Washington
Metropolitan
Area
Transit
Authority

Scope of Work/Specification

Project Title

Special Trackwork: Turnouts & Crossovers

Attachment B

1.0 SCOPE

1.1 The Washington Metropolitan Area Transit Authority requires Special Trackwork: Turnouts and Crossovers for system-wide capital track rehabilitation.

1.2 This Scope of Work provides for the manufacture, testing, shop assembly, inspection, packaging, and delivery of Special Trackwork: Turnouts and Crossovers (herein referred to as Special Trackwork, excluding specific references). Drawings for the Special Trackwork are provided in this contract package.

2.0 APPLICABLE DOCUMENTS

2.1 List of Applicable Documents (Most recent versions apply):

- AREMA (American Railway and Engineering Maintenance-of-Way Association) Standards (AREMA documents herein collectively referred to as AREMA Standards)
- AREMA Manual of Railway Engineering
- AREMA Portfolio of Trackwork Plans/Specifications for Special Trackwork
- AREMA Specification for Preservatives
- AREMA Specification for Treatment
- AWPA (American Wood Preserver's Association) Standards
- AWPA Standards C6 and M3
- ASTM (American Society of Testing and Materials) Standards
- ASTM A36
- ASTM A325
- ASTM E329
- ASTM E395
- ASTM D412
- ASTM F436
- ASTM D471
- ASTM A490
- ASTM D518
- ASTM A536
- ASTM A563
- ASTM D573
- ASTM D1149
- ASTM D1229
- ASTM D2240
- IFI-100, IFI-101 (International Fastener Institute)
- AAR (American Association of Railroads) Requirements
- American Council of Independent Laboratories' Manual of Practice
- AWS (American Welding Society) D1.1

3.0 TECHNICAL SPECIFICATIONS

3.1 Vendor to Provide:

3.1.1 All materials and equipment required for this procurement will be the responsibility of the Vendor.

3.1.2 The work specified in this Scope of Work consists of manufacturing, testing, shop assembly, inspection, packaging, and shipping of Special Trackwork materials.

3.1.3 Furnish direct fixation and ballasted track turnouts/crossovers per this Special Trackwork scope of work/technical specifications and drawings (herein collectively referred to as the Contract Documents).

3.1.4 The fastening system to be used for fixing rails to plates will be, for example, left-hand Pandrol spring clips e2056, or approved equal.

3.2 Materials

3.2.1 Materials (General)

A. Special Trackwork materials, including oval-neck track bolts of one-inch nominal diameter, nuts, and spring washers, and Special Trackwork assemblies: Provide in accordance with AREMA Standards and the Contract Documents.

B. Rail, switches, frogs and other track material: In accordance with AREMA dimensional requirements for 115 RE rail section and the Contract Documents.

C. All rail will be in accordance with AREMA Standards and the Contract Documents.

D. Cut at rail ends in accordance with AREMA Standards except that tolerance to be taken up in the rail base

E. Drill rail ends to receive 36-inch, six-hole joint bars in accordance with AREMA Standards and the Contract Documents. Standard joints will be drilled to allow butting of rail ends. Insulated joints will be drilled to allow for a 1/4 - inch end post. All rail will be in accordance with AREMA Standards and as specified in the Contract Documents.

F. Guard rails: 132 RE section.

G. Drill and ream holes with edges beveled.

H. All joints required for installation will be of new materials.

I. Supply all ties in accordance with the Timber Ties section of this specification, Section 3.2.17.

3.2.2 Stock Rails, Closure Rails, and Connecting Rails

A. Length: As specified in the Contract Documents plus or minus 1/8 inch.

B. All rail ends drilled as specified in the Contract Documents except ends to be connected to CWR (Continuous Welded Rail).

C. Connecting rail drilled to match frog guard rail holes.

D. Rail Section and Weight will be new 115 RE rail section, and will be in conformance with the most current AREMA Manual for Railway Engineering, Volume 1, Chapter 4 (Rail), Part 1 – Design, and Part 2 – "Manufacture of Rail," and as specified in the Contract Documents.

1. Where required by the Contract Documents, rail will be suitable for joining into continuous welded strings using both electric flash butt and exothermic welding methods.
2. Length as specified in the Contract Documents.
3. The standard length of rails will be 39 or 78 feet, unless otherwise specified in the Contract Documents.

E. High Strength (Head Hardened) Rail.

1. High strength rail will be head hardened, control cooled, and vacuum treated.
2. High strength rail will conform to all requirements for high strength rail specified in the AREMA Manual for Railway Engineering, Volume 1, Chapter 4 Section 2.1, Specifications for Steel Rails.
3. Rails will have a Brinell Hardness in the range of 341 to 388. A maximum hardness of 388 BHN may be exceeded provided a fully fine pearlitic structure is maintained.
4. Minimum tensile strength: 140,000 psi.
5. Minimum yield strength: 95,000 psi.
6. Ensure rail is ultrasonically tested over its full length. Test all rail fully 100% in line with AREMA Manual for Railway Engineering, Volume 1, Chapter 4, Part 2, Section 4.5 and ASTM A578 testing or approved equal.

3.2.3 Frogs

A. Turnout Frogs: Railbound manganese steel construction as specified in the Contract Documents, and in AREMA Portfolio of Trackwork Plans, Plan Numbers 621, 622, 600B, and 350. Frogs will be in accordance with AREMA Chapter 4 dimensional requirements for 115 RE rail sections and as specified in the Contract Documents.

B. Crossing Diamond Frogs: Manganese steel insert frogs, as specified in the Contract Documents and AREMA Portfolio of Trackwork Plans, Plan Numbers 750, 761, and 600B.

C. Frog Castings:

1. Depress heel of manganese frog casting in accordance with the most current AREMA Portfolio of Trackwork Plan 617-89, and as specified in the Contract Documents.
2. Three shot explosive depth harden manganese steel castings in accordance with the AREMA Specifications for Special Trackwork, Paragraph M2.7, except that the minimum BHN (Brinell Hardness Number) will be 350.

D. Frog Inserts:

1. Cast inserts of carbon steel in accordance with AREMA Specification M3.
2. Provide inserts of one-piece construction.
3. Provide inserts having full-face contact conforming to configuration of 115 RE rail.
4. Provide available bonding area per inch of length equivalent to that available for bonded standard joints where applicable. Adjust dimensions of bonded inserts to allow for glue and fabric.
5. Ensure the inserts are smooth and straight and do not exceed the following permissible variations:
   a. Width between rail webs: Plus or minus 1/32-inch as specified in the Contract Documents.
   b. Depth of flangeway groove: Plus or minus 1/16-inch as specified in the Contract Documents.
   c. Length of insert: Plus or minus 1/8-inch as specified in the Contract Documents.
   d. Straightness of all portions of inserts adjacent to rail using 36-inch straightedge: Plus or minus 1/32-inch.
   e. Finishing height variance of inserts from that required for bonding area: Plus or minus 1/64-inch.

E. Assembly: Prior to delivery, assemble frogs as specified in the Contract Documents.

1. Bonding adhesive: As manufactured for bonded joint bars by, for example, Allegheny Drop Forge Company, Portec Rail/ LB Foster Rail Technologies, or approved equal, applied as directed by the manufacturer to all contact surfaces between inserts and rail.
2. Secure frog, except for insert, with 1-3/8 inch diameter high -strength bolts in accordance with AREMA Standards.
3. Assemble inserts with 1-1/8 inch diameter high-strength bolts, ASTM A490, and lock nuts. Position bolt holes in accordance with AREMA Plans 621-89 and 1010-89 and as specified in the Contract Documents. Bolt holes 1-3/8 inches in diameter plus or minus 1/32- inch.
4. Flat washers: ASTM F436.
5. Equip bolts as specified in the Contract Documents with one beveled or flat headlock washer and one flat or beveled washer to provide square bearing and to permit tightening of nuts by wrench.

6. Lock nuts: IFI-100 and IFI-101, ASTM A563, Grade C.
7. Tension bolts to between 75 percent and 85 percent of proof load. Exact value as directed by the WMATA COTR. Ascertain bolt tension by means of torque wrench. Determine desired torque by test similar to that described in IFI-101.

3.2.4 Frog Guard Rails

A. Length: 12'-6" (Frog Guard rails will be 132 RE, Standard AREMA Chemistry High Strength, in accordance with AREMA Manual for Railway Engineering – Volume 1, Chapter 4, Part 2, Section 2.1, "Specifications for Steel Rails".)

B. Complete with blocks and bolts as specified in the Contract Drawings.

3.2.5 Switches

A. Minimum yield strength: 95,000 psi.

B. Switch rails and stock rails: As specified in the Contract Documents, and AREMA Plan 221-62, Detail 5100.
   1. Switch rails may be thick web or constructed with reinforcing bars.
   2. Switch rail lengths: as specified in the Contract Documents for switch panels.
   3. Bolts, rivets, fittings and spring washers in accordance with Appendix A of the AREMA Portfolio of Trackwork Plans.
   4. Fabricate five bolt heel joint assembly in accordance with AREMA Plan 221-62 and AREMA Specifications for Special Trackwork.
   5. Fabricate forged steel rail stops in accordance with AREMA Standards.
   6. Switch inserts with bolts: As specified in the Contract Drawings for frog inserts.
   7. Drill stock rails for special trackwork as specified in the Contract drawings. Switch heaters will be the responsibility of WMATA.
   8. Floating heel blocks for No.10 switch as specified in the Contract Documents.
   9. Heel block assembly for No. 8 guarded switch as manufactured by, for example, Rail Products and Fabricators or approved equal, modified as specified in the Contract Documents.

A. The guarded turnouts will have a modified five bolt heel joint assembly to accommodate the stock rail, switch rail and guard rail in accordance with AREMA Plan 221-03 or most current.

3.2.6 Switch Rods

A. Switch rods and clips of vertical design, Type MJS modified as specified in the Contract Documents.
   1. Insulated construction.
   2. Assembled.

B. Test in accordance with Association of American Railroad requirements.

C. Switch rods must be capable of at least one (1) inch plus/minus adjustment after the initial specified throw has been set.

D. Vendor's shop drawings will provide the required spread measurement for each switch rod which is needed to support the specified throw of the switch points.

3.2.7 Rail Braces

A. Boltless adjustable brace equal to those manufactured by, for example, ArcelorMittal or equal, modified to permit installation of one inch diameter electric switch heaters on rail web of turnouts.

B. Shop weld rail brace backing blocks to switch plates.

1. Rail brace backing blocks to permit mounting on 3/4-inch thick flat plates. Allow for modification to fit 1/4-inch recessed gauge plates. Ensure that distance from rail base to horizontal bearing surface of backing block is the same in each case to permit use of standardized wedge.
2. Clearance between backing block and rail base: Determined by design of selected brace.
3. Brace will use, for example, left-hand Pandrol spring clips e2056, or approved equal.

3.2.8 Plates

A. Furnish special trackwork units with special plates as specified in the Contract Documents, fabricated of 3/4-inch thick steel, ASTM A36 in accordance with designs specified in the Contract Documents and AREMA Standards. For yard trackwork, see drawings TW2015-13 (Detail A), and TW2017-16 (Detail A) for reference of special switch plates. See TW2015-13, TW2015-14, TW2015-15, TW2015-21, TW2016-7, and TW2017-16 (Detail C) for mainline turnout End Plate Details.

B. Plates complete with specified rail base backing blocks, riser plates, rail stops and rail clamp blocks welded thereon.

C. Riser plates and rail stops fabricated of ASTM A36 steel as specified in the Contract Documents and as specified.

D. Punch holes in each plate perpendicular to face. Cut clean without torn or ragged edges.

E. Straighten plates cold in press or roller until surface and line requirements are met. The following tolerances are not cumulative.

1. Plate thickness: Plus or minus 1/32-inch.
2. Middle ordinate: Place plate on horizontal support. Place straightedge or wire string from one end of plate to the other on the concave side. Measure distance between plate surface and straightedge or string line. Distance not to exceed 0.001 inch per inch of length with surface upsweep or downsweep uniform.

3. Plate thickness of dual rail stops, single rail stops and riser plates: Plus or minus 1/32-inch.
4. Straightness of edge of dual rail stops, single rail stops and riser plates parallel and adjacent to base of running rail: Plus or minus 1/32-inch.
5. Transverse dimension of dual rail stops: Plus or minus 1/32-inch.
6. Tolerances other than those specified: Plus or minus 1/8-inch.
7. Spike hole locations for ballasted special trackwork: Plus or minus 1/8-inch.

F. Identification of plates:

1. Stamp with suitably sized characters not less than 1/2-inch in height, located on top surface and plainly visible when assembled.
2. Include Contract Number and identification designation as specified in the Contract Documents.

G. Fillet weld rail braces, rail stops, riser plates and rail clamps to their respective plates as specified in accordance with AWS D1.1.

3.2.9 Gauge Plates

A. Switch gauge plates as specified in the Contract Documents.

B. Insulation will be a four hole 7-1/2" x 8" x 3/4" epoxy fiberglass splice block fastened to the plate with, for example, Huck type compression fasteners or approved equal. The insulating material will have a tensile strength of 70 ksi, compressive strength of 100 ksi and a tensile modulus of 3.4×10^6.

3.2.10 Turnout Guard Rail

A. Length: As specified in the Contract Documents.

B. Complete with blocks and bolts as specified in the Contract Documents.

C. Type: 132 RE rail.

D. Planned in accordance with AREMA Plan No. 504-89.

3.2.11 Rail Joints

A. Furnish all standard and insulated joints within the turnout as specified in the Contract Documents.

B. End post will be reinforced epoxy fiberglass or approved equal.

3.2.12 Elastomer Pads

A. Elastomer pads will be furnished for use under special plates in special track wok will be fabricated from polychloroprene (neoprene) as specified in the Contract Documents and as specified below.

B. Physical Characteristics

1. Elastomer pads will be 3/4 inch thick and extend 1 inch beyond the plate edges on all sides.
2. All pads will have a Durometer test.
3. Elastomer pads furnished for use under all special plates will be cut from a uniformly cored sheet conforming to the following requirements:
   a. Coring will consist of cylindrical holes 11/16 inch in depth. A continuous membrane 1/16 inch thick will close one end of all holes.
   b. Cored holes will be 1-5/8 inches on center measured between adjacent holes in all directions.
   c. Anchor bolt holes, 1-5/8 inch in diameter, will be cut at the required locations on the pad.
   d. Tolerances for finished pads will be as follows:

1)	Length and width:	Plus or minus 1/4 inch.
2)	Thickness:	Plus or minus 0.03 inch.
3)	Squareness:	Plus or minus 1 degree.
4)	Centering of holes:	Plus or minus 1/32 inch.
5)	Diameter of holes:	Plus or minus 1/32 inch.
6)	Durometer:	Plus or minus 5 points.

   e. The diameter of the core holes will be as follows:
      1) Pads for use under all special plates having a longitudinal dimension greater than 12 inches measured along the rail will have a diameter of 1 - 1/8 inch.
      2) Pads for use under plates having a longitudinal dimension measured along the rail equal to or less than 12 inches will have a diameter of 3/4 inch.

A. Testing of Elastomer Material
   a. A vertical load increasing in increments of 1000 pounds to a maximum load of 15,000 pounds will be applied downward at the center of plate normal to the plate. For each load the vertical deflection of the center of the plate will be measured to the nearest 0.001 inch and recorded. The load will be removed and the final position of the plate measured and recorded. The recorded values for vertical load and deflection will be plotted on a graph as specified in Exhibit 05658-C- Vertical Test Acceptance Criteria in Section 7.0.
   b. The load vs. deflection curve will lie within the envelope specified in **Exhibit 05658 C** for loads in the range from 4,500 pounds to the load corresponding to a 120,000 pound vehicle. Throughout that loading range, the spring rate of the fastener, slope of the load-deflection curve,

will not be less than 80,000 pounds per inch or more than 130,000 pounds per inch and will be of a constant slope within 10 percent. In the event the curve fails to meet the requirements specified above, the chemical formulation of the pad, the coring size, or both will be modified and the new elastomer pad design retested.

c. An electrical resistance test with one anchor bolt grounded, 100 volts dc will be applied to the rail head for three minutes. The actual current flow will be measured to the nearest 0.1 microampere and recorded. Then 1000 volts dc will be applied to the rail head for two hours, after which 100 volts dc will be applied again for three minutes and the actual current flow will be measured, as above, and recorded. A potential of 50 volts rms ac will be applied to the rail head for three minutes for each increment of measurement for frequencies from 20 Hertz to 10 kilohertz in increments of measurement of 20 Hz up to 100 Hz; 200 Hz up to 1000 Hz; and 2000 Hz up to 10 kHz. The impedance after three minutes will be determined with an accuracy of plus or minus two percent and recorded for each frequency. The maximum current for 100 volts dc will be 1.0 microampere. The minimum impedance for any frequency with 50 volts rms ac will be 10,000 ohms.

3.2.13 Guard Rail Stop:

A. Ductile Iron: ASTM A536, Grade 65-45-12 to fit 115 RE rail and as supplied for WMATA guarded turnouts.

B. Direct Fixation Turnouts:

1. Ductile iron rail stops will be attached to the steel plate with 7/8" square neck carriage bolts, ASTM A325, inserted through a square punched hole from the underside of the plate. A heavy hex nut, Grade 3 ASTM 563 and flat washer, weathering steel ASTM F436 will complete the assembly; three bolts, nuts and washer per rail stop.

2. The rail stop will be backed with a 6"x2"x1/2" steel block welded to the rail plate.

3.2.14 Manganese Housing Assembly:

A. Cast manganese steel: AREMA Specifications for Special Trackwork, Section M2, Manganese Steel Castings.

B. Housing: As specified in the Contract Documents.

C. Housing Chairs: Ductile Iron ASTM A536 Grade 65-45-12.

1. Direct Fixation Housing chairs will be fastened to steel plates and gauge plates similar to ductile iron rail stops, except that one hole, as specified in the Contract Documents, in each chair will be sized for an anchor assembly instead of the square neck carriage bolt.

2. The front housing chair will be configured for bolting to a 132 RE guard rail which continues ahead of the point of switch as specified in the Contract Documents.

3. The housing chair on switch gauge plate 8G2 will be modified as specified in the Contract Documents.

D. No part of the housing assembly will extend more than 1- 5/8 inches above the top of rail.

3.2.15 Separator Blocks:

A. Separator blocks will be five inches long made of steel or cast iron configured for a 1-7/8 inch flangeway between 115 RE running rail and 132 RE guard rail.

B. Connect separator blocks with a 1-3/8 inch high strength, square head bolt, spring washer and heavy hex nut with one beveled or flat headlock washer and one flat or beveled washer to provide square bearing and to permit tightening of nuts by wrench.

3.2.16 Guard Rail Joints:

A. Except for the insulated joint specified in the rail layout diagram, joints in the guard rail will not be nearer than four feet to a joint in the 115 RE running rail.

3.2.17 Timber Ties:

A. General Requirements:

1. All ties and timbers will be new.
2. Physical requirements in accordance with AREMA Standards, as modified herein.
3. Lengths of ties and timbers will be as specified in the Contract Documents. Ties and Timbers will measure 7 inches deep by 9 inches wide in cross section.
4. All ties will be oak wood species.
5. Sawed top, bottom and sides.
6. Free of checks over two inches deep or extending more than eight inches from end of tie.

B. Anti-splitting devices will be nail plates in accordance with AREMA Standards, as modified herein.

1. Nail plates will be installed by a method or machine that presses them into the end of the tie. Hammer installation of nail plates is not allowed and will be a cause for the rejection of the ties.
2. Incise all sides prior to treatment to a depth of 3/4 inch. Thickness of incisor teeth will not exceed 7/32 inch.
3. Free of knots greater than 1/2 inch diameter for areas indicated in the AREMA Manual.

C. Individual Requirements:

1. Crossties:
   a. Length: Eight feet, six inches.

b. Straightness: A crosstie will be considered straight when a line along a side from the middle of one end to the middle of the other end is everywhere more than 2-3/4 inches from the top and bottom of the tie.

2. Contact rail ties:

   a. Length: Ten feet.

   b. Free of knots greater than 1/2 inch diameter in area of contact rail insulator, i.e., 100 through 110 inches from line end.

   c. AREMA Size 5 requirements apply to contact rail insulator area.

   d. Straightness: A contact rail tie will be considered straight when a line along the tip from the middle of one end to the middle of the other end is everywhere more than two inches from both sides.

3. Timber ties:

   a. Timber ties within Special Trackwork, as specified in the Contract Documents.

   b. Length: As specified in the Contract Documents.

   c. Free of knots greater than 1/2 inch diameter for areas indicated in the AREMA Manual.

   d. Straightness: A contact rail tie will be considered straight when a line along the top from the middle of one end to the middle of the other end is everywhere more than two inches from both sides.

D. Preservative Treatment:

1. All timbers will be bored for screw spikes. The holes will be treated with copper naphthenate.

2. Ties will be treated in accordance with the requirements of AWPA Standard C6 for Crossties and Switch Ties. Conditioning prior to treatment will be in accordance with Paragraph 3.2, Boulton Drying Process, of the above standard.

3. Immediately following conditioning, the ties will be pressure treated. The minimum quality control requirements will be in accordance with AWPA Standard M3. The treating company will furnish a Certificate of Compliance with this standard, and will certify the treatment according to the foregoing Specification.

4. Use only tested and approved preservatives.

5. Stamp each treated tie to indicate compliance with these specifications.

6. Complete AREMA or AWPA forms for treatment of ties.

4.0 TESTING, INSPECTION, AND ACCEPTANCE

4.1 WMATA Notification:

4.1.1 Notify the WMATA COTR in writing not less than (14) calendar days in advance of any scheduled tests or inspections, as required in Section 3.0 Technical Specifications. WMATA retains the right to witness testing and inspections, which must not be conducted until authorized by the WMATA COTR.

4.2 Testing Laboratory:

4.2.1 Perform qualification and production quality control tests using either an independent testing laboratory or a qualified manufacturer's laboratory, approved by WMATA. If an independent testing laboratory is selected, it will be a member of the American Council of Independent Laboratories. If a manufacturer's laboratory is selected, it will satisfy the requirements of the American Council of Independent Laboratories' Manual of Practice - Quality Control System - Requirements for A Testing and Inspection Laboratory, and ASTM E329.

4.2.2 The selected laboratory will use the proper equipment and qualified personnel for the specified tests.

4.2.3 Provide equipment in good operating condition, of adequate capacity and range, and accurately calibrated. Use testing equipment that is in calibration with standards which are certified and traceable to the National Bureau of Standards within one year immediately preceding the test date. Submit copies of calibration certificates with test reports to WMATA.

4.3 Documentation:

4.3.1 In conjunction with the specified tests, submit the documents under Section 4.3.2 for review and approval to the WMATA COTR no later than (60) calendar days after issuance of the Notice to Proceed (NTP).

4.3.2 Test report:

A. A separate report of test results for each test which includes original data calculations, test procedure references, test equipment identification, test personnel, date of test, specified requirements, actual test results, nonconformance if any, and interpretation of the results. Highlight conformance or deviation in a report summary.

B. Accompany the written test reports with a photographic record of the tests. Include photographs of sufficient clarity to distinguish relevant details as described or referenced in the respective written report.

4.3.3 For depth hardening of frog castings, Vendor will submit the following:

A. Certificates of material compliance required by AREMA and the Contract Documents.

B. Test reports of chemical analyses, Brinell hardness, electrical insulation, and other tests required by AREMA and the Contract Documents.

C. Frog depth hardening results.

D. A certified copy of reports on the analyses and tests are required by referenced ASTM specifications.

4.4 Quality Assurance/Control:

4.4.1 Quality Assurance Program must be submitted to the WMATA prior to contract award and must be consistent with ISO 9001.

A. A Vendor quality assurance report will be completed and submitted to the WMATA COTR for approval prior to shipping any special trackwork.

4.4.2 Tolerances: Conform to the AREMA Portfolio of Trackwork Plans - Plan No. 1010-89, Permissible Variations in Completed Frogs; the AREMA Specifications for Special Trackwork, Permissible Variations in Dimensions, Fits and Other Physical Attributes, page 100-92, Section 7; and the AREMA Specifications for Steel Rails, Section 5, in all aspects unless modified in the Contract Documents.

4.4.3 Preassembly for Inspection (WMATA may perform inspection at Vendor facility):

A. Assemble all turnout units and crossover units with plates, clamps, braces and other track material to verify alignment and tolerances as specified.

B. No bracing, wedging, or support blocking will be permitted to hold components to proper gauge and alignment.

C. Ballasted special trackwork will be assembled with all ties.

D. For direct fixation Special Trackwork, for the purpose of locating and fastening plates to the rails, use layout rail where CWR (Continuous Welded Rail) is required during field installation. The layout rail will be of section and straightness required by the Running Rail Section of the Specifications, and within tolerance. The guard rail will be fully assembled to the layout rail.

E. Fully bolt and assemble rail joints for all turnouts. For inspection, use temporary joint bars with C clamps for shop assembly. Install 3/16 inch end post shim where insulated joint bars are indicated. Do not apply adhesive during this process.

F. Switch point tuck (mating) against the stock rail will be such that the assembled switch, with minimal bar pressure acting on the switch rail at rod number 1, is such as 25 % or more of the switch point contact length, starting from the tip of the point, will make positive, firm contact with the ball of the stock rail.

G. Switch point spring back will be such that the assembled switch, with no pressure acting on the switch rail, the maximum allowable spring back between the switch point and the ball of the stock rail will be 3/16 inch, measured six inches back from the tip of the point.

H. Test insulated gauge plates and switch rods in accordance with AAR Signal Manual, Part 14.5.3.

I. If WMATA chooses to perform a visual inspection, the Vendor must provide free access to the facility, and assist with the inspection process.

J. Vendor will provide WMATA with use of templates and one yard straight edge or longer, as necessary, to check flangeway, rail end drilling, switch rail planing, and other features of the work usually checked by templates.

K. Vendor will present material for inspection in a safe area away from excessive noise and manufacturing activities and provide support for inspection of the top, side and bottom of frogs and switches.

L. Inform WMATA when treated wood is ready for inspection.

M. Variations from the AREMA Standards or Contract Documents will constitute noncompliance and will not be accepted for shipment unless or until proper modification is made and reviewed by WMATA.

N. Vendor to provide WMATA with a completed turnout inspection checklist.

O. Averaging of dimensions, with respect to measurement for size acceptance, is not permitted.

P. For inspection and review, match mark rails in appropriate colors, and sequentially number fasteners, in accordance with the WMATA reviewed System. Submit the match marking and numbering system on the Shop Drawings for review by the Vendor Quality Manager before match marking and numbering commences.

Q. Upon approval by the WMATA COTR and Vendor Quality Manager, before special plates have been removed for shipping, all plate locations will be marked with paint on the rails to facilitate subsequent assembly. Package as specified in the Contract Documents.

4.5 Shop Drawings and Submittals

4.5.1 All drawings and submittals must be provided to the WMATA COTR for review and approval no later than (60) calendar days after issuance of the NTP. Submittal review time by WMATA will be (7) days.

4.5.2 The Vendor will produce all working drawings or shop drawings required in addition to the furnished drawings. The shop drawings will be delivered to the WMATA COTR.

A. Shop Drawings for Special Trackwork will be in CADD and PDF, including the following:

1. Split Switches, including stock rails
2. Insulated switch rods, including clip assemblies
3. Closure rails, turnout rails and connecting rails as specified in the Contract Documents.
4. All special plates for direct fixation special track work, including details of components
5. Heel block assemblies.
6. Complete layouts and details for turnouts, double crossover, and crossing diamonds
7. Manganese housing
8. Cast rail stops and housing chairs

4.6 : Shipping Preparation

4.6.1 Load, handle, and store turnout and crossover materials with care to prevent damage.

4.6.2 While loading, do not drop turnout and crossover materials, but place each length of rail with the head up and with sufficient support under the base.

4.6.3 Do not subject frogs to excessive static loading.

4.6.4 Avoid sudden impacts or dynamic loading, and prevent high stressing arising from point or line loading.

4.6.5 Locate slinging points at uniform distances along the load so that components are in a horizontal position at all times.

4.6.6 Use only slings that do not cause surface damage or notching.

A. Terylene or nylon strapping is acceptable, with an additional sleeve where the sling is in contact with the rail or component.
B. Flat profile chain-link slings having a protective sleeve are also acceptable.

4.6.7 Do not use chains and wires that may cause surface damage.

4.6.8 Use sufficient timber dunnage at all times, and take particular care when extracting slings from around component lifts In order to ensure they are not ripped out.

4.6.9 Submit method of packaging to WMATA for acceptance before shipping.

4.6.10 The turnouts will be packaged as follows:

A. One switch panel, extending from the beginning of the turnout unit ahead of the point of switch.

B. The remainder of the turnout as follows:
   1. Frog with associated plates and hardware.
   2. Guard rails
   3. Closure rails and turnout rails and connecting rails.
   4. Large switch plates for direct fixation must be banded to the rails.

4.6.11 Identification Numbers:

A. As specified in the Contract Documents, each frog has an identification number. This number will be stamped on a metal tag and the tag affixed to each panel.

B. Tags will be made of corrosive-resistant metal such as anodized aluminum or brass. Fastening hardware will be of the same material as the tags. Numbers will be stamped in characters 1/2" high, and plate will be of the 6" wide, 3" high plate dimensions.

4.6.12 Single Crossover packaging:

A. Two turnouts per one single crossover as specified in the Contract Documents.

B. Connecting Rails as specified in the Contract Documents.

4.6.13 Double Crossovers packaged as follows:

A. Four turnouts per one double crossover as specified in the Contract Documents.

B. One package for each center frog, with plates.

C. One package for each end frog, with plates.

4.6.14 Ties 0, 1, 2, 3 and all contact rail ties may be bundled, tagged and shipped separately from the switch panel to facilitate transportation.

4.6.15 Package and label parts and replacement materials in moisture-proof containers suitable for shipment and storage.

4.6.16 Attach copies of shipping list in the package so it is readable from the exterior of the package.

5.0 WARRANTY

5.1.1 There will be a 1 year warranty on all materials and workmanship.

6.0 DELIVERY AND ACCEPTANCE

6.1.1 Delivery of the Special Trackwork will be made to designated WMATA locations no later than the dates indicated in the chart below for the Base Year. Hours of delivery will be between 7:00 a.m. and 2:00 p.m. Monday through Friday only exclusive of legal holidays in the District of Columbia.

Description	Qty	Delivery Location*	Due Date
Line Item 2 – No. 6 Guard Ballast R/H Turnout	2	Brentwood Yard	07/10/18
Line Item 2 – No. 6 Guard Ballast R/H Turnout	2	Brentwood Yard	07/18/18
Line Item 5 – No. 8 Guard Ballast L/H Turnout	1	Brentwood Yard	11/06/18
Line Item 6 – No. 8 Guard Ballast R/H Turnout	2	Brentwood Yard	10/23/18
Line Item 6 – No. 8 Guard Ballast R/H Turnout	1	Brentwood Yard	11/06/18
Line Item 9 – No. 8 Guard Ballast Diamond Section	1	Alexandria Yard	05/29/18
Line Item 36 – No. 10 Direct Fixation Double Crossover	1	Alexandria Yard	04/24/18
Line Item 37 – No. 15 Direct Fixation L/H Turnout	2	New Carrollton Yard	11/20/18

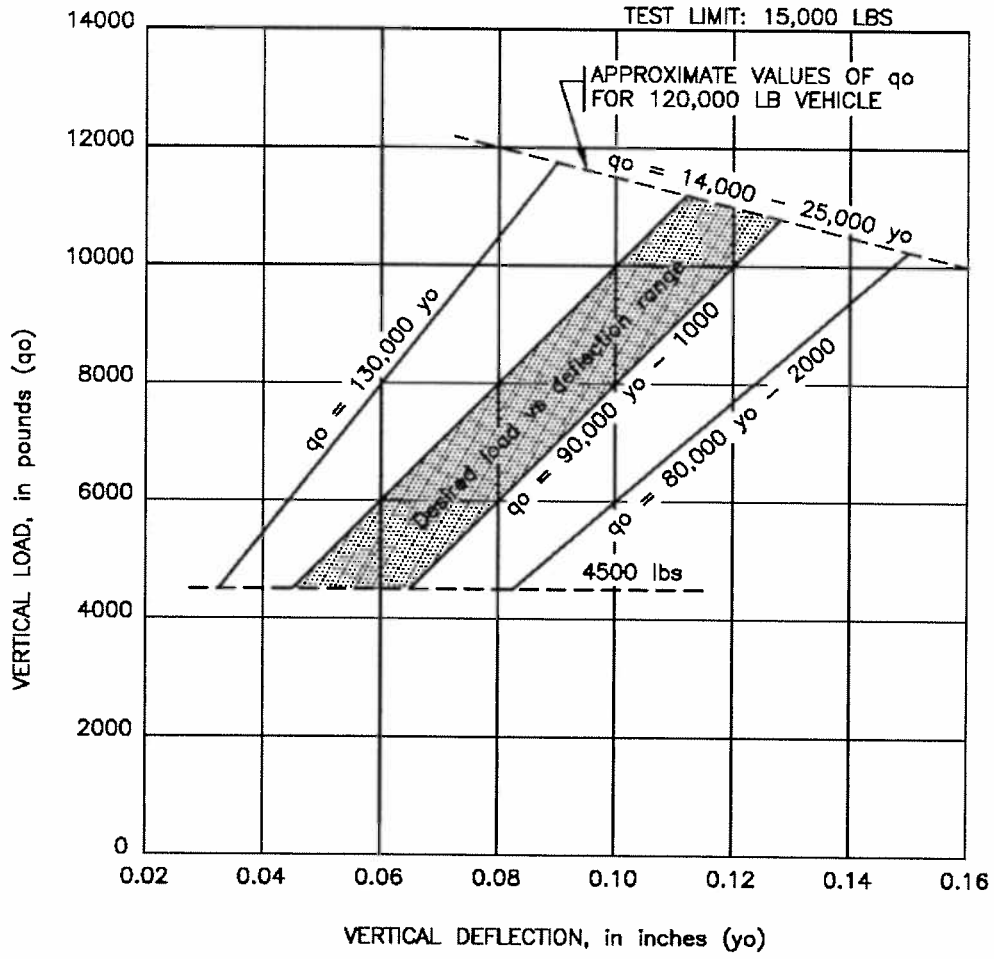
Deliver locations and due dates for the option years will be addressed in separate correspondence after contract award.

* Delivery locations are subject to change, at WMATA's discretion, but will remain within the Metrorail system.

6.1.2 The Vendor will notify WMATA of material deliveries (72) hours in advance. Contact Track Supervisor Blyden Davis at (202) 374-1236 for instructions. Advanced notice is required to allow WMATA to clear space and prepare equipment for unloading.

6.1.3 WMATA will inspect the materials after delivery to determine that they are of proper quantity and that they are in satisfactory condition upon arrival. The Vendor will replace or supply any products that have been damaged or do not meet specification requirements without expense to WMATA.

7.0 EXHIBIT 05658-C- VERTICAL TEST ACCEPTANCE CRITERIA

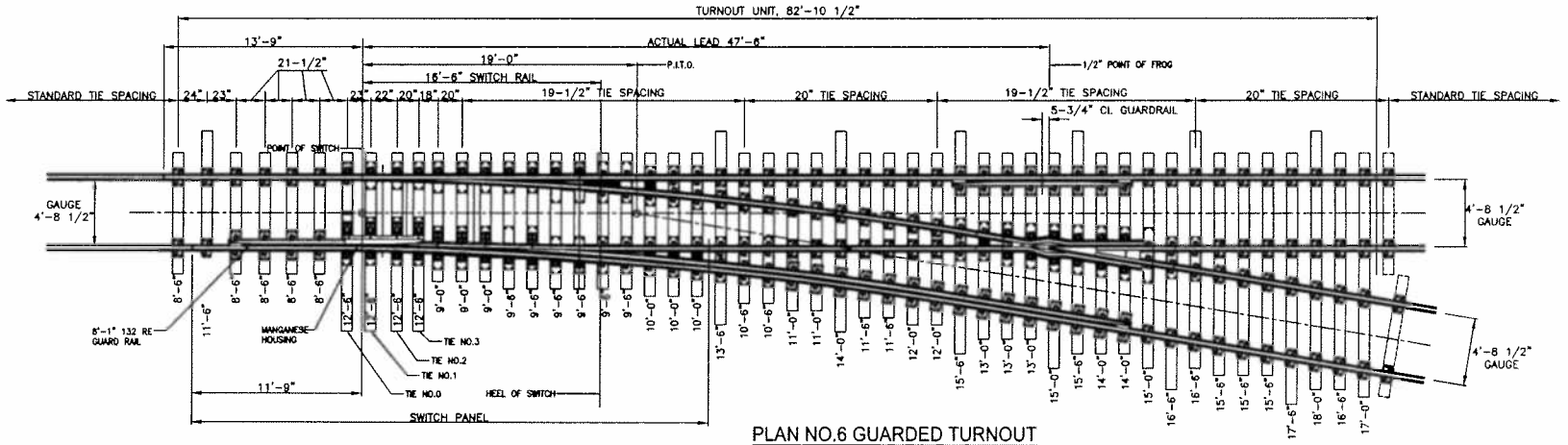


NOTES:

1. MAXIMUM DEFLECTION AT TEST LIMIT SHALL NOT EXCEED 25% OF THE UNCOMPRESSED THICKNESS OF ELASTOMER PAD.
2. FASTENER SPRING RATE MUST BE BETWEEN 80,000 LBS/IN. AND 130,000 LBS/IN. FOR ALL LOADS BETWEEN 4,500 POUNDS AND THE LINE INDICATING THE APPROXIMATE VALUES OF qo FOR A 120,000 POUND VEHICLE.

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

DEPARTMENT OF TRANSIT SYSTEM DEVELOPMENT OFFICE OF ENGINEERING & ARCHITECTURE	VERTICAL LOAD TEST ACCEPTANCE CRITERIA EXHIBIT 05658-C



PLAN NO.6 GUARDED TURNOUT

SCALE: 1/4"=1'-0"

TURNOUT DATA

FROG	NUMBER	6
	ANGLE	9°-31'-38"
	TOE LENGTH	5'-1"
	HEEL LENGTH	8'-9"
	TOTAL LENGTH	13'-10"
	TOE SPREAD	9-5/8"
	HEEL SPREAD	17-15/16"
SWITCH	LENGTH OF SWITCH RAIL	16'-6"
	THICKNESS AT POINT	0"
	SWITCH ANGLE	0°-58'-18"
	HEEL SPREAD	9-1/8"
	CURVED POINT RADIUS	285.53'
	VERTEX DISTANCE	0"
ACTUAL LEAD		47'-6"
STRAIGHT CLOSURE LENGTH		25'-11"
CURVED CLOSURE LENGTH		26'-1 5/8"
CURVED CLOSURE RADIUS		285.53'
CENTERLINE RADIUS		283.17'
DEGREE OF CURVE		20°-14'-01"
TANGENT AT HEEL OF SWITCH		0"
TANGENT AT TOE OF FROG		0"

BILL OF MATERIAL

QTY	DESCRIPTION
1	16'-6" GUARDED PLATED STRAIGHT SWITCH WITH UNIFORM RISERS - BALLASTED TRACK, COMPLETE
1	16'-6" UNGUARDED PLATED CURVED SWITCH WITH UNIFORM RISERS - BALLASTED TRACK, COMPLETE
1	NO. 6 PLATED RAIL BOUND MANGANESE FROG - BALLASTED, COMPLETE
1	12'-6" GUARD RAIL, COMPLETE
1	MANGANESE HOUSING WITH DUCTILE IRON CHAIRS
4	DUCTILE IRON RAIL STOPS
A.R.	132 RE GUARD RAILS
A.R.	CURVED CLOSURE RAIL, STOCK RAIL, AND TURNOUT RAIL
A.R.	STRAIGHT CLOSURE RAIL, STOCK RAIL, AND TURNOUT RAIL
A.R.	7"x9" TIMBER SWITCH TIES
A.R.	ELASTIC FASTENER TIE PLATES, PUNCHED FOR 7/8"SCREW SPIKES
A.R.	7/8" SCREW SPIKES
A.R.	LEFT HAND PANDROL CLIPS e2056 (MODIFIED 'e' CLIPS AT JOINT BARS)
A.R.	BOLTED STANDARD RAIL JOINTS, 6 HOLE, 36 INCH
A.R.	BOLTED INSULATED RAIL JOINTS, 6 HOLE, 36 INCH

NOTES:

1. GAUGE WIDTH THROUGHOUT TURNOUT IS 4' - 8 1/2".
2. TURNOUT UNITS SHALL BE FULLY ASSEMBLED IN THE FACTORY FOR INSPECTION BY WMATA MAKE-UP RAIL SHALL BE USED DURING FACTORY ASSEMBLY TO ASSURE LOCATION AND ALIGNMENT OF PLATES USED TO FASTEN CWR.
3. SWITCH PANEL SHALL BE SHIPPED AS ONE UNIT.
4. TIE NO'S 1, 2, 3 AND ALL CONTACT RAIL TIES MAY BE BUNDLED, TAGGED AND SHIPPED SEPARATELY FROM SWITCH PANEL TO FACILITATE TRANSPORTING.
5. ALL RAIL AND COMPONENTS SHALL CONFORM TO 115 RE RAIL SECTION.
6. RAIL SHALL BE FULLY HEAD HARDENED.
7. CLOSURE RAIL LENGTHS INDICATED ARE TOTAL LENGTHS AND DO NOT ALLOW FOR STANDARD OR INSULATED JOINTS.
8. RAIL JOINTS SHOWN IN RAIL LAYOUT DIAGRAM INTERNAL TO THE TURNOUT ARE REQUIRED. ALL OTHER JOINTS REQUIRED FOR PANELIZING THE SWITCH OR TO AID IN TRANSPORTING COMPONENTS SHALL BE LOCATED BY THE CONTRACTOR AND SUBMITTED TO THE ENGINEER FOR APPROVAL. JOINTS IN OPPOSITE RAILS SHALL HAVE A TWO TIE STAGGER. JOINTS IN OPPOSITE RAILS SHALL HAVE A TWO TIE STAGGER.
9. RAIL ENDS TO BE JOINTED TO CWR ARE UNDRILLED.
10. DO NOT DRILL FOR JOINTS ON STOCK RAILS AHEAD OF P.S.
11. RIGHT HAND TURNOUT IS SHOWN. LEFT HAND TURNOUT IS OPPOSITE HAND.
12. ALL RAILS WITHIN TURNOUT UNITS ARE CLAMPED TO THE PLATES BY LEFT HAND PANDROL SPRING CLIPS - E2056.
13. RAIL AT JOINT BARS ARE FASTENED WITH LEFT HAND MODIFIED "E" TYPE C CLIPS OR TYPE J CLIPS.
14. ALL PLATES ARE FASTENED TO TIES WITH 7/8" SCREW SPIKES.
15. ALL PLATES ARE PUNCHED FOR 7/8" SCREW SPIKES.
16. DIMENSIONS SHOWN ON STOCK RAILS AHEAD OF POINT OF SWITCH ARE STANDARD. THE AUTHORITY WILL SPECIFY STOCK RAIL LENGTHS AHEAD OF POINT OF SWITCH WHERE OTHER THAN STANDARD LENGTHS ARE REQUIRED.
17. TIE NO.'S 0 AND 3 SHALL BE 9' - 0" LONG FOR HAND THROW SWITCHES.
18. LOCATE SEPARATOR BLOCKS NOT MORE THAN 4' - 0" ON CENTERS AND AS NECESSARY TO CLEAR JOINT BARS AND ANCHOR BOLTS.
19. GUARD RAILS ARE 132 RE RAIL SECTION, HEAD HARDENED.

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE DISTRICT OF COLUMBIA."

LICENSE No. _____

EXPIRATION DATE _____

- DC REGISTER SECTION 3413

DESIGNED	DCCO	01/99 DATE
DRAWN	A. DAVIS	05/06 DATE
CHECKED	RAVI AMIN	12/14 DATE

REFERENCE DRAWINGS

NUMBER	TITLE

REVISIONS

DATE	NUM	DESCRIPTION
08/01	01	Revised & Released by the Authority
08/06	02	Drawing Revision-Released
07/08	03	Drawing Revision-Released
12/14	04	Revised Title Block & Changed DD to read ST

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES

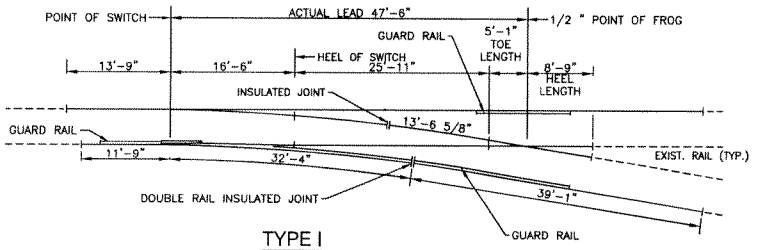
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

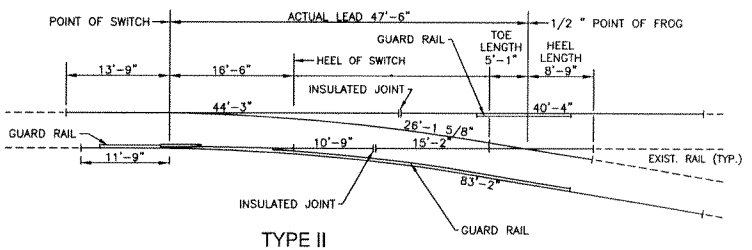
APPROVED: THOMAS ROBINSON, DEPUTY CHIEF ENGINEER _____ DATE

TRACKWORK STANDARD DRAWING
NO. 6 GUARDED TURNOUT
PLATED, BALLASTED TRACK

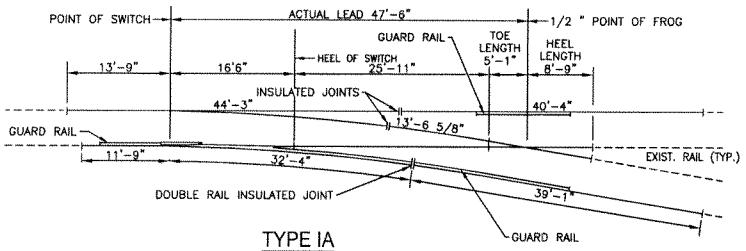
CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	1/4" = 1'-0"	ST-TW-015	## of .



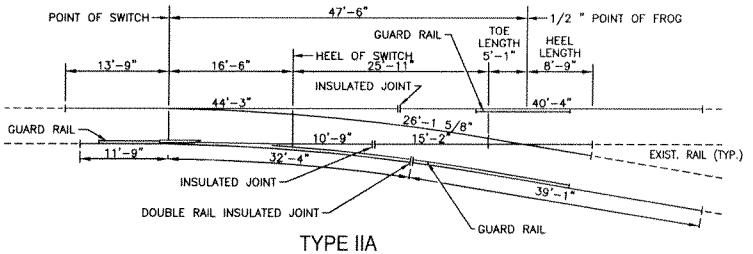
TYPE I
RAIL LAYOUT DIAGRAM
SCALE: 1/8"=1'-0"



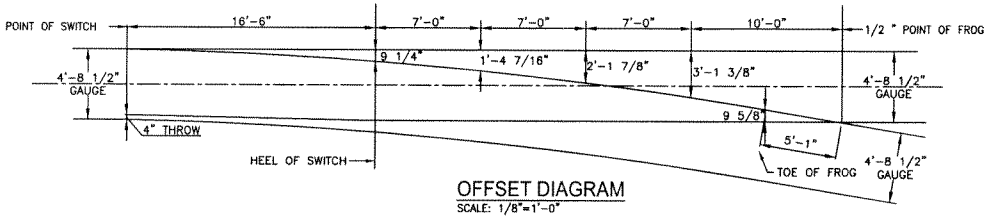
TYPE II
RAIL LAYOUT DIAGRAM
SCALE: 1/8"=1'-0"



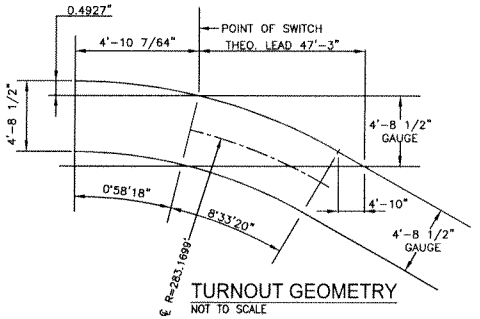
TYPE IA
RAIL LAYOUT DIAGRAM
SCALE: 1/8"=1'-0"



TYPE IIA
RAIL LAYOUT DIAGRAM
SCALE: 1/8"=1'-0"



OFFSET DIAGRAM
SCALE: 1/8"=1'-0"



TURNOUT GEOMETRY
NOT TO SCALE

"PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE DISTRICT OF COLUMBIA."

LICENSE No. _____

EXPIRATION DATE: _____

- DC REGISTER SECTION 3413

DESIGNED	DCCO	01/99 DATE
DRAWN	A. DAVIS	06/06 DATE
CHECKED	RAVI AMIN	12/14 DATE

REFERENCE DRAWINGS		REVISIONS		
NUMBER	TITLE	DATE	NUM	DESCRIPTION
		08/01	01	Revised & Issued by the Authority
		06/06	02	Drawing No Revision - Reissued
		12/14	03	Revised Title Block & Changed OD to read ST

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

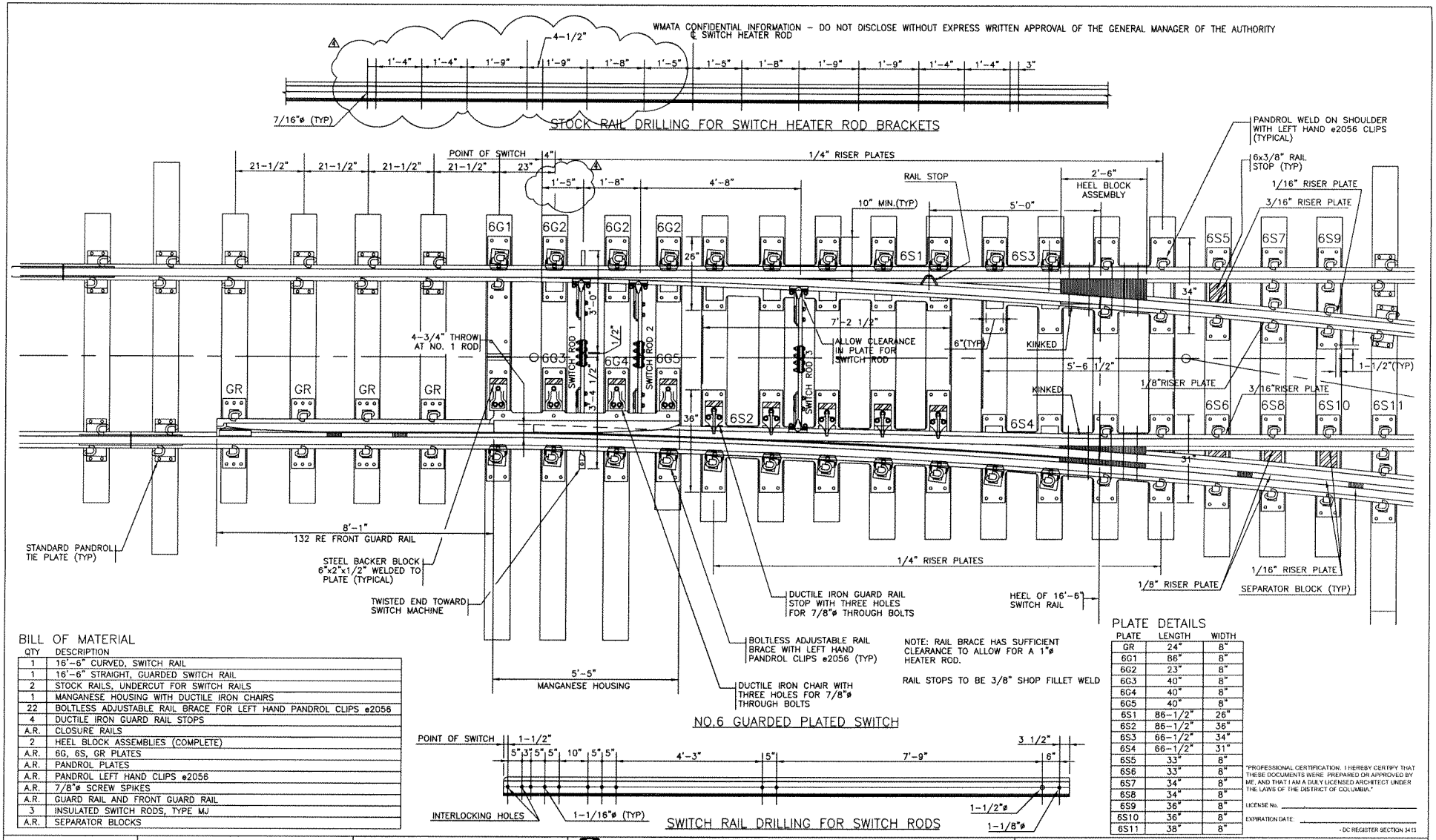
DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

APPROVED _____ DATE
THOMAS ROBINSON
DEPUTY CHIEF ENGINEER

TRACKWORK STANDARD DRAWING
PLAN NO. 6 GUARDED TURNOUT
RAIL LAYOUT, BALLASTED TRACK

CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	NOT TO SCALE	ST-TW-016	## of .



NOTE: RAIL BRACE HAS SUFFICIENT CLEARANCE TO ALLOW FOR A 1"ø HEATER ROD.

RAIL STOPS TO BE 3/8" SHOP FILLET WELD

BILL OF MATERIAL

QTY	DESCRIPTION
1	16'-6" CURVED, SWITCH RAIL
1	16'-6" STRAIGHT, GUARDED SWITCH RAIL
2	STOCK RAILS, UNDERCUT FOR SWITCH RAILS
1	MANGANESE HOUSING WITH DUCTILE IRON CHAIRS
22	BOLTLESS ADJUSTABLE RAIL BRACE FOR LEFT HAND PANDROL CLIPS e2056
4	DUCTILE IRON GUARD RAIL STOPS
A.R.	CLOSURE RAILS
2	HEEL BLOCK ASSEMBLIES (COMPLETE)
A.R.	6G, 6S, GR PLATES
A.R.	PANDROL PLATES
A.R.	PANDROL LEFT HAND CLIPS e2056
A.R.	7/8"ø SCREW SPIKES
A.R.	GUARD RAIL AND FRONT GUARD RAIL
3	INSULATED SWITCH RODS, TYPE MJ
A.R.	SEPARATOR BLOCKS

PLATE DETAILS

PLATE	LENGTH	WIDTH
GR	24"	8"
6G1	86"	8"
6G2	23"	8"
6G3	40"	8"
6G4	40"	8"
6G5	40"	8"
6S1	86-1/2"	26"
6S2	86-1/2"	36"
6S3	66-1/2"	34"
6S4	66-1/2"	31"
6S5	33"	8"
6S6	33"	8"
6S7	34"	8"
6S8	34"	8"
6S9	36"	8"
6S10	36"	8"
6S11	38"	8"

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE DISTRICT OF COLUMBIA."

LICENSE No. _____

EXPIRATION DATE: _____

- DC REGISTER SECTION 3413

DESIGNED DCCO 01/99 DATE
DRAWN A. DAVIS 06/06 DATE
CHECKED RAVI AMIN 01/15 DATE

REFERENCE DRAWINGS

NUMBER	TITLE

REVISIONS

DATE	NUM	DESCRIPTION
06/01	01	Revised and Issued by the Authority
06/06	02	Changed Sw. BLK Spacing
09/06	03	Added Note 1
06/13	04	Revisions for Stock Rail Drillings- Switch Heater
01/15	05	Revised Title Block and Changed DD to read ST

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

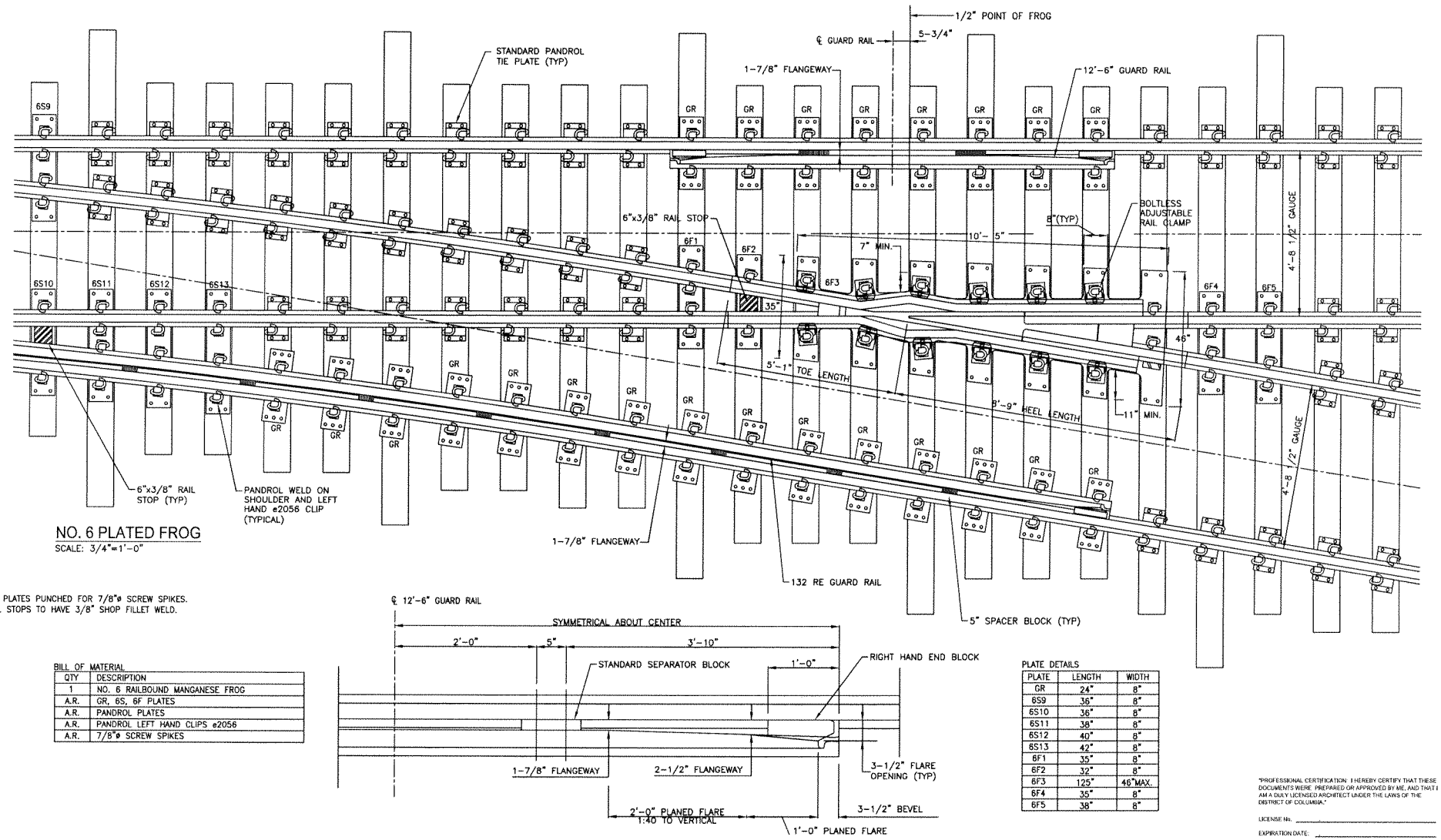
DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

APPROVED _____ DATE
THOMAS ROBINSON
DEPUTY CHIEF ENGINEER

TRACKWORK STANDARD DRAWING NO. 6 GUARDED TURNOUT, PLAN PLATED SWITCH, BALLASTED TRACK

CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	AS SHOWN	ST-TW-017	## of .



NO. 6 PLATED FROG

SCALE: 3/4"=1'-0"

NOTE:
1. ALL PLATES PUNCHED FOR 7/8"ø SCREW SPIKES.
2. RAIL STOPS TO HAVE 3/8" SHOP FILLET WELD.

BILL OF MATERIAL

QTY	DESCRIPTION
1	NO. 6 RAILBOUND MANGANESE FROG
A.R.	GR, 6S, 6F PLATES
A.R.	PANDROL PLATES
A.R.	PANDROL LEFT HAND CLIPS e2056
A.R.	7/8"ø SCREW SPIKES

PLATE DETAILS

PLATE	LENGTH	WIDTH
GR	24"	8"
6S9	36"	8"
6S10	36"	8"
6S11	38"	8"
6S12	40"	8"
6S13	42"	8"
6F1	35"	8"
6F2	32"	8"
6F3	125"	46"MAX.
6F4	35"	8"
6F5	38"	8"

"PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE DISTRICT OF COLUMBIA."

LICENSE No. _____

EXPIRATION DATE: _____

- DC REGISTER SECTION 3413

DESIGNED DCCO. 01/99 DATE
DRAWN A. DAVIS 06/06 DATE
CHECKED RAVI AMIN 12/14 DATE

REFERENCE DRAWINGS

NUMBER	TITLE

REVISIONS

DATE	NUM	DESCRIPTION
06/01	01	Revised & Issued by the Authority
06/06	02	Drawing Revision Minor-Reissued
09/06	03	Added Note #2
12/14	04	Revised Title Block & Changed DD to read ST

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

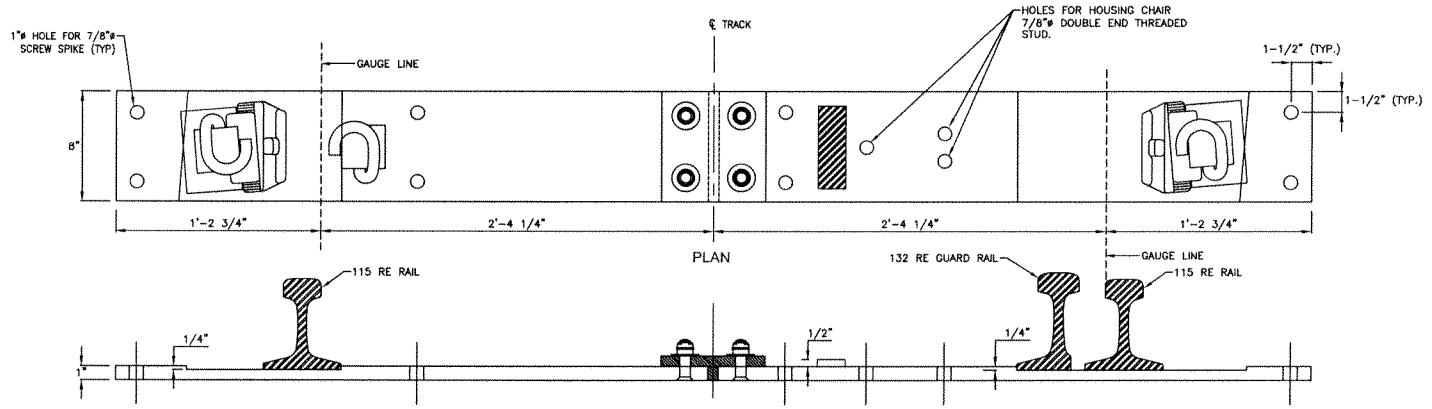
DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

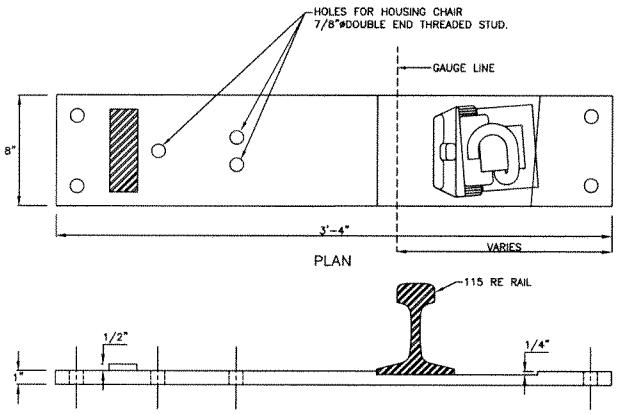
APPROVED _____ DATE
DEPUTY CHIEF ENGINEER

TRACKWORK STANDARD DRAWING
NO. 6 GUARDED TURNOUT
PLATED FROG, BALLASTED TRACK

CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	AS NOTED	ST-TW-018	## of .



ELEVATION, PLATE 6G1 BALLASTED TRACK
SCALE:3"=1'-0"



ELEVATION, PLATES 6G3, 6G4, 6G5 BALLASTED TRACK
SCALE:3"=1'-0"

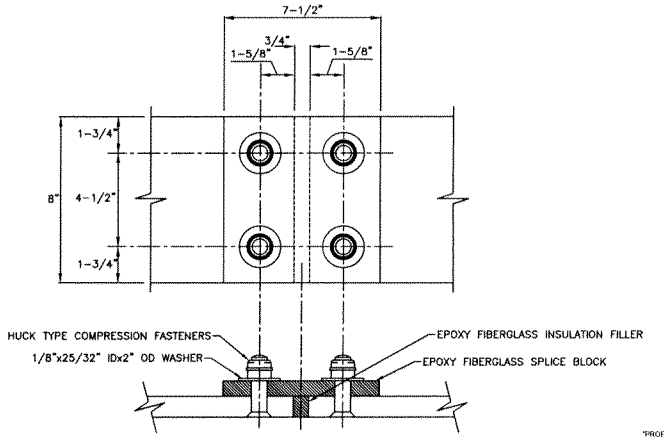


PLATE INSULATOR
SCALE: 3/8"=1"

"PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE DISTRICT OF COLUMBIA."

LICENSE No. _____

EXPIRATION DATE: _____

- DC REGISTER SECTION 3413

DESIGNED OCCO 01/99 DATE
DRAWN A. DAVIS 06/06 DATE
CHECKED RAVI AMIN 12/14 DATE

REFERENCE DRAWINGS

NUMBER	TITLE

REVISIONS

DATE	NUM	DESCRIPTION
08/01	01	Revised & Issued by the Authority
06/06	02	Drawing Revision Minor-Reissued
12/14	03	Revised Title Block & Changed OD to read ST

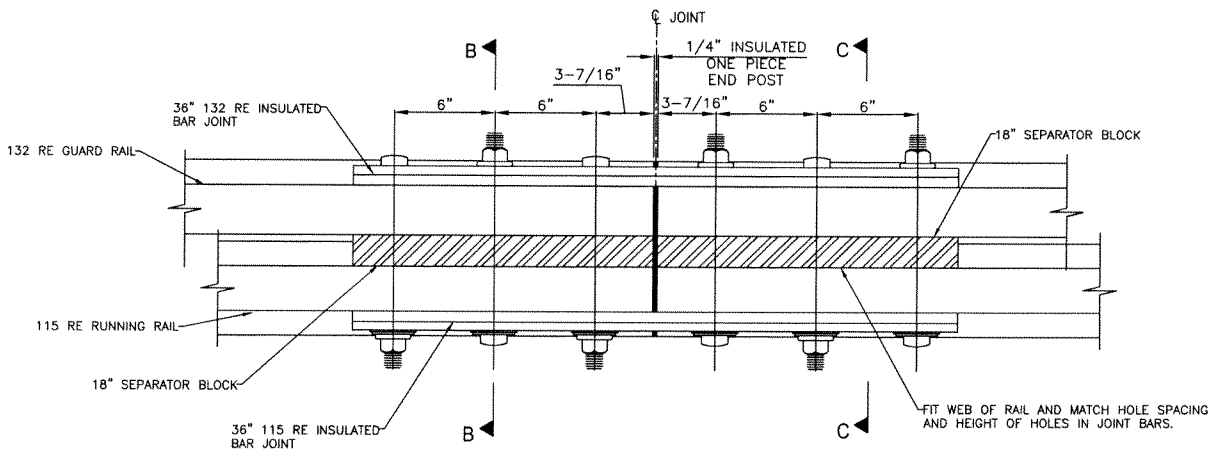
WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY
DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

APPROVED _____ DATE
DEPUTY CHIEF ENGINEER

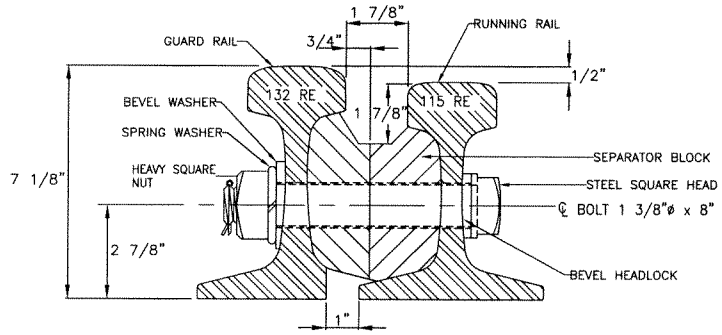
TRACKWORK STANDARD DRAWING
NO. 6 GUARDED TURNOUT
PLATE DETAILS

CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	AS NOTED	ST-TW-019	## of .



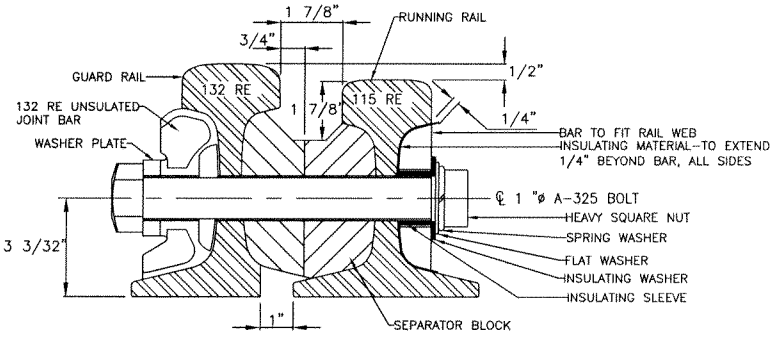
PLAN DOUBLE RAIL INSULATED JOINT

SCALE: 3"=1'-0"



SECTION C-C- SEPARATOR BLOCK

NOT TO SCALE



SECTION B-B- DOUBLE RAIL INSULATED JOINT

NOT TO SCALE

"PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE DISTRICT OF COLUMBIA."

LICENSE No. _____

EXPIRATION DATE: _____

- DC REGISTER SECTION 3413

DESIGNED	DCCO	01/99 DATE
DRAWN	A. DAVIS	06/06 DATE
CHECKED	RAVI AMIN	12/14 DATE

REFERENCE DRAWINGS

NUMBER	TITLE

REVISIONS

DATE	NUM	DESCRIPTION
08/01	01	Revised & Issued by the Authority
02/06	02	Revised Rail Grip- Released
12/14	03	Revised Title Block & Changed DO to read ST

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

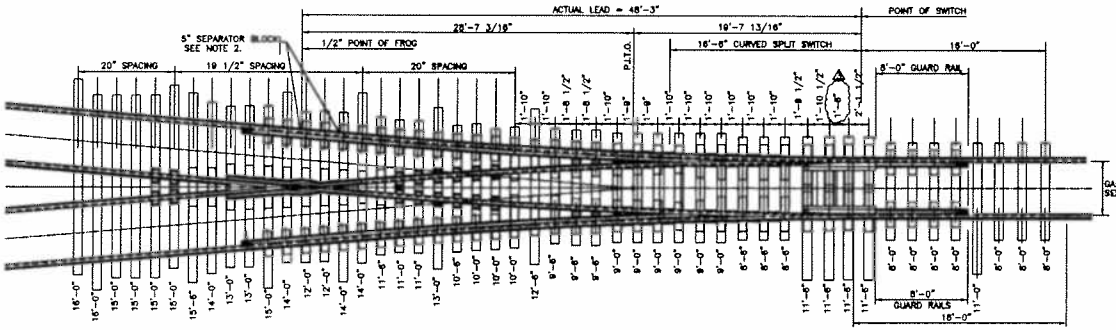
DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

APPROVED _____ DATE
DEPUTY CHIEF ENGINEER

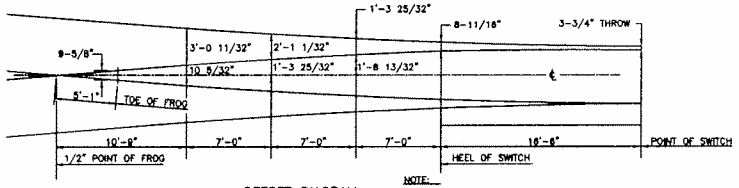
TRACKWORK STANDARD DRAWING
NO. 6 GUARDED TURNOUT
JOINT AND SEPARATOR BLOCK DETAILS

CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	AS SHOWN	ST-TW-020	## of .



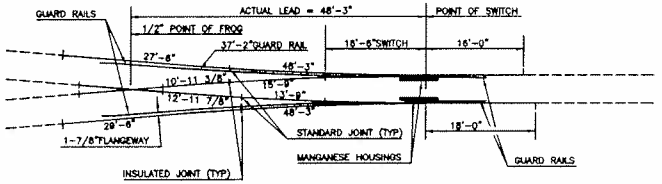
PLAN NO. 6 EQUILATERAL TURNOUT
SCALE: 1/4"=1'-0"

NOTES:
1. GAUGE WIDTH THROUGHOUT TURNOUT IS 4' – 8 1/2".
2. TURNOUT UNITS SHALL BE FULLY ASSEMBLED IN THE FACTORY FOR INSPECTION MAKE-UP. RAIL SHALL BE [illegible] ASSEMBLY TO ASSURE LOCATION AND ALIGNMENT OF PLATES USED TO LIMIT RAIL CANT.
3. SWITCH PANEL SHALL BE SHIPPED AS ONE UNIT.
4. TIE NOS. 0, 1 AND 2 AS SHOWN ON ST-TW-006 AND ALL CONTACT RAIL TIES MAY BE BUNDLED, TAGGED AND SHIPPED SEPARATELY FROM THE SWITCH PANEL TO FACILITATE TRANSPORTING.
5. ALL RAIL AND COMPONENTS SHALL CONFORM TO 115 RE RAIL SECTION.
6. RAIL SHALL BE HEAT HARDENED.
7. CLOSURE RAIL LENGTHS INDICATED ARE TOTAL LENGTHS AND DO NOT ALLOW FOR STANDARD OR [illegible]
8. RAIL JOINTS SHOWN IN RAIL LAYOUT DIAGRAM INTERNAL TO THE TURNOUT ARE REQUIRED. ALL OTHER JOINTS REQUIRED FOR PENALIZING THE SWITCH OR TO AID IN TRANSPORTING COMPONENTS SHALL BE LOCATED BY THE CONTRACTOR AND SUBMITTED TO THE ENGINEER FOR APPROVAL. JOINTS IN OPPOSITE RAILS SHALL HAVE A TWO TIE STAGGER.
9. RAIL ENDS TO BE JOINTED TO CWR ARE UNDRILLED.
10. DO NOT DRILL FOR JOINTS ON STOCK RAILS AHEAD OF P.S
11. ALL RAILS WITHIN TURNOUT UNITS ARE CLAMPED TO THE PLATES BY LEFT HAND PANDROL SPRING CLIPS – E2055B.
12. RAIL AT JOINT BARS ARE FASTENED WITH LEFT HAND MODIFIED 'E' CLIPS TYPE 'J' OR 'C' CLIPS.
13. ALL PLATES ARE FASTENED TO TIES WITH 7/8" SCREW SPIKES.
14. ALL PLATES ARE PUNCHED FOR 7/8" SCREW SPIKES.
15. DIMENSIONS SHOWN ON STOCK RAILS AHEAD OF POINT OF SWITCH ARE STANDARD. THE AUTHORITY WILL SPECIFY STOCK RAIL LENGTHS AHEAD OF POINT OF SWITCH WHERE OTHER THAN STANDARD LENGTHS ARE REQUIRED.
16. TIE NO.'S 0 AND 3 AS SHOWN ON ST-TW-006 SHALL BE 9' – 0" LONG FOR HAND THROW SWITCHES.
17. LOCATE SEPARATOR BLOCKS NOT MORE THAN 4' – 0" ON CENTERS AND AS NECESSARY TO CLEAR JOINT BARS AND ANCHOR BOLTS.
18. GUARD RAILS ARE 132 RE RAIL SECTION, HEAD HARDENED.



OFFSET DIAGRAM
SCALE: 1/4"=1'-0"

NOTE:
DIMENSIONS SYMMETRICAL ABOUT CENTERLINE.



RAIL LAYOUT DIAGRAM
SCALE: 1/8"=1'-0"

BILL OF MATERIAL

QTY	DESCRIPTION
1	NO. 6 GUARDED EQUILATERAL PLATED SWITCH WITH UNIFORM RISERS (LATEST AREMA STD. PLAN 111)
1	NO.6 PLATED FROG
2	CLOSURE RAILS
2	MANGANESE HOUSINGS WITH DUCTILE IRON CHAIRS
8	DUCTILE IRON RAIL STOPS
A.R.	132 RE GUARD RAILS
A.R.	STANDARD RAIL JOINTS – COMPLETE
A.R.	INSULATED RAIL JOINTS – COMPLETE

TIE SCHEDULE

LENGTH	QTY.
8'-0"	7
9'-0"	3
9'-6"	6
10'-0"	3
11'-0"	4
11'-6"	5
12'-0"	2
12'-6"	1
13'-0"	3
14'-0"	3
15'-0"	5
15'-6"	1
16'-0"	1
16'-8"	2
17'-0"	2
18'-0"	1
TOTAL	51

TURNOUT DATA

FROG	NUMBER	6
	ANGLE	9°-31'-38"
	TOE LENGTH	5'-1"
	HEEL LENGTH	8'-8"
	TOTAL LENGTH	13'-10"
	TOE SPREAD	9-5/8"
	HEEL SPREAD	17-15/16"
SWITCH	LENGTH OF SWITCH RAIL	16'-8"
	THICKNESS AT POINT	0"
	ANGLE AT HEEL	2°-04'-27"
	ANGLE AT POINT	0°-24'-47"
	HEEL SPREAD	8-11/16"
	RADIUS	569.22'
	HEATER DISTANCE	0"
CENTERLINE RADIUS		566.88'
DEGREE OF CURVE		10°-06'-27"
TANGENT AT	HEEL OF SWITCH	0"
	TOE OF FROG	0"
ACTUAL LEAD		48'-3"
CURVED CLOSURE LENGTH		28'-8 3/8"
CENTRAL ANGLE		2°-41'-15"

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE DISTRICT OF COLUMBIA."

LICENSE No. _____

EXPIRATION DATE _____

- DC REGISTER SECTION 3413

DESIGNED	DCCO	01/99 DATE
DRAWN	A. DAVIS	05/06 DATE
CHECKED	RAVI AMIN	01/15 DATE

REFERENCE DRAWINGS

NUMBER	TITLE

REVISIONS

DATE	NUM	DESCRIPTION
05/01	01	Revised and Issued by the Authority
05/06	02	Revised Drawing - Released
06/13	03	Revised Tie Spacing
01/15	04	Revised Title Block and Changed DO to read ST

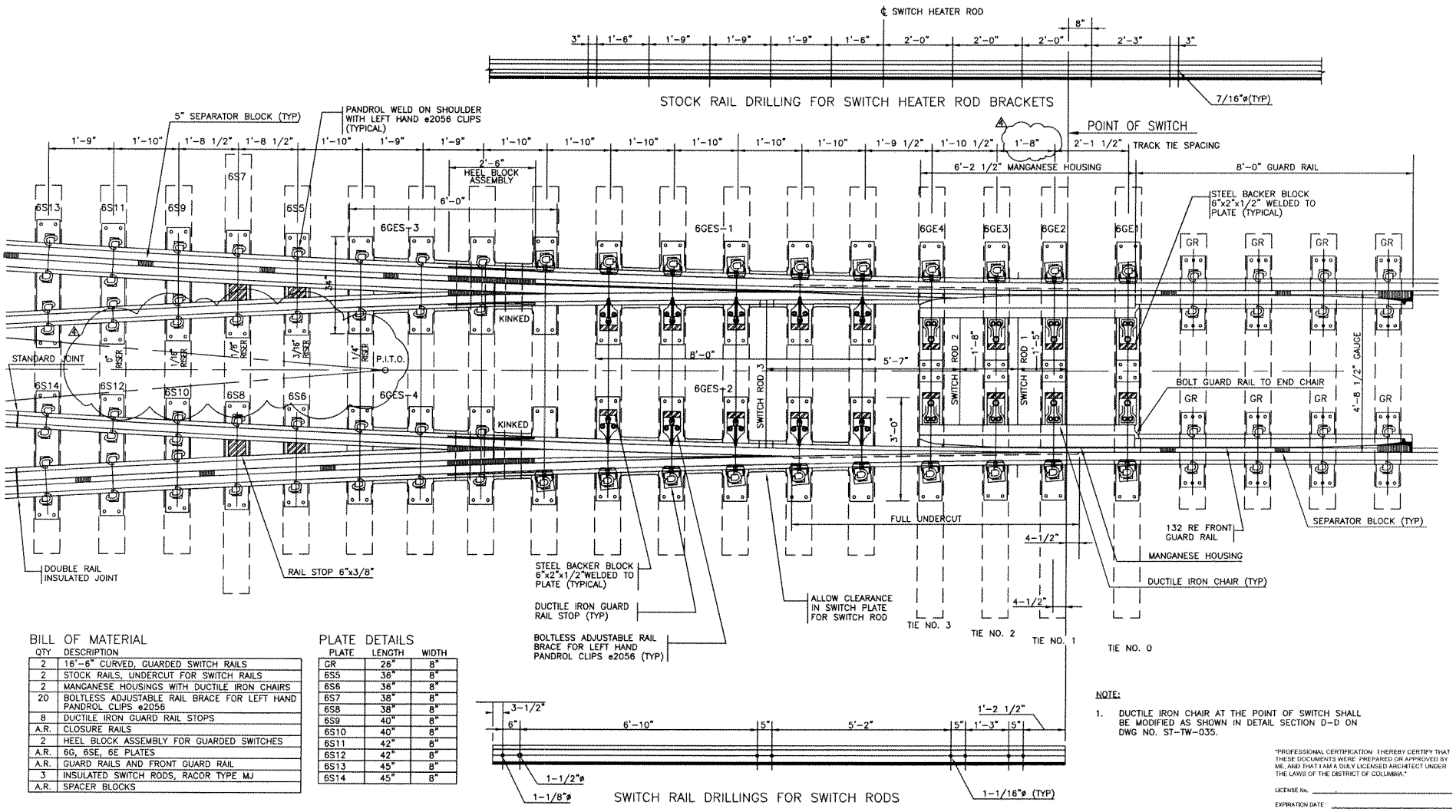
WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY
DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

APPROVED _____ DATE
THOMAS ROBINSON
DEPUTY CHIEF ENGINEER

TRACKWORK STANDARD DRAWING NO. 6 GUARDED EQUILATERAL TURNOUT, BALLASTED TRACK

CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	AS SHOWN	ST-TW-005	5 of .



BILL OF MATERIAL

QTY	DESCRIPTION
2	16'-6" CURVED, GUARDED SWITCH RAILS
2	STOCK RAILS, UNDERCUT FOR SWITCH RAILS
2	MANGANESE HOUSINGS WITH DUCTILE IRON CHAIRS
20	BOLTLESS ADJUSTABLE RAIL BRACE FOR LEFT HAND PANDROL CLIPS e2056
8	DUCTILE IRON GUARD RAIL STOPS
A.R.	CLOSURE RAILS
2	HEEL BLOCK ASSEMBLY FOR GUARDED SWITCHES
A.R.	6G, 6SE, 6E PLATES
A.R.	GUARD RAILS AND FRONT GUARD RAIL
3	INSULATED SWITCH RODS, RACOR TYPE MJ
A.R.	SPACER BLOCKS

PLATE DETAILS

PLATE	LENGTH	WIDTH
GR	26"	8"
6S5	36"	8"
6S6	38"	8"
6S7	38"	8"
6S8	38"	8"
6S9	40"	8"
6S10	40"	8"
6S11	42"	8"
6S12	42"	8"
6S13	45"	8"
6S14	45"	8"

NOTE:

1. DUCTILE IRON CHAIR AT THE POINT OF SWITCH SHALL BE MODIFIED AS SHOWN IN DETAIL SECTION D-D ON DWG NO. ST-TW-035.

"PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE DISTRICT OF COLUMBIA."

LICENSE No. _____

EXPIRATION DATE: _____

- DC REGISTER SECTION 3413

DESIGNED DCCO 01/99 DATE
DRAWN A. DAVIS 06/06 DATE
CHECKED RAVI AMIN 01/15 DATE

REFERENCE DRAWINGS

NUMBER	TITLE

REVISIONS

DATE	NUM	DESCRIPTION
08/01	01	Revised and Issued by the Authority
06/06	02	Revised Drawing - Reissued
09/06	03	Added Note 1
06/13	04	Revised Tie Spacing
06/13	05	Revised Riser Plates
01/15	06	Revised Title Block & Changed DD to read ST

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

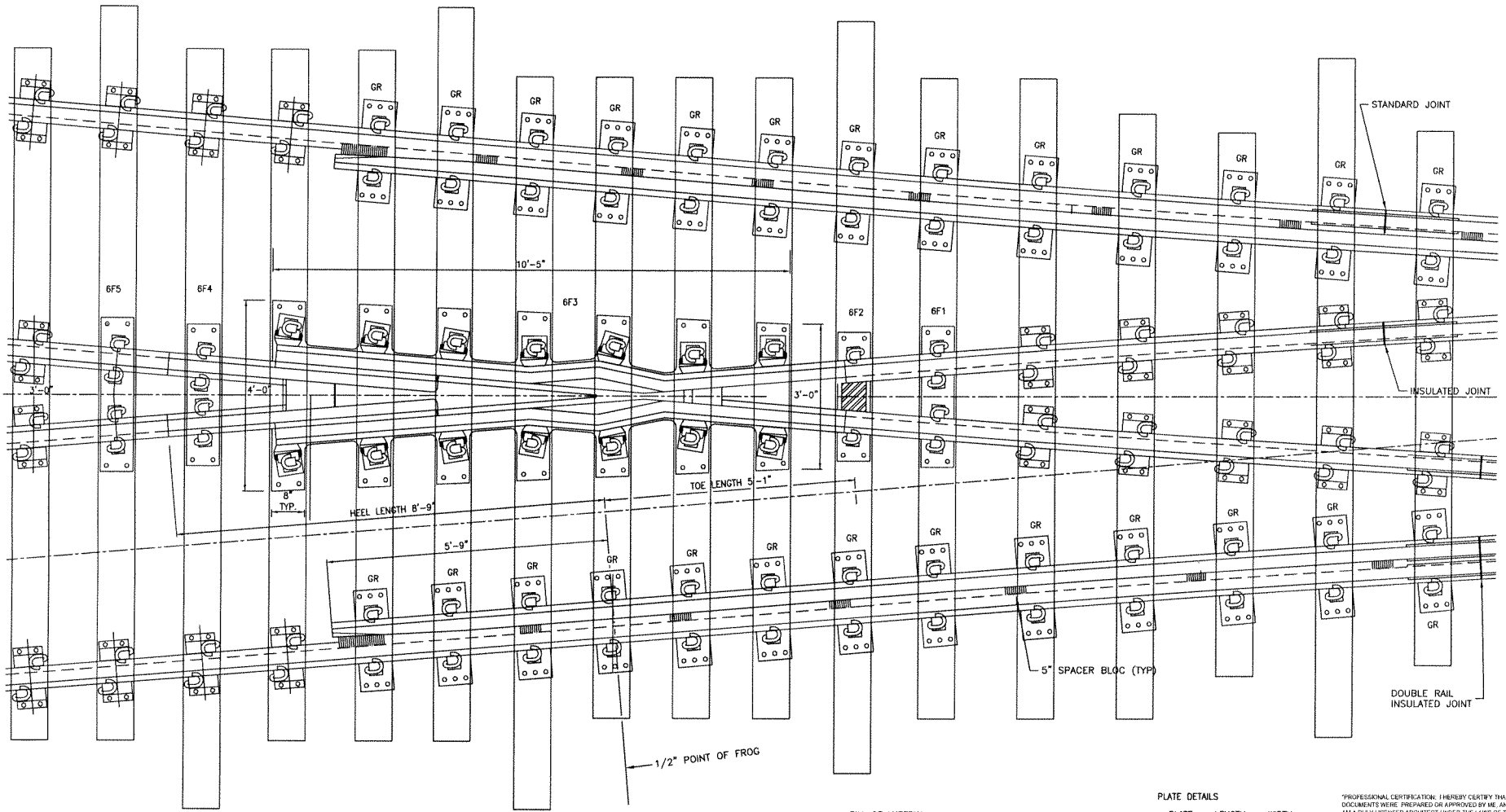
DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

APPROVED _____ DATE
THOMAS ROBINSON
DEPUTY CHIEF ENGINEER

TRACKWORK STANDARD DRAWING NO. 6 GUARDED EQUILATERAL TURNOUT PLATED SWITCH, BALLASTED TRACK

CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	3/4" = 1'-0"	ST-TW-006	6 of .



BILL OF MATERIAL

QTY	DESCRIPTION
1	NO.6 RAILBOUND MANGANESE FROG
A.R.	8E, GR, GRS, 8FE PLATES

PLATE DETAILS

PLATE	LENGTH	WIDTH
GR	26"	8"
6F1	35"	8"
6F2	32"	8"
6F4	35"	8"

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE DISTRICT OF COLUMBIA."

LICENSE No. _____

EXPIRATION DATE: _____

- DC REGISTER SECTION 3413

DESIGNED DCCO 01/99 DATE
DRAWN A. DAVIS 06/2006 DATE
CHECKED RAVI AMIN 12/14 DATE

REFERENCE DRAWINGS

NUMBER	TITLE

REVISIONS

DATE	NUM	DESCRIPTION
08/01	01	Revised & Issued by the Authority
06/06	02	Revised Drawing - Reissued
12/14	03	Revised Title Block & Changed DD to read ST

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

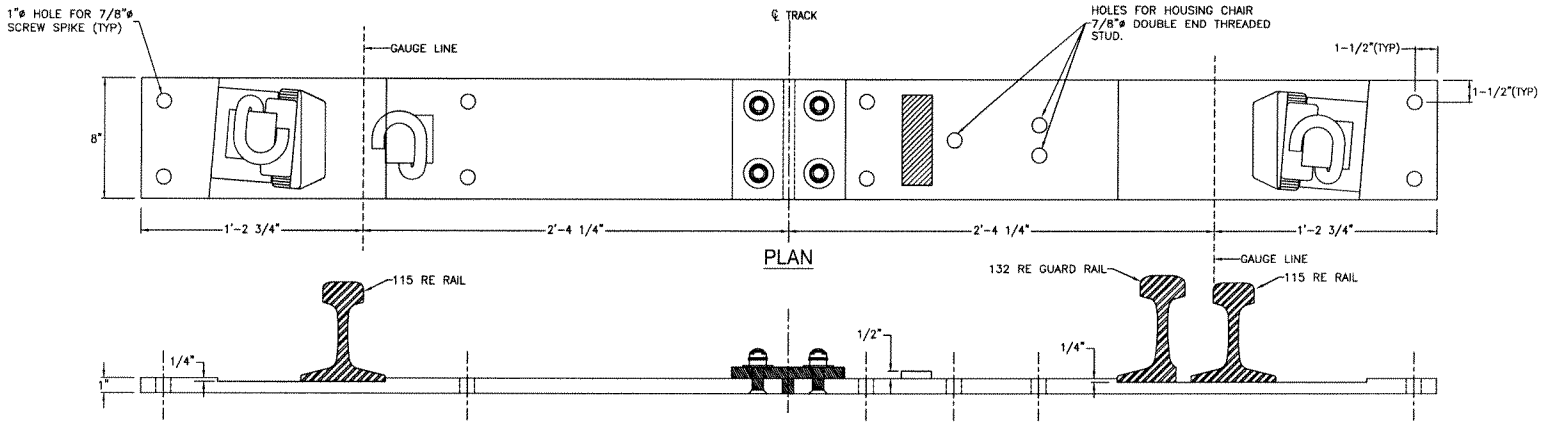
DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

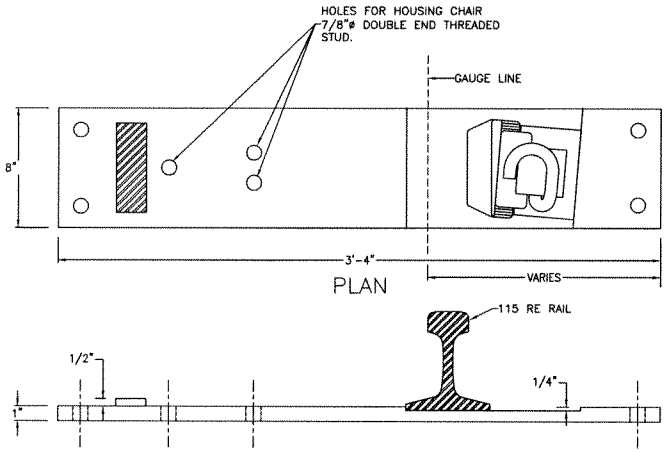
APPROVED _____ DATE
THOMAS ROBINSON
DEPUTY CHIEF ENGINEER

TRACKWORK STANDARD DRAWING
NO. 6 GUARDED EQUILATERAL TURNOUT
PLATED FROG, BALLASTED TRACK

CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	1" = 1'-0"	ST-TW-007	7 of .



ELEVATION, PLATE 6G1
BALLASTED TRACK
SCALE: 3"=1'-0"



ELEVATION, PLATES 6G3, 6G4, 6G5
BALLASTED TRACK
SCALE: 3"=1'-0"

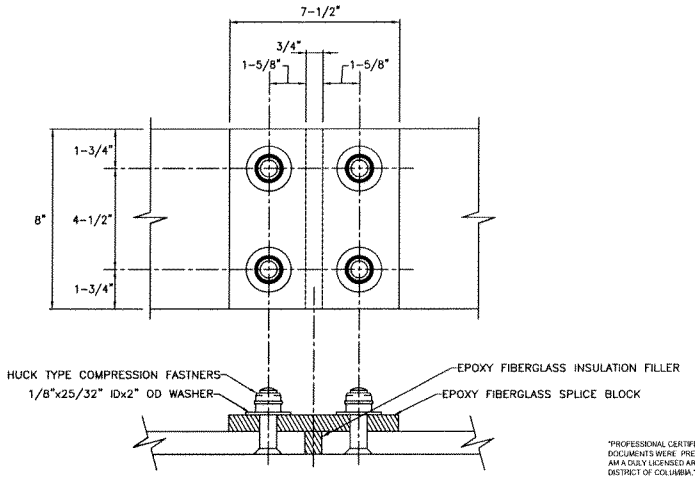


PLATE INSULATOR
SCALE: 3/8"=1'-0"

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE DISTRICT OF COLUMBIA."

LICENSE No. _____

EXPIRATION DATE _____

- DC REGISTER SECTION 3413

DESIGNED DCCO 01/99 DATE
DRAWN A. DAVIS 06/06 DATE
CHECKED RAVI AMIN 12/14 DATE

REFERENCE DRAWINGS

NUMBER	TITLE

REVISIONS

DATE	NUM	DESCRIPTION
08/01	01	Revised & Issued by the Authority
06/06	02	Revised Drawing - Reissued
12/14	03	Revised Title Block & Changed DD to read ST

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

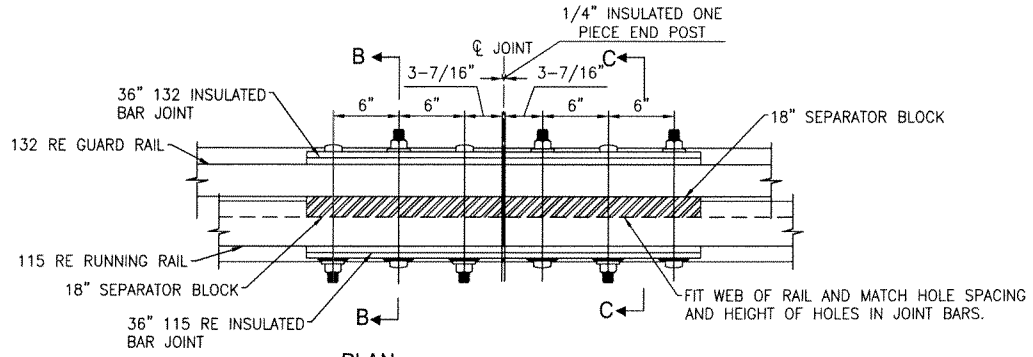
DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

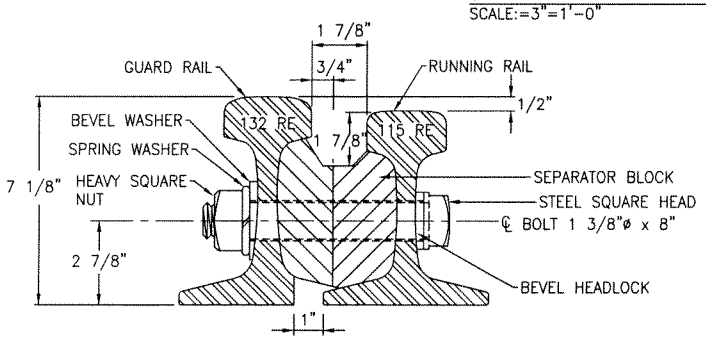
APPROVED _____ DATE
THOMAS ROBINSON
DEPUTY CHIEF ENGINEER

TRACKWORK STANDARD DRAWING NO. 6 GUARDED EQUILATERAL TURNOUT PLATE DETAILS, BALLASTED TRACK

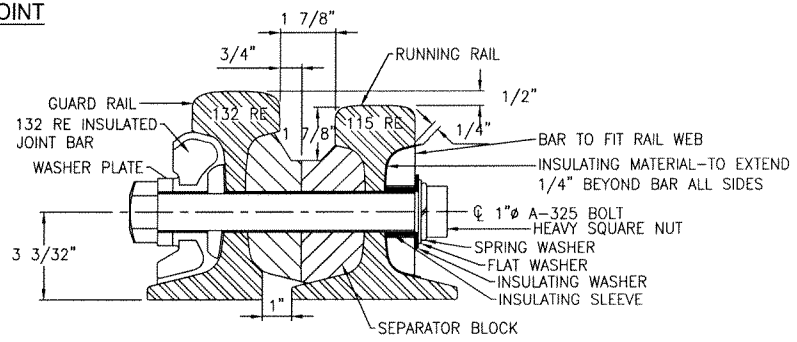
CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	AS SHOWN	ST-TW-008	8 of .



PLAN
DOUBLE RAIL INSULATED JOINT
SCALE:=3"=1'-0"



SECTION C-C
SEPARATOR BLOCK
NOT TO SCALE



SECTION B-B
DOUBLE RAIL INSULATED BLOCK
NOT TO SCALE

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE DISTRICT OF COLUMBIA."

LICENSE No. _____

EXPIRATION DATE: _____

- DC REGISTER SECTION 3413

DESIGNED	DCCO	01/99 DATE
DRAWN	A. DAVIS	06/06 DATE
CHECKED	RAVI AMIN	12/14 DATE

REFERENCE DRAWINGS

NUMBER	TITLE

REVISIONS

DATE	NUM	DESCRIPTION
08/01	01	Revised & Issued by the Authority
06/06	02	Revised Drawing - Reissued
12/14	03	Revised Title Block and Changed DD to read ST

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

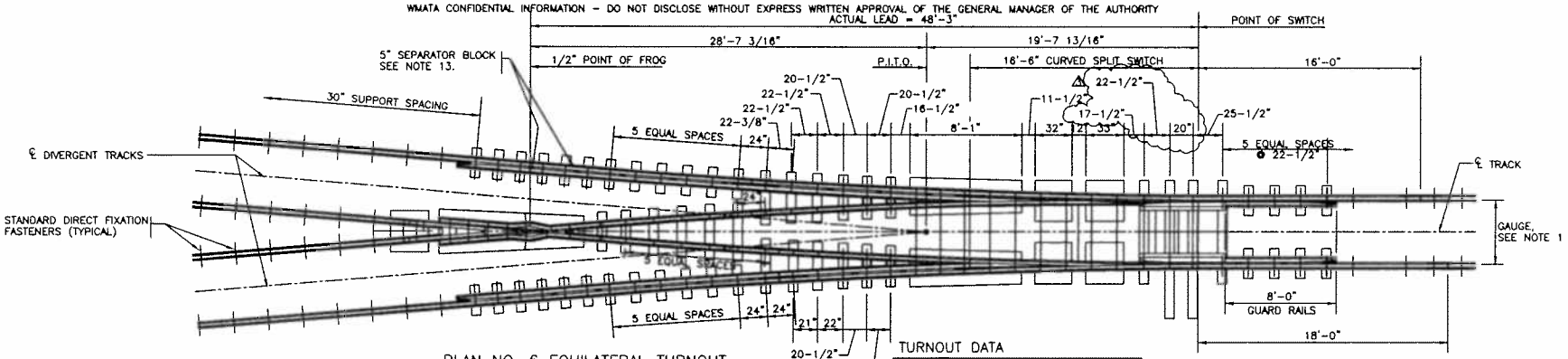
DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

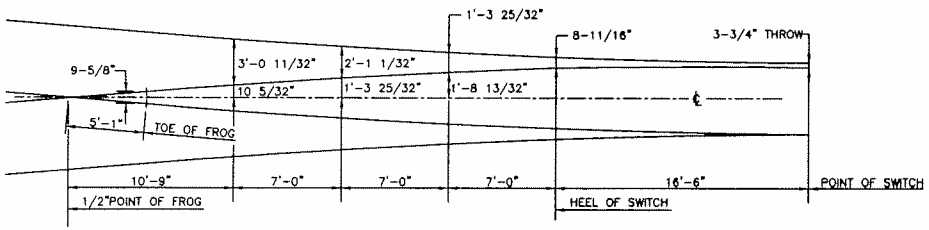
APPROVED _____ DATE
THOMAS ROBINSON
DEPUTY CHIEF ENGINEER

TRACKWORK STANDARD DRAWING NO. 6 GUARDED EQUILATERAL TURNOUT JOINT AND SEPARATOR BLOCK DETAILS

CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	AS SHOWN	ST-TW-009	## of .



PLAN NO. 6 EQUILATERAL TURNOUT
SCALE: 1/4"=1'-0"



OFFSET DIAGRAM
SCALE: 1/4"=1'-0"

NOTE:
DIMENSIONS SYMMETRICAL ABOUT CENTERLINE.

TURNOUT DATA

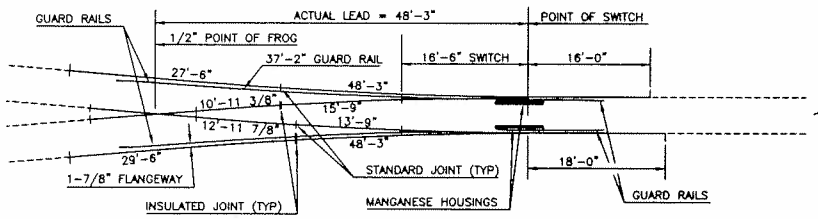
FROG	NUMBER	6
	ANGLE	9°-31'-38"
	TOE LENGTH	5'-1"
	HEEL LENGTH	8'-9"
	TOTAL LENGTH	13'-10"
	TOE SPREAD	9-5/8"
	HEEL SPREAD	17-15/16"
SWITCH	LENGTH OF SWITCH RAIL	16'-6"
	THICKNESS AT POINT	0"
	ANGLE AT HEEL	2°-04'-27"
	ANGLE AT POINT	0°-24'-47"
	HEEL SPREAD	8-11/16"
	RADIUS	569.22'
	VORTEX DISTANCE	0"
CENTERLINE RADIUS		566.66'
DEGREE OF CURVE		10°-06'-27"
TANGENT AT HEEL OF SWITCH		0"
TANGENT AT TOE OF FROG		0"
ACTUAL LEAD		48'-3"
CURVED CLOSURE LENGTH		26'-8 3/8"
CENTRAL ANGLE		2°-41'-15"

BILL OF MATERIAL

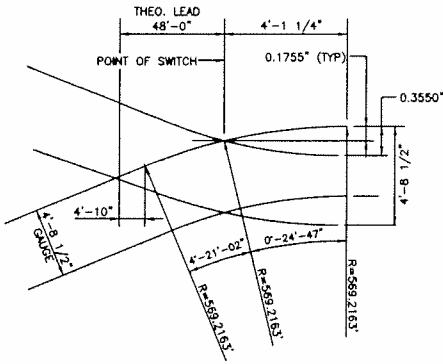
QTY	DESCRIPTION – FURNISHED THIS CONTRACT
1	NO.6 GUARDED EQUILATERAL PLATED SWITCH WITH UNIFORM RISERS – D.F. COMPLETE
1	NO.6 PLATED FROG – D.F. COMPLETE
2	CLOSURE RAILS
2	MANGANESE HOUSINGS WITH DUCTILE IRON CHAIRS
8	DUCTILE IRON RAIL STOPS
A.R.	132 RE GUARD RAILS
A.R.	STANDARD RAIL JOINTS – COMPLETE
A.R.	INSULATED RAIL JOINTS – COMPLETE
A.R.	ELASTOMER PADS AT EVERY PLATE

NOTES:

1. GAUGE WIDTH THROUGHOUT TURNOUT IS 4' – 8 1/2".
2. TURNOUT UNITS SHALL BE FULLY ASSEMBLED IN THE FACTORY FOR INSPECTION MAKE-UP RAIL SHALL BE USED DURING FACTORY ASSEMBLY TO ASSURE LOCATION AND ALIGNMENT OF PLATES USED TO FASTEN CWR.
3. ALL RAIL AND COMPONENTS SHALL CONFORM TO 115 RE RAIL SECTION.
4. RAIL SHALL BE HEAD HARDENED.
5. CLOSURE RAIL LENGTHS INDICATED ARE TOTAL LENGTHS AND DO NOT ALLOW FOR STANDARD OR INSULATED JOINTS.
6. RAIL JOINTS SHOWN IN RAIL LAYOUT DIAGRAM INTERNAL TO THE TURNOUT ARE REQUIRED. ALL OTHER JOINTS REQUIRED FOR PENALIZING THE SWITCH OR TO AID IN TRANSPORTING COMPONENTS SHALL BE LOCATED BY THE CONTRACTOR AND SUBMITTED TO THE ENGINEER FOR APPROVAL. JOINTS IN OPPOSITE RAILS SHALL HAVE A TWO PLATE STAGGER.
7. RAIL ENDS TO BE JOINTED TO CWR ARE UNDRILLED.
8. DO NOT DRILL FOR JOINTS ON STOCK RAILS AHEAD OF P.S.
9. ALL RAILS WITHIN TURNOUT UNITS ARE CLAMPED TO THE PLATES BY LEFT HAND PANDROL SPRING CLIPS – E2056.
10. RAIL AT JOINT BARS ARE FASTENED WITH LEFT HAND MODIFIED "E", TYPE C CLIPS OR TYPE J CLIPS.
11. DIMENSIONS SHOWN ON STOCK RAILS AHEAD OF POINT OF SWITCH ARE STANDARD. THE AUTHORITY WILL SPECIFY STOCK RAIL LENGTHS AHEAD OF POINT OF SWITCH WHERE OTHER THAN STANDARD LENGTHS ARE REQUIRED.
12. LOCATE SEPARATOR BLOCKS NOT MORE THAN 4' – 0" ON CENTERS AND AS NECESSARY TO CLEAR JOINT BARS AND ANCHOR BOLTS.
13. GUARD RAILS IS HIGH STRENGTH 132 RE RAIL SECTION, HEAD HARDENED.
14. THE CONTRACTOR SHALL FURNISH ALL JOINTS INTERNAL TO THE TURNOUT.
15. FOR DOUBLE RAIL INSULATED JOINT DETAILS SEE DRAWING ST-TW-041.
16. SWITCH PANEL SHALL BE SHIPPED AS ONE UNIT.
17. ADDITIONAL DOUBLE RAIL INSULATED JOINTS SHALL BE FURNISHED WITH TURNOUT AS SPARE.
18. WIDTH AND LENGTH OF ELASTOMERIC PADS SHALL BE 2" GREATER THAN DIMENSIONS OF CORRESPONDING PLATES.



RAIL LAYOUT DIAGRAM
SCALE: 1/8"=1'-0"



TURNOUT GEOMETRY

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE DISTRICT OF COLUMBIA."

LICENSE NO. _____

EXPIRATION DATE: _____

- DC REGISTER SECTION 3413

DESIGNED	R. REYES	04/06 DATE
DRAWN	A. DAVIS	04/06 DATE
CHECKED	RAVI AMIN	01/15 DATE

REFERENCE DRAWINGS

NUMBER	TITLE

REVISIONS

DATE	NUM	DESCRIPTION
09/01	01	Revised and Issued by the Authority
05/05	02	Changed Sw. RUK Spacing
06/13	03	Revised Plate Spacing at Switch Point
01/15	04	Revised Title Block & Changed DD to read ST

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

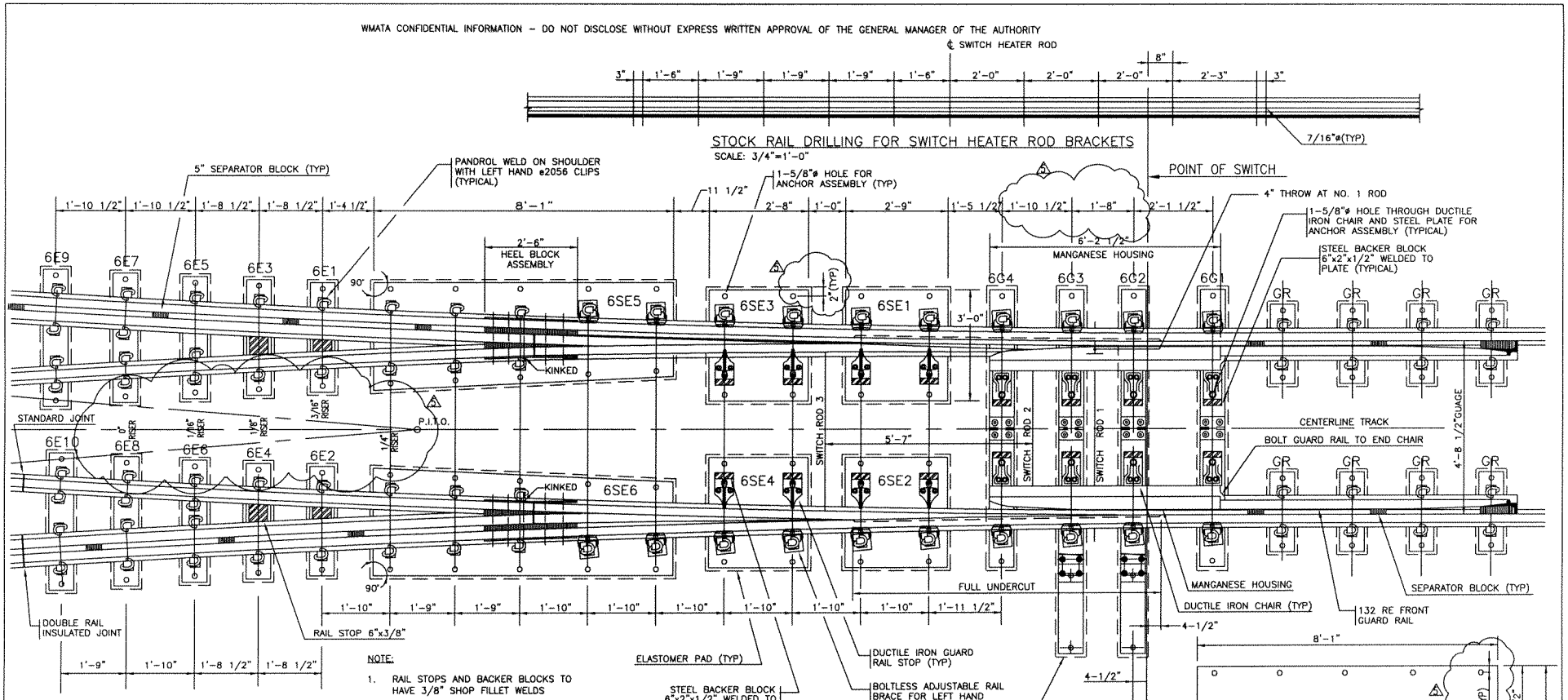
DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

APPROVED _____ DATE
THOMAS ROBINSON
DEPUTY CHIEF ENGINEER

TRACKWORK STANDARD DRAWING NO. 6 GUARDED EQUILATERAL TURNOUT, DIRECT FIXATION TRACK, PLAN

CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	AS SHOWN	ST-TW-010	## of .



BILL OF MATERIAL

QTY	DESCRIPTION
2	16'-6"CURVED, GUARDED SWITCH RAILS
2	STOCK RAILS, UNDERCUT FOR SWITCH RAILS
2	MANGANESE HOUSINGS WITH DUCTILE IRON CHAIRS
20	BOLTLESS ADJUSTABLE RAIL BRACE FOR LEFT HAND PANDROL CLIPS e2056
8	DUCTILE IRON GUARD RAIL STOPS
A.R.	CLOSURE RAILS
2	HEEL BLOCK ASSEMBLY FOR GUARDED SWITCHES
A.R.	6G, 6SE, 6E PLATES
A.R.	ELASTOMER PAD FOR EVERY PLATE
A.R.	ANCHOR ASSEMBLIES
A.R.	GUARD RAILS AND FRONT GUARD RAIL
3	INSULATED SWITCH RODS, RAYCOR TYPE MJ
A.R.	SPACER BLOCKS

PLATE DETAILS

PLATE	LENGTH	WIDTH
GR	26"	8"
6E1	36"	8"
6E2	36"	8"
6E3	38"	8"
6E4	38"	8"
6E5	40"	8"
6E6	40"	8"
6E7	42"	8"
6E8	42"	8"
6E9	45"	8"
6E10	45"	8"

DESIGNED	R. REYES	04/06 DATE
DRAWN	A. DAVIS	04/06 DATE
CHECKED	RAVI AMIN	01/15 DATE

REFERENCE DRAWINGS NUMBER	TITLE

REVISIONS DATE	NUM	DESCRIPTION
08/01	01	Revised and Issued by the Authority
06/06	02	Changed Sw. BLK Spacing
09/06	03	Added Note 1
07/07	04	Changed Sw. BLK Spacing
01/15	05	Revised Title Block & Changed DD to read ST

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

APPROVED _____ DATE
THOMAS ROBINSON
DEPUTY CHIEF ENGINEER

TRACKWORK STANDARD DRAWING NO. 6 GUARDED EQUILATERAL TURNOUT DIRECT FIXATION TRACK, PLATED SWITCH

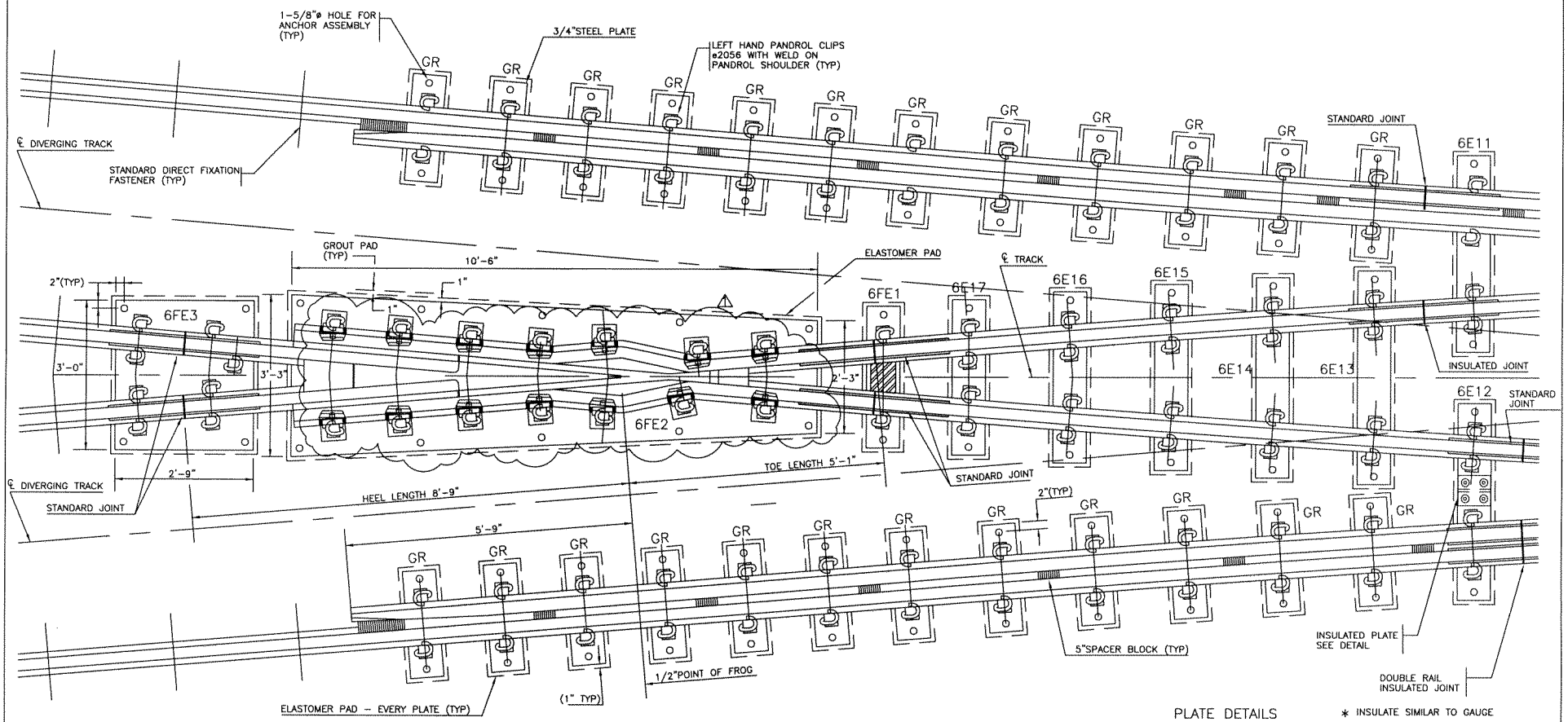
CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	AS SHOWN	ST-TW-011	## of .

"PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE DISTRICT OF COLUMBIA."

LICENSE No. _____

EXPIRATION DATE: _____

- DC REGISTER SECTION 3413



PLAN NO. 6 GUARDED EQUILATERAL TURNOUT

BILL OF MATERIAL

QTY	DESCRIPTION
1	NO.6 RAILBOUND MANGANESE FROG
A.R.	6E, GR, GRS, 6FE PLATES
A.R.	ELASTOMER PADS
A.R.	ANCHOR ASSEMBLIES
14	BOLTLESS ADJUSTABLE RAIL BRACE FOR LEFT HAND PANDROL CLIPS ø2056

PLATE DETAILS

PLATE	LENGTH	WIDTH
GR	26"	8"
6E11	48"	8"
6E12 *	48"	8"
6E13	52"	8"
6E14	48"	8"
6E15	45"	8"
6E16	41"	8"
6E17	37"	8"
6FE1	34"	8"

* INSULATE SIMILAR TO GAUGE PLATES. LENGTH CALLED OUT IS FOR WHOLE ASSEMBLY.

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE DISTRICT OF COLUMBIA."

LICENSE No. _____

EXPIRATION DATE: _____

- DC REGISTER SECTION 3413

DESIGNED R. REYES 04/06 DATE
DRAWN A. DAVIS 07/07 DATE
CHECKED RAVI AMIN 01/15 DATE

REFERENCE DRAWINGS

NUMBER	TITLE

REVISIONS

DATE	NUM	DESCRIPTION
07/13	01	Added Adjustable Braces
01/15	02	Revised Title Block and Changed OD to read ST

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

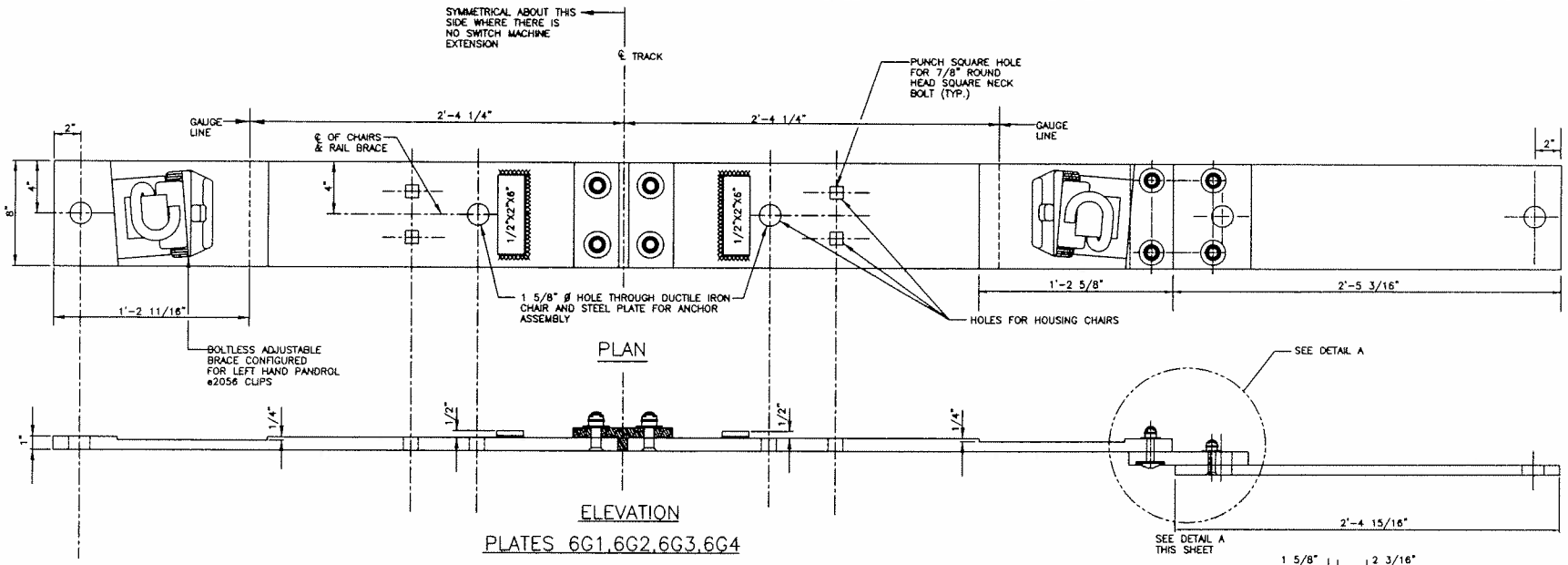
DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

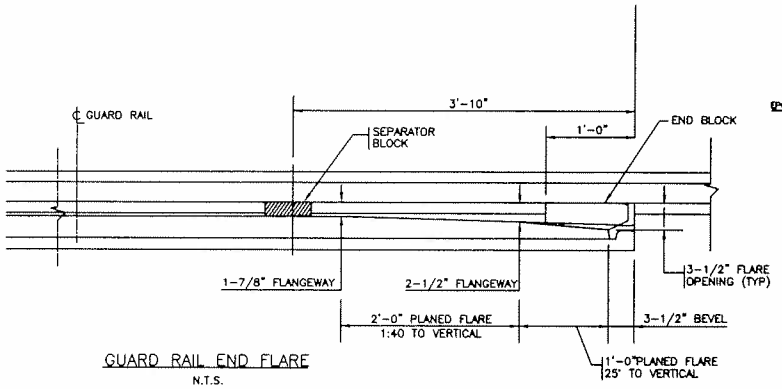
APPROVED _____ DATE
THOMAS ROBINSON
DEPUTY CHIEF ENGINEER

TRACKWORK STANDARD DRAWING
NO. 6 GUARDED EQUILATERAL TURNOUT,
PLATED FROG
DIRECT FIXATION TRACK

CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	AS SHOWN	ST-TW-012	## of .



NOTE 1. END PLATE DETAIL A IS BASED ON 5SE SWITCH MACHINE



GUARD RAIL END FLARE
N.T.S.

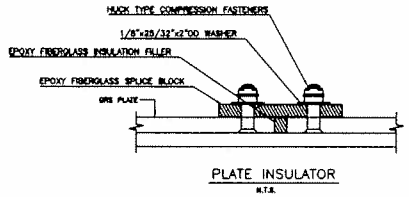
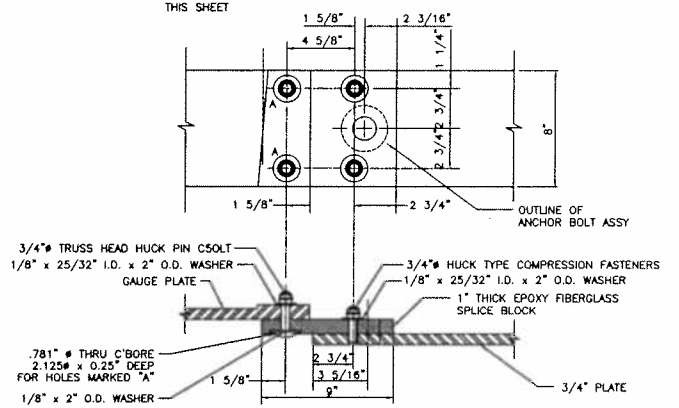


PLATE INSULATOR
N.T.S.



DETAIL A
N.T.S.

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE DISTRICT OF COLUMBIA."

LICENSE No. _____

EXPIRATION DATE _____

- DC REGISTER SECTION 3413

DESIGNED	R. Ryce	04/2008 DATE
DRAWN	A. Davis	06/06 DATE
CHECKED	RAVI AMIN	09/15 DATE

REFERENCE DRAWINGS

NUMBER	TITLE

REVISIONS

DATE	NUM	DESCRIPTION
08/2001	1	Reviewed & Issued by the Authority
09/2006	2	Revised Detail A Reviewed
09/2015	3	Added Note for 5SE Sw. Machine

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

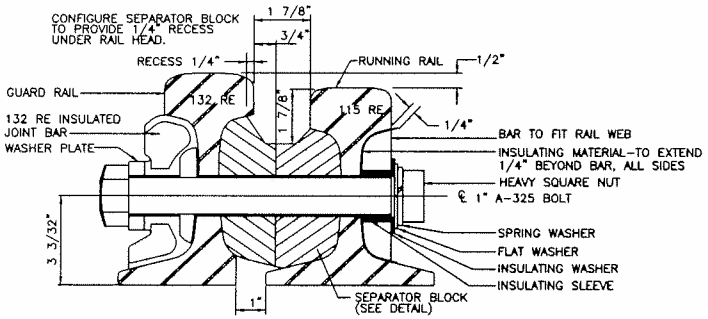
DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

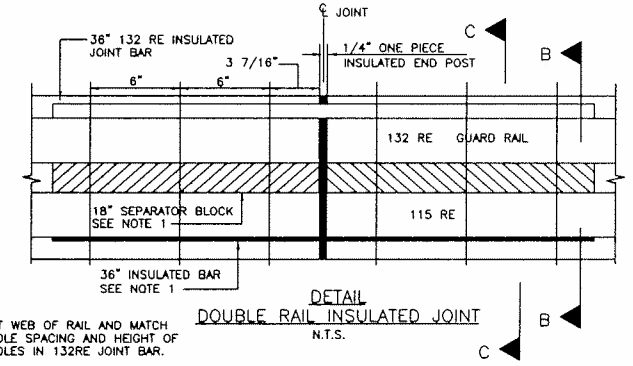
APPROVED _____ DATE
THOMAS ROBINSON
DEPUTY CHIEF ENGINEER

TRACKWORK STANDARD DRAWING NO.6 GUARDED EQUILATERAL TURNOUT DIRECT FIXATION TRACK .DETAIL SHEET 1 OF 2

CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	AS NOTED	ST-TW-013	## of .

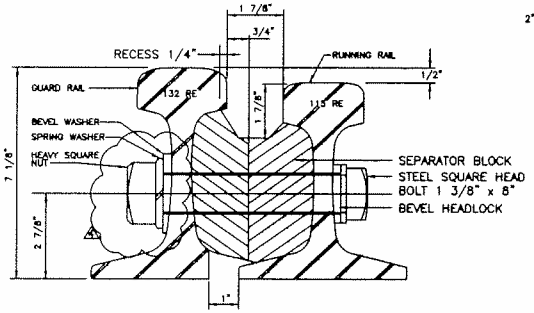


SECTION B–B
DOUBLE RAIL INSULATED JOINT
N.T.S.

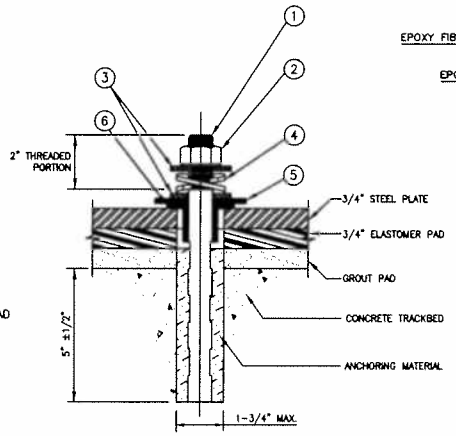


NOTE
1. FIT WEB OF RAIL AND MATCH HOLE SPACING AND HEIGHT OF HOLES IN 132RE JOINT BAR.

DETAIL
DOUBLE RAIL INSULATED JOINT
N.T.S.



SECTION C–C
SEPARATOR BLOCK
N.T.S.



SPECIAL PLATE ANCHOR ASSEMBLY
NOT TO SCALE

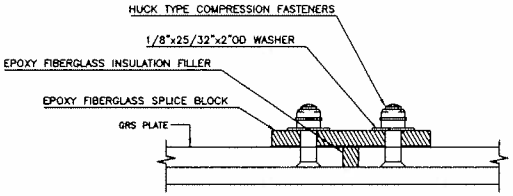


PLATE INSULATOR
N.T.S.

BILL OF MATERIAL – ANCHOR ASSEMBLY

ITEM	QTY.	DESCRIPTION
1	1	STEEL STUD 7/8"x11" ASTM-A449
2	1	STEEL HEX NUT FOR 7/8"ø BOLT, WASHER FACED, ASTM-A-325
3	2	STEEL WASHER, 15/16" I.D., 2-1/4" O.D., 3/16" THICK, ASTM-A-325
4	1	DOUBLE COIL SPRING WASHER
5	1	INSULATING FIBER WASHER, 1-9/32" I.D., 3-3/8" O.D.
6	1	ONE PIECE – INSULATING FIBER WASHER (29/32" I.D., 2-1/2" O.D.) AND INSULATING FIBER SLEEVE (29/32" I.D., 1-9/32" O.D.)

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE DISTRICT OF COLUMBIA."

LICENSE No. _____

EXPIRATION DATE: _____

- DC REGISTER SECTION 3413

DESIGNED	R. REYES	04/06 DATE
DRAWN	A. DAVIS	08/06 DATE
CHECKED	RAVI AMIN	01/15 DATE

REFERENCE DRAWINGS

NUMBER	TITLE

REVISIONS

DATE	NUM	DESCRIPTION
08/01	01	Revised and Issued by the Authority
08/06	02	Change Sw, BLK Spacing
09/06	03	Added Note 3
05/13	04	Omit Cotter Pin in Separator Block
01/15	05	Revised Title Block and Changed DO to read ST

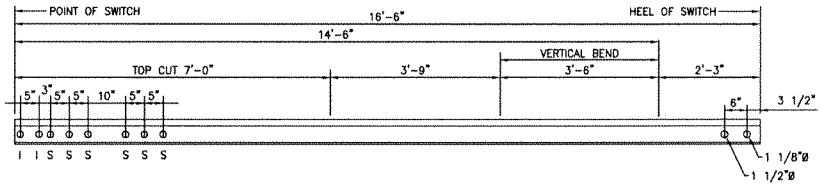
WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY
DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

APPROVED _____ DATE
THOMAS ROBINSON
DEPUTY CHIEF ENGINEER

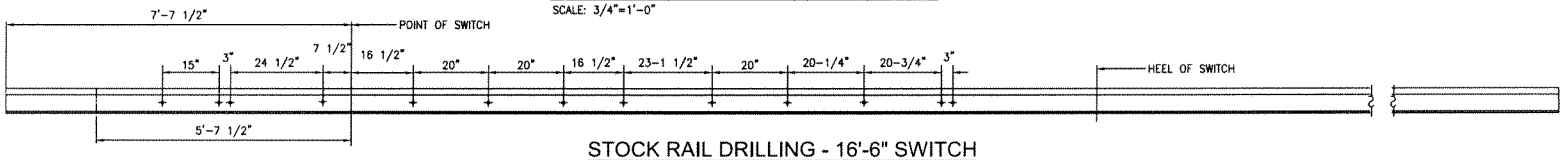
TRACKWORK STANDARD DRAWING
NO. 6 GUARDED EQUILATERAL TURNOUT,
DIRECT FIXATION TRACK,
DETAILS SHEET 2 OF 2

CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	AS SHOWN	ST-TW-014	## of



SWITCH RAIL DRILLING 16'-6" SWITCH

SCALE: 3/4"=1'-0"

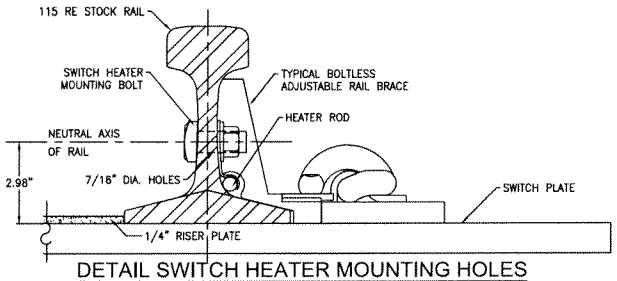


STOCK RAIL DRILLING - 16'-6" SWITCH

SCALE: 3/4"=1'-0"

HOLE SIZES
I 1 1/16"ø INTERLOCKING HOLES
S 1 1/16"ø SWITCH ROD HOLES
+ 7/16" HEATER MOUNTING HOLES

NOTES:
1. HOLES SHOWN ARE REQUIRED. ADDITIONAL HOLES FOR REINFORCING BAR OR RAILS STOPS SHALL BE LOCATED AS PER THE SPECIFIC SWITCH HEATER.



DETAIL SWITCH HEATER MOUNTING HOLES

SCALE: NO SCALE

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE DISTRICT OF COLUMBIA."

LICENSE No. _____

EXPIRATION DATE: _____

- DC REGISTER SECTION 3413

DESIGNED	DCCO	01/99 DATE
DRAWN	A. DAVIS	06/06 DATE
CHECKED	RAVI AMIN	12/14 DATE

REFERENCE DRAWINGS

NUMBER	TITLE

REVISIONS

DATE	NUM	DESCRIPTION
08/01	01	Revised & Issued by the Authority
06/06	02	Title Revision
12/14	03	Revised Title Block & Changed DD to read ST

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

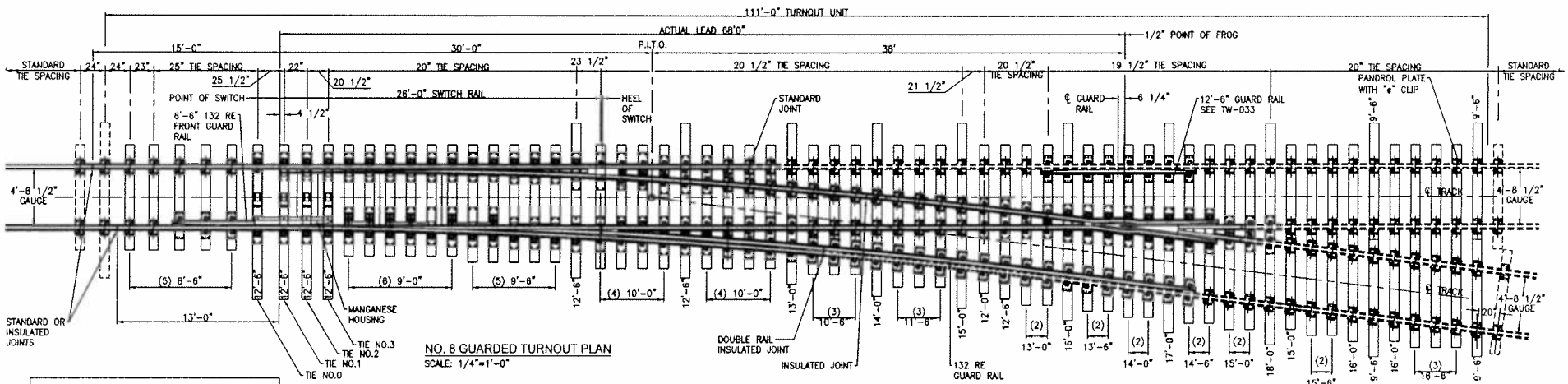
DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

APPROVED _____ DATE
THOMAS ROBINSON
DEPUTY CHIEF ENGINEER

TRACKWORK STANDARD DRAWING NO. 8 TURNOUT SWITCH RAIL, DRILLING DETAILS

CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	3/4" = 1'-0"	ST-TW-027	## of .



NO. 8 GUARDED TURNOUT PLAN

SCALE: 1/4"=1'-0"

TURNOUT DATA		
FROG	NUMBER	8
	ANGLE	7°-09'-10"
	TOE LENGTH	6'-3"
	HEEL LENGTH	9'-5"
	TOTAL LENGTH	15'-8"
	TOE SPREAD	8-13/16"
	HEEL SPREAD	14-9/16"
SWITCH	LENGTH OF SWITCH RAIL	26'-0"
	THICKNESS AT POINT	0"
	ANGLE AT HEEL	3°-07'-09"
	ANGLE AT POINT	0°-11'-48"
	HEEL SPREAD	9"
	CURVED POINT RADIUS	509.98'
	VERTEX DISTANCE	0"
ACTUAL LEAD		68'-0"
STRAIGHT CLOSURE LENGTH		35'-9"
CURVED CLOSURE LENGTH		35'-10 31/32"
CURVED CLOSURE RADIUS		509.98'
CENTERLINE RADIUS		507.63'
DEGREE OF CURVE		11°-17'-13"
TANGENT AT HEEL OF SWITCH		0"
TANGENT AT TOE OF FROG		0"

BILL OF MATERIAL	
QTY.	DESCRIPTION
1	26'-0" GUARDED PLATED STRAIGHT SWITCH WITH UNIFORM RISERS, BALLASTED, COMPLETE
1	26'-0" UNGUARDED PLATED CURVED SWITCH WITH UNIFORM RISERS, BALLASTED, COMPLETE
1	NO. 8 PLATED RAIL BOUND MANGANESE FROG, BALLASTED, COMPLETE
1	12'-6" GUARD RAIL, COMPLETE
1	MANGANESE HOUSING WITH DUCTILE IRON CHAIRS
6	DUCTILE IRON RAIL STOPS
A.R.	132 RE GUARD RAILS
A.R.	CURVED CLOSURE RAIL, STOCK RAIL, TURNOUT RAIL
A.R.	STRAIGHT CLOSURE RAIL, STOCK RAIL
A.R.	BOLTED STANDARD RAIL JOINTS, 6 HOLE, 36 INCH
A.R.	BOLTED INSULATED RAIL JOINTS, 6 HOLE, 36 INCH
A.R.	LEFT HAND PANDROL CLIPS e2056
A.R.	SPACER BLOCKS
A.R.	ELASTIC FASTENER TIE PLATES PUNCHED FOR 7/8" SCREW SPIKES
A.R.	GR PLATES
A.R.	7" X 9" TIMBER SWITCH TIES AS SHOWN
A.R.	7" X 9" TIMBER CROSS TIES AS SHOWN
A.R.	7/8" SCREW SPIKES
A.R.	PANDROL PLATES

RUNNING RAIL AND COMPONENTS SHALL CONFORM TO 115 RE RAIL SECTION.

TIE SCHEDULE	
LENGTH	QTY.
8'-6"	5
9'-0"	6
9'-6"	9
10'-0"	8
10'-6"	3
11'-6"	3
12'-0"	1
12'-6"	7
13'-0"	3
13'-6"	2
14'-0"	3
14'-6"	2
15'-0"	4
15'-6"	2
16'-0"	3
16'-6"	3
17'-0"	1
18'-0"	1
TOTAL	66

TIES NO. 0 AND 3 SHALL BE 9'-0" LONG IF REQUIRED FOR HAND THROW SWITCHES.

NOTES:

1. GAUGE WIDTH THROUGHOUT TURNOUT IS 4'-8 1/2".
2. LOCATE SEPARATOR BLOCKS NOT MORE THAN 4'-0" ON CENTERS AND AS NECESSARY TO CLEAR JOINT BARS AND ANCHOR BOLTS.
3. JOINTS INDICATED IN RAIL LAYOUT DIAGRAM ARE REQUIRED. OTHER JOINTS LOCATED BY THE CONTRACTOR TO FACILITATE SHIPPING OR FABRICATION SHALL BE SUBMITTED FOR APPROVAL BY THE ENGINEER. JOINTS IN OPPOSITE RAILS SHALL HAVE A TWO TIE STAGGER.
4. CLOSURE RAIL LENGTHS INDICATED ARE TOTAL LENGTHS AND DO NOT ALLOW FOR STANDARD OR INSULATED JOINTS.
5. RAIL ENDS TO BE JOINTED TO CWR SHALL BE UN-DRILLED.
6. THE CONTRACTOR SHALL FURNISH ALL JOINTS INTERNAL TO THE TURNOUT.
7. DO NOT DRILL HOLES FOR JOINTS IN STOCK RAILS AHEAD OF POINT OF SWITCH.
8. TURNOUTS SHALL BE FULLY ASSEMBLED IN THE FACTORY FOR INSPECTION. MAKE-UP RAILS SHALL BE USED DURING FACTORY ASSEMBLY TO ASSURE LOCATION AND ALIGNMENT OF PLATES USED TO FASTEN CWR.
9. SWITCH PANELS SHALL BE SHIPPED AS ONE UNIT.
10. RIGHT HAND TURNOUT IS SHOWN. LEFT HAND TURNOUT IS OPPOSITE HAND.
11. GUARD RAIL IS HIGH STRENGTH 132 RE SECTION.
12. RAIL IS HEAD HARDENED.
13. ALL RAILS WITHIN THE TURNOUT ARE FASTENED TO THE PLATES BY LEFT HAND PANDROL SPRING CLIPS - e2056.
14. RAIL AT JOINT BARS SHALL BE FASTENED WITH MODIFIED LEFT HAND PANDROL CLIP E2063, TYPE "C" CLIPS OR TYPE "J" CLIPS.
15. ALL PLATES ARE FASTENED TO TIES WITH 7/8" SCREW SPIKES.
16. ALL PLATES ARE PUNCHED FOR 7/8" SCREW SPIKES.
17. RAIL AT HEEL BLOCK SHALL BE FASTENED WITH PANDROL "C" CLIPS C/W TYPE "A" C-PLATE.
18. DIMENSIONS SHOWN ON STOCK RAILS AHEAD OF P.S. ARE STANDARD. AUTHORITY WILL SPECIFY STOCK RAIL LENGTHS AHEAD OF P.S. WHERE OTHER THAN STANDARD LENGTHS ARE REQUIRED.

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE DISTRICT OF COLUMBIA."

LICENSE No. _____

EXPIRATION DATE _____

DC REGISTER SECTION 3413

PANDROL PLATE

DESIGNED	R. Reyes	12/06 DATE
DRAWN	A. DAVIS	07/06 DATE
CHECKED	RAVI AMIN	12/14 DATE

REFERENCE DRAWINGS

NUMBER	TITLE

REVISIONS

DATE	NUM	DESCRIPTION
12/03	01	Removed One Stock Rail
04/06	02	Rev. for DD Drawing Approval, App Apr 2005
07/07	03	Removed 5th Tie Rod
12/14	04	Revised Title Block & Changed DD to read ST

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

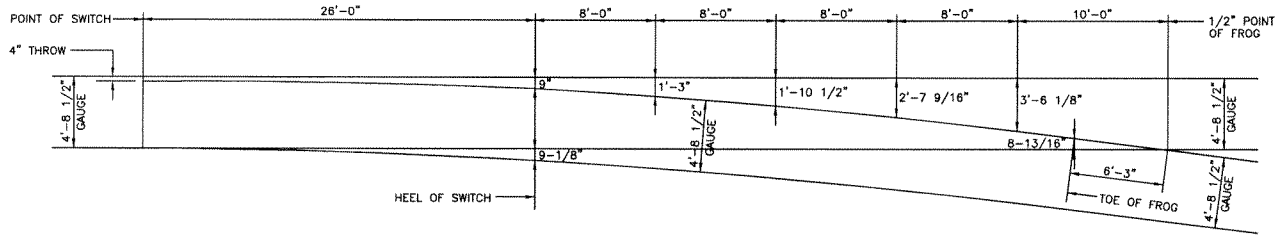
DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

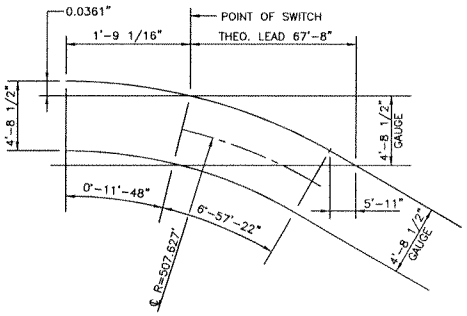
APPROVED _____ DATE
THOMAS ROBINSON
DEPUTY CHIEF ENGINEER

TRACKWORK STANDARD DRAWING NO. 8 GUARDED TURNOUT, PLAN BALLASTED TRACK

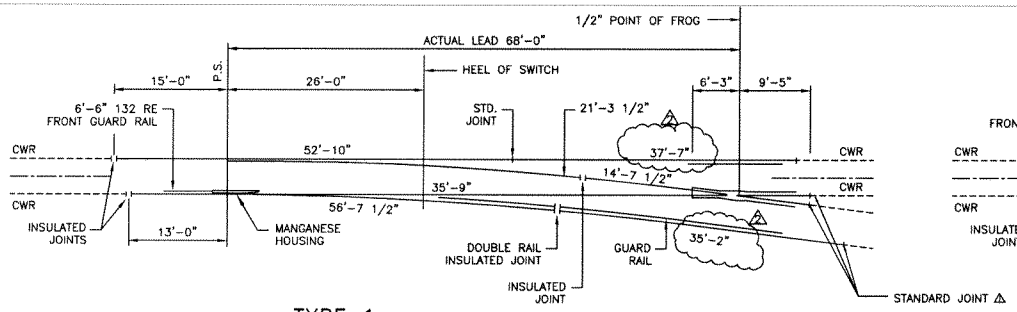
CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	1/4" = 1'-0"	ST-TW-030	## of .



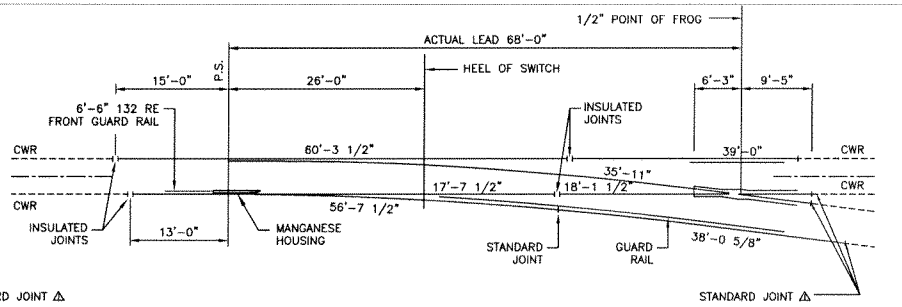
NO. 8 OFFSET DIAGRAM
SCALE: 1/4"=1'-0"



NO. 8 TURNOUT GEOMETRY
NOT TO SCALE



TYPE 1 RAIL LAYOUT DIAGRAM
SCALE: 1/8"=1'-0"



TYPE 2 RAIL LAYOUT DIAGRAM
SCALE: 1/8"=1'-0"

"PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE DISTRICT OF COLUMBIA."

LICENSE No. _____

EXPIRATION DATE: _____

- DC REGISTER SECTION 3413

DESIGNED	R. REYES	10/05 DATE
DRAWN	A. DAVIS	06/08 DATE
CHECKED	Ravi Amin	01/15 DATE

REFERENCE DRAWINGS

NUMBER	TITLE

REVISIONS

DATE	NUM	DESCRIPTION
04/05	01	Revision for Design Drawing Approval
06/13	02	Revised Dimensions to Accommodate Unsuspended Rail Joi
01/15	03	Revised Title Block and Changed DD to read ST

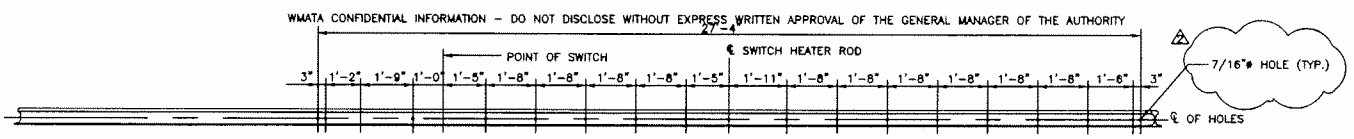
WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY
DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

APPROVED _____ DATE
THOMAS ROBINSON
DEPUTY CHIEF ENGINEER

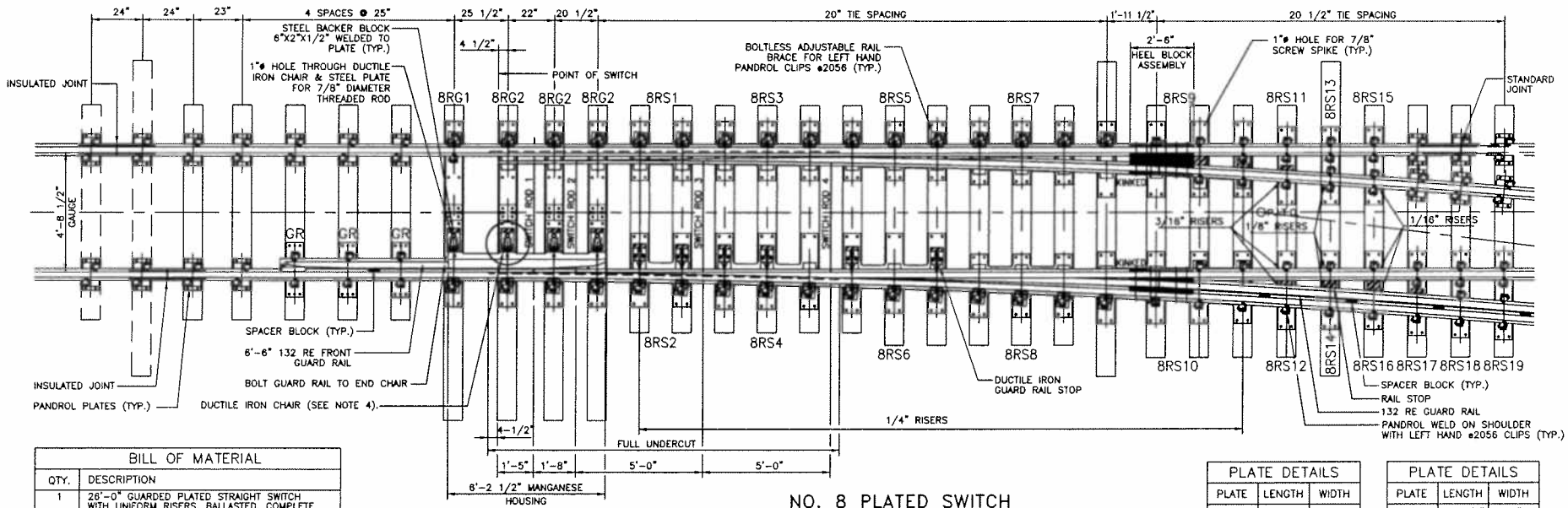
TRACKWORK STANDARD DRAWING
NO. 8 GUARDED TURNOUT, OFFSET, GEOMETRY, AND RAIL LAYOUT DIAGRAMS, BALLASTED TRACK

CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	AS SHOWN	ST-TW-031	## of .



STOCK RAIL DRILLING FOR SWITCH HEATER ROD BRACKETS

SCALE: 1/2"=1'-0"



NO. 8 PLATED SWITCH

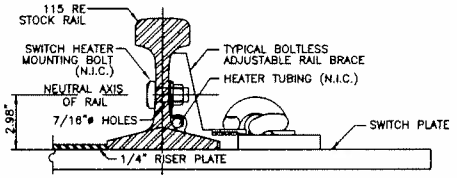
SCALE: 1/2"=1'-0"

BILL OF MATERIAL	
QTY.	DESCRIPTION
1	26'-0" GUARDED PLATED STRAIGHT SWITCH WITH UNIFORM RISERS, BALLASTED, COMPLETE PER AREMA STD. PLAN NO. 125-08, DETAIL 5100
1	26'-0" UNGUARDED PLATED CURVED SWITCH WITH UNIFORM RISERS, BALLASTED, COMPLETE PER AREMA STD. PLAN NO. 125-08, DETAIL 5100
A.R.	STOCK RAILS, UNDERCUT FOR SWITCH RAILS
1	MANGANESE HOUSING WITH DUCTILE IRON CHAIRS
32	BOLTLESS ADJUSTABLE RAIL BRACE FOR LEFT HAND PANDROL CLIPS ø2056
8	DUCTILE IRON GUARD RAIL STOPS
A.R.	CLOSURE RAILS
1	HEEL BLOCK ASSEMBLY FOR GUARDED SWITCH
1	HEEL BLOCK ASSEMBLY FOR UNGUARDED SWITCH
A.R.	GR, 8G, 8S PLATES
A.R.	GUARD RAILS AND FRONT GUARD RAIL
4	INSULATED SWITCH RODS, TYPE MJS
A.R.	SPACER BLOCKS
A.R.	THREADED ROD 7/8" DIA. x 11" LONG

NOTES:

1. FOR SWITCH GAUGE PLATES, SEE DETAIL, DWG. NO. ST-TW-034.
2. FOR PLATE CUTOUT, SEE DETAIL, DWG. NO. ST-TW-089 (M3 SWITCH MACHINE)
3. SWITCH PLATE NUMBERING IS AS FOLLOWS: "8" FROG NUMBER, "R" R.H. (OR "L" L.H.), "S" FOR SWITCH, "1 THRU 20" FOR POSITION FROM POINT OF SWITCH.
4. DUCTILE IRON CHAIR AT THE POINT OF SWITCH SHALL BE MODIFIED AS SHOWN IN DETAIL SECTION D-D ON DRAWING No. ST-TW-035.

BILL OF MATERIAL	
QTY.	DESCRIPTION
A.R.	7/8" SCREW SPIKES
A.R.	PANDROL PLATES



DETAIL – SWITCH HEATER MOUNTING HOLES

NOT TO SCALE

PLATE DETAILS		
PLATE	LENGTH	WIDTH
GR	26"	8"
8RS1	28"	28"
8RS2	35"	28"
8RS3	48"	28"
8RS4	48"	36"
8RS5	48"	28"
8RS6	48"	36"
8RS7	48"	30"
8RS8	48"	30"
8RS9	72-3/8"	36"

PLATE DETAILS		
PLATE	LENGTH	WIDTH
8RS10	72-3/8"	34"
8RS11	37"	8"
8RS12	37"	8"
8RS13	37"	8"
8RS14	37"	8"
8RS15	37"	8"
8RS16	37"	8"
8RS17	40"	8"
8RS18	41"	8"
8RS19	42"	8"

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE DISTRICT OF COLUMBIA."

LICENSE No. _____

EXPIRATION DATE _____

- DC REGISTER SECTION 3413

DESIGNED R. REYES 10/15 DATE
DRAWN A. DAVIS 08/06 DATE
CHECKED RAVI AMIN 01/15 DATE

REFERENCE DRAWINGS	
NUMBER	TITLE

REVISIONS		
DATE	NUM	DESCRIPTION
04/05	01	Rev. for DD-DWG Approval, Apr. 2006
04/06	02	Added Details
06/13	03	Updated Stock Rail Drilling Hole Diameter
01/15	04	Revised Title Block and Changed DD to read ST

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

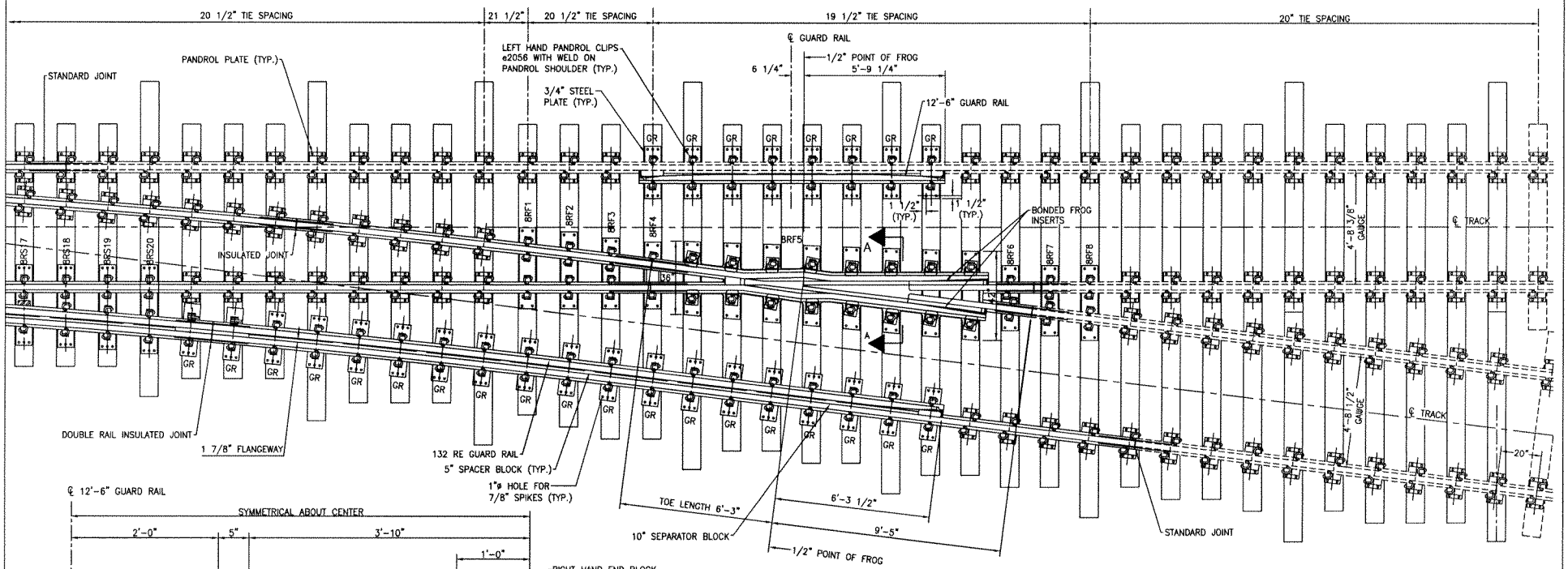
DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

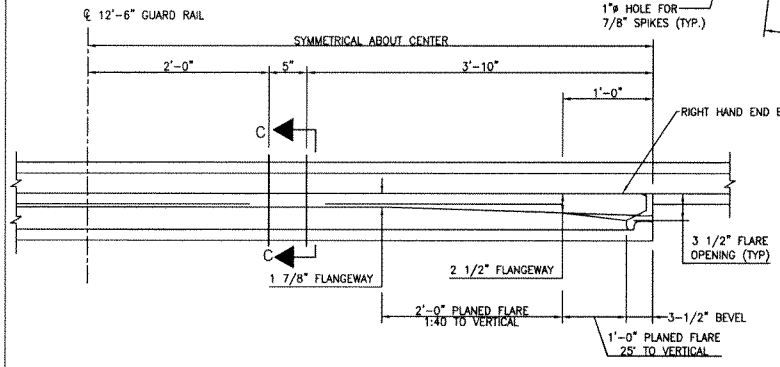
REVISION SUBMITTED _____ DATE

APPROVED _____ DATE
THOMAS ROBINSON
DEPUTY CHIEF ENGINEER

TRACKWORK STANDARD DRAWING NO. 8 GUARDED TURNOUT, PLATED SWITCH, BALLASTED TRACK

CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	NOT TO SCALE	ST-TW-032	## of .





12'-6" GUARD RAIL
SCALE: 1/2"=1'-0"

NO. 8 PLATED FROG
SCALE: 1/2"=1'-0"

NOTES:
1. FOR SECTION A-A, SEE DETAIL, DWG. NO. ST-TW-035.
2. FOR PLATE CUTOUT, SEE DETAIL, DWG. NO. ST-TW-089 (M3 SWITCH MACHINE).
3. FOR SECTION C-C, SEE DETAIL, DWG. NO. ST-TW-035.
4. SWITCH PLATE NUMBERING IS AS FOLLOWS: "8" FROG NUMBER, "R" FOR R.H., "F" FOR FROG, "1 THRU 8" FOR POSITION FROM TOE TO HEEL.

PLATE DETAILS		
PLATE	LENGTH	WIDTH
GR	26"	8"
8RS17	40"	8"
8RS18	41"	8"
8RS19	42"	8"
8RS20	44"	8"
8RF1	40"	8"
8RF2	38"	8"
8RF3	35"	8"
8RF4	33"	8"
8RF5	144-1/2"	44"*
8RF6	32-1/4"	8"
8RF7	34 5/8"	8"
8RF8	37"	8"

* FROG PLATE WIDTH AT ITS WIDEST POINT.

BILL OF MATERIAL	
QTY.	DESCRIPTION
1	NO. 8 RAILBOUND MANGANESE FROG PER AREMA STD. PLAN 622-09 MODIFIED AS SHOWN
A.R.	8S, 8F, GR, PLATES
A.R.	GUARD RAILS
A.R.	SPACER BLOCKS
12	BOLTLESS ADJUSTABLE RAIL BRACE FOR LEFT HAND PANDROL CLIPS e2056
A.R.	7/8" SCREW SPIKES
A.R.	PANDROL PLATES

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE DISTRICT OF COLUMBIA."

LICENSE No. _____

EXPIRATION DATE: _____

- DC REGISTER SECTION 3413

DESIGNED R. REYES 10/05 DATE
DRAWN A. DAVIS 10/05 DATE
CHECKED RAVI AMIN 12/14 DATE

REFERENCE DRAWINGS

NUMBER	TITLE

REVISIONS

DATE	NUM	DESCRIPTION
04/05	01	Rev. for DD-DWG Approval, Apr. 2005
06/06	02	Added Description
12/14	03	Revised Title Block & Changed DD to read ST

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

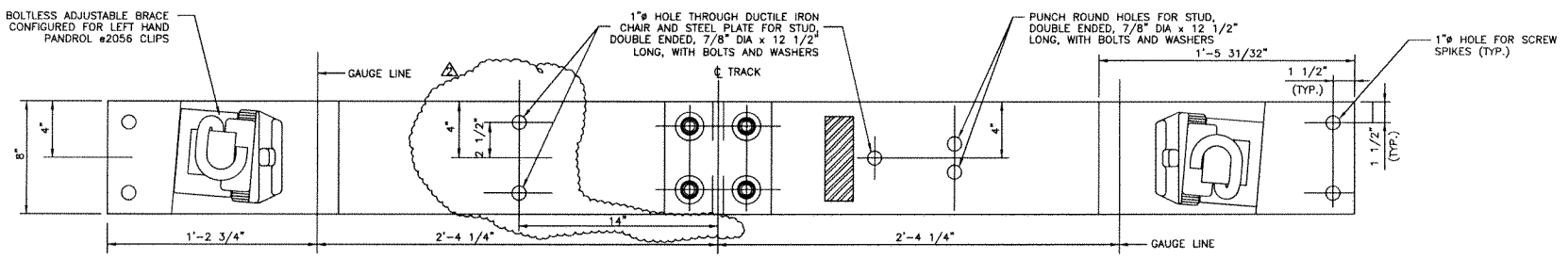
DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

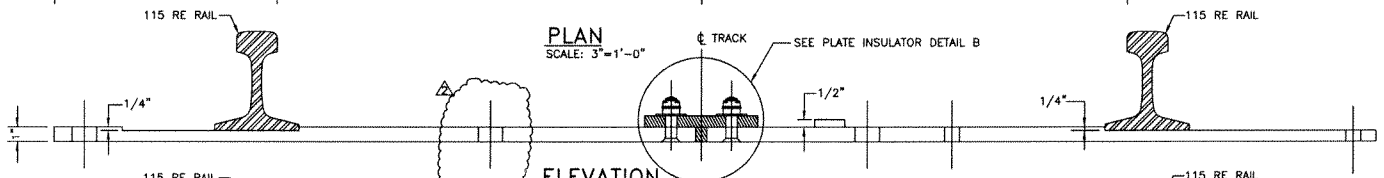
APPROVED _____ DATE
THOMAS ROBINSON
DEPUTY CHIEF ENGINEER

TRACKWORK STANDARD DRAWINGS
NO. 8 GUARDED TURNOUT, PLATED FROG
BALLASTED TRACK

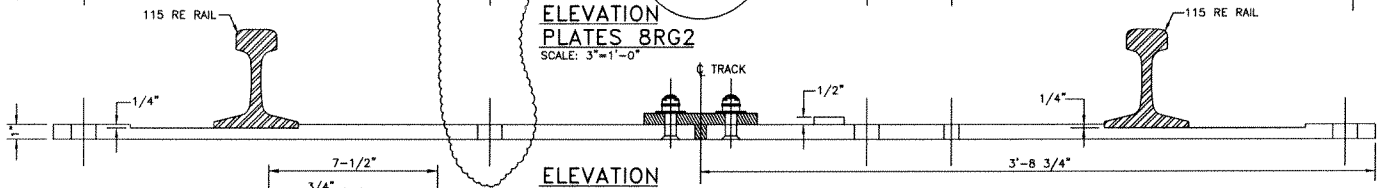
CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	1/2" = 1'-0"	ST-TW-033	## of .



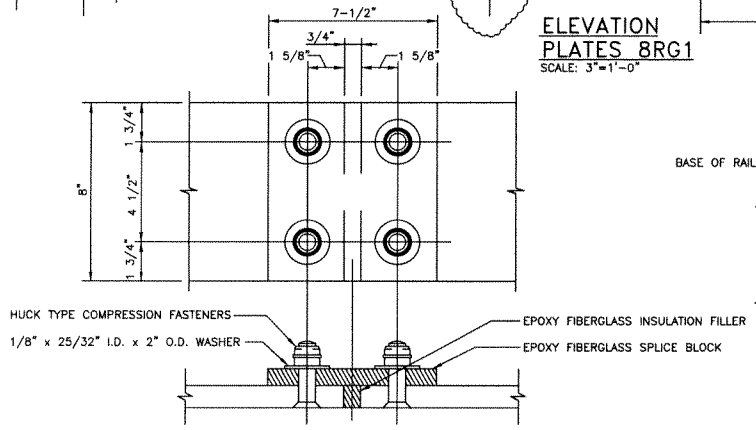
PLAN
SCALE: 3"=1'-0"



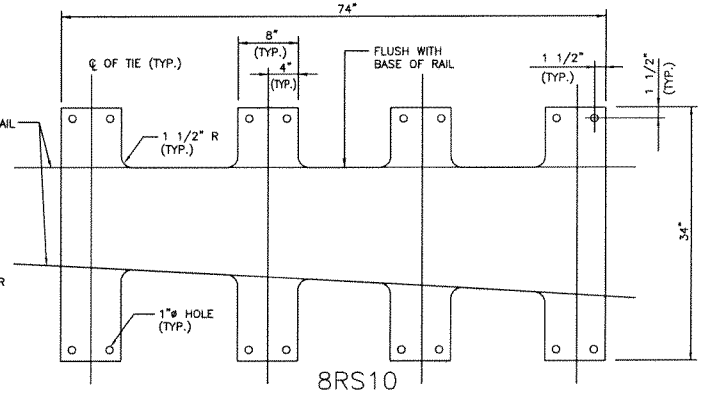
ELEVATION
PLATES 8RG2
SCALE: 3"=1'-0"



ELEVATION
PLATES 8RG1
SCALE: 3"=1'-0"



DETAIL B – PLATE INSULATOR
SCALE: 3/8"=1'-0"



DETAIL – CUTOUT FOR PLATE
SCALE: 1 1/2"=1'-0"

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE DISTRICT OF COLUMBIA."

LICENSE No. _____

EXPIRATION DATE: _____

- DC REGISTER SECTION 3413.

DESIGNED	R. REYES	10/05 DATE
DRAWN	A. DAVIS	08/06 DATE
CHECKED	RAVI AMIN	01/15 DATE

REFERENCE DRAWINGS

NUMBER	TITLE

REVISIONS

DATE	NUM	DESCRIPTION
04/05	01	Rev. for DD-DWG Approval, Apr. 2005
06/13	02	Added Drill Holes for Ductile Iron Chair
01/15	03	Revised Title Block and Changed DD to read ST

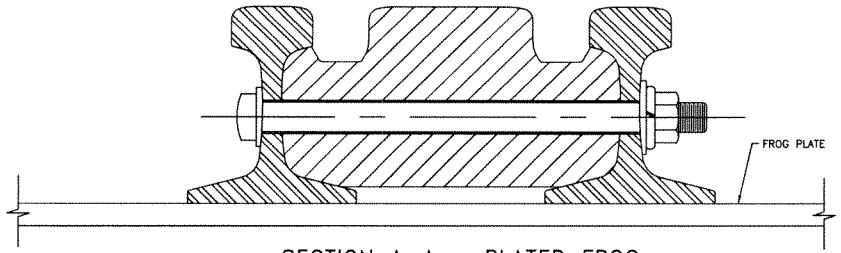
WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY
DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

APPROVED _____ DATE
THOMAS ROBINSON
DEPUTY CHIEF ENGINEER

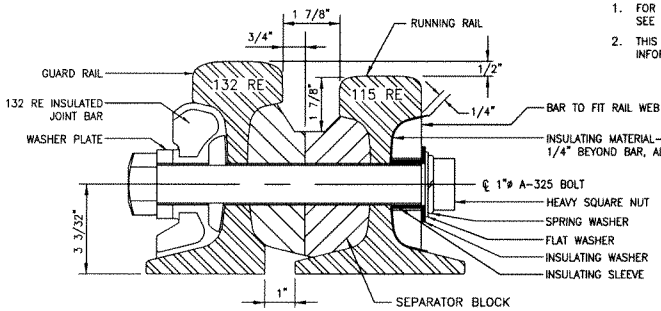
TRACKWORK STANDARD DRAWING NO. 8 GUARDED TURNOUT, DETAILS, BALLASTED TRACK

CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	AS SHOWN	ST-TW-034	## of .

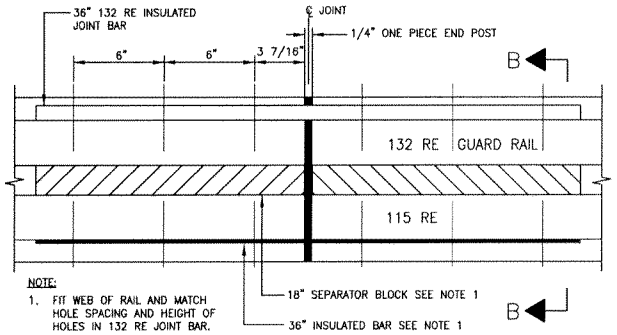


SECTION A–A – PLATED FROG
NOT TO SCALE

NOTE:
1. FOR BILL OF MATERIAL AND GENERAL NOTES ON DETAILS. SEE DRAWING ST-TW-033 (2)
2. THIS DRAWING PROVIDES CLARIFICATION AND ADDITIONAL INFORMATION TO THAT SHOWN ON DWG ST-TW-033 (2)



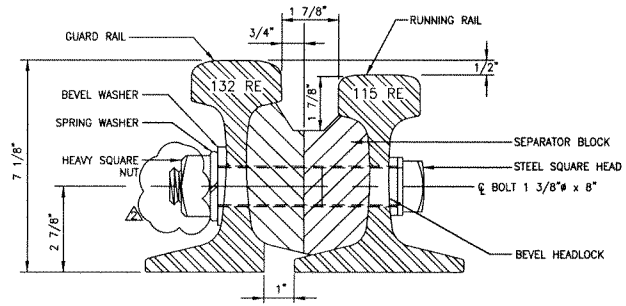
SECTION B–B – DOUBLE RAIL INSULATED JOINT
NOT TO SCALE



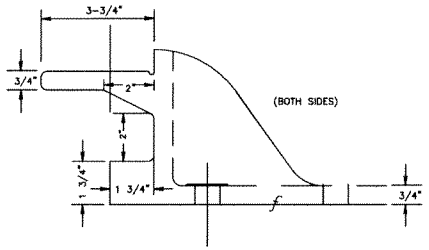
NOTE:
1. FIT WEB OF RAIL AND MATCH HOLE SPACING AND HEIGHT OF HOLES IN 132 RE JOINT BAR.

DETAIL – DOUBLE RAIL INSULATED JOINT
NOT TO SCALE

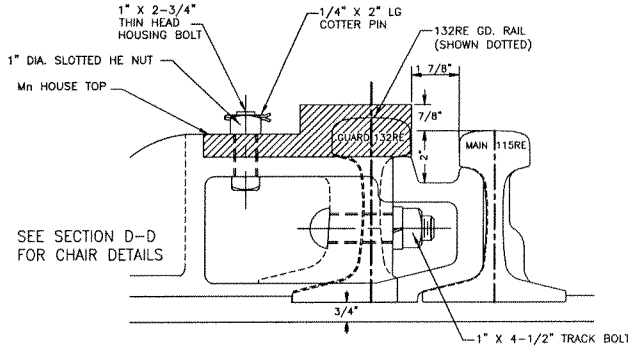
NOTE: USE ¼"END POST INSULATING FIBER



SECTION C–C – SEPARATOR BLOCK
NOT TO SCALE



SECTION D–D – MODIFIED DUCTILE IRON CHAIR
NOT TO SCALE



HOUSING TOP ASSEMBLY (TYPICAL SECTION)
NOT TO SCALE

"PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE DISTRICT OF COLUMBIA."

LICENSE No. _____

EXPIRATION DATE: _____

- DC REGISTER SECTION 3413

DESIGNED	R. REYES	10/05 DATE
DRAWN	A. DAVIS	06/06 DATE
CHECKED	Ravi Amin	01/15 DATE

REFERENCE DRAWINGS

NUMBER	TITLE

REVISIONS

DATE	NUM	DESCRIPTION
04/05	01	Rev. for DD-DWG Approval, Apr. 2005
06/06	02	Minor Revision
01/13	03	Modification to Ductile Iron Chair
06/13	04	Omit Cotter Pin in Separator Block
01/15	05	Revised Title Block and Changed DD to read ST

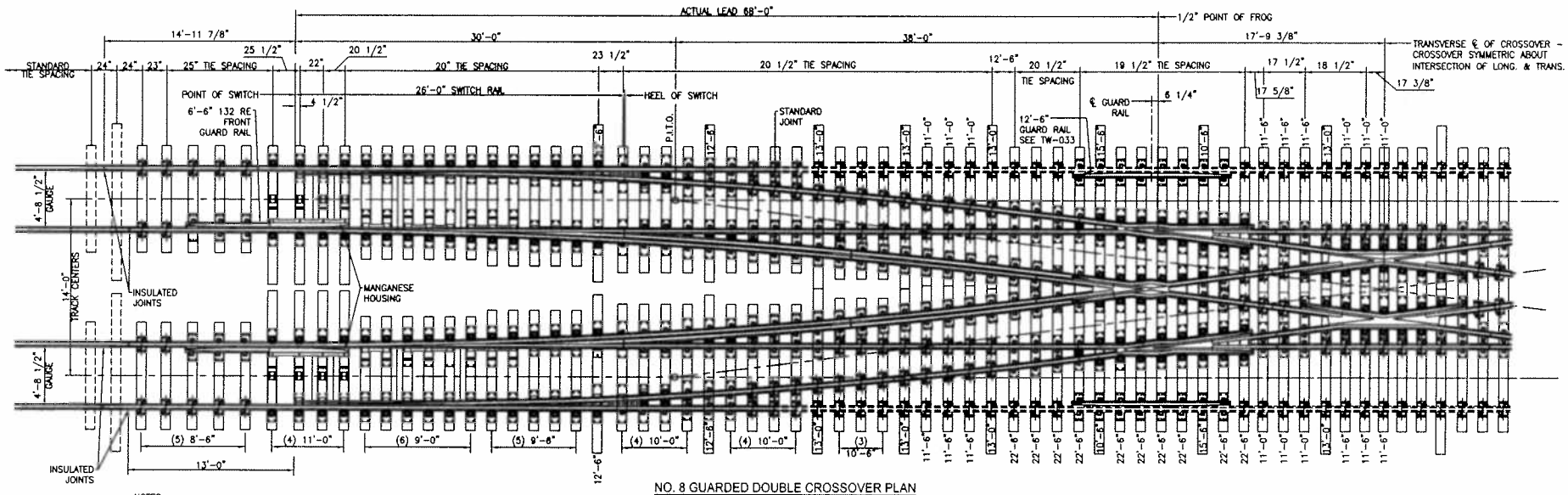
WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY
DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

APPROVED _____ DATE
THOMAS ROBINSON
DEPUTY CHIEF ENGINEER

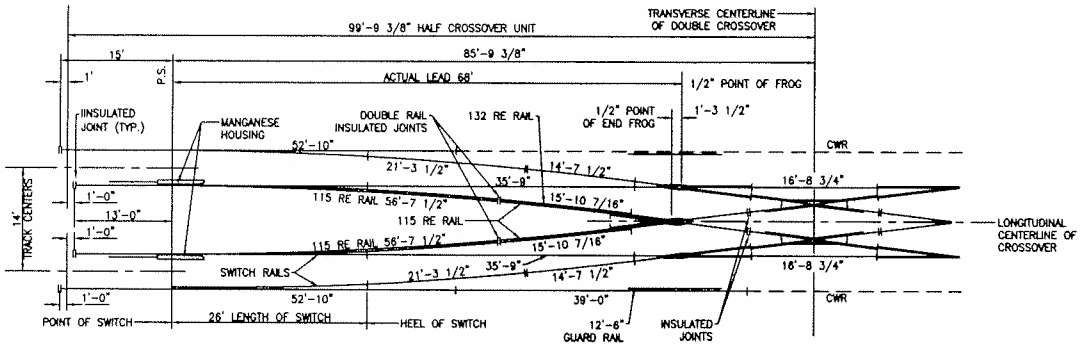
TRACKWORK STANDARD DRAWING
NO. 8 GUARDED TURNOUT, DETAILS,
BALLASTED TRACK, SHEET 2 OF 2

CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	NOT TO SCALE	ST-TW-035	## of .



NOTES:
1. FOR TURNOUT DATA SEE DWG. NO. ST-TW-030.

NO. 8 GUARDED DOUBLE CROSSOVER PLAN
SCALE: 1/4"=1'-0"



RAIL LAYOUT DIAGRAM
SCALE: 1/8"=1'-0"

BILL OF MATERIAL

QTY.	DESCRIPTION - FURNISHED, TYP. PROCUREMENT
4	NO. 8 GUARDED PLATED SWITCH, BALLASTED, COMPL.
4	NO. 8 PLATED FROG, BALLASTED, COMPLETE
4	12'-6" GUARD RAIL, FULLY HEAT TREATED, COMPLETE
2 EACH	RAILBOUND MAGANESE STEEL, END AND CENTER CROSSING FROGS, BALLASTED, COMPLETE AS SHOWN ON DWG. NO. ST-TW-033
4	MANGANESE HOUSING WITH DUCTILE IRON CHAIRS
24	DUCTILE IRON RAIL STOPS
A.R.	132 RE GUARD RAILS
A.R.	BONDED RAIL JOINTS, INTERNAL TO THE TURNOUTS
A.R.	LEFT HAND PANDROL CLIPS e2056
A.R.	ELASTIC FASTENER TIE PLATES PUNCHED FOR 7/8" SCREW SPIKES
A.R.	GR PLATES
A.R.	7/8" SCREW SPIKES
A.R.	PANDROL PLATES

BILL OF MATERIAL

QTY.	DESCRIPTION - FURNISHED, TYP. INSTALLATION
A.R.	RAIL JOINTS TO CONNECT TURNOUTS AND DIAMOND TO CWR

TIE SCHEDULE

LENGTH	QTY.
8'-6"	20
9'-0"	24
9'-6"	20
10'-0"	32
10'-6"	16
11'-0"	33
11'-6"	17
12'-6"	8
13'-0"	16
15'-6"	4
22'-6"	20
TOTAL	210


PANDROL PLATE WITH "e" CLIPS

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE DISTRICT OF COLUMBIA."

LICENSE No. _____

EXPIRATION DATE: _____

- DC REGISTER SECTION 3413

DESIGNED	R. REYES	10/05 DATE
DRAWN	A. DAVIS	09/06 DATE
CHECKED	RAVI AMIN	01/15 DATE

REFERENCE DRAWINGS

NUMBER	TITLE
	Rev. for DW DWG Approval, Apr. 2005

REVISIONS

DATE	NUM	DESCRIPTION
12/02/02	01	Revised End Frog Detail
04/05	02	
06/06	03	Minor Revision

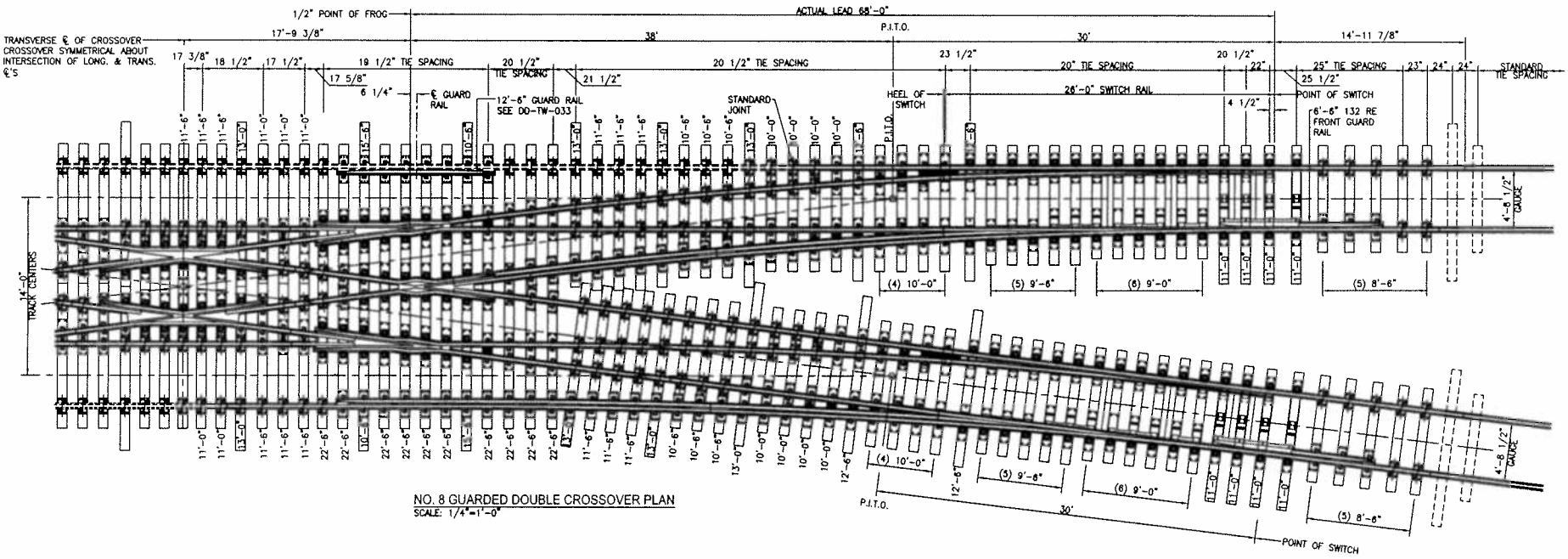
WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY
DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

APPROVED _____ DATE
THOMAS ROBINSON
DEPUTY CHIEF ENGINEER

TRACKWORK STANDARD DRAWING NO. 8 GUARDED DOUBLE CROSSOVER, TYPE 1, HALF UNIT, 14'-0" TRACK CENTERS, PLAN, BALLASTED TRACK

CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	1/4" = 1'-0"	ST-TW-061	## of .



NO. 8 GUARDED DOUBLE CROSSOVER PLAN
SCALE: 1/4"=1'-0"

BILL OF MATERIAL	
QTY.	DESCRIPTION – FURNISHED, TYP. PROCUREMENT
4	NO. 8 GUARDED PLATED SWITCH, BALLASTED, COMPL.
4	NO. 8 PLATED FROG, BALLASTED, COMPLETE
8	12'-6" GUARD RAIL, FULLY HEAT TREATED, COMPLETE
2 EACH	NO. 8 DOUBLE CROSSOVER, END AND CENTER CROSSING FROGS, BALLASTED, COMPLETE
4	MANGANESE HOUSING WITH DUCTILE IRON CHAIRS
24	DUCTILE IRON RAIL STOPS
A.R.	132 RE GUARD RAILS
A.R.	BONDED RAIL JOINTS, INTERNAL TO THE TURNOUTS
A.R.	LEFT HAND PANDROL CLIPS e2056
A.R.	ELASTIC FASTENER TIE PLATES PUNCHED FOR 7/8" SCREW SPIKES
A.R.	GR PLATES
A.R.	7" X 9" TIMBER SWITCH TIES AS SHOWN
A.R.	7" X 9" TIMBER CROSS TIES AS SHOWN
A.R.	7/8" SCREW SPIKES
A.R.	PANDROL PLATES

BILL OF MATERIAL	
QTY.	DESCRIPTION – FURNISHED, TYP. INSTALLATION
A.R.	RAIL JOINTS TO CONNECT TURNOUTS AND DIAMOND TO CWR

NOTES:

1. FOR TURNOUT DATA SEE DWG. NO. ST-TW-030.

TIE SCHEDULE	
LENGTH	QTY.
8'-6"	20
9'-0"	24
9'-6"	20
10'-0"	32
10'-6"	16
11'-0"	27
11'-6"	23
12'-6"	8
13'-0"	16
15'-6"	4
22'-6"	20
TOTAL	210

PANDROL PLATE
WITH "e" CLIPS

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE DISTRICT OF COLUMBIA."

LICENSE No. _____

EXPIRATION DATE: _____

- DC REGISTER SECTION 3413

DESIGNED	R. REYES	10/05 DATE
DRAWN	A. DAVIS	06/06 DATE
CHECKED	RAVI AMIN	01/15 DATE

REFERENCE DRAWINGS

NUMBER	TITLE

REVISIONS

DATE	NUM	DESCRIPTION
12/02/02	01	Revised End Frog Detail
04/03	02	Rev. for DD DWG Approval, Apr, 2005
06/06	03	Minor Revision
09/06	04	Revised Bill of Materials
07/07	05	Deleted Slit Tie Rod
01/15	06	Revised Title Block & Changed DD to read ST

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

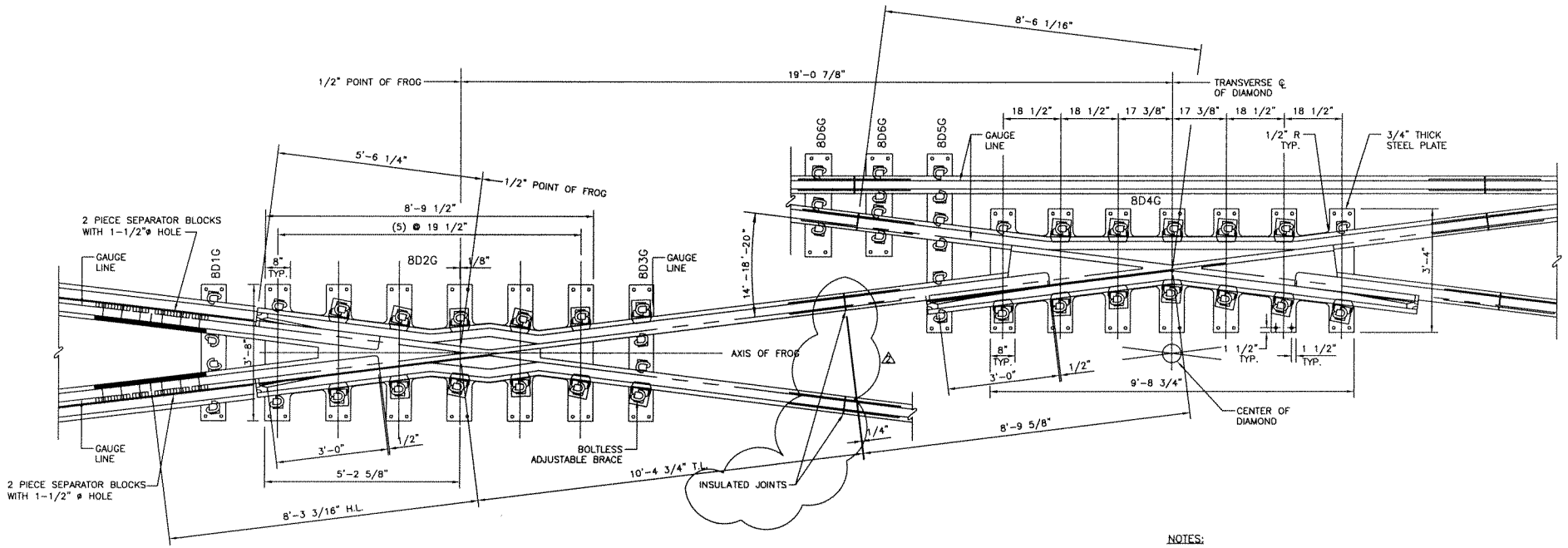
DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

APPROVED _____ DATE
THOMAS ROBINSON
DEPUTY CHIEF ENGINEER

TRACKWORK STANDARD DRAWING
NO. 8 GUARDED DOUBLE CROSSOVER, TYPE 4, HALF UNIT, 14'-0" TRACK CENTERS, PLAN, BALLASTED TRACK

CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	1/4" = 1'-0"	ST-TW-062	## of .



NO. 8 DOUBLE CROSSOVER END FROG – COMPLETE	
BILL OF MATERIAL	
QUANTITY	DESCRIPTION
2 EACH	MANGANESE STEEL INSERT END FROG WITH LEVEL GUARDS FOR 14'-18'-20" CROSSING ANGLE, COMPLETE (PER AREMA STANDARD PLAN NO. 750-81 AND 761-83) AND MODIFIED AS INDICATED
2 EACH	MANGANESE STEEL INSERT CENTER FROG WITH LEVEL GUARDS FOR 14'-18'-20" CROSSING ANGLE, COMPLETE (PER AREMA STANDARD PLAN NO. 750-81 AND 761-83)
2 EACH	SPECIAL PLATES 8D1 THRU 8D5, COMPLETE
2 PER FROG	BONDED FROG INSERTS
48	BOLTLESS ADJUSTABLE BRACE WITH LEFT HAND PANDROL CLIPS e2056

3/4"=1'-0"

1 0 1FT

PLATE DETAILS		
PLATE	LENGTH	WIDTH
8D1G	3'-8"	8"
8D3G	3'-8"	8"
8D5G	4'-9"	8"
8D6G	2'-9"	8"

NOTES:

1. RAIL AND COMPONENTS SHALL CONFORM TO 115 RE RAIL SECTION.
2. RAIL DRILLINGS, BAR PUNCHINGS, OVAL NECK TRACK BOLTS AND TRACK BOLT NUTS SHALL BE IN ACCORDANCE WITH AREMA MANUAL, VOL. 1, PAGES 4-1-13 THRU 4-1-18 (36"-6 HOLE JOINT BAR, 115 RE RAIL SECTION).
3. CROSSOVER END AND CENTER FROGS SHALL BE FULLY HEAT TREATED RAILBOUND MAGANESE STEEL EXPLOSION HARDENED PER AREMA TRACKWORK SPECIFICATIONS, "SPECIAL TRACKWORK MATERIAL."
4. ALL SPECIAL FROG PLATES SHALL BE 3/4" THICK WITH NO RAIL CANT.
5. ELASTOMER PADS SHALL BE 3/4" THICK AND EXTEND BEYOND THE FROG PLATES 1" ON ALL SIDES.
6. THE BONDED FROG AND BONDED CENTER FROG INSERTS SHALL BE MILLED CARBON STEEL CASTINGS AS SPECIFIED IN AREMA STANDARD PLAN NO. 750-81 AND 761-83, OF THE CONTRACT SPECIFICATIONS, AND AS SHOWN ON THIS DRAWING.

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE DISTRICT OF COLUMBIA."

LICENSE No. _____

EXPIRATION DATE: _____

• DC REGISTER SECTION 3413

DESIGNED R. Reyes 10/2005 DATE
DRAWN A. DAVIS 06/2006 DATE
CHECKED L. Padget 09/2006 DATE

REFERENCE DRAWINGS	
NUMBER	TITLE

REVISIONS		
DATE	NUM	DESCRIPTION
01/2007	1	Modifications to the Separator Blocks

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

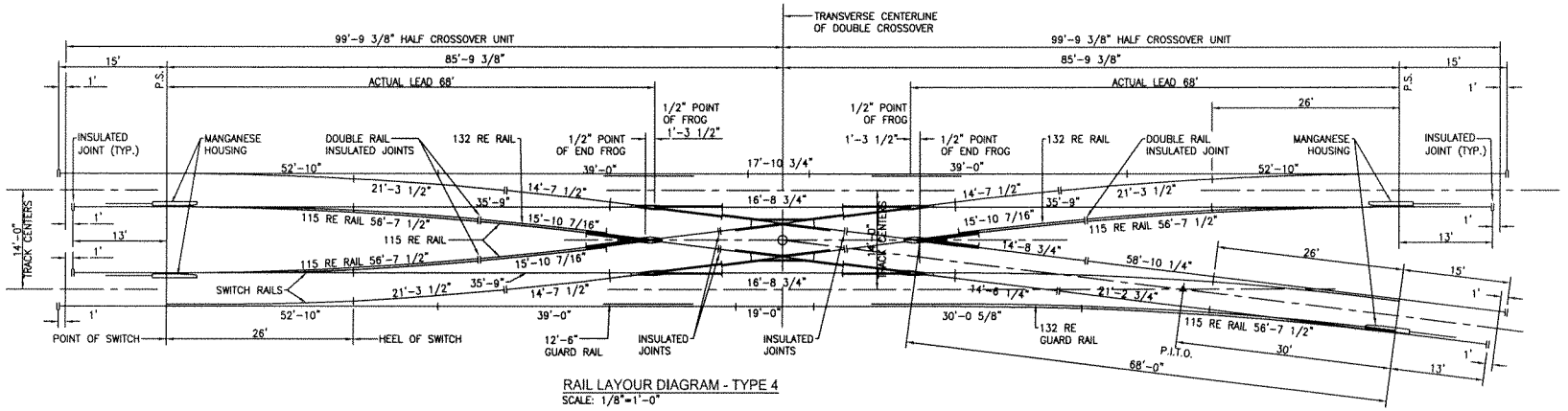
DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

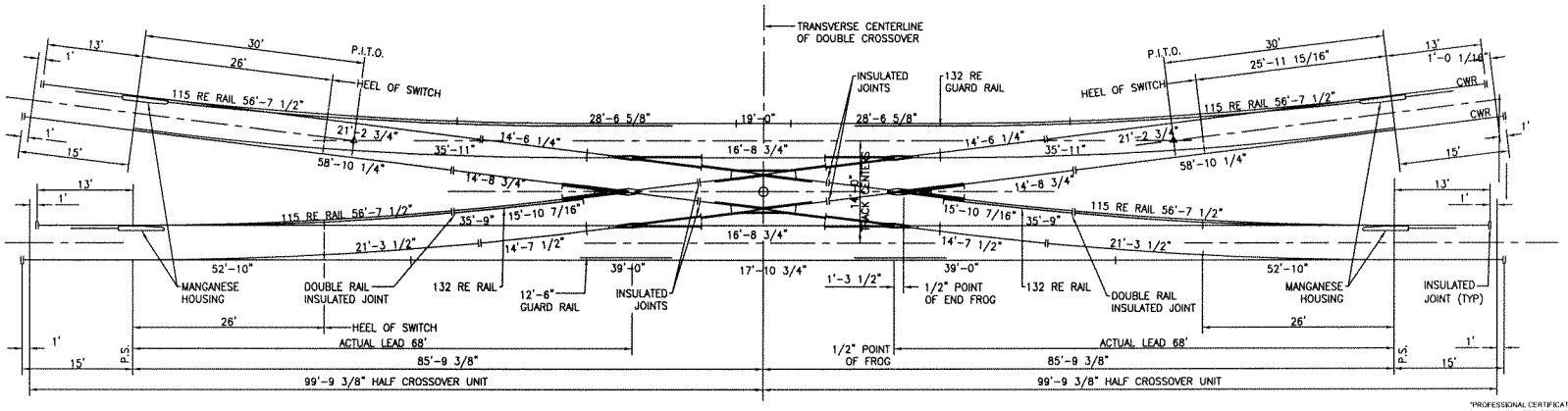
APPROVED _____ DATE
THOMAS ROBINSON
DEPUTY CHIEF ENGINEER

TRACKWORK STANDARD DRAWING
NO.8 GUARDED DOUBLE CROSSOVER, 14'-0" TRACK CENTERS, DIAMOND & END FROG DETAILS .BALLASTED TRACK

CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	AS NOTED	ST-TW-063	## of .



RAIL LAYOUR DIAGRAM - TYPE 4
SCALE: 1/8"=1'-0"



RAIL LAYOUR DIAGRAM - TYPE 5
SCALE: 1/8"=1'-0"

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE DISTRICT OF COLUMBIA."

LICENSE No. _____

EXPIRATION DATE: _____

- DC REGISTER SECTION 3413

DESIGNED	R. REYES	10/05 DATE
DRAWN	A. DAVIS	06/06 DATE
CHECKED	RAVI AMIN	01/15 DATE

REFERENCE DRAWINGS

NUMBER	TITLE

REVISIONS

DATE	NUM	DESCRIPTION
04/05	01	Rev. for DD DWG Approval, Apr. 2005
01/15	02	Revised Title Block & Changed DD to read ST

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

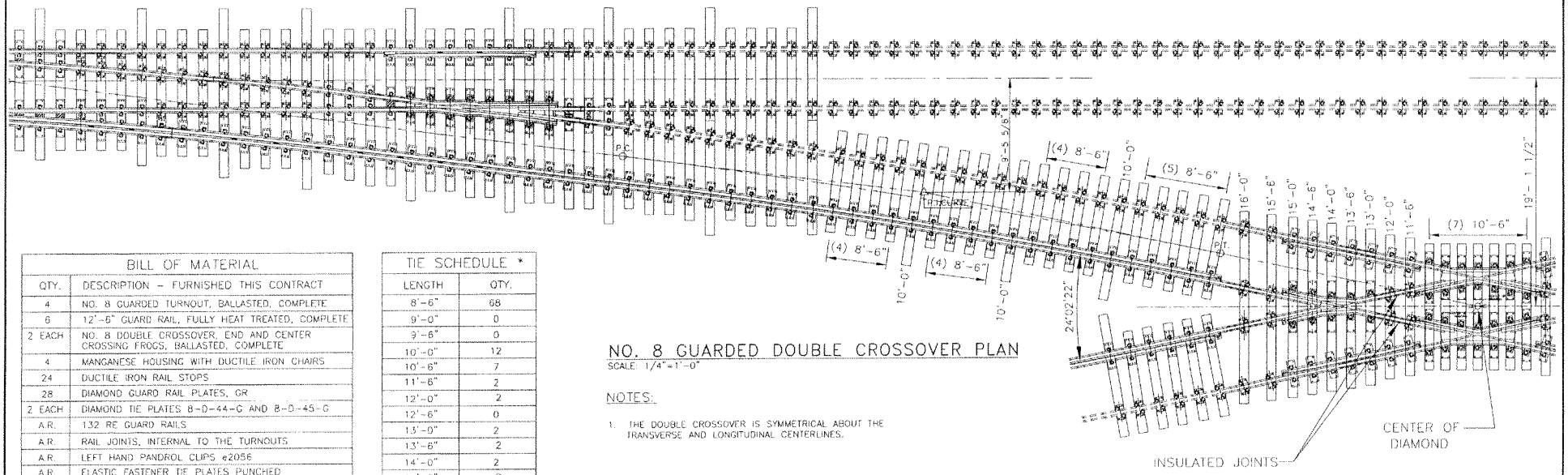
DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

APPROVED _____ DATE
THOMAS ROBINSON
DEPUTY CHIEF ENGINEER

TRACKWORK STANDARD DRAWING NO. 8 GUARDED DBL CROSSOVER, TYPES 4 & 5, 14'-0" TRACK CENTERS, RAIL LAYOUT DIAGRAM, BALLASTED TRACK

CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	1/8" = 1'-0"	ST-TW-064	## of .



NO. 8 GUARDED DOUBLE CROSSOVER PLAN

SCALE: 1/4"=1'-0"

NOTES:

1. THE DOUBLE CROSSOVER IS SYMMETRICAL ABOUT THE TRANSVERSE AND LONGITUDINAL CENTERLINES.

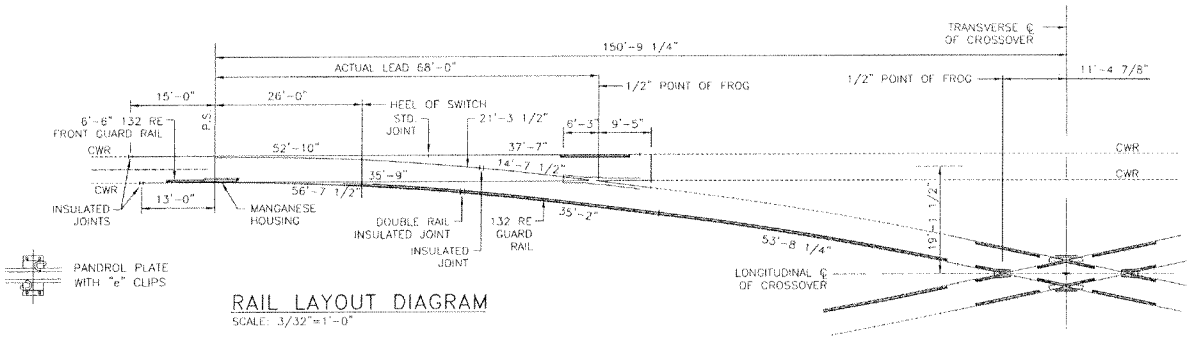
BILL OF MATERIAL	
QTY.	DESCRIPTION – FURNISHED THIS CONTRACT
4	NO. 8 GUARDED TURNOUT, BALLASTED, COMPLETE
6	12'-6" GUARD RAIL, FULLY HEAT TREATED, COMPLETE
2 EACH	NO. 8 DOUBLE CROSSOVER, END AND CENTER CROSSING FROGS, BALLASTED, COMPLETE
4	MANGANESE HOUSING WITH DUCTILE IRON CHAIRS
24	DUCTILE IRON RAIL STOPS
28	DIAMOND GUARD RAIL PLATES, GR
2 EACH	DIAMOND TIE PLATES 8-D-44-G AND 8-D-45-G
A.R.	132 RE GUARD RAILS
A.R.	RAIL JOINTS, INTERNAL TO THE TURNOUTS
A.R.	LEFT HAND PANDROL CLIPS e2056
A.R.	ELASTIC FASTENER TIE PLATES PUNCHED FOR 7/8" SCREW SPIKES
A.R.	7" X 9" TIMBER SWITCH TIES AS SHOWN
A.R.	7" X 9" CROSS TIES AS SHOWN
A.R.	7/8" SCREW SPIKES
A.R.	PANDROL PLATES

TIE SCHEDULE *	
LENGTH	QTY.
8'-6"	68
9'-0"	0
9'-6"	0
10'-0"	12
10'-6"	7
11'-6"	2
12'-0"	2
12'-6"	0
13'-0"	2
13'-6"	2
14'-0"	2
14'-6"	2
15'-0"	2
15'-6"	2
16'-0"	2
16'-6"	0
17'-0"	0
18'-0"	0
TOTAL	105

*DIAMOND TIE SCHEDULE ONLY. TURNOUT TIE SCHEDULE NOT INCLUDED.

BILL OF MATERIAL	
QTY.	DESCRIPTION – FURNISHED BY OTHERS
A.R.	RAIL JOINTS TO CONNECT TURNOUTS AND DIAMOND TO CWR

CURVE DATA	
Δ	4°-52'-01"
R	585.00'
T	24.86'
Lc	49.63'
E	6 1/4"
SE	0



RAIL LAYOUT DIAGRAM

SCALE: 3/32"=1'-0"

DESIGNED	R.REYES	12/08 DATE
DRAWN	A.SEREDICH	12/08 DATE
CHECKED	R.REYES	12/08 DATE
APPROVED		DATE

REFERENCE DRAWINGS	
NUMBER	DESCRIPTION

REVISIONS		
DATE	BY	DESCRIPTION
12/08	A.S.	REMOVED ANGLE OF DIAMOND FROM RAIL LAYOUT DIAGRAM

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

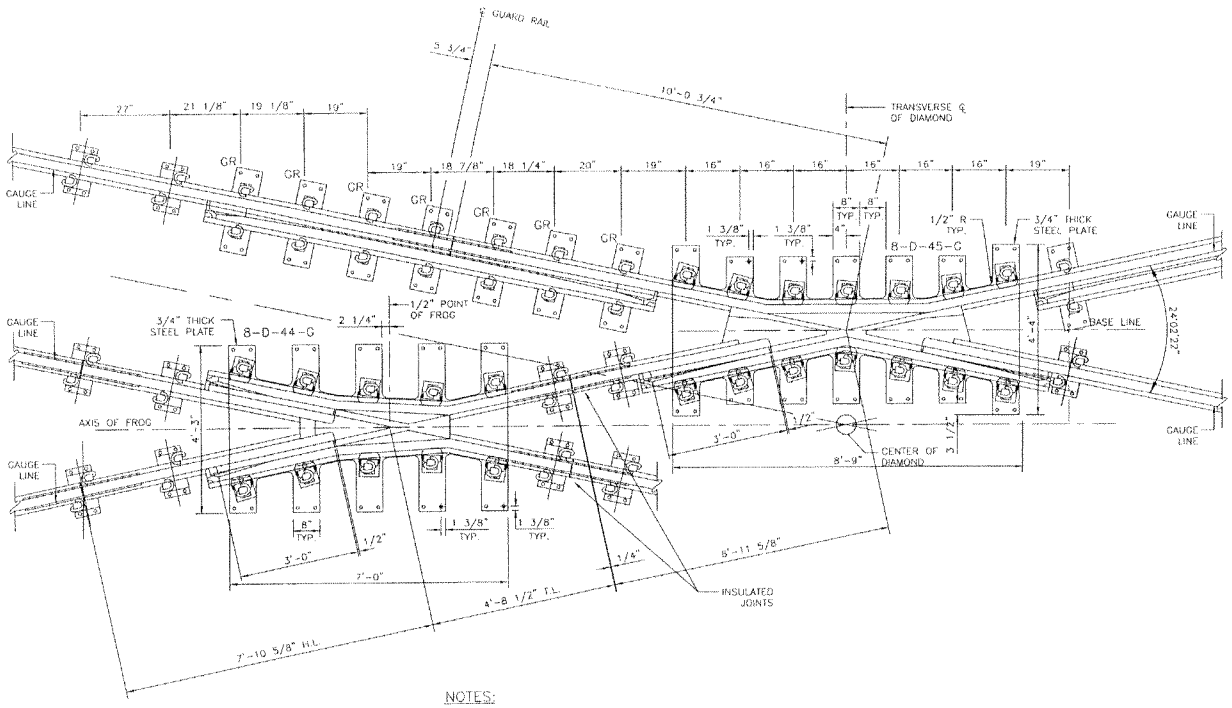
DEPARTMENT OF OPERATIONS • RAIL SERVICES
OFFICE OF TRACK AND STRUCTURES SYSTEMS MAINTENANCE

APPROVED BY _____ SUBMITTED BY _____

TRACKWORK PROCUREMENT

NO. 8 GUARDED DOUBLE CROSSOVER, TYPE 1, QUARTER UNIT, 38'-3" TRACK CENTERS, PLAN, BALLASTED TRACK

SCALE	DRAWING NO.	SHEET NO.
1/4"=1'-0" AND AS SHOWN 1 0 1 2 4FT	TW2010-12	13



NOTES:

1. RAIL AND COMPONENTS SHALL CONFORM TO 115 RE RAIL SECTION.
2. RAIL DRILLINGS, BAR PUNCHINGS, OVAL NECK TRACK BOLTS AND TRACK BOLT NUTS SHALL BE IN ACCORDANCE WITH AREMA MANUAL, VOL. 1, PAGES 4-1-13 THRU 4-1-18 (36"-6 HOLE JOINT BAR, 115 RE RAIL SECTION).
3. CROSSOVER END AND CENTER FROGS SHALL BE RAILBOUND MAGANESE STEEL EXPLOSION HARDENED PER TRACKWORK SPECIFICATIONS.
4. ALL SPECIAL FROG PLATES SHALL BE 3/4" THICK WITH NO RAIL CANT.
5. THE BONDED FROG AND BONDED CENTER FROG INSERTS SHALL BE MILLED CARBON STEEL CASTINGS AS SPECIFIED IN THE CONTRACT SPECIFICATIONS, AND AS SHOWN ON THIS DRAWING.

NO. 8 DOUBLE CROSSOVER CENTER FROG, END FROG - COMPLETE	
BILL OF MATERIAL	
QUANTITY	DESCRIPTION - FURNISHED THIS CONTRACT
2 EACH	MANGANESE STEEL INSERT END FROG WITH LEVEL GUARDS FOR 24'-02'-22" CROSSING ANGLE, COMPLETE (PER AREA STANDARD PLAN NO. 750-01 AND 761-83) AND MODIFIED AS INDICATED
2 EACH	MANGANESE STEEL INSERT CENTER FROG WITH LEVEL GUARDS FOR 24'-02'-22" CROSSING ANGLE, COMPLETE (PER AREA STANDARD PLAN NO. 750-01 AND 761-83) AND MODIFIED AS INDICATED
2 PER FROG	BONDED FROG INSERTS
A.R.	GR PLATES
48	BOLTLESS ADJUSTABLE BRACE WITH LEFT HAND PANDROL CLIPS e2056

DESIGNED R.REYES 12/08 DATE	REFERENCE DRAWINGS	REVISIONS
DRAWN C.RIGGINS 12/08 DATE	NUMBER / DESCRIPTION	DATE / BY / DESCRIPTION
CHECKED R.REYES 12/08 DATE		12/09 / A.S. / REMOVED NOTES TO REMOVE THE NOTE ON ELASTOMER PADS
APPROVED _____ DATE		

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

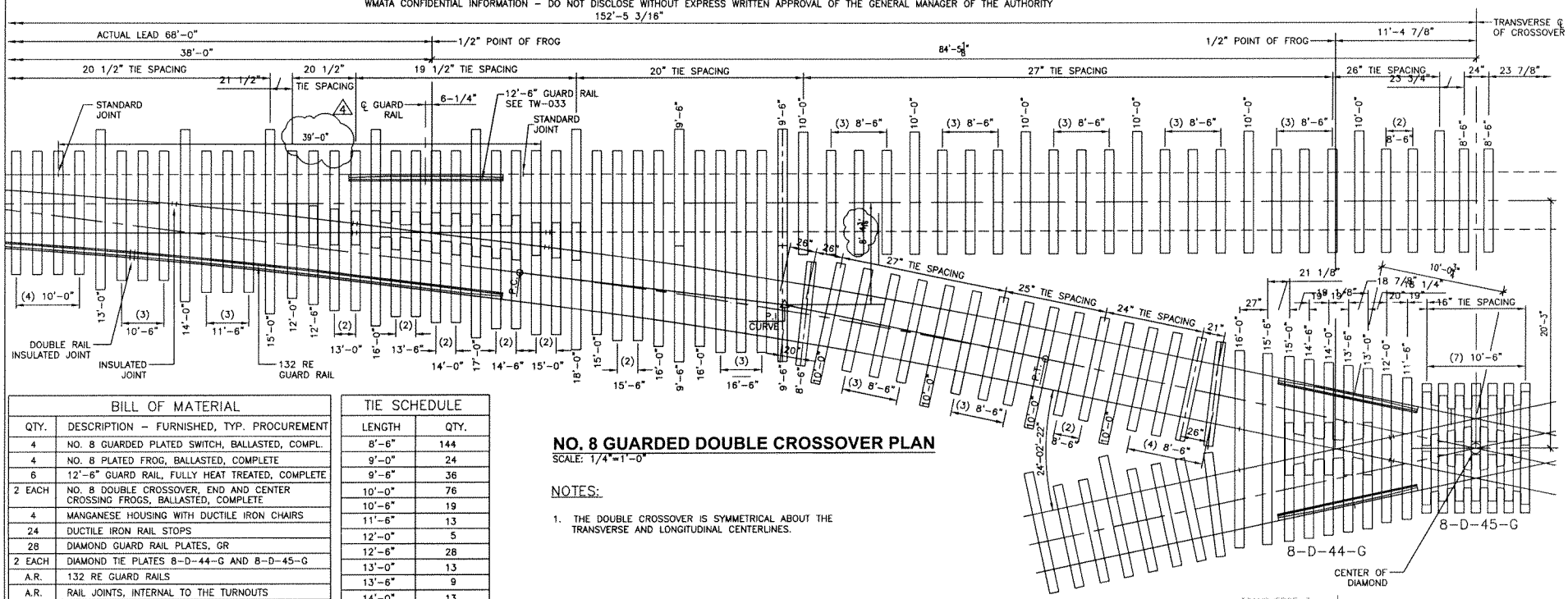
DEPARTMENT OF OPERATIONS • RAIL SERVICES
OFFICE OF TRACK AND STRUCTURES SYSTEMS MAINTENANCE

APPROVED BY _____ SUBMITTED BY _____

TRACKWORK PROCUREMENT

NO. 8 GUARDED DOUBLE CROSSOVER TYPE 1, 38'-3" TRACK CENTERS, DIAMOND & END FROG DETAILS, BALLASTED TRACK

SCALE	DRAWING NO.	SHEET NO.
1/4"=1'-0" AND AS SHOWN 1 0 1 2 4FT	TW2010-13	14



NO. 8 GUARDED DOUBLE CROSSOVER PLAN

SCALE: 1/4"=1'-0"

NOTES:

1. THE DOUBLE CROSSOVER IS SYMMETRICAL ABOUT THE TRANSVERSE AND LONGITUDINAL CENTERLINES.

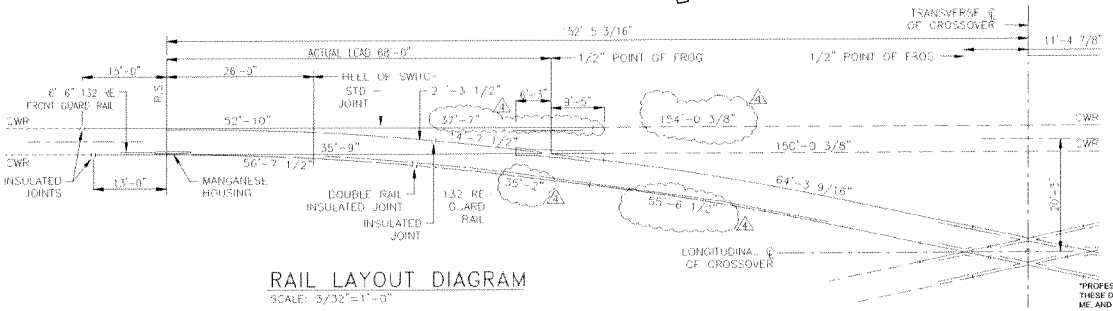
BILL OF MATERIAL	
QTY.	DESCRIPTION – FURNISHED, TYP. PROCUREMENT
4	NO. 8 GUARDED PLATED SWITCH, BALLASTED, COMPL.
4	NO. 8 PLATED FROG, BALLASTED, COMPLETE
6	12'-6" GUARD RAIL, FULLY HEAT TREATED, COMPLETE
2 EACH	NO. 8 DOUBLE CROSSOVER, END AND CENTER CROSSING FROGS, BALLASTED, COMPLETE
4	MANGANESE HOUSING WITH DUCTILE IRON CHAIRS
24	DUCTILE IRON RAIL STOPS
28	DIAMOND GUARD RAIL PLATES, GR
2 EACH	DIAMOND TIE PLATES 8-D-44-G AND 8-D-45-G
A.R.	132 RE GUARD RAILS
A.R.	RAIL JOINTS, INTERNAL TO THE TURNOUTS
A.R.	LEFT HAND PANDROL CLIPS e2056
A.R.	ELASTIC FASTENER TIE PLATES PUNCHED FOR 7/8" SCREW SPIKES
A.R.	7" X 9" TIMBER SWITCH TIES AS SHOWN
A.R.	7" X 9" CROSS TIES AS SHOWN
A.R.	7/8" SCREW SPIKES
A.R.	PANDROL PLATES

TIE SCHEDULE	
LENGTH	QTY.
8'-6"	144
9'-0"	24
9'-6"	36
10'-0"	76
10'-6"	19
11'-6"	13
12'-0"	5
12'-6"	28
13'-0"	13
13'-6"	9
14'-0"	13
14'-6"	9
15'-0"	17
15'-6"	9
16'-0"	13
16'-6"	12
17'-0"	4
18'-0"	4
TOTAL	448

BILL OF MATERIAL	
QTY.	DESCRIPTION – FURNISHED, TYP. INSTALLATION
A.R.	RAIL JOINTS TO CONNECT TURNOUTS AND DIAMOND TO CWR

PANDROL PLATE WITH "e" CLIPS

CURVE DATA	
Δ	4°-52'-01"
R	507.63'
T	21.57'
Lc	43.12'
℄	5 1/2"
SE	0



RAIL LAYOUT DIAGRAM

SCALE: 3/32"=1'-0"

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE DISTRICT OF COLUMBIA."

LICENSE No. _____

EXPIRATION DATE: _____

- DC REGISTER SECTION 3413

DESIGNED R. REYES 10/05 DATE
DRAWN A. DAVIS 06/06 DATE
CHECKED RAVI AMIN 01/15 DATE

REFERENCE DRAWINGS	
NUMBER	TITLE

REVISIONS		
DATE	NUM	DESCRIPTION
07/02	01	Revised Tie Schedule
04/05	02	Rev. for DD-DWG Approval, Apr. 2005
06/06	03	Minor Revision
09/06	04	Revised Bill of Materials
06/15	05	Dimensions for Lead Rail at Standard Joint
01/15	06	Revised Title Block and Changed DD to read ST

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

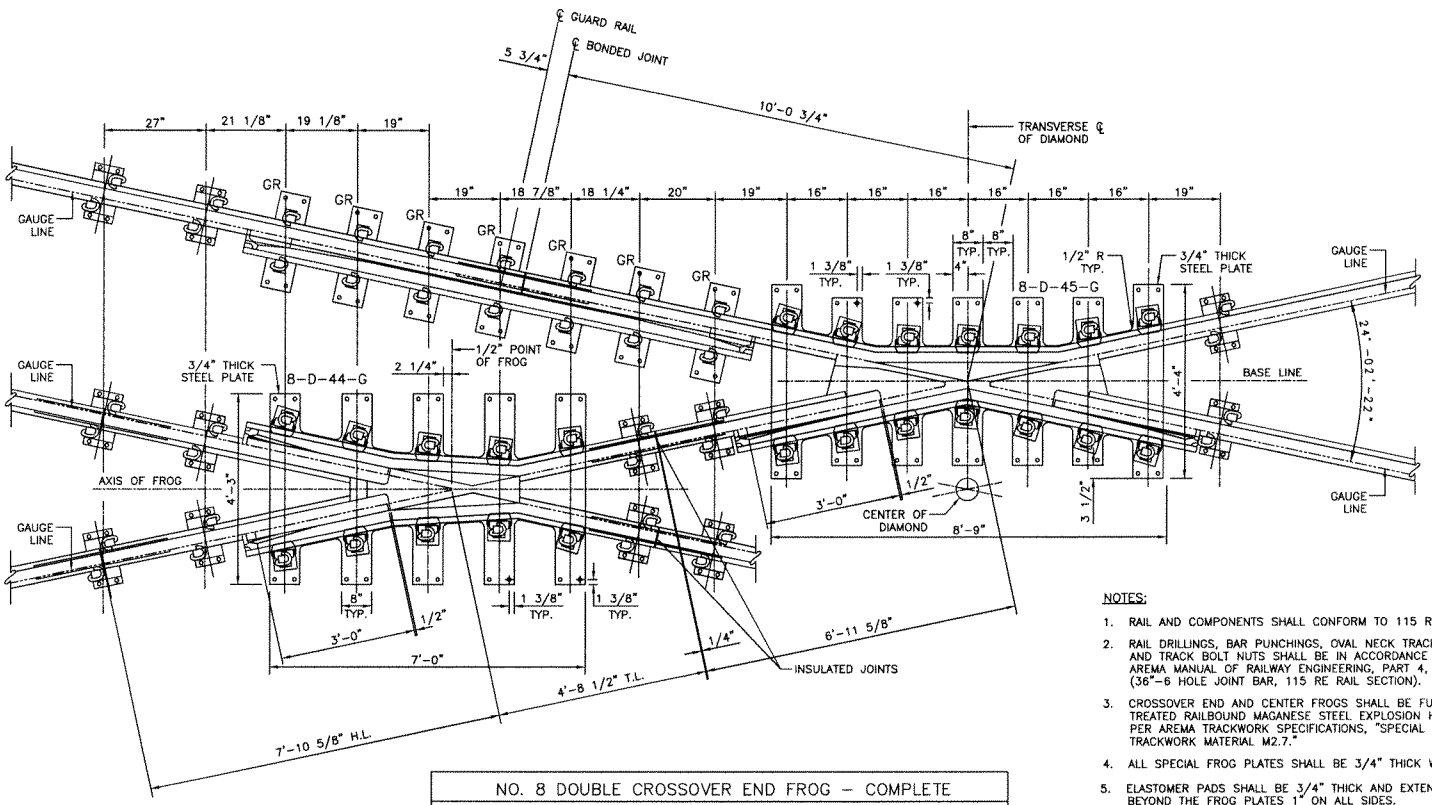
DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

APPROVED _____ DATE
THOMAS ROBINSON
DEPUTY CHIEF ENGINEER

TRACKWORK STANDARD DRAWING NO. 8 DOUBLE CROSSOVER, TYPE 1, QUARTER UNIT, 40'-6" TRACK CENTERS, Plan, BALLASTED TRACK

CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	AS SHOWN	ST-TW-065	## of -



NO. 8 DOUBLE CROSSOVER END FROG – COMPLETE	
BILL OF MATERIAL	
QUANTITY	DESCRIPTION
2 EACH	MANGANESE STEEL INSERT END FROG WITH LEVEL GUARDS FOR 24°-02'-22" CROSSING ANGLE, COMPLETE (PER LATEST AREMA STANDARD PLAN NO. 774 AND 750) AND MODIFIED AS INDICATED
2 EACH	MANGANESE STEEL INSERT CENTER FROG WITH LEVEL GUARDS FOR 24°-02'-22" CROSSING ANGLE, COMPLETE (PER LATEST AREMA STANDARD PLAN NO. 774 AND 750) AND MODIFIED AS INDICATED
2 PER FROG	BONDED FROG INSERTS
A.R.	GR PLATES
48	BOLTLESS ADJUSTABLE BRACE WITH LEFT HAND PANDROL CLIPS e2056

NOTES:

1. RAIL AND COMPONENTS SHALL CONFORM TO 115 RE RAIL SECTION.
2. RAIL DRILLINGS, BAR PUNCHINGS, OVAL NECK TRACK BOLTS AND TRACK BOLT NUTS SHALL BE IN ACCORDANCE WITH AREMA MANUAL OF RAILWAY ENGINEERING, PART 4, RAIL (36"–6 HOLE JOINT BAR, 115 RE RAIL SECTION).
3. CROSSOVER END AND CENTER FROGS SHALL BE FULLY HEAT TREATED RAILBOUND MAGANESE STEEL EXPLOSION HARDENED PER AREMA TRACKWORK SPECIFICATIONS, "SPECIAL TRACKWORK MATERIAL M2.7."
4. ALL SPECIAL FROG PLATES SHALL BE 3/4" THICK WITH NO RAIL CANT.
5. ELASTOMER PADS SHALL BE 3/4" THICK AND EXTENDED BEYOND THE FROG PLATES 1" ON ALL SIDES.
6. THE BONDED FROG AND BONDED CENTER FROG INSERTS SHALL BE MILLED CARBON STEEL CASTINGS AS SPECIFIED IN THE LATEST AREMA STANDARD PLAN NO. 750 AND 761, OF THE CONTRACT SPECIFICATIONS, AND AS SHOWN ON THIS DRAWING.

"PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE DISTRICT OF COLUMBIA."

LICENSE No. _____

EXPIRATION DATE: _____

- DC REGISTER SECTION 3413

DESIGNED R. REYES 10/05 DATE
DRAWN A. DAVIS 06/06 DATE
CHECKED RAVI AMIN 01/15 DATE

REFERENCE DRAWINGS	
NUMBER	TITLE

REVISIONS		
DATE	NUM	DESCRIPTION
08/02/02	01	Delete Note 5
04/05	02	Rev. for DD-DWG Approval, Apr. 2005
06/06	03	Minor Revision
06/13	04	Added Insulated Joints
01/15	05	Revised Title Block and Changed DD to read ST

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

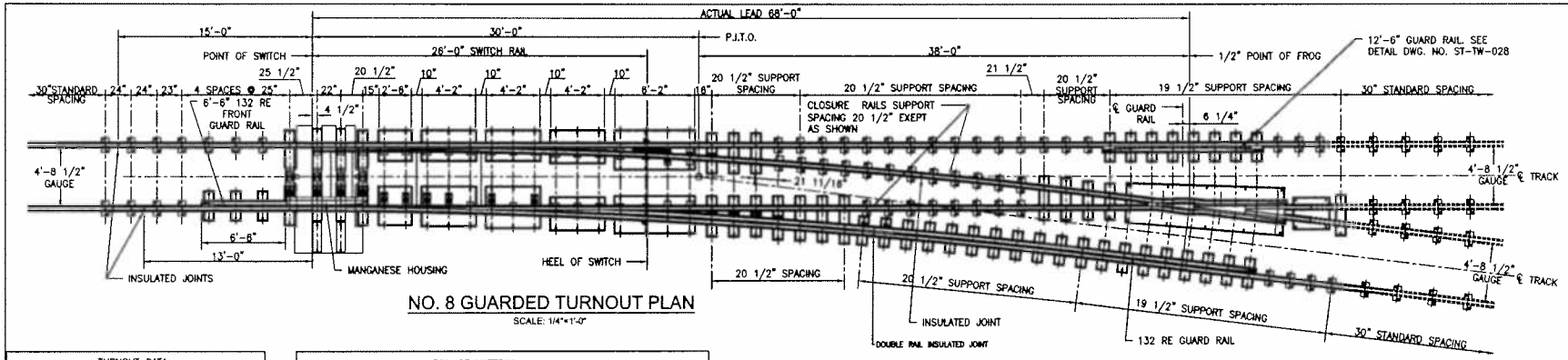
DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

APPROVED _____ DATE
THOMAS ROBINSON
DEPUTY CHIEF ENGINEER

TRACKWORK STANDARD DRAWING
NO. 8 GUARDED DOUBLE CROSSOVER, 40'-6", TRACK CENTERS, DIAMOND & END FROG DETAILS, BALLASTED TRACK

CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	3/4" = 1'-0"	ST-TW-066	## of .



NO. 8 GUARDED TURNOUT PLAN

SCALE: 1/4"=1'-0"

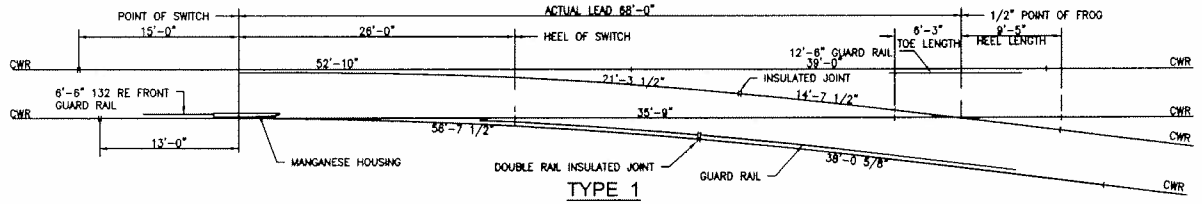
TURNOUT DATA		
FROG	NUMBER	8
	ANGLE	7°-09'-10"
	TOE LENGTH	6'-3"
	HEEL LENGTH	9'-5"
	TOTAL LENGTH	15'-8"
	TOE SPREAD	8-13/16"
	HEEL SPREAD	14-9/16"
SWITCH	LENGTH OF SWITCH RAIL	26'-0"
	THICKNESS AT POINT	0"
	ANGLE AT HEEL	3°-07'-09"
	ANGLE AT POINT	0°-11'-48"
	HEEL SPREAD	9"
	CURVED POINT RADIUS	509.98'
	VERTEX DISTANCE	0
ACTUAL LEAD		68'-0"
STRAIGHT CLOSURE LENGTH		35'-9"
CURVED CLOSURE LENGTH		35'-10 31/32"
CURVED CLOSURE RADIUS		509.98'
CENTERLINE RADIUS		507.63'
DEGREE OF CURVE		11°-17'-13"
TANGENT AT HEEL OF SWITCH		0"
TANGENT AT TOE OF FROG		0"

BILL OF MATERIAL	
QTY.	DESCRIPTION
1	26'-0" GUARDED PLATED STRAIGHT SWITCH WITH UNIFORM RISERS - D.F. COMPLETE
1	26'-0" UNGUARDED PLATED CURVED SWITCH WITH UNIFORM RISERS - D.F. COMPLETE
1	NO. 8 PLATED RAIL BOUND MANGANESE FROG - D.F. COMPLETE
1	12'-6" GUARD RAIL, COMPLETE
1	MANGANESE HOUSING WITH DUCTILE IRON CHAIRS
8	DUCTILE IRON RAIL STOPS
A.R.	132 RE GUARD RAILS
A.R.	BOLTED STANDARD RAIL JOINTS, 6 HOLE, 36 INCH
A.R.	BOLTED INSULATED RAIL JOINTS, 6 HOLE, 36 INCH
A.R.	LEFT HAND PANDROL CLIPS e2056
A.R.	ELASTOMER PAD FOR EACH PLATE

BILL OF MATERIAL	
QTY.	DESCRIPTION
A.R.	DIRECT FIXATION FASTENERS
A.R.	GROUT PADS
A.R.	INSERT AND ANCHOR ASSEMBLY, ANCHORING MATERIAL (CELTITE 21-30, FOX INDUSTRIES FX 830 AS MANUFACTRED BY FOX INDUSTRIES, POLYESTER RESIN)

NOTES:

1. GAUGE WIDTH THROUGHOUT TURNOUT IS 4'-8 1/2".
2. LOCATE SEPARATOR BLOCKS NOT MORE THAN 4'-0" ON CENTERS AND AS NECESSARY TO CLEAR JOINT BARS AND ANCHOR BOLTS.
3. JOINTS INDICATED IN RAIL LAYOUT DIAGRAM ARE REQUIRED. OTHER JOINTS LOCATED BY THE CONTRACTOR TO FACILITATE SHIPPING OR FABRICATION SHALL BE SUBMITTED FOR APPROVAL BY THE WMATA ENGINEER.
4. CLOSURE RAIL LENGTHS INDICATED ARE TOTAL LENGTHS AND DO NOT ALLOW FOR STANDARD OR INSULATED JOINTS.
5. RAIL ENDS TO BE JOINED TO CWR AND UNDRILLED.
6. THE CONTRACTOR SHALL FURNISH ALL JOINTS INTERNAL TO THE TURNOUT.
7. RIGHT HAND TURNOUT IS SHOWN. LEFT HAND TURNOUT IS OPPOSITE HAND.
8. GUARD RAIL IS HIGH STRENGTH 132RE SECTION.
9. ALL DIRECT FIXATION FASTENERS ARE N.I.C.
10. ALL RAILS WITHIN THE TURNOUT ARE FASTENED TO THE PLATES BY LEFT HAND PANDROL SPRING CLIPS - e2058.
11. RAIL AT JOINT BARS SHALL BE FASTENED WITH LEFT HAND MODIFIED E-CLIP OR C-CLIP.
12. ADDITIONAL DOUBLE RAIL INSULATED JOINT SHALL BE FURNISHED WITH EACH TURNOUT AS SPARE.
13. WIDTH AND LENGTH OF ELASTOMER PADS SHALL BE 2" LARGER THAN DIMENSIONS OF CORRESPONDING PLATES.
14. RAIL AT HEEL BLOCK SHALL BE FASTENED WITH MODIFIED LEFT HAND PANDROL CLIPS "E" e2063 OR PADROL "J" CLIPS.
15. RAIL IS HEAD HARDENED RAIL.
16. FOR DOUBLE RAIL INSULATED JOINT DETAIL SEE DWG No. ST-TW-035.
17. DO NOT DRILL HOLES FOR JOINTS IN STOCK RAILS AHEAD OF P.S.
18. CLOSURE LENGTHS INDICATED ARE TOTAL LENGTH WITH NO ALLW. FOR STAD. OR INS. JTS.
19. DIMENSIONS SHOWN ON STOCK RAILS AHEAD OF P.S. ARE STANDARD. AUTHORITY WILL SPECIFY STOCK RAIL LENGTH AHEAD OF P.S. WHERE OTHER THAN STANDARD LENGTHS ARE REQUIRED.



TYPE 1
RAIL LAYOUT DIAGRAM

SCALE: 1/4"=1'-0"

"PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE DISTRICT OF COLUMBIA."

LICENSE No. _____

EXPIRATION DATE _____

- DC REGISTER SECTION 3413

DESIGNED DCCO 01/98 DATE
DRAWN A. DAVIS 05/08 DATE
CHECKED RAVI AMIN 01/15 DATE

REFERENCE DRAWINGS	
NUMBER	TITLE

REVISIONS		
DATE	NUM.	DESCRIPTION
08/01	01	and Issued by the Authority
09/00	02	and Issued by the Authority
05/08	03	Added Bill of Material Notes
01/15	04	Revised Title Block and Changed DD to read ST

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

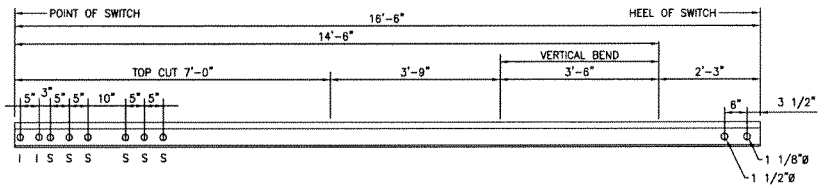
DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

APPROVED _____ DATE
THOMAS ROBINSON
DEPUTY CHIEF ENGINEER

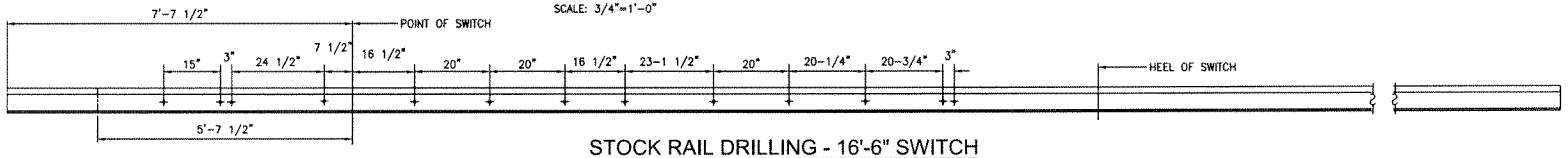
TRACKWORK STANDARD DRAWING
NO. 8 GUARDED TURNOUT, PLAN, PLATED DIRECT FIXATION

CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	1/4" = 1'-0"	ST-TW-026	## of .



SWITCH RAIL DRILLING 16'-6" SWITCH

SCALE: 3/4"=1'-0"

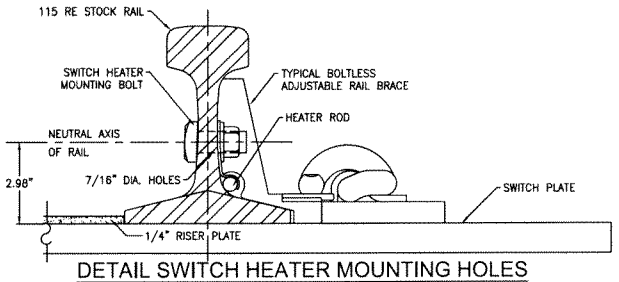


STOCK RAIL DRILLING - 16'-6" SWITCH

SCALE: 3/4"=1'-0"

HOLE SIZES
I 1 1/16"ø INTERLOCKING HOLES
S 1 1/16"ø SWITCH ROD HOLES
+ 7/16" HEATER MOUNTING HOLES

NOTES:
1. HOLES SHOWN ARE REQUIRED. ADDITIONAL HOLES FOR REINFORCING BAR OR RAILS STOPS SHALL BE LOCATED AS PER THE SPECIFIC SWITCH HEATER.



DETAIL SWITCH HEATER MOUNTING HOLES

SCALE: NO SCALE

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE DISTRICT OF COLUMBIA."

LICENSE No. _____

EXPIRATION DATE: _____

- DC REGISTER SECTION 3413

DESIGNED	DCCO	01/99 DATE
DRAWN	A. DAVIS	06/06 DATE
CHECKED	RAVI AMIN	12/14 DATE

REFERENCE DRAWINGS

NUMBER	TITLE

REVISIONS

DATE	NUM	DESCRIPTION
08/01	01	Revised & Issued by the Authority
06/06	02	Title Revision
12/14	03	Revised Title Block & Changed DD to read ST

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

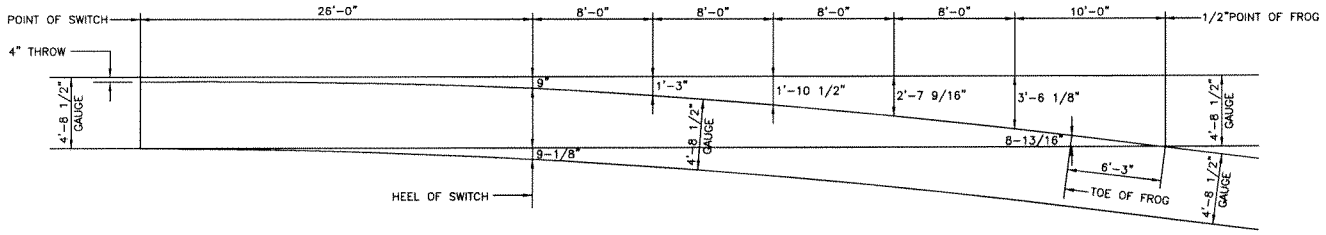
DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

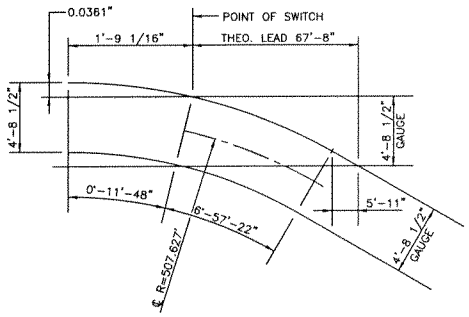
APPROVED _____ DATE
THOMAS ROBINSON
DEPUTY CHIEF ENGINEER

TRACKWORK STANDARD DRAWING
NO. 8 TURNOUT
SWITCH RAIL, DRILLING DETAILS

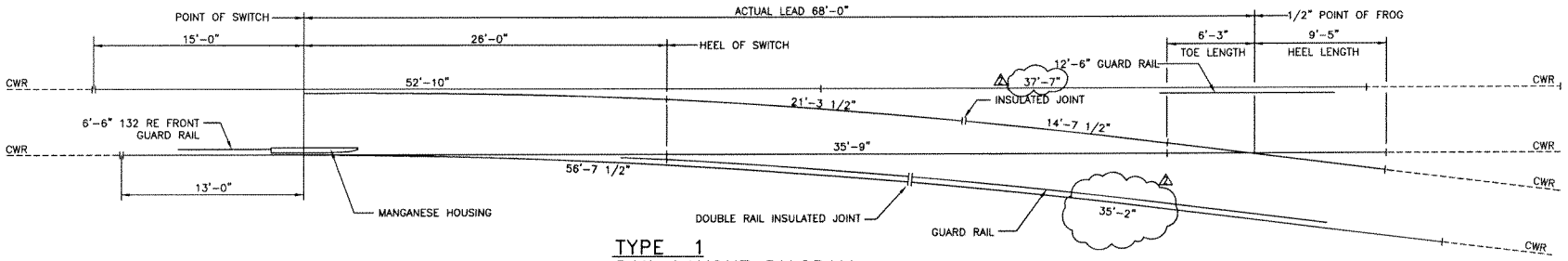
CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	3/4" = 1'-0"	ST-TW-027	## of .



OFFSET DIAGRAM
SCALE: 1/4"=1'-0"



TURNOUT GEOMETRY
NOT TO SCALE



TYPE 1 RAIL LAYOUT DIAGRAM
SCALE: 1/4"=1'-0"

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE DISTRICT OF COLUMBIA."

LICENSE No. _____

EXPIRATION DATE: _____

- DC REGISTER SECTION 3413

DESIGNED	R. REYES	10/05 DATE
DRAWN	A. DAVIS	06/06 DATE
CHECKED	RAVI AMIN	01/15 DATE

REFERENCE DRAWINGS

NUMBER	TITLE

REVISIONS

DATE	NUM	DESCRIPTION
04/05	01	Rev. for DD-DWG Approval, Apr. 2005
06/05	02	Minor Revision
06/13	03	Rev. for Lead Rail at Standard Joint Location
01/15	04	Revised Title Block and Changed DD to read ST

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

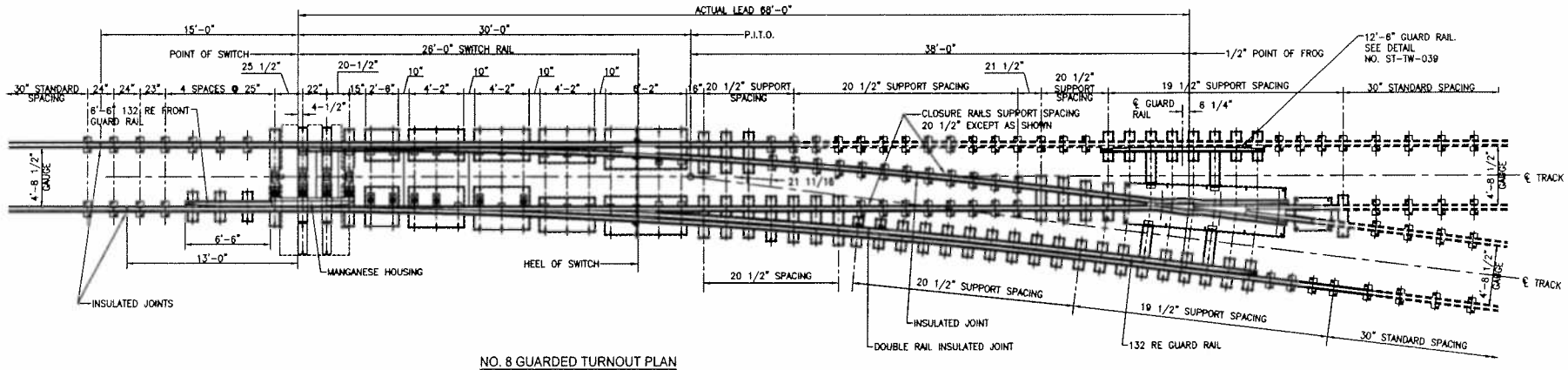
DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

APPROVED _____ DATE
THOMAS ROBINSON
DEPUTY CHIEF ENGINEER

TRACKWORK STANDARD DRAWING NO. 8 GUARDED TURNOUT, OFFSET, GEOMETRY & RAIL LAYOUT DIAGRAM, DIRECT FIXATION TRACK

CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	AS SHOWN	ST-TW-036	## of .



NO. 8 GUARDED TURNOUT PLAN

SCALE: 1/4"=1'-0"

TURNOUT DATA		
FROG	NUMBER	8
	ANGLE	7°-09'-10"
	TOE LENGTH	6'-3"
	HEEL LENGTH	9'-5"
	TOTAL LENGTH	15'-8"
	TOE SPREAD	8-13/16"
	HEEL SPREAD	14-9/16"
SWITCH	LENGTH OF SWITCH RAIL	26'-0"
	THICKNESS AT POINT	0"
	ANGLE AT HEEL	3°-07'-09"
	ANGLE AT POINT	0°-11'-48"
	HEEL SPREAD	9"
	CURVED POINT RADIUS	509.98'
	VERTEX DISTANCE	0
ACTUAL LEAD		68'-0"
STRAIGHT CLOSURE LENGTH		35'-9"
CURVED CLOSURE LENGTH		35'-10 31/32"
CURVED CLOSURE RADIUS		509.98'
CENTERLINE RADIUS		507.63'
DEGREE OF CURVE		11°-17'-13"
TANGENT AT HEEL OF SWITCH		0"
TANGENT AT TOE OF FROG		0"

BILL OF MATERIAL	
QTY.	DESCRIPTION – FURNISHED TYP. PROCUREMENT
1	26'-0" GUARDED PLATED STRAIGHT SWITCH WITH UNIFORM RISERS – D.F. COMPLETE
1	26'-0" UNGUARDED PLATED CURVED SWITCH WITH UNIFORM RISERS – D.F. COMPLETE
1	NO. 8 PLATED RAIL BOUND MANGANESE FROG – D.F. COMPLETE
1	12'-6" GUARD RAIL, COMPLETE
1	MANGANESE HOUSING WITH DUCTILE IRON CHAIRS
6	DUCTILE IRON RAIL STOPS
A.R.	132 RE GUARD RAILS
A.R.	BOLTED STANDARD RAIL JOINTS, 6 HOLE, 36 INCH
A.R.	BOLTED INSULATED RAIL JOINTS, 6 HOLE, 36 INCH
A.R.	LEFT HAND PANDROL CLIPS e2056
A.R.	ELASTOMER PAD FOR EACH PLATE

BILL OF MATERIAL	
QTY.	DESCRIPTION – FURNISHED TYP. INSTALLATION
A.R.	DIRECT FIXATION FASTENERS
A.R.	GROUT PADS
A.R.	INSERT AND ANCHOR ASSEMBLY, ANCHORING MATERIAL, "FX830" AS MANUFACTURED BY FOX INDUSTRIES (POLYESTER RESIN)

NOTES:

1. GAUGE WIDTH THROUGHOUT TURNOUT IS 4'-8 1/2".
2. LOCATE SEPARATOR BLOCKS NOT MORE THAN 4'-0" ON CENTERS AND AS NECESSARY TO CLEAR JOINT BARS AND ANCHOR BOLTS.
3. JOINTS INDICATED IN RAIL LAYOUT DIAGRAM ARE REQUIRED. OTHER JOINTS LOCATED BY THE CONTRACTOR TO FACILITATE SHIPPING OR FABRICATION SHALL BE SUBMITTED FOR APPROVAL BY THE WMATA ENGINEER.
4. CLOSURE RAIL LENGTHS INDICATED ARE TOTAL LENGTHS AND DO NOT ALLOW FOR STANDARD OR INSULATED JOINTS.
5. RAIL ENDS CONNECTING TO CWR SHALL BE DRILLED FOR THE JOINT BARS SHOWN ON THE RAIL LAYOUT DIAGRAM.
6. THE CONTRACTOR SHALL FURNISH ALL JOINTS INTERNAL TO THE TURNOUT.
7. RIGHT HAND TURNOUT IS SHOWN. LEFT HAND TURNOUT IS OPPOSITE HAND.
8. JOINT IN OPPOSITE RAILS SHALL HAVE A TWO PLATE STAGGER.
9. RAIL SHALL BE HEAD HARDENED.
10. DO NOT DRILL HOLES FOR JOINTS IN STOCK RAILS AHEAD OF POINT OF SWITCH.
11. GUARD RAIL IS HIGH STRENGTH 132 RE SECTION. RUNNING RAIL AND COMPONENTS SHALL CONFORM TO 115 RE RAIL SECTION.
12. ALL RAILS WITHIN THE TURNOUT ARE FASTENED TO THE PLATES BY LEFT HAND PANDROL SPRING CLIPS – e2056.
13. RAIL AT JOINT BARS SHALL BE FASTENED WITH MODIFIED LEFT HAND PANDROL CLIP TYPE "J" CLIPS OR "C" CLIPS.
14. WIDTH AND LENGTH OF ELASTOMER PADS SHALL BE 2" LARGER THAN DIMENSIONS OF CORRESPONDING PLATES.
15. RAIL AT HEEL BLOCK SHALL BE FASTENED WITH MODIFIED LEFT HAND PANDROL CLIPS "E" e2063 OR PANDROL "J" CLIPS.
16. DIMENSIONS SHOWN ON STOCK RAILS AHEAD OF P.S. ARE STANDARD. AUTHORITY WILL SPECIFY STOCK RAIL LENGTHS AHEAD OF P.S. WHERE OTHER THAN STANDARD LENGTHS ARE REQUIRED.
17. SWITCH PANEL SHALL BE SHIPPED AS ONE UNIT.
18. FOR DOUBLE RAIL INSULATED JOINTS DETAILS SEE DWG. ST-TW-041.

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE DISTRICT OF COLUMBIA."

LICENSE No. _____

EXPIRATION DATE _____

- DC REGISTER SECTION 3413

DESIGNED R. REYES 12/05 DATE
DRAWN A. DAVIS 06/06 DATE
CHECKED RAVI AMIN 12/14 DATE

REFERENCE DRAWINGS

NUMBER	TITLE

REVISIONS

DATE	NUM	DESCRIPTION
04/06	01	Rev. for DD-DWG Approval, Apr. 2006
06/06	02	Minor Revision, Notes
09/06	03	Minor Revision, Notes
12/14	04	Revised Title Block & Changed DD to read ST

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

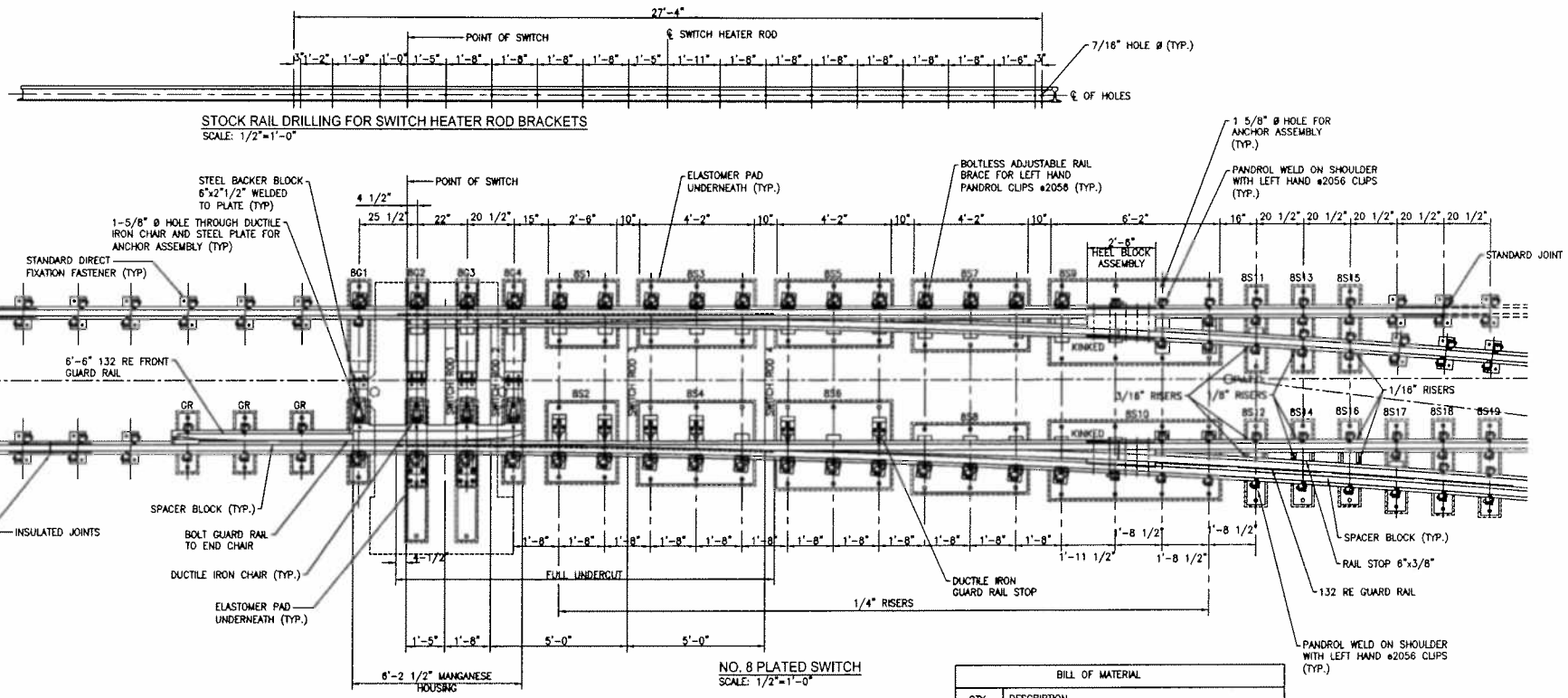
DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

APPROVED _____ DATE
THOMAS ROBINSON
DEPUTY CHIEF ENGINEER

TRACKWORK STANDARD DRAWING
NO. 8 GUARDED TURNOUT, PLAN, PLATED DIRECT FIXATION TRACK

CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	1/4" = 1'-0"	ST-TW-037	## of .



BILL OF MATERIAL	
QTY.	DESCRIPTION
A.R.	SPACER BLOCKS
A.R.	GUARD RAILS AND FRONT GUARD RAIL
A.R.	ANCHOR ASSEMBLIES

NOTES
1. FOR SWITCH GAUGE PLATES, SEE DETAIL DWG NO. ST-TW-089 (M3 SWITCH MACHINE)
2. DUCTILE IRON CHAIR AT THE POINT OF SWITCH SHALL BE AS SHOWN IN DETAIL DRAWING ST-TW-035

PLATE DETAILS		
PLATE	LENGTH	WIDTH
8S10	74"	34"
8S11	37"	8"
8S12	37"	8"
8S13	37"	8"
8S14	37"	8"
8S15	37"	8"
8S16	37"	8"
8S17	40"	8"
8S18	41"	8"
8S19	42"	8"

PLATE DETAILS		
PLATE	LENGTH	WIDTH
GR	26"	8"
8G4	88"	8"
8S1	30"	28"
8S2	30"	35"
8S3	50"	28"
8S4	50"	36"
8S5	50"	28"
8S6	50"	38"
8S7	50"	30"
8S8	50"	30"
8S9	74"	36"

BILL OF MATERIAL	
QTY.	DESCRIPTION
1	26'-0" GUARDED PLATED STRAIGHT SWITCH WITH UNIFORM RISERS - D.F. COMPLETE PER LATEST AREMA STD. PLAN NO. 125, DETAIL 5100
1	26'-0" UNGUARDED PLATED CURVED SWITCH WITH UNIFORM RISERS - D.F. COMPLETE PER LATEST AREMA STD. PLAN NO. 125, DETAIL 5100
A.R.	STOCK RAILS, UNDERCUT FOR SWITCH RAILS
1	MANGANESE HOUSING WITH DUCTILE IRON CHAIRS
32	BOLTLESS ADJUSTABLE RAIL BRACE FOR LEFT HAND PANDROL CLIPS e2056
6	DUCTILE IRON GUARD RAIL STOPS
A.R.	CLOSURE RAILS
1	HEEL BLOCK ASSEMBLY FOR GUARDED SWITCH
1	HEEL BLOCK ASSEMBLY FOR UNGUARDED SWITCH
A.R.	GR, 8G, 8S PLATES
A.R.	ELASTOMER PADS FOR EVERY PLATE
4	INSULATED SWITCH RODS, TYPE MJS

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- DC REGISTER SECTION 3413

DESIGNED R. REYES 10/05 DATE
DRAWN A. DAVIS 06/06 DATE
CHECKED RAVI AMIN 12/14 DATE

REFERENCE DRAWINGS	
NUMBER	TITLE

REVISIONS		
DATE	NUM	DESCRIPTION
07/15/02	01	Updated Bill of Materials
04/05	02	Rev. for DD-DWG, Approved Apr. 2005
06/06	03	Plate Revision
09/06	04	Stock Rail Drill Revision
09/06	05	Added Note No. 2

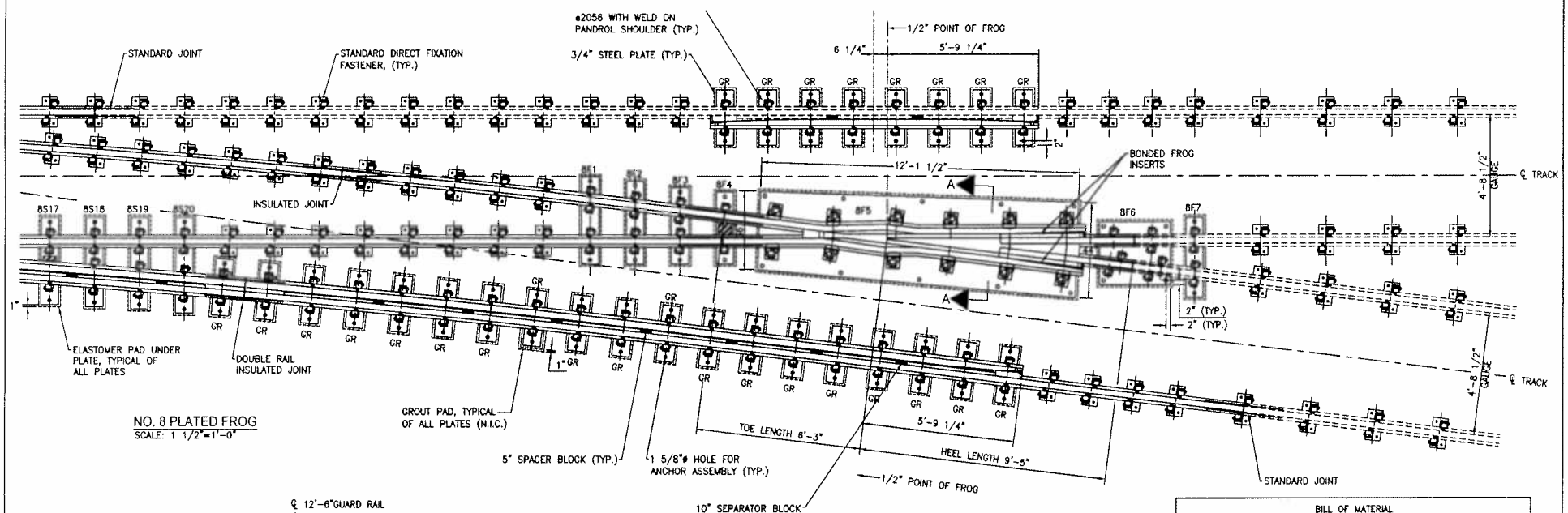
WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY
DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

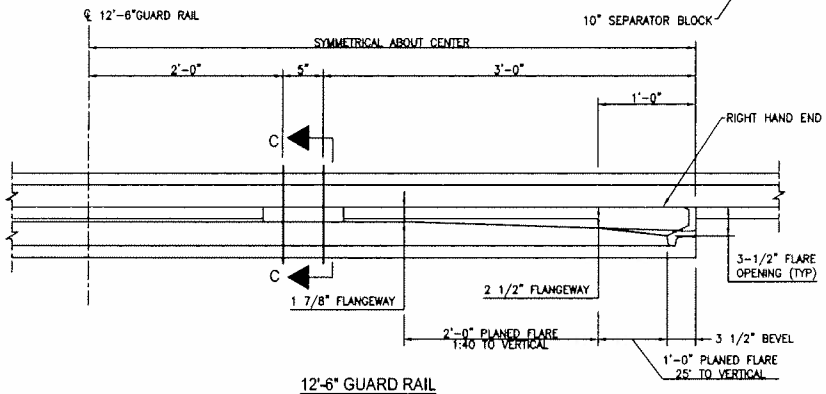
APPROVED _____ DATE
THOMAS ROBINSON
DEPUTY CHIEF ENGINEER

TRACKWORK STANDARD DRAWING NO. 8 GUARDED TURNOUT, PLATED SWITCH, DIRECT FIXATION TRACK

CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	1/2" = 1'-0"	ST-TW-038	## of .



NO. 8 PLATED FROG
SCALE: 1 1/2"=1'-0"



12'-6" GUARD RAIL
SCALE: 1 1/2"=1'-0"

PLATE DETAILS		
PLATE	LENGTH	WIDTH
GR	26"	8"
8S17	40"	8"
8S18	41"	8"
8S19	42"	8"
8S20	44"	8"
8F1	40"	8"
8F2	38"	8"
8F3	35"	8"
8F4	33"	8"
8F5	145-1/2"	44"*
8F6	32-1/2"	29"
8F7	37"	8"

* FROG PLATE WIDTH AT ITS WIDEST POINT.

BILL OF MATERIAL	
QTY.	DESCRIPTION
1	NO. 8 RAILBOUND MANGANESE FROG PER LATEST AREMA STD. PLAN NO. 622 MODIFIED AS SHOWN
A.R.	8S, 8F, GR PLATES
A.R.	ELASTOMER PADS FOR EVERY PLATE
A.R.	ANCHOR ASSEMBLIES
1	CURVED STOCK RAIL, CURVED TURNOUT RAIL
A.R.	GUARD RAILS
A.R.	SPACER BLOCKS
12	BOLTLESS ADJUSTABLE RAIL BRACE FOR LEFT HAND PANDROL CLIPS ø2056

NOTES:
1. FOR SECTION A-A, SEE PLATED FROG DETAIL, DWG. NO. ST-TW-041.
2. FOR SPECIAL PLATE ANCHOR ASSEMBLY, SEE DETAIL, DWG. NO. ST-TW-041.
3. FOR SECTION C-C, SEE DETAIL, DWG. NO. ST-TW-041.
4. FOR PLATE INSULATORS, SEE DETAIL, DWG. NO. ST-TW-089 (M3 SWITCH MACHINE).

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE DISTRICT OF COLUMBIA."

LICENSE No. _____

EXPIRATION DATE _____

- DC REGISTER SECTION 1516

DESIGNED R. REYES 10/05 DATE
DRAWN A. DAVIS 06/06 DATE
CHECKED Ravi Amin 12/14 DATE

REFERENCE DRAWINGS		REVISIONS		
NUMBER	TITLE	DATE	NUM	DESCRIPTION
		07/15/02	01	Updated Bill of Materials
		04/06	02	Rev. for DO-DWG Approval, Apr 2006
		06/06	03	Minor Revision
		08/06	04	Added Section A-A Indo to Plan View

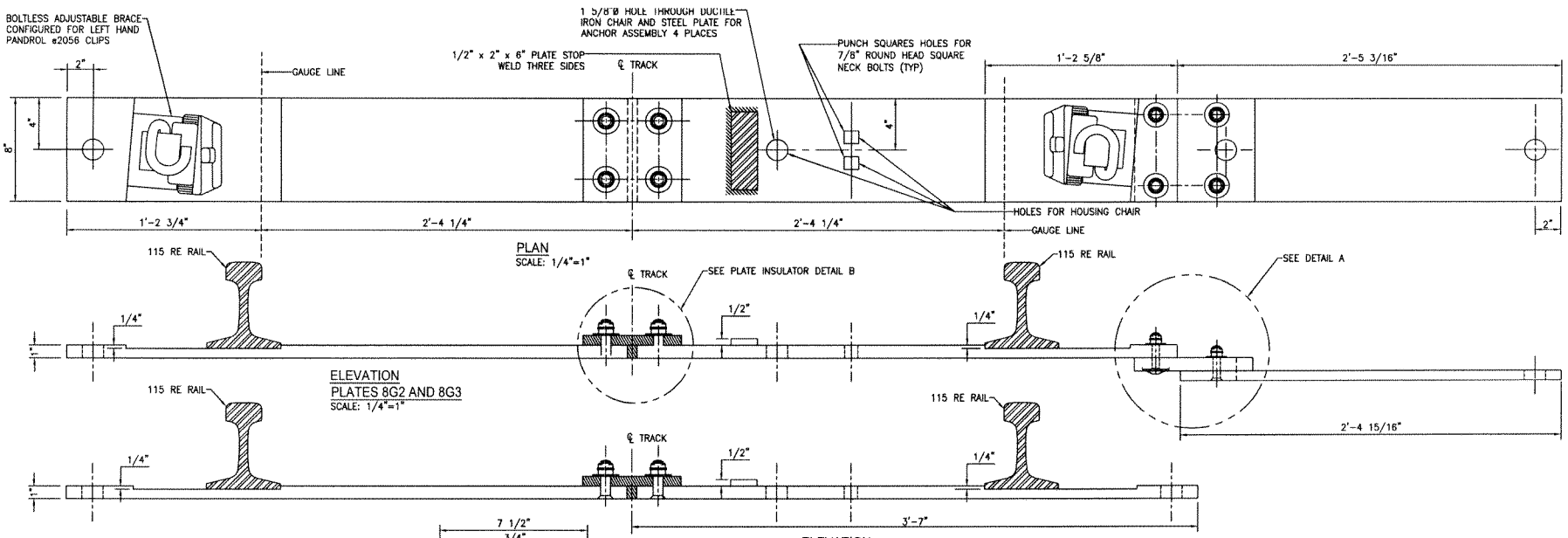
WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY
DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

APPROVED _____ DATE
THOMAS ROBINSON
DEPUTY CHIEF ENGINEER

TRACKWORK STANDARD DRAWING NO. 8 GUARDED TURNOUT, PLATED FROG DIRECT FIXATION TRACK

CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	1/2" = 1'-0"	ST-TW-039	## of .



NOTE:
1. PLATE STOPS TO BE 3/8" SHOP FILLET WELD.
2. END PLATE DETAIL "A" IS BASED ON 55E SWITCH MACHINE

"PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE DISTRICT OF COLUMBIA."

LICENSE No. _____

EXPIRATION DATE: _____

- DC REGISTER SECTION 3413

DESIGNED	R. REYES	10/05 DATE
DRAWN	A. DAVIS	06/08 DATE
CHECKED	RAVI AMIN	12/14 DATE

REFERENCE DRAWINGS

NUMBER	TITLE

REVISIONS

DATE	NUM	DESCRIPTION
04/05	01	Rev. for DD DWG. Approval 2005
09/06	02	Added Note No. 1
07/07	03	Changed Housing Hole Chair
12/14	04	Revised Title Block & Changed DD to read ST

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

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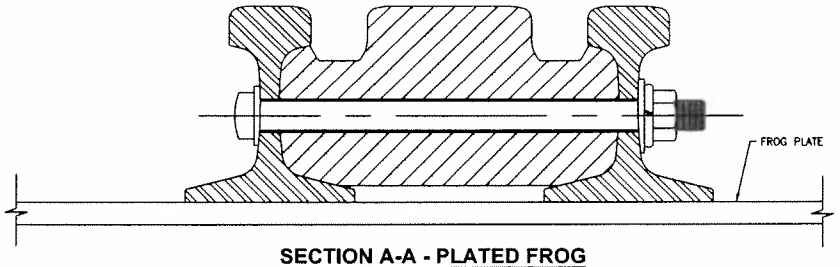
THOMAS ROBINSON
DEPUTY CHIEF ENGINEER

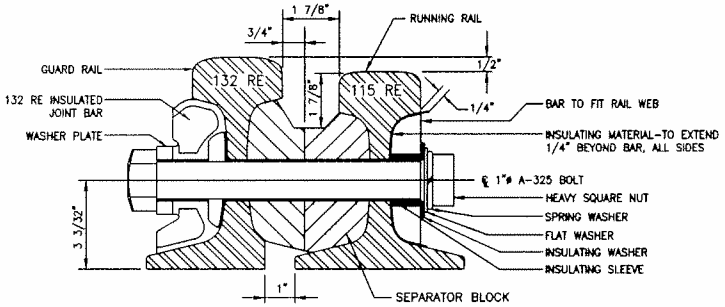
TRACKWORK STANDARD DRAWING NO. 8 GUARDED TURNOUT, DETAILS DIRECT FIXATION TRACK SHEET 1 OF 2

CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	AS SHOWN	ST-TW-040	## of .

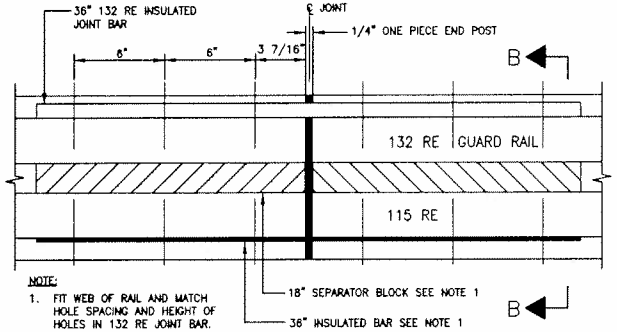


SECTION A-A - PLATED FROG
NOT TO SCALE

NOTES:
1. FOR BILL OF MATERIAL AND GENERAL NOTES ON DETAILS, SEE DRAWING ST-TW-039.
2. THIS DRAWING PROVIDES CLARIFICATION AND ADDITIONAL INFORMATION TO THAT IS SHOWN ON DRAWING ST-TW-039.

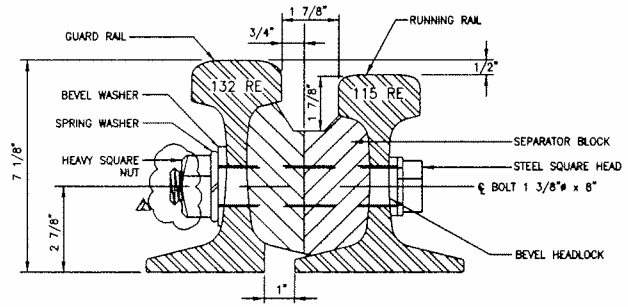


SECTION B-B - DOUBLE RAIL INSULATED JOINT
NOT TO SCALE



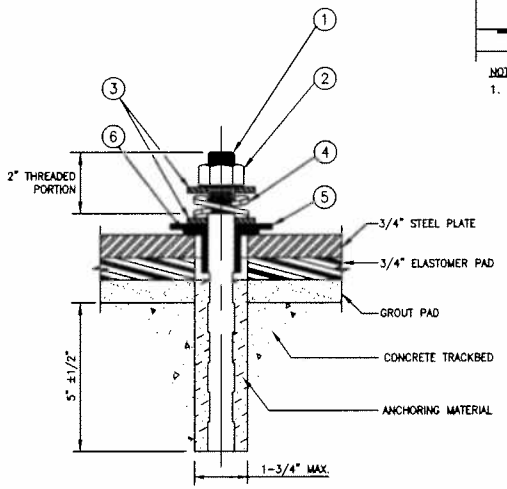
NOTE:
1. FIT WEB OF RAIL AND MATCH HOLE SPACING AND HEIGHT OF HOLES IN 132 RE JOINT BAR.

DETAIL - DOUBLE RAIL INSULATED JOINT
NOT TO SCALE



SECTION C-C - SEPARATOR BLOCK
NOT TO SCALE

NOTES:
THIS SECTION REPLACES SECTION "C" OF DRAWING, DD-TW-039.



SPECIAL PLATE ANCHOR ASSEMBLY
NOT TO SCALE

BILL OF MATERIAL – ANCHOR ASSEMBLY		
ITEM	QTY.	DESCRIPTION – FURNISHED THIS CONTRACT
1	1	THREADED ROD HOT DIPPED GALVANIZED 7/8"X11" ASTM-A123/A123M
2	1	THREADED ROD HOT DIPPED GALVANIZED 7/8"X11" ASTM-A123/A123M
3	2	STEEL WASHER, 15/16" I.D., 2-1/4" O.D., 3/16" THICK, ASTM-A-325
4	1	DOUBLE COIL SPRING WASHER
5	1	INSULATING FIBER WASHER, 1-9/32" I.D., 3-3/8" O.D.
6	1	ONE PIECE – INSULATING FIBER WASHER (29/32" I .D., 2-1/2" O.D.) AND INSULATING FIBER SLEEVE (29/32" I.D., 1-9/32" O.D.)

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LICENSE No. _____

EXPIRATION DATE: _____

- DC REGISTER SECTION 3413

DESIGNED	R. REYES	10/08 DATE
DRAWN	A. DAVIS	06/06 DATE
CHECKED	RAVI AMIN	01/15 DATE

REFERENCE DRAWINGS		REVISIONS		
NUMBER	TITLE	DATE	NUM	DESCRIPTION
		04/06	01	Rev. DD-DWG Approval, Apr. 2006
		08/13	02	Omit Cotter Pin at Separator Block
		01/15	03	Revised Title Block and Changed DD to read ST

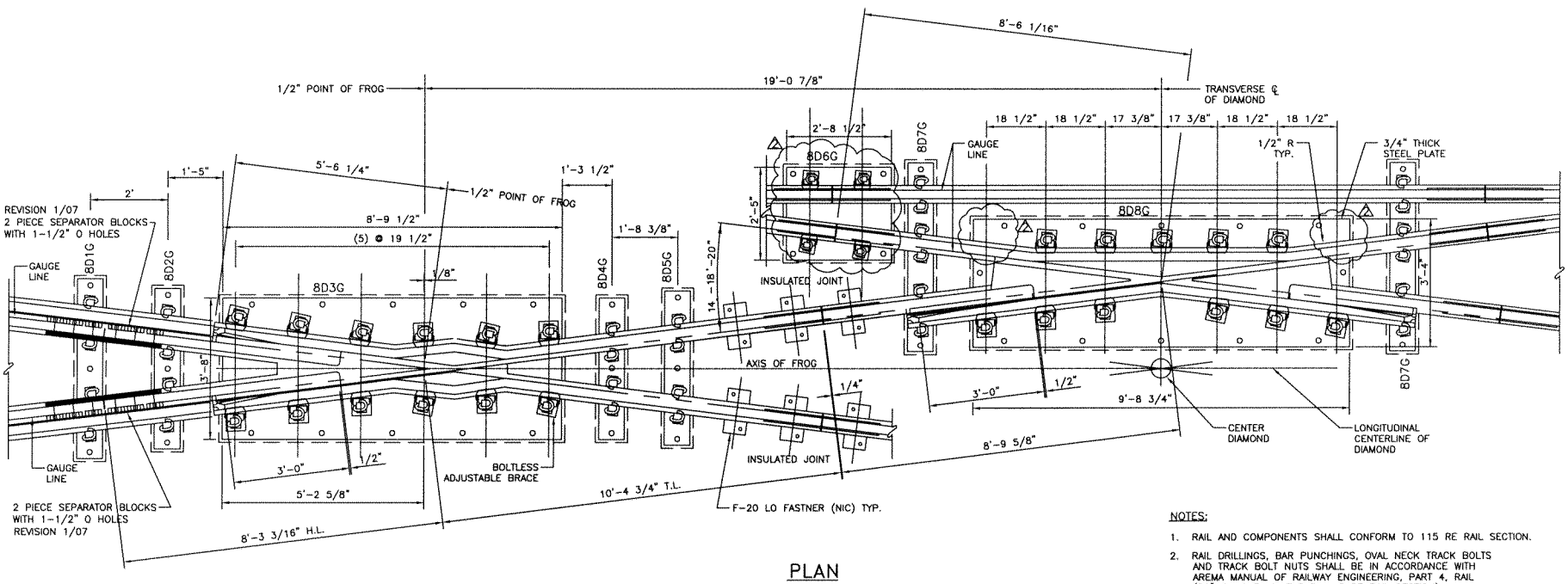
WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY
DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

APPROVED _____ DATE
THOMAS ROBINSON
DEPUTY CHIEF ENGINEER

TRACKWORK STANDARD DRAWING
NO. 8 PLATED TURNOUT, DETAILS,
DIRECT FIXATION TRACK
SHEET 2 OF 2

CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	NOT TO SCALE	ST-TW-041	## of .



PLAN

NO. 8 DOUBLE CROSSOVER CENTER FROG & END FROG – COMPLETE	
BILL OF MATERIAL	
QUANTITY	DESCRIPTION
2 EACH	MANGANESE STEEL INSERT END FROG WITH LEVEL GUARDS FOR 14°-18'-20" CROSSING ANGLE, COMPLETE (PER LATEST AREMA STANDARD PLAN NO. 774 AND 750) AND MODIFIED AS INDICATED
2 EACH	MANGANESE STEEL INSERT CENTER FROG WITH LEVEL GUARDS FOR 14°-18'-20" CROSSING ANGLE, COMPLETE (PER LATEST AREMA STANDARD PLAN NO. 774 AND 750)
2 EACH	SPECIAL PLATES 8D1 THRU 8D5, COMPLETE
2 PER FROG	BONDED FROG INSERTS
50	BOLTLESS ADJUSTABLE BRACE WITH LEFT HAND PANDROL CLIPS e2056

PLATE DETAILS		
PLATE	LENGTH	WIDTH
8D1G	4'-8"	8"
8D2G	4'-2"	8"
8D4G	3'-8"	8"
8D5G	4'-0"	8"
8D7G	4'-11"	8"

NOTES:

1. RAIL AND COMPONENTS SHALL CONFORM TO 115 RE RAIL SECTION.
2. RAIL DRILLINGS, BAR PUNCHINGS, OVAL NECK TRACK BOLTS AND TRACK BOLT NUTS SHALL BE IN ACCORDANCE WITH AREMA MANUAL OF RAILWAY ENGINEERING, PART 4, RAIL (36"-6 HOLE JOINT BAR, 115 RE RAIL SECTION).
3. CROSSOVER END AND CENTER FROGS SHALL BE FULLY HEAT TREATED RAILBOUND MAGANESE STEEL EXPLOSION HARDENED PER AREMA TRACKWORK SPECS. "SPECIAL TRACKWORK MATERIAL M2.7."
4. ALL SPECIAL FROG PLATES SHALL BE 3/4" THICK WITH NO RAIL CANT.
5. ELASTOMER PADS SHALL BE 3/4" THICK AND EXTEND BEYOND THE FROG PLATES 1" ON ALL SIDES.
6. THE BONDED FROG AND BONDED CENTER FROG INSERTS SHALL BE MILLED CARBON STEEL CASTINGS AS SPECIFIED IN THE CONTRACT SPECIFICATIONS, AND AS SHOWN ON THIS DRAWING.
7. USE 2-PIECE SEPARATOR BLOCKS WITH 1-1/2" ⌀ HOLE

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DRAWN	A. DAVIS	12/06 DATE
CHECKED	RAVI AMIN	01/15 DATE

REFERENCE DRAWINGS	
NUMBER	TITLE

REVISIONS		
DATE	NUM	DESCRIPTION
07/06	01	Added Information to Plan View
06/13	02	Revised Adjustable Brace Locations
01/15	03	Revised Title Block and Changed DD to read ST

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

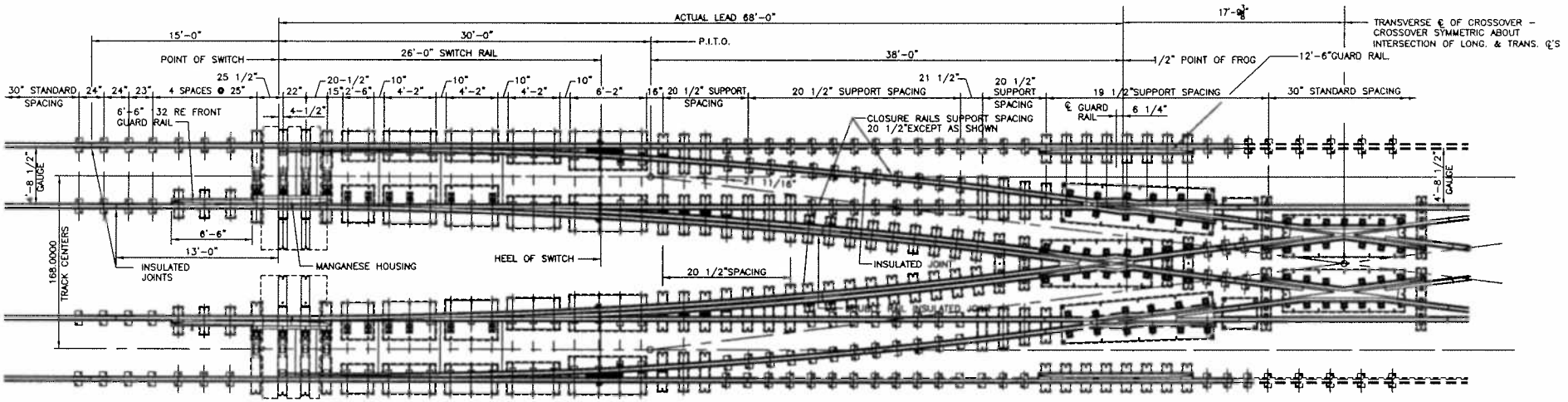
DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

APPROVED _____ DATE
THOMAS ROBINSON
DEPUTY CHIEF ENGINEER

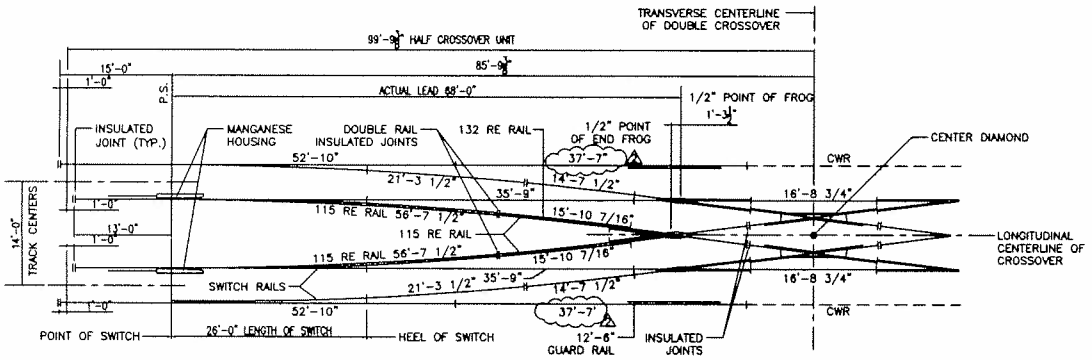
TRACKWORK STANDARD DRAWING
NO. 8 GUARDED DOUBLE CROSSOVER, 14'-0" TRACK CENTERS, DIAMOND & END FROG DETAILS, DIRECT FIXATION TRACK

CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	3/4" = 1'-0"	ST-TW-067	## of .



NO. 8 GUARDED DOUBLE CROSSOVER PLAN

SCALE: 1/4"=1'-0"



RAIL LAYOUT DIAGRAM

SCALE: 1/8"=1'-0"

BILL OF MATERIAL	
QTY.	DESCRIPTION – FURNISHED THIS CONTRACT
4	NO. 8 GUARDED PLATED SWITCH, DIRECT FIX, COMPL.
4	NO. 8 PLATED FROG, DIRECT FIXATION, COMPLETE
4	12'-6" GUARD RAIL, FULLY HEAT TREATED, COMPLETE
2 EACH	RAILBOUND MAGANESE STEEL, END AND CENTER CROSSING FROGS, DIRECT FIXATION, COMPLETE
4	MANGANESE HOUSING WITH DUCTILE IRON CHAIRS
24	DUCTILE IRON RAIL STOPS
A.R.	132 RE GUARD RAILS
A.R.	RAIL JOINTS, INTERNAL TO THE TURNOUTS
A.R.	LEFT HAND PANDROL CLIPS e2056
A.R.	GR PLATES
A.R.	INSULATED JOINTS
A.R.	ELASTOMER PADS AT EVERY PLATE

BILL OF MATERIAL	
QTY.	DESCRIPTION – FURNISHED BY OTHERS
A.R.	F20LO RAIL DIRECT FIXATION FASTENERS

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE DISTRICT OF COLUMBIA."

LICENSE No. _____

EXPIRATION DATE: _____

- DC REGISTER SECTION 3413

DESIGNED	R. REYES	04/06 DATE
DRAWN	A. AMIN	07/07 DATE
CHECKED	RAVI AMIN	01/15 DATE

REFERENCE DRAWINGS		
NUMBER	TITLE	

REVISIONS		
DATE	NUM	DESCRIPTION
07/05	01	Rail Layout Diagram & Notes
06/13	02	Revised Dim. of Load Rods at Standard Joints&
01/15	03	Revised Title Block and Changed DD to read ST

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

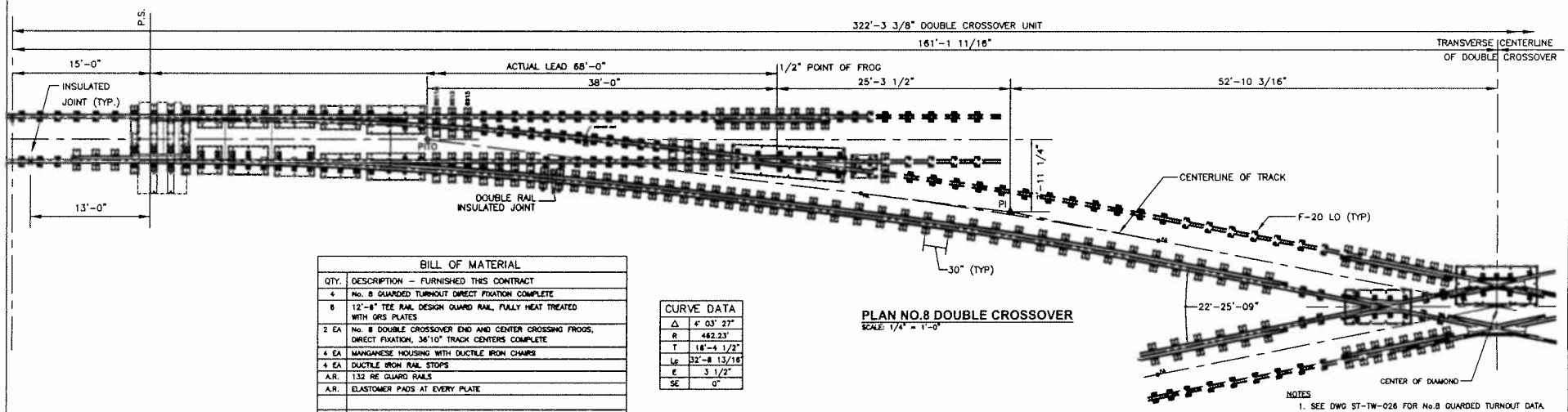
DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

APPROVED _____ DATE
THOMAS ROBINSON
DEPUTY CHIEF ENGINEER

TRACKWORK STANDARD DRAWING
NO. 8 GUARDED DOUBLE CROSSOVER, TYPE 1.
HALF UNIT, 14'-0" TRACK CENTERS, PLAN,
DIRECT FIXATION TRACK

CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	AS SHOWN	ST-TW-074	## of .



PLAN NO.8 DOUBLE CROSSOVER

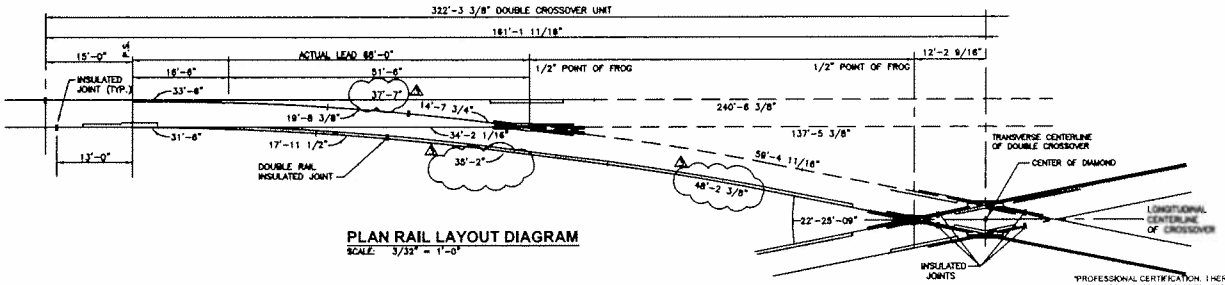
SCALE: 1/4" = 1'-0"

BILL OF MATERIAL	
QTY.	DESCRIPTION – FURNISHED THIS CONTRACT
4	No. 8 GUARDED TURNOUT DIRECT FIXATION COMPLETE
8	12'-8" TEE RAIL DESIGN GUARD RAIL, FULLY HEAT TREATED WITH ORS PLATES
2 EA	No. 8 DOUBLE CROSSOVER END AND CENTER CROSSING FROGS, DIRECT FIXATION, 36"10" TRACK CENTERS COMPLETE
4 EA	MANGANESE HOUSING WITH DUCTILE IRON CHAIRS
4 EA	DUCTILE IRON RAIL STOPS
A.R.	132 RE GUARD RAILS
A.R.	ELASTOMER PADS AT EVERY PLATE
	BILL OF MATERIAL
QTY.	DESCRIPTION – FURNISHED BY OTHERS
A.R.	DIRECT FIXATION FASTENERS
A.R.	GROUT PADS

CURVE DATA	
Δ	6° 03' 27"
R	462.23'
T	16'-4 1/2"
Lc	32'-8 13/16"
℄	3 1/2"
SE	0"

NOTES

1. SEE DWG ST-TW-026 FOR No.8 GUARDED TURNOUT DATA.
2. CROSSOVER IS SYMMETRICALLY ROTATED ABOUT THE CENTER OF DIAMOND.



PLAN RAIL LAYOUT DIAGRAM

SCALE: 3/32" = 1'-0"

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE DISTRICT OF COLUMBIA."

LICENSE No. _____

EXPIRATION DATE _____

- DC REGISTER SECTION 3413

DESIGNED	R. REYES	04/06 DATE
DRAWN	A. DAVIS	07/07 DATE
CHECKED	RAVI AMIN	01/15 DATE

REFERENCE DRAWINGS

NUMBER	TITLE

REVISIONS

DATE	NUM	DESCRIPTION
07/06	01	Added Information to Plan View
07/07	02	Revised Dimensions
06/13	03	Rev. Detail, for Load Rails at Standard Joints
01/15	04	Revised Title Block and Changed DO to read ST

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

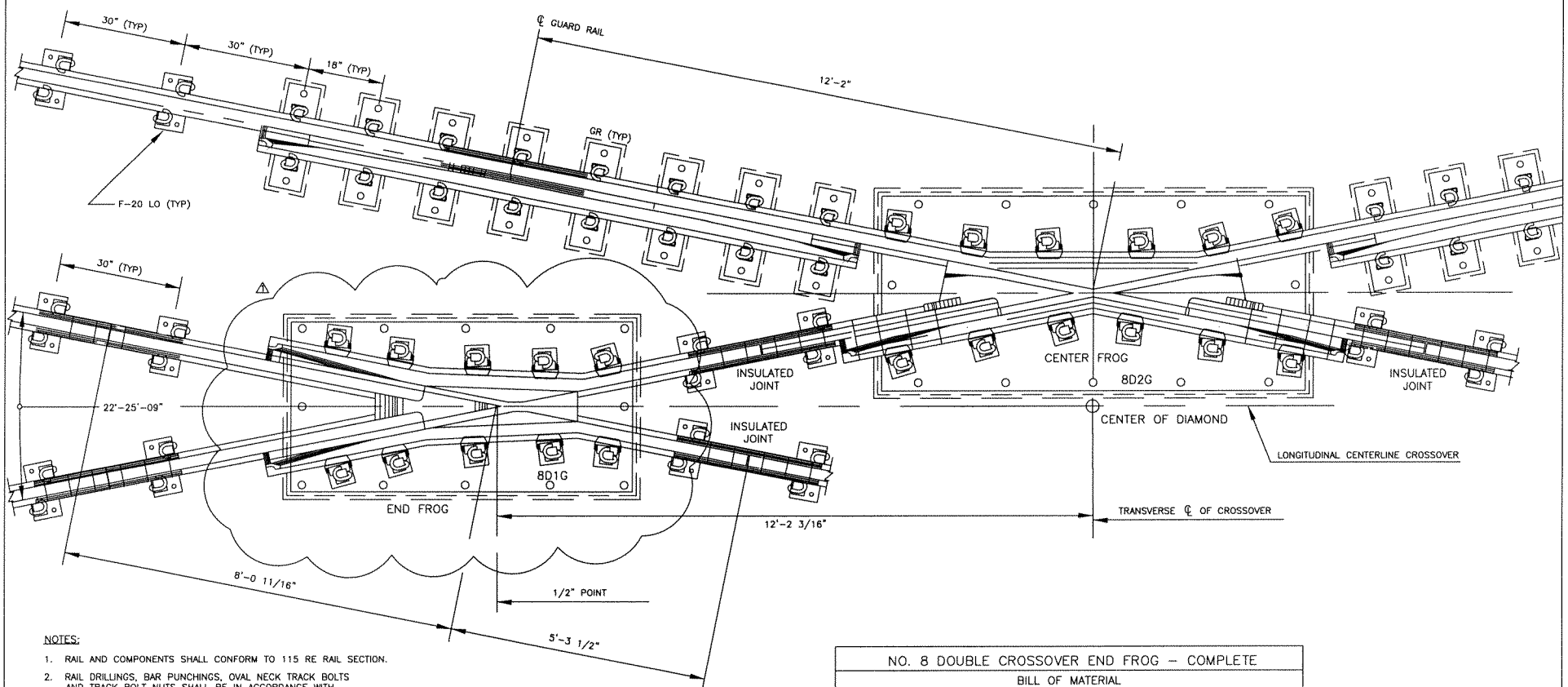
DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

APPROVED _____ DATE
THOMAS ROBINSON
DEPUTY CHIEF ENGINEER

TRACKWORK STANDARD DRAWING NO. 8 GUARDED DOUBLE CROSSOVER, TYPE 1, HALF UNIT, 36'-10" TRACK CENTERS, PLAN, DIRECT FIXATION TRACK

CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	AS SHOWN	ST-TW-068	## of .



PLAN

NOTES:

1. RAIL AND COMPONENTS SHALL CONFORM TO 115 RE RAIL SECTION.
2. RAIL DRILLINGS, BAR PUNCHINGS, OVAL NECK TRACK BOLTS AND TRACK BOLT NUTS SHALL BE IN ACCORDANCE WITH AREMA MANUAL OF RAILWAY ENGINEERING, PART 4 RAIL LATEST EDITION (36"–6 HOLE JOINT BAR, 115 RE RAIL SECTION).
3. CROSSOVER END AND CENTER FROGS SHALL BE RAILBOUND RAILBOUND MAGANESE STEEL EXPLOSION HARDENED PER TRACKWORK SPECIFICATIONS M2.7.
4. ALL SPECIAL FROG PLATES SHALL BE 3/4" THICK WITH NO RAIL CANT.
5. ELASTOMER PADS SHALL BE 3/4" THICK AND EXTEND BEYOND THE FROG PLATES 1" ON ALL SIDES.
6. THE BONDED FROG AND BONDED CENTER FROG INSERTS SHALL BE MILLED CARBON STEEL CASTINGS AS SPECIFIED IN THE CONTRACT SPECIFICATIONS, AND AS SHOWN ON THIS DRAWING.

PLATE DETAILS		
PLATE	LENGTH	WIDTH
8D1G	7'–0"	3'–1/2"
8D2G	8'–8"	3'–1/4"

NO. 8 DOUBLE CROSSOVER END FROG – COMPLETE	
BILL OF MATERIAL	
QUANTITY	DESCRIPTION – FURNISHED THIS CONTRACT
2 EACH	MANGANESE STEEL INSERT END FROG WITH LEVEL GUARDS FOR 22'–25'–09" CROSSING ANGLE, COMPLETE (PER LATEST AREMA STANDARD PLAN NO. 774 AND 750) AND MODIFIED AS INDICATED
2 EACH	MANGANESE STEEL INSERT CENTER FROG WITH LEVEL GUARDS FOR 22'–25'–09" CROSSING ANGLE, COMPLETE (PER LATEST AREMA STANDARD PLAN NO. 774 AND 750)
2 EACH	SPECIAL PLATES 8D1 THRU 8D5, COMPLETE
2 PER FROG	BONDED FROG INSERTS
44	BOLTLESS ADJUSTABLE BRACE WITH LEFT HAND PANDROL CLIPS e2056
AR.	ELASTOMER PAD AT EVERY PLATE

"PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE DISTRICT OF COLUMBIA."

LICENSE No. _____

EXPIRATION DATE: _____

- DC REGISTER SECTION 3413

DESIGNED	R. REYES	04/06 DATE
DRAWN	A. DAVIS	07/07 DATE
CHECKED	RAVI AMIN	01/15 DATE

REFERENCE DRAWINGS	
NUMBER	TITLE

REVISIONS		
DATE	NUM	DESCRIPTION
07/07	01	Added Information to Plan View
06/13	02	Added 2 Adjustable, Braces at End of Frog
01/15	03	Revised Title Block and Changed OD to read ST

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

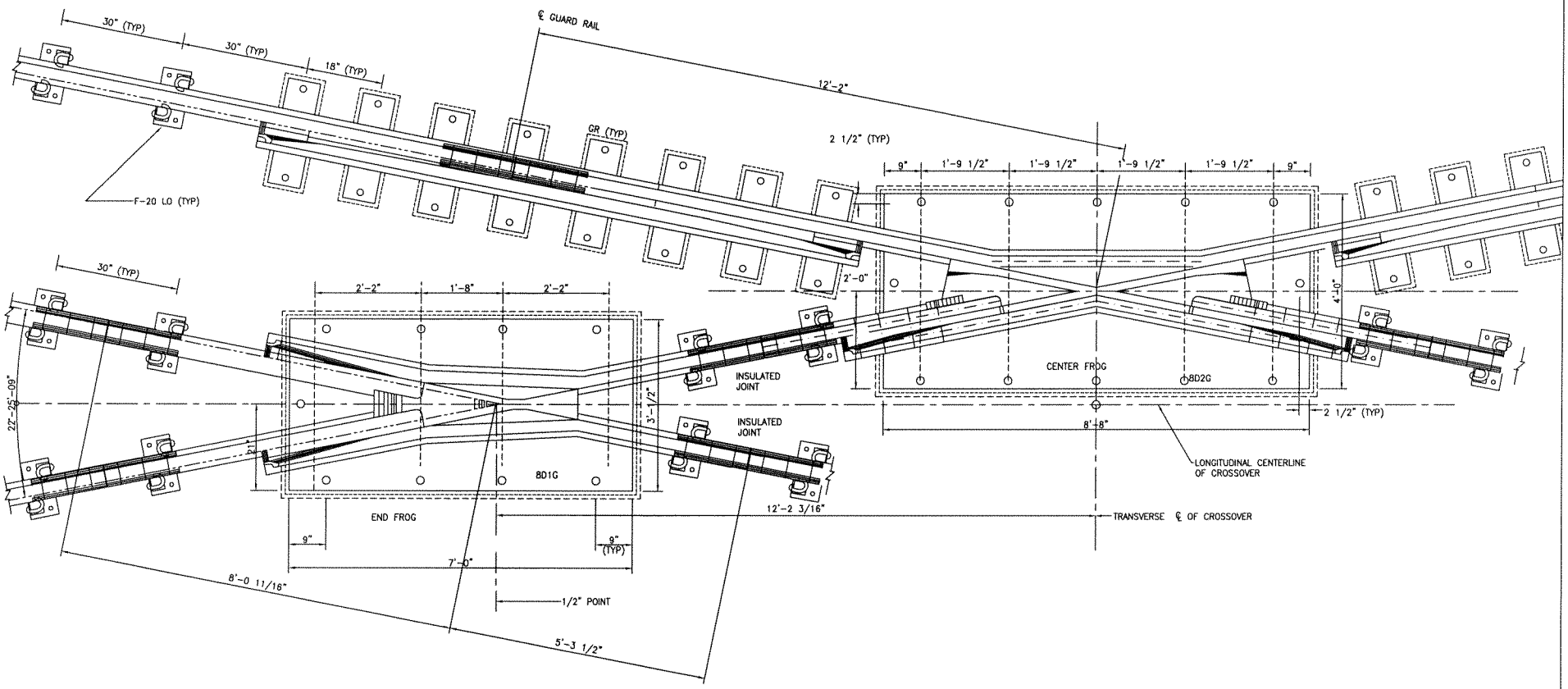
DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

APPROVED _____ DATE
THOMAS ROBINSON
DEPUTY CHIEF ENGINEER

TRACKWORK STANDARD DRAWING NO. 8 GUARDED DOUBLE CROSSOVER, DIAMOND, 36'-10" TRACK CENTERS, DIRECT FIXATION TRACK

CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	1" = 1'-0"	ST-TW-069	## of .



"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE DISTRICT OF COLUMBIA."

LICENSE No. _____

EXPIRATION DATE: _____

- DC REGISTER SECTION 3413

DESIGNED	R. REYES	04/06 DATE
DRAWN	A. DAVIS	07/07 DATE
CHECKED	RAVI AMIN	01/15 DATE

REFERENCE DRAWINGS

NUMBER	TITLE

REVISIONS

DATE	NUM	DESCRIPTION
07/07	01	Revised Dimensions to Center Frog
01/15	02	Revised Dimensions to Center Frog

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

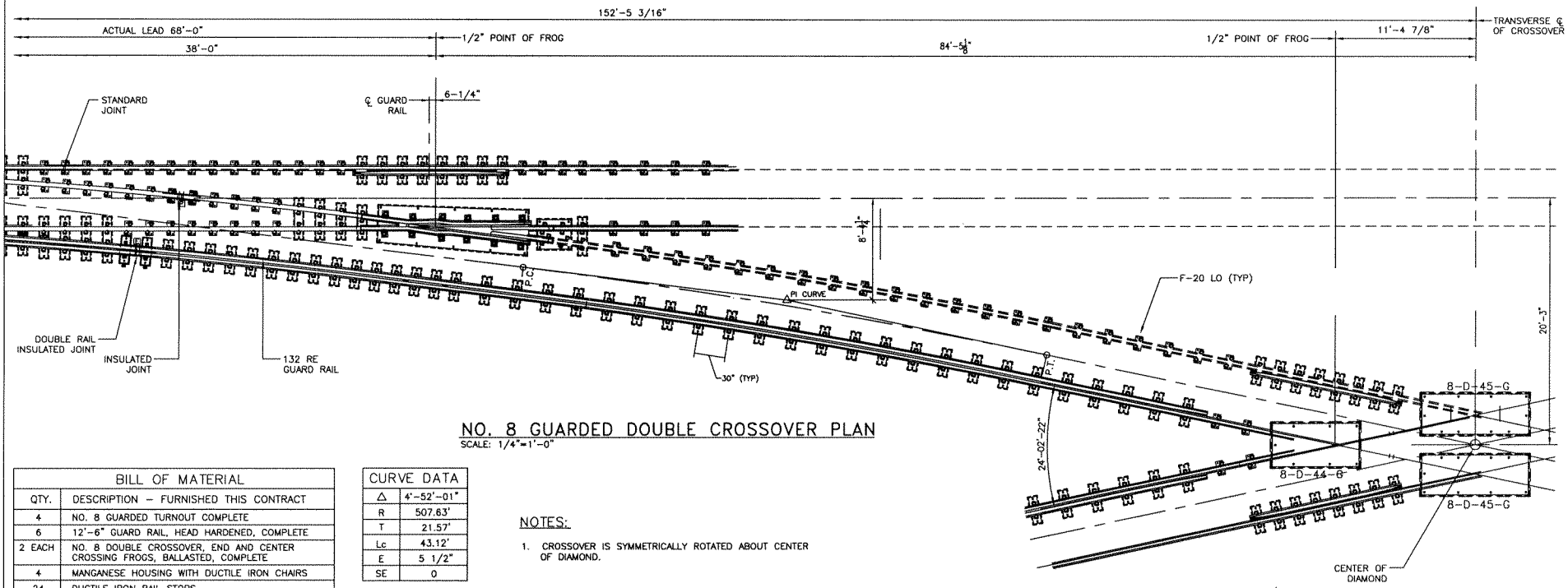
DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

APPROVED _____ DATE
THOMAS ROBINSON
DEPUTY CHIEF ENGINEER

TRACKWORK STANDARD DRAWING
NO. 8 GUARDED DOUBLE CROSSOVER DIAMOND, PLATE DETAILS, 36'-10" TRACK CENTERS, DIRECT FIXATION TRACK

CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	1" = 1'-0"	ST-TW-070	## of .



NO. 8 GUARDED DOUBLE CROSSOVER PLAN

SCALE: 1/4"=1'-0"

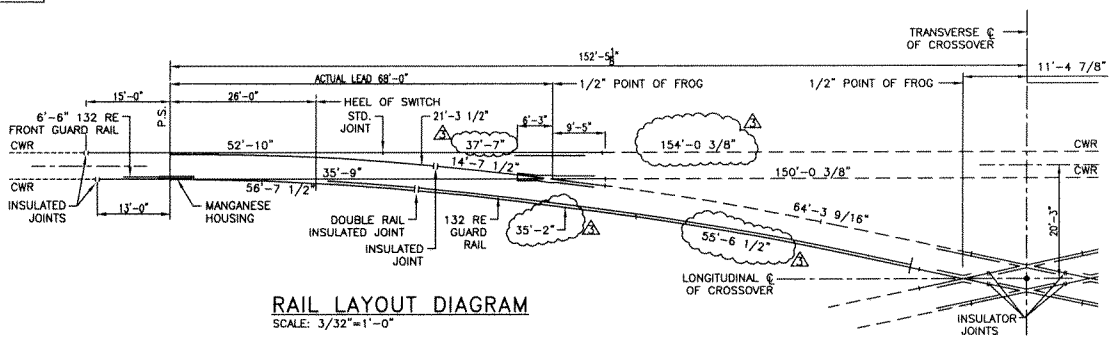
BILL OF MATERIAL	
QTY.	DESCRIPTION – FURNISHED THIS CONTRACT
4	NO. 8 GUARDED TURNOUT COMPLETE
6	12'-6" GUARD RAIL, HEAD HARDENED, COMPLETE
2 EACH	NO. 8 DOUBLE CROSSOVER, END AND CENTER CROSSING FROGS, BALLASTED, COMPLETE
4	MANGANESE HOUSING WITH DUCTILE IRON CHAIRS
24	DUCTILE IRON RAIL STOPS
28	DIAMOND GUARD RAIL PLATES, GR
2 EACH	DIAMOND TIE PLATES 8-D-44-G AND 8-D-45-G
A.R.	132 RE GUARD RAILS
A.R.	RAIL JOINTS, INTERNAL TO THE TURNOUTS
A.R.	LEFT HAND PANDROL CLIPS e2056
A.R.	ELASTOMER PAD AT EVERY PLATE

CURVE DATA	
△	4°-52'-01"
R	507.63'
T	21.57'
Lc	43.12'
E	5 1/2"
SE	0

NOTES:

1. CROSSOVER IS SYMMETRICALLY ROTATED ABOUT CENTER OF DIAMOND.

BILL OF MATERIAL	
QTY.	DESCRIPTION – FURNISHED BY OTHERS
1320	DIRECT FIXATION FASTENERS
A.R.	GROUT PADS



RAIL LAYOUT DIAGRAM

SCALE: 3/32"=1'-0"

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE DISTRICT OF COLUMBIA."

LICENSE No. _____

EXPIRATION DATE: _____

- DC REGISTER SECTION 3413

DESIGNED R. REYES 04/06 DATE
DRAWN A. DAVIS 07/07 DATE
CHECKED RAVI AMIN 01/15 DATE

REFERENCE DRAWINGS	
NUMBER	TITLE

REVISIONS		
DATE	NUM	DESCRIPTION
07/06	01	Edit Notes
07/07	02	Revised Dimension
06/13	03	Revised Dim. of Lead Rails at Standard Joint
01/15	04	Revised Title Block and Changed DD to read ST

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

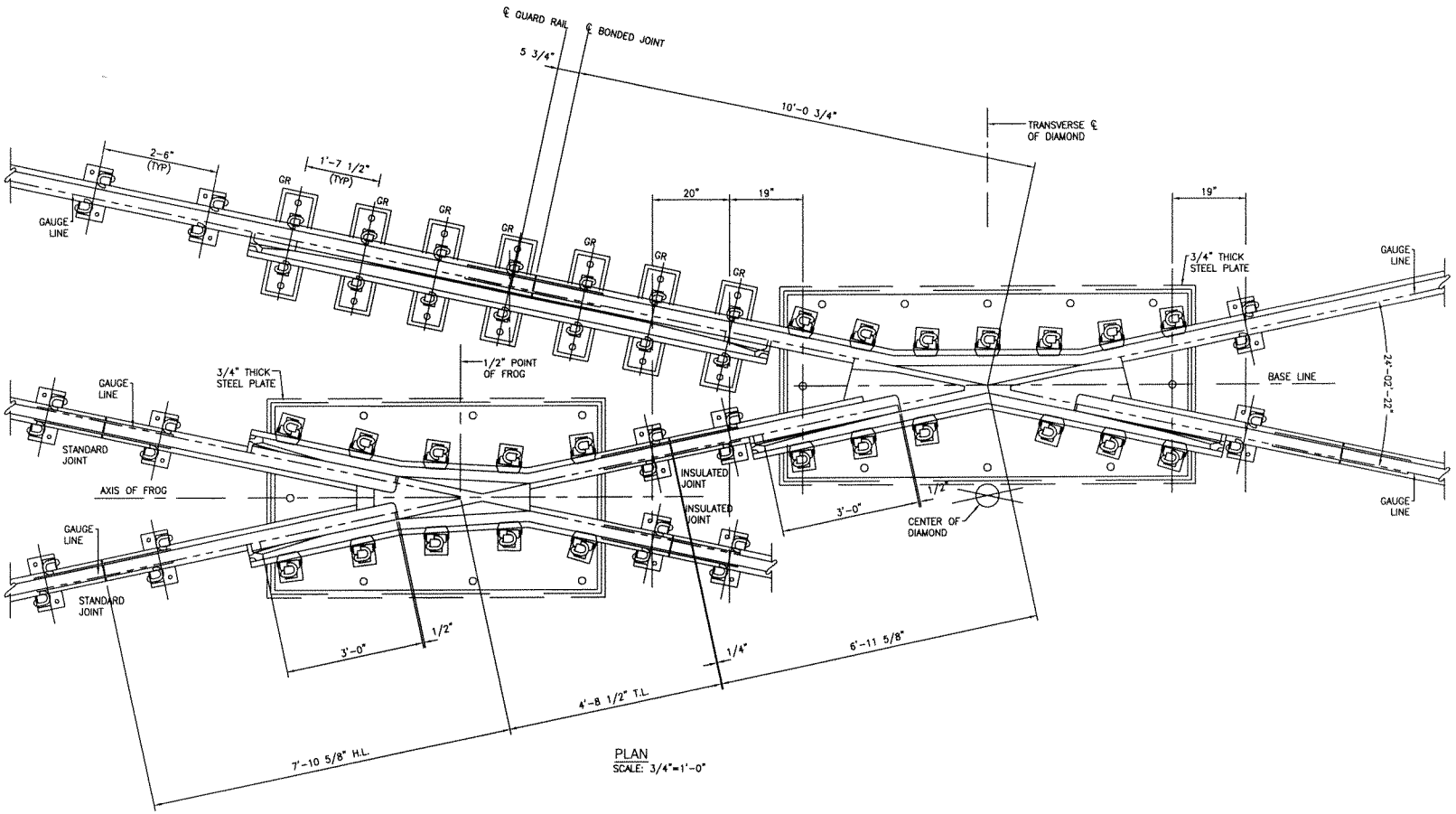
DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

APPROVED _____ DATE
THOMAS ROBINSON
DEPUTY CHIEF ENGINEER

TRACKWORK STANDARD DRAWING NO. 8 GUARDED DOUBLE CROSSOVER, TYPE 1, HALF UNIT, 40'-6" TRACK CENTERS, PLAN, DIRECT FIXATION TRACK

CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	AS SHOWN	ST-TW-071	## of .



PLAN
SCALE: 3/4"=1'-0"

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE DISTRICT OF COLUMBIA."

LICENSE No. _____

EXPIRATION DATE: _____

- DC REGISTER SECTION 3413

DESIGNED R. REYES 10/05 DATE
DRAWN A. DAVIS 07/07 DATE
CHECKED RAVI AMIN 01/15 DATE

REFERENCE DRAWINGS

NUMBER	TITLE

REVISIONS

DATE	NUM	DESCRIPTION
07/07	01	Modified Drawing Revision
01/15	02	Revised Title Block and Changed DD to read ST

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

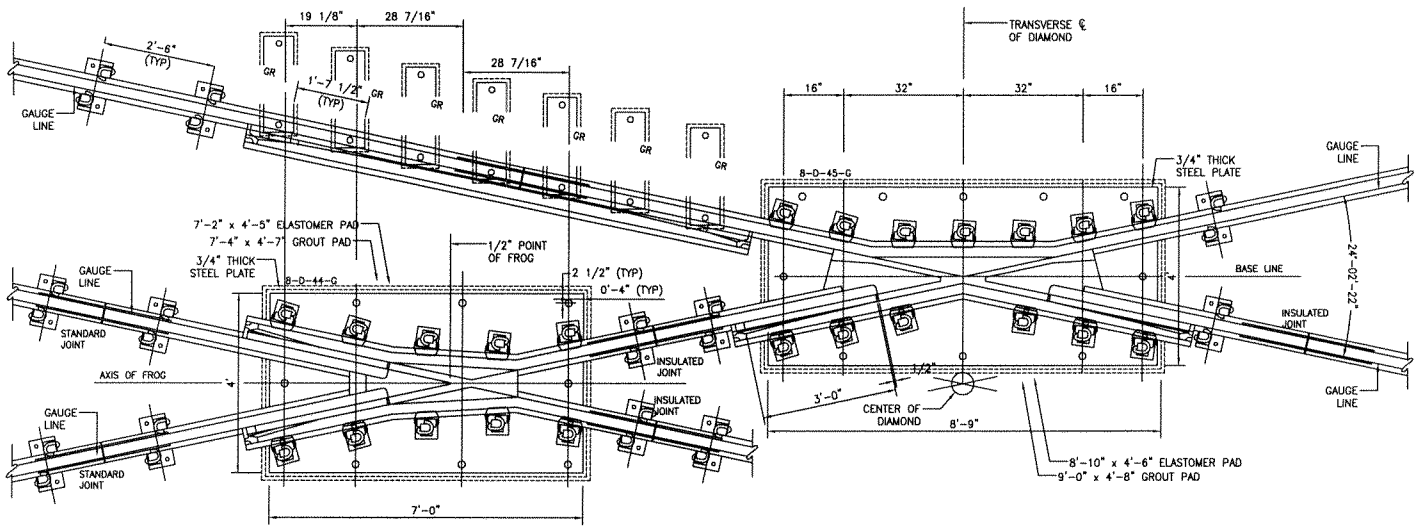
DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

APPROVED _____ DATE
THOMAS ROBINSON
DEPUTY CHIEF ENGINEER

TRACKWORK STANDARD DRAWING NO. 8 GUARDED DOUBLE CROSSOVER, DIAMOND PLATE, 40'-6" TRACK CENTERS, PLAN DIRECT FIXATION TRACK

CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	3/4" = 1'-0"	ST-TW-072	## of ,



PLAN
SCALE: 3/4"=1'-0"

NO. 8 DOUBLE CROSSOVER END FROG, CENTER FROG – COMPLETE	
BILL OF MATERIAL	
QUANTITY	DESCRIPTION – FURNISHED THIS CONTRACT
2 EACH	MANGANESE STEEL INSERT END FROG WITH LEVEL GUARDS FOR 24'-02'-22" CROSSING ANGLE, COMPLETE (PER LATEST AREMA STANDARD PLAN NO. 774 AND 750) AND MODIFIED AS INDICATED
2 EACH	MANGANESE STEEL INSERT CENTER FROG WITH LEVEL GUARDS FOR 24'-02'-22" CROSSING ANGLE, COMPLETE (PER LATEST AREMA STANDARD PLAN NO. 774 AND 750) AND MODIFIED AS INDICATED
2 PER FROG	BONDED FROG INSERTS
A.R.	GR PLATES
48	BOLTLESS ADJUSTABLE BRACE WITH LEFT HAND PANDROL CLIPS e2056

NOTES:

1. RAIL AND COMPONENTS SHALL CONFORM TO 115 RE RAIL SECTION.
2. RAIL DRILLINGS, BAR PUNCHINGS, OVAL NECK TRACK BOLTS AND TRACK BOLT NUTS SHALL BE IN ACCORDANCE WITH AREMA MANUAL OF RAILWAY ENGINEERING, PART 4, RAIL LATEST EDITION (36"-6 HOLE JOINT BAR, 115 RE RAIL SECTION).
3. CROSSOVER END AND CENTER FROGS SHALL BE RAILBOUND MAGANESE STEEL EXPLOSION HARDENED PER TRACKWORK SPECIFICATIONS M2.7.
4. ALL SPECIAL FROG PLATES SHALL BE 3/4" THICK WITH NO RAIL CANT.
5. ELASTOMER PADS SHALL BE 3/4" THICK AND EXTEND BEYOND THE FROG PLATES 1" ON ALL SIDES.
6. THE BONDED FROG AND BONDED CENTER FROG INSERTS SHALL BE MILLED CARBON STEEL CASTINGS AS SPECIFIED IN THE CONTRACT SPECIFICATIONS AND AS SHOWN ON THIS DRAWING.

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE DISTRICT OF COLUMBIA."

LICENSE No. _____

EXPIRATION DATE: _____

• DC REGISTER SECTION 3413

DESIGNED R. REYES 04/06 DATE
DRAWN C. RIGGINS 04/06 DATE
CHECKED RAVI AMIN 01/15 DATE

REFERENCE DRAWINGS

NUMBER	TITLE

REVISIONS

DATE	NUM	DESCRIPTION
01/15	01	Revised Title Block and Changed DD to read ST

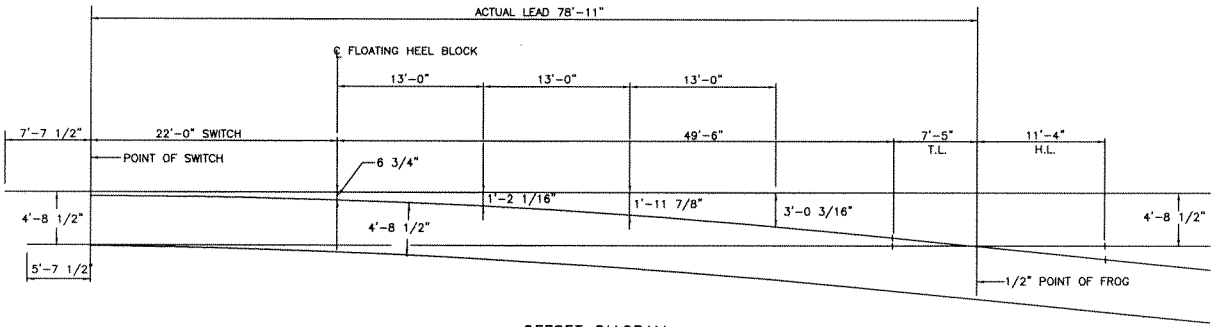
WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY
DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

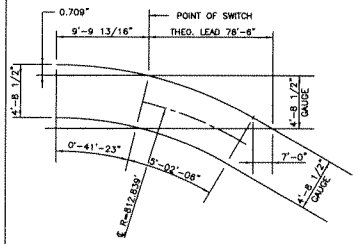
APPROVED _____ DATE
THOMAS ROBINSON
DEPUTY CHIEF ENGINEER

TRACKWORK STANDARD DRAWING NO. 8 GUARDED DOUBLE CROSSOVER DIAMOND PLATE, 40'-6" TRACK CENTERS, DETAILS DIRECT FIXATION TRACK

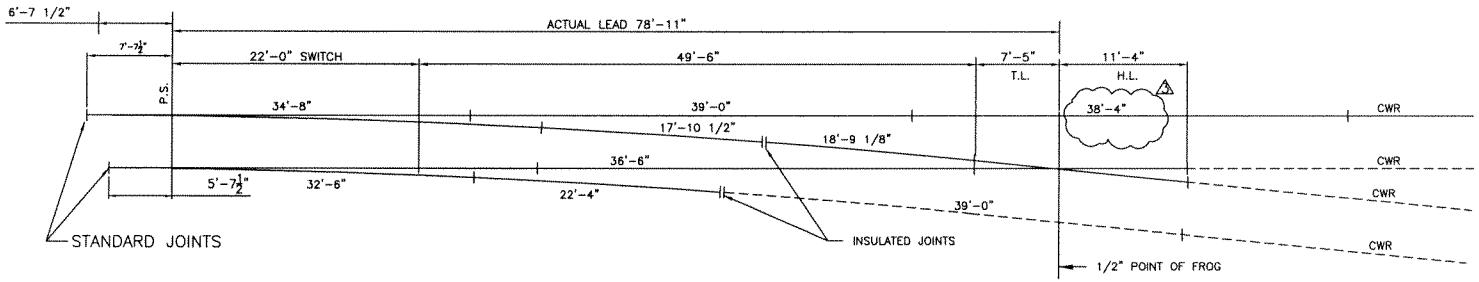
CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	3/4" = 1'-0"	ST-TW-073	## of ,



OFFSET DIAGRAM
NOT TO SCALE



TURNOUT GEOMETRY
NOT TO SCALE



RAIL LAYOUT DIAGRAM
NOT TO SCALE

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE DISTRICT OF COLUMBIA."

LICENSE No. _____

EXPIRATION DATE: _____

- DC REGISTER SECTION 3413

DESIGNED	R. REYES	10/05 DATE
DRAWN	A. DAVIS	06/06 DATE
CHECKED	RAVI AMIN	01/15 DATE

REFERENCE DRAWINGS

NUMBER	TITLE

REVISIONS

DATE	NUM	DESCRIPTION
04/05	01	Rev. for DD-DWG Approval, Apr. 2005
06/06	02	Minor Revision
06/13	03	Rev. for Lead Rail at Standard Joint Location
01/15	04	Revised Title Block and Changed DD to read ST

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

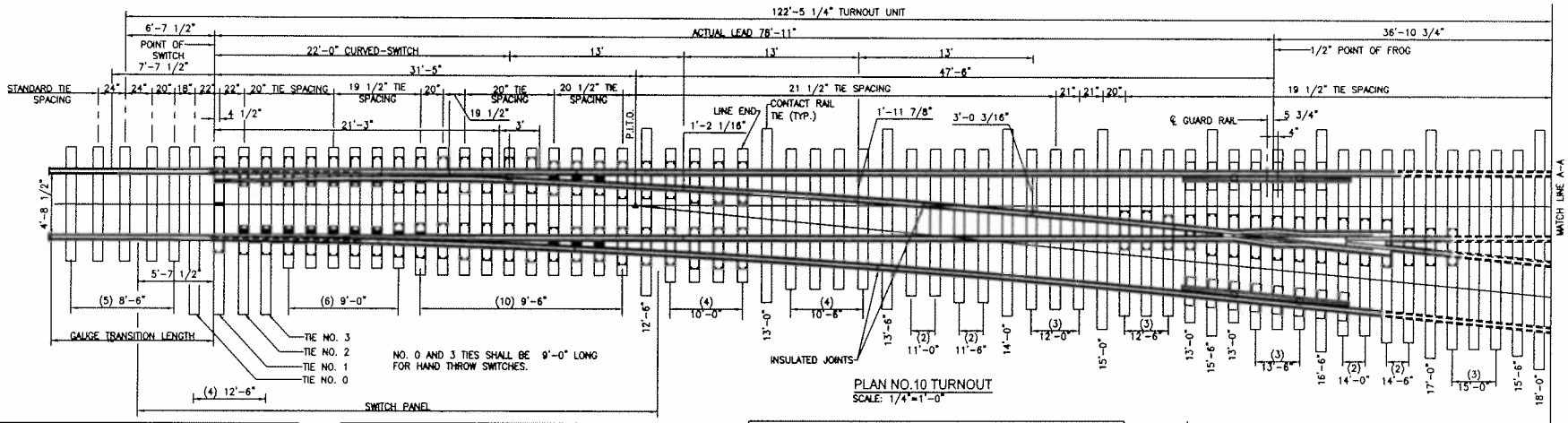
DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

APPROVED _____ DATE
THOMAS ROBINSON
DEPUTY CHIEF ENGINEER

TRACKWORK STANDARD DRAWING NO. 10 PLATED TURNOUT, OFFSET, GEOMETRY & RAIL LAYOUT DIAGRAMS, BALLASTED TRACK

CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	NOT TO SCALE	ST-TW-042	## of .



PLAN NO.10 TURNOUT
SCALE: 1/4"=1'-0"

TURNOUT DATA			
FROG	NUMBER		10
	ANGLE		5°-43'-29"
	TOE LENGTH		7'-5"
	HEEL LENGTH		11'-4"
	TOTAL LENGTH		18'-9"
	TOE SPREAD		8 3/8"
	HEEL SPREAD		14 1/8"
SWITCH	LENGTH OF SWITCH		22'-0"
	HEEL SPREAD		6 3/4"
	HEEL ANGLE		2°-14'-12"
	CURVED POINT	THICKNESS AT POINT	0"
		ANGLE AT POINT	0°-41'-23"
		RADIUS	815.19'
		VERTEX DISTANCE	0"
	STRAIGHT POINT	THICKNESS AT POINT	0"
		ANGLE AT POINT	0°-41'-23"
		RADIUS	810.48'
		VERTEX DISTANCE	0"
ACTUAL LEAD			78'-11"
STRAIGHT CLOSURE RAIL LENGTH			36'-6"
CURVED CLOSURE RAIL LENGTH			36'-7 5/8"
TURNOUT CURVE	CENTER LINE RADIUS		812.84'
	DEGREE OF CURVE		7°-04'-00"
	CENTRAL ANGLE		3°-29'-17"
TANGENT ADJACENT TOE OF FROG			0

BILL OF MATERIAL	
QTY.	DESCRIPTION
1	NO. 10 PLATED SWITCH-BALLASTED TRACK, COMPLETE
1	NO. 10 PLATED FROG-BALLASTED TRACK, COMPLETE
2	12'-6" TEE RAIL DESIGN GUARD RAIL COMPLETE.
A.R.	STRAIGHT CLOSURE RAIL, STOCK RAIL AND TURNOUT RAIL
A.R.	CURVED CLOSURE RAIL, STOCK RAIL AND TURNOUT RAIL
A.R.	ELASTIC FASTENER TIE PLATES PUNCHED FOR 7/8" SCREW SPIKES
A.R.	STANDARD RAIL JOINTS, COMPLETE
A.R.	INSULATED RAIL JOINTS, COMPLETE
A.R.	LEFT HAND PANDROL CLIPS ø2056
A.R.	7" X 9" TIMBER SWITCH TIES AS SHOWN

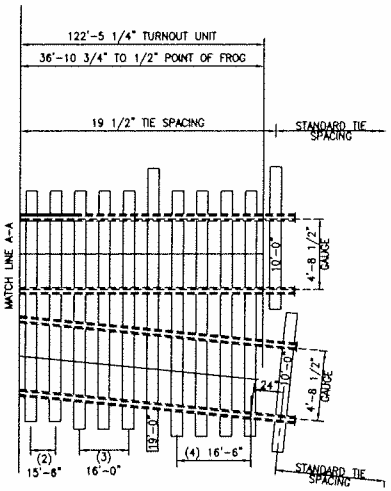
TIE SCHEDULE	
LENGTH	QTY.
8'-6"	5
9'-0"	6
9'-6"	10
10'-0"	4
10'-6"	4
11'-0"	2
11'-6"	2
12'-0"	3
* 12'-6"	8
13'-0"	2
13'-6"	4
14'-0"	3

TIE SCHEDULE	
LENGTH	QTY.
14'-6"	2
15'-0"	4
15'-6"	4
16'-0"	3
16'-6"	5
17'-0"	1
18'-0"	1
19'-0"	1
TOTAL	74

* TWO TIES DAPPED 3" FOR SWITCH MACHINE

BILL OF MATERIAL	
QTY.	DESCRIPTION
A.R.	7/8" SCREW SPIKES
A.R.	PANDROL PLATES

NOTES:
1. GAUGE THROUGHOUT TURNOUT IS 4'-8 1/2".
2. TURNOUT UNITS SHALL BE FULLY ASSEMBLED IN THE FACTORY FOR INSPECTION.
3. SWITCH PANEL SHALL BE SHIPPED AS ONE UNIT.
4. TIES 0, 1, 2, 3 AND ALL CONTACT RAIL TIES MAY BE BUNDLED, TAGGED AND SHIPPED SEPARATELY FROM SWITCH PANEL TO FACILITATE TRANSPORTATION.
5. ALL RAIL AND COMPONENTS SHALL CONFORM TO 115 RE RAIL SECTION.
6. RAIL JOINTS SHOWN IN RAIL LAYOUT DIAGRAM ARE REQUIRED. JOINTS IN OPPOSITE RAILS SHALL HAVE A TWO TIE STAGGER. (**)
7. RIGHT HAND TURNOUT IS SHOWN. LEFT HAND TURNOUT IS OPPOSITE HAND.
8. ALL RAILS WITHIN TURNOUT UNITS SHALL BE CLAMPED TO THE PLATES BY LEFT HAND PANDROL SPRING CLIPS - ø2056.
9. ALL PLATES SHALL BE PUNCHED FOR 7/8" SCREW SPIKES.
10. ALL PLATES SHALL BE FASTENED TO TIES WITH 7/8" SCREW SPIKES.
11. RAIL SHALL BE HEAD HARDENED.
12. MAKE UP RAIL SHALL BE USED DURING FACTORY ASSEMBLY TO ASSURE LOCATION AND ALIGNMENT OF PLATES USED TO FASTEN CWR.
13. PANDROL CLIPS AT JOINTS MAY BE MODIFIED ø CLIPS, TYPE J CLIPS OR TYPE C CLIPS.
14. DO NOT DRILL HOLES FOR JOINTS IN STOCK RAILS AHEAD OF P.S.
15. RAIL ENDS TO BE JOINED TO CWR AND UNDRILLED.
16. DIMENSIONS SHOWN ON STOCK RAILS AHEAD OF P.S. ARE STANDARD. AUTHORITY WILL SPECIFY STOCK RAIL LENGTH AHEAD OF P.S. WHERE OTHER THAN STANDARD LENGTHS ARE REQUIRED.
17. CLOSURE LENGTHS INDICATED ARE TOTAL LENGTH WITH NO ALLW. FOR STANDARD. OR INS. JTS.



(**) OTHER JOINT LOCATED BY THE CONTRACTOR TO FACILITATE SHIPPING OR FABRICATION SHALL BE SUBMITTED OR APPROVAL BY THE ENGINEER.

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE DISTRICT OF COLUMBIA."

LICENSE No. _____

EXPIRATION DATE _____

- DC REGISTER SECTION 3413

DESIGNED R. REYES 10/05 DATE
DRAWN A. DAVIS 06/06 DATE
CHECKED RAVI AMIN 12/14 DATE

REFERENCE DRAWINGS

NUMBER	TITLE

REVISIONS

DATE	NUM	DESCRIPTION
07/15/02	01	Revised Tie Schedule
04/05	02	Rev. for DDDDWG Approval, Apr. 2005
06/06	03	Minor Revision
09/06	04	Revised Bill of Materials
12/14	05	Revised Title Block & Changed DD to read 97

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

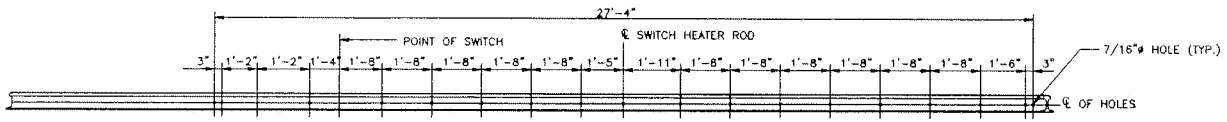
DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

APPROVED _____ DATE
THOMAS ROBINSON
DEPUTY CHIEF ENGINEER

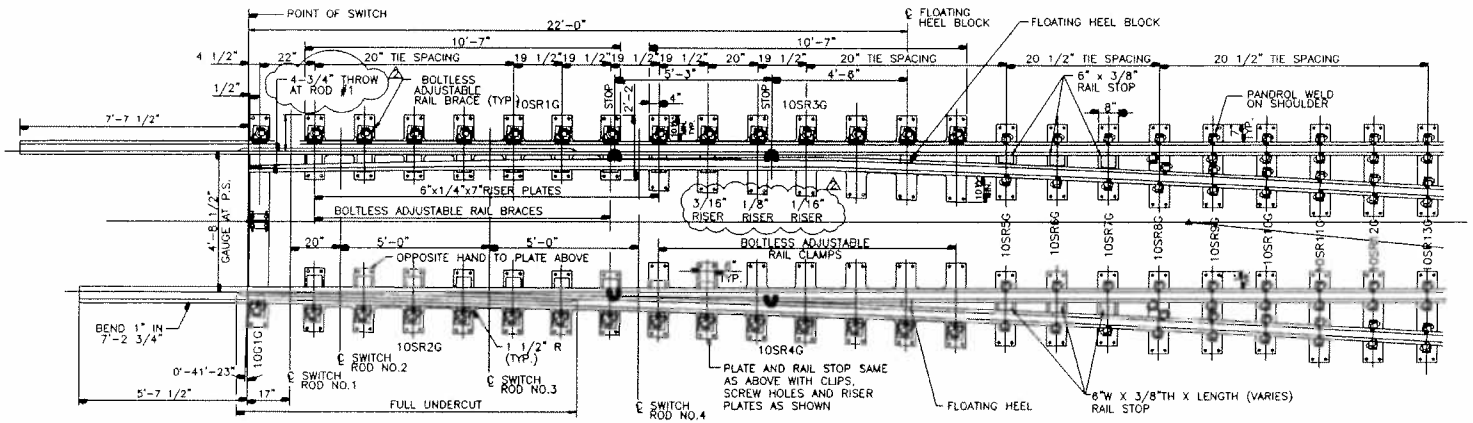
TRACKWORK STANDARD DRAWING NO. 10 PLATED TURNOUT, PLAN, BALLASTED TRACK

CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	1/4" = 1'-0"	ST-TW-043	## of .



STOCK RAIL DRILLING FOR SWITCH HEATER ROD BRACKETS

SCALE: 1/2"=1'-0"



NO. 10 PLATED SWITCH

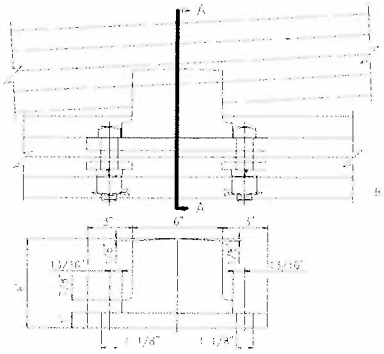
SCALE: 1/2"=1'-0"

NOTES:

1. FOR DETAILS SEE AREMA STD. PLAN NO. 116-55 CURVED SPLIT SWITCH WITH GRADUATED RISERS.

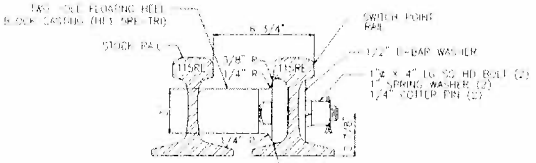
PLATE DETAILS		
PLATE	LENGTH	WIDTH
* 10SR5LG	2'-7"	8"
* 10SR6LG	2'-7"	8"
* 10SR7LG	2'-7"	8"
10SR8LG	2'-10"	8"
10SR9LG	2'-10"	8"
10SR10LG	2'-10"	8"
10SR11LG	3'-1"	8"
10SR12LG	3'-1"	8"
10SR13LG	3'-1"	8"
* 10SR5RG	2'-7"	8"
* 10SR6RG	2'-7"	8"
* 10SR7RG	2'-7"	8"
10SR8RG	2'-10"	8"
10SR9RG	2'-10"	8"
10SR10RG	2'-10"	8"
10SR11RG	3'-1"	8"
10SR12RG	3'-1"	8"
10SR13RG	3'-1"	8"

* RAIL STOPS IN LIEU OF CENTER WELD-ON SHOULDERS



FLOATING HEEL BLOCK

SCALE: QUARTER SIZE



SECTION A-A - ROTATED 90° CCW

SCALE: QUARTER SIZE

22'-0" SWITCH, COMPLETE BILL OF MATERIALS	
QTY.	DESCRIPTION
1 EA.	22'-0" SWITCH ON 35'-0" RAIL WITH FLOATING HEEL BLOCK (LEFT HAND CURVED AND RIGHT HAND STRAIGHT) COMPLETE WITH THICK WEB OR WITH REINFORCING BARS AND RAIL STOPS ATTACHED (POINT DETAIL 5100 PER LATEST AREMA STD. PLAN NO. 221 AND MODIFIED AS SHOWN
1	34'-8" STRAIGHT UNDERCUT STOCK RAIL
1	32'-6" BENT UNDERCUT STOCK RAIL
4	INSULATED VERTICAL SWITCH RODS (RACOR TYPE SMJ)
2	FLOATING HEEL BLOCK ASSEMBLY, COMPLETE
1	INSULATED GAUGE PLATE 10G1G COMPLETE WITH BOLTLESS ADJUSTABLE RAIL BRACES
1 EA.	10SR1G AND 10SR2G SPECIAL SWITCH PLATES COMPLETE WITH BOLTLESS ADJUSTABLE RAIL BRACES AND GRADUATED RISER PLATES
1 EA.	10SR3G AND 10SR4G SPECIAL SWITCH PLATES COMPLETE WITH BOLTLESS ADJUSTABLE RAIL CLAMPS
2 EA.	10SR5G THRU 10SR13G SPECIAL SWITCH PLATES COMPLETE WITH PANDROL WELD-ON SHOULDERS AND ø2056 LEFT HAND SPRING CLIPS

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE DISTRICT OF COLUMBIA."

LICENSE No. _____

EXPIRATION DATE _____

- DC REGISTER SECTION 3413

DESIGNED	R. REYES	10/05	DATE
DRAWN	A. DAVIS	06/06	DATE
CHECKED	RAVI AMIN	01/15	DATE

REFERENCE DRAWINGS		REVISIONS		
NUMBER	TITLE	DATE	NUM	DESCRIPTION
		02/03	01	Revised Stock Rail Drillings
		04/05	02	Rev. for DD-DWG Approval, Apr, 2005
		06/06	03	Minor Revision
		06/10	04	Revised Stock Rail Drilling
		06/13	05	Revised Throw at Rod
		06/13	06	Revised Riser Plates
		01/15	07	Revised Title Block and Changed DD to read ST

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

APPROVED _____ DATE
THOMAS ROBINSON
DEPUTY CHIEF ENGINEER

TRACKWORK STANDARD DRAWING NO. 10 TURNOUT, PLATED SWITCH, BALLASTED TRACK

CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	1/2" = 1'-0"	ST-TW-044	## of .

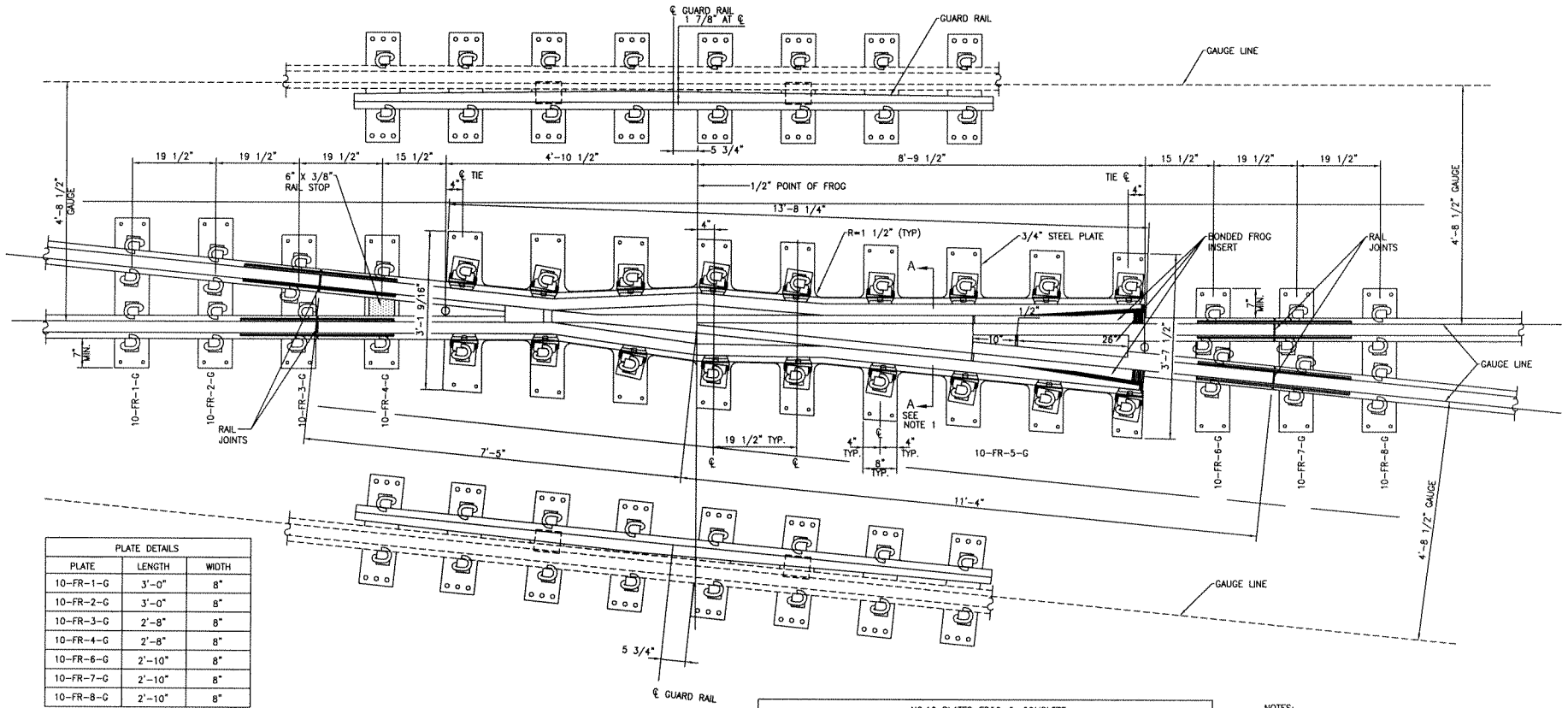


PLATE DETAILS		
PLATE	LENGTH	WIDTH
10-FR-1-G	3'-0"	8"
10-FR-2-G	3'-0"	8"
10-FR-3-G	2'-8"	8"
10-FR-4-G	2'-8"	8"
10-FR-6-G	2'-10"	8"
10-FR-7-G	2'-10"	8"
10-FR-8-G	2'-10"	8"

NO.10 PLATED FROG-G, COMPLETE	
BILL OF MATERIAL	
QTY	DESCRIPTION
1	NO. 10 RAILBOUND MAGANESE STEEL FROG, COMPLETE (PER LATEST AREMA STD. PLAN NO. 623) AND MODIFIED AS SHOWN
1 EA	SPECIAL FROG PLATES 10-FR-1-G THRU 10-FR-8-G, COMPLETE
3	BONDED FROG INSERTS
16 EA	GUARD RAIL PLATES (GR).

NOTES:
1. SEE DRAWING NO. ST-TW-047 FOR FROG AND GUARD RAIL DETAILS AND SECTIONS.

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE DISTRICT OF COLUMBIA."

LICENSE No. _____

EXPIRATION DATE. _____

- DC REGISTER SECTION 3413

DESIGNED R. REYES 10/05 DATE
DRAWN A. DAVIS 06/06 DATE
CHECKED RAVI AMIN 12/14 DATE

REFERENCE DRAWINGS

NUMBER	TITLE

REVISIONS

DATE	NUM	DESCRIPTION
04/05	01	Rev. for DD-DWG, Approval Apr 2005
06/06	02	Minor Revision
12/14	03	Revised Title Block & Changed DD to read ST

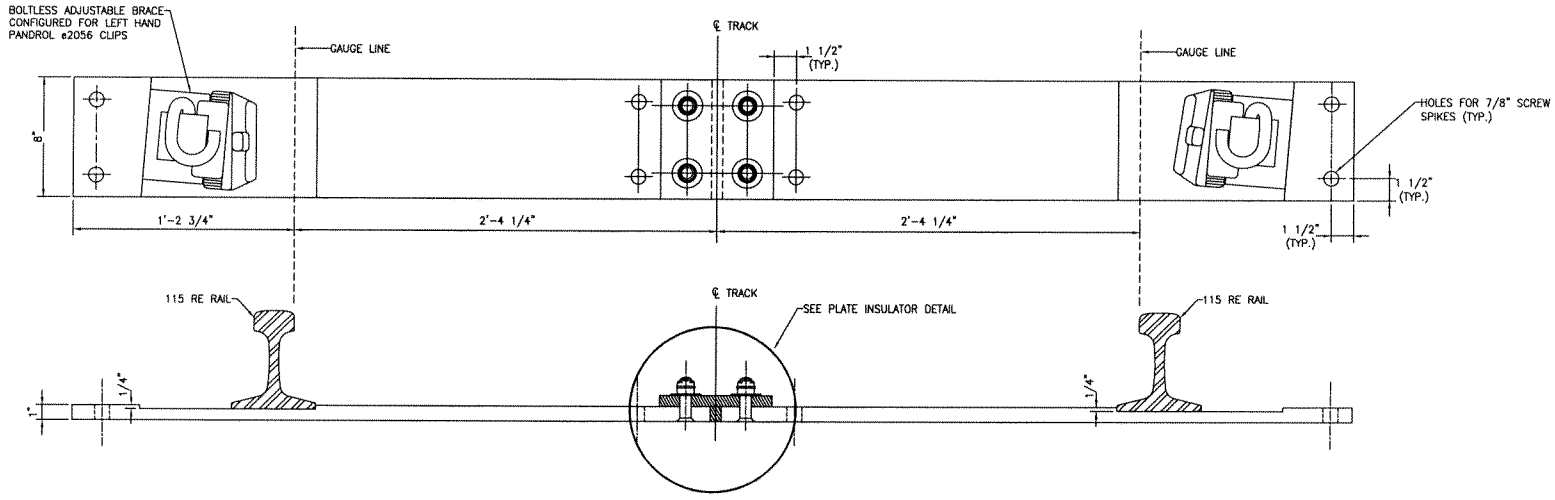
WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY
DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

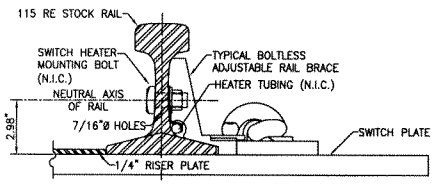
APPROVED _____ DATE
THOMAS ROBINSON
DEPUTY CHIEF ENGINEER

TRACKWORK STANDARD DRAWING NO. 10 TURNOUT, PLATED FROG BALLASTED TRACK

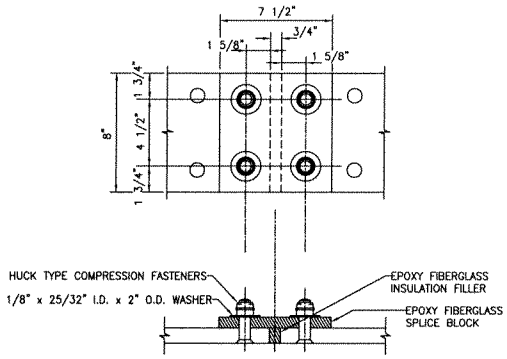
CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	1" = 1'-0"	ST-TW-045	## of .



SWITCH GAUGE PLATE 10G1
SCALE: 1/4"=1"



DETAIL - SWITCH HEATER MOUNTING HOLES
NOT TO SCALE



DETAIL - PLATE INSULATOR
SCALE: 1/4"=1"

"PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE DISTRICT OF COLUMBIA."

LICENSE No. _____

EXPIRATION DATE: _____

- DC REGISTER SECTION 3413

DESIGNED R. REYES 10/05 DATE
DRAWN A. DAVIS 06/06 DATE
CHECKED RAVI LAMIN 12/14 DATE

REFERENCE DRAWINGS

NUMBER	TITLE

REVISIONS

DATE	NUM	DESCRIPTION
04/05	01	Rev. for DD-DWG. Approval, Apr, 2005
06/06	02	Minor Revision
12/14	03	Revised Title Block & Changed DD to read ST

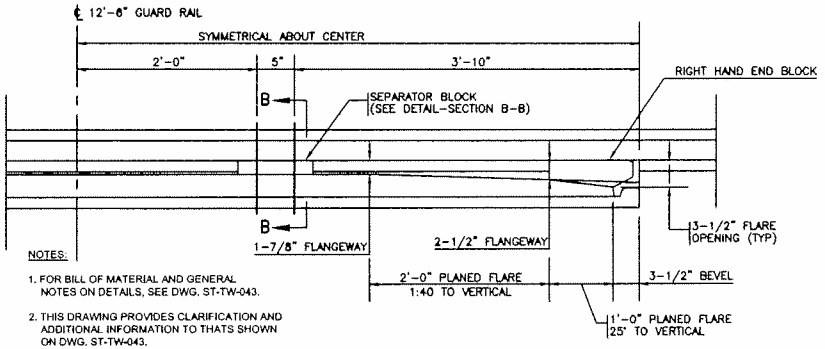
WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY
DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

APPROVED _____ DATE
THOMAS ROBINSON
DEPUTY CHIEF ENGINEER

TRACKWORK STANDARD DRAWING NO. 10 PLATED TURNOUT. DETAILS, BALLASTED TRACK .SHEET 1 OF 2

CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	AS SHOWN	ST-TW-046	## of .



12'-6" GUARD RAIL
SCALE: 1 1/2"=1'-0"

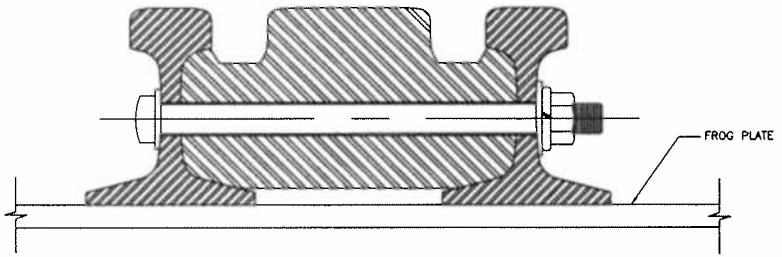
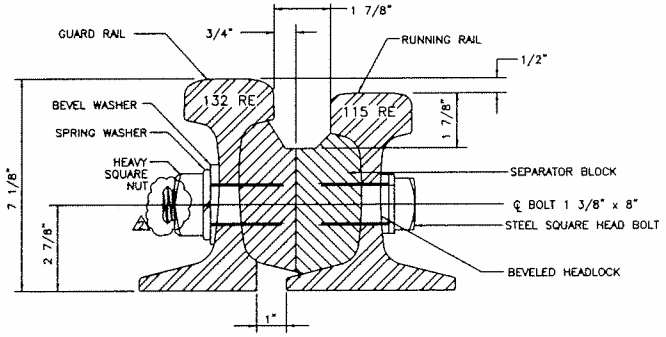


PLATE DETAIL: SECTION A-A
NOT TO SCALE



SEPARATOR BLOCK: SECTION B-B
SCALE: HALF SIZE

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE DISTRICT OF COLUMBIA."

LICENSE No. _____

EXPIRATION DATE _____

- DC REGISTER SECTION 3413

DESIGNED	R. REYES	10/05 DATE
DRAWN	A. DAVIS	06/06 DATE
CHECKED	RAVI AMIN	01/15 DATE

REFERENCE DRAWINGS

NUMBER	TITLE

REVISIONS

DATE	NUM	DESCRIPTION
04/05	01	Rev. for DD-DWG Approval, Apr. 2005
06/06	02	Minor Revision
06/13	03	Omit Cotter Pin at Separator Block
01/15	04	Revised Title Block and Changed DD to read ST

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

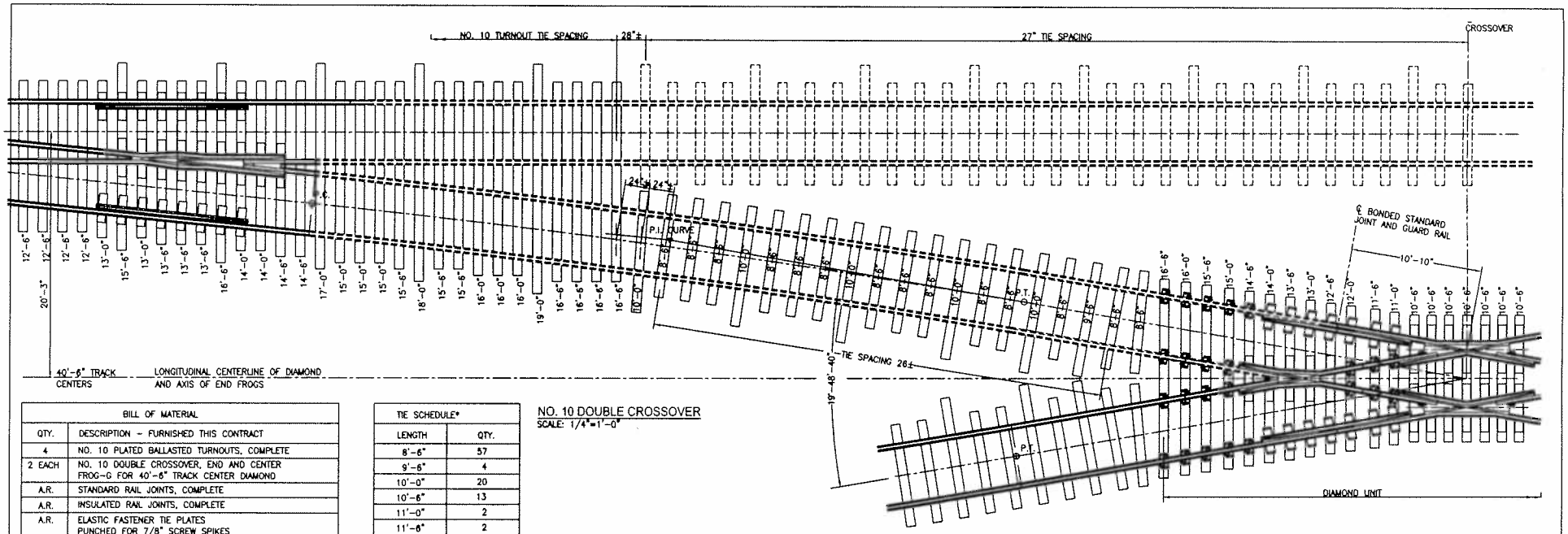
DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

APPROVED _____ DATE
THOMAS ROBINSON
DEPUTY CHIEF ENGINEER

TRACKWORK STANDARD DRAWING
NO. 10 PLATED TURNOUT, DETAILS,
BALLASTED TRACK
SHEET 2 OF 2

CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	AS SHOWN	ST-TW-047	## of .



NO. 10 DOUBLE CROSSOVER
SCALE: 1/4"=1'-0"

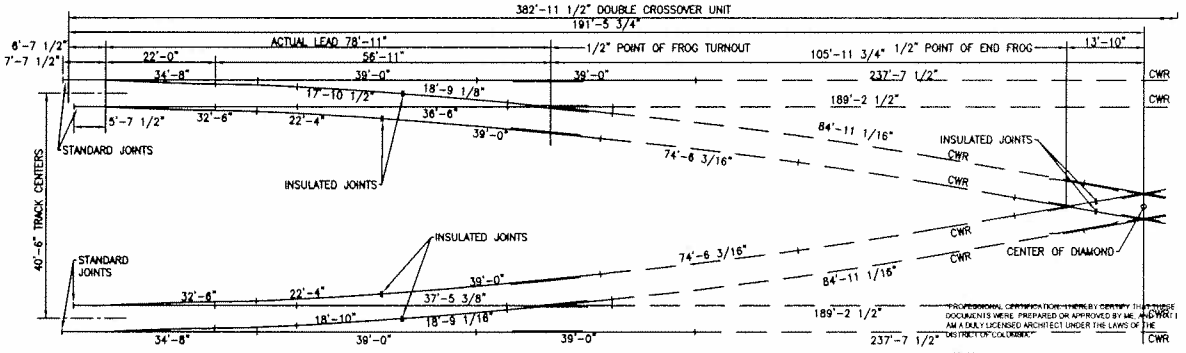
BILL OF MATERIAL	
QTY.	DESCRIPTION – FURNISHED THIS CONTRACT
4	NO. 10 PLATED BALLASTED TURNOUTS, COMPLETE
2 EACH	NO. 10 DOUBLE CROSSOVER, END AND CENTER FROG-G FOR 40'-6" TRACK CENTER DIAMOND
A.R.	STANDARD RAIL JOINTS, COMPLETE
A.R.	INSULATED RAIL JOINTS, COMPLETE
A.R.	ELASTIC FASTENER TIE PLATES PUNCHED FOR 7/8" SCREW SPIKES
A.R.	7" X 9" TIMBER SWITCH TIES AS SHOWN
A.R.	7" X 9" CROSS TIES AS SHOWN
A.R.	7/8" SCREW SPIKES
A.R.	PANDROL PLATES

BILL OF MATERIAL	
QTY.	DESCRIPTION – FURNISHED BY OTHERS
A.R.	GROUT PADS
A.R.	INSERT AND ANCHOR ASSEMBLY, ANCHORING MATERIAL
A.R.	RAIL JOINTS TO CONNECT TURNOUTS AND DIAMOND TO CWR

TIE SCHEDULE*	
LENGTH	QTY.
8'-6"	57
9'-6"	4
10'-0"	20
10'-6"	13
11'-0"	2
11'-6"	2
12'-0"	2
12'-6"	2
13'-0"	2
13'-6"	2
14'-0"	2
14'-6"	2
15'-0"	2
15'-6"	2
16'-0"	2
16'-6"	2
TOTAL	118

* DIAMOND TIE SCHEDULE ONLY. TURNOUT TIE SCHEDULE NOT INCLUDED.

CURVE DATA	
Δ	4°-10'-51"
R	812.84
T	29.67'
Lc	59.3142'
E	6 7/8"
SE	0



NO. 10 DOUBLE CROSSOVER, RAIL LAYOUT DIAGRAM
SCALE: 3/32"=1'-0"

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE DISTRICT OF COLUMBIA."
LICENSE No.
EXPIRATION DATE
DC REGISTER SECTION 3413

REFERENCE DRAWINGS	
NUMBER	TITLE

REVISIONS		
DATE	NUM	DESCRIPTION
09/06	01	Revised Bill of Materials
09/07	02	Revised Crotts Angle
01/15	03	Revised Title Block and Changed DD to read ST

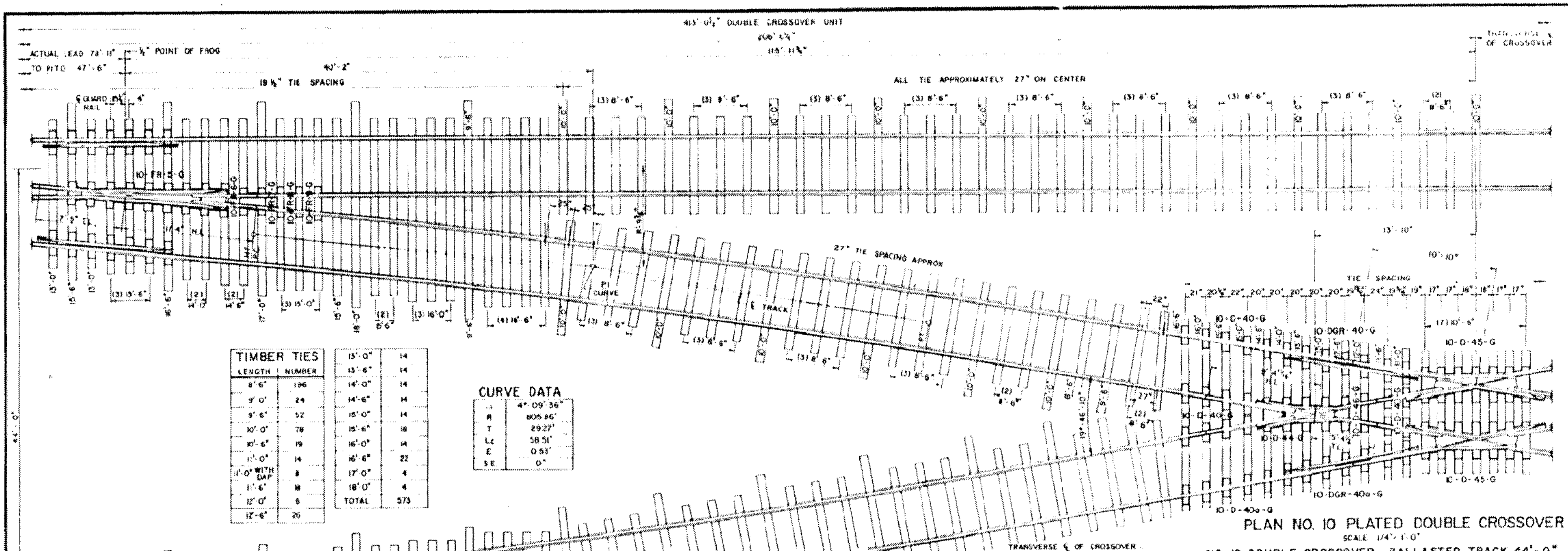
DESIGNED _____ DATE
DRAWN _____ DATE
CHECKED RAVI AMIN 01/15 DATE

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY
DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE
APPROVED _____ DATE
THOMAS ROBINSON
DEPUTY CHIEF ENGINEER

TRACKWORK STANDARD DRAWING
NO. 10 PLATED DOUBLE CROSSOVER, TYPE 1, QUARTER UNIT, 40'-6" TRACK CENTERS, PLAN, BALLASTED TRACK

CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	AS SHOWN	ST-TW-084	## of .



TIMBER TIES

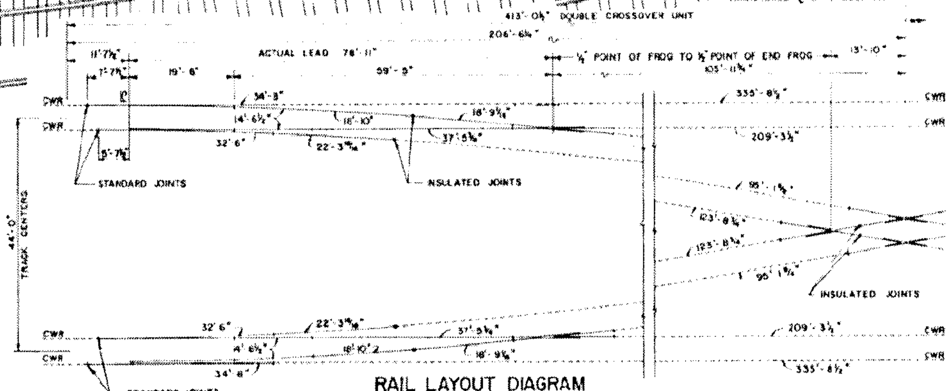
LENGTH	NUMBER
8'-6"	196
9'-0"	24
9'-6"	52
10'-0"	78
10'-6"	19
11'-0"	14
11'-0" WITH DAP	8
11'-6"	18
12'-0"	6
12'-6"	26
13'-0"	14
13'-6"	14
14'-0"	14
14'-6"	14
15'-0"	14
15'-6"	18
16'-0"	14
16'-6"	22
17'-0"	4
18'-0"	4
TOTAL	573

CURVE DATA

Δ	4°-09'-36"
R	805.86'
T	29.27'
Lc	58.51'
E	0.53'
S.E.	0"

PLAN NO. 10 PLATED DOUBLE CROSSOVER

SCALE 1/4" = 1'-0"



RAIL LAYOUT DIAGRAM

SCALE 3/32" = 1'-0"

NO 10 DOUBLE CROSSOVER - BALLASTED TRACK 44'-0"

BILL OF MATERIAL

QTY	DESCRIPTION - FURNISHED BY OTHERS
1	NO 10 PLATED SWITCH G, COMPLETE
1	NO 10 PLATED FROG G, COMPLETE
2 EA	NO 10 DOUBLE CROSSOVER END AND CENTER CROSSING FROG G 44'-0" TRACK CENTERS, COMPLETE
1	11'-0" TEE RAIL DESIGN GUARD RAIL, FULLY HEAT TREATED, COMPLETE W/"GR" PLATES
14 EA	DIAMOND GUARD RAIL PLATES, 10-DGR-40-G & 10-DGR-40a-G
4 EA	40'-2 9/16" RAIL, 18'-10" RAIL, 22'-3 13/16" RAIL, 37'-5 3/8" RAIL
1	14'-6 1/2" RAIL
22 EA	SPECIAL TIE PLATES 10-D-40-G & 10-D-40a-G
4	11'-0" TEE RAIL DESIGN GUARD RAIL, FULLY HEAT TREATED, COMPLETE W/"DGR" PLATES
2	SPECIAL TIE PLATE, 10-D-45-G, COMPLETE
48	BONDED STANDARD RAIL JOINTS COMPLETE
12	BONDED INSULATED RAIL JOINTS COMPLETE
1 SET	7" x 9" TIMBER TIES (SEE TABLE)

QTY	DESCRIPTION - FURNISHED THIS CONTRACT
1036	TIE PLATES (PER AREA MANUAL, VOL 1, PLAN NO 4, PURCHASE A PAGE 5-1-15)
3664	RAIL ANCHORS
15 KEGS	5/8" REINFORCED THROAT TRACK SPIKES (PER AREA MANUAL, VOL 1, PAGE 5-2-1)
25 KEGS	TIE PLATE LOCK SPIKES
48	BALLAST

DESIGNED	HARRIS	6-15-77
DRAWN	LERR	6-21-77
CHECKED	[signature]	
APPROVED	[signature]	

REFERENCE DRAWINGS

NUMBER	DESCRIPTION
TWG-1-87	NO 10 PLATED TURNOUT, BALLASTED TRACK
TWG-1-266	NO 10 PLATED DOUBLE CROSSOVER - FROGS, 19°-45'-10" ANGLE
TWG-T-267	NO 10 PLATED DOUBLE CROSSOVER - DIAMOND, 19°-46'-10" ANGLE

REVISIONS

DATE	BY	DESCRIPTION

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

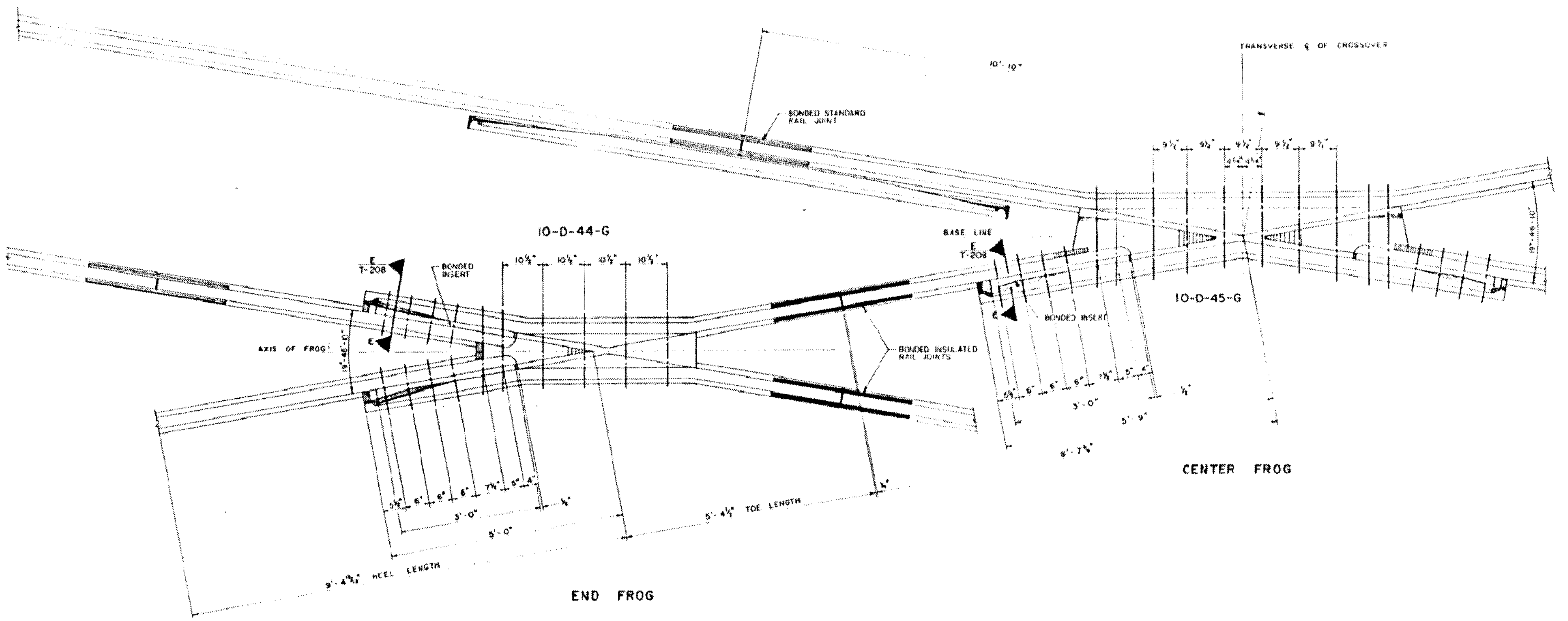
DE LEUW, CATHER & COMPANY
SECTION DESIGNER
[signature]
SUBMITTED

DE LEUW, CATHER & COMPANY — GENERAL ENGINEERING CONSULTANT
HARRY WEESE & ASSOCIATES — GENERAL ARCHITECTURAL CONSULTANT
APPROVED

TRACKWORK-6

NO. 10 PLATED DOUBLE CROSSOVER
BALLASTED TRACK, 44'-0" TRACK CENTERS

SCALE: 1/4" = 1'-0" AND AS NOTED
DRAWING NO. TW6-T-285
M392-86



WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY	
DE LEUW, CATHER & COMPANY SECTION DESIGNER	DE LEUW, CATHER & COMPANY GENERAL ENGINEERING CONSULTANT HARRY WEESE & ASSOCIATES GENERAL ARCHITECTURAL CONSULTANT
SUBMITTED	APPROVED

TRACKWORK-6

NO.10 PLATED DOUBLE CROSSOVER-FROGS, 19°-46'-10" ANGLE

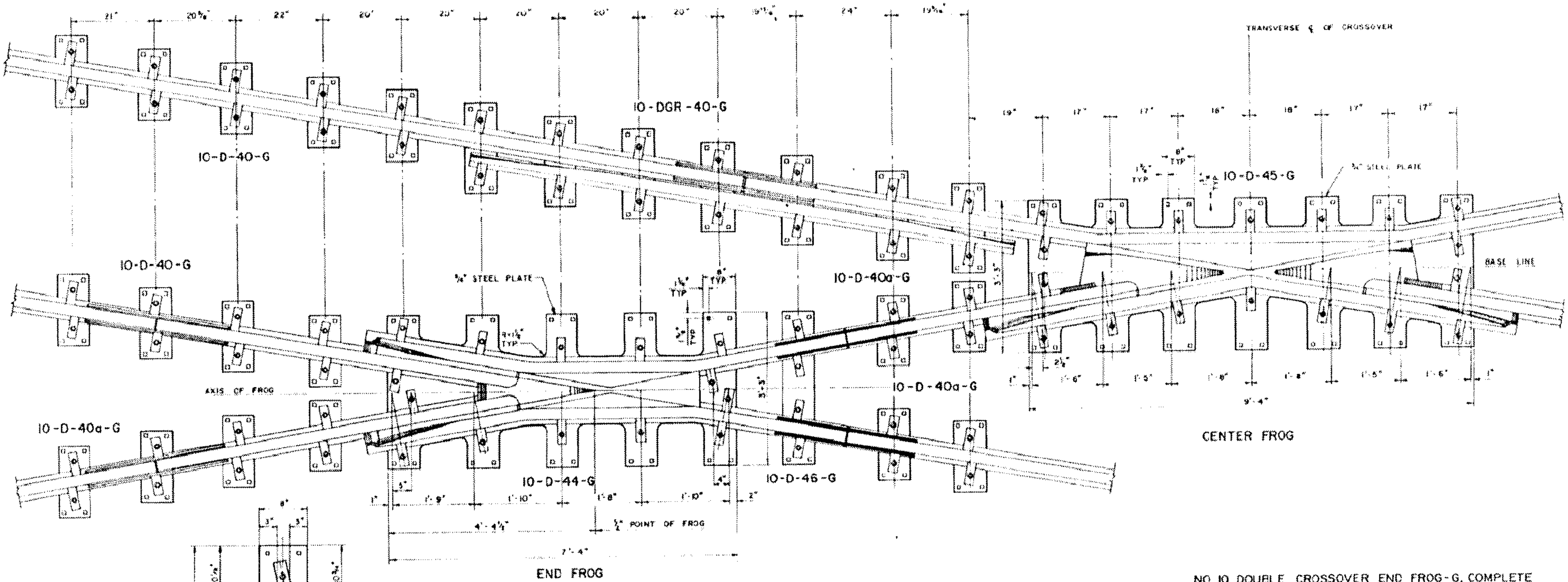
DRAWING NO. TW6-T-286

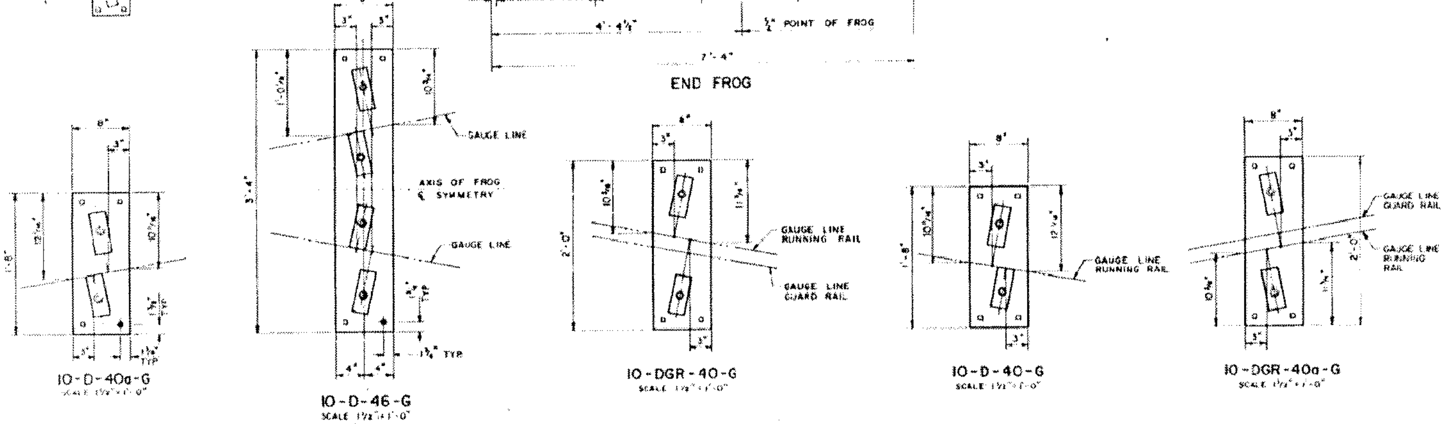
M392-87

REFERENCE DRAWINGS	
NUMBER	DESCRIPTION
TW6-T-285	NO.10 PLATED DOUBLE CROSSOVER, BALLASTED TRACK, 44'-0" TRACK CENTERS

REVISIONS		
DATE	BY	DESCRIPTION

DESIGNED R.C.DERR, J.VALENCIA
DRAWN R.C.DERR 4/3/78
CHECKED
APPROVED





NO. 10 DOUBLE CROSSOVER END FROG-G, COMPLETE

BILL OF MATERIAL

QTY	DESCRIPTION FURNISHED BY OTHERS
1	MANGANESE STEEL INSERT END FROG WITH LEVEL GUARDS FOR 19°-46'-10" CROSSING ANGLE, COMPLETE SPEC AREA STD PLAN NOS 750-55 AND 751-717 AND MODIFIED AS SHOWN
1	SPECIAL PLATE 10-D-44-G, COMPLETE
2	BONDED FROG INSERTS

NO. 10 DOUBLE CROSSOVER CENTER FROG-G, COMPLETE

BILL OF MATERIAL

QTY	DESCRIPTION FURNISHED BY OTHERS
1	MANGANESE STEEL INSERT CENTER FROG WITH LEVEL GUARDS FOR 19°-46'-10" CROSSING ANGLE, COMPLETE SPEC AREA STD PLAN NOS 750-55 AND 751-717 AND MODIFIED AS SHOWN
1	SPECIAL PLATE 10-D-45-G, COMPLETE
2	BONDED FROG INSERTS

DESIGNED: DE HN VALENCIA 4-7-76
DRAWN: GJ NR 4-21-76
CHECKED
APPROVED

REFERENCE DRAWINGS

NUMBER	DESCRIPTION
TW6-T-285	NO. 10 PLATED DOUBLE CROSSOVER BALLASTED TRACK, 44'-0" TRACK CENTERS

REVISIONS

DATE	BY	DESCRIPTION

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

DE LEUW, CATHER & COMPANY
SECTION DESIGNER

SUBMITTED

DE LEUW, CATHER & COMPANY
GENERAL ENGINEERING CONSULTANT

HARRY WEESE & ASSOCIATES
GENERAL ARCHITECTURAL CONSULTANT

APPROVED

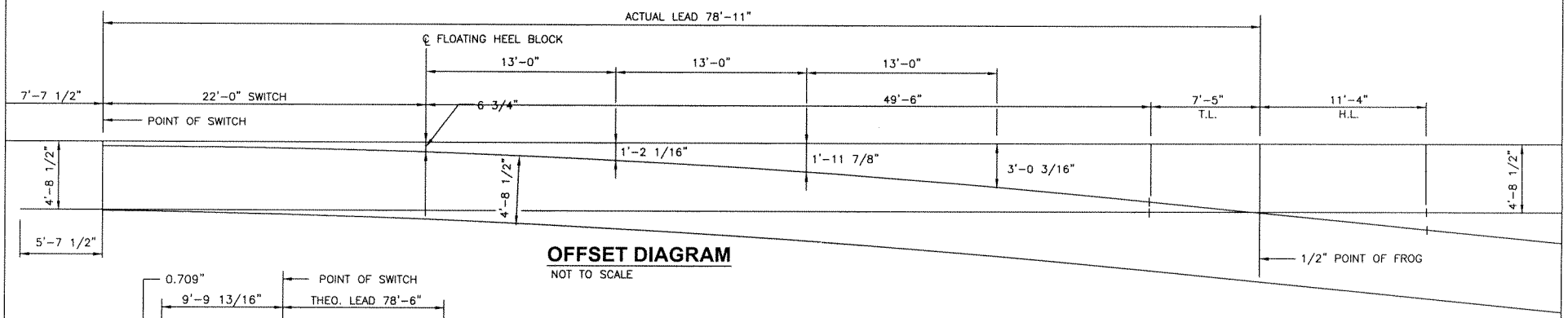
TRACKWORK - 6

NO. 10 PLATED DOUBLE CROSSOVER - DIAMOND
19° - 46' - 10" ANGLE

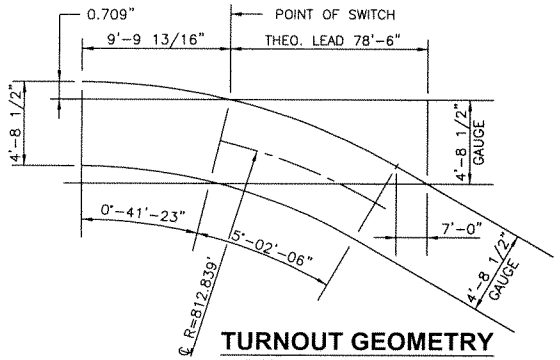
SCALE: 1"=1'-0" EXCEPT AS NOTED

DRAWING NO. TW6-T-287

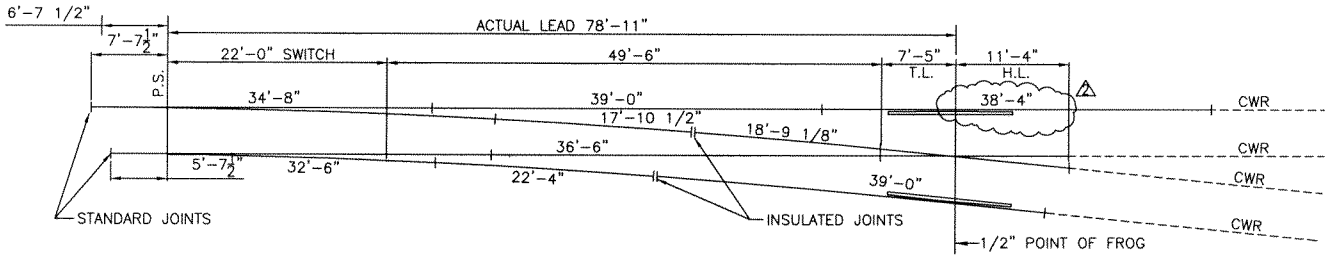
M392-88



OFFSET DIAGRAM
NOT TO SCALE



TURNOUT GEOMETRY
NOT TO SCALE



RAIL LAYOUT DIAGRAM
NOT TO SCALE

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE DISTRICT OF COLUMBIA."

LICENSE No. _____

EXPIRATION DATE: _____

- DC REGISTER SECTION 3413

DESIGNED	R. REYES	04/06 DATE
DRAWN	C. RIGGINS	04/06 DATE
CHECKED	RAVI AMIN	01/15 DATE

REFERENCE DRAWINGS

NUMBER	TITLE

REVISIONS

DATE	NUM	DESCRIPTION
06/13	01	Revision for Lead Rail at Standard Joint
01/15	02	Revised Title Block and Changed OD to read ST

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

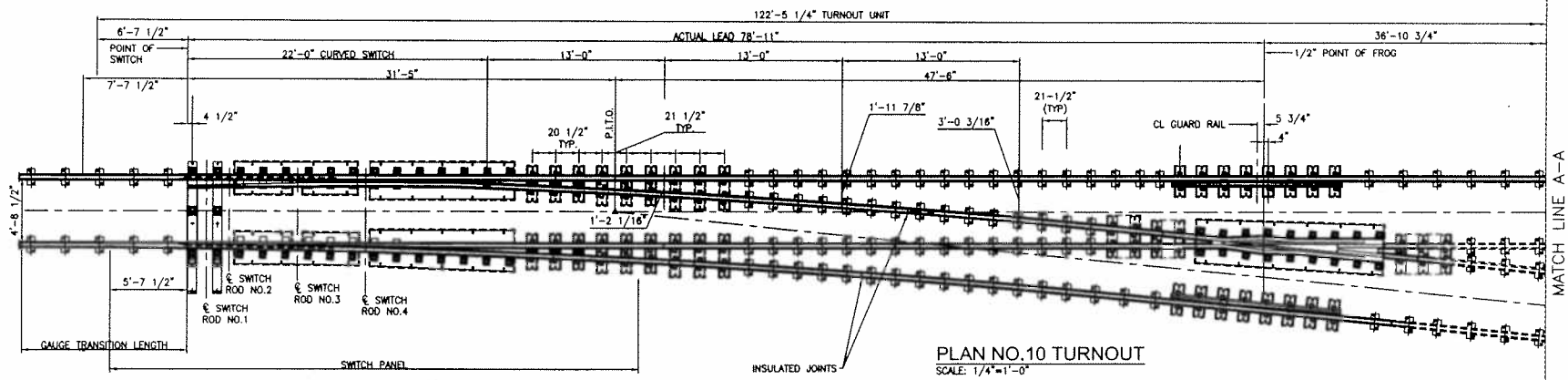
DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

APPROVED _____ DATE
THOMAS ROBINSON
DEPUTY CHIEF ENGINEER

TRACKWORK STANDARD DRAWING NO. 10 PLATED TURNOUT, OFFSET, GEOMETRY, AND RAIL LAYOUT DIAGRAMS DIRECT FIXATION TRACK

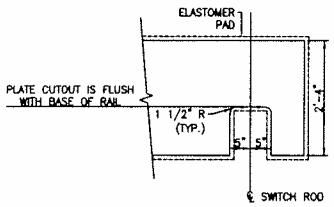
CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	NOT TO SCALE	ST-TW-048	## of .



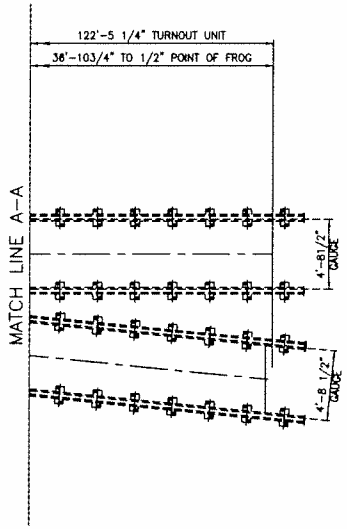
PLAN NO.10 TURNOUT
SCALE: 1/4"=1'-0"

TURNOUT DATA			
FROG	NUMBER		10
	ANGLE		5°-43'-29"
	TOE LENGTH		7'-5"
	HEEL LENGTH		11'-4"
	TOTAL LENGTH		18'-9"
	TOE SPREAD		8 3/8"
	HEEL SPREAD		14 1/8"
SWITCH	LENGTH OF SWITCH		22'-0"
	HEEL SPREAD		6 3/4"
	HEEL ANGLE		2°-14'-12"
	CURVED POINT	THICKNESS AT POINT	0"
		ANGLE AT POINT	0°-41'-23"
		RADIUS	815.19'
		VERTEX DISTANCE	23/32"
	STRAIGHT POINT	THICKNESS AT POINT	0"
		ANGLE AT POINT	0°-41'-23"
		RADIUS	810.48'
		VERTEX DISTANCE	11/16"
ACTUAL LEAD			78'-11"
STRAIGHT CLOSURE RAIL LENGTH			36'-6"
CURVED CLOSURE RAIL LENGTH			36'-7 5/8"
TURNOUT CURVE	CENTER LINE RADIUS		812.84'
	DEGREE OF CURVE		7°-02'-56"
	CENTRAL ANGLE		3°-29'-17"
TANGENT ADJACENT TOE OF FROG			0

BILL OF MATERIAL	
QTY.	DESCRIPTION – FURNISHED THIS CONTRACT
1	NO. 10 PLATED SWITCH-DIRECT FIXATION TRACK, COMPLETE
1	NO. 10 PLATED FROG-DIRECT FIXATION TRACK, COMPLETE
2	12'-6" TEE RAIL DESIGN GUARD RAIL COMPLETE.
A.R.	STRAIGHT CLOSURE RAIL, STOCK RAIL AND TURNOUT RAIL
A.R.	CURVED CLOSURE RAIL, STOCK RAIL AND TURNOUT RAIL
A.R.	BONDED STANDARD RAIL JOINTS, COMPLETE
A.R.	BONDED INSULATED RAIL JOINTS, COMPLETE
A.R.	LEFT HAND PANDROL CLIPS e2056
A.R.	ELASTOMER PADS FOR EACH PLATE
A.R.	DIRECT FIXATION FASTENERS
A.R.	GROUT PADS



DETAIL - CUTOUT FOR PLATE
NOT TO SCALE



NOTES:

1. GAUGE WIDTH THROUGHOUT TURNOUT IS 4' 8 ½".
2. TURNOUT UNITS SHALL BE FULLY ASSEMBLED IN THE FACTORY FOR INSPECTION MAKE-UP RAIL SHALL BE USED DURING FACTORY ASSEMBLY TO ASSURE LOCATION AND ALIGNMENT OF PLATES USED TO FASTEN CWR.
3. ALL RAIL AND COMPONENTS SHALL CONFORM TO 115 RE RAIL SECTION.
4. RAIL SHALL BE HEAD HARDENED.
5. CLOSURE RAIL LENGTHS INDICATED ARE TOTAL LENGTHS AND DO NOT ALLOW FOR STANDARD OR INSULATED JOINTS.
6. RAIL JOINTS SHOWN IN RAIL LAYOUT DIAGRAM INTERNAL TO THE TURNOUT ARE REQUIRED. ALL OTHER JOINTS REQUIRED FOR PANELIZING THE SWITCH OR TO AID IN TRANSPORTING COMPONENTS SHALL BE LOCATED BY THE CONTRACTOR AND SUBMITTED TO THE ENGINEER FOR APPROVAL JOINT IN OPPOSITE RAILS SHALL HAVE A TWO PLATE STAGGER.
7. RAIL ENDS TO BE JOINTED TO CWR ARE UNDRILLED.
8. DO NOT DRILL FOR JOINTS ON STOCK RAILS AHEAD OF P.S.
9. RIGHT HAND TURNOUT IS SHOWN. LEFT HAND TURNOUT IS OPPOSITE HAND.
10. ALL RAILS WITHIN TURNOUT UNITS ARE CLAMPED TO THE PLATES BY LEFT HAND PANDROL SPRING CLIPS – E2056
11. RAIL AT JOINT BARS ARE FASTENED WITH LEFT HAND MODIFIED 'E' CLIPS TYPE 'J' OR 'C' CLIPS
12. DIMENSIONS SHOWN ON STOCK RAILS AHEAD OF POINT OF SWITCH ARE STANDARD. THE AUTHORITY WILL SPECIFY STOCK RAIL LENGTHS AHEAD OF POINT OF SWITCH WHERE OTHER THAN STANDARD LENGTHS ARE REQUIRED.
13. LOCATE SEPARATOR BLOCKS NOT MORE THAN 4'-0" ON CENTERS AND AS NECESSARY TO CLEAR JOINT BARS AND ANCHOR BOLTS.
14. GUARD RAILS ARE 132 RE RAIL SECTION HEAD HARDENED.
15. WIDTH AND LENGTH OF ELASTOMER PADS SHALL BE 2" LARGER THAN DIMENSIONS OF CORRESPONDING PLATES.

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE DISTRICT OF COLUMBIA."

LICENSE No. _____

EXPIRATION DATE _____

- DC REGISTER SECTION 3413

DESIGNED _____ DATE
DRAWN _____ DATE
CHECKED Ravi Amin 12/15 DATE

REFERENCE DRAWINGS	
NUMBER	TITLE

REVISIONS		
DATE	NUM	DESCRIPTION
09/07	01	Revised Gauge Plates
01/16	02	Revised Title Block & Change DD to read ST

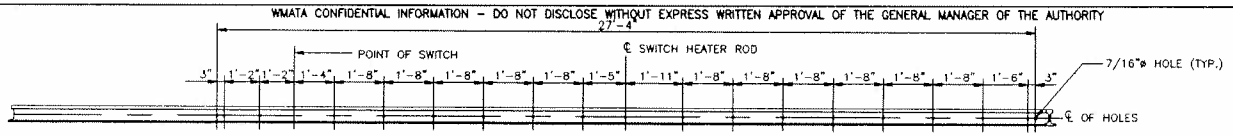
WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY
DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

APPROVED _____ DATE
THOMAS ROBINSON
DEPUTY CHIEF ENGINEER

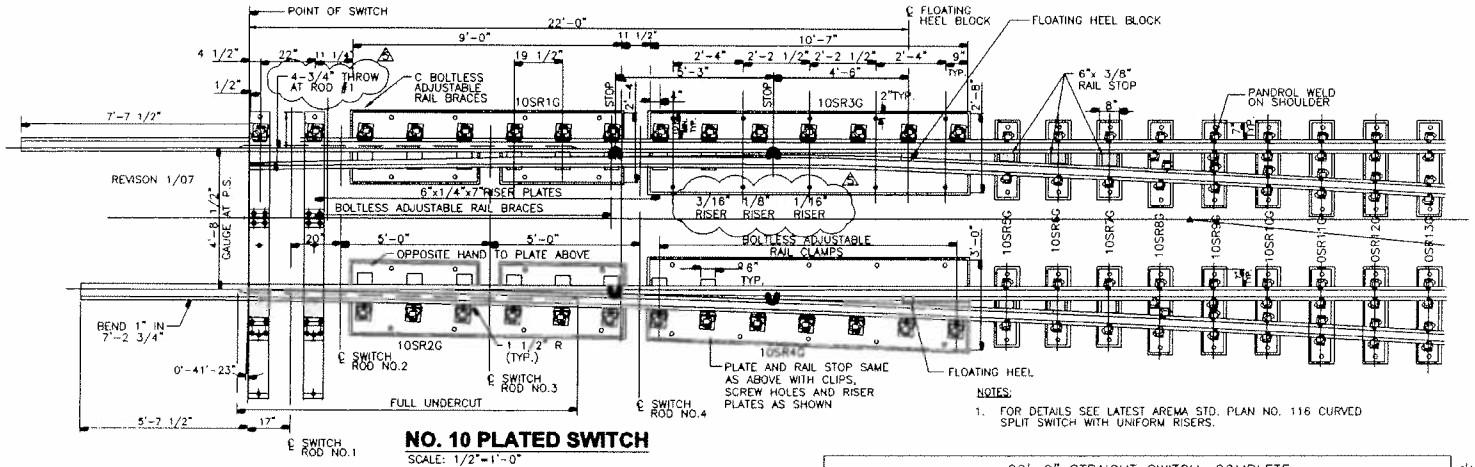
TRACKWORK STANDARD DRAWING NO. 10 PLATED TURNOUT, PLAN, DIRECT FIXATION TRACK

CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	AS SHOWN	ST-TW-049	## of .



STOCK RAIL DRILLING FOR SWITCH HEATER ROD BRACKETS

SCALE: 1/2"=1'-0"



NOTES:

1. FOR DETAILS SEE LATEST AREMA STD. PLAN NO. 116 CURVED SPLIT SWITCH WITH UNIFORM RISERS.

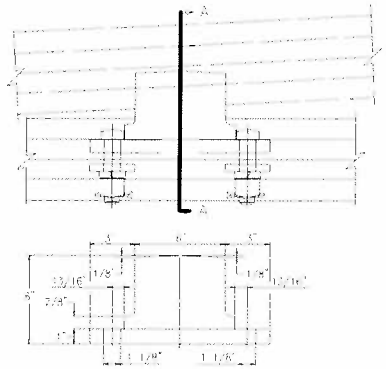
NO. 10 PLATED SWITCH

SCALE: 1/2"=1'-0"

22'-0" STRAIGHT SWITCH, COMPLETE	
BILL OF MATERIALS	
QTY.	DESCRIPTION – FURNISHED THIS CONTRACT
1 EA.	22'-0" SWITCH ON 35'-0" RAIL WITH FLOATING HEEL BLOCK (LEFT HAND CURVED AND RIGHT HAND STRAIGHT) COMPLETE WITH THICK WEB OR WITH REINFORCING BARS AND RAIL STOPS ATTACHED (POINT DETAIL 5100 PER LATEST AREMA STD. PLAN NO. 221) AND AS MODIFIED AS SHOWN
1	34'-8" STRAIGHT UNDERCUT STOCK RAIL
1	32'-6" BENT UNDERCUT STOCK RAIL
4	INSULATED VERTICAL SWITCH RODS (RACOR TYPE SMJ)
2	FLOATING HEEL BLOCK ASSEMBLY, COMPLETE
1	INSULATED GAUGE PLATE 10G1G COMPLETE WITH BOLTLESS ADJUSTABLE RAIL BRACES
1 EA.	10SR1G AND 10SR2G SPECIAL SWITCH PLATES COMPLETE WITH BOLTLESS ADJUSTABLE RAIL BRACES AND GRADUATED RISER PLATES
1 EA.	10SR3G AND 10SR4G SPECIAL SWITCH PLATES COMPLETE WITH BOLTLESS ADJUSTABLE RAIL CLAMPS
2 EA.	10SR5G THRU 10SR13G SPECIAL SWITCH PLATES COMPLETE WITH PANDROL WELD-ON SHOULDERS AND e2056 LEFT HAND SPRING CLIPS
A.R.	ELASTOMER PADS FOR EVERY PLATE
A.R.	10SR1C THRU 10SR15 AND SR15LG PLATES

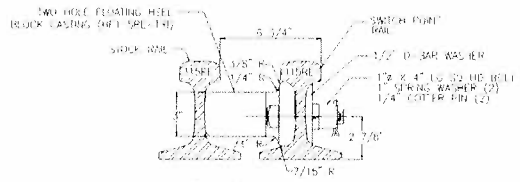
PLATE DETAILS		
PLATE	LENGTH	WIDTH
* 10SR5LG	2'-7"	8"
* 10SR6LG	2'-7"	8"
* 10SR7LG	2'-7"	8"
10SR8LG	2'-10"	8"
10SR9LG	2'-10"	8"
10SR10LG	2'-10"	8"
10SR11LG	3'-1"	8"
10SR12LG	3'-1"	8"
10SR13LG	3'-1"	8"
* 10SR5RG	2'-7"	8"
* 10SR6RG	2'-7"	8"
* 10SR7RG	2'-7"	8"
10SR8RG	2'-10"	8"
10SR9RG	2'-10"	8"
10SR10RG	2'-10"	8"
10SR11RG	3'-1"	8"
10SR12RG	3'-1"	8"
10SR13RG	3'-1"	8"

* RAIL STOPS IN LIEU OF CENTER WELD-ON SHOULDERS



FLOATING HEEL BLOCK

SCALE: QUARTER SIZE



SECTION A–A

SCALE: QUARTER SIZE

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE DISTRICT OF COLUMBIA."

LICENSE No. _____

EXPIRATION DATE _____

- DC REGISTER SECTION 3412

DESIGNED _____ DATE

DRAWN _____ DATE

CHECKED RAVI AMIN 01/15 DATE

REFERENCE DRAWINGS	
NUMBER	TITLE

REVISIONS		
DATE	NUM	DESCRIPTION
07/06	01	Edit to Notes and Revise Stock Rail Drillings
09/06	02	Stock Rail Drilling Hole from 7/8" to 7/16"
01/07	03	Revised Plate 10G1G Holes to Reflect DF
06/07	04	Revised Gauge Plate
06/13	06	Revised Riser Plates
06/13	06	Revised Throw at Rod
01/15	07	Revised Title Block and Changed DD to read ST

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

APPROVED _____ DATE
THOMAS ROBINSON
DEPUTY CHIEF ENGINEER

TRACKWORK STANDARD DRAWING NO. 10 TURNOUT, PLATED SWITCH, DIRECT FIXATION TRACK

CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	AS SHOWN	ST-TW-050	## of .

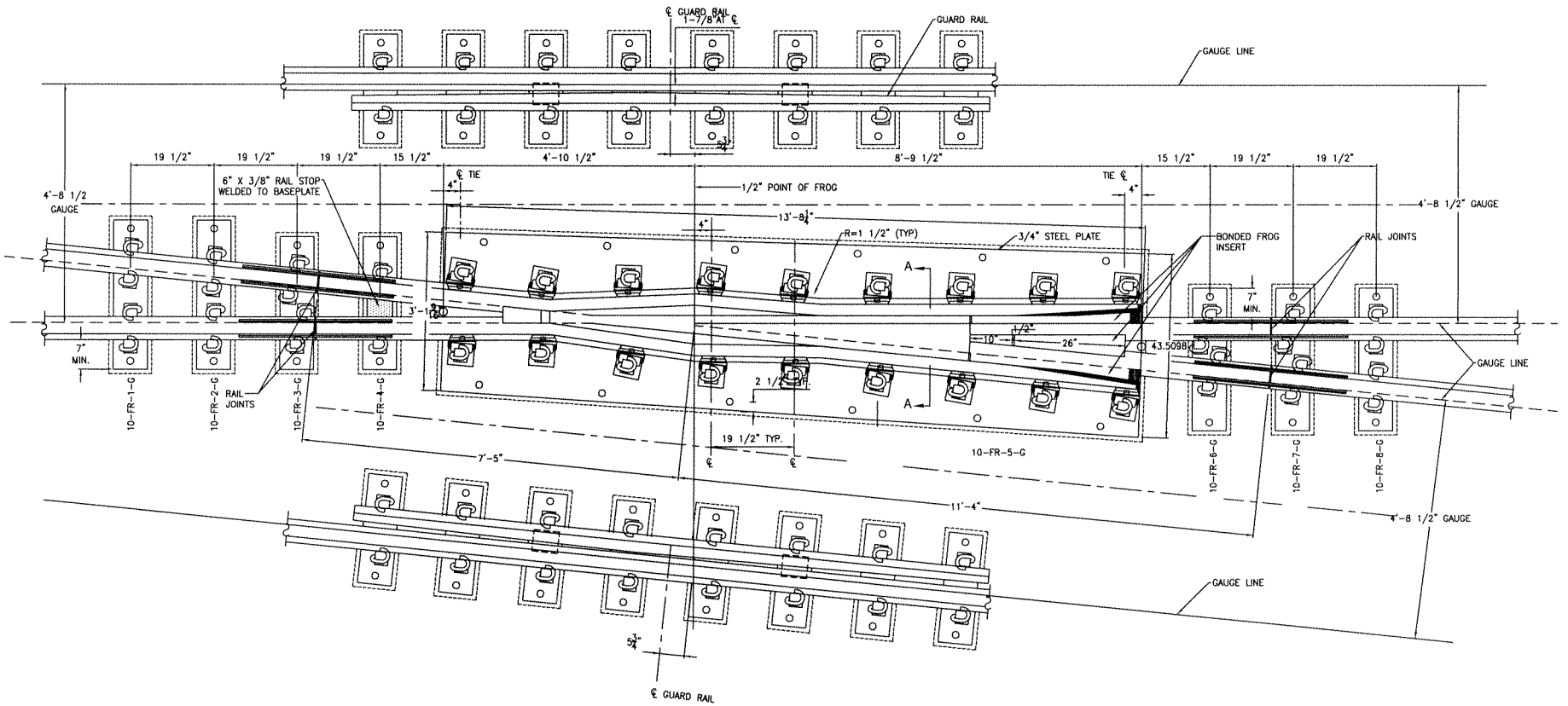


PLATE DETAILS		
PLATE	LENGTH	WIDTH
10-FR-1-G	3'-0"	8"
10-FR-2-G	3'-0"	8"
10-FR-3-G	2'-8"	8"
10-FR-4-G	2'-8"	8"
10-FR-6-G	2'-10"	8"
10-FR-7-G	2'-10"	8"
10-FR-8-G	2'-10"	8"

NO.10 PLATED FROG-G, COMPLETE	
BILL OF MATERIAL	
QTY	DESCRIPTION – FURNISHED THIS CONTRACT
1	NO. 10 RAILBOUND MAGANESE STEEL FROG, COMPLETE (PER LATEST AREMA STD. PLAN NO. 623) AND MODIFIED AS SHOWN
1 EA	SPECIAL FROG PLATES 10-FR-1-G THRU 10-FR-8-G, COMPLETE
2	BONDED FROG INSERTS
18	BOLTLESS ADJUSTABLE RAIL BRACE FOR LEFT HAND PANDROL CLIP e2056
A.R.	BONDED FROG INSERTS

NOTES:
1. SEE DRAWING NUMBER ST-TW-052 FOR FROG AND GUARD RAIL DETAILS.
2. RAIL STOPS TO BE 3/8" SHOP FILLET WELD.

"PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE DISTRICT OF COLUMBIA."

LICENSE No. _____

EXPIRATION DATE: _____

- DC REGISTER SECTION 3413

DESIGNED R. REYES 04/06 DATE
DRAWN A. DAVIS 09/2006 DATE
CHECKED Ravi Amin 01/15 DATE

REFERENCE DRAWINGS	
NUMBER	TITLE

REVISIONS		
DATE	NUM	DESCRIPTION
09/06	01	Added Note No. 2
01/15	02	Revised Title Block & Changed DD to read ST

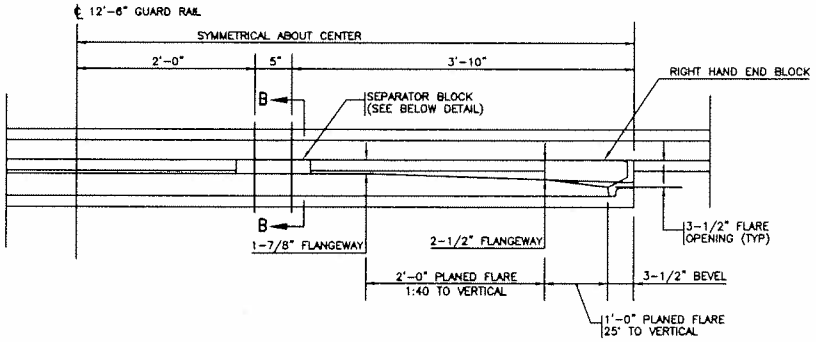
WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY
DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

APPROVED _____ DATE
THOMMAS ROBINSON
DEPUTY CHIEF ENGINEER

TRACKWORK STANDARD DRAWING NO. 10 TURNOUT, PLATED FROG, DIRECT FIXATION TRACK

CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	1"=1'-0"	ST-TW-051	## of .



12'-6" GUARDRAIL

SCALE: 1 1/2"=1'-0"

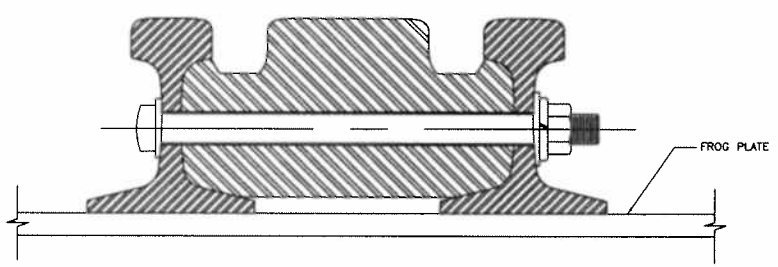
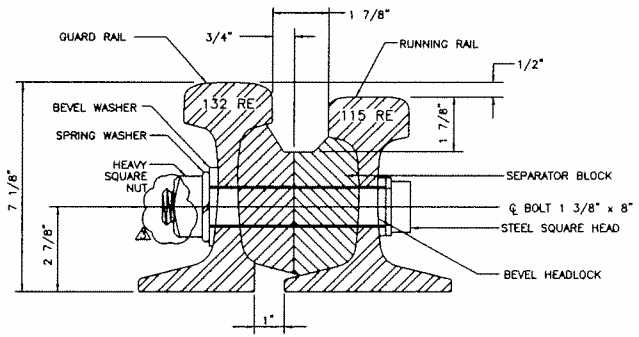


PLATE DETAIL; SECTION A-A

NOT TO SCALE



SECTION B-B - SEPARATOR BLOCK

SCALE: HALF SIZE

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE DISTRICT OF COLUMBIA."

LICENSE No. _____

EXPIRATION DATE: _____

- DC REGISTER SECTION 3413

DESIGNED R. REYES 04/06 DATE

DRAWN A. DAVIS 04/06 DATE

CHECKED RAVI AMIN 01/15 DATE

REFERENCE DRAWINGS

NUMBER	TITLE

REVISIONS

DATE	NUM	DESCRIPTION
06/06	01	Revised and Issued for Submittal
12/06	02	Drawing Reissued
06/13	03	Omit Cotter Pin at Separator Block
01/15	04	Revised Title Block and Changed DO to read ST

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

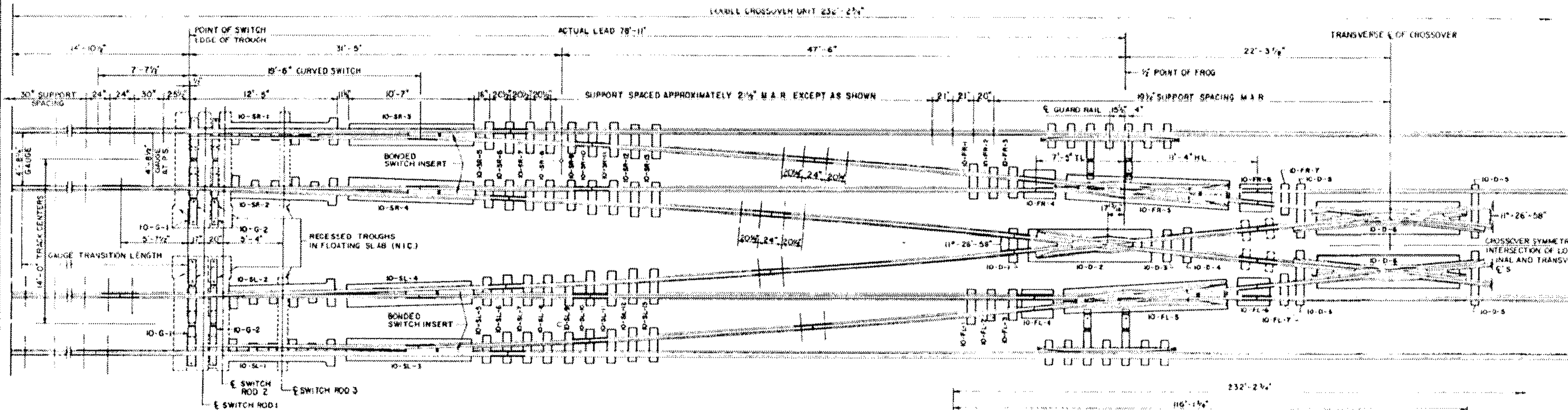
DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

APPROVED _____ DATE
THOMAS ROBINSON
DEPUTY CHIEF ENGINEER

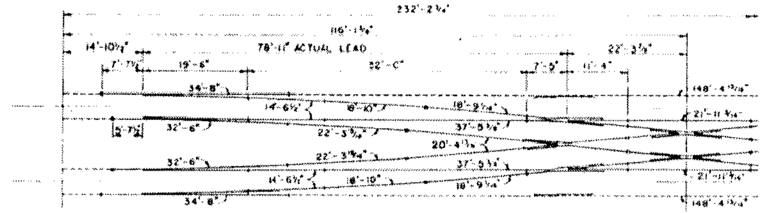
TRACKWORK STANDARD DRAWING
NO. 10 PLATED TURNOUT, DETAILS,
DIRECT FIXATION TRACK

CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	1-1/2" = 1'-0"	ST-TW-052	## of .



PLAN
NO. 10 PLATED DOUBLE CROSSOVER

SCALE ¼" = 1'-0"



RAIL LAYOUT DIAGRAM

SCALE 3/32" = 1'-0"

NO. 10 DOUBLE CROSSOVER - DIRECT FIXATION

QTY	BILL OF MATERIAL — DESCRIPTION - FURNISHED BY OTHERS
4	NO. 10 PLATED SWITCH DF COMPLETE
4	NO. 10 PLATED FROG DF COMPLETE
4	[illegible] DESIGN GUARD RAIL [illegible]
2 EA	NO. 10 DOUBLE CROSSOVER END AND CENTER CROSSING FROGS OF 14'-0" TRACK CENTERS COMPLETE
4 EA	[illegible] RAILS
8	[illegible] RAILS
2	[illegible] RAILS
36	BONDED STANDARD RAIL JOINTS COMPLETE
20	BONDED INSULATED RAIL JOINTS COMPLETE
[illegible]	DIRECT FIXATION RAIL FASTENERS COMPLETE
	DESCRIPTION - FURNISHED THIS CONTRACT
[illegible]	DIRECT FIXATION ANCHOR ASSEMBLIES
18	[illegible]

AS BUILT CONDITION

DESIGNED	DRAWN	CHECKED	APPROVED
[illegible]	[illegible]	[illegible]	[illegible]

REFERENCE DRAWINGS — NUMBER	DESCRIPTION
TW4-T-128	NO. 10 PLATED SWITCH DIRECT FIXATION
TW4-T-129	NO. 10 PLATED FROG DIRECT FIXATION

REVISIONS — DATE	BY	DESCRIPTION

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

DE LEUW, CATHER & COMPANY
SECTION DESIGNER

SUBMITTED

DE LEUW, CATHER & COMPANY
GENERAL ENGINEERING CONSULTANT

HARRY WEESE & ASSOCIATES
GENERAL ARCHITECTURAL CONSULTANT

APPROVED

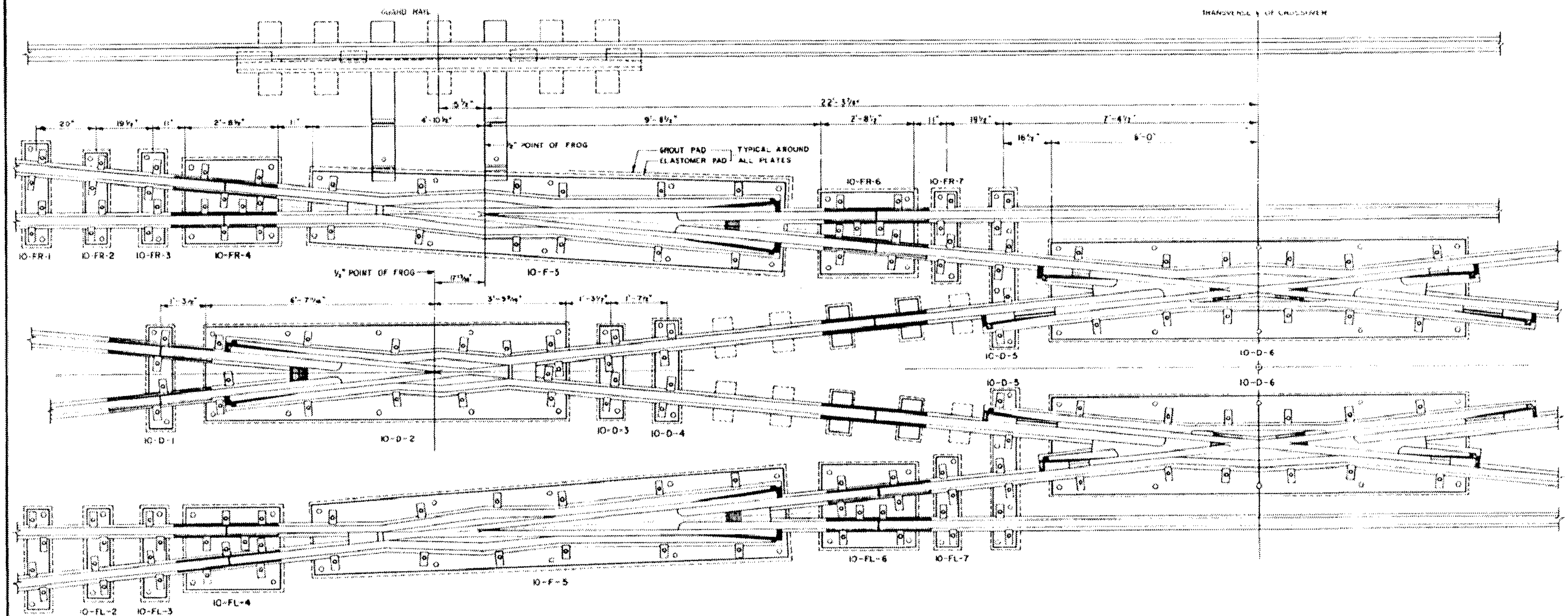
TRACKWORK-4

NO. 10 PLATED DOUBLE CROSSOVER
DIRECT FIXATION 14' TRACK CENTERS

SCALE: AS NOTED

DRAWING NO: TW4-T-158

M289-35



PLAN

SCALE ¼"=1'-0"

NO. 10 DOUBLE CROSSOVER END FROG - DF, COMPLETE

BILL OF MATERIAL

QTY	DESCRIPTION - FURNISHED BY OTHERS
1	MANGANESE STEEL INSERT END FROGS WITH LEVEL GUARDS, FOR 8°-26'-58" CROSSING ANGLE, COMPLETE (PER AREA STD PLAN NO. 769-711 AND MODIFIED AS SHOWN
1 EA	SPECIAL FROG PLATES 10-D-1 THRU 10-D-4 COMPLETE WITH RAIL CLAMPS WELDED TO SPECIAL FROG PLATES
	DESCRIPTION - FURNISHED THIS CONTRACT
4	ELASTOMER PADS 1 PER EACH SPECIAL FROG PLATE 10-D-1 THRU 10-D-4
16	SPECIAL PLATE ANCHORAGE ASSEMBLY COMPLETE
AR	GROUT

NO. 10 DOUBLE CROSSOVER CENTER FROG-DF, COMPLETE

BILL OF MATERIAL

QTY	DESCRIPTION - FURNISHED BY OTHERS
1	MANGANESE STEEL INSERT CENTER FROG WITH RAISED GUARDS, FOR 8°-26'-58" CROSSING ANGLE, COMPLETE (AREA PLAN NO. 769-711 AND MODIFIED AS SHOWN
4	SPECIAL FROG PLATE 10-D-5 COMPLETE WITH RAIL CLAMPS WELDED TO SPECIAL FROG PLATE
1	SPECIAL FROG PLATE 10-D-6 COMPLETE WITH RAIL CLAMPS WELDED TO SPECIAL FROG PLATE
	DESCRIPTION - FURNISHED THIS CONTRACT
5	ELASTOMER PADS 1 PER EACH SPECIAL FROG PLATE 10-D-5 & 10-D-6
18	SPECIAL PLATE ANCHORAGE ASSEMBLY COMPLETE
AR	GROUT

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY
AS BUILT CONDITION

DESIGNED		11-18-75 DATE
DRAWN	KOHOUTEK	11-21-75 DATE
CHECKED		DATE
APPROVED		

REFERENCE DRAWINGS

NUMBER	DESCRIPTION
TW4-T-24	FROG GUARD RAIL DETAILS

REVISIONS

DATE	BY	DESCRIPTION

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

DE LEUW, CATHER & COMPANY
SECTION DESIGNER
SUBMITTED

DE LEUW, CATHER & COMPANY
GENERAL ENGINEERING CONSULTANT
HARRY WEESE & ASSOCIATES
GENERAL ARCHITECTURAL CONSULTANT
APPROVED

TRACKWORK - 4
NO 10 PLATED DOUBLE CROSSOVER DIAMOND
DIRECT FIXATION 14'-0" TRACK CENTERS

SCALE: AS NOTED
DRAWING NO. TW4-T-159
M289-36

PLATE DATA

	A	B	C	D	E	F
10 D 1	8"	2'-11½"	2'-2⅝"	8⅝"	9⅝"	1'-4½"
10 D 3	8"	2'-8½"	1'-11⅝"	9⅞"	8⅞"	1'-10⅛"
10 D 4	8"	2'-11½"	2'-3⅝"	9⅛"	8⅞"	2'-2½"
10 D 5	8"	4'-7"	2'-7⅝"	1'-0"	1'-0"	2'-6½"

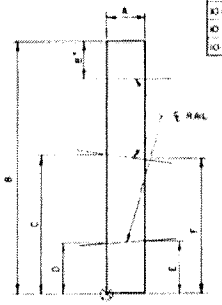
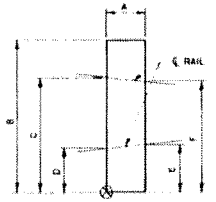
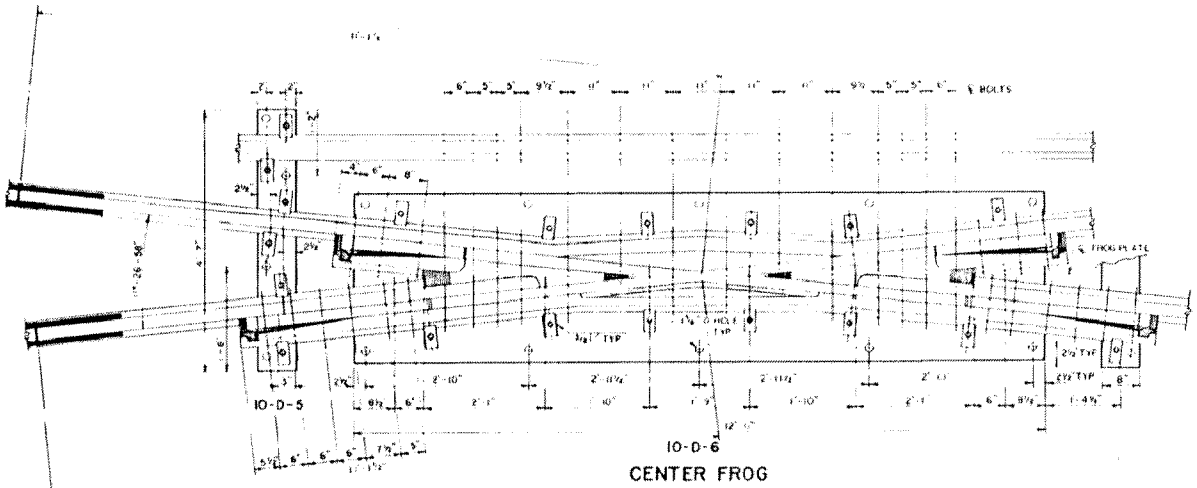


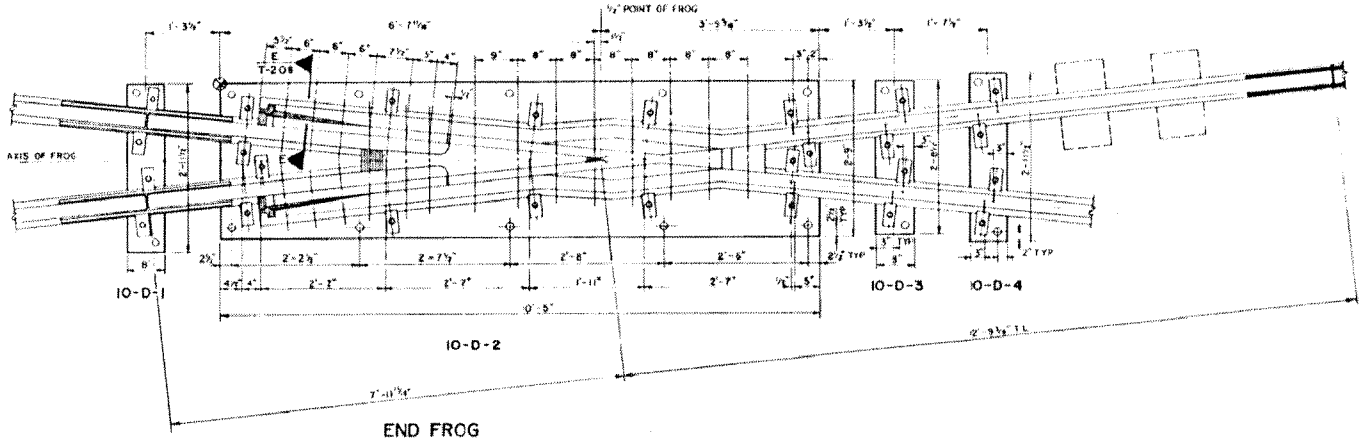
PLATE 10-D-5
NO SCALE



PLATES 10-D-1, 10-D-3 & 10-D-4
NO SCALE



CENTER FROG



END FROG

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

AS BUILT CONDITION

BY _____ DATE _____

DESIGNED ROBERT 11-27-73
DRAWN SCHOUTEN 11-27-73
CHECKED _____ DATE
APPROVED _____ DATE

REFERENCE DRAWINGS

NUMBER	DESCRIPTION

REVISIONS

DATE	BY	DESCRIPTION

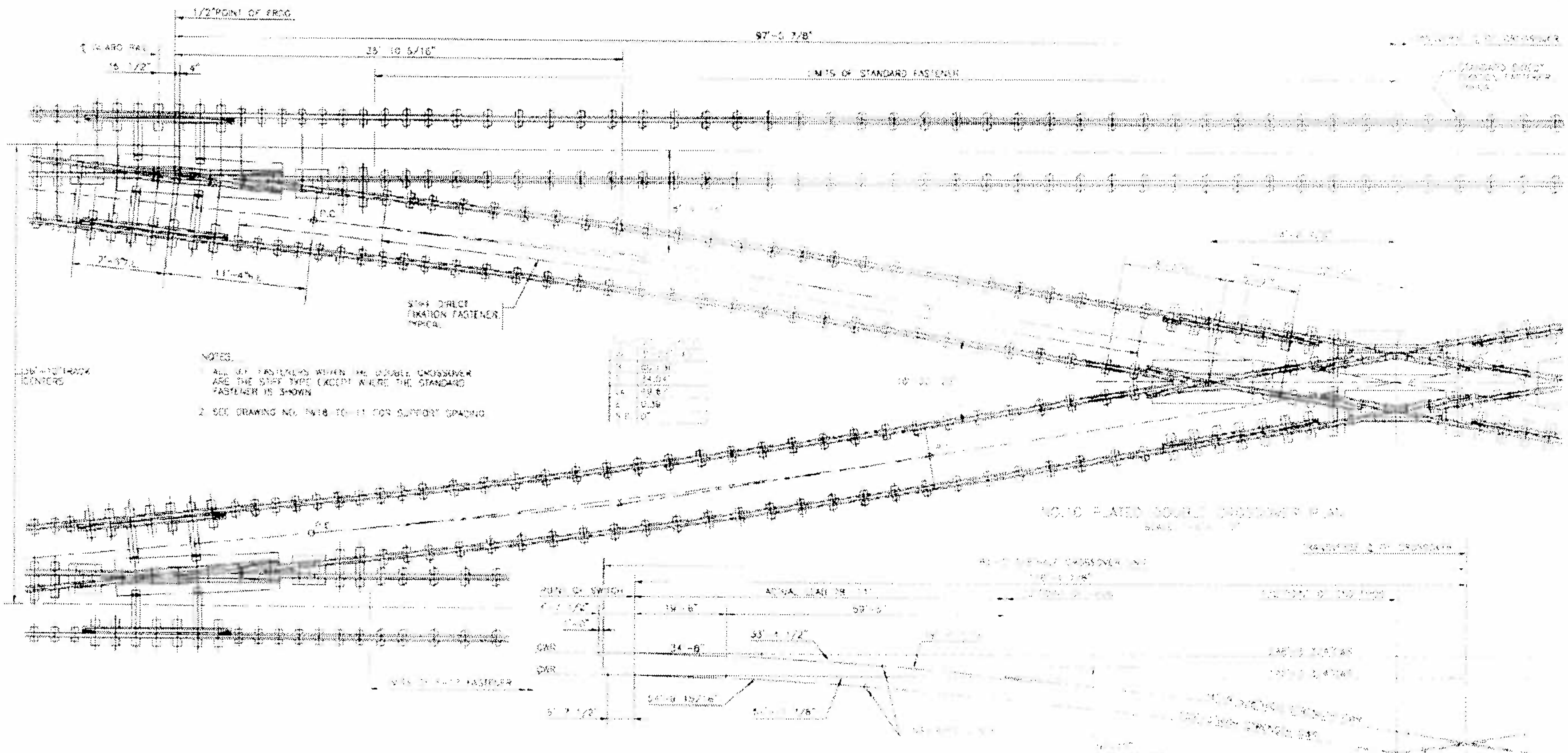
WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

DE LEUW, CATHER & COMPANY
SECTION DESIGNER
SUBMITTED _____

DE LEUW, CATHER & COMPANY
GENERAL ENGINEERING CONSULTANT ■
HARRY WEESE & ASSOCIATES
GENERAL ARCHITECTURAL CONSULTANT ☐
APPROVED _____

TRACKWORK-4
NO 10 PLATED DOUBLE CROSSOVER - DIAMOND PLATE
DETAILS - DIRECT FIXATION - 14'-0" TRACK CENTERS

SCALE 1"=1'-0" | DRAWING NO. TW4 - T - 160 | M289-37



NOTES:

1. ALL D.F. FASTENERS WITHIN THE DOUBLE CROSSOVER ARE THE STIFF TYPE EXCEPT WHERE THE STANDARD FASTENER IS SHOWN
2. SEE DRAWING NO. TW18-TO-11 FOR SUPPORT SPACING

BILL OF MATERIAL

QTY	DESCRIPTION - FURNISHED BY OTHERS
4	NO.10 PLATED SWITCH, D.F. COMPLETE
4	NO.10 PLATED FROG, D.F. COMPLETE
2	12'-6" GUARD RAILS, FULLY HEAT TREATED, COMPLETE
1 EA.	NO.10 DOUBLE CROSSOVER, END AND CENTER CROSSINGS, [illegible] COMPLETE
A.R.	STOCK RAILS AND CLOSURE RAILS
A.R.	BONDED RAIL JOINTS (INTERNAL TO THE CROSSOVER)
A.R.	[illegible] HAND PANDROL CLIPS #2050

REFERENCE DRAWINGS

REVISIONS

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

DE LEUW, CATHER & COMPANY
SECTION DESIGNER

TRACKWORK - 18
NO.10 DOUBLE CROSSOVER, 36'-10" TRACK CENTERS
PLATED, DIRECT FIXATION

TW18-TO-14

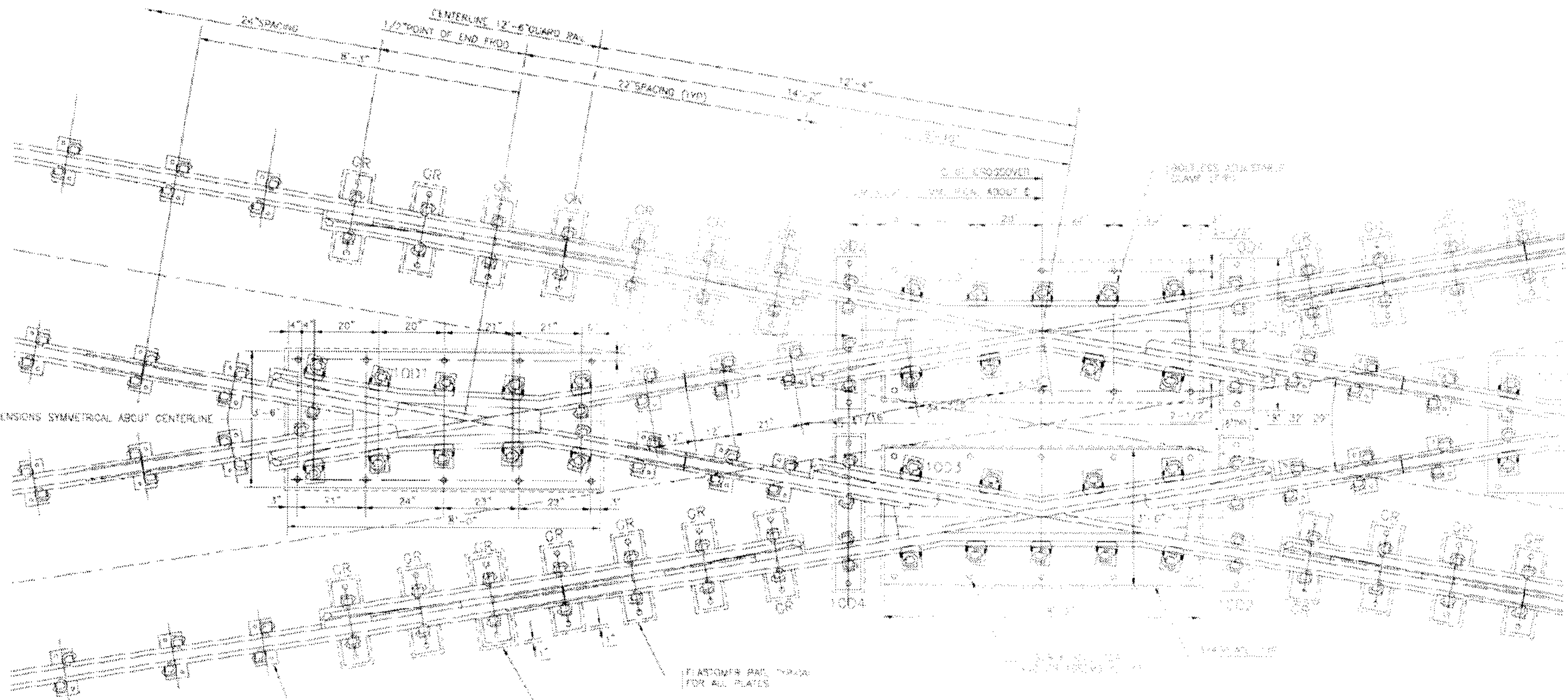


PLATE DIMENSIONS

PLATE	LENGTH	
CR	26"	
1001	56"	
1002	47"	
1003	96"	
1004	47"	

MATERIAL

QUANTITY	DESCRIPTION - FURNISHED BY OTHERS
	MANGANESE STEEL INSERT END FROG WITH LEVEL GUARDS FOR 18°-32'-39" CROSSING ANGLE, COMPLETE (PER AREA STANDARD PLAN NO. 790-81 AND 781-83) AND MODIFIED AS INDICATED
	MANGANESE STEEL INSERT CENTER FROG WITH LEVEL GUARDS FOR 18°-32'-39" CROSSING ANGLE, COMPLETE (PER AREA STANDARD PLAN NO. 790-81 AND 781-81) AND MODIFIED AS INDICATED
	SPECIAL PLATES 1001 THRU 1004, COMPLETE
	BENDING FROG INSERTS
	BOLTLESS ADJUSTABLE CLAMPS

NOTE:
SEE DRAWING NO. TW18-TD-17 FOR SUPPORT SPACING

CONTRACT NO. 1Z70SP

DESIGNED	DRAWN	CHECKED	APPROVED
S. HICKS	S. HICKS	S. SMOHOLSKI	S. SMOHOLSKI

REFERENCE DRAWINGS

NUMBER	DESCRIPTION

REVISIONS

DATE	BY	DESCRIPTION

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

DE LEUW, CATHER & COMPANY
SECTION DESIGNER

KENNETH J. WAGNER
VICE PRESIDENT OPERATIONS
BAKER HEAVY & HIGHWAY, INC.

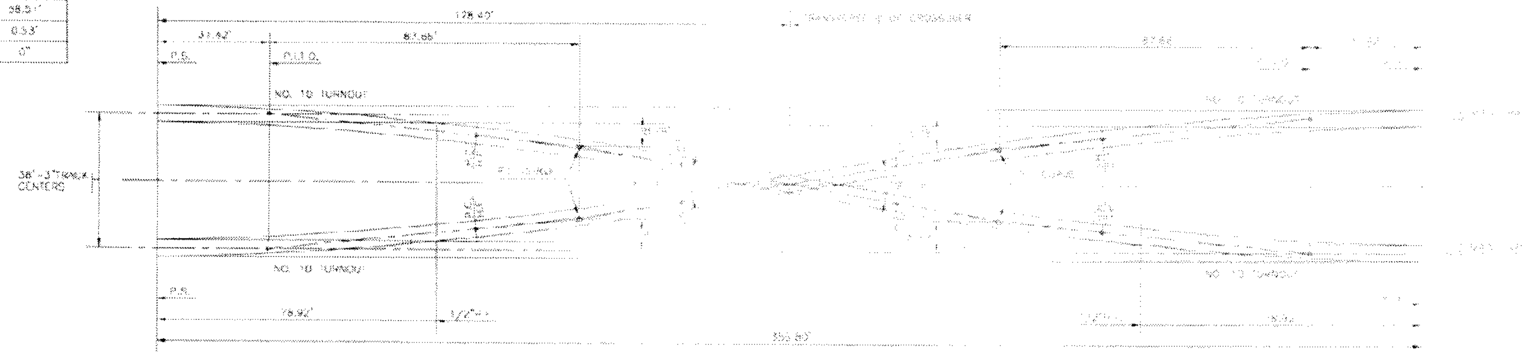
TRACKWORK - 18
NO.10 DOUBLE CROSSOVER, CENTER DIAMOND
FOR 36'-10" TRACK CENTERS, DIRECT FIXATION

SCALE 3/8"=1'-0"

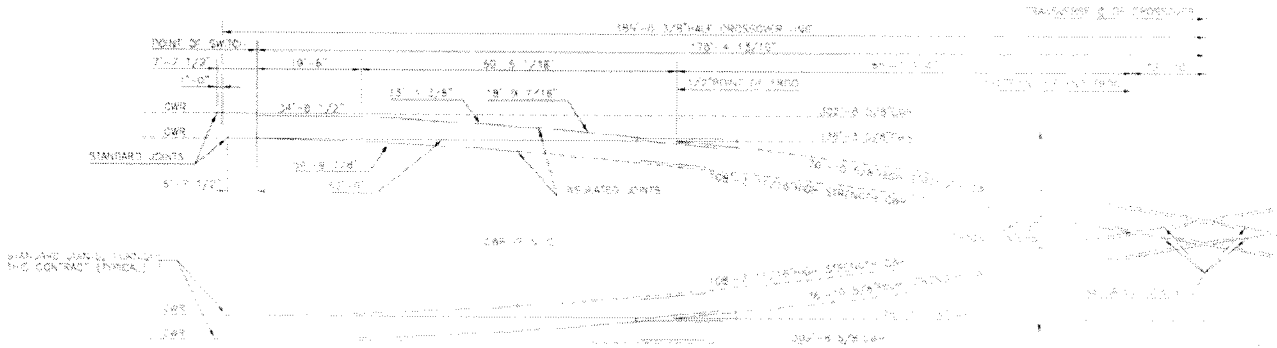
DRAWING NO. TW18-TD-15

TW18-TD-15

CURVE DATA	
Δ	4°-09'-36"
R	805.86'
T	29.27'
L	58.51'
E	0.53'
SE	0"



DOUBLE CROSSOVER GEOMETERY PLAN
SCALE 1/16" = 1'-0"



RAIL LAYOUT DIAGRAM
SCALE 3/32" = 1'-0"

DESIGNED	DRAWN	CHECKED	APPROVED

REFERENCE DRAWINGS

NUMBER	DESCRIPTION

REVISIONS

DATE	BY	DESCRIPTION

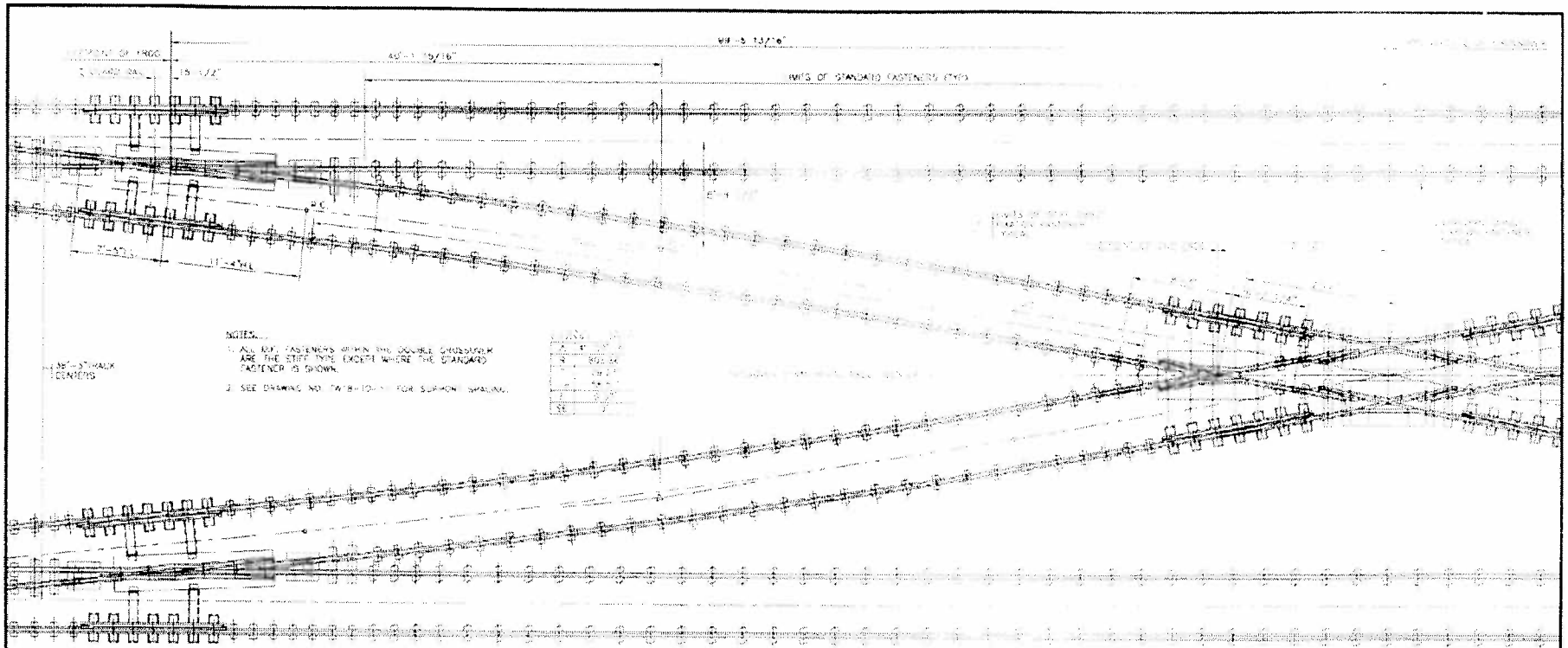
WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

PARSONS DE LEUW, INC.
SECTION DESIGNER

TRACKWORK — 18
NO.10 DOUBLE CROSSOVER, PLAN AND RAIL LAYOUT
38'-3" TRACK CENTERS, DIRECT FIXATION

SCALE 1/16" = 1'-0"

TW18-TO-16



NOTES:...

1. ALL TIE FASTENERS WITHIN THIS DOUBLE CROSSOVER ARE THE STIFF TYPE, EXCEPT WHERE THE STANDARD FASTENER IS SHOWN.
2. SEE DRAWING NO. TW18-TO-1 FOR SUPPORT SPACING.

BILL OF MATERIAL

QTY	DESCRIPTION - FURNISHED BY OTHERS
4	NO. 10 PLATED SWITCH, DF COMPLETE
4	NO. 10 PLATED FROG, DF COMPLETE
8	12' STANDARD RAIL, FULLY HEAT TREATED, 136#
1 ea	NO. 10 DOUBLE CROSSOVER, END AND CENTER DRESSING PASSES, DF, COMPLETE
A.R.	WELDED STANDARD RAIL JOINTS (INTERNAL TO DOUBLE CROSSOVER)
A.R.	BONDED INSULATED RAIL JOINTS (INTERNAL TO DOUBLE CROSSOVER)
A.R.	LEFT HAND PANDROL E-CLIP, e-2056
A.R.	DIRECT FIXATION FASTENERS (STANDARD TYPE)

QTY	DESCRIPTION - FURNISH THRU CONTRACT
A.R.	GROUT PADS
A.R.	INSERT AND ANCHOR ASSEMBLY, ANCHORING MATERIAL
A.R.	ELASTOMER PAD FOR EACH PLATE
A.R.	ANCHOR ASSEMBLIES
A.R.	DIRECT FIXATION INSERTS
A.R.	DIRECT FIXATION FASTENERS (STIFF TYPE)

REFERENCE DRAWINGS		REVISIONS		
NUMBER	DESCRIPTION	BY	DESCRIPTION	

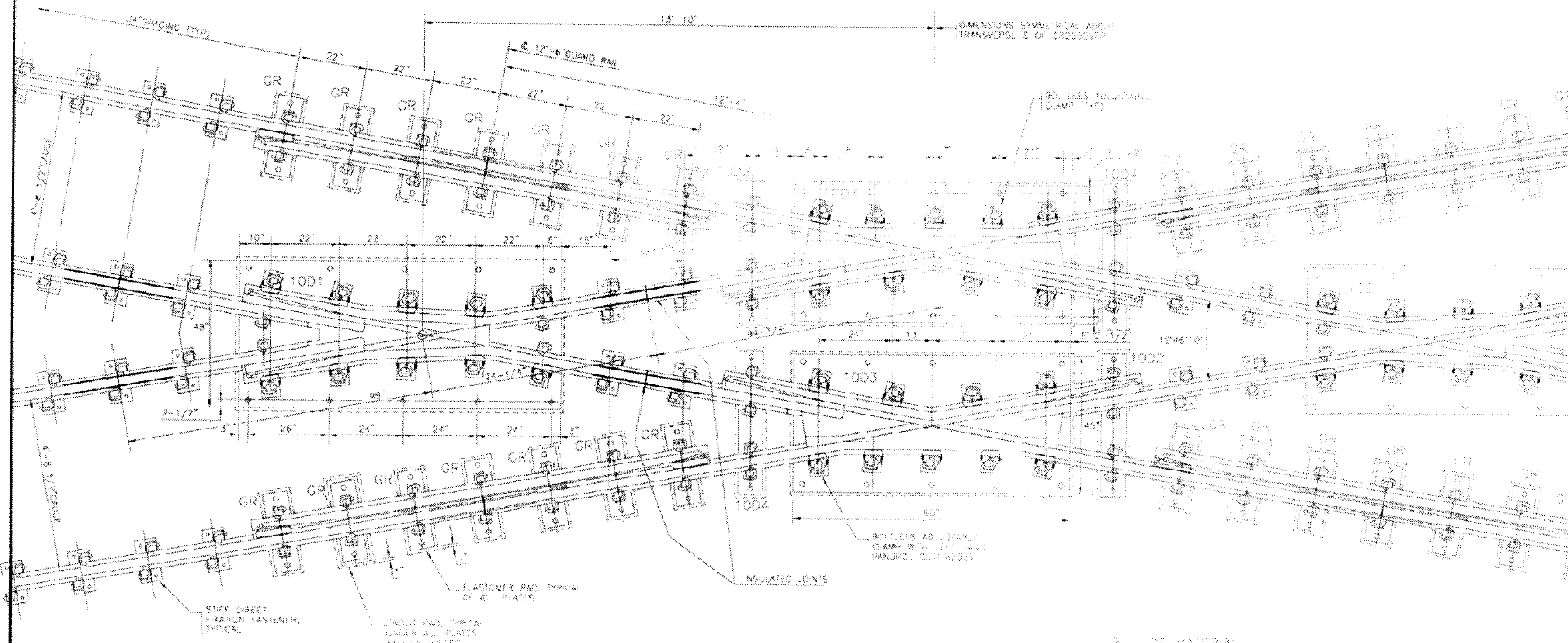
WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

DE LEUW, CATHER & COMPANY

TRACKWORK - 18

NO.10 DOUBLE CROSSOVER, 38'-3" TRACK CENTERS PLATED, DIRECT FIXATION

TW18-TO-17



NOTE:
SEE DRAWING NO. WT8-TO-11 FOR SUPPORT SPACING.

PLATE DETAIL

PLATE	LENGTH	WIDTH
GR	[illegible]	8"
1001	[illegible]	[illegible]
1002	[illegible]	8"
1003	[illegible]	49"
1004	[illegible]	8"

BILL OF MATERIAL

QUANTITY	DESCRIPTION - FURNISHED BY OTHERS
2 EACH	MANGANESE STEEL INSERT END FROG WITH LEVEL GUARDS FOR 19°-46'-10" CROSSING ANGLE, COMPLETE (PER A.R.E.A. STANDARD PLAN NO. 252-81 AND 741-83) AND MODIFIED AS INDICATED
2 EACH	MANGANESE STEEL INSERT CENTER FROG WITH LEVEL GUARDS FOR 19°-46'-10" CROSSING ANGLE, COMPLETE (PER A.R.E.A. STANDARD PLAN NO. 252-81 AND 741-83) AND MODIFIED AS INDICATED
1 EACH	SPECIAL PLATES 1001 THRU 1004, COMPLETE
1 PER FROG	BONDED FROG INSERTS
A.R.	BOLTLESS ADJUSTABLE CLAMP

CONTRACT NO. [illegible]

DESIGNED	CHECKED	DRAWN	APPROVED
[illegible]	[illegible]	[illegible]	[illegible]

REFERENCE DRAWINGS

REVISIONS

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

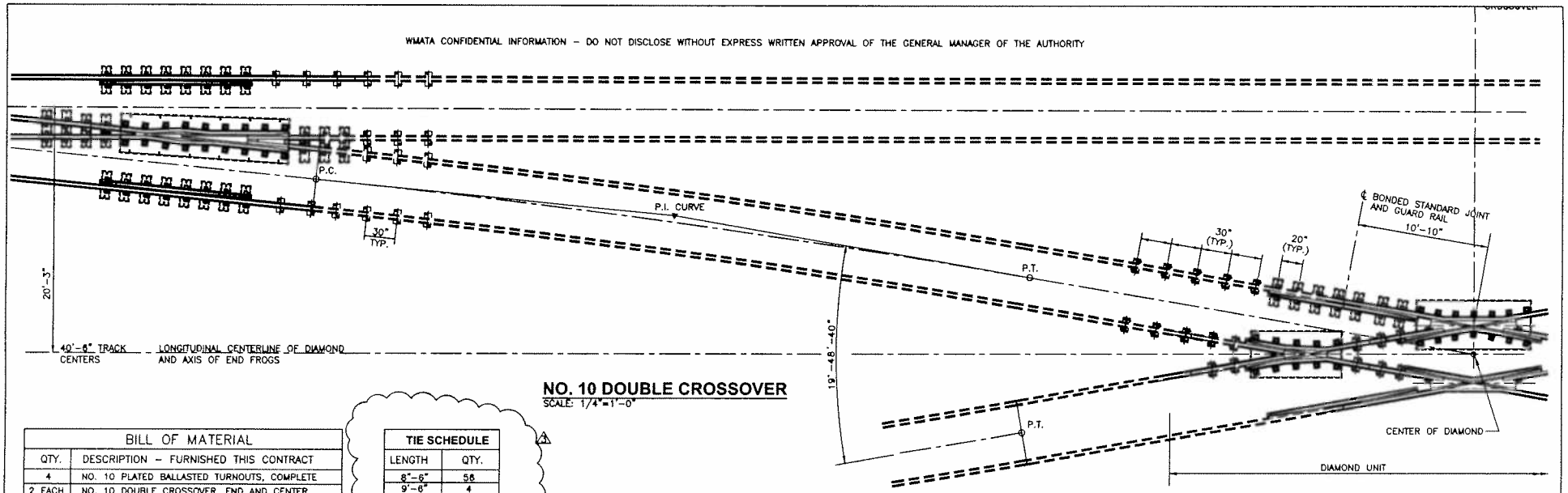
DE LEUW, CATHER & COMPANY
SECTION DESIGNER

TRACKWORK — 18
NO.10 DOUBLE CROSSOVER, CENTER DIAMOND FOR 38'-3" TRACK CENTERS, DIRECT FIXATION

SCALE 3/4"=1'-0"

DRAWING NO. TW18-TO-18

TW18-TO-18



NO. 10 DOUBLE CROSSOVER

SCALE: 1/4"=1'-0"

BILL OF MATERIAL	
QTY.	DESCRIPTION – FURNISHED THIS CONTRACT
4	NO. 10 PLATED BALLASTED TURNOUTS, COMPLETE
2 EACH	NO. 10 DOUBLE CROSSOVER, END AND CENTER FROG–G FOR 40'–6" TRACK CENTER DIAMOND
A.R.	BONDED STANDARD RAIL JOINTS, COMPLETE
A.R.	BONDED INSULATED RAIL JOINTS, COMPLETE
A.R.	ELASTOMER PADS AT EVERY PLATE FOR 7/8" SCREW SPIKES

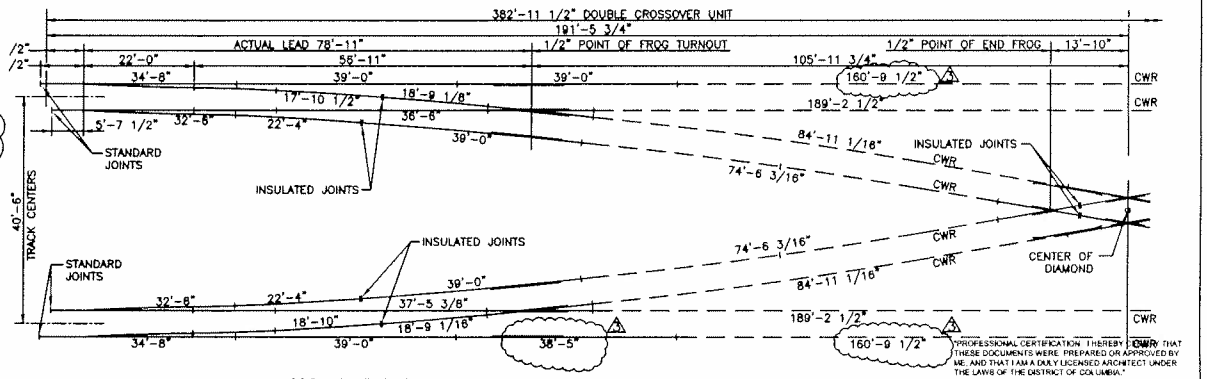
BILL OF MATERIAL	
QTY.	DESCRIPTION – FURNISHED BY OTHERS
A.R.	GROUT PADS
A.R.	INSERT AND ANCHOR ASSEMBLY, ANCHORING MATERIAL
A.R.	BONDED RAIL JOINTS TO CONNECT TURNOUTS AND DIAMOND TO CWR

TIE SCHEDULE	
LENGTH	QTY.
8'–6"	56
9'–6"	4
10'–0"	20
10'–6"	7
11'–0"	2
11'–6"	2
12'–0"	2
12'–6"	2
13'–0"	2
13'–6"	2
14'–0"	2
14'–6"	2
15'–0"	2
15'–6"	2
16'–0"	2
16'–6"	2
TOTAL	111

* DIAMOND TIE SCHEDULE ONLY. TURNOUT TIE SCHEDULE NOT INCLUDED.

CURVE DATA	
Δ	4°-10'-51"
R	812.84
T	29.67'
Lc	59.3142'
E	6 7/8"
SE	0

NOTES:
1. SEE DWG No. ST–TW–048 FOR No.10 TURNOUT DATA.
2. CROSSOVER IS SYMMETRICALLY ROTATED ABOUT CENTER OF DIAMOND.



NO. 10 DOUBLE CROSSOVER, RAIL LAYOUT DIAGRAM

SCALE: 3/32"=1'0"

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE DISTRICT OF COLUMBIA."

LICENSE No. _____

EXPIRATION DATE _____

- DC REGISTER SECTION 3413

DESIGNED R. REYES 04/06 DATE
DRAWN A. DAVIS 07/07 DATE
CHECKED RAVI AMIN 01/15 DATE

REFERENCE DRAWINGS	
NUMBER	TITLE

REVISIONS		
DATE	NUM	DESCRIPTION
07/06	01	Added Information to Plan View
10/07	02	Revised Desta Angle
07/13	03	Add Tie Schedule & Revise Rail Layout Dimension
01/15	04	Revised Title Block and Changed DC to read ST

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

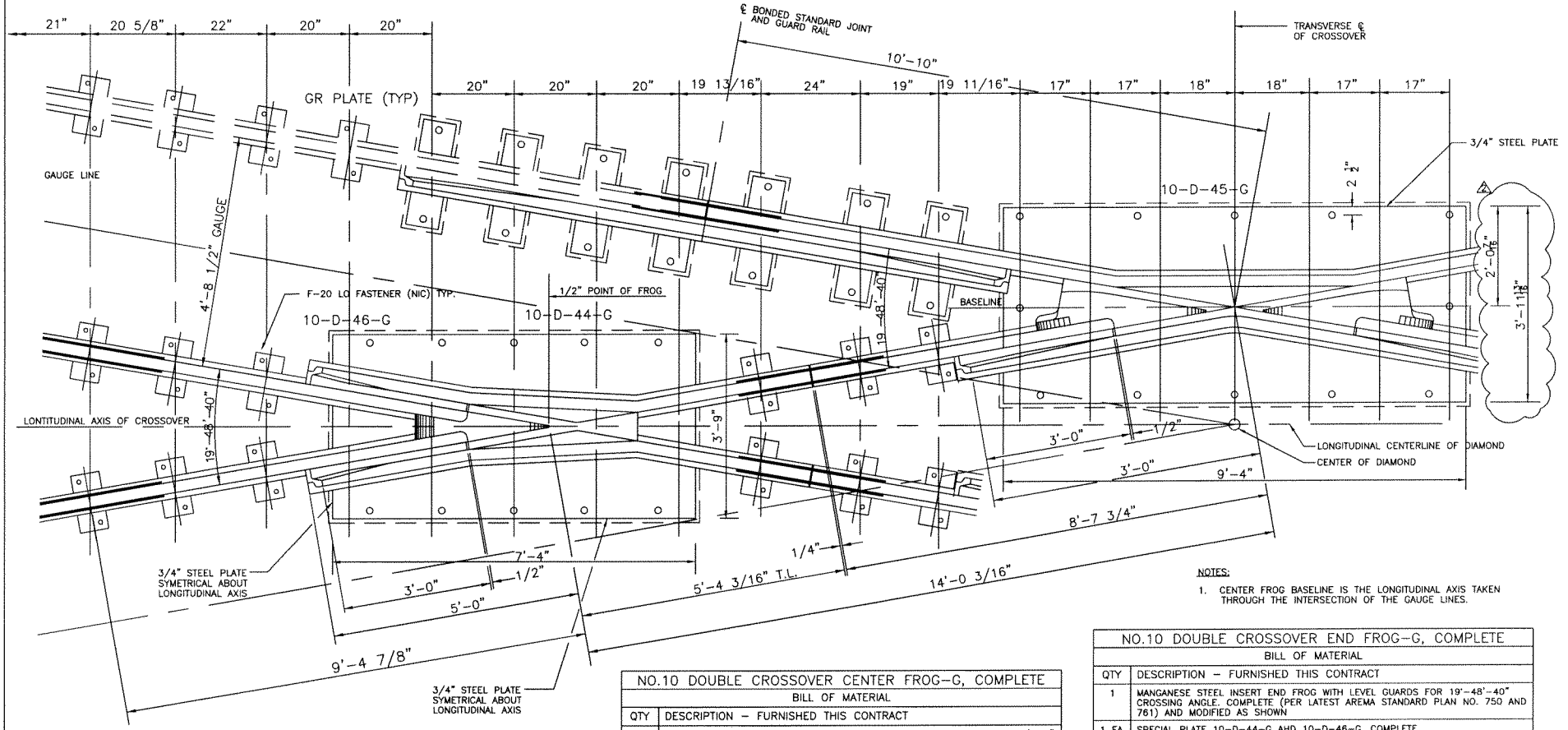
DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

APPROVED _____ DATE
THOMAS ROBINSON
DEPUTY CHIEF ENGINEER

TRACKWORK STANDARD DRAWING
NO. 10 PLATED DOUBLE CROSSOVER, TYPE 1
QUARTER UNIT, 40'-6" TRACK CENTERS, PLAN,
DIRECT FIXATION TRACK

CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	AS SHOWN	ST-TW-081	## of .



NOTES:

1. CENTER FROG BASELINE IS THE LONGITUDINAL AXIS TAKEN THROUGH THE INTERSECTION OF THE GAUGE LINES.

NO.10 DOUBLE CROSSOVER CENTER FROG-G, COMPLETE	
BILL OF MATERIAL	
QTY	DESCRIPTION – FURNISHED THIS CONTRACT
1	MANGANESE STEEL INSERT CENTER FROG WITH LEVEL GUARDS FOR 19'-48'-40" CROSSING ANGLE, COMPLETE (PER LATEST AREMA STANDARD PLAN NOS. 750 AND 761) AND MODIFIED AS SHOWN
1	SPECIAL PLATE 10-D-45-G, COMPLETE
2	BONDED FROG INSERTS
A.R.	ELASTOMER PADS AT EVERY PLATE
13	BOLTLESS ADJUSTABLE BRACE WITH LEFT HAND PANDROL CLIPS e2056

NO.10 DOUBLE CROSSOVER END FROG-G, COMPLETE	
BILL OF MATERIAL	
QTY	DESCRIPTION – FURNISHED THIS CONTRACT
1	MANGANESE STEEL INSERT END FROG WITH LEVEL GUARDS FOR 19'-48'-40" CROSSING ANGLE, COMPLETE (PER LATEST AREMA STANDARD PLAN NO. 750 AND 761) AND MODIFIED AS SHOWN
1 EA	SPECIAL PLATE 10-D-44-G AHD 10-D-46-G, COMPLETE
2	BONDED FROG INSERTS
10	BOLTLESS ADJUSTABLE BRACE WITH LEFT HAND PANDROL CLIPS e2056

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE DISTRICT OF COLUMBIA."

LICENSE No. _____

EXPIRATION DATE: _____

- DC REGISTER SECTION 3413

DESIGNED R. REYES 04/06 DATE
DRAWN A. DAVIS 07/07 DATE
CHECKED RAVI AMIN DATE

REFERENCE DRAWINGS	
NUMBER	TITLE

REVISIONS		
DATE	NUM	DESCRIPTION
07/07	01	Added Information to Plan View
07/13	02	Revised Steel Plate Dimension
01/15	03	Revised Title Block and Changed DD to read ST

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

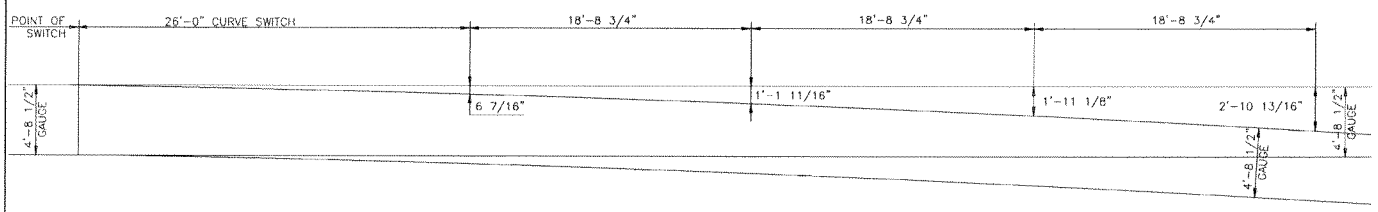
DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

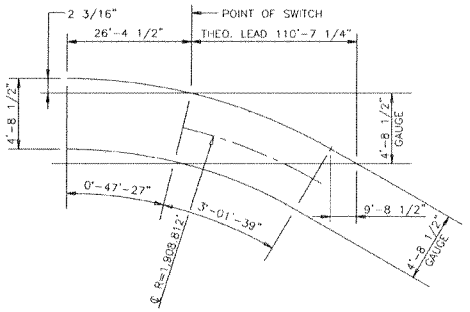
APPROVED _____ DATE
THOMAS ROBINSON
DEPUTY CHIEF ENGINEER

TRACKWORK STANDARD DRAWINH NO. 10 PLATED DOUBLE CROSSOVER, 40'-6" TRACK CENTERS, DIAMOND & END FROG DETAIL, DIRECT FIXATION TRACK

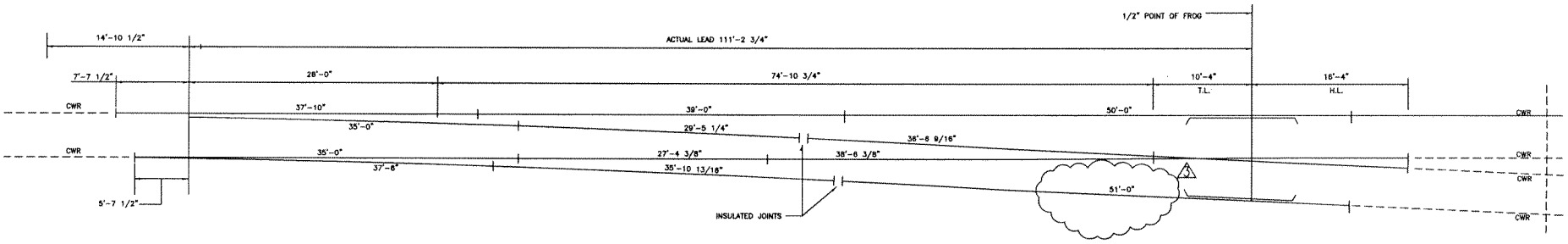
CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	AS SHOWN	ST-TW-082	## of .



NO. 15 OFFSET DIAGRAM
SCALE: 1/4"=1'-0"



NO. 15 TURNOUT GEOMETRY
NOT TO SCALE



RAIL LAYOUT DIAGRAM
SCALE: 1/8"=1'-0"

"PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE DISTRICT OF COLUMBIA."

LICENSE No. _____

EXPIRATION DATE: _____

- DC REGISTER SECTION 3413

DESIGNED	R.REYES	10/05 DATE
DRAWN	A. DAVIS	06/06 DATE
CHECKED	RAVI AMIN	01/15 DATE

REFERENCE DRAWINGS

NUMBER	TITLE

REVISIONS

DATE	NUM	DESCRIPTION
04/05	01	Rev. for DD-DWG Approval, Apr. 2005
06/06	02	Minor Revision
06/13	03	Dimension to Accommodate Unsuspended Rail Joint near Frog
01/15	04	Revised Title Block and Changed DD to read ST

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

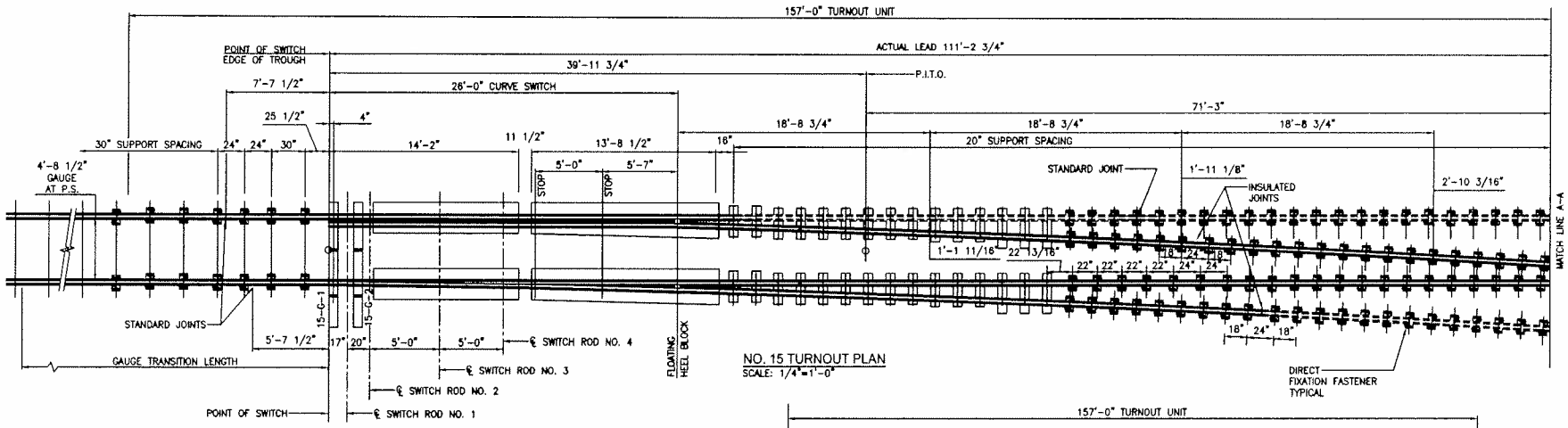
DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

APPROVED _____ DATE
THOMAS ROBINSON
DEPUTY CHIEF ENGINEER

TRACKWORK STANDARD DRAWING
NO. 15 TURNOUT, OFFSET, GEOMETRY &
RAIL LAYOUT DIAGRAM,
DIRECT FIXATION TRACK

CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	AS SHOWN	ST-TW-053	## of .

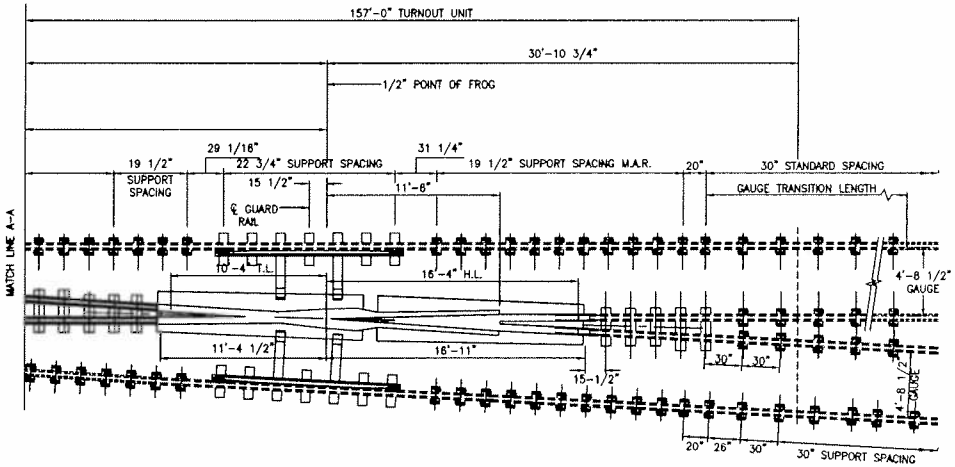


NO. 15 TURNOUT PLAN
SCALE: 1/4"=1'-0"

TURNOUT DATA		
FROG	NUMBER	15
	ANGLE	3°-49'-06"
	TOE LENGTH	10'-4"
	HEEL LENGTH	16'-4"
	TOTAL LENGTH	26'-8"
	TOE SPREAD	7 3/4"
	HEEL SPREAD	13 9/16"
SWITCH	LENGTH OF SWITCH RAIL	26'-0"
	HEEL SPREAD	6 7/16"
	HEEL ANGLE	1°-34'-13"
POINT CURVED	THICKNESS AT POINT	0"
	ANGLE AT POINT	0°-47'-27"
	RADIUS	1911.166'
	VERTEX DISTANCE	0"
POINT STRAIGHT	THICKNESS AT POINT	0"
	ANGLE AT POINT	0°-47'-27"
	RADIUS	1908.458'
	VERTEX DISTANCE	0"
ACTUAL LEAD		111'-2 3/4"
STRAIGHT CLOSURE RAIL LENGTH		65'-10 3/8"
CURVED CLOSURE RAIL LENGTH		65'-11 3/16"
CURVE TURNOUT	CENTER LINE RADIUS	1908.812'
	DEGREE OF CURVE	3°-00'-07"
	CENTRAL ANGLE	2°-14'-53"
TANGENT ADJACENT TOE OF FROG		0"

BILL OF MATERIAL	
QTY.	DESCRIPTION - FURNISHED THIS CONTRACT
1	NO. 15 PLATED SWITCH, D.F., COMPLETE
1	NO. 15 PLATED FROG, D.F., COMPLETE
2	12'-6" TEE RAIL DESIGN GUARD RAIL, COMPLETE
A.R.	STRAIGHT CLOSURE RAIL, STOCK RAIL & TURNOUT RAIL
A.R.	CLOSURE RAIL, STOCK RAIL & TURNOUT RAIL
9	STANDARD RAIL JOINTS COMPLETE
2	INSULATED JOINTS COMPLETE
A.R.	DIRECT FIXATION FASTENERS
A.R.	SPRING CLIPS
A.R.	ELASTOMER PAD FOR EACH PLATE

NOTES:
1. GAUGE WIDTH THROUGHOUT TURNOUT IS 4'-8 1/2".
2. TURNOUT UNITS SHALL BE FULLY ASSEMBLED IN THE FACTORY FOR INSPECTION MAKE-UP RAIL SHALL BE USED DURING FACTORY ASSEMBLY TO ASSURE LOCATION AND ALIGNMENT OF PLATES USED TO FASTEN CWR.
3. ALL RAIL AND COMPONENTS SHALL CONFORM TO 115 RE RAIL SECTION.
4. RAIL SHALL BE HEAD HARDENED.
5. CLOSURE RAIL LENGTHS INDICATED ARE TOTAL LENGTHS AND DO NOT ALLOW FOR STANDARD OR INSULATED JOINTS.
6. RAIL JOINTS SHOWN IN RAIL LAYOUT DIAGRAM INTERNAL TO THE TURNOUT ARE REQUIRED. ALL OTHER JOINTS REQUIRED FOR PANELIZING THE SWITCH OR TO AID IN TRANSPORTING COMPONENTS SHALL BE LOCATED BY THE CONTRACTOR AND SUBMITTED TO THE ENGINEER FOR APPROVAL JOINTS IN OPPOSITE RAILS SHALL HAVE A TWO PLATE STAGGER.
7. RAIL ENDS TO BE JOINTED TO CWR ARE UNDRILLED.
8. DO NOT DRILL FOR JOINTS ON STOCK RAILS AHEAD OF P. S.
9. RIGHT HAND TURNOUT IS SHOWN. LEFT HAND TURNOUT IS OPPOSITE HAND.
10. ALL RAILS WITHIN TURNOUT UNITS ARE CLAMPED TO THE PLATES BY LEFT HAND PANDROL SPRING CLIPS - E2056.
11. RAIL AT JOINT BARS ARE FASTENED WITH LEFT HAND MODIFIED 'E' CLIPS TYPE 'J' CLIPS OR TYPE 'C' CLIPS.
12. DIMENSIONS SHOWN ON STOCK RAILS ARE STANDARD. THE AUTHORITY WILL SPECIFY STOCK RAIL LENGTHS AHEAD OF THE P.S. WHERE OTHER THAN STANDARD LENGTHS ARE REQUIRED.
13. LOCATE SEPARATOR BLOCKS NOT MORE THAN 4'-0" ON CENTERS AND AS NECESSARY TO CLEAR JOINT BARS AND ANCHOR BOLTS.
14. GUARD RAILS ARE 132 RE RAIL SECTION HEAD HARDENED.
15. WIDTH AND LENGTH OF ELASTOMER PADS SHALL BE 2" LARGER THAN DIMENSIONS OF CORRESPONDING PLATES



"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE DISTRICT OF COLUMBIA."

LICENSE No. _____

EXPIRATION DATE _____

- DC REGISTER SECTION 3413

DESIGNED R. REYES 10/05 DATE
DRAWN A. DAVIS 06/06 DATE
CHECKED RAVI AMIN 01/15 DATE

REFERENCE DRAWINGS		REVISIONS		
NUMBER	TITLE	DATE	NUM	DESCRIPTION
		07/15/02	01	Revised Bill of Materials
		04/05	02	Rev. for DD Drawing Approval, Apr. 2006
		06/06	03	Minor Revisions
		06/06	04	Show Grout Pad Cut-Outs for Switch Rods
		09/06	05	Revised Bill of Materials
		01/15	06	Revised Title Block & Changed DD to read ST

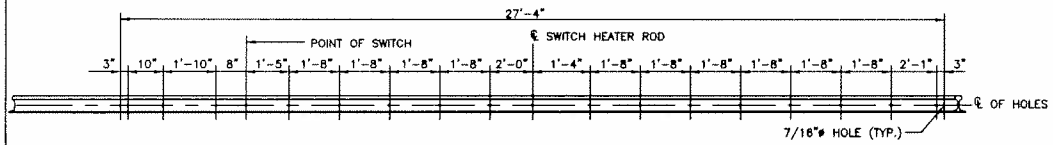
WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY
DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

APPROVED _____ DATE
THOMAS ROBINSON
DEPUTY CHIEF ENGINEER

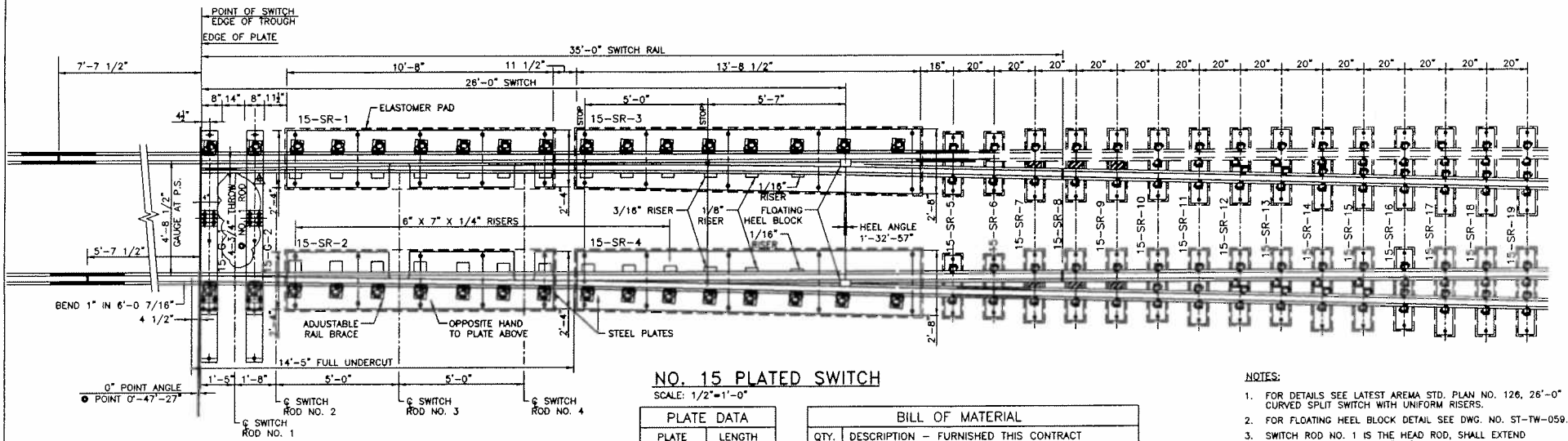
TRACKWORK STANDARD DRAWING
NO. 15 TURNOUT, PLAN.
DIRECT FIXATION TRACK

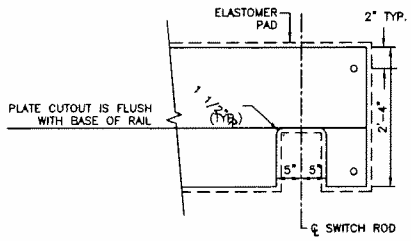
CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	1/4"=1'-0"	ST-TW-054	## of .



STOCK RAIL DRILLING FOR SWITCH HEATER ROD BRACKETS

NOT TO SCALE





DETAIL – CUTOUT FOR PLATE

NOT TO SCALE

NO. 15 PLATED SWITCH

SCALE: 1/2"=1'-0"

PLATE DATA	
PLATE	LENGTH
15-SR-5	30"
15-SR-6	30"
15-SR-7	34"
15-SR-8	34"
15-SR-9	34"
15-SR-10	34"
15-SR-11	36"
15-SR-12	36"
15-SR-13	36"
15-SR-14	39"
15-SR-15	39"
15-SR-16	39"
15-SR-17	42"
15-SR-18	42"
15-SR-19	42"

BILL OF MATERIAL	
QTY.	DESCRIPTION – FURNISHED THIS CONTRACT
1 EA.	26'-0" SWITCH ON 35'-0" RAIL WITH FLOATING HEEL BLOCK, LEFT HAND CURVED RIGHT HAND STRAIGHT, COMPLETE WITH REINFORCING BARS AND RAIL STOPS ATTACHED (POINT DETAIL 5100 PER LATEST AREMA STD. PLAN NO. 221) AND AS MODIFIED AS SHOWN
1	37'-10" STRAIGHT. UNDERCUT STOCK RAIL
1	37'-6" BENT AND CURVED. UNDERCUT STOCK RAIL.
4	INSULATED VERTICAL SWITCH RODS, SEE NOTE #3
2	FLOATING HEEL, COMPLETE (SEE DWG. NO. DD-TW-059)
1 EA.	GAUGE PLATES 15-G-1, 15-GR-2 AND SPECIAL SWITCH PLATES 15-SR-1 THRU 15-SR-4 COMPLETE WITH ADJUSTABLE RAIL BRACES, GRADUATED RISER PLATES, RAIL STOPS AND RAIL CLAMPS WELDED TO SWITCH PLATES
2 EA.	SPECIAL SWITCH PLATES 15-SR-5 THRU 15-SR-19 COMPLETE WITH RAIL CLAMPS AND RAIL STOPS WELDED TO SWITCH PLATES
2	BONDED SWITCH INSERTS, COMPLETE
A.R.	SPRING CLIPS
A.R.	ELASTOMER PAD FOR EACH PLATE

NOTES:

1. FOR DETAILS SEE LATEST AREMA STD. PLAN NO. 126, 26'-0" CURVED SPLIT SWITCH WITH UNIFORM RISERS.
2. FOR FLOATING HEEL BLOCK DETAIL SEE DWG. NO. ST-TW-059.
3. SWITCH ROD NO. 1 IS THE HEAD ROD, SHALL EXTEND BEYOND BASE OF STOCK RAILS.

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LICENSE No. _____

EXPIRATION DATE _____

- DC REGISTER SECTION 3413

DESIGNED	R. REYES	10/05 DATE
DRAWN	A. DAVIS	06/06 DATE
CHECKED	RAVI AMIN	01/15 DATE

REFERENCE DRAWINGS	
NUMBER	TITLE

REVISIONS		
DATE	NUM	DESCRIPTION
07/15/02	01	Revised Bill of Materials
02/04/03	02	Revised Stock Rail Drilling
04/06	03	Rev. for DD-DWG Approval, Apr. 2006
06/06	04	Minor Revision
06/06	06	Revised Stock Rail Drilling Dimensions
06/13	06	Revised Throw at Rod
01/15	07	Revised Title Block and Changed DD to read ST

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

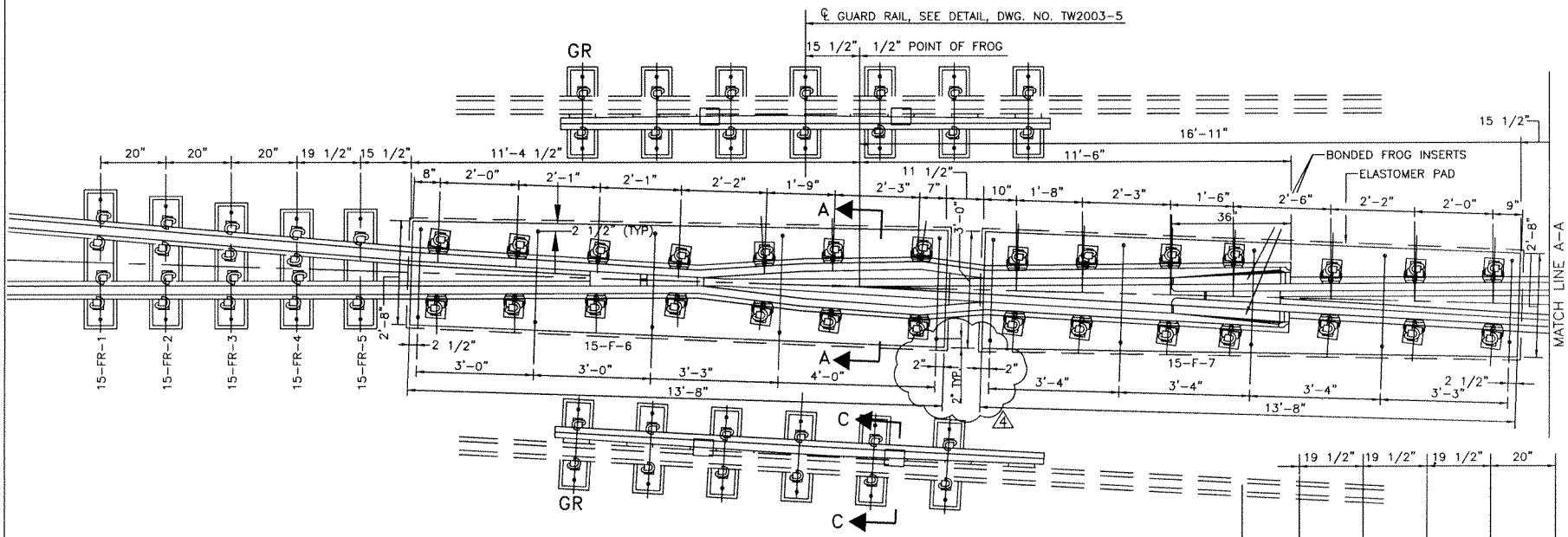
DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

APPROVED _____ DATE
THOMAS ROBINSON
DEPUTY CHIEF ENGINEER

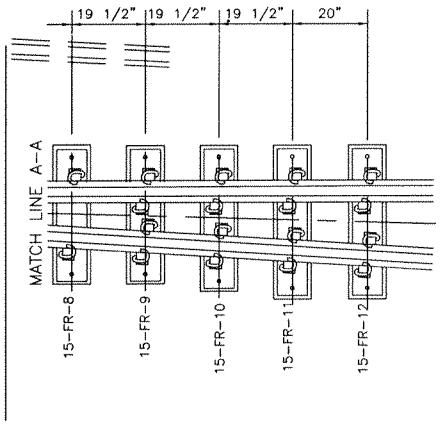
TRACKWORK STANDARD DRAWING NO. 15 TURNOUT, PLATED SWITCH, DIRECT FIXATION TRACK

CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	AS SHOWN	ST-TW-055	## of .



NO. 15 PLATED FROG

SCALE: 3/4"=1'-0"



BILL OF MATERIAL	
QTY.	DESCRIPTION – FURNISHED THIS CONTRACT
1	NO. 15 PLATED RAILBOUND MAGANESE FROG PER LATEST AREMA STD. PLAN NO. 624 AND AS MODIFIED AS SHOWN
2	12"-6" TEE RAIL DESIGN GUARD RAIL, FULLY HEAT TREATED, COMPLETE
1 EA.	SPECIAL FROG PLATES 15-FR-1 THRU 15-FR-12, COMPLETE
2	BONDED FROG INSERTS, COMPLETE

PLATE DATA	
PLATE	LENGTH
15-FR-1	41"
15-FR-2	39"
15-FR-3	37"
15-FR-4	35"
15-FR-5	35"
15-FR-8	35"
15-FR-9	35"
15-FR-10	37"
15-FR-11	39"
15-FR-12	39"

3

NOTES:
1. FOR PLATE INSULATORS, SEE DETAIL, DWG. NO. ST-TW-057 (55E SWITCH MACHINE).
2. FOR SECTION C-C, SEE DETAIL, DWG. NO. ST-TW-092.
3. ELASTOMER PAD SHALL EXTEND 1" BEYOND THE OUTLINE OF THE PLATES.
4. FOR PLATE INSULATORS WITH M3 SWITCH, SEE DETAIL, DWG. NO. ST-TW-092.

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CHECKED RAVI AMIN 01/15 DATE

REFERENCE DRAWINGS

NUMBER	TITLE

REVISIONS

DATE	NUM	DESCRIPTION
08/02	01	Updated Bill of Materials
04/05	02	Rev. for DD-DWG Approval, Apr. 2005
06/06	03	Minor Revision
09/06	04	Revised Information to Plan and Notes
06/13	05	Revised Hole Spacing at Plated Frog
01/15	06	Revised Title Block and Changed DD to read ST

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

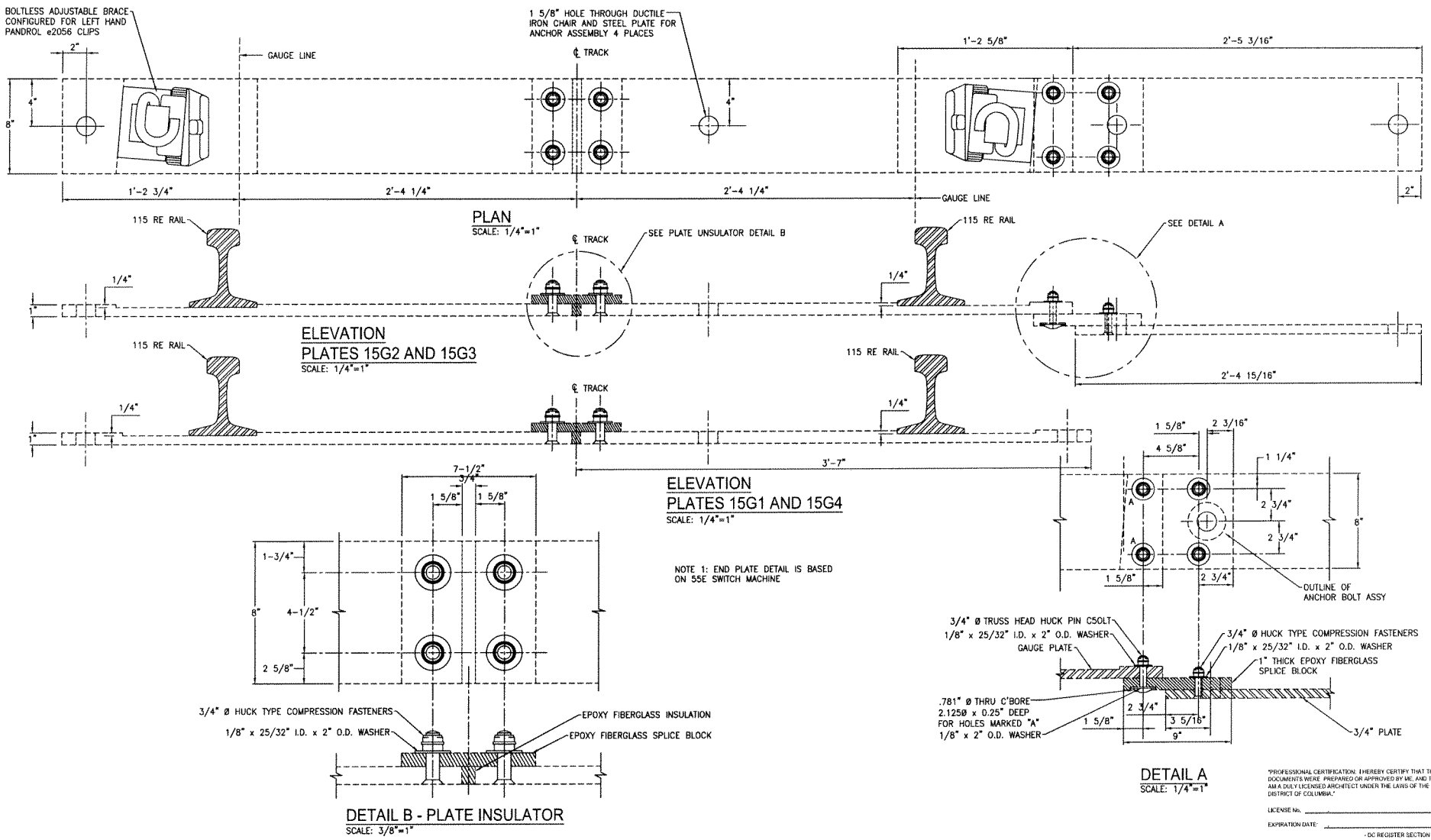
DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

APPROVED _____ DATE
THOMAS ROBINSON
DEPUTY CHIEF ENGINEER

TRACKWORK STANDARD DRAWING NO. 15 TURNOUT, PLATED FROG, DIRECT FIXATION TRACK

CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	3/4" = 1'-0"	ST-TW-056	## of .



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REFERENCE DRAWINGS

NUMBER	TITLE

REVISIONS

DATE	NUM	DESCRIPTION
04/05	01	Rev. for DD-DWG Approval, Apr. 2005
09/06	02	Minor Revision
01/15	03	Revised Title Block and Changed DD to read ST

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
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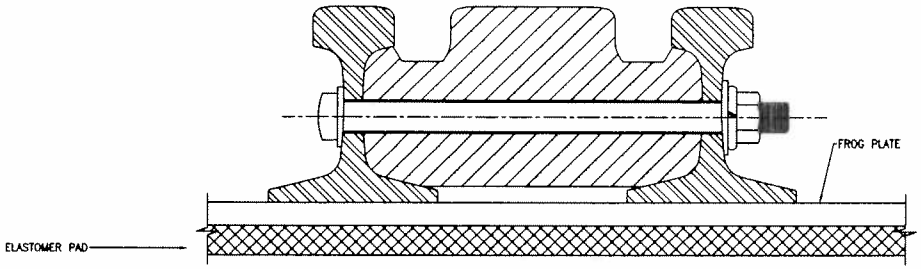
THOMAS ROBINSON
DEPUTY CHIEF ENGINEER

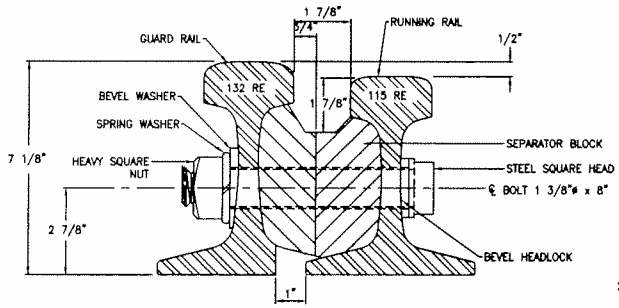
TRACKWORK STANDARD DRAWING NO. 15 TURNOUT, DETAILS DIRECT FIXATION TRACK SHEET 1 OF 2

CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	AS SHOWN	ST-TW-057	## of .



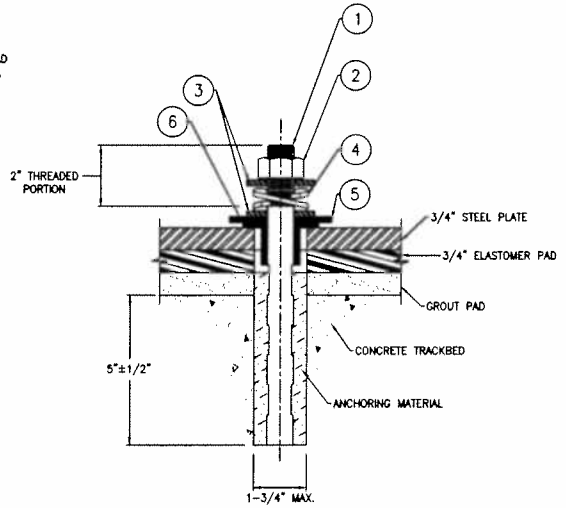
SECTION A-A - PLATED FROG

NOT TO SCALE



SECTION C-C - SEPARATOR BLOCK

NOT TO SCALE



SPECIAL PLATE ANCHOR ASSEMBLY

NOT TO SCALE

BILL OF MATERIAL – ANCHOR ASSEMBLY		
ITEM	QTY.	DESCRIPTION – FURNISHED THIS CONTRACT
1	1	STEEL STUD 7/8"x10" ASTM-A449
2	1	STEEL HEX NUT FOR 7/8"ø BOLT, WASHER FACED, ASTM-A-325
3	2	STEEL WASHER, 15/16" I.D., 2-1/4" O.D., 3/16" THICK, ASTM-A-325
4	1	DOUBLE COIL SPRING WASHER
5	1	INSULATING FIBER WASHER, 1-9/32" I.D., 3-3/8" O.D.
6	1	ONE PIECE – INSULATING FIBER WASHER (29/32" I .D., 2-1/2" O.D.) AND INSULATING FIBER SLEEVE (29/32" I.D., 1-9/32" O.D.)

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DRAWN _____ DATE

CHECKED _____ DATE

REFERENCE DRAWINGS	
NUMBER	TITLE

REVISIONS		
DATE	NUM	DESCRIPTION
01/15	01	Revised Title Block and Changed DD to read ST

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

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CENI - TRACK STRUCTURES & FACILITIES

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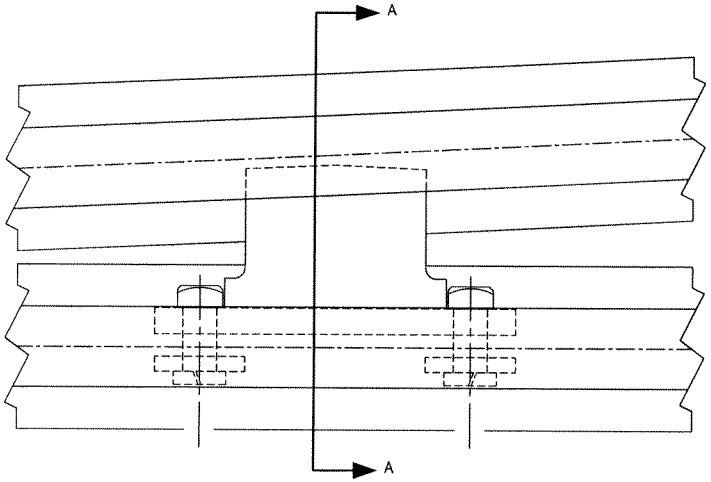
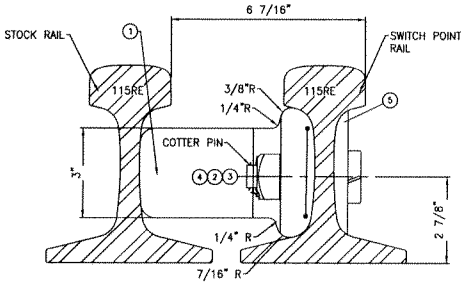
THOMAS ROBINSON
DEPUTY CHIEF ENGINEER

TRACKWORK STANDARD DRAWING NO. 15 TURNOUT, DETAILS, DIRECT FIXATION TRACK SHEET 2 OF 2

CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	AS SHOWN	ST-TW-058	## of .

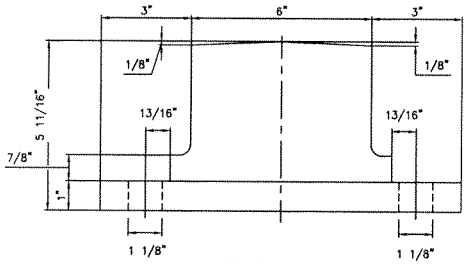


PLAN
NOT TO SCALE



SECTION A-A
HEEL BLOCK ASSEMBLY
NOT TO SCALE

BILL OF MATERIALS– HEEL BLOCK ASSEMBLY		
ITEM No.	QTY.	DESCRIPTION – FURNISHED THIS CONTRACT
1	1	TWO HOLE FLOATING HEEL BLOCK CASTING, HF115RE–TRI
2	2	BOLT, SQ. HD., 1"ø x 4 1/2" LG. C/W NUT AND COTTER HOLE
3	2	SPRING WASHER, 1"
4	2	COTTER PIN, 1/4"
5	2	1/2" D–BAR WASHER



DETAIL
NOT TO SCALE

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REVISIONS		
DATE	NUM	DESCRIPTION
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06/06	02	Minor Revision
01/15	03	Revised Title Block & Changed DD to read ST

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY
DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - TRACK STRUCTURES & FACILITIES

REVISION SUBMITTED _____ DATE

APPROVED _____
THOMAS ROBINSON, DEPUTY CHIEF ENGINEER DATE

TRACKWORK STANDARD DRAWING NO. 15 TURNOUT, FLOATING HEEL BLOCK DETAILS

CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
FQ-	NOT TO SCALE	ST-TW-059	## of .