

GENERAL

1. *Workmanship and materials shall conform to the Hawaii Standard Specifications for Road & Bridge Construction (2005 Edition) & Special Provisions. However, where reference is made to performance conforming to other standards the more stringent shall apply.*
2. *The Contractor shall compare all the contract documents with each other and report in writing to the Engineer all inconsistencies and omissions.*
3. *The Contractor shall take field measurements and verify field conditions and shall compare such field measurements and conditions with the drawings before commencing work. Report in writing to the Engineer all inconsistencies and omissions.*
4. *The Contractor shall be responsible for methods of construction, workmanship and job safety. The Contractor shall provide temporary shoring and bracing as required for stability of structural members and systems.*
5. *The Contractor shall be responsible for protection of the adjacent properties, structures, streets and utilities during the construction period.*
6. *Details noted as typical on the Structural drawings shall apply in all conditions unless specifically shown or noted.*
7. *The General Contractor and his subcontractors must submit in writing any requests for modifications to the plans and specifications.*

FOUNDATION

1. *Foundation design is based on geotechnical investigation by Hirata & Associates, Inc. and memorandum dated March 12, 2018.*
2. *The Contractor shall provide for de-watering of excavation from surface water, ground water or seepage.*
2. *Waianae Baseyard: Loose silty coralline gravel that is exposed below groundwater during foundation excavations shall be overexcavated and replaced with 18 inches of clean gravel tamped to an unyielding condition and wrapped in geotxtile fabric.*
3. *Windward Baseyard: Footings and slab-on-grade subgrades shall be underlain by at least 12 inches of properly compacted imported granular fill. Subgrades shall be moisture conditioned to about 2 percent above optimum moisture content and compacted to a minimum 90 to 95 percent relative compaction as determined by ASTM D 1557. The granular structural fill shall be compacted to a minimum 95 percent compaction as determined by ASTM D 1557 prior to placement of reinforcing steel and concrete.*
4. *The Contractor shall provide for design and installation of all cribbing, sheeting, and shoring necessary to preserve excavation and earth banks.*
5. *The Contractor shall brace or protect all walls below grade from lateral loads until they have attained full design strength.*

CONCRETE

1. Concrete construction workmanship & materials shall conform to the Hawaii Standard Specifications for Road & Bridge Construction (2005 Edition) & Special Provisions.
2. Concrete shall be regular weight hard rock concrete and shall have the following minimum 28 day compressive strengths:
 - a. Footings _____ 3,000 psi
 - b. Walls _____ 3,000 psi
 - c. Slab-On-Grade _____ 3,000 psi
3. Concrete delivery tickets shall record all free water in the mix: at batching by plant, for consistency by driver, and any additional request by contractor if permitted by the mix design.
4. All inserts, anchor bolts, plates, and other items to be cast in the concrete shall be hot-dipped galvanized unless otherwise noted.
5. Reinforcing bars, anchor bolts, inserts, and other items to be cast in the concrete shall be secured in position prior to placement of concrete.
6. The Contractor shall locate construction joints so as not to impair the strength of the structure and to minimize shrinkage stresses. Submit location of construction joints to the Engineer for approval, unless otherwise noted.
7. The Engineer shall be notified at least 3 working days prior to any concrete pour. No concrete shall be poured prior to observation by the Engineer or his representative.

REINFORCING STEEL

1. Reinforcing Steel shall be deformed bars conforming to AASHTO M31, Grade 60.
2. Clear concrete cover for reinforcing bars shall be as follows, unless otherwise noted:
 - a. Footings, etc. cast against earth ———— 3"
 - b. Footings, etc. formed and exposed to earth or weather ———— 2"
 - c. Walls
 1. Formed faces exposed to earth or weather ———— 2"
3. Reinforcing Steel shall be spliced where indicated on plans. Provide lap splice length per typical details and schedule, unless otherwise noted.
4. Bar laps shall be made away from points of maximum stress. Unless noted otherwise, splices, laps, dowel extensions and embedments shall be 48 bar diameters, but not less than 24 inches. Splices shall be staggered where possible.
5. Unless otherwise noted, all horizontal reinforcing steel at wall and wall footing corners and intersections shall extend to the far face of the corner and hooked a length of 48 bar diameters, but not less than 24 inches, around the corner.
6. Bar bends and hooks shall be "Standard Hooks" in accordance with AASHTO LRFD Bridge Design Specifications, Second Edition, Article 5.10.2-Hooks and Bends. See Detail 1 On Sheet EC-05.



STRUCTURAL STEEL

1. *Fabrication and erection of structural steel shall conform to the Hawaii Standard Specifications For Road & Bridge Construction (2005 Edition) & Special Provisions.*
2. *Structural steel shall conform to ASTM A36 unless otherwise noted.*
3. *Threaded rods shall conform to ASTM F1554 Grade 36 unless otherwise noted.*
4. *Welds and welding procedures shall conform to the Structural Welding Code AWS D1.1 of the American Welding Society.*
5. *Welding shall be performed by welders prequalified for welding procedures to be used.*
6. *Welding electrodes shall be E70XX.*
7. *All steel shall be hot-dipped galvanized after fabrication, unless otherwise noted.*
8. *All field welding of galvanized metal shall be repaired per Hawaii Standard Specifications Section 501.03 (G) (2).*

WATERSTOPS:

1. *Waterstops for new fluid containing cast in place concrete structures shall be polyvinyl chloride (pvc) waterstops made of extruded polyvinylchloride (pvc) manufactured from virgin materials conforming to coe crd-c-572.*
2. *Waterstop type for construction joints shall be serrated (ribbed) flat and shall be vinylex r6-38, greenstreak style 679 by vinylex corporation, greenstreak plastic products company, or approved equal.*

ORIGINAL PLAN	SURVEY PLOTTED BY _____	DATE _____
NOTE BOOK	DRAWN BY _____	*
	TRACED BY _____	*
	DESIGNED BY _____	*
	QUANTITIES BY _____	*
INDEX	CHECKED BY _____	*

 4/30/18 EXP. DATE  This work was prepared by me or under my supervision	STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION <u>GENERAL NOTES</u> <u>STORM WATER BEST MANAGEMENT PRACTICES</u> <u>IMPROVEMENTS AT MAINTENANCE BASEYARDS ON OAHU</u> <u>Project No. HWY-0-02-18M</u> Scale: _____ Date: March 2018
--	--

EPOXIED ANCHOR INSTALLATIONS

- 1. Epoxy used for anchoring threaded rods and reinforcing steel into existing concrete shall be Hilti HIT HY-RE-500-SD, Simpson SET-XP, Powers PE100+ system or approved equal, and shall be installed per manufacturer's recommendations.
- 2. Anchors shall be installed with the minimum embedment requirements as indicated on the drawings.

INSPECTION OF WORK AND MATERIALS:

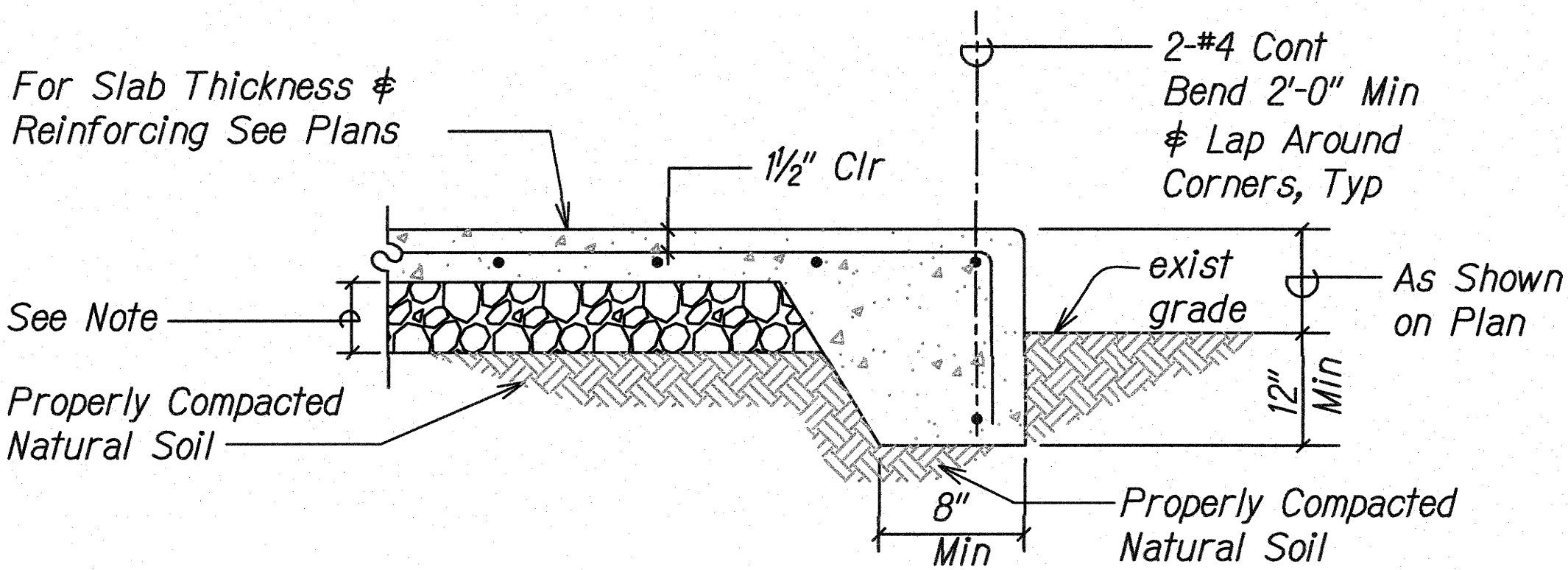
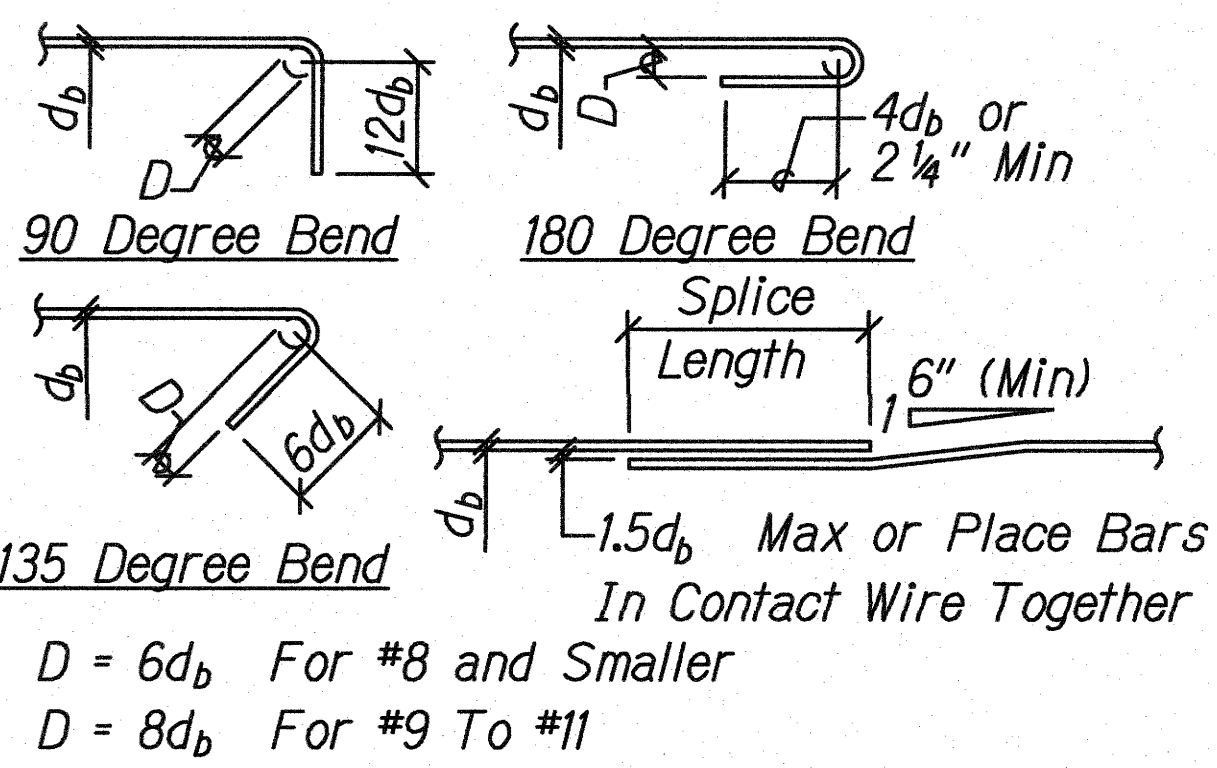
- 1. Contractor shall be responsible for ensuring that inspection of portions of the work, as required by The Hawaii Standard Specifications for Road and Bridge Construction & Special Provisions, is made at the appropriate time, the contractor shall give timely notice of when and where inspections are to be made and provide access for the inspector. the contractor shall correct defective work at no additional cost to the owner and pay for re-inspection.
- 2. The following structural work require inspection:
 - A. Concrete
 - B. Bolts installed in concrete
 - C. Drilled and epoxied threaded rods in concrete or masonry
 - D. Reinforcing steel
- 3. Periodic inspection of the reinforcing of all concrete footings shall be required.

Minimum Splice & Embedment Lengths For Concrete					
Bar Size	Lap Splice		Embedment		
	Bot Bar Or Wall Bar	Top Bar	Straight		w/ Std Hook
			Bot Bar Or Wall Bar	Top Bar	
#3, #4	29"	38"	22"	29"	11"
#5	36"	47"	28"	36"	14"
#6	43"	56"	33"	43"	17"
#7	63"	82"	48"	63"	20"

- 1. Lengths Are For Concrete Beams & Columns With Rebar Spaced 1 Bar Diameter Min O.C. And Concrete Walls with Rebars Spaced 2 Bar Diameters Min O.C. Increase Bar Length 50% For Bars Spaced Closer Than Minimums Specified.
- 2. "Top Bars" Are Horizontal Bars With 12" Or More Of Concrete Cast Below.

TYPICAL REBAR SPLICE & EMBEDMENT LENGTH SCHEDULE

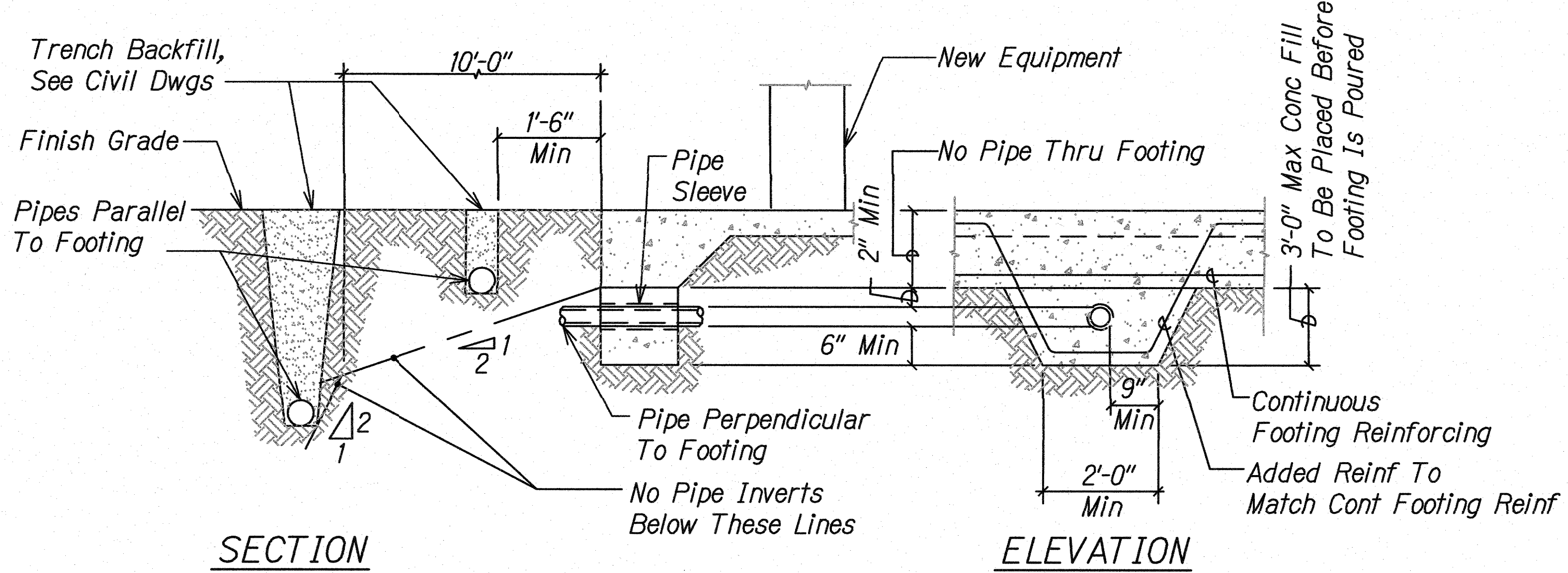
Scale: Not to Scale



CONC. SLAB-ON-GRADE DETAIL AT THICKENED SLAB EDGE

Scale: Not to Scale

- Notes:
- 1. Waianae Baseyard: 6" Min Thk #3 Fine Compacted Base Course.
 - 2. Windward Baseyard: 12" Min Thk Compacted Granular Fill



TYPICAL PIPE AT THICKENED EDGE DETAIL

Scale: Not to Scale

NOTE:

- 1. For Pipe Perpendicular To Footing More Than 3'-0" Below Bottom Of Footing, Trench May Be Backfilled With Compacted Fill. See Civil Drawings.
- 2. Depth Of Footing May Be Affected By Location Of Pipes. General Contractor Shall Determine Exact Depth And Location Of Pipes Prior To Excavation For Footings.

SURVEY PLOTTED BY	DATE
DRAWN BY	
TRACED BY	
QUANTITIES BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
NO.	

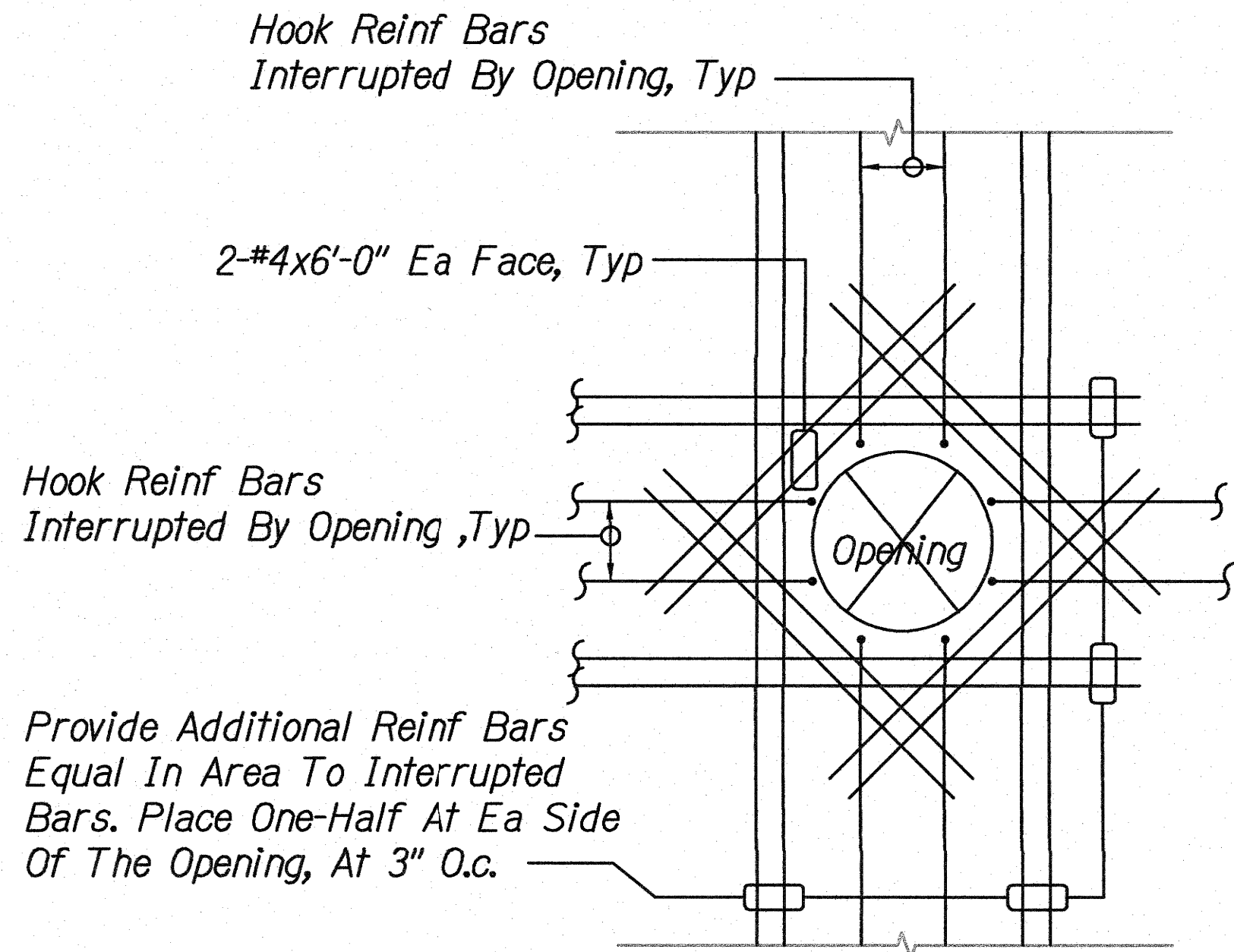
4/30/18
EXP. DATE
This work was prepared by me or under my supervision.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
GENERAL NOTES &
TYPICAL DETAILS
STORM WATER BEST MANAGEMENT PRACTICES
IMPROVEMENTS AT MAINTENANCE BASEYARDS ON OAHU
Project No. HWY-O-02-18M
Scale: Date: March 2018

SHEET No. EC-18 OF 23 SHEETS

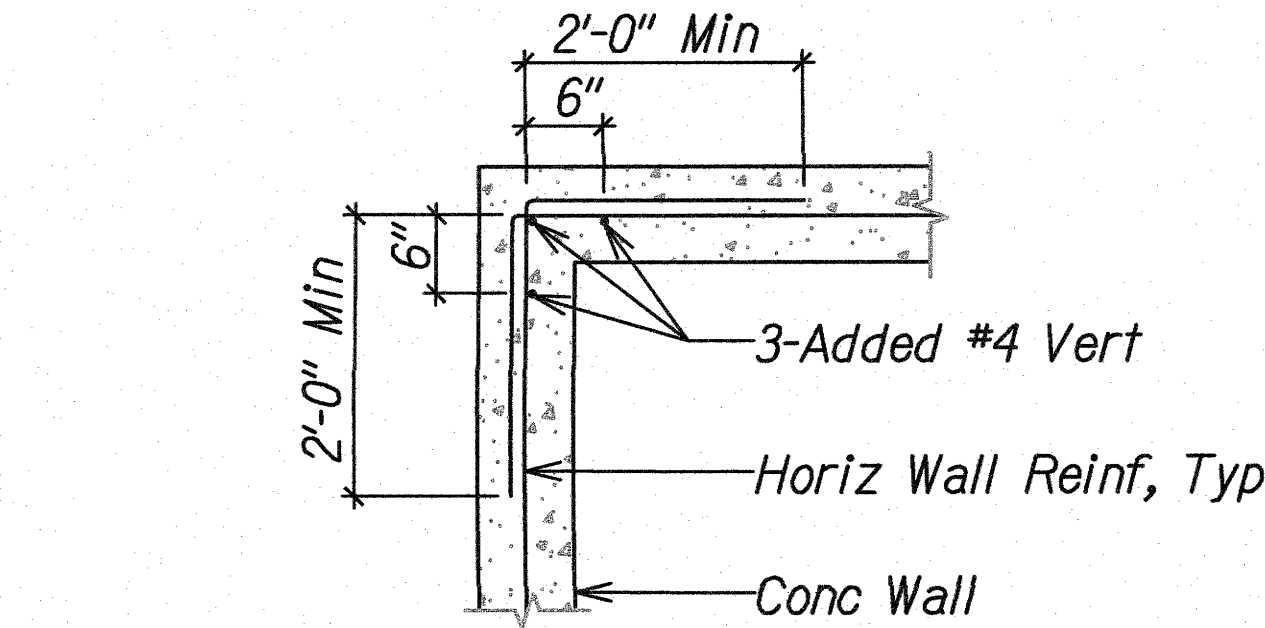
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-O-02-18M	2018	29	33

- Notes:**
1. Provide Additional Vertical Reinf Equal To The Length Of The Uninterrupted Bars.
 2. Extend Horizontal Additional Reinf 3'-0" Min Beyond Either Side Of Opening Hook Bars If 3'-0" Not Available.
 3. This Detail Applies To All Walls Used For Retaining Liquids And Soil.



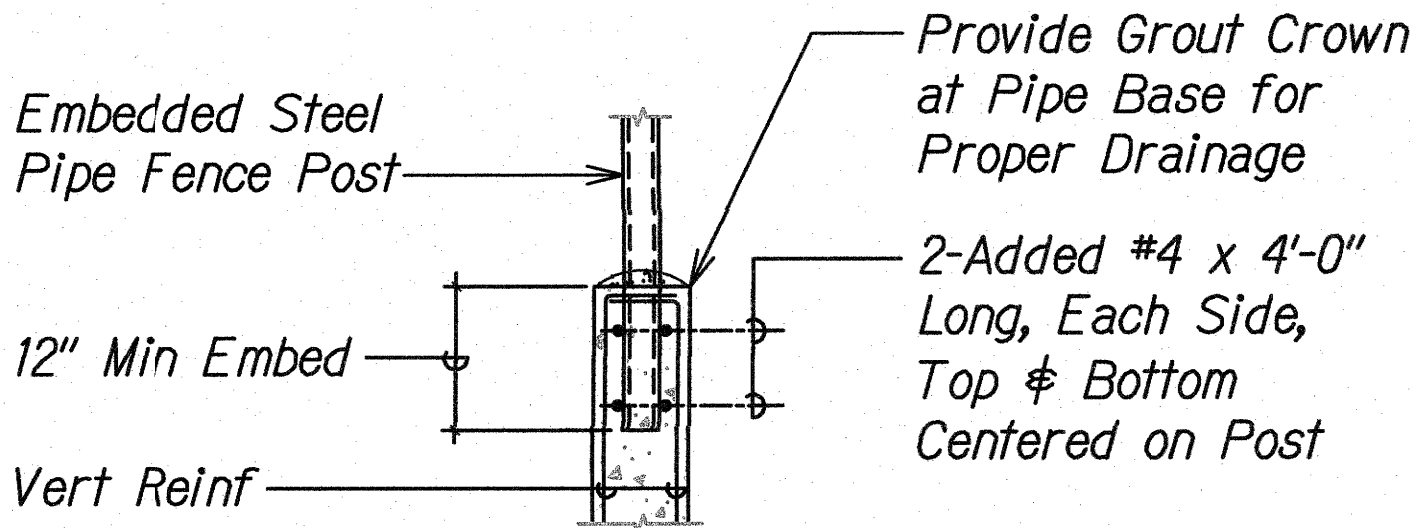
TYPICAL ADDITIONAL REINFORCING AT OPENINGS IN WALLS
 Scale: Not to Scale

1
EC-19EC-19



TYPICAL CONCRETE WALL CORNER DETAIL
 Scale: Not to Scale

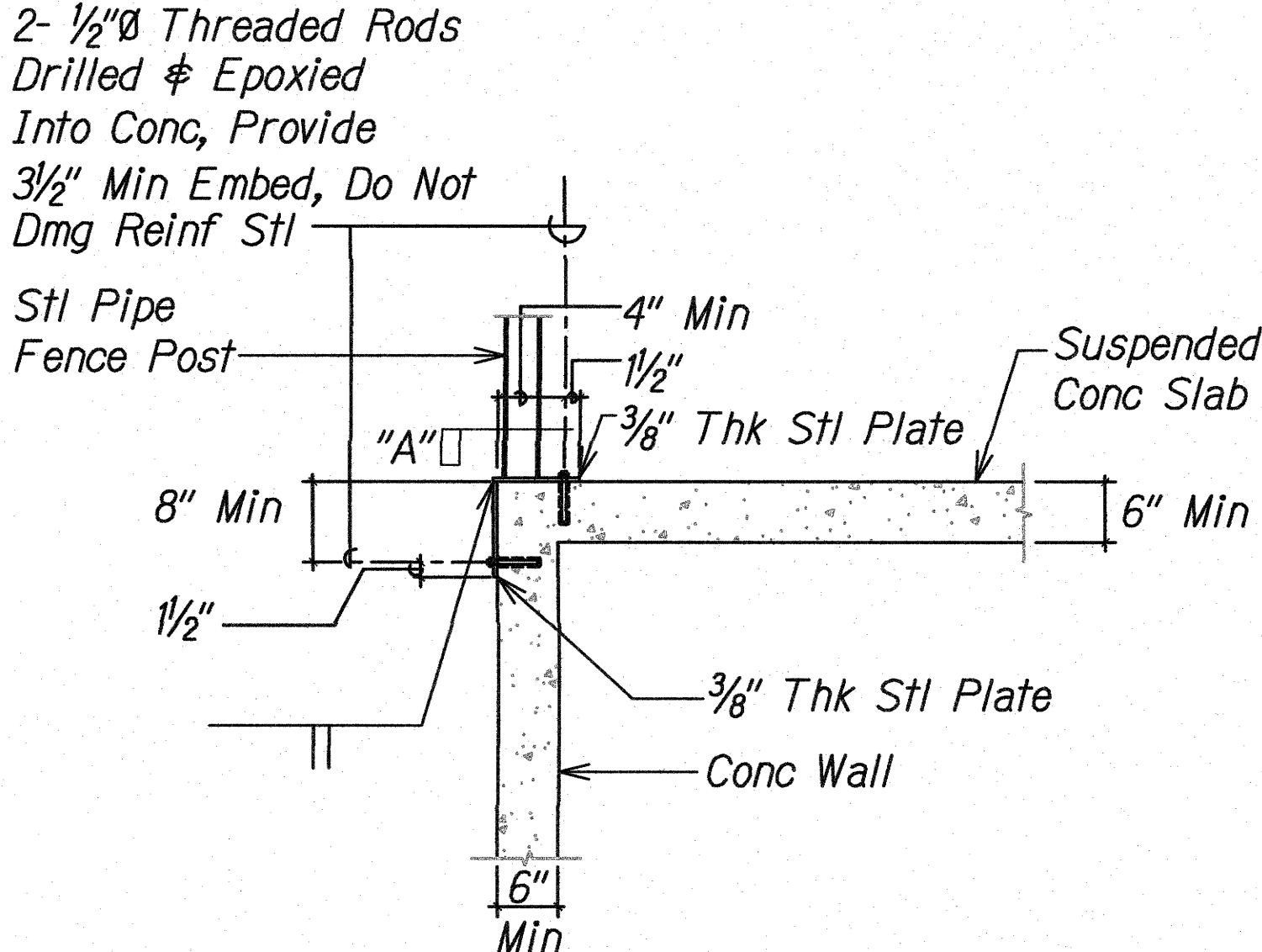
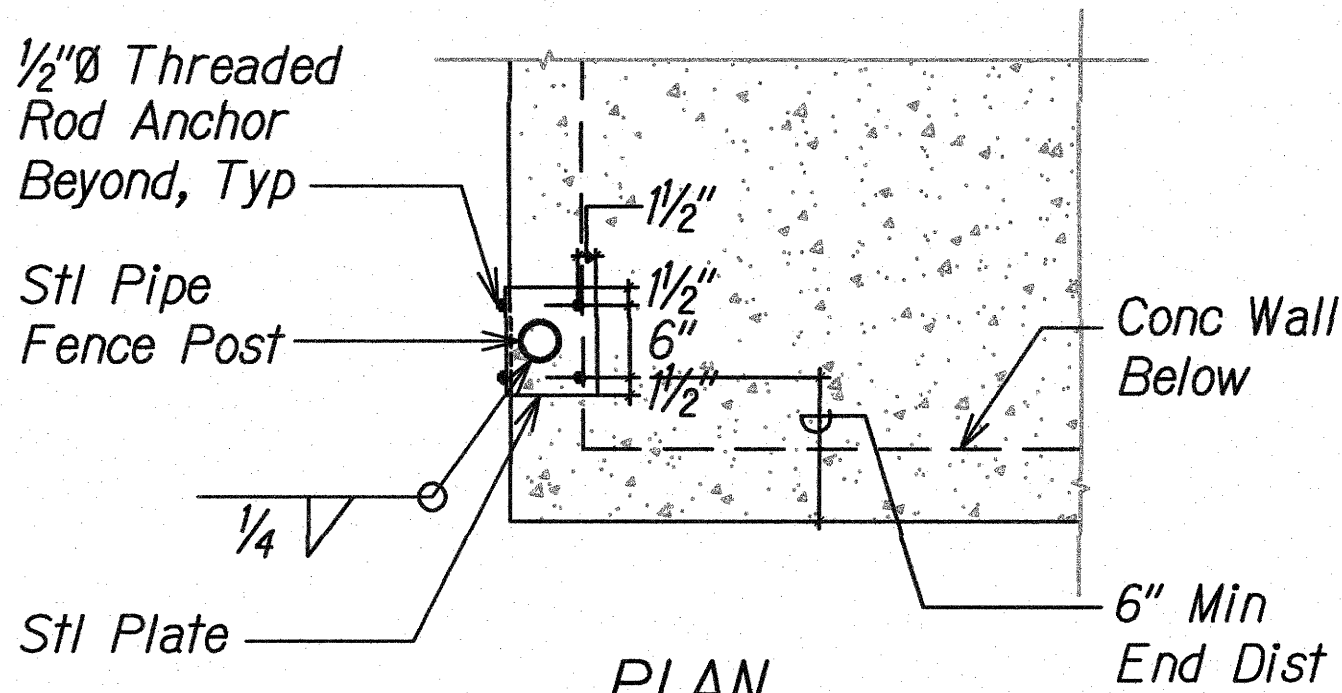
2
EC-19EC-19



Note:
 Continuous Reinforcing Not Shown for Clarity. See Detail Civil Sheets for Balance of Information.

FENCE POST EMBEDMENT DETAIL
 Scale: Not to Scale

3
EC-15EC-19



FENCE POST PLATE DETAIL
 Scale: Not to Scale

4
EC-15EC-19

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
DRAWN BY		
CHECKED BY		
NOTED BY		
NO.		

BASEYARD STRUCTURING 3/19/2018 9:45:35 AM

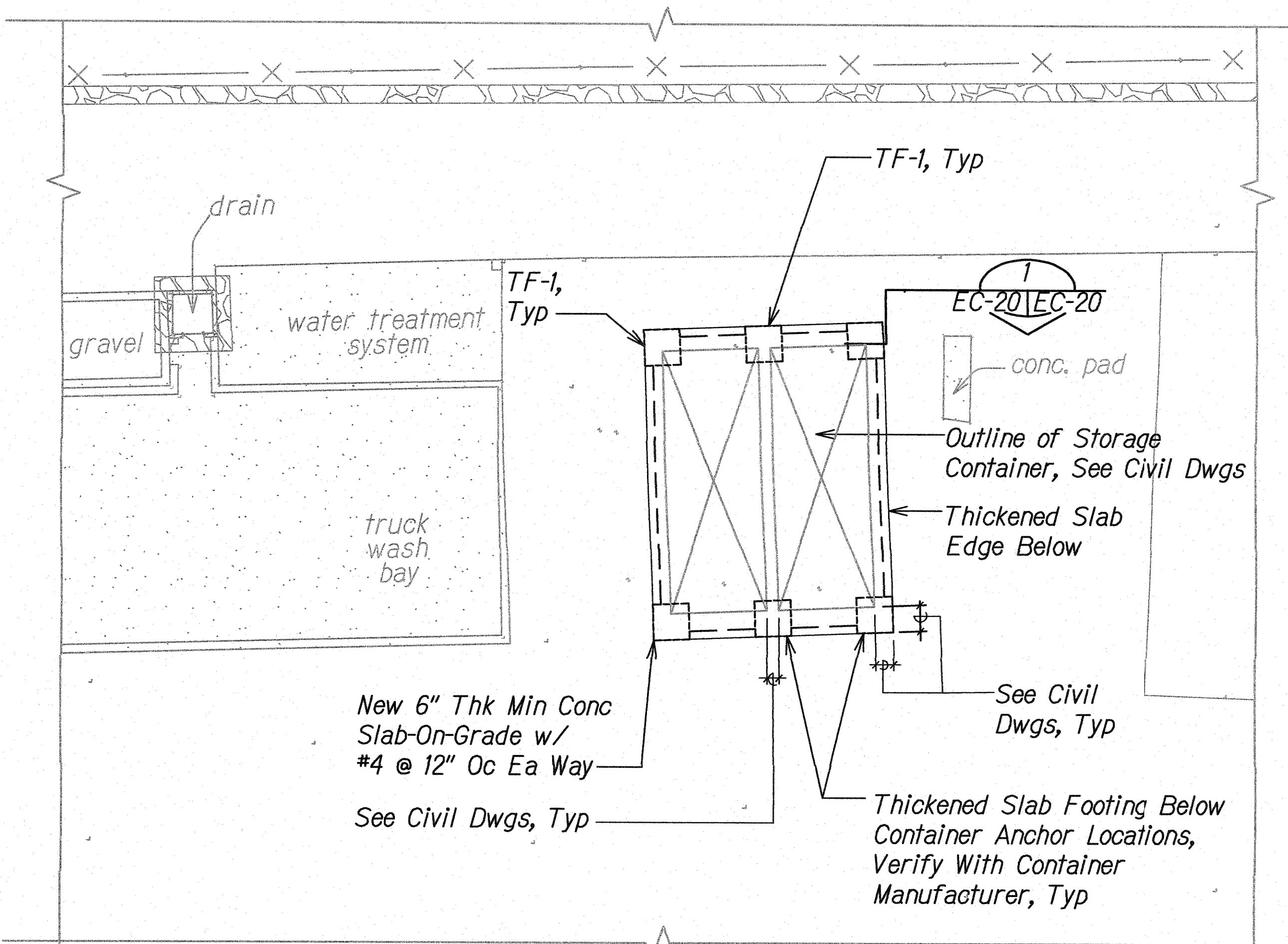
4/30/18
 EXP. DATE
 This work was prepared by me or under my supervision.

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

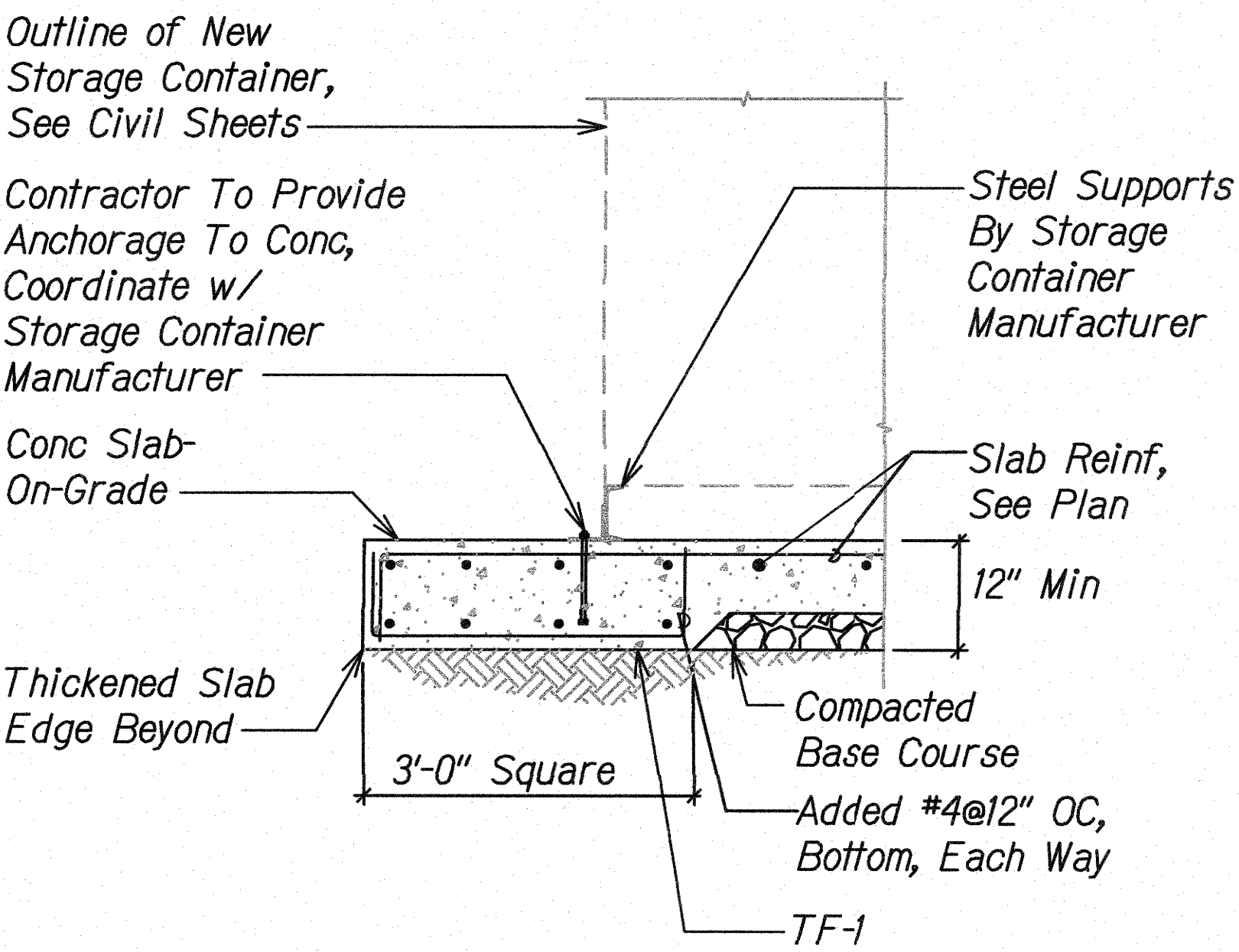
TYPICAL & MISC. DETAILS

STORM WATER BEST MANAGEMENT PRACTICES
 IMPROVEMENTS AT MAINTENANCE BASEYARDS ON OAHU
 Project No. HWY-O-02-18M
 Scale: Date: March 2018

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-O-02-18M	2018	30	33



WAIANAE BASEYARD - FOUNDATION PLAN
Scale: 1/8" = 1'-0"



SECTION
Scale: 3/4" = 1'-0"

Slab-On-Grade Notes:

1. Thicknesses Of Slab-On-Grade Shown Are Minimum & Shall Be Maintained At All Sloped & Depressed Areas.
2. For Top Of Slab Elevations & Slopes To Drain, See Civil Drawings.
3. Slab Shall Be Poured With A Minimum Seven (7) Days Lapse Time Between Adjacent Pours.

Foundation Notes:

1. Thickness Of Footings, Shown As Minimum On Foundation Sections, Shall Be Maintained At All Sloped & Depressed Areas.
2. See Civil Drawings For Dimensions Not Shown.

SURVEY PLOTTED BY	DATE
DESIGNED BY	
NOTED BY	
CHECKED BY	
APPROVED BY	

BASEYARD-STRUCTURING 3/19/2018 9:45:36 AM

4/30/18
EXP. DATE

This work was prepared by me or under my supervision.

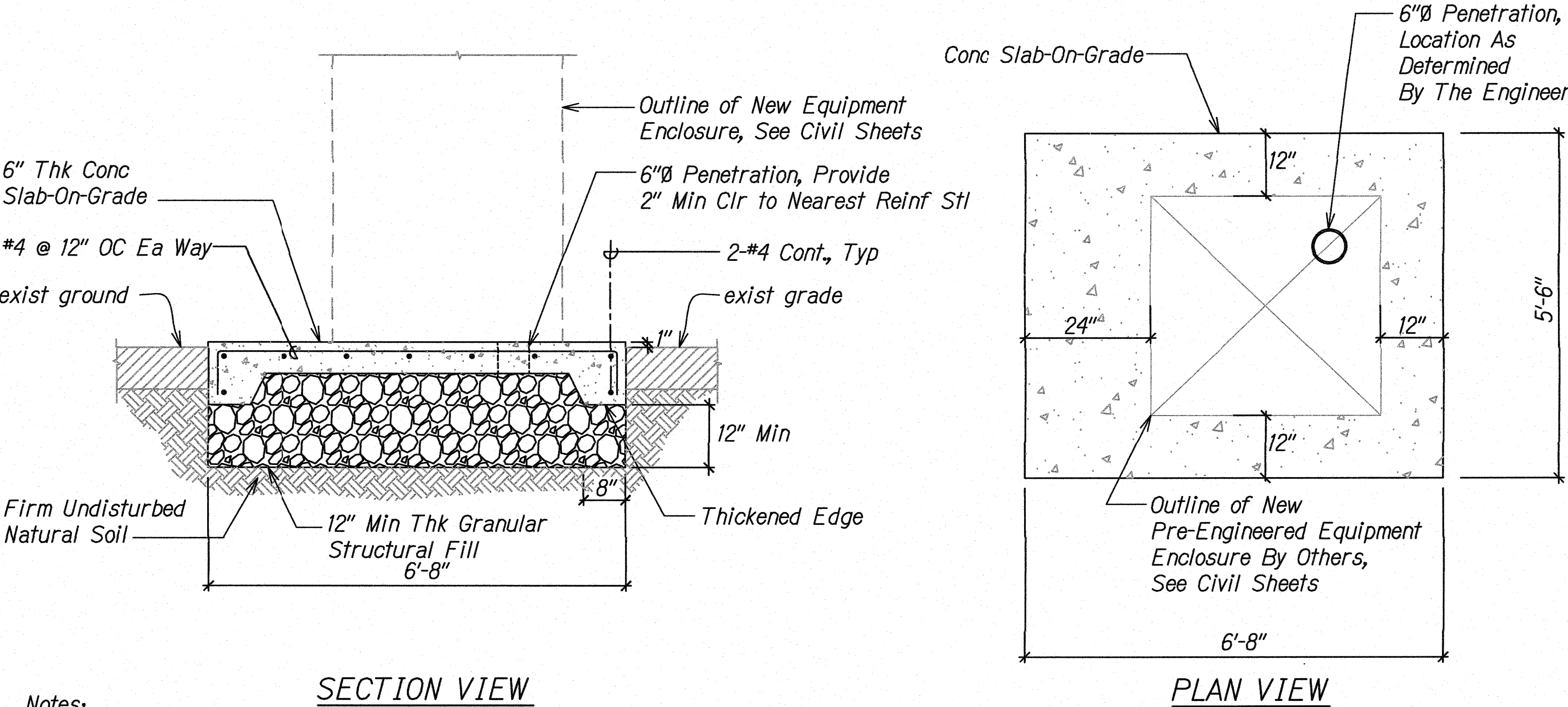
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**WAIANAE BASEYARD -
FOUNDATION PLAN & SECTION**

STORM WATER BEST MANAGEMENT PRACTICES
IMPROVEMENTS AT MAINTENANCE BASEYARDS ON OAHU

Project No. HWY-O-02-18M
Date: March 2018

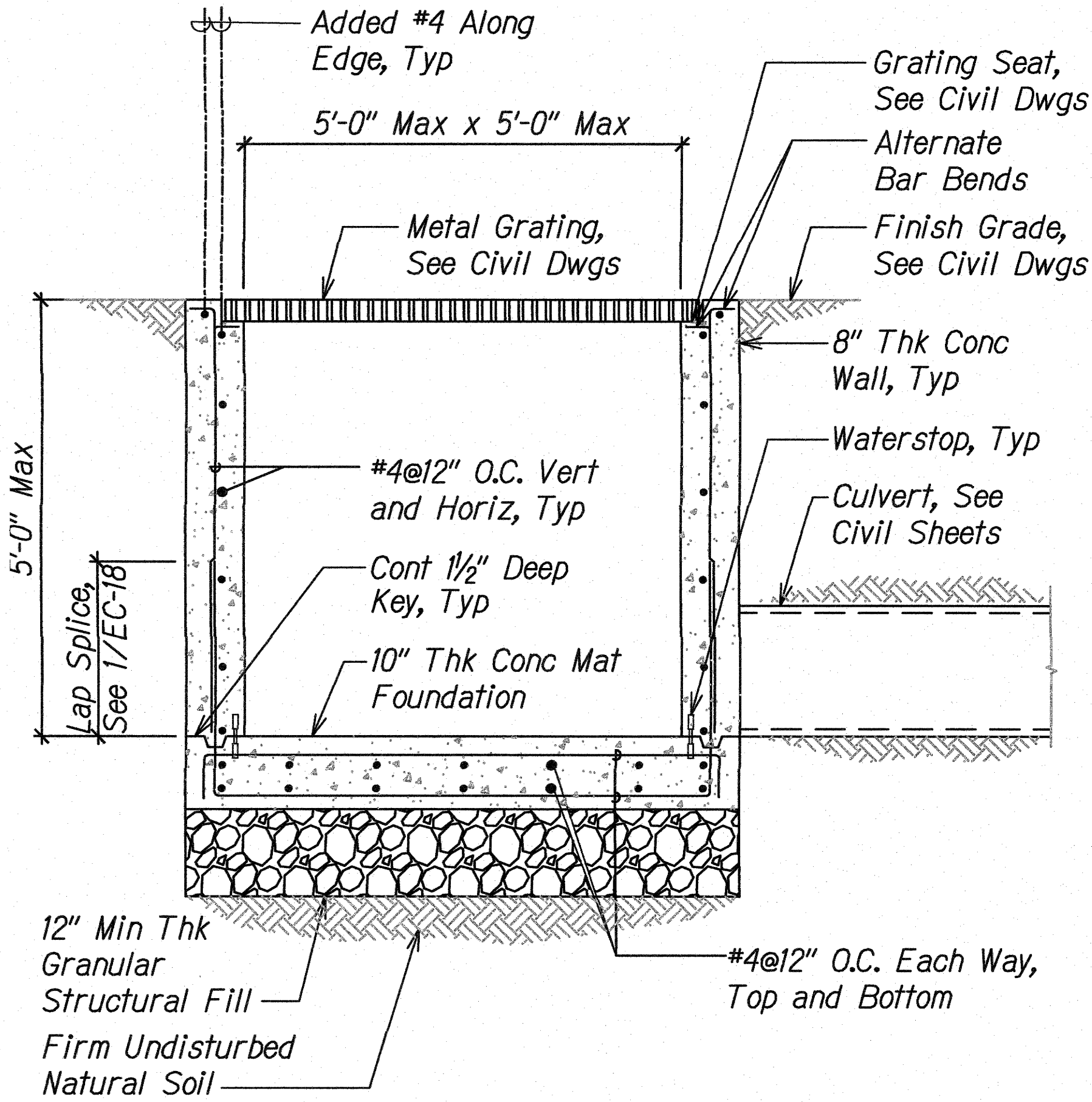
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-O-02-18M	2018	31	33



Notes:

1. Thicknesses Of Slab-On-Grade Shown Are Minimum & Shall Be Maintained At All Sloped & Depressed Areas.
2. For Top Of Slab Elevations & Slopes To Drain, See Civil Drawings.

CONCRETE EQUIPMENT SLAB-ON-GRADE
Scale: 3/4" = 1'-0"



CONC SAMPLING BOX DETAIL
Scale: 3/4" = 1'-0"

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	
	DESIGNED BY	
	CHECKED BY	

BASED ON STRUCTURING 3/19/2018 9:45:36 AM

4/30/18
EXP. DATE

This work was prepared by me or under my supervision.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SECTION & DETAIL

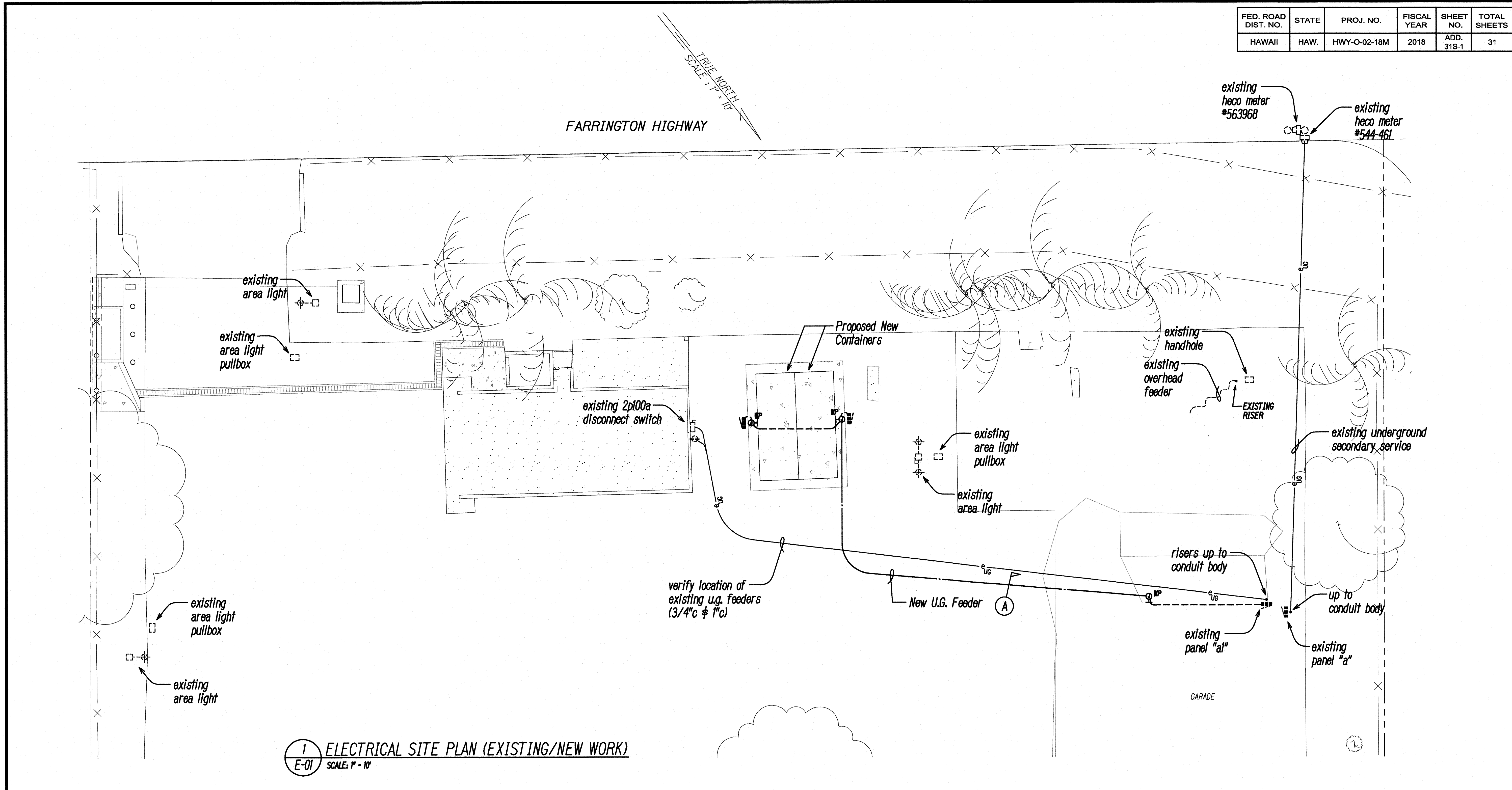
**STORM WATER BEST MANAGEMENT PRACTICES
IMPROVEMENTS AT MAINTENANCE BASEYARDS ON OAHU**

Project No. HWY-O-02-18M

Scale: Date: March 2018

SHEET No. EC-21 OF 23 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-O-02-18M	2018	ADD. 31S-1	31



DESIGNED BY	DATE
DRAWN BY	
CHECKED BY	
NOTED BY	
QUANTITIES BY	
REVISIONS	

2p100a
main breaker

2p20a
ice machine

1p20A
(l)

1p20a
(r)

1p20a

pfb

2 EXISTING PANEL "A"

NOT TO SCALE

GRAPHIC SCALE

0 5' 10' 20' 30'

SCALE: 1"=10'

BRIAN T. ITOZAKI

LICENSED PROFESSIONAL ENGINEER

No. 9058-E

HAWAII, U.S.A.

4/30/20

EXP. DATE

[Signature]

This work was prepared by me or under my supervision.

05/17/18

DATE

NEW SHEET

REVISION

STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

HIGHWAYS DIVISION

ELECTRICAL SITE PLAN

(EXISTING/NEW WORK)

STORM WATER BEST MANAGEMENT PRACTICES

IMPROVEMENTS AT MAINTENANCE BASEYARDS ON OAHU

Project No. HWY-O-02-18M

Scale: AS NOTED

Date: March 2018

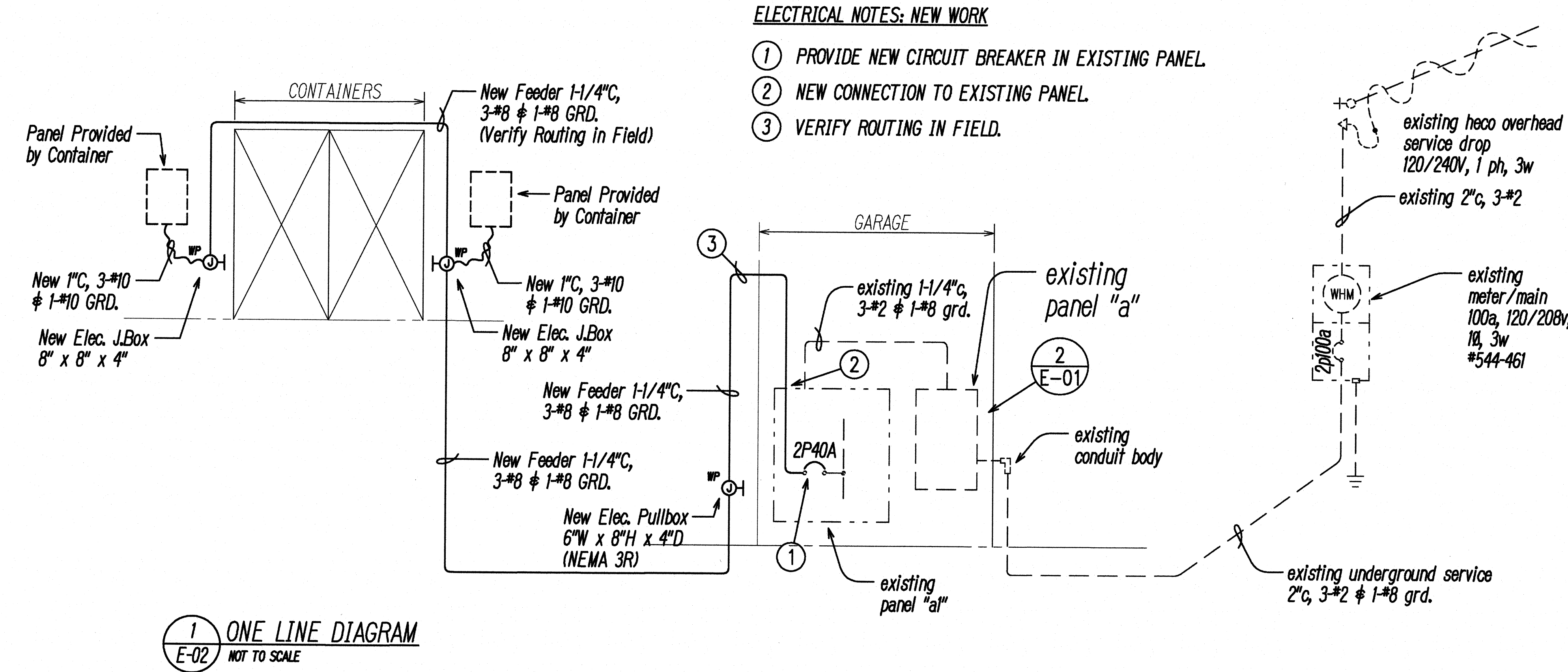
SHEET No. E-01 OF 2 SHEETS

"AS-BUILT" ADD. 31S-1

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-O-02-18M	2018	ADD. 31S-2	31

ELECTRICAL SYMBOL LIST

EXISTING	NEW	DESCRIPTION
		AREA LIGHT, POLE MOUNTED WITH BRACKET ARM.
		JUNCTION BOX, WALL MOUNTED.
		RECEPTACLE, DUPLEX, WALL MOUNTED, 20A, 125V, NEMA 5-20.
		EQUIPMENT DISCONNECT SWITCH, HORSEPOWER RATED.
		ELECTRIC PANEL.
		RACEWAY, UNDERGROUND.
		EXPOSED RACEWAY.
		ELECTRICAL NOTE INDICATOR.
		DUCT SECTION INDICATOR.
		DETAIL INDICATOR
		UPPER HALF: DETAIL NUMBER. LOWER HALF: SHEET NUMBER, DETAIL LOCATION.
	WP	INDICATES WEATHERPROOF.

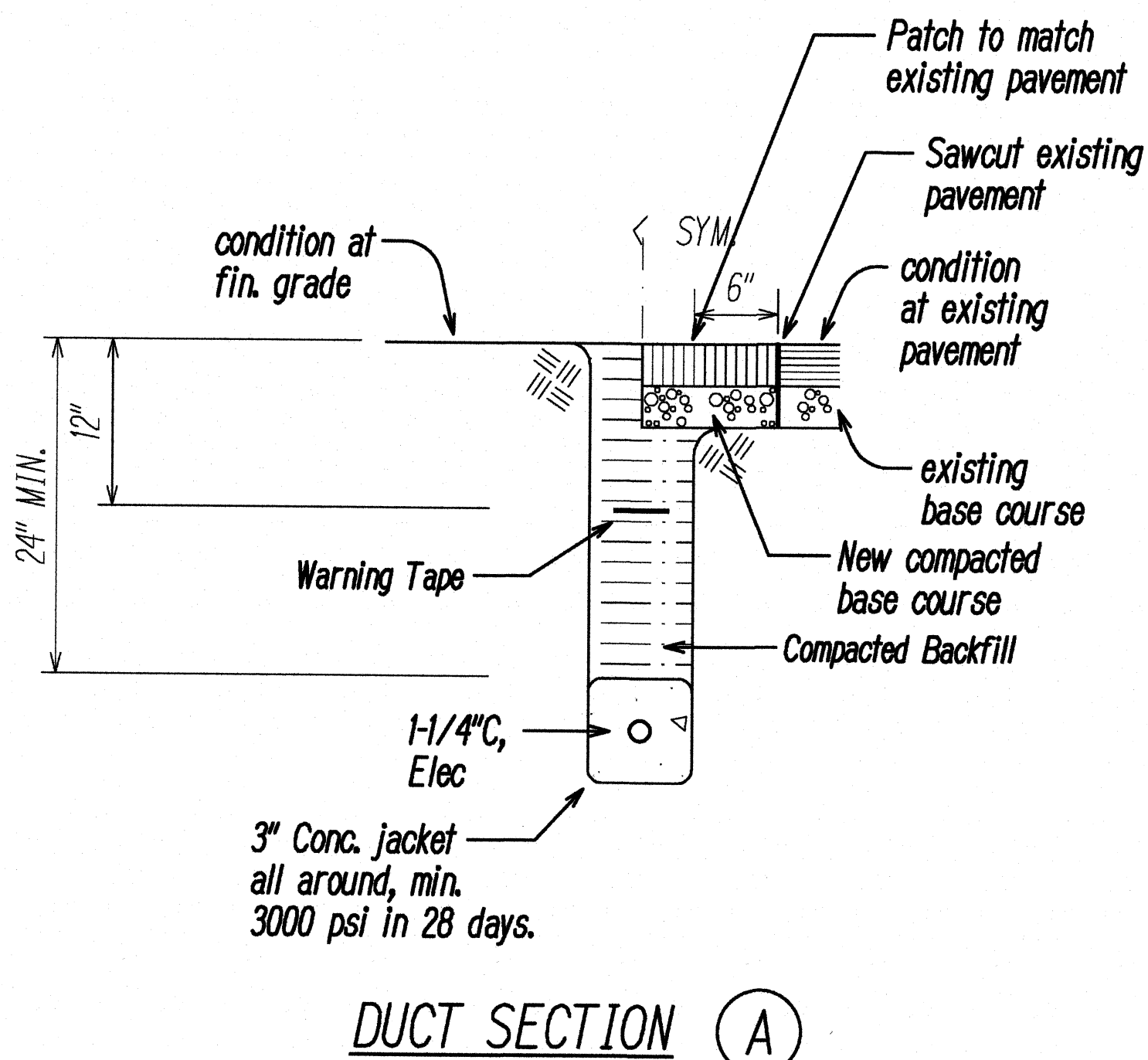


Notes:

- All ducts shall be PVC Schedule 40.
- Provide detectable duct warning tape 12" below finish grade or pavement directly above ducts.

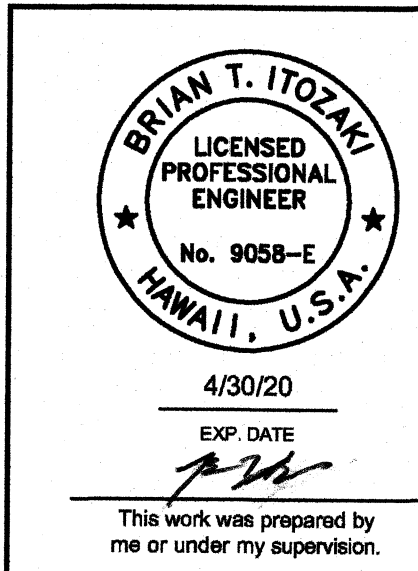
General Electrical Notes:

- Electrical contractor shall visit site and verify existing electrical installation and new design prior to bid.
- Electrical contractor shall, at no additional cost to the state, disconnect and reconnect all existing electrical installations in conflict with new construction.
- All existing electrical installations adjacent to the project area shall be maintained, disconnect and re-connect as required. Provide temporary connections as required.
- Electrical contractor shall coordinate all his work with other trades.
- Electrical contractor shall verify and confirm location of all wiring devices and lighting fixtures w/Civil prior to rough-in.
- Circuit numbers indicated are for the purpose of circuit grouping and may not reflect actual panel circuit number assignment. Electrical contractor shall balance panel load and assign circuits accordingly. Provide new typewritten panel directory using room names and numbers.
- Wire count in raceways not indicated. Electrical contractor shall provide number of wires as required in new raceways and additional wires as required in existing raceways.
- Paint all exposed raceways and outlet boxes to match surrounding finish.
- All multiwire branch circuits shall be in accordance with NEC Article 210.4. All circuits shall have individual neutrals.
- Existing condition shown on drawings are taken from past design drawings and visual field investigation. Prior to start of construction, contractor shall field verify all existing conditions shown. Deviations shall be shown on As-Built drawings.
- All new raceways in ceiling space shall be properly supported.
- All new recessed light fixtures shall be supported from concrete slab with two 12 gage wires attached at opposing corners of the light fixture per IBC Section 1621.
- all penetrations through fire rated walls and slabs shall be sealed to maintain the integrity of the fire rating using a U.L. Listed fire stopping system.
- Refinish and patch to match all existing wall and ceiling surfaces damaged or scratched by electrical removal and installation work. New touch-up paint work shall blend into and match existing finish.
- All new wires shall be # 12 awg, unless otherwise noted.
- All feeder wiring shall include an insulated green grounding conductor sized per Table 250.122 of the National Electrical Code. This conductor shall be carried in all raceways and shall be attached to the panel ground bus.
- The contractor shall provide and install all junction and pull boxes required for the installation of electrical devices and equipment, whether or not specifically indicated on the plans. Sizing of these boxes shall be per the National Electrical Code.
- The term "wiring" shall include raceway, conductors, equipment, and wiring.
- The term "provide" shall mean "Furnish and install".
- All exterior raceways shall be galvanized rigid steel.



SURVEY PLOTTED BY	DATE
DRAWN BY	
CHECKED BY	
NOTED BY	
QUANTITIES BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
No.	

DATE: 05/17/18



05/17/18	NEW SHEET
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION MISCELLANEOUS ELECTRICAL DETAILS STORM WATER BEST MANAGEMENT PRACTICES IMPROVEMENTS AT MAINTENANCE BASEYARDS ON OAHU Project No. HWY-O-02-18M Scale: AS NOTED Date: March 2018 SHEET No. E-02 OF 2 SHEETS	

"AS-BUILT"

ADD. 31S-2