STANDARD SPECIFICATIONS FOR THE DESIGN AND CONSTRUCTION OF PRIVATE SIDETRACKS

OFFICE OF:
VICE PRESIDENT–ENGINEERING
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NOTICE TO USER: This manual has been prepared for the exclusive use of CSX Transportation's existing and potential customers, and their engineering consultants, for the design and construction of private sidetracks on properties operated by CSX Transportation. The information contained herein is subject to change without notice. It is the responsibility of the user to ensure that the latest version is being used for the design and construction of private sidetracks.

All persons entering the CSXT right-of-way during surveying and construction of the sidetrack shall follow all CSXT safety rules including wearing appropriate personal protective equipment to include safety glasses with side shields, hard hats, steel toe boots with distinct heel separation, and high visibility safety vests.

Current versions of this document may be obtained from
CSX Transportation's Industrial Development Department

or online at CSXT's Website at
www.csx.com
by clicking on: Customers..Business Development..Identify, Build, or Expand a Rail-Served Site. Guidelines

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Design

A) GENERAL

These guidelines are intended to provide information and guidance for the design and specifications for the construction of private railroad tracks and their supporting roadbeds. This document is intended to provide this information to industries and Contractors with varying degrees of experience in the design and construction of private tracks. The information provided, both general and specific, should **not** be considered as specifications, but may be used to assist in the preparation of specifications and preliminary drawings.

The Industry shall construct all roadbed, ditches, drainage structures, and subballast required for the proposed track, **including** that of CSXT's ownership. When a proposed turnout is to be located in an existing CSXT owned track, CSXT will perform the construction of the turnout. CSXT will normally construct, own, and maintain the mainline turnout(s) and the portion of the sidetrack from the mainline turnout to and including the derail and/or the insulated joints in signal territory. The Industry will normally construct, own, and maintain all remaining track from the CSXT ownership point into the rest of the industry. If the proposed turnout is located in an existing Industry owned track, Industry shall construct, own, and maintain this track. Final ownership and maintenance points will be determined by CSXT and shall be described in a Private Sidetrack Agreement that the Industry shall execute with CSX Transportation. The ownership point shall be shown on the plans submitted by the Industry and upon construction will be denoted by as a crosstie painted red.

Industry shall provide, at no cost to CSXT, sufficient right of way for the construction and maintenance of CSXT owned track constructed on property beyond CSXT right of way. When industry owned track is constructed on CSXT right of way, CSXT will negotiate with the Industry for the occupancy of its property.

Industry shall furnish plans detailing track and roadbed design, drainage facilities, tipple details, building and loading dock sections, wire and pipeline crossings, car puller details, under track unloading pits, vehicle crossings (at grade or grade separations, public and private), etc., for design and clearance approval by CSXT. Preliminary plans should be submitted as early as possible to avoid potential problems and delay. The industry should attempt to provide for future expansion during the design and construction of their sidetrack. CSXT engineers are available for consultation during all phases of a track project. This service should be utilized for any questions that may arise.

Proper notification must be made to the appropriate CSXT personnel prior to industry entering CSXT right-of-way to construct roadbed or tracks. A separate right-of-entry agreement with CSXT will be required to access the right-of-way for surveying and preliminary engineering activities prior to execution of Sidetrack Agreement with CSXT. When construction operations are closer than twenty-five feet from the centerline of a CSXT track, a CSXT flagman may be assigned to the job site to protect industry or contract personnel, and CSXT personnel and property at the industry's expense. A flagman may also be required for activities involving equipment that has the potential to enter into or swing into the fouling limits of CSXT's track.

All persons entering the CSXT right-of-way during surveying and construction of the sidetrack shall follow all CSXT safety rules including wearing appropriate personal protective equipment to include safety glasses with side shields, hard hats, high visibility safety vests, and steel toe boots with distinct heel separation.

B) ROADBED AND DRAINAGE

Roadbed

Roadbed width, ditches, and slopes shall conform to current **CSXT Standard Roadbed and Ballast Drawing 2601 and 2602 on pages 19 and 20.** State or local regulations, codes, etc., may require increased width of roadbed for walkways or other purposes.

NOTE: The State of Tennessee requires walkway width extending for a distance of 10 feet from centerline of track on both sides. The walkway is to be level with the top of tie for a distance of 6 inches, and thereafter descending away from centerline at no greater than an 8 to 1 slope. The walkway, or fill-in ballast shall be comprised of material with an AREMA gradation #5.

Roadbed for private track within CSXT right of way and parallel to a main or siding track shall be constructed a minimum of 6 inches lower than that of the nearest main or siding track whenever drainage of the existing track could be affected by the new construction. CSXT strongly recommends that private sidetracks be located on track centers of at least 25 feet from the centerline of an adjacent CSXT main and siding; however, private sidetrack leads and other tracks not used for bulk loading shall be no closer than 20 feet from the centerline of adjacent CSXT main or siding tracks.

All turnout locations require **additional roadbed** to support the track structure and to provide proper walkways for CSXT train crews. CSXT requires that the roadbed taper from the existing section 100-feet preceding the point of switch (P.S.) to 18 feet from the centerline at the P.S. The 18 foot roadbed is to extend from the P.S. to the transition with the 12 foot roadbed on the diverging track. **See CSXT Standard Drawing 2603, page 21, for typical subgrade section and grading required at turnout constructed in CSXT's and the industry's track.**

Drainage

Design of the drainage system, including alterations of the existing drainage system on CSXT right of way, is the responsibility of the Industry. Drainage shall not be diverted, directed toward CSXT, or increased in quantity without prior approval and agreement with CSXT. Changes to the upstream flow and volume may necessitate improvements to the existing drainage infrastructure to carry increase stormwater load across the CSXT right-of-way. All ditches, pipes, and culverts shall be adequately sized to carry the drainage without ponding of water against the roadbed (This shall be based on a 100 year storm without overtopping). Track roadbed fills shall not be used as dams or levees for retention of water nor shall CSXT right of way be utilized for retention or settling basins. All drainage facilities must be shown on the drawings submitted by the industry.

Pipes and culverts shall conform to current AREMA Recommendations and ASTM Specifications. All such structures shall be designed to carry Cooper's E-90 loading with diesel impact. Reinforced concrete pipe under CSXT owned track shall be ASTM C-76, Class V, with "O" ring joints. Corrugated metal pipe under CSXT owned track shall be steel fiber bonded and asphalt coated or steel polymer precoated, with minimum 24 inch wide connecting bands. The minimum recommended diameter of pipe under CSXT owned track is 36 inches.

Extension of pipes, culverts, or other drainage structures previously installed under CSXT owned track shall be made with culvert or drainage structures having the same size, shape, and dimensions as the existing pipe. In no case shall the existing drainage structure be extended so that the hydraulic capacity is decreased or obstructed. In some cases, it may be necessary to extend existing outlets with pipe or culvert of a larger size. Details of connections to mismatched culverts shall be submitted for CSXT approval.

C) TRACK DESIGN

Turnout Definitions

Point of Switch (P.S.): The point at which a track begins to diverge from another

Point of Intersection (P.I.): As applied to turnouts, the point of intersection of the centerlines of the diverging track and the through track

Point of Frog (P.F.): The point at which two running rails intersect within a turnout or crossing

Heel of Frog: The end of the frog that is furthest away from the point of switch.

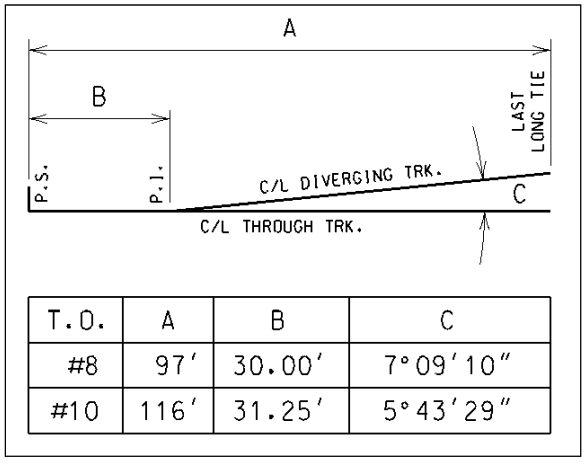
Turnouts

A turnout (T.O.) consists of all parts of the track structure, including switch points, frog, rails, switch ties, fastenings, etc., necessary to connect one track to another. Turnouts are designated by the size of the frog contained in the turnout. Turnouts to be installed and maintained by CSXT in its tracks must be No.10 or larger. Turnouts installed for private sidetracks must be No.8 or larger in industry tracks and No.10 or larger in industry owned lead tracks. Turnouts for unit train facilities must be No.10 or larger. Turnouts installed on industrial sidetrack shall include switch point guards.

See CSXT Standard Drawings, pages 22 through 25, for design data for CSXT Standards for No. 8 and No.10 turnouts.

A turnout must **not** be designed as a simple curve. **Table 1** provides dimensions for laying out turnouts on plans using point of intersection and turnout angle. This method is a simple and acceptable way of representing turnouts on plans. Local conditions, including curves or the use of long cars or special equipment, may require the use of larger size turnouts.

Table 1: Turnout Geometry Data



T.O.	A	B	C
#8	97′	30.00′	7°09′10″
#10	116′	31.25′	5°43′29″

On CSXT main track, the location of any portion of a turnout shall not be located within **200 feet of curves, road crossings, railroad bridges, tunnels, signal equipment, or other turnouts**. On other tracks, this distance may be reduced to 50 feet. If the turnout is located within 500 feet of a bridge, a walkway meeting CSXT's standards is required on the bridge to accommodate switching operations.

Horizontal Curves

Track should be designed using the minimum degree (maximum radius) of curve practicable. Special circumstances, including the use of long cars or special equipment, may require a lesser degree of curvature. Sharper curves may restrict the size of locomotives and opportunity to provide timely switching service due to locomotive restrictions. While a maximum curvature of 10º (radius of 573.69') is highly recommended, under no circumstance without written approval of the Chief Engineer - Design and Construction, will the degree of curvature for the track exceed 12º (radius of 478.34').

Typically, railroads use the chord definition of degree of curve. This defines degree of curve as, **the central angle subtended by a 100-foot chord. The degree of curve is denoted by D_c, where**

$$\sin\left(\frac{Dc}{2}\right) = \frac{50}{r}$$

and **r is the radius of the curve.**

Wherever practicable, a curve should begin beyond the last switch tie, but, if required by special circumstances, a curve may extend onto the switch ties. In no case shall a curve begin between the point of switch and the heel of frog. A curve should be avoided at the loading point of a bulk loading facility or at an under track unloading structure.

Spiral curves and superelevation are not normally required on industry tracks but, if required by special circumstances, shall be designed according to current CSXT standards.

Horizontal reverse curves (curves following each other in opposite directions) shall be separated by a minimum 100 feet of tangent (straight sections) as specified in **"Design Criteria"** on page 14.

Grades and Vertical Curves

Track grades shall be minimized where possible, consistent with terrain requirements. Grades must be carefully designed to ensure that motive power available will handle the tonnage to be moved. This takes into consideration number of cars, whether loaded or empty, etc. Grades for unit train tracks should be designed so that a train is under power with no bunching of couplers while loading or unloading. Frequent changes of grade are to be avoided. Vertical curves shall be provided at all grade changes, and shall be as long as practicable. Minimum standards for calculation of vertical curves are specified in **"Design Criteria."**

Grades shall be compensated for curvature at the rate of 0.04% for each degree of curvature. For example, the maximum allowable grade on a 10 degree curve for a Load / Unload in motion track is 1.5% - (10 x 0.04) = 1.1% grade in the 10 degree curve.

Grades, including compensation, shall not exceed 2.5% on industry and lead tracks, 1.5% on unit train tracks, and 0.7% on loop tracks.

The section of a track where railcars are placed for loading and unloading shall have a 0.00% grade.

Neither grade changes nor vertical curves shall be within the limits of switch or derail ties.

Derails and Bumping Posts

CSXT approved derails will be installed at or near the clearance point of all turnouts entering CSXT's tracks. **See CSXT 11"-0" Vertical Lift Derail Standard Drawing 2252 on page 26. A vertical lift derail is a type of double switch point derail. A standard double switch point derail is permitted for track owned and maintained by the industry.** Derails shall be placed so that a car will derail away from the track being protected before it fouls it or damages the building intended to be protected.

The P.S. of switch point derails shall be located no closer than 50 feet beyond the 15 feet clearance point. Note that additional distance may be required depending on the severity of a descending grade and the track configuration.

A bumping post shall be installed at the end of all tracks. A bumping post is used when the track ends short of a structure, roadway, or public area that must to be protected from cars rolling or being pushed beyond the end of the track. In most industrial situations, a bumping post offers adequate protection. However, cars loaded or empty, rolling or being pushed at an excessive speed will not be stopped by a bumping post. Other protective measures should be taken to supplement the bumping post. Wheel stops should be used only to prevent a standing car from beginning to roll. A rolling car or one being pushed most likely will not be stopped by wheel stops making them ineffective for Industries where cars are typically moved. Earthen barriers may be used for mine tracks only.

D) STRUCTURES

All bridges, trestles, box culverts, unloading pits, conveyors, etc., shall be designed under the authority of a licensed professional engineer familiar with and in accordance to the American Railway Engineering and Maintenance-of-Way Association's *Manual for Railway Engineering* (latest edition published annually—see www.arema.org for details on obtaining the manual) chapters 7 (timber), 8 (concrete), and 15 (steel structures), using a live load of Cooper E-90 with full diesel impact. For a new bridge constructed over the track, minimum clearances are 23 feet vertical (measured from top of highest rail) and clearly span CSXT's right-of-way. The proposed design for bridges, trestles, box culverts, unloading pits, conveyors, etc. shall be reviewed by CSXT prior to construction. Walkway grating shall be securely fastened to the structure with each piece of grating fastened to at least three bearing surfaces. Crash walls may be required for overhead structures located less than 25 feet from the centerline of track. To avoid delay, sealed plans should be forwarded to CSXT allowing sufficient time for review.

Design and construction of track scales shall be conducted under the authority of a licensed professional engineer familiar with and in accordance with the AREMA *Manual for Railway Engineering – Scale Handbook*.

Scale and structure plan shall be included with the grading and track design plans to expedite the approval process.

E) CLEARANCES

All fixed or movable obstructions above or adjacent to tracks shall provide horizontal and vertical clearance as required by applicable State or Local laws or regulations, or by CSXT current Standards, whichever is greater. **See CSXT Clearance Diagrams, pages 17 through 18.** Clearances shall be increased to compensate for curvature and superelevation as specified on CSXT drawing 2604 note 5.

Lesser clearances must have the approval of CSXT's Chief Engineer-Design and Construction and the appropriate governmental agency. Any clearances less than CSXT standard shall be considered a

substandard (close) clearance. CSXT will require signs or markings to warn CSXT employees of approaching substandard clearances. The close clearance sign shall be illuminated by permanently installed automatic electric lights at night. All substandard clearances and associated liabilities will be noted in the sidetrack agreement.

The distance between adjacent tracks is also subject to legal and CSXT clearance requirements. CSXT strongly recommends that private sidetracks be located on track centers of at least 25 feet from the centerline of adjacent CSXT main and siding or sidings; however, private sidetrack shall be no closer than 20 feet from the centerline of adjacent CSXT main or siding tracks. The minimum distance to other tracks is shown on **Standard Clearance Matrix, page 18**. The centerline of a bulk-loading/unloading track shall not be less than 27 feet, at the loading/unloading point, from the centerline of an adjacent main or siding track. **No portion of a loading/unloading structure shall be closer than 18 feet from the centerline of the nearest main or siding track.** The above minimum 27 feet bulk loading/unloading track center is to be adjusted upward to accommodate for the actual size of the portion of the loading structure between the tracks, while observing the required minimum 8'-0" and 18'-0" lateral track clearances, respectively, for the loading/unloading track and the main or siding tracks.

Sufficient clearance is required around switch stands. No object or adjacent track shall be closer than 18 feet from the centerline of a track near a switch stand.

F) CROSSINGS

Track Crossings At Grade

Designs involving one track crossing another at grade (diamonds) are prohibited without written approval of the Chief Engineer – Design and Construction.

Roadway Crossings At Grade

Road crossings at grade must be designed to provide proper sight distances and may require other safety measures such as automatic grade crossing warning devices (flashing lights, gates, etc.). A triangular sight distance envelope must be maintained for 300 feet along the track either side of the crossing and 100 feet along the road from the nearest track; the sight distance shall be maintained to a height of 3.75 feet above the pavement. Existing crossings shall be eliminated whenever possible and new roadway crossings are not permitted without written approval from CSXT. In the event that a private roadway is required that crosses CSXT owned track, it must be covered by a separate agreement. Information on obtaining the agreement may be obtained from CSXT's website at: www.csx.com. If CSXT is the maintaining railroad, CSXT is responsible to place two Emergency Notification Sign at each crossing. If the track is within a Port, Yard or an Industry then the maintaining railroad is required to place one sign at each vehicular entrance to the facility, (Note: Only one DOT number is required for the entire facility). If CSXT does not maintain the crossing but operates trains through the crossing, then the maintaining railroad must put the CSXT 1-800-232-0144 number as noted above.

In order to request a new DOT number; a current copy of FRA Form F 6180.71 must be completed and submitted to the crossingrequests@csx.com email address so a record can be created and logged with the FRA. The form can be downloaded from the FRA website at www.fra.dot.gov and search for Form F6180.71.

New track crossings of public roads involve obtaining permission from governmental agency having jurisdiction, and often require detailed plans, public hearings, etc. Both public and private crossings with CSXT tracks shall conform to CSXT standards and be constructed of asphalt with timber flangeway and filler blocks, unless a higher type crossing (full rubber, slab, concrete, etc.) is desired by the Industry or required by the governmental agency. The materials used for road crossings must conform to CSXT's

specifications. Crossings should never be located within a turnout. Plans for roadway crossings must be submitted to CSXT for approval.

If automatic grade crossing warning devices are required by CSXT or a governmental agency, plans of control apparatus, equipment, and method of installation are subject to review and approval of CSXT and the governmental agency. The entire cost of installation and ongoing maintenance of crossing warning devices shall be borne by the industry. On track where the industry has maintenance, the industry will arrange for ongoing maintenance and inspection in accordance with CSXT requirements and Federal, State, and local regulations.

Track design must provide proper clearance at grade crossings. Railroad cars or other equipment must not stand or be left within 200 feet of any crossing. Some state statutes may require additional clearance requirements; check with the CSXT Industrial Development Site Design Manager for additional details. Track capacities calculated by the industry must exclude the width of the crossing and 200 feet from both edges of the crossing.

Stream and Public Drain Crossings

Complete plans for culverts, bridges, trestles, or other drainage structures must be approved by CSXT and appropriate governmental agencies, and required permits obtained, before construction. CSXT requires the drain system to be designed for a 100 year storm without overtopping. New structures require sufficient width for walkways on both sides. Plans for all structures shall bear the seal of a licensed professional engineer in the state of the project.

Wireline and Pipeline Crossings

Each wireline, pipeline, or fiber optic cable crossing or running parallel to tracks or on property owned and maintained by CSXT must be covered by a separate agreement between the industry and the CSXT. These utility installations shall conform to CSXT's standards for installation of Pipelines and Wirelines as appropriate. The industry should obtain a copy of the CSXT application form and standards for the installation of wireline and pipeline crossings, and parallelisms from www.csx.com.

Proper notification must be made to the appropriate CSXT prior to industry entering CSXT right-of-way to construct such crossing. A flagman will be assigned to the job site to protect industry or contract personnel, and CSXT personnel and property. Instructions and reimbursement information for the flagman will be given through the wireline and pipeline agreement process.

Pipelines

Pipeline crossings and installations parallel to a track shall conform to the current CSXT standards for installation of pipelines on CSXT right of way. Pipelines include any underground casings and carriers containing wires and/or cables or pipelines carrying flammable or non-flammable substances under and not under pressure.

All pipeline installations on CSXT right-of-way and at industry's expense, must be approved by CSXT prior to any construction. The industry must submit complete plans for all proposed pipelines that will cross land and tracks owned and maintained by CSXT, and tracks owned by others (sidings, industry tracks, etc.) over which CSXT operates.

Wirelines

Wirelines include both wires and cables carrying either power or communication that are placed over or under tracks and property which CSXT owns or operates. Electric power line clearances, both overhead and lateral, shall conform to CSXT Standards and the National Electric Safety Code. All wireline installations on CSXT right-of-way must be approved by CSXT prior to any construction. The industry must submit complete plans meeting CSXT standards for installation of wirelines on CSXT right of way for all proposed wirelines that will cross over and under tracks owned and maintained by CSXT, and tracks owned by others (sidings, industry tracks, etc.) over which CSXT operates. The minimum height for all wirelines, guys, and cables regardless of voltage is 27 feet above top-of-rail. Poles must be located greater than 25' from the centerline of any track. Additional minimum vertical clearance from the top-of-rail may be required depending on the line voltage.

Fiber Optic Cable

Underground Fiber Optic Cable installations (longitudinal occupations on CSXT property) may require relocation, lowering, and/or protective casing installation; at times these protections may be at industry expense. CSXT's Engineering representative will contact the Fiber Optic Company to arrange for relocation, lowering, and/or protection of the Fiber Optic Cable at the discretion of the Fiber Optic Company.

Other Crossings

Any other crossing including, but not limited to conveyor crossings - both over and under the tracks - must conform to the same clearance requirements as overhead bridges. Plans must be submitted for CSXT approval and must be covered by a separate agreement.

G) HAZARDOUS MATERIALS

The loading, unloading, and storage of hazardous materials may require special design of tracks. Minimum clearances, minimum distances from storage facilities to track, bonding, and grounding of track, etc. must be considered when designing tracks for the handling of hazardous materials.

Definitions

Active Track - Any main, siding, or other track owned by CSXT and any other track over which the speed of trains on the track exceed 10 MPH.

Hazardous Material - A substance or material which has been determined by the Secretary of Transportation to be capable of posing an unreasonable risk to health, safety, and property when transported in commerce and which has been so designated in Title 49 of the Code of Federal Regulations (49CFR105 and 172).

Terminal - The location and operation point where loading and/or transfer of the above-mentioned commodities takes place.

Transfer - The process of unloading from a railroad tank car(s) into fixed storage facilities and unloading from fixed storage facilities into railroad tank car(s). The term also refers to the process of loading or unloading railroad tank cars directly into or from truck transport trailers.

Transfer Point - Location of point where transfer hose or apparatus is connected to transfer vehicle or device.

Location of tracks

Distances from any active railroad track to any facility/installation for transferring from tank car(s) or storage of hazardous materials, must be taken from the center of the railroad track in question to the nearest boundary of the transfer facility or material storage area(s).

Separation Distance for New Facilities

Transfer point and storage tanks for PIH, Class 3, Division 2.1, Division 2.2, and all other Hazard Classes must be located at least 100 feet from an active track(s).

Transfer point and storage tanks for Combustible liquids, Class 8 and 9 must be located at least 50 feet from an active track(s).

In transferring hazardous materials, the tank car(s) and storage tank(s) must be so constructed as to effectively permit a free flow of vapors from the tank car to the storage tank and to positively prevent the escape of these vapors to the air, or the vapors must be carried by a vent line to a point not less than 100 feet from the nearest occupied building, or active track(s).

Preferably, the site should be located on ground that slopes away from active tracks. Whenever possible, transfer equipment shall be placed on the same side of the private tracks as the storage tanks to avoid crossing under or over such tracks. This equipment should be located on the same side of the tracks as the access/egress highway to minimize the crossing of said tracks with trucks providing service.

Hazardous Materials Terminals must be sloped and contoured to contain any spills within the transfer area. In addition, track pans or other type of acceptable containment system must be installed to contain spilled material and prevent contamination of underground water sources.

Customer must isolate transfer point tracks from rail movement during transfer operations. This shall accomplished by locking a derail or facing point turnout restricting movement into the transfer operation.

Storage of Loaded Hazardous Material Tank Cars

Storage tracks for PIH, Class 3, Division 2.1, Division 2.2, and all other Hazard Classes must be located at least 50 feet from an active track(s).

Storage tracks for combustible liquids, Class 8 and 9 must be located at least 25 feet from an active track(s).

Bonding and Grounding

Tracks constructed to handle hazardous materials must be bonded and grounded as per **CSXT drawing number SS500, page 28.**

H) DESIGN CRITERIA

Design criteria to be used for sidetracks with operating speeds not to exceed 15 mph are listed in the following table. The criteria are not intended for Yard and Terminal track, Intermodal track, Branch or Spur Lines, nor any track with operating speed greater than 15 mph.

Table 2: Design Criteria

CRITERIA	INDUSTRY TRACK	INDUSTRY LEAD TRACK	UNIT TRAIN TRACK
Turnout Size	Number 8	Number 10	Number 10
Note: turnouts in all CSXT owned tracks shall be Number 10 or larger			
Maximum Horizontal Curvature			
Degree	12º-00'-00"	10º-00'-00"	10º-00'-00"
Radius	478.34'	573.69'	573.69'
		Chord Definition: $r=\frac{50}{\sin(\frac{Dc}{2})}$	
Tangent Between Horizontal Reverse Curves			
Minimum	100'	100'	100'
Maximum Grade (total grade including compensation in curves)			
	2.5%	2.5%	1.5%
Loop Track	--	--	0.7%
(note: Compensation rate is 0.04% per degree of curve)			
Vertical Curve			
Summits	40 x algebraic difference in grades	40 x algebraic difference in grade	400 x algebraic difference in grades
Sags	50 x algebraic difference in grades	50 x algebraic difference in grades	500 x algebraic difference in grades
Length	100' minimum	100' minimum	100' minimum

I) PLANS FURNISHED BY INDUSTRY

To expedite review procedure, plans produced by industry or its consultant shall be provided to the appropriate CSXT office in Portable Document Format (.pdf). Electronic files will be forwarded via email (email attachments are subject to a 10.0Mb file size). The entire plan set shall be consolidated into one file; individual files should not be sent. . Printed plan sets shall be furnished to CSXT upon request. The industry shall provide a MicroStation (.dgn), along with all reference and supporting files to CSXT upon request.

Plans provided to CSXT should include a track layout drawing to be made part of the agreement covering the new track(s). All drawings sent to CSXT for review shall be a convenient scale and shall be no larger than 11" x 17" with all text being legible at this size.

All stationing and dimensions on plans provided to CSXT shall be placed using English decimal measurements; plans submitted in metric will not be reviewed.

Plans submitted by the Industry or its consultant for CSXT review and approval should include, but are not limited to, the following:

Plans shall be drawn to scale and show all important features effecting track layout, walkways, clearances, and drainage. Preferred scale is 1 inch = 100 feet, but a minimum scale of 1 inch = 200 feet may be used for large projects.

Plans shall show true and magnetic North, city, county, township, state, and other information necessary to locate the site. The plan shall be oriented so that north is to the top or right side of the drawing.

Tracks shall be drawn as a single line representing the **centerline** of track **only** (do **not** draw track showing the rails or crossties). Existing track shall be shown as solid lines with light line weight. Proposed track shall be shown as solid lines with heavy (bold) line weight. Track to be removed or relocated shall be shown as light dashed lines (existing location) and as bold solid lines (proposed location).

Show elevations and locations of proposed and existing buildings (floor elevations), docks, loading pads, loading and unloading points, under track or overhead conveyors, and drainage structures. Show distance above top of rail to overhead utilities (including company name and phone number). Show distance below top of rail to underground utilities (including company name and phone number). Also, include fiber optic cables, CSXT's signal, communication and electric wirelines, and other facilities adjacent to the tracks, showing stationing at the beginning and end of each facility.

Appropriate property lines and the proposed point of switch (PS) - the point where the proposed track begins to diverge from the existing track - must be referenced by the distance to the nearest CSXT railroad milepost. The reference shall be the distance to the nearest milepost including the prefix of the milepost if known. The location of the milepost or the direction and distance to the milepost shall be noted on the drawing. Stationing shall be provided where track crosses right-of-way lines.

Stationing (measurement along the track centerline) shall be used to locate all points of horizontal and vertical design and all existing or proposed structures. Stationing shall be continuous along each track starting with 0+00 at its point of switch and increasing to its end. Therefore, the PS of each track will have two stations: its own (0+00) and the station of the track from which it diverges. Sufficient length shall be provided in tracks to allow variability in freight car lengths and for spotting cars on tracks.

Curve information for each curve shall include the intersection angle (I), degree of curve (D_C), radius (R), tangent distance (T), external (E), and length of curve (L). Chord definition of curvature shall be used:

$R = \frac{50}{\sin(\frac{Dc}{2})}$ and $L = 100(\frac{I}{Dc})$.

If known at the time of the design, show size and weight of rail of proposed turnout, and weight of rail and type of construction (welded rail or jointed rail) in the proposed track and in the existing track from which the proposed track diverges. If the rail weight is unknown, the statement "minimum acceptable rail section is 100 pound/yard" should be shown on the drawing. The industry should note that based on market availability, larger rail sections are frequently available for lower costs than smaller rail sections; additionally, use of larger rail sections may reduce track maintenance costs to the industry over time. **Also note that non-controlled cooled rail shall not be used in industrial sidetracks.**

Plans shall include top of rail and subgrade profile of the entire proposed track showing vertical curves at points of vertical intersection with their proposed lengths and station location, ground profile and drainage structures. Profile shall also include the top of rail profile of the existing track from which the proposed track diverges with elevations taken every 100 feet for a distance of 300 feet each side of the proposed point of switch. Where superelevated curves exist, the top of rail elevation of the low rail shall be the given elevation. **All proposed tracks must have the same grade, and elevation between the PS and the end of switch ties as the track from which they diverge**.

Plans shall show size, type and location of all proposed and existing drainage structures and ditches in the immediate vicinity of the proposed and existing track and how drainage will be directed to protect the tracks.

Plans shall show all loading, unloading, and other infrastructure within 2 feet of the minimum clearance envelope.

Stations and horizontal clearances from the centerline of track must be shown for all structures, fences, or obstructions within 25 feet of the centerline of any track. Stations and vertical clearances measured from top of rail (high rail in curves) must be shown for all overhead obstructions.

Fences and gates shall be shown on the plans and details of the gate system shall be provided on a separate sheet. Clearances to fences and gates must adhere to all CSXT and local clearance requirements.

Some track layouts may require separate, more detailed drawings and/or information. Examples of these are bridges, box culverts, large drainage structures, tunnels, unloading pits, track scales, facilities for handling hazardous materials, structures with less than standard clearances, road crossings, crossing protection devices, pipeline crossings, wireline crossings, unconventional track construction, track, or other construction in close proximity to CSXT track, encroachments on CSXT right of way, or purchase or lease of land from CSXT.

Some of the above information such as stationing, mileposts, rail weight, etc. may not be obvious or obtainable from a field survey. The industry or Contractor should contact the CSXT Industrial Development Site Design Manager or the Engineering office responsible for the territory involved for any information regarding these items. CSXT Engineers can also provide information or guidance regarding any special features or situations that may exist at the site.

Diagram: Clearance Diagrams (2604)

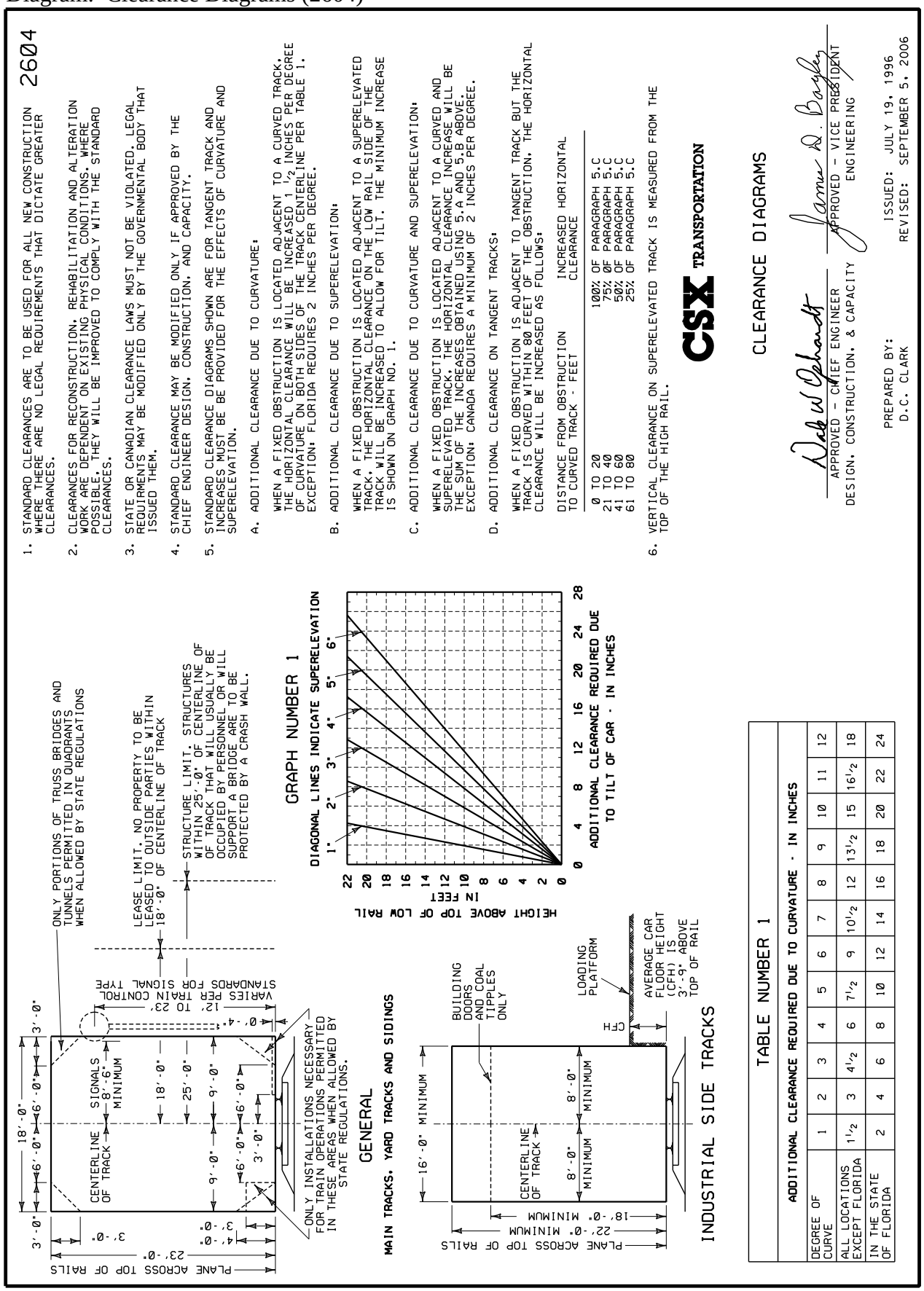


Diagram: Standard Clearance Matrix (2605)

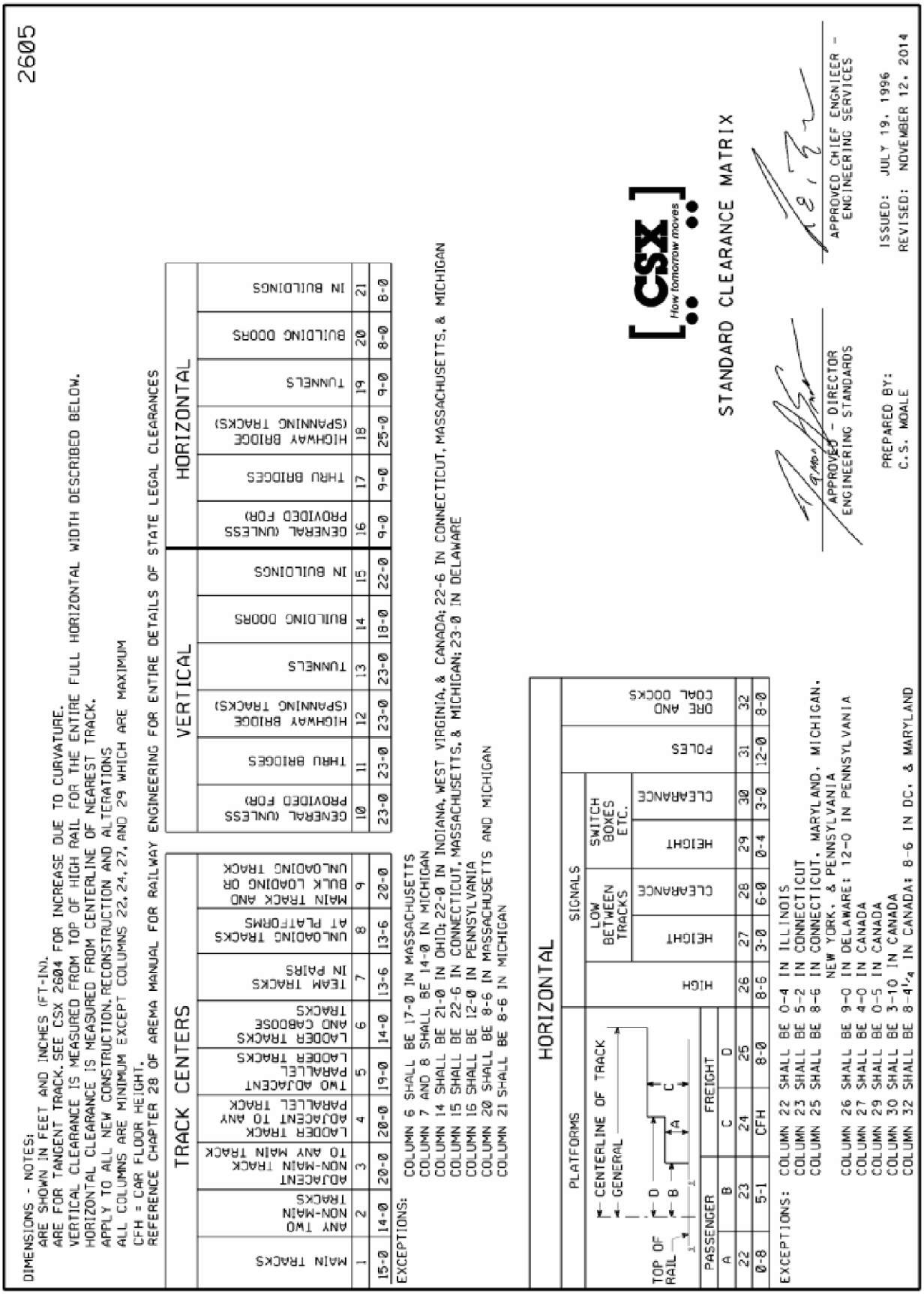


Diagram: Roadbed Sections (2601)

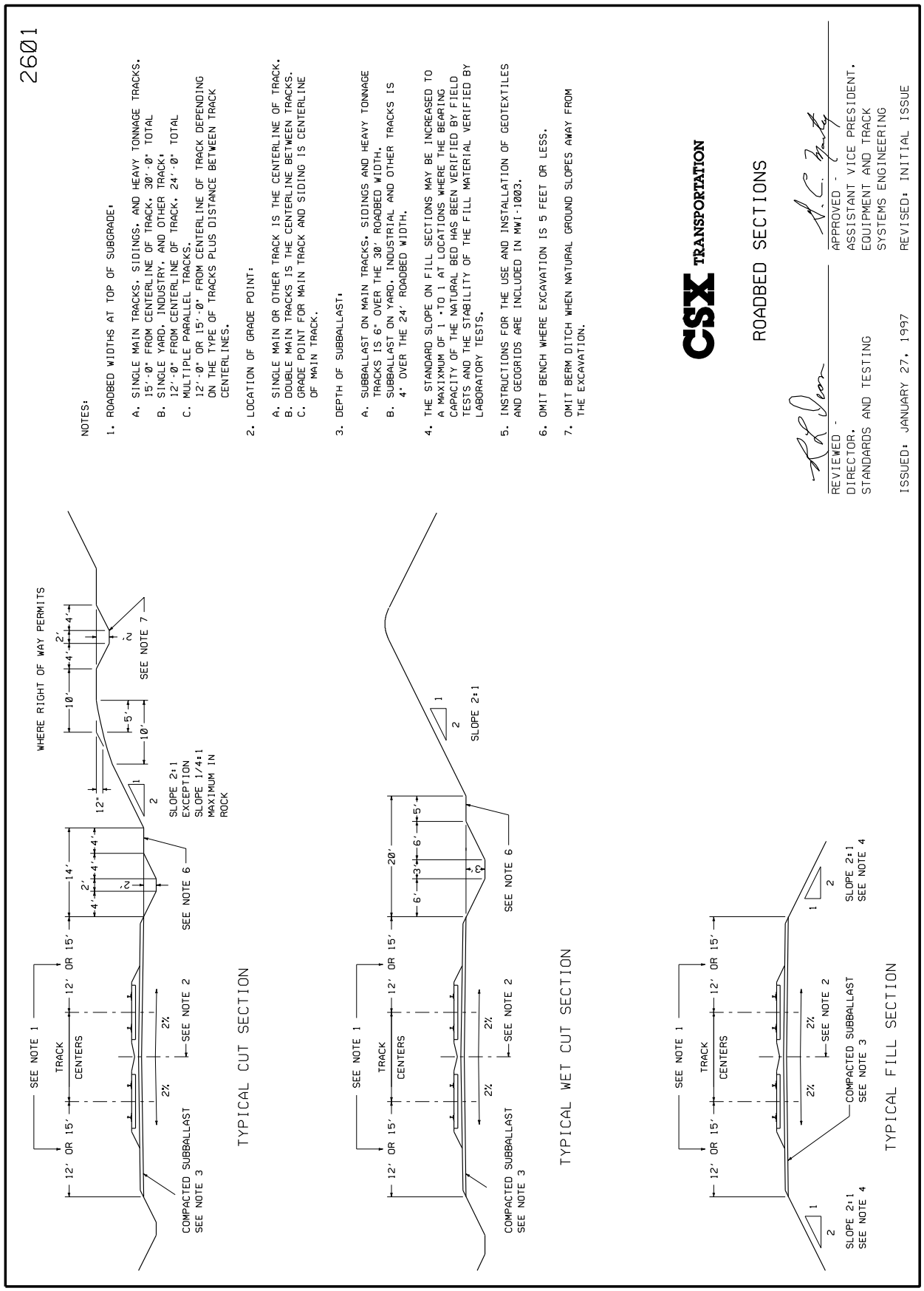


Diagram: Ballast Sections (2602)

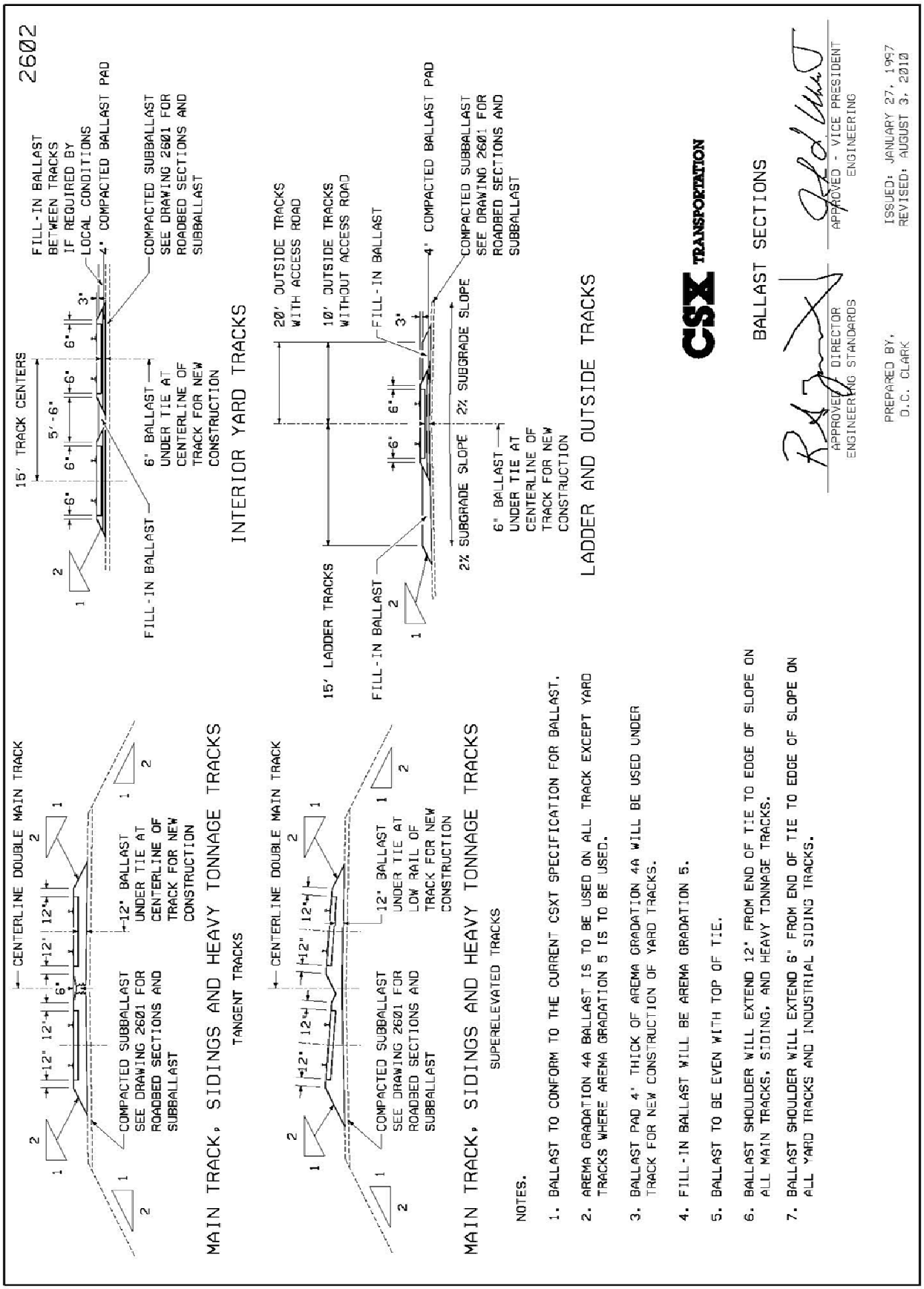
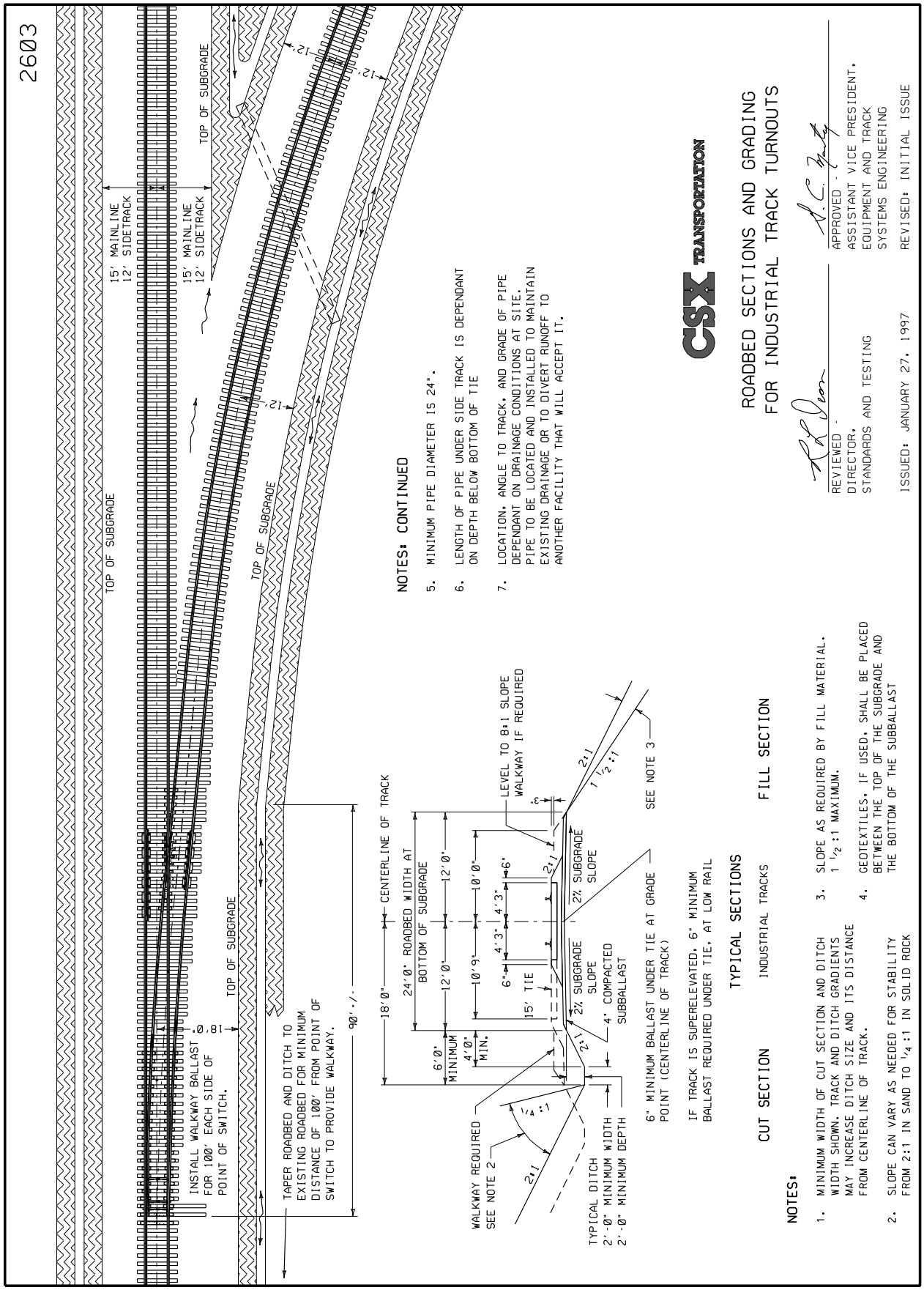
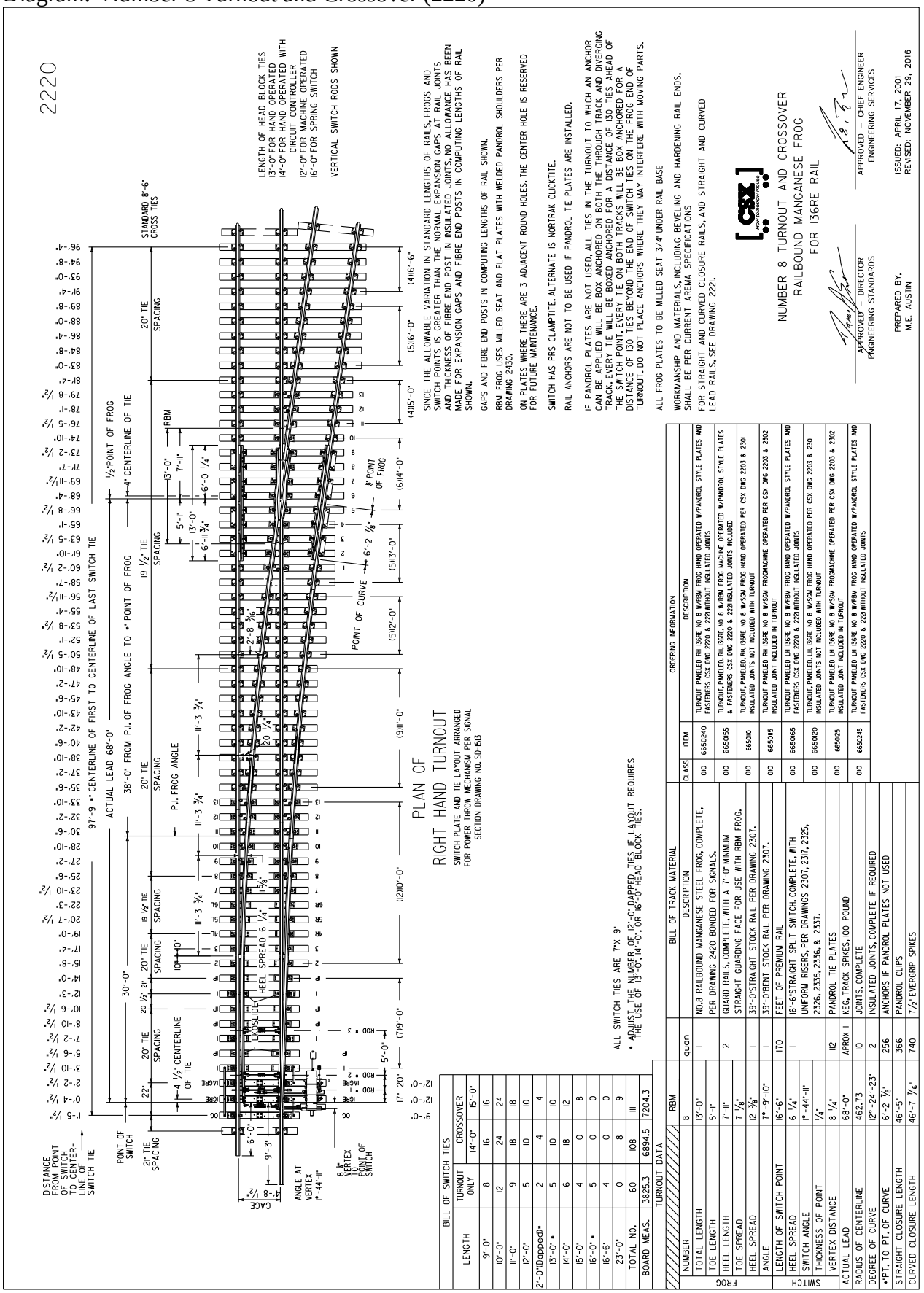


Diagram: Roadbed Sections and Grading for Industrial Track Turnouts (2603)





BILL OF SWITCH TIES			
LENGTH	TURNOUT ONLY	CROSSOVER	
		14'-0"	15'-0"
9'-0"	8	16	16
10'-0"	12	24	24
11'-0"	9	18	18
12'-0"	5	10	10
12'-0"Opped•	2	4	4
13'-0" •	5	10	10
14'-0"	6	18	12
15'-0"	4	0	8
16'-0" •	5	0	0
16'-6"	4	0	0
23'-0"	0	8	9
TOTAL NO.	60	108	111
BOARD MEAS.	3825.3	6894.5	7204.3

TURNOUT DATA			BILL OF TRACK MATERIAL		ORDERING INFORMATION	
	NUMBER	RBM 8	DESCRIPTION	quan	CLASS	ITEM
FROG	TOTAL LENGTH	13'-0"	NO.8 RAILBOUND MANGANESE STEEL FROG, COMPLETE, PER DRAWING 2420 BONDED FOR SIGNALS.	1	00	6650240
	TOE LENGTH	5'-1"				
	HEEL LENGTH	7'-11"	GUARD RAILS, COMPLETE, WITH A 7'-0" MINIMUM STRAIGHT GUARDING FACE FOR USE WITH RBM FROG.	2	00	6650055
	TOE SPREAD	7 ⅛"				
	HEEL SPREAD	12 ⅜"	39'-0"STRAIGHT STOCK RAIL PER DRAWING 2307.	1	00	665000
	ANGLE	7° -9'-10"	39'-0"BENT STOCK RAIL PER DRAWING 2307.	1	00	6650115
SWITCH	LENGTH OF SWITCH POINT	16'-6"	FEET OF PREMIUM RAIL	170	00	6650065
	HEEL SPREAD	6 ¼"	16'-6"STRAIGHT SPLIT SWITCH, COMPLETE, WITH UNIFORM RISERS, PER DRAWINGS 2307, 2317, 2325, 2326, 2335, 2336, & 2337.	1	00	6650120
	SWITCH ANGLE	7° -44'-11"				
	THICKNESS OF POINT	1/4"				
	VERTEX DISTANCE	8 ¼"	PANDROL TIE PLATES	112	00	665025
ACTUAL LEAD		68'-0"	KEG, TRACK SPIKES, 100 POUND	APROX 1	00	6650245
RADIUS OF CENTERLINE		462.73	JOINTS, COMPLETE	10		
DEGREE OF CURVE		12°-24'-23"	INSULATED JOINTS, COMPLETE IF REQUIRED	2		
•PT. TO PT. OF CURVE		6'-2 ⅞"	ANCHORS IF PANDROL PLATES NOT USED	256		
STRAIGHT CLOSURE LENGTH		46'-5"	PANDROL CLIPS	366		
CURVED CLOSURE LENGTH		46'-7 7/16"	7½" EVERGRIP SPIKES	740		

NUMBER 8 TURNOUT AND CROSSOVER
RAILBOUND MANGANESE FROG
FOR 136RE RAIL

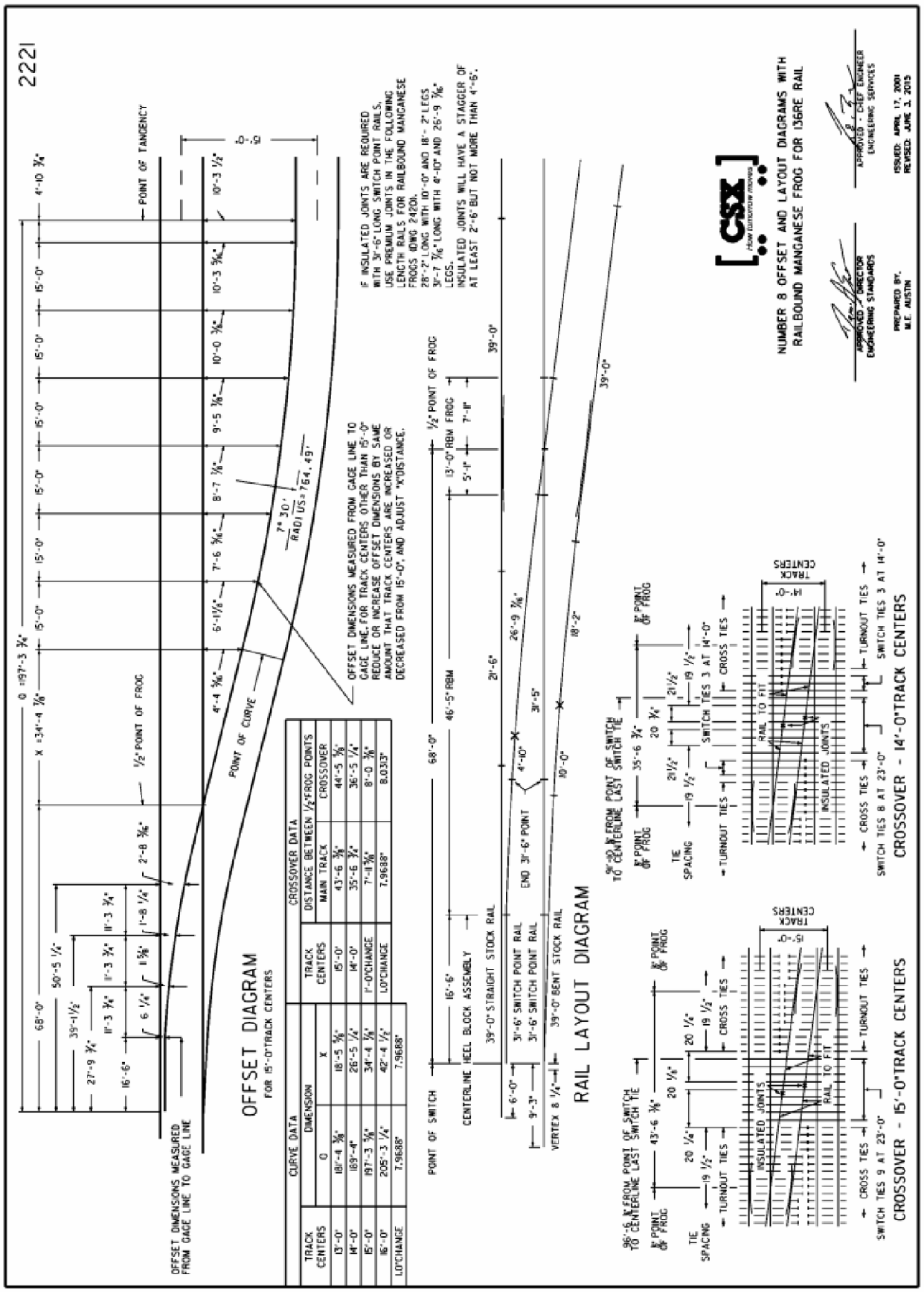
PREPARED BY:
M.E. AUSTIN

APPROVED - DIRECTOR
ENGINEERING STANDARDS

APPROVED - CHIEF ENGINEER
ENGINEERING SERVICES

ISSUED: APRIL 17, 2001
REVISED: NOVEMBER 29, 2016

Diagram: Number 8 Offset and Layout (2221)



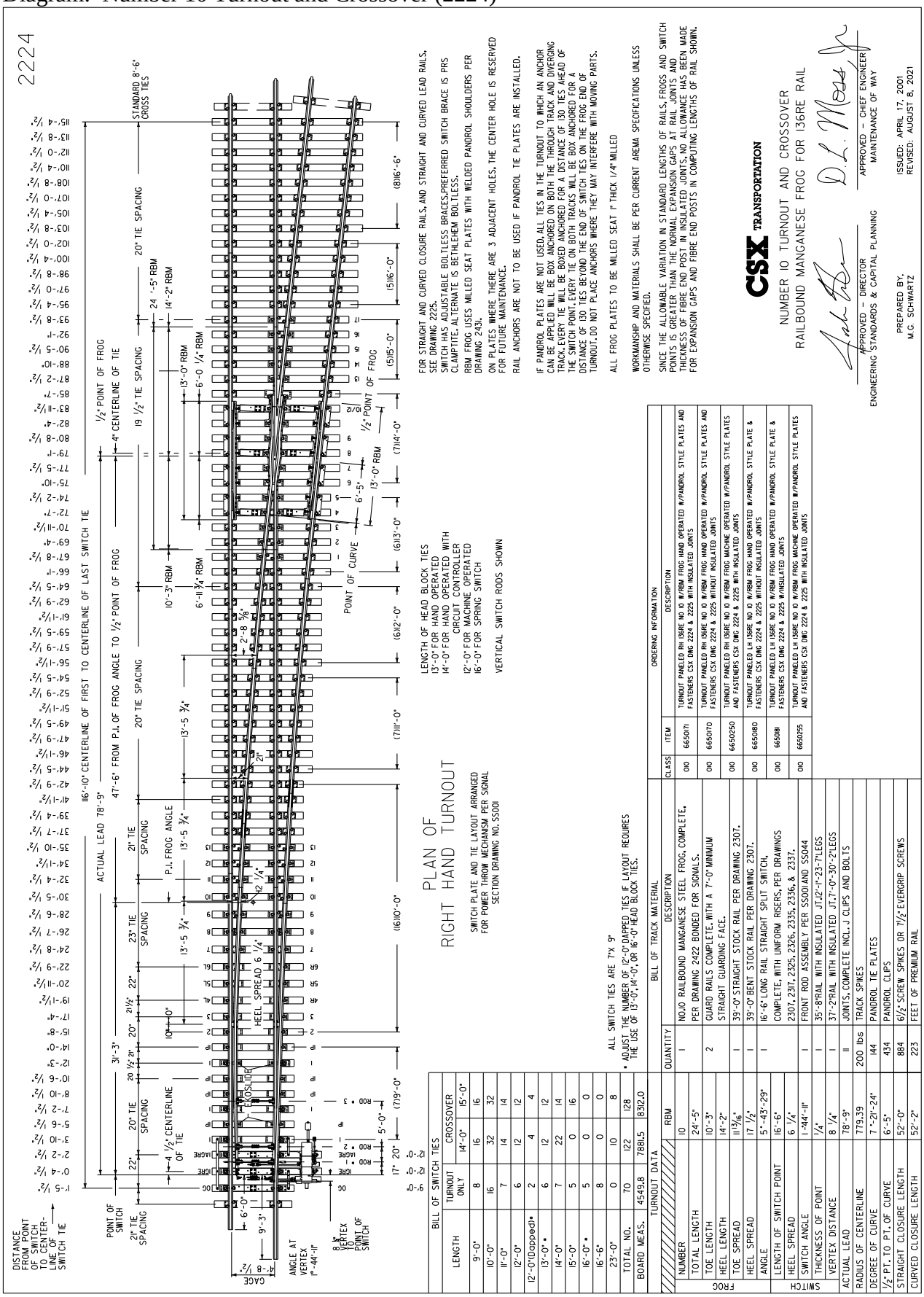
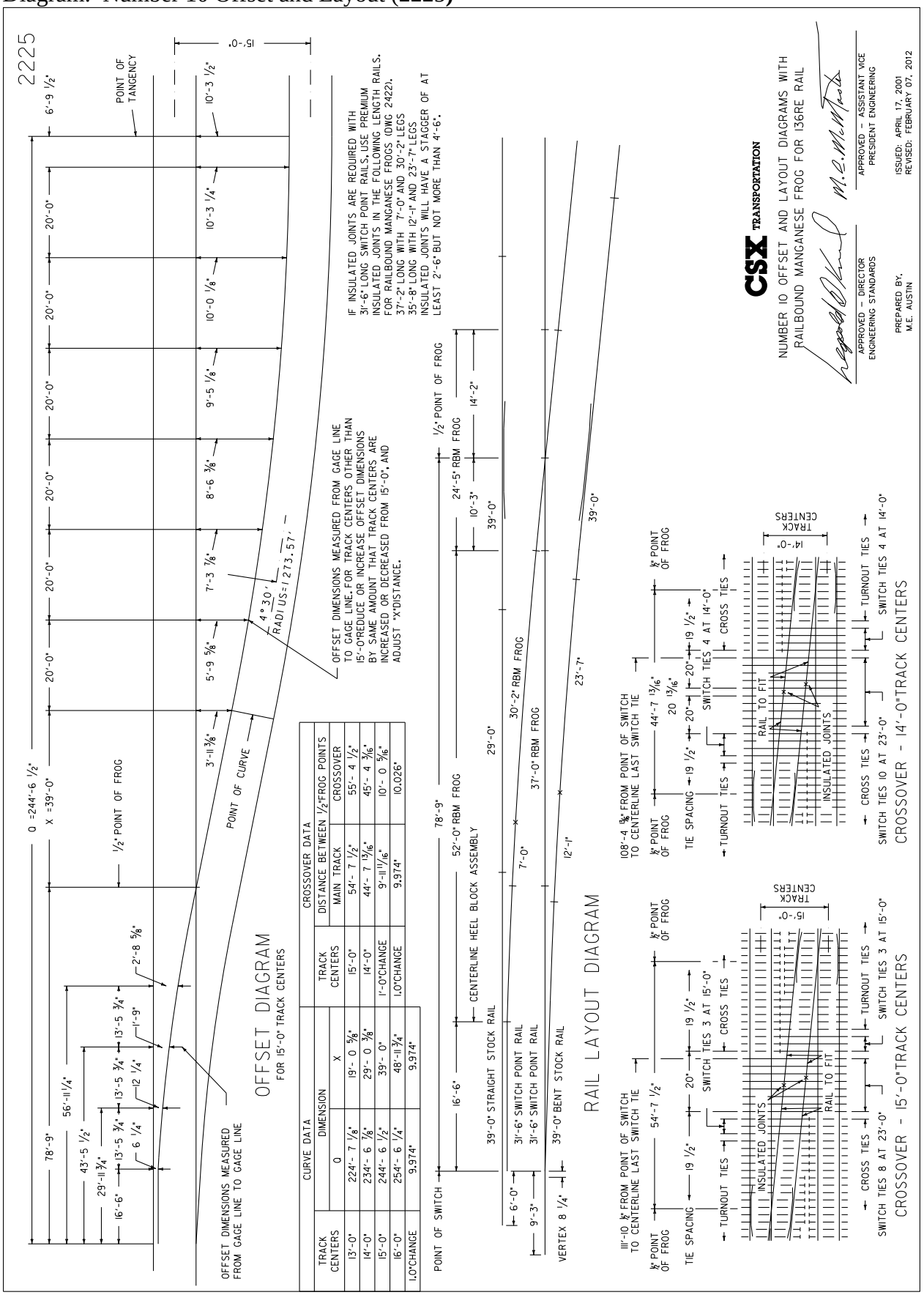
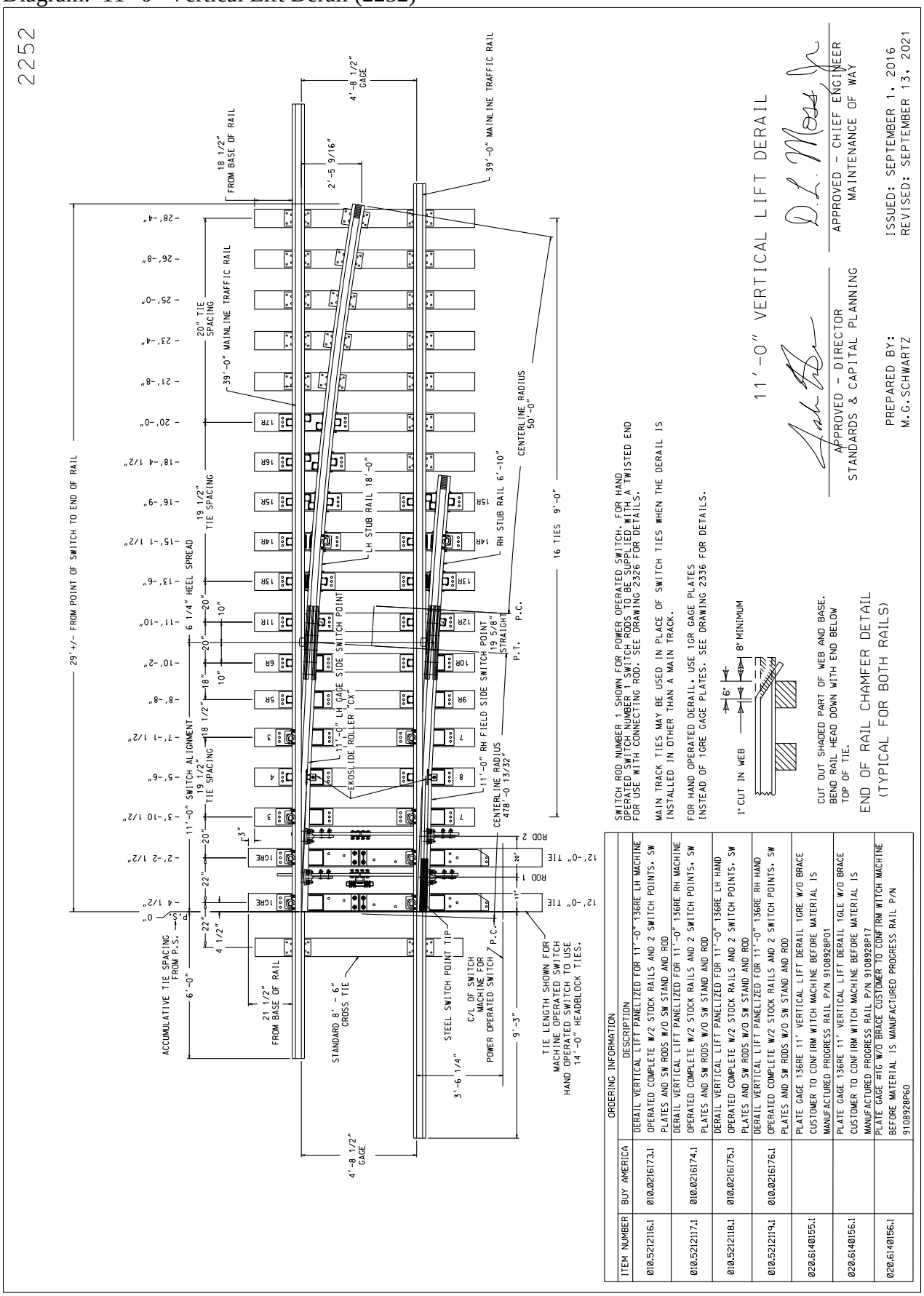

2224
PLAN OF
RIGHT HAND TURNOUT
SWITCH PLATE AND TIE LAYOUT ARRANGED
FOR POWER THROW MECHANISM PER SIGNAL
SECTION DRAWING NO. S5001
LENGTH OF HEAD BLOCK TIES
13'-0" FOR HAND OPERATED
14'-0" FOR HAND OPERATED WITH
CIRCUIT CONTROLLER
12'-0" FOR MACHINE OPERATED
16'-0" FOR SPRING SWITCH
VERTICAL SWITCH RODS SHOWN
FOR STRAIGHT AND CURVED CLOSURE RAILS, AND STRAIGHT AND CURVED LEAD RAILS, SEE DRAWING 2225.
SWITCH HAS ADJUSTABLE BOLTLESS BRACES, PREFERRED SWITCH BRACE IS PRS CLAMPTITE, ALTERNATE IS BETHLEHEM BOLTLESS.
RBM FROG USES MILLED SEAT PLATES WITH WELDED PANDROL SHOULDERS PER DRAWING 2431.
ON PLATES WHERE THERE ARE 3 ADJACENT HOLES, THE CENTER HOLE IS RESERVED FOR FUTURE MAINTENANCE.
RAIL ANCHORS ARE NOT TO BE USED IF PANDROL TIE PLATES ARE INSTALLED.
IF PANDROL PLATES ARE NOT USED, ALL TIES IN THE TURNOUT TO WHICH AN ANCHOR CAN BE APPLIED WILL BE BOX ANCHORED ON BOTH THE THROUGH TRACK AND DIVERGING TRACK. EVERY TIE WILL BE BOXED ANCHORED FOR A DISTANCE OF 130 TIES AHEAD OF THE SWITCH POINT. EVERY TIE ON BOTH TRACKS WILL BE BOX ANCHORED FOR A DISTANCE OF 130 TIES BEYOND THE END OF SWITCH TIES ON THE FROG END OF TURNOUT. DO NOT PLACE ANCHORS WHERE THEY MAY INTERFERE WITH MOVING PARTS.
ALL FROG PLATES TO BE MILLED SEAT 1" THICK 1/4" MILLED
WORKMANSHIP AND MATERIALS SHALL BE PER CURRENT AREMA SPECIFICATIONS UNLESS OTHERWISE SPECIFIED.
SINCE THE ALLOWABLE VARIATION IN STANDARD LENGTHS OF RAILS, FROGS AND SWITCH POINTS IS GREATER THAN THE NORMAL EXPANSION GAPS AT RAIL JOINTS AND THICKNESS OF FIBRE END POST IN INSULATED JOINTS, NO ALLOWANCE HAS BEEN MADE FOR EXPANSION GAPS AND FIBRE END POSTS IN COMPUTING LENGTHS OF RAIL SHOWN.
CSX TRANSPORTATION
NUMBER 10 TURNOUT AND CROSSOVER
RAILBOUND MANGANESE FROG FOR 136RE RAIL
APPROVED - DIRECTOR ENGINEERING STANDARDS & CAPITAL PLANNING
APPROVED - CHIEF ENGINEER MAINTENANCE OF WAY
PREPARED BY: M.G. SCHWARTZ
ISSUED: APRIL 17, 2001
REVISED: AUGUST 8, 2021
BILL OF SWITCH TIES
BILL OF TRACK MATERIAL
ORDERING INFORMATION
TURNOUT DATA

Diagram: Number 10 Offset and Layout (2225)



CURVE DATA			CROSSOVER DATA	
TRACK CENTERS	DIMENSION		TRACK CENTERS	DISTANCE BETWEEN ½" FROG POINTS
	0	X		MAIN TRACK / CROSSOVER
13'-0"	224'- 7 ⅛"	19'- 0 ⅝"	15'-0"	54'- 7 ½" / 55'- 4 ½"
14'-0"	234'- 6 ⅞"	29'- 0 ⅜"	14'-0"	44'- 7 13/16" / 45'- 4 3/16"
15'-0"	244'- 6 ½"	39'- 0"	1'-0"CHANGE	9'-11 11/16" / 10'- 0 5/16"
16'-0"	254'- 6 ¼"	48'-11 ¾"	1.0'CHANGE	9.974' / 10.026'
1.0'CHANGE	9.974'	9.974'		

Diagram: 11’-0” Vertical Lift Derail (2252)



ORDERING INFORMATION		
ITEM NUMBER	BUY AMERICA	DESCRIPTION
010.5212116.1	010.0216173.1	DERAIL VERTICAL LIFT PANELIZED FOR 11'-0" 136RE LH MACHINE OPERATED COMPLETE W/2 STOCK RAILS AND 2 SWITCH POINTS, SW PLATES AND SW RODS W/O SW STAND AND ROD
010.5212117.1	010.0216174.1	DERAIL VERTICAL LIFT PANELIZED FOR 11'-0" 136RE RH MACHINE OPERATED COMPLETE W/2 STOCK RAILS AND 2 SWITCH POINTS, SW PLATES AND SW RODS W/O SW STAND AND ROD
010.5212118.1	010.0216175.1	DERAIL VERTICAL LIFT PANELIZED FOR 11'-0" 136RE LH HAND OPERATED COMPLETE W/2 STOCK RAILS AND 2 SWITCH POINTS, SW PLATES AND SW RODS W/O SW STAND AND ROD
010.5212119.1	010.0216176.1	DERAIL VERTICAL LIFT PANELIZED FOR 11'-0" 136RE RH HAND OPERATED COMPLETE W/2 STOCK RAILS AND 2 SWITCH POINTS, SW PLATES AND SW RODS W/O SW STAND AND ROD
020.6140155.1		PLATE GAGE 136RE 11' VERTICAL LIFT DERAIL 1GRE W/O BRACE CUSTOMER TO CONFIRM WITCH MACHINE BEFORE MATERIAL IS MANUFACTURED PROGRESS RAIL P/N 9108928P01
020.6140156.1		PLATE GAGE 136RE 11' VERTICAL LIFT DERAIL 1GLE W/O BRACE CUSTOMER TO CONFIRM WITCH MACHINE BEFORE MATERIAL IS MANUFACTURED PROGRESS RAIL P/N 9108928P17
020.6140158.1		PLATE GAGE #1G W/O BRACE CUSTOMER TO CONFIRM WITCH MACHINE BEFORE MATERIAL IS MANUFACTURED PROGRESS RAIL P/N 9108928P60

Diagram: Commercial Track A 640.6(2)

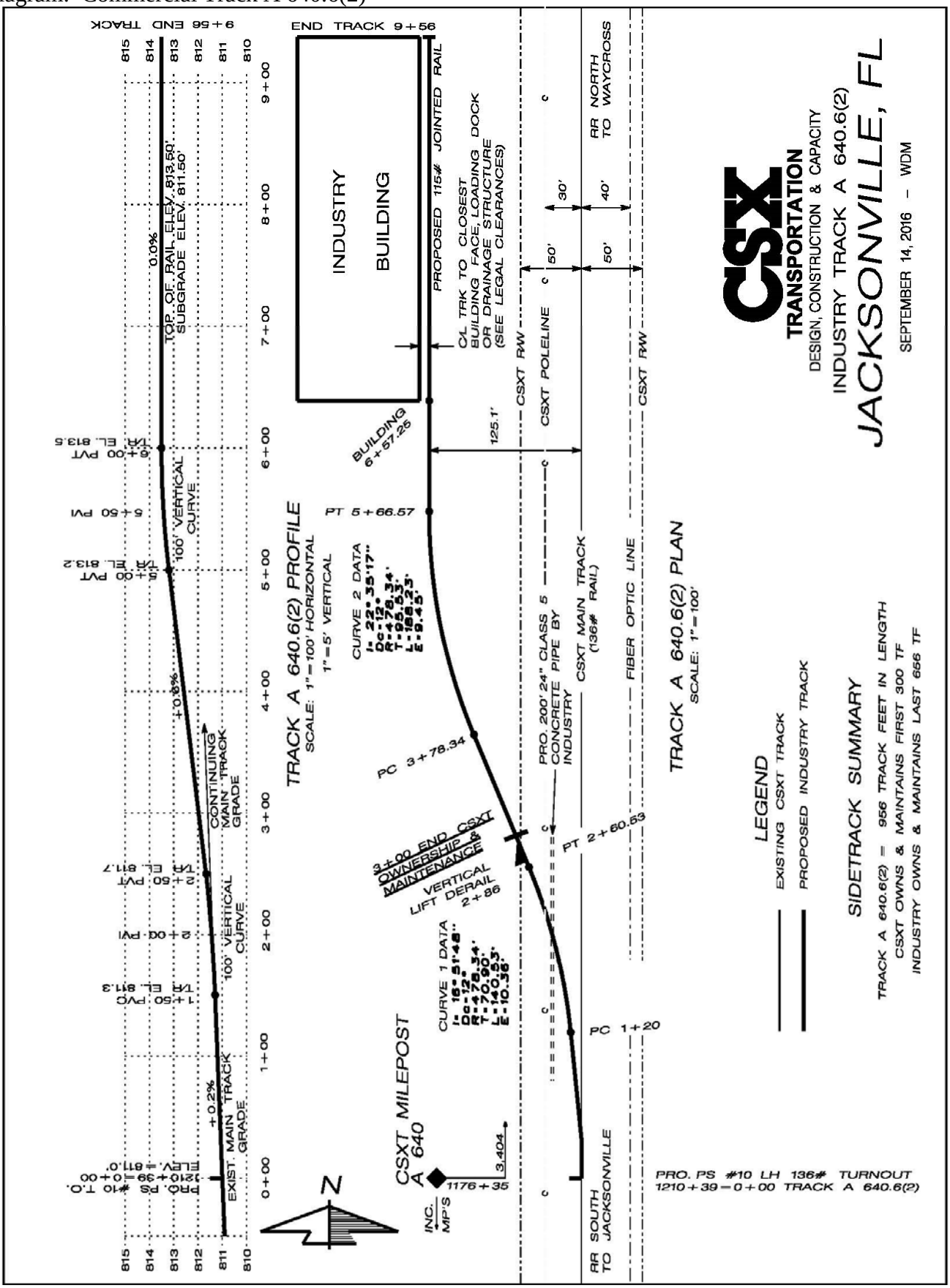
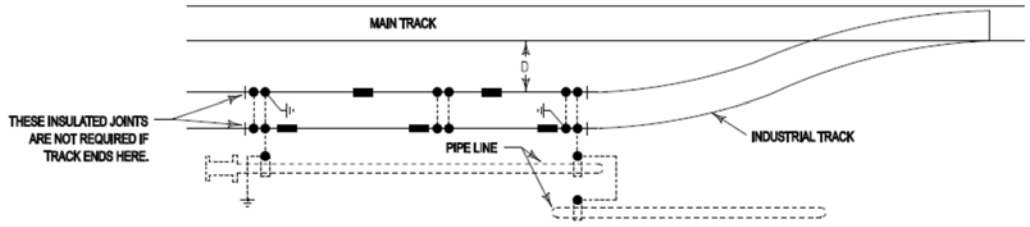
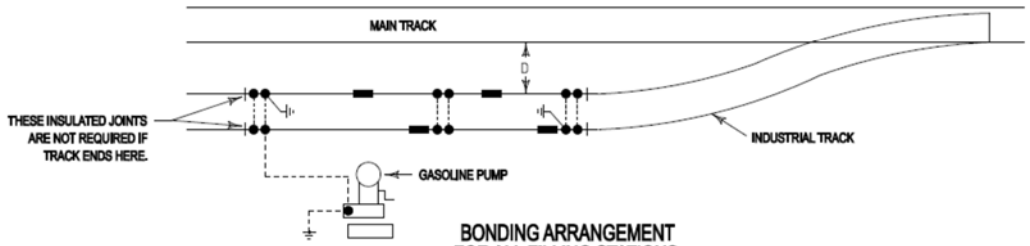


Diagram: Loading or Unloading Combustible and Flammable Liquids or Flammable Gases



BONDING ARRANGEMENT
FOR LOADING AND UNLOADING TRACKS
FIGURE A



BONDING ARRANGEMENT
FOR ALL FILLING STATIONS
SERVING RAIL MOTOR COACHES AND
INTERNAL COMBUSTION LOCOMOTIVES
FIGURE B

NOTES:

1 - The electrical connections shall be not less than one No. 4 nor less than two No.6 AWG stranded copper, bronze, or copper-covered steel wire.

2 - Grounded electrodes shown shall be connected directly to rail, pipe or other equipment to be grounded.

3 - Where pipe connected derail is used, pipe shall be insulated.

4 - Connections of copper wire to pipe line shall be permanently clamped or brazed to an exposed section of the pipe.

5 - The minimum for "D", the distance from near rail of main track to near rail under center of spotted car, shall be as perscribed by state laws, city ordinances, Interstate Commerce Commission regulations, and National Board of Fire Underwriters.

6 - Cars spotted for loading or unloading must not bridge insulated rail joints or be coupled to cars outside of the insulated track section at any time during loading or unloading operations.

7 - Insulated joints shall be of approved type.

8 - Either consignor or consignee shall provide a suitable sign for marking loading or unloading section.

9 - Bonding shall be done in accordance with approved practice. Rail joints are to be double bonded.

10 - Bonding arrangements shown are not applicable in electrified territory.

11 - No rail grinding, bond welding, or flint igniter operations are permitted on or near tracks once transfer equipment is in service.

LEGEND
INSULATED JOINT
RAIL JOINT, DOUBLE BONDED

APPROVED _____
Chief Engineer Train Control

CSX TRANSPORTATION

Bonding Arrangements On Track Used For Loading Or Unloading Combustible And Flammable Liquids Or Flammable Gases

Issued Oct 1, 1996 Revised

SS500
SHEET 1 OF 1

Construction

A) GENERAL

No work of any type shall be performed on CSXT right of way, which could affect CSXT roadbed, or track, without written permission and evidence of proper insurance as may be required. Construction of Industry's structures, roadbed, track, etc., shall not begin prior to receiving CSXT's approval of final plans.

Industry shall obtain all necessary approvals and permits required by governmental agencies for all work on CSXT right of way, including but not limited to grading, drainage, vegetation, erosion control, and siltation prevention devices.

Track, roadbed, and structures shall be constructed to the line and grade as shown on the approved final plans. The industry shall supply the stakeout for entire project including marking of the point-of-switch in the tracks. The industry shall arrange for their track to be tied into CSXT's track at the ownership point. Industry shall be responsible for compromise and/or transitions joints or rails between CSXT's rail size and industry rail size.

Inspection of the completed track will be made by CSXT personnel, and will not be placed in service without such approval. Inspection will include grading, drainage, structures, clearances, track, walking conditions, and related appurtenances to assure satisfactory compliance with approved final plan and CSXT Standards for construction and safety. To ensure uniform curvature, industry tracks with curvature in excess of 10˚ shall be stringlined by the industry prior to the in service inspection by CSXT; stringline notes and/or as built data shall be provided to CSXT upon request.

B) TIES

Use of Steel, Concrete, and Composite Crossties

The use of steel, concrete, and composite crossties for industry owned tracks and turnouts is permitted. Signaled territory, as well as those industrial tracks with active road crossing warning devices, may require certain sections of the track to employ insulated crossties. The use of steel, concrete, or composite ties in industrial tracks should be noted on the plans, along with the manufacturer of the product. The industry shall consult with and follow the manufacturer's guidelines for installation and maintenance of steel and concrete crossties. Industries located in high rot zones (south of middle Alabama and Georgia) should consider alternates to conventional creosote wood crossties for increased service life.

Spacing

The center-to-center spacing for wood, and composite crossties shall be 20 inches. except for ties in special trackwork such as turnouts and road crossings. In these cases, use the tie spacing shown in the standard plan. The center-to-center spacing of concrete and steel crossties shall be 24 inches.

Joints

Bolted joints are to be centered between ties when possible. Field welded joints are to be centered between ties. Glued insulated joints are to be centered between ties. All bolt holes in bolted joint bars are to be filled with appropriate fasteners or the joint shall be welded.

Special Track Work

Turnouts, derails, rail-to-rail crossings (diamonds), road crossings, and special trackwork will have ties spaced as shown on CSXT Standard Drawings or the standard drawings associated with the turnout, derail, crossing, or special trackwork being installed.

Bridge Approach Ties

Bridge approach ties shall be installed in accordance with CSXT Standard Drawing, page 46.

C) SPECIAL CONSIDERATION FOR WOOD AND COMPOSITE TIES

Lining Ties

All ties shall be placed in track at right angles to the centerline of the track. The end of the tie on the line side shall be 4'-3" from the centerline of the track. The line end of the ties shall be to the right hand side of the track, facing north or east (timetable direction) except for sidings and multiple tracks. In this case, ties in the two outside tracks are lined to the outside. Switch ties shall be lined on the straight side, except as noted on the standard plans.

Adzing

When necessary to adze ties, an adzing machine shall be used. The adzing must be done to give the tie plate a full bearing across the tie and parallel with the plane of track.

Damaged Ties

When handling or spacing ties, care shall be taken to prevent damage with picks and hammers. Pulling ties into position with picks will not be permitted; tie tongs shall be used for this purpose.

Use of Tie Plugging Compound and Plugs

The pulling of spikes, once driven, shall be avoided as much as possible. When spikes are pulled, the holes shall be immediately plugged with a chemical tie-plugging compound that completely fills the spike holes and allows for the proper drive of spikes that are subsequently added to the crosstie. Alternatively tie plugs may be used to fill the spike hole

Applying Tie Plates

Double shoulder tie plates shall be used on all ties. Care must be taken that canted tie plates incline toward the center of track and that plates having a different amount of cant or flat plates are not intermixed. Before placing tie plates on the tie, dirt and other substances shall be removed from the bottom of the tie plate and top of the tie.

D) GAGE RODS

The use of gage rods for new track construction is prohibited. Gage rods should only be used in maintenance activities when crossties cannot be changed such as when the ground is frozen.

E) LAYING JOINTED RAIL

Rail Placement

Rails shall be so placed that the joints in each line of rail shall be within the middle half of the opposite length rail. To minimize the cutting of full-length rails, short rails may be used in adjusting for proper spacing of joints, but no rail less than thirty three feet (33') on curves or nineteen feet six inches (19'-6") on tangents shall be used.

Cutting of Rail

Flame cutting of rail is not permitted. Rail shall be cut with a rail saw. Bolt holes shall be drilled, not torch cut.

Cleaning

The bottom of the rail and bearing surfaces of the crosstie and tie plates shall be cleaned before rail is laid.

Rail Temperature

A rail thermometer will be used in determining rail temperatures at the time of installation. Approved thermometers include dial rail thermometer and electronic surface thermometers. Temperatures will be read and recorded periodically during the day and supervisory employee shall see that it is checked frequently and that proper expansion shims are used. When taking rail temperatures, the thermometer will be placed on the web of the rail on the side away from the sun. Non-contact thermometers shall be located no more than two feet away and pointed directly at the web of the rail on the side away from the sun. A record of rail laying temperatures and expansion are to be made available for inspection by CSXT upon request.

Expansion Shims

Rail expansion shims of approved thickness and material will be used per 39-foot rail in accordance with the following temperature table:

Table 3: Expansion Required for Jointed Rail

Below 6ºF	5/16" in each joint
6 – 25ºF	1/4" in each joint
26 – 45ºF	3/16" in each joint
46 – 65ºF	1/8" in each joint
66 – 85ºF	1/16" in each joint
Over 85ºF	no shims necessary

Laying Rail

Except as otherwise specified, rails shall be laid one at a time, and to ensure good adjustment, the rail ends brought squarely together against suitable rail expansion shims and bolted before spiking.

Panel Track

At locations approved by CSXT, track may be laid by the panel method. Joints must be staggered after the panels are in place. After staggering, the joints shall be located as nearly as possible to the middle of the opposite rail.

Gage

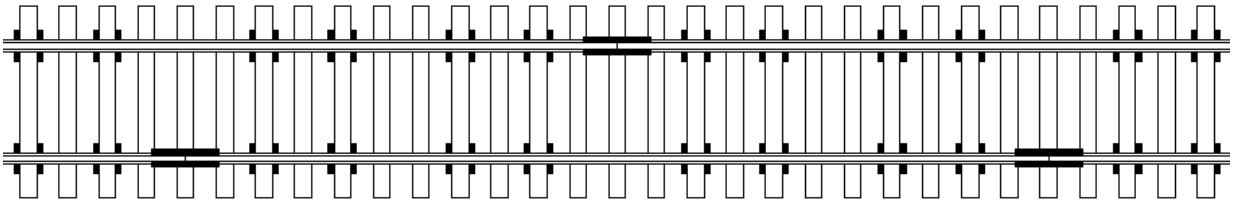
The gage of track is the distance between the heads of rails, measured at right angles thereto, at a point five-eighths (5/8") inch below the top of rail. Standard gage is 4'-8 1/2". No change in gage on account of curvature will be permitted without the express permission of CSXT. **Gaging must be done at the time the rail is laid using a gage manufactured for such purpose**.

Butting Used Rail with New Rail

When butting used rail with new rail, welding shall be used to build up the end of used rail to match the new rail. This provides a smooth transition over the joint. The same process shall be used when it is necessary to butt used rail to new frogs, switches, etc.

Anchors

Rail anchors for jointed track shall be applied at sixteen (16) anchors per 39 feet rail length, box anchoring eight ties spaced in accordance with CSXT Rail Anchoring Policy, MWI 703 (excerpt shown below). Box anchoring is defined as: an anchor on each side of a tie, on both rails, or four (4) anchors applied to one tie. Anchors shall be securely and squarely fastened to rail and have a solid bearing against the ties.



JOINTED RAIL - 16 ANCHORS PER 39 FOOT RAIL, BOX ANCHOR 8 TIES.

RAIL ANCHOR PATTERNS

F) LAYING WELDED RAIL

Track locations that will have over 400 feet in length of welded rail are considered to be continuous welded rail track and shall meet all the requirements for continuous welded rail track (Reference 49 CFR 213.121(f)).

Installation of Continuous Welded Rail will be governed by CSXT Continuous Welded Rail Policy, MWI 1125, latest revision, available upon written request. Field welds will be governed by CSXT Welder's Manual, MWI 801, latest revision, available upon written request. Rail anchors for welded rail will be governed by CSXT Rail Anchoring Policy, MWI 703, latest revision, available upon written request.

G) SPIKING

Spiking patterns will be governed by CSXT Standard Drawings, pages 36 through 40.

H) SUPERELEVATION & SPIRALS

See CSXT Superelevation of Curves, MWI 1104, latest revision, available upon written request.

I) SURFACING & LINING TRACK

Following the assembly of the track, sufficient ballast shall be unloaded in the tie cribs and shoulders of the track structure to restrain movement or buckling of track due to temperature changes. Such ballast unloading shall provide an adequate amount of ballast for the initial track raise with sufficient surplus to continue to hold the track after the raise. On spirals and curves, the outside rail shall be superelevated as indicated on CSXT Standard Drawings.

Ballasting

The ballasting of track shall be accomplished in not less than two lifts. Each lift shall not exceed four inches in height, except the final lift shall be approximately two inches in height.

Surfacing

Track surfacing shall be done by methods that will prevent undue bending of the rail or straining of the joints. The amount of track lift shall not endanger the horizontal or vertical stability of the track. The track shall be initially raised so that a final raise of not less than one inch nor more than three inches will be required to bring it to finished surface. All ties that pulled loose shall be replaced to proper position, shall have full bearing against the rail, and be properly secured to the rail.

Tamping

Tamping of ballast shall be done with power tamping equipment. Control or cycling of the power tamper shall provide the maximum proper compaction of the ballast uniformly along the track. The ballast shall be thoroughly tamped on both sides of the tie from a point 15 inches inside the rails to the ends of the ties.

Lining

The track shall be placed in proper alignment when initially raised and tamped. The final alignment of track shall be done by a power operated lining machine capable of meeting the specified track tolerances.

Final Raise and Surfacing

When the track has been raised to within two inches of the final grade and properly compacted, a finishing lift shall be made by jacking the track to the finished top-of-rail elevations. The ballast shall then be applied under the ties for their entire length and thoroughly driven in place for a space extending from fifteen inches inside either rail to the ends of the ties, by tamping machines, tamping picks, or tamping bars. The ballast under the remainder of the tie bearing shall not be tamped. In making the finishing lift, the spot board and track level board shall be used with care and the track brought to a true surface with the required superelevation of the outer rail on spirals and curves.

Final Lining

After the track has been brought to the established track center, every effort shall be made to maintain appropriate line during preliminary ballast applications.

Final Dressing of Ballast

The Contractor shall provide the necessary templates for shaping the ballast sections. The edge of ballast shall be brought to true line by means of shovels, forks, or ballast regulating machines. The ballast shoulders shall be uniformly formed and compacted. All excess ballast shall be removed and deficiencies of ballast shall be supplied.

J) GRADE CROSSING

Installation

Any road crossing to be constructed over the track at grade shall be installed in accordance with CSXT MWI 901 or by a crossing surface approved by the State in which the track is located. Any road crossing over CSXT owned track shall be CSXT's standard surface and be installed by CSXT track forces. Dirt or gravel crossings are not permitted. Road profiles for crossing roads shall be in accordance with CSXT standard drawings for road crossings and the AASHTO Green Book.

Rail Joints

No joints will be permitted within the confines of the crossing, including road shoulders.

Completion

Highway and street crossings shall be completed in their entirety, including grading, planking, and/or paving in exact accordance with the plans and specifications. Care shall be taken to ensure the least possible interference with highway or street traffic.

K) FINAL CLEANING

All refuse from construction operations shall be removed and disposed of and the entire roadbed and right-of-way shall be left in a presentable condition.

L) DERAILS AND BUMPING POSTS

Derails and bumping posts are to be installed as per CSXT approved plans provided by Industry or its Consultant.

M) GATES AND FENCES

Gates may only be installed on tracks that are located on the industry's property. The gate shall have adequate devices to secure the gate open while CSXT crews are operating on the track. In addition, gates installed across industry sidetrack must be capable of being secured with two locks—one supplied by the industry and one supplied by the CSXT for its use when switching the industry. Fences and gate openings shall be located in compliance with the minimum clearance requirements. CSXT recommends the Industry consider double posting gates.

N) INSPECTION

After completion of the work, a final inspection will be made. Any previous inspection or acceptance will not preclude rejection at the final inspection of anything that is not satisfactory or not in accordance with the Guidelines.

A quarterly inspection of the sidetrack and an annual inspection of bridges will be made by local CSXT Maintenance Personnel to determine any repairs that might be needed. If the track has been inactive for an extended period of time, an inspection must be made by CSXT before any cars may be spotted on the track.

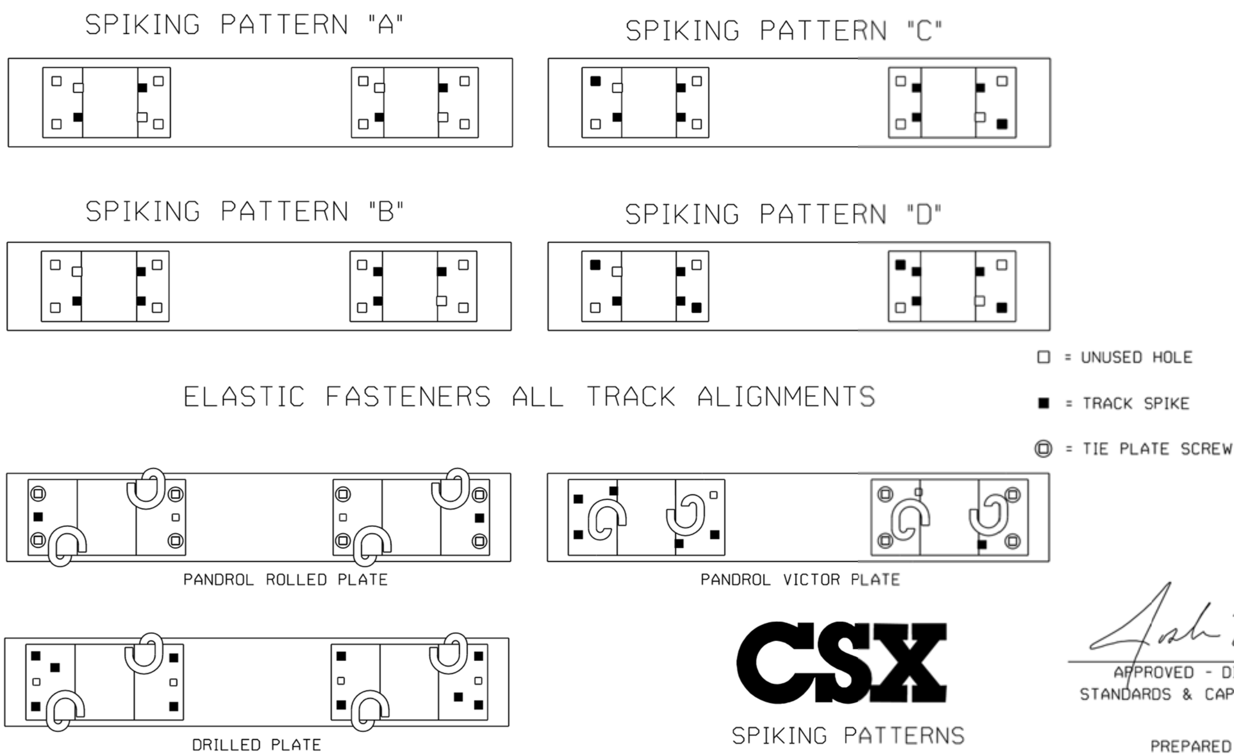
O) MAINTENANCE

All completed work shall be maintained and kept in finished condition by the Contractor until final inspection and acceptance. **After the track is placed in service, the Industry shall <u>maintain</u> its portion of the track and bridges in a condition at minimum in compliance with FRA Class I track (reference 49 CFR 213).** Failure to maintain track and bridges in a proper manner may lead to suspension of service until the defective condition(s) are corrected.

Diagram: Main Track Spiking Patterns Side Track Spiking Patterns (2512)

2512

SPIKING REQUIRMENTS											
TRACK ALIGNMENT		MAIN TRACKS AND SIDINGS						SIDE/INDUSTRIAL TRACK			
		MAXIMUM AUTHORIZED SPEED						MAXIMUM AUTHORIZED SPEED AND TONNAGE			
		UP TO 45 MPH		46 MPH TO 60 MPH		61 MPH AND HIGHER		UP TO 25 MPH		>25 MPH & >10 MGT	
DEGREE FROM	DEGREE TO	SPIKES PER TIE PLATE	SPIKING PATTERN	SPIKES PER TIE PLATE	SPIKING PATTERN	SPIKES PER TIE PLATE	SPIKING PATTERN	SPIKES PER TIE PLATE	SPIKING PATTERN	SPIKES PER TIE PLATE	SPIKING PATTERN
TANGENT		3	B	3	B	4	C	2	A	3	B
0° - 01′	1° - 59′	3	B	4	C	4	C	3	B	3	B
2° - 00′	3° - 59′	4	C	4	C	4	C	3	B	3	B
4° - 00′	5° - 59′	4	C	4	C	4	C	4	C	4	C
6° - 00′	12° - 59′	5	D	5	D	5	D	4	C	4	C
13° - 00′ AND UP		5	D	5	D	5	D	5	D	5	D



CSX

SPIKING PATTERNS

MAIN TRACK - A TRACK, OTHER THAN AN AUXILIARY TRACK, EXTENDING THROUGH YARDS AND BETWEEN STATIONS, UPON WHICH TRAINS ARE OPERATED IN CONFORMANCE WITH RULES OR SPECIAL INSTRUCTIONS.

SIDING - AN AUXILIARY TRACK DESIGNATED IN SPECIAL INSTRUCTIONS FOR THE MEETING OR PASSING OF TRAINS.

THE SPIKING PATTERN ON CURVES WILL BEGIN AT THE TANGENT TO SPIRAL MARKER PLATE AND END AT SPIRAL TO TANGENT MARKER PLATE.

THE SPIKING PATTERN ON COMPOUND CURVES WILL BE BASED ON THE HIGHEST DEGREE OF CURVATURE IN THE CURVE AND WILL BE USED FOR THE ENTIRE CURVE.

SIX AXLE LOCOMOTIVES WITH CONVENTIONAL TRUCKS ARE RESTRICTED FROM OPERATING ON CURVES OVER 17°-00′.

SIX AXLE LOCOMOTIVES WITH RADIAL STEERING TRUCKS ARE RESTRICTED FROM OPERATING ON CURVES OVER 23°-00′.

IF A TIE PLATE DOES NOT HAVE TWO GAGE SIDE RAIL SPIKES, USE ADDITIONAL SPIKES AS SHOWN IN PATTERN C & D.

SPIKING PATTERN B (THREE SPIKES) AT MINIMUM WILL BE USED ON MAIN AND SIDING TRACKS WHERE DISTRIBUTED OR PUSHER LOCOMOTIVES OPERATE, EXCEPT ON TANGENT TRACK DURING MAINTENANCE OR PRODUCTION WORK. SPIKING PATTERN A (TWO SPIKES) MAY BE USED TO PASS TRAINS AT SPEEDS NO GREATER THAN 25 MPH. REQUIRED SPIKING PATTERN MUST BE ESTABLISHED WITHIN 24 HOURS.

APPROVED - DIRECTOR
STANDARDS & CAPITAL PLANNING

APPROVED - ASST. VICE PRESIDENT
ENGINEERING

PREPARED BY:
M. SCHWARTZ

ISSUED: DECEMBER 27, 1996
REVISED: MARCH 21, 2023

Diagram: Turnout Spiking Patterns with Bethlehem 811 Style Braces (2513) [sheet 1]

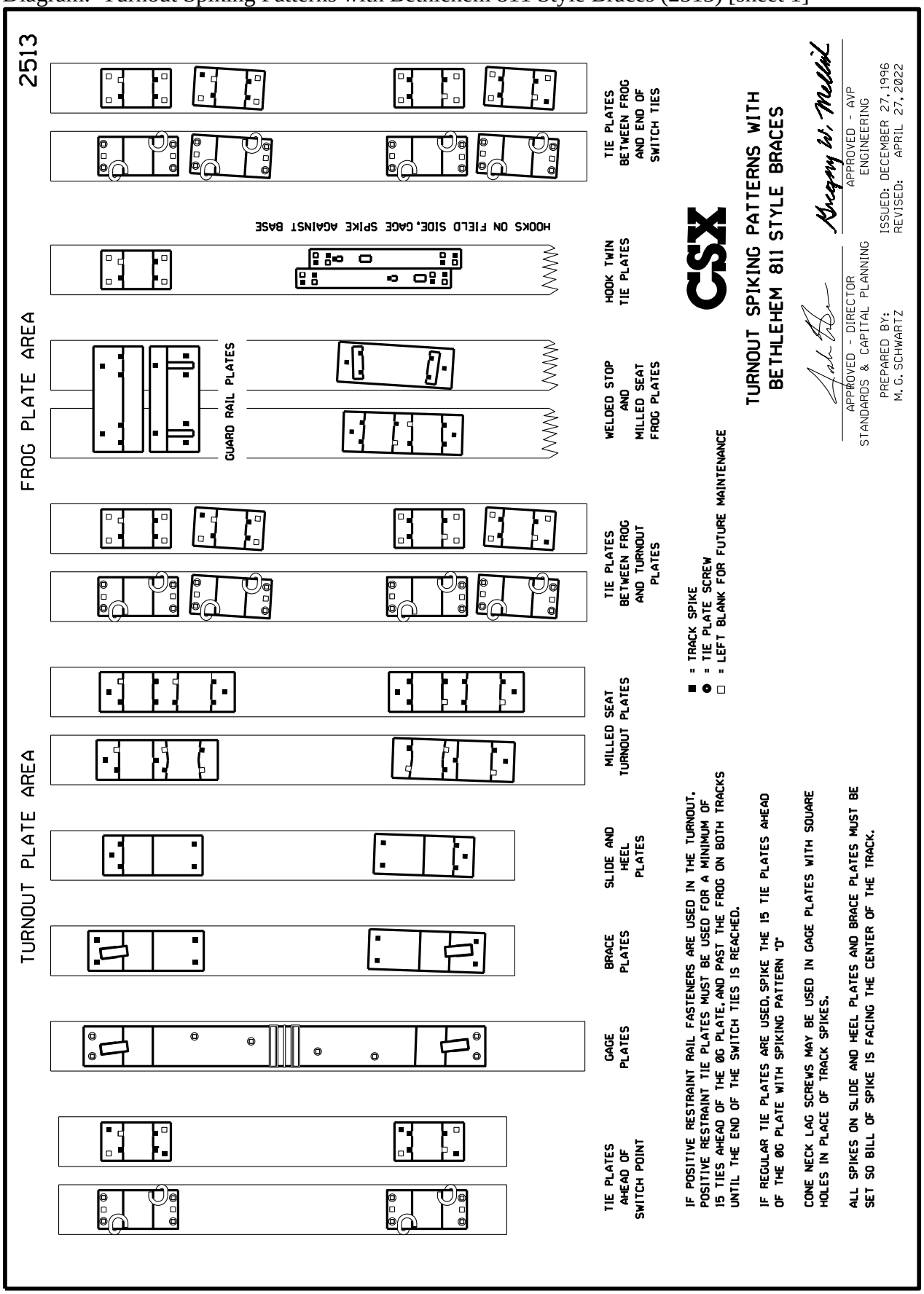


Diagram: Turnout Spiking Patterns with Bethlehem Boltless Style Braces (2513) [sheet 2]

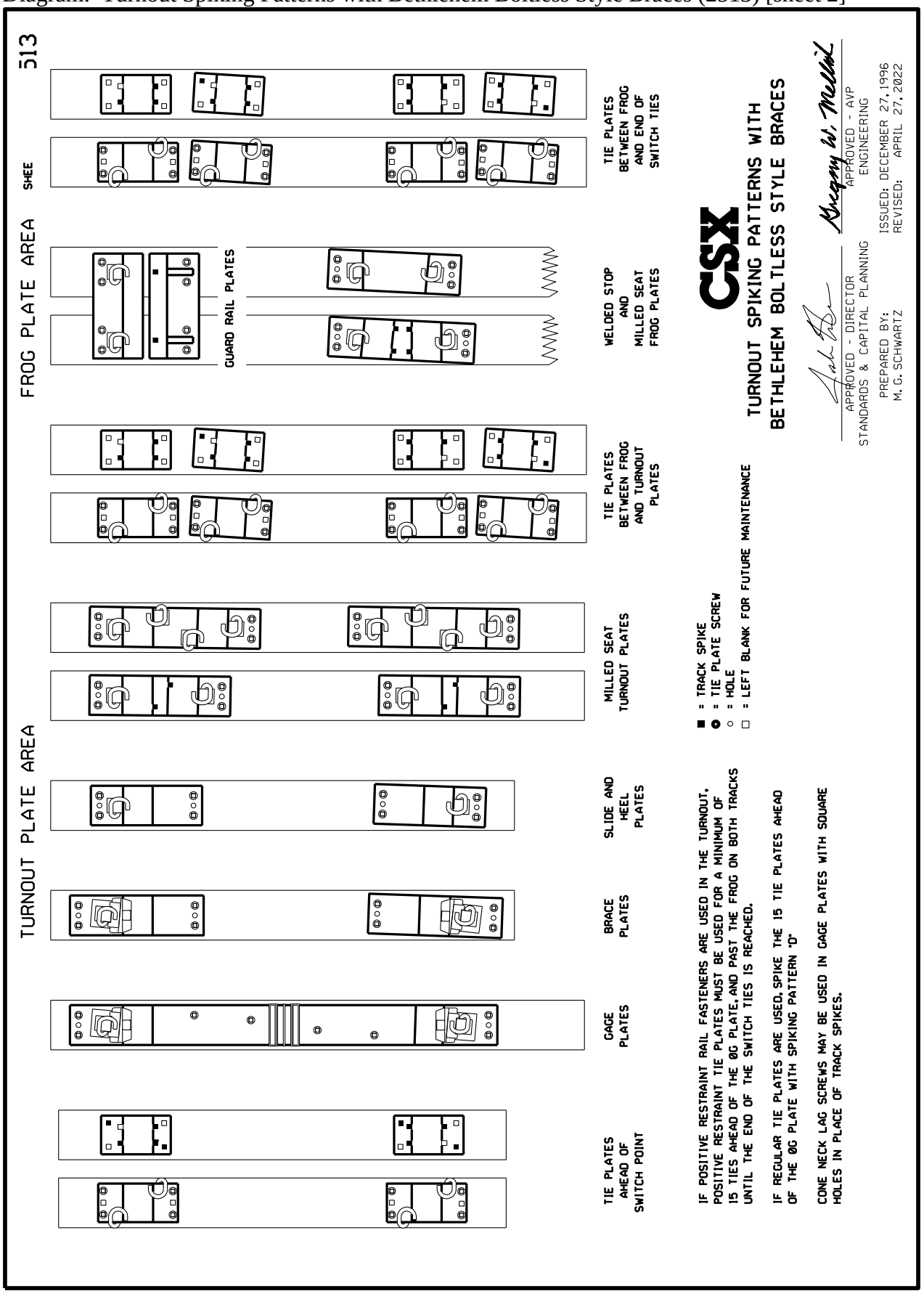


Diagram: Turnout Spiking Patterns with Clamptite Style Braces (2513) [sheet 3]

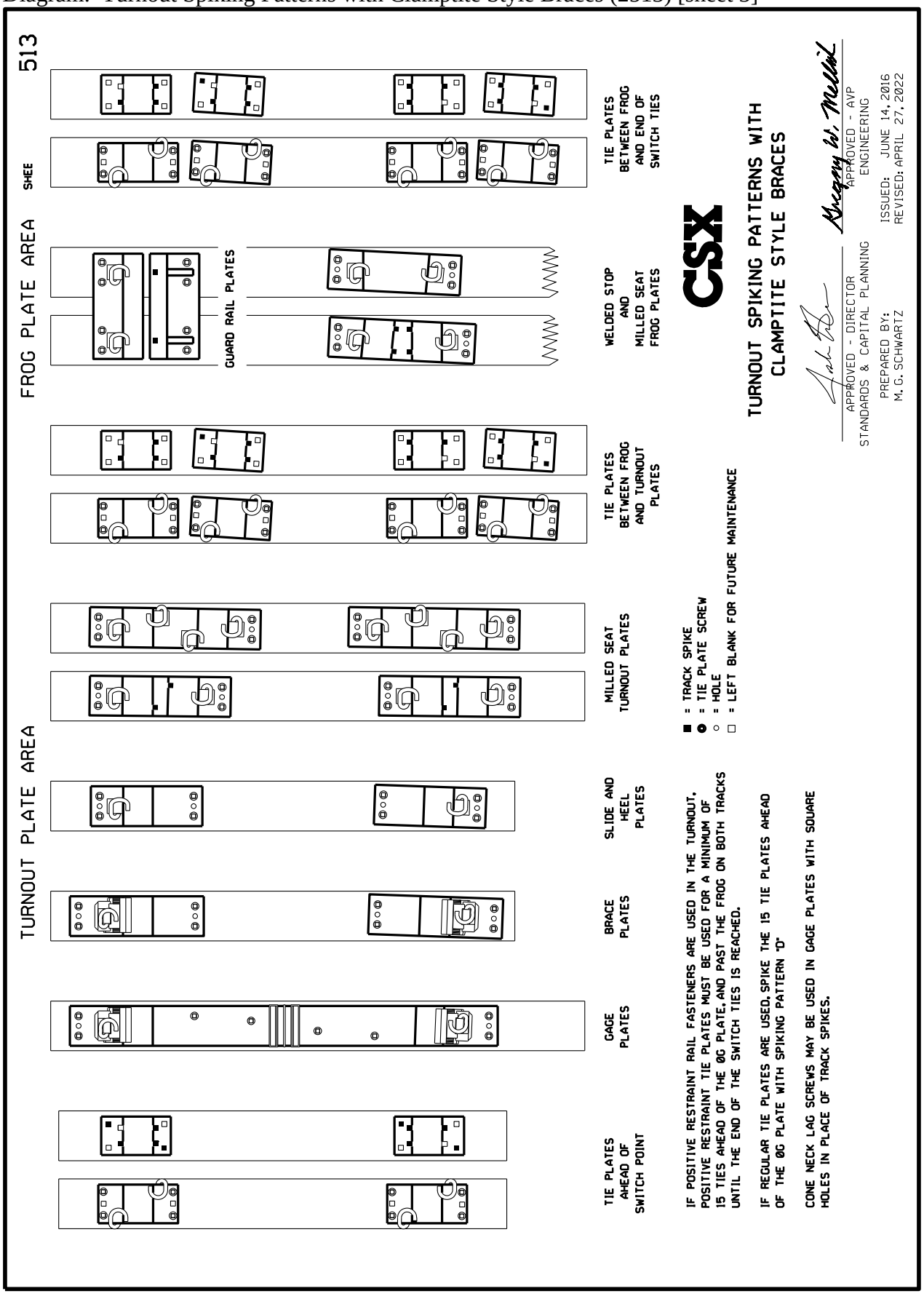


Diagram: Joint Area Spiking Patterns (2514)

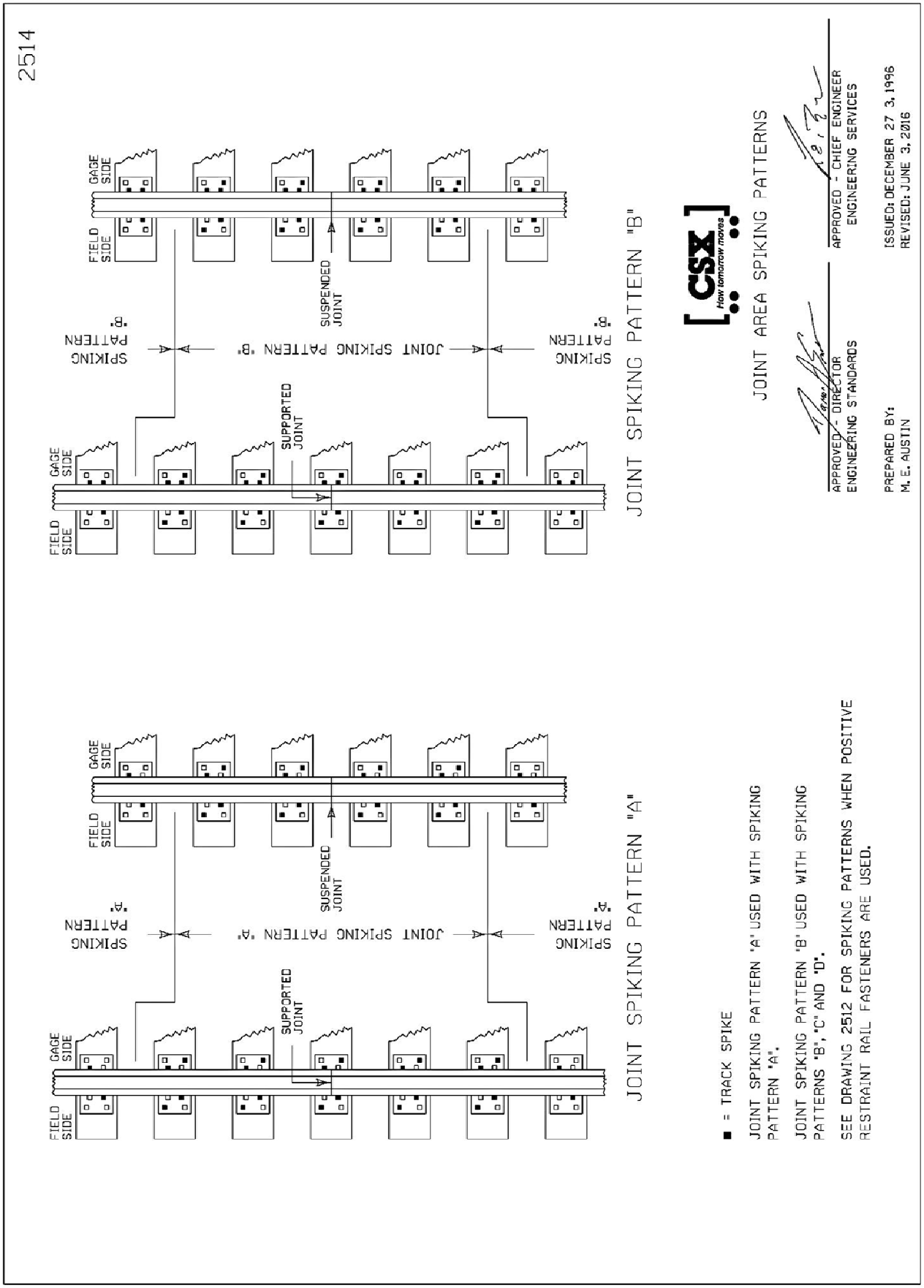


Diagram: Light Duty Road Crossing--Bituminous Concrete with Rubber Panels (2521)

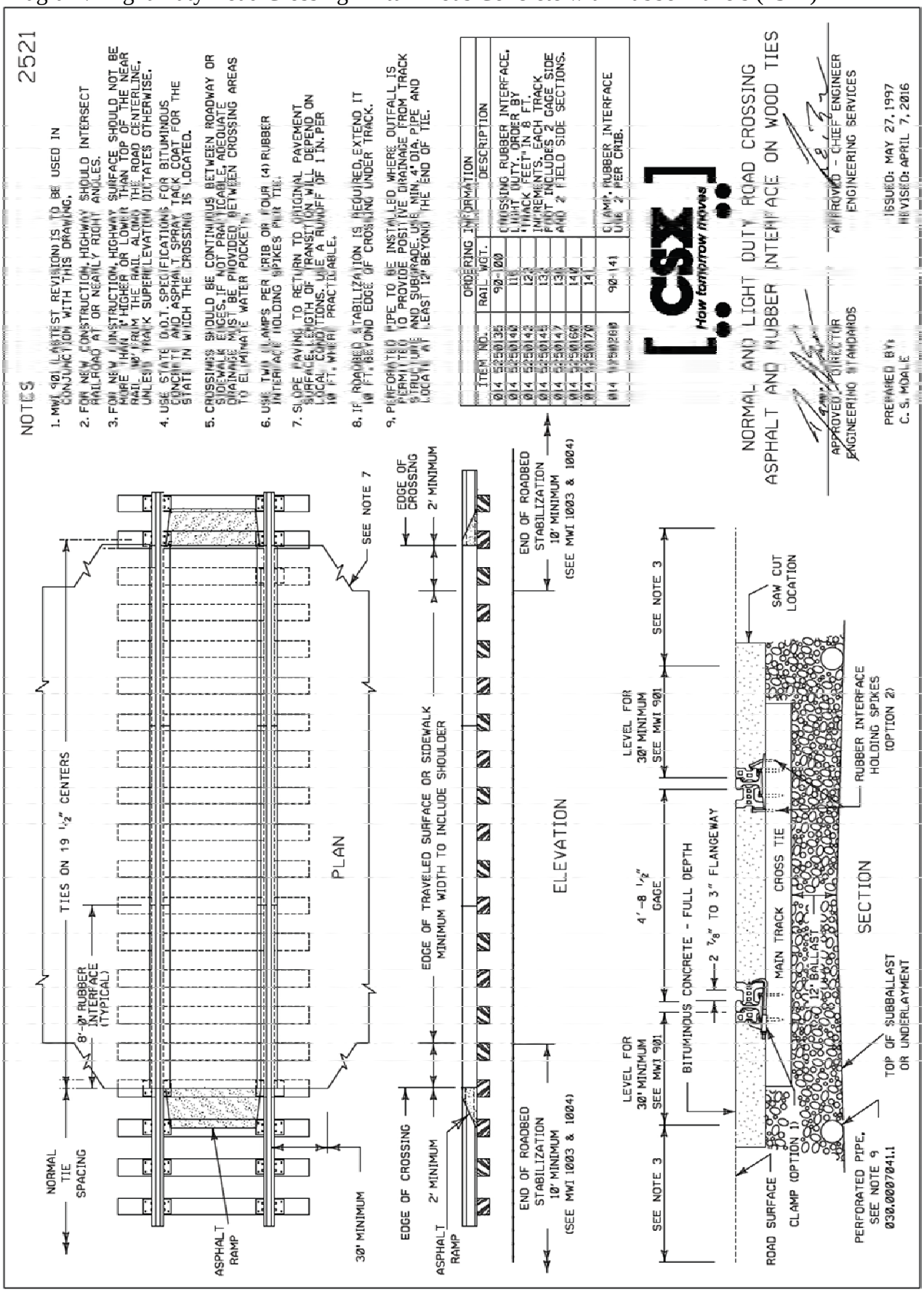


Diagram: Normal Road Crossing—Rubber, Asphalt, & Timber for Wood Ties (2535) [Sheet 1]

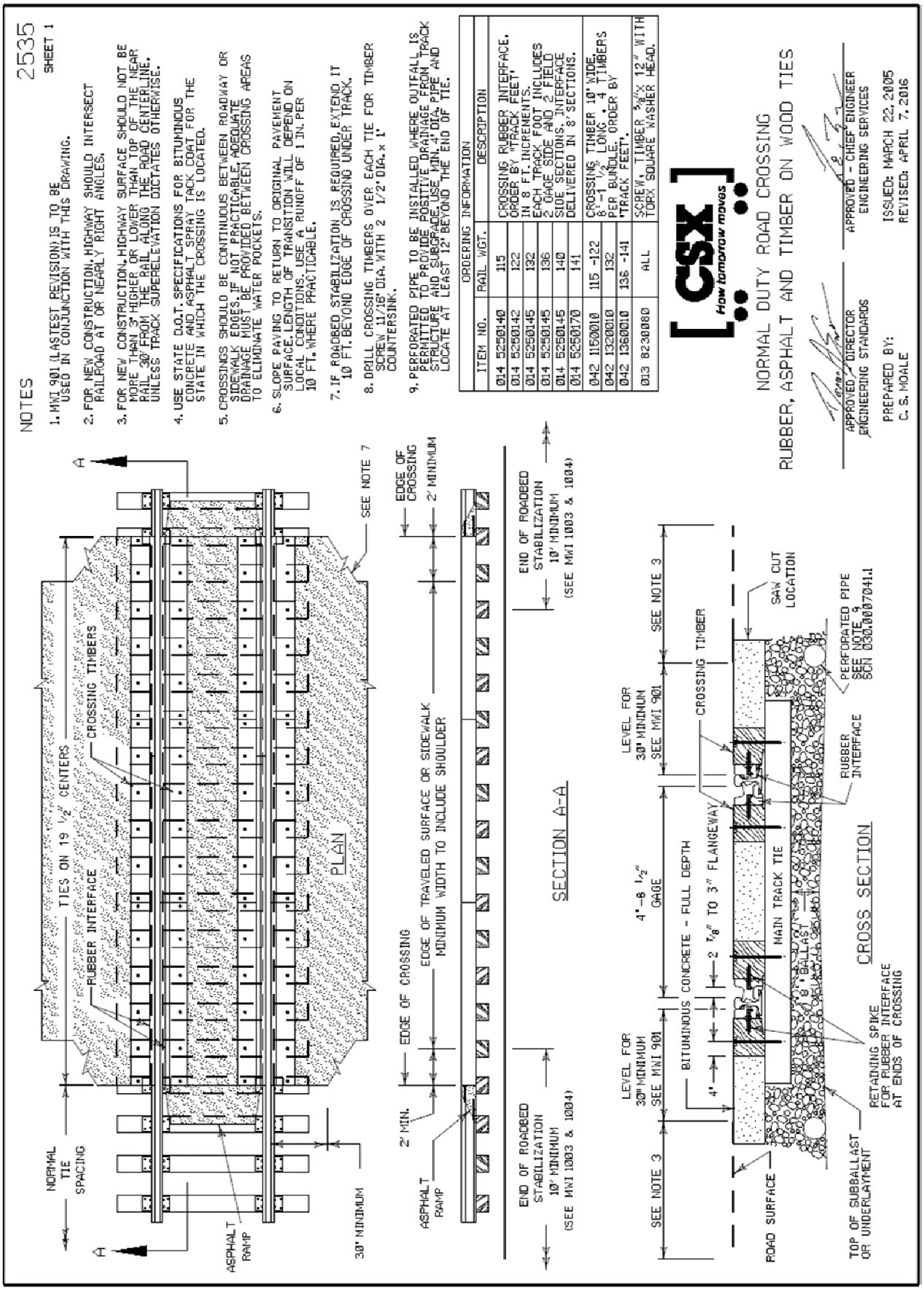


Diagram: Normal Road Crossing—Rubber, Asphalt, & Timber for Wood Ties (2535) [Sheet 2]

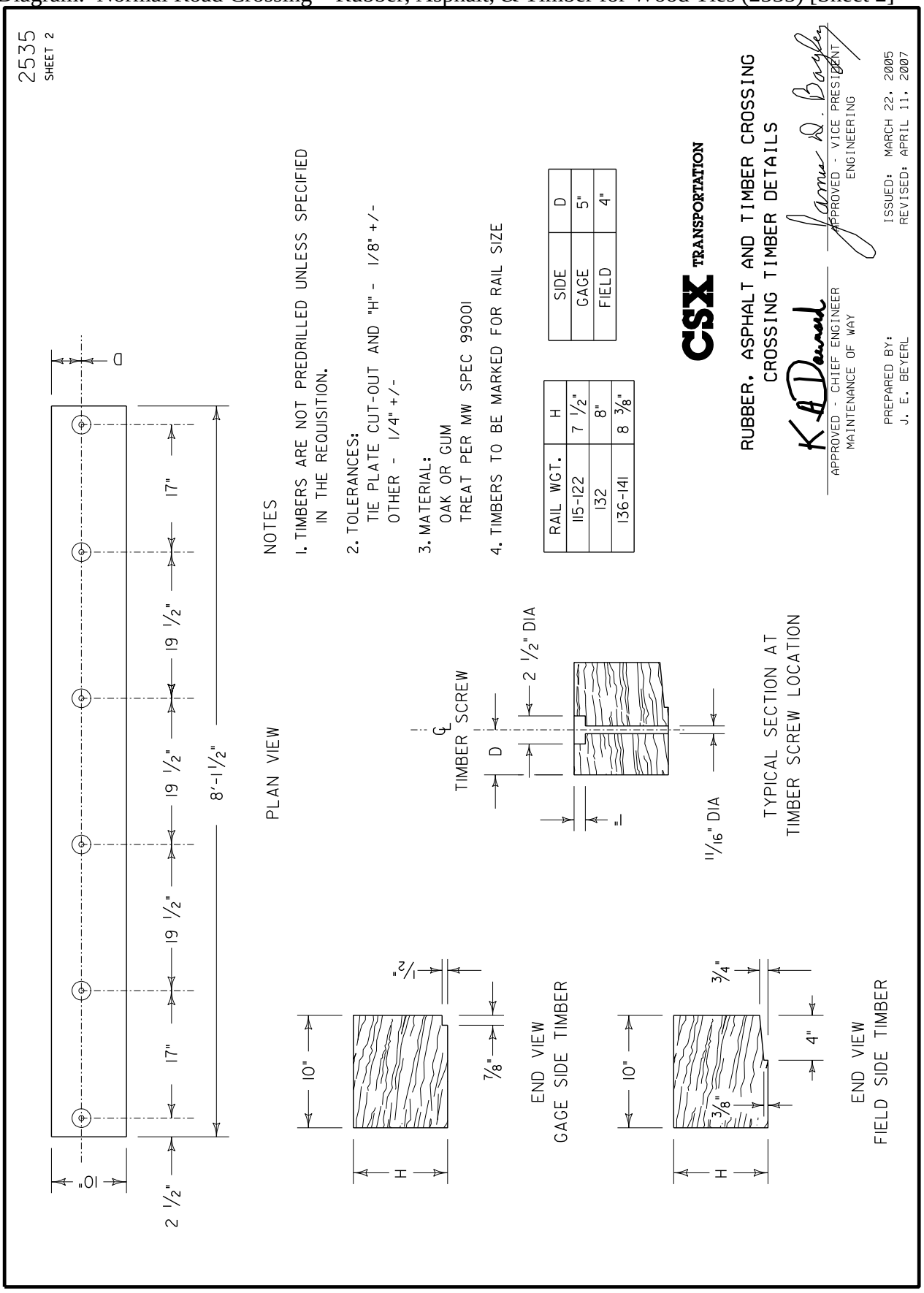


Diagram: Normal Road Crossing—Asphalt, & Timber for Wood Ties (2536) [Sheet 1]

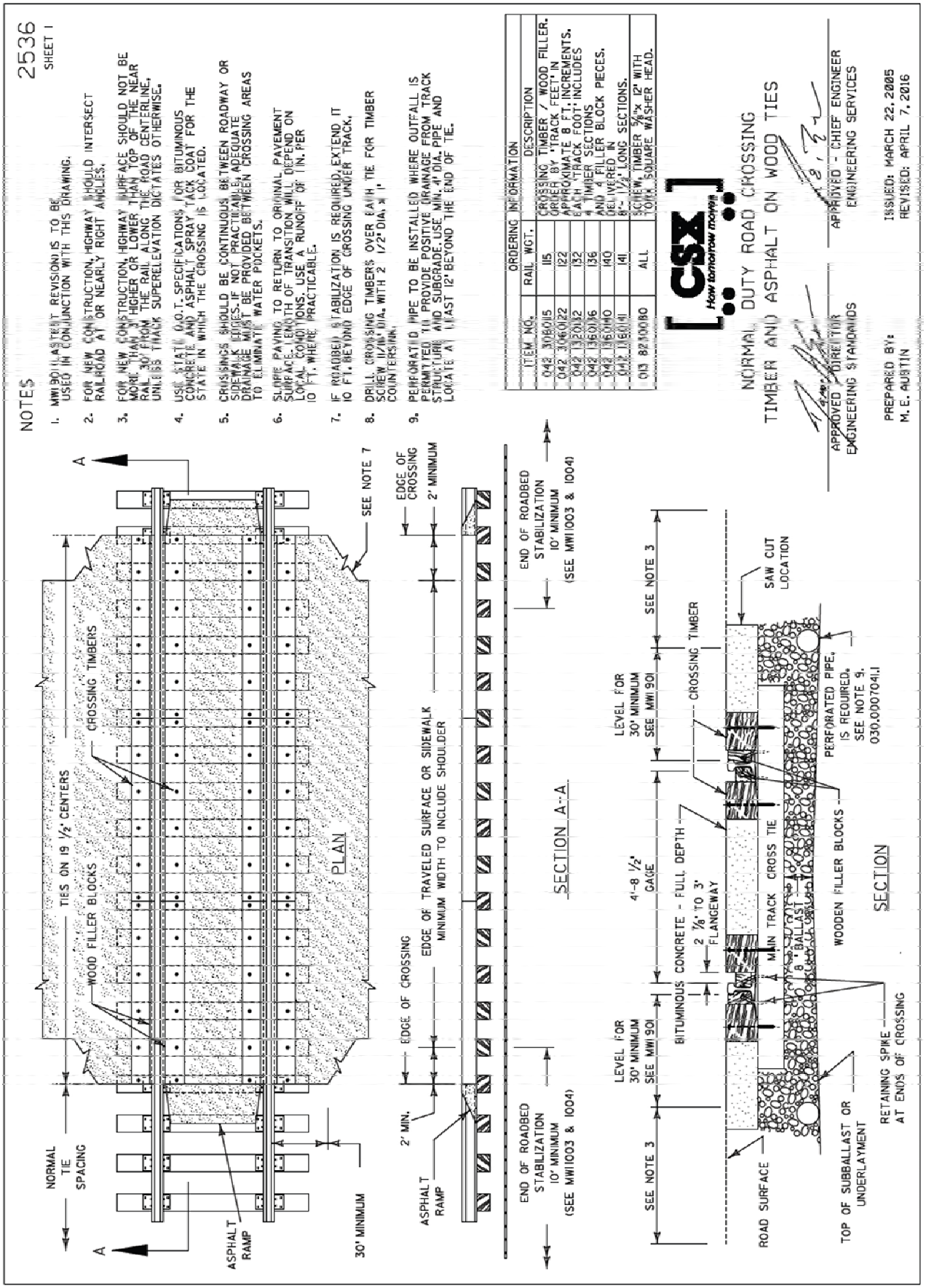
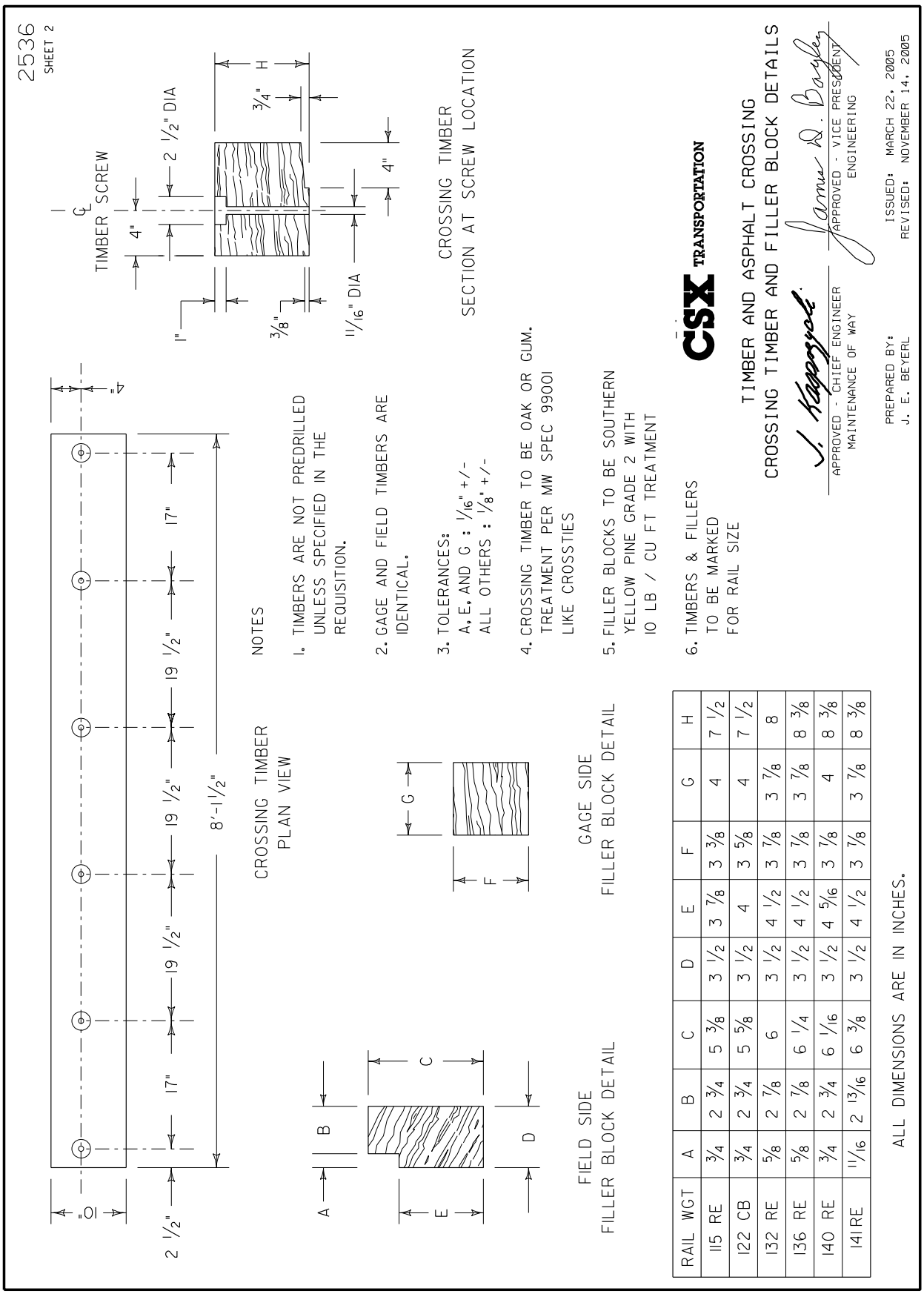


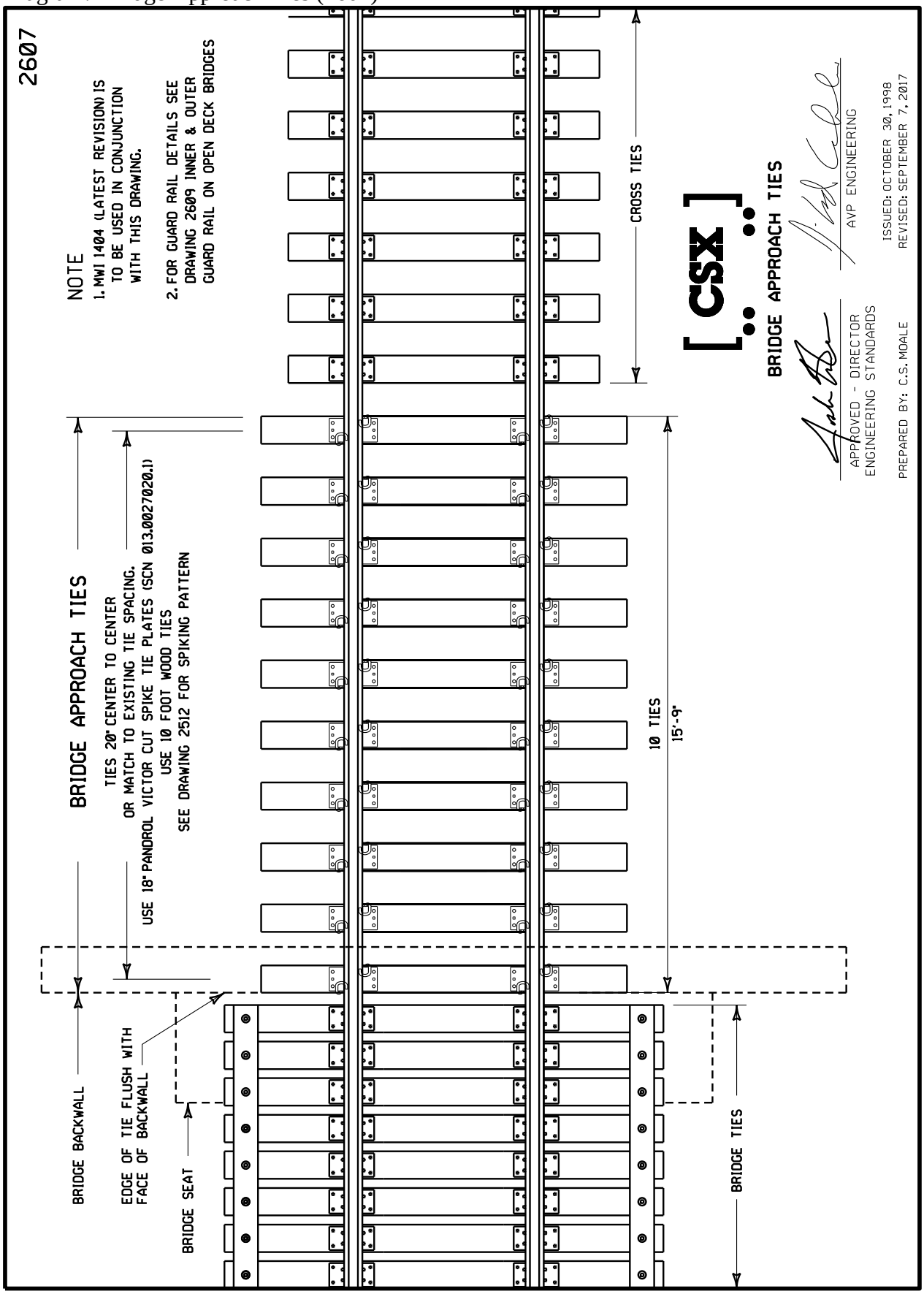
Diagram: Normal Road Crossing—Asphalt, & Timber for Wood Ties (2536) [Sheet 2]



RAIL WGT	A	B	C	D	E	F	G	H
115 RE	3/4	2 3/4	5 3/8	3 1/2	3 7/8	3 3/8	4	7 1/2
122 CB	3/4	2 3/4	5 5/8	3 1/2	4	3 5/8	4	7 1/2
132 RE	5/8	2 7/8	6	3 1/2	4 1/2	3 7/8	3 7/8	8
136 RE	5/8	2 7/8	6 1/4	3 1/2	4 1/2	3 7/8	3 7/8	8 3/8
140 RE	3/4	2 3/4	6 1/16	3 1/2	4 5/16	3 7/8	4	8 3/8
141 RE	11/16	2 13/16	6 3/8	3 1/2	4 1/2	3 7/8	3 7/8	8 3/8

ALL DIMENSIONS ARE IN INCHES.

Diagram: Bridge Approach Ties (2607)



Grading

A) GENERAL

Scope

These specifications cover clearing, grubbing, excavations (cuts), embankments (fills), drainage, subballast, erosion protection, and geotextiles associated with the construction of private tracks served by CSXT.

All work and materials shall conform to these specifications and to any supplemental specifications pertaining to the particular project. Where there is any conflict between specifications, those pertaining to the particular project shall govern.

All references to "the Contractor" shall refer to any Contractor or subcontractor working on the Industry's behalf during the construction of the sidetrack.

Prior to commencing work on CSXT's right-of-way, the proper written authority must be given to the industry and/or Contractor. The primary method of conveying authority is via the sidetrack agreement that must be executed between CSXT and the Industry. A right-of-entry for surveying and preliminary non-construction activities is available and information on obtaining this authority is detailed elsewhere in this document.

Permits and Right of Entry

The Contractor shall seek permission from and coordinate with any individual, governmental body, (including environmental agencies), utility, etc., upon whose property the Contractor must enter or perform work. The Contractor's schedule must take into account any restrictions on tree clearing or other work mandated by protected and endangered species regulations applicable to the project location.

The Contractor will secure all permits, such as environmental, grading, cut and fill, waste disposal, and street opening which may be required by governmental agencies having jurisdiction. Environmentally impacted material on CSXT right-of-way must be coordinated with CSXT for proper disposal.

Fiber Optic Cable

Underground Fiber Optic Cable installations (longitudinal occupations on Railroad right of way) may require relocation, lowering, and/or protective casing installation.

The Fiber Optic Company must be contacted and any work needed to protect the cable must be performed by the Fiber Optic Company prior to commencement of any grading work that may affect the installation. As with all underground utilities, the industry is responsible for contacting the state's one-call/before you dig hotline and/or the utility company directly prior to work that penetrates the ground.

Line and Grade

All work shall conform to the alignment, grades, cross sections, and slopes shown by the plans approved by CSXT. The center of the roadbed will conform to the alignment (horizontal and vertical) indicated on the drawings. The grade line on the profile denotes the subgrade and the finished embankment or the bottom of the excavation ready to receive the subballast or geotextile.

The roadbed will be constructed to the dimensions shown on the current CSXT drawing titled "Standard Roadbed and Ballast Section" pages 19, 20, and 21.

B) CLEARING AND GRUBBING

Clearing

Clearing will consist of the cutting of all trees, stumps, brush, shrubs, and other vegetation at a level not more than 12 inches above ground and the disposal of all cut material and other fallen timber, fallen branches and other surface litter, rubbish, and debris.

Grubbing

Grubbing will consist of the removal and disposal of all stumps, roots, root mats, embedded logs, and all boulders and debris visible on the surface where clearing is to be done. Stumps will be grubbed where embankments are less than 5 feet in height; where the profile indicates excavation; in all areas designated for the construction of other facilities; and in borrow areas. In all other areas, the stumps may be cut off even with the ground.

Methods

In felling trees near tracks, structures, and wire lines, necessary precautions must be exercised in order to prevent damage to these facilities or the obstruction of tracks. This may require flagging protection when felling trees near tracks.

C) EXCAVATION

Methods

Slopes of all excavations shall be cut true and straight and all loose stones in the slopes shall be removed. Rock shall be removed below sub-grade and the area refilled with approved materials. The Contractor shall take whatever measures may be necessary to properly drain the excavations during and after construction to prevent water from flowing into, or standing in the excavations for any appreciable time, whether it be storm or ground water.

Rock excavation shall be removed to a depth of eighteen (18) inches below subgrade and refilled with suitable material. Where required, unsuitable material in the bottom of cuts will be removed and refilled to subgrade with acceptable material.

Disposal of Excess Excavation

Where the quantity of excavation exceeds that required to construct the embankments to a standard cross section, the surplus may be used to widen the embankments uniformly along one or both sides.

Waste Area

Waste areas for the disposal of excess or unsuitable material will be located and materials deposited to not endanger the roadway. Material shall not be wasted on CSXT property under any circumstances.

D) UNSUITABLE MATERIAL

Should unsuitable material be encountered, such as muck, highly plastic clays, or silty unstable material, it shall be removed. In cut sections, plastic material, as defined by the American Association of State Highway and Transportation Officials (AASHTO) - Soil Classification System as Group A-2-6, A-2-7, A-4, A-5, A-6, or A-7 shall be removed to a depth of at least 2 feet below subgrade from ditch line to ditch line. Additional depth may be required depending upon local conditions. Where organic muck, Group Classification A-8, is encountered in the fill section, it shall be removed within the limits of the toes of slope of the roadbed. Where fill exceeds 10 feet in height, width of the section to be excavated shall be three times the height of the fill. After removal, all unsuitable material shall be distributed along the lower portion of the embankments and dressed to give a uniform pleasing appearance or wasted.

E) EMBANKMENTS

Materials

Suitable excavated material shall be used in forming the embankments. The material to be used in embankments shall be free of frozen or organic materials such as leaves, roots, grass, weeds, and all other material not consistent with construction of a stable, homogeneous fill. Embankments will not be constructed on frozen ground.

Formation in Layers

Unless otherwise provided, embankments shall be constructed in successive layers no more than 6 inches thick, loose measurement. Benching is required to widen existing embankments or fills. Where embankments are built by dumping from draglines, trucks, or other similar equipment, a bulldozer must be operated constantly to spread the material. These layers must be the full width of embankment, each thoroughly compacted, built to the true slope, and not widened with loose material from the top. When embankments are being constructed principally of rock, the depth of each layer shall be carefully distributed throughout the embankment, and the voids shall be filled with fine material to secure the maximum density. The most suitable material shall be reserved for finishing the roadbed.

Large stones with any dimension greater than six inches shall not be permitted within two (2) feet of the design subgrade. As the embankment is consolidated, the slopes shall be carefully dressed to the desired section and maintained to their proper height, dimensions, and shape until the work is accepted. Where a new embankment is to be placed on sloping ground or on an existing roadbed embankment, the surface shall be deeply plowed and stepped. When transporting material with rubber-tired equipment, care shall be taken to see that the trailing units do not follow in the tracks of the preceding unit. At the end of each day's work the embankment shall be dressed to shed any water that might fall during the night.

Density

Suitable compaction equipment shall be continuously operated while embankments are being constructed. While work is progressing in separate areas, approved compaction equipment shall be operated continuously in each embankment area. **Compaction of the embankments shall be to density of 95 percent of that obtained in a Modified Proctor Density Test, ASTM D-1557.** Material that does not contain adequate moisture to obtain specified density shall require the incorporation of additional water. Material containing an excess amount of moisture shall not be placed in an embankment until it has been allowed to dry to the design moisture content.

Shrinkage

The Contractor shall construct embankments to such heights above subgrade and to such increased widths as are necessary to provide for shrinkage, subsidence, and erosion. As the embankments become consolidated, their sides shall be trimmed to the proper dimensions and shapes until the completion and acceptance of the work.

Embankments Over/Around Structures

Wet or impervious materials will not be permitted for forming embankments about, against, or over structures. The materials shall be deposited in layers of not more than six (6) inches in thickness, carefully tamped, and sloped away from the structure. Fill over arches, boxes, and large pipes shall be deposited uniformly on both sides. Large stones shall not be placed within two (2) feet of the extrados of any arch, top, and sides of boxes, or outside of large pipes. Any damage to waterproofing shall be repaired.

F) DITCHES

Intercepting and berm ditches shall be provided at the top of the cut slopes and the toe of the embankment slopes to divert storm water that flows toward the roadbed. Roadbed ditches shall be provided as indicated with the outfall ends diverging sufficiently to prevent erosion of the adjoining embankments. All ditches shall be in accordance with CSXT Standard Roadbed and Ballast Section, page 19, 20, and 21.

G) FINISHED SUBGRADE

The subgrade shall be compacted and finished to a true, level, sloped or crowned surface as called for by the drawings, and must leave no depression or irregularity which will hold water or prevent proper drainage. A tolerance of not more than one-tenth (0.10) foot above or below design subgrade will be permitted.

See CSXT Required Grading at Turnout, for typical subgrade section and grading requirements at turnout constructed in CSXT track.

H) SUBBALLAST

The finished track roadbed shall receive compacted sub-ballast as indicated on CSXT's Standard Roadbed Section Drawing unless otherwise indicated on project drawings.

The sub-ballast density shall be 95 percent based on the Modified Proctor Density Test ASTM 1557. If additional moisture is required to obtain adequate density, the Contractor shall use water along with approved mixing, shaping and compaction equipment. The subballast shall be finished to a tolerance of one-tenth (0.10) foot above or below design subgrade elevation. The Contractor shall not place sub-ballast on a wet or rutted roadbed.

I) GEOTEXTILES

The geotextile, when specified, shall be placed on the finished subgrade before the sub-ballast is placed and compacted. No equipment shall be allowed to operate directly on the bare geotextile. The geotextile shall be placed symmetrically about the track centerline. At the end of each roll or piece of geotextile, there shall be a two-foot overlap of the material. Special care shall be taken by the Contractor in placing the geotextile on the finished subgrade to ensure that the geotextile is laid flat and free of wrinkles.

If the geotextile is damaged in any way, the Contractor shall place a patch of the same material over the damaged area. The patch shall have a two-foot overlap in every direction around the damaged area.

If it is necessary to overlap rolls or pieces of a geotextile along the longitudinal edge, eighteen (18) inches of overlap shall be used. No longitudinal overlaps shall occur between the toes of ballast of any track.

At all bridge abutments the geotextile shall be turned down two feet below the finished subgrade against the face of the abutment. As the embankment is replaced against the abutment and the geotextile, the Contractor shall take special care to ensure that the backfill is adequately compacted to the specified design density. The Contractor shall also use special care to avoid any damage to the geotextile.

Specifications for each particular application of geotextile and guidelines for their installation are found in CSXT's MWI 1003, latest edition, available upon written request.

J) PIPE CULVERTS

General

Trench excavation shall be true to the lines and grades shown on the drawings and carefully graded by hand whenever necessary to properly install the culverts. Rocks or other material, which might prove injurious to the culverts, shall be removed from the culvert bed. All pipe culverts shall have a minimum cover of 2.5' measured between the top of pipe and bottom of crosstie.

Concrete Pipe

All reinforced concrete pipe shall be bell and spigot pipe with "O" ring gasket or tongue and groove with RAM-NEK type flexible gasket meeting the current ASTM designation C-76 or as specified. Concrete pipe under tracks shall be Class V Wall C.

Smooth Steel Pipe

Smooth steel pipe shall be ASTM A139 Grade B with a minimum yield strength of 35,000 psi. Joints shall be fully welded with a single 'V' grove butt weld all around per AWS D1.1. Minimum wall thickness shall conform to AREMA recommendations found in Chapter 1 (Roadway and Ballast), Part 5.1.5 (Casing Pipe).

Corrugated Metal Pipe

Corrugated steel pipe shall be zinc coated, (AASHTO M218, ASTM A760) will be fully asphaltic coated (AASHTO M190, ASTM A849) or fully coated with other approved corrosive resistant material. Fiber bonded (ASTM A885) pipe will be provided where specified for placement in tidal waters, where acid mine drainage may be encountered or where other conditions warrant. Fully asphalt coated and paved or polymer precoated (AASHTO M246, ASTM A742) pipe is required in streambeds with moderate to severe bedloads of sand, gravel, and rock with velocities in excess of 5 feet per second.

A minimum of 24" long connecting bands shall be used to connect CMP. Gage of pipe to be used as follows:

Table 4: Corrugated Metal Pipe Specifications

Dia	Gage	Wall Thickness	Cover Limits
12”	16	0.064”	2.5’ to 50’
15”	16		2.5’to 40’
18”	14	0.079”	2.5’to 50’
21”	14		2.5’to 45’
24”	14		2.5’to 40’
30”	12	0.109”	2.5’to 55’
36”	12		2.5’to 40’
42”	12		2.5’to 50’
48”	12		2.5’to 45’
54”	10	0.138”	2.5’to 45’
60”	10		2.5’to 45’
66”	10		2.5’to 45’
72”	8	0.168”	2.5’to 50’
78”	8		2.5’to 45’
84”	8		2.5’to 40’

Note: 12”to 30” CMP shall not be used under CSXT owned track.

Table 5: Elliptical Metal Pipe Specifications

Span & Rise	Gage	Thickness	*Cover Limits
18” x 11”	14	0.079”	2.5’to 50’
22” x 13”	14		2.5’to 45’
25” x 16”	14		2.5’to 40’
29” x 18”	12	0.109”	2.5’to 55’
36” x 22”	12		2.5’to 45’
43” x 27”	12		2.5’to 40’
50” x 31”	10	0.138”	2.5’to 60’
58” x 36”	10		2.5’to 55’
65” x 40”	10		2.5’to 50’
72” x 44”	8	0.168”	2.5’to 60’
79” x 49”	8		2.5’to 55’
85” x 54”	8		2.5’to 50’

***Note: <u>Cover limits measured from bottom of tie.</u>**

<u>Other Material</u>

HDPE, PVC, or ABS “plastic” pipe may be used only with CSXT approval for specific application.

<u>Bedding & Placement</u>

Local selected material may be used as backfill and it shall be free from large rocks, lumps, and debris. No frozen fill, sod, cinders, or material containing a high percentage of organic material shall be allowed. Material under the haunches and around the culvert shall be placed in layers not exceeding 6 inches. The layers are to be alternately placed to keep the same elevation on both sides of the culvert at all times.

Compaction under the haunches shall be accomplished by utilizing a pole or 2" x 4" timber in the small areas. Hand tampers shall weigh not less than 20 pounds and have a tamping face not larger than 6" x 6". Mechanical tampers and rollers shall be used in bringing the backfill up to at least 3 feet above the culvert. They shall not strike the culverts while tamping. Smooth rollers will not be allowed in compacting fills around or over culverts.

K) EROSION PROTECTION

Note: These are minimum CSXT guidelines and governmental agencies' requirements may vary and/or be more stringent.

Seeding

Unless otherwise provided, all roadbed slopes shall be prepared, fertilized, seeded, and mulched to produce a stand of erosion protection grass of an annual variety.

Rip-rap

Description: This work consists of the installation of the required material for a protective covering of stream channel slopes at culvert inlets and outlets and embankment slopes.

Material: Rip-rap will consist of dense, sound, durable, angular shaped stone, ranging in size from 1/4 cubic foot in volume to sixteen cubic feet in volume, except that stones of smaller size, not exceeding 15 percent of the total volume, may be used for filling the voids. Rip-rap will be free from overburden, spoil, shale, and organic matter.

Installation: Rip-rap will be placed in rechanneled areas and in all areas where the fill is in contact with streams. Rip-rap shall be placed a minimum of three feet thick on side slopes measured perpendicular to the slope in accordance with Project Plans. Rip-rap will be placed concurrently with embankments and channel relocation.

Temporary Silt Fence

Description: The work covered by this section consists of furnishing, installing, maintaining, and removing a water permeable filter type fence to remove suspended particles from the drainage water.

Materials: All materials shall comply with applicable specifications of the local State Department of Transportation or with the industry's environmental permitting requirements.

Installation: The Contractor shall install temporary silt fence as shown on the plans. Posts will be spaced 6-10 feet apart depending on the amount of flow expected. Posts will be installed a minimum of 2 feet in the ground. Filter fabric will be attached to the wire fence or post by wire, cord, or staples. The filter fabric will be installed in such a manner that 4 to 6 inches of fabric is left at the bottom to be buried and a minimum overlap of 18 inches is provided at all splices.

Maintenance and Removal: The Contractor shall maintain the silt fence until the project is accepted or until the fence is removed. Contractor shall remove and dispose of silt accumulations along the fence when the capacity of the fence is diminished. Filter fabric shall be replaced when it has deteriorated to such extent that it is no longer effective. Upon removal of the silt fence, the Contractor shall dress the area to give a pleasing appearance, and shall seed and mulch the area in accordance with **Section "Seeding".**

L) TEMPORARY CROSSINGS

When a temporary crossing is necessary to transport material across the track or tracks, the location and construction of the crossing must be approved by CSXT. Temporary crossings installed over tracks that are owned by CSXT shall be installed and removed by CSXT forces only after a separate private crossing agreement is in place. Temporary crossings over tracks not owned by CSXT shall be installed and removed by the Contractor. The cost of all crossings whether by CSXT or the Contractor shall be the responsibility of the Contractor.

M) PROTECTION

Watchmen and flagmen shall be provided, at the expense of the Contractor, by CSXT when CSXT considers it necessary for the safety of trains and highway traffic or for any other operations. The Contractor shall provide the CSXT Engineering Department 30 days advance notice of the need of a watchmen or flagmen.

N) SAFETY OF AND DELAY TO TRAINS

All work performed by the industry shall be so arranged that there will be no delay or interference in any manner with the operation of trains. The work shall not cause any interference with signal wires, cables, fiber optic, telephone, or other wire lines. Note that protection of CSXT's shallow utilities is required; this protection is outside of state or locally sponsored "Call before you dig" services.

Whenever the work is likely to affect the movement or safety of trains, the method for doing such work must be submitted for approval, without which it must not be commenced or prosecuted.

Blasting adjacent to CSXT's tracks is not permitted.

O) ACCESS

Suitable access roads as necessary shall be provided at the expense of the Contractor to provide ingress and egress to the site of the work. The Contractor shall also provide and/or maintain any public or private roads that may be used in the process of the work. After construction is completed, access to CSXT's turnout and signal facilities will need to be maintained to promote periodic inspection and maintenance.

Materials

A) GENERAL

Track, roadbed, and structures shall be constructed to the line and grade as shown on the approved final plans. Inspection and approval of the completed track and bridges shall be made by qualified CSXT Engineering personnel and shall not be placed in service without such approval. Inspection shall include grading, drainage, structures, clearances, track, and related appurtenances to assure satisfactory compliance with approved final plan and CSXT Standards for construction and safety.

B) SCOPE

These specifications shall apply to that portion of the sidetrack owned and maintained by the industry (typically beyond the derail) whether constructed by the industry or the industry's Contractor.

C) SUBBALLAST

Subballast shall be composed of crusher run granite or limestone and shall meet the requirements as set out in Chapter 1 (Roadway and Ballast) Part 2 (Ballast), Section 2.11 (Sub-Ballast Specifications) of the current AREMA Manual. Sub-Ballast material shall conform to the gradation requirements as shown in **Table 6**.

Description: Any material of a superior character spread on the finished sub-grade of the roadbed and below the ballast to provide better drainage and bearing characteristics than afforded by the sub-grade material.

Table 6: Subballast Gradation Requirements

SCREEN SIZE	PERCENT BY WEIGHT PASSING	
	Graded Aggregate.	Crusher Run
1 1/2"	100%	100%
3/4"	60-100%	
No.10	30-55%	15-45%
No.60	8-35%	
No.200	5-12%	5-12%

D) BALLAST

Material shall be limestone, dolomite, or granite material free of loams, dust, or other foreign particles. Material shall be designated as AREMA #4A or #5, in accordance with gradation chart shown in Table 7.

The size of ballast to be used shall be AREMA #4A in main tracks, lead tracks, and sidings. AREMA #4A ballast will also be used between the top of the subballast and the bottom of crossties in industrial tracks, spurs, and yard tracks. AREMA #5 will be used to fill the cribs and shoulders in industrial tracks, spurs, and yard tracks (see drawing 2602 on page 20). Ballast shall conform to the grading requirements as shown in Table 7.

Table 7: Track Ballast Gradation Requirements

	PERCENT BY WEIGHT PASSING	
	MAINTRACK	**WALKWAY**
Screen Size	**AREMA 4A**	**AREMA 5**
2 ½"	100%	
2	90-100%	
1 ½'	60-90%	100%
1"	10-30%	90-100%
¾"	0-10%	40-75%
½"		15-35%
3/8"	0-2%	0-15%
No.4		0-5%

E) TIES

The use of steel, concrete, and composite crossties for industry owned tracks and turnouts are permitted. The use of steel, concrete, and composite ties in industrial tracks should be noted on the plans, along with the manufacturer of the product. The industry shall consult with and follow the manufacturer's guidelines for installation and maintenance of steel and concrete crossties.

Wood Crossties

All crossties will be treated per A.W.P.A. Manual C-6 to a net retention of 7 lb./cu.ft. for oak and 8 1/2 lb./cu.ft. for mixed hardwoods, and will conform to AREMA Manual, Chapter 30. All ties shall be free from any defects that might impair their strength or durability as crossties, such as decay, large splits, large shakes, slanting grain or large numerous holes or knots.

For applications south of mid-Alabama and mid-Georgia, the industry should consider borate treated ties to decrease decay experienced in these areas.

Mainline crossties shall be size 5 (7"x 9"x 8'6" long, minimum 8" face), or size 4 (7"x 8"x 8'6" long, minimum 7 1/2" face). Sidetrack crossties shall be a minimum size 3 (6"x 8"x 8'6" long, minimum 7" face).

Switch Ties

Switch ties shall be pressure treated as specified above**.** The switch ties shall be of 7”x 9” cross-section and shall vary in length as per the specified turnout design.

Types of Wood

The following is a list of the species of wood acceptable for ties.

Ash	Elm	Locust	Sassafras
Beech	Gum	Maple	Walnut
Birch	Hackberry	Mulberry	
Cherry	Hickory	Oak*	

*NOTE: White Oak is not acceptable south of Tennessee and North Carolina

F) TIE PLATES

Tie plates with an 8-hole punch compatible with the approved rail section shall be used on all ties, except in turnouts and track crossings where special plates are required. For all rail sections, double shoulder tie plates with 1:40 cant shall be used. Plates shall conform to AREMA recommendations found in Chapter 5 (Track), Part 1 (Tie Plates).

G) RAIL

Rail shall be new or second-hand, with minimum section of 100 pounds per yard and be appropriate for the operational requirements; however, it is advised for the industry to investigate the economics of using a heavier rail section for reduced maintenance and life cycle costs. Full length rail shall be used except in cutting closures and installing turnouts or crossings. No rail shorter than thirty three (33) feet long on curves and nineteen feet six inches (19’-6”) on tangents shall be used except in turnouts and track crossings. All rail used in the sidetrack shall be control cooled rail; **non-control cooled rail shall not be used**. *CSXT specifies “RE” section rail exclusively when constructing or maintaining CSXT owned tracks*. When CSXT is to construct the turnout or any portion of a private track, “RE” rail will be used. If an industry or the industry’s Contractor wishes to use another section, such as “DY” or “CB”, the industry or Contractor must:

- Obtain approval of CSXT for the specified section.
- Provide tie plates, joint bars, and other track material designed for that section.
- Provide, at industry expense, compromise joints for joining specified section with “RE” rail section installed in turnout or track constructed by CSXT

Frequently an industry served by CSXT will request assistance in “emergency” repair to the sidetrack serving their facility. If the private track contains rail with a section other than “RE”, CSXT maintenance forces will not have the proper material to assist with such repairs. The industry must be prepared to provide material to CSXT forces if emergency repairs are needed.

Certain facilities based upon traffic volume and/or commodity may require usage of Continuously Welded Rail (CWR) at the discretion of the CSXT Engineering Department.

Splices

Joint bars designed for the specified rail section shall be installed and fully bolted. Six-hole joint bars shall be used with all rail sections. Unless the track is to be welded, all six holes of the bar must be bolted. Four-hole joint bars may be used only if approved by CSXT's Chief Engineer-Design and Construction. Joint bars shall conform AREMA recommendations found in Chapter 4 (Rail), Part 3 (Joining of rail)

Insulated and Compromise Joints

All insulated joints shall be of the types and sizes specified and shall be in accordance with CSXT Standards. The entire surface of the rail covered by the insulated joints must be thoroughly cleaned of rust, scale, and dirt. Insulated joints must be suspended between sound smooth ties, well tamped, and well drained. Compromise joints shall not be used on curves, bridges, or in that portion of turnouts laid on switch ties. Compromise welds may be used in place of compromise joints.

Compromise joints connecting private track containing rail of any section other than "RE" shall be provided by the industry or the industry's Contractor.

Track Bolts

SAE Grade 8 button head oval neck bolts shall be used for all track joints. Bolts and nuts shall conform to AREMA recommendations found in Chapter 4 (Rail), Part 3 (Joining of rail).

Washers

Spring washers of the appropriate size and conforming to AREMA recommendations found in Chapter 4 (Rail), Part 3 (Joining of rail) shall be used on each bolt.

Spikes

High-carbon steel track spikes shall be used and conform to AREMA recommendations found in Chapter 5 (Track), Part 2 (Track Spikes). Track spikes shall be 5/8" square by 6" long, unless otherwise approved by CSXT.

Anchors

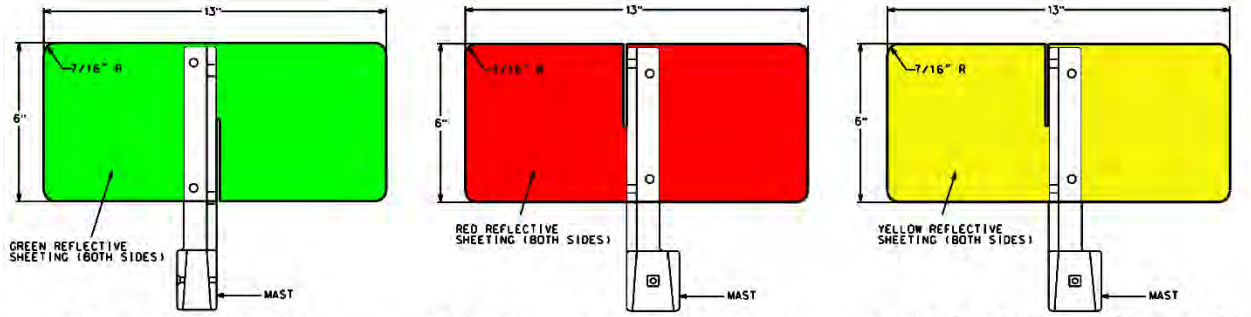
Rail anchors shall be drive on or spring type, of approved design, conforming to AREMA recommendation found in Chapter 5 (Track), Part 7 (Rail Anchors). New or approved reclaimed rail anchors shall be used. Anchors must be sized to fit the rail base and rail section. Note that although 122CB rail has a 6" base, 136RE rail anchors do not properly fit on 122CB rail.

H) TURNOUTS

This section deals with turnouts constructed by industry or industry's Contractor diverging from track owned and maintained by the industry. All turnout material shall be of no lighter rail section than the rail section from which it diverges (100# minimum) and shall be subject to the inspection and approval of CSXT. The minimum size of frog used in a turnout diverging from a sidetrack, shall not be less than a number 8. The type of switch and frog for each turnout to be constructed in CSXT owned track shall be in accordance with CSXT Standard Drawings. AREMA standard turnouts, of not less than number 8 frog size, may be used in industry owned tracks. As with rail, industry must provide material for AREMA standard turnouts when CSXT forces are needed for emergency repairs. Material for turnouts diverging from track owned and maintained by CSXT will be supplied by CSXT. AREMA standard turnouts shall conform to the latest edition of the AREMA *Portfolio of Trackwork Plans.*

Switch Stands

Switch stands for turnouts and derails on industry owned portion of track shall be Low New Century Model 51-A or approved equal. Switch stands located in industry tracks shall be equipped with an ergonomic switch handle (**bow handle**), target, mast, latches, and connecting rods adjusted for proper throw (note bow handle switch handles shall be not located in turnouts in the mainline or passing sidings). Switch targets will be used on all hand-operated switches and switch stand operated derails. **The targets for industrial turnouts shall only be green/yellow (with green directed toward straight move)** and **derails shall be green/red (with green directed toward a non-derailing movement)** as shown below**.** Switch stand cranks must be single use and made of forged steel; double use malleable iron cranks are prohibited. Switch stands and latches shall be secured to switch ties according to manufacturer's recommendations. Bow handle shall point toward frog when switch is in normal (typically straight movement) position.



Point Guards

All industry owned turnouts shall include switch point guards (not protectors) installed as recommended by their manufacturer. Switch point guards will not be installed on mainline turnouts. A switch point guard is a special piece of trackwork that is raised above the head of the rail and is installed adjacent to a switch point; it is not a block of manganese bolted to the rail ahead of a switch point.

I) DERAILS

Derails shall be compatible with rail section used and shall be subject to the inspection and approval of CSXT. Stands for derails shall be similar to the switch stands (see above). Industry supplied sliding or hinged derail used to protect customer's loading and unloading operations shall be painted yellow.

J) BUMPING POSTS

Material shall be of a type approved by CSXT and shall be installed at the end of tracks, where applicable. Bumping posts shall be painted yellow.