED BY: S. MURPHY
Commonwealth of Kentucky DEPARTMENT OF HIGHWAYS	
COUNTY LIVINGSTON	
ROUTE US 60	CROSSING CUMBERLAND RIVER
PIER 3 (3)	
PREPARED BY Stantec	
SHEET NO. S26	DRAWING NO. 27458

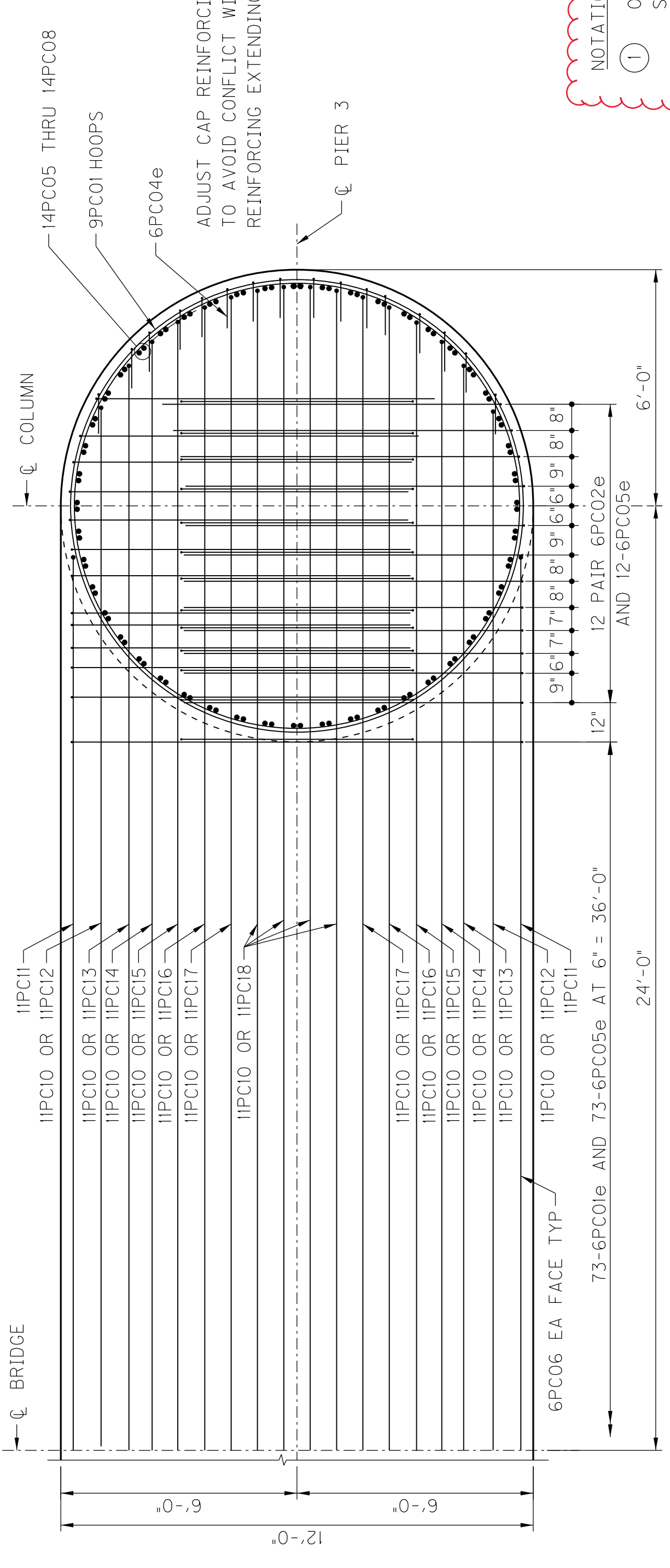
ITEM NUMBER

1-1142.00

REVISED: 03-03-2020

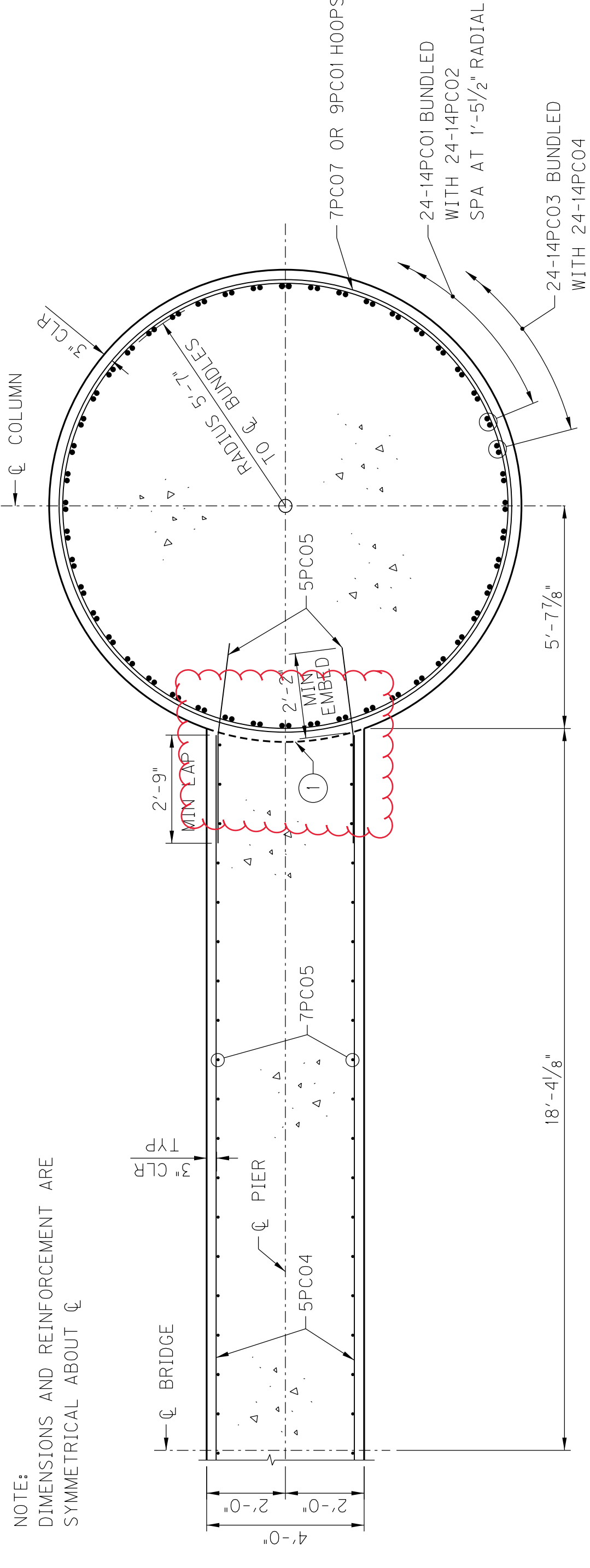


HALF PLAN OF CAP

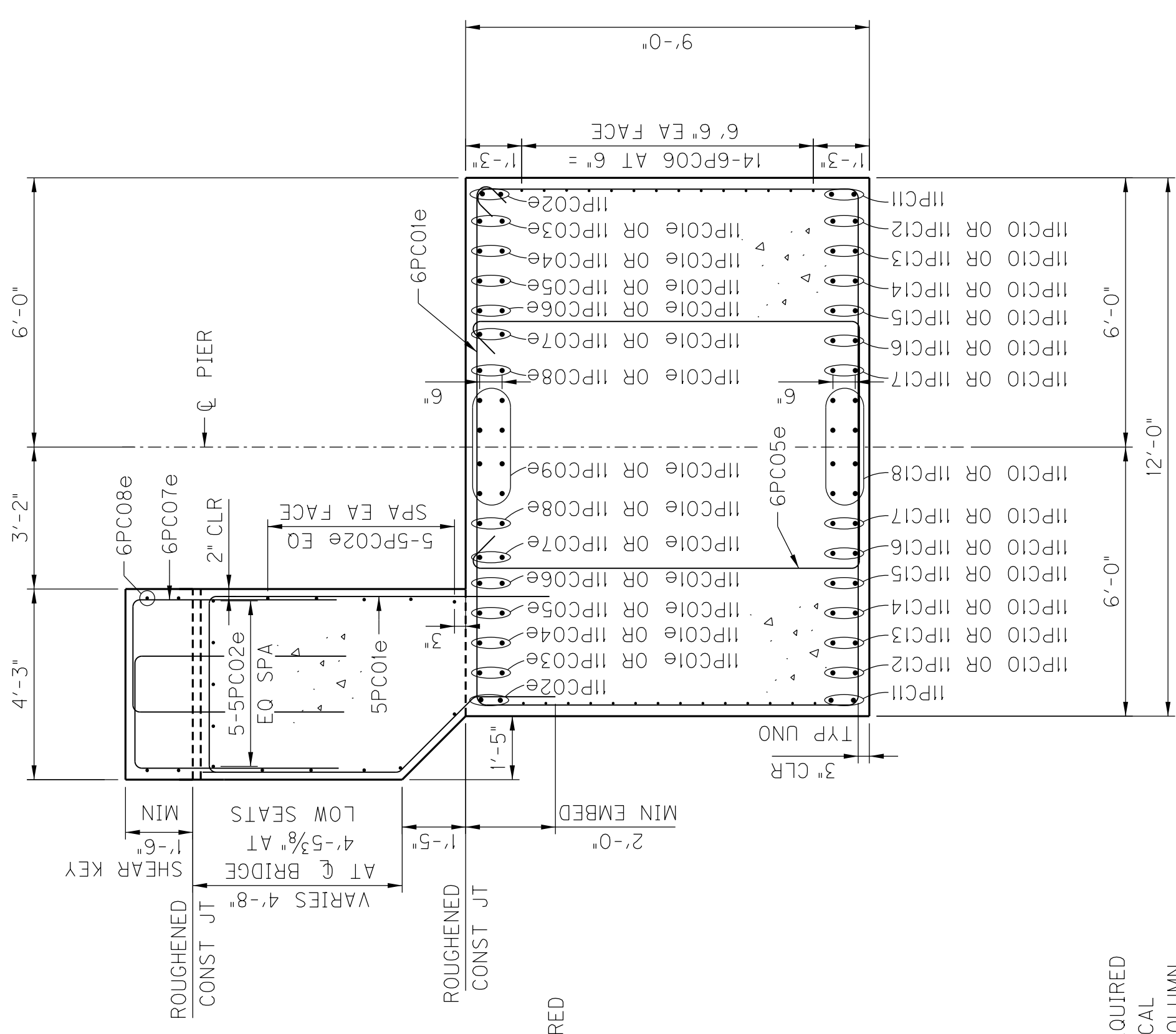


HALF PLAN SECTION THROUGH BOTTOM OF CAP

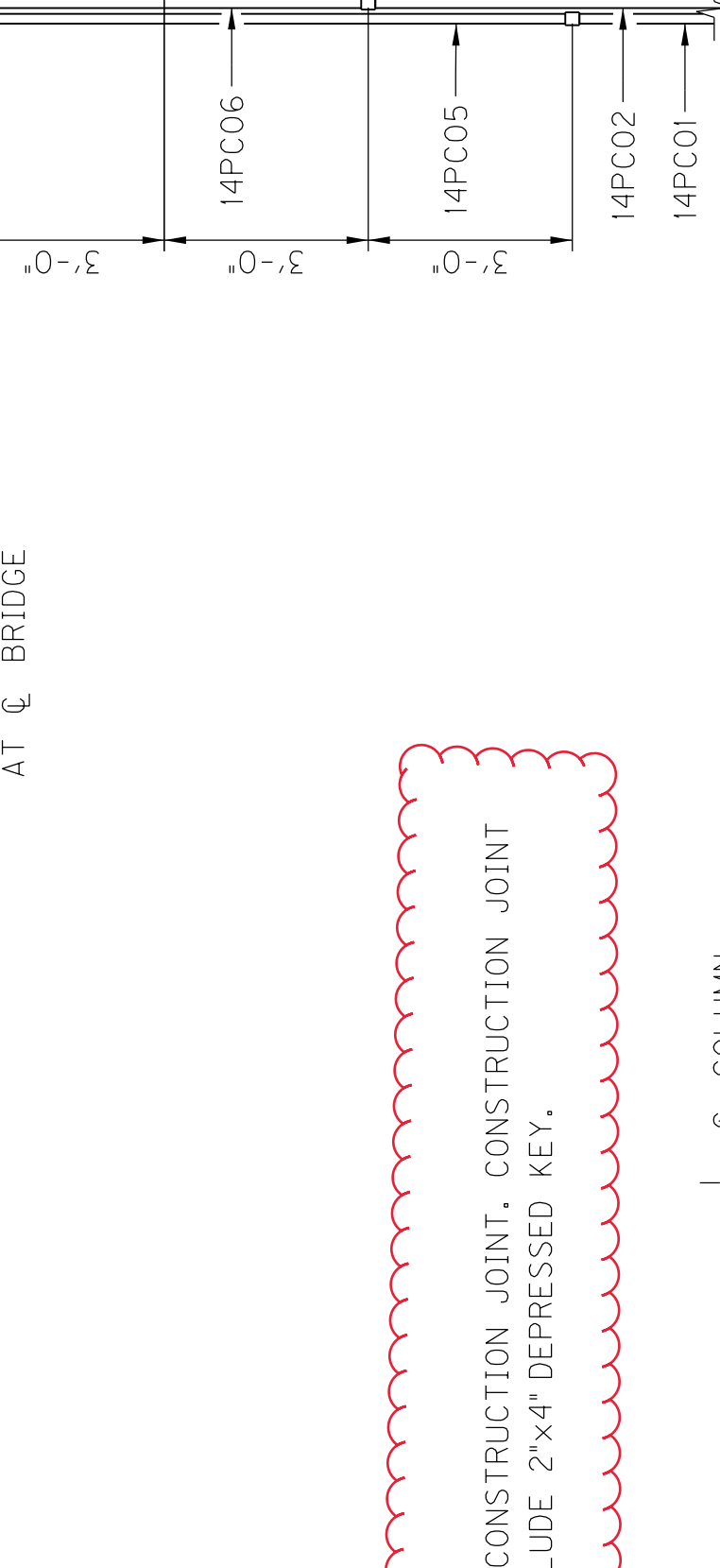
NOTE:
DIMENSIONS AND REINFORCEMENT ARE
SYMMETRICAL ABOUT ϕ



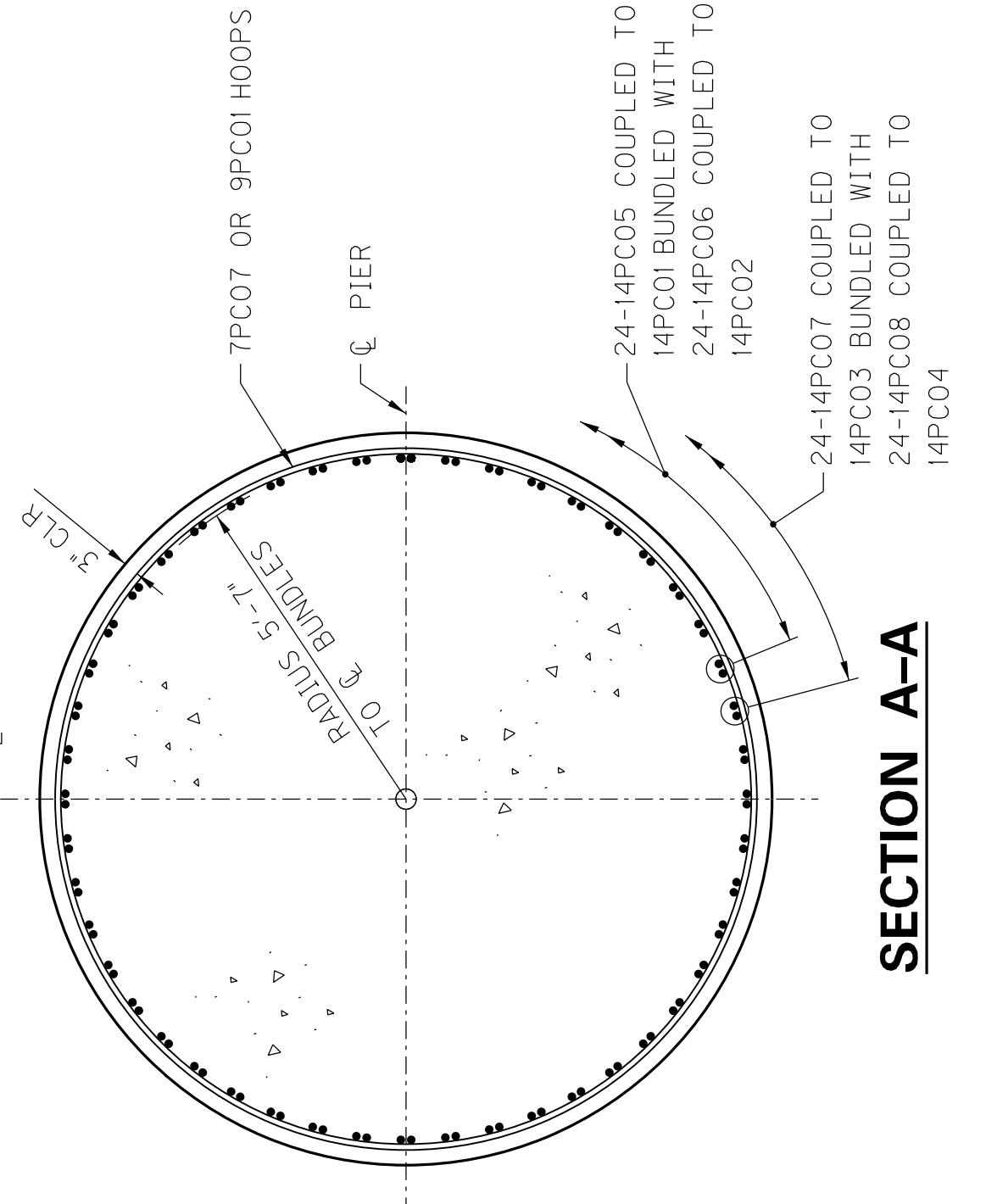
HALF PLAN SECTION THROUGH COLUMN AND WEB WALL



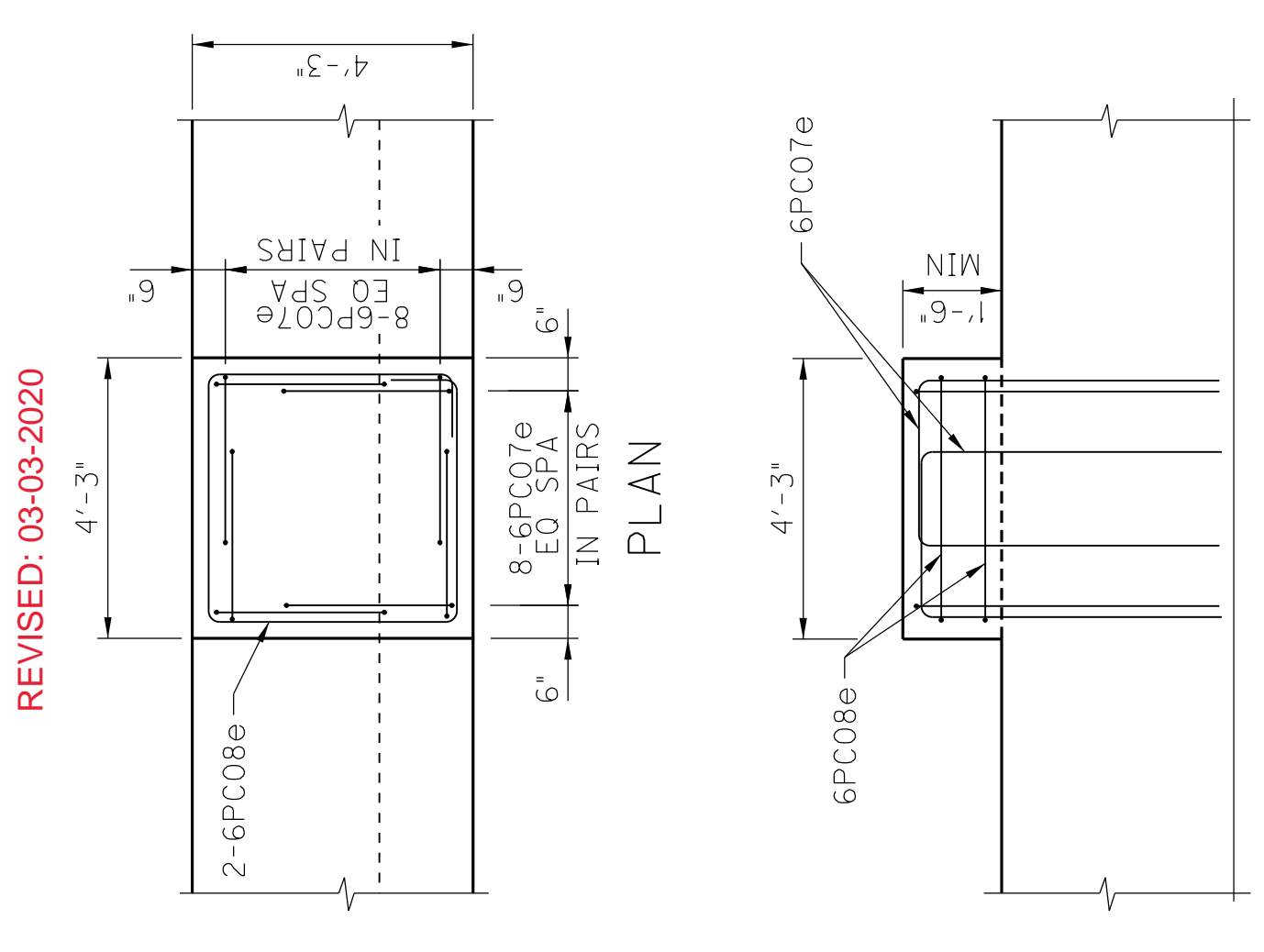
SECTION THROUGH CAP



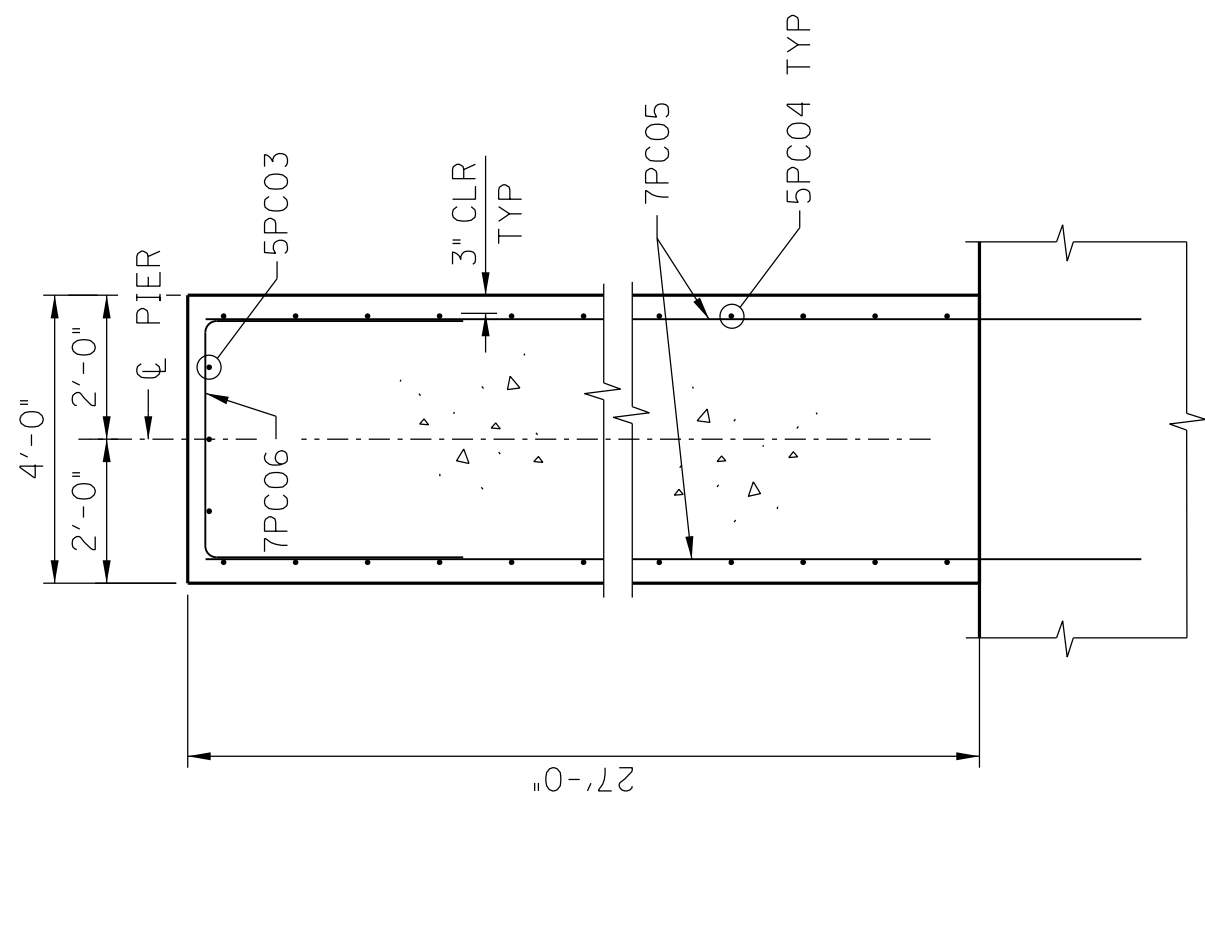
NOTATIONS
① OPTIONAL CONSTRUCTION JOINT. CONSTRUCTION JOINT SHALL INCLUDE 2"x4" DEPRESSED KEY.



SECTION A-A



SHEAR KEY DETAIL

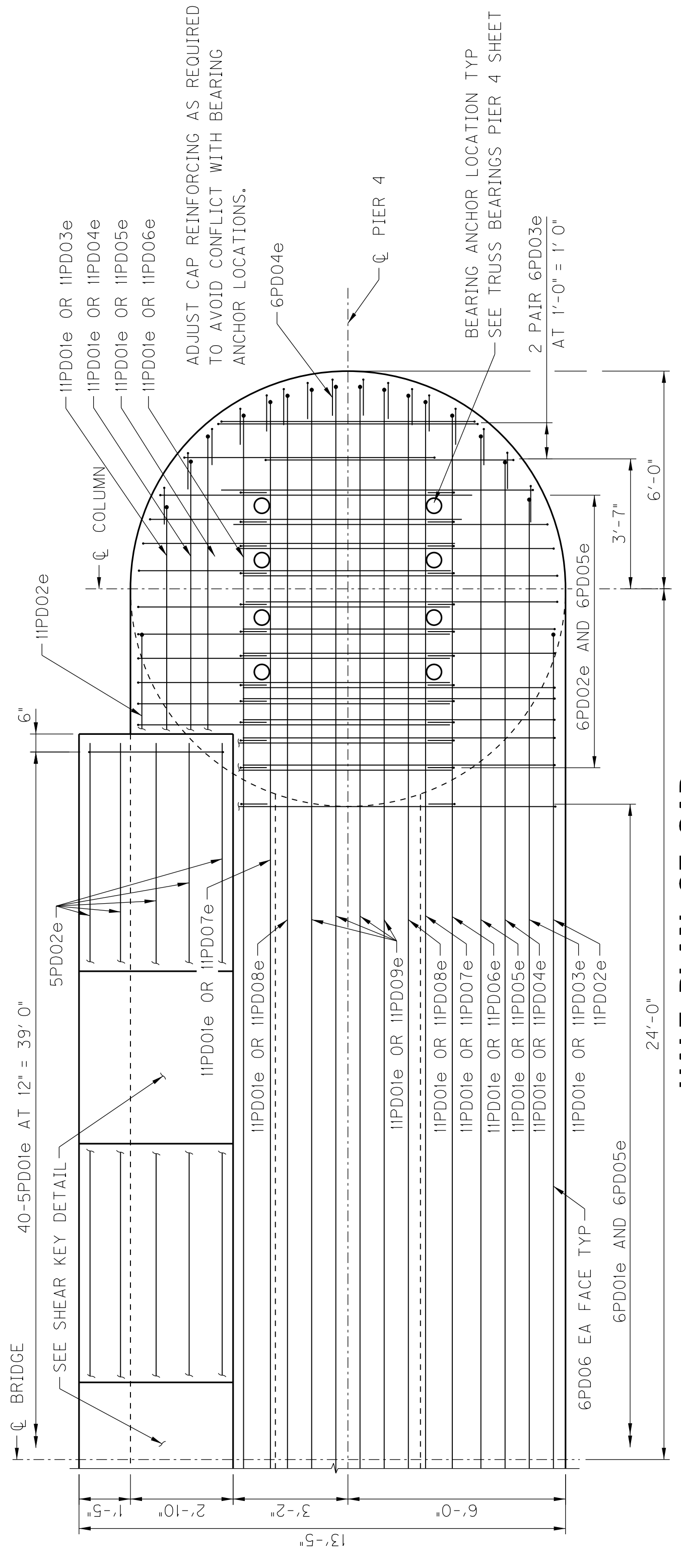


SECTION THROUGH WEB WALL

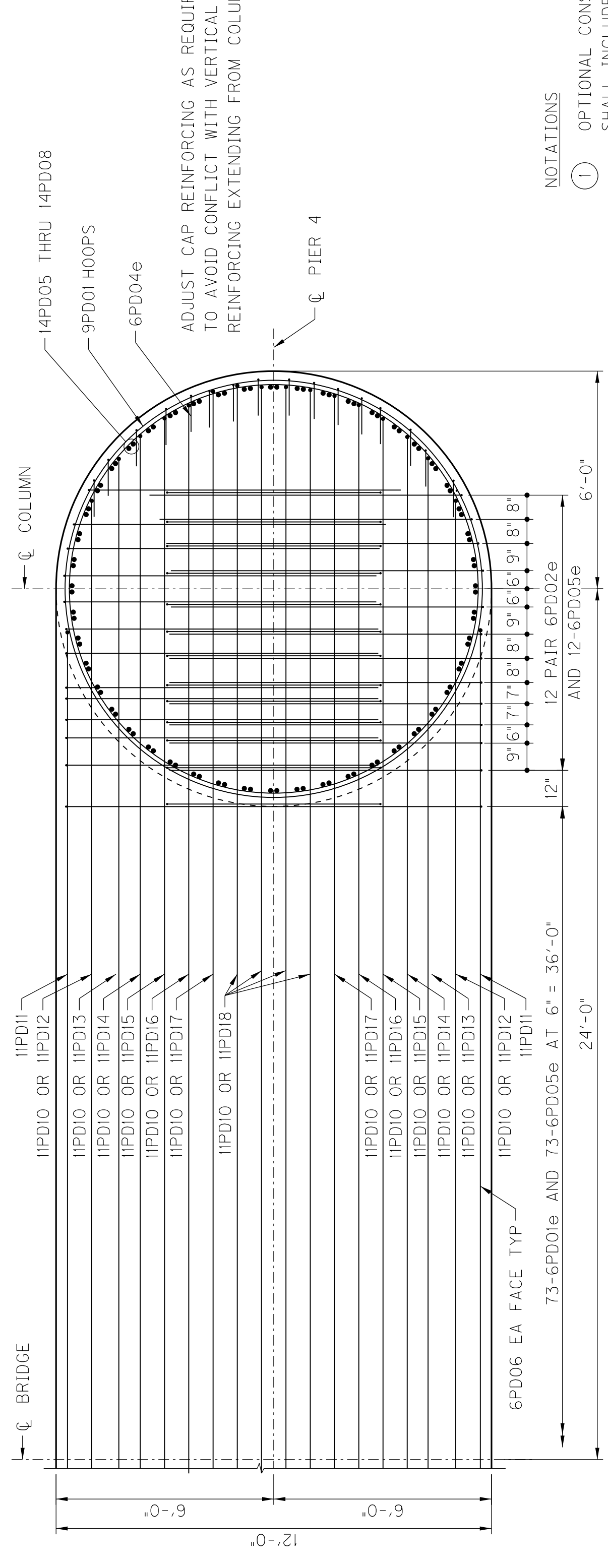
COLUMN BAR COUPLING DETAIL

DATE: MARCH 2020	CHECKED BY: C. GREENWELL
DESIGNED BY: J. HUDSON	DETAILED BY: S. MURPHY
Commonwealth of Kentucky DEPARTMENT OF HIGHWAYS	
COUNTY LIVINGSTON	
ROUTE US 60	CROSSING CUMBERLAND RIVER
PIER 3 (3)	
PREPARED BY Stantec	
SHEET NO. S26	DRAWING NO. 27458

ITEM NUMBER 1-1142.00

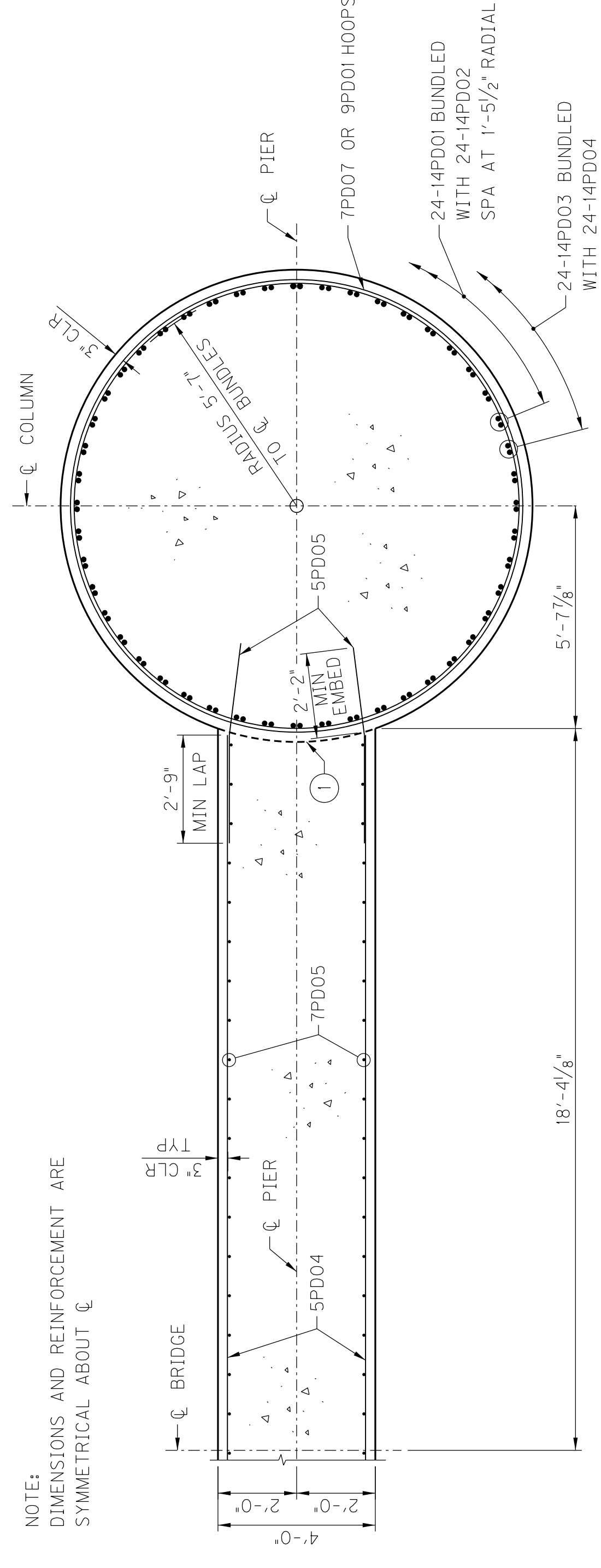


HALF PLAN OF CAP

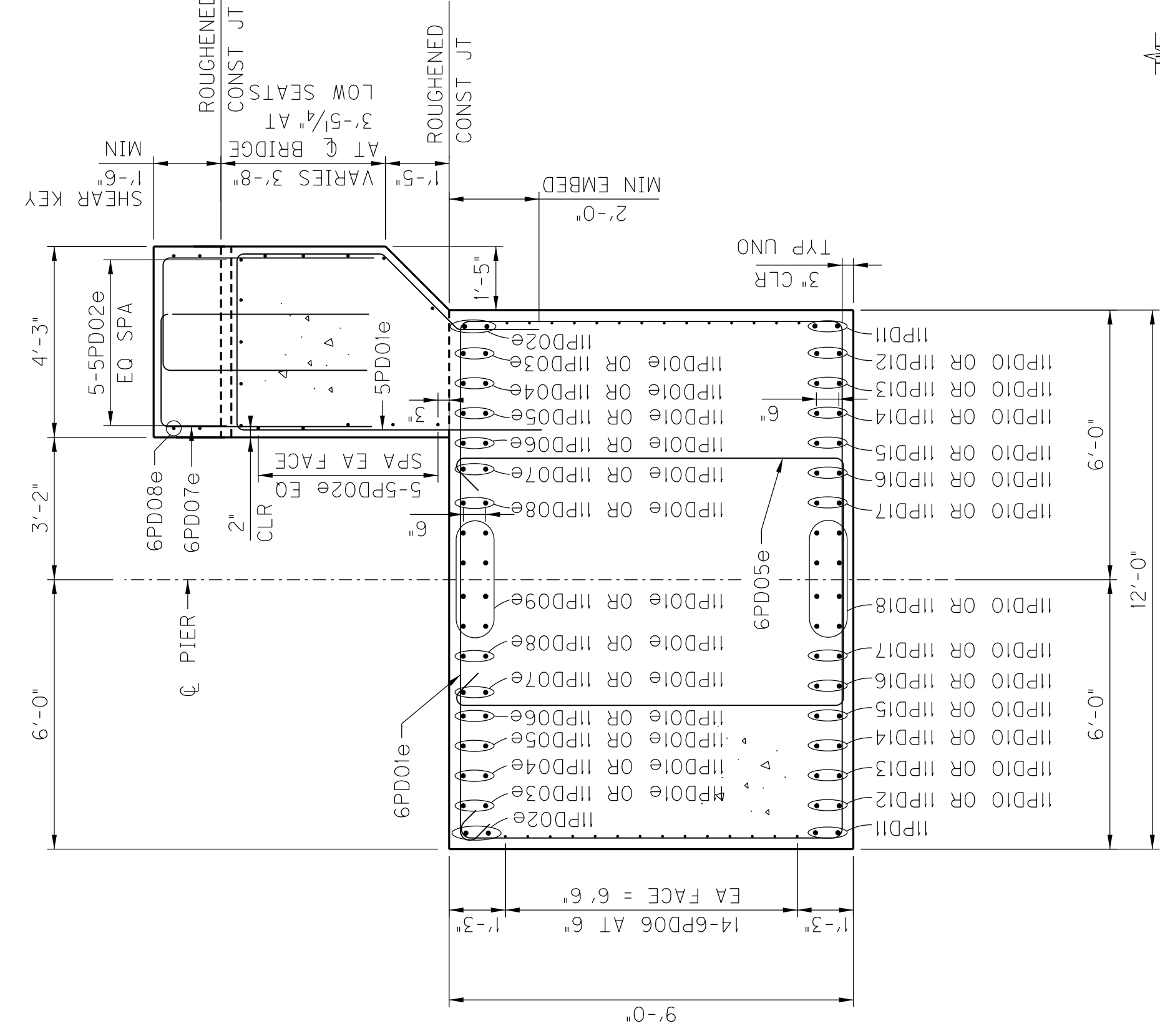


HALF PLAN SECTION THROUGH BOTTOM OF CAP

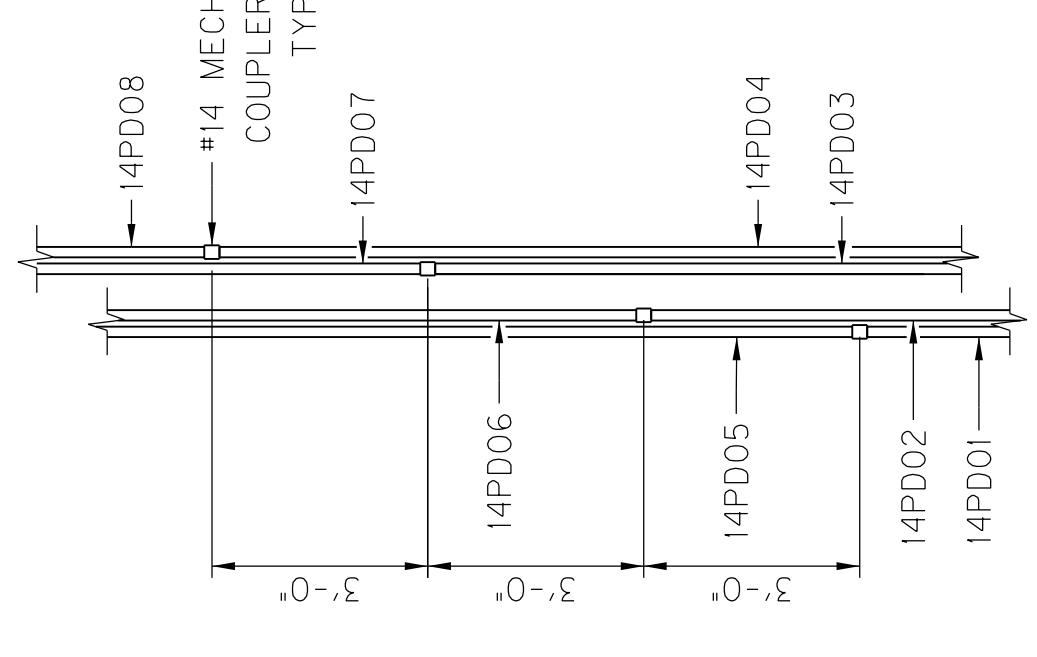
NOTE:
 DIMENSIONS AND REINFORCEMENT ARE
 SYMMETRICAL ABOUT CL



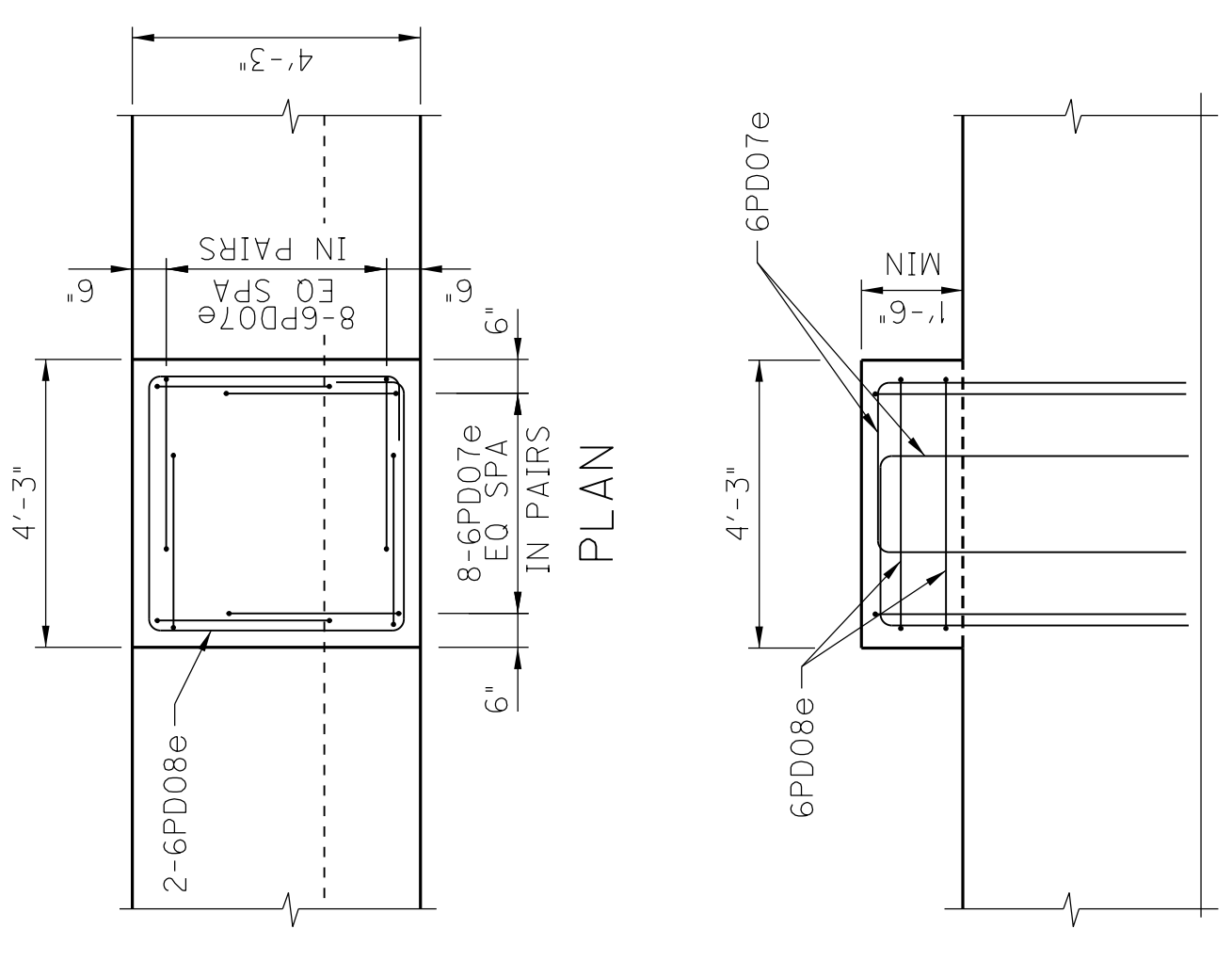
HALF PLAN SECTION THROUGH COLUMN AND WEB WALL



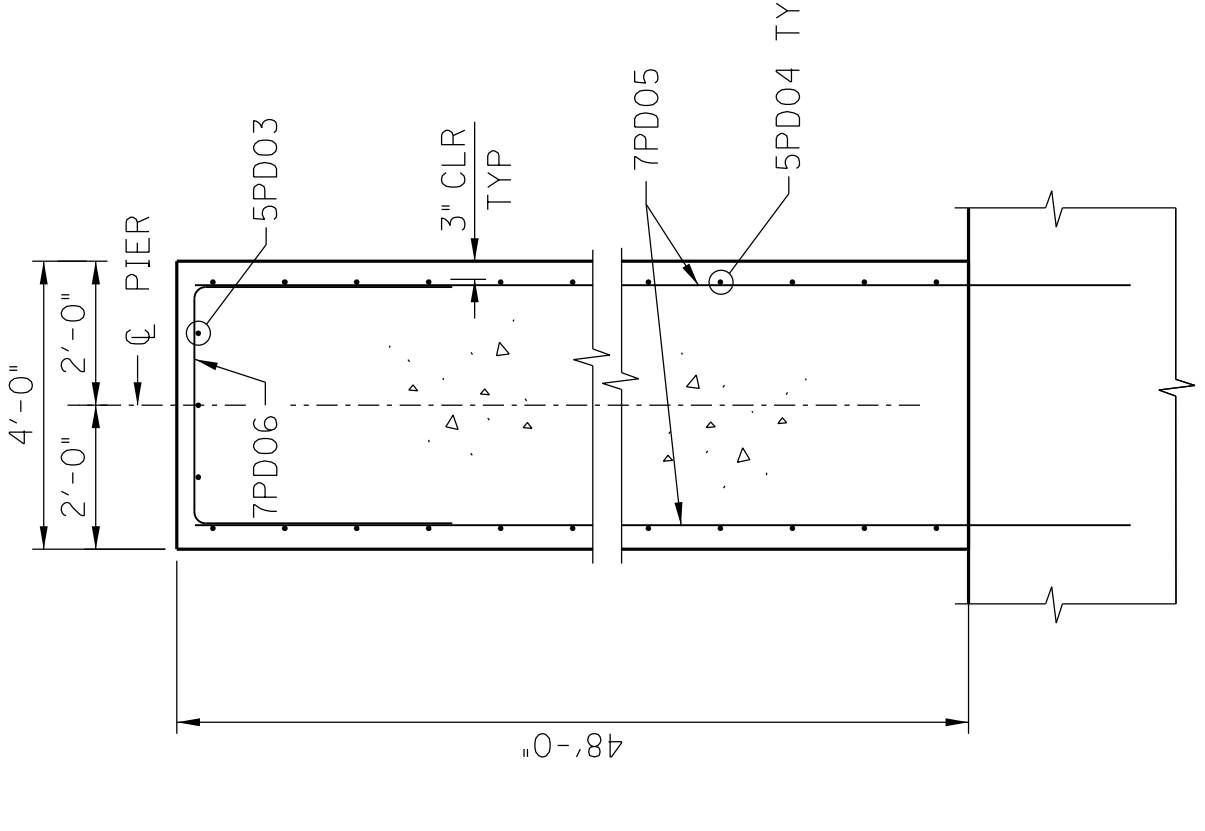
SECTION THROUGH CAP
 AT CL BRIDGE



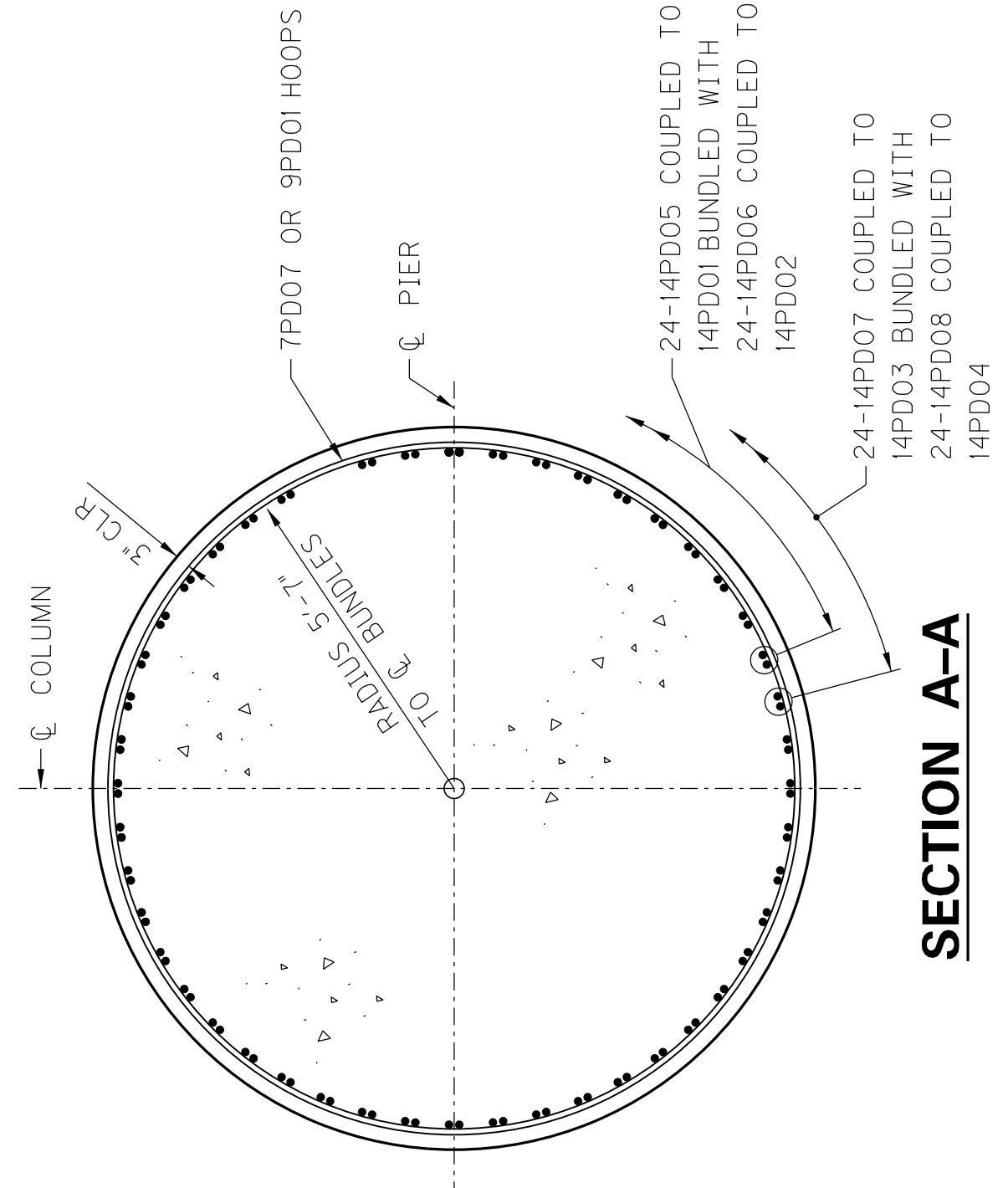
**COLUMN BAR
 COUPLING DETAIL**



ELEVATION
SHEAR KEY DETAIL



SECTION THROUGH WEB WALL



SECTION A-A

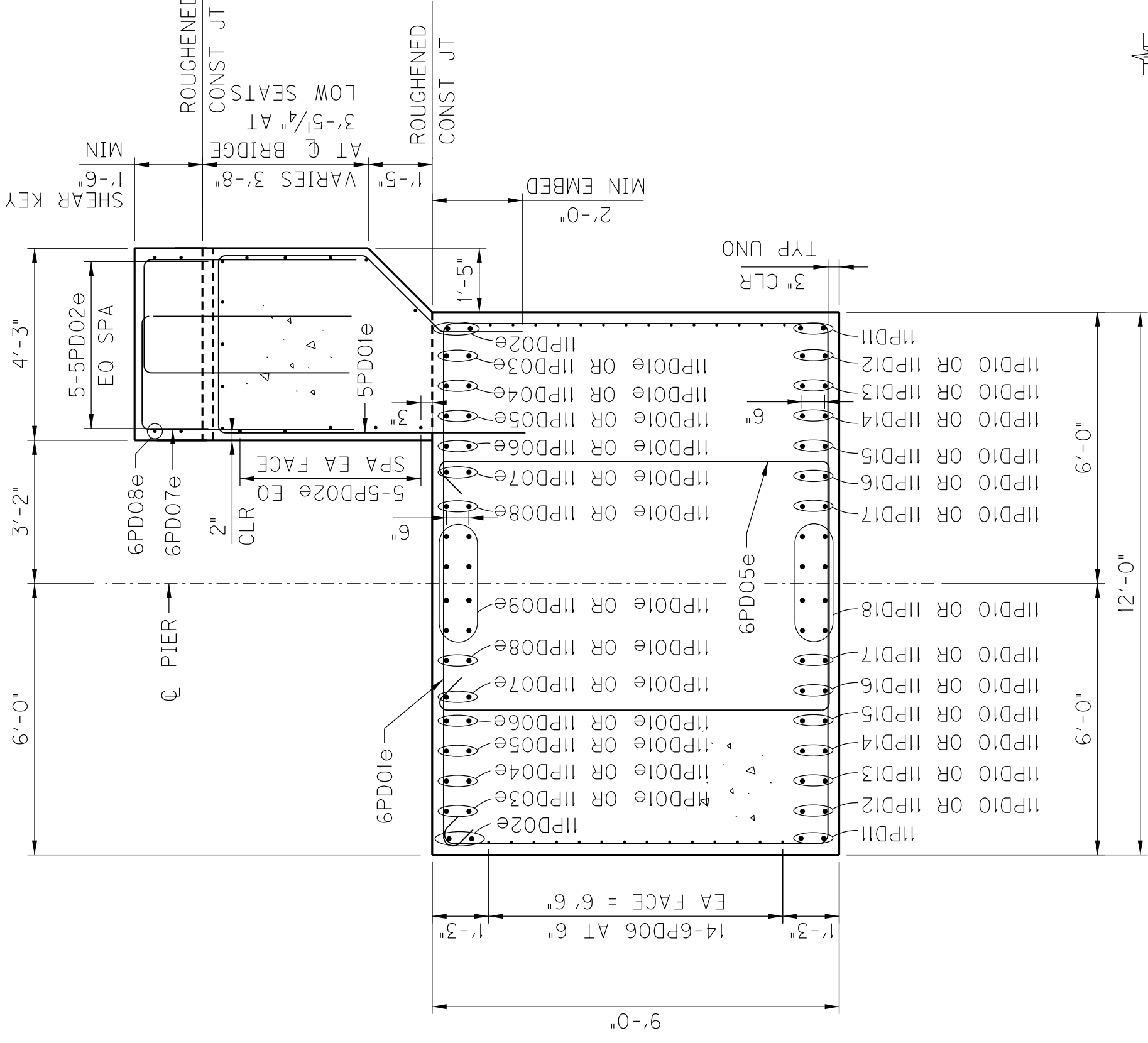
NOTATIONS
 ① OPTIONAL CONSTRUCTION JOINT. CONSTRUCTION JOINT SHALL INCLUDE 2"x4" DEPRESSED KEY.

DATE: MARCH 2020	CHECKED BY: C. GREENWELL
DESIGNED BY: J. HUDSON	DETAILED BY: S. MURPHY
Commonwealth of Kentucky DEPARTMENT OF HIGHWAYS	
COUNTY LIVINGSTON	
ROUTE US 60	CROSSING CUMBERLAND RIVER
PIER 4 (3)	
PREPARED BY Stantec	

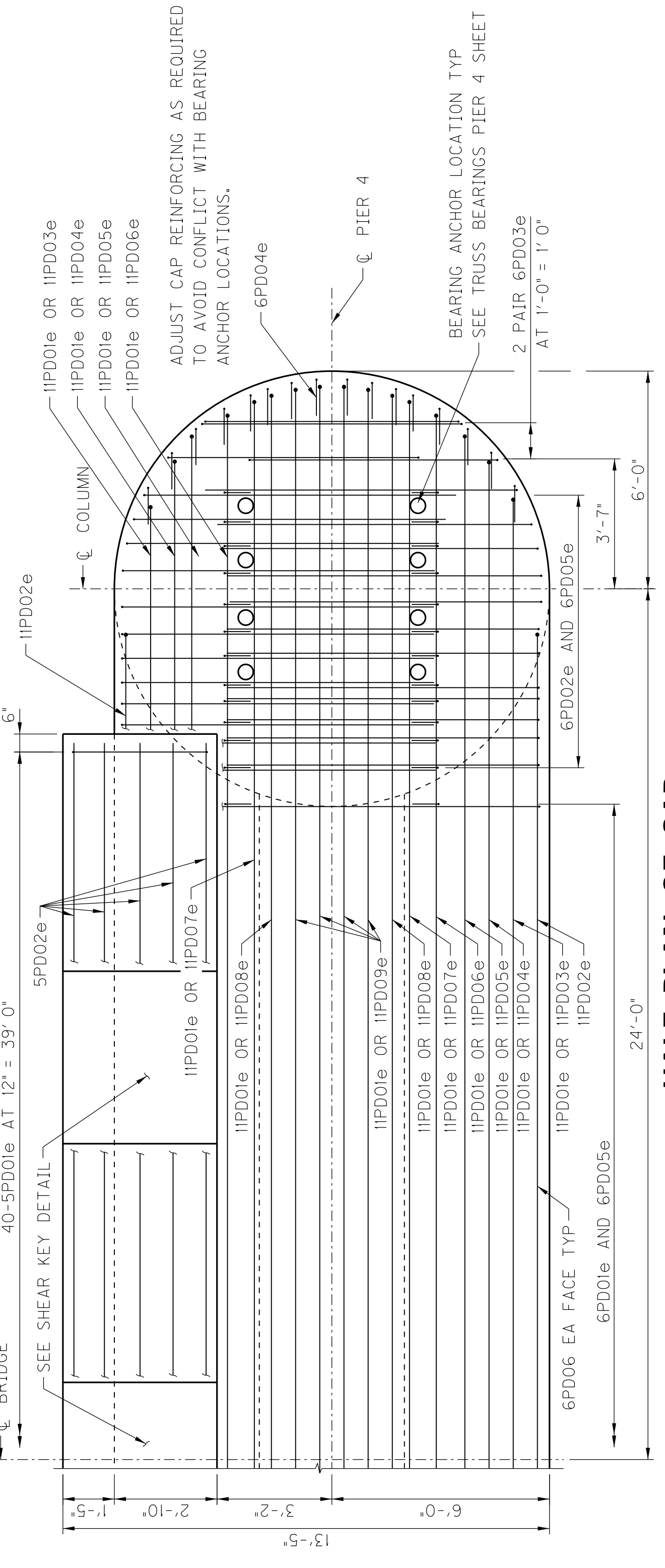
REVISION	DATE

ITEM NUMBER	1-1142.00
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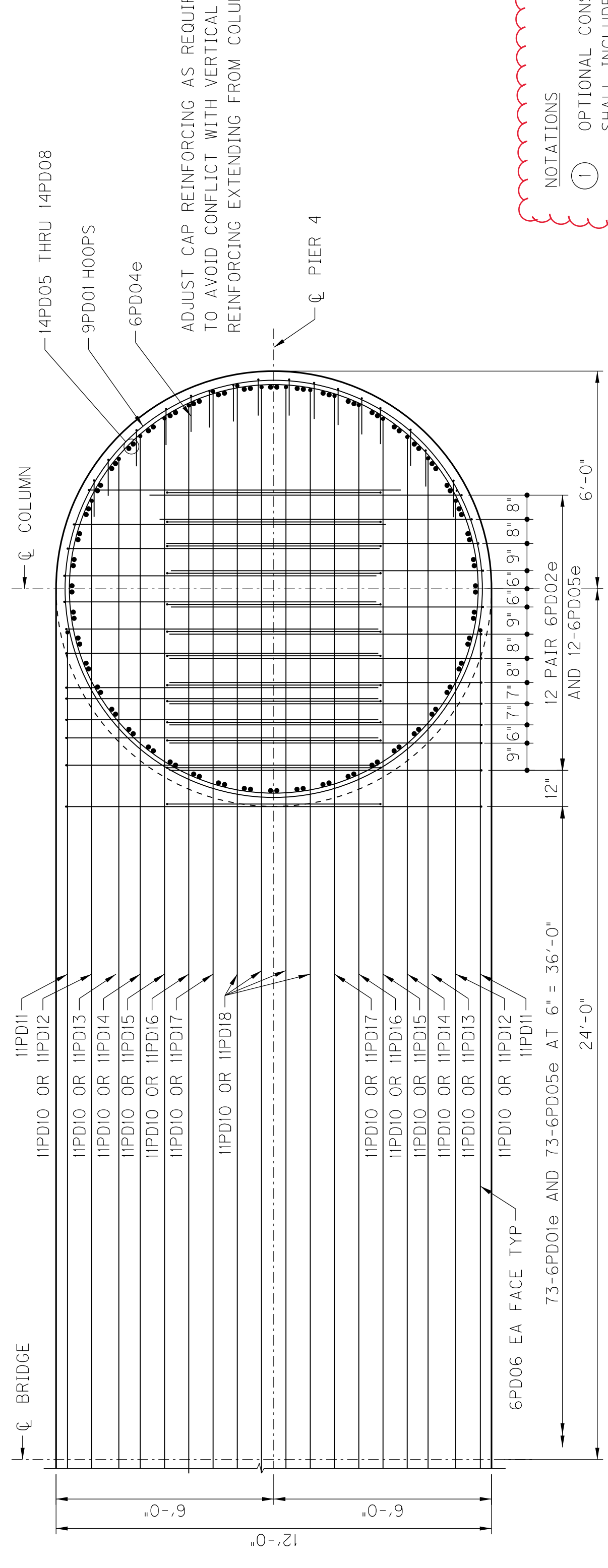
REVISED: 03-03-2020



SECTION THROUGH CAP
AT BRIDGE

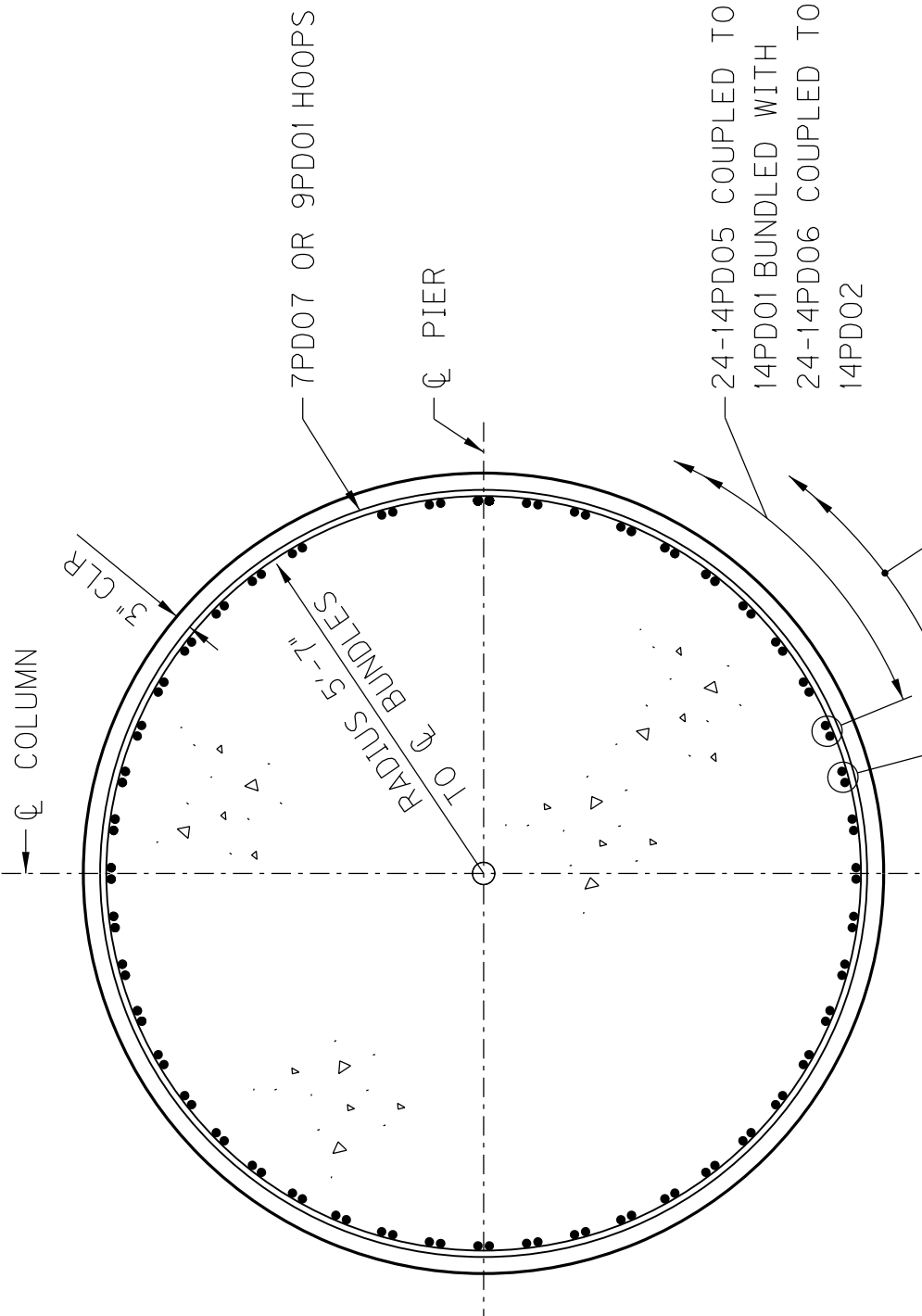


HALF PLAN OF CAP

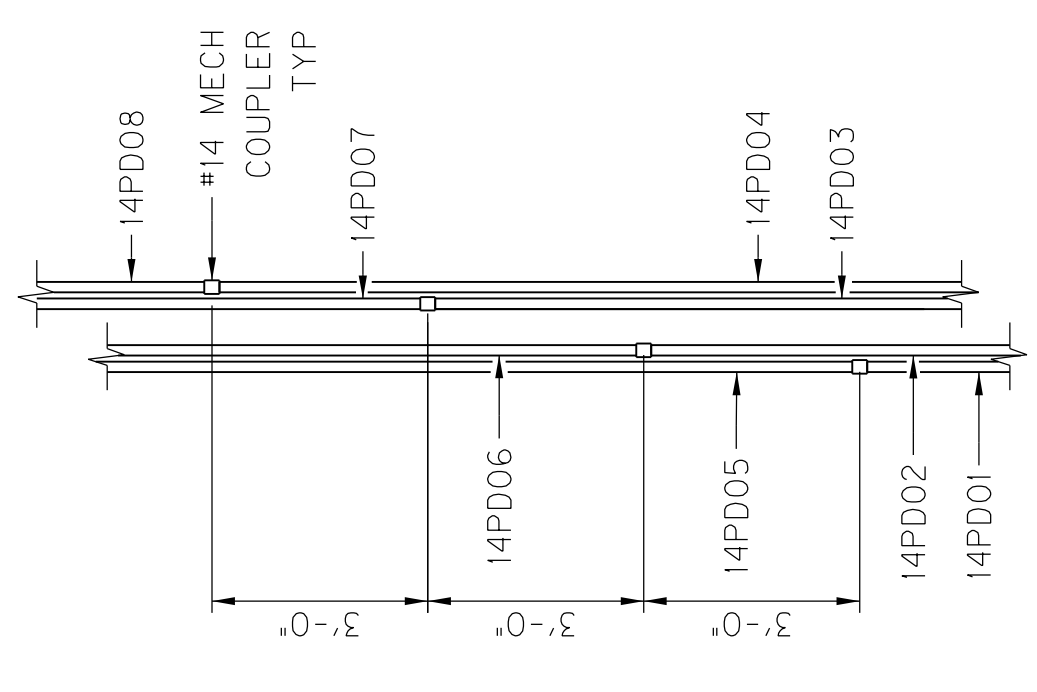


HALF PLAN SECTION THROUGH BOTTOM OF CAP

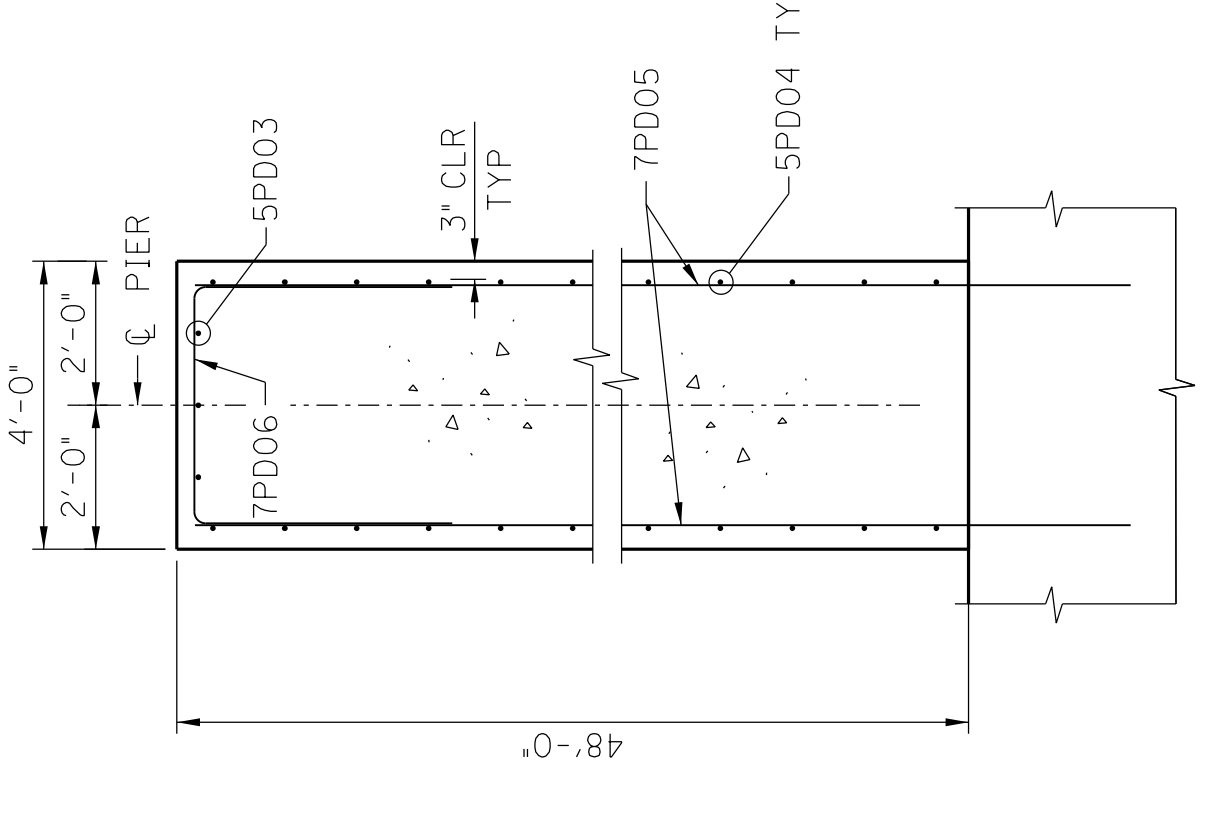
NOTE:
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SYMMETRICAL ABOUT CL



SECTION A-A

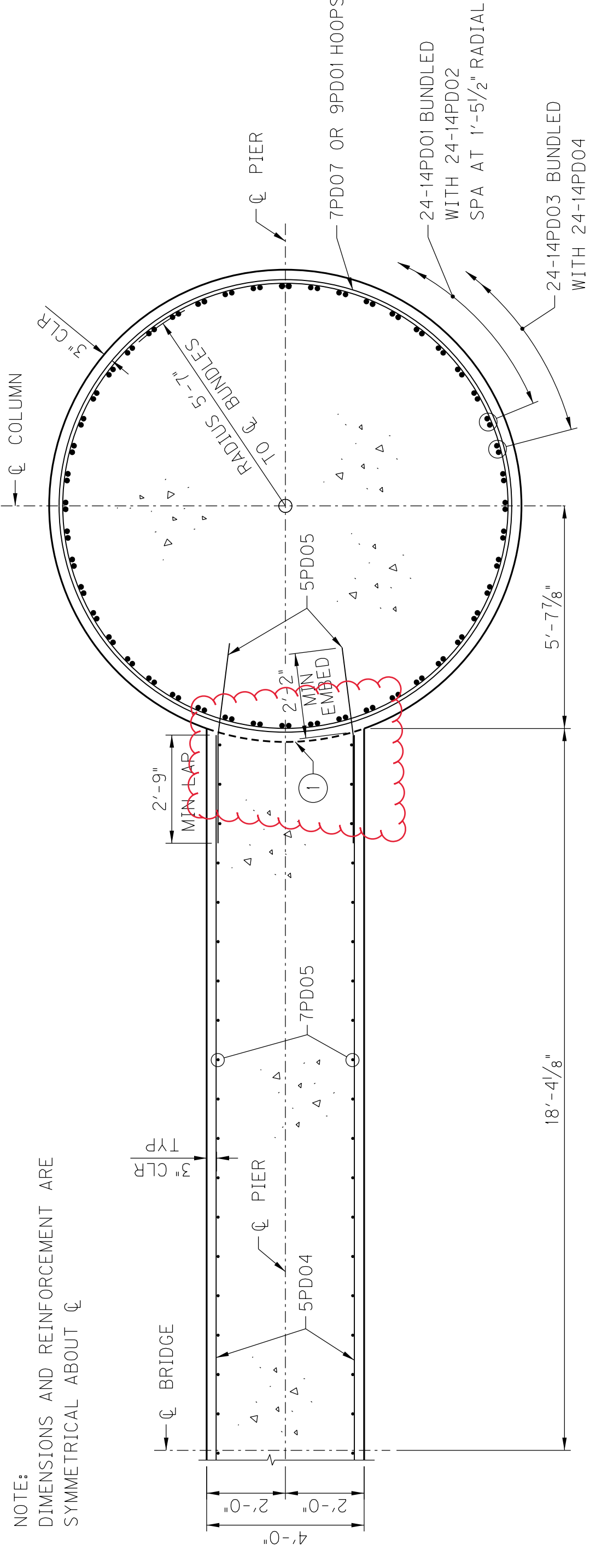
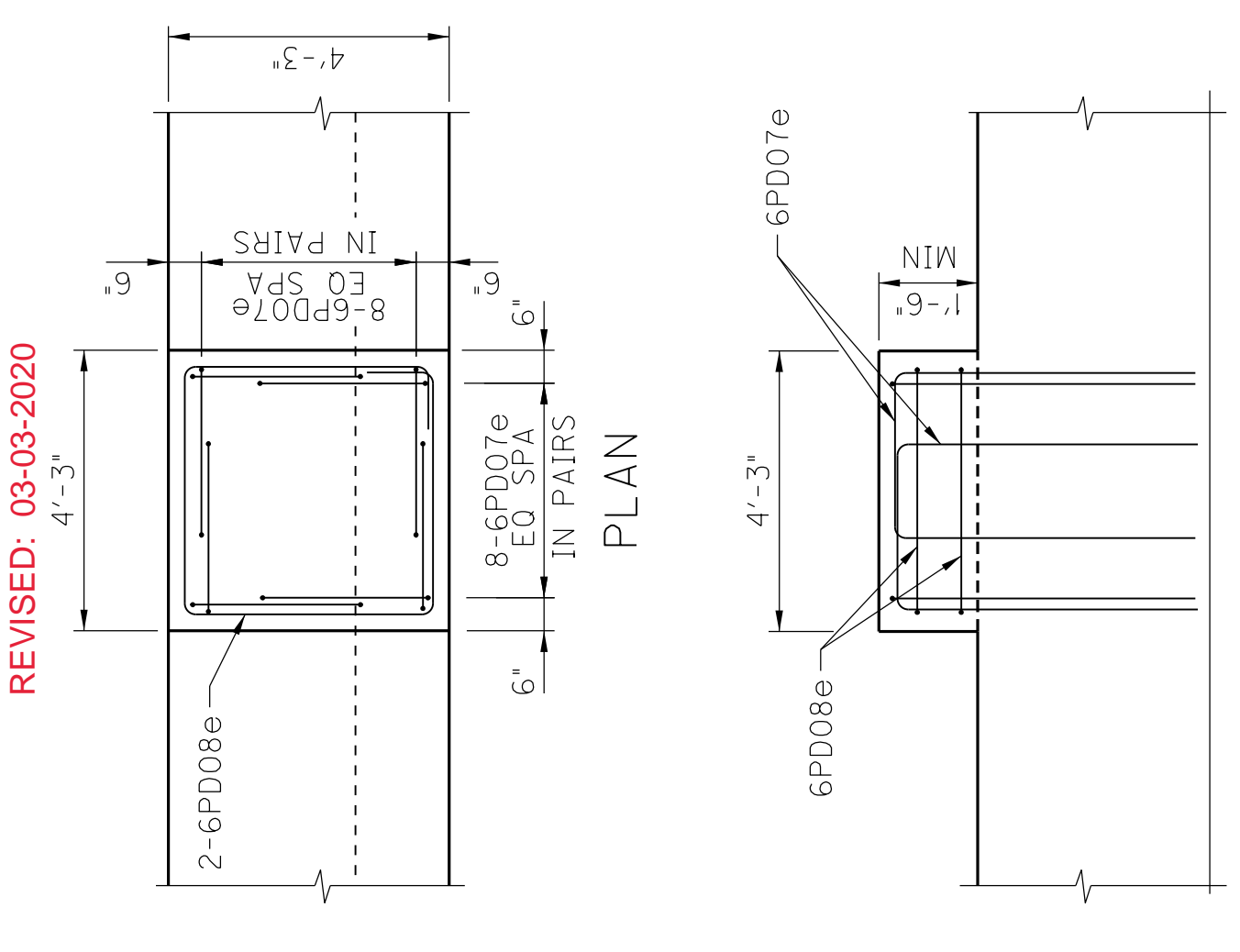


COLUMN BAR
COUPLING DETAIL



SECTION THROUGH WEB WALL

ELEVATION
SHEAR KEY DETAIL

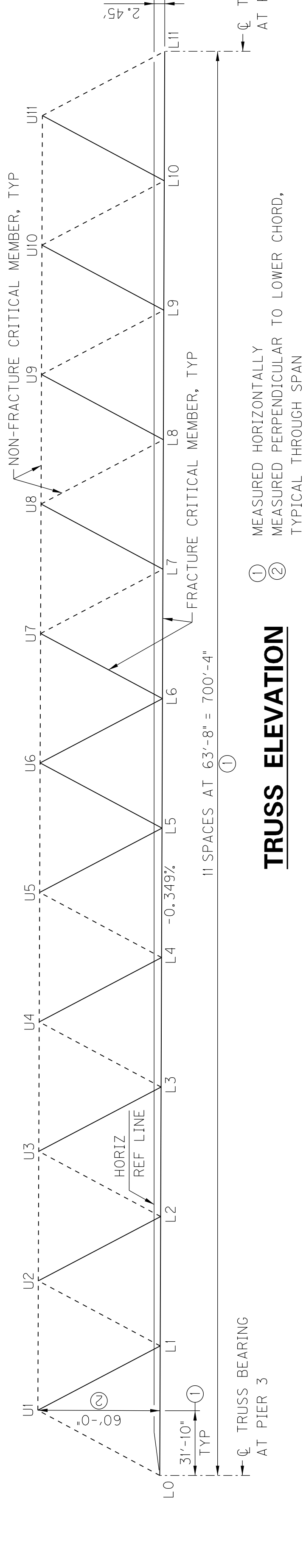


HALF PLAN SECTION THROUGH COLUMN AND WEB WALL

NOTATIONS
① OPTIONAL CONSTRUCTION JOINT. CONSTRUCTION JOINT SHALL INCLUDE 2"x4" DEPRESSED KEY.

REVISION	DATE
DESIGNED BY: J. HUDSON	CHECKED BY: C. GREENWELL
DETAILED BY: S. MURPHY	T. PERKINS
Commonwealth of Kentucky DEPARTMENT OF HIGHWAYS	
COUNTY LIVINGSTON	
ROUTE US 60	CROSSING CUMBERLAND RIVER
PIER 4 (3)	
PREPARED BY Stantec	
SHEET NO. S30	DRAWING NO. 27458

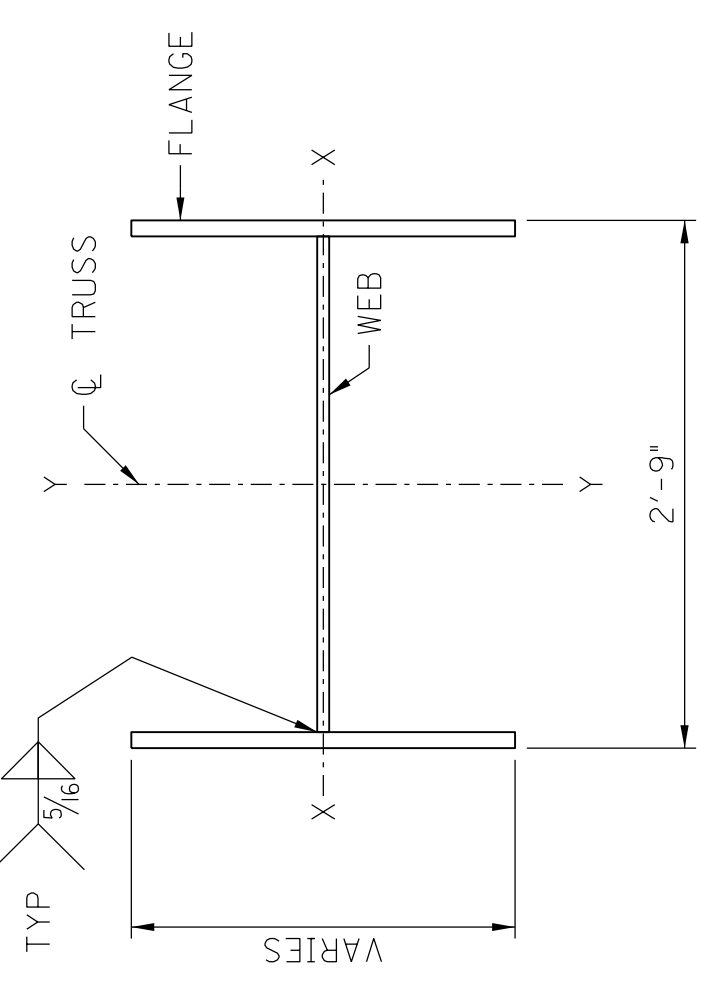
ITEM NUMBER
1-1142.00



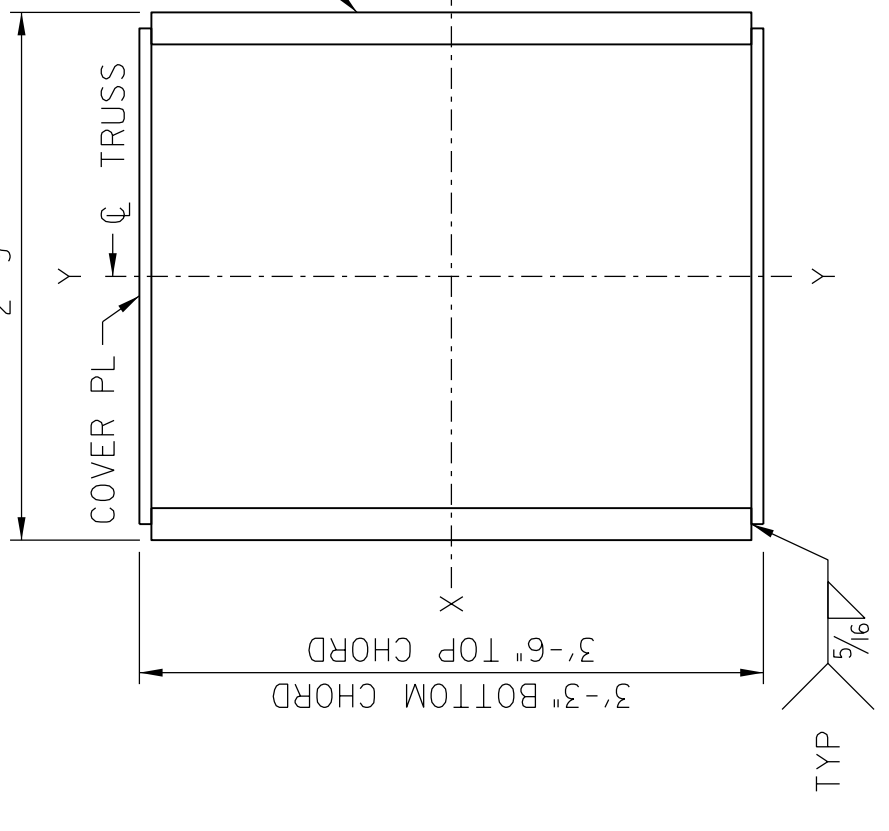
TRUSS ELEVATION

- NOTES:
- MEMBER LENGTHS SHOWN ARE FROM PANEL POINT TO PANEL POINT WITHOUT CAMBER OR TEMPERATURE CORRECTIONS.
 - ELEVATIONS SHOWN IN TABLE INDICATE PANEL POINT POSITIONS UNDER FULL DEADLOAD (NOT INCLUDING FUTURE WEARING SURFACE).
 - SERVICE, STRENGTH, FATIGUE, AND EXTREME EVENT (I.E. SEISMIC) LOAD COMBINATIONS WERE USED FOR THE DESIGN OF THE MAIN TRUSS MEMBERS IN ACCORDANCE WITH AASHTO LRFD TABLE 3.4.1-1. MAXIMUM AND MINIMUM LOAD FACTORS ARE APPLIED IN ACCORDANCE WITH AASHTO LRFD TABLE 3.4.1-2. FOR THE STRENGTH LIMIT STATES, A REDUNDANCY FACTOR OF 1.05 WAS INCLUDED FOR ALL FRACTURE CRITICAL MEMBERS.
 - 5 PSF ALLOWANCE FOR STAY-IN-PLACE FORMS HAS BEEN INCLUDED IN THE CONCRETE DEAD LOAD.
 - MAIN TRUSS MEMBER FORCES WERE DETERMINED USING A 3D ANALYSIS MODEL.
 - (+) INDICATES TENSION FORCE
 (-) INDICATES COMPRESSION FORCE
 - MAIN TRUSS MEMBERS WERE DESIGNED FOR COMBINED AXIAL AND BENDING USING INTERACTION EQUATIONS FROM AASHTO LRFD 6.8.2.3 AND 6.9.2.2 FOR TENSION AND COMPRESSION MEMBERS, RESPECTIVELY. IF THE INTERACTION OF AXIAL TENSION AND BENDING DOES NOT PRODUCE NET COMPRESSION IN EITHER FLANGE, THE FLEXURAL CAPACITY LIMIT STATES OF LATERAL TORSIONAL BUCKLING AND LOCAL FLANGE BUCKLING ARE NOT APPLICABLE.
 - DEAD LOAD AXIAL DEFLECTION REPRESENTS THE AXIAL SHORTENING (-) OR LENGTHENING (+) OF THE TRUSS MEMBERS DUE TO THE TOTAL BRIDGE DEAD LOAD (NOT INCLUDING FUTURE WEARING SURFACE). ALL TRUSS MEMBERS AND CONNECTIONS DETAILS SHALL BE BASED UPON THE GEOMETRY OF THE FINAL ERECTED STRUCTURE.
 - GROSS AREA FOR MEMBERS L0-L1 AND L10-L11 PRESENTED FOR FULL SECTION AS WELL AS SECTION WHERE COVER PLATES TERMINATE AT GUSSETS L0 AND L11. SLENDERNESS RATIOS PROVIDED BASED ON FULL SECTION INCLUDING WEB PLATES AND COVER PLATES.
 - FOR THE SLENDERNESS RATIO (KL/R), THE UNBRACED LENGTH IS MEASURED ALONG THE CENTERLINE OF THE MEMBER FROM PANEL POINT TO PANEL POINT. THE EFFECTIVE LENGTH FACTOR (K) IS TAKEN AS 0.75 IN ACCORDANCE WITH AASHTO LRFD 4.6.2.5.
 - SPLICES, INCLUDING CUP SHOP SPLICES, BETWEEN PANEL POINTS ARE PROHIBITED IN TRUSS MEMBERS.

TABLE OF ELEVATIONS (FEET)												
PANEL POINT	L0	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11
CL TOP CHORD	453.202	452.980	452.788	452.536	451.871	451.649	451.871	451.649	451.427	451.205	450.983	
PROFILE GRADE	402.530	402.309	402.087	401.865	401.643	401.421	401.199	400.977	400.755	400.534	400.312	400.090
CL BOTTOM CHORD	393.313	393.091	392.869	392.647	392.425	392.204	391.982	391.760	391.538	391.316	391.094	390.872

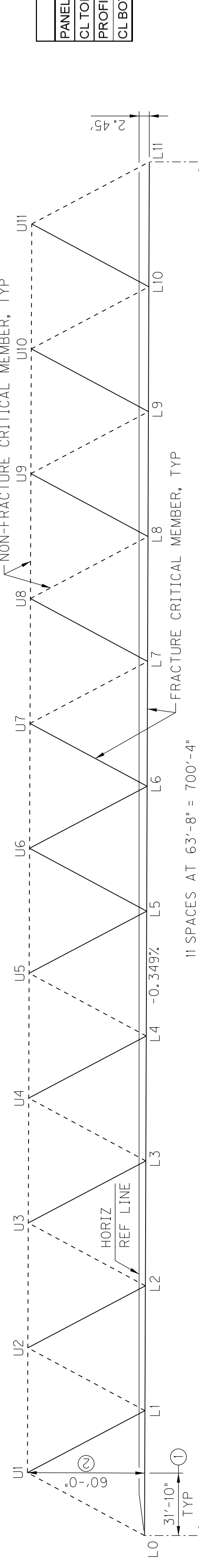


H MEMBERS



BOX MEMBERS

TRUSS MEMBERS	MEMBER AXIAL FORCES (KIPS) - SERVICE LOADS										DC STEEL	CONC.	FWS	UTILITIES	LL-1	WS	WL (+/-)	FACTORED DESIGN LOADS			GOVERNING LOAD GROUP	LIVE LOAD RANGE FOR FATIGUE TRUCK (KSI)	SECTION DESCRIPTION			DEAD LOAD AXIAL DEFLECTION (INCHES)
	DC		DW		AXIAL (KIP)	MOMENT - Mx (KIP-FT)	MOMENT - My (KIP-FT)	MATERIAL GRADE	FLANGE / COVER PLATES	WEB PLATES								SECTION AREA (SQ. IN.)		SHEAR LAG FACTOR			MEMBER LENGTH (FEET)	SLENDERNES RATIO KL/Rx		
	STEEL	CONC.	FWS	UTILITIES														GROSS	NET							
L0 - L1	712	474	51	0	301/-39	148/-147	21	2460	515	555	STR V	2.20	BOX	50W	32.00 x 0.50	38.00 x 1.00	76/108	58.50	1.00	63.667	41.1	20.0	0.29			
L1 - L2	1923	1288	138	0	734/-31	207/-207	36	5891	375	692	STR I	2.14	BOX	50W	31.50 x 0.75	37.50 x 1.50	159.75	136.31	1.00	63.667	41.5	20.3	0.53			
L2 - L3	2906	1926	207	0	1062/-31	267/-266	47	8660	470	818	STR I	2.08	BOX	50W	30.75 x 0.75	37.50 x 2.25	214.88	182.06	1.00	63.667	43.9	20.1	0.59			
L3 - L4	3626	2381	255	0	1292/-28	304/-304	55	10649	706	934	STR I	2.07	BOX	50W	30.00 x 0.75	37.50 x 3.00	270.00	227.81	1.00	63.667	45.5	20.2	0.59			
L4 - L5	4069	2655	285	0	1430/-26	320/-320	58	11851	768	1116	STR I	3.55	BOX	50W	29.75 x 1.00	37.00 x 3.25	300.00	253.13	1.00	63.667	44.9	20.6	0.59			
L5 - L6	4139	2736	292	0	1518/-11	316/-315	58	12396	1027	1030	STR I	2.34	BOX	50W	29.50 x 1.00	37.00 x 3.50	318.00	268.00	1.00	63.667	45.3	20.7	0.57			
L6 - L7	4069	2655	285	0	1430/-26	320/-320	58	11851	768	1116	STR I	3.55	BOX	50W	29.75 x 1.00	37.00 x 3.25	300.00	253.13	1.00	63.667	44.9	20.6	0.59			
L7 - L8	3626	2381	255	0	1292/-28	304/-304	55	10649	706	934	STR I	2.07	BOX	50W	30.00 x 0.75	37.50 x 3.00	270.00	227.81	1.00	63.667	45.5	20.2	0.59			
L8 - L9	2906	1926	207	0	1062/-31	267/-266	47	8660	470	818	STR I	2.08	BOX	50W	30.75 x 0.75	37.50 x 2.25	214.88	182.06	1.00	63.667	43.9	20.1	0.59			
L9 - L10	1923	1288	138	0	734/-34	207/-207	36	5891	375	692	STR I	2.14	BOX	50W	31.50 x 0.75	37.50 x 1.50	159.75	136.31	1.00	63.667	41.5	20.3	0.53			
L10 - L11	712	474	51	0	301/-39	148/-147	21	2460	515	555	STR V	2.20	BOX	50W	32.00 x 0.50	38.00 x 1.00	76/108	58.50	1.00	63.667	41.1	20.0	0.29			
U1 - U2	-1343	-924	-99	0	-524	25/-22	2	-4006	369	185	STR I	1.79	BOX	50W	32.00 x 0.75	40.50 x 1.00	121.50	98.38	0.88	63.667	36.7	41.3	-0.46			
U2 - U3	-2663	-1729	-186	0	-963	47/-43	11	-7247	514	239	STR I	1.71	BOX	50W	31.00 x 0.75	40.50 x 2.00	201.00	161.31	1.00	63.667	40.4	40.0	-0.54			
U3 - U4	-3395	-2265	-243	0	-1232	106/-103	20	-9638	639	157	STR I	1.57	BOX	50W	30.50 x 1.00	40.00 x 2.50	251.00	201.00	1.00	63.667	40.5	40.9	-0.57			
U4 - U5	-4019	-2659	-285	0	-1432	149/-146	27	-11273	722	136	STR I	1.53	BOX	50W	30.00 x 1.00	40.00 x 3.00	290.00	231.25	1.00	63.667	41.5	41.0	-0.59			
U5 - U6	-4320	-2843	-305	0	-1525	169/-166	30	-12080	832	67	STR I	1.37	BOX	50W	29.50 x 1.00	40.00 x 3.50	329.00	261.50	1.00	63.667	42.3	41.2	-0.56			
U6 - U7	-4320	-2843	-305	0	-1525	169/-166	30	-12080	832	67	STR I	1.37	BOX	50W	29.50 x 1.00	40.00 x 3.50	329.00	261.50	1.00	63.667	42.3	41.2	-0.56			
U7 - U8	-4019	-2659	-285	0	-1432	149/-146	27	-11273	722	136	STR I	1.53	BOX	50W	30.00 x 1.00	40.00 x 3.00	290.00	231.25	1.00	63.667	41.5	41.0	-0.59			
U8 - U9	-3395	-2265	-243	0	-1232	106/-103	20	-9638	639	157	STR I	1.57	BOX	50W	30.50 x 1.00	40.00 x 2.50	251.00	201.00	1.00	63.667	40.5	40.9	-0.57			
U9 - U10	-2563	-1729	-186	0	-963	47/-43	11	-7247	514	239	STR I	1.71	BOX	50W	31.00 x 0.75	40.50 x 2.00	201.00	161.31	1.00	63.667	40.4	40.0	-0.54			
U10 - U11	-1343	-924	-99	0	-524	25/-22	2	-4006	369	185	STR I	1.79	BOX	50W	32.00 x 0.75	40.50 x 1.00	121.50	98.38	0.88	63.667	36.7	41.3	-0.46			
L0 - U1	-1558	-1027	-110	0	-596	88/-88	8	-4328	683	1595	STR V	2.57	BOX	50W	30.75 x 0.75	31.50 x 2.25	180.38	135.38	0.86	67.922	54.4	43.4	-0.39			
U1 - L1	1442	1022	110	0	586	47/-47	4	4120	256	2093	STR V	3.05	H	50W	36.00 x 2.00	29.00 x 0.50	158.50	128.50	0.90	67.922	61.7	40.8	0.44			
L1 - U2	-1289	-796	-86	0	42/-485	23/-23	2	-3598	295	1471	STR I	3.27	H	50W	34.00 x 2.00	29.00 x 0.75	177.75	117.75	0.90	67.922	67.1	41.5	-0.37			
U2 - L2	1165	797	86	0	485/-41	17/-17	2	3441	185	1061	STR I	3.59	H	50W	34.00 x 1.50	30.00 x 0.50	117.00	94.50	0.91	67.922	66.7	40.7	0.47			
L2 - U3	-1019	-603	-65	0	71/-399	9/-8	3	-2830	283	1081	STR I	3.54	H	50W	34.00 x 1.50	30.00 x 0.75	124.50	94.50	0.90	67.922	68.8	41.5	-0.37			
U3 - L3	886	604	65	0	400/-69	8/-8	2	2684	147	1020	STR I	3.82	H	50W	30.00 x 1.50	30.00 x 0.50	105.00	82.50	0.90	67.922	76.2	40.9	0.40			
L3 - U4	-721	-401	-43	0	108/-324	7/-9	2	-2042	272	1082	STR I	3.85	H	50W	30.00 x 1.50	30.00 x 0.75	112.50	90.00	0.90	67.922	78.9	41.8	-0.28			
U4 - L4	577	401	43	0	325/-105	8/-7	1	1863	124	922	STR I	4.67	H	50W	28.00 x 1.25	30.50 x 0.50	85.25	72.75	0.90	67.922	83.5	41.1	0.32			
L4 - U5	-416	-201	-22	0	148/-251	7/-9	2	-1231	220	958	STR I	4.56	H	50W	28.00 x 1.25	30.50 x 0.75	92.88	80.38	0.90	67.922	87.1	42.3	-0.19			
U5 - L5	266	202	22	0	252/-146	8/-7	1	1046	90	820	STR I	5.22	H	50W	24.00 x 1.25	30.50 x 0.50	75.25	62.75	0.90	67.922	98.8	41.5	0.17			
L5 - U6	-85	0	0	0	203/-201	6/-7	1	-457	175	836	STR I	5.25	H	50W	24.00 x 1.25	30.50 x 0.50	75.25	62.75	0.90	67.922	98.8	41.5	-0.03			
U6 - L6	-85	0	0	0	203/-201	6/-7	1	-457	175	836	STR I	5.25	H	50W	24.00 x 1.25	30.50 x 0.50	75.25	62.75	0.90	67.922	98.8	41.5	-0.03			
L6 - U7	266	202	22	0	252/-146	8/-7	1	1046	90	820	STR I	5.22	H	50W	24.00 x 1.25	30.50 x 0.50	75.25	62.75	0.90	67.922	98.8	41.5	0.17			
U7 - L7	-416	-201	-22	0	148/-251	7/-9	2	-1231	220	958	STR I	4.56	H	50W	28.00 x 1.25	30.50 x 0.75	92.88	80.38	0.90	67.922	87.1	42.3	-0.19			
L7 - U8	577	401	43	0	325/-105	8/-7	1	1863	124	922	STR I	4.67	H	50W	28.00 x 1.25	30.50 x 0.50	85.25	72.75	0.90	67.922	83.5	41.1	0.32			
U8 - L8	-721	-401	-43	0	108/-324	7/-9	2	-2042	272	1082	STR I	3.85	H	50W	30.00 x 1.50	30.00 x 0.75	112.50	90.00	0.90	67.922	78.9	41.8	-0.28			
L8 - U9	886	604	65	0	400/-69	8/-8	2	2684	147	1020	STR I	3.82	H	50W	30.00 x 1.50	30.00 x 0.50	105.00	82.50	0.90	67.922	76.2	40.9	0.40			
U9 - L9	-1019	-603	-65	0	71/-399	9/-8	3	-2830	283	1081	STR I	3.54	H	50W	34.00 x 1.50	30.00 x										

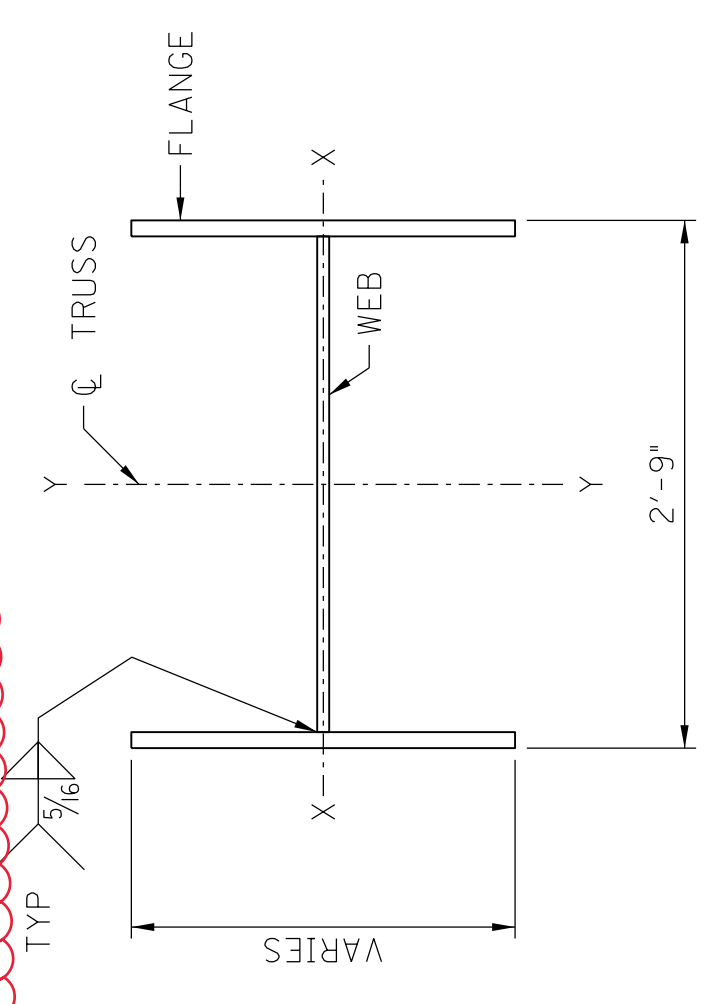


TRUSS ELEVATION

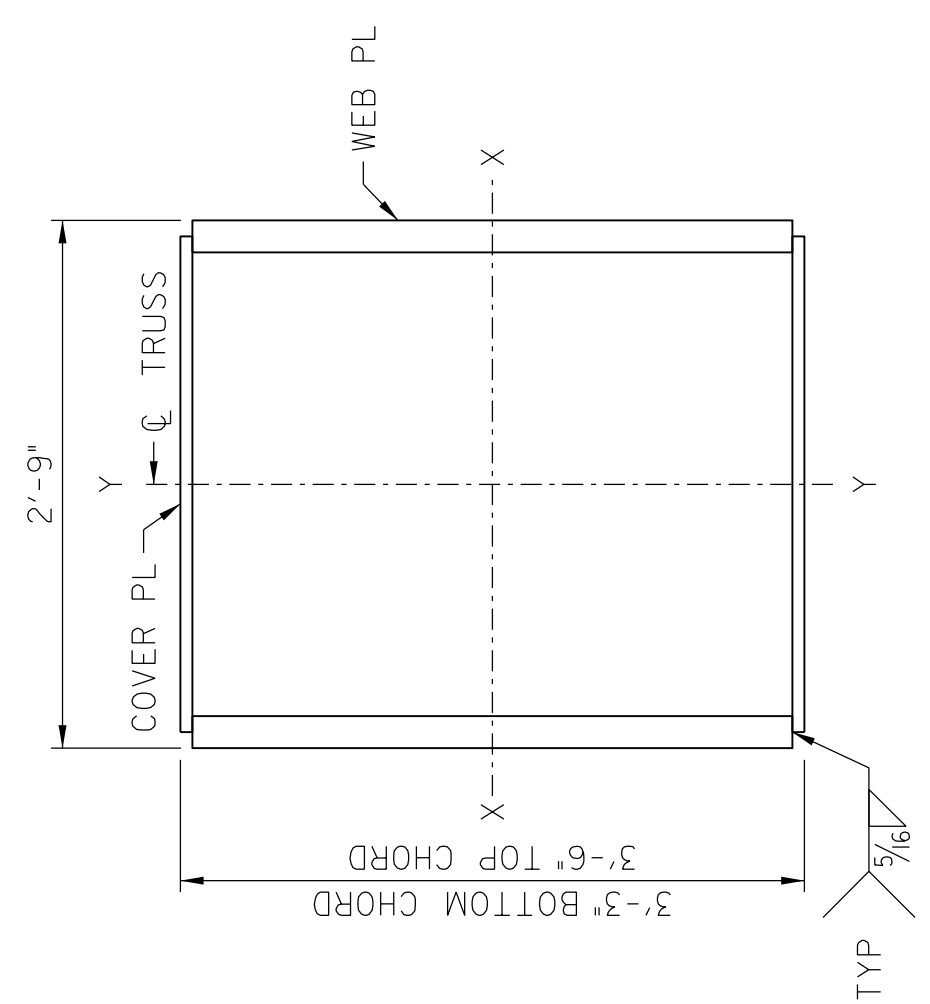
- NOTES:
- MEMBER LENGTHS SHOWN ARE FROM PANEL POINT TO PANEL POINT WITHOUT CAMBER OR TEMPERATURE CORRECTIONS.
 - ELEVATIONS SHOWN IN TABLE INDICATE PANEL POINT POSITIONS UNDER FULL DEADLOAD (NOT INCLUDING FUTURE WEARING SURFACE).
 - SERVICE, STRENGTH, FATIGUE, AND EXTREME EVENT (I.E. SEISMIC) LOAD COMBINATIONS WERE USED FOR THE DESIGN OF THE MAIN TRUSS MEMBERS IN ACCORDANCE WITH AASHTO LRFD TABLE 3.4.1-1. MAXIMUM AND MINIMUM LOAD FACTORS WERE APPLIED IN ACCORDANCE WITH AASHTO LRFD TABLE 3.4.1-2. FOR THE STRENGTH LIMIT STATES, A REDUNDANCY FACTOR OF 1.05 WAS INCLUDED FOR ALL FRACTURE CRITICAL MEMBERS.
 - 5 PSF ALLOWANCE FOR STAY-IN-PLACE FORMS HAS BEEN INCLUDED IN THE CONCRETE DEAD LOAD.
 - MAIN TRUSS MEMBER FORCES WERE DETERMINED USING A 3D ANALYSIS MODEL.
 - (+) INDICATES TENSION FORCE
(-) INDICATES COMPRESSION FORCE
 - MAIN TRUSS MEMBERS WERE DESIGNED FOR COMBINED AXIAL AND BENDING USING INTERACTION EQUATIONS FROM AASHTO LRFD 6.8.2.3 AND 6.9.2.2 FOR TENSION AND COMPRESSION MEMBERS, RESPECTIVELY. IF THE INTERACTION OF AXIAL TENSION AND BENDING DOES NOT PRODUCE NET COMPRESSION IN EITHER FLANGE, THE FLEXURAL CAPACITY LIMIT STATES OF LATERAL TORSIONAL BUCKLING AND LOCAL FLANGE BUCKLING ARE NOT APPLICABLE.
 - DEAD LOAD AXIAL DEFLECTION REPRESENTS THE AXIAL SHORTENING (-) OR LENGTHENING (+) OF THE TRUSS MEMBERS DUE TO THE TOTAL BRIDGE DEAD LOAD (NOT INCLUDING FUTURE WEARING SURFACE). ALL TRUSS MEMBERS AND CONNECTIONS DETAILS SHALL BE BASED UPON THE GEOMETRY OF THE FINAL ERECTED STRUCTURE.
 - GROSS AREA FOR MEMBERS L0-L1 AND L10-L11 PRESENTED FOR FULL SECTION AS WELL AS SECTION WHERE COVER PLATES TERMINATE AT GUSSETS L0 AND L11. SLENDERNESS RATIOS PROVIDED BASED ON FULL SECTION INCLUDING WEB PLATES AND COVER PLATES.
 - FOR THE SLENDERNESS RATIO (KL/R), THE UNBRACED LENGTH IS MEASURED ALONG THE CENTERLINE OF THE MEMBER FROM PANEL POINT TO PANEL POINT. THE EFFECTIVE LENGTH FACTOR (K) IS TAKEN AS 0.75 IN ACCORDANCE WITH AASHTO LRFD 4.6.2.5.
 - DEAD LOAD AXIAL DEFLECTION REPRESENTS THE AXIAL SHORTENING (-) OR LENGTHENING (+) OF THE TRUSS MEMBERS DUE TO THE TOTAL BRIDGE DEAD LOAD (NOT INCLUDING FUTURE WEARING SURFACE). ALL TRUSS MEMBERS AND CONNECTIONS DETAILS SHALL BE BASED UPON THE GEOMETRY OF THE FINAL ERECTED STRUCTURE.
 - GROSS AREA FOR MEMBERS L0-L1 AND L10-L11 PRESENTED FOR FULL SECTION AS WELL AS SECTION WHERE COVER PLATES TERMINATE AT GUSSETS L0 AND L11. SLENDERNESS RATIOS PROVIDED BASED ON FULL SECTION INCLUDING WEB PLATES AND COVER PLATES.
 - SPICES, INCLUDING CUP SHOP SPICES, BETWEEN PANEL POINTS ARE PROHIBITED IN TRUSS MEMBERS.

TABLE OF ELEVATIONS (FEET)

PANEL POINT	L0	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11
CL TOP CHORD	453.202	452.980	452.788	452.536	451.871	451.649	451.427	451.205	450.983	450.761	450.539	450.317
PROFILE GRADE	402.530	402.309	402.087	401.865	401.643	401.421	401.199	400.977	400.755	400.534	400.312	400.090
CL BOTTOM CHORD	393.313	393.091	392.869	392.647	392.425	392.204	391.982	391.760	391.538	391.316	391.094	390.872



H MEMBERS



BOX MEMBERS

REVISION

DATE	DESIGNED BY	CHECKED BY
MARCH 2020	J. HUDSON	T. PERKINS
	D. BASHAM	T. PERKINS

DEPARTMENT OF HIGHWAYS
LIVINGSTON COUNTY

ROUTE US 60
CUMBERLAND RIVER CROSSING

TRUSS ELEV & STRESS SHEET

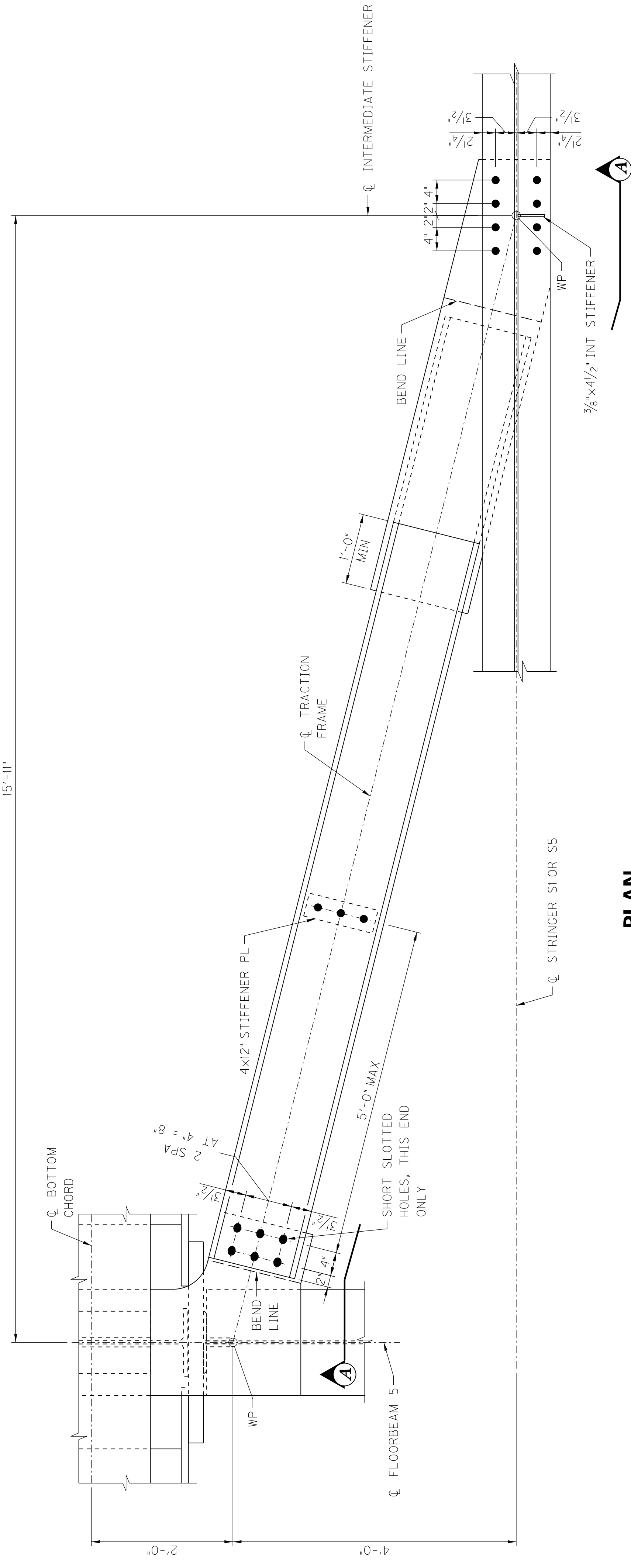
ITEM NUMBER
1-1142.00

PREPARED BY
Stantec

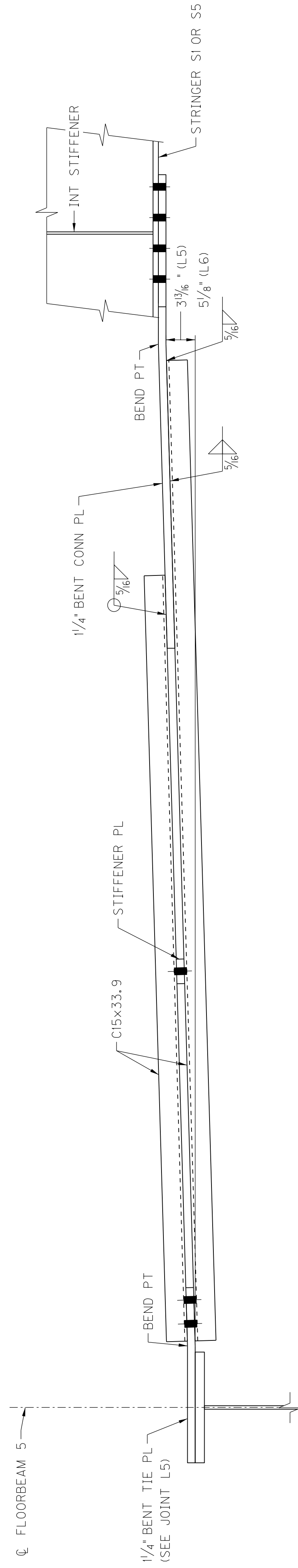
SHEET NO.
535

DRAWING NO.
27458

TRUSS MEMBERS	MEMBER AXIAL FORCES (KIPS) - SERVICE LOADS				GOVERNING LOAD GROUP	LIVE LOAD RANGE FOR FATIGUE TRUCK (KSI)	SECTION DESCRIPTION			DEAD LOAD AXIAL DEFLECTION (INCHES)													
	DC STEEL	CONC.	FWS UTILITIES	LL+1			WS (+/-)	WL (+/-)	AXIAL (KIP)		MOMENT - IMX (KIP-FT)	MOMENT - IMY (KIP-FT)	FACTORED DESIGN LOADS	TYPE	MATERIAL GRADE	FLANGE / COVER PLATES	WEB PLATES	SECTION AREA (SQ. IN.) GROSS NET	SHEAR LAG FACTOR	MEMBER LENGTH (FEET)	SLENDERNESS RATIO KL/RX KL/RY		
L0 - L1	712	474	51	0	301/-39	148/-147	21	2460	515	555	STR V	2.20	BOX	50W	32.00 x 0.50	38.00 x 1.00	76 / 108	68.50	1.00	63.667	41.1	20.0	0.29
L1 - L2	1923	1288	138	0	734/-31	207/-207	36	5891	375	692	STR I	2.14	BOX	50W	31.50 x 0.75	37.50 x 1.50	159.75	136.31	1.00	63.667	41.5	20.3	0.53
L2 - L3	2906	1926	207	0	1062/-31	267/-266	47	8660	470	818	STR I	2.08	BOX	50W	30.75 x 0.75	37.50 x 2.25	214.88	182.06	1.00	63.667	43.9	20.1	0.59
L3 - L4	3626	2381	255	0	1292/-28	304/-304	55	10649	706	934	STR I	2.07	BOX	50W	30.00 x 0.75	37.50 x 3.00	270.00	227.81	1.00	63.667	45.5	20.2	0.59
L4 - L5	4069	2655	285	0	1430/-26	320/-320	58	11851	768	1116	STR I	3.55	BOX	50W	29.75 x 1.00	37.00 x 3.25	300.00	253.13	1.00	63.667	44.9	20.6	0.59
L5 - L6	4139	2736	292	0	1518/-11	316/-315	58	12396	1027	1030	STR I	2.34	BOX	50W	29.50 x 1.00	37.00 x 3.50	318.00	268.00	1.00	63.667	45.3	20.7	0.57
L6 - L7	4069	2655	285	0	1430/-26	320/-320	58	11851	768	1116	STR I	3.55	BOX	50W	29.75 x 1.00	37.00 x 3.25	300.00	253.13	1.00	63.667	44.9	20.6	0.59
L7 - L8	3626	2381	255	0	1292/-28	304/-304	55	10649	706	934	STR I	2.07	BOX	50W	30.00 x 0.75	37.50 x 3.00	270.00	227.81	1.00	63.667	45.5	20.2	0.59
L8 - L9	2906	1926	207	0	1062/-31	267/-266	47	8660	470	818	STR I	2.08	BOX	50W	30.75 x 0.75	37.50 x 2.25	214.88	182.06	1.00	63.667	43.9	20.1	0.59
L9 - L10	1923	1288	138	0	734/-34	207/-207	36	5891	375	692	STR I	2.14	BOX	50W	31.50 x 0.75	37.50 x 1.50	159.75	136.31	1.00	63.667	41.5	20.3	0.53
L10 - L11	712	474	51	0	301/-39	148/-147	21	2460	515	555	STR V	2.20	BOX	50W	32.00 x 0.50	38.00 x 1.00	76 / 108	68.50	1.00	63.667	41.1	20.0	0.29
U1 - U2	-1343	-924	-99	0	-524	25/-22	2	-4006	369	185	STR I	1.79	BOX	50W	32.00 x 0.75	40.50 x 1.00	121.50	98.38	0.88	63.667	36.7	41.3	-0.46
U2 - U3	-2663	-1729	-186	0	-963	47/-43	11	-7247	514	239	STR I	1.71	BOX	50W	31.00 x 0.75	40.50 x 2.00	201.00	161.31	1.00	63.667	40.4	40.0	-0.54
U3 - U4	-3395	-2265	-243	0	-1232	106/-103	20	-9638	639	157	STR I	1.57	BOX	50W	30.50 x 1.00	40.00 x 2.50	251.00	201.00	1.00	63.667	40.5	40.9	-0.57
U4 - U5	-4019	-2659	-285	0	-1432	149/-146	27	-11273	722	136	STR I	1.53	BOX	50W	30.00 x 1.00	40.00 x 3.00	290.00	231.25	1.00	63.667	41.5	41.0	-0.59
U5 - U6	-4320	-2843	-305	0	-1525	169/-166	30	-12080	832	67	STR I	1.37	BOX	50W	29.50 x 1.00	40.00 x 3.50	329.00	261.50	1.00	63.667	42.3	41.2	-0.56
U6 - U7	-4320	-2843	-305	0	-1525	169/-166	30	-12080	832	67	STR I	1.37	BOX	50W	29.50 x 1.00	40.00 x 3.50	329.00	261.50	1.00	63.667	42.3	41.2	-0.56
U7 - U8	-4019	-2659	-285	0	-1432	149/-146	27	-11273	722	136	STR I	1.53	BOX	50W	30.00 x 1.00	40.00 x 3.00	290.00	231.25	1.00	63.667	41.5	41.0	-0.59
U8 - U9	-3395	-2265	-243	0	-1232	106/-103	20	-9638	639	157	STR I	1.57	BOX	50W	30.50 x 1.00	40.00 x 2.50	251.00	201.00	1.00	63.667	40.5	40.9	-0.57
U9 - U10	-2563	-1729	-186	0	-963	47/-43	11	-7247	514	239	STR I	1.71	BOX	50W	31.00 x 0.75	40.50 x 2.00	201.00	161.31	1.00	63.667	40.4	40.0	-0.54
U10 - U11	-1343	-924	-99	0	-524	25/-22	2	-4006	369	185	STR I	1.79	BOX	50W	32.00 x 0.75	40.50 x 1.00	121.50	98.38	0.88	63.667	36.7	41.3	-0.46
L0 - U1	-1558	-1027	-110	0	-596	88/-88	8	-4328	683	1595	STR V	2.57	BOX	50W	30.75 x 0.75	31.50 x 2.25	180.38	135.38	0.86	67.922	54.4	43.4	-0.39
U1 - L1	1442	1022	110	0	586	47/-47	4	4120	256	2093	STR V	3.05	H	50W	36.00 x 2.00	29.00 x 0.50	158.50	128.50	0.90	67.922	61.7	40.8	0.44
L1 - U2	-1289	-796	-86	0	42/-485	23/-23	2	-3598	295	1471	STR I	3.27	H	50W	34.00 x 2.00	29.00 x 0.75	177.75	117.75	0.90	67.922	67.1	41.5	-0.37
U2 - L2	1165	797	86	0	485/-41	17/-17	2	3441	185	1061	STR I	3.59	H	50W	34.00 x 1.50	30.00 x 0.50	117.00	94.50	0.91	67.922	66.7	40.7	0.47
L2 - U3	-1019	-603	-65	0	71/-399	9/-8	3	-2830	283	1081	STR I	3.54	H	50W	34.00 x 1.50	30.00 x 0.75	124.50	94.50	0.90	67.922	68.8	41.5	-0.37
U3 - L3	886	604	65	0	400/-69	8/-8	2	2684	147	1020	STR I	3.82	H	50W	30.00 x 1.50	30.00 x 0.50	105.00	82.50	0.90	67.922	76.2	40.9	0.40
L3 - U4	-721	-401	-43	0	108/-324	7/-9	2	-2042	272	1082	STR I	3.85	H	50W	30.00 x 1.50	30.00 x 0.75	112.50	90.00	0.90	67.922	78.9	41.8	-0.28
U4 - L4	577	401	43	0	325/-105	8/-7	1	1863	124	922	STR I	4.67	H	50W	28.00 x 1.25	30.50 x 0.50	85.25	72.75	0.90	67.922	83.5	41.1	0.32
L4 - U5	-416	-201	-22	0	148/-251	7/-9	2	-1231	220	958	STR I	4.56	H	50W	28.00 x 1.25	30.50 x 0.75	92.88	80.38	0.90	67.922	87.1	42.3	-0.19
U5 - L5	266	202	22	0	252/-146	8/-7	1	1046	90	820	STR I	5.22	H	50W	24.00 x 1.25	30.50 x 0.50	75.25	62.75	0.90	67.922	98.8	41.5	0.17
L5 - U6	-85	0	0	0	203/-201	6/-7	1	-457	175	836	STR I	5.25	H	50W	24.00 x 1.25	30.50 x 0.50	75.25	62.75	0.90	67.922	98.8	41.5	-0.03
U6 - L6	-85	0	0	0	203/-201	6/-7	1	-457	175	836	STR I	5.25	H	50W	24.00 x 1.25	30.50 x 0.50	75.25	62.75	0.90	67.922	98.8	41.5	-0.03
L6 - U7	266	202	22	0	252/-146	8/-7	1	1046	90	820	STR I	5.22	H	50W	24.00 x 1.25	30.50 x 0.50	75.25	62.75	0.90	67.922	98.8	41.5	0.17
U7 - L7	-416	-201	-22	0	148/-251	7/-9	2	-1231	220	958	STR I	4.56	H	50W	28.00 x 1.25	30.50 x 0.75	92.88	80.38	0.90	67.922	87.1	42.3	-0.19
L7 - U8	577	401	43	0	325/-105	8/-7	1	1863	124	922	STR I	4.67	H	50W	28.00 x 1.25	30.50 x 0.50	85.25	72.75	0.90	67.922	83.5	41.1	0.32
U8 - L8	-721	-401	-43	0	108/-324	7/-9	2	-2042	272	1082	STR I	3.85	H	50W	30.00 x 1.50	30.00 x 0.75	112.50	90.00	0.90	67.922	78.9	41.8	-0.28
L8 - U9	886	604	65	0	400/-69	8/-8	2	2684	147	1020	STR I	3.82	H	50W	30.00 x 1.50	30.00 x 0.50	105.00	82.50	0.90	67.922	76.2	40.9	0.40
U9 - L9	-1019	-603	-65	0	71/-399	9/-8	3	-2830	283	1081	STR I	3.54											



PLAN



VIEW A-A

NOTES:

1. BOLTS SHALL BE 1 1/8" DIAMETER ASTM F3125 GRADE A490.
2. BOLT THREADS SHALL BE EXCLUDED FROM THE SHEAR PLANE.
3. SHORT SLOTTED HOLES SHALL BE PROVIDED IN THE TRACTION FRAME MEMBERS AT THE FLOORBEAM TIE PLATE CONNECTION END, ORIENTED IN THE DIRECTION OF THE MEMBER.
4. AFTER THE COMPLETION OF THE DECK POUR, THE CONTRACTOR SHALL LOOSEN BOLTS AT ALL SHORT SLOTTED HOLES TO RELEASE THE DEAD LOAD AXIAL FORCES. ALL BOLTS IN THE CONNECTION SHALL BE REPLACED AND TIGHTENED.
5. CONNECTION AT L5 SHOWN. CONNECTION AT L6 IS SYMMETRICAL.

FILE NAME: V:\1785\ACTIVE\17856501\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\55 TRACTION FRAME.DGN

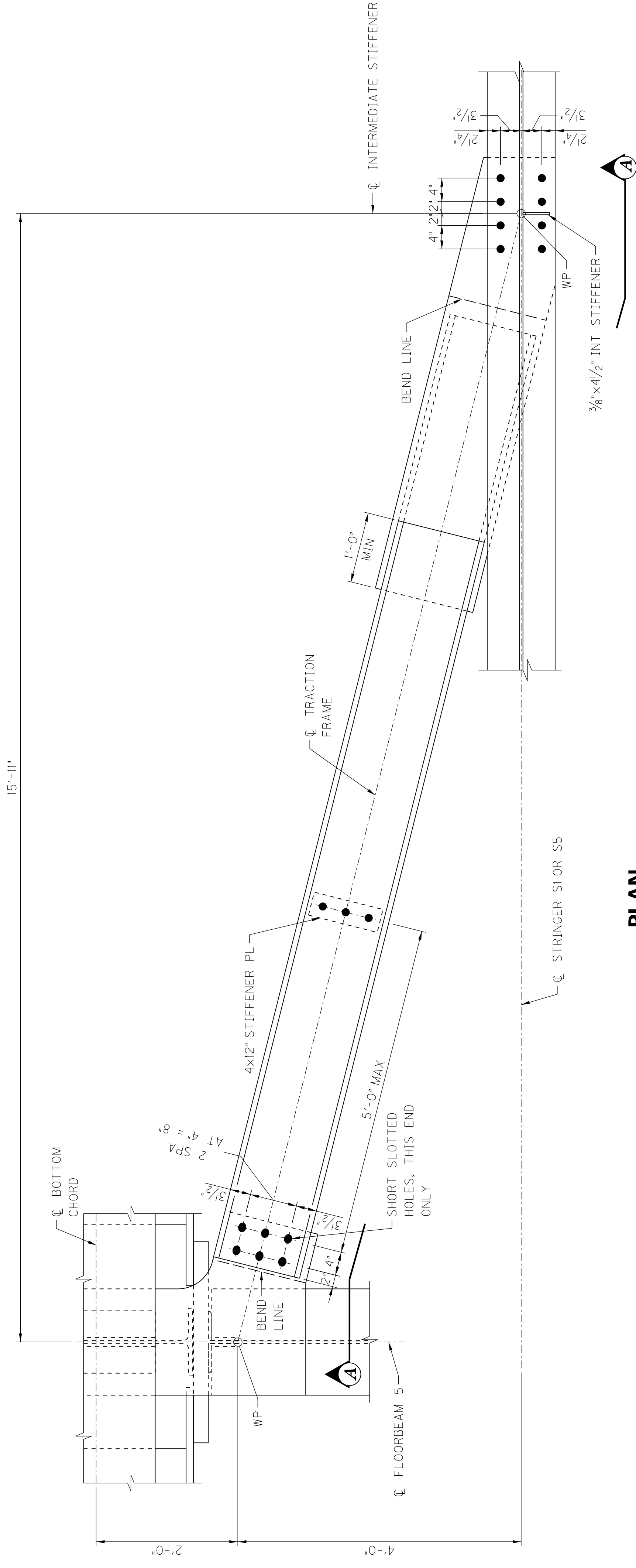
USER: goboshom
DATE PLOTTED: March 3, 2020

E-SHEET NAME: MicroStation v8.11.9.829

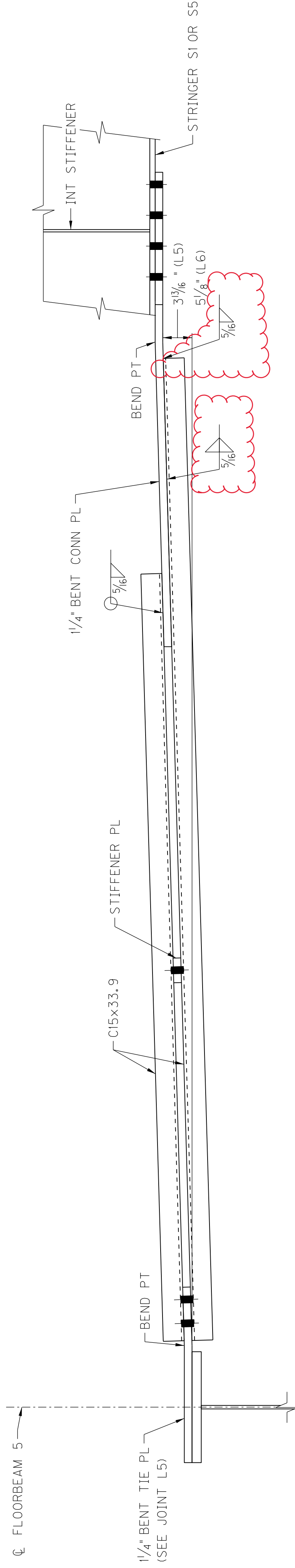
DATE: MARCH 2020	REVISION	CHECKED BY	DATE
DESIGNED BY: J. HUDSON		T. PERKINS	
DETAILED BY: D. BASHAM		T. PERKINS	
Commonwealth of Kentucky DEPARTMENT OF HIGHWAYS			
COUNTY LIVINGSTON			
ROUTE US 60	CROSSING CUMBERLAND RIVER		
TRACTION FRAME			
PREPARED BY Stantec			
SHEET NO. S55		DRAWING NO. 27458	

ITEM NUMBER

1-1142.00



PLAN

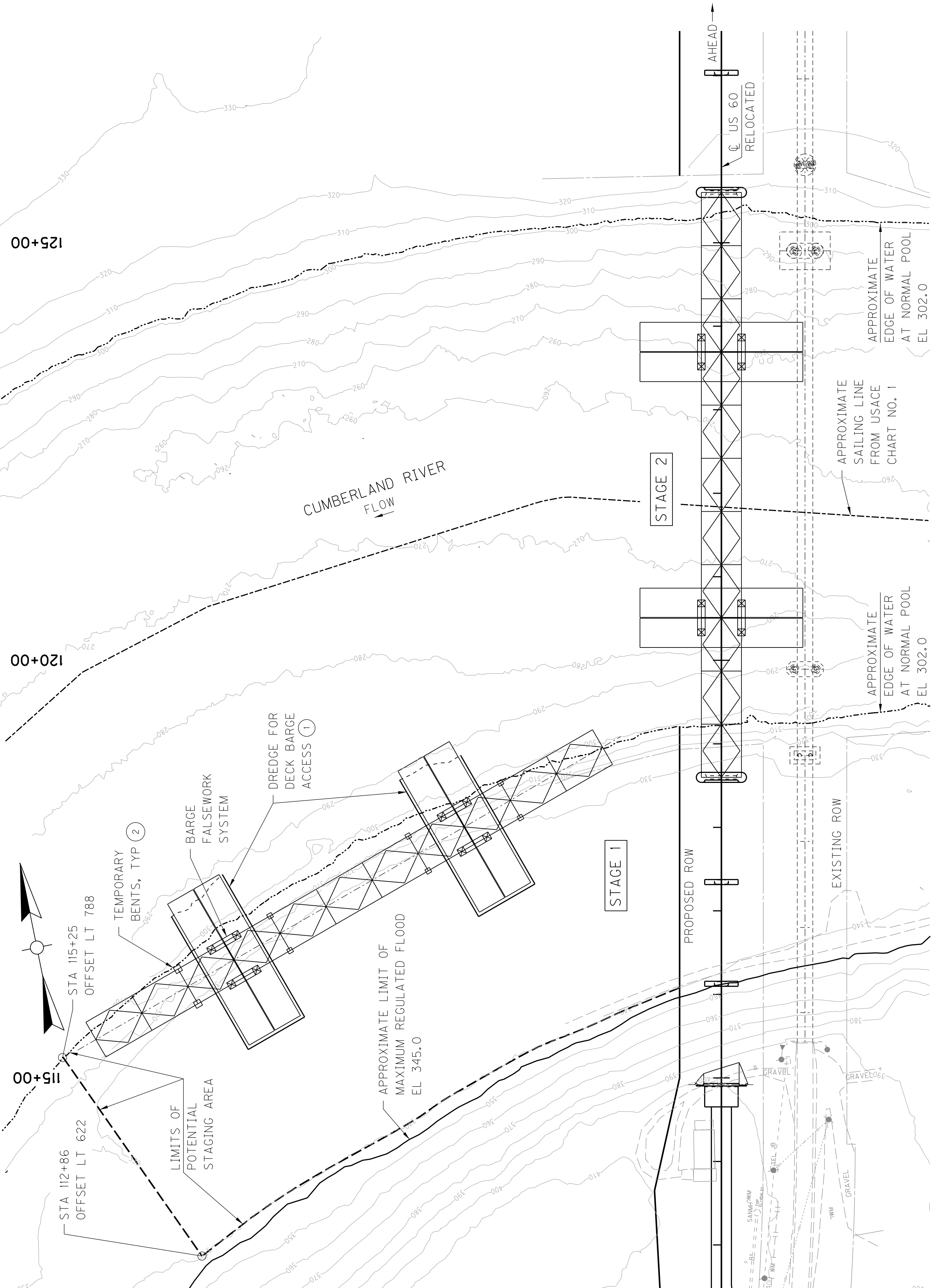


VIEW A-A

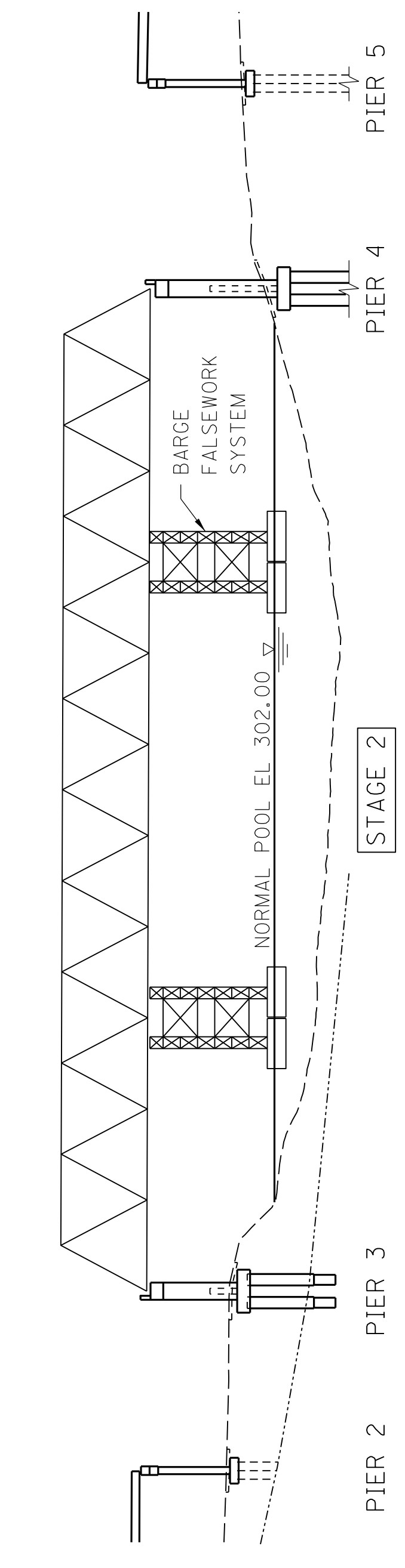
NOTES:

1. BOLTS SHALL BE 1 1/8" DIAMETER ASTM F3125 GRADE A490.
2. BOLT THREADS SHALL BE EXCLUDED FROM THE SHEAR PLANE.
3. SHORT SLOTTED HOLES SHALL BE PROVIDED IN THE TRACTION FRAME MEMBERS AT THE FLOORBEAM TIE PLATE CONNECTION END, ORIENTED IN THE DIRECTION OF THE MEMBER.
4. AFTER THE COMPLETION OF THE DECK POUR, THE CONTRACTOR SHALL LOOSEN BOLTS AT ALL SHORT SLOTTED HOLES TO RELEASE THE DEAD LOAD AXIAL FORCES. ALL BOLTS IN THE CONNECTION SHALL BE REPLACED AND TIGHTENED.
5. CONNECTION AT L5 SHOWN. CONNECTION AT L6 IS SYMMETRICAL.

REVISION	DATE
DATE: MARCH 2020	CHECKED BY
DESIGNED BY: J. HUDSON	T. PERKINS
DETAILED BY: D. BASHAM	T. PERKINS
Commonwealth of Kentucky DEPARTMENT OF HIGHWAYS	
COUNTY LIVINGSTON	
ROUTE US 60	CROSSING CUMBERLAND RIVER
TRACTION FRAME	
PREPARED BY Stantec	
SHEET NO. S55	DRAWING NO. 27458



PLAN - TRUSS ERECTION STAGING



ELEVATION - TRUSS ERECTION STAGING

NOTES:

THIS TRUSS ERECTION SCHEME REPRESENTS ONE FEASIBLE METHOD OF CONSTRUCTING THE TRUSS SPAN. THE DRAWINGS ARE CONCEPTUAL ONLY AND ARE NOT WORKING DRAWINGS. THE MEANS AND METHODS OF ACCESS AND CONSTRUCTION ARE THE RESPONSIBILITY OF THE CONTRACTOR. SEE SPECIAL NOTE FOR STEEL ERECTION FOR ADDITIONAL REQUIREMENTS. THE STABILITY OF THE STRUCTURE DURING ERECTION AND THE FINAL GEOMETRY OF STRUCTURE IS THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL RETAIN AN ERECTION ENGINEER FOR THE PURPOSE OF EVALUATING THE STABILITY, STATE OF STRESS AND GEOMETRY OF THE STRUCTURE DURING AND AFTER ERECTION. SEE SPECIAL NOTE FOR STEEL ERECTION FOR ADDITIONAL REQUIREMENTS.

THE CONSTRUCTION OF FALSEWORK, PILING, COFFERDAMS OR OTHER OBSTRUCTIONS, IF REQUIRED, SHALL BE IN ACCORDANCE WITH PLANS SUBMITTED TO AND APPROVED BY THE COMMANDER, EIGHTH COAST GUARD DISTRICT, PRIOR TO CONSTRUCTION OF THE BRIDGE. ALL WORK SHALL BE SO CONDUCTED THAT THE FREE NAVIGATION OF THE WATERWAY IS NOT UNREASONABLY INTERFERED WITH AND THE PRESENT NAVIGABLE DEPTHS ARE NOT IMPAIRED. TIMELY NOTICE OF ANY AND ALL EVENTS THAT MAY AFFECT NAVIGATION SHALL BE GIVEN TO THE DISTRICT COMMANDER DURING CONSTRUCTION OF THE BRIDGE. THE CHANNEL OR CHANNELS THROUGH THE STRUCTURE SHALL BE PROMPTLY CLEARED OF ALL OBSTRUCTIONS PLACED THEREIN, OR CAUSED BY THE CONSTRUCTION OF THE BRIDGE, TO THE SATISFACTION OF THE DISTRICT COMMANDER. ALL REQUIREMENTS OF THE COAST GUARD PERMIT SHALL BE FOLLOWED.

STAGE 1: TRUSS CONSTRUCTION

1. CONSTRUCT TEMPORARY BENT SYSTEM TO SUPPORT TRUSS.
3. DREDGE CELLS WITHIN STAGING AREA FOR BARGE ACCESS.
2. ERECT ENTIRE TRUSS, INCLUDING STRINGERS ON TEMPORARY BENT SYSTEM. ADDITIONAL ELEMENTS MAY BE PLACED AT THE CONTRACTORS DISCRETION;
4. SIP SLAB FORMS, SLAB REINFORCING BARS AND INSPECTION ACCESS STEEL.
5. INSTALL LOWER BARGE FALSEWORK SYSTEM FOR FLOAT IN.

STAGE 2: FLOAT IN

1. INSTALL TRUSS BEARINGS
2. ENGAGE AND INCREMENTALLY RAISE BARGE MOUNTED FALSEWORK SYSTEM TO LIFT TRUSS TO INSTALLATION HEIGHT.
2. DURING THE NAVIGATION OUTAGE WINDOW, ROTATE/FLOAT TRUSS SPAN INTO LOCATION.
4. LOWER TRUSS FROM BARGE FALSEWORK SYSTEM TO TRUSS BEARINGS.

STAGE 3:

1. CONSTRUCT CONCRETE SLAB AND RAILING.
2. FINISH CONSTRUCTION OF APPROACH SPANS.

NOTATIONS:

1. AFTER THE TRUSS FLOAT-IN, DREDGED AREAS SHALL BE FILLED WITH NATURAL STABLE MATERIAL, GRADED BACK TO ORIGINAL CONTOURS, STABILIZED TO PREVENT EROSION, AND RE-VEGETATED IN ACCORDANCE WITH THE SPECIAL NOTE FOR MITIGATION IMPACTS TO THE CUMBERLAND RIVER IN ACCORDANCE WITH THE BIOLOGICAL OPINION CONCERNING FAT POCKETBOOK MUSSELS, AT A MINIMUM, STABILIZATION SHALL INCLUDE A 2'-0" LAYER OF CYCLOPEAN STONE RIPRAP OVER THE DREDGED AREAS EXTENDING 5'-0" PAST THE TOP OF BANK TO THE NORMAL POOL WATERLINE. ALL WORK AND MATERIAL SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS. ALL COST ASSOCIATED WITH THE BACKFILL, GRADING, SLOPE PROTECTION, AND RE-VEGETATION OF THE DREDGED AREA SHALL BE CONSIDERED INCIDENTAL TO STEEL ERECTION.
2. TEMPORARY BENTS IN THE STAGING AREA SHALL BE REMOVED TO A MINIMUM OF 2'-0" BELOW EXISTING GROUNDLINE AFTER TRUSS FLOAT-IN.

BILL OF INCIDENTAL MATERIAL

ITEM	UNIT	QUANTITY
DREDGING	CY	27,000
BACKFILL	CY	27,000
CYCLOPEAN STONE RIPRAP	TON	1,270

ITEM NUMBER

1-1142.00

REVISION	DATE
DESIGNED BY: T. PERKINS	CHECKED BY: T. HUNLEY
DETAILED BY: A. FARMER	T. PERKINS
Commonwealth of Kentucky	
DEPARTMENT OF HIGHWAYS	
COUNTY	
LIVINGSTON	
ROUTE	CROSSING
US 60	CUMBERLAND RIVER
TRUSS ERECTION SCHEME	
PREPARED BY	
Stantec	
SHEET NO.	DRAWING NO.
S87	27458

REVISED: 03-03-2020

NOTES:

THIS TRUSS ERECTION SCHEME REPRESENTS ONE FEASIBLE METHOD OF CONSTRUCTING THE TRUSS SPAN. THE DRAWINGS ARE CONCEPTUAL ONLY AND ARE NOT WORKING DRAWINGS. THE MEANS AND METHODS OF ACCESS AND CONSTRUCTION ARE THE RESPONSIBILITY OF THE CONTRACTOR. SEE SPECIAL NOTE FOR STEEL ERECTION FOR ADDITIONAL REQUIREMENTS. THE STABILITY OF THE STRUCTURE DURING ERECTION AND THE FINAL GEOMETRY OF STRUCTURE IS THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL RETAIN AN ERECTION ENGINEER FOR THE PURPOSE OF EVALUATING THE STABILITY, STATE OF STRESS AND GEOMETRY OF THE STRUCTURE DURING AND AFTER ERECTION. SEE SPECIAL NOTE FOR STEEL ERECTION FOR ADDITIONAL REQUIREMENTS.

THE CONSTRUCTION OF FALSEWORK, PILING, COFFERDAMS OR OTHER OBSTRUCTIONS, IF REQUIRED, SHALL BE IN ACCORDANCE WITH PLANS SUBMITTED TO AND APPROVED BY THE COMMANDER, EIGHTH COAST GUARD DISTRICT, PRIOR TO CONSTRUCTION OF THE BRIDGE. ALL WORK SHALL BE SO CONDUCTED THAT THE FREE NAVIGATION OF THE WATERWAY IS NOT UNREASONABLY INTERFERED WITH AND THE PRESENT NAVIGABLE DEPTHS ARE NOT IMPAIRED. TIMELY NOTICE OF ANY AND ALL EVENTS THAT MAY AFFECT NAVIGATION SHALL BE GIVEN TO THE DISTRICT COMMANDER DURING CONSTRUCTION OF THE BRIDGE. THE CHANNEL OR CHANNELS THROUGH THE STRUCTURE SHALL BE PROMPTLY CLEARED OF ALL OBSTRUCTIONS PLACED THEREIN, OR CAUSED BY THE CONSTRUCTION OF THE BRIDGE, TO THE SATISFACTION OF THE DISTRICT COMMANDER. ALL REQUIREMENTS OF THE COAST GUARD PERMIT SHALL BE FOLLOWED.

STAGE 1: TRUSS CONSTRUCTION

1. CONSTRUCT TEMPORARY BENT SYSTEM TO SUPPORT TRUSS.
3. DREDGE CELLS WITHIN STAGING AREA FOR BARGE ACCESS.
2. ERECT ENTIRE TRUSS, INCLUDING STRINGERS ON TEMPORARY BENT SYSTEM. ADDITIONAL ELEMENTS MAY BE PLACED AT THE CONTRACTORS DISCRETION;
4. SIP SLAB FORMS, SLAB REINFORCING BARS AND INSPECTION ACCESS STEEL.
5. INSTALL LOWER BARGE FALSEWORK SYSTEM FOR FLOAT IN.

STAGE 2: FLOAT IN

1. INSTALL TRUSS BEARINGS
2. ENGAGE AND INCREMENTALLY RAISE BARGE MOUNTED FALSEWORK SYSTEM TO LIFT TRUSS TO INSTALLATION HEIGHT.
2. DURING THE NAVIGATION OUTAGE WINDOW, ROTATE/FLOAT TRUSS SPAN INTO LOCATION.
4. LOWER TRUSS FROM BARGE FALSEWORK SYSTEM TO TRUSS BEARINGS.

STAGE 3:

1. CONSTRUCT CONCRETE SLAB AND RAILING.
2. FINISH CONSTRUCTION OF APPROACH SPANS.

NOTATIONS:

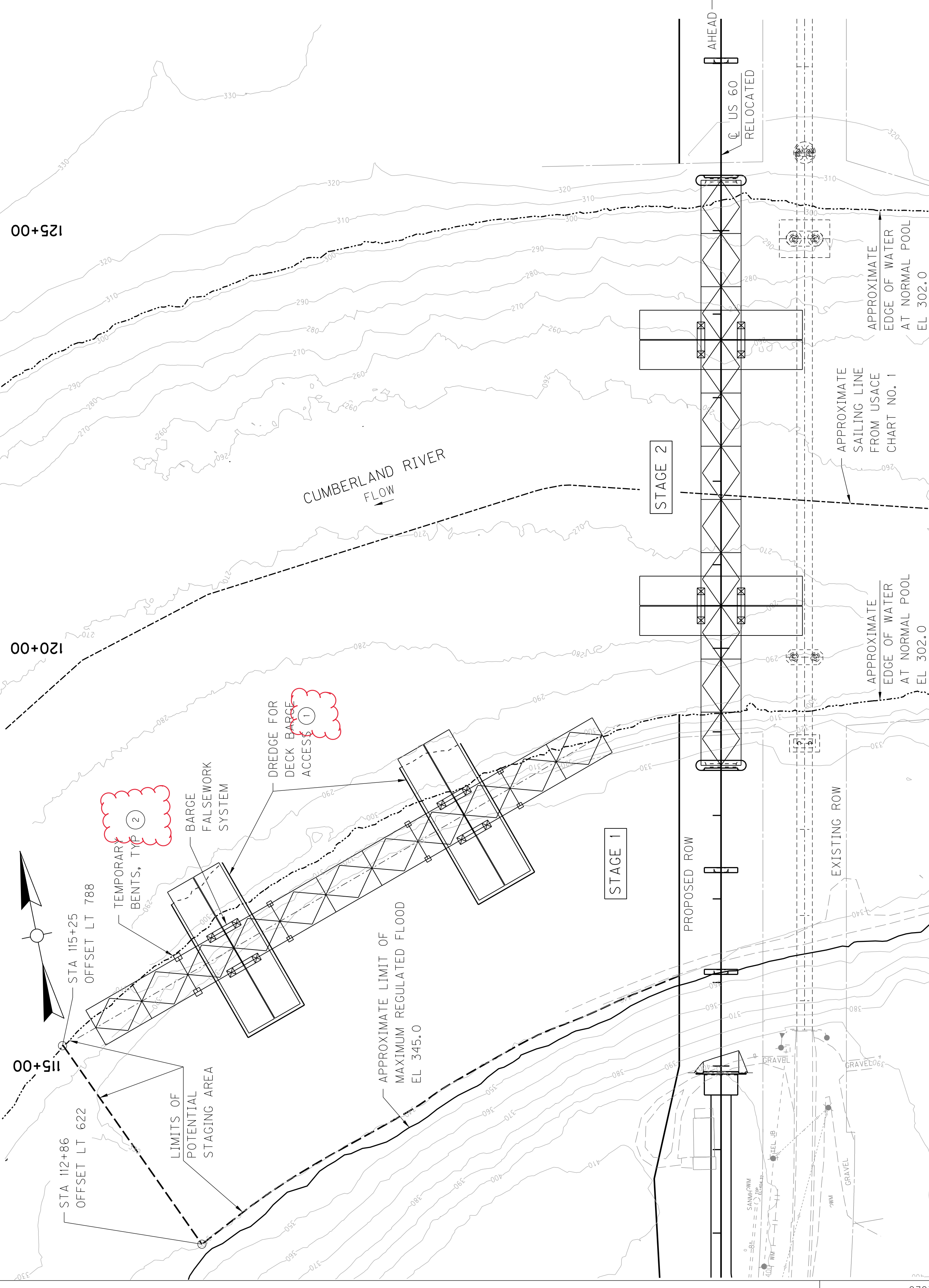
1. AFTER THE TRUSS FLOAT-IN, DREDGED AREAS SHALL BE FILLED WITH NATURAL STABLE MATERIAL, GRADED BACK TO ORIGINAL CONTOURS, STABILIZED TO PREVENT EROSION, AND RE-VEGETATED IN ACCORDANCE WITH THE SPECIAL NOTE FOR MITIGATION IMPACTS TO THE CUMBERLAND RIVER IN ACCORDANCE WITH THE BIOLOGICAL OPINION CONCERNING FAT POCKETBOOK MUSSELS, AT A MINIMUM, STABILIZATION SHALL INCLUDE A 2'-0" LAYER OF CYCLOPEAN STONE RIPRAP OVER THE DREDGED AREAS EXTENDING 5'-0" PAST THE TOP OF BANK TO THE NORMAL POOL WATERLINE. ALL WORK AND MATERIAL SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS. ALL COST ASSOCIATED WITH THE BACKFILL, GRADING, SLOPE PROTECTION, AND RE-VEGETATION OF THE DREDGED AREA SHALL BE CONSIDERED INCIDENTAL TO STEEL ERECTION.
2. TEMPORARY BENTS IN THE STAGING AREA SHALL BE REMOVED TO A MINIMUM OF 2'-0" BELOW EXISTING GROUNDLINE AFTER TRUSS FLOAT-IN.

BILL OF INCIDENTAL MATERIAL

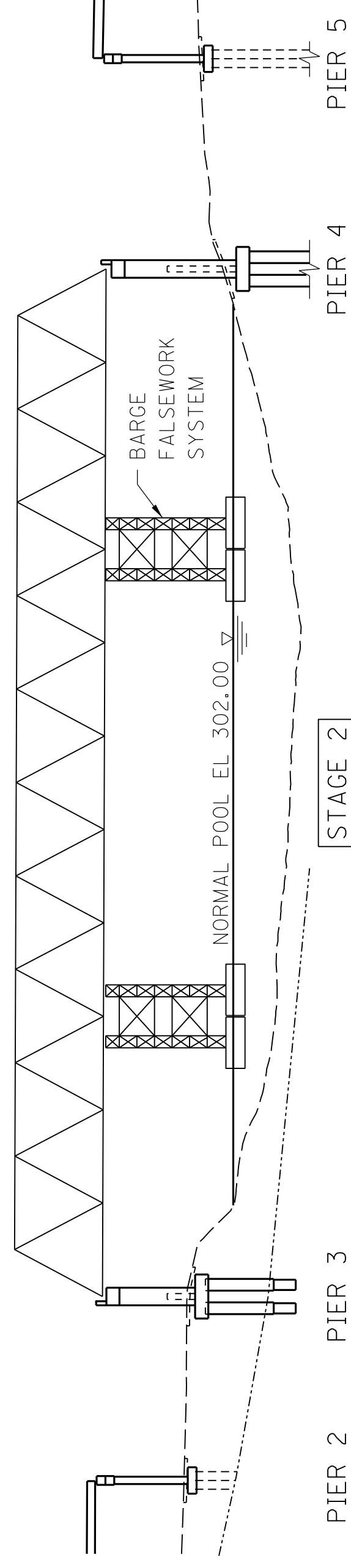
ITEM	UNIT	QUANTITY
DREDGING	CY	27,000
BACKFILL	CY	27,000
CYCLOPEAN STONE RIPRAP	TON	1,270

ITEM NUMBER

1-1142.00



PLAN - TRUSS ERECTION STAGING



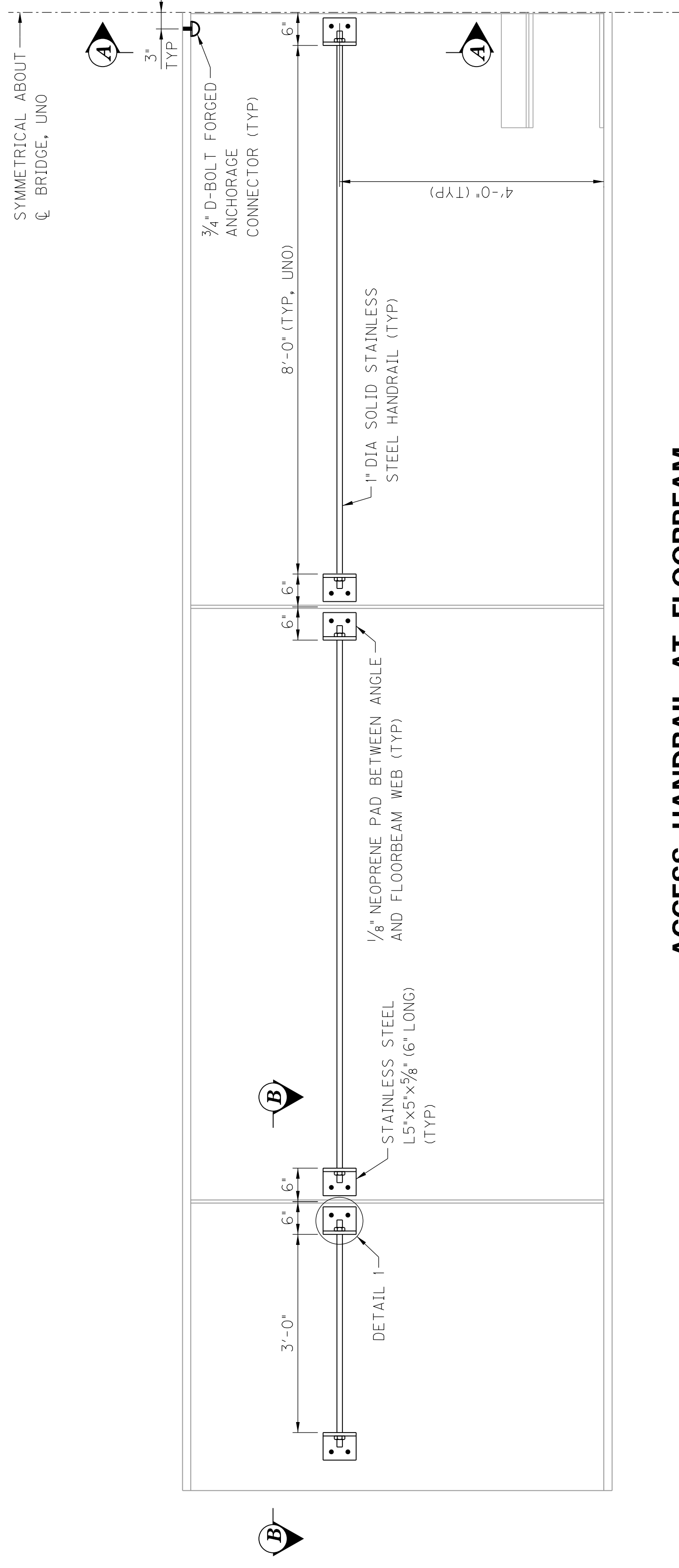
ELEVATION - TRUSS ERECTION STAGING

FILE NAME: V:\1785\ACTIVE\17856501\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\87 TRUSS ERECTION SCHEME.DGN

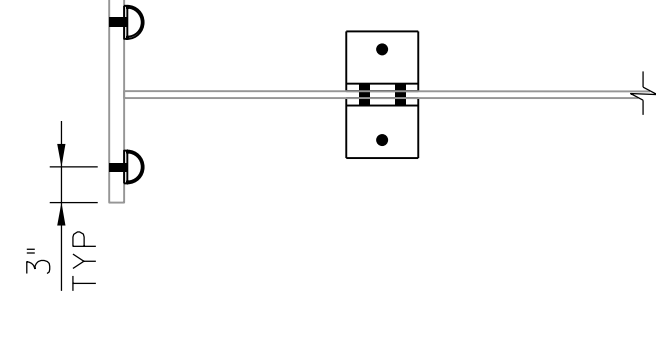
USERS: doboshom DATE PLOTTED: March 3, 2020

E-SHEET NAME: MicroStation v8.11.9.832

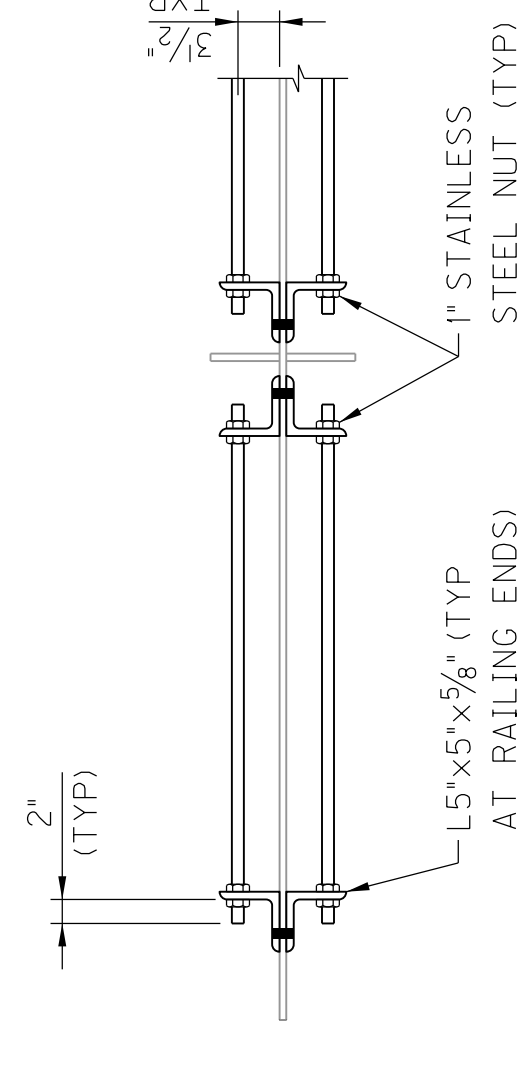
REVISION	DATE
DESIGNED BY: T. PERKINS	CHECKED BY: T. HUNLEY
DETAILED BY: A. FARMER	T. PERKINS
Commonwealth of Kentucky DEPARTMENT OF HIGHWAYS COUNTY	
LIVINGSTON	
ROUTE US 60	CROSSING CUMBERLAND RIVER
TRUSS ERECTION SCHEME	
PREPARED BY Stantec	
SHEET NO. S87	DRAWING NO. 27458



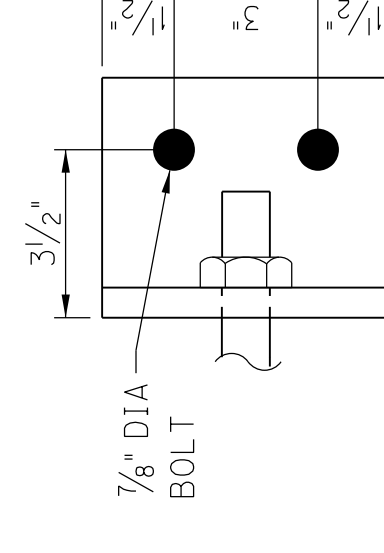
ACCESS HANDRAIL AT FLOORBEAM



SECTION A-A



SECTION B-B



DETAIL 1

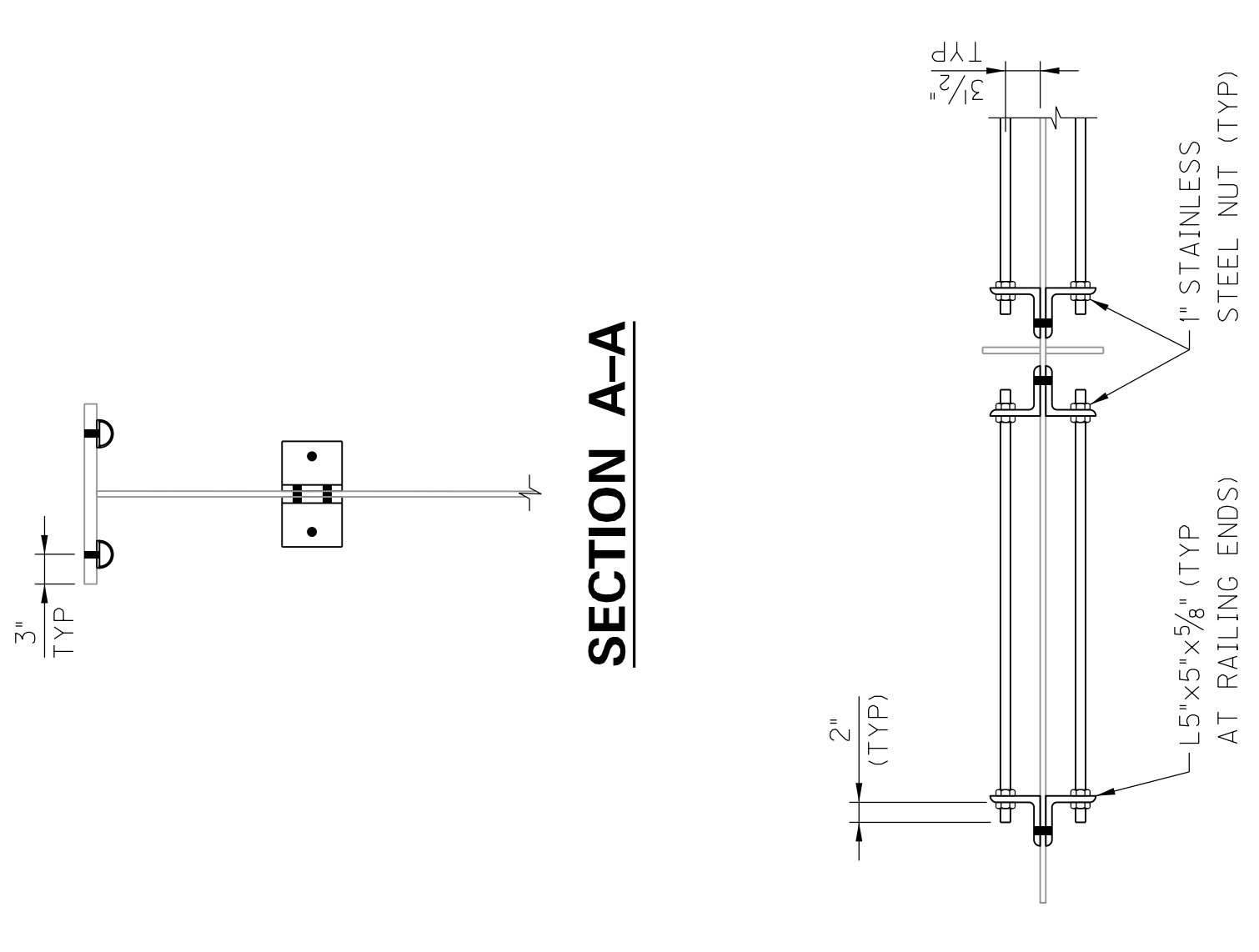
NOTES:

- FLOORBEAM HANDRAIL AND ATTACHMENT ANGLE SHALL BE STAINLESS STEEL CONFORMING TO ASTM A240 AND FLOORBEAM HANDRAIL SHALL HAVE A MINIMUM YIELD STRESS OF 60 KSI.
- ALL BOLTS FOR INSPECTION ACCESS ATTACHMENTS SHALL BE 7/8" DIA. F3125 GRADE A325 BOLTS WITH 15/16" DIA. HOLES.
- ALL D-BOLT FORGED ANCHORAGE CONNECTORS SHALL BE CAPABLE OF SUPPORTING A 5000 POUND FALL ARREST LOAD APPLIED IN ANY DIRECTION AND SHALL BE INSTALLED ACCORDING TO THE MANUFACTURERS' SPECIFICATIONS.

REVISION	DATE
DATE: MARCH 2020	CHECKED BY: J. HUDSON
DESIGNED BY: J. MURPHY	DETAILED BY: A. FARMER
Commonwealth of Kentucky DEPARTMENT OF HIGHWAYS	
COUNTY LIVINGSTON	
ROUTE US 60	CROSSING CUMBERLAND RIVER
INSPECTION ACCESS DETAILS (1)	
PREPARED BY Stantec	
SHEET NO. S97	
DRAWING NO. 27458	

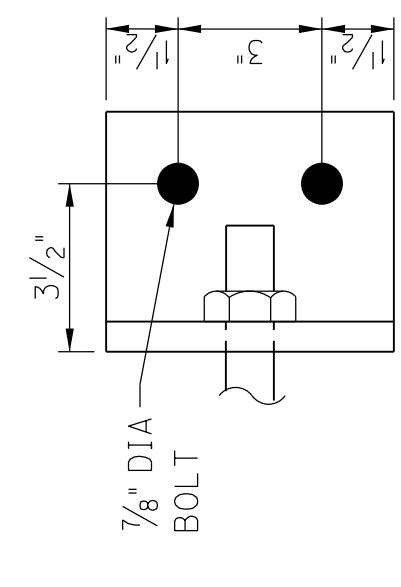
ITEM NUMBER

1-1142.00

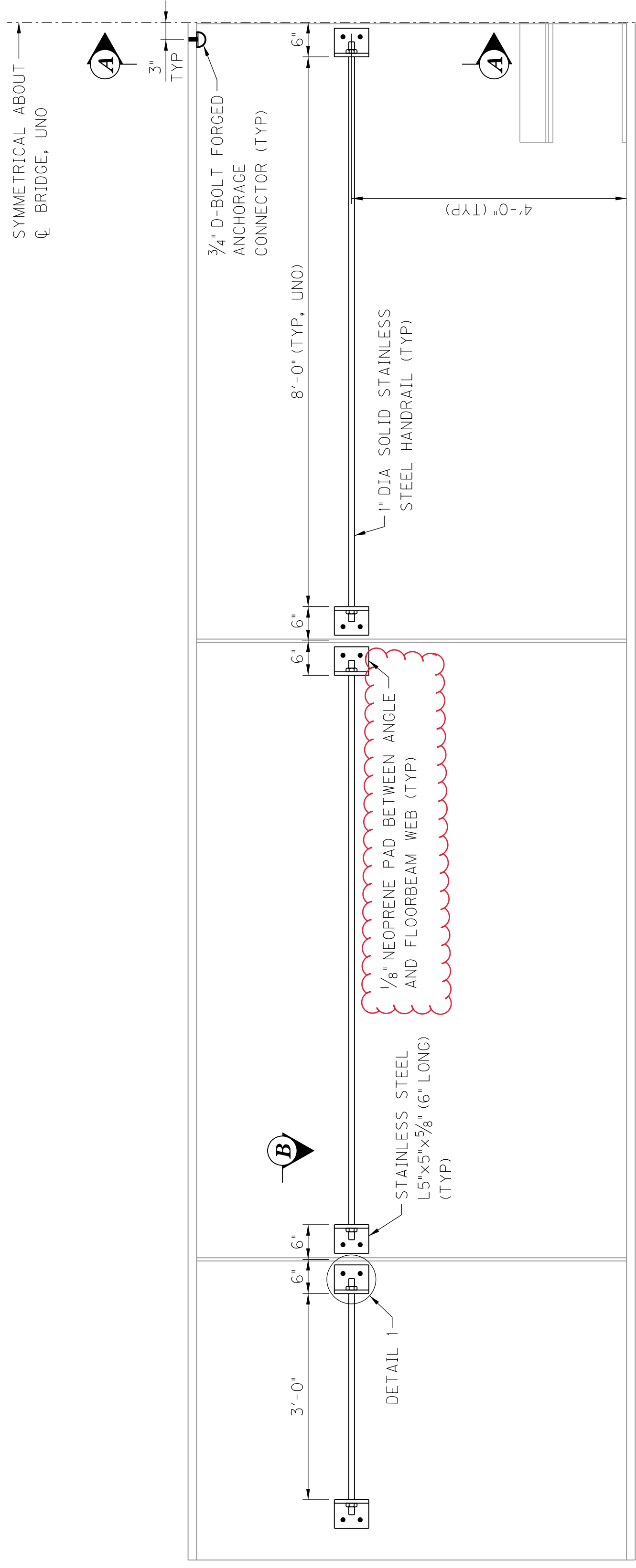


SECTION A-A

SECTION B-B



DETAIL 1

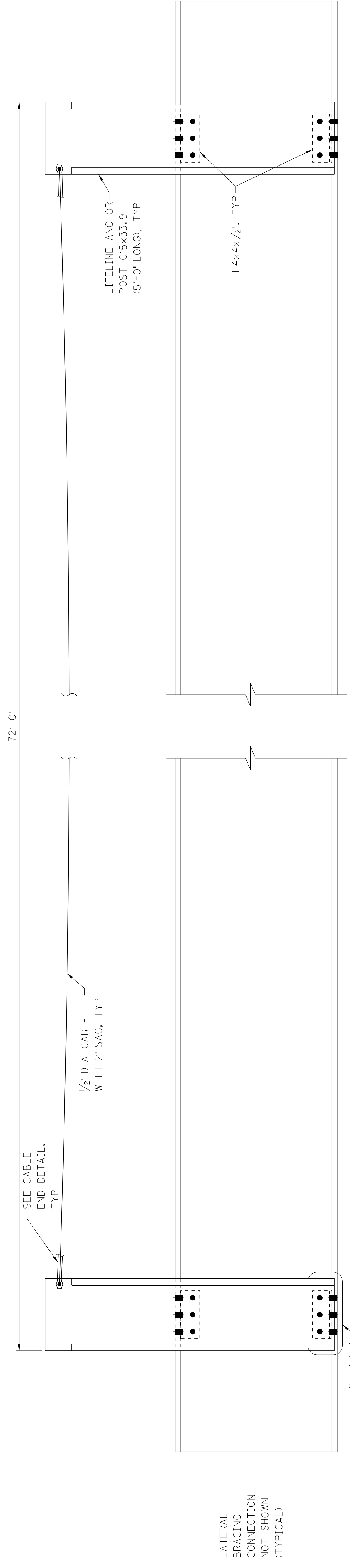


ACCESS HANDRAIL AT FLOORBEAM

NOTES:

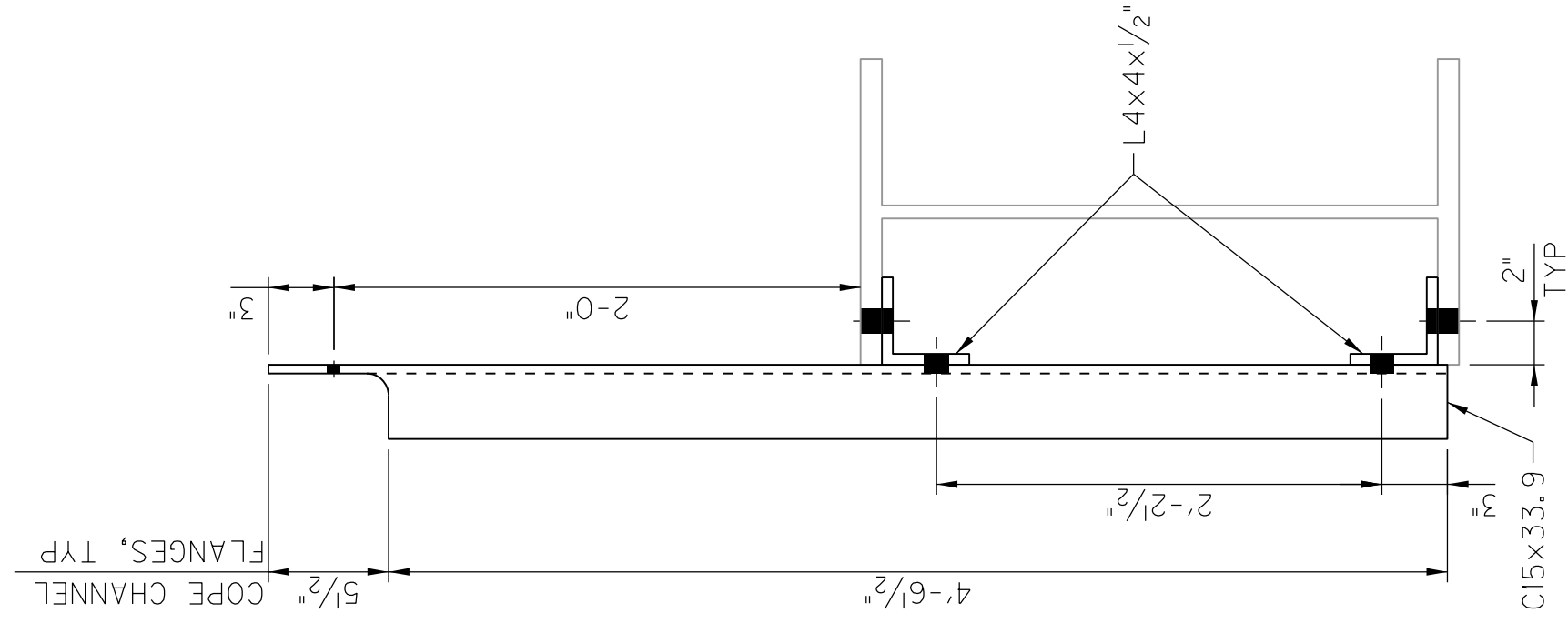
1. FLOORBEAM HANDRAIL AND ATTACHMENT ANGLE SHALL BE STAINLESS STEEL CONFORMING TO ASTM A240 AND FLOORBEAM HANDRAIL SHALL HAVE A MINIMUM YIELD STRESS OF 60 KSI.
2. ALL BOLTS FOR INSPECTION ACCESS ATTACHMENTS SHALL BE 7/8\"/>

REVISION	DATE
DATE: MARCH 2020	CHECKED BY: J. HUDSON
DESIGNED BY: J. MURPHY	DETAILED BY: A. FARMER
Commonwealth of Kentucky DEPARTMENT OF HIGHWAYS <small>COUNTY</small> LIVINGSTON	
ROUTE US 60	CROSSING CUMBERLAND RIVER
INSPECTION ACCESS DETAILS (1)	
ITEM NUMBER 1-1142.00	PREPARED BY Stantec
	SHEET NO. S97
	DRAWING NO. 27458

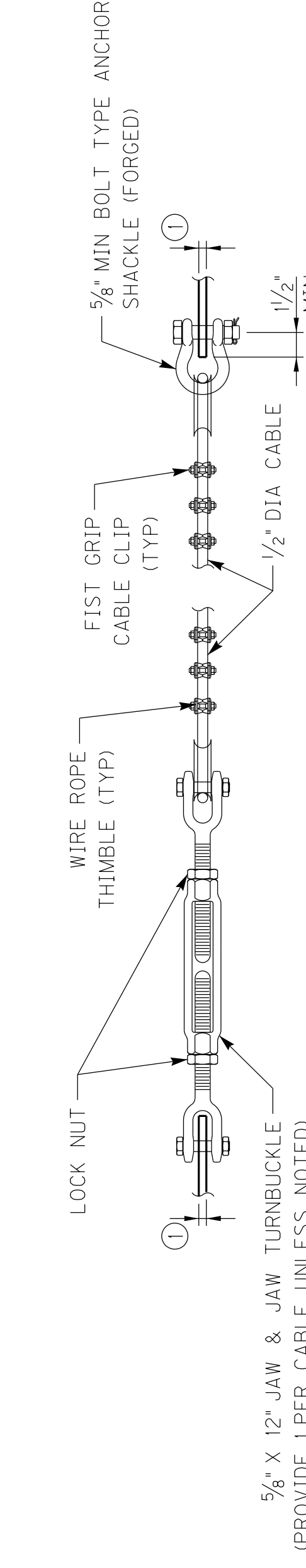


INSPECTION ACCESS AT LATERAL BRACING U5-U6

ONE ACCESS SYSTEM REQUIRED FROM U5 (LEFT TRUSS) TO U6 (RIGHT TRUSS)



SECTION AT LIFELINE ANCHOR POST

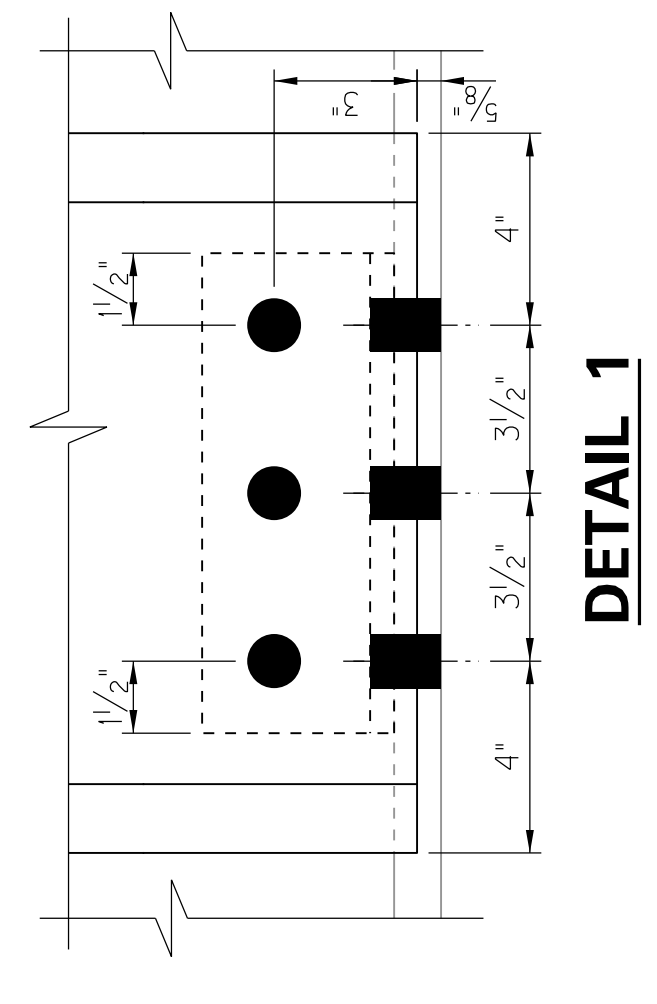


CABLE END DETAIL

- ① WEB OF LIFELINE ANCHOR POST, (C15X33.9) = 3/8".
THICKNESS OF CABLE CONNECTION PLATE AT L0 THROUGH L11 = 1/2".

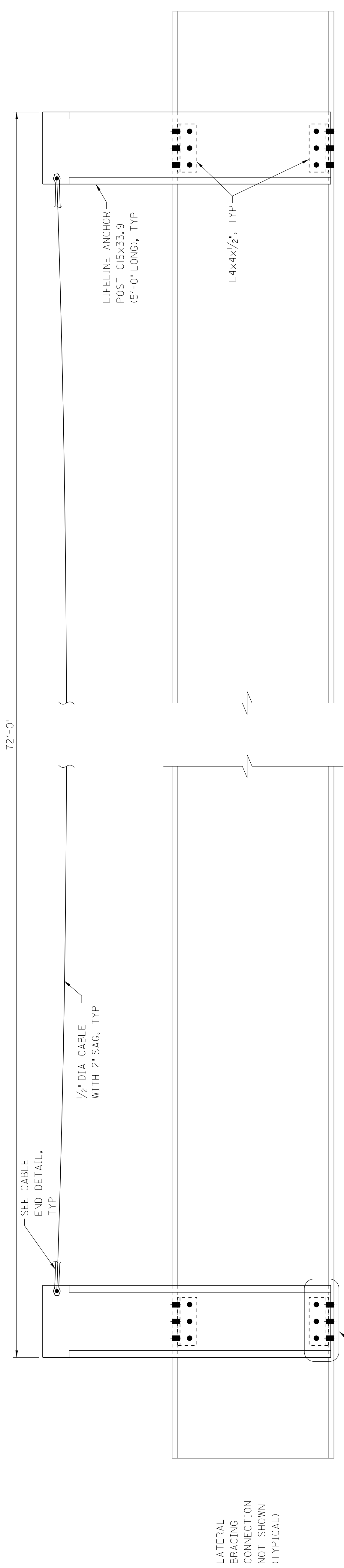
NOTES:

1. ALL BOLTS FOR INSPECTION ACCESS ATTACHMENTS SHALL BE 7/8" DIA, F3125 GRADE A325 BOLTS WITH 5/16" DIA. HOLES.
2. CABLES TO BE 1/2" A586 ZINC COATED STRUCTURAL STRAND WITH CLASS A ZINC COATING THROUGHOUT AND HAVE A MINIMUM BREAKING STRENGTH OF 15 TONS.
3. ALL CABLE FITTINGS (TURNBUCKLES, THIMBLES, CLIPS, SHACKLES, ETC.) SHALL BE HOT-DIPPED GALVANIZED AND SHALL MEET OR EXCEED THE CAPACITY OF THE STRUCTURAL STRAND AND SHALL BE INSTALLED ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS, THE DESIGN, FINISHING, GALVANIZATION, FABRICATING, AND INSTALLATION OF CABLE FITTINGS TO BE INCIDENTAL TO PAY ITEM "STRUCTURAL STEEL".
4. CONTRACTOR IS TO INSTALL THE UPPER LATERAL BRACING HORIZONTAL LIFE LINE SHORTLY AFTER THE INSTALLATION OF THE LATERAL BRACING FROM U5 TO U6.
5. THE UPPER LATERAL BRACING HORIZONTAL LIFE LINE SYSTEM IS DESIGNED FOR A 5000 POUND FALL ARREST LOAD.



DETAIL 1

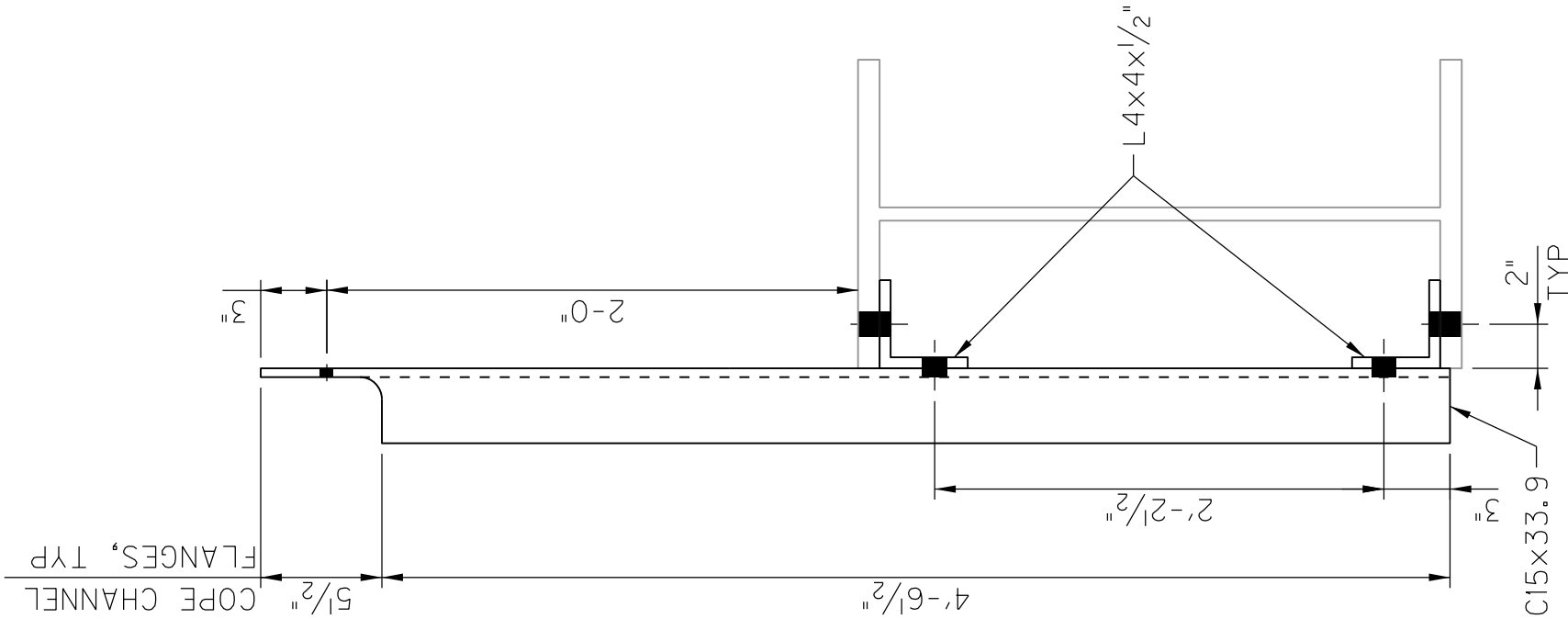
DATE: MARCH 2020	DESIGNED BY: J. MURPHY	REVISION	CHECKED BY
	DETAILED BY: A. FARMER		J. HUDSON
T. PERKINS Commonwealth of Kentucky DEPARTMENT OF HIGHWAYS COUNTY LIVINGSTON			
ROUTE US 60	CROSSING CUMBERLAND RIVER		
INSPECTION ACCESS DETAILS (2)			
ITEM NUMBER 1-1142.00		PREPARED BY Stantec	
		SHEET NO. 998	
		DRAWING NO. 27458	



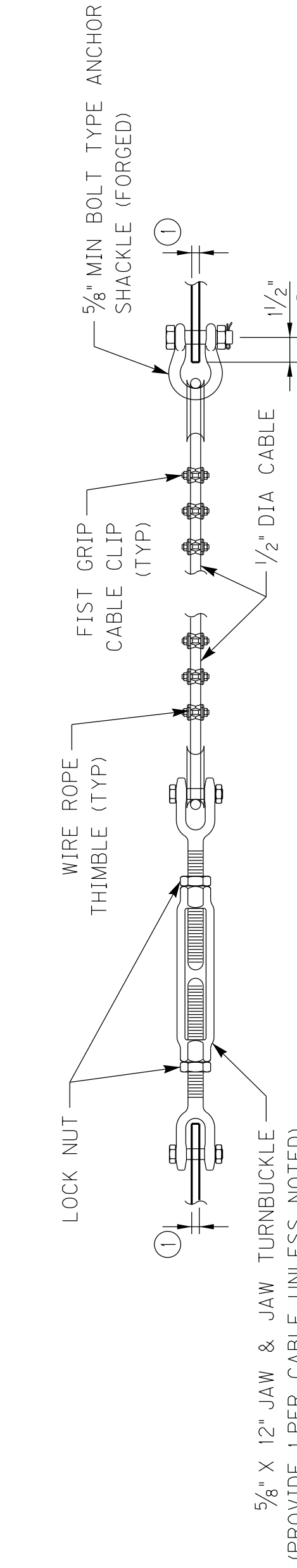
LATERAL BRACING CONNECTION NOT SHOWN (TYPICAL)

INSPECTION ACCESS AT LATERAL BRACING U5-U6

ONE ACCESS SYSTEM REQUIRED FROM U5 (LEFT TRUSS) TO U6 (RIGHT TRUSS)



SECTION AT LIFELINE ANCHOR POST

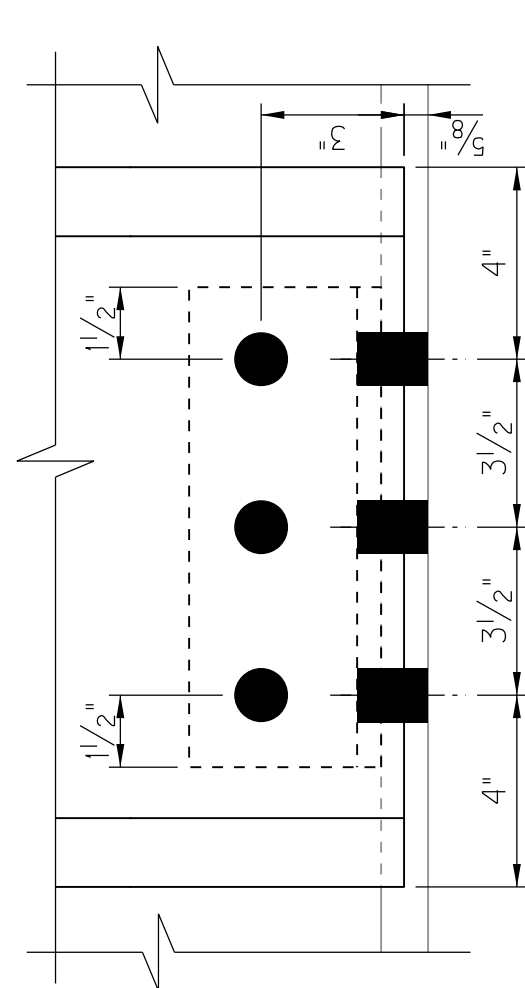


CABLE END DETAIL

① WEB OF LIFELINE ANCHOR POST, (C15X33.9) = 3/8\"/>

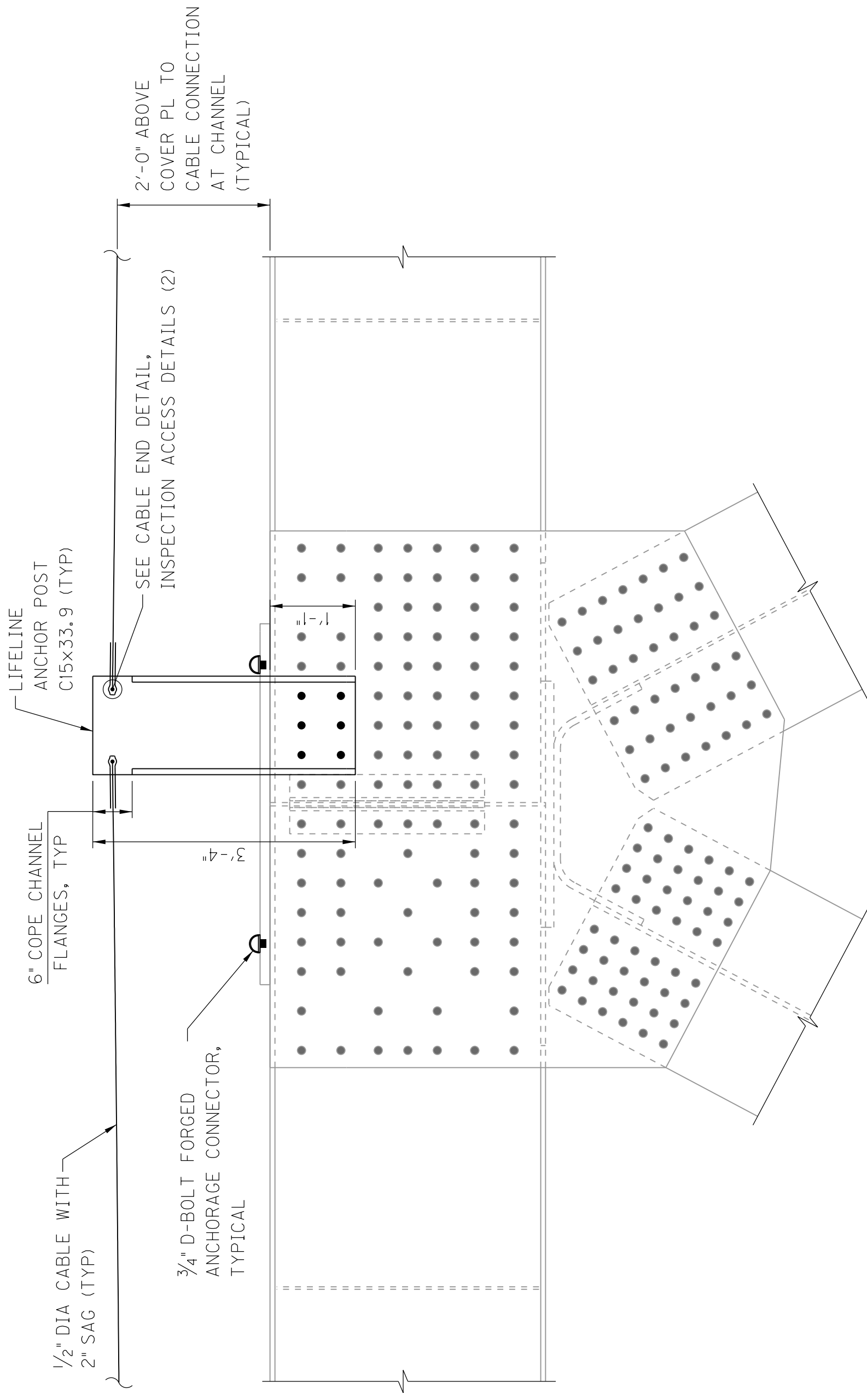
NOTES:

1. ALL BOLTS FOR INSPECTION ACCESS ATTACHMENTS SHALL BE 7/8\"/>
2. CABLES TO BE 1/2\"/>
3. ALL CABLE FITTINGS (TURNBUCKLES, THIMBLES, CLIPS, SHACKLES, ETC.) SHALL BE HOT-DIPPED GALVANIZED AND SHALL MEET OR EXCEED THE CAPACITY OF THE STRUCTURAL STRAND AND SHALL BE INSTALLED ACCORDING TO THE MANUFACTURERS SPECIFICATIONS, THE DESIGN, FURNISHING, GALVANIZATION, FABRICATING, AND INSTALLATION OF CABLE FITTINGS TO BE INCIDENTAL TO PAY ITEM "STRUCTURAL STEEL".
4. CONTRACTOR IS TO INSTALL THE UPPER LATERAL BRACING HORIZONTAL LIFE LINE SHORTLY AFTER THE INSTALLATION OF THE LATERAL BRACING FROM U5 TO U6.
5. THE UPPER LATERAL BRACING HORIZONTAL LIFE LINE SYSTEM IS DESIGNED FOR A 5000 POUND FALL ARREST LOAD.

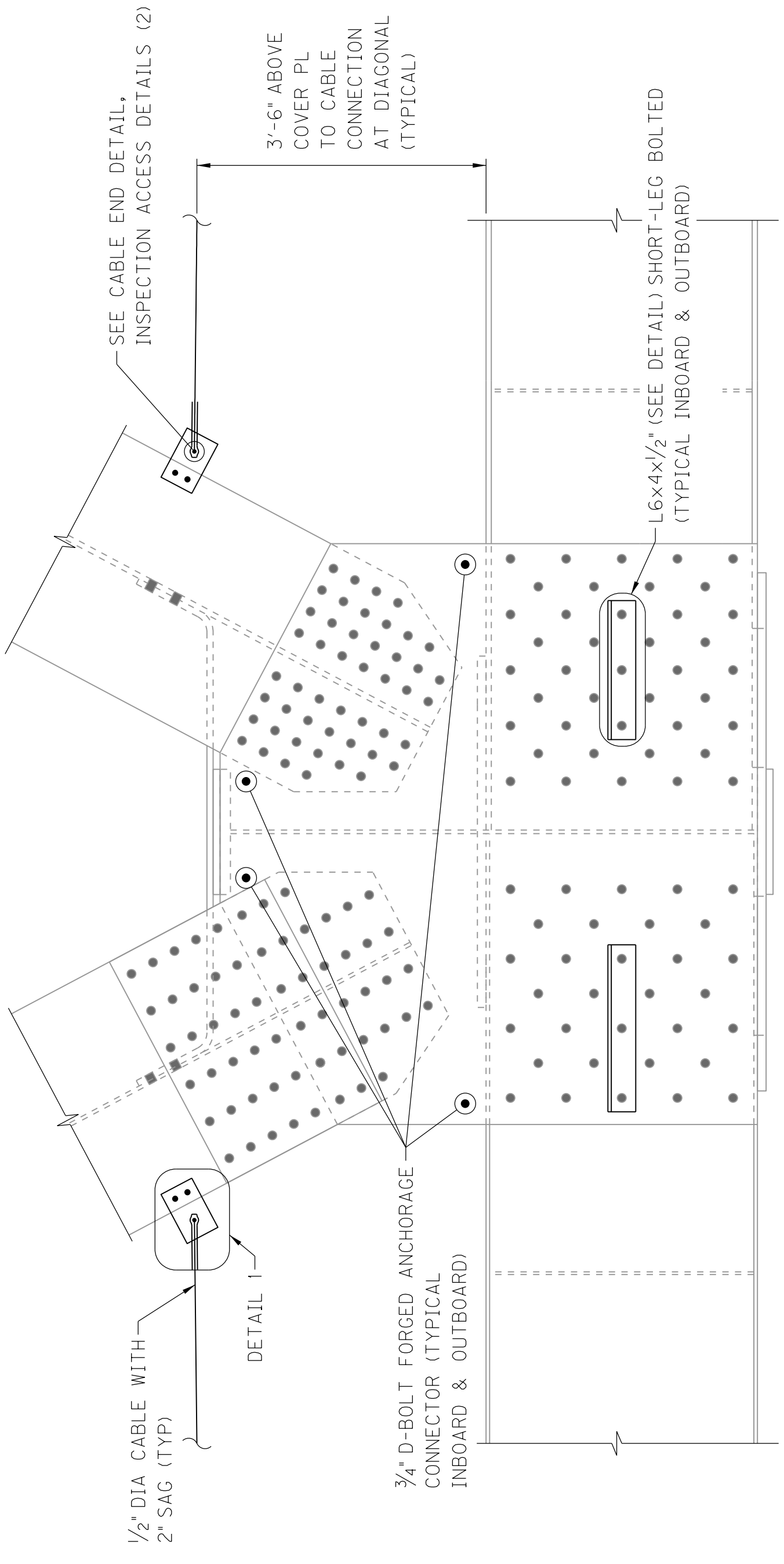
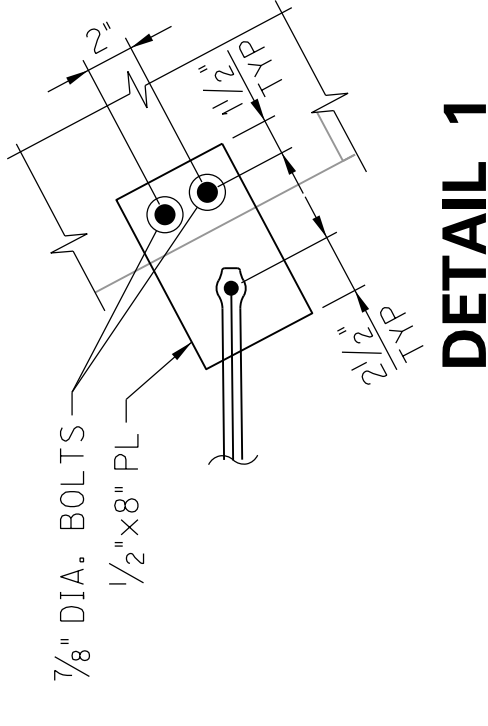


DETAIL 1

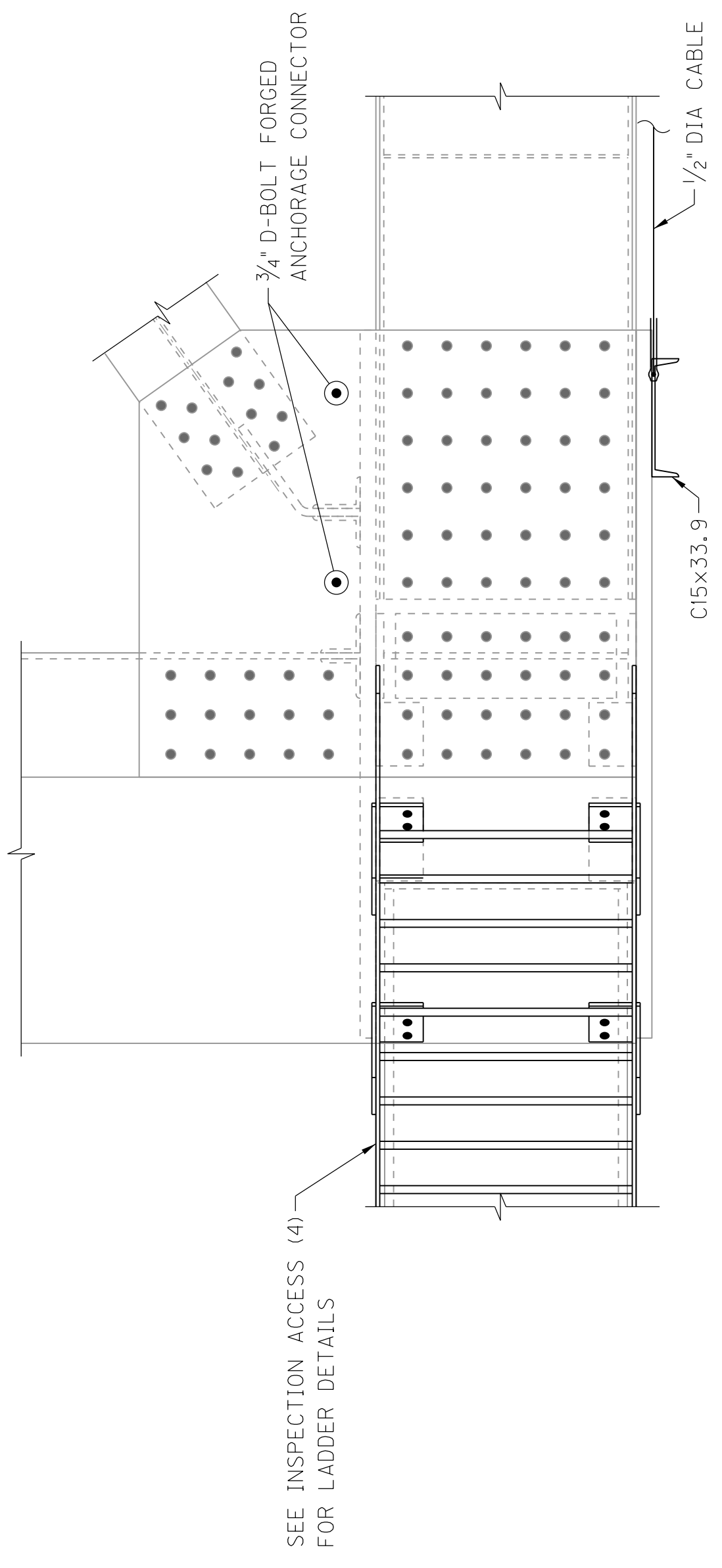
DATE: MARCH 2020	DESIGNED BY: J. MURPHY	REVISION	CHECKED BY: J. HUDSON
	DETAILED BY: A. FARMER		T. PERKINS
Commonwealth of Kentucky DEPARTMENT OF HIGHWAYS			
COUNTY LIVINGSTON			
ROUTE US 60	CROSSING CUMBERLAND RIVER		
INSPECTION ACCESS DETAILS (2)			
ITEM NUMBER 1-1142.00		PREPARED BY Stantec	
		SHEET NO. 598	DRAWING NO. 27458



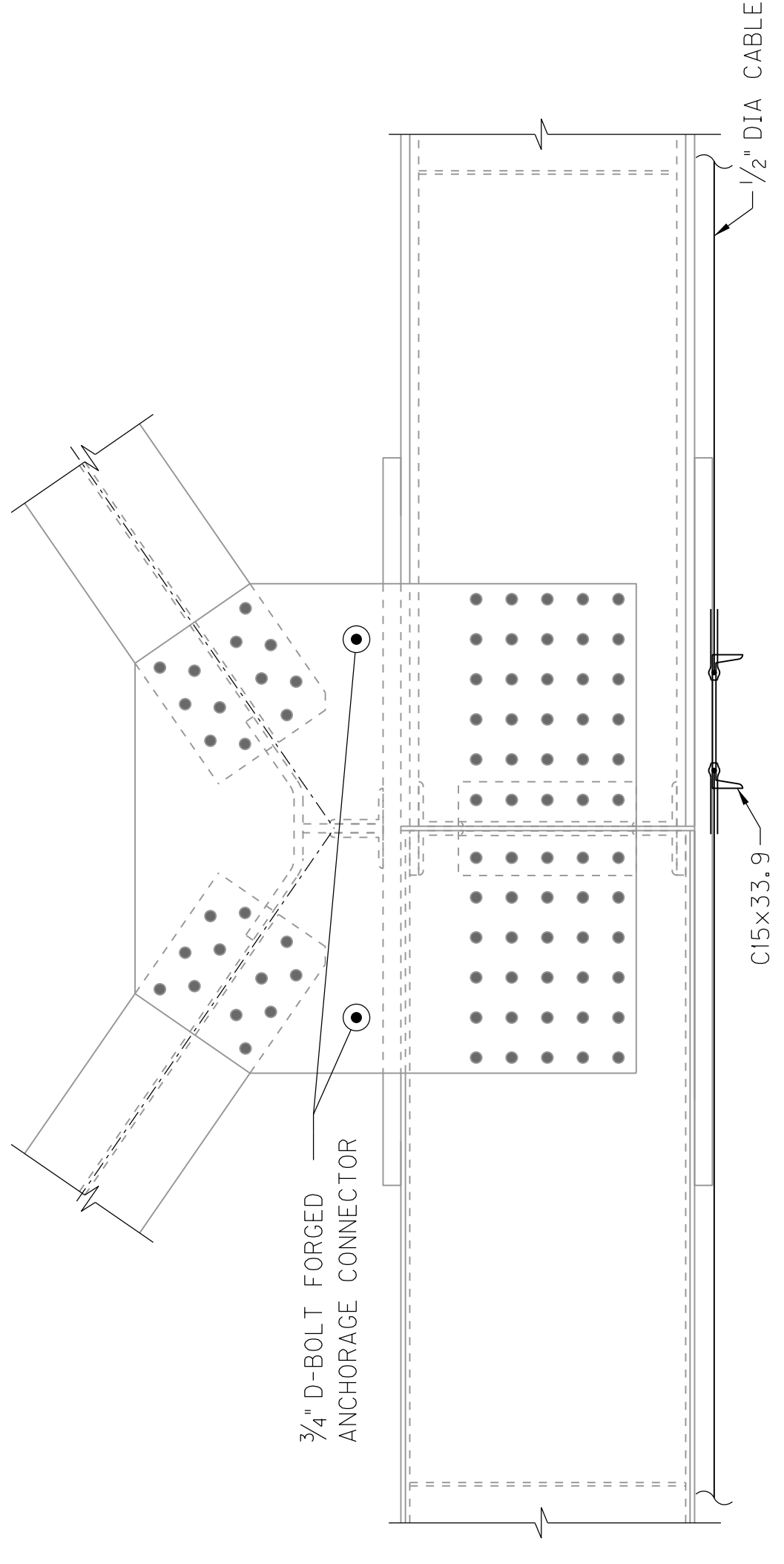
TYPICAL INSPECTION ACCESS – UPPER CHORD (U2 – U10)
(OUTBOARD SIDE SHOWN)



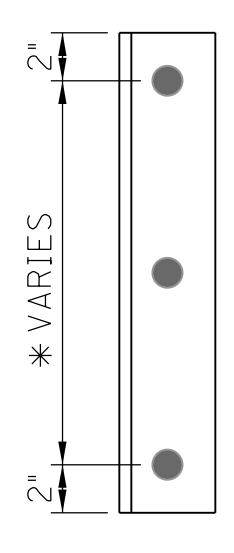
TYPICAL INSPECTION ACCESS – LOWER CHORD
(OUTBOARD SIDE SHOWN)



U1 / U11 TOP VIEW
U1 (RIGHT TRUSS) SHOWN



U2 – U10 TOP VIEW



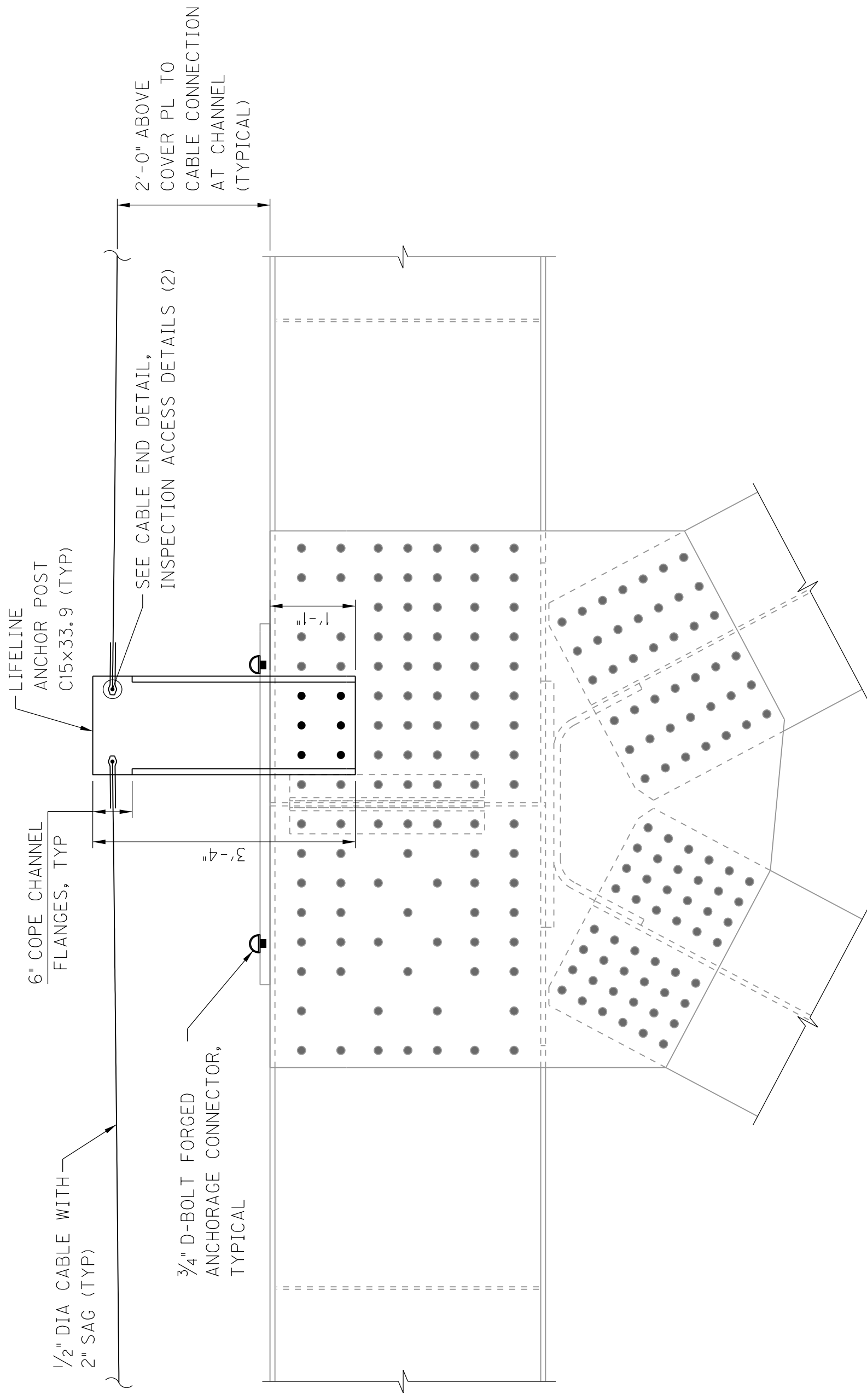
STEP ANGLE DETAIL
* FOR SPACING SEE PITCH ON TRUSS JOINT SHEETS

NOTES:

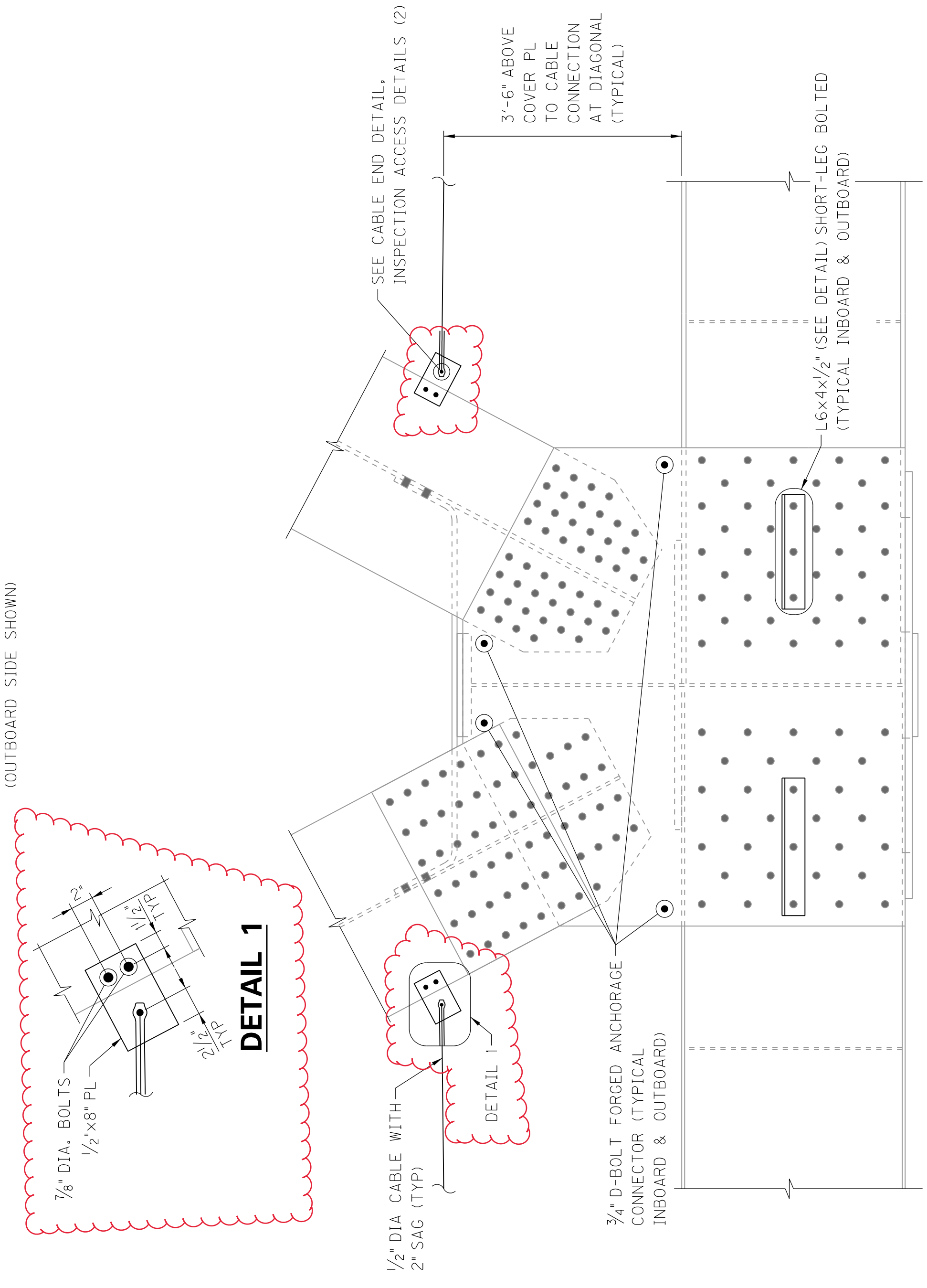
1. ALL BOLTS FOR INSPECTION ACCESS ATTACHMENTS WILL UTILIZE EXISTING TRUSS CONNECTION HOLES, UNLESS OTHERWISE NOTED.
2. ALL D-BOLT FORGED ANCHORAGE CONNECTORS SHALL BE CAPABLE OF SUPPORTING A 5000 POUND FALL ARREST LOAD APPLIED IN ANY DIRECTION AND SHALL BE INSTALLED ACCORDING TO THE MANUFACTURERS SPECIFICATIONS.
3. CABLES TO BE 1/2" A586 ZINC COATED STRUCTURAL STRAND WITH CLASS A ZINC COATING THROUGHOUT AND HAVE A MINIMUM BREAKING STRENGTH OF 15 TONS.
4. CONTRACTOR IS TO INSTALL UPPER CHORD HORIZONTAL LIFE LINE SHORTLY AFTER INSTALLATION OF EACH UPPER CHORD MEMBER.
5. ALL CABLE FITTINGS (TURNBUCKLES, THIMBLES, CLIPS, SHACKLES, ETC.) TO BE HOT - DIPPED GALVANIZED AND SHALL MEET OR EXCEED THE CAPACITY OF THE STRUCTURAL STRAND AND SHALL BE INSTALLED ACCORDING TO THE MANUFACTURERS SPECIFICATIONS, THE DESIGN, FURNISHING, GALVANIZATION, FABRICATING, AND INSTALLATION OF CABLE FITTINGS TO BE INCIDENTAL TO PAY ITEM "STRUCTURAL STEEL".
6. BOLT SPACING IN STEP ANGLES SHALL NOT EXCEED 6".
7. THE UPPER CHORD HORIZONTAL LIFE LINE SYSTEM IS DESIGNED FOR A 6000 POUND FALL ARREST LOAD.
8. ALL BOLTS FOR INSPECTION ACCESS ATTACHMENTS SHALL UTILIZE EXISTING TRUSS MEMBER BOLTS, UNLESS NOTED OTHERWISE. IF NOTED OTHERWISE, BOLTS SHALL BE 7/8" DIA. F3125 GRADE A325 BOLTS WITH 5/8" DIA. HOLES.

REVISION	DATE
DESIGNED BY: J. MURPHY	CHECKED BY: J. HUDSON
DETAILED BY: D. BASHAM	T. PERKINS
Commonwealth of Kentucky DEPARTMENT OF HIGHWAYS COUNTY	
LIVINGSTON	
ROUTE US 60	CROSSING CUMBERLAND RIVER
INSPECTION ACCESS DETAILS (3)	
PREPARED BY Stantec	
SHEET NO. 599	
DRAWING NO. 27458	

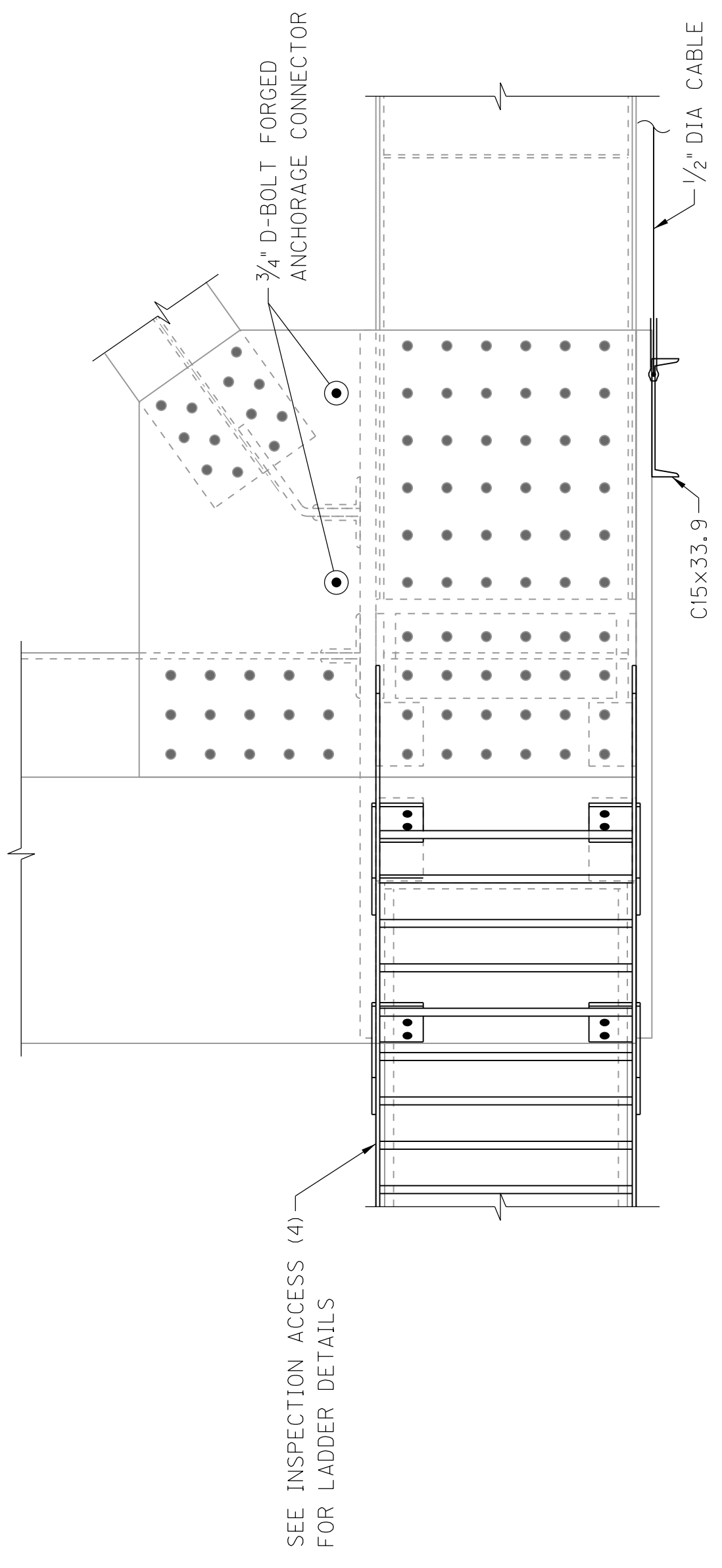
ITEM NUMBER	1-1142.00
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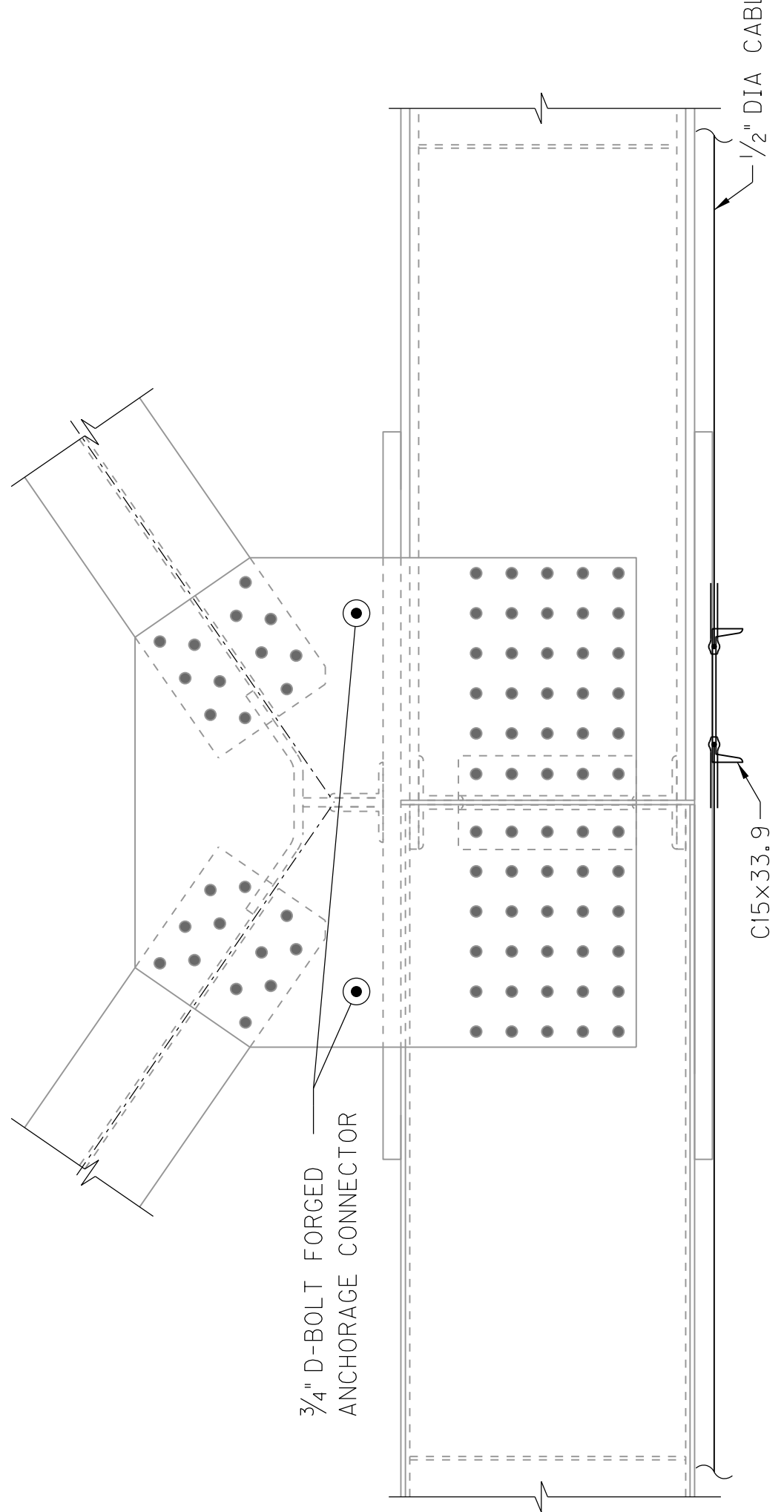
TYPICAL INSPECTION ACCESS – UPPER CHORD (U2 – U10)
(OUTBOARD SIDE SHOWN)



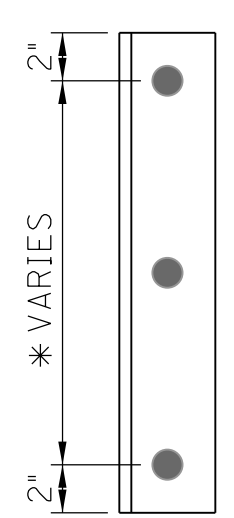
TYPICAL INSPECTION ACCESS – LOWER CHORD
(OUTBOARD SIDE SHOWN)



U1 / U11 TOP VIEW
U1 (RIGHT TRUSS) SHOWN



U2 – U10 TOP VIEW



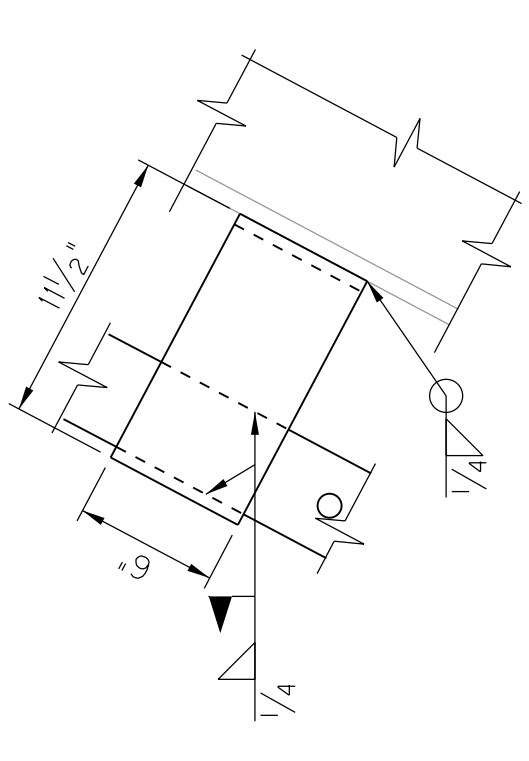
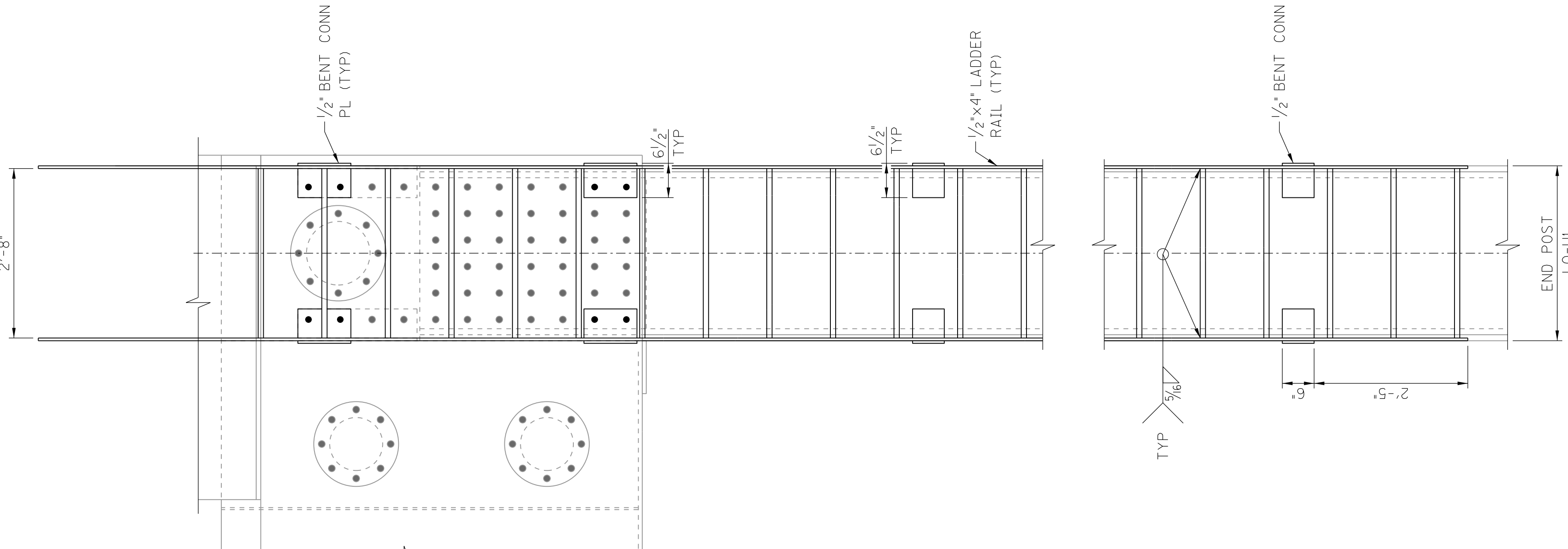
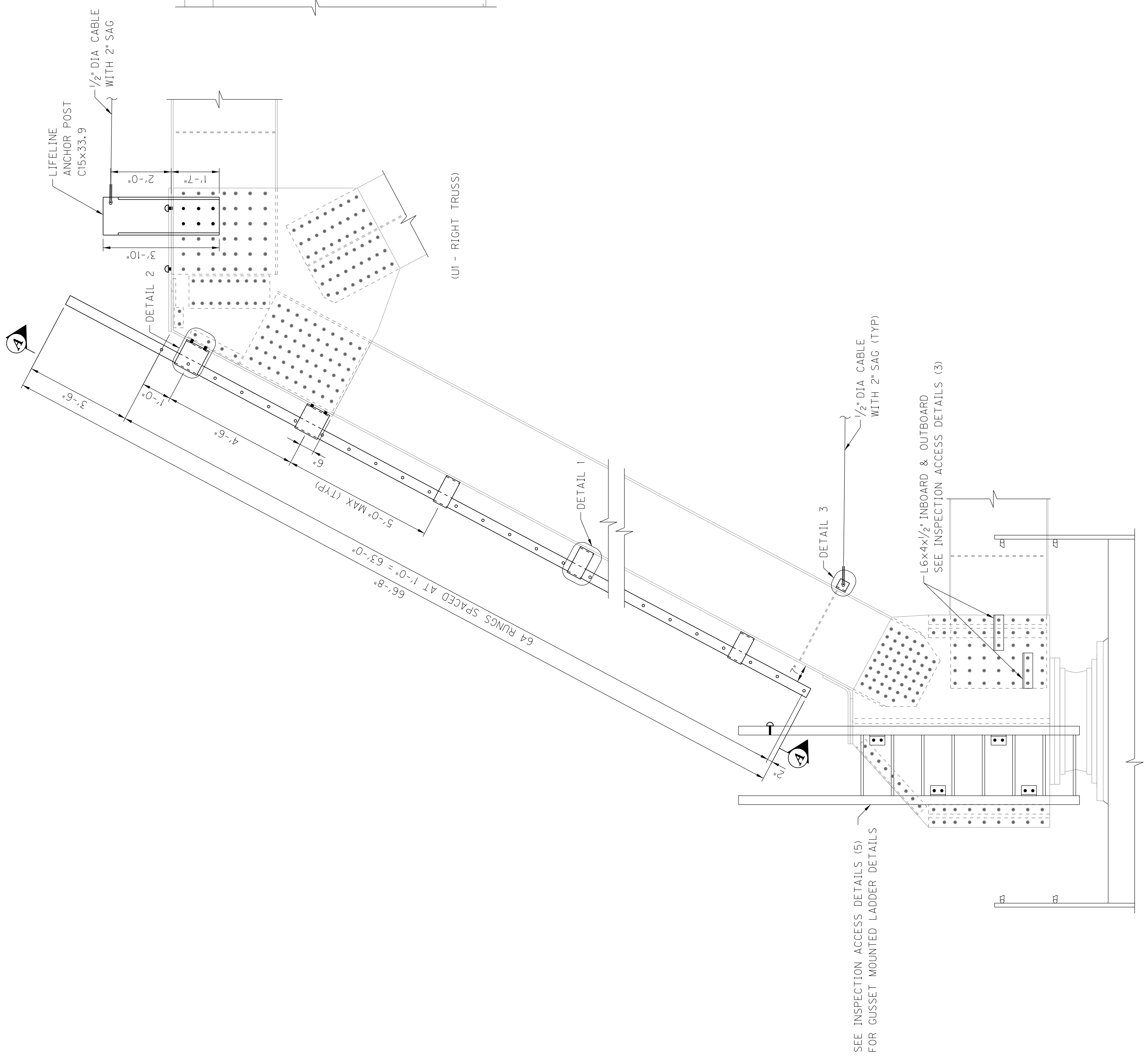
STEP ANGLE DETAIL
* FOR SPACING SEE PITCH ON TRUSS JOINT SHEETS

NOTES:

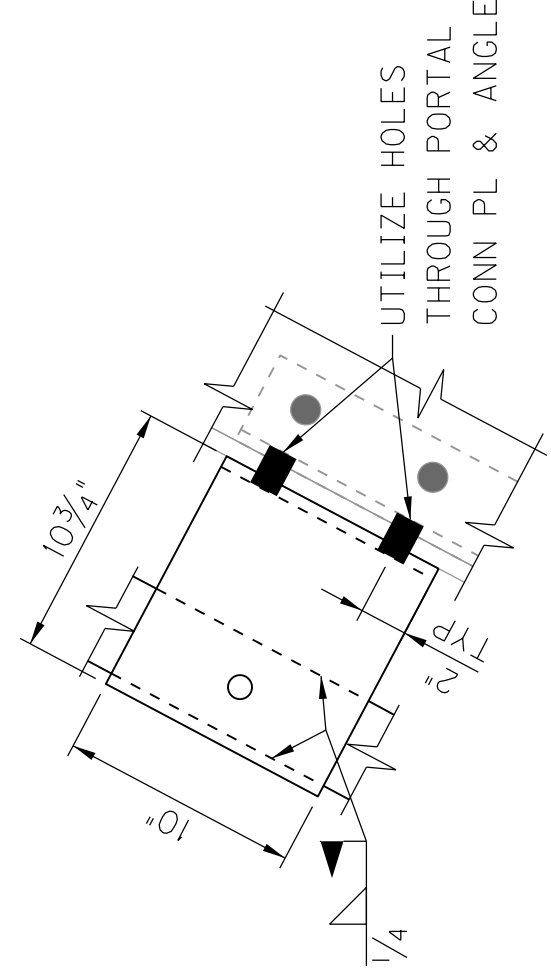
1. ALL BOLTS FOR INSPECTION ACCESS ATTACHMENTS WILL UTILIZE EXISTING TRUSS CONNECTION HOLES, UNLESS OTHERWISE NOTED.
2. ALL D-BOLT FORGED ANCHORAGE CONNECTORS SHALL BE CAPABLE OF SUPPORTING A 5000 POUND FALL ARREST LOAD APPLIED IN ANY DIRECTION AND SHALL BE INSTALLED ACCORDING TO THE MANUFACTURERS SPECIFICATIONS.
3. CABLES TO BE 1/2" A586 ZINC COATED STRUCTURAL STRAND WITH CLASS A ZINC COATING THROUGHOUT AND HAVE A MINIMUM BREAKING STRENGTH OF 15 TONS.
4. CONTRACTOR IS TO INSTALL UPPER CHORD HORIZONTAL LIFE LINE SHORTLY AFTER INSTALLATION OF EACH UPPER CHORD MEMBER.
5. ALL CABLE FITTINGS (TURNBUCKLES, THIMBLES, CLIPS, SHACKLES, ETC.) TO BE HOT - DIPPED GALVANIZED AND SHALL MEET OR EXCEED THE CAPACITY OF THE STRUCTURAL STRAND AND SHALL BE INSTALLED ACCORDING TO THE MANUFACTURERS SPECIFICATIONS, THE DESIGN, FURNISHING, GALVANIZATION, FABRICATING, AND INSTALLATION OF CABLE FITTINGS TO BE INCIDENTAL TO PAY ITEM "STRUCTURAL STEEL".
6. BOLT SPACING IN STEP ANGLES SHALL NOT EXCEED 6".
7. THE UPPER CHORD HORIZONTAL LIFE LINE SYSTEM IS DESIGNED FOR A 6000 POUND FALL ARREST LOAD.
8. ALL BOLTS FOR INSPECTION ACCESS ATTACHMENTS SHALL UTILIZE EXISTING TRUSS MEMBER BOLTS, UNLESS NOTED OTHERWISE. IF NOTED OTHERWISE, BOLTS SHALL BE 7/8" DIA. F3125 GRADE A325 BOLTS WITH 5/8" DIA. HOLES.

REVISION	DATE
DATE: MARCH 2020	CHECKED BY
DESIGNED BY: J. MURPHY	J. HUDSON
DETAILED BY: D. BASHAM	T. PERKINS
Commonwealth of Kentucky DEPARTMENT OF HIGHWAYS COUNTY	
LIVINGSTON	
ROUTE US 60	CROSSING CUMBERLAND RIVER
INSPECTION ACCESS DETAILS (3)	
PREPARED BY	SHEET NO.
Stantec	999
	DRAWING NO.
	27458

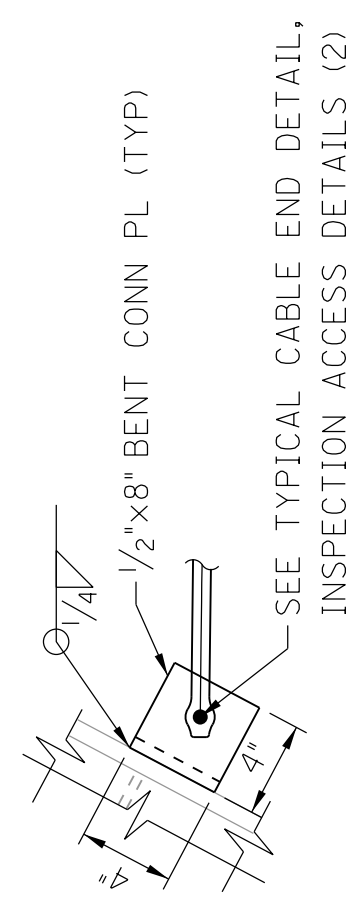
ITEM NUMBER
1-1142.00



DETAIL 1



DETAIL 2



DETAIL 3

- NOTES:
1. ALL BOLTS FOR INSPECTION ACCESS ATTACHMENTS SHALL UTILIZE EXISTING TRUSS MEMBER BOLTS, UNLESS NOTED OTHERWISE. IF NOTED OTHERWISE, BOLTS SHALL BE 7/8" DIA, F3125 GRADE A325 BOLTS WITH 1/16" DIA, HOLES.
 2. ALL LADDER RUNGS MUST BE COATED WITH A SKID RESISTANT MATERIAL TO MINIMIZE SLIPPING PER OSHA STANDARDS. THE FURNISHING AND INSTALLATION OF THE SKID RESISTANT MATERIAL TO BE INCIDENTAL TO THE PAY ITEM FOR "STRUCTURAL STEEL".

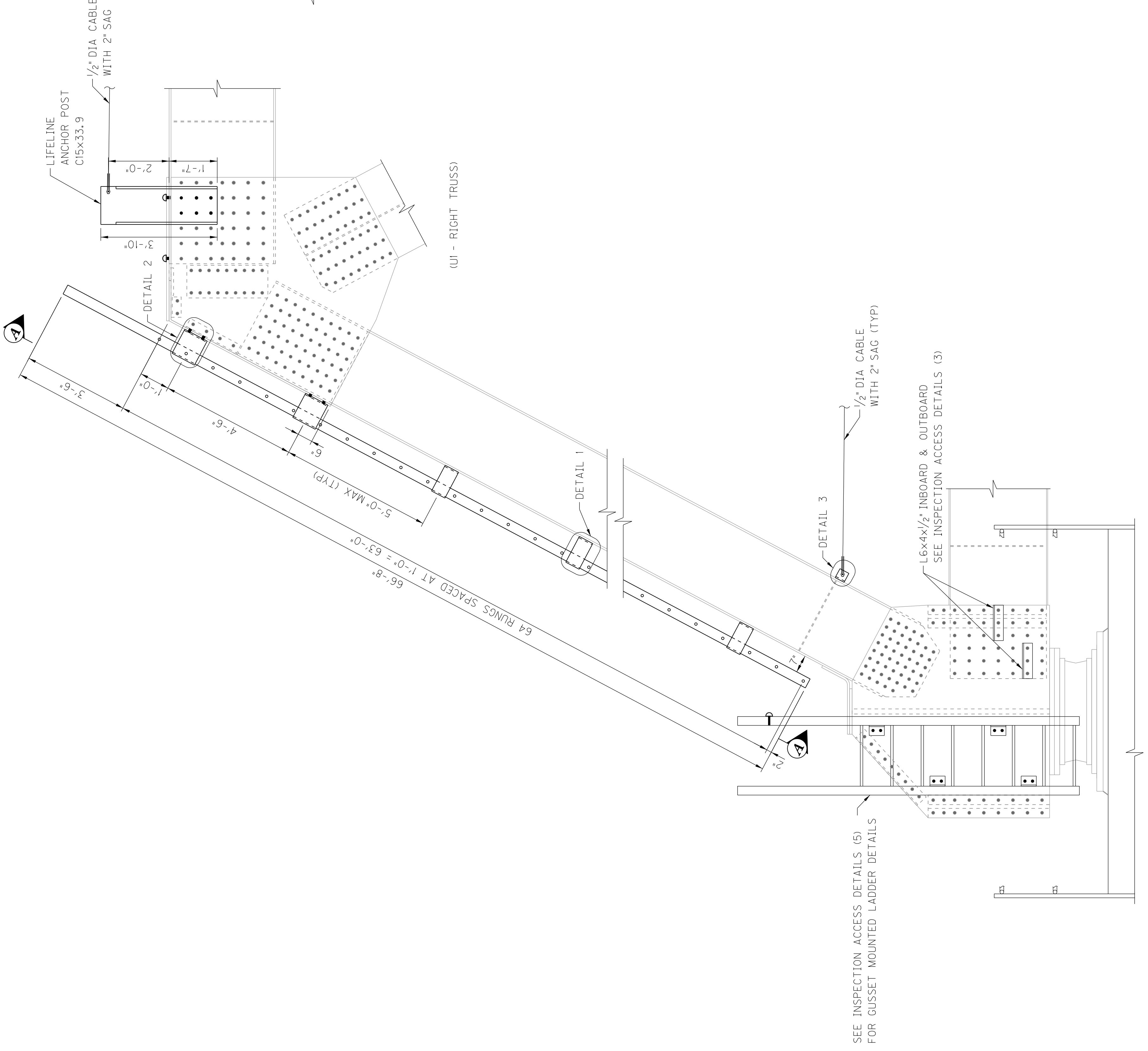
REVISION	DATE
DATE: MARCH 2020	CHECKED BY: J. HUDSON
DESIGNED BY: J. MURPHY	DETAILED BY: D. BASHAM
Commonwealth of Kentucky DEPARTMENT OF HIGHWAYS COUNTY: LIVINGSTON	
ROUTE: US 60	CROSSING: CUMBERLAND RIVER
INSPECTION ACCESS DETAILS (4)	
PREPARED BY: Stantec	SHEET NO. S100
ITEM NUMBER: 1-1142.00	DRAWING NO. 27458

END POST LADDER DETAILS

LADDER AT L0-U1 (RIGHT TRUSS) SHOWN,
LADDER AT L1-L11 (LEFT TRUSS) SYMMETRICAL
BY OPPOSITE HAND.

ELEVATION

(L0 - RIGHT TRUSS)
(LOOKING AT OUTBOARD SIDE)

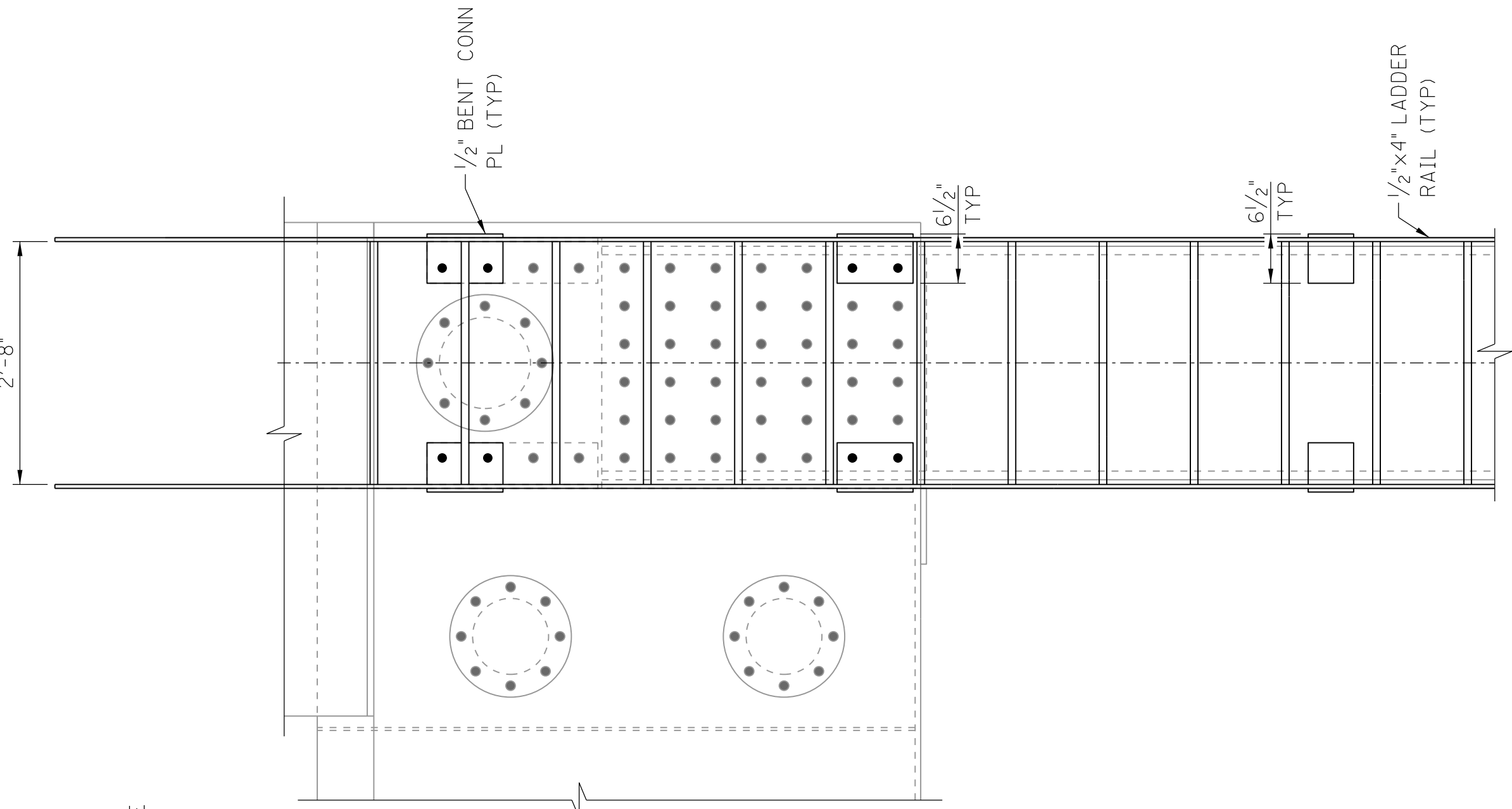


ELEVATION

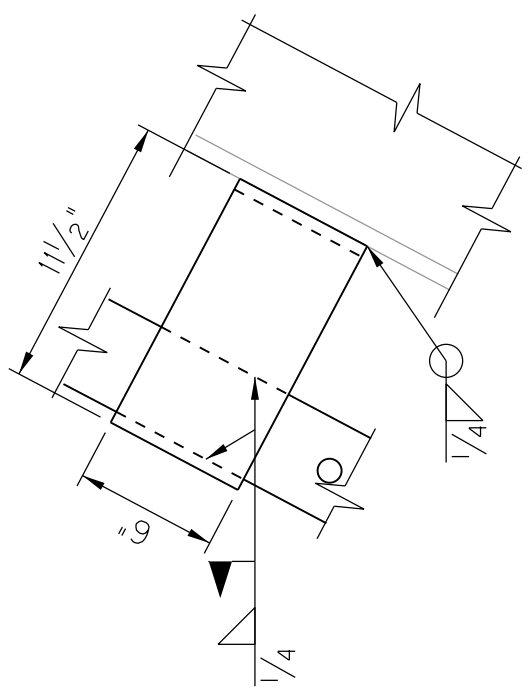
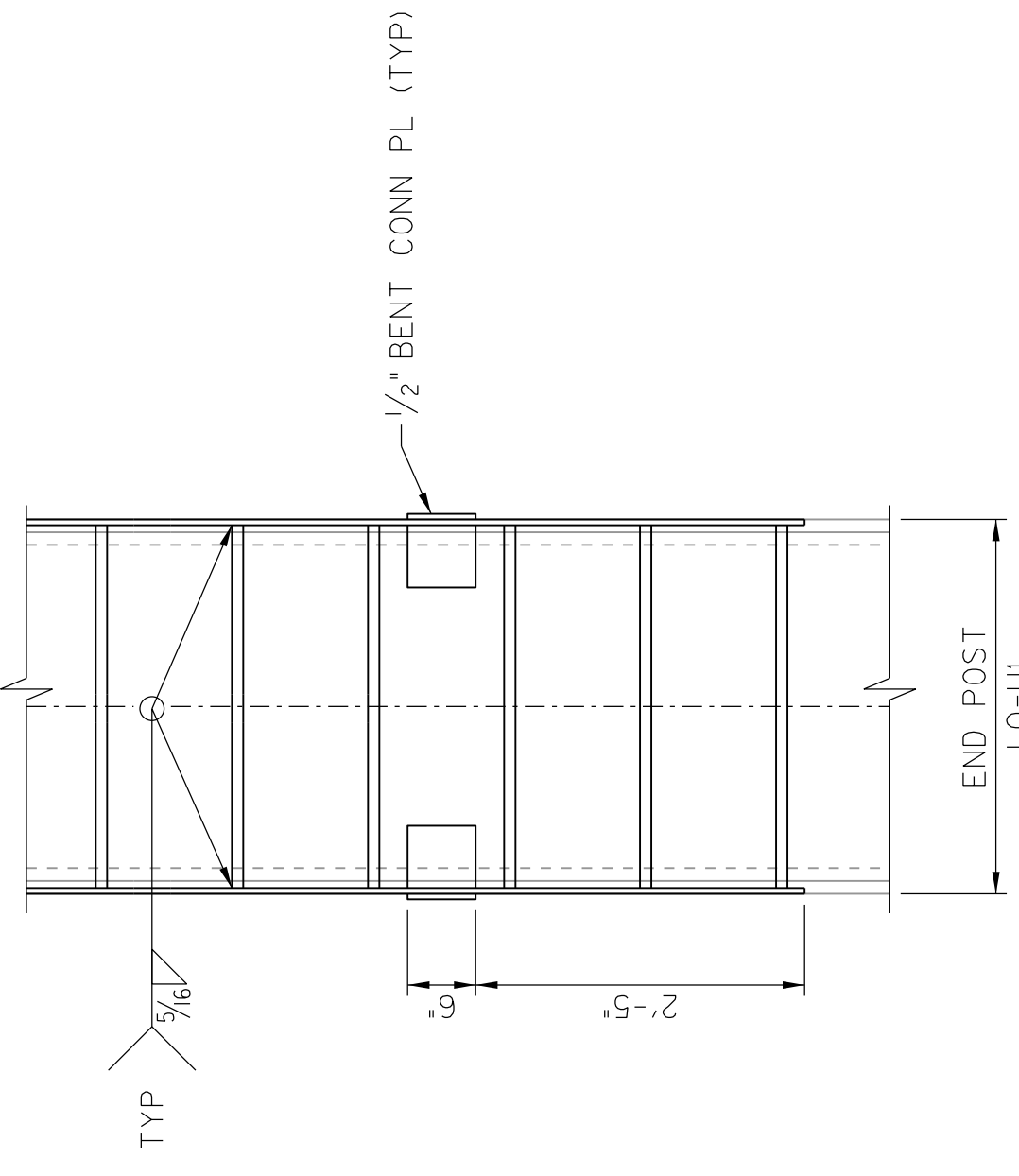
(LO - RIGHT TRUSS)
(LOOKING AT OUTBOARD SIDE)

END POST LADDER DETAILS

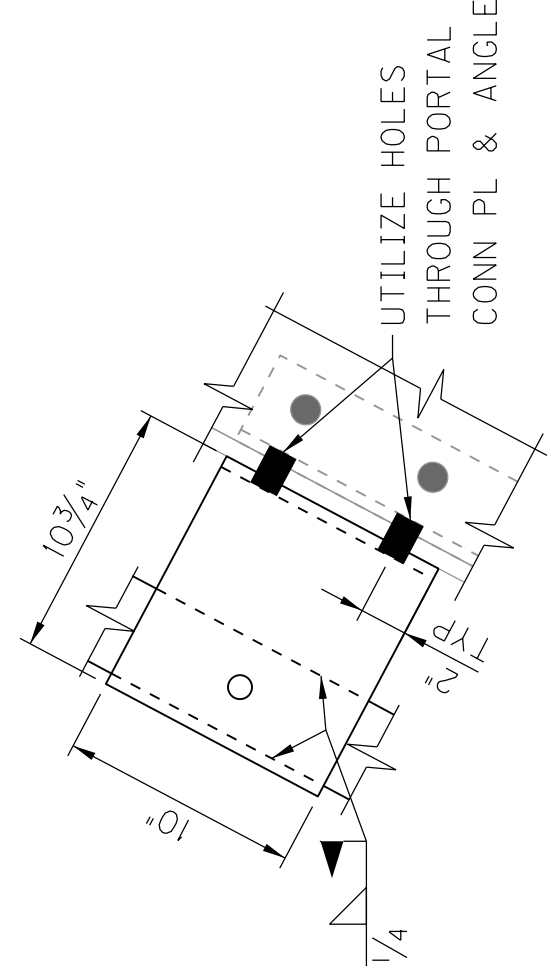
LADDER AT LO-UI (RIGHT TRUSS) SHOWN,
LADDER AT UI-L1I (LEFT TRUSS) SYMMETRICAL
BY OPPOSITE HAND.



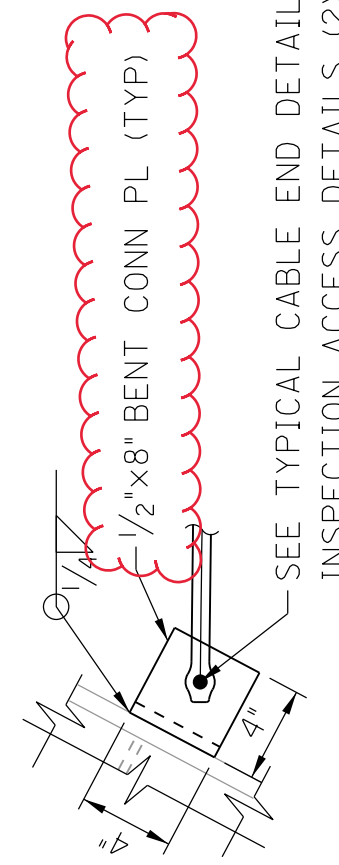
VIEW A-A



DETAIL 1



DETAIL 2



DETAIL 3

- NOTES:
1. ALL BOLTS FOR INSPECTION ACCESS ATTACHMENTS SHALL UTILIZE EXISTING TRUSS MEMBER BOLTS, UNLESS NOTED OTHERWISE. IF NOTED OTHERWISE, BOLTS SHALL BE 7/8" DIA, F3125 GRADE A325 BOLTS WITH 1/16" DIA, HOLES.
 2. ALL LADDER RUNGS MUST BE COATED WITH A SKID RESISTANT MATERIAL TO MINIMIZE SLIPPING PER OSHA STANDARDS. THE FURNISHING AND INSTALLATION OF THE SKID RESISTANT MATERIAL TO BE INCIDENTAL TO THE PAY ITEM FOR "STRUCTURAL STEEL".

REVISION	DATE
DESIGNED BY: J. MURPHY	CHECKED BY: J. HUDSON
DATE: MARCH 2020	DETAILED BY: D. BASHAM
Commonwealth of Kentucky DEPARTMENT OF HIGHWAYS COUNTY: LIVINGSTON	
ROUTE: US 60	CROSSING: CUMBERLAND RIVER
INSPECTION ACCESS DETAILS (4)	
ITEM NUMBER	1-1142-00
PREPARED BY	Stantec
SHEET NO.	S100
DRAWING NO.	27458

COUNTY OF	ITEM NO.	SHEET NO.
LIVINGSTON	1-1142-00	U3

WATER LINE 'A' STA. 17+36 TO STA. 24+14.90
INSTALL 28 L.F. OF W PIPE PVC 06 INCH
I-W METER REMOVE

61' LT. US 60 C.L. STA. 108+23
I-W METER REMOVE

WATER LINE 'A' STA. 17+36 TO STA. 17+64
INSTALL 28 L.F. OF W PIPE PVC 06 INCH
L.T. WATER LINE 'A' STA. 17+54
INSTALL 1-W SERV PE/PLST SHORT SIDE 1 IN
& I-W METER 1 INCH

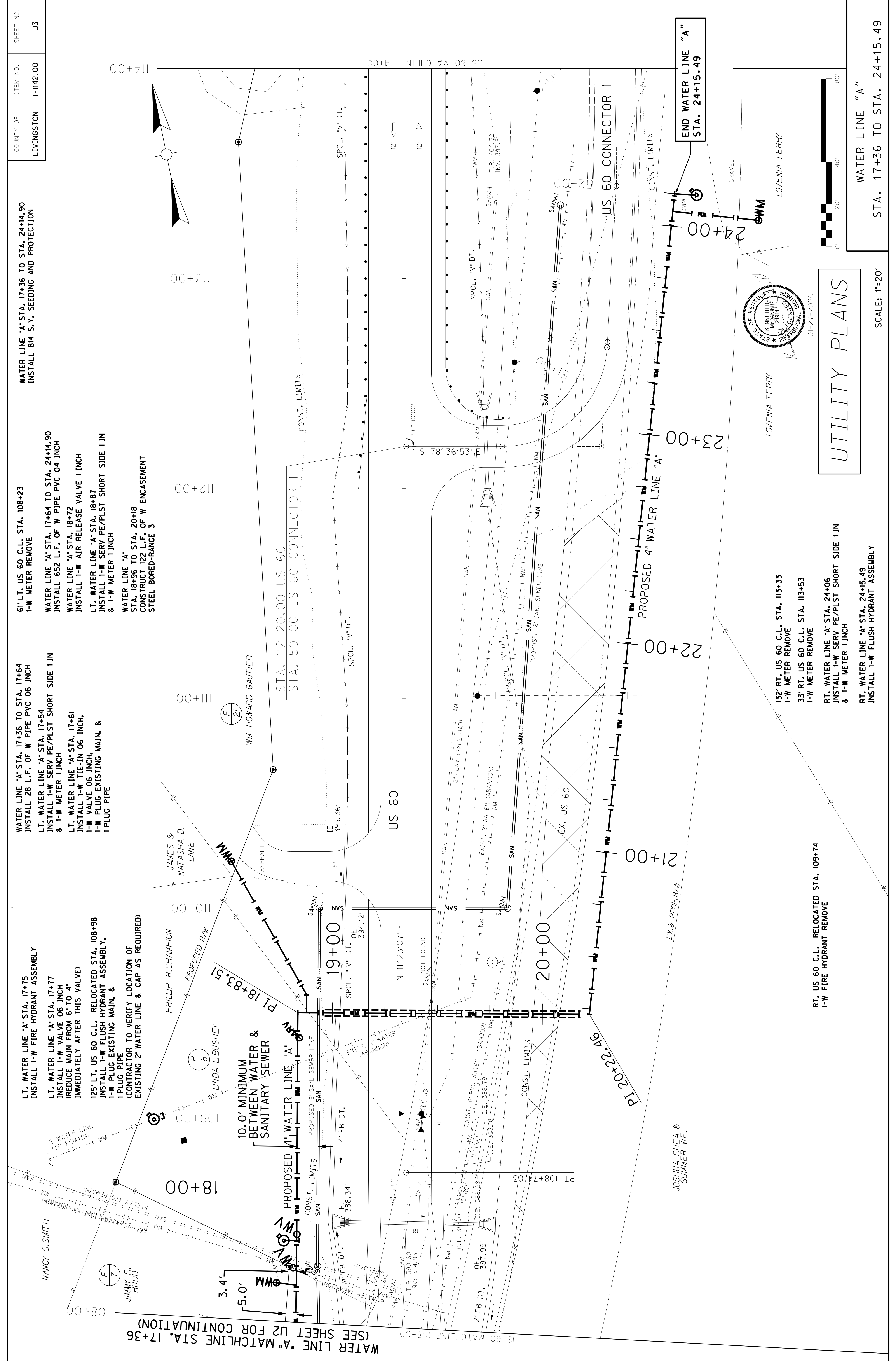
LT. WATER LINE 'A' STA. 17+75
INSTALL 1-W FIRE HYDRANT ASSEMBLY

LT. WATER LINE 'A' STA. 17+77
INSTALL 1-W VALVE 06 INCH
(REDUCE MAIN FROM 6" TO 4"
IMMEDIATELY AFTER THIS VALVE)

125' LT. US 60 C.L. RELOCATED STA. 108+98
INSTALL 1-W FLUSH HYDRANT ASSEMBLY,
I-W PLUG EXISTING MAIN, &
I-PLUG PIPE
(CONTRACTOR TO VERIFY LOCATION OF
EXISTING 2" WATER LINE & CAP AS REQUIRED)

WATER LINE 'A' STA. 17+64 TO STA. 24+14.90
INSTALL 652 L.F. OF W PIPE PVC 04 INCH
WATER LINE 'A' STA. 18+72
INSTALL 1-W AIR RELEASE VALVE 1 INCH
L.T. WATER LINE 'A' STA. 18+87
INSTALL 1-W SERV PE/PLST SHORT SIDE 1 IN
& I-W METER 1 INCH
WATER LINE 'A'
STA. 18+96 TO STA. 20+18
CONSTRUCT 122 L.F. OF W ENCASEMENT
STEEL BORED-RANGE 3

WATER LINE 'A' MATCHLINE STA. 17+36
(SEE SHEET U2 FOR CONTINUATION)



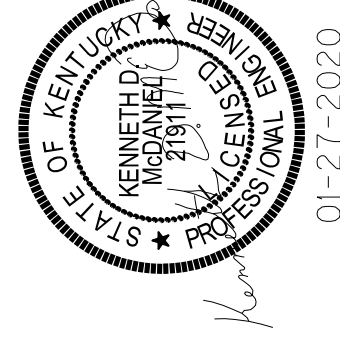
RT. US 60 C.L. RELOCATED STA. 109+74
I-W FIRE HYDRANT REMOVE

132' RT. US 60 C.L. STA. 113+33
I-W METER REMOVE

33' RT. US 60 C.L. STA. 113+53
I-W METER REMOVE

RT. WATER LINE 'A' STA. 24+06
INSTALL 1-W SERV PE/PLST SHORT SIDE 1 IN
& I-W METER 1 INCH

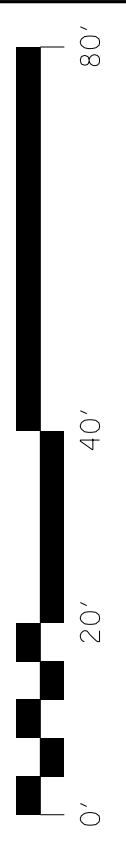
RT. WATER LINE 'A' STA. 24+15.49
INSTALL 1-W FLUSH HYDRANT ASSEMBLY



UTILITY PLANS

SCALE: 1"=20'

WATER LINE "A"
STA. 17+36 TO STA. 24+15.49



COUNTY OF	ITEM NO.	SHEET NO.
LIVINGSTON	1-1142.00	U3

REVISIED: 03-03-2020

WATER LINE 'A' STA. 17+36 TO STA. 24+14.90
INSTALL 28 L.F. OF W PIPE PVC 06 INCH
I-W METER REMOVE

61' LT. US 60 C.L. STA. 108+23
I-W METER REMOVE

WATER LINE 'A' STA. 17+64 TO STA. 24+14.90
INSTALL 652 L.F. OF W PIPE PVC 04 INCH
WATER LINE 'A' STA. 18+72
INSTALL I-W AIR RELEASE VALVE 1 INCH
LT. WATER LINE 'A' STA. 18+87
INSTALL I-W SERV PE/PLST SHORT SIDE 1 IN
& I-W METER 1 INCH

WATER LINE 'A'
STA. 18+96 TO STA. 20+18
CONSTRUCT 122 L.F. OF W ENCASEMENT
STEEL BORED-RANGE 3

WATER LINE 'A' STA. 17+36 TO STA. 17+64
INSTALL 28 L.F. OF W PIPE PVC 06 INCH
LT. WATER LINE 'A' STA. 17+54
INSTALL I-W SERV PE/PLST SHORT SIDE 1 IN
& I-W METER 1 INCH

LT. WATER LINE 'A' STA. 17+61
INSTALL I-W TIE-IN 06 INCH,
I-W VALVE 06 INCH,
I-W PLUG EXISTING MAIN, &
I PLUG PIPE

WATER LINE 'A' STA. 108+98
INSTALL I-W FIRE HYDRANT ASSEMBLY
(REDUCE MAIN FROM 6" TO 4"
IMMEDIATELY AFTER THIS VALVE)

125' LT. US 60 C.L. RELOCATED STA. 108+98
INSTALL I-W FLUSH HYDRANT ASSEMBLY,
I-W PLUG EXISTING MAIN, &
I PLUG PIPE
(CONTRACTOR TO VERIFY LOCATION OF
EXISTING 2" WATER LINE & CAP AS REQUIRED)

WATER LINE 'A' STA. 17+36 TO STA. 17+64
INSTALL 28 L.F. OF W PIPE PVC 06 INCH
LT. WATER LINE 'A' STA. 17+54
INSTALL I-W SERV PE/PLST SHORT SIDE 1 IN
& I-W METER 1 INCH

LT. WATER LINE 'A' STA. 17+61
INSTALL I-W TIE-IN 06 INCH,
I-W VALVE 06 INCH,
I-W PLUG EXISTING MAIN, &
I PLUG PIPE

WATER LINE 'A' STA. 108+98
INSTALL I-W FIRE HYDRANT ASSEMBLY
(REDUCE MAIN FROM 6" TO 4"
IMMEDIATELY AFTER THIS VALVE)

125' LT. US 60 C.L. RELOCATED STA. 108+98
INSTALL I-W FLUSH HYDRANT ASSEMBLY,
I-W PLUG EXISTING MAIN, &
I PLUG PIPE
(CONTRACTOR TO VERIFY LOCATION OF
EXISTING 2" WATER LINE & CAP AS REQUIRED)

WATER LINE 'A' STA. 17+36 TO STA. 17+64
INSTALL 28 L.F. OF W PIPE PVC 06 INCH
LT. WATER LINE 'A' STA. 17+54
INSTALL I-W SERV PE/PLST SHORT SIDE 1 IN
& I-W METER 1 INCH

LT. WATER LINE 'A' STA. 17+61
INSTALL I-W TIE-IN 06 INCH,
I-W VALVE 06 INCH,
I-W PLUG EXISTING MAIN, &
I PLUG PIPE

WATER LINE 'A' STA. 108+98
INSTALL I-W FIRE HYDRANT ASSEMBLY
(REDUCE MAIN FROM 6" TO 4"
IMMEDIATELY AFTER THIS VALVE)

125' LT. US 60 C.L. RELOCATED STA. 108+98
INSTALL I-W FLUSH HYDRANT ASSEMBLY,
I-W PLUG EXISTING MAIN, &
I PLUG PIPE
(CONTRACTOR TO VERIFY LOCATION OF
EXISTING 2" WATER LINE & CAP AS REQUIRED)

WATER LINE 'A' STA. 17+36 TO STA. 17+64
INSTALL 28 L.F. OF W PIPE PVC 06 INCH
LT. WATER LINE 'A' STA. 17+54
INSTALL I-W SERV PE/PLST SHORT SIDE 1 IN
& I-W METER 1 INCH

LT. WATER LINE 'A' STA. 17+61
INSTALL I-W TIE-IN 06 INCH,
I-W VALVE 06 INCH,
I-W PLUG EXISTING MAIN, &
I PLUG PIPE

WATER LINE 'A' STA. 108+98
INSTALL I-W FIRE HYDRANT ASSEMBLY
(REDUCE MAIN FROM 6" TO 4"
IMMEDIATELY AFTER THIS VALVE)

125' LT. US 60 C.L. RELOCATED STA. 108+98
INSTALL I-W FLUSH HYDRANT ASSEMBLY,
I-W PLUG EXISTING MAIN, &
I PLUG PIPE
(CONTRACTOR TO VERIFY LOCATION OF
EXISTING 2" WATER LINE & CAP AS REQUIRED)

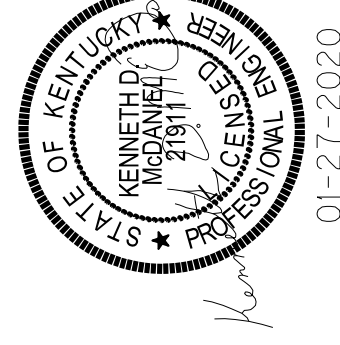
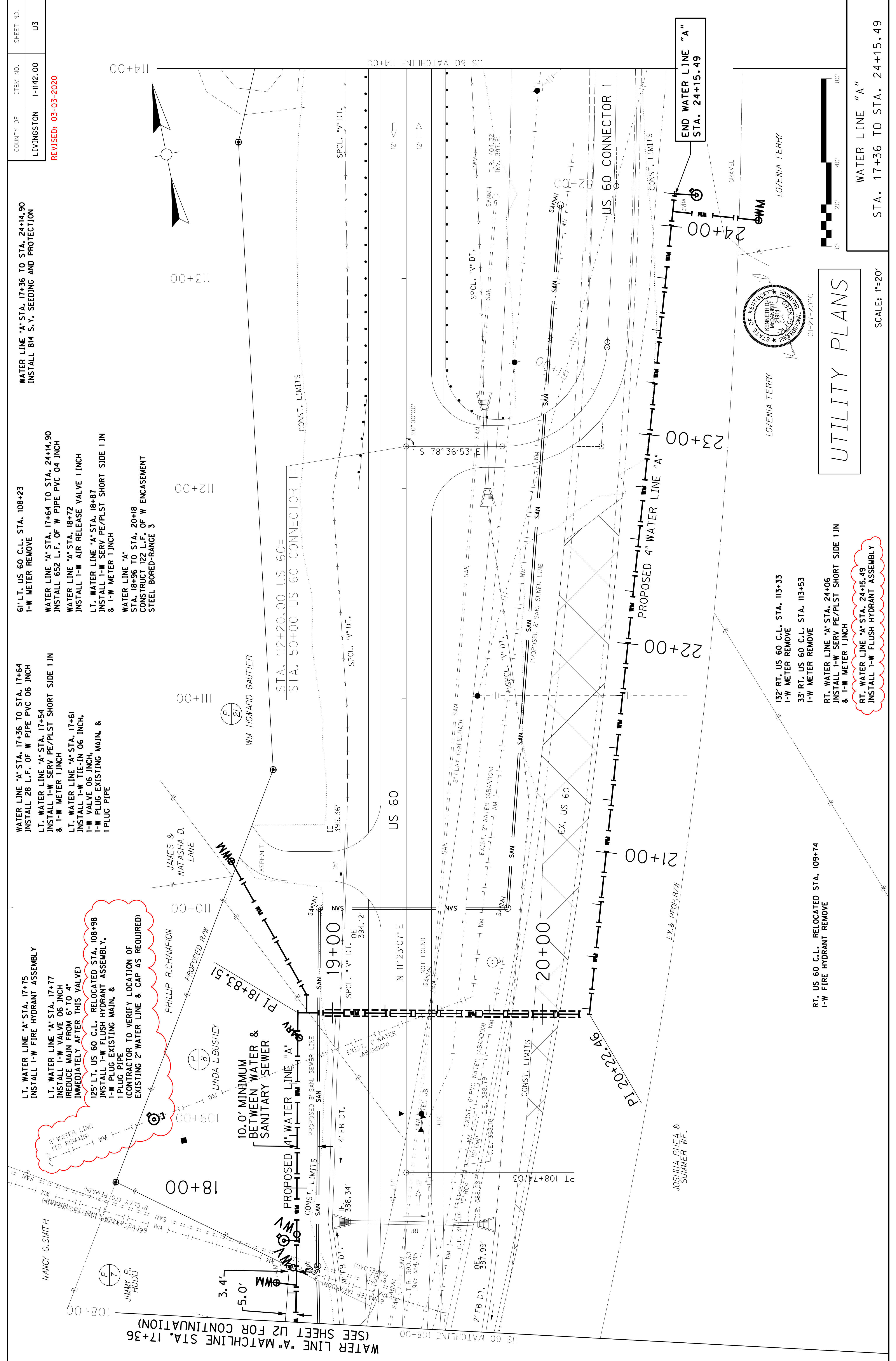
WATER LINE 'A' STA. 17+36 TO STA. 17+64
INSTALL 28 L.F. OF W PIPE PVC 06 INCH
LT. WATER LINE 'A' STA. 17+54
INSTALL I-W SERV PE/PLST SHORT SIDE 1 IN
& I-W METER 1 INCH

LT. WATER LINE 'A' STA. 17+61
INSTALL I-W TIE-IN 06 INCH,
I-W VALVE 06 INCH,
I-W PLUG EXISTING MAIN, &
I PLUG PIPE

WATER LINE 'A' STA. 108+98
INSTALL I-W FIRE HYDRANT ASSEMBLY
(REDUCE MAIN FROM 6" TO 4"
IMMEDIATELY AFTER THIS VALVE)

125' LT. US 60 C.L. RELOCATED STA. 108+98
INSTALL I-W FLUSH HYDRANT ASSEMBLY,
I-W PLUG EXISTING MAIN, &
I PLUG PIPE
(CONTRACTOR TO VERIFY LOCATION OF
EXISTING 2" WATER LINE & CAP AS REQUIRED)

WATER LINE 'A' MATCHLINE STA. 17+36
(SEE SHEET U2 FOR CONTINUATION)



UTILITY PLANS

SCALE: 1"=20'

WATER LINE "A"
STA. 17+36 TO STA. 24+15.49

132' RT. US 60 C.L. STA. 113+33
I-W METER REMOVE

33' RT. US 60 C.L. STA. 113+53
I-W METER REMOVE

RT. WATER LINE 'A' STA. 24+06
INSTALL I-W SERV PE/PLST SHORT SIDE 1 IN
& I-W METER 1 INCH

RT. WATER LINE 'A' STA. 24+15.49
INSTALL I-W FLUSH HYDRANT ASSEMBLY

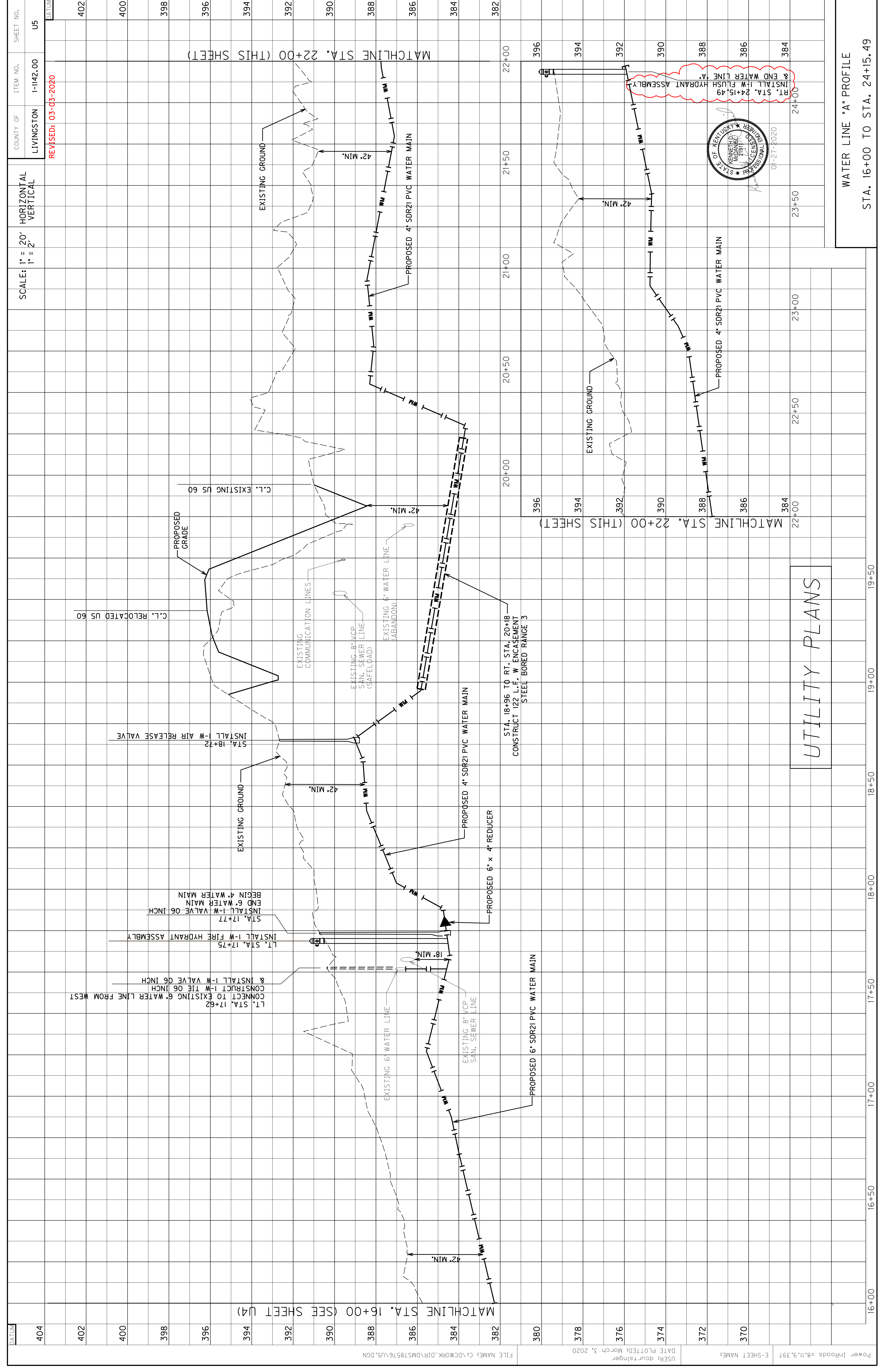
RT. US 60 C.L. RELOCATED STA. 109+74
I-W FIRE HYDRANT REMOVE

LOVENIA TERRY

LOVENIA TERRY

JOSHUA RHEA & SUMMER W.F.

END WATER LINE "A"
STA. 24+15.49



DATUM	404	402	400	398	396	394	392	390	388	386	384	382	380	378	376	374	372	370	
DATE PLOTTED:	March 3, 2020																		
USER:	deurT+stinger																		
FILE NAME:	C:\DCWORK\DIR\DM578576\U5.DGN																		
E-SHEET NAME:	E-SHEET NAME:																		
Power InRoads v8.11.9.397																			

COUNTY OF	ITEM NO.	SHEET NO.
LIVINGSTON	1-1142.00	U5

REVIS: 03-03-2020

SCALE: 1" = 20'
1" = 2'

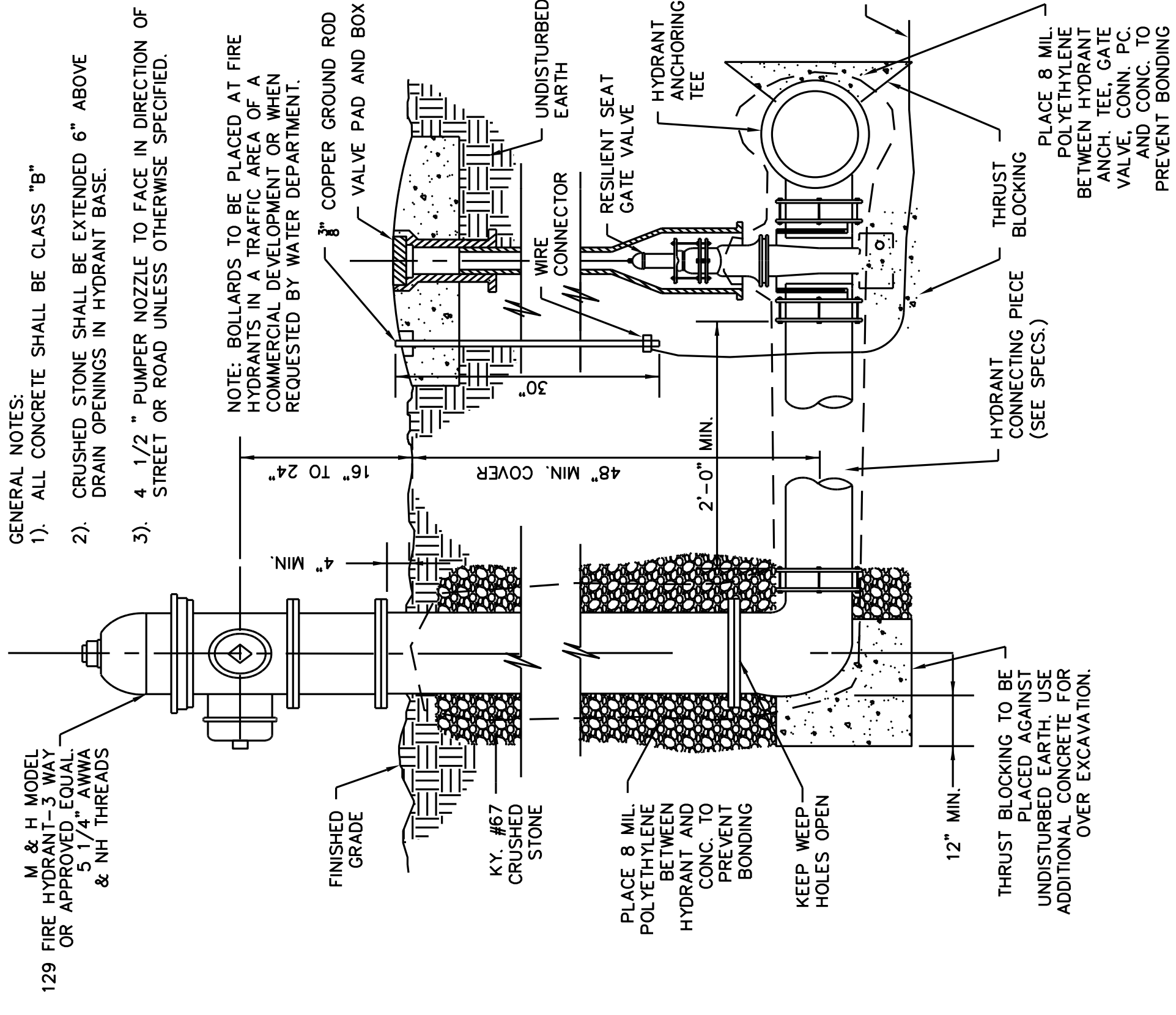
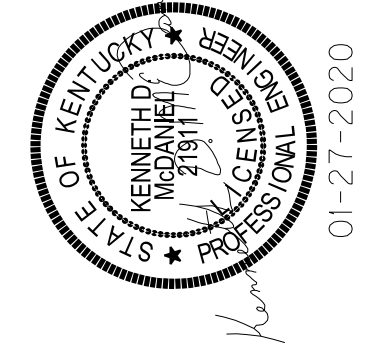
HORIZONTAL
VERTICAL

DATE: 01-27-2020

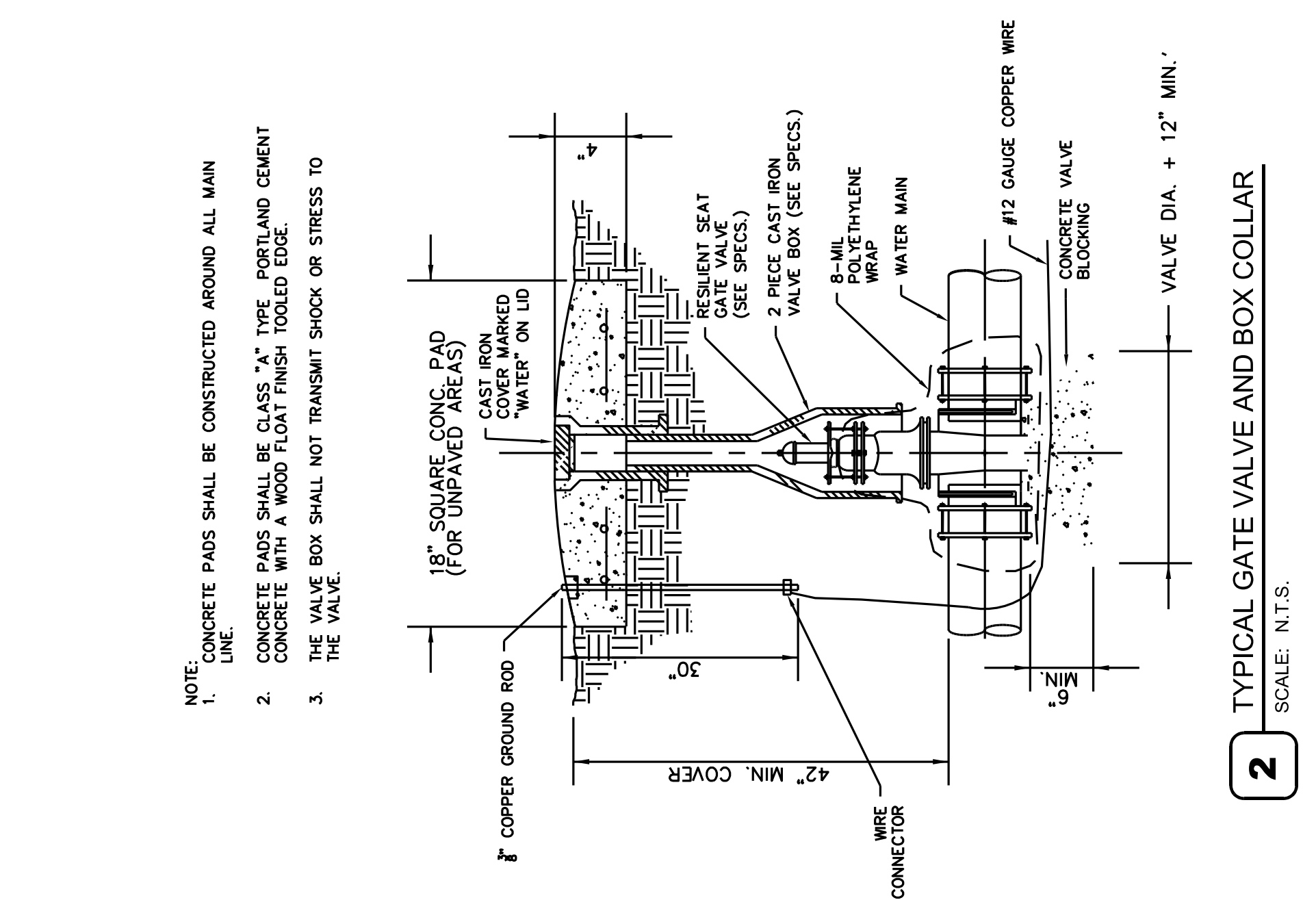
STATE OF KENTUCKY
KENNETH D. MOSELEY
REGISTERED PROFESSIONAL ENGINEER
NO. 12252
EXPIRES 07/15/2024

UTILITY PLANS

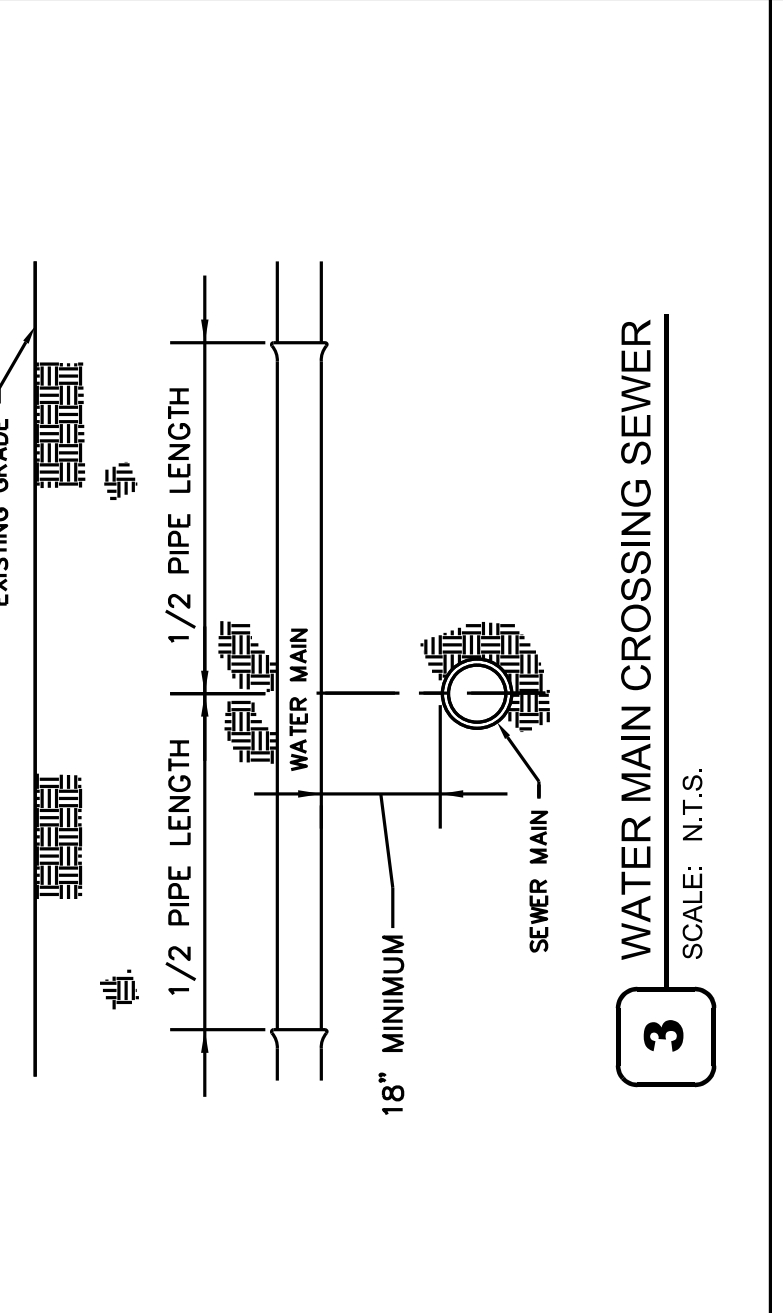
WATER LINE "A" PROFILE
STA. 16+00 TO STA. 24+15.49



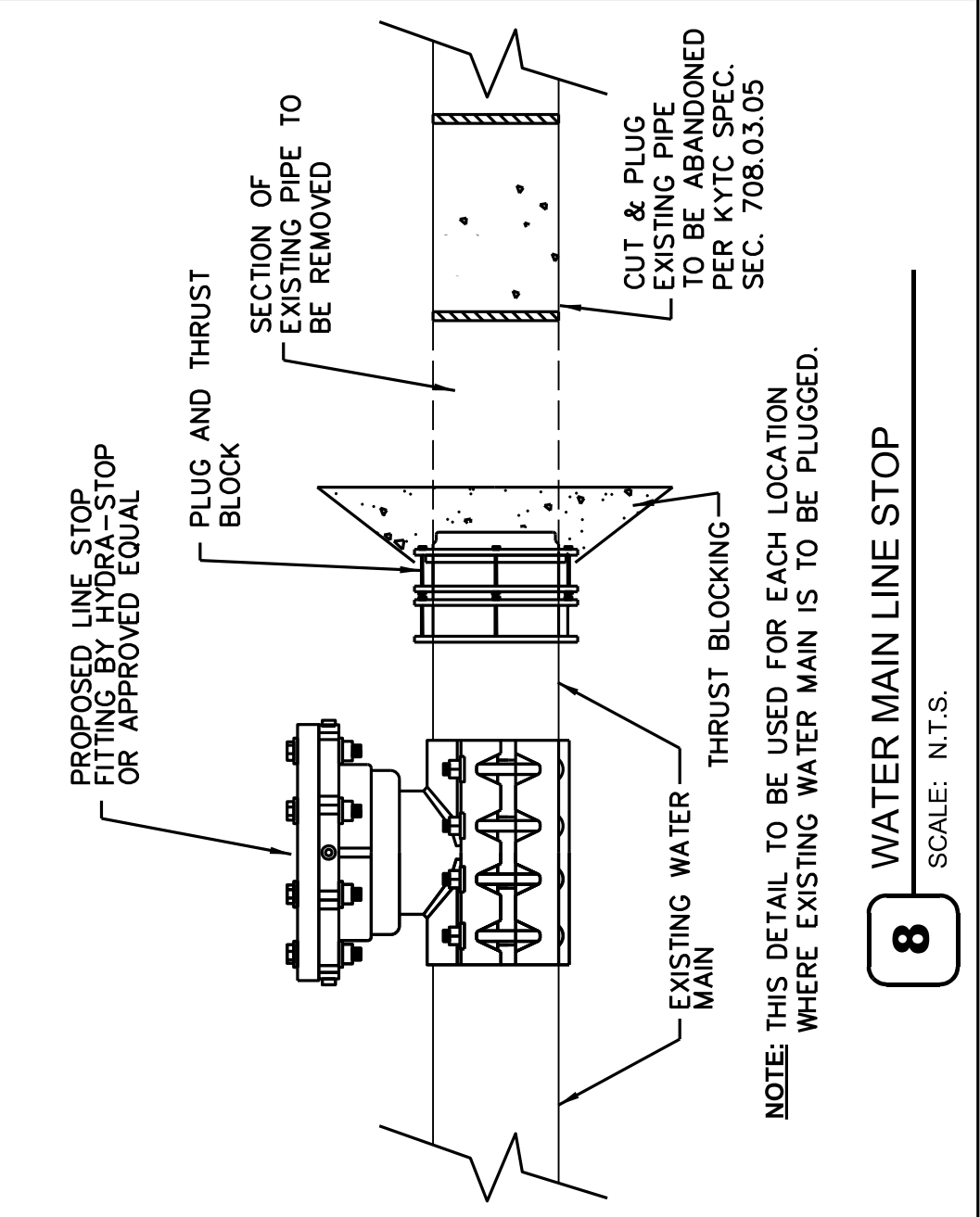
1 WATER HYDRANT PLACEMENT DETAILS
SCALE: N.T.S.



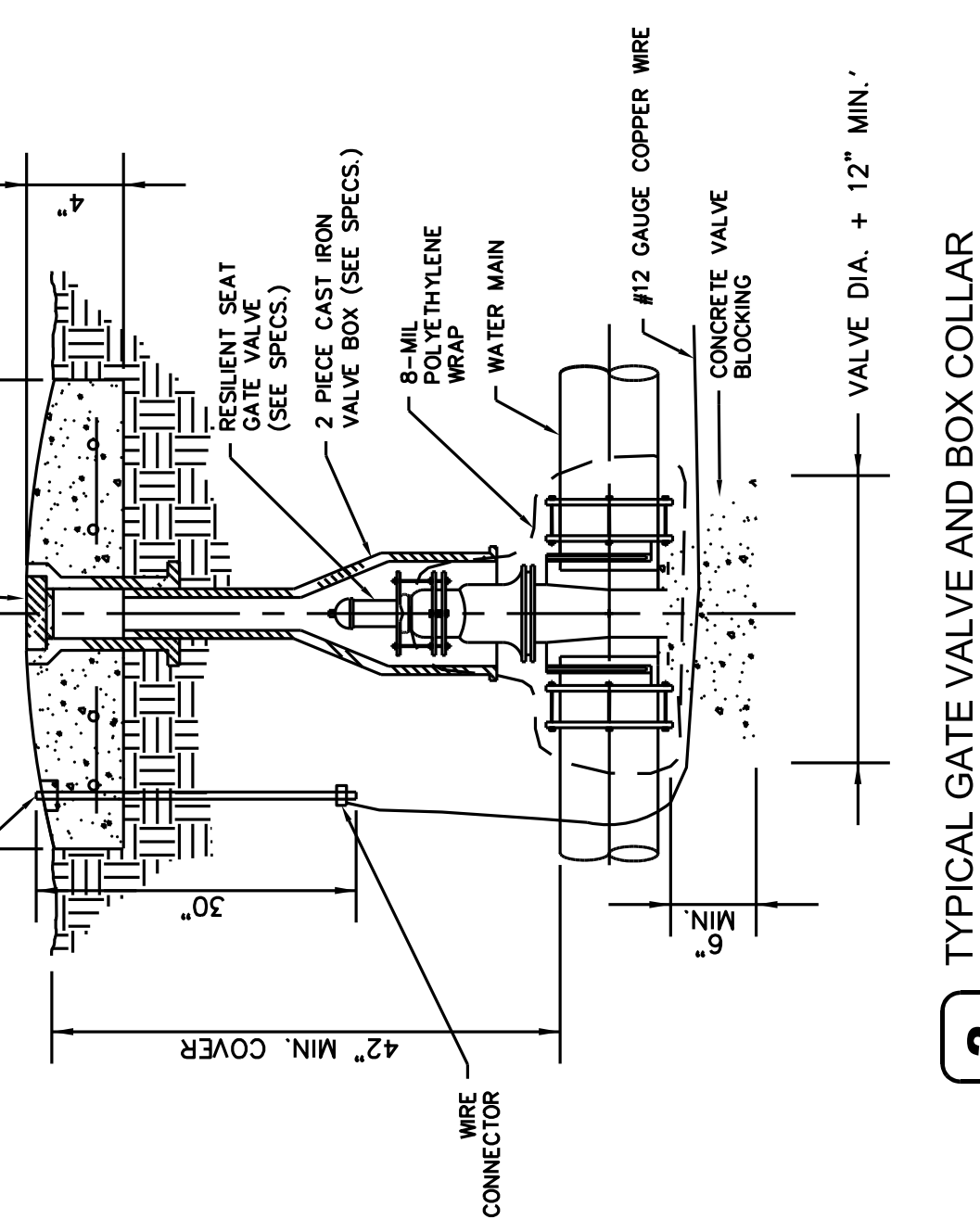
2 TYPICAL GATE VALVE AND BOX COLLAR
SCALE: N.T.S.



3 WATER MAIN CROSSING SEWER
SCALE: N.T.S.

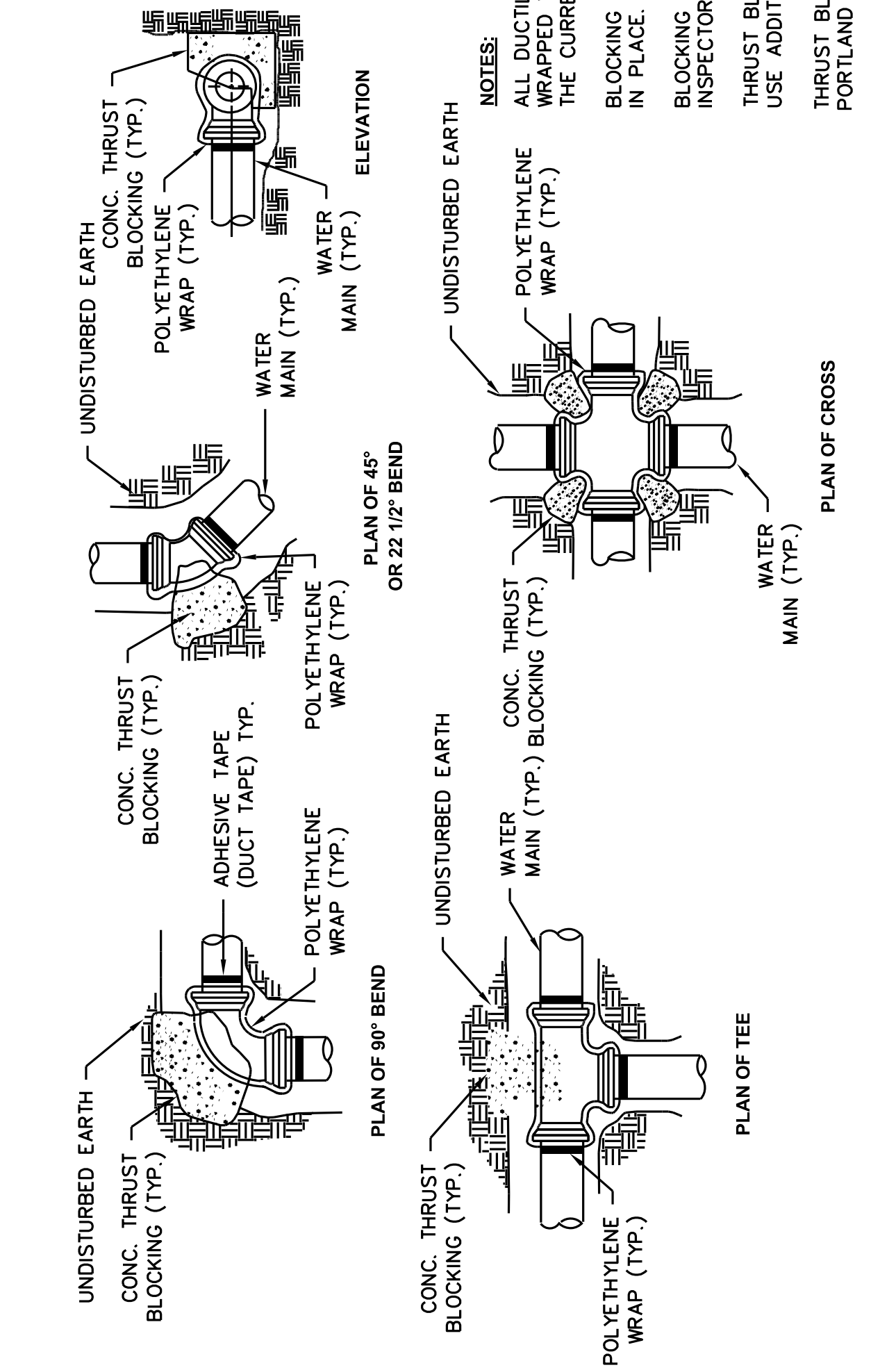


4 TYPICAL TAPPING VALVE INSTALLATION DETAIL
SCALE: N.T.S.



8 WATER MAIN LINE STOP
SCALE: N.T.S.

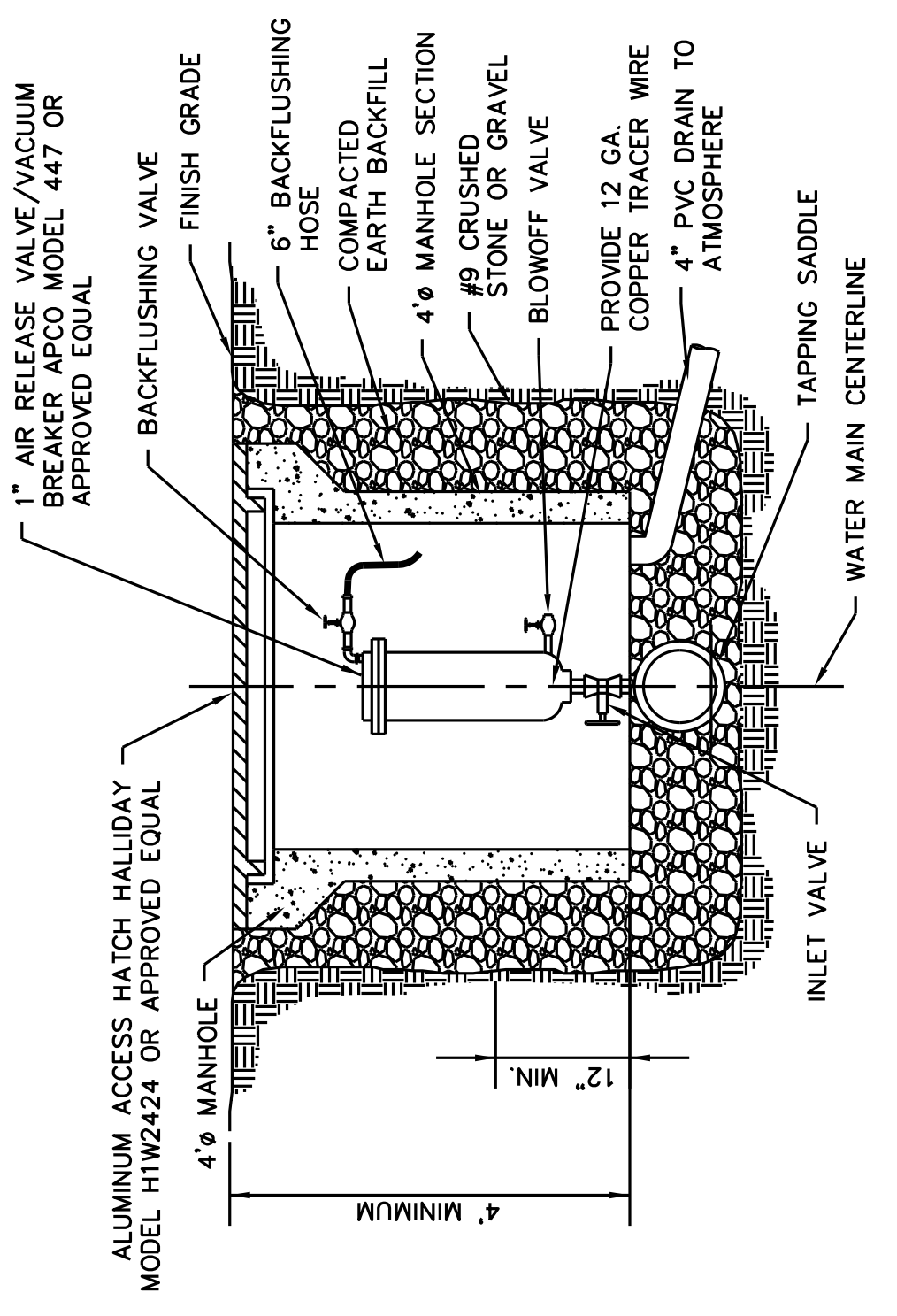
TYPICAL THRUST BLOCKING DETAILS



5 TYPICAL THRUST BLOCKING DETAILS (WATER)
SCALE: N.T.S.

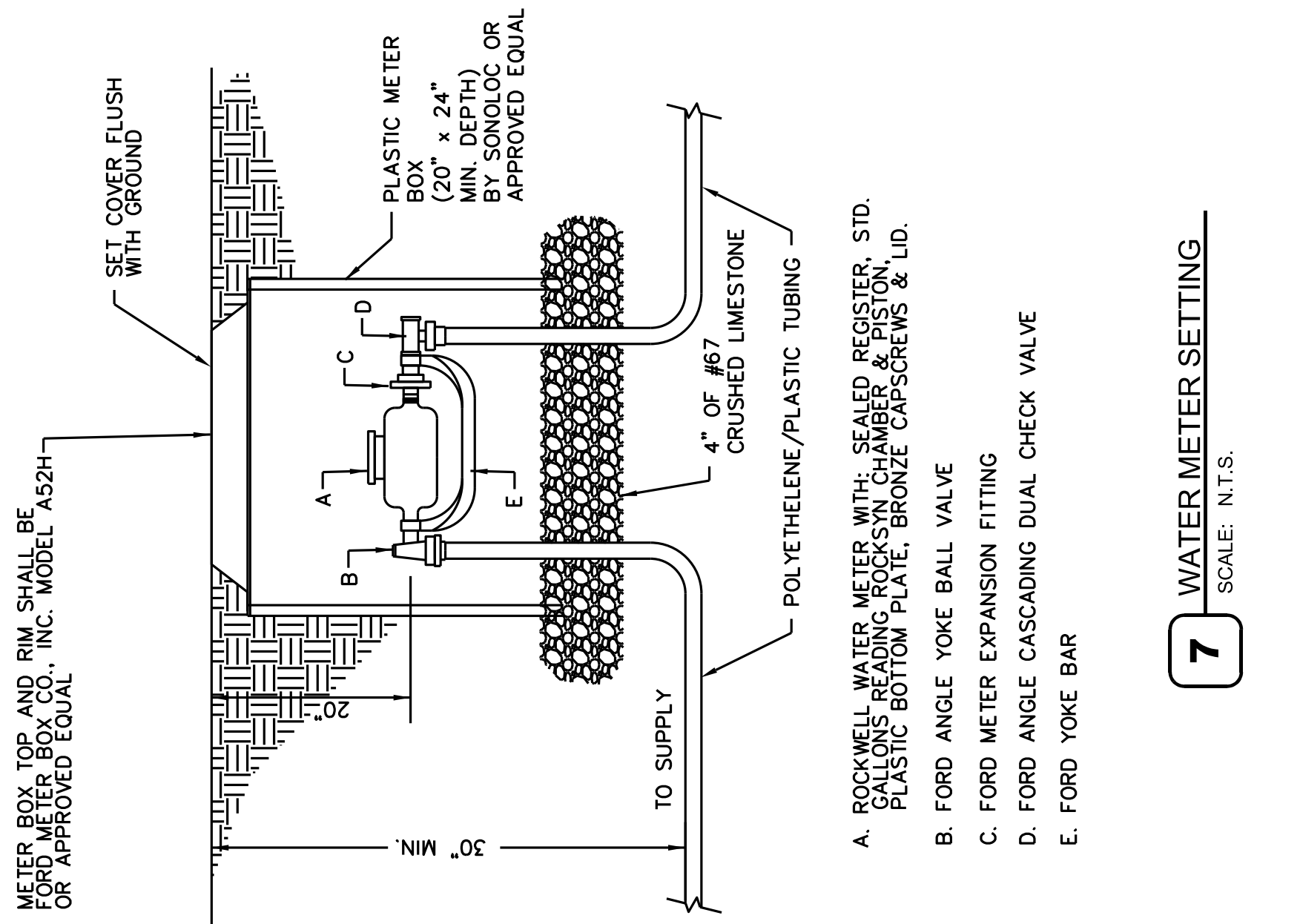
PIPE SIZE	DEAD END OR TEE	1/4" BEND	1/8" BEND	1/16" BEND
4"	20	40	27	20
6"	39	60	54	29
8"	68	100	56	31
10"	110	160	89	48
12"	155	220	120	62
16"	260	340	180	90

THRUST / LBS. OF PRESSURE



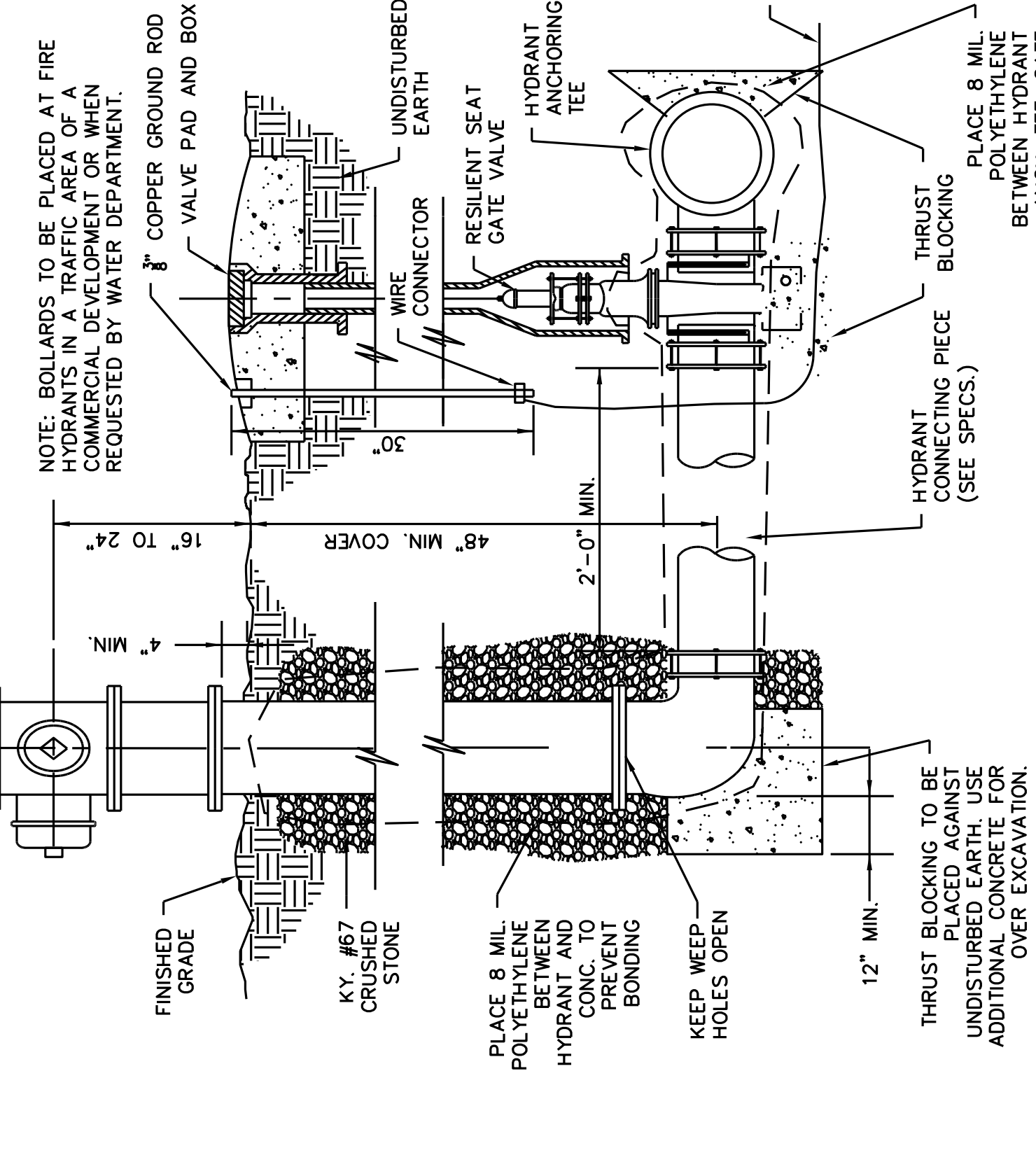
NOTE: WHERE THE MAIN LINE IS LOCATED IN A STREET OR ROAD THE AIR RELEASE VALVE AND BOX SHALL BE LOCATED OFF THE ROAD WHERE NOT SUBJECT TO VEHICULAR TRAFFIC AND CONNECTED TO THE MAIN BY 1" PIPING

6 AIR RELEASE VALVE ASSEMBLY
SCALE: N.T.S.



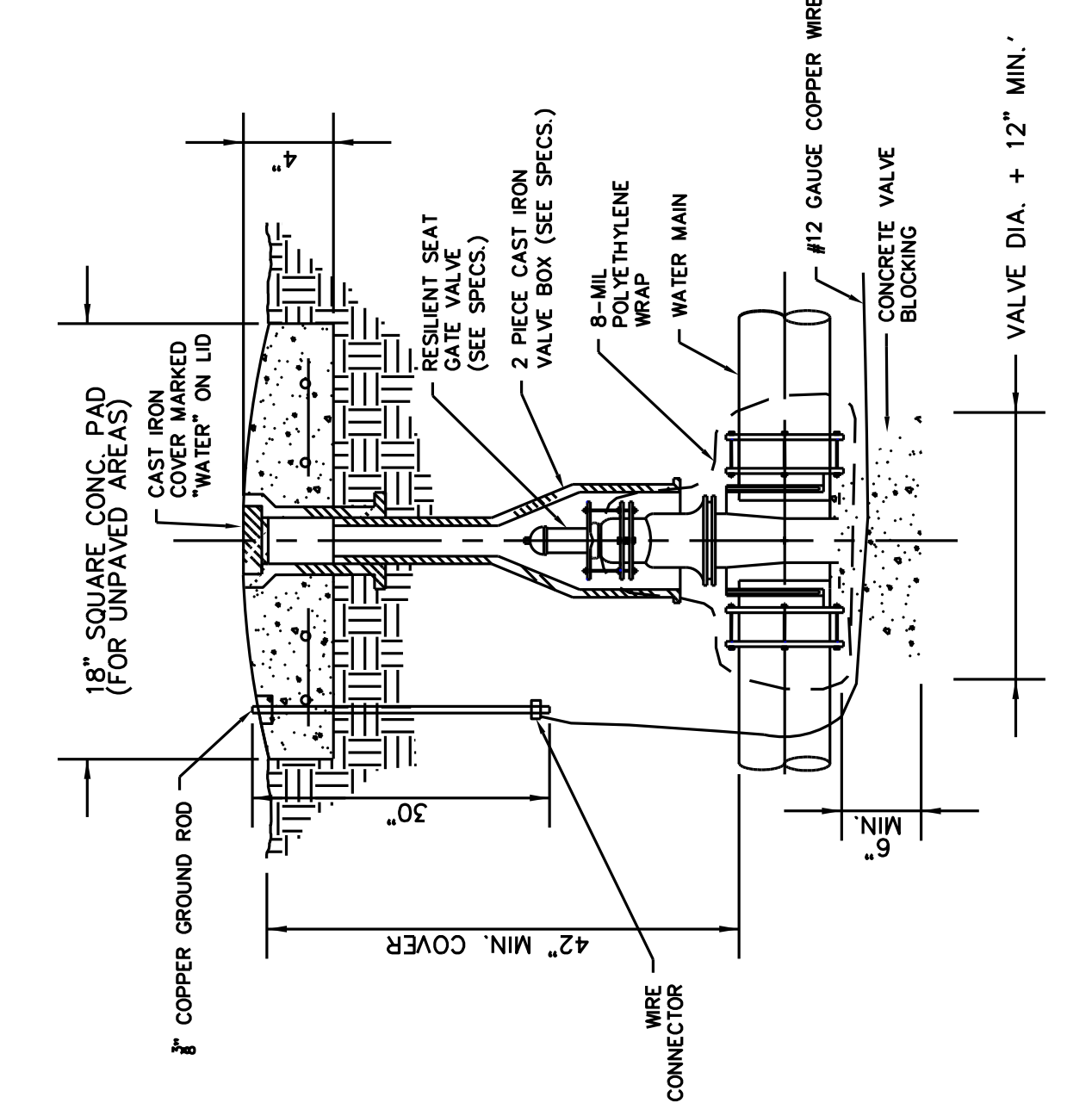
7 WATER METER SETTING
SCALE: N.T.S.

- GENERAL NOTES:**
- 1). ALL CONCRETE SHALL BE CLASS "B"
 - 2). CRUSHED STONE SHALL BE EXTENDED 6" ABOVE DRAIN OPENINGS IN HYDRANT BASE.
 - 3). 4 1/2" PLUMPER NOZZLE TO FACE IN DIRECTION OF STREET OR ROAD UNLESS OTHERWISE SPECIFIED.



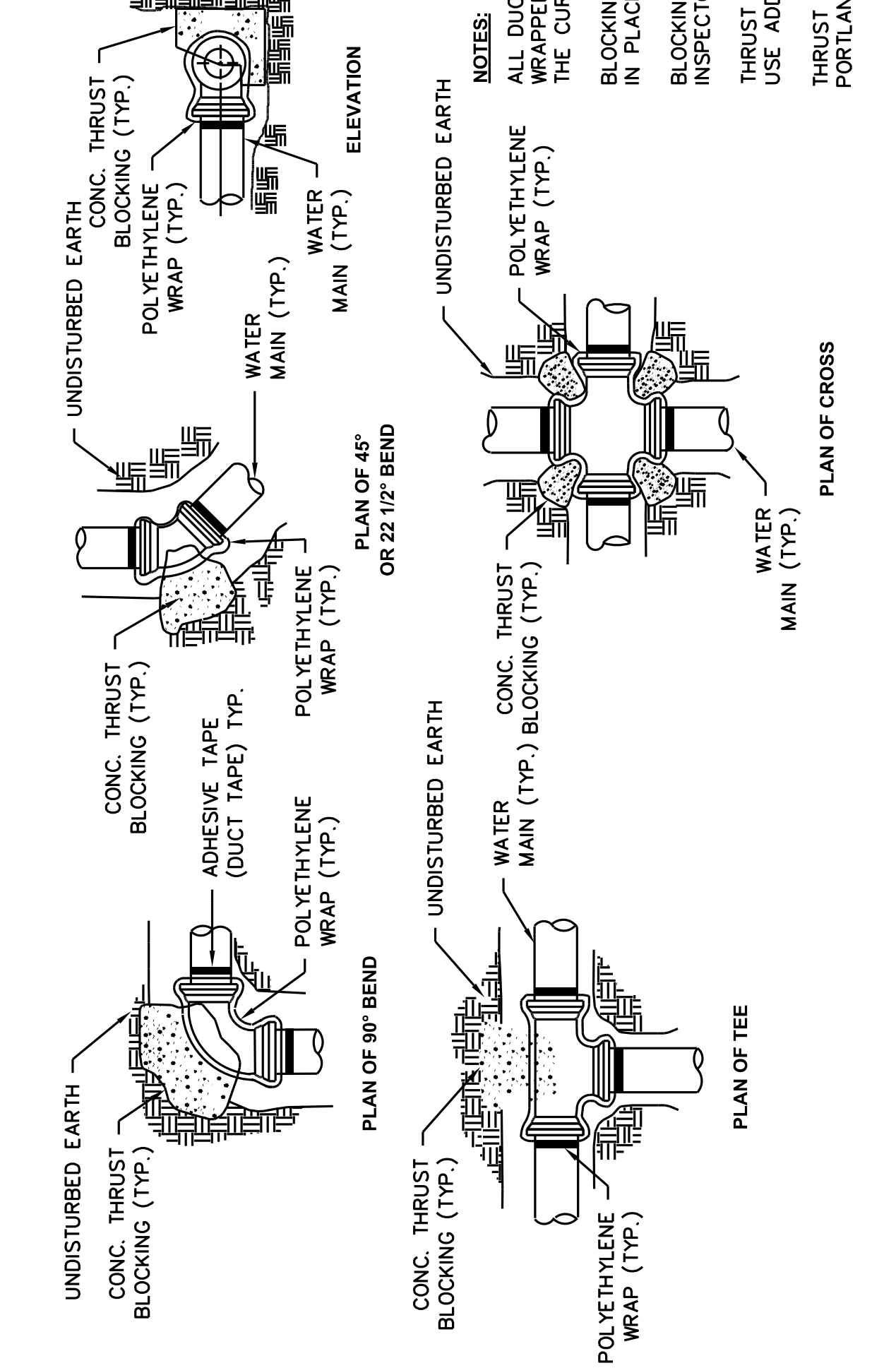
1 WATER HYDRANT PLACEMENT DETAILS
SCALE: N.T.S.

- NOTE:** CONCRETE PADS SHALL BE CONSTRUCTED AROUND ALL MAIN LINE.
1. CONCRETE PADS SHALL BE CLASS "A" TYPE PORTLAND CEMENT CONCRETE WITH A WOOD FLOAT FINISH TOoled EDGE.
 2. THE VALVE BOX SHALL NOT TRANSMIT SHOCK OR STRESS TO



2 TYPICAL GATE VALVE AND BOX COLLAR
SCALE: N.T.S.

TYPICAL THRUST BLOCKING DETAILS

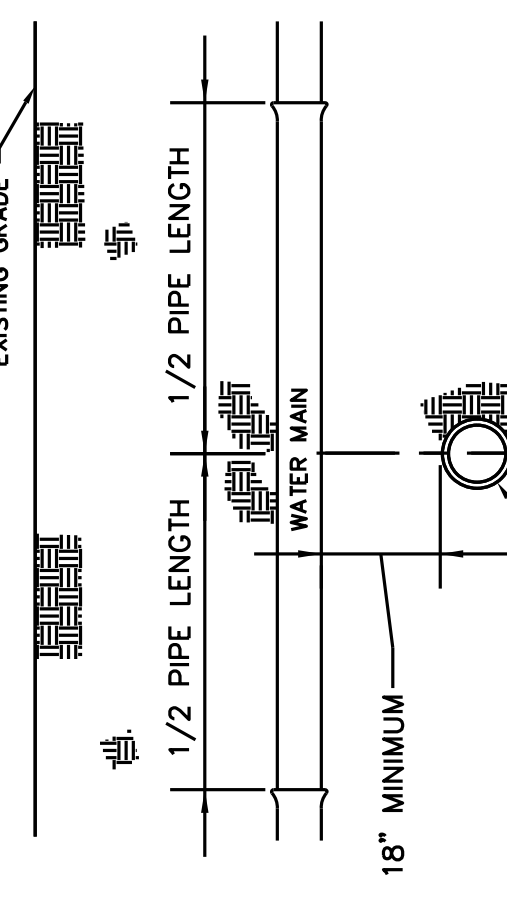


5 TYPICAL THRUST BLOCKING DETAILS (WATER)
SCALE: N.T.S.

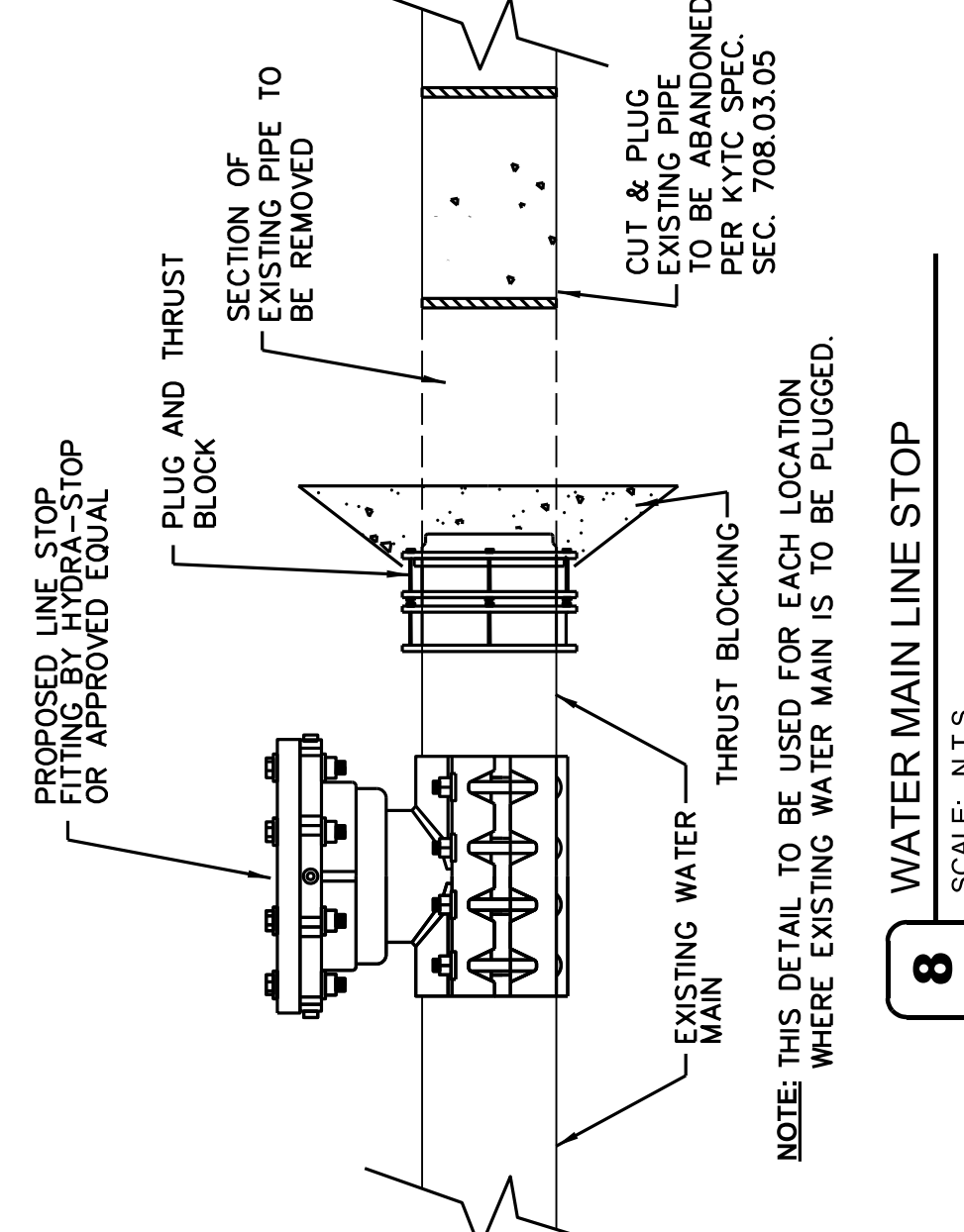
THRUST / LBS. OF PRESSURE

PIPE SIZE	DEAD END OR TEE	1/4" BEND	1/8" BEND	1/16" BEND
4"	20	40	27	20
6"	39	60	54	29
8"	68	100	56	31
10"	110	160	89	48
12"	155	220	120	62
16"	260	340	180	90

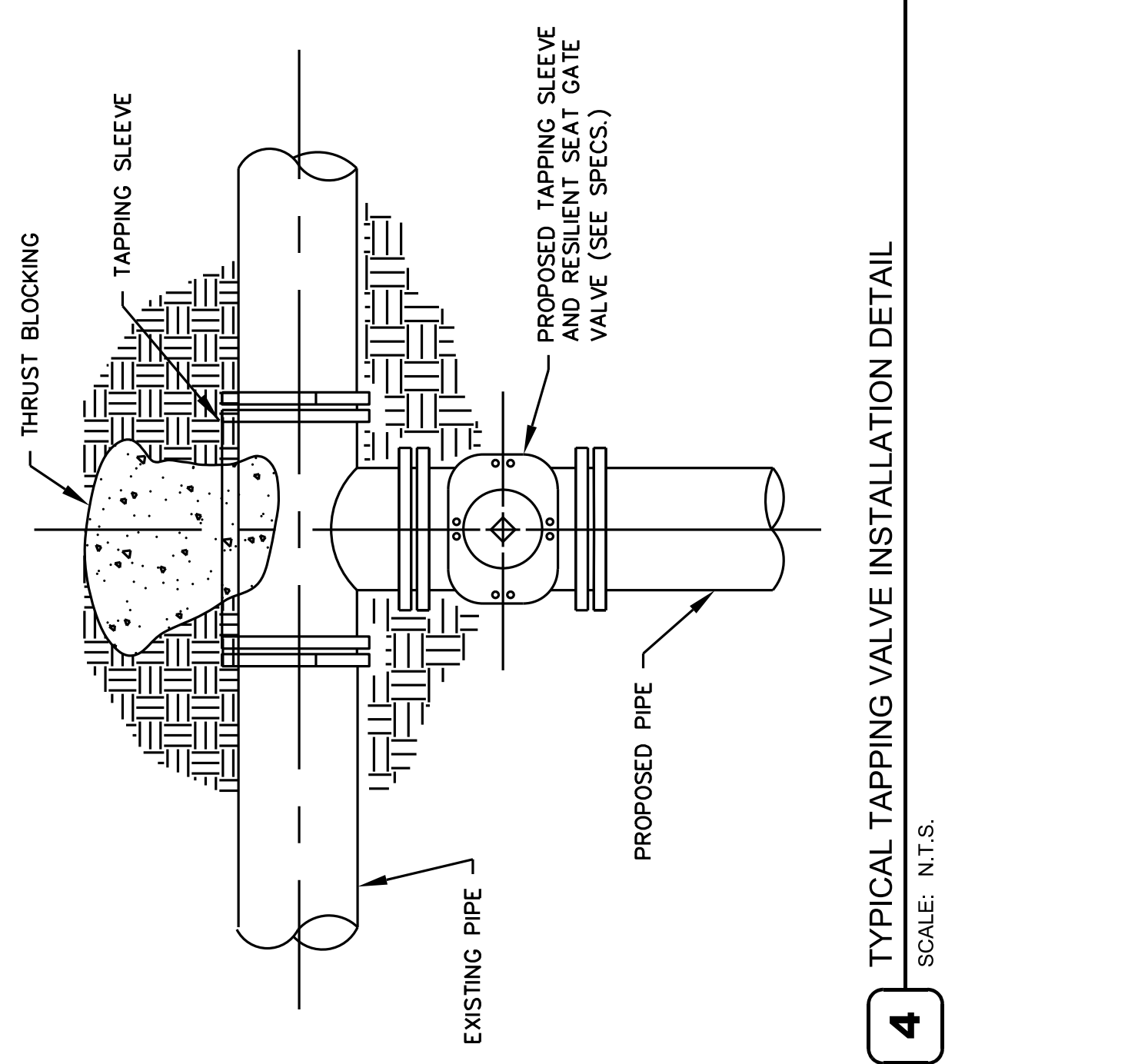
- NOTES:**
- 1). ALL DUCTILE IRON PIPE, FITTINGS AND VALVES SHALL BE WRAPPED WITH POLYETHYLENE MATERIAL, 8-MIL. INSTALLED TO THE CURRENT ADDITION OF THE AWWA C-105.
 - 2). BLOCKING SHALL BE POURED AFTER THE POLYETHYLENE WRAP IS IN PLACE.
 - 3). BLOCKING SHALL BE INSPECTED BY THE DESIGN ENGINEER'S INSPECTOR PRIOR TO BACKFILLING.
 - 4). THRUST BLOCKS TO BE PLACED AGAINST UNDISTURBED EARTH. USE ADDITIONAL CONCRETE AS REQUIRED FOR OVER EXCAVATION.
 - 5). THRUST BLOCKS SHALL BE CONSTRUCTED WITH CLASS "B" PORTLAND CEMENT CONCRETE, 2500 PSI, MINIMUM.



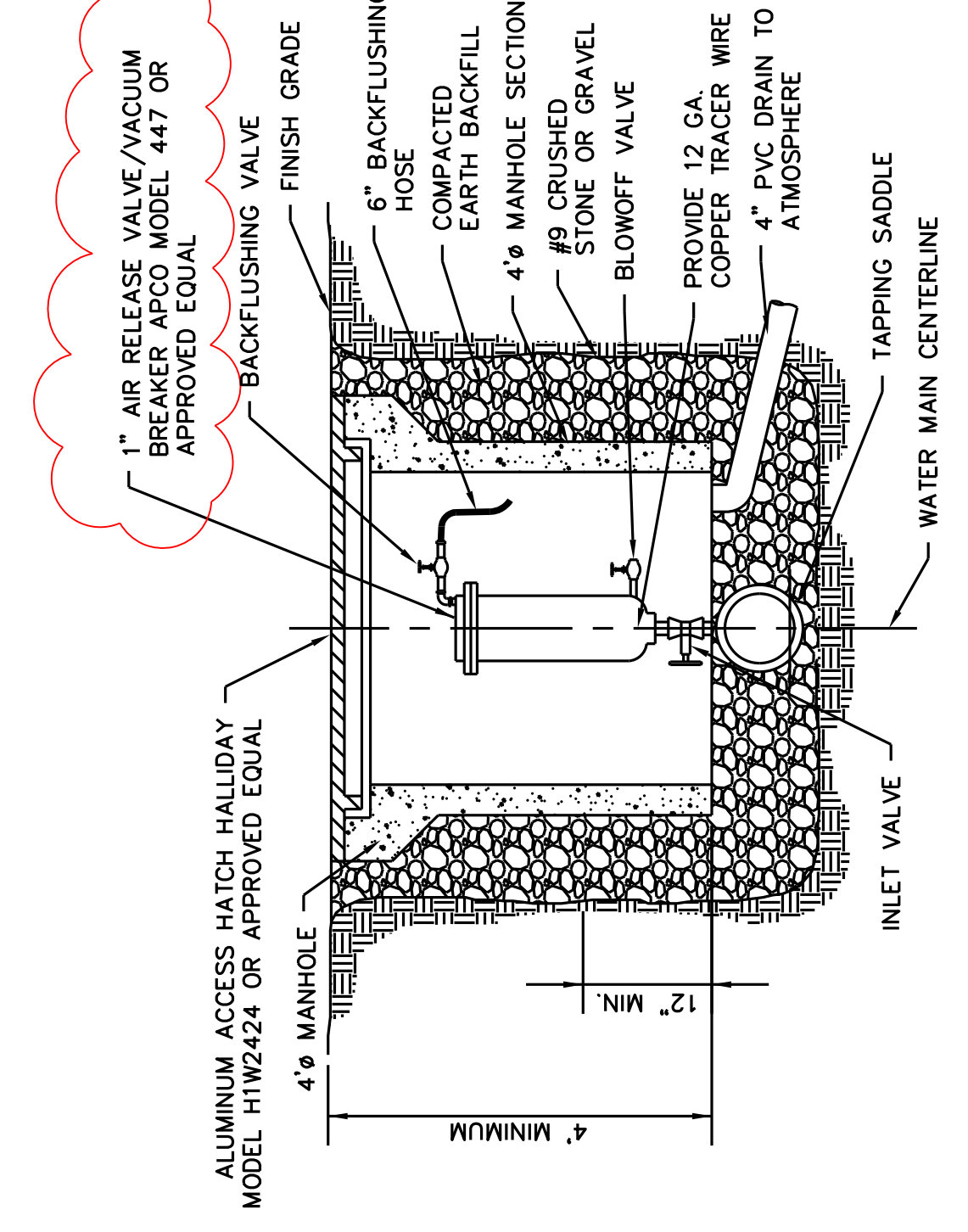
3 WATER MAIN CROSSING SEWER
SCALE: N.T.S.



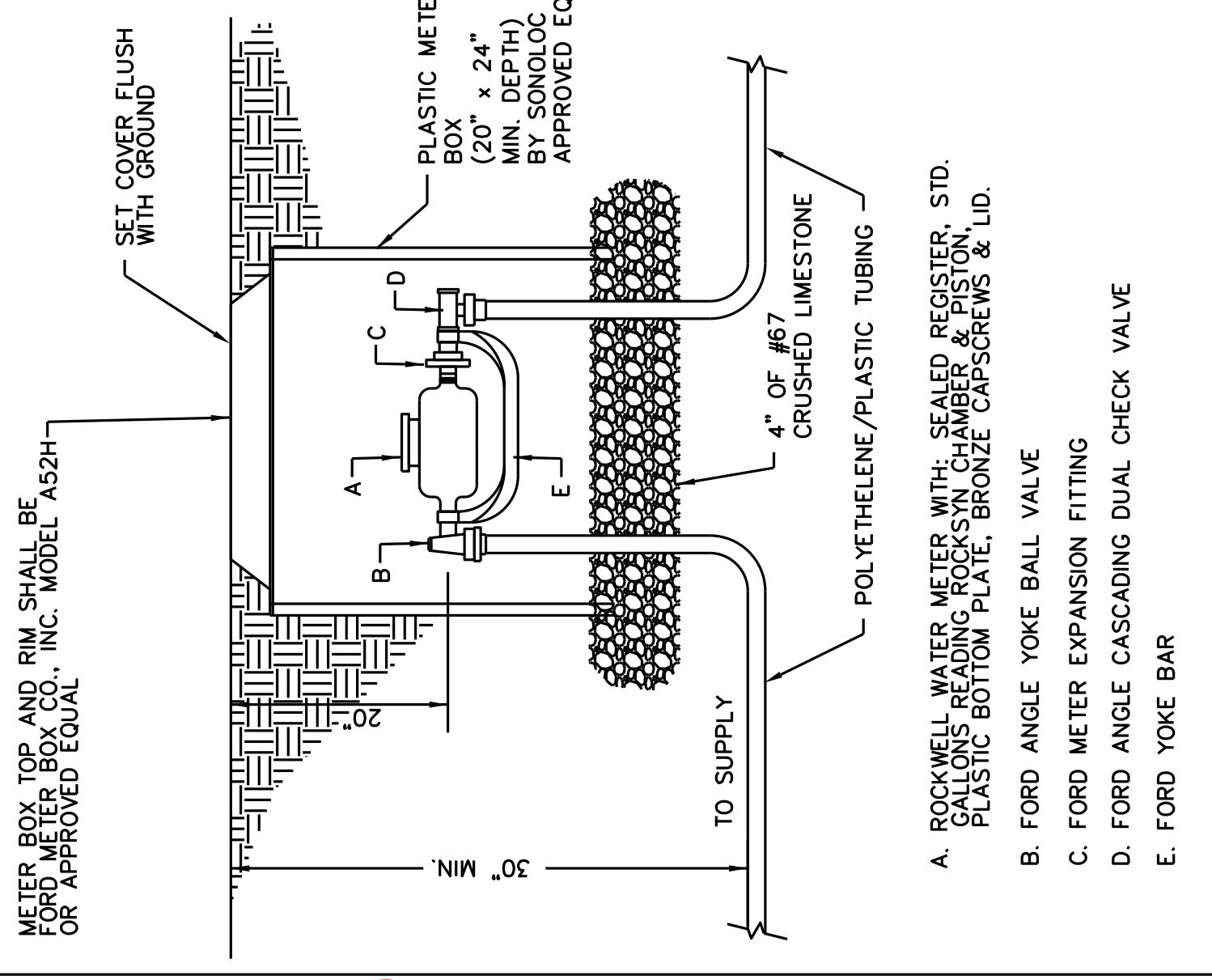
8 WATER MAIN LINE STOP
SCALE: N.T.S.



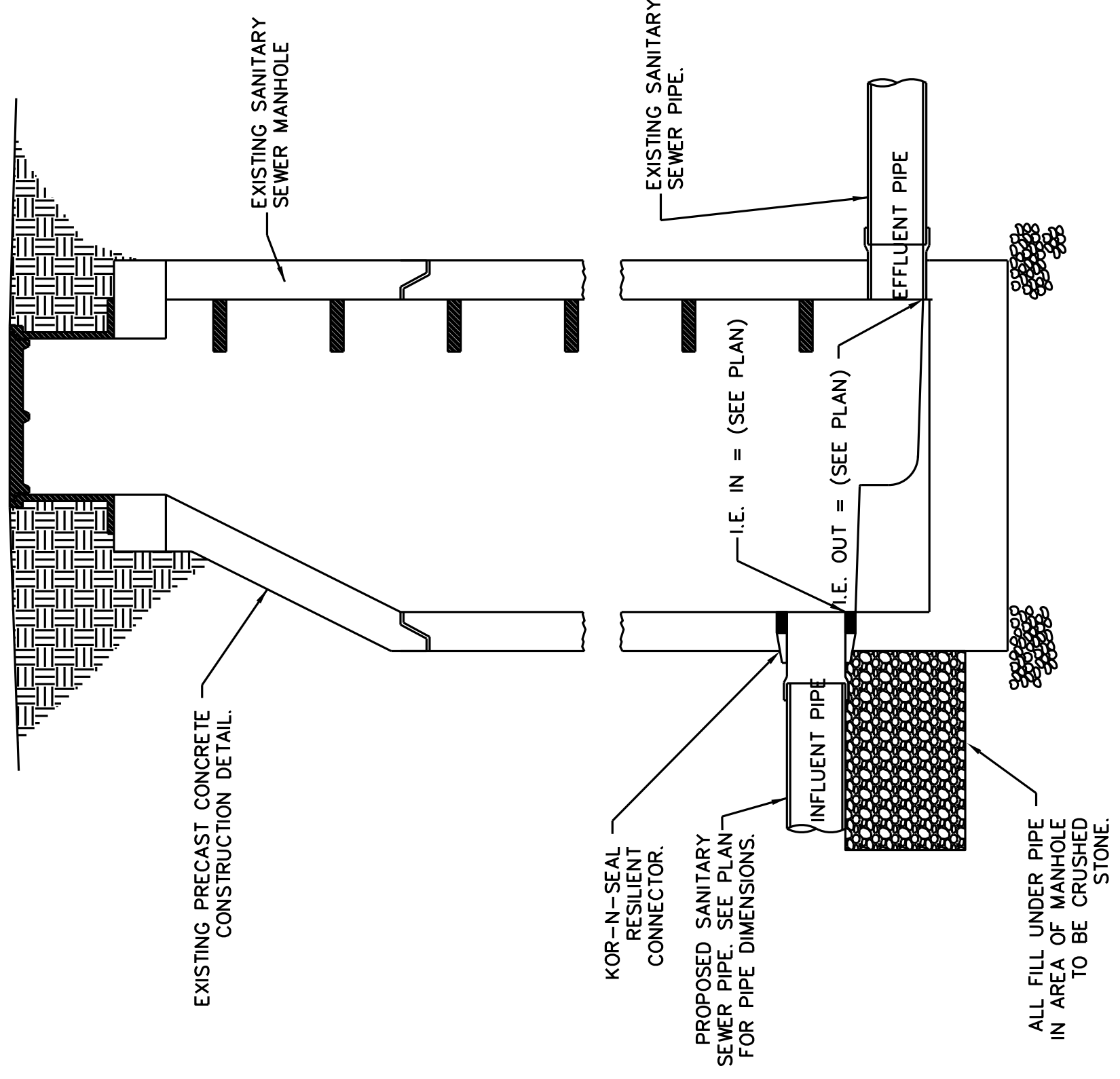
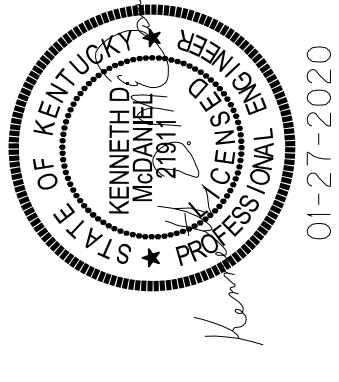
4 TYPICAL TAPPING VALVE INSTALLATION DETAIL
SCALE: N.T.S.



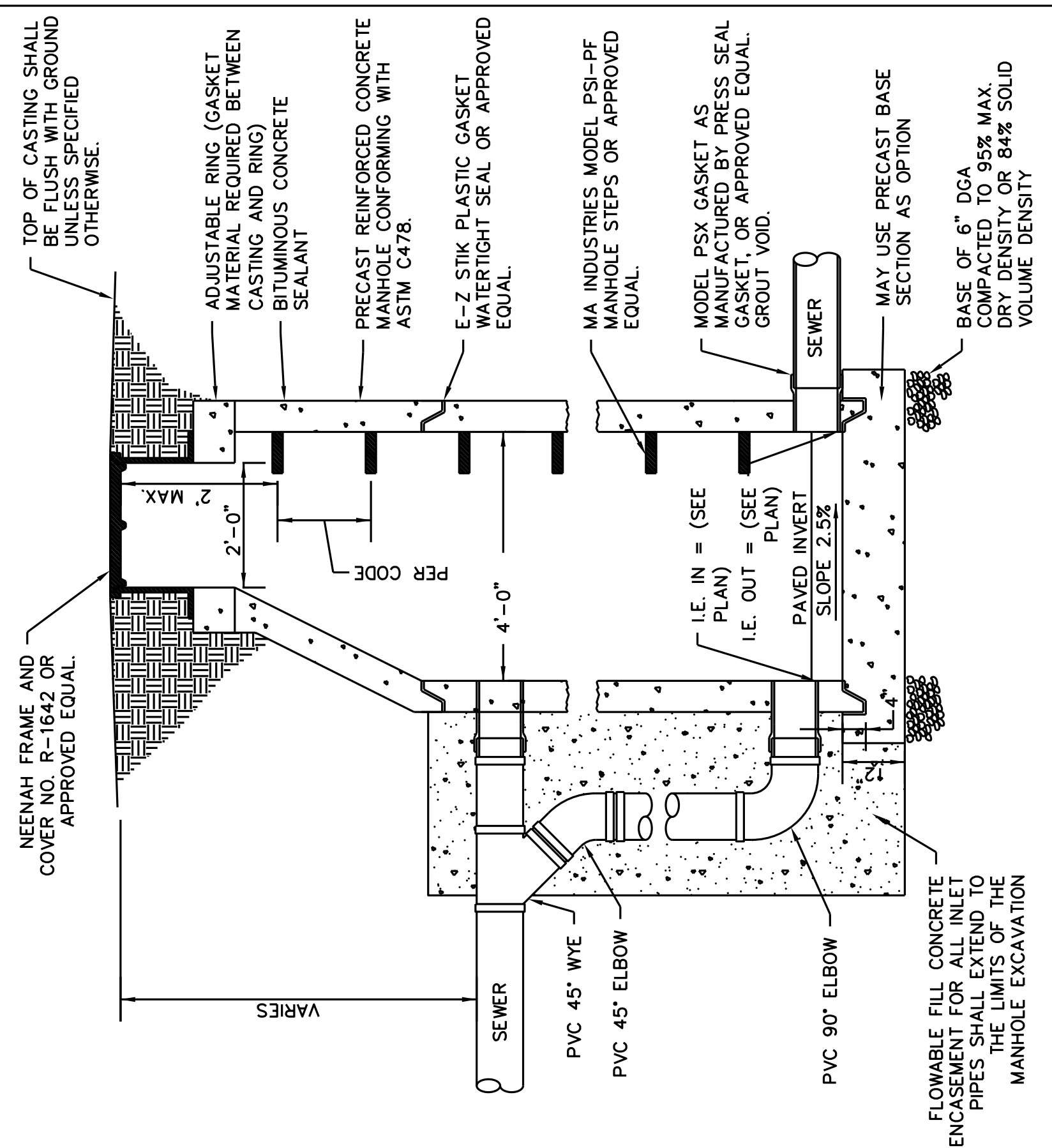
6 AIR RELEASE VALVE ASSEMBLY
SCALE: N.T.S.



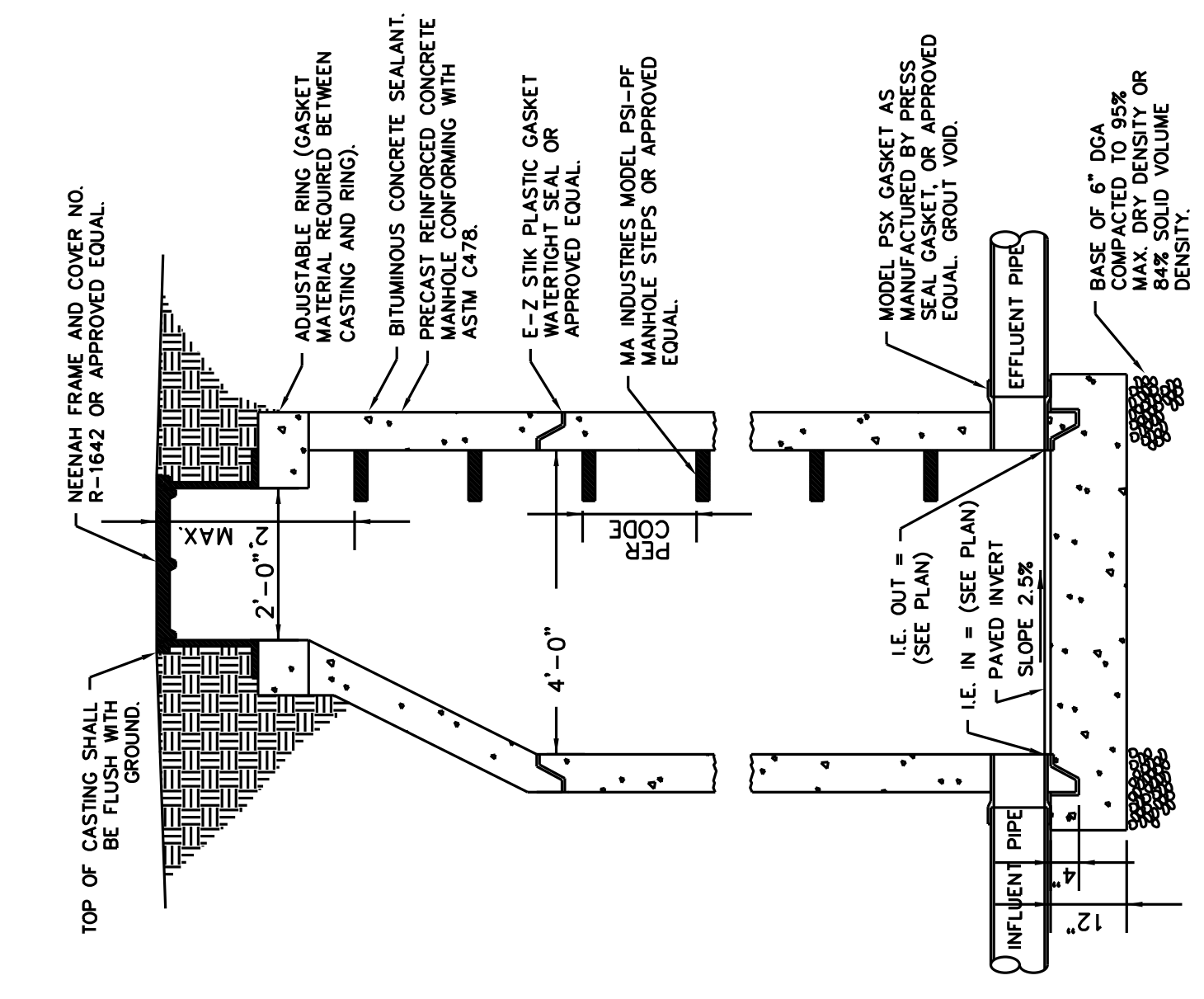
7 WATER METER SETTING
SCALE: N.T.S.



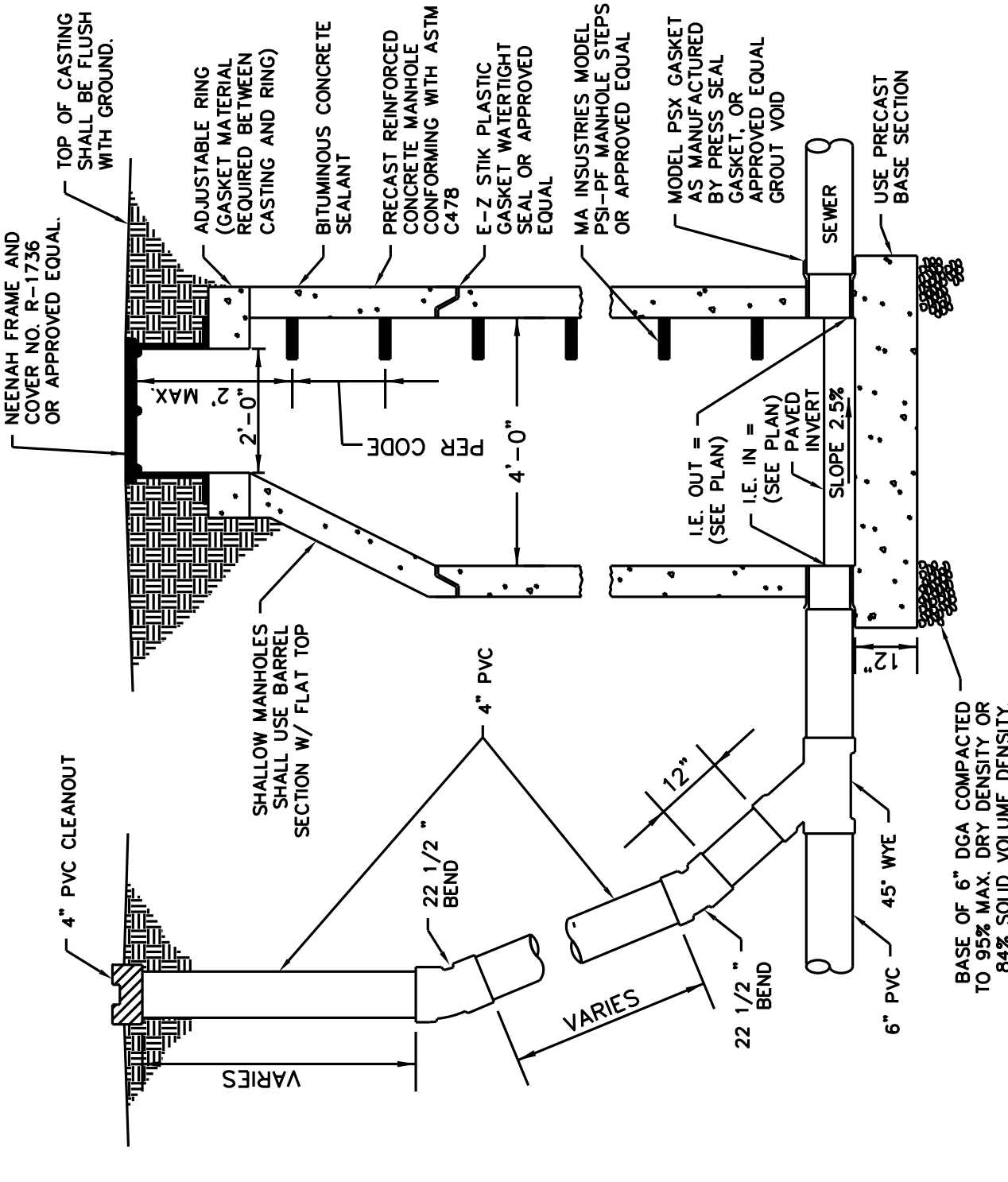
1 CONNECTION TO EXISTING MANHOLE
 SCALE: N.T.S.



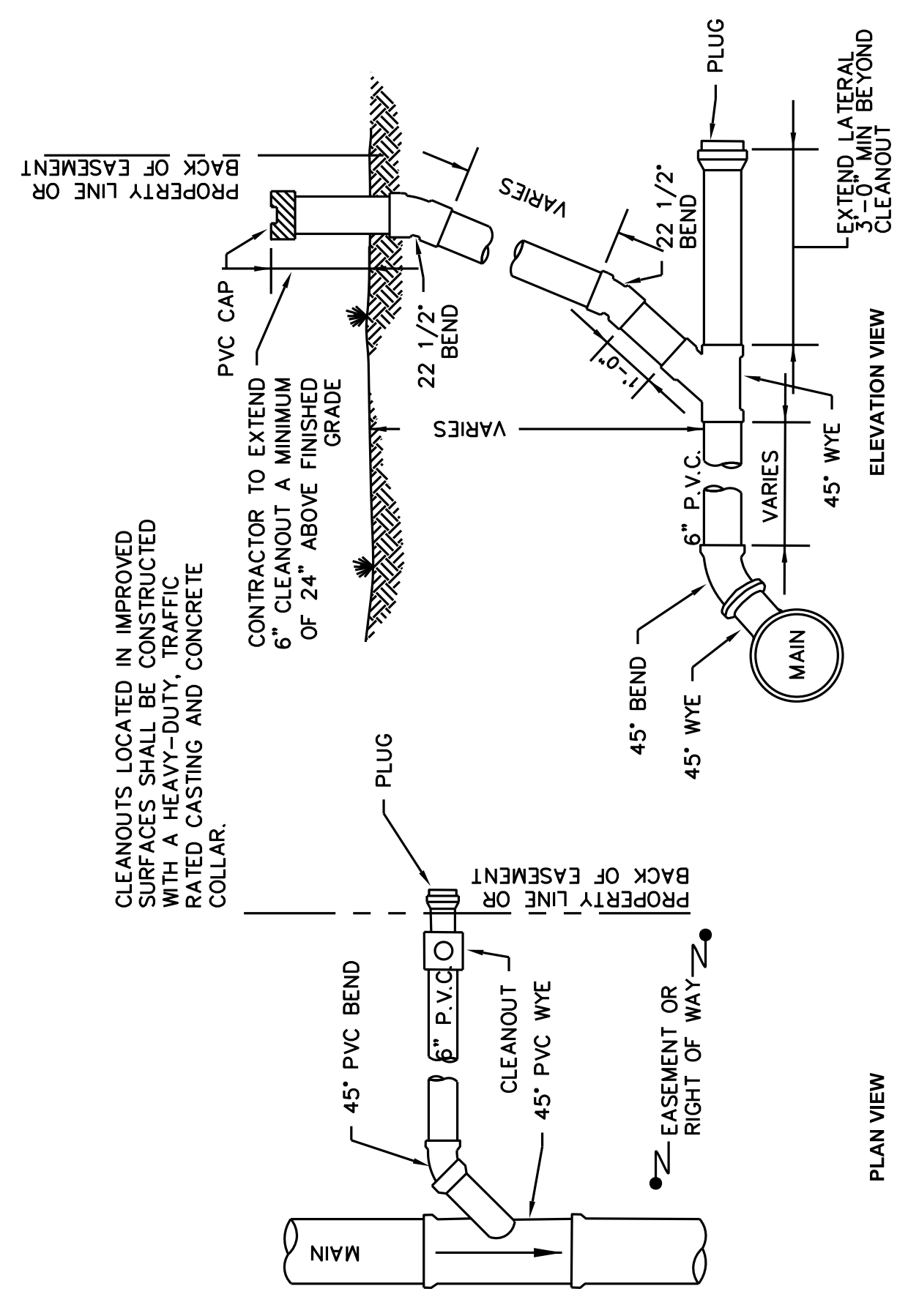
2 SANITARY SEWER DROP MANHOLE
 SCALE: N.T.S.



3 48"Ø SANITARY SEWER MANHOLE
 SCALE: N.T.S.

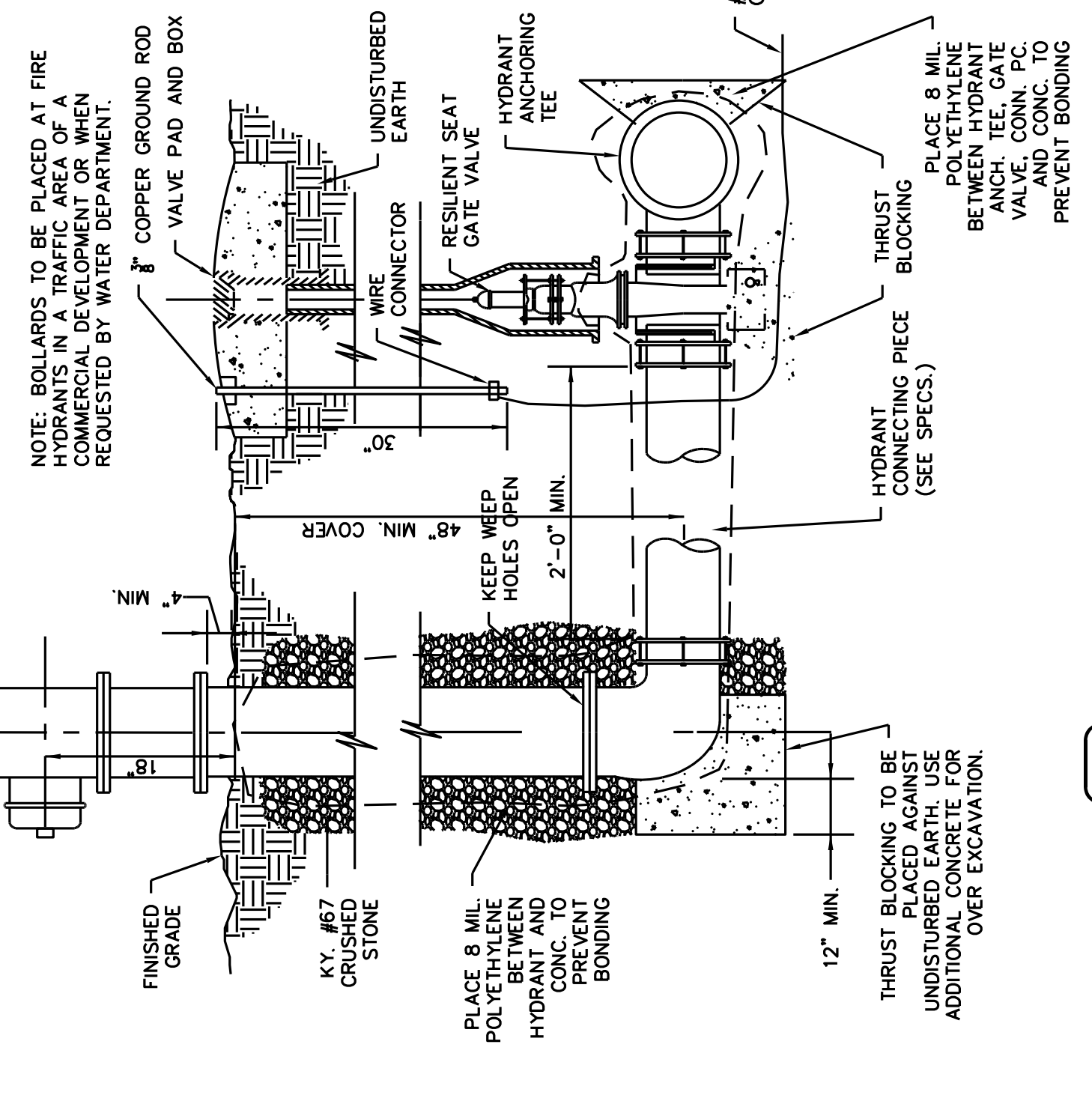


4 SANITARY SEWER MANHOLE WITH LATERAL
 SCALE: N.T.S.



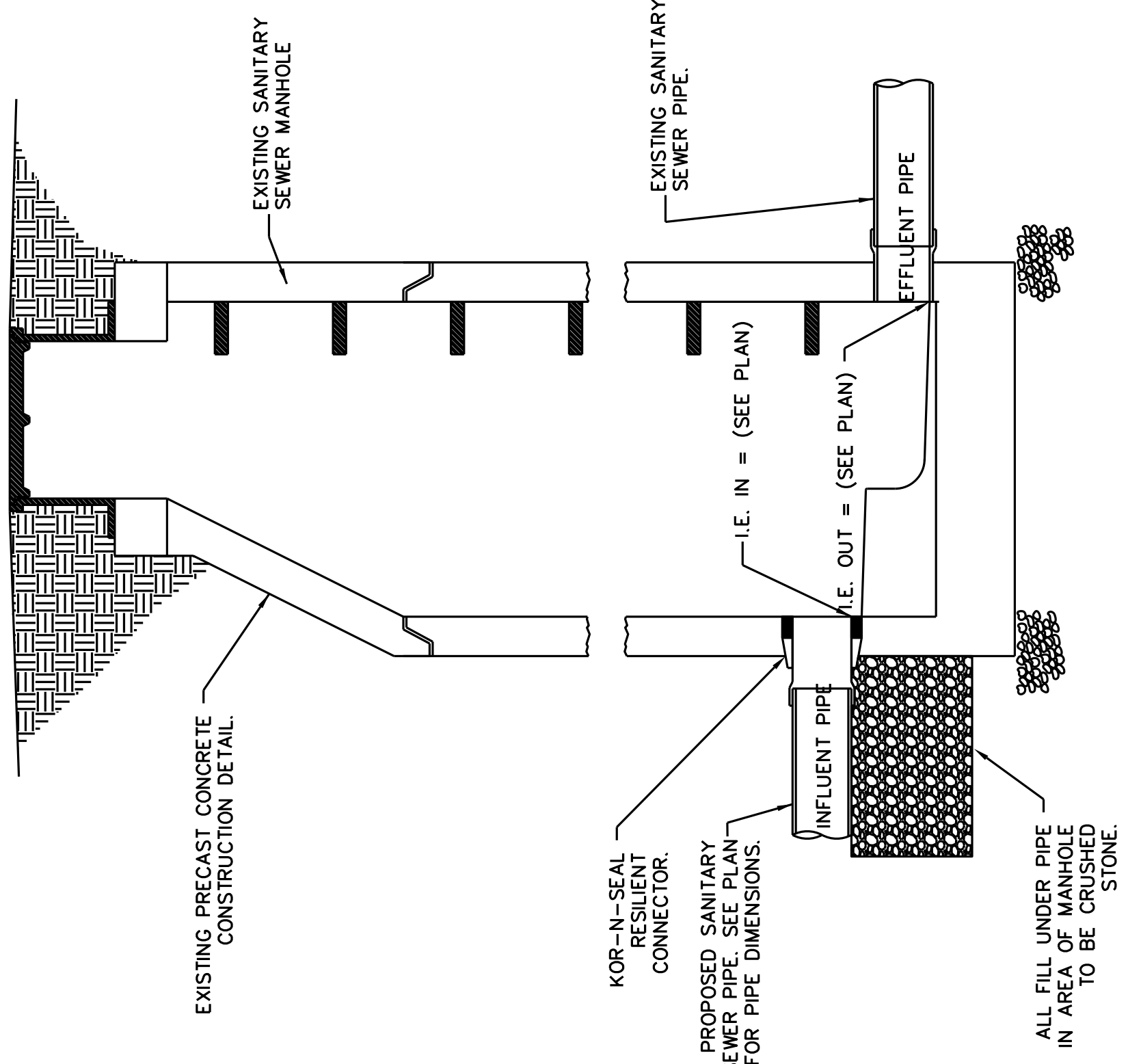
5 SERVICE LATERAL WITH CLEANOUT (UNIMPROVED)
 SCALE: N.T.S.

GENERAL NOTES:
 1). ALL CONCRETE SHALL BE CLASS "B"
 2). CRUSHED STONE SHALL BE EXTENDED 6" ABOVE DRAIN OPENINGS IN HYDRANT BASE.
 3). NOZZLE TO FACE IN DIRECTION OF STREET OR ROAD UNLESS OTHERWISE SPECIFIED.

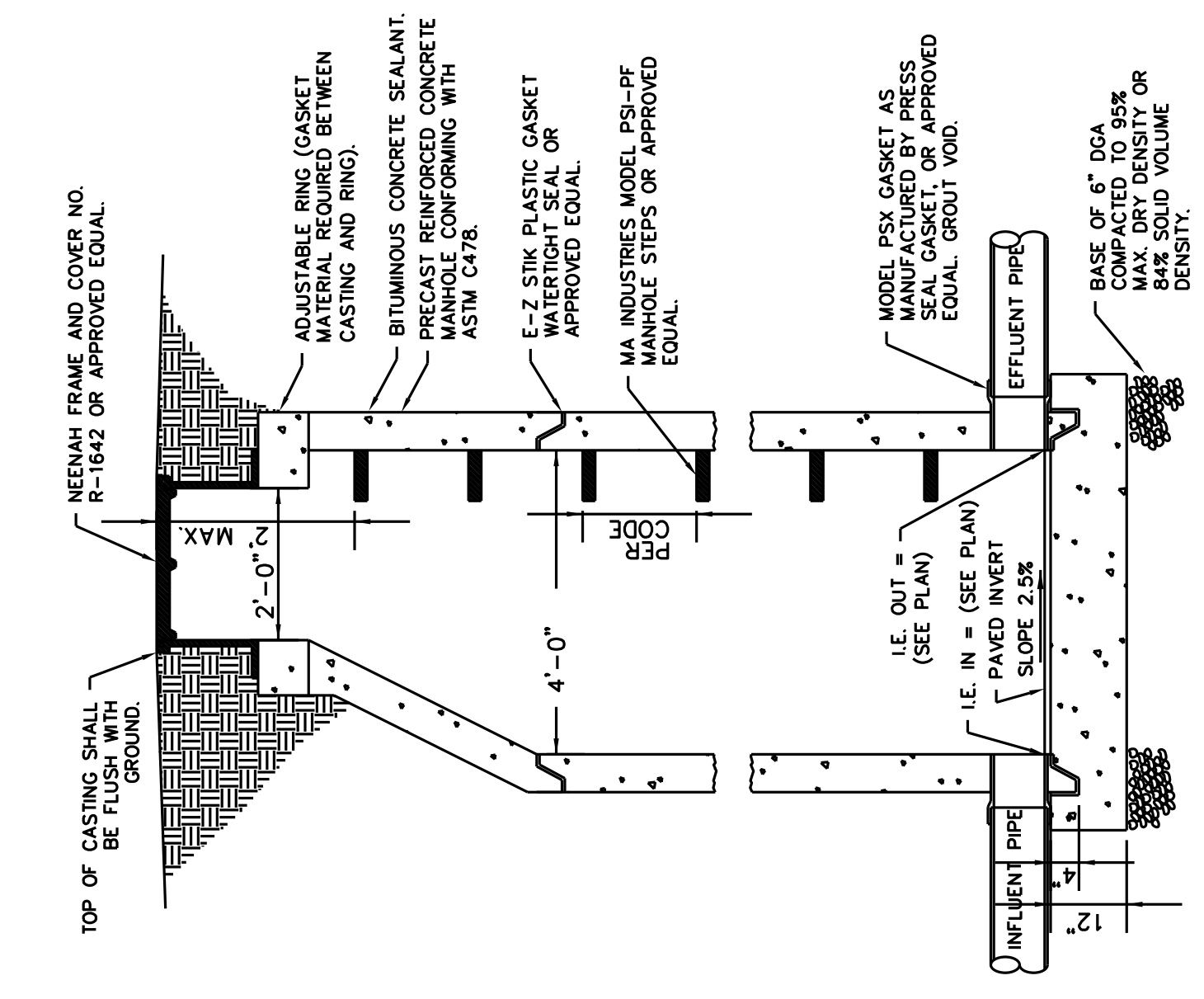


6 FLUSH HYDRANT ASSEMBLY
 SCALE: N.T.S.

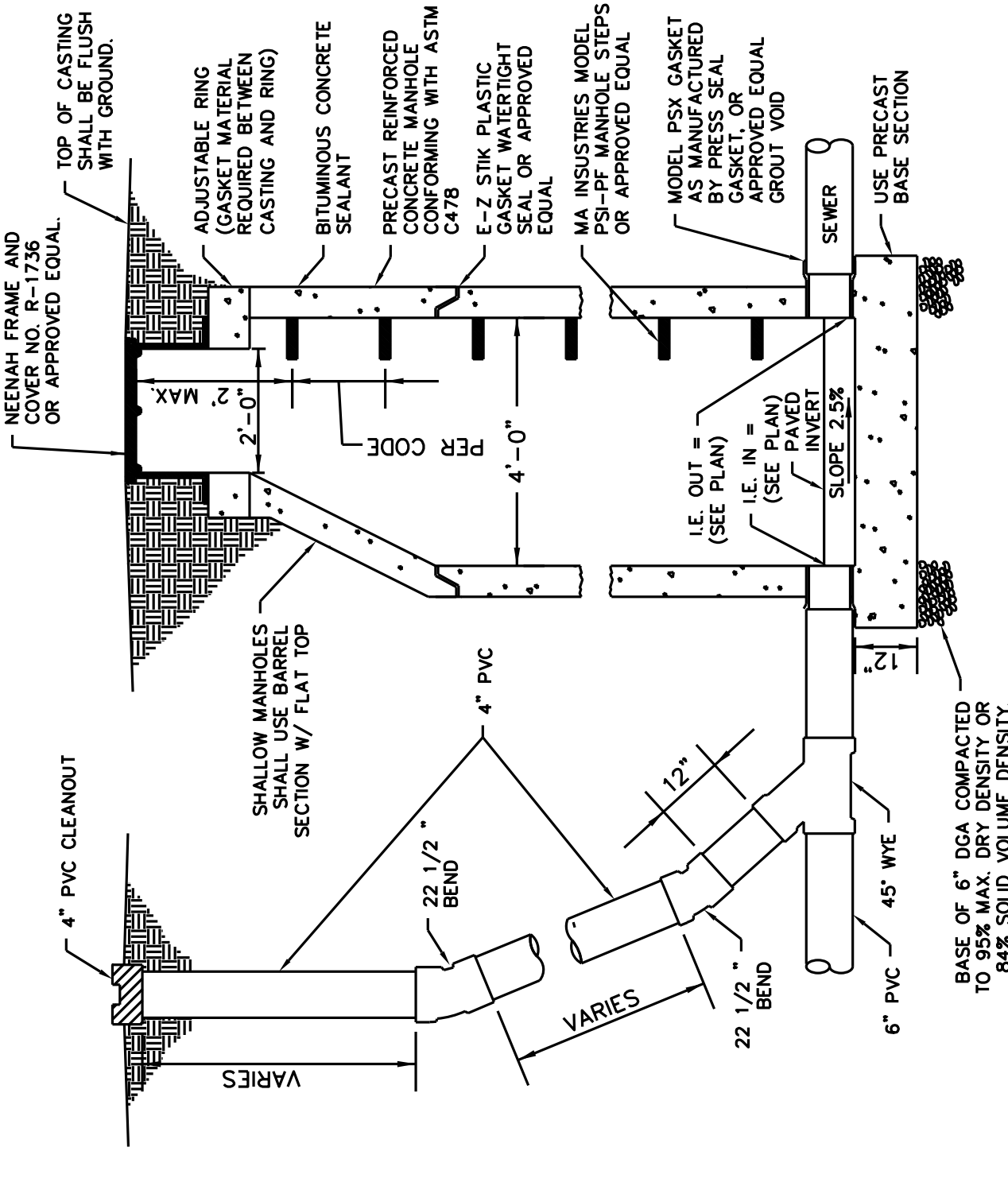
REVISED: 03-03-2020



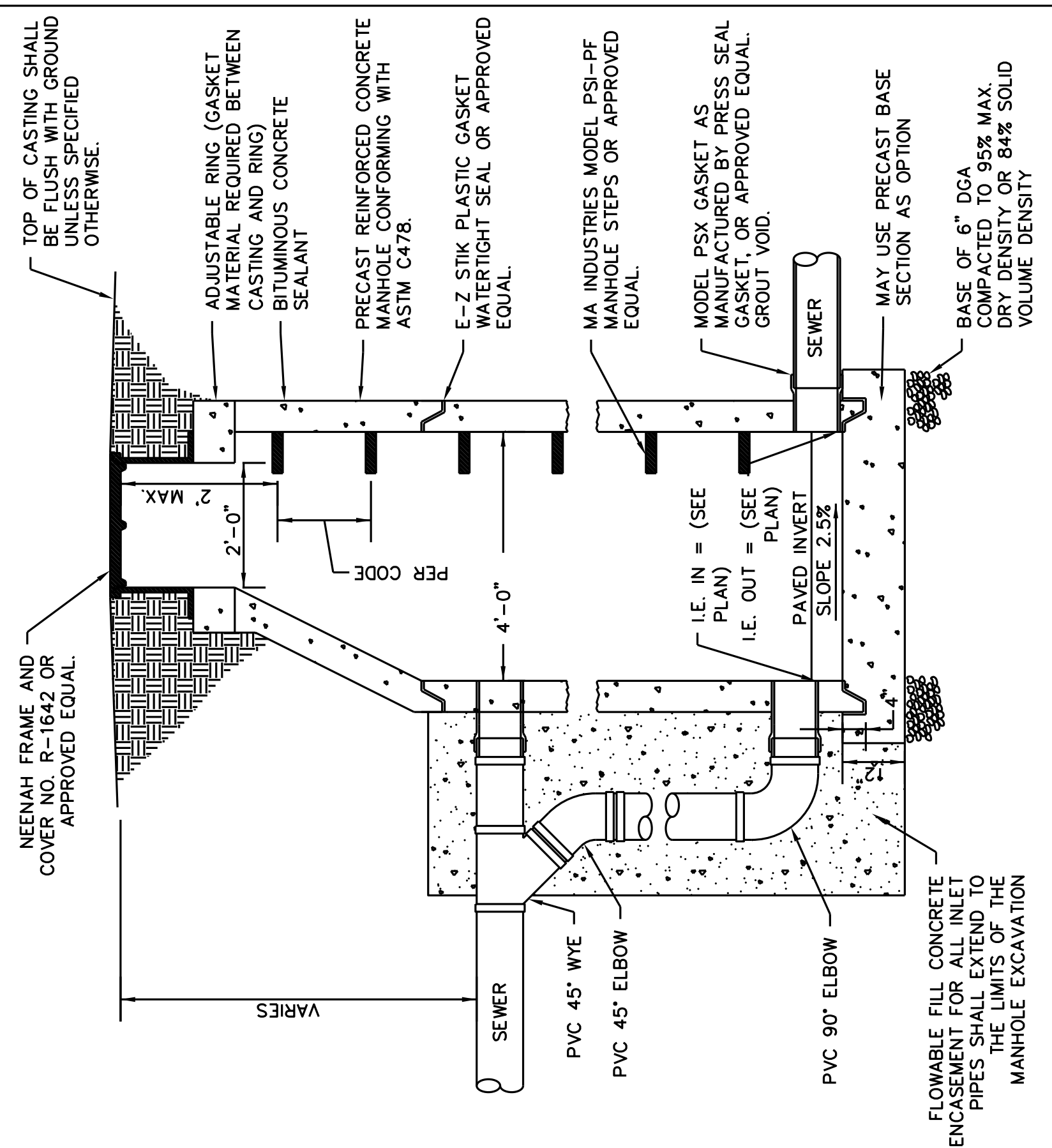
1 CONNECTION TO EXISTING MANHOLE
 SCALE: N. T. S.



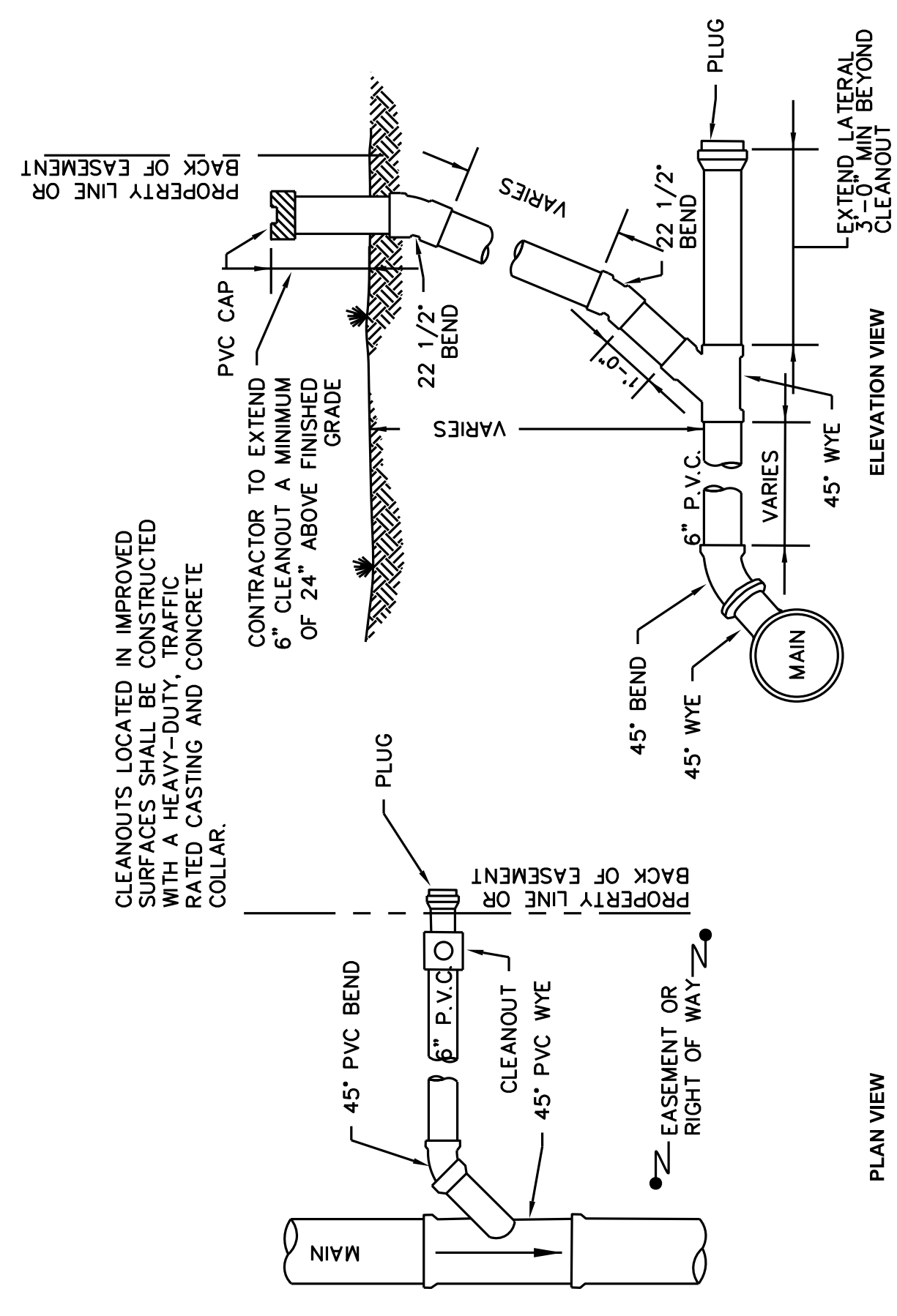
2 48"Ø SANITARY SEWER MANHOLE
 SCALE: N. T. S.



3 SANITARY SEWER MANHOLE WITH LATERAL
 SCALE: N. T. S.

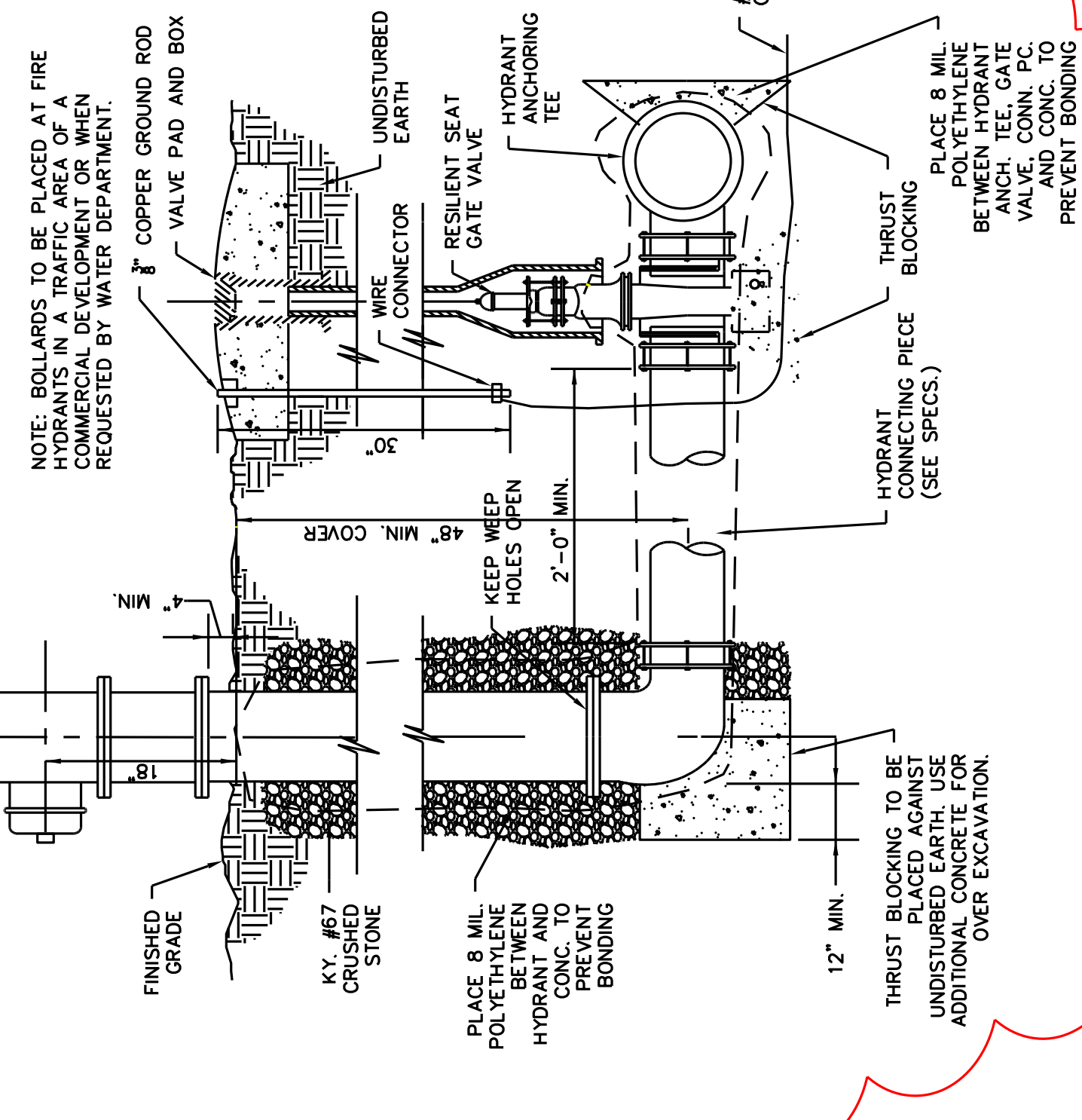


4 SANITARY SEWER DROP MANHOLE
 SCALE: N. T. S.



5 SERVICE LATERAL WITH CLEANOUT (UNIMPROVED)
 SCALE: N. T. S.

- GENERAL NOTES:
- 1). ALL CONCRETE SHALL BE CLASS "B"
 - 2). CRUSHED STONE SHALL BE EXTENDED 6" ABOVE DRAIN OPENINGS IN HYDRANT BASE.
 - 3). NOZZLE TO FACE IN DIRECTION OF STREET OR ROAD UNLESS OTHERWISE SPECIFIED.



6 FLUSH HYDRANT ASSEMBLY
 SCALE: N. T. S.

GENERAL SUMMARY

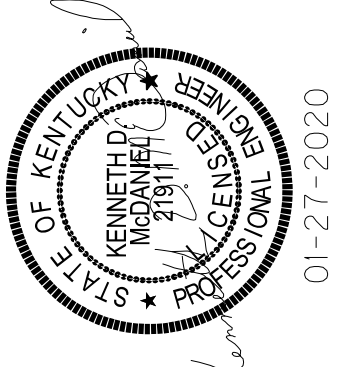
ITEM	DESCRIPTION	UNIT	US 60	KY 70	TOTAL
0134	PLUG PIPE	EACH	3	1	4
02690	SAFELOADING	CY	16	0	16
05985	SEEDING AND PROTECTION	SY	1350	24	1374
14000	W AIR RELEASE VALVE 1 INCH	EACH	1	1	2
14008	W ENCASEMENT STEEL BORED RANGE 3	LF	196	59	255
14019	W FIRE HYDRANT ASSEMBLY	EACH	2	1	3
14021	W FIRE HYDRANT REMOVE	EACH	2	1	3
14022	W FLUSH HYDRANT ASSEMBLY	EACH	2	0	2
14025	W METER 1 INCH	EACH	9	1	10
14058	W PIPE PVC 04 INCH	LF	652	0	652
14059	W PIPE PVC 06 INCH	LF	578	200	778
14074	W PLUG EXISTING MAIN	EACH	4	0	4
14077	W SERV PE/PLST LONG SIDE 1 IN	EACH	2	0	2
14082	W SERV PE/PLST SHORT SIDE 1 IN	EACH	7	1	8
14089	W TAPPING SLEEVE & VALVE SIZE 1	EACH	1	1	2
14094	W TIE-IN 06 INCH	EACH	2	1	3
14105	W VALVE 06 INCH	EACH	6	2	6
14156	W METER REMOVE	EACH	6	1	7
15000	S BYPASS PUMPING	EACH	1	0	1
15017	S ENCASEMENT STEEL BORED RANGE 4	LF	86	0	86
15023	S ENCASEMENT STEEL OPEN CUT RANGE 4	LF	130	0	130
15090	S LATERAL SHORT SIDE 06 INCH	EACH	8	0	8
15092	S MANHOLE	EACH	7	0	7
15093	S MANHOLE ABANDON/REMOVE	EACH	4	0	4
15094	S MANHOLE ADJUST TO GRADE	EACH	1	0	1
15096	S MANHOLE CASTING WATERTIGHT	EACH	10	0	10
15097	S MANHOLE RECONSTRUCT INVERT	EACH	1	0	1
15099	S MANHOLE TAP EXISTING	EACH	2	0	2
15101	S MANHOLE WITH DROP	EACH	1	0	1
1512	S PIPE PVC 08 INCH	LF	1169	0	1169
15136	S LATERAL LOCATE	EACH	8	0	8

UTILITY COMPANIES
 SMITHLAND WATER WORKS
 310 WILSON AVENUE
 SMITHLAND, KY 42081
 PHONE: (270) 928-2446
 CONTACT: (270) 928-5646
 (270) 928-4830 WATER PLANT

CRITTENDEN-LIVINGSTON COUNTY WATER DISTRICT
 716 LIVINGSTON WATER PLANT ROAD
 SALEM, KY 42078
 PHONE: (270) 988-2680
 CONTACT: RONNIE SLAYDEN
 (270) 988-2060 WATER PLANT

USRF: dcgr@stinger DATE PLOTTED: Mch 3, 2020 FILE NAME: c:\pdcwork\DIR\RWMS7873\UIS.DGN

COUNTY OF	ITEM NO.	SHEET NO.
LIVINGSTON	I-1142.00	UIS



GENERAL UTILITY NOTES AND INSTRUCTIONS APPLICABLE TO ALL UTILITY WORK MADE A PART OF THE ROAD CONSTRUCTION CONTRACT:

THE CONTRACTOR SHOULD BE AWARE OF THE FOLLOWING UTILITY NOTES AND KYTC UTILITY BID ITEM DESCRIPTIONS SHALL SUPERSEDE, REPLACE AND TAKE PRECEDENCE OVER ANY AND ALL CONFLICTING INFORMATION THAT MAY BE CONTAINED IN UTILITY OWNER SUPPLIED SPECIFICATIONS CONTAINED IN THE CONTRACT.

WHERE INFORMATION MAY HAVE BEEN OMITTED FROM THESE NOTES, BID ITEM DESCRIPTIONS, UTILITY OWNER SUPPLIED SPECIFICATIONS OR PLANS; THE KYTC STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION SHALL BE REFERENCED.

GENERAL UTILITY NOTES

1. ALL UTILITIES ARE SHOWN IN THEIR GENERAL LOCATION. PRIOR TO INITIATING CONSTRUCTION, ALL UTILITIES SHALL BE FIELD LOCATED. CONTRACTOR SHALL EXPOSE UTILITIES LOCATED WITHIN THE DISTURBED LIMITS UTILIZING MANUAL EXCAVATION WHERE NEEDED TO AVOID DAMAGE TO THE UTILITY. NOTIFY THE ENGINEER OF CONFLICTS WHICH MAY AFFECT PROPER COMPLETION OF THE WORK. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING DAMAGE TO UTILITIES. COORDINATE REPAIR OF DAMAGED UTILITIES WITH THE UTILITY OWNERS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH REQUIRED UTILITY REPAIR OR REPLACEMENT.

2. PROPOSED PIPING IS SHOWN IN ITS PLANNED LOCATION. CONTRACTOR SHALL MAKE ALL MINOR ADJUSTMENTS OF THE LOCATION AND GRADE OF THE PROPOSED PIPING TO INSURE COMPLETE INTEGRATION OF ALL PROPOSED PIPING WITH EXISTING AND PROPOSED PIPING AND STRUCTURES. IN MAKING THESE MINOR ADJUSTMENTS, THE CONTRACTOR SHALL NOT DEVIATE BEYOND THE EXISTING OR PROPOSED EASEMENTS.

3. CONTRACTOR IS RESPONSIBLE FOR PROVIDING AND INSTALLING ALL UNDESIGNED FITTINGS, RISERS OR PROTECTIVES IN THE DRAWINGS THAT ARE LISTED ON THIS DRAWING OR THE SCHEDULES. IN THE DRAWINGS THAT ARE REQUIRED FOR CONSTRUCTION TO PROVIDE A COMPLETE AND FUNCTIONAL SYSTEM, AT NO ADDITIONAL COST TO THE OWNER OR DEVELOPER.

4. ALL WATER LINE FITTINGS SHALL BE MECHANICAL JOINT DUCTILE IRON WITH A MINIMUM TENSILE STRENGTH OF 25,000 PSI AND WITH A WALL THICKNESS EQUIVALENT OF DUCTILE IRON CLASS 54 AND A WORKING PRESSURE RATING OF 350 PSI.

5. ALL WATER & SANITARY SEWER MAINS SHALL MAINTAIN 42 INCHES OF COVER BELOW PROPOSED GRADE MEASURED FROM GROUND SURFACE TO THE TOP OF THE MAIN. IF EXISTING GRADE IS LOWER THAN PROPOSED GRADE, INSTALL MAINS 42 INCHES BELOW EXISTING GRADE IF MAINS ARE TO BE LIVE PRIOR TO PLACEMENT OF PROPOSED FILL.

6. ALL MATERIALS, INSTALLATION AND TESTING SHALL BE IN CONFORMANCE WITH THE LOCAL UTILITY OWNER AND GOVERNING STATE STANDARDS AND SPECIFICATIONS. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING AND FOLLOWING ALL SPECIFICATIONS OF THESE LOCAL OR STATE GOVERNING AGENCIES, REGARDLESS IF THEY ARE OR ARE NOT SPECIFICALLY NOTED HEREIN. THE CONTRACTOR IS RESPONSIBLE FOR REVIEWING AND UNDERSTANDING ALL SPECIFICATIONS AND STANDARDS PRIOR TO COMMENCEMENT OF ANY WORK.

7. THE CONTRACTOR SHALL NOTIFY THE ENGINEER AND THE LOCAL UTILITY OWNER 48 HOURS PRIOR TO TESTING THE SANITARY SEWER MAINS. THE ENGINEER AND A REPRESENTATIVE FROM THE LOCAL UTILITY OWNER MUST BE ON-SITE TO WITNESS ALL TESTING.

8. ALL SANITARY SEWER MAINS MUST MAINTAIN A 10 FEET HORIZONTAL SEPARATION FROM ANY OTHER UTILITIES. UNDER ANY CIRCUMSTANCES, SPECIAL SECES AS APPROVED BY THE LOCAL UTILITY OWNER. SANITARY SEWER MAINS CAN HAVE AN 18" HORIZONTAL AND 18" VERTICAL SEPARATION, PROVIDED THE WATER MAIN IS ABOVE THE SEWER MAIN. SEE DETAILS.

9. WITHOUT REGARD TO THE MATERIALS ENCOUNTERED, ALL EXCAVATION SHALL BE UNCLASSIFIED. ANY REFERENCE TO ROCK, EARTH OR ANY OTHER MATERIAL ON THE PLAN, WHETHER IN NUMBER, WORDS, LETTERS, OR LINES IS FOR INFORMATION ONLY AND IS NOT TO BE AN INDICATION OF A CLASSIFIED EXCAVATION. UNAUTHORIZED EXCAVATION SHALL BE BACKFILLED AT THE CONTRACTOR'S EXPENSE WITH COMPACTED EARTH, GRAVEL, OR OTHER MATERIAL APPROVED AND DIRECTED BY THE ENGINEER. ANY UNSUITABLE MATERIAL ENCOUNTERED SHALL BE REMOVED FROM THE SITE AT THE CONTRACTOR'S EXPENSE.

10. THE CONTRACTOR SHALL BACKFILL TRENCHES PER THE TRENCH DETAIL ON THE DETAILS SHEET.

11. SMITHLAND WATER WORKS AND CRITTENDEN-LIVINGSTON COUNTY WATER DISTRICT HAS FIRST RIGHTS TO SALVAGE. THE CONTRACTOR SHALL NOT DEMOLISH, REMOVE, OR DISPOSE OF ANY ITEMS WITHOUT NOTIFYING SMITHLAND WATER WORKS. THE CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL OF DEBRIS, EXCESS MATERIALS, ETC. FROM THE PROJECT AND DISPOSE AT AN APPROVED LOCATION AT NO ADDITIONAL COST TO THE OWNER.

12. THE CONTRACTOR SHALL NOT STORE EXCAVATED MATERIAL IN LOCATIONS THAT BLOCK STORM DRAINAGE. THE CONTRACTOR IS RESPONSIBLE FOR ALL EROSION CONTROL AND STABILIZATION CAUSED FROM THE EXCAVATIONS ON THIS PROJECT. THE CONTRACTOR IS RESPONSIBLE FOR NOTIFYING ALL AGENCIES THAT IS CROSSED ONTO ADJACENT ROADWAYS FROM THE CONSTRUCTION OF THIS PROJECT ON A DAILY BASIS.

13. THE CONTRACTOR SHALL RESTORE ALL SURFACE CONDITIONS (CONCRETE, ASPHALT, GRAVEL, GRASS, LANDSCAPE, ETC.) DISTURBED AS A RESULT OF THE CONSTRUCTION OF THIS PROJECT TO A CONDITION EQUAL TO OR EXCEEDING PRE-CONSTRUCTION CONDITIONS.

14. THE CONTRACTOR SHALL HAVE A LICENSED PROFESSIONAL LAND SURVEYOR REPLACE ANY AND ALL SURVEY MONUMENTS, PROPERTY CORNERS, ETC., DISTURBED BY THE CONSTRUCTION OF THIS PROJECT AT NO ADDITIONAL COST TO THE OWNER.

15. CONTRACTOR SHALL PROTECT ALL SURROUNDING AREAS DURING THE COURSE OF CONSTRUCTION. CONTRACTOR SHALL REPAIR OR REPLACE TO A CONDITION EQUAL TO OR GREATER THAN THE PRE-CONSTRUCTION CONDITION. ANY DAMAGES TO ON-SITE OR OFF-SITE PROPERTIES OR APPURTENANCES CAUSED BY THE CONSTRUCTION ACTIVITIES AT NO ADDITIONAL COST TO THE OWNER.

16. PROTECTION OF EXISTING UTILITIES:
 AT THE TIME THE PLANS WERE DEVELOPED AND ARE TO BE USED AS BEST KNOWN ONLY BY THE CONTRACTOR. THE CONTRACTOR SHALL USE ALL MEANS AT HIS DISPOSAL TO ACCURATELY LOCATE ALL EXISTING UTILITIES, WHETHER SHOWN ON THESE UTILITIES DURING CONSTRUCTION OR NOT SHOWN ON THE PLANS. ANY DAMAGE TO UTILITIES DURING CONSTRUCTION THAT ARE SHOWN OR NOT SHOWN ON THE PLANS SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.

17. NOTICE TO UTILITY OWNERS OF THE START OF WORK: UTILITY. THE UTILITY OWNER SHALL BE NOTIFIED IN WRITING BY THE LOCAL UTILITY OWNER AND THE UTILITY OWNER OF WHEN WORK ON A UTILITY IS ANTICIPATED TO START. THE UTILITY CONTRACTOR SHALL AGAIN MAKE CONFIRMATION NOTICE TO THE SECTION ENGINEER AND THE UTILITY OWNER ONE WEEK BEFORE UTILITY WORK IS TO ACTUALLY START.

18. UTILITY SHUTDOWNS:
 THE CONTRACTOR SHALL NOT SHUT DOWN ANY ACTIVE AND IN-SERVICE MAINS. UTILITY LINES OR SERVICES FOR ANY REASON UNLESS SPECIFICALLY GIVEN PERMISSION TO DO SO BY THE UTILITY OWNER. THE OPENING AND CLOSING OF VALVES AND OPERATING OF OTHER ACTIVE UTILITY FACILITIES FOR MAIN, UTILITY LINE OR UTILITY SERVICE SHUT DOWNS ARE TO BE PERFORMED BY THE UTILITY OWNER UNLESS SPECIFIC PERMISSION IS GIVEN TO THE CONTRACTOR BY THE OWNER TO MAKE SHUTDOWNS. IF AND WHEN THE UTILITY OWNER GIVES THE CONTRACTOR PERMISSION TO SHUTDOWN MAINS, UTILITY LINES OR UTILITY SERVICES, THE CONTRACTOR SHALL ADVISE THE UTILITY OWNER AND THE LOCAL UTILITY OWNER OF THE UTILITY OWNER, ANY PERMISSION GIVEN BY THE UTILITY OWNER TO THE CONTRACTOR TO SHUTDOWN ACTIVE AND IN-SERVICE MAINS, UTILITY LINES OR SERVICES SHALL BE COMMUNICATED TO THE KYTC SECTION ENGINEER BY THE UTILITY OWNER THAT SUCH PERMISSION HAS BEEN GIVEN.

NOTICE TO CUSTOMERS OF UTILITY SHUT DOWNS IS SOMETIMES REQUIRED TO BE PERFORMED BY THE UTILITY CONTRACTOR. THE CONTRACTOR MAY BE REQUIRED; BUT, IS NOT LIMITED TO, MAKING NOTICE TO UTILITY CUSTOMERS IN A CERTAIN MINIMUM AMOUNT OF TIME IN ADVANCE OF THE SHUT DOWN AND BY WHATEVER MEANS OF COMMUNICATION SPECIFIED BY THE UTILITY OWNER, THE MEANS OF COMMUNICATION TO THE CUSTOMER MAY BE, BUT IS NOT LIMITED TO, A DOOR HANGER, NOTICE BY NEWSPAPER AD, TELEPHONE CONTACT, OR ANY COMBINATION OF COMMUNICATION METHODS DEEMED NECESSARY, CUSTOMARY, AND APPROPRIATE BY THE UTILITY OWNER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING CUSTOMERS OF ANY SHUTDOWNS FOR ANY UTILITY WORK. ANY PROCEDURE FOR REQUIREMENTS ON CUSTOMER NOTICE OF ANY SHUTDOWN PERFORMED BY THE UTILITY OWNER MAY REQUIRE THE CONTRACTOR TO PERFORM BY SPECIFICATION OR PLAN NOTE AND ANY EXPENSE THE CONTRACTOR MAY INCUR TO COMPLY WITH THE UTILITY OWNER'S SHUT DOWN PROCEDURE AND NOTICE TO CUSTOMERS SHALL BE CONSIDERED AN INCIDENTAL EXPENSE TO THE UTILITY CONSTRUCTION.

19. CUSTOMER SERVICE AND LATERAL ABANDONMENTS:
 WHEN TEMPORARY OR PERMANENT ABANDONMENT OF CUSTOMER WATER, GAS, OR SEWER SERVICES OR LATERALS ARE NECESSARY DURING RELOCATION OF UTILITIES INCLUDED IN THE CONTRACT, THE UTILITY CONTRACTOR SHALL PERFORM THESE ABANDONMENTS AS PART OF THE CONTRACT AS INCIDENTAL WORK. NO SEPARATE PAYMENT WILL BE MADE FOR SERVICE LINE AND LATERAL ABANDONMENTS. THE CONTRACTOR SHALL PROVIDE ALL LABOR, EQUIPMENT AND MATERIALS TO ACCOMPLISH THE TEMPORARY OR PERMANENT ABANDONMENT IN ACCORDANCE WITH THE PLANS. SPECIFICATIONS OR PERMANENT ABANDONMENT IN ACCORDANCE WITH THE PLANS, SPECIFICATIONS AND/OR AS DIRECTED BY THE ENGINEER. ABANDONMENT WILL INCLUDE, BUT IS NOT LIMITED TO, DIGGING DOWN ON A WATER MAIN OR CAPPING OR PLUGGING THE TAP. DIGGING DOWN ON A SEWER TAP, STOP AND OR CAPPING OR CAPPING THE TAP. DIGGING DOWN ON A SERVICE LINE OR LATERAL AT A LOCATION SHOWN ON THE PLANS OR AGREEABLE TO THE ENGINEER AND CAPPING OR PLUGGING, OR PERFORMING ANY OTHER WORK NECESSARY TO ABANDON THE SERVICE OR LATERAL TO SATISFACTORILY ACCOMPLISH THE FINAL RELOCATION.

20. STATIONS AND DISTANCES:
 ALL STATIONS AND DISTANCES, WHEN INDICATED FOR UTILITY PLACEMENT IN UTILITY RELOCATION PLANS OR SPECIFICATIONS, ARE APPROXIMATE; THEREFORE, SOME MINOR ADJUSTMENT MAY HAVE TO BE MADE DURING CONSTRUCTION TO FIT LOCAL CONDITIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY ADJUSTMENTS TO LOCATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING THE LOCATION OF UTILITY OR DESIGNATED REPRESENTATIVE AND UTILITY OWNER ENGINEER OR DESIGNATED REPRESENTATIVE. CHANGES IN LOCATION WITHOUT PRIOR APPROVAL SHALL BE REMEDIED BY THE CONTRACTOR AT HIS OWN EXPENSE IF THE UNAUTHORIZED CHANGE CREATES AN UNACCEPTABLE CONFLICT OR CONDITION.

21. RESTORATION:
 TEMPORARY AND PERMANENT RESTORATION OF PAVED OR STONE AREAS DUE TO UTILITY CONSTRUCTION SHALL BE CONSIDERED INCIDENTAL TO THE UTILITY WORK. NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK. TEMPORARY RESTORATION SHALL BE AS DIRECTED BY THE KYTC SECTION ENGINEER. PERMANENT RESTORATION SHALL BE "IN-KIND" AS EXISTING. RESTORATION OF SEED AND SOD AREAS WILL BE MEASURED AND PAID UNDER THE APPROPRIATE SEEDING AND SODDING BID ITEMS ESTABLISHED IN THE CONTRACT FOR ROADWAY WORK.

UTILITY PLANS

US 60
 UTILITY SUMMARY SHEET

GENERAL SUMMARY

ITEM	DESCRIPTION	UNIT	US 60	KY 70	TOTAL
0134	PLUG PIPE	EACH	3	1	4
02690	SAFELOADING	CY	16	0	16
05985	SEEDING AND PROTECTION	SY	1350	24	1374
14000	W AIR RELEASE VALVE 1 INCH	EACH	1	1	2
14019	W ENCASMENT STEEL BORED RANGE 3	LF	196	59	255
14019	W FIRE HYDRANT ASSEMBLY	EACH	2	1	3
14021	W FIRE HYDRANT REMOVE	EACH	2	1	3
14022	W FLUSH HYDRANT ASSEMBLY	EACH	2	0	2
14025	W METER 1 INCH	EACH	9	1	10
14058	W PIPE PVC 04 INCH	LF	652	0	652
14059	W PIPE PVC 06 INCH	LF	578	200	778
14074	W PLUG EXISTING MAIN	EACH	4	0	4
14077	W SERV PE/PLST LONG SIDE 1 IN	EACH	2	0	2
14082	W SERV PE/PLST SHORT SIDE 1 IN	EACH	7	1	8
14089	W TAPPING SLEEVE & VALVE SIZE 1	EACH	1	1	2
14094	W TIE-IN 06 INCH	EACH	2	1	3
14105	W VALVE 06 INCH	EACH	6	2	6
14156	W METER REMOVE	EACH	1	0	1
15000	S BYPASS PUMPING	LF	86	0	86
15017	S ENCASMENT STEEL BORED RANGE 4	LF	130	0	130
15023	S ENCASMENT STEEL OPEN CUT RANGE 4	LF	8	0	8
15090	S LATERAL SHORT SIDE 06 INCH	EACH	8	0	8
15092	S MANHOLE	EACH	7	0	7
15093	S MANHOLE ABANDON/REMOVE	EACH	4	0	4
15094	S MANHOLE ADJUST TO GRADE	EACH	1	0	1
15096	S MANHOLE CASTING WATERTIGHT	EACH	10	0	10
15097	S MANHOLE RECONSTRUCT INVERT	EACH	1	0	1
15099	S MANHOLE TAP EXISTING	EACH	2	0	2
15101	S MANHOLE WITH DROP	EACH	1	0	1
15112	S PIPE PVC 08 INCH	LF	1169	0	1169
15136	S LATERAL LOCATE	EACH	8	0	8

UTILITY COMPANIES
 SMITHLAND WATER WORKS
 310 WILSON AVENUE
 SMITHLAND, KY 42081
 PHONE: (270) 928-2446
 CONTACT: (270) 928-8546
 (270) 928-4619 CELL
 (270) 928-4830 WATER PLANT

CRITTENDEN-LIVINGSTON COUNTY WATER DISTRICT
 716 LIVINGSTON WATER PLANT ROAD
 SALEM, KY 42078
 PHONE: (270) 988-2680
 CONTACT: RONNIE SLAYDEN
 (270) 988-2060 WATER PLANT

FILE NAME: C:\DWORK\DIR\MMS7873\U15.DGN
 USFR: dcdr\stinger
 DATE PLOTTED: Mch 2, 2020

E-SHEET NAME: Power InRoads v8.11.9.397

GENERAL UTILITY NOTES AND INSTRUCTIONS APPLICABLE TO ALL UTILITY WORK MADE A PART OF THE ROAD CONSTRUCTION CONTRACT.
 THE CONTRACTOR SHOULD BE AWARE OF THE FOLLOWING UTILITY NOTES AND KYTC UTILITY BID ITEMS DESCRIPTIONS SHALL SUPERSEDE, REPLACE AND TAKE PRECEDENCE OVER ANY AND ALL CONFLICTING INFORMATION THAT MAY BE CONTAINED IN UTILITY OWNER SUPPLIED SPECIFICATIONS CONTAINED IN THE CONTRACT.
 WHERE INFORMATION MAY HAVE BEEN OMITTED FROM THESE NOTES, BID ITEM DESCRIPTIONS, UTILITY OWNER SUPPLIED SPECIFICATIONS OR PLANS; THE KYTC STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION SHALL BE REFERENCED.

GENERAL UTILITY NOTES
 1. ALL UTILITIES ARE SHOWN IN THEIR GENERAL LOCATION. PRIOR TO INITIATING CONSTRUCTION, ALL UTILITIES SHALL BE FIELD LOCATED. CONTRACTOR SHALL EXPOSE UTILITIES LOCATED WITHIN THE DISTURBED LIMITS UTILIZING MANUAL EXCAVATION WHERE NEEDED TO AVOID DAMAGE TO THE UTILITY. NOTIFY THE ENGINEER OF CONFLICTS WHICH MAY AFFECT PROPER COMPLETION OF THE WORK.
 2. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH REQUIRED UTILITY REPAIR OR REPLACEMENT.

2. PROPOSED PIPING IS SHOWN IN ITS PLANNED LOCATION. CONTRACTOR SHALL MAKE ALL MINOR ADJUSTMENTS OF THE LOCATION AND GRADE OF THE PROPOSED PIPING TO INSURE COMPLETE INTEGRATION OF ALL PROPOSED PIPING WITH EXISTING AND PROPOSED PIPING AND STRUCTURES. IN MAKING THESE MINOR ADJUSTMENTS, THE CONTRACTOR SHALL NOT DEVIATE BEYOND THE EXISTING OR PROPOSED EASEMENTS.

3. CONTRACTOR IS RESPONSIBLE FOR PROVIDING AND INSTALLING ALL LISTED AND UNLISTED FITTINGS, RISERS, OR PROTECTIVES. ALL FITTINGS LISTED ON THIS DRAWING OR THE SCHEDULES IN THE DRAWING THAT ARE REQUIRED FOR CONSTRUCTION TO PROVIDE A COMPLETE AND FUNCTIONAL SYSTEM, AT NO ADDITIONAL COST TO THE OWNER OR DEVELOPER.

4. ALL WATER LINE FITTINGS SHALL BE MECHANICAL JOINT DUCTILE IRON WITH A MINIMUM TENSILE STRENGTH OF 25,000 PSI AND WITH A WALL THICKNESS EQUIVALENT OF DUCTILE IRON CLASS 54 AND A WORKING PRESSURE RATING OF 350 PSI.

5. ALL WATER & SANITARY SEWER MAINS SHALL MAINTAIN 42 INCHES OF COVER BELOW PROPOSED GRADE MEASURED FROM GROUND SURFACE TO THE TOP OF THE MAIN. IF EXISTING GRADE IS LOWER THAN PROPOSED GRADE, INSTALL MAINS 42 INCHES BELOW EXISTING GRADE IF MAINS ARE TO BE LIVE PRIOR TO PLACEMENT OF PROPOSED FILL.

6. ALL MATERIALS, INSTALLATION AND TESTING SHALL BE IN CONFORMANCE WITH THE LOCAL UTILITY OWNER AND GOVERNING STATE STANDARDS AND SPECIFICATIONS. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING AND FOLLOWING ALL SPECIFICATIONS OF THESE LOCAL OR STATE GOVERNING AGENCIES, REGARDLESS IF THEY ARE OR ARE NOT SPECIFICALLY NOTED HEREIN. THE CONTRACTOR IS RESPONSIBLE FOR REVIEWING AND UNDERSTANDING ALL SPECIFICATIONS AND STANDARDS PRIOR TO COMMENCEMENT OF ANY WORK.

7. THE CONTRACTOR SHALL NOTIFY THE ENGINEER AND THE LOCAL UTILITY OWNER 48 HOURS PRIOR TO TESTING THE SANITARY SEWER MAINS. THE ENGINEER AND A REPRESENTATIVE FROM THE LOCAL UTILITY OWNER MUST BE ON-SITE TO WITNESS ALL TESTING.

8. ALL SANITARY SEWER MAINS MUST MAINTAIN A 10 FEET HORIZONTAL STRAKE FROM WATER MAINS UNDER ALL CIRCUMSTANCES. SPECIAL SECTORS AS APPROVED BY THE LOCAL UTILITY OWNER. SANITARY SEWER MAINS CAN HAVE AN 18' HORIZONTAL AND 18' VERTICAL SEPARATION, PROVIDED THE WATER MAIN IS ABOVE THE SEWER MAIN. SEE DETAILS.

9. WITHOUT REGARD TO THE MATERIALS ENCOUNTERED, ALL EXCAVATION SHALL BE UNCLASSIFIED. ANY REFERENCE TO ROCK, EARTH OR ANY OTHER MATERIAL ON THE PLAN, WHETHER IN NUMBER, WORDS, LETTERS, OR LINES IS FOR INFORMATION ONLY AND IS NOT TO BE AN INDICATION OF A CLASSIFIED EXCAVATION. UNAUTHORIZED EXCAVATION SHALL BE BACKFILLED AT THE CONTRACTOR'S EXPENSE WITH COMPACTED EARTH, GRAVEL, OR OTHER MATERIAL APPROVED AND DIRECTED BY THE ENGINEER. ANY UNSUITABLE MATERIAL ENCOUNTERED SHALL BE REMOVED FROM THE SITE AT THE CONTRACTOR'S EXPENSE.

10. THE CONTRACTOR SHALL BACKFILL TRENCHES PER THE TRENCH DETAIL ON THE DETAILS SHEET.
 11. SMITHLAND WATER WORKS AND CRITTENDEN-LIVINGSTON COUNTY WATER DISTRICT HAS FIRST RIGHTS TO SALVAGE. THE CONTRACTOR SHALL NOT DEMOLISH, REMOVE, OR DISPOSE OF ANY ITEMS WITHOUT NOTIFYING SMITHLAND WATER WORKS. THE CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL OF DEBRIS, EXCESS MATERIALS, ETC. FROM THE PROJECT AND DISPOSE AT AN APPROVED LOCATION AT NO ADDITIONAL COST TO THE OWNER.

12. THE CONTRACTOR SHALL NOT STORE EXCAVATED MATERIAL IN LOCATIONS THAT BLOCK STORM DRAINAGE. THE CONTRACTOR IS RESPONSIBLE FOR ALL EROSION CONTROL MEASURES TO BE IMPLEMENTED FROM THE EXCAVATION ON THIS PROJECT. THE CONTRACTOR IS RESPONSIBLE FOR NOTIFYING ADJACENT ROADWAYS THAT IS CHERISHED ONTO ADJACENT ROADWAYS FROM THE CONSTRUCTION OF THIS PROJECT ON A DAILY BASIS.

13. THE CONTRACTOR SHALL RESTORE ALL SURFACE CONDITIONS (CONCRETE, ASPHALT, GRAVEL, GRASS, LANDSCAPE, ETC.) DISTURBED AS A RESULT OF THE CONSTRUCTION OF THIS PROJECT TO A CONDITION EQUAL TO OR EXCEEDING PRE-CONSTRUCTION CONDITIONS.

14. THE CONTRACTOR SHALL HAVE A LICENSED PROFESSIONAL LAND SURVEYOR REPLACE ANY AND ALL SURVEY MONUMENTS, PROPERTY CORNERS, ETC., DISTURBED BY THE CONSTRUCTION OF THIS PROJECT AT NO ADDITIONAL COST TO THE OWNER.
 15. CONTRACTOR SHALL PROTECT ALL SURROUNDING AREAS DURING THE COURSE OF CONSTRUCTION. CONTRACTOR SHALL REPAIR OR REPLACE TO A CONDITION EQUAL TO OR GREATER THAN THE PRE-CONSTRUCTION CONDITION. ANY DAMAGES TO ON-SITE OR OFF-SITE PROPERTIES OR APURTENANCES CAUSED BY THE CONSTRUCTION ACTIVITIES AT NO ADDITIONAL COST TO THE OWNER.

16. PROTECTION OF EXISTING UTILITIES:
 AT THE TIME THE PLANS WERE DEVELOPED AND ARE TO BE USED AS A GUIDE ONLY BY THE CONTRACTOR. THE CONTRACTOR SHALL USE ALL MEANS AT HIS DISPOSAL TO ACCURATELY LOCATE ALL EXISTING UTILITIES, WHETHER SHOWN ON THESE UTILITIES DURING CONSTRUCTION OR NOT SHOWN ON THE PLANS. ANY DAMAGE TO EXISTING UTILITIES DURING CONSTRUCTION THAT ARE SHOWN OR NOT SHOWN ON THE PLANS SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.

17. NOTICE TO UTILITY OWNERS OF THE START OF WORK:
 ONE MONTH BEFORE COMMUNICATION TO THE LOCAL UTILITY OWNER AND THE LOCAL UTILITY OWNER SHALL MAKE SURE THAT THE LOCAL UTILITY OWNER AND THE LOCAL UTILITY CONTRACTOR SHALL AGAIN MAKE CONFIRMATION NOTICE TO THE LOCAL UTILITY CONTRACTOR AND THE UTILITY OWNER ONE WEEK BEFORE UTILITY WORK IS TO ACTUALLY START.

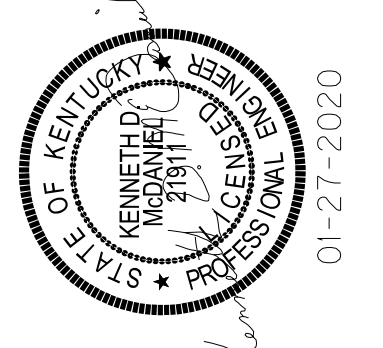
18. UTILITY SHUTDOWNS:
 THE CONTRACTOR SHALL NOT SHUT DOWN ANY ACTIVE AND IN-SERVICE MAINS, UTILITY LINES OR SERVICES FOR ANY REASON UNLESS SPECIFICALLY GIVEN PERMISSION TO DO SO BY THE UTILITY OWNER. THE OPENING AND CLOSING OF VALVES AND OPERATING OF OTHER ACTIVE UTILITY FACILITIES FOR MAIN, UTILITY LINE OR UTILITY SERVICE SHUT DOWNS ARE TO BE PERFORMED BY THE UTILITY OWNER UNLESS SPECIFIC PERMISSION IS GIVEN TO THE CONTRACTOR BY THE OWNER TO MAKE SHUTDOWNS. IF AND WHEN THE UTILITY OWNER GIVES THE CONTRACTOR PERMISSION TO SHUTDOWN MAINS, UTILITY LINES OR UTILITY SERVICES, THE CONTRACTOR SHALL BE REQUIRED TO FOLLOW ANY PROCEDURES AND RESTRICTIONS OF THE UTILITY OWNER. ANY PERMISSION GIVEN BY THE UTILITY OWNER TO THE CONTRACTOR TO SHUTDOWN ACTIVE AND IN-SERVICE MAINS, UTILITY LINES OR SERVICES SHALL BE COMMUNICATED TO THE KYTC SECTION ENGINEER BY THE UTILITY OWNER THAT SUCH PERMISSION HAS BEEN GIVEN.
 NOTICE TO CUSTOMERS OF UTILITY SHUT DOWNS IS SOMETIMES REQUIRED TO BE PERFORMED BY THE UTILITY CONTRACTOR. THE CONTRACTOR MAY BE REQUIRED; BUT, IS NOT LIMITED TO, MAKING NOTICE TO UTILITY CUSTOMERS IN A CERTAIN MINIMUM AMOUNT OF TIME IN ADVANCE OF THE SHUT DOWN AND BY WHATEVER MEANS OF COMMUNICATION SPECIFIED BY THE UTILITY OWNER, THE MEANS OF COMMUNICATION TO THE CUSTOMER MAY BE; BUT IS NOT LIMITED TO, A DOOR HANGER, NOTICE BY NEWSPAPER AD, TELEPHONE CONTACT, OR ANY COMBINATION OF COMMUNICATION METHODS DEEMED NECESSARY, CUSTOMARY, AND APPROPRIATE BY THE UTILITY OWNER. THE CONTRACTOR SHALL FOLLOW ALL PROCEDURES AND RESTRICTIONS OF THE UTILITY OWNER TO MAKE SURE THAT THE UTILITY OWNER IS FULLY ADVISED OF THE REQUIREMENTS ON CUSTOMER NOTICE.

19. CUSTOMER SERVICE AND LATERAL ABANDONMENTS:
 WHEN TEMPORARY OR PERMANENT ABANDONMENT OF CUSTOMER WATER, GAS, OR SEWER SERVICES OR LATERALS ARE NECESSARY DURING RELOCATION OF UTILITIES INCLUDED IN THE CONTRACT, THE UTILITY CONTRACTOR SHALL PERFORM THESE ABANDONMENTS AS PART OF THE CONTRACT AS INCIDENTAL WORK. NO SEPARATE PAYMENT WILL BE MADE FOR SERVICE LINE AND LATERAL ABANDONMENTS. THE CONTRACTOR SHALL PROVIDE ALL LABOR, EQUIPMENT AND MATERIALS TO ACCOMPLISH THE TEMPORARY OR PERMANENT ABANDONMENT IN ACCORDANCE WITH THE PLANS, SPECIFICATIONS OR PERMANENT ABANDONMENT IN ACCORDANCE WITH THE PLANS, SPECIFICATIONS AND/OR AS DIRECTED BY THE ENGINEER. ANY ABANDONMENT MAY INCLUDE, BUT IS NOT LIMITED TO, DIGGING DOWN ON A WATER MAIN AND PLUGGING OR CAPPING THE TAP, DIGGING DOWN ON A SEWER TAP, STOP AND OR CAPPING OR PLUGGING THE TAP, DIGGING DOWN ON A SERVICE LINE OR MAIN AND PLUGGING OR CAPPING THE TAP, DIGGING DOWN ON A SERVICE LINE OR LATERAL AT A LOCATION SHOWN ON THE PLANS OR AGREEABLE TO THE ENGINEER AND CAPPING OR PLUGGING, OR PERFORMING ANY OTHER WORK NECESSARY TO ABANDON THE SERVICE OR LATERAL TO SATISFACTORILY ACCOMPLISH THE FINAL RELOCATION.

20. STATIONS AND DISTANCES:
 ALL STATIONS AND DISTANCES, WHEN INDICATED FOR UTILITY PLACEMENT IN UTILITY RELOCATION PLANS OR SPECIFICATIONS, ARE APPROXIMATE; THEREFORE, SOME MINOR ADJUSTMENT MAY HAVE TO BE MADE DURING CONSTRUCTION TO FIT LOCAL CONDITIONS. CUSTOMER MAINS SHALL BE EXCESS OF 6 INCHES TO SECTION LOCATION. SEWER MAINS SHALL BE EXCESS OF 6 INCHES TO SECTION LOCATION. ANY EXCESS SHALL BE REMOVED AND APPROVED BY THE LOCAL UTILITY ENGINEER OR DESIGNATED REPRESENTATIVE AND UTILITY OWNER. ENGINEER OR DESIGNATED REPRESENTATIVE CHANGES IN LOCATION WITHOUT PRIOR APPROVAL SHALL BE REMEDIED BY THE CONTRACTOR AT HIS OWN EXPENSE IF THE UNAUTHORIZED CHANGE CREATES AN UNACCEPTABLE CONFLICT OR CONDITION.

21. RESTORATION:
 TEMPORARY AND PERMANENT RESTORATION OF PAVED OR STONE AREAS DUE TO UTILITY CONSTRUCTION SHALL BE CONSIDERED INCIDENTAL TO THE UTILITY WORK. NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK. TEMPORARY RESTORATION SHALL BE AS DIRECTED BY THE KYTC SECTION ENGINEER. PERMANENT RESTORATION SHALL BE "IN-KIND" AS EXISTING. RESTORATION OF SEED AND SOG AREAS WILL BE MEASURED AND PAID UNDER THE APPROPRIATE SEEDING AND SOODING BID ITEMS ESTABLISHED IN THE CONTRACT FOR ROADWAY WORK.

REVISED: 03-03-2020



UTILITY PLANS