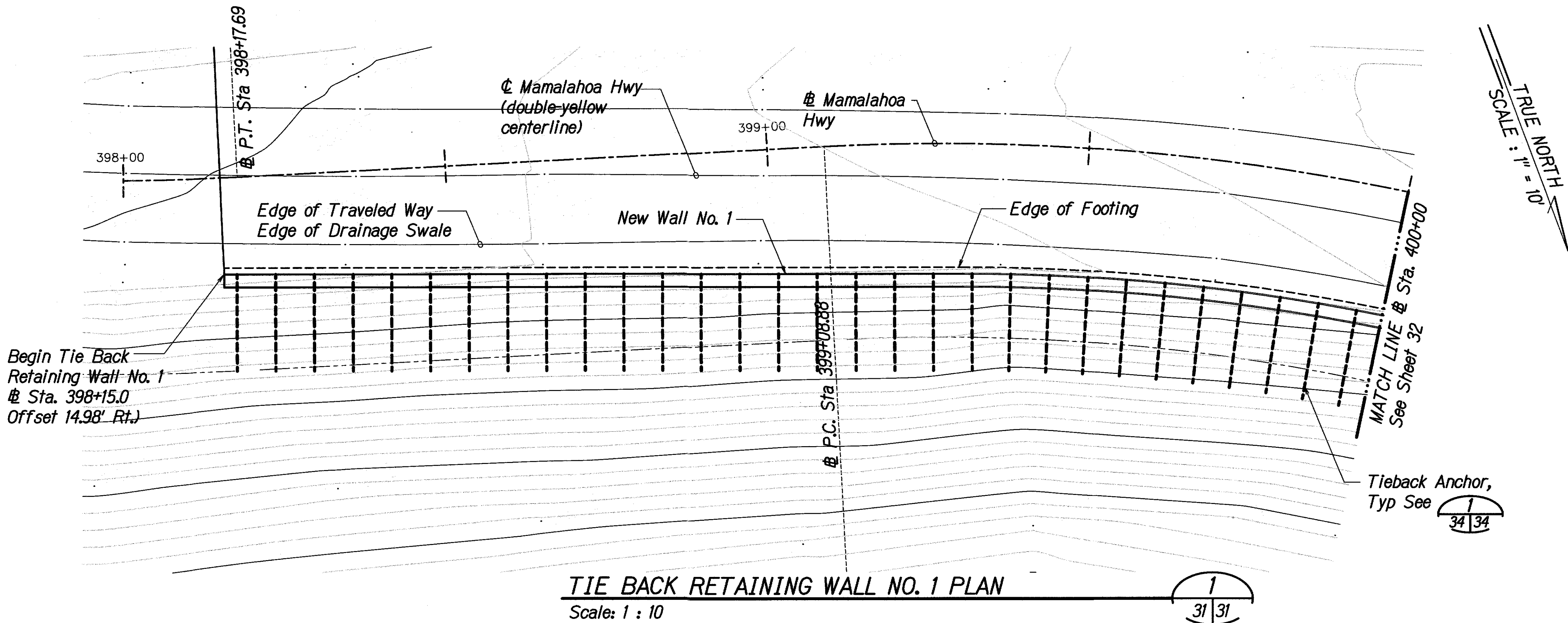
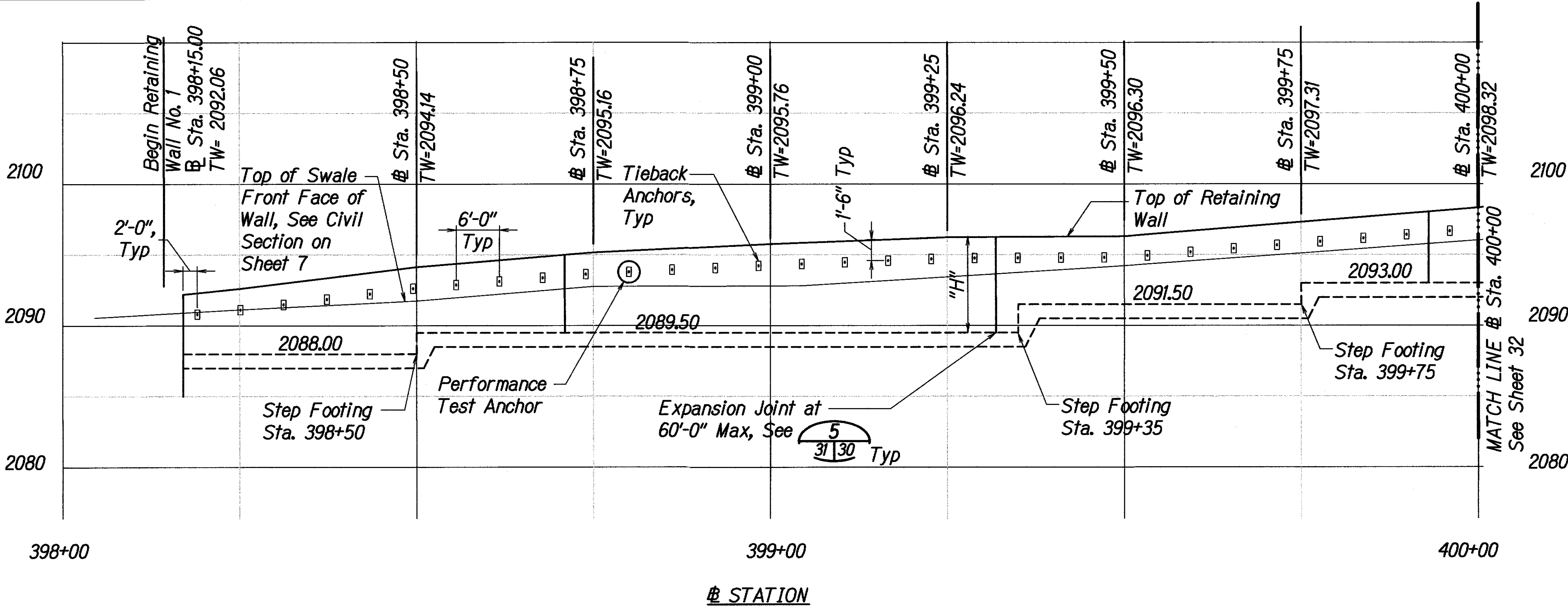


FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0190(016)	2016	ADD. 31	36

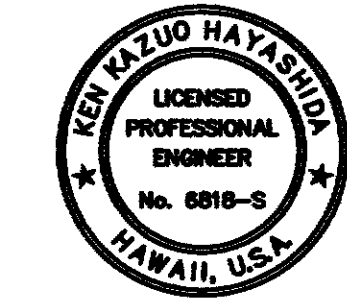


Note:
 1. Retaining wall offset from Mamalahoa Hwy is to front face of shotcrete wall. See Sheet 34 and Sheet 7, Civil Section at Retaining Wall for additional information.



Note:
 1. Information on drainage weep holes, and other related information, See Sheets 34 and 36.
 2. Provide contraction joints at 20'-0" maximum spacing, See Sheet 30

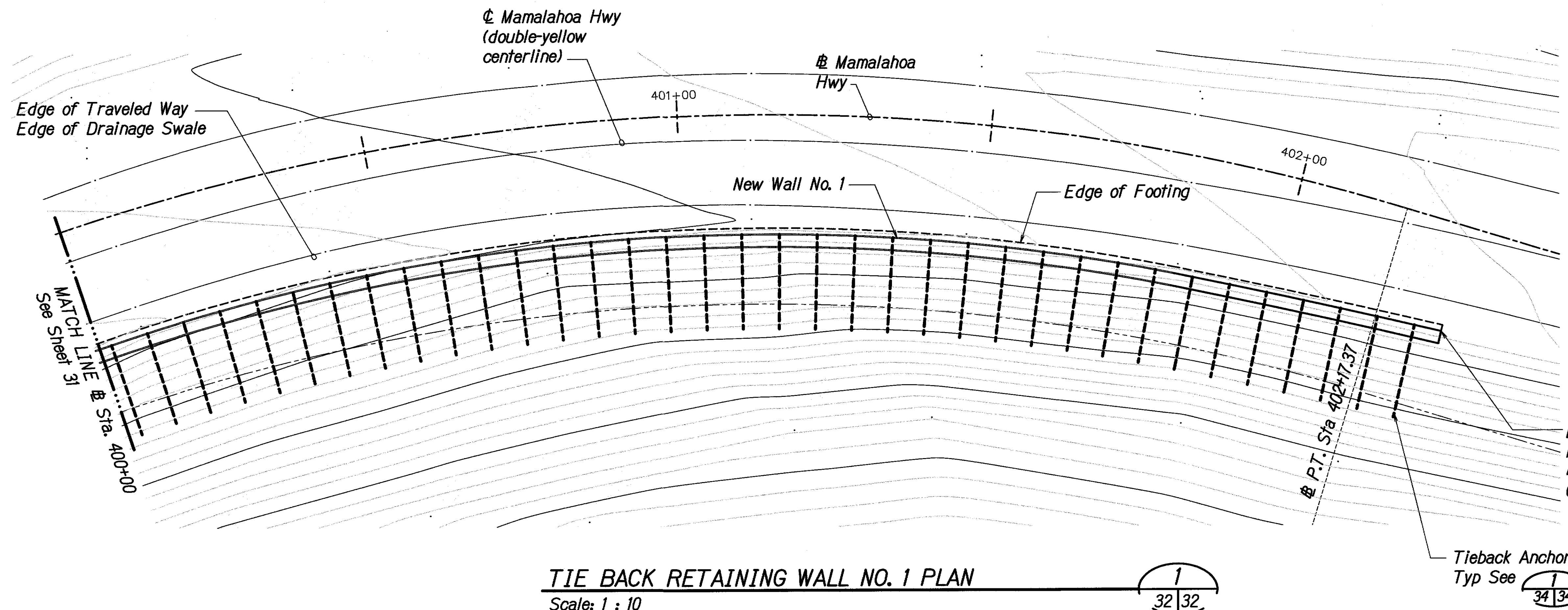
9/26/16	Revised Tieback Anchor Layout
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION TIE BACK RETAINING WALL NO. 1 PLAN AND ELEVATION MAMALAHOA HIGHWAY DRAINAGE IMPROVEMENTS Vicinity of Puuwaawaa Ranch Road Federal Aid Project No. STP-0190(016) Scale: As Noted Date: April 2016	
SHEET No. 3 OF 8 SHEETS	



EXPIRATION DATE OF THE LICENSE 4/30/2016
 THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

\\02838 County of Hawaii - Mamalahoa Highway Retaining Wall\\004 Drawings\\Structural\\AutoCAD\\format\\2016-09-22 - ADD 1\\2838_S-3_S-4.dwg, 9/26/2016 4:08:49 PM, tamahaha

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0190(016)	2016	ADD. 32	36



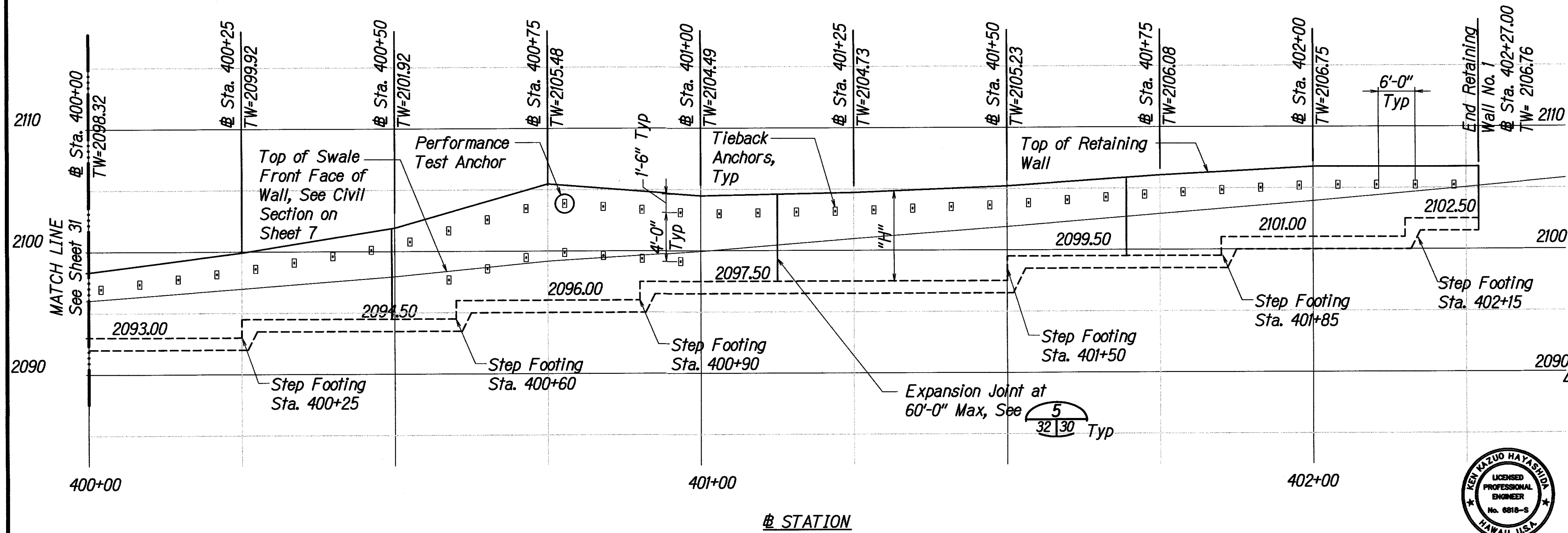
Note:
1. Retaining wall offset from Mamalahoa Hwy is to front face of shotcrete wall. See Sheet 34 and Sheet 7, Civil Section at Retaining Wall for additional information.

End Tie Back Retaining Wall No. 1
Sta. 402+27.00
Offset 17.11' Rt.

Tieback Anchor, Typ See 34/34

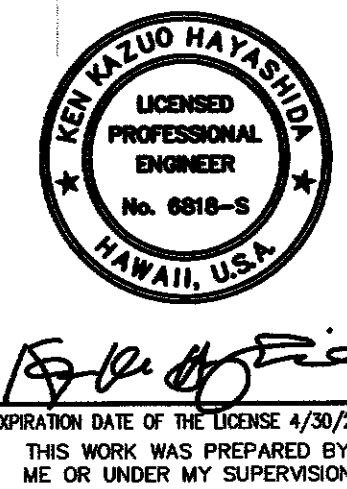
TIE BACK RETAINING WALL NO. 1 PLAN

Scale: 1 : 10



Note:
1. Information on drainage weep holes, and other related information, See Sheets 34 and 36.
2. Provide contraction joints at 20'-0" maximum spacing, See Sheet 30

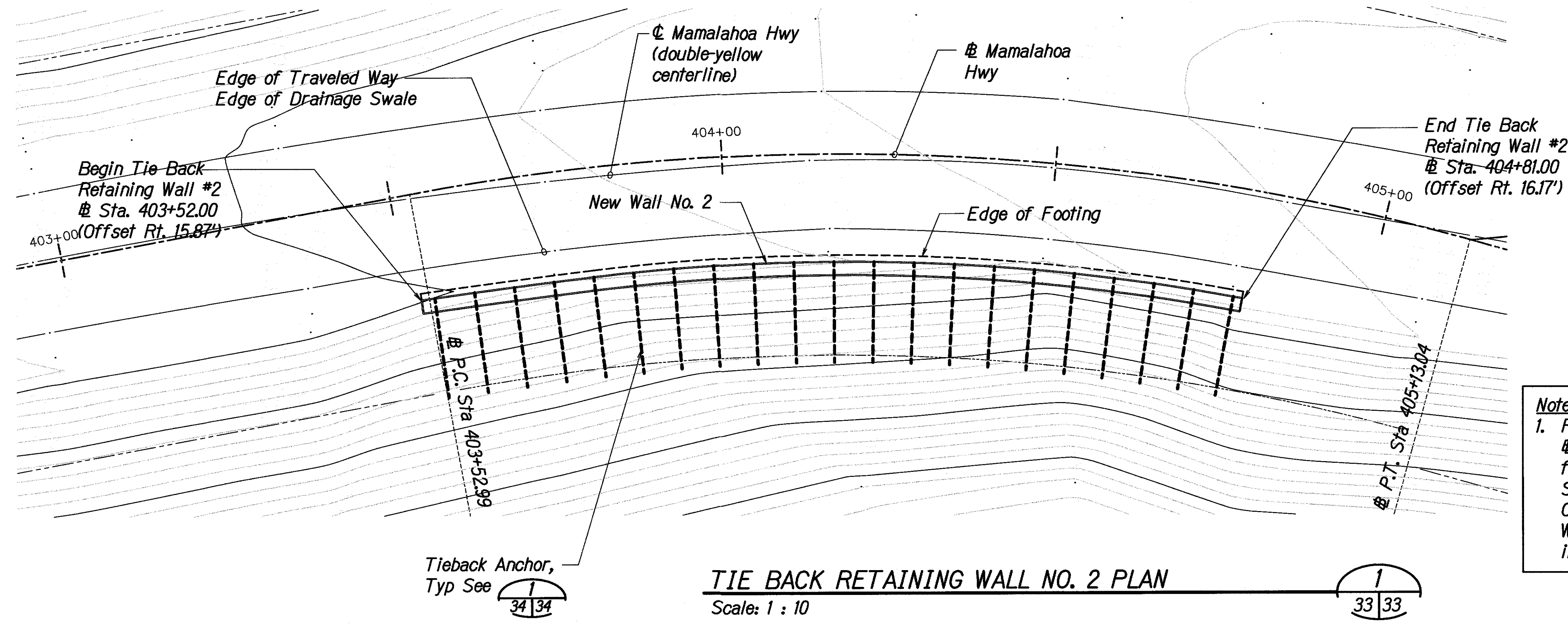
9/26/16	Revised Tieback Anchor Layout
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION TIE BACK RETAINING WALL NO. 1 PLAN AND ELEVATION	
MAMALAHOA HIGHWAY DRAINAGE IMPROVEMENTS Vicinity of Puuwaawaa Ranch Road Federal Aid Project No. STP-0190(016) Scale: As Noted Date: April 2016	



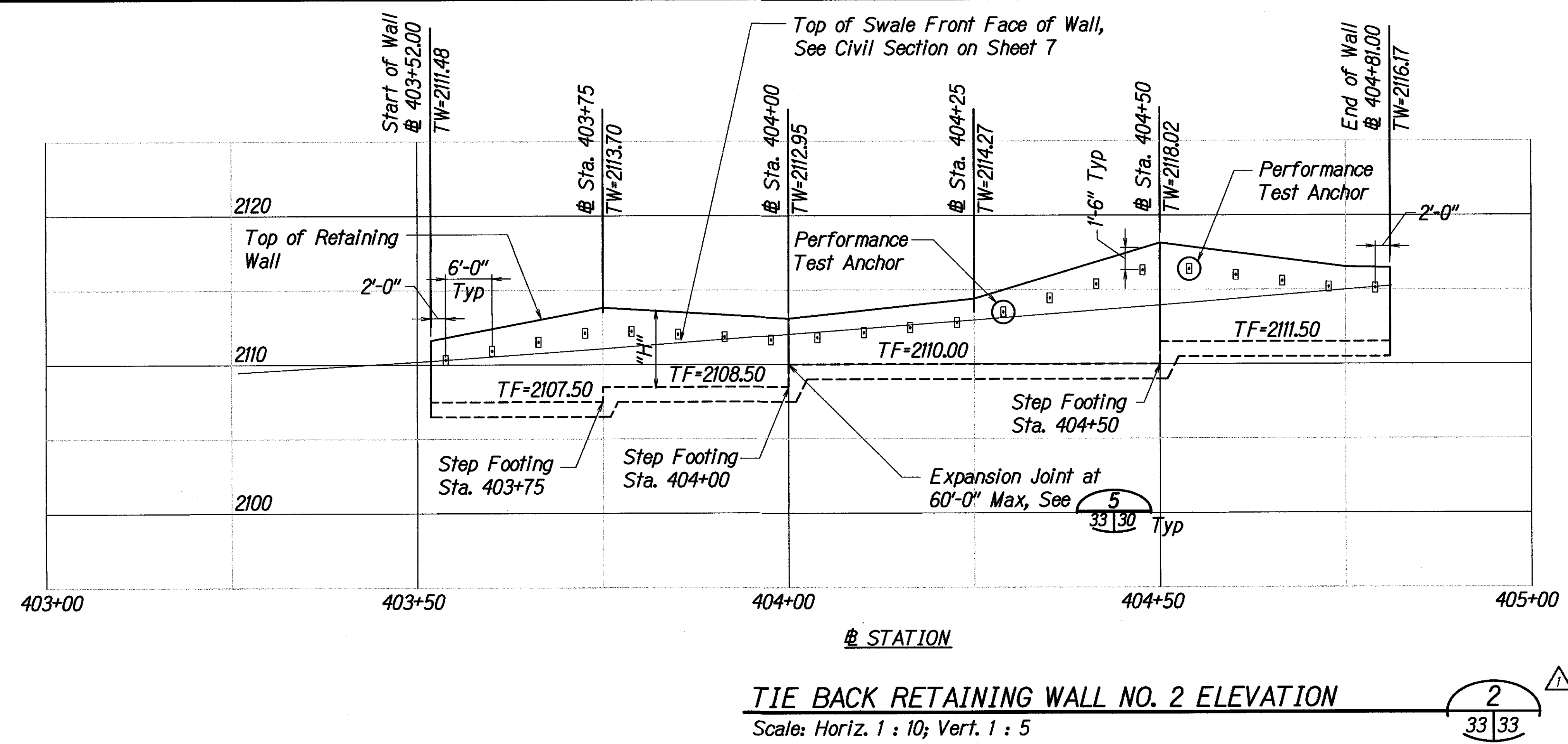
TIE BACK RETAINING WALL NO. 1 ELEVATION

Scale: Horiz. 1 : 10; Vert. 1 : 5

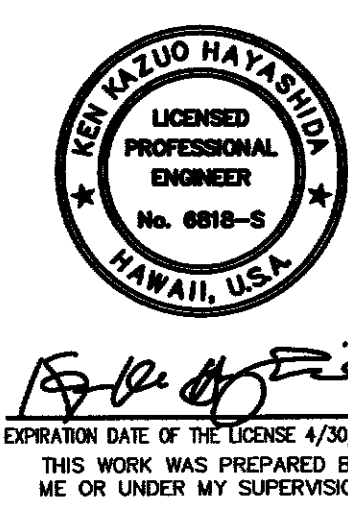
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0190(016)	2016	ADD. 33	36



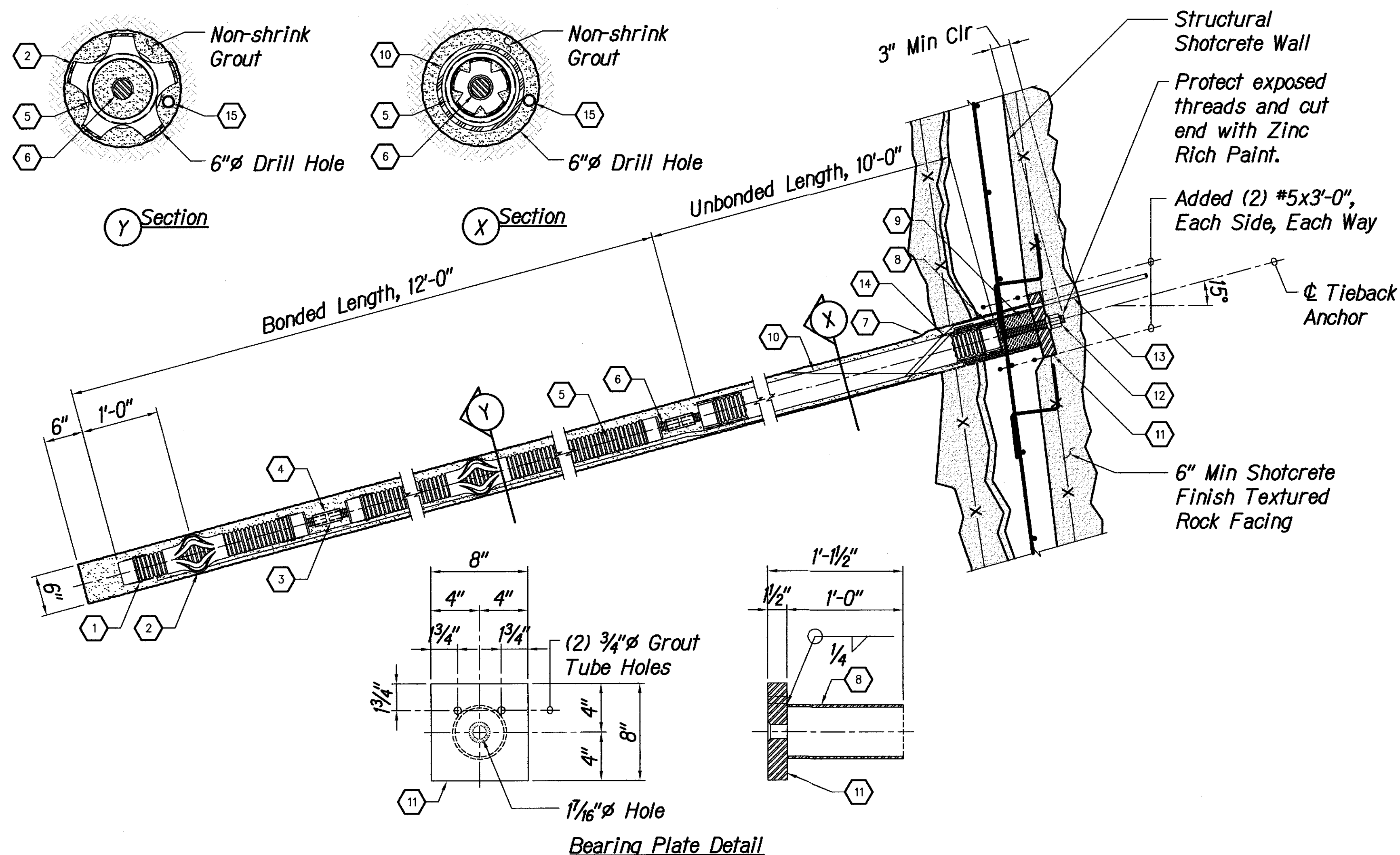
Note:
 1. Retaining wall offset from Mamalahoa Hwy is to front face of shotcrete wall. See Sheet 34 and Sheet 7, Civil Section at Retaining Wall for additional information.



Note:
 1. Information on drainage weep holes, and other related information, See Sheets 34 and 36.
 2. Provide contraction joints at 20'-0" maximum spacing, See Sheet 30



9/26/16	Revised Tieback Anchor Layout
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION TIE BACK RETAINING WALL NO. 2 PLAN AND ELEVATION MAMALAHOA HIGHWAY DRAINAGE IMPROVEMENTS Vicinity of Puuwaawaa Ranch Road Federal Aid Project No. STP-0190(016) Scale: As Noted Date: April 2016	
SHEET No. 5 OF 8 SHEETS	



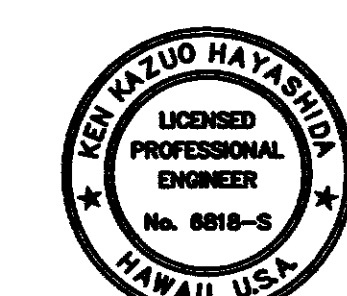
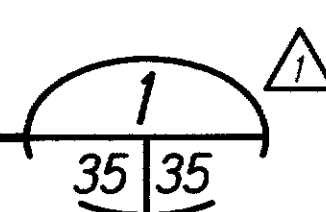
Tieback Anchor Notes:

- The all-thread bar yield strength shall not be reduced by more than 5% after galvanizing. In addition, angle compensating nuts and/or beveled washers shall be galvanized per ASTM 123. Threaded bars shall be new and free of any surface damages, kinks, and sharp bends.
- When lifting the tieback anchors for installation into the holes, multiple pick points shall be used to avoid bending or damaging the threaded bar and/or encapsulation grout.
- Grout tubes shall be placed thru the 8"x8"x1 1/2" steel bearing plate, See detail 1/35. Size and locations shall ensure full grouting of hole. The Contractor shall submit grouting details for approval by the Engineer.
- The contractor shall retain a Civil Engineer, licensed in the State of Hawaii, who has been practicing Geotechnical Engineering for at least 5 years, to be present to monitor the installation and testing of the Tieback Anchors. The Contractor shall coordinate the installation and testing schedule with the State's Project Engineer.
- The Contractor is responsible for any additional equipment, including, but not limited to, special drilling equipment, temporary casings, temporary shoring, and other materials necessary to ensure the tieback anchor holes are open and obstruction free as loose/soft fill, extremely weathered basalt rock, and hard unweathered basalt rock are expected to be encountered. Temporary casing shall be used for the drilled tieback anchor holes to prevent cave-in conditions during the drilling of the tieback anchor holes, especially in the loose/soft fill and the extremely weathered basalt rock at the site.
- Grout shall attain a minimum compressive strength of 4,000 psi prior to stressing. Testing for compressive strength shall conform to ASTM C-109 mortar and sand.
- All grouting shall be performed in the presence of the Civil Engineer. Grouting not performed in the presence of the Civil Engineer shall be the grounds for rejection of the anchor at no additional cost to the State.
- Bar splices shall not be located within the unbonded zone.
- A total of four (4) performance tests, two (2) per wall, shall be conducted at locations as indicated on the structural drawing elevations. The remainder of the anchors not performance tested shall be proof tested. All tests shall be performed in accordance with the schedule per the AASHTO LRFD Bridge Construction Specifications.
- The tieback anchor design load is 12 kips, the test load is 16 kips, and the lock-off load is 9 kips.

- | | |
|--|--|
| 1 3" Nom. HDPE Poly Corrugated End Cap, Polyethylene ASTM D3350, AASHTO M252 with Adhesive Heat-shrink Seal | 7 Chip Drill Hole under Grout Tube Holes of Bearing Plate to accommodate Grout Tubes past Duct Collar |
| 2 External PVC Centralizer, Class 200, ASTM D2241 at 10'-0" max | 8 5" Nom. (5.563" OD) Sch. 40 Steel Pipe, Duct Collar, ASTM A53 x 1'-0" Long, Welded to Bearing Plate, Hot-dip Galvanized, ASTM A123 |
| 3 Field apply Densyl Petrolatum Tape with 55% min overlap onto Exposed Threads and Coupling, Cover with Denso Utility Protective Tape, Typ | 9 Field Packed Corrosion Inhibiting Grease, ASTM B117 and ASTM D1743 |
| 4 1" Nom. Grade 75 ksi Stop-Type Coupling, tapped oversize, ASTM A108, (1 5/8" OD x 4 1/2" Long) Hot-dip Galvanized, ASTM A153, AASHTO M232 | 10 4" Nom. (4.50" OD) Class 200 PVC Smooth Sleeve, ASTM D2241 installed over 3" Nom. Factory Grouted HDPE tubing |
| 5 3" Nom. (3.60" OD, 0.06" Wall) Factory grouted HDPE Poly Corrugated Tubing with Internal PVC Centralizer, Polyethylene ASTM D3350, AASHTO M252 | 11 1 1/2"x8"x8" Dished Bearing Plate with 1/4" Center Hole for 1" Nom. Grade 75 ksi All-thread Bar and (2) 3/4" Grout Tube Holes, Hot-dip galvanized, ASTM A123, AASHTO M232 |
| 6 1" Nom. Grade 75 ksi, All-thread Bar, ASTM A615, AASHTO M275, Hot-dip Galvanized, ASTM A153, AASHTO M232 | 12 1" Nom. Grade 75 ksi Spherical Hex Nut, tapped oversize, ASTM A536, Hot-dip Galvanized, ASTM A153, AASHTO M232 |
| | 13 1/2" Nom. (5/8" OD) High Density Plastic Grout Tubing |
| | 14 Duct Tape Seal |

TIEBACK ANCHOR DETAIL

Not to Scale



EXPIRATION DATE OF THE LICENSE 4/30/2016
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

9/26/16	Revised Tieback Anchor Detail and Notes
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION TIE-BACK WALL DETAILS MAMALAHOA HIGHWAY DRAINAGE IMPROVEMENTS Vicinity of Puuwaawaa Ranch Road Federal Aid Project No. STP-0190(016) Scale: As Noted Date: April 2016	