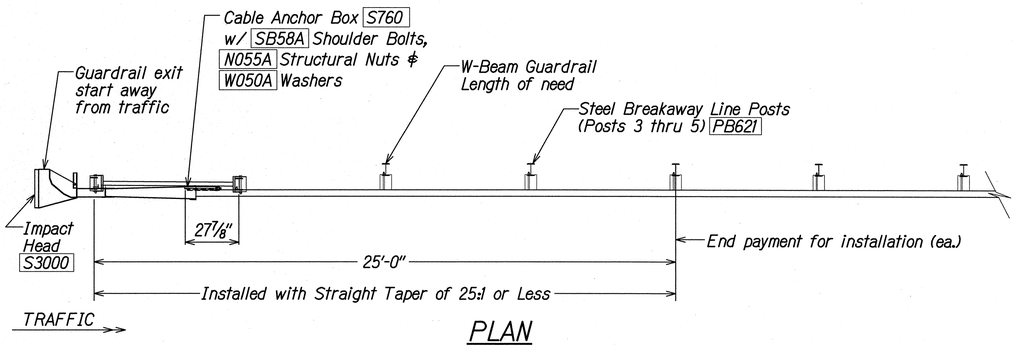
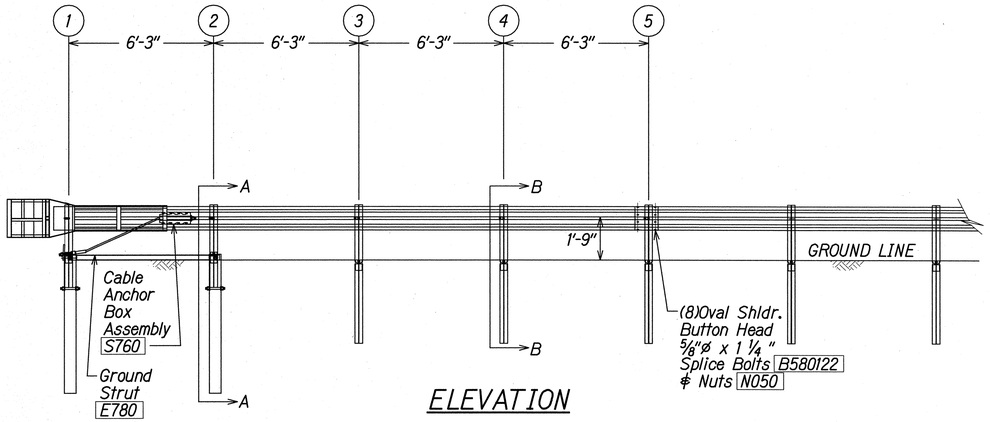
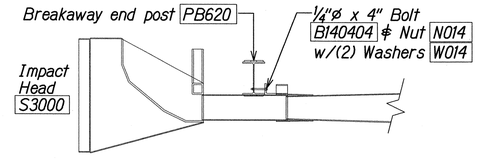
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-072-1(53)	2015	23	117



PLAN



ELEVATION



IMPACT HEAD CONNECTION DETAIL

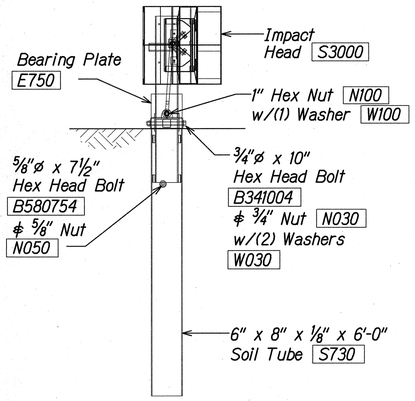
GENERAL NOTES:

1. Breakaway steel posts are required with the Sequential Kinking Terminal.
2. All bolts, nuts, cable assemblies, cable anchors and bearing plates shall be galvanized.
3. When the Sequential Kinking Terminal is selected as the end treatment for W-beam guardrail installation, the SKT will be flared at a rate of 25:1 to prevent the impact head from encroaching on the shoulder.
4. The soil tube shall not protrude more than 4" above ground (measured along a 5' cord). Site grading may be necessary to meet this requirement.
5. The soil tubes may be driven with an approved driving head. They shall not be driven with the post in the tube. If the soil tubes are placed in drilled holes, the backfill material must be satisfactorily compacted to prevent settlement.
6. When rock is encountered during excavation, a 12" dia. post hole, 20" deep may be used if approved by the engineer. Granular material will be placed in the bottom of the hole approx. 2½" deep to provide drainage. The soil tubes will be field cut to length, placed in the hole and backfilled with adequately compacted material excavated from the hole.
7. The breakaway cable assembly must be taut. A locking device, (vice grips or channel lock pliers) should be used to prevent the cable from twisting when tightening nuts.
8. A special site evaluation should be considered prior to using the Sequential Kinking Terminal where there is less than 25' between the outlet side of the Sequential Kinking Terminal and any adjacent driving lane.
9. (R) or (L) indicates right or left Impact Head Reflector Marker (IHRM). Providing and installing of IHRM shall be considered incidental to end treatment.
10. The stripes for IHRM shall slope downward at an angle of 45^ towards the side of the end treatment that traffic is to pass.

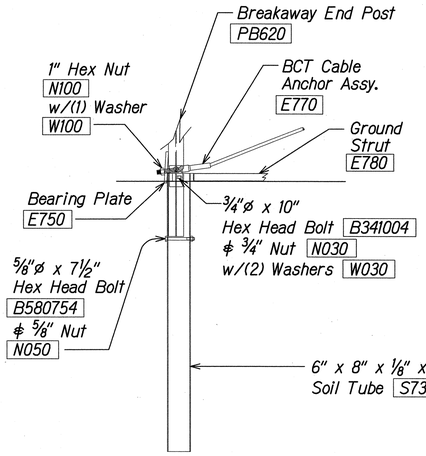
BILL OF MATERIALS

ITEM NO.	QTY.	
S3000	1	IMPACT HEAD
S1303/ S1305	1	W-BEAM GUARDRAIL END SECTION 12 ga. 12.5' or 25'
G1203	1/0	W-BEAM GUARDRAIL, 12 GA., 12.5'
S730	2	*FOUNDATION SOIL TUBE, 6" X 8" X 6'-0"
E750	1	BEARING PLATE
S760	1	CABLE ANCHOR BOX
E770	1	BCT CABLE ANCHOR ASSEMBLY
E780	1	GROUND STRUT
PB620	2	BREAKAWAY END POST
PB621	3	BREAKAWAY LINE POST
	3	RECYCLED PLASTIC BLOCKOUTS OR OFFSET BLOCKS
	1	IMPACT HEAD REFLECTOR MARKER - IHRM(R) OR (L)
		HARDWARE
B580122	9/17	5/8" Dia. x 1" , SPLICE BOLT, POST 2
B580754	2	5/8" Dia. x 7 ½" HEX BOLT
B341004	2	3/4" Dia. x 10" HEX BOLTS
B581002	3	5/8" Dia. x 10" H.G.R. BOLT (POSTS 3 THRU 5)
N050	14/22	5/8" Dia. H.G.R. NUT (SPLICE 8/16, SOIL TUBES 2, POSTS 2 THRU 5,4)
N030	2	3/4" Dia. HEX NUT
W050	4	H.G.R. WASHER
W030	4	3/4" ID WASHER
N100	2	1" ANCHOR CABLE HEX NUT
W100	2	1" ANCHOR CABLE WASHER
B140404	2	1/4" x 4" HEX BOLT
N014	2	1/4" HEX NUT
W014	4	1/4 " WASHER
SB58A	8	CABLE ANCHOR BOX SHOULDER BOLT
N055A	8	½" A325 STRUCTURAL NUT
W050A	16	1 1/16" OD X 9/16" ID A325 STR. WASHER

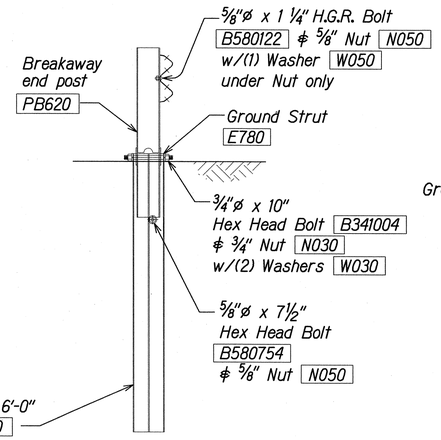
Foundation Tube Options For Posts 1 & 2:
- *6'-0" Split Foundation Tube S730
- *6'-0" Solid Foundation Tube E731
- *5'-0" Foundation Tube S735 w/Soil Plate SP600
- *4'-6" Foundation Tube E735 w/Soil Plate SP600



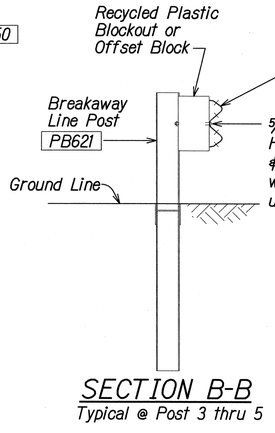
FRONT VIEW OF POST 1



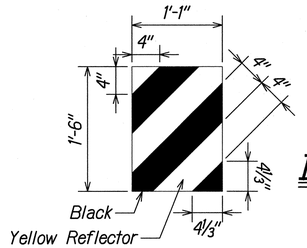
PARTIAL VIEW OF POST 1



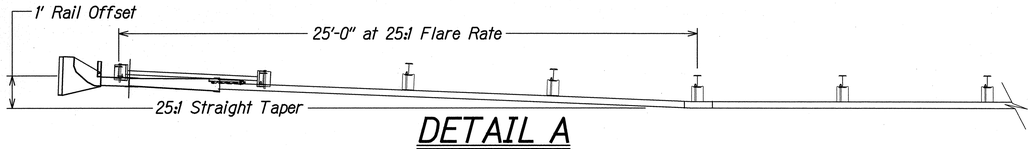
SECTION A-A
at Post #2



SECTION B-B
Typical @ Post 3 thru 5



IHRM(R)
IMPACT HEAD REFLECTOR MARKER INSERT DETAIL



DETAIL A
25:1 Flare Rate

PAUL M. CHUNG
LICENSED PROFESSIONAL ENGINEER
NO. 8681-C
HAWAII USA

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

SIGNATURE 04/30/16 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SKT-S-TL2-2 SEQUENTIAL KINKING TERMINAL

KALANIANAOLE HIGHWAY IMPROVEMENTS, PHASE 1
Olomana Golf Course To Vicinity of Poalima St.
Federal Aid Project No. NH-072-1(53)

Scale: AS NOTED Date: July, 2015

SHEET No. C23 OF 71 SHEETS

ORIGINAL PLAN | NOTE BOOK No. | SURVEY PLOTTED BY | DRAWN BY | TRACED BY | DESIGNED BY | QUANTITIES BY | CHECKED BY | DATE

W:_CIVIL 3D PROJECTS\2008_008_000 DOT-HWY KAL HWY IMP WAIMANALO PH 1\C23 - SKT-S-TL2-2 SEQUENTIAL KINKING TERMINAL.DWG 9/30/2015 5:33 PM