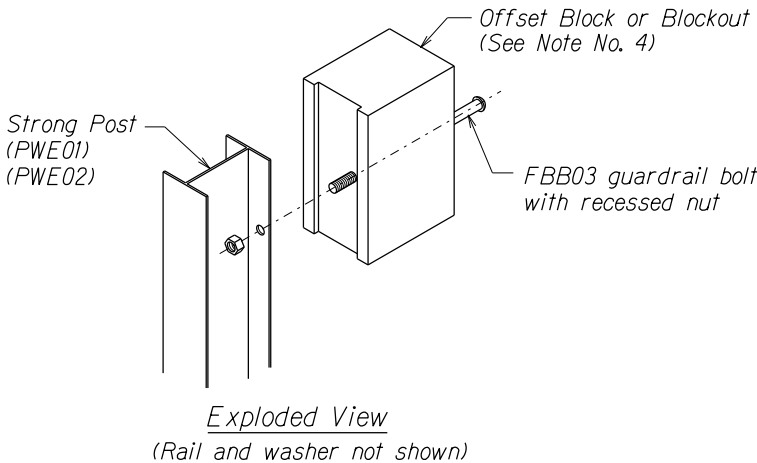
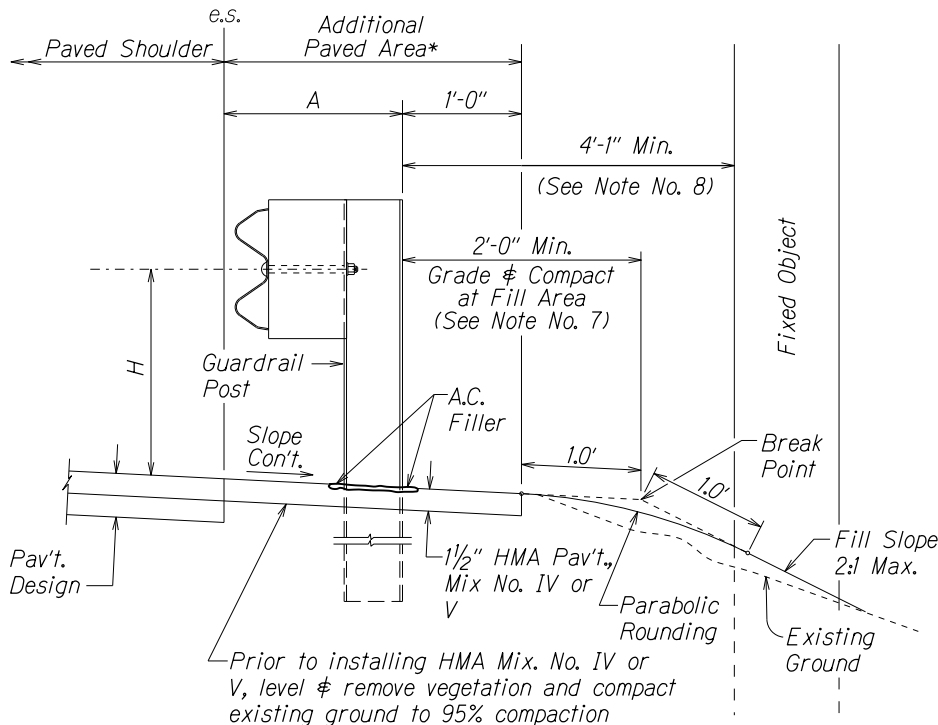
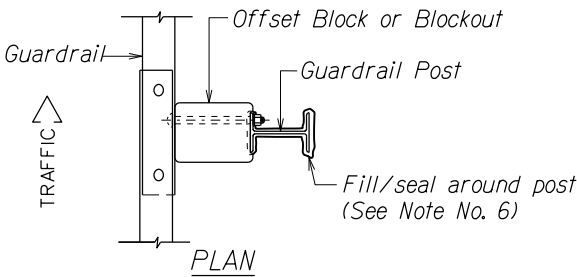


GENERAL NOTES

1. All hardware, posts and fasteners shall be hot-dip zinc coated galvanized after fabrication. No punching, drilling or cutting will be permitted after galvanizing.
2. Where conditions require, special post lengths in increments of 6 inches may be specified by the Engineer.
3. All fasteners, posts, and rail elements (i.e. FBB03, PWE01, RWM04b, etc.) shall conform to the latest edition and amendments of "A Guide to Standardized Highway Barrier Rail Hardware", a report prepared and approved by the AASHTO-AGC-ARTBA Joint Cooperative Committee, Subcommittee On New Highway Materials, Task Force 13 Report. Dimensions of fastners, posts and rail elements have been converted from metric units into their present form.
4. The Blockout or Offset Block shall be approved by the State.
5. All new guardrail systems (system consists of total length of guardrail including both end treatments) shall include the Additional Paved Area.
6. After the guardrail posts are installed in the paved area, the Contractor shall fill/seal around each guardrail post and all cracks in the paved area caused during the guardrail post installation. If required by the inspector/engineer, the Contractor shall tamper the paved area around the guardrail post prior to filling/sealing. All costs associated with this work shall not be paid for separately, but shall be considered incidental to the various guardrail items.
7. When standards for the fill slope area cannot be met, a site specific, engineer approved design may be used.
8. Minimum working width (clear distance) between back of MGS post to any fixed object is 4'-1" (49").
9. New Hot Mix Asphalt (HMA) pavement at guardrails shall extend 6 feet longitudinally beyond terminal ends.
10. Reflector Markers (RM-5) mounted on guardrails shall be spaced every 25 feet. RM-5's shall not be installed on Terminal Sections. Furnishing and installing of each RM-5 shall be considered incidental to the guardrail system.
11. The pay limit for MSKT-SP-MGS (TL-3), and MAX-Tension (TL-3) is 50 L.F., which shall be measured from Post 1 of the end terminal. Should the manufactured end terminal be less than 50 L.F. in length, the remaining length shall be considered incidental to the end terminal. All end terminal hardware extending beyond Post 1, such as hardware connecting to Post 0, shall also be considered incidental to the end terminal.
12. The pay limit for MSKT-SP-MGS (TL-2), Soft Stop Terminal (TL-2), and MAX-Tension (TL-2) is 25 L.F., which shall be measured from Post 1 of the end terminal. Should the manufactured end terminal be less than 25 L.F. in length, the remaining length shall be considered incidental to the end terminal. All end terminal hardware extending beyond Post 1, such as hardware connecting to Post 0, shall also be considered incidental to the end terminal.



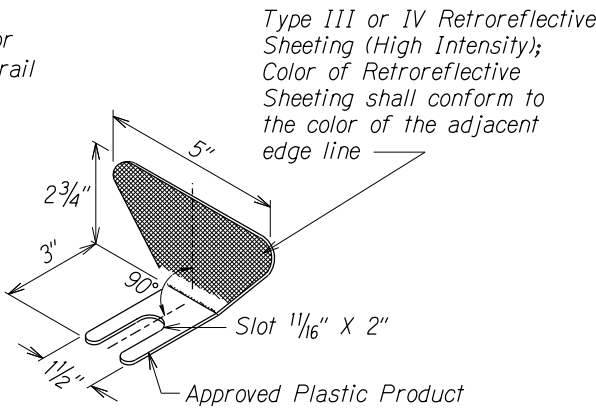
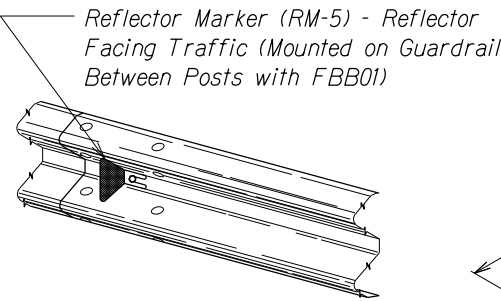
STEEL POST AND BLOCK DETAIL



ELEVATION

TYPICAL GUARDRAIL INSTALLATION

| GUARDRAIL TYPE                  | DIMENSION |       |
|---------------------------------|-----------|-------|
|                                 | H         | A     |
| MGS w/ Standard 8" Offset Block | 2'-1"     | 1'-6" |
| MGS w/ No Blockout              | 2'-7/8"   | 9/4"  |



REFLECTOR MARKER (RM-5) DETAIL AND TYPICAL INSTALLATION

|                   |      |   |
|-------------------|------|---|
| SURVEY PLOTTED BY | DATE | X |
| DESIGNED BY       |      |   |
| NOTED BY          |      |   |
| CHECKED BY        |      |   |

109/15/17 Dist 2/Engr/Standards/Traffic Guardrail Standards/ml.1450rev.dgn

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**GUARDRAIL DETAILS & NOTES**

HONOAPIILANI HIGHWAY RESURFACING  
Keanu Street to Kuihelani Highway  
Federal-Aid Project No. NH-030-1(K056)

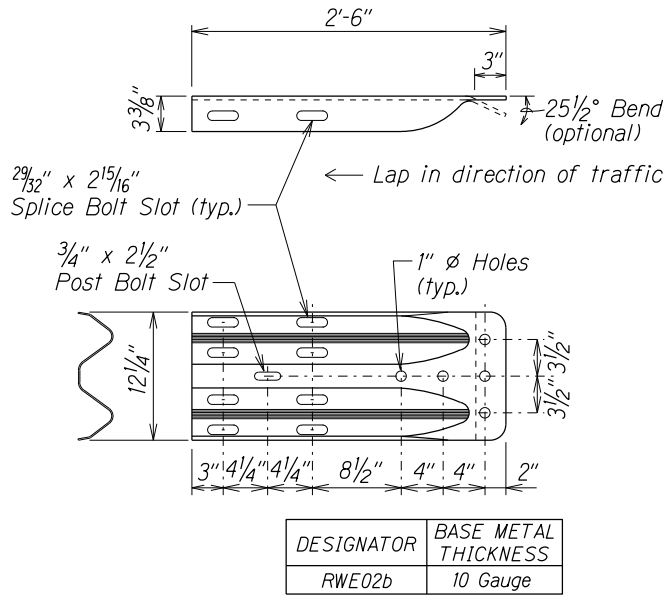
Scale: NTS Date: March, 2018

SHEET No. 1 OF 4 SHEETS

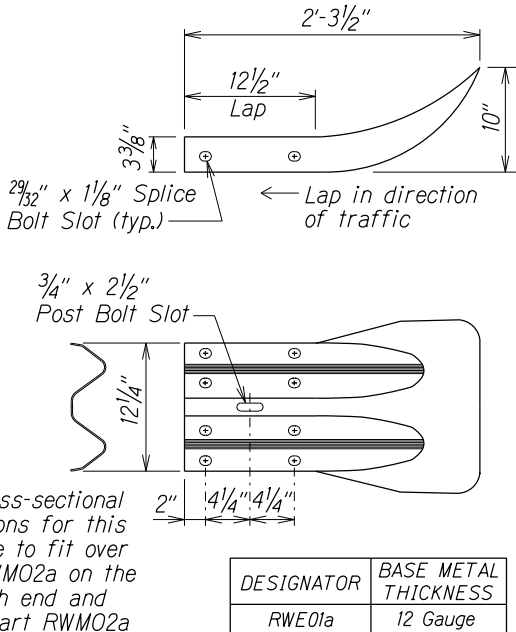




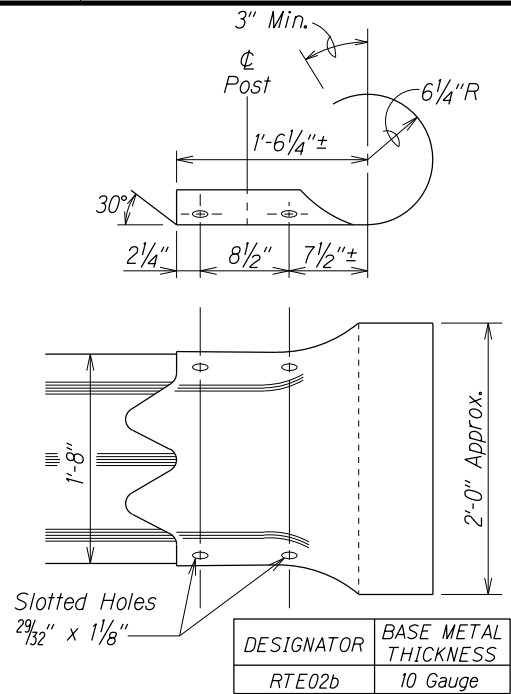
| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | NH-030-1(056)      | 2019        | 14        | 41           |



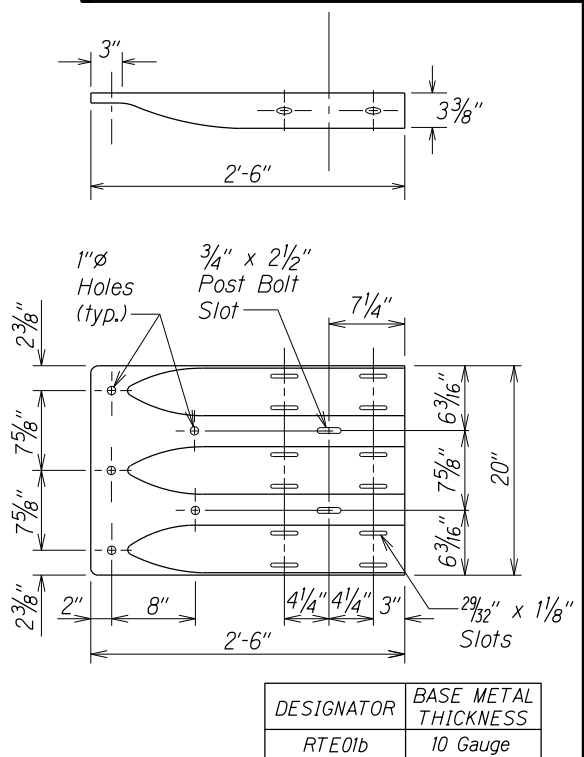
W-BEAM TERMINAL CONNECTOR (RWE02b)



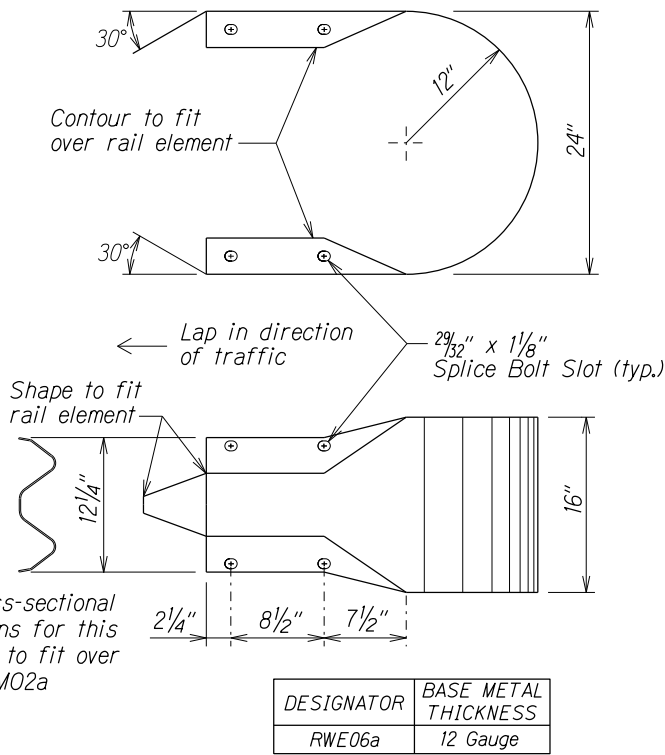
W-BEAM END SECTION (FLARED RWE01a)



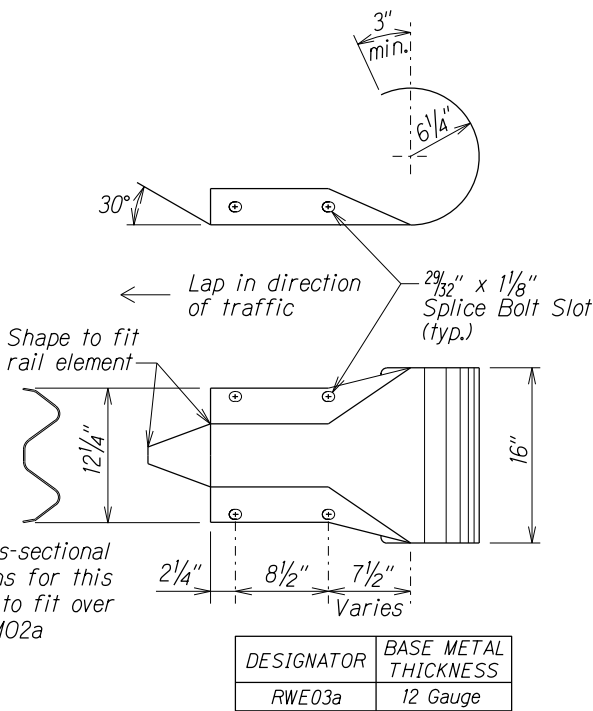
THRIE-BEAM SECTION (ROUNDED) (RTE02b)



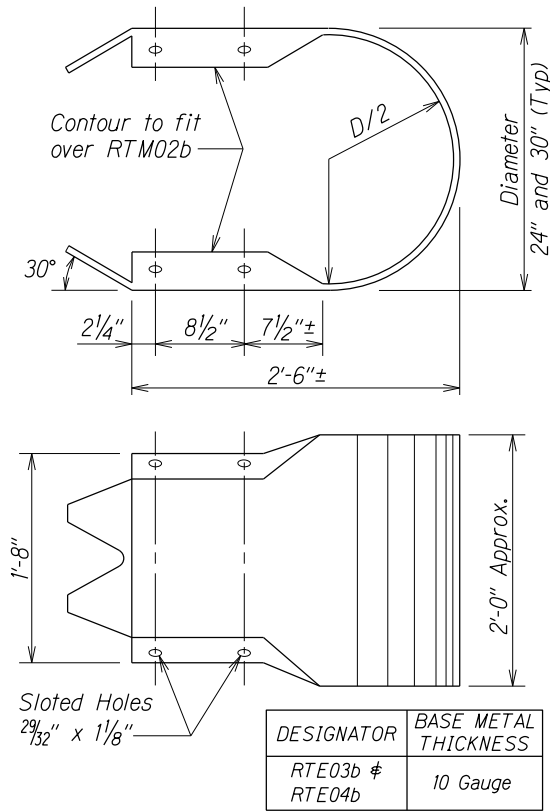
THRIE-BEAM TERMINAL CONNECTOR (RTE01b)



W-BEAM END SECTION (BUFFER RWE06a)



W-BEAM END SECTION (ROUNDED RWE03a)



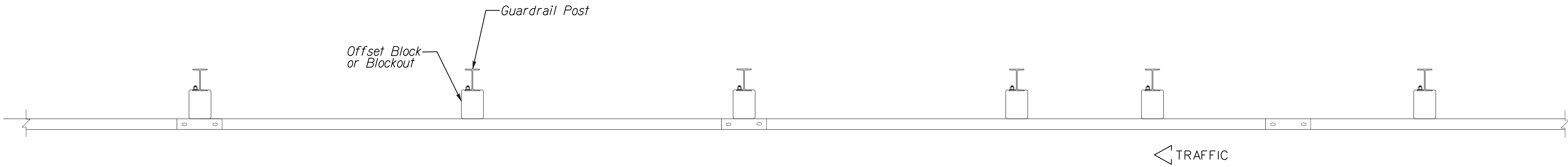
THRIE-BEAM END SECTION (BUFFER RTE03b or RTE04b)

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION  
**GUARDRAIL TERMINAL CONNECTORS AND END SECTIONS**  
HONOAPIILANI HIGHWAY RESURFACING  
Keanu Street to Kuihelani Highway  
Federal-Aid Project No. NH-030-1(056)  
Scale: NTS Date: March, 2018  
SHEET No. 4 OF 4 SHEETS

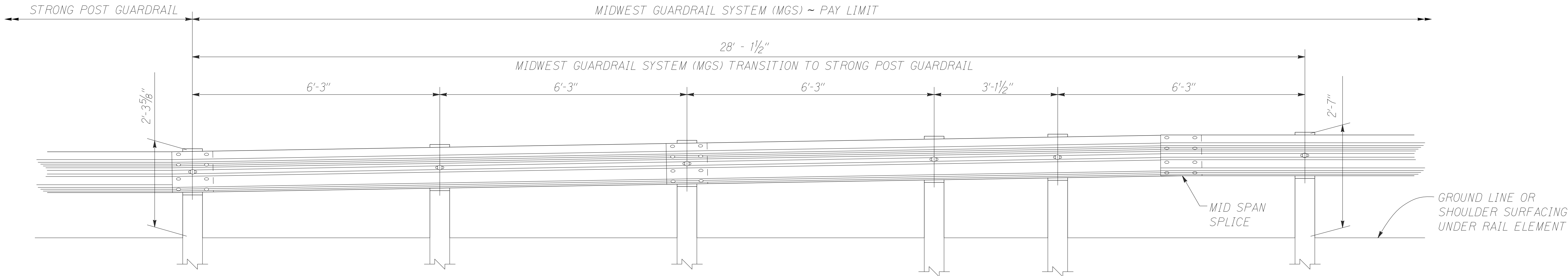
|                   |      |
|-------------------|------|
| SURVEY PLOTTED BY | DATE |
| DRAWN BY          |      |
| DESIGNED BY       |      |
| QUANTITIES BY     |      |
| CHECKED BY        |      |
| ORIGINAL PLAN     |      |
| NOTE BOOK         |      |
| N.                |      |

107/28/17 Bas2/Ernest/Standards/Traffic/Guardrail Standards/m4.tblrev.dgn

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | NH-030-1(056)      | 2019        | ADD.14S-1 | 41           |



PLAN



ELEVATION

|               |                   |      |
|---------------|-------------------|------|
| ORIGINAL PLAN | SURVEY PLOTTED BY | DATE |
| NOTE BOOK     | DRAWN BY          | X    |
| designed by   | DESIGNED BY       |      |
| checked by    | CHECKED BY        |      |
| No. X.dgn     |                   |      |

r09.06/16 Dusr2/Ernest/standards/Traffic Guardrail Standards/ml\_midwest.dgn

|   |         |                                   |
|---|---------|-----------------------------------|
| 2   | 10/9/19 | Additional MGS Guardrail Details. |
| DATE  |         | REVISION                          |
| <p>STATE OF HAWAII<br/>DEPARTMENT OF TRANSPORTATION<br/>HIGHWAYS DIVISION</p> <p><u><b>MGS TRANSITION TO</b></u><br/><u><b>STRONG POST GUARDRAIL</b></u><br/><u>HONOAPIILANI HIGHWAY RESURFACING</u><br/><u>Keanu Street to Kuihelani Highway</u><br/><u>Federal-Aid Project No. NH-030-1(056)</u></p> <p>Scale: NTS                      Date: October, 2019</p> |         |                                   |
| SHEET No. 1 OF 2 SHEETS   |         |                                   |

