Georgia Department of Transportation

# GUARDRAIL END TREATMENT INVENTORY & INSPECTIONS

## FIELD ASSESSMENT MANUAL

Prepared By: State Maintenance Office

Version 2.2, August 2024

This version supersedes any previous versions of this Manual.

REVISIONS

| **Revisions** | **Comments** |
|---|---|
| Version 1.0 | Inspection Manual Created |
| Version 1.1 | Added Post and Rail Type Attribution<br>Updated Terminology<br>Added Identification Photos for Type 1, MELT and FLEAT MT End Treatments<br>Updated and Organized Attenuators Section<br>Added Section *2.0 – General Guardrail Parts*<br>Added *APPENDIX 3 - GUARDRAIL END TREATMENT INSPECTION APPLICATION INSTRUCTIONS* |
| Version 1.2 | Added all End Treatments to Appendix 1 |
| Version 1.3 | Updated Bridge Connection terminology<br>Removed Bridge Connection – Other |
| Version 1.4 | Added Buried in Backslope End Treatment Type<br>Added Cable Barrier End Treatment Type<br>Added New Rail Types<br>Updated SRT-31 Checklist Diagrams<br>Added New Condition Fields in Section 5.1<br>Added Appendix 4: ATTACHING PHOTOS TO SEPARATED TABLE<br>Added Appendix 5: STRIKE APP ATTRIBUTION REQUIREMENTS |
| Version 1.5 | Updated Table of Contents<br>Added Bridge Connection – Double Facing – W Beam, Long, Short<br>Added new Type 1 (Old) Photo<br>Added Appendix 5: INVENTORY POINT ATTRIBUTION |
| Version 1.6 | Added SCI to Section 3 |
| Version 1.7 | Removed ‘Lag Screws (Energy Absorbing Terminals Only)’ from Strike App Reporting Criteria |
| Version 1.8 | Added Updated Workflow for Guardrail Terminal Inventory and Inspections<br>Added Regent-C End Treatment to Section 2<br>Added Regent-C Rail Type |
| Version 1.9 | Added MSKT Retrofit notes to SKT-SP, SKT-350 WD, and SKT-350 SP<br>Removed Application User Manual section. Application User Manual is now an additional document. |

| | |
|---|---|
| Version 2.0 | Added MATT End Treatment<br><br>**Section 2.38 Type 1:** added language for mid-stream anchors.<br><br>**Section 2.39 Type 1 Old:** added language for how to account for End Treatments without anchor.<br><br>**Section 4.1 How to Count Post and Rail Locations Along Guardrail:** added language for how to relabel posts for Type 1 Old not at last posts in the run of guardrail.<br><br>**2.36 Double Facing:** Added language for how to account for transition from Double Facing to Single Facing without an End Buffer. |
| Version 2.1 | **Section 2:** Updated End Treatment lengths, added post spacing information |
| Version 2.2 | **Section 6:** Updated photos and added correct checklist answer on SoftStop, MSKT, MFLEAT, FLEAT-MT, SRT 31, and MATT. |

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# SECTION 1: OVERVIEW OF PROGRAM

## Preface

Welcome to the Team! Thanks to you, the Georgia Department of Transportation continues to deliver on its' mission to "develop and maintain all state and federal roadways in the U.S. state of Georgia, and to deliver a transportation system focused on innovation, safety, sustainability and mobility."

This manual presents procedures for inventorying and inspecting Guardrail End Treatments along GDOT's roadways. This manual is intended to be used in conjunction with the Application User Manual. Guardrail End Treatments, hereafter referred to as End Treatments, are located at the beginning or end of a length of Guardrail and are intended to absorb energy and protect the motorist in the case of an accident. As such, these are a critical safety assets and data collected during this inventorying program brings a high amount of value to the Department.

This manual is designed to assist personnel responsible for inventorying the End Treatments. Instructions on the collection of End Treatment data are provided, as well as detailed descriptions, examples, and illustrations to understand how to accurately collect the required information. Annual training is strongly recommended for anyone who is involved in inventorying these assets.

End Treatments will be inventoried and inspected using the End Treatment Inventory and Inspections Application, which contains functionality to log new locations of End Treatments, take photos of the asset and to perform an inspection by filling out detailed condition and installation questions in an Inspection Form. It is imperative that all data is collected accurately and completely in the application as data from this program will be used by GDOT management to prioritize maintenance and replacement of End Treatments.

This Inventory and Inspection Program covers all state roadways, which are sectioned by Counties and assigned to inspectors. Once a section is assigned to the inspector, it is their responsibility to locate, inventory and inspect all End Treatments in their assignment. The information collected will be reported to the Department in a timely manner via reports and dashboards so they can understand the condition of the End Treatments on their network.

## Terminology

**COUNTY** –The county in which the section is located.

**DISTRICT** – The GDOT District where the section is located.

**INSPECTOR** – The name of the inspector inventorying the End Treatment.

**(ROUTE PRIORITY) SYSTEM TYPE** – Classification of the roadway based upon the type of maintenance that is applied to the roadway section.

**INSTALLATION CHECKLISTS** – Checklists pulled from End Treatment installation manuals provided by the respective manufacturer.

**INVENTORY SECTION** – Pre-defined length of roadway assigned to the inspector upon which to collect all End Treatments within.

**ROUTE** – Identifies the state route or interstate on which the End Treatment is located.

**CONSTRUCTION WORK ZONE** – A part of the roadway that is under construction and is defined as follows: from the “Work Begins 500 ft. Ahead” or “Road Work Next X miles” sign to the “End Work Zone” sign. Construction zones are considered active until all construction signs and construction barrels have been removed.

**INTERSECTION** – A portion of the roadway in which a stopping condition is present for all routes.

**TYPE 1** – A general term encompassing free standing trailing guardrail End Treatments.

**TYPE 6** – End shoe attaching guardrail to concrete structure.

**TYPE 12** – A general term encompassing free standing approach guardrail end treatments.

**FLARED** – The end terminal has an offset over the length of the installation.

**TANGENT** – The end terminal is installed parallel with the direction of traffic. No offset is required.

**BEGIN** – Refers to an end treatment at the upstream end of a run of guardrail.

**END** – Refers to an end treatment at the downstream end of a run of guardrail.

**POST ACRONYMS**

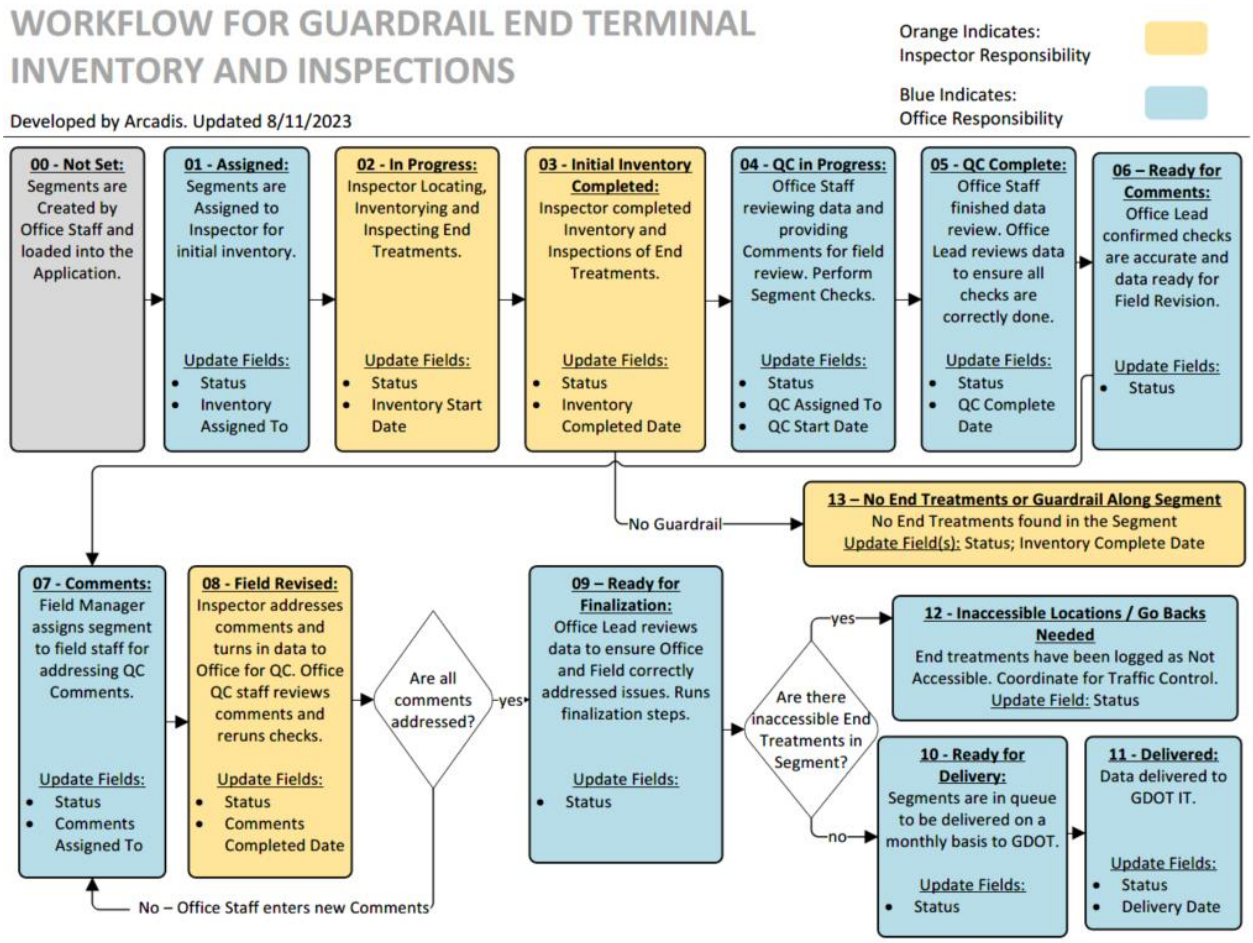
- **HBA** – Steel Hinged Breakaway Posts
- **SYTP** – Steel Yielding Terminal Posts
- **BCT** – Breakaway Wood in Steel Tube (Breakaway Cable Terminal)
- **CRT** – Breakaway Wood
- **Other Post Types** – Steel Line Posts (Standard Guardrail Posts), Plug Welded Steel Posts

## Inventory Sectioning

The roadway network is sectioned based on the Route and County. Inspectors are assigned sections upon which they will work to locate, inventory, and inspect all End Treatments in their assignment, including End Treatments located in the median. If a stretch of roadway is expected to be under construction for an extended period, it may be excluded from the sectioning by the Office Staff until the project is finished.

All sections will be visible in the Guardrail Inventory and Inspection Field Map and color coded based on the status that section is in. The office staff will oversee assigning sections to inspectors based on the status of their existing assignments. When the inspector starts on a section, they will update the status from '01 – Assigned' to '02 - In Progress'. Once they have finished inspecting the section, they will update the status from '02 - In Progress' to '03 - Initial Inventory Completed'.

To assist with an orderly process flow, it is recommended that an inspector consistently work on one section at a time so the data can be collected in a timely fashion. This enables the QC staff to process the backlog of the inventoried data and provide comments where necessary. The process flow for the sections is in the image below.



# Data Collection

## Inspector Responsibilities

Individuals that inventory and inspect the Guardrail End Terminals must complete the Guardrail Academy Training.

It is mandatory that the inspector's priority be the safety of the motoring public and themselves. On occasions, it may be necessary to schedule the inventory and inspections of a section with high traffic volume during low-traffic periods to ensure safety. Appropriate traffic control procedures should be arranged.

All assessments are completed Guardrail End Treatment Inventory and Inspection Field Map, which is synced with Sections 3 and 4 of this Manual. Using that field map, the inspector will accurately record the location of the End Treatment using GPS coordinates, fill out the Inspection Form to the best of their abilities, and take photos of the End Treatment for review by Office QC Staff.

It is NOT the inspector's responsibility to perform a repair to the End Treatment. If an End Treatment is not functioning for the reasons below, it is the inspector's responsibility to enter the End Treatment into GDOT's Guardrail Strike Application:

- Clear Strikes;
- Damaged End Post (Post 1 in Inspection);
- Missing Anchor Cable (If the end treatment was installed with a cable anchor system but is missing one at the time of the inspection);
- Missing Lag Screws causing the Impact Head to be on the ground;
- Missing Strut (only entered during QC Comments inspections based on flag by Office Staff);
- Incorrect Rail Lapping.

## Hazard Awareness Notes

Signs that are next to Changeable Message Signs (CMS) may have posts driven through electrical wires. Inspectors should use caution when approaching or touching any guardrail near CMS signs. If it is "hot", use Stop Work Authority and do not inventory or touch the End Terminal. Then call 511 and report the location of the guardrail.

Typical Hazards Located behind the guardrail include:

- Erosion Scours
- Old Post holes from when a guardrail was re-installed and used a different hole
- Sign Stubs from when a sign was knocked over but not replaced
- Biologic factors including ant nests, hornets nests, spiders within the rails, among others.

## Locating and Inventorying End Terminal Treatments

The Inspector must get out of the vehicle and physically walk to the End Terminal. This is not a windshield survey, it is a hands-on, boots on the ground inspection.

It is best practice to inventory all End Terminals on one shoulder in one 'pass'. The inspector should not be crossing lanes of traffic to capture End Treatments on opposite sides of the road (outside shoulder and median shoulder). Remember that the safety of the travelling public is of the highest priority in this program.

- **Intersections** –
    - If a guardrail wraps around the radius of an intersection, the inspector will need to include both end treatments attached to that guardrail. This would include the end treatment on the intersecting roadway.
    - If the End Treatment has already been inventoried and inspected on the intersecting section, then the inspector does not need to create a duplicate inventory point and inspection.
- **Interstate Ramps** – All End Treatments along the ramp need to be inventoried and inspected of an interstate section. Intersections between the ramp and a non-interstate roadway should be handled the same as normal intersections, listed above.
- **Divided Highways** – If the roadway is a divided highway or interstate, inventory and inspect End Treatments on both directions of travel in the section.
- **Medians** – End Treatments in the median need to be inventoried and inspected. If an End Treatment is in an inaccessible median, the inspector needs to call the office to discuss safe ways to schedule capturing that End Treatment.
- **Bridges** – Many bridges have limited shoulders. The inspector should plan accordingly. They may have to park at the beginning of the guardrail section to inventory the leading End Treatment, then walk the length of the guardrail to Inventory and Inspect the End Treatment that ties the guardrail into the bridge.
- **Construction Zones** – report construction zones to your supervisor so they can coordinate with a GDOT Liaison on whether that project will impact the existing End Treatment locations.
- **Cable Barrier Installation** – For construction zones that are installing cable barrier, if there is a concrete pad where the cable barrier anchor will be located, inventory that pad in the application. Do not do an inspection on the pad, the inspection will be scheduled for a later point in time, once the installation is complete.

## Equipment and Supplies

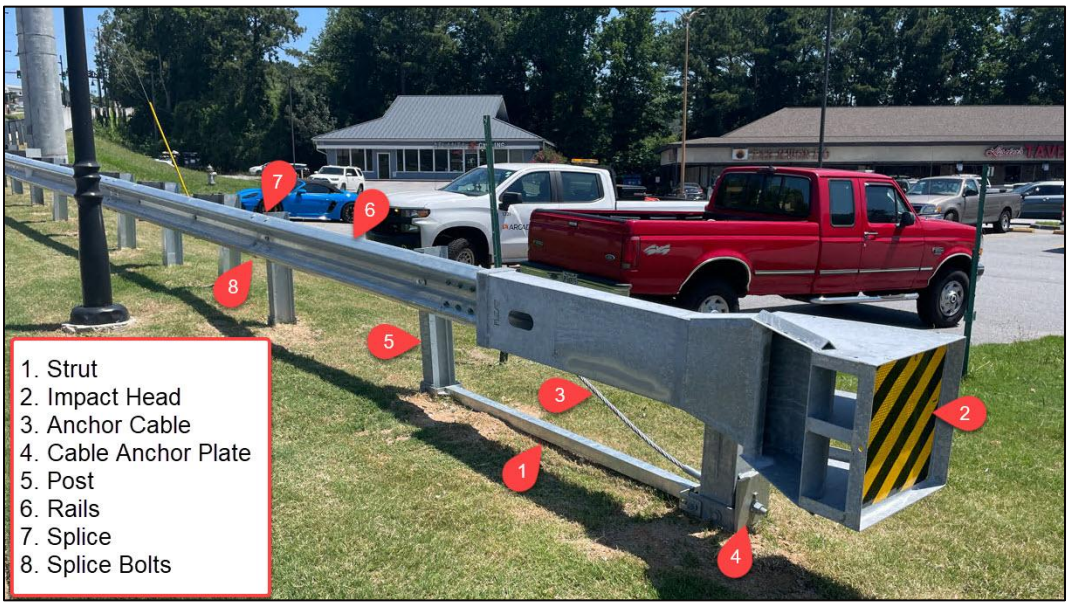
The following equipment and supplies may be required and/or recommended for the efficient and safe collection of the assessment data:

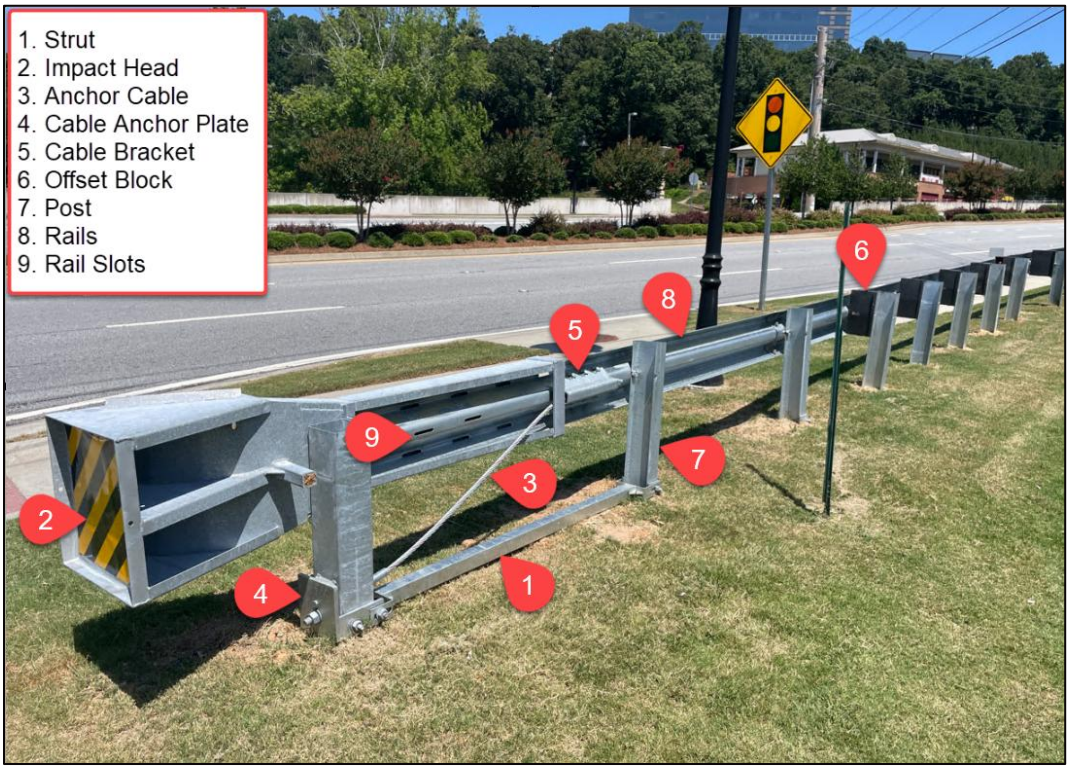
**Required:**

- Health and Safety Plan, including
    - Tailgate Health and Safety Meeting Form
    - Weekly Vehicle Inspection Form
    - Traffic Control Plan
- “Shoulder Work Ahead” Warning Sign(s)
- Flashing amber lights for vehicle roof or strobes in vehicle lights
- DOT-approved vests
- First Aid Kit
- Mechanic Gloves
- Mobile device with built-in camera and GPS capability with the
    - Arcadis End Treatment Inventory and Inspection Application
    - GDOT Guardrail Strike Application
- Guardrail Inventorying Training Manual
- Small measuring ruler (6” or 12”) or small measuring tape (3’ to 12’)
- Spade for digging out high shoulder
- Pocket guide / caliper for measuring bolt sizes
- Smart level – for measuring whether the head is tilted
- String and magnet for measuring offset

# SECTION 2: IDENTIFICATION OF END TREATMENTS

## 2.0 Diagram of Guardrail Parts



## 2.1 SOFTSTOP

**Identification Characteristics: TL3 Length 50'-9 1/2", 8 posts, 1 hex bolt**

1. Narrow 7” wide steel impact head.
2. W-beam rail is flattened upon end-on impact.
3. 50’-9.5” length in a straight- line tangent to roadway or up to a 2’ offset at Post 0.
4. Attaches to 31” high guardrail (MASH TL-3).
5. Rail is not attached to Post 2.
6. No blockout at Post 1.
7. Embedded steel anchor upstream of Post 1.
8. Includes a ground strut assembly upstream of Post 1.
9. First rail segment is cut longitudinally, threaded through chute, connecting to anchor paddle which is connected to anchor upstream of Post 1.
10. Posts 1 & 2 Steel SYTP Posts, Posts 3-8 – Standard Steel Guardrail Posts.
11. Post spacing:
    - Posts 1 to 2: 5’-8”
    - Posts 2 through 8: 6’-3”

## 2.2 MSKT


**Identification Characteristics: Length 50', 8 posts, 2 lag screws**

1. Square Impact Head
2. Rail is sequentially kinked out to the back as head slides along rail in end-on impact.
3. Impact head assembly has nearly solid panel on traffic side of the rail.
4. Placed in straight-line taper – 1:25 or flatter.
5. Second guardrail panel is 9'-4.5" long to get splices at mid-span.
6. Breakaway cable assembly downstream of Post 1.
7. Cable anchor attaches to back of rail with eight bolts.
8. No blockout at Posts 1 & 2.
9. Attaches to 31" high guardrail (MASH TL-3).
10. Includes a ground strut assembly between Post 1 and Post 2.
11. Posts 1 & 2 – Steel Hinged Posts or one SP upper and lower Post and one hinged breakaway Post, Posts 3-8 – Standard Steel guardrail posts.
12. Includes bearing plate and retainer tie.
13. Post spacing:
    - Posts 1 through 8: 6'-3"

## 2.3 SKT-SP

**Identification Characteristics: Length 50', 8 posts, 2 lag screws**

1. 1’-8” W x 1’-8.25” H Square impact head.
2. Rail is sequentially kinked out to the back as head slides along rail in end-on impact.
3. Impact head assembly has 2 struts on traffic side.
4. Installed in a straight-line taper - tangent to 25:1 allowed.
5. Breakaway cable assembly downstream of Post 1.
6. Cable anchor attaches to back of rail with 8 bolts.
7. No blockout at Posts 1 & 2.
8. No ground strut assembly between Post 1 and Post 2.
9. Post spacing:
    - Posts 1 through 8: 6’-3”

***Note: It is possible that there will be end treatment installations that include an MSKT impact head on an SKT-SP. In those instances, you should identify the end treatment as MSKT Retrofit – SKT SP and complete the inspection as normal. Example Photo below.**

## 2.4 SKT 350 Wood Post

**Identification Characteristics: Length 50', 8 posts, 2 lag screws**

1. 1’-8” W x 1’-8.25” H Square impact head.
2. Rail is sequentially kinked out to the back as head slides along rail in end-on impact.
3. Impact head assembly has two struts on traffic side.
4. Installed in a straight-line taper – tangent to 1:25 allowed.
5. Breakaway cable assembly downstream of Post 1.
6. Cable anchor attaches to back of rail with 8 bolts.
7. No blockout at Posts 1 & 2.
8. Includes a ground strut assembly between Post 1 and Post 2.
9. Post combinations:
    - Posts 1 & 2 – Steel Hinged, Posts 3-8 – Breakaway Wood Posts (CRT).
    - Posts 1-8 – Breakaway Wood Post in steel tube (BCT).
    - Posts 1 & 2 – Wood BCT in steel tube, Posts 3-8 –CRT.
    - Posts 1-4 – Wood BCT in steel tube, Posts 5-8 – CRT.
10. Post spacing:
    - Posts 1 through 8: 6’-3”

***Note: It is possible that there will be end treatment installations that include an MSKT impact head on an SKT-350 Wood Post. In those instances, you should identify the end treatment as MSKT Retrofit – SKT 350 Wood Post and complete the inspection as normal.**

## 2.5 SKT-350 Steel Post

**Identification Characteristics: Length 50', 8 posts, 2 lag screws**

1. 1’-8” W x 1’-8.25” H Square impact head.
2. Rail is sequentially kinked out to the back as head slides along rail in end-on impact.
3. Impact head assembly has two struts on traffic side.
4. Installed in a straight-line taper – tangent to 1:25 allowed.
5. Breakaway cable assembly downstream of Post 1.
6. Cable anchor attaches to back of rail with 8 bolts.
7. No blockout at Posts 1 & 2.
8. Includes a ground strut assembly between Post 1 and Post 2. Different strut for Hinged Bolted Posts.
9. The steel post systems bearing plate uses a retainer/tie to prevent rotation.
10. Post combinations:
    - Posts 1&2 – Steel Hinged Posts, Posts 3-8 – Plug Weld Steel Posts.
    - Posts 1-8 – Steel Hinged Posts.
    - Posts 1&2 – Plug Weld Steel post in steel tube, Posts 3-8 – Plug Weld Steel Posts.
11. Post spacing:
    - Posts 1 through 8: 6’-3”

***Note: It is possible that there will be end treatment installations that include an MSKT impact head on an SKT-350 Steel Post. In those instances, you should identify the end treatment as MSKT Retrofit – SKT-350 Steel Post and complete the inspection as normal.**

## 2.6 MFLEAT

**Identification Characteristics: Length 36'-5 ½", 8 posts, 2 lag screws**

1. Rectangular impact head.
2. Triangular bar on top of impact head.
3. Rail is sequentially kinked out to the front as head slides along rail in end-on impact.
4. Impact head assembly has nearly solid panel on traffic side of rail and 'MFLEAT' is cut into the chute.
5. Includes 3-ft fixed offset over the 39'-7" length.
6. Breakaway cable assembly downstream of Post 1.
7. Cable anchor attaches to back of rail with eight bolts.
8. No blockout at Posts 1, 2, & 3.
9. Includes ground strut assembly between Post 1 and Post 2.
10. Rail lengths: 12'-6" end rail, 10'-5" second rail, 13'-6 ½" third rail.
11. Includes bearing plate with retention bolt hole above anchor cable bolt hole. Retention bolt and cable hex nut should be present.
12. Posts 1 & 2 –SP upper and lower Post, two Hinged Posts, Posts 4-8 – Standard Steel guardrail posts.
13. Post spacing:
    - The first 2 post spacings are at 6'-3" and the remaining 6 posts are spaced at 4'-2".

## 2.7 FLEAT-SP

**Identification Characteristics: Length 37'-6", 7 posts, 2 lag screws**

1. Rectangular impact head - flanges all sides.
2. Square bar on top of impact head.
3. Rail is sequentially kinked out to the front as head slides along rail in end-on impact.
4. Impact head assembly has two struts on traffic side of rail.
5. Installed in a straight-line taper – 2.5' to 4' offset at upstream end.
6. Rail not attached to Post 1 or to Post 3.
7. Breakaway cable assembly downstream of Post 1.
8. Cable anchor attaches to back of rail with 8 bolts.
9. Cable not inside feeder chute.
10. No blockout at Posts 1 & 2.
11. No ground strut assembly between Post 1 and Post 2.
12. Post 1 is 6"x6" tube with W6x15# lower post, Post 2 is W6x9# post with W6x9# lower post, and Posts 3-7 are Standard Steel Guardrail Posts.
13. Post spacing:
    - Posts 1 through 7: 6'-3"

## 2.8 FLEAT-350 Steel Post

**Identification Characteristics: Length 37'-6", 7 posts, 2 lag screws**

1. Rectangular impact head – flanges all sides.
2. Square bar on top of impact head.
3. Rail is sequentially kinked out to the front in end-on impact.
4. Impact head assembly has two struts on traffic side.
5. Installed in a straight-line taper – 2'-6" to 4'-0" offset at upstream end.
6. Rail not attached to Post 1 or to Post 3.
7. Breakaway cable assembly downstream of Post 1.
8. Cable anchor attaches to back of rail with 8 bolts.
9. Cable not inside feeder chute.
10. No blockout at Posts 1 & 2
11. Includes a ground strut assembly between Post 1 and Post 2.
12. Post combinations:
    - Posts 1 & 2 – Steel Hinged Posts, Posts 3-7 – Plug Weld Steel Posts.
      Posts 1-7 – Steel Hinged Posts.
    - Posts 1 & 2 – Plug Weld Steel Post in steel tube, Posts 3-7 – Plug Weld Steel Posts.
13. Post spacing:
    - Posts 1 through 7: 6'-3"

## 2.9 FLEAT-350 Wood Post

**Identification Characteristics: Length 37'-6", 7 posts, 2 lag screws**

1. Rectangular impact head - flanges all sides.
2. Square bar on top of impact head.
3. Rail is sequentially kinked out to the front as head slides along rail in end-on impact.
4. Impact head assembly has two struts on traffic side of rail.
5. Installed in a straight-line taper – 2'-6" to 4'-0" offset at upstream end.
6. Rail not attached to Post 1 or to Post 3.
7. Breakaway cable assembly downstream of Post 1.
8. Cable anchor attaches to back of rail with 8 bolts.
9. Cable not inside feeder chute.
10. No blockout at Posts 1 & 2.
11. Includes a ground strut assembly between Post 1 and Post 2.
12. Post combinations:
    - Posts 1 & 2 – Steel Hinged, Posts 3-7 – Breakaway Wood Posts (CRT).
    - Posts 1&2 – Wood BCT in steel tube, Posts 3-7 – Breakaway Wood (CRT).
    - Older system could have 8 posts similar to (a) with Posts 3-8 Breakaway Wood (CRT).
13. Post spacing:
    - Posts 1 through 7: 6'-3"

## 2.10 FLEAT-MT

**Identification Characteristics: Length 37'-6", 7 posts, 2 lag screws**

1. Rectangular impact heads - flanges all sides.
2. Square bar on top of impact heads.
3. Rail is not attached to Post 1 or to Post 3.
4. Rail is sequentially kinked out to the front as head slides along rail in end-on impact.
5. Impact head assemblies have 2 struts on traffic side of rail.
6. Installed in a median.
7. Post 1 through 4 installed at a straight-line taper (2'-0" offset for upstream head).
8. Breakaway cable assembly downstream of Post 1.
9. Breakaway cable assembly downstream of Post 4 (for second head).
10. Each cable anchor attaches to back of rail with 8 bolts.
11. Cable not inside feeder chute (for each head).
12. No blockout at Posts 1 & 2.
13. Ground strut assembly between Post 1 and Post 2.
14. Posts 1, 2 & 4 – Wood BCT in steel tube, Posts 3, 5-7 – Breakaway Wood (CRT).
15. Post spacing:
    - Posts 1 thought 7: 6'-3"

## 2.11 SRT-350 6 Post Wood

**Identification Characteristics: Length 37'-6", 6 posts, 0 lag screws**

1. Curved, buffered steel end section.
2. W-Beam rail has horizontal slots in first and second rail segments.
3. 37'-6" long in a straight-line flare.
4. Upstream end has 4' offset.
5. Slot guard brackets attached to back of rail at downstream end of slots (four total).
6. Rail is not attached to Post 2.
7. No blockouts at Posts 1 & 2.
8. Breakaway cable assembly downstream of Post 1.
9. Cable anchor attaches to back of rail with eight bolts through the rail.
10. V-notch bearing plate (notch faces up).
11. Includes a ground strut assembly between Post 1 and Post 2.
12. Posts 1 & 2 – Steel HBA, Posts 3-6 – Breakaway Wood (CRT).
13. Post spacing:
    - Posts 1 through 6: 6'-3"

## 2.12 SRT-350 8 Post Wood

**Identification Characteristics: Length 37'-6", 8 posts, 0 lag screws**

1. Curved, buffered steel end section.
2. W-Beam rail has horizontal slots in first and second rail segments.
3. 37'-6" long in a parabolic curve.
4. Upstream end has 4' offset.
5. Slot guard brackets attached to back of rail at downstream end of slots (four total).
6. Rail is not attached to Posts 7 & 8.
7. No blockouts at Posts 1 & 2.
8. Breakaway cable assembly downstream of Post 1.
9. Cable anchor attaches to back of rail with eight bolts through the rail.
10. V-notch bearing plate (notch faces up).
11. Includes a ground strut assembly between Post 1 and Post 2.
12. Posts 1 & 2 – Wood BCT in steel tube, Posts 3-8 – Breakaway Wood (CRT).
13. Post spacing:
    - The first 2 post spacings are at 6'-3" and the remaining 6 posts are spaced at 4'-2".

## 2.13 SRT-27-SP


**Identification Characteristics: Length 37'-6", 6 posts, 0 lag screws**

1. Curved, buffered steel end section.
2. W-Beam rail has horizontal slots in first and second rail segments.
3. 37'-6" long in a straight-line flare.
4. Upstream end has 4' offset.
5. Slot guard brackets attached to back of rail at downstream end of slots (four total).
6. Rail is not attached to Posts 2 through 5.
7. No blockouts at Posts 1 & 2.
8. Breakaway cable assembly downstream of Post 1.
9. Cable anchor attaches to back of rail with eight bolts through the rail.
10. No bearing plate – uses cable anchor bracket angle within Post 1.
11. Includes a ground strut assembly between Post 1 and Post 2.
12. Posts 1 – Steel Cable Release Post, Posts 2-6 – Steel SYTP Posts.
13. Post spacing:
    - Posts 1 through 6: 6'-3"

## 2.14 SRT-31

**Identification Characteristics: Length 40’-7 ½”(or 34'-4 ½), 6 posts, 0 lag screws**

1. Curved, buffered steel end section.
2. W-Beam rail has horizontal slots in first and second rail segments.
3. 43’-4 ½” or 40’-7 ½” long in a straight-line flare.
4. SRT™ 31 System has a 4’0” [1.22 m] offset.
5. Slot guard brackets attached to back of rail at downstream end of slots (four total).
6. SRT™ -1 Anchor Guardrail and SRT™ -2 and -3 Guardrails are not bolted to posts 2-5.
7. No blockouts.
8. Breakaway cable assembly downstream of Post 1.
9. Cable anchor attaches to back of rail with eight bolts through the rail.
10. No bearing plate – uses cable anchor bracket within Post 1.
11. Includes a ground strut assembly between Post 1 and Post 2.
12. Posts 1 – Steel Cable Release Post, Posts 2-6 – Steel SYTP Posts.
13. Post spacing:
    - Posts 1 through 6: 6’-3”

## 2.15 Regent-C

**Identification Characteristics: Length 37' 6'', 7 posts**

1. Curved, buffered steel end section.
2. All three rails are 12'6" w-beam Regent-C anchor panels (Each rail has two sets of large slots on top and bottom corrugation with a large hole in the middle corrugation between the slots.)
3. 6' 3'' spacing between posts with a 4' straight flared offset.
4. Breakaway cable assembly downstream of Post 1.
5. Cable anchor attaches to back of rail with eight bolts.
6. A Second cable goes through the cable anchor bracket, around Post 2, through the center hole between Posts 2-3, and through the center hole after post 6, then to the cable anchor box upstream of post 7.
7. No blockout at Posts 1 & 2.
8. The rail is not connected to Post 2.
9. Includes a ground strut assembly between Post 1 and Post 2.
10. Includes bearing plate.
11. Does not have slot guards.
12. Post spacing:
    - Posts 1 through 7: 6'-3"

## 2.16 ET Plus Steel Post

**Identification Characteristics: Length 50’ and 37’6” versions, 7 and 8 posts, 1 lag screw**

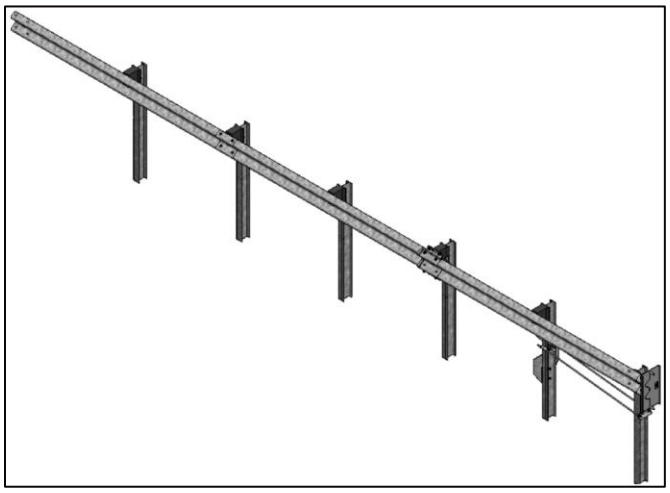
1. 1’-3” W x 2’-4” H Rectangular Impact head.
2. Front of impact head has flanges on sides only.
3. Rail is extruded out to the back as head slides along rail in end-on impact.
4. Impact head assembly has one strut on traffic side.
5. Breakaway cable assembly downstream of Post 1.
6. Cable anchor attaches to back of rail with six tabs protruding through the rail.
7. Includes a ground strut assembly between Post 1 and Post 2.
8. Post combinations:
    - Posts 1-8 – HBA.
    - Post 1 – HBA, Posts 2-8 – Steel Yielding Terminal Posts (SYTP).
    - Posts 1 & 2 – Steel Hinged Breakaway (HBA), Posts 3-8 – Steel Line Posts.
9. Post spacing:
    - Posts 1 through 7: 6’-3”

## 2.17 ET Plus Wood Post

**Identification Characteristics: Length 50’ and 37’6” versions, 7 and 8 post, No ET Plus wood post manual**

1. 1’-3” W x 2’-4” H Rectangular Impact head.
2. Front of impact head has flanges on sides only.
3. Rail is extruded out to the back as head slides along rail in end-on impact.
4. Impact head assembly has one strut on traffic side.
5. Breakaway cable assembly downstream of Post 1.
6. Cable anchor attaches to back of rail with six tabs protruding through the rail.
7. Includes a ground strut assembly between Post 1 and Post 2.
8. Posts 1 & 2 – Wood BCT in steel tube, Posts 3-8 – Breakaway Wood.
9. Post Spacing:
    - Posts 1 through 7: 6’-3” (assumed same post spacing as steel post version*)

## 2.18 X-Lite (Flared)



**Identification Characteristics: Length 37'-6", 6 posts, 0 lag screws**

1. Rectangular impact head with flanges on sides only.
2. W-beam rail telescopes rearward in end-on impact.
3. Flared system installed at a 4ft offset.
4. Rail not attached to Posts 3 & 5.
5. Shear bolts used at Post 5.
6. Standard bolts used at Post 7.
7. Breakaway cable assembly downstream of Post 2.
8. Cable anchor attaches to back of rail immediately upstream of Post 3.
9. No blockout at Post 1.
10. Includes two ground strut tension rods between Post 1 and Post 2.
11. Posts 1, 2 & 3 – Special Steel Posts, Posts 4-8 – Standard Steel Guardrail Posts.
12. Post spacing:
    - Posts 1 through 6: 6'-3"

## 2.19 X-Lite (Tangent)

**Identification Characteristics: Length 37'-6", 6 posts, 0 lag screws**

1. Rectangular impact head with flanges on sides only.
2. W-beam rail telescopes rearward in end-on impact.
3. Installed in a straight-line taper or tangent to roadway.
4. Rail not attached to Posts 3 & 5.
5. Shear bolts used at Posts 5 & 7.
6. Breakaway cable assembly downstream of Post 2.
7. Cable anchor attaches to back of rail immediately upstream of Post 3.
8. No blockout at Posts 1 & 2.
9. Includes two ground strut tension rods between Post 1 and Post 2.
10. Posts 1, 2 & 3 – Special Steel Posts, Posts 4-8 – Standard Steel Guardrail Posts.
11. Post spacing:
    - Posts 1 through 6: 6'-3"

## 2.20 MELT (Modified Eccentric Loader Terminal)

**Identification Characteristics: Length 26', 6 posts, 0 lag screws**

1. Rounded steel buffered end assembly with two diaphragm plates (could be bolted or welded).
2. 37'-6" long in a parabolic curve.
3. Upstream end has 4' offset.
4. Rail is not attached to Posts 2 - 6.
5. No blockout at Post 1.
6. Breakaway cable assembly downstream of Post 1.
7. Cable anchor attaches to back of rail with eight bolts upstream of Post 2.
8. Includes ground strut assembly between Post 1 and Post 2.
9. Posts 1 & 2 – Wood BCT in steel tube, Posts 3-6 – Breakaway Wood (CRT), Posts 7-8 – Standard Wood Guardrail Posts. (Some MELT systems include steel posts throughout.)
10. Post Spacing:
    - Posts 1 to 3: 2m
    - Posts 3 to 6: 1.33m

## 2.21 ET-2000 Steel Post

**Identification Characteristics: Length 50', 8 posts, 2 lag screws**

1. 1'-8" W x 1'-8.5" H Square Impact head.
2. Rail is extruded out to the back as head slides along rail in end-on impact.
3. Impact head assembly has one strut on traffic side.
4. Breakaway cable assembly downstream of Post 1.
5. Cable anchor attaches to back of rail with six tabs protruding through the rail.
6. Includes a ground strut assembly between Post 1 and Post 2.
7. Post combinations:
    - Posts 1-8 HBA.
        - Post spacing:
        - Posts 1 through 7: 6'-3"

## 2.22 ET-2000 Wood Post

**Identification Characteristics: Length 50' (assumed same length as steel post version*), 8 posts, 2 lag screws**

1. 1'-8" W x 1'-8.5" H Square Impact head.
2. Rail is extruded out to the back as head slides along rail in end-on impact.
3. Impact head assembly has one strut on traffic side.
4. Breakaway cable assembly downstream of Post 1.
5. Cable anchor attaches to back of rail with six tabs protruding through the rail.
6. Includes a ground strut assembly between Post 1 and Post 2.
7. Posts 1 & 2 – Wood BCT in steel tube, Posts 3-8 Breakaway Wood.
10. Post spacing:
    - Posts 1 through 7: 6'-3"

## 2.23 CAT-350

**Identification Characteristics: Length 31’ 3”, 6 posts**

1. Steel nose assembly.
2. Side rails are W-beam.
3. Side rails may or may not be slotted.
4. Tensioning cable downstream of Post 1.
5. Strut between Post 1 and Post 2.
6. Post 1 through 6 may be wood breakaway type installed in metal foundation tubes or steel yielding:
    - Breakaway wood posts include a bored hole less than 4” from finished grade.
    - Steel yielding posts include holes on the post flanges less than 4” from finished grade.
7. Post spacing:
    - Posts 1 to 6: 6’-3”

## 2.24 MATT™ (Median Attenuating TREND® Terminal)

**Identification Characteristics: Length 34’ 4-1/2” (TL3), 6 Posts**

1. Includes MATT Impact Head.
2. Installed 31” from finished grade.
3. Uses MATT specific rail throughout.
4. Angle strut between post 1 and 2.
5. Includes CR Post, 4 SYTP with soil plates, and 1 system line post.
6. Post spacing:
    - All Posts are spaced at 6”-3”.

## 2.25 X-Tension Tangent

**Identification Characteristics: Length 38', 6 Posts**

1. Impact head with plastic nose piece.
2. W-beam rail telescopes rearward on end-on impact.
3. Installed in a straight-line taper (0' to 4' offset).
4. Rail not attached to Post 3.
5. Shear bolts used at Post 5.
6. Tension cable assembly upstream of Post 1.
7. Cables run along back of rail and attach to back of rail immediately upstream of Post 7.
8. No blockout at Post 1.
9. Includes ground strut assembly upstream of Post 1.
10. Post Combinations:
    - Post 1 – Special Steel Post, Post 2 – Crimped Steel (weakened), Posts 3-8 – Standard teel Guardrail posts.
    - Post 1 – Special Steel Post, Posts 2-6 – Breakaway Wood Posts (CRT).

## 2.26 X-Tension Flared

**Identification Characteristics: Length 38', 6 posts**

1. Impact head with plastic nose piece.
2. W-beam rail telescopes rearward on end-on impact.
3. Installed in a straight-line taper (0' to 4' offset).
4. Rail not attached to Post 3.
5. Shear bolts used at Post 5.
6. Tension cable assembly upstream of Post 1.
7. Cables run along back of rail and attach to back of rail immediately upstream of Post 7.
8. No blockout at Post 1.
9. Includes ground strut assembly upstream of Post 1.
10. Post Combinations:
    - Post 1 – Special Steel Post, Post 2 – Crimped Steel (weakened), Posts 3-8 – Standard teel Guardrail posts.
    - Post 1 – Special Steel Post, Posts 2-6 – Breakaway Wood Posts (CRT).

## 2.27 X-MAS

**Identification Characteristics: Length 38’**

1. Plastic nose assembly.
2. Side rails are W-beam.
3. Side rail adjacent to approach side traffic is straight.
4. Side rail opposite approach side traffic is parabolic.
5. Includes a strut assembly upstream of Post 1.
6. Tensioning cables upstream of Post 1.
7. Post 1 is steel hinged breakaway type.
8. Post 2 through 6 may be wood breakaway or steel yielding:
    - Breakaway wood posts include a bored hole less than 4” from finished grade.
    - Steel yielding posts include holes on the post flanges less than 4” from finished grade.

## 2.28 MAX-Tension

**Length 50', 8 posts, Posts 1 and 2 have 37 ½" spacing, Posts 2 to 5 have 6'-3" spacing, Posts 5 to 6 have 72 ¾" spacing, and Posts 6 though 8 have 6'-3" spacing.**

## 2.29 MAX-Tension Median

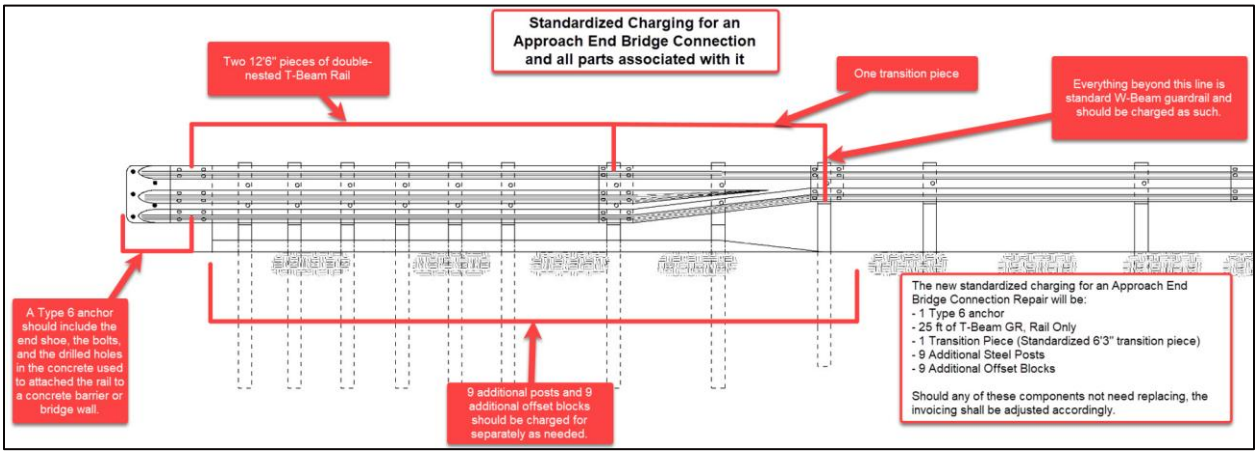
**Length 50', 8 posts, Posts 1 and 2 have 37 ½" spacing, Posts 2 to 5 have 6'-3" spacing, Posts 5 to 6 have 72 ¾" spacing, and Posts 6 through 8 have 6'-3" spacing.**

## 2.30 Bridge Connection – W Beam

**Identification Characteristics: 4 Posts**

1. W Beam end shoe is attached to concrete barrier with 4 bolts (with nuts, washers, and galvanized plates).
2. W Beam/End shoe splice is lapped in the direction of traffic.
3. Not permitted at approaches to concrete structures.

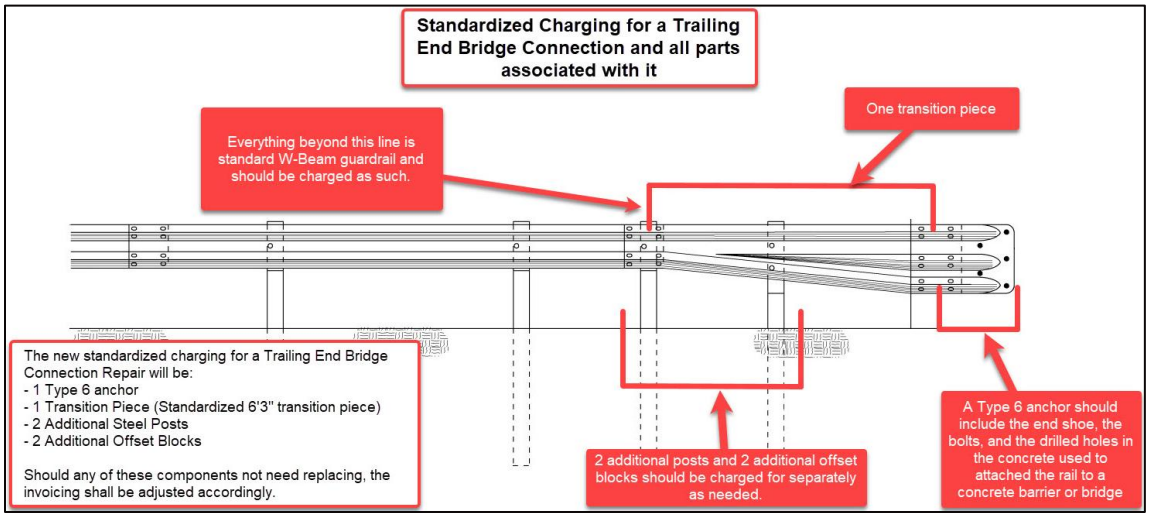
## 2.31 Bridge Connection – Long




**Identification Characteristics: Length 20' 7 ¾", 9 posts**

1. Includes T Beam end shoe attached to concrete bridge barrier or bridge wall.
2. Two 12'6" pieces of T Beam are double-nested.
3. Includes a double nested T-beam with 6 posts at 1'-6 ¾" spacings and a transition piece with 3'-1 ½" post spacing
4. End shoe is attached with 5 bolts (or threaded rods with nuts and washers) and galvanized plates.
5. Post count/placement matches bridge connection standard.

## 2.32 Bridge Connection – Short




**Identification Characteristics: Length 8' 1 3/4", 2 Posts**

1. Includes T Beam end shoe attached to concrete bridge barrier or bridge wall.
2. Includes a transition piece with 3'-1 ½" post spacing.
3. End shoe is attached with 5 bolts or threaded rods, with nuts, washers, and galvanized plates on back side.
4. Post count/placement matches bridge connection standard.

## 2.33 Bridge Connection - Double Facing – W Beam

**Identification Characteristics: 4 Posts**

1. W Beam End shoes are attached to concrete barrier with 4 bolts (with nuts and washers).
2. W Beam/End shoe splice is lapped in the direction of traffic (opposing sides of the double facing rail may be lapped in opposite directions due to direction of traffic).
3. Both sides of guardrail share same posts.

## 2.34 Bridge Connection - Double Facing - Long

**Identification Characteristics: Length 20’ 7 ¾”, 9 posts**

1. Includes T Beam end shoes attached to concrete bridge barrier or bridge wall.
2. Includes transition pieces with 3’-1 ½” post spacing.
3. End shoes are attached to concrete barrier with 5 bolts (or threaded rods with nuts and washers).
4. T Beam/End shoe splice is lapped in the direction of traffic (opposing sides of the double facing rail may be lapped in opposite directions due to direction of traffic).
5. Both sides of guardrail share same posts.

## 2.35 Bridge Connection - Double Facing - Short

***Image Not Available***

**Identification Characteristics: Length 8’ 1 3/4“, 2 Posts**

1. Includes T Beam end shoes attached to concrete bridge barrier or bridge wall.
2. Includes transition pieces with 3’-1 ½” post spacing.
3. End shoes are attached with 5 bolts or threaded rods, with nuts, and washers.
4. T Beam/End shoe splice is lapped in the direction of traffic (opposing sides of the double facing rail may be lapped in opposite directions due to direction of traffic).
5. Both sides of guardrail share same posts.

## 2.36 Double Facing

**Identification Characteristics: 2 Posts**

1. Includes 2 curved end buffers or one end buffer that connects both end rail segments (not pictured).
2. Cable assembly downstream of post 1.
3. Cable anchor plate attaches to back of rail with eight bolts through the rail.
4. Bearing plate with two nails to prevent rotation.
5. Both sides of guardrail share same posts.

## 2.37 Type 5 (Texas Twist)

**Identification Characteristics:**

1. Rails twists to attach to horizontal concrete surface.
2. Includes w beam end shoe.
3. No impact head.

## 2.38 Type 1

**Identification Characteristics: Length 12’ 5”, 3 Posts**

1. Curved, buffered steel end section.
2. Consists of 2 short timber posts with foundation tubes and one standard guardrail post.
3. Includes strut between post 1 and 2.
4. Cable assembly downstream of post 1.
5. Bearing plate with two nails to prevent rotation.
6. Cable anchor plate attaches to back of rail with eight bolts through the rail.
7. Post spacing:
    - Posts 1 to 2: 6’-3”
    - Posts 2 to 3: 3’ -1 ½”

**Mid-Stream Type 1 Anchors:** This program does not Inventory mid-stream Type 1 anchors. If a Type 1 End Treatment is located at the middle of a run of guardrail, do not inventory it.

## 2.39 Type 1 (Old)

**Identification Characteristics: 2 Posts**

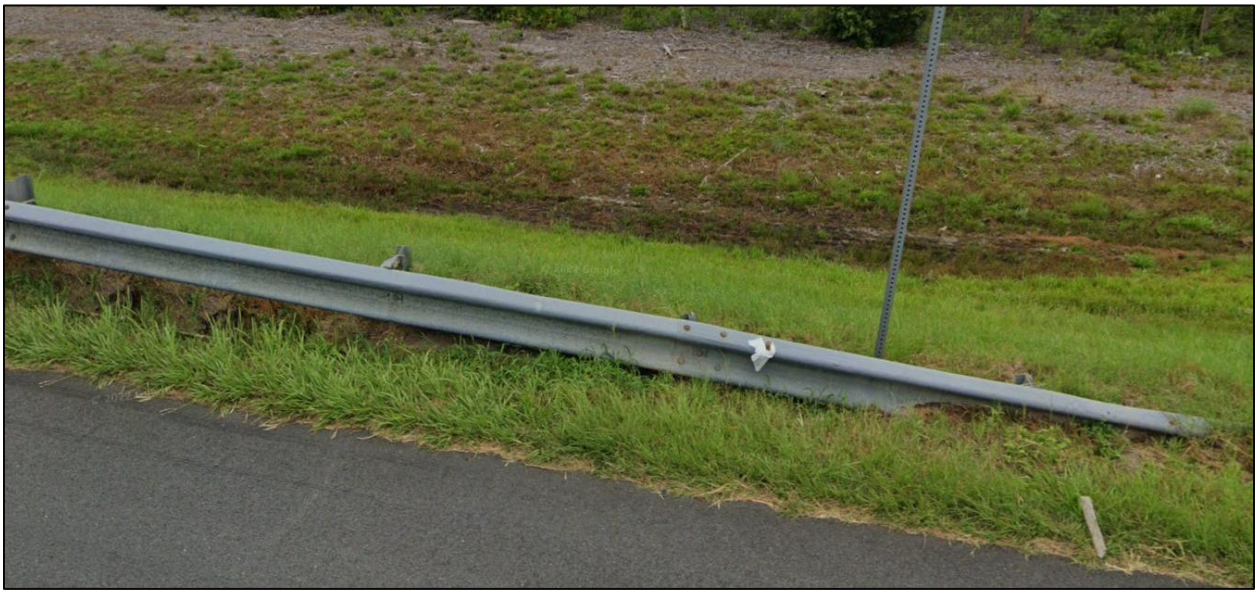
1. Flared or rounded end section.
2. Cable assembly is attached to post one with bearing plate and hex nut or is attached to deadman anchor.
3. Cable has 5 cable clips if attached to Deadman Anchor.
4. Cable anchor plate attaches to back of rail with eight bolts through the rail.

End Treatments installed without an anchor system: There are instances when an End Treatment was installed without a cable anchor bracket. These installations will have no anchor bracket holes. This would be categorized as a Type 1 Old. Do not add these instances to the Strike Application. Refer to the following instructions for how to answer questions specific to the Anchor Cable in the Inspection Form:

- Anchor Cable Missing: Not Applicable
- Cable Anchor Bracket Loose/Misaligned: Not Applicable
- Bearing Plate Loose/Misaligned/Missing: Not Applicable
- No Strut Installed: Not Applicable

# GUARDRAIL END TREATMENTS

## 2.40 Buried in Backslope



**Identification Characteristics: 8**

1. End of guardrail is turned down into ground or hillside.
2. No Impact head or end buffer.

## 2.41 Cable Barrier

**Identification Characteristics:**

1. High Tension cable.
2. Cables meet at one concrete anchor or guardrail connection.

# SECTION 3: IDENTIFICATION OF ATTENUATORS

**SCI (Smart Cushion Impact Attenuator)**

**TAU-II**

**QuadGuard Elite**

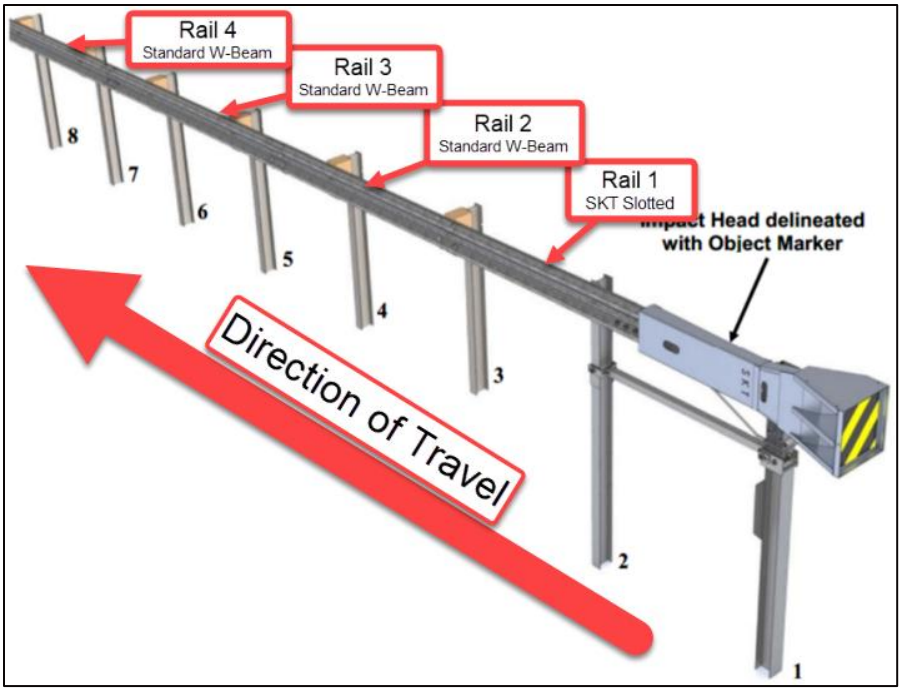
**QuadGuard**

# SECTION 4: POST AND RAIL IDENTIFICATION

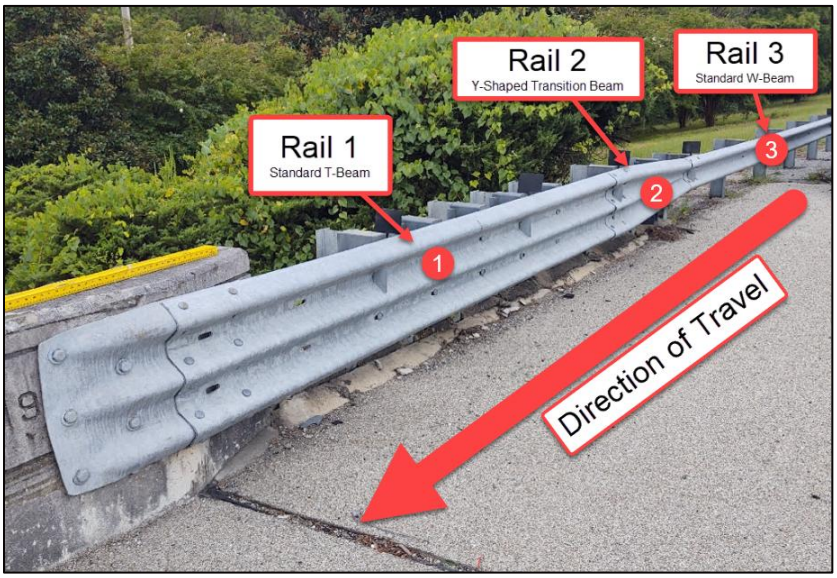
## 4.1 How to Count Post and Rail Locations Along Guardrail

### Rail Type Attribution

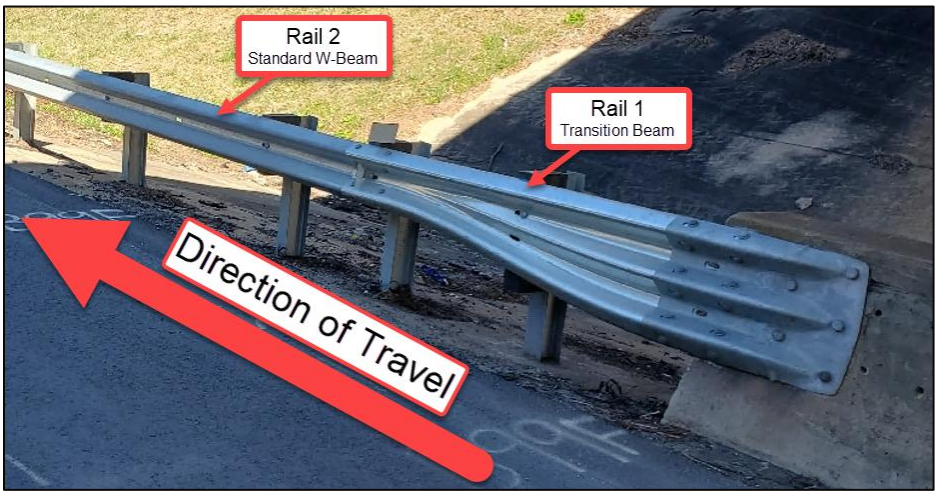
**MSKT**



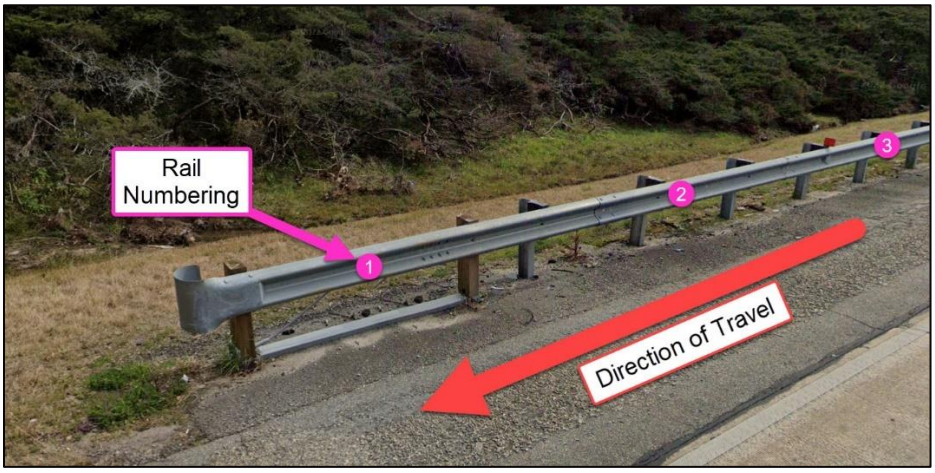

**Bridge Connection - Long**



**Bridge Connection - Short**

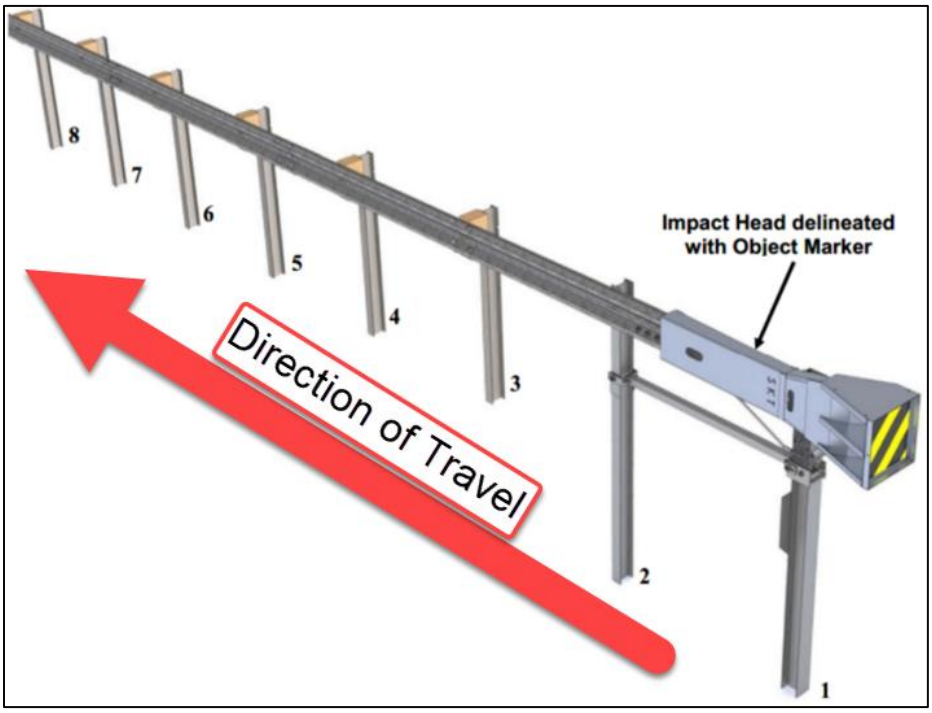



**Type 1**

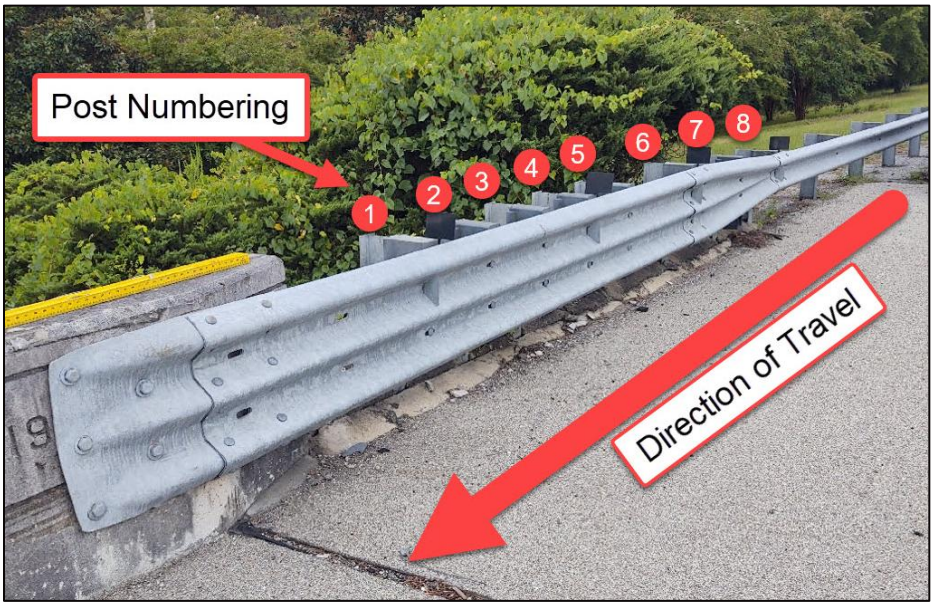


## Post Type Attribution

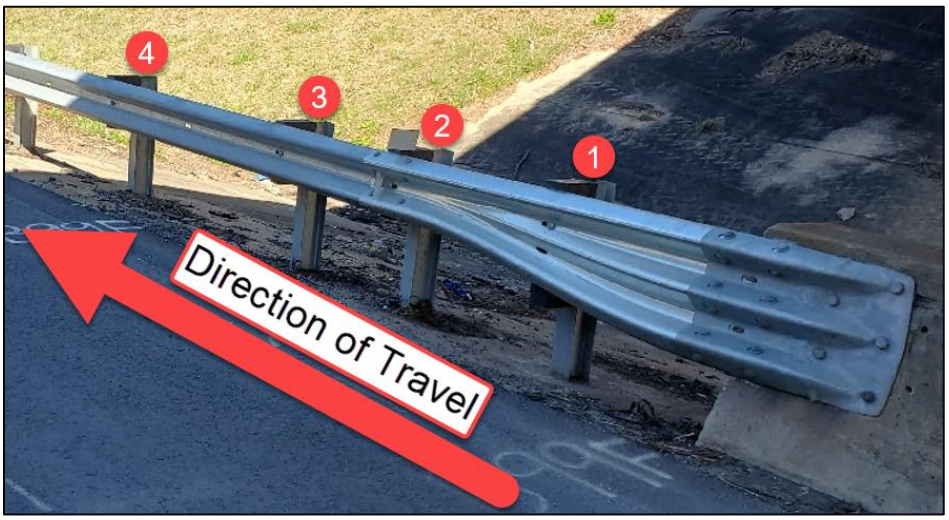
### MSKT



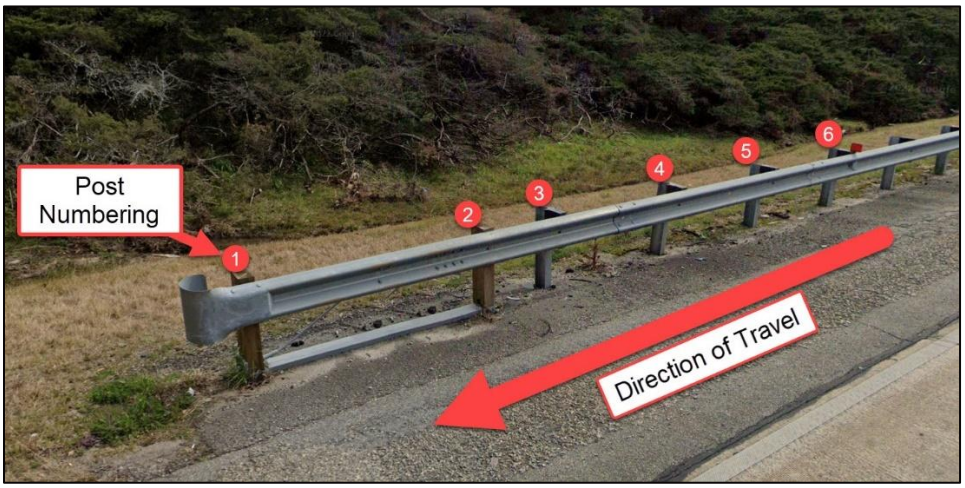

### Bridge Connection - Long



**Bridge Connection - Short**




**Type 1**



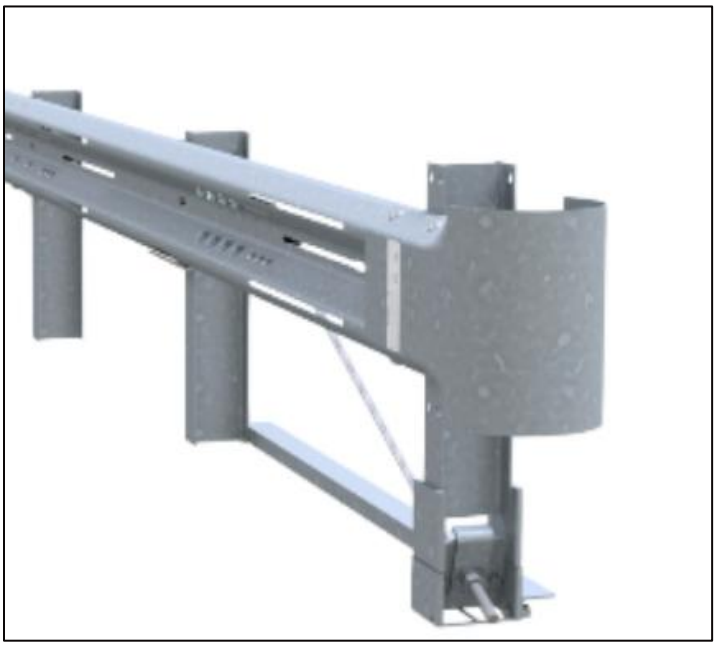
Re-labeling Posts for Cable Anchors not at post 1 and 2:

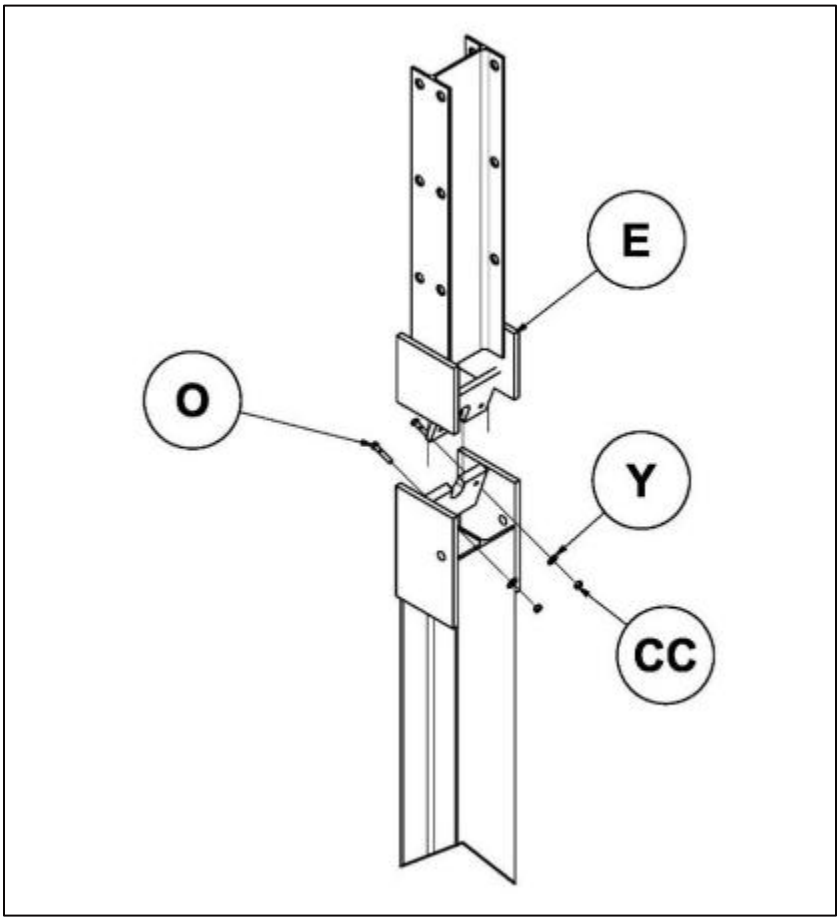
There are instances when a Type 1 End Treatment is installed upstream from the end of the run of Guardrail. If this is the case, Post 1 and 2 will be where the anchor assembly is.

In the following example, the anchor assembly is between post 3 and 4. These posts will be relabeled to be post 1 and 2 for entry into the Arcadis Field Inspection and Inventory Map. The offset measurement would be at the newly labeled post 1 and 2. See image below:

## 4.2 6x6 Hinged Steel Post (RSI Upper and Lower Post)

## 4.3 SRT Steel Cable Release Post (CR Post)



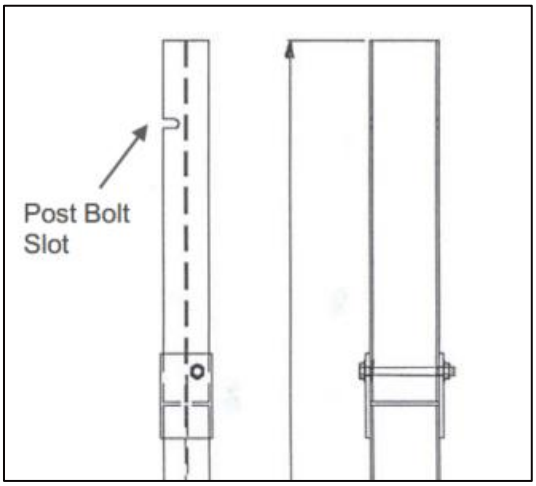


## 4.4 Other Steel Posts

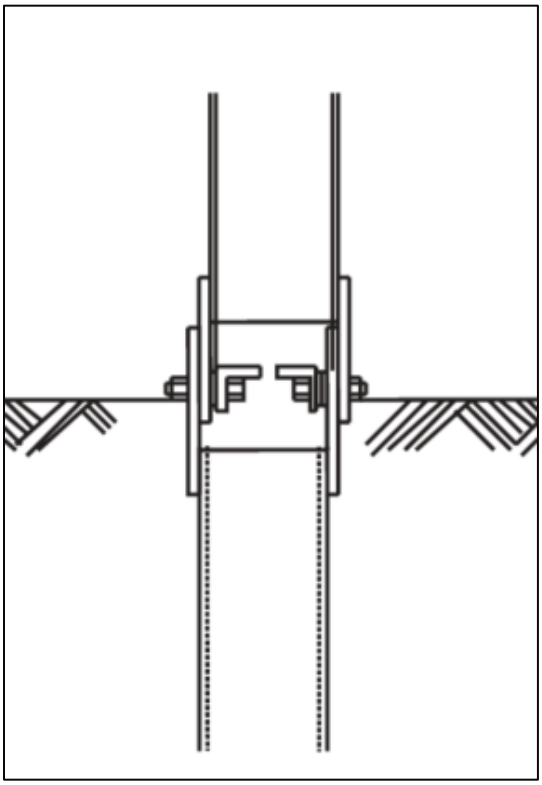
**Steel Yielding Terminal Post (SYTP)**

**Plug Welded Steel Post**

**Hinged Steel**

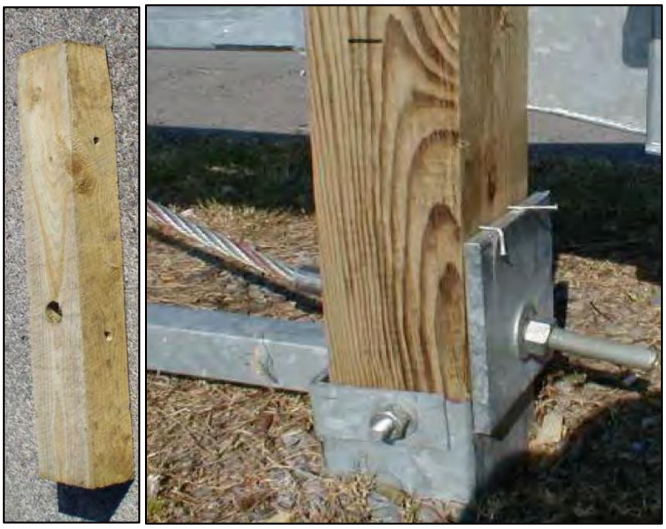



**HBA™ Post**

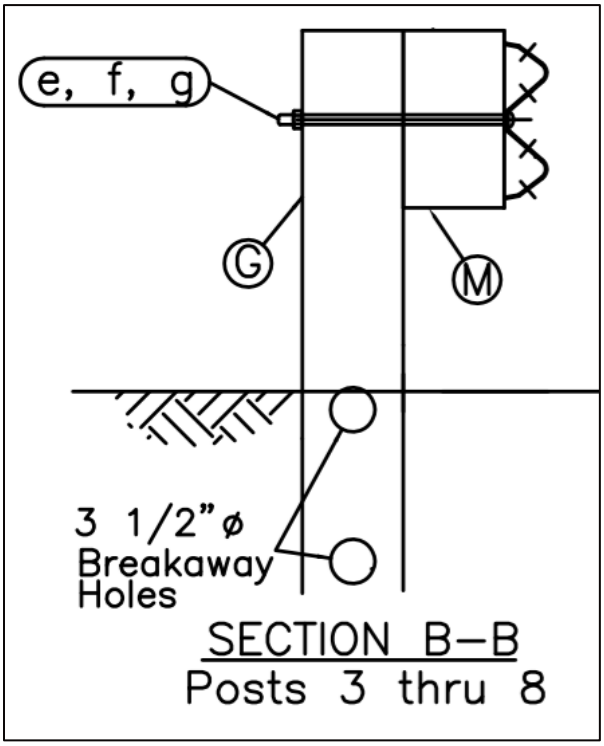


## 4.5 Wood Posts

**BCT Post**



**CRT Post**


e, f, g
G
M
3 1/2" ø
Breakaway
Holes
SECTION B–B
Posts 3 thru 8

## 4.6 Rail Types

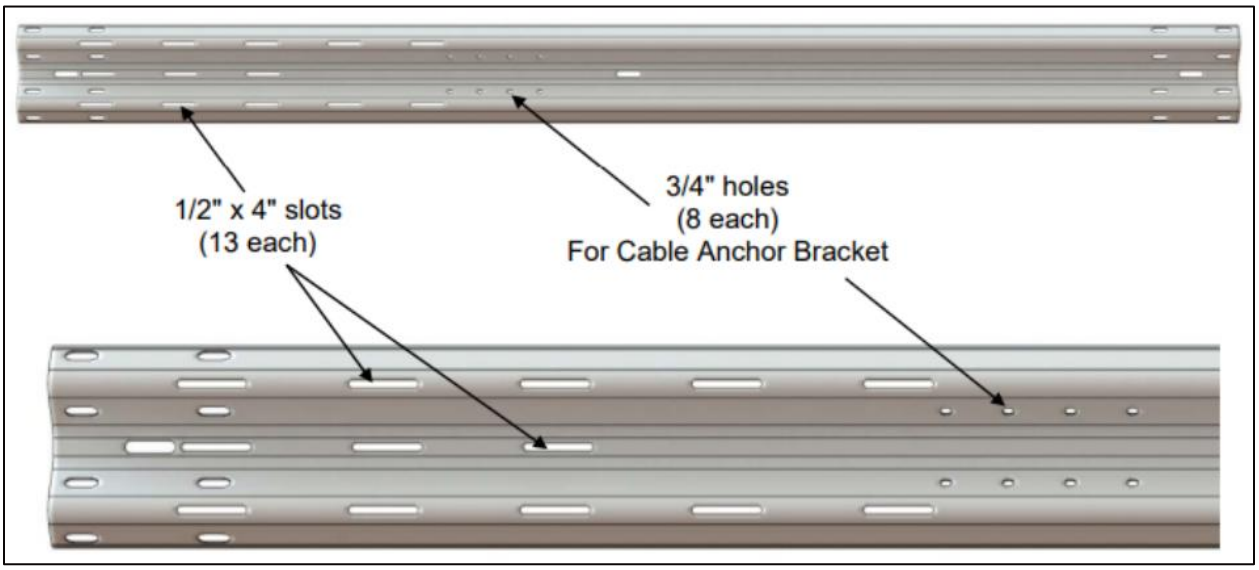
**Standard W-Beam**

**Standard T-Beam**

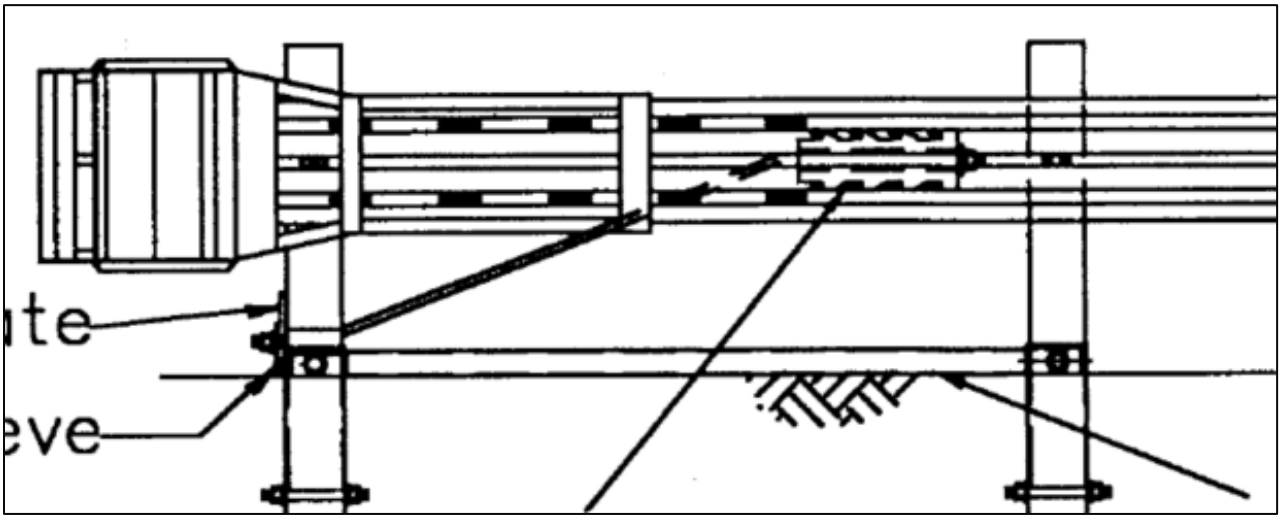
**Transition Beam**

**Y-Shaped Transition Beam**

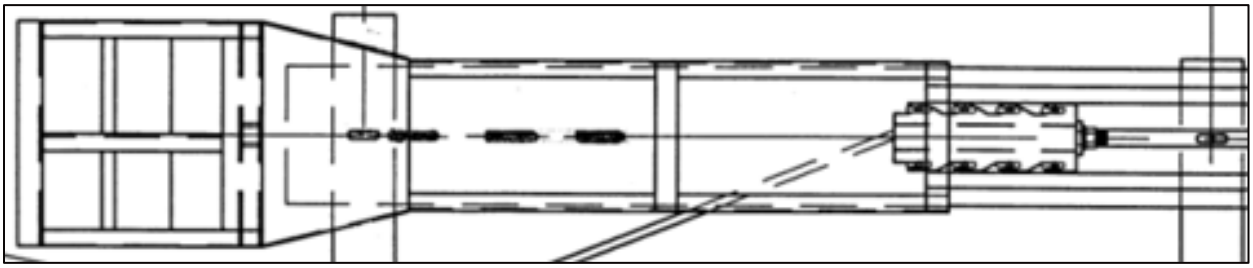
**13 Slot (Top Bottom Middle Corrugation) SKT Rail**




**10 Slot (Top Bottom Corrugation) Fleat Rail**

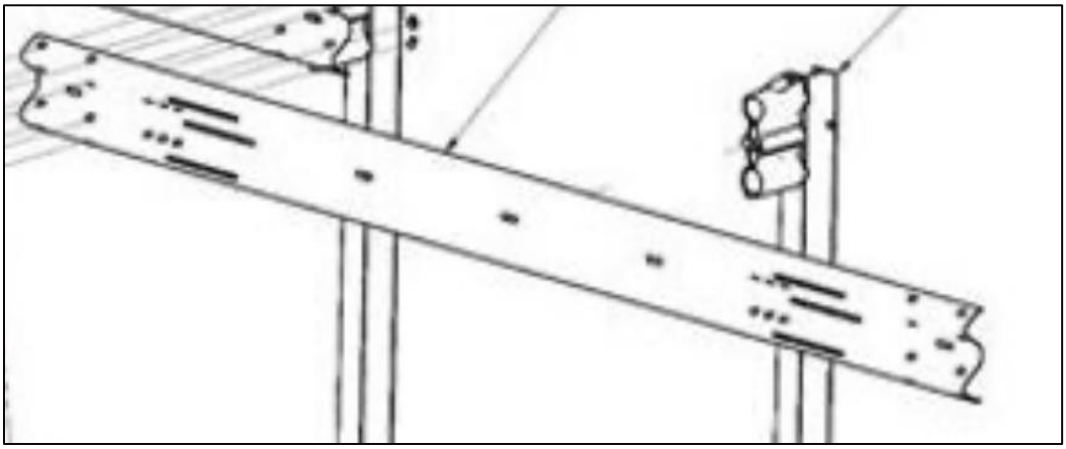


**3 Slot (Middle Corrugation) SKT Rail**



**SRT Slotted 1 (Anchor)**

**SRT Slotted 2**



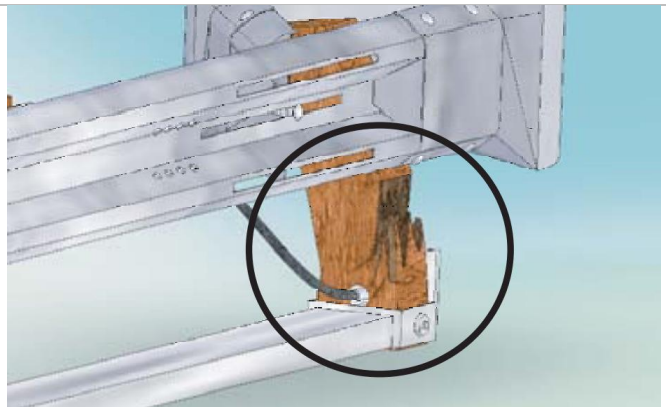
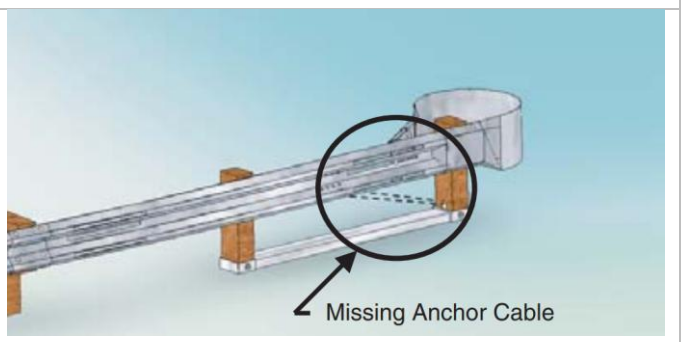
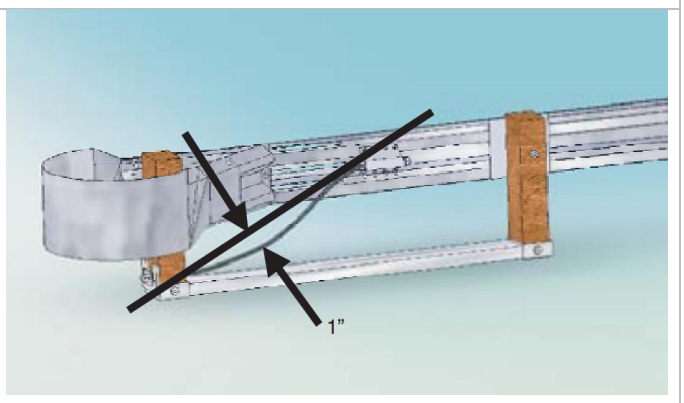
**Regent-C Anchor Panel**

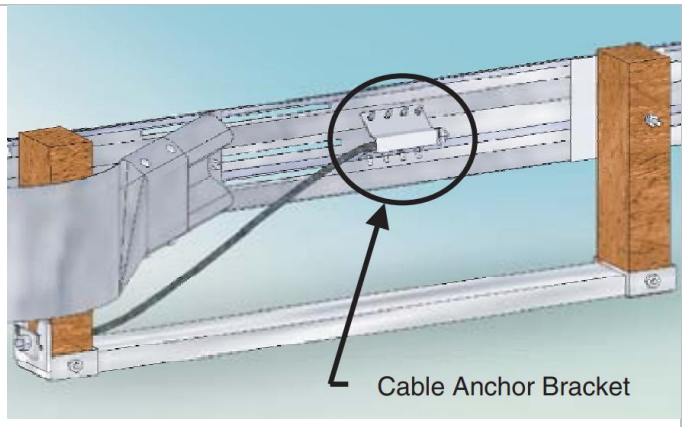
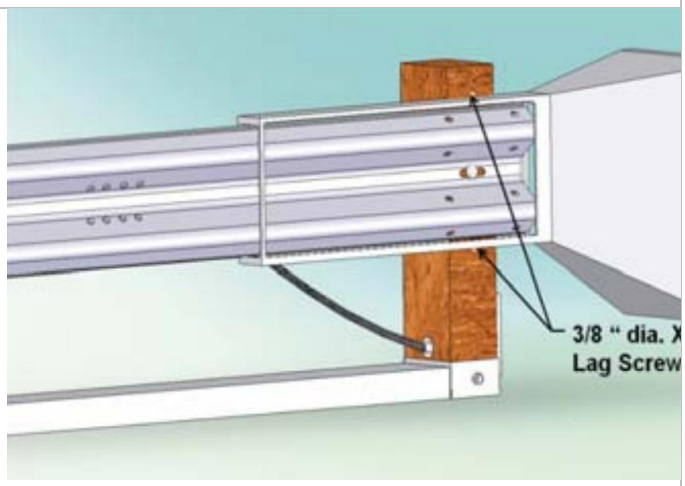
# SECTION 5: CONDITION ASSESSMENT

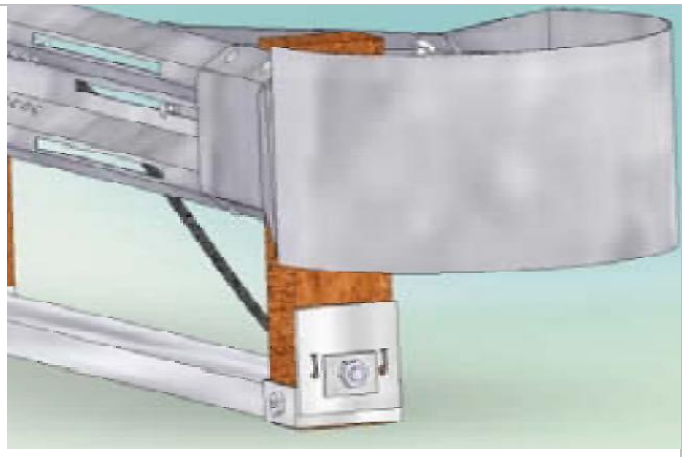
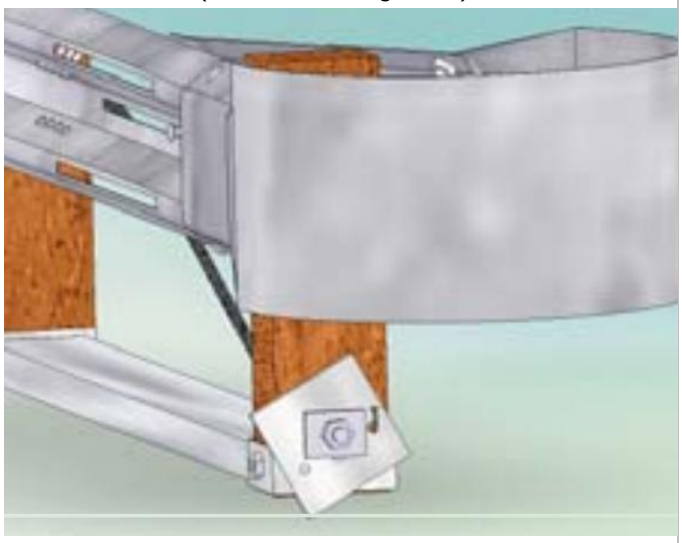
## 5.1 Summary of Generic End Terminal Repair Thresholds

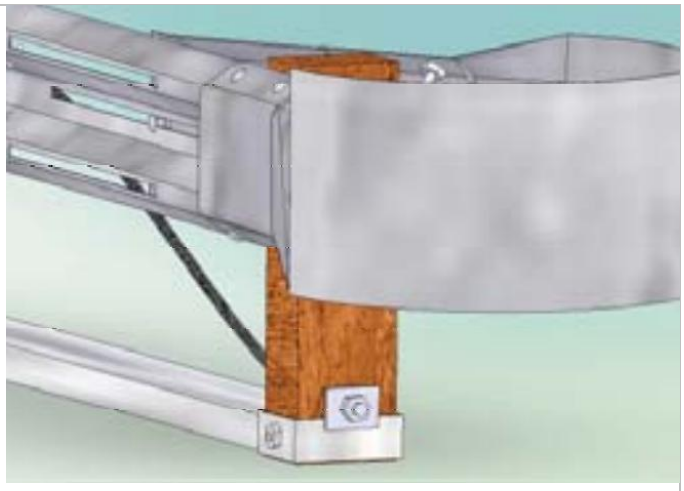
**End Treatments with conditions that match the highlighted Damage Modes below should be reported to the GDOT Strike Application at time of inspection. If a Cable Barrier Anchor is damaged, enter that into the GDOT Strike Application.**

**(NCHRP REPORT 656 (Criteria for Restoration of Longitudinal Barriers) pg 98)**

| Damage Mode | Repair Threshold | Relative Priority | Measurement |
|---|---|---|---|
| Damaged End Post | Not functional (sheared, rotted, cracked across the grain) | High |  |
| Anchor Cable | Missing | High |  |
| Anchor Cable | More than 1 in. of movement when pushed down by hand | Medium |  |

| | | | |
|---|---|---|---|
| Cable Anchor Bracket | Loose or not firmly seated in rail | Medium |  |
| Stub Height | Height which exceeds 4 in. | Medium |  |
| Lag Screws (Energy Absorbing Terminals Only) | Missing or failed lag screws | High |  |

| | | | |
|---|---|---|---|
| Bearing Plate | Loose or misaligned | Medium |  (Correct Bearing Plate)  (Misaligned Bearing Plate) |

| | | | |
|---|---|---|---|
| | Missing bearing plate | High |  (Missing Bearing Plate) |
| Strut | Missing/Damaged | High |  |
| Backfill | Backfill around the posts is properly compacted. | |  |

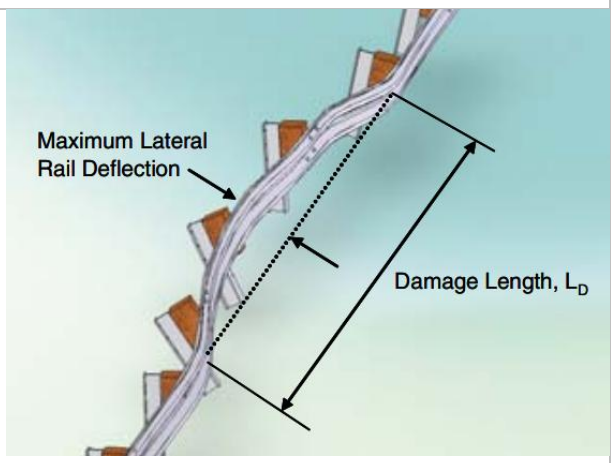
| | | | |
|---|---|---|---|
| Delineator Sticker | Missing/damaged/incorrect/faded delineator sticker | High |  |
| Bolts and Nuts | Are all bolts and nuts tightened and flush where installed. | |  |

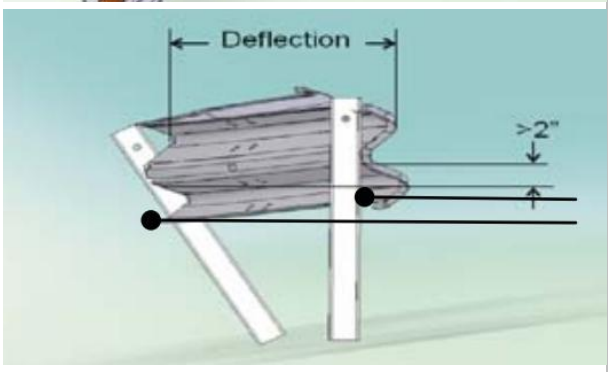
| | | | |
|---|---|---|---|
| Rail Lapping | Is rail lapped in the correct direction of traffic?<br><br>(The upstream rail should overlap onto the downstream rail.) | High |  <br>Downstream Upstream |
| Long Bolt Used at Post 2 | Is a long bolt used at post 2 on end treatment with impact head? | |  |
| Bridge Connection has Missing Bolts | Is the bridge connection end shoe missing bolts?<br><br>• T-Beam bridge connection should have 5 bolts.<br>• W-Beam bridge connection should have 4 bolts. | |  |

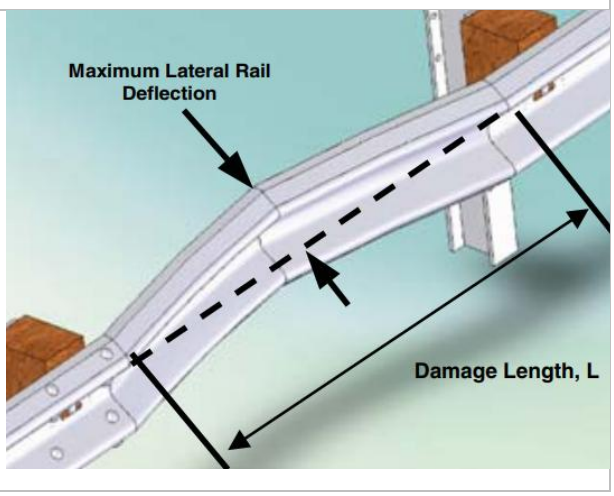
| | | | |
|---|---|---|---|
| Rail not within Impact Head Chute | Is the impact head situated so that the end of the anchor rail is not completely within the chute? | |  |

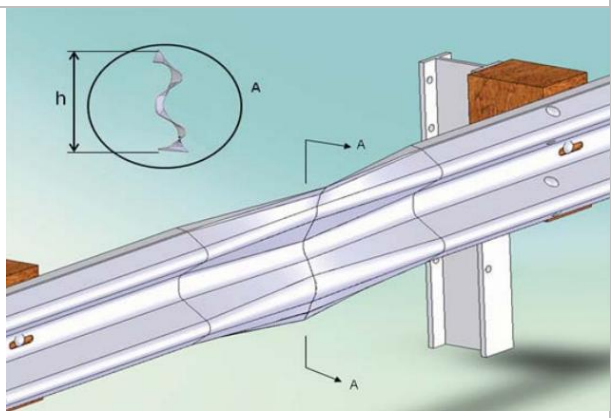
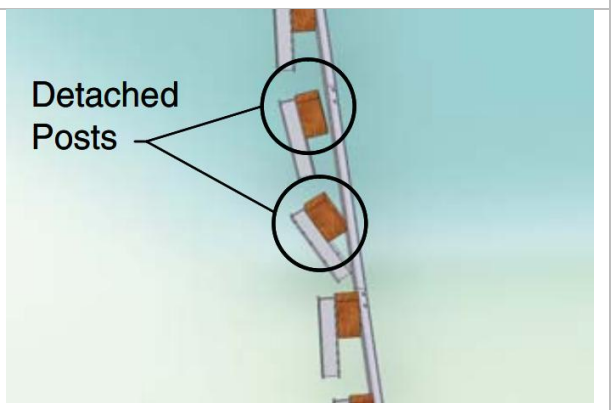
## 5.2 Summary of W-Beam Barrier Repair Thresholds

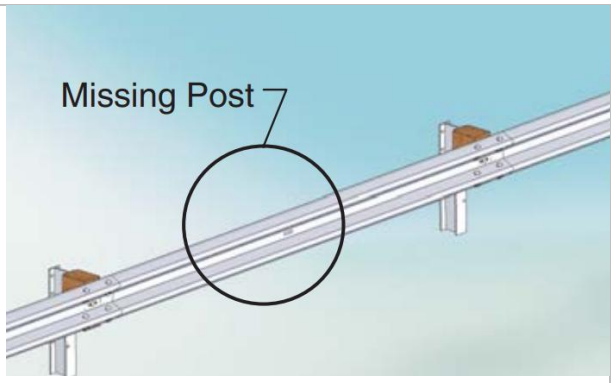
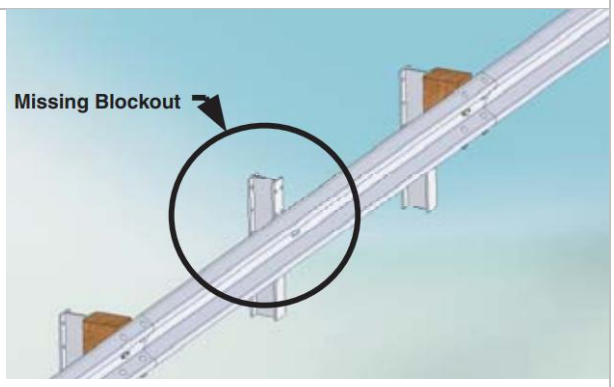
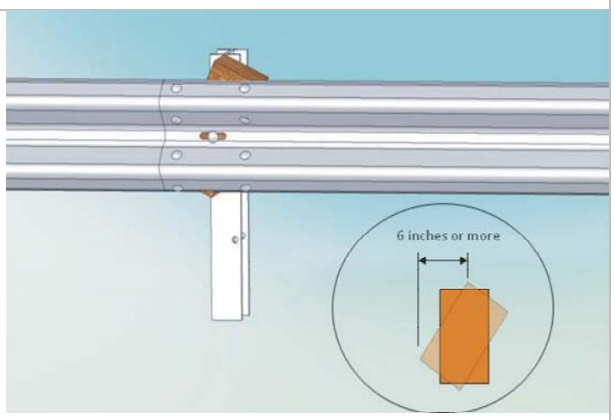
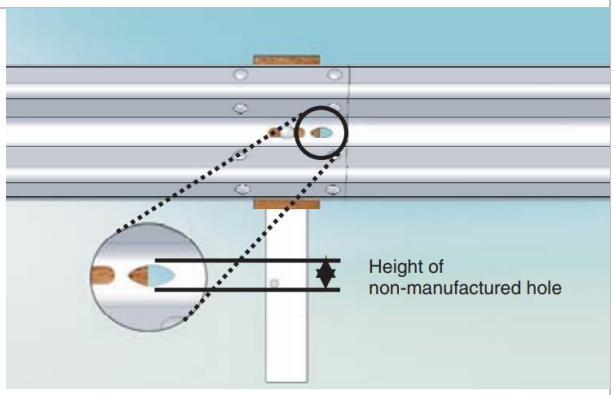
**(NCHRP REPORT 656 (Criteria for Restoration of Longitudinal Barriers) pg 95)**

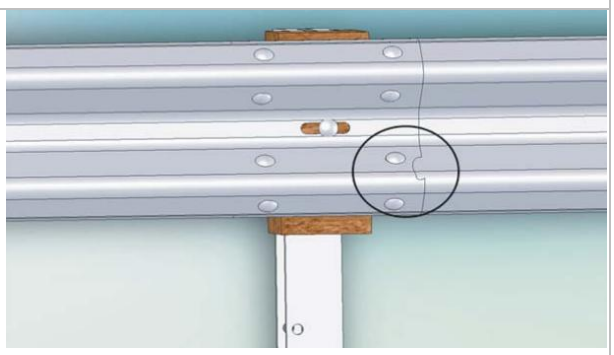
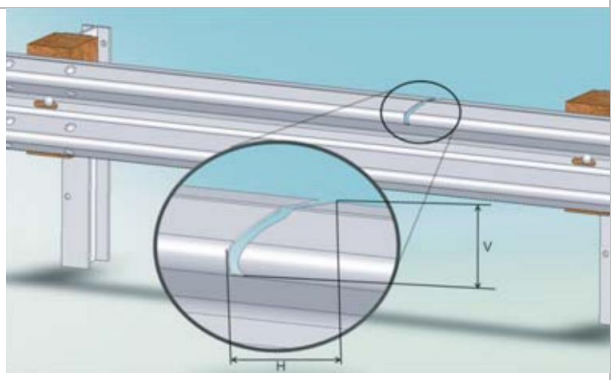
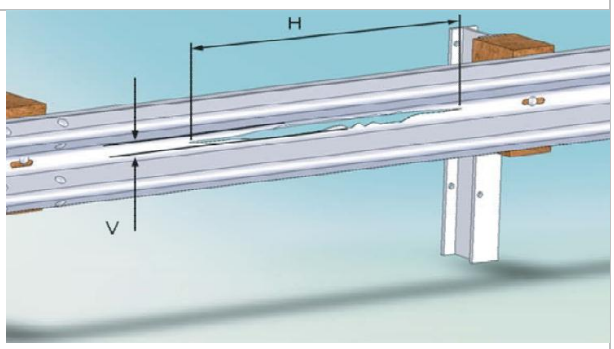
<table>
<tr><th>Damage Mode</th><th>Repair Threshold</th><th>Relative Priority</th><th>Measurement</th></tr>
<tr><td rowspan="3">Post or Rail Deflection</td><td>One or more of the following thresholds:<ul><li>More than 9 in. of lateral deflection anywhere over a 25-ft length of rail</li><li>Top of rail height 2 or more inches lower than original top of rail height</li></ul></td><td>High</td><td rowspan="3"> 



(Weak Post W-Beam Shown Only for Clarity. Each measurement taken at the rail's middle fold)</td></tr>
<tr><td>6-9 in. lateral deflection anywhere over a 25-ft length of rail</td><td>Medium</td></tr>
<tr><td>Less than 6 in. of lateral deflection over a 25-ft length of rail</td><td>Low</td></tr>
<tr><td>Rail Deflection Only</td><td>6-9 in. of lateral deflection between any two adjacent posts<br><br><u>Note</u>: For deflection over 9 in., use post/rail deflection guidelines.</td><td>Medium</td><td> 
</td></tr>
</table>

| | | | |
|---|---|---|---|
| | Less than 6 in. of lateral deflection between any two adjacent posts | Low | |
| Rail Flattening | One or more of the following thresholds:<br>• Rail cross-section height is more than 17 in. (such as may occur if the rail is flattened)<br>• Rail cross-section height is less than 9 in. (such as a dent to the top edge) | Medium |  |
| | Rail cross-section height is between 9 and 17 in. | Low | |
| Posts Separated from Rail | • 2 or more posts with blockout attached with a post/rail separation less than 3 in.<br>• 1 or more posts with a post/rail separation which exceeds 3 in. | Medium |  <br>Note: 1. If the blockout is not firmly attached to the post, use the missing blockout guidelines. 2. Damage should also be evaluated against post/rail deflection guidelines. |
| | • 1 post with blockout attached with post/rail separation less than 3 in. | Low | |

| | | | |
|---|---|---|---|
| Missing/Broken Post | 1 or more posts<br>• Missing<br>• Cracked across the grain<br>• Broken<br>• Rotted<br>• With metal tears | High |  |
| Missing/Damaged Blockout | Any blockouts<br>• Missing<br>• Cracked across the grain<br>• Cracked from top or bottom of blockout through post bolt hole<br>• Rotted | Medium |  |
| Twisted Blockouts | Any misaligned blockouts and the top edge of the block is 6 in. or more from the bottom edge<br>Note: Repairs of twisted blockout are relatively quick and inexpensive. | Low |  |
| Non-Manufactured holes<br>(such as crash-induced holes, lug-nut damage, or holes rusted-through the rail) | • More than 2 holes with a height less than 1 in. on a 12.5-ft length of rail<br>• Any holes with a height greater than 1 in<br>• Any hole which intersects either the top or bottom edge of the rail | High |  |

| | | | |
|---|---|---|---|
| | 1-2 holes with a height less than 1in. on a 12.5-ft. length of rail | Medium | |
| Damage at a rail splice | More than 1 splice bolt<br>• Missing<br>• Damaged<br>• Visibly missing any underlying rail<br>• Torn through rail | High |  |
| | 1 splice bolt<br>• Missing<br>• Damaged<br>• Visibly missing any underlying rail<br>• Torn through rail | Medium | |
| Vertical Tear | Any length vertical (transverse) tear | High |  |
| Horizontal Tear | Horizontal (longitudinal) tears greater than 12 in. long or greater than 0.5 in. wide<br>Note: for horizontal tears less than 12 in. in length or less than 0.5 in. in height, use the non-manufactured holes guidelines. | Medium |  |

| | | | |
|---|---|---|---|
| Erosion at a Single Post<br><br>(Erosion depth is measured at the back of the post) | Erosion depth > 12 inches | High |  |
| | Erosion depth > 9 inches and < 12 inches. | Medium | |
| Erosion at Multiple Post in a 4 Post Span<br><br>(Erosion depth is measured at the back of the post) | Erosion depth > 6 inches | High |  |
| | Erosion depth > 4 inches and < 6 inches. | Medium | |

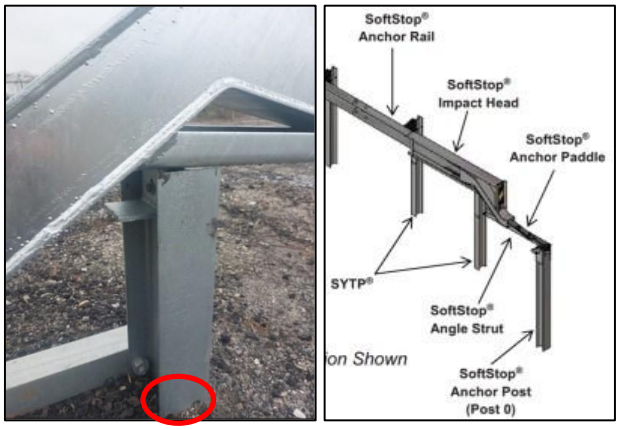
# SECTION 6: END TREATMENT CHECKLISTS

## 6.1 SoftStop

**SoftStop Inspection Checklist**

1. Are all rail panels straight (not curved) between Post 0 and last post (8) within the Soft Stop system?

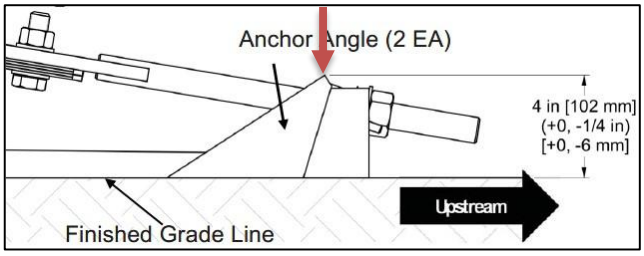
Correct Checklist answer: Yes




**SoftStop Inspection Checklist**

2. Are the centers of the SYTP yielding holes approximately centered at finished grade line for Post 1 & 2?

Correct Checklist answer: Yes




**SoftStop Inspection Checklist**

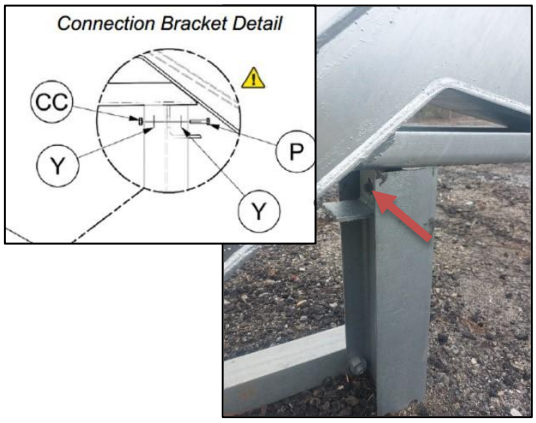
3. What is the height of the Anchor Post (Post 0)?

Correct Checklist answer:
3.75" ≤ [Measurement] ≤ 4.0"


**SoftStop Inspection Checklist**

4. Is the anchor rail bolted at post 2?

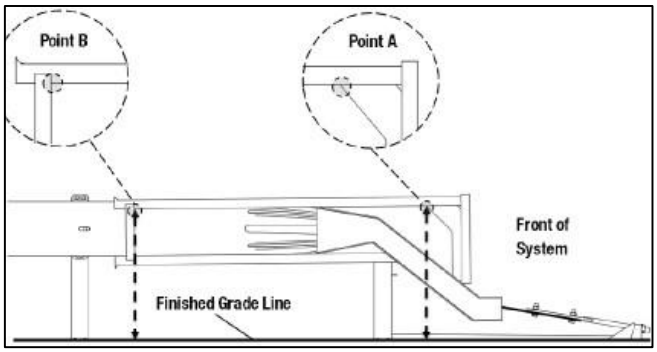
Correct Checklist answer: No




**SoftStop Inspection Checklist**

5. Is the SoftStop Impact Head Connection Bracket attached to the front side of the SoftStop Post 1 with required 5/16” hardware?

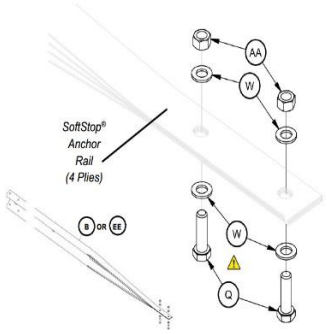
Correct Checklist answer: Yes




**SoftStop Inspection Checklist**

6. Record the upward tilt of the SoftStop Impact Head.

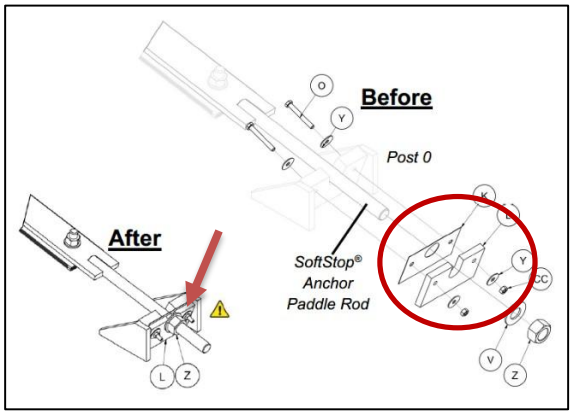
Correct Checklist answer: [Measurement] ≤ 3.5”




**SoftStop Inspection Checklist**

7. Is the Anchor Paddle installed on top of the SoftStop Anchor Rail and are the two ¾" bolts utilized are installed from the bottom of the SoftStop Anchor Rail with a washer and hex nut installed on top?

Correct Checklist answer: Yes




**SoftStop Inspection Checklist**

8. Is the SoftStop® Keeper Plate and Plate Washer properly positioned with required hardware?

Correct Checklist answer: Yes

**SoftStop Inspection Checklist**

9. Is the the 1" Hex Nut fully tightened (flush) against the SoftStop® Plate Washer?

Correct Checklist answer: Yes

**SoftStop Inspection Checklist**

10. Are both SoftStop® Anchor Angles properly positioned?

Correct Checklist answer: Yes

**SoftStop Inspection Checklist**

11. Is the SoftStop® Angle Strut properly attached on the non-traffic side with the “toe” of the vertical leg down?

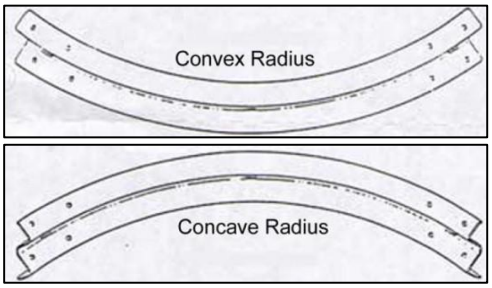
Correct Checklist answer: Yes

**SoftStop Inspection Checklist**

12. Are all fasteners of the SoftStop® System tightened to a snug position with a minimum of two threads protruding beyond the nut?

Correct Checklist answer: Yes

## 6.2 MSKT







**MSKT Inspection Checklist**

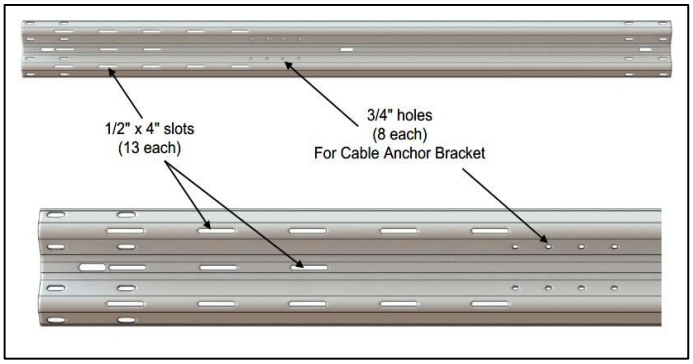
1. Is there curved (radius rail) within the MSKT 50'-0" length?

Correct Checklist answer: No

**MSKT Inspection Checklist**

2. Is the end rail panel attached to the post at post 1?

Correct Checklist answer: No




**MSKT Inspection Checklist**

3. Does the end rail panel have ½" x 4" slots?

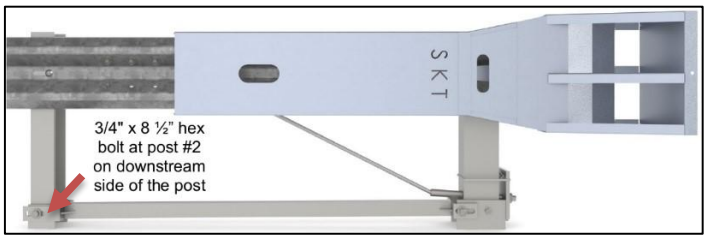
Correct Checklist answer: Yes

**MSKT Inspection Checklist**


4. Is the end rail panel is 12'-6" long and the second rail panel 9'-4 ½" or 15'-7 ½"?

Correct Checklist answer: Yes

**MSKT Inspection Checklist**




5. Is the ¾" x 8 ½" hinge bolt at the bottom of post #2 is on the downstream side of the post?

Correct Checklist answer: Yes

**MSKT Inspection Checklist**

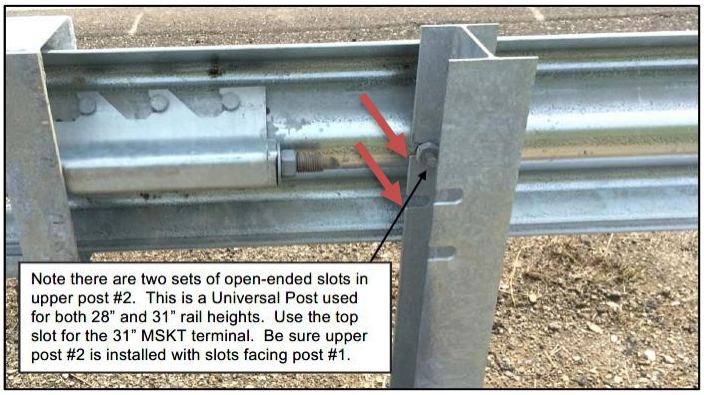
6. Is the ⅝" x 9" hinge bolt at the bottom of post 1 on the upstream side of the post?

Correct Checklist answer: Yes

**MSKT Inspection Checklist**

7. Is the lower stub at posts #1 and #2 more than 4" above the ground line? (Measured by the AASHTO 5' cord method).

Correct Checklist answer: No




**MSKT Inspection Checklist**

8. At post #2, are the open-ended slots at the post bolt on the upstream side of the post?

Correct Checklist answer: Yes

**MSKT Inspection Checklist**

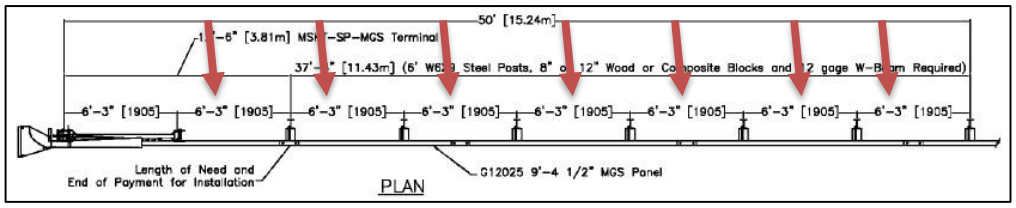
9. Are standard steel W6x9# x 6'-0" guardrail posts used at post locations #3-8 and beyond?

Correct Checklist answer: Yes

**MSKT Inspection Checklist**

10. Are all posts within the MSKT spaced at 6'-3" centers?

Correct Checklist answer: Yes

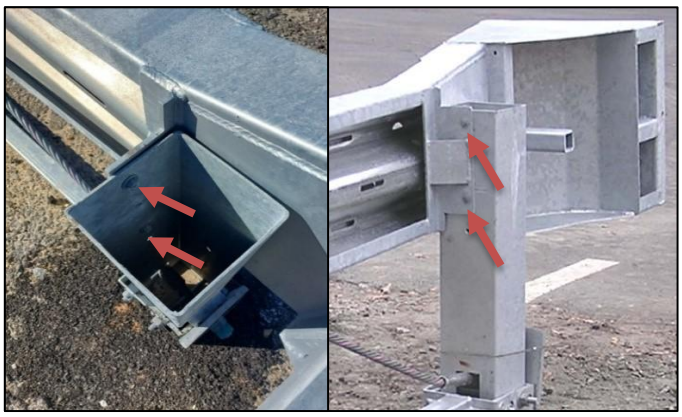



**MSKT Inspection Checklist**

11. Are offset blocks 8" or 12" deep?

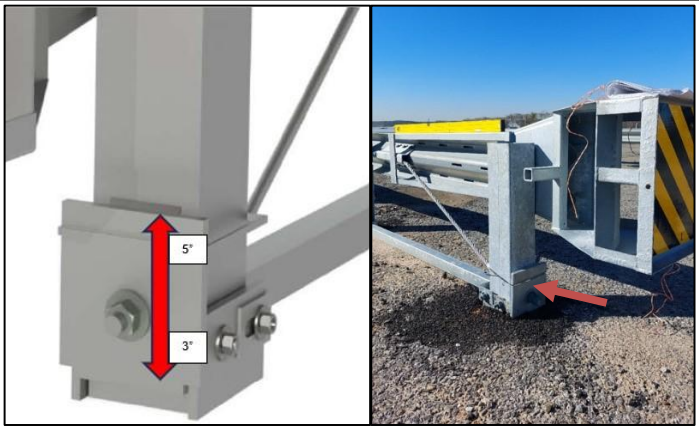
Correct Checklist answer: Yes

**MSKT Inspection Checklist**



12. Are the two 5/16" x 1" hex bolts holding the impact head to post #1 secured?

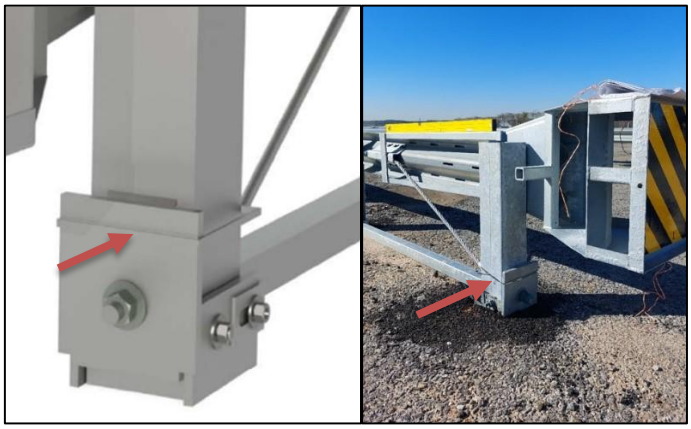
Correct Checklist answer: Yes




**MSKT Inspection Checklist**

13. Is there an 8" x 8" bearing plate at post #1 and is it correctly positioned with the 5" dimension up (resting on the angle spacer) and 3" dimension down?

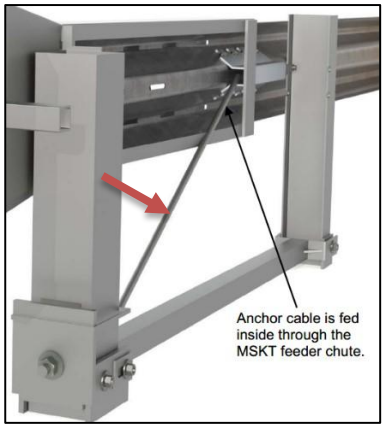
Correct Checklist answer: Yes



**MSKT Inspection Checklist**

14. Is there a retainer/tie placed over the bearing plate to prevent rotation?

Correct Checklist answer: Yes




**MSKT Inspection Checklist**

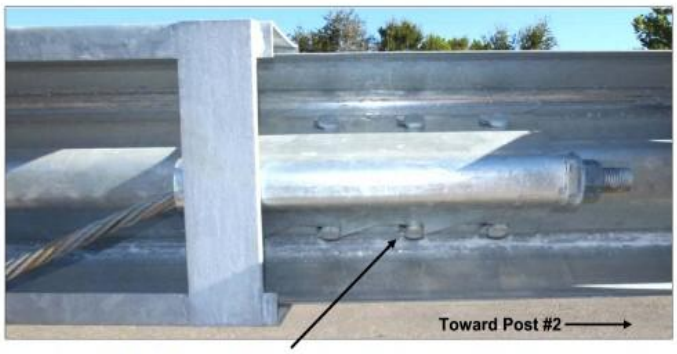
15. Does the cable deflect more than 1 inch when pressure is applied by hand in an up or down direction?

Correct Checklist answer: No

**MSKT Inspection Checklist**

16. Is there a ground strut secured between posts #1 & #2 using the ¾" x 8 ½" hinge bolt at post #2 and a second ⅝" x 9" hex bolt at post location #1?

Correct Checklist answer: Yes




It is important that the anchor bracket be fully seated on the shoulder portion of the cable anchor bolts

**MSKT Inspection Checklist**

17. Are the cable anchor bracket shoulder bolts properly attached to the W-Beam guardrail and is the cable anchor bracket fully seated on the shoulder portion of the bolts?

Correct Checklist answer: Yes

## 6.3 SKT-SP/FLEAT-SP

**SKT-SP/FLEAT-SP Inspection Checklist**

1. Is there curved rail within the terminal (SKT-SP 50'-0" or FLEAT-SP 37'-6")? (FLEAT-SP usually has curved rail immediately after the required end treatment length)

**SKT-SP/FLEAT-SP Inspection Checklist**

2. Is the end rail section attached to post 1?

**SKT-SP/FLEAT-SP Inspection Checklist**

3. Is the FLEAT-SP rail attached to post 3?

**SKT-SP/FLEAT-SP Inspection Checklist**

4. Does the end rail panel have ½" x 4" slots?

**SKT-SP/FLEAT-SP Inspection Checklist**

5. Is the ¾" x 8 ½" hinge bolt at post #2 on the downstream side of the post?

**SKT-SP/FLEAT-SP Inspection Checklist**

6. Is the ⅝" x 9" hinge bolt at post 1 on the upstream side of the post?

**SKT-SP/FLEAT-SP Inspection Checklist**

7. Does the lower stub at posts #1 and #2 protrude more than 4" above the ground line? (measured by the AASHTO 5' cord method)

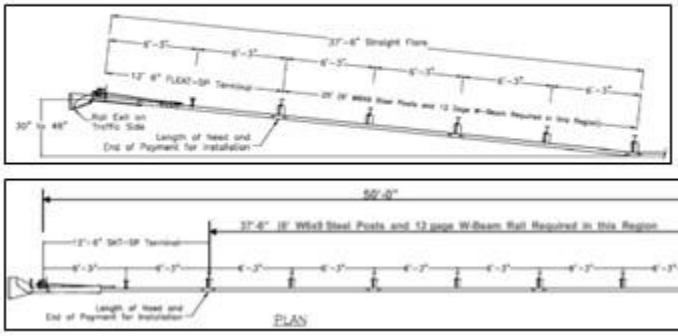
**SKT-SP/FLEAT-SP Inspection Checklist**

8. At post #2, is the open-ended slot at the post bolt on the upstream side of the post?

**SKT-SP/FLEAT-SP Inspection Checklist**

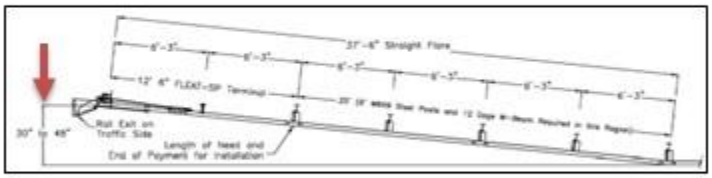
9. Are standard steel W6x9# x 6'-0" guardrail posts used at post locations #3 and beyond?

**SKT-SP/FLEAT-SP Inspection Checklist**




10. Are all posts within the end treatment spaced at 6'-3" centers?

**SKT-SP/FLEAT-SP Inspection Checklist**




11. Is the FLEAT-SP installed with a straight flare (offset between 2'-6" & 4'-0") over a 37'-6" terminal length?

**SKT-SP/FLEAT-SP Inspection Checklist**

12. Are there two 5/16" x 1" hex bolts holding the impact head to post #1?

**SKT-SP/FLEAT-SP Inspection Checklist**

13. Is there an 8" x 8" bearing plate at post #1 that is correctly positioned with the 5" dimension up (resting on the angle spacer) and 3" dimension down?

**SKT-SP/FLEAT-SP Inspection Checklist**

14. Is there a retainer/tie placed over the bearing plate to prevent rotation?

**SKT-SP/FLEAT-SP Inspection Checklist**

15. Does the cable deflect more than 1 inch when pressure is applied by hand in an up or down direction?

**SKT-SP/FLEAT-SP Inspection Checklist**

16. Are the cable anchor bracket shoulder bolts properly attached to the W-beam guardrail?

**SKT-SP/FLEAT-SP Inspection Checklist**

17. Is the cable anchor bracket fully seated on the shoulder portion of the bolts?

**SKT-SP/FLEAT-SP Inspection Checklist**

18. Are washers used on the face of the rail apart from the cable anchor bracket bolts? (The face of the rail can only have washers within the teal square.)

## 6.4 SKT-350 Wood Post

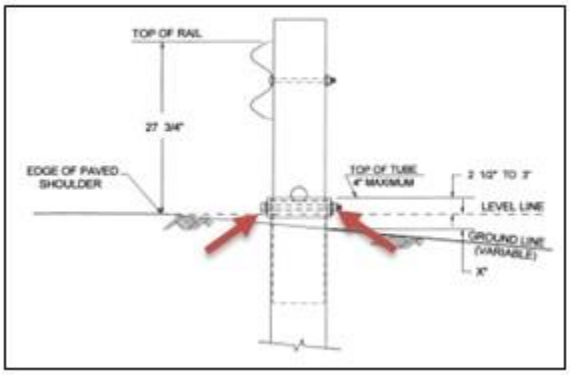
**SKT-350 Wood Post Inspection Checklist**

1. Is the rail section attached to the post at post location #1?

**SKT-350 Wood Post Inspection Checklist**

2. Do the foundation tubes protrude more than 4" above the ground line? (Measured by the AASHTO 5' cord method)

**SKT-350 Wood Post Inspection Checklist**

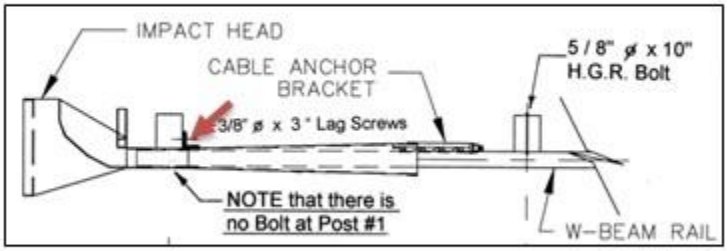



3. Are the bolts at the top of the foundation tubes over-tightened, deforming the walls of the tubes?

**SKT-350 Wood Post Inspection Checklist**

4. Is the guide chute of the impact head parallel to the top of the rail?

**SKT-350 Wood Post Inspection Checklist**

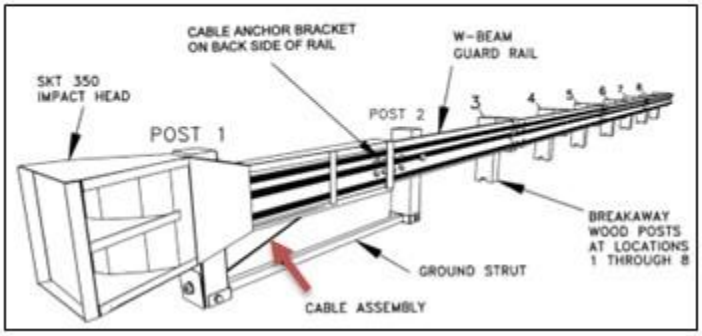



5. Are the two lag screws holding the impact head to post 1 flush?

**SKT-350 Wood Post Inspection Checklist**

6. Is the 8" x 8" bearing plate at post #1 correctly positioned with the 5" dimension up and the 3" dimension down?

**SKT-350 Wood Post Inspection Checklist**




7. Is the anchor cable taut and correctly installed?

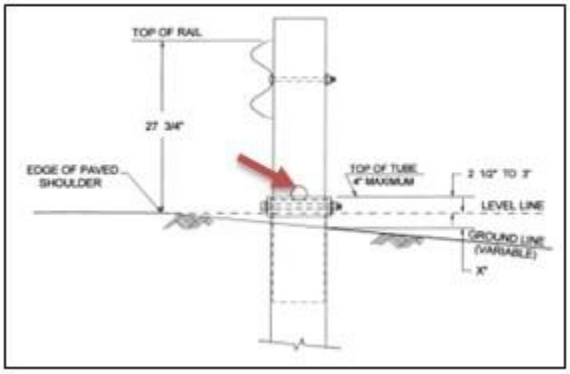
**SKT-350 Wood Post Inspection Checklist**

8. Has a nail has been placed over the bearing plate to prevent rotation?

**SKT-350 Wood Post Inspection Checklist**

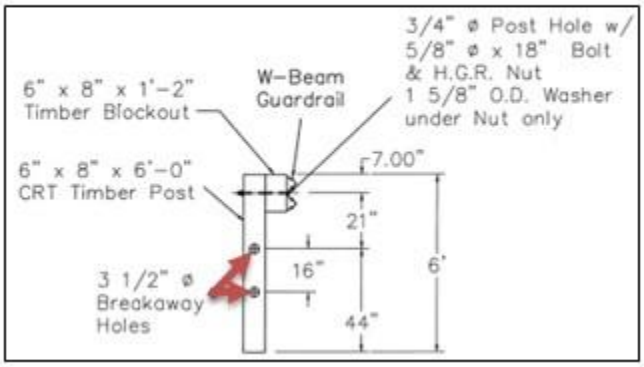
9. Are the cable anchor bracket shoulder bolts properly attached to the W-beam guardrail and is the cable anchor bracket fully seated on the shoulder portion of the bolts?

**SKT-350 Wood Post Inspection Checklist**




10. Do posts installed in foundation tubes have the 2-1/2" breakaway hole located parallel to the roadway with the bottom of the hole at the top of the tube?

**SKT-350 Wood Post Inspection Checklist**




11. Do the CRT posts have a 3-1/2" breakaway hole located parallel to the roadway with the center of the top hole located at the ground line?

**SKT-350 Wood Post Inspection Checklist**

12. Are washers used on the face of the rail apart from the cable anchor bracket bolts? (The face of the rail can only have washers within the teal square.)

## 6.5 SKT-350 Steel Post

**SKT-350 Steel Post Inspection Checklist**

1. Is the rail in the terminal curved?



**SKT-350 Steel Post Inspection Checklist**

2. Is the rail attached to the post at post 1?

**SKT-350 Steel Post Inspection Checklist**

3. Does the end rail panel have ½" x 4" special slots?

**SKT-350 Steel Post Inspection Checklist**

4. Is the ¾" x 8 ½" Hinge Bolt at post 2 on the downstream side of the post?

**SKT-350 Steel Post Inspection Checklist**

5. Is the 5/8" x 9" Hinge Bolt at post location 1 on the upstream side of the post?

**SKT-350 Steel Post Inspection Checklist**

6. If the posts are Plug Welded, are the splice plates secure and with the weld having not failed?

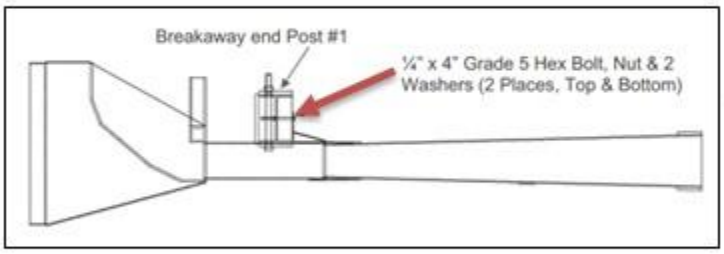
**SKT-350 Steel Post Inspection Checklist**

7. At post #2, is the open-ended slot for the post bolt on the upstream side of the post?

**SKT-350 Steel Post Inspection Checklist**

8. Is the guide chute of the impact head parallel to the top of the rail?

**SKT-350 Steel Post Inspection Checklist**




9. Are the two ¼" x 4" hex bolts holding the impact head to post 1 secured?

**SKT-350 Steel Post Inspection Checklist**

10. Is the 8" x 8" bearing plate at post 1 is correctly positioned with the 5" dimension up & the 3" dimension down?

**SKT-350 Steel Post Inspection Checklist**

11. Is the anchor cable taut and correctly installed?

**SKT-350 Steel Post Inspection Checklist**

12. Has a retainer/tie has been placed over the bearing plate to prevent rotation?

**SKT-350 Steel Post Inspection Checklist**

13. Are the cable anchor bracket shoulder bolts properly attached to the W-beam guardrail?

**SKT-350 Steel Post Inspection Checklist**

14. Is the cable anchor bracket fully seated on the shoulder portion of the bolts?

**SKT-350 Steel Post Inspection Checklist**

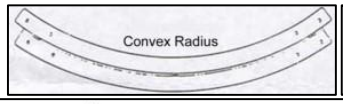
15. Are washers used on the face of the rail apart from the cable anchor bracket bolts?

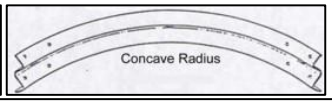
**SKT-350 Steel Post Inspection Checklist**

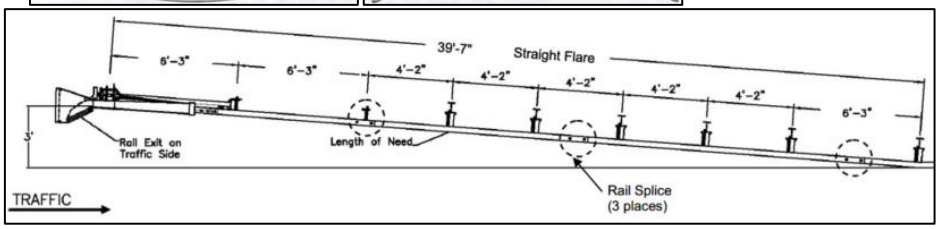
16. If used, do the foundation tubes protrude more than 4" above the ground line? (measured by the AASHTO 5' cord method)

## 6.6 MFLEAT

**MFLEAT Inspection Checklist**



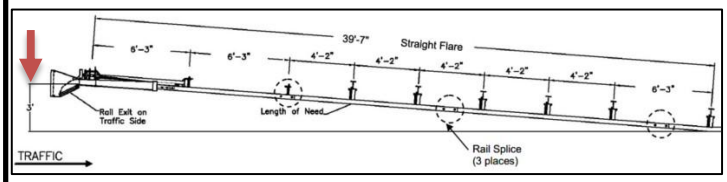




1. Is there radius rail within the MFLEAT 39'-7" length?

Correct Checklist answer: No

**MFLEAT Inspection Checklist**




2. Has the MFLEAT been placed with a 3'-0" straight flare offset between posts #1 and #9 over the 39'-7" length?

Correct Checklist answer: Yes

**MFLEAT Inspection Checklist**

3. Is the end rail panel attached to post #1?

Correct Checklist answer: No

**MFLEAT Inspection Checklist**

4. Are all other posts (2-8) attached to the rail?

Correct Checklist answer: Yes

**MFLEAT Inspection Checklist**

5. Does the end rail panel have ½" x 4" slots and is 12'-6" long?

Correct Checklist answer: Yes

**MFLEAT Inspection Checklist**

6. Is the second rail panel 10'-5" long to establish the mid-span splice between posts #5 & #6.

Correct Checklist answer: Yes

**MFLEAT Inspection Checklist**

7. Is the third rail length 13'-6 ½" long?

Correct Checklist answer: Yes

**MFLEAT Inspection Checklist**

8. Is the ¾" x 8 ½" hinge bolt at posts #2 and #3 on the downstream sides of the posts?

Correct Checklist answer: Yes

**MFLEAT Inspection Checklist**

9. Is the ⅝" x 9" bolt connecting upper and lower post #1 on the upstream side of the post?

Correct Checklist answer: Yes

**MFLEAT Inspection Checklist**

10. Do the lower stubs at posts #1, #2, and #3 protrude more than 4" above the ground line? (Measured by the AASHTO 5' cord method)

Correct Checklist answer: No


**MFLEAT Inspection Checklist**

11. At posts #2 and #3, are the open-ended slots at the post bolts on the upstream side of the posts?

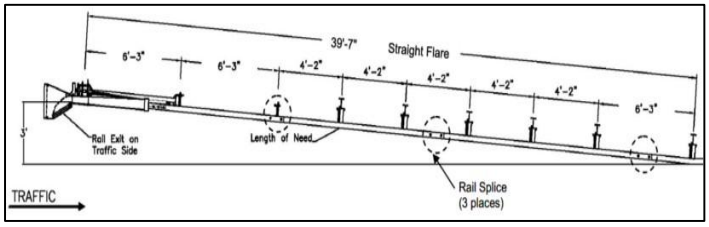
Correct Checklist answer: Yes

**MFLEAT Inspection Checklist**

12. Are standard steel W6x9# x 6'-0" guardrail posts used at post locations #4 to #8?

Correct Checklist answer: Yes

**MFLEAT Inspection Checklist**




13. Is the post spacing within the MFLEAT (beginning at Post #1) 2 spaces at 6'-3" centers, 5 spaces at 4'-2" centers, and at Post #8 continuing 6' -3" centers thru the guardrail?

Correct Checklist answer: Yes

**MFLEAT Inspection Checklist**

14. Are the blockouts 8" or 12" deep?

Correct Checklist answer: Yes

**MFLEAT Inspection Checklist**

15. Is the MFLEAT impact head exit slot pointed toward traffic?

Correct Checklist answer: Yes

**MFLEAT Inspection Checklist**

16. Are there two 5/16" x 1" hex bolts attaching the impact head to the 6" x 6" x ⅛" upper post #1?

Correct Checklist answer: Yes

**MFLEAT Inspection Checklist**

17. Is the 8" x 8" bearing plate at post #1 correctly positioned with the 5" dimension up and 3" dimension down and setting on the extended cap plate of lower post #1?

Correct Checklist answer: Yes

**MFLEAT Inspection Checklist**

18. Is the anchor cable taut and correctly installed?

Correct Checklist answer: Yes

**MFLEAT Inspection Checklist**

19. Is a 5/8" x 5" long bolt secured to the bearing plate and placed in the hole of upper post #1?

Correct Checklist answer: Yes

**MFLEAT Inspection Checklist**

20. Is a ground strut secured between posts #1 & #2 using the ¾" x 8 ½" hinge bolt at post #2 and a second ⅝" x 9" hex bolt at post location #1?

Correct Checklist answer: Yes

**MFLEAT Inspection Checklist**

21. Are the cable anchor bracket shoulder bolts properly attached to the W-Beam guardrail and the cable anchor bracket fully seated on the shoulder portion of the bolts?

Correct Checklist answer: Yes

**MFLEAT Inspection Checklist**

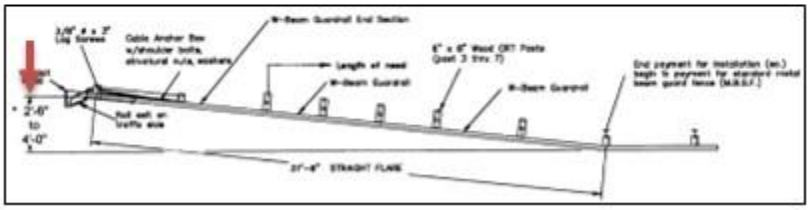
22. Are washers used on the face of the rail apart from the cable anchor bracket bolts? (The face of the rail can only have washers within the teal square.)

Correct Checklist answer: No

## 6.7 FLEAT-350 Wood post

**FLEAT-350 Wood Post Inspection Checklist**

1. Is the rail at post #1 placed at a slight flare (offset between 2'-6" and 4'-0" over the 37'-6" terminal length)?



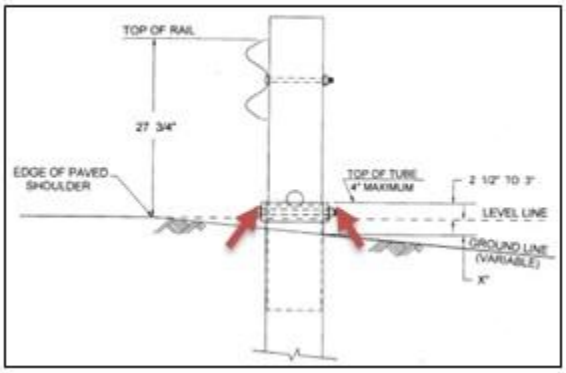
**FLEAT-350 Wood Post Inspection Checklist**

2. Is the rail attached to the post at post 3 or post 1?

**FLEAT-350 Wood Post Inspection Checklist**

3. Do the foundation tubes protrude more than 4" above the ground line? (measured by the AASHTO 5' cord method)

**FLEAT-350 Wood Post Inspection Checklist**




4. Are the bolts at the top of the foundation tubes over-tightened, deforming the walls of the tubes?

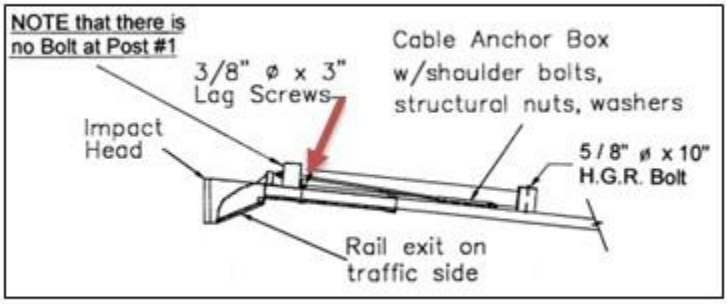
**FLEAT-350 Wood Post Inspection Checklist**

5. Is the guide chute of the impact head parallel to the top of the rail?

**FLEAT-350 Wood Post Inspection Checklist**

6. Is the exit slot is facing traffic?

**FLEAT-350 Wood Post Inspection Checklist**




7. Are the two lag screws holding the impact head to post 1 snug?

**FLEAT-350 Wood Post Inspection Checklist**

8. Is the 8" x 8" bearing plate at post #1 correctly positioned with the 5" dimension up and the 3" dimension down?

**FLEAT-350 Wood Post Inspection Checklist**

9. Is the anchor cable taut and correctly installed?

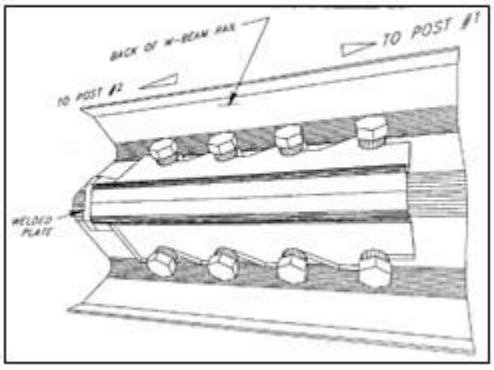
**FLEAT-350 Wood Post Inspection Checklist**

10. Has a nail has been placed over the bearing plate to prevent rotation?

**FLEAT-350 Wood Post Inspection Checklist**

11. Are the cable anchor bracket shoulder bolts properly attached to the W-beam guardrail?

**FLEAT-350 Wood Post Inspection Checklist**




12. Is the cable anchor bracket fully seated on the shoulder portion of the bolts?

**FLEAT-350 Wood Post Inspection Checklist**

13. Are posts 1 and 2 installed in foundation tubes?

**FLEAT-350 Wood Post Inspection Checklist**

14. Do posts 1 and 2 have the 2-1/2" breakaway hole with the bottom of the hole at the top of the tube?

**FLEAT-350 Wood Post Inspection Checklist**

15. Do CRT posts at locations 3 through 7 have a 3-1/2" breakaway hole located parallel to the roadway with the center of the top hole located at the ground line?

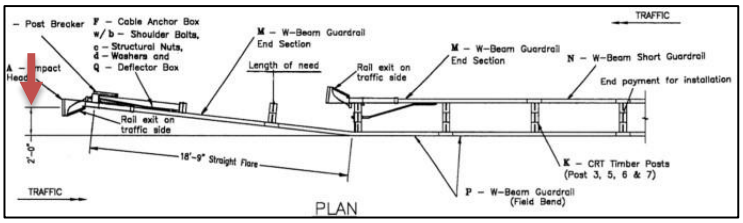
**FLEAT-350 Wood Post Inspection Checklist**

16. Are washers used on the face of the rail apart from the cable anchor bracket bolts?

## 6.8 FLEAT-MT

**FLEAT-MT Inspection Checklist**

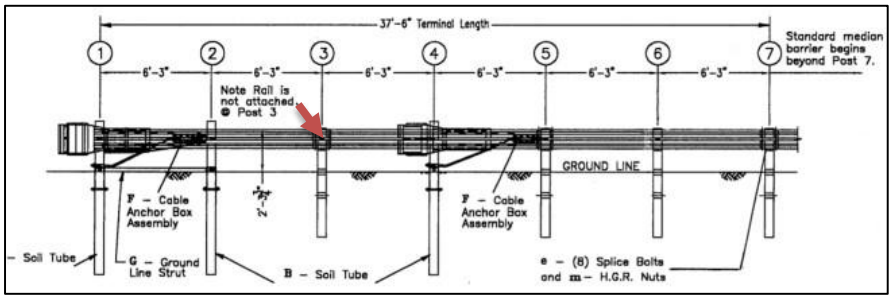
1. Is the rail at post 1 placed at a straight, single-sided flare offset of 2'-0" beginning at post 4?




Correct Checklist answer: Yes

**FLEAT-MT Inspection Checklist**

2. Is the rail attached to post 3?




Correct Checklist answer: No

**FLEAT-MT Inspection Checklist**

3. Is the rail attached to post 1?

Correct Checklist answer: No

**FLEAT-MT Inspection Checklist**

4. Is the rail attached to the post at the impact head side at post 4?

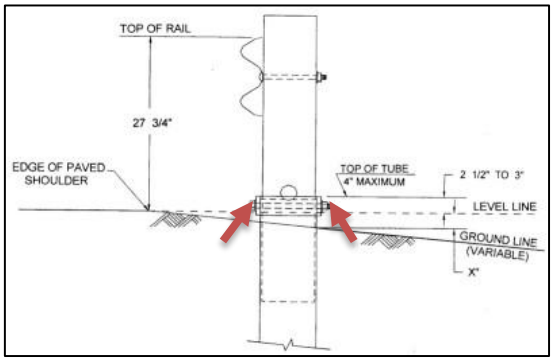
Correct Checklist answer: No

**FLEAT-MT Inspection Checklist**

5. Do the 3 foundation tubes protrude more than 4" above the ground line? (Measured by the AASHTO 5' cord method)

Correct Checklist answer: No

**FLEAT-MT Inspection Checklist**




6. Are the bolts at the top of the 3 foundation tubes over-tightened, deforming the walls of the tubes?

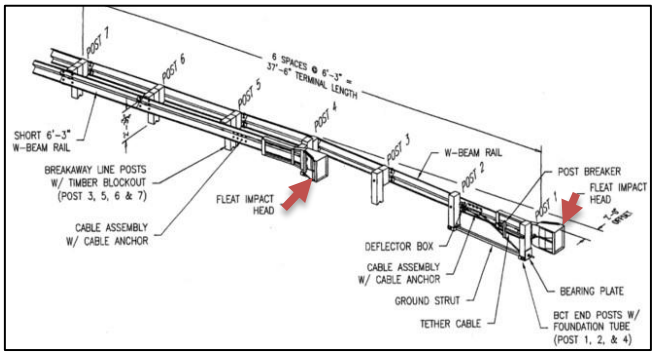
Correct Checklist answer: No

**FLEAT-MT Inspection Checklist**

7. Is the guide chute of the 2 impact heads parallel to the top of the rail?

Correct Checklist answer: Yes

**FLEAT-MT Inspection Checklist**




8. Are the exit slots of the impact heads facing traffic?

Correct Checklist answer: Yes

**FLEAT-MT Inspection Checklist**

9. Are the two lag screws holding the impact heads to post #1 and post #4 snug?

Correct Checklist answer: Yes

**FLEAT-MT Inspection Checklist**

10. Are the 8”x8” bearing plates at post 1 and 4 correctly positioned with the 5” dimension up and the 3” dimension down?

Correct Checklist answer: Yes

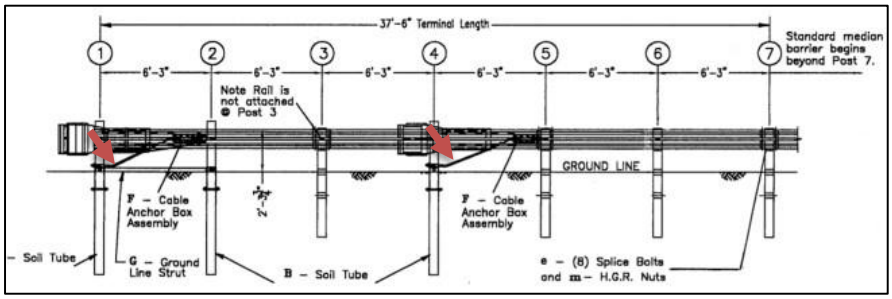
**FLEAT-MT Inspection Checklist**

10. Are the 8”x8” bearing plates at post 1 and 4 correctly positioned with the 5” dimension up and the 3” dimension down?

Correct Checklist answer: Yes

**FLEAT-MT Inspection Checklist**

11. Are the anchor cables taught and correctly installed?




Correct Checklist answer: Yes

**FLEAT-MT Inspection Checklist**

12. Has a nail has been placed over the bearing plates to prevent rotation?

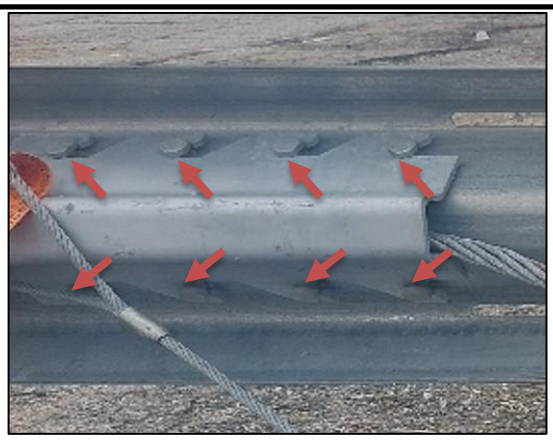
Correct Checklist answer: Yes

**FLEAT-MT Inspection Checklist**

13. Are the cable anchor bracket shoulder bolts properly attached to the 2 W-beam guardrail end sections?

Correct Checklist answer: Yes

**FLEAT-MT Inspection Checklist**



14. Are the cable anchor brackets fully seated on the shoulder portion of the bolts?

Correct Checklist answer: Yes

**FLEAT-MT Inspection Checklist**

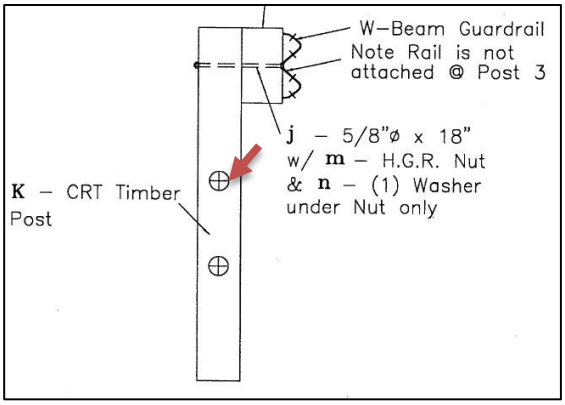
15. Are posts 1, 2 and 4 are installed in foundation tubes?

Correct Checklist answer: Yes

**FLEAT-MT Inspection Checklist**

16. Do posts 1, 2, and 4 have the 2-1/2" breakaway hole located parallel to the roadway with the bottom of the hole at the top of the tube?

Correct Checklist answer: Yes




**FLEAT-MT Inspection Checklist**

17. Do the CRT posts at locations 3, 5, 6, and 7 have two 3-1/2" breakaway holes located parallel to the roadway with the center of the top hole located at the ground line?

Correct Checklist answer: Yes

**FLEAT-MT Inspection Checklist**

18. Is the post breaker attached at the non-traffic side of post #1 with two lag screws?

Correct Checklist answer: Yes

**FLEAT-MT Inspection Checklist**

19. Is the 3/8” tether cable correctly looped around the impact head post #1, looped around the anchor cable near post #2, and tied under the impact head at post #1?

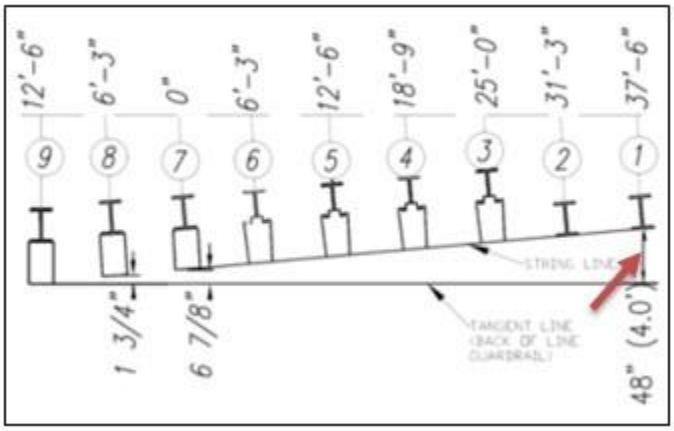
Correct Checklist answer: Yes

**FLEAT-MT Inspection Checklist**

20. Are washers used on the face of the rail apart from the cable anchor bracket bolts?

Correct Checklist answer: No

## 6.9 SRT-27

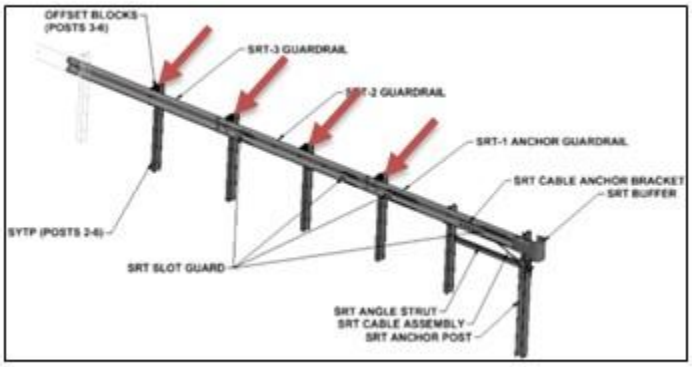



**SRT-27 Inspection Checklist**

1. Does the SRT™ 27 System have a 4'0" straight-line offset?

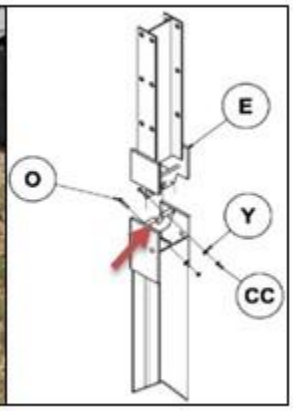

**SRT-27 Inspection Checklist**

2. Are the center of the SYTP® yielding holes approximately centered at finished grade line for posts 2 – 6?




**SRT-27 Inspection Checklist**

3. Are the 8" composite offset blocks properly in place on posts 3-6 and not damaged or rotated?

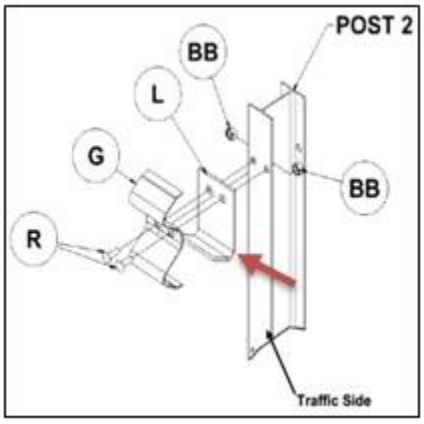



**SRT-27 Inspection Checklist**

4. Are the CR Post 1 top and CR Post 1 bottom oriented correctly?

**SRT-27 Inspection Checklist**

5. Does the top of the CR Post 1 Bottom protrude more than 4" above the finished grade?

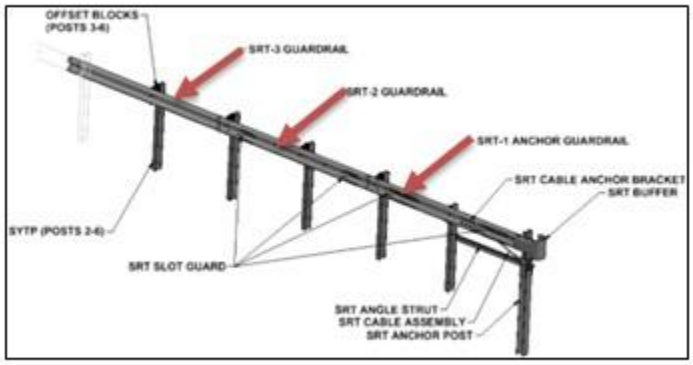



**SRT-27 Inspection Checklist**

6. Is the SRT™ Shelf Angle at Post 2 attached with 2 bolts and the SRT™ Flange Protector and SRT™ Anchor Guardrail placed appropriately?

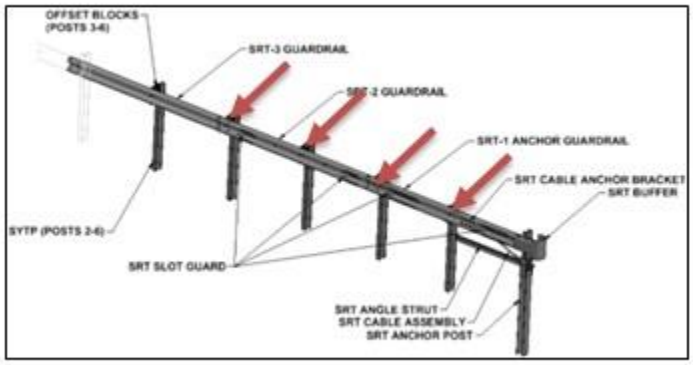
**SRT-27 Inspection Checklist**

7. Are the guardrails between Posts 1 and 7 curved?




**SRT-27 Inspection Checklist**

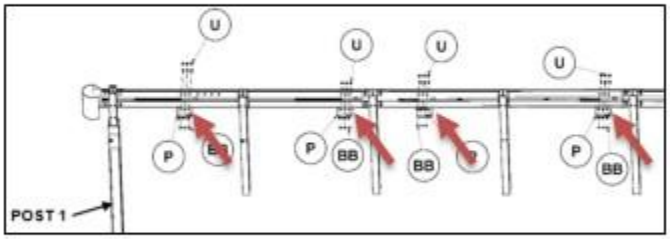
8. Are the SRT™ -1 Anchor Guardrail and SRT™ -2 and -3 Guardrails are oriented correctly?




**SRT-27 Inspection Checklist**

9. Are the SRT™ -1 Anchor Guardrail and SRT™ -2 and -3 Guardrails bolted to posts 2-5?

**SRT-27 Inspection Checklist**




10. Are the SRT™ Slot Guards are in place against the non-traffic side of the SRT™ -1 Anchor Guardrail and SRT™ -2 Guardrail with the deflector angle gap opening toward (closest to) the elongated slot and arrows pointing towards Post 1?

**SRT-27 Inspection Checklist**

11. Is the SRT™ Cable Anchor Bracket placed between Posts 1 and 2 on the non-traffic side of the SRT™-1 Anchor Guardrail and bolted to the SRT™-1 Anchor Guardrail with eight (8) Hex Bolts and washers?

**SRT-27 Inspection Checklist**

12. Is the bent part of the SRT™ Cable Anchor Bracket Angle at post 1 up and hooked over the CR Post 1 Top?

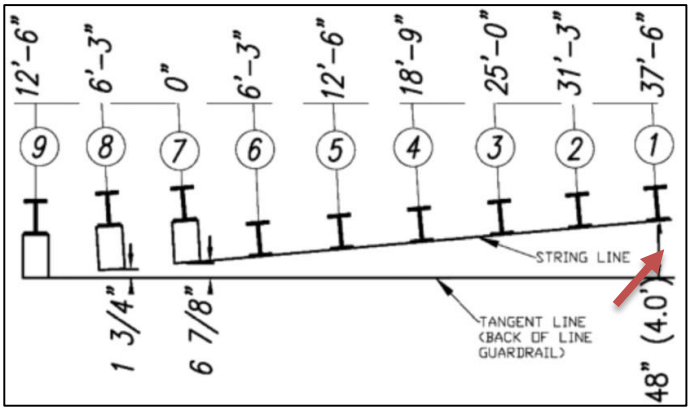
**SRT-27 Inspection Checklist**

13. Are the 1" Hex Nuts fully tightened and the SRT™ Anchor Cable taut?

**SRT-27 Inspection Checklist**

14. Is the SRT™ Angle Strut properly attached on the non-traffic side to the CR Post 1 Bottom and Post 2 SYTP®?

## 6.10 SRT-31




**SRT-31 Inspection Checklist**

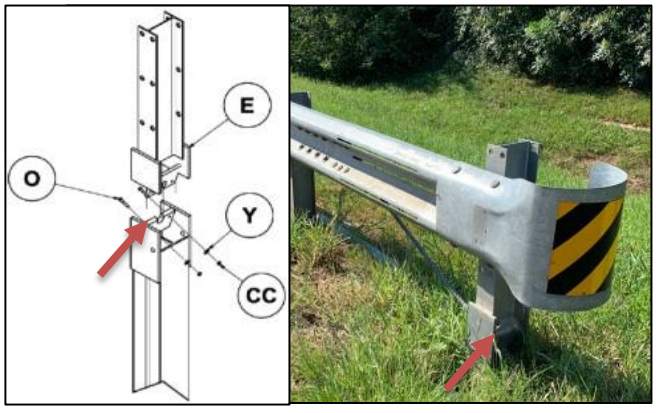
1. Does the SRT™ 31 System has a 4'0" straight-line offset?

Correct Checklist answer: Yes


**SRT-31 Inspection Checklist**

2. Are the center of the SYTP® yielding holes approximately centered at finished grade line for posts 2 – 6?

Correct Checklist answer: Yes




**SRT-31 Inspection Checklist**

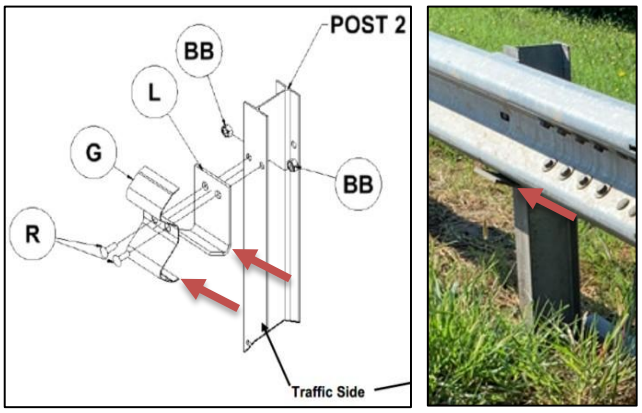
3. Are the CR Post 1 top and CR Post 1 bottom are oriented correctly?

Correct Checklist answer: Yes

**SRT-31 Inspection Checklist**

4. Does the top of the CR Post 1 Bottom protrude more than 4" above the finished grade?

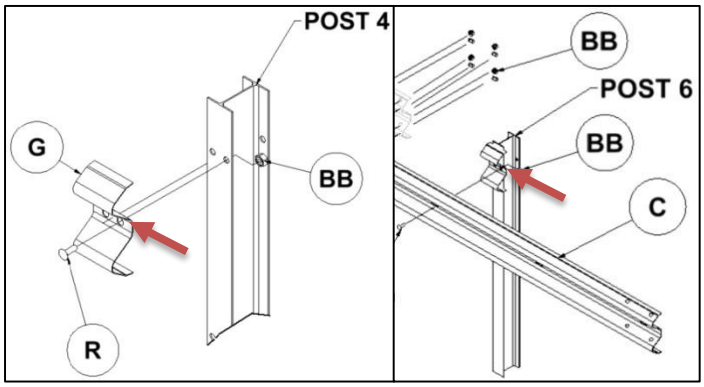
Correct Checklist answer: No




**SRT-31 Inspection Checklist**

5. Is the SRT™ Shelf Angle at Post 2 attached with 2 bolts and the SRT™ Flange Protector and SRT™ Anchor Guardrail placed appropriately?

Correct Checklist answer: Yes




**SRT-31 Inspection Checklist**

6. Are SRT™ Flange Protectors installed on traffic side of posts 4 and 6?

Correct Checklist answer: Yes

**SRT-31 Inspection Checklist**

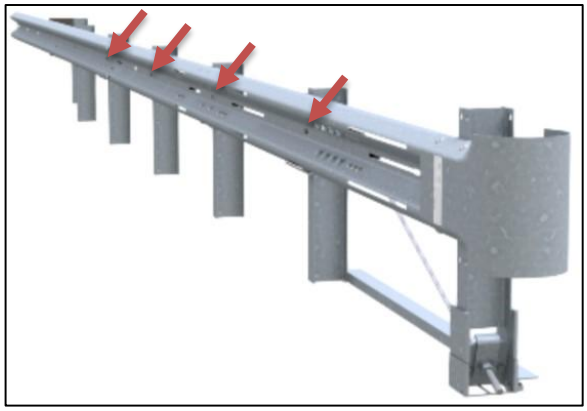
7. Are the guardrails between Posts 1 and 7 curved?

Correct Checklist answer: No

**SRT-31 Inspection Checklist**

8. Are the SRT™-1 Anchor Guardrail and SRT™ -2 and -3 Guardrails oriented correctly?

Correct Checklist answer: Yes



**SRT-31 Inspection Checklist**

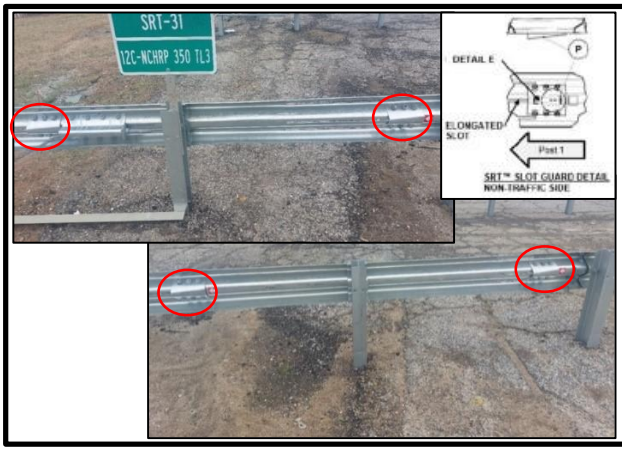
9. Is the rail bolted to posts 2 5?

Correct Checklist answer: No

**SRT-31 Inspection Checklist**

10. Is the 5/8" x 1.75" countersunk HD bolt used to attach the SRT™-3 Guardrail to Post 6?

Correct Checklist answer: Yes




**SRT-31 Inspection Checklist**

11. Are the SRT™ Slot Guards are in place against the non-traffic side of the SRT™ -1 Anchor Guardrail and SRT™ -2 Guardrail with the deflector angle gap opening toward (closest to) the elongated slot and arrows pointing towards Post 1?

Correct Checklist answer: Yes

**SRT-31 Inspection Checklist**

12. Is the SRT™ Cable Anchor Bracket placed between Posts 1 and 2 on the non-traffic side of the SRT™-1 Anchor Guardrail and bolted to the SRT™-1 Anchor Guardrail with eight (8) Hex Bolts and washers?

Correct Checklist answer: Yes

**SRT-31 Inspection Checklist**

13. Is the bent part of the SRT™ Cable Anchor Bracket Angle at post 1 up and hooked over the CR Post 1 Top?

Correct Checklist answer: Yes

**SRT-31 Inspection Checklist**

14. Are washers ONLY used on the traffic side of the SRT™-1 Anchor Guardrail for the SRT™ Cable Anchor Bracket?

Correct Checklist answer: Yes

**SRT-31 Inspection Checklist**

15. Are the 1” Hex Nuts fully tightened and the SRT™ Anchor Cable taut?

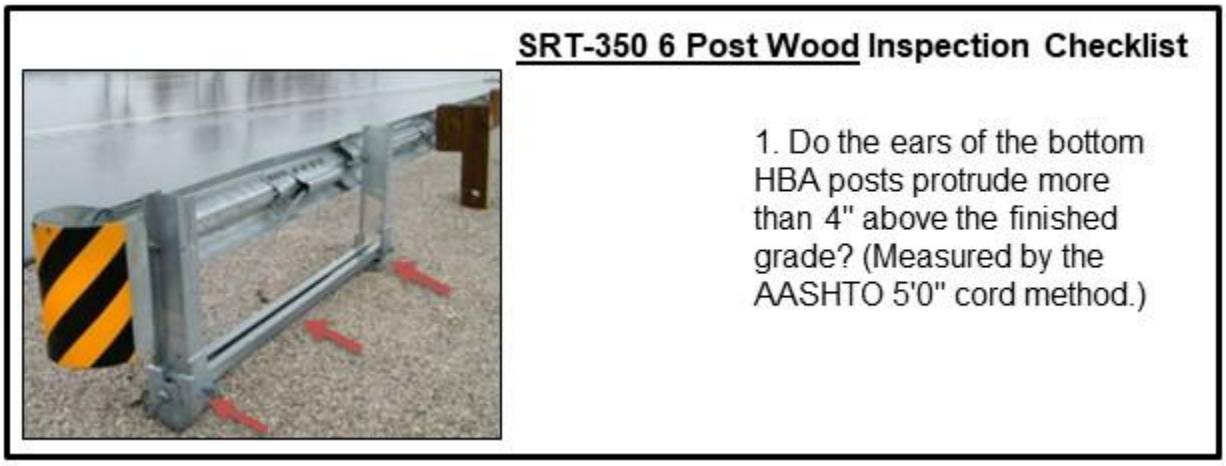
Correct Checklist answer: Yes

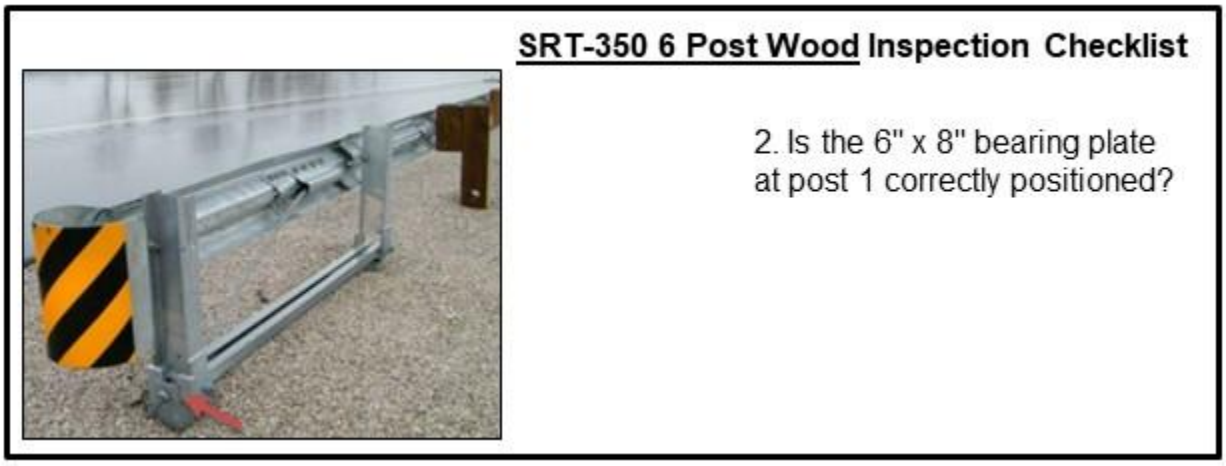
**SRT-31 Inspection Checklist**

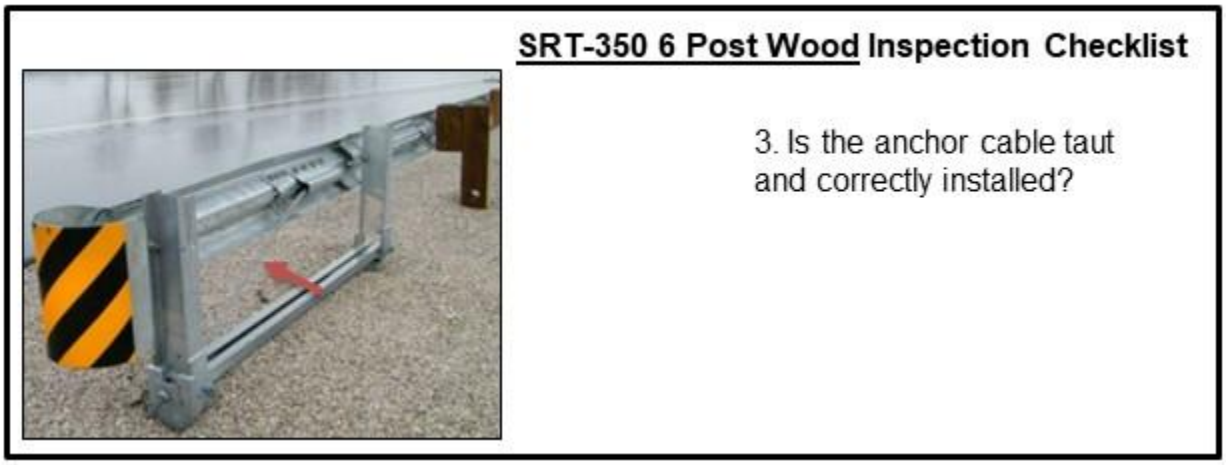
16. Is the SRT™ Angle Strut properly attached on the non-traffic side to the CR Post 1 Bottom and Post 2 SYTP®?

Correct Checklist answer: Yes

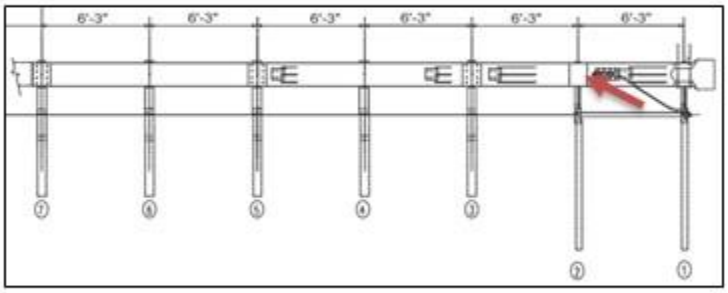
## 6.11 SRT-350 6 Post Wood



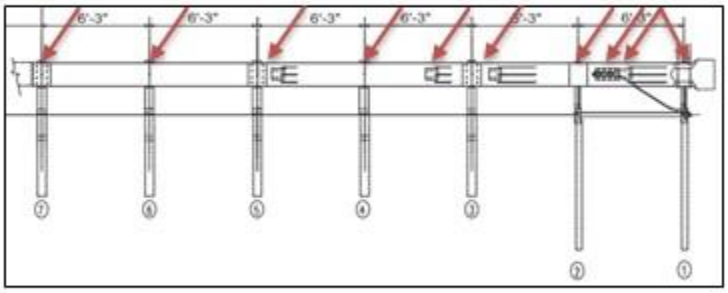



**SRT-350 6 Post Wood Inspection Checklist**



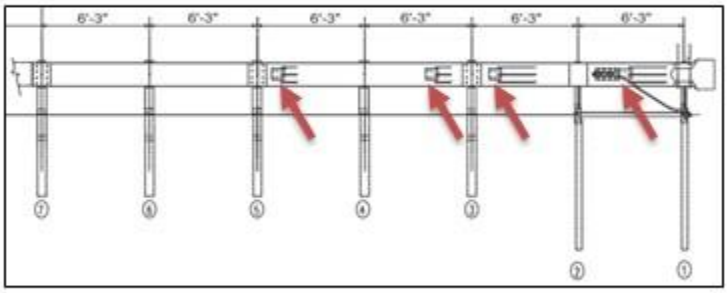
4. Is the rail panel attached to the post at location 2?

**SRT-350 6 Post Wood Inspection Checklist**



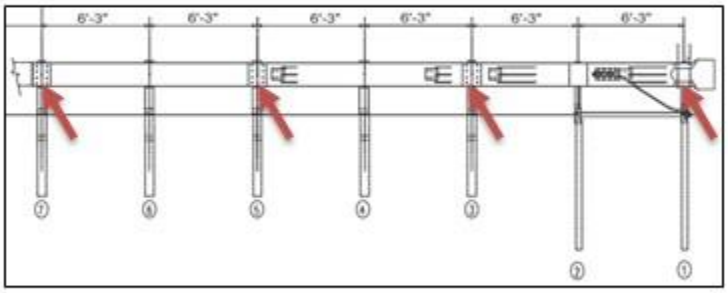
5. Are rectangular washers used on the face of the rail?

**SRT-350 6 Post Wood Inspection Checklist**



6. Are the slot guards in place and oriented correctly?

**SRT-350 6 Post Wood Inspection Checklist**

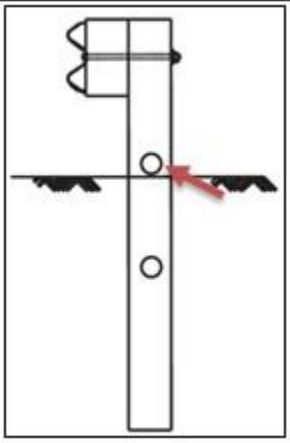


7. Are rail panels oriented correctly?

**SRT-350 6 Post Wood Inspection Checklist**

8. Have blockouts been toe nailed to the posts for all wood posts?

**SRT-350 6 Post Wood Inspection Checklist**



9. Do the Controlled Released Terminal (CRT) posts have a 3-1/2" breakaway hole with the bottom of the hole located approximately at the finished grade?

**SRT-350 6 Post Wood Inspection Checklist**

10. If paved, is the material around posts 1 and 2 removed?

**SRT-350 6 Post Wood Inspection Checklist**

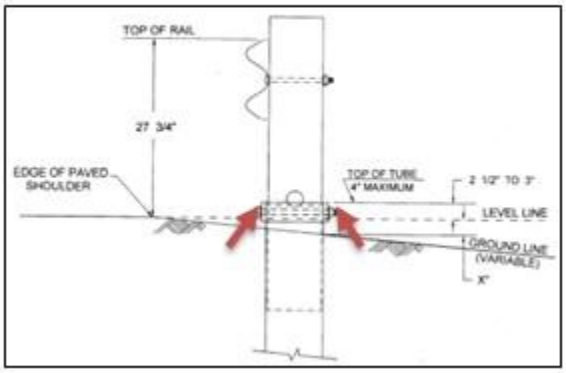
11. If the finished grade is paved around terminal posts 1 and 2, is a 3" deep recess around each post provided to allow for the top post to rotate when impacted?

## 6.12 SRT-350 8 Post Wood

**SRT-350 8 Post Wood Inspection Checklist**

1. Do the steel tubes protrude more than 4" above the finished grade? (Measured by the AASHTO 5' 0" cord method)

**SRT-350 8 Post Wood Inspection Checklist**




2. Are the bolts at the top of the steel tubes over-tightened? (The walls of the steel tubes are collapsed)

**SRT-350 8 Post Wood Inspection Checklist**

3. Is the 6" x 8" Bearing Plate at post 1 correctly positioned?

**SRT-350 8 Post Wood Inspection Checklist**

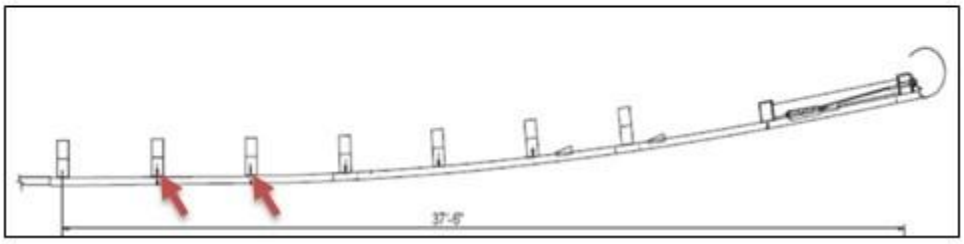
4. Does the taut cable deflect more than 1 inch, when pressure is applied by hand in an up or down direction?

**SRT-350 8 Post Wood Inspection Checklist**

5. Is a nail driven through each of the holes on the bearing plate and bent to prevent the plate from rotating?

**SRT-350 8 Post Wood Inspection Checklist**

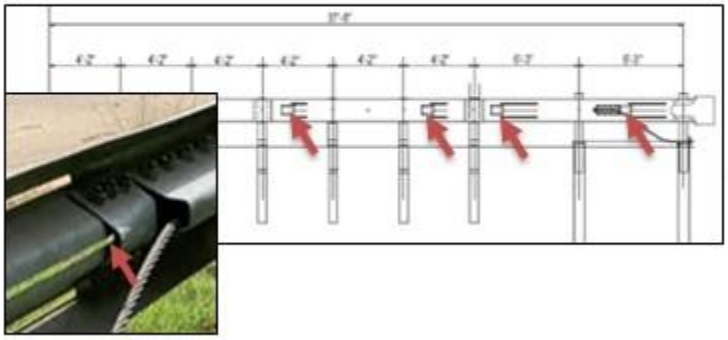
6. Is the rail panel attached to posts 7 and 8?



**SRT-350 8 Post Wood Inspection Checklist**

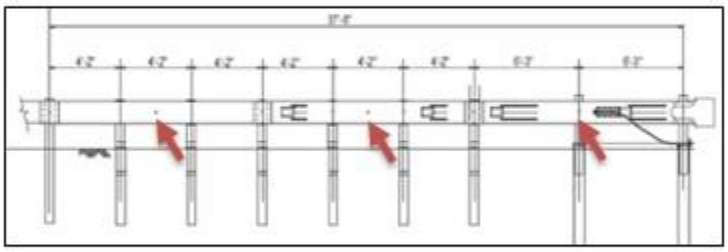
7. Are rectangular washers used on the face of the rail?

**SRT-350 8 Post Wood Inspection Checklist**

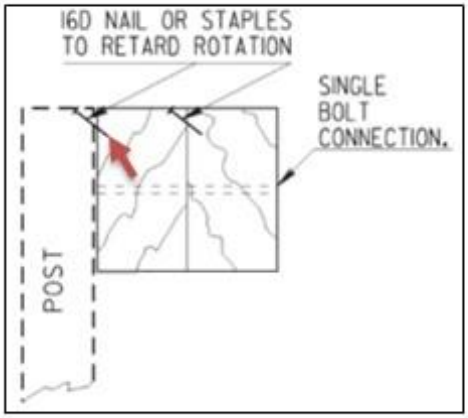


8. Are Slot Guards in place against the backside of the Guardrail panels with the deflector angle gap opening toward (closest to) the elongated slots?

**SRT-350 8 Post Wood Inspection Checklist**



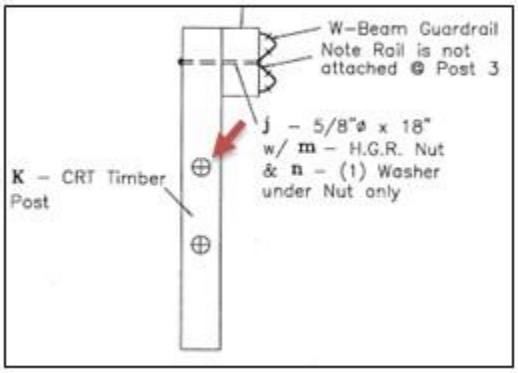
9. Are all rail panels oriented correctly?




**SRT-350 8 Post Wood Inspection Checklist**

10. Have all blockouts been toe nailed to the posts with 16d hot-dipped galvanized nails?

**SRT-350 8 Post Wood Inspection Checklist**




11. Do the CRT posts have a 3 1/2" breakaway hole located parallel to the roadway with the bottom edge of the hole located approximately at the finished grade?

**SRT-350 8 Post Wood Inspection Checklist**

12. Do posts 1 and 2 have metal bands around them under the post bolt hole?

## 6.13 ET Plus

**ET Plus Inspection Checklist**

1. Do the steel tubes or post plates to the HBA™ Bottom Posts protrude more than 4" above the finished grade? (Measured by the AASHTO 5' cord method.)

**ET Plus Inspection Checklist**

2. Are the 3/4" bolts and ⅜" bolts connecting the tops of the HBA™ Bottom Posts to the bottoms of the HBA™ Top Posts tightened to a snug position?

**ET Plus Inspection Checklist**

3. Are the bolts at the top of the steel tubes over tightened so that the walls of the steel tubes are collapsed?

**ET Plus Inspection Checklist**

4. Are the two bolts holding the ET-PLUS™ Extruder (Head) to Post 1 snug?

**ET Plus Inspection Checklist**

5. Is the Extruder channel chute approximately parallel to the finished grade?

**ET Plus Inspection Checklist**

6. Is the Cable Anchor Bracket locked into place by pulling the bracket towards the impact end of the unit with the hooks/lugs well seated into the square holes?

*Image not available.*

**ET Plus Inspection Checklist**

7. Is the shank portion of the anchor cable positioned vertically, up flush against the bottom web of the top section of the HBA post?

*Image not available.*

**ET Plus Inspection Checklist**

8. Is the shank portion of the cable centered horizontally so that the bearing plate bears uniformly on both flanges of Post 1?

**ET Plus Inspection Checklist**

9. Is any grout, backfill, or other materials high enough to obstruct, constrain, or otherwise engage the bearing plate?

**ET Plus Inspection Checklist**

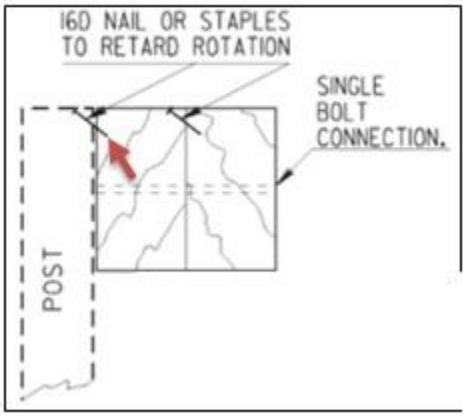
10. Is the Bearing Plate placed on the impact side of Post 1?

**ET Plus Inspection Checklist**

11. Is the cable bearing plate oriented with the "long" dimension turned up with the hole in the bearing plate vertically off center, 5" from one edge and 3" from the opposite edge?

**ET Plus Inspection Checklist**

12. Are the top surfaces of any grout or other backfill high enough to obstruct/constrain the 3/8" shear bolts or the 3/4" hinge bolts of the HBA Post?




**ET Plus Inspection Checklist**

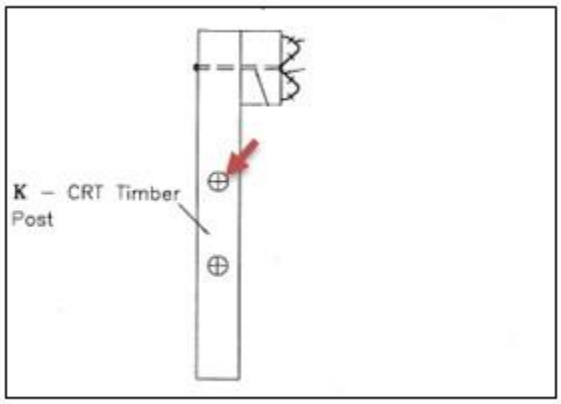
13. Are any wood offset blocks used toe nailed to the wood posts?

**ET Plus Inspection Checklist**

14. Does each HBA™ post have two bolts on either side of the post with the larger bolt downstream of the smaller bolt?

**ET Plus Inspection Checklist**

15. Are the SYTP™ holes at the finished grade?



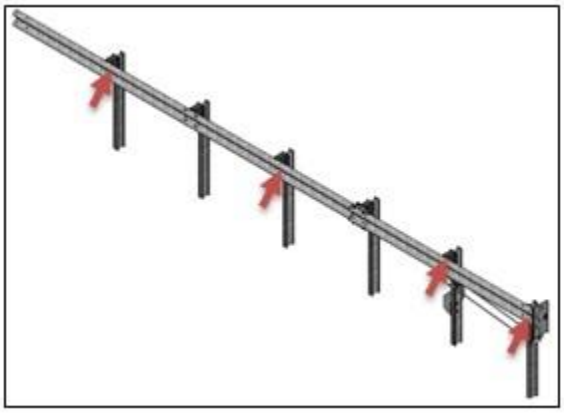

**ET Plus Inspection Checklist**

16. Does the CRT post have a 3 1/2" breakaway hole located parallel to the roadway and approximately at finished grade?

## 6.14 X-Lite (Flared)

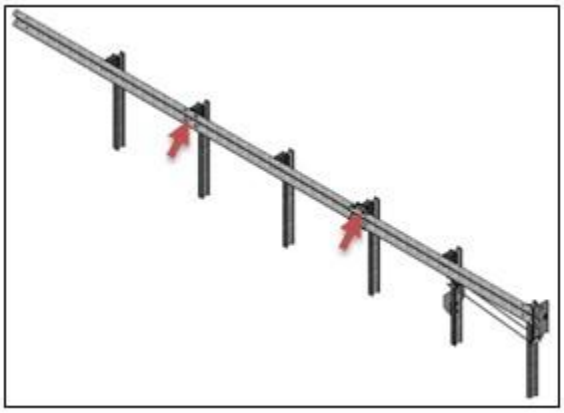
**X-Lite (Flared) Inspection Checklist**

1. Do posts 1 & 3 use slotted holes?



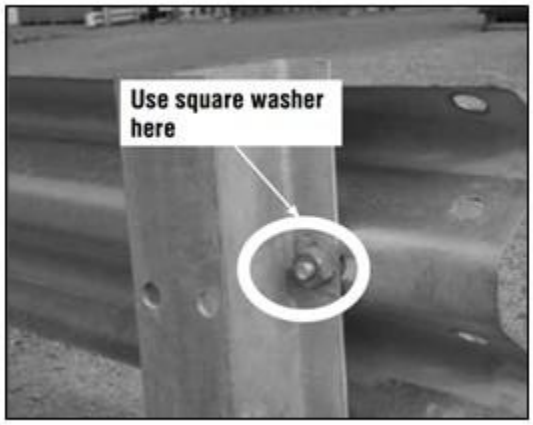
**X-Lite (Flared) Inspection Checklist**

2. Is the rail bolted at posts 1, 2, 4 and 6 only?



**X-Lite (Flared) Inspection Checklist**

3. Are the rails bolted to posts at posts 3 and 5?




**X-Lite (Flared) Inspection Checklist**

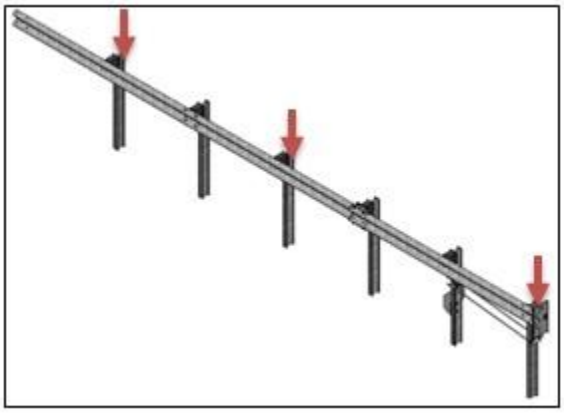
4. Is a square washer used at post 1?

**X-Lite (Flared) Inspection Checklist**

5. Are the blockout and Back Slider Panel attached to post 3 using the trailing/back slot on the post?

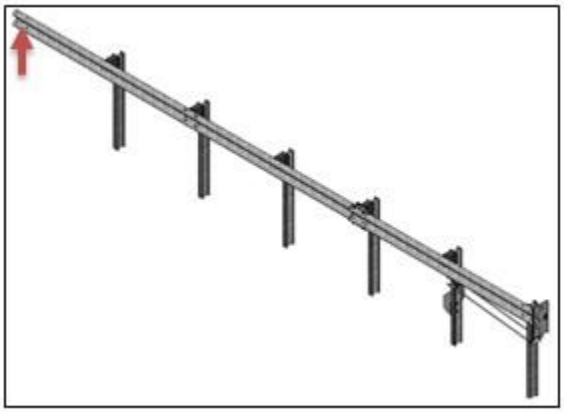
**X-Lite (Flared) Inspection Checklist**

6. Is the rail at post 2 bolted using trailing/back slot of the post?



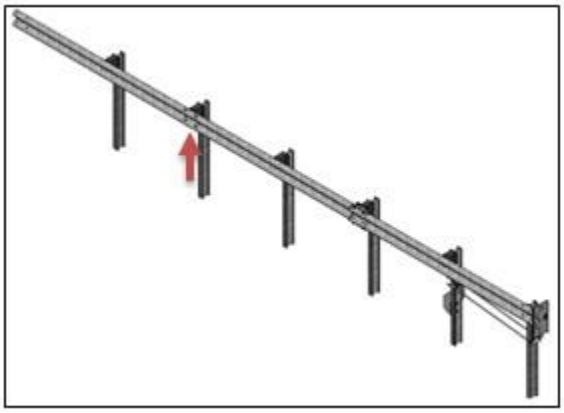
**X-Lite (Flared) Inspection Checklist**

7. Are posts 1, 4, and 6 bolted to the rail using approach/front hole or slot on the posts?



**X-Lite (Flared) Inspection Checklist**

8. Are rails 3 and 4 spliced using standard guardrail bolts?

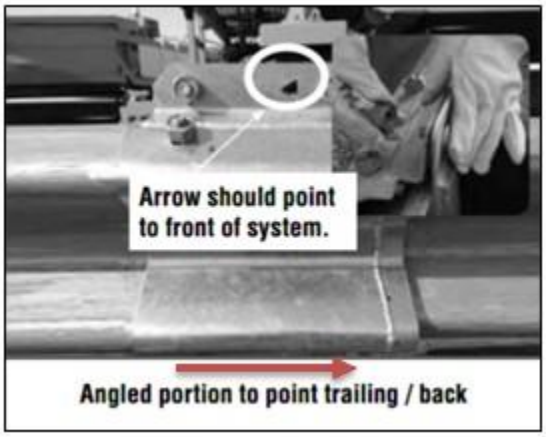


**X-Lite (Flared) Inspection Checklist**

9. Are rails 2 and 3 spliced using special yellow shear bolts?

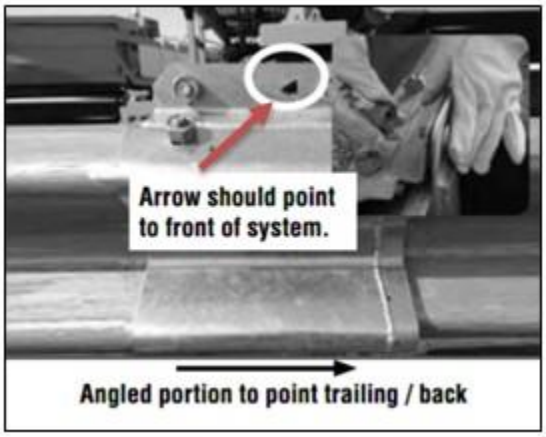
**X-Lite (Flared) Inspection Checklist**

10. Is the slider assembly properly assembled with bolts from back to front with nuts on the outside?




**X-Lite (Flared) Inspection Checklist**

11. Is the angled portion of the slider panel pointing toward the trailing/back end of the system?




**X-Lite (Flared) Inspection Checklist**

12. Do the arrows on the slider point toward the front of the system?

**X-Lite (Flared) Inspection Checklist**

13. Is the cable bracket and washer installed on the cable at Post 2?

**X-Lite (Flared) Inspection Checklist**

14. Is the cable anchor nut at post 2 properly tightened?

**X-Lite (Flared) Inspection Checklist**

15. Is there a blockout at Post 2?

**X-Lite (Flared) Inspection Checklist**

16. Is there a straight line offset of 4ft from parallel?

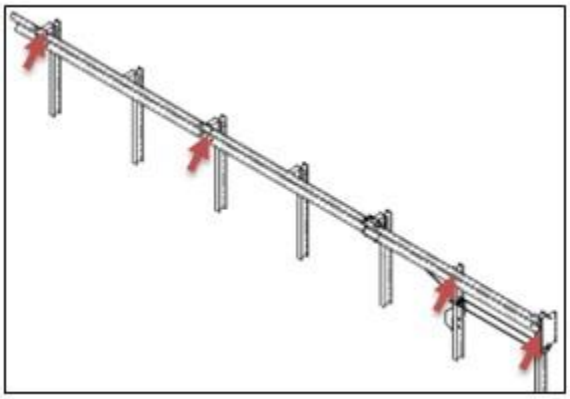
## 6.15 X-Lite (Tangent)

**X-Lite (Tangent) Inspection Checklist**

1. Does post 1 use slotted holes?

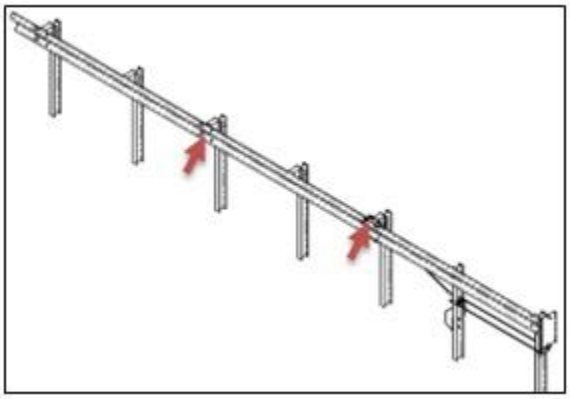
**X-Lite (Tangent) Inspection Checklist**

2. At post 3, do the slotted holes face away from rail?



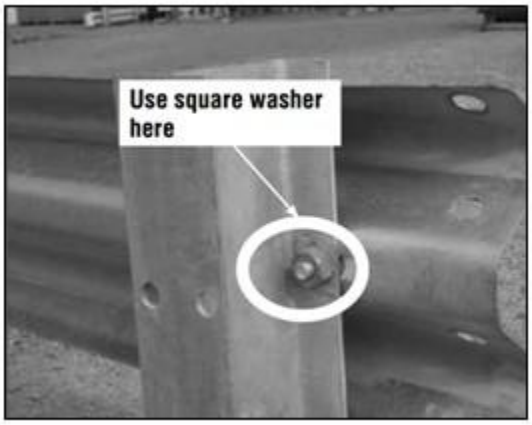
**X-Lite (Tangent) Inspection Checklist**

3. Is the rail bolted at posts 1, 2, 4, and 6?



**X-Lite (Tangent) Inspection Checklist**

4. Is the rail bolted to posts 3 and 5?

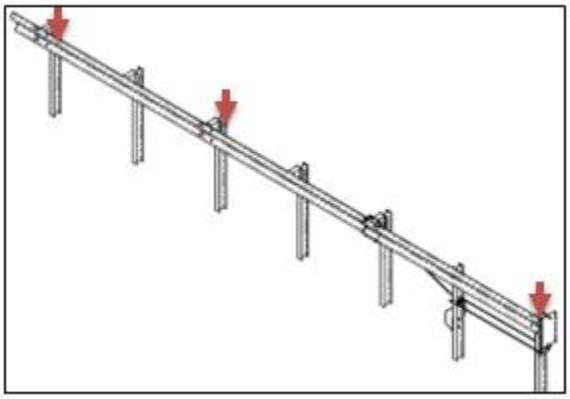



**X-Lite (Tangent) Inspection Checklist**

5. Is a square washer used at post 1?

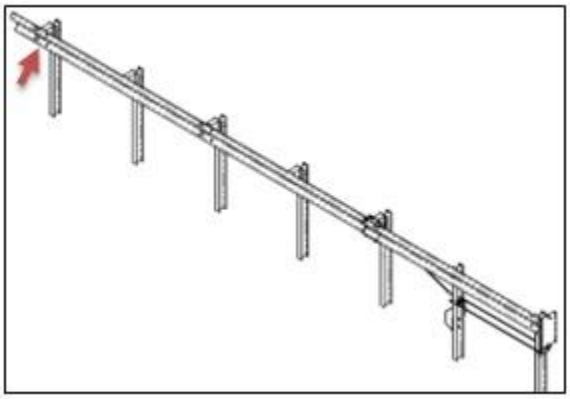
**X-Lite (Tangent) Inspection Checklist**

6. At post 2, is the rail bolted using downstream/back hole on the post?



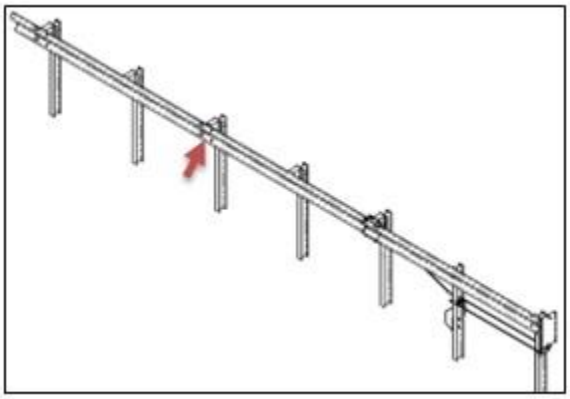
**X-Lite (Tangent) Inspection Checklist**

7. At posts 1, 4, and 6, are the rails bolted using upstream/front hole of the posts?



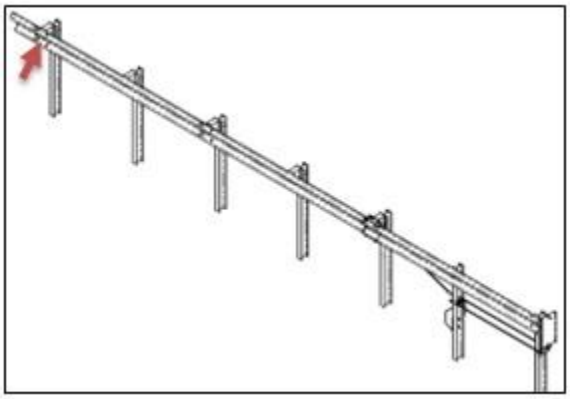
**X-Lite (Tangent) Inspection Checklist**

8. Are rails 3 and 4 spliced using special yellow shear bolts?



**X-Lite (Tangent) Inspection Checklist**

9. Are rails 2 and 3 spliced using special yellow shear bolts?

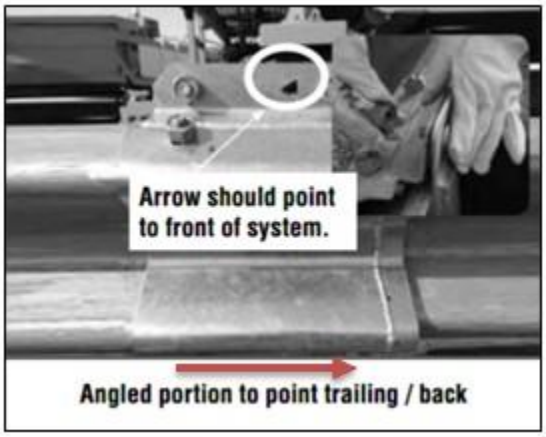


**X-Lite (Tangent) Inspection Checklist**

10. At Post 7, does a 9" bolt pass through both guardrail sections, the blockout and the post?

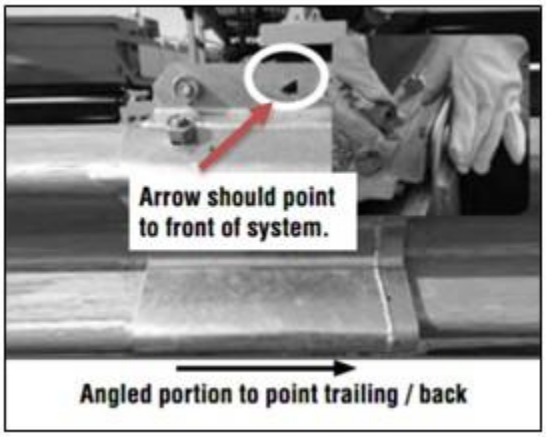
**X-Lite (Tangent) Inspection Checklist**

11. Is the slider assembly properly assembled with bolts from back to front with nuts on the outside?




**X-Lite (Tangent) Inspection Checklist**

12. Does the angled position of the slider panel point toward the downstream/back end of the system?




**X-Lite (Tangent) Inspection Checklist**

13. Do the arrows on slider point toward the front of the system?

**X-Lite (Tangent) Inspection Checklist**

14. Is the cable bracket and washer installed on the cable at Post 2?

**X-Lite (Tangent) Inspection Checklist**

15. Is the cable anchor nut at post 2 properly tightened?

**X-Lite (Tangent) Inspection Checklist**

16. Is a blockout present on Post 1 or Post 2?

**X-Lite (Tangent) Inspection Checklist**

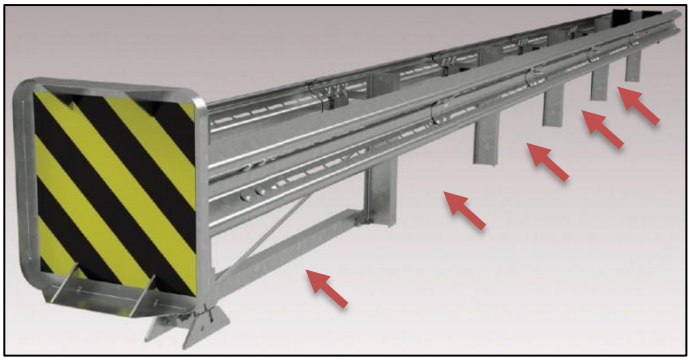
17. Is the system installed under the maximum flare of 2ft?

## 6.16 MATT

**MATT Inspection Checklist**

1. Is the rail within the MATT curved, between Post 1 and Post 6?

Correct Checklist answer: No



**MATT Inspection Checklist**

2. Are all MATT™ post spacings are 6'-3" [1.905 m] on center?

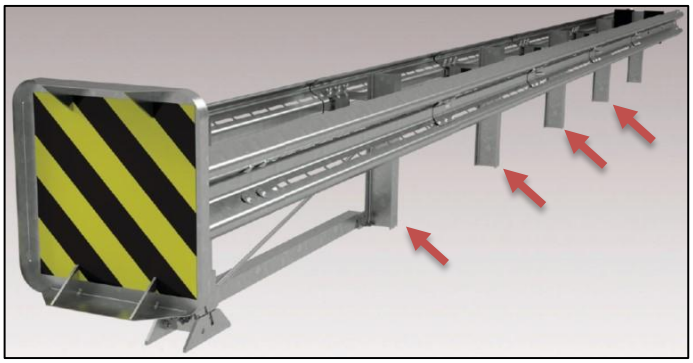
Correct Checklist answer: Yes

**MATT Inspection Checklist**

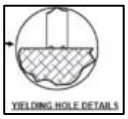
3. Is the Strut Hole of the MATT™ CR Post 1 Bottom upstream and the Post is 4" above the finished grade?

Correct Checklist answer: Yes

**MATT Inspection Checklist**

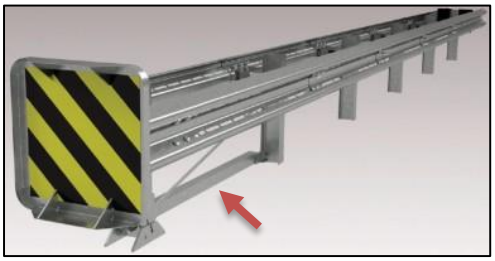


4. Are the center of the SYTP® yielding holes at Posts 2-5 are approximately centered at finished grade?




Correct Checklist answer: Yes

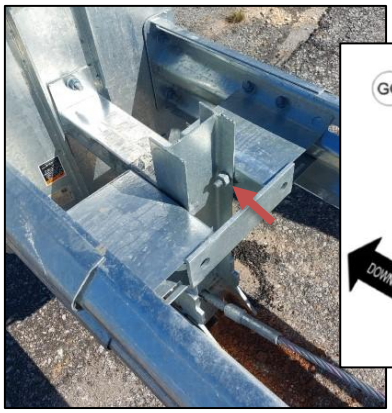
**MATT Inspection Checklist**

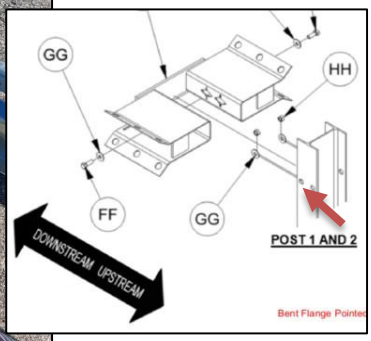


5. Are the MATT™ Strut Adapter Plate (at Post 2) and Strut installed between Post 1 and 2 on the post side OPPOSITE the closest traffic?

Correct Checklist answer: Yes

**MATT Inspection Checklist**






6. Are the downstream slotted holes in the MATT ™ Double Spacer bolted to the downstream hole of the MATT CR Post 1 Top and the MATT SYTP® (Post 2)?

Correct Checklist answer: Yes

**MATT Inspection Checklist**

7. Is the upstream slotted hole in the MATT ™ Spacer (Posts 3-5) bolted to the MATT™ SYTP® using the upstream hole in the post?

Correct Checklist answer: Yes

**MATT Inspection Checklist**

8. Are all MATT™ 12 Gauge Transition Guardrails with Fin-4, at post location 6, lapped in the direction of the nearest adjacent traffic and fins are positioned upstream?

Correct Checklist answer: Yes

**MATT Inspection Checklist**

9. Are the MATT™ 12 Gauge, Slotted Intermediate Guardrails with Fin-3 lapped to the outside of the MATT™ 12 Gauge Transition Guardrails with Fin-4?

Correct Checklist answer: Yes

**MATT Inspection Checklist**

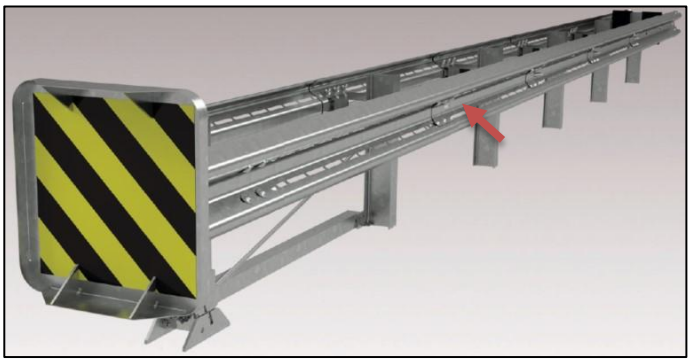
10. Are the MATT™ 12 Gauge, Slotted Intermediate Guardrails with Fin-3 lapped to the outside of the MATT™ 12 Gauge, Slotted Intermediate Guardrails with Fin-3?

Correct Checklist answer: Yes

**MATT Inspection Checklist**

11. Are the MATT™ 12 Gauge, Slotted Intermediate Guardrails-2 lapped to the outside of the MATT™ 12 Gauge, Slotted Intermediate Guardrails with Fin-3?

Correct Checklist answer: Yes



**MATT Inspection Checklist**

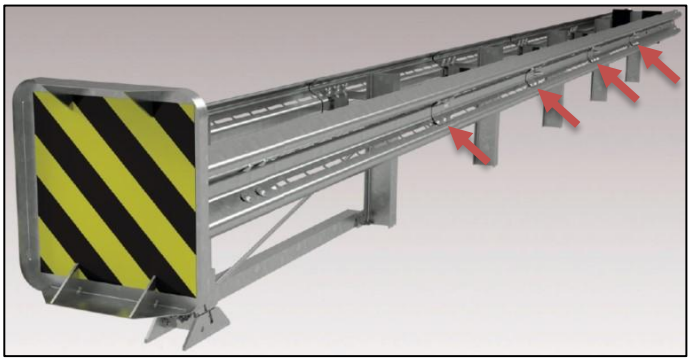
12. Are the MATT™ 10 Gauge, Slotted Front Guardrails-1 lapped to the outside of the MATT™ 12 Gauge, Slotted Intermediate Guardrails-2?

Correct Checklist answer: Yes

**MATT Inspection Checklist**

13. Are the MATT™ 10 Gauge Head Rails lapped to the outside of the MATT™ 10 Gauge Slotted Front Guardrails-1?

Correct Checklist answer: Yes



**MATT Inspection Checklist**

14. Is the MATT™ Backing Plate assembled on the outside of the MATT™ Guardrail Panels at Posts 2, 3, 4 and 5?

Correct Checklist answer: Yes

**MATT Inspection Checklist**

15. Are the 5/8” heavy flat washers (1/4” thick) placed between the nut and spacers at Posts 1-5?

Correct Checklist answer: Yes

**MATT Inspection Checklist**

16. Is the MATT™ Head Tube attached to the MATT™ Impact Head and less than 1/4" [6mm] from the MATT™ CR Post 1 Top?

Correct Checklist answer: Yes

**MATT Inspection Checklist**

17. Is the Cable Anchor Bracket Angle hooked over the MATT™ CR Post 1 Top and is the cable is taut?

Correct Checklist answer: Yes

# APPENDIX 1: IDENTIFICATION OF END TREATMENTS WITH PHOTOS

**SOFTSTOP**

Example Photo of **SoftStop**

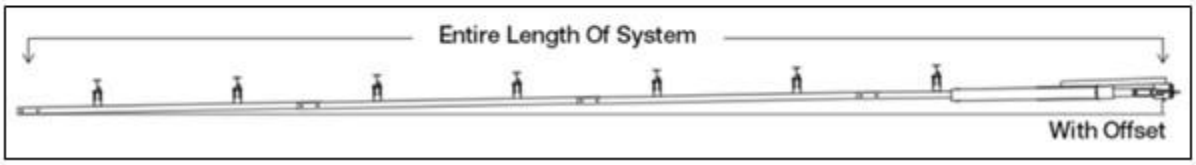
1. Narrow 7" wide steel impact head.

Example Photo of **SoftStop**

2. W-beam rail is flattened upon end-on impact.

Example Photo of **SoftStop**

3. 50'-9.5" length in a straight- line tangent to roadway or up to a 2' offset at Post 0.




Example Photo of **SoftStop**

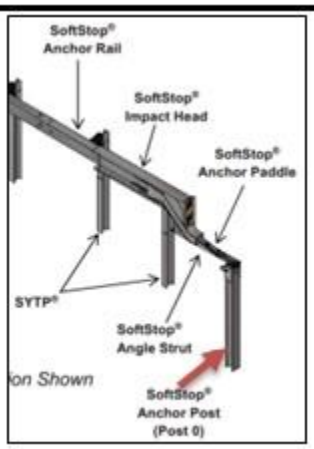
4. Attaches to 31" high guardrail (MASH TL-3).

Example Photo of **SoftStop**

5. Rail is not attached to Post 2.

Example Photo of **SoftStop**

6. No blockout at Post 1.

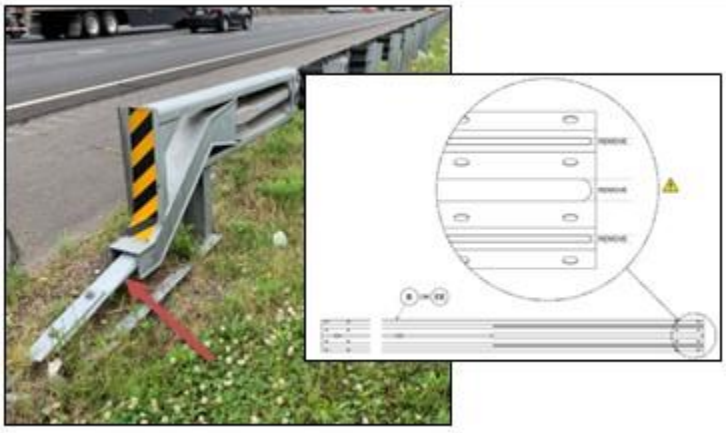



Example Photo of **SoftStop**

7. Embedded steel anchor upstream of Post 1.

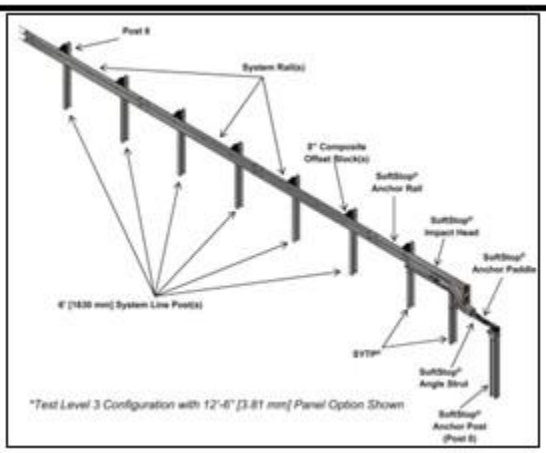
Example Photo of **SoftStop**

8. Includes a ground strut assembly upstream of Post 1.



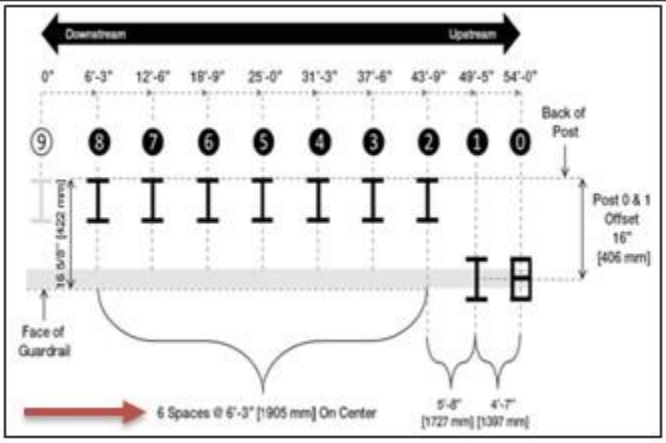
Example Photo of **SoftStop**

9. First rail segment is cut longitudinally, threaded through chute, connecting to anchor paddle which is connected to anchor upstream of Post 1.




Example Photo of **SoftStop**

10. Posts 1 & 2 Steel SYTP Posts, Posts 3-8 – Standard Steel Guardrail Posts.




Example Photo of **SoftStop**

11. Post spacing:
    - Posts 1 to 2: 5'-8"
    - Posts 2 through 8: 6'-3"

## MSKT (MSKT-SP-MGS)


Example Photo of **MSKT**

1. Square Impact Head

Example Photo of **MSKT**

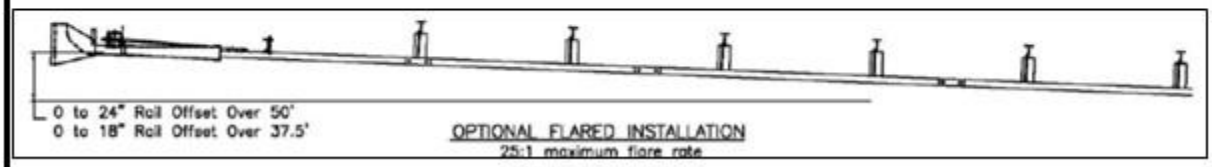
2. Rail is sequentially kinked out to the back as head slides along rail in end-on impact


Example Photo of **MSKT**

3. Impact head assembly has nearly solid panel on traffic side of the rail.

Example Photo of **MSKT**

4. Placed in straight-line taper – 1:25 or flatter.




Example Photo of **MSKT**

5. Second guardrail panel is 9'-4.5" long to get splices at mid-span.

Example Photo of **MSKT**

6. Breakaway cable assembly downstream of Post 1.

Example Photo of **MSKT**

7. Cable anchor attaches to back of rail with eight bolts.

Example Photo of **MSKT**

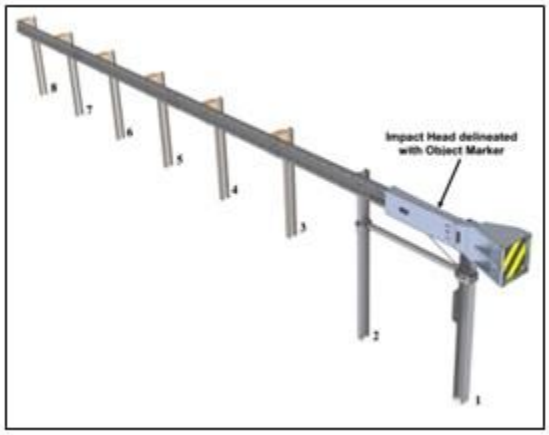
8. No blockout at Posts 1 & 2.

Example Photo of **MSKT**

9. Attaches to 31" high guardrail (MASH TL-3).

Example Photo of **MSKT**

10. Includes a ground strut assembly between Post 1 and Post 2.




Example Photo of **MSKT**

11. Posts 1 & 2 – SP upper and lower Post and one hinged breakaway Post, Posts 3-8 – Standard Steel guardrail posts.

Example Photo of **MSKT**

12. Includes bearing plate and retainer tie.

**SKT-SP (Steel Post)**

Example Photo of **SKT-SP**

1. 1'-8" W x 1'-8.25" H Square impact head.

Example Photo of **SKT-SP**

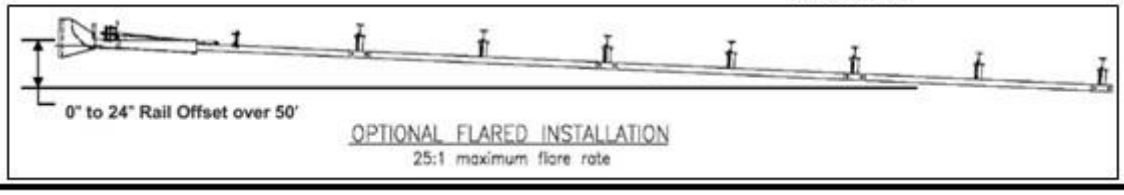
2. Rail is sequentially kinked out to the back as head slides along rail in end-on impact.

Example Photo of **SKT-SP**

3. Impact head assembly has 2 struts on traffic side.

Example Photo of **SKT-SP**

4. Installed in a straight-line taper - tangent to 25:1 allowed.




Example Photo of **SKT-SP**

5. Breakaway cable assembly downstream of Post 1.

Example Photo of **SKT-SP**

6. Cable anchor attaches to back of rail with 8 bolts.

Example Photo of **SKT-SP**

7. No blockout at Posts 1 & 2.

## SKT 350 Wood Post

Example Photo of **SKT-350 Wood Post**

1. 1'-8" W x 1'-8.25" H Square impact head.

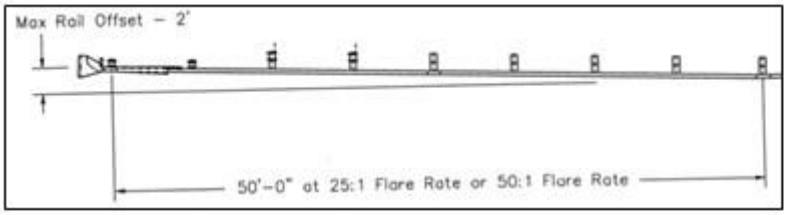
Example Photo of **SKT-350 Wood Post**

2. Rail is sequentially kinked out to the back as head slides along rail in end-on impact.

Example Photo of **SKT-350 Wood Post**

3. Impact head assembly has 2 struts on traffic side.

Example Photo of **SKT-350 Wood Post**




4. Installed in a straight-line taper - tangent to 25:1 allowed.

Example Photo of **SKT-350 Wood Post**

5. Breakaway cable assembly downstream of Post 1.

Example Photo of **SKT-350 Wood Post**

6. Cable anchor attaches to back of rail with 8 bolts.

Example Photo of **SKT-350 Wood Post**

7. No blockout at Posts 1 & 2.

Example Photo of **SKT-350 Wood Post**

8. Includes a ground strut assembly between Post 1 and Post 2.

Example Photo of **SKT-350 Wood Post**

9. Post combinations:

- Posts 1 & 2 – Steel Hinged, Posts 3-8 – Breakaway Wood Posts (CRT).
- Posts 1-8 – Breakaway Wood Post in steel tube (BCT).
- Posts 1 & 2 – Wood BCT in steel tube, Posts 3-8 –CRT.
- Posts 1-4 – Wood BCT in steel tube, Posts 5-8 – CRT.

## SKT-350 Steel Post

Example Photo of **SKT-350 Steel Post**

1. 1'-8" W x 1'-8.25" H Square impact head.

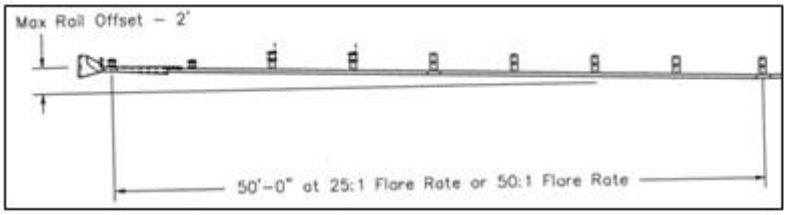
Example Photo of **SKT-350 Steel Post**

2. Rail is sequentially kinked out to the back as head slides along rail in end-on impact.

Example Photo of **SKT-350 Steel Post**

3. Impact head assembly has 2 struts on traffic side.

Example Photo of **SKT-350 Steel Post**




4. Installed in a straight-line taper - tangent to 25:1 allowed.

Example Photo of **SKT-350 Steel Post**

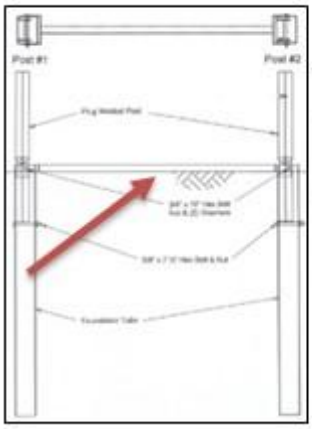
5. Breakaway cable assembly downstream of Post 1.

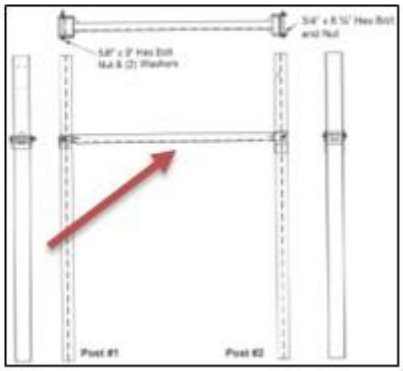
Example Photo of **SKT-350 Steel Post**

6. Cable anchor attaches to back of rail with 8 bolts.

Example Photo of **SKT-350 Steel Post**

7. No blockout at Posts 1 & 2.

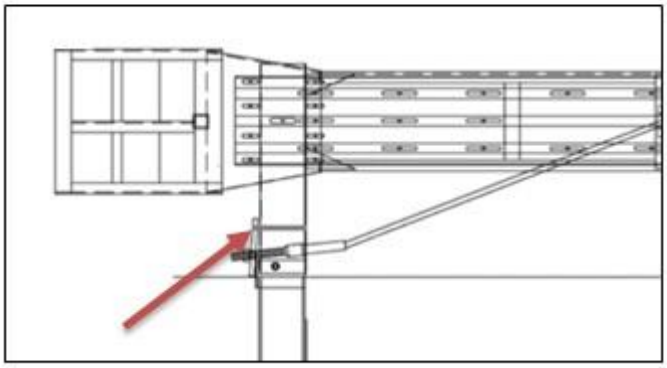




Example Photo of **SKT-350 Steel Post**

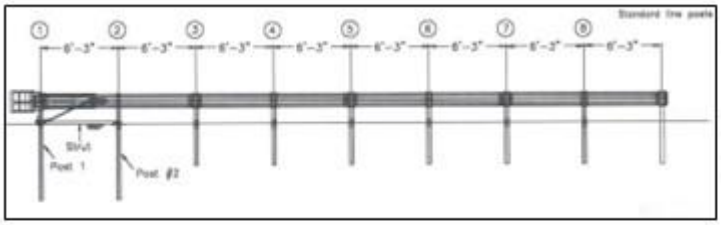
8. Includes a ground strut assembly between Post 1 and Post 2.

Example Photo of **SKT-350 Steel Post**



9. The steel post systems bearing plate uses a retainer/tie to prevent rotation.

Example Photo of **SKT-350 Steel Post**



10. Post combinations:

- Posts 1&2 – Steel Hinged Posts, Posts 3-8 – Plug Weld Steel Posts.
- Posts 1-8 – Steel Hinged Posts.
- Posts 1&2 – Plug Weld Steel post in steel tube, Posts 3-8 – Plug Weld Steel Posts.
- Posts 1&2 – Steel Hinged Posts, Posts 3-8 – Wood CRT Posts

**MFLEAT**

Example Photo of **MFLEAT**

1. Rectangular impact head.

Example Photo of **MFLEAT**

2. Triangular bar on top of impact head.

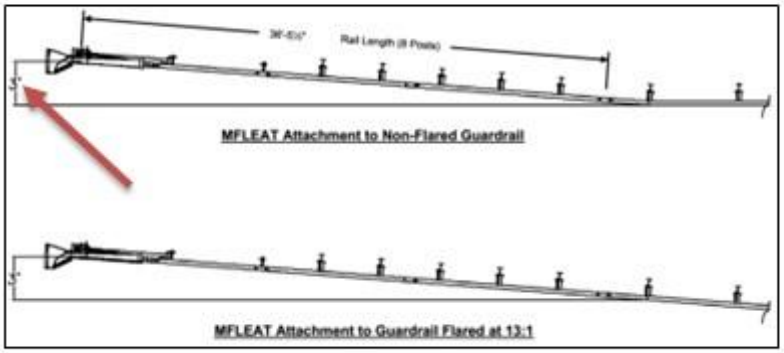
Example Photo of **MFLEAT**

3. Rail is sequentially kinked out to the front as head slides along rail in end-on impact.

Example Photo of **MFLEAT**

4. Impact head assembly has nearly solid panel on traffic side of rail and 'MFLEAT' is cut into the chute.

Example Photo of **MFLEAT**




5. Includes 3-ft fixed offset over the 39'-7" length.

Example Photo of **MFLEAT**

6. Breakaway cable assembly downstream of Post 1.

Example Photo of **MFLEAT**

7. Cable anchor attaches to back of rail with eight bolts.

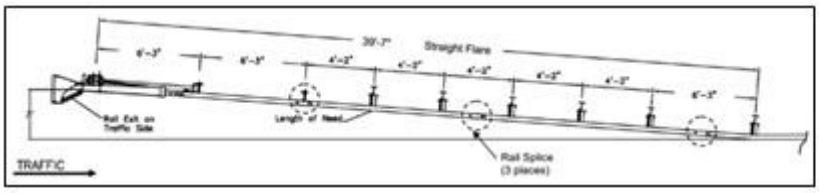
Example Photo of **MFLEAT**

8. No blockout at Posts 1, 2, & 3.

Example Photo of **MFLEAT**

9. Includes ground strut assembly between Post 1 and Post 2.

Example Photo of **MFLEAT**




10. The first 2 posts are spaced at 6'-3" and the remaining 5 posts spaced @ 4'-2".

Example Photo of **MFLEAT**

11. Rail lengths: 12'-6" end rail, 10'-5" second rail, 13'-6 ½" third rail.

Example Photo of **MFLEAT**

12. Includes bearing plate with retention bolt hole above anchor cable bolt hole. Retention bolt and cable hex nut should be present.

Example Photo of **MFLEAT**

13. Post Combinations:
- Posts 1-3 are bolted steel posts.
- Posts 4-8 are standard guardrail posts.

**FLEAT-SP (Steel Post)**

Example Photo of **FLEAT-SP**

1. Rectangular impact head - flanges all sides.

Example Photo of **FLEAT-SP**

2. Square bar on top of impact head.

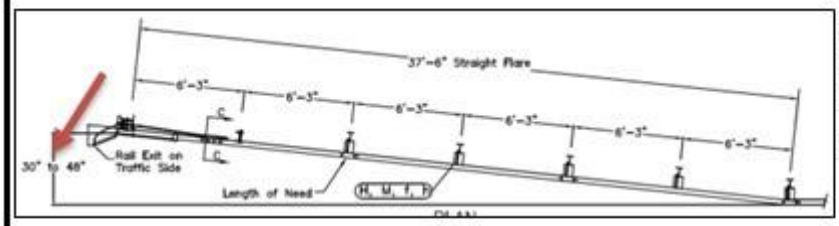
Example Photo of **FLEAT-SP**

3. Rail is sequentially kinked out to the front as head slides along rail in end-on impact.

Example Photo of **FLEAT-SP**

4. Impact head assembly has two struts on traffic side of rail.

Example Photo of **FLEAT-SP**




5. Installed in a straight-line taper – 2.5' to 4' offset at upstream end.

Example Photo of **FLEAT-SP**

6. Rail not attached to Post 1 or to Post 3.

Example Photo of **FLEAT-SP**

7. Breakaway cable assembly downstream of Post 1.

Example Photo of **FLEAT-SP**

8. Cable anchor attaches to back of rail with 8 bolts.

Example Photo of **FLEAT-SP**

9. Cable not inside feeder chute.

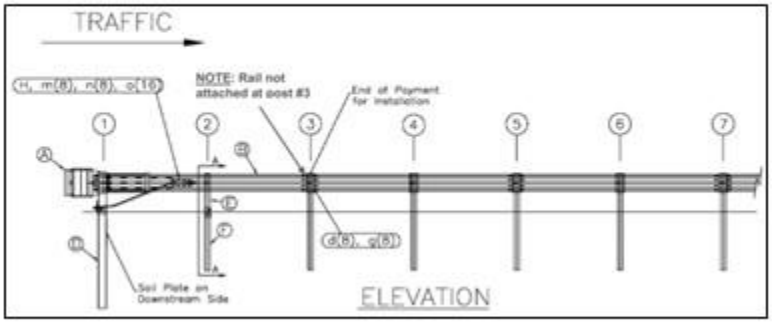
Example Photo of **FLEAT-SP**

10. No blockout at Posts 1 & 2.

Example Photo of **FLEAT-SP**

11. No ground strut assembly between Post 1 and Post 2.

Example Photo of **FLEAT-SP**




12. Post 1 is 6"x6" tube with W6x15# lower post, Post 2 is W6x9# post with W6x9# lower post, and Posts 3-7 are Standard Steel Guardrail Posts.

## FLEAT-350 Steel Post

Example Photo of **FLEAT-350 Steel Post**

1. Rectangular impact head – flanges all sides.

Example Photo of **FLEAT-350 Steel Post**

2. Square bar on top of impact head.

Example Photo of **FLEAT-350 Steel Post**

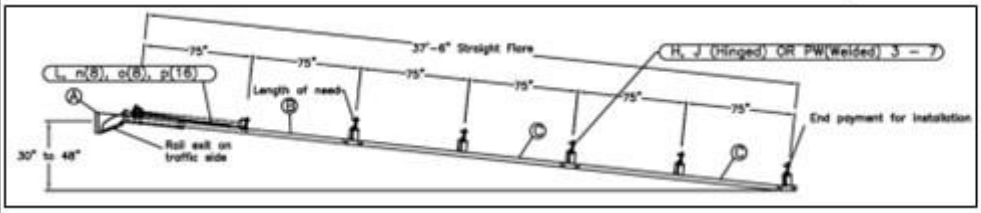
3. Rail is sequentially kinked out to the front in end-on impact.

Example Photo of **FLEAT-350 Steel Post**

4. Impact head assembly has two struts on traffic side.

Example Photo of **FLEAT-350 Steel Post**

5. Installed in a straight-line taper – 2'-6" to 4'-0" offset at upstream end.




Example Photo of **FLEAT-350 Steel Post**

6. Rail not attached to Post 1 or to Post 3.

Example Photo of **FLEAT-350 Steel Post**

7. Breakaway cable assembly downstream of Post 1.

Example Photo of **FLEAT-350 Steel Post**

8. Cable anchor attaches to back of rail with 8 bolts.

Example Photo of **FLEAT-350 Steel Post**

9. Cable not inside feeder chute.

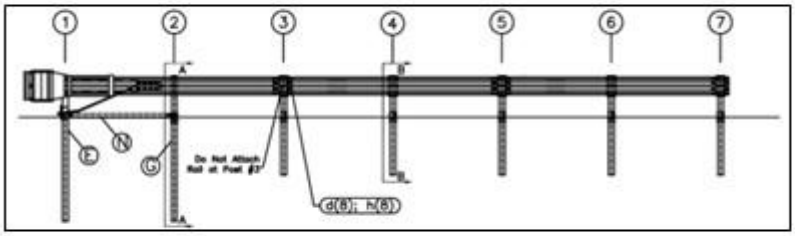
Example Photo of **FLEAT-350 Steel Post**

10. No blockout at Posts 1 & 2

Example Photo of **FLEAT-350 Steel Post**

11. Includes a ground strut assembly between Post 1 and Post 2.

Example Photo of **FLEAT-350 Steel Post**




12. Post combinations:

- Posts 1 & 2 – Steel Hinged Posts, Posts 3-7 – Plug Weld Steel Posts.
- Posts 1-7 – Steel Hinged Posts.
- Posts 1 & 2 – Plug Weld Steel Post in steel tube, Posts 3-7 – Plug Weld Steel Posts.

## FLEAT-350 Wood Post

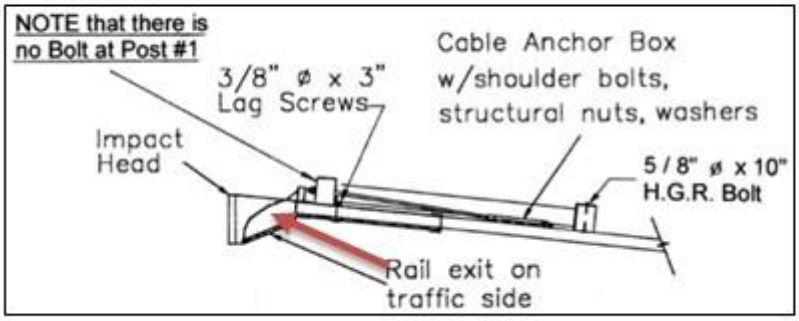
Example Photo of **FLEAT-350 Wood Post**

1. Rectangular impact head – flanges all sides.

Example Photo of **FLEAT-350 Wood Post**

2. Square bar on top of impact head.

Example Photo of **FLEAT-350 Wood Post**

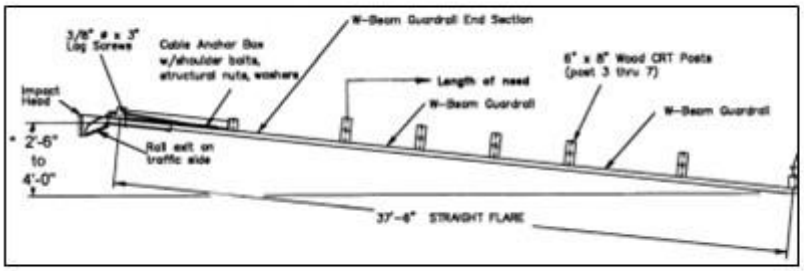



3. Rail is sequentially kinked out to the front as head slides along rail in end-on impact.

Example Photo of **FLEAT-350 Wood Post**

4. Impact head assembly has two struts on traffic side of rail.

Example Photo of **FLEAT-350 Wood Post**




5. Installed in a straight-line taper – 2'-6" to 4'-0" offset at upstream end.

Example Photo of **FLEAT-350 Wood Post**

6. Rail not attached to Post 1 or to Post 3.

Example Photo of **FLEAT-350 Wood Post**

7. Breakaway cable assembly downstream of Post 1.

Example Photo of **FLEAT-350 Wood Post**

8. Cable anchor attaches to back of rail with 8 bolts.

Example Photo of **FLEAT-350 Wood Post**

9. Cable not inside feeder chute.

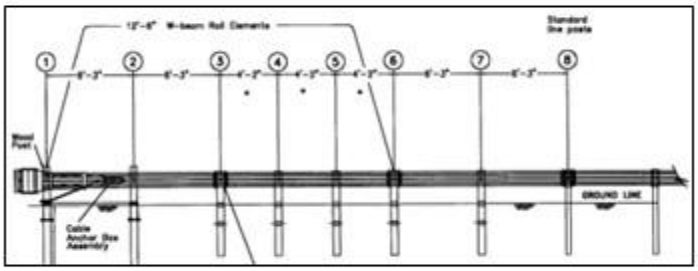
Example Photo of **FLEAT-350 Wood Post**

10. No blockout at Posts 1 & 2.

Example Photo of **FLEAT-350 Wood Post**

11. Includes a ground strut assembly between Post 1 and Post 2.

Example Photo of **FLEAT-350 Wood Post**



12. Post combinations:

- Posts 1 & 2 – Steel Hinged, Posts 3-7 – Breakaway Wood Posts (CRT).
- Posts 1&2 – Wood BCT in steel tube, Posts 3-7 – Breakaway Wood (CRT).
- Older system could have 8 posts similar to (a) with Posts 3-8 Breakaway Wood (CRT).

**FLEAT-MT**

Example Photo of **FLEAT-MT**

1. Rectangular impact heads - flanges all sides.

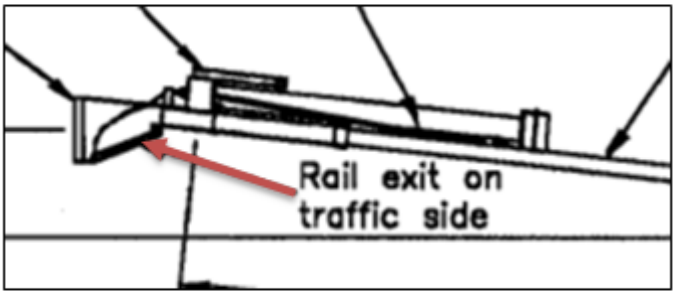
Example Photo of **FLEAT-MT**

2. Square bar on top of impact heads.

Example Photo of **FLEAT-MT**

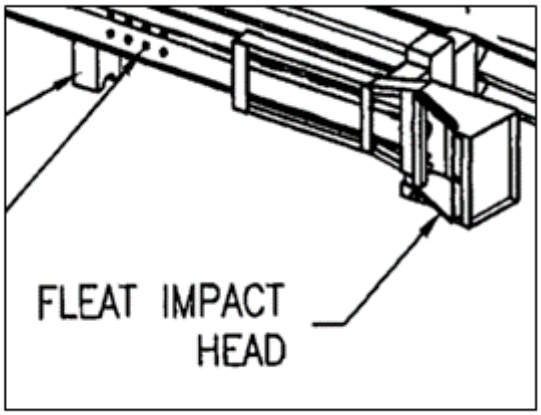
3. Rail is not attached to Post 1 or to Post 3.

Example Photo of **FLEAT-MT**




4. Rail is sequentially kinked out to the front as head slides along rail in end-on impact.

Example Photo of **FLEAT-MT**

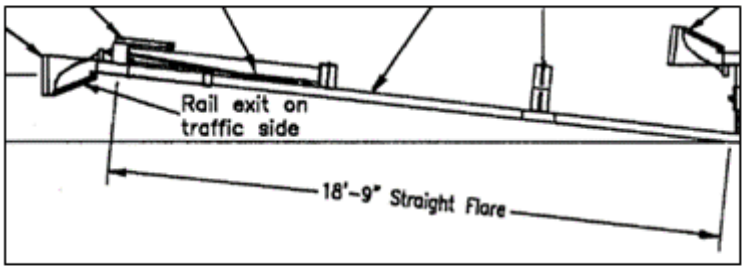



5. Impact head assemblies have 2 struts on traffic side of rail.

Example Photo of **FLEAT-MT**

6. Installed in a median.

Example Photo of **FLEAT-MT**



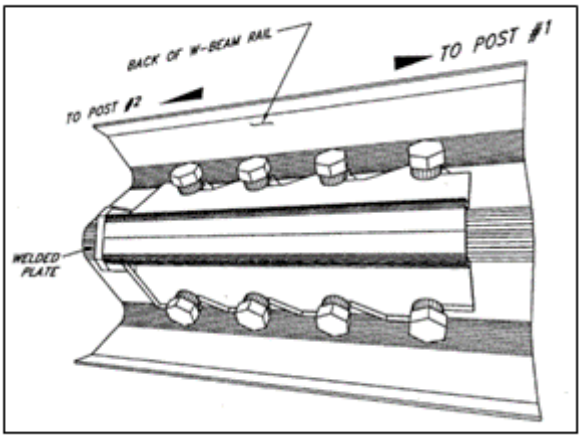

7. Post 1 through 4 installed at a straight-line taper (2'-0" offset for upstream head).

Example Photo of **FLEAT-MT**

8. Breakaway cable assembly downstream of Post 1.

Example Photo of **FLEAT-MT**

9. Breakaway cable assembly downstream of Post 4 (for second head).




Example Photo of **FLEAT-MT**

10. Each cable anchor attaches to back of rail with 8 bolts.

Example Photo of **FLEAT-MT**

11. Cable not inside feeder chute (for each head).

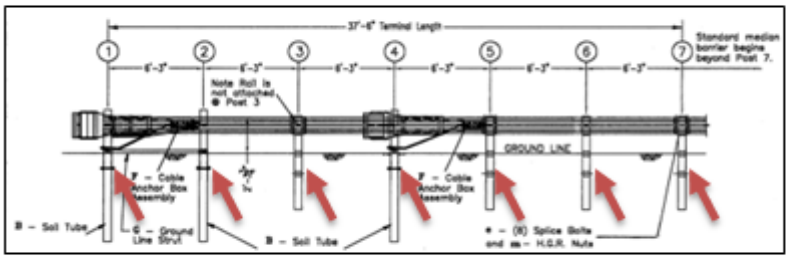
Example Photo of **FLEAT-MT**

12. No blockout at Posts 1 & 2.

Example Photo of **FLEAT-MT**

13. Ground strut assembly between Post 1 and Post 2.

Example Photo of **FLEAT-MT**



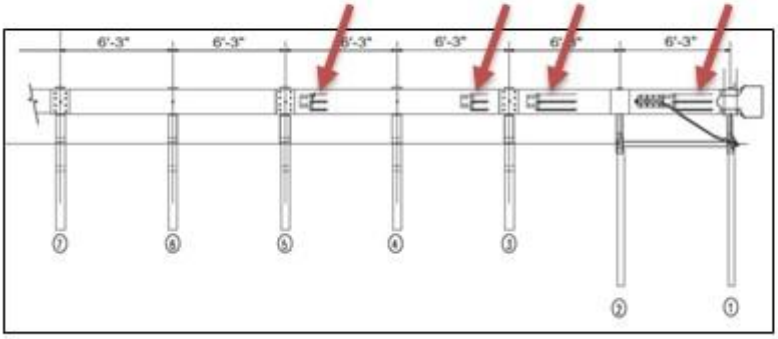

14. Posts 1, 2 & 4 – Wood BCT in steel tube, Posts 3, 5-7 – Breakaway Wood (CRT).

## SRT-350 6 Post Wood

Example Photo of **SRT-350 6 Post Wood**

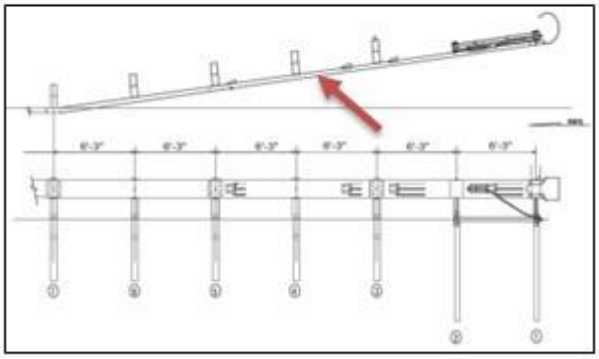
1. Curved, buffered steel end section.

Example Photo of **SRT-350 6 Post Wood**



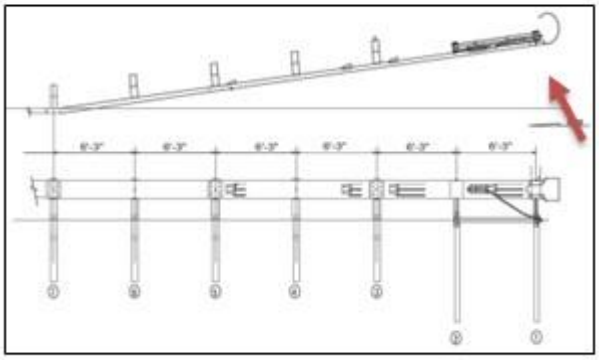
2. W-Beam rail has horizontal slots in first and second rail segments.

Example Photo of **SRT-350 6 Post Wood**



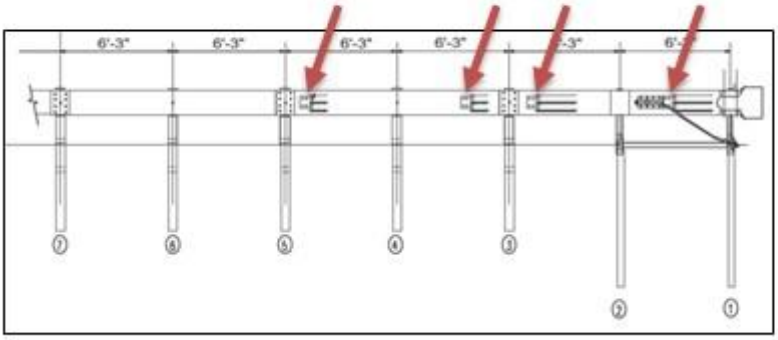
3. 37'-6" long in a straight-line flare.

Example Photo of **SRT-350 6 Post Wood**



4. Upstream end has 4' offset.

Example Photo of **SRT-350 6 Post Wood**



5. Slot guard brackets attached to back of rail at downstream end of slots (four total).

Example Photo of **SRT-350 6 Post Wood**

6. Rail is not attached to Post 2.

Example Photo of **SRT-350 6 Post Wood**

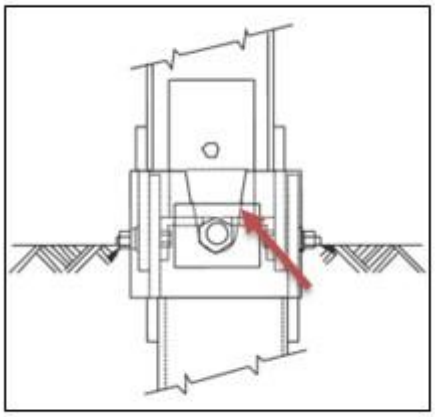
7. No blockouts at Posts 1 & 2.

Example Photo of **SRT-350 6 Post Wood**

8. Breakaway cable assembly downstream of Post 1.

Example Photo of **SRT-350 6 Post Wood**

9. Cable anchor attaches to back of rail with eight bolts through the rail.



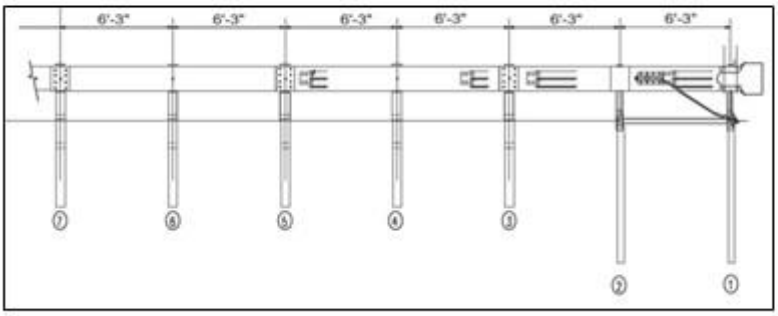
Example Photo of **SRT-350 6 Post Wood**

10. Post 1 V-notch bearing plate (notch faces up).

Example Photo of **SRT-350 6 Post Wood**

11. Includes a ground strut assembly between Post 1 and Post 2.

Example Photo of **SRT-350 6 Post Wood**




12. Posts 1 & 2 – Steel HBA, Posts 3-6 – Breakaway Wood (CRT).

## SRT-350 8 Post Wood

Example Photo of **SRT-350 8 Post Wood**

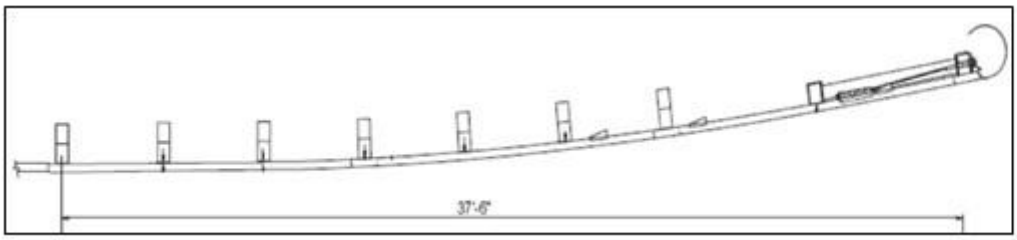
1. Curved, buffered steel end section.

Example Photo of **SRT-350 8 Post Wood**

2. W-Beam rail has horizontal slots in first and second rail segments.

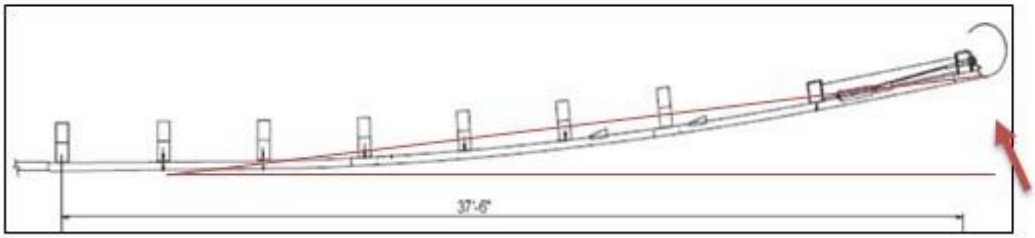
Example Photo of **SRT-350 8 Post Wood**

3. 37'-6" long in a parabolic curve.

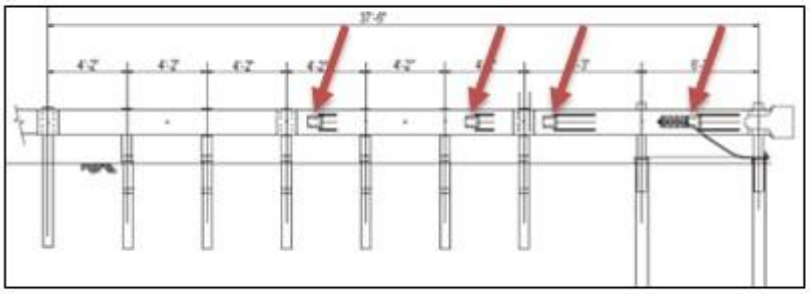


Example Photo of **SRT-350 8 Post Wood**

4. Upstream end has 4' offset.



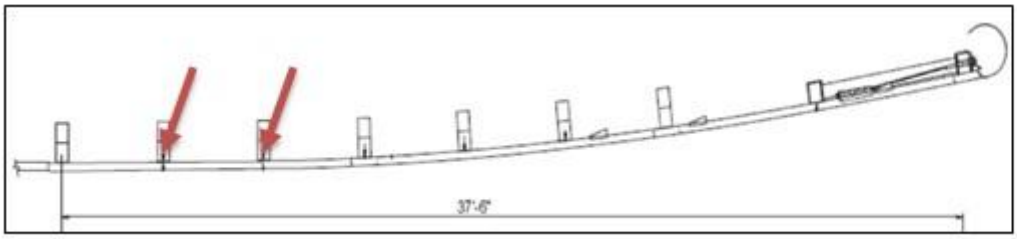

Example Photo of **SRT-350 8 Post Wood**



5. Slot guard brackets attached to back of rail at downstream end of slots (four total).

Example Photo of **SRT-350 8 Post Wood**

6. Rail is not attached to Posts 7 & 8.



Example Photo of **SRT-350 8 Post Wood**

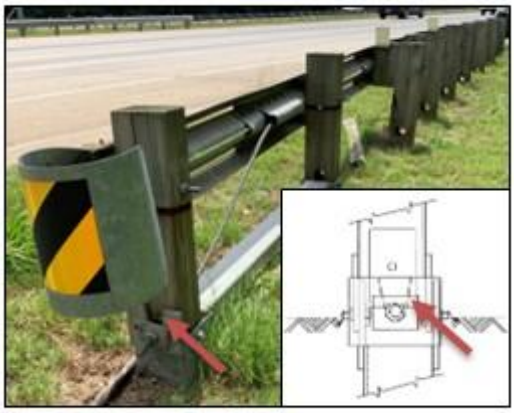
7. No blockouts at Posts 1 & 2.

Example Photo of **SRT-350 8 Post Wood**

8. Breakaway cable assembly downstream of Post 1.

Example Photo of **SRT-350 8 Post Wood**

9. Cable anchor attaches to back of rail with eight bolts through the rail.



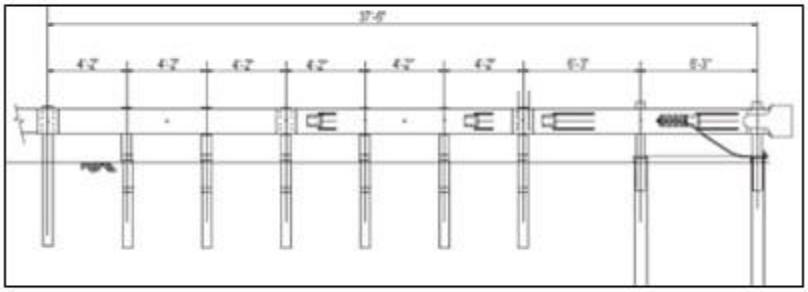
Example Photo of **SRT-350 8 Post Wood**

10. V-notch bearing plate (notch faces up).

Example Photo of **SRT-350 8 Post Wood**

11. Includes a ground strut assembly between Post 1 and Post 2.

Example Photo of **SRT-350 8 Post Wood**

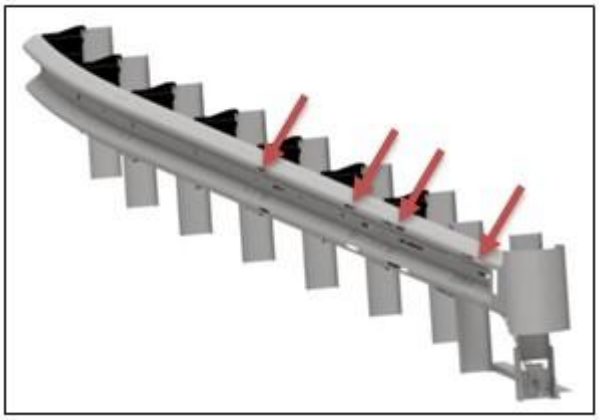


12. Posts 1 & 2 – Wood BCT in steel tube, Posts 3-8 – Breakaway Wood (CRT).

## SRT-27 Steel Post

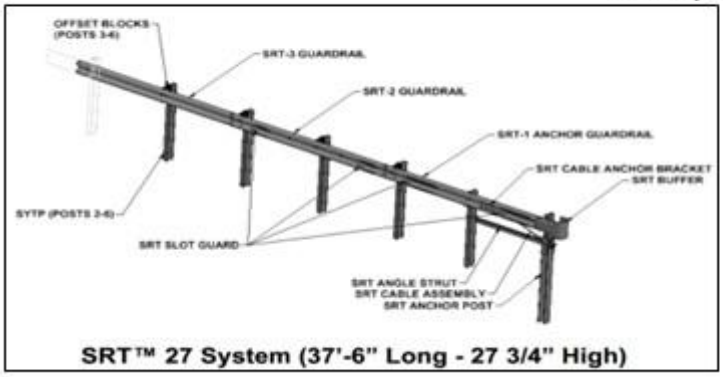
Example Photo of **SRT-27 Steel Post**

1. Curved, buffered steel end section.



Example Photo of **SRT-27 Steel Post**

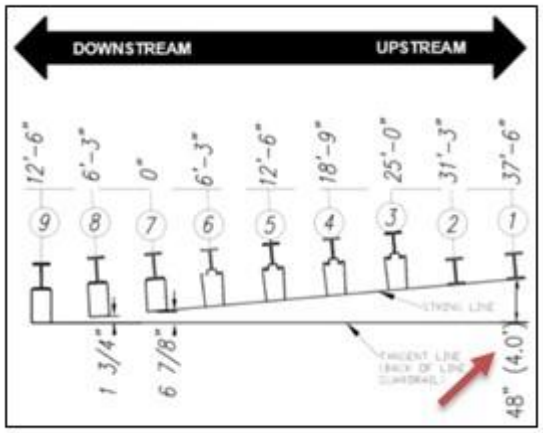
2. W-Beam rail has horizontal slots in first and second rail segments.




SRT™ 27 System (37'-6" Long - 27 3/4" High)

Example Photo of **SRT-27 Steel Post**

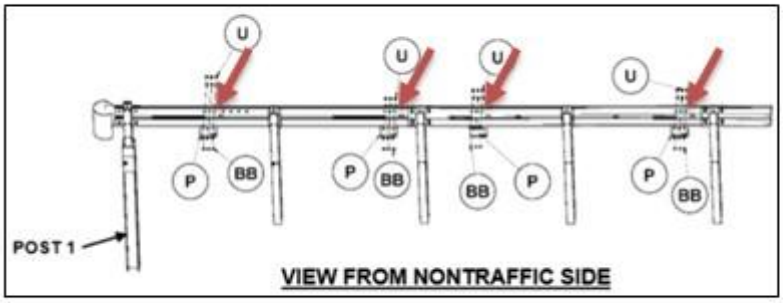
3. 37'-6" long in a straight-line flare.




Example Photo of **SRT-27 Steel Post**

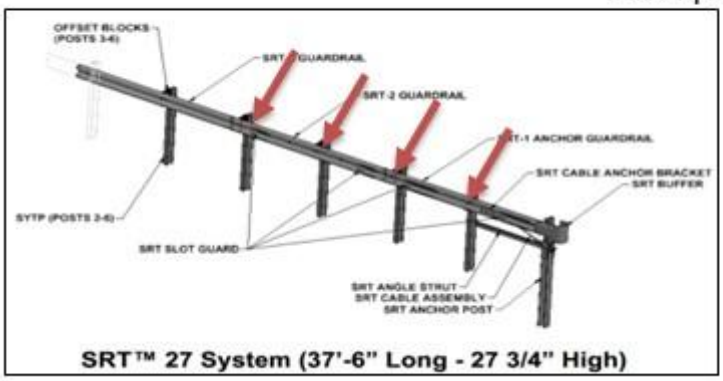
4. Upstream end has 4' offset.

Example Photo of **SRT-27 Steel Post**




5. Slot guard brackets attached to back of rail at downstream end of slots (four total).

Example Photo of **SRT-27 Steel Post**

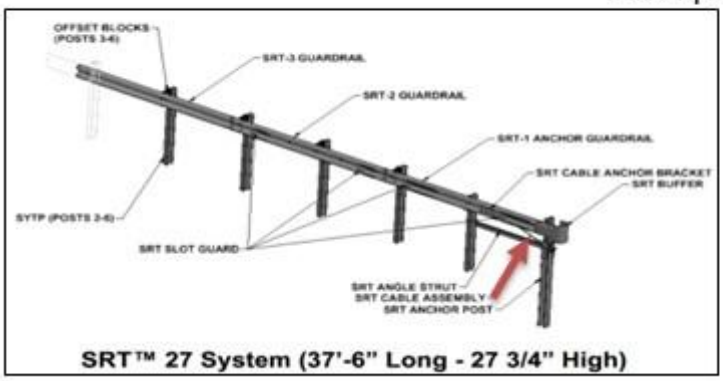



6. Rail is not attached to Posts 2 through 5.

Example Photo of **SRT-27 Steel Post**

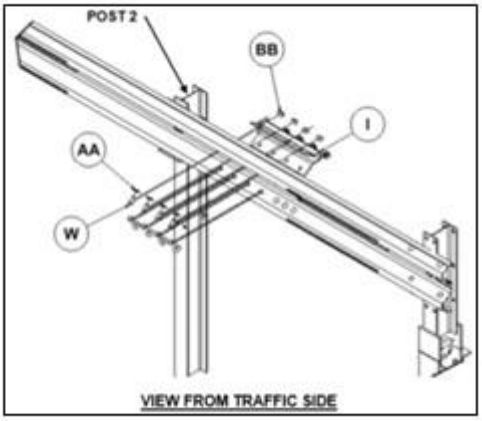
7. No blockouts at Posts 1 & 2.

Example Photo of **SRT-27 Steel Post**




SRT™ 27 System (37'-6" Long - 27 3/4" High)

8. Breakaway cable assembly downstream of Post 1.




Example Photo of **SRT-27 Steel Post**

9. Cable anchor attaches to back of rail with eight bolts through the rail.

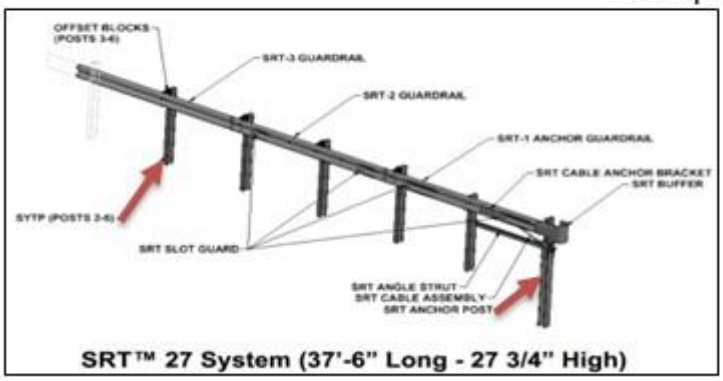
Example Photo of **SRT-27 Steel Post**

10. No bearing plate – uses cable anchor bracket within Post 1.

Example Photo of **SRT-27 Steel Post**

11. Includes a ground strut assembly between Post 1 and Post 2.

Example Photo of **SRT-27 Steel Post**




SRT™ 27 System (37'-6" Long - 27 3/4" High)

12. Posts 1 – Steel Cable Release Post, Posts 2-6 – Steel SYTP Posts.

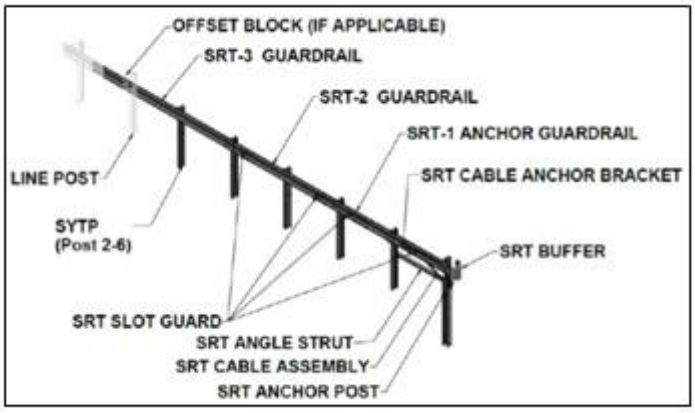
**SRT-31**

Example Photo of **SRT-31**

1. Curved, buffered steel end section.

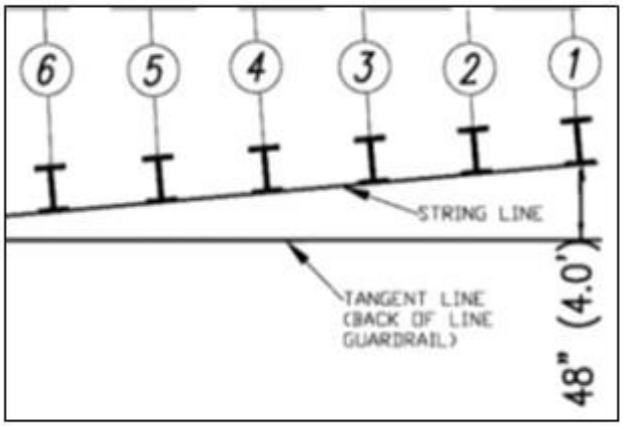
Example Photo of **SRT-31**

2. W-Beam rail has horizontal slots in first and second rail segments.




Example Photo of **SRT-31**

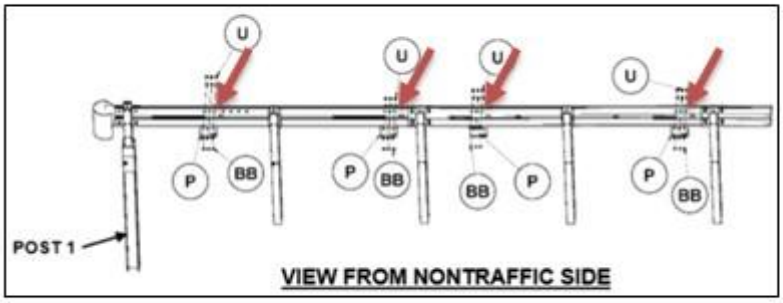
3. 43'-4 ½" or 40'-7 ½" long in a straight-line flare.




Example Photo of **SRT-31**

4. SRT™ 31 System has a 4'0" [1.22 m] offset.

Example Photo of **SRT-31**




5. Slot guard brackets attached to back of rail at downstream end of slots (four total).

Example Photo of **SRT-31**

6. SRT™ -1 Anchor Guardrail and SRT™ -2 and -3 Guardrails are not bolted to posts 2-5.

Example Photo of **SRT-31**

7. No blockouts.

Example Photo of **SRT-31**

8. Breakaway cable assembly downstream of Post 1.

Example Photo of **SRT-31**

9. Cable anchor attaches to back of rail with eight bolts through the rail.

Example Photo of **SRT-31**

10. No bearing plate – uses cable anchor bracket within Post 1.

Example Photo of **SRT-31**

11. Includes a ground strut assembly between Post 1 and Post 2.

Example Photo of **SRT-31**

12. Posts 1 – Steel Cable Release Post, Posts 2-6 – Steel SYTP Posts.

## ET Plus Steel Post

Example Photo of **ET Plus Steel Post**

1. 1'-3" W x 2'-4" H Rectangular Impact head.

Example Photo of **ET Plus Steel Post**

2. Front of impact head has flanges on sides only.

Example Photo of **ET Plus Steel Post**

3. Rail is extruded out to the back as head slides along rail in end-on impact.

Example Photo of **ET Plus Steel Post**

4. Impact head assembly has one strut on traffic side.

Example Photo of **ET Plus Steel Post**

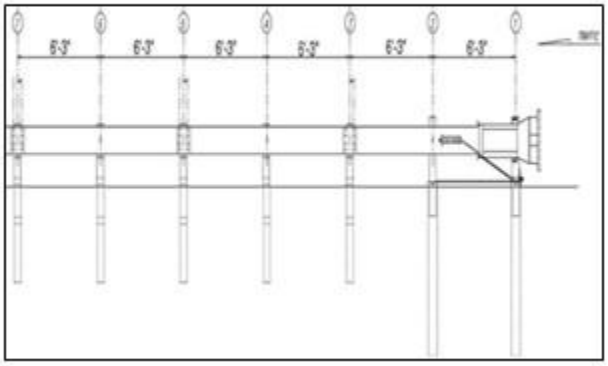
5. Breakaway cable assembly downstream of Post 1.

Example Photo of **ET Plus Steel Post**

6. Cable anchor attaches to back of rail with six tabs protruding through the rail.

Example Photo of **ET Plus Steel Post**

7. Includes a ground strut assembly between Post 1 and Post 2.



Example Photo of **ET Plus Steel Post**

8. Post combinations:
   - Posts 1-8 – HBA.
   - Post 1 – HBA, Posts 2-8 – Steel Yielding Terminal Posts (SYTP).
   - Posts 1 & 2 – Steel Hinged Breakaway (HBA), Posts 3-8 – Steel Line Posts.

## ET Plus Wood Post

Example Photo of **ET Plus Wood Post**

1. 1'-3" W x 2'-4" H Rectangular Impact head.

Example Photo of **ET Plus Wood Post**

2. Front of impact head has flanges on sides only.

Example Photo of **ET Plus Wood Post**

3. Rail is extruded out to the back as head slides along rail in end-on impact.

Example Photo of **ET Plus Wood Post**

4. Impact head assembly has one strut on traffic side.

Example Photo of **ET Plus Wood Post**

5. Breakaway cable assembly downstream of Post 1.

Example Photo of **ET Plus Wood Post**

6. Cable anchor attaches to back of rail with six tabs protruding through the rail.

Example Photo of **ET Plus Wood Post**

7. Includes a ground strut assembly between Post 1 and Post 2.

Example Photo of **ET Plus Wood Post**

8. Posts 1 & 2 – Wood BCT in steel tube, Posts 3-8 – Breakaway Wood.

**X-Lite (Flared)**

**X-Lite (Tangent)**

Example Photo of **X-Lite (Tangent)**

1. Rectangular impact head with flanges on sides only.

Example Photo of **X-Lite (Tangent)**

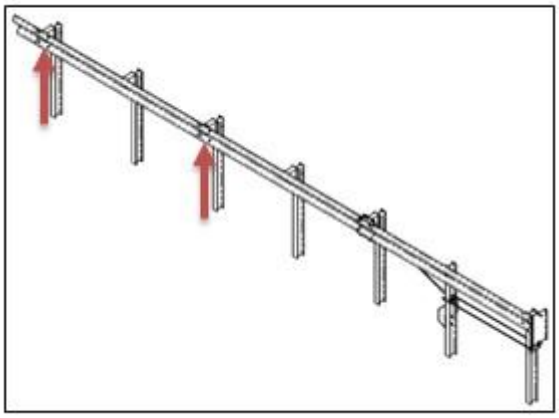
2. W-beam rail telescopes rearward in end-on impact.

Example Photo of **X-Lite (Tangent)**

3. Installed in a straight-line taper or tangent to roadway.

Example Photo of **X-Lite (Tangent)**

4. Rail not attached to Posts 3 & 5.



Example Photo of **X-Lite (Tangent)**

5. Shear bolts used at Posts 5 & 7.

Example Photo of **X-Lite (Tangent)**

6. Breakaway cable assembly downstream of Post 2.

Example Photo of **X-Lite (Tangent)**

7. Cable anchor attaches to back of rail immediately upstream of Post 3.

Example Photo of **X-Lite (Tangent)**

8. No blockout at Posts 1 & 2.

Example Photo of **X-Lite (Tangent)**

9. Includes two ground strut tension rods between Post 1 and Post 2.

## Bridge Connection – W Beam

Example Photo of **Bridge Connection – W Beam**

1. Special End shoe is attached to concrete barrier with 4 bolts (with nuts, washers, and galvanized plates).

Example Photo of **Bridge Connection – W Beam**

2. W Beam/End shoe splice is lapped in the direction of traffic.

Example Photo of **Bridge Connection – W Beam**

3. Not permitted at approaches to concrete structures.

## Bridge Connection – Long

Example Photo of **Bridge Connection - Long**

1. Includes T-Beam end shoe attached to concrete bridge barrier or bridge wall.

Example Photo of **Bridge Connection - Long**

2. Two 12'6" pieces of T-Beam are double-nested.

Example Photo of **Bridge Connection - Long**

3. Includes a transition piece with 3'-1 ½ " post spacing.

Example Photo of **Bridge Connection - Long**

4. End shoe is attached with 5 bolts (or threaded rods with nuts and washers) and galvanized plates.

Example Photo of **Bridge Connection - Long**

5. Post count/placement matches bridge connection standard.

**Bridge Connection – Short**

Example Photo of **Bridge Connection - Short**

1. Includes T-Beam end shoe attached to concrete bridge barrier or Bridge wall.

Example Photo of **Bridge Connection - Short**

2. Includes a transition piece with 3'-1 ½ " post spacing.

Example Photo of **Bridge Connection - Short**

3. End shoe is attached with 5 bolts or threaded rods, with nuts, washers, and galvanized plates on back side.

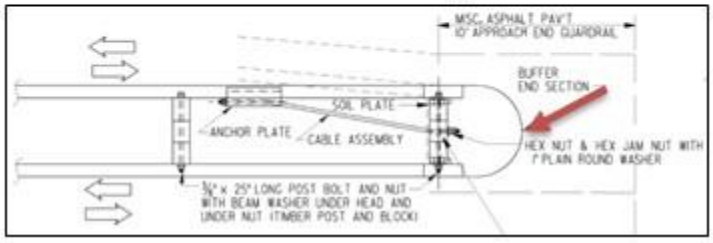
Example Photo of **Bridge Connection - Short**

4. Post count/placement matches bridge connection standard.

## Double Facing

Example Photo of **Double Facing Cable Anchor**

1. Includes buffer end section on double facing rail.




Example Photo of **Double Facing Cable Anchor**

2. Cable assembly downstream of post 1.

Example Photo of **Double Facing Cable Anchor**

3. Cable anchor plate attaches to back of rail with eight bolts through the rail.

Example Photo of **Double Facing Cable Anchor**

4. Bearing plate with two nails to prevent rotation.

## Type 1

Example Photo of **Type 1**

1. Curved, buffered steel end section.

Example Photo of **Type 1**

2. Consists of 2 short timber posts with foundation tubes and one standard guardrail post.

Example Photo of **Type 1**

3. Includes strut between post 1 and 2.

Example Photo of **Type 1**

4. Cable assembly downstream of post 1.

Example Photo of **Type 1**

5. Bearing plate with two nails to prevent rotation.

Example Photo of **Type 1**

6. Cable anchor plate attaches to back of rail with eight bolts through the rail.

**Type 1 (Old)**

Example Photo of **Type 1 (Old)**

5. Cable anchor plate attaches to back of rail with eight bolts through the rail.

Example Photo of **Type 1 (Old)**

1. Flared or rounded end section.

Example Photo of **Type 1 (Old)**

2. No ground strut.

Example Photo of **Type 1 (Old)**

3. Cable assembly is attached to post one with bearing plate and hex nut or is attached to deadman anchor.

Example Photo of **Type 1 (Old)**

4. Cable has 5 cable clips if attached to deadman anchor.

**Type 5**

Example Photo of **Type 5**

1. Rails twists to attach to horizontal concrete surface.

Example Photo of **Type 5**

2. Includes w beam end shoe.

Example Photo of **Type 5**

3. No impact head.

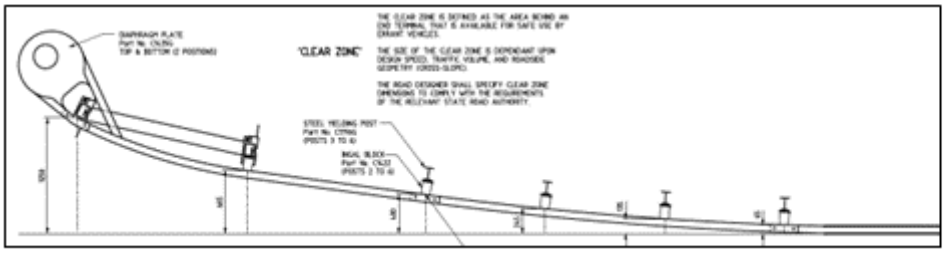
## MELT (Modified Eccentric Loader Terminal)

Example Photo of **MELT**

1. Rounded steel buffered end assembly with two diaphragm plates (could be bolted or welded).

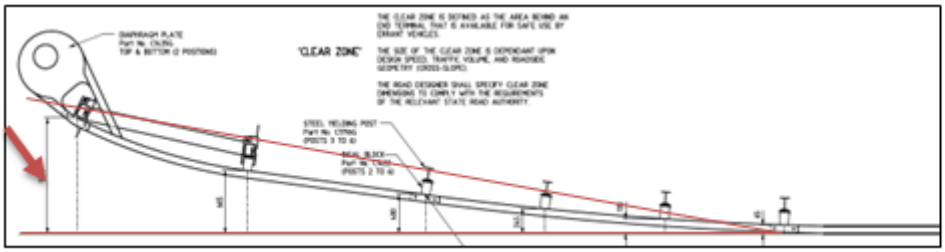
Example Photo of **MELT**

2. 26' long in a parabolic curve.



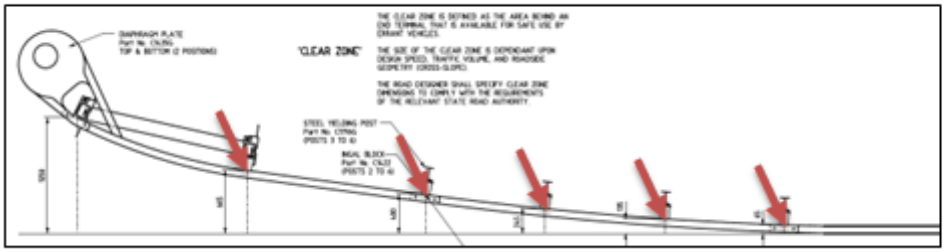

Example Photo of **MELT**

3. Upstream end has 4' offset.



Example Photo of **MELT**

4. Rail is not attached to Posts 2 - 6.

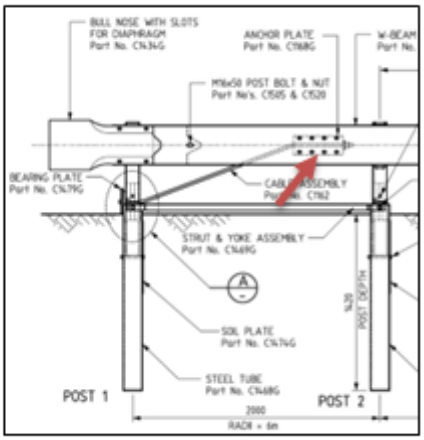



Example Photo of **MELT**

5. No blockout at Post 1.

Example Photo of **MELT**

6. Breakaway cable assembly downstream of Post 1.



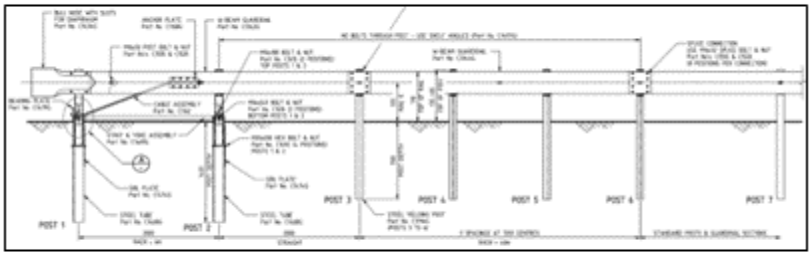

Example Photo of **MELT**

7. Cable anchor attaches to back of rail with eight bolts upstream of Post 2.

Example Photo of **MELT**

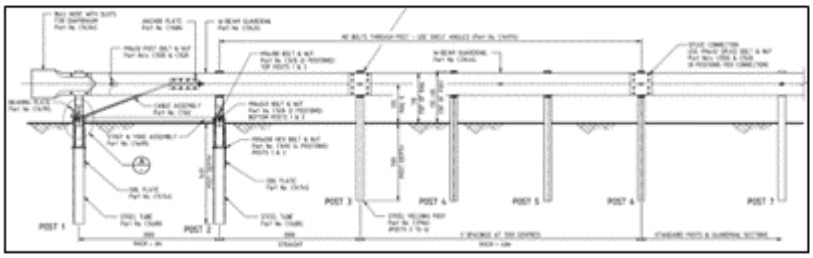
8. Includes ground strut assembly between Post 1 and Post 2.

Example Photo of **MELT**



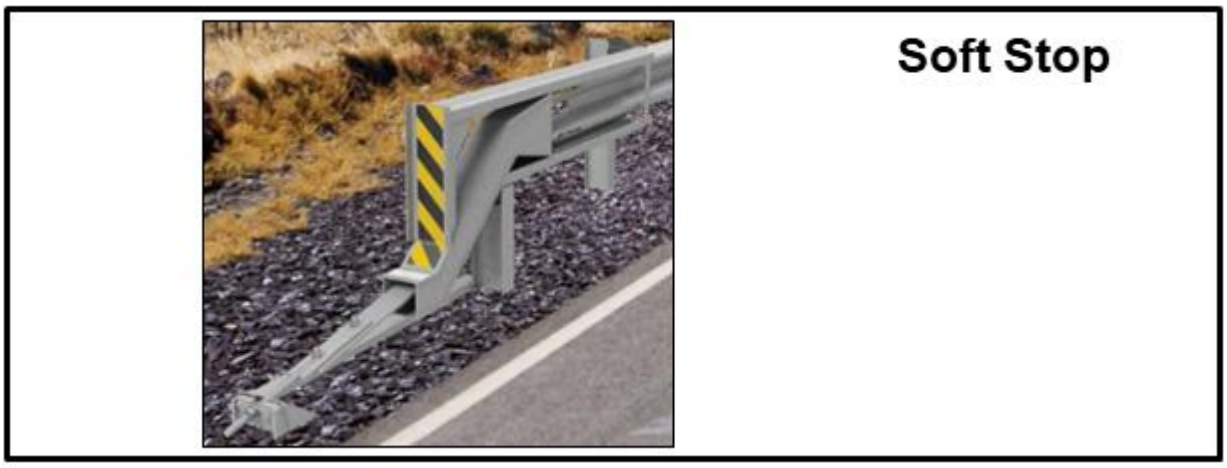
9. Post Spacing: 1 to 3: 6'-3"; 3 to 6: 4'-2"; 6 to 8: 6'-3".

Example Photo of **MELT**



10. Posts 1 & 2 – Wood BCT in steel tube, Posts 3-6 – Breakaway Wood (CRT), Posts 7-8 – Standard Wood Guardrail Posts. (Some MELT systems include steel posts throughout.)

# APPENDIX 2: END TREATMENT QUICK REFERENCE





**SKT 350 Wood Post**

**SKT 350 Steel Post**

**MFLEAT**

**FLEAT-SP**

**FLEAT-350**
**Steel Post**

**FLEAT-350**
**Wood Post**

FLEAT-MT

SRT-350 6 Post Wood

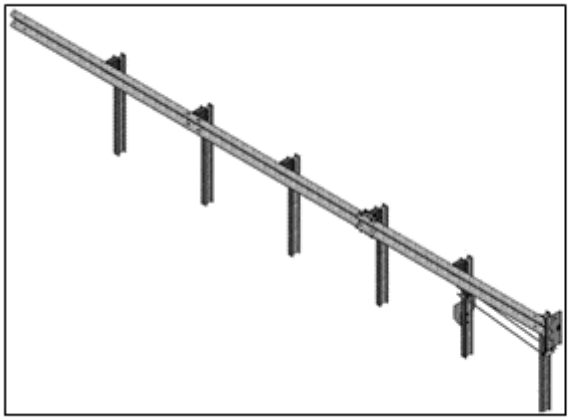
SRT-350 8 Post Wood

SRT-27-SP

SRT-31

ET Plus Steel Post

**ET Plus Wood Post**



**X-Lite (Flared)**

**X-Lite (Tangent)**

**MELT (Modified Eccentric Loader Terminal)**

**ET-2000 Steel Post**

**ET-2000 Wood Post**

**CAT-350**

**MATT ™ (Median Attenuating TREND® Terminal)**

**X-Tension Tangent**

X-Tension
Flared

X-MAS

MAX-Tension

**MAX-Tension Median**

**Bridge Connection – W Beam**

**Bridge Connection - Long**

**Bridge Connection - Short**

**Type 5 (Texas Twist)**

**Double Facing**

**Type 1**

**Type 1 Old**

# APPENDIX 3: STRIKE APP ATTRIBUTION REQUIREMENTS

**Fields to be Completed when Submitting a Strike App Point**

- **Direction:** Direction of travel on the road the guardrail is on. NB, SB, EB, WB, clockwise (Inside loop), Counterclockwise (outside loop)
- **Side of Road:** Side of road the guardrail is on. Left/Right
- **Location or Milepost:** Measure milepost from milepost reference layer in Arcadis Inventory and Inspection map. If the milepost is not in that map, reference mileposts in the field.
- **Rail Type:** W-Beam, T-Beam, Double Facing, Attenuator
- **Anchor Type** – Type 12 (approach), Type 1 (Trailing), or Type 6 (Bridge Connection), no value needed for attenuator
- **Damaged Height** – height at rail that connects to it (31 or 27)
- **Repair Height** – always 31” (31 or 27)
- **Ramp:** Is guardrail on a ramp. Yes/No
- **Status**
    - Non-Functional for all guardrail repairs.
    - L1A or L2A for attenuators.
        - L1A: Attenuator is 50% or more damaged.
        - L2A: Attenuator is 50% or less damaged.
- **Damaged Length:** Wheel off damaged length. For damage modes of damaged end post, missing anchor cable, missing lag screws causing impact head tilt onto the ground, incorrect rail lapping, damage length will be 0 but general notes will include the damaged mode information for the district.
- **Reported By:** Arcadis Inspector
- **General Notes:**
    - The damage mode selected from the Strike App Reporting Criteria document.
    - If Clear Strike (multiple damage modes), just log in general notes “Clear Strike”.
- **Route:** The Route the strike is on.
- **County:** The County the strike is in.
- **District:** The District the strike is in.
- **Inspector Name:** Other for now until names are populated in dropdown
- **Pictures of Damage:** Attach a minimum of 2 photos showing the damaged end treatment