**NOTES 1 – 174 ARE FOR USE ON NEW BRIDGE, BRIDGE REPLACEMENT,**

 **AND BRIDGE WIDENING PROJECTS.**

**GENERAL NOTES**

**SPECIFICATIONS & LOADING**

1. **Specifications**: Standard Road and Bridge Specifications of the Tennessee Department of Transportation (January 1, 2015 Edition). [and current AREMA Specifications except as modified on these drawings.] *[add bracketed part of note for bridges carrying railroad traffic.]*
2. **DESIGN SPECIFICATIONS:** 8TH EDITION (2018) AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS WITH INTERIMS, AND THE 2ND EDITION (2011) AASHTO GUIDE SPECIFICATIONS FOR LRFD SEISMIC BRIDGE DESIGN WITH INTERIMS. *[alL EXCEPT bridges carrying railroad traffic.]*
3. **Loading**:
	1. HL-93 live loading
	2. Seismic Category \_\_\_\_\_\_\_ witH AS= \_\_\_\_\_\_\_, SDS=\_\_\_\_\_\_\_, SD1=\_\_\_\_\_\_\_, (1000 year return period).
	3. Dead Load includes 35 lb/sq. ft. for future wearing surface.

**CONCRETE, REINFORCING & FORMING**

1. **CONCRETE:** TO BE CLASS “A” f’c = 3000 PSI EXCEPT AS NOTED OTHERWISE. *[STEEL BRIDGES]*

*OR*

1. **CONCRETE:** TO BE CLASS “A” (CAST-IN-PLACE) f’c = 3000 PSI EXCEPT AS NOTED OTHERWISE. *[PRESTRESSED BRIDGES]*
2. **BRIDGE DECKS:** CLASS “D” CONCRETE FOR BRIDGE DECKS SHALL BE IN ACCORDANCE WITH SECTION 604 OF THE STANDARD SPECIFICATIONS.

*OR [ON INTERSTATE OR BRIDGES WITH FOUR OR MORE LANES]*

1. **BRIDGE DECKS:** CLASS “DS” CONCRETE FOR BRIDGE DECKS SHALL BE IN ACCORDANCE WITH SECTION 604 OF THE STANDARD SPECIFICATIONS. CLASS “A” CONCRETE IN PAVEMENT AT BRIDGE ENDS SHALL HAVE SURFACE AGGREGATE IN ACCORDANCE WITH ARTICLE 903.24 OF THE STANDARD SPECIFICATIONS.
2. **Bridge Deck Surface Finish**: To be in accordance with Method (1 or 3) in Article 604.22 of the Standard Specifications. *[Use “1” when approach roadway design speed is less than 40 mph. Use “3” for all other structures. When “3” is used, add the Item Number for Bridge Deck Grooving (Mechanical) to the Estimated Quantities. The limits of the grooving shall be to within one foot of the toe of the parapet or face of the rail for the full length of the bridge plus the approach pavements.]*
3. **Bridge Deck Forms**: Bridge Deck Forms for concrete decks shall be constructed using either removable forms or permanent forms. Permanent forms may be either remain-in-place steel or precast, prestressed concrete panels. In either case, forms shall be attached by means other than welding to main structural members or reinforcing steel. Temporary erection diaphragms must be used at the ends of precast concrete girders where end diaphragms, support diaphragms, or abutment ENDwalls are to be poured concurrently with the deck and shall be provided elsewhere in accordance with the STANDARD Specifications to prevent girder rotation. See Standard Drawings STD-4-1 thru 4, [STD-14-1, 2, or 3], and Article 604.05 of the Standard Specifications. *[USE WHEN PRECAST DECK PANELS ARE ALLOWED. USE STD-14-1 FOR BULB-TEE BEAMS, STD-14-2 FOR I-BEAMS, AND STD-14-3 FOR BOX BEAMS. Prestressed concrete deck panels are not allowed on horizontally curved girders.]*

*OR*

1. **Bridge Deck Forms**: Bridge Deck Forms for concrete decks shall be constructed using either removable forms or permanent forms. Permanent forms SHALL be remain-in-place steel. forms shall be attached by means other than welding to main structural members or reinforcing steel. Temporary erection diaphragms must be used at the ends of precast concrete girders where end diaphragms, support diaphragms, or abutment ENDwalls are to be poured concurrently with the deck and shall be provided elsewhere in accordance with the STANDARD Specifications to prevent girder rotation. See Standard Drawing [STD-14-1, 2, or 3] and Article 604.05 of the Standard Specifications. *[USE WHEN PRECAST DECK PANELS ARE NOT ALLOWED. USE STD-14-1 FOR BULB-TEE BEAMS, STD-14-2 FOR I-BEAMS, AND STD-14-3 FOR BOX BEAMS. Prestressed concrete deck panels are not allowed on horizontally curved girders.]*
2. **Reinforcing Steel**: Shall be ASTM A615 Grade 60 unless noted otherwise. See Section 604 and 907 of the Standard Specifications.
3. **Reinforcing Steel in Columns:** All longitudinal reinforcing steel in columns shall be ASTM A706 Grade 60, or A615 Grade 60 if mill test reports certifying that the maximum yield strength is 78 ksi or less are forwarded to the Division of Structures for approval prior to installation. *[use for All bridges in Seismic Category D or any category when pushover analysis is used to verify displacement capacity. Using A706 steel (or A615 steel with Fy-max = 78 ksi) will reduce the plastic shear compared to using normal A615 steel. Also, use hoops instead of spirals, with 135 degree seismic hooks in lieu of welded or mechanical coupler closing connections. Use 15 bar diameter extensions instead of 6 bar diameter extensions for hooks.]*

**FOUNDATION ELEMENTS**

1. **Foundation Preparation**: See Section 204 of the Standard Specifications. If it is determined that cofferdams are required, they shall be in accordance with Section 204.09 of the Standard Specifications.

*or*

1. **Foundation Preparation**: See Section 204 of the Standard Specifications. cofferdams and seals are required and shall be in accordance with Section 204.09 of the Standard Specifications.
2. **bent excavation**: All fill shall be in place prior to excavating for bent footings. After constructing the bent, extreme care shall be taken when backfilling so as not to damage or misalign the bent. *[for bents located in the toe of abutment fill.]*
3. **SPREAD FootingS for Bents**: After excavation to rock for footing has been completed, holes 6’ deep shall be drilled at points designated by the Engineer. From the results obtained, the Engineer shall determine the final footing elevations. No reinforcing steel for bent columns OR FOOTINGS shall be ordered until final footing elevations have been determined.
4. **END-BEARING STEEL PILES AT BENTS**: Foundations for bents shall be excavated to the bottom of footing elevations shown. rod soundings shall then be made as directed by the Engineer. From the results obtained, the Engineer will decide if piles will be used or the footings lowered to rock. Cost of rod sounding to be included in the unit price bid for other items. No reinforcing steel for bent columns or footings shall be ordered until final elevations have been determined.
5. **abutments on fill**: The fills at the ends of the bridge shall be in place and thoroughly compacted before any abutment piles are driven.
6. **Note**: The Contractor shall support the abutments until the superstructure is in place, falsework has been removed, and backfilling has been completed. *[FOR AbutmentS with overturning problems during construction.]*
7. **END-BEARING STEEL Piles:** To be (SIZE) driven to refusal on rock or a minimum bearing of (LOAD) tons for the bents and (LOAD) tons for the abutments. all piles shall be astm a709 grade 50 steel.
8. **PILE TIPS:** Piles shall be equipped with cast steel points. Also, see standard drawing STD-5-1 for additional notes. *[check foundation report for pile tip reinforcement requirements. Pile tip reinforcement is not required for Steel H Piles when driving through overburden that is relatively free of boulders and the rock surface is generally flat. Pile reinforcement is required when driving through overburden of small scattered boulders, overburden of dense boulders, inclined rock surface, or the rock surface is fragmented or weathered.]*
9. **Friction Piles**: To be (SIZE) . After excavation to the proposed footing elevations, a test pile shall be driven at each substructure at the location designated on drawing nO. . A load test will then be applied to the test pile in (bent or abut. no.). From the results of the load test, the Engineer of Structures will determine the required length of the production piles and minimum required bearing. For pile design loads and cut-off elevations, see table on drawing no. \_\_\_\_\_\_\_\_\_\_.

The contractor shall install piling such that all the following requirements are met. The tip elevation for all test piles and production piles shall be equal to or below the minimum pile tip elevation shown on the plans. In addition, test piles to be load tested shall be installed to at least the specified bearing shown on the plans or full length. all other test piles shall be installed to at least 1.5 times the specified bearing shown on the plans or full length. All production piles shall be installed full length unless excessively hard driving which might damage the piles is encountered. If the production piles do not achieve the minimum required bearing, the Engineer of Structures will determine if additional piles are required.

In the event that driving the test pile to at least the minimum tip elevation or driving the production pile full length might damage the pile because of excessively hard driving, the contractor shall use other methods approved by the Engineer for installing the piles such as jetting or pre-drilling holes. However, all piles must be driven by hammer for the last few feet of penetration. No measurement for payment will be made for pre-drilling holes or for jetting piling to obtain the required pile penetration.

The pile load test shall be conducted in accordance with the STANDARD Specifications. The pile load test apparatus for applying loads and measuring movement shall meet the requirements of ASTM D1143, Standard Method of Testing Piles Under Static Axial Compressive Load. When insufficient clearance is available within an excavation, the clearance requirements in Article 4.1.1 may be reduced, but only with prior approval of the Engineer. *[Show minimum tip elevations when required due to scour at piers or when piling must be driven through abutment fills because excessive settlement of the underlying soil is expected, or to penetrate liquefiable layers in seismic zones.]*

1. **Alternate FRICTION Piles**: The contractor may use piling of a different material or configuration from that shown on the plans provided the substitution meets minimum design standards and specifications, and is approved by the Engineer.
2. **Pipe Piles**: Shall be PP (SIZE) , Grade 2, in accordance with ASTM A252. Weathering Steel will not be allowed for pipe piles. Any pipe pile having bends, kinks or other deformations during the process of driving that would impair the strength (10% reduction as determined by the engineer) efficiency of the completed pile shall be either removed and replaced or repaired by the contractor in a manner satisfactory to the engineer. The contractor will not be reimbursed for any such pipe pile ordered removed or replaced by the engineer.
3. **PIPE Pile Splices**: Full length piles shall be used where practiCAL. Piles may be spliced with the prior approval of the engineer. Splices shall use full penetration welds designed to develop the full strength of the pile cross-section in tension and compression. Only one splice per 40 linear feet of pile will be allowed. Drive-on splices shall not be used and only commercially manufactured splices will be allowed. Splicing details must be submitted to the Engineer for approval. Cost to be included in the cost of piles Item No. .
4. **PIPE PILE Galvanizing**: All steel pipe piles shall be galvanized after fabrication to the requirements of ASTM A123 and repaired according to ASTM A780. *[Use only if required by location.]*
5. **Pile Protection Systems:** At the bent locations specified on the Plans, and after the steel piles have been driven to their final elevation, a concrete collar as detailed on drawing NO.\_\_\_\_\_\_\_\_\_ shall be constructed one (1) foot above and three (3) feet below the finished ground elevation indicated on the contract plans.

Steel piles that extend above the ground or water surface shall be painted as specified in Subsection 606.19 of the Standard specifications. The top coat color shall be gray, color No. 36440, AMS-STD-595A. Instead of field painting, steel piles may be shop painted provided the Contractor repairs, to the satisfaction of the Engineer, any areas damaged due to handling or installation. *[for all with steel pile bents]*

1. **drilled shafts**: See Special Provision 625 regarding drilled shaft specifications.

**PRECAST SUPERSTRUCTURES**

1. **Slab Overhangs Supported by Bulb-Tee Beams**: It is recommended that spacing of overhang brackets for Bulb-Tee beams not exceed 2’-0” center to center.
2. **Structural Steel:** See notes on Drawing No. \_\_\_\_\_\_\_\_ (and [in case of bridge with railroad traffic] Railroad Special Provisions.) *[PRESTRESSED Bridges WITH Steel BEARINGs or Steel ExpANSION Devices]*

**STEEL SUPERSTRUCTURES**

1. **Welding**: See Section 602 of the Standard Specifications and notes on Drawing No. .
2. **Paint**: PAINT SHALL BE SYSTEM “A” (QPL 3.001) – INORGANIC ZINC. COLOR OF THE FINISH COAT SHALL COMPLY WITH AMS-STD-595A, FEDERAL STANDARD NO. (FED COLOR ID. AND DESCRIPTION). SEE SECTIONS 603 AND 910 OF THE STANDARD SPECIFICATIONS. THE CONTRACTOR SHALL ALSO HAVE THE OPTION TO USE ORGANIC ZINC IN SYSTEM “A” INSTEAD OF AN INORGANIC ZINC. ORGANIC ZINC SYSTEMS SHALL BE FROM QPL 3.002.
3. **Painting Structural Steel**: All surfaces of structural steel girders must be painted. However, the faying surfaces of field splices, the top of the top flange, surfaces embedded in concrete, and bearing areas shall receive only a coat of primer. Bolted faying surfaces for this project are designed for a Class B surface. (See AASHTO Table 6.13.2.8-3). The Contractor shall insure the faying surfaces are prepared to provide a slip coefficient at least equal to that required for this Class for the thickness of primer applied in the shop. The faying surfaces are to be painted, as noted above, and the Contractor shall supply a Paint Manufacturer’s certification that the paint to be used will provide the required resistance at the applied thickness when tested in accordance with AASHTO Art. 6.13.2.8.
4. **Special Paint Note**: Interior surfaces of welded plate box girders shall receive the same paint system as the exterior surfaces, except the color shall be White. *[use for all steel tub girders and steel box bent caps.]*
5. **Radiographic, Ultrasonic, and Magnetic Inspection**: See Section 602 of The Standard Specifications and Notes on Drawing No. \_\_\_\_\_\_\_\_.
6. **Steel Structures**: See Tennessee Standard Specifications Section 602 and notes on Drawing No.\_\_\_\_\_\_\_ (AND [IN CASE OF BRIDGE WITH RAILROAD TRAFFIC] RAILROAD SPECIAL PROVISIONS).
7. **Protection Of Substructures:** Since this bridge utilizes weathering steel, the contractor must take special precautions to prevent staining of piers and abutments. Prior to the erection of any steel, the tops and sides of the completed substructures shall be protected from staining by wrapping with translucent, reinforced, high density, two-ply, cross-laminated polyethylene.

In lieu of this protection, the Contractor may elect to thoroughly clean the concrete of rust staining by sandblasting or other approved methods, prior to applying a texture-coated finish. No sealant type materials shall be applied which are incompatible with the texture-coatED finish unless they can be thoroughly removed prior to applying the finish. Texture-coating of the substructure should be delayed until after the deck is completed.

After a substructure has received its final finish, the top and sides shall be protected from staining by wrapping with reinforced polyethylene, which, if being reused, shall be in good condition and free from holes and tears. It shall be the contractor’s responsibility to protect the substructures from staining for the duration of the contract. Any corrective texture-coating shall be at his expense. Cost to be included in the unit price bid for other items. *[FOR ALL WITH WEATHERING STEEL]*

1. **Blast Cleaning**: The fascia girders and all faying surfaces of field splices of all girders shall be blast cleaned in accordance with the Steel Structures Painting Council Surface Preparation specifications “No. 6 Commercial Blast Cleaning” SSPC-SP 6. Prior to bolting, any loose rust on the faying surfaces shall be removed. *[FOR ALL WITH WEATHERING STEEL. For ROADWAY grade separations, require all girders to be blast cleaned.]*
2. **Final Appearance**: Prior to final acceptance, all Structural Steel shall be free of grease, oil, chalk marks, paint, concrete spatter and similar soilage. Depending on the location, with respect to view and severity of the fore-going soilage, the Structural Steel shall be cleaned under the provisions of one of the following Steel Structures Painting Council Surface Preparation Specifications;
* No. 1 Solvent Cleaning - SSPC-SP 1
* No. 2 Hand Cleaning - SSPC-SP 2
* No. 3 Power Tool Cleaning - SSPC-SP 3
* No. 7 Brush-off Blast Cleaning - SSPC-SP 7

*[FOR ALL WITH WEATHERING STEEL]*

1. **Weathering Bolts**: All Bolts shall be ASTM F3125 GRADE (A325 OR A490), Type 3 UNLESS NOTED OTHERWISE. All bolts, nuts, and washers shall have the same weathering characteristics as the Structural Steel used. In lieu of using direct tension indicators (DTI’s), all bolts shall be installed by either turn- of-nut tightening or calibrated wrench tightening in accordance with the AASHTO LRFD Bridge Construction Specifications, current edition.  *[FOR ALL WITH WEATHERING STEEL]*
2. **Painting Girders Encased in Concrete**: Where weathering steel girders are encased in concrete at integral abutments (and integral pier caps), the girders shall be painted over the entire embedment length plus at least one foot outside the encasement. The color of the top coat shall be Brown, AMS-STD-595A, ColOr No. 30059. *[USE THIS NOTE ALONG WITH NOTE 32 When weathering steel girders are encased in integral abutments and/or pier caps.]*
3. **Painting Girders below Expansion Joints**: Weathering steel girders below expansion joints shall be painted for a minimum distance of 1 ½ times the depth (1.5D) of the girder on either side of the joint. The color of the top coat shall be Brown, AMS-STD-595A, Color No. 30059.  *[USE THIS NOTE ALONG WITH NOTE 32 WHEN WEATHERING STEEL GIRDERS HAVE EXPANSION JOINTS.]*

**MISCELLANEOUS GENERAL NOTES**

1. **Special Note for Railroad Crossing:** The contractor shall conduct his work so as to protect the railroad tracks and properties from any damage. The work shall be done in accordance with regulations stipulated by the (name of R.R.) so as to maintain clearance and not interrupt traffic.

1. **Special Note for Utilities**: It is intended that the cost of materials and labor necessary for the complete installation of utilities shall be borne by others and shall not be paid for as a part of this contract. The Contractor shall cooperate with others in the installation of utilities with no additional compensation allowed the Contractor as a result.
2. **Shop Drawings:** See Section 105.02 of the Standard Specifications.

1. **Note:** The contractor shall provide 100% conventional fall protection for workers installing decking above 15 feet.
2. **Bridge Rail System**: Build bridge railings according to Standard Drawing (STD-1-1SS, STD-7-1, STD-11-1, STD-11-2, OR STD-11-3). The railing shall be formed and cast plumb, not perpendicular to the slab. The dimensions at the traffic face shall be kept constant, with variation due to cross-slope accommodated at the rear face.
3. **Note:** The reinforced concrete median barrier rail shall be constructed in accordance with the details shown on drawing (STD-1-3 or STD-1-3SS) and shall be given an applied texture finish. The color of the finish shall be white, color No. 37886, AMS-STD-595A. The cost of the finish shall be included in the linear foot price bid for the median rail. Precast bridge deck panels are not permitted in the bay supporting the median barrier rail. *[AS NEEDED]*
4. **Grouted Bars in Drilled Holes:** Horizontally drilled holes shall be drilled ½” in diameter larger than the bar, cleaned, packed with non-shrink grout, and the bar rotated (not driven) to its seat. Vertically drilled holes shall be drilled ¼” in diameter larger than the bar, cleaned, packed with epoxy grout, and the bar shall be driven to its seat. All grouting material shall be approved by TDOT Materials and Tests. *[use as needed. Do not use drilled inserts or masonry anchors in a tension situation. Use a dowel set in grout or drill all the way through with a back up plate. use cast-in-place anchors For utilities on new construction. AlWAYS show size, location, and spacing of anchors. If THE drilled hole is in a horizontal position, use a non-shrink grout. If THE DRILLED hole is in A vertical position, use epoxy.]*
5. **Drilled-In Anchors (Mechanical or Epoxy) Certification:**  The contractor shall furnish certified anchor pull out data from an independent testing laboratory using Class “A” concrete as prescribed by THE STANDARD Specifications. The required ultimate load for 7/8” ∅ anchors is 19,000 lbs., 18,000 lbs. for ¾” ∅ anchors, 12,000 lbs. for 5/8” ∅ and 9,000 lbs. for ½” ∅. In Place Requirements: The units shall be subset 3/32” to ¼” and torqued, with base plate in place, to an equivalent direct pull out load of 60 percent of required ultimate load. The Department will perform testing of anchors on site to insure the specified in place requirements. Installations not meeting these requirements must be corrected at the contractor’s expense. For mechanical anchors, slippage shall not exceed ¼”. *[use AS NEEDED. The design notes should indicate which anchors should receive a pull out test. Do not use mechanical anchors in a direct tension loading. If mechanical anchors are not allowed, delete the last sentence in the above note and show “Epoxy only” in the title.]*
6. **Concrete Sealer:** Concrete sealer shall be applied to substructures coinciding with expansion joint locations before placement of bearing devices and applying texture-coating. [Concrete sealer shall be applied to the front vertical face of the abutment ENDwall, the front and top of the abutment beam (plus apron walls or any other faces that are deemed necessary by the Engineer).] [Concrete sealer shall be applied to the top and vertical surfaces of the bent or pier cap.]

Concrete shall be clean and dry before applying the concrete sealER, and the thickness of the sealER shall be as recommended by the sealant manufacturer. Acceptable concrete sealers are included in the Qualified Products List for Non-Penetrating Concrete SealERs maintained by the Division of Materials and Tests. The sealer shall be clear or similar to the color of existing concrete surfaces to be sealed. The cost of the sealer, complete and in place, shall be included in the unit price bid for the expansion device at each substructure. *[use for all with expansion joints. Use the applicable sentences in brackets depending on the location of the expansion joint.]*

1. **Rip-Rap:** Machined rip-rap shall be Class \_ in accordance with Section 709 of the Standard Specifications and shall be measured and paid for under Roadway Item NO. . *[USE FOR HYDRAULIC CROSSINGS. HYDRAULICS WILL DETERMINE THE CLASS OF RIP-RAP.]*

*OR*

1. **Rip-Rap**: Rubble stone rip-rap shall be hand-placed in accordance with Subsection 709.06 of the Standard Specifications and shall be measured and paid for under Item NO. 709-07. *[use when directed by hydraulics.]*

*OR*

1. **Machined Rip-Rap:** Machined Rip-Rap for slope protection shall be 2” to 6” in size uniformly graded and meet the requirements of section 709 of the Standard Specifications AND shall be measured and paid for under Roadway Item NO. \_\_\_\_\_\_\_\_ . *[USE FOR GRADE CROSSINGS. Add RD01-SA-1 to standard drawing list and base quantities on 8” thickness.]*

*OR*

1. **SLOPE PAVEMENT:** PAVE SLOPES AND EXPOSED EARTH UNDER BRIDGE WITH a 4” THICK CONCRETE SLAB REINFORCED WITH 6 x 6 – D4.5 x d4.5 welded wire reinforcement. THE welded wire REINFORCEMENT SHALL BE PLACED AT ONE-HALF THE DEPTH OF THE SLAB AND EXTEND TO WITHIN 3” OF ITS EDGE with A 1’-0” LAP REQUIRED ON ALL SHEETS. THE COST OF THE Welded wire REINFORCEMENT SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM NO. 709-04, REINFORCED CONCRETE SLOPE PAVEMENT. ONE-HALF INCH PREMOLDED EXPANSION JOINTS without load transfers shall be formed around all structures and features projecting through, in, or against the slab. the slab shall be grooved parallel with and at right angles to the under roadway centerline at 6’-0” spacing in each direction. depth of groove shall not be less than 1”. see std. dwg. no. rd01-sa-1 for limits of slope protection. *[USE FOR RAILROAD CROSSINGS AND ELSEWHERE AS NEEDED. ADD rd01-sa-1 TO THE STANDARD DRAWING LIST. see smo 28 for more information.]*
2. **Value Engineering Alternate Bridge Design Criteria:** Alternate bridge design proposals may not diminish the functional or structural equivalency of the bridge and must meet or exceed THE capacities of the Contract Plans structure AT ALL LIMIT STATES IN AASHTO TABLE 3.4.1-1. Additionally, the waterway opening and flood clearances may not be reduced. for grade separations, the horizontal clearances may not be reduced, nor may the vertical clearances be less than the minimum acceptable for the type facility crossed. *[DO NOT USE ON GRANT BRIDGES.]*

1. **Falsework over Traffic:** See Section 604.06 of the Standard Specifications. *[as needed]*
2. **Note:** The Contractor shall erect posting signs at each approach to the existing bridge stating the load limit to be tons. Additionally, the contractor shall maintain the existing structure in accordance with the standard specifications. The cost of required labor and materials shall be included in the unit price bid for other items. *[USE When maintenance of Traffic is required on existing substandard bridge. The load posting shall be equal to the present posting, but not less than 3 tons.]*
3. **Requirements and Restrictions for Phase Construction**
	1. The phase construction sequence may prohibit the extraction of some sheet piling. All costs associated with sheet piling shall be included in the UNIT price BID for OTHER ITEMS.
	2. The location of longitudinal construction joints shall not be changed to accommodate stay-in-place deck forms.
	3. No sheet piles or bearing piles may be driven from the existing or proposed structure.
	4. (Number and Width) traffic lanes shall be maintained at all times.

*[USE FOR PHASE CONSTRUCTION PROJECTS. ONLY USE THE NOTES APPLICABLE TO A PARTICULAR PROJECT.]*

*[USE NOTEs 63, 64, or 65 When existing structural steel CONTAINING LEAD AND/OR CHROMATE-BASED PAINT IS to be EITHER reconditioned and repainted or removed and scrappeD. In order to determine which note applies, consult the bridge repair section to determine what paint system was originally applied to the structural steel and whether it was removed or overcoated after construction. IF THIS INFORMATION IS NOT AVAILABLE, contact tED kNIAZEWYCZ for instructions on how to proceed. This fact-finding should begin during development of the preliminary layout. If structural steel with lead and/or chromate-BASED paint is to be removed, use note 66 also.]*

1. **Note:** Our maintenance records indicate the bridge was originally painted with materials containing lead and/or chromates. the contractor is required to proceed accordingly to take all mandatory safeguards prescribed by State and Federal Law for both worker protection and hazardous materials disposal.

*OR*

1. **Note:** Our maintenance records indicate the bridge was originally painted with materials containing lead and/or chromates and subsequently overcoated with and \_\_\_\_\_\_\_\_\_. The contractor is required to proceed accordingly to take all mandatory safeguards prescribed by State and Federal Law for both worker protection and hazardous materials disposal.

*OR*

1. **Note:** Our maintenance records indicate this bridge has been stripped of lead and/or chromate-based paints and repainted with inorganic zinc primer and (vinyl or polyurethane) top coat. Small residual amounts of lead and/or chromates may remain and if found the contractor is required to proceed accordingly to take all mandatory safeguards prescribed by State and Federal Law for both worker protection and hazardous materials disposal.
2. **Note:** When structural steel coated with lead and/or chromate-based paints are to be severed using thermal cutting methods, the areas to be cut shall first be cleaned to bare metal by abrasion.
3. **Note:** Our existing bridge drawings, inspection reports, or ACM (asbestos containing material) survey indicate this bridge contains elements with ACM. To minimize the amount of hazardous material waste, the elements containing asbestos shall be removed prior to demolition of the entire structure. The contractor is required to take all mandatory safeguards prescribed by state and federal law for both worker protection and hazardous materials disposal. *[USE WHEN BRIDGE CONTAINS ACM. CHECK with c. e. mANAGER 1 FOR THIS INFORMATION. Use Item No. 202-01.02 Removal of Asbestos, L.S., 1.]*
4. **NOTE:** THE CONTRACTOR SHALL SAW CUT 1 INCH DEEP INTO THE SLAB BEFORE REMOVING CONCRETE. ALL TRANSVERSE REINFORCING STEEL SHALL REMAIN IN PLACE AND BE SPLICED WITH THE NEW REINFORCING. THE CONTRACTOR SHALL NOT USE A HYDRAULIC RAM MOUNTED ON A BACKHOE (COMMONLY CALLED A HOE RAM) OR OTHER SIMILAR HEAVY EQUIPMENT FOR CONCRETE REMOVAL. THE MAXIMUM ALLOWABLE HAMMER SIZE IS THE 60 POUND CLASS. *[For Bridge Widenings with Slab Removal]*
5. **Finishing Concrete Surfaces**: Concrete finishing shall be in accordance with Section 604.21 of the Standard Specifications with the Contractor having the option of using either Class II finish or a Class I finish followed by an Applied Texture Finish. No texture finish shall be applied prior to completion of paving and hauling operations at the bridge site. The cost of finishing concrete shall be included in the unit price bid for Item No. \_\_\_\_\_\_\_\_. *[OPTIONAL]*
6. **Finishing Concrete Surfaces:** Concrete finishing shall be in accordance with Section 604.21 of the Standard SpecificationS. A Class I finish followed by an Applied Texture Finish shall be used in lieu of a class II finish. No texture finish shall be applied prior to completion of paving and hauling operations at the bridge site. The applied texture finish shall be measured and paid for under Item No. \_\_\_\_\_\_\_\_. *[REQUIRED]*
7. **note:** in addition to the surfaces shown in the applied texture finish sketch, all exposed surfaces of the [wingwalls, abutment beams, apron walls, bents, and exterior portions of the endwalls] shall receive an applied texture finish, (grey, AMS-STD-595A, COLOR NO. 36440). *[place note under applied texture finish sketch. modify list in brackets as needed. The bottom of slab between spread girders shall not receive an applied texture finish. When the STD-7-1, STD-11-1, std-11-2, OR std-11-3 Rail is used, designate on the applied texture finish sketch that the entire rail will be white. for prestressed girders over vehicular traffic, designate on the applied texture finish sketch that all beams are to receive an applied texture finish.]*
8. **Note:** The Contractor shall check the location of all existing substructures and verify span lengths before fabricating girders. *[FOR ALL WIDENINGS.]*

**EStimated Quantities Notes**

1. **Note:**  Prior to construction of the pavement at bridge ends, the Contractor shall submit a proposed Bill of Steel to the Engineer for approval. *[FOR ALL WITH PAVEMENT AT BRIDGE ENDS (ALSO COMMONLY CALLED APPROACH SLABS). APPROACH SLABS must be provided on structures with a roadway width greater than 30 feet, except that ramp bridges of any width must have APPROACH SLABS.]*
2. **Note:** lump sum (description of structure) *[Give a complete description of the bridge. Spec. Art. 202.04 specifies the limits of removal including the removal of all conflicting elements of the existing structure. Spec. Art. 202.03 specifies the salvageable value to be the property of the contractor. Any deviation from the specifications must be noted on the bridge ESTIMATED quantitIES sheet and on sheet 2. The bridge designer must obtain information about salvageable material from the project commitments listed in the roadway plans. For large or unusual existing bridges, the existing bridge plans should be printed with the plans as reference drawings. If in doubt, consult with Construction.]*
3. **Note:** The following asbestos containing material elements were determined to be located on the existing bridge(s): [list material(s), location, and quantity]. See Special Provision No. 202ACM. *[USE WHEN BRIDGE HAS ASBESTOS CONTAINING MATERIAL (acm). ADD SPECIAL PROVISION 202ACM TO THE SPECIAL PROVISION LIST.]*
4. **Note:** Excavation based ON (FINAL PROFILE OR EXISTING GROUND) AT ABUTMENTS AND (FINAL PROFILE OR EXISTING GROUND) AT (bENTS OR PIERS).
5. **Note:** The UNIT price bid for roadway expansion devices to include the cost of \_\_\_\_\_\_\_\_ s.y. of concrete sealER required. See general notes for description of concrete sealER. *[for all with expansion joints]*
6. **Note:** See Foundation Preparation note this sheet. *[for all with cofferdams]*
7. **Note:** Lump Sum: Total estimated weight of \_\_\_\_\_\_\_ lbs. of structural steel includes GIRDERS, GIRDER BEARING DEVICES, FIELD SPLICES, CROSS-FRAMES, STIFFENERS, LATERAL BRACES, SHEAR CONNECTORS, TAB CONNECTION PLATES, BOLTS, etc. Also see Standard Specifications SectionS 602.49 and 602.50. *[steel bridges]*
8. **Note:** Cost of Rubber Bonding Cement and Elastomeric Bearing Pads to be included in unit price bid for Class “A” Concrete. *[This applies to steel bridges where pads are not bid under a bearing bid item OR INCLUDED IN THE COST OF STEEL STRUCTURES.]*
9. **Note:** Cost of \_\_\_\_\_\_\_ bridge deck drains to be included in the unit price bid for the parapet. *[OMIT DECK DRAINS OVER ROADWAYS, RAILROADS, AND BENTS.]*
10. **Note:** The cost of (water stops, bituminous-fiberboard, epoxy joints, etc.) and all miscellaneous joint material to be included in the unit price bid for other items. *[Specify only those items used on your bridge.]*
11. **Note:** End Fill Drainage System: Lump sum – drainage system includes all drainage pipe and porous backfill material. *[ONLY USE FOR BRIDGES CARRYING RAILROAD TRAFFIC.]*
12. **Note:**  Cost of elastomeric pads and rubber bonding cement to be included in the unit price bid for the prestressed beam. *[THIS APPLIES TO ALL PRESTRESSED BRIDGES. OTHER TYPES OF BEARING DEVICES FOR PRESTRESSED BRIDGES SHOULD BE INCLUDED IN A BID ITEM FOR BEARINGS.]*
13. **Note:** Intermediate Diaphragms shall be paid for in accordance with Standard Drawing STD-14-1. *[bULB-TEE BEAMS]*
14. **Note:**  Cost of polyethylene sheeting and all miscellaneous items necessary for installation to be included in the unit price bid for Perforated Pipe.
15. **Note:** The cost of removing the exterior portion of the existing slab, portions of the existing abutment, and the bridgerail shall be included in the unit price bid for Removal of Structures, Item No.\_\_\_\_\_\_. *[ALL WIDENINGS]*
16. **Note:** The cost of all materials and labor necessary for the installation of ­­­­­­\_\_\_\_\_\_\_ anchor bolt assemblies shall be included in the unit price bid for Class “A” Concrete (Bridges), Item No. 604-03.01. *[ALL BRIDGES with ANCHOR BOLT ASSEMBLIES PER STD-6-1. SHOW THE TOTAL NUMBER OF ANCHOR BOLTS REQUIRED FOR THE BRIDGE.]*
17. **Note:** Lump sum for structurAL lighting includes \_\_\_\_\_\_\_ ft. 2” ∅ SCHEDULE 40 PVC conduit with pull wires, \_\_\_\_\_\_\_ junction boxes, \_\_\_\_\_\_\_ pull boxes, \_\_\_\_\_\_\_ anchor bolts, and all necessary materials for installation of structurAL lighting. SEE ROADWAY PLANS FOR STRUCTURAL LIGHTING DETAILS AND NOTES.
18. **nOTE:** Lump Sum FOR NAVIGATIONAL LIGHTING Includes all items and labor necessary to install the navigationAL lighting complete as shown on the plans, including connection to power source. Power source to be furnished by others (See Roadway Plans). The Contractor shall furnish navigationAL lighting in accordance with the Coast Guard Permit. Shop drawings for navigationAL lighting support brackets shall be submitted for approval.
19. **Note:** The Expansion Joint at (Location) shall be in accordance with Section 623.03 of the Standard Specifications. The total required movement is 4 inches. Shop drawings shall be submitted to the Engineer of Structures for approval. *[FOR BRIDGES WITH STRIP-SEAL EXPANSION JOINTS]*
20. **Note:** The Expansion Joint at (Location) shall be in accordance with Section 623.02 of the Standard Specifications. The total required movement is \_\_\_\_\_ inches. Shop drawings shall be submitted to the Engineer of Structures for approval. Joint members and support boxes shall be galvanized after fabrication in accordance with ASTM A123. *[FOR BRIDGES WITH MODULAR EXPANSION JOINTS]*
21. **Note:** The cost of removing any existing asphalt overlay shall be included in the unit price bid for scarifying. *[WHEN BRIDGE DECK IS TO BE SCARIFIED. SEE SMO51-16 FOR MORE INFORMATION.]*
22. **Note:** The surface of the bridge deck shall be removed to the depth necessary to expose sound concrete utilizing hydrodemolition equipment with a minimum nozzle pressure of 17,000 psi. The equipment and work operation at each site will be subject to approval of the Engineer. If the depth and/or soundness of concrete being removed is unacceptable to the Engineer, the nozzle pressure shall be adjusted as necessary to provide satisfactory performance.

After the hydrodemolition operation is completed, the Engineer will determine if the exposed reinforcing steel and concrete is sufficiently cleaned or if additional sand blasting is required. All loose material shall be removed from the deck prior to pouring concrete.

Areas of the deck not accessible or otherwise adaptable to hydrodemolition shall be removed by conventional power chipping or hand tools. Pneumatic hammers heavier than the 30 pound class shall not be used.

The cost of all work required to remove unsound concrete from the deck and to clean and prepare the deck to the satisfaction of the Engineer shall be included in the unit price bid for Item No.\_\_\_\_\_\_, Bridge Deck Removal (Hydro), S.Y.

*[use FOR REMOVAL OF DECK BY HYDRODEMOLITION. Item No. \_\_\_\_\_\_\_, Bridge Deck Removal (Hydro) L.S. is also available, but may be used only with the approval of the Engineer of Structures.]*

1. **Note:** Mechanical bar splicers must be on the tdot Qualified Products List 27. The bar splicers shall meet AASHTO lrfd Specifications for mechanical connection. When epoxy coating is required, the exposed threads shall be repaired after splicing according to Section 907 of the Standard Specifications. The cost of furnishing the bar splicers, (and epoxy coating when required) including all labor and materials necessary for complete installation, shall be included in the unit price bid for Item No. 604-02.03 and Item No. 604-03-02.
2. **Note:** Cost of preparation of the top of pile for seismic requirements shall be included in the unit price bid for Item 606-12.01. See Standard Drawing STD-6-1 for details. The pile and test pile lengths shown on the plans do not include the 2 feet required for seismic attachment. *[FOR ALL BRIDGES with CONCRETE PILING EXCEPT IN SEISMIC CATEGORY A.]*
3. **Note:** Granular backfill shall be Class "A" Grading "D" material. See Standard Drawing STD-10-1. *[For granular material, use a conversion factor of 1.75 when converting cubic yards to tons.]*
4. **Note:**  The unit price bid for the cast steel points shall include furnishing and installation to the piles. *[USE FOR ALL WITH PILE TIPS.]*
5. **NOTE:** INCLUDES ALL COSTS FOR INSTALLING THE BRIDGE DECK CRACK SEALER (HMWM) INCLUDING CRACK PREPARATION, CLEANING, LABOR, AND ALL MISCELLANEOUS MATERIALS REQUIRED TO SEAL THE LONGITUDINAL CONSTRUCTION JOINT ACCORDING TO SPECIAL PROVISION 604CR AND MANUFACTURERS' SPECIFICATIONS. CRACK SEALING SHALL BE DONE AT THE END OF CONSTRUCTION TO ALLOW SHRINKAGE OF DECK CONCRETE CAUSING THE CRACK TO OCCUR. *[USE FOR ALL WIDENINGS AND PHASE-CONSTRUCTED BRIDGES.]*
6. **NOTE:** THE COSTs OF THE FOLLOWING ITEMS IS TO BE INCLUDED IN THE UNIT PRICE BID FOR ITEM NOS. 625-02.01 AND 625-02.13:
	1. dRILLING THE SHAFT
	2. CLEANING AND INSPECTING THE SHAFT
	3. INSTALLATION OF ALL CASING AND/OR SLURRY, IF USED. NO PAYMENT WILL BE MADE FOR temporary CASING WHICH CANNOT BE REMOVED.
	4. INSTALLATION OF 1.5” DIAMETER PIPES IN SHAFTS FOR CSL TESTING. \_\_\_\_\_ CSL TUBES

 ARE REQUIRED PER SHAFT AT BENT NOS. \_\_\_\_\_\_\_\_\_\_. *[ONE CSL TUBE IS REQUIRED FOR EACH FOOT OF*

 *SHAFT DIAMETER.]*

1. **NOTE:** THE CONTRACTOR SHALL HAVE THE STABILITY OF THE SHAFT CAGE VERIFIED BY AN ENGINEER LICENSED IN tENNESSEE.
2. **NOTE:** SEE ARTICLE 625.31 OF THE SPECIAL PROVISION. THE INTENT IS FOR THE CORE DRILLING AND SAMPLING TO BE PERFORMED PRIOR TO SHAFT DRILLING. SUBJECT TO THE APPROVAL FROM THE GEOTECHNICAL ENGINEER, THESE CORES ARE TO BE USED TO PRE-DETERMINE ACCEPTABLE SHAFT TIP ELEVATIONS. CORES SHALL EXTEND \_\_\_\_\_\_\_ BELOW ESTIMATED TIP ELEVATIONS SHOWN ON THE PLANS. 1 CORE IS REQUIRED PER SHAFT. *[CONSULT WITH the Geotechnical engineer for the distance to extend core drilling below the bottom of tip elevations. This distance ranges from 8-20 ft. See section 625.31 of the special provision.]*
3. **NOTE:** THE CSL TESTING FIRM MUST BE PRESENT FOR ALL SHAFT POURS. *[use for all with drilled shafts, even if csl testing is not included as a bid item. see section 625.51 of the special provision.]*
4. **NOTE:** THE INTENT IS TO VERIFY THAT THE SHAFT TIP AND SIDE WALLS OF the SOCKET ARE CLEAN AND INTACT.  *[USE with either item no. 625-01.10 camera inspection – drilled shaft (dry) or 625-01.11 camera inspection – drilled shaft (wet).]*
5. **NOTE:** THE CONTRACTOR SHALL USE PERMANENT CASING. the STRUCTURAL capacity of the casing IS NOT INCORPORATED INTO the DESIGN. *[USE WHEN PERMANENT CASING IS REQUIRED.]*
6. **NOTE:** QUANTITY BASED ON \_\_\_\_\_\_\_ CORES PER SHAFT. SEE SPECIAL PROVISION 625.50. *[SPECIFY THE NUMBER OF CORES BASED ON THE TABLE BELOW.]*

|  |  |
| --- | --- |
| *sHAFT DIAMETER* | *nUMBER OF CORES REQUIRED* |
| *4’-0” OR LESS* | *1* |
| *>4’-0” & <7’-0”* | *2* |
| *7’-0” or LARGER* | *3* |

1. **NOTE:** DRILLED SHAFT CONCRETE SHALL BE CLASS "SH-SCC".

**SUPERSTRUCTURE NOTES [PRECAST BEAMS]**

1. DECK CONCRETE POURING SEQUENCE: SLAB construction joints may be located at the contractor’s option subject to the following:

1. NO CONSTRUCTION JOINT SHALL BE LOCATED CLOSER THAN 10 FEET OR FURTHER THAN 15 FEET FROM AN INTERIOR SUPPORT.

2. THE SLAB IN THE MIDDLE SECTION OF BOTH ADJACENT SPANS MUST BE POURED TO WITHIN AT LEAST 15 FEET OF THE SUPPORTS EITHER PRIOR TO OR CONCURRENTLY WITH THE SLAB OVER AN INTERIOR SUPPORT.

3. ALL SLAB CONSTRUCTION JOINTS SHALL BE IN ACCORDANCE WITH THE SLAB CONSTRUCTION JOINT DETAILS SHOWN ON THIS SHEET.

1. **Note:** No portion of the (curb, parapet, or median barrier rail) shall be poured until the entire deck slab is in place (unless required for phase construction). *[include last phrase as needed.]*

1. **Note:** Outside edge of slab and bridge rail to conform to horizontal curve.
2. **Special Note for Anchor Bolts at Bents:** Anchor bolt assemblies at bents shall be in accordance with Standard Drawing STD-6-1.
3. **Dead Load Correction Curve:** This curve is for dead load slab and all dead loads that are applied after slab is in place and should be corrected to compensate for the effects due to vertical curve. *[Omit the vertical curve correction part of this note when a vertical curve is not involved.]*
4. **Note:** If prestressed deck panels are used and the beams are profiled after the panels are in place, reduce the dead load correction values shown by 25%. *[If necessary, correct the percent reduction shown above due to actual design requirements.]*
5. **NOTE:** WHEN POURING SLAB, PROVISIONS SHALL BE MADE FOR SETTING (REINFORCING STEEL OR ANCHOR BOLTS) FOR (BRIDGE RAIL OR PARAPET). THE PARAPET SHALL NOT BE POURED UNTIL THE SLAB IS POURED AND CURED. [WHEN POURING PARAPET, PROVISIONS SHALL BE MADE FOR SETTING ANCHOR BOLTS FOR HANDRAILS.] ALSO SEE STD. DWG. NO. \_\_. *[bracketed sentence required when parapet has a HANDrail.]*
6. **Note:** All the strands in the block-out that are to be cut in the field shall be heated in a sufficient amount (usually near white surface) to relieve the stresses in the strands before the strands are cut. Any damage that occurs to the beams due to a deviation from the cutting procedure as stated shall be the responsibility of the Contractor and repaired at his own expense to the complete satisfaction of the Engineer. *[use when strands are cut in the top of prestressed beams.]*
7. **Note:** The Contractor is solely responsible for supporting the beams to prevent damage due to twisting or overturning during all phases of construction. It is strongly recommended that the temporary erection diaphragms be installed and the permanent intermediate diaphragms be INSTALLED prior to placing any loads on the BEAMS. However, temporary erection diaphragms and permanent intermediate diaphragms must be in place in the span at the time the slab is poured in said span. *[Delete reference to permanent intermediate diaphragms when not applicable. See SMO48.]*
8. **Note:** The support diaphragms at the bents shall be formed and the bottom 15 inches poured as soon as possible after the beams have been set. The remainder of the diaphragmS shall be poured concurrently with the deck slab. The beams shall attain an age of at least 90 days prior to pouring the remainder of the support diaphragms and deck slab. All diaphragm concrete shall be included in the quantity FOR CLASS (“D” OR “DS”) CONCRETE.

**SUPERSTRUCTURE NOTES [STEEL GIRDERS]**

1. ALL SLAB CONSTRUCTION JOINTS SHALL BE IN ACCORDANCE WITH THE SLAB CONSTRUCTION JOINT DETAILS SHOWN ON THIS SHEET.
2. all slab pours shall be made in numerical sequence. *[place note under pouring sequence drawing.]*
3. the contractor shall make adequate provisions during placement of the slab to prevent the exterior girders from twisting.
4. **Note:** No portion of the (curb, parapet, or median barrier rail) shall be poured until the entire deck slab is in place (unless required for phase construction). *[include last phrase as needed.]*

1. **Note:** Outside edge of slab and bridge rail to conform to horizontal curve.
2. **Note:** The concrete deck shall not be poured until all structural steel is erected and all welding and/or bolting complete. *[Other coordinating notes may be required for projects involving stage construction.]*
3. **Dead Load Correction Curve:** Girders shall be cambered to compensate for dead load deflection and vertical curve. *[Omit the vertical curve part of this note when a vertical curve is not involved. DEAD LOAD girder camber should include the weight of cross-frames, sTIFFENERS, etc. Also see SMO40-06 for information regarding erection, cross-frames, phasing, etc.]*
4. **Note:** If prestressed deck panels are used and the girders are profiled after the panels are in place, reduce the dead load correction values shown by 25%. *[If necessary, correct the percent reduction shown above due to actual design requirements.]*
5. **NOTE:** WHEN POURING SLAB, PROVISIONS SHALL BE MADE FOR SETTING (REINFORCING STEEL OR ANCHOR BOLTS) FOR (BRIDGE RAIL OR PARAPET). THE PARAPET SHALL NOT BE POURED UNTIL THE SLAB IS POURED AND CURED. [WHEN POURING PARAPET, PROVISIONS SHALL BE MADE FOR SETTING ANCHOR BOLTS FOR HANDRAILS.] ALSO SEE STD. DWG. NO. \_\_. *[bracketed sentence required when parapet has a HANDrail.]*
6. **Approval of Materials:** No fabrication shall be started until the materials involved have been approved by the Tennessee Department of Transportation, Division of Materials and Tests or (in case of a railroad structure, name of railroad) with a copy of the test reports also going to the Tennessee Department of Transportation, Division of Materials and Tests.
7. **Identity of Main Materials:** See Section 602 of the Standard Specifications.
8. **Structural Steel:** Shall conform to ASTM A709 Grade unless otherwise noted. All structural steel for girder flanges in tension and all webs shall meet the supplemental requirements for longitudinal charpy V-Notch tests specified in the ASTM Specifications. Zone 2 of (Non-Fracture Critical CriteriA or Fracture Critical Criteria) shall apply. *[SELECT APPROPRIATE CRITERIA]*

[Structural steel designated on the plans as fracture critical shall meet the requirements of the AASHTO Guide Specifications for Fracture Critical Non-Redundant Steel Bridge Members as required for Zone 2. Fabrication of fracture critical bridge members shall be accomplished by fabricators certified under the AISC Quality MANAGEMENT SYSTEMS CERTIFICATION – CERTIFIED BRIDGE FABRICATOR - ADVANCED. No other certification program will be acceptable.] *[USE this paragraph FOR BRIDGES WITH FRACTURE CRITICAL MEMBERS.]*

1. **Note FOR HPS 70W:** The use of Thermo-Mechanically Controlled Processed (TMCP) Grade 70W plate up to 2 inches in thickness is allowed. *[When HPS 70W steel ≤ 2" in thickness is used]*

1. **Welding:** AASHTO/AWS D1.5-Current Edition BRIDGE Welding Code and Section 602 of the Standard Specifications.
2. **Field Connections:** Shall be ∅ High Tensile strength bolts ASTM F3125 GRADE (A325 OR A490) TYPE 3 unless otherwise shown. See AASHTO LRFD Bridge Construction Specifications Art. 11.3.2 and Section 602 of the Standard Specifications.
3. **Heat Curving Steel Girders:** Heat curving will be permitted for girders with radius of curvature in excess of the minimum requirements specified in AASHTO LRFD Bridge Design Specifications Art. 6.7.7.2, provided the procedure is in accordance with AASHTO LRFD Bridge Construction Specifications Art. 11.4.12.
4. **Additional Shop Splice Note:** Shop splices necessary due to lengths or size of material involved may be added by the Fabricator subject to approval by the Engineer and shall be at no additional cost to the project.
5. **Additional Field Splice Note:** Field splices necessary due to lengths involved may be added by the Fabricator subject to approval by the Engineer and shall be at no additional cost to the project.
6. **Field Splice Note:** Field splices shown on the plans may be deleted by the Contractor. Adjustment to the lump sum price for steel structures shall be in accordance with the STANDARD specifications.

1. **NOTE:** 2” DIAMETER WEEP HOLES WITH SCREEN WIRE ARE REQUIRED AT THE LOW POINT OF EACH CELL. *[FOR steel TUB GIRDERS OR STEEL BOX BENT CAPS]*
2. **Steel Beam Design Data** (Per Beam):

Live Load Distribution Factor: Lanes for Moment

 Lanes for Shear

 Lanes for Fatigue

Composite Dead Load: DC = LB/FT

DW = LB/FT

Composite Slab Design Strength: F’C = 4000 psi

1. **(STRAIGHT OR CURVED) GIRDER ERECTION:** GIRDERS MAY HAVE TO BE CRANE-LIFTED, JACKED, NEEDLE-BEAMED, ETC. TO ACHIEVE THE PROPER CROSS-SLOPE AND HOLE ALIGNMENT DURING TRANSVERSE BRACING INSTALLATION. THE CONTRACTOR WILL NOT BE ALLOWED TO REAM HOLES UNTIL 50% OF THE HOLES IN THE PATTERN AT THAT LOCATION ARE FILLED WITH BOLTS OF PLANS SPECIFIED SIZE. ALL TRANSVERSE BRACING SHALL BE IN PLACE AND ALL BOLTS TENSIONED TO THE PLANS SPECIFIED VALUES PRIOR TO THE SLAB POUR. ALL COSTS OF TRANSVERSE BRACING installation TO BE INCLUDED IN THE LUMP SUM COST OF STEEL STRUCTURES. *[FOR SINGLE PHASE CONSTRUCTION]*
2. **(STRAIGHT OR CURVED) GIRDER ERECTION:** GIRDERS MAY HAVE TO BE CRANE-LIFTED, JACKED, NEEDLE-BEAMED, ETC. TO ACHIEVE THE PROPER CROSS-SLOPE AND HOLE ALIGNMENT DURING PHASE 1 AND PHASE 2 TRANSVERSE BRACING INSTALLATION. THE CONTRACTOR WILL NOT BE ALLOWED TO REAM HOLES UNTIL 50% OF THE HOLES IN THE PATTERN AT THAT LOCATION ARE FILLED WITH BOLTS OF PLANS SPECIFIED SIZE. ALL TRANSVERSE BRACING in phase 1 and phase 2 SHALL BE IN PLACE AND ALL BOLTS TENSIONED TO THE PLANS SPECIFIED VALUES PRIOR TO THE SLAB POUR in that phase. ALL COSTS OF TRANSVERSE BRACING installation TO BE INCLUDED IN THE LUMP SUM COST OF STEEL STRUCTURES. *[FOR MULTIPLE PHASE CONSTRUCTION]*
3. **(STRAIGHT OR CURVED) GIRDER CHANNEL BRACING:** CHANNEL BRACING FOR PHASE 3 CLOSURE POUR TO BE CONNECTED DURING PHASE 2 GIRDER ERECTION. THE CENTER BOLT SHALL BE INSTALLED HAND-TIGHT AT EACH END OF THE CHANNEL. AFTER THE DECK SLAB OF PHASE 2 HAS BEEN POURED, THE CONTRACTOR SHALL INSTALL THE REMAINING BOLTS AND TENSION ALL BOLTS TO THE REQUIRED PLANS VALUE. *[FOR MULTIPLE PHASE CONSTRUCTION]*
4. **(STRAIGHT OR CURVED) GIRDER Z-FRAME BRACING:** THE TOP AND BOTTOM MEMBERS FOR TRANSVERSE BRACING IN THE PHASE 3 CLOSURE BAY TO BE CONNECTED DURING PHASE 2 GIRDER ERECTION. ONE BOLT SHALL BE INSTALLED HAND-TIGHT AT EACH END OF EACH TOP AND BOTTOM MEMBER. BOLTS SHALL NOT BE INSTALLED IN THE DIAGONAL MEMBER AT THIS TIME. AFTER THE DECK SLAB OF PHASE 2 HAS BEEN POURED, THE CONTRACTOR SHALL INSTALL THE REMAINING BOLTS AND TENSION ALL BOLTS TO THE REQUIRED PLANS VALUE. *[FOR MULTIPLE PHASE CONSTRUCTION]*
5. **(STRAIGHT OR CURVED) GIRDER K-FRAME BRACING:**THE TOP AND BOTTOM MEMBER FOR TRANVERSE BRACING IN THE PHASE 3 CLOSURE BAY TO BE CONNECTED DURING PHASE 2 GIRDER ERECTION. ONE BOLT SHALL BE INSTALLED HAND-TIGHT AT EACH END OF EACH TOP AND BOTTOM MEMBER. BOLTS SHALL NOT BE INSTALLED IN THE DIAGONAL MEMBERS AT THIS TIME. AFTER THE DECK SLAB OF PHASE 2 HAS BEEN POURED, THE CONTRACTOR SHALL INSTALL THE REMAINING BOLTS AND TENSION ALL BOLTS TO THE REQUIRED PLANS VALUE. *[FOR MULTIPLE PHASE CONSTRUCTION]*
6. **CONTRACTOR CURVED GIRDER ERECTION PLAN:** THE CONTRACTOR SHALL SUBMIT A DETAILED ERECTION PLAN FOR THE GIRDERS TO THE ENGINEER FOR REVIEW. SUBMITTAL SHALL BE AT LEAST 90 DAYS PRIOR TO START OF GIRDER ERECTION. THE CONTRACTOR WILL BE OBLIGATED TO SUPPLY ALL ENGINEERING ANALYSIS REQUESTED BY THE ENGINEER DEEMED NECESSARY TO CONFIRM THE ERECTION PLAN TO BE STRUCTURALLY ADEQUATE AND IN CONFORMANCE WITH AASHTO SPECIFICATIONS. THE ERECTION PLAN SHALL ADDRESS SHIPPING, HANDLING, AND ERECTION METHODS TO BE APPLIED. SHIPMENT OF THE GIRDERS SHALL NOT BE EXECUTED PRIOR TO RECEIVING THE ENGINEER’S APPROVAL OF ERECTION PLAN AND SUPPORTING ANALYSIS. SEE SECTION 602 OF THE STANDARD SPECIFICATIONS.

IN THE EVENT THE ERECTION PLAN EMPLOYS TEMPORARY SHORING, THIS SHORING SHALL SUPPORT THE GIRDERS SUCH THAT THE GIRDER PROFILE DEFINED BY THE BLOCKING DIAGRAM IN THE “NO-LOAD” POSITION ON THE SHOP DRAWINGS IS ESTABLISHED AND SUSTAINED. SEE ALSO ARTICLES 602.42 AND 604.06 OF THE STANDARD SPECIFICATIONS.

WHEN CONTRACTOR’S PROPOSED PLACEMENT OF SHORING CONFLICTS WITH THE TRAFFIC CONTROL PLAN ESTABLISHED BY TDOT PLANS, THE CONTRACTOR SHALL DEVELOP AND SUBMIT A REVISED TRAFFIC CONTROL PLAN TO THE ENGINEER FOR APPROVAL. THE TRAFFIC CONTROL PLAN SHALL INCLUDE DOCUMENTS AND DRAWINGS AS APPROPRIATE TO PROVIDE A COMPREHENSIVE DESCRIPTION OF DEVIATIONS FROM THE TDOT TRAFFIC CONTROL PLAN. INFORMATION INCLUDED IN THE CONTRACTOR’S TRAFFIC CONTROL PLAN SHALL INCLUDE BUT IS NOT LIMITED TO IDENTIFYING THE LOCATION OF ALL TEMPORARY SHORING, THE CHARACTER AND LOCATION OF BARRIERS ISOLATING SHORING FROM TRAFFIC, DETAILS FOR REALIGNMENT OF TRAFFIC LANES, AND CHANGES TO SIGN TYPE OR PLACEMENT. THE COST OF TEMPORARY SHORING AND ANY COST INCURRED AS A CONSEQUENCE OF MODIFICATIONS TO THE TRAFFIC CONTROL PLAN REQUESTED BY THE CONTRACTOR TO ACCOMMODATE HIS ERECTION PLAN SHALL BE INCLUDED IN ITEM No. \_\_\_\_\_\_\_\_\_. *[FOR ALL CURVED STEEL BRIDGES. give ITEM NO. FOR STEEL STRUCTURES.]*

1. **STRAIGHT GIRDER TRANSVERSE BRACING:** STRAIGHT GIRDER TRANSVERSE BRACING, (INCLUDING CLOSURE BRACING), SHALL BE FABRICATED FOR TOTAL CAMBER MINUS girder SELF WEIGHT CAMBER. *[USE FOR ALL STRAIGHT STEEL GIRDER BRIDGES. omit phase in parentheses FOR SINGLE PHASE CONSTRUCTION.]*
2. **CURVED GIRDER TRANSVERSE BRACING:** TRANSVERSE BRACING SHALL BE FABRICATED TO FIT THE “NO-LOAD” POSITION (FOR EACH PHASE AND THE CLOSURE bracing FABRICATED TO MATCH THE DEFLECTED POSITION OF EACH PHASE). *[use for ALL CURVED STEEL GIRDER BRIDGEs. omit phase in parentheses FOR SINGLE PHASE CONSTRUCTION.]*
3. *[The need for supplemental cantilever bracing should be checked for all steel girder bridges. An in-house computer program called CBR is available to perform this check. If supplemental bracing is required, the program will generate required notes for the plans. Consultants may obtain the program by contacting the Division of Structures.]*
4. **note:** shear connector material shall be cold-drawn astm a108 grade 1015, 1018, or 1020, either semi or fully killed, and have specified minimum yield and tensile strengths of 50 ksi and 60 ksi, respectively.

**GENERAL NOTES [PRECAST BEAMS SHEET]**

1. **Note:** See STD-14-1 for Bulb-Tee Beam Standard Details and Notes.

1. **Note:** All beams are (BT-54, BT-63, BT-72).

*[BULB-TEE BEAMS]*

*OR*

1. **Note:** See STD-14-2 for I-Beam Standard Details, Notes AND REINFORCING.

1. **Note:** All beams are AASHTO - PCI Standard Type (i, ii, iii, OR iv).

*[I-BEAMS]*

*OR*

1. **Note:** See STD-14-3 for BOX BEAM Standard Details, Notes AND REINFORCING.

*[BOX BEAMS]*

1. **Note:** The prestressed beams shall attain an age of at least 90 days prior to pouring the support diaphragms (excluding bottom 15”) and deck slab.
2. **Note:** The prestressing strands shall be cut flush at the end of THE beam adjacent to the expansion joint and a protective coating placed on the end of the beam. *[use for bridges with expansion joints.]*
3. **Note:** The concrete for this construction shall be of such properties as to attain a compressive strength of not less than \_\_\_\_\_\_\_\_ psi at the age of 28 days and stress transfer shall not be made to the bridge member until the test specimens indicate that the concrete has reached a compressive strength of at least \_\_\_\_\_\_\_\_ psi. See General Notes for Concrete finishing note.
4. **Prestressed Beam Design Data** (Per Beam):

Live Load Distribution Factor: Moment = Lanes

Shear = Lanes

Composite Dead Load: DC = LB/FT

 DW = LB/FT

Composite Slab Design Strength: f 'c = 4000 psi

 Downward deflection under total DL is not allowed.

**GENERAL NOTES [BENT SHEET]**

1. **Note:** When pouring cap beam, provisions shall be made for setting anchor bolts. See Standard Drawing STD-6-1. Bolt projection 11". *[use for All with Anchor Bolt Assemblies per Std. Dwg. STD-6-1. DO NOT LOCATE ANCHOR BOLTS OUTSIDE THE CENTERLINE OF THE EXTERIOR GIRDERS FOR I-BEAMS.]*
2. **Note:** Riser blocks to be poured monolithically with (BENT OR pIER) CAP. *[Riser blocks of 6 inches in height or higher AT CENTERLINE shall be reinforced. Riser blocks should be a minimum of 2 inches at THE centerline and 1 inch at the edge.]*
3. **Note:** Riser block bearing surface to conform to bottom of beam grade. *[USE FOR All Bridges with Elastomeric Pads or Sliding Bearing Devices. Use this note when bottom of beam slope is numerically equal to or greater than 0.0052 ft. per ft. (1/16" per ft.). Show actual riser block slope dimensions on the detail. The riser block bearing surface can be poured level when a hinged (NON-EXPANSION) joint bearing device is used.]*
4. **Note:** Elastomeric pads shall be in place a minimum of one day before being disturbed by setting beams on concrete. Place rubber bonding cement in such a way that visible concrete surfaces will not be stained.
5. **Note:** Column steel to extend feet into (BENT OR pIER) CAP.
6. **Note:** See Standard Drawing STD-6-1 for pile details and notes.  *[ALL BRIDGES WITH PILING EXCEPT IN SEISMIC CATEGORY A.]*
7. **Note:** See Standard Drawing STD-6-2 for spiral reinforcement details and notes. *[AS NEEDED]*

**GENERAL NOTES [ABUTMENT SHEET]**

1. **Note:** When pouring abutment beam, provisions shall be made for setting (anchor bolts or dowel bars). If the Contractor elects to drill the holes for the (anchor boltS or dowel bars), the reinforcing steel shall be placed so as not to interfere with the drilling. (Bolt or dowel bar) projection . *[AS NEEDED]*
2. **Note:** Riser blocks SHALL be poured monolithically with THE ABUTMENT beam.  *[Riser blocks of 6 inches in height or higher AT CENTERLINE shall be reinforced. Riser blocks should be a minimum of 2 inches at the centerline and 1 inch at the edge.]*
3. **Note:** Riser block bearing surface to conform to bottom of beam grade. *[USE FOR All Bridges with Elastomeric Pads or Sliding Bearing Devices. Use this note when bottom of beam slope is numerically equal to or greater than 0.0052 ft. per ft. (1/16" per ft.). Show actual riser block slope dimensions on the detail. The riser block bearing surface can be poured level when a hinged (NON-EXPANSION) joint bearing device is used.]*
4. **Note:** Elastomeric pads shall be in place a minimum of one day before being disturbed by setting beams on concrete. Place rubber bonding cement in such a way that visible concrete surfaces will not be stained.
5. **Note:** When pouring wingwalls, provisions shall be made for setting reinforcing steel for wingposts and parapets. For details of wingposts and parapetS, see Std. Dwg. No. .
6. **Note:** Not less than half of the slab in the end span shall be poured prior to, or concurrently with, placement of any part of the abutment ENDwall. At least the top 12 inches of the ENDwall shall be poured concurrently with the end of slab. *[PRESTRESSED BEAMS WITH INTEGRAL ABUTMENTS]*
7. **Note:** The entire abutment ENDwall shall be poured concurrently with Pour No. \_\_\_\_\_\_\_\_. See Dwg. No. \_\_\_\_\_\_\_ for details. *[STEEL BEAMS WITH INTEGRAL ABUTMENTS]*
8. **Note:** The girders shall be in place prior to pouring the abutment endwall. At least the top 12 inches of the ENDWALL shall be poured concurrently with the expansion joint closure pour. *[ALL with EXPANSION JOINTS]*
9. **Note:** Cost of bridge rail and post is to be included in the unit price bid for the bridge rail system.
10. **Note:** Top of apron wall to conform to bottom of roadway slab.
11. **Note:** The Contractor shall support the abutment until the superstructure is in place, falsework has been removed, and backfilling has been completed. *[use for abutments where overturning during construction could be a problem.]*
12. **Note:** See Standard Drawing STD-6-1 for pile details and notes.  *[All Bridges with Piling Except in Seismic Category A.]*
13. **Note:** Wingbeam piles shall be driven to the plans tip elevation or refusal. Seismic attachment is not required for wingbeam piles.

**NOTES 175 – 237 ARE FOR USE ON BRIDGE REPAIR PROJECTS.**

**GENERAL NOTES**

**SPECIFICATIONS & LOADING**

1. **SPECIFICATIONS:** STANDARD ROAD AND BRIDGE SPECIFICATIONS OF THE TENNESSEE DEPARTMENT OF TRANSPORTATION (JANUARY 1, 2015 EDITION), and the 4th edition (2017) aashto lrfd bridge construction specifications with interims.
2. **DESIGN SPECIFICATIONS:** 8TH EDITION (2018) AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS WITH INTERIMS, AND THE 2ND EDITION (2011) AASHTO GUIDE SPECIFICATIONS FOR LRFD SEISMIC BRIDGE DESIGN WITH INTERIMS. *[alL EXCEPT bridges carrying railroad traffic.]*

*[FOR BRIDGE REPLACEMENTS AND SUPERSTRUCTURE REPLACEMENTS]*

1. **Loading**:
	1. HL-93 live loading
	2. Seismic Category \_\_\_\_\_\_ witH AS= \_\_\_\_\_\_, SDS= , SD1= , (1000 year return period).
	3. Dead Load includes 35 lb/sq. ft. for future wearing surface.

**STEEL, CONCRETE, REINFORCING, AND FORMING**

1. **Structural Steel:** Shall conform to ASTM A709 Grade unless otherwise noted. All structural steel for girder flanges in tension and all webs shall meet the supplemental requirements for longitudinal charpy V-Notch tests specified in the ASTM Specifications. Zone 2 of (Non-Fracture Critical CriteriA or Fracture Critical Criteria) shall apply. *[SELECT APPROPRIATE CRITERIA.]*

[Structural steel designated on the plans as fracture critical shall meet the requirements of the AASHTO Guide Specifications for Fracture Critical Non-Redundant Steel Bridge Members as required for Zone 2. Fabrication of fracture critical bridge members shall be accomplished by fabricators certified under the AISC Quality MANAGEMENT SYSTEMS CERTIFICATION – CERTIFIED BRIDGE FABRICATOR - ADVANCED. No other certification program will be acceptable.] *[USE this paragraph FOR BRIDGES WITH FRACTURE CRITICAL MEMBERS.]*

1. **Reinforcing Steel**: Shall be ASTM A615 Grade 60 unless noted otherwise. See Section 604 and 907 of the Standard Specifications.
2. **Note:** Mechanical bar splicers must be on the tdot Qualified Products List 27. The bar splicers shall meet AASHTO lrfd Specifications for mechanical connection. When epoxy coating is required, the exposed threads shall be repaired after splicing according to Section 907 of the Standard Specifications. The cost of furnishing the bar splicers, (and epoxy coating when required) including all labor and materials necessary for complete installation, shall be included in the unit price bid for Item No. 604-10.18.
3. **BOLTS:** SHALL BE HIGH TENSILE STRENGTH BOLTS (ASTM-F3125, GRADE A325 OR A490), TYPE 1, UNLESS OTHERWISE NOTED. BOLT SIZE TO BE AS NOTED ON PLANS. SEE SECTION 602 OF THE STANDARD SPECIFICATIONS. EXISTING CONTACT SURFACES SHALL BE CLEANED OF ALL EXISTING PAINT AND RUST TO BARE METAL PRIOR TO ATTACHMENT OF NEW MEMBERS. UNCOATED (BLACK) BOLTS MAY BE USED INSTEAD OF GALVANIZED BOLTS. *[use this note when a small number of bolts are required for the project.]*
4. **BOLTS:** SHALL BE HIGH TENSILE STRENGTH BOLTS (ASTM-F3125, GRADE A325 OR A490), TYPE 1, UNLESS OTHERWISE NOTED. BOLT SIZE TO BE AS NOTED ON PLANS. SEE SECTION 602 OF THE STANDARD SPECIFICATIONS. EXISTING CONTACT SURFACES SHALL BE CLEANED OF ALL EXISTING PAINT AND RUST TO BARE METAL PRIOR TO ATTACHMENT OF NEW MEMBERS. BOLTS USED ARE TO BE GALVANIZED BOLTS. FOR GALVANIZING, SEE SECTION 908 IN THE STANDARD AND SUPPLEMENTAL SPECIFICATIONS. *[use this note when adding bolts in a job that involves repainting steel structures.]*
5. **BOLTS**: SHALL BE HIGH TENSILE STRENGTH BOLTS (ASTM-F3125, GRADE A325 OR A490), TYPE 3, UNLESS OTHERWISE NOTED. BOLT SIZE TO BE AS NOTED ON PLANS. SEE SECTION 602 OF THE STANDARD SPECIFICATIONS. EXISTING CONTACT SURFACES SHALL BE CLEANED OF ALL EXISTING PAINT AND/OR RUST TO BARE METAL PRIOR TO ATTACHMENT OF NEW MEMBERS. *[use this note when adding bolts in a job that involves work on weathering steel bridges.]*
6. **CONCRETE:**  TO BE CLASS “A” f’c = 3000 PSI EXCEPT AS NOTED OTHERWISE. *[STEEL BRIDGES]*

*OR*

1. **CONCRETE:**  TO BE CLASS “A” (CAST-IN-PLACE) f’c = 3000 PSI EXCEPT AS NOTED OTHERWISE. *[PRESTRESSED BRIDGES]*
2. **BRIDGE DECKS:** CLASS “D” CONCRETE FOR BRIDGE DECKS SHALL BE IN ACCORDANCE WITH SECTION 604 OF THE STANDARD SPECIFICATIONS.

*OR [ON INTERSTATE OR BRIDGES WITH FOUR OR MORE LANES]*

1. **BRIDGE DECKS:** CLASS “DS” CONCRETE FOR BRIDGE DECKS SHALL BE IN ACCORDANCE WITH SECTION 604 OF THE STANDARD SPECIFICATIONS. CLASS “A” CONCRETE IN PAVEMENT AT BRIDGE ENDS SHALL HAVE SURFACE AGGREGATE IN ACCORDANCE WITH ARTICLE 903.24 OF THE STANDARD SPECIFICATIONS. *[USE ITEM NUMBER 604-03.32 CLASS DS CONCRETE C.Y. INSTEAD OF THE NORMAL CLASS D ITEM NUMBER.]*
2. **HIGH EARLY STRENGTH CONCRETE:** THE MIX IS TO MEET THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS, CLASS “X”. THE CEMENT CONTENT SHALL BE A MINIMUM OF 714 LBS. THE WATER-CEMENT RATIO SHALL BE A MAXIMUM OF 0.40. DESIGN AIR CONTENT SHALL BE 6% WITH ±2% ACCEPTANCE RANGE IN THE FIELD. SLUMP SHALL BE 3±1 inches. IF USING A TYPE A, F, OR G WATER REDUCER, THE SLUMP SHALL BE MAXIMUM OF 8 INCHES. NO FLY ASH REPLACEMENT WILL BE PERMITTED. THE MINIMUM 28 DAY COMPRESSIVE STRENGTH SHALL BE 3,500 pSI. TRAFFIC SHALL NOT BE PERMITTED ON ANY OF THE REPAIRED AREAS UNTIL TEST SPECIMENS ATTAIN A minimum COMPRESSIVE STRENGTH OF 3,000 pSI AND THE CONCRETE HAS BEEN IN PLACE A MINIMUM OF TEN (10) DAYS.
3. **Bridge Deck Surface Finish**: To be in accordance with Method (1 or 3) in Article 604.22 of the Standard Specifications. *[Use “1” when approach roadway design speed is less than 40 mph. Use “3” for all other structures. When “3” is used, add the Item Number for Bridge Deck Grooving (Mechanical) to the Estimated Quantities. The limits of the grooving shall be to within one foot of the toe of the parapet or face of the rail for the full length of the bridge plus the approach pavements.]*
4. **CONCRETE CURING:** ALL CONCRETE IN REPAIR AREAS SHALL BE CURED ACCORDING TO THE STANDARD SPECIFICATIONS.

**STEEL REPAIR**

1. **HEAT STRAIGHTENING:** HEAT STRAIGHTENING IS TO BE PERFORMED UNDER THE DIRECT SUPERVISION OF A LEAD SUPERVISOR POSSESSING THE KNOWLEDGE AND EXPERIENCE TO APPLY HEAT IN SUCH A MANNER, SEQUENCE, AND AMOUNT THAT THE FINAL STRAIGHTENED MEMBER RETAINS AS LITTLE RESIDUAL STRESS AS POSSIBLE. THE LEAD SUPERVISOR SHALL HAVE successfully COMPLETED 3 PROJECTS IN THE PAST 5 YEARS. THE WORK SHALL HAVE BEEN ACCOMPLISHED USING TECHNIQUES SHOWN IN FHWA REPORT: FHWA-IF-99-004, HEAT-STRAIGHTENING REPAIRS OF DAMAGED STEEL BEAMS, A TECHNICAL GUIDE AND MANUAL OF PRACTICE.
2. THE LEAD SUPERVISOR SHALL BE ON SITE AT ALL TIMES WHILE THE HEAT STRAIGTENING WORK IS PERFORMED.
3. HEATING AND OVER-JACKING (HOT MECHANICAL STRAIGHTENING) IS NOT ALLOWED.

THE FOLLOWING SHALL BE SUBMITTED PRIOR TO BEGINNING WORK:

1. WRITTEN DOCUMENTATION SHOWING the contractor’s SUCCESSFUL HEAT STRAIGHTENING EXPERIENCE, USING TECHNIQUES IN FHWA REPORT: FHWA-IF-99-004, WITH COMPARABLE BRIDGE BEAMS/GIRDERS, ALONG WITH PHOTOGRAPHS OF THE WORK COMPLETED. THE DOCUMENTATION SHALL BE FROM THE contractor’s 3 SUCCESSFUL PROJECTS IN THE PAST 5 YEARS.
2. A WORK PLAN SHOWING ANTICIPATED HEATING PATTERNS, HEATING LOCATIONS, AND RESTRAINT METHODS FOR GENERAL APPROVAL. THE WORK PLAN SHALL INCLUDE:

A: FRAMING PLAN SHOWING AREAS TO BE REPAIRED

B: SEQUENCE OF WORK

C: SHAPE, SIZE, AND TEMPERATURE OF HEATING PATTERNS

D: LOCATION AND LIMITS OF JACKS, PULLING, OR RESTRAINING

 FORCES

1. HEAT SHALL BE APPLIED AT OR BELOW 1100 DEGREES F AND MONITORED WITH CONTACT THERMOMETERS, INFRARED DEVICES, PYROMETRIC STICKS, OR OTHER HEAT INDICATING DEVICES. THESE DEVICES SHALL BE SUPPLIED BY THE CONTRACTOR AND MADE AVAILABLE TO THE INSPECTOR AT ALL TIMES. HEATING THICKNESSES EQUALING 1 ¼” OR MORE SHALL REQUIRE HEATING BOTH FACES CONCURENTLY. AFTER COMPLETING A PLANNED SET OF HEAT PATTERNS ALONG THE MEMBER, DO NOT APPLY ADDITIONAL HEAT UNTIL THE ENTIRE MEMBER HAS COOLED TO at LEAST 250 DEGREES F BEFORE STARTING THE NEXT HEATING PATTERN CYCLE.
2. DO NOT ACCELERATE COOLING WITH WATER, WATER MIST, OR OTHER COOLING ACCELERANTS. AFTER THE STEEL SURFACE TEMPERATURE IS 600 DEGREES F OR LESS, COOLING MAY BE ACCELERATED WITH DRY COMPRESSED AIR.
3. THE STRAIGHTENING SHALL BE ACCOMPLISHED WITH AS LITTLE MECHANICAL FORCE AS POSSIBLE. THE BEAM MAY BE RESTRAINED FROM MOVING DURING THE HEATING PROCESS. JACKS OR “COME-ALONGS” MAY BE USED TO MECHANICALLY AUGMENT THE HEAT STRAIGHTENING PROCESS.
4. THE JACKING AND RESTRAINING FORCES SHALL NOT BE ADJUSTED DURING HEATING OR BEFORE THE TEMPERATURE IN THE MEMBER HAS COOLED TO 250 DEGREES F OR LESS. ADJUSTMENTS SHALL BE MADE BEFORE STARTING THE NEXT HEATING CYCLE.
5. THE CONTRACTOR SHALL ADEQUATELY BRACE THE ADJACENT BEAMS AT THE JACKING LOCATIONS IN ORDER TO PREVENT OVERLOADING DUE TO APPLIED LATERAL LOADS. POSITION JACKS AND RESTRAINING FORCES SUCH THAT STRAIGHTENING SHRINKAGE WILL RELIEVE THE FORCE DURING THE COOLING CYCLE.
6. MEMBERS THAT ARE CRACKED OR DAMAGED DURING HEAT STRAIGHTENING SHALL BE REPAIRED AT no cost to the department.
7. TOLERANCES SHALL MEET REQUIREMENTS AS SHOWN IN SECTION 3.5 OF THE CURRENT AASHTO/AWS BRIDGE WELDING CODE D1.5. TOLERANCE MEASUREMENTS SHALL NOT BE TAKEN UNTIL THE HEATED AREAS HAVE COOLED TO 160 DEGREES F. TOLERANCES SHALL BE CHECKED BEFORE ANY CROSS-FRAMES OR OTHER RESTRAINING DEVICES ARE ATTACHED. FORCING MEMBERS WITHIN TOLERANCES BEFORE ATTACHING CROSS-FRAMES TO HOLD THE MEMBER IN PLACE IS NOT ALLOWED.
8. **WELDING:** SEE CURRENT EDITION OF THE AASHTO/AWS D1.5 BRIDGE WELDING CODE. CONTRACTOR IS TO SUBMIT WELDING PROCEDURE SPECIFICATIONS (BASED ON SUCCESSFUL TEST RESULTS AS RECORDED IN A PROCEDURE QUALIFICATION TEST RECORD, SEE AASHTO/AWS D1.5 SECTION 1.9 AND SECTION 5 (QUALIFICATION)) AND WELDER QUALIFICATIONS TO THE ENGINEER FOR REVIEW BEFORE WELDING WILL BE ALLOWED. WELDER QUALIFICATION SHALL INCLUDE PROOF OF CONTINUOUS WORK USING THE SPECIFIED WELDING PROCESS.

WELDING PROCEDURE SPECIFICATIONS ARE NOT REQUIRED FOR TEMPORARY

WELDS (STAY-IN-PLACE METAL DECK forms are CONSIDERED TEMPORARY.)

THE WELDING PROCEDURE SPECIFICATIONS SHOULD BE ON SITE FOR WELDER AND INSPECTOR REVIEW.

WELDING IS TO BE DONE BY QUALIFIED WELDERs. SUPERVISION OF NON-QUALIFIED WELDERs IS NOT PERMITTED. TDOT HAS THE OPTION OF HAVING THE WELDER RECERTIFIED IF QUESTIONABLE WORK IS OBSERVED. the COST OF THIS REQUALIFICATION IS TO BE PAID FOR BY THE CONTRACTOR.

WELDER QUALIFICATION POSITIONS FOR FILLET AND GROOVE WELDS: FLAT (F), HORIZONTAL (H), VERTICAL (V), OVERHEAD (OH). SEE FIG 5.4 OR FIG 5.5 IN AASHTO/AWS D1.5 FOR POSITION LIMITS.

|  |  |
| --- | --- |
| QUALIFICATION TEST | TYPE OF WELD AND POSITION OF WELDING QUALIFIEDPLATE |
| WELD | POSITION | GROOVE | FILLET |
| GROOVE | 1G2G3G4G3G AND 4G | FF,HF,H,VF,OHALL | F,HF,HF,H,VF,H,OHALL |
| FILLET | 1F2F3F4F3F AND 4F |  | FF,HF,H,VF,H,OHALL |

FROM TABLE 5.8, WELDER QUALIFICATION – TYPE AND POSITION LIMITATIONS, AASHTO/AWS D1.5

**MISCELANEOUS GENERAL NOTES**

1. **SHOP DRAWINGS:** REFER TO SECTION 105.02 OF THE STANDARD SPECIFICATIONS. SHOP DRAWINGS ARE TO BE SENT TO THE BRIDGE REPAIR OFFICE IN THE DIVISION OF STRUCTURES. EACH SHOP DRAWING SHALL CONTAIN IN THE TITLE BLOCK THE FOLLOWING: THE STATE PROJECT NUMBER, COUNTY, BRIDGE NAME, BRIDGE NUMBER (OR STRUCTURE TYPE AND NUMBER), STATION, AND CONTRACT NUMBER. SHOP DRAWINGS With TITLE BLOCKS NOT INCLUDing THE FOREGOING IDENTIFICATION WILL BE RETURNED FOR CORRECTION BEFORE ANY REVIEWS FOR APPROVAL ARE CONDUCTED.
2. **EXPANSION JOINTS:** FOR ADDITIONAL GENERAL NOTES APPLICABLE TO STRIP SEAL EXPANSION JOINTS, SEE STANDARD DRAWING NOS. SBR-2-115 AND SBR-2-116, ALSO SEE section 623 of the STANDARD SPECIFICATIONs.
3. **SPECIAL NOTE TO CONTRACTOR:** CONTRACTOR SHALL USE EXTREME CARE AND TAKE ANY MEASURES NECESSARY TO INSURE THAT NO DEBRIS IS DROPPED INTO THE STREAM. ANY DEBRIS WHICH IS ALLOWED TO DROP ON THE BANKS BELOW THE BRIDGE SHALL NOT BE ALLOWED TO ENTER THE STREAM AND SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR. COST OF REMOVAL AND DISPOSAL OF DEBRIS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR OTHER ITEMS.
4. **DEMOLITION:** THE CONTRACTOR SHALL TAKE SPECIAL CARE TO PROTECT ANY PARTS OF THE STRUCTURE THAT ARE NOT TO BE REMOVED SPECIFICALLY. FOR FULL DEPTH SLAB REMOVAL, EXCEPT OVER BEAMS, THE MAXIMUM HAMMER SIZE IS 90 POUND CLASS. FOR PARTIAL DEPTH SLAB REMOVAL AND ANY WORK OVER THE BEAMS, THE MAXIMUM HAMMER SIZE IS 60 POUND CLASS; CHIPPING HAMMERS OF THE 15 POUND CLASS SHALL BE USED TO REMOVE CONCRETE FROm BENEATH ANY REINFORCING STEEL. SAWING OR CUTTING OF THE CONCRETE IS ACCEPTABLE as LONG AS ANY SPECIFIED PROJECTION OF THE EXISTING REINFORCING STEEL IS MAINTAINED. EXPANSION JOINT REMOVAL SHALL FOLLOW THE SAME RESTRICTIONS AS FULL DEPTH SLAB REMOVAL. ALL DEVICES PROPOSED FOR CONCRETE DEMOLITION SHALL MEET THE APPROVAL OF THE ENGINEER.

*HOE RAMS AND OTHER LARGE SIZED HAMMERS:*

*use THE FOLLOWING NOTE on normal projects WHERE we don’t want the use of hoe rams AT ALL:*

1. THE CONTRACTOR IS NOT ALLOWED TO USE A HYDRAULIC RAM MOUNTED ON A BACKHOE (COMMONLY CALLED A HOE RAM), MINI EXCAVATOR, OR OTHER EQUIPMENT FOR ANY CONCRETE REMOVAL.

*USE ThE FOLLOWING note for total superstructure removals, parts of ABC projects, etc. WHEN HOE RAMS ARE ALLOWED IN CERTAIN AREAS.:*

1. THE CONTRACTOR IS NOT ALLOWED TO USE A HYDRAULIC RAM MOUNTED ON A BACKHOE (COMMONLY CALLED A HOE RAM), MINI EXCAVATOR, OR OTHER EQUIPMENT, EXCEPT FOR THE AREAS LISTED BELOW: [list the areas where allowed.]
2. **SPECIAL NOTE FOR RAILROAD CROSSINGS:** THE CONTRACTOR SHALL CONDUCT HIS WORK SO AS TO PROTECT THE RAILROAD TRACKS AND PROPERTIES FROM ANY DAMAGE. THE WORK SHALL BE DONE IN ACCORDANCE WITH REGULATIONS STIPULATED BY THE \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ RAILROAD SO AS TO MAINTAIN CLEARANCE AND NOT INTERRUPT TRAFFIC.

*when the existing texture coat has asbestos use the following note:*

1. **TEXTURE COAT CONTAINING ASBESTOS:** TEXTURE COAT REMOVAL WILL BE REQUIRED IN AREAS WHERE NEW CONCRETE WILL BE CAST AGAINST THE EXISTING CONCRETE SURFACE OR WHERE EPOXY INJECTION WILL BE PLACED. OTHER AREAS BEING TEXTURE-COATED ARE TO RECEIVE A WATER WASH AND BE OVERCOATED. TEXTURE-COAT DEBRIS IS TO BE COLLECTED AND DISPOSED OF in accordance with special provision 202ACM.
2. **nOTE:** Lump Sum FOR NAVIGATIONAL LIGHTING INCLUDES ALL ITEMS AND LABOR NECESSARY TO MAKE THE NAVIGATION LIGHTING COMPLETE AS SHOWN ON THE PLANS, INCLUDING CONNECTION TO THE EXISTING POWER SOURCE. NEW LIGHTING SHALL MEET COAST GUARD REGULATIONS. SHOP DRAWINGS FOR NAVIGATIONAL LIGHTING SUPPORT BRACKET MODIFICATIONS OR REPLACEMENT SUPPORTS SHALL BE SUBMITTED FOR APPROVAL.

*Non corps waterways:*

1. **SPECIAL NOTE CONCERNING WORK OVER A NAVIGABLE WATERWAY:** THE CONTRACTOR SHALL COMPLY FULLY WITH ANY REQUIREMENTS ESTABLISHED BY THE CORPS OF ENGINEERS, U.S. COAST GUARD, AND ANY OTHER AGENCIES WHICH MAY HAVE JURISDICTION RELATIVE TO CONSTRUCTION WORK OVER A NAVIGABLE STREAM WHICH IS APPLICABLE TO THIS CONTRACT, AND WHICH MAY NOT BE COVERED BY EXISTING PERMITS. THE CONTRACTOR SHALL SUBMIT A DESCRIPTION OF WORK AND SKETCHES OF ANY FALSEWORK, SCAFFOLDING, DEBRIS CONTAINMENT SYSTEMS, ETC. WHICH MAY BE REQUIRED DURING CONSTRUCTION WHICH MAY ENCROACH UPON THE VERTICAL AND/OR HORIZONTAL CLEARANCES FOR WATERWAY TRAFFIC TO THE U.S. COAST GUARD FOR APPROVAL BEFORE ANY WORK begins.

CONTACT: ERIC WASHBURN

 U.S. COAST GUARD

 BRIDGE ADMINISTRATOR

 1222 SPRUCE STREET

 ST. LOUIS, MO 63103-2832

*Corps waterways:*

1. **SPECIAL NOTE CONCERNING WORK OVER A NAVIGABLE WATERWAY:** THE CONTRACTOR SHALL COMPLY FULLY WITH ANY REQUIREMENTS ESTABLISHED BY THE CORPS OF ENGINEERS, U.S. COAST GUARD, AND ANY OTHER AGENCIES WHICH MAY HAVE JURISDICTION RELATIVE TO CONSTRUCTION WORK OVER A NAVIGABLE STREAM WHICH IS APPLICABLE TO THIS CONTRACT, AND WHICH MAY NOT BE COVERED BY EXISTING PERMITS. THE CONTRACTOR SHALL also NOTIFY THE CORPS OF ENGINEERS INFORMING THEM OF WORK TO BE PERFORMED BEFORE ANY WORK OVER THE WATERWAY begins. THE CONTRACTOR SHALL SUBMIT A DESCRIPTION OF WORK AND SKETCHES OF ANY FALSEWORK, SCAFFOLDING, DEBRIS CONTAINMENT SYSTEMS, ETC. WHICH MAY BE REQUIRED DURING CONSTRUCTION WHICH MAY ENCROACH UPON THE VERTICAL AND/OR HORIZONTAL CLEARANCES FOR WATERWAY TRAFFIC TO THE U.S. COAST GUARD FOR APPROVAL BEFORE ANY WORK begins.

CONTACT: ERIC WASHBURN

 U.S. COAST GUARD

 BRIDGE ADMINISTRATOR

 1222 SPRUCE STREET

 ST. LOUIS, MO 63103-2832

1. **GROUTED BARS IN DRILLED HOLES:** HORIZONTALLY DRILLED HOLES SHALL BE DRILLED ½” IN DIAMETER LARGER THAN THE BAR, CLEANED, PACKED WITH NON-SHRINK GROUT, AND THE BAR ROTATED (NOT DRIVEN) to ITS SEAT. VERTICALLY DRILLED HOLES SHALL BE DRILLED ¼” IN DIAMETER LARGER THAN THE BAR, CLEANED, PACKED WITH EPOXY GROUT, AND THE BAR DRIVEN TO ITS SEAT. ALL GROUTING MATERIAL SHALL Be APPROVED BY TDOT MATERIALS AND TESTS. *[use as needed. Do not use drilled inserts or masonry anchors in a tension situation. Use a dowel set in grout or drill all the way through with a back up plate. use cast-in-place anchors For utilities on new construction. always show size, location, and spacing of anchors. If THE drilled hole is in a horizontal position, use a non-shrink grout. If THE DRILLED hole is in A vertical position, use epoxy.]*
2. **QUICK-SET PATCHING MATERIAL:** QUICK-SET PATCHING MATERIAL SHALL BE A POLYMER MODIFIED CEMENTITIOUS PATCHING MATERIAL. SEE TDOT QUALIFIED PRODUCTS LIST 13.009 POLY MOD CEMENT STRUCT PATCH VERT & OVER FOR ACCEPTABLE PATCHING MATERIALS.
3. **CONTAINMENT AND DISPOSAL:** OUR RECORDS SHOW THAT THIS BRIDGE HAS OR HAS HAD LEAD-based/CHROMATE-based PAINT APPLIED TO IT DURING ITS HISTORY; THEREFORE, THE CONTRACTOR SHALL ASSUME THAT REMNANTS OF THAT PAINT REMAIN ON THE BRIDGE. SEE SECTION 603.13 OF THE STANDARD SPECIFICATIONS FOR SPECIAL PRECAUTIONS THAT MUST BE TAKEN IN THE REMOVAL; CONTAINMENT AND DISPOSAL OF THE SURFACE PREPARATION WASTE AND PAINT REMOVAL MEDIA; AND WORKER AND PUBLIC SAFETY. [New paint note for bridges that have or have had lead-based/chromate-based paint on them sometime during their life regardless of what coating is on it now.]
4. **SPECIAL NOTE SURFACE PREPARATION FOR PAINT:** OUR RECORDS SHOW THAT THIS BRIDGE HAS OR HAS HAD LEAD-based/CHROMATE-based PAINT APPLIED TO IT DURING ITS HISTORY. THEREFORE, THE CONTRACTOR SHALL ASSUME THAT REMNANTS OF THAT PAINT REMAIN ON THE BRIDGE ALONG WITH THE POSSIBILITY OF THE PRESENCE OF MILLSCALE. CONTRACTOR SHALL BID ACCORDINGLY. [Special paint note for bridges that have or have had lead-based/chromate-based paint on them sometime during their life regardless of what coating is on it now. Use on all PROJECTS THAT INVOLVE ANY PAINTING.]
5. **WORKER PROTECTION:** OUR MAINTENANCE RECORDS INDICATE THAT THIS BRIDGE WAS ORIGINALLY PAINTED WITH MATERIALS CONTAINING LEAD AND/OR CHROMATES AND THE CONTRACTOR SHALL BE REQUIRED TO PROCEED ACCORDINGLY AND TAKE ALL MANDATORY SAFEGUARDS PRESCRIBED BY THE STATE AND FEDERAL LAW FOR WORKER PROTECTION AND HAZARDOUS MATERIALS DISPOSAL.

**use when ORIGINAL paint is zinc with vinyl or urethane**

1. **BLAST CLEANING:** SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATION 603.05(B), EXCEPT AS MODIFIED BY THIS NOTE. ALL STRUCTURAL STEEL SHALL BE BLAST CLEANED. THE BLAST CLEANING SHALL REMOVE ALL EXISTING FINISH COAT. THE TIGHTLY ADHERING EXISTING INORGANIC ZINC PRIMER COAT MAY REMAIN.
2. **PAINTING:** THE SYSTEM SHALL BE SYSTEM “B” (QPL 3.005) IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. COLOR OF THE FINISH COAT SHALL COMPLY WITH AMS-STD-595A, FEDERAL STANDARD COLOR NO. (FED COLOR ID AND DESCRIPTION). SEE SECTIONS 603 AND 901 OF THE STANDARD SPECIFICATIONS.
3. **APPLICATION:** THE COATING APPLICATOR SHALL FOLLOW THE MANUFACTURER’S PRINTED INSTRUCTIONS AND SHALL HAVE THESE INSTRUCTIONS ON SITE DURING THE COURSE OF THE WORK.
4. **CONTAINMENT AND DISPOSAL:** ACCORDING TO OUR RECORDS, THE EXISTING PAINT SYSTEM CONTAINS AN INORGANIC ZINC PRIMER AND \_\_\_\_\_\_\_ (vinyl or urethane) \_\_\_\_\_\_\_ TOP COAT. THE CONTRACTOR SHALL CONTAIN AND DISPOSE OF ALL PAINT REMOVAL WASTE IN ACCORDANCE WITH SECTION 603.13 OF THE STANDARD SPECIFICATIONS.

**when only painting BEARINGs NOTES**

1. **PAINT:** SHALL BE SYSTEM “B” (QPL 3.005) IN ACCORDANCE WITH SECTION 603.06 OF THE STANDARD SPECIFICATIONS. COLOR OF THE FINISH COAT SHALL COMPLY WITH AMS-STD-595A, FEDERAL STANDARD NO. (FED COLOR ID AND DESCRIPTION). SEE SECTIONS 603 AND 910 OF THE STANDARD SPECIFICATIONS. ALL PRODUCTS USED IN THIS COATING SYSTEM, INCLUDING THINNERS, MUST BE SUPPLIED BY THE SAME MANUFACTURER.
2. **BEARING CLEANING:** ALL STEEL BEARINGS SHALL BE CLEANED AND PAINTED. CLEANING SHALL BE IN ACCORDANCE WITH SECTION 603.05(B.1) OF THE STANDARD SPECIFICATIONS. HAND (SSPC-SP 2) OR POWER (SSPC-SP 3) TOOL CLEANING SHALL REMOVE ALL RUST, SCALE, LOOSE PAINT, AND DIRT. THE COLOR OF THE FINISH COAT SHALL COMPLY WITH AMS-STD-595A, FEDERAL STANDARD NO. (FED COLOR ID AND DESCRIPTION). SEE SECTIONS 603 AND 910 OF THE STANDARD SPECIFICATIONS.
3. **APPLICATION:** THE COATING APPLICATOR SHALL FOLLOW THE MANUFACTURER’S PRINTED INSTRUCTIONS AND SHALL HAVE THESE INSTRUCTIONS ON SITE DURING THE COURSE OF THE WORK.

**SPOT PAINTING AREAS NOTES**

1. **SPOT CLEANING AND PAINTING:** AREAS REQUIRING REPAINTING OF STEEL SHALL BE CLEANED IN ACCORDANCE WITH SECTION 603.05(B.1) OF THE STANDARD SPECIFICATIONS. HAND (SSPC-SP 2) OR POWER (SSPC-SP 3) TOOL CLEANING SHALL REMOVE ALL RUST, SCALE, LOOSE PAINT, AND DIRT. THESE AREAS SHALL BE SPOT PRIMED IMMEDIATELY AFTER CLEANING. CLEANED AND PRIMED STEEL SHALL RECEIVE A SYSTEM “B” (QPL 3.005) OR “C” (QPL 3.006) PAINT SYSTEM IN ACCORDANCE WITH SECTION 603.06(B) OF STANDARD SPECIFICATIONS. THE COLOR OF THE FINISH COAT SHALL COMPLY WITH AMS-STD-595A, FEDERAL STANDARD NO. (FED COLOR ID AND DESCRIPTION). SEE SECTIONS 603 AND 910 OF THE STANDARD SPECIFICATIONS.
2. SEE THE Tdot QUALIFIED PRODUCTS LIST 3.005 OR 3.006 FOR ACCEPTABLE COATINGS FOR THE PAINT SYSTEM. THE SAME MANUFACTURER SHALL SUPPLY ALL PRODUCTS USED, INCLUDING THINNERS.

**BLAST CLEANING AND PAINTING (SYSTEM “A”) NOTES**

1. **CLEANING AND PAINTING:** ALL STRUCTURAL STEEL SHALL BE BLAST CLEANED AND PAINTED. BLAST CLEANING SHALL BE IN ACCORDANCE WITH SECTION 603.05(B.2) OF THE STANDARD SPECIFICATIONS. PAINT SHALL BE SYSTEM “A” (QPL 3.001) – INORGANIC ZINC. COLOR OF THE FINISH COAT SHALL COMPLY WITH AMS-STD-595A, FEDERAL STANDARD NO. (FED COLOR ID AND DESCRIPTION). SEE SECTIONS 603 AND 910 OF THE STANDARD SPECIFICATIONS. THE CONTRACTOR SHALL ALSO HAVE THE OPTION TO USE ORGANIC ZINC IN SYSTEM “A” INSTEAD OF AN INORGANIC ZINC. ORGANIC ZINC SYSTEMS SHALL BE FROM QPL 3.002.
2. BLAST CLEANING SHALL BE IN ACCORDANCE WITH SECTION 603.05(B.2) AND CLEANED TO SSPC-SP 10 “NEAR -WHITE METAL BLAST CLEANING”. BLAST CLEANING SHOULD PRODUCE A UNIFORM SURFACE PROFILE BETWEEN 1.5 MIL AND 3.5 MIL. IF THE PROFILE REQUIREMENTS OF THE COATING MANUFACTURER ARE MORE RESTRICTIVE, THE CONTRACTOR SHALL ADVISE THE ENGINEER AND COMPLY WITH THE MORE RESTRICTIVE REQUIREMENTS.
3. DRY FILM THICKNESSES SHOWN IN SECTION 603.06 OF THE STANDARD SPECIFICATIONS ARE THICKNESSES ABOVE THE SURFACE PROFILE.
4. ROLLER AND DAUBER NAP SHALL NOT BE ALLOWED IN THE COATINGS.
5. FINS, TEARS, SLIVERS, AND DELAMINATIONS ARE TO BE GROUND FOLLOWED BY RE-BLASTING. AT THE DESCRETION OF THE ENGINEER, THE USE OF POWER TOOLS TO CLEAN THE LOCALIZED AREAS AFTER GRINDING AND ESTABLISH A SURFACE PROFILE ACCEPTABLE TO THE COATING MANUFACTURER CAN BE USED IN LIEU OF RE-BLASTING.
6. ALL COATS SHALL BE TINTED TO CONTRAST AGAINST THE PRECEDING OR FOLLOWING COAT.
7. SEE Tdot QUALIFIED PRODUCTS LIST 3.001 (INORGANIC ZINC SYSTEM) OR 3.002 (ORGANIC ZINC SYSTEM) FOR ACCEPTABLE COATINGS FOR THE SYSTEM “A” PAINT SYSTEM. THE SAME MANUFACTURER SHALL SUPPLY ALL PRODUCTS USED, INCLUDING THINNERS.

**PAINTING NEW STEEL NOTES**

1. **PAINTING OF NEW STEEL:** ALL STRUCTURAL STEEL SHALL BE BLAST CLEANED AND SHOP PRIMED. BLAST CLEANING SHALL BE IN ACCORDANCE WITH 603.05(B.2) OF THE STANDARD SPECIFICATIONS. PAINT SHALL BE SYSTEM “A”, INORGANIC ZINC SYSTEM (QPL 3.001), AS STATED IN SECTION 603.06(A) OF THE STANDARD SPECIFICATIONS. COLOR OF THE URETHANE FINISH COAT SHALL COMPLY WITH AMS-STD-595A, FEDERAL STANDARD NO. (FED COLOR ID AND DESCRIPTION). SEE SECTIONS 603 AND 910 OF THE STANDARD SPECIFICATIONS. COST OF SHOP PRIMECOAT SHALL BE INCLUDED IN THE UNIT PRICE BID FOR STRUCTURAL STEEL. THE CONTRACTOR SHALL ALSO HAVE THE OPTION TO USE ORGANIC ZINC WHEN USING A PAINT SYSTEM FROM QPL 3.002. ORGANIC ZINC SYSTEMS SHALL BE FROM QPL 3.002.
2. SEE THE TDOT QUALIFIED PRODUCTS LIST 3.001 OR 3.002 FOR ACCEPTABLE COATINGS FOR THE PAINT SYSTEM. THE SAME MANUFACTURER SHALL SUPPLY ALL PRODUCTS USED, INCLUDING THINNERS.