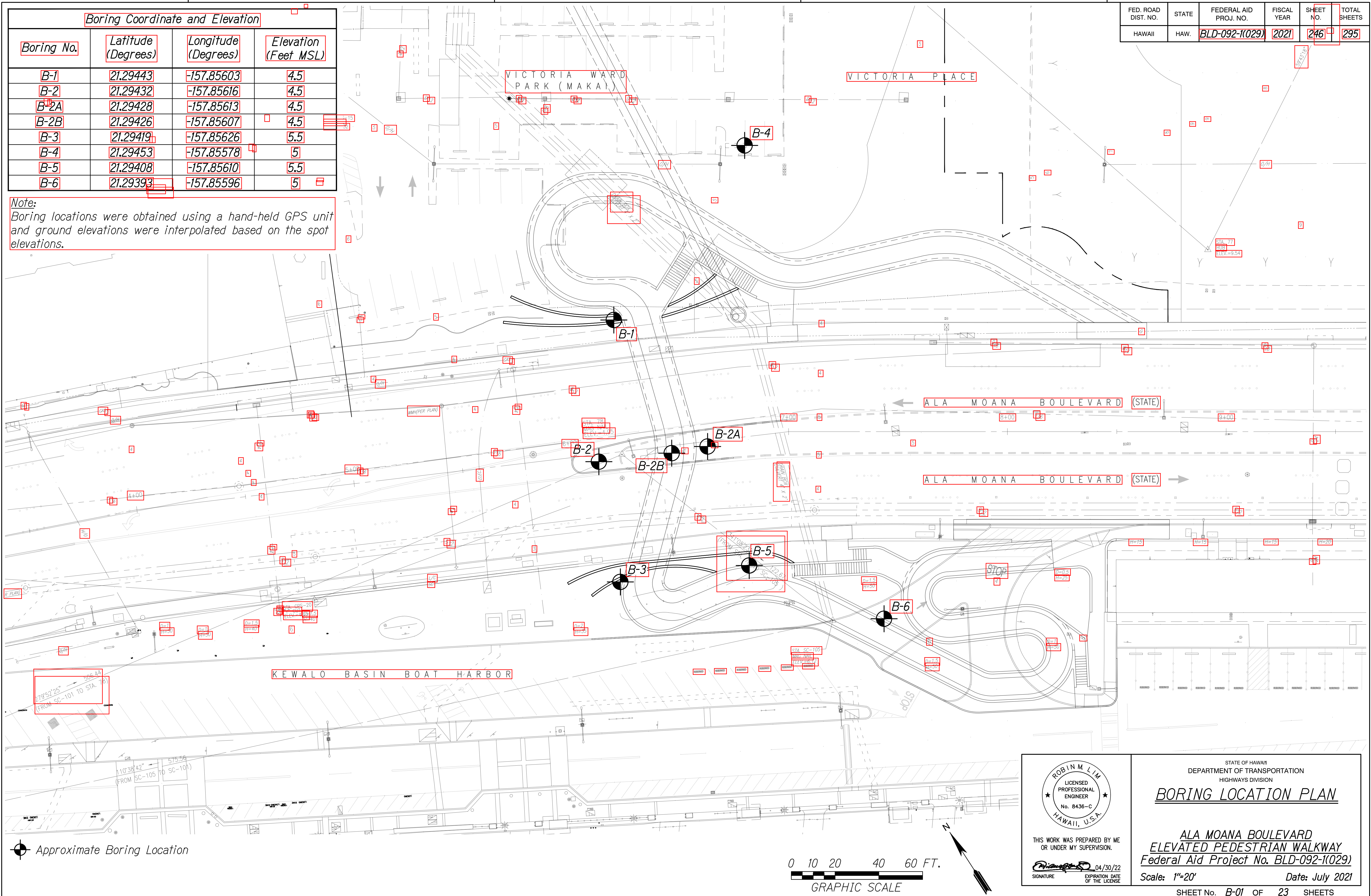


Boring Coordinate and Elevation			
Boring No.	Latitude (Degrees)	Longitude (Degrees)	Elevation (Feet MSL)
B-1	21.29443	-157.85603	4.5
B-2	21.29432	-157.85616	4.5
B-2A	21.29428	-157.85613	4.5
B-2B	21.29426	-157.85607	4.5
B-3	21.29419	-157.85626	5.5
B-4	21.29453	-157.85578	5
B-5	21.29408	-157.85610	5.5
B-6	21.29393	-157.85596	5

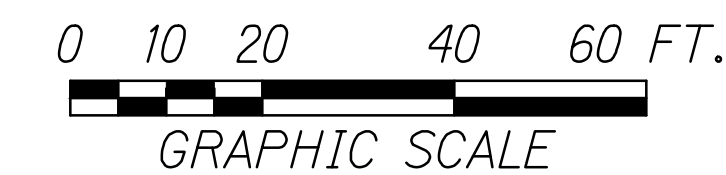
Note:
Boring locations were obtained using a hand-held GPS unit and ground elevations were interpolated based on the spot elevations.

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BLD-092-1(029)	2021	246	295



DATE	BY
DESIGNED BY	BY
CHECKED BY	BY
IN CHARGE	BY
NOTES	BY
DATE	BY

Approximate Boring Location



ROBIN M. LIM
LICENSED PROFESSIONAL ENGINEER
No. 8436-C
HAWAII, U.S.A.

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SIGNATURE EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOCATION PLAN

ALA MOANA BOULEVARD
ELEVATED PEDESTRIAN WALKWAY
Federal Aid Project No. BLD-092-1(029)

Scale: 1"=20' Date: July 2021

SHEET No. B-01 OF 23 SHEETS

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BLD-092-1(029)	2021	248	295

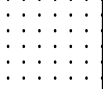
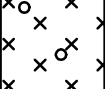
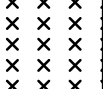


GEOLABS, INC.

Geotechnical Engineering

Rock Log Legend

ROCK DESCRIPTIONS

	BASALT		CONGLOMERATE
	BOULDERS		LIMESTONE
	BRECCIA		SANDSTONE
	CLINKER		SILTSTONE
	COBBLES		TUFF
	CORAL		VOID/CAVITY

ROCK DESCRIPTION SYSTEM

ROCK FRACTURE CHARACTERISTICS

The following terms describe general fracture spacing of a rock:

Massive:

Greater than 24 inches apart

Slightly Fractured:

12 to 24 inches apart

Moderately Fractured:

6 to 12 inches apart

Closely Fractured:

3 to 6 inches apart

Severely Fractured:

Less than 3 inches apart

DEGREE OF WEATHERING

The following terms describe the chemical weathering of a rock:

Unweathered:

Rock shows no sign of discoloration or loss of strength.

Slightly Weathered:

Slight discoloration inwards from open fractures.

Moderately Weathered:

Discoloration throughout and noticeably weakened though not able to break by hand.

Highly Weathered:

Most minerals decomposed with some corestones present in residual soil mass. Can be broken by hand.

Extremely Weathered:

Saprolite. Mineral residue completely decomposed to soil but fabric and structure preserved.

HARDNESS

The following terms describe the resistance of a rock to indentation or scratching:

Very Hard:

Specimen breaks with difficulty after several "pinging" hammer blows.
Example: Dense, fine grain volcanic rock

Hard:

Specimen breaks with some difficulty after several hammer blows.
Example: Vesicular, vugular, coarse-grained rock

Medium Hard:

Specimen can be broked by one hammer blow. Cannot be scraped by knife. SPT may penetrate by ~25 blows per inch with bounce.
Example: Porous rock such as clinker, cinder, and coral reef

Soft:

Can be indented by one hammer blow. Can be scraped or peeled by knife. SPT can penetrate by ~100 blows per foot.
Example: Weathered rock, chalk-like coral reef

Very Soft:

Crumbles under hammer blow. Can be peeled and carved by knife. Can be indented by finger pressure.
Example: Saprolite

Plate

A-0.3

BORING LOG NOTES:

1. A geotechnical engineering report entitled "Geotechnical Engineering Exploration, Ala Moana Boulevard, Elevated Pedestrian Walkway, Federal Aid Project No. BLD-092-1(029), Honolulu, Oahu, Hawaii" dated June 1, 2021 has been prepared by Geolabs, Inc. Contractor may obtain a copy of the report from HDOT upon written request to the Engineer.
2. For boring locations, see Sheet B-01.
3. The information presented in the logs of borings depict the subsurface conditions encountered at that specified location and at the time of the field exploration only. Variations of subsoil conditions from those depicted in the logs of borings may occur between and beyond the borings.
4. The penetration resistance shown on the logs of borings indicate the number of blows required for the specific sampler type used. The blow counts may need to be factored to obtain the Standard Penetration Test (SPT) blow counts.
5. The data given is for general information only. Bidders shall examine the site and the boring data and draw their own conclusions therefrom as to the character of materials to be encountered. The Engineer will not assume responsibility for variations of subsoil quality or conditions other than at the boring locations shown and at the time the borings were taken.

GENERAL PLAN	DESIGNED BY	DATE
	DRAWN BY	
	CHECKED BY	
	NOTED BY	
	DATE	

ROBIN M. LIM

LICENSED
PROFESSIONAL
ENGINEER

No. 8436-C

HAWAII, U.S.A.

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OR UNDER MY SUPERVISION.



04/30/22

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EXPIRATION DATE
OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ROCK LOG LEGEND AND
BORING LOG NOTES

ALA MOANA BOULEVARD
ELEVATED PEDESTRIAN WALKWAY
Federal Aid Project No. BLD-092-1(029)

Scale: NoneDate: July 2021

SHEET No. B-03 OF 23 SHEETS

248

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BLD-092-1(029)	2021	250	295

		GEOLABS, INC. Geotechnical Engineering		ALA MOANA BOULEVARD ELEVATED PEDESTRIAN WALKWAY FEDERAL AID PROJECT NO. BLD-092-1(029) HONOLULU, OAHU, HAWAII				Log of Boring 2		
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet): 4.5 *
										Description
									GW-	5-inch ASPHALT
									GM	Dark grayish brown SANDY GRAVEL (BASALTIC) with a little silt, moist (fill)
							5		SM	Tannish brown SILTY SAND with some gravel, moist (fill)
			100	100						Gray SILTY SAND (CORALLINE) with some gravel, moist (fill)
					30/5"		10			grades to wet
			16	0						72-inch CONCRETE
							15		CL	Light gray SANDY CLAY (CORALLINE) with some gravel (coralline), very soft (lagoonal deposit)
Sieve - #200 = 55.2%	32		0		2		20			grades with a little cobbles (coralline), medium stiff
	33	96	0		8		25			grades to very soft
	39		0		2		30			
UC= 550 psi	34	85	64	0	39		35			Tan CORAL, closely fractured, moderately weathered, medium hard (coral formation)
	17		52	0	62		40			grades to severely fractured, highly weathered
	22	102	38	0	65		45		SW	Tan GRAVELLY SAND (CORALLINE) with traces of silt, medium dense (coralline detritus)
	20		0		28		50			
Direct Shear	15	111	0		36		55			
	16		0		21		60			
	17	115	0		27		65			
LL=NP PI=NP Sieve - #200 = 0.8%	19		0		7		70			grades to loose
	15	106	0		43		75		GP- GM	Whitish tan SANDY GRAVEL (CORALLINE) with a little silt, medium dense (coralline detritus)
Date Started: August 17, 2020					Water Level: 5.0 ft. 08/17/2020 1021 HRS					
Date Completed: August 24, 2020					3.0 ft. 08/24/2020 0902 HRS					
Logged By: D. Gremminger					Drill Rig: CME-75DG1					
Total Depth: 122 feet					Drilling Method: 4" Solid-Stem Auger & PQ Coring					
Work Order: 8115-00					Driving Energy: 140 lb. wt., 30 in. drop					

		GEOLABS, INC. Geotechnical Engineering		ALA MOANA BOULEVARD ELEVATED PEDESTRIAN WALKWAY FEDERAL AID PROJECT NO. BLD-092-1(029) HONOLULU, OAHU, HAWAII				Log of Boring 2		
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	(Continued from previous plate) Description
	12		0		8				GP- GM	grades to loose
	18	101	67	12	27		80			grades to medium dense
			18	18	40/3"		85			Tannish white CORAL, severely fractured, highly to moderately weathered, medium hard (coral formation) grades to moderately fractured hard locally
	34	78	0		8		90		SM	Tan SILTY SAND (CORALLINE) with some gravel, loose (coralline detritus)
	23		0		7		95			
			0		11		100			
	24		57	19	10		105			Tan cemented SANDSTONE, severely to closely fractured, moderately weathered, medium hard (sandstone formation)
			57	10	30/2"		110			Brown TUFF, closely fractured, slightly weathered, medium hard to hard (volcanic tuff)
	20		71	0	65		115			Tan CORAL, severely fractured, moderately to highly weathered, medium hard (coral) grades to white
	26				11		120			Boring terminated at 122 feet
							125			
							130			
							135			
							140			
							145			
							150			Latitude: 21.29432° N Longitude: 157.85616° W
Date Started: August 17, 2020					Water Level: 5.0 ft. 08/17/2020 1021 HRS					
Date Completed: August 24, 2020					3.0 ft. 08/24/2020 0902 HRS					
Logged By: D. Gremminger					Drill Rig: CME-75DG1					
Total Depth: 122 feet					Drilling Method: 4" Solid-Stem Auger & PQ Coring					
Work Order: 8115-00					Driving Energy: 140 lb. wt., 30 in. drop					

GENERAL PLAN	DATE
REVISION BY	
NOTES REVISION BY	
CHECKED BY	
No.	

ROBIN M. L. M.

LICENSED
PROFESSIONAL
ENGINEER

No. 8436-C

HAWAII, U.S.A.

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 04/30/22
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OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS-2

ALA MOANA BOULEVARD
ELEVATED PEDESTRIAN WALKWAY
Federal Aid Project No. BLD-092-1(029)

Scale: None Date: July 2021

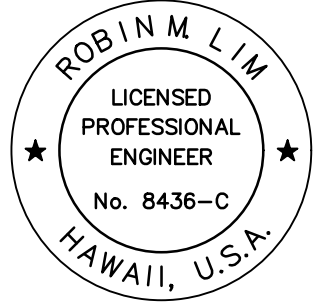
SHEET No. B-05 OF 23 SHEETS

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BLD-092-1(029)	2021	252	295

		GEOLABS, INC. Geotechnical Engineering		ALA MOANA BOULEVARD ELEVATED PEDESTRIAN WALKWAY FEDERAL AID PROJECT NO. BLD-092-1(029) HONOLULU, OAHU, HAWAII				Log of Boring 3		
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet): 5.5 *
										Description
LL=NP PI=NP	18	85			13		5		SM	2-inch TOPSOIL
	18				22					Brownish tan SILTY SAND (CORALLINE) with a little gravel (coralline), loose to medium dense, moist (fill)
	35	87	0		11				GM	Grayish tan SILTY GRAVEL (CORALLINE) with some sand and a little cobbles (coralline), loose (fill)
							10			grades to medium dense
	39		0		10					
							15		SM	Tannish gray SILTY SAND (CORALLINE) with some gravel and cobbles (coralline), very loose (lagoonal deposit)
	40	80			3					
	32		0		0		20			
							25			
			0					30		
UC= 650 psi	30		71	17	10				SP-SM	Tan GRAVELLY SAND (CORALLINE) with a little silt, medium dense (coralline detritus)
							35			Tannish white CORAL, severely to closely fractured, moderately weathered, medium hard (coral formation)
	25	94	75	19	25/1"					grades to moderately fractured, slightly weathered locally
	29		0		19			SM	Tannish white SILTY SAND (CORALLINE) with some gravel (coralline), medium dense (coralline detritus)	
							45			grades with pockets of brown clayey silt
	54	74	26							
							50			grades without clayey silt pockets
	25		0							
	22	86	48		13					grades to moderately cemented
							60			
Sieve - #200 = 23.3%	25		55		15					
							65			
	20	95	52		21					
							70			
UC= 1100 psi	16		93	50	16					
							75			
Date Started: July 7, 2020					Water Level: 4.8 ft. 07/07/2020 1003 HRS					
Date Completed: July 8, 2020					3.0 ft. 07/08/2020 0844 HRS					
Logged By: D. Gremminger					Drill Rig: CME-75DG2					
Total Depth: 122 feet					Drilling Method: 4" Solid-Stem Auger & PQ Coring					
Work Order: 8115-00					Driving Energy: 140 lb. wt., 30 in. drop					

		GEOLABS, INC. Geotechnical Engineering		ALA MOANA BOULEVARD ELEVATED PEDESTRIAN WALKWAY FEDERAL AID PROJECT NO. BLD-092-1(029) HONOLULU, OAHU, HAWAII				Log of Boring 3		
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	(Continued from previous plate)
										Description
	15	92	89	65	45/5"					Tannish white CORAL, closely fractured, moderately weathered, medium hard (coral formation)
							80		SM	grades to moderately fractured
	25		0		13					White SILTY SAND (CORALLINE) with some gravel (coralline), medium dense (coralline detritus)
							85			
	38	82	43		24					
							90			Grayish tan CORAL, severely to closely fractured, highly weathered, soft (coral formation)
	37		71	17	12					
	25	96	74	57	11					grades to extremely weathered
							95			
	29		62	0	9					
	12	103	71	21	80					Tan CORAL, severely fractured, highly weathered, soft (coral formation)
							105			grades to medium hard
	21		57	28	15/1"					grades to reddish tan, moderately weathered
							110			
	18	98	0		11				SP-SM	Brown TUFF, severely fractured, moderately weathered, hard (volcanic tuff)
							115			Whitish tan GRAVELLY SAND (CORALLINE) with a little silt and cobbles (coralline), medium dense (coralline detritus)
	16				22					
							120			Boring terminated at 122 feet
							125			
							130			
						135				
						140				
						145				
						150				
Date Started: July 7, 2020					Water Level: 4.8 ft. 07/07/2020 1003 HRS					
Date Completed: July 8, 2020					3.0 ft. 07/08/2020 0844 HRS					
Logged By: D. Gremminger					Drill Rig: CME-75DG2					
Total Depth: 122 feet					Drilling Method: 4" Solid-Stem Auger & PQ Coring					
Work Order: 8115-00					Driving Energy: 140 lb. wt., 30 in. drop					

GENERAL PLAN	DATE
REVISION	
NOTES	
CHECKED BY	
DATE	



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SIGNATURE EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS-4

ALA MOANA BOULEVARD
ELEVATED PEDESTRIAN WALKWAY
Federal Aid Project No. BLD-092-1(029)

Scale: None Date: July 2021

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BLD-092-1(029)	2021	253	295

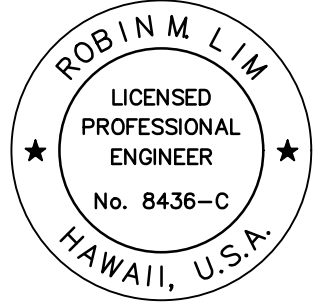
		GEOLABS, INC. Geotechnical Engineering		ALA MOANA BOULEVARD ELEVATED PEDESTRIAN WALKWAY FEDERAL AID PROJECT NO. BLD-092-1(029) HONOLULU, OAHU, HAWAII						Log of Boring 4	
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet): 5 *	
										Description	
Sieve - #200 = 12.9%	12	101			44		5		GP-GM	3-inch ASPHALTIC CONCRETE	
	19				12				GM	Gray SANDY GRAVEL with a little silt, dry (fill)	
	20	103			53		5		SM	Brown SILTY SAND with a little gravel, medium dense, moist (fill)	
			0						GP-GM	Grayish tan SILTY SAND (CORALLINE) with some gravel, medium dense, moist (fill)	
							10		GM	Gray SANDY GRAVEL (CORALLINE) with a little silt, medium dense (lagoonal deposit) grades to very loose	
	35		0		4				GM		
							15		GM	grades with a little cobbles (coralline), loose	
	29	85			8				GM		
			0				20		GM	grades to medium dense	
	32				12				GM		
Sieve - #200 = 11.0%	37	79			34		25		SM	Tan SILTY SAND (CORALLINE) with some gravel, medium dense (coralline detritus)	
			33	12			30		SM	Tan CORAL, severely fractured, highly weathered, soft (coral formation)	
	32				16				SP-SM	Tan SAND (CORALLINE) with a little silt and gravel (coralline), medium dense (coralline detritus)	
	26				27				SP-SM		
			0				35		SP-SM		
	25				29				SP-SM	grades to whitish tan	
							40		SP-SM		
	32	84			49				SP-SM		
			0				45		SP-SM		
	29				4				SM	Tannish white SILTY SAND (CORALLINE), loose (coralline detritus)	
Direct Shear Sieve - #200 = 15.7%	25	90			16		55		SM		
							60		SM		
	25				7				SM		
			0				65		SM	grades with some gravel, medium dense	
							70		SM	grades to tan, loose	
	27				9				SM		
			0				75		SM		
									SM		
									SM		
									SM		
Date Started: June 12, 2020					Water Level: ∇ 4.5 ft. 06/12/2020 0917 HRS						
Date Completed: June 12, 2020											
Logged By: D. Gremminger					Drill Rig: CME-75DR						
Total Depth: 77 feet					Drilling Method: 4" Solid-Stem Auger & PQ Coring						
Work Order: 8115-00					Driving Energy: 140 lb. wt., 30 in. drop						

BORING LOG LOCATION: BLD-092-1(029) GEOLABS, INC. 2020

		GEOLABS, INC. Geotechnical Engineering		ALA MOANA BOULEVARD ELEVATED PEDESTRIAN WALKWAY FEDERAL AID PROJECT NO. BLD-092-1(029) HONOLULU, OAHU, HAWAII						Log of Boring 4	
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	(Continued from previous plate) Description	
					23		77		SM	grades to medium dense Boring terminated at 77 feet	
Latitude: 21.29453° N Longitude: 157.85578° W											
Date Started: June 12, 2020					Water Level: ∇ 4.5 ft. 06/12/2020 0917 HRS						
Date Completed: June 12, 2020											
Logged By: D. Gremminger					Drill Rig: CME-75DR						
Total Depth: 77 feet					Drilling Method: 4" Solid-Stem Auger & PQ Coring						
Work Order: 8115-00					Driving Energy: 140 lb. wt., 30 in. drop						

GENERAL PLAN	DATE
REVISION BY	
NOTES REVISION BY	
CHECKED BY	
No.	

BORING LOG LOCATION: BLD-092-1(029) GEOLABS, INC. 2020



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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS-5

ALA MOANA BOULEVARD
ELEVATED PEDESTRIAN WALKWAY
Federal Aid Project No. BLD-092-1(029)

Scale: None Date: July 2021

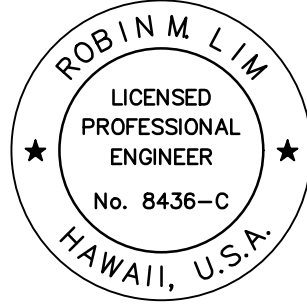
SHEET No. B-08 OF 23 SHEETS

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BLD-092-1(029)	2021	254	295

		GEOLABS, INC. Geotechnical Engineering		ALA MOANA BOULEVARD ELEVATED PEDESTRIAN WALKWAY FEDERAL AID PROJECT NO. BLD-092-1(029) HONOLULU, OAHU, HAWAII				Log of Boring 5			
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet): 5.5 *	
										Description	
Consol.	26	67			6				SC	3-inch TOPSOIL	
	31				5				SM	Reddish brown CLAYEY SAND with some gravel, very loose, moist (fill)	
	19	103			37		5		SM	Grayish tan SILTY SAND (CORALLINE), loose, wet (fill)	
			0						SM	Gray SILTY SAND (CORALLINE) with some gravel, medium dense (fill)	
	45				4		10			Gray SILTY SAND (CORALLINE) with some gravel (coralline), loose (lagoonal deposit)	
			0								
			0		9		15			grades with a little cobbles (coralline)	
	30				3		20			grades to very loose	
			0								
	34	65			7		25			grades with traces of shells, loose	
		0									
37					18		30				
			33	0					SP- SM	Tan GRAVELLY SAND (CORALLINE) with a little silt, medium dense (coralline detritus)	
27	77				65/6"		35			Whitish tan cemented CORAL, severely fractured, highly to moderately weathered, medium hard (coral formation)	
			19	0							
				0	20/3"		40		SM	Whitish tan SILTY SAND (CORALLINE) with some gravel (coralline), medium dense (coralline detritus)	
Sieve - #200 = 21.2%	29	82			18		45				
			0								
	32				37		50			grades to dense locally	
			0								
28	82				18		55				
			0								
27					2		60			grades to very loose	
			0								
Sieve - #200 = 20.0%	25	85			4		65				
			0								
22					6		70			grades to loose	
			0				75				
Date Started: June 11, 2020										Water Level: 4.1 ft. 06/11/2020 0849 HRS	
Date Completed: June 11, 2020											
Logged By: D. Gremminger										Drill Rig: CME-75DR	
Total Depth: 77 feet										Drilling Method: 4" Solid-Stem Auger & PQ Coring	
Work Order: 8115-00										Driving Energy: 140 lb. wt., 30 in. drop	

		GEOLABS, INC. Geotechnical Engineering		ALA MOANA BOULEVARD ELEVATED PEDESTRIAN WALKWAY FEDERAL AID PROJECT NO. BLD-092-1(029) HONOLULU, OAHU, HAWAII				Log of Boring 5			
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	(Continued from previous plate)	
										Description	
	21	92			25				SM	grades to medium dense Boring terminated at 77 feet	
										Latitude: 21.29408° N Longitude: 157.85610° W	
Date Started: June 11, 2020										Water Level: 4.1 ft. 06/11/2020 0849 HRS	
Date Completed: June 11, 2020											
Logged By: D. Gremminger										Drill Rig: CME-75DR	
Total Depth: 77 feet										Drilling Method: 4" Solid-Stem Auger & PQ Coring	
Work Order: 8115-00										Driving Energy: 140 lb. wt., 30 in. drop	

GENERAL PLAN	DATE
REVISION BY	
NOTES REVISIONS BY	
CHECKED BY	
No.	



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 04/30/22
SIGNATURE EXPIRATION DATE
OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS-6

ALA MOANA BOULEVARD
ELEVATED PEDESTRIAN WALKWAY
Federal Aid Project No. BLD-092-1(029)

Scale: None Date: July 2021

SHEET No. B-09 OF 23 SHEETS

GENERAL PLAN	DESIGNED BY	DATE
	DRAWN BY	
	CHECKED BY	
	NOTES	
	No.	

GENERAL REQUIREMENTS:

- All Jet Grouting work required shall be performed in accordance with Section 657 of the Special Provisions entitled "Soil Stabilization by Jet Grouting."
- The Contractor shall compare all the contract requirements with each other and report all inconsistencies and/or omissions in writing to the Engineer.
- The Contractor shall take field measurements and verify the field conditions and compare such field measurements and conditions with the plans before commencing with the work.
- All site preparation and traffic control measures to provide access for the jet grouting operations will the responsibility of the Contractor and will be considered incidental to the jet grouting work.
- The Contractor shall be responsible for coordinating the work of all trades in order to produce the jet grout columns for support of the embankment and retaining structures to reduce ground settlement and to provide slope stability as shown on the plans.
- The Contractor shall be responsible for providing a safe working environment on the highway including traffic control measures meeting all applicable federal, state, and local requirements while performing jet grouting work.
- The Contractor shall be responsible for protection of the highway, adjacent properties, structures, streets, and utilities during the construction period.
- Excavation into the existing ground shall comply with all applicable safety requirements. The adequacy and safety of the temporary excavation shall be the responsibility of the Contractor. Shoring plans and calculations shall be submitted to the Engineer for review.

JET GROUTING REQUIREMENTS:

- Jet grouting shall be performed by a qualified contractor or specialty subcontractor approved by the Engineer. Personnel for the Contractor who will be in charge of supervising the jet grouting operations shall have experience on at least five similar jet grouting projects with project requirements similar to those required for this project.
- A jet grout test program shall be successfully completed before commencement of the jet grouting work. Written approval shall be obtained from the Engineer before proceeding with the jet grouting work.
- Jet grout columns for support of the embankment and ramp structures shall have a minimum diameter of 42 inches.
- Jet grout columns for support of the embankment and ramp structure shall have a minimum unconfined compressive strength of 200 psi and 600 psi at 7 days and 28 days, respectively.
- Jet grout columns for support of the embankment and ramp structure have been designed based on an allowable compression load capacity of up to 220 kips.
- The Contractor shall keep the ground surface and the highway clean from leakage of grout at all times during the jet grouting operations.
- Measurement for payment of the jet grout columns will be based on the approved lengths installed. Jet grout column lengths will be variable ranging from about 24 to 35 feet (plus or minus 5 feet). Length of each jet grout column will be determined by the Engineer in the field during construction. The Engineer (or Engineer's representative) will maintain jet grout column logs for payment purposes. Additional lengths of jet grout columns required by the Contractor in the execution of his work will not be measured and paid for based on the unit prices shown in the proposal schedule.

JET GROUT TEST PROGRAM:

- One Test Section shall be performed at the location shown on the contract drawings. The test section shall consist of a minimum of three columns each extending to 35 feet below the ground level constructed using the same procedures proposed for the production jet grouting work.
- The jet grout columns for the test section shall be installed from near the existing ground surface extending to the full depth required to allow for later excavation for physical inspection. Excavation to expose the jet grout columns of the test section shall not be sooner than 10 days after the jet grout columns have been constructed.
- Continuous core samples of the jet grout columns in the test section shall be obtained in the presence of the Engineer using the methods described in the technical specifications. The Engineer will check the core samples for segregation. A minimum of six samples from each test column cored shall be selected for unconfined compression tests. Compression tests shall be performed in accordance with ASTM D1633 or ASTM D2850 to determine the 28-day compressive strength.

CONSTRUCTION SEQUENCE (ABUTMENT No. 1 AND MAUKA FILL EMBANKMENT):

- Install drilled shafts at Abutment No. 1.
- Install jet grout columns (including area in front of Retaining Wall A).
- Construct load transfer platform (LTP).
- Construct Abutment No. 1 (including skeg wall)
- Place GRS Embankment for Abutment No. 1.
- Provide a break or vertical slip joint between the GRS Embankment for Retaining Wall A and the GRS Embankment for Abutment No. 1.
- Place GRS Embankment at Retaining Wall A after completion of GRS Embankment for Abutment No. 1.
- Fill behind the GRS Embankment for Retaining Wall A may be placed concurrently with the GRS Embankment for Retaining Wall A.
- Fill placement in front of the GRS Embankment for Retaining Wall A shall be delayed until after the interim shotcrete layer for GRS Embankment for Retaining Wall A has been installed.
- Provide a break or vertical slip joint between the GRS Embankment for Retaining Wall C and the GRS Embankment Abutment No. 1.
- Place GRS Embankment for Retaining Wall C after completion of GRS Embankment for Abutment No. 1.
- Fill placement behind the GRS Embankment for Retaining Wall C may be constructed concurrently with the GRS Embankment for Retaining Wall C.
- Install interim shotcrete layer at the GRS Embankment for Retaining Wall A and Retaining Wall C.
- Fill placement in front of the GRS Embankment for Retaining Wall A, GRS Embankment for Retaining Wall C, and the bridge structure shall be delayed until after the interim shotcrete layer for GRS Embankment for Retaining Wall A and Retaining Wall C has been installed.
- Placement of the temporary surcharge fill above the GRS Embankment for Retaining Wall A and Retaining Wall C may proceed only after the placement of the interim shotcrete layer for the wall facing is completed and aged a minimum of 14 days.
- Allow surcharge fill to sit for a period of 3 months for settlement monitoring.
- Settlement gauges shall be installed on the existing ground before fill placement for the project commences.

CONSTRUCTION SEQUENCE (ABUTMENT No. 1 AND MAUKA FILL EMBANKMENT - CONTINUED):

- Settlement markers shall be installed on top of the temporary fill surface for monitoring during the settlement waiting period.
- Construct flatwork, landscaping, and architectural elements.
- Install permanent shotcrete facing of GRS embankments for Retaining Wall A and Retaining Wall C.
- Install sculpted shotcrete for a portion of Retaining Wall A.
- Remove excess surcharge fill when settlement monitoring is complete.

CONSTRUCTION SEQUENCE (ABUTMENT NO. 2 AND RAMP STRUCTURE):

- Install drilled shafts at Abutment No. 2.
- Install jet grout columns.
- Construct load transfer platform (LTP).
- Construct Abutment No. 2 (including skeg wall) and the portion of Retaining Walls D and E where the GRS occurs.
- Place GRS Embankment for Abutment No. 2.
- Construct remaining U-shaped retaining walls for ramp structure along pathway alignment.
- In-fill U-shaped retaining walls with light weight concrete fill.
- Place landscaping fill.
- Construct flatwork and install landscaping.

ROBIN M. LIM

LICENSED PROFESSIONAL ENGINEER

No. 8436-C

HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

Signature

04/30/22

SIGNATURE

EXPIRATION DATE OF LICENSE

STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

HIGHWAYS DIVISION

GEOTECHNICAL NOTES-1

ALA MOANA BOULEVARD

ELEVATED PEDESTRIAN WALKWAY

Federal Aid Project No. BLD-092-1(029)

Scale: None

Date: July 2021

SHEET No. B-11 OF 23 SHEETS

256

GENERAL PLAN	DATE	DESIGNED BY	_____
		DRAWN BY	_____
		CHECKED BY	_____
		NOTES REVISIONS BY	_____
		NO.	_____

SCULPTED SHOTCRETE FINISH GENERAL NOTES:

- The face of the shotcrete shall be finished to produce a coral-like aesthetic finish to simulate the color and texture of the nearby cast-in-place formlined walls. Producing a coral-like aesthetic finish will require forming and carving relief into the shotcrete face to the limits shown on the plans. The relief shall be sculpted into shotcrete applied on the structural shotcrete facing or onto a substrate suitable to sustain the sculpted shotcrete. The texture shall closely resemble that of the designated cast-in-place formlined walls or approved mock-up.
- The Contractor performing the sculpted shotcrete finish work shall provide a project reference list verifying the successful construction completion for at least five (5) permanent sculpted shotcrete retaining projects during the past five (5) years totaling at least 300,000 square feet of surface area. A brief description of each project with the owner's name and current phone number shall be included.
- The sculpted rock company shall submit a list identifying the lead sculptor, additional sculptors and lead staining artisan having experience installing sculpted shotcrete on at least five (5) projects of similar magnitude and difficulty over the past five (5) years. The list shall contain a summary of each individual's experience.
- The Engineer may suspend the work if the documents provided by the Contractor do not demonstrate sufficient experience gained on past projects in the opinion of the Engineer, non-approved sculpting personnel shall not perform the work.
- The color and aesthetics of the sculpted shotcrete shall match the formlined walls at the Makai ramp structure and shall be submitted to the Engineer for approval prior to production.
- The Contractor shall submit details listing MSDS data sheets for review and approval by the Engineer before starting the work.
- Three test panels and photo simulations shall represent a section of the sculpted finish. The test panels shall be a minimum of 48 inches by 48 inches in size and 6 inches in thickness. The test panel or photo simulation shall be used as a visual reference throughout the construction for the desired shotcrete finish.
- Sculpting and carving of the nozzle applied shotcrete shall be carved and shaped so that all crevasses shall be created with a slope so that water cannot be trapped or puddle on the surface. Sculpting of shotcrete shall be carved in such a way in which finished work shall match the test panels.
- All curing compounds applied to the sculpted shotcrete surfaces shall be removed by pressure washing with water prior to acceptance by the Engineer.
- All permanently exposed shotcrete surfaces shall be cleaned and pressure washed with the water to remove laitance and provide a clean surface. Sandblasting will not be required.
- Shotcrete of the test panel shall be completed at no additional cost to the State.

SETTLEMENT MONITORING NOTES:

- Settlement monitoring of the fill using settlement gauges will be required where 3 feet or more of fill is placed over the existing ground.
- Contractor shall furnish and install up to 20 settlement gauges (see Sheet No. B-22 for details) and 20 settlement markers in areas where the finished ground elevations is at least 3 feet higher than the existing ground surface. Settlement gauges shall be installed on the original ground or the excavated ground surface, as appropriate, before placement of fill. Fills shall be tamped with small equipment to support the pipe on a vertical position until such time as the placement of fill embankment is carried above the plate. The platforms shall be carefully set and leveled.

SETTLEMENT MONITORING NOTES (CONTINUED):

- As the height of the fill embankment above the settlement platform increases, the casing pipe from the plate shall be increased in 5-foot increments to maintain the top of the pipe casing between 1 to 6 feet above the embankment. As each additional length of pipe is added, the pipe cap on the 1 1/2-inch casing shall be immediately transferred to the new section so as to prevent fill material from entering the casing.
- The Contractor is responsible for maintaining the settlement gauges in working order during the period of the construction operation. All settlement gauges damaged by the Contractor's construction operation shall be replaced by the Contractor within seven (7) calendar days after being damaged. Each damaged settlement gauge shall be replaced by two (2) new settlement gauges at the Contractor's expense. Additional settlement readings shall be taken of the damaged settlement gauge to establish the settlement pattern.
- Settlement gauges shall be read as follows:
 - Twice (minimum 24 hours apart) 10 days prior to placement of fills.
 - Once a week during placement of fill. Additional readings shall be taken when extending the settlement gauge.
 - Once a week during the settlement waiting period of 15 weeks.
 - Continue reading at once a week for 4 more weeks after end of settlement waiting period.
- Each Settlement Gauge Reading shall include the following:
 - Elevation of the filled ground.
 - Elevation of top of pipe.
- Additional Settlement Gauge Readings shall be taken when Extending the Pipe and shall include the following:
 - Elevation of the filled ground.
 - Elevation of top of pipe before adding on a new pipe section.
 - Elevation of top of pipe after adding on a new pipe section.
- Additional Requirements for Settlement Monitoring:
 - Reading intervals may be modified by the Engineer depending on the shape of the settlement curves established for the first four (4) weeks.
 - Settlement observations shall be made with engineering surveying instruments to an accuracy of about 0.01 foot.
 - Settlement readings shall be referenced to at least two (2) benchmarks located beyond the influence of the fill area (>500 feet).
 - Settlement readings shall be taken by a licensed surveyor and submitted to the Engineer for review and comment on a weekly basis.
 - The settlement waiting period shall not commence until all fill has been placed. The Contractor shall inform the Engineer in writing of the date of commencement of settlement waiting period.
- Construction of foundations and other improvements within the filled ground including underground utilities will not be permitted without the written approval of the Engineer.

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BLD-092-1(029)	2021	257	295

ROBIN M. LIM

LICENSED
PROFESSIONAL
ENGINEER

No. 8436-C

HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME
OR UNDER MY SUPERVISION.



04/30/22

SIGNATURE

EXPIRATION DATE
OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

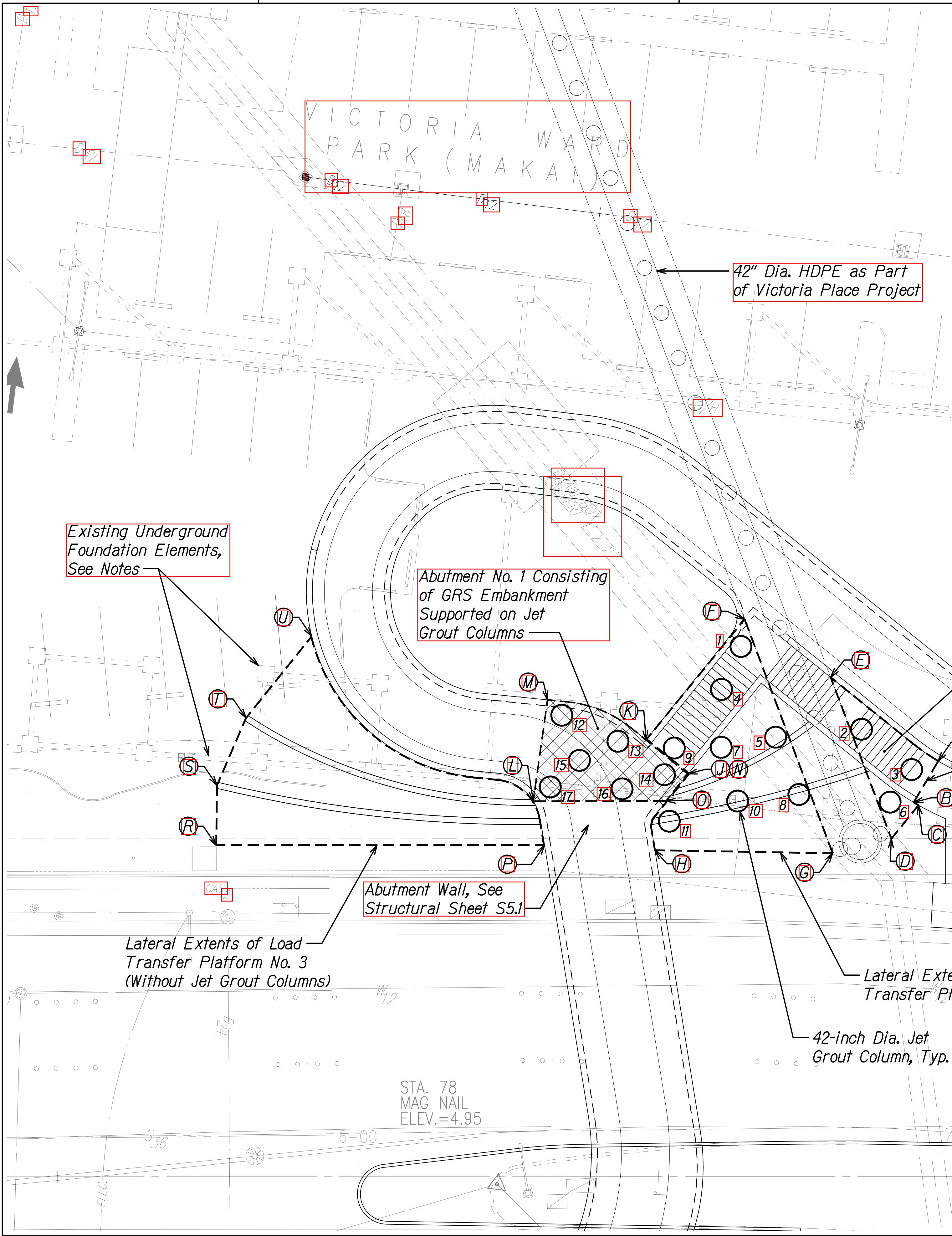
GEOTECHNICAL NOTES-2

ALA MOANA BOULEVARD
ELEVATED PEDESTRIAN WALKWAY
Federal Aid Project No. BLD-092-1(029)

Scale: NoneDate: July 2021

SHEET No. B-12 OF 23 SHEETS

257



Load Transfer Platform No. 1 Limits Schedule		
Identification	Southing	Westing
A	6479.4168	2290.7336
B	6483.7958	2297.4287
C	6484.5598	2296.9180
D	6487.5840	2303.4165
E	6459.0145	2300.6812
Load Transfer Platform No. 2 Limits Schedule		
F	6444.0290	2309.2922
G	6485.4759	2313.2604
H	6471.9937	2339.6109
J	6463.0189	2329.0541
K	6454.8630	2332.8593
Abutment No. 1 Limits Schedule		
L	6455.7499	2354.1885
M	6441.6598	2344.6456
N	6463.0189	2329.0541
O	6465.4784	2334.3256
Load Transfer Platform No. 3 Limits Schedule		
P	6463.1738	2355.7434
R	6439.1452	2404.8030
S	6430.2260	2400.2972
T	6422.2952	2391.0223
U	6414.8958	2375.2265

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BLD-092-1(029)	2021	ADD. 258	295
Jet Grout Column Schedule					
Column No.	Southing	Westing			
1	6447.8405	2311.8227			
2	6468.7694	2299.9906			
3	6478.7372	2295.3383			
4	6452.8360	2317.8697			
5	6463.9372	2313.2816			
6	6482.0201	2300.9303			
7	6461.4609	2332.1623			
8	6474.2074	2314.0059			
9	6458.1386	2329.2307			
10	6470.7040	2323.6419			
11	6468.7111	2335.3317			
12	6444.9998	2343.6398			
13	6453.0040	2337.1450			
14	6461.4011	2332.6740			
15	6453.0346	2344.3039			
16	6460.4198	2340.0293			
17	6454.8776	2350.6168			
Jet Grout Column Test Section Schedule					
TS-01	6460.1412	2259.6567			
TS-02	6463.5846	2261.6922			
TS-03	6467.0279	2263.7278			

NOTES:

1. The existing foundations shown herein were not surveyed and only shown herein as reference. Contractor shall verify location of existing foundations and utilities.

2. As-built drawings entitled "The Ward Warehouse, 1050 Ala Moana Blvd., Honolulu, Hawaii" dated April 1973 prepared for Victoria Ward Limited (Owner) can be requested through Hawaii Department of Transportation.

DESIGNED BY	DATE
DRAWN BY	
CHECKED BY	
NOTES	
REVISIONS	
NO.	

REVISION

DATE

BRIEF

8/30/21

REVISED NOTE

R. LIM

MADE BY

APPROVED

ROBIN M. LIM

LICENSED PROFESSIONAL ENGINEER

No. 8436-C

HAWAII, U.S.A.

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Signature

04/30/22

EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

HIGHWAYS DIVISION

JET GROUT COLUMN PLAN - MAUKA RAMP

ALA MOANA BOULEVARD

ELEVATED PEDESTRIAN WALKWAY

Federal Aid Project No. BLD-092-1(029)

Scale: 1"=10'

Date: July 2021

SHEET No. B-13 OF 23 SHEETS

ADD. 258

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	<i>BLD-092-1(029)</i>	<i>2021</i>	<i>260</i>	<i>295</i>

Column No.	Southing	Westing
18	6542.7243	2445.9186
19	6548.0026	2435.1418
20	6553.2809	2424.3650
21	6558.5592	2413.5882
22	6562.9578	2404.6075
23	6567.3564	2395.6269
24	6571.7550	2386.6462
25	6576.1536	2377.6655
26	6580.5522	2368.6849
27	6584.9508	2359.7042
28	6589.3494	2350.7235
29	6592.4284	2344.4371
30	6599.0263	2330.9661
31	6605.6242	2317.4951
32	6612.6986	2307.5980
33	6617.9769	2296.8212
34	6625.5096	2288.2620
35	6556.9832	2439.5404
36	6562.2616	2428.7636
37	6567.5399	2417.9868
38	6571.9385	2409.0061
39	6576.3371	2400.0254
40	6580.7357	2391.0448
41	6585.1342	2382.0641
42	6589.5328	2373.0834
43	6593.9314	2364.1028
44	6598.3300	2355.1221
45	6601.8489	2347.9376
46	6608.0069	2335.3646
47	6614.6048	2321.8936
48	6619.8831	2311.1168
49	6625.1615	2300.3400
50	6631.7960	2291.3410
51	6565.9639	2443.9390
52	6571.2422	2433.1622
53	6576.5205	2422.3854
54	6580.9191	2413.4047
55	6585.3177	2404.4240
56	6589.7163	2395.4434
57	6594.1149	2386.4627
58	6598.5135	2377.4820
59	6602.9121	2368.5014
60	6607.3107	2359.5207
61	6611.7093	2350.5400
62	6616.9876	2339.7632
63	6623.5855	2326.2922
64	6628.8638	2315.5154
65	6634.1421	2304.7386
66	6638.9806	2294.8599
67	6649.1340	2278.6764
68	6573.7624	2440.5208
69	6582.8070	2425.4644
70	6587.2056	2416.4837
71	6592.5023	2407.9429

Column No.	Southing	Westing
72	6596.9009	2398.9622
73	6602.1975	2390.4214
74	6607.4942	2381.8806
75	6611.8928	2372.9000
76	6616.2914	2363.9193
77	6620.6900	2354.9386
78	6649.1340	2278.6764
79	6632.5662	2330.6908
80	6637.8445	2319.9140
81	6643.1228	2309.1372
82	6646.6050	2297.4807
83	6651.8833	2286.7039
84	6657.1616	2275.9271
85	6662.4399	2265.1503
86	6669.9909	2258.8272
87	6636.2685	2345.8662
88	6641.5468	2335.0894
89	6646.8251	2324.3126
90	6652.1035	2313.5358
91	6655.5856	2301.8793
92	6660.8639	2291.1025
93	6666.1423	2280.3257
94	6671.4206	2269.5489
95	6678.4950	2259.6518
96	6682.0139	2252.4673
97	6649.6111	2336.8122
98	6655.8058	2328.7112
99	6661.0841	2317.9344
100	6666.3624	2307.1576
101	6671.6407	2296.3808
102	6676.9191	2285.6040
103	6682.1974	2274.8272
104	6687.4757	2264.0504
105	6691.4344	2255.9678
106	6664.7865	2333.1098
107	6670.0648	2322.3330
108	6675.3431	2311.5562
109	6680.6214	2300.7794
110	6685.8997	2290.0026
111	6691.1780	2279.2258
112	6696.4564	2268.4490
113	6700.4151	2260.3664
114	6678.5872	2325.3937
115	6684.3238	2315.9548
116	6689.6021	2305.1780
117	6694.8804	2294.4012
118	6700.1587	2283.6244
119	6705.4370	2272.8476
120	6710.7520	2266.5428
121	6695.0088	2310.0532
122	6702.9630	2298.3600
123	6708.2413	2287.5832

Load Transfer Platform No. 4 Limits Schedule		
Identification	Southing	Westing
A1	6534.5260	2448.7008
B1	6587.7772	2341.0685
C1	6605.8420	2346.9686
D1	6606.5768	2346.4912
E1	6607.1226	2347.3674
F1	6628.4096	2353.9299
G1	6572.5959	2446.2440
H1	6555.8166	2447.9397
J1	6550.6065	2445.3878
K1	6546.1866	2454.4120
Load Transfer Platform No. 5 Limits Schedule		
A2	6591.5141	2333.5154
B2	6624.8684	2282.3492
C2	6640.8686	2291.0023
D2	6647.3759	2277.6626
E2	6661.2016	2263.7442
F2	6668.9413	2257.2432
G2	6681.6302	2250.6121
H2	6687.6955	2251.5087
J2	6696.1517	2254.6214
K2	6716.5009	2266.3211
L2	6713.1611	2272.1307
M2	6713.9066	2283.8535
N2	6698.5594	2309.5652
O2	6688.8824	2322.5615
P2	6657.7732	2340.8099
R2	6650.6196	2339.5331
S2	6636.4571	2347.7412
T2	6633.8518	2346.9165
U2	6632.9587	2347.4347
V2	6632.4563	2346.5695
W2	6608.5625	2338.7560
X2	6607.8907	2339.9035
Y2	6602.7117	2336.8715

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
	REACED BY	
NOTE BOOK	RECEIVED BY	
	QUANTITIES BY	
N _o .	CHECKED BY	



THIS WORK WAS PREPARED BY ME
OR UNDER MY SUPERVISION.

Rob M. Lim 04/30/22
SIGNATURE EXPIRATION DATE
OF THE LICENSE

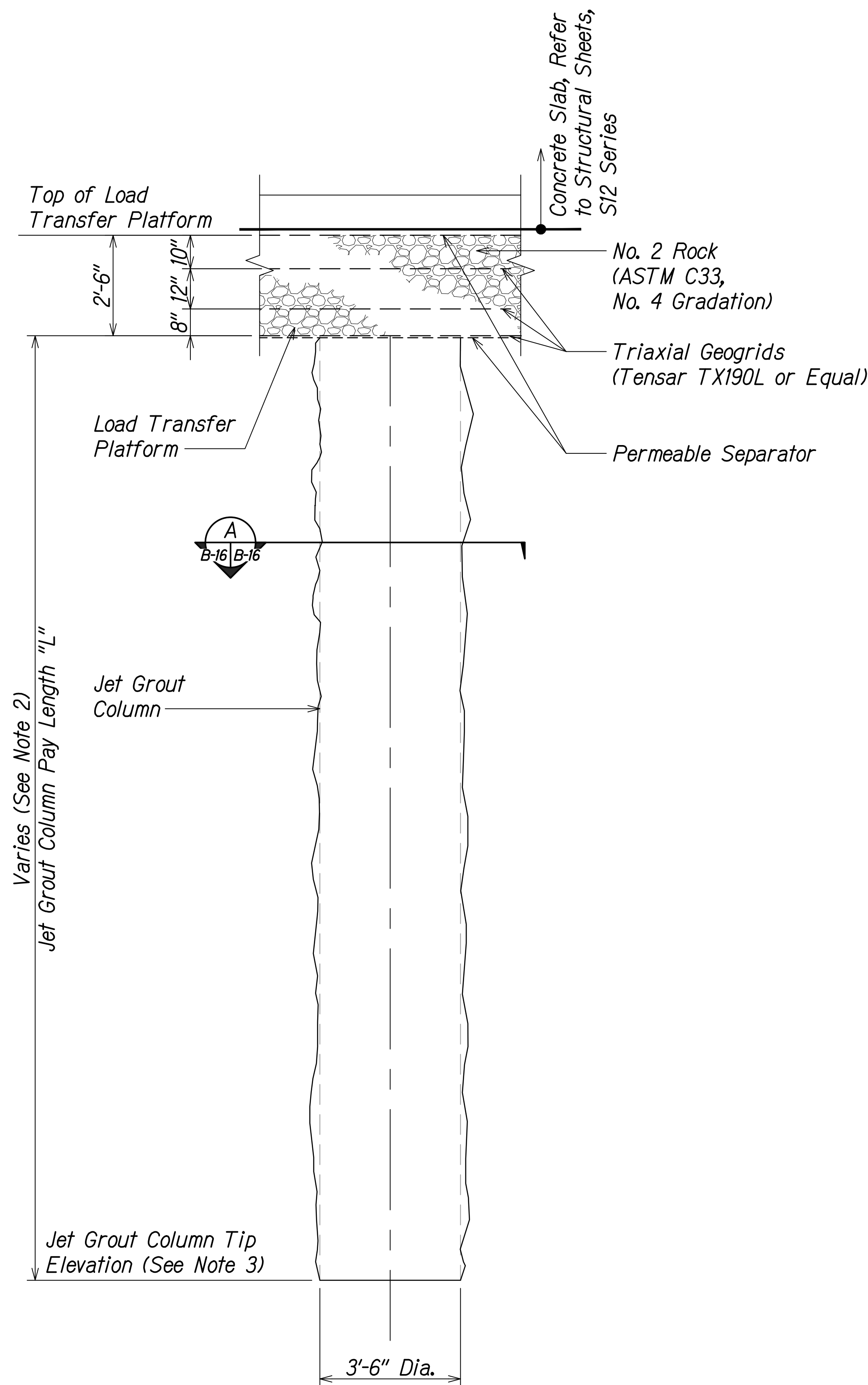
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

JET GROUT COLUMN PLAN -
MAKAI RAMP-2

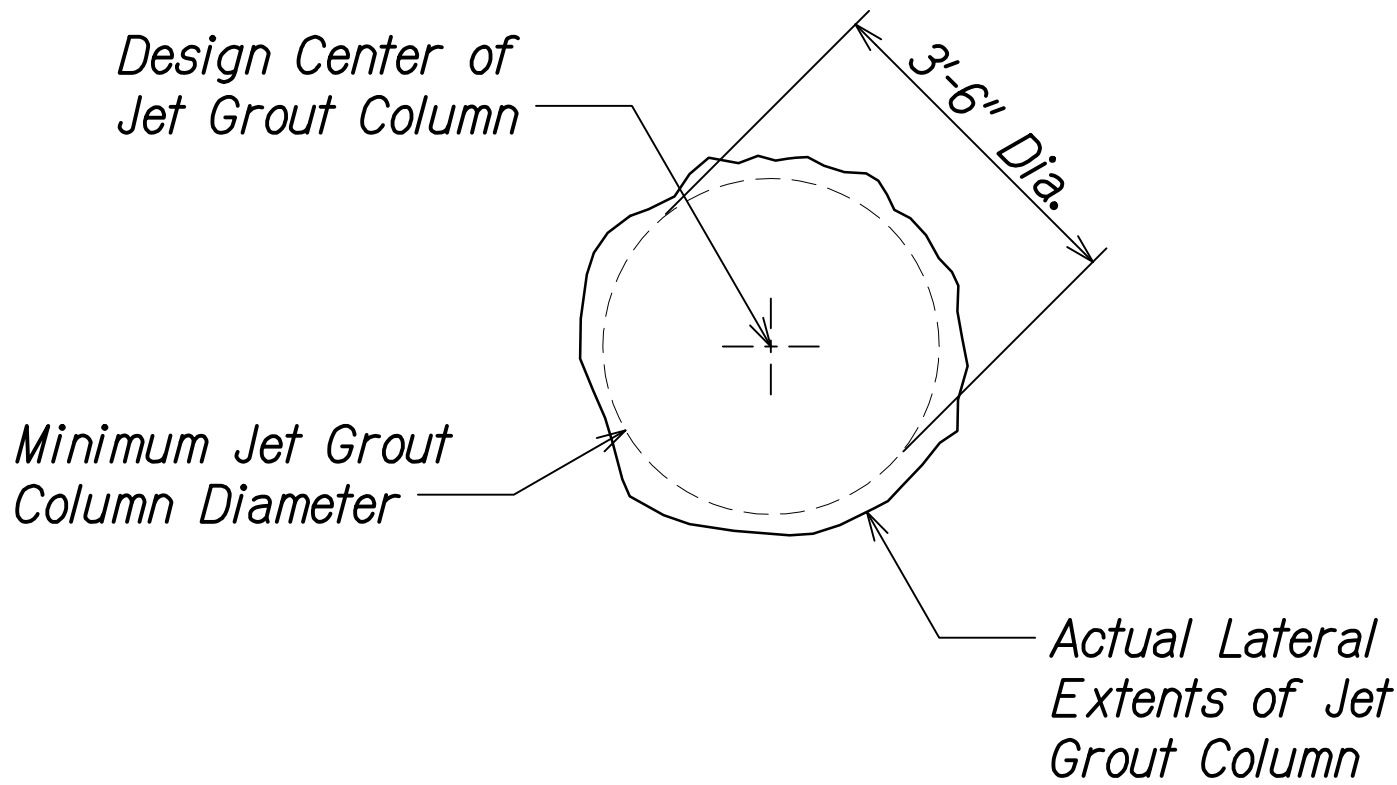
ALA MOANA BOULEVARD
ELEVATED PEDESTRIAN WALKWAY
Federal Aid Project No. BLD-092-1(K029)

Scale: None *Date: July 2021*

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BLD-092-1(029)	2021	261	295



3'-6" Diameter Jet Grout Column Section
Scale: None



3'-6" Diameter Jet Grout Column Section A
Scale: None B-16/B-16

- NOTES:**
1. Load Transfer Platform shall consist of a 30-inch thick layer of open-graded gravel consisting of ASTM C33, No. 4 gradation (or ASTM D448, No. 4 gradation) with three (3) layers of triaxial geogrid (Tensar TX190L or equal) wrapped all around with a layer of permeable separator. Each layer of the open-graded gravel shall be placed and densified by a vibratory plate tamper a minimum of four (4) passes.
 2. Jet grout column length will be variable, ranging from about 24 to 35 feet (plus or minus 5 feet). Length of each jet grout column to be determined by the Engineer in the field during construction.
 3. Jet grout column tip elevation to be embedded 2 feet into coral formation or hard materials to be determined by the Engineer in the field during construction. Logs will be maintained by the Engineer (or Engineer's representative) for payment purposes.

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NOTES	
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ROBIN M. LIM

LICENSED PROFESSIONAL ENGINEER

No. 8436-C

HAWAII, U.S.A.

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DEPARTMENT OF TRANSPORTATION

HIGHWAYS DIVISION

JET GROUT DETAILS

ALA MOANA BOULEVARD

ELEVATED PEDESTRIAN WALKWAY

Federal Aid Project No. BLD-092-1(029)

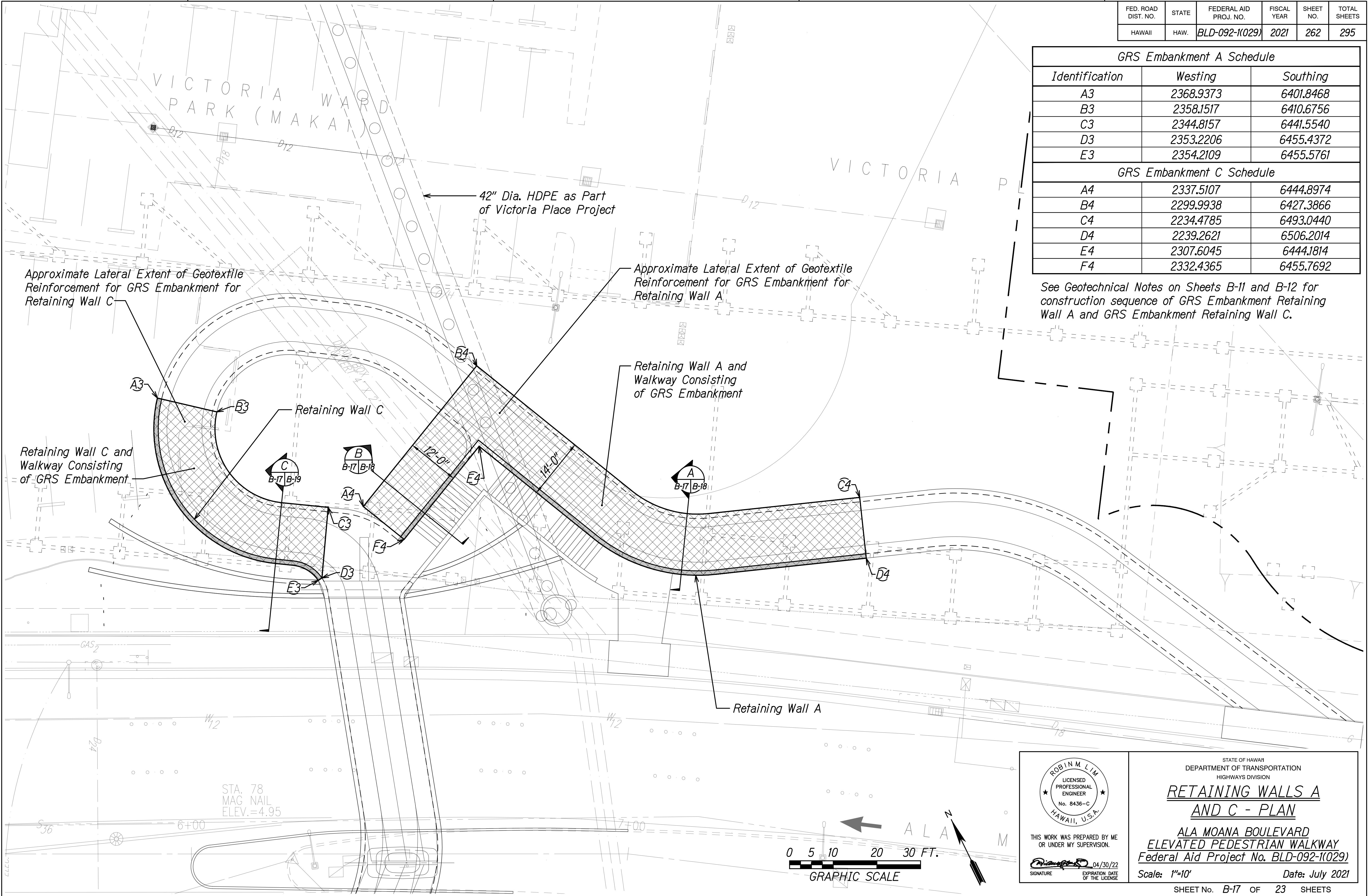
Scale: AS NOTED

Date: July 2021

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BLD-092-1(029)	2021	262	295

GRS Embankment A Schedule		
Identification	Westing	Southing
A3	2368.9373	6401.8468
B3	2358.1517	6410.6756
C3	2344.8157	6441.5540
D3	2353.2206	6455.4372
E3	2354.2109	6455.5761
GRS Embankment C Schedule		
A4	2337.5107	6444.8974
B4	2299.9938	6427.3866
C4	2234.4785	6493.0440
D4	2239.2621	6506.2014
E4	2307.6045	6444.1814
F4	2332.4365	6455.7692

See Geotechnical Notes on Sheets B-11 and B-12 for construction sequence of GRS Embankment Retaining Wall A and GRS Embankment Retaining Wall C.



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RETAINING WALLS A
AND C - PLAN

ALA MOANA BOULEVARD
ELEVATED PEDESTRIAN WALKWAY
Federal Aid Project No. BLD-092-1(029)

Scale: 1"=10' Date: July 2021

SHEET No. B-17 OF 23 SHEETS

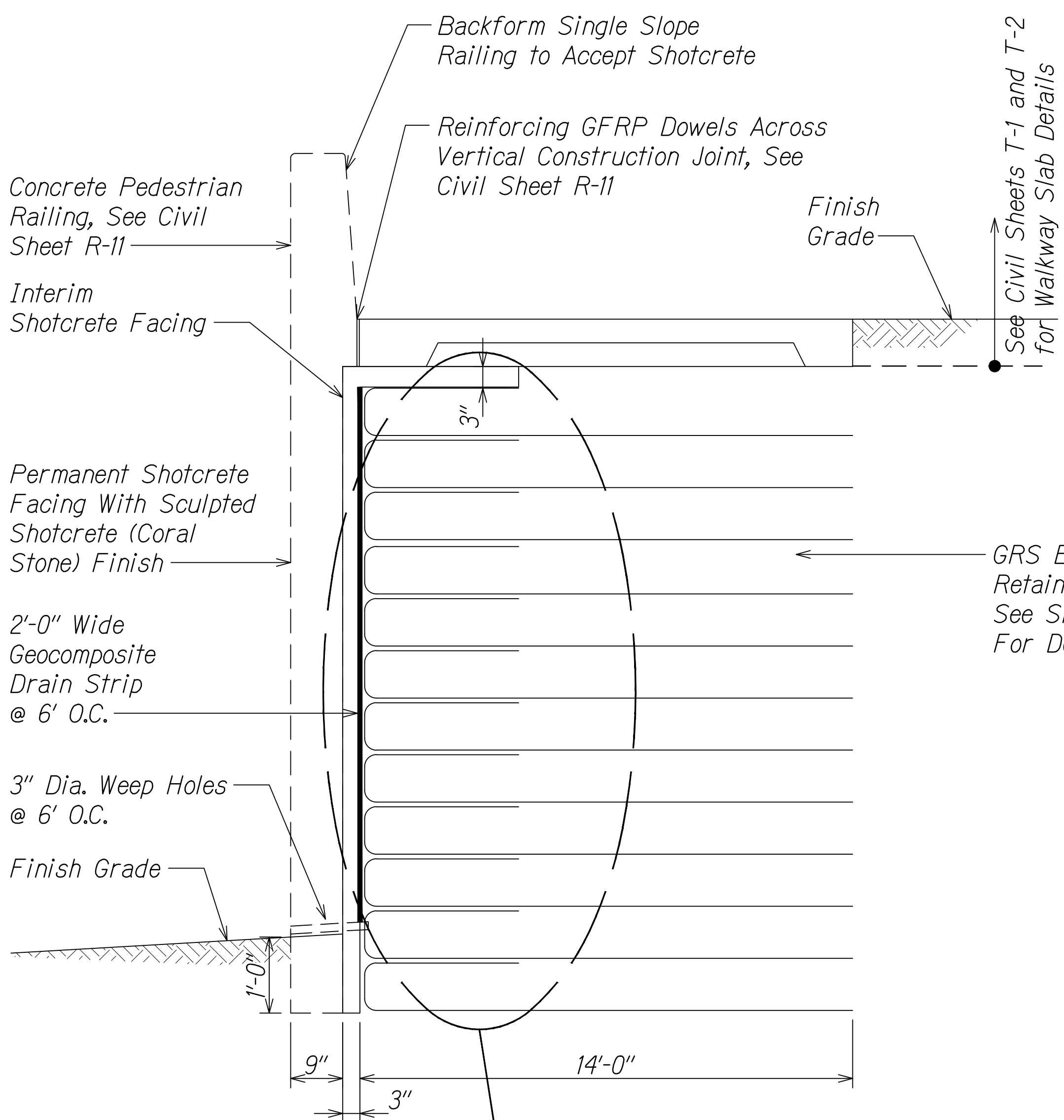
FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BLD-092-1(029)	2021	263	295

Makai

Mauka

Mauka

Makai



Retaining Wall A - Typical Section

Scale: None

A
B-17 B-18

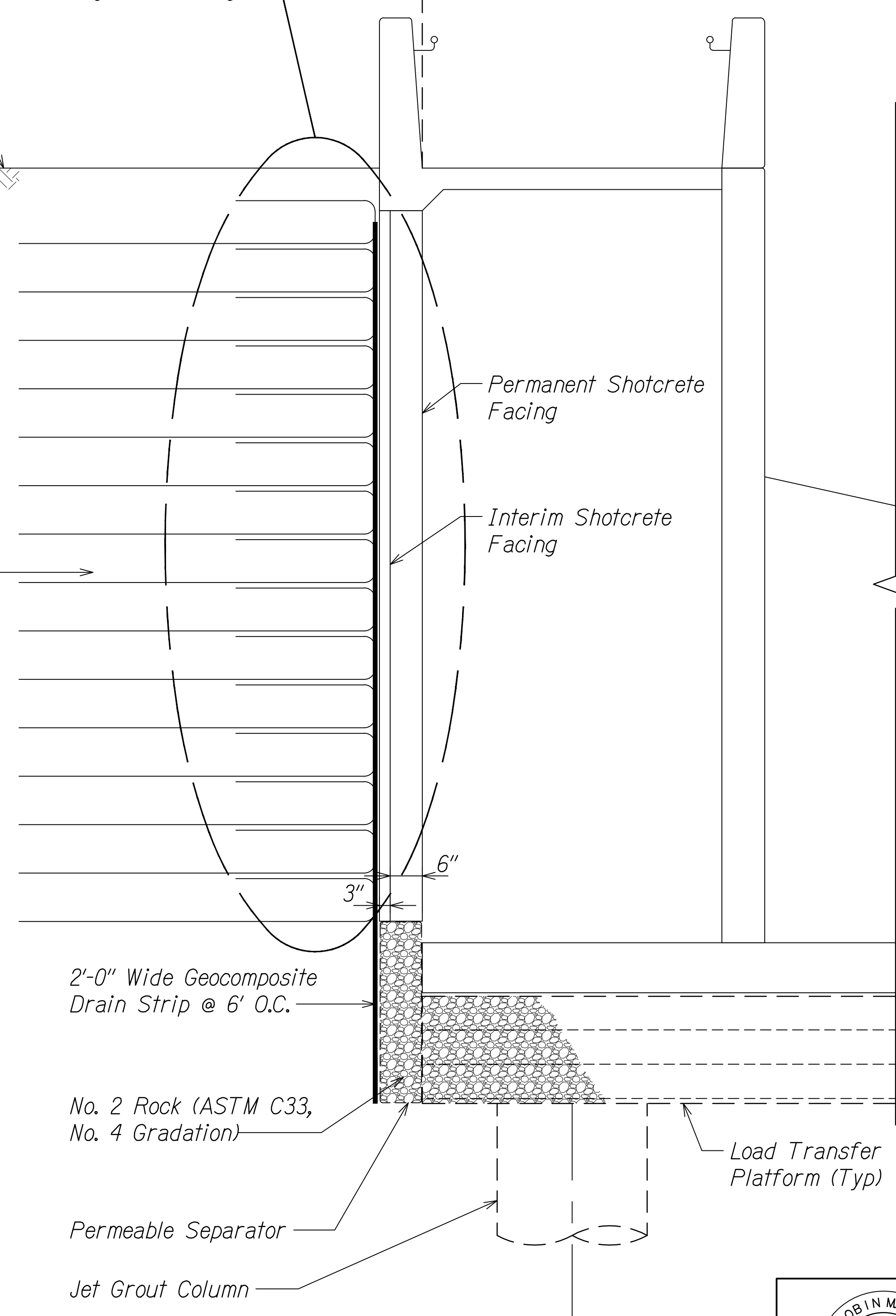
Refer to Sheet B-22 for Detailed Construction Requirements at GRS Embankment Retaining Wall Facing.

Finish Grade

GRS Embankment Retaining Wall, See Sheet B-22 For Details

Refer to Sheet B-22 for Detailed Construction Requirements at GRS Embankment Retaining Wall Facing.

See Structural Sheet S12.2 for Stair F Details



Retaining Wall A - Typical Section

Scale: None

B
B-17 B-18

NOTES:

1. See sheet B-20 for geosynthetic reinforcement elevation placement.
2. Weep holes shall be centered at the geocomposite drain strip, at 6" above finished grade, and a minimum distance of 2'-0" from a vertical control joint location. Weep holes shall only be provided between Retaining Wall A Sta. 10+00 and Retaining Wall A Sta. 10+44.
3. Drain connection to weep hole as per manufacturer's recommendations.
4. After settlement monitoring period, fill and compact from top of GRS Embankment Retaining Wall to finished subgrade for walkway with aggregate subbase.
5. For concrete pedestrian railing reinforcing steel, see Sheet B-23.
6. Vertical control joints in backform single slope railing to accept shotcrete shall match control joints in permanent shotcrete facing. For vertical control joint locations, see Sheet B-20.
7. Geocomposite drain strips between Retaining Wall A Sta. 10+44 and Retaining Wall A Sta. 11+27.87 shall be hydraulically connected to Load Transfer Platform Nos. 1 or 2.

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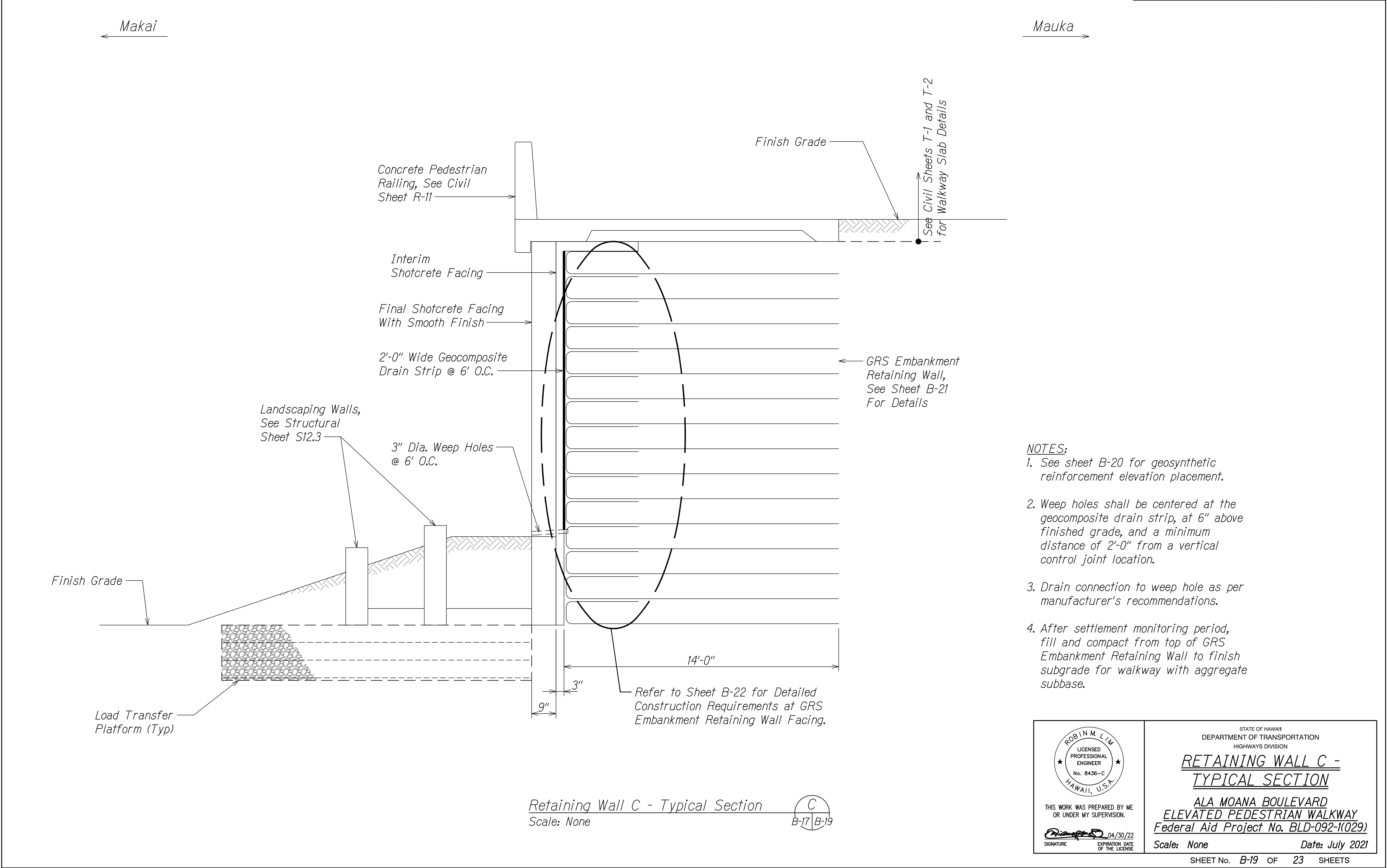
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**RETAINING WALL A -
TYPICAL SECTIONS**

ALA MOANA BOULEVARD
ELEVATED PEDESTRIAN WALKWAY
Federal Aid Project No. BLD-092-1(029)

Scale: None Date: July 2021

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BLD-092-1(029)	2021	264	295



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RETAINING WALL C -

TYPICAL SECTION

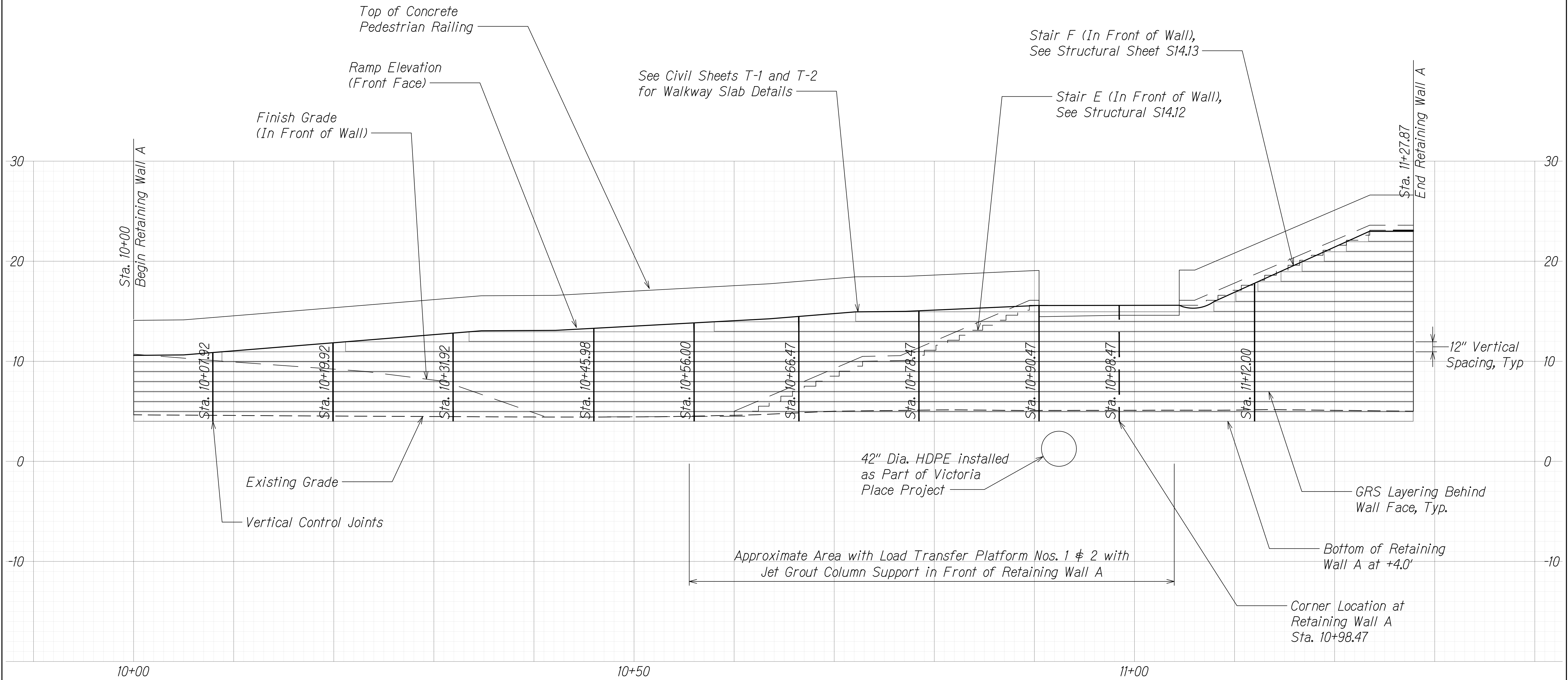
ALA MOANA BOULEVARD

ELEVATED PEDESTRIAN WALKWAY

Federal Aid Project No. BLD-092-1(029)

Scale: None Date: July 2021

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HAWAII	HAW.	BLD-092-1(029)	2021	265	295



GENERAL PLAN	DATE
DESIGNED BY	DATE
NOTES REVISIONS BY	DATE
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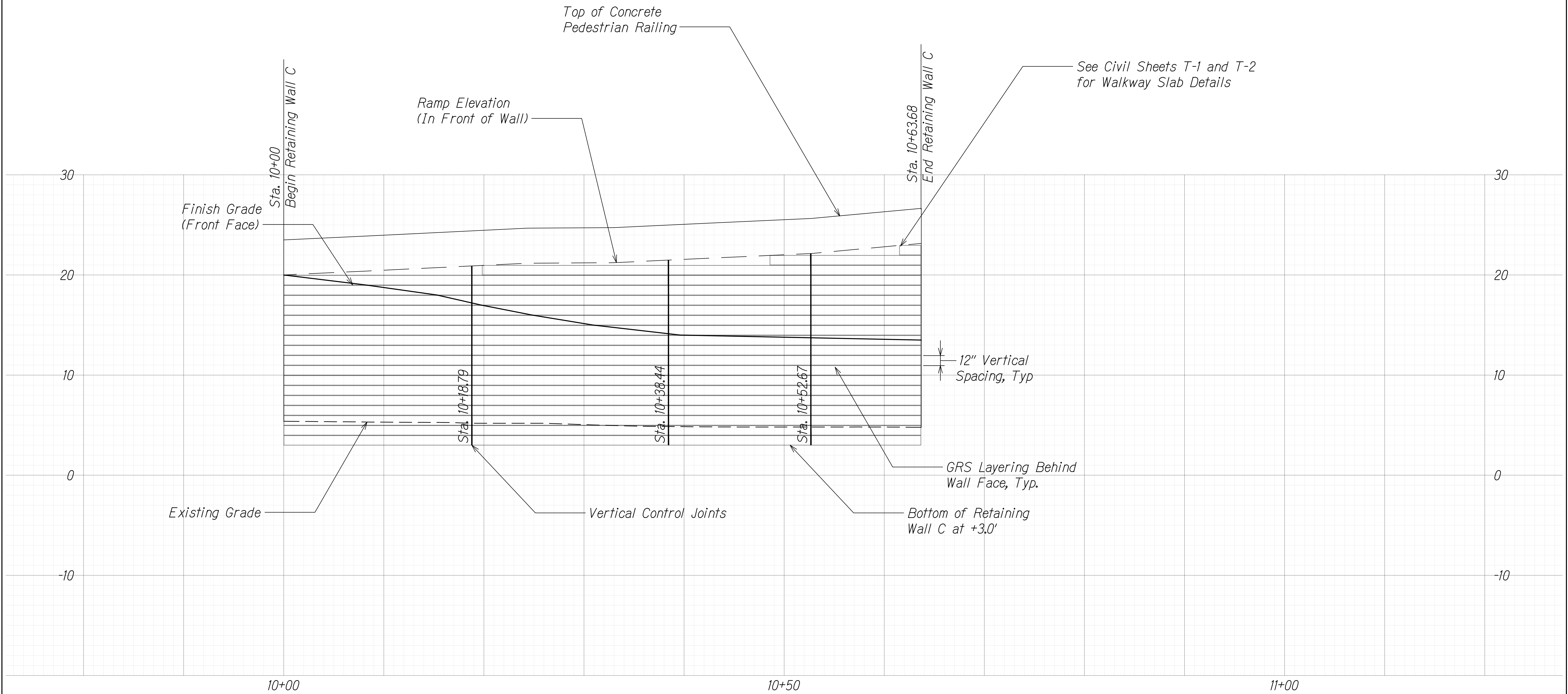
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**RETAINING WALL A -
ELEVATION PROFILE**

ALA MOANA BOULEVARD
ELEVATED PEDESTRIAN WALKWAY
Federal Aid Project No. BLD-092-1(029)

Scale: 1"=5' Date: July 2021

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BLD-092-1(029)	2021	266	295



GENERAL PLAN	DATE
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NOTES REVISIONS BY	DATE
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RETAINING WALL C - ELEVATION PROFILE

ALA MOANA BOULEVARD

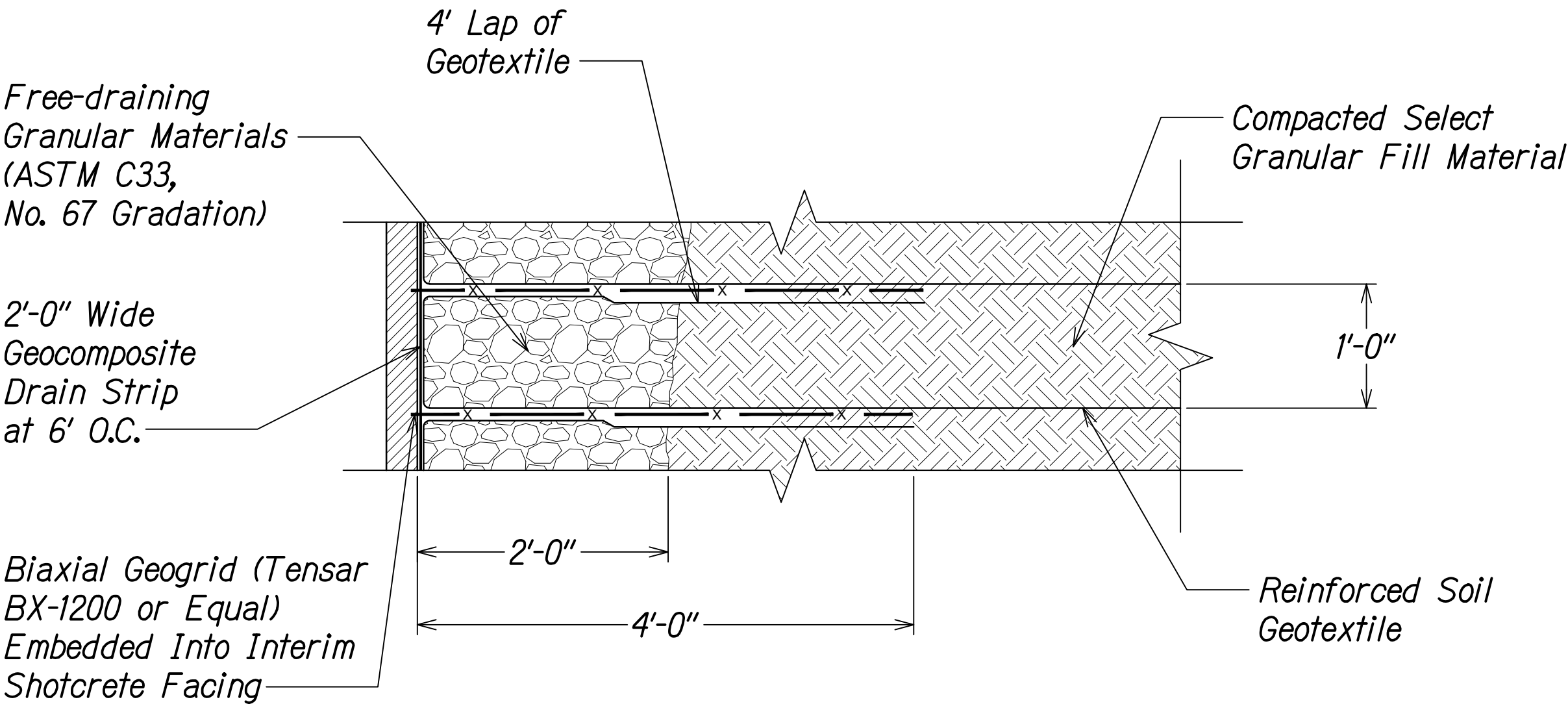
ELEVATED PEDESTRIAN WALKWAY

Federal Aid Project No. BLD-092-1(029)

Scale: 1"=5'

Date: July 2021

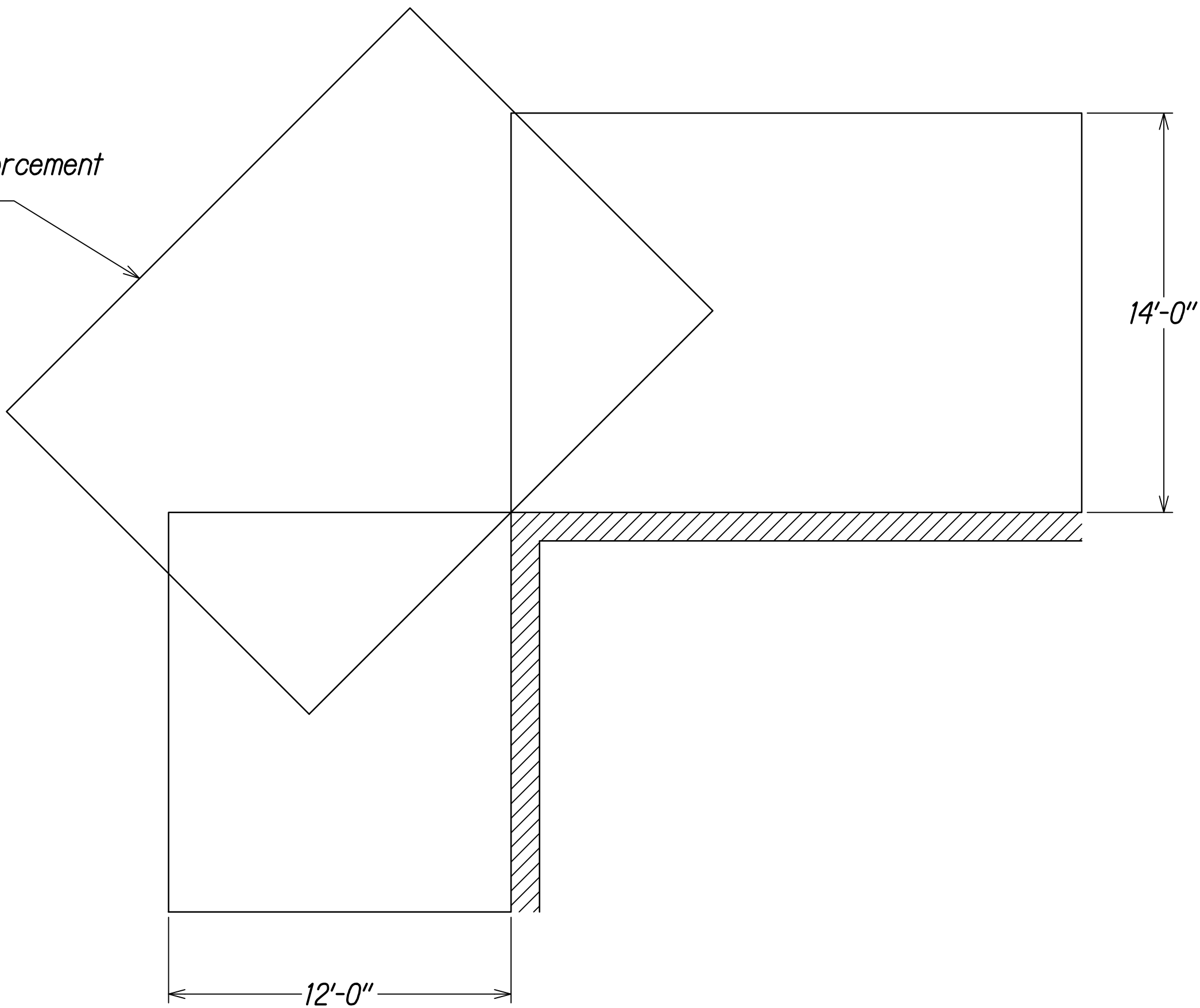
FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BLD-092-1(029)	2021	267	295



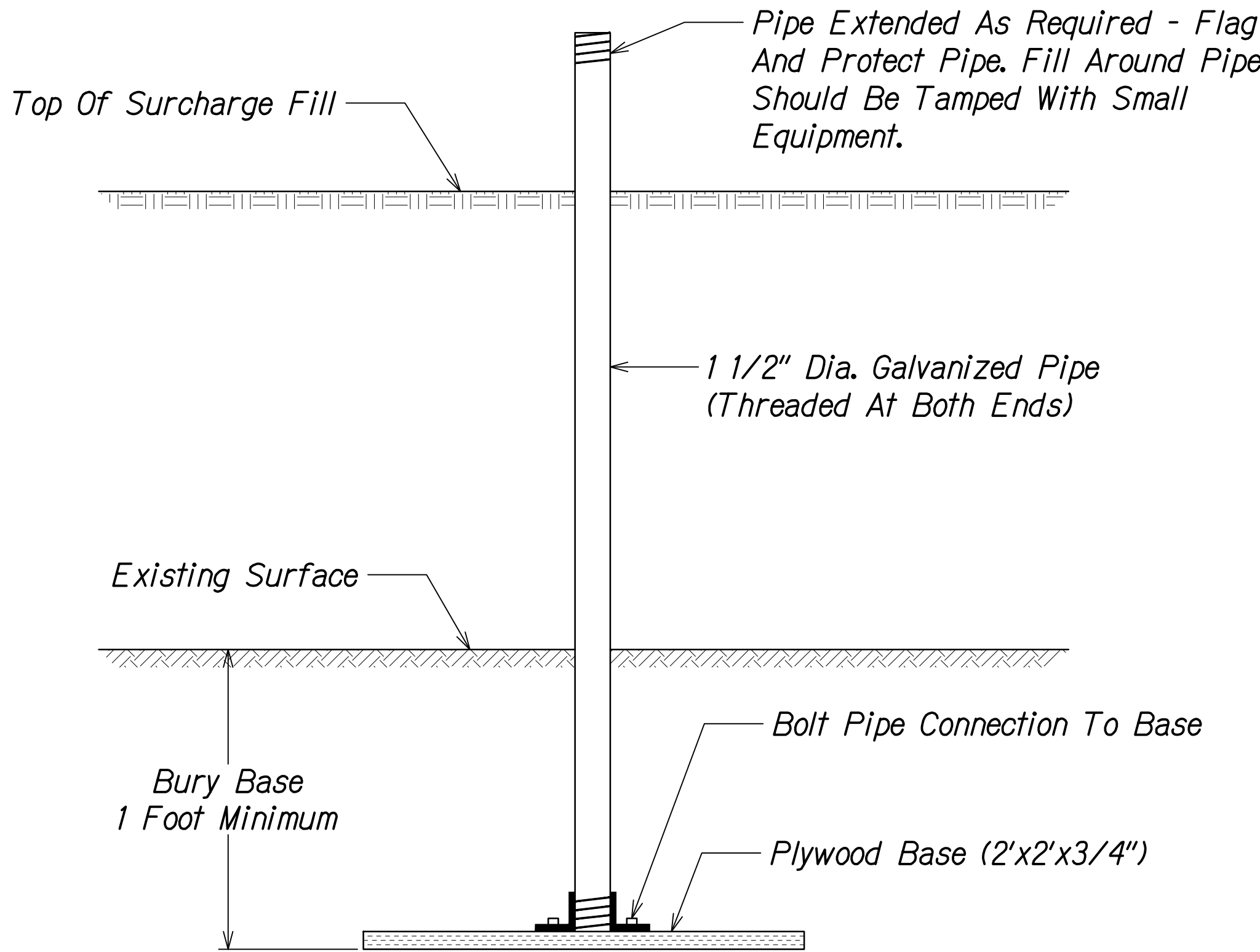
Typical Section View of Construction Requirements
at GRS Embankment Retaining Wall Facing
Scale: None

Table A Reinforced Soil Geotextile Requirements	
Physical Property	Requirements
Ultimate Tensile Strength	4,800 lbs./foot (ASTM D4595)
Tensile Strength at 2% Strain	1,370 lbs./foot (ASTM D4595)
Apparent Opening Size (AOS)	U.S. Sieve Size No. 30 (ASTM D4751)

Additional Layer of
Geosynthetic Reinforcement
Layer at Corner
(Minimum 20 feet
by 15 feet)



Plan View
Geosynthetic Reinforcement Layer Placement at
the Corner of Retaining Wall "A"
Scale: None



Typical Settlement Gauge
Scale: None

- GENERAL NOTES:**
1. Install settlement gauges (20) and take initial surveying measurements 10 days prior to fill placements and weekly during fill placements and the settlement monitoring period.
 2. Install surface settlement markers (20) immediately when surcharge fill elevation is met and take initial surveying measurements and weekly surveying measurements during the settlement monitoring period.
 3. Settlement gauge and surface settlement marker locations to be finalized in the field during construction, as jointly determined by the Engineer and Contractor.
 4. All settlement gauges and surface settlement markers shall be removed or buried prior to completion of the project.
 5. A settlement period of 15 weeks shall be observed following completion of fill placement to the top of the temporary fill grades (3 feet higher than the finished grades) with weekly readings taken for the entire period and four (4) weeks beyond the end of the settlement waiting period.
 6. All costs related to the settlement monitoring, settlement waiting period, and backfill and compaction of aggregate subbase to finished subgrade shall be incidental to the earthwork components of the work.

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**GRS MISCELLANEOUS
DETAILS**

**ALA MOANA BOULEVARD
ELEVATED PEDESTRIAN WALKWAY
Federal Aid Project No. BLD-092-1(029)**

Scale: As Noted Date: July 2021

