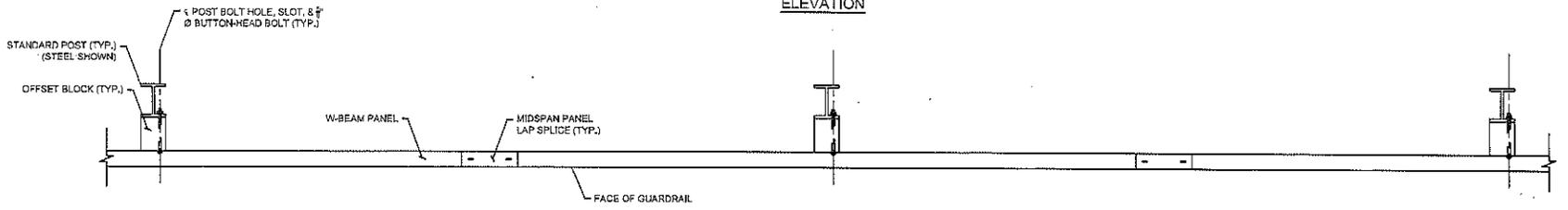


ELEVATION



PLAN

NOTES:

1. A 8'-4 3/4" PANEL IS REQUIRED WHEN TRANSITIONING TO TL-3 W-BEAM GUARDRAIL TO MAINTAIN PROPER POST SPACING.

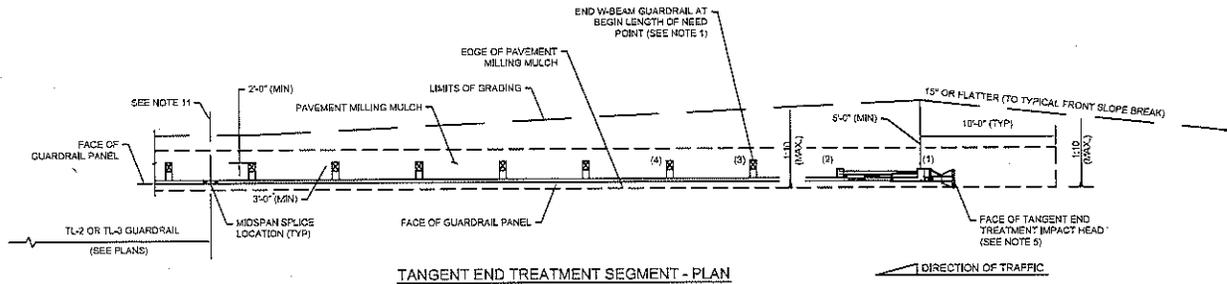


CONSTRUCTION STANDARDS  
SECTION 400

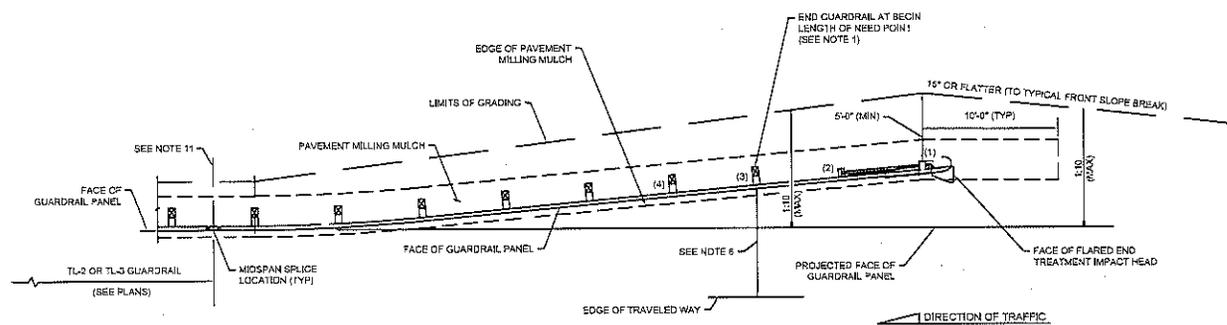
GUARDRAIL, TL-2

DATE OF ISSUE  
OCTOBER 2017

DRAWING NUMBER  
400.1.2



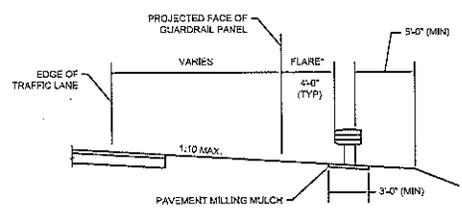
TANGENT END TREATMENT SEGMENT - PLAN



FLARED END TREATMENT SEGMENT - PLAN

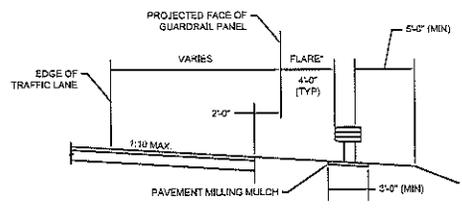
**NOTES:**

1. INSTALL GUARDRAIL AT STATION AND OFFSET SHOWN IN THE PLANS. THE END OF THE GUARDRAIL SHOWN IN THE PLANS CORRESPONDS WITH THE BEGIN LENGTH OF NEED POINT FOR THE END TREATMENT (SHOWN AT POST 3 IN THESE STANDARDS, BUT MAY VARY BY MANUFACTURER).
2. PROPRIETARY END TREATMENTS MAY VARY IN SIZE AND SHAPE FROM WHAT IS DEPICTED IN THESE STANDARDS. HOWEVER, THE MAXIMUM SLOPES AND MINIMUM OFFSETS DIMENSIONED FROM THE POSTS SHOWN HEREIN SHALL STILL APPLY.
3. END TREATMENT TEST LEVEL AND TYPE (TANGENT OR FLARED) SHALL BE SPECIFIED IN THE PLANS.
4. CONSTRUCT TANGENT AND FLARED END TREATMENTS IN ACCORDANCE WITH THE MANUFACTURER'S UNIQUE DRAWING DETAILS, PROCEDURES, AND SPECIFICATIONS.
5. AT THE DISCRETION OF THE ENGINEER, THE FACE OF THE TANGENT END TREATMENT IMPACT HEAD MAY BE OFFSET UP TO 2'-0" FROM THE PROJECTED FACE OF GUARDRAIL TO MINIMIZE NUISANCE HITS. THE OFFSET SHALL OCCUR OVER THE ENTIRE LENGTH OF THE END TREATMENT UNLESS OTHERWISE SPECIFIED BY THE MANUFACTURER.
6. LATERAL OFFSET OF FLARED END TREATMENT SHALL BE DETERMINED BY THE DESIGN ENGINEER FOLLOWING THE METHODOLOGY FOUND IN THE *ROADSIDE DESIGN GUIDANCE* AND SHOULD FALL WITHIN THE ALLOWABLE TOLERANCES SPECIFIED BY THE MANUFACTURER. LATERAL OFFSET SHALL BE MEASURED FROM THE EDGE OF TRAVELED WAY TO THE FACE OF THE GUARDRAIL AT POST #3.
7. END TREATMENTS SHALL NOT TERMINATE CURVED W-BEAM SEGMENTS.
8. END TREATMENT IMPACT HEAD DELINEATION SHALL CONFORM TO 601.63.
9. INSTALL GRADING AS SHOWN HEREIN UNDER SEPARATE PAY ITEMS.
10. SEE 400.2.2 FOR APPROACH TERMINAL GEOMETRY FOR GUARDRAIL INSTALLED ADJACENT TO CURB AND DOUBLE FACED GUARDRAIL.
11. MAINTAIN 2'-0" (MIN) OFFSET TO FRONT SLOPE BREAK DOWNSTREAM OF MIDSPAN SPLICE LOCATION AT ALL TIMES. IF DOWNSTREAM OF THE SPLICE, GRADING CONSTRAINTS INHIBIT THIS MINIMUM OFFSET THEN USE DEEP STEEL POSTS AND TRANSITION TO A SLOPE BREAK CONDITION DESIGN PER THE DETAIL IN 400.1.5 UNTIL THE 2'-0" OFFSET CAN BE MET.



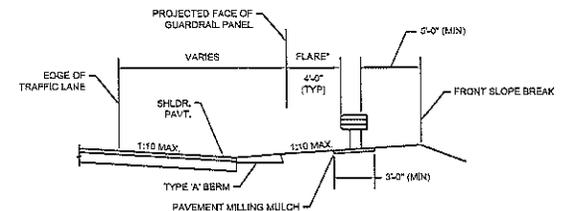
SECTION AT POST (1)  
WITH UNPAVED SHOULDER

\*FLARE IF CALLED FOR IN PLANS, OTHERWISE ALIGN WITH PROJECTED FACE OF GUARDRAIL (SEE NOTES 3 & 5)



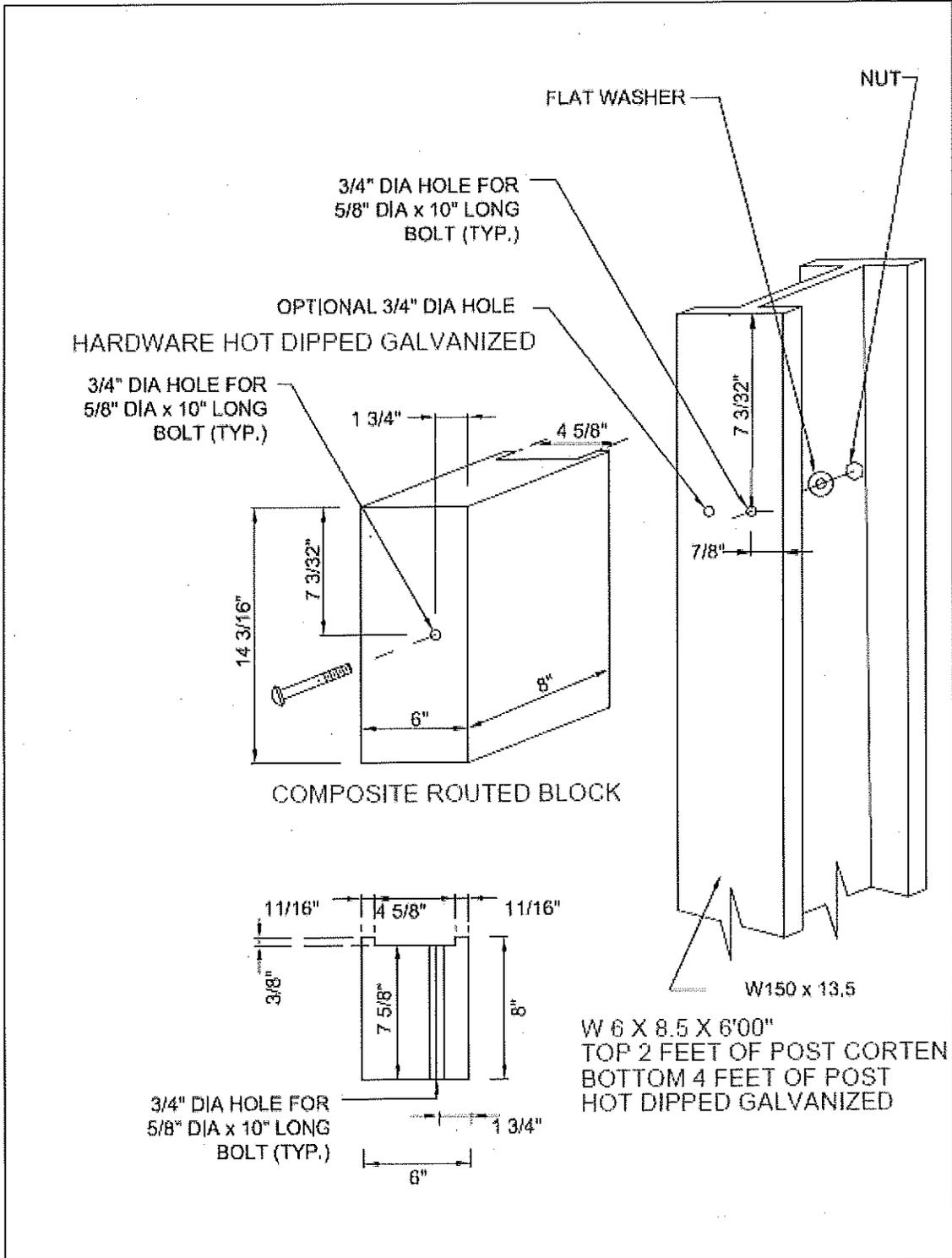
SECTION AT POST (1)  
WITH FULLY PAVED SHOULDER

\*FLARE IF CALLED FOR IN PLANS, OTHERWISE ALIGN WITH PROJECTED FACE OF GUARDRAIL (SEE NOTES 3 & 5)



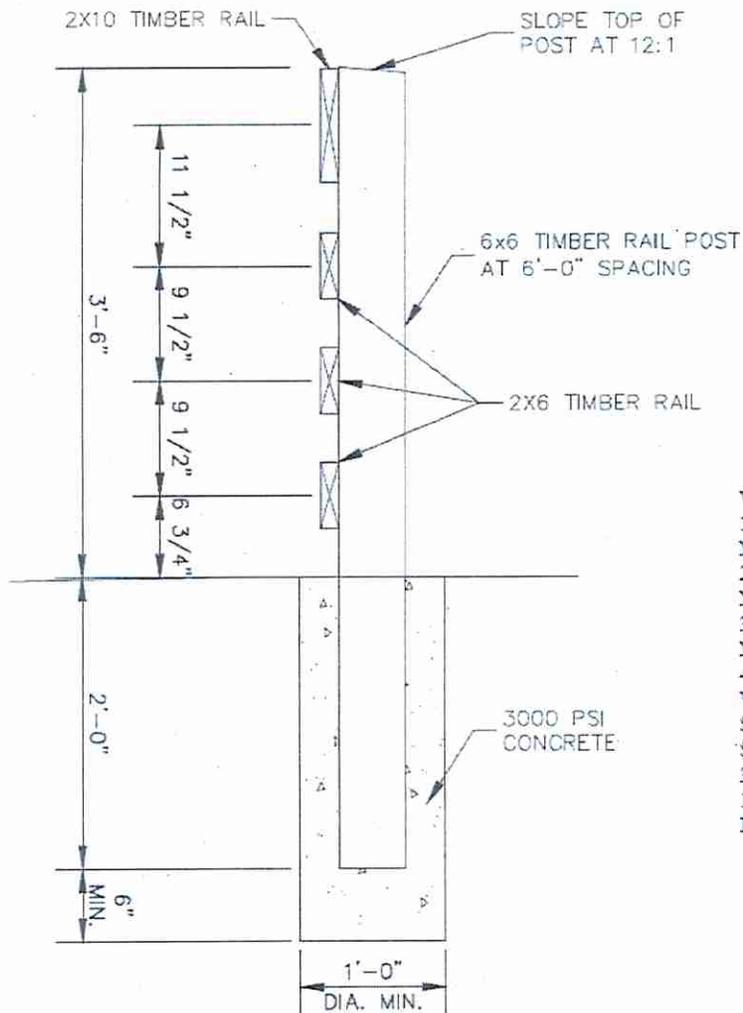
SECTION AT POST (1)  
WITH TYPE 'A' BERM

\*FLARE IF CALLED FOR IN PLANS, OTHERWISE ALIGN WITH PROJECTED FACE OF GUARDRAIL (SEE NOTES 3 & 5)



**OFFSET BLOCKS FOR  
STEEL W BEAM HIGHWAY GUARD**

DATE OF ISSUE DECEMBER 2016
DRAWING NUMBER <b>E 401.20.0</b>



**WOOD PEDESTRAIN RAIL NOTES:**

- 1) WOOD POSTS - 6"X6"X6'00" - #1 S4S - SYP - MCA - GC SLOPE TOP
- 2) WOOD RAILS - 2"X10"X12'00" - #1 S4S - SYP - MCA - GC
- 3) WOOD RAILS - 2"X6"X12'00" - #1 S4S - SYP - MCA - GC
- 4) CONNECTION HARDWARE WOOD RAILS TO WOOD POSTS SHALL BE AS FOLLOWS:  
 STRONG DRIVE SDWS TIMBER STRUCTURAL STAINLESS STEEL TYPE 316 - 1/4" SHANK, 3/8" THREAD DIAMETER X 6 INCHES.  
 12 EACH STAINLESS SCREWS PER 12 FOOT LONG RAILS

**PEDESTRIAN RAILING**

NOT TO SCALE

SUBMITTED BY:  
 STEELCO CHAIN LINK FENCE ERECTING COMPANY, INC.  
 19 BROOK ROAD  
 NEEDHAM HEIGHTS, MA. 02494

GENERAL CONTRACTOR:  
 J. TROPEANO, INC.  
 RE: CONCORD, MA.  
 CAMBRIDGE TURNPIKE IMPROVEMENTS PROJECT PHASE 1  
 PROJECT NUMBER 2142