



CITY OF ST PETERS
636.477.6600
bids@stpetersmo.net

May 13, 2015

RE: Addendum 2: Bid 14-158 – Willott Road Improvements – Bridge BRM 7305 (610) and Resurfacing 7305 (609)

To all Contract Bidders of Record,

This Addendum, consisting of 57 pages with attachments of Section L and N, and separate attachments consisting of 78 pages, is issued to modify, explain or correct the original Contract documents as noted below, and is hereby made a part of the Contract documents.

Questions/Clarifications

1. The addendum plan sheets 27 through 62 are labeled preliminary and not stamped by an engineer. Will a stamp set be issued before bid?

A revised plan set will be distributed with corrected plan sheets 27 through 67.

2. Would MoDOT and the City reconsider the OJT goal for the project? The project duration is only 180 calendar days long; the trainee would have to work 40 hrs a week for the entire 180 calendar days to achieve the 1,000 hrs. If you take out the typically weather days and a schedule that would be complete before the 180 maximum it is not possible to achieve the goal of 1,000 hrs.

The OJT goal is set by MoDOT will not be changed.

3. Does the City intend to allow the contractor to work at night or Sundays and holidays on the Willott Road Bridge Closure to meet the 60 calendar day requirement?

No night work will be permitted due to the proximity of proposed improvements to residential developments. Extended work hours, including weekends and holidays, will be permitted as described in revised Section N, Item 9. C. 3, included in this addendum.

4. Does this project a single bid for both the Bridge (7305 (610) and Resurfacing 7305 (609) or can a contractor bid one or the other or both?

The Willott Road Improvement project is being bid as a single project, which incorporates two federal funding budgets. The prospective bidder must bid on the entire project.

Questions/Clarifications (continued)

5. Will the City consider extending the 60 day time limit for the road closure?

Section N, Item 9. C. 3 is hereby revised as follows:

- 1. The portion of Willott Road, from Del Ray Drive to Crescent Hills Drive, may be closed for a single period of time, not to exceed sixty (60) consecutive calendar days. Willott Road must be reopened to two way traffic no later than August 28, 2015. Liquidated damages in the amount of one thousand (\$1,000) dollars per calendar day will be accessed for each calendar day Willott Road is not reopened to two (2) way travel (one traffic lane in each direction) beyond Friday, August 28, 2015 and/or over sixty (60) calendar days. This allowable road closure period coincides with the area school district schedule. It is the intent to reopen Willott Road to two way traffic before the start of the 2015-16 school year.*

Work within the closure area only, and only during the period of closure, may be performed Monday through Friday, from 7:00 A.M. to 7:00 P.M., and on Saturdays, Sundays and Holidays from 8:00 AM to 5:00 PM. No night work (work between the hours of 7:00 PM and 7:00 AM, Monday through Friday, or between 7:00 PM and 8:00 AM, Saturday, Sunday and Holidays) will be permitted on this project due to adjacent residential developments.

6. Based on the bid schedule for the project, the allowable dates for the Willott Road closure are not correct. What will be allowable dates?

As stated in revised Section N, Item 9. C. 3, Willott Road must be reopened to two way travel by August 28, 2015.

7. Are plans available for the pedestrian bridge to be called out to be salvaged?

Copies of the available as-builts for the pedestrian bridge are included with this addendum. The bridge was designed and constructed by Continental Bridge, of Alexandria, MN, Job # 92023.

8. What is the weight of the pedestrian bridge?

The City has no record of the bridge weight.

9. Where is the salvaged pedestrian bridge to be taken?

The salvaged pedestrian bridge is to be transported and unloaded by the contractor at the City's Lakeside 370 Park, located north of the Highway 370 – Harry S. Truman Road interchange.

10. The overhead electric lines are over the pedestrian bridge and will make it difficult to place a crane to lift the bridge. Will these lines be removed?

The lines in questions will not be removed. The contractor is to coordinate its operations with Ameren to and Charter to allow the bridge to be salvaged.

Questions/Clarifications (continued)

11. Under the utility adjustment portion of Section N, Item 3 on page 145, the City of St. Peters Water and Sewer description references an 8" sanitary sewer main in conflict and to be relocated by the contractor. Where is this main?

The conflicting sanitary sewer main is an 18" diameter main located under Willott Road, at approximately Sta. 109+40. There is no 8" sanitary sewer main. Section N, Item 8. B. 3 is hereby revised as follows:

3. City of St. Peters Water and Sewer: Approximately 300 lineal feet of eighteen (18") PVC sanitary sewer main is in conflict with the proposed bridge abutment located at near Sta. 109+40. This main cannot be relocated cost effectively until the existing bridge is removed. So as to not impede the contractor's schedule during the sixty (60) calendar day closure of Willott Road, the contractor will be responsible for the sanitary main relocation. The contract specifications include pay items and requirements for the contractor to temporarily pump sewage while the conflicting portion of the old 18" sanitary main is removed and the new 18" sanitary sewer main constructed.

The portions of the City's conflicting water main will be isolated by the end of May and abandoned in place. During the 60 day road closure, the City intends to install a new water main across Willott Road at approximately Sta. 110+60. This installation will be coordinated with the contractor so as not to interfere with bridge, culvert and sanitary construction. The City's intent is to install the new water main across Willott Road while the pavement is removed. In addition, the City expects to have a directional boring contractor on site to install a water main along the south side of Willott Road, under the creek and proposed Willott Road culvert (Sta. 110+00).

12. A water main appears to be in conflict with the proposed bridge. Will this water main be relocated prior to the start of work? Will there be an adjustment to the project schedule to accommodate this relocation?

The water main in question is owned by the City of St. Peters. The portions of the conflicting main will be isolated by the end of May and abandoned. During the 60 day road closure, the City intends to install a new water main across Willott Road at approximately Sta. 110+60. This installation will be coordinated with the contractor so as not to interfere with bridge, culvert and sanitary construction. The City's intent is to install the new water main across Willott Road while the pavement is removed. In addition, the City expects to have a directional boring contractor on site to install a water main along the south side of Willott Road, under the creek and proposed Willott Road culvert (Sta. 110+00). The city's work will be coordinated so as not to interfere with the contractor. No adjustment to Willott closure schedule is necessary.

13. There is no quantity for placement of Type 5 Aggregate for the 7305(609) portion of the project. Is not rock to be placed?

Placement of Type 5 Aggregate based is an incidental item for the work associated with the 7305(609) portion of the project. Placement of Type 5 Aggregate is considered incidental to the unit cost provided for Line Item 7 "Removal and Replacement of 8" Concrete Pavement" Line Item 10 "Removal and Replacement of Approach Pavement" and Line Item 14 "Removal and Replacement of Curb and Gutter. The technical descriptions for Line Items 10 and 14 in Section L have been revised to clarify this.

Questions/Clarifications (continued)

14. MoDOT specs require 1-¼" diameter dowel bars, but the bid specifications state 1" diameter dowel bars. What size bars are to be used?

The Contractor is to use one (1") inch diameter dowel bars as stated in the bid specifications.

15. I am requesting that the Vyking Wall System be added as an approved equal for the "Modular Block Wall" included in the above mentioned project.

Vyking Wall System by Stockman Stone Works is approved to be considered an approved equal.

16. The relocated power pole on the north side of Willott Road, at approximately Sta. 108+10, appears to be in conflict with the proposed sidewalk. Will this be moved?

The proposed sidewalk will be shifted slightly south. The pole in question was surveyed and should be in the correction location.

17. Section L, Item 25 of the contract specifications is revised as follows to identify clean fill disposal requirements and available locations.

DISPOSAL OF SPOIL AND EXCESS MATERIALS: *All spoil material generated by the project shall be disposed at a location approved by the City prior to removal from the project area. All costs associated with spoil material disposal shall be considered incidental to the work associated with this contract.*

Unless otherwise directed by the City, all clean fill spoil material (broken concrete, soil and rock) generated by the project is to be transported by the contractor to one of the following locations:

- Saint Peters Municipal Golf Course located at 200 Salt Lick Road, Saint Peters, Missouri*
- Intersection of Main Street and Salt River Road, just north of the rail road tracks in Old Towne St. Peters, Missouri.*
- North Iffrig Road, at its intersection with the St. Peters Old Towne Levee, St. Peters, Missouri*

The contractor is responsible for proper transport and dumping of all clean fill delivered to these locations. The dumped material will be placed by a third party.

All pavement, curb and gutter and sidewalks removed shall be broken up in pieces that are generally recognized as one-man riprap, 18" square size or smaller.

It is anticipated there will be sufficient capacity at the above referenced sites to accept all of the clean fill material generated by the project. In the event these sites can no longer accept clean fill material from the project, the contractor may dispose of this material at an alternate, properly permitted location, approved by the City. The contractor may also use the Metrofill Disposal Facility, located at the intersection of Friedens Road and Arena Parkway, St. Charles. The City has an agreement with the Metrofill Facility and there will be no disposal fees charged to the contractor for the Willott Road Improvement Project.

Questions/Clarifications (continued)

Certain organic spoil material may be disposed at City of St. Peters Earth Center, located at 115 Ecology Drive for a fee. The Contractor can obtain information regarding the types of material accepted, hours of operations and disposal fees by calling 636-477-6600, extension 1573.

18. The Technical descriptions for Line Items 7, 10 and 14, stated in Section L of the contract specifications have been updated to reference Section L, Item 25 above.

Attachments

- Section L – 28 pages
- Section N – 24 pages
- As-Built Plan Sheets 1 and 2 – Pedestrian Bridge – 2 pages – separate attachment
- Final Plan – Willott Road Bridge Replacement 7305(610), dated November 26, 201, by Horner and Shifrin – 76 pages – separate attachment

When submitting your bid, please include the following:

- Section O - Acknowledge receipt of Addenda 1 and 2

Thank you,

City of St. Peters
bids@stpetersmo.net

SECTION L STANDARD SPECIFICATIONS

1. **PROPOSED WORK:** The City of St. Peters, Missouri, is requesting sealed proposals for the for the removal and replacement of eight (8") inch concrete pavement with four (4") inch Type 5 aggregate base, diamond grinding surface treatment, concrete curb and gutter with four (4") Type 5 aggregate base, concrete sidewalk removal and replacement, installation of ADA compliant accessible ramps, modification and replacement of signal components, storm sewer improvements and removal and replacement of pavement markings and other appurtenances. Included in the proposal is the Willott Road Bridge replacement over Spencer Creek. Bridge Improvements include Willott Road over Spencer Creek bridge replacement, lane addition along Willott Road west of Jungermann Road, sidewalk and ADA improvements, bike trail/culvert crossing, signals and lighting.
2. Unless approved by the engineer, all work shall be performed Monday through Friday, from 7:00 A.M. to 6:00 P.M. All weekend work shall be permitted only by written approval from the City of Saint Peters; weekend shall be defined as 6:00 P.M. Friday thru 7:00 A.M. Monday.
3. **GOVERNING STANDARD:** Except as modified or supplemented herein, all work under this contract shall conform to all the applicable requirements of the 2011 edition of the Missouri Standard Specifications for Highway Construction. Any items not covered in Missouri Standard Specifications shall conform to the City of St. Peters Design Criteria and Standard Specifications for Street Construction. All storm sewer work shall conform to the most current edition of the Saint Louis Metropolitan Sewer District Specifications.
4. **WORK LOCATIONS:** All work shall take place entirely within the public right of way of Willott Road from approximately 30 feet east of the centerline of Mid Rivers Mall Drive and Willott Road to approximately 50 feet east of centerline of Jungermann Road and Willott Road, as shown in the project locations map located in Section M of this document.
5. **MATERIAL TESTING:** All construction inspections and material testing will be performed by MODOT certified and registered testing agency. All technician who perform, or are required by FHWA to witness, such sampling and testing shall be deemed as qualified by virtue of successfully completing requirements MoDOT EGP 106.18 Technician Certification Program, for that specific technical area. All testing shall be the responsibility of the City of Saint Peters.
6. **UTILITY LOCATES:** The existence and approximate location of utility facilities known to exist, as shown on the plans, are based upon the best information available to the City at this time. This information is provided by the City "as-is" and the City expressly disclaims any representation or warranty as to the completeness, accuracy, or suitability of the information for any use. Reliance upon this information is done at the risk and peril of the user, and the City shall not be liable for any damages that may arise from any error in the information. It is, therefore, the responsibility of the contractor to verify the above listing information indicating existence, location and status of any facility. Such verification includes direct contact with Missouri One Call (800 Dig Rite) and the listed utilities.

The Contractor is responsible for obtaining the locations and verifying the depths of all utilities within the project area. The contractor shall be solely responsible and liable for incidental and consequential damage to any utility facilities or interruption of the service caused by it or its subcontractors operation. The contractor shall hold and save harmless the City from damages to any utility facilities interruption of service by it or it's subcontractor's operation.

It shall be noted by the contractor that the City of St. Peters is a member of Missouri One Call (800 Dig Rite). Some work on this project may be in the vicinity of MoDOT utility facilities, which includes but is not limited to traffic signal cables, highway lighting circuits, ITS cables, cathodic protection cables, etc. Prior to beginning work, the contractor shall request locates from Missouri One Call.

The contractor shall also complete the Notice of Intent to Perform Work form located at the Missouri Department of Transportation website:

<http://www.modot.mo.gov/asp/intentToWork.shtml>

The contractor shall submit the form over the web (preferred method) or by fax to the numbers on the printed form. The notice must be submitted a minimum of 2 and a maximum of 10 working days prior to excavation just as Missouri One Call requires.

7. **TRAFFIC CONTROL:** The Contractor shall be responsible for the supply, placement, and maintenance of all appropriate barricades and signs for traffic control, both vehicular and pedestrian, and to protect the completed work within the work area, in accordance with the latest edition of the Federal Highway Administrations Manual on Uniform Traffic Control Devices (MUTCD). The City reserves the right to require additional traffic and pedestrian control at any time during performance of this contract.

A minimum of one (1) week prior to the start of work, the Contractor shall prepare and provide a traffic control plan for review and approval by the City of St. Peters. The City reserves the right to make any modifications to the traffic control plan shown in the project plans and additions to the traffic control plan provided by the Contractor at no additional cost to the City. Any additional devices required for said modifications will be paid for at the contract unit price.

Said contractor provided work zone traffic management plan and work zone traffic control devices shall be in accordance with Missouri Standard Specifications for Highway Construction 2011 and current edition of the Manual On Uniform Traffic Control Devices (MUTCD) – 2009, as well as Work Zone Traffic Management Plan provisions stated in Section N, Item 9.

8. **NO SECOND-TIER SUBCONTRACTING STATEMENT:** Second tier subcontracting will not be permitted on this project. It will be the responsibility of the contractor to insure that his subcontractors do not, in turn, subcontract any portion of the work specified for this project.
9. **BUY AMERICA REQUIREMENT:** On all federal-aid projects, the contractor's attention is directed to Title 23, CFR, titled *Buy America Requirements*. Where steel or iron products to be permanently incorporated into the contract work, steel and iron materials shall be manufactured in the USA except for "minor usage" as described in section 106 of Missouri Standard Specifications for Highway Construction, 2011. Any steel products used on the project qualifying for the "Buy America Requirement" will require proper supporting documentation and approval prior to delivery, storage or installation within the project limits. Any steel product qualifying for the "Buy America Requirement" delivered, stored or installed without proper documentation or approval shall be removed at contractor's expense until approved by the city.
10. **CURB AND AREA INLET EROSION AND SEDIMENT PROTECTION:** The contractor shall provide sufficient protection to prevent sediment from entering the intake points of all curb and area inlets that have the potential to receive storm water runoff from excavated areas or areas that have recently placed pavement (asphalt or concrete). This inlet protection shall be installed and periodically inspected and maintained and/or replaced by the contractor for the duration of the project. The Contractor is permitted to remove the inlet protection if approved prior to such action by the Engineer. All materials, labor and equipment required to provide curb and area inlet erosion and sediment protection shall be considered incidental to the work associated with this project, except as noted on the plans. Additional payment will only be provided for inlet erosion protection as noted on the plans.
11. **STANDARDIZED CHANGED CONDITION CLAUSES**
 - (a) Except as provided in paragraph (b) of this section, the following changed conditions contract clauses shall be made part of, and incorporated in, each highway construction project approved under 23 U.S.C. 106:

(1) *Differing site conditions.* (i) During the progress of the work, if subsurface or latent physical conditions are encountered at the site differing materially from those indicated in the contract or if unknown physical conditions of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in the work provided for in the contract, are encountered at the site, the party discovering such conditions shall promptly notify the other party in writing of the specific differing conditions before the site is disturbed and before the affected work is performed.

(ii) Upon written notification, the engineer will investigate the conditions, and if it is determined that the conditions materially differ and cause an increase or decrease in the cost or time required for the performance of any work under the contract, an adjustment, excluding anticipated profits, will be made and the contract modified in writing accordingly. The engineer will notify the contractor of the determination whether or not an adjustment of the contract is warranted.

(iii) No contract adjustment which results in a benefit to the contractor will be allowed unless the contractor has provided the required written notice.

(iv) No contract adjustment will be allowed under this clause for any effects caused on unchanged work. (This provision may be omitted by the STD's at their option.)

(2) *Suspensions of work ordered by the engineer.* (i) If the performance of all or any portion of the work is suspended or delayed by the engineer in writing for an unreasonable period of time (not originally anticipated, customary, or inherent to the construction industry) and the contractor believes that additional compensation and/or contract time is due as a result of such suspension or delay, the contractor shall submit to the engineer in writing a request for adjustment within 7 calendar days of receipt of the notice to resume work. The request shall set forth the reasons and support for such adjustment.

(ii) Upon receipt, the engineer will evaluate the contractor's request. If the engineer agrees that the cost and/or time required for the performance of the contract has increased as a result of such suspension and the suspension was caused by conditions beyond the control of and not the fault of the contractor, its suppliers, or subcontractors at any approved tier, and not caused by weather, the engineer will make an adjustment (excluding profit) and modify the contract in writing accordingly. The contractor will be notified of the engineer's determination whether or not an adjustment of the contract is warranted.

(iii) No contract adjustment will be allowed unless the contractor has submitted the request for adjustment within the time prescribed.

(iv) No contract adjustment will be allowed under this clause to the extent that performance would have been suspended or delayed by any other cause, or for which an adjustment is provided or excluded under any other term or condition of this contract.

(3) *Significant changes in the character of work.* (i) The engineer reserves the right to make, in writing, at any time during the work, such changes in quantities and such alterations in the work as are necessary to satisfactorily complete the project. Such changes in quantities and alterations shall not invalidate the contract nor release the surety, and the contractor agrees to perform the work as altered.

(ii) If the alterations or changes in quantities significantly change the character of the work under the contract, whether such alterations or changes are in themselves significant changes to the character of the work or by affecting other work cause such other work to become significantly different in character, an adjustment, excluding anticipated profit, will be made to the contract. The basis for the adjustment shall be agreed upon prior to the performance of the work. If a basis cannot be agreed upon, then an adjustment will be made either for or against the contractor in such amount as the engineer may determine to be fair and equitable.

(iii) If the alterations or changes in quantities do not significantly change the character of the work to be performed under the contract, the altered work will be paid for as provided elsewhere in the contract.

(iv) The term "significant change" shall be construed to apply only to the following circumstances:

(A) When the character of the work as altered differs materially in kind or nature from that involved or included in the original proposed construction; or

(B) When a major item of work, as defined elsewhere in the contract, is increased in excess of 125 percent or decreased below 75 percent of the original contract quantity. Any allowance for an increase in quantity shall apply only to that portion in excess of 125 percent of original contract item quantity, or in case of a decrease below 75 percent, to the actual amount of work performed.

(b) The provisions of this section shall be governed by the following:

(1) Where State statute does not permit one or more of the contract clauses included in paragraph (a) of this section, the State statute shall prevail and such clause or clauses need not be made applicable to Federal-aid highway contracts.

(2) Where the State transportation department has developed and implemented one or more of the contract clauses included in paragraph (a) of this section, such clause or clauses, as developed by the State transportation department may be included in Federal-aid highway contracts in lieu of the corresponding clause or clauses in paragraph (a) of this section. The State's action must be pursuant to a specific State statute requiring differing contract conditions clauses. Such State developed clause or clauses, however, must be in conformance with 23 U.S.C., 23 CFR and other applicable Federal statutes and regulations as appropriate and shall be subject to the Division Administrator's approval as part of the PS&E.

(c) In the case of a design-build project, STDs are strongly encouraged to use "suspensions of work ordered by the engineer" clauses, and may consider "differing site condition" clauses and "significant changes in the character of work" clauses which are appropriate for the risk and responsibilities that are shared with the design-builder.

[56 FR 37004, Aug. 2, 1991; 57 FR 10062, Mar. 23, 1992, as amended at 67 FR 75925, Dec. 10, 2002]

12. PORTLAND CEMENT CONCRETE: Unless stated otherwise in this document, all materials used for this project shall be in accordance with Missouri Standard Specifications for Highway Construction - 2011.
13. UTILITY LOCATES: The Contractor is responsible for obtaining the locations and verifying the depths of all utilities within the project area.
14. EXCAVATION and BACKFILLING: Existing grade shall be excavated to allow for the placement of sidewalk, accessible ramps and pavement as specified. Excavation shall be done in such a manner as to minimize property damage. All pavement removal shall require removing and re-establishing 4" type 5 aggregate base below the existing 8" concrete slab for a total excavation of 12" below the existing pavement surface. All concrete pavement, approaches and curbs will be placed on a minimum of four (4") inch thick, Type 5 aggregate base, compacted to 90% density as by the modified proctor. All excavation and backfilling will be incidental to the items in which they are performed.
15. SUBGRADE PREPARATION: Subgrade shall be trimmed to a uniform, smooth surface and compacted to a minimum ninety (95%) percent density, as by standard proctor compaction test. If unstable conditions are found, subgrade is to be excavated to a depth that removes all unsuitable materials, then backfilled and compacted with Type 5 aggregate base. When unsuitable materials are present the contractor shall notify the engineer prior to any removal. The removal amount shall be determined by the engineer. Any un-approved removal of unsuitable material shall be replaced

by the contractor at the contractor's expense. Areas identified and approved by the engineer, the contractor will be compensated for replacement of unsuitable subgrade per the terms outlined in the 2011 edition of the Missouri Standard Specifications for Highway. All aggregate base is to be placed in compacted lifts, up to the required grade, which do not exceed six inches (4") in depth. All subgrade is to be inspected and approved by the engineer prior to placement of concrete. Concrete placed prior to inspection and approval by the engineer shall be done so at the complete risk of the Contractor and may be required to be removed at the contractor's sole expense.

16. FORMS: All forms shall be wood, metal, or other material approved by the engineer. All forms shall be straight and free from warp, having sufficient strength to resist the pressure of the concrete without displacement. All the forms shall be braced and staked so that they remain in both horizontal and vertical alignment until their removal. All forms and stakes shall remain in place for a minimum of twenty-four (24) hours after placement of concrete, unless otherwise approved by the City. Forms shall be removed without damage to the concrete after it has set.
17. WIDTH: All sidewalk, curb and gutter and slab replacements widths shall be determined in the field.
18. THICKNESS: Unless modified herein to and approved by the engineer, all new concrete sidewalk and replacement sidewalk sections replaced shall be no less than four (4") inches thick. All new and replacement concrete ADA compliant ramps shall be six (7") inches thick. All new and replacement concrete entrances and approach slabs shall be no less than eight (8") inches thick. All new and replacement concrete pavement shall be no less than eight (8') inches thick.
19. FINISHING: All concrete placed shall be struck off and edged level with existing sections, inlet structures, curbs, or driveways. All operations shall take place at the appropriate time during the curing process. Sidewalk surface shall be broom finished, except in handicap ramps. All slab replacements shall be finished in a method conducive to the diamond grinding that shall follow installation. At no time shall additional water be placed on the concrete during finishing operations, unless approved by the engineer. All slab replacements will be required to be installed prior to diamond grinding. All new slabs will be required to be diamond ground. No extra payment will be made to diamond grind new pavement.
20. CURING COMPOUND: After the free water has left the concrete surface, a water-emulsion, wax-based concrete curing compound, complying with ASTM C 309, Type 2 Class A; or approved equal, is to be applied evenly to all exposed surfaces of freshly finished concrete.
21. JOINT SEALANT: All expansion joints and control joints in diamond ground and new pavement shall be filled with a rubberized sealant material conforming to ASTM D-1190. Sealant shall be placed in accordance with all applicable provisions contained within Sections 502 and 1057 of the St. Louis County Standard Specifications for Highway Construction. All joints shall be thoroughly cleaned and dried before placement of sealant. Sealant material shall be properly heated, per all applicable manufacturers' recommendations, prior to use. Joints shall be filled uniformly and all excess material shall be removed with a squeegee or appropriate tool. No direct payment shall be made for sealant. Sealant shall be incidental to the pavement item performed.
22. PROTECTION: The Contractor shall be responsible to have materials available to protect the surface of the concrete against all weather conditions. Thermal blankets shall be used when concrete is being placed in cold weather and the temperature is expected to drop below thirty-five degrees (35°) Fahrenheit for a minimum of three (3) days. Concrete damaged from rain and/or frost shall be removed and replaced at the Contractor's expense.
23. RE-VEGETATION / YARD RESTORATION: All areas damaged during construction operations shall be backfilled and compacted thoroughly to the top of the finished sidewalk, and sloped gradually into the existing grade at a rate not to exceed 3:1 (horizontal: vertical). All disturbed areas greater than six (6") inches in width shall be repaired by Terra Seeding method. Areas to be repaired include depressions or tracks left by vehicles and/or equipment used by the Contractor. All costs associated with re-vegetation and yard restoration work shall be considered incidental to the work associated with this contract.

The City of St. Peters manufacturers compost located at the Earth Center Composting Facility, 100 Ecology Drive is available to the contractor at normal prices. The Contractor shall use the compost material to amend soil as required by the Terra Seeding method. Contact the Engineer or his representative for its availability. The City reserves the right to reject any backfill material used on this project at any time. All decoratively landscaped areas disturbed from construction must be repaired as close as possible to pre-construction conditions.

24. **INSPECTION:** The Director of Transportation or his designated representative will serve as the resident inspector on the site. Compaction of subgrade and determinations such as when to undercut the subgrade for base placement will be made by said person in conjunction with the Contractor's representative. MoDOT and/or FHWA officials may make inspections of the work and the Contractor shall grant them access to all parts of the work at any time. Acceptance testing shall be conducted by LPA or consultant hired by LPA. Inspector will be MoDOT Certified.
25. **DISPOSAL OF SPOIL AND EXCESS MATERIALS:** All spoil material generated by the project shall be disposed at a location approved by the City prior to removal from the project area. All costs associated with spoil material disposal shall be considered incidental to the work associated with this contract.

Unless otherwise directed by the City, all clean fill spoil material (broken concrete, soil and rock) generated by the project is to be transported by the contractor to one of the following locations:

- Saint Peters Municipal Golf Course located at 200 Salt Lick Road, Saint Peters, Missouri
- Intersection of Main Street and Salt River Road, just north of the rail road tracks in Old Towne St. Peters, Missouri.
- North Iffrig Road, at its intersection with the St. Peters Old Towne Levee, St. Peters, Missouri

The contractor is responsible for proper transport and dumping of all clean fill delivered to these locations. The dumped material will be placed by a third party.

All pavement, curb and gutter and sidewalks removed shall be broken up in pieces that are generally recognized as one-man riprap, 18" square size or smaller.

It is anticipated there will be sufficient capacity at the above referenced sites to accept all of the clean fill material generated by the project. In the event these sites can no longer accept clean fill material from the project, the contractor may dispose of this material at an alternate, properly permitted location, approved by the City. The contractor may also use the Metrofill Disposal Facility, located at the intersection of Friedens Road and Arena Parkway, St. Charles. The City has an agreement with the Metrofill Facility and there will be no disposal fees charged to the contractor for the Willott Road Improvement Project.

Certain organic spoil material may be disposed at City of St. Peters Earth Center, located at 115 Ecology Drive for a fee. The Contractor can obtain information regarding the types of material accepted, hours of operations and disposal fees by calling 636-477-6600, extension 1573.

ADD ALTERNATES

1.0 Description. This contract requires bidders to bid on additional contract work that will be considered for award. The award of this project does not guarantee work for all add alternate sections.

Routes	Proposal Section Description
Willott Road	Items 1- 123 – Base Bid
Willott Road	Item 124-125 - Add Alternate A
Willott Road	Items 126 - Add Alternate B

Note: See plans for a breakdown of all quantities for each add alternate section.

2.0 Consideration of Bids. The contractor shall submit a bid for each add alternate section. The City reserves the right to award, to the lowest responsible bidder, the combination of base plus add alternate sections that will allow the most work to be completed within the City's budget. If the City chooses to exercise this right, the award of add alternate sections will be selected in accordance with the following priorities:

1. Base + Add Alt A + Add Alt B
2. Base + Add Alt A
3. Base

2.1 The City reserves the right to award the combination of highest priority add alternate sections over the City's budget as long as the low bidder does not change and the award of the combination of highest priority alternate sections does not exceed more than ten percent or \$250,000 of the City's budget, whichever is less.

2.2 The City's budget is the basis for award of add alternates, but not the basis for award of the base section. The base section of the contract will be awarded or rejected in accordance with Division 100 of The Missouri Department of Transportation, Standard Specifications for Highway Construction, 2011.

2.3 The awarded bidder will be notified, on MoDOT's website, of the City's selection of the combination of add alternate sections to be awarded the day of the City meeting.

3.0 Bid Bond Requirements. The contractor shall be required to obtain a bid bond for 5% of the total bid amount for the base bid and all add alternates. This bid bond will be considered applicable to the proposed work for any option.

4.0 DBE Goal. The DBE contract goal percentage specified in the Request for Bid applies to work completed for the base bid and all add alternates. The DBE contract goal percentage will be considered applicable to the proposed work for any add alternate section that is awarded.

4.1 The bidder shall submit the completed "DBE Identification Submittal" information in accordance with the bid documents for the total DBE participation percentage for the base bid and all add alternates.

4.2 If the contract is awarded for less than the maximum total of all add alternates, the awarded bidder shall submit a modified "DBE Identification Submittal" form for the proportionately reduced work with the executed contract documents after award. The modified "DBE Identification Submittal" form shall specify the DBE firm(s) to be used to meet the DBE participation percentage identified in the bid submittal for the proportionately reduced work of the awarded add alternates.

4.2.1 With submittal of the modified "DBE Identification Submittal" form, the awarded bidder is not allowed to eliminate any DBE firm(s) previously identified to complete items of work for the awarded add alternates. The awarded bidder is only allowed to proportionately reduce the participation of previously identified DBE firm(s) on awarded add alternates or eliminate previously identified DBE firms for add alternates that were not awarded.

4.2.2 The failure of the awarded bidder to submit the modified "DBE Identification Submittal", listing actual, committed DBE participation percentage equal to or greater than the DBE participation percentage specified in the bid for all add alternates, may result in the bid being declared non responsive and may result in forfeiture of the bid surety bond or bid guaranty from the bidder.

TECHNICAL DESCRIPTION OF PROPOSAL ITEMS:

1. **CLEARING AND GRUBBING** - This work shall consist of clearing, grubbing, removing and disposing of vegetation within the limits of the right-of-way and easement areas. The contractor shall legally dispose of all excess materials off-site. Payment shall be made at the lump sum unit bid price. Contractor shall perform clearing and grubbing operations in accordance with Section 201 of the 2011 Missouri Standard Specifications for Highway Construction.
2. **REMOVAL OF IMPROVEMENTS** - This work shall consist of all removal items as noted on the plans and per St. Louis County Standard Specifications for Highway Construction. Contractor is responsible for removal of all necessary items to construct improvements as noted. Payment shall be made at the lump sum unit bid price.

The contractor shall saw cut pavement designated for removal to provide a smooth joint to the existing pavement. All saw cutting shall be incidental to the line item "REMOVAL OF IMPROVEMENTS". There shall be no direct pay for saw cutting.

Any pavement that is damaged as a result of saw cutting, excavation or breaking that was not scheduled to be removed shall be removed and replaced at the contractor's expense. Said damaged pavement shall be removed entirely from existing joint to existing joint. Any reduction in the entire slab removal shall be the discretion of the City of Saint Peters. Any existing pavement that is damaged that is not scheduled for removal and replacement shall be documented by contractor and shall be brought to the attention of the City of Saint Peters prior to any work. Any such pavement not documented and brought to the attention of the City of Saint Peters prior to work shall be considered the Contractor's responsibility and shall be replaced at the Contractor's expense.

3. **CLASS A EXCAVATION** - This work shall consist of excavating and removing material as indicated in the construction plans and within the limits of the right-of-way and easement areas. The contractor shall legally dispose of all excess materials off-site. Payment shall be made at the contract cubic yard (CY) unit price. Contractor shall perform excavation operations in accordance with the St. Louis County Standard Specifications for Highway Construction.
4. **COMPACTING EMBANKMENT** – This work shall consist of compacting embankment material as indicated in the construction plans and within the limits of the right-of-way and easement areas. The compacted material shall be clean and free of debris. Payment shall be made at the contract cubic

yard (CY) unit price. Contractor shall perform compaction operations in accordance with the St. Louis County Standard Specifications for Highway Construction.

5. TYPE 5 AGGREGATE BASE (4 IN. THICK) - This work shall consist of furnishing and installing 4" Type 5 aggregate base in accordance with St. Louis County Standard Specifications for Highway Construction. Incidental to this bid item are all cost associated with placement and any other items required to install as shown on the construction plans. Payment shall be made at the contract square yard (SY) unit price.
6. CONCRETE PAVEMENT (8" NON-REINFORCED) – This work shall consist of all labor, materials, and equipment required to construct eight (8") inch thick concrete pavement, with transverse and longitudinal joint reinforcement as specified in the plans and at the specific locations designated by the City.

All work shall comply with St. Louis County Standard Specifications for Highway Construction and City of St. Peters Design Criteria and Standard Specifications for Street Construction.

All transverse concrete pavement joints (Type G joints) shall comply with City of St. Peters Design Criteria and Standard Specifications for Street Construction, with reinforcement consisting of eighteen (18") inch long, one (1") inch diameter, smooth, epoxy coated dowels, placed one (1') foot on center or matching the existing transverse joint spacing of the adjacent undisturbed pavement section. The contractor shall drill adjacent pavement sections as needed to properly place transverse joint reinforcement. The free end of drilled dowels will require to be greased prior to concrete placement.

All longitudinal concrete pavement joints constructed adjacent to existing pavement (Type F joints) including undamaged curb and gutter, shall comply with City of St. Peters Design Criteria and Standard Specifications for Street Construction, with reinforcement consisting of thirty (30") inch long, number five epoxy coated reinforcement bars, placed thirty (30") inches on center. The longitudinal end joints will require number 5 bars to be drilled into existing undisturbed slabs to a depth of fifteen (15") inches. Longitude joints between separate pours will require keyway and bent bar installation. Longitude concrete pavement joints between slabs of continuous placement shall be constructed as Type B joints complying with City of St. Peters Design Criteria and Standard Specifications for Street Construction.

All pavement joints are to be sealed with rubberized joint sealant after placement.

All work described for Concrete Pavement (8" Non-Reinforced) shall be made at the contract square yard (SY) unit price.

7. REMOVE AND REPLACE CONCRETE PAVEMENT (8" NON-REINFORCED) – This work shall consist of all labor, materials, equipment and disposal required to remove and replace eight (8") inch thick concrete pavement, with transverse and longitudinal joint reinforcement and four (4") inch type five (5) aggregate base as specified below and at the specific locations designated by the City. All concrete slabs requiring replacement with integral curb and gutter will require curb replacement integral to the pavement. Said integral curb and gutter shall be incidental to the line item "REMOVE AND REPLACE CONCRETE PAVEMENT (8" NON-REINFORCED)". There shall be no direct pay for integral curb installation.

All concrete used for pavement replacement shall comply with Missouri Standard Specifications for Highway Construction (2011) and City of St. Peters Design Criteria and Standard Specifications for Street Construction. Said concrete pavement shall be replaced as specified below and standard drawing provided in Section M of this document.

The contractor shall saw cut pavement designated for replacement to provide a smooth joint to the existing pavement. All saw cutting shall be incidental to the line item "REMOVE AND REPLACE CONCRETE PAVEMENT (8" NON-REINFORCED)". There shall be no direct pay for saw cutting.

Any pavement that is damaged as a result of saw cutting, excavation or breaking that was not scheduled to be removed shall be removed and replaced at the contractor's expense. Said damaged pavement shall be removed entirely from existing joint to existing joint. Any reduction in the entire slab removal shall be the discretion of the City of Saint Peters. Any existing pavement that is damaged that is not scheduled for removal and replacement shall be documented by contractor and shall be brought to the attention of the City of Saint Peters prior to any work. Any such pavement not documented and brought to the attention of the City of Saint Peters prior to work shall be considered the Contractor responsibility and shall be replaced at the contractor's expense.

All pavement designated for replacement shall have four (4") of existing subgrade removed from beneath the existing pavement. Said remaining soil subgrade shall be compacted to a minimum ninety five (95%) percent density as determined by standard proctor, then backfilled with Type 5 aggregate base compacted to minimum ninety (95%) percent density as determined by standard proctor. All excavation, disposal, backfill and compaction operations shall be considered incidental to the unit cost provided for concrete pavement replacement (8").

All transverse concrete pavement joints (Type G joints) shall comply with City of St. Peters Design Criteria and Standard Specifications for Street Construction, with reinforcement consisting of eighteen (18") inch long, one (1") inch diameter, smooth, epoxy coated dowels, placed one (1') foot on center or matching the existing transverse joint spacing of the adjacent undisturbed pavement section. The contractor shall drill adjacent pavement sections as needed to properly place transverse joint reinforcement. The free end of drilled dowels will require to be greased prior to concrete placement.

All longitudinal concrete pavement joints constructed adjacent to existing pavement (Type F joints) including undamaged curb and gutter, shall comply with City of St. Peters Design Criteria and Standard Specifications for Street Construction, with reinforcement consisting of thirty (30") inch long, number five epoxy coated reinforcement bars, placed thirty (30") inches on center. The longitudinal end joints will require number 5 bars to be drilled into existing undisturbed slabs to a depth of fifteen (15") inches. Longitude joints between separate pours will require keyway and bent bar installation. Longitude concrete pavement joints between slabs of continuous placement shall be constructed as Type B joints complying with City of St. Peters Design Criteria and Standard Specifications for Street Construction.

All pavement joints are to be sealed with rubberized joint sealant after placement and diamond grinding.

Alternative non-destructive removal methods may be considered by the city on a case by case basis. Undisturbed subgrade from non-destructive removals may be reused pending the inspection and approval by the city.

Concrete over break slabs may require temporary backfilling prior to traffic lane openings as a result of project phasing. These temporary backfilled areas may require maintenance from rutting and settlement. Maintenance shall be the contractor's responsibility at no additional cost to the city. Over break areas may be filled with layers of minus rock and capped with concrete to avoid rutting and loss of material.

All clean fill material (no asphalt or millings) generated by this work is to be transported and disposed of by the contractor at the locations stated in Section L, Item 25 of this document.

All work described for Concrete Pavement Replacement 8" with 72 hour set concrete shall be made at the contract square yard (SY) unit price.

8. CONCRETE DIAMOND GRINDING – This work shall consist all labor, materials, equipment, clean up and disposal required to grind concrete pavement traffic lane surfaces to achieve the greater of a post profilographic trace of forty-five (45") inches per mile or a post profilographic trace measurement thirty-five (35%) percent less than a control profilographic trace measurement taken prior to the start of work. The control profilographic trace will be required prior to slab replacements. Profilographic

traces shall be required for each lane performed individually. The pre and post profilographic test per each lane shall be incidental to the diamond grinding. No direct payment will be made for profilographic testing.

All profilographic measurements shall be performed by the contractor and taken with a California-type measurement device in accordance with MoDOT Test Method TM 59. The profilograph line drawn by the profilograph will be referred to as the profile trace in these specifications.

In general, the contractor shall texture the entire pavement surface. Extra depth grinding to eliminate minor depressions in order to provide texturing on 100 percent of the pavement surface will not be required. The grinding contractor shall be responsible to grind the entire width of the road within twenty-four (24") inches of the existing curb. Areas near drainage inlets may require extra grinding to allow all surface water to drain into the existing throat. Any standing water as a result of grinding shall be unacceptable and corrective actions will be required to ensure proper drainage.

Proper disposal of all spoil materials, water and diamond grinding slurry shall be the responsibility of the contractor.

The contractor may use City of Saint Peters water to supply the diamond grinding operation. The City of Saint Peters Water Department will require a permit to obtain water from a local hydrant. Said permit may be obtained by contacting the City of Saint Peters Water Department.

All work specified above including the profilographic traces shall be considered incidental to the unit cost bid provided by the contractor diamond grinding. Payment shall be made at the contract square yard (SY) unit price.

9. CONCRETE APPROACH PAVEMENT - This work shall consist of placement and preparation of base material and construction of reinforced Concrete Approach Pavement in accordance with St. Louis County Standard Specifications for Highway Construction. Incidental to this bid item are all costs associated with placement and any other items required to install as shown on the construction plans. Payment shall be made at the contract square yard (SY) unit price.
10. **REMOVE AND REPLACE CONCRETE APPROACH PAVEMENT (8") – This work shall consist of all labor, materials, equipment and disposal required to remove and replace eight (8") inch thick concrete approach pavement, with four (4") inch type five (5) aggregate base, as specified below and at the specific locations designated by the City. All concrete slabs requiring replacement with integral curb and gutter will require curb replacement integral to the pavement. Said integral curb and gutter shall be incidental to the line item "REMOVE AND REPLACE CONCRETE APPROACH PAVEMENT (8)". There shall be no direct pay for integral curb installation.**

All concrete used for approach pavement replacement shall comply with Missouri Standard Specifications for Highway Construction (2011) and City of St. Peters Design Criteria and Standard Specifications for Street Construction. Said concrete pavement shall be replaced as specified below and standard drawing provided in Section M of this document.

The contractor shall saw cut approach pavement designated for replacement to provide a smooth joint to the existing pavement. All saw cutting shall be incidental to the line item "REMOVE AND REPLACE CONCRETE APPROACH PAVEMENT (8)". There shall be no direct pay for saw cutting.

Any pavement that is damaged as a result of saw cutting, excavation or breaking that was not scheduled to be removed shall be removed and replaced at the contractor's expense. Said damaged pavement shall be removed entirely from existing joint to existing joint. Any reduction in the entire slab removal shall be the discretion of the City of Saint Peters. Any existing pavement that is damaged that is not scheduled for removal and replacement shall be documented by contractor and shall be brought to the attention of the City of Saint Peters prior to any work. Any such pavement not documented and brought to the attention of the

City of Saint Peters prior to work shall be considered the Contractor responsibility and shall be replaced at the contractor's expense.

All approach pavement designated for replacement shall have four (4") of existing subgrade removed from beneath the existing pavement. Said remaining soil subgrade shall be compacted to a minimum ninety five (95%) percent density as determined by standard proctor, then backfilled with Type 5 aggregate base compacted to minimum ninety (95%) percent density as determined by standard proctor. All excavation, disposal, backfill and compaction operations shall be considered incidental to the unit cost provided for concrete pavement replacement (8").

All transverse concrete pavement joints (Type G joints) shall comply with City of St. Peters Design Criteria and Standard Specifications for Street Construction, with reinforcement consisting of eighteen (18") inch long, one (1") inch diameter, smooth, epoxy coated dowels, placed one (1') foot on center or matching the existing transverse joint spacing of the adjacent undisturbed pavement section. The contractor shall drill adjacent pavement sections as needed to properly place transverse joint reinforcement. The free end of drilled dowels will require to be greased prior to concrete placement.

All longitudinal concrete pavement joints constructed adjacent to existing pavement (Type F joints) including undamaged curb and gutter, shall comply with City of St. Peters Design Criteria and Standard Specifications for Street Construction, with reinforcement consisting of thirty (30") inch long, number five epoxy coated reinforcement bars, placed thirty (30") inches on center. The longitudinal end joints will require number 5 bars to be drilled into existing undisturbed slabs to a depth of fifteen (15") inches. Longitude joints between separate pours will require keyway and bent bar installation. Longitude concrete pavement joints between slabs of continuous placement shall be constructed as Type B joints complying with City of St. Peters Design Criteria and Standard Specifications for Street Construction.

All pavement joints are to be sealed with rubberized joint sealant after placement and diamond grinding.

Alternative non-destructive removal methods may be considered by the city on a case by case basis. Undisturbed subgrade from non-destructive removals may be reused pending the inspection and approval by the city.

Concrete over break on approach slabs may require temporary backfilling prior to traffic lane openings as a result of project phasing. These temporary backfilled areas may require maintenance from rutting and settlement. Maintenance shall be the contractor's responsibility at no additional cost to the city. Over break areas may be filled with layers of minus rock and capped with concrete to avoid rutting and loss of material.

All clean fill material (no asphalt or millings) generated by this work is to be transported and disposed of by the contractor at the locations stated in Section L, Item 25 of this document.

All work described for Concrete Pavement Replacement 8" with 72 hour set concrete shall be made at the contract square yard (SY) unit price.

11. CONVERT INLET TO MANHOLE AND ADJUST TO GRADE AND CONVERT LID TO LOCKDOWN COVER - This work shall consist of converting an existing inlet to a manhole and adjusting the manhole to grade in accordance with St. Louis County Standard Specifications for Highway Construction.

In addition, the lid for the manhole shall be converted to a lockdown 24" diameter lid.

Incidental to this bid item are all costs associated with converting and adjusting the existing structure and any other items required as shown on the construction plans. Payment shall be made at the contract unit price per each.

12. **REMOVE MANHOLE FRAME AND LID AND REPLACE WITH LOCKDOWN TYPE FRAME AND LID** - This work shall consist of all labor, materials, equipment and disposal required to remove the existing manhole frame and lid and replace with lockdown type frame and lid. The lockdown type lid shall have a heavy duty load rating with stainless steel cam type locking mechanisms and shall have a hinge attached safety type opening to 120 degrees while remaining attached. See section M of this document for a sample type of lockdown lid and diamond pattern installation requirements.

Any pavement or curb and gutter required to be replaced shall be constructed in accordance with Missouri Standard Specifications for Highway Construction (2011) and construction detail shown on the project plans. Any pavement required to be replaced shall be paid for by the unit cost for line item, "REMOVE AND REPLACE CONCRETE PAVEMENT (8" NON-REINFORCED)". Any curb and gutter required to be replaced shall be paid for by the unit cost for line item, "REMOVE AND REPLACE CURB AND GUTTER (2.5' WIDE)". All other work associated with the installation of the lockdown type lid shall be incidental. Payment shall be made at the contract unit price per each (EA).

13. **CURB AND GUTTER, VERTICAL** - This work shall consist of furnishing all necessary equipment and installing 2'-6" wide vertical curb and gutter (6" curb height) in accordance with St. Louis County Standard Specifications for Highway Construction. Incidental to this bid item are all costs associated with placement and any other items required to install as shown on the construction plans. Payment shall be made at the contract lineal foot (LF) unit price.

14. **REMOVE AND REPLACE CURB AND GUTTER, VERTICAL** - This work shall consist of all labor, materials, equipment and disposal required to remove and replace concrete curb (vertical and mountable) in various locations as shown on the project plans. All curb and gutter replaced shall comply with City of St. Peters Design Criteria and Standard Specifications for Street Construction, with reinforcement consisting of thirty (30") inch long, number five epoxy coated reinforcement bars, placed thirty (30") inches on center. The longitudinal end joints will require number 5 bars to be drilled into existing undisturbed slabs to a depth of fifteen (15") inches.

All concrete used for "Remove and Replace Curb and Gutter, Vertical" shall comply with Missouri Standard Specifications for Highway Construction (2011) and City of St. Peters Design Criteria and Standard Specifications for Street Construction. Said concrete curb and gutter will be replaced as specified below and standard drawing provided in Section M of this document.

All saw cutting required for proper curb and gutter replacement shall be incidental to the line item "REMOVE AND REPLACE CURB AND GUTTER, VERTICAL". There shall be no direct pay for saw cutting.

Any curb and gutter sections that are damaged as a result of saw cutting, excavation or breaking that was not scheduled to be removed shall be removed and replaced at the contractor's expense. Said damaged curb and gutter shall be removed entirely from existing joint to existing joint. Any reduction in the damage curb and gutter to be removed shall be the discretion of the City of Saint Peters. Any existing curb and gutter that is damaged and is not scheduled for removal and replacement shall be documented by contractor and shall be brought to the attention of the City of Saint Peters prior to any work. Any such curb and gutter not documented and brought to the attention of the City of Saint Peters prior to work shall be considered the Contractor responsibility and shall be replaced at the contractor's expense.

All curb and gutter designated for replacement shall have four (4") of existing subgrade removed from beneath the existing pavement. Said remaining soil subgrade shall be compacted to a minimum ninety five (95%) percent density as determined by standard proctor, then backfilled with Type 5 aggregate base compacted to minimum ninety (95%) percent density as determined by standard proctor. All excavation, disposal, backfill and

compaction operations shall be considered incidental to the unit cost provided for concrete pavement replacement (8").

All clean fill material (no asphalt or millings) generated by this work be transported and disposed of by the contractor at the locations stated in Section L, Item 25 of this document.

All work shall comply with the Missouri Standard Specifications for Highway Construction (2011). Payment shall be made at the contract linear foot (LF) unit price.

15. BRIDGE ANCHOR SECTION – This work shall consist of furnishing and installing Bridge Anchor Sections in accordance with St. Louis County Standard Specifications for Highway Construction. Incidental to this bid item are all cost associated with placement and any other items required to install as shown on the construction plans. Payment shall be made at the contract price per each.
16. TRANSITION SECTION – This work shall consist of furnishing and installing Transition Sections in accordance with St. Louis County Standard Specifications for Highway Construction. Incidental to this bid item are all cost associated with placement and any other items required to install as shown on the construction plans. Payment shall be made at the contract price per each.
17. CRASHWORTHY GUARDRAIL END TERMINAL – This work shall consist of furnishing and installing Crashworthy Guardrail End Terminals in accordance with St. Louis County Standard Specifications for Highway Construction. The length shall be 37'-6", which follows the St. Louis County Standard Drawing C606.32. Incidental to this bid item are all cost associated with placement and any other items required to install as shown on the construction plans. Payment shall be made at the contract price per each.
18. CHANNELIZER (TRIM-LINE) - This work shall consist of furnishing all necessary equipment and installing trim-line channelizers in accordance with Missouri Standard Specifications for Highway Construction and current edition of the Manual On Uniform Traffic Control Devices (MUTCD) – 2009. Incidental to this bid item are all costs associated with placement and any other items required to install as shown on the construction plans. Payment shall be made at the contract each unit price.
19. TYPE III BARRICADES – This work shall consist of furnishing, maintaining, cleaning, relocating and removing Type III Barricades in accordance with St. Louis County Standard Specifications. Incidental to this bid item are all cost associated with placement and any other items required to install as shown on the construction plans. Payment shall be made at the contract price per each.
20. TRAFFIC CONTROL SIGNS – This work shall consist of all labor, materials and equipment required to furnish, implement, maintain, relocate and remove work zone traffic control signs required to perform all work specified.

Temporary signing is included in this item. The Contractor shall be responsible for maintaining all traffic control devices throughout the duration of construction. All maintenance costs are considered incidental to this pay item.

A minimum of three (3) working days prior to the start of work, the Contractor shall prepare and provide a traffic control plan for review and approval by the City of St. Peters. The City reserves the right to make any modifications to the traffic control plan shown in the project plans and additional traffic control plan provided by the Contractor and at any time and at no additional cost to the City.

Said contractor provided work zone traffic management plan and work zone traffic control devices shall be in accordance with St. Louis County Standard Specifications for Highway Construction and current edition of the Manual On Uniform Traffic Control Devices (MUTCD) – 2009, as well as Work Zone Traffic Management Plan provisions stated in Section N, Item 7.

Payment shall be made at the contract square feet (SF) unit price.

21. CHANGEABLE MESSAGE SIGN, CONTRACTOR FURNISHED - This work shall consist of the contractor furnishing, maintaining, cleaning, relocating and removing Changeable Message Signs in accordance with Missouri Standard Specifications for Highway Construction. Incidental to this bid

item are all cost associated with placement and any other items required to install as shown on the construction plans. Payment shall be made at the contract price per each.

22. **ARROW PANELS** - This work shall consist of all labor, materials and equipment required to furnish, implement, maintain, relocate and remove as needed all work zone traffic control arrow panels required to perform all work specified. The traffic control arrow panels required shall meet all standards and specifications as defined in the current "Manual on Uniform Traffic Control Devices" for all project related traffic control. Payment shall be made at the contract unit bid price per each (EA).
23. **MOBILIZATION** - This work shall consist of all the necessary items to mobilize on the site to begin work and demobilize after completion of work. All work shall comply with St. Louis County Standard Specifications for Highway Construction. Payment shall be made at the lump sum unit bid price.
24. **CONTRACTOR FURNISHED SURVEYING AND STAKING** - This work shall consist of surveying and staking all improvements as required for construction of the project. Contractor is responsible for all staking and accuracy of surveys. Payment shall be made at the lump sum unit bid price.
25. **8" POLYVINYL CHLORIDE PIPE** - This work shall consist of furnishing and installing polyvinyl chloride pipe (PVC) Schedule 40 in accordance with St. Louis County Standard Specifications for Highway Construction and Saint Louis Metropolitan Sewer District Standard Specifications. Incidental to this bid item are all costs associated with placement and any other items required to install as shown on the construction plans. Backfill of the pipe shall be per the specifications and will be considered incidental. Payment shall be made at the contract lineal foot (LF) unit price.
26. **18" POLYVINYL CHLORIDE PIPE** - This work shall consist of furnishing and installing polyvinyl chloride pipe (PVC) Schedule 35 in accordance with St. Louis County Standard Specifications for Highway Construction and Saint Louis Metropolitan Sewer District Standard Specifications. Incidental to this bid item are all costs associated with placement and any other items required to install as shown on the construction plans. Backfill of the pipe shall be per the specifications and will be considered incidental. Payment shall be made at the contract lineal foot (LF) unit price.
27. **12" CLASS III REINFORCED CONCRETE PIPE** - This work shall consist of furnishing and installing 12" Class III Reinforced Concrete Pipe (RCP) in accordance with St. Louis County Standard Specifications for Highway Construction and Saint Louis Metropolitan Sewer District Standard Specifications. Incidental to this bid item are all costs associated with placement and any other items required to install as shown on the construction plans. Backfill of the pipe shall be per the specifications and will be considered incidental. Payment shall be made at the contract lineal foot (LF) unit price.
28. **15" CLASS III REINFORCED CONCRETE PIPE** - This work shall consist of furnishing and installing 15" Class III Reinforced Concrete Pipe (RCP) in accordance with St. Louis County Standard Specifications for Highway Construction and Saint Louis Metropolitan Sewer District Standard Specifications. Incidental to this bid item are all costs associated with placement and any other items required to install as shown on the construction plans. Backfill of the pipe shall be per the specifications and will be considered incidental. Payment shall be made at the contract lineal foot (LF) unit price.
29. **30" CLASS III REINFORCED CONCRETE PIPE** - This work shall consist of furnishing and installing 30" Class III Reinforced Concrete Pipe (RCP) in accordance with St. Louis County Standard Specifications for Highway Construction and Saint Louis Metropolitan Sewer District Standard Specifications. Incidental to this bid item are all costs associated with placement and any other items required to install as shown on the construction plans. Backfill of the pipe shall be per the specifications and will be considered incidental. Payment shall be made at the contract lineal foot (LF) unit price.
30. **PRECAST CONCRETE MANHOLE** - This work shall consist of installing a precast concrete manhole in accordance with St. Louis County Standard Specifications for Highway Construction and Saint Louis Metropolitan Sewer District Standard Specifications.

Incidental to this bid item are all costs associated with furnishing and installing the structure and any other items required as shown on the construction plans. Backfill of the manhole shall be per the specifications and will be considered incidental. Payment shall be made at the contract unit price per each.

31. 12" FLARED END SECTION - This work shall consist of furnishing and installing a 12" Flared End Section in accordance with St. Louis County Standard Specifications for Highway Construction and Saint Louis Metropolitan Sewer District Standard Specifications. Incidental to this bid item are all costs associated with placement and any other items required to install as shown on the construction plans. The price for 12" Flared End Sections shall include all costs for flared end section, concrete, toe walls, excavation and bedding and shall be paid at the contract unit price per each.

32. 30" FLARED END SECTION - This work shall consist of furnishing and installing a 30" Flared End Section in accordance with St. Louis County Standard Specifications for Highway Construction and Saint Louis Metropolitan Sewer District Standard Specifications. Incidental to this bid item are all costs associated with placement and any other items required to install as shown on the construction plans. The price for 30" Flared End Sections shall include all costs for flared end section, concrete, toe walls, excavation and bedding and shall be paid at the contract unit price per each.

33. TRENCH DRAIN WITH CATCH BASIN - This work shall consist of installing a trench drain and catch basin at the location specified in the construction plan documents. All construction materials and operations shall be in accordance with St. Louis County Standard Specifications for Highway Construction and Saint Louis Metropolitan Sewer District Standard Specifications.

The trench drain shall have a 4" inside dimension with reinforced slotted galvanized grates. The trench shall be precast or cast-in-place and constructed per the dimensions on the construction plans.

The trench shall slope to drain to the catch basin including an 8" outlet pipe connection.

Grates shall be a minimum of 14ga stamped reinforced galvanized steel and shall have a minimum .375" opening. Grating shall meet a minimum 310 psi proof load per AASHTO M-306 test modified by utilizing a 9" x 3" load plate. Grates shall seat into channels without rocking and shall be locked to the channel using a zinc plated steel 5/16 – 18 UNC bolt with a bolt torque of 10in/lb. Grates shall be independently tested to AASHTO M-306.

Incidental to this bid item are all costs associated with furnishing and installing the structure and any other items required as shown on the construction plans. Backfill of the structure shall be per the specifications and will be considered incidental. Payment shall be made at the contract unit price per each.

34. CHECK VALVE - This work shall consist of furnishing and installing a Check Valve in accordance with Item 8 of the Special Conditions (Section N) of the Project Standard Specifications. Incidental to this bid item are all the costs associated and any other items required as shown on the construction plans. Payment shall be made at the contract lineal foot unit price per each.

35. SINGLE CURB INLET, UNTRAPPED - This work shall consist of installing a single curb inlet in accordance with St. Louis County Standard Specifications for Highway Construction and Saint Louis Metropolitan Sewer District Standard Specifications.

Incidental to this bid item are all costs associated with furnishing and installing the structure and any other items required as shown on the construction plans. Backfill of the structure shall be per the specifications and will be considered incidental. Payment shall be made at the contract unit price per each.

36. MULTIPLE CURB INLET, UNTRAPPED - This work shall consist of installing a multiple curb inlet in accordance with St. Louis County Standard Specifications for Highway Construction and Saint Louis Metropolitan Sewer District Standard Specifications.

Incidental to this bid item are all costs associated with furnishing and installing the structure and any other items required as shown on the construction plans. Backfill of the structure shall be per the specifications and will be considered incidental. Payment shall be made at the contract unit price per each.

- 37. FIBER ROLLS - This work shall consist of furnishing and installing fiber rolls as erosion control devices at inlets in accordance with St. Louis County Standard Specifications for Highway Construction. Incidental to this bid item are all costs associated with placement and any other items required to install as shown on the construction plans. Maintenance of the erosion control devices shall be performed by the Contractor at no additional cost. Payment shall be made at the contract lineal foot (LF) unit price.
- 38. SILT FENCE - This work shall consist of furnishing and installing silt fence as erosion control protection in accordance with St. Louis County Standard Specifications for Highway Construction. Incidental to this bid item are all costs associated with placement and any other items required to install as shown on the construction plans. Maintenance of the erosion control device shall be performed by the Contractor at no additional cost. Payment shall be made at the contract lineal foot (LF) unit price.
- 39. SEDIMENT REMOVAL - This work shall consist of removing and disposing sediment along the silt fence with the St. Louis County Standard Specifications for Highway Construction. Payment shall be made at the contract cubic yard (CY) unit price.
- 40. MSD 5 – ROCK BLANKET - This work shall consist of furnishing and placing MSD 5-Rock Blanket for permanent erosion control protection at pipe outlets in accordance with the St. Louis County Standard Specifications for Highway Construction and Saint Louis Metropolitan Sewer District Standard Specifications. Incidental to this bid item are all costs associated with furnishing and placing rock blanket and any other items required to install as shown on the construction plans. Excavating the trench and backfill will be considered incidental. Maintenance of the erosion control device shall be performed by the Contractor at no additional cost. Payment shall be made at the contract square yard (SY) unit price.
- 40A FURNISH TYPE 2 ROCK BLANKET - This work shall consist of furnishing Type 2 Rock Blanket in accordance with the Missouri Standard Specifications for Highway Construction. Payment shall be made at the contract cubic yard (CY) unit price.
- 40B FURNISH TYPE 2 ROCK BLANKET - This work shall consist of placing Type 2 Rock Blanket in accordance with the Missouri Standard Specifications for Highway Construction. Payment shall be made at the contract cubic yard (CY) unit price.
- 41. REMOVE AND REPLACE TOP WITH SUMP BRIDGE TOP- SINGLE - This work shall consist of all labor, materials, equipment and disposal required to remove the existing curb inlet stone tops and replace with triple curb inlet top sump bridges. The triple curb inlet top sump bridge installation shall include all curb and gutter, sump concrete and roadway pavement removal and replacements required to comply with ADA standards. The triple curb inlet top sump bridge installation shall include but not limited to any flares, wings and concrete footing cleats as shown on the detail page located in section M of this document.

The unit cost shall include but not be limited to any saw cutting, curb and gutter and sump removal and replacements required. All costs associated with the saw cutting and removal and replacement of existing concrete curb and gutter, sumps and roadway pavement shall be considered incidental to the installation of the single curb inlet top sump bridges and included in the unit cost for the line item, "REMOVE AND REPLACE TOP WITH SUMP BRIDGE TOP-SINGLE".

Any portion of concrete sidewalk pavement that requires removal and replacement to properly install double curb inlet top sump bridges beyond the width of the replacement tops shall be considered sidewalk pavement. Therefore any sidewalk pavement replacement completed shall be paid at the

contract unit price for line item, "SIDEWALK REMOVAL AND REPLACEMENT CONCRETE (4" THICK)".

Section M of this document includes design dimensions of the new curb inlet top sump bridges. Contractor shall reference section M of this document for all design elements required to properly install curb inlet top sump bridges. Contractor will be responsible to purchase the modified inlet stone tops as shown on the detail page from an MSD approved supplier or equivalent. Any cost associated with the procurement of said tops shall be incidental to line item, "REMOVE AND REPLACE TOP WITH SUMP BRIDGE TOP-SINGLE".

42. REMOVE AND REPLACE TOP WITH SUMP BRIDGE TOP-DOUBLE - This work shall consist of all labor, materials, equipment and disposal required to remove the existing curb inlet stone tops and replace with triple curb inlet top sump bridges. The triple curb inlet top sump bridge installation shall include all curb and gutter, sump concrete and roadway pavement removal and replacements required to comply with ADA standards. The triple curb inlet top sump bridge installation shall include but not limited to any flares, wings and concrete footing cleats as shown on the detail page located in section M of this document.

The unit cost shall include but not be limited to any saw cutting, curb and gutter and sump removal and replacements required. All costs associated with the saw cutting and removal and replacement of existing concrete curb and gutter, sumps and roadway pavement shall be considered incidental to the installation of the single curb inlet top sump bridges and included in the unit cost for the line item, "REMOVE AND REPLACE TOP WITH SUMP BRIDGE TOP-DOUBLE".

Any portion of concrete sidewalk pavement that requires removal and replacement to properly install double curb inlet top sump bridges beyond the width of the replacement tops shall be considered sidewalk pavement. Therefore any sidewalk pavement replacement completed shall be paid at the contract unit price for line item, "SIDEWALK REMOVAL AND REPLACEMENT CONCRETE (4" THICK)".

Section M of this document includes design dimensions of the new curb inlet top sump bridges. Contractor shall reference section M of this document for all design elements required to properly install curb inlet top sump bridges. Contractor will be responsible to purchase the modified inlet stone tops as shown on the detail page from an MSD approved supplier or equivalent. Any cost associated with the procurement of said tops shall be incidental to line item, "REMOVE AND REPLACE TOP WITH SUMP BRIDGE TOP-DOUBLE".

All Triple curb inlets tops replaced will require manhole openings in all inlet tops. Therefore no solid inlet tops will be required.

43. (This Item Left Intentionally Blank)

44. REMOVE DAMAGED GRATE INLET AND REPLACE WITH FABRICATED TOP- This work shall consist of all labor, materials, equipment and disposal required to remove and replace the existing damaged grate inlet tops as shown on the project plans. All replaced grate inlet tops shall be constructed in accordance with Saint Louis Metropolitan Sewer District Standard Specifications. Any pavement or curb and gutter required to be replaced shall be constructed in accordance with Missouri Standard Specifications for Highway Construction (2011) and construction detail shown on the project plans. Any pavement required to be replaced shall be paid for by the unit cost for line item, "REMOVE AND REPLACE CONCRETE PAVEMENT (8" NON-REINFORCED)". Any curb and gutter required to be replaced shall be paid for by the unit cost for line item, "REMOVE AND REPLACE CURB AND GUTTER, VERTICAL". All other work associated with the installation of the grated inlet shall be incidental. Payment shall be made at the contract unit price per each inlet (EA).

Section M of this document includes design dimensions of the new custom grate inlet tops. Any grade adjustments required will be done using concrete risers only, brick and mortar will not be allowed. These new grate inlet tops will require custom fabrication to the dimensions on the documents located in section M.

All grates scheduled for replacement with side intake hoods will require the reinstallation of the existing side intake hoods. Contractor should remove existing inlets in a manner allowing the reuse of the existing hoods

45. **REMOVE EXISTING CONCRETE CURB INLET TOPS AND REPLACE WITH NEW CONCRETE CURB INLET TOPS** - This work shall consist of all labor, materials, equipment and disposal required to remove and replace the existing damaged single or double concrete curb inlet tops in locations as detailed in the project plans. All replaced concrete curb inlet tops shall be constructed in accordance with Saint Louis Metropolitan Sewer District Standard Specifications. Any pavement or curb and gutter required to be replaced shall be constructed in accordance with Missouri Standard Specifications for Highway Construction (2011) and construction detail shown on the project plans. Any pavement required to be replaced shall be paid for by the unit cost for line item, "REMOVE AND REPLACE CONCRETE PAVEMENT (8" NON-REINFORCED)". Any curb and gutter required to be replaced shall be paid for by the unit cost for line item, "REMOVE AND REPLACE CURB AND GUTTER, VERTICAL". All other work associated with the installation of the concrete curb inlet tops shall be incidental. Payment shall be made at the contract unit price per each (EA).

All Double curb inlets tops replaced will require manhole openings in both inlet tops. Therefore no solid inlet tops will be required.

46. **DOWEL BAR RETROFIT** - This work shall consist of installing dowel bar retrofit into the existing pavement in areas specified on the plans, namely mid block cracks associated with the existing pavement. Dowel bar retrofit shall be performed in accordance with Missouri Standard Specifications for Highway Construction (Section 613), "Pavement Repair" and as noted in these specifications. Incidental to this bid item are all the costs associated with the labor, equipment and materials required for the proper installation of the dowel bar retrofits. Payment shall be made at the contract unit price per each (EA).
47. **MODULAR BLOCK RETAINING WALL** - This work shall consist of furnishing and erecting Modular Block Walls in accordance with Item 8 of the Special Conditions (Section N) of the Project Standard Specifications. Incidental to this bid item are all the costs associated and any other items required as shown on the construction plans. Payment shall be made at the contract made at the contract square foot (SF) unit price.
48. **CHAIN LINK FENCE** – This work shall consist of furnishing and installing Chain Link Fence in accordance with St. Louis County Standard Specifications for Highway Construction. Incidental to this bid item are all cost associated with placement and any other items required to install as shown on the construction plans. Payment shall be made at the contract unit price per lineal foot.
- Chain link fence shall be constructed of black, vinyl coated material and shall be 48" in height.
49. **4 IN. WHITE ACRYLIC WATERBORNE PAVEMENT MARKING PAINT** - This work shall consist of furnishing and installing pavement markings in accordance with Item 12 of the Special Conditions (Section N) of the Project Standard Specifications and Missouri Standard Specifications for Highway Construction. Incidental to this bid item are all the costs associated and any other items required as shown on the construction plans. Payment shall be made at the contract lineal foot (LF) unit price.
50. **4 IN. YELLOW ACRYLIC WATERBORNE PAVEMENT MARKING PAINT** - This work shall consist of furnishing and installing pavement markings in accordance with Item 12 of the Special Conditions (Section N) of the Project Standard Specifications and Missouri Standard Specifications for Highway Construction. Incidental to this bid item are all the costs associated and any other items required as shown on the construction plans. Payment shall be made at the contract lineal foot (LF) unit price.
51. **8" WHITE PAVEMENT MARKING ACYRLIC WATERBORNE PAINT - CROSSWALK** - This work shall consist of furnishing and installing pavement markings in accordance with Missouri Standard Specifications for Highway Construction and Section N, Paragraph 16 "Polyurea Pavement Markings"

of this document. Incidental to this bid item are all the costs associated and any other items required as shown on the construction plans. Payment shall be made at the contract price per linear foot (LF).

52. ACRYLIC WATERBORNE PAVEMENT MARKING PAINT, 12 IN. WHITE - This work shall consist of furnishing and installing pavement markings in accordance with Item 12 of the Special Conditions (Section N) of the Project Standard Specifications and Missouri Standard Specifications for Highway Construction. Incidental to this bid item are all the costs associated and any other items required as shown on the construction plans. Payment shall be made at the contract lineal foot (LF) unit price.
53. ACRYLIC WATERBORNE PAVEMENT MARKING PAINT, 24 IN. WHITE - This work shall consist of furnishing and installing pavement markings in accordance with Item 12 of the Special Conditions (Section N) of the Project Standard Specifications and Missouri Standard Specifications for Highway Construction. Incidental to this bid item are all the costs associated and any other items required as shown on the construction plans. Payment shall be made at the contract lineal foot (LF) unit price.
54. ACRYLIC WATERBORNE PAVEMENT MARKING PAINT, 8 IN. YELLOW - This work shall consist of furnishing and installing pavement markings in accordance with Item 12 of the Special Conditions (Section N) of the Project Standard Specifications and Missouri Standard Specifications for Highway Construction. Incidental to this bid item are all the costs associated and any other items required as shown on the construction plans. Payment shall be made at the contract lineal foot (LF) unit price.
55. ACRYLIC WATERBORNE PVMT. MKNG. PAINT, LEFT/RIGHT ARROW - This work shall consist of furnishing and installing pavement marking arrows in accordance with Item 12 of the Special Conditions (Section N) of the Project Standard Specifications and Missouri Standard Specifications for Highway Construction. Incidental to this bid item are all the costs associated and any other items required as shown on the construction plans. Payment shall be made at the contract unit price per each.
56. ACRYLIC WATERBORNE PVMT. MKNG. PAINT, COMBINATION STRAIGHT-LEFT/RIGHT ARROW - This work shall consist of furnishing and installing pavement markings in accordance with Item 12 of the Special Conditions (Section N) of the Project Standard Specifications and Missouri Standard Specifications for Highway Construction. Incidental to this bid item are all the costs associated and any other items required as shown on the construction plans. Payment shall be made at the contract unit price per each.
57. ACRYLIC WATERBORNE PVMT. MKNG. PAINT, BICYCLE SYMBOL - This work shall consist of furnishing and installing pavement markings in accordance with Item 12 of the Special Conditions (Section N) of the Project Standard Specifications and Missouri Standard Specifications for Highway Construction. Incidental to this bid item are all the costs associated and any other items required as shown on the construction plans. Payment shall be made at the contract unit price per each.
58. SIGNAL HEAD, TYPE 1S, PEDESTRIAN – This work shall consist of furnishing and installing a type 1S pedestrian signal head in accordance with City of Saint Peters Standard Specifications for LED Pedestrian Signal Face (See Section T). Incidental to this bid item are all costs associated with placement and any other items required to install as shown on the construction plans. Payment shall be made at the contract price per each.
59. WIRE STRANDED GROUND, #6 GAUGE – This work shall consist or furnishing and installing a 6 AWG, stranded wire as shown in the plans in accordance with City of Saint Peters Standard Specifications for Grouned Wire (See Section T). Incidental to this bid item are all costs associated with placement and any other items required to install as shown on the construction plans. Payment shall be made at the contract linear foot price.
60. CABLE, PUSH BUTTON AND/OR DETECTOR LOOP LEAD-IN, #18 GAUGE, 2 CONDUCTOR (SHIELDED) – This work shall consist of furnishing and installing 18 AWG, 2 conductor shielded cable as shown in the plans in accordance with City of Saint Peters Standard Specifications for Push Button and Vehicle Detector Lop lead-in Cable (See Section T). Incidental to this bid item are all

costs associated with placement and any other items required to install as shown on the construction plans. Payment shall be made at the contract linear foot price.

61. SIGNAL HEAD, TYPE 3S – This work shall consist of furnishing and installing a type 3S signal head in accordance with Missouri Standard Specifications for Highway Construction (Section 902). Incidental to this bid item are all costs associated with placement and any other items required to install as shown on the construction plans. Payment shall be made at the contract price per each.
62. SIGNAL HEAD, TYPE 3B – This work shall consist of furnishing and installing a type 3B signal head in accordance with Missouri Standard Specifications for Highway Construction (Section 902). Incidental to this bid item are all costs associated with placement and any other items required to install as shown on the construction plans. Payment shall be made at the contract price per each.
63. POST, TYPE CL, 20 FT. ARM OR 6.1 M ARM – This work shall consist of furnishing and installing a Type CL post with an arm measuring 20 foot or as shown on the plans in accordance with Missouri Standard Specifications for Highway Construction (Section 902). Incidental to this bid item are all costs associated with placement and any other items required to install as shown on the construction plans. Payment shall be made at the contract price per each.
64. POST, TYPE CL, 30 FT. ARM OR 9.1 M ARM – This work shall consist of furnishing and installing a Type CL post with an arm measuring 30 foot or as shown on the plans in accordance with Missouri Standard Specifications for Highway Construction (Section 902). Incidental to this bid item are all costs associated with placement and any other items required to install as shown on the construction plans. Payment shall be made at the contract price per each.
65. POST, TYPE CL, 40 FT. ARM OR 12.2 M ARM – This work shall consist of furnishing and installing a Type CL post with an arm measuring 40 foot or as shown on the plans in accordance with Missouri Standard Specifications for Highway Construction (Section 902). Incidental to this bid item are all costs associated with placement and any other items required to install as shown on the construction plans. Payment shall be made at the contract price per each.
66. CONTROLLER ASSEMBLY HOUSING, NEMA TS2 CONTROLLER – This work shall consist of furnishing and installing a traffic signal control housing and cabinet hardware in accordance with City of Saint Peters Standard Specifications for Traffic Controller (See Section T). Incidental to this bid item are all costs associated with placement and any other items required to install as shown on the construction plans. Payment shall be made at the contract price per each.
67. DETECTOR, PUSHBUTTON – This work shall consist of furnishing and installing pushbutton detectors in accordance with City of Saint Peters Standard Specifications for Push Button Detectors (See Section T). Incidental to this bid item are all costs associated with placement and any other items required to install as shown on the construction plans. Payment shall be made at the contract price per each.
68. VIDEO DETECTION SYSTEM – This work shall consist of furnishing and installing a video detection system in accordance with Missouri Standard Specifications for Highway Construction (Section 902). Video Detection System shall be Autoscope to be compatible with other City installations and equipment. Incidental to this bid item are all costs associated with placement and any other items required to install as shown on the construction plans. Payment shall be made at the contract price per each.
69. CONDUIT, 2", TRENCH – This work shall consist of furnishing and installing 2" conduit in accordance with City of Saint Peters Standard Specifications for Conduit in Trench (See Section T). Incidental to this bid item are all costs associated with placement and any other items required to install as shown on the construction plans. Payment shall be made at the contract linear foot price.
70. CONDUIT, 3", TRENCH – This work shall consist of furnishing and installing 3" conduit in accordance with City of Saint Peters Standard Specifications for Conduit in Trench (See Section T). Incidental to this bid item are all costs associated with placement and any other items required to install as shown on the construction plans. Payment shall be made at the contract linear foot price.

71. CONDUIT, 2", PUSHED – This work shall consist of furnishing and installing 2" conduit in accordance with City of Saint Peters Standard Specifications for Pushed Conduit (See Section T). Incidental to this bid item are all costs associated with placement and any other items required to install as shown on the construction plans. Payment shall be made at the contract linear foot price.
72. CONDUIT, 3", PUSHED – This work shall consist of furnishing and installing 3" conduit in accordance with City of Saint Peters Standard Specifications for Pushed Conduit (See Section T). Incidental to this bid item are all costs associated with placement and any other items required to install as shown on the construction plans. Payment shall be made at the contract linear foot price.
73. CABLE, 6 AWG 1 CONDUCTOR, POWER – This work shall consist of furnishing and installing 6 AWG, 1 conductor cable as shown in the plans in accordance with City of Saint Peters Standard Specifications for Power Cable (See Section T). Incidental to this bid item are all costs associated with placement and any other items required to install as shown on the construction plans. Payment shall be made at the contract linear foot price.
74. CABLE, 16 AWG 5 CONDUCTOR – This work shall consist of furnishing and installing 16 AWG, 5 conductor cable as shown in the plans in accordance with City of Saint Peters Standard Specifications for Multi-Conductor Signal Cable (See Section T). Incidental to this bid item are all costs associated with placement and any other items required to install as shown on the construction plans. Payment shall be made at the contract linear foot price.
75. CABLE, 16 AWG 7 CONDUCTOR – This work shall consist of furnishing and installing 16 AWG, 7 conductor cable as shown in the plans in accordance with City of Saint Peters Standard Specifications for Multi-Conductor Signal Cable (See Section T). Incidental to this bid item are all costs associated with placement and any other items required to install as shown on the construction plans. Payment shall be made at the contract linear foot price.
76. PULL BOX, PREFORMED CLASS 1 – This work shall consist of furnishing and installing a preformed class 1 pull box in accordance with Missouri Standard Specifications for Highway Construction (Section 902). Incidental to this bid item are all costs associated with placement and any other items required to install as shown on the construction plans. Payment shall be made at the contract price per each.
77. PULL BOX, PREFORMED CLASS 2 – This work shall consist of furnishing and installing a preformed class 2 pull box in accordance with Missouri Standard Specifications for Highway Construction (Section 902). Incidental to this bid item are all costs associated with placement and any other items required to install as shown on the construction plans. Payment shall be made at the contract price per each.
78. PULL BOX, PREFORMED CLASS 3 – This work shall consist of furnishing and installing a preformed class 3 pull box in accordance with Missouri Standard Specifications for Highway Construction (Section 902). Incidental to this bid item are all costs associated with placement and any other items required to install as shown on the construction plans. Payment shall be made at the contract price per each.
79. PULL BOX, PREFORMED CLASS 5 – This work shall consist of furnishing and installing a preformed class 5 pull box in accordance with Missouri Standard Specifications for Highway Construction (Section 902). Incidental to this bid item are all costs associated with placement and any other items required to install as shown on the construction plans. Payment shall be made at the contract price per each.
80. BASE, CONCRETE – This work shall consist of furnishing and installing a concrete base in accordance with City of Saint Peters Standard Specifications for Construction of Concrete Bases (See Section T). Incidental to this bid item are all costs associated with placement and any other items required to install as shown on the construction plans. Payment shall be made at the contract price per cubic yard.

81. REMOVE AND DELIVER OLD TRAFFIC SIGNAL EQUIPMENT, POLES AND MAST ARMS TO CITY YARD - Deliver mast arms, poles and signal heads to City Of St. Peters public works yard, located: 100 Boone Hills Drive. Payment shall be made at the contract price per lump sum.
82. POWER SUPPLY ASSEMBLY WITH BATTERY BACKUP, TYPE 2 WITH 120V LIGHTING CONTROL CABINET – This work shall consist of furnishing and installing a type 2 power supply assembly with a 120 volt lighting control cabinet in accordance with City of Saint Peters Standard Specifications for Power Supply Assemblies (See Section T). Incidental to this bid item are all costs associated with placement and any other items required to install as shown on the construction plans. Payment shall be made at the contract price per each.
83. LED LUMINAIRE - This work shall consist of furnishing and installing LED luminaires in accordance with Missouri Standard Specifications for Highway Construction (Section 902). Incidental to this bid item are all costs associated with placement and any other items required to install as shown on the construction plans. Payment shall be made at the contract price per each.
84. SURFACE MOUNTED MOTION ACTIVATED LED LIGHT FIXTURE - This work shall consist of furnishing and installing a surface mounted motion activated LED light fixture in accordance with Missouri Standard Specifications for Highway Construction (Section 902). Incidental to this bid item are all costs associated with placement and any other items required to install as shown on the construction plans. Payment shall be made at the contract price per each.
85. EMBEDDED JUNCTION BOX- This work shall consist of furnishing and installing an embedded junction box compatible with the SURFACE MOUNTED MOTION ACTIVATED LED LIGHT FIXTURE in accordance with Missouri Standard Specifications for Highway Construction (Section 902). Incidental to this bid item are all costs associated with placement and any other items required to install as shown on the construction plans. Payment shall be made at the contract price per each.
86. FIBER OPTIC CABLE, 48 FIBER, SINGLE MODE – This work shall consist of furnishing and installing a fiber optic cable in accordance with City of Saint Peters Standard Specifications. Incidental to this bid item are all costs associated with placement and any other items required to install as shown on the construction plans. Payment shall be made at the contract price per each.
87. CONDUIT, 3/4" ON STRUCTURE – This work shall consist of furnishing and installing 3/4" conduit on structure in accordance with Missouri Standard Specifications for Highway Construction (Section 902). Incidental to this bid item are all costs associated with placement and any other items required to install as shown on the construction plans. Payment shall be made at the contract linear foot price.
88. CABLE, 10 AWG 1 CONDUCTOR – This work shall consist of furnishing and installing 10 AWG, 1 conductor cable in conduit, pull boxes, junction boxes and light fixtures in accordance with Missouri Standard Specifications for Highway Construction (Section 902). Incidental to this bid item are all costs associated with placement and any other items required to install as shown on the construction plans. Payment shall be made at the contract linear foot price.
89. TYPE SHR2L-1 SIGN - This work shall consist of furnishing and installing SHR2L-1 signs in accordance with Missouri Standard Specifications for Highway Construction. Sign details and locations are noted on the construction plans. Incidental to this bid item are all costs associated and any other items required as shown on the construction plans. Payment shall be made at the contract price per square foot.
90. PRESSURE SENSITIVE ADA PUSHBUTTONS (NEW INSTALLATION) - This work shall consist of furnishing and installing new ADA compliant pushbutton detectors in accordance with Missouri Standard Specifications for Highway Construction (Section 902). Incidental to this bid item are all costs associated with placement and any other items required to install as shown on the construction plans. Payment shall be made at the contract price per each (EA).
91. REMOVE GROUT AND REPLACE WITH SCREEN ON MAST ARM BASES - Payment shall be made at the contract each price (EA).

92. R10-3EL PEDESTRIAN SIGN -. To be banded to poles in accordance with current ADA standards. Payment shall be made at the contract each price (EA).
93. R10-3ER PEDESTRIAN SIGN - To be banded to poles in accordance with current ADA standards. Payment shall be made at the contract each price (EA).
94. PEDESTRIAN STANCHION - To be installed in accordance to MODOT specification. Payment shall be made at the contract each price (EA).
95. ADJUST EXISTING PULL BOX TO GRADE - Payment shall be made at the contract each price (EA).
96. (This Item Left Intentionally Blank)
97. CONCRETE SIDEWALK, CURB RAMP (7" THICK) - This work shall consist of furnishing all necessary equipment and installing concrete curb ramps in accordance with St. Louis County Standard Specifications for Highway Construction. Incidental to this bid item are all costs associated with placement and any other items required to install as shown on the construction plans. Payment shall be made at the contract square yard (SY) unit price.
98. TRUNCATED DOMES FOR CURB RAMPS (NEW CONSTRUCTION) - This work shall consist of furnishing and installing 24" wide and various length ADA compliant raised dome tile inserts.

Truncated dome texturing shall be applied with a modular tile. Truncated dome texturing shall extend the full width of the accessible ramp's walking surface, and extend a minimum of two (2') feet from the intersection of the roadway and sidewalk.

Truncated dome modular tiles shall be composed of an epoxy polymer composition with an ultra violet stabilized coating employing aluminum oxide particles in the truncated domes. The tile shall incorporate an in-line dome pattern of truncated domes 0.2" in height, 0.9" diameter at the base and 0.4" diameter at the top of the dome spaced 2.35" nominal as measured on a diagonal and 1.70" nominal as measured side by side. For wheelchair safety the field area shall consist of a non-slip surface with a minimum of 40 - 90° raised points 0.0045" high, per square inch.

Truncated Dome Modular Tiles: Truncated dome tiles used for this project shall be color "Brick Red", or approved equal, and comply with the following minimum specifications:

- a. Tile Dimensions: Tile Assemblies shall be held within the following dimensions and tolerances:

Length and Width:	24"x24" nominal
Depth	1.400" ± 5% max.
Face Thickness	0.1875 ± 5% max.
Warpage of Edge	± 0.5% max.

- b. Tile Dome Diagram:

0.4"	Top
0.9"	Bottom
0.2"	Height
2.35"	Center to Center Spacing
- c. Truncated dome tile shall be installed at a maximum cross slope of two (2%) percent and a maximum running slope of five (5%).
- d. Water Absorption of Tile when tested by ASTM-D 570 not to exceed 0.35%.
- e. Slip Resistance of Tile when tested by ASTM-C 1028 the combined wet/dry static co-efficient of friction not to be less than 0.90 on top of domes and field area.

- f. Compressive Strength of tile when tested by ASTM-D 695-91 not to be less than 18,000 PSI.
- g. Tensile Strength of Tile when tested by ASTM-D 638-91 not to be less than 10,000 PSI.
- h. Flexural Strength of Tile when tested by ASTM - C293-94 not to be less than 24,000 PSI.
- i. Chemical Stain Resistance of Tile when tested by ASTM-D 543-87 to withstand without discoloration or staining - 1% hydrochloric acid, urine, calcium chloride, stamp pad ink, gum and red aerosol paint.
- j. Abrasive Wear of Tile when tested by BYK - Gardner Tester ASTM-D 2486* with reciprocating linear motion of $37 \pm$ cycles per minute over a 10" travel. The abrasive medium, a 40-grit Norton Metallite sand paper, to be fixed and leveled to a holder. The combined mass of the sled, weight and wood block to be 3.2 lb. Average wear depth shall not exceed 0.030 after 1000 abrasion cycles measured on the top surface of the dome representing the average of three measurement locations per sample.
- k. Fire Resistance: When tested to ASTM E84 flame spread shall be less than 25.
- l. Gardner Impact to geometry "GE" of the standard when tested by ASTM-D 5420-93 to have mean failure energy expressed as a function of specimen thickness of not less than 450 in. 1bf/in. A failure is noted if a hairline fracture is visible in the specimen.
- m. Accelerated Weathering of Tile when tested by ASTM-G26-95 for 2000 hours shall exhibit the following result - no deterioration, fading or chalking of surface of tile.
- n. Accelerated Aging and Freeze Thaw Test of Tile when tested to ASTM-D 1037 shall show no evidence of cracking, delaminating, warpage, checking, blistering, color change, loosening of tiles or other defects.
- o. Salt and Spray Performance of Tile and Adhesive System when tested to ASTM-B 117 not to show any deterioration or other defects after 100 hours of exposure.
- p. Polymer Concrete and/or epoxy resin properties shall meet or exceed the following criteria:
 - 1. Tensile Strength of Resin: greater than 7,000psi; ASTM D638
 - 2. Modulus of Elasticity of Resin: greater than 4,000psi; ASTM D638
 - 3. Bond Strength of Polymeric Concrete: greater than 8,000psi; ASTM C551

Payment and measurement for the truncated domes installed at reconstructed and new concrete curb ramps will be paid at the contract unit price square foot (SF).

- 99. CONCRETE SIDEWALK (4" THICK) – This work shall consist of all labor, materials, equipment and disposal required to construct four (4") thick concrete sidewalk sections at the locations designated by the Engineer.

Any concrete sidewalk that is damaged as a result of saw cutting, excavation or breaking that was not scheduled to be removed shall be removed and replaced at the Contractor's expense. Said damaged concrete sidewalk shall be removed entirely from existing joint to existing joint. Any reduction in the entire slab removal shall be the discretion of the City of Saint Peters. Any existing concrete sidewalk that is damaged that is not scheduled for removal and replacement shall be documented by Contractor and shall be brought to the attention of the City of Saint Peters prior to any work. Any such concrete sidewalk not documented and brought to the attention of the City of Saint Peters prior to work shall be considered the Contractor's responsibility and shall be replaced at the Contractor's expense.

All work shall comply with St. Louis County Standard Specifications for Highway Construction and all requirements of the Americans with Disabilities Act (ADA). Payment shall be made at the contract square yard (SY) price.

100. ASPHALT BASE MIX (4" THICK) - This work shall consist of furnishing and installing Type "X" Bituminous Concrete (Base) in accordance with St. Louis County Standard Specifications for Highway Construction. Incidental to this bid item are all cost associated with placement and any other items required to install as shown on the construction plans. Payment shall be made at the contract square yard (SY) unit price.
101. TYPE 5 AGGREGATE BASE (6 IN. THICK) - This work shall consist of furnishing and installing 6" Type 5 aggregate base in accordance with St. Louis County Standard Specifications for Highway Construction. Incidental to this bid item are all cost associated with placement and any other items required to install as shown on the construction plans. Payment shall be made at the contract square yard (SY) unit price.
102. SEEDING - This work shall consist of furnishing and installing seeding in accordance with City of Saint Peters Standard Specifications for Terra-Seeding (See Section N – Item 22). The contractor shall fill in any rills and return the slope to finished grade as part of his work. Incidental to this bid item are all costs associated with placement and any other items required to install as shown on the construction plans. Payment shall be made at the contract price per acre.
103. CLASS 1 EXCAVATION – This work shall consist of Class 1 Excavation in accordance with Missouri Standard Specifications for Highway Construction and as noted in these specifications. Incidental to this bid item are all the costs associated and any other items required as shown on the construction plans. Payment shall be made at the contract cubic yard price.
- 103A. CLASS 2 EXCAVATION - This work shall consist of Class 2 Excavation in accordance with Missouri Standard Specifications for Highway Construction and as noted in these specifications. Incidental to this bid item are all the costs associated and any other items required as shown on the construction plans. Payment shall be made at the contract cubic yard price.
104. (This Item Left Intentionally Blank)
105. (This Item Left Intentionally Blank)
106. REMOVAL OF BRIDGES - This work shall consist of Removal of Bridges in accordance with Missouri Standard Specifications for Highway Construction and as noted in these specifications. Incidental to this bid item are all the costs associated and any other items required as shown on the construction plans. Payment shall be made at the contract lump sum price.
107. BRIDGE APPROACH SLAB (BRIDGE) – This work shall consist of installing a Bridge Approach Slab in accordance with Missouri Standard Specifications for Highway Construction and as noted in these specifications. Incidental to this bid item are all the costs associated and any other items required as shown on the construction plans. Payment shall be made at the contract square yard price.
108. (72 IN.) BICYCLE RAILING – This work shall consist of furnishing and installing a (72 in.) Bicycle Railing in accordance with Missouri Standard Specifications for Highway Construction and as noted in these specifications. Incidental to this bid item are all the costs associated and any other items required as shown on the construction plans. Payment shall be made at the contract linear foot price.
109. SAFETY BARRIER CURB RAILING – This work shall consist of furnishing and installing a 20 in. railing on the right safety barrier curb in accordance with Missouri Standard Specifications for Highway Construction and as noted in these specifications. Incidental to this bid item are all the costs associated and any other items required as shown on the construction plans. Payment shall be made at the contract linear foot price.
110. STRUCTURAL STEEL PILES (14 IN.) – This work shall consist of furnishing and driving Structural Steel Piles in accordance with Missouri Standard Specifications for Highway Construction and as noted in these specifications. Incidental to this bid item are all the costs associated and any

other items required as shown on the construction plans. Payment shall be made at the contract linear foot price.

- 111. (This Item Left Intentionally Blank)
- 112. PILE POINT REINFORCEMENT – This work shall consist of providing and installing Pile Point Reinforcement in accordance with Missouri Standard Specifications for Highway Construction and as noted in these specifications. Incidental to this bid item are all the costs associated and any other items required as shown on the construction plans. Payment shall be made at the contract price per each.
- 113. CLASS B CONCRETE (SUBSTRUCTURE) – This work shall consist of providing and placing Class B Concrete in accordance with Missouri Standard Specifications for Highway Construction and as noted in these specifications. Incidental to this bid item are all the costs associated and any other items required as shown on the construction plans. Payment shall be made at the contract cubic yard price.
- 114. SAFETY BARRIER CURB – This work shall consist of providing and installing Safety Barrier Curb in accordance with Missouri Standard Specifications for Highway Construction and as noted in these specifications. Incidental to this bid item are all the costs associated and any other items required as shown on the construction plans. Payment shall be made at the contract linear foot price.
- 115. SLAB ON PRESTRESSED CONCRETE BOX BEAM – This work shall consist of installing Slab on Prestressed Concrete Box Beam in accordance with Missouri Standard Specifications for Highway Construction and as noted in these specifications. Incidental to this bid item are all the costs associated and any other items required as shown on the construction plans. Payment shall be made at the contract square yard price.
- 115A. SLAB DRAIN - This work shall consist of providing and installing Slab Drain in accordance with Missouri Standard Specifications for Highway Construction and as noted in these specifications. Incidental to this bid item are all the costs associated and any other items required as shown on the construction plans. Payment shall be made at the contract price per each.
- 115B. VERTICAL DRAIN AT END BENTS - This work shall consist of providing and installing Vertical Drain at End Bents in accordance with Missouri Standard Specifications for Highway Construction and as noted in these specifications. Incidental to this bid item are all the costs associated and any other items required as shown on the construction plans. Payment shall be made at the contract price per each.
- 116. 27 IN, PRESTRESSED CONCRETE SPREAD BOX BEAM – This work shall consist of providing and placing 21 in. Prestressed Concrete Spread Box Beams in accordance with Missouri Standard Specifications for Highway Construction and as noted in these specifications. Incidental to this bid item are all the costs associated and any other items required as shown on the construction plans. Payment shall be made at the contract linear foot price.
- 117. REINFORCING STEEL (BRIDGES) – This work shall consist of providing and installing Reinforcing Steel in accordance with Missouri Standard Specifications for Highway Construction and as noted in these specifications. Incidental to this bid item are all the costs associated and any other items required as shown on the construction plans. Payment shall be made at the contract price per pound.
- 118. (This Item Left Intentionally Blank)
- 119. PLAIN NEOPRENE BEARING PAD – This work shall consist of providing and installing Plain Neoprene Bearing Pads in accordance with Missouri Standard Specifications for Highway Construction and as noted in these specifications. Incidental to this bid item are all the costs associated and any other items required as shown on the construction plans. Payment shall be made at the contract price per each.

- 119A. LAMINATED NEOPRENE BEARING PAD - This work shall consist of providing and installing Laminated Neoprene Bearing Pads in accordance with Missouri Standard Specifications for Highway Construction and as noted in these specifications. Incidental to this bid item are all the costs associated and any other items required as shown on the construction plans. Payment shall be made at the contract price per each.
120. CLASS 4 EXCAVATION – This work shall consist of Class 4 Excavation in accordance with Missouri Standard Specifications for Highway Construction and as noted in these specifications. Incidental to this bid item are all the costs associated and any other items required as shown on the construction plans. Payment shall be made at the contract cubic yard price.
121. CLASS B-1 CONCRETE (CULVERTS) – This work shall consist of providing and placing Class B-1 Concrete in accordance with Missouri Standard Specifications for Highway Construction and as noted in these specifications. Incidental to this bid item are all the costs associated and any other items required as shown on the construction plans. Payment shall be made at the contract cubic yard price.
122. FORM LINERS – This work shall consist of utilizing Form Liners in accordance with Missouri Standard Specifications for Highway Construction and as noted in these specifications. Incidental to this bid item are all the costs associated and any other items required as shown on the construction plans. Payment shall be made at the contract square yard price.
123. REINFORCING STEEL (CULVERTS) – This work shall consist of providing and installing Reinforcing Steel in accordance with Missouri Standard Specifications for Highway Construction and as noted in these specifications. Incidental to this bid item are all the costs associated and any other items required as shown on the construction plans. Payment shall be made at the contract price per pound.
124. LED ILLUMINATED STREET NAME SIGN - This work shall consist of furnishing and installing a LED Illuminated Street Name Sign in accordance with Missouri Standard Specifications for Highway Construction (Section 902). Incidental to this bid item are all costs associated with placement and any other items required to install as shown on the construction plans. Payment shall be made at the contract price per each.
125. CABLE, 14 AWG 3 CONDUCTOR – This work shall consist of furnishing and installing 14 AWG, 3 conductor cable in conduit, traffic signal poles and luminaire brackets in accordance with Missouri Standard Specifications for Highway Construction (Section 902). Incidental to this bid item are all costs associated with placement and any other items required to install as shown on the construction plans. Payment shall be made at the contract linear foot price.
126. SIDEWALK INFILL - This work shall consist of all labor, materials, equipment and disposal required to install four (4") thick concrete pavement at the 2 – 4 foot wide grass area between the back side of the curb and the edge of the sidewalk commonly known as "Green Space". The locations for sidewalk infill are labeled on the plans however will be any locations within the project limits that have a green space with the dimensions of 4 feet wide or less. Payment shall be made at the contract square foot (SF) price.

SECTION N

SPECIAL CONDITIONS

1. The City of St. Peters will conduct a pre-construction meeting with the successful bidder. Sections C, L, and N of these documents, and any other questions, will be discussed.

The contract documents, as specified in section M, include two separate plan document sets. The bridge construction plan titled, "Willott Road Bridge BRM 7305 (610)", completed by Horner and Shifrin, shall govern all construction activities and specifications associated with the construction of the bridge, culvert and widening section east of the bridge. The roadway construction plan titled, "Willott Road Resurfacing STP 7305 (609)", completed by City of Saint Peters shall govern all construction activities and specifications for the remaining area of Willott Road (excluding the location of the bridge), as specified on both construction plan sets.

2. Contractor is responsible for all job site safety.
3. All work described and specified in the documents shall be completed within one hundred and eighty (180) calendar days from the date of issuance of the Notice to Proceed. Unless approved by the Engineer. There will be no stop of work from December 15 through March 15 and days will be counted during this period.
4. Liquidated damages will be deducted from the total contract payment at a rate of one thousand one hundred (\$1,100.00) per day, for each calendar day the work is not completed beyond the one hundred and eighty (180) calendar days allotted for the project. Liquidated damages will be deducted from the total contract payment at a rate of one thousand (\$1,000.00) per calendar day, for each calendar day Willott Road is closed between Crescent Hills Drive and del Ray Drive beyond sixty (60) calendar days allotted for said closure.
5. SUBCONTRACTOR DISCLOSURE: Requirements contained within Sec 102.7.12 of the Missouri Standard Specification for Highway Construction shall be waived for this contract.
6. ACCEPTANCE OF PRECAST CONCRETE MEMBERS AND PANELS

The following procedures have been established for the acceptance of precast concrete girders, slab panels, MSE wall systems, and other structural members. Shop drawings shall be submitted for review and approval to the engineer of record for the local public agency (LPA). The approval is expected to cover only the general design features, and in no case shall this approval be considered to cover errors or omissions in the shop drawings. The LPA or their engineer of record has the option of inspecting the precast units during fabrication or requiring the fabricator to furnish a certification of contract compliance and substantiating test reports. In addition, the reports shown below shall be required.

Certified mill test reports, including results of physical tests on the prestressing strands in reinforcing steel, as required.

Test reports on concrete cylinder breaks.

The LPA or their engineer of record shall verify and document that the dimensions of the precast units were checked at the jobsite and found to be in compliance with the shop drawings.

7. ACCEPTANCE OF STRUCTURAL STEEL

The following procedures have been established for the acceptance of structural steel. Shop drawings shall be submitted for review and approval to the engineer of record for the local public agency (LPA). The approval is expected to cover only the general design features, and in no case shall this approval be considered to cover errors or omissions in the shop drawings. It is

recommended that the contract documents contain provisions that the contractor shall utilize a fabricator that meets the appropriate American Institute of Steel Construction (AISC) certification provisions as outlined in [Sec 1080.3.1.6](#). Additional information regarding the AISC certification program can be found on [the AISC website](#).

All welding operations, including material and personnel, shall meet the American Welding Society (AWS) specifications. Primary welds shall meet the provisions of [Sec 1080.3.3.5.2](#). The LPA or their engineer of record has the option of inspecting the steel units during fabrication or requiring the fabricator to furnish a certification of contract compliance and substantiating test reports. In addition, the reports shown below shall be required.

- Certified mill test reports, including results of chemical and physical tests on all structural steel as furnished.
- Non-destructive testing reports.
- Verification of the girder camber, sweep, and other blocking data.
- Verification of coating operations.

The LPA or their engineer of record shall verify and document that the dimensions of the structural steel units were checked at the jobsite and found to be in compliance with the shop drawings.

8. EXISTING UTILITY ADJUSTMENTS

- A. The existence and approximate location of utility facilities known to exist, as shown on the plans, are based upon the best information available to the City at this time. This information is provided by the City "as-is" and the City expressly disclaims any representation or warranty as to the completeness, accuracy, or suitability of the information for any use. Reliance upon this information is done at the risk and peril of the user, and the City shall not be liable for any damages that may arise from any error in the information. It is, therefore, the responsibility of the contractor to verify the above listing information indicating existence, location and status of any facility. Such verification includes direct contact with the listed utilities.
- B. The contractor agrees that any effects of the presence of the utilities, their relocation, contractor's coordination of work with the utilities and any delay in utility relocation shall not be compensable as a suspension of work, extra work, a change in the work, as a differing site condition or otherwise including but, without limitation, delay, impact, incidental or consequential damages. The contractor's sole remedy for the effects of the presence of utilities, delay in their relocation or any other effects shall be an excusable delay as provided in Section 105.7.3. The contractor waives, for itself, its subcontractors and suppliers the compensability of the presence of utilities, delay in their relocation and any cost to the contractor, its subcontractors and suppliers in any claim or action arising out of or in relation to the work under the contract.

Below is a summary of utility adjustments identified to the City and anticipated relocation schedule.

1. Ameren UE: Six (6) overhead electric poles are in conflict with the proposed improvements and will require adjustment. The poles and lines affected are located within existing road right-of-way and the new poles will be relocated out of right-of-way, in to a new permanent utility easement. Negotiations are ongoing for this easement and acquisition is expected by the end of February 2015. Ameren UE anticipates beginning pole and line relocation operations as soon as the necessary easements are secured and has advised work will take up to thirty (30) calendar days to complete. The required utility adjustments primary effect work associated with the proposed road widening (Sta. 120+22 to Sta. 115+63), and not work associated with the bridge replacement (Sta 111+00 to Sta 107+00). It is anticipated

Ameren UE's adjustments will be completed prior to issuance of contract Notice to Proceed, however the contractor will be able to begin work operations associated with the bridge and pavement resurfacing if utility adjustments are not completed.

2. **LaClede Gas:** Approximately 400 lineal feet of six (6") plastic natural gas main, located along the south side of Willott Road, between Sta. 107+00 and 111+00, are in conflict with the proposed bridge improvements and requires adjustment. A Facility Adjustment and Relocation Agreement was executed by the City and Laclede Gas on August 4, 2014. LaClede Gas began work in November 2014 and will complete work by the end of February 2015.
3. **City of St. Peters Water and Sewer:** Approximately 300 lineal feet of eighteen (18") PVC sanitary sewer main is in conflict with the proposed bridge abutment located at near Sta. 109+40. This main can not be relocated cost effectively until the existing bridge is removed. So as to not impede the contractor's schedule during the sixty (60) calendar day closure of Willott Road, the contractor will be responsible for the sanitary main relocation. The contract specifications include pay items and requirements for the contractor to temporarily pump sewage while the conflicting portion of the old 18" sanitary main is removed and the new 18" sanitary sewer main constructed.

The portions of the City's conflicting water main will be isolated by the end of May and abandoned in place. During the 60 day road closure, the City intends to install a new water main across Willott Road at approximately Sta. 110+60. This installation will be coordinated with the contractor so as not to interfere with bridge, culvert and sanitary construction. The City's intent is to install the new water main across Willott Road while the pavement is removed. In addition, the City expects to have a directional boring contractor on site to install a water main along the south side of Willott Road, under the creek and proposed Willott Road culvert (Sta. 110+00).

4. **Charter Communications:** Has communication cables installed on the six (6) poles to be relocated by Ameren UE. Charter anticipates beginning relocation operations once Ameren UE has completed their relocation operations, with work taking seven (7) calendar days to complete.
- C. The contractor shall be solely responsible and liable for incidental and consequential damage to any utility facilities or interruption of the service caused by it or its subcontractors operation. The contractor shall hold and save harmless the City from damages to any utility facilities interruption of service by it or it's subcontractor's operation.
- D. It shall be noted by the contractor that the City of St. Peters is a member of Missouri One Call (800 Dig Rite). Some work on this project may be in the vicinity of MoDOT utility facilities, which includes but is not limited to traffic signal cables, highway lighting circuits, ITS cables, cathodic protection cables, etc. Prior to beginning work, the contractor shall request locates from Missouri One Call. The contractor shall also complete the Notice of Intent to Perform Work form located at the Missouri Department of Transportation website:

<http://www.modot.mo.gov/asp/intentToWork.shtml>

The contractor shall submit the form over the web (preferred method) or by fax to the numbers on the printed form. The notice must be submitted a minimum of 2 and a maximum of 10 working days prior to excavation just as Missouri One Call requires.

9. Work Zone Traffic Management Plan

A. Description. All work zone traffic management materials, equipment and implementation shall be in accordance with applicable portions of Missouri Standard Specifications for Highway Construction (2011) and current edition of the Manual On Uniform Traffic Control Devices (MUTCD) – 2009. The Contractor shall prepare a written work zone traffic safety plan for approval by the Engineer, and then furnish, install, maintain and remove all work zone traffic control devices until completion of the project. In addition to said requirements, the Contractor's work zone traffic management plan shall comply with all applicable provisions of this contract.

B. Traffic Management Phasing Plan

1. The Contractor is to perform and stage construction operations to minimize lane restrictions during the construction of the lane widening area of the project.
2. The Contractor shall prepare and submit a written work zone traffic management plan and schedule to the Engineer for review and approval prior to the project preconstruction meeting. Once approved, the Contractor shall submit any requested revisions to the approved traffic management plan to the Engineer at least one (1) week prior to implementation for review and approval. At a minimum, the work zone traffic management plan shall include the proposed traffic control measures to be implemented for each phase of the project; duration said traffic control measures will be in place and the phasing sequence.
3. The Contractor shall notify the Engineer a minimum of 2 weeks prior to closing the road to begin construction of the new bridge deck.
4. The Engineer shall be notified as soon as practical of any postponement due to weather, material or other circumstances.
5. In order to ensure minimal traffic interference, the Contractor shall schedule lane closures for the absolute minimum amount of time required to complete the work. Lanes shall not be closed until material is available for continuous construction and the Contractor is prepared to diligently pursue the work until the closed lane is opened to traffic.
6. The Contractor shall be responsible for maintaining the existing traffic flow through the job site during construction. If disruption of the traffic flow occurs and traffic is delayed in queues deemed excessive by the City of Saint Peters, then the Contractor shall review the construction operations which contributed directly to disruption of the traffic flow and make adjustments to the operations to prevent the queues from occurring again.

C. Work Hours and Lane Restrictions.

1. **Unless approved by the City, or modified here in, work shall be performed Monday through Friday, from 7:00 A.M. to 5:00 P.M. All weekend work (any work from 5:00 PM Friday to 5:00 PM Sunday) will be permitted based on need as solely determined by the City of St. Peters. No night work (work between the hours of 5:00 PM and 6:00 AM) will be permitted on this project due to adjacent residential developments.**

For the lane widening portion of the project all work shall be phased such as to maintain traffic flow in all directions and at all times.

2. For all work other than the bridge replacement, no more than one (1) traffic lane may be closed or restricted at a given time, unless approved by the Engineer.
3. **The portion of Willott Road, from Del Ray Drive to Crescent Hills Drive, may be closed for a single period of time, not to exceed sixty (60) consecutive calendar days. Willott Road must be reopened to two way traffic no later than August 28, 2015. Liquidated damages in the amount of one thousand (\$1,000) dollars per calendar day will be assessed for each calendar day Willott Road is not reopened to two (2) way travel (one traffic lane in each direction) beyond Friday, August 28, 2015 and or over sixty (60) calendar days. This allowable road closure period coincides with the area school district schedule. It is the intent to reopen Willott Road to two way traffic before the start to the 2015-16 school year.**

Work within the closure area only, and only during the period of closure, may be performed Monday through Friday, from 7:00 A.M. to 7:00 P.M., and on Saturdays, Sundays and Holidays from 8:00 AM to 5:00 PM. No night work (work between the hours of 7:00 PM and 7:00 AM, Monday through Friday, or between 7:00 PM and 8:00 AM, Saturday, Sunday and Holidays) will be permitted on this project due to adjacent residential developments.

4. Except when There are three major summer holiday periods: Memorial Day, Independence Day, and Labor Day. All lanes shall be scheduled to be open to traffic during these holiday periods, from 3:00 p.m. on the last working day proceeding the holiday until 8:00 a.m. on the first working day subsequent to the holiday.
5. The Contractor shall not perform any construction operation on the roadway, (including the hauling of material within the project limits), during restricted periods, holiday periods or other special events specified in the contract documents, unless approved by the Engineer.
6. For the lane widening work area, brief closures of an additional lane will be permitted when work operations will seriously hinder the safe movement of traffic. Temporary daytime closures of multiple lanes will be permitted, with engineers approval, provided adequate warning signs and flagmen to safely control traffic during construction are in place. Operations will be immediately suspended should traffic restrictions be attempted on the existing roadway without the necessary flagmen being in place and properly equipped. No further payment will be made on the project until the Contractor has provided to the City sufficient proof that proper flagging procedures will be followed during any future operations requiring it.

D. Work Zone Traffic Device Implementation and Maintenance

1. In addition to all traffic control devices required to comply with implementation of the work zone traffic plan per these specifications, a minimum of one (1) week prior to the start of work, the contractor shall install digital message boards as shown in the traffic control plan. These message boards will alert and advise motorists of upcoming lane restrictions and/or work activities. Unless approved by the engineer, these message boards shall remain in place and in operation for the duration of the project and be updated by the contractor as needed to reflect current work zone conditions.
2. All work zone traffic control devices used for all lane closures shall comply with all applicable provisions of this contract.

3. The contractor shall, at regular intervals of no less than twice weekly, inspect, maintain and/or replace all work zone traffic control devices placed under this contract. The Contractor shall take immediate action to correct any devices found to be missing, out of place, or in need of repair or cleaning. Failure to correct any deficiency, whether found by the Contractor or as notified by the City, will result in the withholding of payment from the Contractor's invoice until such time the corrections are made and the devices are in place according to the original plan, or any approved modification thereof.
4. No traffic switch can be made unless the necessary pavement markings, whether temporary or permanent, is in place. Sufficient notice must be given to the City to allow proper notification to be made regarding the proposed traffic switch.
5. Temporary pavement markings are required at the end of each day concrete placement. Permanent pavement markings must be placed within 5 days of the final placed concrete pavement open to traffic.

E. Commercial Entrance Closures

1. Unless approved by the engineer, no more than one-half of any commercial entrance may be closed or restricted at any time by work activities.
2. The contractor is responsible to contact adjacent property owners at least one (1) week prior to commencing any work activity that will restrict or close access to a public roadway or commercial entrances.

F. Basis of Payment. No direct payment will be made to the contractor to recover the cost of equipment, labor, materials or time required to fulfill the above provisions, unless specified elsewhere in the contract document.

G. ADA Work Zones (EPG 136.7.2.4.4)

The contractor is required to provide an accessible signed detour during the various stages and locations of construction when pedestrian facilities are impacted as described MUTCD Part VI. Prior to construction and/or closure on an existing pedestrian path of travel, the contractor shall develop and submit a detailed plan showing the accessible signed pedestrian detour which will be used during each stage of construction. This plan shall be submitted to the City for review and approval at or prior to the pre-construction conference. Appropriate detours for pedestrian facilities that are impacted by construction activities shall be in place so there is no reduction of access during the construction process.

10. Modular Block Wall

A. Description

1. The modular block wall shall be straight split-faced block. The actual color to be used shall be subject to the approval of the Director of Transportation of the City of St. Peters prior to installation. Any variation in color, uniformity and general appearance of the facing of the wall units may be cause for rejection.

2 One of the following systems may be used for permanent modular block retaining wall at the Contractor's option:

Versa-Lok Retaining Wall by Versa-Lok Retaining Wall Systems, a division of Kiltie Corporation

Keystone Retaining Wall by Keystone Retaining Wall Systems, Inc.

Amastone Modular Block Retaining Walls by Retaining Wall Systems, Inc.

Rockwood Classic Retaining Wall System by Rockwood Retaining Wall, Inc.

Anchor Diamond Retaining Wall by Anchor Wall Systems, Inc.

Vyking Walls Systems, by Stockman Stone Works

3. Other systems may be considered for acceptance. Gravity/infilled retaining wall systems such as Loeffelstein Retaining Walls and Hercules Retaining Walls will be evaluated on a case by case basis. The following information must be submitted for consideration of other systems:

A letter requesting approval of the system.

Color catalog cuts clearly showing the visual appearance of the wall.

Detailed design and installation information for the wall.

4. This information must be submitted a minimum of thirty (30) days prior to installation of the wall. The Contractor will be fully responsible for any costs incurred due to delays caused by late submittals or due to incomplete, illegible, or inaccurate information.

5. A filter cloth shall be placed at all wall joints in front of the selected granular backfill mass.

6. Wall units shall be placed on a 3 inch thick non-reinforced cast-in-place concrete leveling pad or on a 6 inch thick compacted Type 1 or Type 5 Aggregate leveling pad. The leveling pad should extend laterally at least a distance of 6 inches from the toe and heel of the lowermost unit.

B. Design of the Wall

1. The design analysis for the final, P.E. sealed retaining wall plans prepared by the Wall Design Engineer shall consider the external stability against sliding and overturning, internal stability, and facial stability of the reinforced soil mass and shall be in accordance with acceptable engineering practice and these specifications. The internal and external stability analysis shall be performed in accordance with the "NCMA Design Manual for Segmented Retaining Walls", using the recommended minimum factors of safety in this manual. The wall shall be designed for SEISMIC PERFORMANCE CATEGORY B, and shall be subject to any additional requirements as may elsewhere be shown in the plans or covered in this specification.

2. The Contractor and manufacturer are responsible for the internal and external stability of the structure. The design angle of internal friction, Φ , for the retained earth shall not be taken to be less than 27 degrees.

3. The successful bidder shall submit five (5) sets of completed wall plans, design calculations and shop drawings suitable for microfilming. These plans and shop drawings shall be submitted regardless of whether or not earth reinforcements and select backfill are required. All design

plans, calculations, and shop drawings shall be signed and sealed by a Registered Professional Engineer in the State of Missouri. The shop drawings shall demonstrate that the wall meets the minimum elevation requirements shown on the plans. The Contractor will be fully responsible for any costs incurred due to delays caused by late submittals or due to incomplete, illegible, or inaccurate shop drawings and calculations.

4. Completed wall design plans shall also contain all material specifications, fabrication requirements, and all construction requirements for erecting the wall complete in place. Polymeric reinforcing grid may be required and shall extend into the fill as indicated on the approved shop drawings. Any requirements on the design plans conflicting with this special provision shall not be used.

5. All retaining walls should include an underdrain system. The underdrain pipes shall be polyvinyl chloride with a nominal internal diameter of four (4") or six inches (6") and shall be perforated or unperforated in accordance with the details shown in the plans. The underdrain pipes shall extend to daylight or a drainage structure.

6. The Contractor shall indemnify and save harmless the City from all claims for infringement by reason of the use of any patented process by other without the consent of the patent owner.

C. Selected Granular Backfill Material

1. To insure proper functioning of the structure, all select backfill materials used in the structure volume shall conform to the following gradation limits and be obtained from natural sources, have a Plasticity Index (P.I.) as determined by AASHTO T-90 of less than 6 and conform to the following gradation limits:

<u>Sieve Size</u>	<u>Percent Passing</u>
4 inches	100
No. 40	0-60
No. 200	0-10

2. If the select granular backfill proposed for use by the contractor does not meet the above requirements, the contractor must provide the following information:

(1)(a) The direct shear test – AASHTO T-236, utilizing a sample of the material compacted to 95 percent of maximum density as determined by AASHTO T-99 Methods C or D (with oversize correction, as outlined in Note 7) at optimum moisture content;

(b) The triaxial compression test – AASHTO T-234; or

(c) Other means meeting the approval of the Director of Transportation.

Tests will ordinarily be waived for crushed stone products where 80 percent of the particles exceed

(2) Test results demonstrating that the dry unit weight of the backfill materials not less than 110 pounds per cubic foot.

(3) Test results indicating that the material is substantially free of shale or other soft, poor durability particles, and has a magnesium sulfate soundness loss of less than 30 percent after 4 cycles.

(4) Test results demonstrating that the selected granular backfill materials also meet the following electrochemical requirements:

<u>Requirements</u>	<u>Test Methods</u>
Resistivity 3000 ohm centimeters	California DOT 643
pH 5-10	California DOT 643
Chlorides #200 parts per million	California DOT 422
Sulfates #1000 parts per million	California DOT 417

2. Excepting pH, the electrochemical requirements are waived for wall systems with a totally nonmetallic reinforcement and connecting system to the wall units.

3. Backfill not conforming to this specification shall not be used without the written consent of the Director of Transportation. The Contractor shall furnish to the Director of Transportation a Certificate of Compliance certifying the selected granular backfill material complies with this section of the specifications. A copy of all test results performed by the Contractor or his supplier necessary to assure contract compliance shall also be furnished to the Director of Transportation.

4. Acceptance will be based on the Certificate of Compliance, accompanying test reports, and any applicable tests performed by the Director of Transportation.

5. The frequency of sampling of selected granular backfill, necessary to assure gradation control throughout construction, shall be as directed by the Director of Transportation.

D. Foundation Preparation

1. The foundation for the structure shall be graded level for a width equal to or exceeding the length of the reinforcing strips, or as shown on the approved shop drawings. Prior to wall construction, the foundation, if not in rock, shall be compacted as directed by the Director of Transportation. Any foundation soils found to be unsuitable shall be removed and replaced, as directed by the Director of Transportation.

2. At each wall unit foundation level, a three inch thick by eighteen inch wide unreinforced concrete leveling pad or six inch thick by eighteen inch wide compacted Type 1 or Type 5 Aggregate leveling pad shall be provided as shown on the approved shop drawings. Concrete leveling pads shall be constructed from Class B or B1 concrete, be cured a minimum of 12 hours before placement of wall blocks, and have a 28-day strength, f'c, of 3,000 p.s.i.

E. Backfill Placement

1. Backfill placement shall closely follow the erection of each course of blocks. Backfill shall be placed in such a manner as to avoid any damage or disturbance to the wall materials or misalignment of the facing panels. Any wall materials which become damaged or disturbed during backfill placement shall be either removed and replaced at the Contractor's expense or corrected, as directed by the Director of Transportation. Any misalignment or distortion of the wall blocks due

to placement of backfill outside the limits of this specification shall be corrected, as directed by the Director of Transportation.

2. Backfill shall be compacted in accordance with Section 203 of the St. Louis County Standard Specifications for Highway Construction with the following exceptions:

(a) Minimum density shall not be less than 95 percent of maximum dry density.

(b) For backfills containing more than 30 percent retained on the three-quarter-inch ("3/4") sieve, a method of compaction consisting of at least four (4) passes by a heavy roller shall be used.

(c) The moisture content of the backfill material prior to and during compaction shall be uniformly distributed throughout each layer. Backfill materials shall have a placement moisture content less than or equal to the optimum moisture content.

(d) Compaction within three feet (3') of the back face of the wall shall be achieved by at least three (3) passes of a lightweight mechanical tamper, roller or vibratory system.

(e) At the end of each day's operation, the Contractor shall slope the last level of the backfill away from the wall facing to rapidly direct runoff away from the wall face. In addition, the Contractor shall not allow surface runoff from adjacent areas to enter the wall construction site.

F. Cap Blocks and Miscellaneous Requirements

1. Cap blocks are required for the top wall course of each wall tier. Adjustments to the bottom of wall elevation shall be made such that the elevation of the top wall course meets the elevations indicated on the plans.

2. When the modular block wall is supporting an adjacent sidewalk, driveway or pavement no more than the cap block shall be exposed above the finished sidewalk surface unless prior approval by the engineer is received.

3. The Contractor will be required to fill any open space in joints between the modular block wall and any adjacent structures (buildings, reinforced concrete walls, etc.) with a weatherproof caulk of tan-brown color. The color of the caulk shall be approved by the Director of Transportation prior to use.

4. The Contractor shall obtain the services of a technical representative from the manufacturer to advise the Director of Transportation, if necessary. This advisor shall be a qualified representative, acceptable to the Director of Transportation. It will not be necessary for this representative to be present during wall construction, unless specifically requested by the Director of Transportation.

5. The unit of measurement for furnishing and fabricating all materials for the walls, including modular blocks, excavation, reinforcement, joint materials, selected granular backfill as specified above, and incidentals, will be per square foot of vertical wall surface from wall base to top. The quantity shown for Modular Block Wall in the bid is approximate.

6. Final measurement will not be made except for authorized changes during construction or where appreciable errors are found in the contract quantity. The revision or correction will be computed and added to or deducted from the contract quantity. Cap blocks are considered to be part of the measurement or payment will be made for cap blocks. No measurement will be made for any leveling pads. No measurement will be made for wall reinforcements.

7. The accepted quantity, determined as provided above, will be paid for at the contract unit price, for the pay item shown on the design plans. The contract unit price and payment will be full compensation for providing a technical advisor as needed, furnishing all materials, fabricating modular wall blocks and cap blocks, excavation, leveling pad placement and constructing the modular block wall in place.

11. Check Valve

A. General

1. Submit product literature that includes information on the performance and operation of the valve, materials of construction, dimensions and weights, elastomer characteristics, flow data, headloss data, and pressure ratings.

2. Upon request, provide shop drawings that clearly identify the valve dimensions.

B. Quality Assurance

1. Supplier shall have at least fifteen (15) years experience in the manufacture of "duckbill" style elastomeric valves, and shall provide references and a list of installations upon request.

C. Products

1. Check Valves are to be all rubber of the flow operated check type with a slip-on connection. The Check Valve is designed to slip over the specified pipe outside diameter and attached by means of vendor furnished stainless steel clamps. The port area shall contour down to a duckbill, which shall allow passage of flow in one direction while preventing reverse flow. The valve shall be one piece rubber construction with nylon reinforcement. The duckbill shall be offset so that the bottom line of the valve is flat, keeping the invert of the pipe parallel with the invert of the valve. The top of the valve shall rise to form the duckbill shape and formed into a curve of 180°.

2. Manufacturer must have available flow test data from an accredited hydraulics laboratory to confirm pressure drop data. Company name, plant location, valve size and serial number shall be bonded to check valve.

3. When line pressure inside the valve exceeds the backpressure outside the valve by a certain amount, the line pressure forces the bills of the valve to open, allowing flow to pass. When backpressure exceeds the line pressure by the same amount, the bills of the valve are forced closed. The flat bottom allows the valve to be installed where minimal bottom clearance exists.

C. Installation

1. Valve shall be installed in accordance with manufacturer's written Installation and Operation Manual and approved submittals.

12. The Contractor is responsible to record the existing conditions of driveways, mailboxes, landscaping, and other improvements and property that may be damaged during construction operations prior to the start of construction operations. Prior to the start of work, the Contractor shall report any existing condition, which may be construed as damage due to construction operations to the engineer. Failure to properly document existing conditions may result in Contractor being held responsible for its repair or replacement. All property damage is to be recorded, photographed, and reported to the City representative and the property owner the same day the damage occurs. All property damage issues are to be settled reasonably and in a timely manner.

13. LED Luminaire

a. Description:

- i. This work shall consist of furnishing and installing a LED luminaire on a proposed Traffic Signal Post, Type CL

b. Products:

- i. The LED Luminaire shall have the following characteristics:
 1. Cobra head style - exterior mounted roadway luminaire
 2. multi-volt input (120V-277V)
 3. distribution pattern of Narrow Asymmetric (Medium)
 4. output of 8300 lumens at a color temperature of 4000K
 5. constructed from black material to match the traffic signal mast arms and poles.
 6. Have the ability to be mounted on a luminaire arm meeting the requirements of MoDOT Standard Plan 902.40Q

14. LED Illuminated Street Sign

c. Description:

- i. This work shall consist of furnishing and installing an internally LED slim line street name sign in accordance with the details in the plans and as specified herein.
- ii. All messages shall be clearly legible, attracting attention under any lighting conditions.
- iii. The sign shall be single-face, internally illuminated, and suspended below a traffic signal mast arm. Internal illumination will be controlled by a photocell located inside the power supply assembly.

d. Products:

- i. The internally illuminated street name sign shall be manufactured by one of the following companies:
 1. National Sign and Signal

2. Temple, Inc.
3. Traffic Signs, Inc.

15. Surface Mounted LED Luminaire (Culvert)

e. Description:

- i. This work shall consist of furnishing and installing a surface mounted vandal resistant LED luminaire inside of culvert

f. Products:

- i. The LED Luminaire shall have the following characteristics:
- ii. Surface mounted aluminum fixture vandal resistant with clear prismatic polycarbonate lens.
- iii. Lens shall be UV stabilized with integral prism. Lens shall be attached to housing with vandal resistant screws.
- iv. Marine grade die cast aluminum with polyester powder coat finish Bronze in color.
- v. Output of 4802 lumens at a color temperature of 4000K. Maximum 60 watts
- vi. Wet location listed.
- vii. Microwave occupancy sensor mounted behind lens.
- viii. Luminaire shall be warranted by manufacturer to be repaired or replaced for the life of the installation for damage due to vandalism.
- ix. LED's shall be rated for over 130,000 hours projected life based on L70 testing In accordance with LM-80.
- x. Multi-volt input (100V-277V)

g. Products:

- i. The surface mounted Vandal resistant LED Luminaire shall be manufactured by one of the following companies:
 1. Luminaire LED
 2. Columbia
 3. Hubbell
 4. Lithonia

16. The Contractor and the Engineer shall record and reconcile all work quantities on a weekly basis.

17. Americans With Disabilities Act (ADA) Compliance and Final Acceptance of Constructed Facilities (MoDOT EPG JSP-10-01)

- A. Description. The contractor shall comply with all laws pertaining to the Americans with Disabilities Act during construction of pedestrian facilities on public rights of way for this project. An ADA Post Construction Checklist is provided herein to be utilized by the contractor for verifying compliance with the ADA law. The contractor is expected to familiarize himself with the plans involving pedestrian facilities and the ADA Post Construction Checklist prior to performing the work.
- B. ADA Post Construction Checklist. The contractor can locate the ADA Inspection Checklist form in Section 'M' of this document and on the Missouri Department of Transportation website:

http://www.modot.mo.gov/business/contractor_resources/forms.htm

- 1. The checklist is intended to be a helpful tool for the contractor to use during the construction of the pedestrian facilities and a basis for the commission's acceptance of work. Prior to work being performed, the contractor shall bring to the engineer's attention any planned work that is in conflict with the design or with the requirement shown in the checklist. Situations may arise where the checklist may not fully address all requirements needed to construct a facility to the full requirements of current ADA law. In those situations, the contractor shall propose a solution to the engineer that is compliant with current ADA law using the following hierarchy of resources: Americans with Disabilities Act Accessibility Guidelines (ADAAG), Draft Public Rights of Way Accessibility Guidelines (PROWAG), MoDOT's Engineering Policy Guidelines (EPG), or a solution approved by the Access Board.
 - 2. It is encouraged that the contractor monitor the completed sections of the newly constructed pedestrian facilities in attempts to minimize impacts that his equipment, subcontractors or general public may have on the tolerances as established in the checklist.
- C. Coordination of Construction.
 - 1. Prior to construction and/or closure on an existing pedestrian path of travel, the contractor shall submit a schedule of work to be constructed, which includes location of work performed, the duration of time the contractor expects to impact the facility and an accessible signed pedestrian detour during each stage of construction. This plan shall be submitted to the engineer for review and approval at or prior to the pre-construction conference.
 - 2. When consultant survey is included in the contract, the contractor shall use their survey crews to verify that the intended design can be constructed to the full requirements as established in the ADAAG. When ADAAG does not give sufficient information to construct the contract work, the contractor shall refer to the Draft PROWAG.
 - 3. When consultant survey is not included in the contract, the contractor shall coordinate with the engineer, prior to construction, to determine if additional survey will be required to confirm the designs constructability.
- D. Final Acceptance of Work. The contractor shall provide the completed ADA Post Construction Checklist to the engineer at the semi-final inspection. ADA improvements require final inspection and compliance with the ADA Post Construction Checklist. Each item listed in the checklist must receive either a "YES" or an "N/A" score. Any item receiving a "NO" will be deemed non-compliant and shall be corrected at the contractor's expense unless deemed otherwise by the engineer.

E. Basis of Payment. The contractor will receive full pay of the contract unit cost for all sidewalk, ramp, curb ramp, median, island, approach work, cross walk striping, APS buttons, pedestrian heads and detectible warning systems that are completed during the current estimate period as approved by the engineer. Based upon completion of the ADA Post Construction Checklist, the contractor shall complete any necessary adjustments deemed non-compliant as directed by the engineer.

1. No direct payment will be made to the contractor to recover the cost of equipment, labor, materials, or time required to fulfill the above provisions, unless specified elsewhere in the contract documents.
2. No direct payment will be made to the contractor to recover the cost of the equipment, labor, materials, or time required to provide an accessible signed detour during the various stages and locations of construction.

18. The Contractor shall restore, at its sole cost and expense, the surface area of all property disturbed by the Contractor, its subcontractors, agents, representatives or invitees, as nearly as practicable to its previous condition, including repaving, restoring all interior curbs, resodding/reseeding, replanting of trees and bushes, and replacement of directional signs, lot lights and road sign as necessary if damaged by activities related to construction of the project.

19. (This Item Left Blank)

20. Section M of this document includes the ADA Final Acceptance Checklist Specification. The contractor will be required to follow the most current ADA compliance specifications approved by The Missouri Department of Transportation.

21. General Pavement Marking Placement Standards

- A. Permanent pavement markings must be placed within 5 days of the final of the diamond ground concrete pavement open to traffic.
- B. The contractor is to replace all pavement markings removed during construction operations specified in the contract. In general the replaced pavement markings are to be placed at the same locations present at the start of the project. The Engineer, or his representative, shall provide guidance marks in the field to assist the contractor however pavement marking layout shall be the responsibility of the contractor.
- C. The Contractor shall place polyurea paint pavement markings at the contract unit price in accordance with this specification and with approval from the Engineer.
- D. All pavement markings shall be uniform in appearance with crisp, well-defined edges and shall be uniform in width and thickness. Surface distribution of the beads shall be uniform.
- E. Lateral deviation of pavement markings shall not exceed one (1") inch in 100 feet.
- F. Length of pavement markings shall not deviate more than three (3") inches in ten (10') feet.

G. Width of markings shall not deviate more than shown in the following table:

Marking Width Tolerance	
Marking Width	Requirement
Four (4") inch	+ One Quarter (1/4") inch
Six (6") and Eight (8") inches	± One Quarter (1/4") inch
Ten (10") inches and above	± One Half (1/2") inch

- H. The Contractor will be responsible for the protection of all pavement markings until the pavement markings have reached a no-track state. All pavement markings shall be installed in accordance with this specification and all manufacturers' recommendations. The Contractor shall provide manufacturer's written application or installation instructions, upon request by the Engineer.
- I. The Contractor shall begin intermittent pavement marking, starting with the gap, immediately after the last existing intermittent pavement marking to maintain the specified cycle length along the entire length of the intermittent pavement marking line.
- J. All pavement markings placed per this contract shall meet or exceed the following minimum retroreflectivity requirements:

Retroreflectivity Acceptance Requirements		
Type of Material	Color	Millicandelas/ft ² /footcandle (Millicandelas/m ² /lux) (Minimum Initial)
Extruded Thermoplastic	White	300
	Yellow	225
Hot Spray Thermoplastic	White	300
	Yellow	225
Epoxy	White	300
	Yellow	225
Preformed Marking Tape	White	Per Manufacturer's Specifications
	Yellow	Per Manufacturer's Specifications
Paint	White	300
	Yellow	225

- K. Discoloration of pavement marking material will be cause for rejection.
- L. Upon completion of the initial performance inspection, and after satisfactory completion of any necessary corrections, the Engineer will notify the Contractor, in writing, of the date of acceptance and release the Contractor from further performance responsibility.

- M. All pavement markings will require a retroreflectivity test performed with a reflectometer. Intervals of testing shall be 4 separate tests in locations selected by the engineer. Test Frequency may increase if previous test locations failed.

22. Painting Existing Traffic Signal Equipment

a) Description:

- i) The work to be performed by the Contractor shall be in accordance with industry standard best practices and shall meet the approval of the Engineer. Contractor shall take due care to protect the public, automobiles, buildings, pedestrians, and adjacent areas, from paint drops, over spray and spillage. The Contractor shall utilize tarps and drop cloths as necessary. The Contractor shall take appropriate measures to avoid painting existing signs or equipment installed on the pole or mast arms. The removal of signs or equipment from the pole or mast arm shall not be allowed at any time, unless otherwise directed by the Engineer.

- ii) Pole Preparation: The Contractor shall remove any existing stickers, tape, or materials prior to the application of a cleaning solvent, then to be followed by the application of Primer and Paint.

iii) Painting:

- (1) This work shall consist of field painting the remaining traffic signal poles and mast arm and pole assemblies in both the southwest and southeast quadrants of the intersection of Mexico Road and Salt Lick Road. The color shall be "Valmont Ebony Black (Part No. 334)", or as approved by the Engineer.

- (2) The Contractor shall apply one (1) coat of Primer prior to painting. The primer shall be compatible for use with aluminum or steel: Contractor responsible for verifying existing materials in field and making adjustments as necessary to

ensure material compatibility. The primer shall be allowed to dry for 24 hours prior to the application of Paint Finish.

- (3) The Contractor shall apply one (1) coat of paint. The paint finish used shall be compatible with the primer. The Contractor shall use only new factory sealed primer and paint finish materials

iv) Painting Cleanup:

- (1) The Contractor shall conduct cleaning of paint equipment, and tools in a designated Paint Cleanup Area that will not allow contamination of storm water or runoff spills. The Contractor is not allowed to dump wash water from cleaning of painting equipment and tools into streets, gutter, storm drains, or creeks. To assist in painting cleanup, the Contractor shall remove as much excess paint as possible from brushes, rollers, and paint equipment before starting cleanup. For water based paint, the Contractor shall dispose of wash water from aqueous cleaning equipment and tools to the sanitary sewer. For oil based paint, the Contractor shall filter paint thinner and solvents for reuse.

b) Basis of Payment:

- i) Painting of all traffic signal poles and mast arm and pole assemblies remaining in place will be paid for at the contract unit price for each (EA).

23. Maintain Sanitary Sewer

- A. Description. For the sanitary line replacement, the Contractor shall maintain the sanitary sewer system during construction by means of pumping to the downstream structure as approved by the Engineer.
1. The Contractor shall provide 24-hour maintenance of the pumping system.
 2. The Contractor shall maintain existing flows through the sanitary sewer system.
- B. Basis of Payment. No direct payment will be made to the contractor to recover the cost of equipment, labor, materials or time required to fulfill the above provisions, unless specified elsewhere in the contract document.

24. Seeding

This work shall consist of furnishing and installing seeding in accordance with City of Saint Peters Standard Specification for Terra-Seeding. The contractor shall fill in any rills and return the slope to finished grade as part of his work. Incidental to this bid item are all the costs associated and any other items required as shown on the construction plans. Payment shall be made at the contract price per acre.

a. General: The Contractor shall perform finish grading operations and establish grass vegetation along the side slopes of soil roadway embankment and all areas disturbed during construction of the project as designated by the City by either surface placement of a decomposed organic compost/seed medium (*Terra SeedingTM*) or incorporation of a decomposed organic compost medium in to the soil embankment surface (Soil Amendment and Hydro-seeding). All materials, work and equipment used shall comply with the specifications contained in this document. All re-vegetation operations shall be performed in a manner consistent with professional application practices and to the complete satisfaction of Owner.

b. Unit Price: The unit price for Re-vegetation (Item 1 of Section C) shall include all costs, including but not limited to all labor, equipment and materials, required to finish grade and properly establish grass vegetation using one of the approved methods specified.

c. Measurement of Quantities: Payment for re-vegetation shall be made to the nearest square foot (SF) basis. Areas that have existing patches of vegetation are to remain and will be considered as non-contributing to the square foot calculations.

d. Compost: All compost shall be United States Concrete Council (USCC) certified "Class A" compost meeting the requirements of the Seal of Testing Assurance certification program. The Contractor shall provide written documentation to the City disclosing the compost source and said certification.

The City of St. Peter manufactures USCC certified Class A compost at its Earth Center Composting Facility located at 100 Ecology Drive. This compost and all other Earth Center Products are available at the City's retail cost.

e. Seed Mixture and Application Rate: Tall seed used for the project shall be placed in the following mixture and rates.

Species	Percent Mixture (%)	Application Rate (lbs/Ac)
Tall Fescue	38.4	165
Perennial Rye Grass	38.4	165
Kentucky Blue Grass	11.6	50
Oates	11.6	50
Total	100	430

f. **Finish Grading:** The Contractor shall finish grade the areas to be revegetated to the grades shown on the drawings. All surfaces shall be tilled or scarified to loosen the soil and break up large dirt clods prior to application of seed.

g. **Terra Seeding™**

1. Work shall consist of a one (1") to one and one-half (1-1/2") thick surface application of compost seed and polymer binder over all areas designated for re-vegetation per the specifications contained in this document.
2. Compost or Soil Mix shall be uniformly applied using an Express Blower™ or other approved pneumatic blower equipment. Using the pneumatic blower, project compost/soil mix directly at soil surface, thereby establishing good soil contact. When applying on a slope for erosion control, compost/soil mix layer should be applied approximately three feet over the top of the slope or overlap it into existing vegetation.
3. Pneumatic blower – The pneumatic blower shall be an approved unit capable of uniformly applying soil mix, mulch, wood chips, etc. up to three or four inch minus in length, up to 1/2 inch in width and thickness, and 60% moisture or less. The unit must also provide an application hose of 300 feet in length or greater to allow for maximum accessibility.
4. Compost shall be applied to all areas designated for re-vegetation at a depth of one (1") inch to one and one-half (1-1/2") inches. This rate equals approximately 144 to 216 cubic yards of compost material per acre of application area. Contractor will supply documentation showing this amount of material purchased and effectively placed (i.e. material invoices and truck load tickets).
5. Polymer binder shall be thoroughly incorporated in to the compost mix and applied at a rate of ten (10 lbs) pounds per 1,000 square feet, or 435.60 pounds per acre.
6. Apply seed using a Supplemental (Seed) Injection System or other approved equal. All seeding systems **must** include an accurate mechanized calibration system that insures proper integration during application, and also insures integration rates of seed or seed/fertilizer mix throughout compost/soil mix profile (*Terra Seeding™*). Natural conditions and time of year should be taken into consideration if irrigation is not available. Re-seed areas that exhibit unsatisfactory growth. Fill in and seed eroded areas with compost/soil mix material after appropriate grading and compaction.

- h. Soil Amendment and Hydro-seeding
 - 1. Work shall consist of incorporating two (2") inches of compost in to the top two (2") of the soil surface and applying a hydro-seed mixture of seed and mulch over all areas designated for re-vegetation per the specifications contained in this document.
 - 2. Compost shall be uniformly applied using compact track loaders or other equivalent equipment approved by the City. After the compost is spread uniformly the compost shall be tilled into the top two (2") inches of the soil surface using a tiller or equivalent equipment approved by the City. This rate equals approximately 288 cubic yards of compost material per acre of application area. Contractor will supply documentation showing this amount of material purchased and effectively placed (i.e. material invoices and truck load tickets).
 - 3. Seed and mulch mix shall be applied using a hydro-seeder or other equivalent equipment approved by the City. All seeding systems **must** include an accurate mechanized calibration system that insures proper integration during application, and also insures integration rates of seed or seed/fertilizer mix throughout compost/soil mix profile.
 - i. Establishment of Turf: The Contractor shall guarantee the establishment of turf for a period of nine months or two complete cuttings. All areas that exhibit unsatisfactory growth shall be reworked and reseeded until turf is established.

25. Removal of Bridges

A. Description:

This work shall conform to Section 216 of the Missouri Specifications, latest edition, and as modified by this Job Special Provision. Work will consist of removing and disposing the existing bridge structure as shown on the plans or as directed by the Engineer.

B. Removal Requirements:

The Contractor shall remove the structure as outlined on the plans. The existing superstructure shall not be removed until after the abutment backfill has been removed to footing level. Earth removal shall be balanced between abutments with no more than a 4-ft height differential in fill allowed. The Contractor shall accept full responsibility for the safety and feasibility of his operation.

The Contractor shall submit his proposed method and plan of bridge removal to the Engineer for review a minimum of 14 days before commencing such activities. Said plan shall include a proposed method of removing and dismantling the existing superstructure as well as a proposed method of demolishing and removing the substructure. Included shall be a proposed method of disposal. Material removed under this item shall be disposed of by the Contractor off the project site at such place(s) as the Contractor may secure. If the material is disposed of on private property, the Contractor shall secure the written consent of the property owner.

The existing pedestrian truss structure shall be carefully removed to avoid damage and be salvaged for future use. The truss shall be delivered to a location within city limits to be determined by the City of St. Peters.

Any damage to nearby utilities will be the Contractor's responsibility. Repairs and replacements of damaged sections will be made at the expense of the Contractor.

C. Method of Measurement:

No direct payment will be made for incidental items necessary to complete the work unless specifically provided as a pay item in the contract.

D. Basis of Payment:

This work will be paid for at the contract lump sum price for "Removal of Bridges."

26. Stream Gauge

A. Description:

The contractor shall coordinate with the City of St. Peters prior to removal of the stream gauging station. The work shall include removal of the gauging station and associated equipment along with reinstallation on the new bridge.

B. Method of Measurement

No separate measurement will be made for work associated with the Stream Gauge.

C. Basis of Payment

No separate payment will be made for work associated with the Stream Gauge. All work associated with the removal and reinstallation of the stream gauge shall be included in the contract unit price of other items.

27. Form Liners

A. Description

This work item shall consist of constructing the form liner aesthetic treatment on cast-in-place concrete as shown on the plans and described in this special provision. A form liner shall be utilized on the interior exposed faces of the wingwalls and headwalls of the pedestrian box culvert.

B. Materials

1. Shop Drawings. Contractor shall provide complete shop drawings of all aesthetic treatments.
2. Formwork. Formwork for aesthetic treatment of the cast-in-place concrete, shall be a type that produces uniform results consistent in both, pattern and depth of relief with the project design aesthetics. The contractor shall be responsible to coordinate the aesthetic treatments of all components to meet the design aesthetic criteria described herein and as shown on plans. No mixing of pattern numbers or manufacturers will be

permitted. The form liner pattern shall be one of the patterns listed on the plans or approved equal.

3. Form Ties. Wall form ties shall be placed in a uniform pattern. In surface areas receiving the aesthetic treatment form liner, all form ties shall be placed in the simulated stone surface. Form ties shall be fiberglass ties that shall hold the forms in the correct alignment. The color of the ties shall closely match the concrete wall color. Ties shall be ground flush with the surface of concrete prior to pressure washing.

4. Form Release Agent. Form release agents shall be the manufacturer's standard non-staining, non-petroleum based and compatible with surface sealer finish coating. Form release agents shall be applied to all surfaces of the form liner at the manufacturer's recommended rate.

5. Gaskets. Closed cell compressible neoprene of such thickness as is appropriate to assure leakage prevention shall be used to prevent joint leakage. One face shall be coated with an adhesive tape to assure proper positioning at the time of form closure. The neoprene shall be sufficiently compressible as to assure virtual "zero" separation of the forms as a result of the use of this product.

6. Aggregates

a. Aggregate Source. The aggregate incorporated into the concrete mix of all aesthetic concrete bridge components shall be from the same source as the balance of the bridge concrete work. The purpose for this provision is to ensure uniformity of materials and color once areas are pressure washed and aggregates become exposed. Single-source shall be interpreted as one contiguous rock quarry, gravel pit or dredging location. This provision in no way alters the specification requirements for aggregate quality specified in other sections of the project specifications.

b. Aggregate Gradation. Concrete mixes supplied for the construction of the aesthetic treatments shall be in accordance with the

following requirements. The concrete aggregate for the aesthetic treatment mix shall be Gradation E in accordance with [Sec 1005](#) for any areas where aesthetic treatment is formed monolithically with the structure. This requirement for aggregate size is necessary to permit concrete mixture to flow freely and fill completely into reveals and form liner proposed in the aesthetic treatment. Gradation E aggregate shall meet the aggregate source requirements.

7. Joint Materials. Bond breaker material shall be polyethylene tape, coated paper, metal foil or similar type materials. The backup material shall be compressible, non-shrink, non-reactive with the sealant and non-absorptive material type such as extruded butyl or polychloroprene foam rubber. The joint sealant shall be an elastomeric, multi-component sealant, in accordance with Federal Specification TT-S-227, Type II. The sealant color shall match the pressure washed concrete surface color.

C. Construction Requirements

1. Reveals and Texture. All reveals and texture shall be continuous from element to element through construction joints and around corners. Techniques shall be utilized to ensure true continuous texture between separate elements. Sand blasting will not be permitted for cleaning concrete surface, as sand blasting will reduce the special surface texture specified. Pressure washing with water is the preferred method of removing laitance. Pressure washing cleaning shall provide a minimum pressure of 3000 psi (21 MPa) at a rate of 3 to 4 gallons per minute (11.4 to 15.1 L/min) using a fan nozzle held perpendicular to the surface at a distance of 2 to 3 feet (0.6 to 0.9 m). The completed surface shall be free of blemishes, discolorations, surface voids and conspicuous form marks to the satisfaction of the engineer.

2. Sample Test Panels. Sample test panels shall be constructed to demonstrate the contractor's workmanship for all form liner textures and patterns as shown on the plans. The sample test panels may also be used for demonstration special surface finish if approved by the engineer. The architectural surface treatment of the finished work shall achieve the same final effect as demonstrated on the approved sample test panels. The materials used in construction of the sample test panels shall be in accordance with all standards as listed in this specification and the plans. The concrete mix shall be consistent with the project specifications and criteria. The minimum size of the sample test panels shall be 4 x 4 feet x 8 inches. The form liner finish shall be demonstrated in a vertical strip covering one-half to three-quarters of the sample test panel(s).

3. Patches. Holes and defects in concrete surface shall be filled within 48 hours of when the forms are removed. The same patching materials and techniques shall be used that were approved on sample test panels. The patches shall be made with a stiff mortar made with the same material sources as the concrete. The mortar mix proportions shall be adjusted so the dry patch matches the dry adjacent concrete. White cement shall be added to the mortar mix if necessary to lighten the mortar mix.

4. Joints. Joints shall be sealed when the sealant, air and concrete temperatures are above 40°F (4°C). Joints shall be primed and filled flush with

joint sealant in accordance with the manufacturer's recommendation. All construction control and expansion joints shall occur within the vertical joints as shown in the elevation views on the plans. All vertical expansion joints shall be filled with preformed fiber expansion joint filler covered with bond break tape and sealed with elastomeric, multi-component sealant.

D. Method of Measurement.

Final measurement will not be made except for authorized changes during construction or where significant errors are found in the contract quantity. The revision or correction will be computed and added to or deducted from the contract quantity. Measurement of form liners will be made to the nearest square yard.

E. Basis of Payment.

Payment for form liners will be based on the contract plan quantities. Payment for the above described work, including all material, additional concrete, equipment, labor and any other incidental work necessary to complete this item, will be considered completely covered by the contract unit price for "Form Liners". Any change in the contract plan quantities, based on approved change orders, will be paid for at the contract unit price.

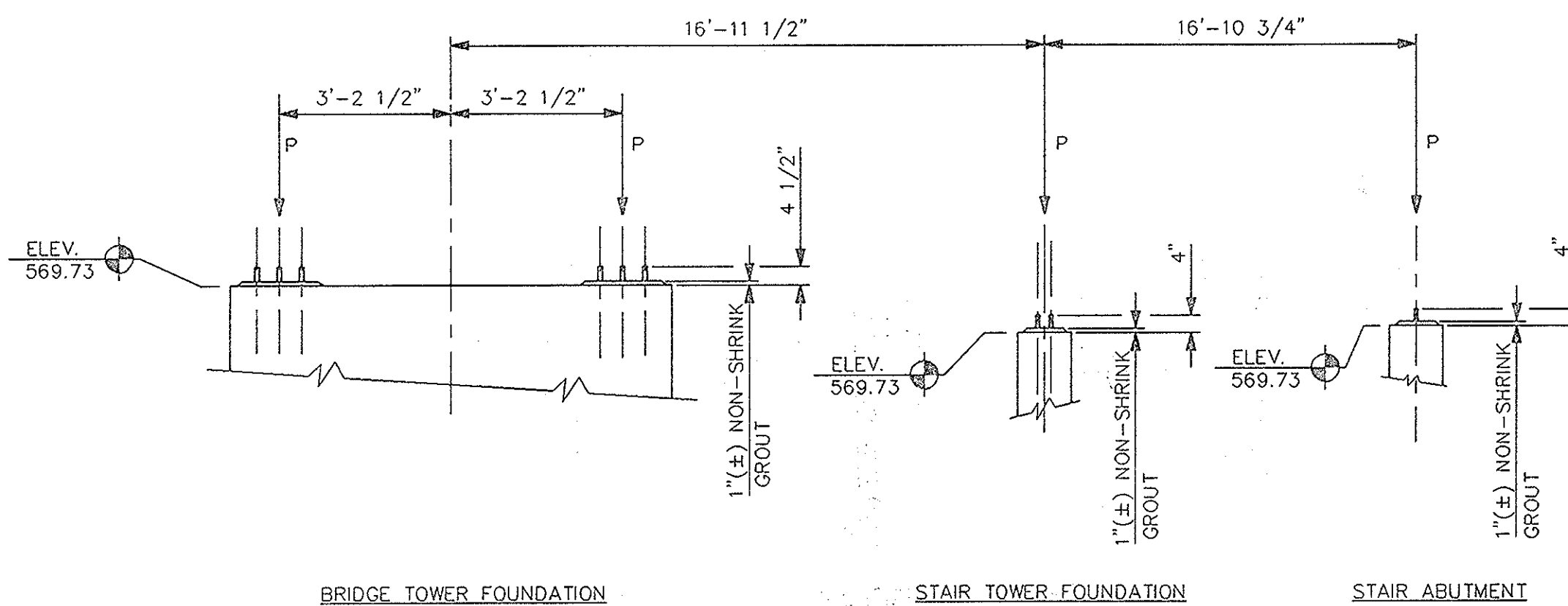
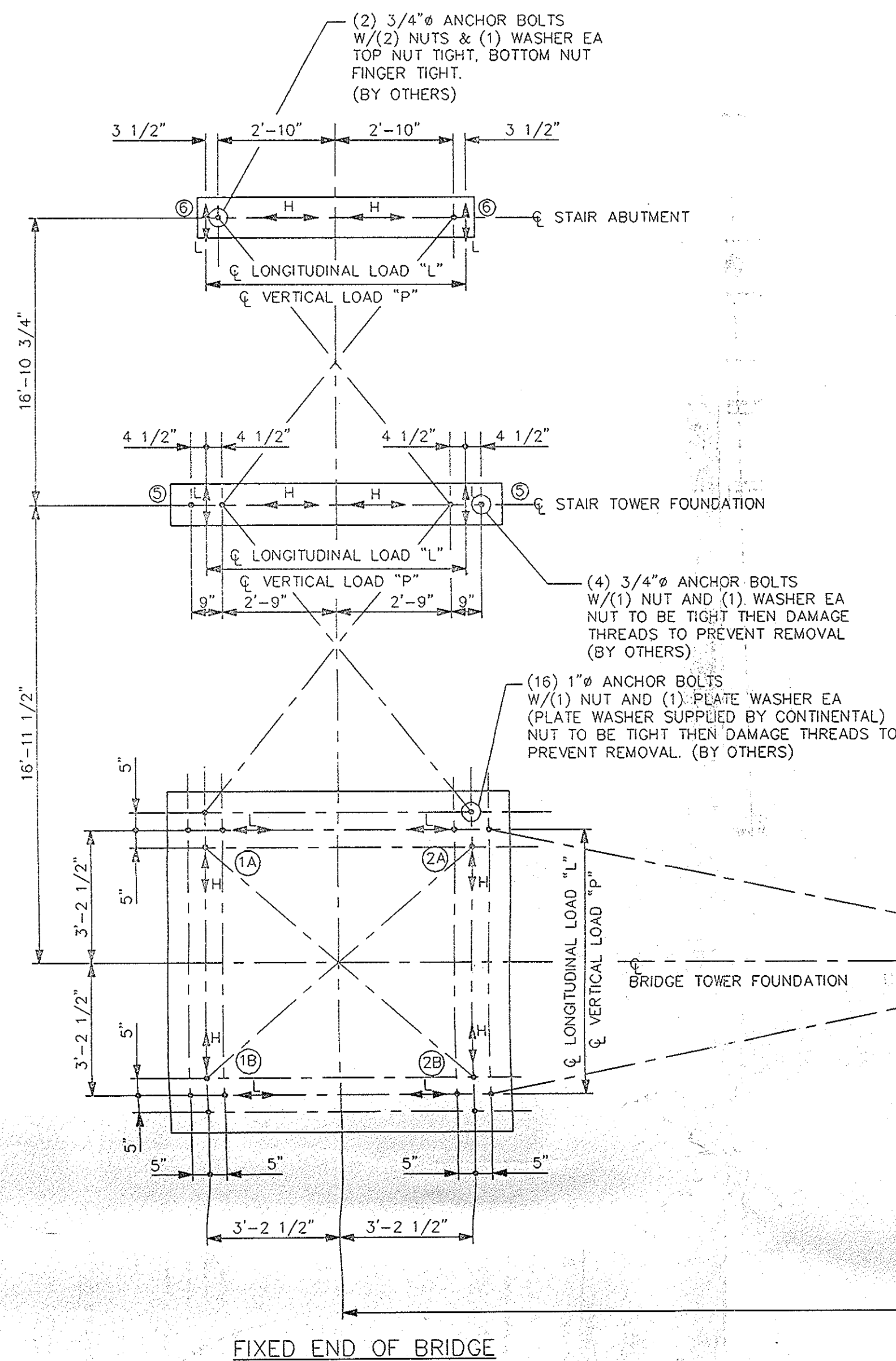
28. Penetrating Concrete Sealer

A. Description. This work shall consist of preparing and treating the new concrete surfaces with a penetrating concrete sealer meeting this specification. These surfaces include the bridge deck, approach slabs and roadway face and top of sidewalks, and barrier curbs. This type of sealer shall be used in lieu of the normal surface sealing for concrete in accordance with Sec 703.

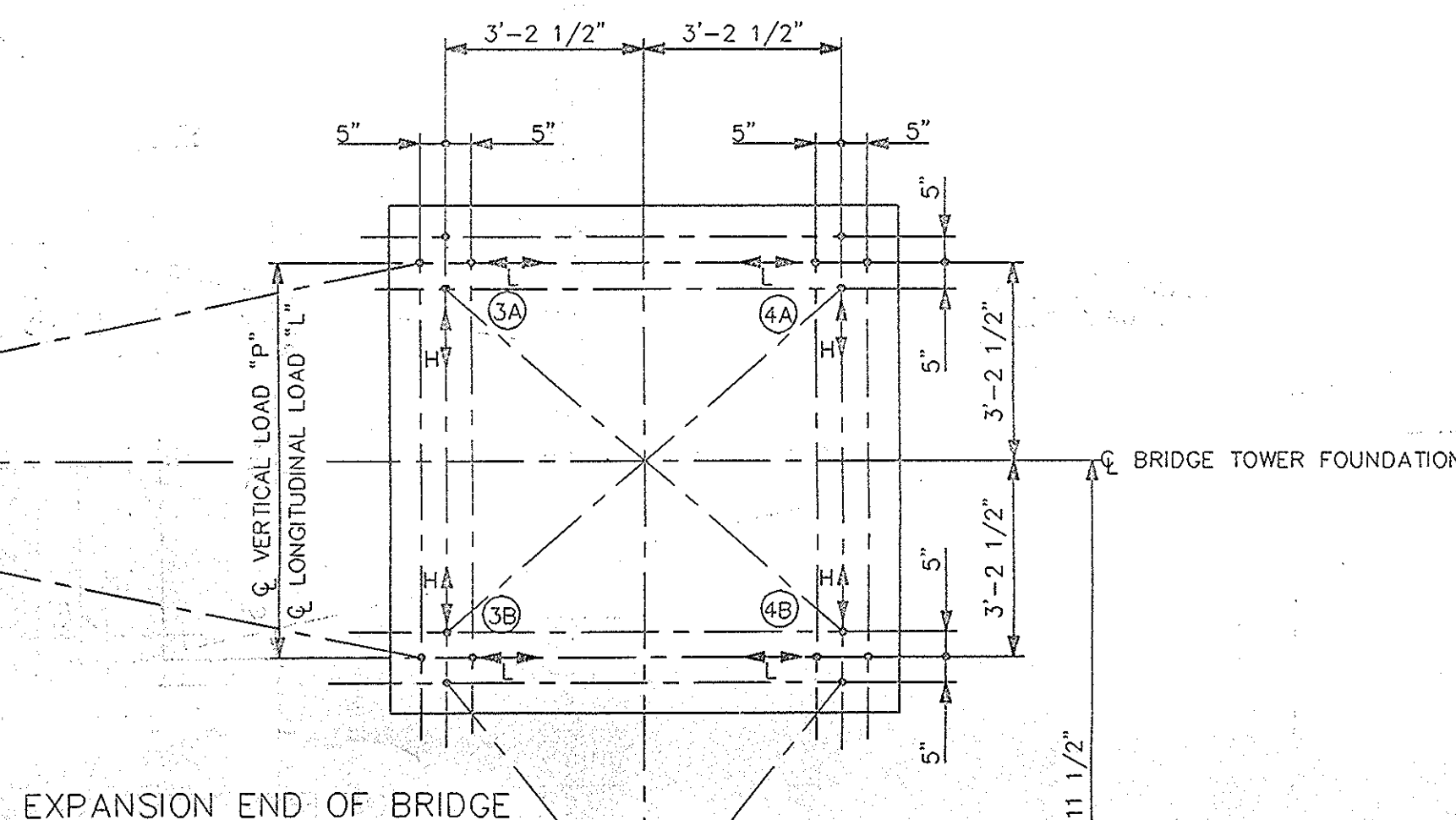
B. Materials. The sealer shall meet the requirements of this job special provision. The sealer selected by the contractor shall be submitted to the engineer for approval two weeks before application and shall be listed on MoDOT's Pre-Qualified Product List.

1. The sealer shall be a alkyltrialkoxysilane, with low oligomer and polymer compound content. The chemical composition shall meet the following requirements:

Property	Specification
Purity	95% minimum monomer by weight
Solvent	Less than 5% by weight
Residue	Less than 2% by weight
Density	Per the manufacturer's recommendation
Flash Point	ASTM D93: greater than 125 degrees F
Dry Time	ASTM D1640 Sec 7.5.1: One hour or less



ANCHOR BOLT ELEVATION

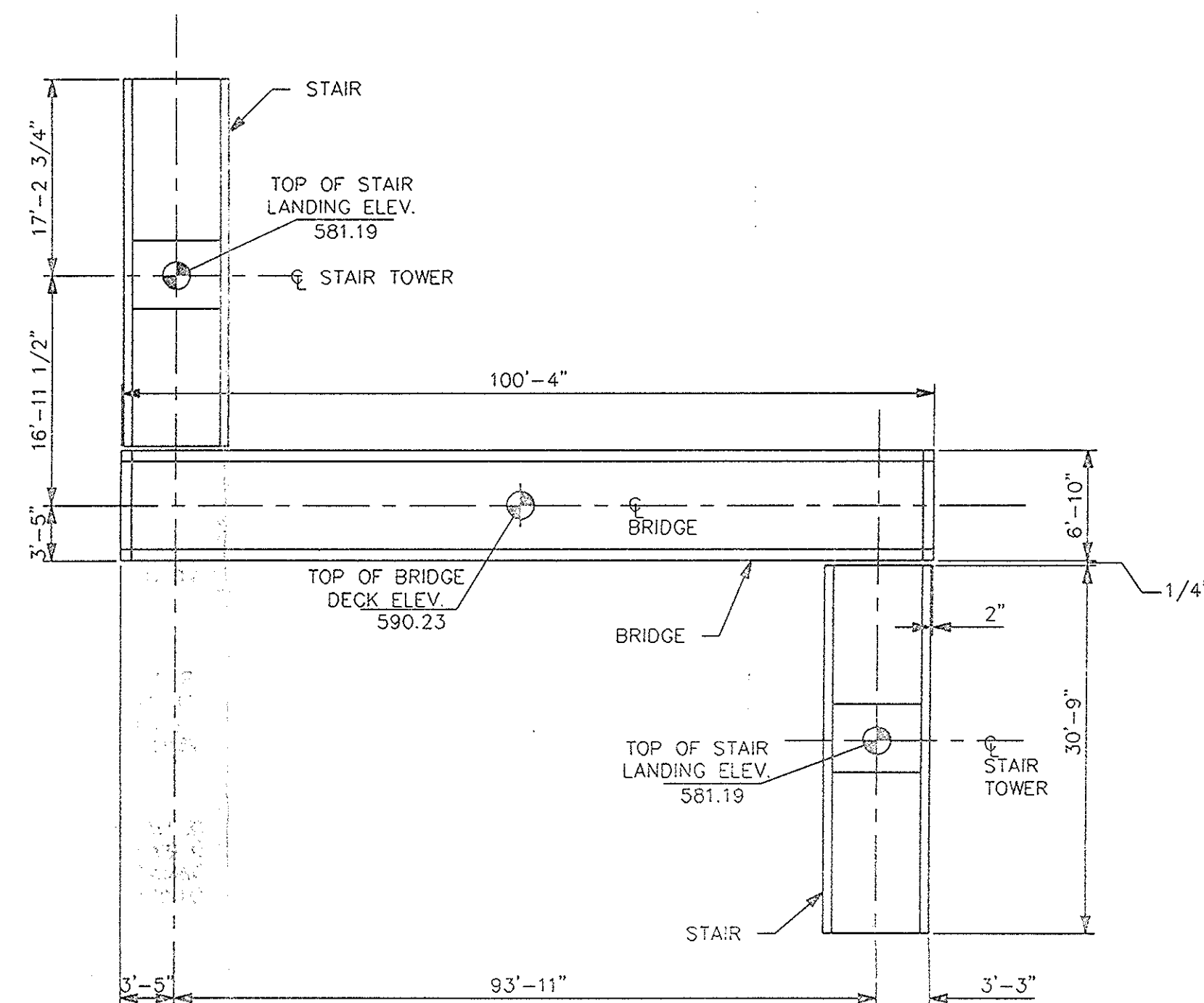


ANCHOR BOLT PLAN

COMBINE REACTIONS AS PER LOCAL OR GOVERNING BUILDING CODES AS REQUIRED

BRIDGE REACTIONS	+ DOWNWARD LOAD - UPWARD LOAD											
	P _{1A} (LBS)	H _{1A} (LBS)	L _{1A} (LBS)	P _{1B} (LBS)	H _{1B} (LBS)	L _{1B} (LBS)	P _{2A} (LBS)	H _{2A} (LBS)	L _{2A} (LBS)	P _{2B} (LBS)	H _{2B} (LBS)	L _{2B} (LBS)
DEAD LOAD	2600			1900			9800			9000		
UNIFORM LIVE LOAD	3200			1100			16300			14200		
WIND UPLIFT 20 PSF	-1100			-400			-5600			-4900		
WIND	+41900	7350	7720	+41900	7350	7720	+41900	7350	7720	+41900	7350	7720
THERMAL	+2800	300	900	+2800	300	900	+2800	300	900	+2800	300	900
BRIDGE REACTIONS	+ DOWNWARD LOAD - UPWARD LOAD											
	P _{1A} (LBS)	H _{1A} (LBS)	L _{1A} (LBS)	P _{1B} (LBS)	H _{1B} (LBS)	L _{1B} (LBS)	P _{2A} (LBS)	H _{2A} (LBS)	L _{2A} (LBS)	P _{2B} (LBS)	H _{2B} (LBS)	L _{2B} (LBS)
DEAD LOAD	9800			1900			2600			2000		
UNIFORM LIVE LOAD	16300			1100			3200			4600		
WIND UPLIFT 20 PSF	-5600			-400			-1100			-1500		
WIND	+27440	7350	3310	+27440	7350	3310	+27440	7350	3310	+27440	7350	3310
THERMAL	+2800	300	900	+2800	300	900	+2800	300	900	+2800	300	900

WHERE TWO "L"'S OR TWO "H"'S ARE IN LINE ON AN ABUTMENT, THE "L" AND "H" LOADS GIVEN IN THE TABLE ARE ASSUMED TO ACT AT ONLY ONE "L" OR ONE "H" LOCATION AT A TIME. FOR EXAMPLE, THE "L_{2A}" LOAD WILL NOT ACT SIMULTANEOUSLY AS THE "L_{1A}" LOAD.



PEDESTRIAN OVERPASS PLAN

GENERAL NOTES

- DESIGN STRESSES ARE IN ACCORDANCE WITH THE MANUAL OF STEEL CONSTRUCTION FOR ALLOWABLE STRESS DESIGN AS ADOPTED BY THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC), NINTH EDITION.
- ALL MATERIAL FABRICATED FROM HIGH STRENGTH STEEL, ASTM A500 GRADE C (F_y = 50,000 PSI) AND ASTM A36 (F_y = 36,000 PSI) STRUCTURAL STEEL SHAPES.
- BRIDGE DECKING TO BE 1/4" GALVANIZED SAFETY (CHECKERED) PLATE.
- E80 SERIES ELECTRODES FOR WELDING.
- ALL TOP AND BOTTOM CHORD SHOP SPLICES TO BE COMPLETE PENETRATION TYPE WELOS. WELD BETWEEN TOP CHORD AND END VERTICAL SHALL BE PARTIAL PENETRATION.
- UNLESS OTHERWISE NOTED, WELDED CONNECTIONS SHALL BE FILLET WELDS (OR HAVE THE EFFECTIVE THROAT OF A FILLET WELD) OF A SIZE EQUAL TO THE THICKNESS OF THE LIGHTEST GAGE MEMBER IN THE CONNECTION. WELDS SHALL BE APPLIED AS FOLLOWS:
 - BOTH ENDS OF VERTICALS, DIAGONALS, AND FLOOR BEAMS SHALL BE WELDED ALL AROUND.
 - BRACE DIAGONALS WILL BE WELDED FOR FULL LENGTH ON TOP, BOTTOM AND OUTSIDE VERTICAL FACES.
 - BOTTOM OF STRINGERS WILL BE STITCH WELDED TO TOP OF FLOOR BEAMS.
 - MISCELLANEOUS NON-STRUCTURAL MEMBERS WILL BE STITCH WELDED TO THEIR SUPPORTING MEMBERS.
- BRIDGE DESIGN WAS ONLY BASED ON COMBINATIONS OF THE FOLLOWING LOADS WHICH WILL PRODUCE MAXIMUM CRITICAL MEMBER STRESSES.
 - 100 PSF UNIFORM LIVE LOADING ON THE FULL DECK AREA OR 20 PSF UNIFORM LIVE LOADING ON THE FULL DECK AREA PLUS A 1000 POUND ROVING CONCENTRATED LOAD.
 - 24.5 PSF WIND LOAD ON THE FULL HEIGHT OF THE BRIDGE, AS IF ENCLOSED (PER AASHTO 3.15 W/70 MPH WIND VELOCITY).
 - 20 PSF UPWARD FORCE, APPLIED AT THE WINDWARD QUARTER POINT OF THE TRANSVERSE BRIDGE WIDTH (AASHTO 3.15.3).
 - 20 PSF ROOF SNOW LOAD.
- PAINTING: ALL EXPOSED SURFACES OF STEEL SHALL BE CLEANED IN ACCORDANCE WITH STEEL STRUCTURES PAINTING COUNCIL SURFACES PREPARATION SPECIFICATIONS NO. 6 COMMERCIAL BLAST CLEANING, SSPC-SP6-LATEST EDITION. PRIMER COAT OF CARBOLINE 858 (THREE COMPONENT) ORGANIC ZINC PRIMER AS MANUFACTURED BY THE CARBOLINE COMPANY. COLOR TO BE GREEN #0300, DRY FILM THICKNESS OF 3 MILS.

(BRIDGE TOP COAT)- ONE (1) TOP COAT OF CARBOLINE 890 (TWO COMPONENT), CROSS LINKED EPOXY PAINT, AS MANUFACTURED BY THE CARBOLINE COMPANY. COLOR TO BE BONE WHITE (EQUIV. TO FSC #37778), DRY FILM THICKNESS OF 5 MILS.

(STAIRS & TOWERS)- ONE (1) TOP COAT OF CARBOLINE 890 (TWO COMPONENT), CROSS LINKED EPOXY PAINT, AS MANUFACTURED BY THE CARBOLINE COMPANY. COLOR TO BE FEDERAL GREY (EQUIV. TO FSC #26622), DRY FILM THICKNESS OF 5 MILS.

(BRIDGE HANDRAIL)- TWO (2) TOP COATS OF HIGH BUILD ALIPHATIC POLYURETHANE (TWO COMPONENT) PAINT, AS MANUFACTURED BY SHERWIN WILLIAMS, COLOR TO BE SAFETY YELLOW (EQUIV. TO FSC #13655) TOTAL DRY FILM THICKNESS OF 6 MILS.

BRIDGE SHALL BE PROVIDED WITH PAINT FOR TOUCH UP AFTER ERECTION.

CONTINENTAL
BRIDGE

ALEXANDRIA, MN 612-852-7500

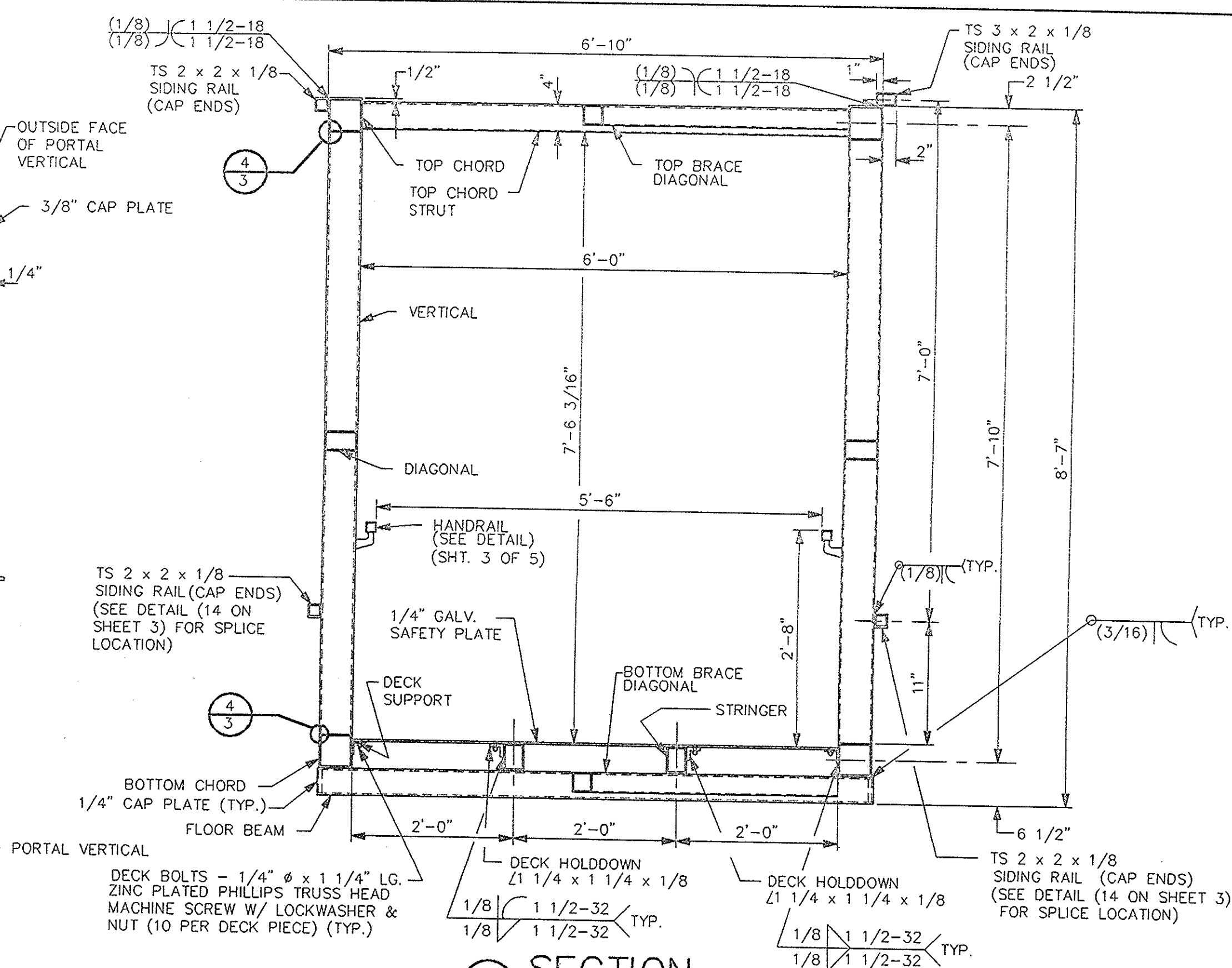
DATE:	LEVEL:	REVISION:
3/24/92	B	CHGD WIND LOADS FROM 20 TO 24.5 PSF
3/09/92	A	UPDATED PAINT NOTE

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF OHIO

DATE: REG. NO. E-53213

THESE PLANS, AS INSTRUMENTS OF SERVICE, ARE PROPERTY SOLELY OF CONTINENTAL BRIDGE. THEY ARE NOT TO BE REPRODUCED FOR ANY PURPOSE OR USED IN ANY OTHER LOCATION WITHOUT WRITTEN AUTHORIZATION.

DRAWN BY:	87' X 6' PEDESTRIAN OVERPASS
BAC	ANCHOR BOLT LAYOUT SHEET
CHECKED BY:	CHESHIRE, OH
BLH	
DATE:	SHEET NO. 1 OF 5
2/12/92	JOB # 92023



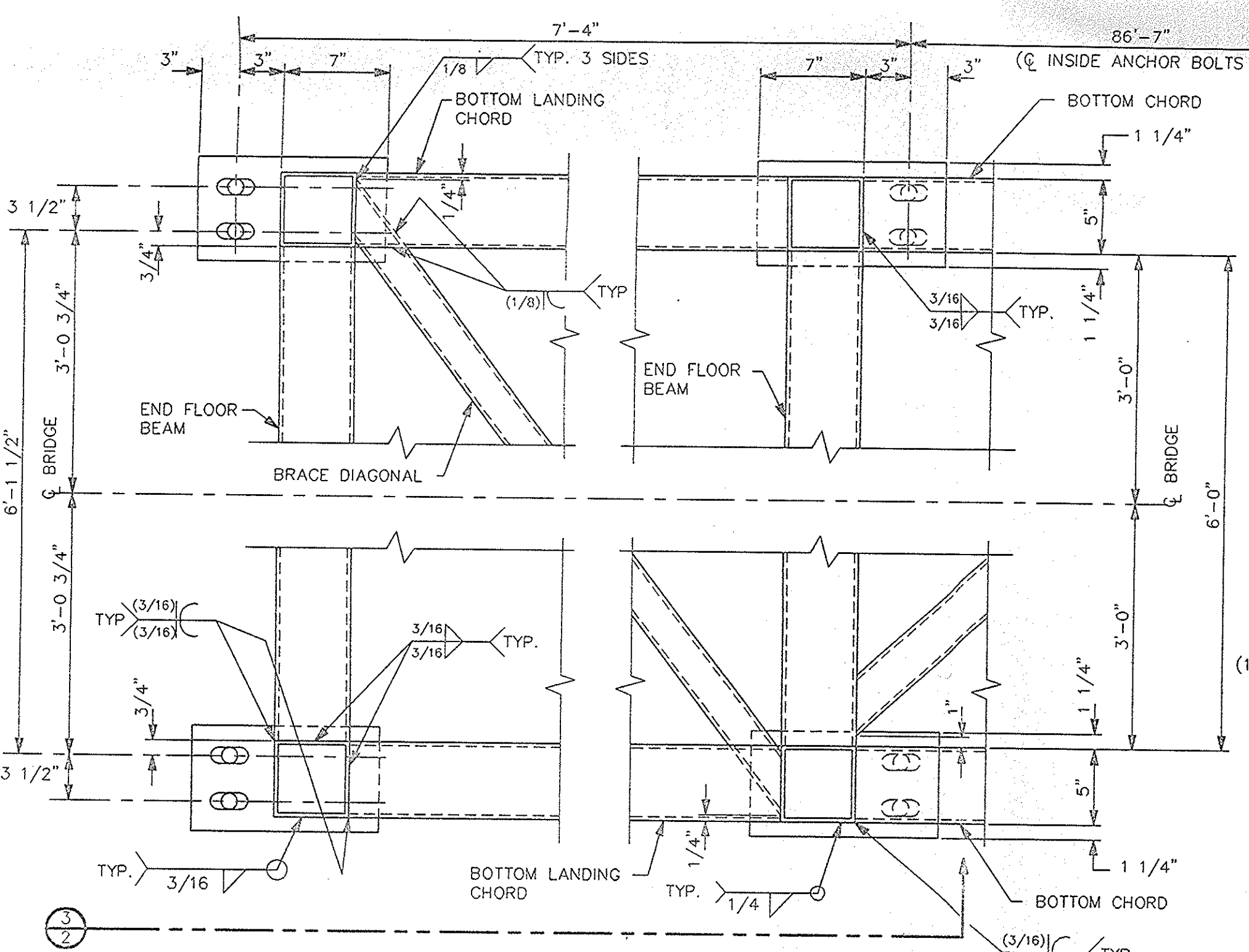
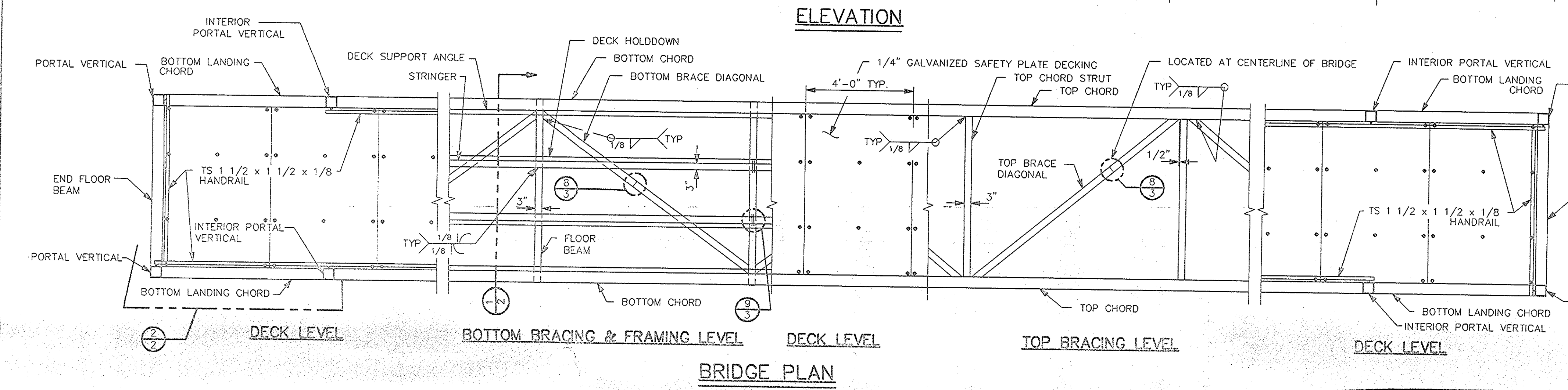
SECTION

SCHEDULE OF MEMBER SIZES		
TOP CHORD		TS 5 x 5 x 3/16
BOTTOM CHORD		TS 5 x 5 x 3/16
VERTICAL		TS 5 x 5 x 3/16
DIAGONAL		TS 5 x 3 x 1/8
TOP BRACE DIAGONAL		TS 3 x 3 x 1/8
BOTTOM BRACE DIAGONAL		TS 3 x 3 x 1/8
PORTAL VERTICAL		TS 5 x 5 x 3/16
INTERIOR PORTAL VERTICAL		TS 5 x 5 x 1/4
PORTAL STRUT		**
BOTTOM LANDING CHORD		TS 7 x 5 x 1/4
TOP CHORD STRUT		TS 4 x 3 x 1/8
TUBE HANDRAIL		TS 1 1/2 x 1 1/2 x 1/8
FLOOR BEAM		TS 4 x 3 x 3/16
END FLOOR BEAM		**
STRINGER		TS 4 x 3 x 1/8
DECK SUPPORT		L 2 x 2 x 3/16

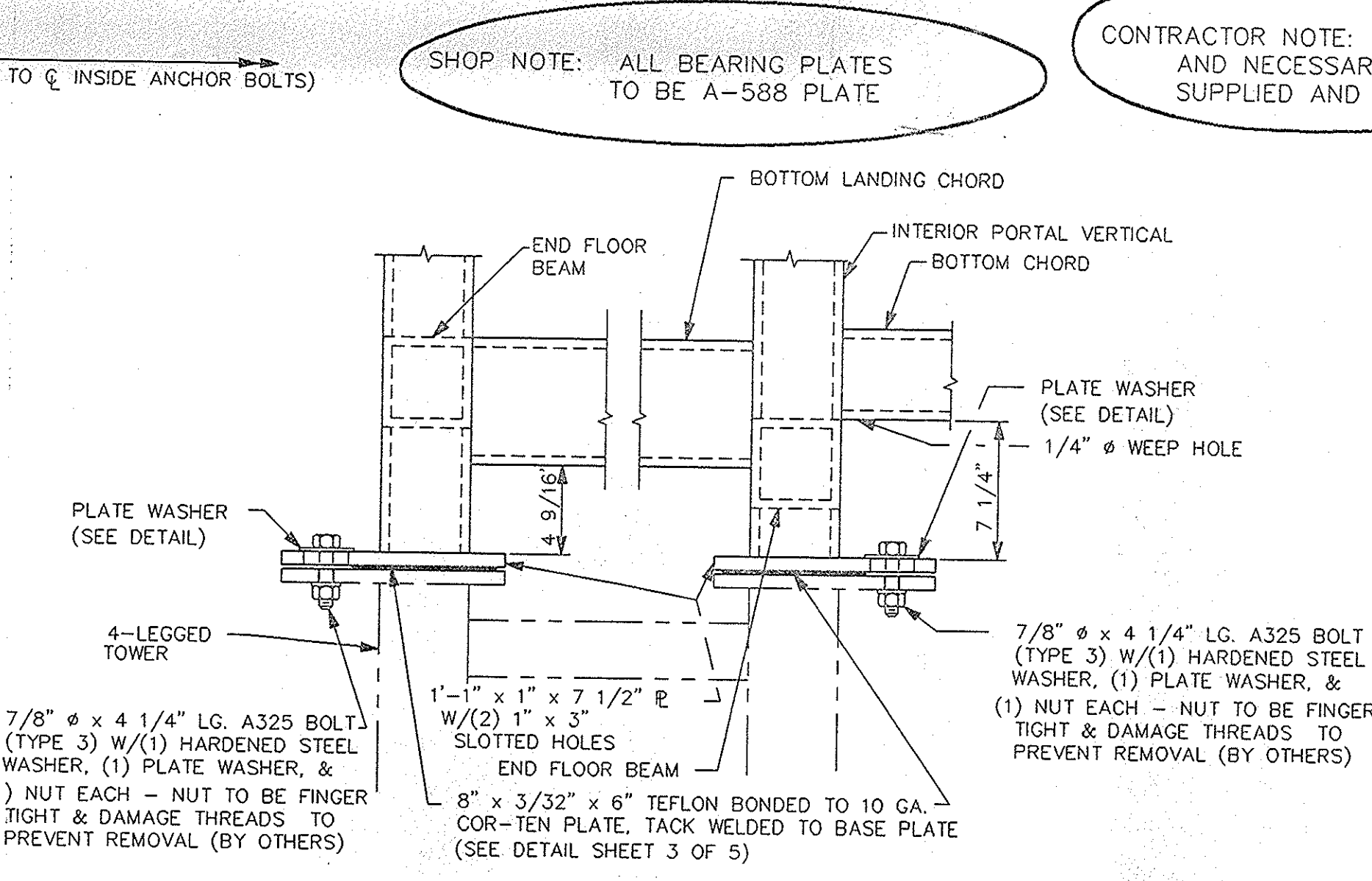
SHOP NOTE:
TS 1 1/2 x 1 1/2 x 1/8 HANDRAIL
TO BE PAINTED W/ SHERWIN
WILLIAMS SAFETY YELLOW (SEE
BRIDGE GENERAL NOTES FOR
PAINT SPECS.)

CONTRACTOR NOTE: ALL SIDING, ROOFING,
AND NECESSARY HARDWARE TO BE
SUPPLIED AND INSTALLED BY OTHERS.

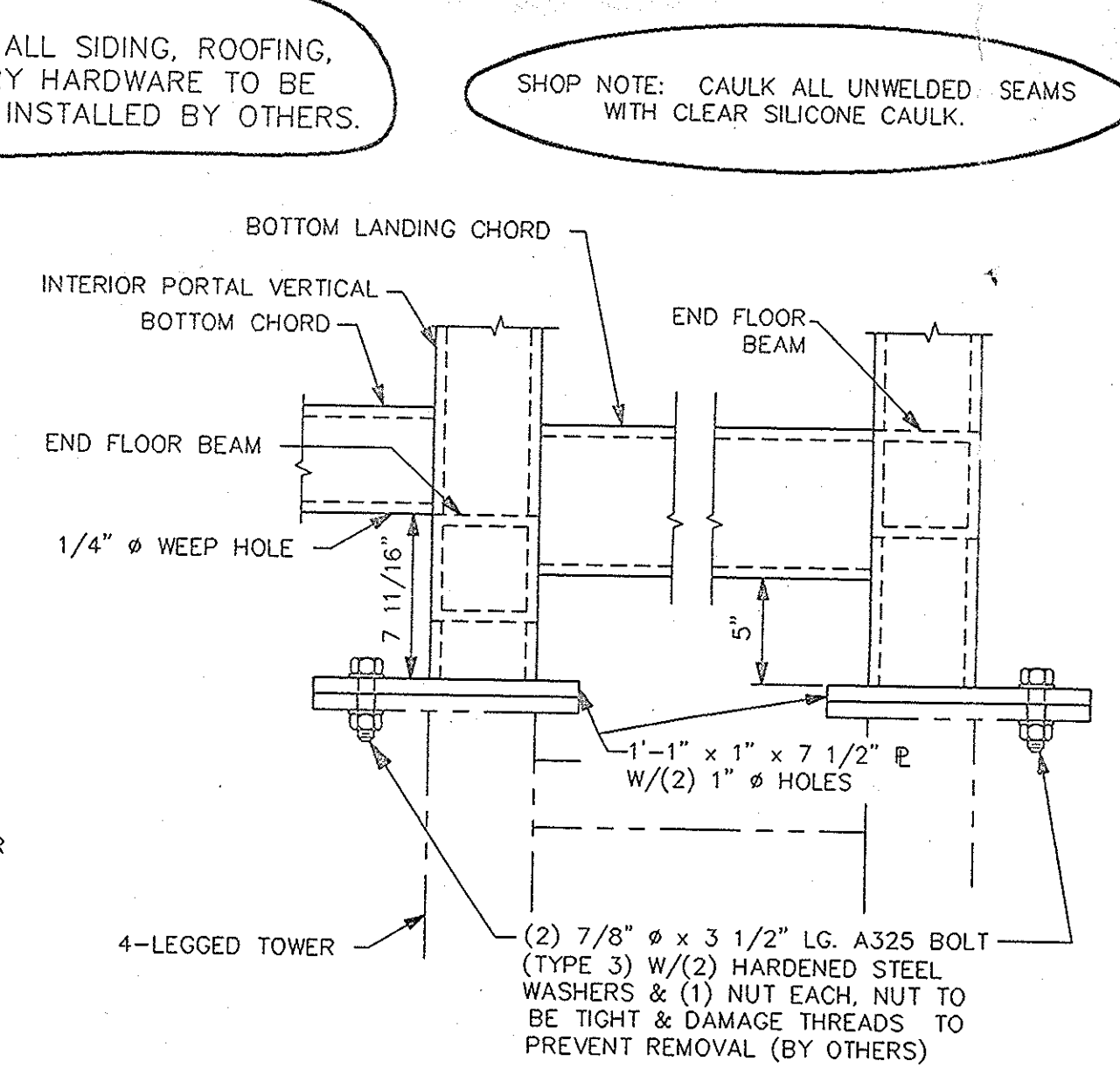
SHOP NOTE: CAULK ALL UNWELDED SEAMS
WITH CLEAR SILICONE CAULK.



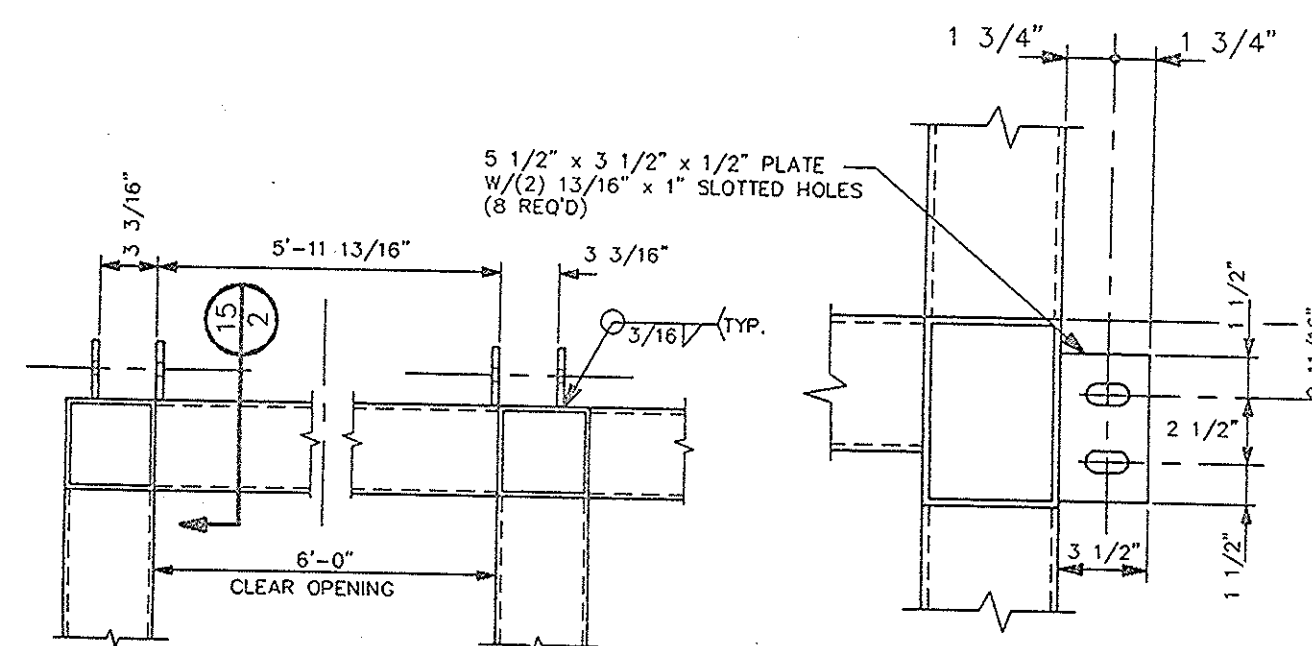
PLAN - BEARING ASSEMBLY



EXPANSION END



FIXED END



15 SECTION

3 SIDE VIEW - BEARING ASSEMBLY

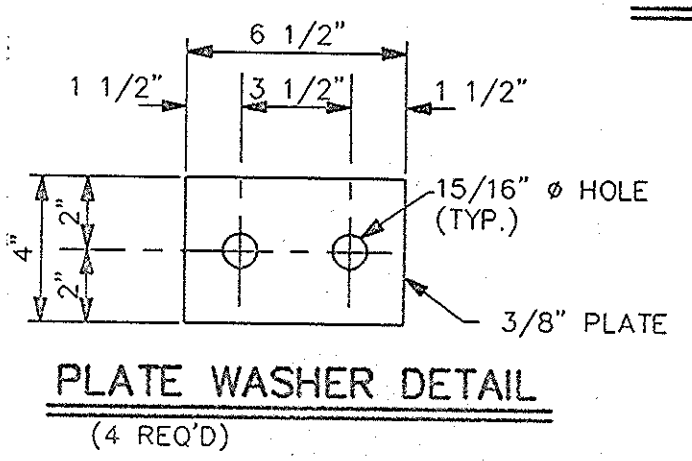


PLATE WASHER DETAIL
(4 REQ'D)

3/24/92	B	ADDED WELD SYMBOLS
3/09/92	A	REV. PAINT ON HANDRAIL NOTE
DATE:	LEVEL:	REVISION:

I HEREBY CERTIFY THAT THIS PLAN
WAS PREPARED BY ME OR UNDER MY
DIRECT SUPERVISION AND THAT I AM
A DULY REGISTERED PROFESSIONAL
ENGINEER UNDER THE LAWS OF THE
STATE OF OHIO

DATE: _____ REG. NO. E-53213

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OF SERVICE ARE PROPERTY
SOLELY OF CONTINENTAL BRIDGE.
THEY ARE NOT TO BE REPRODUCED
FOR ANY PURPOSE OR USED IN
ANY OTHER LOCATION WITHOUT
WRITTEN AUTHORIZATION.

DRAWN BY:	DJB
CHECKED BY:	BLH
DATE:	2/11/92

87' X 6' PEDESTRIAN OVERPASS
BRIDGE SHEET
CHESHIRE, OH

JOB # 92023

UTILITIES

AT&T
KATHLEEN SMITH
(636) 949-1312

CHARTER COMMUNICATIONS
LISA WARD
815 CHARTER COMMONS
TOWN & COUNTRY, MO 63017
(636) 387-6663

AMERENUE
MARK RUSSO
2100 BLUESTONE DRIVE
ST. CHARLES, MO 63303
(636) 925-3214

LACLEDE GAS COMPANY
KENT THAEMERT
6400 GRAHAM ROAD
ST. LOUIS, MO 63134
(314) 658-5437

CITY OF ST. PETERS
BILL MALACH
CITY OF ST. PETERS
1 ST. PETERS CENTRE
ST. PETERS, MO 63376
(636) 477-6600 EXT. 1316

CONVENTIONAL SYMBOLS

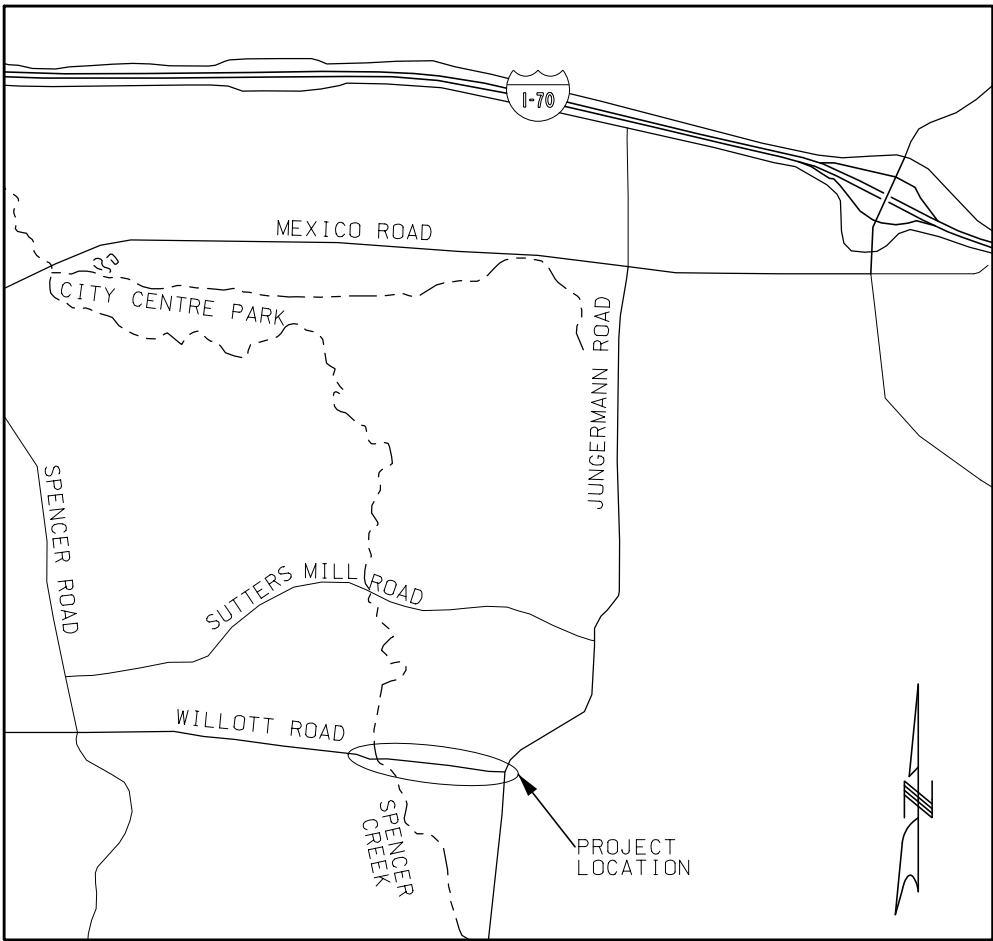
(USED IN PLANS)

	EXISTING	NEW
BUILDINGS AND STRUCTURES		
CONCRETE RIGHT-OF-WAY MARKER		
STEEL RIGHT-OF-WAY MARKER		
LOCATION SURVEY MARKER		
UTILITIES		
SANITARY SEWER		
CABLE TV		
OVERHEAD TELEPHONE		
UNDERGROUND TELEPHONE		
OVERHEAD POWER		
UNDERGROUND POWER		
GAS		
WATER		
GUY WIRE		
MANHOLE		
FIRE HYDRANT		
WATER VALVE / WATER METER		
GAS VALVE		
DROP INLET		
LAND CORNER		
GROUND MOUNTED SIGN		
LIGHT POLE / POWER POLE		
TELEPHONE RISER / POWER RISER		
POWER AND CABLE POLE		
TREE		
TELEPHONE MANHOLE		
FENCE		
CHAIN LINK		
WOVEN WIRE		
IRON PIPE		
MAILBOX		
BENCHMARK		
SPRINKLER HEAD		
STREET LIGHT		
STOP BOX		
TRUNCATED DOMES		
LANDSCAPE BOULDER		
TO BE REMOVED		
TO BE REMOVED AND RELOCATED		
TO BE REMOVED BY OTHERS		
TO BE REMOVED AND RELOCATED BY OTHERS		
TO BE ABANDONED AND FILLED		
TEMPORARY CONSTRUCTION EASEMENT		
PERMANENT DRAINAGE & UTILITY EASEMENT		
ADJUST TO GRADE		
ADJUST TO GRADE BY OTHERS		
USE IN PLACE		
TO BE REMOVED AND REPLACED		
TO BE REMOVED AND REPLACED BY OTHERS		
PERMANENT DRAINAGE EASEMENT		

NOTE: DASHED OR OPEN SYMBOLS INDICATE EXISTING FEATURES

CITY OF ST. PETERS
CONSTRUCTION PLANS FOR
WILLOTT ROAD
BRIDGE REPLACEMENT
FEDERAL PROJECT # BRM-7305(610)

NOVEMBER 26, 2014



NOT TO SCALE

BENCHMARK - NATIONAL GEODETIC SURVEY STATION NUMBER CSC-03
STANDARD DISK IN THE TOP OF A CONCRETE MONUMENT
NAD 83 POSITION:
LATITUDE 38°46'01.823"
LONGITUDE 90°32'20.435"

HORNER & SHIFRIN, INC.
ENGINEERS

5200 OAKLAND AVE. ST. LOUIS, MO 63110
314-531-4321 FAX: 314-531-6966 www.HornerShifrin.com
Discipline: Professional Engineering
Certificate of Authority: 000159
Expiration Date: December 31, 2014

SPECIAL NOTE TO CONTRACTOR(S):

EXISTING UNDERGROUND AND ABOVE-GRADE FACILITIES, STRUCTURES, AND UTILITIES HAVE BEEN PLOTTED ON THESE CONTRACT DOCUMENTS BASED ON THE INFORMATION AND SURVEYS AVAILABLE AT THE TIME OF DRAWING PREPARATION. THE LOCATIONS OF THESE FEATURES MUST, THEREFORE, BE CONSIDERED APPROXIMATE, ONLY. IN ADDITION, THERE MAY BE OTHER FACILITIES, STRUCTURES, AND UTILITIES WHICH DID NOT EXIST (OR THE EXISTENCE OF WHICH WAS NOT KNOWN) AT THE TIME OF DRAWING PREPARATION. IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR(S) TO HAVE ALL EXISTING FACILITIES, STRUCTURES, AND UTILITIES LOCATED IN THE FIELD PRIOR TO ANY EXCAVATION OR CONSTRUCTION ACTIVITY, AND TO PROTECT ALL SUCH FEATURES (EXCEPT THOSE SPECIFICALLY NOTED FOR REMOVAL OR DEMOLITION) DURING CONSTRUCTION.

CITY OF ST. PETERS
ONE ST. PETERS CENTRE BLVD
ST. PETERS, MO 63376
(636) 477-6600

DISCLAIMER
THE PROFESSIONAL WHOSE SIGNATURE AND PERSONAL SEAL APPEAR HEREON ASSUMES RESPONSIBILITY ONLY FOR WHAT APPEARS ON THIS PAGE, AND DISCLAIMS (PURSUANT TO SECTION 327.411 RSMO) SPECIFICATION, ESTIMATES, REPORTS, OR OTHER DOCUMENTS OR INSTRUMENTS NOT SEALED BY THE UNDERSIGNED PROFESSIONAL RELATING TO OR INTENDED TO BE USED FOR ANY PART OR PARTS OF THE PROJECT TO WHICH THIS PAGE REFERS.

WILLOTT ROAD BRIDGE

SHEET
1

CITY OF ST. PETERS

OF
70

FEDERAL PROJECT NO.
BRM-7305(610)

INDEX OF SHEETS

DESCRIPTION	SHEET NUMBER
TITLE SHEET-----	1
SUMMARY OF QUANTITIES-----	2A
TYPICAL SECTIONS-----	2-4
SCHEDULE OF QUANTITIES-----	5B-8B
PLAN SHEETS-----	5-8
REFERENCE AND COORDINATE POINTS-----	9
INTERSECTION DETAILS-----	10
RETAINING WALL PLAN & PROFILE-----	11
BIKE TRAIL/CULVERT GRADING-----	12
STORM SEWER PROFILES-----	13
SANITARY SEWER PROFILE-----	14
PAVEMENT MARKING, EROSION PLAN-----	15-16
TRAFFIC CONTROL PLAN-----	17-19
TRAFFIC SIGNAL AND LIGHTING PLAN-----	20-26
BRIDGE PLAN SHEETS-----	27-60
BOX CULVERT SHEETS-----	61-62
WILLOTT ROAD CROSS SECTIONS-----	63-70

DESIGN DESIGNATION

WILLOTT ROAD
A.D.T. - EXISTING = 16,600
A.D.T. - PROPOSED = 18,000

POSTED SPEED = 40 M.P.H.

LENGTH OF PROJECT

BEGINNING OF PROJECT STA. 107+00.00
END OF PROJECT STA. 120+33.70

APPARENT LENGTH 1,333.70 FEET

EQUATIONS AND EXCEPTIONS

TOTAL CORRECTIONS 0.0 FEET
NET LENGTH OF PROJECT 1,333.70 FEET

STATE LENGTH 0.25 MILES

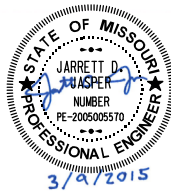
CITY OF ST. PETERS, MO

APPROVED:

DIRECTOR OF TRANSPORTATION

DATE

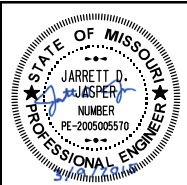
SEAL




DATE 3/9/2015

SUMMARY OF QUANTITIES														
ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT	SHEET 5B	SHEET 6B	SHEET 7B	SHEET 8B	SHEET 15	SHEET 16	SHEETS 17-19		SHEETS 20-26	BRIDGE	ROADWAY	TOTAL
			BRM-7305(610)	ROADWAY	ROADWAY	BRM-7305(610)	BRM-7305(610)	ROADWAY	BRM-7305(610)	ROADWAY	ROADWAY	SUBTOTAL	SUBTOTAL	QUANTITY
	ROADWAY ITEMS:													
1	CLEARING AND GRUBBING	LS										1	1	1
2	REMOVAL OF IMPROVEMENTS	LS										1	1	1
3	CLASS A EXCAVATION	CY										4339	270	4609
4	COMPACTING EMBANKMENT	CY										167	2	169
5	FURNISHING TYPE 2 ROCK BLANKET	CY	390									390	0	390
6	PLACING TYPE 2 ROCK BLANKET	CY	390									390	0	390
7	TYPE 5 AGGREGATE BASE (4" THICK)	SY	923	401	363							923	764	1687
8	CONCRETE PAVEMENT (8" NON-REINFORCED)	SY	788	315	282							788	597	1385
9	CONCRETE APPROACH PAVEMENT	SY	359									359	0	359
10	CONVERT INLET TO MANHOLE AND ADJUST TO GRADE AND CONVERT LID TO PAMREX COVER	EACH		1								0	1	1
11	CURB AND GUTTER, VERTICAL	LF	522	214	209							522	423	945
12	BRIDGE ANCHOR SECTION	EACH	2									2	0	2
13	TRANSITION SECTION	EACH	2									2	0	2
14	CRASHWORTHY GUARDRAIL END TERMINAL	EACH	2									2	0	2
15	CHANNELIZERS (TRIM-LINE)	EACH								10		0	10	10
16	TYPE III BARRICADE	EACH								23	2	23	2	25
17	TRAFFIC CONTROL SIGNS	SF								178	58	178	58	236
18	CHANGEABLE MESSAGE SIGN	EACH								3		3	0	3
19	MOBILIZATION	LS										1	1	2
20	CONTRACTOR FURNISHED SURVEYING AND STAKING	LS										1	1	2
21	8" POLYVINYL CHLORIDE PIPE	LF				206						206	0	206
22	18" POLYVINYL CHLORIDE PIPE	LF				189						189	0	189
23	12" CLASS III REINFORCED CONCRETE PIPE	LF		18								0	18	18
24	15" CLASS III REINFORCED CONCRETE PIPE	LF			9							0	9	9
25	30" CLASS III REINFORCED CONCRETE PIPE	LF				268						268	0	268
26	PRECAST CONCRETE MANHOLE (48")	EACH			1	3						3	1	4
27	12" FLARED END SECTION	EACH		1								0	1	1
28	30" FLARED END SECTION	EACH				1						1	0	1
29	TRENCH DRAIN WITH CATCH BASIN	LF				28						28	0	28
30	CHECK VALVE	EACH				2						2	0	2
31	SINGLE CURB INLET, UNTRAPPED	EACH		1								0	1	1
32	MULTIPLE CURB INLET, UNTRAPPED	EACH			1							0	1	1
33	FIBER ROLLS	LF					9	18				9	18	27
34	SILT FENCE	LF					456					456	0	456
35	SEDIMENT REMOVAL	CY					4					4.1	0	4
36	MSD 5 - ROCK BLANKET	CY				4						4	0	4
37	CANTILEVERED 54"x96" INLET TOP	EACH	1									1	0	1
38	CANTILEVERED 54"x75" INLET TOP	EACH	1									1	0	1
39	MODULAR BLOCK WALL	SF				954						954	0	954
40	CHAIN LINK FENCE	LF				217						217	0	217
	SIGNALS/LIGHTING/SIGNING/STRIPING ITEMS:													
41	4 IN. WHITE ACRYLIC WATERBORNE PAVEMENT MARKING PAINT	LF					800	3010				800	3010	3810
42	4 IN. YELLOW ACRYLIC WATERBORNE PAVEMENT MARKING PAINT	LF					1410	2620				1410	2620	4030
43	ACRYLIC WATERBORNE PAVEMENT MARKING PAINT, 12 IN. WHITE	LF						230				0	230	230
44	ACRYLIC WATERBORNE PAVEMENT MARKING PAINT, 24 IN. WHITE	LF						100				0	100	100
45	ACRYLIC WATERBORNE PAVEMENT MARKING PAINT, 8 IN. YELLOW	LF					180					180	0	180
46	ACRYLIC COPOLYMER FAST DRY PVMT. MKNG. PAINT, LEFT/RIGHT ARROW	EACH						17				0	17	17
47	ACRYLIC COPOLYMER FAST DRY PVMT. MKNG. PAINT, COMBINATION STRAIGHT-LEFT/RIGHT ARROW	EACH						2				0	2	2
48	ACRYLIC COPOLYMER FAST DRY PVMT. MKG. PAINT, BICYCLE SYMBOL	EACH					1	4				1	4	5
49	SIGNAL HEAD, TYPE 1S, PEDESTRIAN, W/ "HAND-WALKING PERSON" SYMBOL AND "COUNTDOWN" DISPLAY (16"x18", W/ ALL LED ILLUMINATION)	EACH									6	0	6	6
50	WIRE STRANDED GROUND, #6 GAUGE	LF									80	0	80	80
51	CABLE, PUSH BUTTON AND/OR DETECTOR LOOP LEAD-IN, #18 GAUGE, 2 CONDUCTOR (SHIELDED)	LF									660	0	660	660
52	SIGNAL HEAD, TYPE 3S	EACH									3	0	3	3
53	SIGNAL HEAD, TYPE 3B	EACH									7	0	7	7
54	POST, TYPE CL, 20 FT. ARM OR 6.1 M ARM	EACH									2	0	2	2
55	POST, TYPE CL, 30 FT. ARM OR 9.1 ARM	EACH									1	0	1	1
56	POST, TYPE CL, 40 FT. ARM OR 12.2 ARM	EACH									1	0	1	1
57	CONTROLLER ASSEMBLY HOUSING, NEMA TS2 CONTROLLER	EACH									1	0	1	1
58	DETECTOR, PUSHBUTTON	EACH									6	0	6	6
59	VIDEO DETECTION SYSTEM	EACH									1	0	1	1
60	CONDUIT, 2 IN., TRENCH	LF									277	0	277	277
61	CONDUIT, 3 IN., TRENCH	LF									90	0	90	90
62	CONDUIT, 2 IN., PUSHED	LF									1051	0	1051	1051
63	CONDUIT, 3 IN., PUSHED	LF									264	0	264	264
64	CABLE, 6 AWG 1 CONDUCTOR, POWER	LF									360	0	360	360
65	CABLE, 16 AWG 5 CONDUCTOR	LF									660	0	660	660
66	CABLE, 16 AWG 7 CONDUCTOR	LF									1270	0	1270	1270
67	PULL BOX, PREFORMED CLASS 1	EACH									1	0	1	1
68	PULL BOX, PREFORMED CLASS 2	EACH									3	0	3	3
69	PULL BOX, PREFORMED CLASS 3	EACH									2	0	2	2
70	PULL BOX, PREFORMED CLASS 5	EACH									2	0	2	2
71	BASE, CONCRETE	CY									15.3	0	15.3	15.3
72	REMOVE AND DELIVER OLD TRAFFIC SIGNAL EQUIPMENT, POLES AND MAST ARMS TO CITY YARD	LS									1	0	1	1
73	POWER SUPPLY ASSEMBLY WITH BACKUP BATTERY, TYPE 2 WITH 120V LIGHTING CONTROL CABINET	EACH									1	0	1	1
74	LED LUMINAIRE	EACH									4	0	4	4
75	LED ILLUMINATED STREET NAME SIGN	EACH									4	0	4	4
76	SURFACE MOUNTED, MOTION ACTIVATED LED LIGHT FIXTURE	EACH									4	0	4	4
77	EMBEDDED JUNCTION BOX	EACH									4	0	4	4
78	CABLE, 14 AWG 3 CONDUCTOR	LF									1030	0	1030	1030
79	FIBER OPTIC CABLE, 48 FIBER, SINGLE MODE	LF									1240	0	1240	1240
80	CONDUIT, 3/4" ON STRUCTURE	LF									100	0	100	100
81	CABLE, 10 AWG 1 CONDUCTOR	LF									1250	0	1250	1250
82	SIGNAL SIGN, TYPE SHR2L-1	SF									28.1	0	28.1	28.1

WILLOTT ROAD BRIDGE	SHEET 2A
CITY OF ST. PETERS	OF 70
FEDERAL PROJECT NO. BRM-7305(610)	



WILLOTT ROAD
BRIDGE REPLACEMENT
SUMMARY OF QUANTITIES
SHEET 1 OF 2


HORNER &
SHIFRIN, INC.

SUMMARY OF QUANTITIES														
ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT	SHEET 5B	SHEET 6B	SHEET 7B	SHEET 8B	SHEET 15	SHEET 16	SHEETS 17-19		SHEETS 20-26	BRIDGE SUBTOTAL	ROADWAY SUBTOTAL	TOTAL QUANTITY
			BRM-7305(610)	ROADWAY	ROADWAY	BRM-7305(610)	BRM-7305(610)	ROADWAY	BRM-7305(610)	ROADWAY	ROADWAY			
	PEDESTRIAN ITEMS:													
83	CONCRETE SIDEWALK, CURB RAMP (7" THICK)	SY		22	11							0	33	33
84	TRUNCATED DOMES FOR CURB RAMPS (NEW CONSTRUCTION)	SF		36	20							0	56	56
85	CONCRETE SIDEWALK (4" THICK)	SY	439	145	138							439	283	722
86	ASPHALT BASE MIX (4" THICK)	SY				851						851	0	851
87	TYPE 5 AGGREGATE BASE (6" THICK)	SY				906						906	0	906
	LANDSCAPING ITEMS:													
88	SEEDING	ACRE		0.1	0.1	0.6						0.6	0.2	0.8
	BRIDGE ITEMS:													
89	CLASS 1 EXCAVATION	CY										120	0	120
90	CLASS 2 EXCAVATION	CY										27	0	27
91	REMOVAL OF BRIDGES	LS										1	0	1
92	BRIDGE APPROACH SLAB (BRIDGE)	SY										242	0	242
93	(72 IN.) BICYCLE RAILING	LF										212	0	212
94	SAFETY BARRIER CURB RAILING	LF										235	0	235
95	STRUCTURAL STEEL PILES (12 IN.)	LF										751	0	751
96	PILE POINT REINFORCEMENT	EACH										29	0	29
97	CLASS B CONCRETE (SUBSTRUCTURE)	CY										157	0	157
98	SAFETY BARRIER CURB	LF										237	0	237
99	SLAB ON CONCRETE BEAM	SY										604	0	604
100	27 IN. PRESTRESSED CONCRETE SPREAD BOX BEAM	LF										511	0	511
101	REINFORCING STEEL (BRIDGES)	LB										12090	0	12090
102	SLAB DRAIN	EACH										3	0	3
103	VERTICAL DRAIN AT END BENTS	EACH										2	0	2
104	PLAIN NEOPRENE BEARING PAD	EACH										12	0	12
105	LAMINATED NEOPRENE BEARING PAD	EACH										12	0	12
	CULVERT ITEMS:													
106	CLASS 4 EXCAVATION	CY										360	0	360
107	CLASS B-1 CONCRETE (CULVERTS)	CY										200	0	200
108	FORM LINERS	SY										66	0	66
109	REINFORCING STEEL (CULVERTS)	LB										36260	0	36260


WILLOTT ROAD BRIDGE	SHEET 2A
CITY OF ST. PETERS	OF 70
FEDERAL PROJECT NO. BRM-7305(610)	

EARTHWORK – BRM-7305(610)					
LOCATION	STATION	STATION	CLASS A EXCAVATION	COMPACTING EMBANKMENT	REMARKS
			(CY)	(CY)	
ROADWAY	107+00.00	111+00.00	285	11	
BRIDGE WEST			858	6	
BRIDGE EAST / CULVERT			3196	150	
TOTALS			4339	167	
EXCESS MATERIAL (HAUL OFF)			4172		
REMOVAL OF EXISTING PAVEMENT IS INCLUDED IN REMOVAL OF IMPROVEMENTS AND IS NOT INCLUDED IN EARTHWORK. NO ADDITIONAL PAYMENT WILL BE MADE FOR THE HAUL OFF OF EXCESS MATERIAL.					

EARTHWORK – ROADWAY					
LOCATION	STATION	STATION	CLASS A EXCAVATION	COMPACTING EMBANKMENT	REMARKS
			(CY)	(CY)	
WILLOTT ROAD	115+63.80	120+22.07	270	2	
TOTALS			270	2	
EXCESS MATERIAL (HAUL OFF)			268		
REMOVAL OF EXISTING PAVEMENT IS INCLUDED IN REMOVAL OF IMPROVEMENTS AND IS NOT INCLUDED IN EARTHWORK. NO ADDITIONAL PAYMENT WILL BE MADE FOR THE HAUL OFF OF EXCESS MATERIAL.					

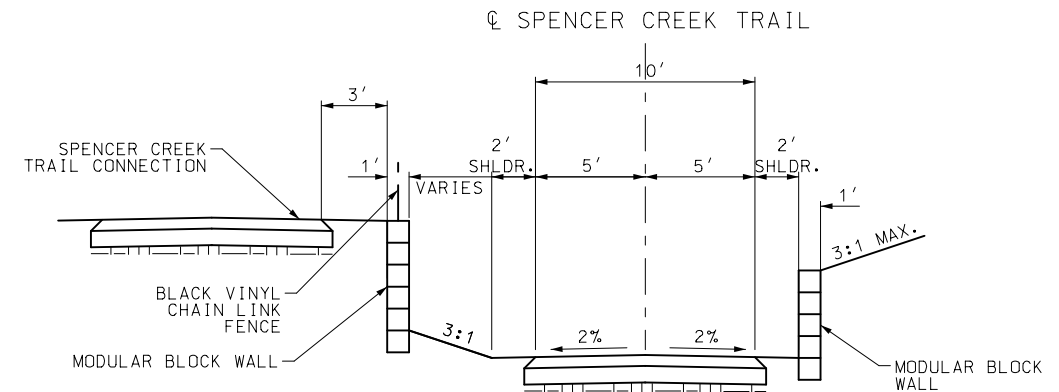
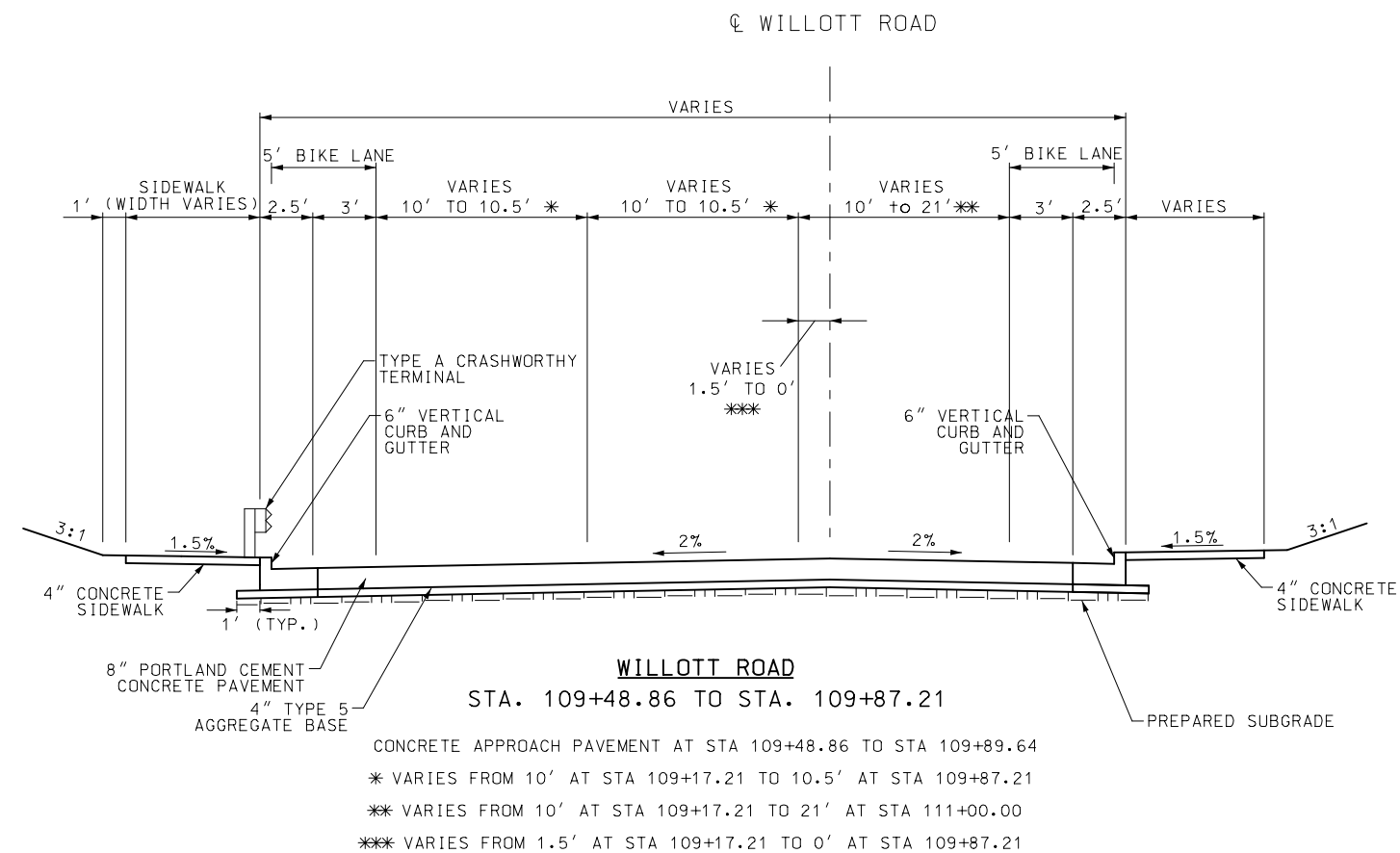
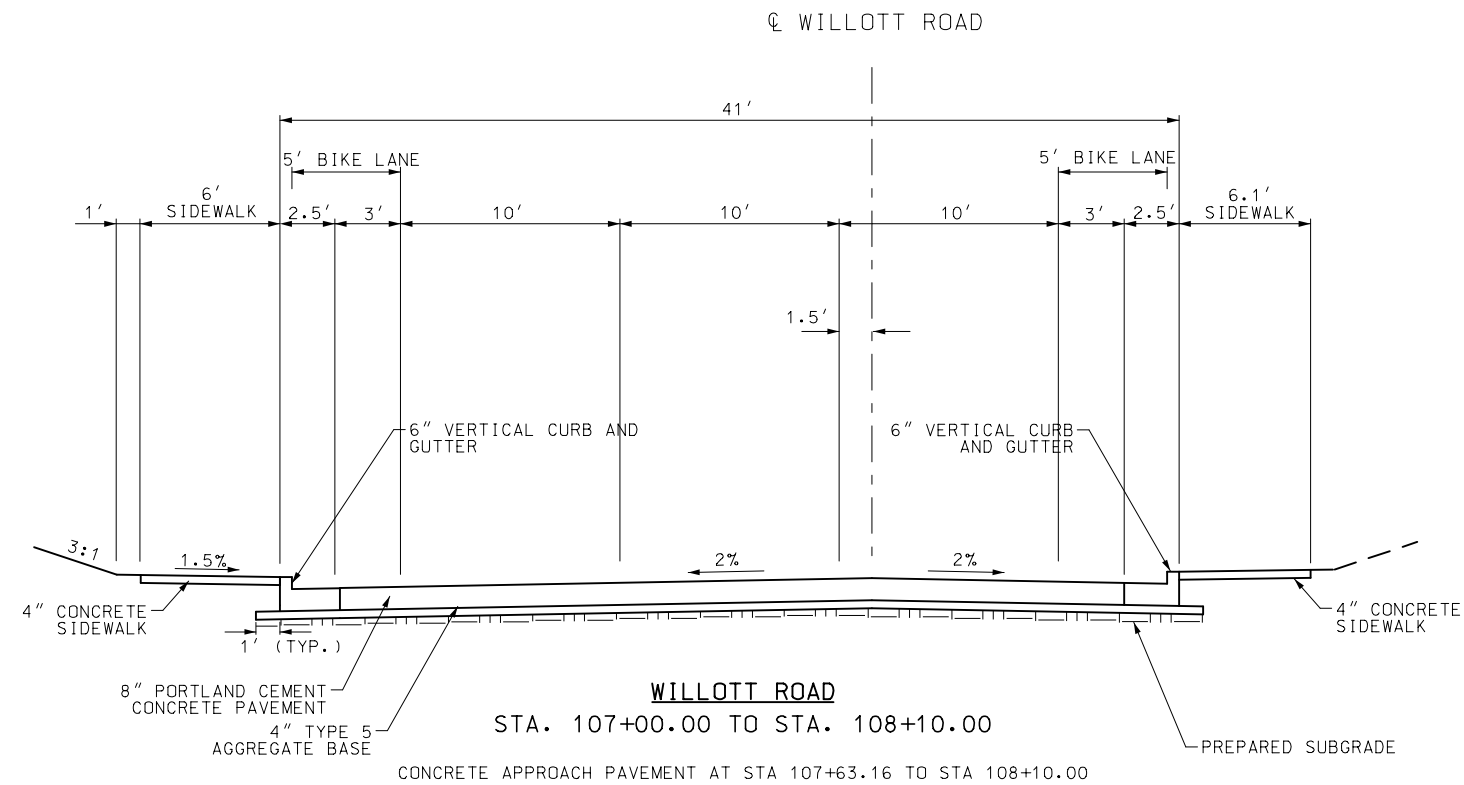


WILLOTT ROAD
BRIDGE REPLACEMENT
SUMMARY OF QUANTITIES
SHEET 2 OF 2

 **HORNER &
SHIFRIN, INC.**

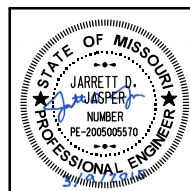
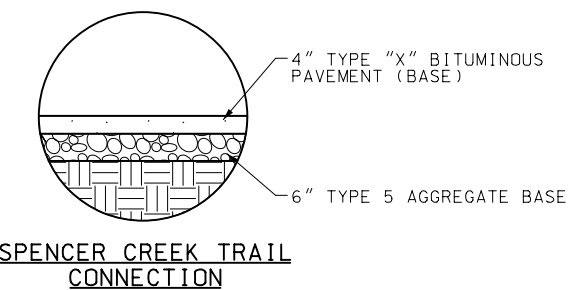
NOTES:

- 1) DO NOT SCALE DRAWING. FOLLOW DIMENSIONS.
- 2) ALL NECESSARY PAVEMENT MARKINGS MUST COMPLY WITH THE CURRENT EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
- 3) SECTIONS SHOWN MAY NOT APPLY AT INTERSECTIONS.
- 4) EXISTING 12' LANES ON WILLOTT ROAD WILL BE RESTRIPED.
- 5) ALL SAWCUTS SHALL BE INCIDENTAL TO REMOVAL OF IMPROVEMENTS. NO DIRECT PAY FOR SAWCUTS.
- 6) DOWEL BARS TO BE USED PER ST. LOUIS COUNTY STANDARD SPECIFICATIONS AND DETAILS. NO ADDITIONAL PAYMENT SHALL BE MADE FOR DOWEL BARS.
- 7) ALL WORK SHALL CONFORM TO THE PROJECT SPECIFICATIONS AND CITY OF ST. PETERS DESIGN CRITERIA AND STANDARD SPECIFICATIONS FOR STREET CONSTRUCTION. ST. LOUIS COUNTY STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION SHALL BE USED FOR ANY ITEMS NOT COVERED IN THE CITY OF ST. PETERS DESIGN CRITERIA AND STANDARD SPECIFICATIONS FOR STREET CONSTRUCTION. THE MISSOURI STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (2011) SHALL BE USED WHEN SPECIFICALLY REFERENCED IN THIS DOCUMENT. ALL STORM SEWERS SHALL BE CONSTRUCTED PER THE METROPOLITAN ST. LOUIS SEWER DISTRICT'S STANDARD CONSTRUCTION SPECIFICATIONS FOR SEWERS AND DRAINAGE FACILITIES, 2009.



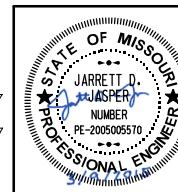
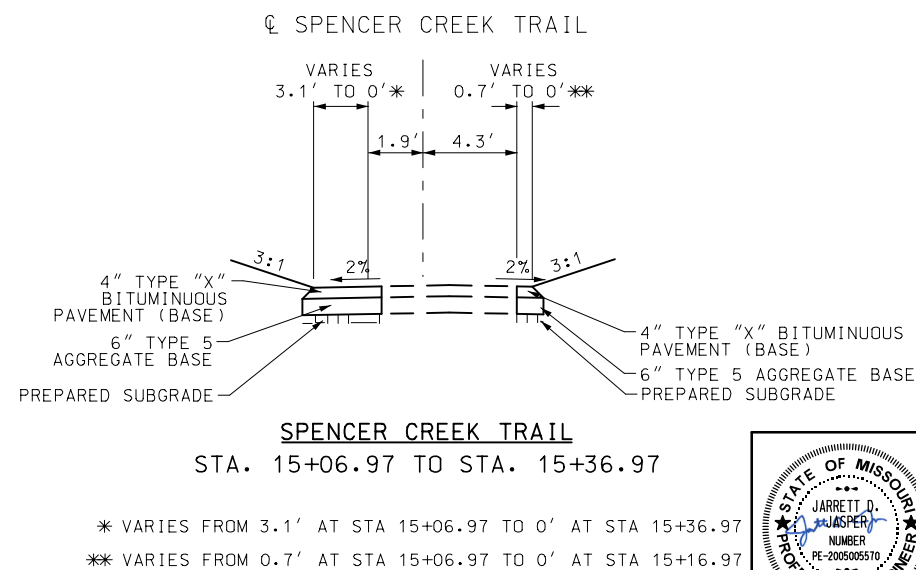
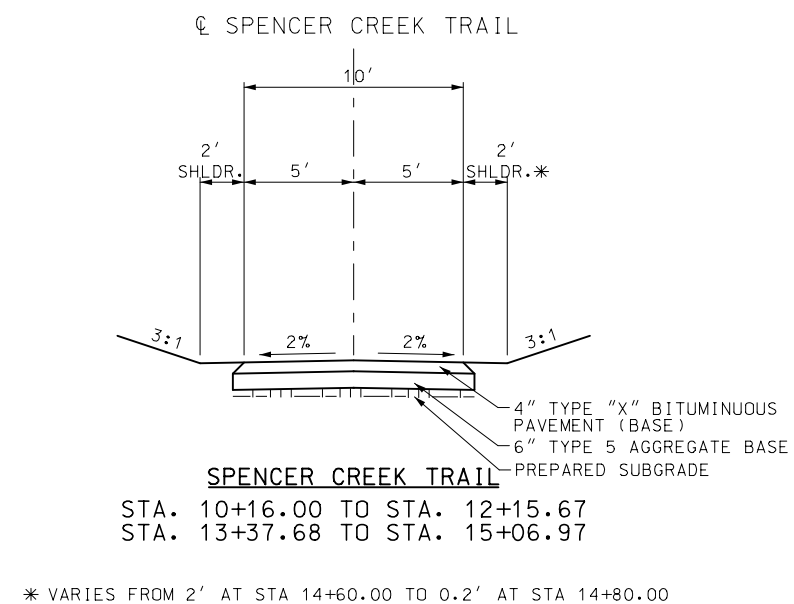
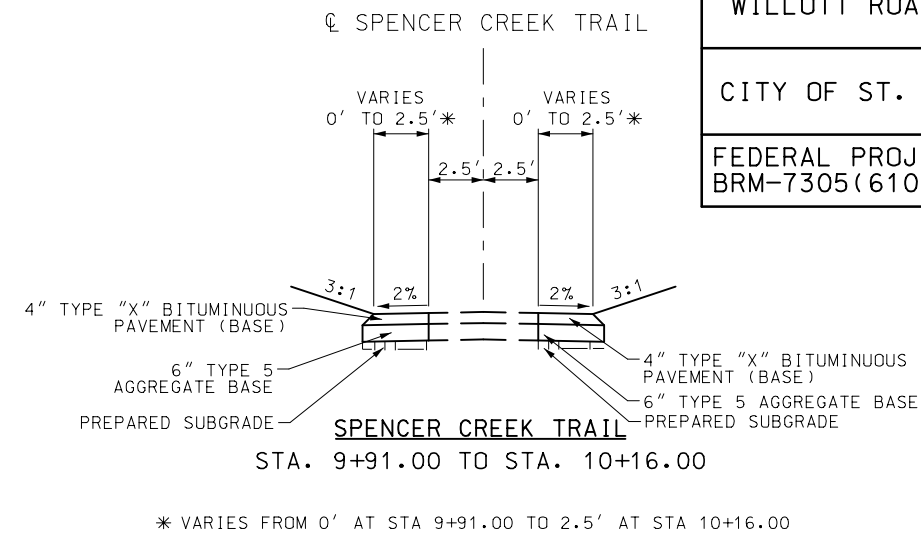
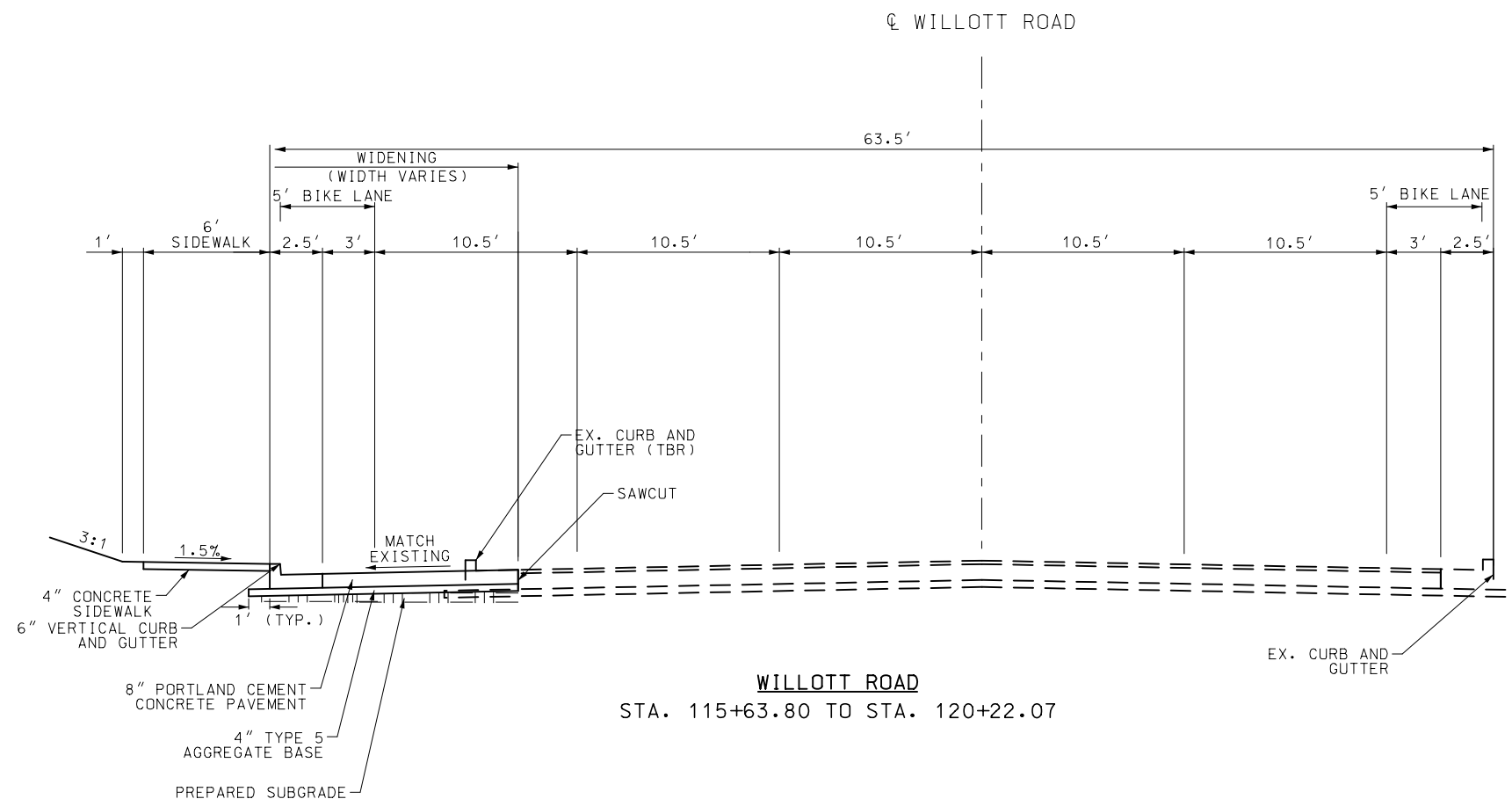
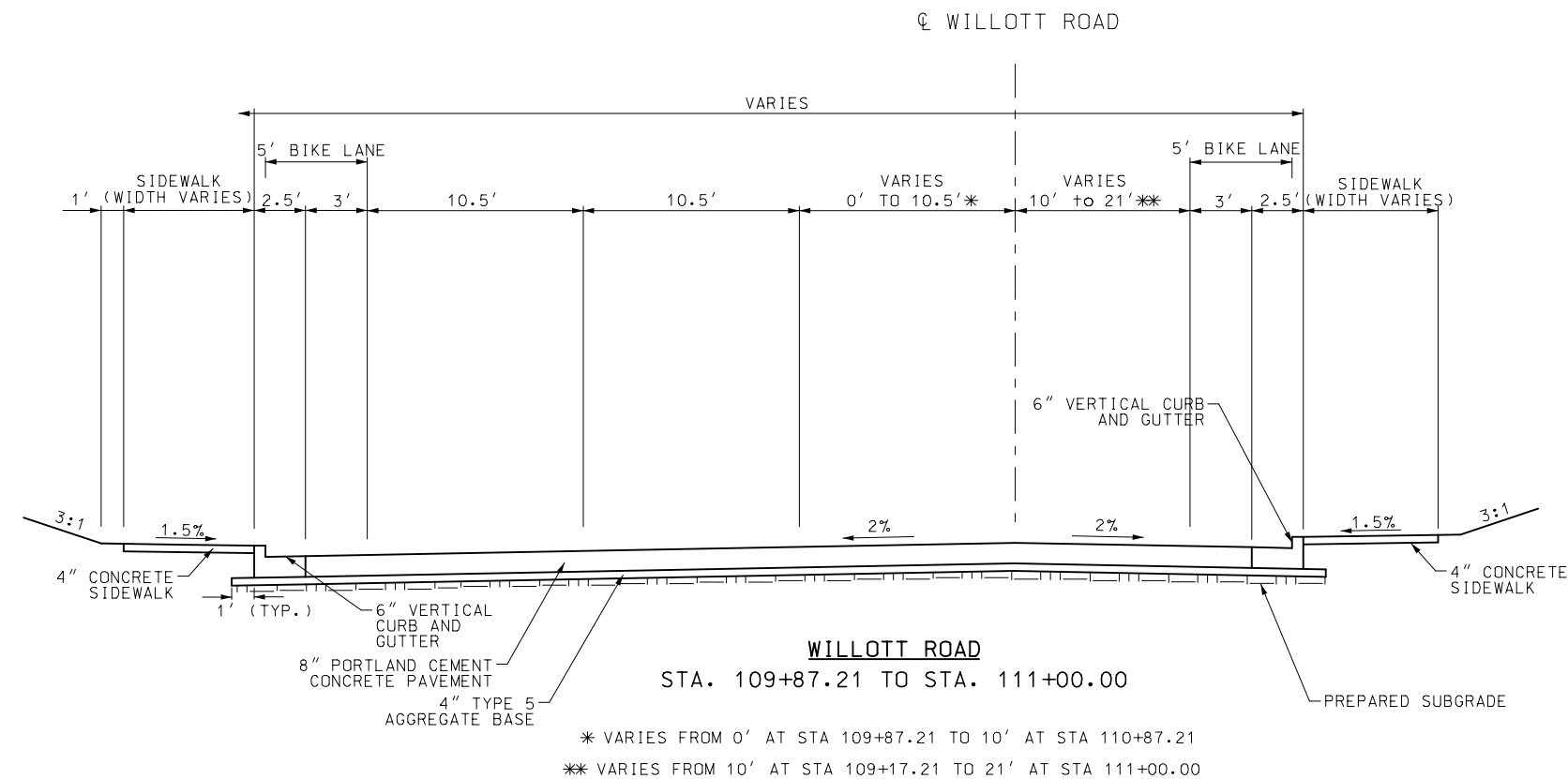
TYPICAL MODULAR BLOCK WALL SECTION

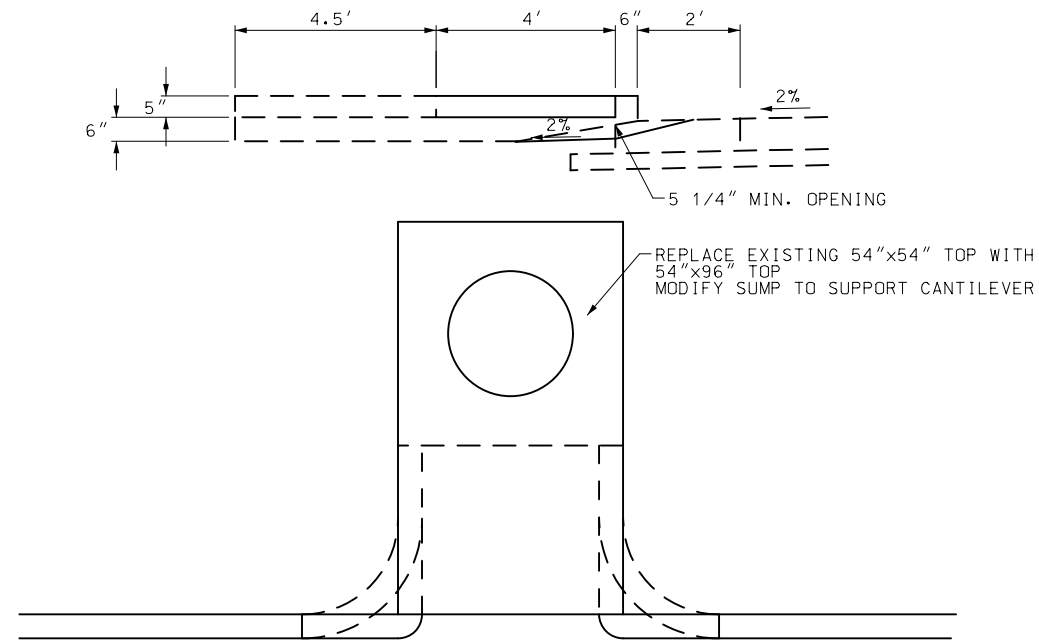
SPENCER CREEK TRAIL
STA. 14+00.00 RT TO STA. 14+80.00 RT - WALL A
STA. 13+37.69 LT TO STA. 14+52.53 LT - WALL B



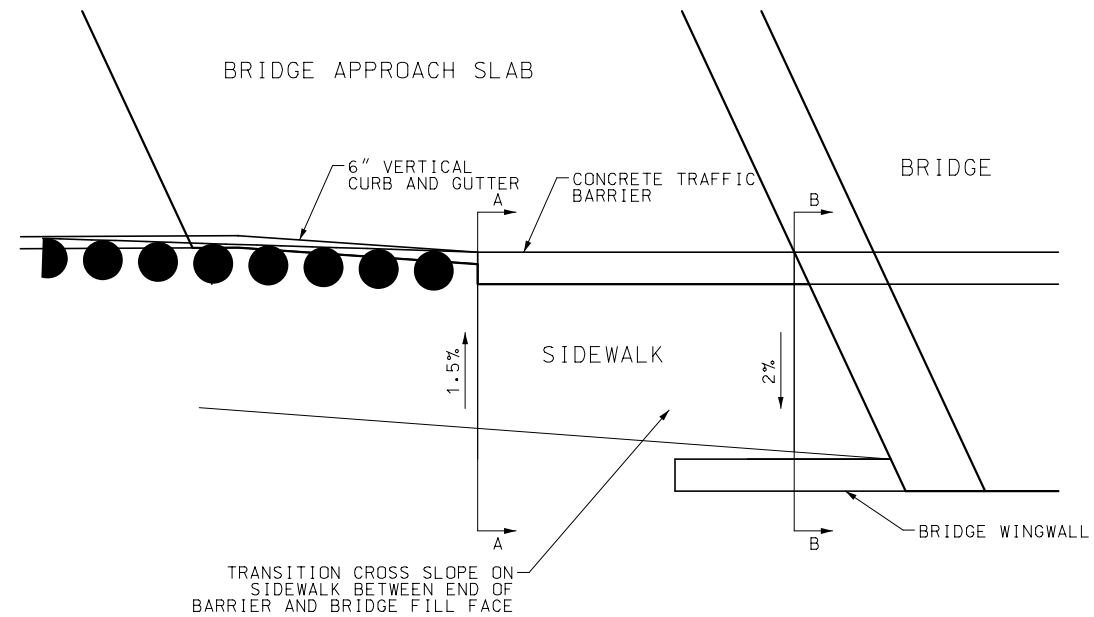
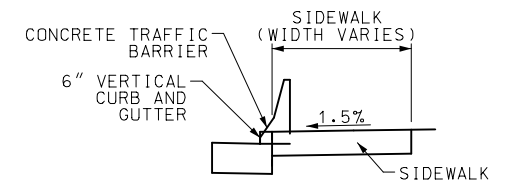
WILLOTT ROAD
BRIDGE REPLACEMENT
TYPICAL SECTIONS
SHEET 1 OF 3

HORNER & SHIFRIN, INC.

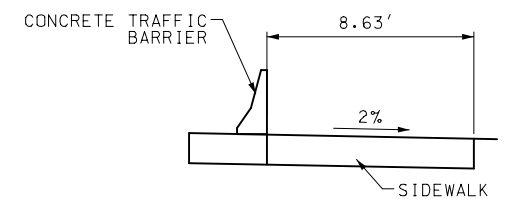
WILLOTT ROAD
BRIDGE REPLACEMENT
TYPICAL SECTIONS
SHEET 2 OF 3**HORNER & SHIFRIN, INC.**



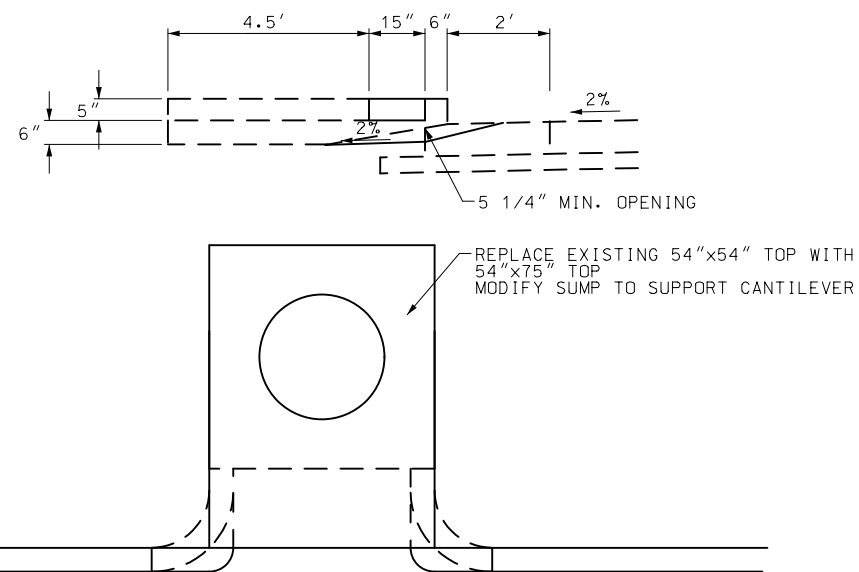
SPECIAL SUMP DETAIL 1

SIDEWALK TRANSITIONS
BEHIND BARRIER
DETAIL 3

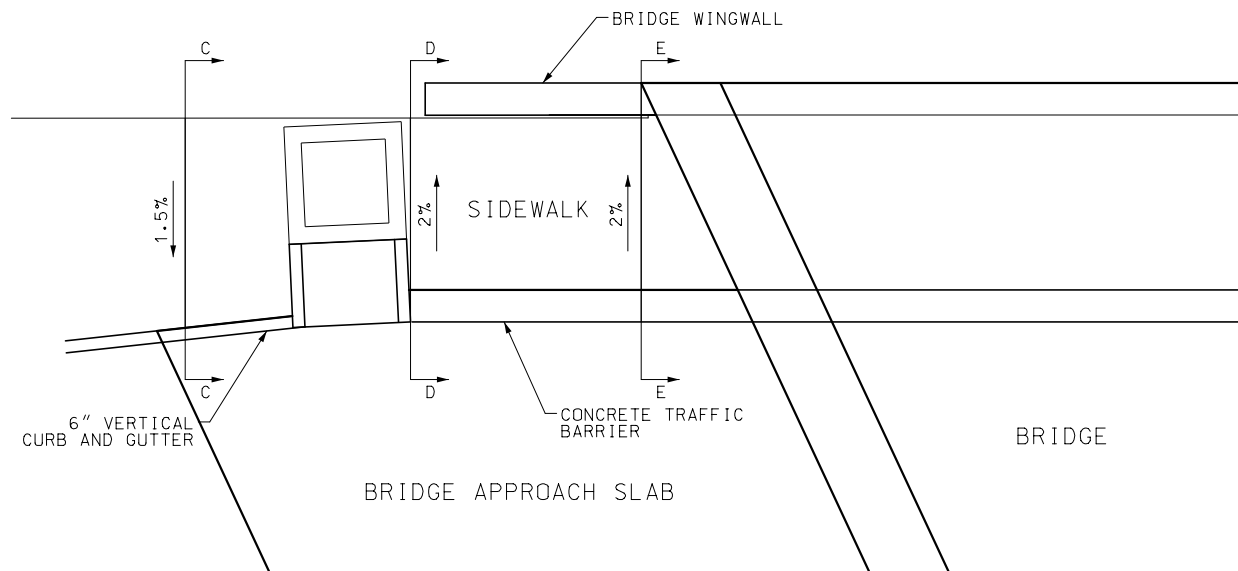
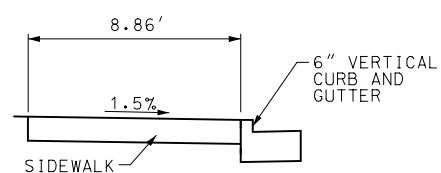
SECTION A-A



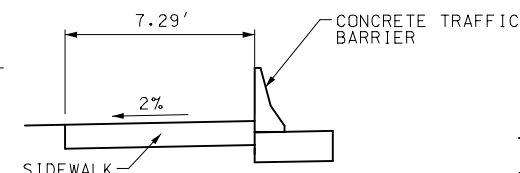
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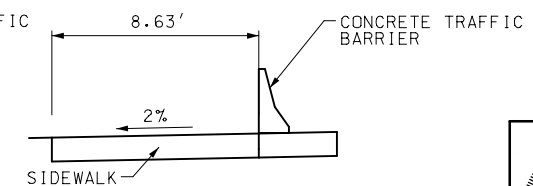
SPECIAL SUMP DETAIL 2

SIDEWALK TRANSITION
BEHIND BARRIER
DETAIL 4

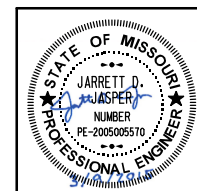
SECTION C-C



SECTION D-D



SECTION E-E

WILLOTT ROAD
BRIDGE REPLACEMENT
TYPICAL SECTIONS
SHEET 3 OF 3HORNER &
SHIFRIN, INC.

WILLOTT ROAD BRIDGE	SHEET 5B
CITY OF ST. PETERS	OF 70
FEDERAL PROJECT NO. BRM-7305(610)	

GUARDRAIL						
LOCATION	STATION	STATION	SIDE	BRIDGE ANCHOR SECTION	TRANSITION SECTION	CRASHWORTHY GUARDRAIL END TERMINAL
				(EACH)	(EACH)	(EACH)
WILLOTT ROAD	107+71.44	108+28.56	RT	1	1	1
WILLOTT ROAD	109+24.41	109+81.52	LT	1	1	1
		TOTAL		2	2	2
		PAY TOTAL		2	2	2

CONCRETE SIDEWALK				
LOCATION	STATION	STATION	4" CONC SIDEWALK	REMARKS
			(SY)	
WILLOTT ROAD	107+00.00	111+00.00	438.5	
		TOTAL	438.5	
		PAY TOTAL	439	

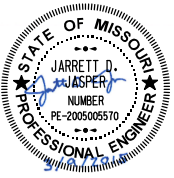
CONCRETE APPROACH PAVEMENT				
LOCATION	STATION	STATION	8" APPROACH PAVEMENT	REMARKS
			(SY)	
WILLOTT ROAD	107+63.16	108+10.00	176.4	
	109+48.86	109+89.64	182.3	
		TOTAL	358.7	
		PAY TOTAL	359	

CONCRETE PAVEMENT					
LOCATION	STATION	STATION	8" NON-REINFORCED	4" TYPE 5 AGGREGATE BASE	REMARKS
			(SY)	(SY)	
WILLOTT ROAD	107+00.00	111+00.00	787.8	922.9	
		TOTAL	787.8	922.9	
		PAY TOTAL	788	923	


CURB AND GUTTER					
LOCATION	STATION	STATION	SIDE	CURB AND GUTTER VERTICAL	REMARKS
				(LF)	
WILLOTT ROAD	107+00.00	107+97.57	LT	97.6	
WILLOTT ROAD	107+00.00	108+16.45	RT	116.1	
WILLOTT ROAD	109+36.58	111+00.00	LT	163.5	
WILLOTT ROAD	109+55.65	111+00.00	RT	144.7	
		TOTAL		521.9	
		PAY TOTAL		522	

STORM SEWERS						
				STRUCTURE		REMARKS
LOCATION	STATION	OFFSET	SIDE	CANTILEVERED 54"x96" INLET TOP	CANTILEVERED 54"x75" INLET TOP	
				(EA)	(EA)	
WILLOTT ROAD	108+05.49	26.9	LT	1		
WILLOTT ROAD	108+07.05	14.3	RT		1	
				1	1	

ROCK BLANKET					
LOCATION	STATION	STATION	FURNISHING TYPE 2 ROCK BLANKET	PLACING TYPE 2 ROCK BLANKET	REMARKS
			(CY)	(CY)	
WILLOTT ROAD	108+38.31	108+66.14	223	223	
WILLOTT ROAD	108+99.94	109+20.55	167	167	
		TOTAL	390	390	
		PAY TOTAL	390	390	



SHEET 5 QUANTITIES

 **HORNER & SHIFRIN, INC.**

*QUANTITIES FOUND ON SHEET 5B ARE INCLUDED IN BRM-7305(610).

SPENCER CREEK SOUTH VILLAGE PLAT ELEVEN
PB 22 PG 156

SPENCER CREEK VILLAGES
② PB 23 PG 69

ST. PETERS CONDOMINIUMS
PHASE 1
PB 22 PG 55

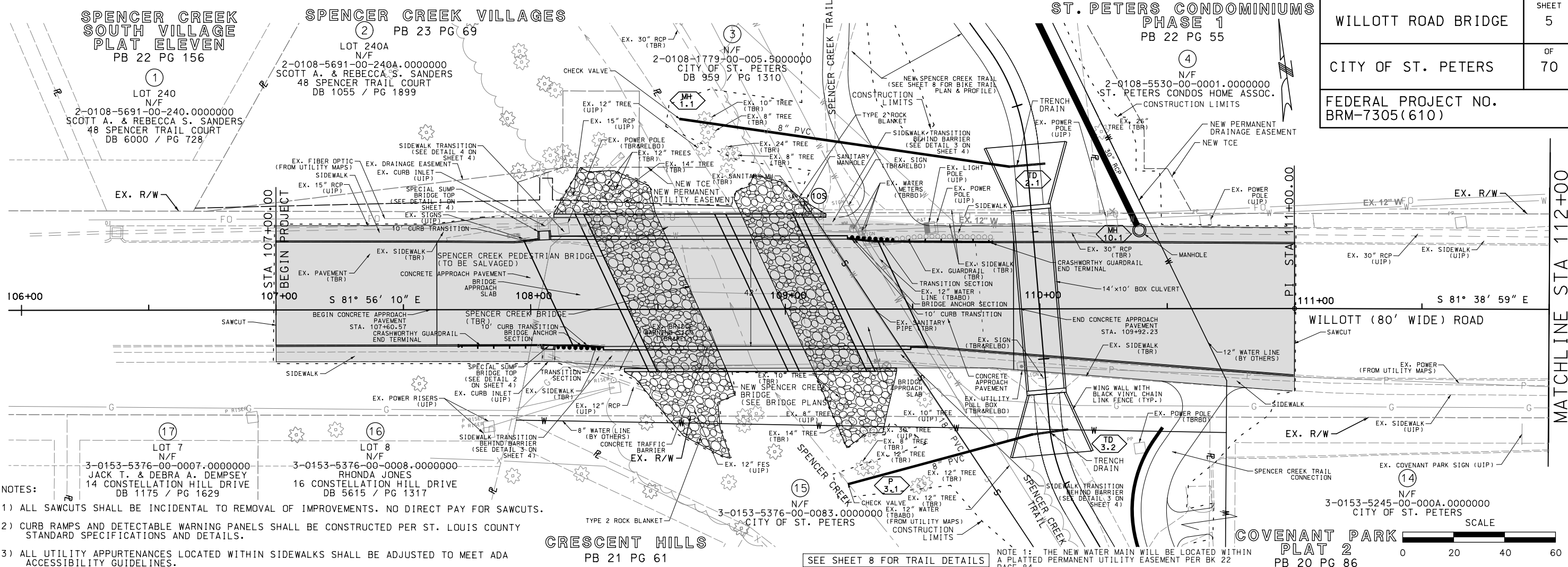
WILLOTT ROAD BRIDGE

SHEET
5

CITY OF ST. PETERS

OF
70

FEDERAL PROJECT NO.
BRM-7305(610)



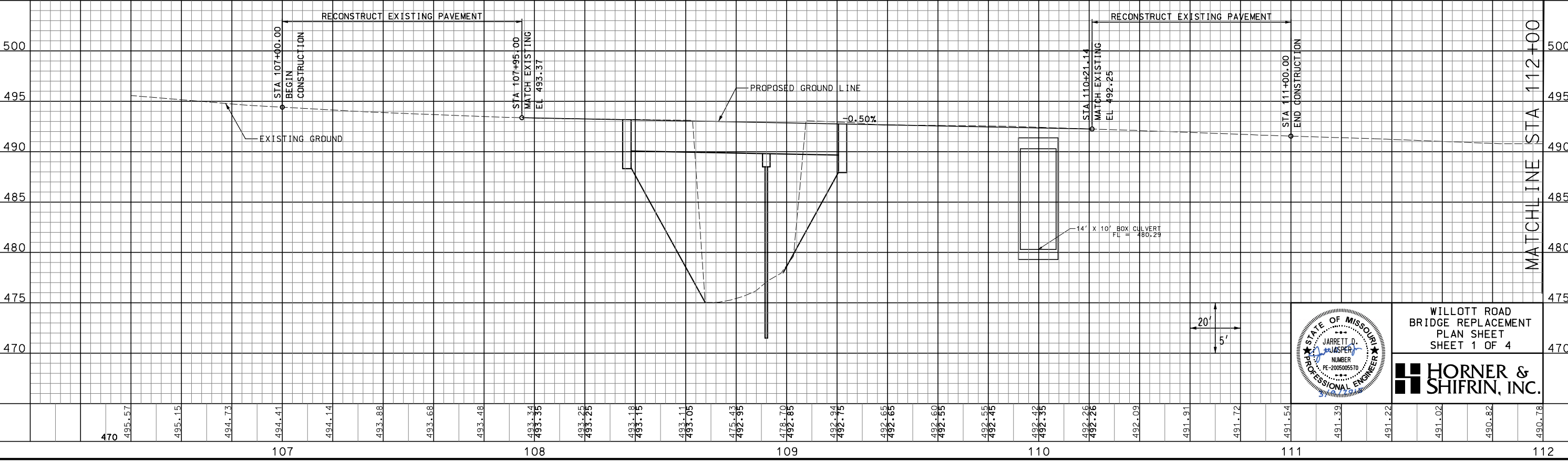
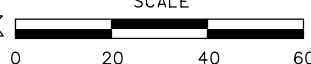
- NOTES:
- 1) ALL SAWCUTS SHALL BE INCIDENTAL TO REMOVAL OF IMPROVEMENTS. NO DIRECT PAY FOR SAWCUTS.
 - 2) CURB RAMPS AND DETECTABLE WARNING PANELS SHALL BE CONSTRUCTED PER ST. LOUIS COUNTY STANDARD SPECIFICATIONS AND DETAILS.
 - 3) ALL UTILITY APPURTENANCES LOCATED WITHIN SIDEWALKS SHALL BE ADJUSTED TO MEET ADA ACCESSIBILITY GUIDELINES.

CRESCENT HILLS
PB 21 PG 61

SEE SHEET 8 FOR TRAIL DETAILS

NOTE 1: THE NEW WATER MAIN WILL BE LOCATED WITHIN A PLATTED PERMANENT UTILITY EASEMENT PER BK 22 PAGE 84.

COVENANT PARK
PLAT 2
PB 20 PG 86



WILLOTT ROAD
BRIDGE REPLACEMENT
PLAN SHEET
SHEET 1 OF 4

HORNER & SHIFRIN, INC.

WILLOTT ROAD BRIDGE	SHEET 6B
CITY OF ST. PETERS	OF 70
FEDERAL PROJECT NO. BRM-7305(610)	

CONCRETE SIDEWALK						
LOCATION	STATION	STATION	4" CONC SIDEWALK (SY)	CONC. SIDEWALK CURB RAMP (7") (SY)	TRUNCATED DOMES (SF)	REMARKS
WILLOTT ROAD	115+63.80	118+00.00	144.2	21.5	35.2	
		TOTAL	144.2	21.5	35.2	
		PAY TOTAL	145	22	36	

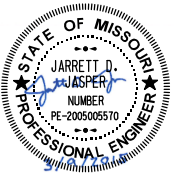
SEEDING				
LOCATION	STATION	STATION	AREA (ACRE)	REMARKS
WILLOTT ROAD	115+63.80	118+00.00	0.07	
		TOTAL	0.07	
		PAY TOTAL	0.1	

UTILITY ADJUSTMENTS					
LOCATION	STATION	SIDE	OFFSET	CONVERT INLET TO MANHOLE AND ATG AND CONVERT LID TO PAMREX COVER (EACH))	REMARKS
WILLOTT ROAD	116+46.72	LT	29.7	1	
			TOTAL	1	
			PAY TOTAL	1	


CONCRETE PAVEMENT					
LOCATION	STATION	STATION	8" NON-REINFORCED (SY)	4" TYPE 5 AGGREGATE BASE (SY)	REMARKS
WILLOTT ROAD	115+63.80	118+00.00	314.4	400.5	
		TOTAL	314.4	400.5	
		PAY TOTAL	315	401	

CURB AND GUTTER				
LOCATION	STATION	STATION	CURB AND GUTTER VERTICAL (LF)	REMARKS
WILLOTT ROAD	115+63.80	118+00.00	214.0	
		TOTAL	214.0	
		PAY TOTAL	214	

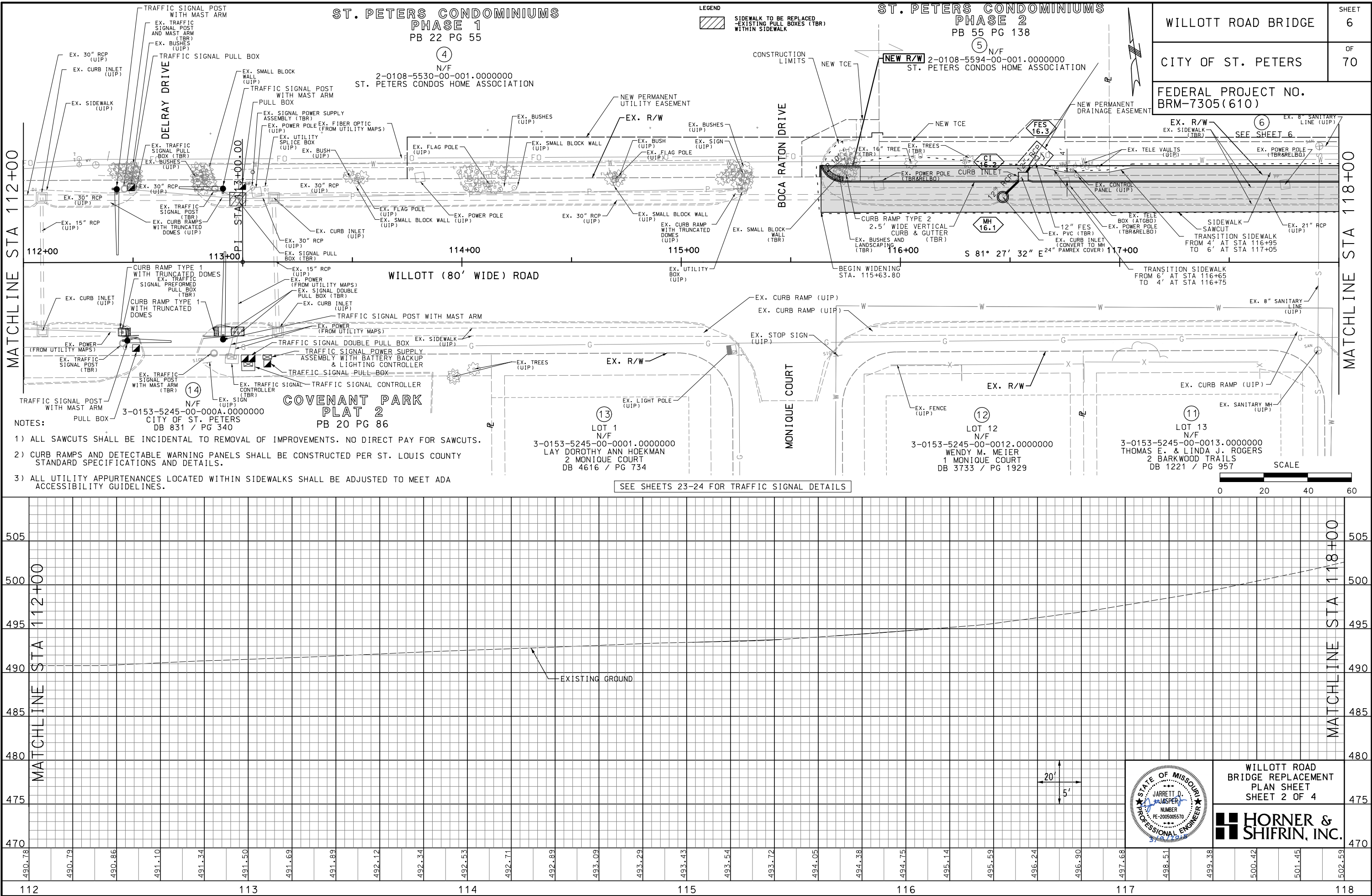
STORM SEWERS									
									PIPING
LOCATION	STATION	OFFSET	SIDE	STRUCTURE NUMBER	TO STRUCTURE	PIPE OPENINGS	SINGLE CURB INLET UNTRAPPED	12" FES	CL III 12" RCP (LF)
							(EA)	(EA)	
WILLOTT ROAD	116+46.72	29.7	LT	MH 16.1	CI 16.2	1-12", 1-21", 1-30"			13
WILLOTT ROAD	116+56.01	39.0	LT	CI 16.2	FES 16.3	2-12"	1	1	5
						TOTAL	1	1	18



SHEET 6 QUANTITIES

 **HORNER &
SHIFRIN, INC.**

*QUANTITIES FOUND ON SHEET 6B ARE INCLUDED IN THE ROADWAY PROJECT.



WILLOTT ROAD BRIDGE	SHEET 7B
CITY OF ST. PETERS	OF 70
FEDERAL PROJECT NO. BRM-7305(610)	


CONCRETE SIDEWALK						
LOCATION	STATION	STATION	4" CONC SIDEWALK (SY)	CONC. SIDEWALK CURB RAMP (7") (SY)	TRUNCATED DOMES (SF)	REMARKS
WILLOTT ROAD	118+00.00	120+31.68	137.8	10.2	20.0	
		TOTAL	137.8	10.2	20.0	
		PAY TOTAL	138	11	20	

SEEDING				
LOCATION	STATION	STATION	AREA (ACRE)	REMARKS
WILLOTT ROAD	118+00.00	120+31.68	0.08	
		TOTAL	0.08	
		PAY TOTAL	0.1	


STORM SEWERS										
							DRAINAGE STRUCTURES		PIPING	REMARKS
LOCATION	STATION	OFFSET	SIDE	STRUCTURE NUMBER	TO STRUCTURE	PIPE OPENINGS	MULTIPLE CURB INLET UNTRAPPED	PRECAST CONCRETE MANHOLE (48")	CL III 15" RCP	
							(EA)	(EA)	(LF)	
WILLOTT ROAD	118+79.22	30.1	LT	MH 18.1	MCI 18.2	1-15", 1-18", 1-21"		1	9	PAMREX COVER
WILLOTT ROAD	118+80.66	39.0	LT	MCI 18.2		1-12", 1-15"	1			
						TOTAL	1	1	9	

CONCRETE PAVEMENT					
LOCATION	STATION	STATION	8" NON-REINFORCED (SY)	4" TYPE 5 AGGREGATE BASE (SY)	REMARKS
WILLOTT ROAD	118+00.00	120+22.07	281.5	362.1	
		TOTAL	281.5	362.1	
		PAY TOTAL	282	363	

CURB AND GUTTER				
LOCATION	STATION	STATION	CURB AND GUTTER VERTICAL (LF)	REMARKS
WILLOTT ROAD	118+00.00	120+31.68	208.6	
		TOTAL	208.6	
		PAY TOTAL	209	



SHEET 7 QUANTITIES

 **HORNER &
SHIFRIN, INC.**

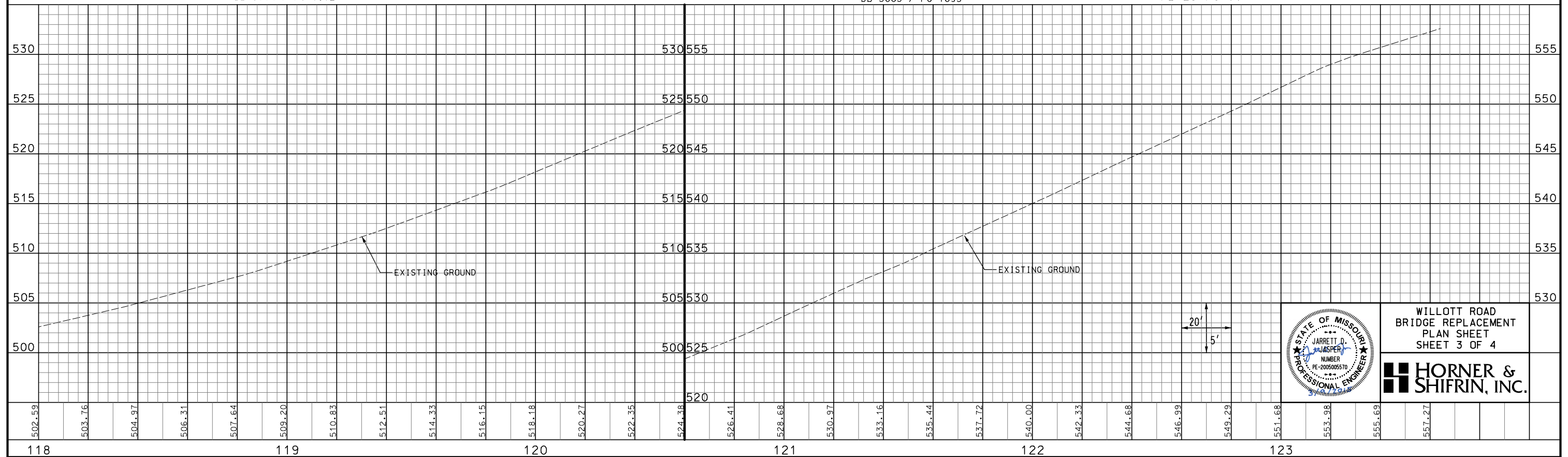
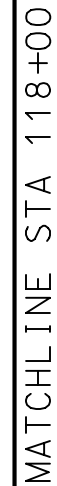
*QUANTITIES FOUND ON SHEET 7B ARE INCLUDED IN THE ROADWAY PROJECT.

- 1) ALL SAWCUTS SHALL BE INCIDENTAL TO REMOVAL OF IMPROVEMENTS. NO DIRECT PAY FOR SAWCUTS.
- 2) CURB RAMPS AND DETECTABLE WARNING PANELS SHALL BE CONSTRUCTED PER ST. LOUIS COUNTY STANDARD SPECIFICATIONS AND DETAILS.
- 3) ALL UTILITY APPURTENANCES LOCATED WITHIN SIDEWALKS SHALL BE ADJUSTED TO MEET ADA ACCESSIBILITY GUIDELINES.



OF
70

1314 J. J. M. Verbeke et al.



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WILLOTT ROAD BRIDGE	SHEET 8B
CITY OF ST. PETERS	OF 70
FEDERAL PROJECT NO. BRM-7305(610)	

SPENCER CREEK TRAIL					
LOCATION	STATION	STATION	4" ASPHALT BASE MIX (SY)	6" TYPE 5 AGGREGATE BASE (SY)	REMARKS
SPENCER CREEK TRAIL	9+91.00	12+15.67	443.2	471.6	INCLUDES CONNECTIONS
SPENCER CREEK TRAIL	13+37.68	15+06.97	407.6	434.2	INCLUDES CONNECTIONS TO WILLOTT ROAD SIDEWALK AND PARK PARKING LOT
		TOTAL	850.8	905.8	
		PAY TOTAL	851	906	


MODULAR BLOCK RETAINING WALL					
LOCATION	STATION	STATION	SIDE	MODULAR RETAINING WALL (SF)	CHAIN LINK FENCE (LF)
SPENCER CREEK TRAIL	13+37.69	14+52.53	LT	691.3	216.6
SPENCER CREEK TRAIL	14+00.00	14+80.00	RT	262.5	
		TOTAL		953.8	216.6
		PAY TOTAL		954	217

SEEDING				
LOCATION	STATION	STATION	AREA	REMARKS
			(ACRE)	
WILLOTT ROAD	107+00.00	111+00.00	0.6	
		TOTAL	0.6	
		PAY TOTAL	0.6	

STORM SEWERS														
							DRAINAGE STRUCTURES			PIPING				REMARKS
LOCATION	STATION	OFFSET	SIDE	STRUCTURE NUMBER	TO STRUCTURE	PIPE OPENINGS	PRECAST CONCRETE MANHOLE (48")	30" FES	CHECK VALVE	8" PVC	18" PVC	CL 111 30" RCP	TRENCH DRAIN WITH CATCH BASIN	
							(EA)	(EA)	(EA)	(LF)		(LF)	(LF)	
WILLOTT ROAD	109+91.21	129.5	LT	MH 9.1	FES 8.1	2-30"	1	1				158		
WILLOTT ROAD	110+39.08	30.8	LT	MH 10.1	MH 9.1	2-30"	1					110		
WILLOTT ROAD	109+07.42	42.2	LT	MH 10S	MH 269S	2-18"	1				189			
SPENCER CREEK TRAIL	12+23.64			TD 2.1	P 1.1				1	131			14	
SPENCER CREEK TRAIL	13+28.78			TD 3.2	P 3.1				1	75			14	
						TOTAL	3	1	2	206	189	268	28	



SHEET 8 QUANTITIES

 **HORNER &
SHIFRIN, INC.**

*QUANTITIES FOUND ON SHEET 8 ARE INCLUDED IN BRM-7305(610).

LEGEND
TRAIL/SIDEWALK REMOVAL

WILLOTT ROAD BRIDGE

SHEET
8

CITY OF ST. PETERS

OF
70

FEDERAL PROJECT NO.
BRM-7305(610)

SPENCER CREEK TRAIL
CURVE 1
PI 10+27.33
PC 10+18.86
PT 10+35.78
Δ 6° 27' 44" (RT)
D 38° 11' 50"
L 16.92'
T 8.47'
R 150.00'

SPENCER CREEK TRAIL
CURVE 2
PI 11+21.88
PC 10+95.59
PT 11+46.39
Δ 36° 22' 47" (LT)
D 71° 37' 11"
L 50.80'
T 26.29'
R 80.00'

SPENCER CREEK TRAIL
CURVE 3
PI 11+96.37
PC 11+73.84
PT 12+17.76
Δ 31° 27' 02" (RT)
D 71° 37' 11"
L 43.91'
T 22.52'
R 80.00'

SPENCER CREEK TRAIL
CURVE 4
PI 13+42.87
PC 13+24.56
PT 13+60.56
Δ 25° 46' 53" (LT)
D 71° 37' 11"
L 36.00'
T 18.31'
R 80.00'

SPENCER CREEK TRAIL
CURVE 5
PI 14+70.26
PC 14+61.72
PT 14+78.78
Δ 6° 30' 56" (RT)
D 38° 11' 50"
L 17.06'
T 8.54'
R 150.00'

④
N/F
2-0108-5530-00-0001.0000000
ST. PETERS CONDOS HOME ASSOC.

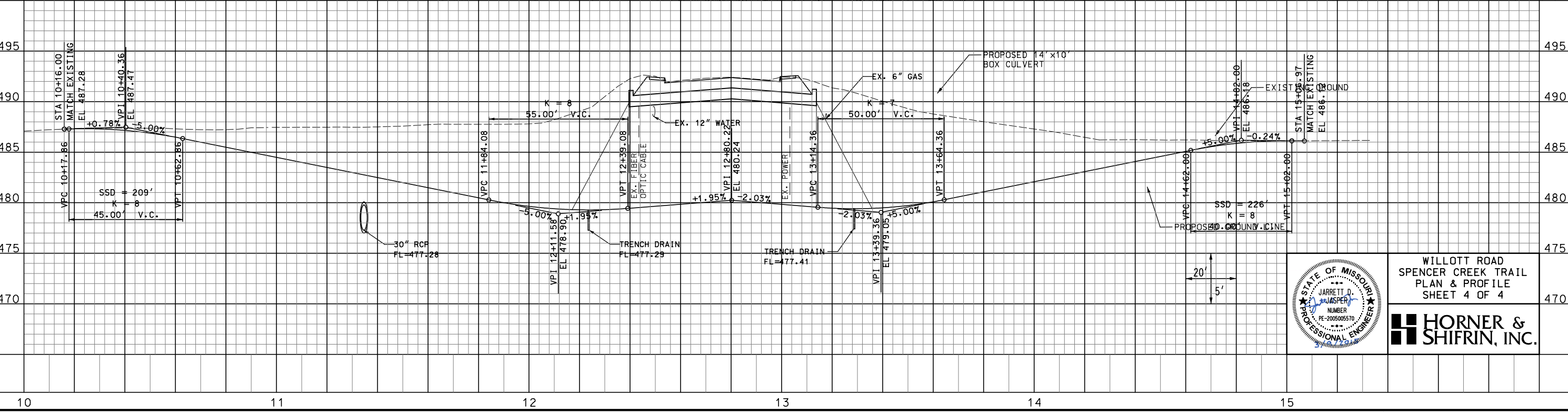
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CITY OF ST. PETERS
DB 831 / PG 340

N/F
3-0153-5376-00-0083.0000000
CITY OF ST. PETERS
(BY OTHERS)

N/F
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CITY OF ST. PETERS
DB 959 / PG 1310

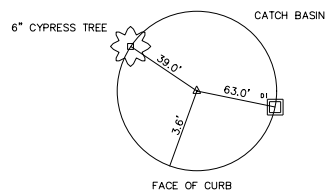
SCALE
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SEE SHEET 5 FOR ROADWAY DETAILS



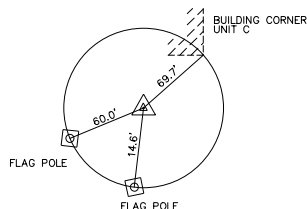
WILLOTT ROAD
SPENCER CREEK TRAIL
PLAN & PROFILE
SHEET 4 OF 4

HORNER & SHIFRIN, INC.



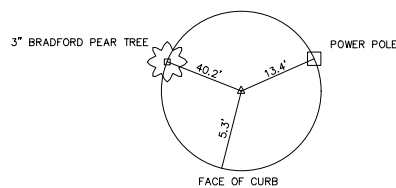
CONTROL POINT 4023

COORDINATES
NORTHING = 1071122.51
EASTING = 795161.65
STATION = 107+42.14
OFFSET = 30.24 LT
ELEVATION = 493.75



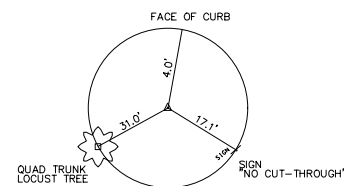
CONTROL POINT 4011

COORDINATES
NORTHING = 1071041.87
EASTING = 795884.60
STATION = 114+68.81
OFFSET = 54.22 LT
ELEVATION = 494.75



CONTROL POINT 4017

COORDINATES
NORTHING = 1070975.36
EASTING = 796173.78
STATION = 117+64.67
OFFSET = 31.41 LT
ELEVATION = 500.70

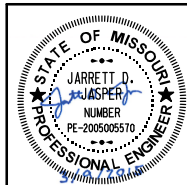


CONTROL POINT 4016

COORDINATES
NORTHING = 1070862.73
EASTING = 796518.40
STATION = 121+21.90
OFFSET = 30.95 RT
ELEVATION = 531.34

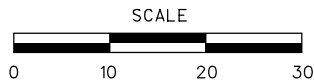
COORDINATE POINTS

PLAN SHEET	STATION	STATION	NORTHING (FEET)	EASTING (FEET)	DESCRIPTION
5	107+00.00	WILLOTT ROAD	1071098.48	795115.68	BEGIN PROJECT
5	111+00.00	WILLOTT ROAD	1071042.36	795511.73	PI STA
6	113+00.00	WILLOTT ROAD	1071013.32	795709.61	PI STA
7	119+00.00	WILLOTT ROAD	1070924.21	796302.95	PI STA
7	120+33.70	WILLOTT ROAD	1070905.63	796435.36	END PROJECT
8	9+93.01	SPENCER CREEK TRAIL	1071311.53	795393.66	BEGIN TRAIL
8	10+18.86	SPENCER CREEK TRAIL	1071310.64	795395.07	PC STA - CURVE 1
8	10+27.33	SPENCER CREEK TRAIL	1071302.17	795394.82	PI STA - CURVE 1
8	10+35.78	SPENCER CREEK TRAIL	1071293.79	795393.61	PT STA - CURVE 1
8	10+95.59	SPENCER CREEK TRAIL	1071234.59	795385.08	PC STA - CURVE 2
8	11+21.88	SPENCER CREEK TRAIL	1071208.57	795381.34	PI STA - CURVE 2
8	11+46.39	SPENCER CREEK TRAIL	1071185.40	795393.75	PT STA - CURVE 2
8	11+73.84	SPENCER CREEK TRAIL	1071161.20	795406.72	PC STA - CURVE 3
8	11+96.37	SPENCER CREEK TRAIL	1071141.34	795417.36	PI STA - CURVE 3
8	12+17.76	SPENCER CREEK TRAIL	1071118.85	795416.08	PT STA - CURVE 3
8	13+24.56	SPENCER CREEK TRAIL	1071012.22	795410.00	PC STA - CURVE 4
8	13+42.87	SPENCER CREEK TRAIL	1070993.94	795408.96	PI STA - CURVE 4
8	13+60.56	SPENCER CREEK TRAIL	1070977.03	795415.97	PT STA - CURVE 4
8	14+61.72	SPENCER CREEK TRAIL	1070883.58	795454.70	PC STA - CURVE 5
8	14+70.26	SPENCER CREEK TRAIL	1070875.70	795457.97	PI STA - CURVE 5
8	14+78.78	SPENCER CREEK TRAIL	1070867.49	795460.33	PT STA - CURVE 5
8	15+06.97	SPENCER CREEK TRAIL	1070840.39	795468.10	PI STA
8	15+36.97	SPENCER CREEK TRAIL	1070812.38	795478.85	END TRAIL

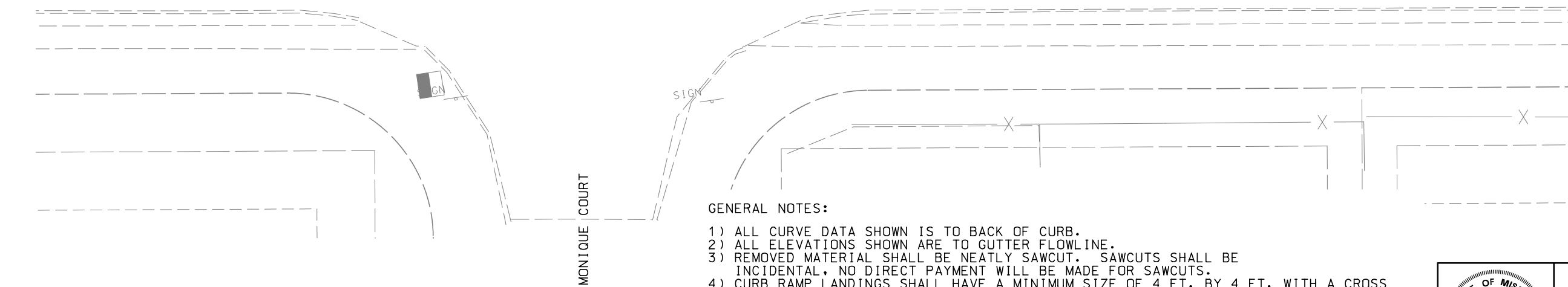
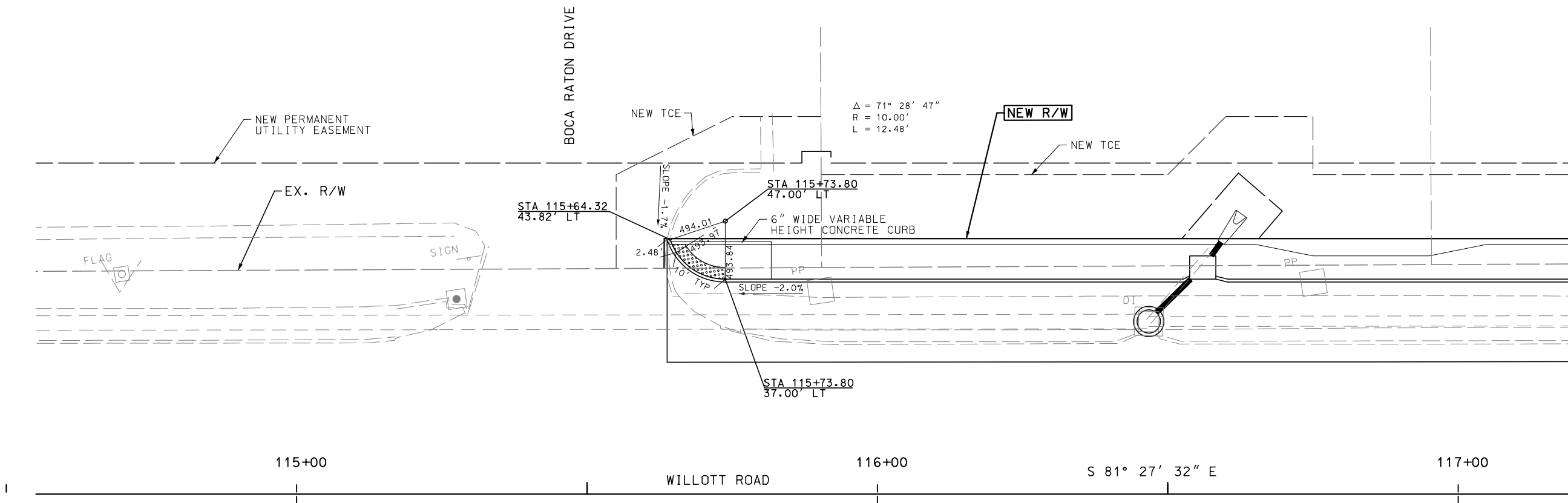


WILLOTT ROAD
BRIDGE REPLACEMENT
REFERENCE POINTS &
COORDINATE POINTS

**HORNER &
SHIFRIN, INC.**

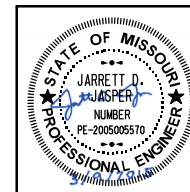


WILLOTT ROAD BRIDGE	SHEET 10
CITY OF ST. PETERS	OF 70
FEDERAL PROJECT NO. BRM-7305(610)	



GENERAL NOTES:

- 1) ALL CURVE DATA SHOWN IS TO BACK OF CURB.
- 2) ALL ELEVATIONS SHOWN ARE TO GUTTER FLOWLINE.
- 3) REMOVED MATERIAL SHALL BE NEATLY SAWCUT. SAWCUTS SHALL BE INCIDENTAL, NO DIRECT PAYMENT WILL BE MADE FOR SAWCUTS.
- 4) CURB RAMP LANDINGS SHALL HAVE A MINIMUM SIZE OF 4 FT. BY 4 FT. WITH A CROSS SLOPE OF 1.5% (+ OR - 0.5%) IN ANY DIRECTION (SLOPE 1.0% TO 2.0% MAX.)
- 5) CURB RAMP AND DETECTABLE WARNING PANELS SHALL BE CONSTRUCTED PER ST. LOUIS COUNTY STANDARD SPECIFICATIONS AND DETAILS.
- 6) ALL UTILITY APPURTENANCES LOCATED WITHIN SIDEWALKS SHALL BE ADJUSTED TO MEET ADA ACCESSIBILITY GUIDELINES.

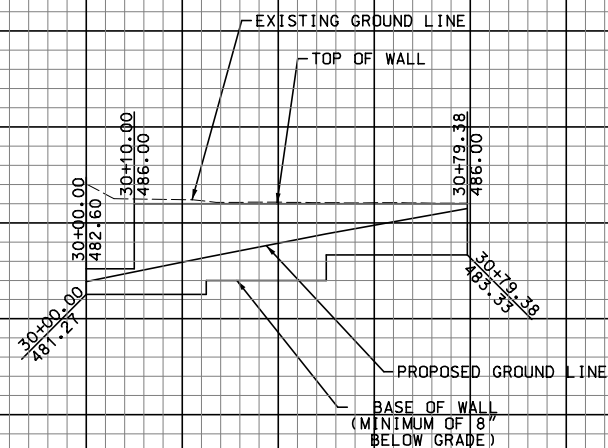


WILLOTT ROAD -
BOCA RATON DRIVE
INTERSECTION DETAILS
SHEET 1 OF 1

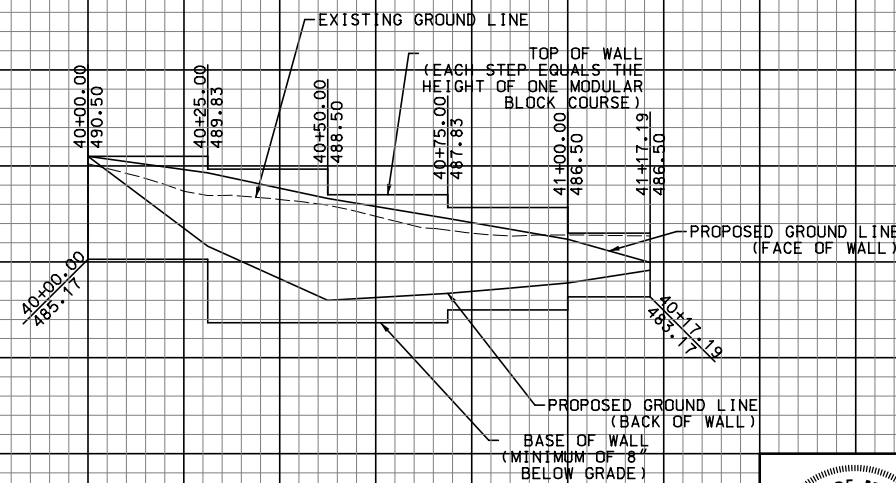
**HORNER &
SHIFRIN, INC.**

SPENCER CREEK TRAIL
CURVE 5
PI 14+70.26
PC 14+61.72
PT 14+78.78
Δ 6° 30' 56" (RT)
D 38° 11' 50"
L 17.06'
T 8.54'
R 150.00'

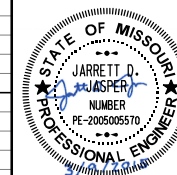
WALL B
CURVE 1
PI 40+34.28
PC 40+05.49
PT 40+57.54
Δ 60° 52' 01" (RT)
D 116° 55' 49"
L 52.05'
T 28.79'
R 49.00'



WALL A



WALL B



RETAINING WALL
PLAN & PROFILE
SHEET 1 OF 1

HORNER & SHIFRIN, INC.

LEGEND

EX. 1 FT CONTOUR

EX. 5 FT CONTOUR

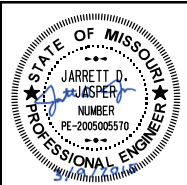
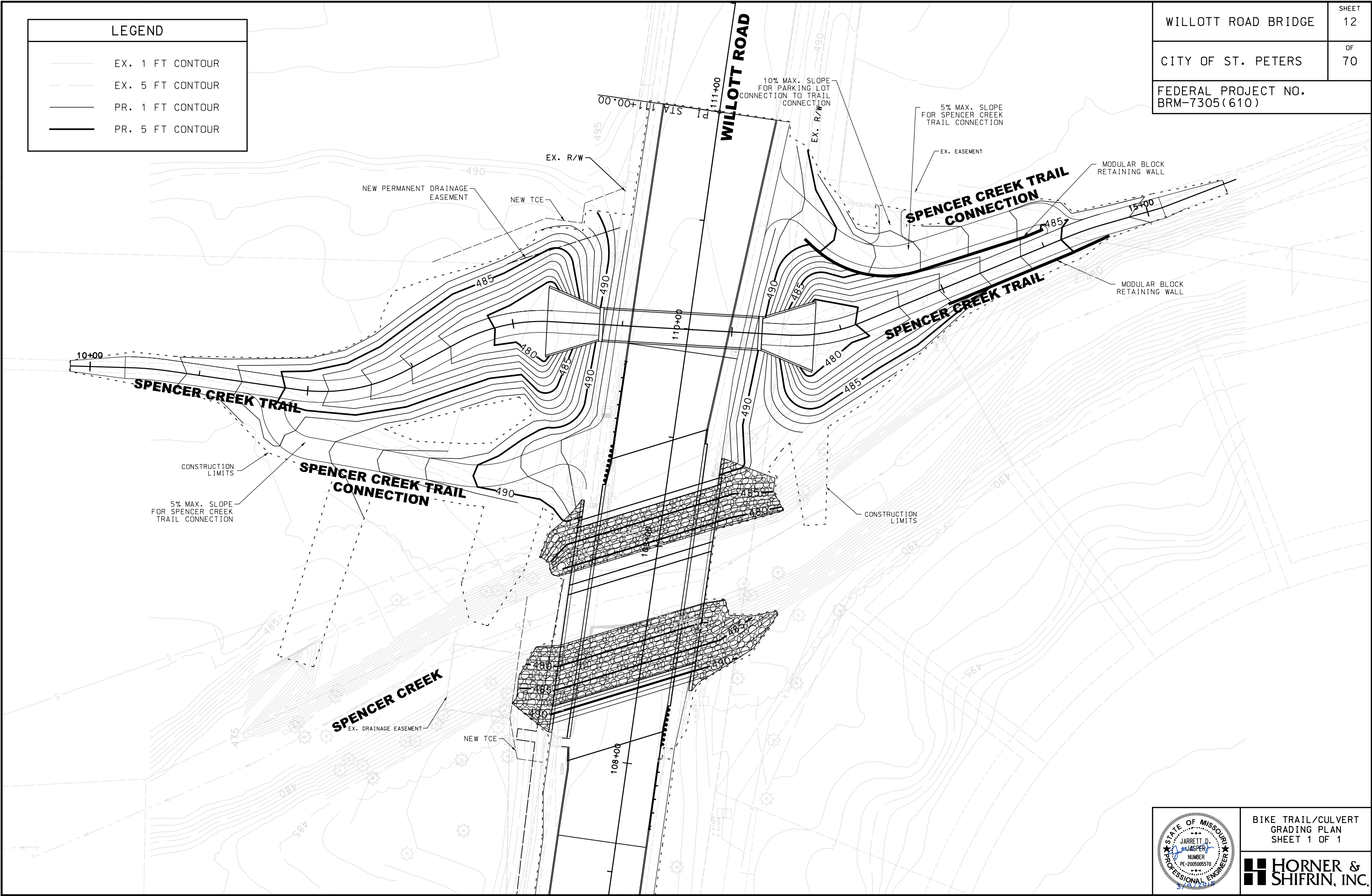
WILLOTT ROAD BRIDGE

SHEET
12

CITY OF ST. PETERS

OF
70

FEDERAL PROJECT NO.
BRM-7305(610)

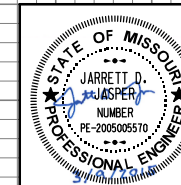
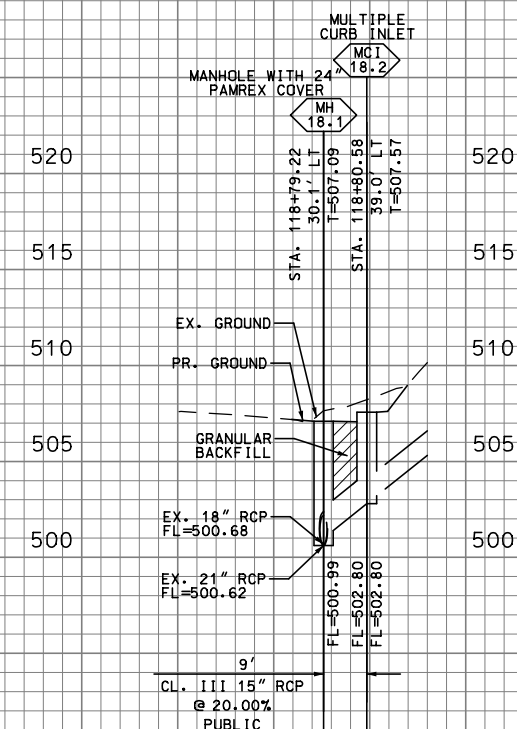
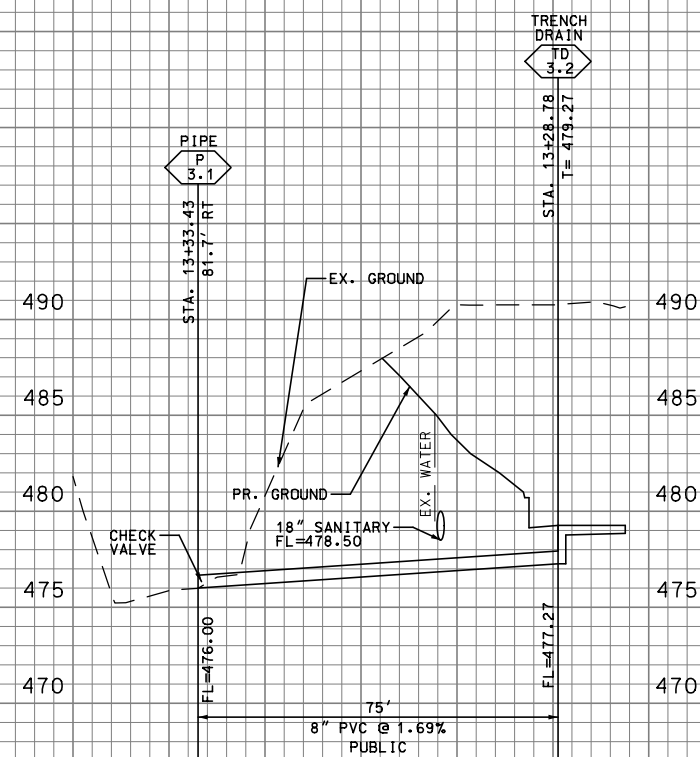
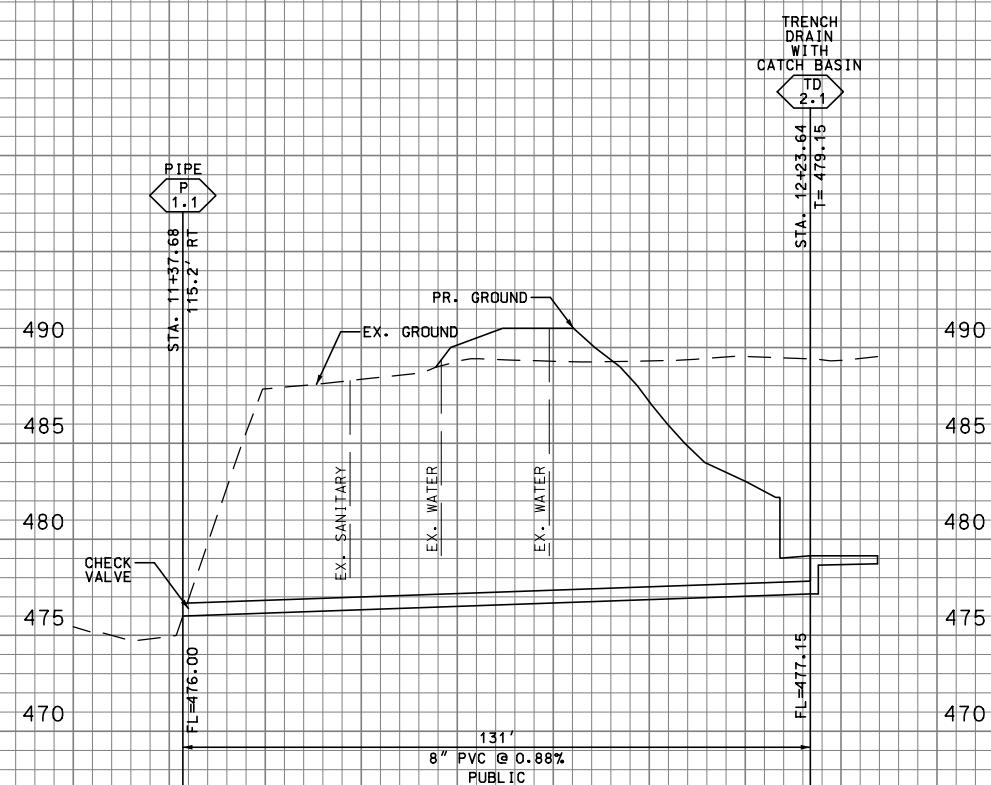
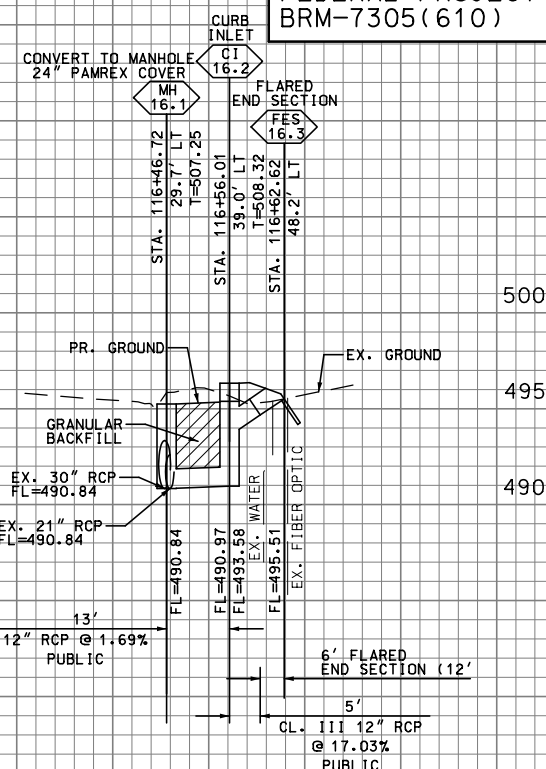
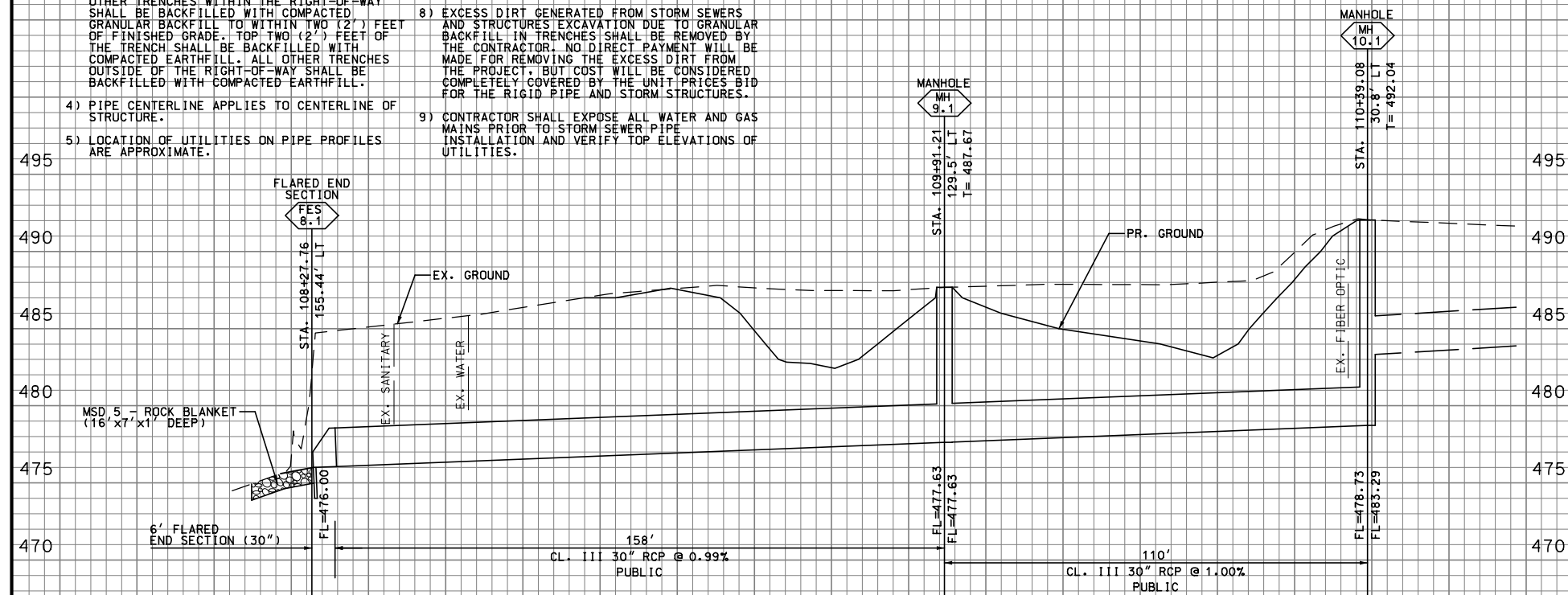


BIKE TRAIL/CULVERT
GRADING PLAN
SHEET 1 OF 1

HORNER & SHIFRIN, INC.

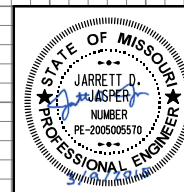
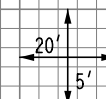
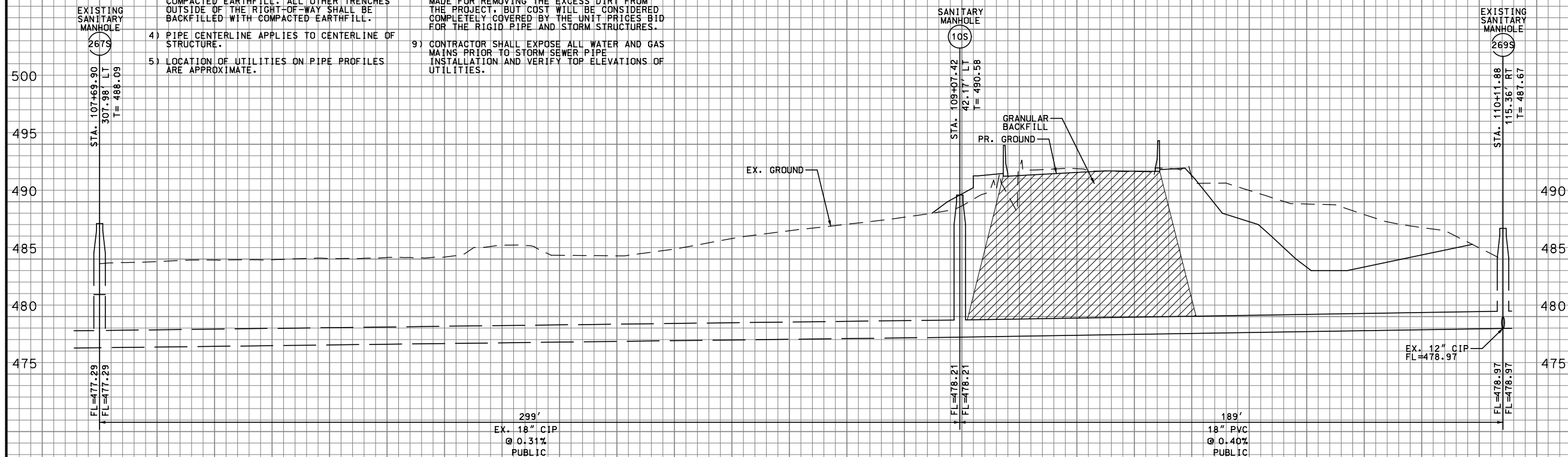
GENERAL NOTES:

- 1) T=TOP OF MANHOLE CASTING OR INLET STONE.
- 2) ALL STORM SEWER PIPE TO BE CLASS III, UNLESS OTHERWISE NOTED, GASKETED PIPE (4' O' RING) ASTM C-443.
- 3) CONTRACTOR TO PROVIDE COMPACTED GRANULAR BACKFILL TO THE SUBGRADE OF THE PAVEMENT FOR ALL TRENCHES UNDER PAVEMENT. ALL OTHER TRENCHES WITHIN THE RIGHT-OF-WAY SHALL BE BACKFILLED WITH COMPACTED GRANULAR BACKFILL TO WITHIN TWO (2') FEET OF FINISHED GRADE. TOP TWO (2') FEET OF THE TRENCH SHALL BE BACKFILLED WITH COMPACTED EARTHFILL. ALL OTHER TRENCHES OUTSIDE OF THE RIGHT-OF-WAY SHALL BE BACKFILLED WITH COMPACTED EARTHFILL.
- 4) PIPE CENTERLINE APPLIES TO CENTERLINE OF STRUCTURE.
- 5) LOCATION OF UTILITIES ON PIPE PROFILES ARE APPROXIMATE.
- 6) DISTANCES BETWEEN STRUCTURES ARE MEASURED TO THE CENTER OF STRUCTURES.
- 7) FILL MATERIAL UPON WHICH THE PROPOSED SEWERS ARE TO BE LAID SHALL BE COMPACTED TO 90% OF MAXIMUM DENSITY AS DETERMINED BY ASTM D-1557-180 AASHTO MODIFIED COMPACTION TEST AND BE VERIFIED BY THE ENGINEER.
- 8) EXCESS DIRT GENERATED FROM STORM SEWERS AND STRUCTURES EXCAVATION DUE TO GRANULAR BACKFILL IN TRENCHES SHALL BE REMOVED BY THE CONTRACTOR. NO DIRECT PAYMENT WILL BE MADE FOR REMOVING THE EXCESS DIRT FROM THE PROJECT, BUT COST WILL BE CONSIDERED COMPLETELY COVERED BY THE UNIT PRICES BID FOR THE RIGID PIPE AND STORM STRUCTURES.
- 9) CONTRACTOR SHALL EXPOSE ALL WATER AND GAS MAINS PRIOR TO STORM SEWER PIPE INSTALLATION AND VERIFY TOP ELEVATIONS OF UTILITIES.
- 10) ALL SEWER CONSTRUCTION AND MATERIALS TO BE IN ACCORDANCE WITH THE METROPOLITAN ST. LOUIS SEWER DISTRICT STANDARD CONSTRUCTION SPECIFICATIONS FOR SEWERS AND DRAINAGE FACILITIES, 2009.
- 12) PAYMENT FOR ALL GRANULAR BACKFILL WILL BE INCIDENTAL TO THE PIPE.

STORM SEWER
PROFILES
SHEET 1 OF 1**HORNER & SHIFRIN, INC.**

GENERAL NOTES:

- 1) T=TOP OF MANHOLE CASTING OR INLET STONE.
- 2) ALL STORM SEWER PIPE TO BE CLASS III, UNLESS OTHERWISE NOTED, GASKETED PIPE (9" RING) ASTM C-443.
- 3) CONTRACTOR TO PROVIDE COMPACTED GRANULAR BACKFILL TO THE SUBGRADE OF THE PAVEMENT FOR ALL TRENCHES UNDER PAVEMENT. ALL OTHER TRENCHES WITHIN THE RIGHT-OF-WAY SHALL BE BACKFILLED WITH COMPACTED GRANULAR BACKFILL TO WITHIN TWO (2') FEET OF FINISHED GRADE. TOP TWO (2') FEET OF THE TRENCH SHALL BE BACKFILLED WITH COMPACTED EARTHFILL. ALL OTHER TRENCHES OUTSIDE OF THE RIGHT-OF-WAY SHALL BE BACKFILLED WITH COMPACTED EARTHFILL.
- 4) PIPE CENTERLINE APPLIES TO CENTERLINE OF STRUCTURE.
- 5) LOCATION OF UTILITIES ON PIPE PROFILES ARE APPROXIMATE.
- 6) DISTANCES BETWEEN STRUCTURES ARE MEASURED TO THE CENTER OF STRUCTURES.
- 7) FILL MATERIAL UPON WHICH THE PROPOSED SEWERS ARE TO BE LAID SHALL BE COMPACTED TO 90% OF MAXIMUM DENSITY AS DETERMINED BY ASTM D-1557-180 AASHTO MODIFIED COMPACTION TEST AND BE VERIFIED BY THE ENGINEER.
- 8) EXCESS DIRT GENERATED FROM STORM SEWERS AND STRUCTURES EXCAVATION DUE TO GRANULAR BACKFILL IN TRENCHES SHALL BE REMOVED BY THE CONTRACTOR. NO DIRECT PAYMENT WILL BE MADE FOR REMOVING THE EXCESS DIRT FROM THE PROJECT, BUT COST WILL BE CONSIDERED COMPLETELY COVERED BY THE UNIT PRICES BID FOR THE RIGID PIPE AND STORM STRUCTURES.
- 9) CONTRACTOR SHALL EXPOSE ALL WATER AND GAS MAINS PRIOR TO STORM SEWER PIPE INSTALLATION AND VERIFY TOP ELEVATIONS OF UTILITIES.
- 10) ALL SEWER CONSTRUCTION AND MATERIALS TO BE IN ACCORDANCE WITH THE METROPOLITAN ST. LOUIS SEWER DISTRICT STANDARD CONSTRUCTION SPECIFICATIONS FOR SEWERS AND DRAINAGE FACILITIES, 2009, EXCEPT FOR THE 8"x5' BOX CULVERT EXTENSION WHICH WILL BE ACCORDANCE WITH THE CURRENT MISSOURI DEPARTMENT OF TRANSPORTATION STANDARD PLANS.
- 12) PAYMENT FOR ALL GRANULAR BACKFILL WILL BE INCIDENTAL TO THE PIPE.

SANITARY SEWER
PROFILES
SHEET 1 OF 1**HORNER & SHIFRIN, INC.**

LEGEND

S.W. - SOLID WHITE

S.Y. - SOLID YELLOW

D.S.Y. - DOUBLE SOLID YELLOW

I.W. - INTERMITTENT WHITE

I.Y. - INTERMITTENT YELLOW

D.W. - DOTTED WHITE

TURN ARROW

TURN/THRU ARROW

BICYCLE SYMBOL

SILT FENCE

INLET PROTECTION, FIBER ROLLS

- GENERAL NOTES:
1. STRIPING WIDTH 4" UNLESS OTHERWISE NOTED

2. ALL STRIPING SHALL CONFORM TO THE CURRENT EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD)

3. EROSION CONTROL DEVICES (SUCH AS SILT FENCE AND INLET PROTECTION) SHALL BE INSTALLED AS REQUIRED AND APPROVED BY THE CITY.

4. EXISTING STRIPING SHALL BE REMOVED TO AVOID CONFLICTS WITH PROPOSED STRIPING. REMOVAL OF EXISTING STRIPING WILL BE CONSIDERED INCIDENTAL. NO DIRECT PAYMENT WILL BE MADE FOR REMOVAL OF EXISTING STRIPING.

INLET PROTECTION FIBER ROLLS - BRM-7305-(610)

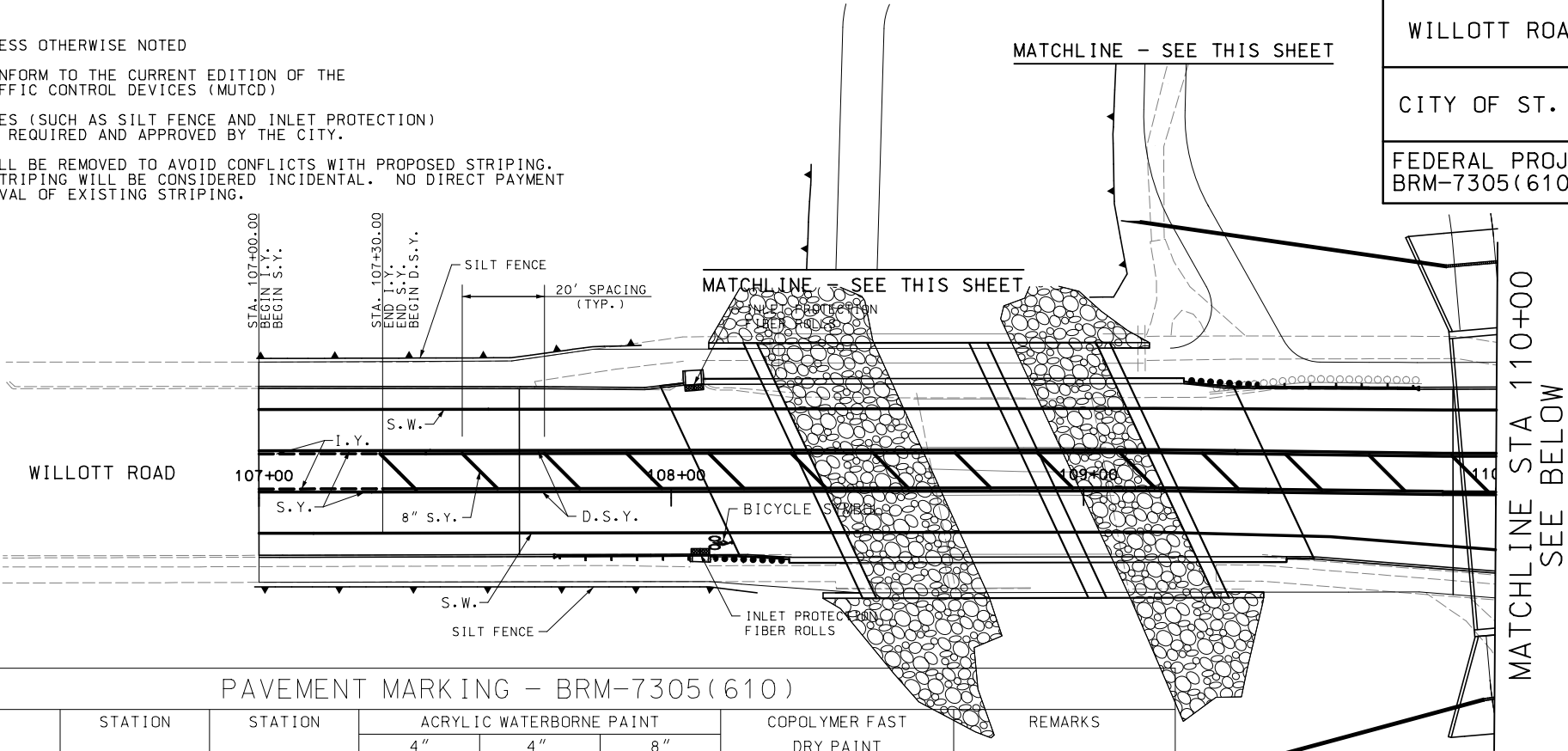
9 L.F.

SILT FENCE

456 L.F.

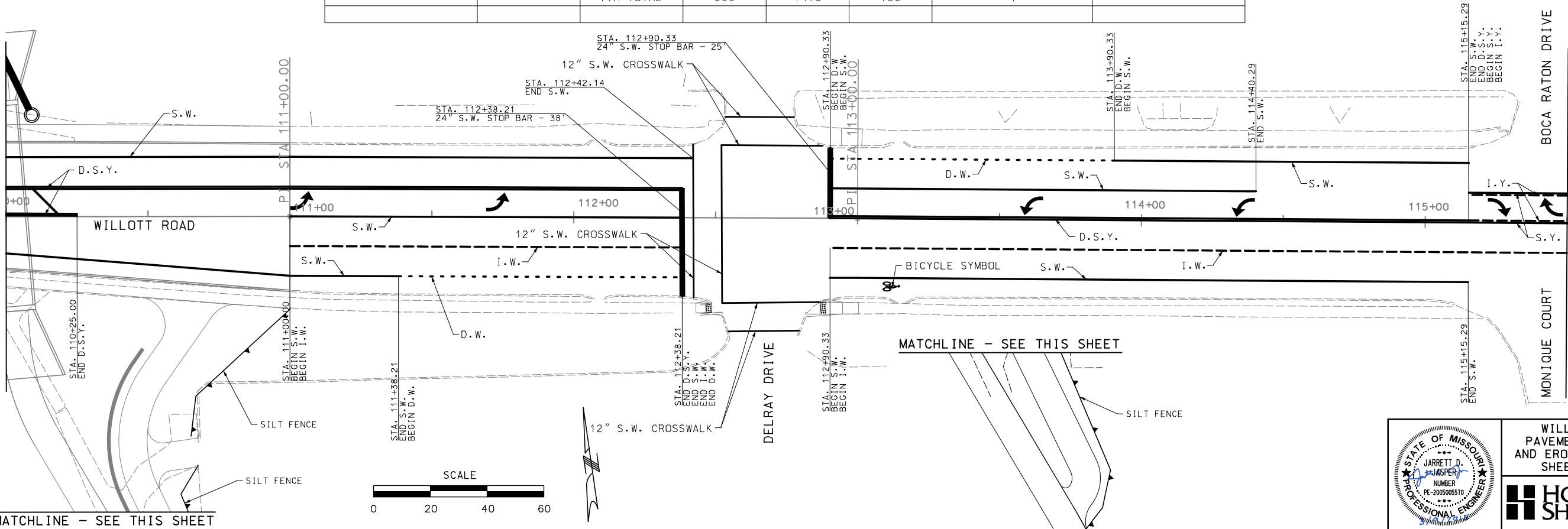
SEDIMENT REMOVAL

4.1 C.Y.



PAVEMENT MARKING - BRM-7305(610)						
LOCATION	STATION	STATION	ACRYLIC WATERBORNE PAINT			COPOLYMER FAST DRY PAINT BICYCLE SYMBOL (EACH)
			4" WHITE (LF)	4" YELLOW (LF)	8" YELLOW (LF)	
WILLOTT ROAD	101+45.60	111+00.00	801	1410	182	1
		TOTAL	801	1410	182	1
		PAY TOTAL	800	1410	180	1

MATCHLINE STA 110+00
SEE ABOVE



MATCHLINE STA 115+50
SEE SHEET 15

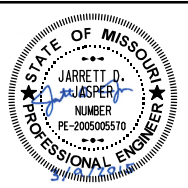
WILLOTT ROAD BRIDGE

SHEET 15

CITY OF ST. PETERS

OF 70

FEDERAL PROJECT NO. BRM-7305(610)

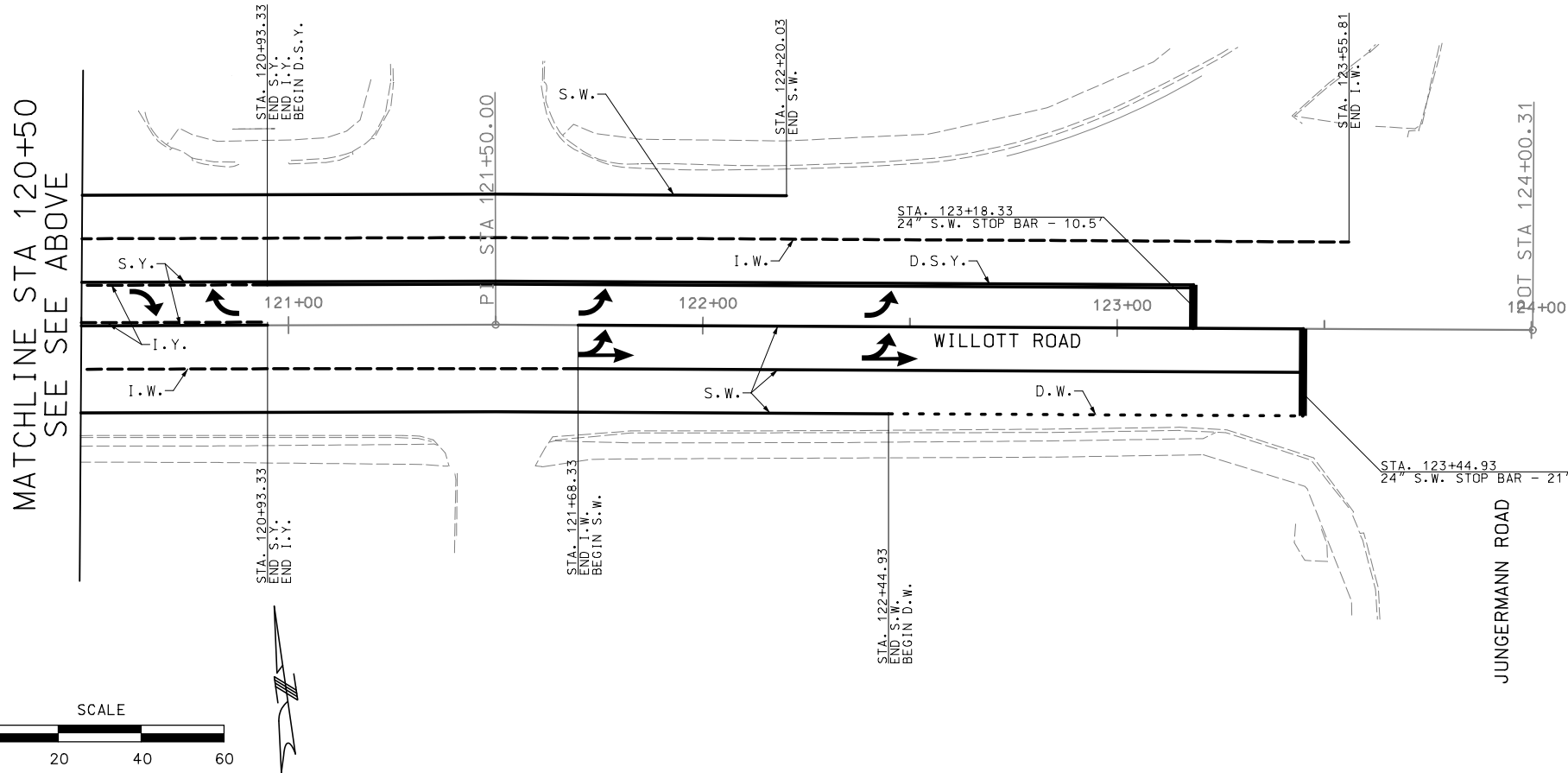
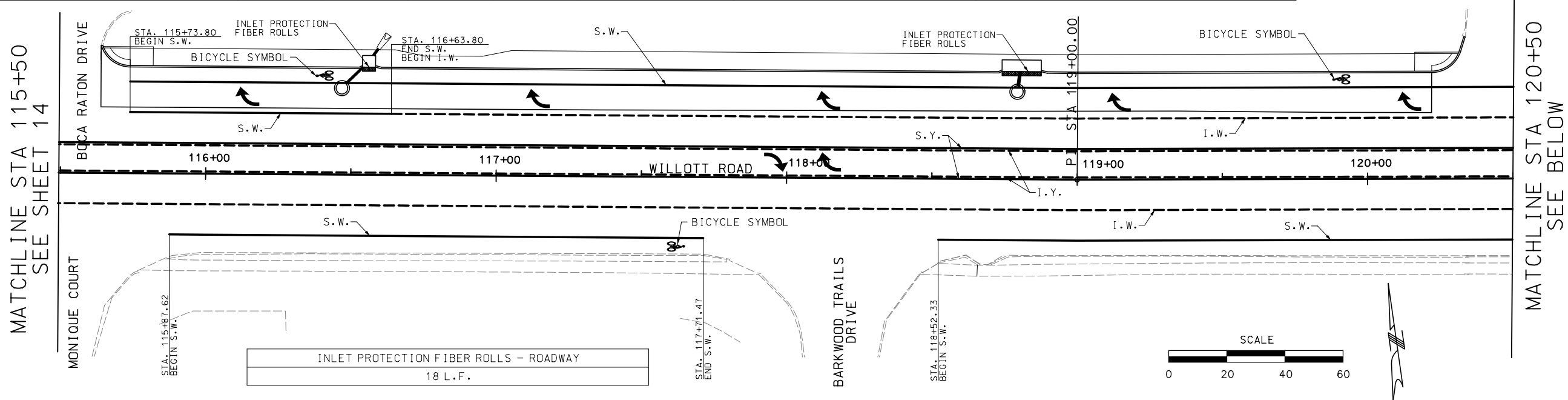


WILLOTT ROAD
PAVEMENT MARKING
AND EROSION CONTROL
SHEET 1 OF 2

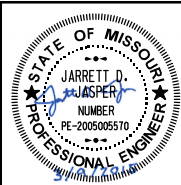
HORNER & SHIFRIN, INC.

PAVEMENT MARKING – ROADWAY										
LOCATION	STATION	STATION	ACRYLIC WATERBORNE PAINT				COPOLYMER FAST DRY PAINT LT/RT ARROW WHITE	COPOLYMER FAST DRY PAINT COMBINATION STRAIGHT-LEFT/RIGHT ARROW WHITE	COPOLYMER FAST DRY PAINT BICYCLE SYMBOL	REMARKS
			4" WHITE	4" YELLOW	12" WHITE	24" WHITE				
			(LF)	(LF)	(LF)	(LF)				
WILLOTT ROAD	111+00.00	115+50.00	984	813	229	63	6		1	
WILLOTT ROAD	115+50.00	123+55.81	2022	1809		32	11	2	3	
		TOTAL	3006	2622	229	95	17	2	4	
		PAY TOTAL	3010	2620	230	100	17	2	4	

WILLOTT ROAD BRIDGE	SHEET 16
CITY OF ST. PETERS	OF 70
FEDERAL PROJECT NO. BRM-7305(610)	



LEGEND	
S.W.	– SOLID WHITE
S.Y.	– SOLID YELLOW
D.S.Y.	– DOUBLE SOLID YELLOW
I.W.	– INTERMITTENT WHITE
I.Y.	– INTERMITTENT YELLOW
D.W.	– DOTTED WHITE
↩	– TURN ARROW
↩↪	– TURN/THRU ARROW
🚲	– BICYCLE SYMBOL
▨	– SILT FENCE
▣	– INLET PROTECTION, FIBER ROLLS

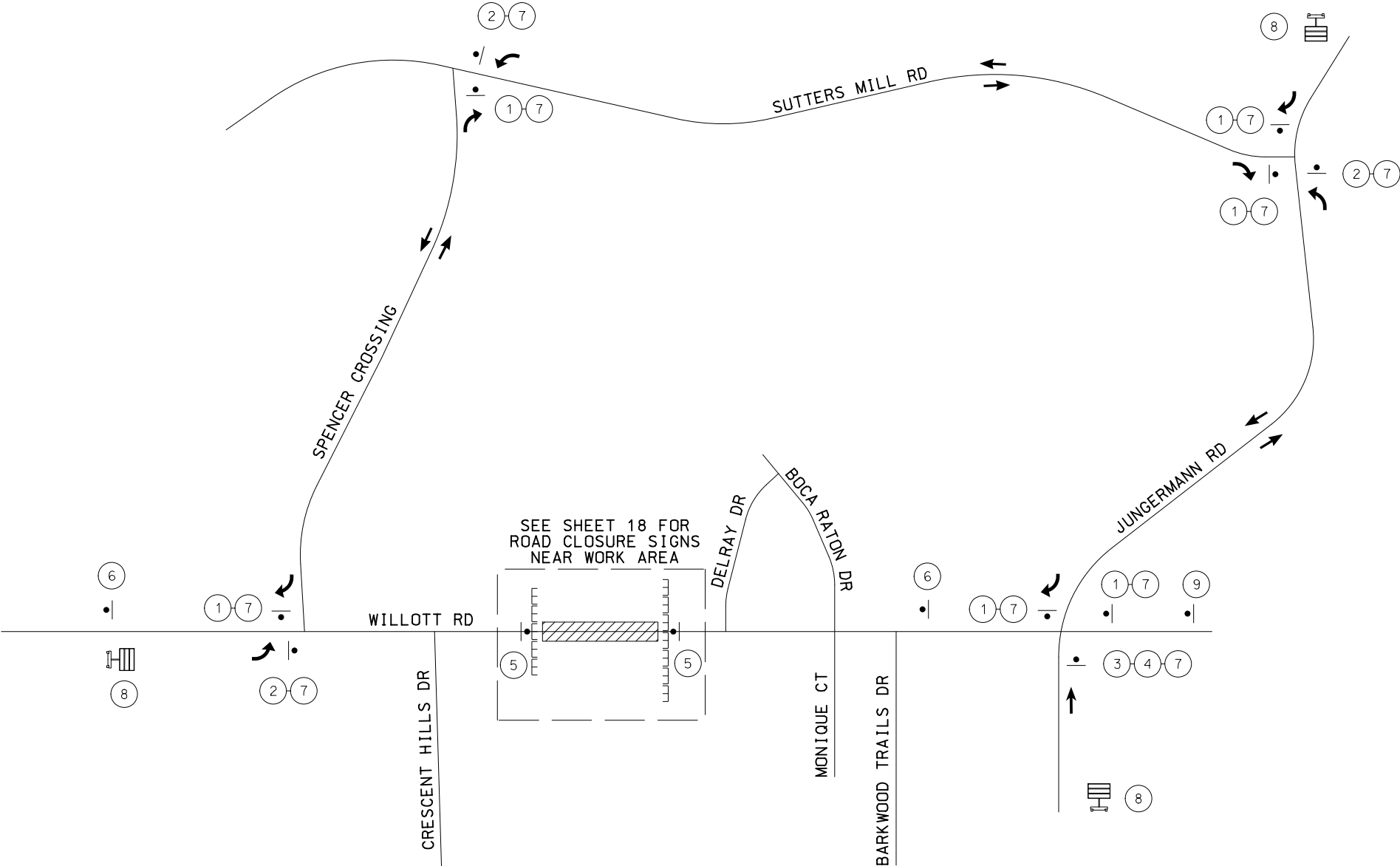


WILLOTT ROAD
PAVEMENT MARKING
AND EROSION CONTROL
SHEET 2 OF 2

HORNER & SHIFRIN, INC.

DISCLAIMER
THE PROFESSIONAL WHOSE SIGNATURE AND PERSONAL SEAL APPEAR HEREON ASSUMES RESPONSIBILITY ONLY FOR WHAT APPEARS ON THIS PAGE, AND DISCLAIMS (PURSUANT TO SECTION 327.411 RSMO) SPECIFICATION, ESTIMATES, REPORTS, OR OTHER DOCUMENTS OR INSTRUMENTS NOT SEALED BY THE UNDERSIGNED PROFESSIONAL RELATING TO OR INTENDED TO BE USED FOR ANY PART OR PARTS OF THE PROJECT TO WHICH THIS PAGE REFERS.

GENERAL NOTES:
1) DETOUR PLAN FOR BRIDGE AND CULVERT CONSTRUCTION BETWEEN STA. 107+00 AND STA. 111+00.



MO4-9R
1



MO4-9L
2



MO4-8
3



M6-3
4

CHANGEABLE MESSAGE SIGN



8



R11-2
5



MO4-8a
6



SPECIAL 1
7

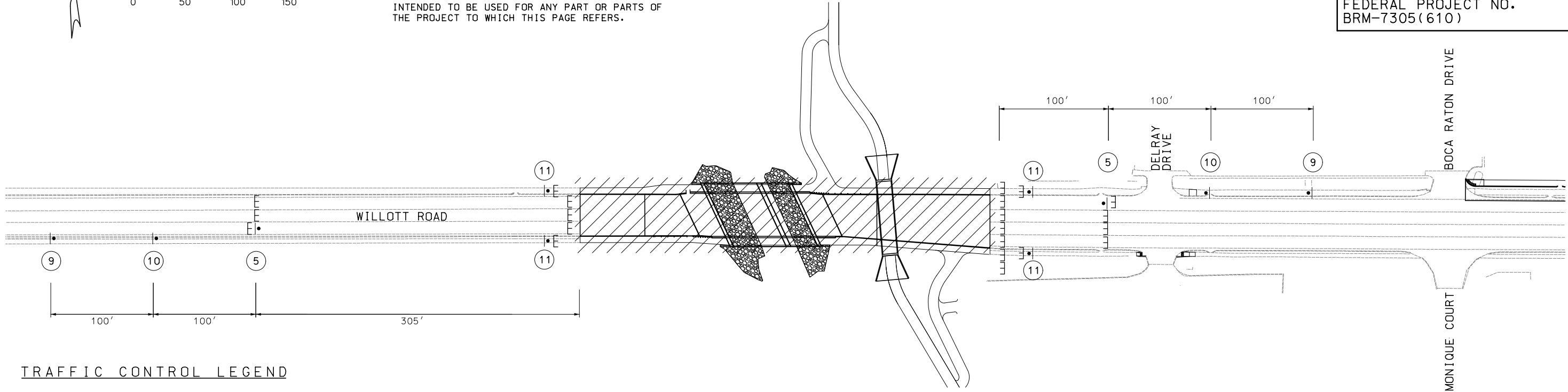
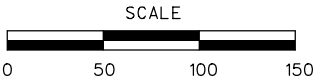


WO20-3
9

TRAFFIC CONTROL – BRM-7305(610)								
LOCATION	CONSTRUCTION SIGNS					TYPE III BARRICADE	CHANGEABLE MESSAGE SIGN	REMARKS
	SIGN (LF)	SIZE (IN)	QUANTITY (EACH)	QUANTITY (SF)	DESCRIPTION			
WILLOTT ROAD	MO4-9R	30 X 24	6	30	DETOUR RIGHT	23	3	
	MO4-9L	30 X 24	3	15	DETOUR LEFT			
	MO4-8	24 X 12	1	2	DETOUR			
	MO6-3	21 X 15	1	2	ARROW			
	R11-2	48 X 30	2	20	ROAD CLOSED			
	MO4-8a	24 X 18	2	6	END DETOUR			
	SPECIAL 1	24 X 30	10	50	WILLOTT ROAD			
	WO20-3	36 X 36	3	27	ROAD CLOSED AHEAD			
	WO20-3a	36 X 36	2	18	ROAD CLOSED 100 FT			
	R9-9	24 X 12	4	8	SIDEWALK CLOSED			
TOTAL				178		23	3	
PAY TOTAL				178		23	3	



DISCLAIMER
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TRAFFIC CONTROL LEGEND

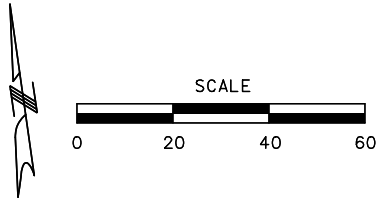
- SIGN (SINGLE SIDED)
- E TYPE III MOVABLE BARRICADE WITH LIGHT
- CHANNELIZER (TRIM-LINE)
- ▨ WORK AREA

- GENERAL NOTES:
- 1) SIGN LOCATIONS TO BE APPROVED BY ENGINEER.
 - 2) DISTANCE MAY BE ADJUSTED ACCORDING TO FIELD CONDITIONS WITH PERMISSION OF THE ENGINEER.
 - 3) NO DIRECT PAYMENT WILL BE MADE FOR RELOCATION OF TCP SIGNS AND DEVICES.
 - 4) ANY EXISTING SIGNS THAT CONFLICT WITH TEMPORARY TRAFFIC CONTROL SHALL BE COVERED OR REMOVED.
 - 5) ALL TRAFFIC CONTROL ITEMS WHICH ARE NOT INCLUDED IN THE PAY ITEMS ARE TO BE CONSIDERED INCIDENTAL.
 - 6) MAINTAIN ACCESS TO ALL ENTRANCES AT ALL TIMES.

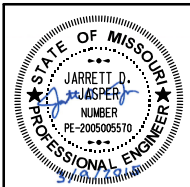
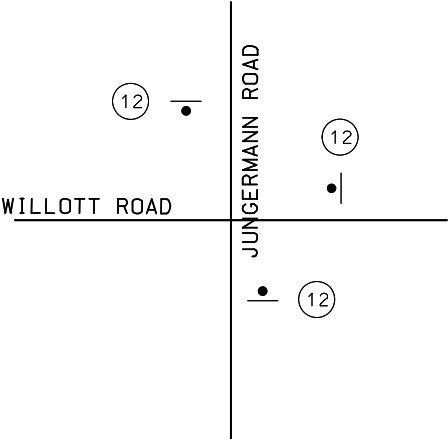
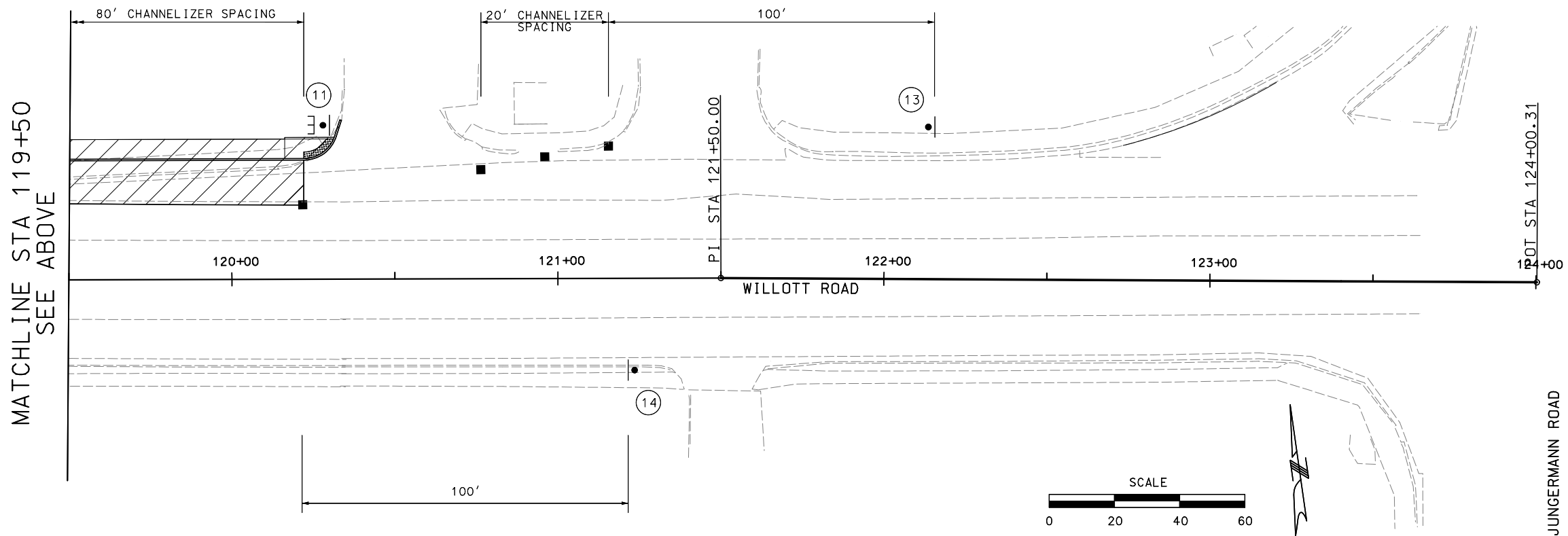
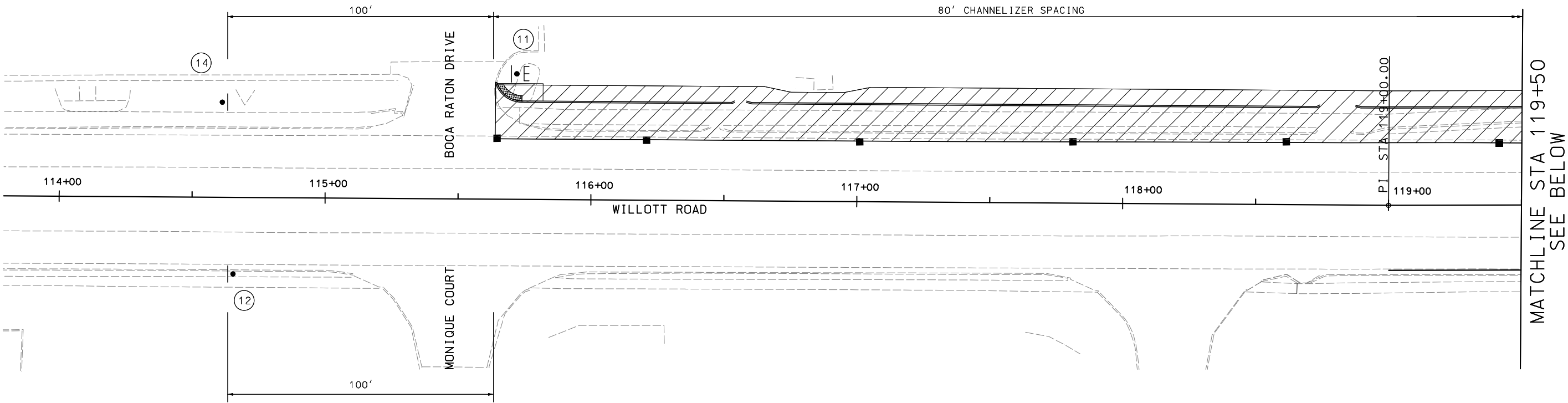


TRAFFIC CONTROL - ROADWAY							
LOCATION	CHANNELIZERS (TRIM-LINE) (EACH)	CONSTRUCTION SIGNS				TYPE III BARRICADE (EACH)	REMARKS
		SIGN (LF)	SIZE (IN)	QUANTITY (EACH)	QUANTITY (SF)		
WILLOTT ROAD	10	R9-9	24 X 12	2	4	2	SIDEWALK CLOSED ROAD WORK AHEAD RIGHT LANE CLOSED AHEAD END ROAD WORK
		W020-1	36 X 36	4	36		
		W020-5	36 X 36	1	9		
		G20-2	36 X 18	2	9		
TOTAL	10				58	2	
PAY TOTAL	10				58	2	

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WILLOTT ROAD BRIDGE	SHEET 19
CITY OF ST. PETERS	OF 70
FEDERAL PROJECT NO. BRM-7305(610)	



WILLOTT ROAD
TRAFFIC CONTROL
WIDENING
SHEET 3 OF 3

HORNER & SHIFRIN, INC.

SPECIAL NOTE TO CONTRACTOR(S):

EXISTING UNDERGROUND AND ABOVE-GRADE FACILITIES, STRUCTURES, AND UTILITIES HAVE BEEN PLOTTED ON THESE CONTRACT DOCUMENTS BASED ON THE INFORMATION AND SURVEYS AVAILABLE AT THE TIME OF DRAWING PREPARATION. THE LOCATIONS OF THESE FEATURES MUST, THEREFORE, BE CONSIDERED APPROXIMATE, ONLY. IN ADDITION, THERE MAY BE OTHER FACILITIES, STRUCTURES, AND UTILITIES WHICH DID NOT EXIST (OR THE EXISTENCE OF WHICH WAS NOT KNOWN) AT THE TIME OF DRAWING PREPARATION. IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR(S) TO HAVE ALL EXISTING FACILITIES, STRUCTURES, AND UTILITIES LOCATED IN THE FIELD PRIOR TO ANY EXCAVATION OR CONSTRUCTION ACTIVITY; AND TO PROTECT ALL SUCH EXISTING FEATURES (EXCEPT THOSE SPECIFICALLY NOTED FOR REMOVAL OR DEMOLITION) DURING CONSTRUCTION.

ST. PETERS CONDOMINIUMS PHASE 1
P.B. 22, pg 55

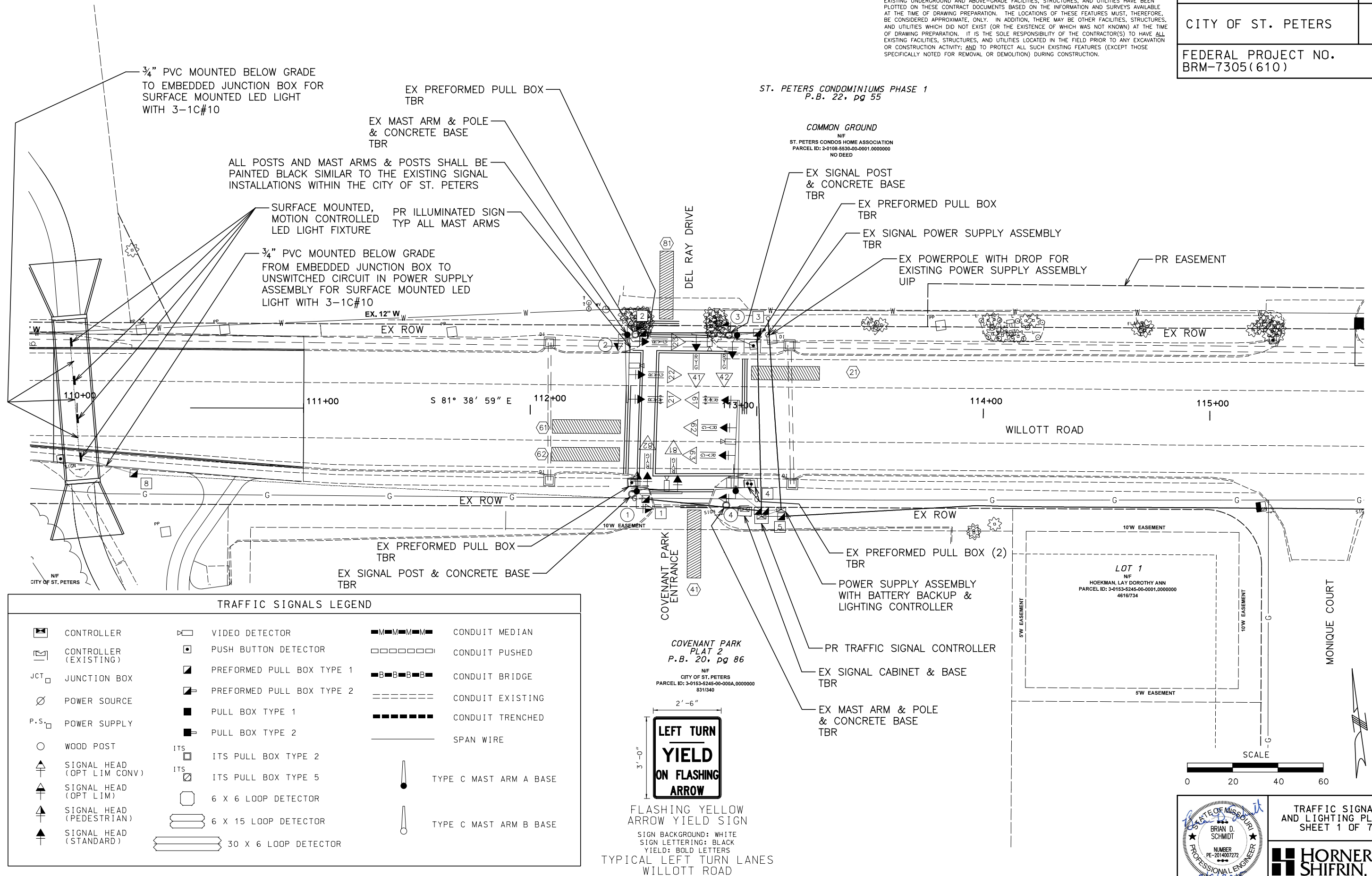
COMMON GROUND
NIF
ST. PETERS CONDOS HOME ASSOCIATION
PARCEL ID: 2-0100-5530-00-0001.0000000
NO DEED

EX SIGNAL POST & CONCRETE BASE TBR
EX PREFORMED PULL BOX TBR
EX SIGNAL POWER SUPPLY ASSEMBLY TBR
EX POWERPOLE WITH DROP FOR EXISTING POWER SUPPLY ASSEMBLY UIP
PR EASEMENT

EX PREFORMED PULL BOX TBR
EX MAST ARM & POLE & CONCRETE BASE TBR
ALL POSTS AND MAST ARMS & POSTS SHALL BE PAINTED BLACK SIMILAR TO THE EXISTING SIGNAL INSTALLATIONS WITHIN THE CITY OF ST. PETERS

SURFACE MOUNTED, MOTION CONTROLLED LED LIGHT FIXTURE
PR ILLUMINATED SIGN TYP ALL MAST ARMS
3/4" PVC MOUNTED BELOW GRADE FROM EMBEDDED JUNCTION BOX TO UNSWITCHED CIRCUIT IN POWER SUPPLY ASSEMBLY FOR SURFACE MOUNTED LED LIGHT WITH 3-1C#10

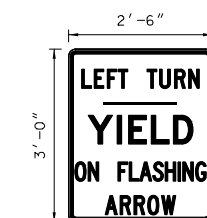
3/4" PVC MOUNTED BELOW GRADE TO EMBEDDED JUNCTION BOX FOR SURFACE MOUNTED LED LIGHT WITH 3-1C#10



TRAFFIC SIGNALS LEGEND

	CONTROLLER		VIDEO DETECTOR		CONDUIT MEDIAN
	CONTROLLER (EXISTING)		PUSH BUTTON DETECTOR		CONDUIT PUSHED
	JUNCTION BOX		PREFORMED PULL BOX TYPE 1		CONDUIT BRIDGE
	POWER SOURCE		PREFORMED PULL BOX TYPE 2		CONDUIT EXISTING
	POWER SUPPLY		PULL BOX TYPE 1		CONDUIT TRENCHED
	WOOD POST		PULL BOX TYPE 2		SPAN WIRE
	SIGNAL HEAD (OPT LIM CONV)		ITS PULL BOX TYPE 2		TYPE C MAST ARM A BASE
	SIGNAL HEAD (OPT LIM)		ITS PULL BOX TYPE 5		TYPE C MAST ARM B BASE
	SIGNAL HEAD (PEDESTRIAN)		6 X 6 LOOP DETECTOR		
	SIGNAL HEAD (STANDARD)		6 X 15 LOOP DETECTOR		
			30 X 6 LOOP DETECTOR		

COVENANT PARK
PLAT 2
P.B. 20, pg 86
NIF
CITY OF ST. PETERS
PARCEL ID: 3-0153-5245-00-000A.0000000
831/340



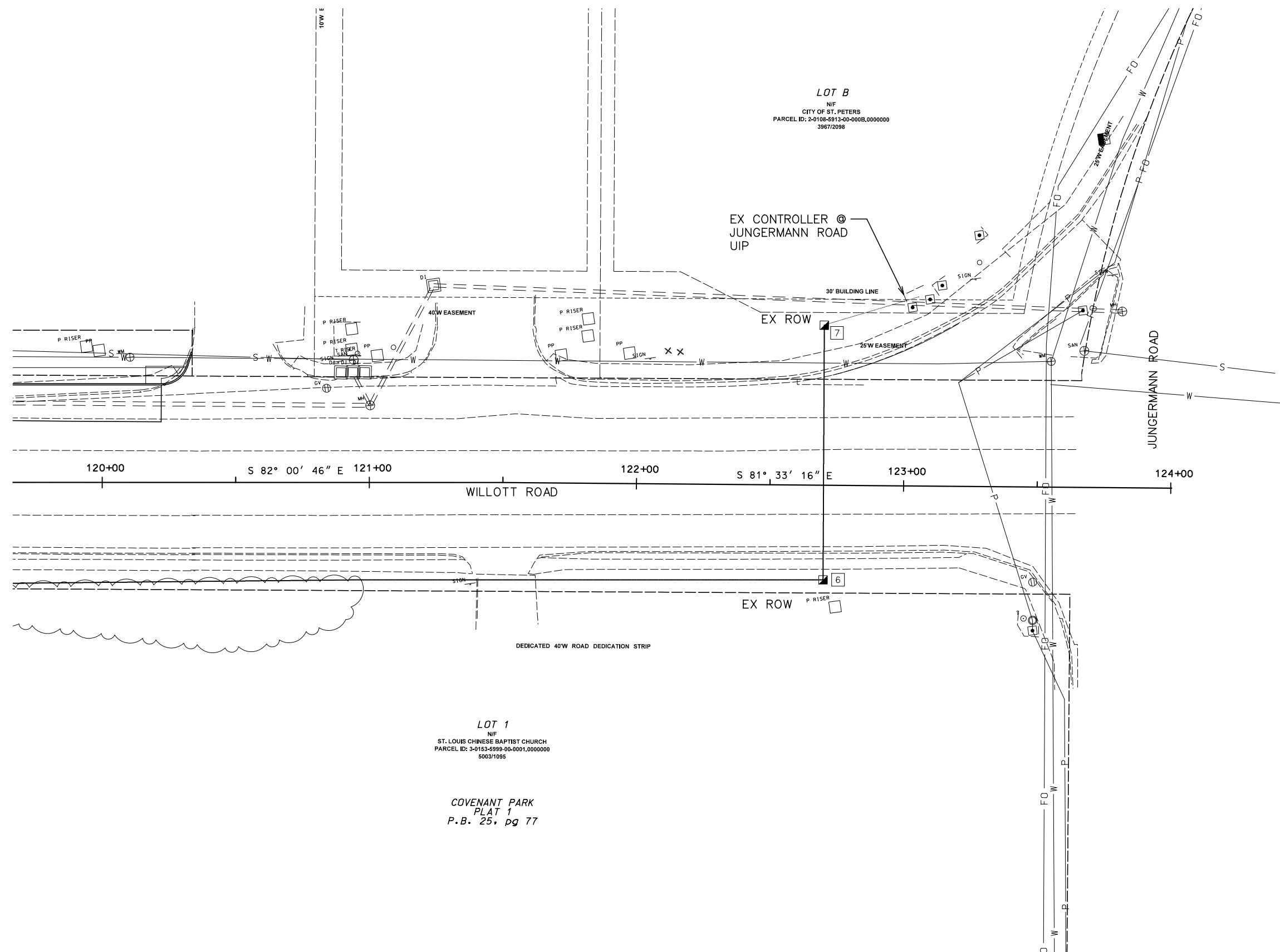
FLASHING YELLOW
ARROW YIELD SIGN
SIGN BACKGROUND: WHITE
SIGN LETTERING: BLACK
YIELD: BOLD LETTERS
TYPICAL LEFT TURN LANES
WILLOTT ROAD

SCALE
0 20 40 60

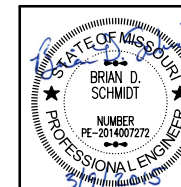
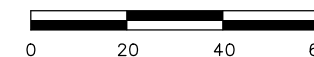


TRAFFIC SIGNAL
AND LIGHTING PLANS
SHEET 1 OF 7

HORNER & SHIFRIN, INC.



SCALE

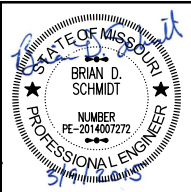


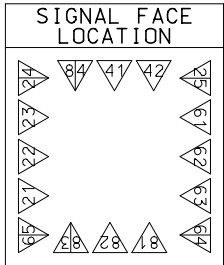
TRAFFIC SIGNAL
AND LIGHTING PLANS
SHEET 2 OF 7



**HORNER &
SHIFRIN, INC.**

CONDUIT																	CABLE																				
FROM	TO	CENTER TO CENTER DISTANCE	LOOP DET.	TRENCH				PUSHED			MEDIAN			ON STRUCTURE			REMARKS	FROM	TO	CENTER TO CENTER DISTANCE	POWER		CONTROL				CLOSED LOOP INTERCONNECT	LUMINAIRE - LED		SURFACE MOUNT FIXTURE - LED	GROUND		FIBER		REMARKS		
				1"	2"	3"	4"	2"	3"	4"	2"	3"	4"	3/4"	3"	1C #6						2c #18	5c #16	7c #16	3c #16	CONTROL		POLE & BRACKET	CONTROL	1c #6 GROUND	SINGLE- MODE	MULTI- MODE					
																										3c #14		3c #14	1c #10								
Ø	P.S.	84						88									⊠	▽	58				88														
P.S.	⊠	10			18												⊠	□	65	58			87														
																	⊠	▽	58																		
⊠	4	3			12												⊠	▽	58																		
4	④	15			18												⊠	▽	58				88														
4	1	52						50									⊠	□	83	58			87														
1	①	5			8												⊠	▽	131																		
4	3	79						77									⊠	▽	131																		
3	③	9			12												⊠	▽	131																		
3	2	51						49									⊠	▽	131																		
2	②	7			10												⊠	□	24	131			166														
																	⊠	▽	131																		
⊠	5	9		12													⊠	□	84	131			166														
5	6	960						958									⊠	▽	82				112														
6	7	95						93									⊠	□	25	82			111														
6	⊠	37		40													⊠	▽	82																		
																	⊠	▽	82																		
P.S.	4	9			12												⊠	▽	13																		
																	⊠	▽	13																		
8	1	227		225													⊠	▽	13																		
																	⊠	▽	13																		
8	CULV													100		CULVERT LIGHTING	⊠	□	64	13			36														
																	Ø	P.S.	78	282														3 WIRES			
																	P.S.	⊠	9	75														3 WIRES			
																	⊠	①	LUM	58							78	45						TYPE CL - LED LUMINAIRE			
																	⊠	①	SIGN	58							78	30						ILLUMINATED MAST ARM SIGN			
																	⊠	②	LUM	131							157	45						TYPE CL - LED LUMINAIRE			
																	⊠	②	SIGN	131							157	30						ILLUMINATED MAST ARM SIGN			
																	⊠	③	LUM	82							102	45						TYPE CL - LED LUMINAIRE			
																	⊠	③	SIGN	82							102	30						ILLUMINATED MAST ARM SIGN			
																	⊠	④	LUM	13							27	45						TYPE CL - LED LUMINAIRE			
																	⊠	④	SIGN	13							27	30						ILLUMINATED MAST ARM SIGN			
																	⊠	⊠	JUNGERMANN	1100												1240		FIBER TO JUNGERMANN RD			
																	①	1	5																		
																	②	2	7																		
																	③	3	9																		
																	④	4	15																		
																	⊠	4	3																		
																	P.S.	CULVERT LIGHTING													1242			3 WIRES			
SUBTOTALS				277	90			1051	264					100			SUBTOTALS				357		653	659	1265			728	300	1242	74	1240					
TOTALS				277	90			1051	264					100			TOTALS				360		660	660	1270			730	300	1250	80	1240					
																														1030							









TRAFFIC PHASING AND COLOR SEQUENCE - ACTUATED CONTROLLERS																															
NOT USED				NOT USED				NOT USED				NOT USED				NOT USED				NOT USED				NOT USED				NOT USED			
PHASE 1				PHASE 2				PHASE 3				PHASE 4				PHASE 5				PHASE 6				PHASE 7				PHASE 8			
PED 2 OVERLAP				PED 4 OVERLAP				PED 6 OVERLAP				PED 8 OVERLAP																			
24				25				64				65				83				84											
R				R				R				R				Y				Y				Y				Y			
Y				Y				Y				Y				Y				Y				Y				Y			
FYA				FYA				FYA				FYA				FYA				FYA				FYA				FYA			
G				G				G				G				G				G				G				G			
DETECTOR ASSIGNMENTS				DETECTOR ASSIGNMENTS				DETECTOR ASSIGNMENTS				DETECTOR ASSIGNMENTS				DETECTOR ASSIGNMENTS				DETECTOR ASSIGNMENTS				DETECTOR ASSIGNMENTS				DETECTOR ASSIGNMENTS			
DETECTOR ASSIGNMENTS (PEDS. ONLY)				DETECTOR ASSIGNMENTS (PEDS. ONLY)				DETECTOR ASSIGNMENTS (PEDS. ONLY)				DETECTOR ASSIGNMENTS (PEDS. ONLY)				DETECTOR ASSIGNMENTS (PEDS. ONLY)				DETECTOR ASSIGNMENTS (PEDS. ONLY)				DETECTOR ASSIGNMENTS (PEDS. ONLY)				DETECTOR ASSIGNMENTS (PEDS. ONLY)			
OVERLAP PARENT PHASES				OVERLAP PARENT PHASES				OVERLAP PARENT PHASES				OVERLAP PARENT PHASES				OVERLAP PARENT PHASES				OVERLAP PARENT PHASES				OVERLAP PARENT PHASES				OVERLAP PARENT PHASES			

FACE NUMBERS		PHASE 1		PHASE 2		PHASE 3		PHASE 4	
SIGNAL INDICATIONS	R								
	Y								
	FYA								
	G								

RING 1

RING 2

PHASE 1		PHASE 2		PHASE 3		PHASE 4	
NOT USED				NOT USED			
NOT USED				NOT USED			
NOT USED				NOT USED			
PHASE 5	PHASE 6			PHASE 7	PHASE 8		

BARRIER

RING STRUCTURE

IF CALLED, ALL NON-CONFLICTING PHASES SHALL COMBINE AND TIME CONCURRENTLY. TIME TO BE DETERMINED BY THE ENGINEER AT SIGNAL TURN ON AND SET IN THE CONTROLLER BY THE CONTRACTOR.

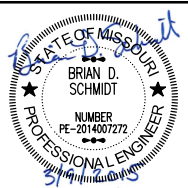
LEGEND

- ACTUATED VEHICULAR MOVEMENT
- PARTIALLY RESTRICTED ACTUATED VEHICULAR MOVEMENT
- NON-ACTUATED VEHICULAR MOVEMENT
- PARTIALLY RESTRICTED NON-ACTUATED VEHICULAR MOVEMENT
- ACTUATED PEDESTRIAN MOVEMENT
- NON-ACTUATED PEDESTRIAN MOVEMENT
- VEHICLE STOPPED
- FDW — FLASHING DON'T WALK
- R/W — RIGHT OF WAY INTERVAL
- DW — DON'T WALK
- YR+ — YELLOW RIGHT ARROW
- RT. — GREEN RIGHT ARROW
- W — WALK
- LY — YL — YELLOW LEFT ARROW
- L — GREEN LEFT ARROW
- S — GREEN STRAIGHT AHEAD ARROW
- G — CIRCULAR GREEN
- Y — CIRCULAR YELLOW
- R — CIRCULAR RED
- Ø — TRAFFIC PHASE
- AO — ALL OTHERS
- FR — FLASHING RED
- FY — FLASHING CIRCULAR YELLOW
- FYA — FLASHING YELLOW ARROW
- FYL — FLASHING YELLOW LEFT ARROW
- FYR — FLASHING YELLOW RIGHT ARROW

FLASHING OPERATION	
WILLIOT ROAD	FY
DEL RAY DRIVE	FR
CONTROLLER TYPE	8 ϕ NEMA

TRAFFIC SIGNAL CONTROL OPERATION	
INTERSECTION OF	
WILLOTT ROAD WITH DEL RAY DRIVE	

D-38A



TRAFFIC SIGNAL AND LIGHTING PLANS
SHEET 7 OF 7



SHEET
27

OF
70

Sta. 108+35.55
Top of Slab
@ End of Slab
Elev. 493.15

Safety Barrier Curb

-0.50%

Safety Barrier Curb Railing

Bicycle Railing (72 in.)

Sta. 109+23.31
Top of Slab
@ End of Slab
Elev. 492.71

Fix

D.H.W. Elev. 488.44

Excavation Datum Elev. 477.00

Existing Groundline (Survey Date 2013)

2:1 (H:V) Slope Normal (Typ.)

MoDOT Type 2 Rock Blanket and Permanent Erosion Control Geotextile Material (Roadway Item) (Typ.)

① ② ③

The plan view shows a bridge structure with two spans, Span 1-2 and Span 2-3. The bridge is oriented diagonally, with a bearing of 25°00'00" and a length of 11.0338. The roadway is 42'-0" wide, with 8' sidewalks on each side. The bridge structure is 21'-6" wide, with 8' sidewalks on each side. The bridge is supported by three bents: Bent No. 1, Bent No. 2, and Bent No. 3. The bridge is to be removed, and the existing bridge is to be replaced. The bridge is shown in plan view, with dimensions and stationing provided.

Key dimensions and stationing:

- Span 1-2: 88'-10 1/4"
- Span 2-3: 31'-11 1/8"
- Stationing: Sta. 108+35.00, Sta. 108+91.93, Sta. 109+23.86
- Profile Grade (P.G.) Elevations: 493.17, 492.89, 492.73
- Bridge Structure Width: 21'-6"
- Roadway Width: 42'-0"
- Sidewalk Width: 8'-7 1/2"
- Bent Width: 21'-0"
- Bridge Piles: 8 piles @ 9'-3" spacing, 13 piles @ 5'-7" spacing
- Flow Direction: Indicated by an arrow pointing towards the right.
- North Arrow: Located in the upper right corner.

The city does not represent or warrant that any such boring data accurately depicts the conditions to be encountered in constructing this project. A contractor assumes all risks it may encounter in basing its bid prices, time or schedule of performance on the boring data depicted here or those available from the city, or on any other documentation not expressly warranted, which the contractor may obtain from the city.


**HORNER &
SHIFRIN, INC.**

...\\Cod\SS\27 GPE.dgn 9:13:03 AM 12/9/2014

Estimated Quantities				
Item		Substr.	Superstr.	Total
Class 1 Excavation	cu. yard	120		120
Class 2 Excavation	cu. yard	27		27
Removal of Bridges	lump sum			1
Bridge Approach Slab (Bridge)	sq. yard		242	242
(72 in.) Bicycle Railing	linear foot		212	212
Safety Barrier Curb Railing	linear foot		235	235
Structural Steel Piles (12 in.)	linear foot	751		751
Pile Point Reinforcement	each	29		29
Class B Concrete (Substructure)	cu. yard	157.4		157.4
* Safety Barrier Curb	linear foot		237	237
Slab on Concrete Beam	sq. yard		604	604
27 in. Prestressed Concrete Spread Box Beam	linear foot		511	511
Reinforcing Steel (Bridges)	pound	12,090		12,090
Slab Drain	each	3		3
Vertical Drain at End Bents	each	2		2
Plain Neoprene Bearing Pad	each		12	12
Laminated Neoprene Bearing Pad	each		12	12

Notes:

All concrete above the construction joint in the end bents is included in the Estimated Quantities for Slab on Concrete Box Beam.

* Safety barrier curb shall be cast-in-place option or slip-form option.

All reinforcement in the end bents is included in the Estimated Quantities for Slab on Concrete Beam.

All reinforcement in the intermediate bent concrete diaphragms except reinforcement embedded in the beam cap is included in the Estimated Quantities for Slab on Concrete Beam.

All concrete above the intermediate beam cap is included in the Estimated Quantities for Slab on Concrete Beam.

Estimated Quantities for Slab on Concrete Beam		
Item		Total
Class B-2 Concrete	cu. yard	185.6
Reinforcing Steel	pound	11,740
Reinforcing Steel (Epoxy Coated)	pound	39,110

Notes:

The table of Estimated Quantities for Slab on Concrete Beam represents the quantities used by the Owner in preparing the cost estimate for concrete slabs. The area of the concrete slab will be measured to the nearest square yard with the horizontal dimensions as shown on the plan of slab. Payment for prestressed panels, conventional forms, all concrete and coated and uncoated reinforcing steel will be considered completely covered by the contract unit price for the slab. Variations may be encountered in the estimated quantities but the variations cannot be used for an adjustment in the contract unit price.

Method of forming the slab shall be as shown on the plans and in accordance with Sec 703. All hardware for forming the slab to be left in place as a permanent part of the structure shall be coated in accordance with ASTM A123 or ASTM B633 with a thickness class SC 4 and a finish type I, II or III.

The Estimated Quantities for Slab on Concrete Beam are based on skewed precast prestressed end panels.

Class B-2 Concrete quantity is based on minimum top flange thickness and minimum joint material thickness.

The prestressed panel quantities are not included in the table of Estimated Quantities for Slab on Concrete Box Beam.

Foundation Data						
Bent No.		1	2	3		
Driven Pile	Type	Foundation	Foundation	Foundation		
	Kind	HP12 X 53	HP12 X 53	HP12 X 53		
	Number	8	13	8		
	Approximate Length	foot	26	27	24	
	Pile Driving Verification Method		DF	DF	DF	
	Minimum Nominal Axial Pile Compressive Resistance		kip	400	520	290
	Hammer Energy Required		foot-pound	12,800	16,600	9,300

Manufactured pile point reinforcement shall be used on all piles.

Minimum Nominal Axial Compressive Resistance = Maximum Factored Loads /Resistance Factor

DF = FHWA-modified Gates Dynamic Formula

Designed: TPL
Detailed: CAB
Checked: TPL

Note: This drawing is not to scale. Follow dimensions.

GENERAL NOTES:

Design Specifications:
2012 - AASHTO LRFD 6th Edition and 2013 Interims Load and Resistance Factor Design

Design Loading:
HL-93
35#/Sq. Ft. Future Wearing Surface
Equivalent Fluid Pressure 45#/Cu. Ft.
Superstructure: Simply-supported, non-composite for dead load, continuous composite for live load.

Design Unit Stresses:
Class B Concrete (Substructure) $f'c = 3,000$ psi
Class B-2 Concrete (Superstructure, except Prestressed Box Beams and Safety Barrier Curb) $f'c = 4,000$ psi
Class B-1 Concrete (Safety Barrier Curb) $f'c = 4,000$ psi
Reinforcing Steel (Grade 60) $fy = 60,000$ psi
Steel Pile (ASTM A709 Grade 50) $fy = 50,000$ psi
For prestressed concrete box beam stresses see Sheet No. 38 & 39.
For precast prestressed panel stresses see Sheet No. 41.

Neoprene Bearing Pads:
Bearings shall be 60 durometer neoprene pads.
Laminated Neoprene Bearing Pads shall be in accordance with Sec 716.

Joint Filler:
All joint filler shall be in accordance with Sec 1057 for preformed sponge rubber expansion and partition joint filler, except as noted.

Reinforcing Steel:
Minimum clearance to reinforcing steel shall be 1 1/2 ", unless otherwise shown.

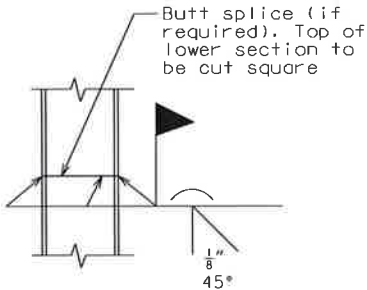
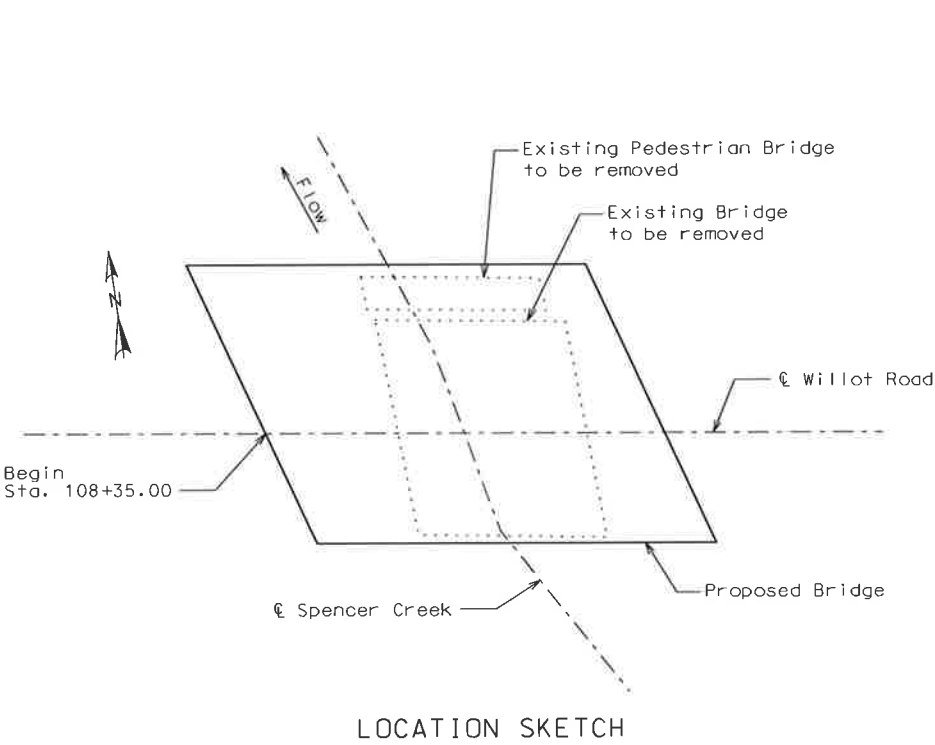
Miscellaneous:
The bridge shall be constructed in accordance with the latest edition of the MoDOT Standard Plans and Specifications except as noted.

"Sec" refers to the sections in the standard and supplemental specifications unless specified otherwise.

Structure to be closed during construction.

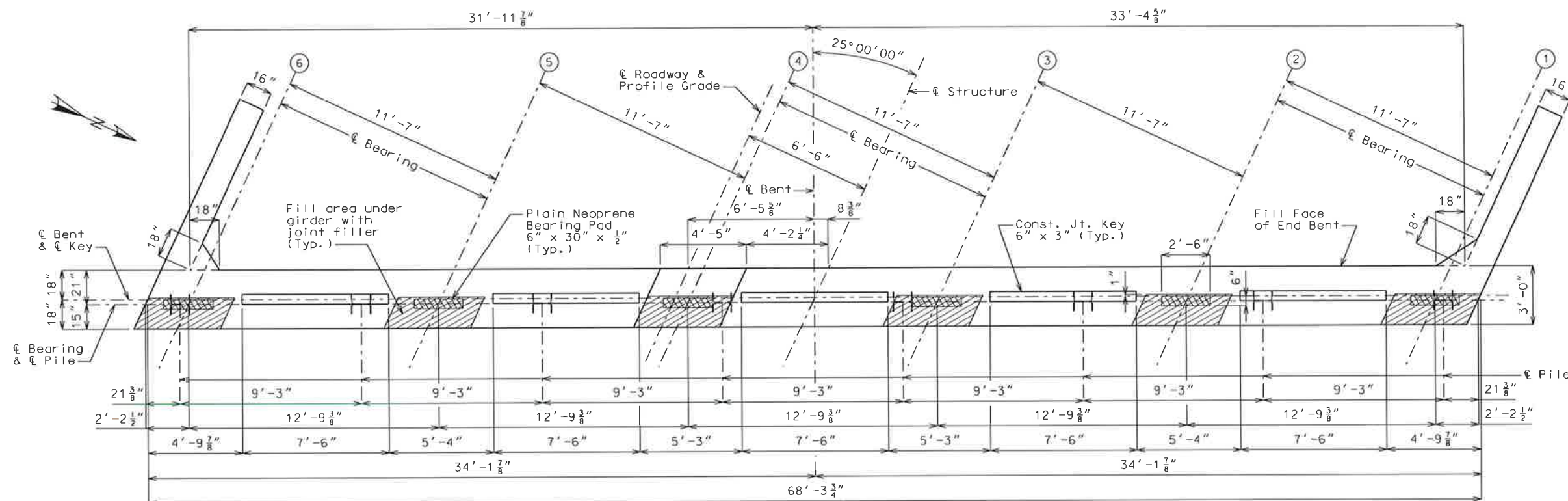
WILLOTT ROAD BRIDGE	SHEET 28
CITY OF ST. PETERS	OF 70
FEDERAL PROJECT NO. BRM-7305(610)	

HYDROLOGIC DATA
Drainage Area = 5.60 (sq. mi.)
Backwater/Base Flood Data (100 year)
High Water Elev. = 488.44
Design Discharge = 4,374 (cfs)
Estimated Backwater = 0.0 (ft)
Freeboard = 1.2 (ft)
Average Velocity thru Opening = 8.8 (ft/sec)
Roadway Overtopping
Design Elev. (1' below shoulder) = 490.79
Design Frequency > 500 years

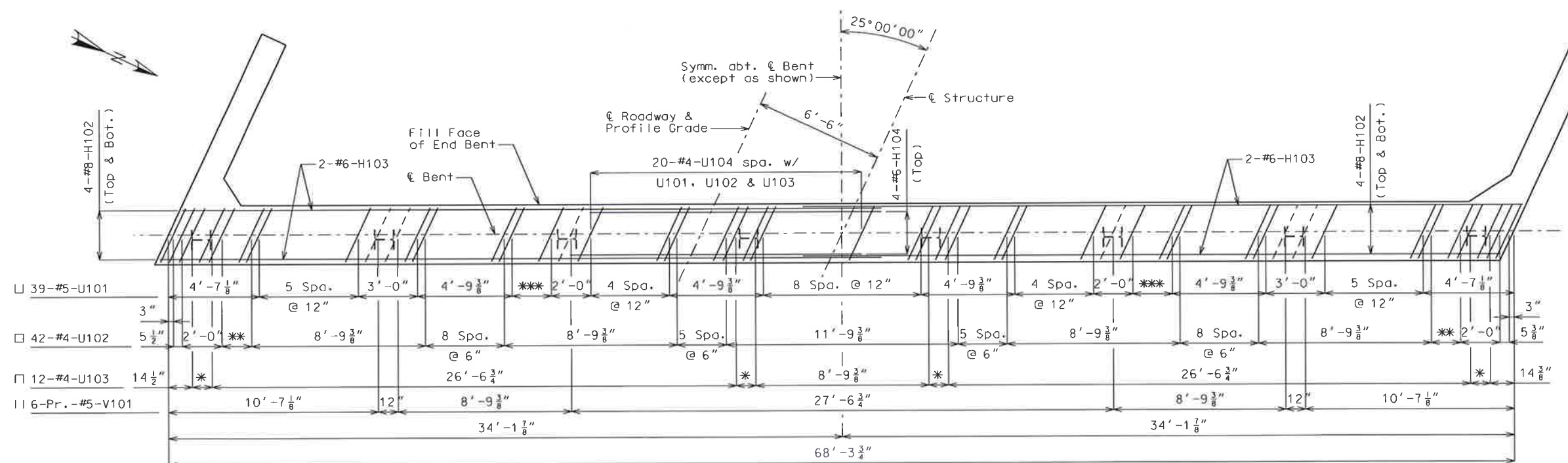
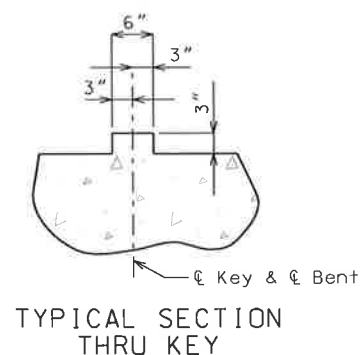


QUANTITIES AND
GENERAL NOTES





PLAN OF BEAM SHOWING DIMENSIONS



PLAN OF BEAM SHOWING REINFORCEMENT

* 2 Spa. @ 6"
 ** 3 Spa. @ 6"
 *** 2 Spa. @ 12"

Notes:

For reinforcement of safety barrier curb, see Sheets No. 46 thru 50.

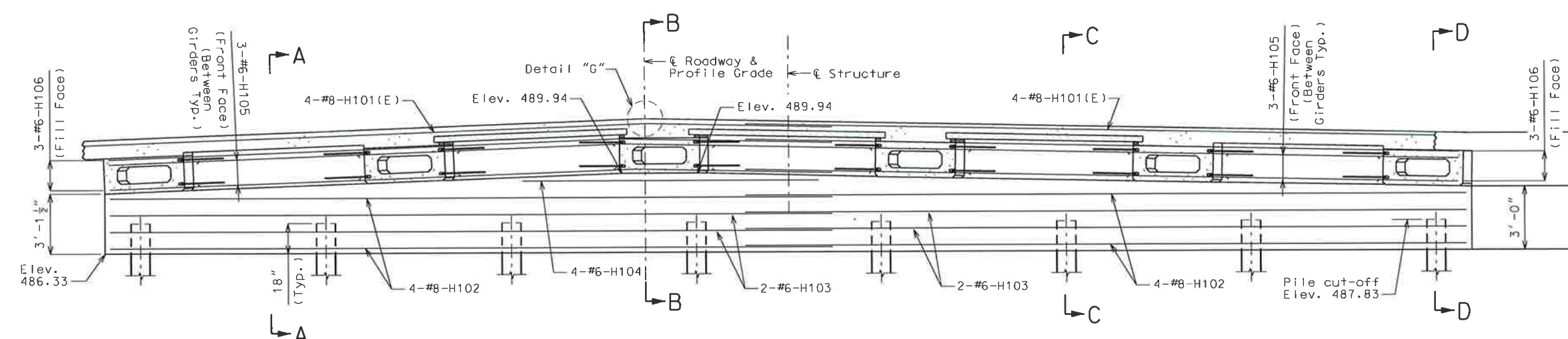
For details of End Bent No. 1 not shown, see Sheets No. 30 & 31.

For details of approach slab, see Sheet No. 52.

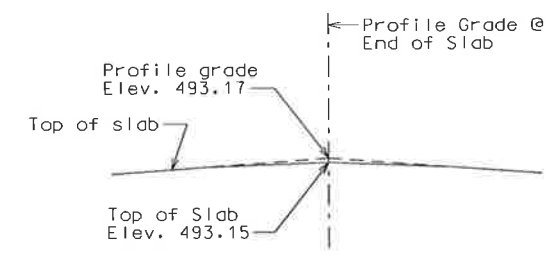
For details of Vertical Drain at End Bents, see Sheet No. 32.

All vertical reinforcing bars in the substructure beams or caps shall be field adjusted to clear piles by at least 12".

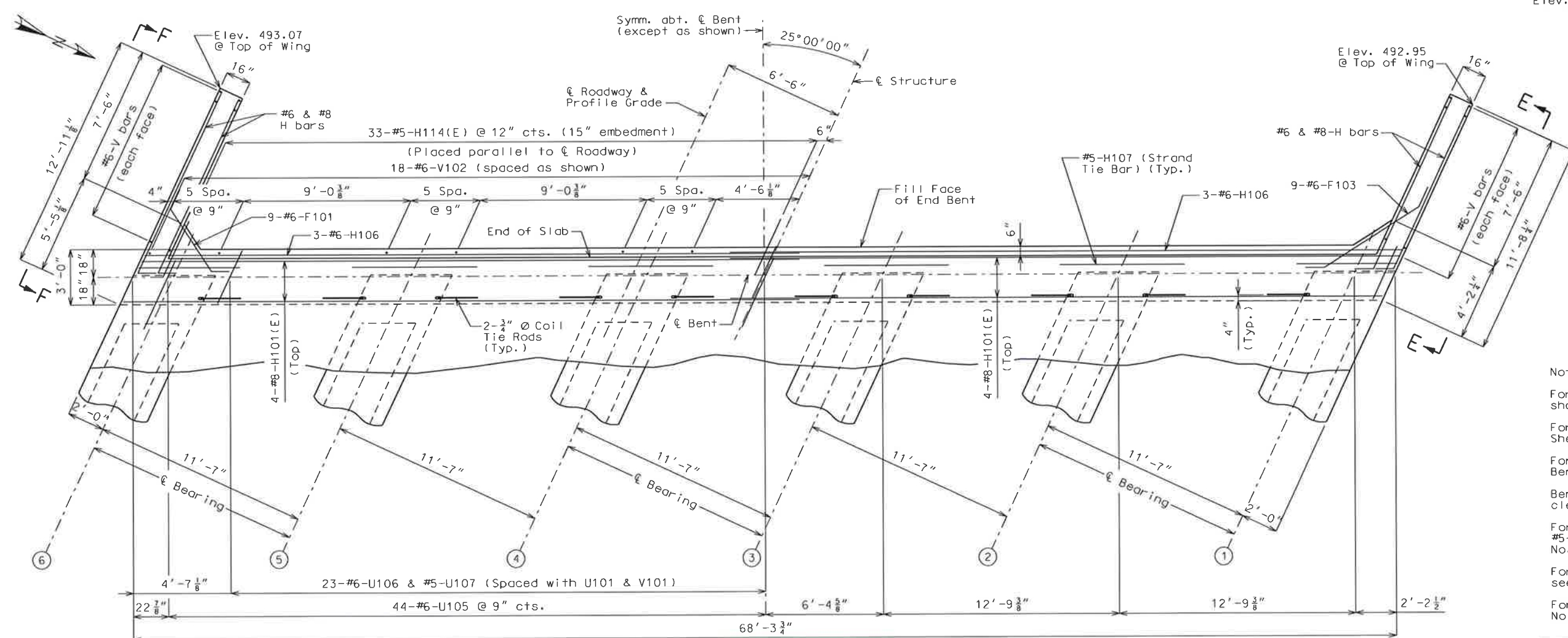
All U-bars and Pr. V-bars in end bent are to be placed parallel to ℓ Roadway.



SECTION NEAR END BENT



DETAIL "G"



PLAN OF BEAM SHOWING DIMENSIONS

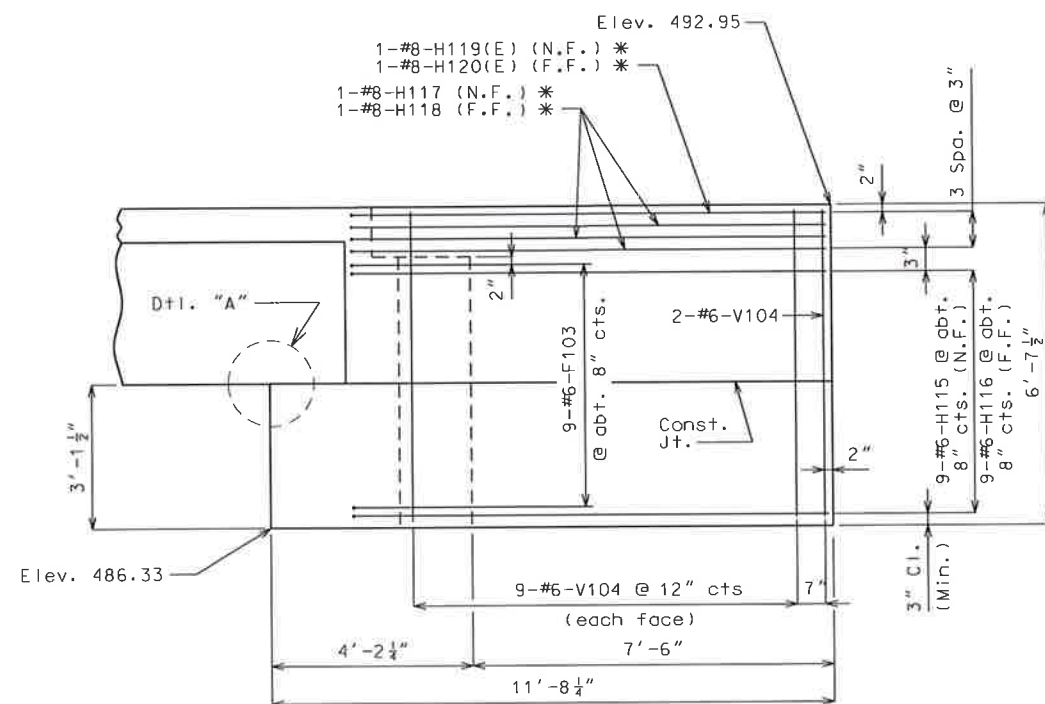
Notes:

- For details of End Bent No. 1 not shown, see Sheets No. 29 & 31.
- For details of approach slab, see Sheet No. 52.
- For details of Vertical Drain at End Bents, see Sheet No. 32.
- Bent F101 & F103 bars in field to clear girders.
- For location of Coil Tie Rods and #5-H107 (Strand Tie Bar), see Sheet No. 38.
- For Sections A-A, B-B, C-C & D-D, see Sheet No. 31.
- For Elevations E-E & F-F, see Sheet No. 31.

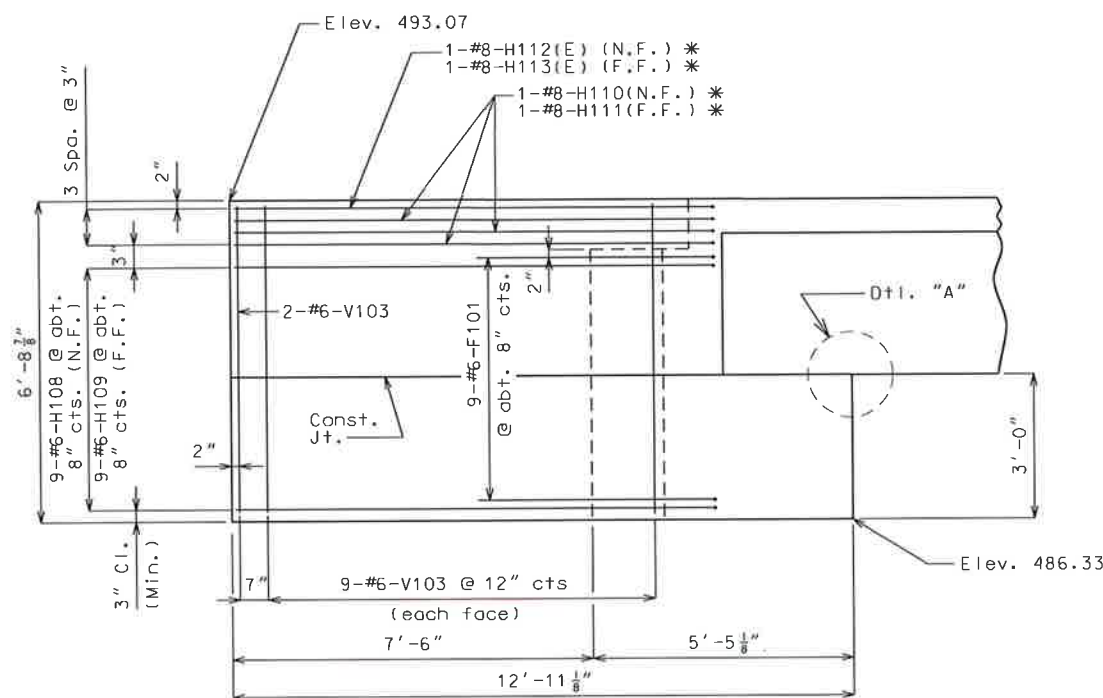
Designed: TPL
Detailed: CAB
Checked: MAC

Note: This drawing is not to scale. Follow dimensions.

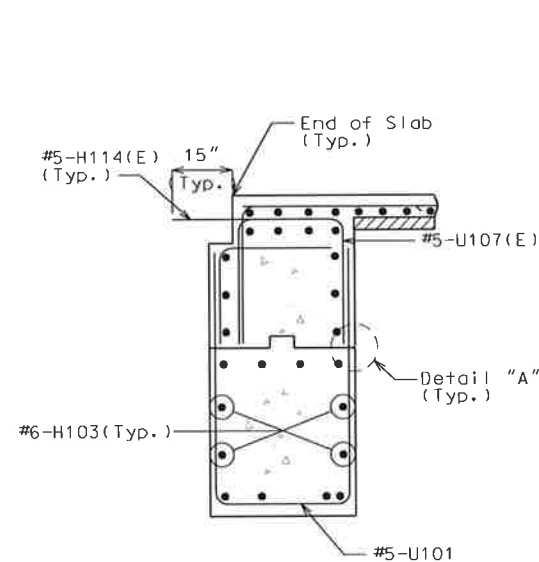
	END BENT NO. 1 DETAILS



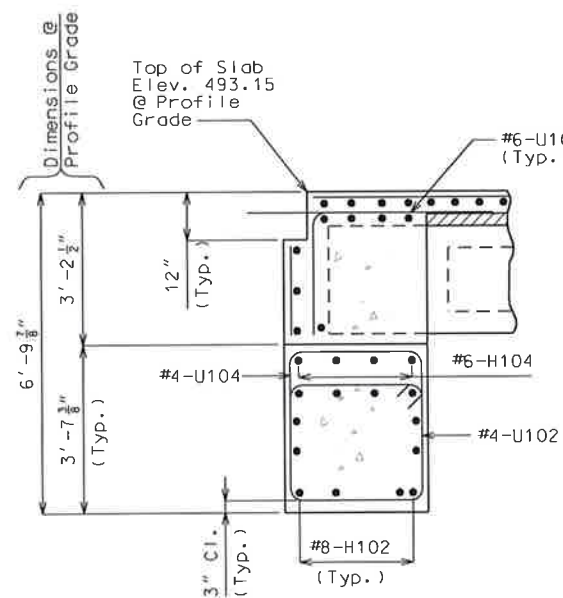
ELEVATION E-E



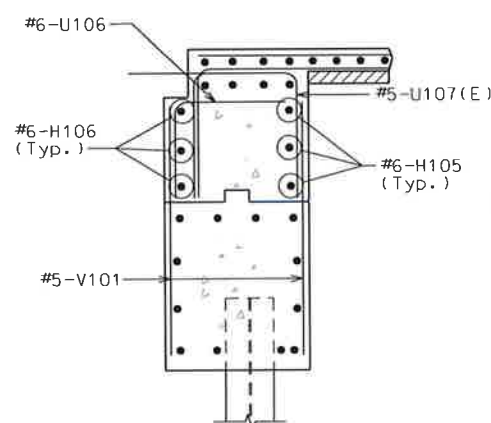
ELEVATION F-F



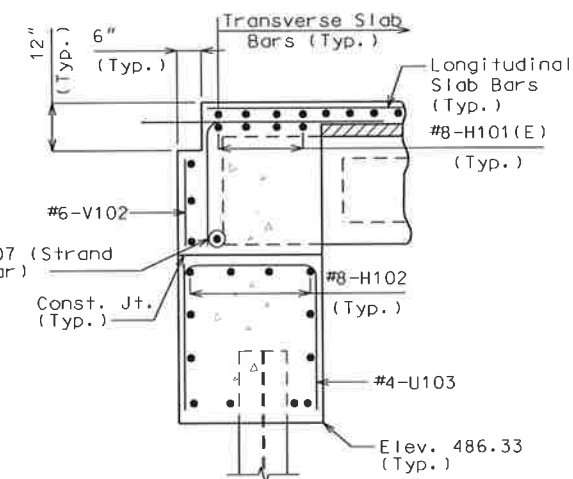
SECTION A-A



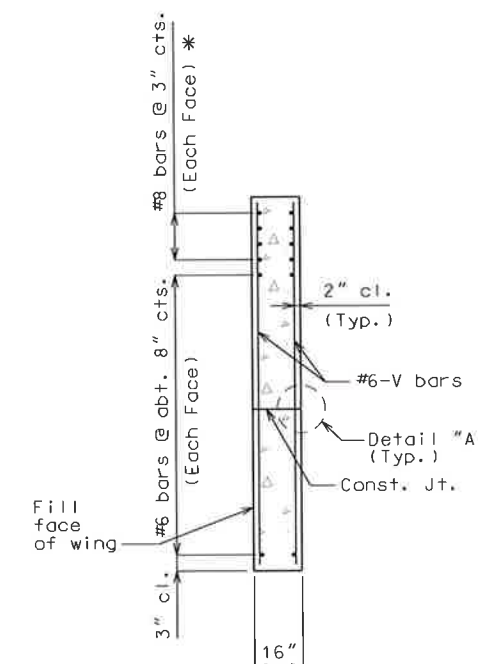
SECTION B-B



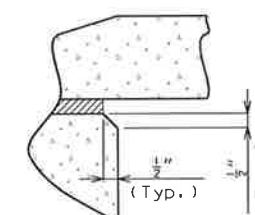
SECTION C-C



SECTION D-D

TYPICAL SECTION
THRU WING

* Placed with grade



DETAIL "A"

Notes:

For details of End Bent No. 1 not shown, see Sheets No. 29 and 30.

For location of Sections A-A, B-B, C-C, & D-D, see Sheet No. 30.

For location of Elevations E-E and F-F, see Sheet No. 30.

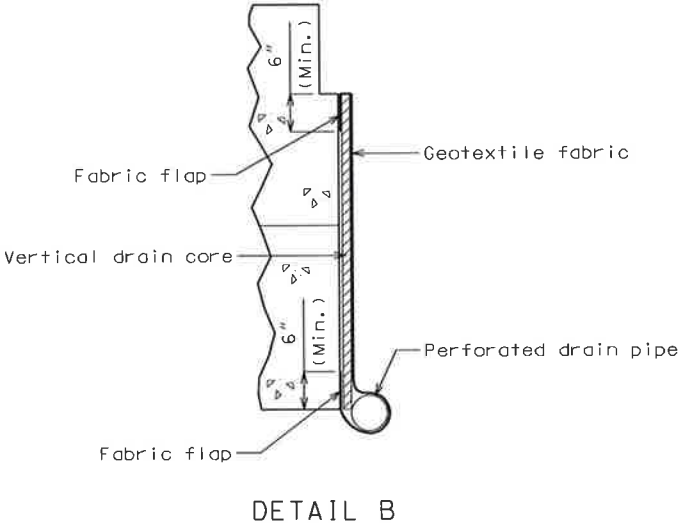
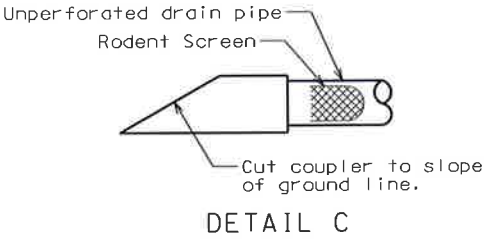
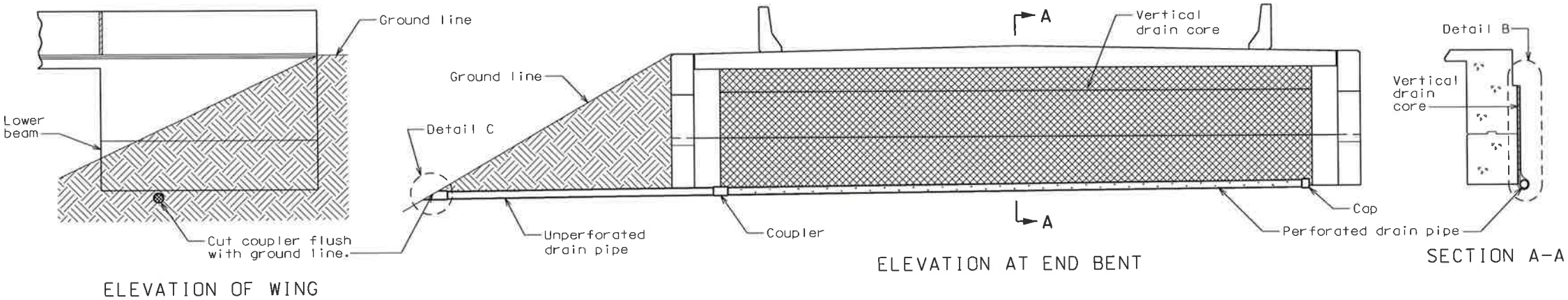
Substructure Quantity Table for Bent No. 1

Item	Quantity
Class 1 Excavation	cu. yard 60
Structural Steel Piles (12 in.)	linear foot 208
Pile Point Reinforcement	each 8
Class B Concrete (Substructure)	cu. yard 28.5

Note: These quantities are included in the estimated quantities table on Sheet No. 2.

Note: This drawing is not to scale. Follow dimensions.

WILLOTT ROAD BRIDGE	SHEET 32
CITY OF ST. PETERS	OF 70
FEDERAL PROJECT NO. BRM-7305(610)	



Note:
Drain pipe may be either 6" diameter corrugated metallic-coated steel pipe underdrain, 4" diameter corrugated polyvinyl chloride (PVC) drain pipe, or 4" diameter corrugated polyethylene (PE) drain pipe.

Place drain pipe at fill face of end bent and slope to lowest grade of ground line, also missing the lower beam of end bent by 1 1/2". (See elevation at end bent.)

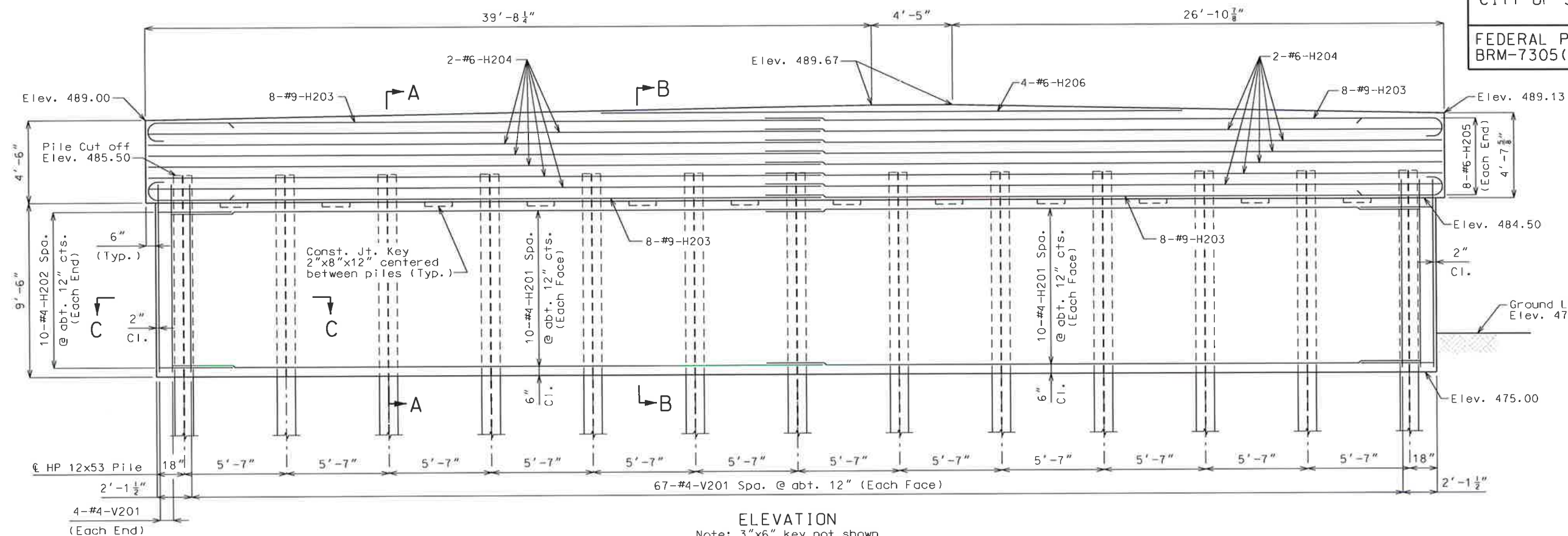
Perforated pipe shall be placed at fill face side at the bottom of end bent and plain pipe shall be used where the vertical drain ends to the exit at ground line.

Designed: TPL
Detailed: CAB
Checked: CBW

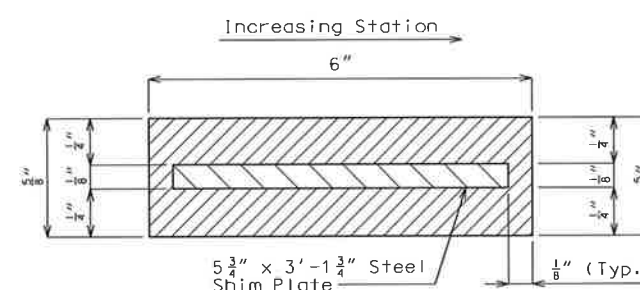
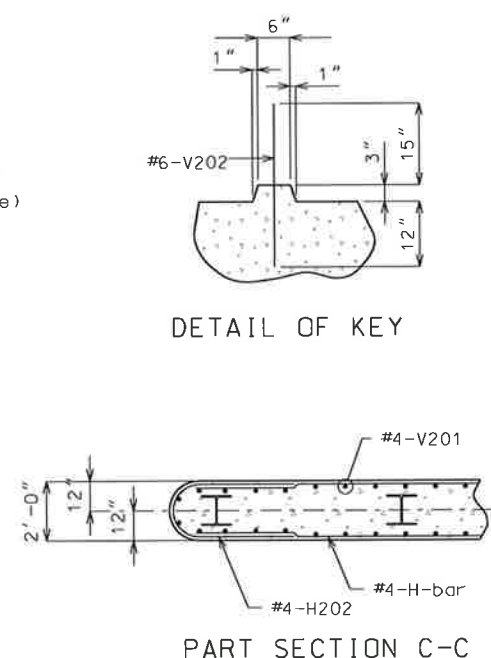
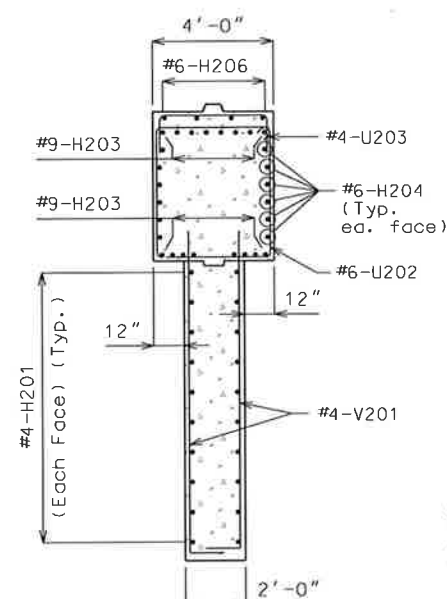
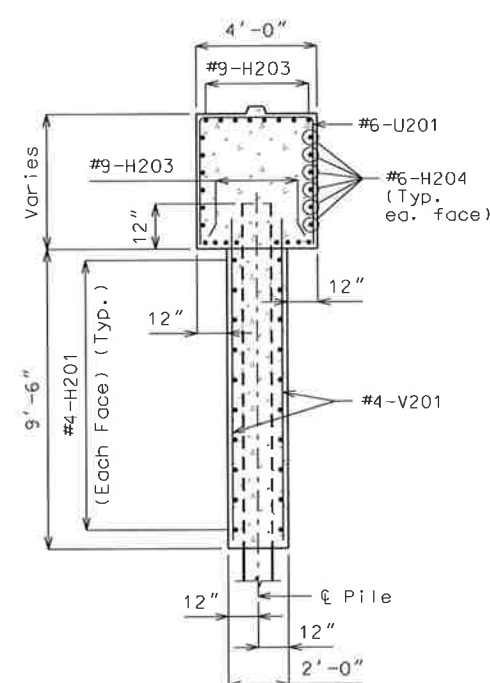
Note: This drawing is not to scale. Follow dimensions.



VERTICAL DRAIN
DETAILS
HORNER & SHIFRIN, INC.

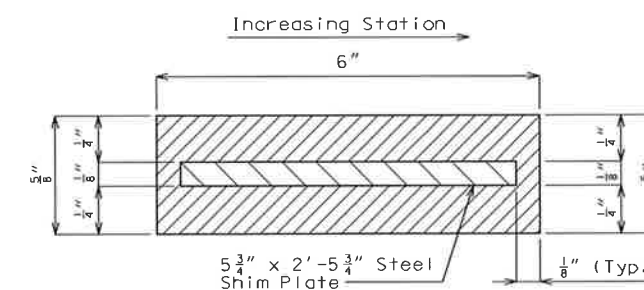


ELEVATION
Note: 3"x6" key not shown
in elevation for clarity.



TYPICAL SECTION THRU 6" x 3'-2"
LAMINATED NEOPRENE BEARING PAD

Note: The required shim plate shall be placed between layers of elastomer and be molded together to form an integral unit.
(6 required)



TYPICAL SECTION THRU 6" x 2'-6"
LAMINATED NEOPRENE BEARING PAD

Note: The required shim plate shall be placed between layers of elastomer and be molded together to form an integral unit.
(6 required)

Substructure Quantity Table for Bent No. 2		
Item		Quantity
Class 2 Excavation	cu. yard	27
Structural Steel Piles (12 in.)	linear foot	351
Pile Point Reinforcement	each	13
Class B Concrete (Substructure)	cu. yard	100.5
Reinforcing Steel (Bridges)	pound	12,090

Note: These quantities are included in the estimated quantities table on Sheet No. 2.

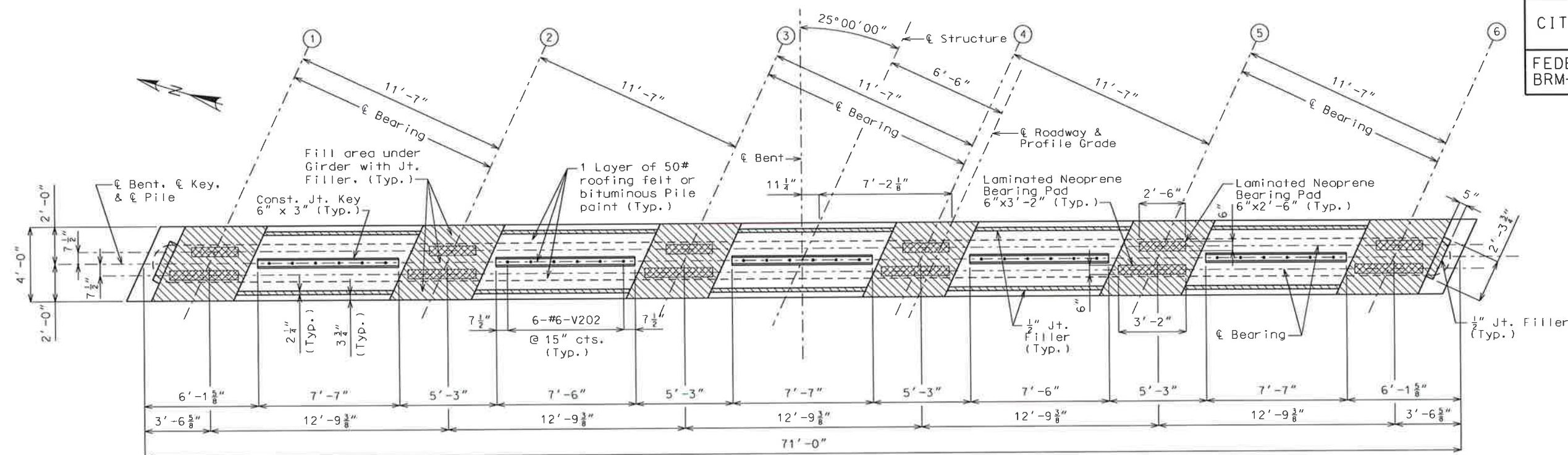
Note:

Work this sheet with Sheet No. 34.

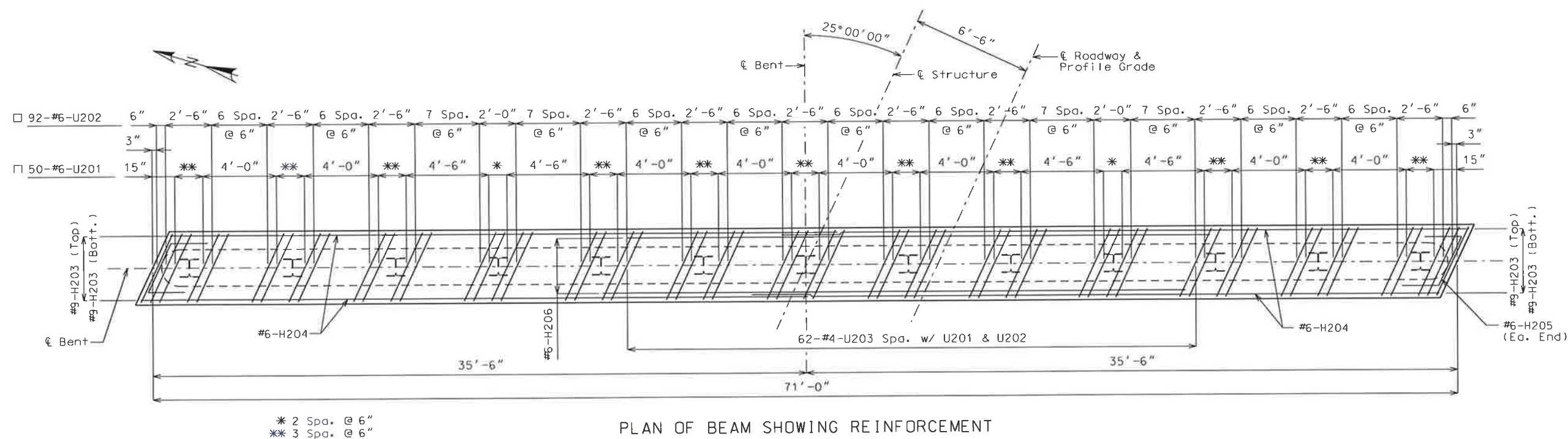


INT. BENT NO. 2
DETAILS


**HORNER &
SHIFRIN, INC.**



PLAN OF BEAM
(Symmetrical except as shown.
Piles omitted for clarity.)



PLAN OF BEAM SHOWING REINFORCEMENT

Notes:
Reinforcement in wall omitted for clarity.
All U-bars shall be placed parallel to C Roadway.

Note:
Work this sheet with Sheet No. 33.



INT. BENT NO. 2
DETAILS

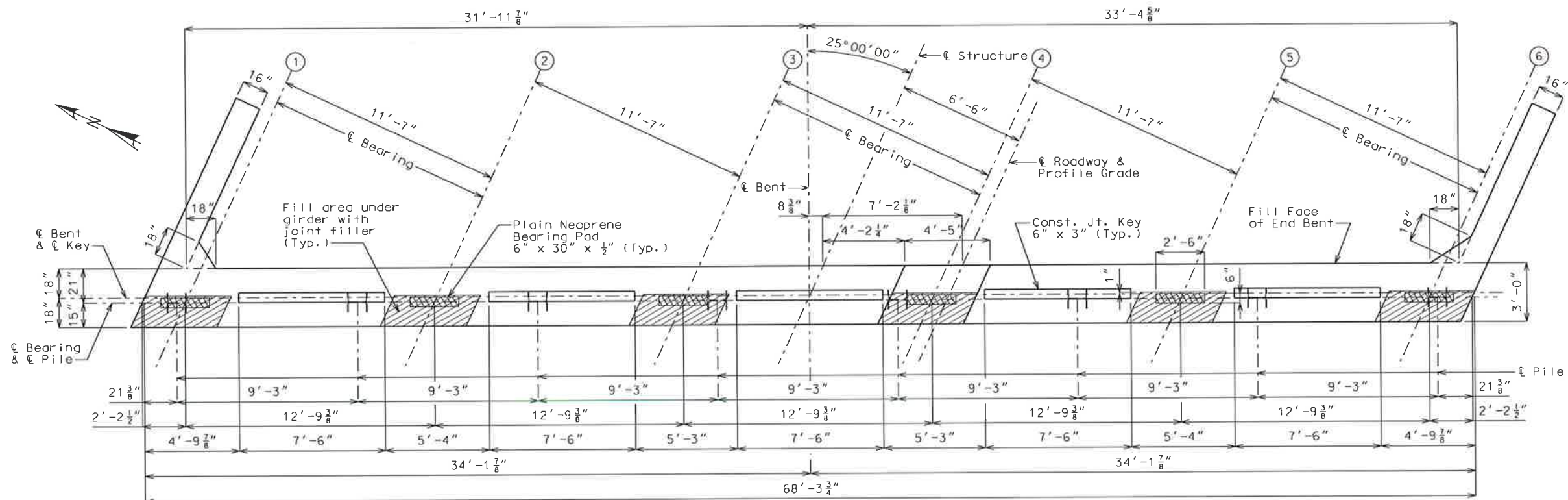


**HORNER &
SHIFRIN, INC.**

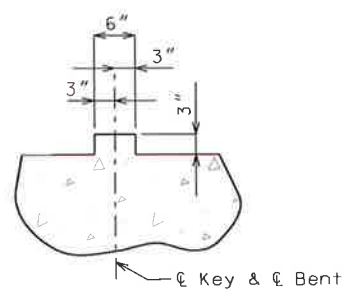
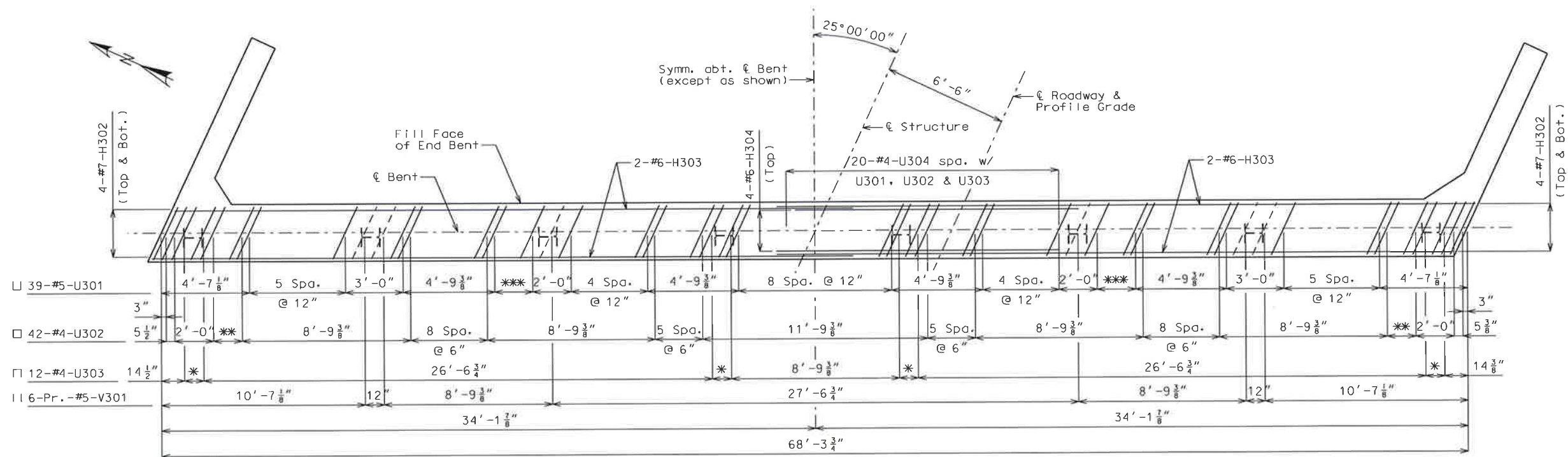
Designed: KAK
Detailed: CAB
Checked: TPL

Note: This drawing is not to scale. Follow dimensions.

...	Int Bent 2 Details.dgn	9:13:07 AM	12/9/2014
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PLAN OF BEAM SHOWING DIMENSIONS

TYPICAL SECTION
THRU KEY

PLAN OF BEAM SHOWING REINFORCEMENT

* 2 Spa. @ 6"
 ** 3 Spa. @ 6"
 *** 2 Spa. @ 12"

Notes:

For reinforcement of safety barrier curb, see Sheets No. 46 thru 50.

For details of End Bent No. 3 not shown, see Sheets No. 35 & 36.

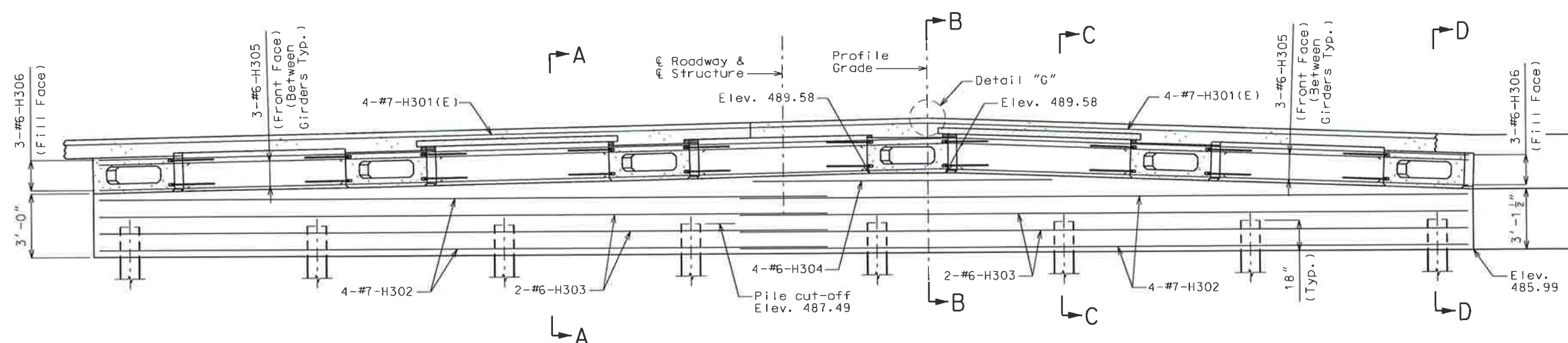
For details of approach slab, see Sheet No. 52.

For details of Vertical Drain at End Bents, see Sheet No. 32.

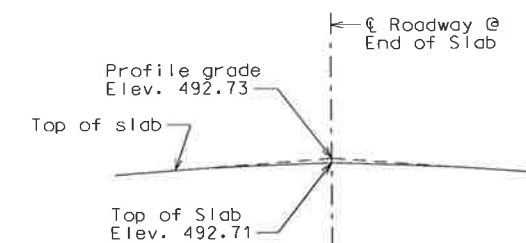
All vertical reinforcing bars in the substructure beams or caps shall be field adjusted to clear piles by at least 1 1/2".

All U-bars and Pr. V-bars in end bent are to be placed parallel to Roadway.

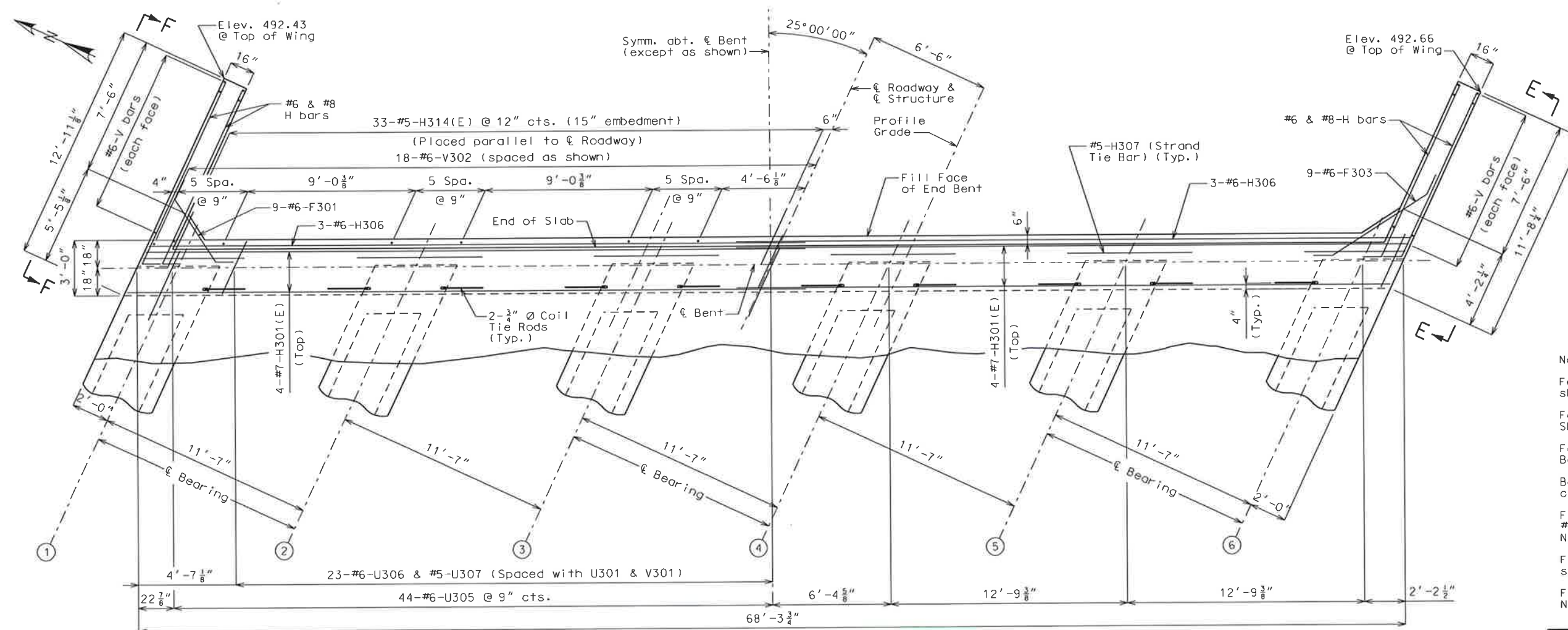
END BENT NO. 3
DETAILS



SECTION NEAR END BENT



DETAIL "G"



PLAN OF BEAM SHOWING DIMENSIONS

Notes:

For details of End Bent No. 3 not shown, see Sheets No. 35 & 37.

For details of approach slab, see Sheet No. 52.

For details of Vertical Drain at End Bents, see Sheet No. 32.

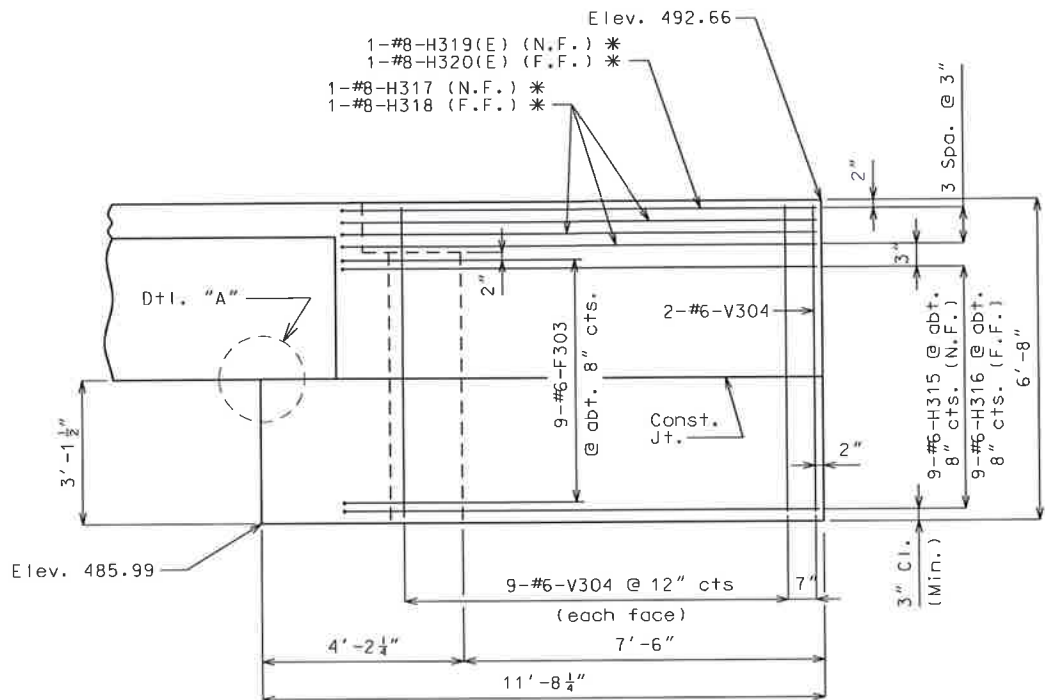
Bent F301 & F303 bars in field to clear girders.

For location of Coil Tie Rods and #5-H307 (Strand Tie Bar), see Sheet No. 39.

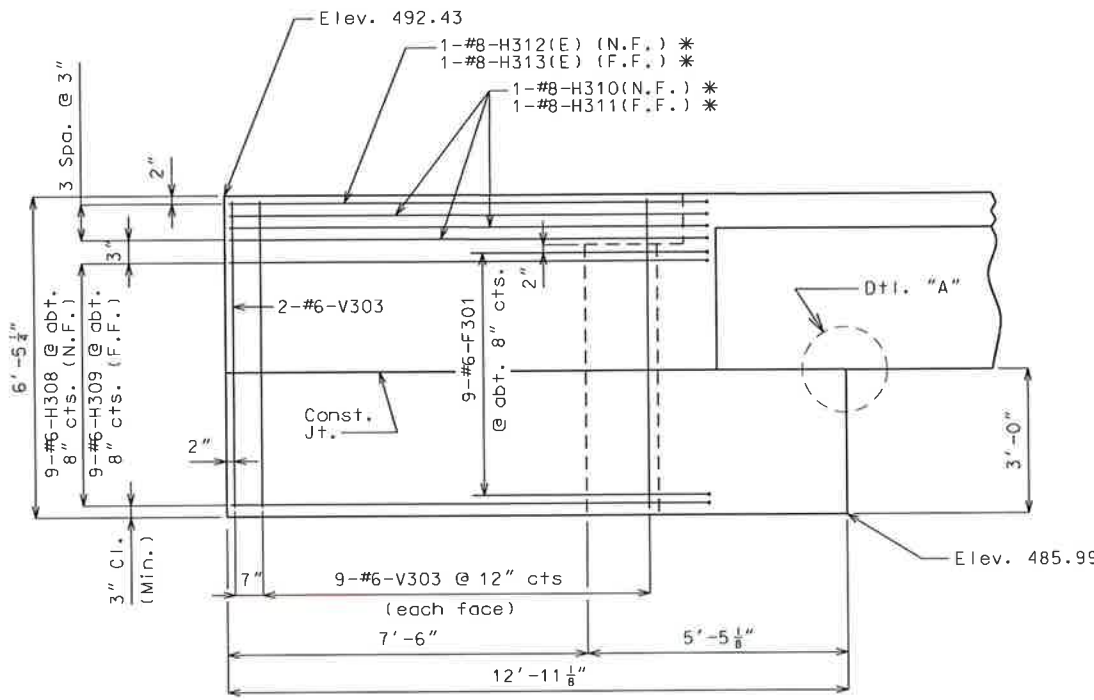
For Sections A-A, B-B, C-C & D-D, see Sheet No. 37.

For Elevations E-E & F-F, see Sheet No. 37.

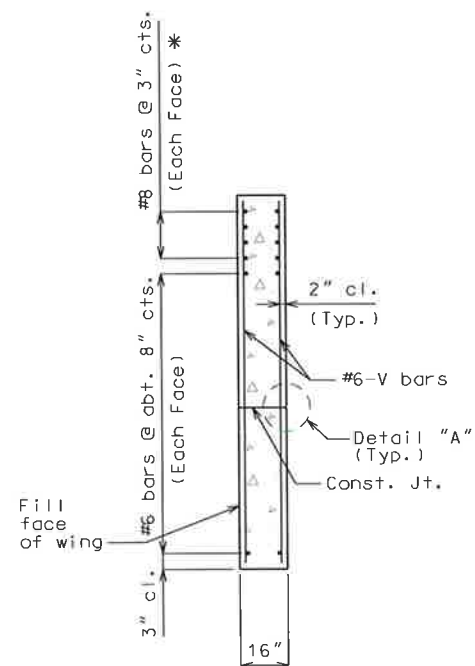
END BENT NO. 3
DETAILS



ELEVATION E-E

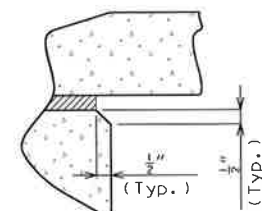


ELEVATION F-F

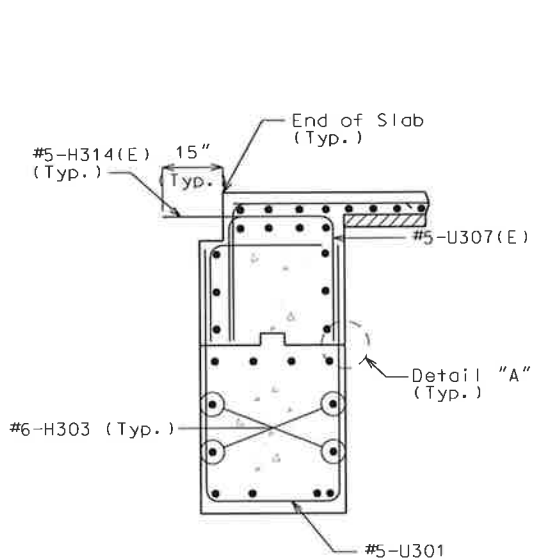


TYPICAL SECTION THRU WING

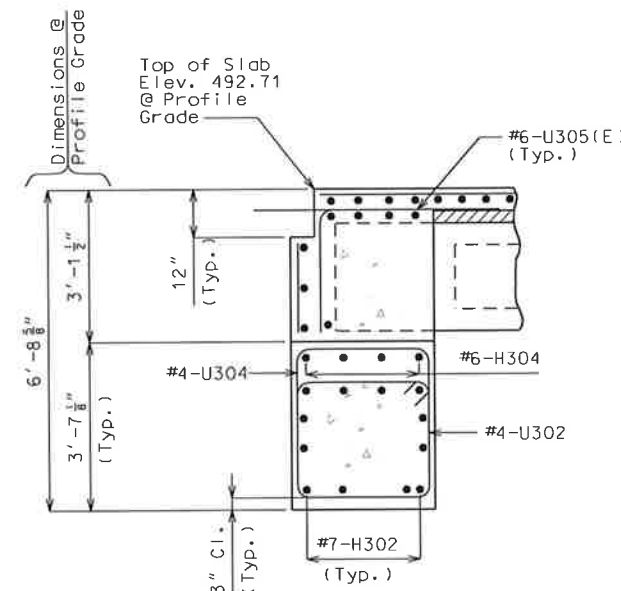
* Placed with grade



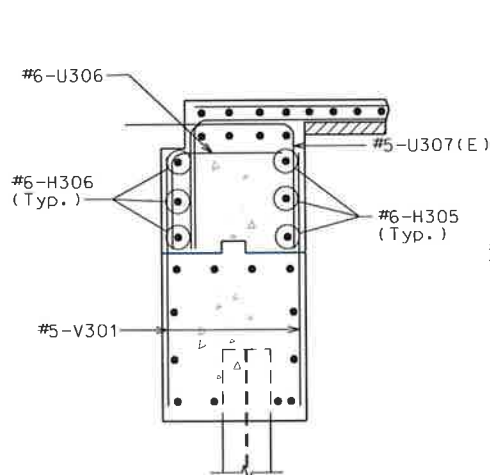
DETAIL "A"



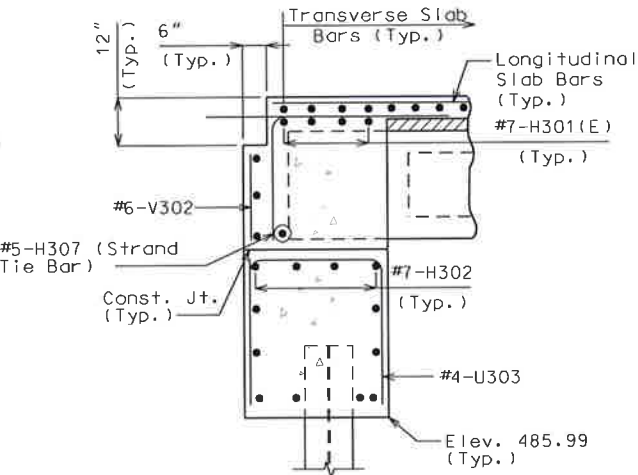
SECTION A-A



SECTION B-B



SECTION C-C



SECTION D-D

Substructure Quantity Table for Bent No. 3			
Item		Quantity	
Class 1 Excavation	cu. yard	60	
Structural Steel Piles (12 in.)	linear foot	192	
Pile Point Reinforcement	each	8	
Class B Concrete (Substructure)	cu. yard	28.4	

Note: These quantities are included in the estimated quantities table on Sheet No. 2.

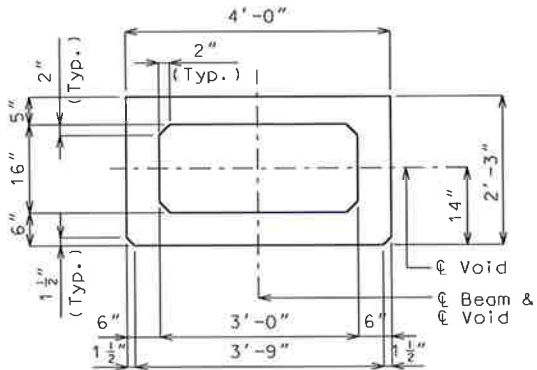
Notes:
 For details of End Bent No. 3 not shown, see Sheets No. 35 & 36.
 For location of Sections A-A, B-B, C-C, & D-D, see Sheet No. 36.
 For location of Elevations E-E and F-F, see Sheet No. 36.

Designed: TPL
 Detailed: CAB
 Checked: TPL

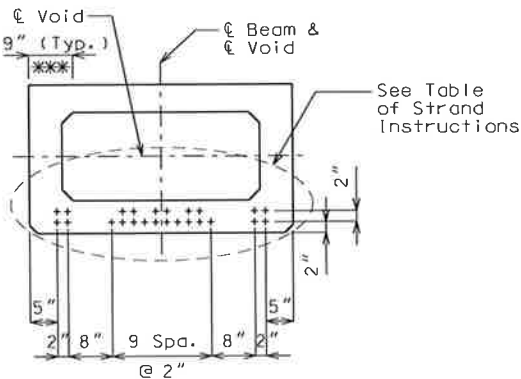
Note: This drawing is not to scale. Follow dimensions.

END BENT NO. 3
DETAILS

HORNER & SHIFRIN, INC.



DIMENSIONS

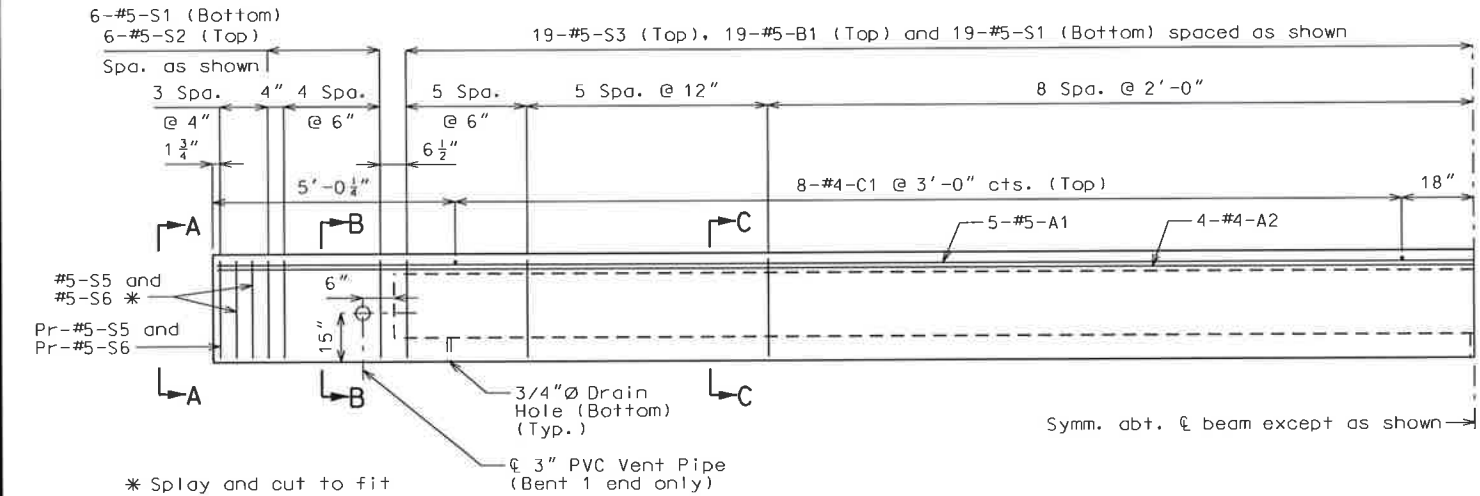


STRAND ARRANGEMENT

(+) Indicates prestressing strand.

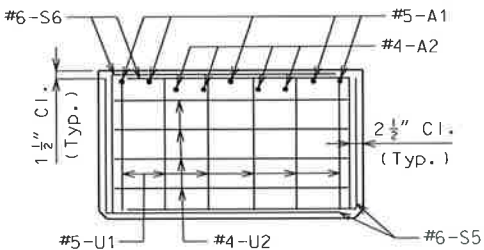
Use 24 strands with an initial prestress force of 744 kips.

*** Beam top flange shall be steel troweled to a smooth finish for 9" at the edges, as shown. Apply two layers of 30-lb. roofing felt as a bond breaker to this region only excluding where joint filler is applied. The center portion shall be rough finished by scarifying the surface transversely with a wire brush, and no laitance shall remain on the surface.



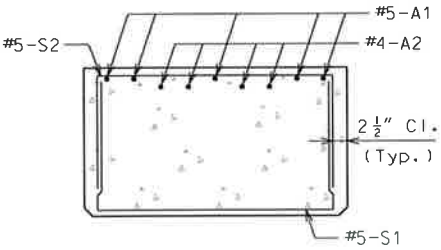
HALF ELEVATION OF BOX BEAM ALONG ϕ BEAM

Exterior and interior box beams are the same, except for coil ties. See Sheet No. 40 for spacing of U1 and U2 bars.



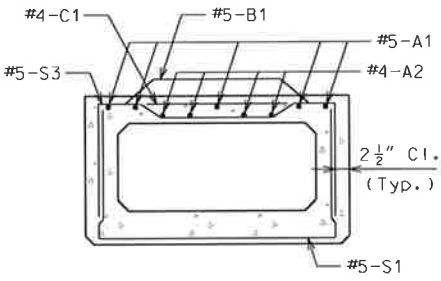
ELEVATION A-A

Note: U1 and U2 bars shall be equally spaced.
(Strands not shown for clarity)



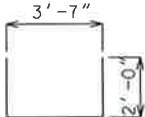
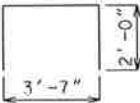
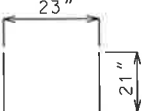
SECTION B-B

(Strands not shown for clarity)



SECTION C-C

(Strands not shown for clarity)

BILL OF REINFORCING STEEL - EACH BEAM					BENDING DIAGRAM	
NO.	SIZE & MARK	ACTUAL LENGTH	SHAPE			
5	5 A1	54'-9 1/2"	20		SHAPE 20	
4	4 A2	54'-9 1/2"	20			
37	5 B1	4'-7"	51			SHAPE 10 (S2)
16	4 C1	3'-7"	20			
49	5 S1	7'-4"	10		SHAPE 10 (S1)	
12	5 S2	7'-4"	10			
37	5 S3	7'-4"	50			SHAPE 10 (U1)
8	6 S5	5'-5"	19			
8	6 S6	5'-5"	19			
12	5 U1	5'-3"	10			
8	4 U2	9'-7"	21			

All dimensions are out to out.

Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures, Stirrup and Tie Dimensions.

Actual lengths are measured along centerline of bar to the nearest inch.

Minimum clearance to reinforcing shall be 1", unless otherwise shown.

All reinforcement shall be Grade 60.

All B1 bars shall be epoxy coated.

Table of Strand Instructions

++	++	++	++	++	++
+	Denotes fully bonded strands				
⊕	Cut and shop bend with 2'-0" projection. Cut any remaining bottom strands within 1" of end of beam. ***				

*** At the contractor's option the location for bent-up strands may be varied from that shown. The total number of bent-up strands shall not be changed. One strand tie bar is required for each layer of bent-up strands except at end bents which require one bar on the bottom layer of strands only. No additional payment will be made if additional strand tie bars are required.

General Notes

Concrete for prestressed beams shall be Class A-1 with $f'c = 7,000$ psi and $f'ci = 5,000$ psi.

Prestressing tendons shall be uncoated, seven-wire, low-relaxation strands, 0.5 inch diameter conforming to AASHTO M203, Grade 270. Prestensioned members shall be in accordance with Sec 1029.

For Beam Camber Diagram, see Sheet No. 42.

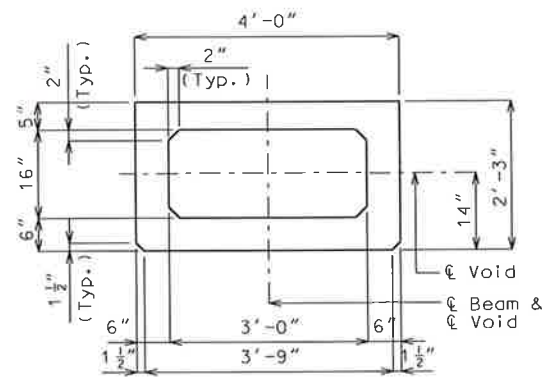
3/4" drain holes shall be provided at each end of each void, and shall be kept open at all times.

Beams shall be kept upright at all times. Support shall be within 12 inches of the ends only.

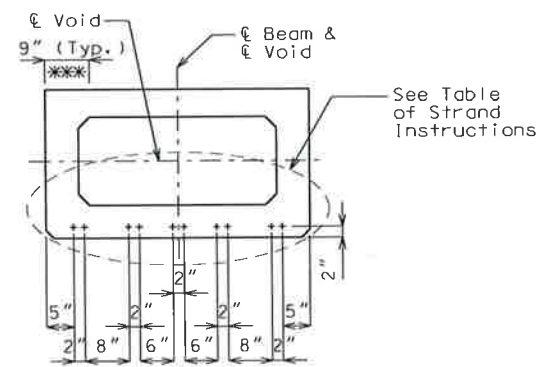
Void filler shall be non-absorptive cellular polystyrene, according to ASTM C 578, designed to withstand the forces imposed upon them during fabrication without substantial deformation such as bulging, sagging, or collapsing. Cardboard void filler will not be allowed. The outside dimensions of void filler shall be as shown on the plans. When two or more sections of void filler are used to make up a required length, they shall be effectively taped or spliced together.

Beams shall be finished similarly in accordance with Sec 1029, except as noted.

Note: Work this sheet with Sheet No. 40.



DIMENSIONS

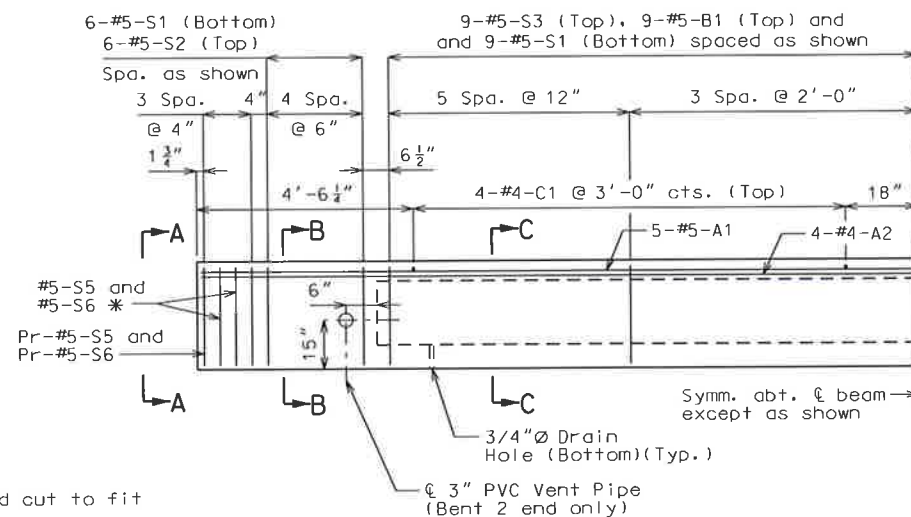


STRAND ARRANGEMENT

(+) Indicates prestressing strand.

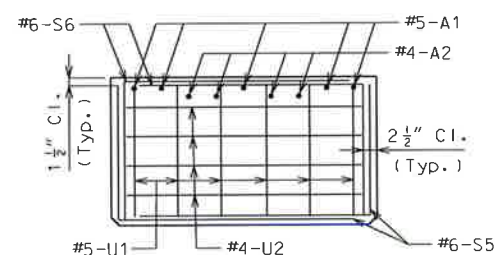
Use 10 strands with an initial prestress force of 310 kips;

*** Beam top flange shall be steel troweled to a smooth finish for 9" at the edges, as shown. Apply two layers of 30-lb. roofing felt as a bond breaker to this region only excluding where joint filler is applied. The center portion shall be rough finished by scarifying the surface transversely with a wire brush, and no laitance shall remain on the surface.



HALF ELEVATION OF BOX BEAM ALONG C BEAM

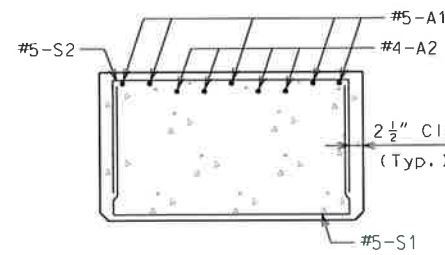
Exterior and interior box beams are the same, except for coil ties and coil inserts for slab drains. See Sheet No. 40 for spacing of U1 and U2 bars.



ELEVATION A-A

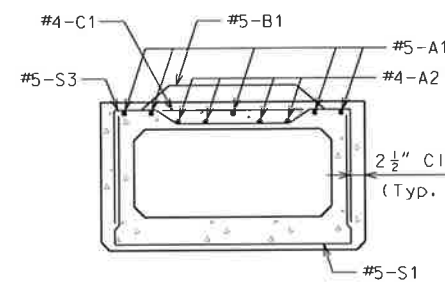
Note: U1 and U2 bars shall be equally spaced.

(Strands not shown for clarity)



SECTION B-B

(Strands not shown for clarity)



SECTION C-C

(Strands not shown for clarity)

BILL OF REINFORCING STEEL - EACH BEAM				BENDING DIAGRAM
NO.	SIZE & MARK	ACTUAL LENGTH	SHAPE	
5	5 A1	29'-9 1/2"	20	
4	4 A2	29'-9 1/2"	20	
17	5 B1	4'-7"	51	
8	4 C1	3'-7"	20	
29	5 S1	7'-4"	10	
12	5 S2	7'-4"	10	
17	5 S3	7'-4"	50	
8	6 S5	5'-5"	19	
8	6 S6	5'-5"	19	
12	5 U1	5'-3"	10	
8	4 U2	9'-7"	21	

All dimensions are out to out.

Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures, Stirrup and Tie Dimensions.

Actual lengths are measured along centerline of bar to the nearest inch.

Minimum clearance to reinforcing shall be 1", unless otherwise shown.

All reinforcement shall be Grade 60.

All B1 bars shall be epoxy coated.

Table of Strand Instructions	
\oplus + $\oplus\oplus$ $\oplus\oplus$ $\oplus\oplus$ + \oplus	
+	Denotes fully bonded strands
\oplus	Cut and shop bend with 2'-0" projection. Cut any remaining bottom strands within 1" of end of beam. ***

*** At the contractor's option the location for bent-up strands may be varied from that shown. The total number of bent-up strands shall not be changed. One strand tie bar is required for each layer of bent-up strands except at end bents which require one bar on the bottom layer of strands only. No additional payment will be made if additional strand tie bars are required.

General Notes

Concrete for prestressed beams shall be Class A-1 with $f'_c = 7,000$ psi and $f'_{ci} = 5,000$ psi.

Prestressing tendons shall be uncoated, seven-wire, low-relaxation strands, 0.5 inch diameter conforming to AASHTO M203, Grade 270. Pretensioned members shall be in accordance with Sec 1029.

For Beam Camber Diagram, see Sheet No. 42.

For location of coil inserts at slab drains, see
Sheet No. 40.

3/4"Ø drain holes shall be provided at each end of each void, and shall be kept open at all times.

Beams shall be kept upright at all times. Support shall be within 12 inches of the ends only.

Void filler shall be non-absorptive cellular polystyrene, according to ASTM C 578, designed to withstand the forces imposed upon them during fabrication without substantial deformation such as bulging, sagging, or collapsing. Cardboard void filler will not be allowed. The outside dimensions of void filler shall be as shown on the plans. When two or more sections of void filler are used to make up a required length, they shall be effectively taped or spliced together.

Beams shall be finished similarly in accordance with Sec 1029, except as noted.



SPREAD BOX
BEAM DETAILS
SPAN (2-3)

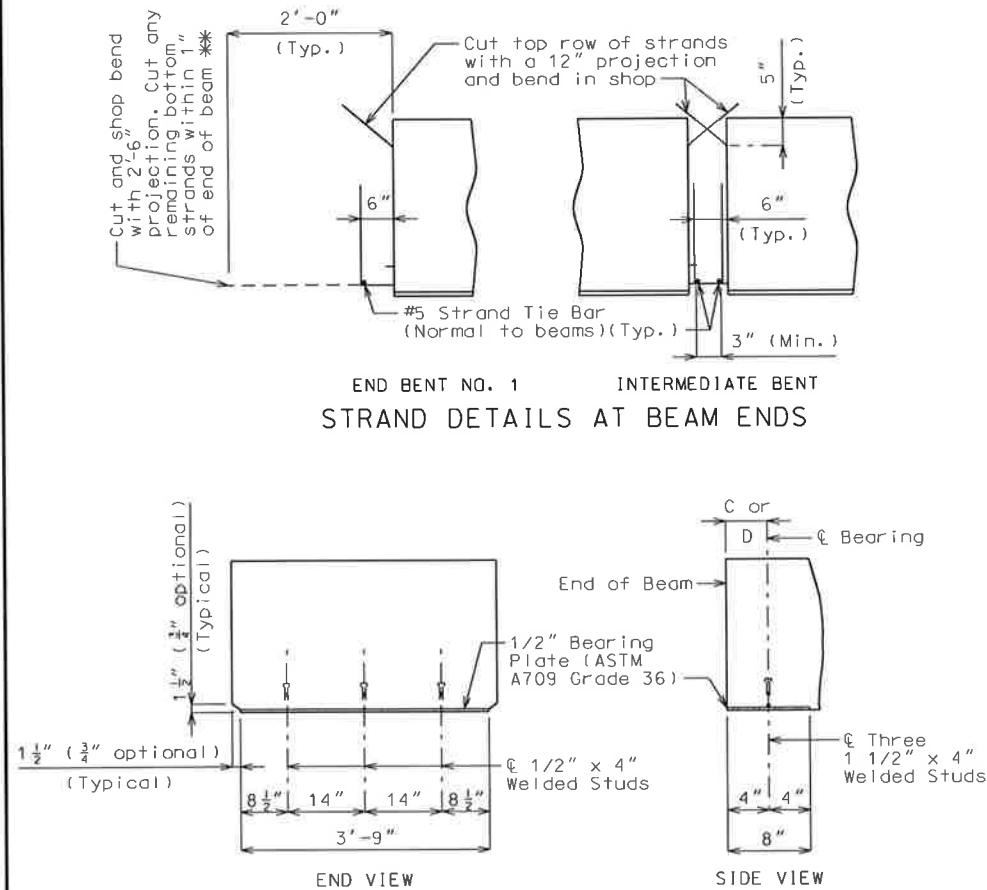


**HORNER &
SHIFRIN, INC.**

Designed: TPL
Detailed: CAB
Checked: TPL

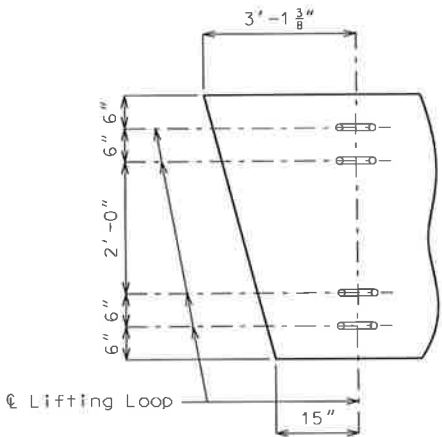
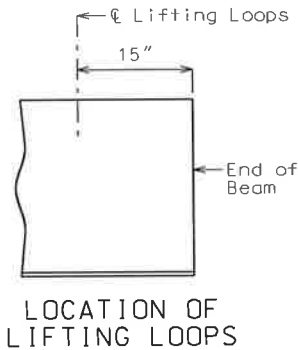
Note: Work this sheet with Sheet No. 40.

*** At the contractor's option the location for bent-up strands may be varied from that shown. The total number of bent-up strands shall not be changed. One strand tie bar is required for each layer of bent-up strands except at end bents which require one bar on the bottom layer of strands only. No additional payment will be made if additional strand tie bars are required.

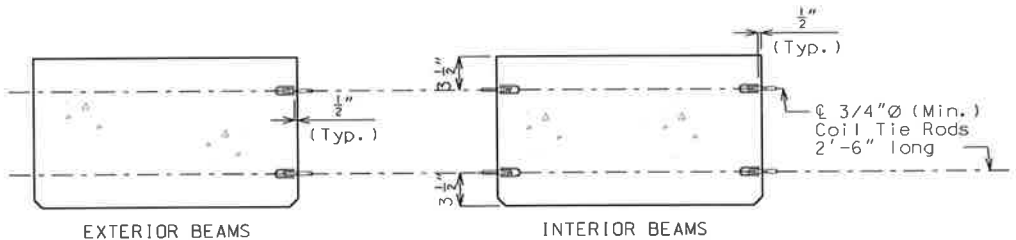


Galvanize the 1/2" bearing plate (ASTM A709 Grade 36) in accordance with ASTM A123.

Cost of furnishing, galvanizing, and installing the 1/2" bearing plate (ASTM A709 Grade 36) and welded studs in the prestressed box beam will be considered completely covered by the contract unit price for Prestressed Concrete Spread Box Beam.



PART PLAN SHOWING LOCATION OF LIFTING LOOPS



DETAILS OF COIL TIES

(Strands and reinforcement not shown for clarity)

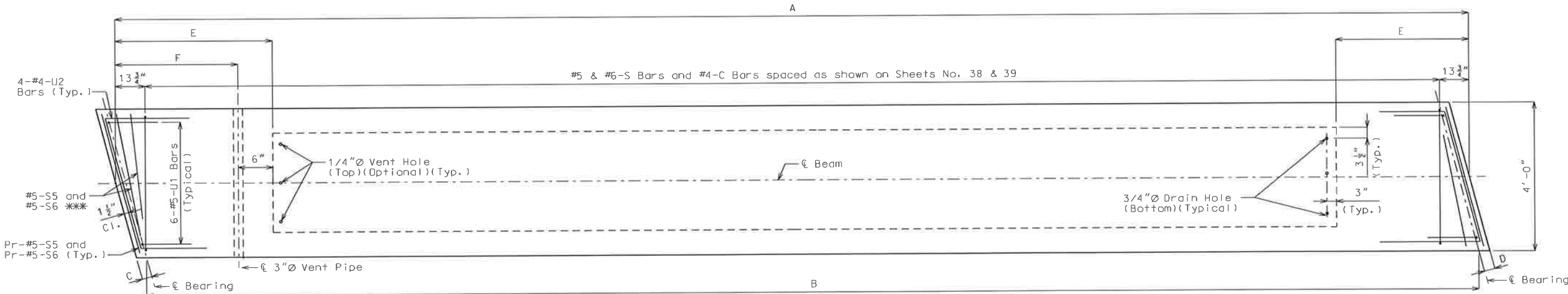
Cost of 3/4" coil tie rods placed in diaphragms will be considered completely covered by the contract unit price for Prestressed Concrete Spread Box Beam.

Coil ties shall be held in place in the forms by slotted wire-setting-studs projecting thru forms. Studs are to be left in place or replaced with temporary plugs until beams are erected, then replaced by coil tie rods.

For location of coil ties, see Sheets No. 30, 36 & 43.

Table of Dimensions for Plan of Beam

Span	Beam Length A	℄ Brg. to ℄ Brg. B	Left ℄ Brg. C	Right ℄ Brg. D	End Length E	Vent Pipe F
(1-2)	55'-0 1/2"	54'-3 3/4"	4"	4"	3'-9"	3'-0 3/4"
(2-3)	30'-0 1/2"	29'-3 3/4"	4"	4"	3'-9"	3'-0 3/4"



*** Splay and cut to fit.

PLAN OF BEAM
(S bars, C bars and strands not shown for clarity)

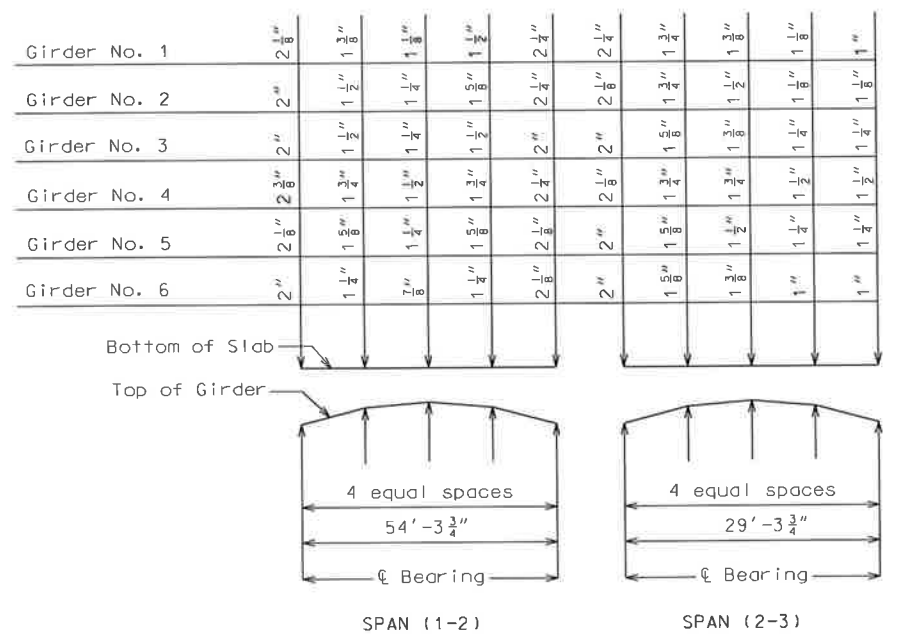
Note: Work this sheet with Sheets No. 38 & 39.

Designed: TPL
Detailed: CAB
Checked: TPL

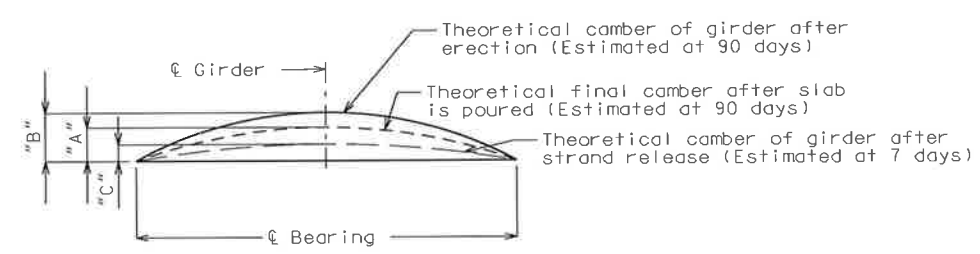


SPREAD BOX
BEAM DETAILS

HORNER &
SHIFRIN, INC.

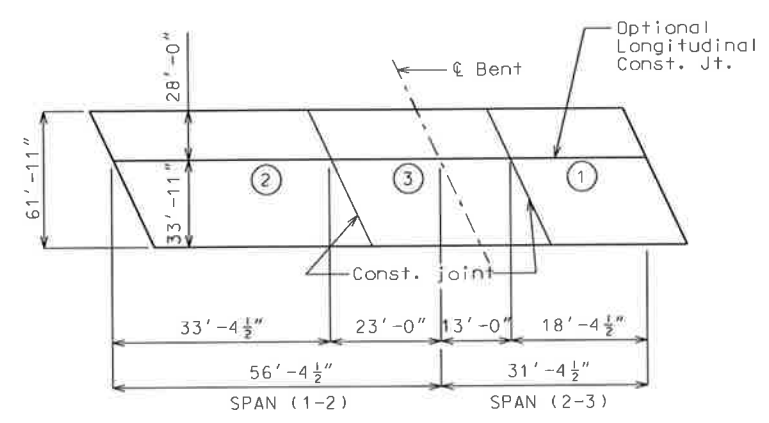


THEORETICAL SLAB HAUNCHING DIAGRAM



	Span (1-2)			Span (2-3)		
	"A"	"B"	"C"	"A"	"B"	"C"
Ext. girder	1"	1 5/8"	7/8"	1/4"	1/4"	1/8"
Int. girder	7/8"			1/4"		

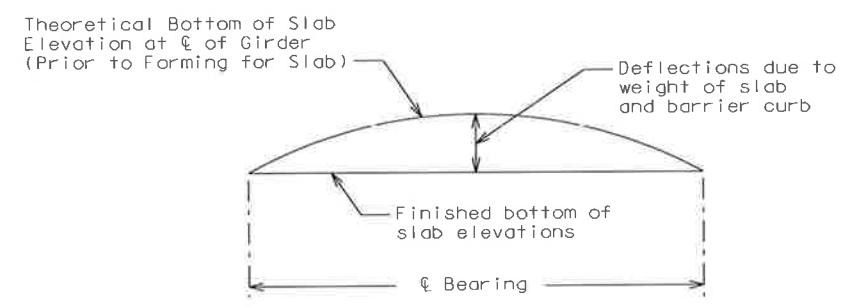
GIRDER CAMBER DIAGRAM



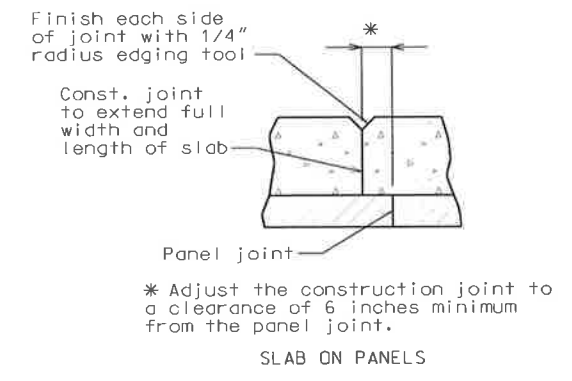
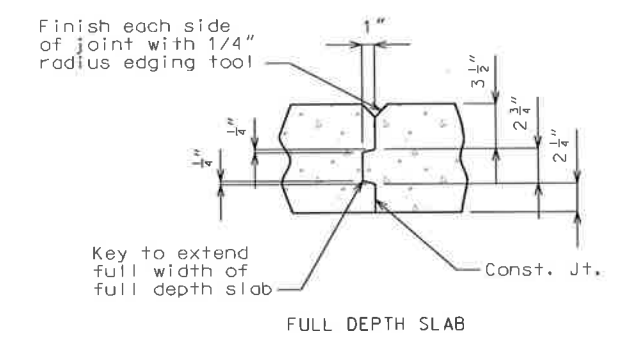
SLAB POURING SEQUENCE

Theoretical Bottom of Slab Elevations at ℄ of Girder (Prior to Forming for Slab) **										
	Span (1-2) (54'-3 3/4" ℄ brg - ℄ brg.)					Span (2-3) (29'-3 3/4" ℄ brg - ℄ brg.)				
	℄ brg.	.25	.50	.75	℄ brg.	℄ brg.	.25	.50	.75	℄ brg.
Girder No. 1	491.83	491.79	491.73	491.65	491.55	491.55	491.51	491.47	491.44	491.40
Girder No. 2	492.03	492.01	491.95	491.88	491.76	491.75	491.72	491.69	491.64	491.61
Girder No. 3	492.23	492.22	492.16	492.08	491.96	491.96	491.92	491.89	491.85	491.81
Girder No. 4	492.43	492.41	492.35	492.28	492.16	492.15	492.11	492.09	492.04	492.00
Girder No. 5	492.21	492.19	492.13	492.06	491.94	491.93	491.89	491.87	491.82	491.78
Girder No. 6	491.95	491.91	491.85	491.78	491.68	491.67	491.64	491.60	491.56	491.53

** Elevations are based on a constant slab thickness of 8 1/2" and include allowance for theoretical dead load deflections due to weight of slab (including precast panel) and barrier curb.



TYPICAL SLAB ELEVATIONS DIAGRAM



SLAB CONSTRUCTION JOINT DETAILS

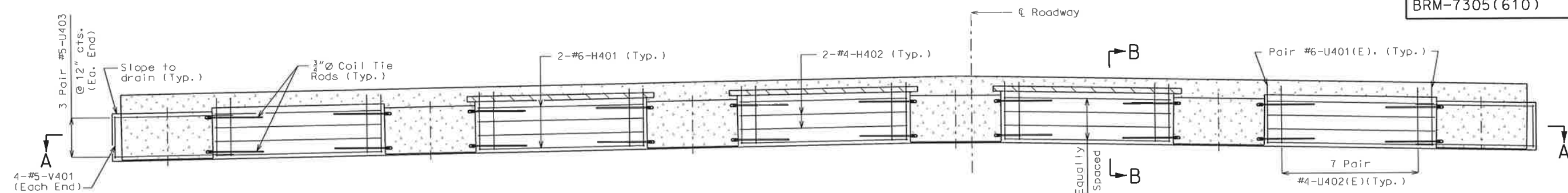
	Sequence of Pours			Min. rate of pour cu. yds./hr.
	Direction			With retarder
Basic sequence	1	2	3	25
Alternate pours to the basic skip sequence are subject to the approval of the engineer in accordance with Sec 703.				
Alternate "A" pours	1	3 + 2		25
	End to 3	1 to end		
Alternate "B" pours	1 + 3 + 2			25
	End to end			

Notes:

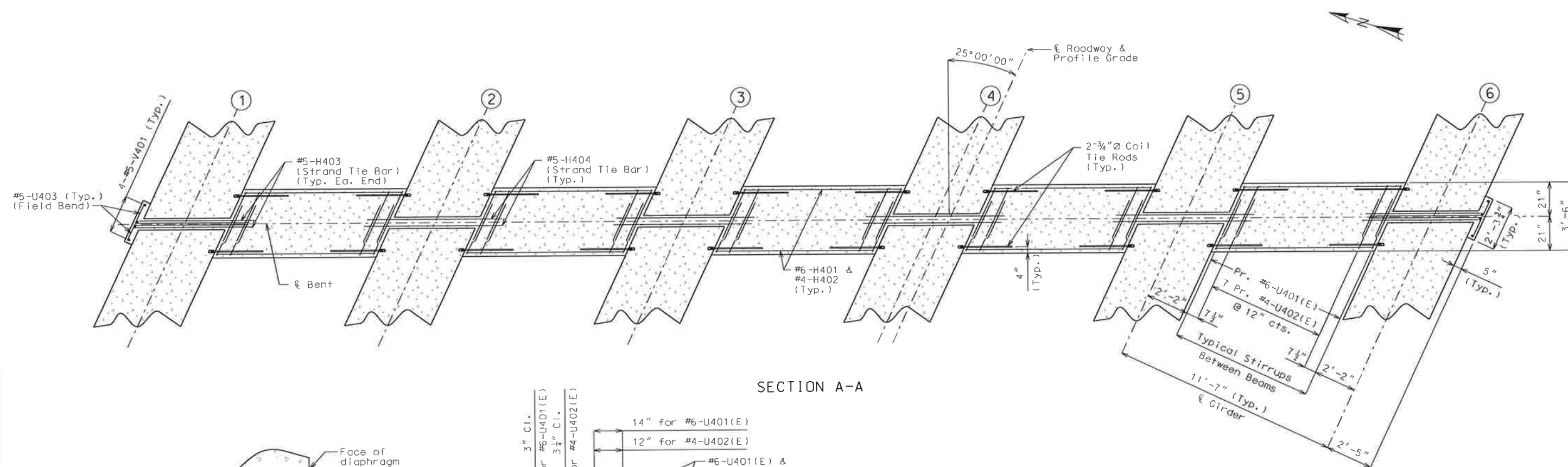
The contractor shall furnish an approved retarder to retard the set of the concrete to 2.5 hours and shall pour and satisfactorily finish the slab pours at the rate given.

The concrete diaphragm at the intermediate bents and integral end bents shall be poured a minimum of 30 minutes and a maximum of 2 hours before the slab is poured.

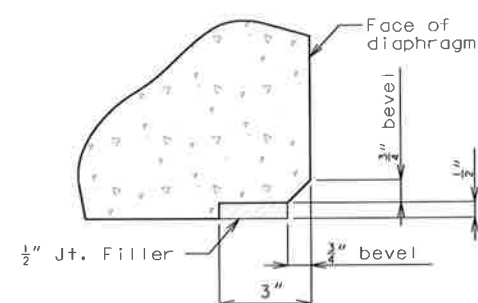
The longitudinal construction joint may be omitted with the approval of the engineer. When the longitudinal construction joint is omitted, the minimum rate of pour for alternate pouring sequences shall be increased to 36 Cu. Yds./Hr.



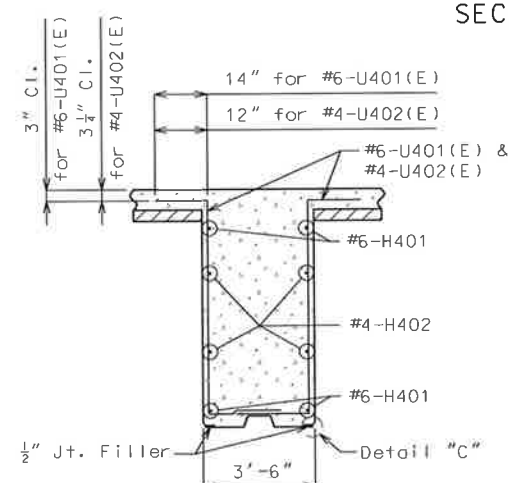
SECTION NEAR INTERMEDIATE BENT NO. 2



SECTION A-A



DETAIL "C"



SECTION B-B

Notes:

Diaphragm at Intermediate Bent shall be built vertical.

All U bars in diaphragm are to be placed parallel to C Roadway.

For location of #5-H403 & #5-H404 (Strand Tie Bars) and Coil Tie Rods, see Sheets No. 38 & 39.



INT. BENT DIAPH.
DETAILS


**HORNER &
SHIFRIN, INC.**

Notes:

For details of precast panels, see Sheet No. 41.

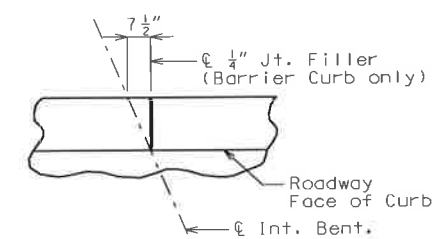
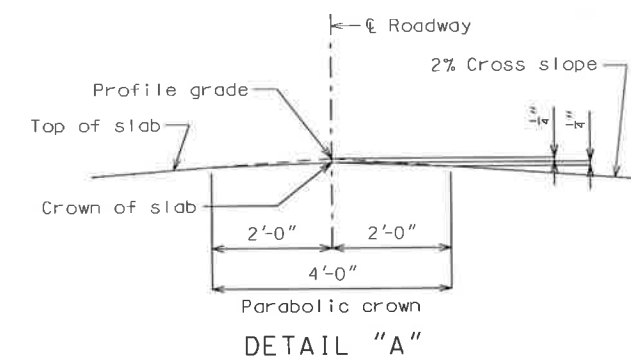
For Theoretical Bottom of Slab Elevations, Slab Haunching Diagram, and Girder Camber, see Sheet No. 42.

For details of safety barrier curb not shown, see Sheets No. 46 thru 50.

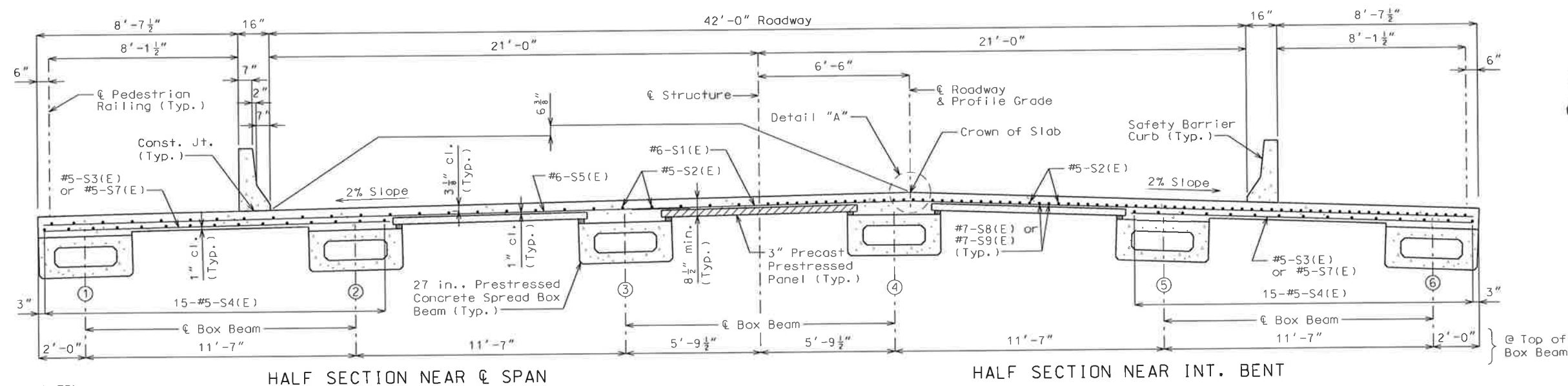
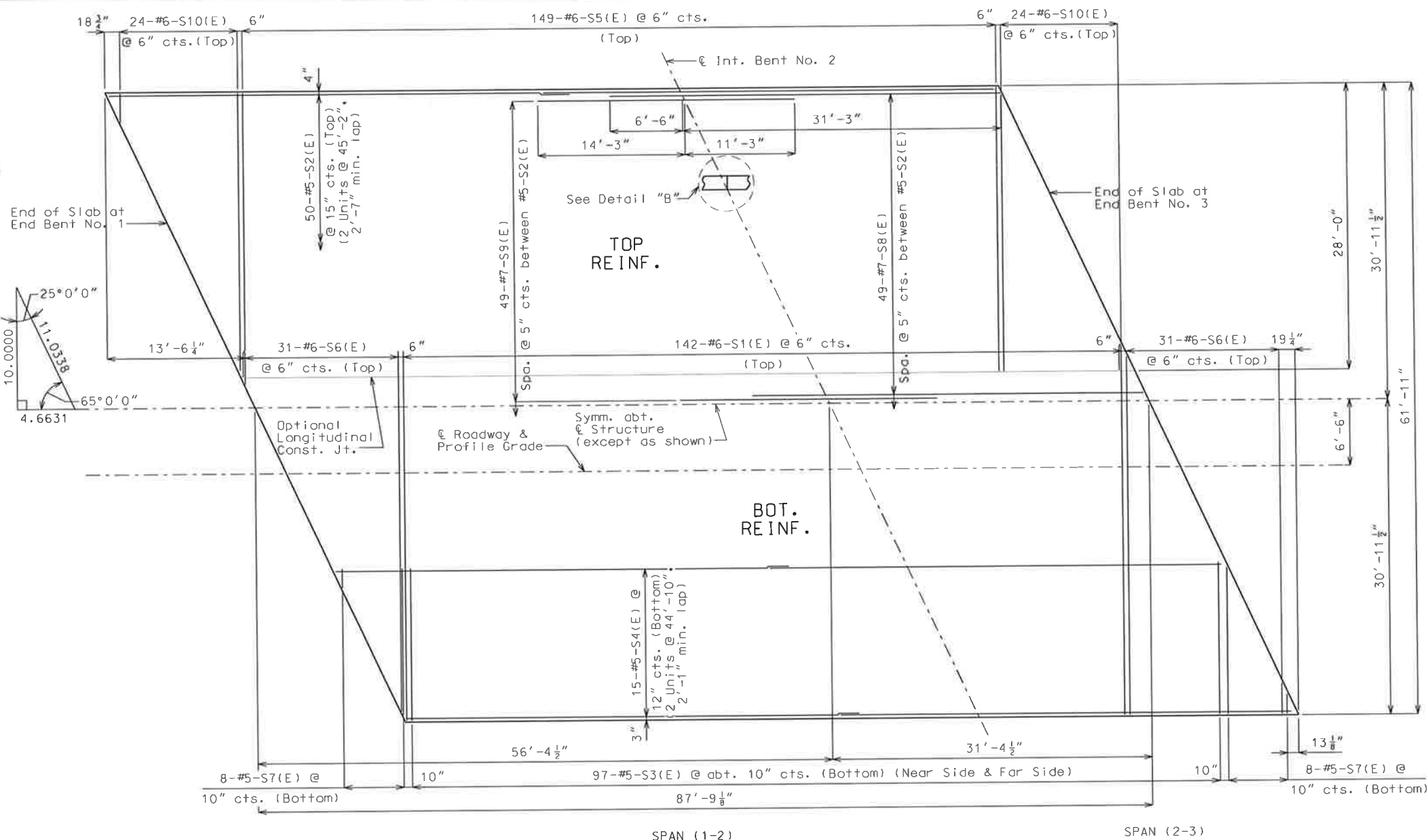
Longitudinal dimensions are horizontal.

For Slab Pouring Sequence and Slab Construction Joint Details, see Sheet No. 42.

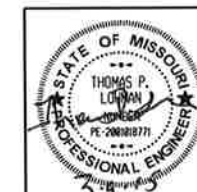
Minimum splice for #6 Top Transverse bars = 2'-6".



PLAN OF SLAB SHOWING REINFORCEMENT



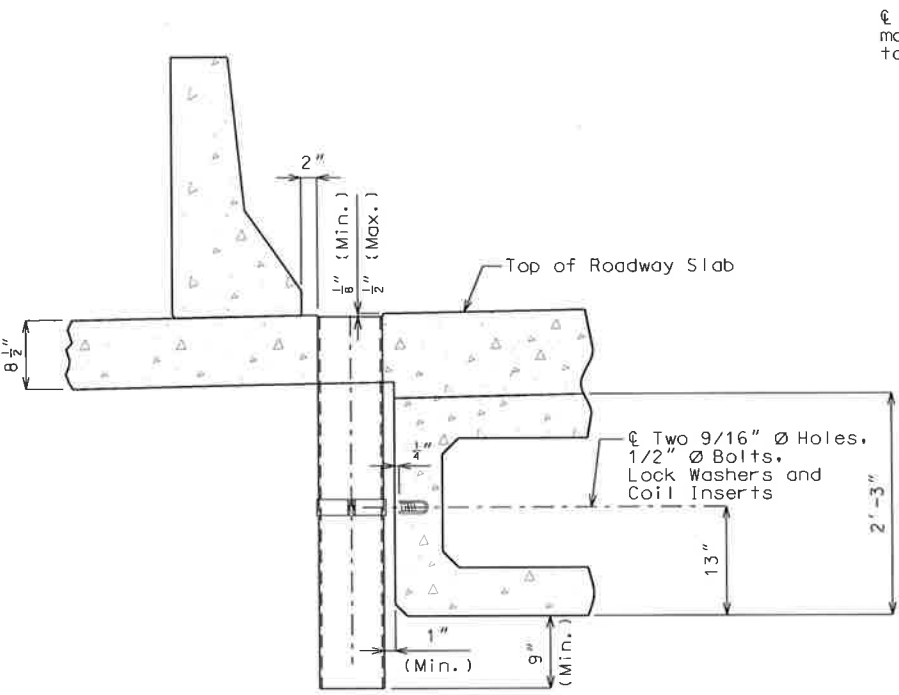
Note: This drawing is not to scale. Follow dimensions.

Designed: TPL
Detailed: CAB
Checked: CBW

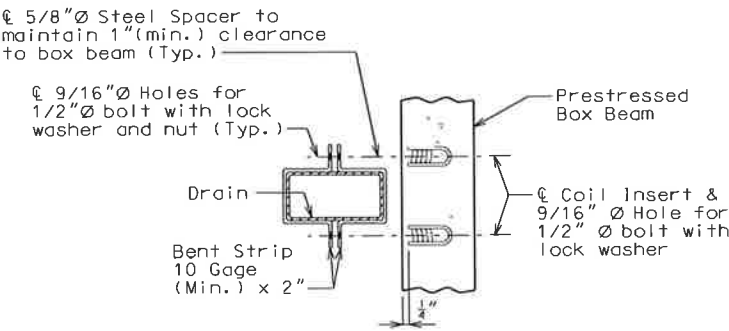
SLAB DETAILS

HORNER & SHIFRIN, INC.

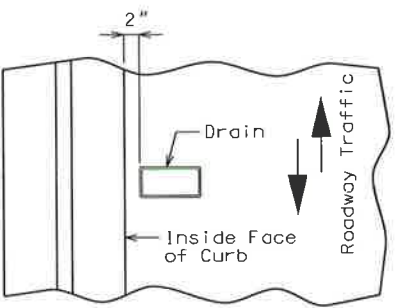
WILLOTT ROAD BRIDGE	SHEET 45
CITY OF ST. PETERS	OF 70
FEDERAL PROJECT NO. BRM-7305(610)	



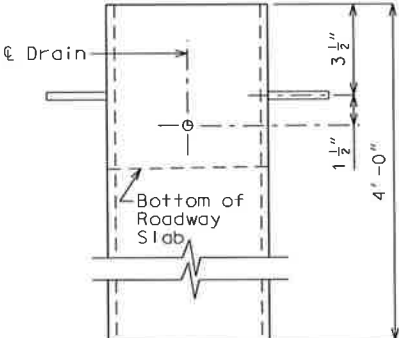
PART SECTION NEAR DRAIN



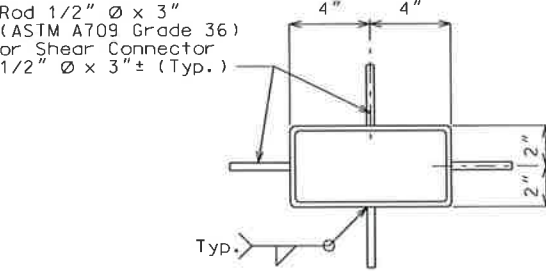
PART SECTION SHOWING
BRACKET ASSEMBLY



PART PLAN OF SLAB AT DRAIN

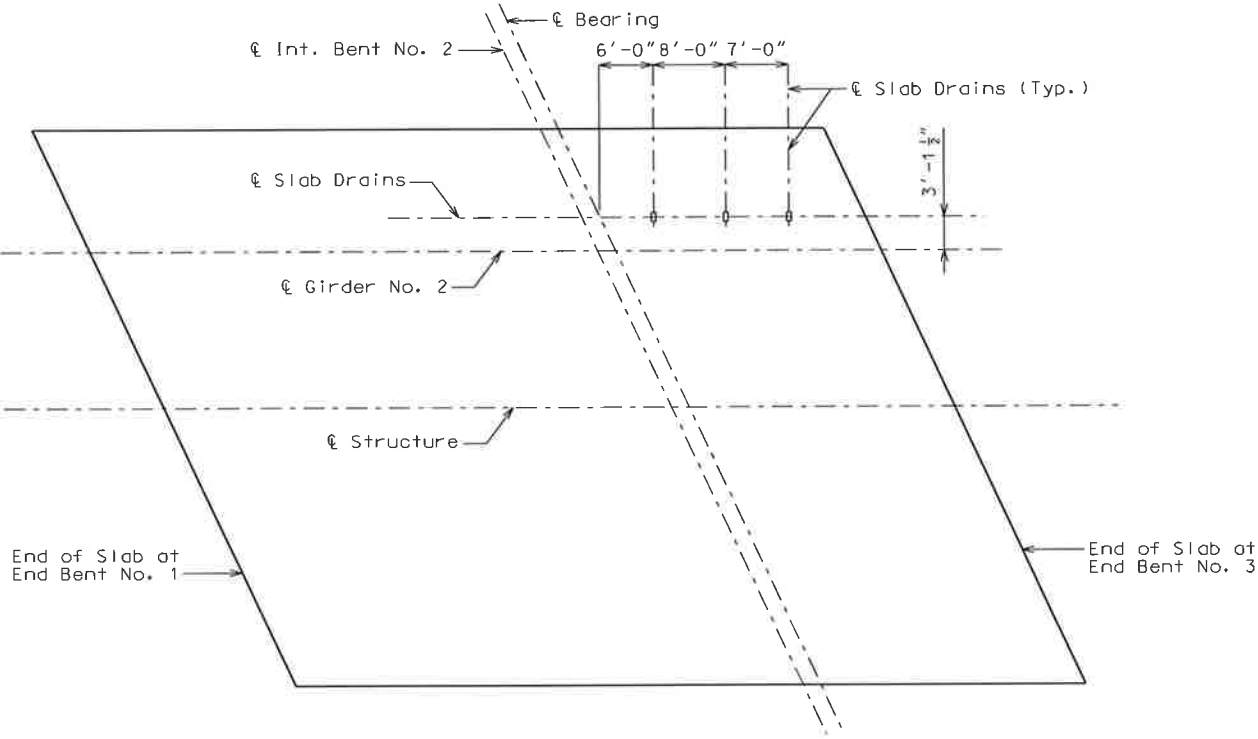


ELEVATION OF DRAIN



PLAN OF DRAIN

- Notes:
- Slab drains may be fabricated of either 1/4" welded sheets of ASTM A709 Grade 36 steel or from 1/4" structural steel tubing ASTM A500 or A501.
 - Slab drain bracket assembly shall be ASTM A709 Grade 36 steel.
 - Outside dimensions of drains are 8" x 4".
 - Locate drains in slab by dimensions shown in Part Section Near Drain.
 - Reinforcing steel shall be shifted to clear drains.
 - The drains, coil inserts and bracket assembly shall be galvanized in accordance with ASTM A123.
 - All bolts, hardened washers, lock washers and nuts shall be galvanized in accordance with ASTM A153.
 - The coil insert required for the bracket assembly attachment shall be located on the prestressed box beam shop drawings.
 - Shop drawings will not be required for the slab drains and the bracket assembly.
 - Coil inserts shall have a concrete pull-out strength (ultimate load) of at least 2,500 pounds in 5,000 psi concrete.
 - The bolts required to attach the slab drain bracket assembly to the prestressed concrete box beam shall be supplied by the prestressed box beam fabricator.



PLAN OF SLAB SHOWING SLAB DRAIN LOCATIONS
Note: Longitudinal dimensions are horizontal.

Designed: TPL
Detailed: CAB
Checked: TPL

Note: This drawing is not to scale. Follow dimensions.

SLAB DRAIN
DETAILS

HORNER & SHIFRIN, INC.

WILLOTT ROAD BRIDGE

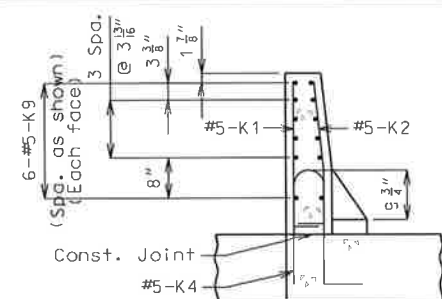
SHEET

47

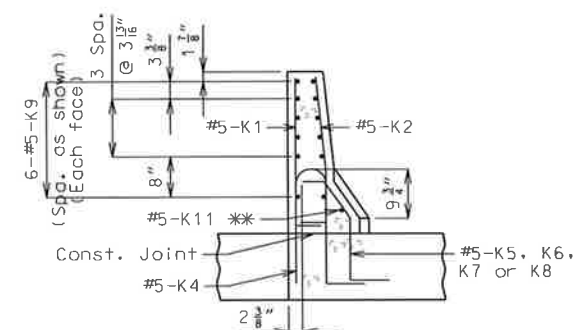
CITY OF ST. PETERS

OF

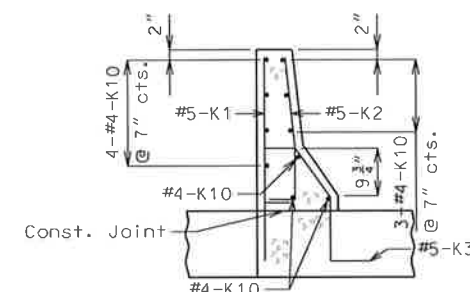
70

FEDERAL PROJECT NO.
BRM-7305(610)

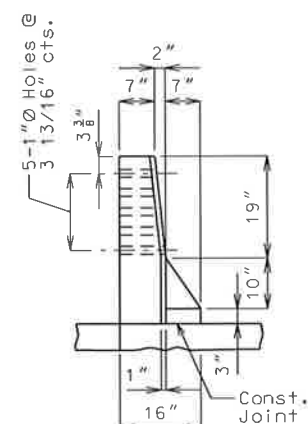
SECTION A-A



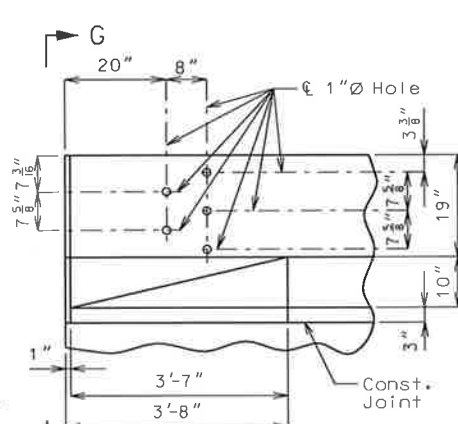
SECTION B-B



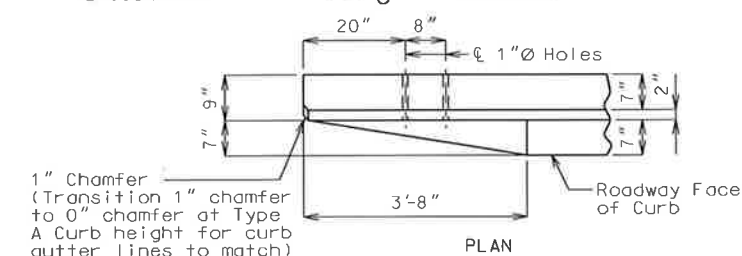
SECTION C-C



SECTION G-G

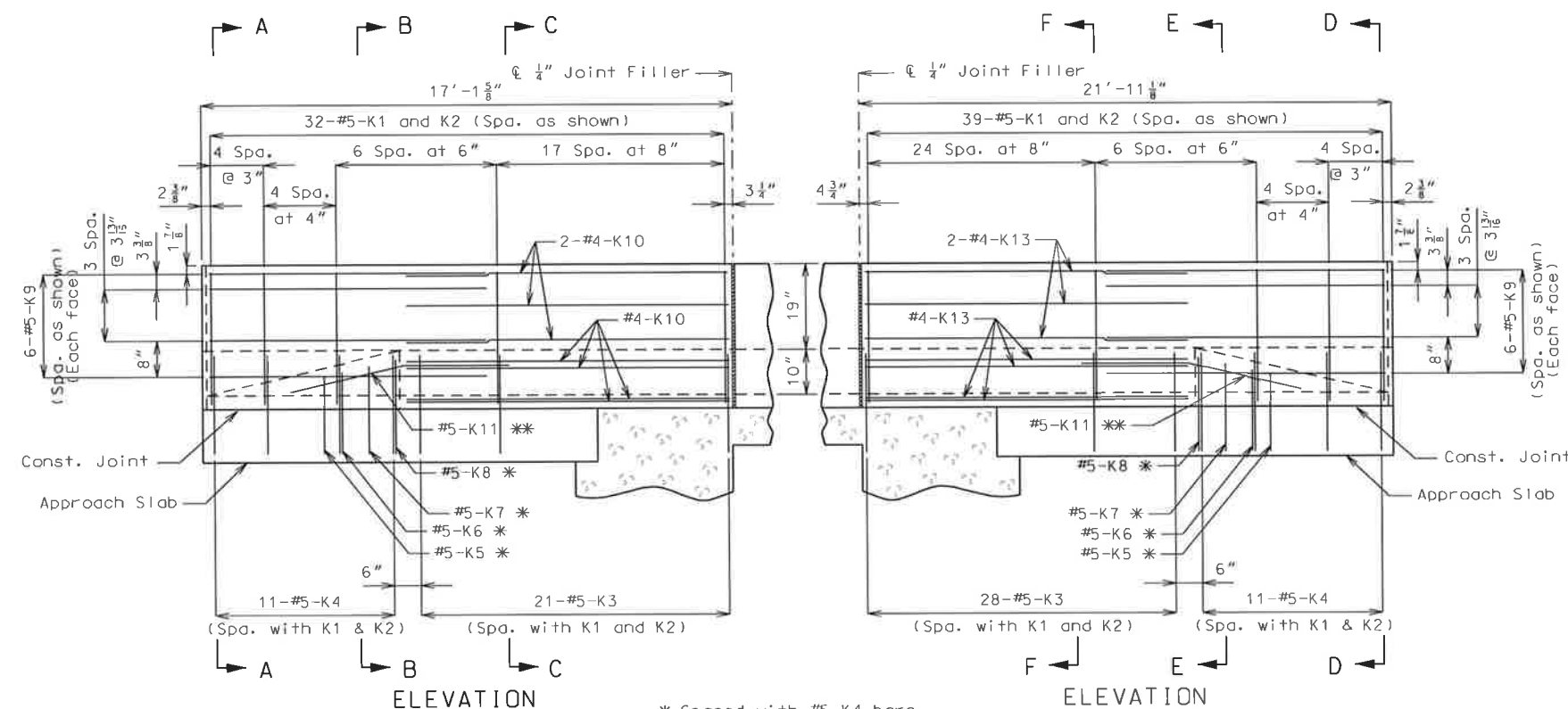


SECTION ELEVATION



PLAN

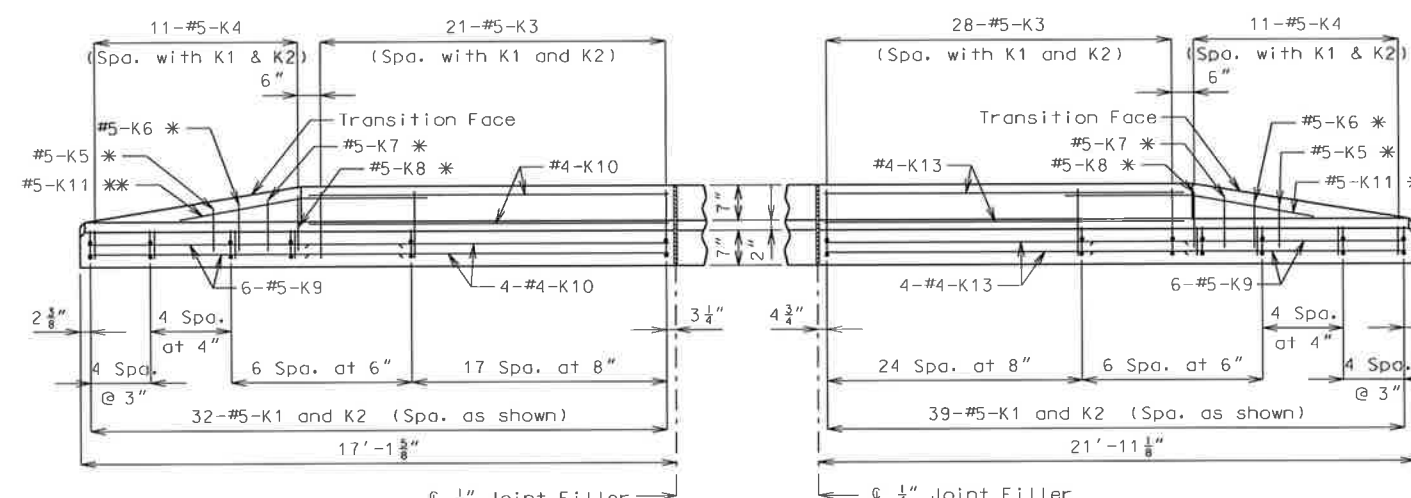
DETAILS OF GUARD RAIL ATTACHMENT



ELEVATION

* Spaced with #5-K4 bars.

** Fit bar to follow transition face of curb.

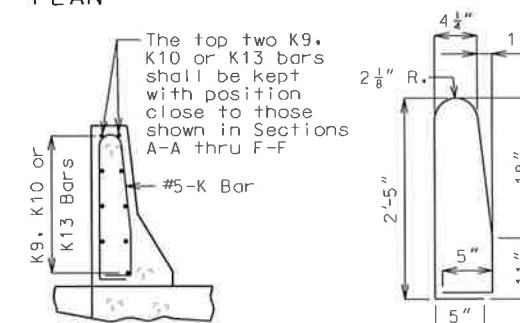


PLAN

PLAN

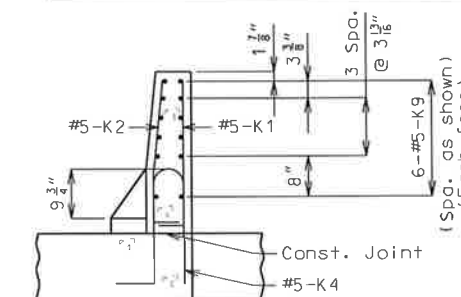
Note: Use a minimum lap of 2'-0" between K9 and K10 or K13 bars.

Concrete traffic barrier delineators shall be placed on top of the safety barrier curb as shown on Missouri Standard Plans 617.10 and in accordance with Sec 617. Delineators on bridges with two-lane, two way traffic shall have retroreflective sheeting on both sides. Concrete traffic barrier delineators will be considered completely covered by the contract unit price for Safety Barrier Curb.

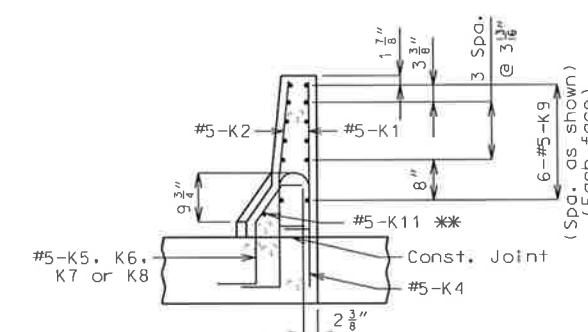
K1-K2 BAR PERMISSIBLE
ALTERNATE SHAPE

(K3 or K4 thru K8 bars not shown for clarity)

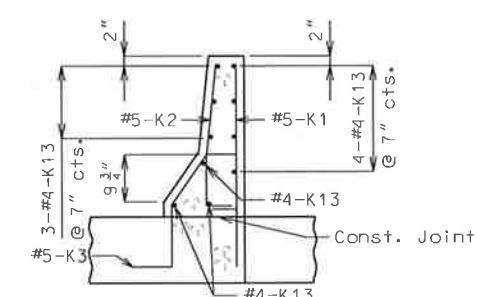
The K1 and K2 bar combination may be furnished as one bar as shown, at the contractor's option.



SECTION D-D



SECTION E-E



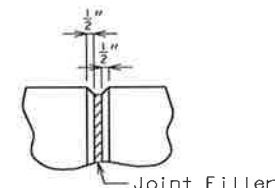
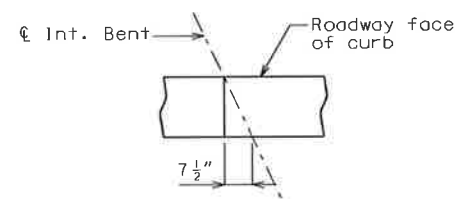
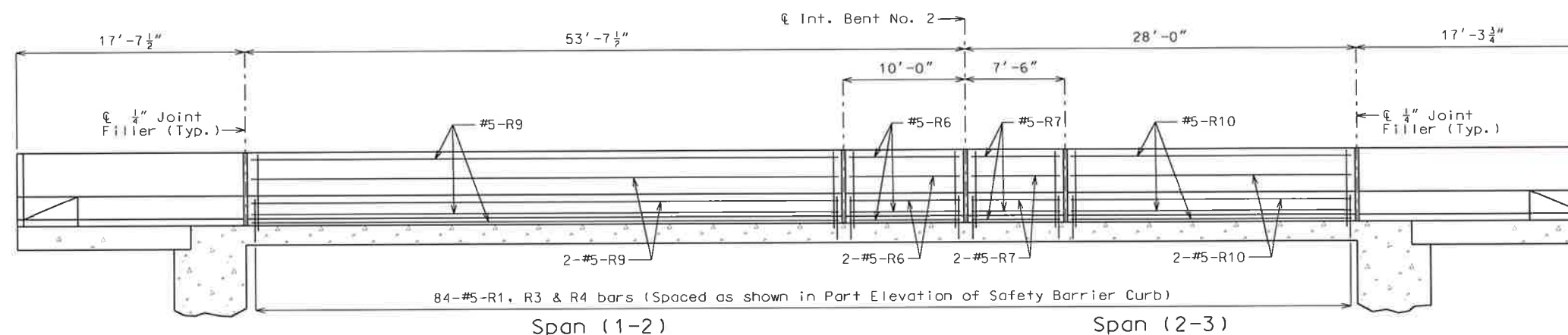
SECTION F-F

RIGHT SBC
AT END BENTSHORNER &
SHIFRIN, INC.Designed: TPL
Detailed: CAB
Checked: CBW

Note: This drawing is not to scale. Follow dimensions.

147 SBC Right at End Bents.dgn

9/13/16 AM 12/9/2014



General Notes

Top of safety barrier curb shall be built parallel to grade with barrier curb joints (except at end bents) normal to grade.

All exposed edges of safety barrier curb shall have either a 1/2-inch radius or a 3/8-inch bevel, unless otherwise noted.

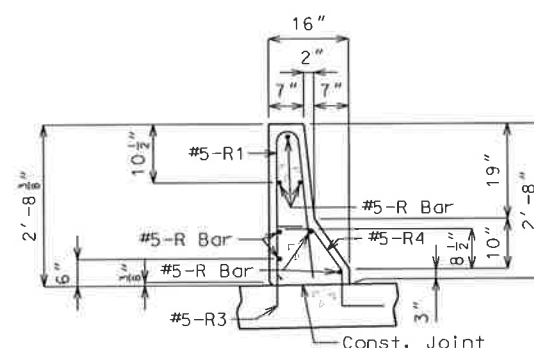
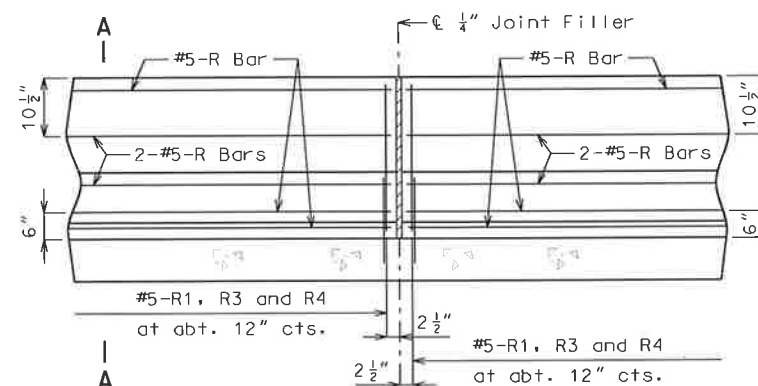
Payment for all concrete and reinforcement, complete in place, will be considered completely covered by the contract unit price for Safety Barrier Curb per linear foot.

Concrete in the safety barrier curb shall be Class B-1.

Measurement of safety barrier curb is to the nearest linear foot for each structure, measured along the outside top of barrier from end of safety barrier curb to end of safety barrier curb.

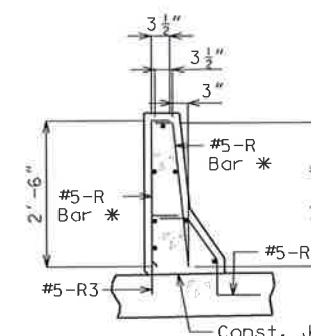
Concrete traffic barrier delineators shall be placed on top of the safety barrier curb as shown on Missouri Standard Plans 617.10 and in accordance with Sec 617. Delineators on bridges with two-lane, two-way traffic shall have retroreflective sheeting on both sides. Concrete traffic barrier delineators will be considered completely covered by the contract unit price for Safety Barrier Curb.

For Safety Barrier Curb Railing details, see Sheet 51.

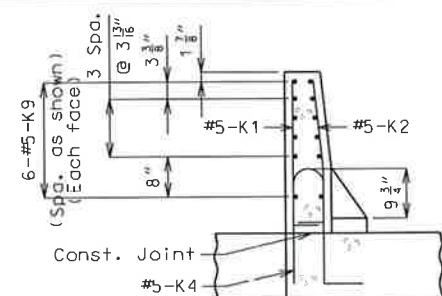


Use a minimum lap of 2'-11" for #5 horizontal safety barrier curb bars.

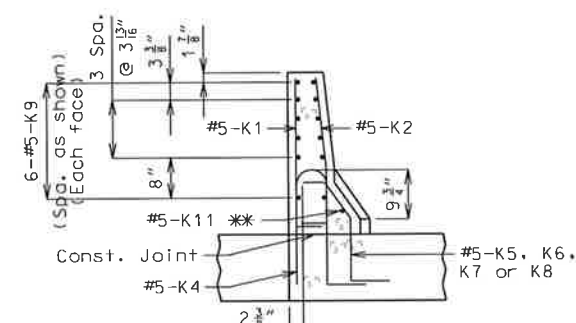
The cross-sectional area above the slab = 2.27 sq. ft.



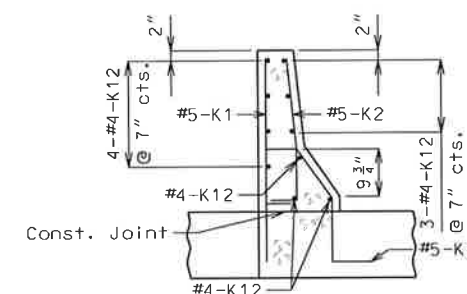
* The R1 bar may be separated into two bars as shown, at the contractor's option, only when slip forming is not used. (All dimensions are out to out.)



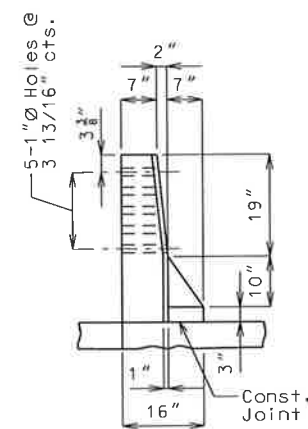
SECTION A-A



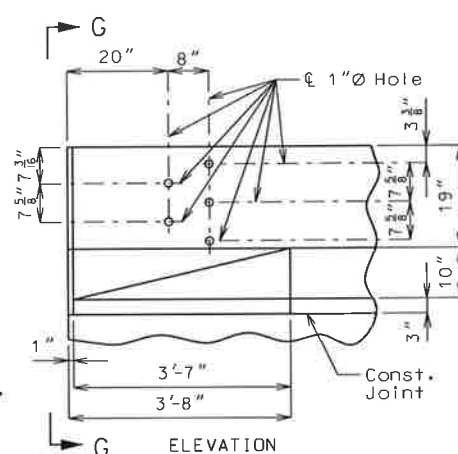
SECTION B-B



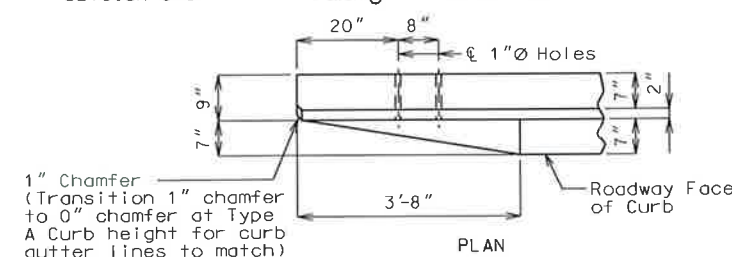
SECTION C-C



SECTION G-G

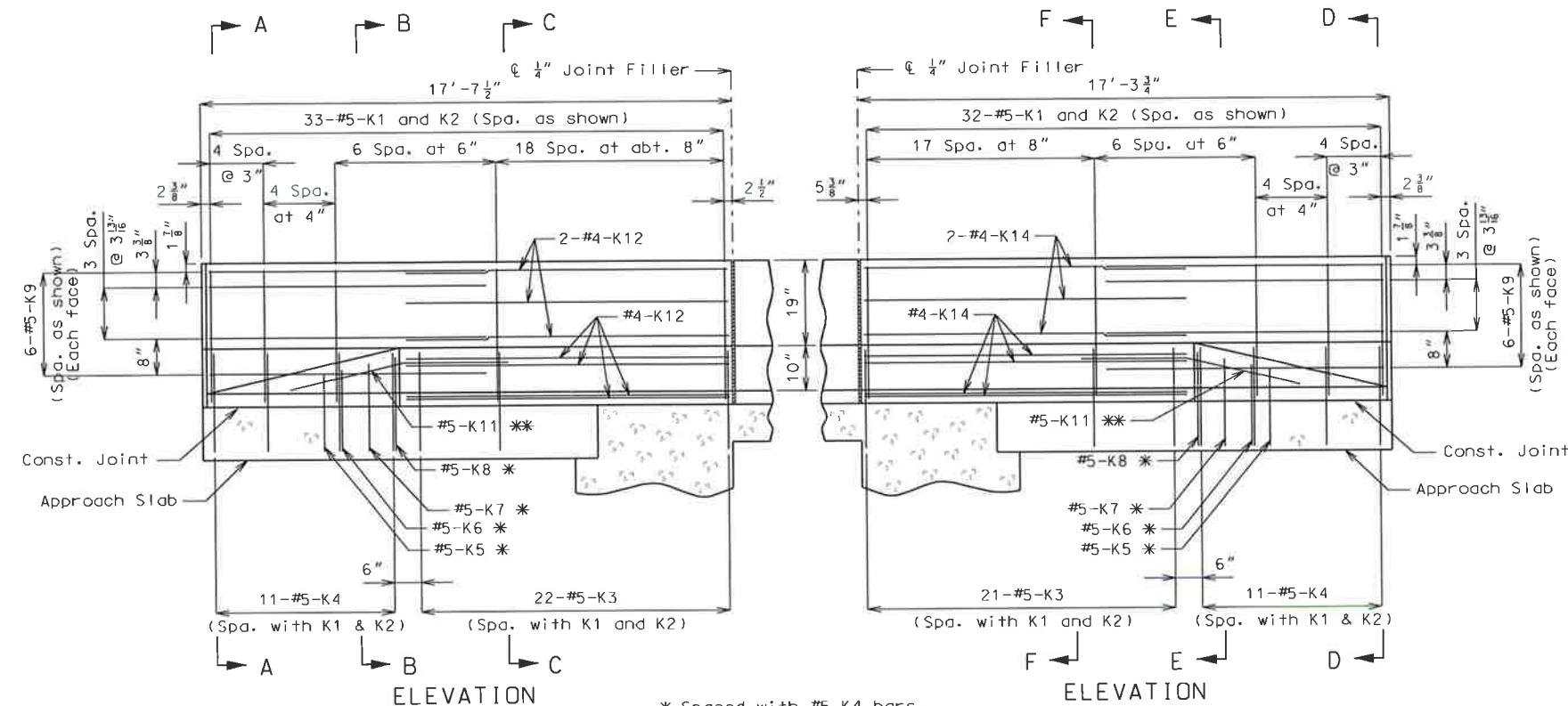


SECTION ELEVATION



SECTION PLAN

DETAILS OF GUARD RAIL ATTACHMENT

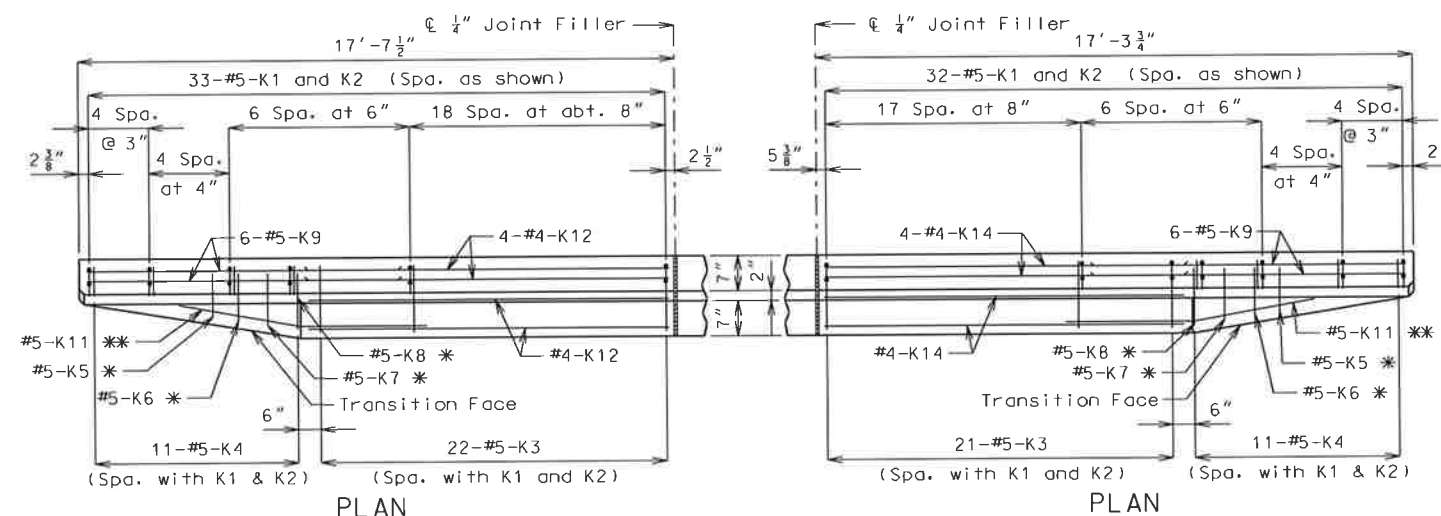


ELEVATION

ELEVATION

* Spaced with #5-K4 bars.

** Fit bar to follow transition face of curb.

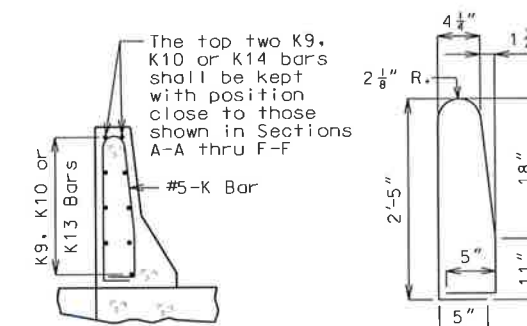


PLAN

PLAN

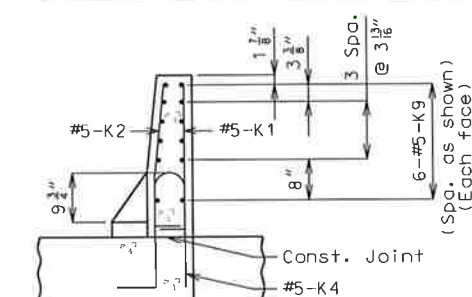
Note: Use a minimum lap of 2'-0" between K9 and K12 or K14 bars.

Concrete traffic barrier delineators shall be placed on top of the safety barrier curb as shown on Missouri Standard Plans 617.10 and in accordance with Sec 617. Delineators on bridges with two-lane, two way traffic shall have retroreflective sheeting on both sides. Concrete traffic barrier delineators will be considered completely covered by the contract unit price for Safety Barrier Curb.

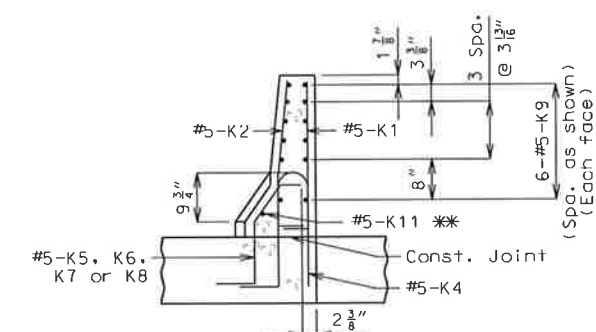
K1-K2 BAR PERMISSIBLE
ALTERNATE SHAPE

(K3 or K4 thru K8 bars not shown for clarity)

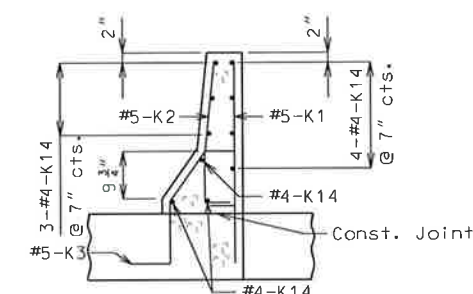
The K1 and K2 bar combination may be furnished as one bar as shown, at the contractor's option.



SECTION D-D



SECTION E-E

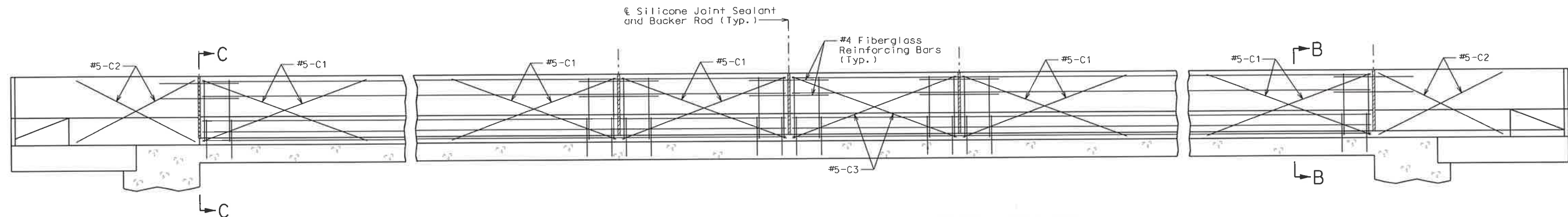


SECTION F-F

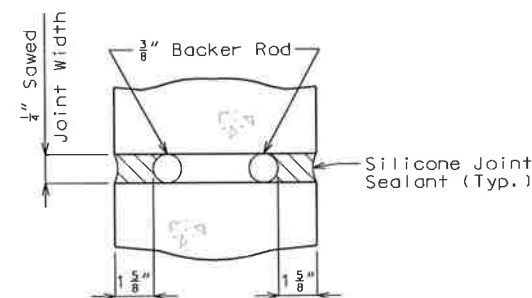
LEFT SBC
AT END BENTSHORNER &
SHIFRIN, INC.

Designed: TPL
Detailed: CAB
Checked: CBW

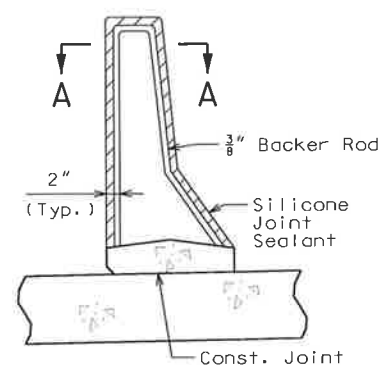
Note: This drawing is not to scale. Follow dimensions.



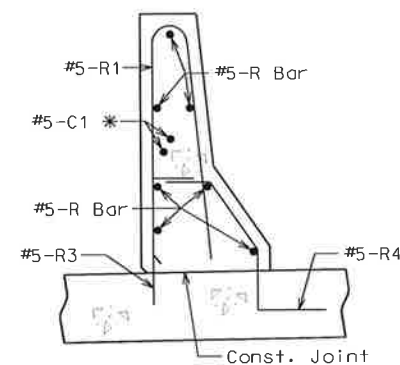
TYPICAL ELEVATION OF SAFETY BARRIER CURB AT SUPPORT LOCATIONS
(left safety barrier curb shown, right safety barrier curb similar)



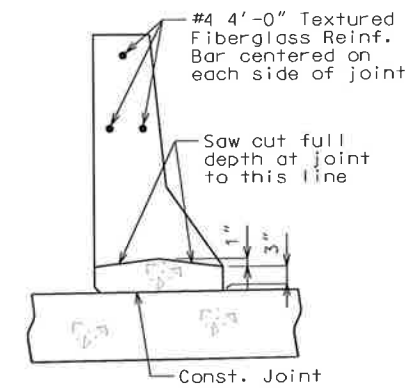
SECTION A-A



SECTION THRU JOINT



SECTION B-B
* Each side of joint location.



SECTION C-C

General Notes:

Top of safety barrier curb shall be built parallel to grade with barrier curb joints (except at end bents) normal to grade.

All exposed edges of safety barrier curb shall have either a 1/2-inch radius or a 3/8-inch bevel, unless otherwise noted.

Payment for all concrete and reinforcement, complete in place, will be considered completely covered by the contract unit price for Safety Barrier Curb per linear foot.

Concrete in the safety barrier curb shall be Class B-1.

Measurement of safety barrier curb is to the nearest linear foot for each structure, measured along the outside edge of barrier from end of safety barrier curb to end of safety barrier curb.

Concrete traffic barrier delineators shall be placed on top of the safety barrier curb as shown on Missouri Standard Plans 617.10 and in accordance with Sec 617. Delineators on bridges with two-lane, two-way traffic shall have retroreflective sheeting on both sides. Concrete traffic barrier delineators will be considered completely covered by the contract unit price for Safety Barrier Curb.

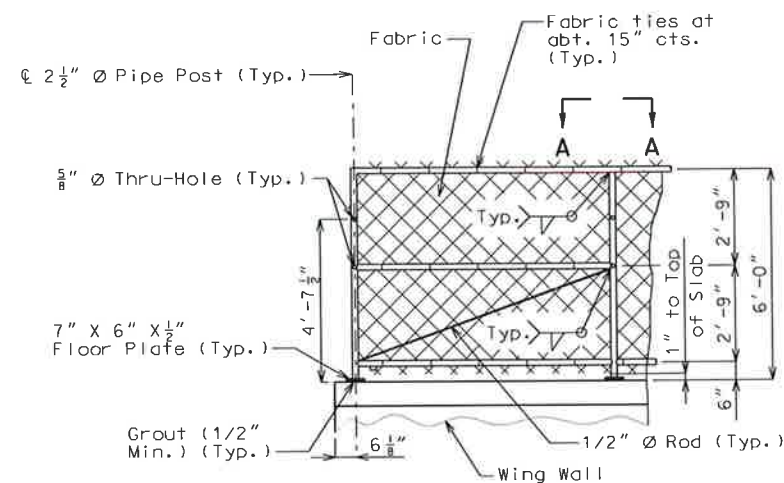
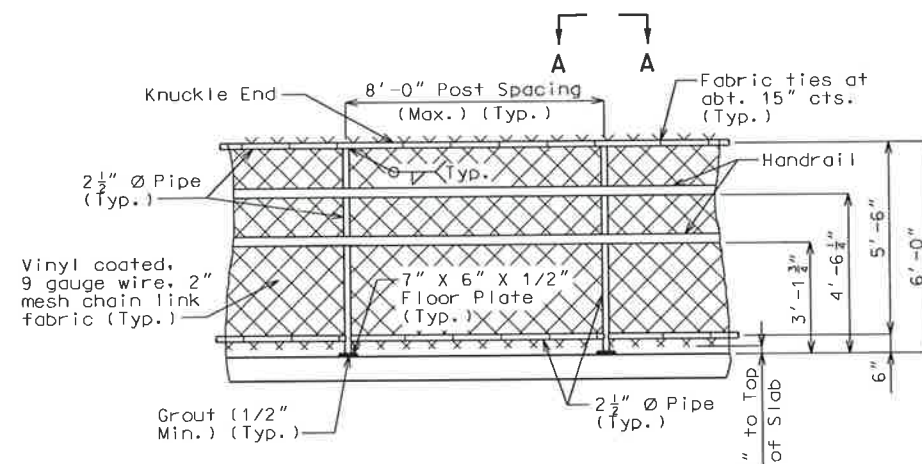
Joint sealant and backer rods shall be used on all slip-form barrier curbs instead of joint filler and shall be in accordance with Sec 717 for silicone joint sealant for saw cut and formed joints.

Plastic waterstop shall not be used with slip-form option.

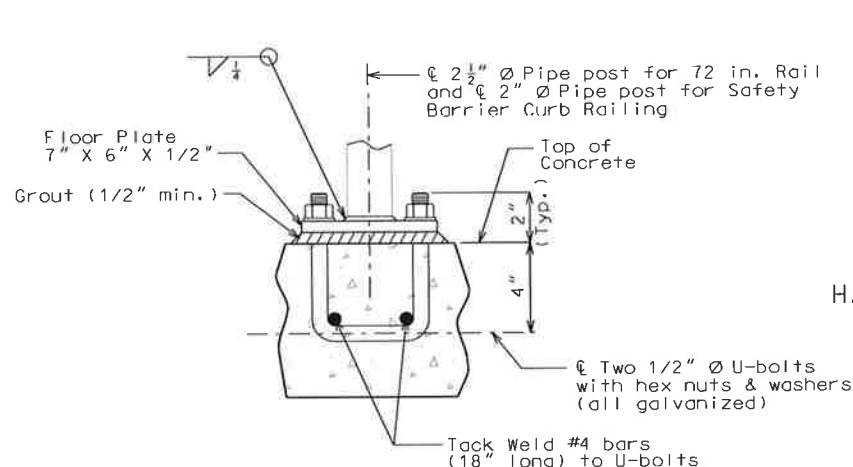
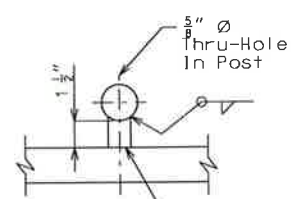
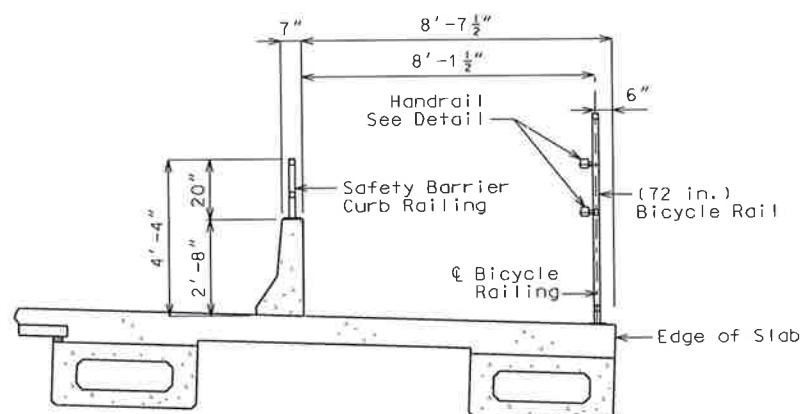
For slip-form option, all sides of the safety barrier curb shall have a vertically broomed finish and the curb top shall have a transversely broomed finish.

C bars (slip-form option only) shall be used in addition to cast-in-place conventional forming reinforcement for bridge safety barrier curb.

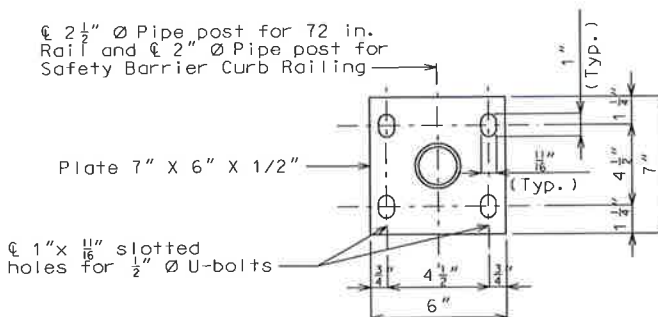
Cost of silicone joint sealant and backer rod, complete in place, will be considered completely covered by the contract unit price for Safety Barrier Curb.

DETAIL OF (72 IN.) BICYCLE RAIL
(Handrail not shown)

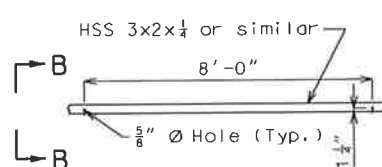
(72 IN.) BICYCLE RAIL ELEVATION

POST CONNECTION
(TYPICAL)SECTION A-A
HANDRAIL ATTACHMENT

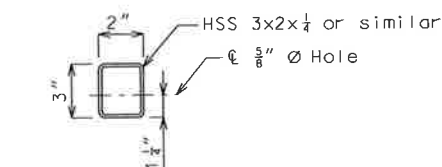
SECTION THRU SLAB



PLAN OF FLOOR PLATE

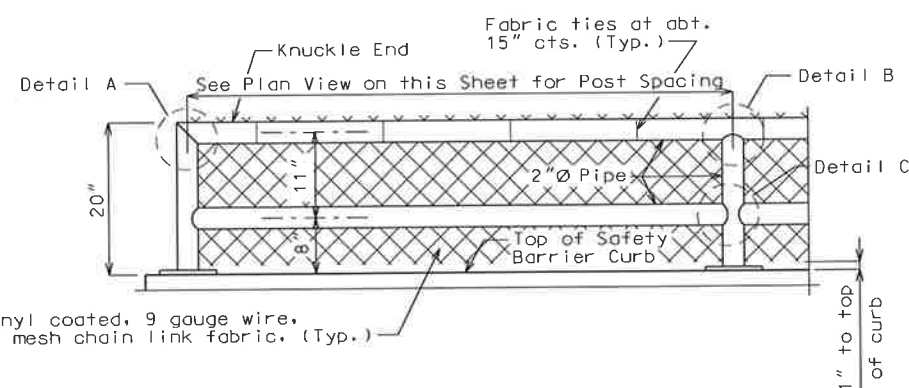


ELEVATION OF HANDRAIL

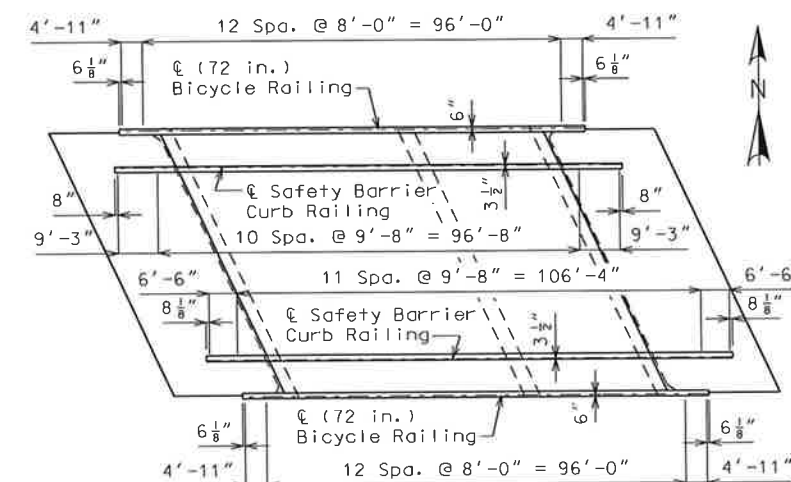


SECTION B-B

Note: Connect handrail to posts with
1/2 inch diameter ASTM A307 galvanized carriage
bolt with nut and washer.

SAFETY BARRIER CURB RAILING ELEVATION
(Inside Face of Two Element Rail)

Note: This drawing is not to scale. Follow dimensions.



PLAN SHOWING POST SPACING OF RAILINGS

Notes:

All fabricated structural steel shall be ASTM A36.

All steel pipe shall be ASTM A500, Grade B.

(72 in.) Bicycle Rail and Safety Barrier Curb Rail shall be in accordance with Sec 1043 except all fabric shall have the top edges knuckled.

All rail post shall be vertical. Grout of 1/2 inch minimum thickness shall be placed under floor plates to provide for vertical alignment of rail posts.

Payment for furnishing, galvanizing and erecting the fence and frame complete with handrails, anchor bolts and washers will be considered completely covered by the contract unit price for (72 in.) Bicycle Rail and Safety Barrier Curb Railing per linear foot.

Dimensions are measured horizontally.

The maximum spacing allowed for the braced panels (Pull posts) is 100 ft.

Connect the lower end of the 1/2 inch diameter rod to the end of the braced panel to which the stretcher bar is attached.

(72 in.) Bicycle Railing will be measured to the nearest linear foot.

Safety Barrier Curb Railing will be measured to the nearest linear foot.

The (72 in.) Bicycle Railing and Safety Barrier Curb Railing, including chain link fabric, shall be black vinyl coated.

Provide splice in rails with 1/4 inch gap @ 30 feet 0 inch max spacing.

DETAIL A

DETAIL B

DETAIL C

Designed: TPL
Detailed: CAB
Checked: TPL

PEDESTRIAN
RAILING DETAILSHORNER &
SHIFRIN, INC.

NOTE:
SEE ROADWAY PLANS FOR
ADDITIONAL BRIDGE APPROACH
SLAB GEOMETRY. ADJUST
REINFORCEMENT ACCORDINGLY.

General Notes:

All concrete for the bridge approach slab and sleeper slab shall be in accordance with Sec 503 ($f'c = 4,000$ psi).

All joint filler shall be in accordance with Sec 1057 for preformed fiber expansion joint filler, except as noted.

The reinforcing steel in the bridge approach slab and the sleeper slab shall be epoxy coated Grade 60 with $F_y = 60,000$ psi.

Minimum clearance to reinforcing steel shall be 1 1/2", unless otherwise shown.

The reinforcing steel in the bridge approach slab and the sleeper slab shall be continuous. The transverse reinforcing steel may be made continuous by lap splicing the #4 & #6 bars 18" and 2'-2", respectively.

Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures, Stirrup and Tie Dimensions.

The contractor shall pour and satisfactorily finish the bridge or semi-deep slab before pouring the bridge approach slabs.

Longitudinal construction joints in approach slab and sleeper slab shall be aligned with longitudinal construction joints in bridge or semi-deep slab.

Payment for furnishing all materials, labor and excavation necessary to construct the approach slab, including the timber header, sleeper slab, underdrain, Type 5 aggregate base, joint filler and all other appurtenances and incidental work as shown on this sheet, complete in place, will be considered completely covered by the contract unit price for Bridge Approach Slab (Bridge) per square yard.

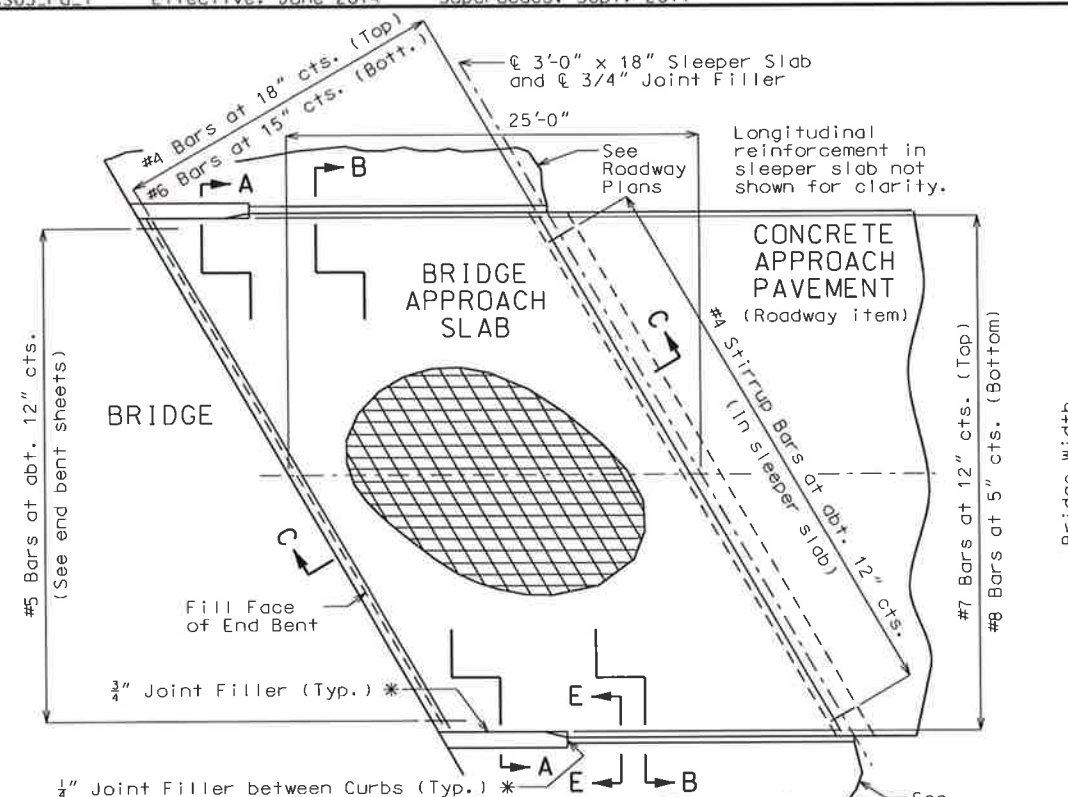
For Concrete Approach Pavement details, see roadway plans.

See Missouri Standard Plans Drawing 609.00 for details of Type A Curb.

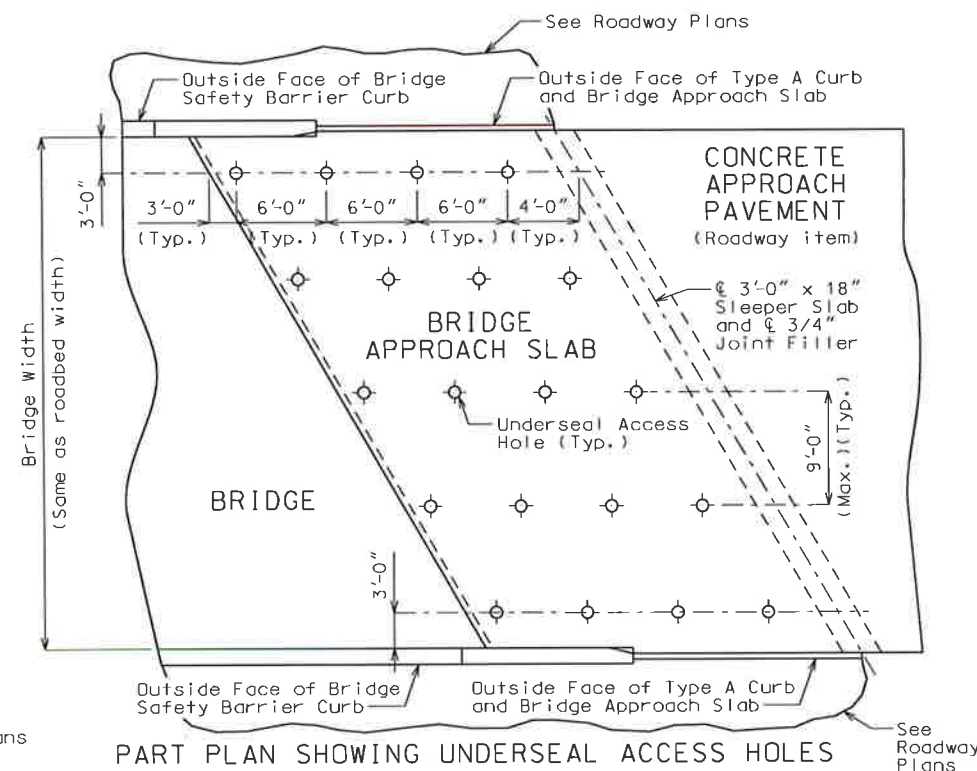
At the contractor's option, Grade 40 reinforcement may be substituted for the Grade 60 #5 dowel bars connecting the bridge approach slab to the bridge abutment. No additional payment will be made for this substitution.

When Grade 40 reinforcement is substituted for the Grade 60 #5 dowel bars connecting the bridge approach slab to the bridge abutment, the reinforcement may be bent up to 90 degrees with a 2" minimum radius near the abutment to allow compaction of the backfill material near the abutment. Damage to epoxy coating shall be repaired in accordance with Sec 710.

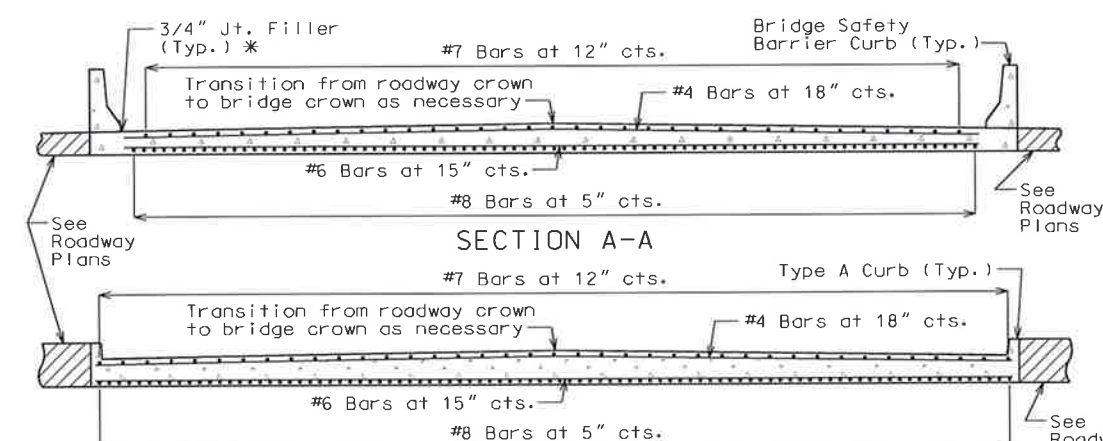
Drain pipe may be either 6" diameter corrugated metallic-coated pipe underdrain, 4" diameter corrugated polyvinyl chloride (PVC) drain pipe, or 4" diameter corrugated polyethylene (PE) drain pipe.



PART PLAN SHOWING REINFORCEMENT

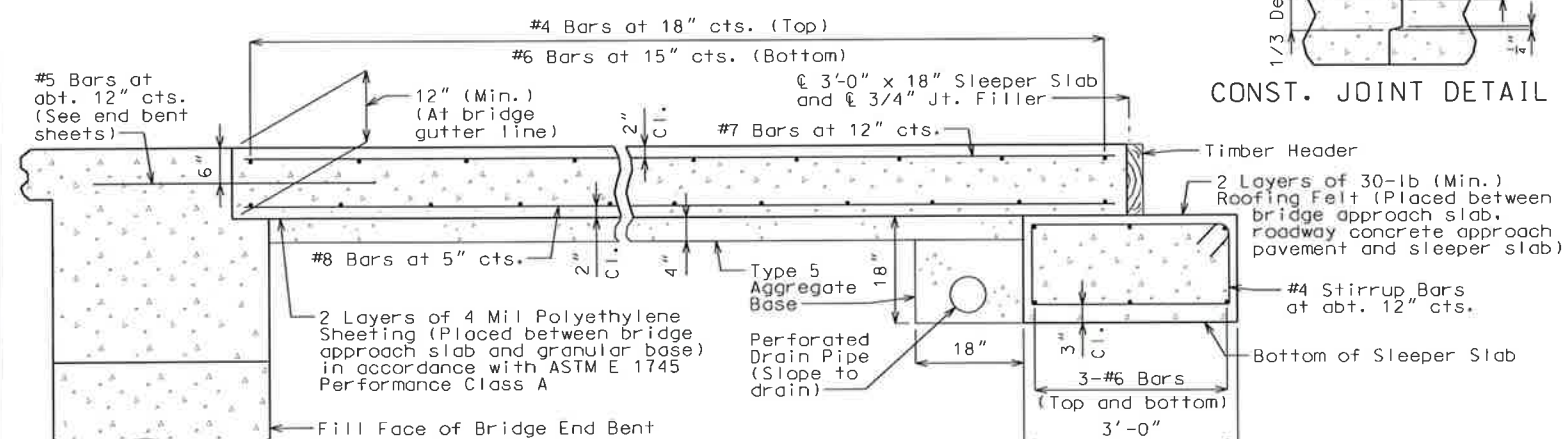


PART PLAN SHOWING UNDERSEAL ACCESS HOLES

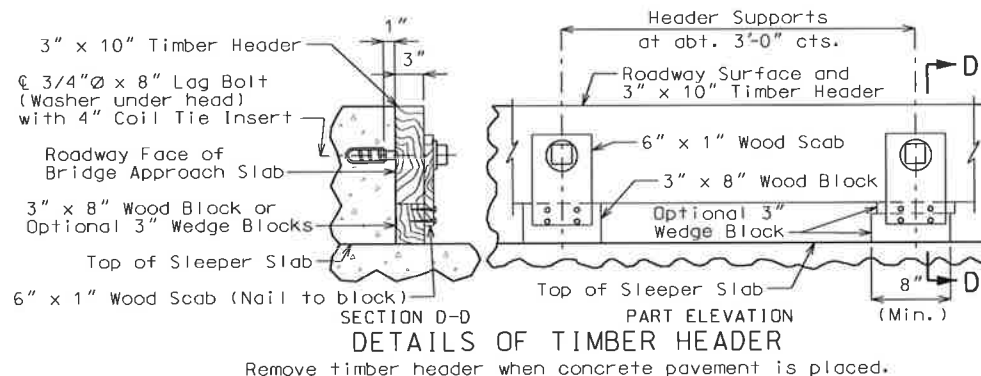


SECTION B-B

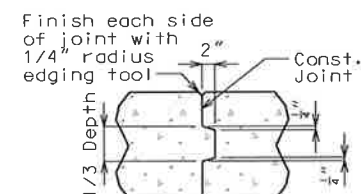
With the approval of the engineer, the contractor may crown the bottom of the approach slab to match the crown of the roadway surface.



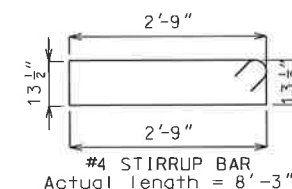
SECTION C-C



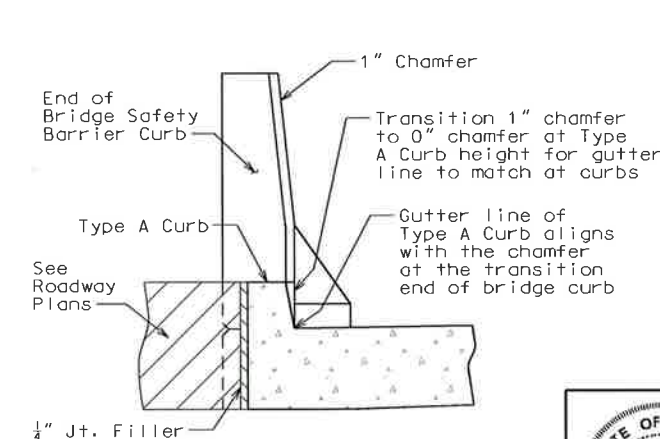
Remove timber header when concrete pavement is placed.



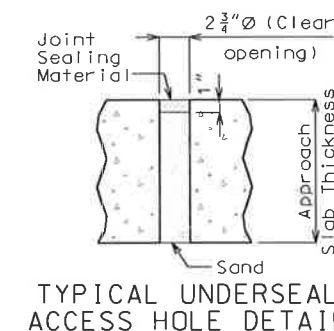
CONST. JOINT DETAIL

TYPICAL 135° STIRRUP HOOK
BENDING DIAGRAMS

Nominal lengths are based on out-to-out dimensions shown in bending diagram and are listed for fabricators use (nearest inch).

SECTION E-E
(Between curbs)

(See Roadway Plans for location of Type A curb)

TYPICAL UNDERSEAL
ACCESS HOLE DETAIL

Designed: TPL
Detailed: CAB
Checked: CBW

Note: This drawing is not to scale. Follow dimensions.



APPROACH SLAB
DETAILS

HORNER & SHIFRIN, INC.

BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO.	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS														NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
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BILL OF REINFORCING STEEL

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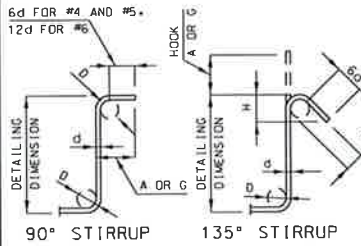
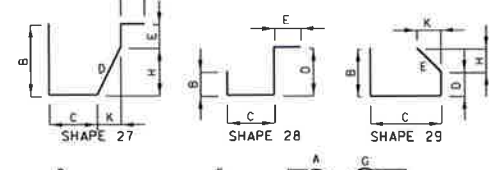
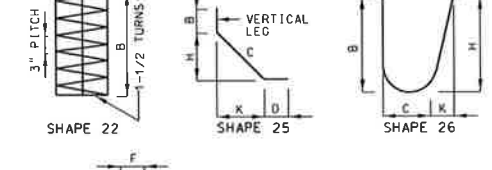
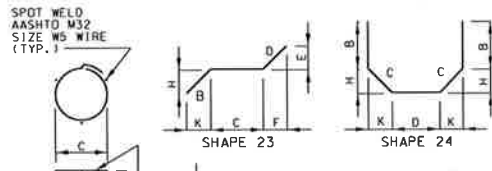
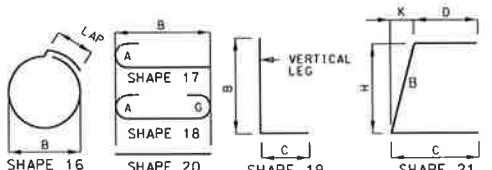
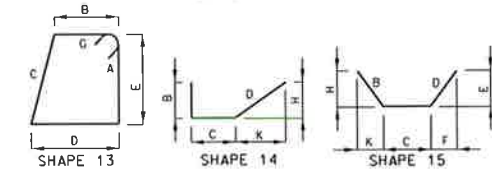
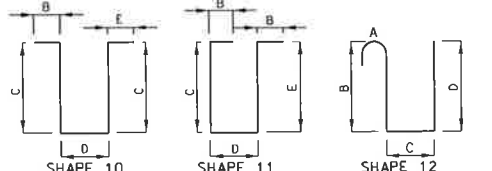
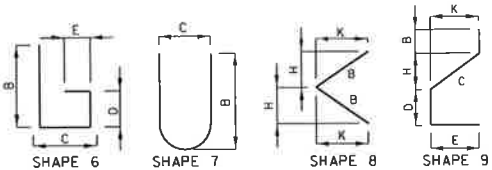
WILLOTT ROAD BRIDGE

SHEET 53

CITY OF ST. PETERS

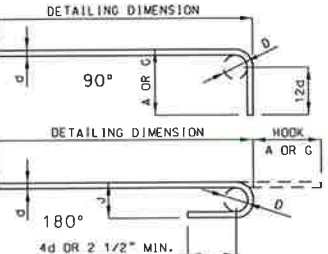
OF 70

FEDERAL PROJECT NO. BRM-7305(610)



STIRRUP HOOK DIMENSIONS				
GRADES 40 - 50 - 60 KSI				
BAR SIZE	D (IN.)	90° HOOK A OR G	135° HOOK A OR G	APPROX. H
#4	2"	4 1/2"	4 1/2"	3"
#5	2 1/2"	6"	5 1/2"	3 3/4"
#6	4 1/2"	12"	8"	4 1/2"

NOTE: UNLESS OTHERWISE NOTED, DIAMETER "D" IS THE SAME FOR ALL BENDS AND HOOKS ON A BAR.



END HOOK DIMENSIONS				
ALL GRADES				
BAR SIZE	D (IN.)	180° HOOK A OR G	90° HOOK A OR G	90° HOOK A OR G
#3	2 1/4"	5"	3"	6"
#4	3"	6"	4"	8"
#5	3 3/4"	7"	5"	10"
#6	4 1/2"	8"	6"	12"
#7	5 1/4"	10"	7"	14"
#8	6"	11"	8"	16"
#9	9 1/2"	15"	11 3/4"	19"
#10	10 3/4"	17"	13 1/4"	22"
#11	12"	19"	14 3/4"	24"
#14	18 1/4"	24-3"	21 3/4"	27-7"

NOTE: ALL STANDARD HOOKS AND BENDS OTHER THAN 180 DEGREE ARE TO BE BENT WITH SAME PROCEDURE AS FOR 90 DEGREE STANDARD HOOKS. HOOKS AND BENDS SHALL BE IN ACCORDANCE WITH THE PROCEDURES AS SHOWN ON THIS SHEET. E = EPOXY COATED REINFORCEMENT. S = STIRRUP. X = BAR IS INCLUDED IN SUBSTRUCTURE QUANTITIES. V = BAR DIMENSIONS VARY IN EQUAL INCREMENTS BETWEEN DIMENSIONS SHOWN ON THIS LINE AND THE FOLLOWING LINE. NO. EA = NUMBER OF BARS OF EACH LENGTH. NOMINAL LENGTHS ARE BASED ON OUT TO OUT DIMENSIONS SHOWN IN BENDING DIAGRAMS AND ARE LISTED FOR FABRICATORS USE. (NEAREST INCH) ACTUAL LENGTHS ARE MEASURED ALONG CENTERLINE BAR TO THE NEAREST INCH. PAYWEIGHTS ARE BASED ON ACTUAL LENGTHS. FOUR ANGLE OR CHANNEL SPACERS ARE REQUIRED FOR EACH COLUMN SPIRAL. SPACERS ARE TO BE PLACED ON INSIDE OF SPIRALS. LENGTH AND WEIGHT OF COLUMN SPIRALS DO NOT INCLUDE SPLICES OR SPACERS. REINFORCING STEEL (GRADE 60) F_y = 60,000 PSI.

Designed: MAC
Detailed: MAC
Checked: TPL

Note: This drawing is not to scale. Follow dimensions.



BILL OF REINFORCING



BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO.	SIZE	MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS												NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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BILL OF REINFORCING STEEL

NO.	REQ'D.	MARK NO.	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS												NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT						
										B		C		D		E		F		H					K					
										FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	LBS.
			SLAB																											
142	6	S1	SLAB	E	20					36	5.000													36	5	36	5	7767		
100	5	S2	SLAB	E	20					45	2.000													45	2	45	2	4711		
194	5	S3	SLAB	E	20					14	11.000													14	11	14	11	3018		
60	5	S4	SLAB	E	20					44	10.000													44	10	44	10	2806		
149	6	S5	SLAB	E	20					27	9.000													27	9	27	9	6210		
62	6	S6	SLAB	E	20			V	2	35	2.750													35	3	35	3			
			INCREMENT =							3	0.500													3	1	3	1	1785		
			12.875 INCH																											
32	5	S7	SLAB	E	20			V	4	14	4.625													14	5	14	5			
			INCREMENT =							1	11.000														1	11	1	11	273	
			21.375 INCH																											
49	7	S8	SLAB	E	20					37	9.000														37	9	37	9	3781	
49	7	S9	SLAB	E	20					25	6.000														25	6	25	6	2554	
48	6	S10	SLAB	E	20			V	2	27	2.125														27	2	27	2		
			INCREMENT =							2	6.000														2	6	2	6	1069	
			12.875 INCH																											
			SAFETY																											
			BARRIER CURB																											
136	5	K1	BARRIER CURB	E	19	S				2	5.000	0	5.125												2	10	2	9	390	
136	5	K2	BARRIER CURB	E	14	S				0	5.125	0	11.125	1	6.000			0	2.000	1	5.875				2	10	2	9	390	
92	5	K3	BARRIER CURB	E	27	S				1	11.250	0	5.125	1	0.000	1	1.375	1	0.000	0	9.875	0	6.875			5	6	5	3	504
44	5	K4	BARRIER CURB	E	50					1	11.250	0	6.000	1	11.250	1	0.000									5	5	5	0	229
4	5	K5	BARRIER CURB	E	27	S					0	4.375	0	6.750	1	5.750	1	0.000	0	5.500	0	4.000				3	5	3	3	14
4	5	K6	BARRIER CURB	E	27	S					0	4.375	0	7.875	1	4.750	1	0.000	0	6.500	0	4.500				3	5	3	3	14
4	5	K7	BARRIER CURB	E	27	S					0	4.375	0	9.625	1	3.375	1	0.000	0	7.875	0	5.500				3	5	3	3	14
4	5	K8	BARRIER CURB	E	27	S					0	4.375	0	11.250	1	2.000	1	0.000	0	9.250	0	6.500				3	6	3	4	14
48	5	K9	BARRIER CURB	E	20					5	7.000														5	7	5	7	280	
10	4	K10	BARRIER CURB	E	20					13	4.000														13	4	13	4	89	
4	5	K11	BARRIER CURB	E	8					2	2.125							2	2.000	0	2.375				4	4	4	4	18	
10	4	K12	BARRIER CURB	E	20					13	10.000														13	10	13	10	92	
10	4	K13	BARRIER CURB	E	20					18	2.000														18	2	18	2	121	
10	4	K14	BARRIER CURB	E	20					13	6.000														13	6	13	6	90	
169	5	R1	BARRIER CURB	E	26					2	6.000	0	4.250					2	6.000	0	3.000				5	3	5	2	91	
169	5	R3	BARRIER CURB	E	19	S				1	5.000	0	6.000												1	11	1	10	323	
169	5	R4	BARRIER CURB	E	27	S					0	6.000	0	11.250	0	7.000	1	0.000	0	9.250	0	6.375				3	0	2	10	499
7	5	R5	BARRIER CURB	E	20					42	9.000														42	9	42	9	312	
14	5	R6	BARRIER CURB	E	20					9	9.000														9	9	9	9	142	
14	5	R7	BARRIER CURB	E	20					7	3.000														7	3	7	3	106	
7	5	R8	BARRIER CURB	E	20					20	10.000														20	10	20	10	152	
7	5	R9	BARRIER CURB	E	20					43	4.000														43	4	43	4	316	
7	5	R10	BARRIER CURB	E	20					20	3.000														20	3	20	3	148	
			SLIP FORM																											
			OPTION																											
20	5	C1	SLIP FORM	E	20					10	0.000														10	0	10	0	209	
8	5	C2	SLIP FORM	E	20					13	4.000														13	4	13	4	11	
4	5	C3	SLIP FORM	E	20					7	6.000														7	6	7	6	3	

BILL OF REINFORCING STEEL

BILL OF REINFORCING STEEL

WILLOTT ROAD BRIDGE

SHEET

55

CITY OF ST. PETERS

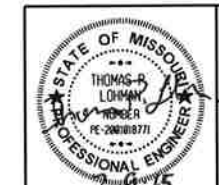
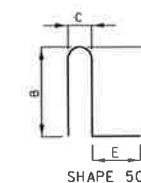
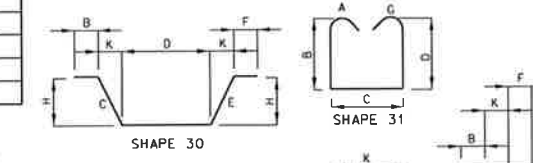
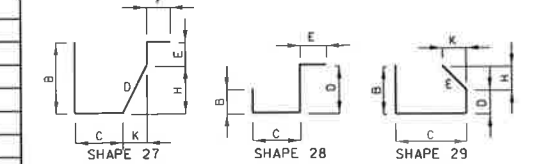
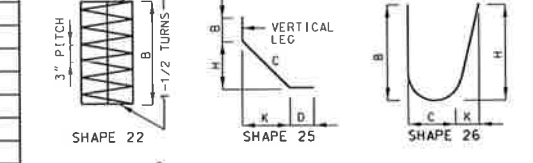
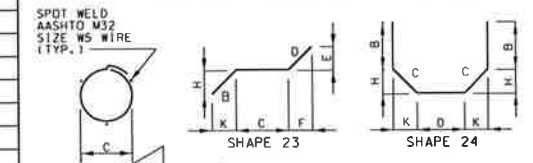
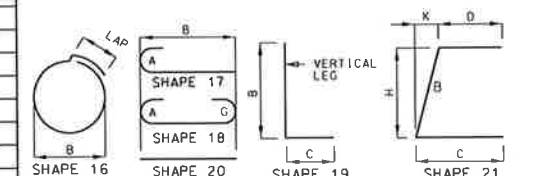
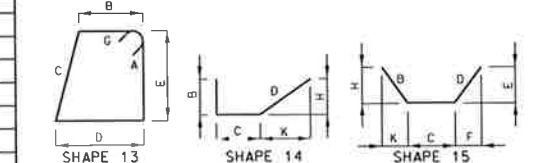
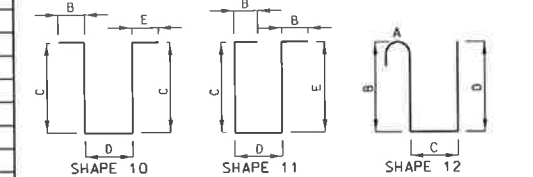
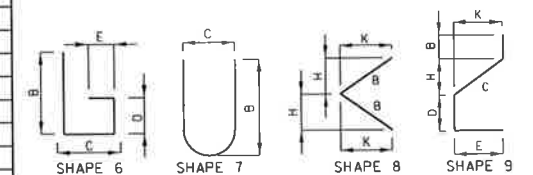
OF

70

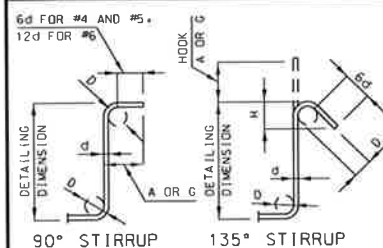
FEDERAL PROJECT NO.
BRM-7305(610)

NO. REQ'D.	MARK NO.	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS								NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT
									B	C	D	E	F	H	K				
									FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	LBS.
		TOTALS																	
4																			3520
4			E																715
5																			1395
5			E																16991
6																			10934
6			E																18924
7																			1232
7			E																6951
8																			2329
8			E																1045
9																			4425
		Total																	23835
		Total	E																44626
		Slab on Girder																	
4																			1032
4			E																323
5																			1395
5			E																11864
6																			5756
6			E																18924
7																			1232
7			E																6951
8																			2329
8			E																1045
		Total																	11744
		Total	E																39107
		Reinforcing Steel (Bridges)																	
4																			2488
6																			5178
9																			4425
		Total																	12091
		Safety Barrier Curb																	
4			E																392
5			E																4776
		Total	E																5168
		Slip Form Option																	
5			E																351
		Total	E																351

NO. REQ'D.	MARK NO.	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS								NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT
									B	C	D	E	F	H	K				
									FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	LBS.

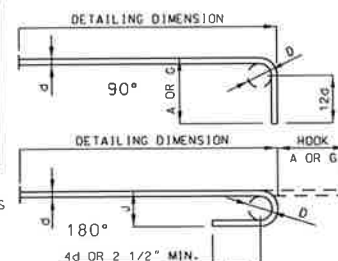


BILL OF REINFORCING



STIRRUP HOOK DIMENSIONS				
GRADES 40 - 50 - 60 KSI				
BAR SIZE	D (IN.)	90° HOOK A OR G	135° HOOK A OR G	APPROX. H
#4	2"	4 1/2"	4 1/2"	3"
#5	2 1/2"	6"	5 1/2"	3 3/4"
#6	4 1/2"	12"	8"	4 1/2"

NOTE: UNLESS OTHERWISE NOTED, DIAMETER "D" IS THE SAME FOR ALL BENDS AND HOOKS ON A BAR.

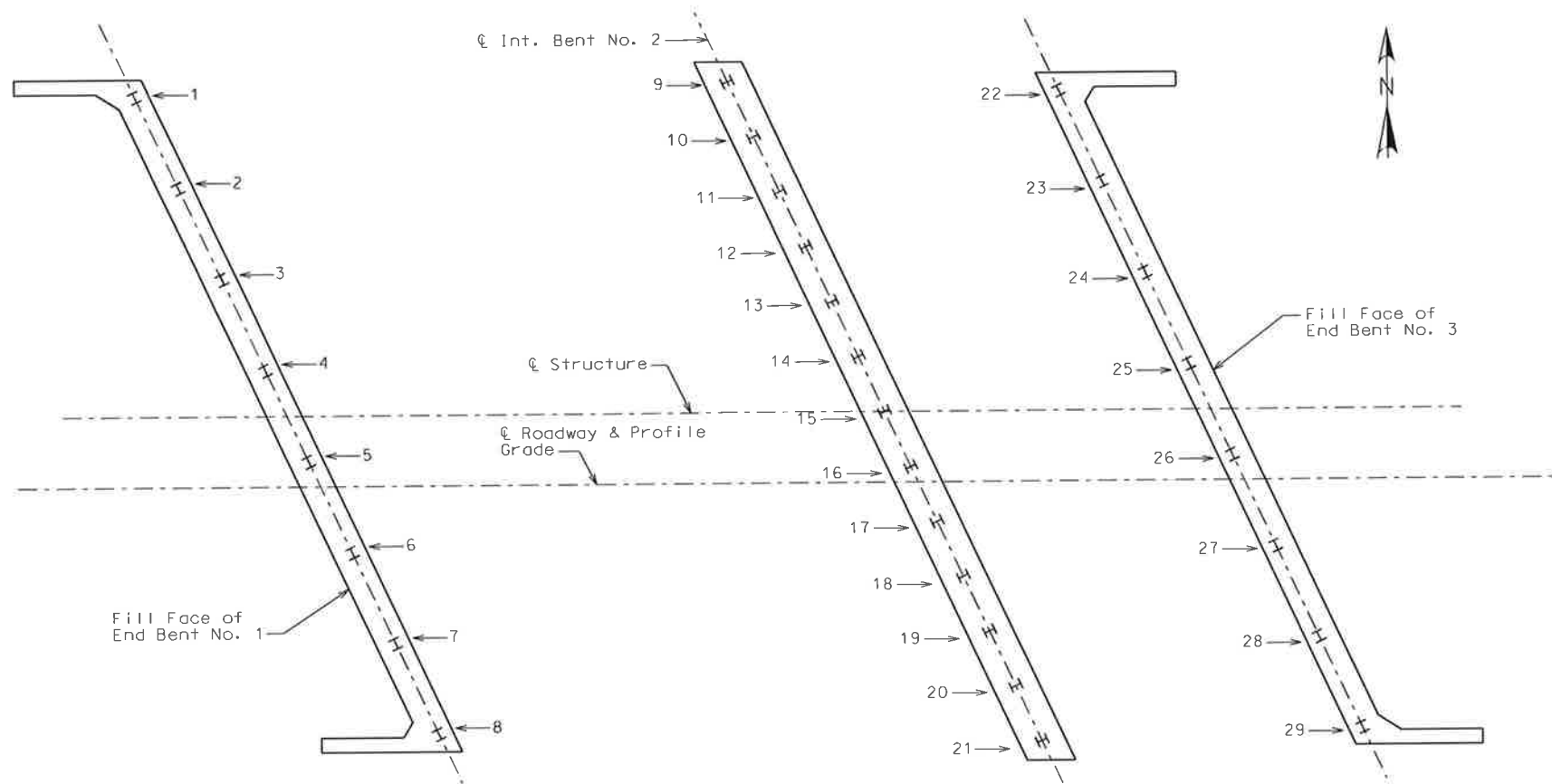


END HOOK DIMENSIONS				
ALL GRADES				
BAR SIZE	D (IN.)	180° HOOKS A OR G	90° HOOKS J	A OR G
#3	2 1/4"	5"	3"	6"
#4	3"	6"	4"	8"
#5	3 3/4"	7"	5"	10"
#6	4 1/2"	8"	6"	12"
#7	5 1/4"	10"	7"	14"
#8	6"	11"	8"	16"
#9	9 1/2"	15"	11 3/4"	19"
#10	10 3/4"	17"	13 1/4"	22"
#11	12"	19"	14 3/4"	24"-0"
#14	18 1/4"	24"-3"	21 3/4"	24"-7"

NOTE: ALL STANDARD HOOKS AND BENDS OTHER THAN 180 DEGREE ARE TO BE BENT WITH SAME PROCEDURE AS FOR 90 DEGREE STANDARD HOOKS. HOOKS AND BENDS SHALL BE IN ACCORDANCE WITH THE PROCEDURES AS SHOWN ON THIS SHEET. E = EPOXY COATED REINFORCEMENT. S = STIRRUP. X = BAR IS INCLUDED IN SUBSTRUCTURE QUANTITIES. V = BAR DIMENSIONS VARY IN EQUAL INCREMENTS BETWEEN DIMENSIONS SHOWN ON THIS LINE AND THE FOLLOWING LINE. NO. EA. = NUMBER OF BARS OF EACH LENGTH. NOMINAL LENGTHS ARE BASED ON OUT TO OUT DIMENSIONS SHOWN IN BENDING DIAGRAMS AND ARE LISTED FOR FABRICATORS USE. (NEAREST INCH) ACTUAL LENGTHS ARE MEASURED ALONG CENTERLINE BAR TO THE NEAREST INCH. PAYWEIGHTS ARE BASED ON ACTUAL LENGTHS. FOUR ANGLE OR CHANNEL SPACERS ARE REQUIRED FOR EACH COLUMN SPIRAL. SPACERS ARE TO BE PLACED ON INSIDE OF SPIRALS. LENGTH AND WEIGHT OF COLUMN SPIRALS DO NOT INCLUDE SPLICES OR SPACERS. REINFORCING STEEL (GRADE 60) F_y = 60,000 PSI.

Designed: MAC
Detailed: MAC
Checked: TPL

Note: This drawing is not to scale. Follow dimensions.



PART PLAN SHOWING
PILE NUMBERING FOR RECORDING
"AS-BUILT PILE" DATA

"AS BUILT PILE" DATA			
PILE NO.	LENGTH IN PLACE (FT.)	COMPUTED AXIAL COMPRESSIVE RESISTANCE (KIPS)	REMARKS
End Bent No. 1			
1			
2			
3			
4			
5			
6			
7			
8			

"AS BUILT PILE" DATA			
PILE NO.	LENGTH IN PLACE (FT.)	COMPUTED AXIAL COMPRESSIVE RESISTANCE (KIPS)	REMARKS
Int. Bent No. 2			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			

"AS BUILT PILE" DATA			
PILE NO.	LENGTH IN PLACE (FT.)	COMPUTED AXIAL COMPRESSIVE RESISTANCE (KIPS)	REMARKS
End Bent No. 3			
22			
23			
24			
25			
26			
27			
28			
29			

NOTE: INDICATE IN REMARKS COLUMN:
A.) IF PILING WERE DRIVEN TO PRACTICAL REFUSAL.
B.) PILE BATTER IF OTHER THAN SHOWN ON BENT DETAIL SHEET.
C.) TYPE OF PILING USED.

NOTE: THIS SHEET TO BE COMPLETED BY
CITY OF ST. PETERS CONSTRUCTION PERSONNEL.
















Designed: TPL
Detailed: CAB
Checked: TPL

Note: This drawing is not to scale. Follow dimensions.

STATE OF MISSOURI
THOMAS P. LORAN
Professional Engineer
PE-200600771
2-4-15

AS-BUILT
PILE DATA

HORNER & SHIFRIN, INC.

LOG OF BORING NO. B-1						TSI Engineering Inc. 5850 Arsenal Street St. Louis, Missouri 63139 (314) 644-3134 (314) 644-3135 FAX								
Project Description: New Willott Road Bridge over Spencer Creek St. Peters, Missouri														
Depth, feet	Samples	Sample #	Graphic Log	Surface El.: Approx. 492.5 Location: See Site and Boring Location Plan	Recovery %	RQD	Penetration Blows Per 6 inches Hand Penetrometer TSF	Undrained Shear Strength, TSF	Unit Dry Weight, lb/cu ft.	Water Content, %	Liquid Limit	Plastic Limit	Plasticity Index	
MATERIAL DESCRIPTION														
5		SS-1		Brown, lean CLAY (CL), with grass and roots	50		4 4 5			21				
10		SS-2		Brown, lean CLAY (CL) (FILL) - gray, trace limestone pieces below 6.3 ft.	100		7 11 13	>4.50		17				
15		ST-3		Gray, lean CLAY (CL)	96			2.00	0.55	95	26	39	24	15
20		SS-4			100		3 4 4	1.25			24			
25		SS-5			100		2 2 3	1.25			16			
30		ST-6			92			<0.25	0.30	98	26			
35		SS-7		Brown, clayey GRAVEL (GC), with sand	50		11 17 14			21				
Completion Depth: 27.2 Date Boring Started: 12/11/13 Date Boring Completed: 12/11/13 Engineer/Geologist: KKH Project No.: 20131365.00				Remarks: Boring drilled with CME 550 using HSA and auto SPT. Groundwater encountered at 24.0 ft. during drilling. Delayed groundwater level at 24.5 ft. after 0.25 hrs. Auger refusal at 27.2 ft.										


The stratification lines represent approximate strata boundaries.
In situations, the transition may be gradual.




Continued Next Page

LOG OF BORING NO. B-1

Project Description: New Willott Road Bridge over Spencer Creek
St. Peters, Missouri

TSI Engineering Inc.
5850 Arsenal Street
St. Louis, Missouri 63139
(314) 644-3134 (314) 644-3135 FAX



Depth, feet	Samples	Sample #	Graphic Log	Surface El.: Approx. 492.5 Location: See Site and Boring Location Plan	Recovery %	RQD	Penetration Blows Per 6 inches Hand Penetrometer TSF	Undrained Shear Strength, TSF	Unit Dry Weight, lb/cu ft.	Water Content, %	Liquid Limit	Plastic Limit	Plasticity Index
MATERIAL DESCRIPTION													
30				Brown, clayey GRAVEL (GC), with sand(continued)									
35				Gray, weathered LIMESTONE									
40				Boring terminated at 27.2 ft.									
45													
50													
Completion Depth: 27.2 Date Boring Started: 12/11/13 Date Boring Completed: 12/11/13 Engineer/Geologist: KKH Project No.: 20131365.00				Remarks: Boring drilled with CME 550 using HSA and auto SPT. Groundwater encountered at 24.0 ft. during drilling. Delayed groundwater level at 24.5 ft. after 0.25 hrs. Auger refusal at 27.2 ft.									

The stratification lines represent approximate strata boundaries.
In situations, the transition may be gradual.

Note: For locations of borings, see Sheet No. 27.









Designed: TPL
Detailed: CAB
Checked: MAB

Note: This drawing is not to scale. Follow dimensions.







BORING DATA



LOG OF BORING NO. B-2						TSI Engineering Inc. 5850 Arsenal Street St. Louis, Missouri 63139 (314) 644-3134 (314) 644-3135 FAX							
Project Description: New Willott Road Bridge over Spencer Creek St. Peters, Missouri													
Depth, feet	Samples	Sample #	Graphic Log	Surface El.: Approx. 493.5 Location: See Site and Boring Location Plan	Recovery %	RQD	Penetration Blows Per 6 inches Hand Penetrometer TSF	Undrained Shear Strength, TSF	Unit Dry Weight, lb/cu ft.	Water Content, %	Liquid Limit	Plastic Limit	Plasticity Index
MATERIAL DESCRIPTION													
5		SS-1		Brown, lean CLAY (CL), with grass and roots	50		4			20			
				Brown, lean CLAY (CL), trace fine roots			4						
		SS-2		Gray, lean CLAY (CL)	89		3	2.25		25			
				- with silt layers from 6.0 to 8.0 ft.			5						
10		SS-3		- with decayed wood pieces from 11.0 to 15.0 ft.	83		2	1.00		26			
							4						
		SS-4		- with decayed wood pieces from 11.0 to 15.0 ft.	67		2			31			
							4						
15		SS-5		- with decayed wood pieces from 11.0 to 15.0 ft.	67		8						
							13						
20		SS-6		- with decayed wood pieces from 11.0 to 15.0 ft.	67		4	0.50		27			
							2						
25		SS-7		Brown, clayey GRAVEL (GC), trace sand	44		11			18			
				(23% passing No. 200 sieve)			16						
Completion Depth: 38.5 Date Boring Started: 12/12/13 Date Boring Completed: 12/12/13 Engineer/Geologist: KKH Project No.: 20131365.00													
Remarks: Boring drilled with CME 550 using HSA and auto SPT. Groundwater encountered at 23.0 ft. during drilling. Delayed groundwater level at 27.0 ft. after 0.25 hrs. ST-5 refusal at 13.5 ft.; drove SS-5 from 13.5 to 15.0 ft. ST-7 refusal at 23.0 ft.; drove SS-7 from 23.0 to 24.5 ft. Auger refusal at 28.5 ft.													
The stratification lines represent approximate strata boundaries. In situations, the transition may be gradual.													
Continued Next Page													

Continued Next Page

LOG OF BORING NO. B-2											
Project Description: New Willott Road Bridge over Spencer Creek St. Peters, Missouri						TSI Engineering Inc. 5850 Arsenal Street St. Louis, Missouri 63139 (314) 644-3134 (314) 644-3135 FAX					
Depth, feet	Samples	Sample #	Graphic Log	Surface El.: Approx. 493.5 Location: See Site and Boring Location Plan	Recovery %	RQD	Penetration Blows Per 6 inches Hand Penetrometer TSF	Undrained Shear Strength, TSF	Unit Dry Weight, lb/cu ft.	Water Content, %	Plastic Limit Plastic Limit Plasticity Index
MATERIAL DESCRIPTION											
				Brown, clayey GRAVEL (GC), trace sand(continued)							
30		RUN1		LIMESTONE, gray, moderately hard, slightly weathered, finely crystalline, thin to medium bedded - chert nodule at 29.2 ft.	100	43					
		RUN2		- with chert nodules below 31.8 ft. - 0.5" soft, brown clay seam at 33.2 ft.	97	57					
35		RUN3			98	41					
				Boring terminated at 38.5 ft.							
40											
45											
50											
Completion Depth: 38.5 Date Boring Started: 12/12/13 Date Boring Completed: 12/12/13 Engineer/Geologist: KKH Project No.: 20131365.00				Remarks: Boring drilled with CME 550 using HSA and auto SPT. Groundwater encountered at 23.0 ft. during drilling. Delayed groundwater level at 27.0 ft. after 0.25 hrs. ST-5 refusal at 13.5 ft.; drove SS-5 from 13.5 to 15.0 ft. ST-7 refusal at 23.0 ft.; drove SS-7 from 23.0 to 24.5 ft. Auger refusal at 28.5 ft.							
The stratification lines represent approximate strata boundaries. In situations, the transition may be gradual.											

Note: For locations of borings, see Sheet No. 27.

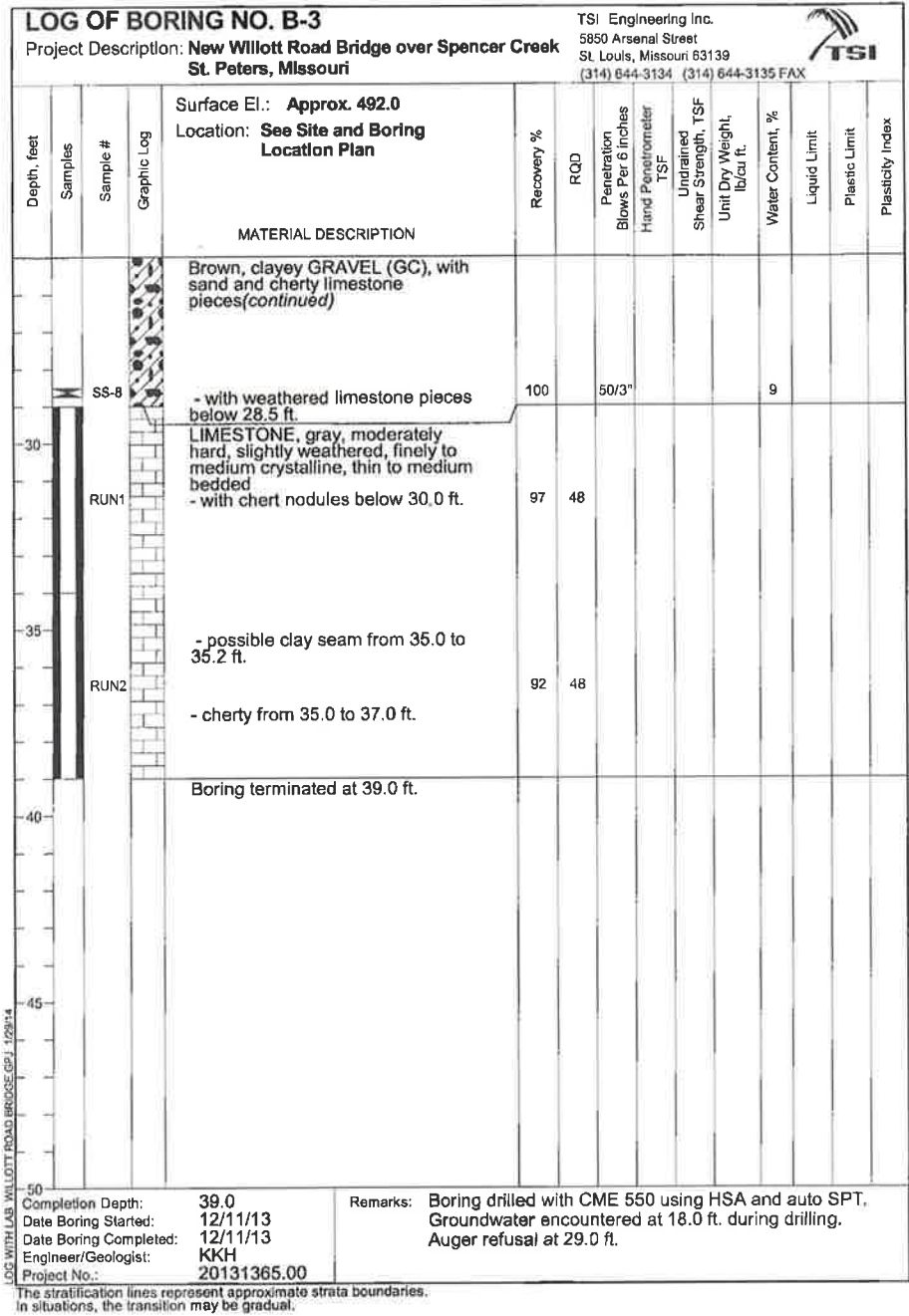
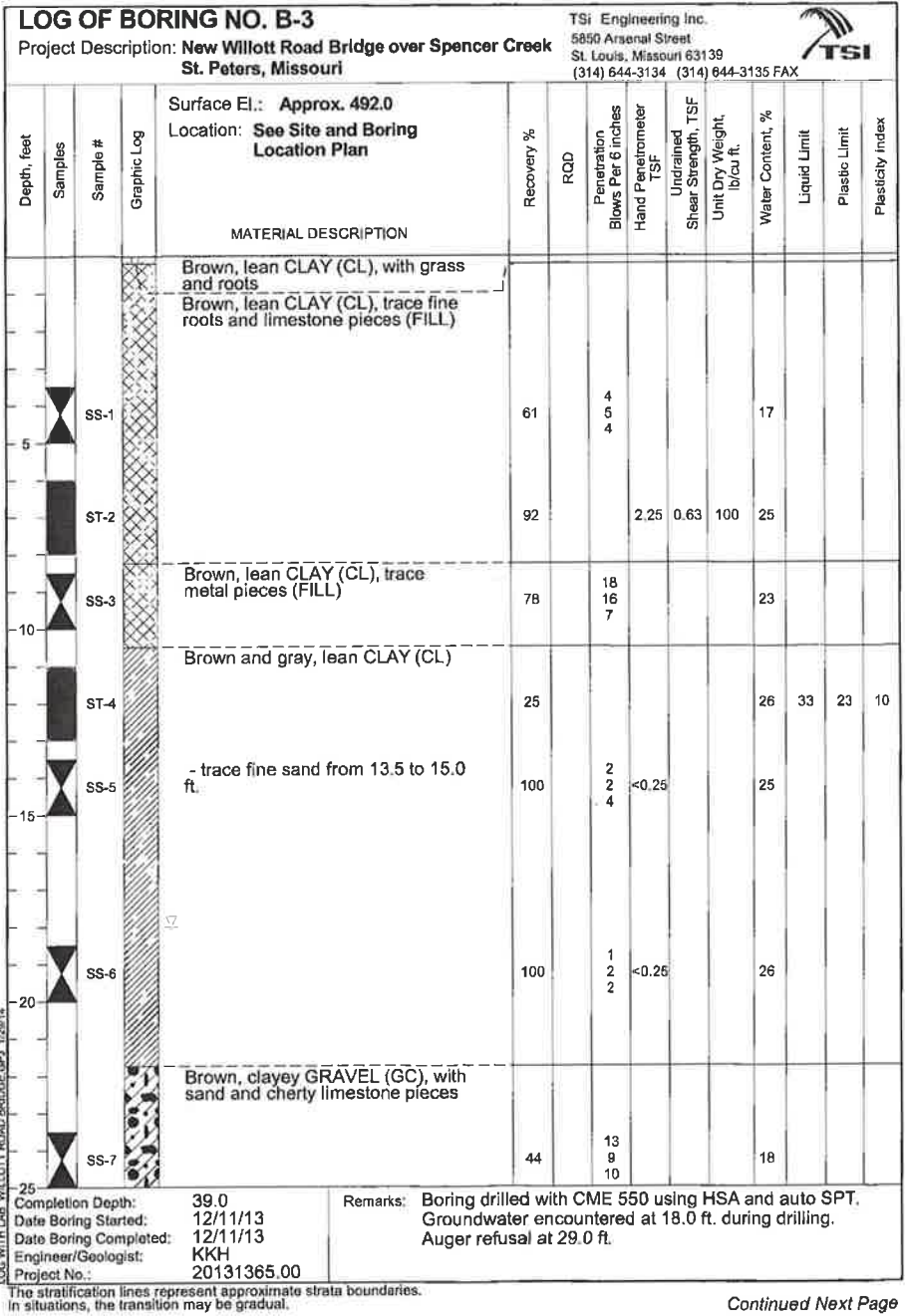
Note: This drawing is not to scale. Follow dimensions.

Designed: TPL
Detailed: CAB
Checked: MAB



BORING DATA





Note: For locations of borings, see Sheet No. 27.

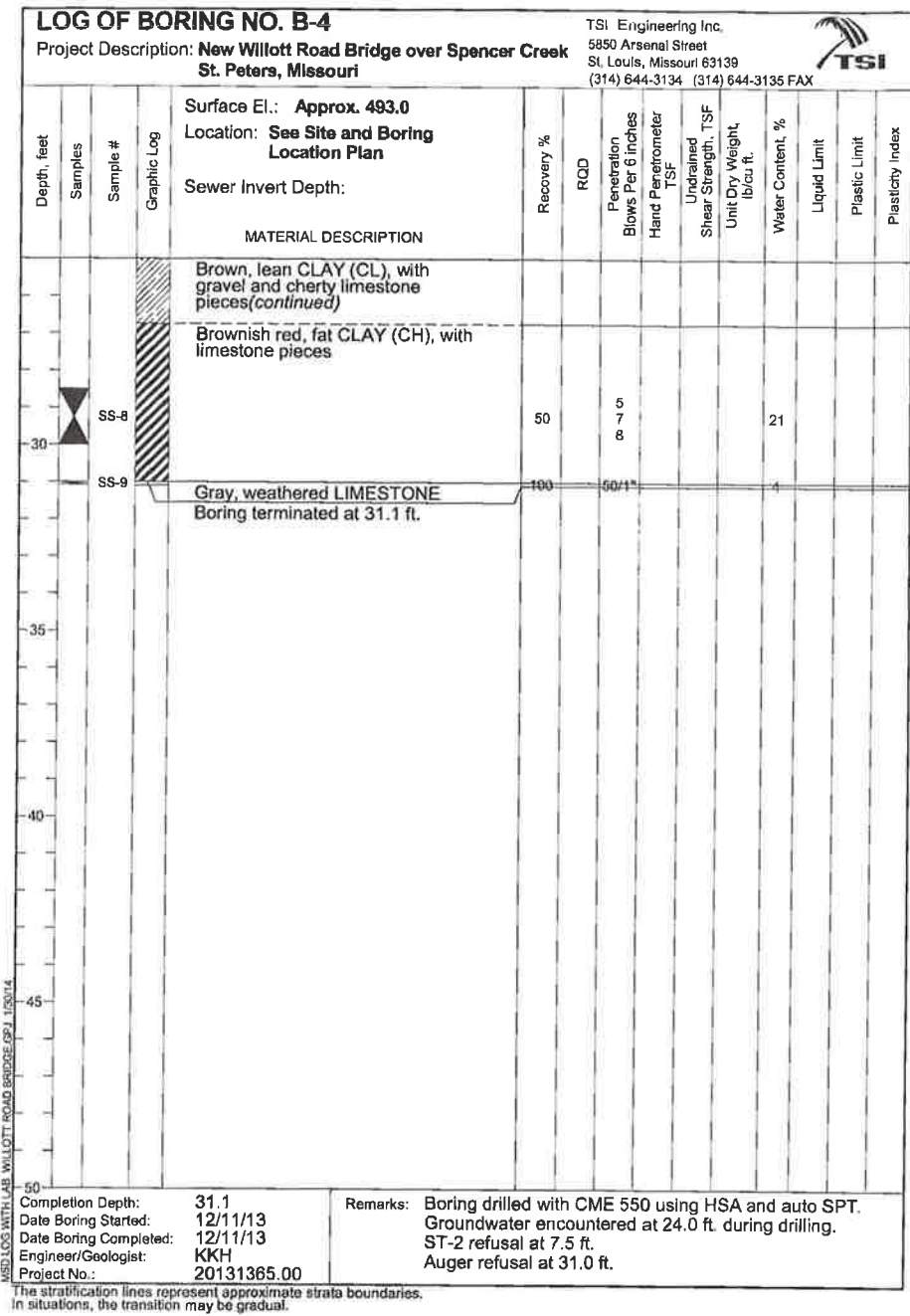
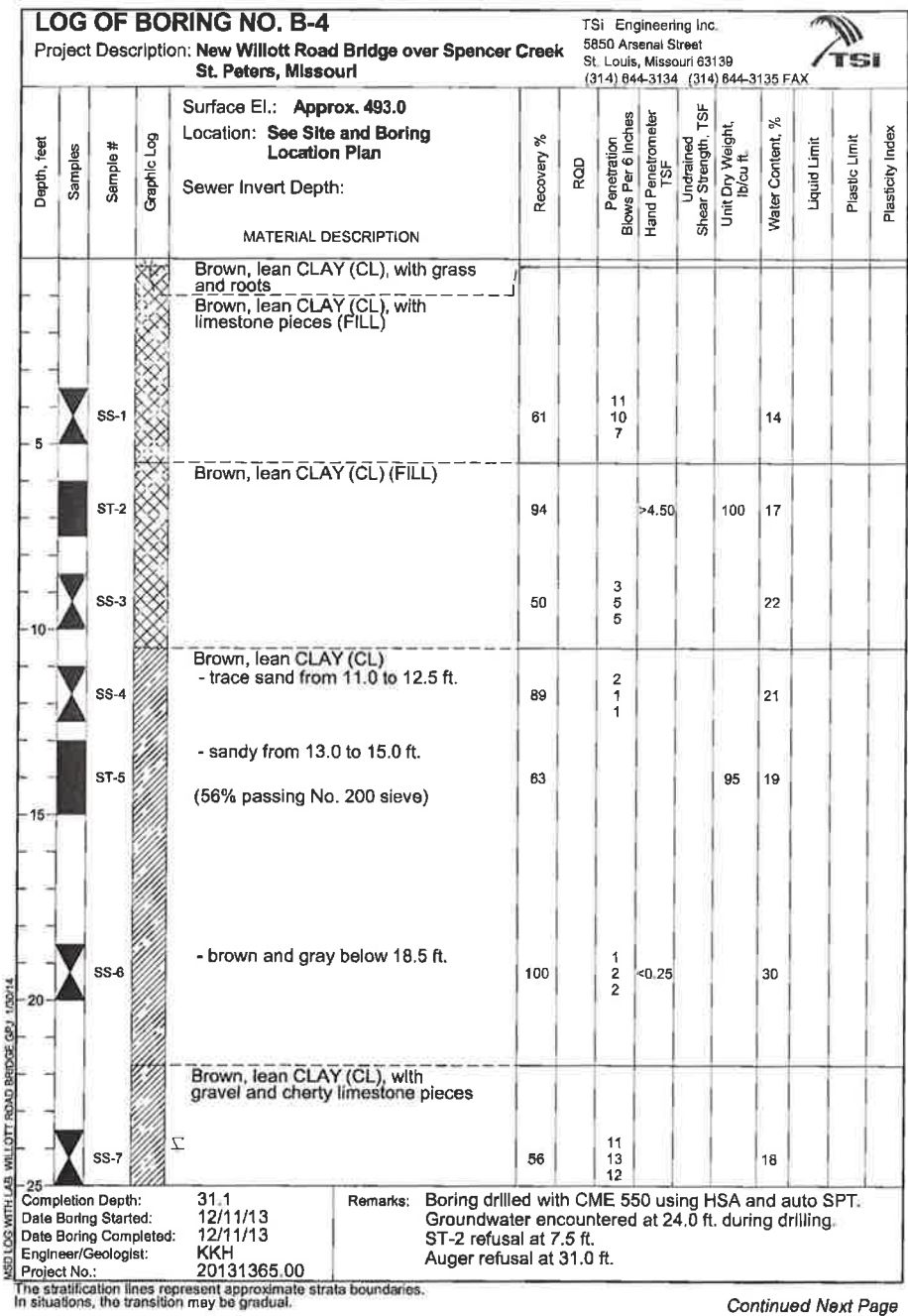
Note: This drawing is not to scale. Follow dimensions.

Designed: TPL
Detailed: CAB
Checked: MAB



BORING DATA

HORNER & SHIFRIN, INC.



Note: For locations of borings, see Sheet No. 27.

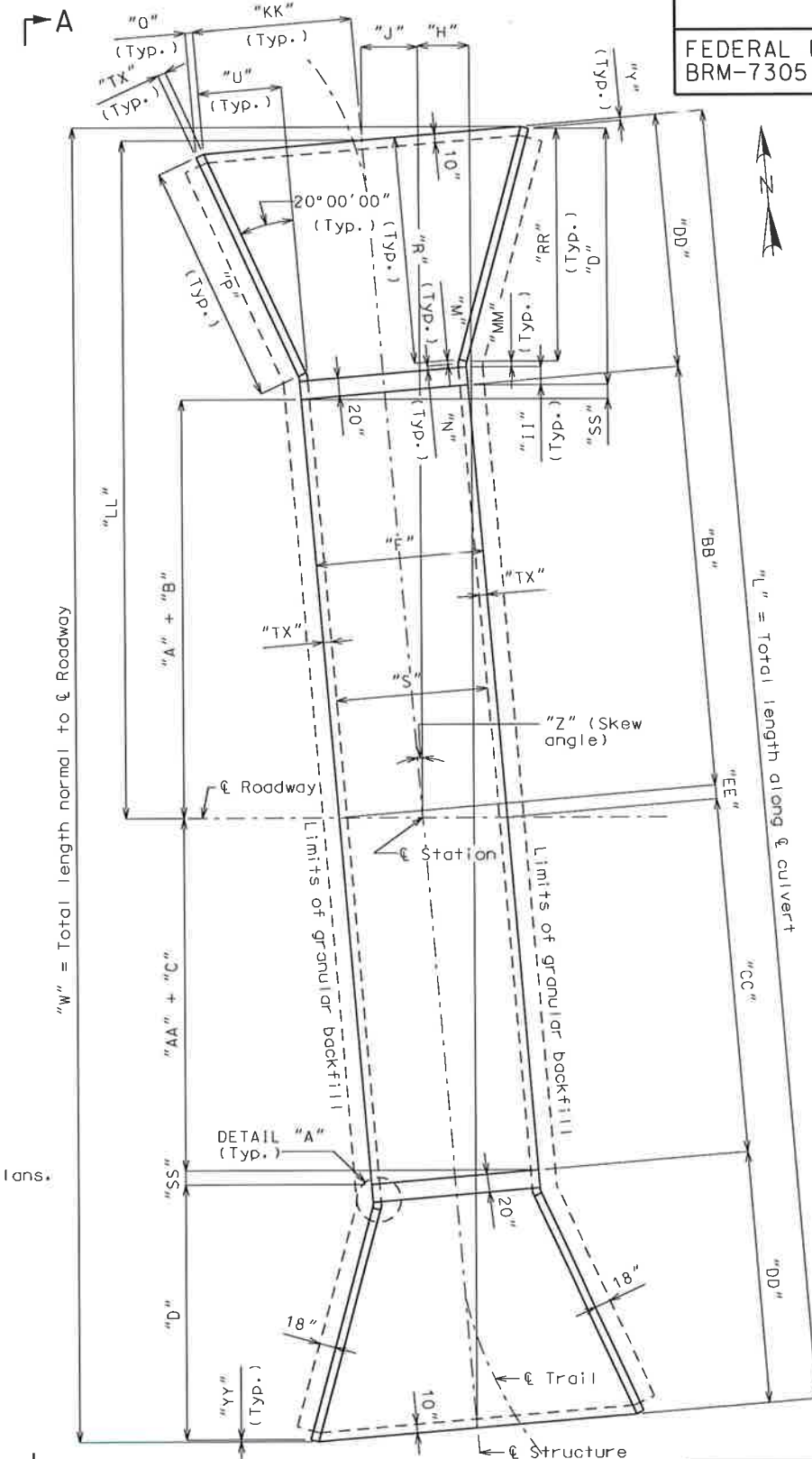
Designed: TPL
Detailed: CAB
Checked: MAB

Note: This drawing is not to scale. Follow dimensions.



BORING DATA

HORNER & SHIFRIN, INC.



Plan view of a road cross-section. The roadway is 25'-0" wide. The shoulders are 6'-11 1/8" wide. The total width is 37'-11 1/8". The diagram shows a 'High Point' and a 'Rdway' label. The construction area is indicated by dashed lines.

PLAN SHOWING
TRANSVERSE JOINTS

STD. 703.15		COLLECT PLAN AND ELEVATION
STD. 703.16		
STD. 703.17		
STD. 703.37		
STD. 706.35		
STD. 706.35	HORNER & SHIFRIN, INC	

BILL OF REINFORCING STEEL

NO.	REQ'D.	MARK NO.	LOCATION	SHAPE NO.	STIRRUP (S)	EPOXY (E)	VARIES (V)	NO. EACH	DIMENSIONS						NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT	
									B	C	D or F	E	H	K				
									FT.	FT.	FT.	FT.	FT.	FT.	FT. IN.	FT. IN.	LBS.	
-	-	-	Barrel Section	-	-	-	-	-	-	-	-	-	-	-	-	-		
Cut Section 1																		
51	6	A1	Top Slab	20				1	15.167						15'-2"	15'-2"	1163	
51	6	A2	Bottom Slab	20				1	15.167						15'-2"	15'-2"	1163	
94	5	J3	Top Corner	19				1	2.800	8.550					11'-4"	11'-3"	1101	
102	6	J4	Bottom Corner	19				1	10.667	8.858					19'-6"	19'-4"	2970	
68	5	B2	Exterior Wall	10				1		1.000	11.667				13'-8"	13'-5"	951	
62	4	F1	Temp. Steel	20				1	24.750						24'-9"	24'-9"	1025	
Cut Section 2																		
15	6	A1	Top Slab	20				1	15.167						15'-2"	15'-2"	342	
15	6	A2	Bottom Slab	20				1	15.167						15'-2"	15'-2"	342	
28	5	J3	Top Corner	19				1	2.800	8.550					11'-4"	11'-3"	328	
30	6	J4	Bottom Corner	19				1	10.667	8.858					19'-6"	19'-4"	874	
20	5	B2	Exterior Wall	10				1		1.000	11.667				13'-8"	13'-5"	280	
62	4	F1	Temp. Steel	20				1	6.830						6'-10"	6'-10"	283	
Cut Section 3																		
51	6	A1	Top Slab	20				1	15.167						15'-2"	15'-2"	1163	
51	6	A2	Bottom Slab	20				1	15.167						15'-2"	15'-2"	1163	
94	5	J3	Top Corner	19				1	2.800	8.550					11'-4"	11'-3"	1101	
102	6	J4	Bottom Corner	19				1	10.667	8.858					19'-6"	19'-4"	2970	
68	5	B2	Exterior Wall	10				1		1.000	11.667				13'-8"	13'-5"	951	
62	4	F1	Temp. Steel	20				1	24.750						24'-9"	24'-9"	1025	
Upper End Section																		
17	6	A1	Top Slab	20				1	15.167						15'-2"	15'-2"	388	
18	6	A2	Bottom Slab	20				1	15.167						15'-2"	15'-2"	410	
34	5	J3	Top Corner	19				1	2.800	8.550					11'-4"	11'-3"	398	
38	6	J4	Bottom Corner	19				1	10.667	8.858					19'-6"	19'-4"	1106	
26	5	B2	Exterior Walls	10				1		1.000	11.667				13'-8"	13'-5"	364	
62	4	F10	Temp. Steel	20				1	8.287						8'-3"	8'-3"	343	
Lower End Section																		
17	6	A1	Top Slab	20				1	15.167						15'-2"	15'-2"	388	
18	6	A2	Bottom Slab	20				1	15.167						15'-2"	15'-2"	410	
34	5	J3	Top Corner	19				1	2.800	8.550					11'-4"	11'-3"	398	
38	6	J4	Bottom Corner	19				1	10.667	8.858					19'-6"	19'-4"	1106	
26	5	B2	Exterior Walls	10				1		1.000	11.667				13'-8"	13'-5"	364	
62	4	F60	Temp. Steel	20				1	8.287						8'-3"	8'-3"	343	
Upper Wings and Headwall																		
49	6	A10	Bottom Slab	20			V	1	31.631			Incr =	4.116	inches	31'-8"	31'-8"	1723	
2	8	D1	Headwall	20				1	15.167						15'-2"	15'-2"	82	
8	5	E1	Toe	20				1	15.250						15'-3"	15'-3"	82	
14	4	F50	Flared Wings	15			V	2		20.763		Incr =	34.176	1.052	2.889	23'-10"	23'-10"	143
										3.675				1.052	2.889	6'-9"	6'-9"	114
14	4	F51	Bottom Slab	20			V	2	21.822			Incr =	38.465	inches	21'-10"	21'-10"	114	
									2.589						2'-7"	2'-7"	108	
6	4	F53	Bottom Slab	20			FR	1	26.809						26'-10"	26'-10"	108	
13	4	F55	Bottom Slab	20				1	25.450						25'-5"	25'-5"	221	
64	5	G2	Exterior Wings	20			V	2	11.568			Incr =	3.683	inches	11'-7"	11'-7"	456	
									2.053						2'-1"	2'-1"	488	
8	7	J6	Flared Wings	20				1	29.849						29'-10"	29'-10"	488	
92	6	J5	Exterior Wings	19			V	2	11.450	8.858		Incr =	2.506	inches	20'-4"	20'-2"	2136	
									2.053	8.858					10'-11"	10'-9"		
17	5	R3	Headwall	10	S			1		1.417	1.333				4'-2"	3'-12"	70	
Lower Wings and Headwall																		
49	6	A10	Bottom Slab	20			V	1	31.631			Incr =	4.116	inches	31'-8"	31'-8"	1723	
2	8	D1	Headwall	20				1	15.167						15'-2"	15'-2"	82	
8	5	E1	Toe	20				1	15.250						15'-3"	15'-3"	82	
14	4	F50	Flared Wings	15			V	2		20.763		Incr =	34.176	1.052	2.889	23'-10"	23'-10"	143
										3.675				1.052	2.889	6'-9"	6'-9"	114
14	4	F51	Bottom Slab	20			V	2	21.822			Incr =	38.465	inches	21'-10"	21'-10"	114	
									2.589						2'-7"	2'-7"	108	
6	4	F53	Bottom Slab	20			FR	1	26.809						26'-10"	26'-10"	108	
13	4	F55	Bottom Slab	20				1	25.450						25'-5"	25'-5"	221	
64	5	G2	Exterior Wings	20			V	2	11.568			Incr =	3.683	inches	11'-7"	11'-7"	456	
									2.053						2'-1"	2'-1"	488	
8	7	J6	Flared Wings	20				1	29.849						29'-10"	29'-10"	488	
92	6	J5	Exterior Wings	19			V	2	11.450	8.858		Incr =	2.506	inches	20'-4"	20'-2"	2136	
									2.053	8.858					10'-11"	10'-9"		
17	5	R3	Headwall	10	S			1		1.417	1.333				4'-2"	3'-12"	70	

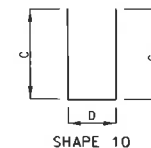
BILL OF REINFORCING STEEL

NO.	REQ'D.	MARK NO.	LOCATION	SHAPE NO.	STIRRUP (S)	EPOXY (E)	VARIES (V)	NO. EACH	DIMENSIONS						NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT
									B	C	D or F	E	H	K			
									FT.	FT.	FT.	FT.	FT.	FT.	FT. IN.	FT. IN.	LBS.
4			Totals														4091
5																	7354
6																	23676
7																	976
8																	164
9																	0
10																	0
11			TOTALS														36261.0

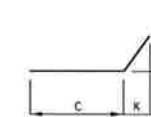
WILLOTT ROAD BRIDGE

SHEET
62

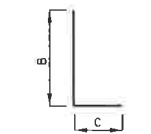
CITY OF ST. PETERS

OF
70FEDERAL PROJECT NO.
BRM-7305(610)

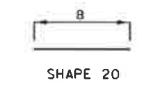
SHAPE 10



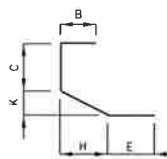
SHAPE 15



SHAPE 19



SHAPE 20

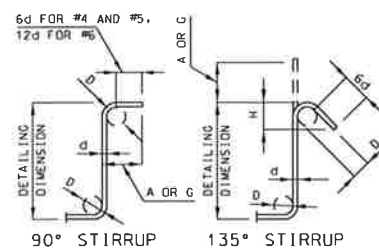


SHAPE 27

SPlice LENGTH		MAX BAR LENGTH	
BAR SIZE	NON-EPOXY	BAR SIZE	NON-EPOXY
#4	21 IN.	#4	60 FT.
#5	26 IN.	#5	60 FT.
#6	31 IN.	#6	60 FT.
#7	39 IN.	#7	60 FT.
#8	51 IN.	#8	60 FT.
#9	65 IN.	#9	60 FT.
#10	82 IN.	#10	60 FT.
#11	101 IN.	#11	60 FT.

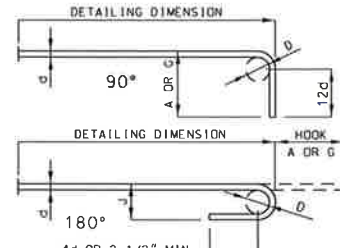
NOTE:
THE BAR LIST IS BASED ON THE MISSOURI
STANDARD PLANS.
THIS BAR LIST IS FOR QUANTITY
ESTIMATION PURPOSE ONLY AND SHALL BE
VERIFIED OR MODIFIED BY THE CONTRACTOR.

CULVERT BILL
OF REINFORCING

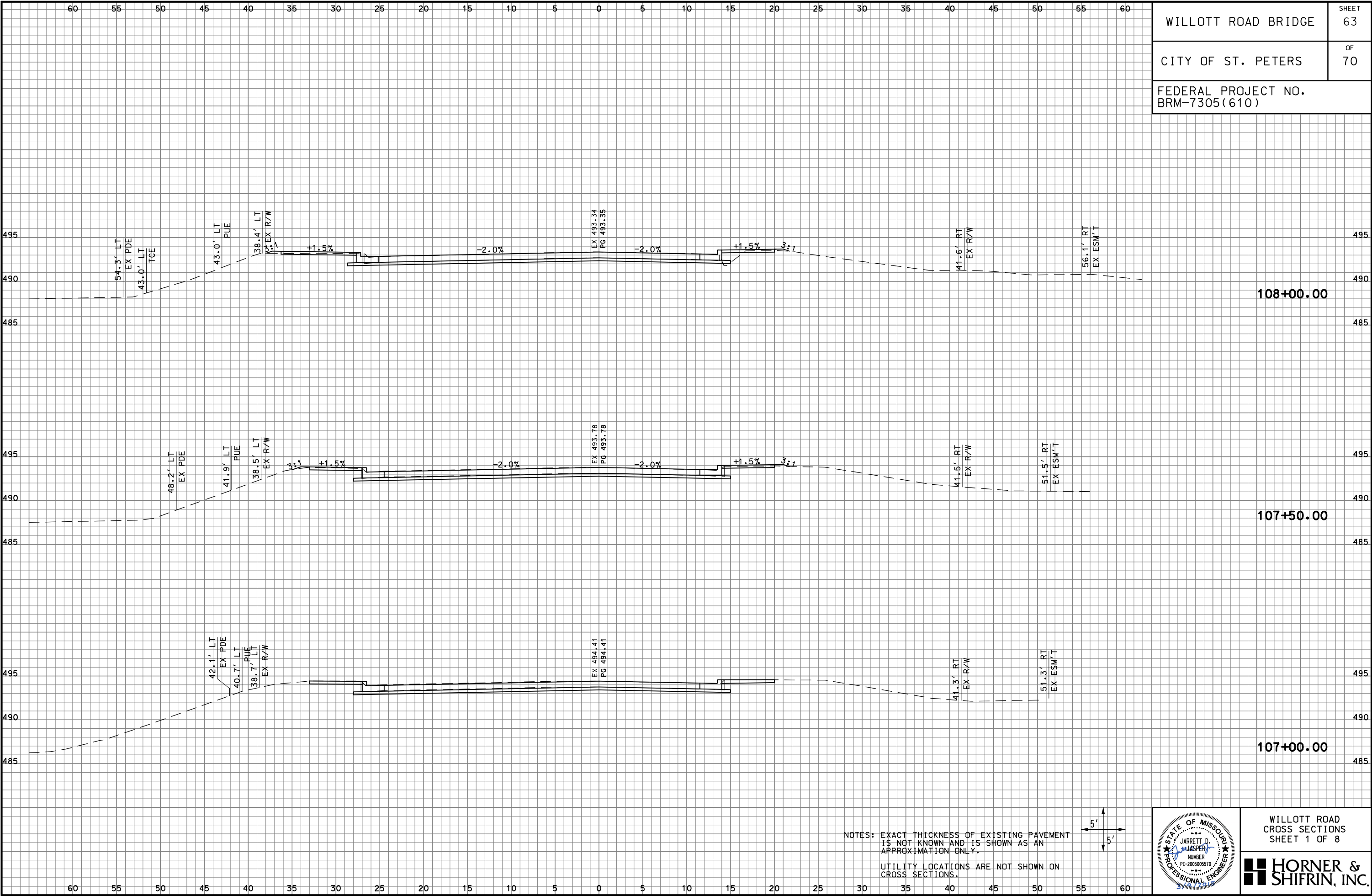
Detailed MAB
Checked MAC

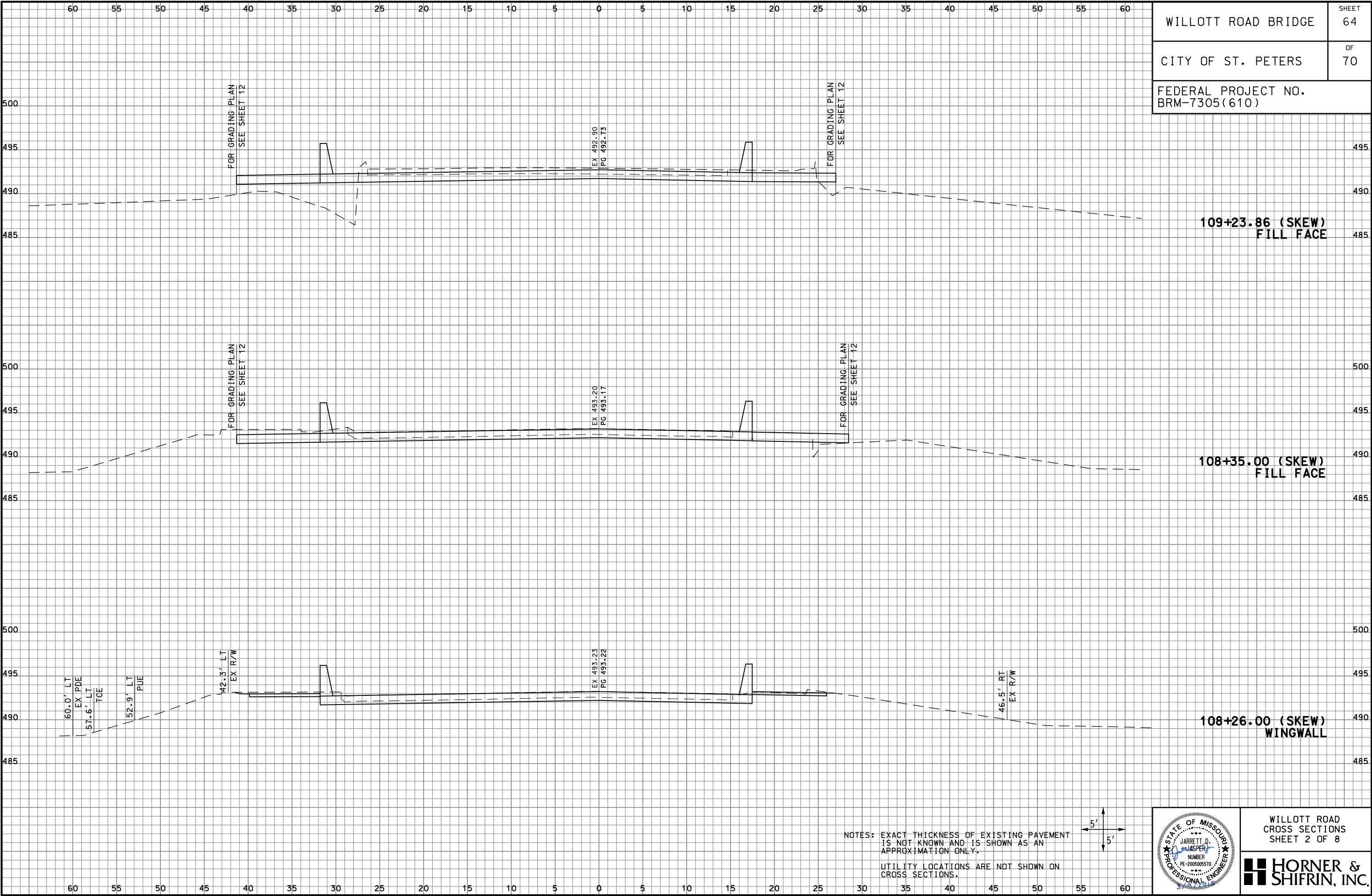
STIRRUP HOOK DIMENSIONS				
BAR SIZE	D (IN.)	90° HOOK	135° HOOK	APPROX. H
#4	2"	4 1/2"	4 1/2"	3"
#5	2 1/2"	6"	5 1/2"	3 3/4"
#6	4 1/2"	12"	8"	4 1/2"

NOTE: UNLESS OTHERWISE NOTED DIAMETER
"D" IS THE SAME FOR ALL BENDS AND HOOKS
ON A BAR.



END HOOK DIMENSIONS			
BAR SIZE	D (IN.)	GRADE 60	
		180° HOOKS	90° HOOKS
#4	3"	6"	4"
#5	3 3/4"	7"	5"
#6	4 1/2"	8"	6"
#7	5 1/4"	10"	7"





WILLOTT ROAD BRIDGE

SHEET
64

CITY OF ST. PETERS

OF
70

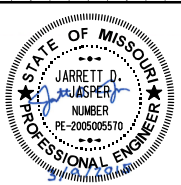
FEDERAL PROJECT NO.
BRM-7305(610)

109+23.86 (SKEW)
FILL FACE

108+35.00 (SKEW)
FILL FACE

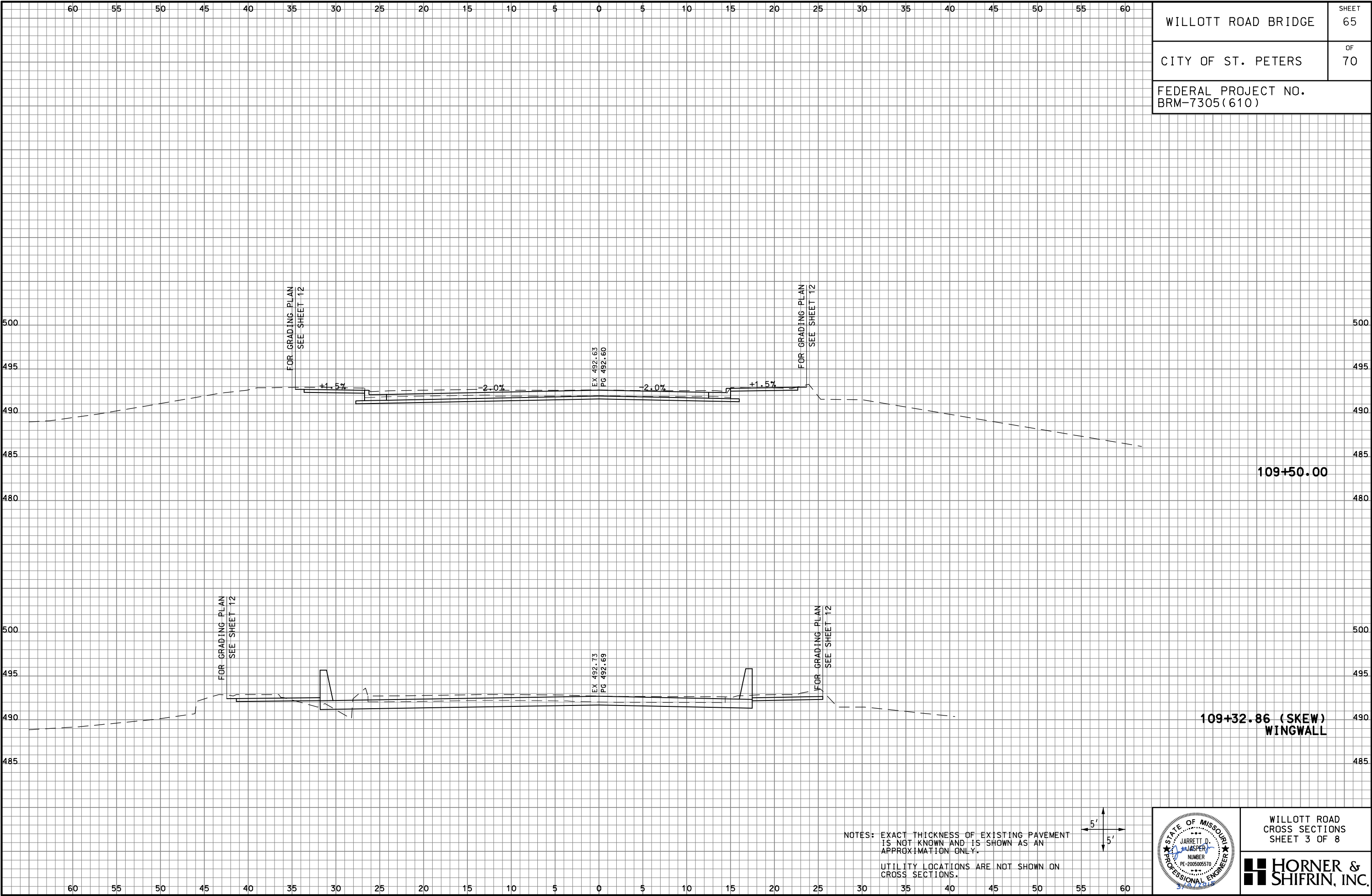
108+26.00 (SKEW)
WINGWALL

NOTES: EXACT THICKNESS OF EXISTING PAVEMENT
IS NOT KNOWN AND IS SHOWN AS AN
APPROXIMATION ONLY.
UTILITY LOCATIONS ARE NOT SHOWN ON
CROSS SECTIONS.




WILLOTT ROAD
CROSS SECTIONS
SHEET 2 OF 8


HORNER & SHIFRIN, INC.

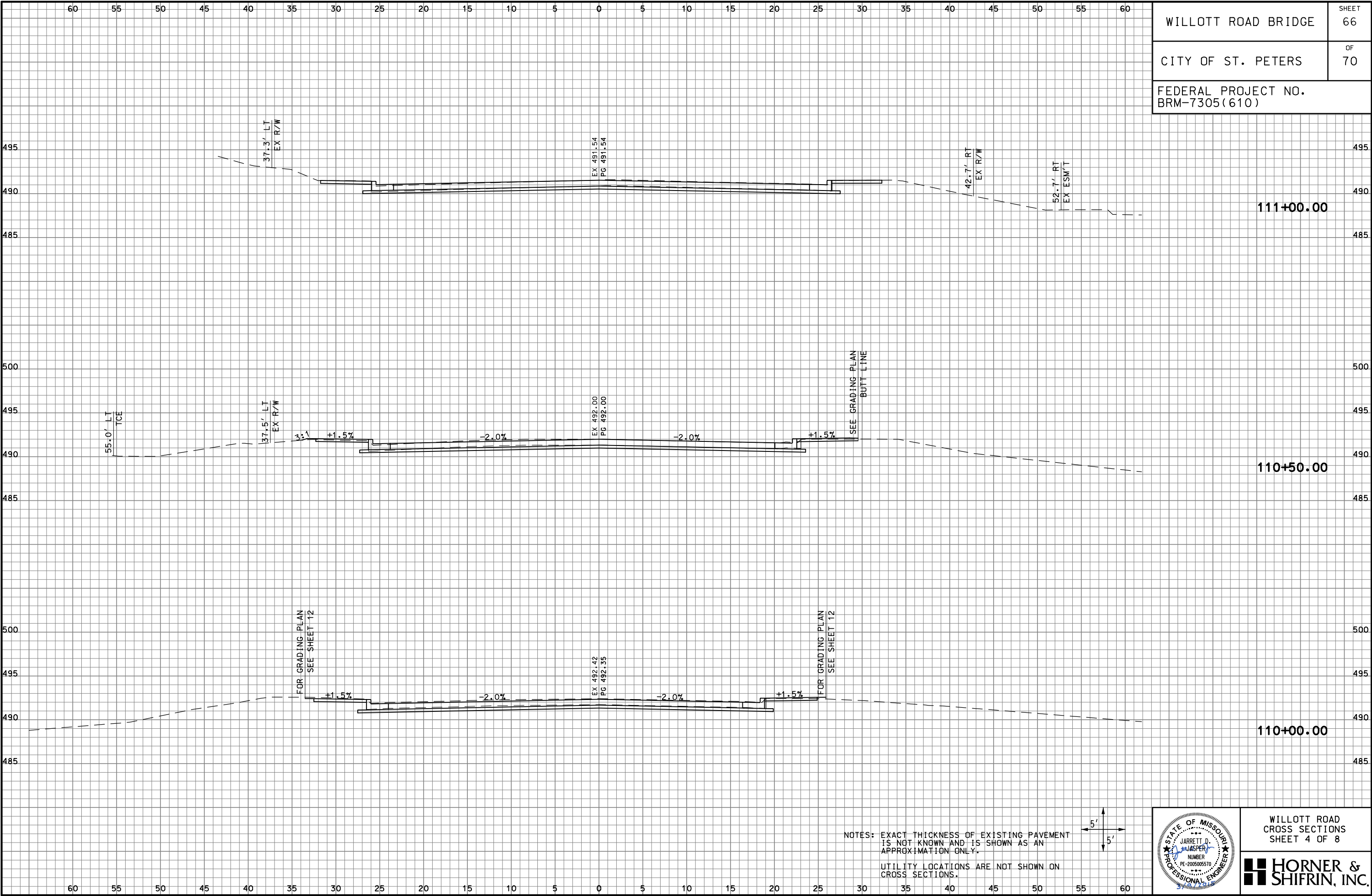


WILLOTT ROAD BRIDGE	SHEET 65
CITY OF ST. PETERS	OF 70
FEDERAL PROJECT NO. BRM-7305(610)	



WILLOTT ROAD
CROSS SECTIONS
SHEET 3 OF 8

HORNER &
SHIFRIN, INC.



WILLOTT ROAD BRIDGE

SHEET
66

CITY OF ST. PETERS

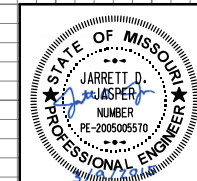
OF
70

FEDERAL PROJECT NO.
BRM-7305(610)

111+00.00

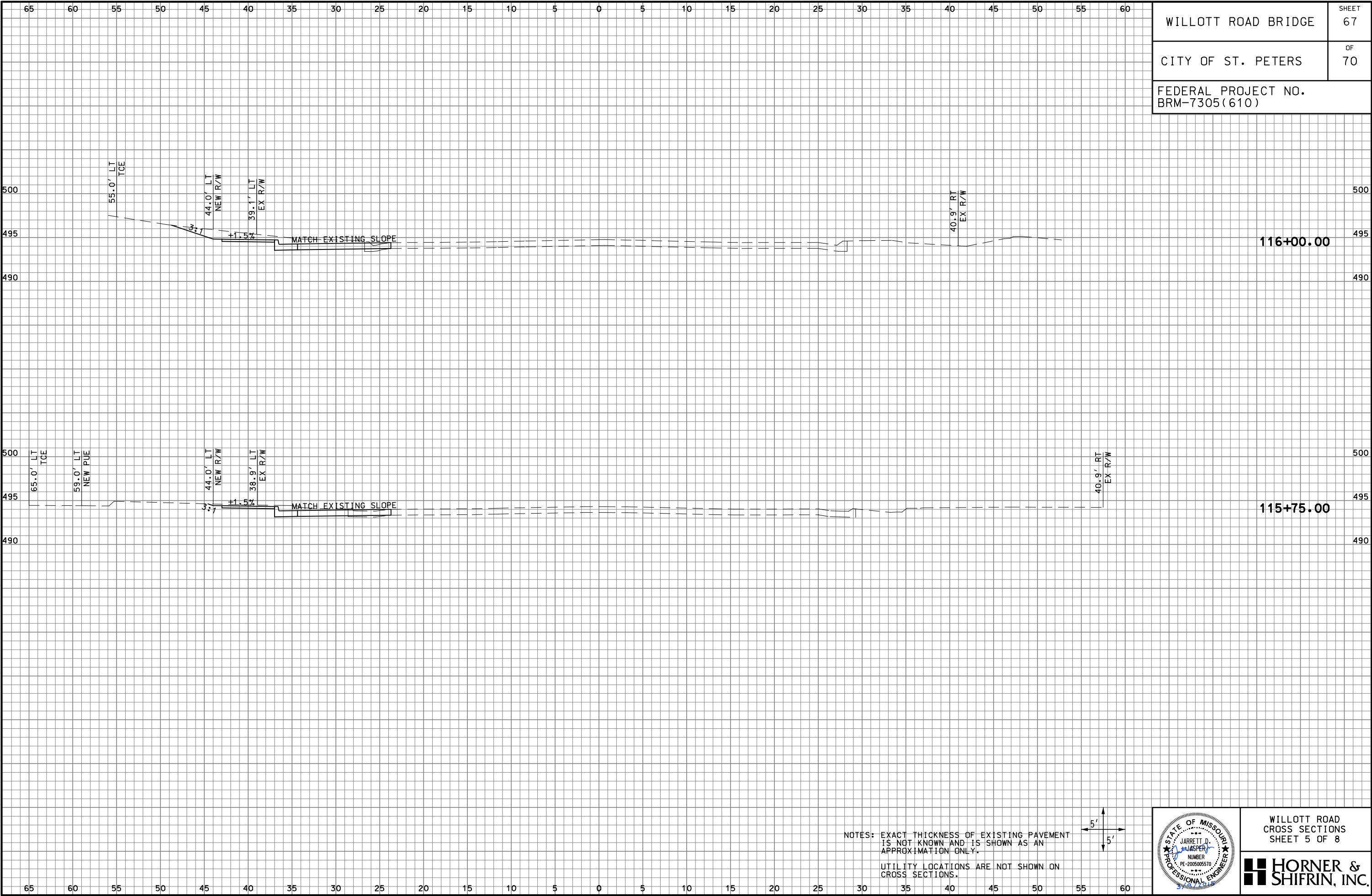
110+50.00

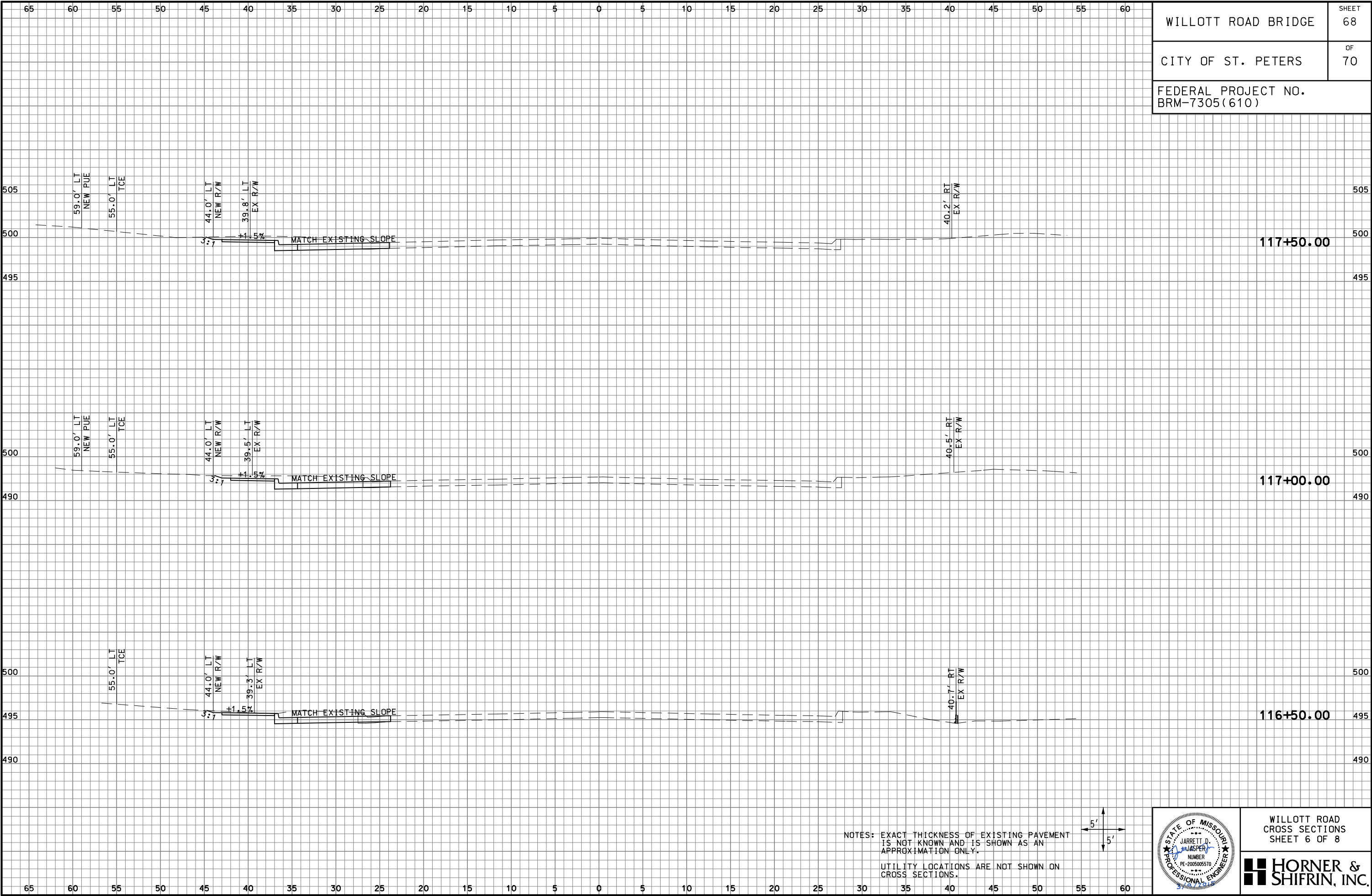
110+00.00

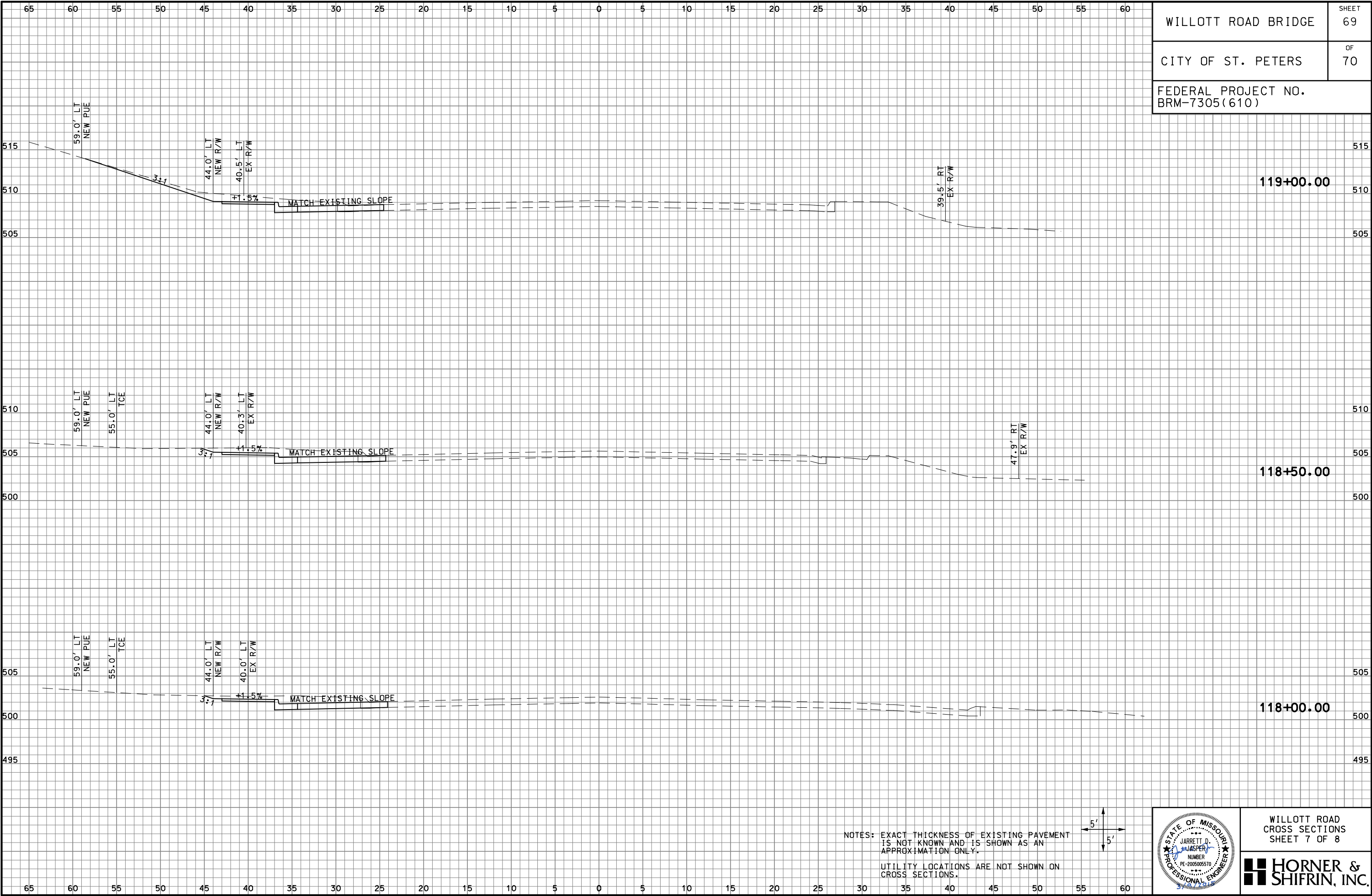


WILLOTT ROAD
CROSS SECTIONS
SHEET 4 OF 8

HORNER & SHIFRIN, INC.



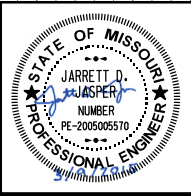




WILLOTT ROAD BRIDGE	SHEET 69
CITY OF ST. PETERS	OF 70
FEDERAL PROJECT NO. BRM-7305(610)	

NOTES: EXACT THICKNESS OF EXISTING PAVEMENT IS NOT KNOWN AND IS SHOWN AS AN APPROXIMATION ONLY.

UTILITY LOCATIONS ARE NOT SHOWN ON CROSS SECTIONS.



WILLOTT ROAD
CROSS SECTIONS
SHEET 7 OF 8

HORNER & SHIFRIN, INC.

