



KAWAIHAE GUARDRAIL INSTALLATION

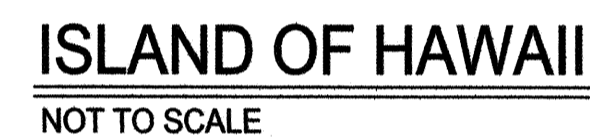
KAWAIHAE, SOUTH KOHALA, HAWAII

PREPARED FOR:

**DEPARTMENT OF
HAWAIIAN HOME LANDS
91-5420 KAPOLEI PARKWAY
KAPOLEI, HAWAII 96707**

PREPARED BY:


AUSTIN, TSUTSUMI & ASSOCIATES, INC.
CONSULTING CIVIL ENGINEERS
501 SUMNER STREET, SUITE 521
HONOLULU, HAWAII 96817-5304



INDEX OF DRAWINGS

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APPROVED


DIRECTOR, DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

4/25/14
DATE

ADMINISTRATOR, HIGHWAYS DIVISION
STATE DEPARTMENT OF TRANSPORTATION (APPROVAL GRANTED FOR
WORK WITHIN STATE RIGHT-OF-WAY ONLY. ID NO. H-15-03
LETTER OF APPROVAL NO. HWY-CM 2-1623
DATED 01/27/16

1/27/16
DATE

~~CHIEF ENGINEER, DEPARTMENT OF PUBLIC WORKS~~
~~COUNTY OF HAWAII~~

~~DATE~~

JOB NO. 0-11-056.004
FN: X:\2011\11-056\11-056.G-1 CONSTRUCTION NOTES.DWG

GENERAL CONSTRUCTION NOTES

- ALL CONSTRUCTION WORK SHALL BE DONE IN ACCORDANCE WITH THE "HAWAII STANDARD SPECIFICATIONS FOR ROAD, BRIDGE, AND PUBLIC WORKS CONSTRUCTION 2005" AS AMENDED, AND THE "STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION", DATED SEPTEMBER 1984, AS AMENDED, OF THE DEPARTMENT OF PUBLIC WORKS, CITY AND COUNTIES OF THE STATE OF HAWAII AND THE CONSTRUCTION DRAWINGS AND DETAILS SPECIFICATIONS PREPARED FOR THIS PROJECT.
- THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING UTILITIES, WHETHER SHOWN ON THE PLANS OR NOT, AND SHALL BE RESPONSIBLE FOR THE REPAIR OR REPLACEMENT OF SAME IN THE EVENT OF DAMAGES DUE TO HIS CONSTRUCTION PRACTICES.
- WHEREVER CROSSINGS OR CONNECTIONS OF NEW UTILITIES TO EXISTING UTILITIES ARE SHOWN ON THE PLANS, THE CONTRACTOR SHALL EXPOSE THE EXISTING LINES TO VERIFY THEIR LOCATIONS AND DEPTHS PRIOR TO EXCAVATION FOR THE NEW LINES. THE CONTRACTOR SHALL PROTECT EXISTING UTILITIES AND SHALL BE RESPONSIBLE FOR DAMAGES TO THE FACILITIES WHETHER SHOWN OR NOT ON THE PLANS.
- THE EXISTENCE AND LOCATION OF UNDERGROUND UTILITIES AND STRUCTURES AS SHOWN ON THE PLANS ARE FROM THE LATEST AVAILABLE DATA, BUT ARE NOT GUARANTEED AS TO THE ACCURACY OF THE ENCOUNTERING OF OTHER OBSTACLES DURING THE COURSE OF LOCATION OF UNCHARTED UTILITIES. THE CONTRACTOR SHALL BE RESPONSIBLE, AND SHALL PAY FOR ALL DAMAGES TO EXISTING UTILITIES.
- NO CONSTRUCTION EQUIPMENT SHALL BE PARKED WITHIN THE ROAD RIGHT-OF-WAY IN SUCH A MANNER THAT THE EQUIPMENT WILL OBSTRUCT THE NORMAL MOVEMENT AND SIGHT DISTANCE OF THE DRIVING MOTORIST, EXCEPT DURING ACTUAL WORKING HOURS.
- EXCEPT DURING ACTUAL WORKING HOURS, ALL SIGNS WHICH DO NOT PERTAIN TO THE CONSTRUCTION ACTIVITY, SUCH AS "MEN WORKING" AND "FLAGMEN AHEAD" SHALL BE COVERED OR LAID DOWN. HOWEVER, ALL SIGNS NECESSARY FOR THE SAFETY OF THE PUBLIC SHALL BE MAINTAINED.
- THE CONTRACTOR SHALL EMPLOY A HAWAII REGISTERED PROFESSIONAL SURVEYOR TO PERFORM ALL CONSTRUCTION STAKEOUTS, THE COST OF WHICH SHALL BE BORNE BY THE CONTRACTOR.
- THE CONTRACTOR SHALL MAKE HIS OWN ARRANGEMENTS FOR, AND PAY FOR ALL TEMPORARY UTILITIES REQUIRED FOR HIS WORK.
- SHOULD HISTORIC SITES SUCH AS WALLS, PLATFORMS, PAVEMENTS AND MOUNDS, OR REMAINS SUCH AS ARTIFACTS, BURIALS, CONCENTRATION OF CHARCOAL OR SHELLS BE ENCOUNTERED DURING CONSTRUCTION WORK, WORK SHALL CEASE IN THE IMMEDIATE VICINITY OF THE FIND AND THE FIND SHALL BE PROTECTED FROM FURTHER DAMAGE. THE CONTRACTOR SHALL IMMEDIATELY CONTACT THE STATE HISTORIC PRESERVATION DIVISION ((808) 692-8015), WHICH WILL ASSESS THE SIGNIFICANCE OF THE FIND AND RECOMMEND AN APPROPRIATE MITIGATION MEASURE, IF NECESSARY. A 3-METER / 10-FOOT WIDE BUFFER ZONE EXISTS AROUND ALL SITES IN PRESERVATION DURING CONSTRUCTION. IT IS HIGHLY IMPORTANT THAT THE PRESERVED SITES REMAIN UNDISTURBED.
- THE CONTRACTOR SHALL PROCURE AND PAY FOR ALL LICENSES AND PERMITS AND SHALL GIVE ALL NOTICES NECESSARY AND INCIDENTAL TO THE DUE AND LAWFUL PROSECUTION OF THE WORK.
- THE CONTRACTOR SHALL RESTORE ALL EXISTING FACILITIES INCLUDING PAVEMENT, DRAINAGE FACILITIES, CURBS, GUTTERS, SIGNS, LANDSCAPING, IRRIGATION SYSTEMS, ETC., REMOVED OR DAMAGED AS A RESULT OF HIS OPERATION USING MATERIALS AND WORKMANSHIP IN ACCORDANCE WITH "HAWAII STANDARD SPECIFICATIONS FOR ROAD, BRIDGE, AND PUBLIC WORKS CONSTRUCTION", 2005 AS AMENDED, AND "STANDARD DETAILS", SEPTEMBER 1984 FOR PUBLIC WORKS CONSTRUCTION OF THE DEPARTMENT OF PUBLIC WORKS, COUNTY OF MAUI, AS AMENDED.
- CONTRACTOR SHALL PROVIDE, INSTALL AND MAINTAIN ALL NECESSARY SIGNS, LIGHTS, FLARES, BARRICADES AND OTHER PROTECTIVE DEVICES FOR THE PROTECTION, SAFETY AND CONVENIENCE OF THE PUBLIC ACCORDING TO THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS", 2003 AND THE "RULES AND REGULATIONS GOVERNING THE USE OF TRAFFIC CONTROL DEVICES AT WORK SITES ON/OR ADJACENT TO PUBLIC STREETS AND HIGHWAYS", ADOPTED BY THE HIGHWAY SAFETY COORDINATOR AND THE U.S. FEDERAL HIGHWAY ADMINISTRATION "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR HIGHWAY CONSTRUCTION AND MAINTENANCE OPERATIONS", DATED 2009.
- THE DIRECTOR OF PUBLIC WORKS HAS THE RIGHT TO STOP CONSTRUCTION SHOULD ANY WORK BE FOUND CONTRARY TO THE APPROVED CONSTRUCTION PLAN OR DETRIMENTAL TO THE PUBLIC'S INTEREST.
- THE CONTRACTOR, AT HIS OWN EXPENSE, SHALL KEEP THE PROJECT AREA AND SURROUNDING AREA FREE FROM DUST NUISANCE. THE WORK SHALL BE IN CONFORMANCE WITH THE AIR POLLUTION CONTROL STANDARDS AND REGULATIONS OF THE STATE DEPARTMENT OF HEALTH, AND COUNTY GRADING ORDINANCE.
- THE CONTRACTOR SHALL REMOVE AND DISPOSE ALL SILT AND DEBRIS DEPOSITED IN DRAINAGE FACILITIES, ROADWAYS AND OTHER AREAS RESULTING FROM HIS WORK. THE COST INCURRED FOR ANY NECESSARY REMEDIAL ACTION ORDERED BY THE DIRECTOR OF PUBLIC WORKS SHALL BE PAID BY THE CONTRACTOR.

GENERAL CONSTRUCTION NOTES (CONT.)

- CONSTRUCTION DEBRIS AND WASTES SHALL BE DEPOSITED AT AN APPROPRIATE SITE. THE CONTRACTOR SHALL INFORM THE DIRECTOR OF PUBLIC WORKS OF THE LOCATION OF THE DISPOSAL SITES. THE DISPOSAL SITE MUST FULFILL THE REQUIREMENTS OF THE GRADING ORDINANCE. THE CONTRACTOR SHALL MINIMIZE ITS CONSTRUCTION DEBRIS AND SOLID WASTES.
- CONTRACTOR SHALL PROVIDE VEHICULAR AND PEDESTRIAN ACCESS ROUTES AT ALL TIMES TO ALL EXISTING FACILITIES.
- THE EXISTING ASPHALTIC CONCRETE (A.C.) PAVEMENT SHALL BE SAW CUT BEFORE COMMENCEMENT OF WORK.
- ALL DIMENSIONS AND DETAILS SHOWN ON THE DRAWINGS SHALL BE CHECKED AND VERIFIED PRIOR TO THE START OF CONSTRUCTION, AND ANY DISCREPANCIES SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ENGINEER FOR CLARIFICATION.

NOTES FOR CONSTRUCTION WITHIN COUNTY RIGHT-OF-WAY

- CONTRACTOR SHALL OBTAIN A PERMIT TO PERFORM WORK ON COUNTY HIGHWAYS FROM THE DEVELOPMENT SERVICES ADMINISTRATION TWO WEEKS PRIOR TO THE COMMENCEMENT OF WORK.
- STANDARD DETAIL DRAWINGS AND STANDARD SPECIFICATIONS OF THE DEPARTMENT OF PUBLIC WORKS SHALL BE INCLUDED AS PART OF THE CONSTRUCTION PLANS.
- ALL CONSTRUCTION WORK SHALL STRICTLY CONFORM TO THE LATEST VERSION OF THE HAWAII STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE PUBLIC WORKS CONSTRUCTION, AND THE SEPTEMBER 1984 "STANDARD DETAILS" FOR PUBLIC WORKS CONSTRUCTION OF THE DEPARTMENT OF PUBLIC WORKS, AS AMENDED.
- IF EXISTING UTILITIES, WHETHER OR NOT SHOWN ON PLANS, ARE DAMAGED DURING CONSTRUCTION, THE CONTRACTOR SHALL AT HIS OWN EXPENSE BE REQUIRED TO REPAIR SUCH UTILITIES.
- CONTRACTOR SHALL PROVIDE, INSTALL AND MAINTAIN ALL NECESSARY SIGNS, LIGHTS, FLARES, BARRICADES, AND OTHER PROTECTIVE DEVICES FOR THE PROTECTION, SAFETY AND CONVENIENCE OF THE PUBLIC ACCORDING TO THE LATEST VERSION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICE FOR STREETS AND HIGHWAYS", AND TO THE RULES AND REGULATIONS GOVERNING THE USE OF TRAFFIC CONTROL DEVICES AT WORKSITES ON/OR ADJACENT TO PUBLIC STREETS AND HIGHWAYS ADOPTED BY THE HIGHWAY SAFETY COORDINATOR AND THE U.S. FEDERAL HIGHWAY ADMINISTRATION "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR HIGHWAY CONSTRUCTION AND MAINTENANCE OPERATIONS".
- THE DIRECTOR OF PUBLIC WORKS AND/OR THE DIRECTOR OF THE DEPARTMENT OF WATER SUPPLY HAS THE RIGHT TO STOP CONSTRUCTION SHOULD ANY WORK BE FOUND CONTRARY TO THE APPROVED CONSTRUCTION PLAN OR DETRIMENTAL TO THE PUBLIC'S INTEREST.
- THE CONTRACTOR SHALL SCHEDULE A PRE-CONSTRUCTION MEETING WITH DSA FIVE (5) DAYS PRIOR TO COMMENCEMENT OF CONSTRUCTION.
- THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, KEEP THE PROJECT AREA AND THE SURROUNDING AREA FREE FROM DUST NUISANCE. THE WORK SHALL BE IN CONFORMANCE WITH THE AIR POLLUTION CONTROL STANDARDS AND REGULATIONS OF THE STATE DEPARTMENT OF HEALTH AND THE COUNTY GRADING ORDINANCE.
- THE CONTRACTOR SHALL REMOVE ALL SILT AND DEBRIS RESULTING FROM HIS WORK AND DEPOSITED IN DRAINAGE FACILITIES, ROADWAYS AND OTHER AREAS. THE COSTS INCURRED FOR ANY NECESSARY REMEDIAL ACTION ORDERED BY THE DIRECTOR OF PUBLIC WORKS SHALL BE PAID BY THE CONTRACTOR.
- CONSTRUCTION DEBRIS AND WASTES SHALL BE DEPOSITED AT AN APPROPRIATE WORK SITE. THE CONTRACTOR SHALL INFORM THE DIRECTOR OF PUBLIC WORKS OF THE LOCATION OF THE DISPOSAL SITES. THE DISPOSAL SITE MUST FULFILL THE REQUIREMENTS OF THE GRADING ORDINANCE.
- THE CONTRACTOR SHALL SUBMIT A .PDF FILE AND FIVE (5) COPIES OF THE "AS-BUILT" DRAWINGS PRIOR TO THE FINAL APPROVAL OF THE IMPROVEMENTS.
- IF THE CLEARANCE BETWEEN A WASTEWATER LINE AND A NEW OR EXISTING WATERLINE IS EIGHTEEN INCHES (18") OR LESS, THE WASTEWATER LINE SHALL BE CONCRETE-JACKETED IN ACCORDANCE WITH THE STANDARD DETAILS OF PUBLIC WORKS CONSTRUCTION DATED SEPTEMBER 1984, AS AMENDED.
- SHOULD HISTORIC SITES SUCH AS WALLS, PLATFORMS, PAVEMENTS, OR MOUNDS, OR REMAINS SUCH AS ARTIFACTS, BURIALS, CONCENTRATION OF SHELL OR CHARCOAL BE ENCOUNTERED DURING CONSTRUCTION ACTIVITIES, WORK SHALL CEASE IMMEDIATELY IN THE IMMEDIATE VICINITY OF THE FIND AND THE FIND SHALL BE PROTECTED FROM FURTHER DAMAGE. THE CONTRACTOR AND/OR LANDOWNER SHALL IMMEDIATELY CONTACT THE STATE HISTORIC PRESERVATION DIVISION (692-8015), WHICH WILL ASSESS THE SIGNIFICANCE OF THE FIND AND RECOMMEND AN APPROPRIATE MITIGATION MEASURE, IF NECESSARY.
- STEEL PLATE WARNING SIGNS ARE REQUIRED FOR ALL STEEL PLATES IN THE RIGHT-OF-WAY.
- WHEELCHAIR RAMP INSPECTION/CERTIFICATION FORMS SHALL BE REQUIRED FOR ALL NEWLY CONSTRUCTED RAMPS.
- ALL STRIPING AND PAVEMENT MARKINGS SHALL BE OF THERMOPLASTIC MATERIAL.

CONTRACTOR'S RESPONSIBILITY FOR

EXISTING UTILITY LINES, PIPES AND SERVICES

- INFORMATION REGARDING THE SITE OF THE WORK GIVEN ON THE DRAWINGS OR SPECIFICATIONS HAS BEEN OBTAINED BY THE ENGINEER AND IS BELIEVED TO BE REASONABLY CORRECT; HOWEVER, IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL SUCH INFORMATION. THE CONTRACTOR SHALL TONE THE AREA TO BE EXCAVATED TO ASCERTAIN THE LOCATION OF UNCHARTED UTILITIES.
- ANY UTILITIES THAT THE CONTRACTOR ENCOUNTERS DURING THE PROGRESS OF THE WORK, SUCH AS TELEPHONE DUCTS, ELECTRIC DUCTS, WATER LINES, SEWER LINES, ELECTRIC LINES AND DRAINAGE PIPES, WHETHER SHOWN OR NOT ON THE CONTRACT PLANS, SHALL NOT BE DISTURBED OR DAMAGED UNLESS OTHERWISE INSTRUCTED IN THE PLANS AND SPECIFICATIONS.
- IN THE EVENT THE UTILITIES ARE DAMAGED OR DISTURBED BY THE CONTRACTOR, THE CONTRACTOR SHALL BE HELD LIABLE FOR THE DAMAGED OR DISTURBED UTILITIES.
- THE CONTRACTOR SHALL REPAIR THE DAMAGED OR DISTURBED UTILITIES TO THE EXISTING CONDITION AT NO COST TO THE OWNER. ANY DAMAGE CLAIMS DUE TO THE DISRUPTION OF SERVICE CAUSED BY THE UTILITIES BEING DAMAGED SHALL BE PAID BY THE CONTRACTOR, WHO SHALL SAVE HARMLESS THE OWNER AND ENGINEER FROM ALL SUITS, ACTIONS OR CLAIMS OF ANY CHARACTER BROUGHT ON ACCOUNT OF SUCH DAMAGES. 5. IN THE EVENT UTILITIES WHICH WERE NOT SHOWN ON THE PLANS AND SPECIFICATIONS ARE DAMAGED OR DISTURBED BY THE CONTRACTOR, THE CONTRACTOR SHALL BE HELD LIABLE. THE CONTRACTOR SHALL CONTACT ALL UTILITY COMPANIES AND EXPOSE ALL UTILITY LINES PRIOR TO ANY EXCAVATION AND/OR INSTALLATION OF LINES.

SOLID WASTE CONSTRUCTION NOTES

UNLESS OTHERWISE SPECIFIED, THE CONTRACTOR IS RESPONSIBLE FOR THE PROPER HANDLING, STORAGE AND/OR DISPOSAL OF ALL WASTE GENERATED BY THE CONSTRUCTION INCLUDING GRUBBING AND EXCESS EXCAVATED MATERIAL. ANY MATERIAL BROUGHT TO THE COUNTY LANDFILLS WILL BE SUBJECTED TO THE INSTITUTED TIPPING FEE SYSTEM, WITH NO EXCEPTIONS OR EXEMPTIONS.

ARCHAEOLOGICAL MONITORING NOTES

CONTRACTOR SHALL HAVE AN ARCHAEOLOGICAL MONITOR TO BE PRESENT DURING ALL GROUND-DISTURBING ACTIVITIES. THE ARCHAEOLOGICAL MONITOR SHALL INSPECT THE EXPOSED SOIL AND THE STRATIGRAPHIC PROFILES OF ANY EXCAVATED TRENCHES IN AN EFFORT TO IDENTIFY ANY PREVIOUSLY UNDISCOVERED AND UNDISTURBED CULTURAL DEPOSITS, FEATURES, ARTIFACTS AND HUMAN SKELETAL MATERIAL. THE MONITOR SHALL NOTIFY THE COUNTY IF ANY SUCH RESOURCES ARE ENCOUNTERED. IF NO CULTURAL RESOURCES ARE ENCOUNTERED, THE MONITOR SHALL PREPARE A FINAL MONITORING REPORT AND SUBMIT TO SHPD FOR CONCURRENCE. THIS WORK SHALL BE INCIDENTAL TO THE VARIOUS CONTRACT ITEMS AND WILL NOT BE PAID FOR SEPARATELY. ADDITIONAL WORK DUE TO THE DISCOVERY OF CULTURAL RESOURCES WILL BE PAID FOR ON A FORCE ACCOUNT BASIS.

ELECTRICAL NOTES:

- DO NOT EXCAVATE WITHIN 5'-0" OF POLES
- VERIFY EXISTING UNDERGROUND CABLES IN THE VICINITY. CALL HAWAII ONE CALL CENTER AT 1-866-423-7287 TO HAVE EXISTING UNDERGROUND LINES LOCATED BEFORE EXCAVATING.
- CALL FOR A MECO STANDBY MAN BEFORE EXCAVATION IN THE AREA OF EXISTING UNDERGROUND ELECTRICAL CABLES. THREE WORKING DAYS IN ADVANCE NOTICE IS REQUIRED. CALL 8771-7777.
- WHEN WORKING OR OPERATING EQUIPMENT IN THE VICINITY OF OVERHEAD ELECTRICAL LINES/GUY WIRES, MAINTAIN A MINIMUM OF 10'-0" RADIAL CLEARANCE.

NOTES FOR ENVIRONMENTAL PROTECTION

- ENVIRONMENTAL PROTECTION NOTES PERTAINING TO AIR AND WATER POLLUTION SHALL BE ADMINISTERED AND MONITORED BY THE DEPARTMENT OF HEALTH.
- THE CONTRACTOR, AT HIS OWN EXPENSE, SHALL PROVIDE EFFECTIVE MEASURES FOR THE CONTROL OF FUGITIVE DUST EMISSIONS FROM THE PROJECT AND SURROUNDING AREAS CAUSED BY HIS OPERATIONS, THESE MEASURES SHALL MEET THE REQUIREMENTS OF STATE ADMINISTRATIVE RULES, DEPARTMENT OF HEALTH, AIR POLLUTION CONTROL ((11-60.1)).
- ALL GRADING OPERATIONS SHALL BE PERFORMED IN CONFORMANCE WITH THE APPLICABLE PROVISIONS OF THE GRADING ORDINANCE TO PREVENT VIOLATION OF THE STATE ADMINISTRATIVE RULES, DEPARTMENT OF HEALTH, WATER POLLUTION CONTROL AND WATER QUALITY STANDARDS ((11-54, 11-55)) DUE TO EROSION AND RUNOFF TO STATE WATERS.
- GRUB MATERIAL, DEMOLITION WASTES, AND CONSTRUCTION WASTES SHALL BE DISPOSED OF AT AN AUTHORIZED SITE HAVING A DEPARTMENT OF HEALTH SOLID WASTE MANAGEMENT PERMIT. OPEN BURNING IS PROHIBITED.
- PERMITS REQUIRED:
 - A NPDES PERMIT IS REQUIRED TO BE OBTAINED FROM THE CLEAN WATER BRANCH OF THE DEPARTMENT OF HEALTH FOR STORM WATER DISCHARGE AND HYDROTESTING.
 - A DEWATERING PERMIT MAY BE REQUIRED TO BE OBTAINED FROM THE CLEAN WATER BRANCH OF THE DEPARTMENT OF HEALTH IF DISCHARGING INTO STATE WATERS.
 - PERMIT MUST BE OBTAINED PRIOR TO START OF CONSTRUCTION.
- ENVIRONMENTAL PROTECTION NOTES PERTAINING TO AIR AND WATER POLLUTION SHALL BE ADMINISTERED AND MONITORED BY THE DEPARTMENT OF HEALTH.



Austin Tsutsumi
& ASSOCIATES, INC.
CIVIL ENGINEERS | SURVEYORS
HONOLULU | WAILUKU | HILO, HAWAII

501 SUMNER STREET, SUITE 521
HONOLULU, HAWAII 96817

PHONE: 808-533-3646
FAX: 808-526-1267



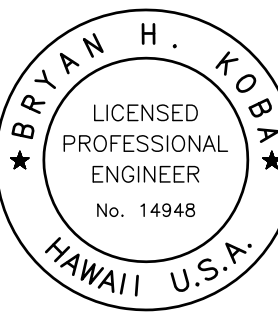
STATE OF HAWAII
DEPARTMENT OF
HAWAIIAN HOME LANDS

KAWAIIHAE
GUARDRAIL INSTALLATION

CONSTRUCTION NOTES-1



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0 1 2
LINE IS 2 INCHES AT FULL SIZE
(If NOT 2-inches - Scale Accordingly)

REVISION	DATE	BRIEF	BY

Project No: O-11-056.004
Scale: AS NOTED
Date: 10/16/15
Designed By: BHK
Drawn By: BHK
Checked By: DMF

CONSTRUCTION
NOTES

DWG. NO.

G-1

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CIVIL ENGINEERS & SURVEYORS
HONOLULU & WAILUKU & HILO, HAWAII

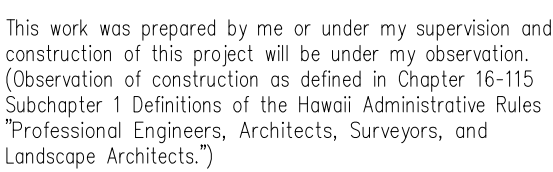
501 SUMNER STREET, SUITE 521
HONOLULU, HAWAII 96817


PHONE: 808-533-3646
FAX: 808-526-1267



KAWAIHAE GUARDRAIL INSTALLATION

OVERALL SITE PLAN



SIGNATURE  APRIL 30, 2016
EXP. DATE OF THE LICENSE

[illegible]

Project No: O-11-056.004

Scale: AS NOTED

Date: 10/16/15

Designed By: BHK

Drawn By: BHK

Checked By:

DWG. NO.

C-1

SHEET 4 OF 16

FILE	POCKET	FOLDER	NO.

JOB NO. 0-11-056.004
FN: Y:\2011\11-056\11-056.4 GUARD RAIL DESIGN\DRAWINGS\C-1 SITE PLAN.DWG



& ASSOCIATES, INC.
CIVIL ENGINEERS | SURVEYORS
HONOLULU | WAILUKU | HILO, HAWAII

501 SUMNER STREET, SUITE 521
HONOLULU, HAWAII 96817

PHONE: 808-533-3646
FAX: 808-526-1267



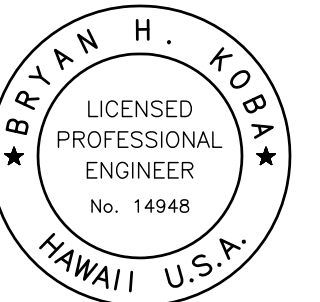
KAWAIHAE GUARDRAIL INSTALLATION

SITE PLAN


KAWAIHAE-MAHUKONA ROAD AND HONOKOA STREET



AUSTIN, TSUTSUMI & ASSOC., INC.
ENGINEERS, SURVEYORS • HONOLULU, HAWAII



This work was prepared by me or under my supervision and construction of this project will be under my observation. (Observation of construction as defined in Chapter 16-115 Subchapter 1 Definitions of the Hawaii Administrative Rules "Professional Engineers, Architects, Surveyors, and Landscape Architects.")

SIGNATURE  APRIL 30, 2016
EXP. DATE OF THE LICENSE

[illegible]

Project No: O-11-056.004

Scale: AS NOTED

Date: 10/16/15

Designed By: BHK

Drawn By: BHK

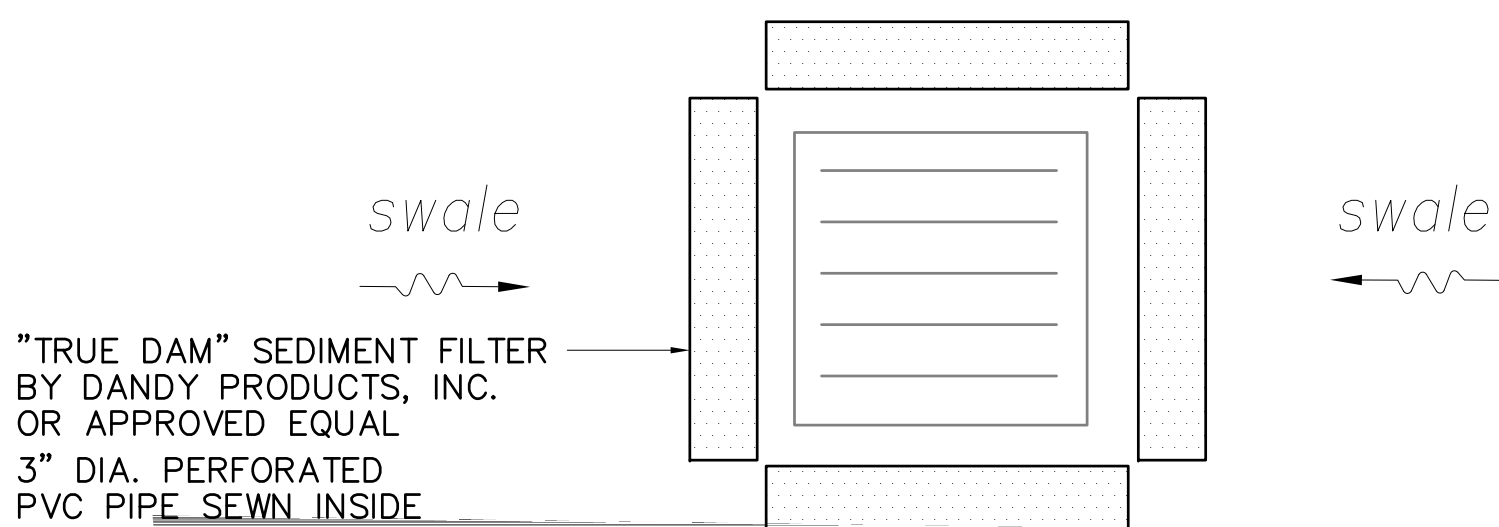
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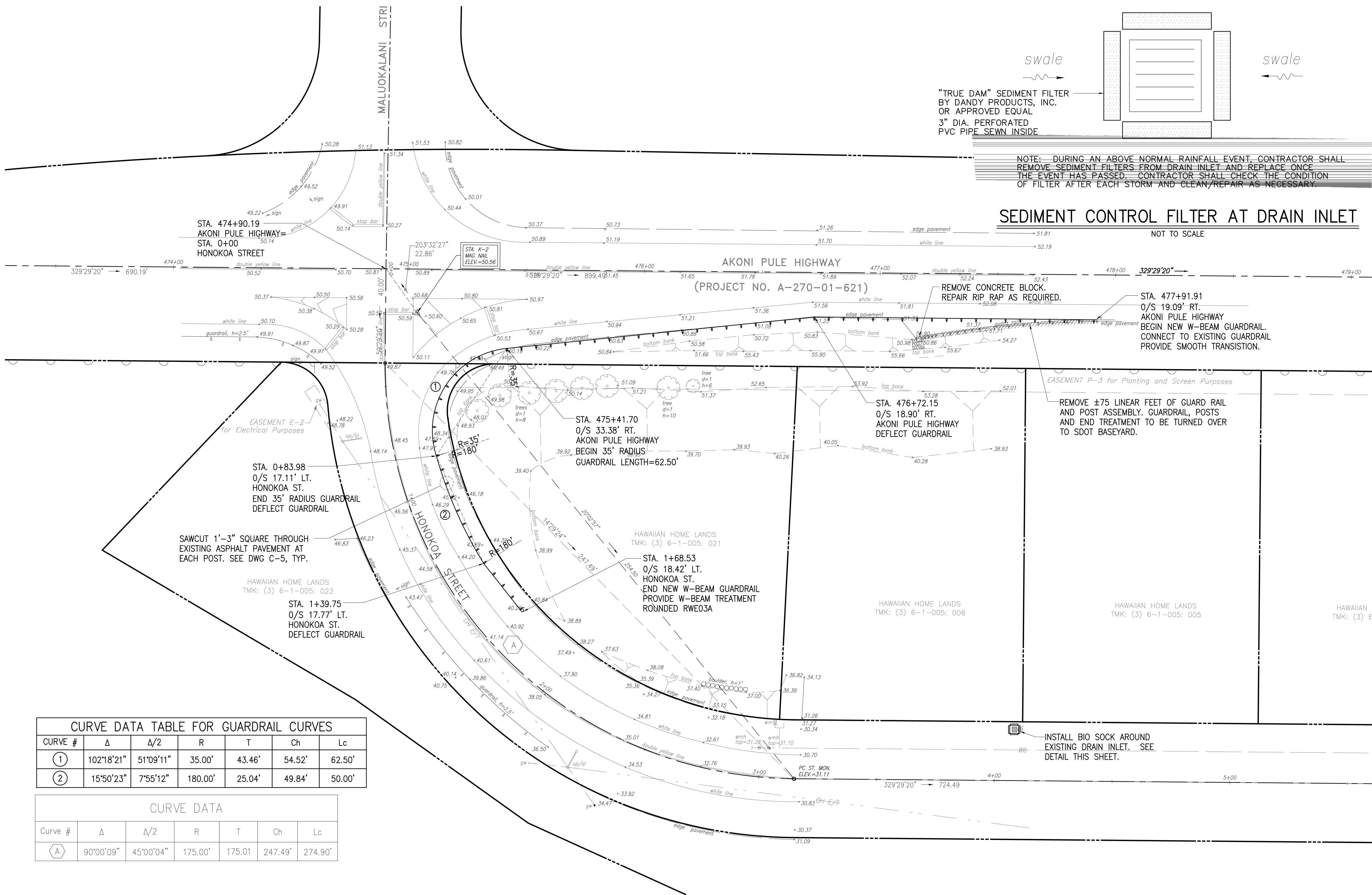
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NOTE: DURING AN ABOVE NORMAL RAINFALL EVENT, CONTRACTOR SHALL REMOVE SEDIMENT FILTERS FROM DRAIN INLET AND REPLACE ONCE THE EVENT HAS PASSED. CONTRACTOR SHALL CHECK THE CONDITION OF FILTER AFTER EACH STORM AND CLEAN/REPAIR AS NECESSARY.

SEDIMENT CONTROL FILTER AT DRAIN INLET

NOT TO SCALE



CURVE DATA TABLE FOR GUARDRAIL CURVES						
CURVE #	Δ	$\Delta/2$	R	T	Ch	Lc
①	102°18'21"	51°09'11"	35.00'	43.46'	54.52'	62.50'
②	15°50'23"	7°55'12"	180.00'	25.04'	49.84'	50.00'

CURVE DATA						
Curve #	Δ	$\Delta/2$	R	T	Ch	Lc
A	90°00'09"	45°00'04"	175.00'	175.01	247.49'	274.90'

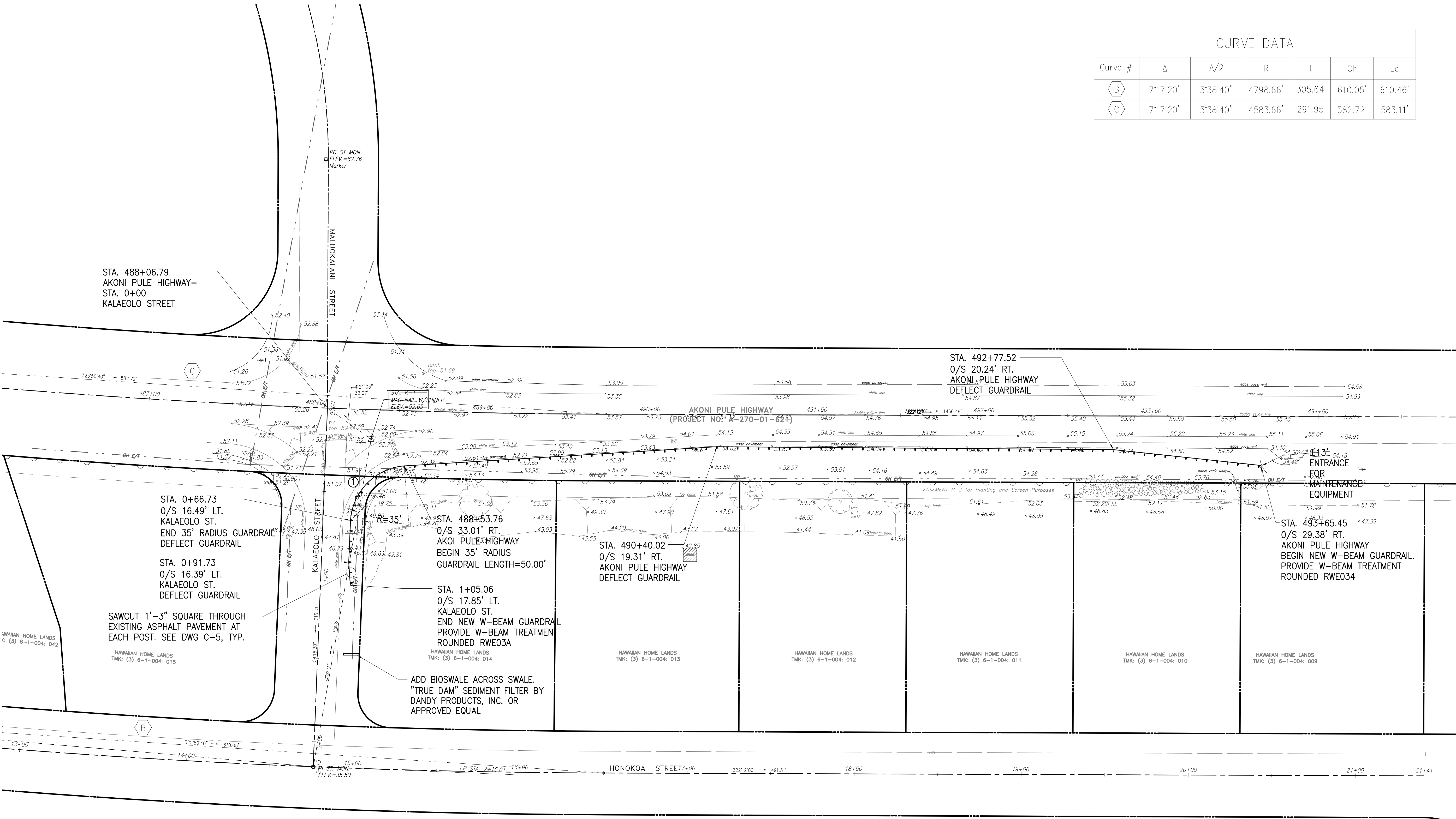


SITE PLAN KAWAIHAE-MAHUKONA ROAD AND HONOKOA STREET

SCALE: 1"=20'

JOB NO. 0-11-056.004
 PLEN: Y:\2011\11-056\11-056.4 GUARD RAIL DESIGN\DRAWINGS\C-2 KAWAHAE AND HONOKOA.DWG

JOB NO. O-11-056.004
FN: Y:\2011\11-056\11-056.4 GUARD RAIL DESIGN\DRAWINGS\C-3 KAWAIHAE AND KALAELO.DWG



CURVE DATA TABLE FOR GUARDRAIL CURVES						
CURVE #	Δ	Δ/2	R	T	Ch	Lc
①	81°51'11"	40°55'36"	35.00'	30.35'	45.86'	50.00'

NOTE: DURING AN ABOVE NORMAL RAINFALL EVENT, CONTRACTOR SHALL REMOVE SEDIMENT FILTERS SWALE AND REPLACE ONCE THE EVENT HAS PASSED. CONTRACTOR SHALL CHECK THE CONDITION OF FILTER AFTER EACH STORM AND CLEAN/REPAIR AS NECESSARY.



SITE PLAN KAWAIHAE-MAHUKONA ROAD AND KALAEOLO STREET
SCALE: 1"=30'

CURVE DATA						
Curve #	Δ	Δ/2	R	T	Ch	Lc
ⓑ	7°17'20"	3°38'40"	4798.66'	305.64	610.05'	610.46'
ⓒ	7°17'20"	3°38'40"	4583.66'	291.95	582.72'	583.11'

Austin Tsutsumi & Associates, Inc.
CIVIL ENGINEERS & SURVEYORS
HONOLULU | WAILUKU | HILO, HAWAII

501 SUMNER STREET, SUITE 521
HONOLULU, HAWAII 96817

PHONE: 808-533-3646
FAX: 808-526-1267

STATE OF HAWAII
DEPARTMENT OF
HAWAIIAN HOME LANDS

KAWAIHAE
GUARDRAIL INSTALLATION

SITE PLAN
KAWAIHAE-MAHUKONA ROAD
AND KALAEOLO STREET

AUSTIN, TSUTSUMI & ASSOC., INC.
ENGINEERS, SURVEYORS • HONOLULU, HAWAII

This work was prepared by me or under my supervision and construction of this project will be under my observation.
(Observation of construction as defined in Chapter 16-115 Subchapter 1 Definitions of the Hawaii Administrative Rules
Professional Engineers, Architects, Surveyors, and Landscape Architects.)

[Signature] APRIL 30, 2016
SIGNATURE EXP. DATE OF THE LICENSE

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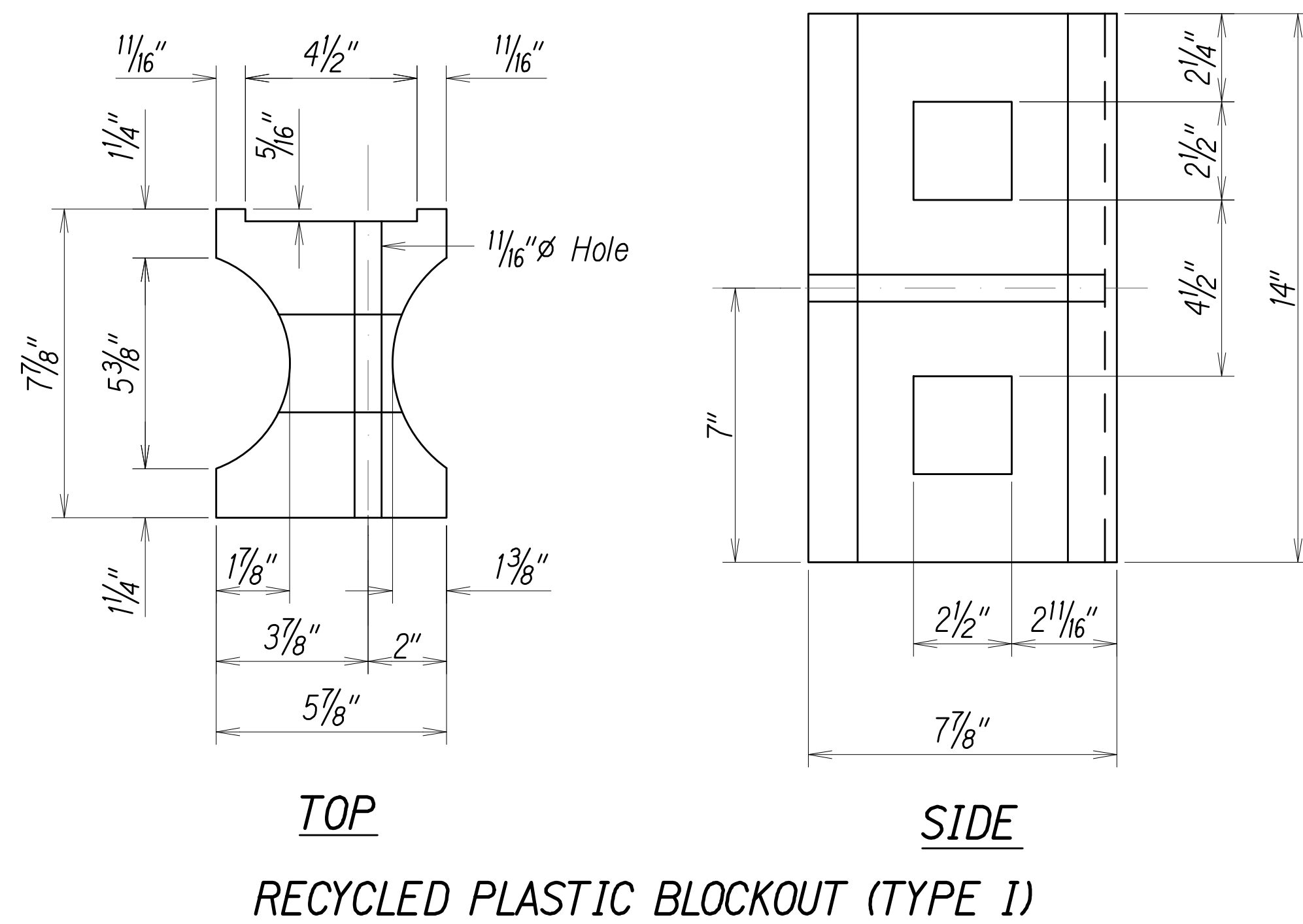
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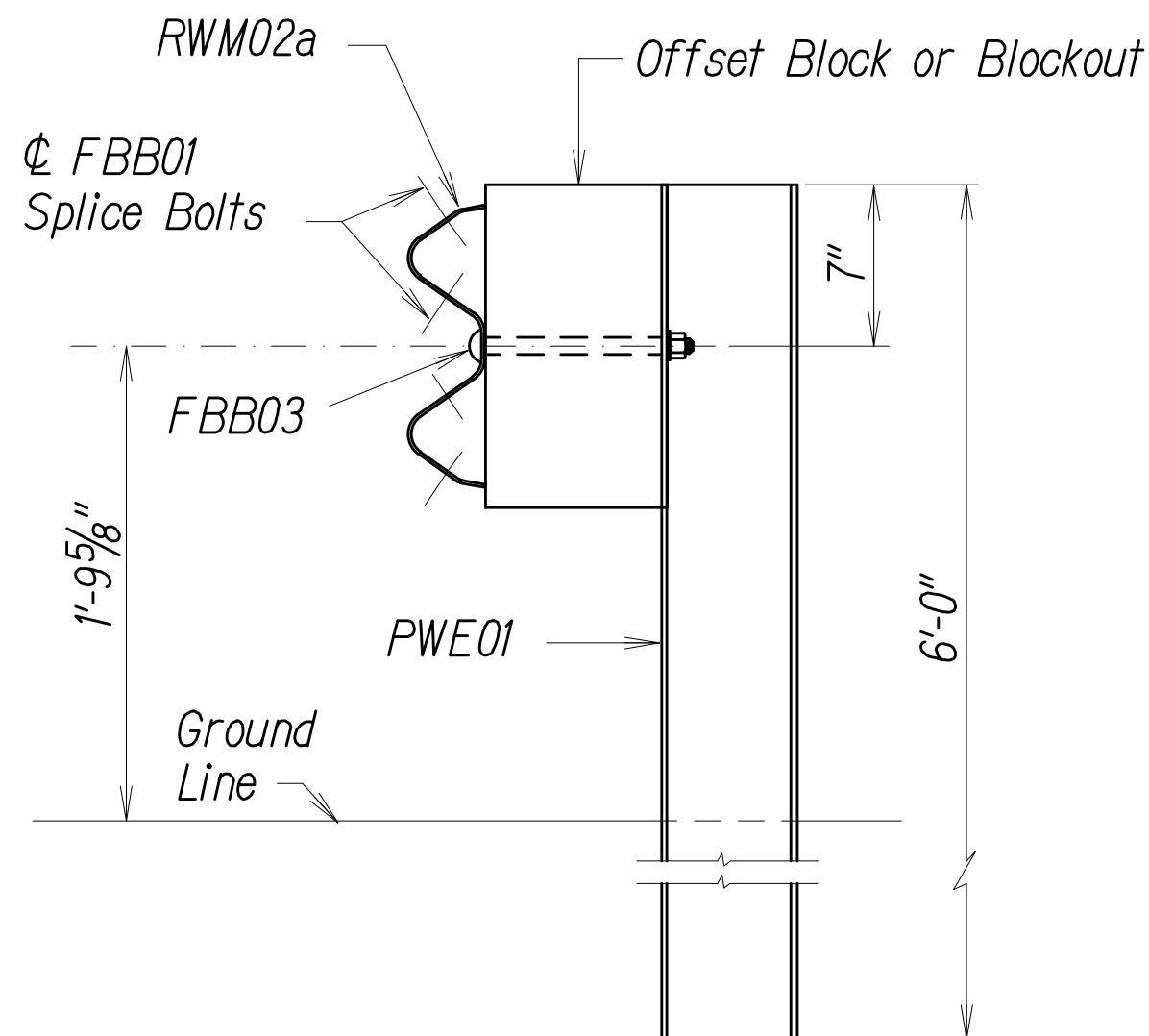
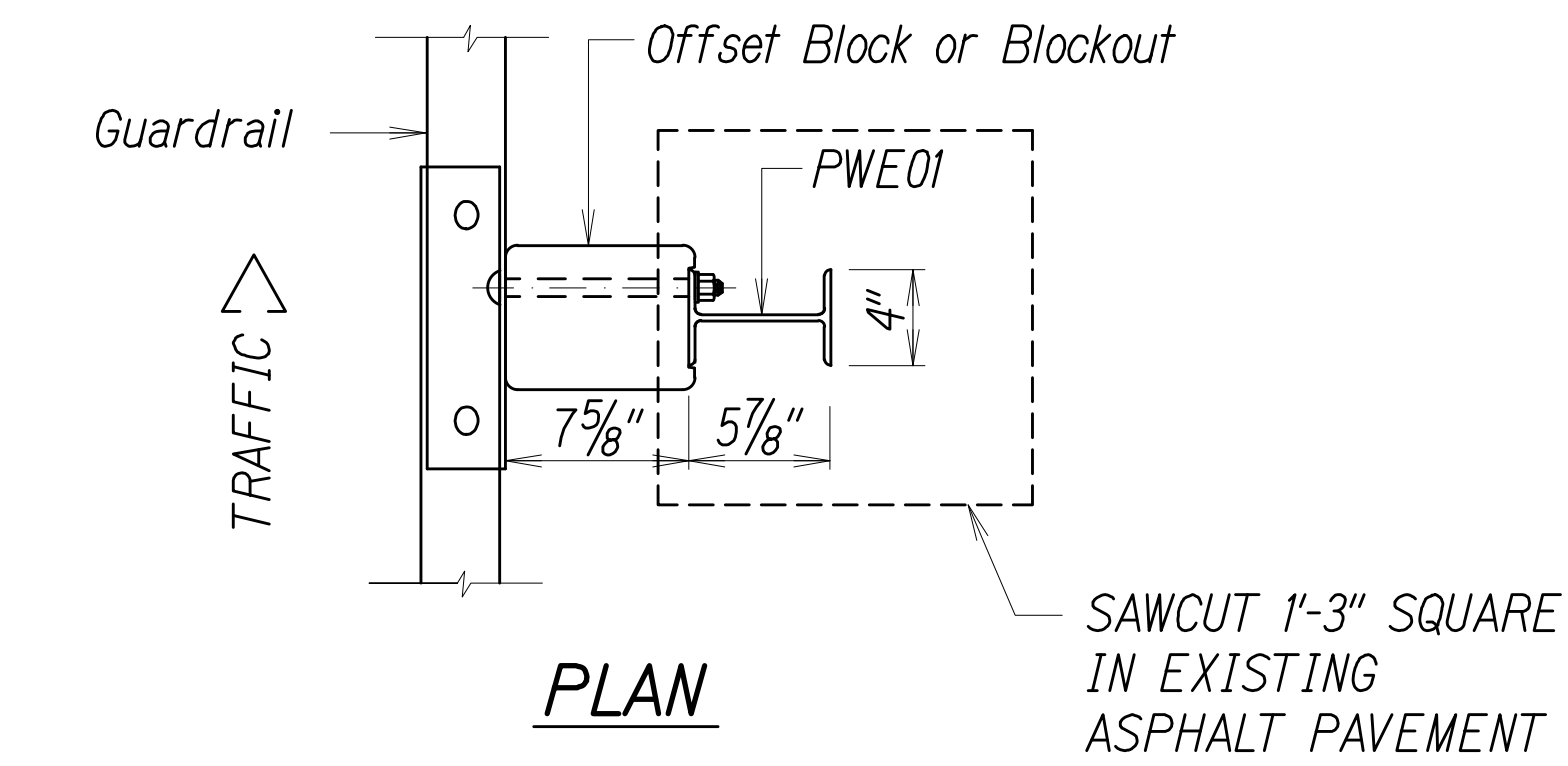
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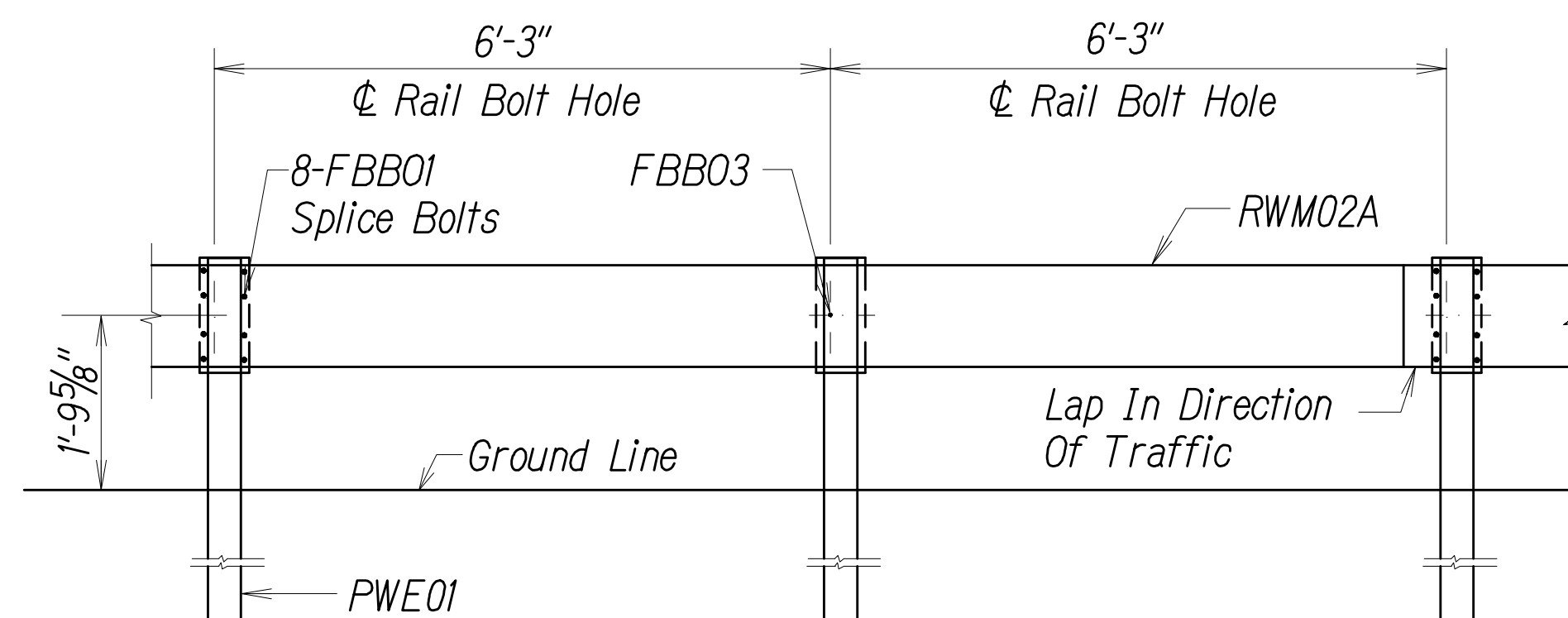
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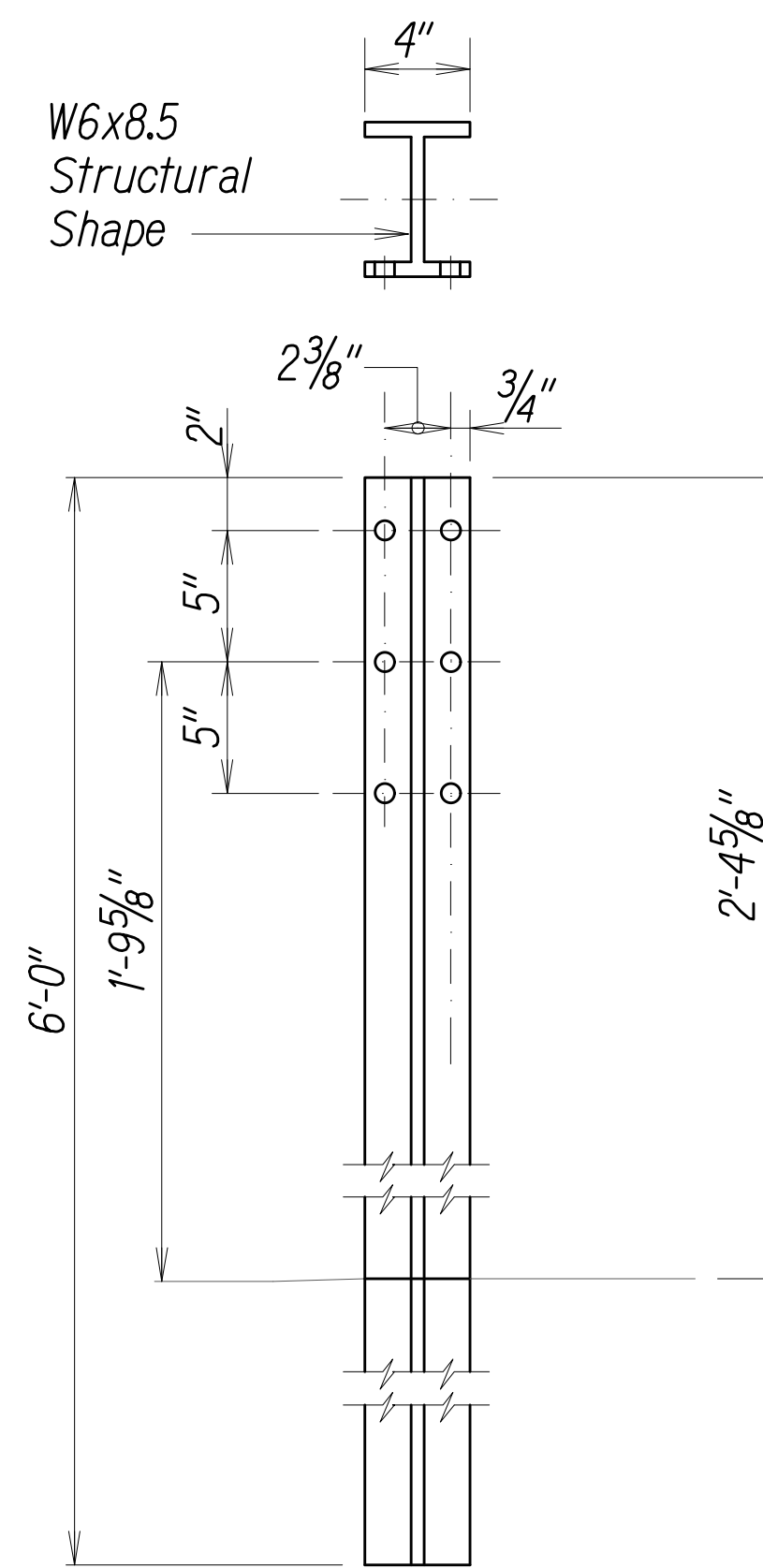
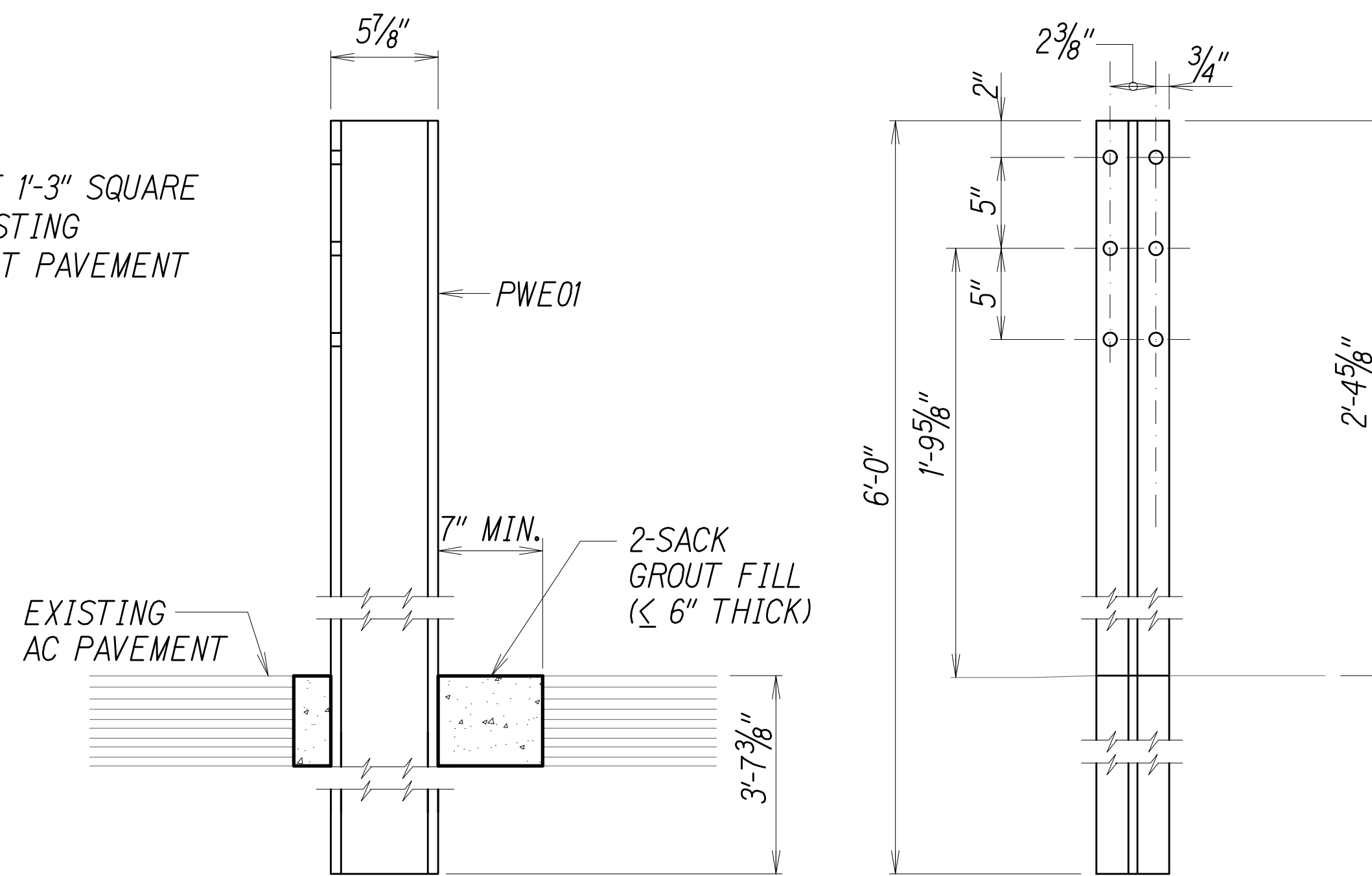


STRONG POST W-BEAM GUARDRAIL
(SGR04a)

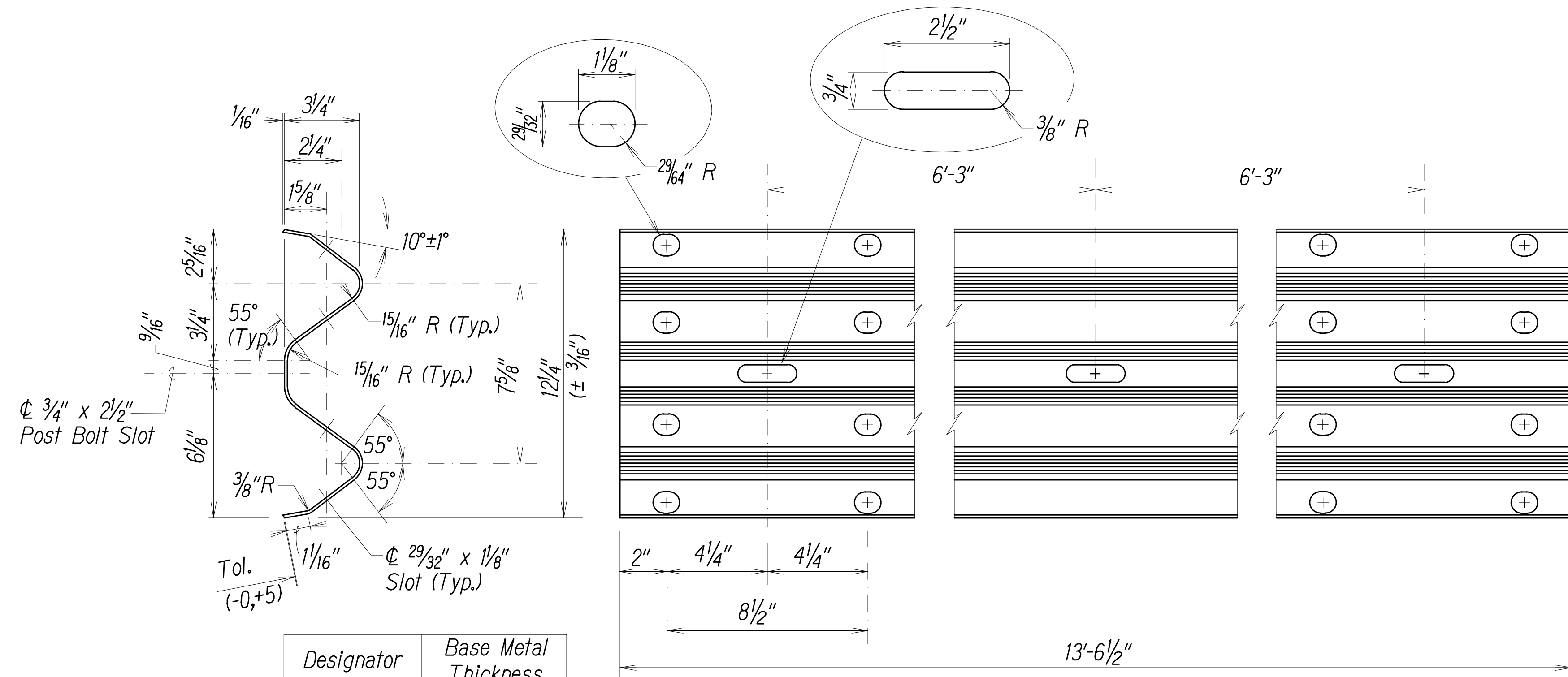
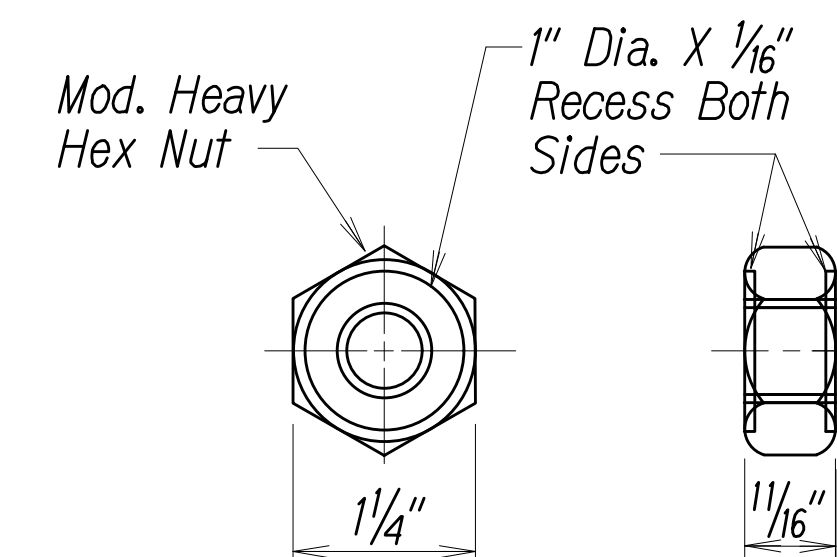
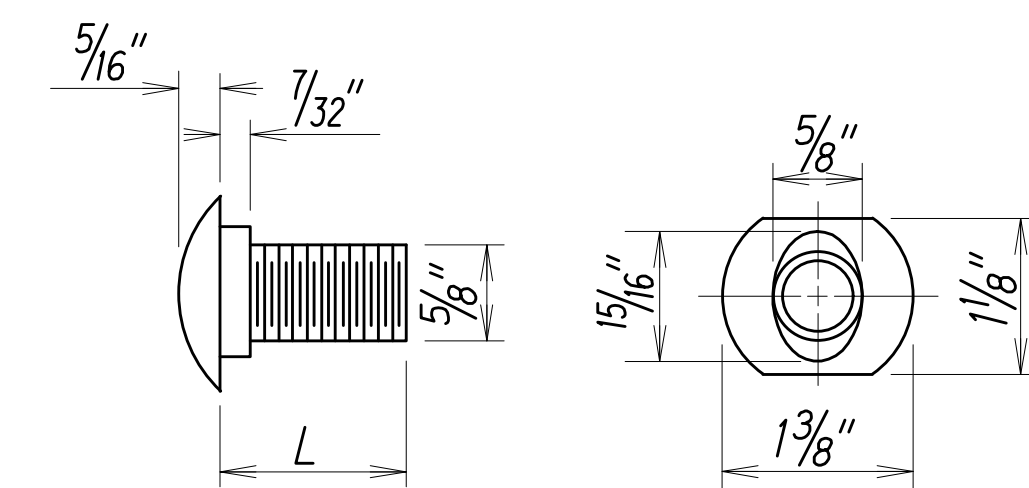


STRONG POST W-BEAM GUARDRAIL WITH
RECYCLED OFFSET BLOCK OR PLASTIC BLOCKOUT

NOTE:
All Holes are
3/4" Dia.



W-BEAM STRONG POST (PWE01)



<i>Designator</i>	<i>Base Metal Thickness</i>
<i>RWM02a</i>	<i>12 Gauge</i>

JOB NO. 0-11-056.004
 PLOT: Y:\2011\11-056\11-056.4 GUARD RAIL DESIGN\DRAWINGS\C-5 C4.05B GR WBEAMSP_B2.DWG

Austin Tsutsumi
& ASSOCIATES, INC.
CIVIL ENGINEERS | SURVEYORS
HONOLULU | WAILUKU | HILO, HAWAII

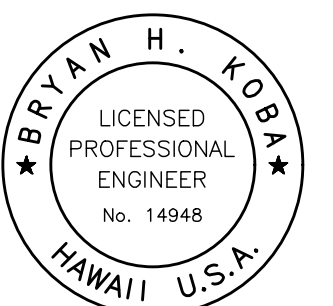
501 SUMNER STREET, SUITE 521
HONOLULU, HAWAII 96817

PHONE: 808-533-3646
FAX: 808-526-1267



KAWAIHAE GUARDRAIL INSTALLATION

STRONG POST
W-BEAM GUARDRAIL



This work was prepared by me or under my supervision and construction of this project will be under my observation. (Observation of construction as defined in Chapter 16-115 Subchapter 1 Definitions of the Hawaii Administrative Rules "Professional Engineers, Architects, Surveyors, and Landscape Architects.")

SIGNATURE B. J. Allen APRIL 30, 2016
EXP. DATE OF THE LICENSE

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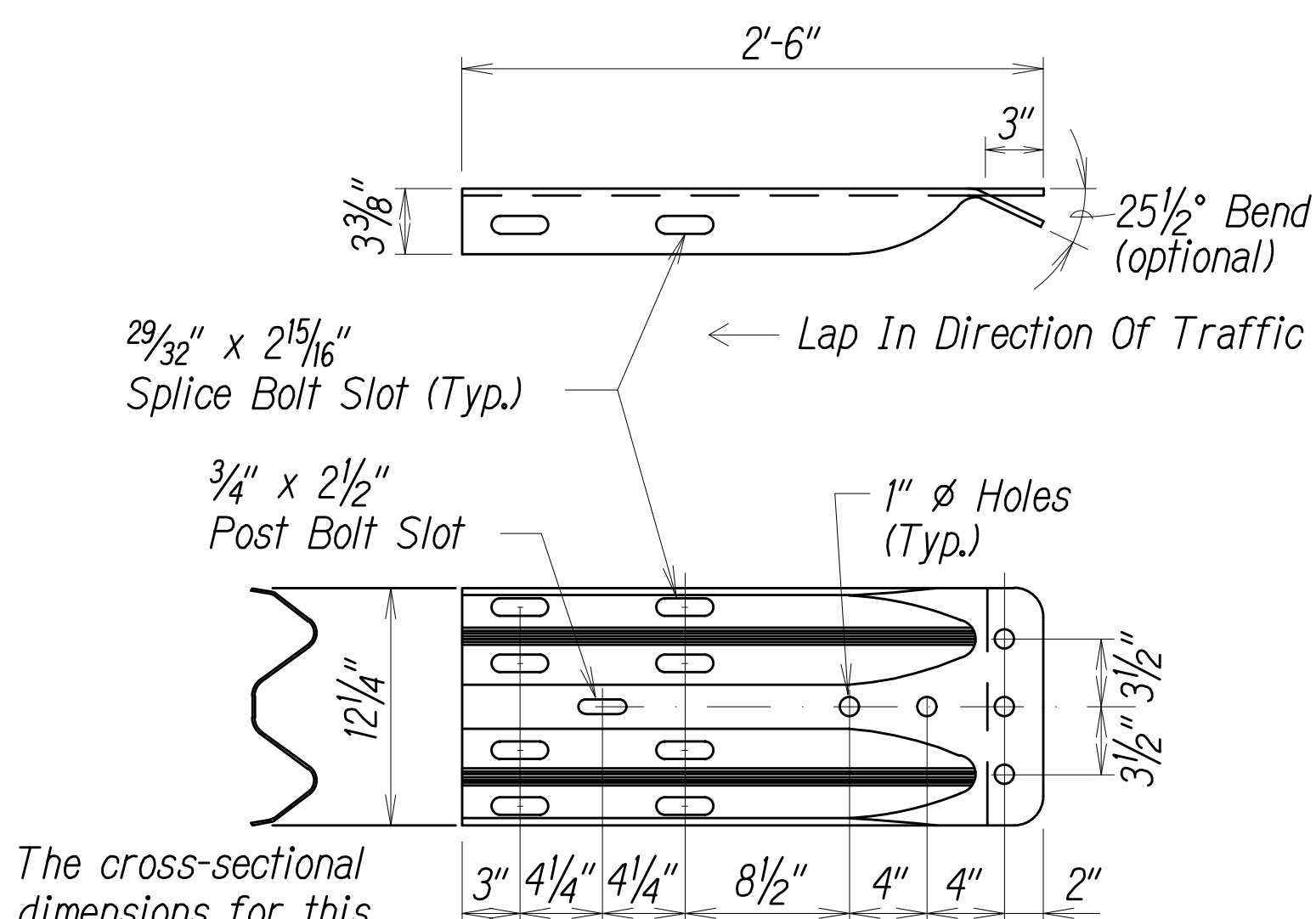
Project No:	O-11-056.004
Scale:	AS NOTED
Date:	10/16/15
Designed By:	BHK
Drawn By:	BHK
Checked By:	

DWG. NO. **C-5**

SHEET 8 OF 16

FILE	POCKET	FOLDER	NO.
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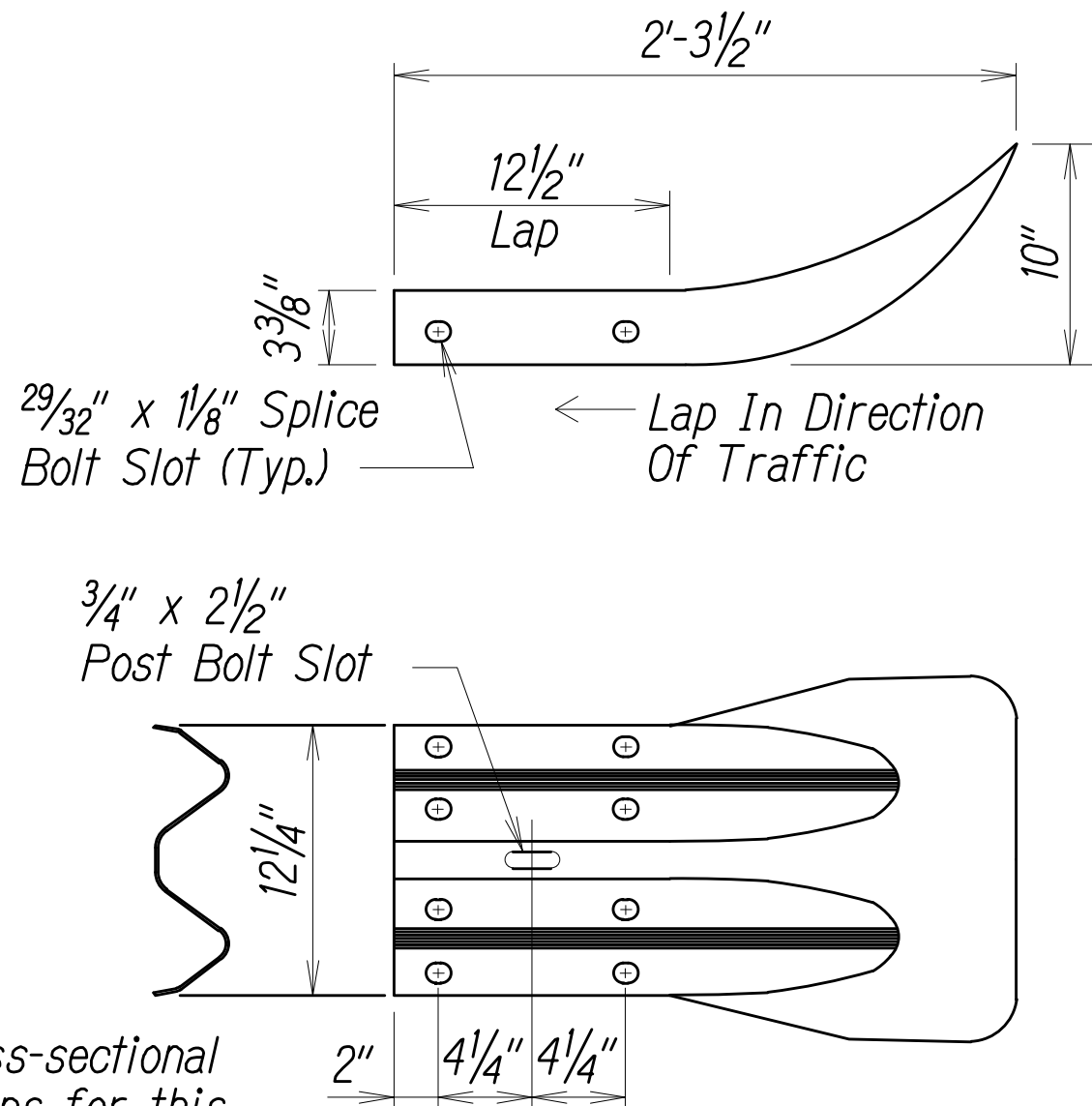
JOB NO. 0-11-056.004
FN: Y:\2011\11-056\11-056.4 GUARD RAIL DESIGN\DRAWINGS\C-6 C4.05C OR TE5REV.B3.DWG



The cross-sectional dimensions for this part are to fit over part RWM02A on the approach end and under part RWM02A on the trailing end.

Designator	Base Metal Thickness
RWE02b	10 Gauge

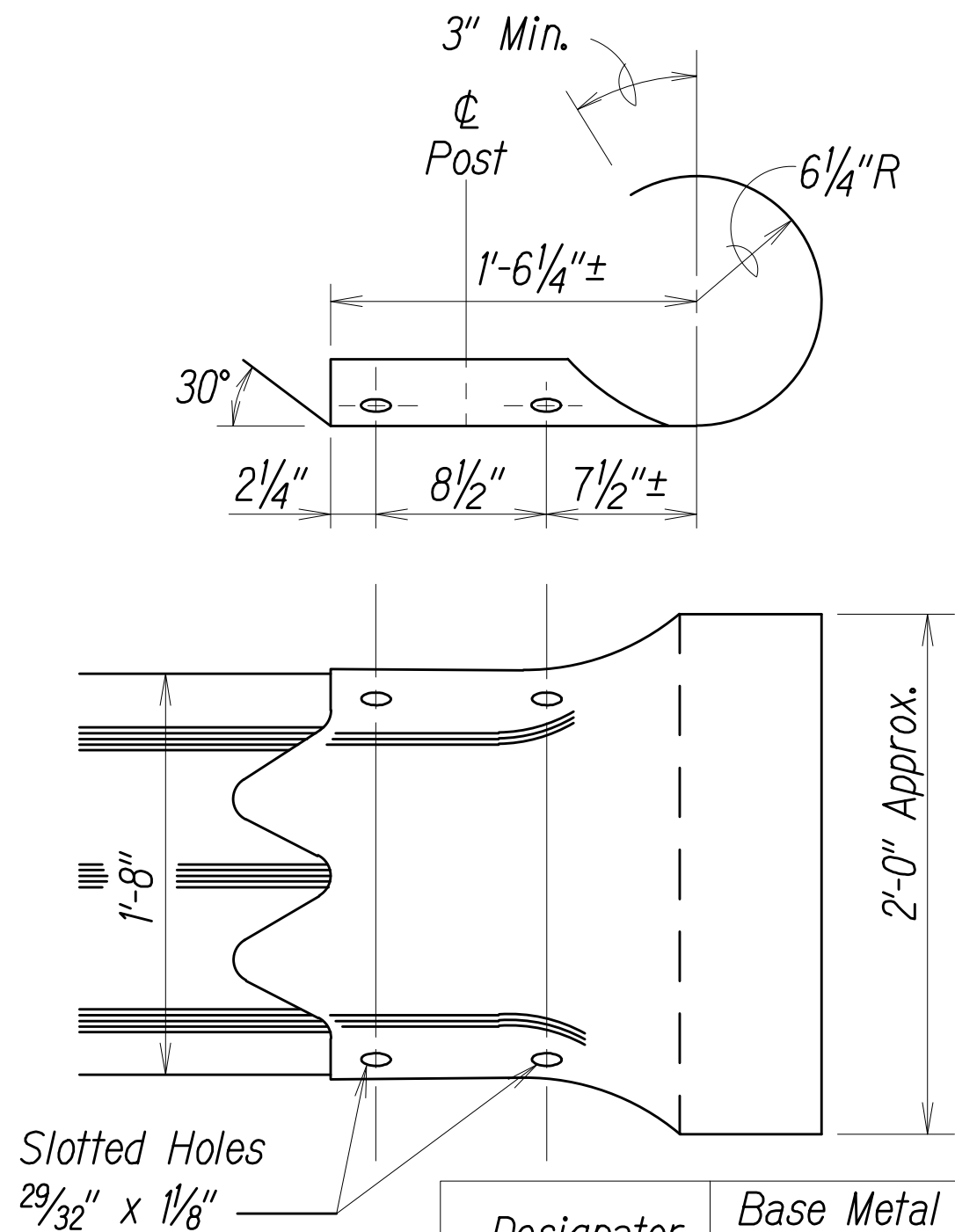
W-BEAM TERMINAL CONNECTOR (RWE02B)



The cross-sectional dimensions for this part are to fit over part RWM02A on the approach end and under part RWM02A on the trailing end.

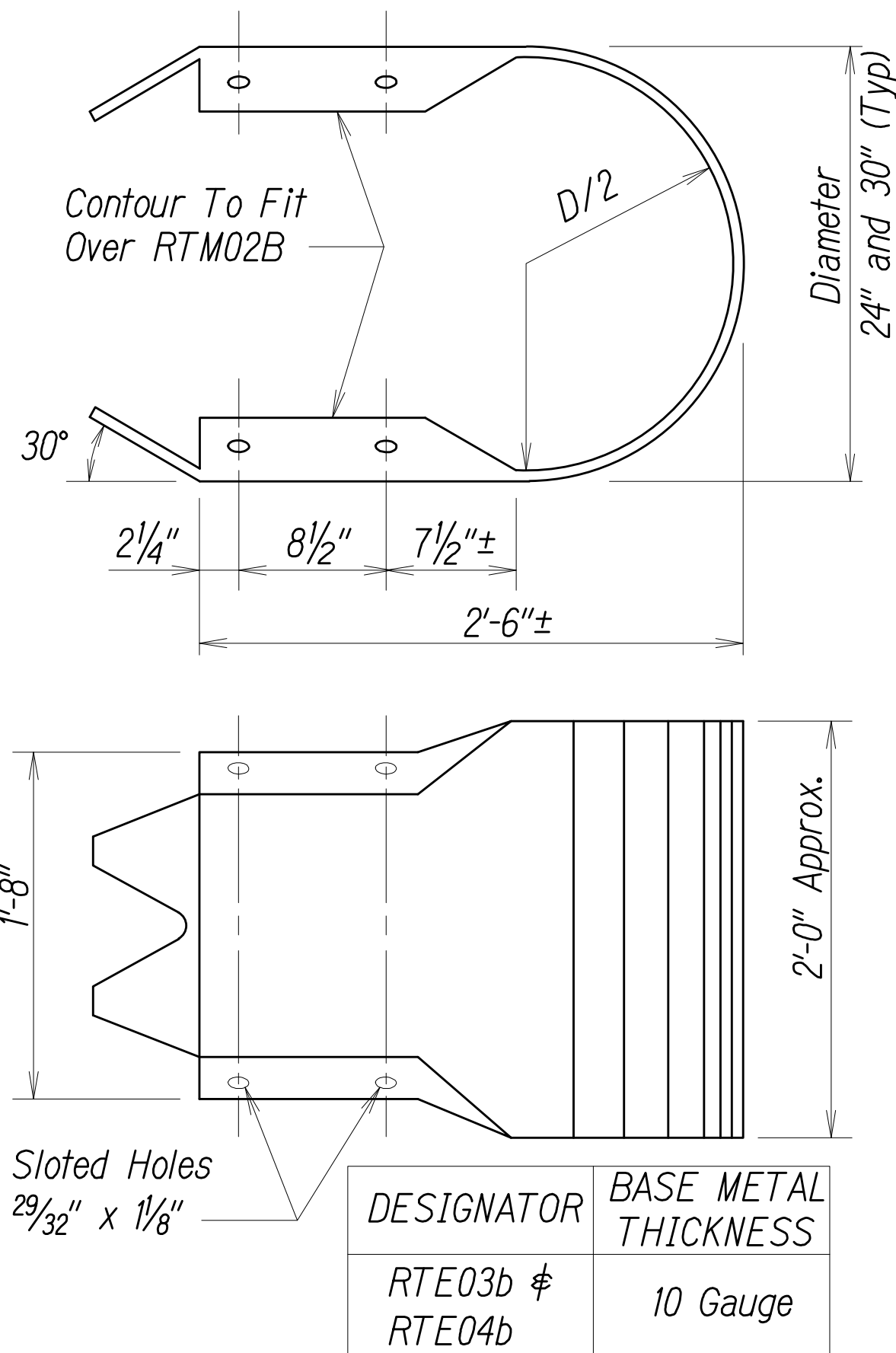
DESIGNATOR	BASE METAL THICKNESS
RWE01a	12 Gauge

W-BEAM END SECTION (FLARED RWE01A)



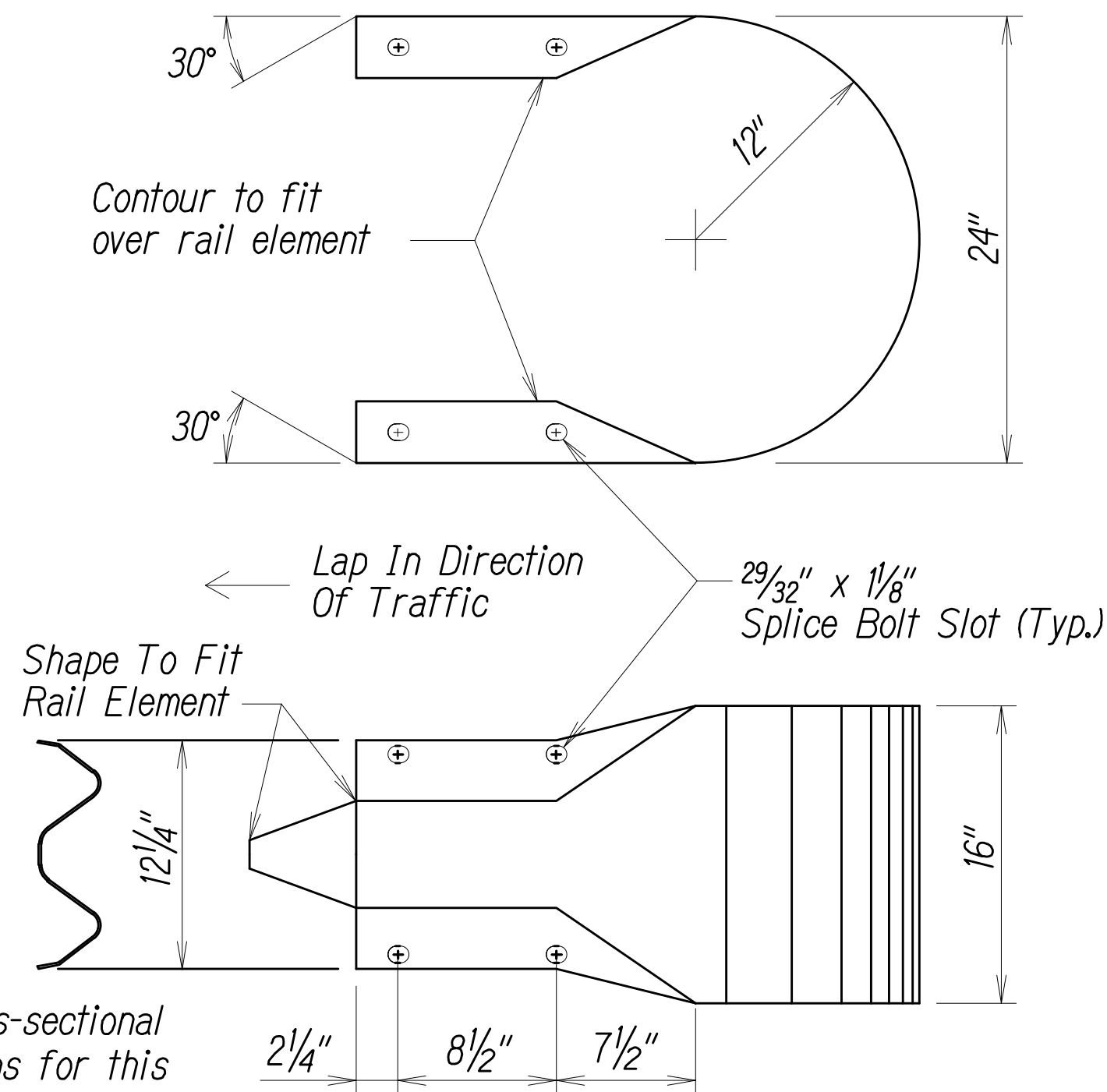
Designator	Base Metal Thickness
RTE02b	10 Gauge

THRIE-BEAM SECTION (ROUNDED) (RTE02B)



DESIGNATOR	BASE METAL THICKNESS
RTE03b & RTE04b	10 Gauge

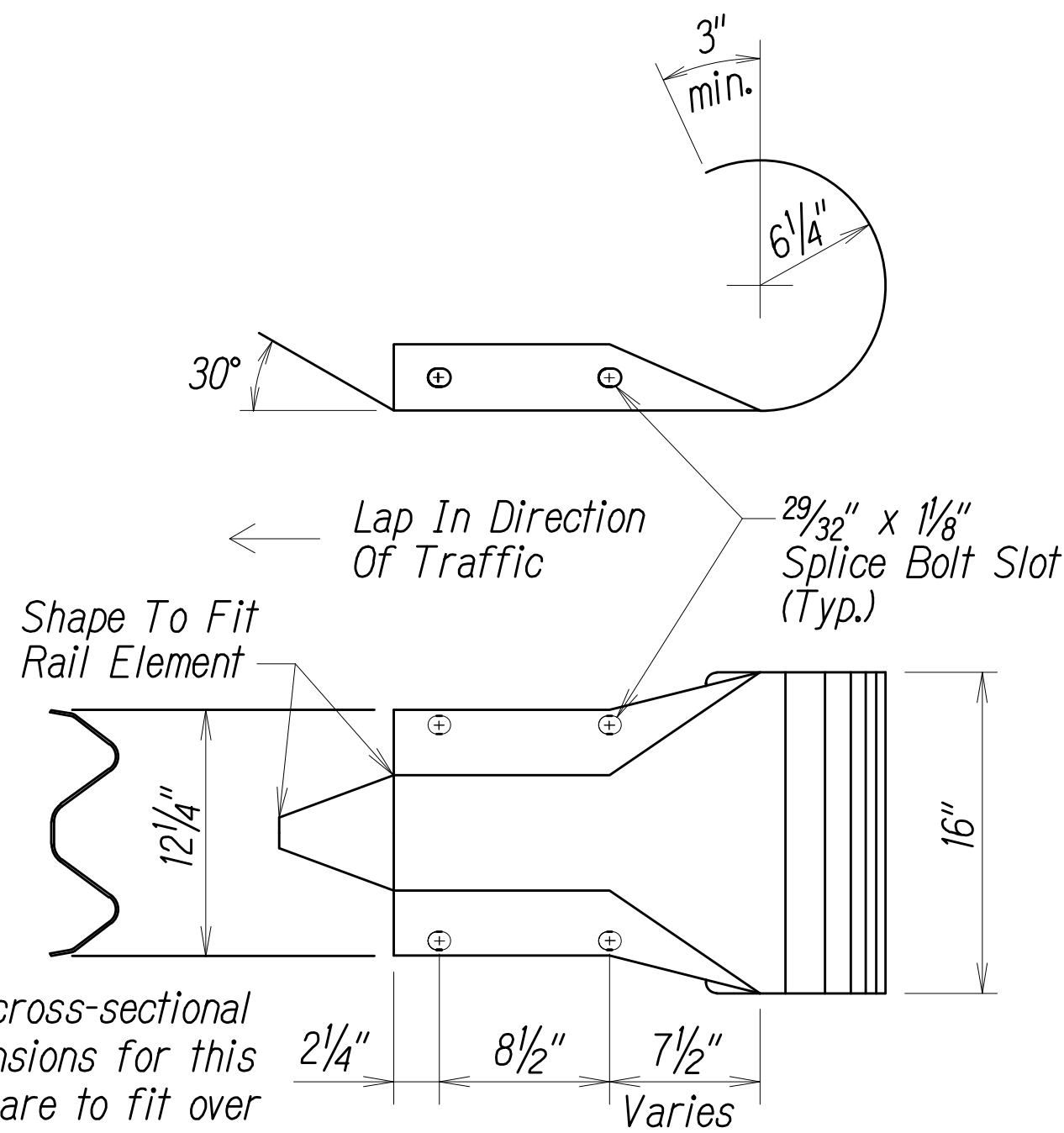
THRIE-BEAM END SECTION (BUFFER RTE03B or RTE04B)



The cross-sectional dimensions for this part are to fit over part RWM02A

DESIGNATOR	BASE METAL THICKNESS
RWE06a	12 Gauge

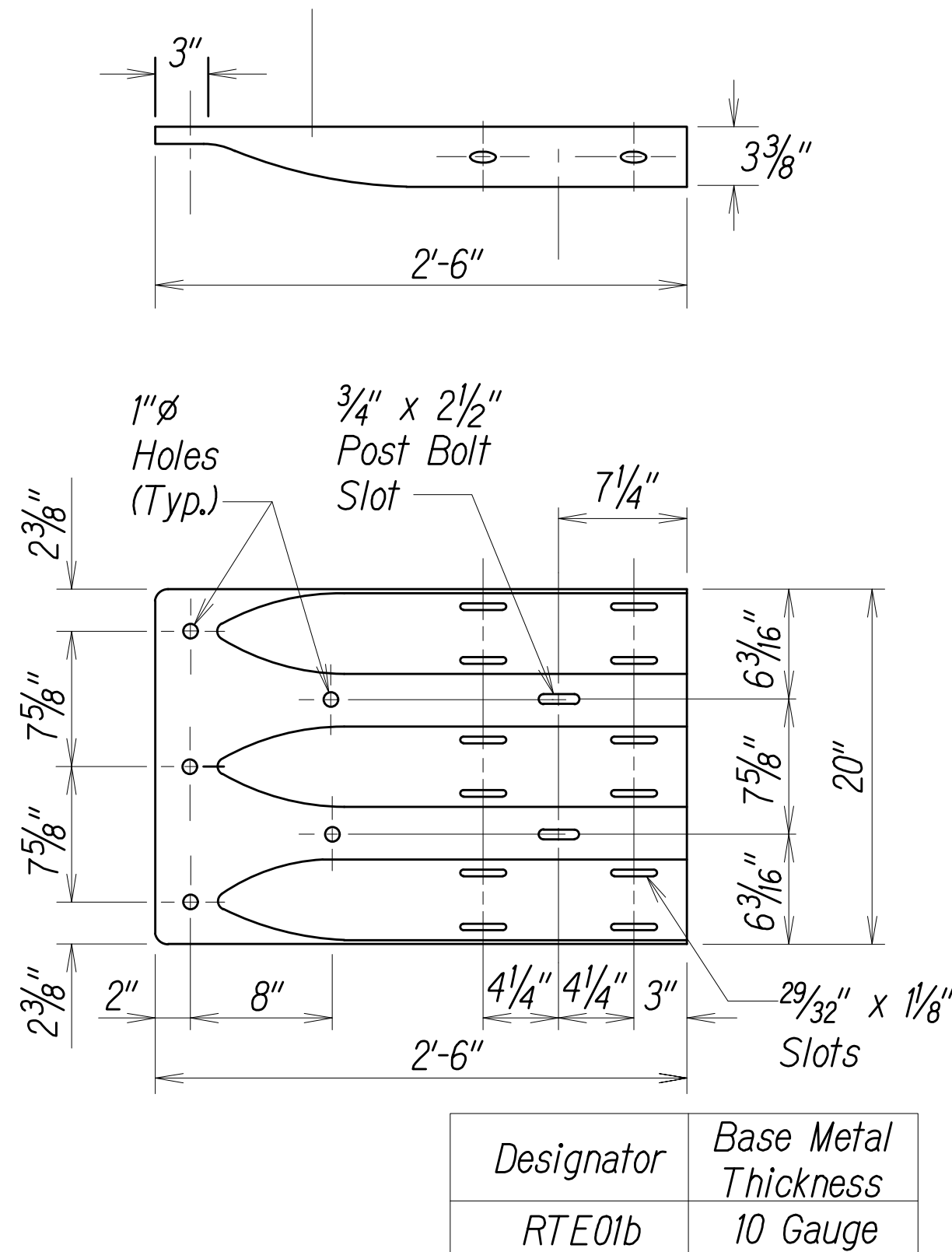
W-BEAM END SECTION (BUFFER RWE06A)



The cross-sectional dimensions for this part are to fit over part RWM02A

Designator	Base Metal Thickness
RWE03a	12 Gauge

W-BEAM END SECTION (ROUNDED RWE03A)



Designator	Base Metal Thickness
RTE01b	10 Gauge

THRIE-BEAM TERMINAL CONNECTOR (RTE01B)

Austin Tsutsumi & Associates, Inc.
CIVIL ENGINEERS | SURVEYORS
HONOLULU | WAILUKU | HILO, HAWAII
501 SUMNER STREET, SUITE 521
HONOLULU, HAWAII 96817
PHONE: 808-533-3646
FAX: 808-526-1267

STATE OF HAWAII
DEPARTMENT OF
HAWAIIAN HOME LANDS

KAWAIIHAE
GUARDRAIL INSTALLATION

GUARDRAIL TERMINAL
CONNECTORS &
END SECTIONS

AUSTIN, TSUTSUMI & ASSOC., INC.
ENGINEERS, SURVEYORS • HONOLULU, HAWAII

BRYAN H. KOBAYASHI
LICENSED PROFESSIONAL ENGINEER
No. 14948
HAWAII U.S.A.

This work was prepared by me or under my supervision and construction of this project will be under my observation. (Observation of construction as defined in Chapter 16-115 Subchapter 1 Definitions of the Hawaii Administrative Rules "Professional Engineers, Architects, Surveyors, and Landscape Architects.")

Signature: APRIL 30, 2016
EXP. DATE OF THE LICENSE

0 1 2
LINE IS 2 INCHES AT FULL SIZE
(If NOT 2-inches : Scale Accordingly)

REVISION	DATE	BRIEF	BY

Project No: O-11-056.004
Scale: AS NOTED
Date: 10/16/15
Designed By: BHK
Drawn By: BHK
Checked By:

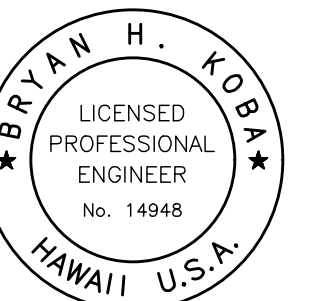
DWG. NO. **C-6**
SHEET 9 OF 16

FILE	POCKET	FOLDER	NO.



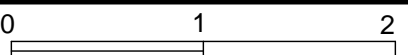
KAWAIHAE GUARDRAIL INSTALLATION

ANCHOR BLOCK DETAILS



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SIGNATURE _____ APRIL 30, 2016
EXP. DATE OF THE LICENSE



LINE IS 2 INCHES AT FULL SIZE
(If NOT 2-inches : Scale Accordingly)

[illegible]

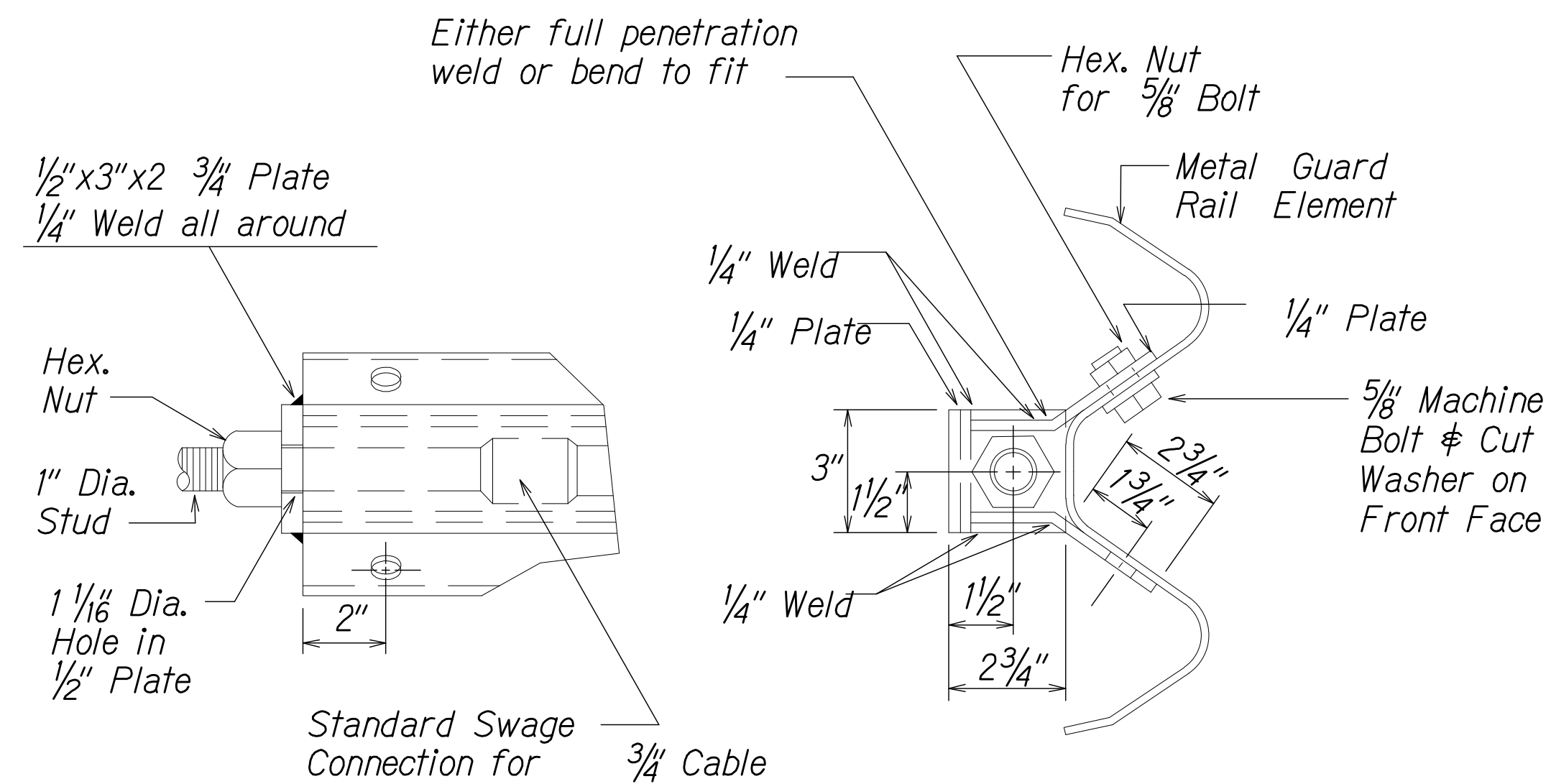
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Scale:	AS NOTED
Date:	10/16/15
Designed By:	BHK
Drawn By:	BHK
Checked By:	

DWG. NO.

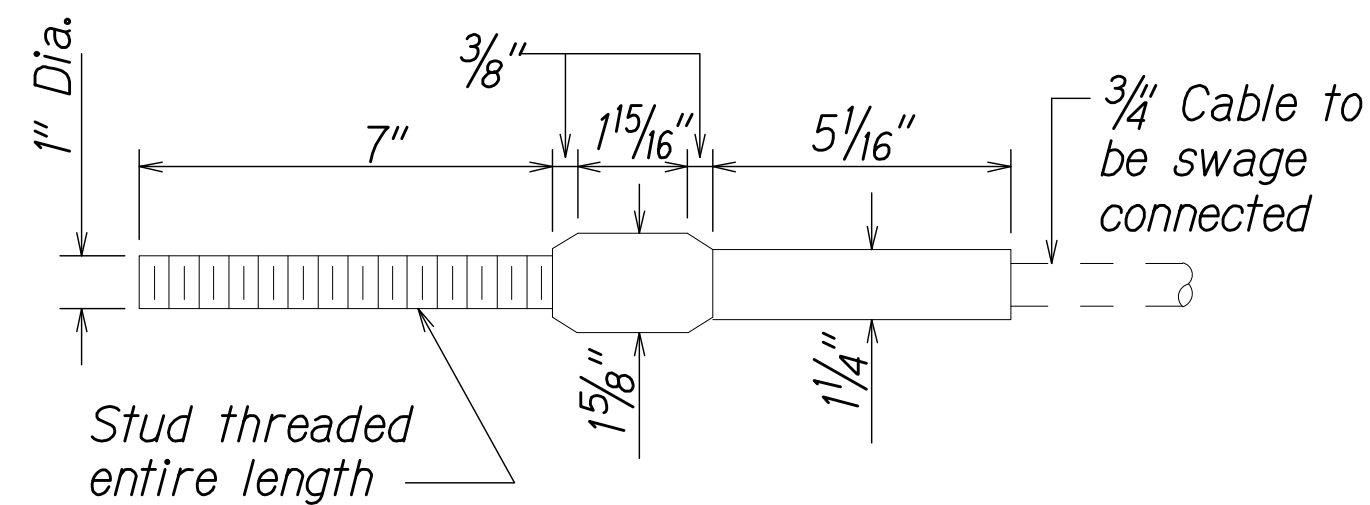
C-7

SHEET 10 OF 16

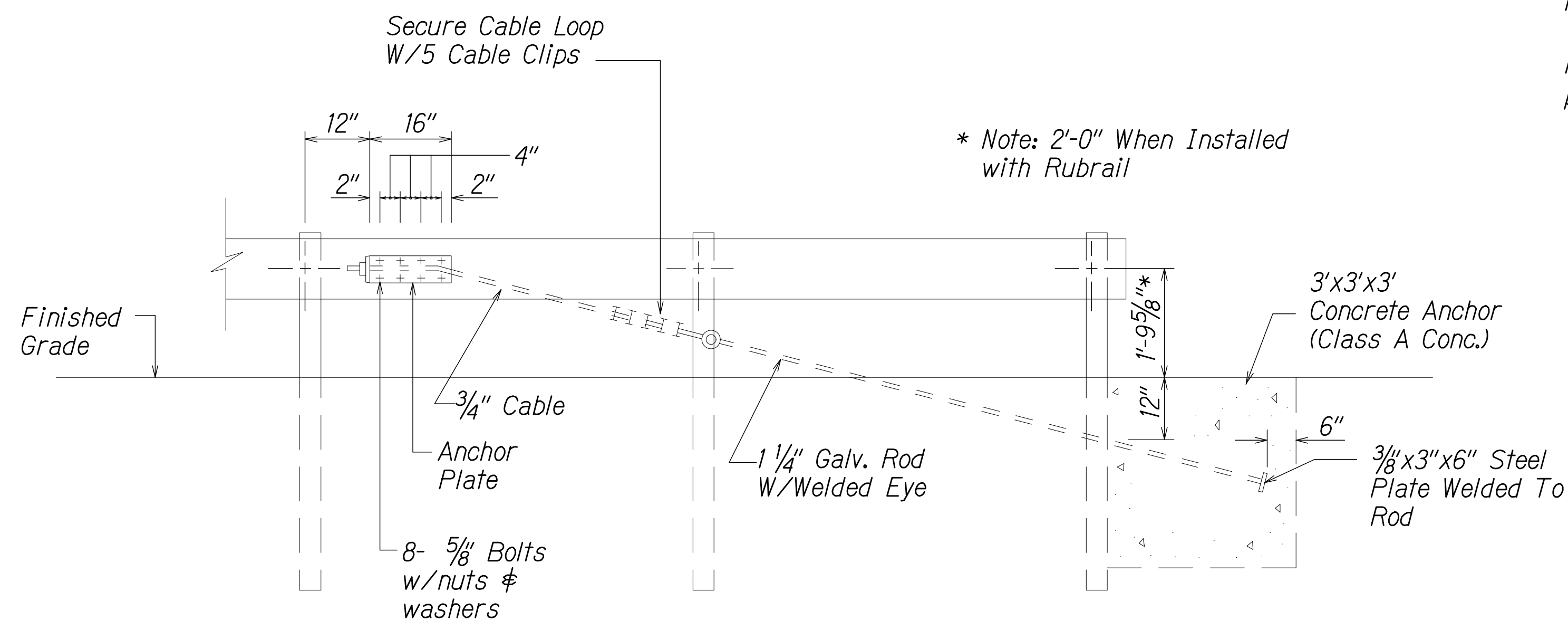
FILE	POCKET	FOLDER	NO.



ANCHOR PLATE DETAILS

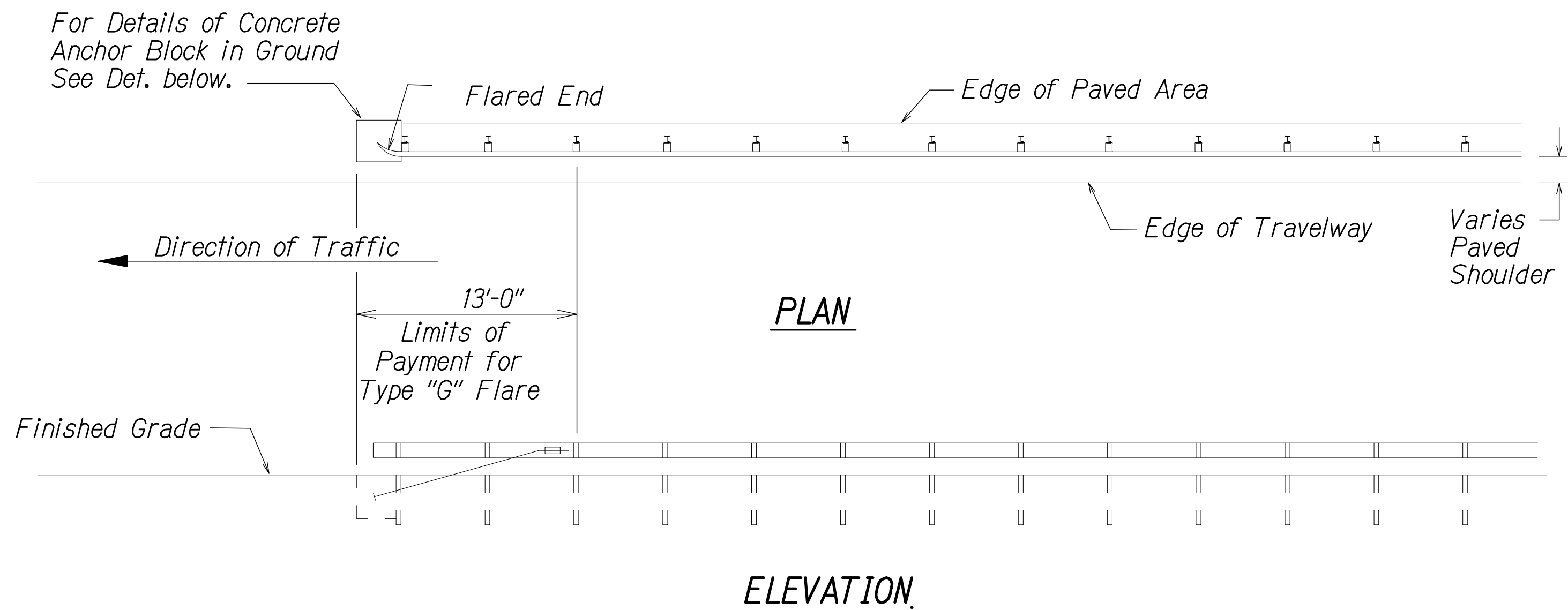


STANDARD SWAGED FITTING AND STUD



ANCHOR BLOCK DETAIL

1. Concrete, G.R.P., excavation, anchor rod and miscellaneous appurtenances necessary to anchor the guardrail ends shall be incidental to metal guardrail.



TYPE "G" FLARE END TERMINAL

NOTE:

Type "G" Modified End Terminal is a site specific end terminal with a taper and radial termini. A site specific detailed drawing is required for all Type "G" Modified End Terminal and must receive Engineer's approval.

The taper (flare rate) of the guardrail shall follow the latest edition of AASHTO'S Roadside Design Guide (currently, Table 5.6 - Suggested Flare Rate for Barrier Design, page 5-21, Jan. 1996 edition).

The radius of the radial termini is an Engineer's judgement based on the site evaluation. The Engineer shall consider safety (minimize the spearing & blunt end situation); degree and potential seriousness of the hazard; bicycle and pedestrian accessibility; maintenance equipment accessibility; Right-of-Way availability; the smallest radii the metal w-beam/thrie-beam railing can be constructed (check with supplier/contractor); posted speed limit; angle of vehicle impact; and aesthetics when designing the Type "G" Modified End Terminal.

During construction, the Contractor shall layout the proposed Type "G" Modified End Terminal and receive approval from the Construction Engineer prior to installation.

JOB NO. 0-11-056.004
 PLOT: Y:\2011\11-056\11-056.4 GUARD RAIL DESIGN\DRAWINGS\C-7 C4.05D GR B8.DWG



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CIVIL ENGINEERS | SURVEYORS
HONOLULU | WAILUKU | HILO, HAWAII
501 SUMNER STREET, SUITE 521
HONOLULU, HAWAII 96817
PHONE: 808-533-3646
FAX: 808-526-1267

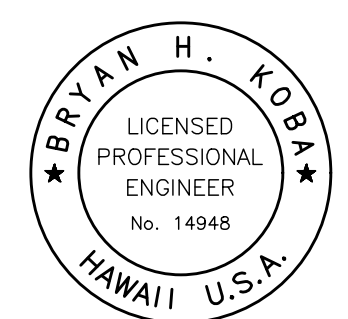


STATE OF HAWAII
DEPARTMENT OF
HAWAIIAN HOME LANDS

KAWAIIHAE
GUARDRAIL INSTALLATION

GUARDRAIL DETAILS

ATA AUSTIN, TSUTSUMI & ASSOC., INC.
ENGINEERS, SURVEYORS • HONOLULU, HAWAII



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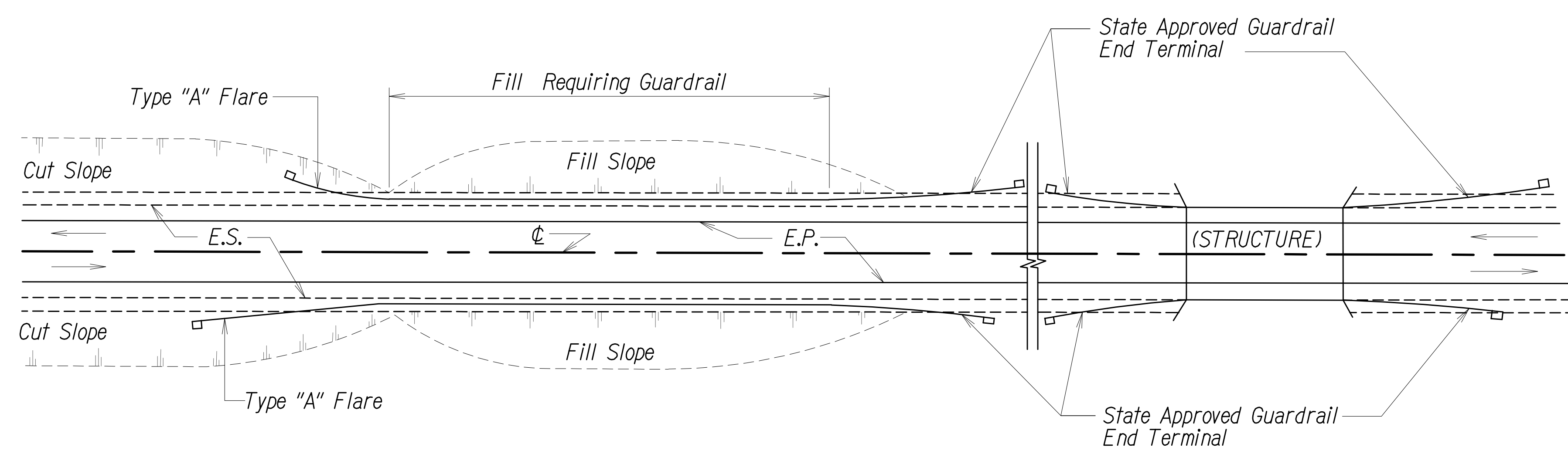
[Signature] APRIL 30, 2016
SIGNATURE EXP. DATE OF THE LICENSE

0 1 2
LINE IS 2 INCHES AT FULL SIZE
(If NOT 2-inches : Scale Accordingly)

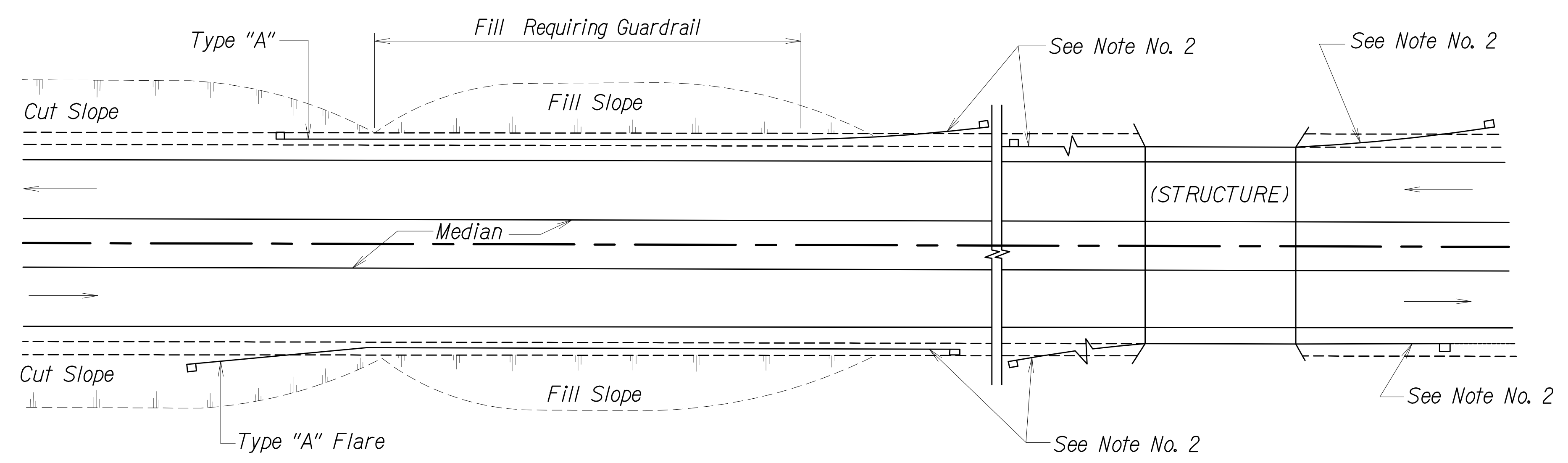
REVISION	DATE	BRIEF	BY

Project No: O-11-056.004
Scale: AS NOTED
Date: 10/16/15
Designed By: BHK
Drawn By: BHK
Checked By:

DWG. NO. **C-9**
SHEET 12 OF 16
FILE POCKET FOLDER NO.



PLAN
TWO WAY ROADWAY



PLAN
ONE WAY ROADWAY (DIVIDED HIGHWAY)

- Notes:
1. Metal Guardrail Connection to concrete structures requires end post connection. See structure plans.
 2. Depending on the existing field conditions, the Engineer shall determine which guardrail end terminal should be installed.
 3. Refer to State's most current approved product list for NCHRP 350 approved guardrail end terminals.

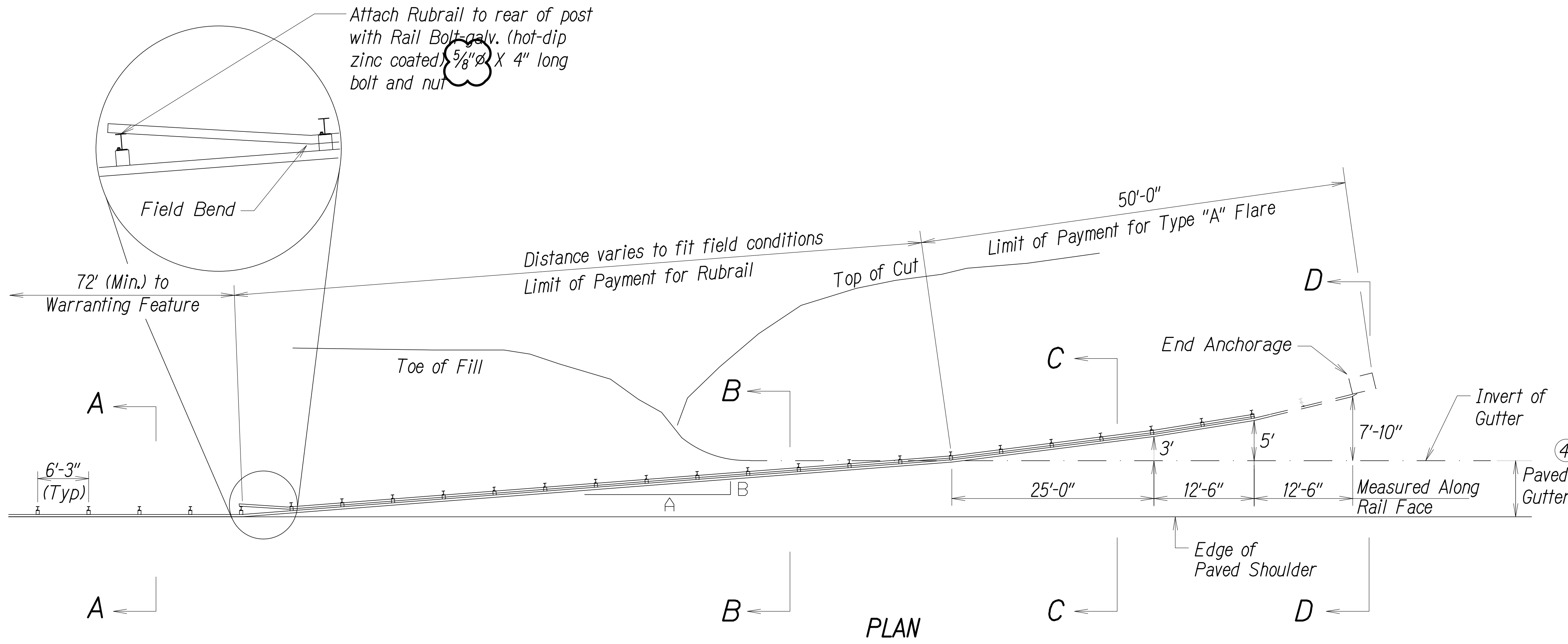
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REVISION	DATE	BRIEF	BY

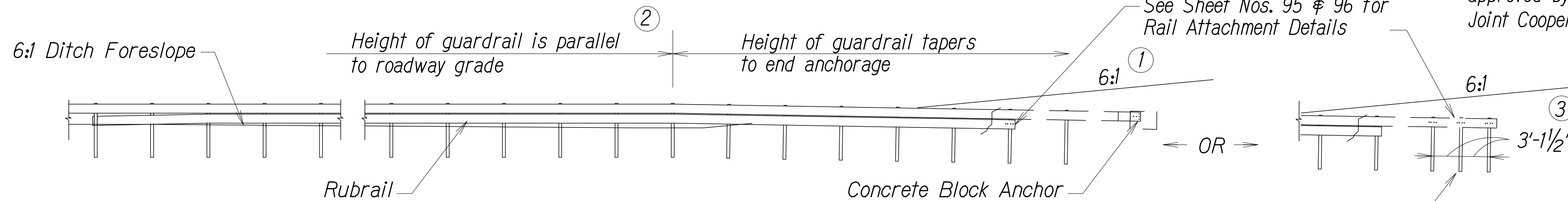
Project No: O-11-056.004
Scale: AS NOTED
Date: 10/16/15
Designed By: BHK
Drawn By: BHK
Checked By:

GENERAL NOTES:

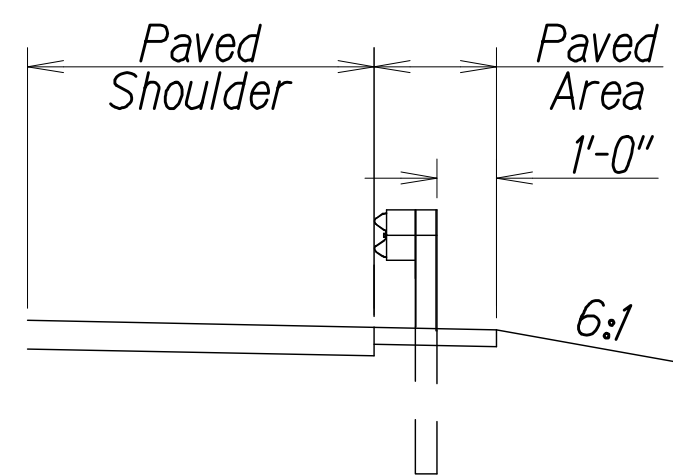
1. A 6:1 or flatter slope is desirable. however, a steeper or flatter existing slope may be used.
2. Height of guardrail may be tapered down in elevation to maintain 3'-8" maximum height.
3. All posts are 8'-0" in length from where the guardrail flares away from the shoulder back to the post anchor. posts for the post anchor are 6'-0" long.
4. Variable paved gutter offsets may be used to fit field conditions.
5. The guardrail posts shall be located away from the gutter/swale invert.
6. All fasteners, posts, blocks and rail elements 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-AGCARTBA Joint Cooperative Committee.



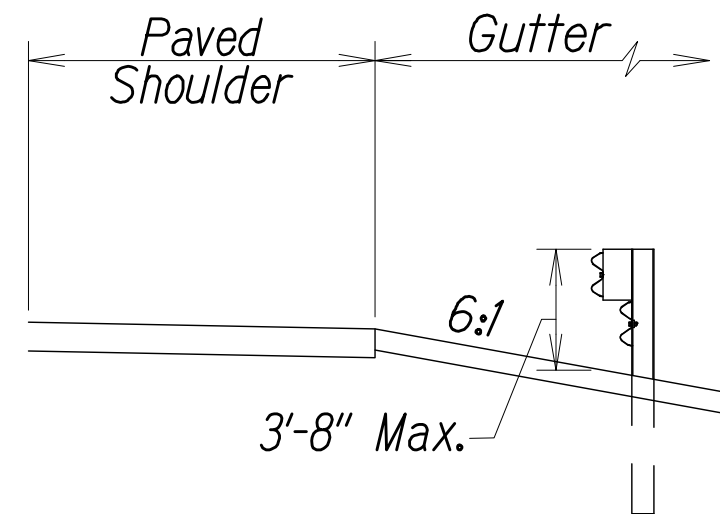
Design Speed MPH	a:b
68	15:1
62	13:1
56	12:1
50	11:1
43	10:1
37	9:1
31	7:1



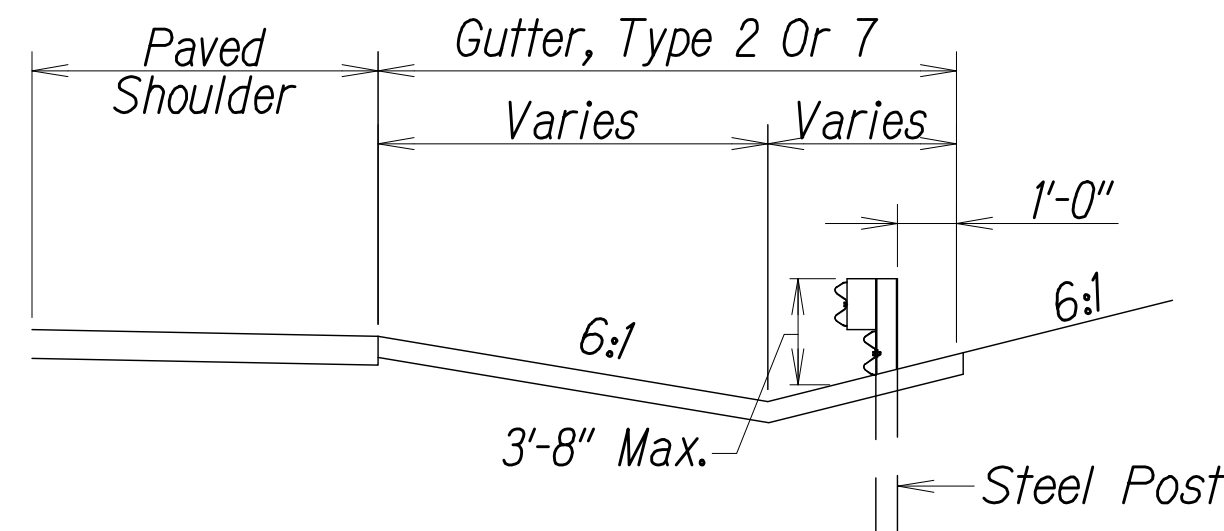
ELEVATION (Profile Along Rail)



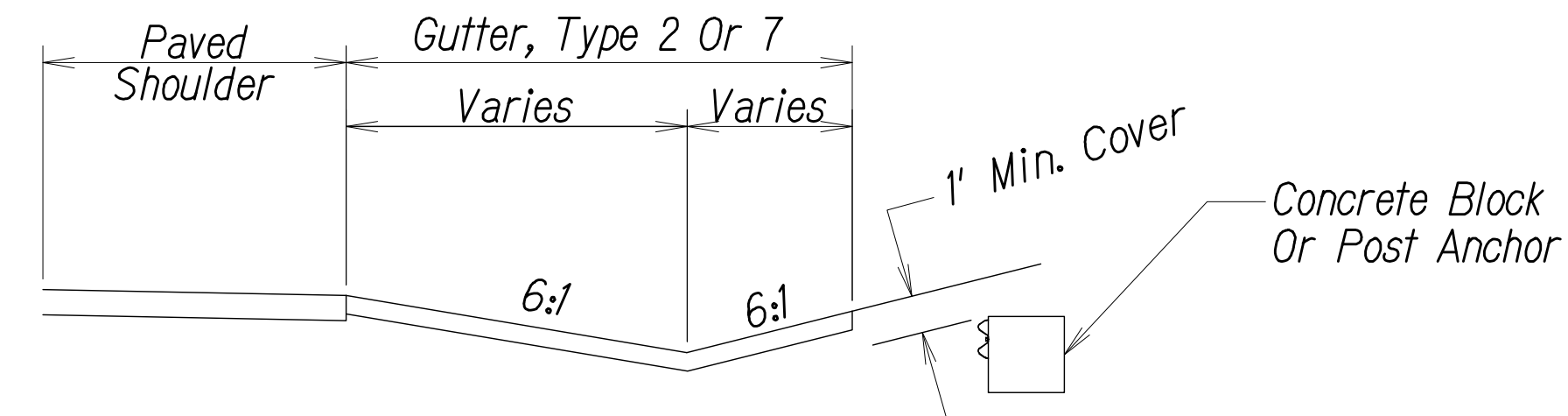
SECTION A - A



SECTION B - B
(WITH RUBRAIL)

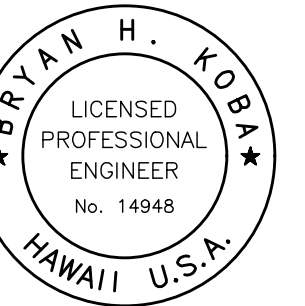


SECTION C - C
(WITH RUBRAIL)



SECTION D - D

BACKSLOPE ANCHOR TERMINAL (WITH 6:1 PAVED GUTTER) AND
TYPE "A" FLARE



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SIGNATURE _____ APRIL 30, 2016
EXP. DATE OF THE LICENSE

[illegible]

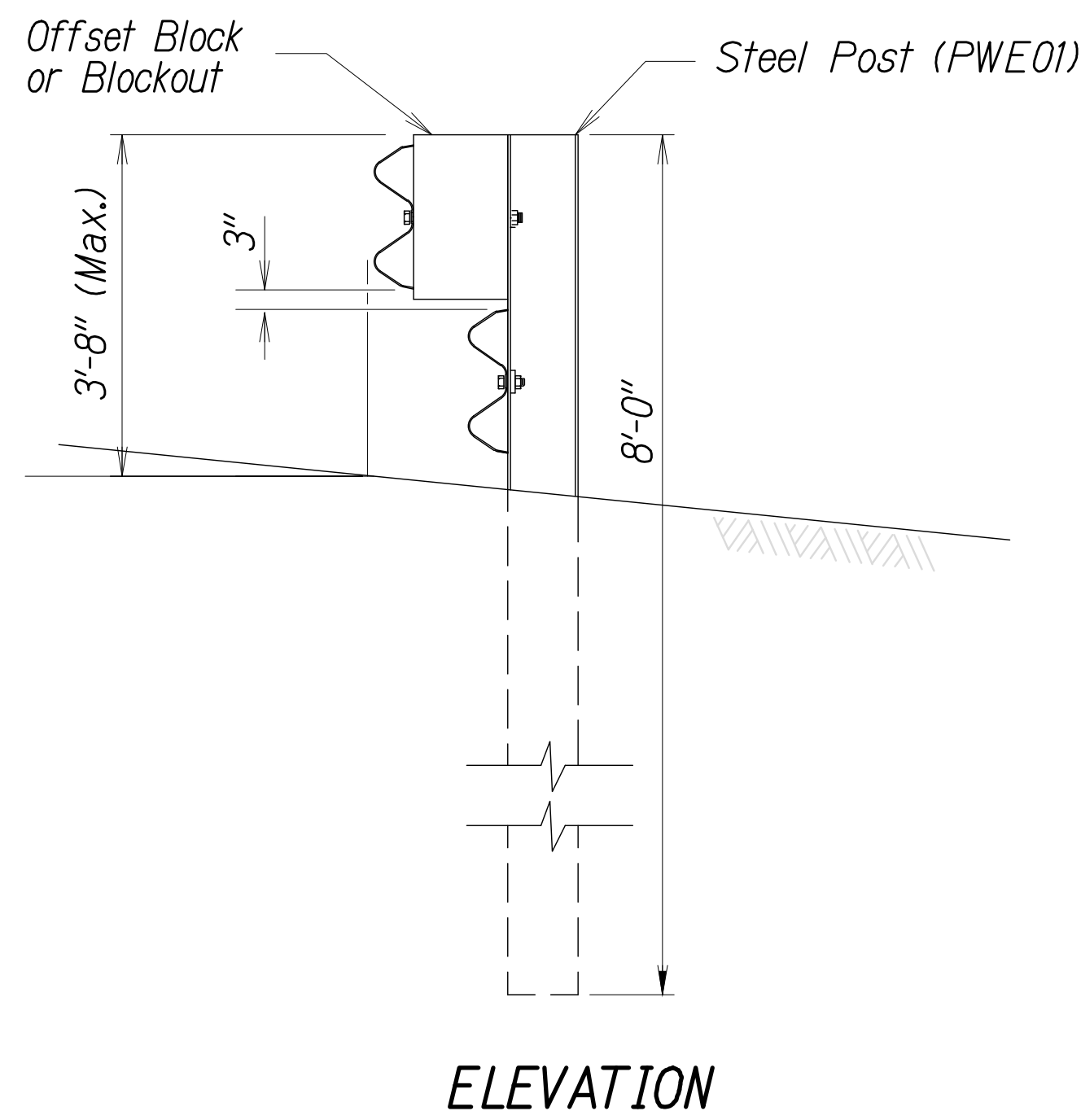
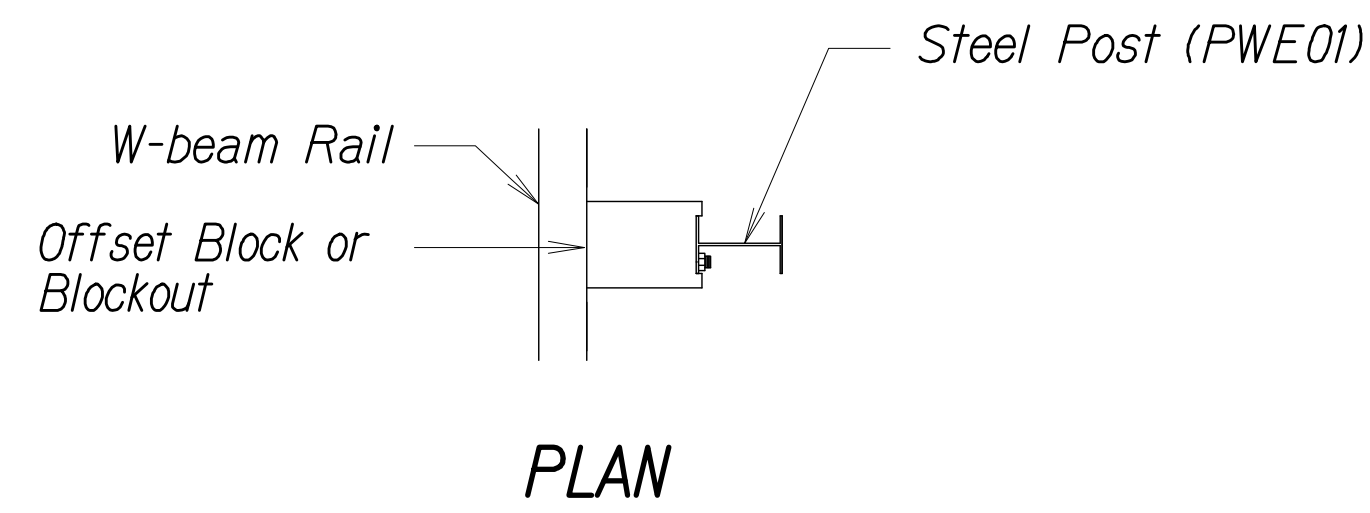
Project No:	O-11-056.004
Scale:	AS NOTED
Date:	10/16/15
Designed By:	BHK
Drawn By:	BHK
Checked By:	

DWG. NO.

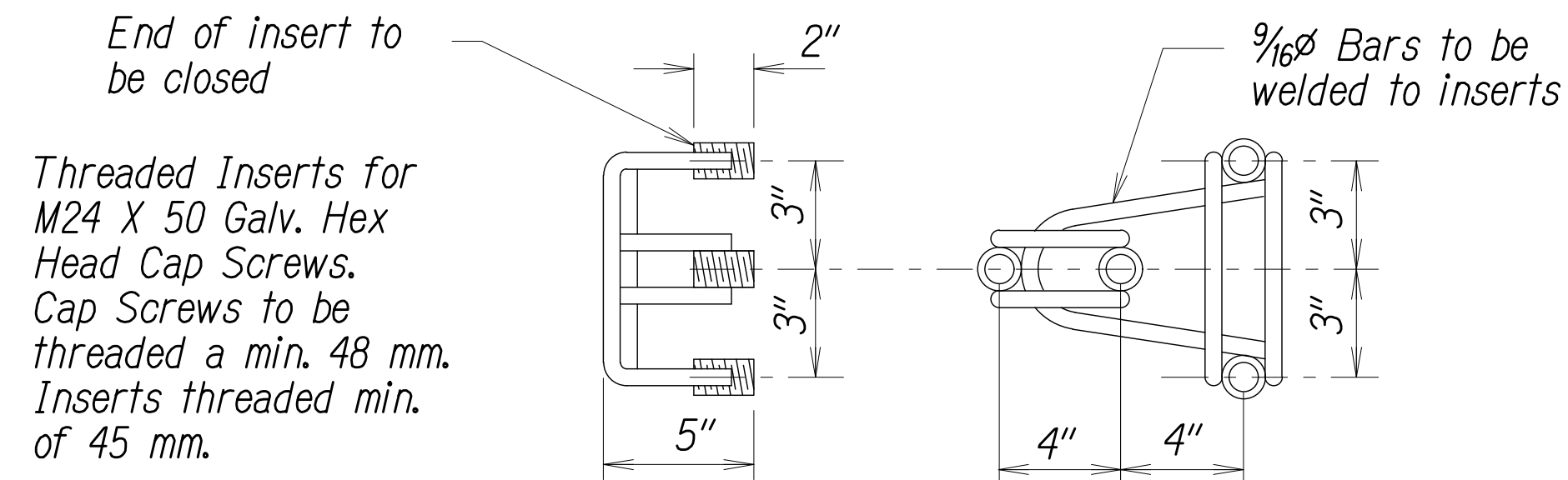
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SHEET 14 OF 16

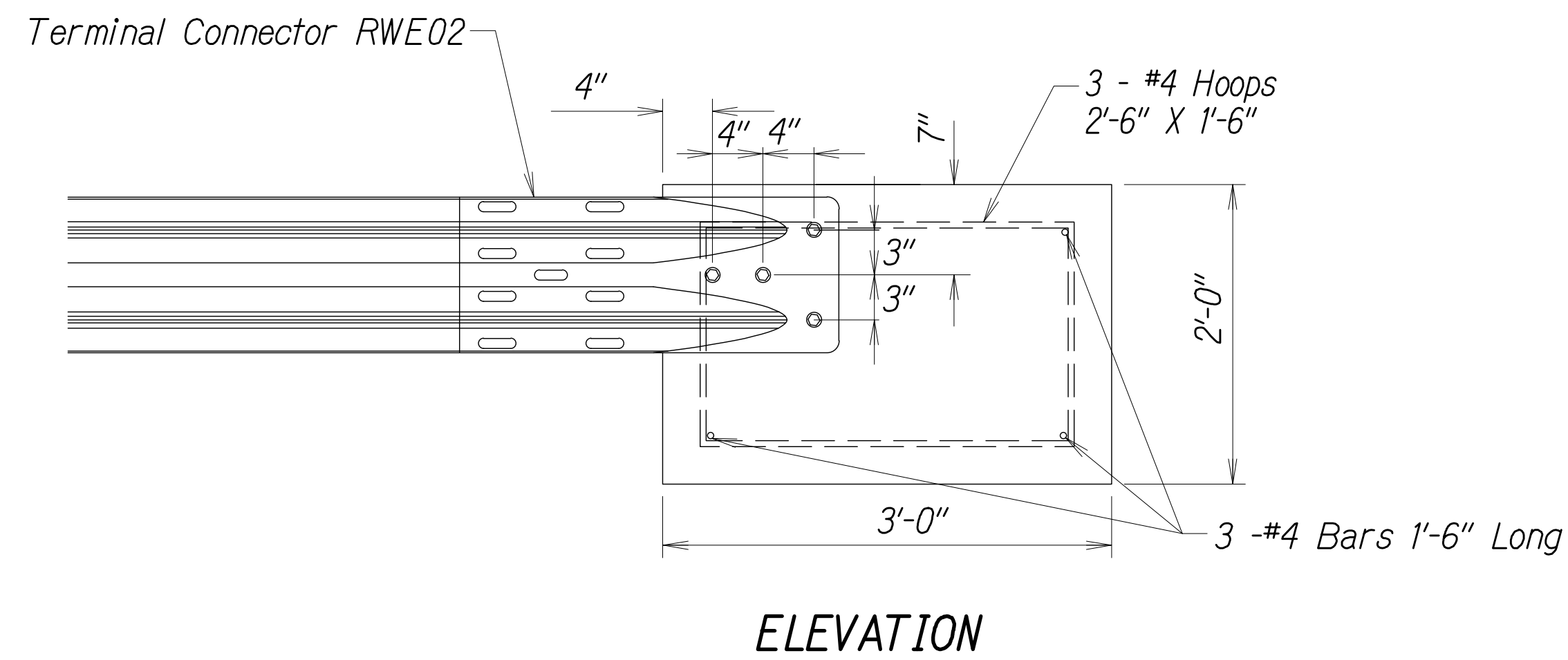
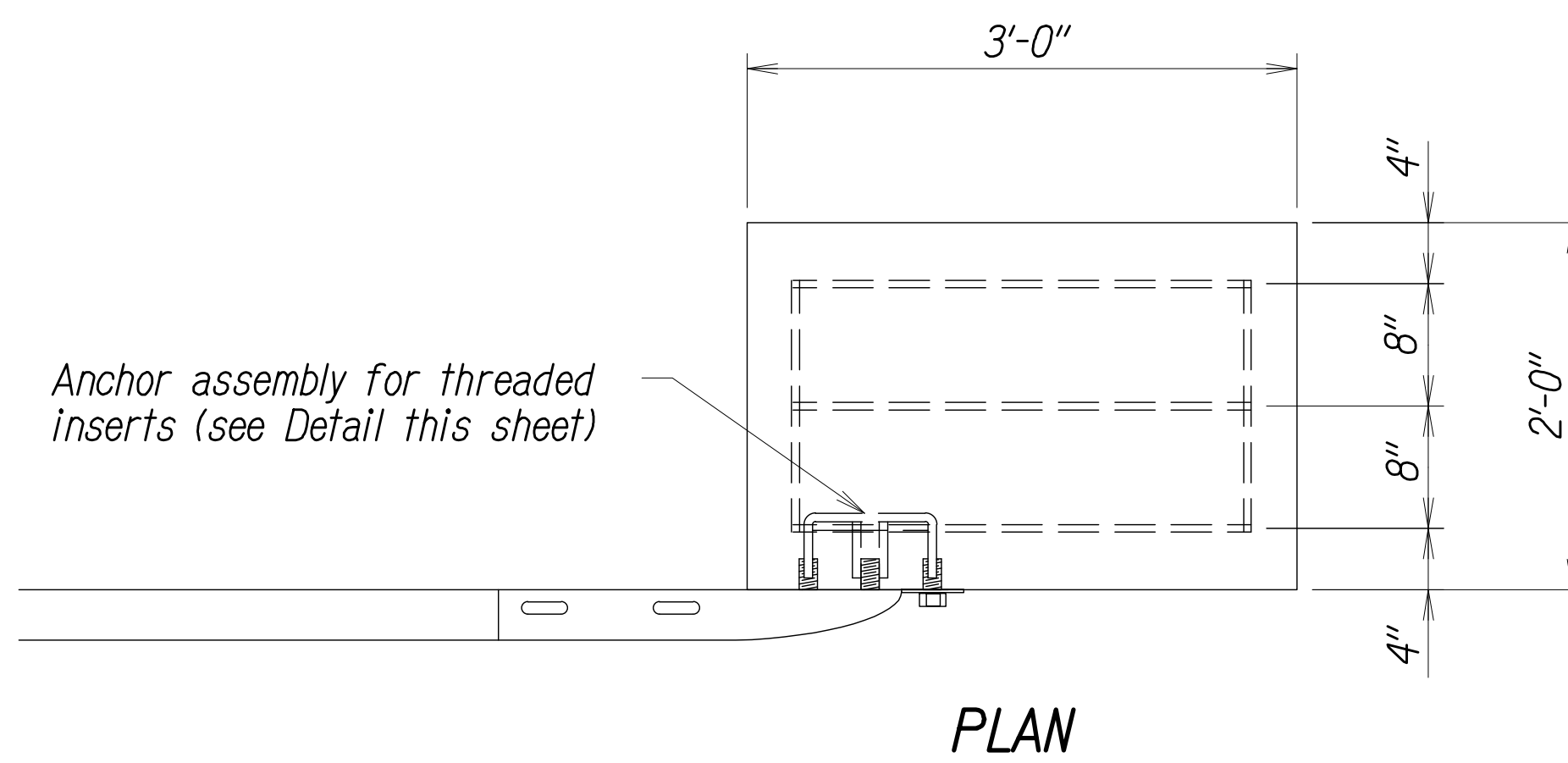
FILE	POCKET	FOLDER	NO.



STEEL POST GUARDRAIL
WITH RUBRAIL



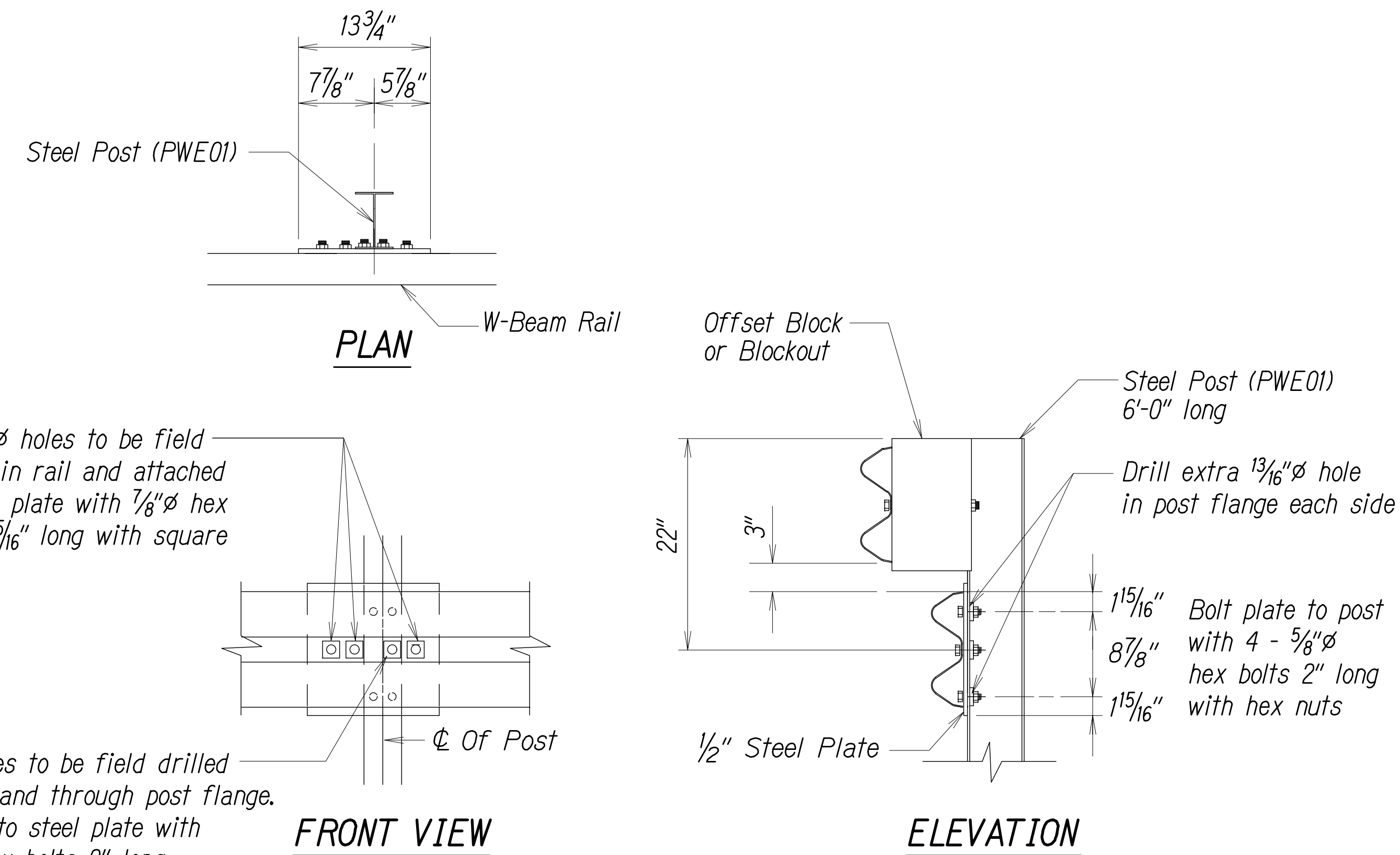
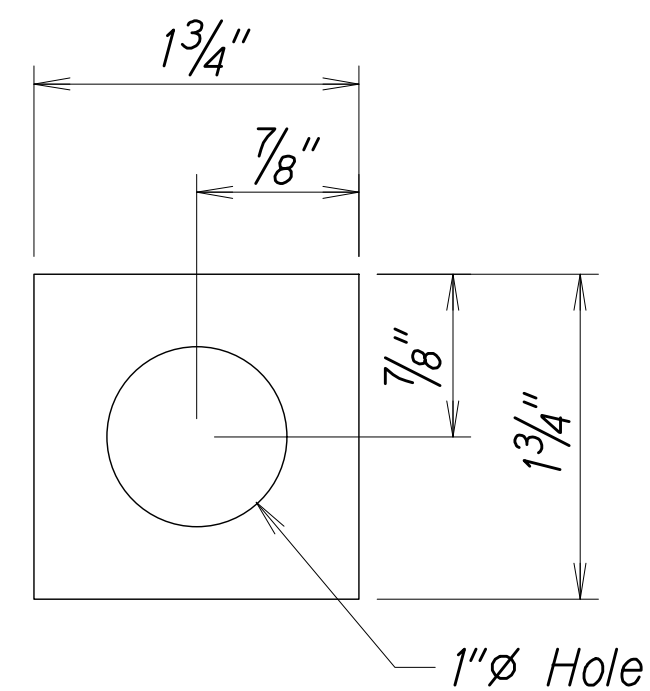
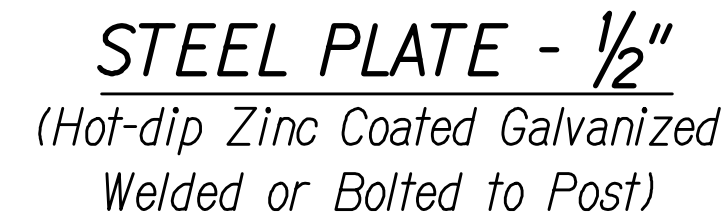
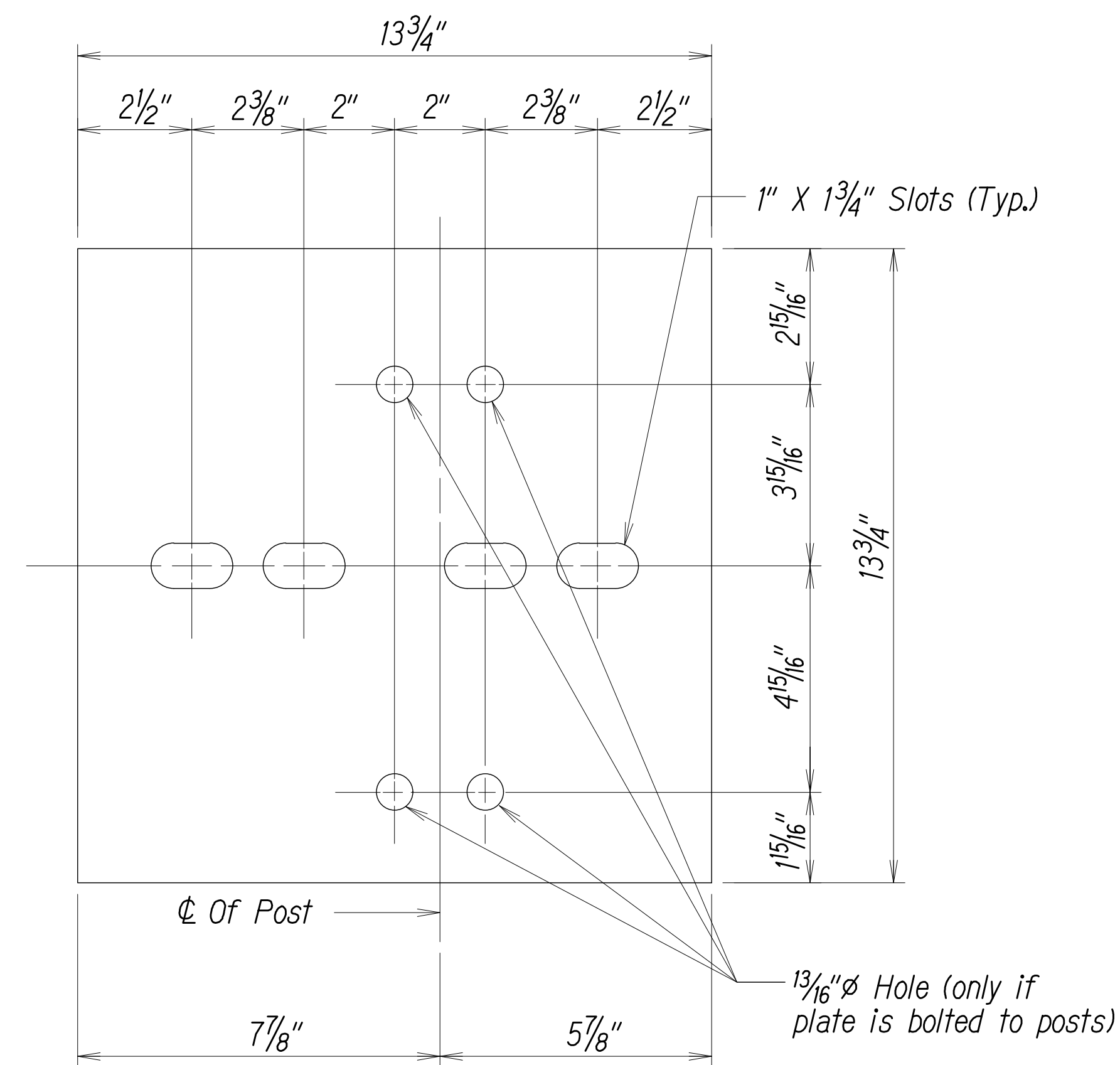
ANCHOR ASSEMBLY
CONCRETE BLOCK ANCHOR



CONCRETE BLOCK ANCHOR
(2' X 2' X 3')

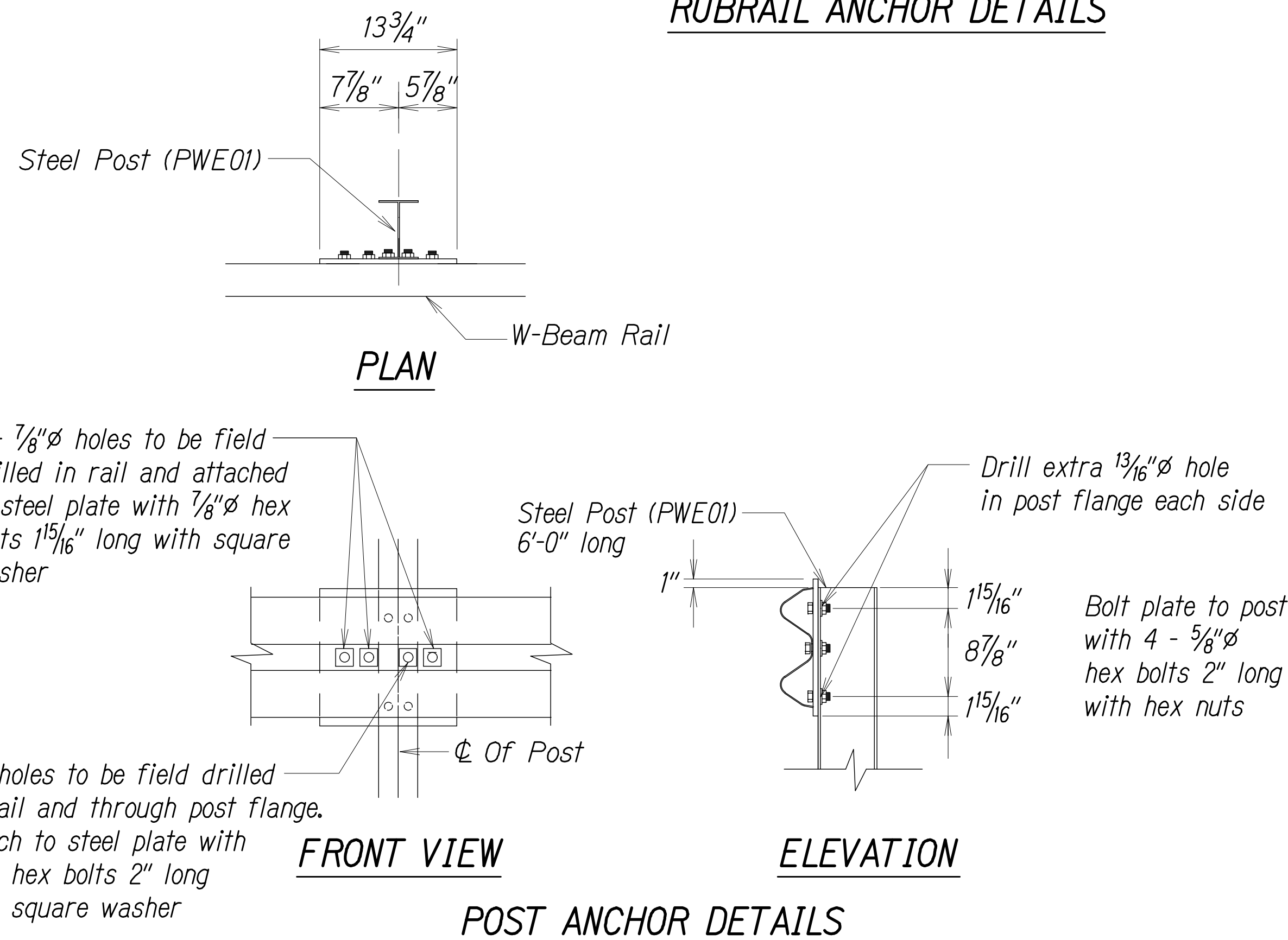
BACKSLOPE ANCHOR TERMINAL END ANCHORAGE DETAILS
TYPE "A" FLARE

JOB NO. 0-11-056.004
 PLOT: Y:\2011\11-056\11-056.4 GUARD RAIL DESIGN\DRAWINGS\C-11 C4.05H GR C4DET1_B9C.DWG



Note:

All fasteners, posts, blocks and rail elements 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-AGCARTBA Joint Cooperative Committee.



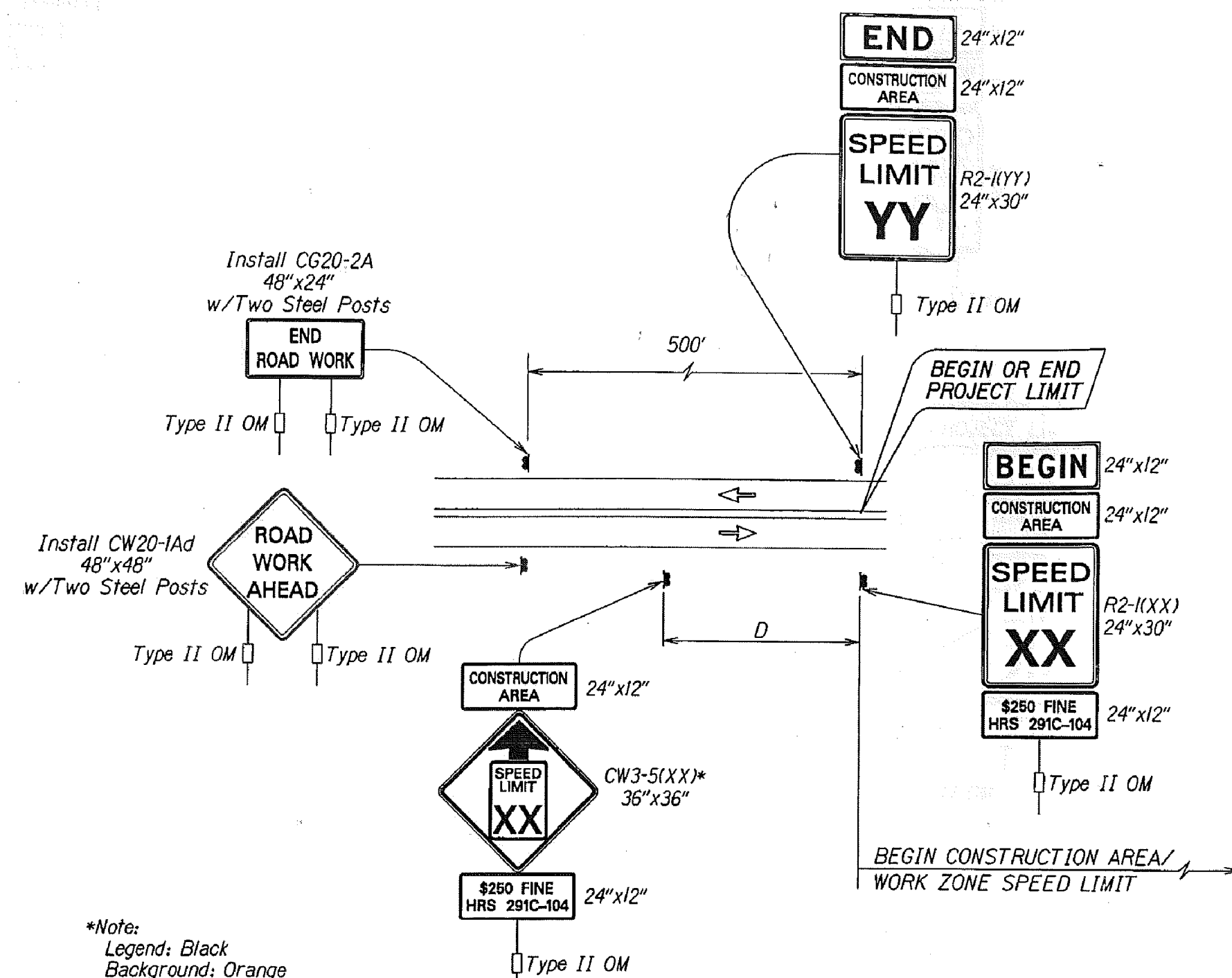
BACKSLOPE ANCHOR TERMINAL END ANCHORAGE DETAILS
TYPE "A" FLARE

GENERAL NOTES FOR TRAFFIC CONTROL PLAN

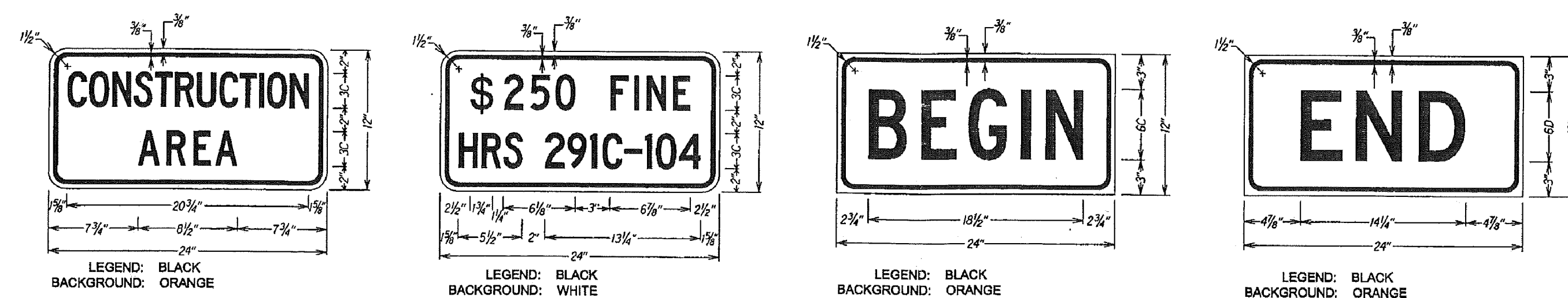
1. THE PERMITTEE SHALL MAKE MINOR ADJUSTMENTS AT INTERSECTIONS, DRIVEWAYS, BRIDGES, STRUCTURES, ETC., TO FIT FIELD CONDITIONS.
2. CONES OR DELINEATORS SHALL BE EXTENDED TO A POINT WHERE THEY ARE VISIBLE TO APPROACHING TRAFFIC.
3. TRAFFIC CONTROL DEVICES SHALL BE INSTALLED SUCH THAT THE SIGN OR DEVICE FARTHEST FROM THE WORK AREA SHALL BE PLACED FIRST. THE OTHERS SHALL THEN BE PLACED PROGRESSIVELY TOWARD THE WORK AREA.
4. REGULATORY AND WARNING SIGNS WITHIN THE CONSTRUCTION ZONE THAT ARE IN CONFLICT WITH THE TRAFFIC CONTROL PLANS SHALL BE REMOVED OR COVERED. ALL SIGNS SHALL BE RESTORED UPON COMPLETION OF THE WORK.
5. FLAGGERS AND/OR POLICE OFFICERS SHALL BE IN SIGHT OF EACH OTHER OR IN DIRECT COMMUNICATION AT ALL TIMES.
6. WHEN REQUIRED BY THE ISSUING OFFICE, THE PERMITTEE SHALL INSTALL A FLASHING ARROW SIGNAL AS SHOWN ON THE TRAFFIC CONTROL PLANS.
7. ALL TRAFFIC LANES SHALL BE A MINIMUM OF 10 FEET WIDE.
8. ALL CONSTRUCTION WARNING SIGNS SHALL BE PROMPTLY REMOVED OR COVERED WHENEVER THE MESSAGE IS NOT APPLICABLE OR NOT IN USE.
9. THE BACKS OF ALL SIGNS USED FOR TRAFFIC CONTROL SHALL BE APPROPRIATELY COVERED TO PRECLUDE THE DISPLAY OF INAPPLICABLE SIGN MESSAGES (I.E., WHEN SIGNS HAVE MESSAGES ON BOTH FACES).
10. AT THE END OF EACH DAY'S WORK, OR AS SOON AS THE WORK IS COMPLETED, THE PERMITTEE SHALL REMOVE ALL TRAFFIC CONTROL DEVICES NO LONGER NEEDED TO PERMIT FREE AND SAFE PASSAGE OF PUBLIC TRAFFIC. REMOVAL SHALL BE IN THE REVERSE ORDER OF INSTALLATION. REPLACE EXISTING FADED OR OBLITERATED PAVEMENT MARKINGS THAT ARE NECESSARY FOR SAFE TRAFFIC FLOW IN THE CONSTRUCTION AREA WITH TEMPORARY OR PERMANENT MARKINGS BEFORE OPENING THE ROADWAY TO PUBLIC TRAFFIC EACH DAY.
11. REPLACE PAVEMENT MARKINGS AND TRAFFIC SIGNS UPON COMPLETION OF EACH PHASE OF WORK.
12. THE CONTRACTOR SHALL CONTROL TRAFFIC IN AND OUT OF DRIVEWAYS.
13. SIGN SPACINGS (L), TAPER LENGTHS (T) AND SPACING OF CONES OR DELINEATORS SHALL BE AS SHOWN ON TABLE 1, THIS SHEET, UNLESS OTHERWISE NOTED.

NOTES:

1. THIS PLAN MAY BE USED IF ALL ROAD WORK, INCLUDING EQUIPMENT AND WORKERS ARE OFF THE TRAVEL WAY.
2. SEE TABLE 1 FOR ADDITIONAL DIMENSIONS.
3. ENGINEER WILL DETERMINE IF ADVISORY SPEED SIGN IS NECESSARY.
4. THE CONTRACTOR SHALL PROVIDE NECESSARY ADJUSTMENTS TO ACCOMMODATE BICYCLISTS AND PEDESTRIANS.
5. CW20-1AD SIGN REQUIRED FOR POSTED SPEED LIMIT OF 45 MPH OR GREATER.
5. SIGNING IS NOT REQUIRED IF THE WORK AREA INCLUDING EQUIPMENT AND WORKERS IS OUTSIDE THE CLEAR ZONE DISTANCE, AS SPECIFIED IN THE LATEST AASHTO ROADSIDE DESIGN GUIDE.



TYPICAL DETAIL FOR CONSTRUCTION SIGNS
ON TWO LANE OR MULTILANE UNDIVIDED LOW SPEED HIGHWAY

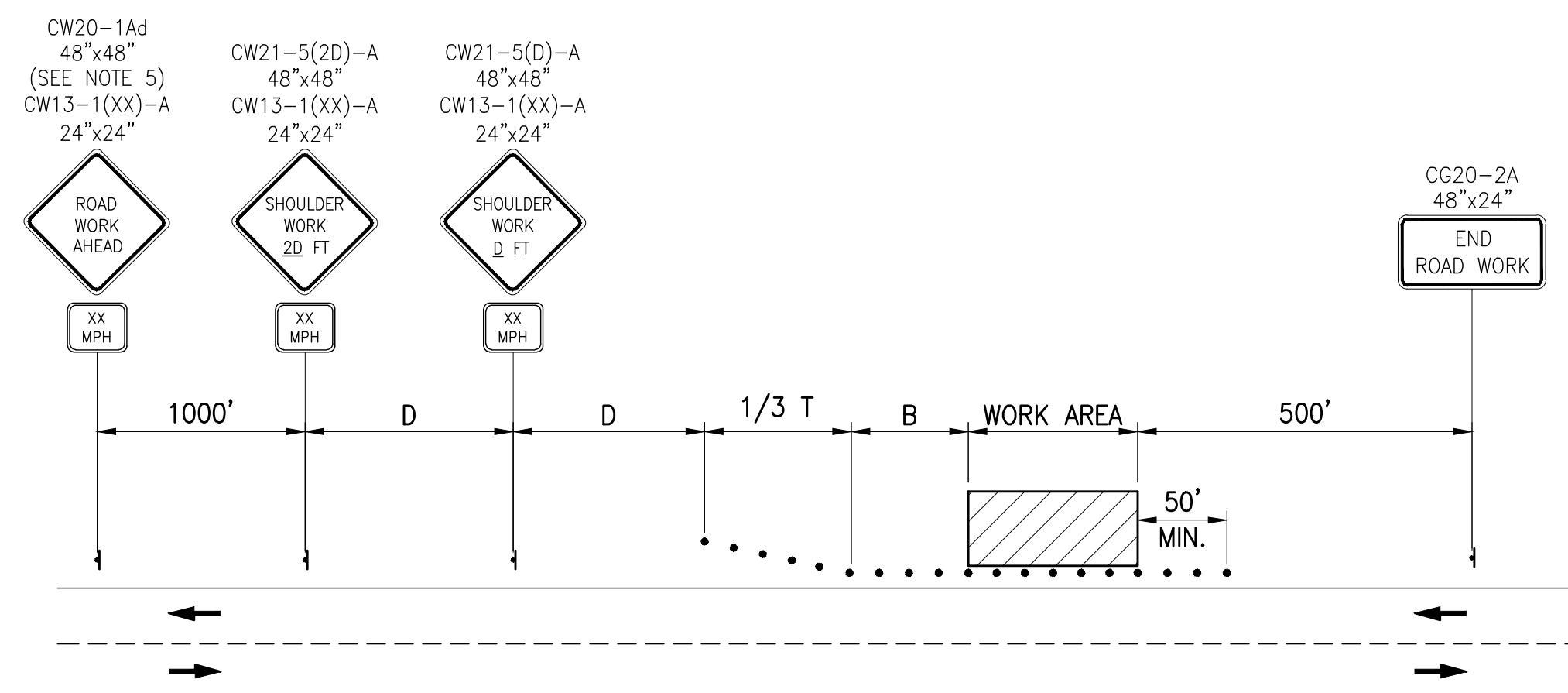


TYPICAL DETAIL FOR CONSTRUCTION SIGNS
ON TWO LANE OR MULTILANE UNDIVIDED LOW SPEED HIGHWAYS

TABLE 1 FOR TRAFFIC CONTROL PLAN							
POSTED SPEED LIMIT (MPH)	SIGN SPACING (D) (FEET)	TAPER LENGTH (T) (FEET)		LONGITUDINAL BUFFER SPACE (B) (FEET)	SPACING OF CONES OR DELINEATORS (FEET) ②		
		W = 12' OR LESS ①	W = GREATER THAN 12' ①		TAPER	TANGENT	WORK AREA
20	250	200	W x 17	35	20	20	10
25	250	200	W x 17	55	25	25	10
30	250	250	W x 20	85	30	30	10
35	250	250	W x 20	120	35	35	10
40	500	350	W x 30	170	40	40	10
45	500	550	W x 45	220	45	45	10
50	1000	600	W x 50	280	50	50	10
55	1000	700	W x 55	335	55	55	10

NOTES

- ① USE ADVISORY SPEEDS WHEN POSTED
- ② W= WIDTH OF LANE OR OFFSET
- ③ NOT APPLICABLE FOR "TWO-LANE HIGHWAYS"



WORK ON SHOULDER OR ROADSIDE

Designer Notes:

1. This Work Zone Signing Plan shall be used only for low speed highways (design speeds of 45 mph or less).
2. The Designer shall replace all XX, YY & D references with appropriate speed limit as indicated in Table I.
3. Speed Limit YY shall be the existing posted speed.

Work Zone Notes:

1. This Work Zone Sign Plan is intended for use on long-term stationary work zones/construction phases (3 days or more). All work zones or construction phases less than 3 days duration will use Traffic Control Plans shown in Section 645 of the Special Provisions.
2. All existing regulatory speed limit signs with posts within the work zone/project limits shall be removed and replaced with work zone speed limit sign assemblies (62-1XX) and (CW3-5XXX) with "CONSTRUCTION AREA" and "#250 FINE HRS 291C-104" Supplemental Signs).
3. Construction sign assemblies shall be installed on both the approaching and trailing ends of each work zone as shown on this plan.
4. Each construction warning sign shall have a minimum of two (2) Type II OM. Each work zone speed limit assembly shall have a minimum of one (1) Type II OM. Installation of each Type II OM shall be considered incidental to Item No. 621.7100, Construction Sign with Posts.
5. Upon the completion of all physical work or as directed by the Engineer, all construction signs and work zone speed limit assemblies shall be removed. All speed limit signs and posts that were existing at the start of the project within the work zone/project limits shall be restored back to their original locations and configurations.
6. Placement of construction signs shall not obstruct the path of pedestrians and bicyclists.
7. The removal and restoration of existing regulatory speed limit signs with new posts along with the installation, maintenance and removal of work zone speed limit sign assemblies shall be considered incidental to Item No. 621.7100, Construction Sign with Posts.

TABLE I
GUIDELINE FOR ADVANCE PLACEMENT OF SPEED REDUCTION
SIGN CW3-5(XX), CONSTRUCTION AREA SPEED LIMIT

EXISTING POSTED SPEED LIMIT (MPH)	XX-NEW CONSTRUCTION AREA SPEED LIMIT (MPH)	D-REDUCED SPEED LIMIT SIGN SPACING TO FIRST CONSTRUCTION AREA SPEED LIMIT SIGN (FEET)
≤25	EXIST. SPEED	LIMIT TO REMAIN
30	25	100
35	25	175
40	30	175