Office of Engineering
Project Development Division
Bridge Design Section
PO Box 94245 | Baton Rouge, LA 70804-9245

John Bel Edwards, Governor
Shawn D. Wilson, Ph.D., Secretary

MEMORANDUM

TO: ALL BRIDGE DESIGNERS - IN-HOUSE AND CONSULTANTS

FROM: ZHENGZHENG "JENNY" FU, P.E.
BRIDGE DESIGN ENGINEER ADMINISTRATOR

Zhengzheng Fu
Digitally signed by Zhengzheng Fu
DN: cn=Zhengzheng Fu, o=LADOTD, ou=bridge design, email=zhengzheng.fu@la.gov, c=US
Date: 2021.04.09 09:25:08 -05'00'

SUBJECT: BRIDGE DESIGN TECHNICAL MEMORANDUM NO. 102 (BDTM.102) - USE OF ROUND GUARD RAIL POSTS

DATE: March 30, 2021

Effective immediately, the round timber posts specified below will be allowed as a substitute for the rectangular timber posts and W 6 x 9 steel posts currently shown in the guard rail standard plan, GR-MASH-ON.

The round posts shall be 7½" Dia. x 6 ft. long and spaced at 6'-3" intervals. Posts shall be embedded 3 ft. into the ground with the remaining 3 ft. above the ground line, mow strip, etc. A 14" tall by 8" deep block out shall be used and routed to fit onto the post. W-beam guard rail shall be installed on the block out at 31" above the ground line or pavement and attached using an 18" long 9/16" dia. round head bolt.

The use of round posts is limited to sections of blocked out rail (pay item 704-03-00200) only. Round posts are not allowed in the guard rail to bridge rail transition (pay item 704-07-00200) or in end treatments unless specifically allowed by the manufacturer. Round posts shall also not be used in sections of thrie beam, trailing ends, retrofits, or other special installations. See the attached pages from GR-MASH-ON indicating the sections of guard rail where round post are allowed.

These posts have been successfully crash tested according to the requirements of MASH as documented in TTI Test Report 0-6968-R2. Appendix A from this report showing the crash tested details has been attached as a reference.

The round post details along with other required updates will be included in the next edition of the LADOTD guard rail standard plans (GR-MASH-ON).

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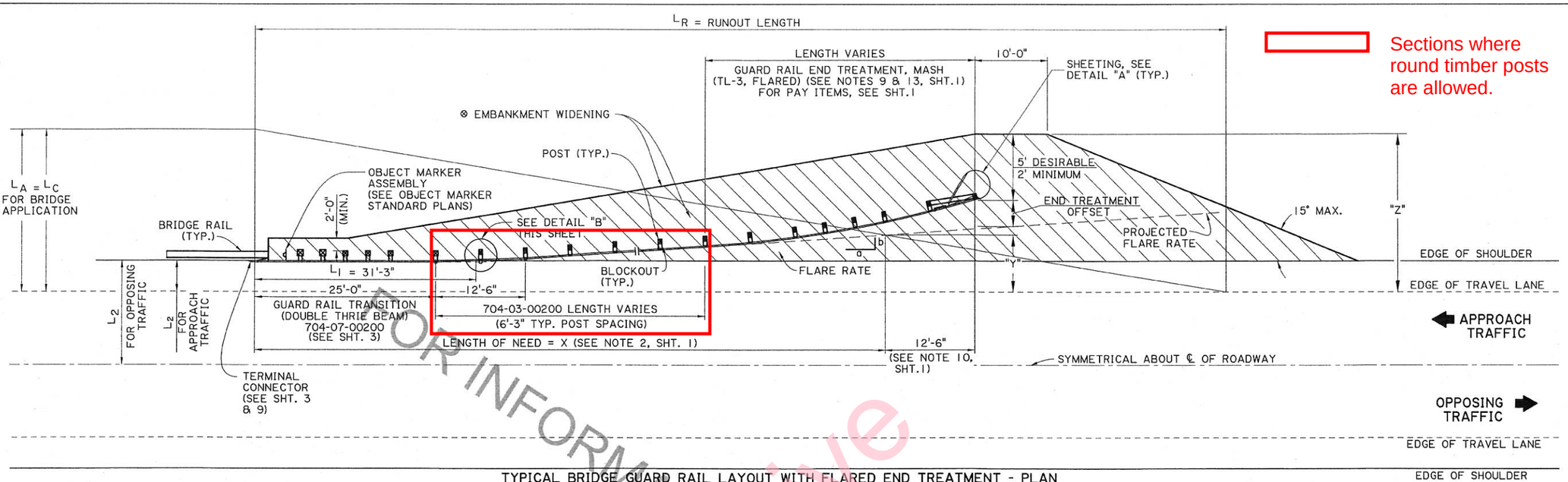
This technical memorandum is posted on the LA DOTD Website under *Inside La DOTD* > *Divisions - Engineering* > *Bridge Design* > *Technical Memoranda – BDTMs.*

Please contact Kelly Kemp (kelly.kemp@la.gov or 225-379-1809) if you have questions or comments.

ZZF/kmb

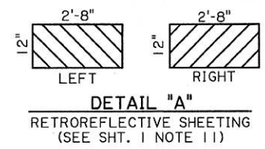
c: Christopher P. Knotts (Chief Engineer)
Edward Wedge (Deputy Engineer Administrator)
Chad Winchester (Chief, Project Development Division)
Vince Latino (Assistant Secretary of Operations)
David Miller (Chief Maintenance Administrator)
Nick Fagerburg (Bridge Maintenance Administrator)
Michael Vosburg (Chief Construction Division Engineer)
Brian Owens (Construction Engineer Administrator)
Joe Umeozulu (Acting Project Management Director)
Chris Nickel (Pavement and Geotechnical Engineer Administrator)
David Smith (Road Design Engineer Administrator)
Jacques Deville (Contracts and Specifications)
Art Aguirre (FHWA)
District Administrators and ADAs of Engineering and Operations
District Bridge Engineers and Area Engineers



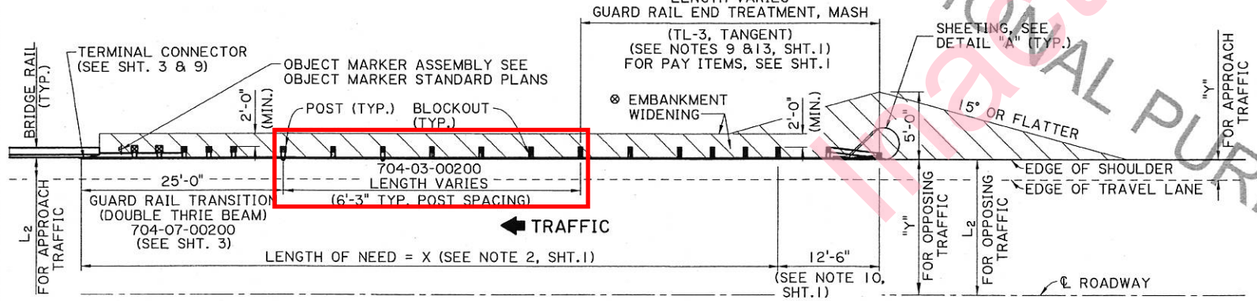

Sections where round timber posts are allowed.

## TYPICAL BRIDGE GUARD RAIL LAYOUT WITH FLARED END TREATMENT - PLAN

NOTE: LAYOUT SIMILAR FOR OTHER QUADRANTS OF BRIDGE END
⊗ SEE NOTES 5, 8, AND 12, SHT. 1.

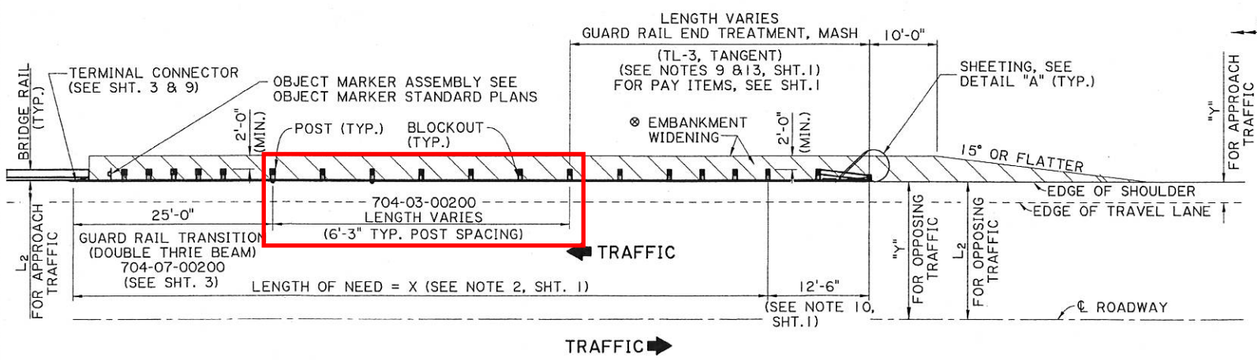



DETAIL "A"
RETROREFLECTIVE SHEETING
(SEE SHT. 1 NOTE 11)



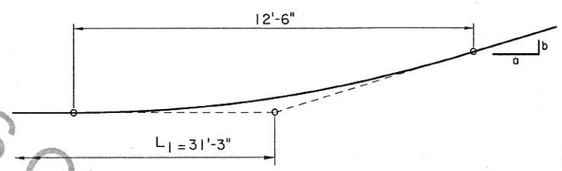

TYPICAL BRIDGE GUARD RAIL LAYOUT WITH TANGENT END TREATMENT - PREFERRED GRADING - PLAN

⊗ SEE NOTES 5, 8, AND 12, SHT. 1.

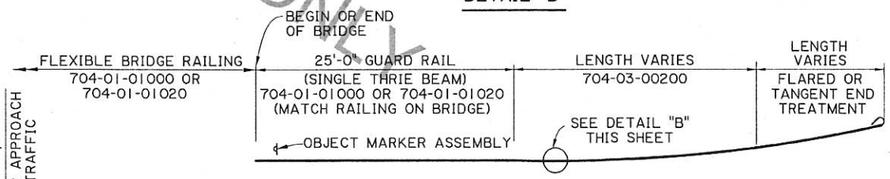



TYPICAL BRIDGE GUARD RAIL LAYOUT WITH TANGENT END TREATMENT - ALTERNATIVE GRADING - PLAN

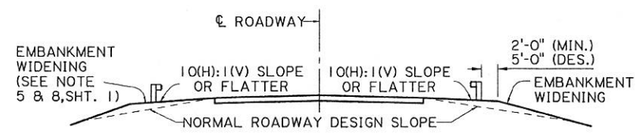
⊗ SEE NOTES 5, 8, AND 12, SHT. 1.




DETAIL "B"




BEAM TRANSITION FOR FLEXIBLE BRIDGE RAILING - PLAN




TYPICAL EMBANKMENT WIDENING SECTION



SHEET NUMBER
PARISH | CONTROL SECTION | STATE PROJECT
DESIGN P. FOSSIER | DETAIL J. DOUCET | REVIEW C. GUIDRY
CHECK K. BRAUNER | CHECK K. BRAUNER | SERIES # 2 OF 11

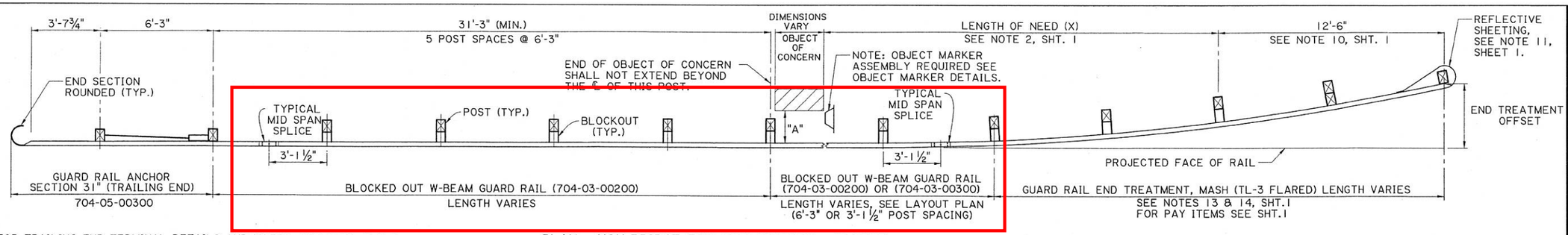
STATE OF LOUISIANA
KURT M. BRAUNER
License No. 30567
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
12/12/18

APPROVED BY CHIEF ENGINEER: DATE: 1/3/19

HIGHWAY GUARD RAIL (MASH)
BRIDGE APPLICATION
(TYPICAL LAYOUT)

STANDARD PLAN BD.1.1.0.02 GR-MASH-ON

DOTD LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
BRIDGE AND STRUCTURAL DESIGN

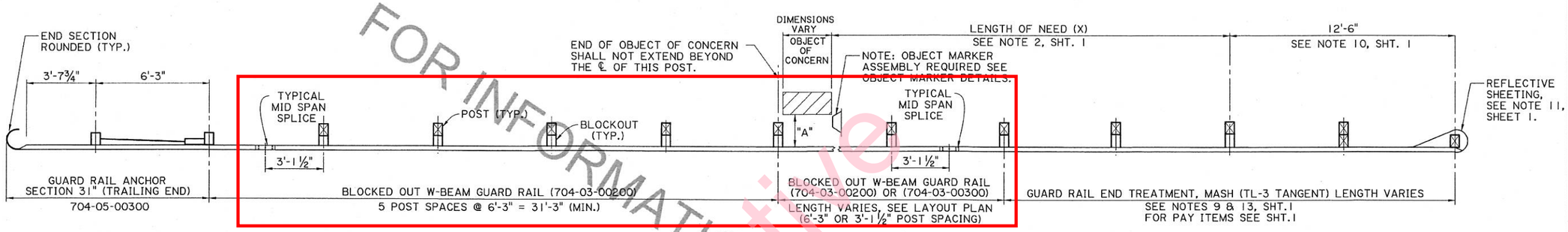



FOR TRAILING END TERMINAL DETAILS AND NOTES, SEE SHTS. 7 & 8.

BACK FACE OF GUARD RAIL TO FRONT FACE OF OBJECT = "A" = 5'-0" MIN.

PLAN - NON-BRIDGE END APPLICATION - FLARED

N.T.S.

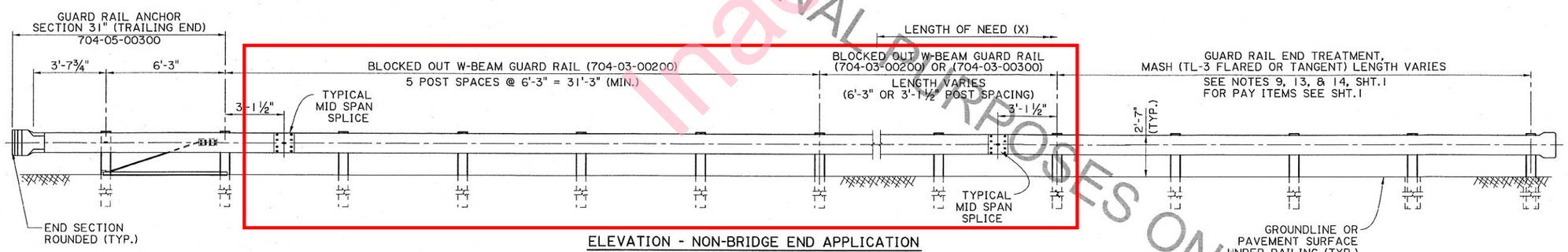



FOR TRAILING END TERMINAL DETAILS AND NOTES, SEE SHTS. 7 & 8.

BACK FACE OF GUARD RAIL TO FRONT FACE OF OBJECT = "A" = 5'-0" MIN.

PLAN - NON-BRIDGE END APPLICATION - TANGENT

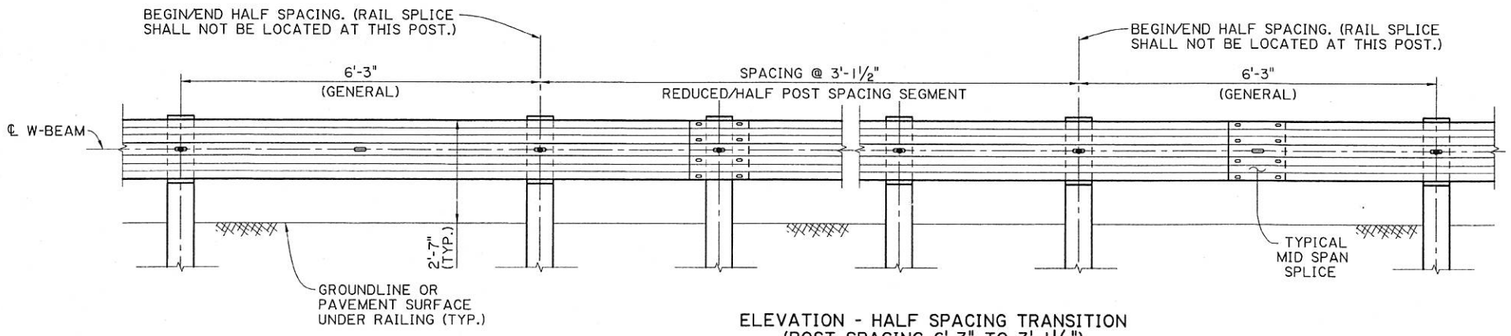
N.T.S.




ELEVATION - NON-BRIDGE END APPLICATION

FOR POST, BLOCKOUTS AND GUARD RAIL DETAILS, SEE SHTS. 6, 9, 10, & 11

N.T.S.




ELEVATION - HALF SPACING TRANSITION
(POST SPACING 6'-3" TO 3'-1½")

N.T.S.

Sections where round timber posts are allowed.

PANEL SPLICES, FOR HALF POST SPACING TRANSITIONS

MIDSPAN PANEL SPLICES ARE NOT REQUIRED IN TRANSITION AND REDUCED POST SPACING SEGMENTS, HOWEVER THEY ARE REQUIRED FOR GENERAL SEGMENTS. TO PLACE MIDSPAN SPLICES IN GENERAL SEGMENTS NEAR A TRANSITION, USE ONE NON-GENERAL PANEL LENGTH (9'-4½" or 15'-7½") OR ADD AN ADDITIONAL TRANSITION SPACED POST WHERE REQUIRED.



SHEET NUMBER

PARISH | CONTROL SECTION | STATE PROJECT

DESIGN P. FOSSIER | DETAIL J. DOUCET | REVIEW C. GUIDRY
CHECK K. BRAUNER | CHECK K. BRAUNER | SERIES # 5 OF 11

STATE OF LOUISIANA
KURT M. BRAUNER
License No. 30267
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
12/19/18

APPROVED BY CHIEF ENGINEER:
DATE: 1/3/19

HIGHWAY GUARD RAIL (MASH)
NON-BRIDGE APPLICATION
(TYPICAL LAYOUT)

BD.1.1.0.05
STANDARD SHT. NO.
GR-MASH-ON

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

BRIDGE AND STRUCTURAL DESIGN

1/9/2019 07:30

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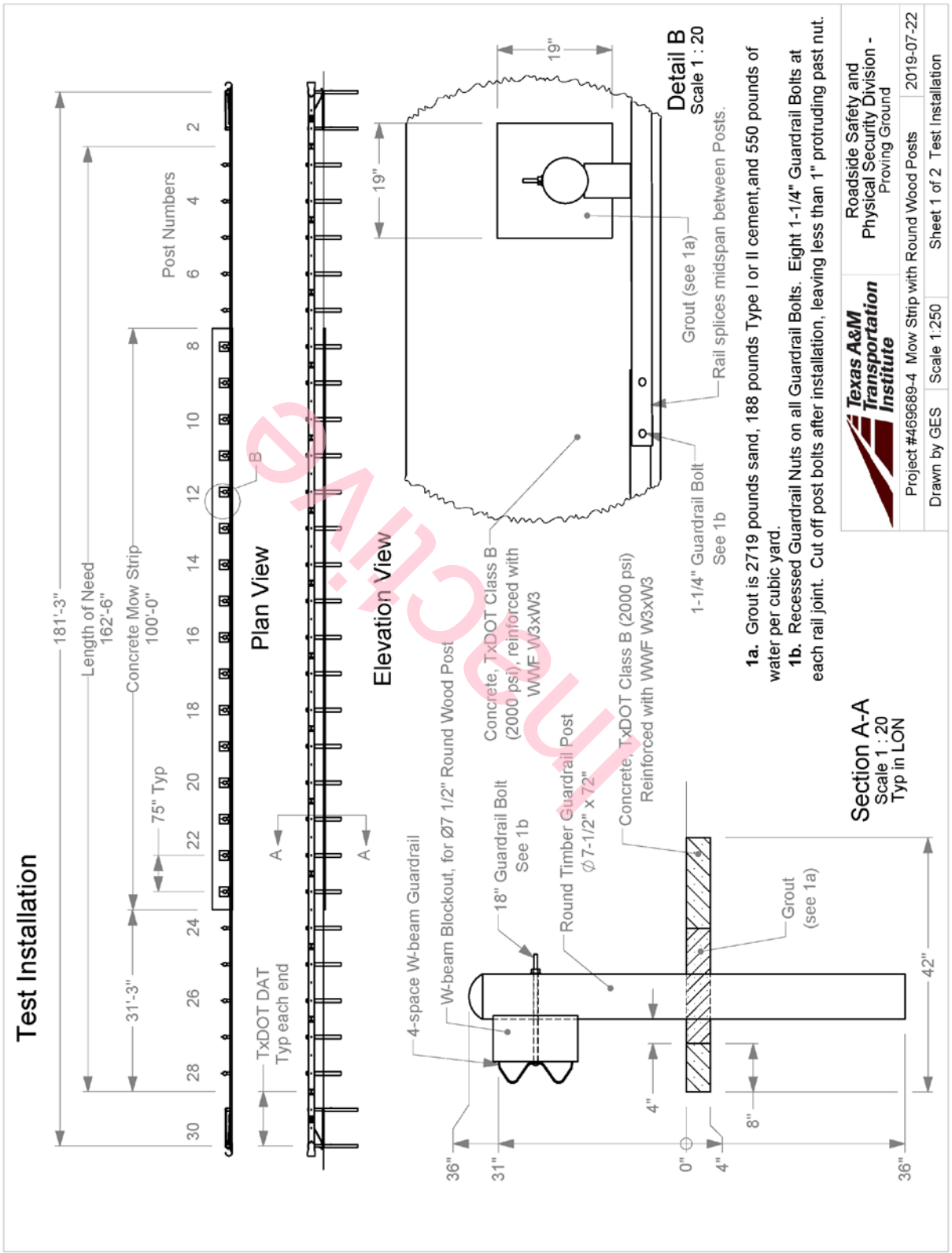
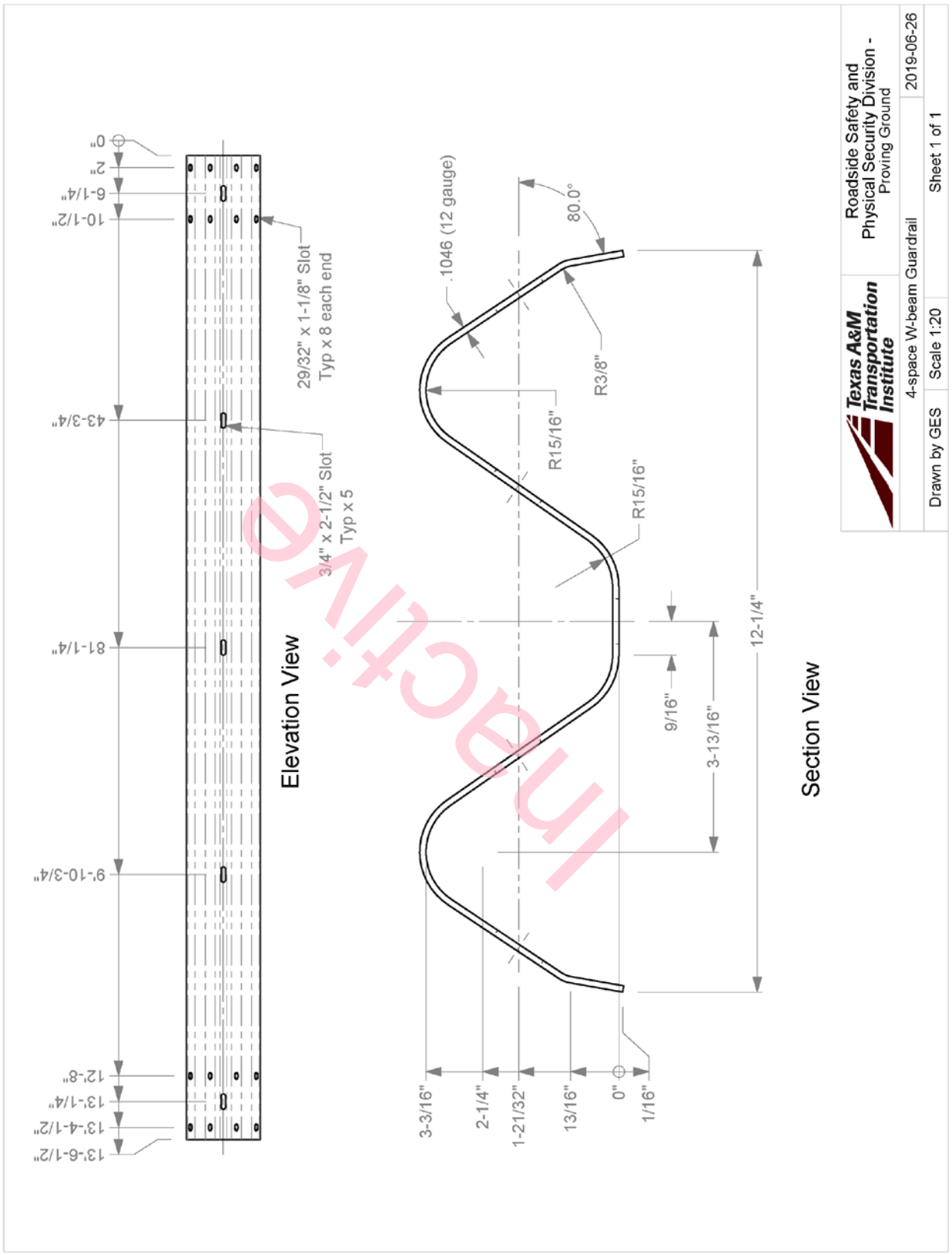
# APPENDIX A. DETAILS OF TEST INSTALLATION



Post and Blockout
72"
69-3/4"
61"
25"
36"
(embedment depth)
0"
Ø13/16"
Ø7-1/2"
Timber Post
C
C
14"
Ø13/16"
Timber Blockout
Scale 1:5
R3-3/4"
3/4"
7-5/8"
5-5/8"
Section C-C
Scale 1 : 5
Inactive
Texas A&M Transportation Institute
Roadside Safety and Physical Security Division - Proving Ground
Project #469689-4 Mow Strip with Round Wood Posts
2019-07-22
Drawn by GES
Scale 1:10
Sheet 2 of 2 Post and Blockout
T:\1-ProjectFiles\469689-TxDOT\-4 Mow Strip with Round Wood Posts\Drafting, 469469-4\469689-4 Drawing


T:\Drafting Department\Solidworks\Standard Parts\Guardrail Parts and Subs\Guardrail Drawings\4-space W-Beam Guardrail
Texas A&M Transportation Institute
Roadside Safety and Physical Security Division - Proving Ground
4-space W-beam Guardrail
2019-06-26
Drawn by GES
Scale 1:20
Sheet 1 of 1
Elevation View
0"
2"
6-1/4"
10-1/2"
43-3/4"
81-1/4"
9'-10-3/4"
12'-8"
13'-1/4"
13'-4-1/2"
13'-6-1/2"
29/32" x 1-1/8" Slot
Typ x 8 each end
3/4" x 2-1/2" Slot
Typ x 5
Section View
.1046 (12 gauge)
80.0°
R3/8"
R15/16"
R15/16"
9/16"
3-13/16"
12-1/4"
3-3/16"
2-1/4"
1-21/32"
13/16"
0"
1/16"
Inactive

**1a.** Material is ASTM A307.
**1b.** All bolt sizes not used in all projects. See system drawing.
**1c.** Head and shoulder dimensions typical all sizes.

| | | |
|---|---|---|
| Texas A&M Transportation Institute | Roadside Safety and Physical Security Division - Proving Ground | |
| Guardrail Bolt | | 2019-06-27 |
| Drawn by GES | Scale 1:2 | Sheet 1 of 1 |

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# Recessed Guardrail Nut






**1a.** Material is ASTM A 563 Grade A.

| | | | |
|---|---|---|---|
| Texas A&M Transportation Institute | | Roadside Safety and Physical Security Division - Proving Ground | |
| Recessed Guardrail Nut | | | 2019-06-27 |
| Drawn by GES | Scale 2:1 | Sheet 1 of 1 | |

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