MASSACHUSETTS
BAY
TRANSPORTATION
AUTHORITY

MAINTENANCE OF WAY DIVISION

BOOK OF STANDARD TRACKWORK PLANS

M.O.W. DIVISION

BOOK OF STANDARD TRACKWORK PLANS

Index Date:
June 2001

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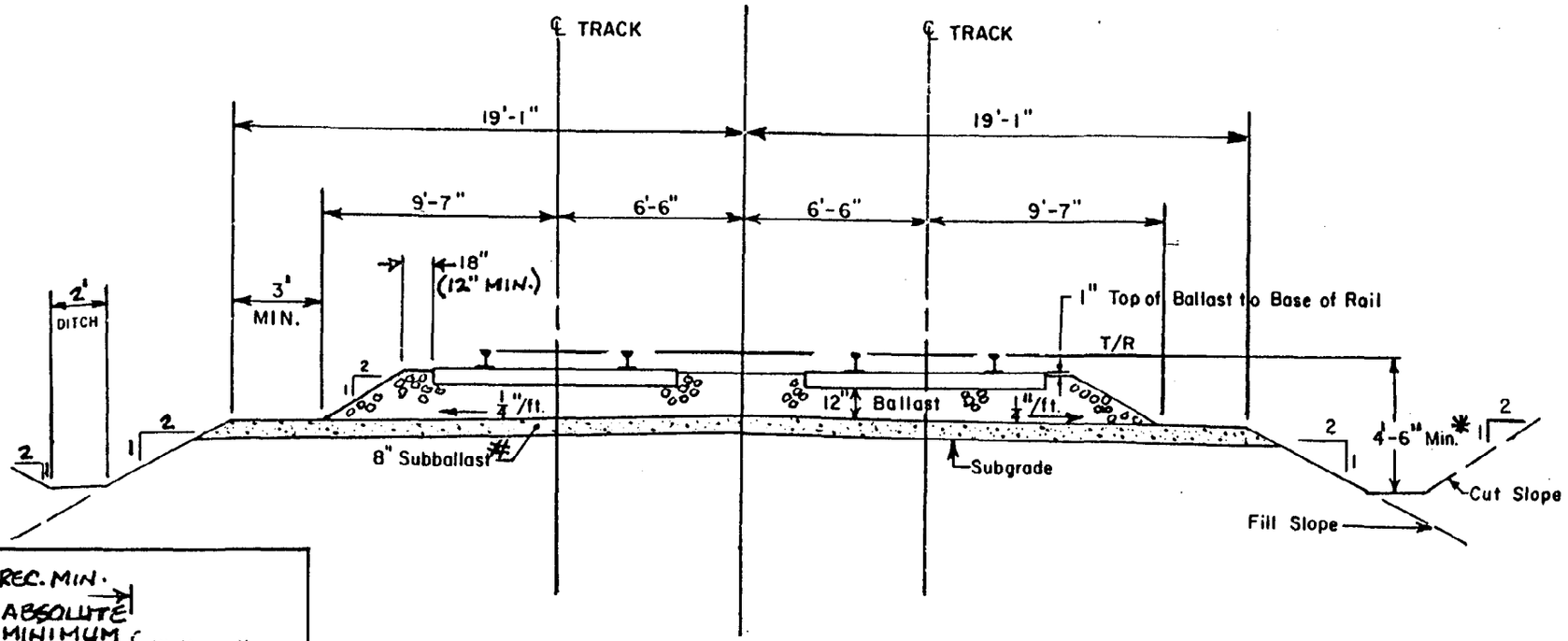
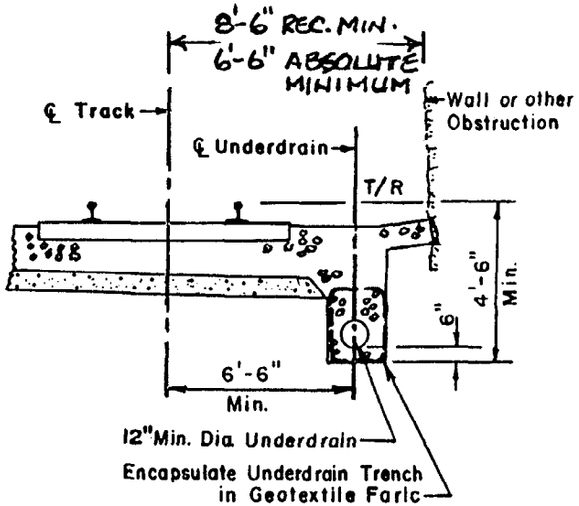




SECTION WHEN SIDE DITCH IS NOT POSSIBLE

TYPICAL ROADBED SECTION

DOUBLE TRACK -- TANGENT ALIGNMENT

— Recommended Design Criteria —

NOTES:

* At locations where side ditch use is precluded due to clearance constraints, use perforated pipe underdrain (12" min. diameter)

\# Place geotex fabric below subgrade when subgrade conditions require its use.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

M.O.W. DIVISION

DWG. NO. 100

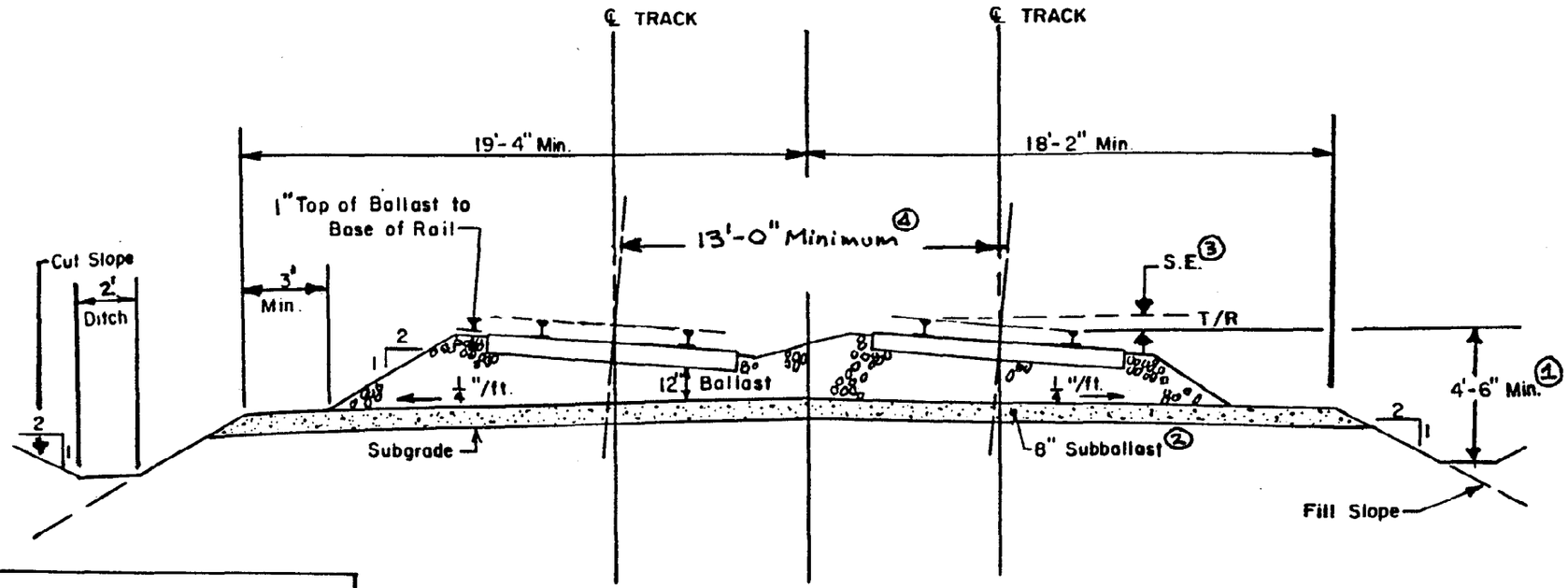
DATE ISSUE NO.

RTL TRACK

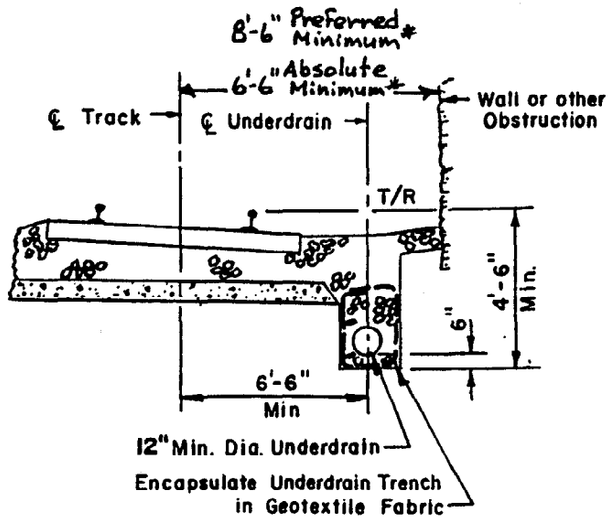
TYPICAL ROADBED SECTION (Tangent)

Mgr. Track Engineering

Director - M.O.W.



* Add calculated middle or end overhang to minimum dimensions.



SECTION WHEN SIDE DITCH IS NOT POSSIBLE

TYPICAL ROADBED SECTION

DOUBLE TRACK -- CURVED ALIGNMENT

— Recommended Design Criteria —

NOTES:

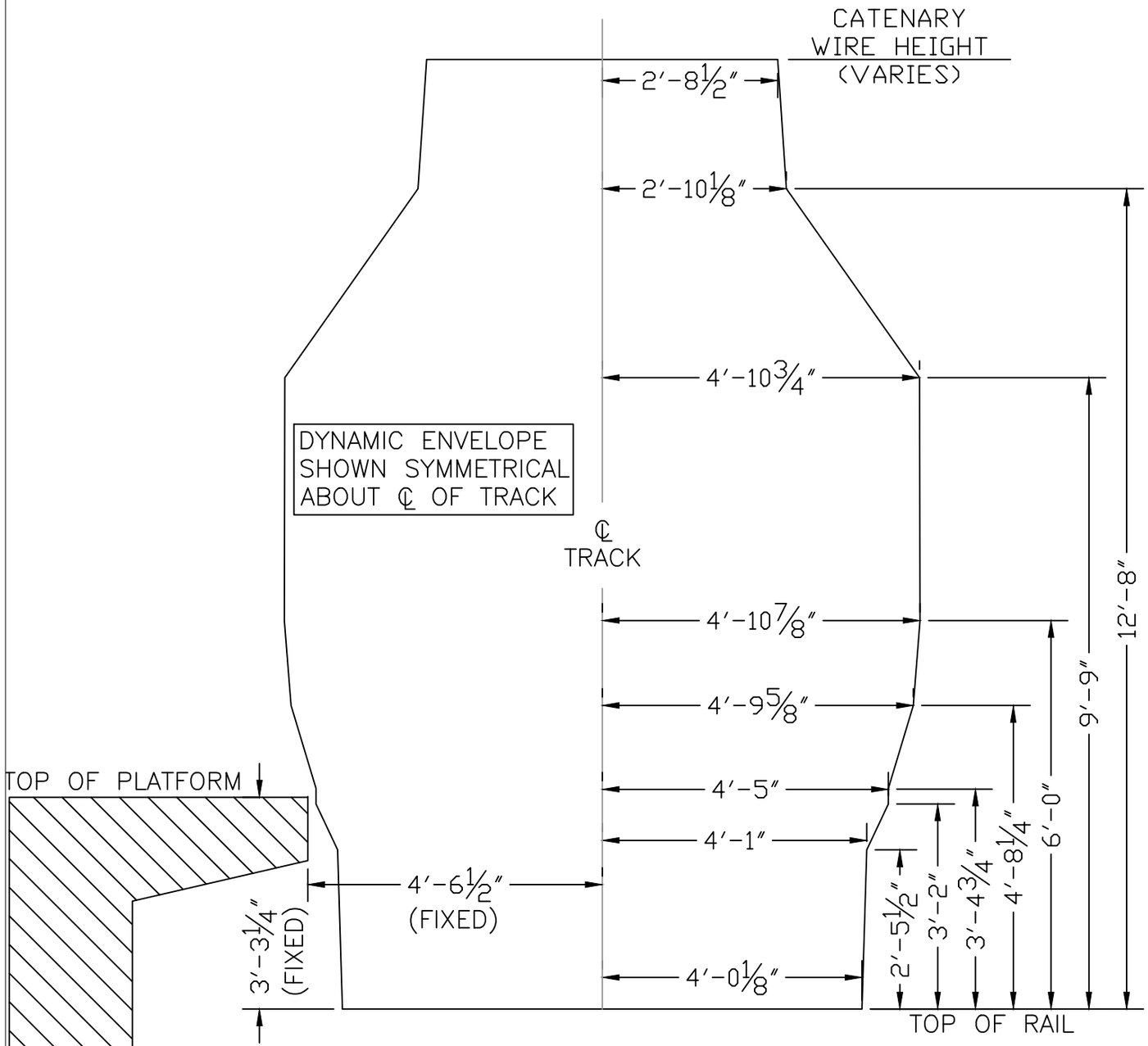
① At locations where side ditch use is precluded due to clearance constraints, use perforated pipe underdrain (12" minimum diameter).
② Place geotex fabric below subballast when subgrade conditions require its use.
③ If outer track has greater superelevation than inner track, increase track centers 3.5" for each 1" of additional SE.
④ Add calculated middle and end overhangs for applicable curvature and equipment to "minimum".

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY | M.O.W. DIVISION | DWG. NO. 105 | ISSUE NO. | DATE

RTL TRACK

TYPICAL ROADBED SECTION (CURVE)

Mgr. Track Engineering | Director - M.O.W.



NOTES:

1. DYNAMIC ENVELOPE SHOWN FOR LOADED CAR WITH; A) AIR BAGS IN NORMAL OPERATING CONDITION B) LATERAL STOPS C) ROLL ANGLE AT BODY = 3°–1' D)LATERAL TRANSLATION OF TRUCK = 1⅛"
2. ENVELOPE INDICATES CAR ON TANGENT TRACK WITH 0" SUPERELEVATION. CALCULATED CAR BODY OERHANG AND ACTUAL SE MUST BE CONSIDERED.
3. RECOMMENDED CLEARANCE IS 6" BEYOND DYNAMIC ENVELOPE WITH ANY CURVATURE AND/OR SUPERELEVATION ADDED. ABSOLUTE MINUMUM CLEARANCE IS 3" BEYOND WORST CASE DYNAMIC ENVELOPE OF CAR. FIELD SURVEY OF TRACK CONDITIONS AND USE OF CLEARANCE CAR AND/OR CAR BODY TEMPLATE ADJUSTED FOR TRACK GEOMETRY IS REQUIRED TO CONFIRM ACTUAL CLEARANCE LIMITS.

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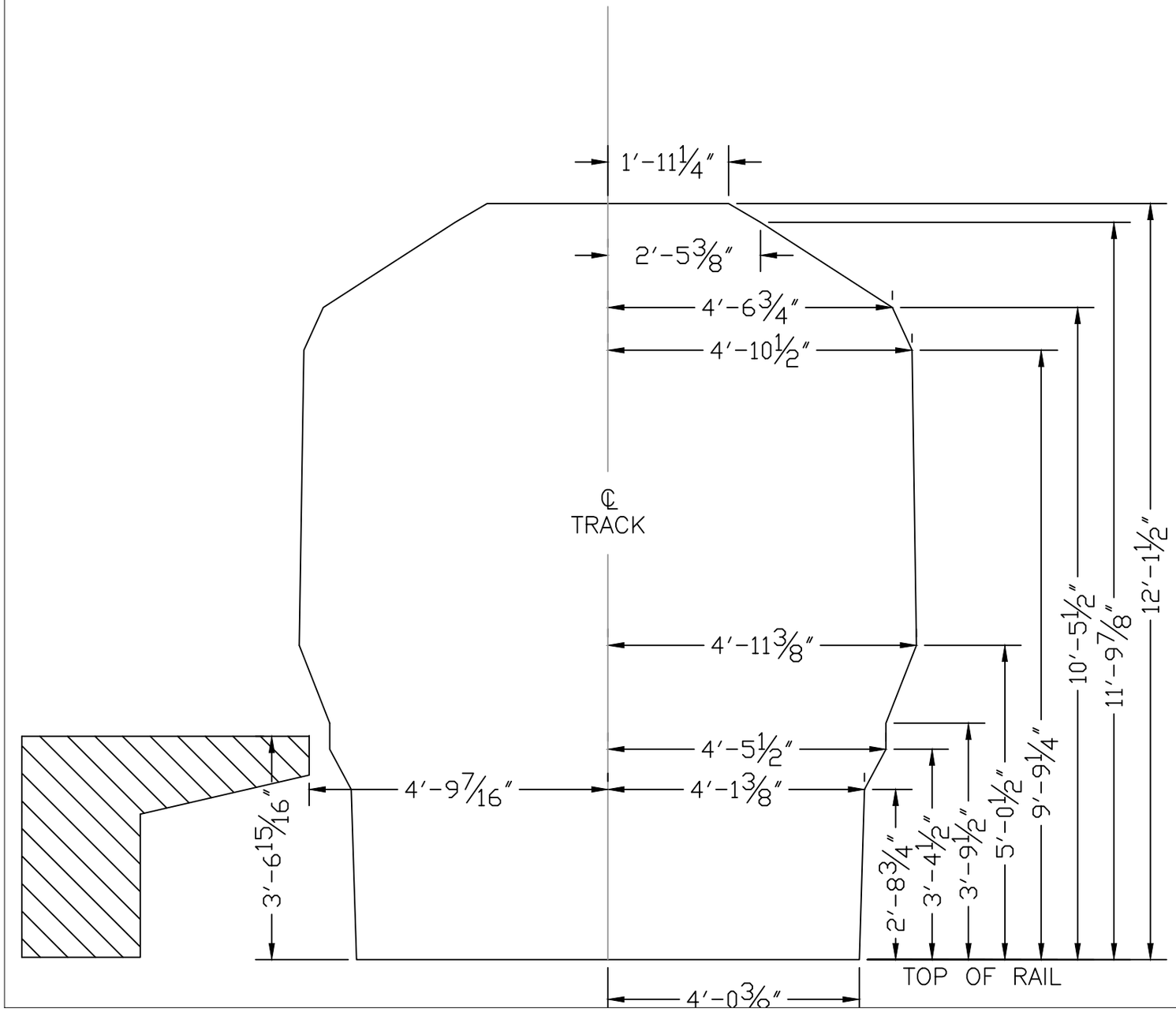
RTL TRACK
STANARD DYNAMIC CLEARANCE ENVELOPE BLUE LINE #4 CAR

MGR. TRACK ENGINEERING

DIRECTOR – M.O.W.



NOTES:

1. DYNAMIC ENVELOPE SHOWN FOR LOADED CAR WITH; A) AIR BAGS IN NORMAL OPERATING CONDITION B) LATERAL STOPS C) ROLL ANGLE AT BODY = 3°–1' D)LATERAL TRANSLATION OF TRUCK = 1⅛"
2. ENVELOPE INDICATES CAR ON TANGENT TRACK WITH 0" SUPERELEVATION. CALCULATED CAR BODY OERHANG AND ACTUAL SE MUST BE CONSIDERED.
3. RECOMMENDED CLEARANCE IS 6" BEYOND DYNAMIC ENVELOPE WITH ANY CURVATURE AND/OR SUPERELEVATION ADDED. ABSOLUTE MINUMUM CLEARANCE IS 3" BEYOND WORST CASE DYNAMIC ENVELOPE OF CAR. FIELD SURVEY OF TRACK CONDITIONS AND USE OF CLEARANCE CAR AND/OR CAR BODY TEMPLATE ADJUSTED FOR TRACK GEOMETRY IS REQUIRED TO CONFIRM ACTUAL CLEARANCE LIMITS.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY	M.O.W. DIVISION	DRG. NO. 115
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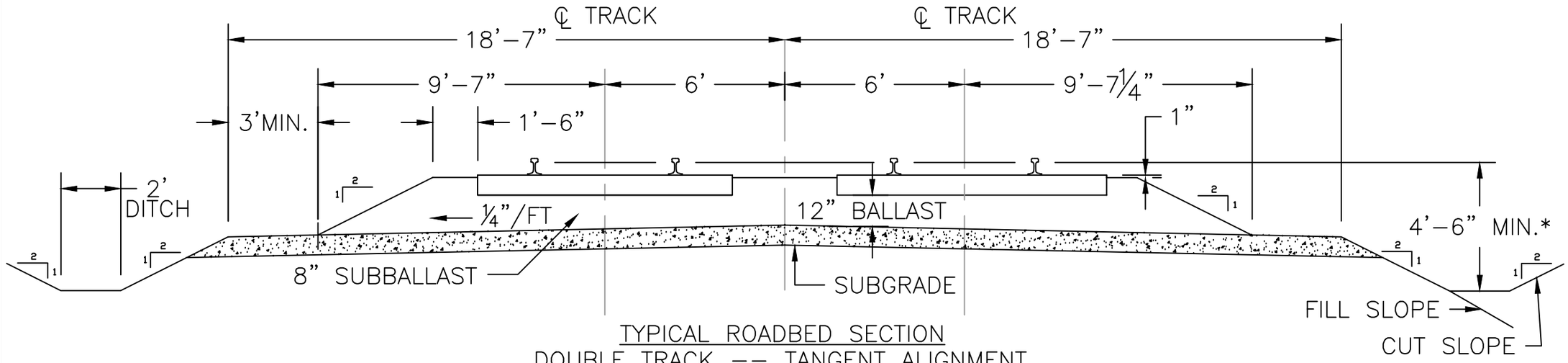
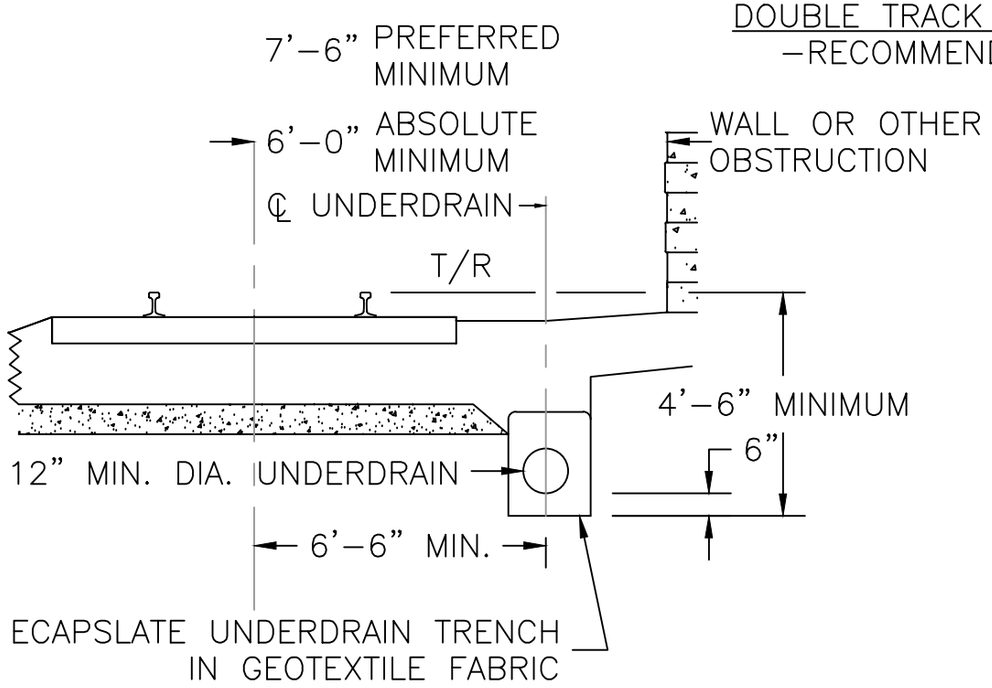
RTL TRACK
STANARD DYNAMIC CLEARANCE ENVELOPE ORANGE LINE #12 CAR

MGR. TRACK ENGINEERING

DIRECTOR – M.O.W.



TYPICAL ROADBED SECTION
DOUBLE TRACK –– TANGENT ALIGNMENT
–RECOMMENDED DESIGN CRITERIA–



SECTION WHEN SIDE DITCH IS NOT POSSIBLE

NOTES:
*AT LOCATIONS WHERE SIDE DITCH USE IS PRECLUDED DUE TO CLEARANCE CONSTRAINTS, USE PERFORATED PIPE UNDERDRAIN (12" MIN. DIAMETER)
*PLACE GEOTEX FABRIC BELOW SUBBALLAST WHEN SUBGRADE CONDITIONS REQUIRE ITS USE

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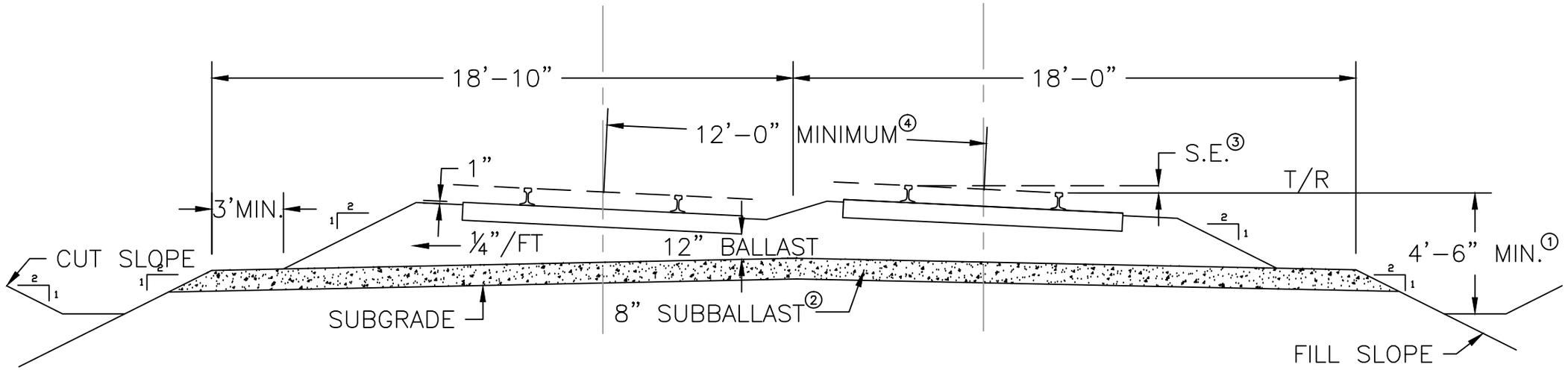
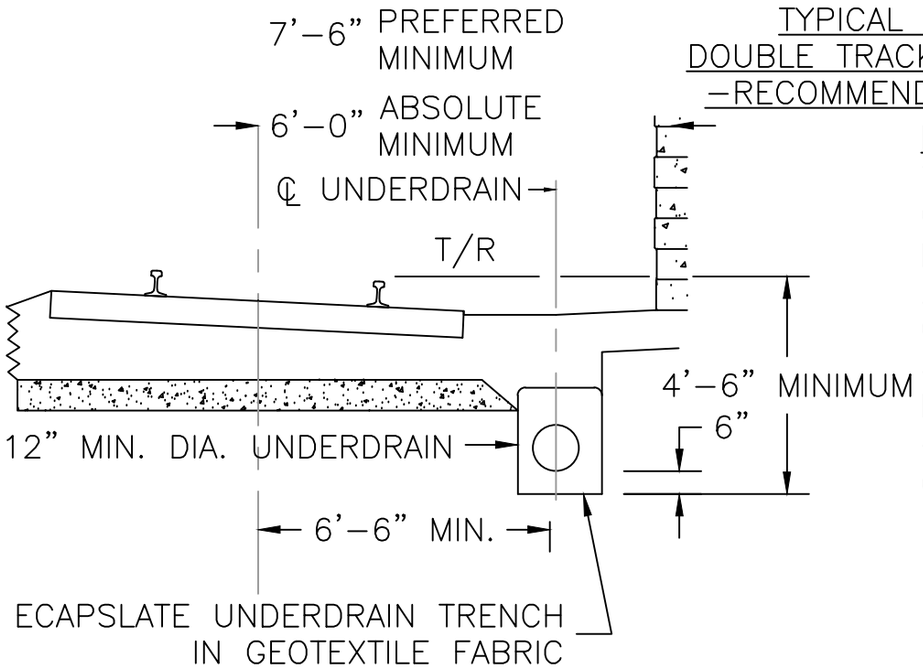
LRT TRACK
TYPICAL ROADBED SECTION (TANGENT)

MGR. TRACK ENGINEERING

DIRECTOR – M.O.W.



TYPICAL ROADBED SECTION
DOUBLE TRACK––CURVED ALIGNMENT
–RECOMMENDED DESIGN CRITERIA–



SECTION WHEN SIDE DITCH IS NOT POSSIBLE

NOTES:
1. AT LOCATIONS WHERE SIDE DITCH USE IS PRECLUDED DUE TO CLEARANCE CONSTRAINTS, USE PERFORATED PIPE UNDERDRAIN (12" MINIMUM DIAMETER).
2. PLACE GEOTEX FABRIC BELOW SUBBALLAST WHEN SUBRADE CONDITIONS REQUIRE ITS USE.
3. IF OUTER TRACK HAS GREATER SUPERELEVATION THAN INNER TRACK, INCREASE TRACK CENTERS 3.5" FOR EACH 1" OF ADDITIONAL SE
4. ADD CALCULATED MIDDLE AND END OVERHANGS FOR APPLICABLE CURVATURE AND EQUIPMENT TO "MINIMUM".

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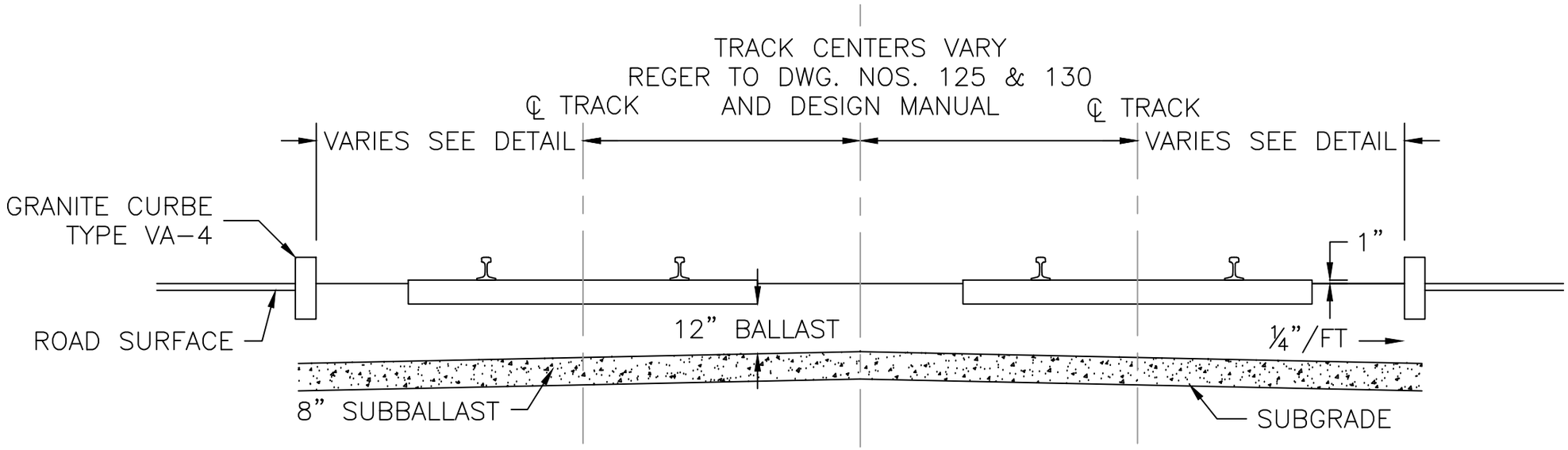
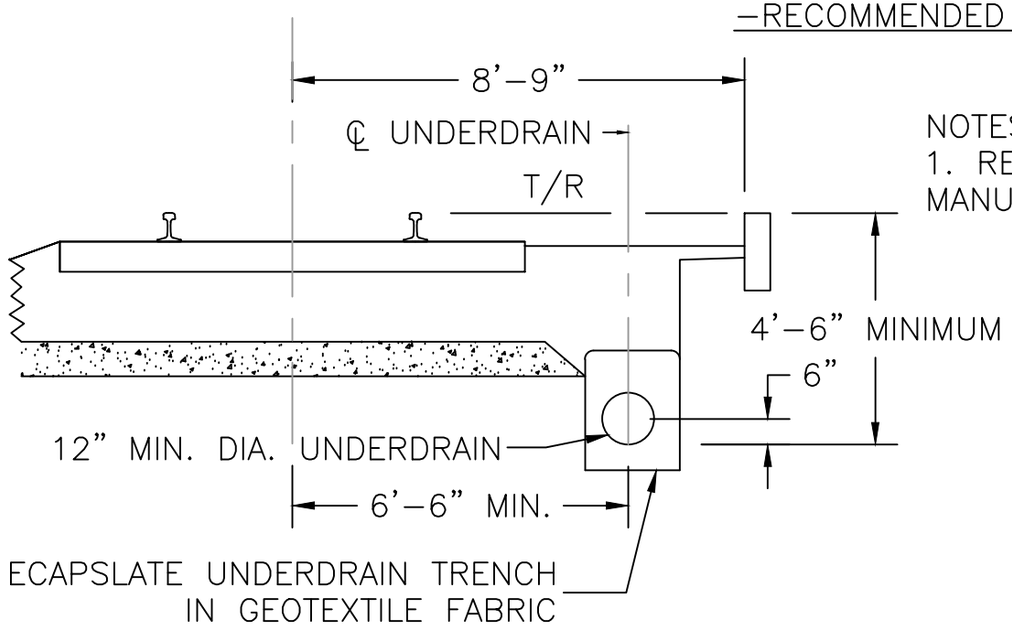
LRT TRACK
TYPICAL ROADBED SECTION
(CURVE)

MGR. TRACK ENGINEERING

DIRECTOR – M.O.W.



TYPICAL ROADBED SECTION
DOUBLE LRT TRACK––IN RESERVATION
–RECOMMENDED DESIGN CRITERIA–



NOTES:
1. REFER TO SECTION 5 OF THE TRANSIT DESIGN STANDARDS MANUAL FOR CRITERIA GOVERNING ROADWAY DESIGN.

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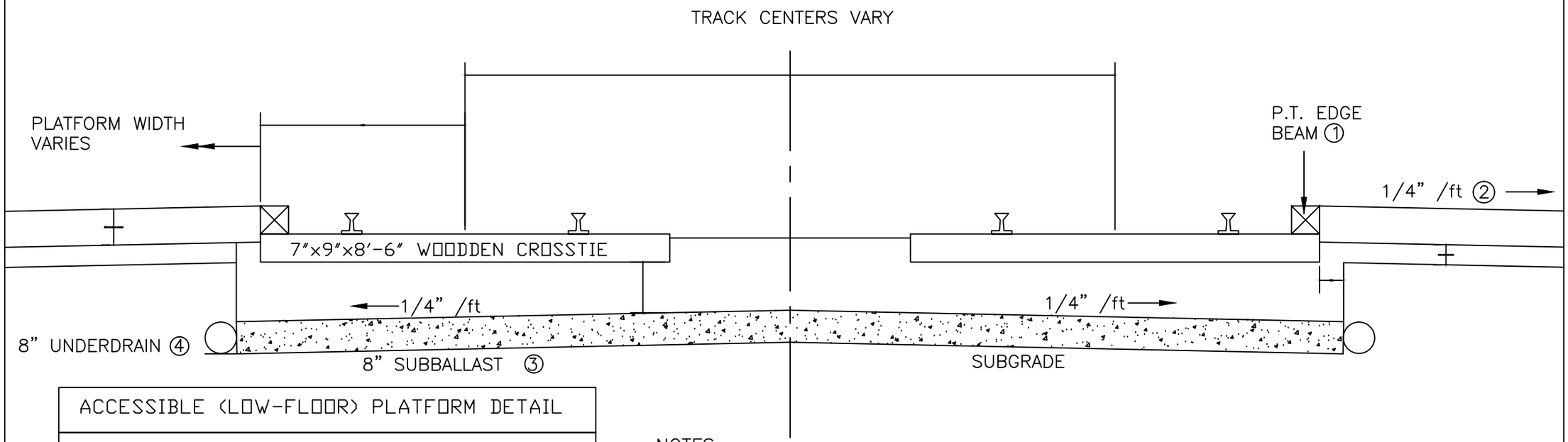
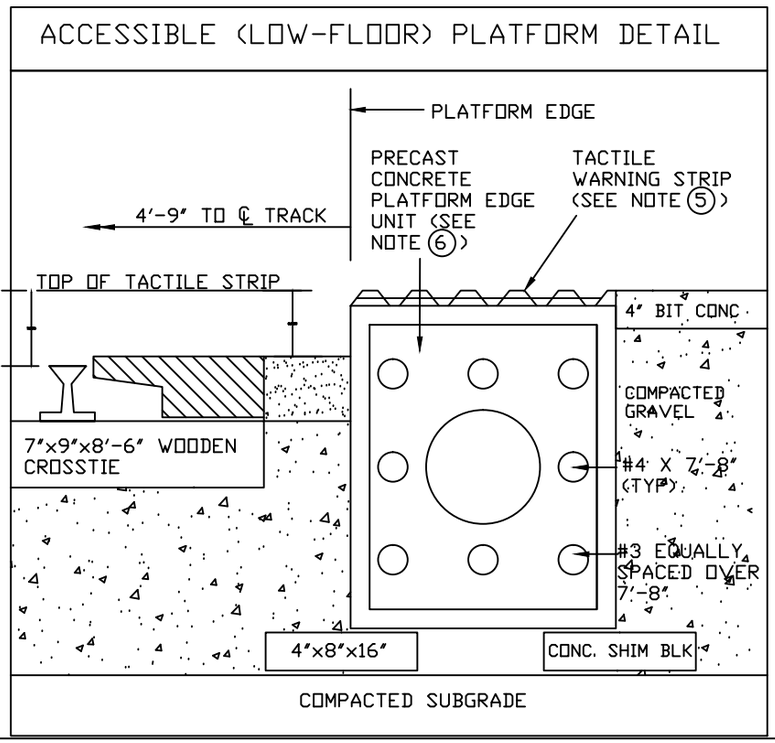
LRT TRACK
TYPICAL ROADBED SECTION
DOUBLE TRACK IN RESERVATION

MGR. TRACK ENGINEERING

DIRECTOR – M.O.W.





NOTES:

1. EDGE BEAM = 7"X7" PRESSURE TREATED TIMBER LAGGED INTO EVERY OTHER CROSS TIE WITH 12"X5⁄8" GALV. DOME HEAD LAG SCREW. COUNTERSINK BOLT HEAD IN SURFACE OF EDGE BEAM.
2. SLOPE PLATFORM SURFACE AWA FROM TRACK. PROVIDE DRAINS AT BACK OF PLATFORM WHERE JERSEY BARRIERS OR SIMILAR OBSTRUCTION TO WATER FLOW IS USED
3. PLACE GEOTECH FABRIC BELOW SUBBALLAST WHEN SUBGRADE CONDITIONS REQUIRE ITS USE
4. INSTALL 8" UNDERDRAIN IN SUBBALLAST ON SURFACE OF SUBGRADE AND TIE INTO EXISTING STREET DRAINAGE SYSTEM. MINIMUM UNDERDRAIN SLOPE TO BE 0.5%.

NOTES FOR ACCESSIBLE DETAIL (AT LEFT):

5. TACTILE WARNING STRIP TO BE MECHANICALLY FASTED TO PRECAST UNITS PER MANUFACTURER'S SPECS.
6. PRECAST CONCRETE EDGE UNITS TO BE 2'–0" WIDE BY 2'–6" HIGH BY 8'–0" LONG REINFORCED AS INDICATED.

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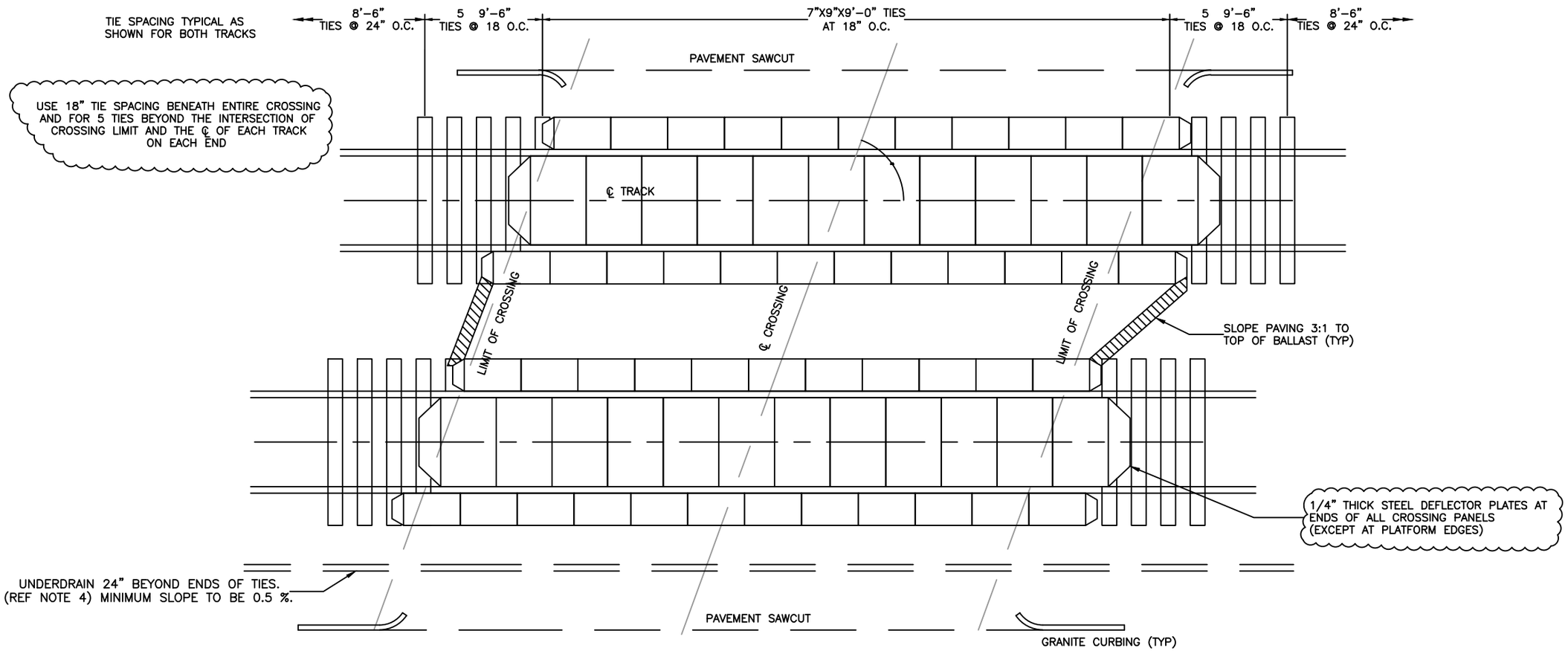
LRT TRACK
TYPICAL ROADBED SECTION
DOUBLE TRACK WITH STATION PLATFORMS

MGR. TRACK ENGINEERING

DIRECTOR – M.O.W.



NOTES:

1. REFER TO DRWG NO. 150 IN THE BOOK OF STANDARD TRACKWORK PLANS, THE DESIGN STANDARDS MANUAL AND M.O.W. DIV MATERIAL SPECIFICATIONS FOR FULL-DEPTH RUBBER CROSSING DETAILS.

2. THE LIMITS OF FULL-DEPTH TRACK RECONSTRUCTION VARY BY SITE AND ARE IDENTIFIED IN THE SPCIFICATIONS.

3. STAGGER FIELD AND GAGE CROSSING PANELS (AS SHOWN) ON 18" CENTERS WHEN THE CROSSING ANGLE IS LESS THAN 60 DEGREES.

4. PROVIDE 8" DIA (MIN) UNDERDRAIN TIED TO EXISTING STREET DRAINAGE SYSTEM OR RUN TO DAYLIGHT DOWNHILL SIDE OF CROSSING AS DIRECTED BY THE ENGINEER.

5. WHEN CALLED FOR IN SPECIFICATIONS, INSTALL 5" HMA UNDERLAYMENT IN 2 COURSES BENEATH CROSSING TO 12" BEYOND TIE ENDS; LONGITUDINALLY TO THE LIMITS SPECIFIED.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

M.O.W. DIVISION

DRG. NO. 145

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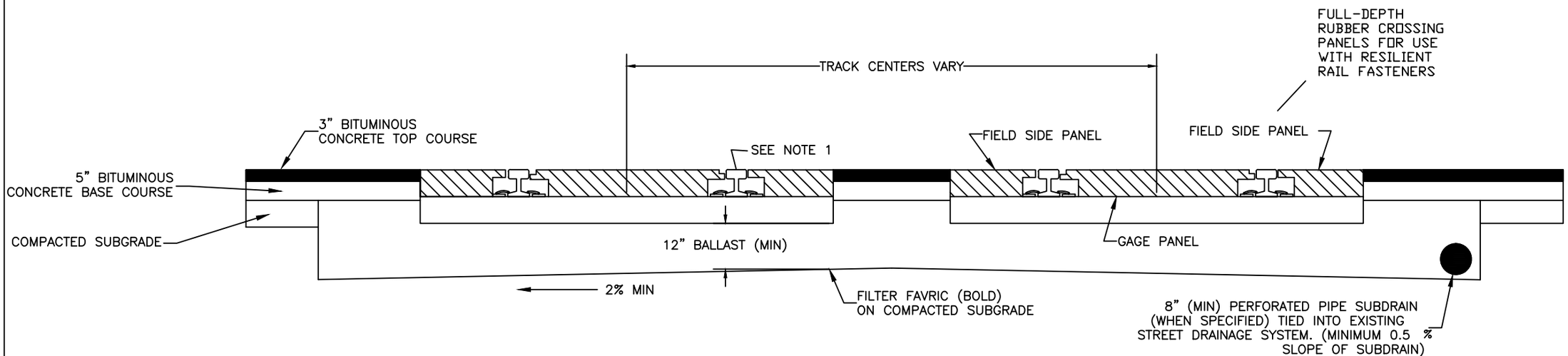
ISSUE DATE ISSUE NO.

LRT TRACK
TYPICAL FULL-DEPTH RUBBER GRADE CROSSING LAYOUT

MGR. TRACK ENGINEERING

DIRECTOR – M.O.W.



NOTES:

1. 115 RE RAIL WITH RESILIEN FASTENERS ON WOODEN CROSSTIES @ 18" CENTERS.

2. COMPACT EXISTING SUBGRADE PRIOR TO PLACEMENT OF ASPHALT. ROLL AND COMPACT PAVING MATERIAL EXPECIALLY IN AREA BETWEEN TRACKS AND AT ALL TRANSITIONS TO CROSSING PANELS.

3. INSTALL GEOTEX FABRIC UNDER TRACK STRUCTURE, UP BOTH SIDES OF EXCAVATED TRENCH AND AROUND SUBDRAIN PIPE WHERE APPLICABLE.

4. SLOPE NEW PAVEMENT TO EXISTING USING STREET PROFILE SPECIFIED. PRIVIDE SMOOTH TRANSITION AT PAVEMENT JOINT AND SEAL WITH BITUMELASTIC COMPOUND

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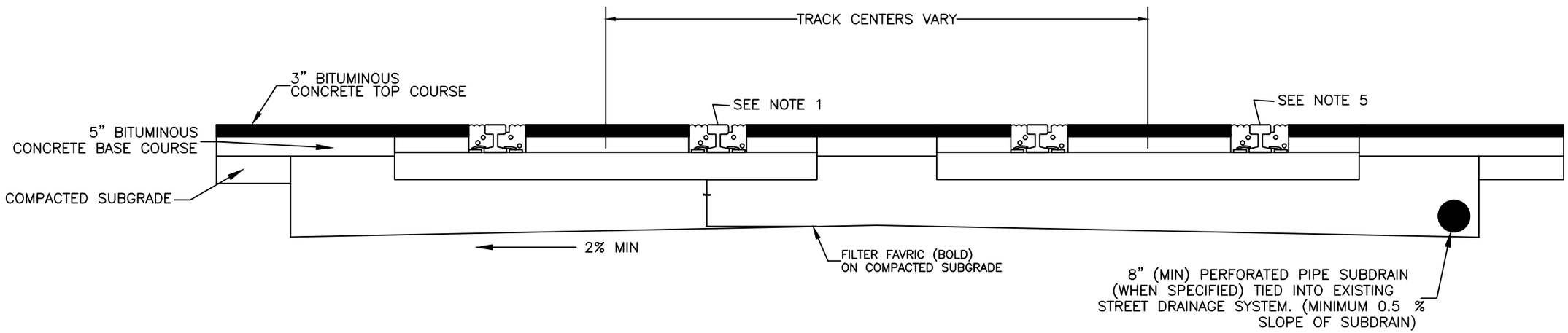
LRT TRACK
TYPICAL SECTION -- DOUBLE TRACK CROSSING WITH FULL-DEPTH RUBBER

MGR. TRACK ENGINEERING

DIRECTOR – M.O.W.



NOTES:
1. 115 RE RAIL WITH RESILIENT FASTENERS ON WOODEN CROSSTIES @ 18" CENTERS.
2. COMPACT EXISTING SUBGRADE PRIOR TO PLACEMENT OF ASPHALT. ROLL AND COMPACT PAVING MATERIAL ESPECIALLY IN AREA BETWEEN TRACKS AND AT ALL TRANSITIONS TO RUBBER MAIN SEAL.
3. INSTALL GEOTEXFABRIC UNDER TRACK STRUCTURE, UP BOTH SIDES OF EXCAVATED TRENCH AND AROUND SUBDRAIN PIPE WHERE APPLICABLE.
4. SLOPE NEW PAVEMENT TO EXISTING USING STREAT PRFILE SPECIFIED. PROVIDE SMOOTH TRANSITION AT PAVEMENT JOINT AND SEAL WITH BITUMELASTIC COMPOUND.
5. RUBBER RAIL SEAL TO BE FABRICATED FROM EXTRUDED VIRGIN RUBBER, MUST BE DESIGNED TO SPAN RESILIENT RAIL FASTENERS AND BEAR ON TIE SURFACE BEYOND ENDS OF TIE PLATES. GAGE SIDE RAIL SEAL MUST PROVIDE A FLEXIBLE FLANGEWAY OPENING >= 1½" <= 2" FOR 115 RE RAIL. RAIL SEAL SECTIONS MUST BE MANUFACTURED IN CONTINUOUS STRIPS >= 15' LONG OF INSULATING MATERIAL WHICH SHALL BPROVIDE COLUME RESISTIVITY OF 1X10^7 OHM/CM ACCORDING TO LATEST ASTM D257. ANY DEVIATION FROM THESE REQUIREMENTS SUBJECT TO APPROVAL OF THE ENGINEER.

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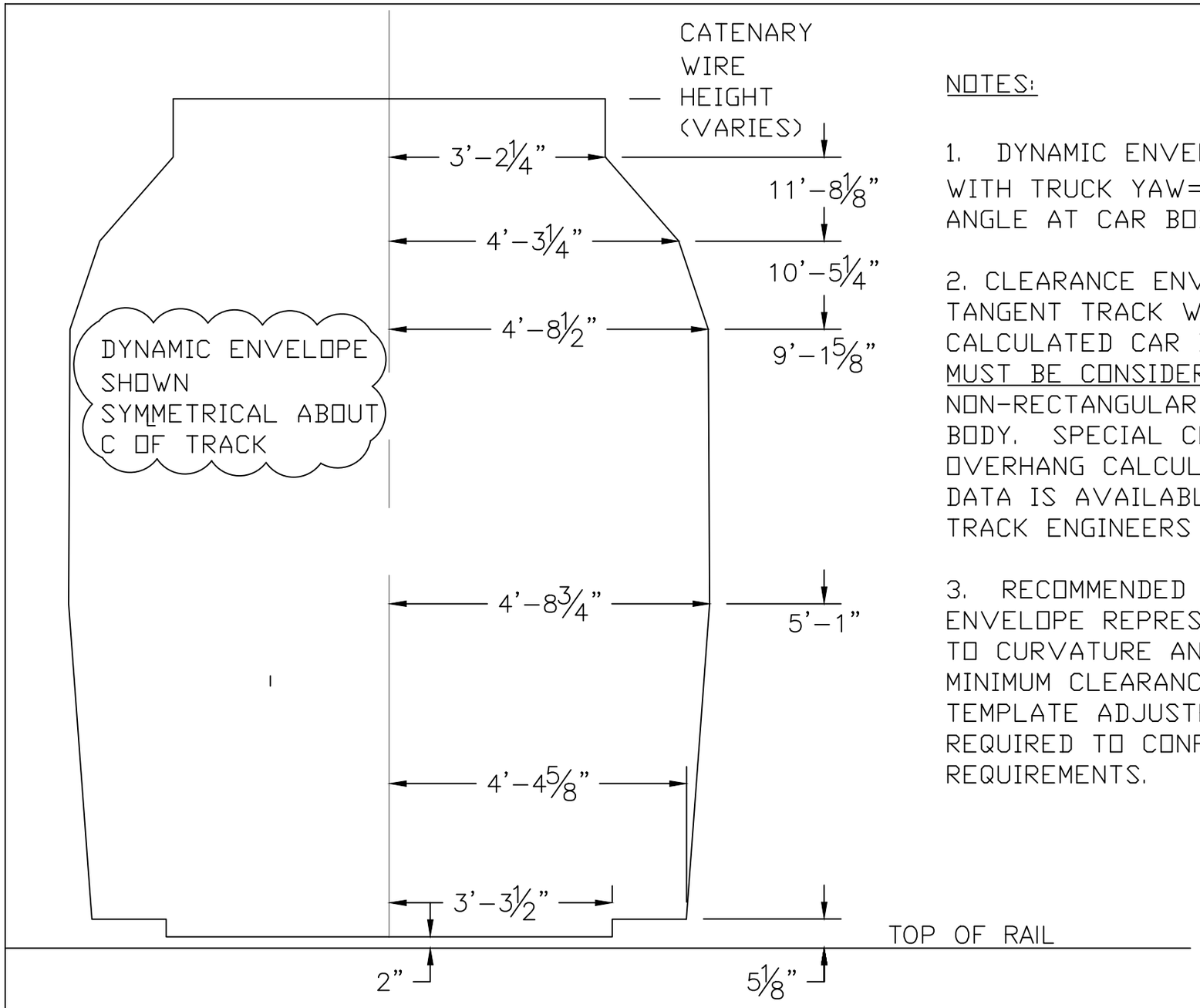
LRT TRACK
DOUBLE TRACK CROSSING
WITH RUBBER RAIL SEAL

MGR. TRACK ENGINEERING

DIRECTOR – M.O.W.



NOTES:

1. DYNAMIC ENVELOPE SHOWN FOR LOADED CAR WITH TRUCK YAW= $1\frac{5}{8}$" AND 3.23 DEGREES ROLL ANGLE AT CAR BODY.

2. CLEARANCE ENVELOPE REPRESENTS CAR ON TANGENT TRACK WITH 0" SUPERELEVATION. CALCULATED CAR BODY OVERHANG AND ACTUAL SE MUST BE CONSIDERED. BECAUSE OF NON-RECTANGULAR CONFIGURATION OF THE LRV CAR BODY. SPECIAL CONSIDERATION APPLY TO END OVERHANG CALCULATIONS (IN CURVES). ADDITIONAL DATA IS AVAILABLE FROM THE M.O.W. DIVISTION TRACK ENGINEERS STAFF.

3. RECOMMENDED CLEARANCE IS 6" BEYOND DYNAMIC ENVELOPE REPRESENTED HERE WITH OVERHANG DUE TO CURVATURE AND ANY SE ADDED. ABSOLUTE MINIMUM CLEARANCE CAR AND/OR CAR BODY TEMPLATE ADJUSTED FOR TRACK GEOMETRY IS REQUIRED TO CONFIRM ACTUAL CLEARANCE REQUIREMENTS.

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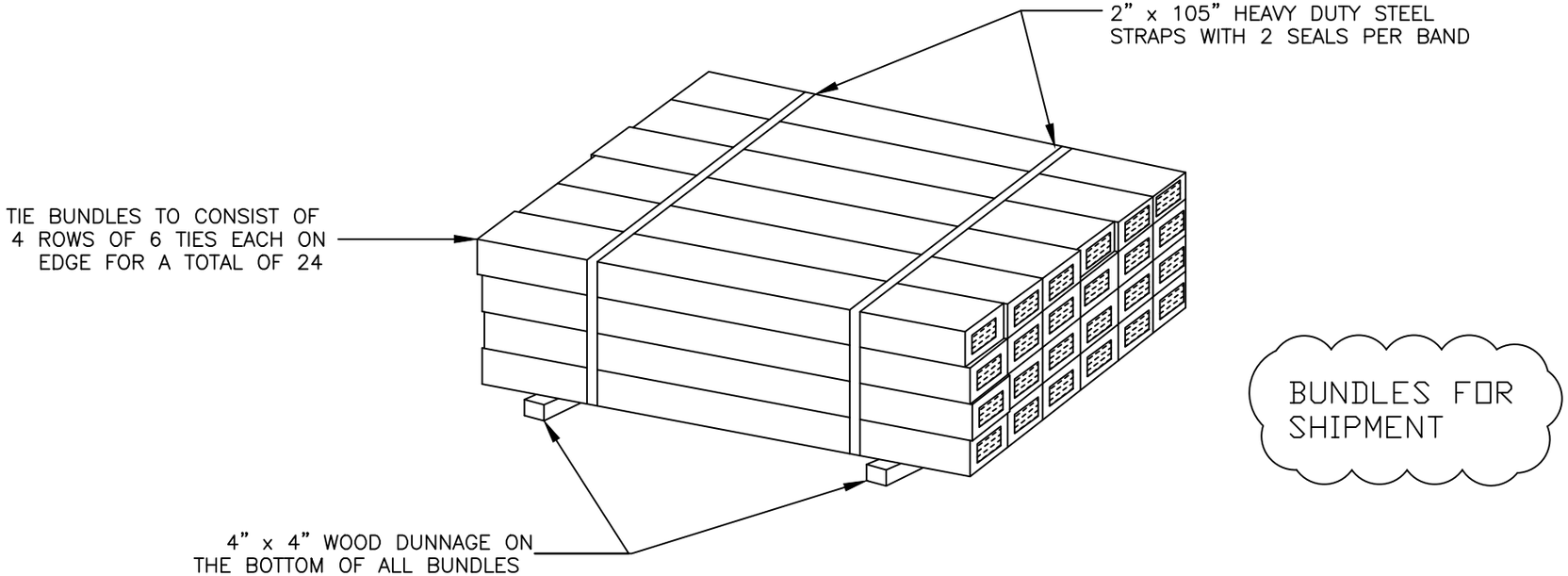
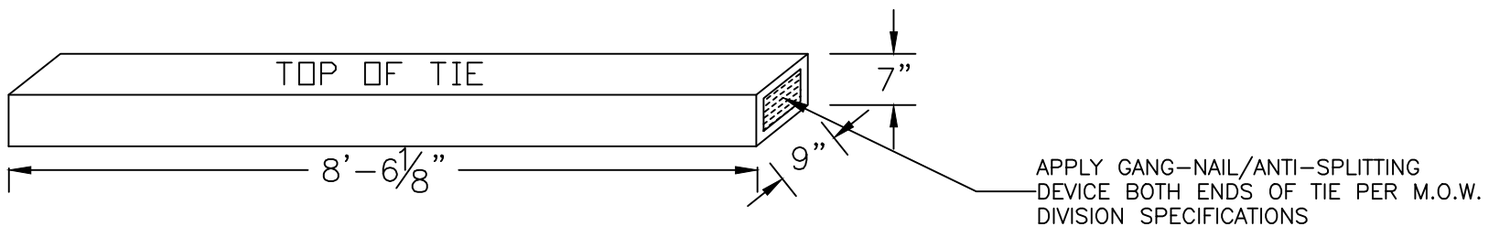
LRT TRACK
STANDARD DYNAMIC CLEARANCE ENVELOPE - COMPOSITE LRV

MGR. TRACK ENGINEERING

DIRECTOR – M.O.W.



BUNDLES FOR SHIPMENT



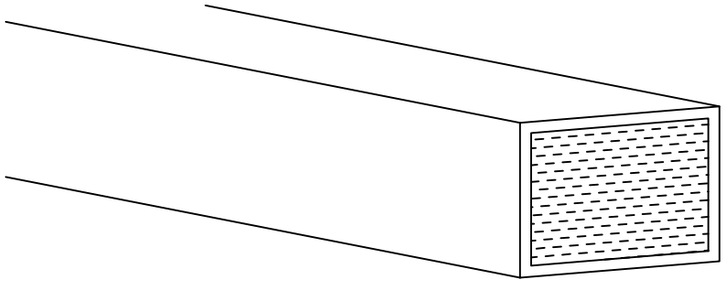
STANDARD WOODEN CROSSTIES

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY	M.O.W. DIVISION	DRG. NO. 200
		APR. 18, 2013 ISSUE DATE / 0 ISSUE NO.

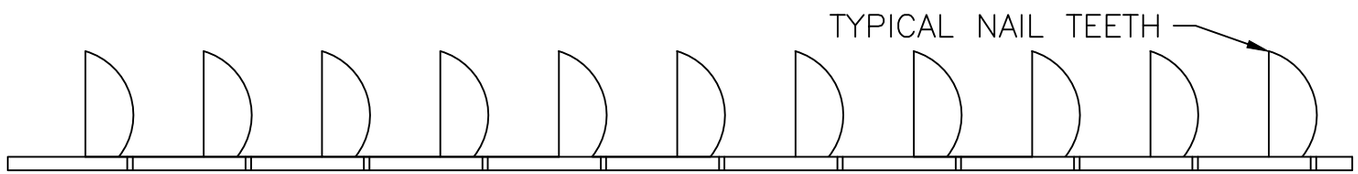
STANDARD WOODEN CROSSTIE

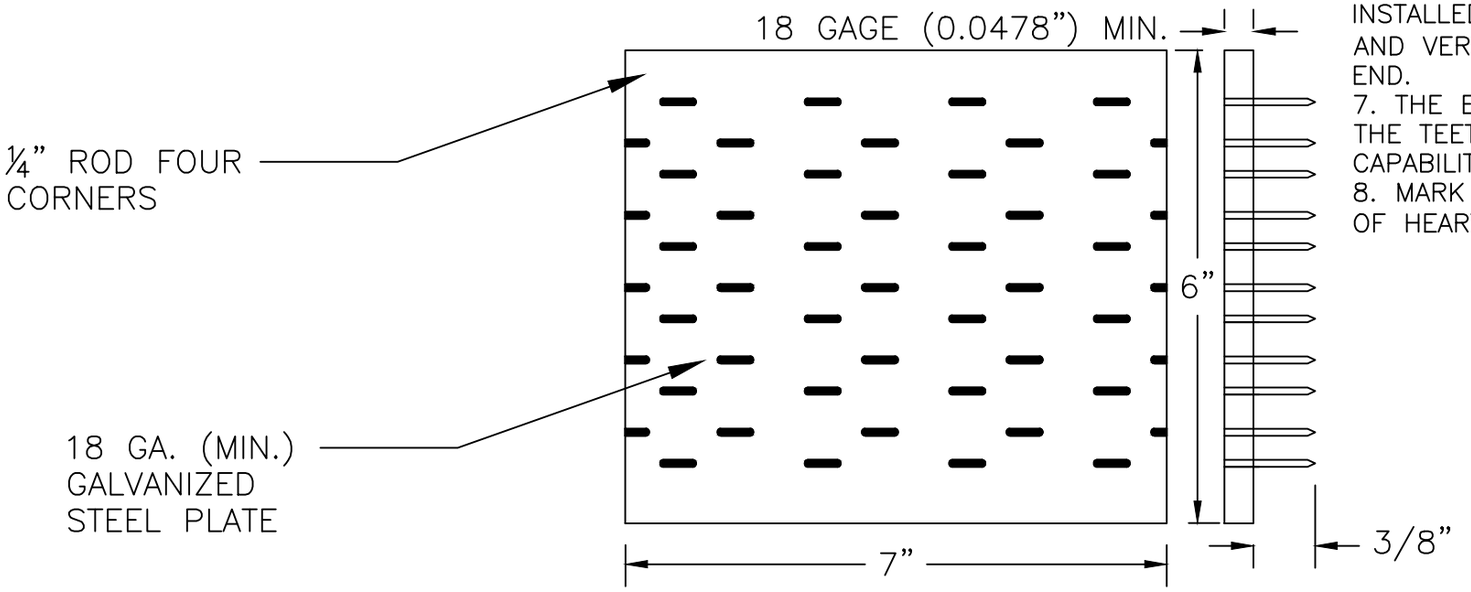
MGR. TRACK ENGINEERING

DIRECTOR – M.O.W.



TYPICAL TIE END VIEW





NOTES:

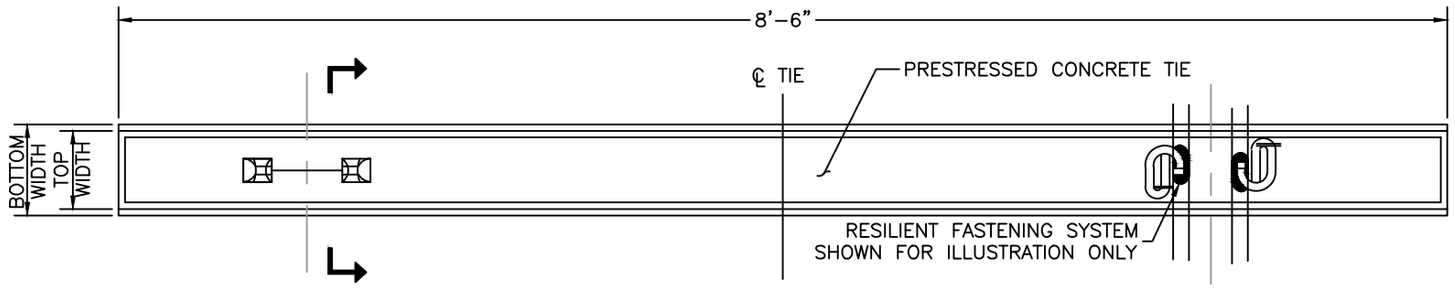
1. THE ANTI–SPLITING END PLATE SGALL BE MANUFACTURED FROM A MINIMUM 18 GA. (0.0478") GALVANIZED STEEL PLATE CONFORMING TO ASTM A446, GRADE 4, GALVANIZING CONFORMING TO ASTM A525
2. END PLATE SHALL HAVE NAIL TEETH NOT LESS THAN ⅜" IN LENGTH AND OF SUFFICIENT SHARPNESS TO FULLY PENETRATE HARDWOOD TIMBERS USED FOR CROSSTIES.
3. END PLATE SHALL BEMACHINE APPLIED TO THE TIE ENDS BY A MECHANICAL DEVICE CAPABLE OF SQUEEZING ANY SPLITS IN TIE ENDS TOGETER BEFORE APPLICATION OF END PLATE.
END PLATE APPLICATOR SHALL INSTALL END LATES WITH UNIFORM PPRESSURE AND MINIMUM TEETH BENDING AND SO THAT THE NAIL TEETH SIDE OF THE END PLATE IS FLUSH WITH THE END SURFACE OF THE TIE.
5. THE END PLATE IS TO BE INSTALLED IN NEW TIES PRIOR TO SEASONING.
6. THE CENTER OF THE END PLATE SHALL BE INSTALLED NO MORE THAN ½" OFF THE HORIZONTAL AND VERTICAL CENTERLINE INTERSECTIONS OF THE TIE END.
7. THE END PLATE SHALL BE FABRICATED SO THAT THE TEETH TWIST VERTICALL FOR BETTER GRIPPING CAPABILITY IN THE TIE.
8. MARK AND INSTALL PLATES TO INDICATE LOCATION OF HEARTWOOD (KERF MARKS).

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY	M.O.W. DIVISION	DRG. NO. 201
		APR. 18, 2013 ISSUE DATE / 0 ISSUE NO.

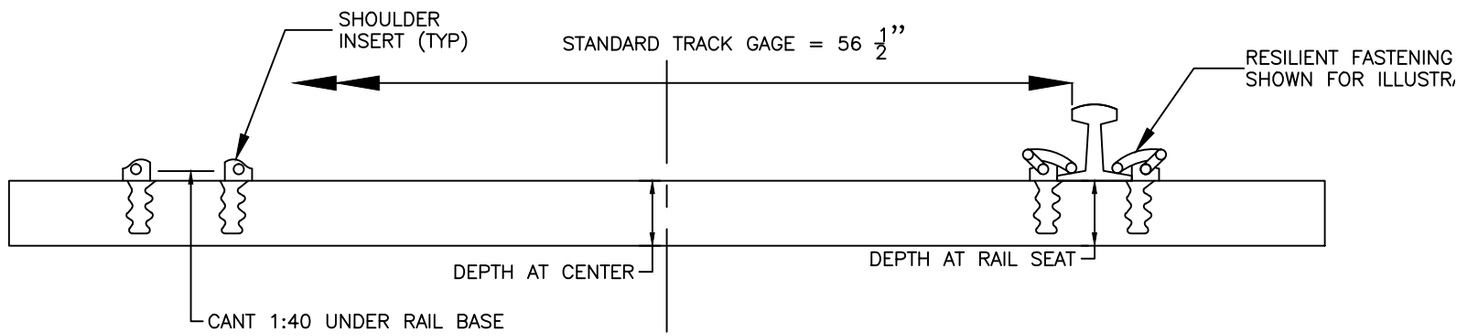
ANTI-SPLITTING END PLATE FOR WOODEN CROSS-TIES

MGR. TRACK ENGINEERING

DIRECTOR – M.O.W.

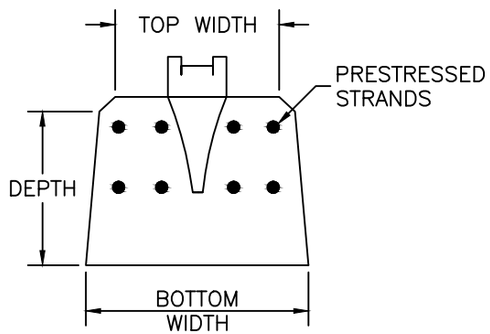


PLAN



ELEVATION

NOTES:
1. TIES SHALL BE PERMANENTLY LABELED BY INDENTED OR RAISED CHARACTERS ON THE TOP SURFACE TO IDENTIFY THE FOLLOWING:
-MANUFACTURERS IDENTIFICATION
-LINE NUMBER
-FORM NUMBER
-CAVITY NUMBER
-YEAR OF MANUFACTURE
-DATE CODE
-RAIL SEAT SIZE
2. WEIGHT OF TIE SHALL NOT EXCEED 800LBS.
3. CONC STREGTH (FC), 7000 PSI MIN AT 28 DAYS



DIMENSIONS / DESCRIPTION	MINIMUM	MAXIMUM	TOLERANCE
TOP WIDTH	9"	10"	+/- 1/8"
BOTTOM WIDTH	11"	12"	+/- 1/8"
DEPTH AT WIDTH	7"	10"	+1/4" -1/8"
DEPTH AT WIDTH	9 1/2"	10 1/2"	+1/4" -1/8"

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

M.O.W. DIVISION

DRG. NO. 205

APR. 18, 2013 ISSUE DATE

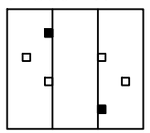
0 ISSUE NO.

CONCRETE TIES

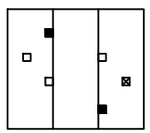
MGR. TRACK ENGINEERING

DIRECTOR – M.O.W.

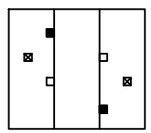
TANGENT TRACK AND UNRESTRAINED CURVES >1500′ R



HIGH RAIL IN RESTRAINED CURVES AND IN UNRESTRINED CURVES <1500′ R



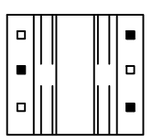
IN SPECIAL CIRCUMSTANCES WHERE PLATE MOVEMENT IS EVIDENT.



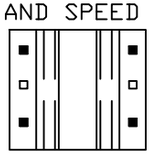
STANDARD TIE PLATE (8-6 PUNCHING) WITH CURT SPIKES

■ INDICATES RAIL HOLDING SPIKES ⊠ INDICATES ADDITIONAL CUT SPIKES

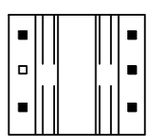
STANDARD SPIKING CONFIGURATION



HIGH RAIL IN RESTRAINED CURVES WHERE SPEED IS >= 30MPH AND IN UNRESTRAINED CURVES < 1500′R AND SPEED >= 40

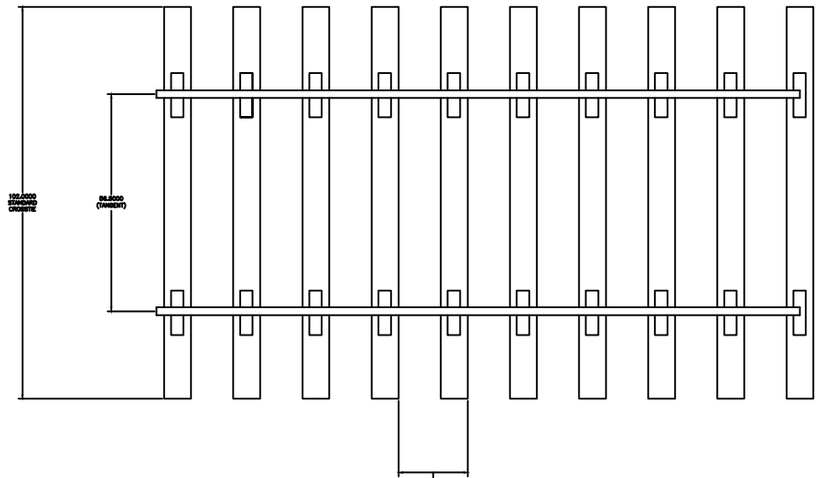


IN SPECIAL CIRCUMSTANCES WHERE PLATE MOVEMENT IS EVIDENT.



STANDARD RESILIENTLY FASTENED TIE PLATE

■ INDICATES USE OF LOCK SPIKE IN SPIKE HOLE
PREBORE HOLES FOR LOCK SPIKES, $\frac{9}{16}$″ DIA x 6″ DEEP
DO NOT BORE HOLES ALL THE WAY THROUGH THE TIE



TIMBER TIES
STANDARD MAIN LINE TRACK-------24″ WITHIN GRADE CROSSINGS*--------18″
CONCRETE TIES
STANDARD MAIN LINE TRACK-------30″

* USE 9′-0″ TIES WITHIN FULL-DEPTH RUBBER CROSSINGS PER PLAN NO. 145

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

M.O.W. DIVISION

DRG. NO. 210

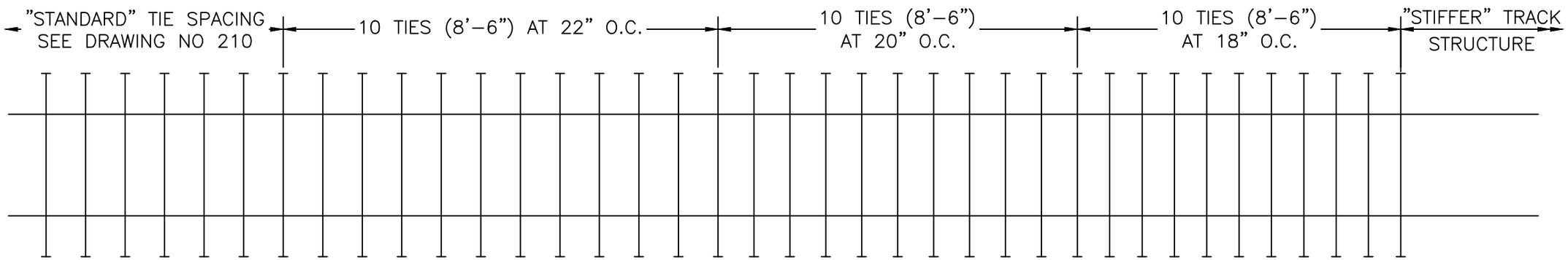
APR. 18, 2013 ISSUE DATE

0 ISSUE NO.

STANDARD TIE SPACING, USAGE AND SPIKING PATTERNS

MGR. TRACK ENGINEERING

DIRECTOR – M.O.W.



NOTES:

1. TRANSITION TIES TO BE USED WHEREVER A SIGNIFICANT CHANGE IN TRACK MODULUS STIFFNESS) OCCURS.
2. "STIFFER TRACK STRUCTURE CONSISTS OF A) CONCRETE TIES, B)BRIDGE DECK OR APPROACH SLAB, C) HMA UNDERLAYMENT FOR GRADE XING, TURNOUT ETC. OR D) DIRECT FIXATION TRACK CONSTRUCTION.
3. TRANSITION TIE SPACING SHOWN IS FOR 50 MPH TRACK. SUBSTANTIAL LATITUDE IN TRANSITION TIE SPACING REQUIREMENTS S POSSIBLE FOR LOWER SPEED TRACK AT THE DISCRETION OF THE MANAGER OF TRACK ENGINEERING.

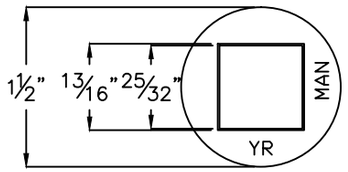
MASSACHUSETTS BAY TRANSPORTATION AUTHORITY	M.O.W. DIVISION	DRG. NO. 215
		APR. 18, 2013 ISSUE DATE / 0 ISSUE NO.

TRANSITION TIE SPACING

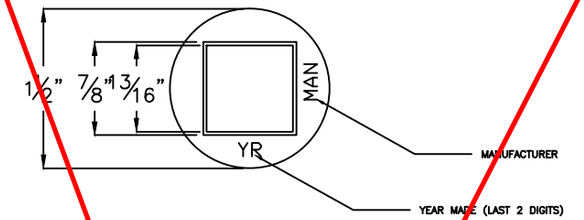
MGR. TRACK ENGINEERING

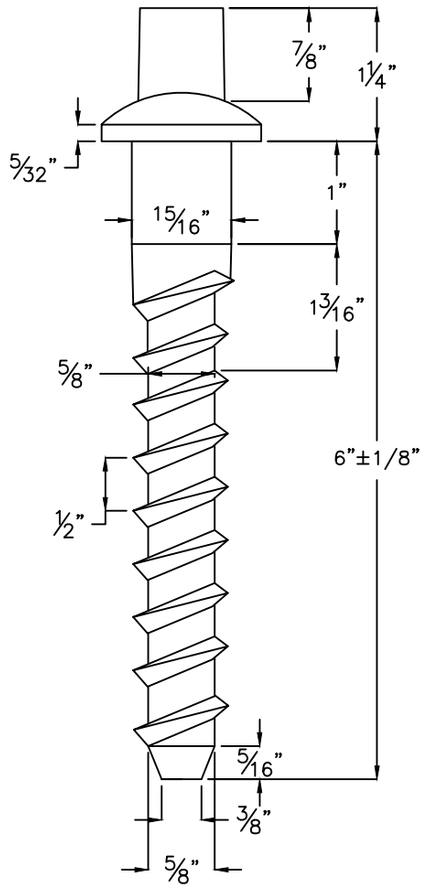
DIRECTOR – M.O.W.

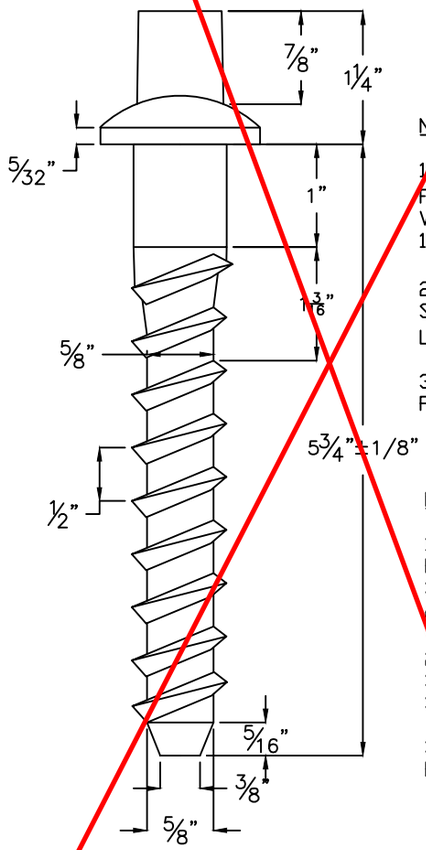
DESIGNED FOR USE WITH 13/16" SOCKET.



DESIGNED FOR USE WITH 7/8" SOCKET.







NOTES:

1. LOCKPIKES SHALL BE MANUFACTURED FROM 5/8" X 5/16" ALLOY SPRING STEEL WITH A MINIMAL TENSILE STRENGTH OF 160,000 PSI AND ELONGATION OF .25%.

2. LOCKSPIKES DRIVEN INTO AN 11/16" SQUARE SPIKE HOLE SHALL CAUSE THE LEGS TO OPEN A MINIMUM OF 1/8".

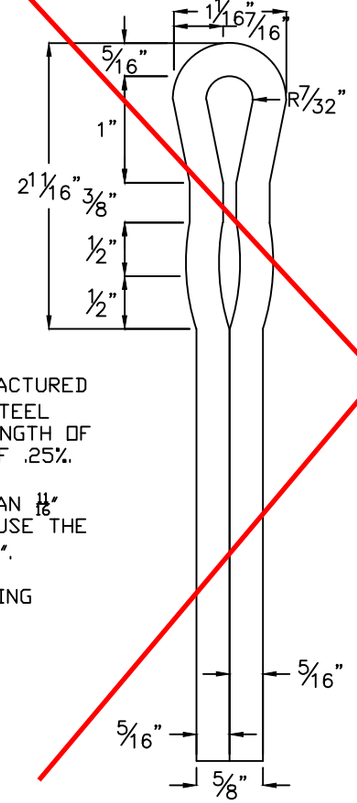
3. SEE DWG NO 210 FOR SPIKING PATERNS.

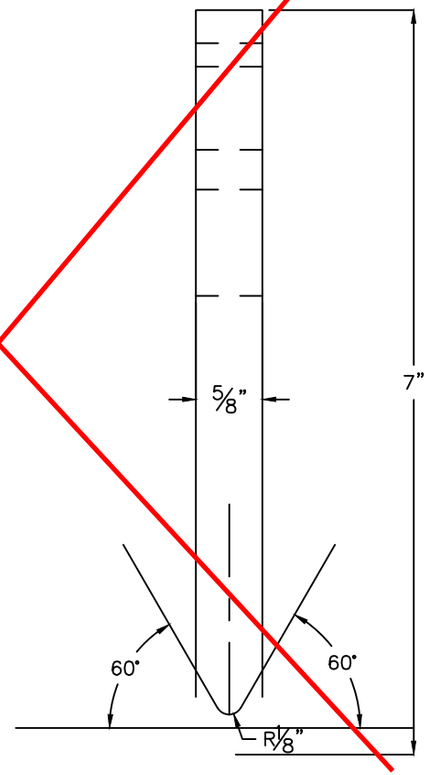
NOTES:

1 SCREW SPIKES TO BE FORGED FROM MEDIUM CARBON STEEL CONFORMING WITH ASTM A-66.

2. FURNISH 7/8" DIAMETER SCREW SPIKES UNLESS SPECIFIED OTHERWISE.

3. APPROXIMATE WEIGHT EACH SPIKE = 1.1 LBS





7"

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

M.O.W. DIVISION

DRG. NO. 220

APR. 18, 2013 ISSUE DATE

0 ISSUE NO.

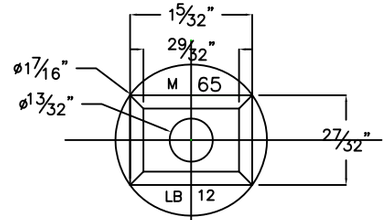
SCREW SPIKES AND LOCKSPIKES

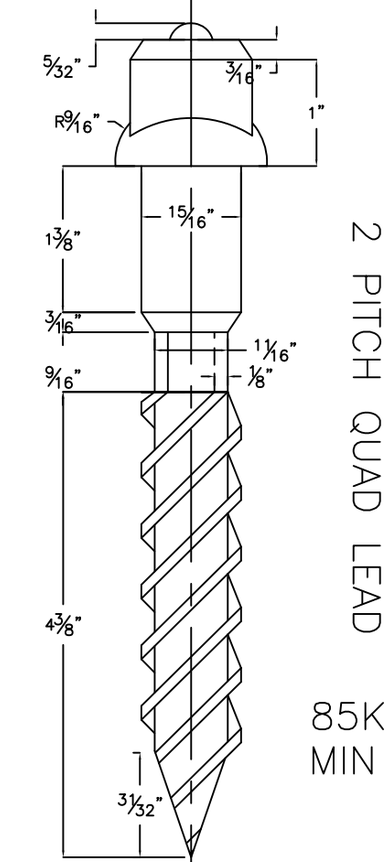
SUPERCEDED

MGR. TRACK ENGINEERING

DIRECTOR – M.O.W.

Standard Evergrip single head screw spike

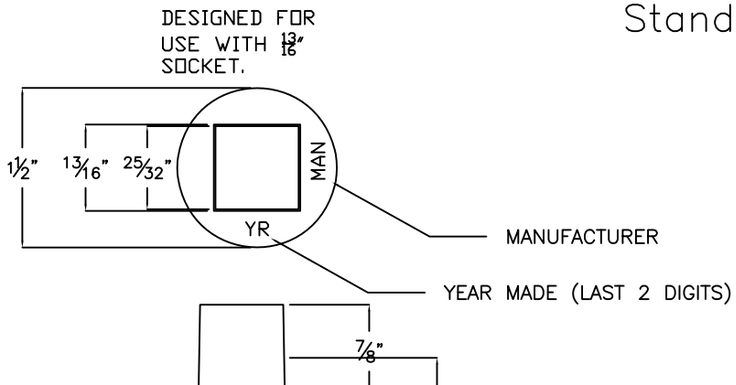


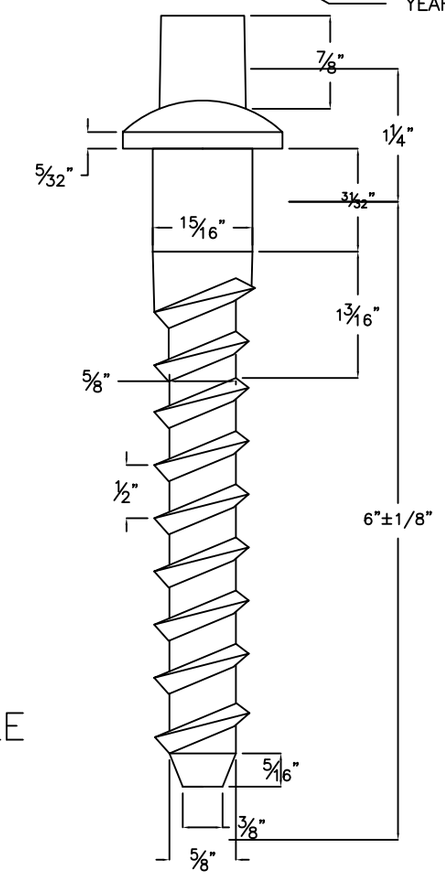


2 PITCH QUAD LEAD

85K PSI
MIN TENSILE

B





A

15" SCREW
16 SPIKES

NOTES:

1 SCREW SPIKES TO BE FORGED FROM MEDIUM CARBON STEEL CONFORMING WITH ASTM A-66.

2. FURNISH 15/16 DIAMETER SCREW SPIKES UNLESS SPECIFIED OTHERWISE.

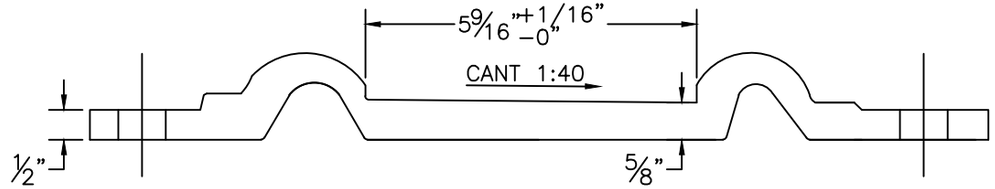
3. APPROXIMATE WEIGHT EACH SPIKE = 1.1 LBS

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY	M.O.W. DIVISION	DRG. NO. 220
		APR. 26, 2017 (1)
		ISSUE DATE ISSUE NO.

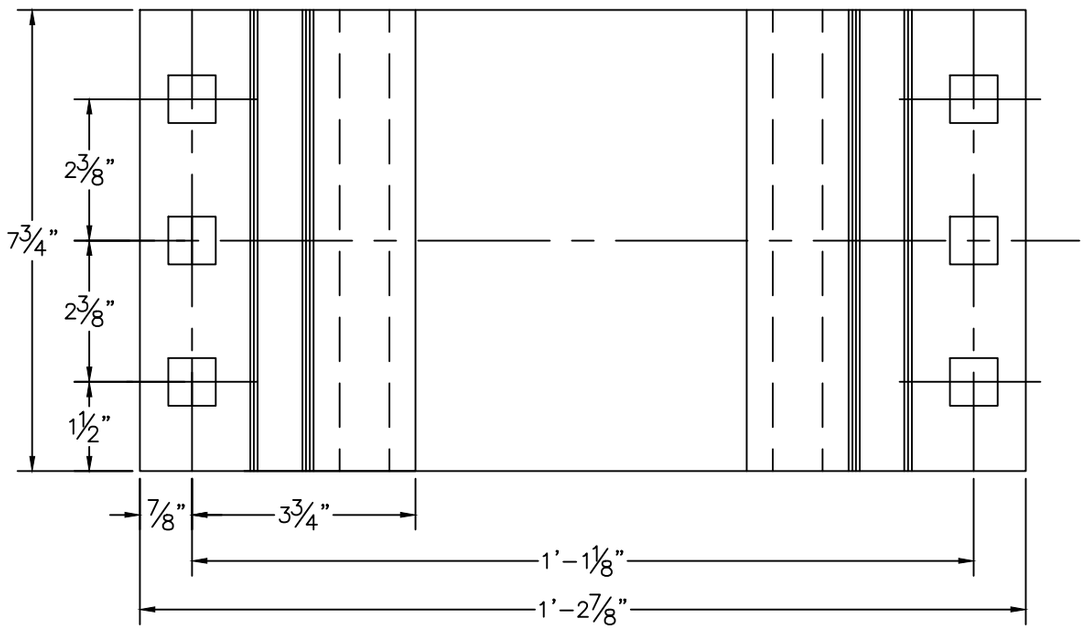
SCREW SPIKES

MGR. TRACK ENGINEERING

DIRECTOR – M.O.W.



SECTION



PLAN

NOTES:

1. TIE PLATES SHALL CONFORM TO CURRENT A.R.E.M.A. SPECIFICATIONS.

2. TIE PLATES SHALL BE BRANDED 115 RE TO DESIGNATE THE SECTION, THREE LETTERS OR A TRADEMARK TO INDICATE THE PRODUCER AND TWO FIGURES BEING THE LAST TWO DIGITS OF THE YEAR ROLLED. LETTERING SHALL BE ON THE GAGE SIDE OF THE PLATE.

3. MATERIAL SHALL BE LOW- CARBON STEEL.

4. TO FASTEN PLATE WITH SCREW SPIKES, 4 OUTSIDE HOLES TO BE PUNCHED 1" DIA ROUND AS INDICATED BY DASHED CIRCLE. USE $\frac{15}{16}$" DIA SCREW SPIKE IN 1" DIA HOLES.

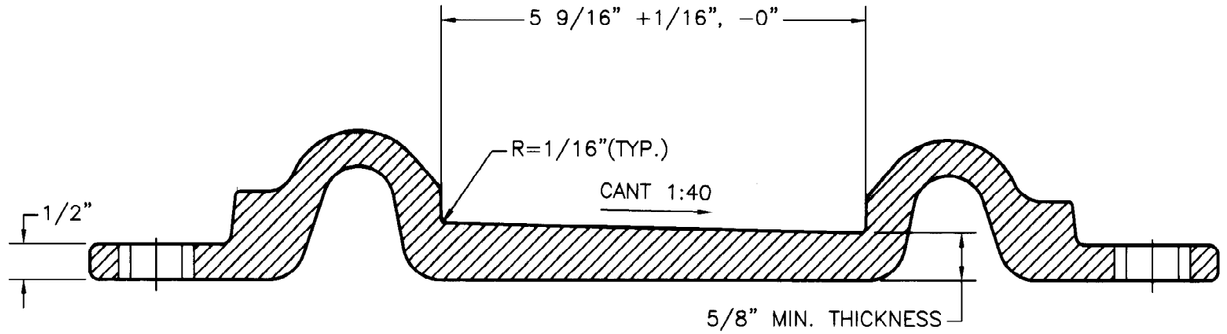
CALCULATED WEIGHT (APPROX.) OF PUNCHED PLATE
115 LB RE---------23.40 LBS

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY	M.O.W. DIVISION	DRG. NO. 225
		APR. 18, 2013 ISSUE DATE / 0 ISSUE NO.

RESILIENT FASTENER TIE PLATE

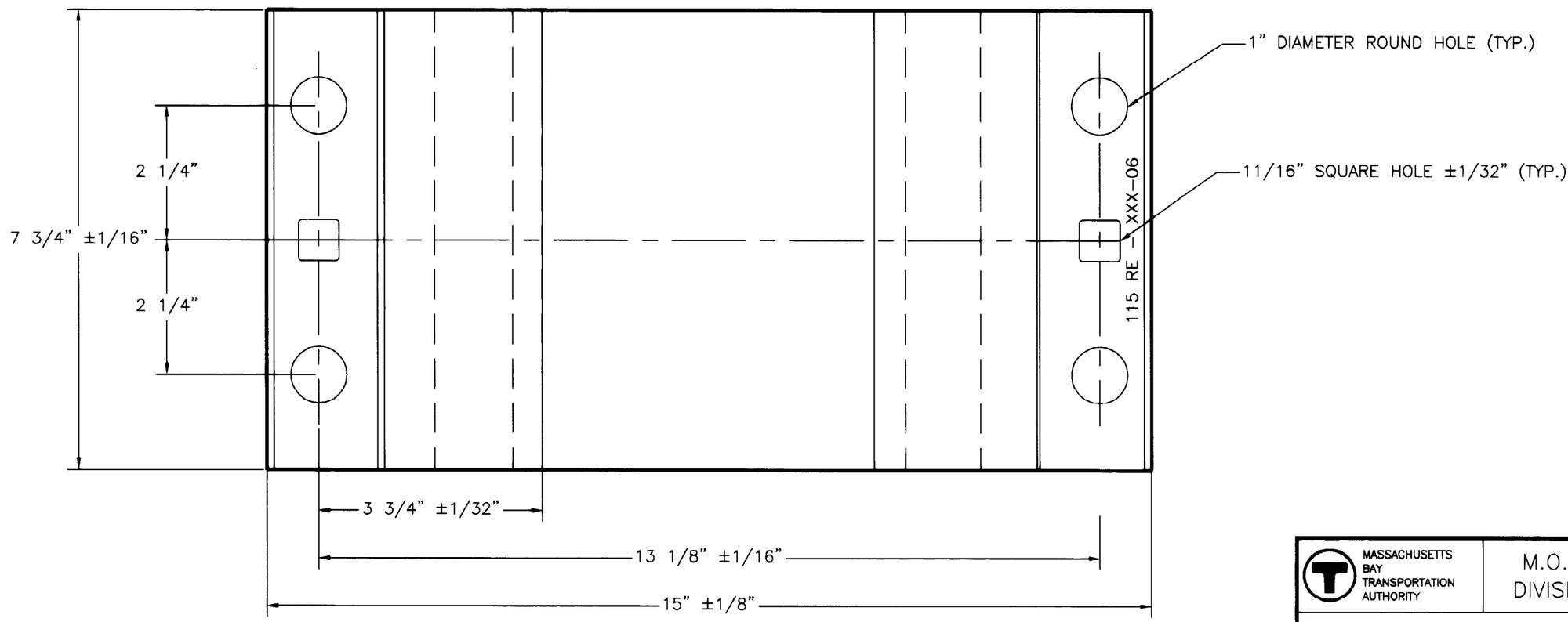
MGR. TRACK ENGINEERING

DIRECTOR – M.O.W.



SECTION

NOTES:
1. TIE PLATES SHALL CONFORM TO CURRENT A.R.E.M.A. SPECIFICATIONS.
2. TIE PLATES SHALL BE BRANDED 115RE TO DESIGNATE THE SECTION, THREE LETTERS OR A TRADEMARK TO INDICATE THE PRODUCER AND TWO CHARACTERS BEING THE LAST TWO DIGITS OF THE YEAR ROLLED. LETTERING SHALL BE ON THE GAGE SIDE OF THE PLATE.
3. MATERIAL SHALL BE LOW−CARBON STEEL.
4. APPROXIMATE CALCULATED WEIGHT OF THE 115 LB. RE PUNCHED PLATE IS 23.4 LBS.



PLAN

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

M.O.W. DIVISION

DRG. NO. 225A

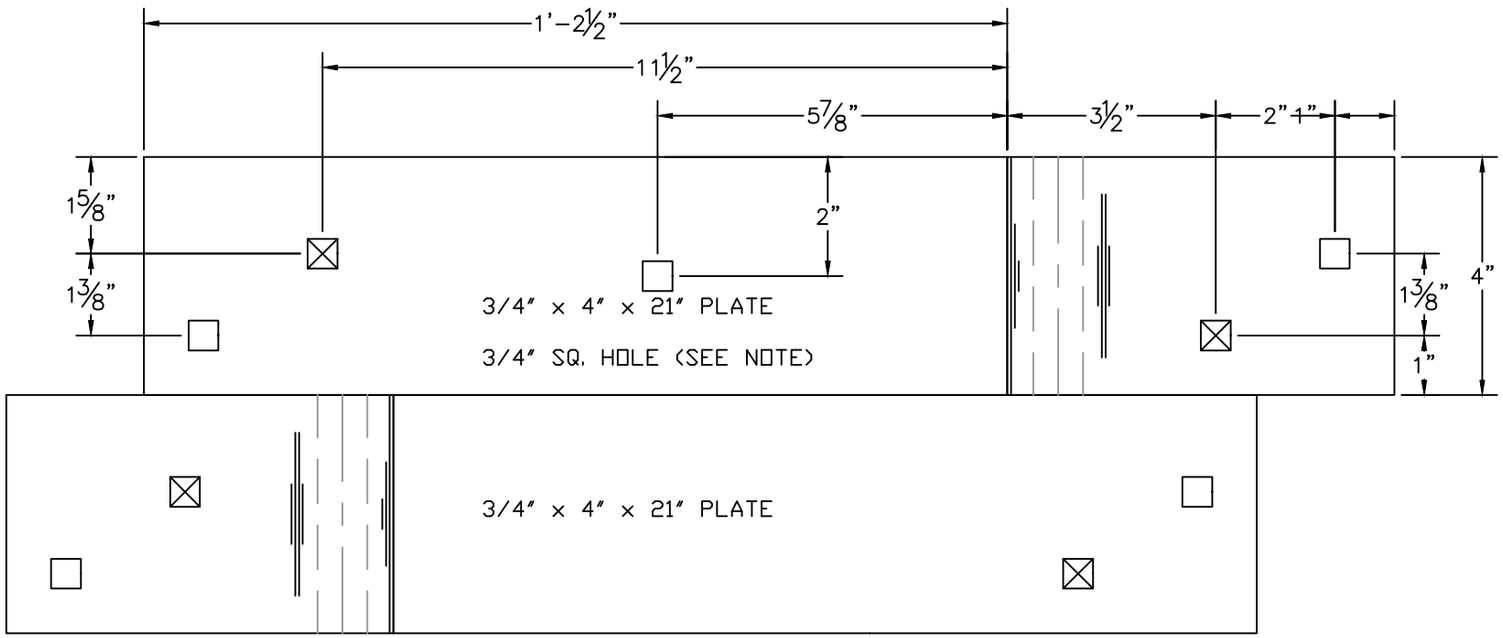
NOV. 1, 2006 ISSUE DATE

0 ISSUE NO.

RESILIENT FASTENER
TIE PLATE FOR SCREW SPIKES

SECTION CHIEF

DIVISION ENGINEER



NOTES:

1. SIX (6) LOCKSPIKES SHALL BE INSTALLED PER TWO (2) PLATE ASSEMBLY AS INDICATED BY HOLES SHOWN: ☒ PREBORE SPIKEHOLES $\frac{9}{16}$" X 6" DEEP, NOT THROUGH TIE BOTTOM.

2. $\frac{3}{4}$" HOLE IS PROVIDED FOR TEMPORARY $\frac{5}{8}$" CUT SPIKE INSTALLATION, IF REQUIRED SHOULD RUNNING RAIL NEED TO BE INSTALLED WITHOUT RESTRINING RAIL TEMPORILY TO FACILITATE PHASED TRACK CONSTRUCTION.

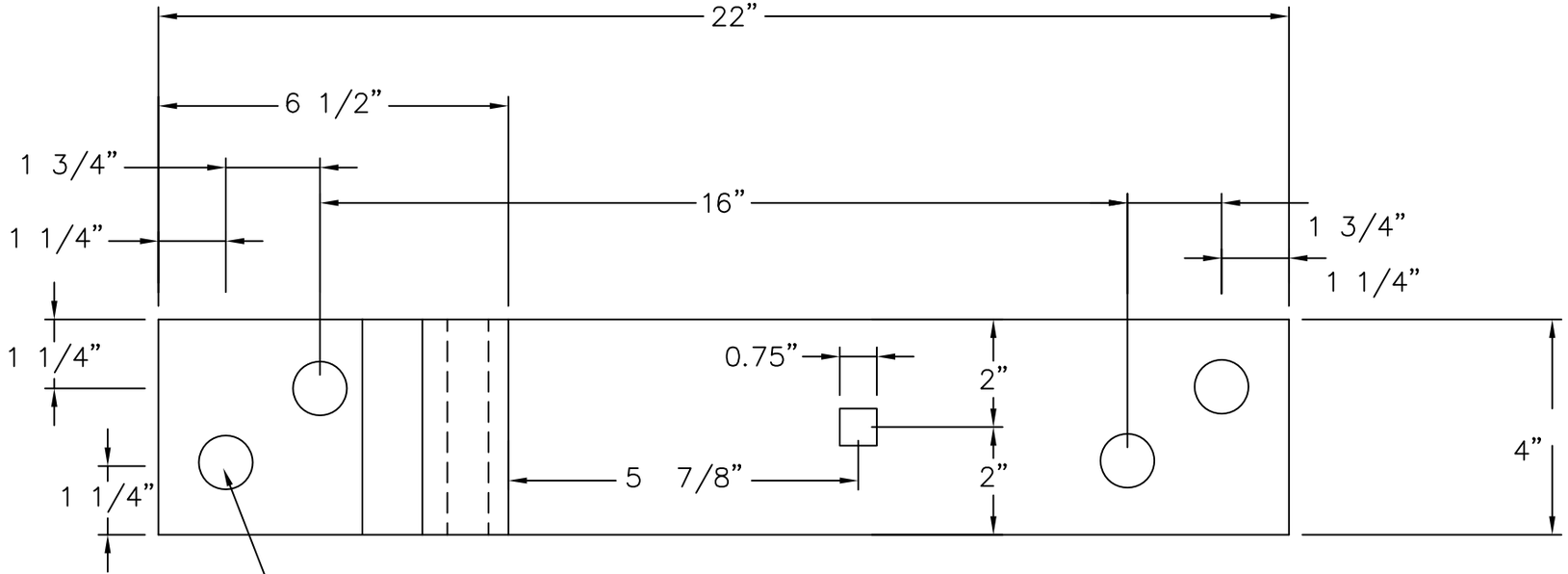
3. MATERIAL SHALL BE LOW-CARBON STEEL AND SHALL CONFORM TO CURRENT AREMA SPECIFICATIONS.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY	M.O.W. DIVISION	DRG. NO. 230
		APR. 18, 2013 (0)
		ISSUE DATE ISSUE NO.

TWIN STEEL TIE PLATES FOR WOOD TIES

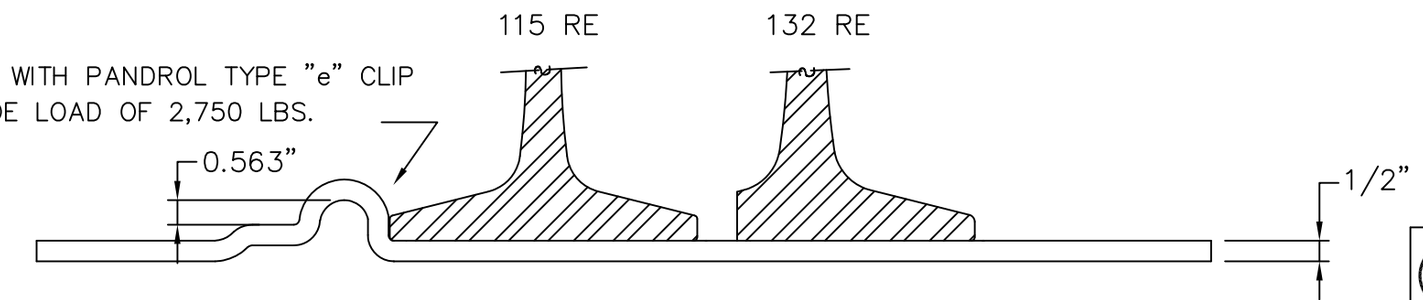
MGR. TRACK ENGINEERING

DIRECTOR – M.O.W.



1" DIA. ROUND HOLE (TYP.)
(FOR USE WITH 15/16" SCREW SPIKE)

PLAN



MATERIAL SHALL BE LOW – CARBON STEEL AND SHALL CONFORM TO CURRENT AREMA SPECIFICATIONS

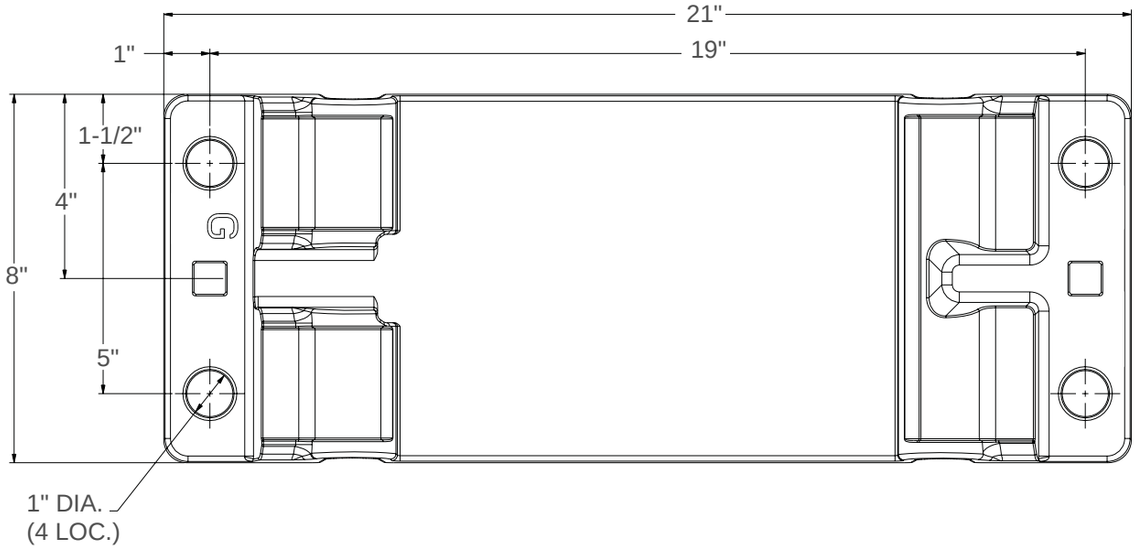
SECTION

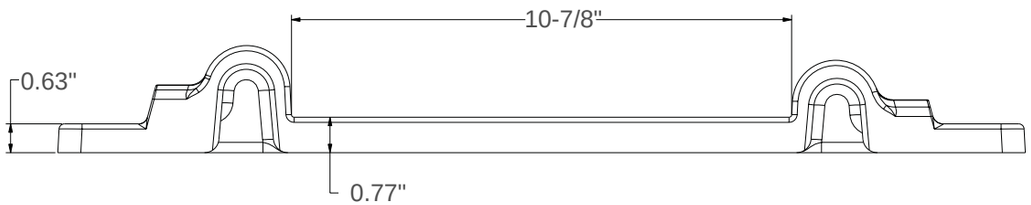
MASSACHUSETTS BAY TRANSPORTATION AUTHORITY	M.O.W. DIVISION	DRG. NO. 230R
		JAN 16, 2013 (0)
		ISSUE DATE ISSUE NO.

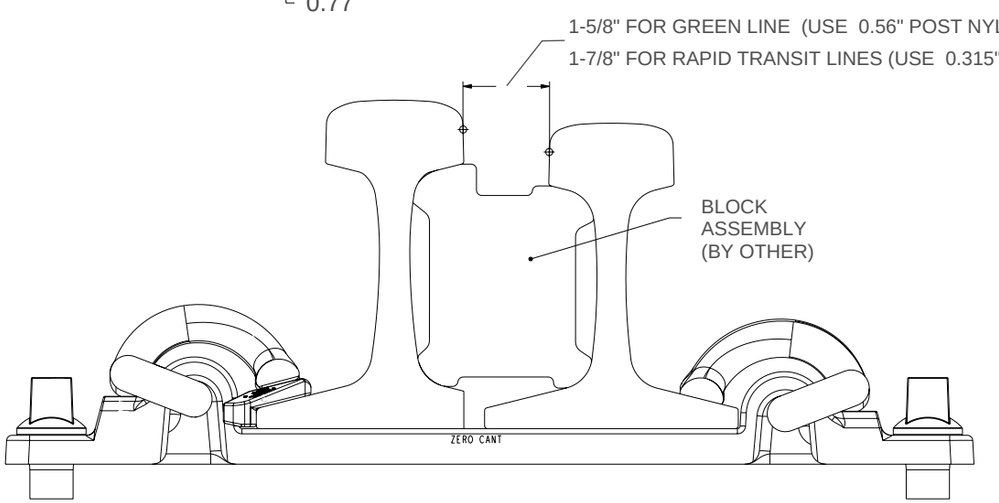
RAISED SINGLE SHOULDER RESTRAIN RAIL PLATE
FOR USE WITH PANDROL "e" TYPE CLIPS

MGR. TRACK ENGINEERING

DIRECTOR – M.O.W.







N.T.S

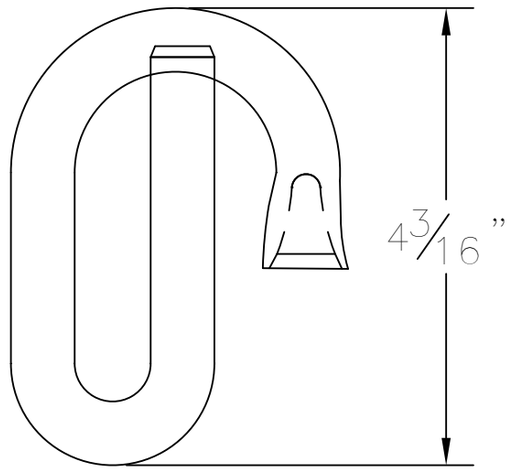
NOTES:

1. TIE PLATES SHALL CONFORM TO CURRENT A.R.E.M.A SPECIFICATIONS.
2. MATERIAL SHALL BE LOW-CARBON STEEL
3. APPROXIMATE WEIGHT IS 33.8 LB.
4. LETTER "G" SHALL BE ON THE GAGE SIDE OF THE PLATE. (PANDROL ITEM 13096 OR EQUAL)

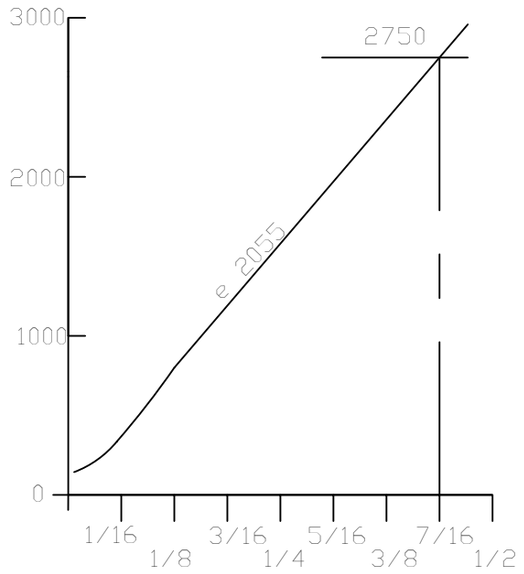
MASSACHUSETTS BAY TRANSPORTATION AUTHORITY	M.O.W. DIVISION	DRG. NO. 231
		0
		ISSUE DATE / ISSUE NO.

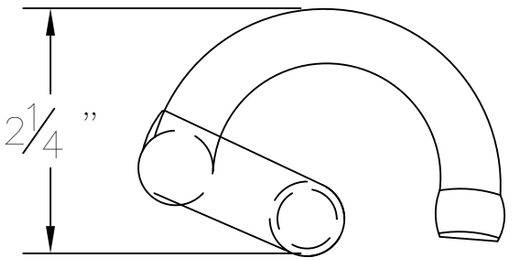
CAST RESTRAINING RAIL 115/132RE TIE PLATE

CLIP	"E" 2055
BAR DIAMETER	20 MM
NOMINAL TOE LOAD	2750 LBS.
WORKING DEFLECTION	$\frac{7}{16}$"
NOMINAL RAIL SEAT CLAMING FORCE	5,500 LBS.
SURFACE AREA IN CONTACT WITH INSULATOR OR RAIL	.82 SQ. IN.



CHAMFERED CENTER LEG ALLOWS EASY SETTING AND DRIVING.





THE "E" CLIP DESIGN UTILIZES THE TOW TO BEAR ON THE RAIL BASE. THE TOW IS FLATTENED TO PROVIDE A LARGE BEARING AREA ON THE RAIL OR INSULATOR.

NOTES:

1) CLIPS SHALL BE ONE PIECE, THREADLESS DETACHABLE, FABRICATED FROM HEAT-TREATED ALLOY SPRING STEEL AND SHALL GENERATE RAIL HOLDING FORCE BY SPRING ACTION. TWO CLIPS MAKE A COMPLETE ASSEMBLY. CLIPS MUST BE CAPABLE OF BEING INSTALALED AND REMOVED BY ONE PERSON WITH STANDARD TRACKWORK TOOLS

2) CLIPS SHALL EXERT A MINIMUM HOLD-DOWN FORCE (TOE LOAD) OF 2,500 LBS. PER CLIP, 5,000 LBS. PER COMPLETE ASSEMBLY FOR THE TYPICAL APPLICATION. ATYPICAL APPLICATION MAY REQIRE DIFFERENT HOLD-DOWN FORCES.

3) THE MINIMUM STATIC LONGITUDINAL SLIP PER COMPLETE ASSEMBLY SHALL BE 2,400 LBS. PER AREMA SPECIFICATIONS.

4) CLIPS SHALL BE DESIGNED AND PRODUCED BY AN ISO 9000 CERTIFIED MANUFACTURER WITH AT LEAST 10 YEARS PROVEN, SUCCESSFUL IN-TRACK SERVICE WITHIN THE U.S.

5) RANDOM PRODUCTION SAMPLES OF CLIPS WITH A HOLD-DOWN FORCE AS SPECIFIED IN #2 ABOVE MUST PASS A 3,000,000 CYCLE VERTICAL DYNAMIC DEFLECTION TEST OF 0.04" (+/- .002") ABOVE NOMINAL RAIL CLIP INSTALLED DEFLECTION WITHOUT FAILURE.

6) CLIPS SHALL BE SUPPLIED BY THE MANUFACTURER OF THE CLIP HOUSING (RESILIENT FASTENER TIE PLATE, WELD-ON SHOULDER, EMBEDDED SHOULDER, ETC.) TO ENSURE THE INTEGRITY OF THE FASTENER SYSTEM.

7) EACH CLIP MUST BEAR MANUFACTURER'S IDENTIFICATION AND THE LAST TWO DIGITS OF THE YEAR OF MANUFACTURE.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

M.O.W. DIVISION

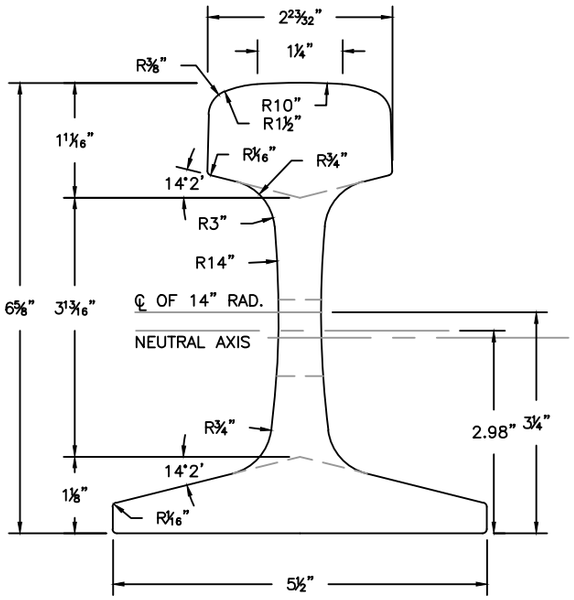
DRG. NO. 240

APR. 18, 2013 (ISSUE DATE) 0 (ISSUE NO.)

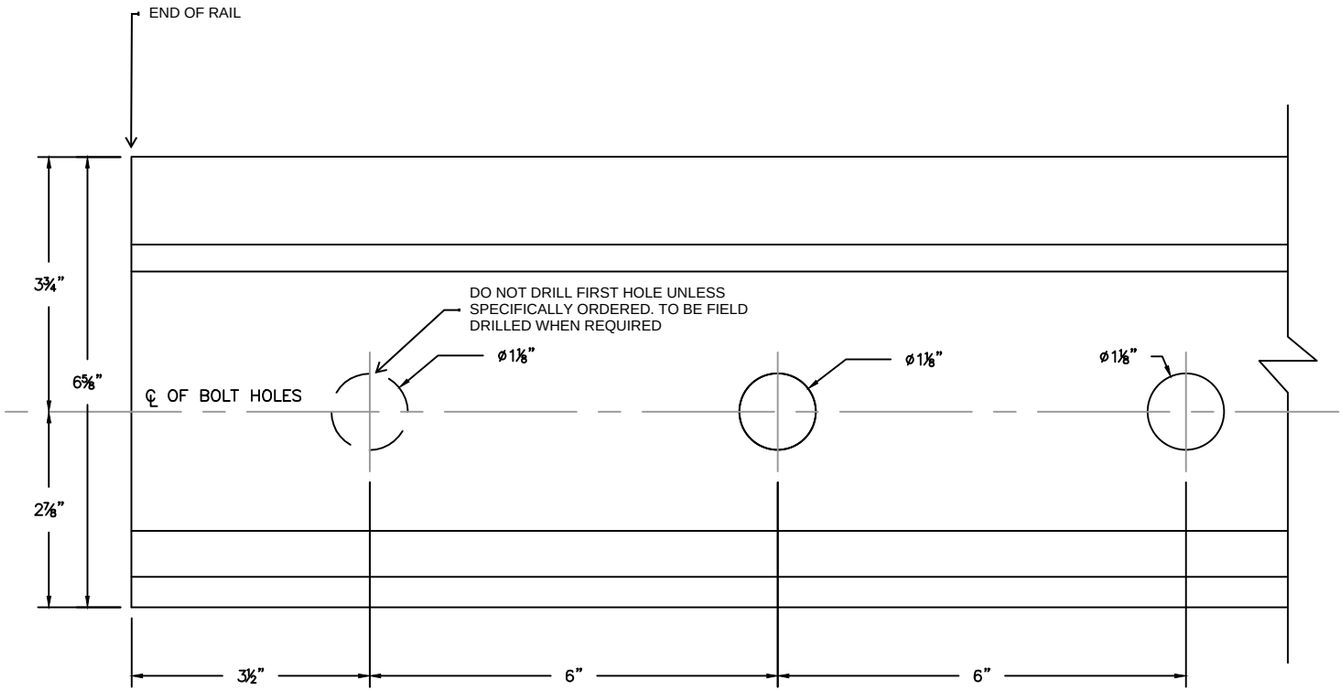
RESILIENT FASTENER

MGR. TRACK ENGINEERING

DIRECTOR - M.O.W.



SECTION



DRILLING

NOTE:
RAIL SHALL CONFORM IN EVERY RESPECT WITH THE CURRENT AREMA SPECS., VOL. 1, CHAP. 4, EXCEPT AS MODIFIED HEREIN AND IN THE MBTA
"SPECIFICATION FOR STEEL RAILS" CONTAINED IN THE M.O.W. DIV. BOOK OF STANDARD SPECS.

MINIMUM MATHEMATICAL ATTRIBUTES

	AREA SQ IN	PERCENT
HEAD ---	3.91	34.6
WEB ---	3.04	27.1
BASE ---	4.29	36.1
TOTAL ---	11.25	100.0

MOMENT OF INERTIA----------	65.6
SEC MODULUS OF HEAD----------	18.0
SEC MODULUS OF BASE----------	22.0
RATIO M.I. TO AREA----------	5.83
RATIO SEC MODULUS HEAD TO AREA-	1.60
RATIO HEIGHT TO BASE----------	1.20
WEIGHT PER YARD----------	114.7
NET TONS PER MILE OF TRACK-----	201.87

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

M.O.W. DIVISION

DRG. NO. 300

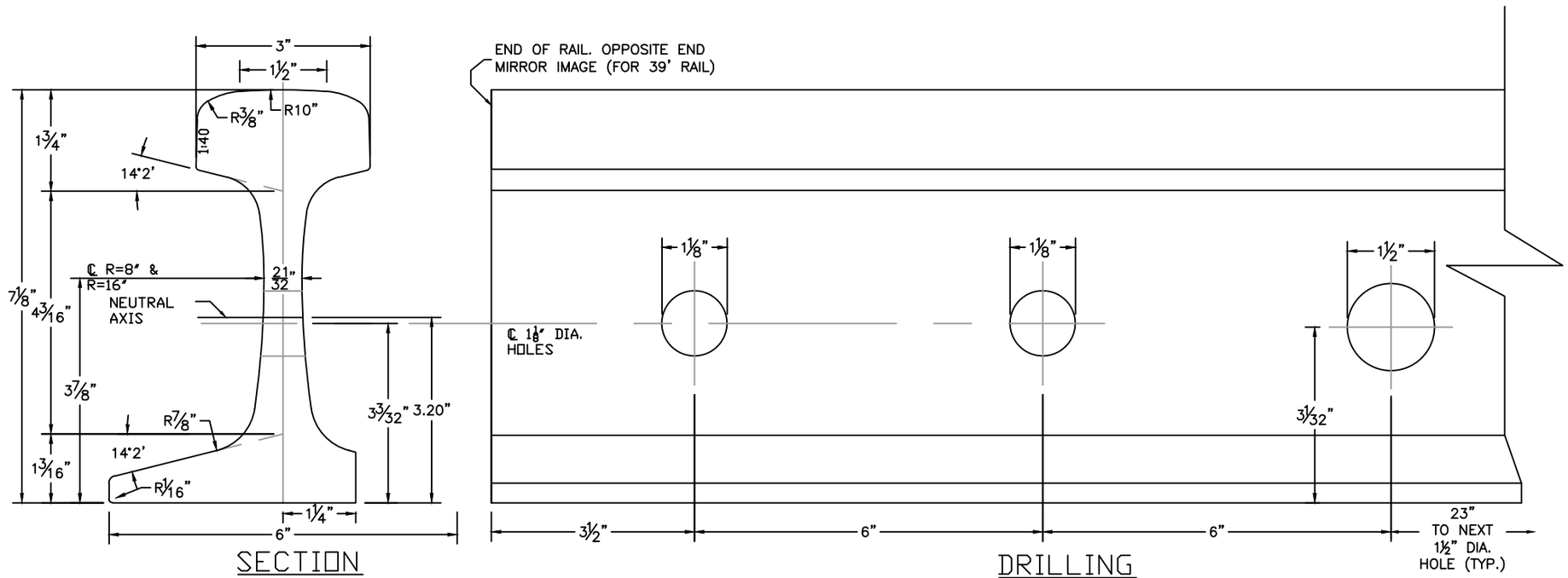
APR. 18, 2013 ISSUE DATE

0 ISSUE NO.

115 RE RAIL

MGR. TRACK ENGINEERING

DIRECTOR – M.O.W.



NOTE:

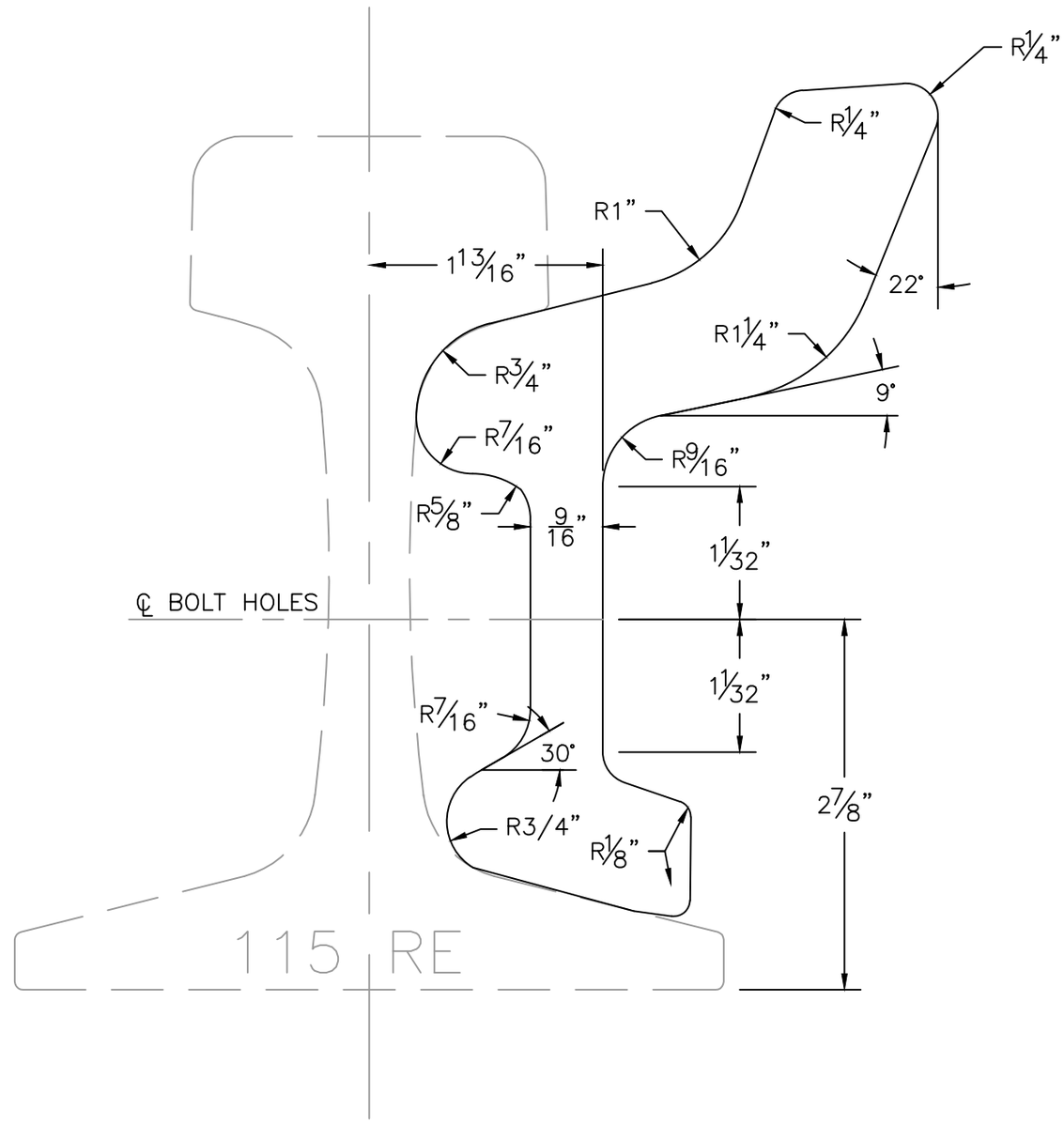
RAIL SHALL CONFORM IN ALL RESPECTS WITH THE CURRENT AREMA SPECIFICATIONS, VOLUME 1, CHAPTER 4, EXCEPT AS MODIFIED HEREON AND IN THE MBTA "SPECIFICATION FOR STEEL RAILS" CONTAINED IN THE M.O.W. DIVISION BOOK OF STANDARD SPECS.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY	M.O.W. DIVISION	DRG. NO. 305
		APR. 18, 2013 (0)
		ISSUE DATE ISSUE NO.

132 RE RESTRAINING RAIL

MGR. TRACK ENGINEERING

DIRECTOR – M.O.W.



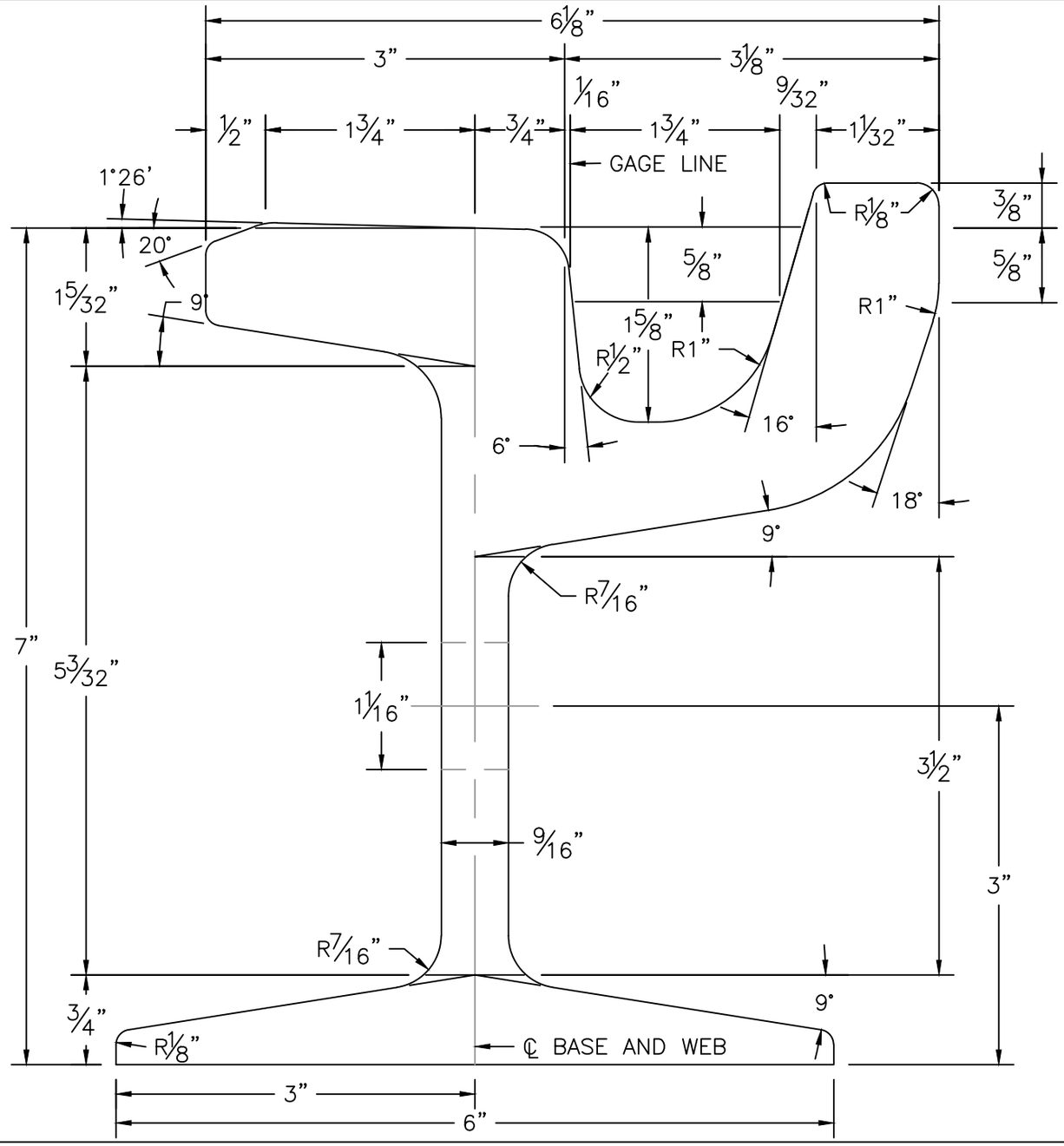
MASSACHUSETTS BAY TRANSPORTATION AUTHORITY	M.O.W. DIVISION	DRG. NO. 306
		APR. 18, 2013 ISSUE DATE / 0 ISSUE NO.

"STRAP GUARD" 115 RE

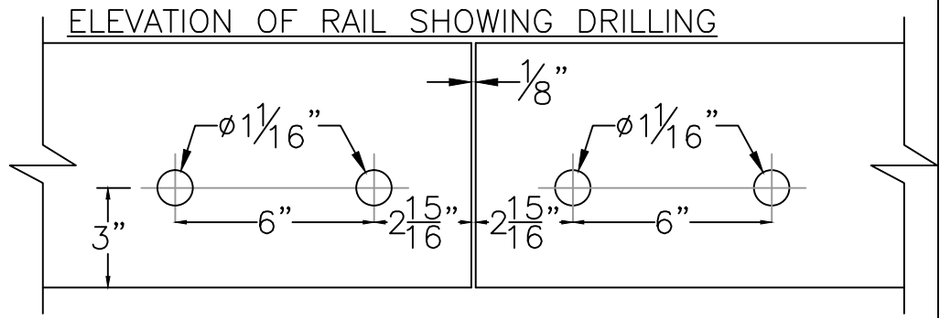
(AS MANUFACTURED B BETHLEHEM STEEL CORP.
FOR PORT AUTHORITY OF ALLEGHENY COUNTY)

MGR. TRACK ENGINEERING

DIRECTOR – M.O.W.



ELEVATION OF RAIL SHOWING DRILLING

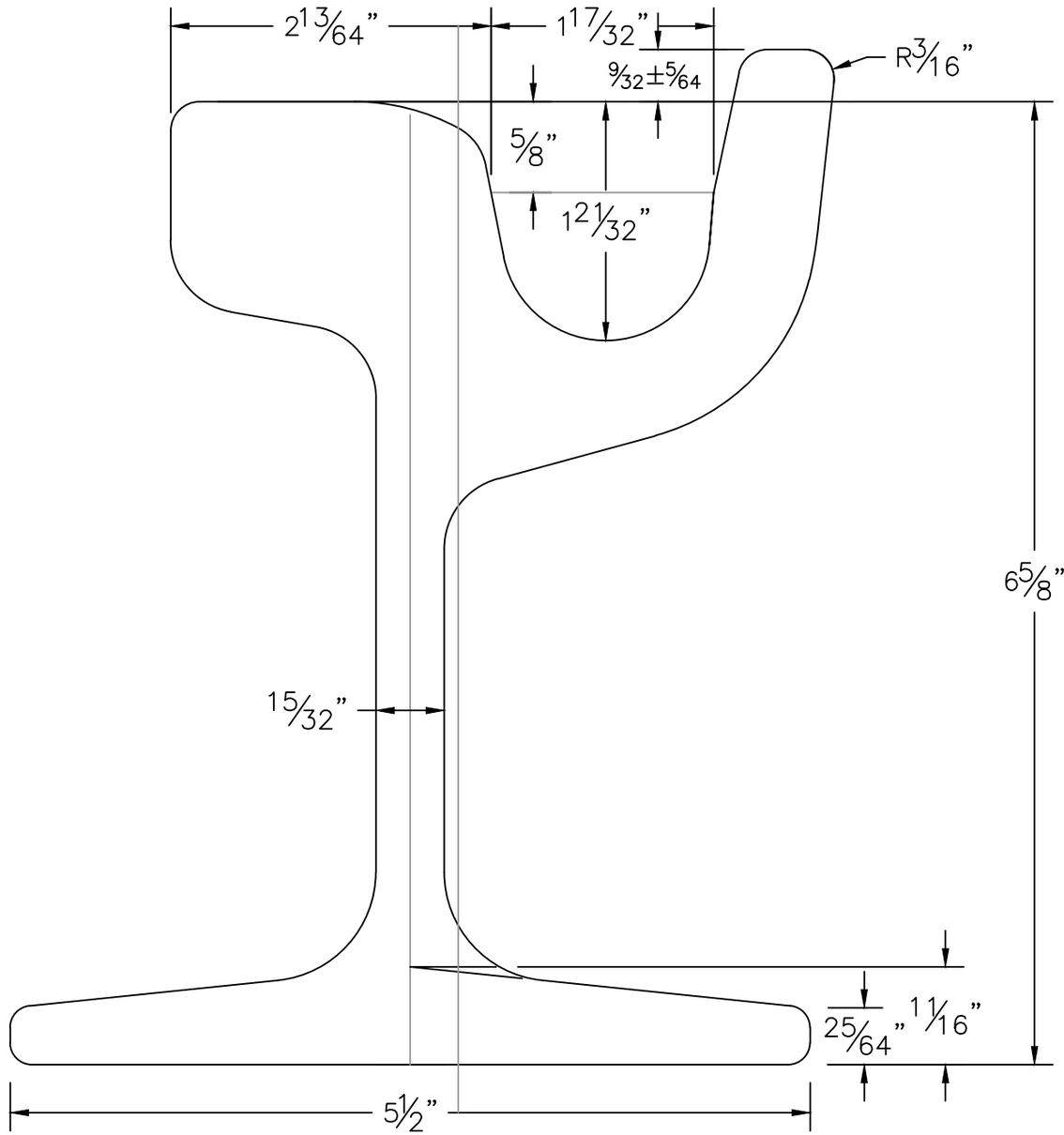


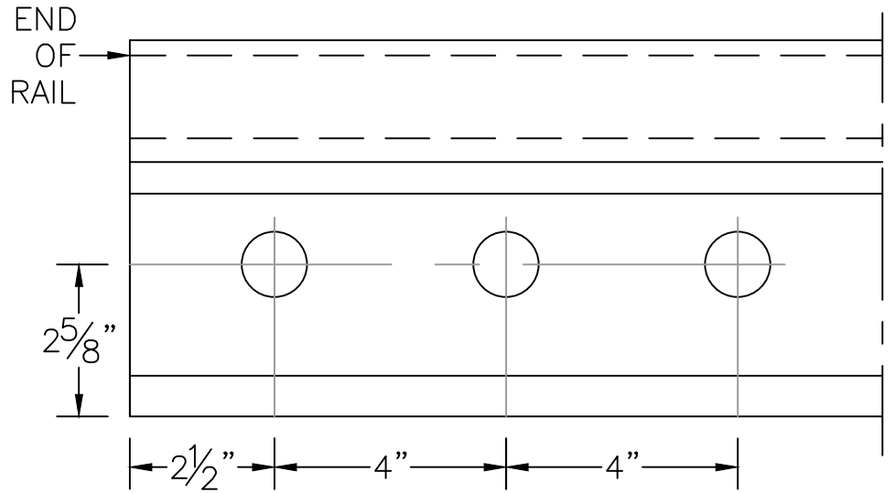
MASSACHUSETTS BAY TRANSPORTATION AUTHORITY	M.O.W. DIVISION	DRG. NO. 310
		APR. 18, 2013 ISSUE DATE / 0 ISSUE NO.

SECTION 149 RE7A GIRDER GUARD RAIL

MGR. TRACK ENGINEERING

DIRECTOR – M.O.W.



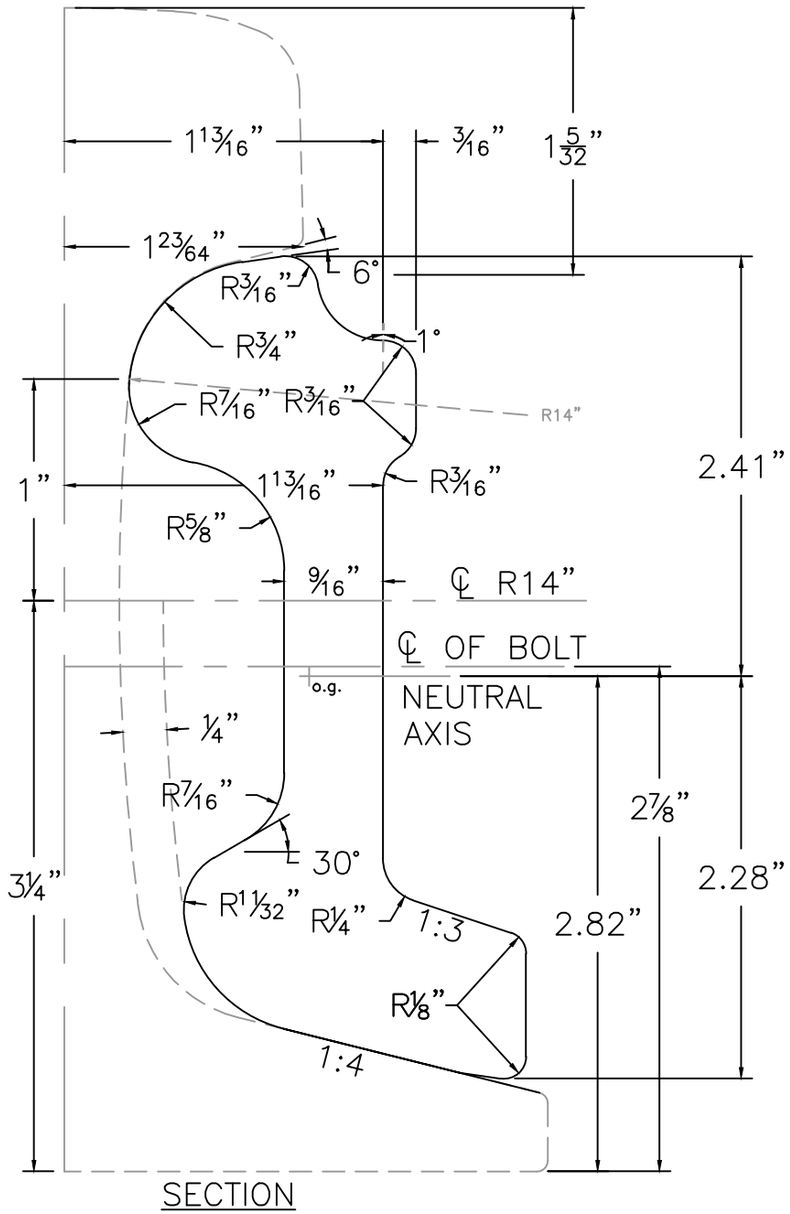


MASSACHUSETTS BAY TRANSPORTATION AUTHORITY	M.O.W. DIVISION	DRG. NO. 315
		APR. 18, 2013 ISSUE DATE / 0 ISSUE NO.

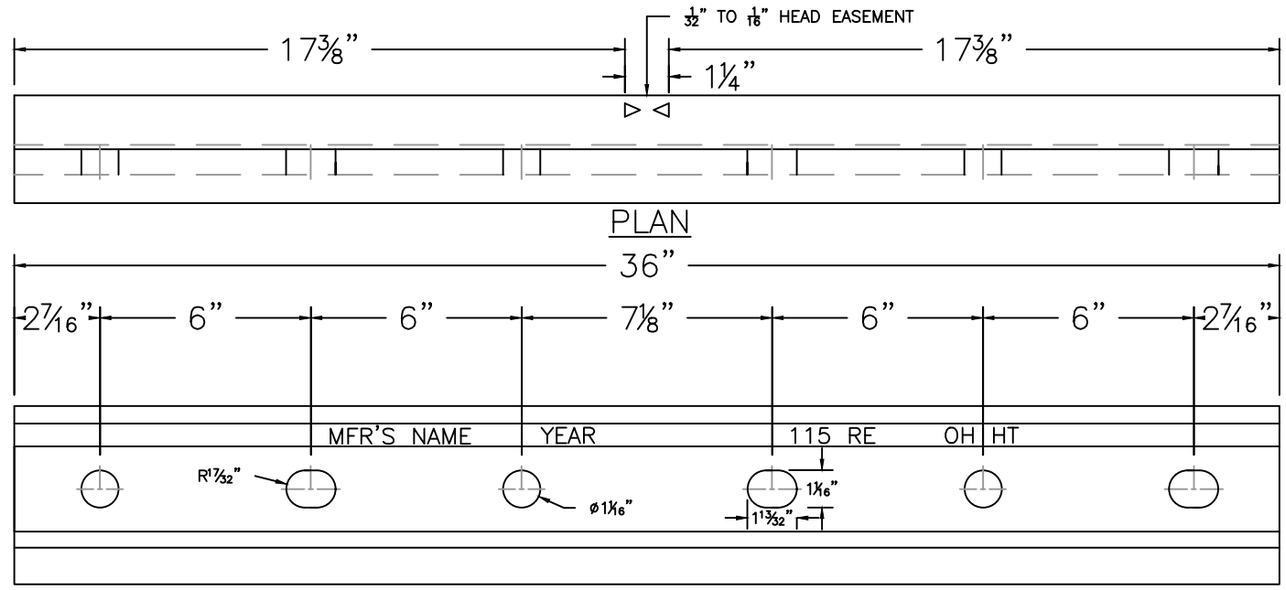
SECTION 118
GIRDER GUARD RAIL

MGR. TRACK ENGINEERING

DIRECTOR – M.O.W.



SECTION



ELEVATION

NOTES:

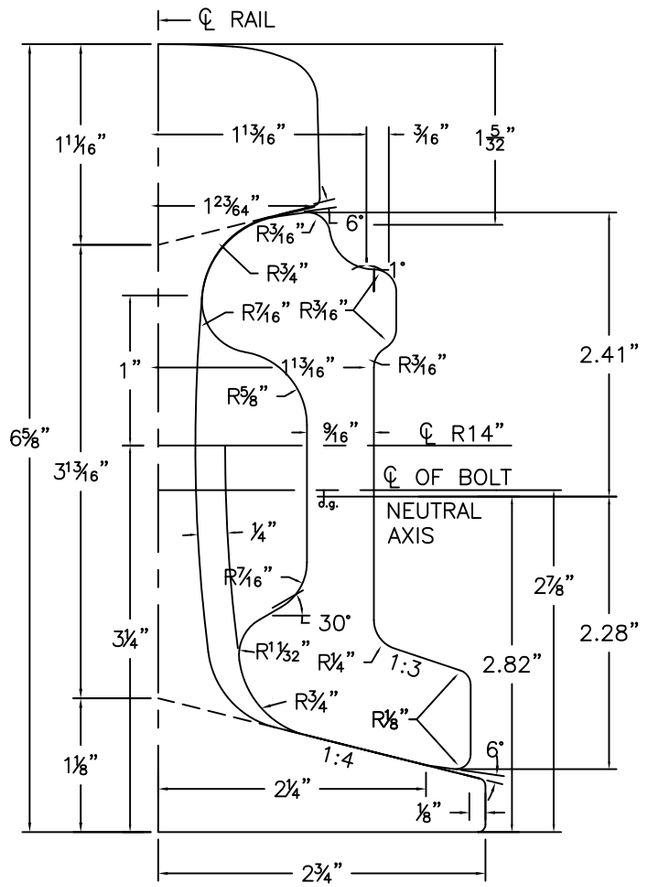
1) JOINT BARS TO BE IN ACCORDANCE WITH CURRENT AREMA "SPECIFICATIONS FOR QUENCHED CARBON STEEL JOINT BARS".
2) JOINT BARS TO BE SHORT TOE AND HEADFREE DESIGN. BARS SHOWN ARE FOR USE WITH 1" ELLIPTICAL NECK TRACK BOLTS.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY	M.O.W. DIVISION	DRG. NO. 320
		APR. 18, 2013 ISSUE DATE / 0 ISSUE NO.

JOINT BAR DETAILS FOR 115 RE SECTION RAIL

MGR. TRACK ENGINEERING

DIRECTOR – M.O.W.



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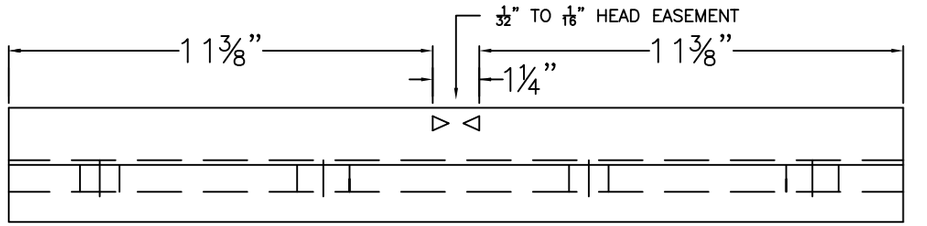
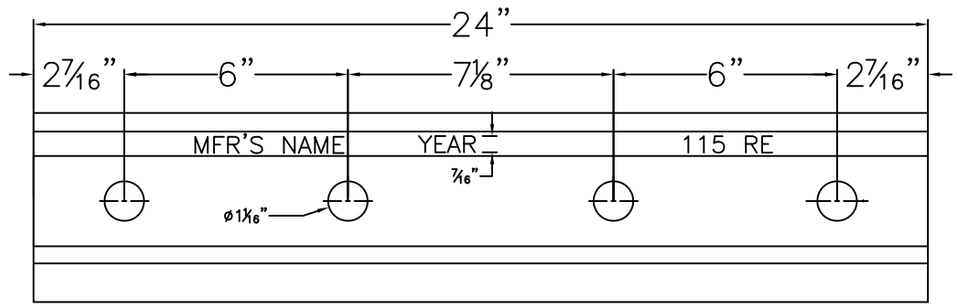
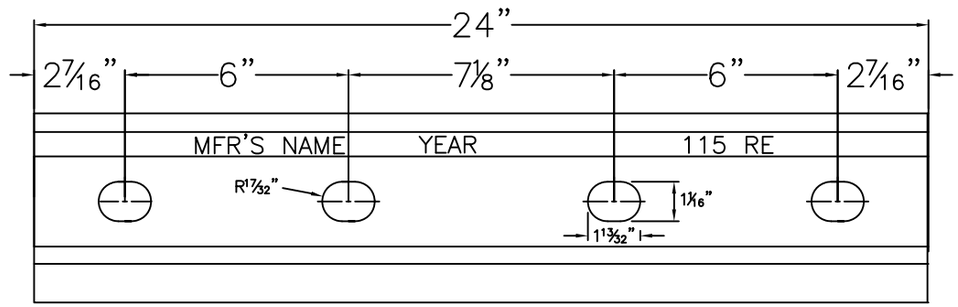


PLAN



ELEVATION



ELEVATION

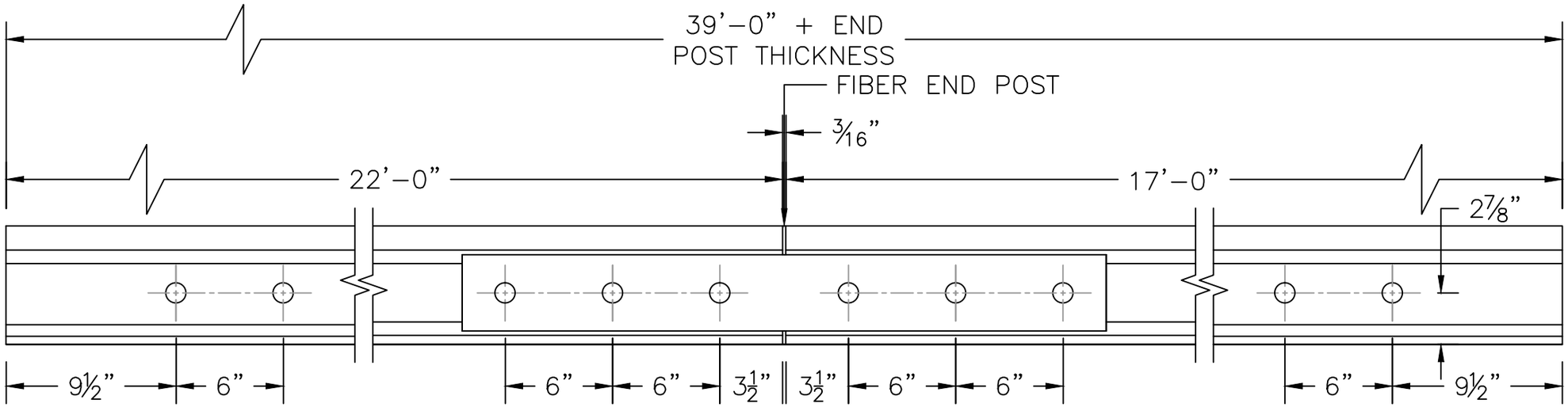
NOTES:
1) JOINT BARS TO BE IN ACCORDANCE WITH CURRENT AREMA "SPECIFICATIONS FOR QUENCHED CARBON STEEL JOINT BARS".
2) JOINT BARS TO BE SHORT TOE AND HEADFREE DESIGN. BARS SHOWN ARE FOR USE WITH 1" ELLIPTICAL NECK TRACK BOLTS.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY	M.O.W. DIVISION	DRG. NO. 321
		MAR. 20, 2017 (1)
		ISSUE DATE ISSUE NO.

JOINT BAR DETAILS FOR 115 RE SECTION RAIL

MGR. TRACK ENGINEERING

DIRECTOR – M.O.W.



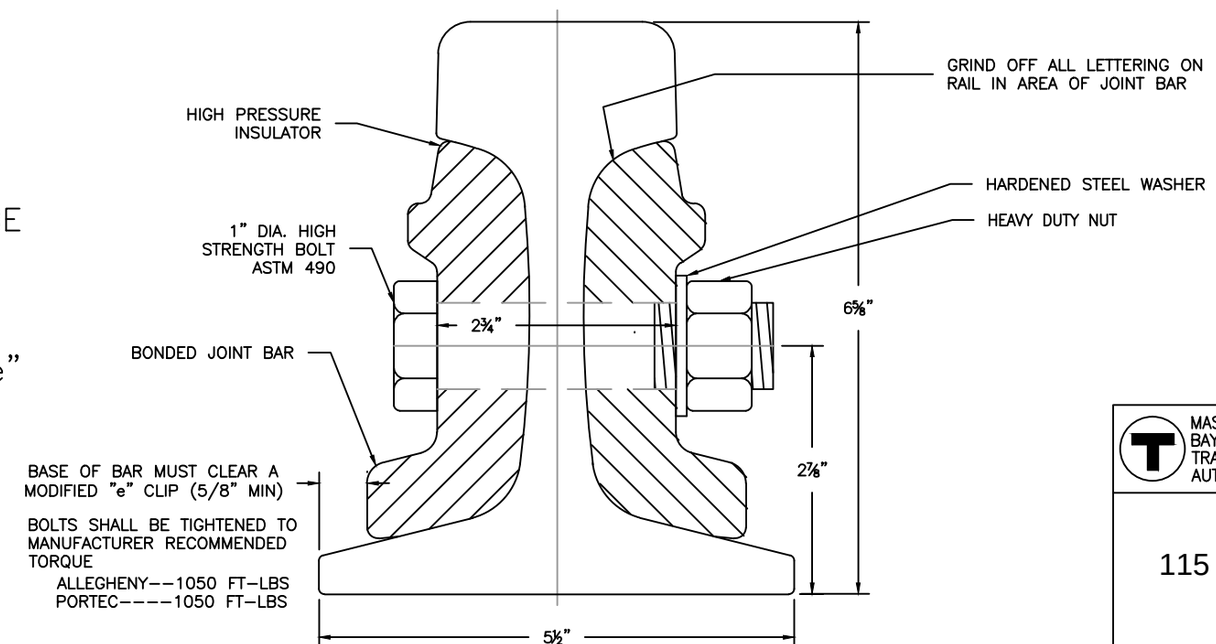
NOTES:

1) RAILS TO CONFORM WITH CURRENT AREMA SPECIFICATIONS FOR HEAT–TREATED RAILS.

2) CONICAL REAMER TO BE APPLIED TO BOLT HOLES AT BONDED JOINT TO REMOVE BURRS.

3) USE ONLY MODIFIED "e" CLIP AT BONDED JOINT.

4) REFER TO SPECIFICATIONS FOR "INSULATED JOINT KIT" IN MBTA BOOK OF MATERIAL SPECS.



MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

M.O.W. DIVISION

DRG. NO. 325

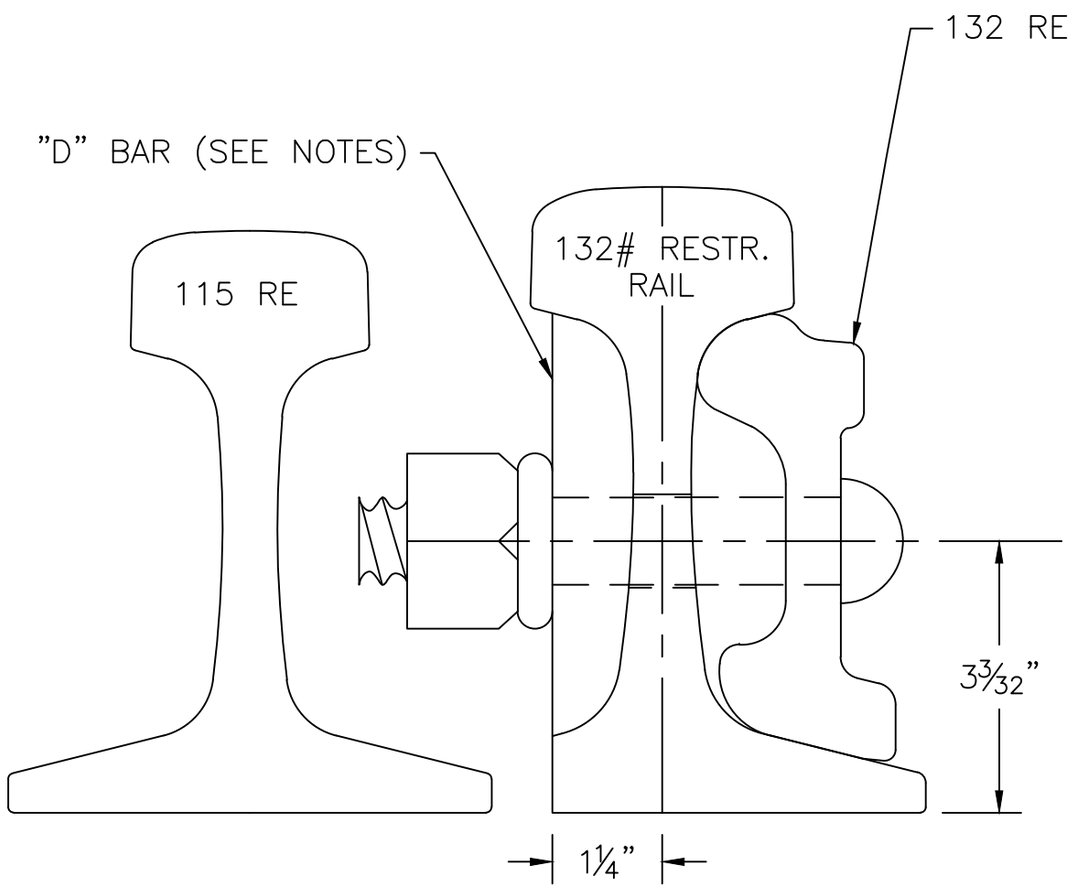
APR. 18, 2013 ISSUE DATE

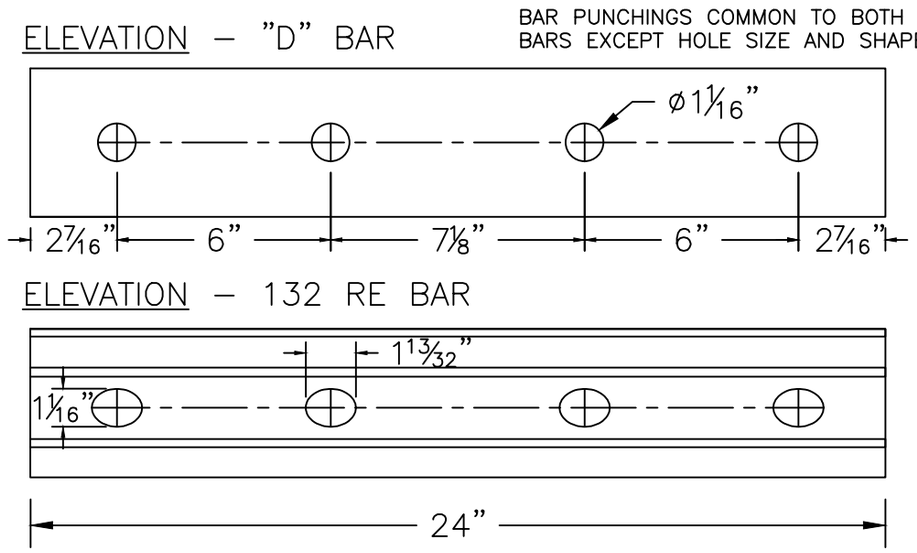
0 ISSUE NO.

115 RE BONDED INSULATED JOINT

MGR. TRACK ENGINEERING

DIRECTOR – M.O.W.



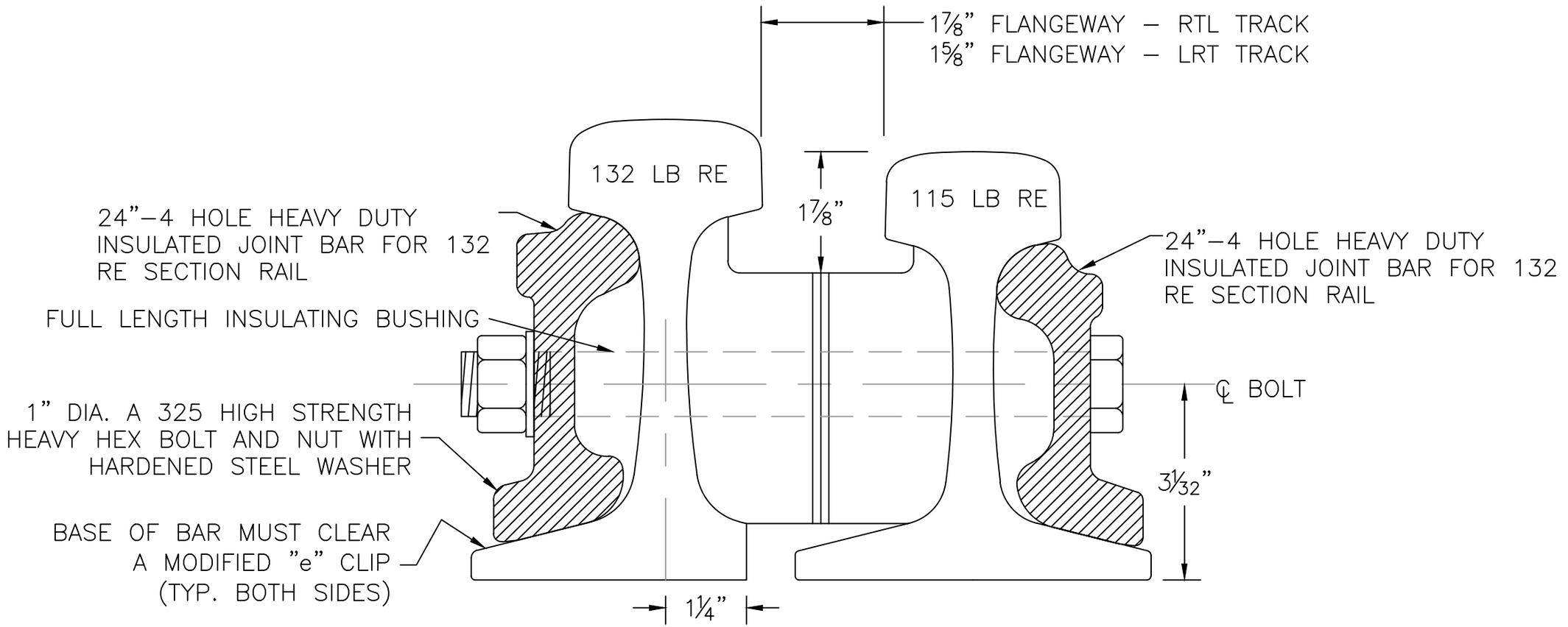


NOTES:

1) BAR FOR OUTSIDE OF ASSEMBLY TO BE STANDARD, HEADFREE 24" LONG WITH PUNCHING FOR FOUR 1" OVAL NECK, HEAT TREATED CARBON STEEL TRACK BOLTS.
2) BAR ON 115 RE SIDE OF ASSEMBLY TO BE MACHINED STEEL WITH TRUE FISHING FOR 132 RE RAIL. BAR TO BE 1" THICK X 24" LONG WITH FOUR 1 1/16" CIRCULAR HOLES
3) BOTH BARS TO BE IN ACCORDANCE WITH CURRENT AREMA "SPECIFICATIONS FOR QUENCHED CARBON STEEL JOINT BARS" AS MODIFIED HEREIN.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY	M.O.W. DIVISION	DRG. NO. 330
		APR. 18, 2013 ISSUE DATE / 0 ISSUE NO.

132 RE RESTRAINING RAIL JOINT DETAILS



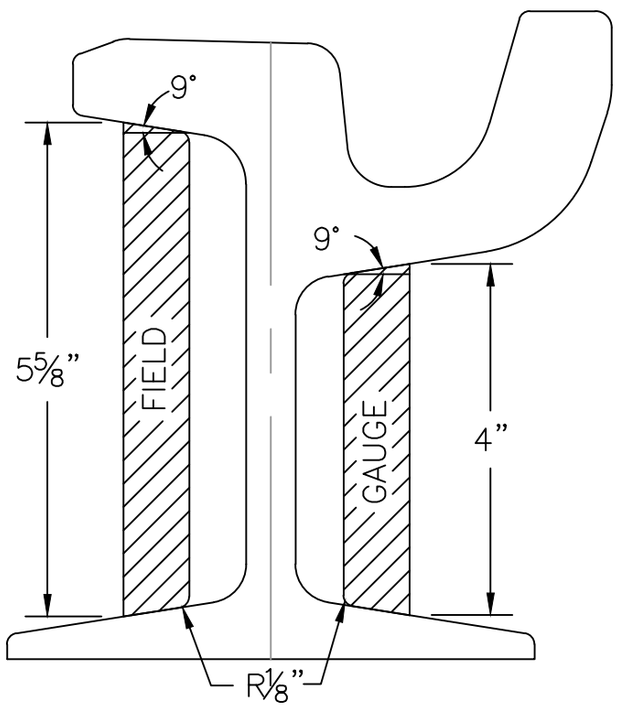
REFER TO MBTA SPECIFICATION FOR "INSULATED JOINT BARS" IN THE BOOK OF STANDARD TRACK MATERIAL SPECIFICATIONS.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY	M.O.W. DIVISION	DRG. NO. 335
		APR. 18, 2013 (0)
		ISSUE DATE ISSUE NO.

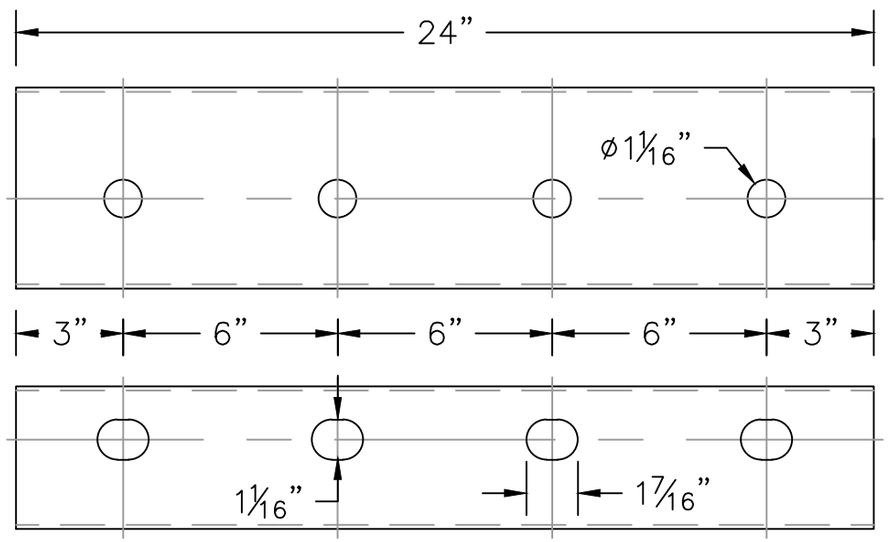
SPECIAL INSULATED JOINT 115 RE WITH 132 RESTRAINING RAIL

MGR. TRACK ENGINEERING

DIRECTOR – M.O.W.



FIELD SIDE BAR



GAUGE SIDE BAR

NOTES:

1) CHEMICAL COMPOSITION OF STEEL TO BE IN ACCORDANCE WITH CURRENT AREMA "SPECIFICIATIONS FOR QUENCHED CARBON STEEL JOINT BARS".

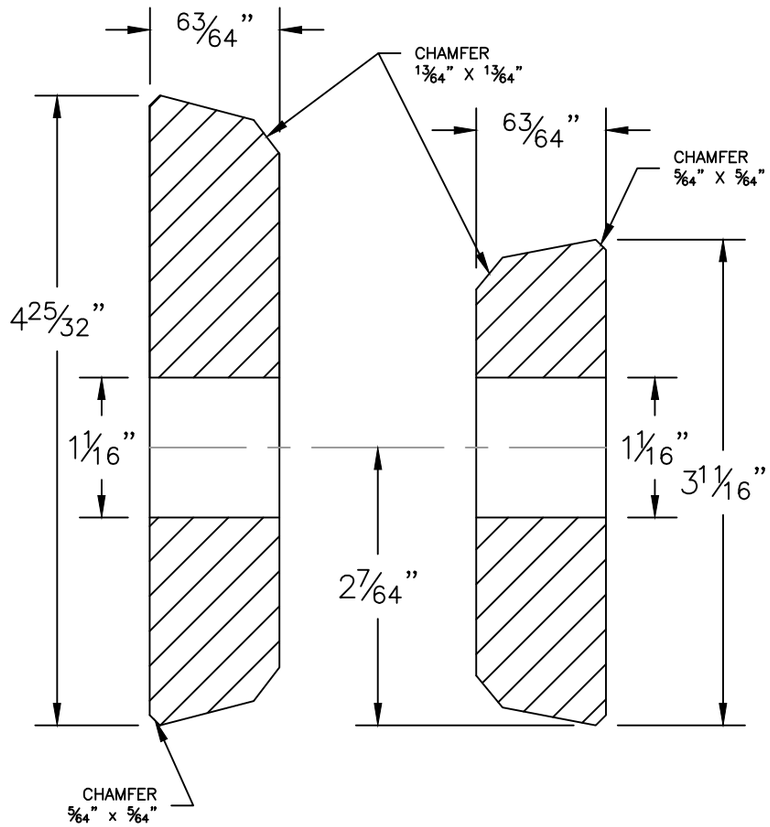
2) BOTH FIELD SIDE AND GAGE SIDE BARS TO BE 1¼" THICK AND OTHERWISE DIMENSIONALLY AS INDICATED.

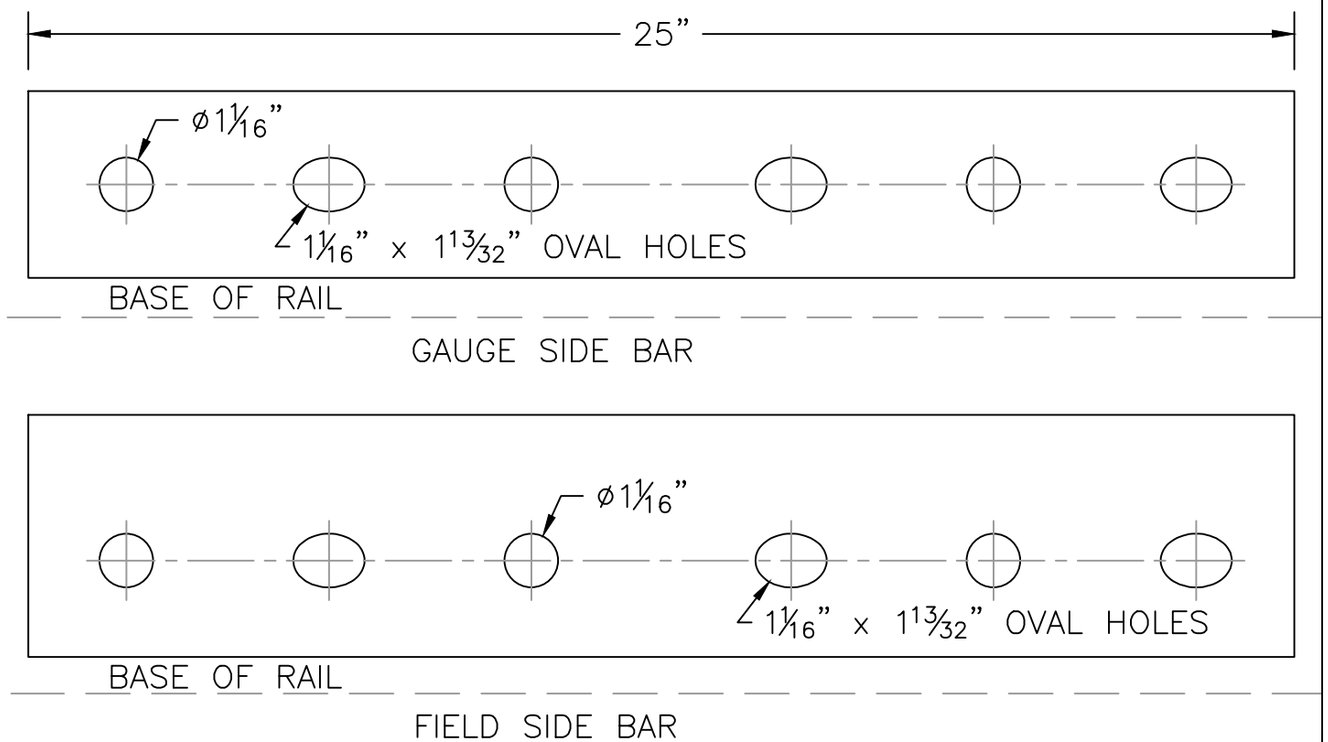
MASSACHUSETTS BAY TRANSPORTATION AUTHORITY	M.O.W. DIVISION	DRG. NO. 340
		APR. 18, 2013 ISSUE DATE / 0 ISSUE NO.

JOINT BAR DETAILS FOR 149# & 128# RAIL

MGR. TRACK ENGINEERING

DIRECTOR – M.O.W.





NOTES:

1) CHEMICAL COMPOSITION OF STEEL TO BE IN ACCORDANCE WITH CURRENT AREMA "SPECIFICIATIONS FOR QUENCHED CARBON STEEL JOINT BARS".

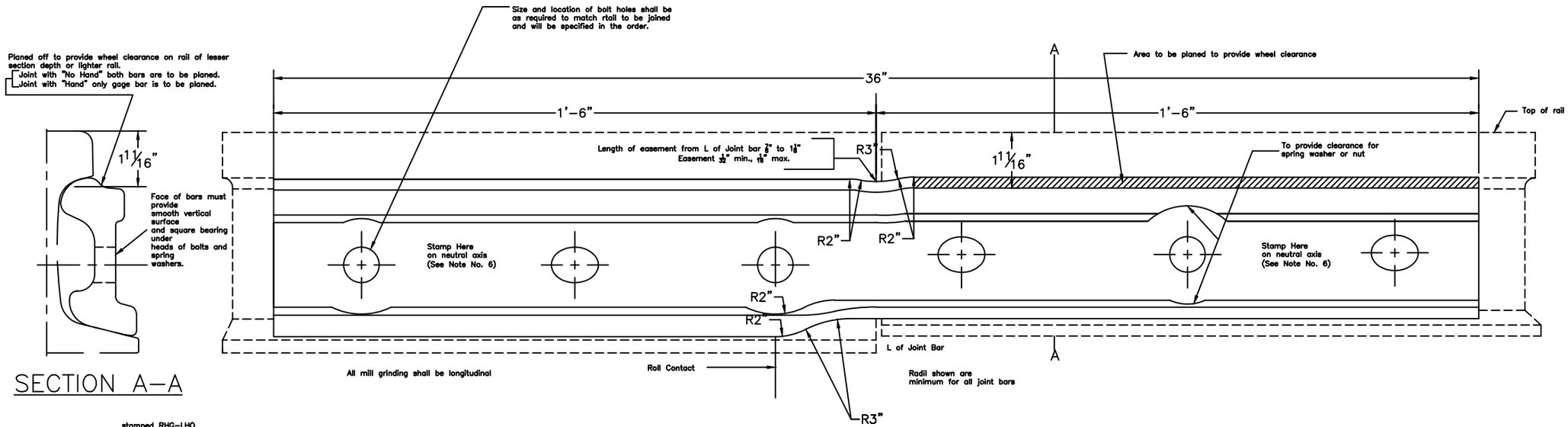
2) HOLE DIMENSIONS SHOWN ON FIELD AND GAUAE SIDE ELEVATIONS ARE OUTSIDE FACES OF BARS.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY	M.O.W. DIVISION	DRG. NO. 345
		APR. 18, 2013 ISSUE DATE / 0 ISSUE NO.

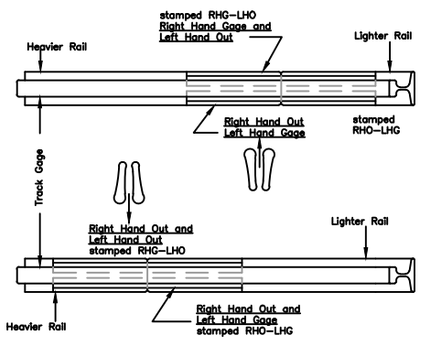
JOINT BAR DETAILS FOR GGR-118 RAIL

MGR. TRACK ENGINEERING

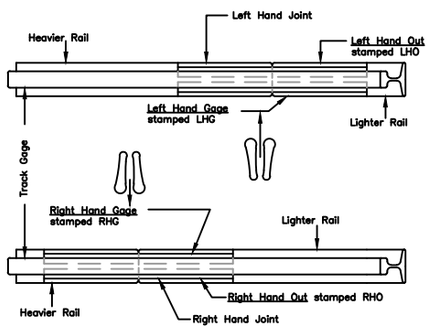
DIRECTOR – M.O.W.



SECTION A–A



JOINTS – NO HAND



JOINTS – WITH A HAND

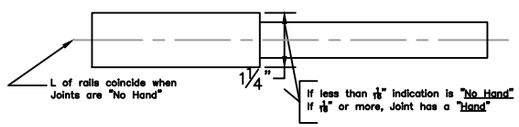
Proper designations for joint bars are shown underlined

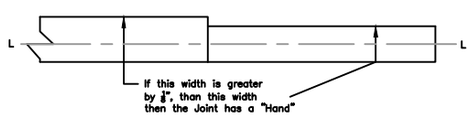
NOTES:

1. All joint bars shall conform to current AREMA specifications for quenched Carbon Steel Joint Bars.
2. Each joint to consist of two bars. Bars to be furnished without any provisions for rail wear.
3. Joint bars to be 36" long unless specifically stated otherwise. Joint bars to be forged, heat–treated and shaped to the configuration of standard joint bars for the respective rail sections.
4. Fabricate bars so distance between outer faces of bars will be the same as for standard joint bars for the respective rail sections so that standard joint belts may be used.
5. All bars shall be stamped with depressed characters at least 1/2" high to show the manufacturer's name, year manufactured and connecting rail sections at each end. Bars for "No Hand" joints to be stamped "RHO–LHG" or "RHG–LHO" to indicate interchangeablility. Bars for "Hand" joints shall be stamped at shown on left.

TO DETERMINE HAND OF JOINT BAR

Stand between the rails (gage) of a track and face rails to be connected, ORDER –
LEFT HAND JOINT – when the heavier rail is on your left
RIGHT HAND JOINT – when the heavier rail is on your right





Even thought the width of the rail heads are equal or within the limites specified above, the indication is a "Hand" if one rail is vertical and one rail is continued.

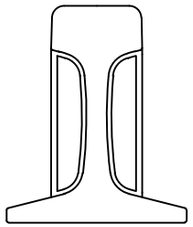
MASSACHUSETTS BAY TRANSPORTATION AUTHORITY	M.O.W. DIVISION	DRG. NO. 350
		APR. 18, 2013 (0)
		ISSUE DATE ISSUE NO.

COMPROMISE JOINT BARS FOR TEE RAIL

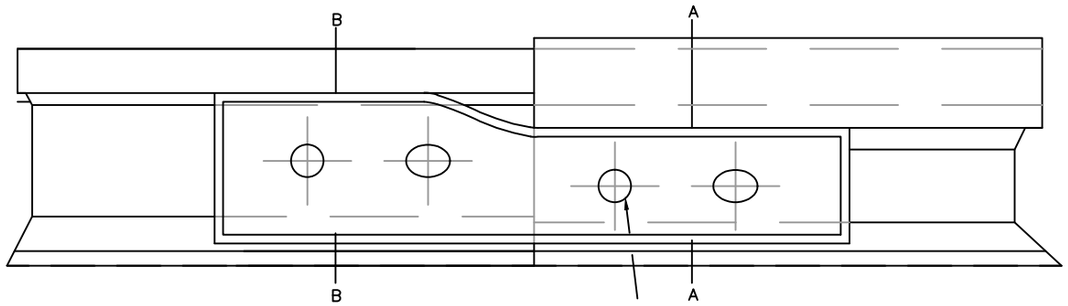
MGR. TRACK ENGINEERING

DIRECTOR – M.O.W.

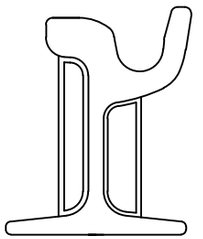
SECTION B–B



Reference 132 RE
restraining raild "D" bar
details –– Dwg. No. 330



Section A–A

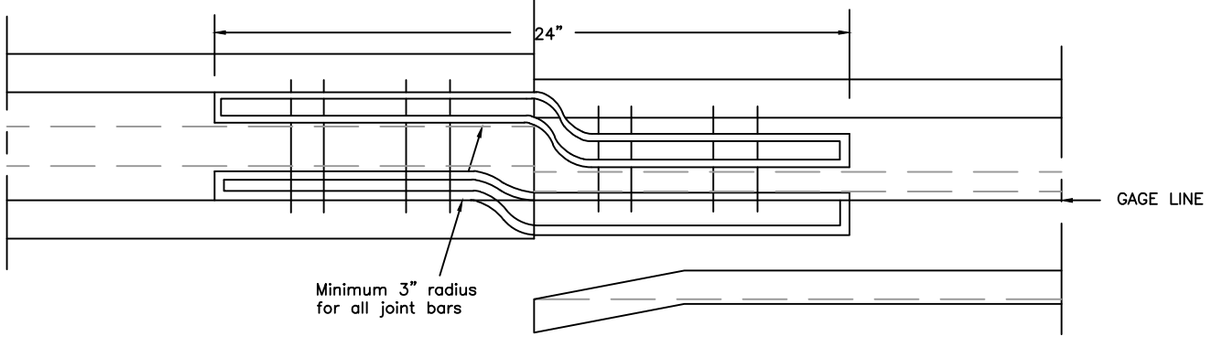


Reference girder
rail joint bar
details –– Dwg. Nos.
340 and 345

TEE RAIL PROFILE
115 RE SHOWN

GIRDER RAIL PROFILE
GGR–118 SHOWN

Size and location of bolt
holes as required to match
rail sections to be joined.



NOTES:
1. All joint bars to be machined or forged, heat–treated and shaped to the web configuration of rails specified as shown. Bars to be 24" long unless otherwise specified.
2. Bars shall conform to current AREMA specifications for Quenched Carbon Steel Joint Bars.
3. Reference Drawing No. 350 in MBTA Book of Standard Trackwork Plans.
4. Bar nomenclature and stamping per Dwg. No. 350.

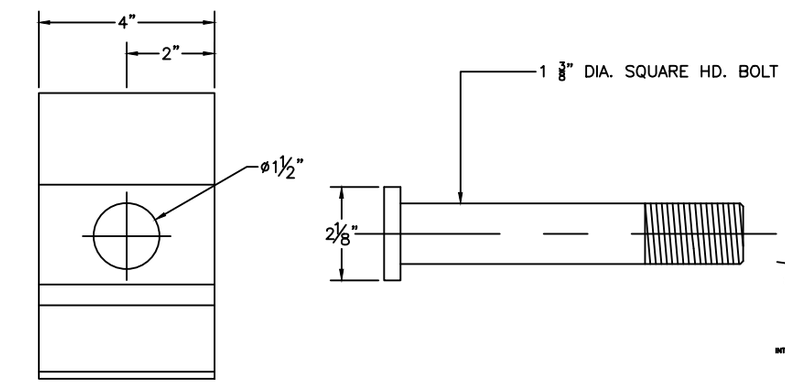
MASSACHUSETTS BAY TRANSPORTATION AUTHORITY	M.O.W. DIVISION	DRG. NO. 355
		APR. 18, 2013 (0)
		ISSUE DATE ISSUE NO.

COMPROMISE JOINT BARS FOR TEE RAIL TO GIRDER RAIL

MGR. TRACK ENGINEERING

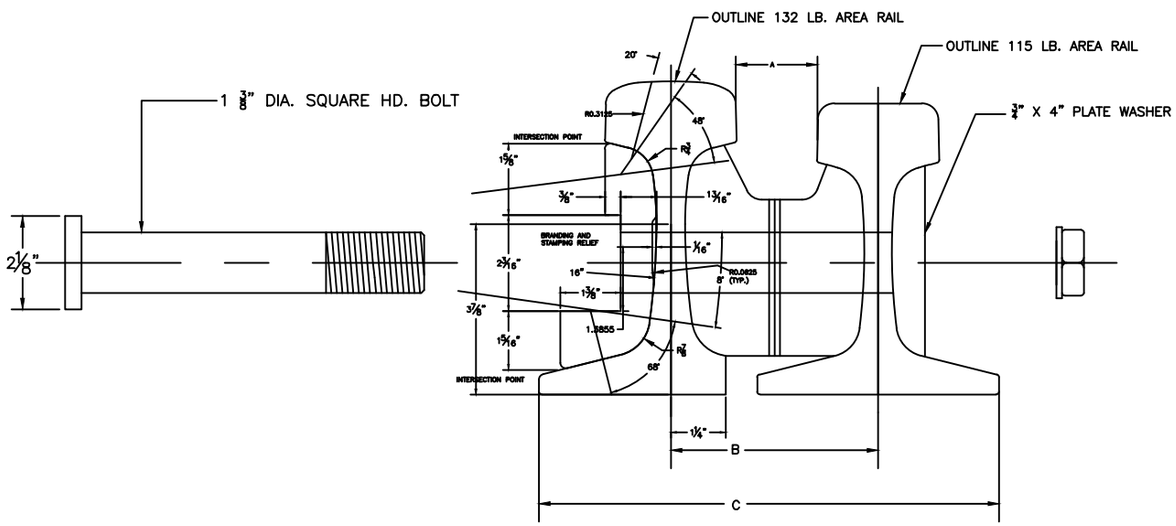
DIRECTOR – M.O.W.

ADJUSTABLE SPACER BLOCK ASSEMBLY



SIDE VIEW

SCALE: ¼ FULL SIZE



CROSS SECTION VIEW

SCALE: ¼ FULL SIZE

TABLE OF DIMENSIONS

	THEORETICAL DIMENSIONS *A	B	C	SHIMS
Surface Lines (Green Line)	1 5/8"	4 15/32"	10 7/32"	1 @ ¼"
Rapid Transit (Red, Orange, Blue)	1 7/8"	4 23/32"	10 15/32"	2 @ ¼"

(Tolerance of Completed Assembly =+/− 1/16")

*Restraining rail standard for surface line curves 100' Rad. and above but less than 1,000' Rad.; rapid transit curves 150' Rad. and above but less than 1,000' Rad.

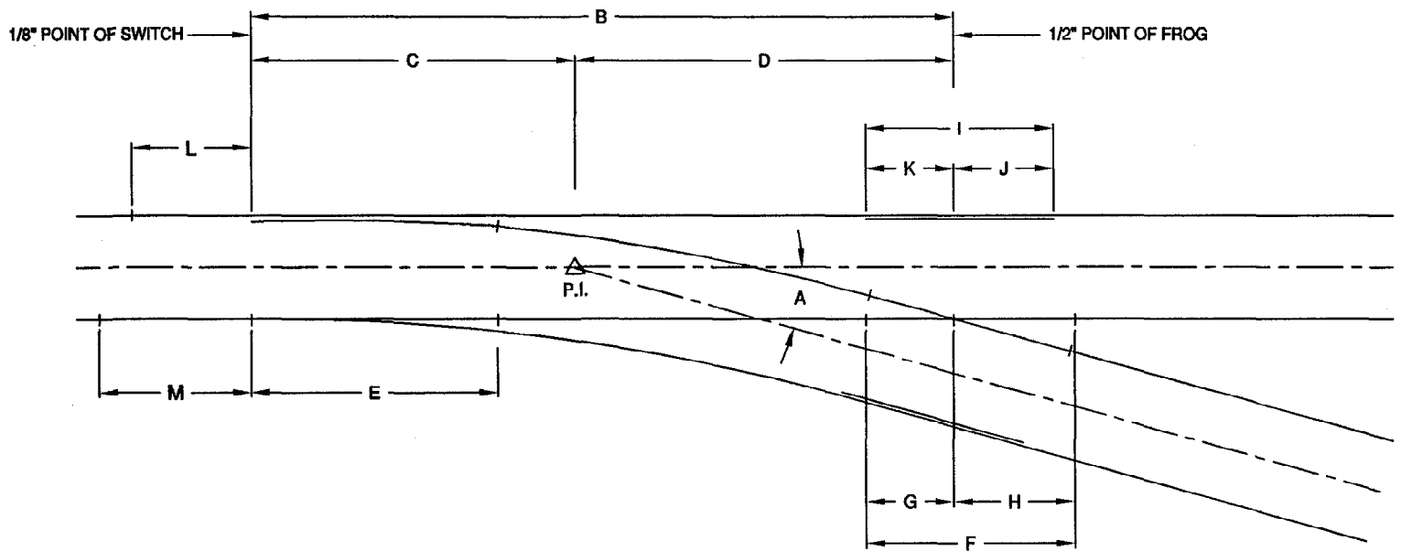
Bolts and spacer blocks typ. 30" o.c. located midway between ties or fasteners.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY	M.O.W. DIVISION	DRG. NO. 370
		APR. 18, 2013 ISSUE DATE — 0 ISSUE NO.

ADJUSTABLE SPACER BLOCK ASSEMBLY WITH RESTRAINING RAIL BOLT

MGR. TRACK ENGINEERING

DIRECTOR – M.O.W.



A = FROG ANGLE
B = ACTUAL LEAD
C = POINT OF INTERSECTION TO 1/8" POINT OF SWITCH
D = POINT OF INTERSECTION TO 1/2" POINT OF FROG
E = LENGTH OF SWITCH POINT
F = LENGTH OF FROG
G = TOE LENGTH
H = HEEL LENGTH
I = GUARD RAIL LENGTH
J = 1/2" FROG POINT TO END OF GUARD RAIL
K = 1/2" FROG POINT TO END OF GUARD RAIL
L = 1/8" POINT OF SWITCH TO END OF STOCK RAIL
M = 1/8" POINT OF SWITCH TO END OF STOCK RAIL

TURNOUT	ANGLE	DIMENSIONS													
NUMBER	A	B	C	D	E	F	G	H	I	J	K	L	M	L	M
6	9°-31'-38"	49'-9"	21'-3"	28'-6"	13'-0"	11'-0"	3'-9"	7'-3"	13'-0"	4'-7 1/2"	8'-4 1/2"	5'-7"	7'-3"	12'-3"	13'-11"
8	7°-09'-10"	58'-11 1/8"	20'-11 1/8"	38'-0"	13'-0"	13'-0"	5'-1"	7'-11"	13'-0"	5'-8 1/2"	7'-3 1/2"	5'-7"	7'-3"	12'-3"	13'-11"
10	5°-43'-29"	78'-11"	31'-5"	47'-6"	19'-6"	16'-6"	6'-5"	10'-1"	13'-0"	6'-9 1/2"	6'-2 1/2"	5'-7"	7'-3"	12'-3"	13'-11"
12	4°-46'-19"	87'-3 1/2"	30'-3 9/16"	57'-0"	19'-6"	20'-4"	7'-9 1/2"	12'-6 1/2"	16'-6"	7'-10 1/2"	8'-7 1/2"	5'-7"	7'-3"	12'-3"	13'-11"
15	3°-49'-06"	113'-5"	42'-2"	71'-3"	26'-0"	24'-4 1/2"	9'-5"	14'-11 1/2"	16'-6"	9'-11"	6'-7"	5'-7"	7'-3"	12'-3"	13'-11"
20	2°-51'-51"	156'-0 1/2"	61'-0 1/2"	95'-0"	39'-0"	30'-10 1/2"	11'-0 1/2"	19'-10"	20'-0"	12'-7 1/2"	7'-4 1/2"	5'-7"	7'-3"	12'-3"	13'-11"
												TYPE "S"		TYPE "L"	

STANDARD TURNOUTS WITH CURVED SWITCH POINTS

NOTE: DIMENSIONS GIVEN ARE BASED ON TRACK GAGE OF 4' - 8 1/2" THROUGHOUT.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

M.O.W. DIVISION

DRG. NO. 400

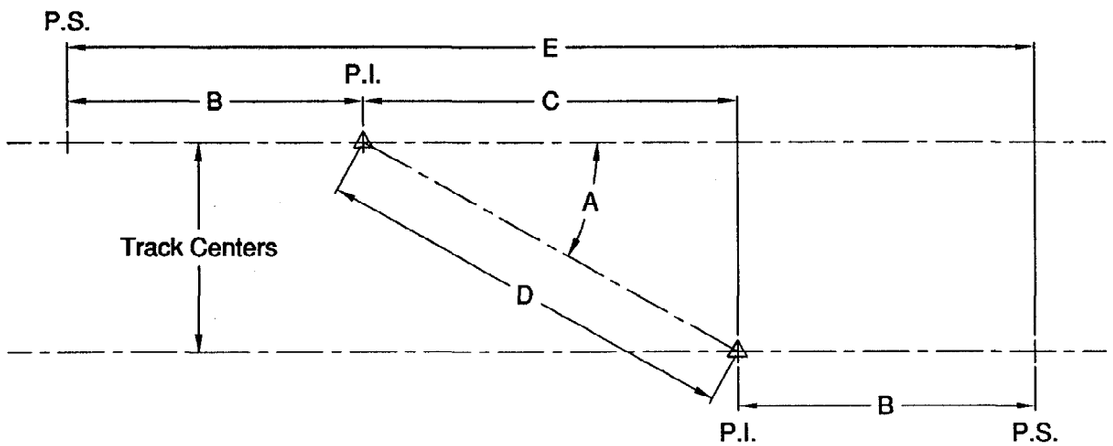
DEC. 1, 2000 (0)

ISSUE DATE ISSUE NO.

STANDARD TURNOUTS GENERAL LAYOUT

MGR. TRACK ENGINEERING

DIRECTOR - M.O.W.



FOR TRACK CENTERS OTHER THAN SHOWN IN TABLE.

C = TRACK CENTERS / TANGENT ANGLE A

D = TRACK CENTERS / SINE ANGLE A

E = DIMENSIONS C + 2 B

FROG #	TANGENT	SINE
6	0.167831	0.165516
8	0.125492	0.124516
10	0.100254	0.099754
15	0.066741	0.066593
20	0.050031	0.049968

TRACK CENTERS MUST BE CALCULATED USING DECIMALS OF A FOOT.

TURNOUT NUMBER	ANGLE A	B	C TRACK CENTERS			D TRACK CENTERS			E TRACK CENTERS		
			11'-0"	12'-0"	13'-0"	11'-0"	12'-0"	13'-0"	11'-0"	12'-0"	13'-0"
6	9'- 31'- 38"	21'-3"	65'-6 1/2"	71'-6"	77'-5 1/2"	66'-5 1/2"	72'-6"	78'-6 1/2"	108'-0 1/2"	114'-0"	119'-11 1/2"
8	7'- 09'- 10"	20'-11 3/16"	87'-7 7/8"	95'-7 1/2"	103'-7 1/8"	88'-4 1/8"	96'-4 1/2"	104'-4 7/8"	129'-6 1/4"	137'-5 7/8"	145'-5 1/2"
10	5'- 43'- 29"	31'-5 1/16"	109'-8 3/4"	119'-8 7/16"	129'-8 1/8"	110'-3 5/16"	120'-3 5/8"	130'-3 15/16"	172'-6 7/8"	182'-6 9/16"	192'-6 1/4"
12	4'- 46'- 19"	30'-3 9/16"	109'-8 3/4"	119'-8 7/16"	129'-8 1/8"	110'-3 5/16"	120'-3 5/8"	130'-3 15/16"	192'-4 3/8"	204'-4 1/8"	216'-3 7/8"
15	3'- 49'- 06"	42'-2 1/16"	164'-9 13/16"	179'-9 9/16"	194'-9 3/8"	165'-2 3/16"	180'-2 3/8"	195'-2 9/16"	249'-1 15/16"	264'-1 11/16"	279'-1 1/2"
20	2'- 51'- 51"	61'-0 9/16"	219'-10 3/8"	239'-10 1/16"	259'-10 1/16"	220'-1 11/16"	240'-1 13/16"	260'-2"	341'-11 1/2"	361'-11 3/16"	381'-11 3/16"

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

M.O.W. DIVISION

DRG. NO. 405

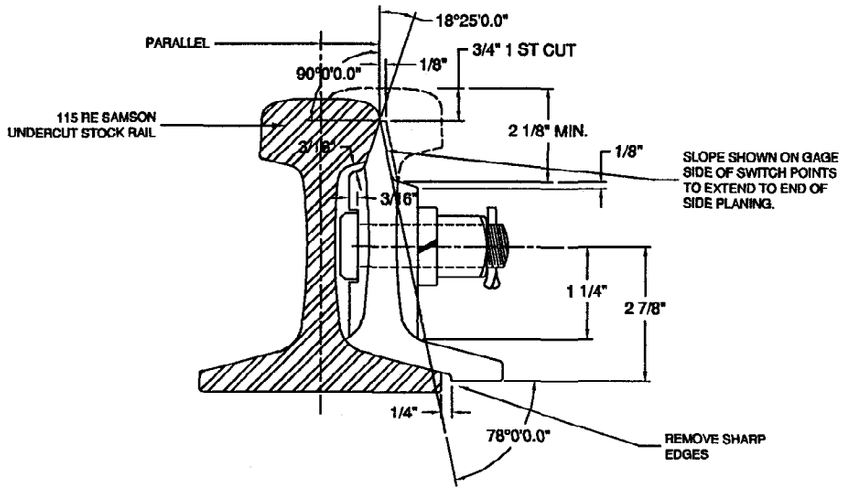
DEC. 1, 2000 (0)

ISSUE DATE ISSUE NO.

STANDARD CROSSOVERS GENERAL LAYOUT

MGR. TRACK ENGINEERING

DIRECTOR - M.O.W.

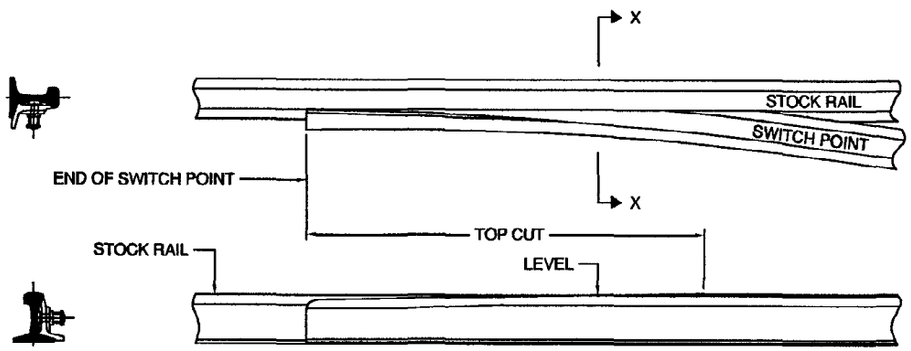


DETAIL 5100 (FOR AAR WHEELS)

SCALE: 1/4 FULL

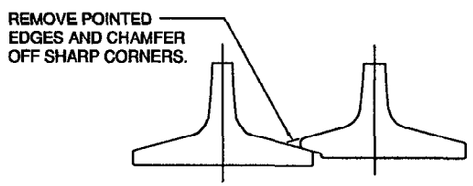
NOTE : ABOVE DETAIL USED ON ALL RAPID TRANSIT LINES. (EXCLUDES GREEN & MATTAPAN LINES)

REINFORCING BARS TO BE 1/2" THICK; SECURED BY 3/4" RIVETS IN CENTER LINE OF WEB EXCEPT FOR HOLES WITH 1" DIAMETER BOLTS AS INDICATED ON PLAN NUMBERS 121-62, 123-62, 125-62 & 127-62 IN AREMA PORTFOLIO OF TRACKWORK PLANS.



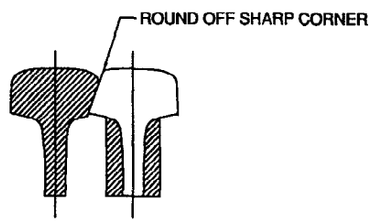
SWITCH POINT PLANING ELEVATION & PLAN VIEWS

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



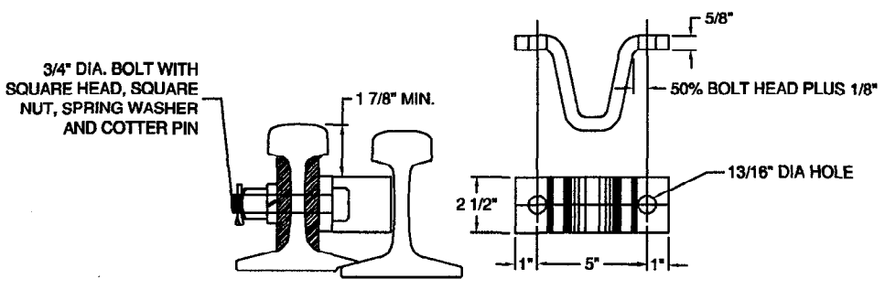
BASE DETAIL PLAN

SCALE: 3/16 FULL



CROSS SECTION X-X

SCALE: 3/16 FULL



POINT STOP DETAIL 2024

SCALE: 1/8 FULL

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

M.O.W. DIVISION

DRG. NO. 410

DEC. 1, 2000 (0)

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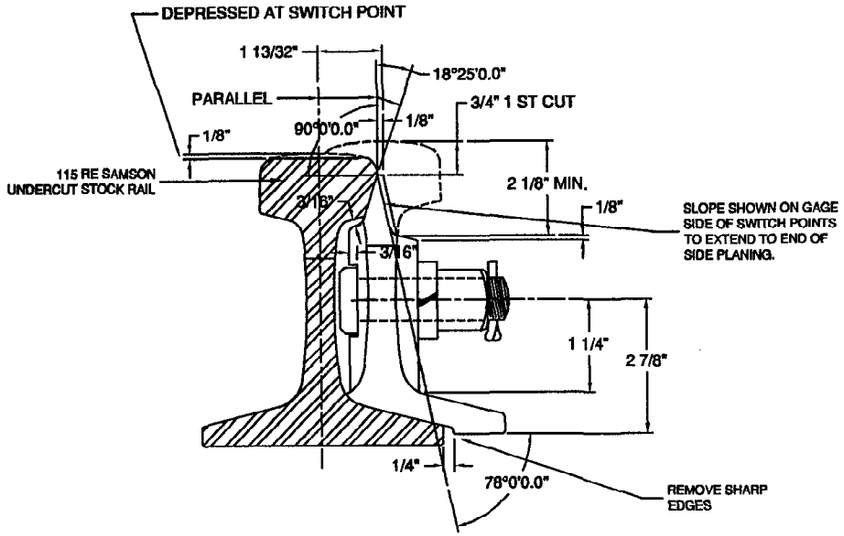
STANDARD SWITCH POINT DETAILS

DETAIL 5100, SWITCH POINT PLANING & RAIL STOP

MGR. TRACK ENGINEERING

DIRECTOR - M.O.W.

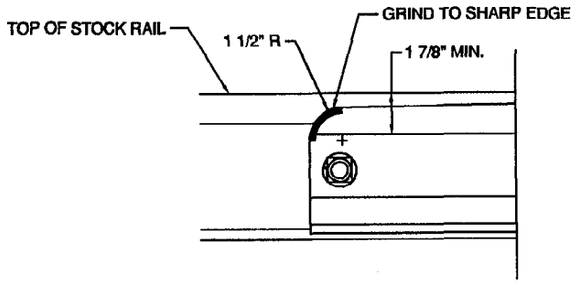


MODIFIED 5100 DETAIL (FOR LRT WHEELS)

SCALE: 1/4 FULL

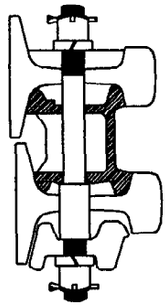
NOTE : ABOVE DETAIL USED ON ALL LIGHT RAIL LINES. (GREEN & MATTAPAN LINES)

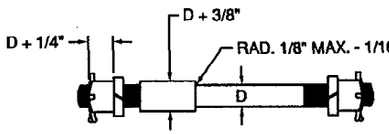
REINFORCING BARS TO BE 1/2" THICK; SECURED BY 3/4" RIVETS IN CENTER LINE OF WEB EXCEPT FOR HOLES WITH 1" DIAMETER BOLTS AS INDICATED ON PLAN NUMBERS 121-62, 123-62, 125-62 & 127-62 IN AREMA PORTFOLIO OF TRACKWORK PLANS.



SWITCH POINT END / SIDE VIEW

SCALE: 1/8 FULL

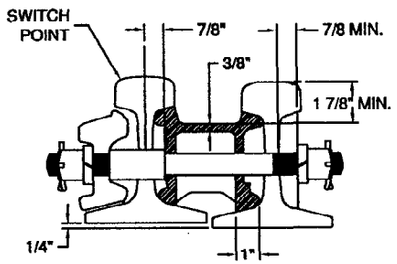




DETAIL OF SHOULDER BOLT

SCALE: 1/8 FULL

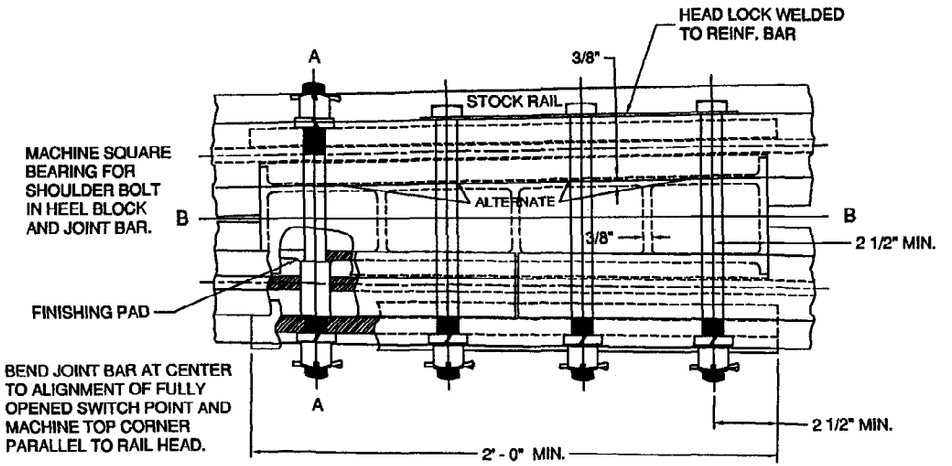
D = DIAMETER OF BOLT
ALLOY STEEL S.A.E. 4130 OR EQUIVALENT
HEAT TREATED - BRINELL MIN. 275



CROSS SECTION A - A

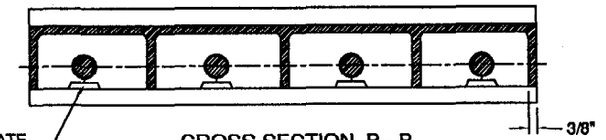
SCALE: 1/8 FULL

DETAIL 2125 OFFSET HEEL



HEEL JOINT ASSEMBLY

SCALE: 1/8 FULL



CROSS SECTION B - B

SCALE: 1/8 FULL

HEEL BLOCK - CAST OR WELDED, CLASS B, HARD. FOR FIT, SEE PLANS BASIC NO. 1010 AND 1011.
BOLTS - HIGH TENSILE STEEL AND GENERALLY PER SECTION 1402, APPENDIX A.
DIAMETER OF BOLTS AND SPACING OF HOLES SHALL CONFORM TO JOINT BAR DETAIL SPECIFIED, EXCEPT THAT WHEN SIX HOLE BARS ARE DESCRIBED, THE BLOCK SHALL BE DESIGNED WITH FIVE HOLES. THE SIXTH HOLE TOWARD THE NARROW END BEING OMITTED AND THE JOINT BARS SHORTENED ACCORDINGLY.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

M.O.W. DIVISION

DRG. NO. 411

DEC. 1, 2000 (0)
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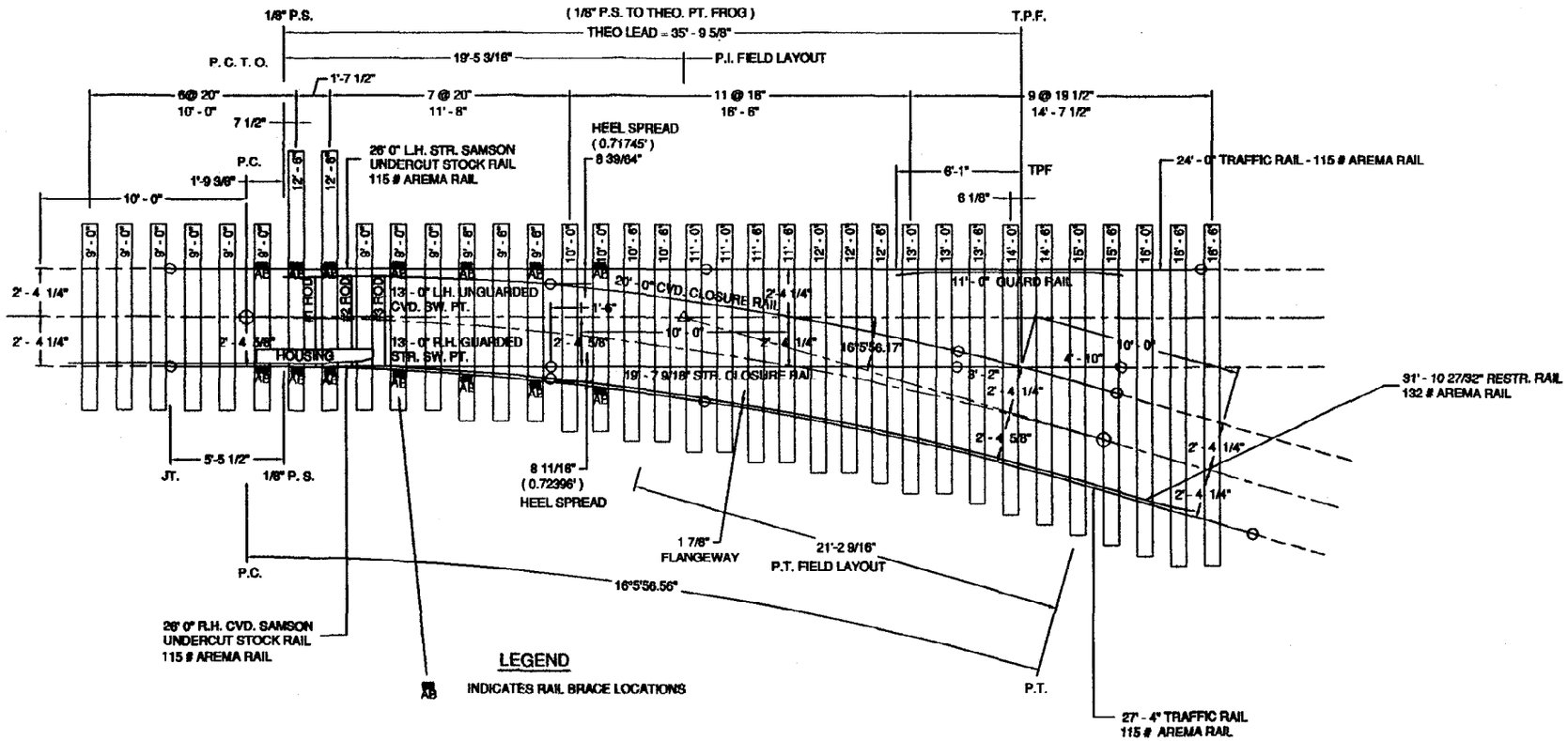
STANDARD SWITCH POINT DETAILS

MODIFIED DETAIL 5100 AND HEEL BLOCK ASSEMBLY

MGR. TRACK ENGINEERING

DIRECTOR - M.O.W.



150' C.R. R.H. TURNOUT (FULLY GUARDED)

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

NOTES

1. THIS TURNOUT USED ON RAPID TRANSIT LINES
2. GAGE TRANSITIONS IN TEN FOOT LENGTHS AS SHOWN.

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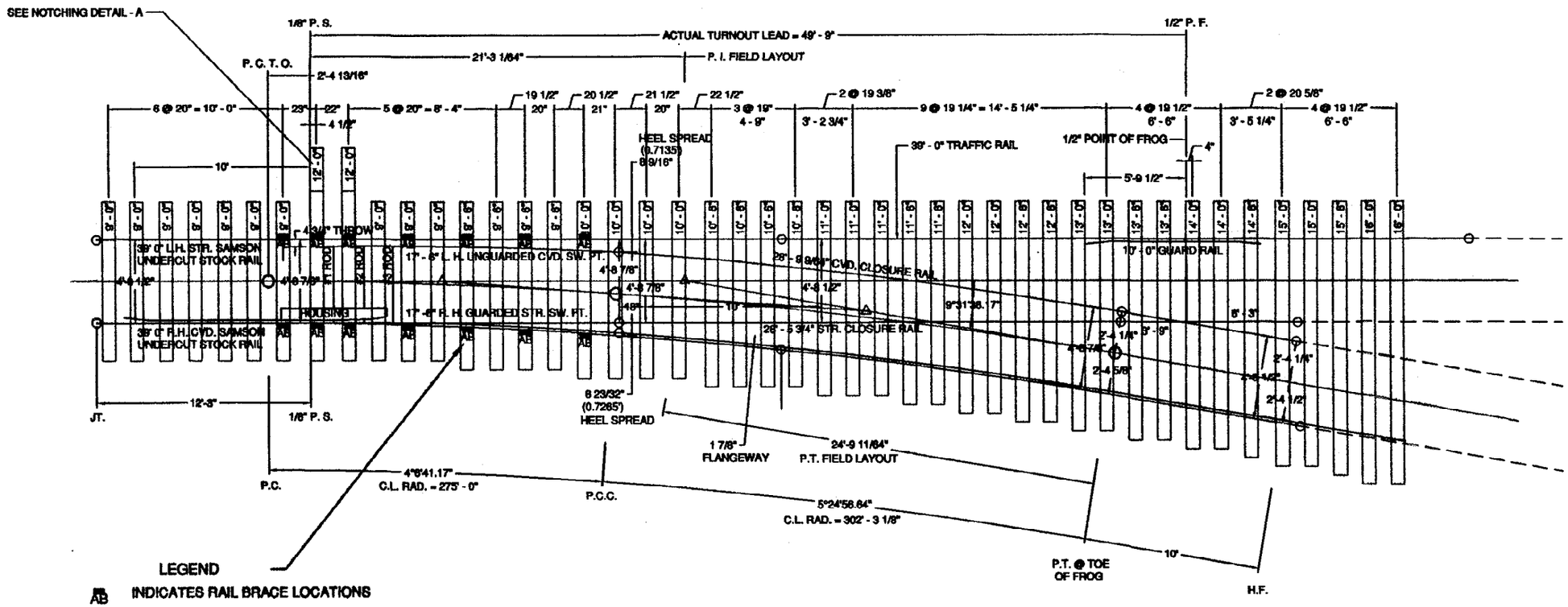
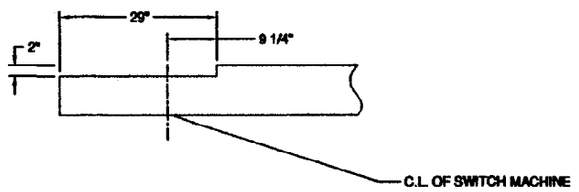
		ISSUE DATE ISSUE NO.

TRACKWORK PLAN FOR
150' C. R. TURNOUT
FULLY GUARDED DESIGN

MGR. TRACK ENGINEERING

DIRECTOR - M.O.W.





DETAIL - A

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

MODIFIED # 6 R.H. TURNOUT (FULLY GUARDED)

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

NOTES:

1. GAGE TRANSITIONS ALWAYS MADE ON INSIDE RAIL OF CURVE AND ON THROUGH SIDE ON STRAIGHT CLOSURE RAIL.
2. THIS TURNOUT USED ON RAPID TRANSIT LINES.

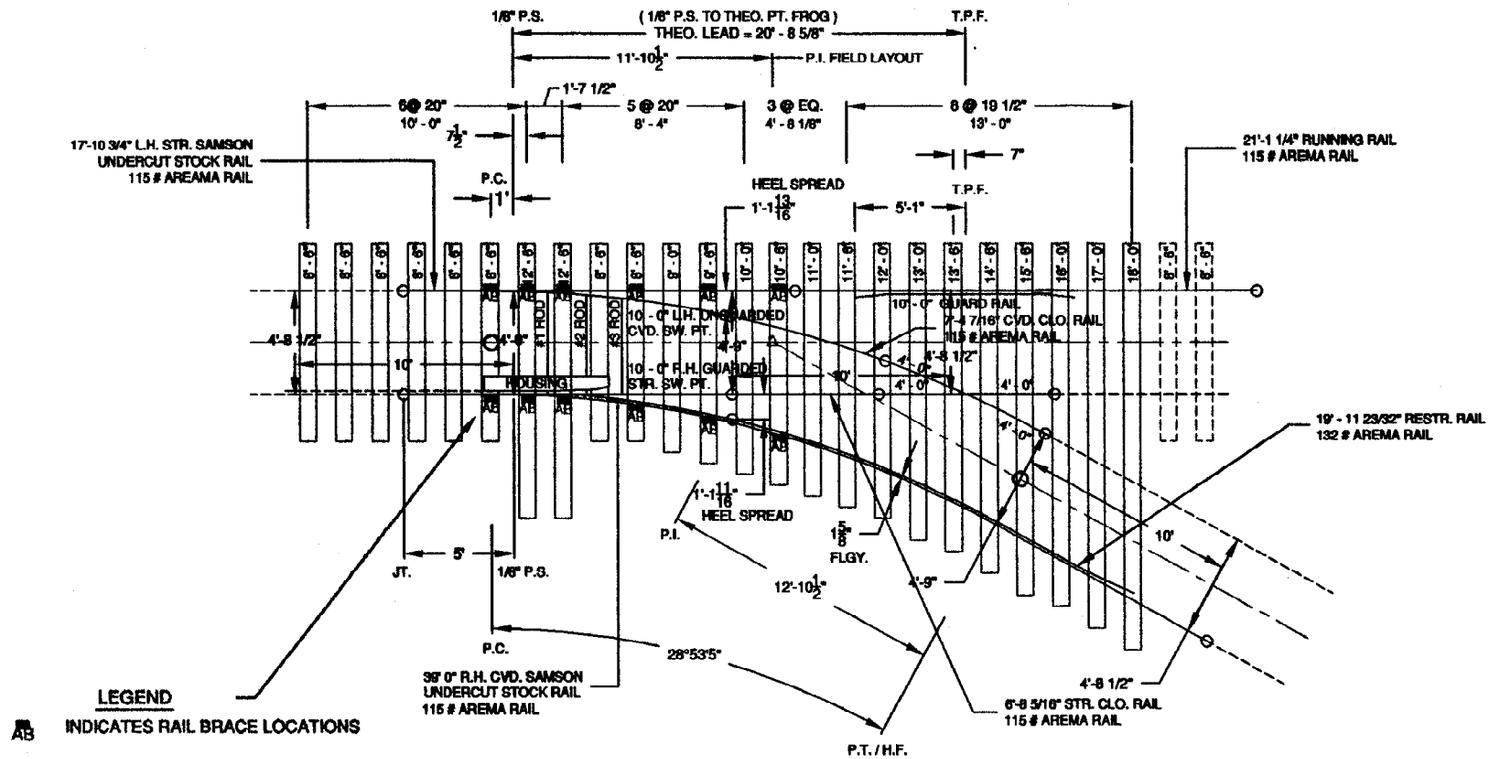
MASSACHUSETTS BAY TRANSPORTATION AUTHORITY	M.O.W. DIVISION	DRG. NO. 510
		JAN. 1, 2001 (ISSUE DATE) / 0 (ISSUE NO.)

AREMA MODIFIED # 6 TURNOUT (Compound Geometry)

FULLY GUARDED DESIGN

MGR. TRACK ENGINEERING

DIRECTOR - M.O.W.



50' C.R. R.H. TURNOUT

(FULLY GUARDED)

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

NOTES

1. THIS TURNOUT USED ON LIGHT RAIL TRACK.
2. GAGE TRANSITIONS IN TEN FOOT LENGTHS AS SHOWN.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

M.O.W. DIVISION

DRG. NO. 600

JAN. 1, 2001 (0)

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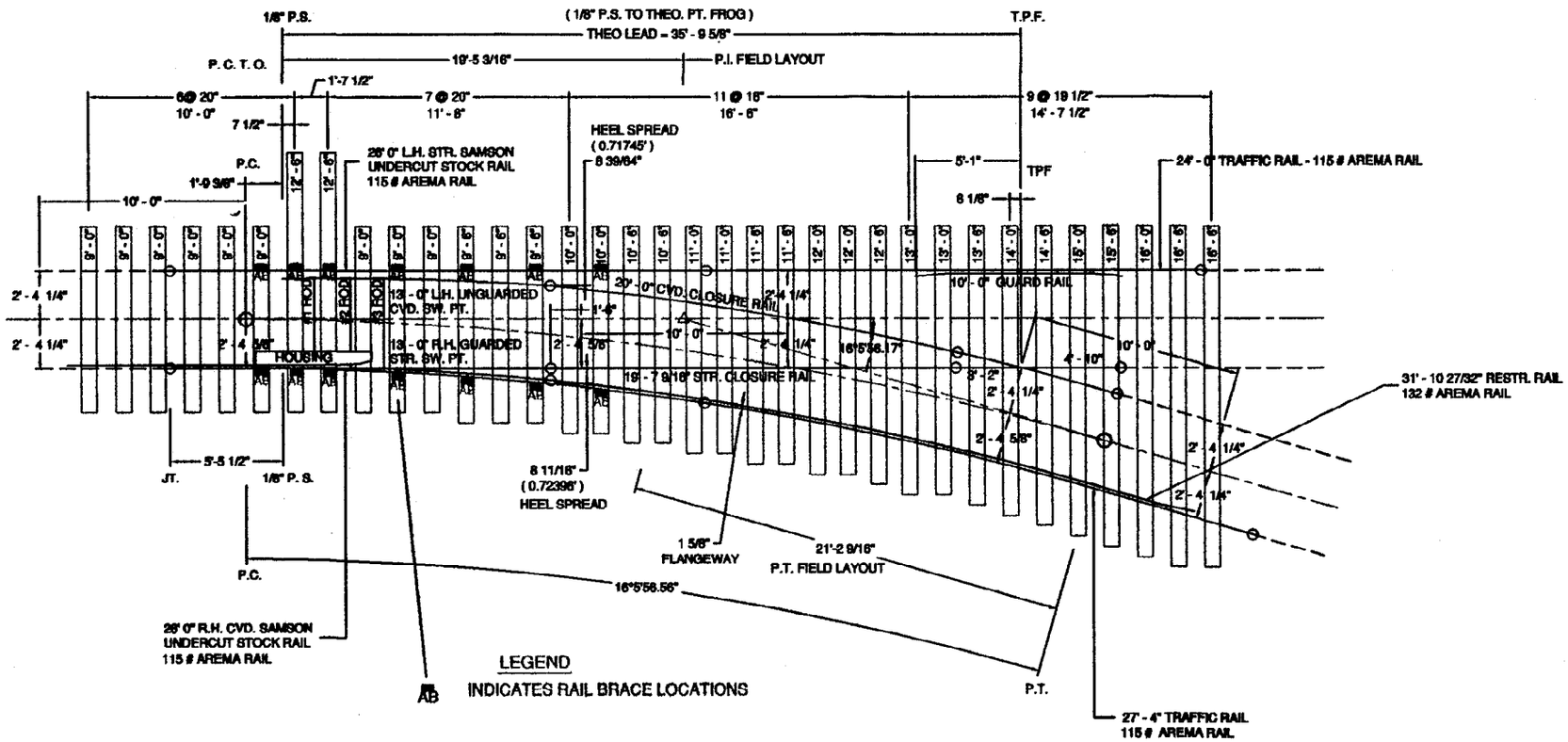
TRACKWORK PLAN FOR 50' C.R. TURNOUT FULLY GUARDED DESIGN - LRT

MGR. TRACK ENGINEERING

DIRECTOR - M.O.W.



150' C.R. R.H. TURNOUT (FULLY GUARDED)

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

NOTES

1. THIS TURNOUT USED ON LIGHT RAIL TRACK.
2. GAGE TRANSITIONS IN TEN FOOT LENGTHS AS SHOWN.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

M.O.W. DIVISION

DRG. NO. 615

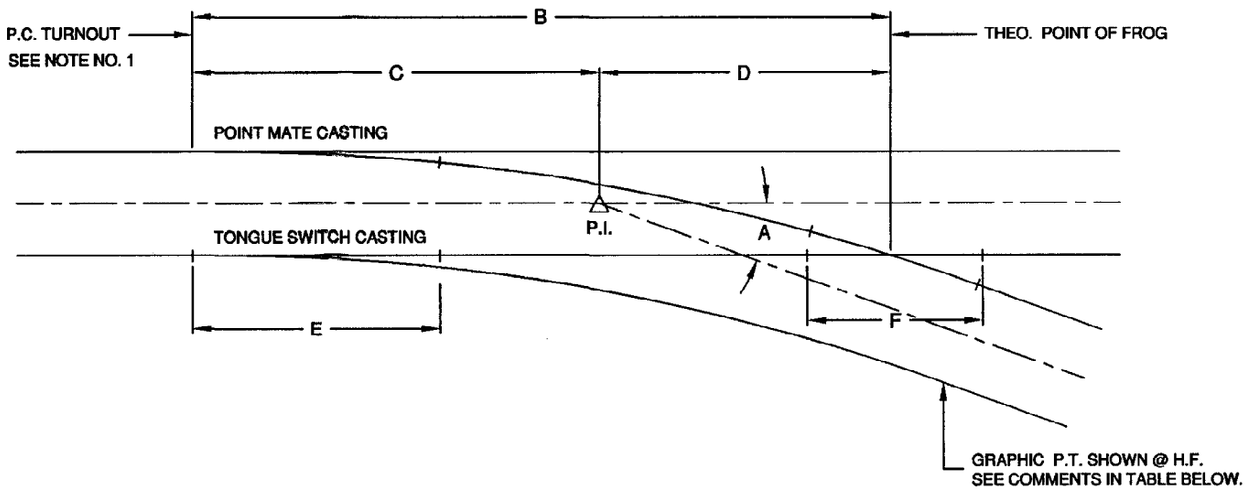
JAN. 1, 2001 (0)

ISSUE DATE ISSUE NO.

TRACKWORK PLAN FOR
150' C. R. TURNOUT
FULLY GUARDED DESIGN - LRT

MGR. TRACK ENGINEERING

DIRECTOR - M.O.W.



A = FROG ANGLE
B = THEORETICAL LEAD
C = P.C. TO P.I.
D = P.I. TO T.P.F.
E = CASTING LENGTH
F = FROG LENGTHS (ALL FROGS 8'- 0" WITH 4'- 0" ARMS)

SWITCH RADIUS	ANGLE	DIMENSIONS					COMMENTS
	A	B	C	D	E	F	
50'	28°-51'-45"	21' - 8 3/8"	12' - 10 3/8"	8' - 10"	T.S.=11'-0" P.M.=10'-0"	8' - 0"	P.T. @ HEEL OF FROG
75'	23°-03'-24"	26' - 6 7/8"	15' - 3 9/16"	11' - 3 5/16"	12' - 0"	8' - 0"	P.T. @ HEEL OF FROG
100' "A"	17°-26'-08"	30' - 8"	15' - 3 13/16"	15' - 4 3/16"	13' - 6"	8' - 0"	P.T. @ T.P.F.
100' "B"	19°-40'-30"	30' - 8"	17' - 3 7/8"	13' - 4 1/8"	13' - 6"	8' - 0"	P.T. @ HEEL OF FROG
150'	12°-46'-22"	37' - 7"	16' - 8 1/16"	20' - 10 15/16"	15' - 0"	8' - 0"	P.T. @ TOE OF FROG
200'	11°-15'-05"	43' - 4 3/4"	19' - 6"	23' - 10 3/4"	16' - 6"	8' - 0"	P.T. @ TOE OF FROG
EQUILATERAL TURNOUTS VARY WITH GEOMETRY, SEE M.O.W. STAFF FOR DETAILS							

STANDARD GIRDER RAIL TURNOUTS

NOTES

1. LOCATION OF P.C. TURNOUT, RELATIVE TO END OF CASTING, VARIES WITH GEOMETRY. REFER TO MBTA PLAN NO. 701 FOR DETAILS.
2. REFER TO APPENDIX 1 OF GIRDER RAIL SPECIAL TRACKWORK SPECIFICATION FOR GAGING AND FLANGEWAY CRITERIA.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

M.O.W. DIVISION

DRG. NO. 700

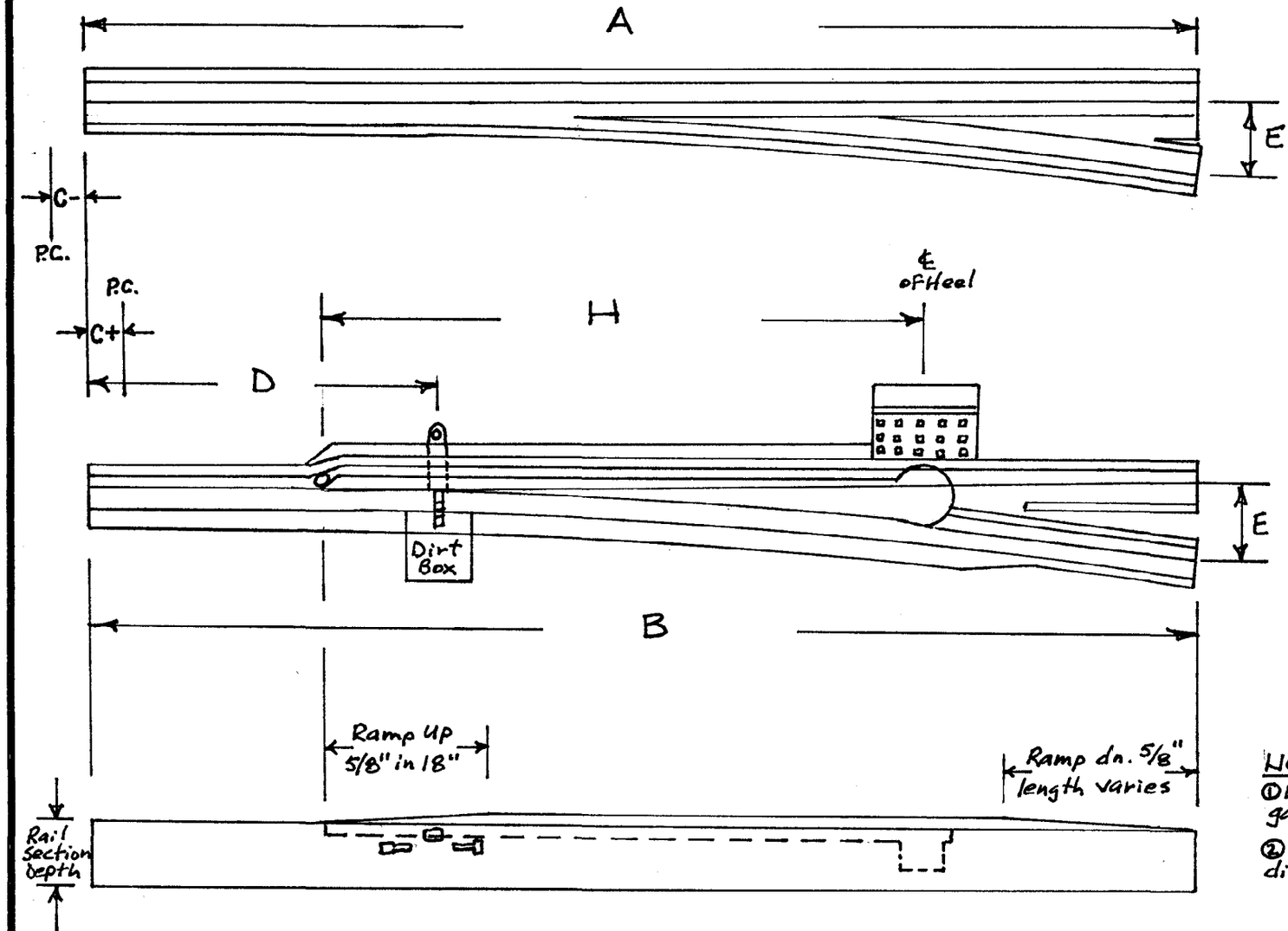
JAN. 1, 2001 (ISSUE DATE)

0 (ISSUE NO.)

TRACKWORK PLAN FOR GIRDER RAIL SWITCHES GENERAL LAYOUT

MGR. TRACK ENGINEERING

DIRECTOR - M.O.W.



Tongue Switch Elevation

Switch Radius	A	B	C	D	E	H
50'	10'	11'	+6"	3'-3"	TS 13 7/8" PM 10 1/8"	5'-5"
75'	12'	12'	0	3'-10"	TS 11 7/8" PM 10 7/8" 11 5/16	6'-2"
100'	13'-6"	13'-6"	0	4'-5"	TS 11 1/8" PM 10 1/2" 10 11/16	6'-11"
150'	15'	15'	-1'	4'-9"	TS 10 3/8" PM 9 7/8"	8'-2"
200'	16'-6"	16'-6"	-1'-6"	5'-5"	TS 9 7/8" PM 9 1/4"	9'-6"

Switch Radius	Switch Angle
50'	12°-37'-40"
75'	9°-27'-52"
100'	7°-55'-17"
150'	6°-12'-35"
200'	5°-13'-05"

NOTES:
① Heel Spread dimensions calculated with gage widened 1/4" to the outside. (56 3/4)
② Dimensional data for tongue mate fabrication different than for point mate. (See M.O.W. staff)

Ref. Plan Nos. 702 and 703 for sections and tongue switch details

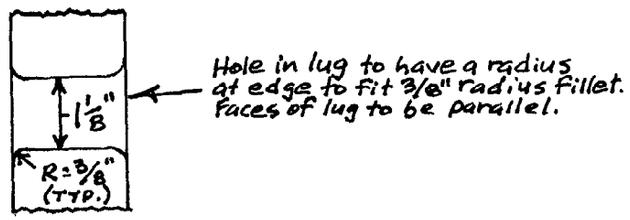
MASSACHUSETTS BAY TRANSPORTATION AUTHORITY | M.O.W. DIVISION | DWG. NO. 701 | ISSUE NO. — DATE

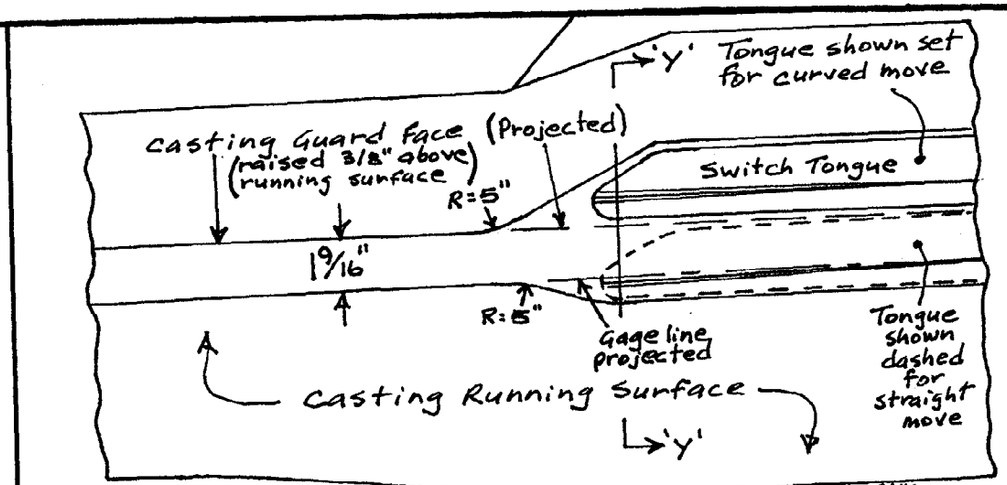
GIRDER RAIL SPECIAL TRACKWORK
- DETAILS -

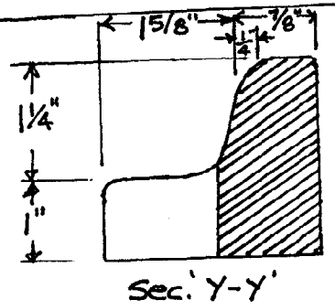
Mgr. Track Engineering | Director - M.O.W.

- Refer to 700 series dwgs. in Book of Standard Trackwork Plans
- Refer to Specification for Girder Rail Special Trackwork in Book of Standard Track Material Specs.

SEC. Z-Z

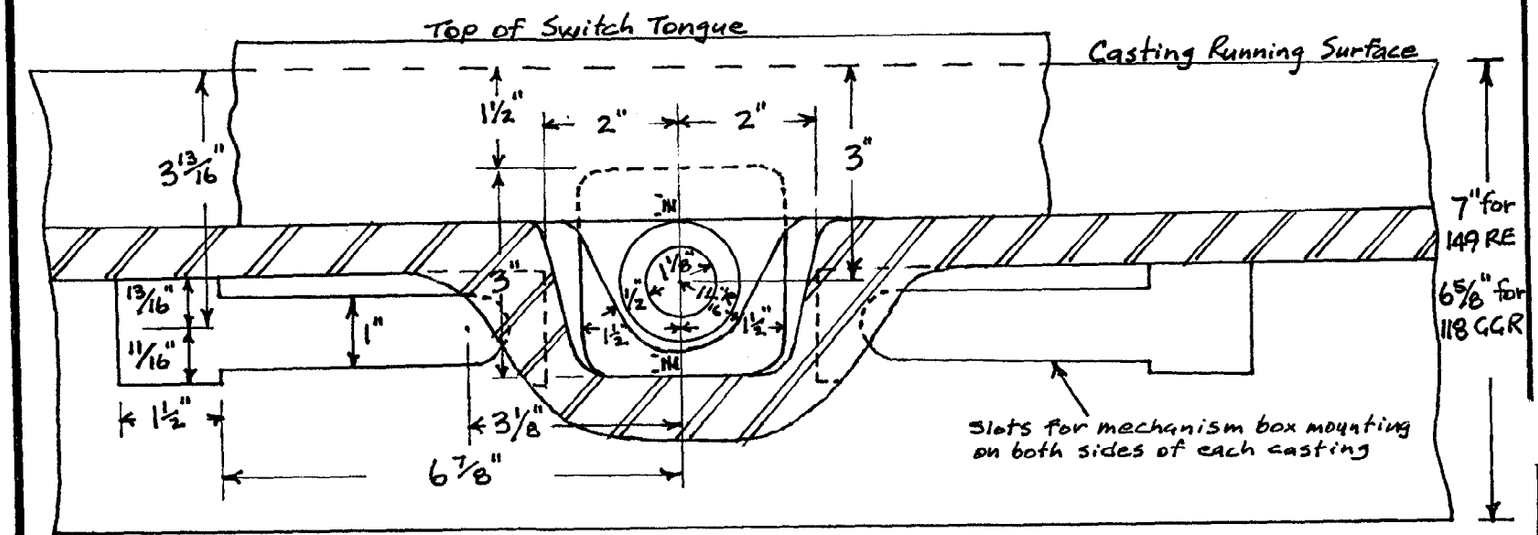






Sec. 'Y-Y'

Details at tip of sw. tongue



Section of Tongue Switch at Throw Connection

(Symmetric section - Dimensions apply both sides)

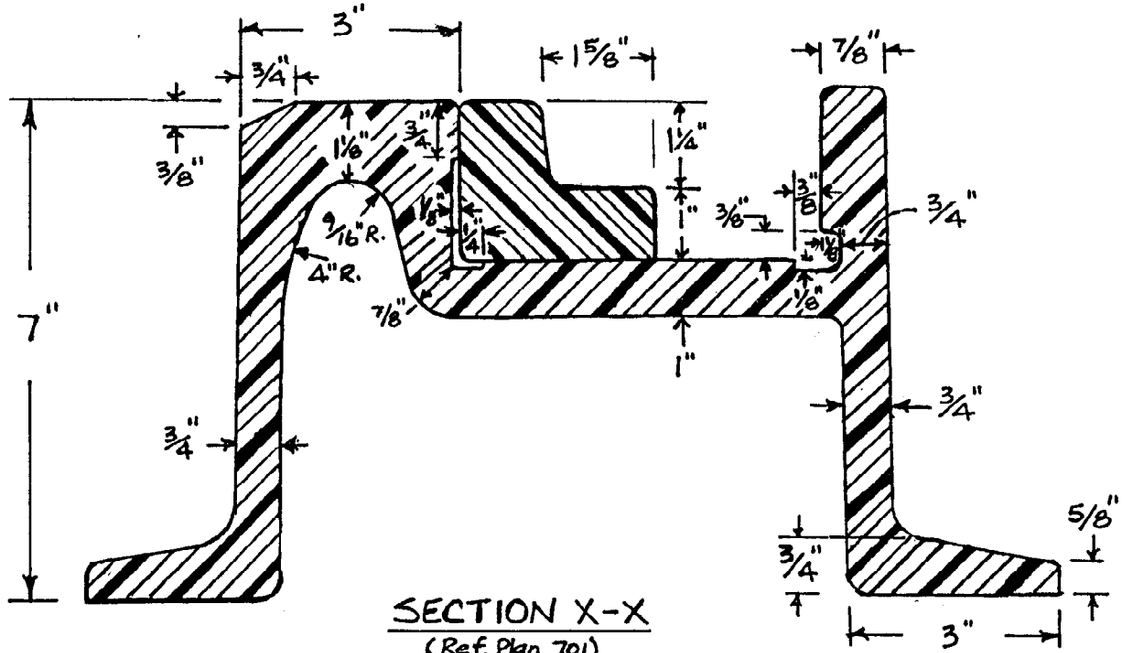
MASSACHUSETTS BAY TRANSPORTATION AUTHORITY	M.O.W. DIVISION	DWG. NO. 702
		DATE / ISSUE NO.

GIRDER RAIL SPECIAL TRACKWORK

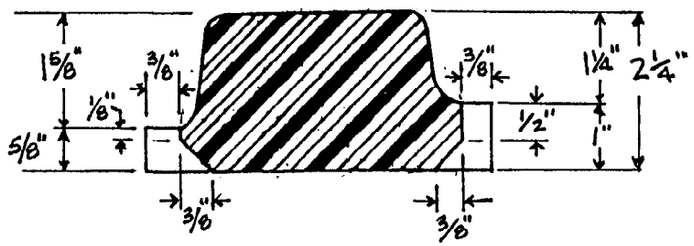
TONGUE SWITCH DETAILS

Mgr. Track Engineering

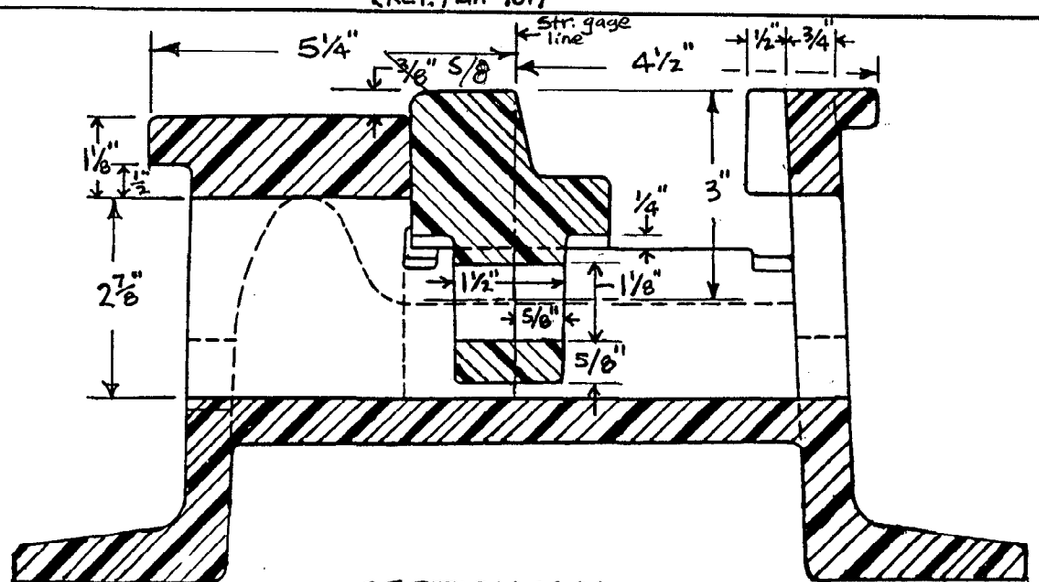
Director - M.O.W.



SECTION X-X
(Ref. Plan 701)



SECTION Z-Z
(Ref. Plan 701)



SECTION Y-Y
(Ref. Plan 701)

NOTES:

① Refer to Plan No. 701 for location of Sections X-X, Y-Y and Z-Z on Plan View of Tongue Switch.

② Refer to Plan No. 702 for other Sections and details of Tongue Switch fabrication.

③ Refer to Specification for Girder Rail Special Trackwork in the Book of Standard Track Material/Construction Specs.

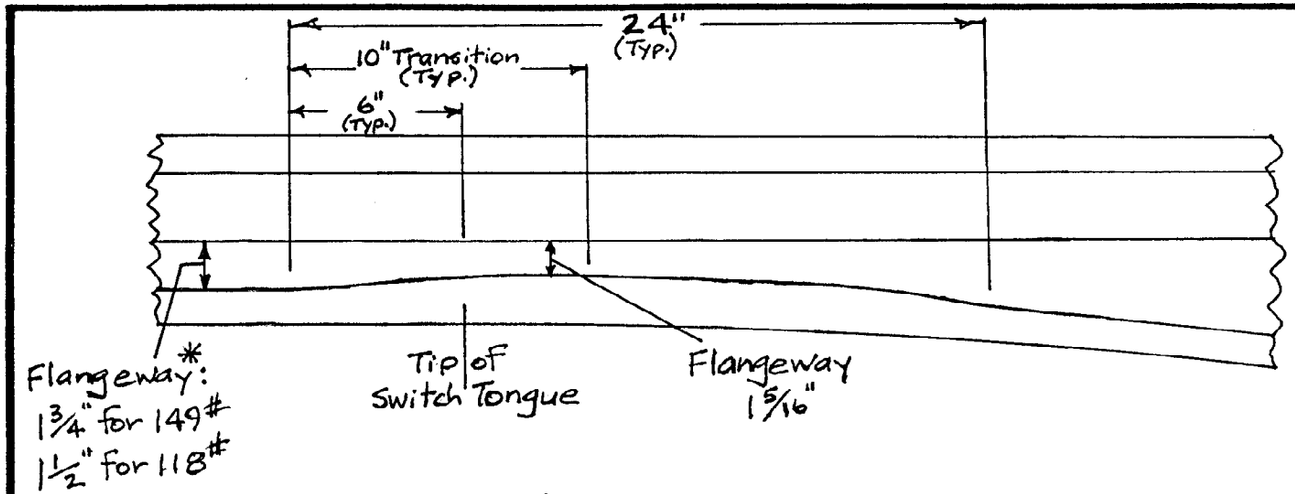
MASSACHUSETTS BAY TRANSPORTATION AUTHORITY	M.O.W. DIVISION	DWG. NO. 703
		DATE / ISSUE NO.

GIRDER RAIL SPECIAL TRACKWORK

TONGUE SWITCH SECTIONS

Mgr. Track Engineering

Director - M.O.W.

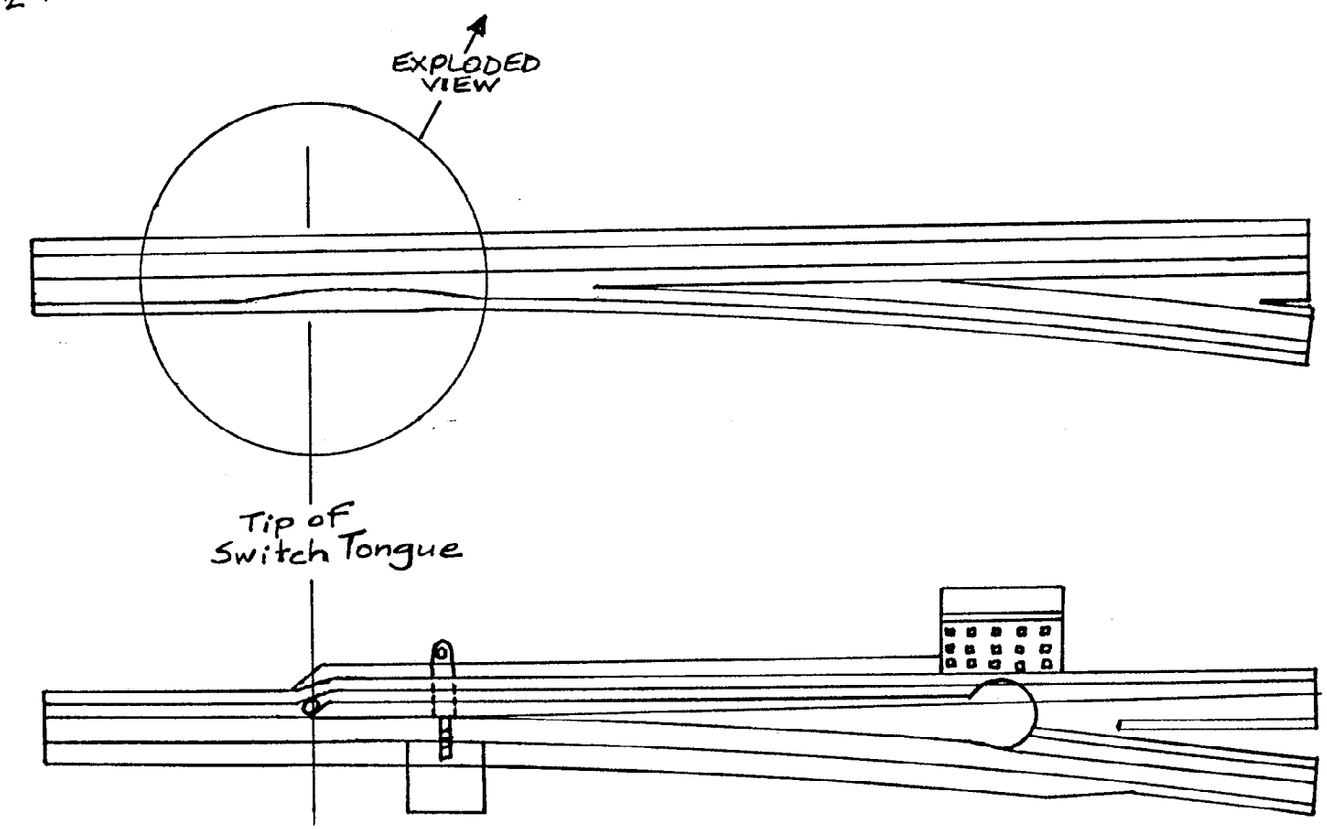


NOTES:

① Flangeway* dimensions designated for dimension measured 1/4" down from plane of rail running surface. Nominal flangeway dimensions are 1 7/8" and 1 5/8" for 149# rail and 118# rail respectively.

② Refer to Plan Nos. 700-704 for girder rail special trackwork layout and details.

③ Refer to specification for Girder Rail Special Trackwork in the Book of Standard Track Material/Construction Specs.



MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

M.O.W. DIVISION

DWG. NO. 704a

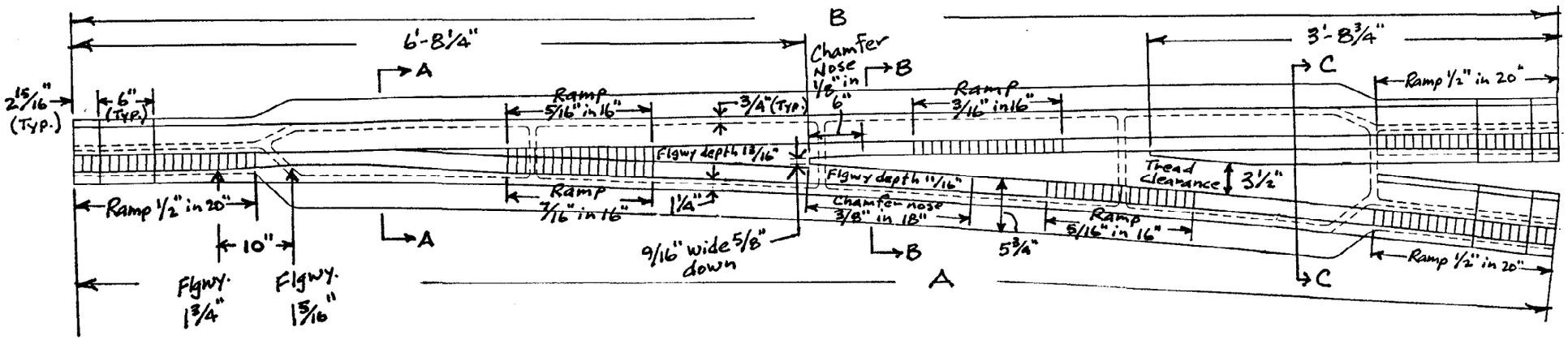
ISSUE NO. ___ DATE

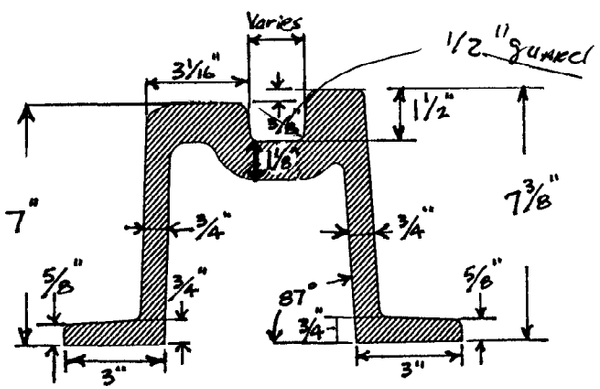
GIRDER RAIL SPECIAL TRACKWORK

POINT MATE DETAILS

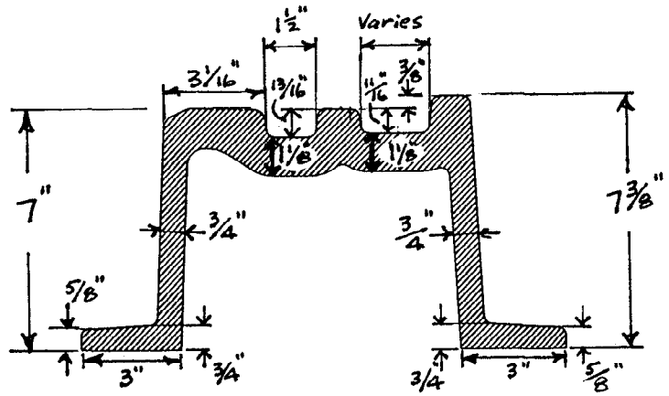
Mgr. Track Engineering

Director-M.O.W.

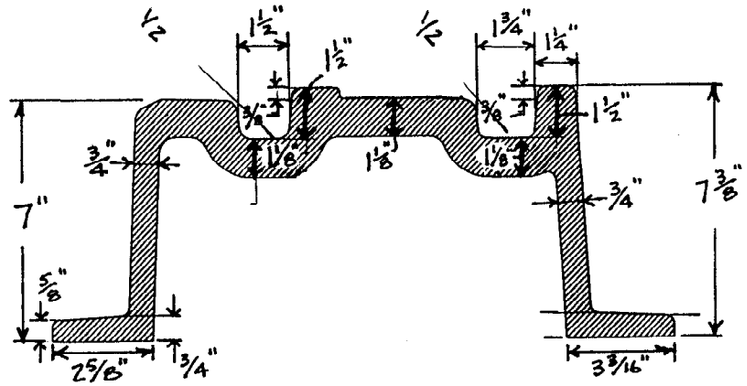




SECTION A-A



SECTION B-B



SECTION C-C

NOTES:

① Refer to Plan No. 704a for additional point mate details.

② All joint drilling to be 1¼" diameter holes, 3" above base, spacing as indicated.

③ Dimensioning shown representative of 100' CR geometry. Different geometric requirements will necessitate recalculation of many dimensions shown on this drawing.

④ This drawing shows 149 RE 7A rail section.

⑤ Refer to Plan Nos. 700, 701, 702 and 703 for girder rail special trackwork and details.

⑥ Refer to specification for Girder Rail Special Trackwork in the Book of Standard Track Material/Construction Specs.

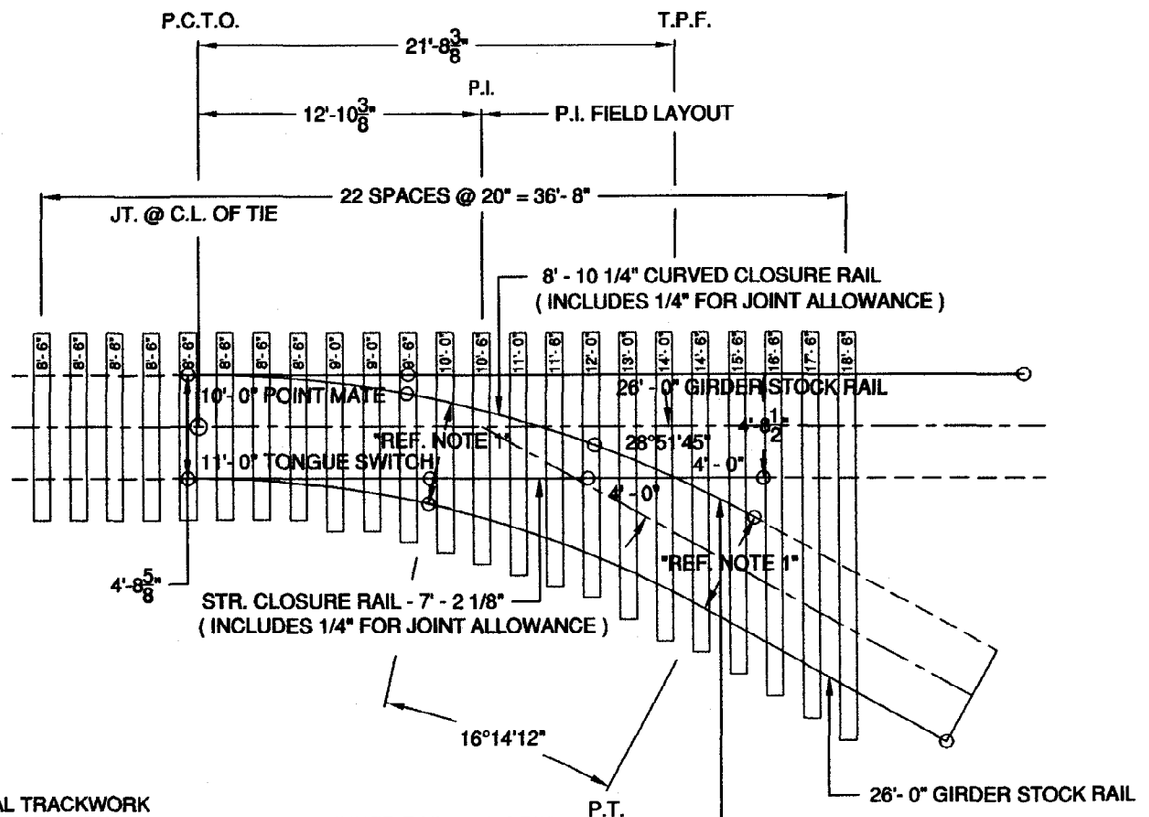
MASSACHUSETTS BAY TRANSPORTATION AUTHORITY	M.O.W. DIVISION	DWG. NO. 704b
		DATE / ISSUE NO. —

GIRDER RAIL SPECIAL TRACKWORK

POINT MATE SECTIONS AND DETAILS

Mgr. Track Engineering

Director-M.O.W.



NOTES:

1.) REFER TO GIRDER RAIL SPECIAL TRACKWORK DESIGN SPECIFICATIONS FOR COMPONENT FABRICATION DETAILS AND GAGING / FLANGEWAY CRITERIA.

2.) REFER TO MBTA DRAWING NOS. 700, 701, 702, 735, 740, 741, 745, AND 750 FOR DATA AND DETAILS RELATED TO GIRDER RAIL SPECIAL TRACKWORK.

50' C.R. GIRDER RAIL TURNOUT

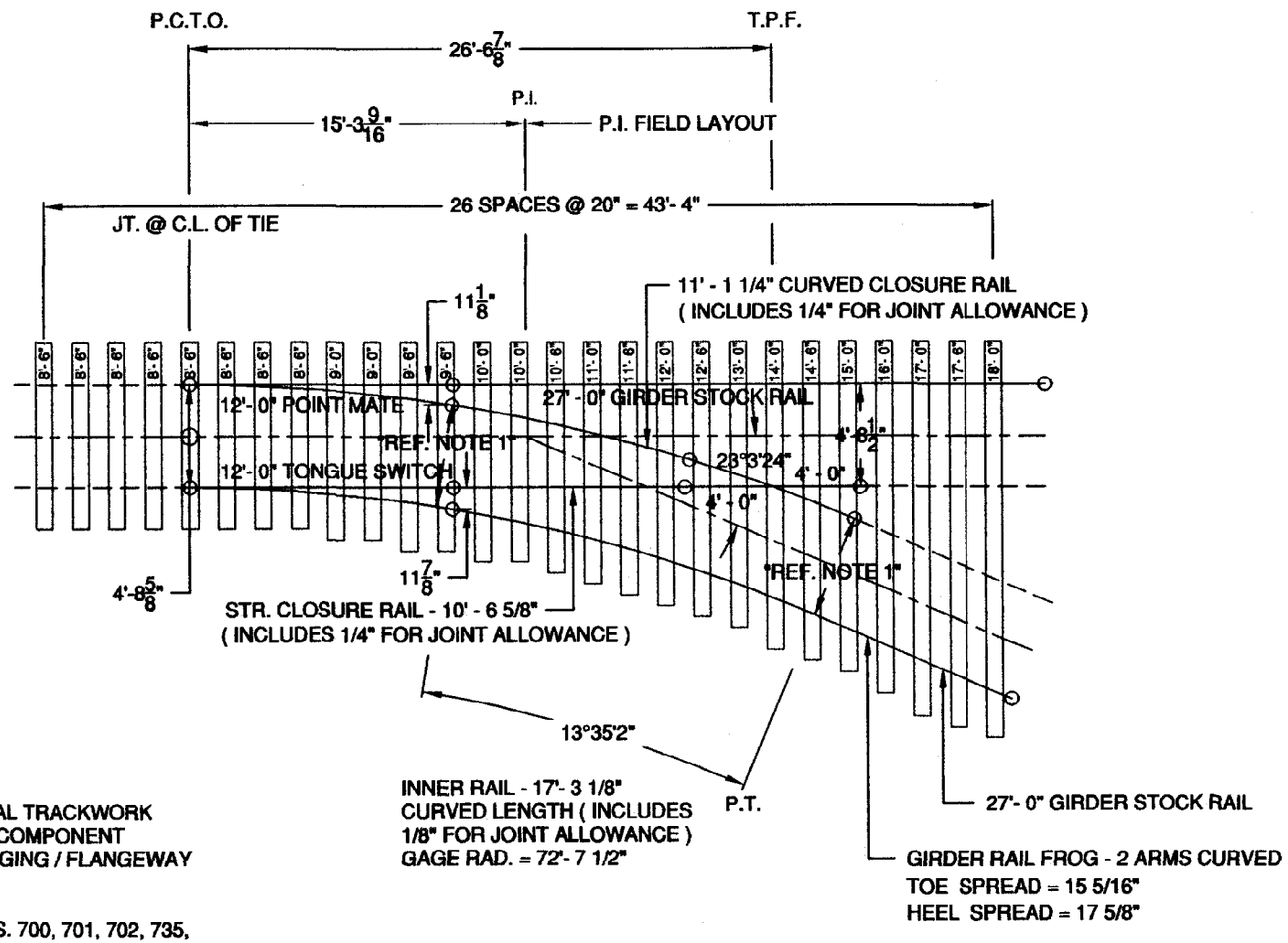
SCALE: 1/8" = 1'- 0"

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY	M.O.W. DIVISION	DRG. NO. 705
		JAN. 1, 2001 (0)
		ISSUE DATE / ISSUE NO.

LRT GIRDER RAIL SPECIAL TRACKWORK
50' C.R. TURNOUT

MGR. TRACK ENGINEERING

DIRECTOR - M.O.W.



NOTES:

1.) REFER TO GIRDER RAIL SPECIAL TRACKWORK DESIGN SPECIFICATIONS FOR COMPONENT FABRICATION DETAILS AND GAGING / FLANGEWAY CRITERIA.

2.) REFER TO MBTA DRAWING NOS. 700, 701, 702, 735, 740, 741, 745, AND 750 FOR DATA AND DETAILS RELATED TO GIRDER RAIL SPECIAL TRACKWORK.

75' C.R. GIRDER RAIL TURNOUT

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

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

M.O.W. DIVISION

DRG. NO. 710

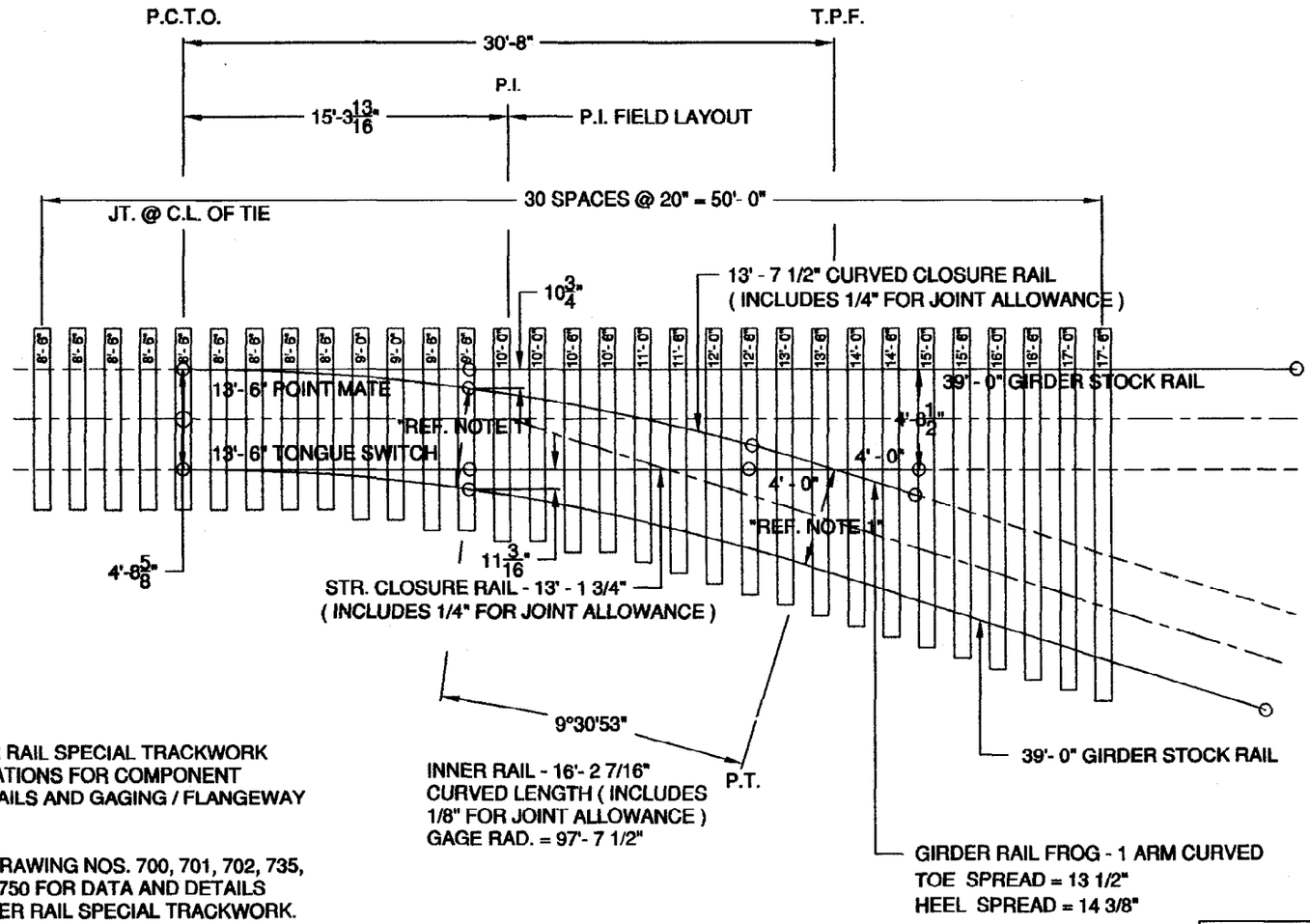
JAN. 1, 2001 (0)

ISSUE DATE ISSUE NO.

LRT GIRDER RAIL SPECIAL TRACKWORK
75' C.R. TURNOUT

MGR. TRACK ENGINEERING

DIRECTOR - M.O.W.



NOTES:

1.) REFER TO GIRDER RAIL SPECIAL TRACKWORK DESIGN SPECIFICATIONS FOR COMPONENT FABRICATION DETAILS AND GAGING / FLANGEWAY CRITERIA.

2.) REFER TO MBTA DRAWING NOS. 700, 701, 702, 735, 740, 741, 745, AND 750 FOR DATA AND DETAILS RELATED TO GIRDER RAIL SPECIAL TRACKWORK.

100' C.R. GIRDER RAIL TURNOUT (TYPE "A")

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

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

M.O.W. DIVISION

DRG. NO. 715

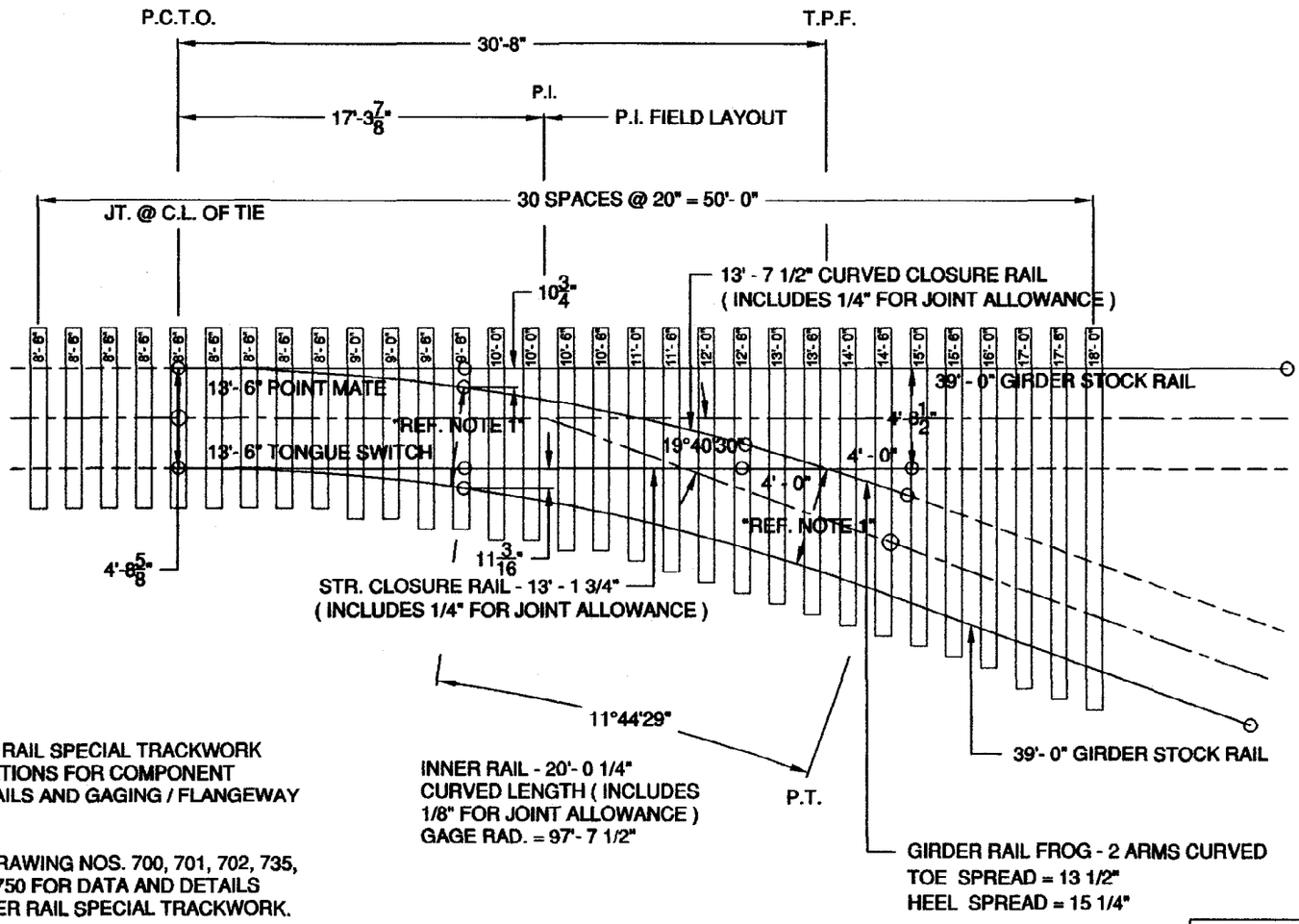
JAN. 1, 2001 (0)

ISSUE DATE ISSUE NO.

LRT GIRDER RAIL SPECIAL TRACKWORK
100' C.R. TYPE "A" TURNOUT

MGR. TRACK ENGINEERING

DIRECTOR - M.O.W.



NOTES:

1.) REFER TO GIRDER RAIL SPECIAL TRACKWORK DESIGN SPECIFICATIONS FOR COMPONENT FABRICATION DETAILS AND GAGING / FLANGEWAY CRITERIA.

2.) REFER TO MBTA DRAWING NOS. 700, 701, 702, 735, 740, 741, 745, AND 750 FOR DATA AND DETAILS RELATED TO GIRDER RAIL SPECIAL TRACKWORK.

100' C.R. GIRDER RAIL TURNOUT (TYPE "B")

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

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

M.O.W. DIVISION

DRG. NO. 720

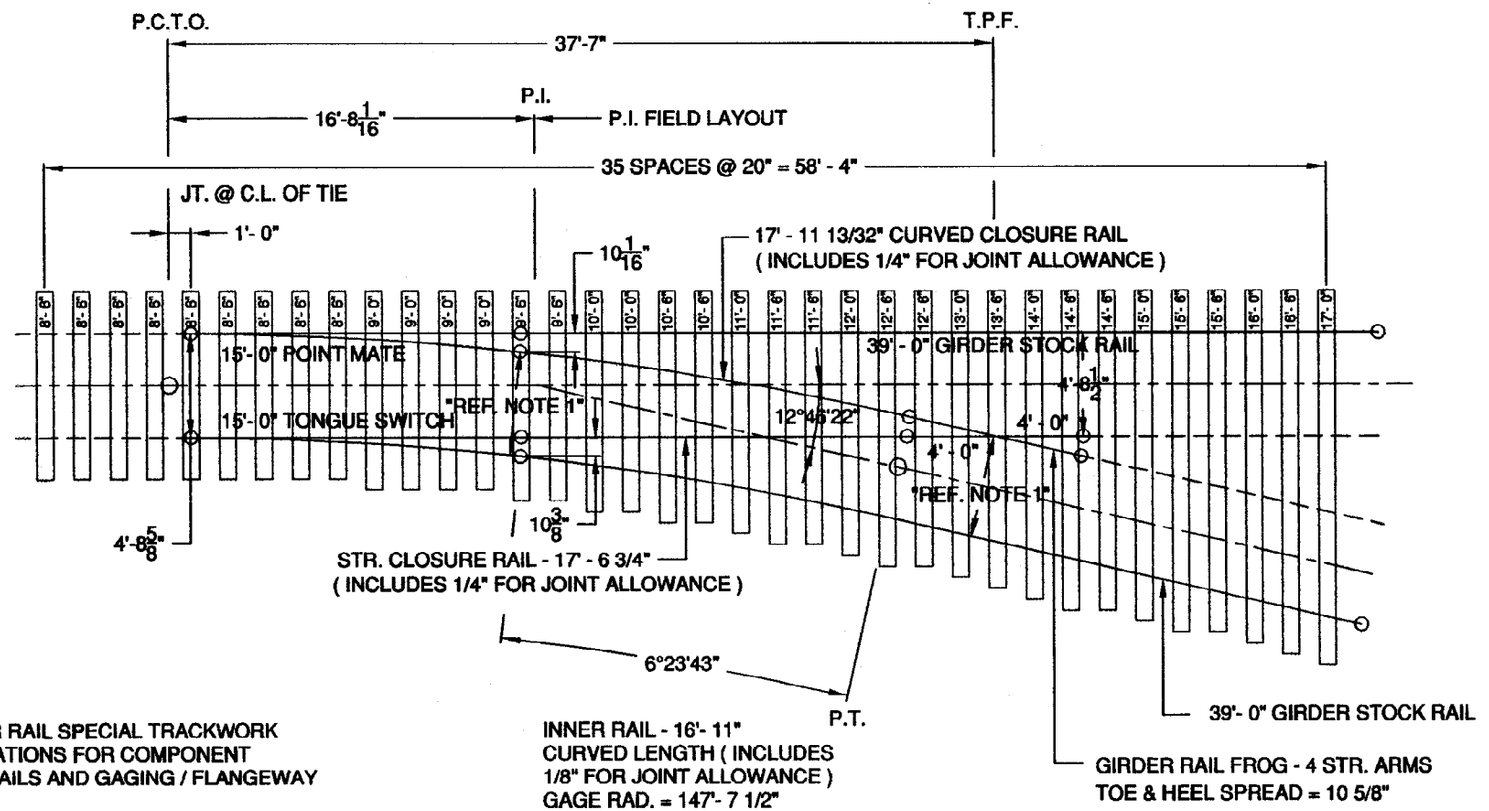
JAN. 1, 2001 ISSUE DATE

0 ISSUE NO.

LRT GIRDER RAIL SPECIAL TRACKWORK
100' C.R. TYPE "B" TURNOUT

MGR. TRACK ENGINEERING

DIRECTOR M.O.W.



NOTES:

1.) REFER TO GIRDER RAIL SPECIAL TRACKWORK DESIGN SPECIFICATIONS FOR COMPONENT FABRICATION DETAILS AND GAGING / FLANGEWAY CRITERIA.

2.) REFER TO MBTA DRAWING NOS. 700, 701, 702, 735, 740, 741, 745, AND 750 FOR DATA AND DETAILS RELATED TO GIRDER RAIL SPECIAL TRACKWORK.

150' C.R. GIRDER RAIL TURNOUT

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

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

M.O.W. DIVISION

DRG. NO. 725

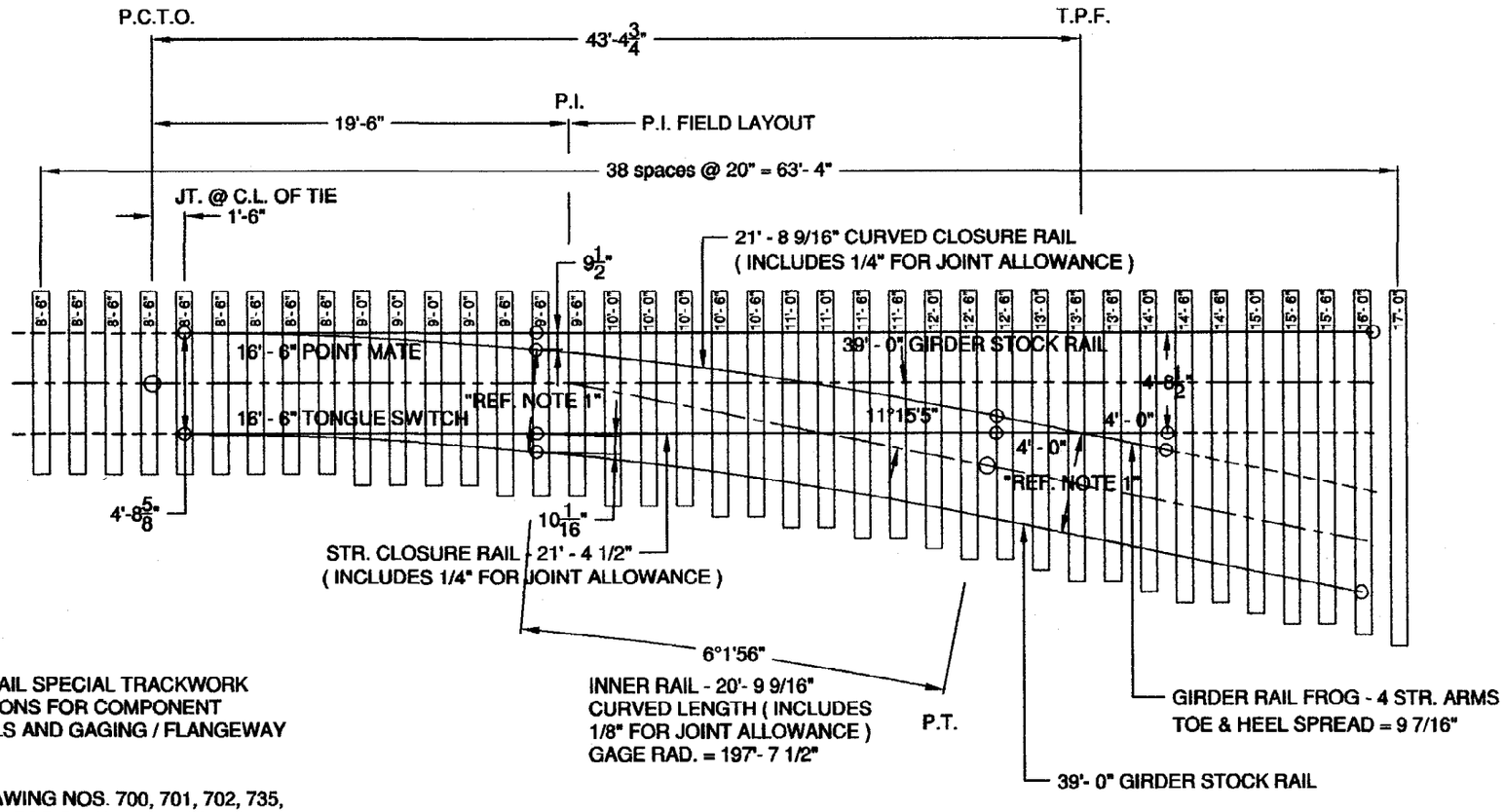
JAN. 1, 2001 (0)

ISSUE DATE ISSUE NO.

LRT GIRDER RAIL SPECIAL TRACKWORK 150' C.R. TURNOUT

MGR. TRACK ENGINEERING

DIRECTOR - M.O.W.



NOTES:

1.) REFER TO GIRDER RAIL SPECIAL TRACKWORK DESIGN SPECIFICATIONS FOR COMPONENT FABRICATION DETAILS AND GAGING / FLANGEWAY CRITERIA.

2.) REFER TO MBTA DRAWING NOS. 700, 701, 702, 735, 740, 741, 745, AND 750 FOR DATA AND DETAILS RELATED TO GIRDER RAIL SPECIAL TRACKWORK.

200' C.R. GIRDER RAIL TURNOUT

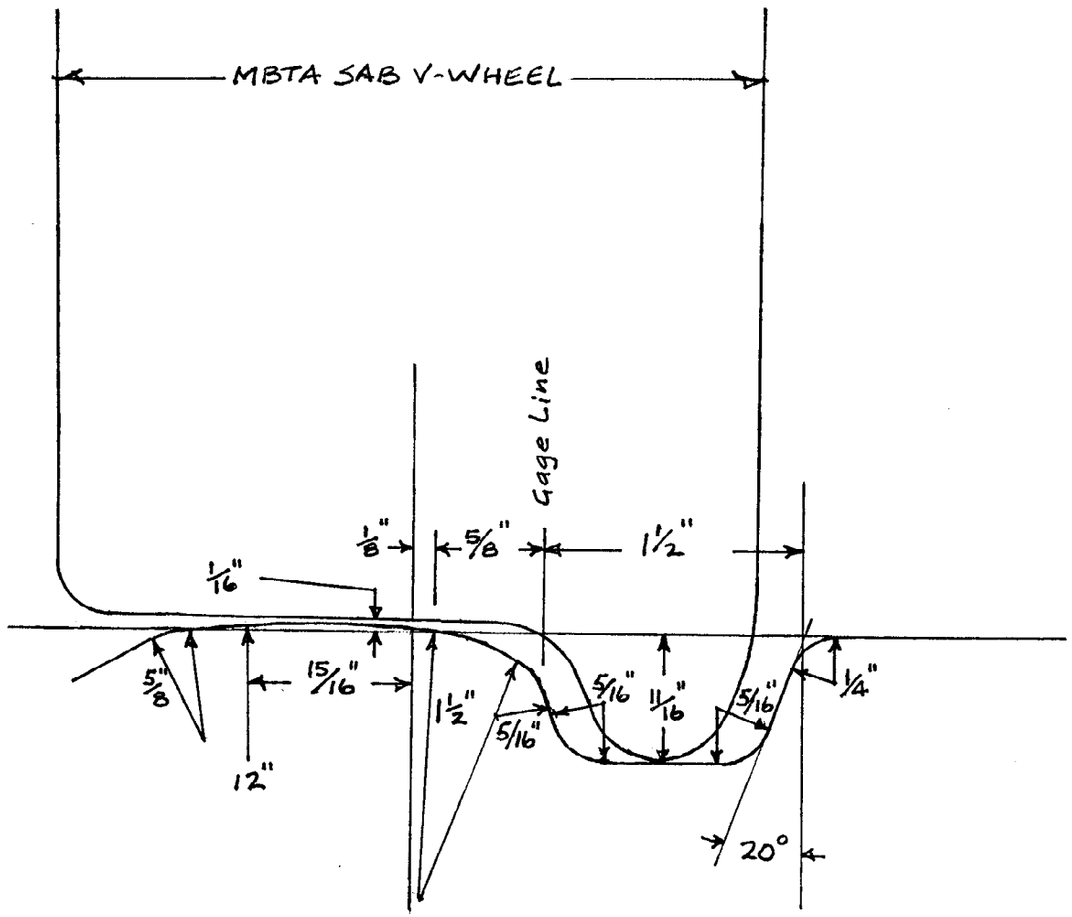
SCALE: 1/8" = 1'- 0"

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY	M.O.W. DIVISION	DRG. NO. 730
		JAN. 1, 2001 (0)
		ISSUE DATE / ISSUE NO.

LRT GIRDER RAIL SPECIAL TRACKWORK
200' C.R. TURNOUT

MGR. TRACK ENGINEERING

DIRECTOR - M.O.W.



Representation is Full-Size

NOTES:

① Flange bearing geometry conforms to A.T.E.A. Standard.

② Refer to Drawing No. 750 for details of SAB V-wheel.

③ Refer to Girder Rail Special Trackwork Drawings, solid manganese frog details and other associated drawings in the M.O.W. Division Book of Standard Trackwork Plans.

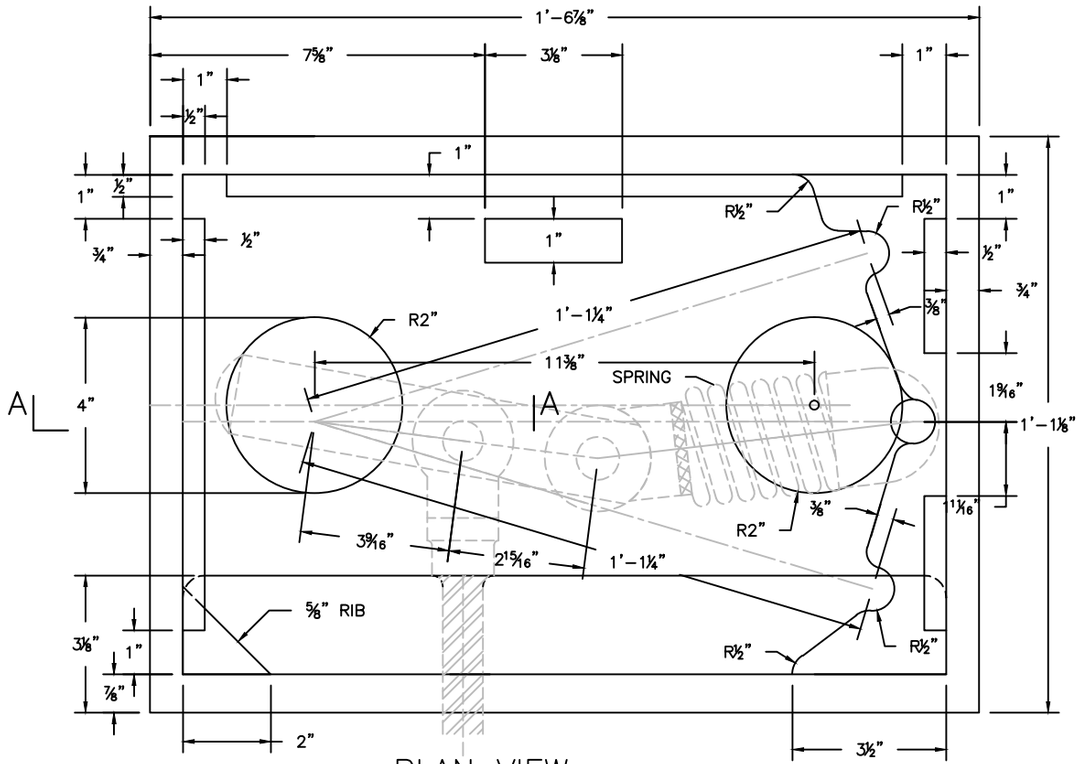
④ Refer to Girder Rail Special Trackwork Design Specification in the MBTA M.O.W. Division Book of Standard Track Material Specs.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY	M.O.W. DIVISION	DWG. NO. 735
		DATE / ISSUE NO. —

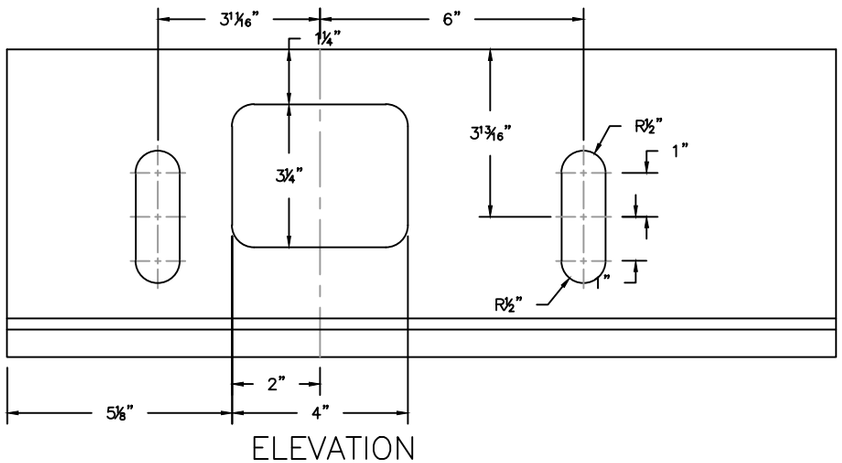
LRT-FLANGE BEARING DETAILS

Mgr. Track Engineering

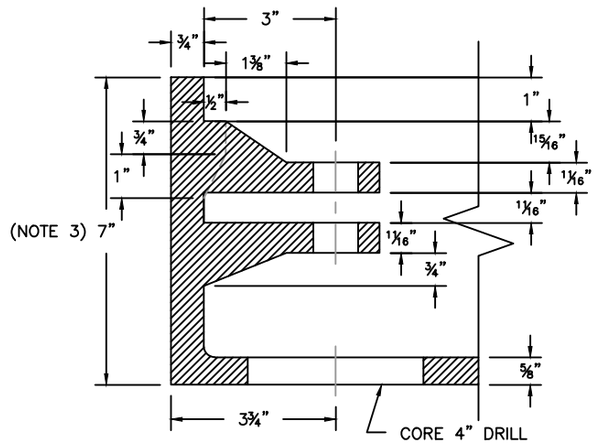
Director-M.O.W.



PLAN VIEW



ELEVATION



SECTION A–A

NOTES:
1) MECHANISM BOX BODY AND COVER TO BE CAST OR FABRICATED STEEL WITH APPROVAL OF MGR. OF TRACK ENGINEERING.
2) OTHER MECHANISM COMPNENTS FABRICATED AS INDICATED.
3) THIS DIMENSION SHOWN FOR 149 RE7A RAIL. DIMENSION MAY VARY DEPENDENT ON RAIL SECTION SPECIFIED.
4) REFER TO PLAN No. 701, 702, 745. ALSO REFER TO SPECIFICATION FOR GIRDER RAIL SPECIAL TRACKWORK IN THE BOOK OF STANDARD TRACK MATERIAL SPECIFICATIONS.

SPRING (SEEE PLAN VIEW)

2½" OUTSIDE DIAMETER
⅜" WIRE
5" FREE LENGTH
7 COILS

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

M.O.W. DIVISION

DRG. NO. 740

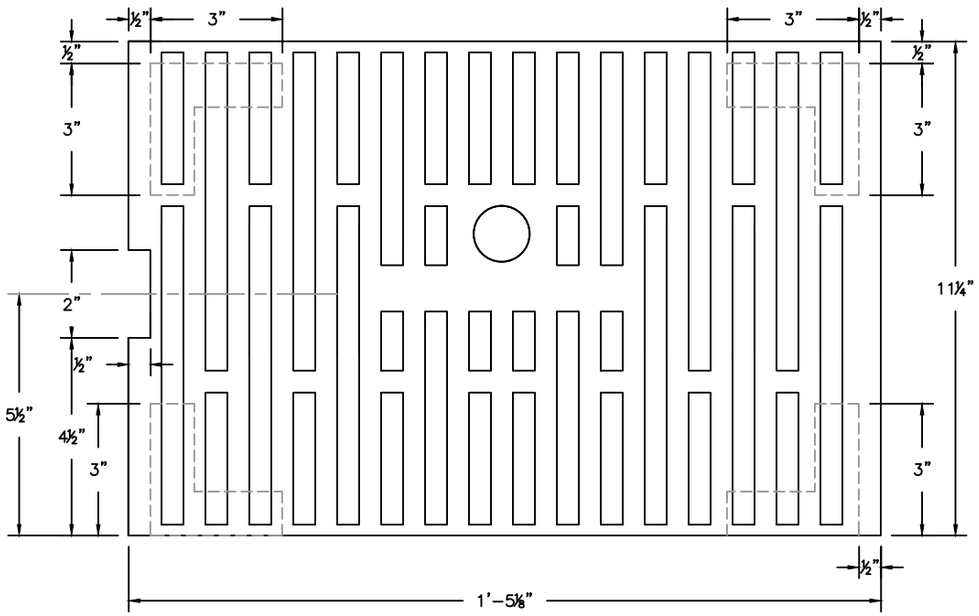
APR. 18, 2013 ISSUE DATE

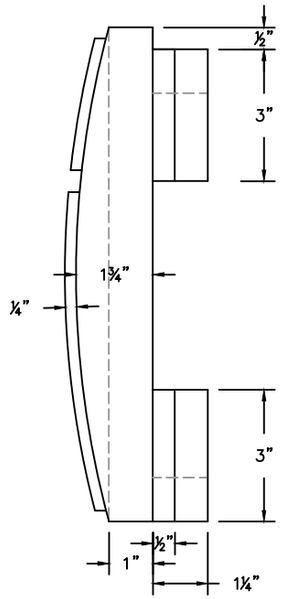
0 ISSUE NO.

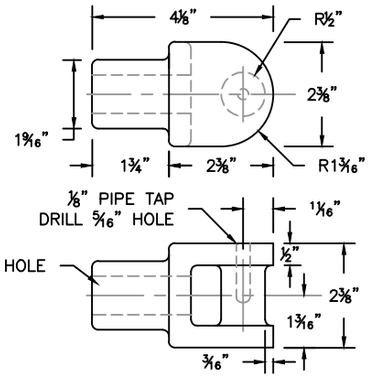
LRT GIRDER RAIL SPECIAL TRACKWORK SWITCH MECHANISM DETAILS (1 OF 2)

MGR. TRACK ENGINEERING

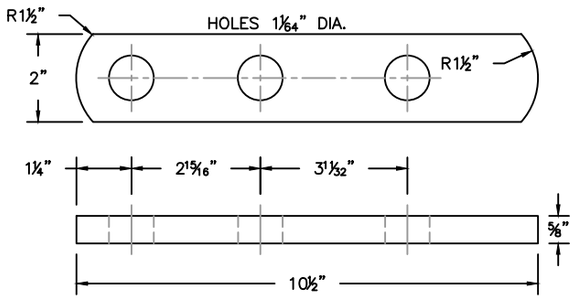
DIRECTOR – M.O.W.



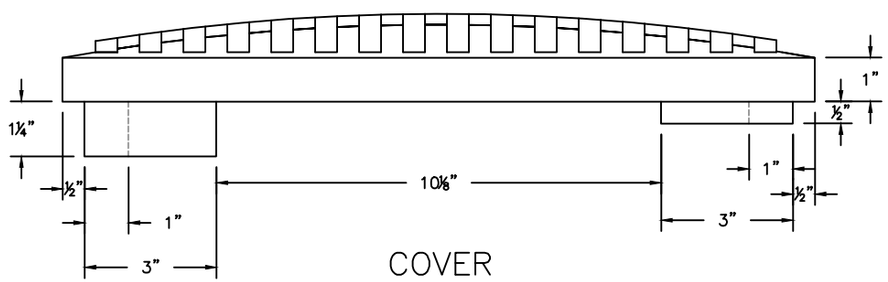




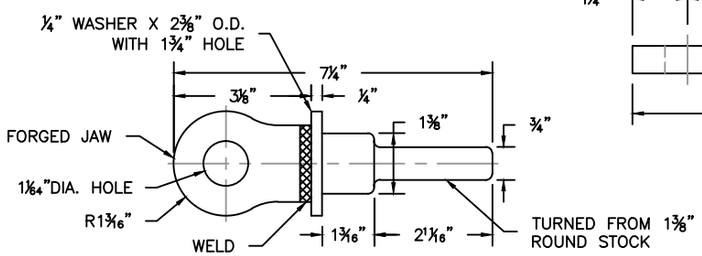
SPRING PIVOT

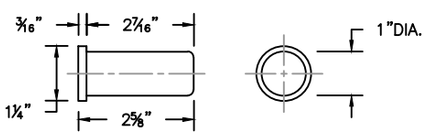


LINK (STEEL)

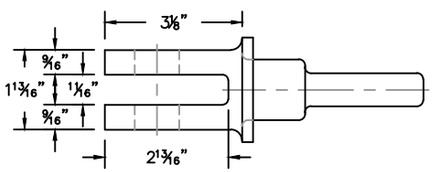


COVER





PIN (STEEL)



WASHER AND JAW
(FORGED STEEL)

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

M.O.W. DIVISION

DRG. NO. 741

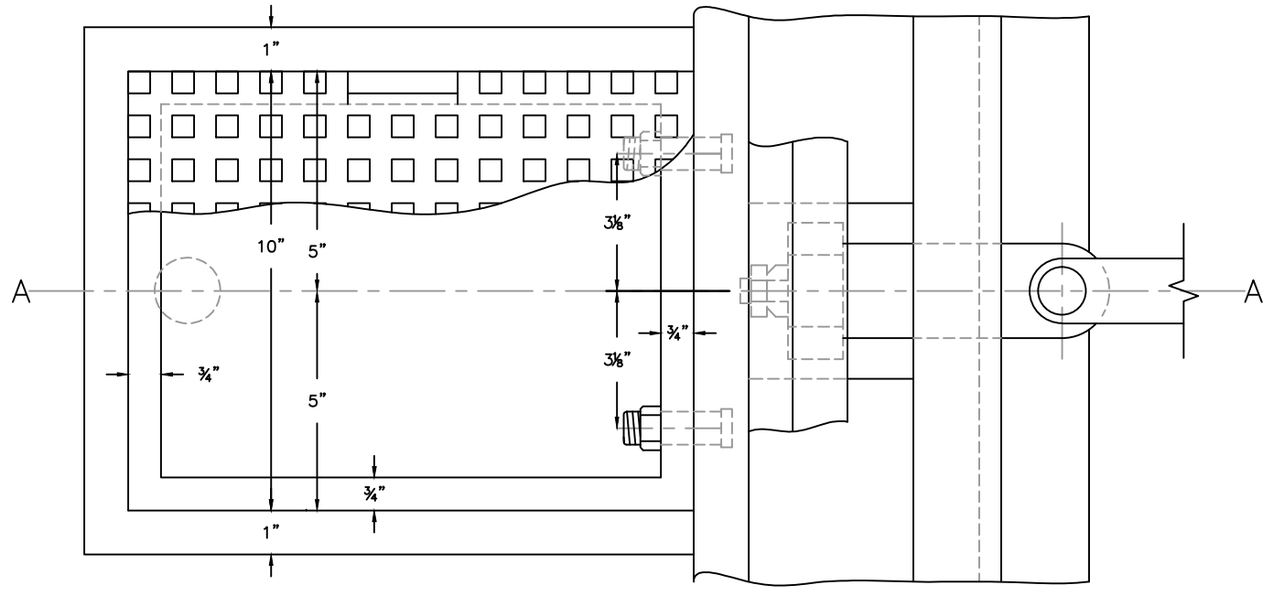
APR. 18, 2013 ISSUE DATE

0 ISSUE NO.

LRT GIRDER RAIL SPECIAL TRACKWORK SWITCH MECHANISM DETAILS (2 OF 2)

MGR. TRACK ENGINEERING

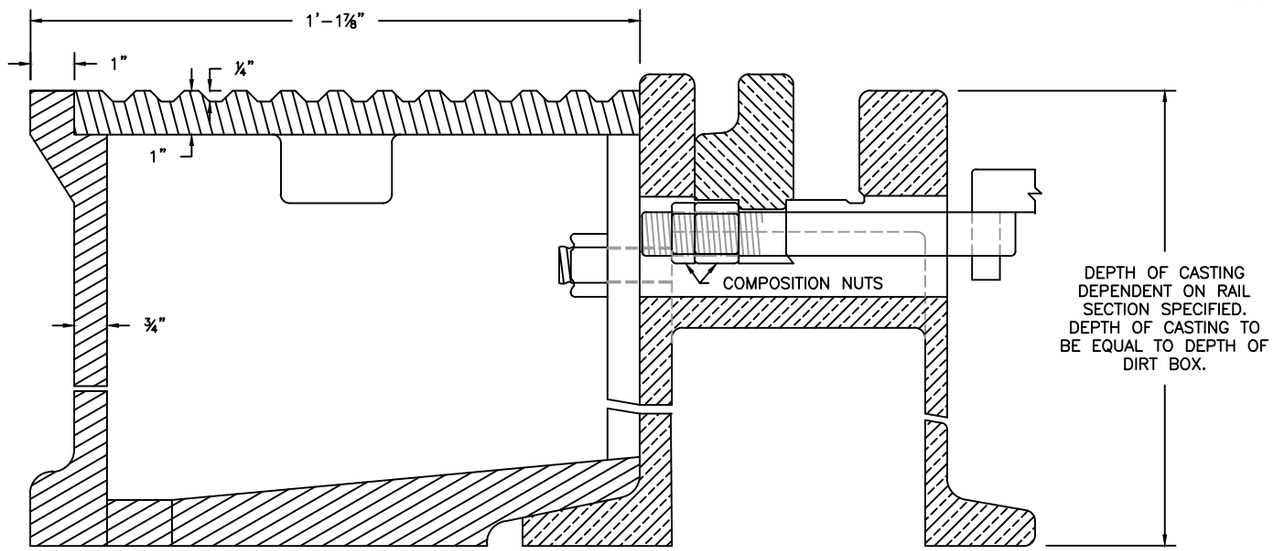
DIRECTOR – M.O.W.



NOTES:

1) REFERENCE GIRDER RAIL SPECIAL TRACKWORK SPEC. IN BOOK OF STANDARD TRACK MATERIAL SPECIFICATIONS.

2) REFERENCE DWG. NOS. 701 AND 702 IN BOOK OF STANDARD TRACKWORK PLANS



SECTION A–A

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

M.O.W. DIVISION

DRG. NO. 745

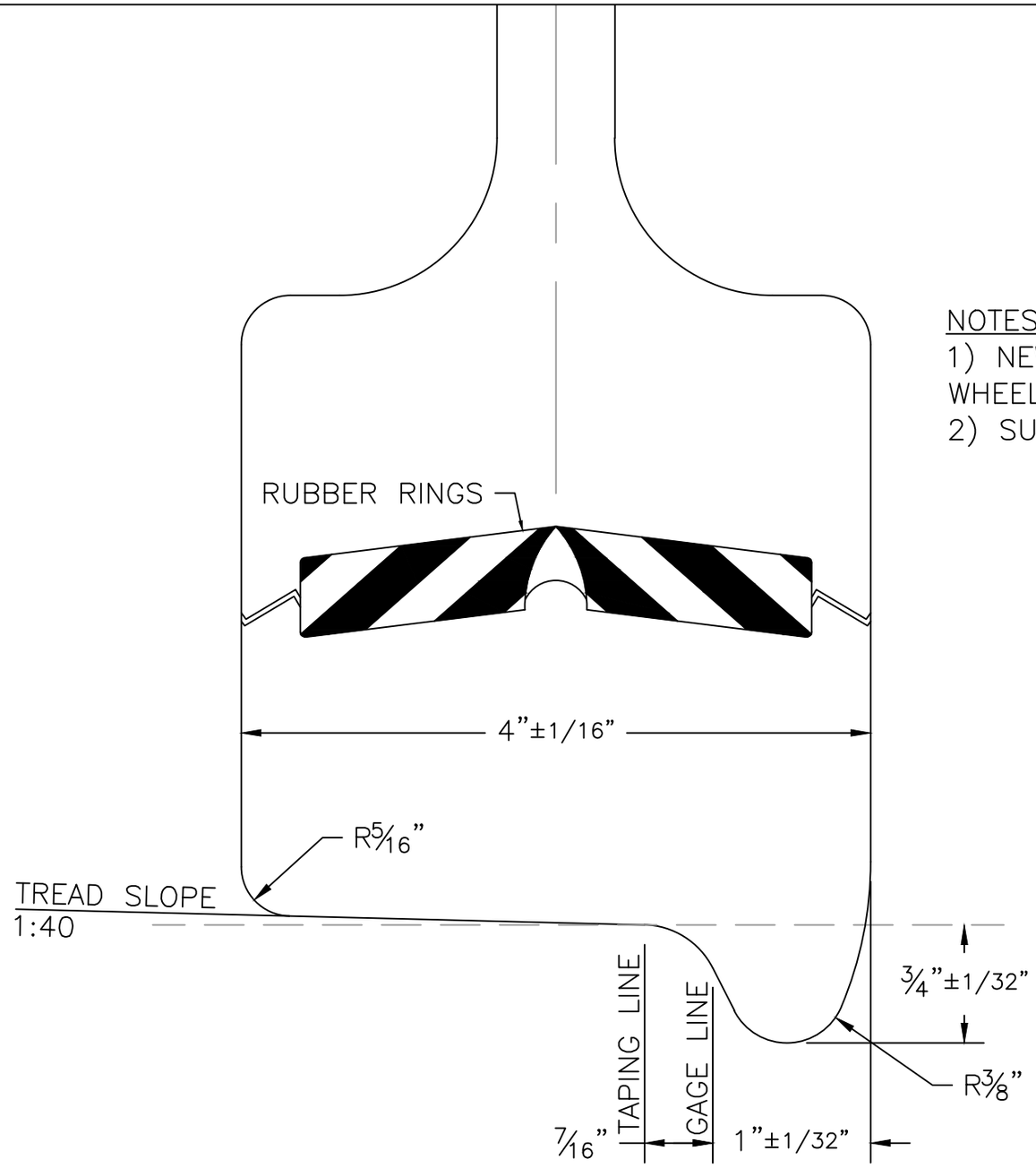
APR. 18, 2013 ISSUE DATE

0 ISSUE NO.

GIRDER RAIL SPECIAL TRACKWORK DIRT BOX DETAIL

MGR. TRACK ENGINEERING

DIRECTOR – M.O.W.



NOTES:

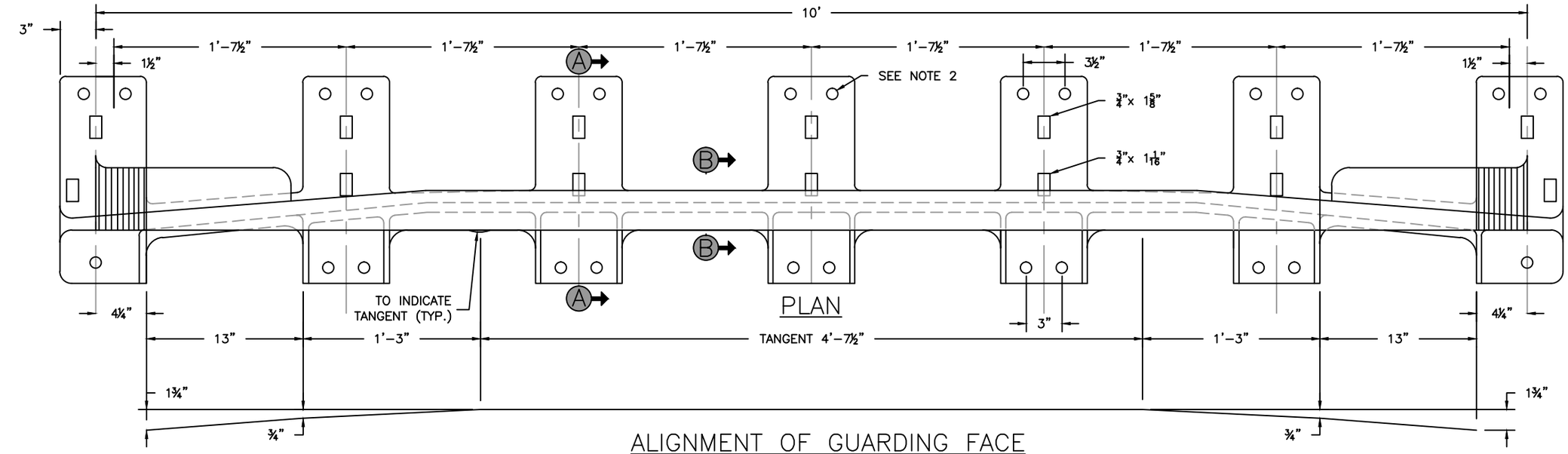
1) NEW WHEEL DIAMETER=26". CONDEMNING LIMIT IS 24". WHEEL WEIGHS 357 LBS (±4 LBS).
2) SURFACE HARDNESS OF TIRE 321–363 BRINELL.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY	M.O.W. DIVISION	DRG. NO. 750
		APR. 18, 2013 ISSUE DATE / 0 ISSUE NO.

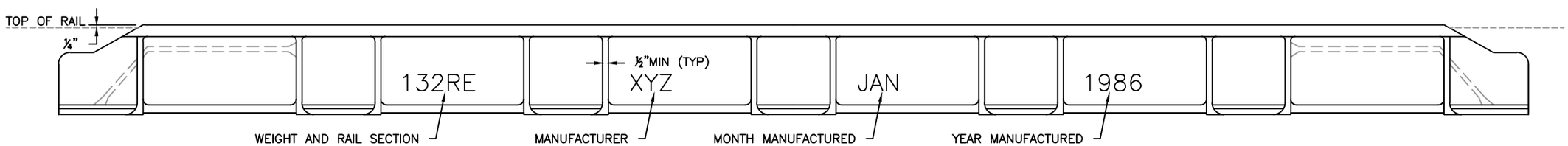
STANDARD LRT RESILIENT WHEEL

MGR. TRACK ENGINEERING

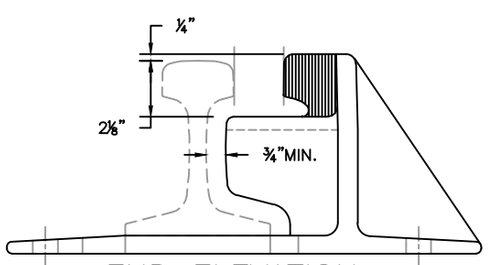
DIRECTOR – M.O.W.



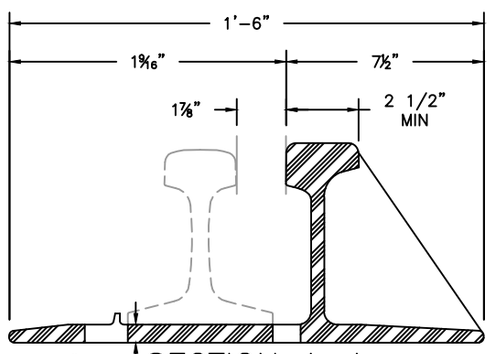
ALIGNMENT OF GUARDING FACE



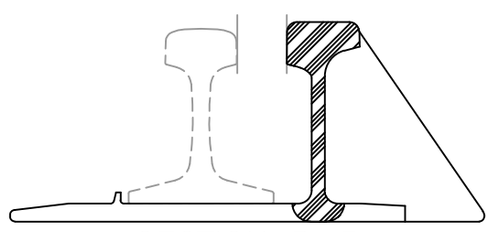
ELEVATION



END ELEVATION



SECTION A–A



SECTION B–B

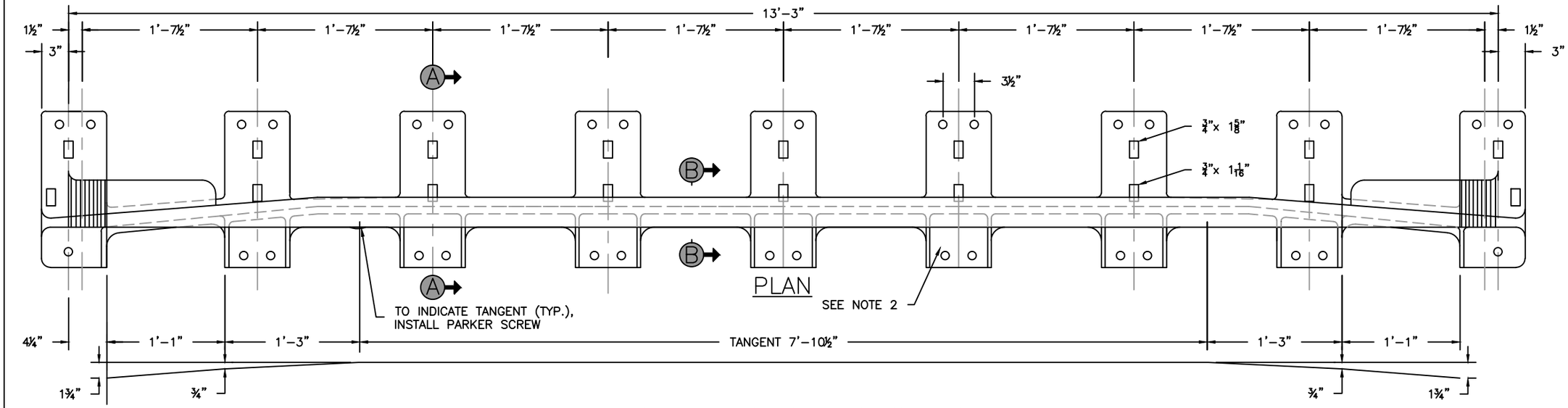
NOTES:
1) REFER TO PLAN NO. 805 FOR INSTALLATION CRITERIA AND RELATED DETAILS.
2) ALL SCREW SPIKE HOLES TO BE 15/16"ø
3) GUARD RAIL FABRICATION SHALL MEET THE REQUIREMENTS OF 100–96 IN THE AREMA PORTFOLIO OF TRACKWORK PLANS.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY	M.O.W. DIVISION	DRG. NO. 800
		APR. 18, 2013 (0)
		ISSUE DATE ISSUE NO.

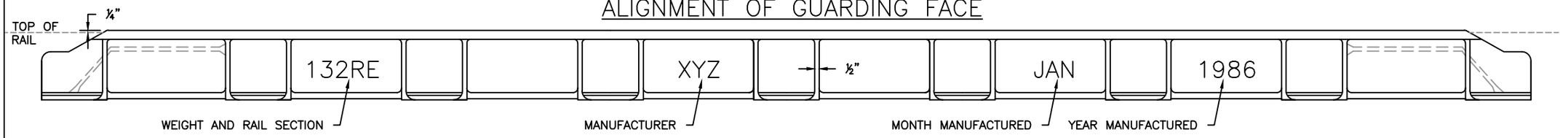
MANGANESE STEEL GUARD RAIL 10'-0" ONE-PIECE

MGR. TRACK ENGINEERING

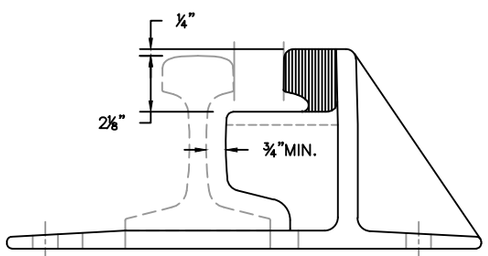
DIRECTOR – M.O.W.



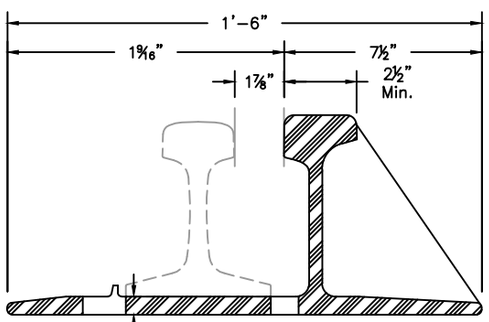
ALIGNMENT OF GUARDING FACE



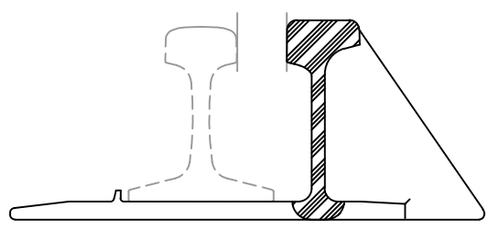
ELEVATION



END ELEVATION



SECTION A–A



SECTION B–B

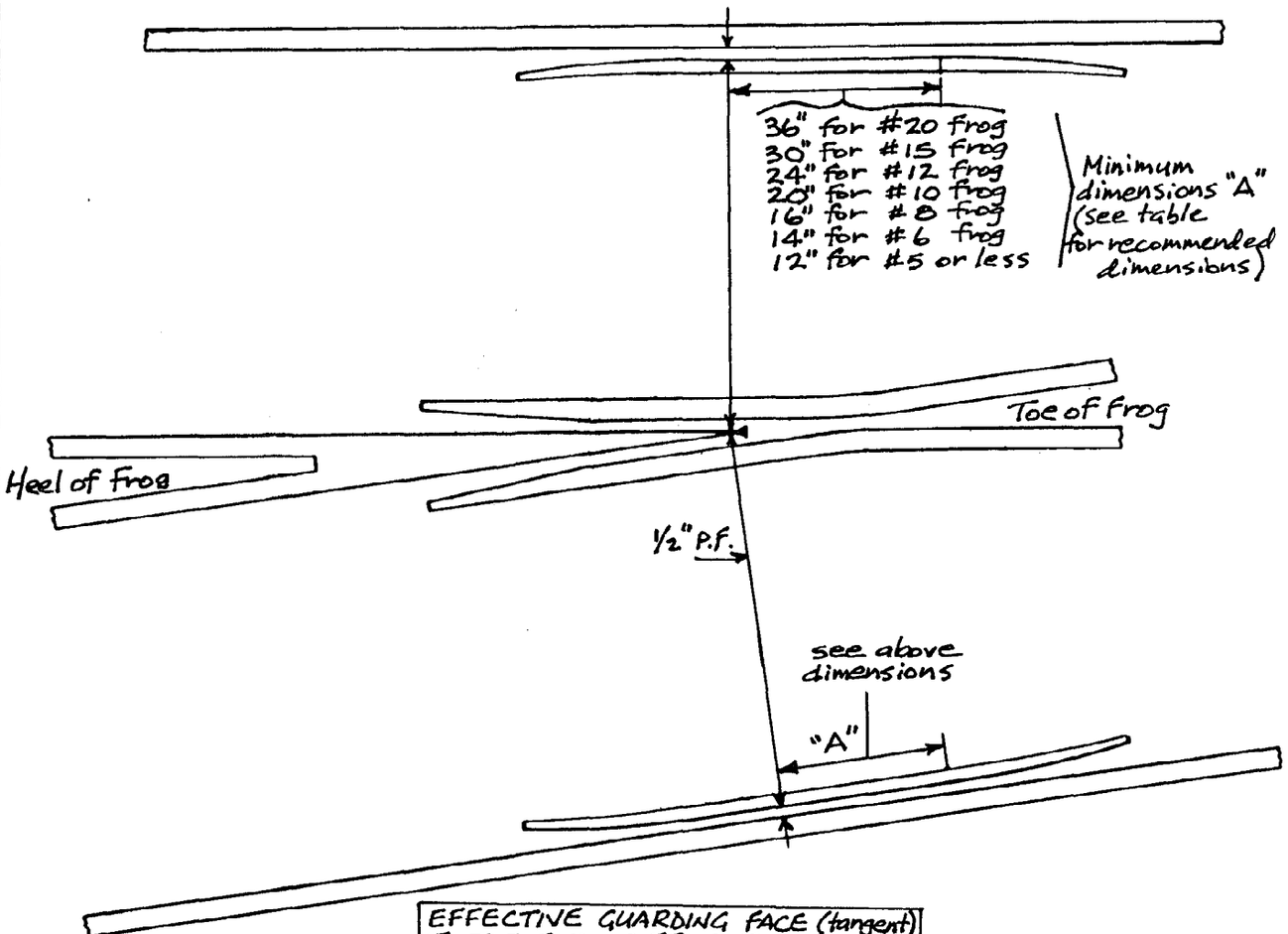
NOTES:
1) REFER TO PLAN NO. 805 FOR INSTALLATION CRITERIA AND RELATED DETAILS.
2) ALL SCREW SPIKE HOLES TO BE 15/16"ø
3) GUARD RAIL FABRICATION SHALL MEET THE REQUIREMENTS OF 100–96 IN THE AREMA PORTFOLIO OF TRACKWORK PLANS.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY	M.O.W. DIVISION	DRG. NO. 801
		APR. 18, 2013 (0)
		ISSUE DATE ISSUE NO.

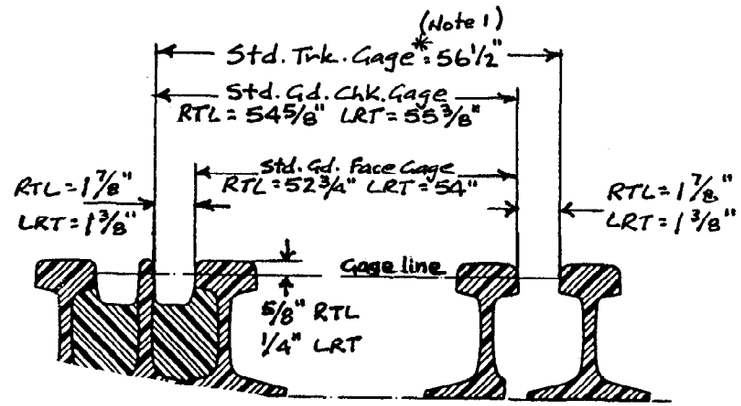
MANGANESE STEEL GUARD RAIL 13'-3" ONE-PIECE

MGR. TRACK ENGINEERING

DIRECTOR – M.O.W.



EFFECTIVE GUARDING FACE (tangent) TO TOE END OF FROG (from 1/2" P.F.)		
FROG NUMBER	LENGTH OF GUARD RAIL	RECOMMENDED DISTANCE "A"
6	10'	43"
8	10'	43"
10	13'-3"	51"
15	13'-3"	63"
20	13'-3"	63"



TRACK AND GUARD RAIL GAGE DATA

NOTES:

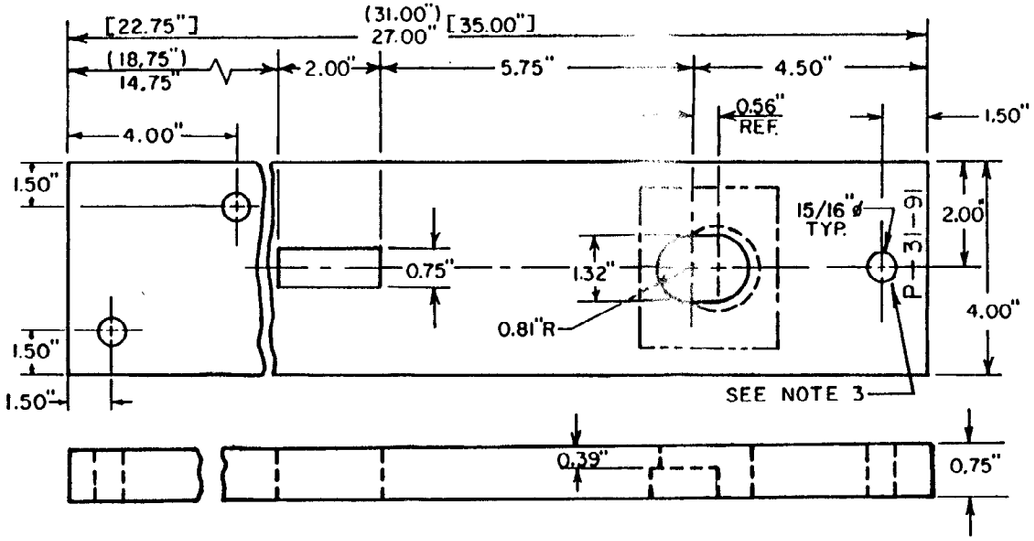
1. Gage may vary in curved side of turnouts. Refer to Special Trackwork Plans for details.
2. Track must be installed ± 1/8" from standard guard check and guard face gages as indicated REGARDLESS OF TRACK GAGE.
3. Guard rail fabrication per Plan Nos. 800 and 801 and 100-96 in the AREMA Portfolio of Trackwork Plans.
4. Refer to M.O.W. Div. Track Maintenance Standards for guard check and guard face gage maintenance thresholds.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY | M.O.W. DIVISION | DWG. NO. 805 | DATE | ISSUE NO. —

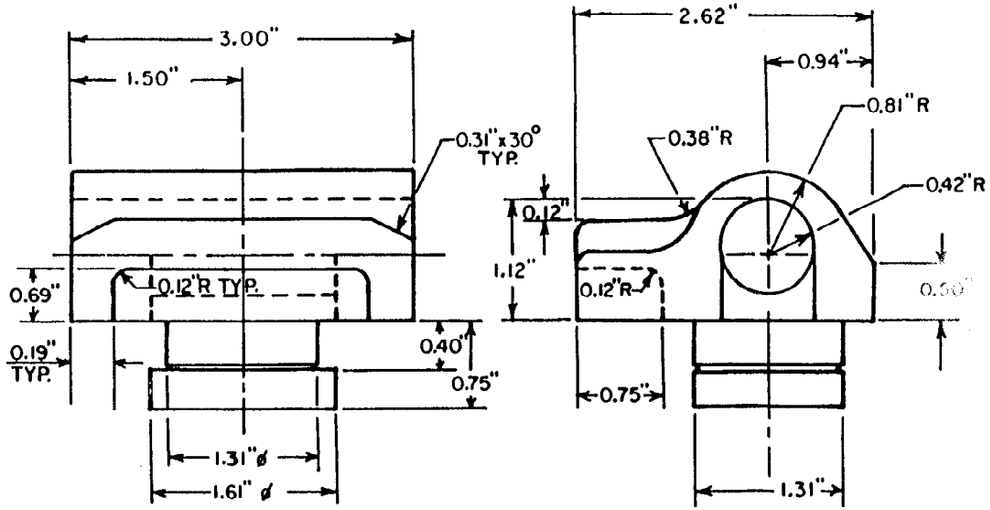
ONE-PIECE GUARD RAIL INSTALLATION CRITERIA

Mgr. Track Engineering

Director - M.O.W.

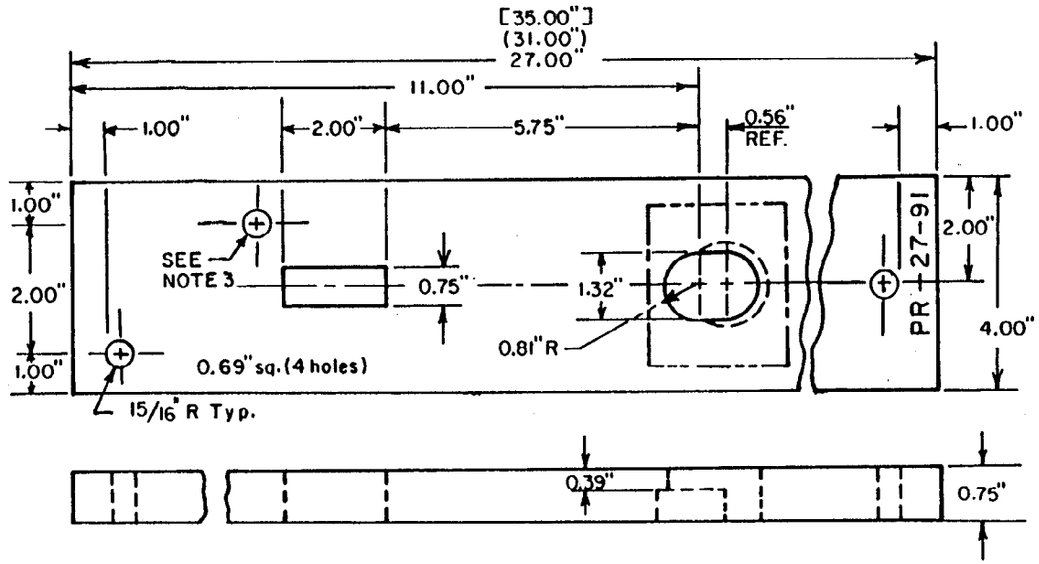


NORMAL FROG PLATE



Note: Unspecified radii to be 0.06" max.

SWIVEL SHOULDER INSERT



REVERSE FROG PLATE

NOTES:

1. Plates shown are manufactured by PANDROL, INC.
2. Material shall be Low-Carbon Steel and the plates shall conform to current AREMA specifications.
3. Furnish plates with 15/16" diameter holes for screw lags.
4. Tie plates shall be branded with a letter to designate the manufacturer, the letter 'R' when the plate is reverse shoulder, two numbers indicating the length (27", 31" or 35"), and the last two digits of the year manufactured.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY	M.O.W. DIVISION	DWG. NO. 810
		DATE / ISSUE NO. —

SELF-ALIGNING SHOULDER TIE PLATES

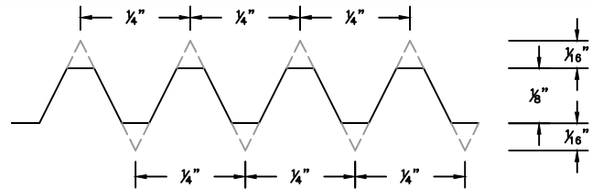
Mgr. Track Engineering

Director-M.O.W.

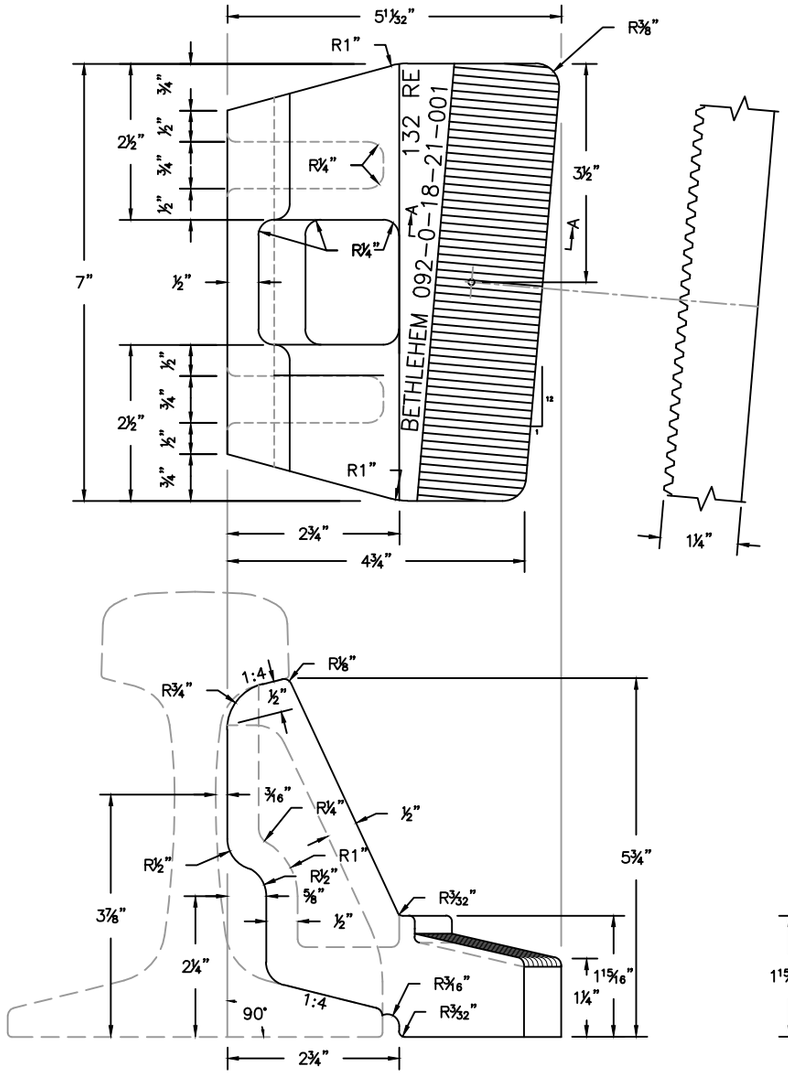
MATERIAL

D.I. = DUCTILE IRON

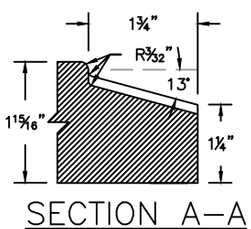
M.I. = MALEABLE IRON



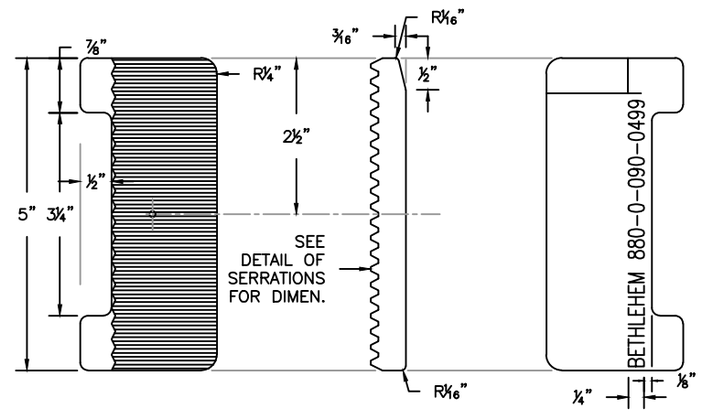
DETAIL OF SERRATION

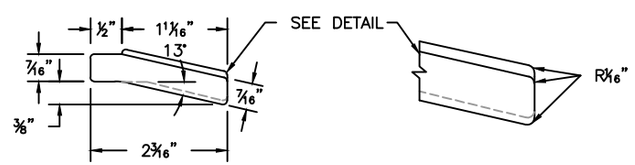


D.I. BRACE



SECTION A–A





M.I. SERRATED WASHER FOR PLATE BASE

NOTE:
DRAWING FOR 132 RE. TYPICALLY 115RE

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

M.O.W. DIVISION

DRG. NO. 820

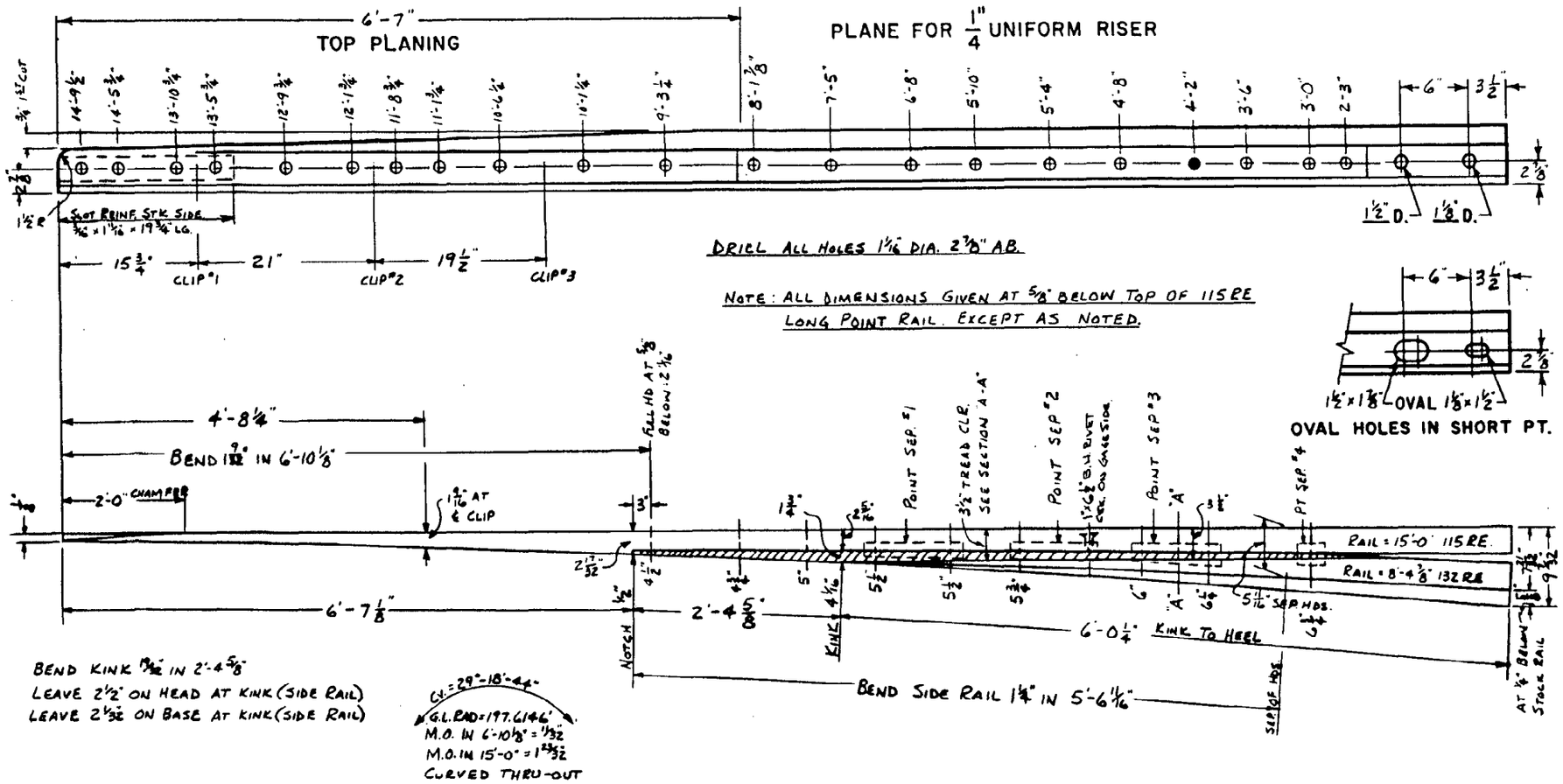
APR. 18, 2013 ISSUE DATE

0 ISSUE NO.

RESILIENTLY FASTENED ADJUSTABLE RAIL BRACE

MGR. TRACK ENGINEERING

DIRECTOR – M.O.W.



NOTES:

① Reference Specification for 115 RE Guarded Special Trackwork in the Book of Standard Track Material and Construction Specifications.

② Reference MBTA plan NOS. 410, 411, 826, 830, 835, 840 and any other applicable Plans and Specifications.

③ Switch throw as indicated in Spec. for 115 RE Gded. Sp. Trkwk.

④ Switch points fully heat-treated to 321-388 Brinell.

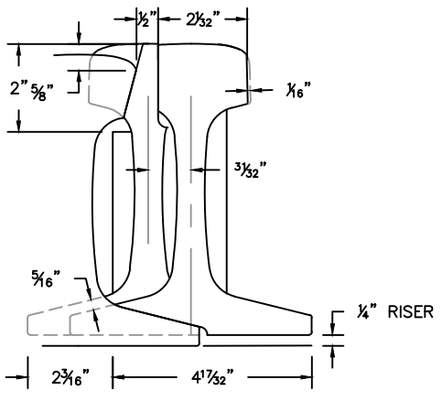
DETAILS SHOWN ARE FOR 200' RADIUS SWITCH IN LRT TRACK. DIFFERENT GEOMETRY WILL NECESSITATE RE-CALCULATION OF EACH DIMENSION SHOWN. NOTE FLANGEWAY DIFFERENTIAL BETWEEN RTL AND LRT TRACK.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY | M.O.W. DIVISION | DWG. NO. 825 | ISSUE NO. — | DATE

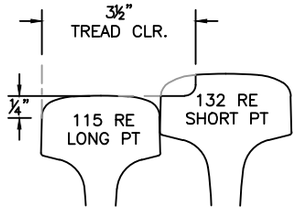
GUARDED SWITCH POINT DESIGN DETAILS

Mgr. Track Engineering

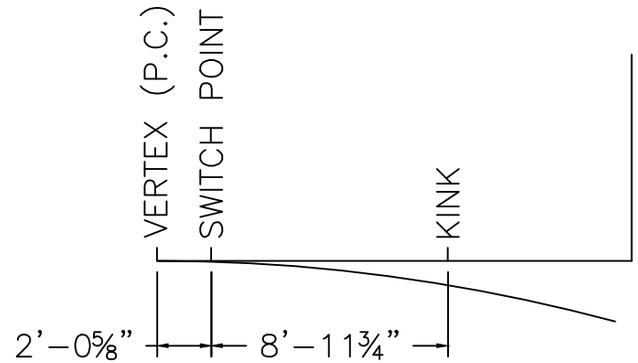
Director M.O.W.



SECTION AT NOTCH

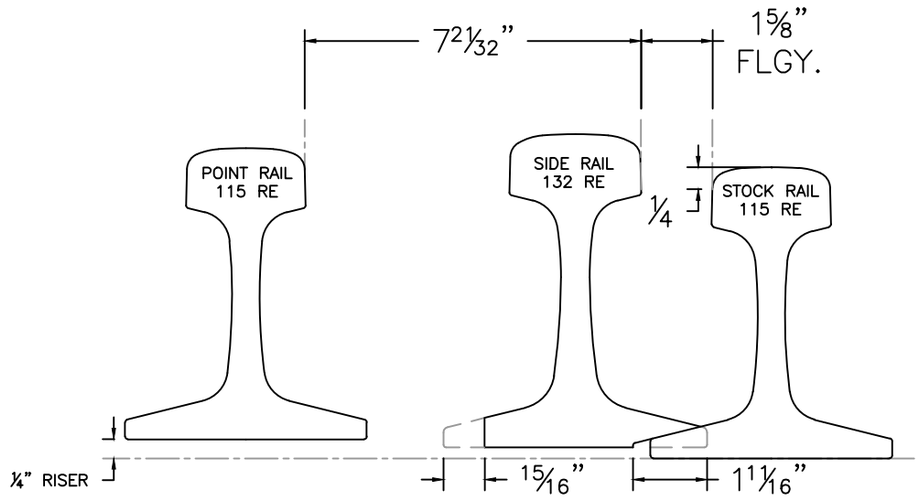


SECTION "A–A"



GAGE – 4'–8½" AT VERTEX (P.C.)
INCREASING 4'–8⅞" AT KINK

ALIGNMENT SKETCH
FOR GEOMETRY SHOWN
ON DWG. NO. 825



SECTIONS AT HEEL

NOTES:

1) REFERENCE SPECIFICATION FOR 115 RE GUARDED SPECIAL TRACKWORK IN THE BOOK OF STANDARD TRACK MATERIAL AND CONSTRUCTION SPECS.

2) REFERENCE DWG. NO. 825 AND ALL OTHER APPLICABLE DRAWINGS AND SPECS

SECTIONS AND DETAILS SHOWN ARE FOR 200' RADIOUS SWITCH IN RT TRACK. DIFFERENT GEOMETRY WILL NECESSITATE RECALCULATION OF EACH DIMESNION SHOW. NOTE GAGE, FLANGEWAY AND WHEEL TREAD CLEARANCE DIFFERENTIAL BETWEEN LRT AND RTL TRACK.

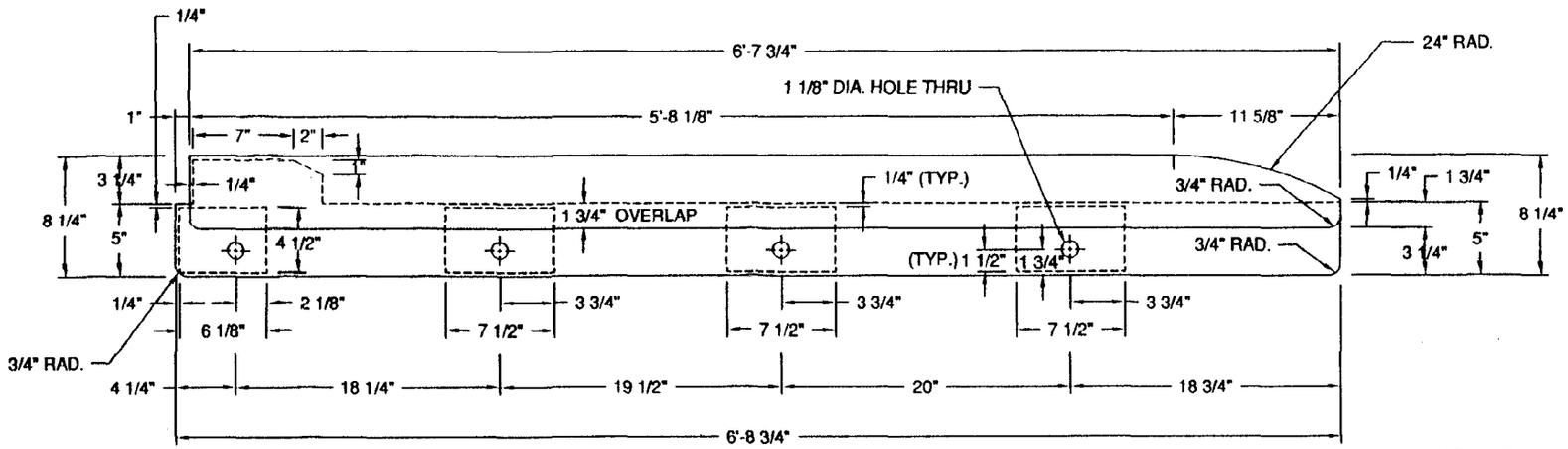
SECTIONS OF GUARDED SWITCH POINT SHOWN ON DWG. 825.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY	M.O.W. DIVISION	DRG. NO. 826
		APR. 18, 2013 (0)
		ISSUE DATE ISSUE NO.

GUARDED SWITCH POINT SECTIONS AND DETAILS

MGR. TRACK ENGINEERING

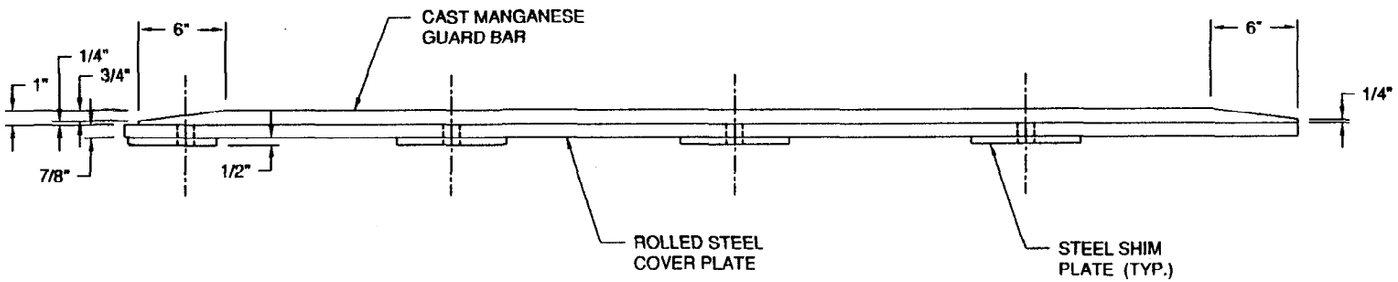
DIRECTOR – M.O.W.



PLAN VIEW

SCALE: 1" = 1'- 0"

LEFT HAND AS SHOWN
RIGHT HAND OPPOSITE



ELEVATION

SCALE: 1" = 1'- 0"

NOTES:

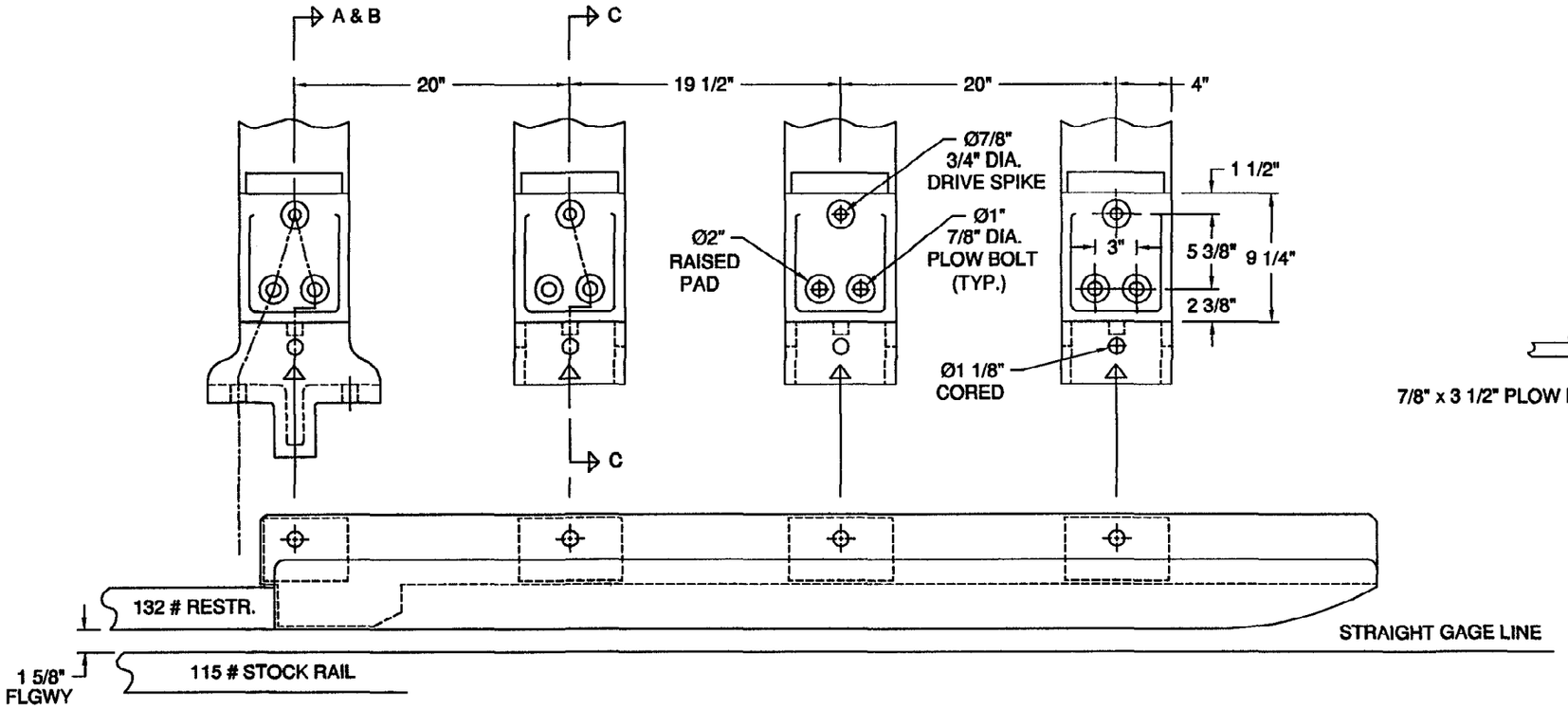
1. GUARD BAR COMPONENT TO CONFORM TO THE A.R.E.A. SPECIFICATIONS FOR SPECIAL TRACKWORK IN THE PORTFOLIO OF TRACKWORK PLANS SECTION 100-96, PART M-2. TORCH CUTTING TO FACILITATE FIT OF MANGANESE BAR WITH OTHER COMPONENTS IS PROHIBITED.
2. FINISH AND WORKMANSHIP OF ALL COMPONENTS SHALL MEET THE STANDARDS OUTLINED IN THE A.R.E.A. SPEC. 100-96.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY	M.O.W. DIVISION	DRG. NO. 830
		MONTH DAY, 2000 (ISSUE DATE) 0 (ISSUE NO)

STANDARD COVER GUARD
200' C.R. T-RAIL LEFT HAND TURNOUT

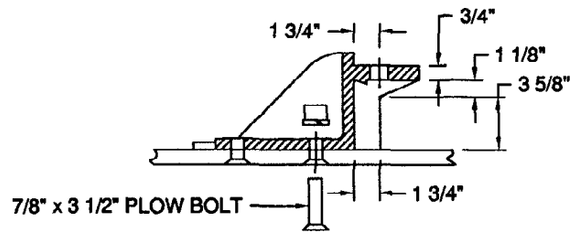
MGR. TRACK ENGINEERING

DIRECTOR M.O.W.



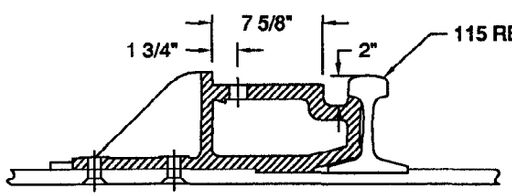
PLAN VIEW

SCALE: 1" = 1'- 0"



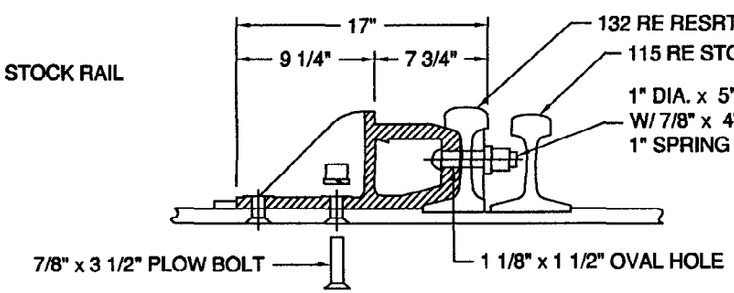
SECTION C - C

SCALE: 1" = 1'- 0"



SECTION A - A

SCALE: 1" = 1'- 0"



SECTION B - B

SCALE: 1" = 1'- 0"

NOTE:

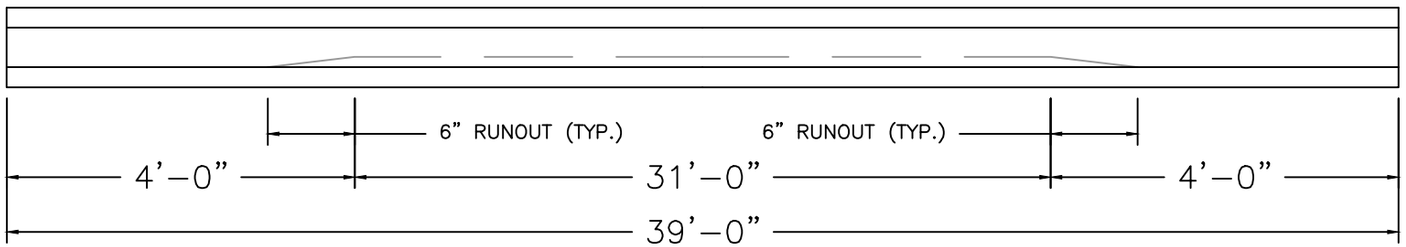
1. REFER TO SPECIFICATION FOR 115 RE GUARDED SPECIAL TRACKWORK IN THE BOOK OF STANDARD MATERIAL / CONSTRUCTION SPECIFICATIONS.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY	M.O.W. DIVISION	DRG. NO. 835
		JAN. 1. 2001 (ISSUE DATE) 0 (ISSUE NO.)

STANDARD COVER GUARD CHAIRS
200' C.R. T-RAIL RIGHT HAND TURNOUT

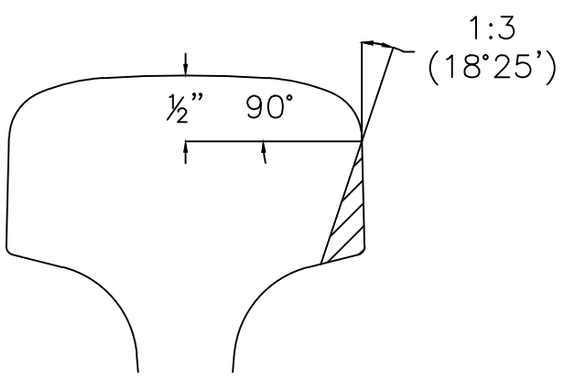
MGR. TRACK ENGINEERING

DIRECTOR - M.O.W.



NOTES:

1) STOCK RAILS TO BE FULLY HEAT–TREATED PER CURRENT AREMA SPECIFICATIONS.
2)UNDERCUT SIDE OF RAIL TO BE OPPOSITE RAIL BRAND SIDE OF RAIL.
3)DRILL BOTH ENDS OF STOCK RAIL 3½"–"–6"@2⅞" A.B., 1⅛" DIAMETER HOLES UNLESS DIRECTED OTHERWISE. NO HEEL BLOCK DRILLING UNLESS SPECIFIED.



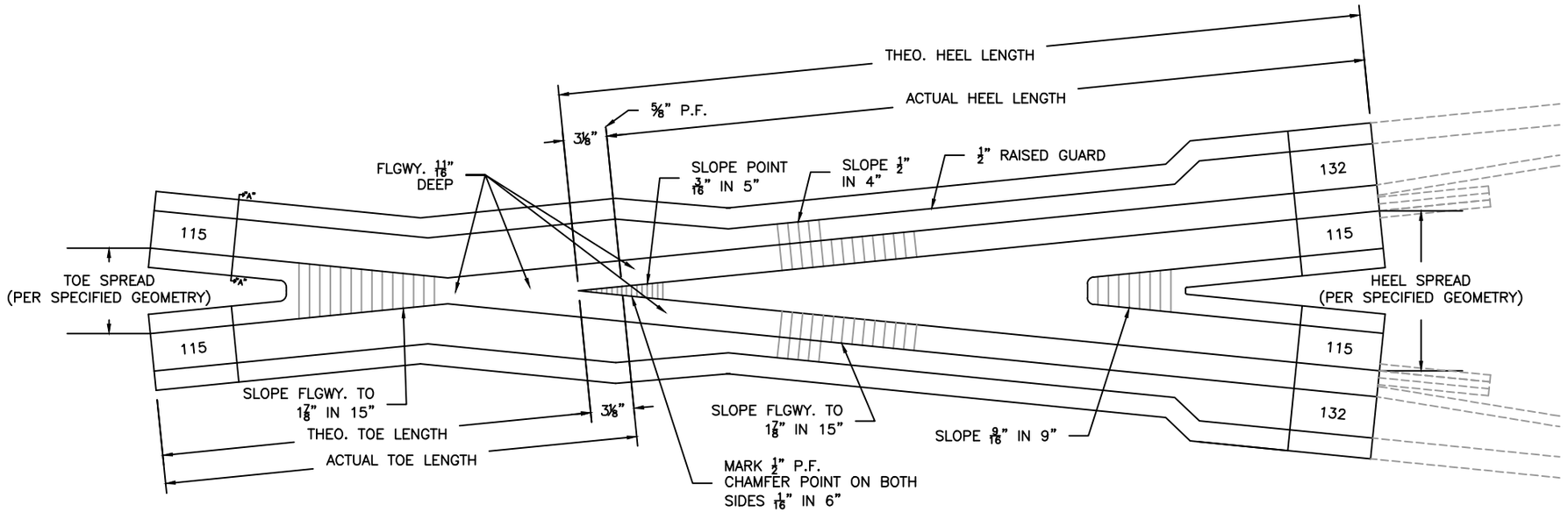
UNDERCUT DETAIL

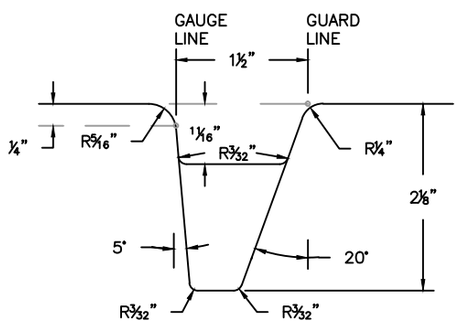
MASSACHUSETTS BAY TRANSPORTATION AUTHORITY	M.O.W. DIVISION	DRG. NO. 845
		APR. 18, 2013 ISSUE DATE / 0 ISSUE NO.

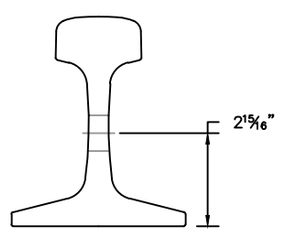
UNDERCUT STOCK RAIL DETAILS

MGR. TRACK ENGINEERING

DIRECTOR – M.O.W.







SECTION "A–A"

NOTES:

1) SOLID MANGANESE FROG PER AREMA PLAN NO. 671 AS MODIFIED HEREIN. REFER TO TRACKWORK PLANS FOR SPECIFIC GEOMETRIC CRITERIA.

2) DETACHABLE WING RAILS AND 132/115 COMBO HEEL SHOWN FOR ILLUSTRATION PURPOSES ONLY. REFER TO TRACKWORK PLANS TO DETERMINE IF HEEL GUARDING REQUIRED.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

M.O.W. DIVISION

DRG. NO. 850

APR. 18, 2013 (0)

ISSUE DATE ISSUE NO.

SOLID MANGANESE FROG DETAILS

MGR. TRACK ENGINEERING

DIRECTOR – M.O.W.

ALL MEASUREMENTS GIVEN AT 1/4" BELOW TOP OF RAIL

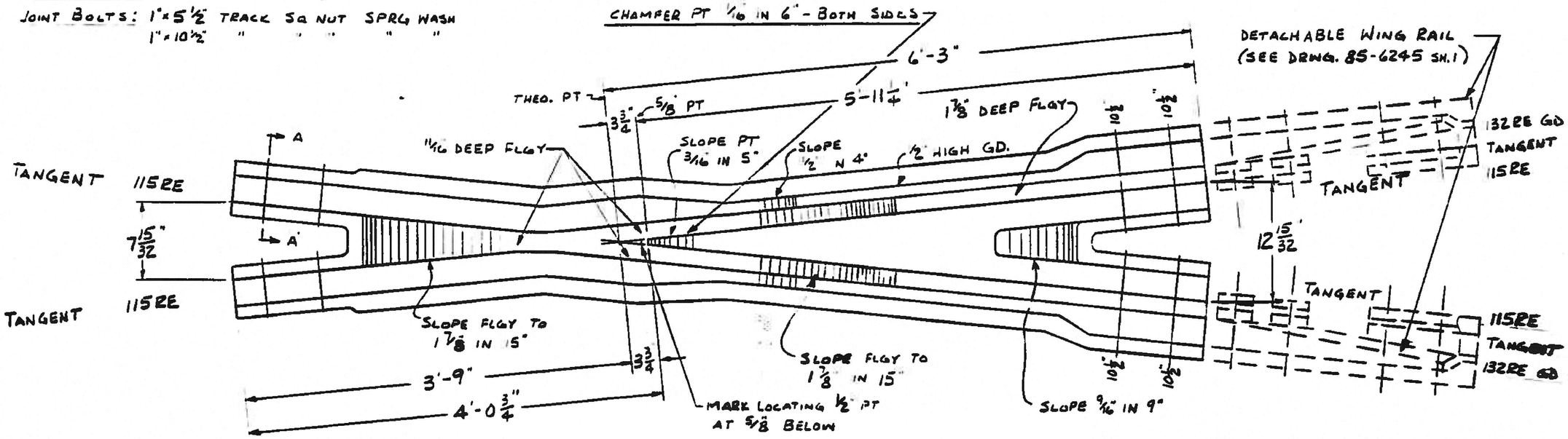
DRILLING : 3 1/2" x 6" ~ 2 7/8" A.B. TOE END / 3 1/2" x 6" ~ 3 13/32" A.B. HEEL END

FLANGEWAYS : 1 1/2" WIDE x 1 7/8" & 1 1/16" DEEP

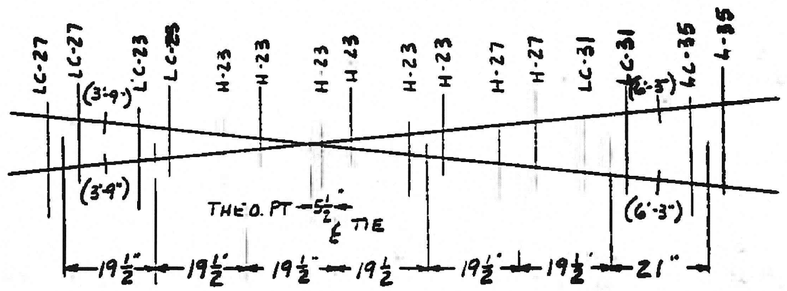
PLATES: HTT (PER WHITE ORDER)

JOINT BOLTS: 1" x 5 1/2" TRACK SQ NUT SPRG WASH
1" x 10 1/2" " " " " "

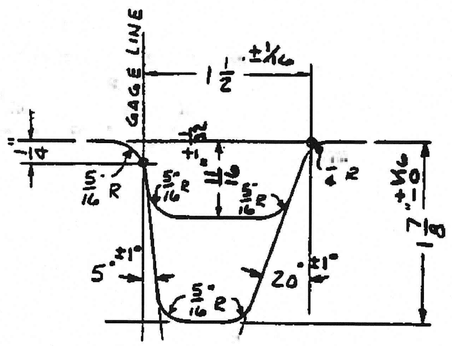
3-SHOT EXPLOSION HARDENED 321-388 BHN.
TREAD SURFACE & FLOOR TO BE HARDENED PER M-24552.



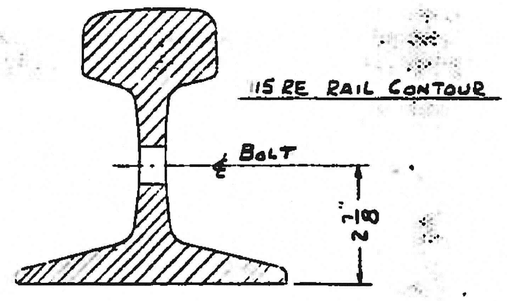
MANG. CSTG. M-24556



LOCATION OF HOOK TWIN TIE PLATES



DETAIL OF FLANGEWAYS



SECTION A-A

TOLERANCES PER B620.12.12 EXCEPT FLANGEWAYS

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

M.O.W. DIVISION

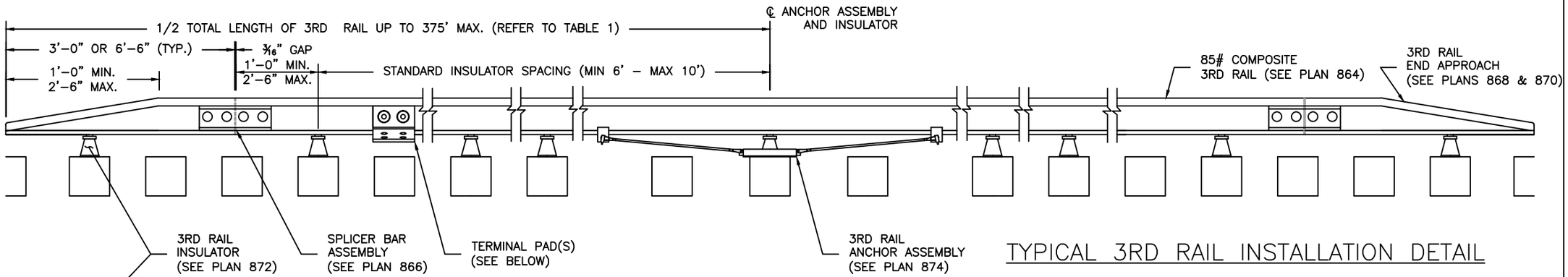
DRG. NO. 851

ISSUE DATE

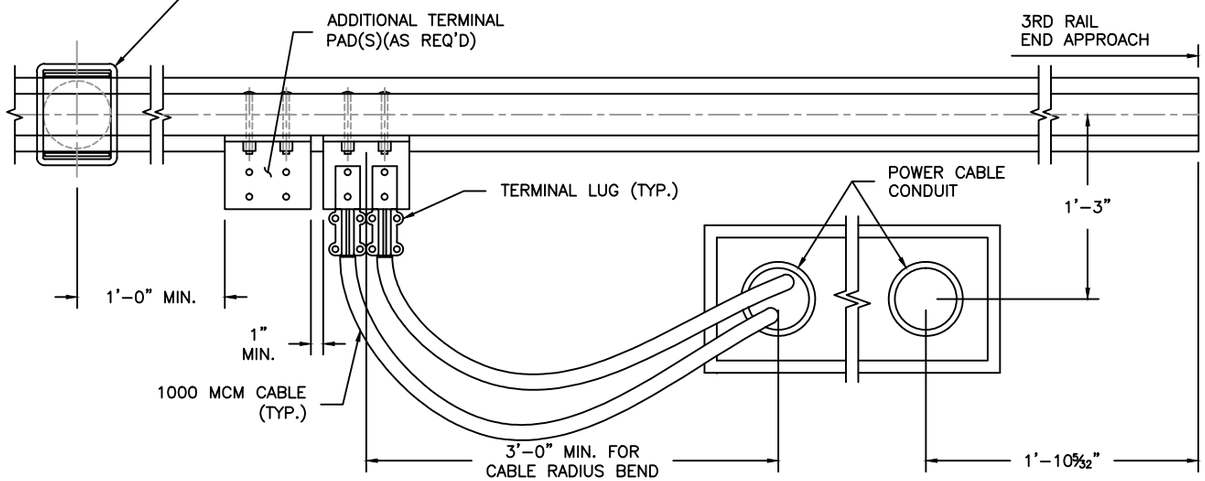
ISSUE NO. 0

NO. 6 MANGANESE FROG - 9°-31'-38" LTR

MGR. TRACK ENGINEERING

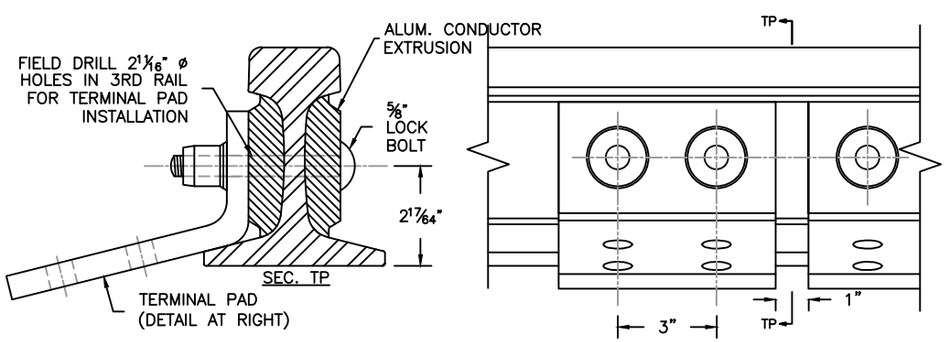


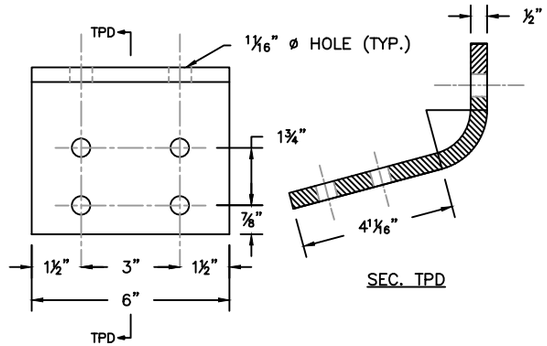
TYPICAL 3RD RAIL INSTALLATION DETAIL



3RD RAIL ANCHOR ASSEMBLIES REQ'D			
3RD RAIL LENGTH	% GRADE		
	0-1	1-2	2-3
LESS THAN 200'	1	1	1
200' TO 400'	1	1	2
400' TO 600'	1	2	2
600' TO 800'	2	2	3
880' TO 1500' (MAX)	2	3	N/A

NOTES:
1) REFER TO ASSOCIATED 3RD RAIL SYSTEM DRAWINGS IN THE BOOK OF STD. TRK. PLANS.
2) REFER TO SPECIFICATIONS FOR 3RD RAIL SYSTEM IN THE BOOK OF STANDARD TRACK MATERIAL/CONSTRUCTION SPECS.





MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

M.O.W. DIVISION

DRG. NO. 860

APR. 18, 2013 ISSUE DATE

0 ISSUE NO.

85# COMPOSITE 3RD RAIL SYSTEM INSTALLATION/LAYOUT DETAILS INSULATOR, ANCHORS, TERMINAL PADS

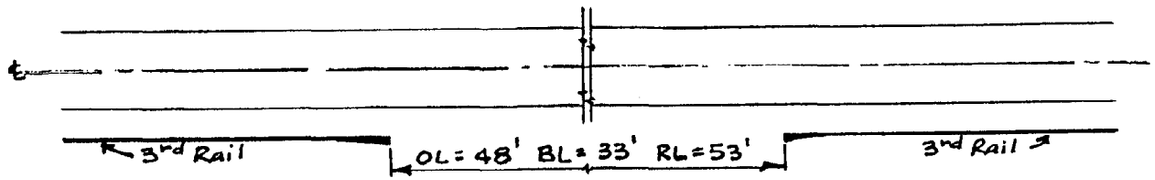
MGR. TRACK ENGINEERING

DIRECTOR - M.O.W.

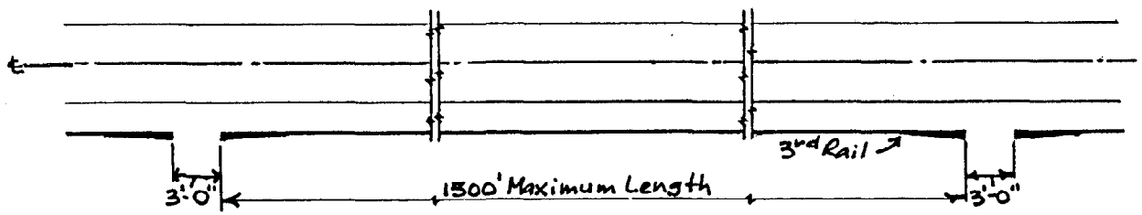
NOTES:

① Refer to associated drawings for 3rd rail system in the Book of Standard Trackwork Plans.

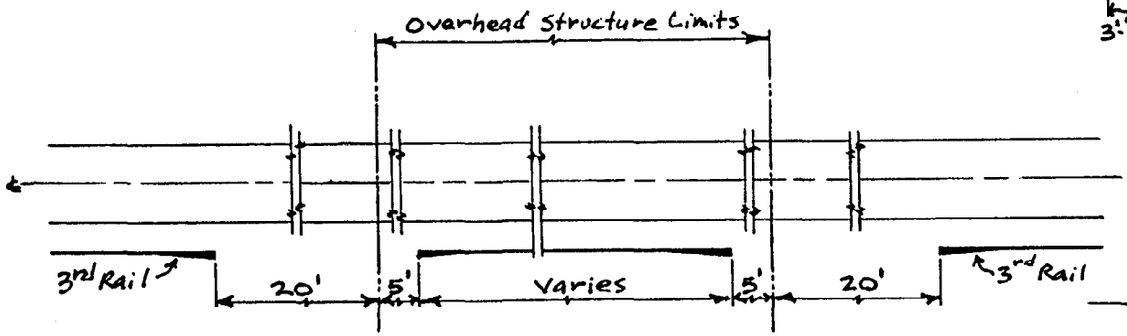
② Refer to Specifications for 3rd Rail System in the Book of Standard Track Material/Construction Specs.



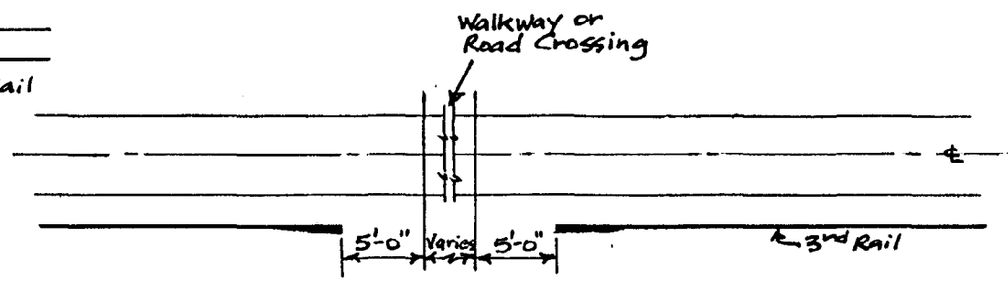
SECTION BREAK



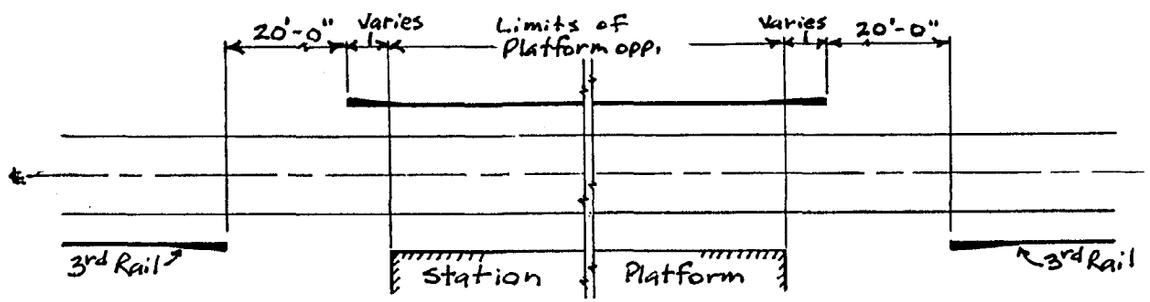
EXPANSION BREAK



OVERHEAD STRUCTURE BREAK



AT-GRADE CROSSING BREAK



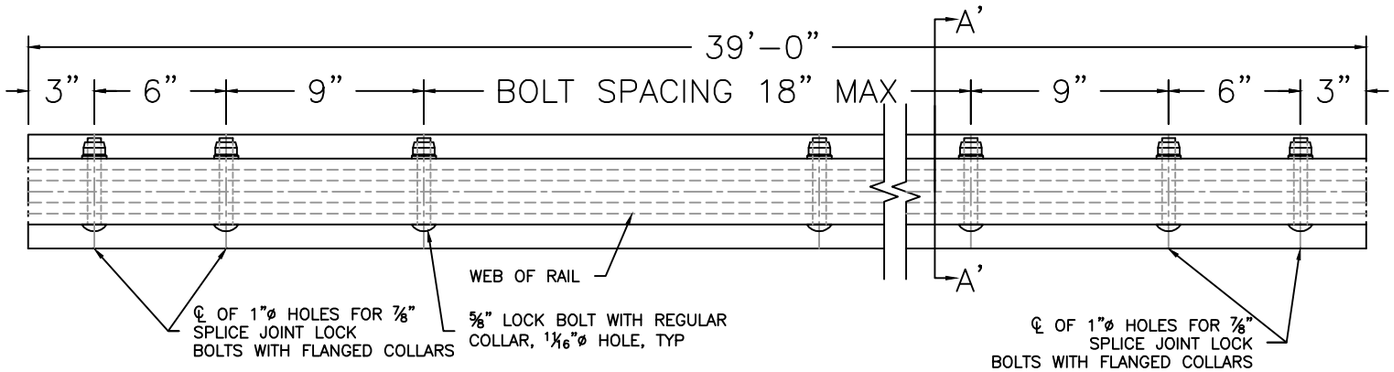
TRANSPOSITION @ STATION

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY	M.O.W. DIVISION	DWG. NO. 862
		DATE / ISSUE NO.

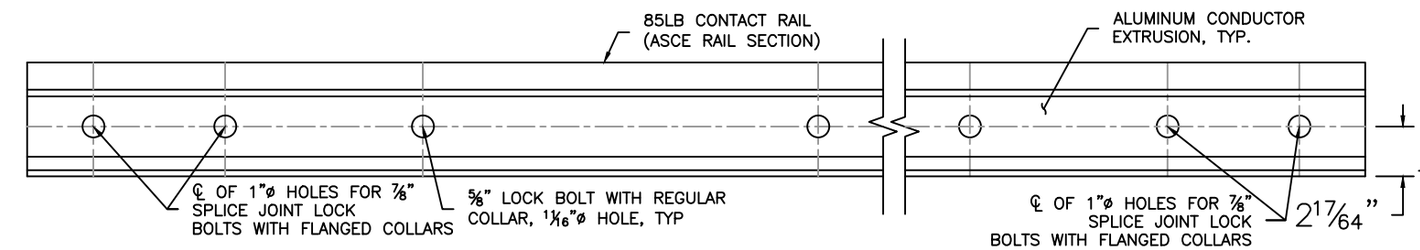
3RD RAIL SYSTEM LAYOUT DETAILS

Mgr. Track Engineering

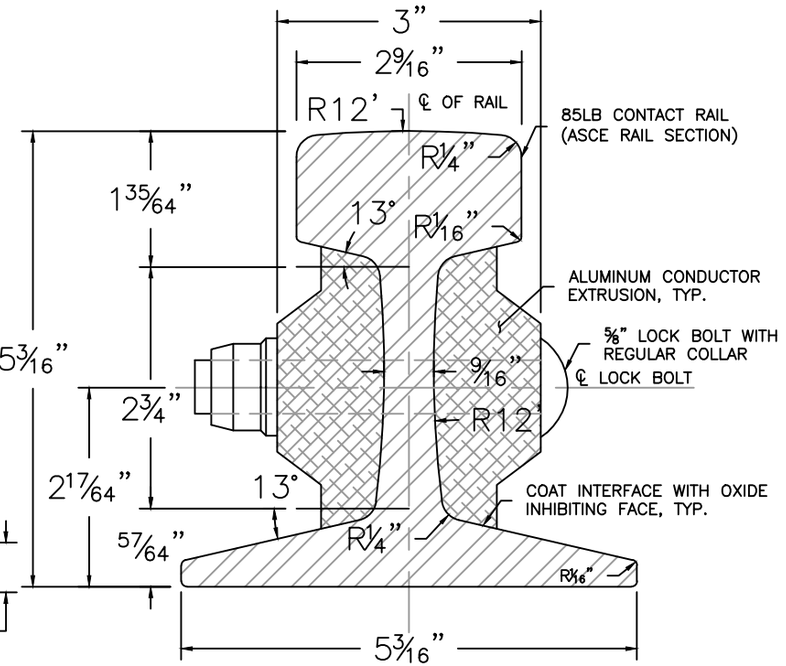
Director - M.O.W.



PLAN



ELEVATION



SECTION A'–A'

NOTES:

1) REFER TO ASSOCATED DRAWINGS FOR SPLICE JOINT DETAILS, ANCHOR ASSEMBLIES, INSULATORS, ETC. IN THE BOOK OF STANDARD TRACKWORK PLANS.

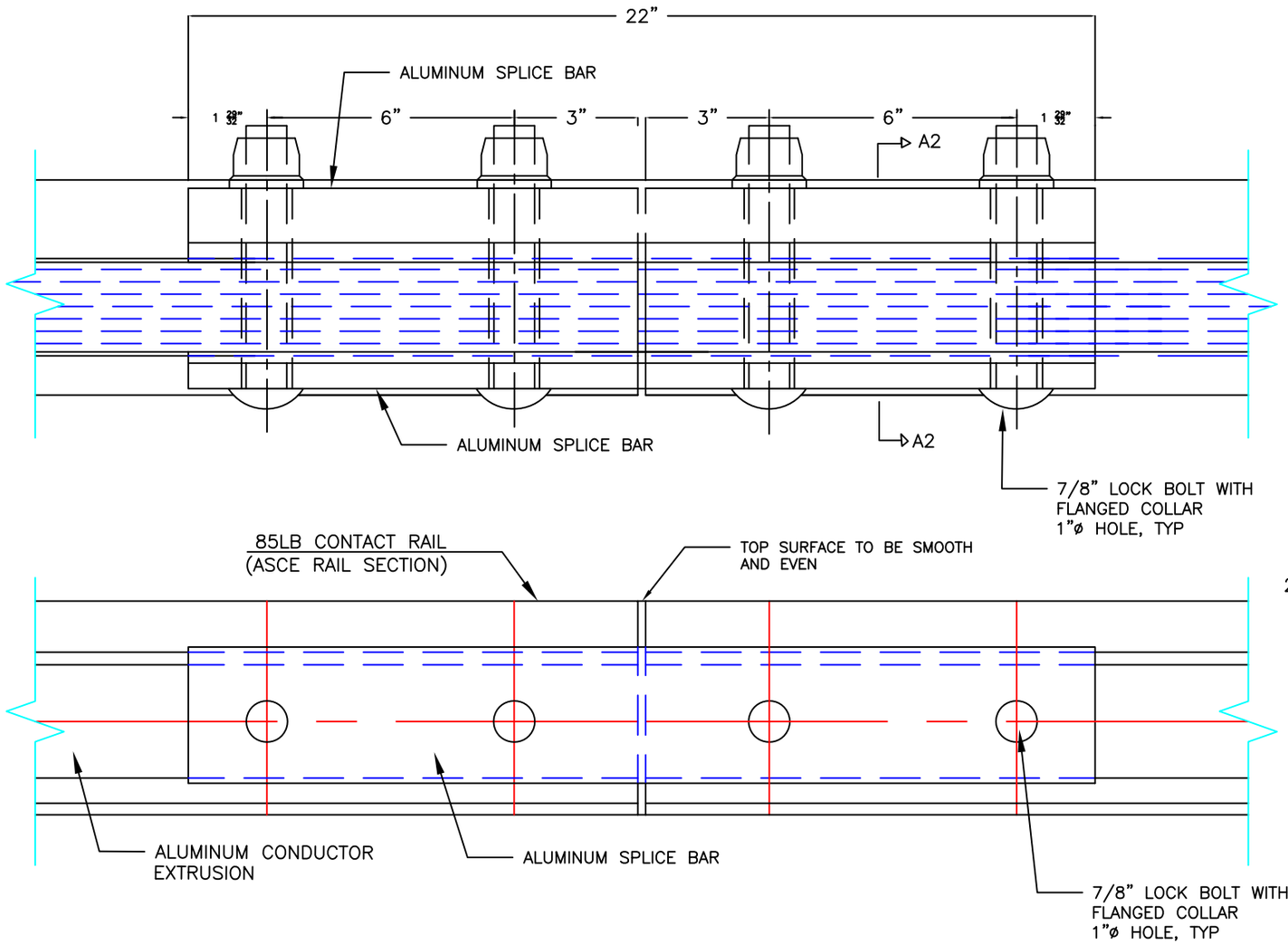
2)REFER TO SPECIFICATIONS FOR CONTACT RAIL SYSTEM IN THE BOOK OF STANDARD TRACK MATERIAL/CONSTRUCTION SPECIFICATIONS.

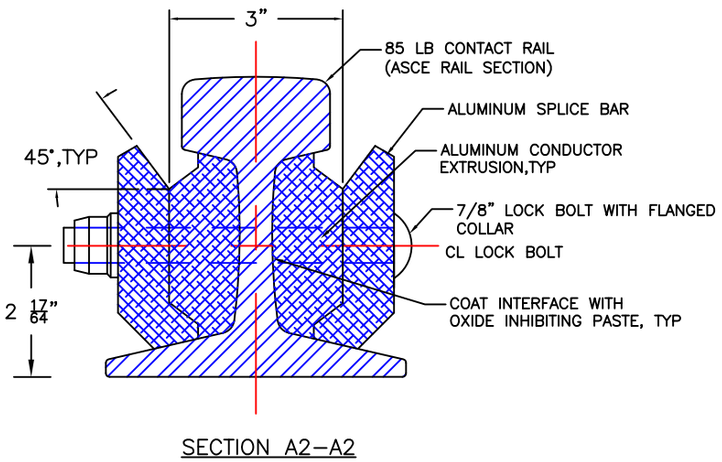
MASSACHUSETTS BAY TRANSPORTATION AUTHORITY	M.O.W. DIVISION	DRG. NO. 864
		APR. 18, 2013 (ISSUE DATE) (0) (ISSUE NO.)

85 LB. COMPOSITE CONTACT RAIL DETAILS

MGR. TRACK ENGINEERING

DIRECTOR – M.O.W.





SECTION A2–A2

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

M.O.W. DIVISION

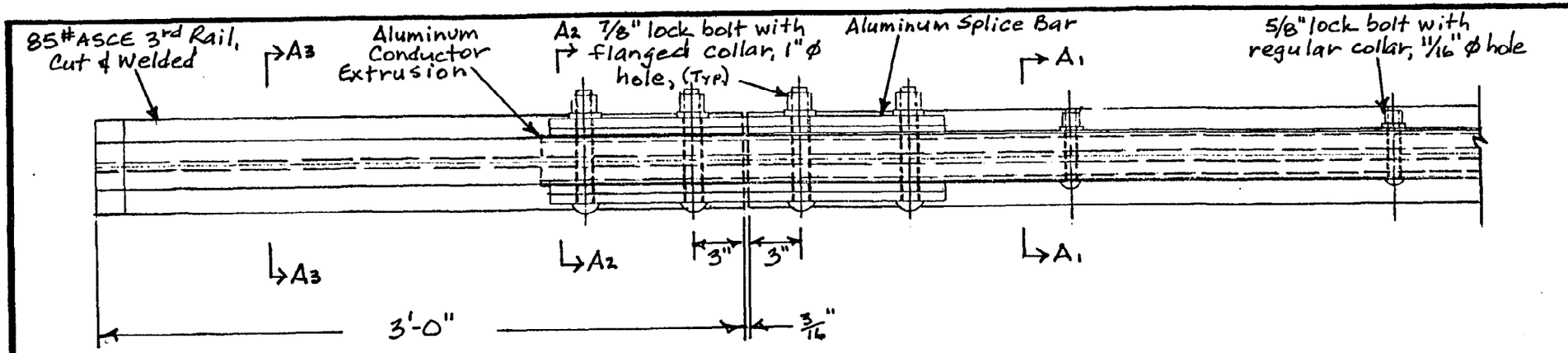
DRG. NO.

ISSUE DATE | ISSUE NO. 0

85 LB COMPOSITE CONTACT RAIL SPLICE JOINT DETAILS

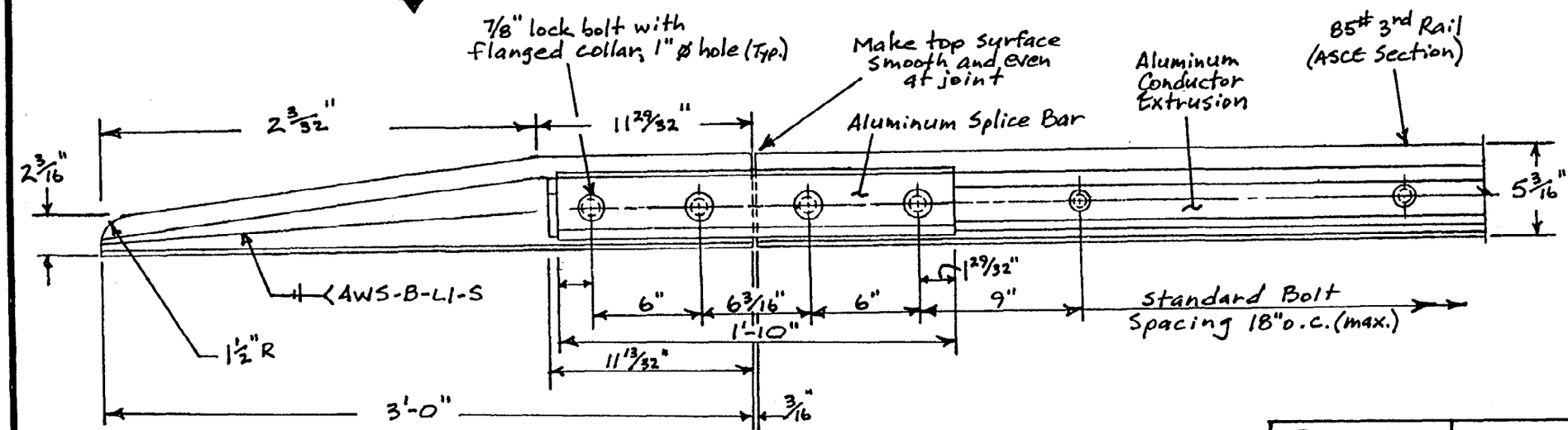
MGR. TRACK ENGINEERING

DIRECTOR – M.O.W.



ELEVATION

PLAN



NOTES:

① Refer to associated drawings for 3rd rail system in the Book of Standard Trackwork Plans.

② Refer to Specification for 3rd Rail System in the Book of Standard Track Material/Construction Specs.

③ Sections A1, A2 and A3 may be found on Drawing Nos. 864, 866 and 868 respectively.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY	M.O.W. DIVISION	DWG. NO. 870
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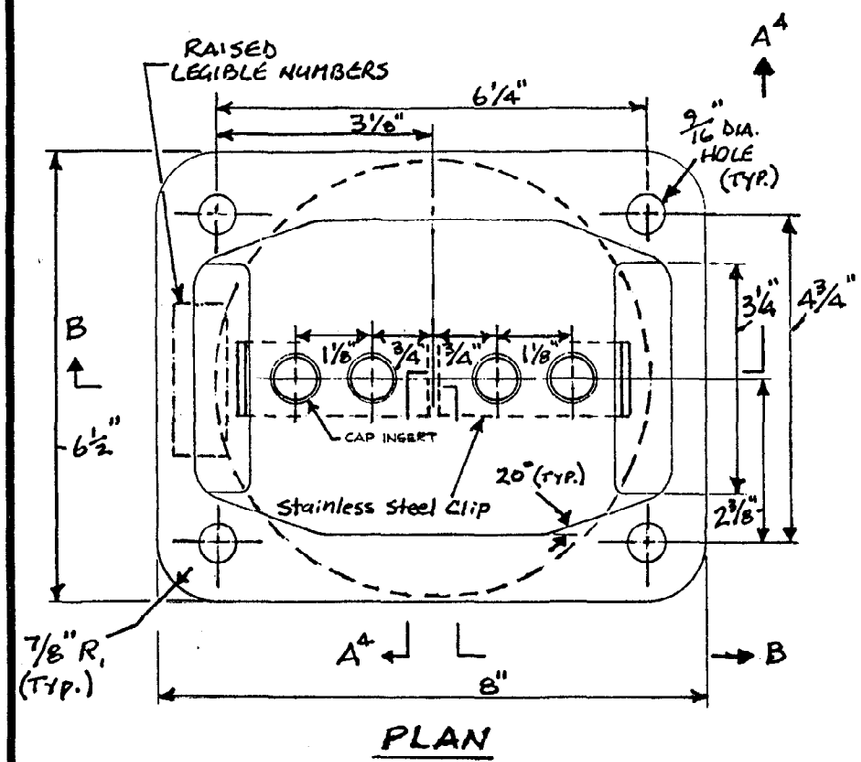
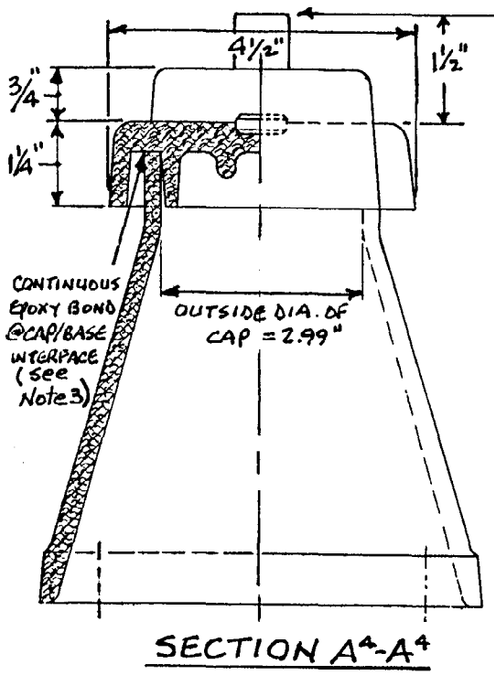
85# COMPOSITE 3rd RAIL
3'-0" END APPROACH

Mgr. Track Engineering

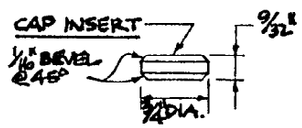
Director - M.O.W.

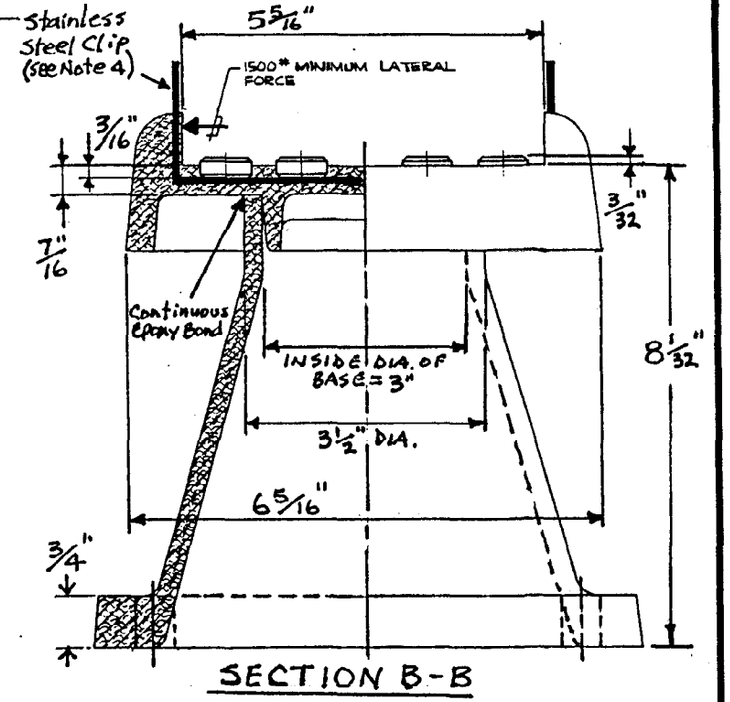


PLAN

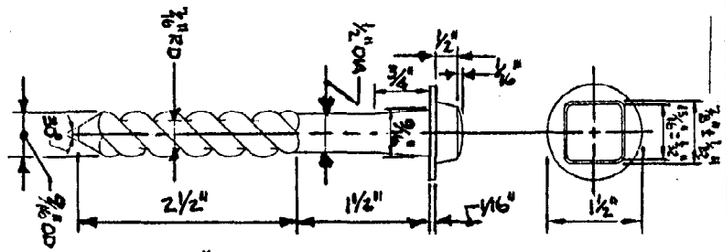


SECTION A4-A4





SECTION B-B



4" INSULATOR LAG

NOTES:

① Refer to Specifications for Contact Rail Insulator found in the Book of Standard Track Material/Construction Specifications.

② Refer to associated drawings related to the Contact Rail System in the Book of Standard Trackwork Plans.

③ Top of insulator base must contact insulator cap bottom. Insulator cap must fit inside insulator base. Epoxy bond must be continuous, without "holidays" and must be plainly visible around circumference of underside of cap.

④ Stainless steel clip as indicated – 2 @ 1/16" x 1" x 4". Clip shall be receptive to aluminum configuration when aluminum rail is specified.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY	M.O.W. DIVISION	DWG. NO. 872
		DATE / ISSUE NO.

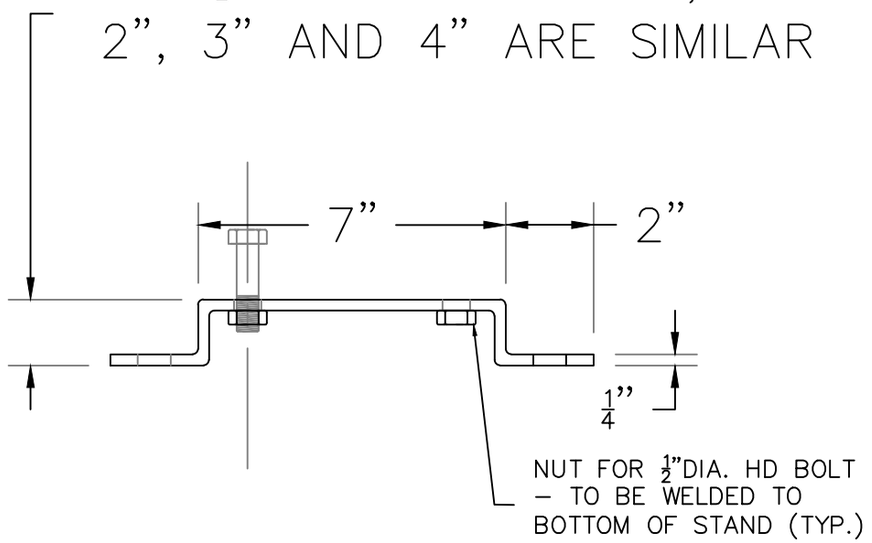
85# CONTACT RAIL SYSTEM
INSULATOR DETAILS
FOR USE WITH 115 RE RUNNING RAIL ON WOOD TIES

Mgr. Track Engineering

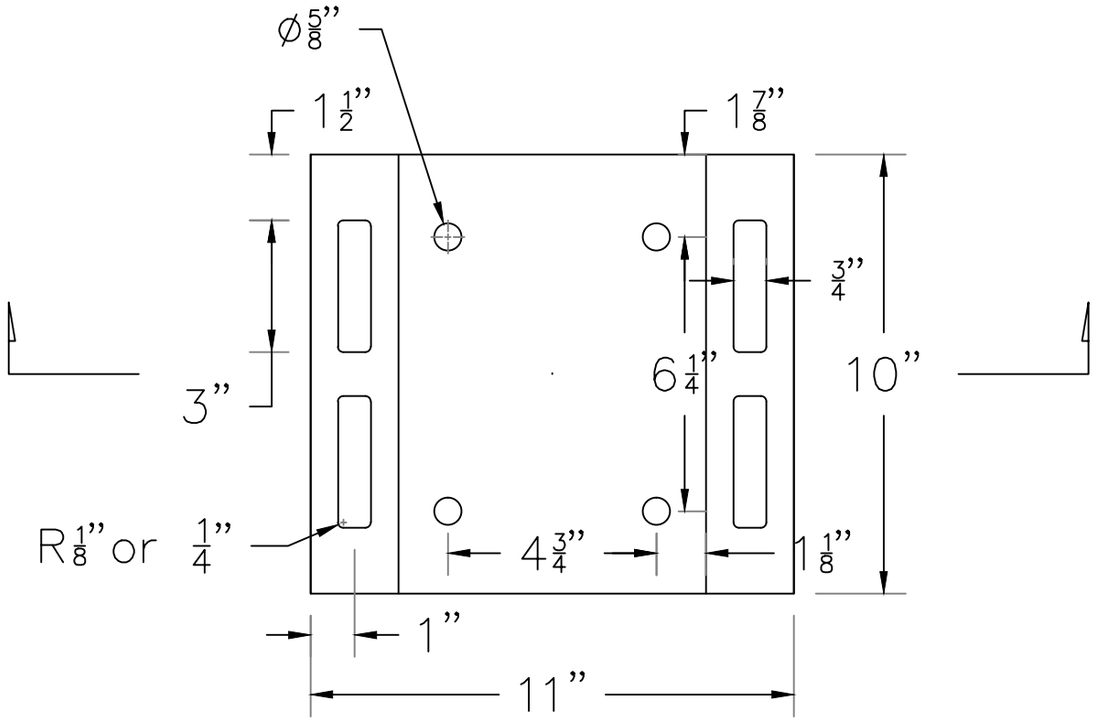
Director-M.O.W.

NOTES:

1/ REFER TO M.O.W TRACK MAINTENANCE STANDARD DWG NO. 872 FOR INSULATOR DETAIL.



SECTION



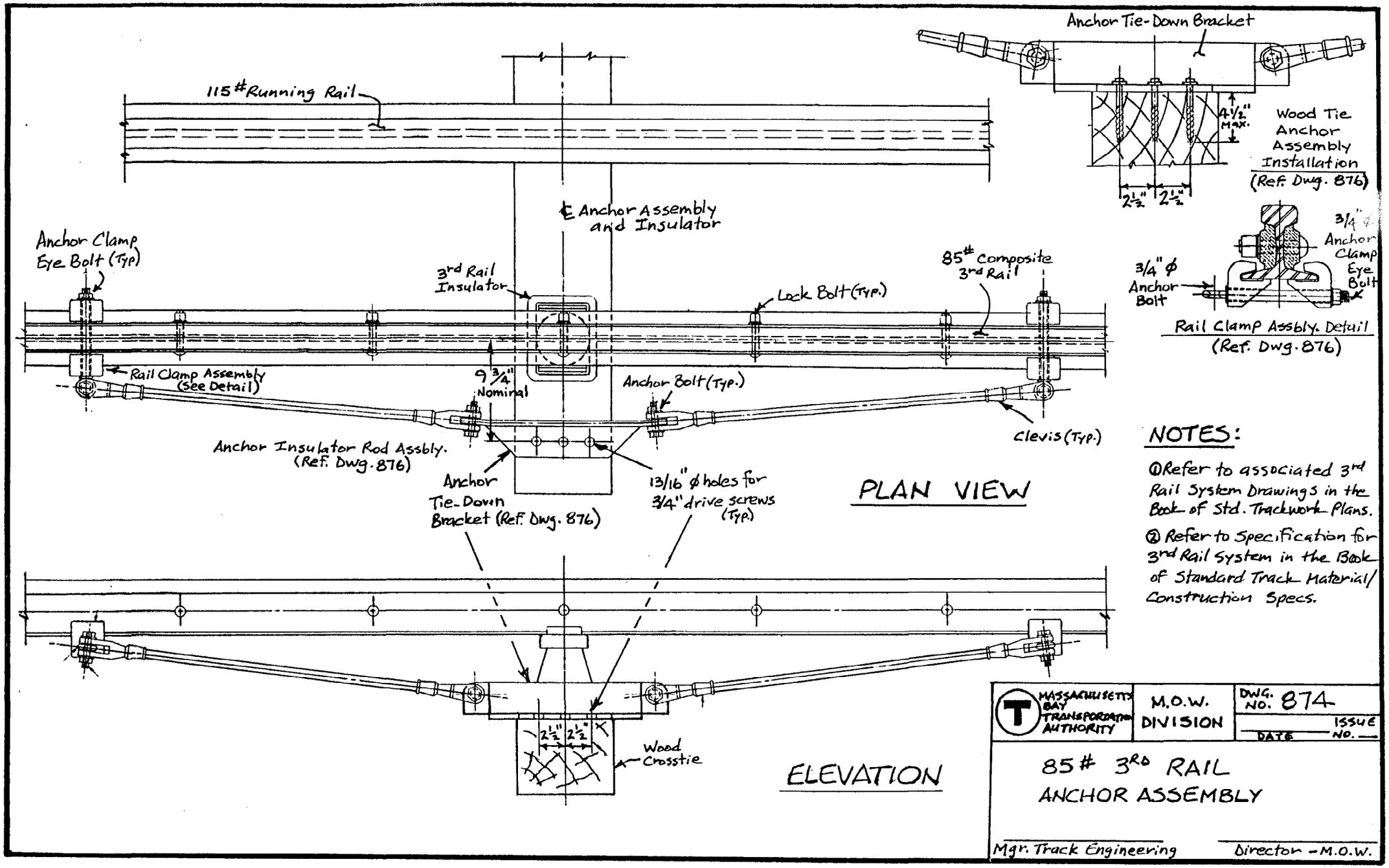
PLAN VIEW

NOT TO SCALE

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY	M.O.W. DIVISION	DRG. NO. 873
		ISSUE DATE: ⓪ ISSUE NO.

INSULATOR STAND FOR FLOATING SLAB SECTION

MGR. TRACK ENGINEERING



NOTES:

① Refer to associated 3rd Rail System Drawings in the Book of Std. Trackwork Plans.

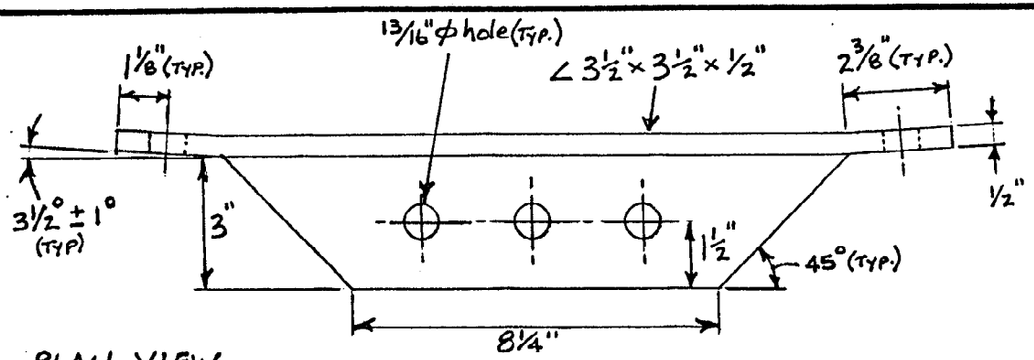
② Refer to Specification for 3rd Rail System in the Book of Standard Track Material/ Construction Specs.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY | M.O.W. DIVISION | DWG. NO. 874 | DATE | ISSUE NO. —

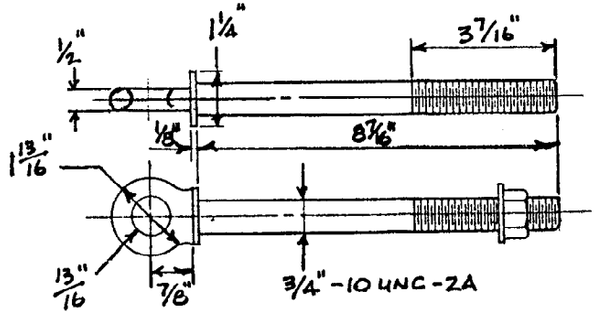
85# 3RD RAIL ANCHOR ASSEMBLY

Mgr. Track Engineering

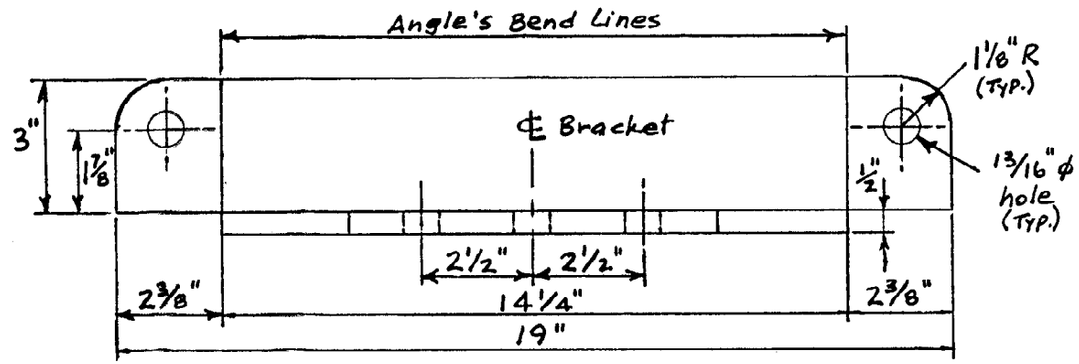
Director - M.O.W.



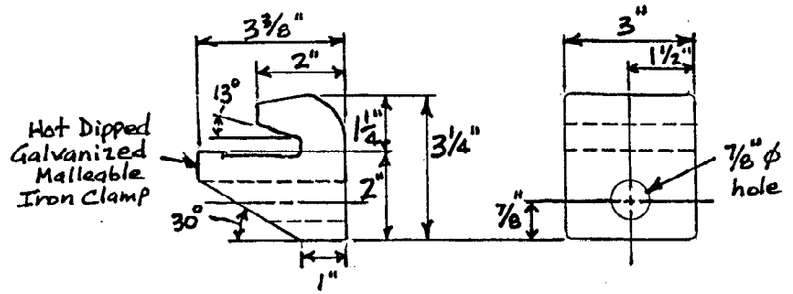
PLAN VIEW



ANCHOR CLAMP EYE BOLT

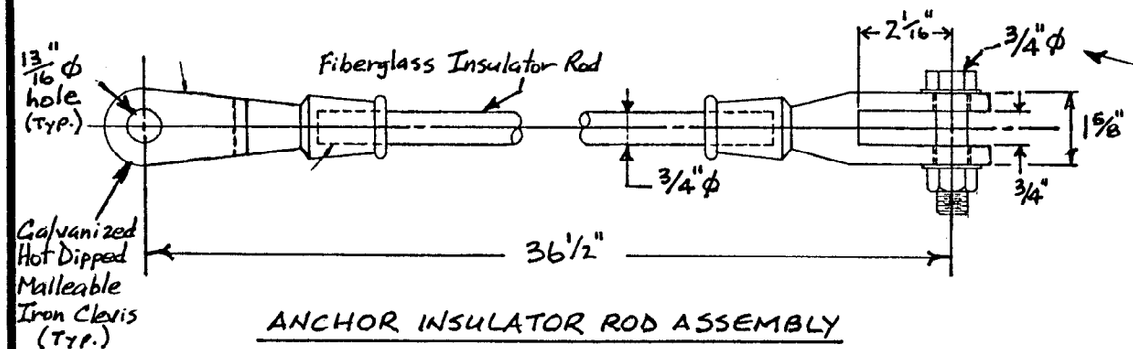


ELEVATION

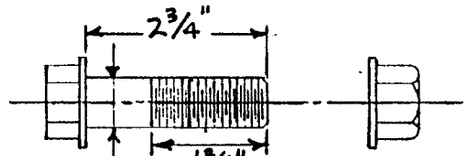


RAIL CLAMP

TIE-DOWN BRACKET DETAIL



ANCHOR INSULATOR ROD ASSEMBLY



ANCHOR BOLT

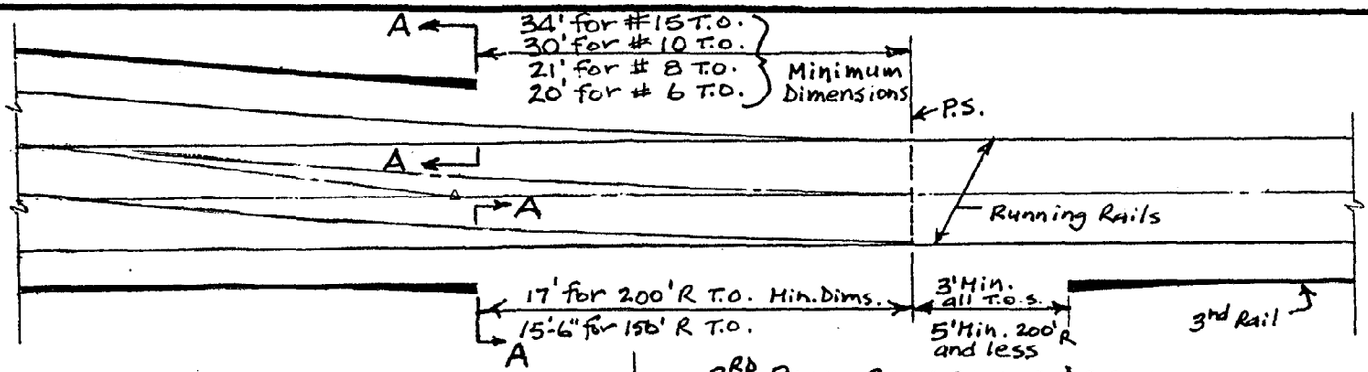
NOTES:

Refer to NOTES on DWG. 874.

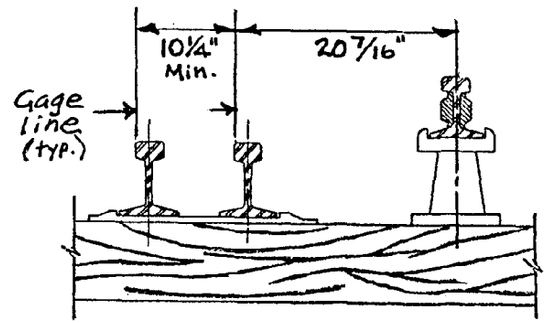
MASSACHUSETTS BAY TRANSPORTATION AUTHORITY | M.O.W. DIVISION | DWG. NO. 876 | DATE | ISSUE NO.

85# 3RD RAIL
ANCHOR ASSEMBLY DETAILS

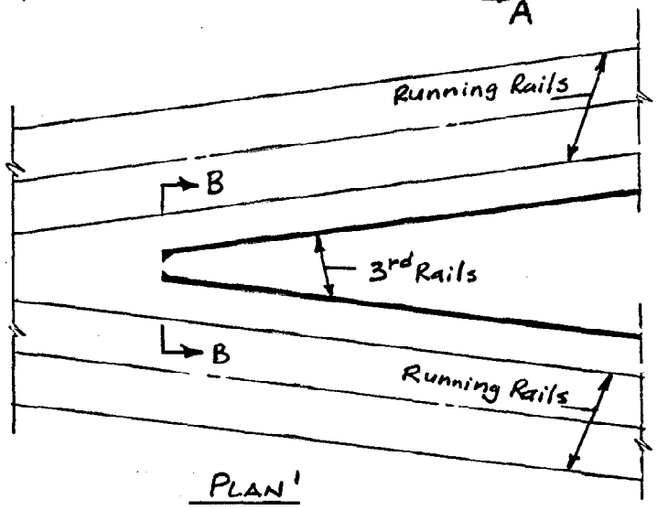
Mgr. Track Engineering | Director - M.O.W.



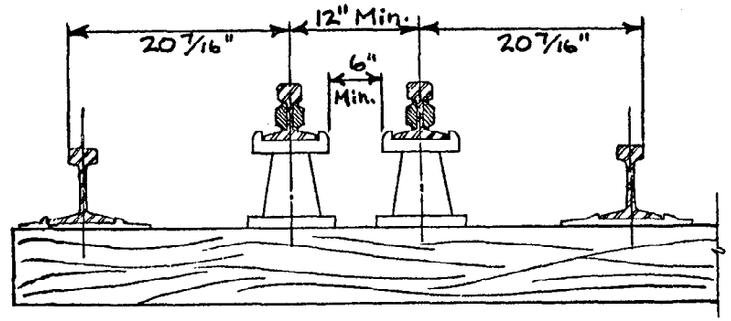
3RD RAIL CLEARANCE DETAIL



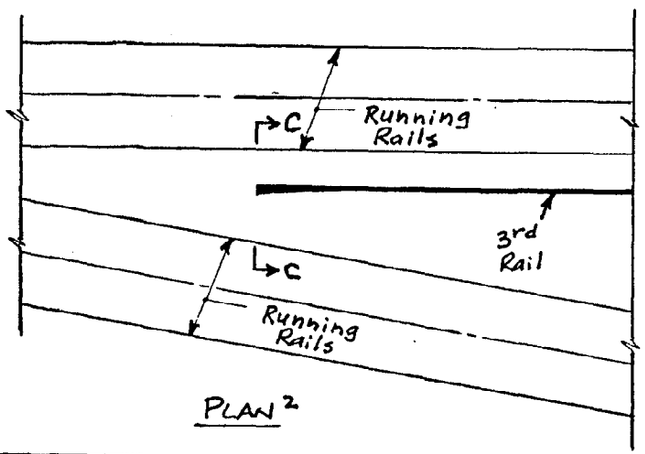
SECTION A-A (see Detail at left)



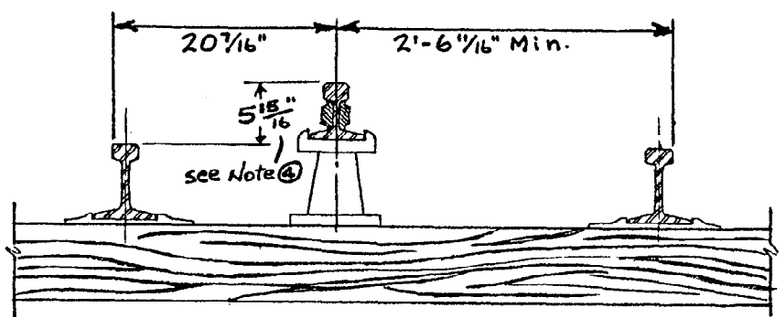
PLAN 1



SECTION B-B (See Plan 1 at left)



PLAN 2



SECTION C-C (See Plan 2 at left)

NOTES:

① Refer to associated 3rd Rail System drawings in the Book of Standard Trackwork Plans.

② Refer to Specifications for 3rd Rail System in the Book of Standard Track Material/Construction Specs.

③ Clearance in other special trackwork configurations must be calculated on an individual basis and calculations (with sketches) submitted to the M.O.W. Division Manager of Track Engineering for review and approval.

④ Relationship of top of running rail to top of 3rd rail is typical, 5 15/16". Refer to Track Maintenance and Safety Standards for Blue, Orange and Red Lines for maintenance limits.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY	M.O.W. DIVISION	DWG. NO. 878
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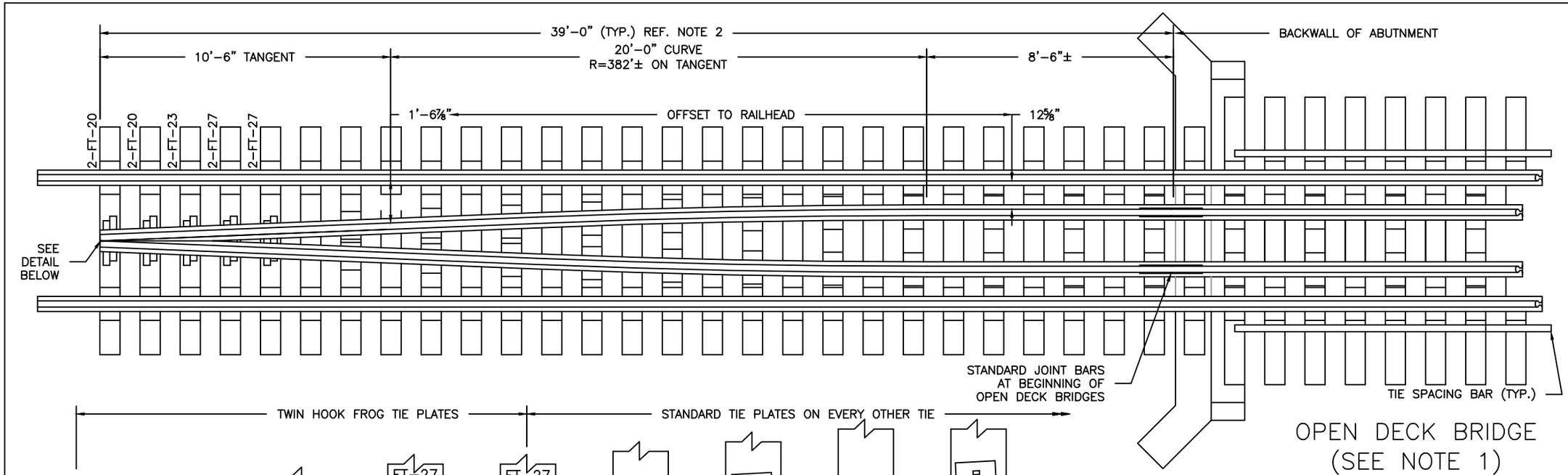
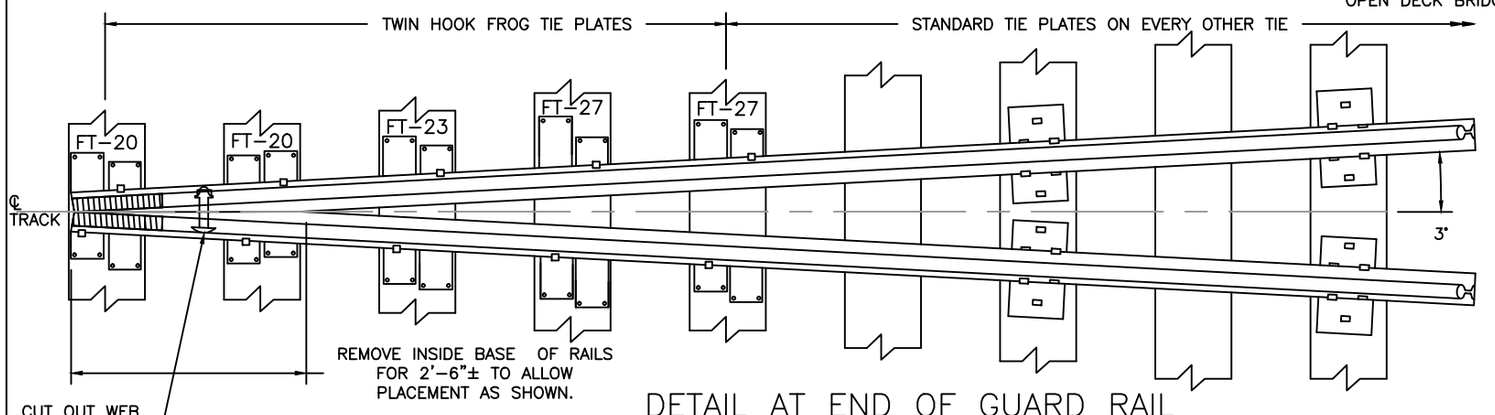
3RD RAIL CLEARANCE in Special Trackwork

Mgr. Track Engineering

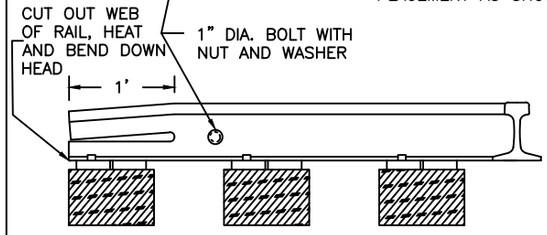
Director - M.O.W.



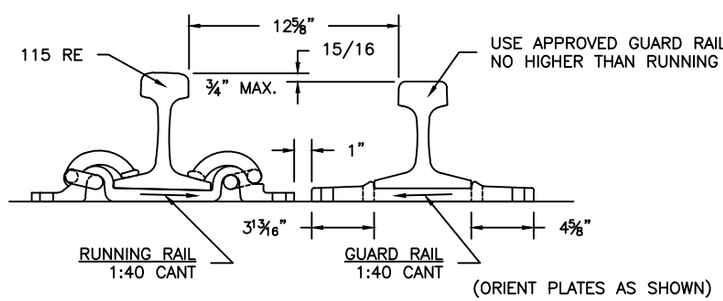
OPEN DECK BRIDGE
(SEE NOTE 1)



DETAIL AT END OF GUARD RAIL



ELEVATION AT END OF GUARD RAIL



(ORIENT PLATES AS SHOWN)

NOTES:

1) BALLASTED DECK BRIDGES SHALL USE RESILIENTLY FASTENED PLATES AS SHOWN ON PLAN NO. 905 ALTERNATIVE USE OF CUT SPIKE FASTENED GUARD RAIL PLATES ON OPEN DECK BRIDGES AS SHOWN.

2) GUARD RAIL REQUIRED ON APPROACH END OF ALL BRIDGES AS DESCRIBED IN SECTION 4,C.13.9 OF THE TRANSIT DESIGN STANDARDS MANUAL. ALSO MAY BE REQUIRED ON LEAVING END OF BRIDGES AS DIRECTED OR SHOWN ON TRACKWORK PLANS.

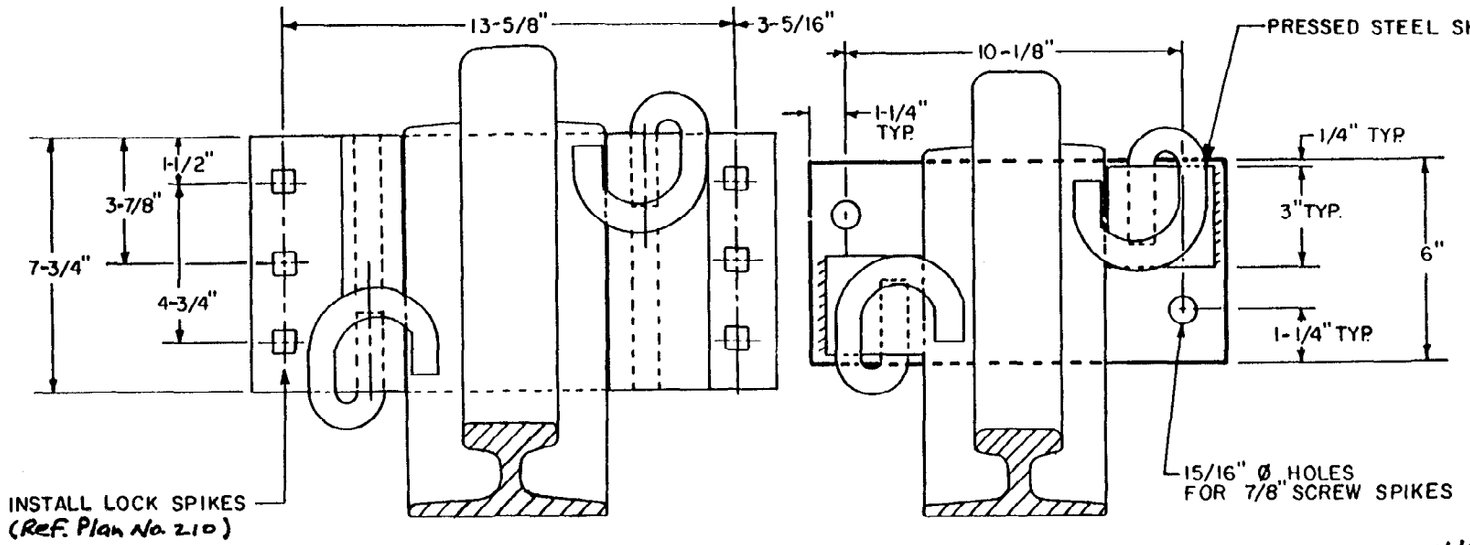
3) PLATE GUARD RAIL AS SHOWN OTHERWISE FULL JOINTED AND SPIKE THE SAME AS RUNNING RAILS.

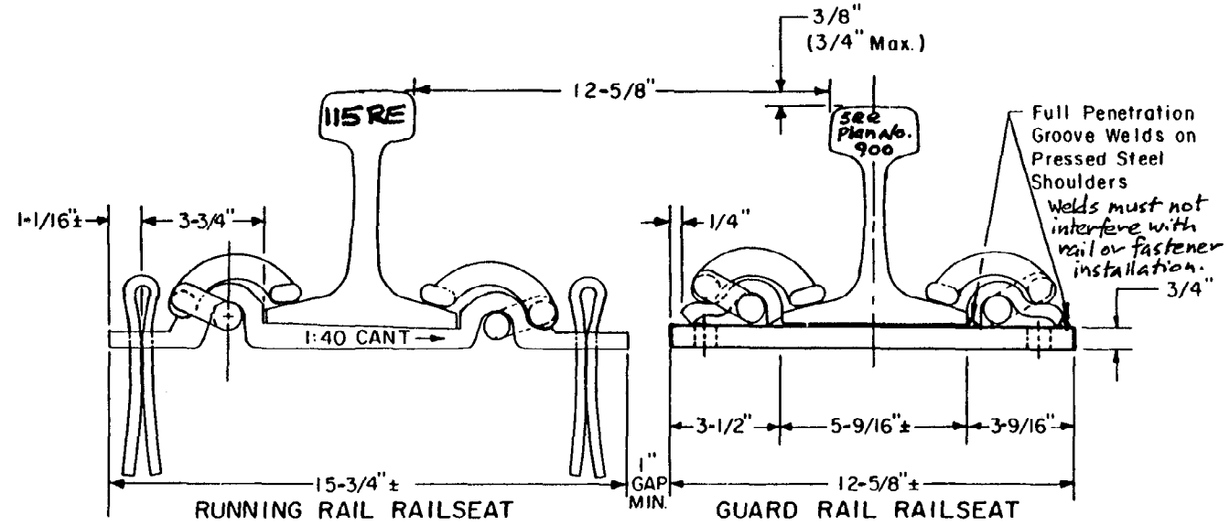
MASSACHUSETTS BAY TRANSPORTATION AUTHORITY	M.O.W. DIVISION	DRG. NO. 900
		APR. 18, 2013 (0)
		ISSUE DATE ISSUE NO.

BRIDGE GUARD INSTALLATION DETAILS

MGR. TRACK ENGINEERING

DIRECTOR – M.O.W.





Tie Plate (Ref. Plan No. 225)
Lockspikes (Ref. Plan No. 220)
Fasteners (Ref. Plan No. 240)

Tie Plate (as shown)
Lockspikes
Pressed Steel Shoulders
Fasteners

NOTES:

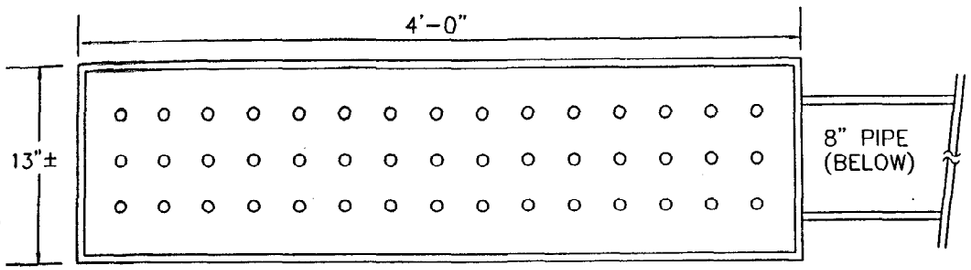
1. Installation shown for use on ballasted deck bridges on wood ties and elsewhere as directed.
2. Ref. Plan No. 900 for additional guard rail installation details.
3. All materials shall conform to requirements of the Book of Standard Track Material/Construction Specs., the Book of Standard Trackwork Plans and the Transit Design Standards Manual.
4. Material to be ASTM A-36 steel unless otherwise specified. Brand guard rail plates to indicate producer and year produced. Guard rail plate assemblies every other tie unless directed otherwise.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY	M.O.W. DIVISION	DWG. NO. 905
		ISSUE NO. — DATE

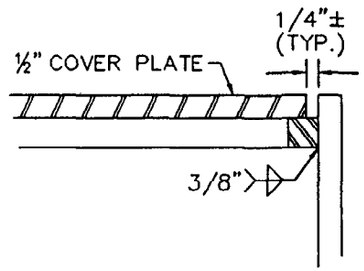
RESILIENTLY FASTENED BRIDGE GUARD

Mgr. Track Engineering

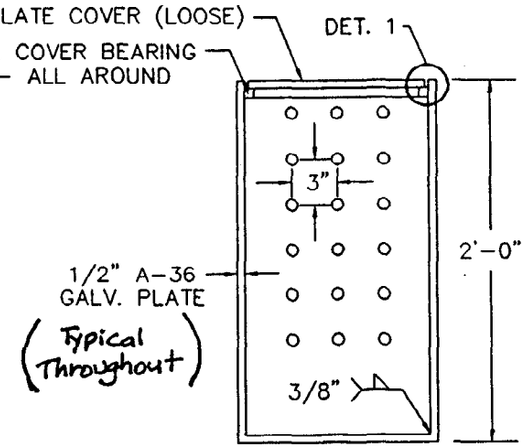
Director-M.O.W.



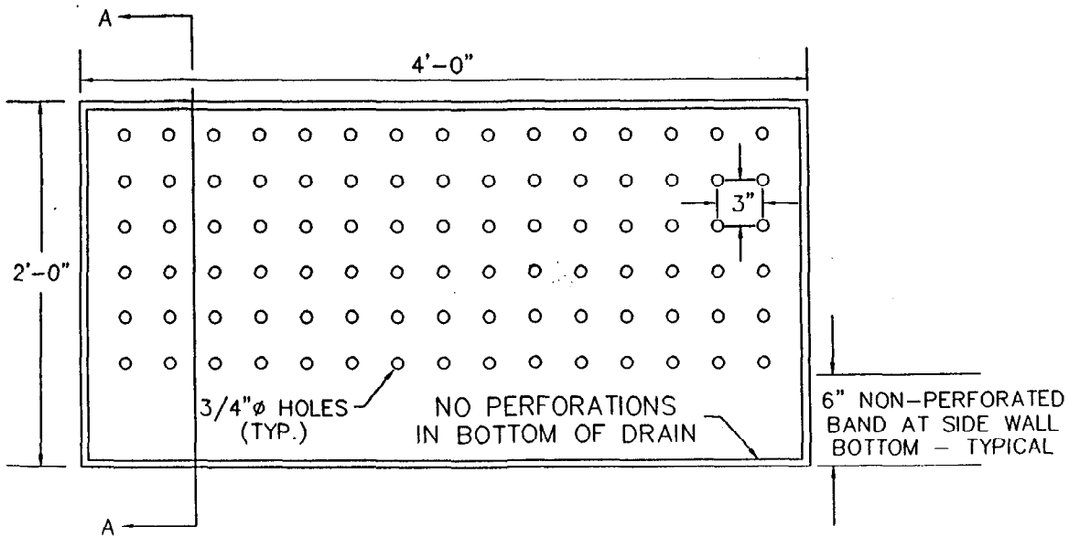
PLAN VIEW



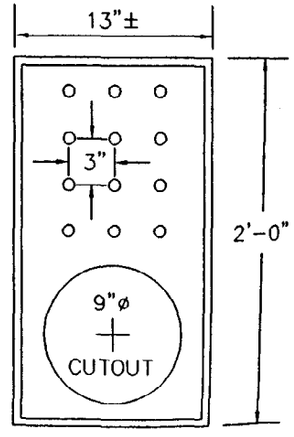
DETAIL 1



SECTION A



SIDE VIEW



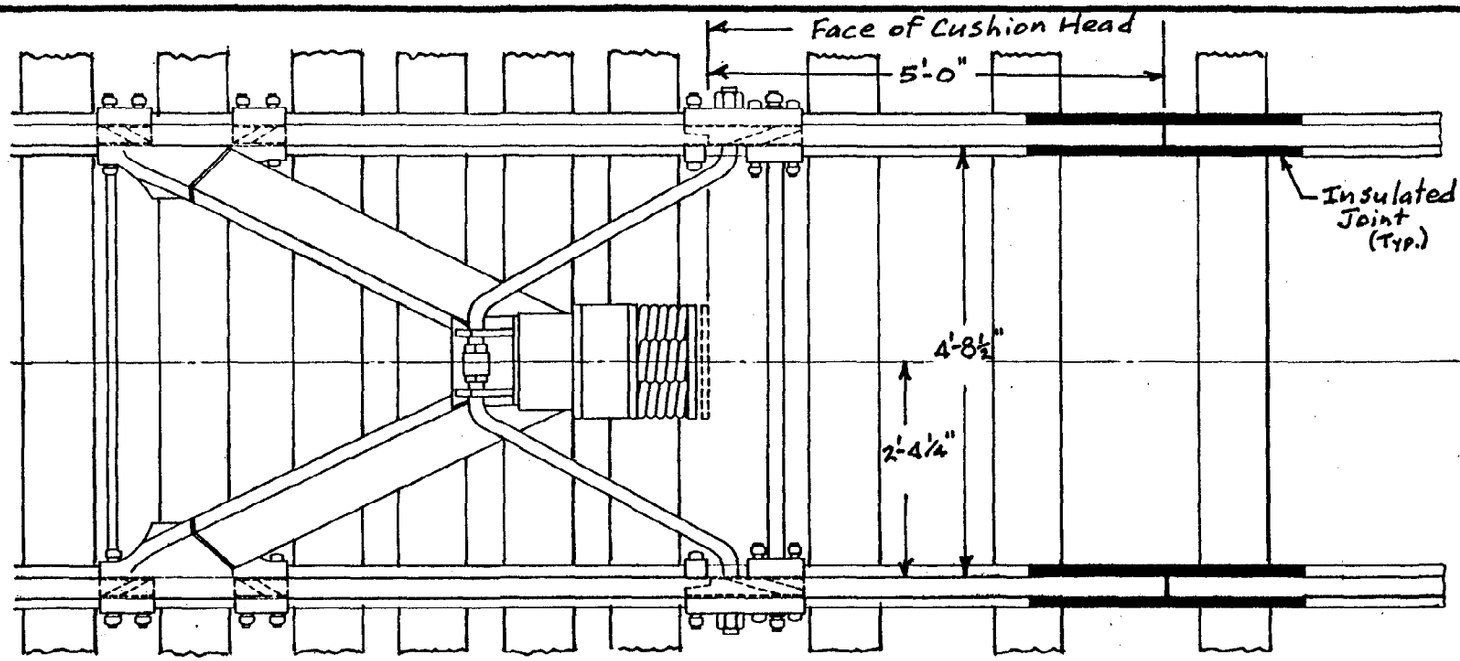
END VIEW

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY | M.O.W. DIVISION | DWG. NO. 910 | ISSUE NO. — | DATE

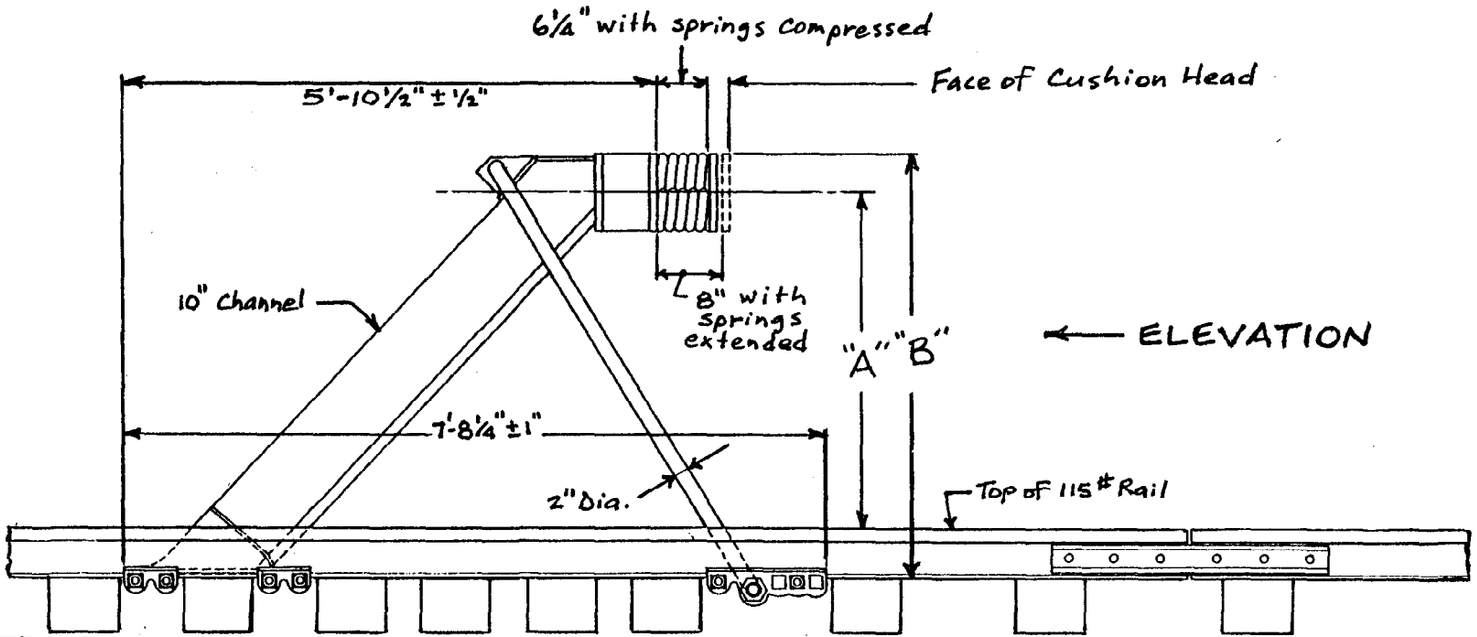
STEEL BALLAST TRACK DRAIN

Mgr. Track Engineering

Director-M.O.W.



← PLAN



← ELEVATION

NOTES:

① Refer to Bumping Post Specification in the Book of Standard Track Material/ Construction Specifications.

② See Table below for height of Bumping Post cushion head as shown in "Elevation" view.

	"A"	"B"
Blue Line	40¾"	52⅜"
Orange Line	44"	55⅝"
Red Line	48¼"	59⅞"

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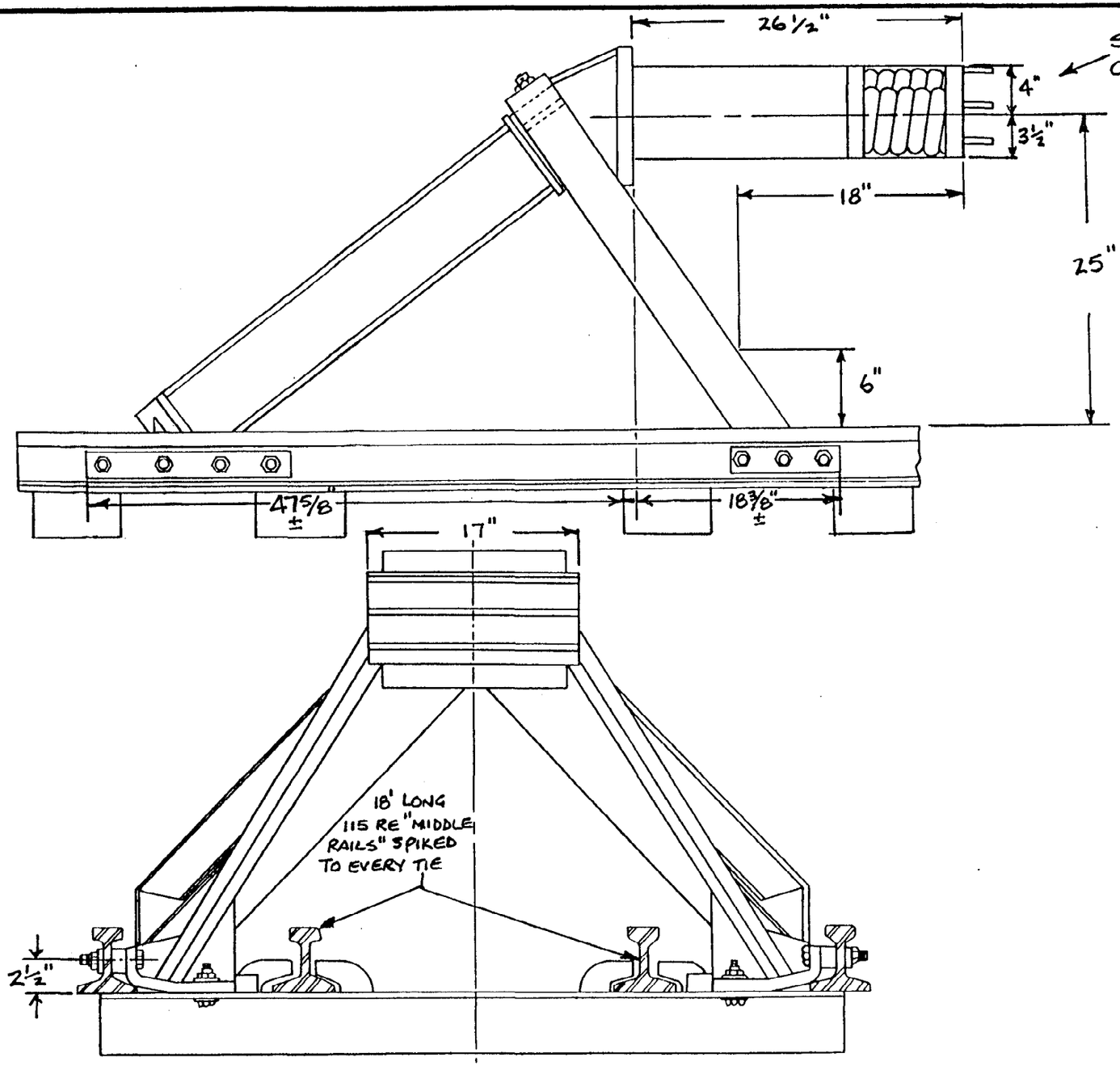
BUMPING POST
for Blue, Orange and Red Lines

Mgr. Track Engineering

Director M.O.W.



NOTES:

① Refer to Bumping Post Specification in the Book of Standard Track Material/ Construction Specifications.

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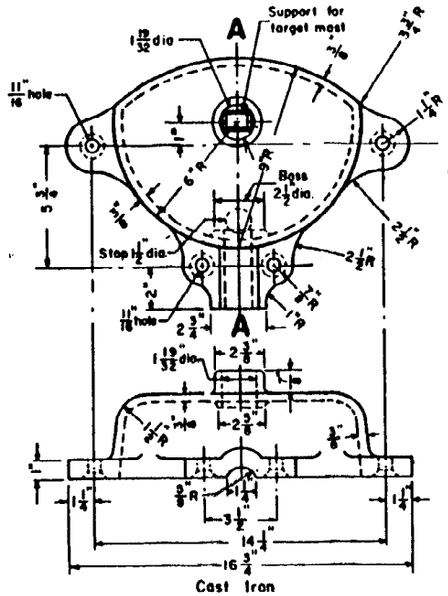
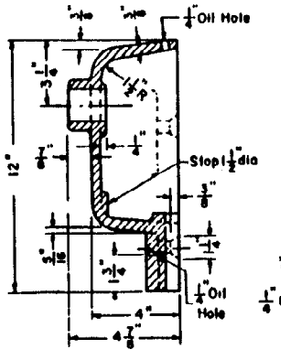
BUMPING POST
for Green Line (LRT) Track

Mgr. Track Engineering

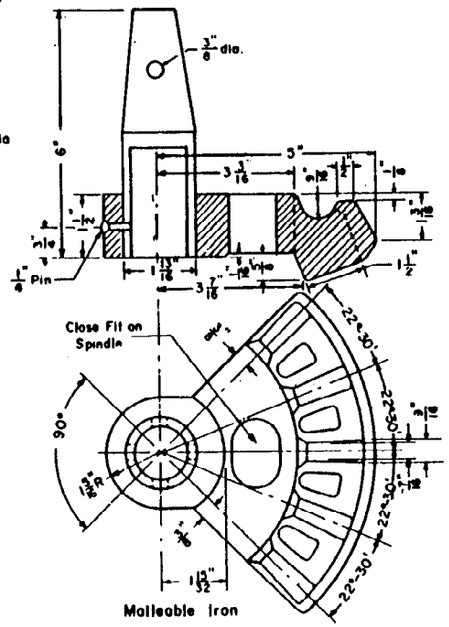
Director – M.O.W.



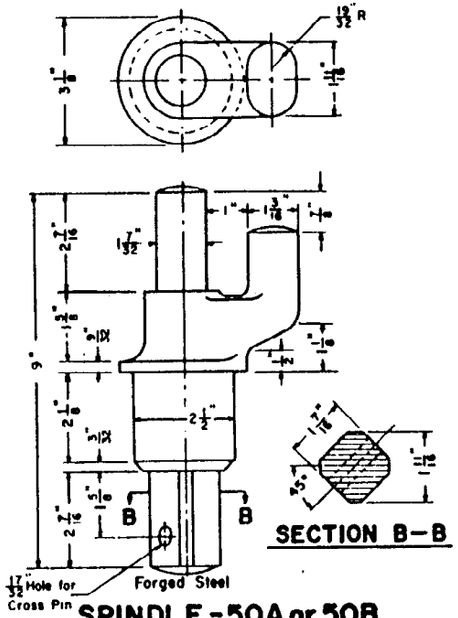
TOP OF SWITCH STAND - 50A



SECTION A-A

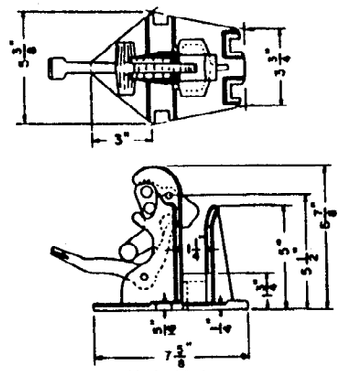


SEGMENT GEAR - 50A or 50B



SPINDLE - 50A or 50B

SECTION B-B

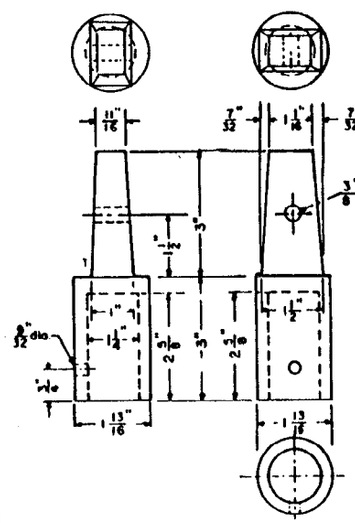


LATCH

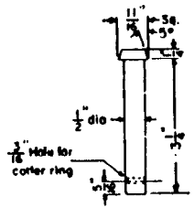
2 Required

NOTES:

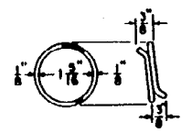
1. Ref. Plan No. 930b for additional details.
2. Models 50A and 50B are manufactured by Bethlehem Steel Corp.
3. Model 50-A is a low profile switch stand, 10" ± high. Use as directed by the Transit Design Standards Manual, Section 4, C. 11.
4. Throw in switch stand = 5".



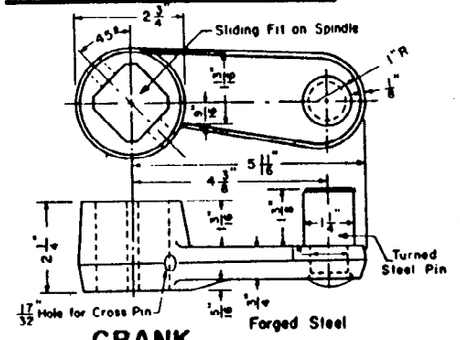
TARGET SUPPORT - 50A



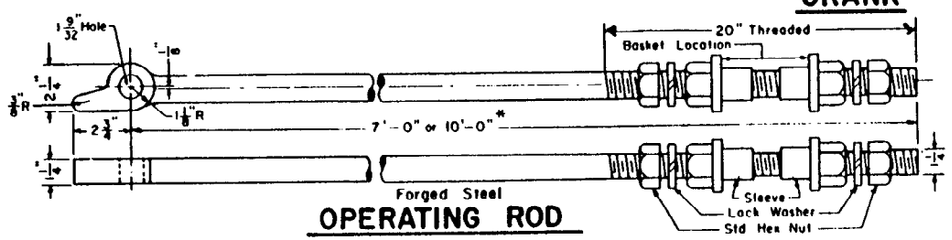
CROSS PIN



COTTER RING



CRANK



OPERATING ROD

*Provide 7'-0" rod with stand 50-A and 10'-0" rod with stand 50-B.

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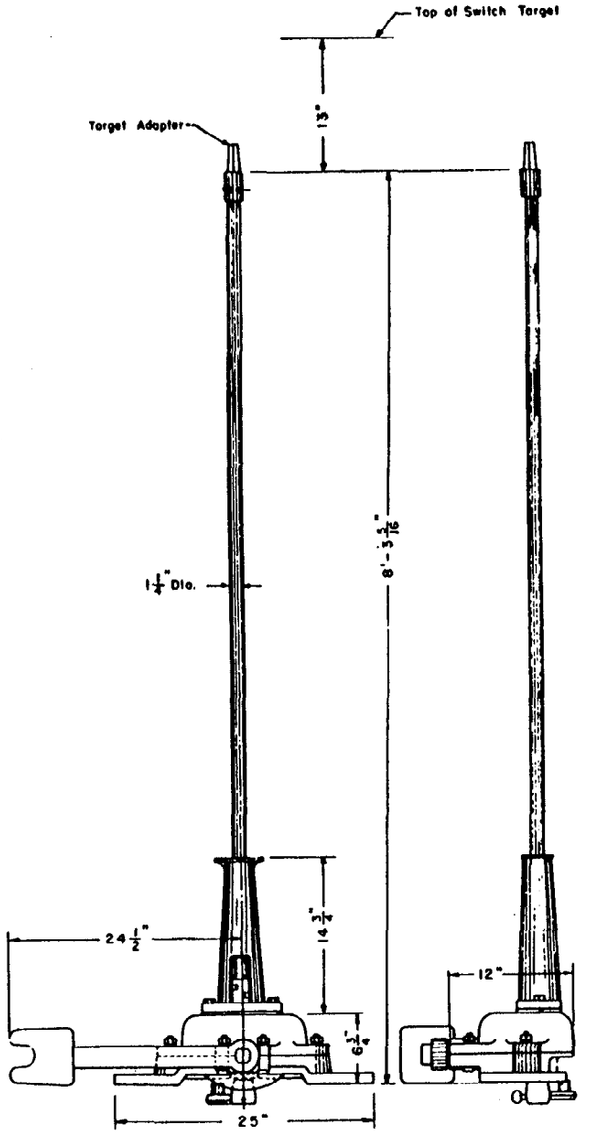
NEW CENTURY SWITCH STANDS
MODELS 50A and 50B

Mgr. Track Engineering

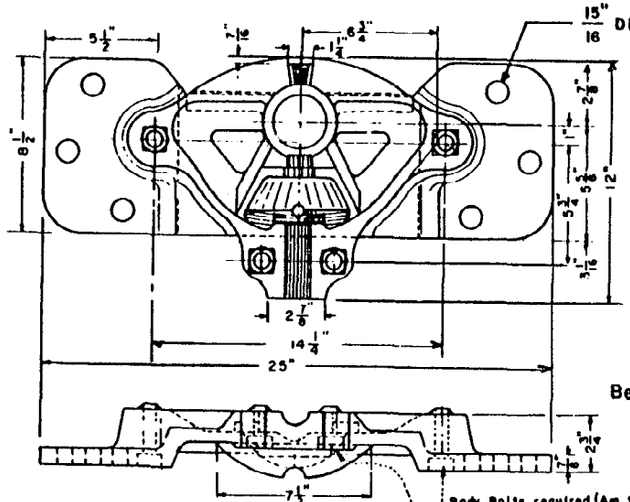
Director M.O.W.

(See Plan No. 930a for more details)

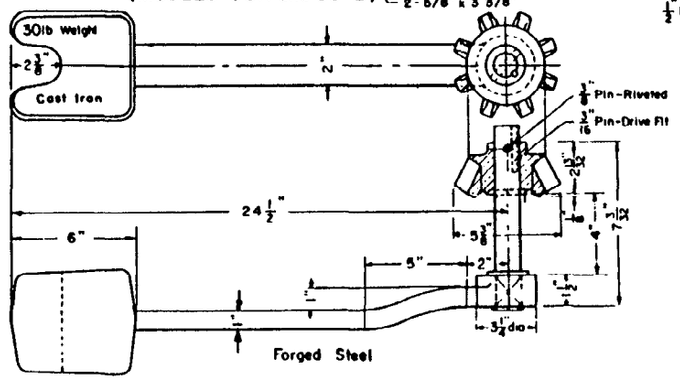


FRONT VIEW SIDE VIEW

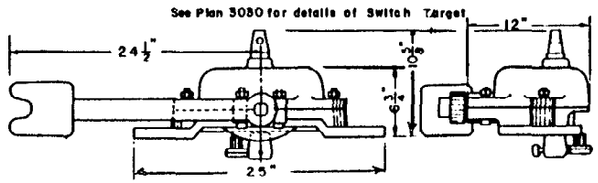
MODEL 50-B



BOTTOM
(MODELS 50A and 50-B)



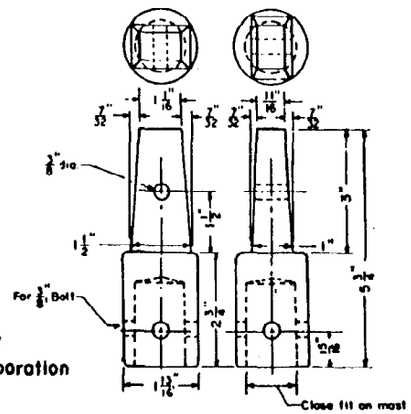
THROW LEVER FOR MODELS 50-A & 50-B



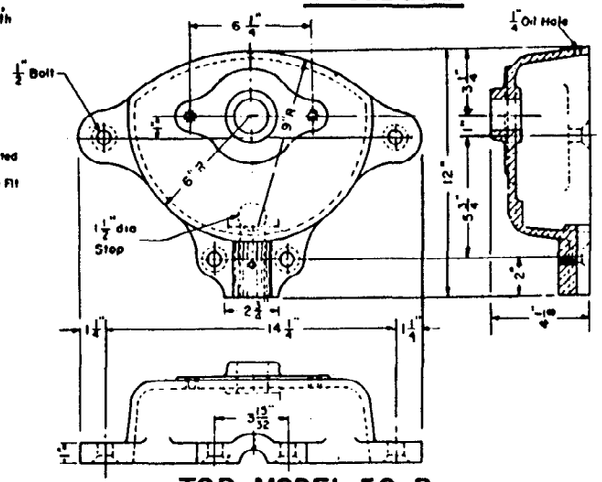
FRONT VIEW SIDE VIEW

MODEL 50-A

Manufactured By
Bethlehem Steel Corporation



TARGET ADAPTER
MODEL 50-B

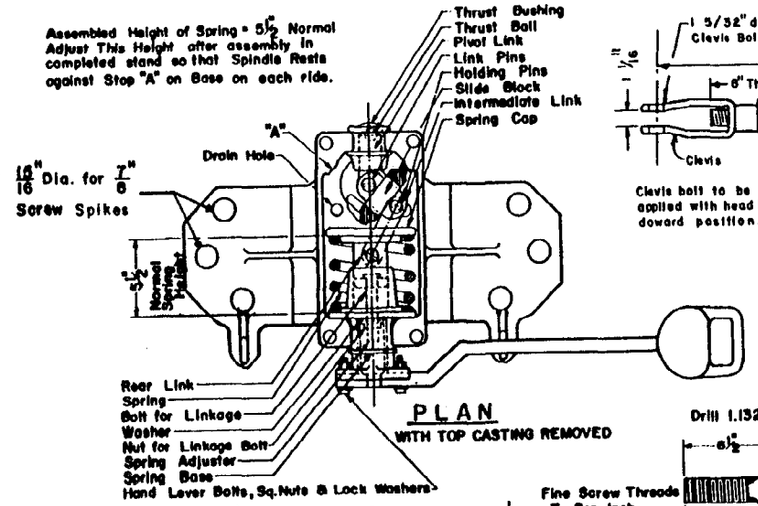


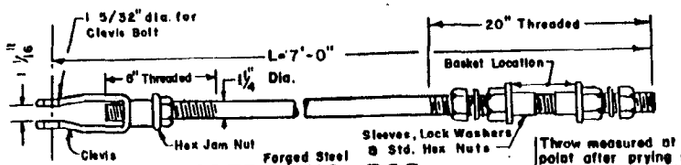
TOP-MODEL 50-B

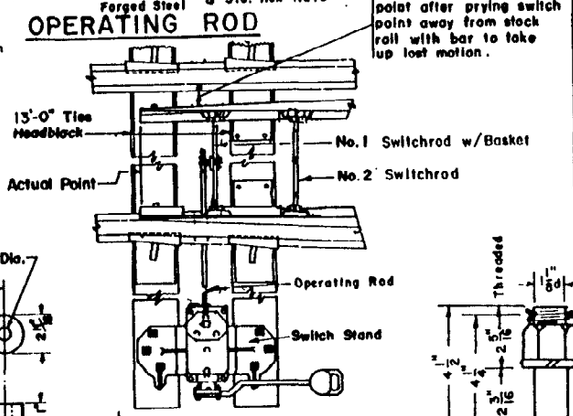
MASSACHUSETTS BAY TRANSPORTATION AUTHORITY | M.O.W. DIVISION | DWG. NO. 930b | ISSUE NO. | DATE

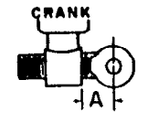
NEW CENTURY SWITCH STANDS
MODELS 50-A & 50-B

Mgr. Track Engineering Director M.O.W.



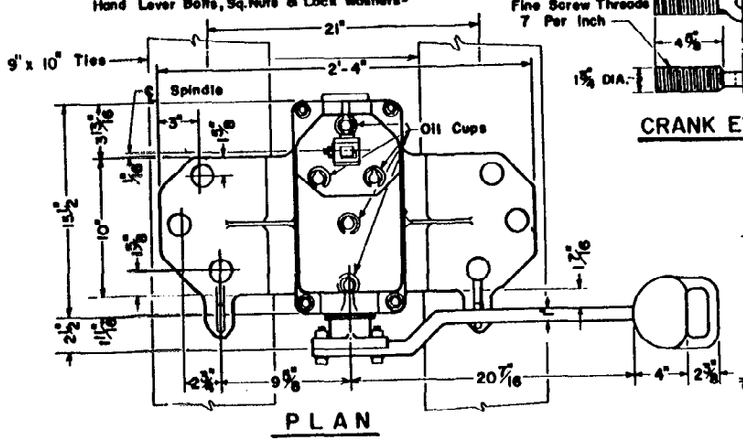


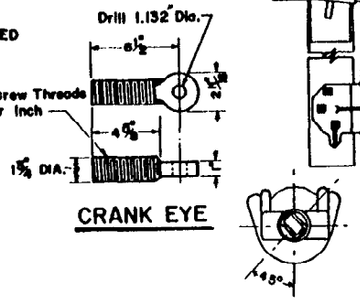


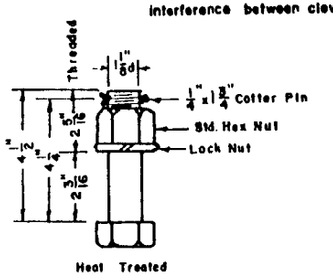


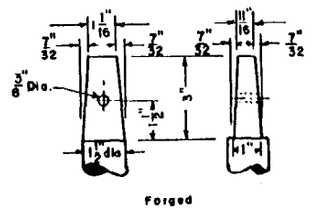
CRANK ADJUSTMENTS FOR RACOR SWITCH STANDS WITH SYMMETRICAL SPINDLE			
Throw of Switch	A	Throw of Switch	A
4½" *	2 1/16" *	5" Std.	2 7/16"
4 5/8"	2 3/16"	5 1/8"	2 1/2"
4 3/4"	2 1/4"	5 1/4"	2 5/8"
4 7/8"	2 5/16"	5 3/8"	2 11/16"
5"	2 7/16"	5 1/2"	2 13/16"

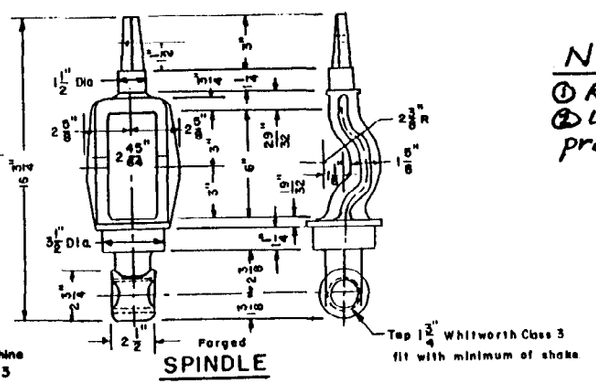
* Do not set crank less than 2 1/16", to avoid interference between clevis and spindle.

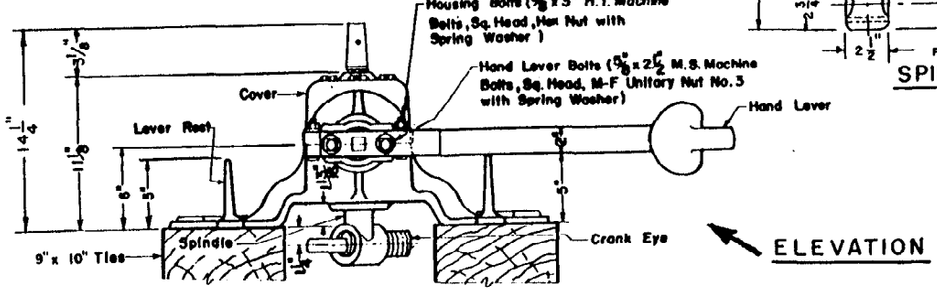












NOTES:

① Racor 22 for yard track use only.
② Use good grade engine oil with graphite content preferred. SAE 60 in summer SAE 40 in winter

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RACOR 22 SWITCH STAND

Mgr. Track Engineering | Director-M.O.W.