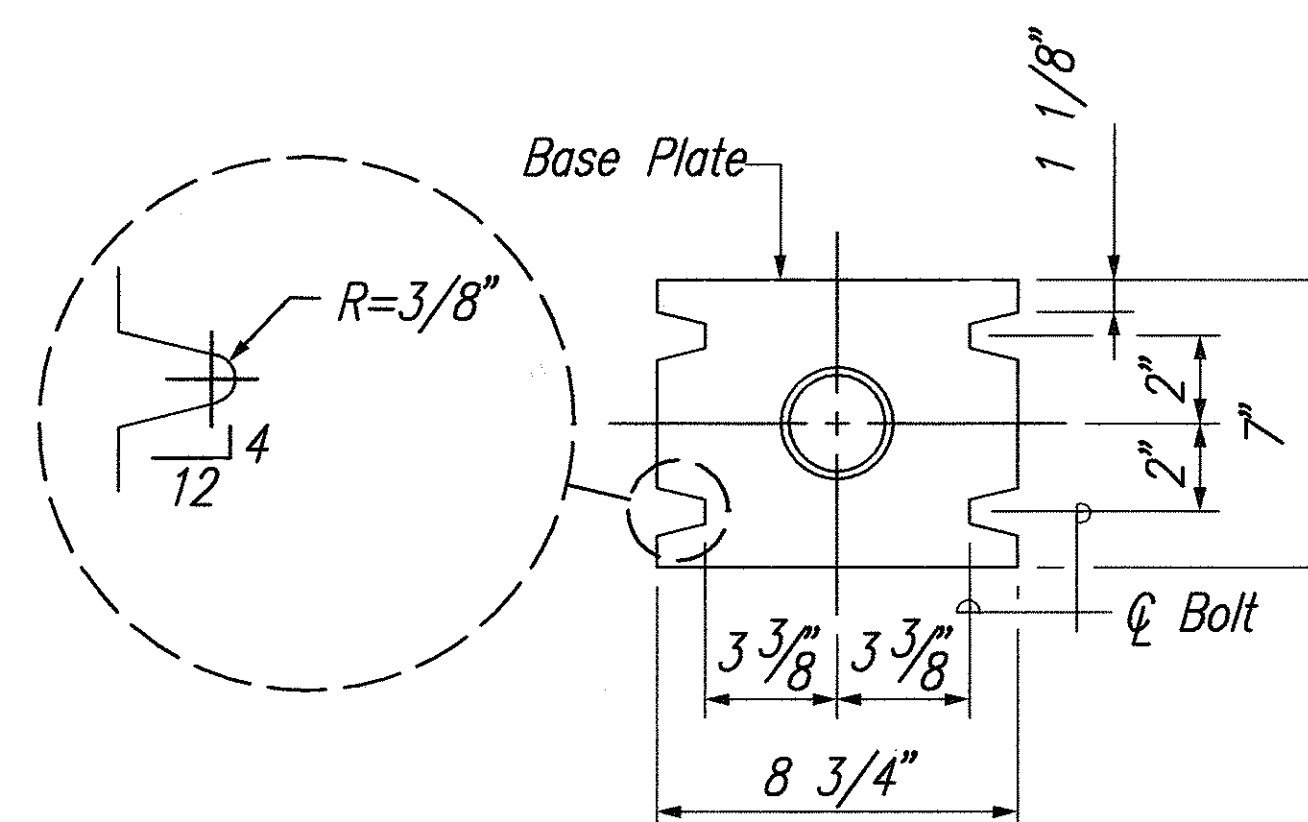


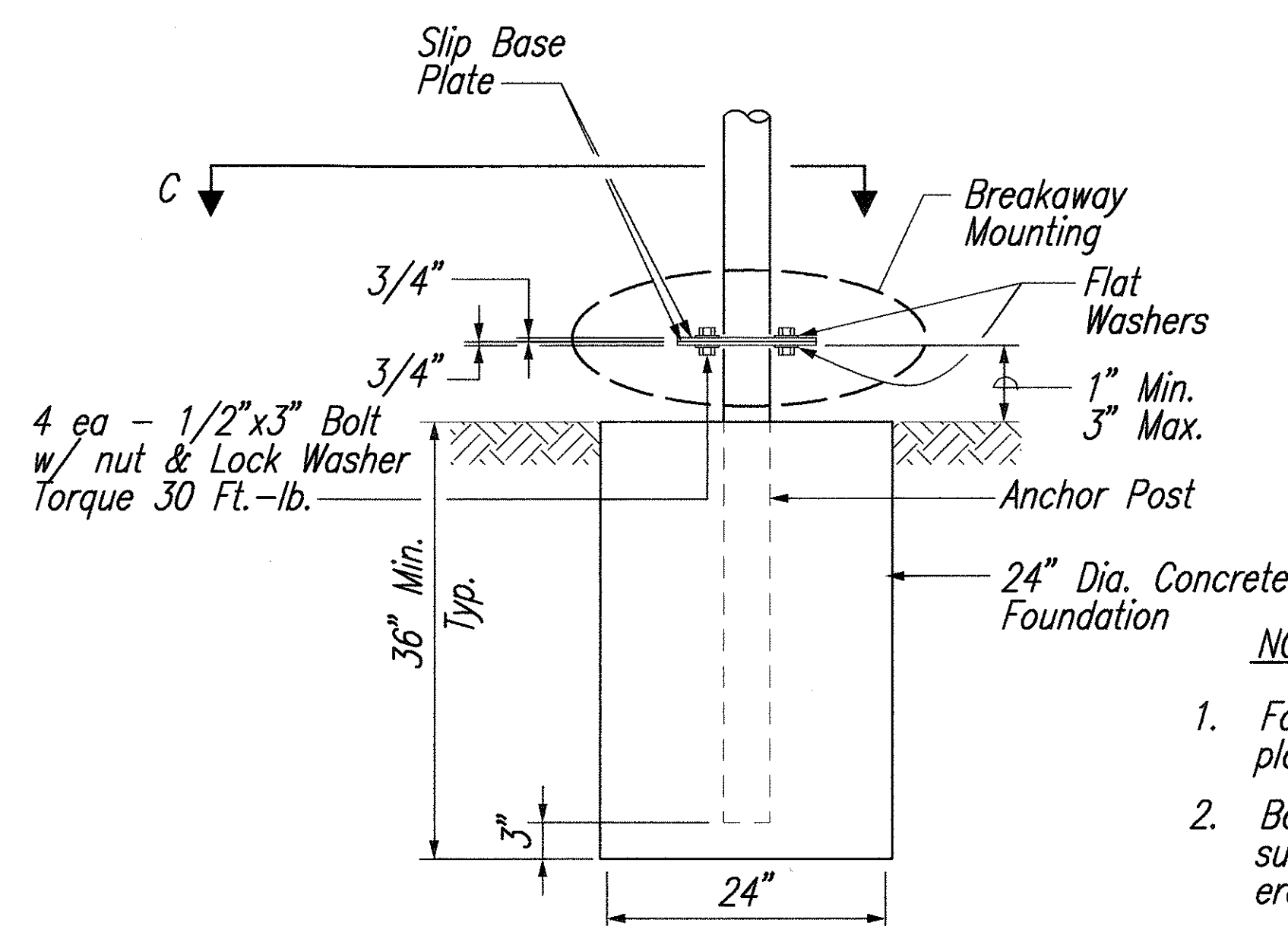
| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|------------------------|-------|-----------------------|----------------|--------------|-----------------|
| HAWAII | HAW. | CMAQ-0300(100) | 2004 | ADD. 20 | 75 |

GENERAL NOTES:

1. Walkway from pedestrian pad to edge of shoulder shall not exceed a maximum slope of 5:1.
2. If walkway from pedestrian pad to edge of shoulder exceeds the maximum slope of 20:1, a accessible ramp shall be constructed.
3. Where new work conflicts with the existing sprinkler system the contractor shall restore the sprinkler system to match the existing condition or better, incidental to the various contract items. The Contractor shall coordinate with HWY-OM for relocation and restoration of existing sprinkler system.
4. Transition A.C. Pavement incidental to Sections 312 and 401.
5. Landscaping, inclusive of Planting Soil and Hydro-Mulch Seeding paid under Section 617 and 641, respectively.



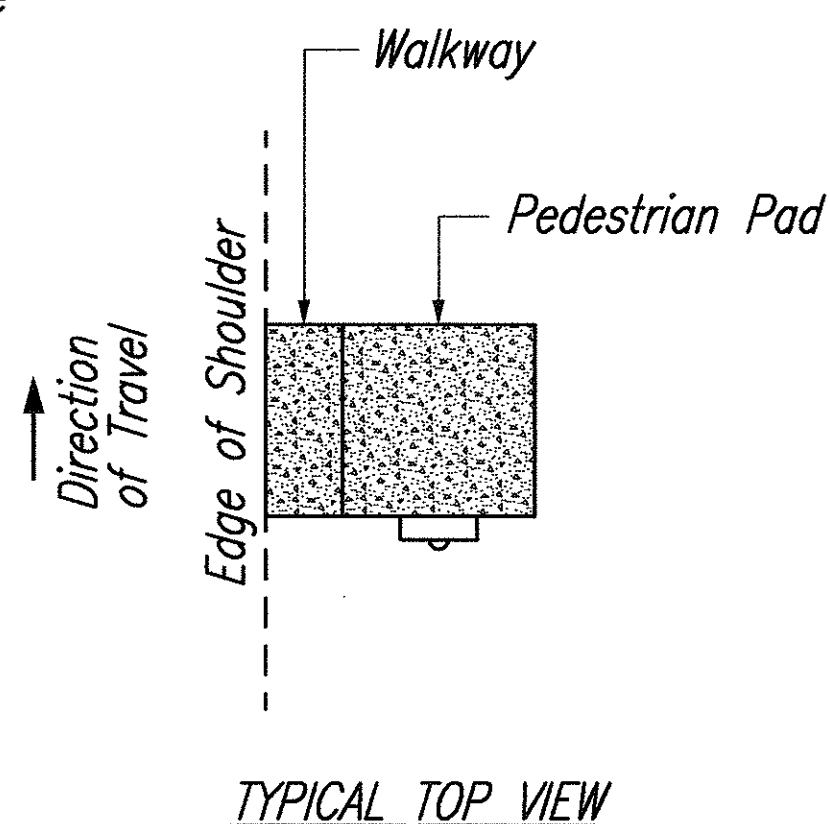
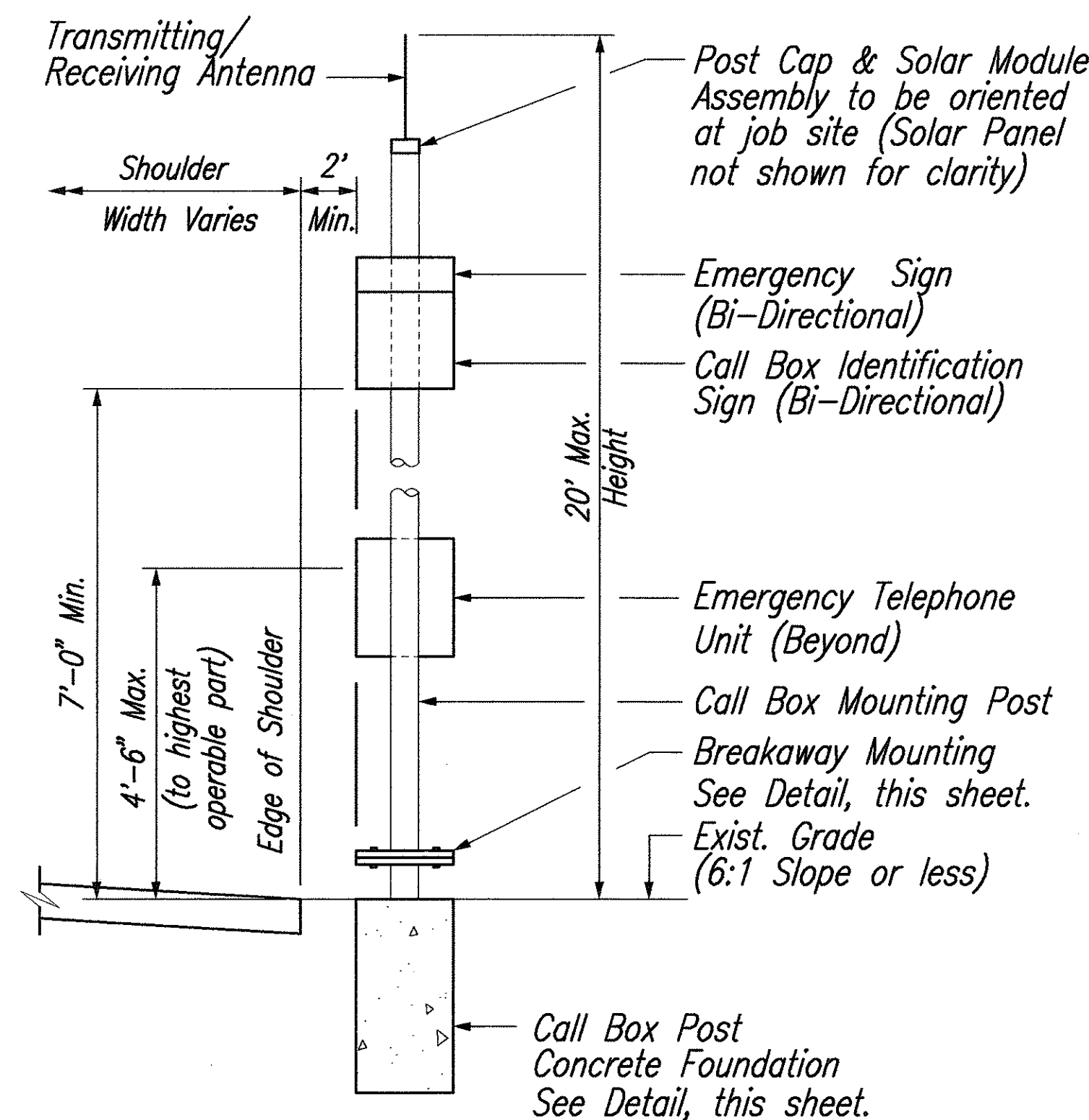
SECTION C



CALL BOX POST CONCRETE FOUNDATION
WITH BREAKAWAY MOUNTING

SCALE 1"=1'-0"

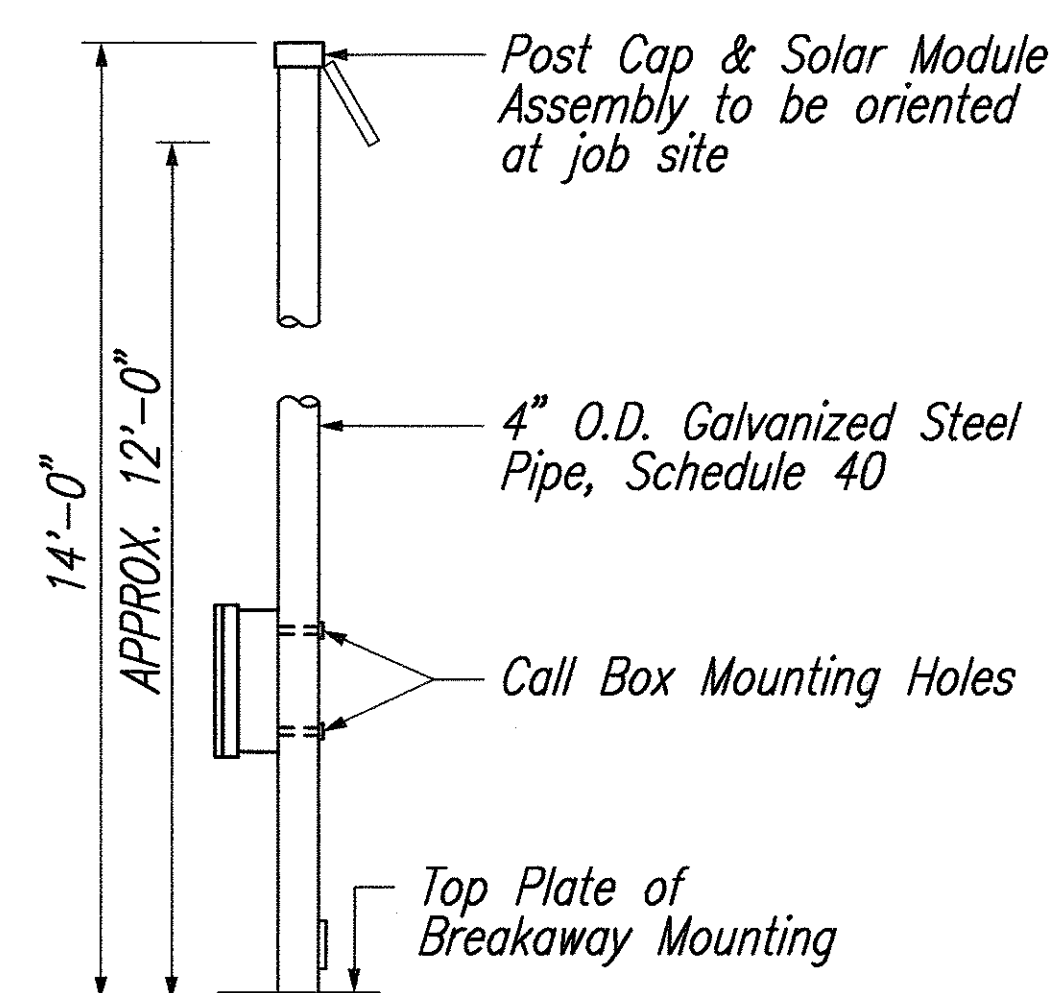
- NOTES:
1. Foundation shall be Class B concrete placed against undisturbed material.
 2. Backfill shall be complete, and adjacent surface improvements prepared prior to erection of the post.
 3. Nuts, bolts, washers and other appertenances shall be stainless steel, type 316.



TYPICAL CALL BOX INSTALLATION DETAIL

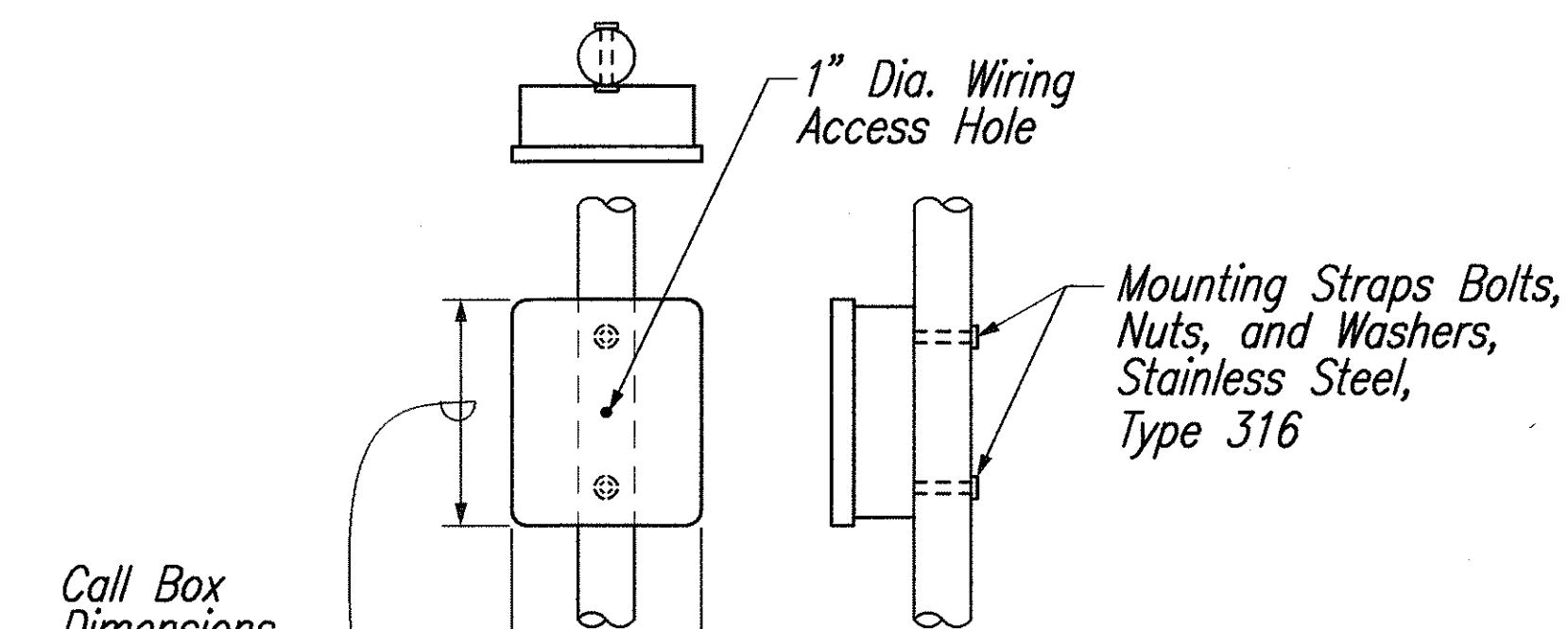
Not to Scale

1. *Wiring between Solar Panel and Antenna to the Call Box shall be pulled into the Post and shall be shielded, grounded cable.*
2. *For Emergency Telephone orientation, see Grading Plans.*
3. *Contractor will adjust any existing call boxes, remaining in use, wherever necessary to ensure that the highest operable part of the Call Box is within 4'-6" of ground level. (Incidental to the various contract items).*



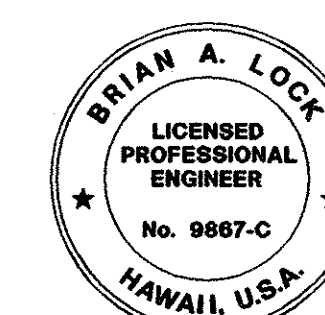
CALL BOX MOUNTING POLE, TYPICAL

Not to Scale



CALL BOX MOUNTING, TYPICAL

SCALE 1"=1'-0"



"OBSERVATION OF CONSTRUCTION" IS DEFINED IN CHAPTER 16-115, HAWAII ADMINISTRATIVE RULES ENTITLED "PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS AND LANDSCAPE ARCHITECTS"

THIS WORK WAS PREPARED BY ME OR UNDER
MY SUPERVISION AND CONSTRUCTION OF THIS
PROJECT WILL BE UNDER MY OBSERVATION



APRIL 30, 2001

WILSON OKAMOTO, CORP. IIC EXP. DATA

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

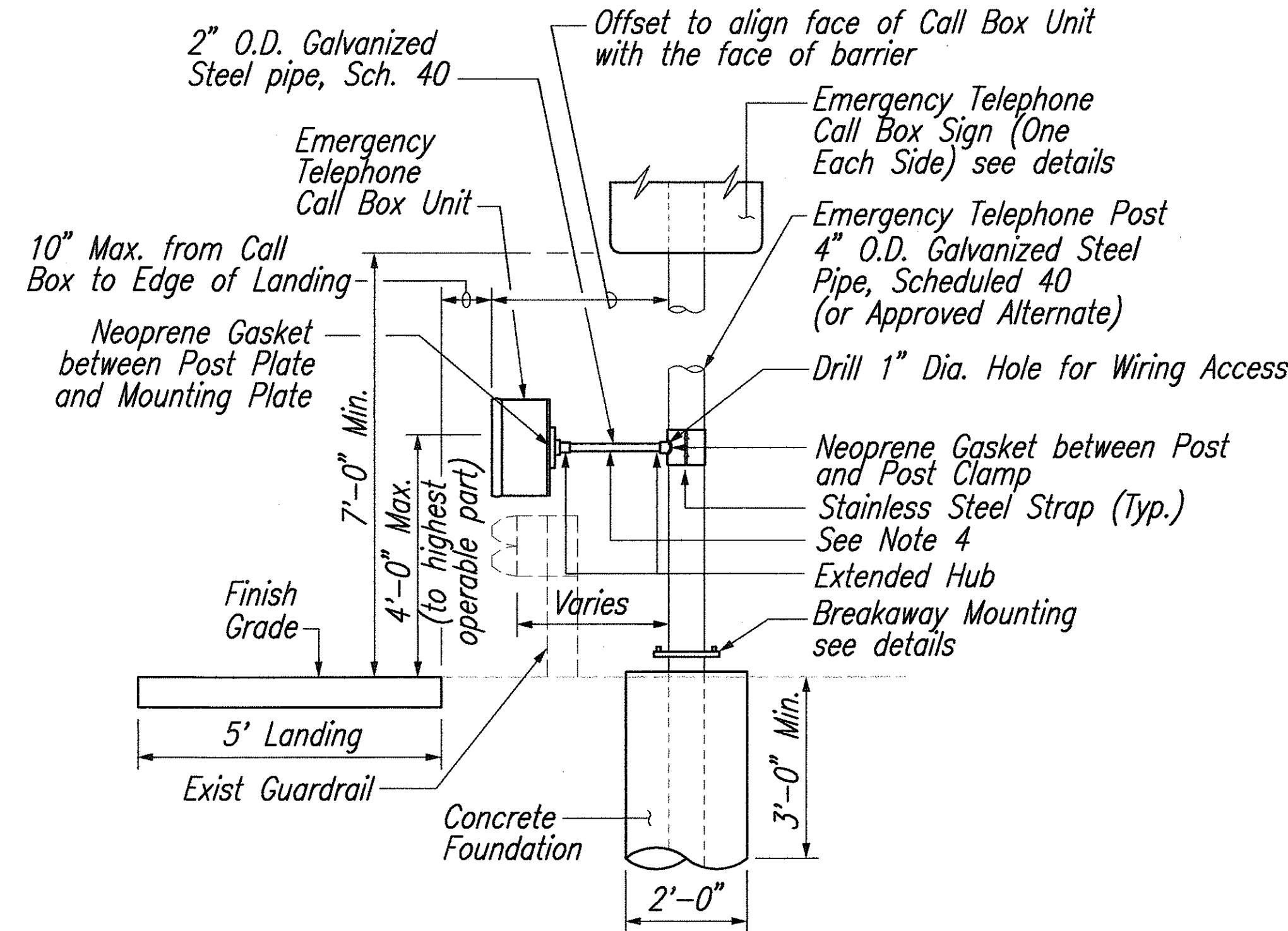
GENERAL NOTES, LEGEND & TYPICAL

CALL BOX INSTALLATION DETAIL

ADA Compliance for Emergency Telephones
at Various Locations on Oahu
Federal Aid Project No. CMAQ-0300(100)

SHEET No. CB19 OF 74 SHEETS

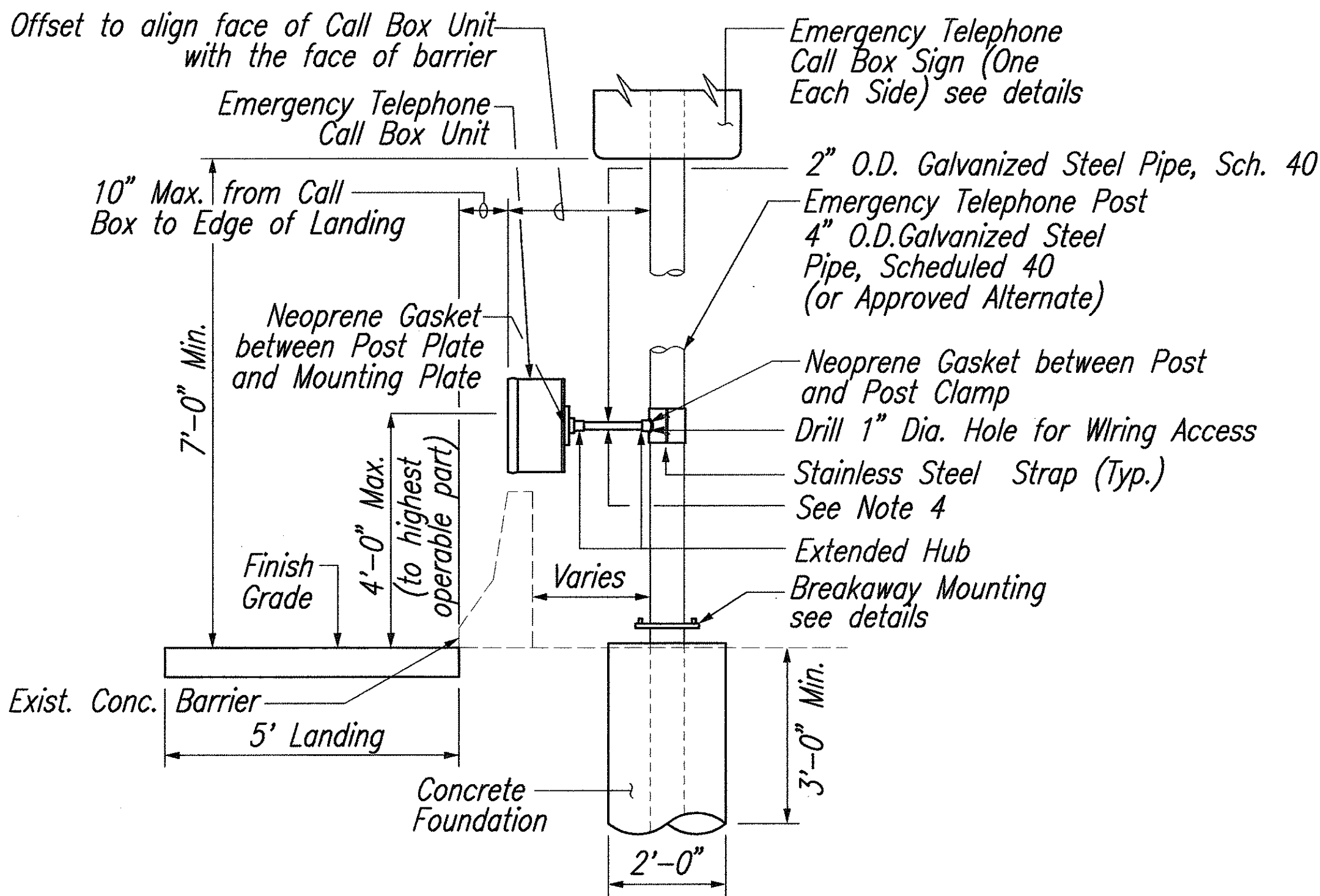
| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII | HAW. | CMAQ-0300(100) | 2004 | ADD. 21 | 75 |



BEHIND METAL GUARDRAIL

NOTES:

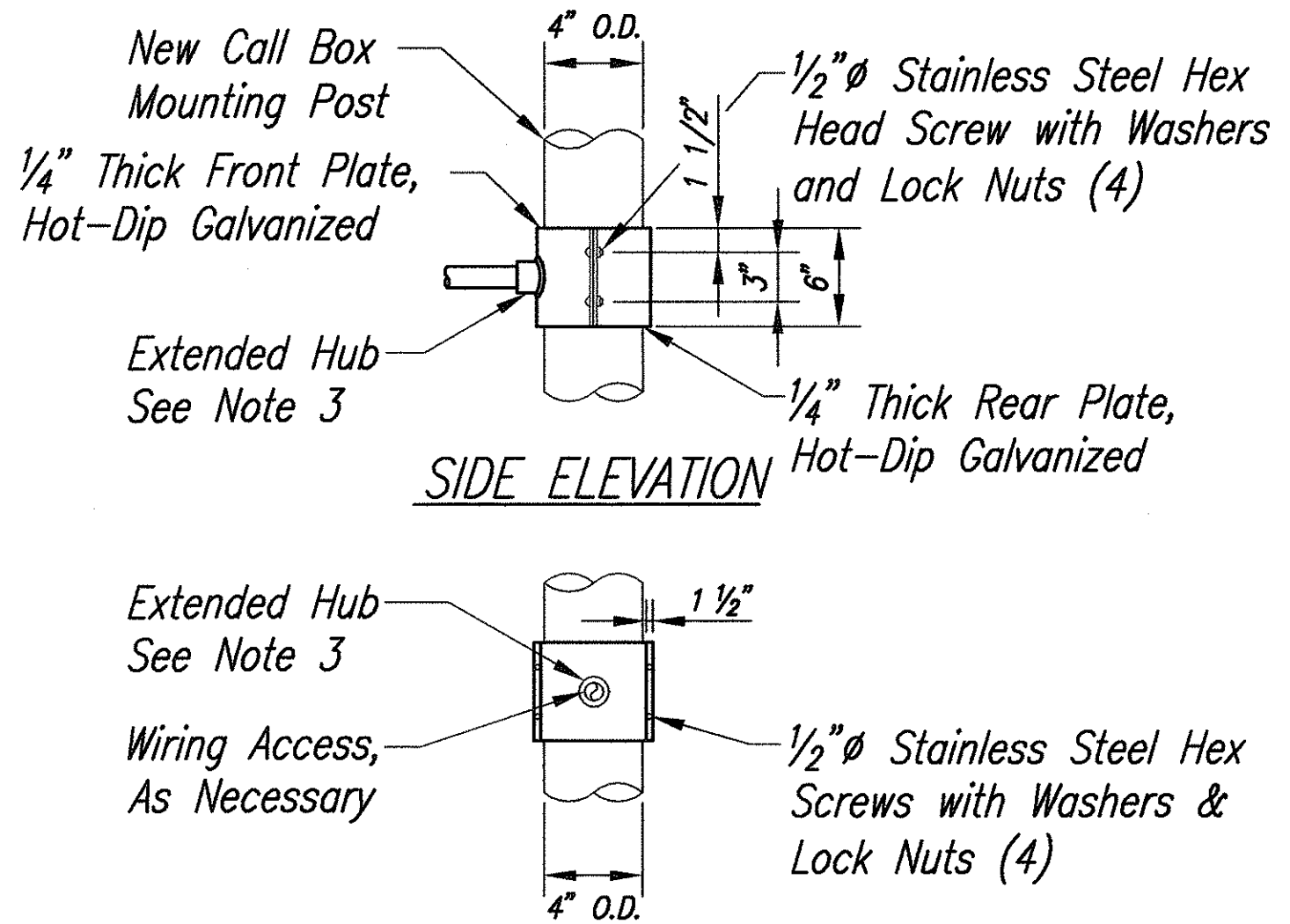
1. Typical installation for behind metal and concrete barrier rail are similar
2. Hot Dip Galvanized Post Clamp after fabrication. Post Clamp shall be snug around Mounting Post & shall not easily slide up & down or rotate
3. Lock conduits to hub with internal hex set. Screw or tack weld prior to hot dip galvanizing.
4. Adjust pipe length as required to fit location.
5. Install with 1/4" stainless steel countersink screws, washers and locknuts.
6. 10" max. from Call Box to edge of landing.



BEHIND CONCRETE BARRIER

TYPICAL CALL BOX EXTENSION ARM MOUNTING DETAIL

SCALE 1/2"=1'-0"

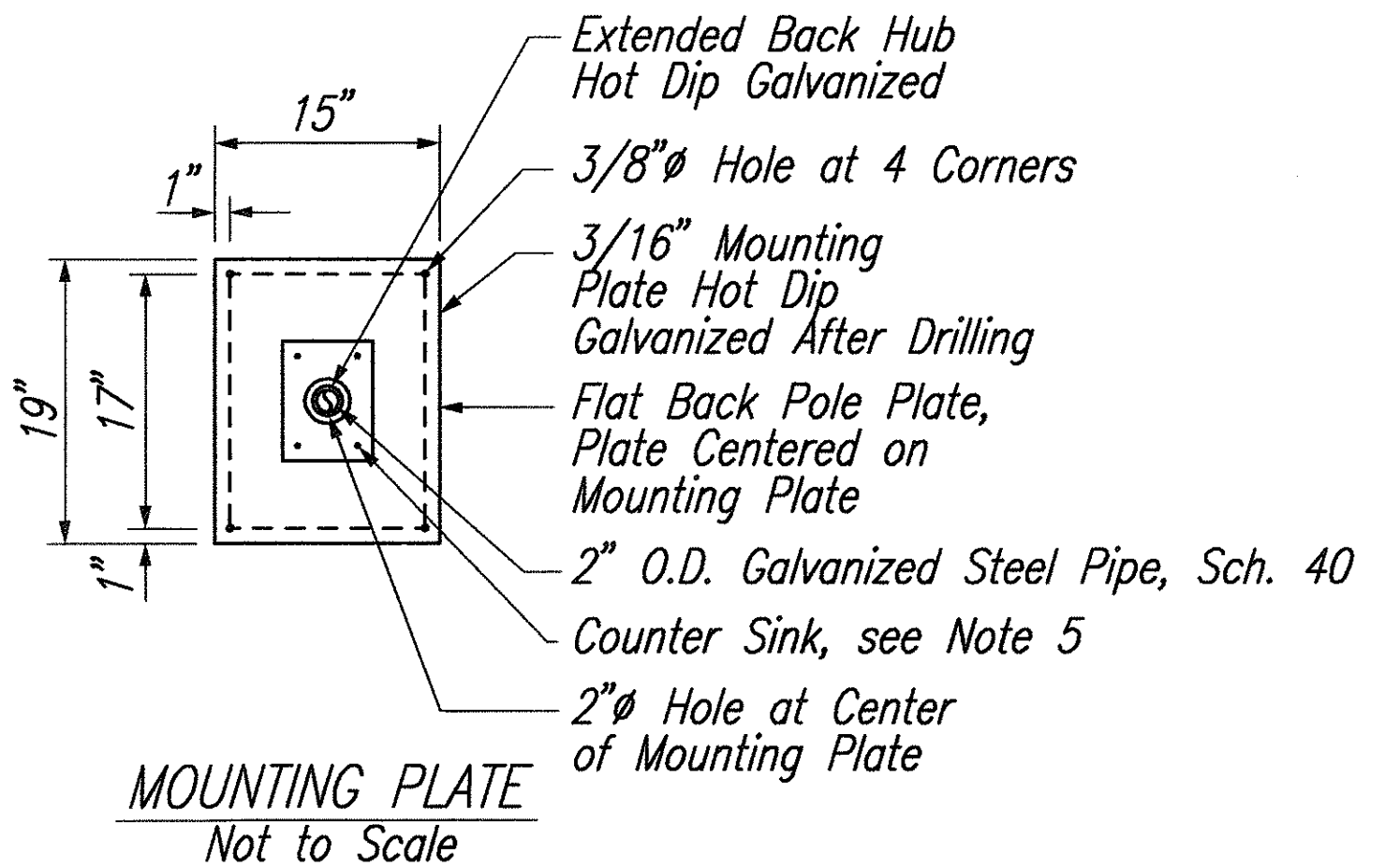


SIDE ELEVATION

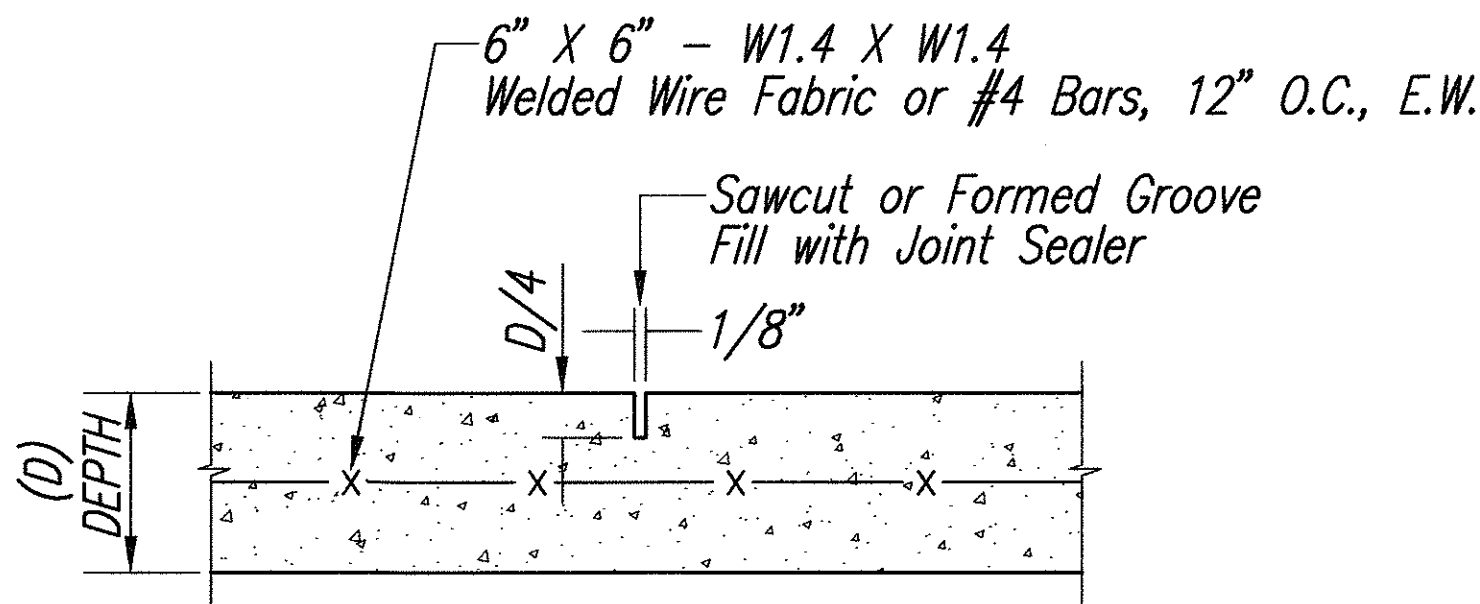
FRONT ELEVATION

EXTENSION ARM POST CLAMP

NOT TO SCALE

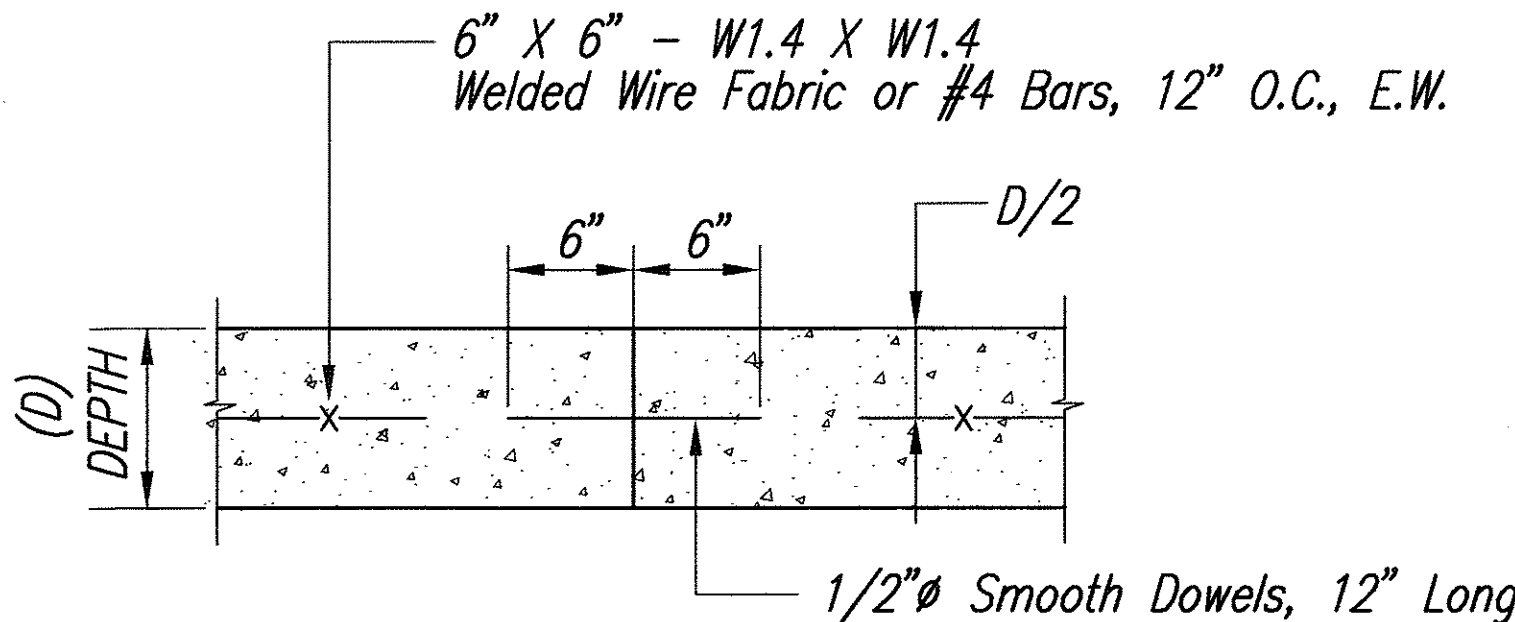


MOUNTING PLATE
Not to Scale



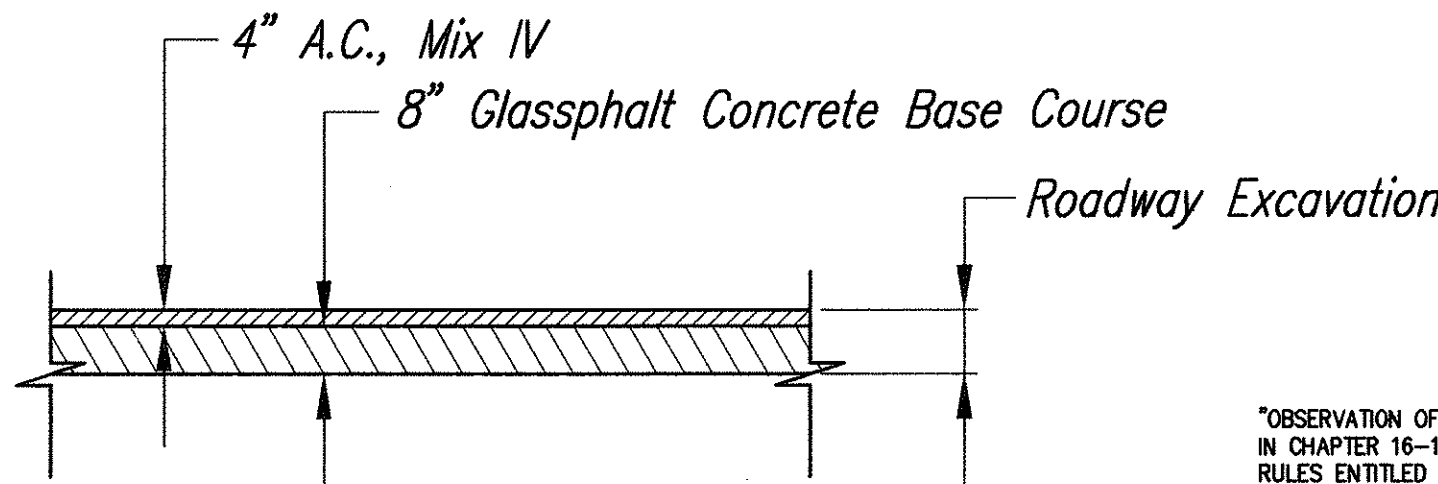
TYPICAL SECTION - CONTRACTION JOINT

NOT TO SCALE



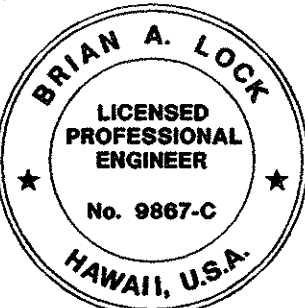
TYPICAL SECTION - CONSTRUCTION JOINT

NOT TO SCALE



NEW PAVEMENT STRUCTURE (TRAVELWAY/SHOULDER)

SCALE 1/2"=1'-0"



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.
WILSON OKAMOTO CORP. LIC. EXP. DATE APRIL 30, 2006

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPICAL CALL BOX INSTALLATION
& MISCELLANEOUS DETAILS

ADA Compliance for Emergency Telephones
at Various Locations on Oahu
Federal Aid Project No. CMAQ-0300(100)

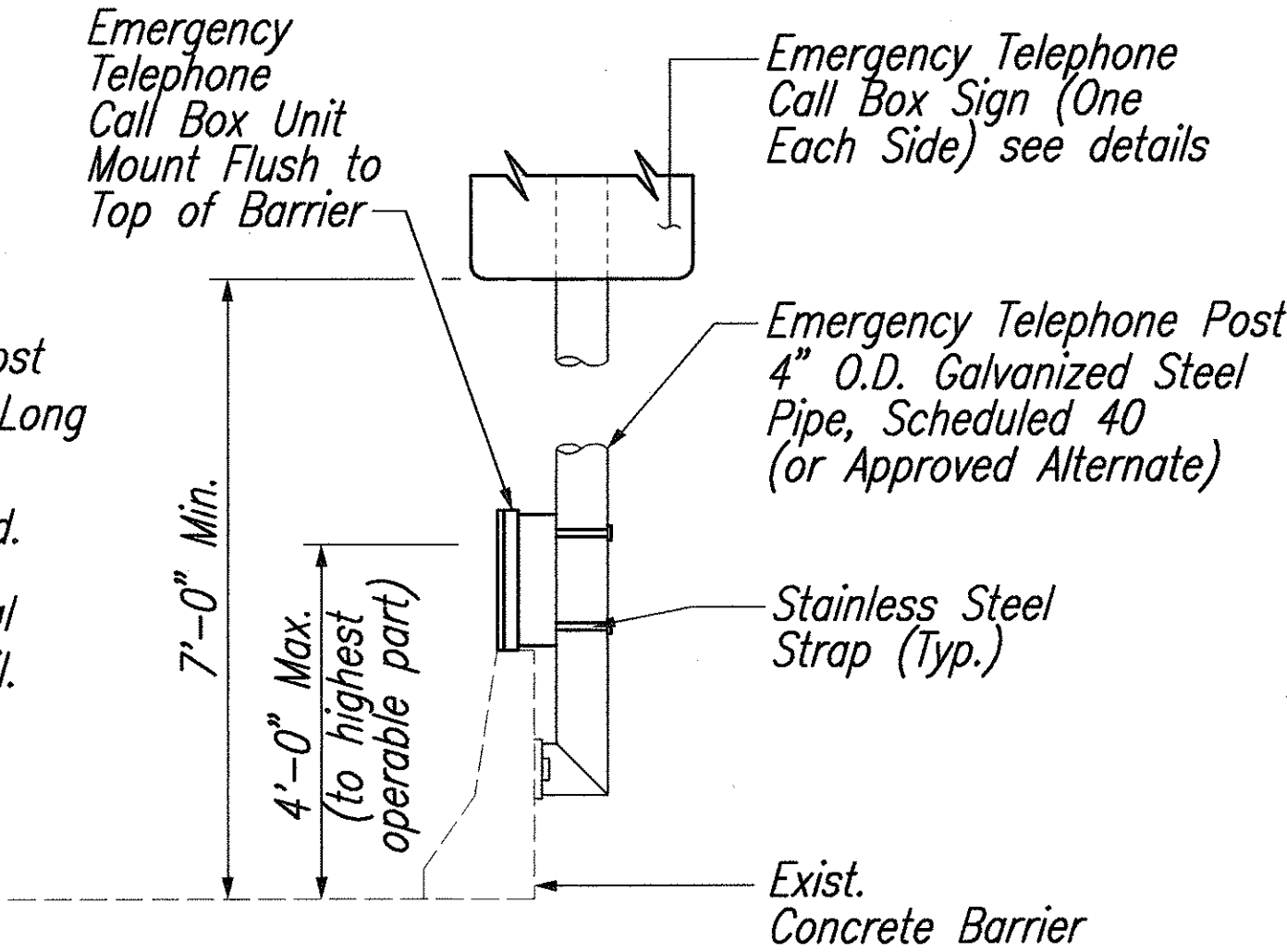
Scale: As Shown Date: AUGUST 27, 2004

SHEET No. CB20 OF 74 SHEETS

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|------------|--------------|
| HAWAII | HAW. | CMAQ-0300(100) | 2004 | ADD. 21S-1 | 75 |

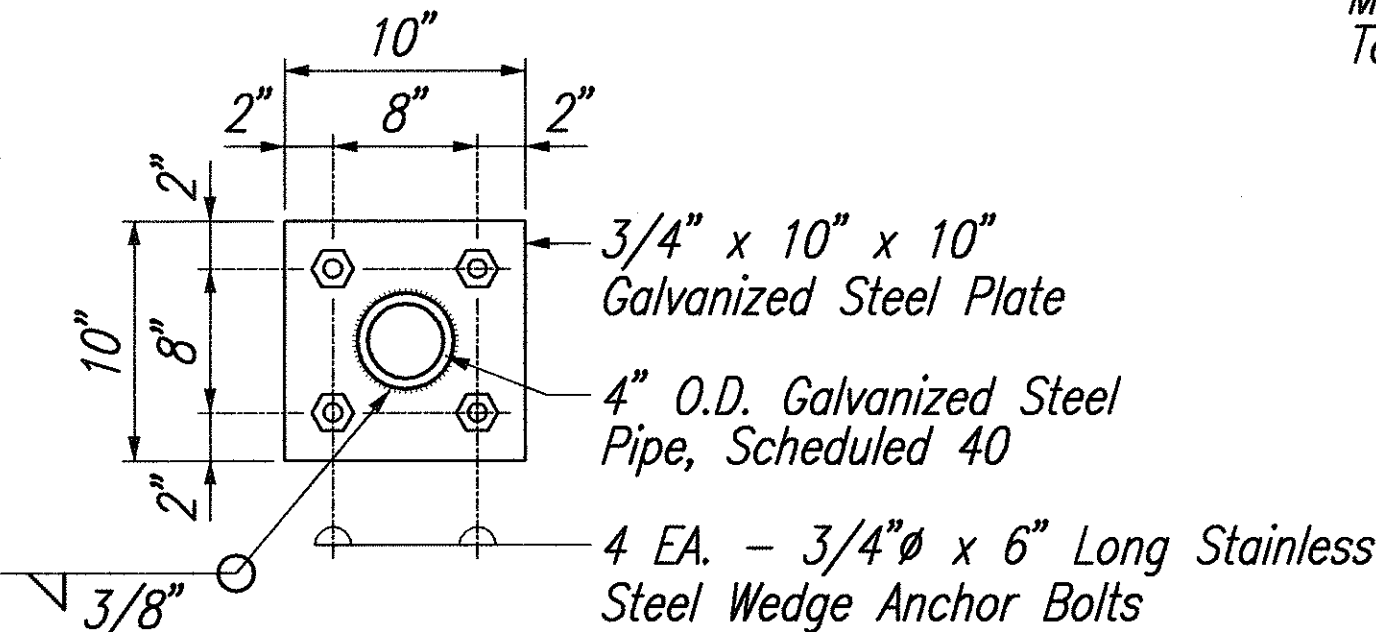
NOTE:

- Contractor May Install New Post Utilizing existing Anchors, as Long as Post Heights Comply with Maximum Heights as Indicated.
- For Extension Arm See Typical Extension Arm Mounting Detail.

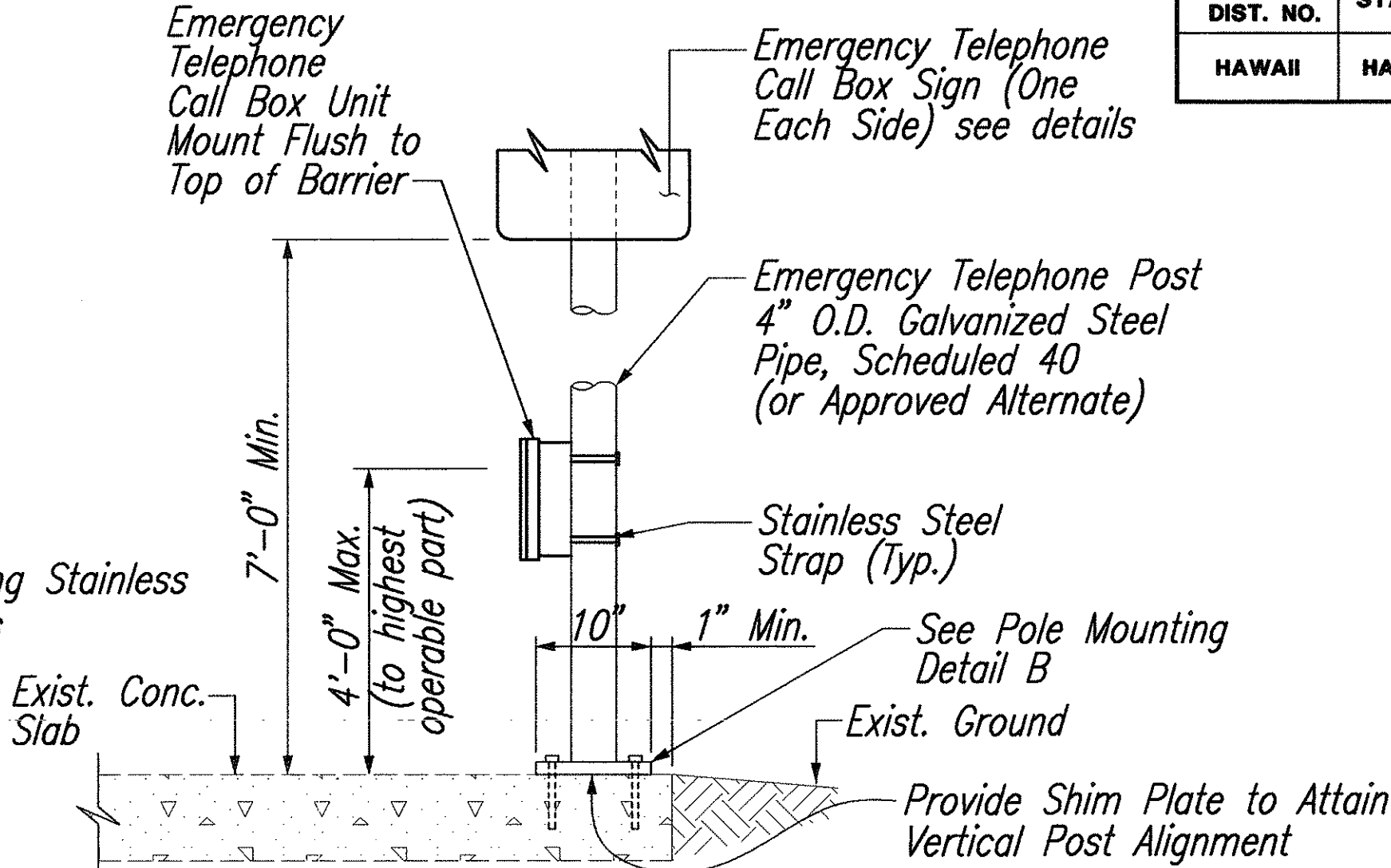


**TYPICAL CALL BOX MOUNTING DETAIL
ON BACK FACE OF CONCRETE BARRIER
OR BRIDGE RAILING - BR1**

NOT TO SCALE

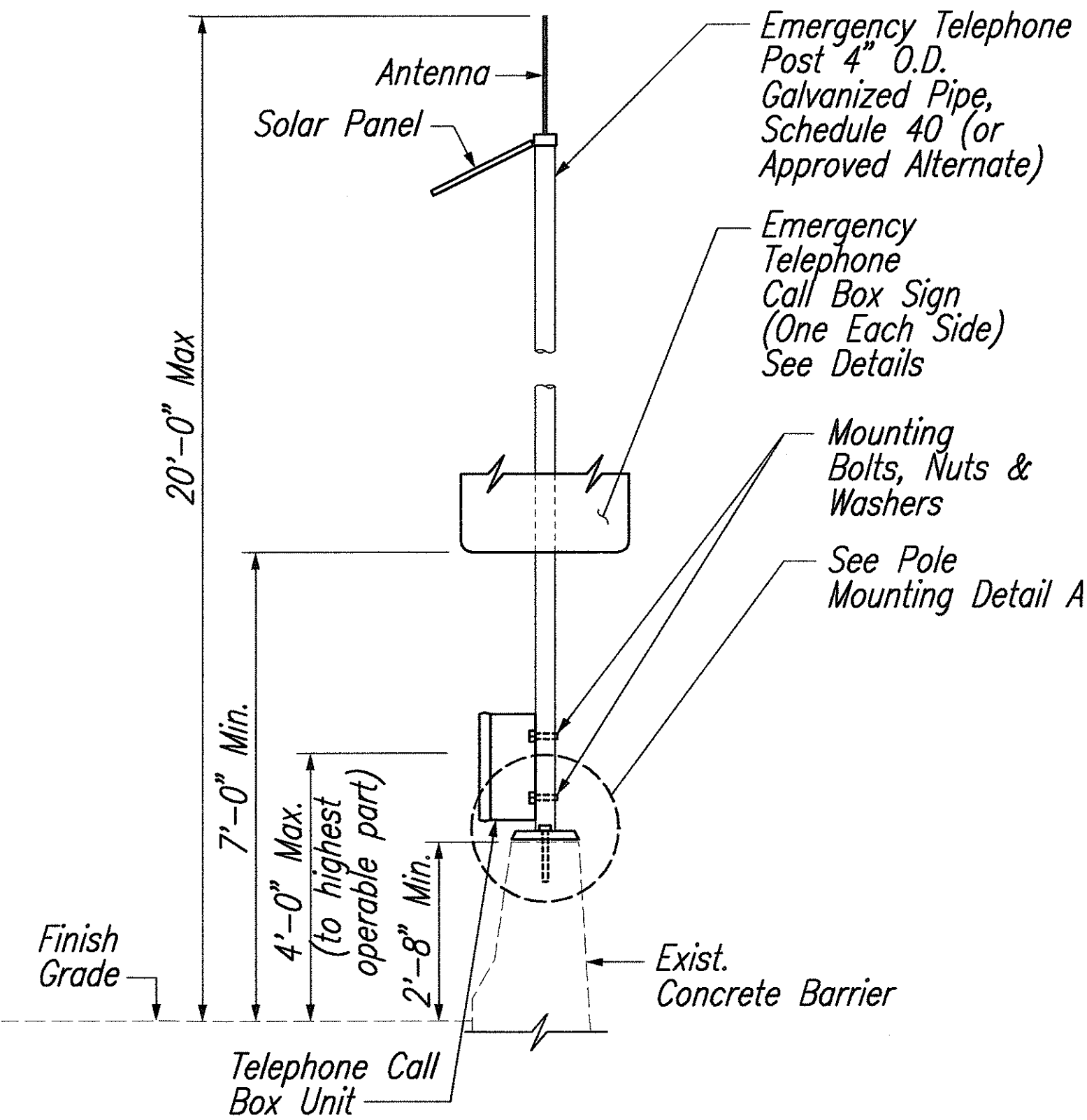


POLE MOUNTING DETAIL B
NOT TO SCALE



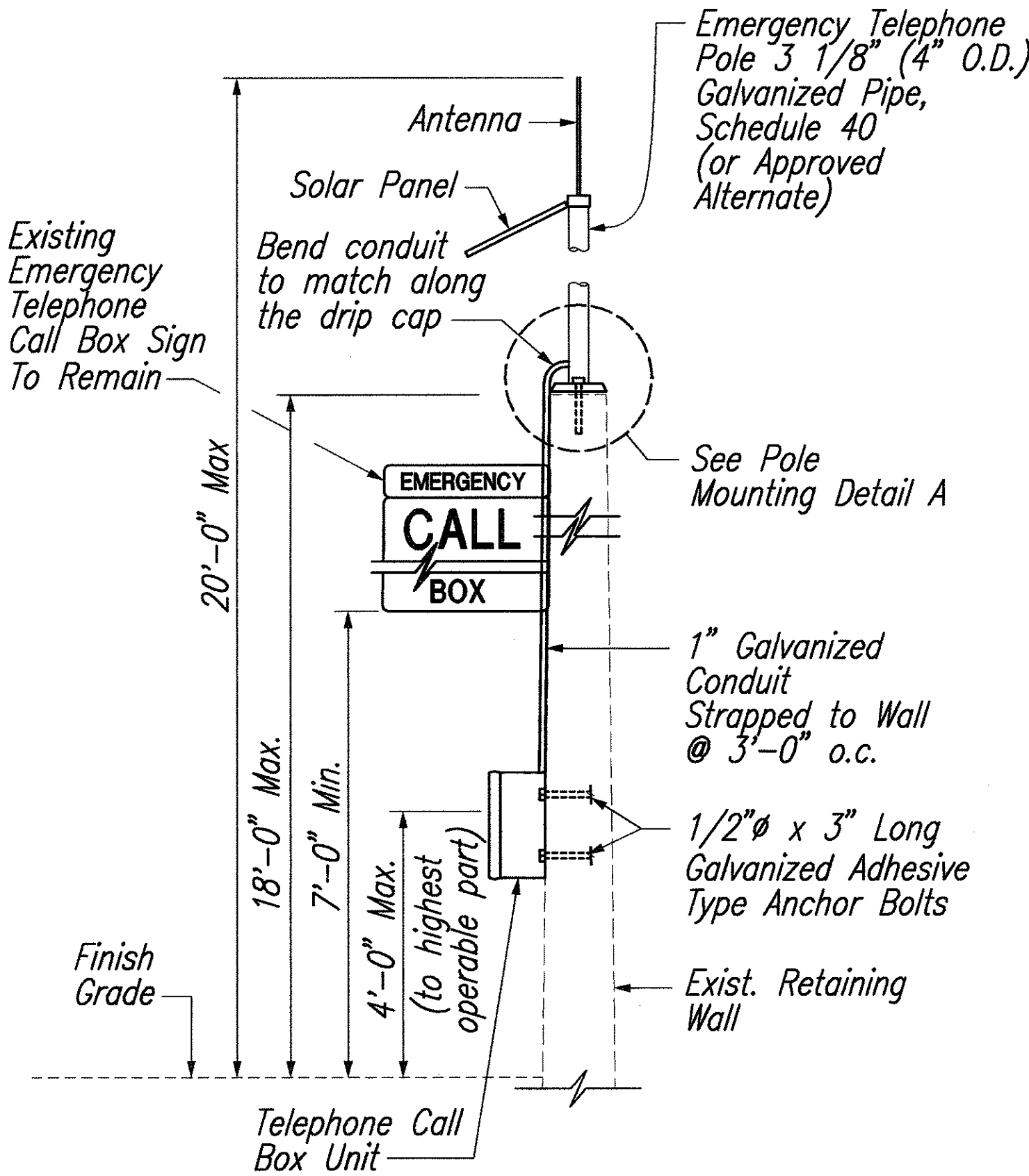
**TYPICAL CALL BOX MOUNTING DETAIL
ON CONCRETE SLAB**

NOT TO SCALE



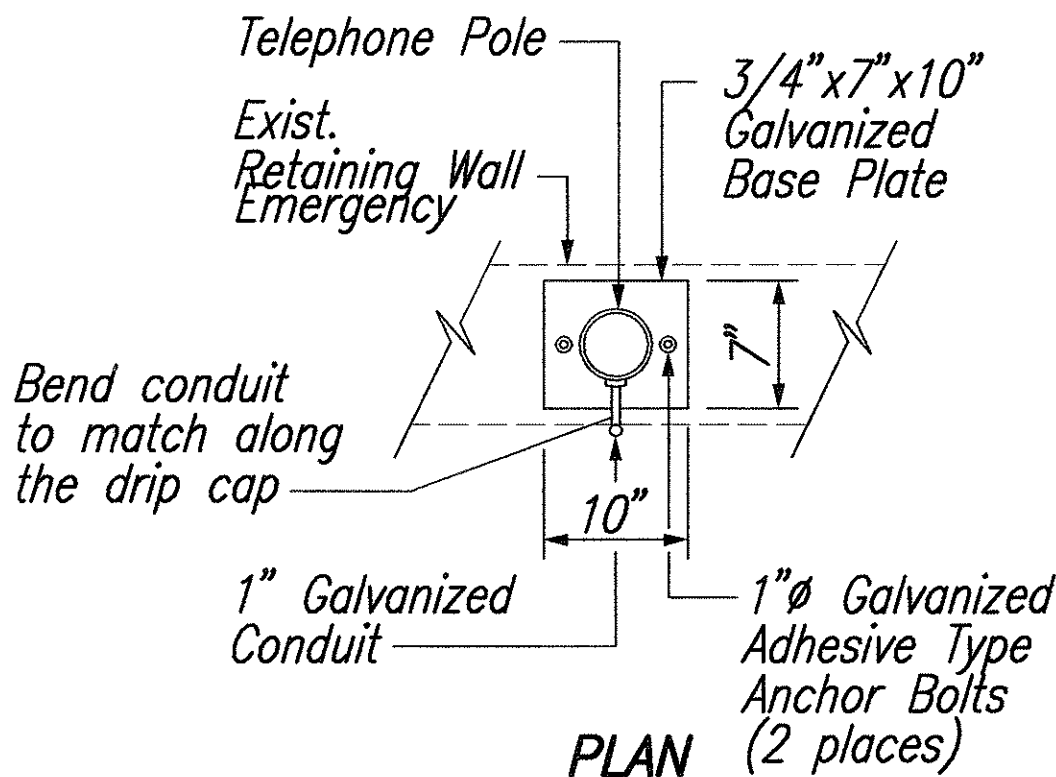
**TYPICAL CALL BOX MOUNTING DETAIL
ON TOP OF CONCRETE BARRIER
OR BRIDGE RAILING - BR2**

NOT TO SCALE

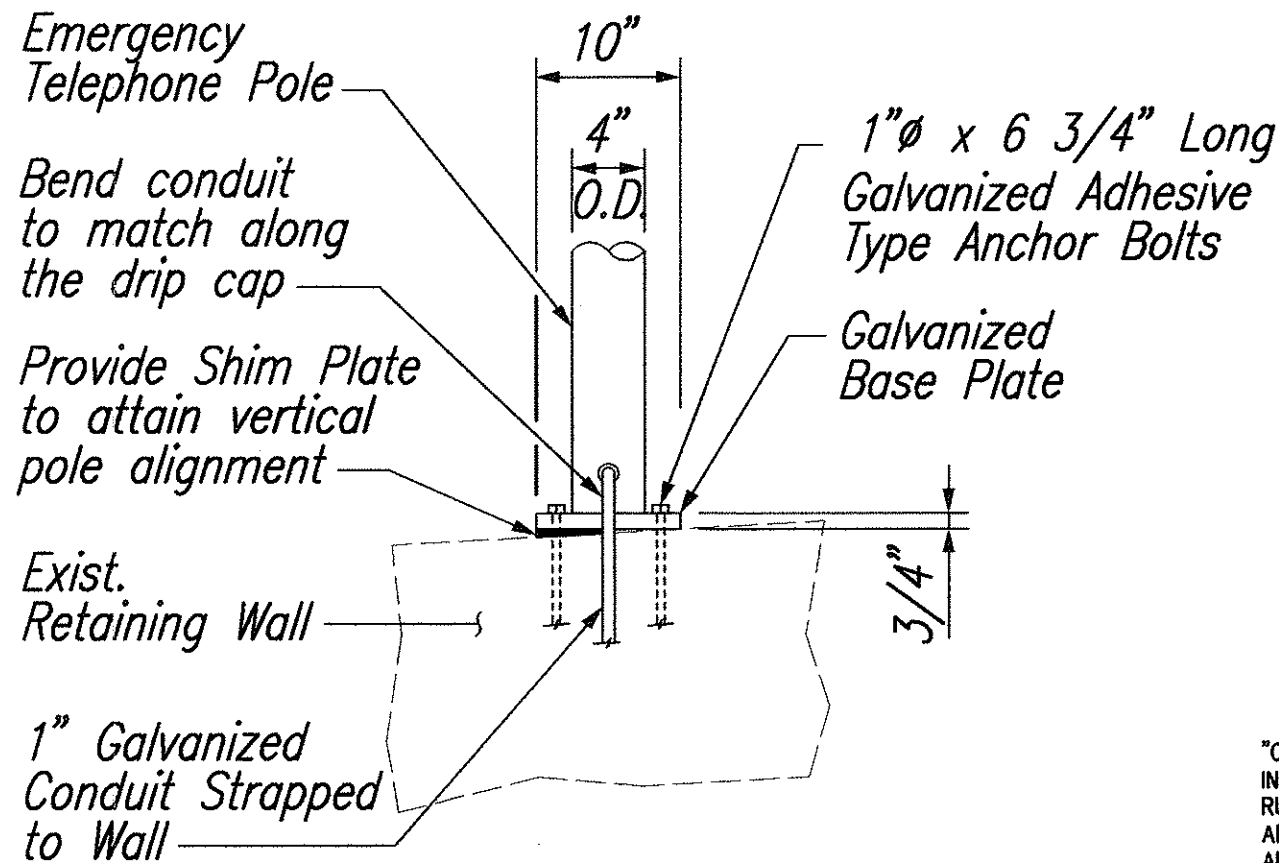


**TYPICAL CALL BOX MOUNTING DETAIL
ON RETAINING WALL**

NOT TO SCALE



PLAN



ELEVATION

POLE MOUNTING DETAIL A

NOT TO SCALE

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.

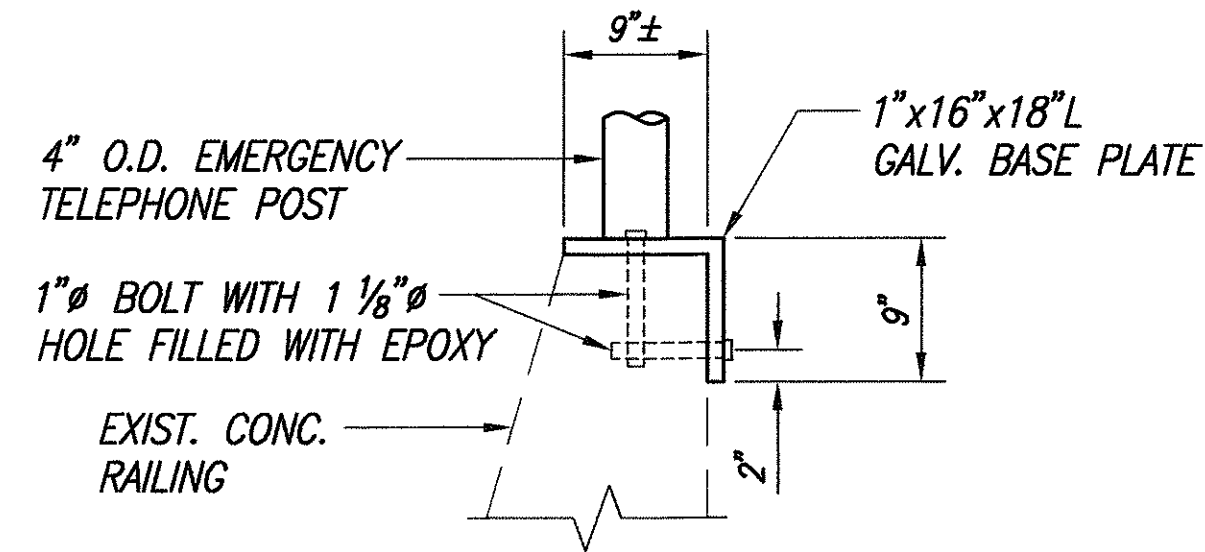
Brian A. Lock
BRIAN A. LOCK
LICENSED PROFESSIONAL ENGINEER
No. 9867-C
HAWAII, U.S.A.

"OBSERVATION OF CONSTRUCTION" IS DEFINED IN CHAPTER 16-115, HAWAII ADMINISTRATIVE RULES ENTITLED "PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS AND LANDSCAPE ARCHITECTS".

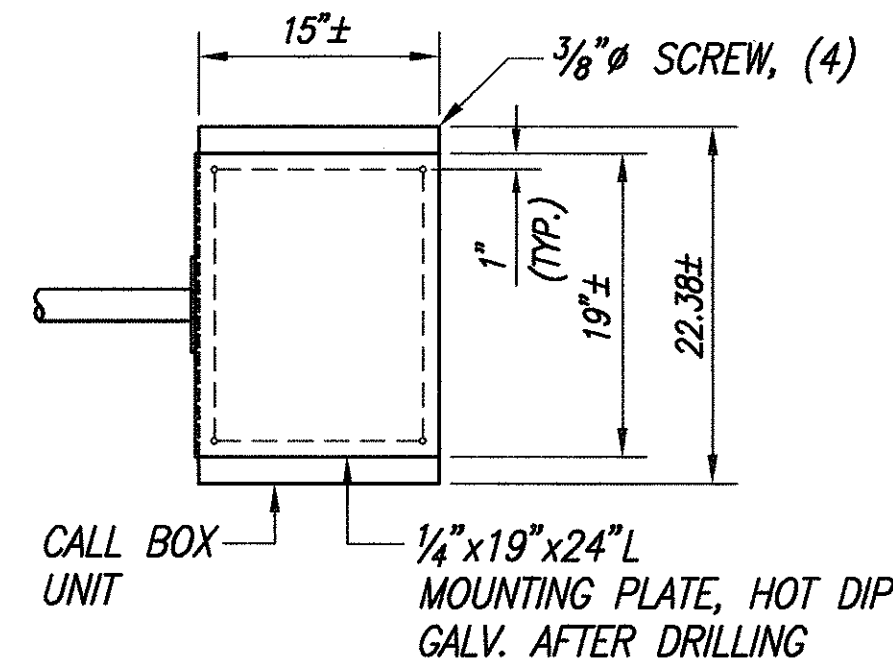
APRIL 30, 2006
WILSON OKAMOTO CORP. LIC. EXP. DATE

| STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION | |
|-------------------------------------------------------------------------------------------------------------------|-----------------------|
| STANDARD INSTALLATION DETAILS | |
| ADA Compliance for Emergency Telephones at Various Locations on Oahu Federal Aid Project No. CMAQ-0300(100) | |
| Scale: As Shown | Date: AUGUST 27, 2004 |
| SHEET No. CB20A OF 74 SHEETS | |

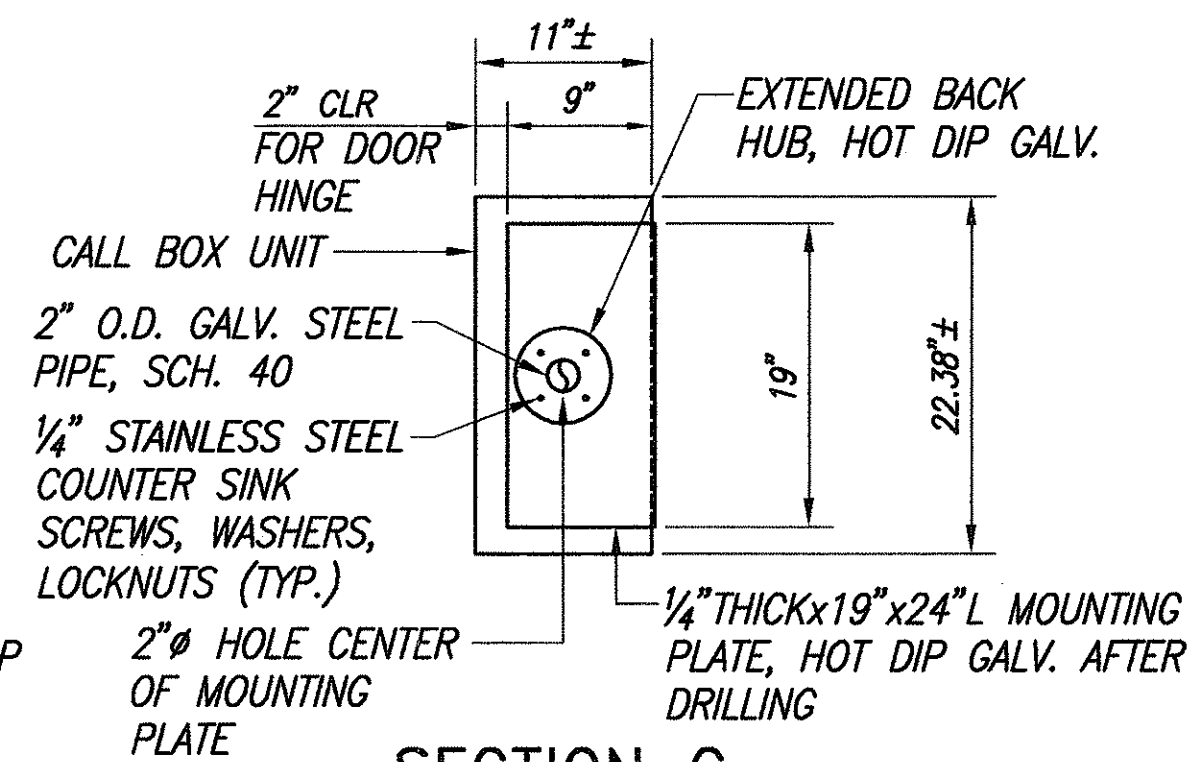
| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|------------|--------------|
| HAWAII | HAW. | CMAQ-0300(100) | 2004 | ADD. 215-2 | 75 |



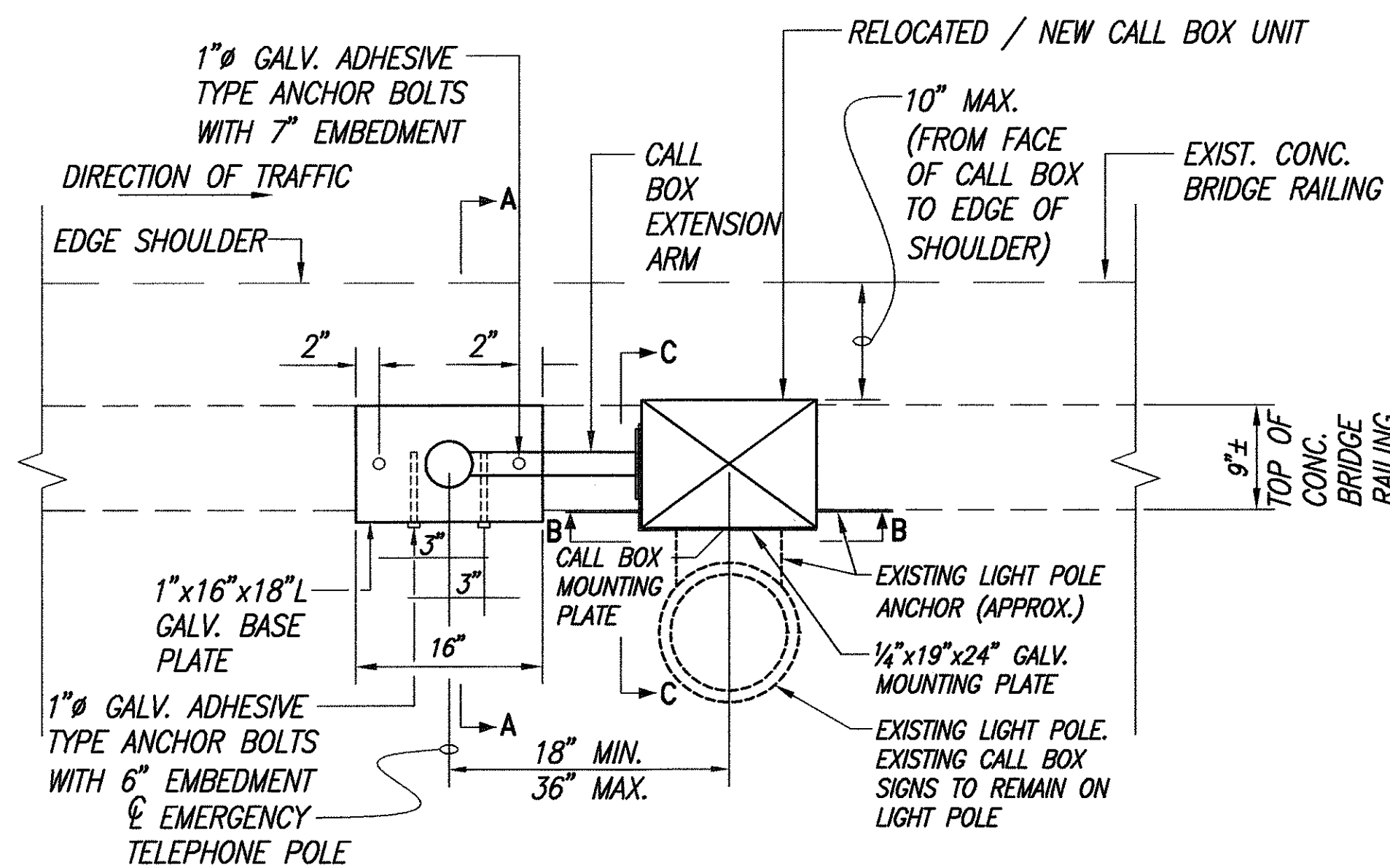
SECTION A
SCALE: 1"=1'-0"



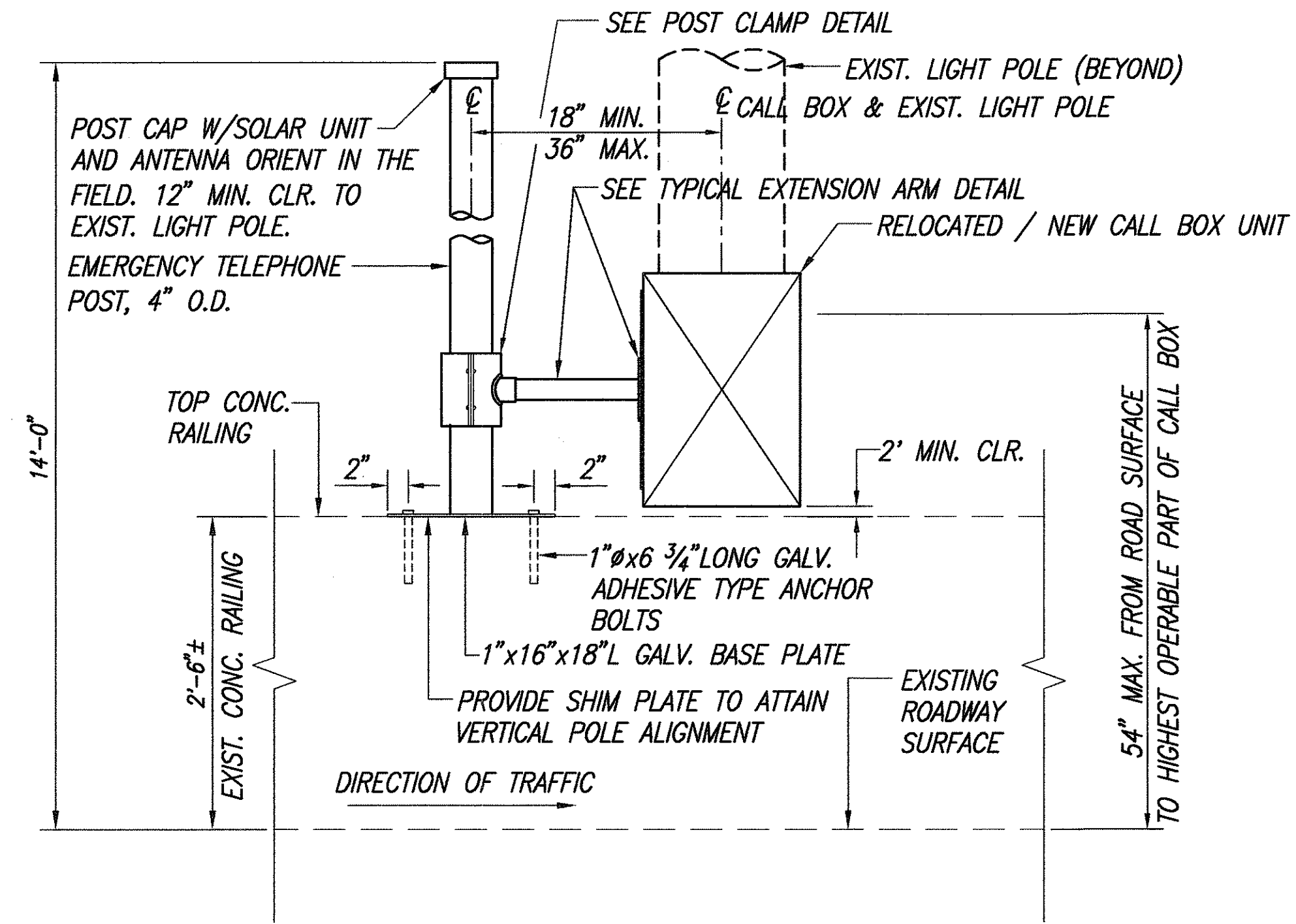
SECTION B
SCALE: 1"=1'-0"



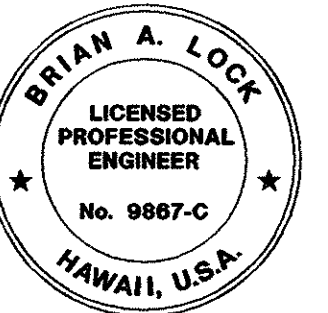
SECTION C
SCALE: 1"=1'-0"



TYPICAL CALL BOX / HORIZONTAL OFFSET MOUNTING DETAIL
ON BRIDGE RAILING AT LIGHT POLE LOCATION BR3
SCALE: 1"=1'-0"



ELEVATION
SCALE: 1"=1'-0"



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.
WILSON OKAMOTO CORP. LIC. EXP. DATE
APRIL 30, 2006

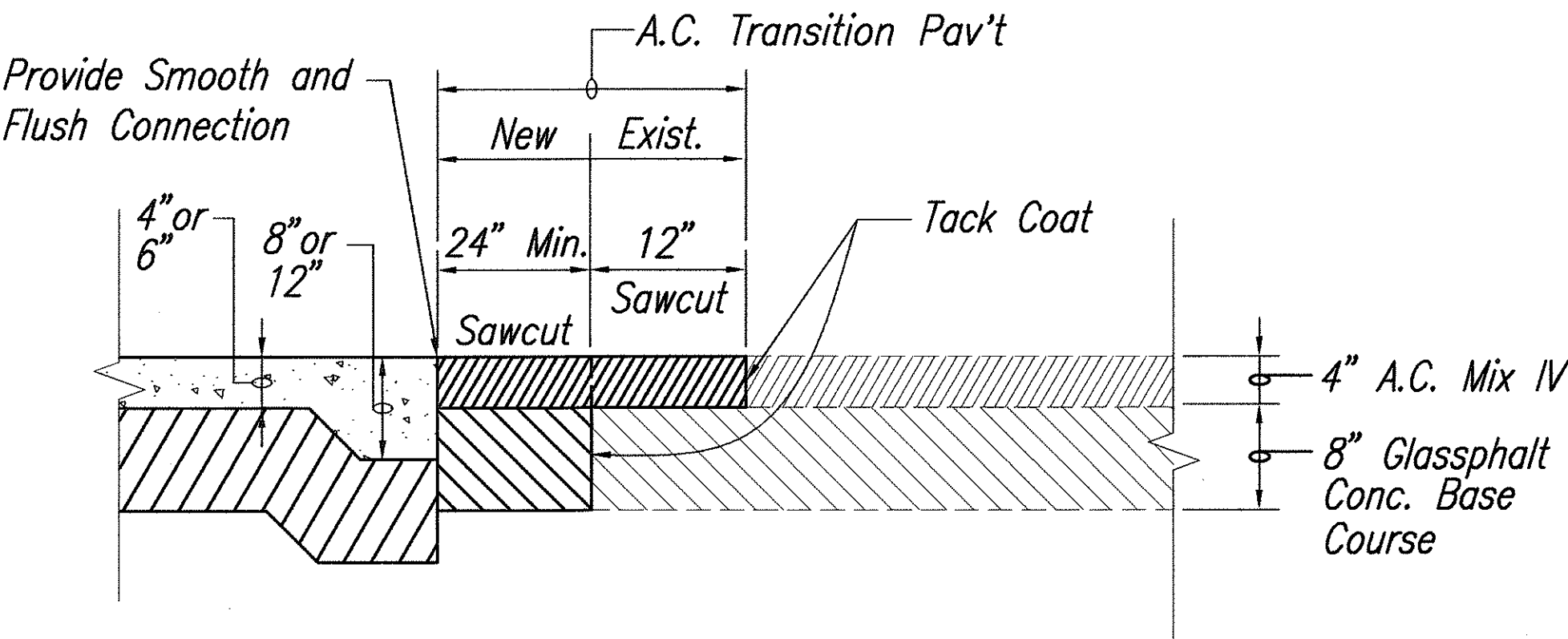
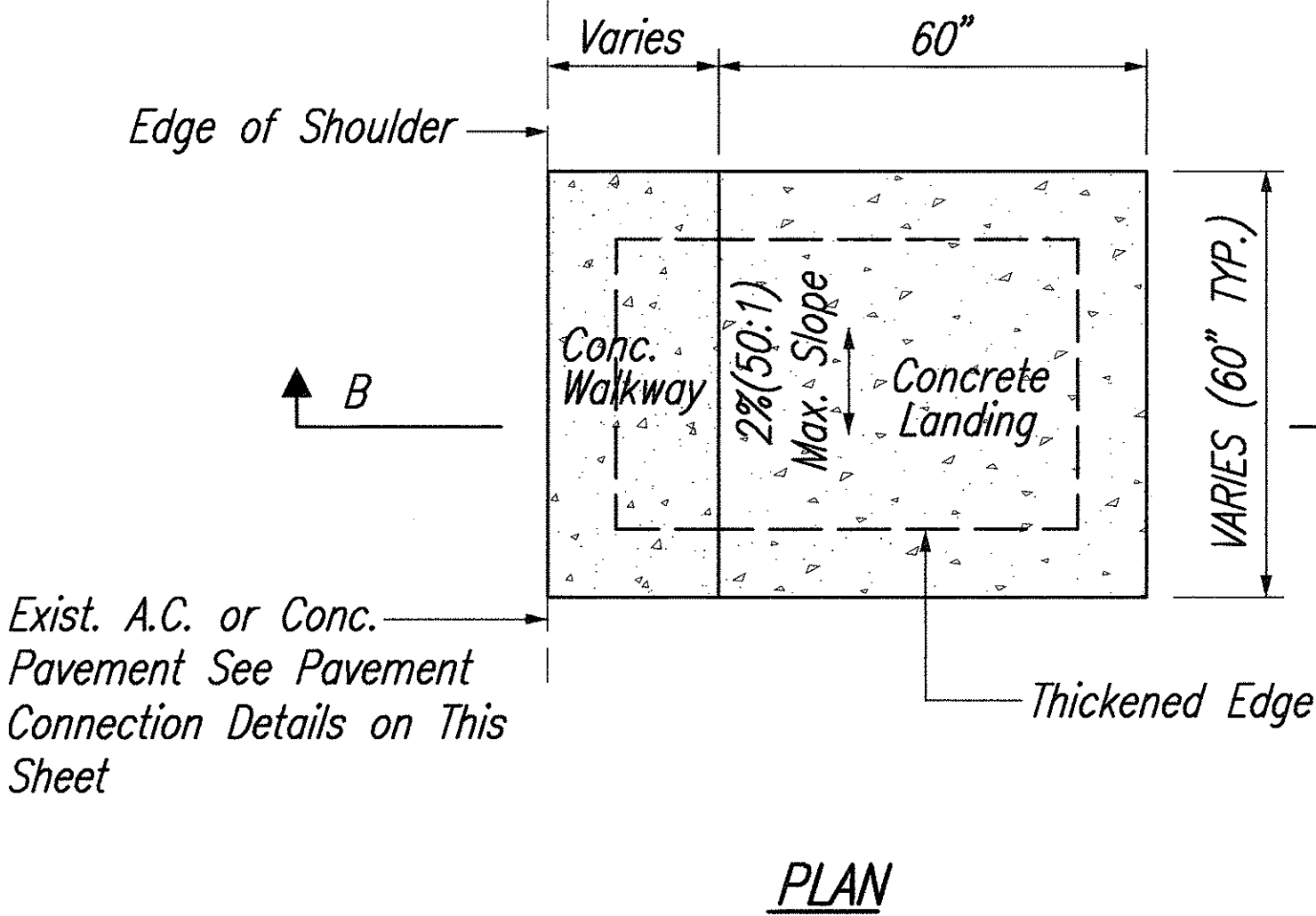
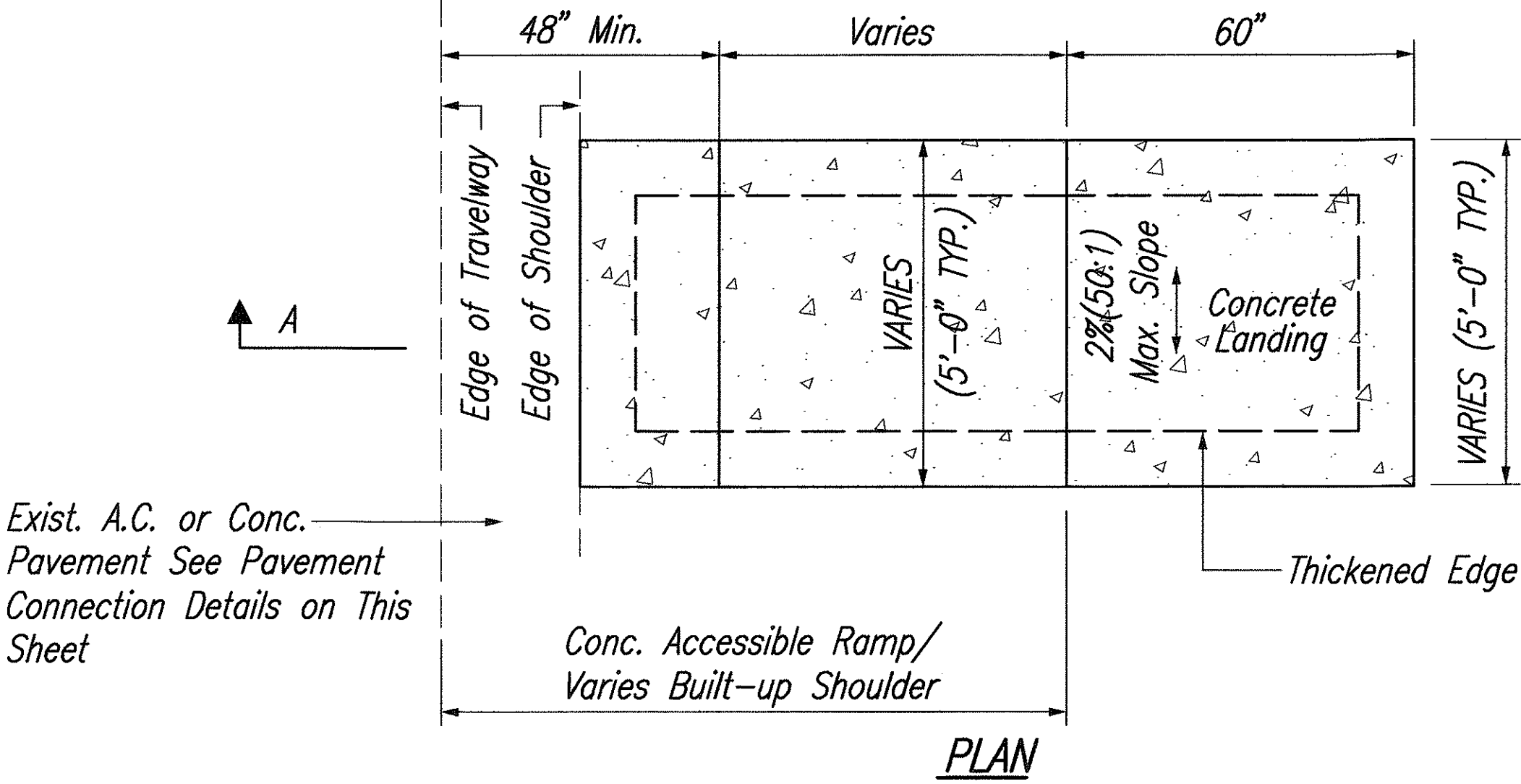
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
**TYPICAL CALL BOX INSTALLATION
& MISCELLANEOUS DETAILS**
ADA Compliance for Emergency Telephones
at Various Locations on Oahu
Federal Aid Project No. CMAQ-0300(100)
Scale: As Shown Date: AUGUST 27, 2004
SHEET No. CB20B OF 74 SHEETS

| | |
|---------------|------|
| DESIGNED BY | DATE |
| NOTED BY | |
| CHECKED BY | |
| ORIGINAL PLAN | |
| NOTE BOOK | |
| No. | |

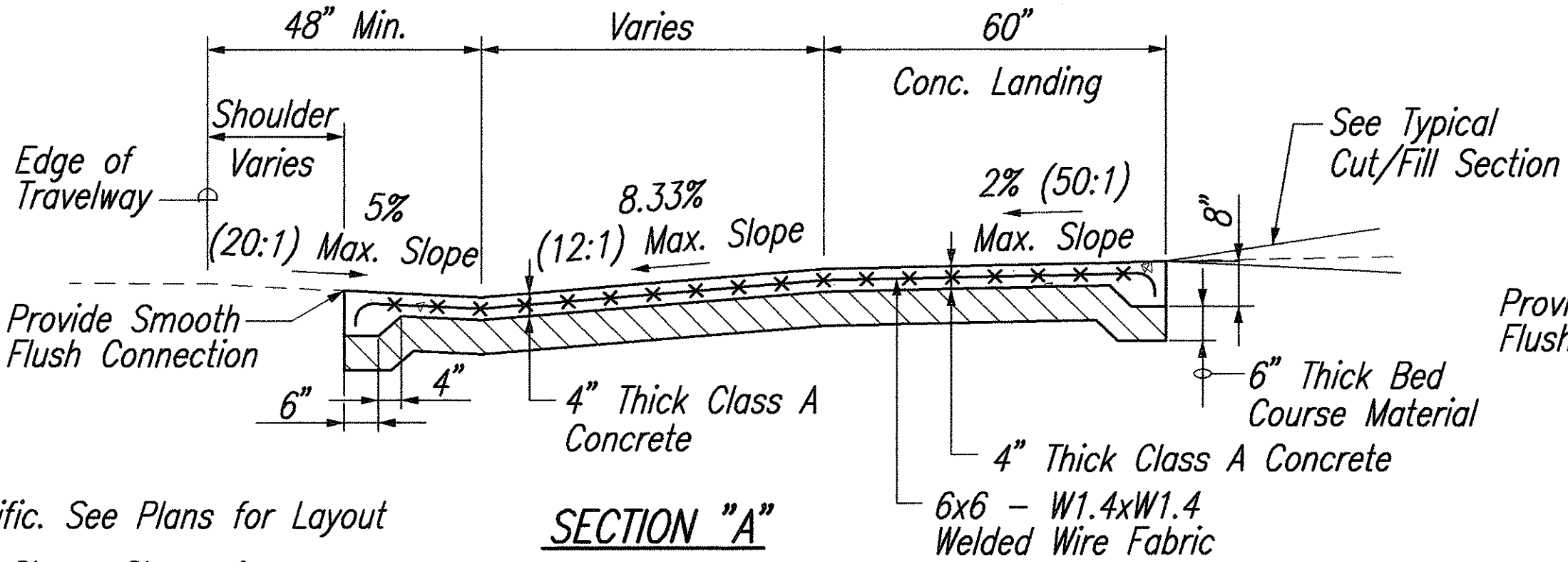
10/18/04 ADDED SHEET

DATE REVISION

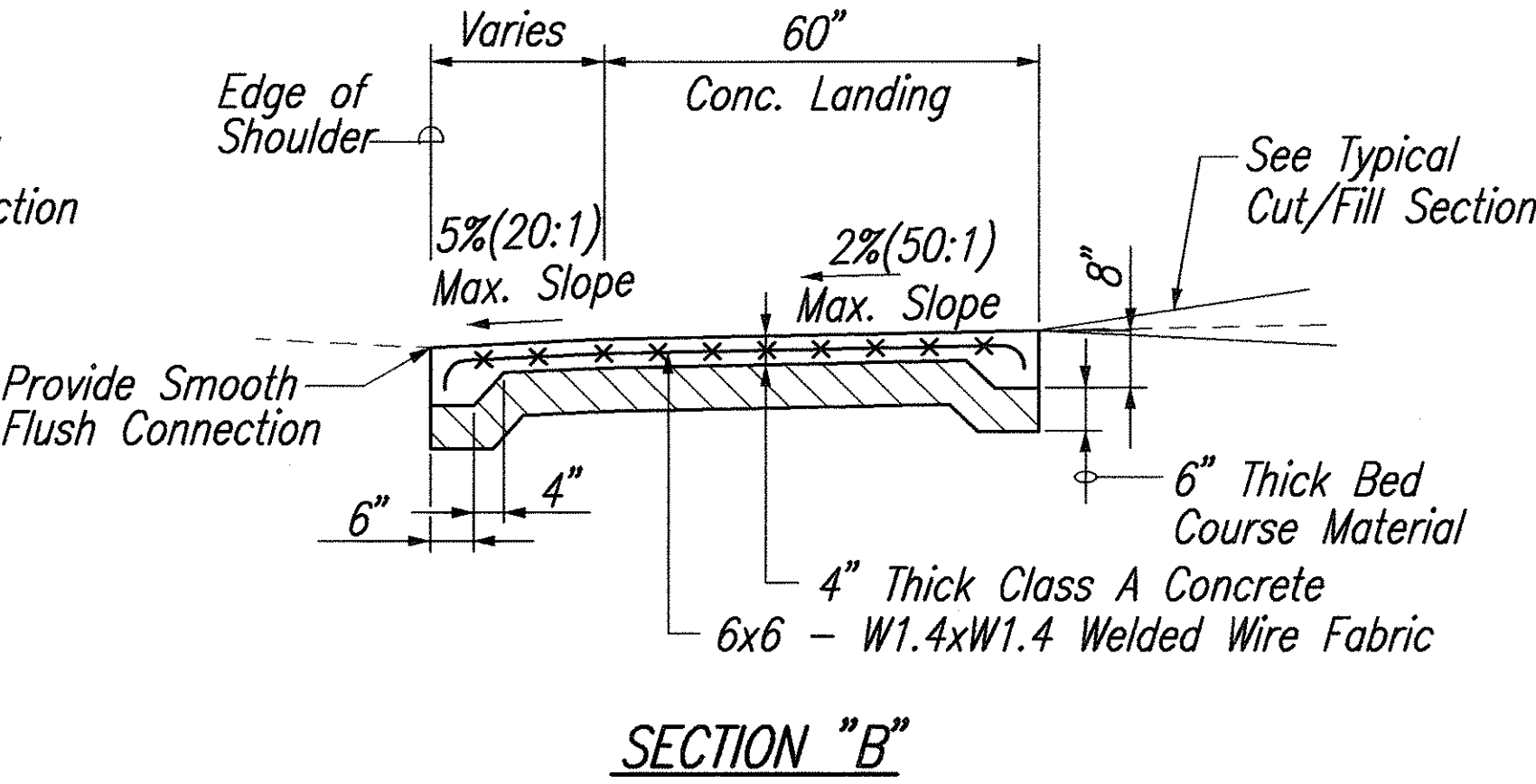
| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII | HAW. | CMAQ-0300(100) | 2004 | 22 | 75 |



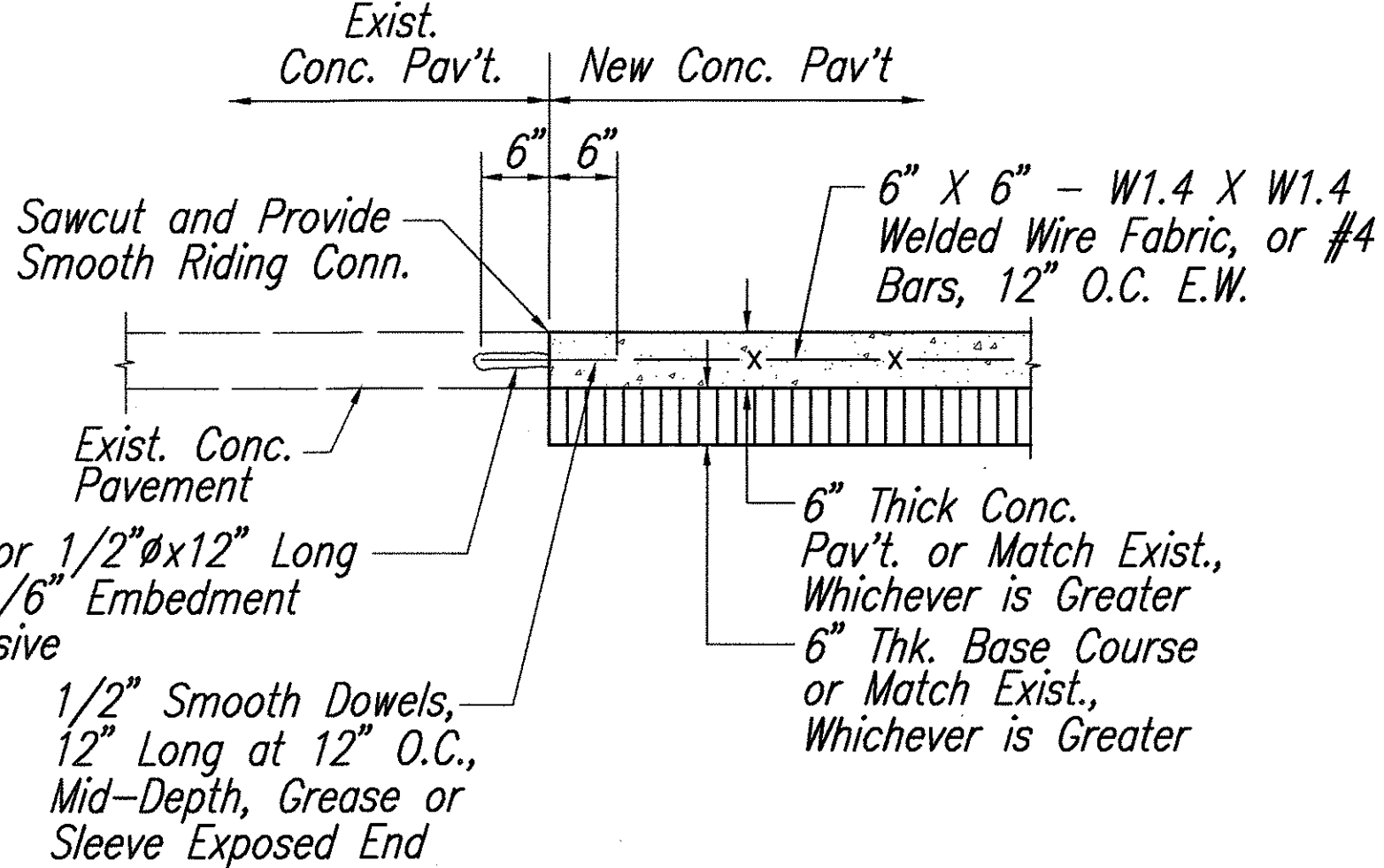
TYPICAL CONCRETE PAVEMENT
CONNECTION TO EXISTING A.C. PAVEMENT DETAIL
NOT TO SCALE



SECTION "A"
4" THICK CONCRETE LANDING
WITH ACCESSIBLE RAMP
SCALE 1/2"=1'-0"

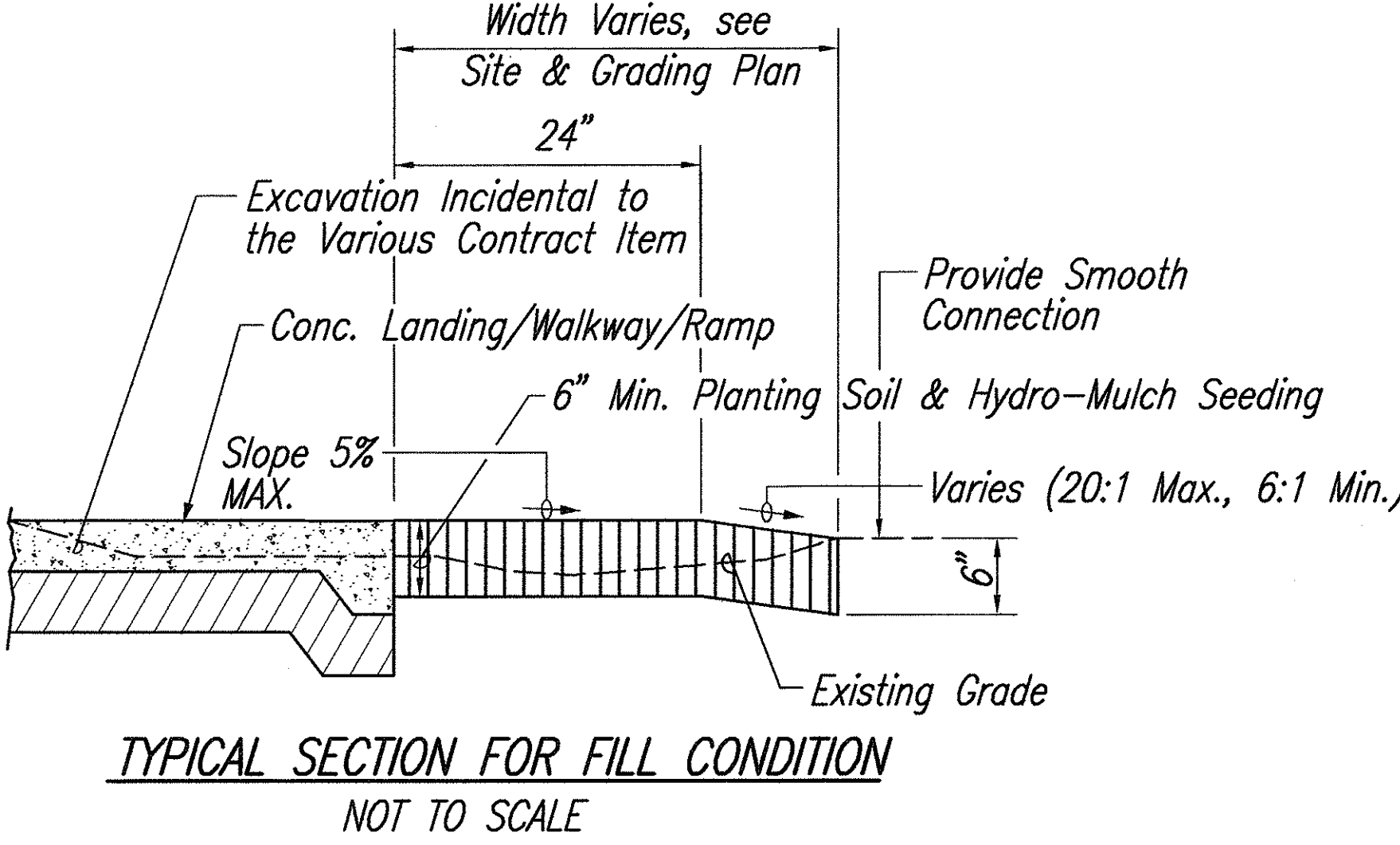


SECTION "B"
4" THICK CONCRETE LANDING
WITH WALKWAY
SCALE 1/2"=1'-0"

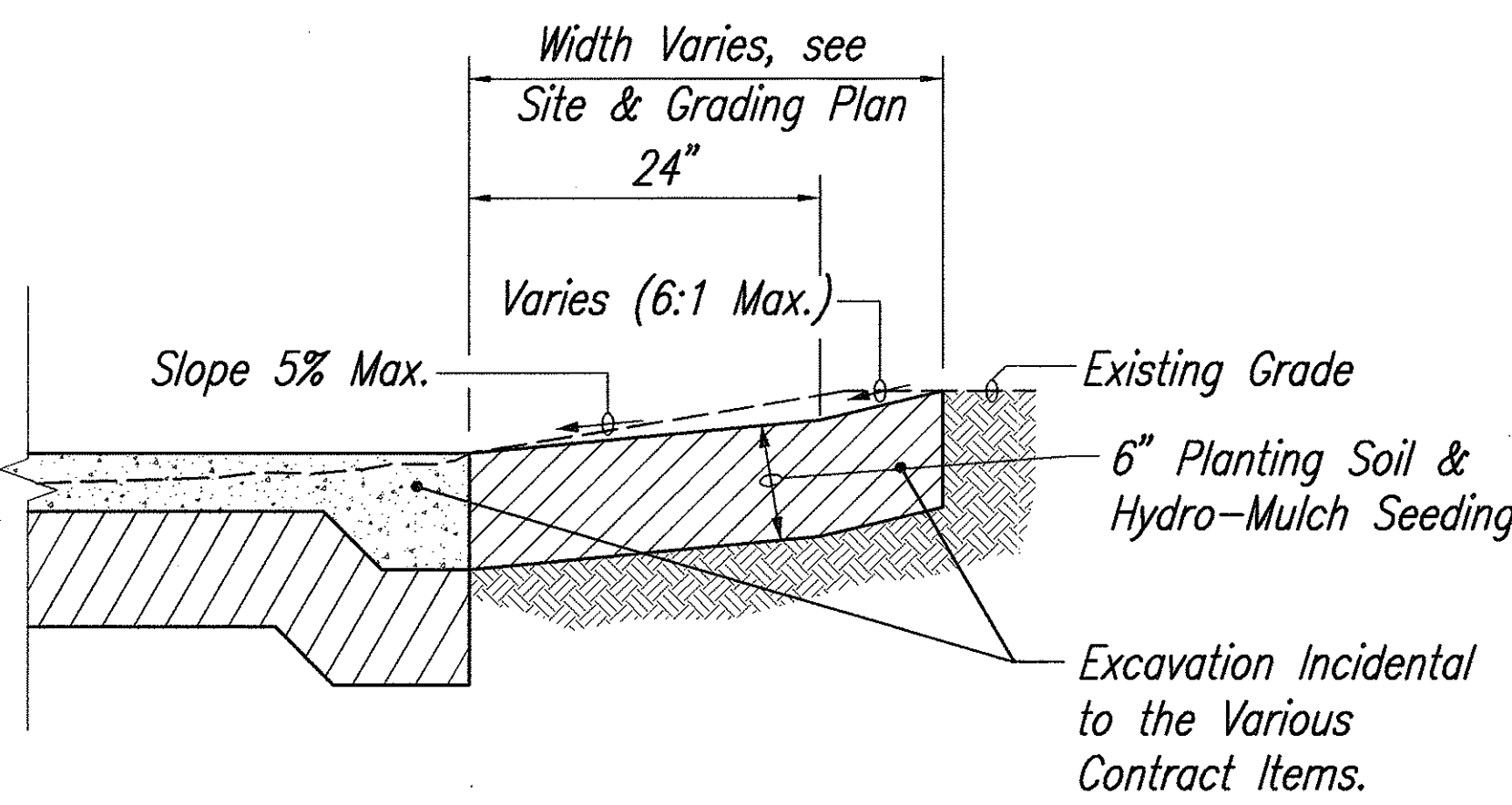


NEW TYPICAL CONCRETE PAVEMENT CONNECTION
TO EXISTING CONCRETE PAVEMENT DETAIL
NOT TO SCALE

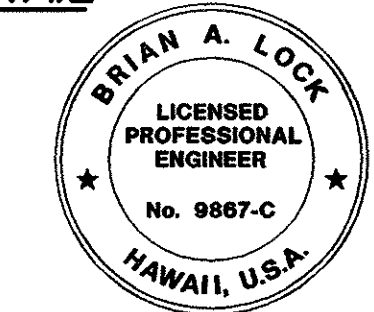
- NOTES:
1. Site Specific. See Plans for Layout
 2. Maximum Slopes Shown for Ramp/Walkway Landing Comply With ADAAG. Slopes Shown On The Grading Plans May Vary. Slopes Greater Than The Maximum Has Been Identified And A Technical Infeasibility Statement Will Be Filed With DCAB. Contractor Shall Construct To Slopes Indicated On The Grading Plans.
 3. Conc. Ramps, Walkways and Landings for Call Boxes Shall be Paid for Under Section 608-Sidewalks.
 4. Conc. for Ramps, Walkways and Landings shall be 4-Inch Thick Class A Conc., Unless Otherwise Noted on the Plans.



TYPICAL SECTION FOR FILL CONDITION
NOT TO SCALE



TYPICAL SECTION FOR CUT CONDITION
NOT TO SCALE



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.
"OBSERVATION OF CONSTRUCTION" IS DEFINED IN CHAPTER 16-115, HAWAII ADMINISTRATIVE RULES ENTITLED "PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS AND LANDSCAPE ARCHITECTS".
APRIL 30, 2006
WILSON OKAMOTO CORP. LIC. EXP. DATE

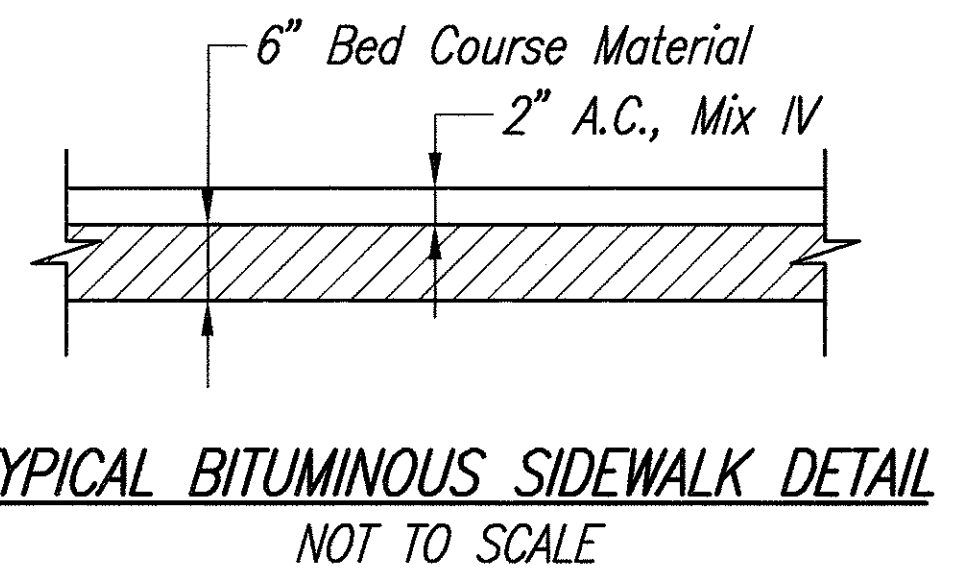
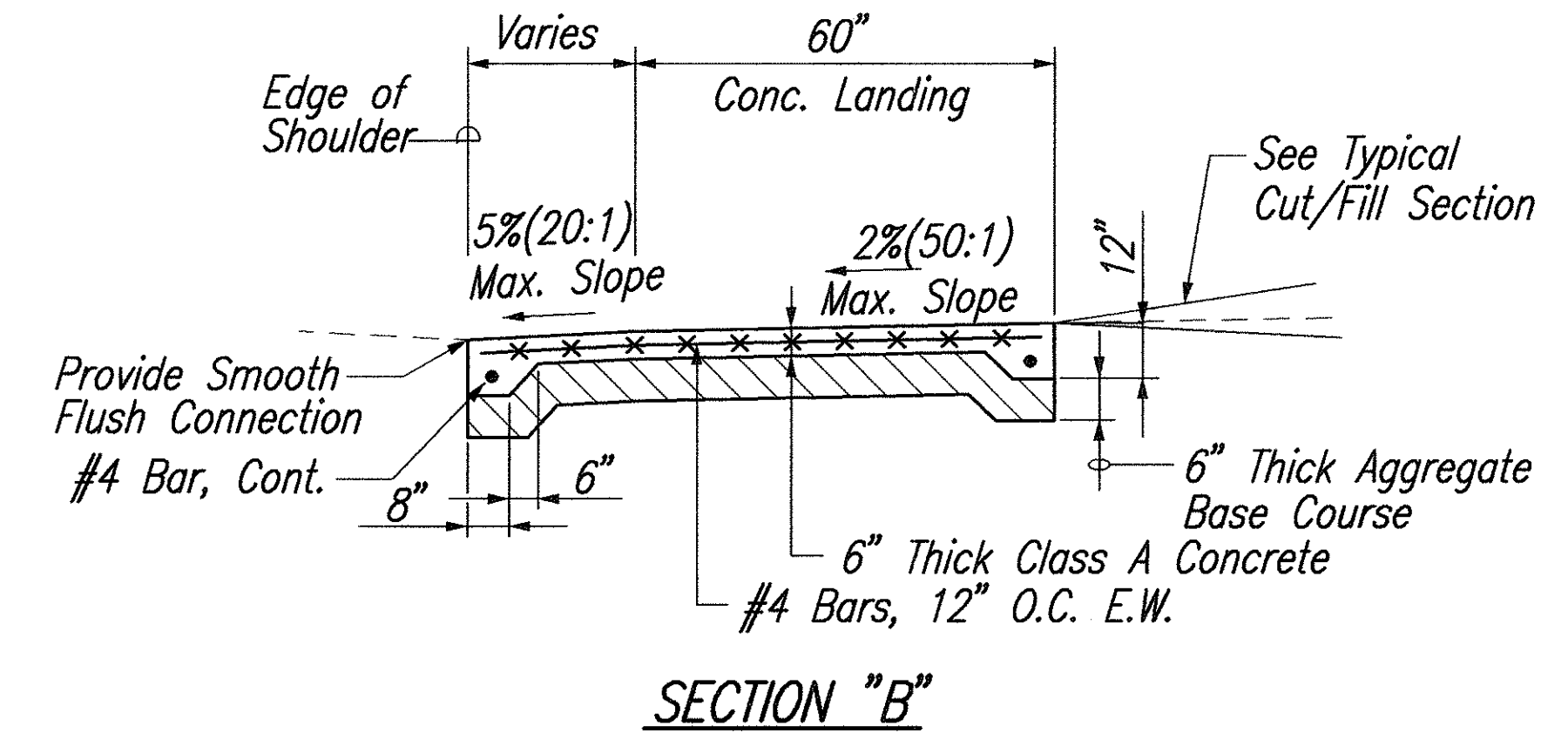
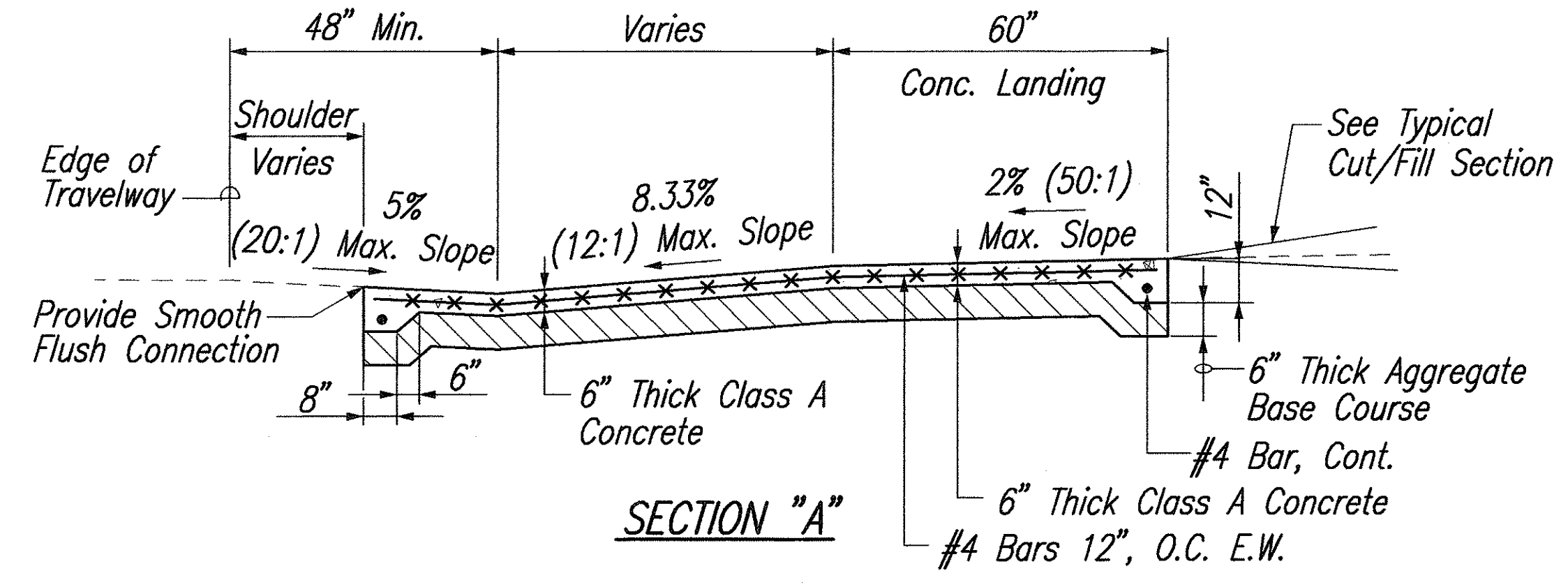
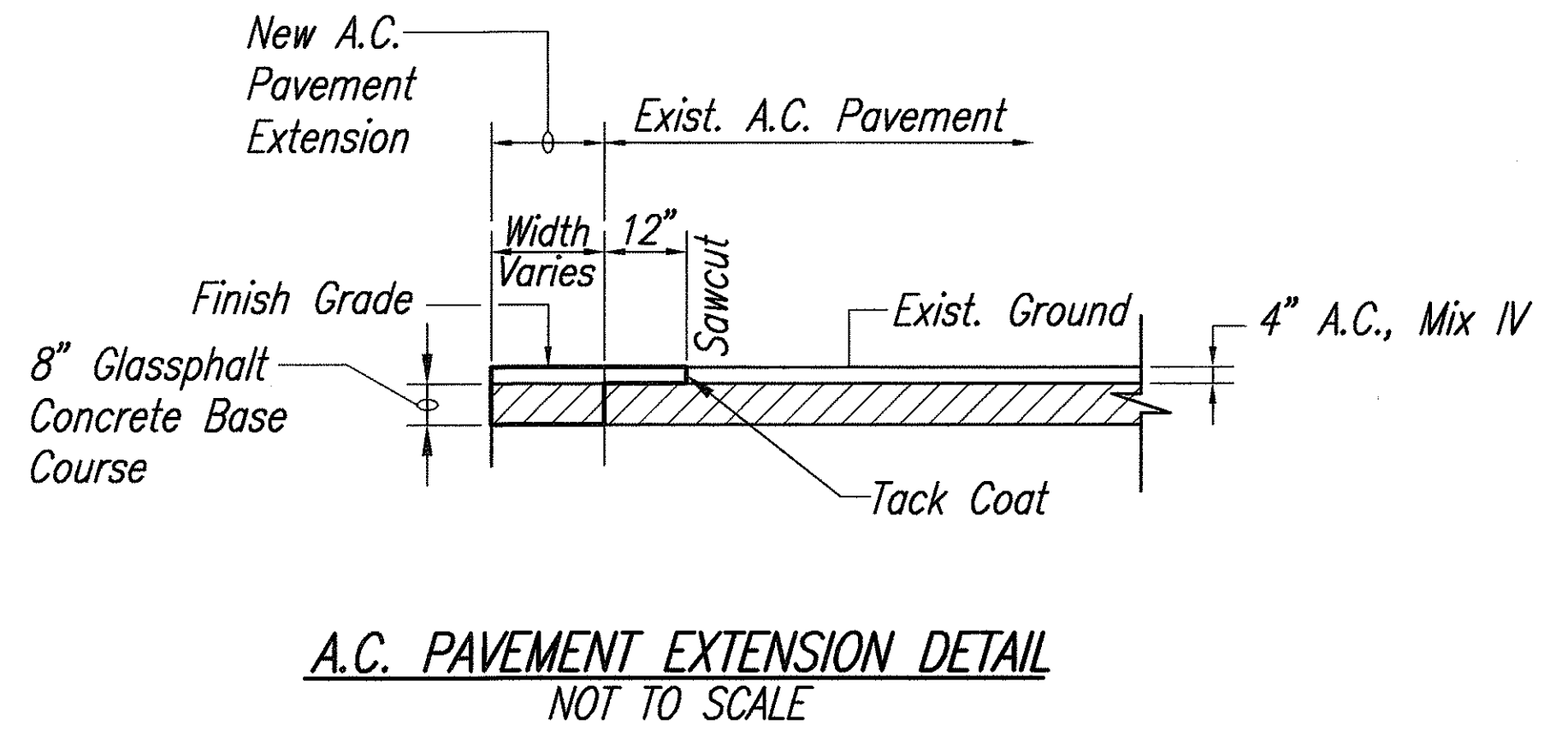
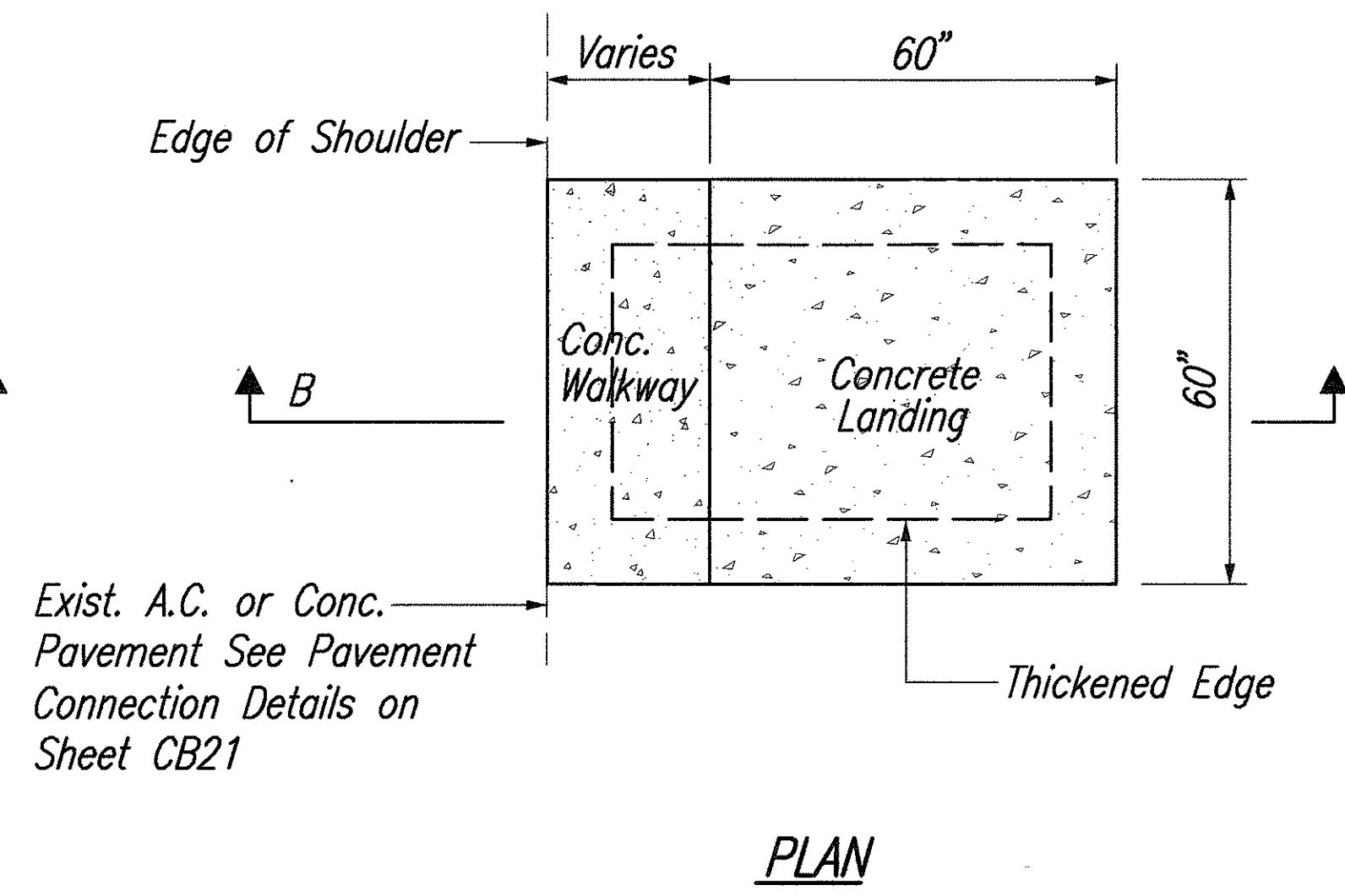
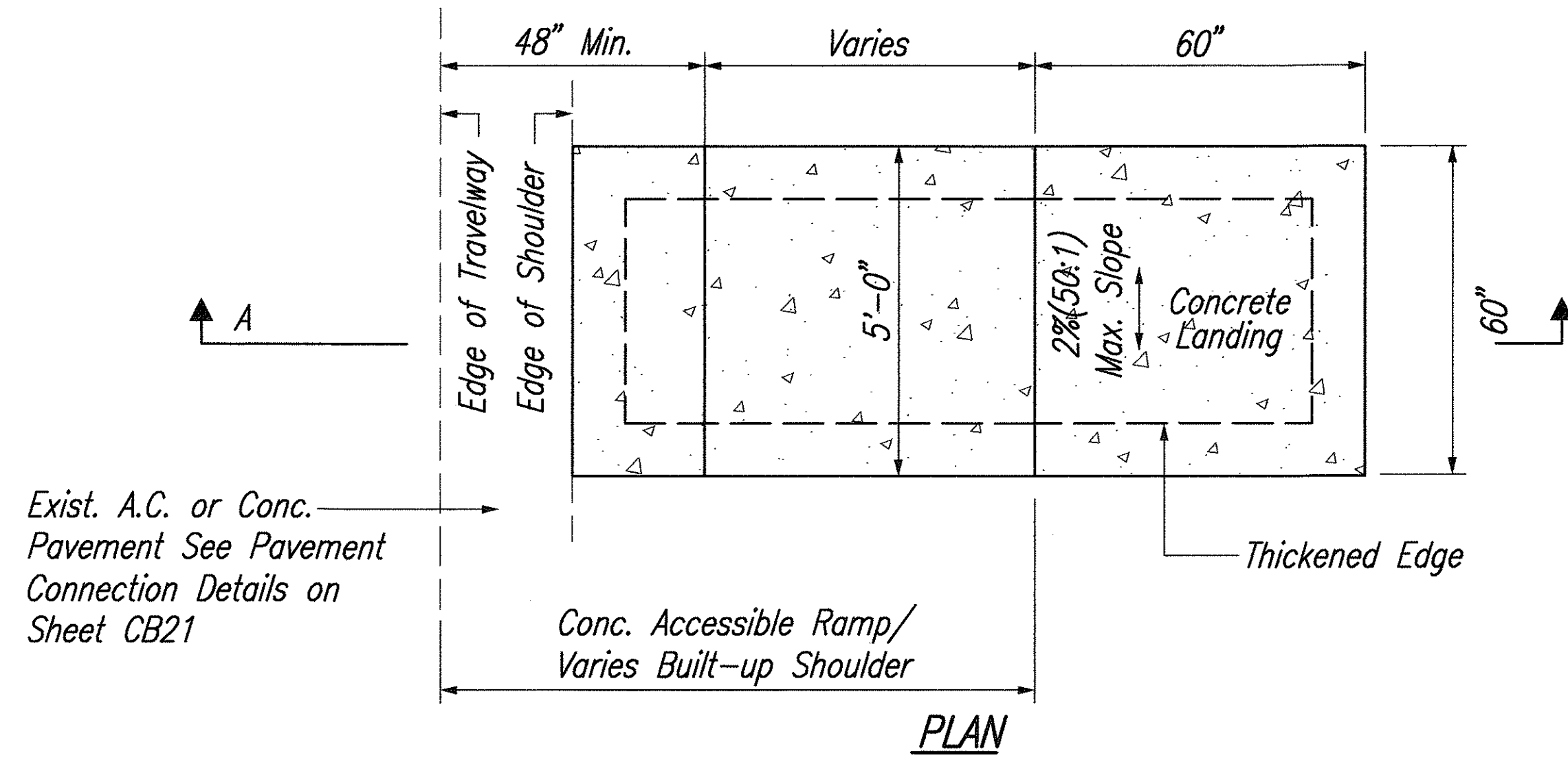
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MISCELLANEOUS DETAILS

ADA Compliance for Emergency Telephones
at Various Locations on Oahu
Federal Aid Project No. CMAQ-0300(100)
Scale: As Shown Date: AUGUST 13, 2004
SHEET No. CB21 OF 74 SHEETS

| | |
|-------------------|-------|
| DATE | _____ |
| SURVEY PLOTTED BY | _____ |
| DESIGNED BY | _____ |
| NOTED BY | _____ |
| CHECKED BY | _____ |
| ORIGINAL PLAN | _____ |
| NOTE BOOK | _____ |
| No. | _____ |

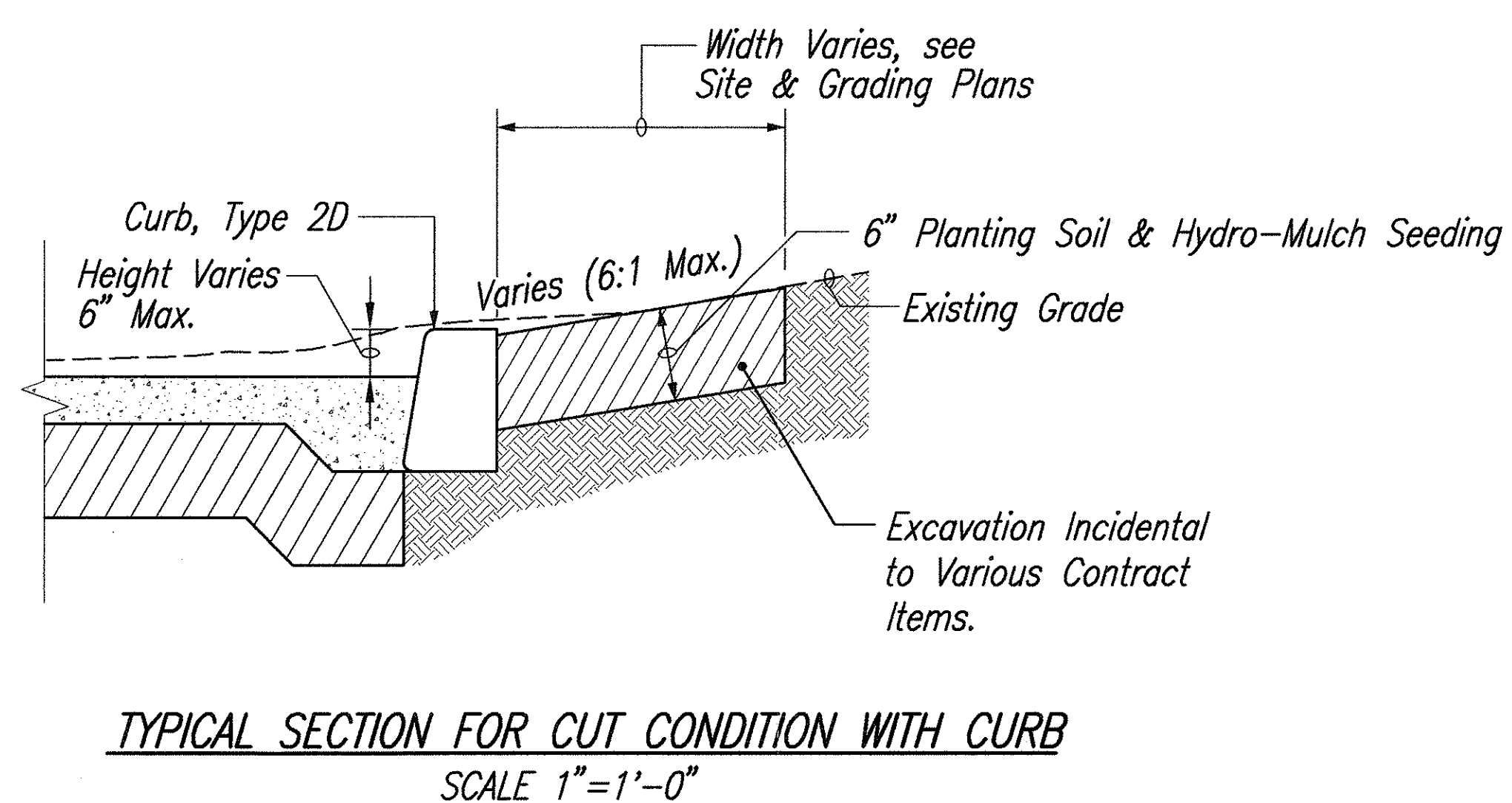
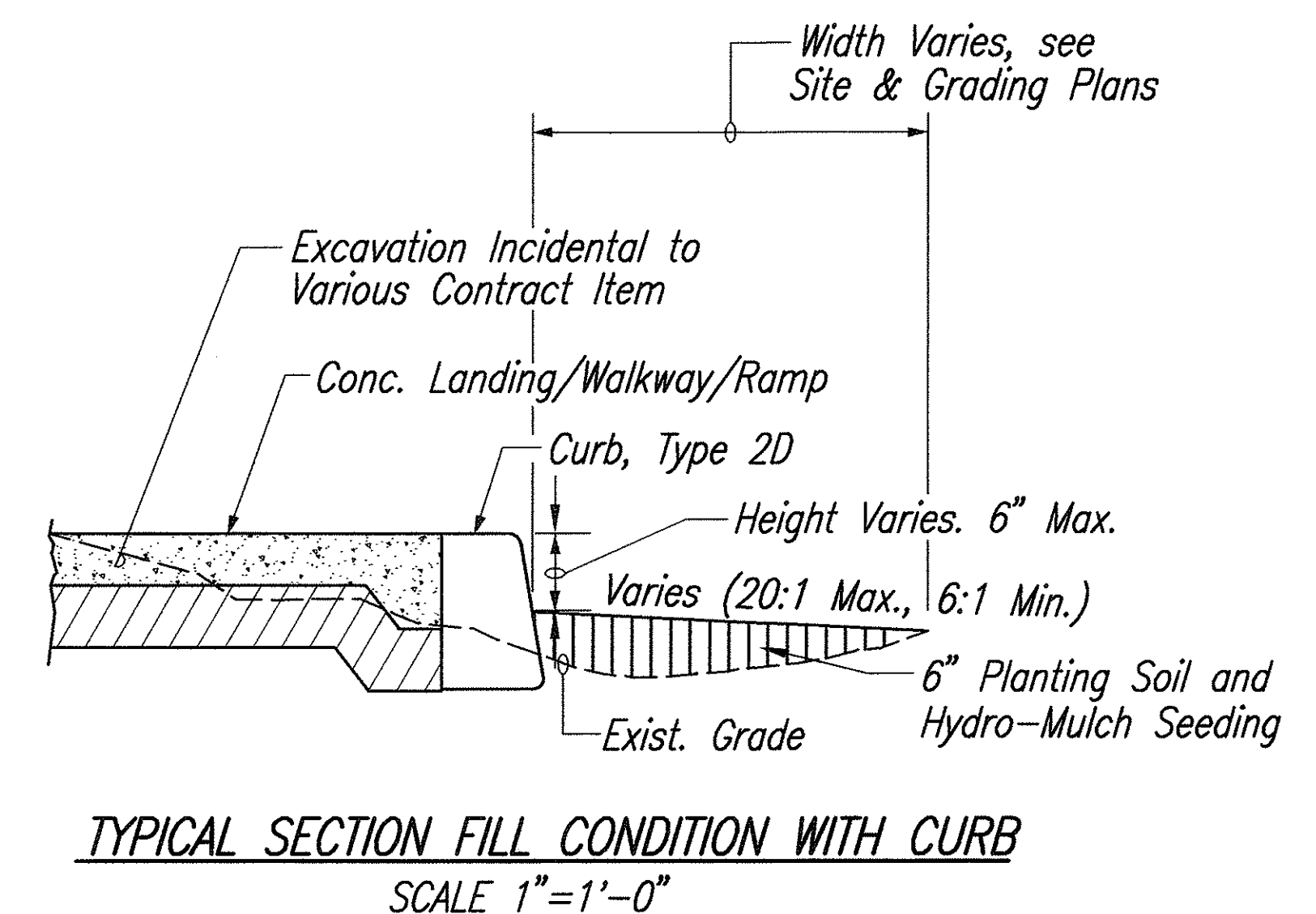
| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII | HAW. | CMAQ-0300(100) | 2004 | 23 | 75 |



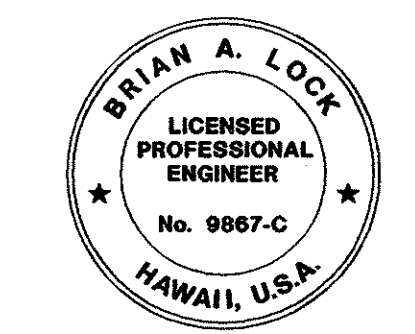
**6" THICK CONCRETE LANDING
WITH ACCESSIBLE RAMP**
SCALE 1/2"=1'-0"

**6" THICK CONCRETE LANDING
WITH WALKWAY**
SCALE 1/2"=1'-0"

- NOTES:**
1. Site Specific. See Plans for Layout
 2. Maximum Slopes Shown for Ramp/Walkway Landing Comply With ADAAG. Slopes Shown On The Grading Plans May Vary. Slopes Greater Than The Maximum Has Been Identified And A Technical Infeasibility Statement Will Be Filed With DCAB. Contractor Shall Construct To Slopes Indicated On The Grading Plans.
 3. All Conc. Ramps, Walkways and Landings shall be 4" Thick, unless otherwise noted.
 4. Conc. Ramps, Walkways and Landing for Call Boxes Shall be Paid for Under Section 608-Sidewalks.



| | |
|-------------------|------|
| SURVEY PLOTTED BY | DATE |
| DRAWN BY | |
| CHECKED BY | |
| NOTED BY | |
| QUANTITIES BY | |
| CHECKED BY | |



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.

"OBSERVATION OF CONSTRUCTION" IS DEFINED IN CHAPTER 16-115, HAWAII ADMINISTRATIVE RULES ENTITLED "PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS AND LANDSCAPE ARCHITECTS".

Brian A. Lock
APRIL 30, 2006
WILSON OKAMOTO CORP. LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MISCELLANEOUS DETAILS

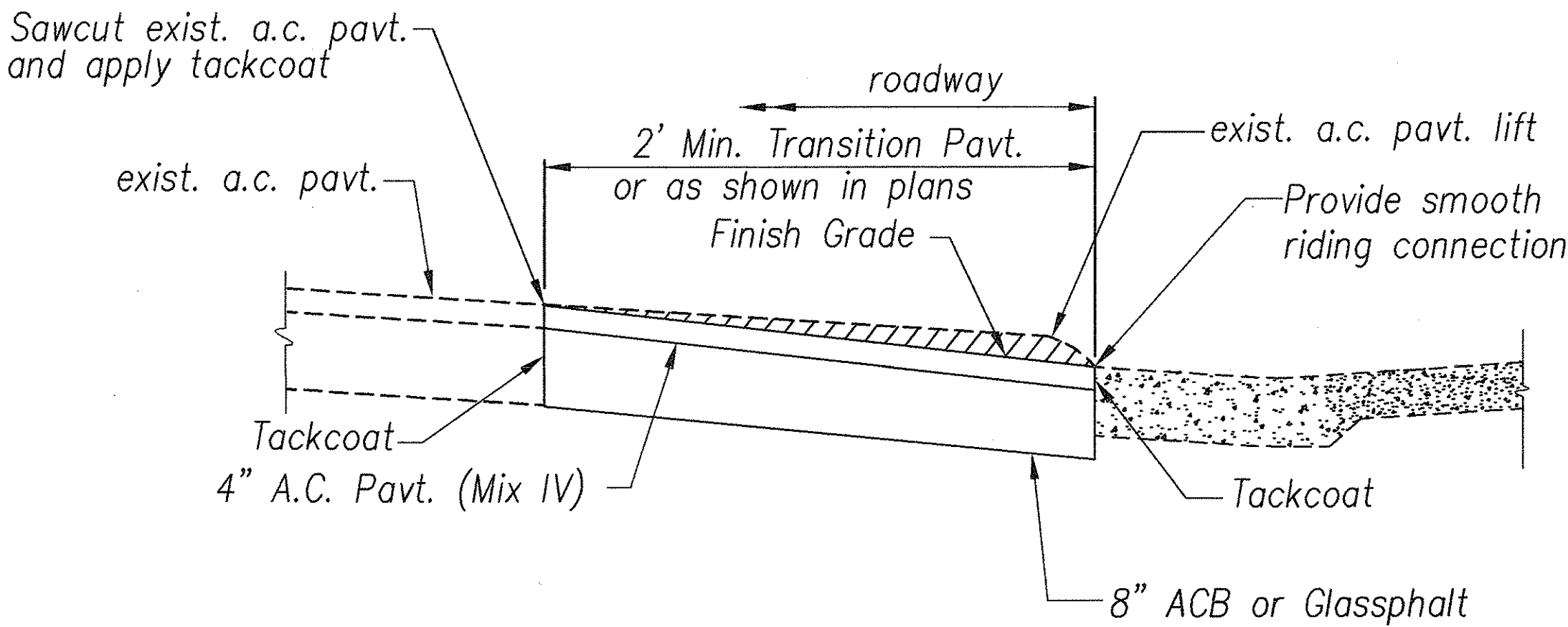
ADA Compliance for Emergency Telephones
at Various Locations on Oahu

Federal Aid Project No. CMAQ-0300(100)

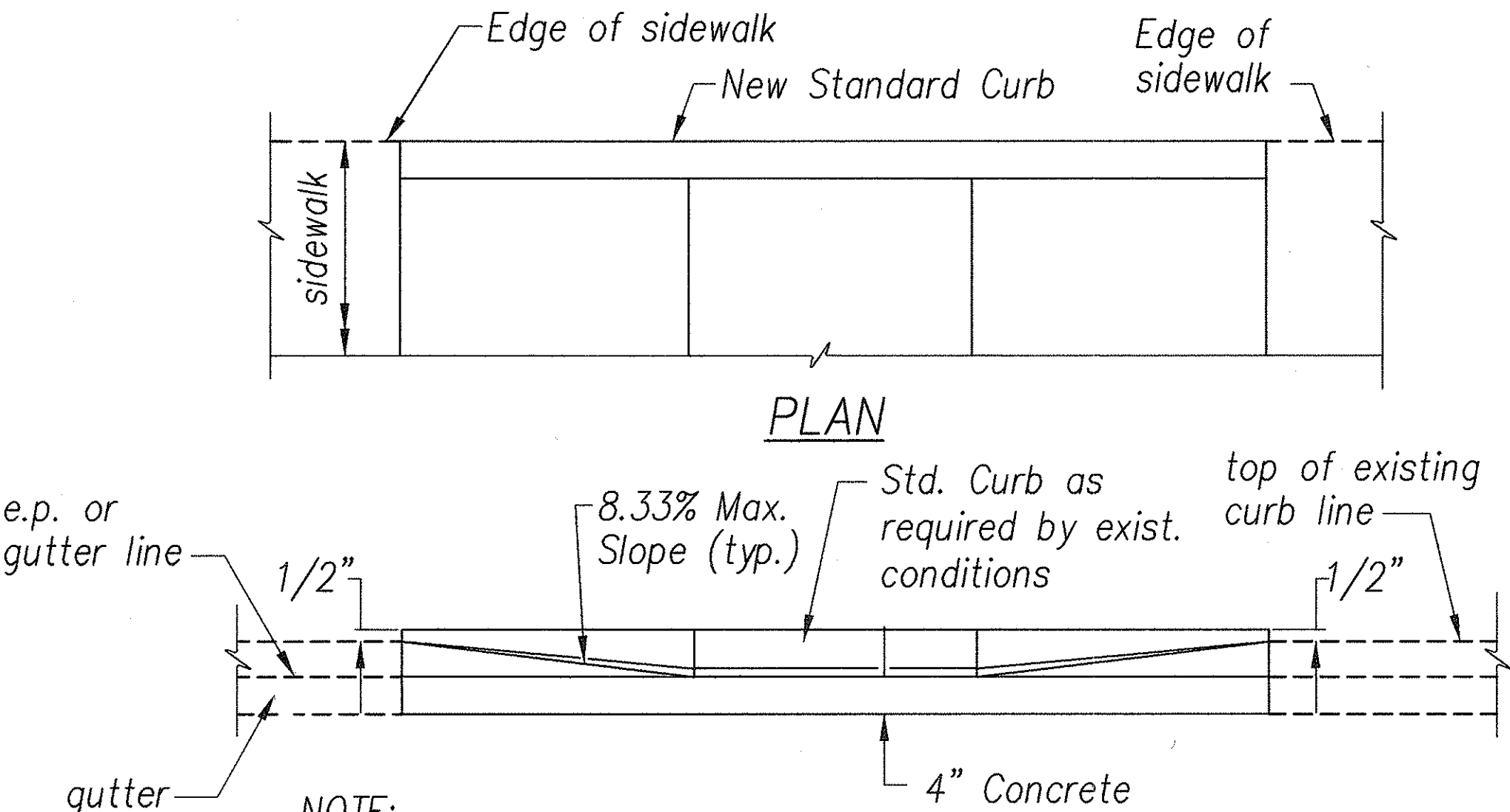
Scale: As Shown Date: AUGUST 13, 2004

SHEET No. CB22 OF 74 SHEETS

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII | HAW. | CMAQ-0300(100) | 2004 | CO.25 | 75 |



PAVEMENT TRANSITION DETAIL
Not to scale

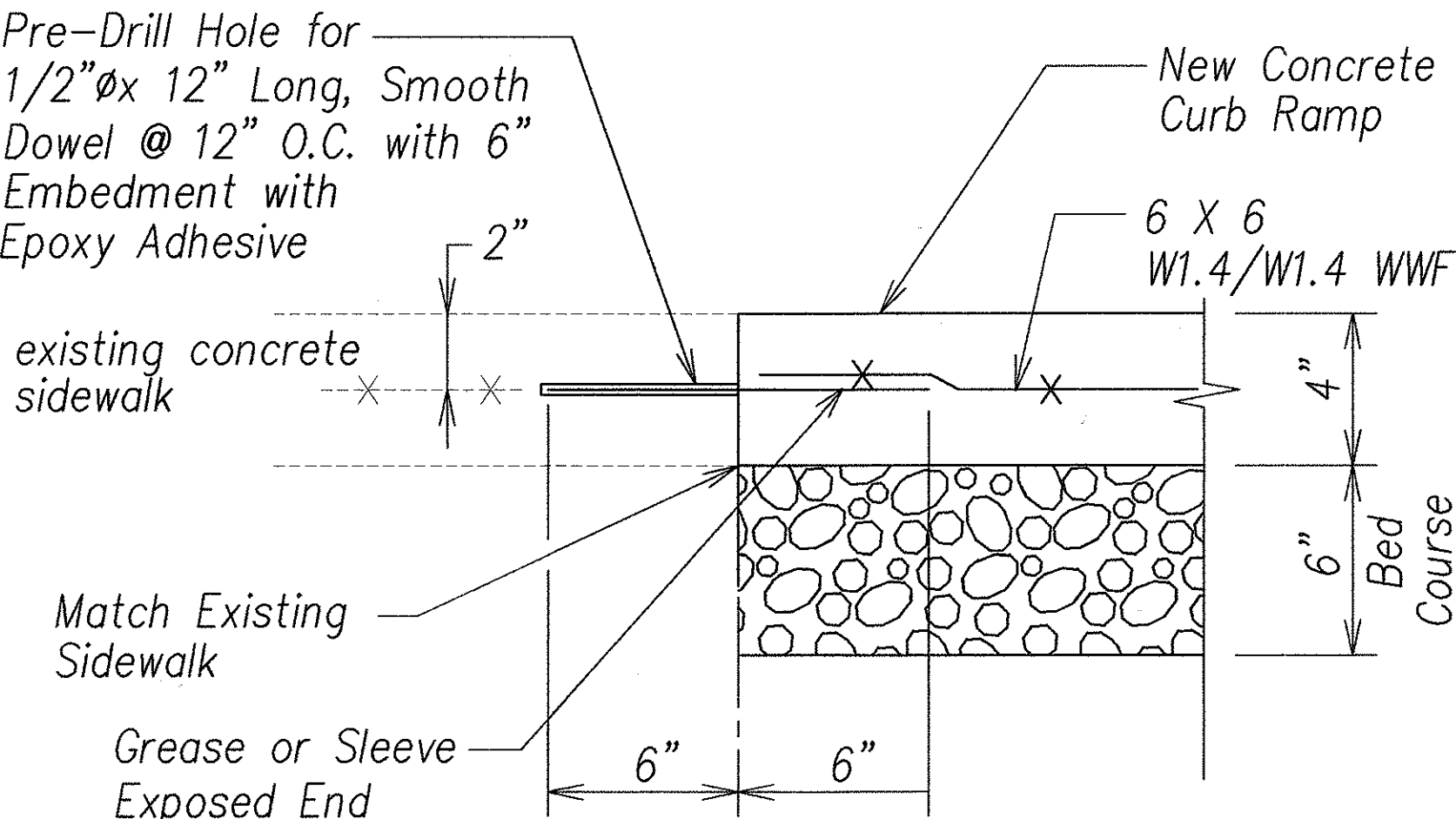


NOTE:
This detail can be used in situations where the edge of sidewalk cannot be flush with the face of (back) curb due to right of way restrictions.

ELEVATION

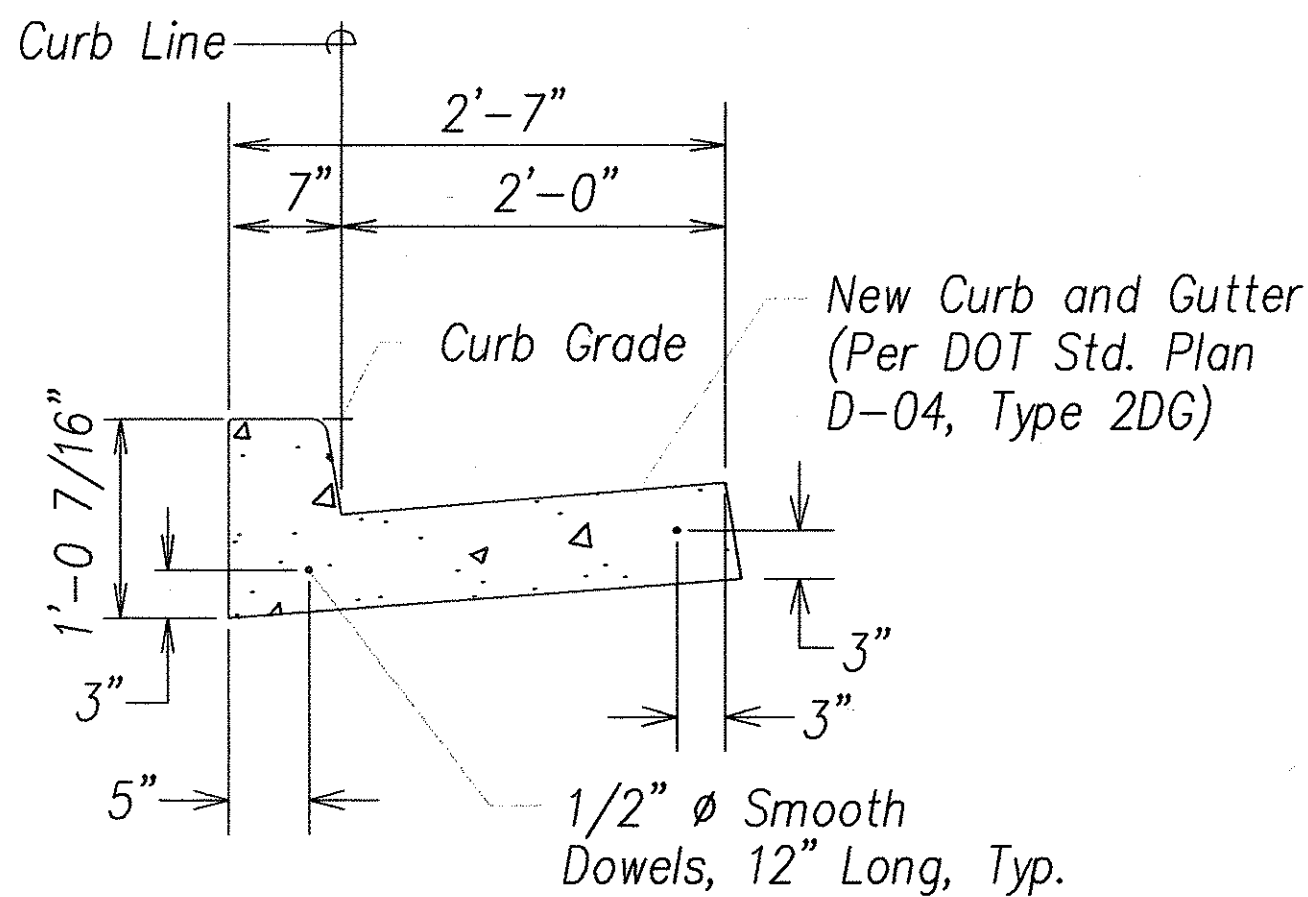
DETAIL – BACK CURB

Not to scale



TYPICAL CONSTRUCTION JOINT AT EXISTING SIDEWALK

Not to scale

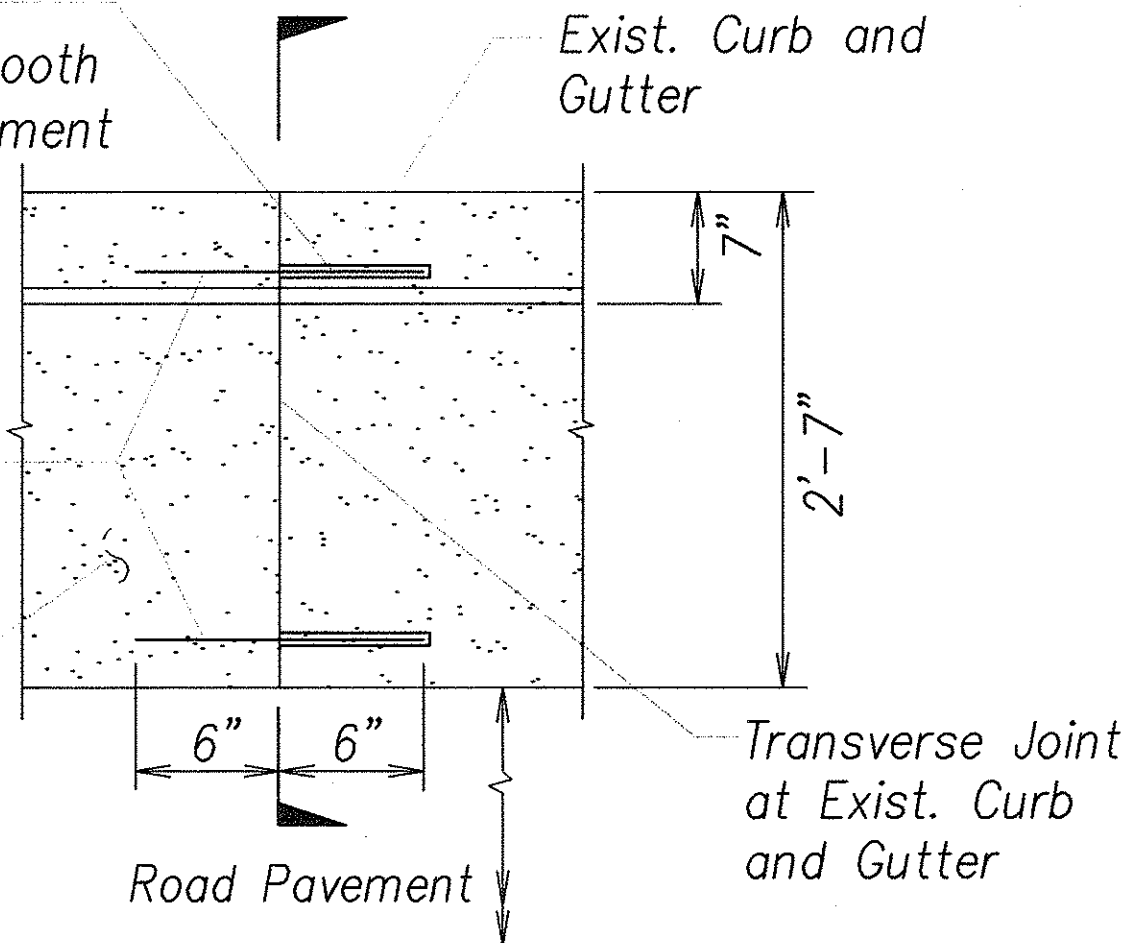


SECTION

Pre-Drill hole for 1/2"Øx 12" Long, Smooth Dowel with 6" Embedment with Epoxy Adhesive

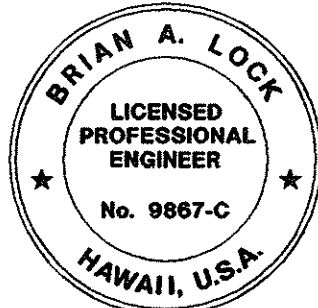
Grease or Sleeve Exposed End

New Curb and Gutter (Per DOT Std. Plan D-04, Type 2DG)



CURB AND GUTTER CONNECTION

Not to scale



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.
"OBSERVATION OF CONSTRUCTION" IS DEFINED IN CHAPTER 16-115, HAWAII ADMINISTRATIVE RULES ENTITLED "PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS AND LANDSCAPE ARCHITECTS".
APRIL 30, 2006
WILSON OKAMOTO CORP. LIC. EXP. DATE

**DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION**

MISCELLANEOUS DETAILS

ADA Compliance for Emergency Telephones at Various Locations on Oahu
Federal Aid Project No. CMAQ-0300(100)

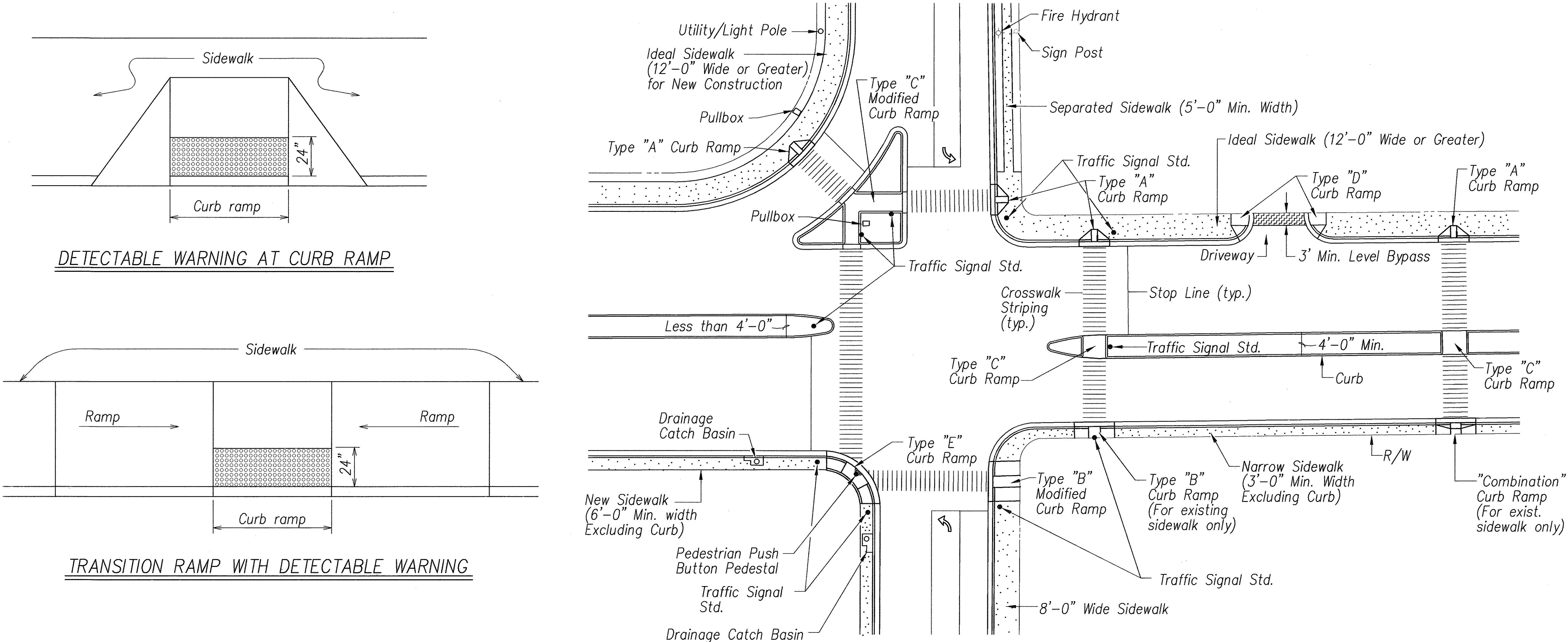
Scale: As Shown Date: AUGUST 27, 2004

SHEET No. CB24 OF 74 SHEETS

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

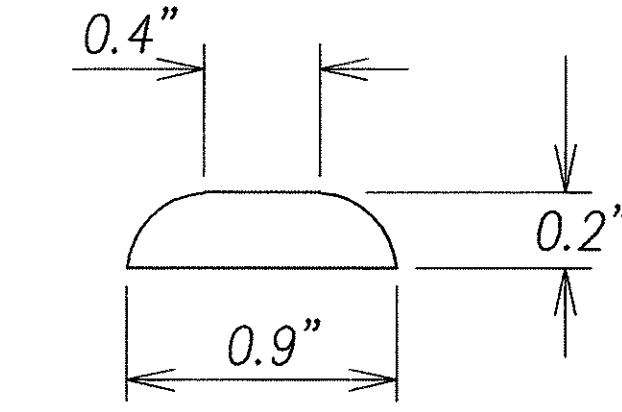
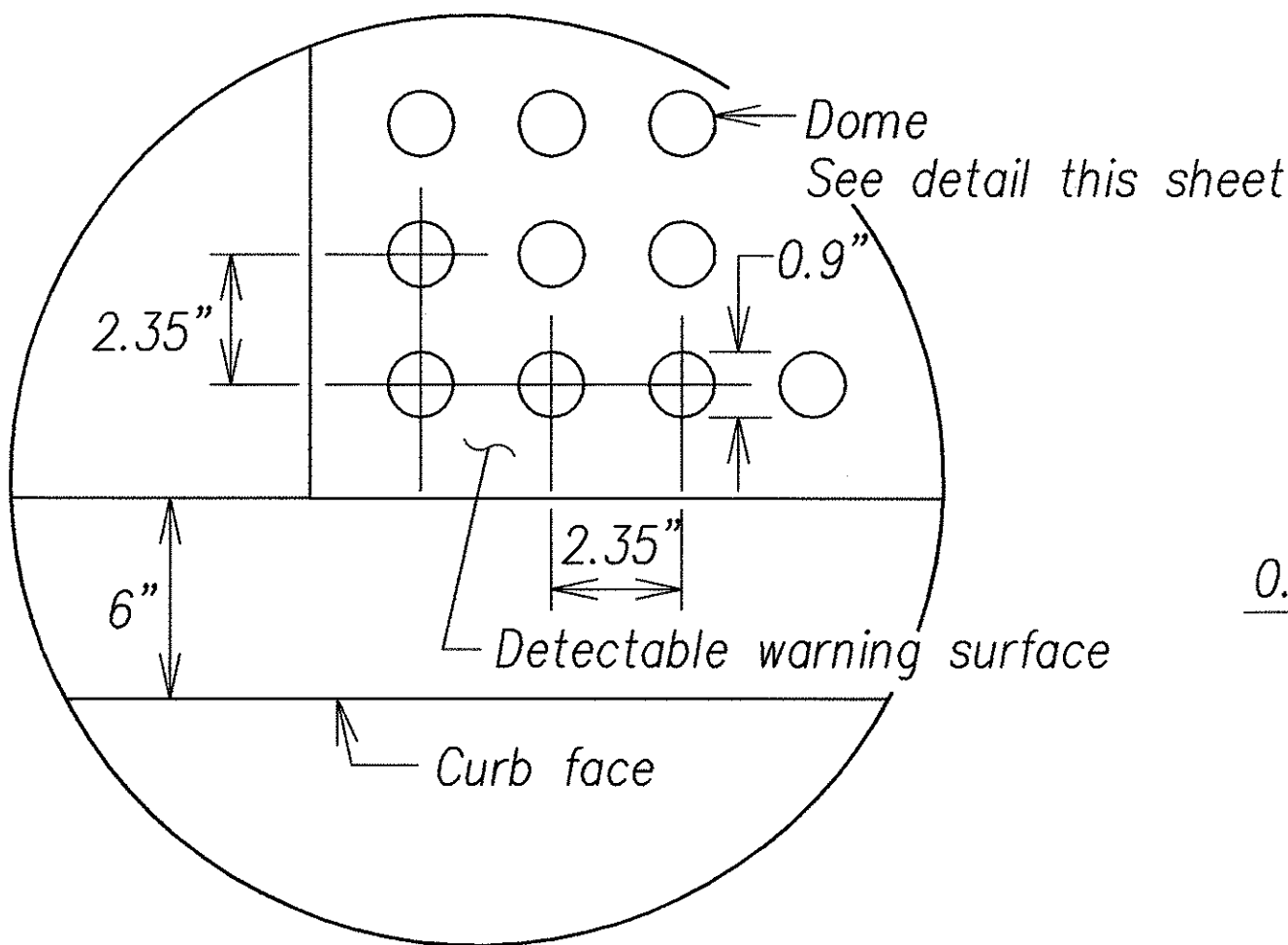
| | |
|----------|--------------------------------------|
| 04/26/05 | DELETED CONC. CURB TRANSITION DETAIL |
| DATE | REVISION |

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII | HAW. | CMAQ-0300(100) | 2004 | 26 | 75 |



NOTES:

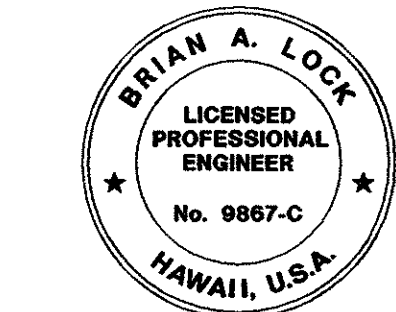
- Detectable warnings shall be 24 inches in the direction of travel and extend the full width of the curb ramp or flush surface (does not include flares).
- Truncated domes shall have a diameter of 0.9 inch at the bottom, a diameter of 0.4 inch at the top, a height of 0.2 inch and a center-to-center spacing of 2.35 inches measured along one side of a square arrangement.
- Domes shall be aligned on a square grid in the predominant direction of travel to permit wheels to roll between the domes.
- The detectable warning shall be "safety yellow".
- The material used to provide visual contrast shall be an integral part of the detectable warning surface.
- The detectable warning shall be located so that the edge nearest the curb line or other potential hazard is 6 to 8 inches from the curb line.



ENLARGEMENT

DOME SECTION

| | |
|---------------|------|
| DESIGNED BY | DATE |
| DRAWN BY | |
| CHECKED BY | |
| NOTED BY | |
| APPROVED BY | |
| ORIGINAL PLAN | |
| NO. | |



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.

WILSON OKAMOTO CORP. L.C. EXP. DATE

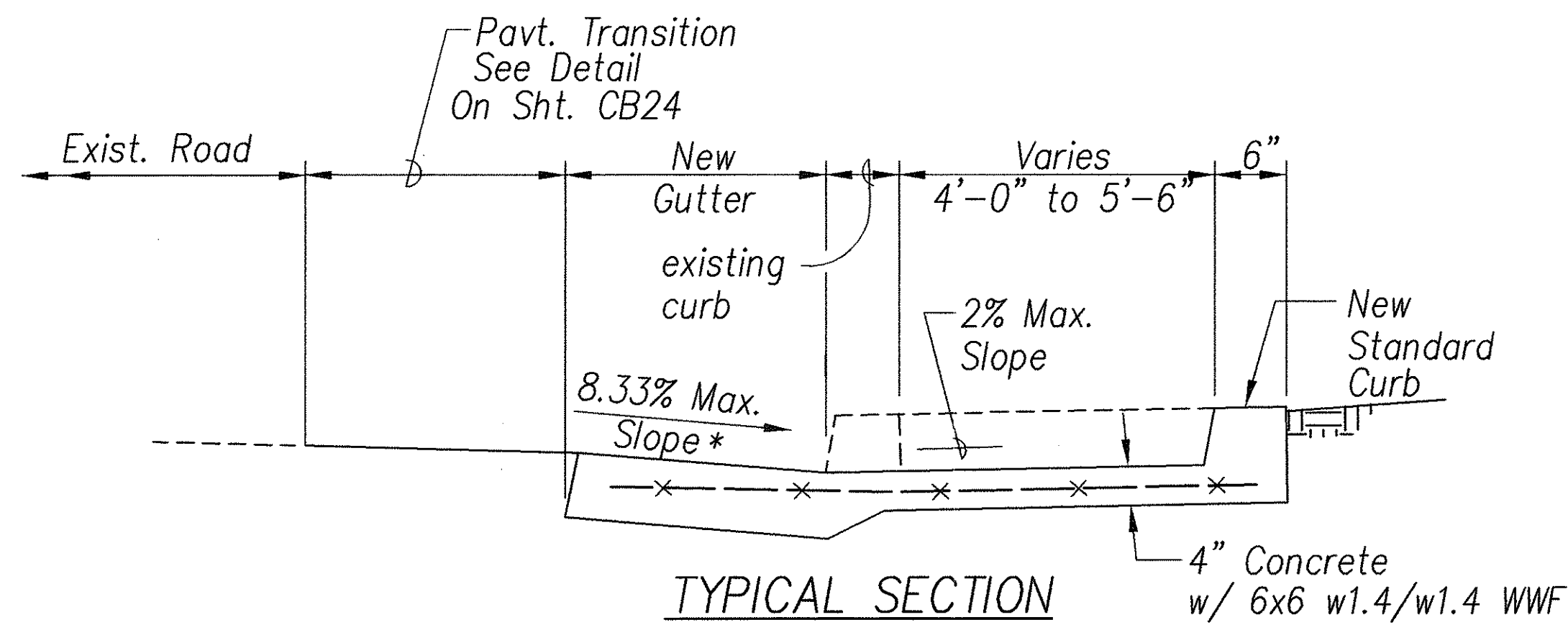
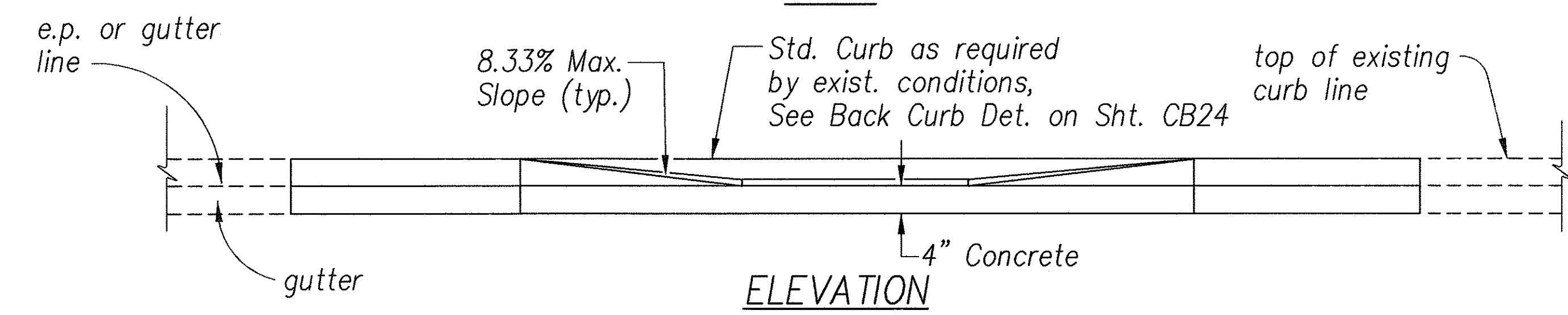
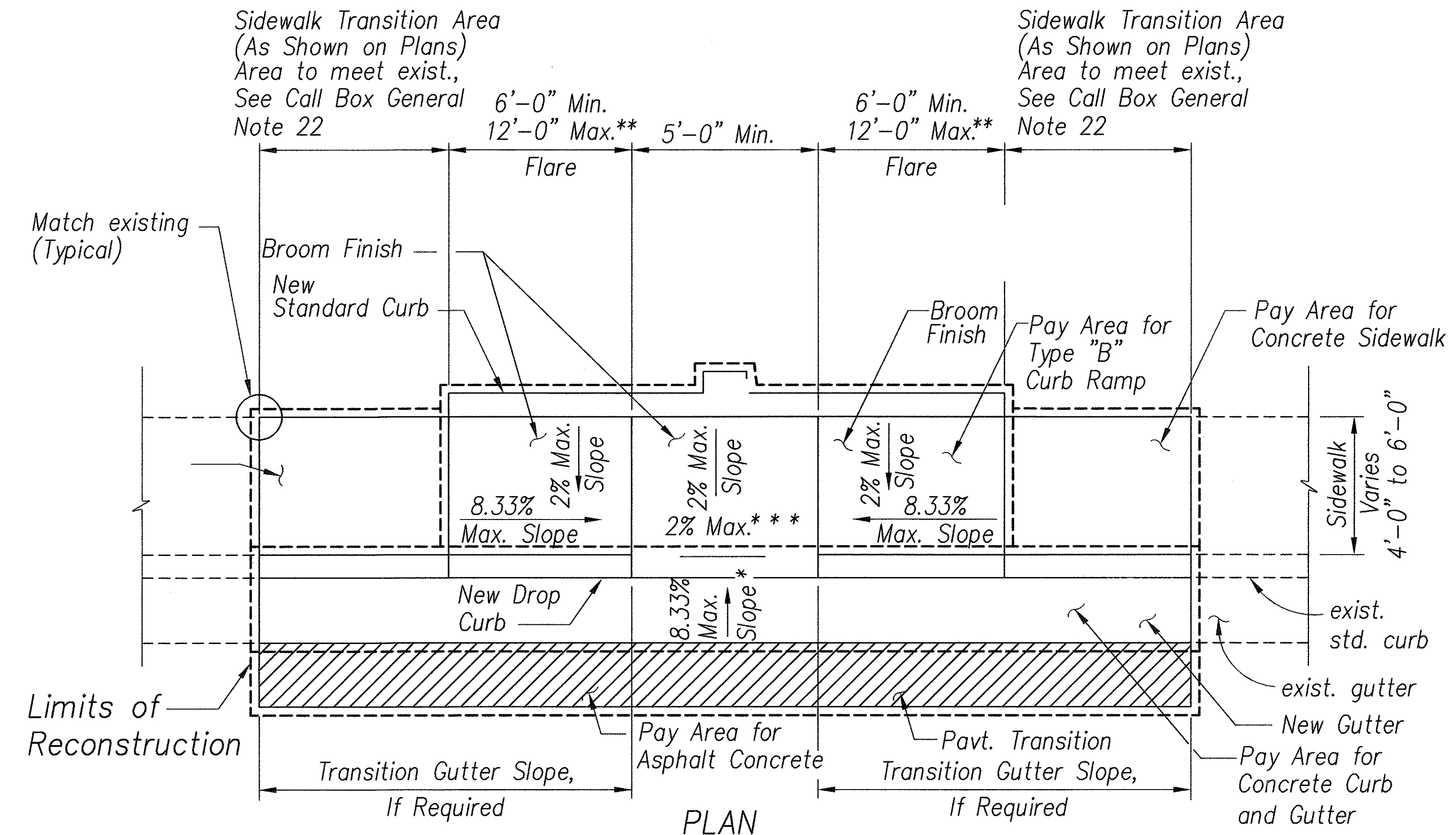
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPICAL CURB RAMP
LAYOUT & DETAILS

ADA Compliance for Emergency Telephones
at Various Locations on Oahu
Federal Aid Project No. CMAQ-0300(100)

Scale: As Shown
Date: AUGUST 13, 2004

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII | HAW. | CMAQ-0300(100) | 2004 | 28 | 75 |



See Curb Ramp and Sidewalk Note No. 9
 The slope of the ramp shall take precedence over the length of the ramp. If the maximum slope of a ramp cannot be met within a length of 12 feet, then the slope of the ramp shall be set when the length of the ramp is set at the maximum of 12 feet.
 If roadway slope >2% conform to roadway slope and file a Technical Infeasibility (TI) Statement

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

CURB RAMP – TYPE "B"
 SIDEWALK WIDTH 4'-0" OR GREATER
 BUT LESS THAN 6'-0" WIDTH

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.
 APRIL 30, 2008
 WILSON OKAMOTO CORP. LIC. EXP. DATE

"OBSERVATION OF CONSTRUCTION" IS DEFINED IN CHAPTER 16-115, HAWAII ADMINISTRATIVE RULES ENTITLED "PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS AND LANDSCAPE ARCHITECTS".

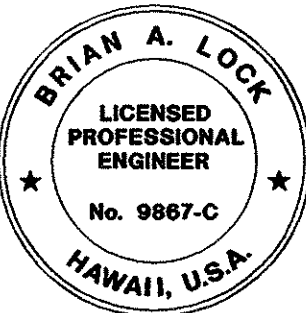
STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
CURB RAMP – TYPE "B"
 ADA Compliance for Emergency Telephones at Various Locations on Oahu
 Federal Aid Project No. CMAQ-0300(100)
 Scale: As Shown Date: AUGUST 13, 2004
 SHEET No. CB27 OF 74 SHEETS

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII | HAW. | CMAQ-0300(100) | 2004 | 29 | 75 |

GENERAL NOTES

- All hardware, posts and fasteners shall be hot-dip zinc coated galvanized after fabrication. No punching, drilling or cutting will be permitted after galvanizing.
- Where conditions require, special post lengths in increments of 6 inches may be specified.
- All fasteners, posts, and rail elements (i.e. FBB03, PWE01, RWM02b, 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.
- The Recycled Plastic Block or Offset Block shall be approved by the State.
- All new guardrail systems (system consists of total length of guardrail including both end treatments) shall include the Additional Paved Area.
- 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.
- When standards for the fill slope area cannot be met, a site specific, engineer approved design may be used.
- New A.C. pavement at guardrails shall extend 6 feet longi-tudinally beyond terminal ends.

| GUARDRAIL TYPE | DIMENSION | |
|------------------------------------|----------------------|-------|
| | H | A |
| Strong Post W-Beam | 1'-9 $\frac{5}{8}$ " | 1'-6" |
| Strong Post Rubrail (W-Beam) | 2'-0" | 1'-6" |
| Modified or Strong Post Thrie Beam | 2'-0" | 2'-0" |



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.

[Signature] APRIL 30, 2006
WILSON OKAMOTO CORP. LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

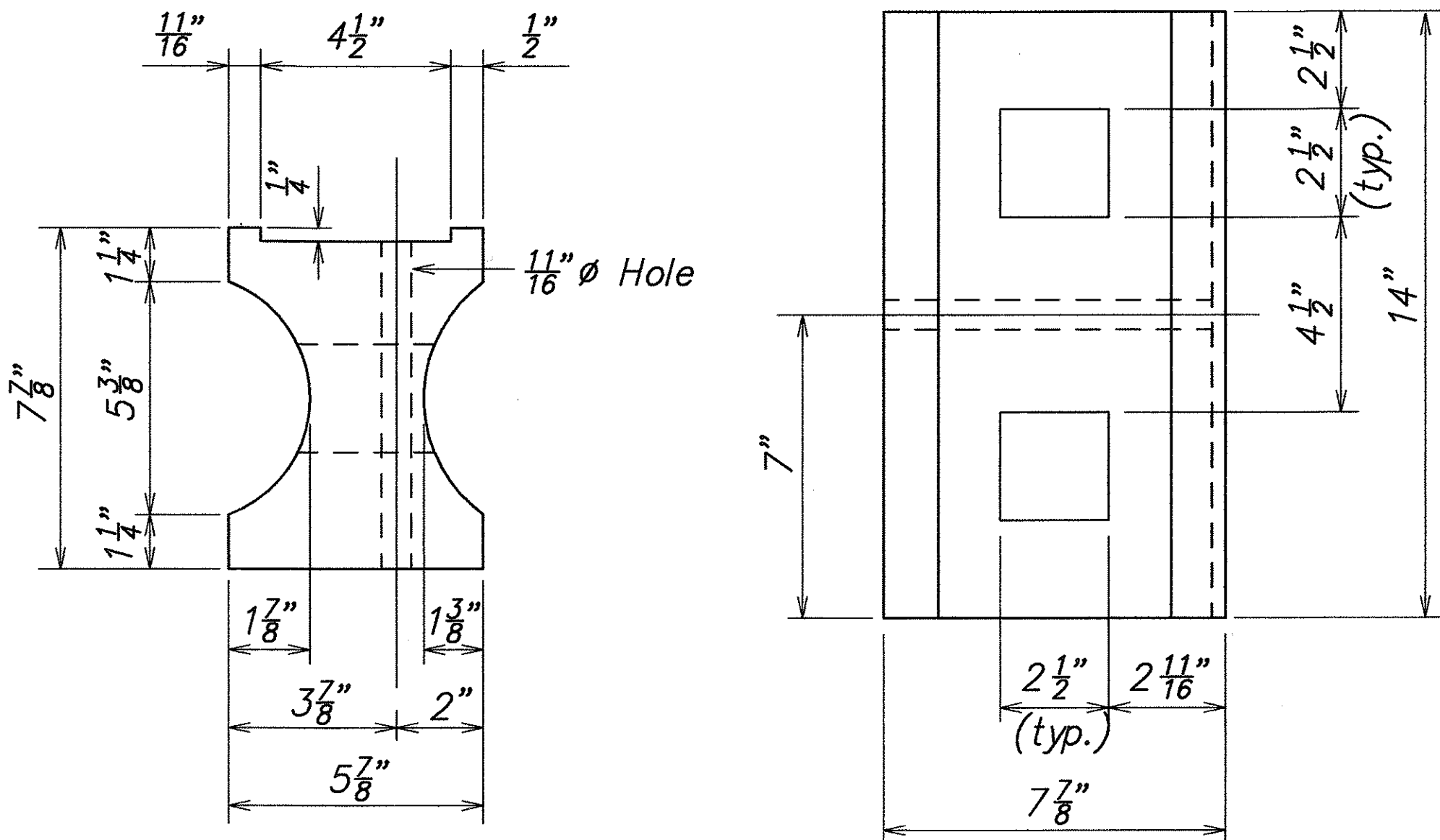
GUARDRAIL DETAILS & NOTES

ADA Compliance for Emergency Telephones
at Various Locations on Oahu

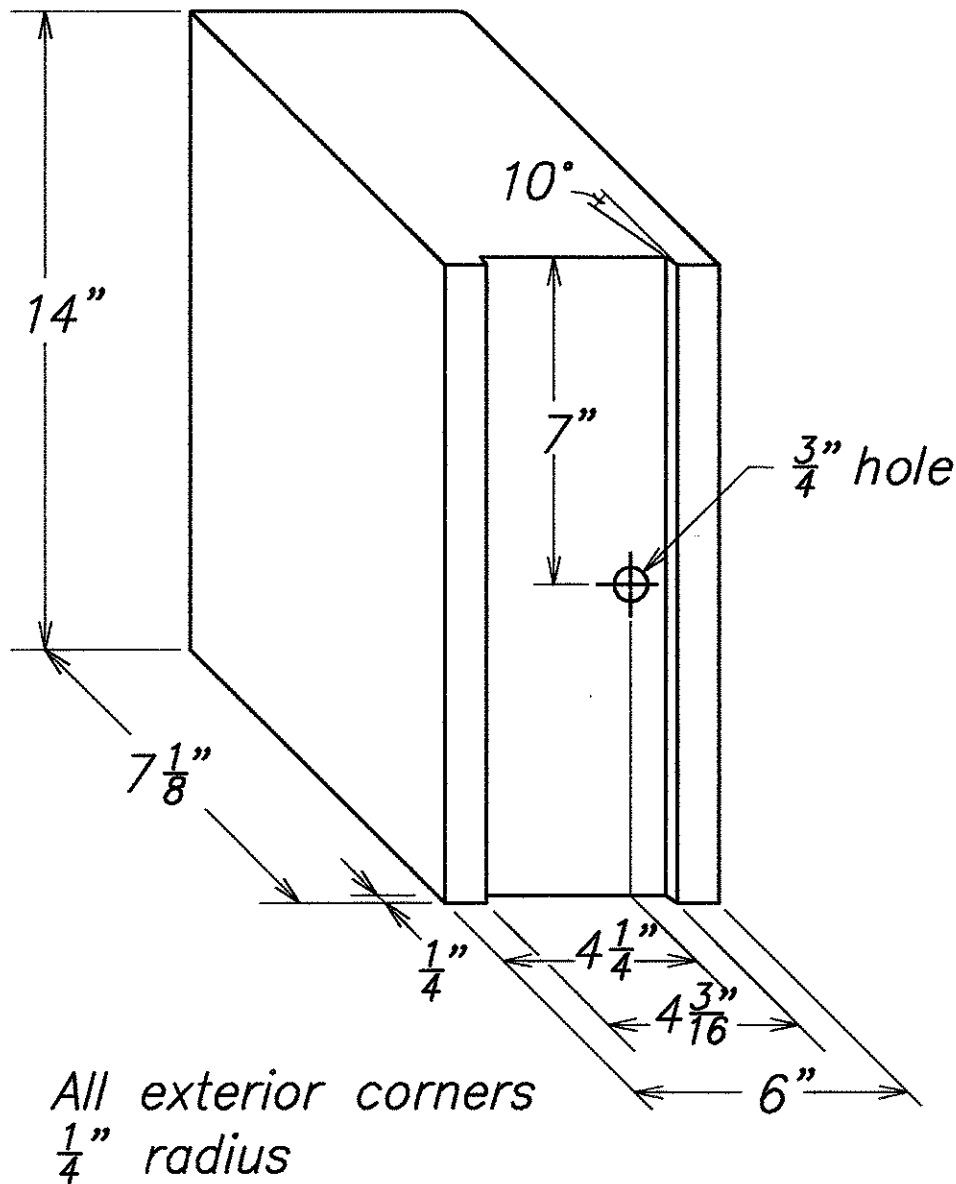
Federal Aid Project No. CMAQ-0300(100)

Scale: As Shown Date: AUGUST 13, 2004

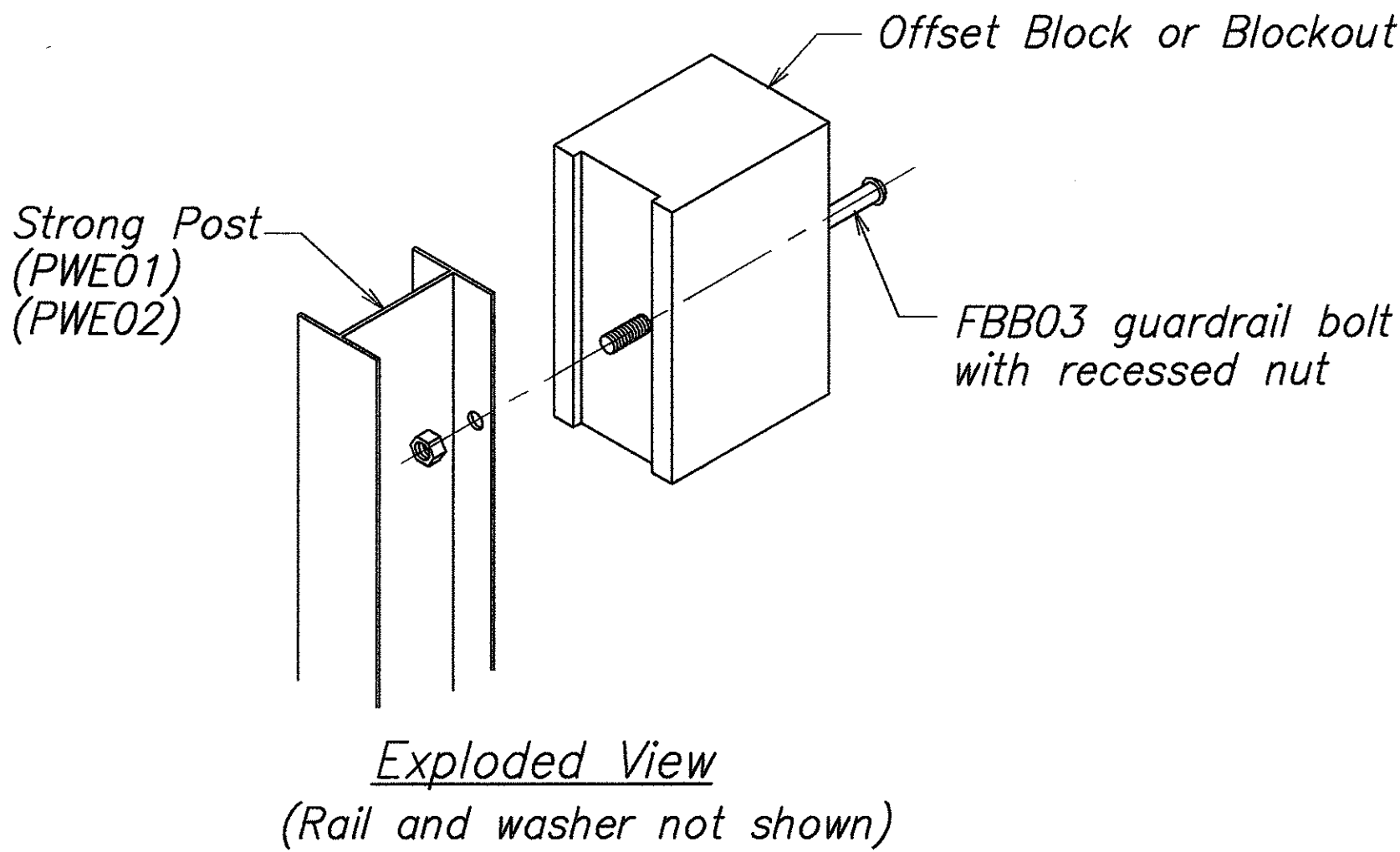
SHEET No. CB28 OF 74 SHEETS



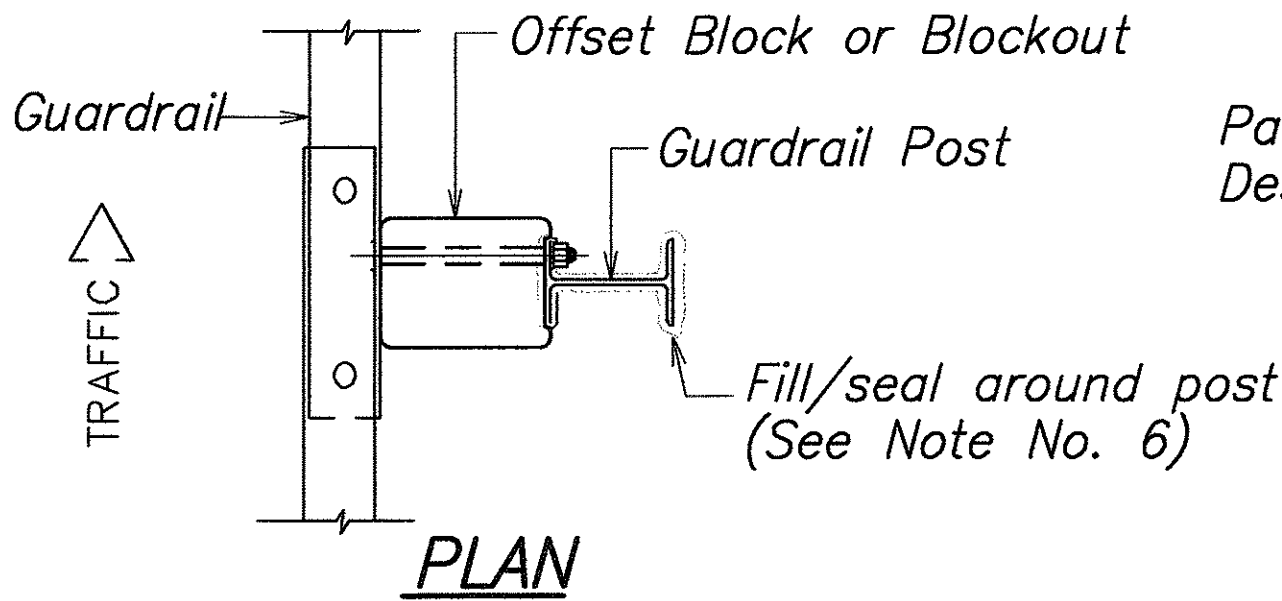
TOP
SIDE
RECYCLED PLASTIC BLOCKOUT (TYPE I)



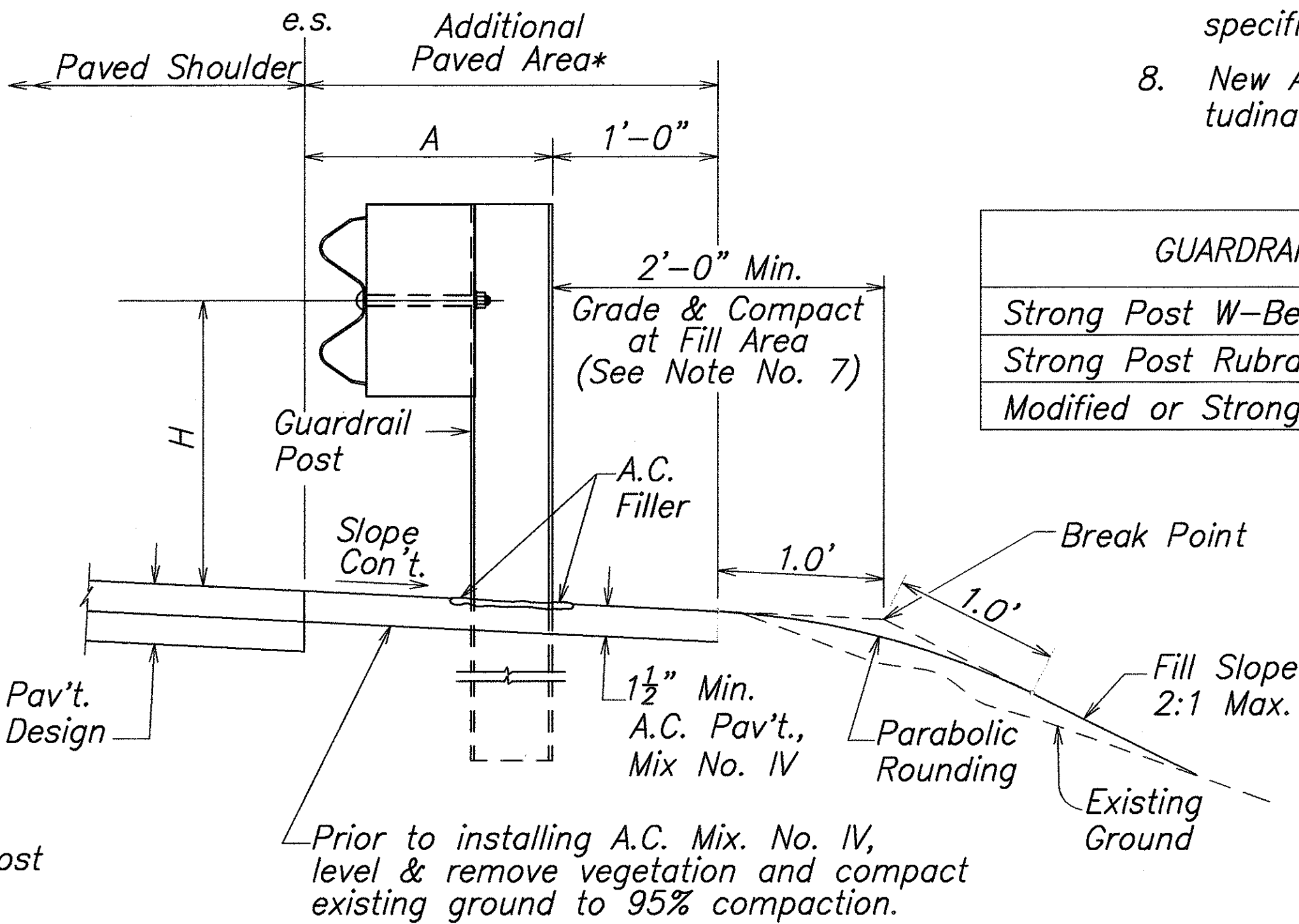
**RECYCLED POLYETHYLENE
OFFSET BLOCK (TYPE II)**



STEEL POST AND BLOCK DETAIL



PLAN

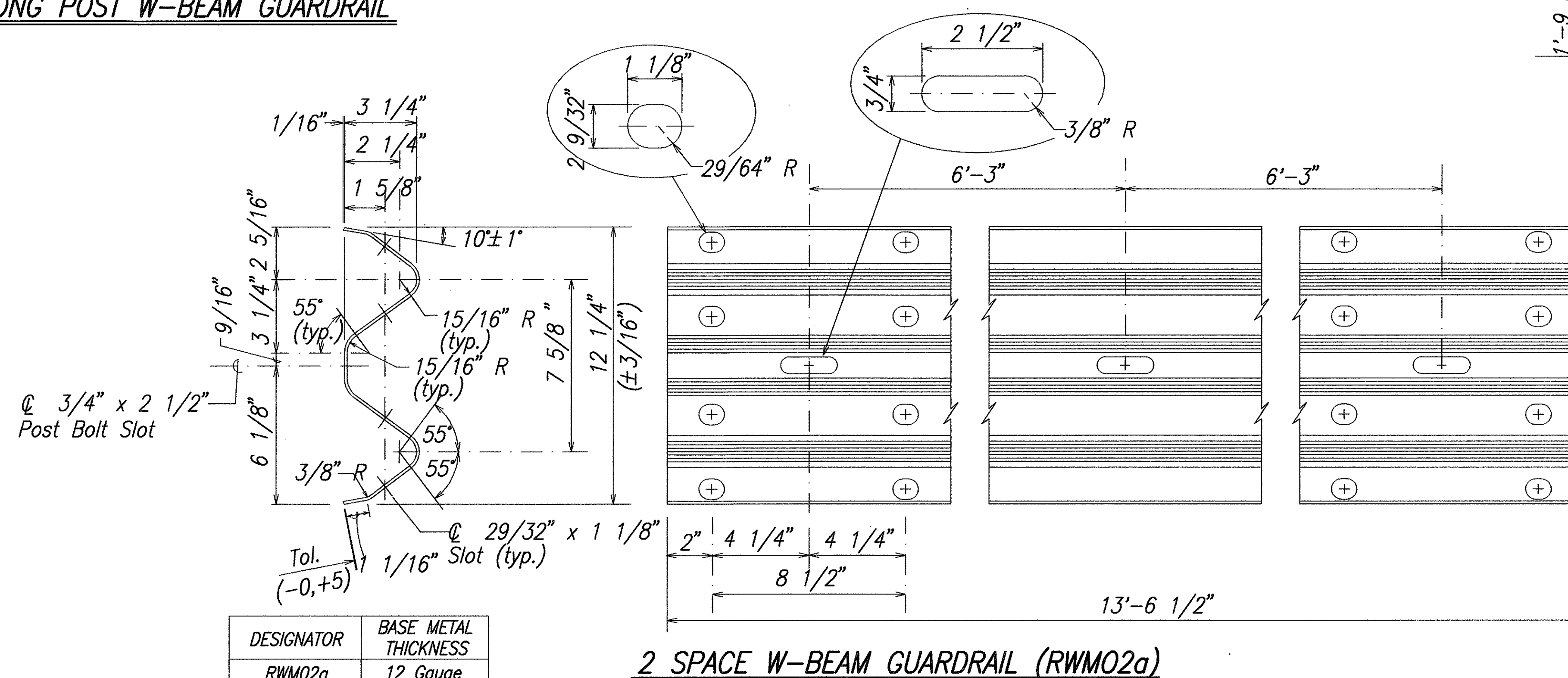
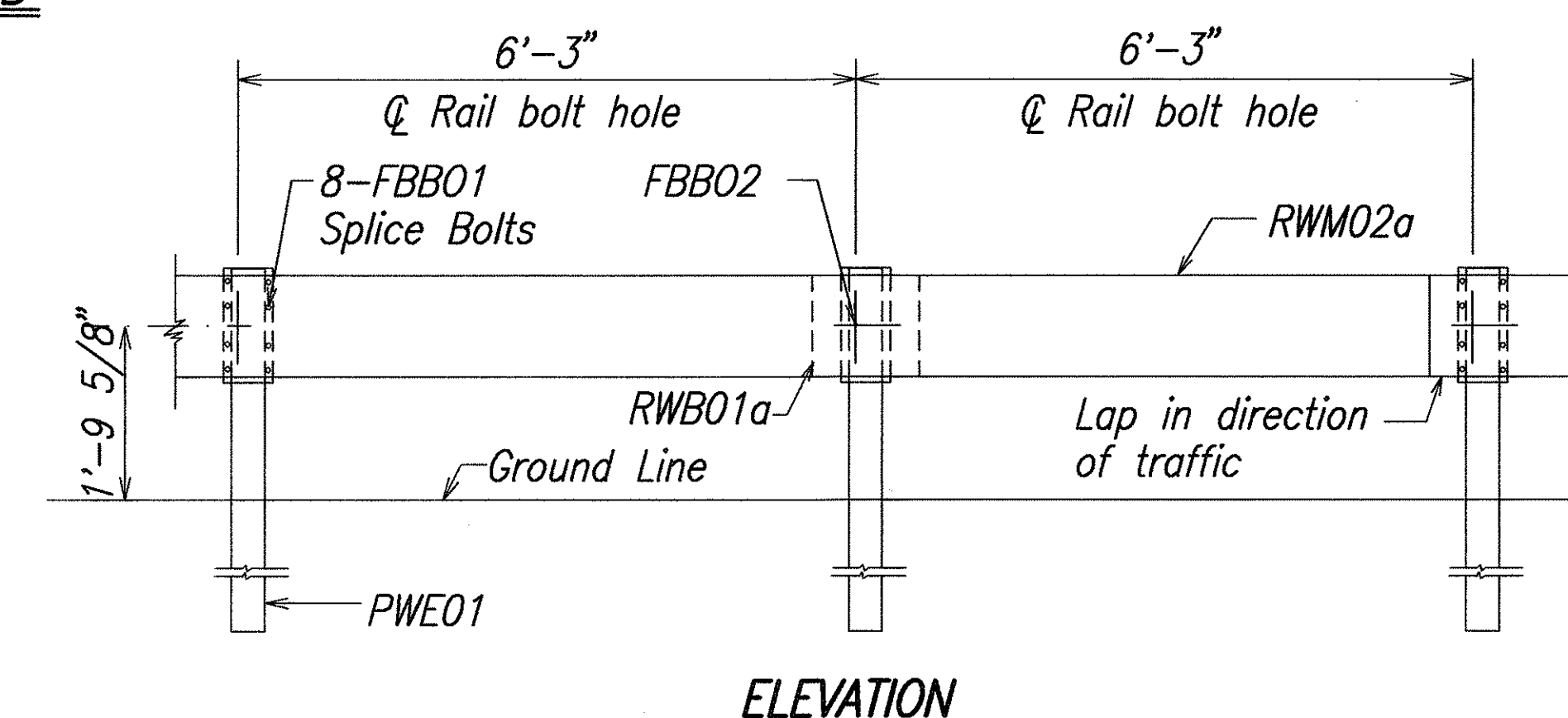
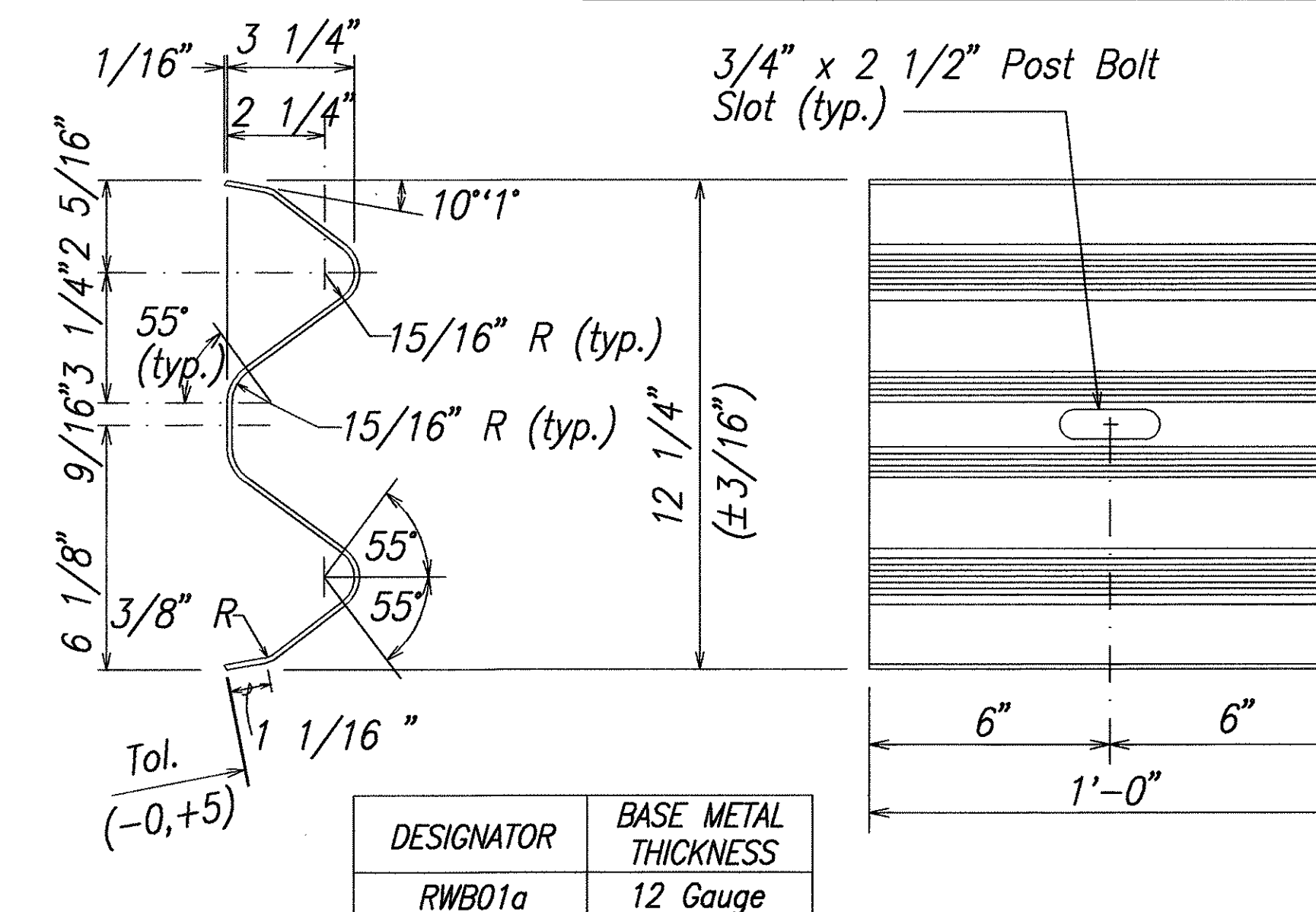
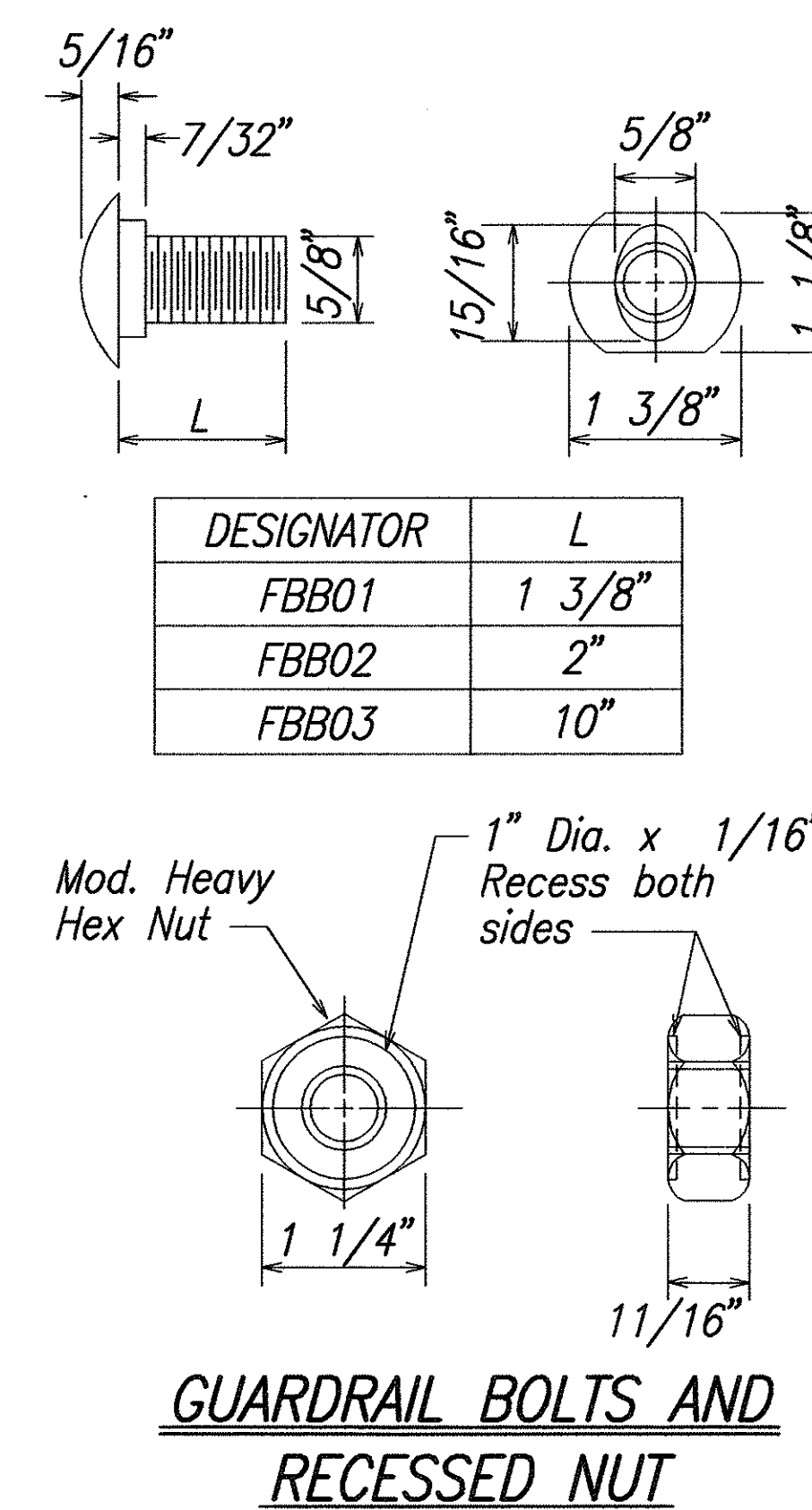
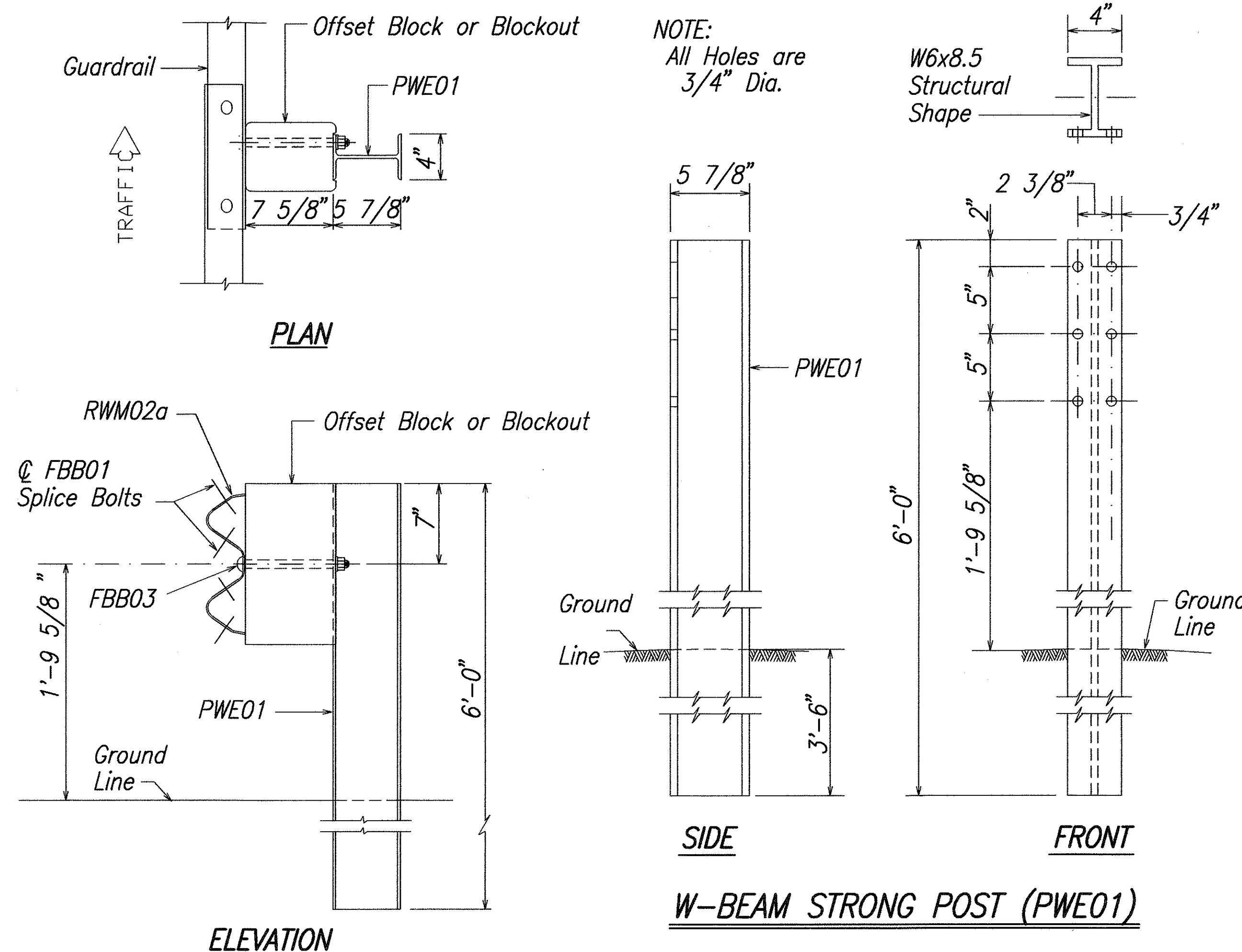


ELEVATION

TYPICAL GUARDRAIL INSTALLATION

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

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII | HAW. | CMAQ-0300(100) | 2004 | 30 | 75 |



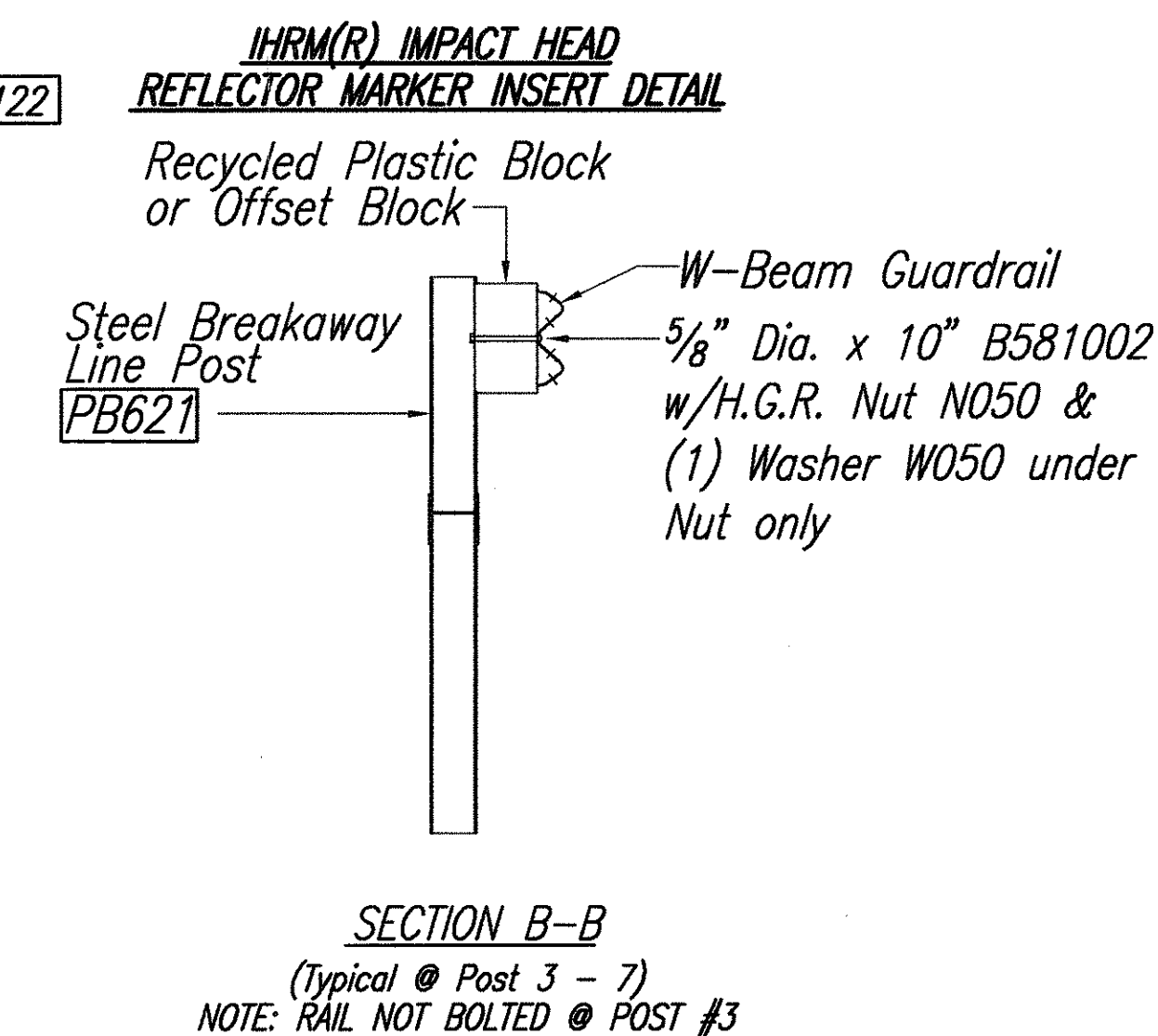
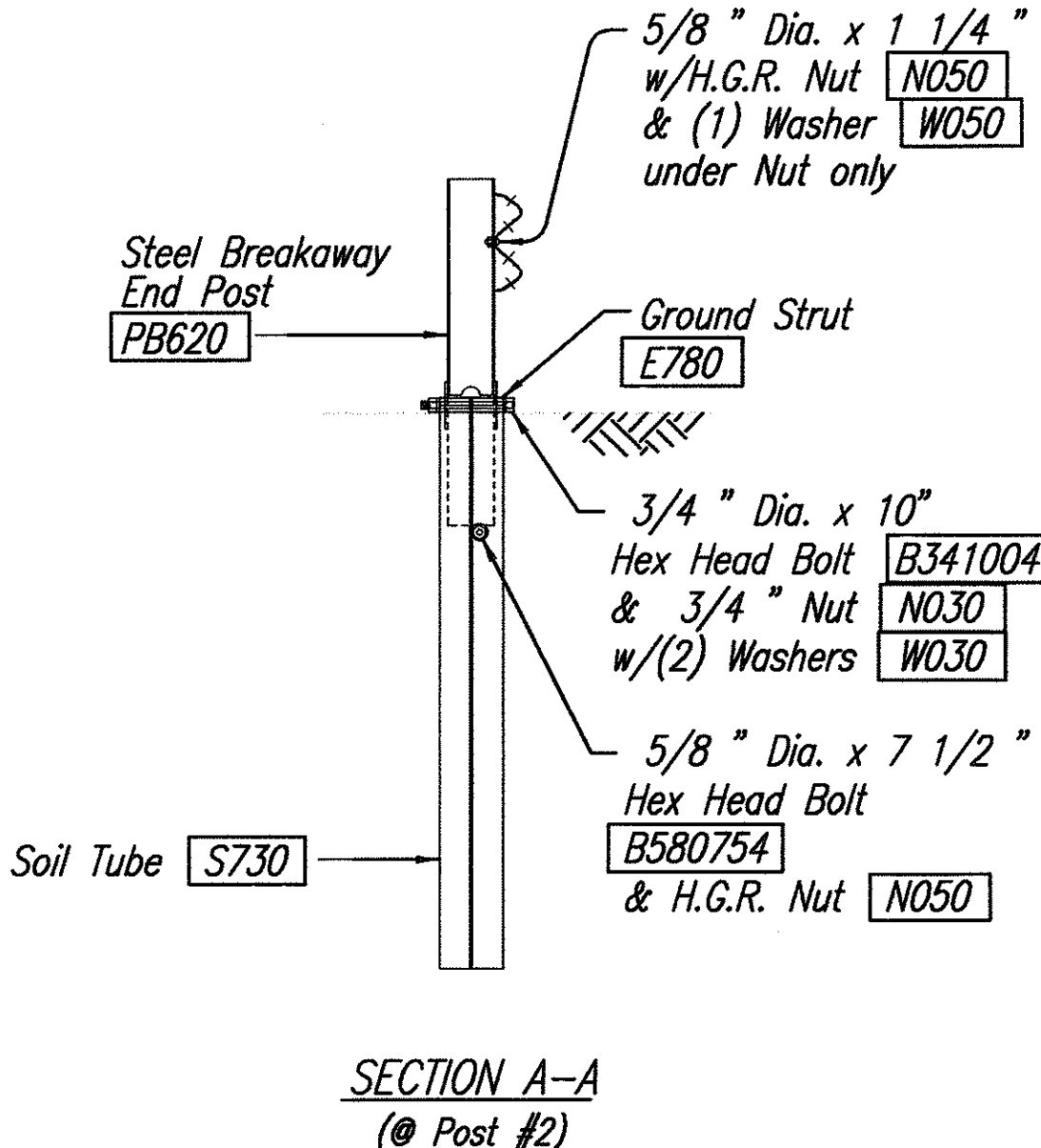
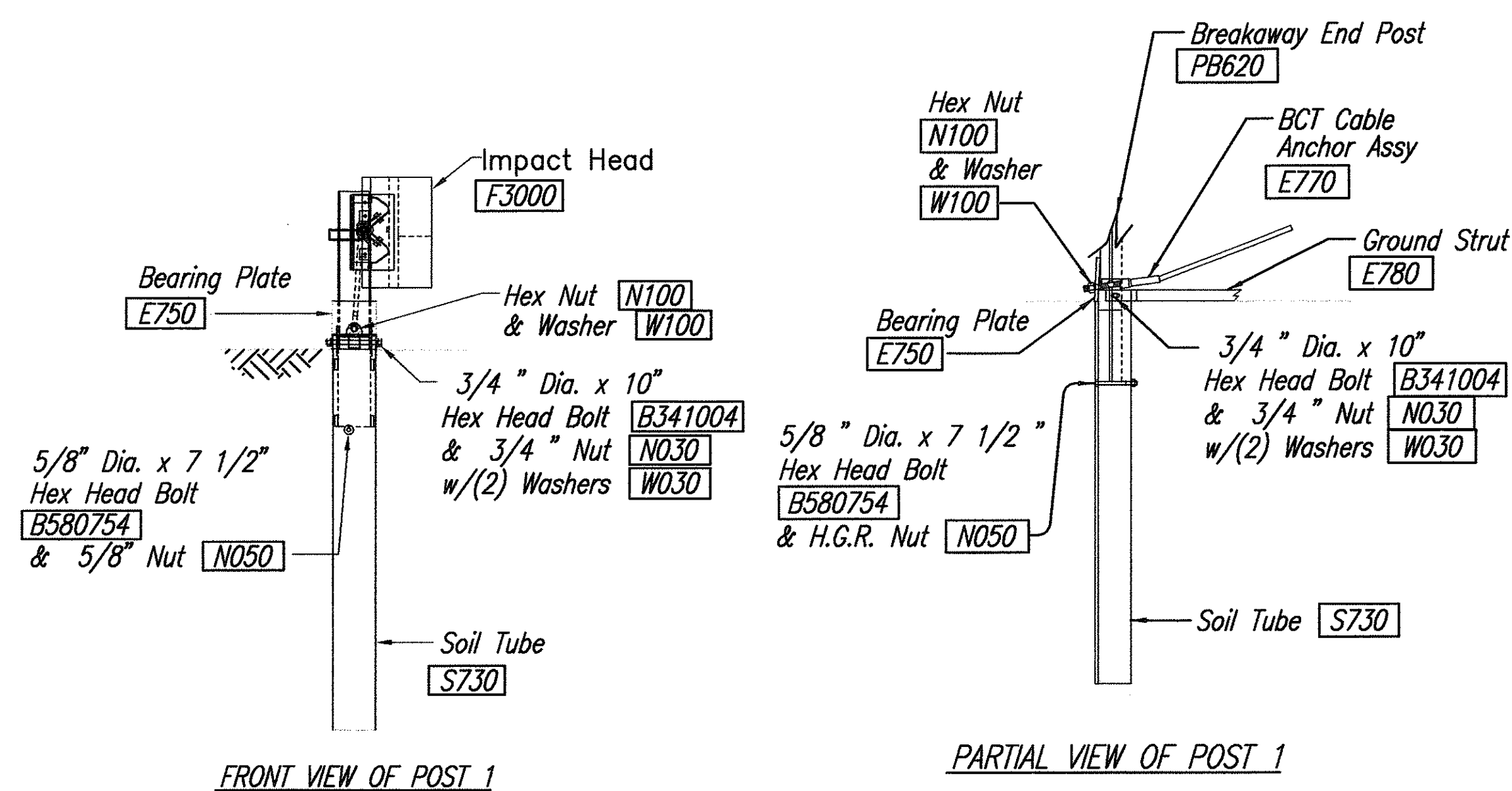
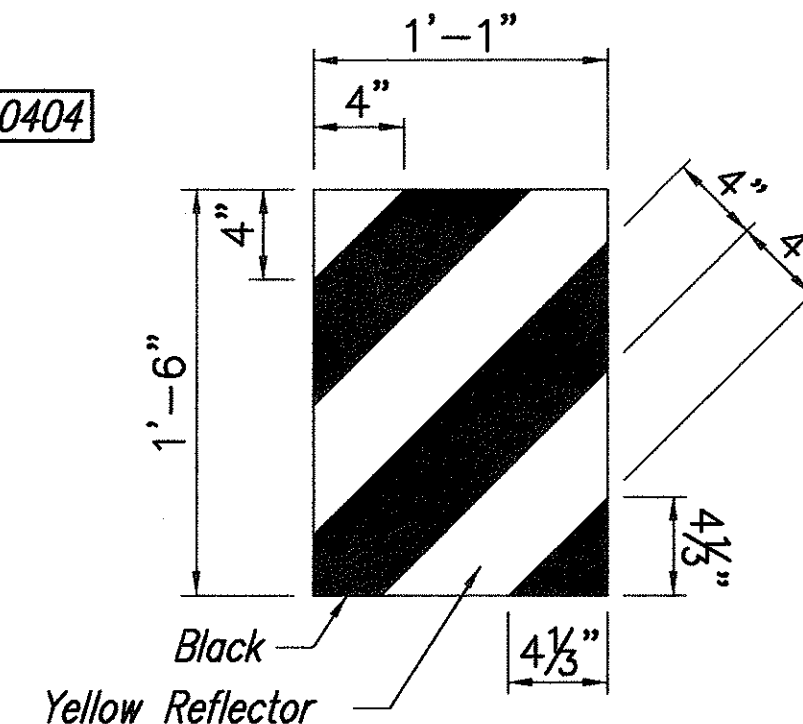
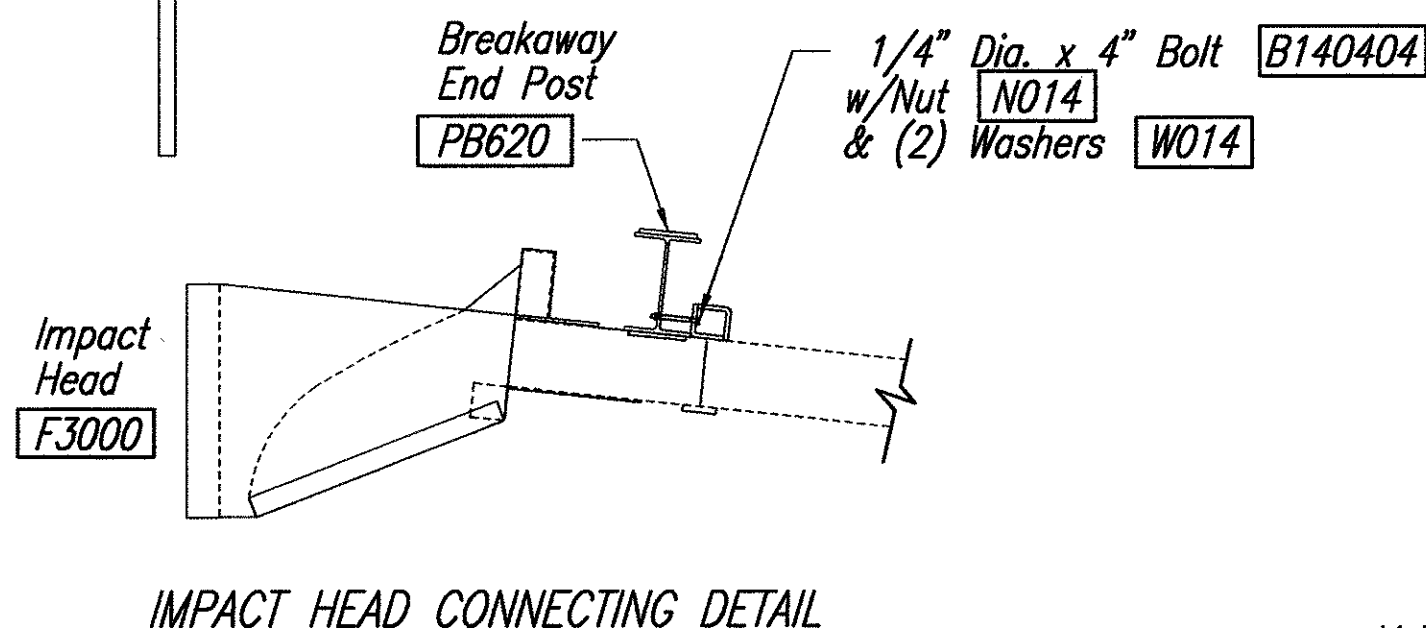
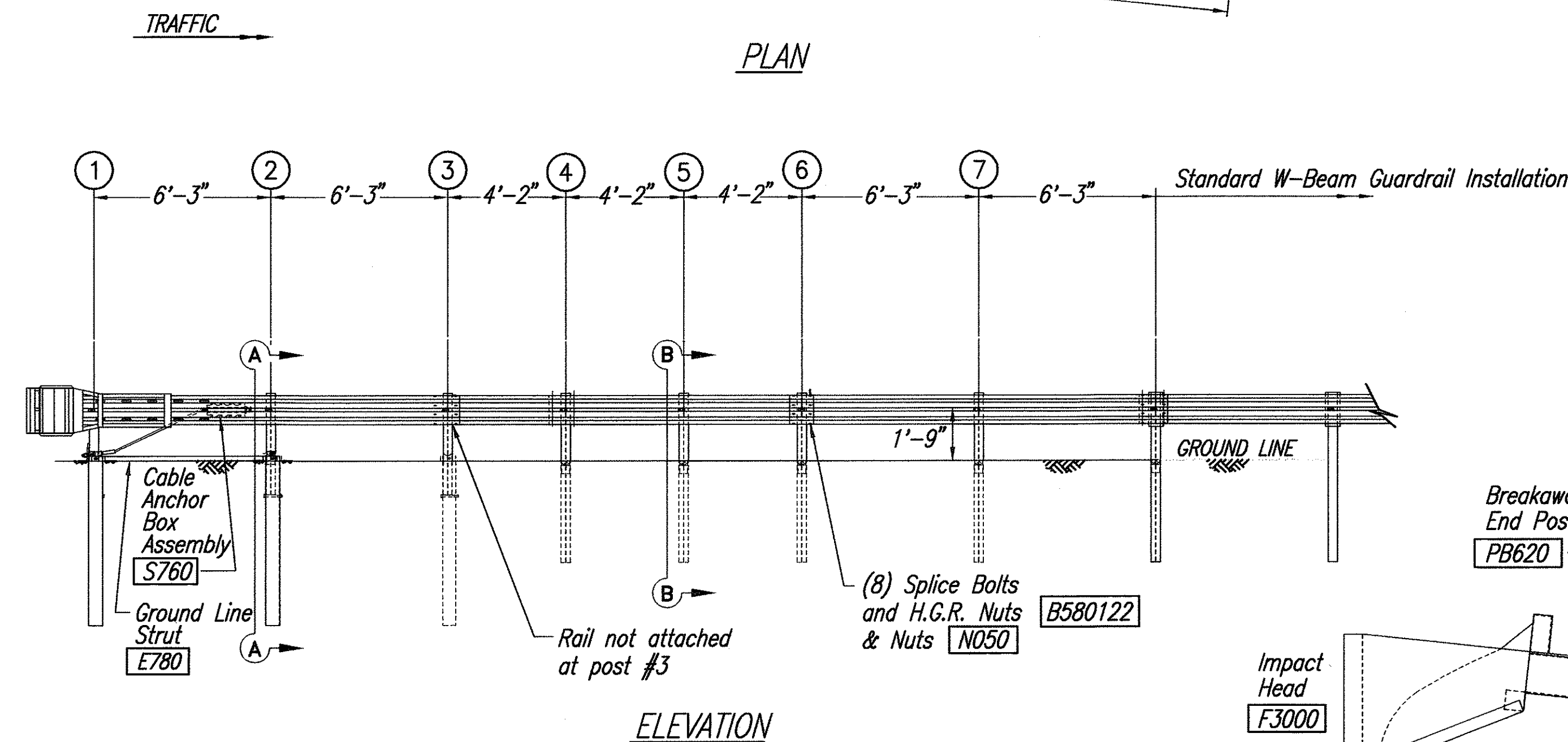
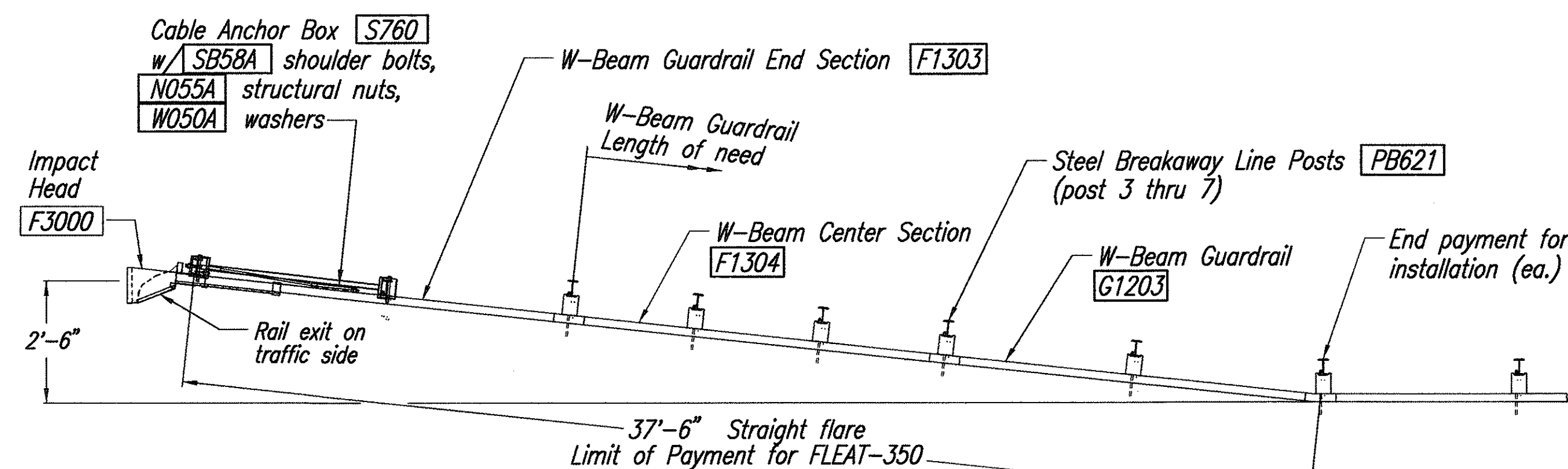
| | |
|-------------------|------|
| SURVEY PLOTTED BY | DATE |
| DRAWN BY | |
| TRACED BY | |
| DESIGNED BY | |
| CHECKED BY | |
| ORIGINAL PLAN | |
| NOTE BOOK | |
| No. | |

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.

BRIAN A. LOCK
LICENSED PROFESSIONAL ENGINEER
No. 9987-C
HAWAII, U.S.A.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STRONG POST W-BEAM
GUARDRAIL DETAILS
ADA Compliance for Emergency Telephones
at Various Locations on Oahu
Federal Aid Project No. CMAQ-0300(100)
Scale: As Shown Date: AUGUST 13, 2004
SHEET No. CB29 OF 74 SHEETS

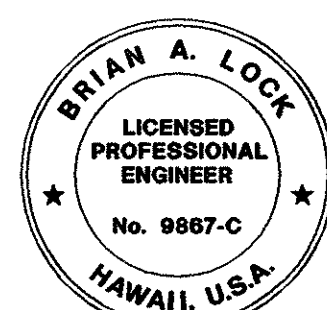
| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII | HAW. | CMAQ-0300(100) | 2004 | 31 | 75 |



- GENERAL NOTES**
- Breakaway steel posts are required with the FLEAT Terminal.
 - All bolts, nuts, cable assemblies, cable anchors and bearing plates shall be galvanized.
 - The soil tubes shall not protrude more than 4" above ground (measured along a 5' cord). Site grading may be necessary to meet this requirement.
 - The soil tubes may be driven with an approved driving head. Soil tubes shall not be driven with the post in the tube. If the tubes are placed in drilled holes, the backfill material must be satisfactorily compacted to prevent settlement.
 - 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. 2 1/2" 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.
 - 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.
 - (R) or (L) indicates right or left Impact Head Reflector Marker (IHRM). Providing and installing of IHRM shall be considered incidental to end treatment.
 - The stripes for IHRM shall slope downward at an angle of 45° towards the side of the end treatment that traffic is to pass.

| ITEM NO. | QTY. | BILL OF MATERIALS |
|----------|------|------------------------------------------------------------------|
| F3000 | 1 | IMPACT HEAD |
| F1303 | 1 | W-BEAM GUARDRAIL END SECTION, 12 GA. |
| F1304 | 1 | W-BEAM GUARDRAIL CENTER SECTION, 12 GA. |
| G1203 | 1 | W-BEAM GUARDRAIL, 12 GA. |
| S730 | 2 | *FOUNDATION SOIL TUBE, 6" x 8" x 72" |
| E750 | 1 | BEARING PLATE |
| S760 | 1 | CABLE ANCHOR BOX |
| E770 | 1 | BCT CABLE ANCHOR ASSEMBLY |
| E780 | 1 | GROUND STRUT |
| PB620 | 2 | STEEL BREAKAWAY END POST |
| PB621 | 5 | STEEL BREAKAWAY LINE POST |
| | 5 | RECYCLED PLASTIC BLOCKOUT OR OFFSET BLOCK |
| | 1 | IMPACT HEAD REFLECTOR MARKER - IHRM(R) OR (L) |
| | | HARDWARE |
| B580122 | 25 | 5/8" Dia. x 1 1/4" SPLICE BOLT, POST #2 |
| B580754 | 2 | 5/8" Dia. x 7 1/2" HEX BOLT |
| B341004 | 2 | 3/4" Dia. x 10" HEX BOLT |
| B581002 | 5 | 5/8" Dia. x 10" H.G.R. BOLT (POST 3 THRU 7) |
| N050 | 32 | 5/8" Dia. H.G.R. NUT (SPLICE 24, SOIL TUBES 2, POST 2 THRU 7, 6) |
| N030 | 2 | 3/4" Dia. HEX NUT |
| W050 | 6 | 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 | 1/2" 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 Tubes S730
*6'-0" Solid Foundation Tubes E731
*5'-0" Foundation Tubes S735 W/Soil Plates SP600
*4'-6" Foundation Tubes E735 W/Soil Plates SP600



"OBSERVATION OF CONSTRUCTION" IS DEFINED IN CHAPTER 16-115, HAWAII ADMINISTRATIVE RULES ENTITLED "PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS AND LANDSCAPE ARCHITECTS".

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.
WILSON OKAMOTO CORP. LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

FLEAT 350 GUARDRAIL DETAIL

ADA Compliance for Emergency Telephones
at Various Locations on Oahu
Federal Aid Project No. CMAQ-0300(100)

Scale: As Shown Date: AUGUST 13, 2004

SHEET No. CB30 OF 74 SHEETS