

General Notes:

1. Provide 5' Minimum Clear Between Street Light Poles & Sewer Laterals.
2. Provide 3' Minimum Clear Between Pullboxes & Sewer Laterals.
3. Provide 6' Minimum Clear Between Transformer Pads & Sewer Laterals (Do Not Straddle).
4. Provide 3' Minimum Clear Between Ductlines & Sewer Lines.
5. Contractor Shall Verify Sewer Lateral Locations with Civil Sheets.
6. Provide 3' Minimum Horizontal Clear & 6" Vertical Clear Between Water Lines & All Electrical Systems. Provide Minimum 12" Vertical Clear Between BWS Water Lines & All Electrical Systems.
7. The Electrical Contractor and any other subcontractor shall be responsible to arrange with the General Contractor to identify the locations of civil site utilities, driveways, etc. prior to electrical contractors layout of electric, telephone, street light, traffic signal, and CATV systems.

Notes for Construction:

- A. The Location of Overhead and Underground Facilities Shown on the Plans are From Existing Records With Varying Degrees of Accuracy and are Not Guaranteed As Shown. the Contractor Shall Exercise Extreme Caution Whenever Construction Crosses Or is In Proximity of Underground Lines and Shall Maintain Adequate Clearance When Operating Equipment Under Any Overhead Lines.
- B. The Contractor is to Comply With the Directions of the State of Hawaii Occupational Safety and Health Law (HIOSH).
- C. When Trench Excavation is Adjacent to Existing Structures Or Facilities, the Contractor is Responsible For Properly Sheeting and Bracing the Excavation and Stabilizing the Existing Ground to Render it Safe and Secure From Possible Slides, Cave-ins and Settlement, and For Properly Supporting Existing Structures and Facilities With Beams, Struts Or Underpinning to Fully Protect it From Damage.
- D. As Required by Section 645, the Contractor Shall Provide Two Off-duty Police Officers to Control the Flow of Traffic at Each Location.
- E. Where Pedestrian Walkways Exist, Such Walkways Shall Be Maintained In Passable Condition Or Other Facilities For Pedestrians Shall Be Provided. Passage Between Walkways At Intersections Shall Likewise Be Provided, All Shall Be ADA Compliant.
- F. Driveways Shall Be Kept Open Unless the Owners of the Property Using These Right-of-ways are Otherwise Provided For Satisfactorily.
- G. The Underground Pipes, Cables Or Ductlines Known by the Engineer to Exist From His Search of Records are Indicated on the Plans. the Contractor Shall Verify the Location and Depth of the Facilities and Exercise Proper Care In Excavating the Area. Wherever Connections of New Utilities to Existing Utilities are Shown on the Plans, the Contractor Shall Expose the Existing Lines At the Proposed Connections to Verify Their Locations and Depths Prior to Excavation For the New Lines.

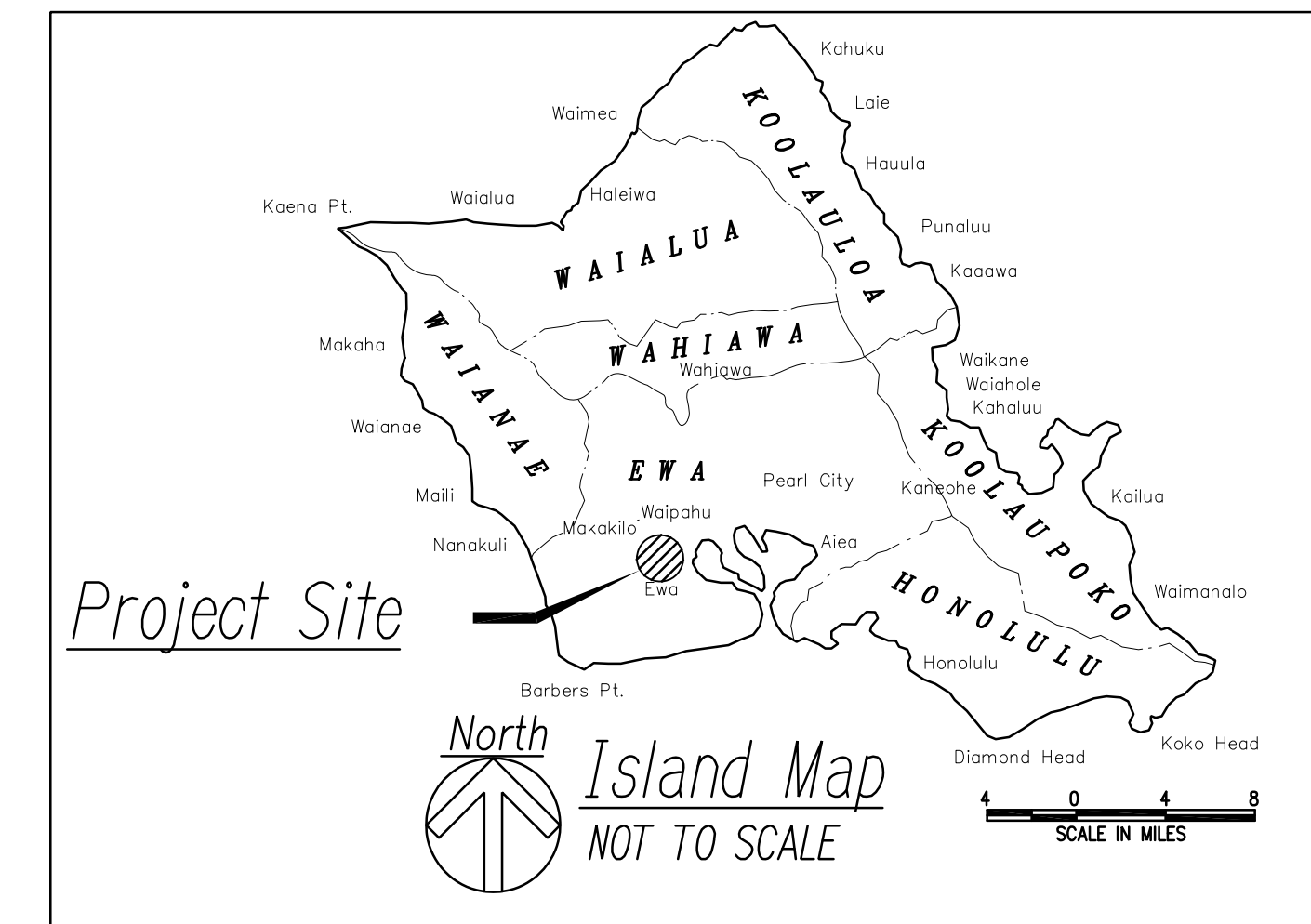
City & County of Honolulu - Department of Transportation Services Traffic Signals And Technology Notes:

1. The Contractor Shall Notify The Traffic Signals And Technology Division, Department Of Transportation Services, Three (3) Working Days Prior To Commencing Work On The Traffic Signal System (Phone: 768-8388).
2. The Traffic Signal System Shall Be Kept Operational During Construction. Any Relocation Required Shall Be Approved By The Traffic Signals And Technology Division, Department Of Transportation Services, And Paid For By The Contractor.
3. The Contractor Shall Be Responsible For Any Damages To The Existing Traffic Signal Facilities, Including But Not Limited To The Traffic Signal Fiber Optic Cable System, And Interconnect System. Any And All Damages To The Facilities Shall Be Repaired By The Contractor At Their Cost In Accordance With The Requirements Of The Traffic Signal And Technology Division, Department Of Transportation Services.
4. Coordinate All Speciality Work to be Performed by Traffic Signal System (TS) Contractor and Closed Circuit Television (ITS) Contractor. Work Included are New and Relocation of HECO Services, Including HECO Metering and Underground Feeders to Equipment.

City & County of Honolulu - Department of Design & Construction Mechanical/Electrical Division Notes:

1. The Contractor Shall Notify the Mechanical/Electrical Division, Department of Design and Construction Two (2) Weeks in Advance of Any Relocation of Utility Pole(s) that May Be Necessary. (1-808-768-8431).
2. The Contractor Shall Notify the Mechanical/Electrical Division, Department of Design and Construction, Three (3) Working Days Prior to Commencing Work on the Street Light System. (1-808-768-8431).
3. The Street Lighting System Shall Be Kept Operational During Construction. Any Relocation Required Shall Be Approved by the Mechanical/Electrical Division and Paid for by the Contractor.
4. The Locations of the Existing Underground Street Light Facilities Shown On the Plans are from Existing Plans and are Approximate Only. The Contractor Shall Exercise Caution when Construction Crosses or Is In Close Proximity to the Existing Street Light Facilities. The Contractor Shall Be Responsible for Any Damages to the Existing Street Light Facilities. Any and All Damages to these Facilities Shall Be Repaired by the Contractor at His Cost in Accordance with the Requirements of the City and County of Honolulu.
5. The Contractor Shall Be Responsible for Any Damages to the City's Existing Communications Fiber Optic Cable System. Any and All Damages to these Facilities Shall be Repaired by the Contractor at His Cost in Accordance with the Requirements of the City and County of Honolulu.
6. Salvage and Deliver Existing Street Light Standard to the Department of Facility Maintenance Baseyard at Manana (1001 Makolu Street) as Directed by the Street Light Inspector. Contact 1-808-768-5310 a Minimum of Two Days Prior to Delivery.

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	710A-01-20	2021	EA-1	790



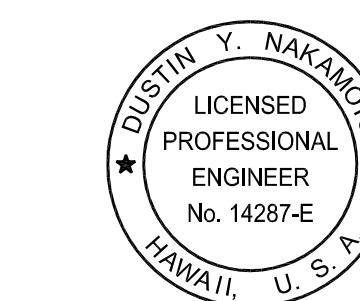
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APPROVED BY

PROGRAM ADMINISTRATOR, MECHANICAL/ELECTRICAL DIVISION DATE
DEPT. OF DESIGN AND CONSTRUCTION
CITY & COUNTY OF HONOLULU

CHIEF, TRANSPORTATION TECHNOLOGY DIVISION DATE
DEPT. OF TRANSPORTATION SERVICES
CITY & COUNTY OF HONOLULU



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

SIGNATURE: [Signature] DATE: April 30, 2024
EXPIRATION DATE OF THE LICENSE

06/08/22	2 UPDATED NOTE
DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

GENERAL NOTES

FARRINGTON HIGHWAY WIDENING
Kapolei Golf Course Road to Fort Weaver Road
Project No. 7101A-01-20

Scale: As Shown Date: April 2022

SHEET No. EA-1 OF 12 SHEETS

ADD. 575

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	710A-01-20	2021	EA-2	790

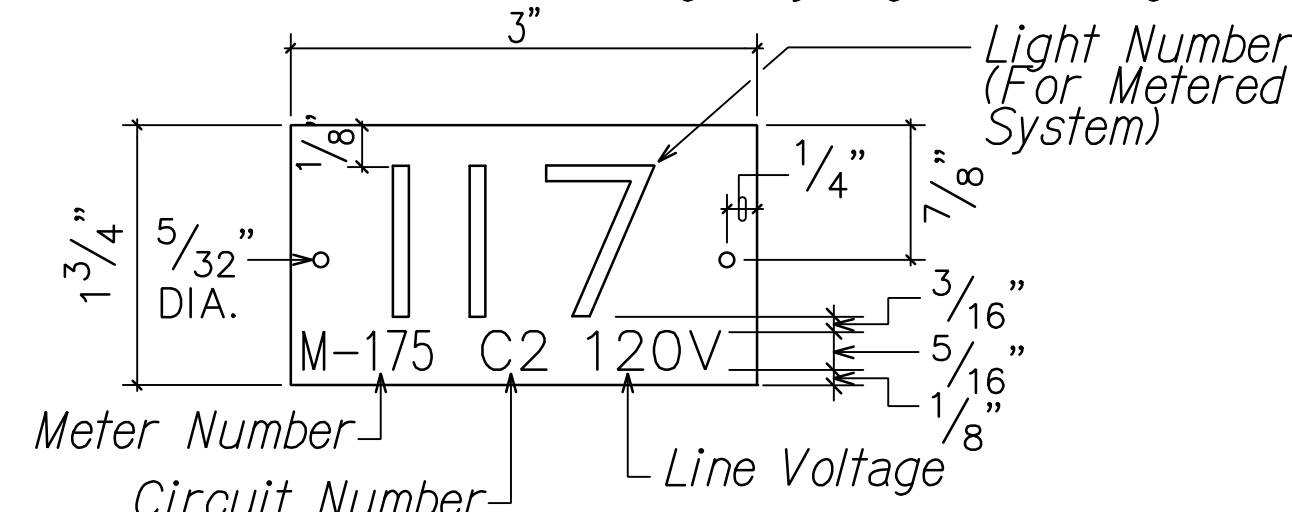
Electrical Symbols

Symbol	Description	Symbol	Description	Symbol	Description
	Exst. Street Light		Exst. HECO 3-PHASE PADMOUNT TRANSFORMER (1000-1500 KVA) See Detail B/EF-12		Traffic Signal Controller, See Detail A/EH07
	Note Symbol, See Plan For Notes		Exst. HECO 3-PHASE PADMOUNT TRANSFORMER (500-750 KVA) See Detail A/EF-12		CCTV Controller, See Detail A/EH07
	Breakline To Begin & End Duct Section Type		Exst. HECO 3-PHASE PADMOUNT TRANSFORMER (75-300 KVA)		Type ϕ I ϕ I Traffic Signal Standard With Traffic Signal Heads Mounted On Mast Arm Standard; Pole "B" with 25' Mast Arm Indicated, Standard; Pole "B" With 25' Mast Arm Indicated, See Detail A/EH03
	Electric/Signal Ductline With Designators; Indicates Type "A" Duct Section With "2-2E" Ducts. See Sheet EF-01 For Duct Sections And This Sheet For The Conduit Schedule		HECO 1-PHASE PADMOUNT TRANSFORMER See Detail C/EF-12		Pedestrian Push Button, See Detail B/EH04
	Saw Cut Exst A.C. Pavement, Conc. Sidewalk, Curb & Gutter Prior To Trench Excavation. Restore Subbase, Basecourse, Pavement, Conc. Sidewalk, Curb & Gutter Per Hdot Requirements, Thickness Shall Match Exst Road Design See Civil Sheets For Restoration Details.		Exst. HECO SWITCHGEAR PAD		Vehicle Loop Detector, See Sht EH06
	Traffic Signal Ducts & Wiring		HECO 1-PHASE OVERHEAD TRANSFORMER		Signal Standard, 10' Height, Unless Indicated Otherwise With Designator; Pole "A" Indicated, See Detail C/EH04
	Exst. Street Light Ducts & Wiring		HECO 3-PHASE OVERHEAD TRANSFORMER BANK		12" RYG Traffic Signal Head, See Mounting Details A/EH04
	Exst. Traffic Signal Ducts & Wiring		Exst. OVERHEAD HECO LINE		12" RYGA Traffic Signal Head (Straight Arrow), See Mounting Details A/EH04
			Exst. OVERHEAD HECO LINE		12" RYGA Traffic Signal Head (Left Turn Arrow Indicated), See Mounting Details A/EH04
			Exst. OVERHEAD HECO LINE		12" RYGA Programmed Visibility Traffic Signal Head (Left Turn Arrow Indicated), See Mounting Details A/EH04
	HECO 2' X 4' Handhole		Exst. OVERHEAD HECO LINE		Pedestrian Signal Head, See Mounting Detail C/EH05
	HECO 3' X 5' Handhole		Exst. OVERHEAD HECO LINE		Optical Pre-emption Detector, See Mounting Details A & B/EH05
	Exst. HECO 4' X 6' Manhole		Exst. OVERHEAD HECO LINE		CCTV Camera, See Mounting Detail B/EH08
	Exst. HECO 5' X 8' Manhole		Exst. OVERHEAD HECO LINE		HECO Meter Pedestal, See Detail A/EH01
	Exst. HECO 6' X 11' Manhole		Exst. OVERHEAD HECO LINE		Type "A" Metric State Highway Traffic Signal Pullbox
	Exst. HECO 6' X 14' Manhole		Exst. OVERHEAD HECO LINE		Type "B" Metric State Highway Traffic Signal Pullbox
	Exst. HECO 7' X 16' Manhole		Exst. OVERHEAD HECO LINE		Type "C" Metric State Highway Traffic Signal Pullbox
	HECO 6' X 18' Manhole		Exst. OVERHEAD HECO LINE		Type "B" Metric State Highway Street Light Pullbox
			Exst. OVERHEAD HECO LINE		98W State Standard LED Street Light, Bracket Arm Length As Noted On Plan
	HTCO 2' X 4' Handhole		Exst. OVERHEAD HECO LINE		98W Reduced Height LED Street Light, Bracket Arm Length And Mounting Height As Noted On Plan
	Exst. HTCO 3' X 5' Handhole		Exst. OVERHEAD HECO LINE		120W State Standard LED Street Light, Bracket Arm Length As Noted On Plan
	Exst. HTCO 5' X 10' Manhole		Exst. OVERHEAD HECO LINE		120W Reduced Height LED Street Light, Bracket Arm Length And Mounting Height As Noted On Plan
			Exst. OVERHEAD HECO LINE		
	Exst. CATV 2' X 6' Handhole		UTILITY POLE BY UTILITY COMPANY UNLESS OTHERWISE STATED		
	Exst. CATV 3' X 5' Handhole		ANCHOR & GUY WIRE BY UTILITY COMPANY UNLESS OTHERWISE STATED		
	CATV 4' X 6' Manhole				
			Metering Equipment, See Sheet EG-15		
			Metering Equipment, See Sheet EH-1		
			Exst. Metering Equipment		
			Concrete Stub Out Marker, See Sheet EF-01		
			Elec Connection, WP		
	Exst. SIC 4' X 6' Manhole				
	Exst. AT&T 6' X 6' Manhole				
	AT&T 4' X 4' Manhole				

Notes:

- "X" Thru System Denotes Item to be Removed, Unless Otherwise Noted.
- Dashed Symbol Indicates Existing Item, Unless Otherwise Noted.
- Dashed and Screened Symbol Indicates Future Item, Unless Otherwise Noted.
- "Top Of Wall" Indicates Pole Base Mounted On Top Of Retaining Wall.
"In Cut Slope" Indicates Pole Base Located In Cut Slope Area.
"In Fill Slope" Indicates Pole Base Located In Fill Slope Area.
"Behind Guardrail" Indicates Pole Base Located Behind Guardrail.
"Breakaway" Indicates Breakaway Transformer Base.

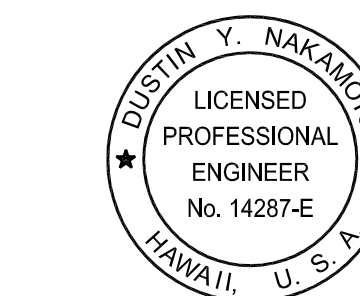
See Detail 3/EG-18 For State Highway Light I.D. Tag Indicator Legend.



STREET LIGHT I.D. TAG DETAIL
NOT TO SCALE (METERED SYSTEM)

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SIGNATURE: DATE: April 30, 2022
EXPIRATION DATE OF THE LICENSE

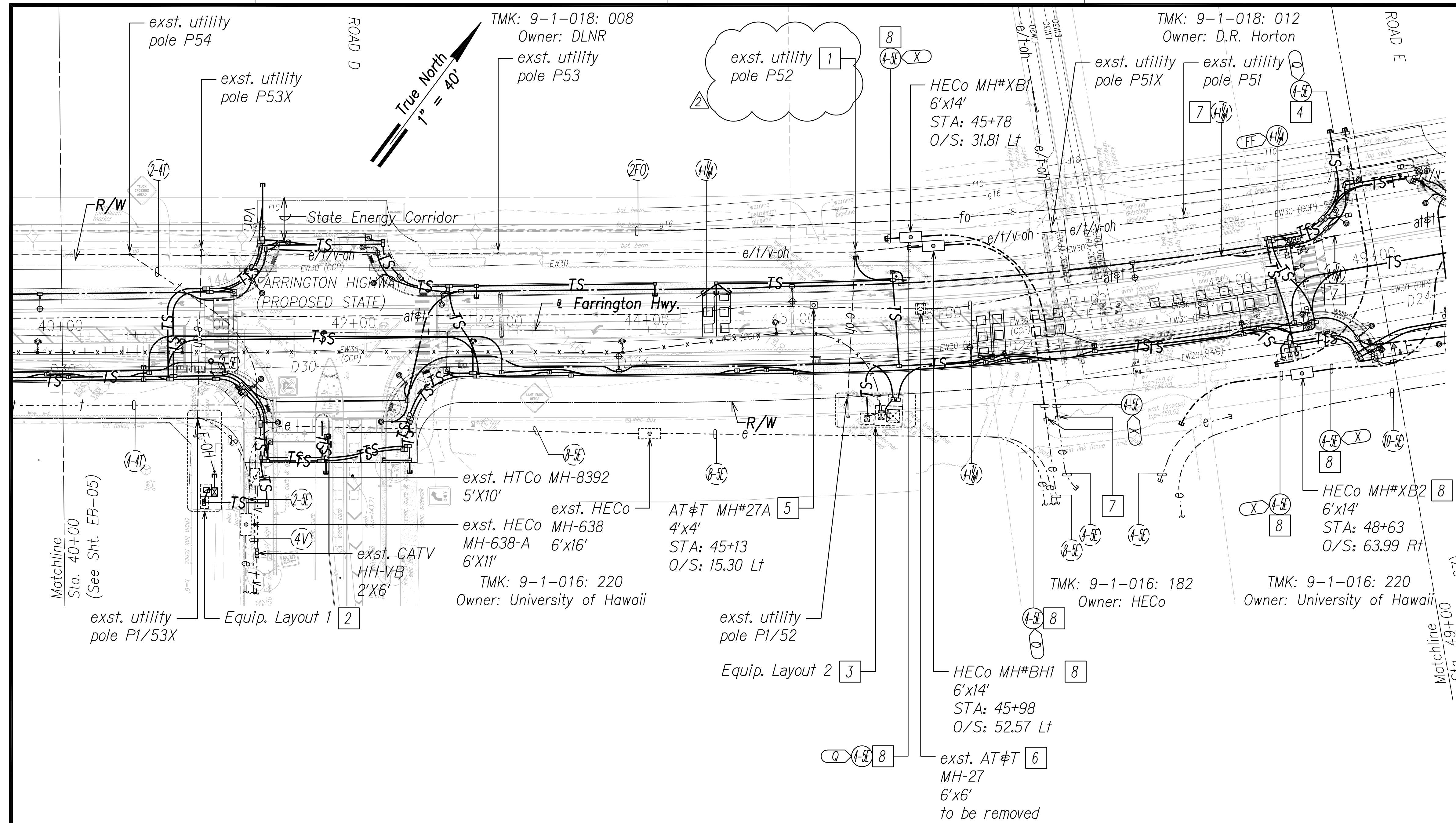
06/08/22	2 UPDATED LEGEND
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION ELECTRICAL SYMBOLS FARRINGTON HIGHWAY WIDENING Kapolei Golf Course Road to Fort Weaver Road Project No. 7101A-01-20	
Scale: As Shown	Date: April 2022
SHEET No. EA-2 OF 12 SHEETS	

ADD. 576

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	710A-01-20	2021	EB-06	790

General Electrical Notes:

1. Caution!!! Electrical Hazard!!! Existing HECO overhead and underground lines, are energized and will remain energized during construction unless prior special arrangements have been made with HECO. Only HECO personnel are to handle these energized lines and erect temporary guards to protect these lines from damage. The contractor shall work cautiously at all times to avoid accidents and damage to existing HECO facilities which can result in electrocution.
2. Construct new utility structures & coordinate relocation of respective utility facilities, prior to removal of existing, respectively.
3. See street lighting & traffic signal plans for street lighting & traffic signal work.
4. HECO, HTCO & CATV to remove their respective overhead facilities.
5. Coordinate manhole/handhole adjustments with respective utility(s).

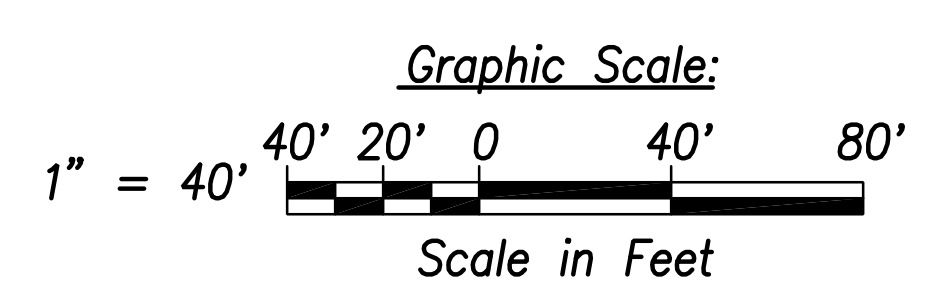


Notes:

- 1 Not Used.
- 2 See Sht. EF-12 for Enlarged Equipment Layout 1.
- 3 See Sht. EF-13 for Enlarged Equipment Layout 2.
- 4 For future development.
- 5 Excavate & expose exst. duct(s) to intercept with new manhole. Coordinate and schedule work with AT&T prior to excavation. Provide duct entry for AT&T, per utility co. requirements. Repair to match existing.

- 6 Excavate & expose exst. manhole wall(s). Coordinate and schedule work with AT&T prior to excavation. Demolish exst. manhole, provide couplings as required & extend duct(s) to exst. Repair to match existing.
- 7 Excavate & expose exst. duct(s) to intercept with new duct(s). Coordinate and schedule work with respective utility company prior to excavation. Repair to match existing.
- 8 HECO Betterment.

Electrical Plan 6 - (Sta. 40+00 to Sta. 49+00)
Scale: 1" = 40'



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QUANTITIES BY	
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ORIGINAL PLAN	No. _____
NOTE BOOK	

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DRAWING REVIEW

Reviewed for Hawaiian Electric Company Facilities Only
Req# _____ By _____ Date _____
Transmission & Distribution Engineering
Hawaiian Electric
Hawaiian Electric's review of these drawings shall in no way relieve the Customer, its Consultant, its Contractor or anyone acting on the Customer's behalf from the responsibility for engineering, design, materials and any other liability associated with this project including revisions made beyond the reviewed data.



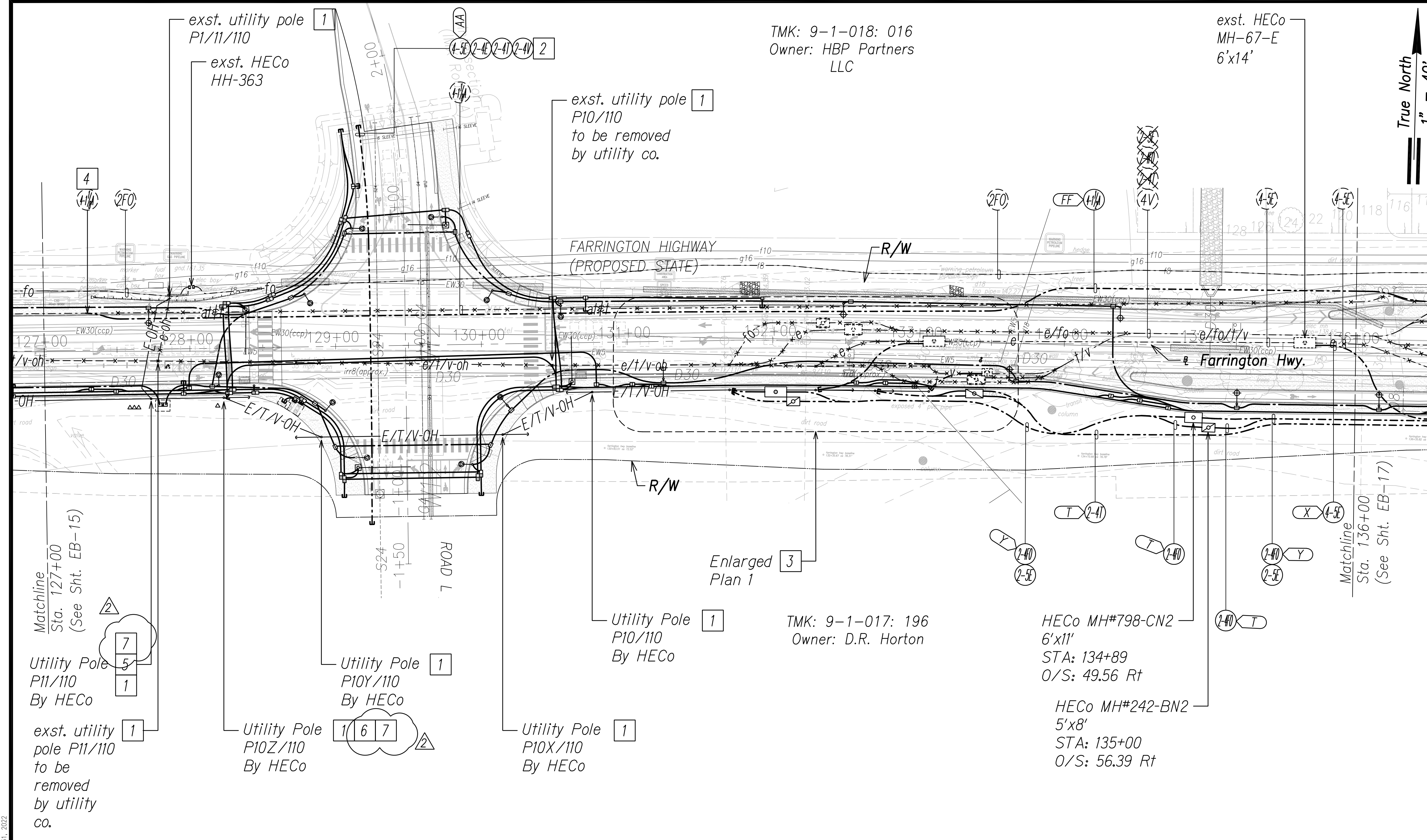
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.
SIGNATURE: [Signature]
Date: April 30, 2024
EXPIRATION DATE OF THE LICENSE

06/08/22	2 UPDATED SHEET
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
ELECTRICAL PLAN 6	
FARRINGTON HIGHWAY WIDENING Kapolei Golf Course Road to Fort Weaver Road Project No. 7101A-01-20	
Scale: As Shown	Date: April 2022
SHEET No. EB-06 OF 25 SHEETS	

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	710A-01-20	2021	EB-16	790

General Electrical Notes:

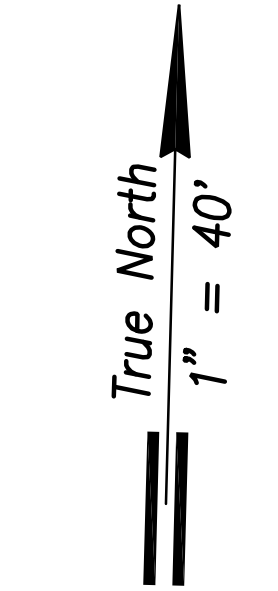
1. **Caution!!! Electrical Hazard!!!** Existing HECo overhead and underground lines, are energized and will remain energized during construction unless prior special arrangements have been made with HECo. Only HECo personnel are to handle these energized lines and erect temporary guards to protect these lines from damage. The contractor shall work cautiously at all times to avoid accidents and damage to existing HECo facilities which can result in electrocution.
2. Construct new utility structures & coordinate relocation of respective utility facilities, prior to removal of existing, respectively.
3. See street lighting & traffic signal plans for street lighting & traffic signal work.
4. HECo, HCo & CATV to remove their respective overhead facilities.
5. Coordinate manhole/handhole adjustments with respective utility(s).



TMK: 9-1-018: 016
Owner: HBP Partners LLC

exst. HECo
MH-67-E
6'x14'

TMK: 9-1-017: 196
Owner: D.R. Horton



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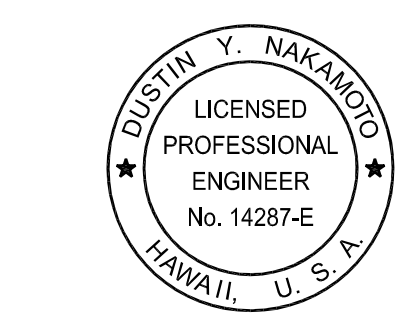
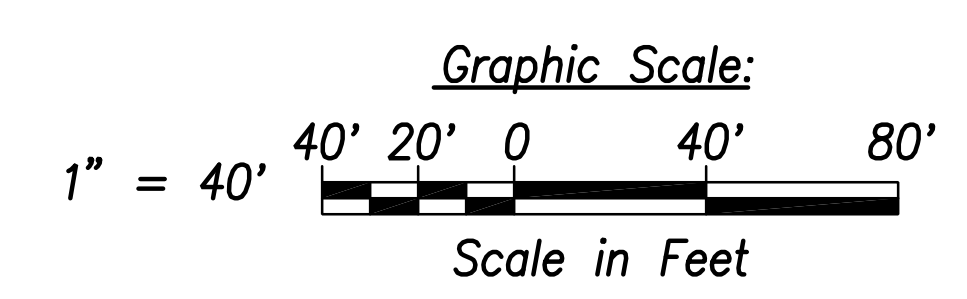
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ORIGINAL PLAN	
NOTE BOOK	
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Notes:

- 1 Provide proper bracing/support for exst. utility pole during construction; submit details to respective utility company(s) for approval.
- 2 For future development.
- 3 See Sht. EB-21 for Enlarged Plan 1.
- 4 Excavate & expose exst. duct(s) to intercept with new duct(s). Coordinate and schedule work with AT&T prior to excavation. Repair to match existing.

- 5 Weatherhead for street light service to be installed on pole.
- 6 Weatherhead for traffic service to be installed on pole.
- 7 HECo to install transformer(s) for street light or traffic signal service.

Electrical Plan 16 - (Sta. 127+00 to Sta. 136+00)
Scale: 1" = 40'



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.
SIGNATURE: [Signature]
April 30, 2024
EXPIRATION DATE OF THE LICENSE

DRAWING REVIEW
Reviewed for Hawaiian Electric Company Facilities Only
Req# _____ By _____ Date _____
Transmission & Distribution Engineering
Hawaiian Electric
Hawaiian Electric's review of these drawings shall in no way relieve the Customer, its Consultant, its Contractor or anyone acting on the Customer's behalf from the responsibility for engineering, design, materials and any other liability associated with this project including revisions made beyond the reviewed data.

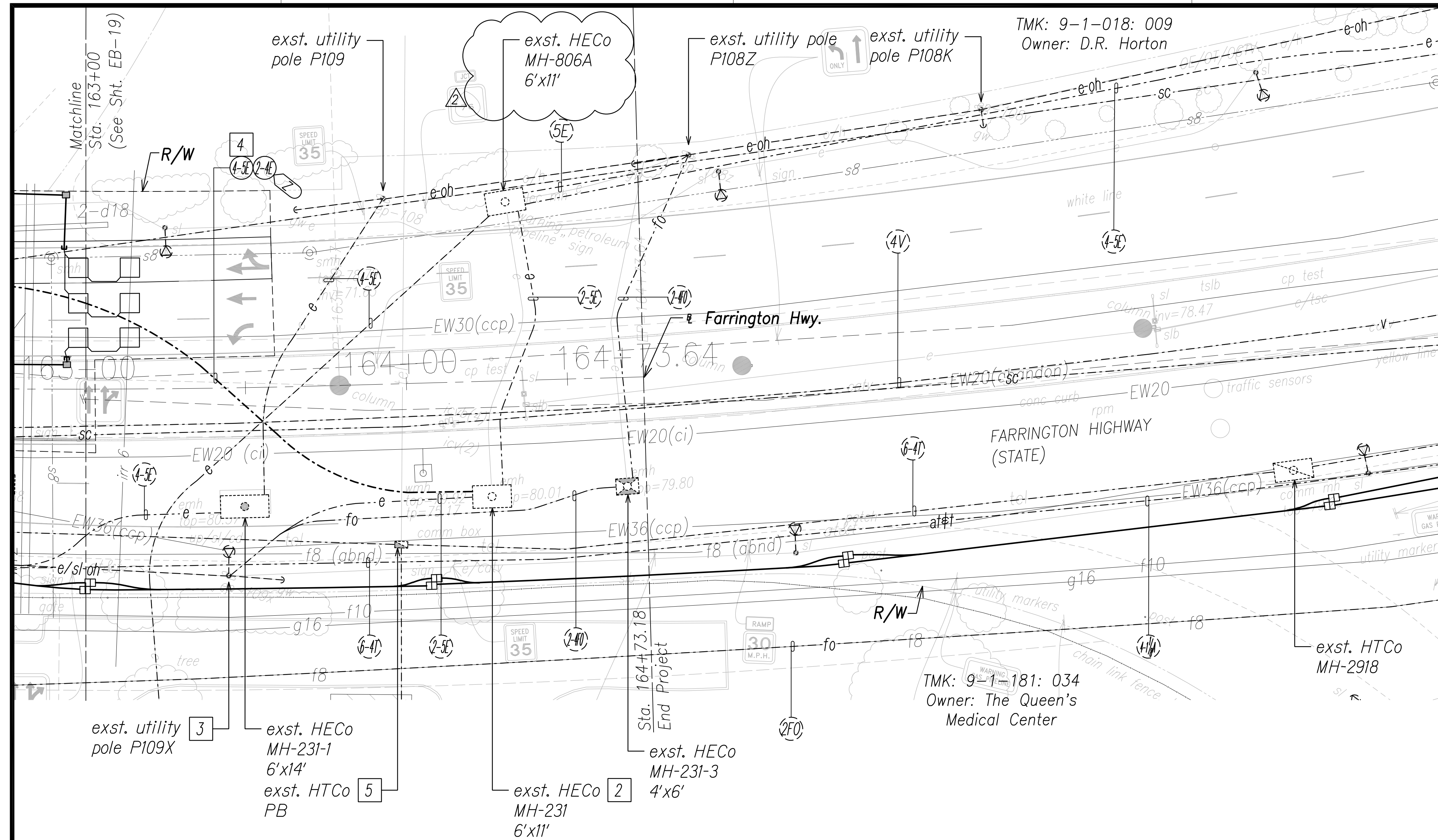
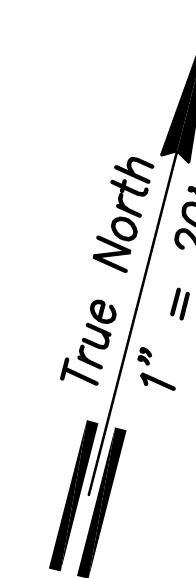
06/08/22	2 UPDATED SHEET
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
ELECTRICAL PLAN 16	
FARRINGTON HIGHWAY WIDENING Kapolei Golf Course Road to Fort Weaver Road Project No. 7101A-01-20	
Scale: As Shown	Date: April 2022
SHEET No. EB-16 OF 25 SHEETS	

ADD. 602

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	710A-01-20	2021	EB-20	790

General Electrical Notes:

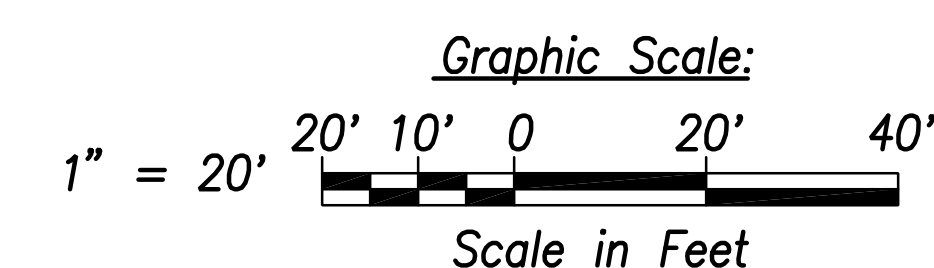
1. **Caution!!! Electrical Hazard!!!** Existing HECO overhead and underground lines, are energized and will remain energized during construction unless prior special arrangements have been made with HECO. Only HECO personnel are to handle these energized lines and erect temporary guards to protect these lines from damage. The contractor shall work cautiously at all times to avoid accidents and damage to existing HECO facilities which can result in electrocution.
2. Construct new utility structures & coordinate relocation of respective utility facilities, prior to removal of existing, respectively.
3. See street lighting & traffic signal plans for street lighting & traffic signal work.
4. HECO, HECO & CATV to remove their respective overhead facilities.
5. Coordinate manhole/handhole adjustments with respective utility(s).



Notes:

- | | |
|---|--|
| <p>1 Provide conduit riser(s) up pole per utility company requirements.</p> <p>2 Excavate & expose manhole wall(s). Coordinate & schedule work with HECO prior to commencing with excavation. Caution!!! Electrical Hazard!!! Only HECO personnel shall break & remove existing conduits, shift cables, & construct duct entry(s). Provide couplings as required & extend duct(s). Repair to match existing. The cost of HECO's assistance in providing proper support & protection will be changed to the contractor. Repair to match existing.</p> | <p>3 Provide proper bracing/support for exst. utility pole during construction; submit details to respective utility company(s) for approval.</p> <p>4 For Future Development.</p> <p>5 Not found.</p> |
|---|--|

Electrical Plan 20 - (Sta. 163+00 to End)
Scale: 1" = 20'

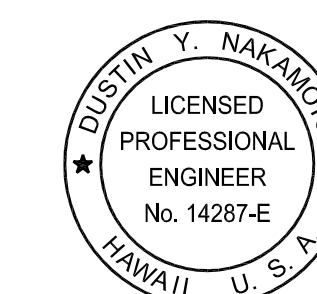


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ORIGINAL PLAN	
NOTE BOOK	
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DRAWING REVIEW

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Req# _____ By _____ Date _____
Customer Installations Department
Hawaiian Electric
Hawaiian Electric's review of these drawings shall in no way relieve the Customer, its Consultant, its Contractor or anyone acting on the Customer's behalf from the responsibility for engineering, design, materials and any other liability associated with this project including revisions made beyond the reviewed date.

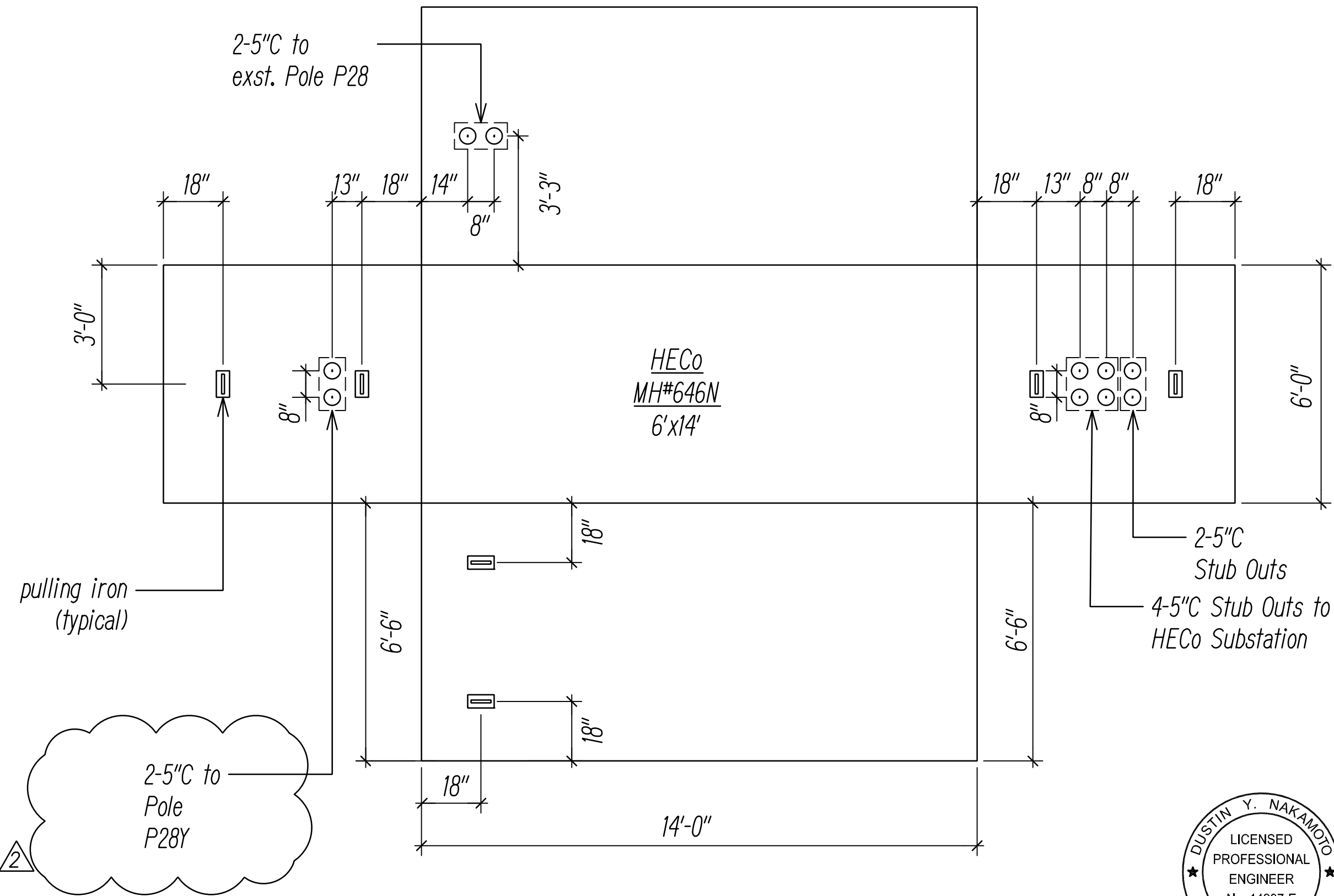
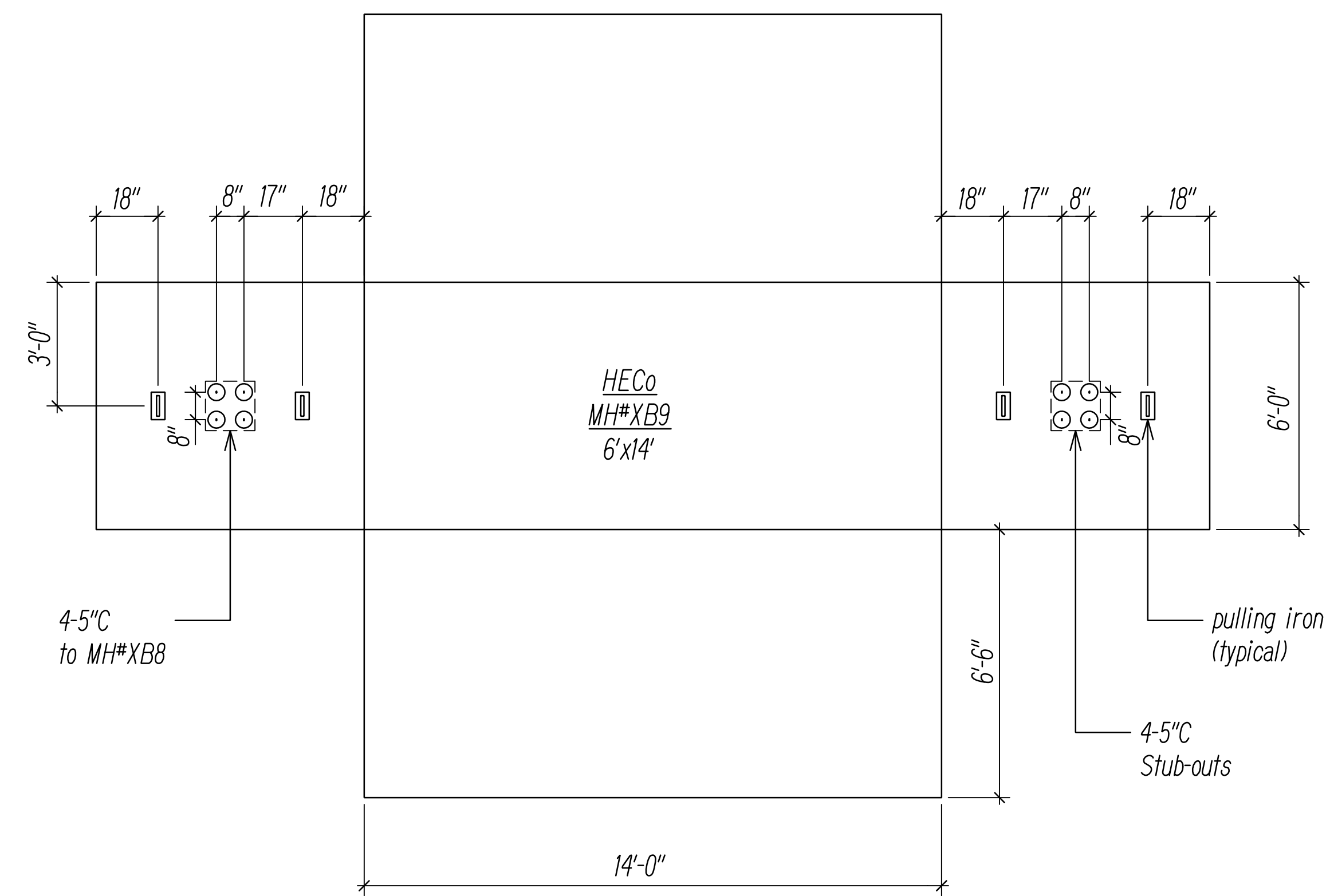
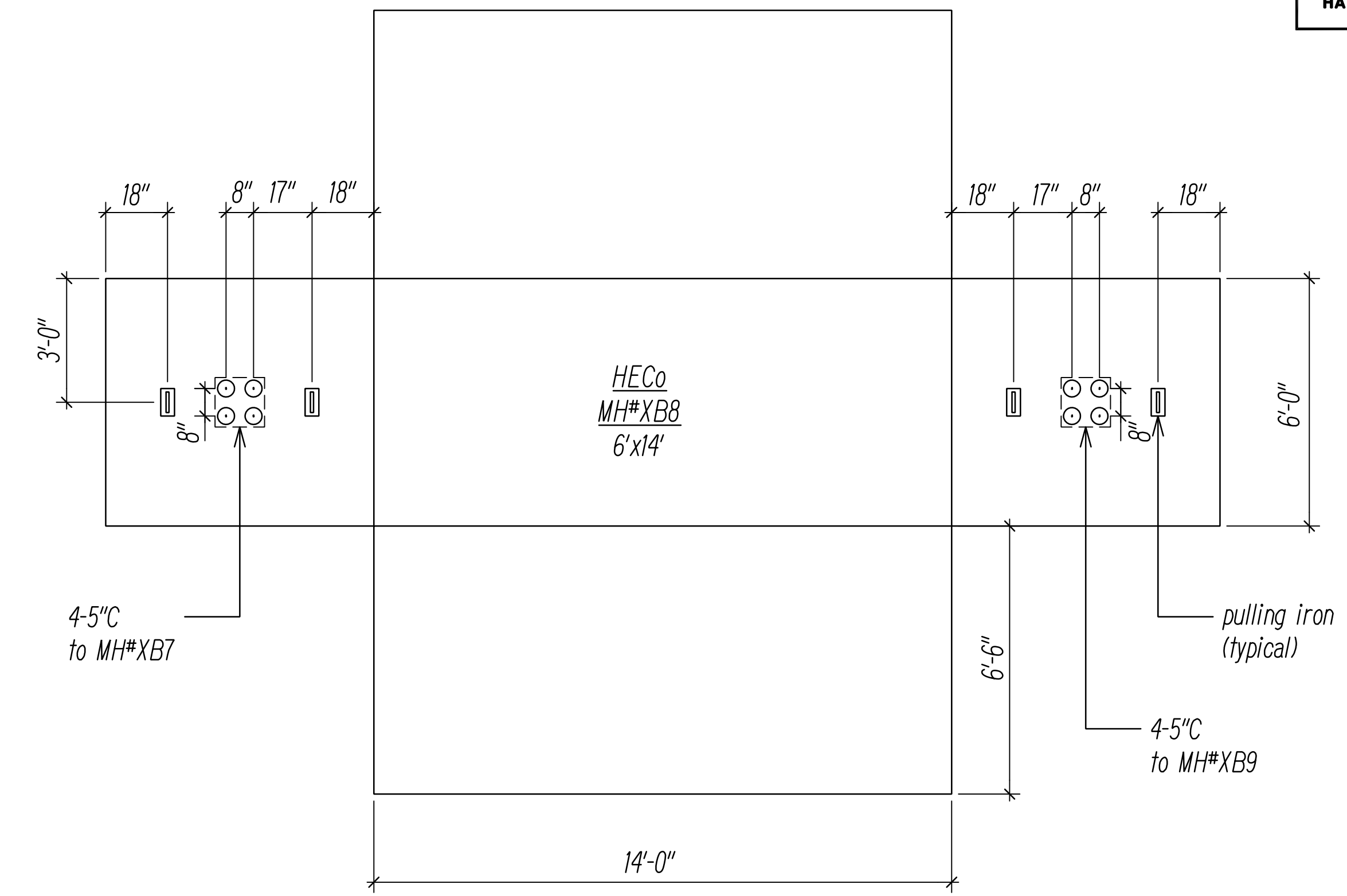
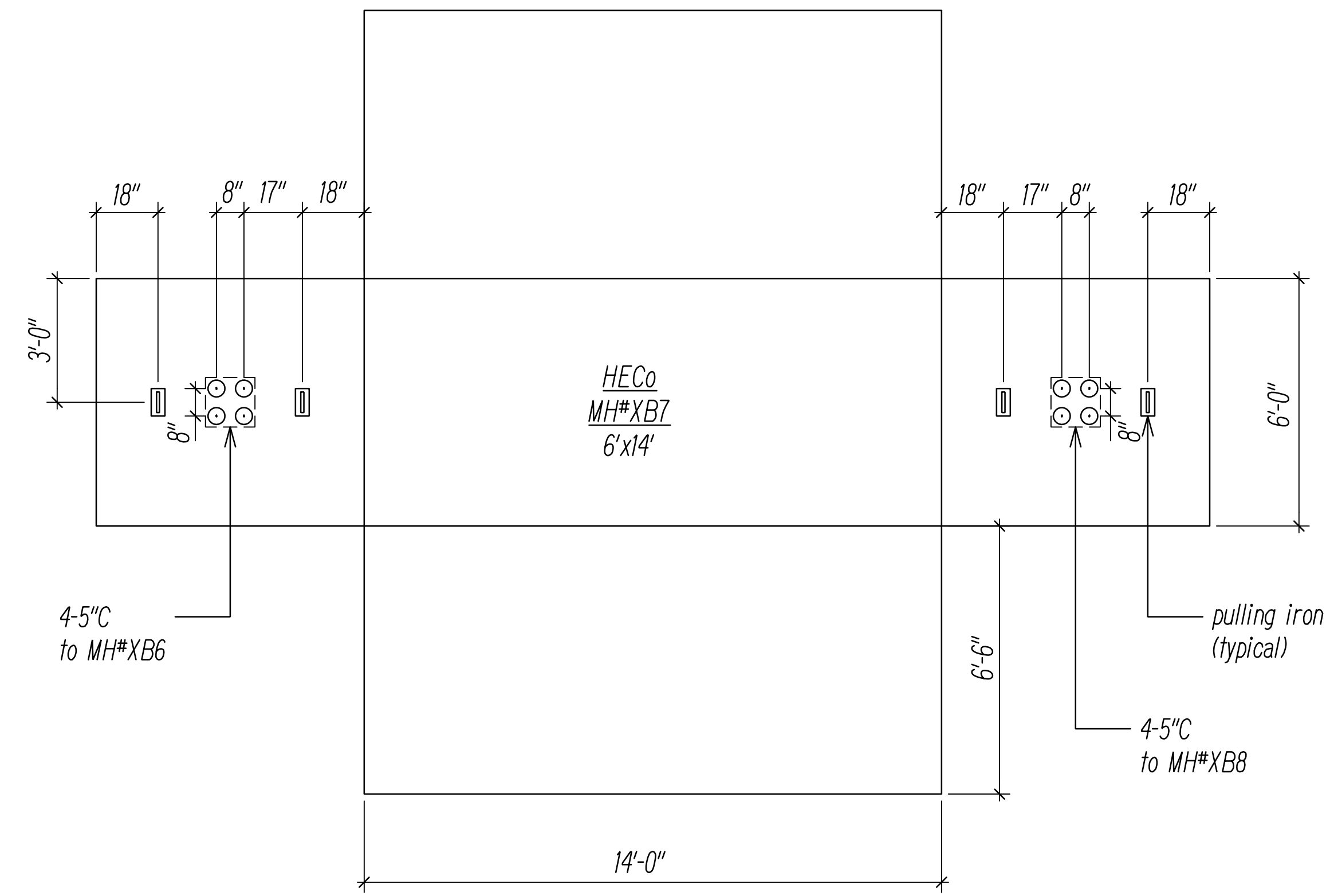


THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.
SIGNATURE: *[Signature]*
Date: April 30, 2022
EXPIRATION DATE OF THE LICENSE

06/08/22	2 UPDATED SHEET
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
ELECTRICAL PLAN 20	
FARRINGTON HIGHWAY WIDENING Kapolei Golf Course Road to Fort Weaver Road Project No. 7101A-01-20	
Scale: As Shown	Date: April 2022
SHEET No. EB-20 OF 25 SHEETS	

ADD. 606

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	710A-01-20	2021	EF-07	790



Notes:

1. Manhole Shop Drawings and Structural Calculations shall be submitted to to Utility Company(s) for review and approval prior to fabrication.
2. New Manhole(s) shall be constructed with 12" minimum and 18" maximum neck dimensions.

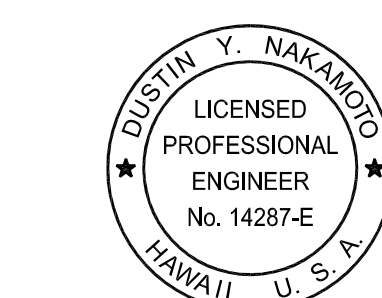
DRAWING REVIEW

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 Req# _____ By _____ Date _____
 Transmission & Distribution Engineering
 Hawaiian Electric
 Hawaiian Electric's review of these drawings shall in no way relieve the Customer, its Consultant, its Contractor or anyone acting on the Customer's behalf from the responsibility for engineering, design, materials and any other liability associated with this project including revisions made beyond the reviewed date.

DATE	_____
SURVEY PLOTTED BY	_____
DRAWN BY	_____
TRACED BY	_____
QUANTITIES BY	_____
CHECKED BY	_____
NO.	_____

FILE: Z:\ACAD\PROJECTS\220674\ERD_220674_HECO-MH-BETAL-03.dwg saved May 31, 2022

HECO MANHOLE DIAGRAMS 3
 NOT TO SCALE



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

Signature: _____
 Date: April 30, 2024
 EXPIRATION DATE OF THE LICENSE

06/08/22	2 UPDATED SHEET
DATE	REVISION

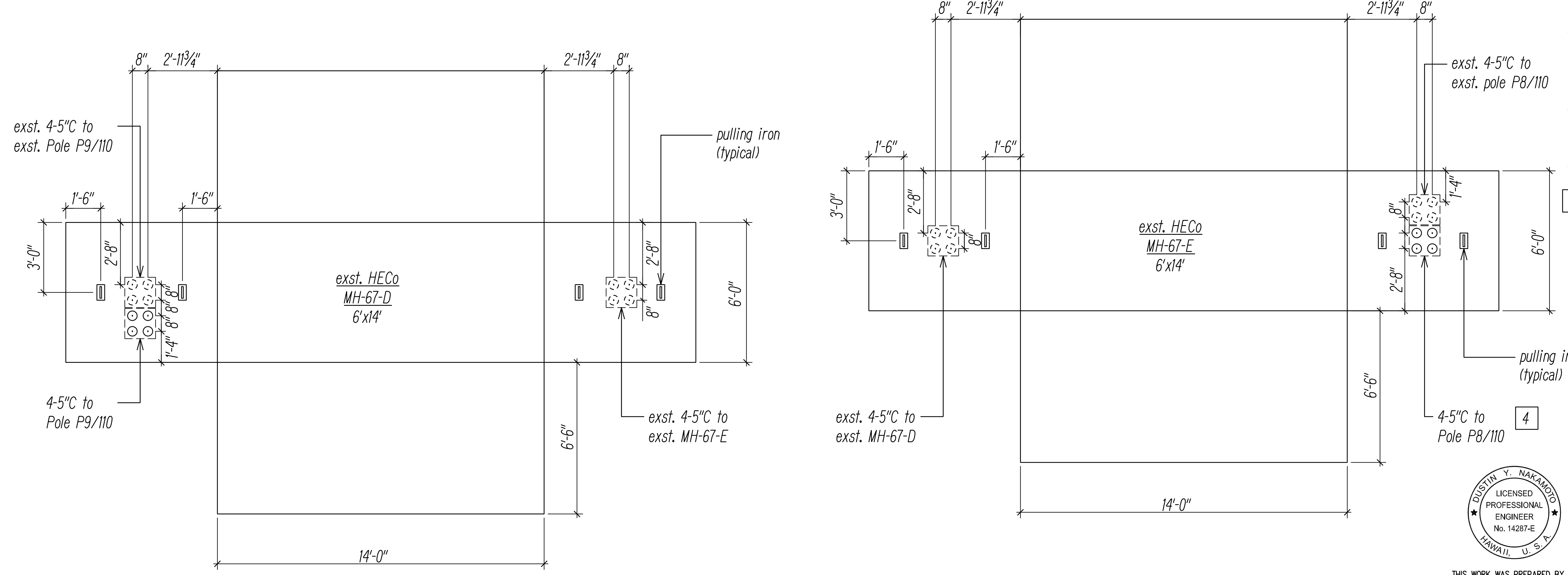
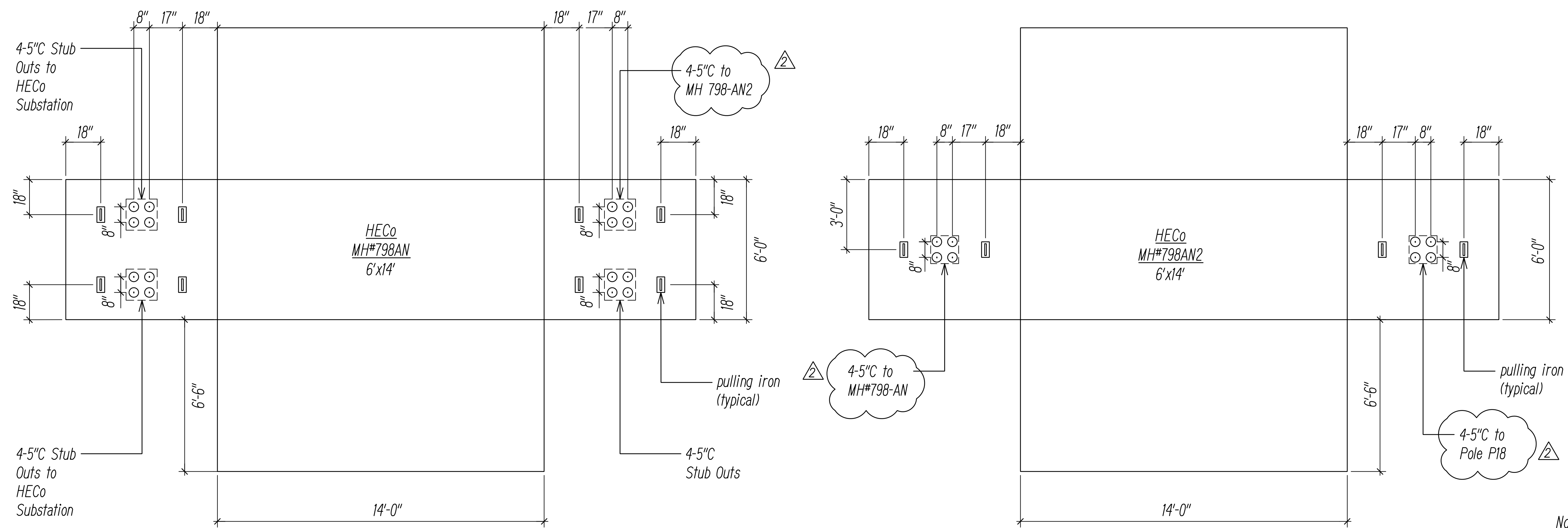
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

HAWAIIAN ELECTRIC Co. (HECO)
MANHOLE DIAGRAMS 3

FARRINGTON HIGHWAY WIDENING
 Kapolei Golf Course Road to Fort Weaver Road
 Project No. 7101A-01-20

Scale: As Shown Date: April 2022

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	710A-01-20	2021	EF-08	790



- Notes:**
1. Manhole Shop Drawings and Structural Calculations shall be submitted to to Utility Company(s) for review and approval prior to fabrication.
 2. New Manhole(s) shall be constructed with 12" minimum and 18" maximum neck dimensions.
 3. Verify all dimensions on existing manholes.
 4. Utilize previous knockout and duct entry for new conduit(s).

DRAWING REVIEW
 Reviewed for Hawaiian Electric Company Facilities Only
 Req# _____ By _____ Date _____
 Transmission & Distribution Engineering
 Hawaiian Electric
 Hawaiian Electric's review of these drawings shall in no way relieve the Customer, its Consultant, its Contractor or anyone acting on the Customer's behalf from the responsibility for engineering, design, materials and any other liability associated with this project including revisions made beyond the reviewed date.

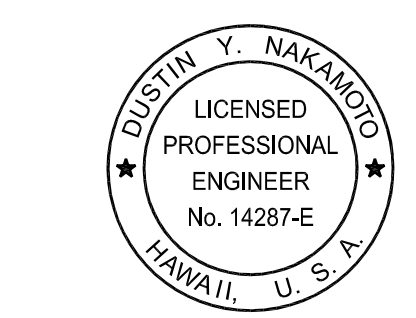
06/08/22	UPDATED SHEET
DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

HAWAIIAN ELECTRIC Co. (HECo)
MANHOLE DIAGRAMS 4

FARRINGTON HIGHWAY WIDENING
 Kapolei Golf Course Road to Fort Weaver Road
 Project No. 7101A-01-20

Scale: As Shown Date: April 2022



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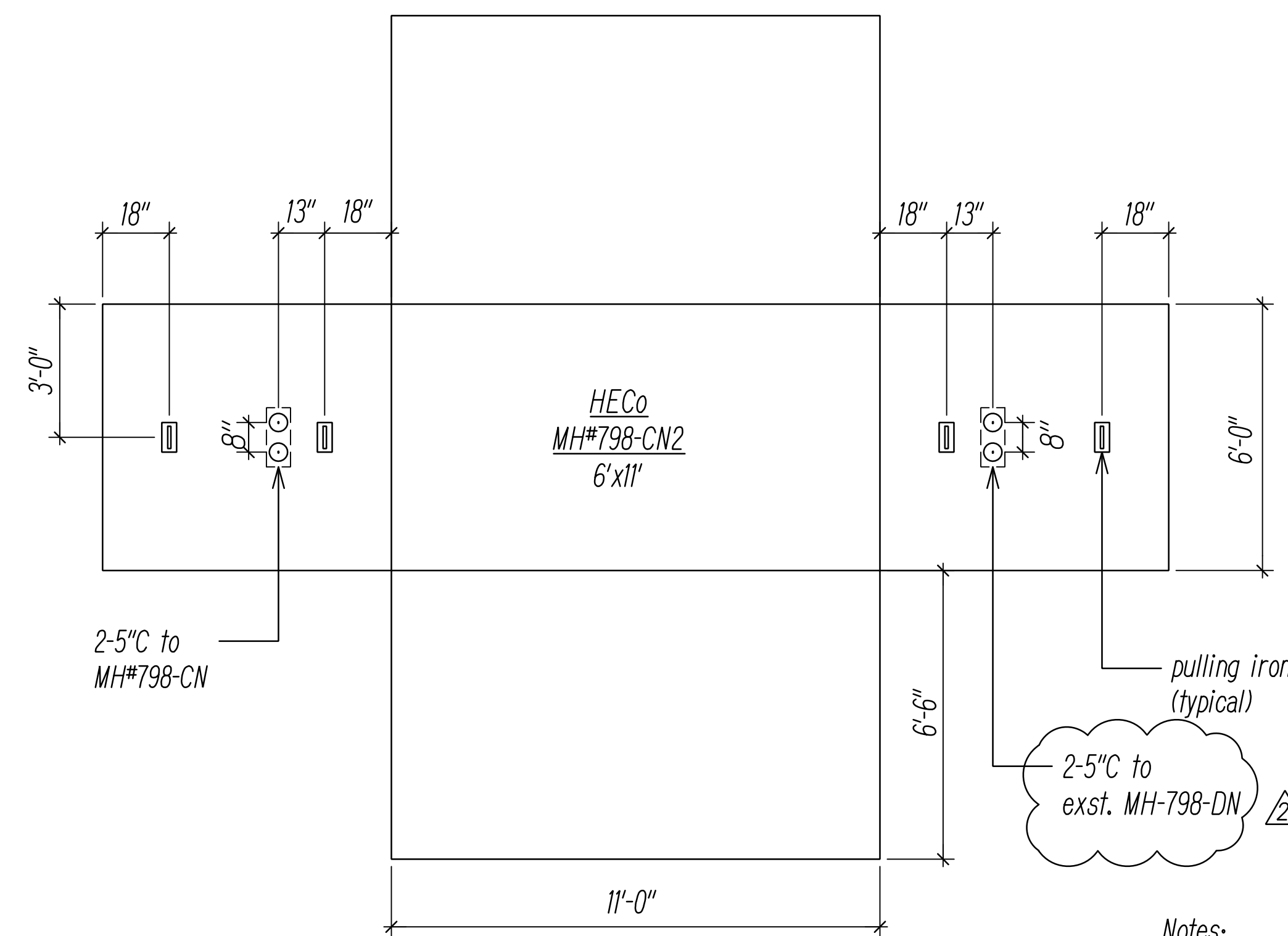
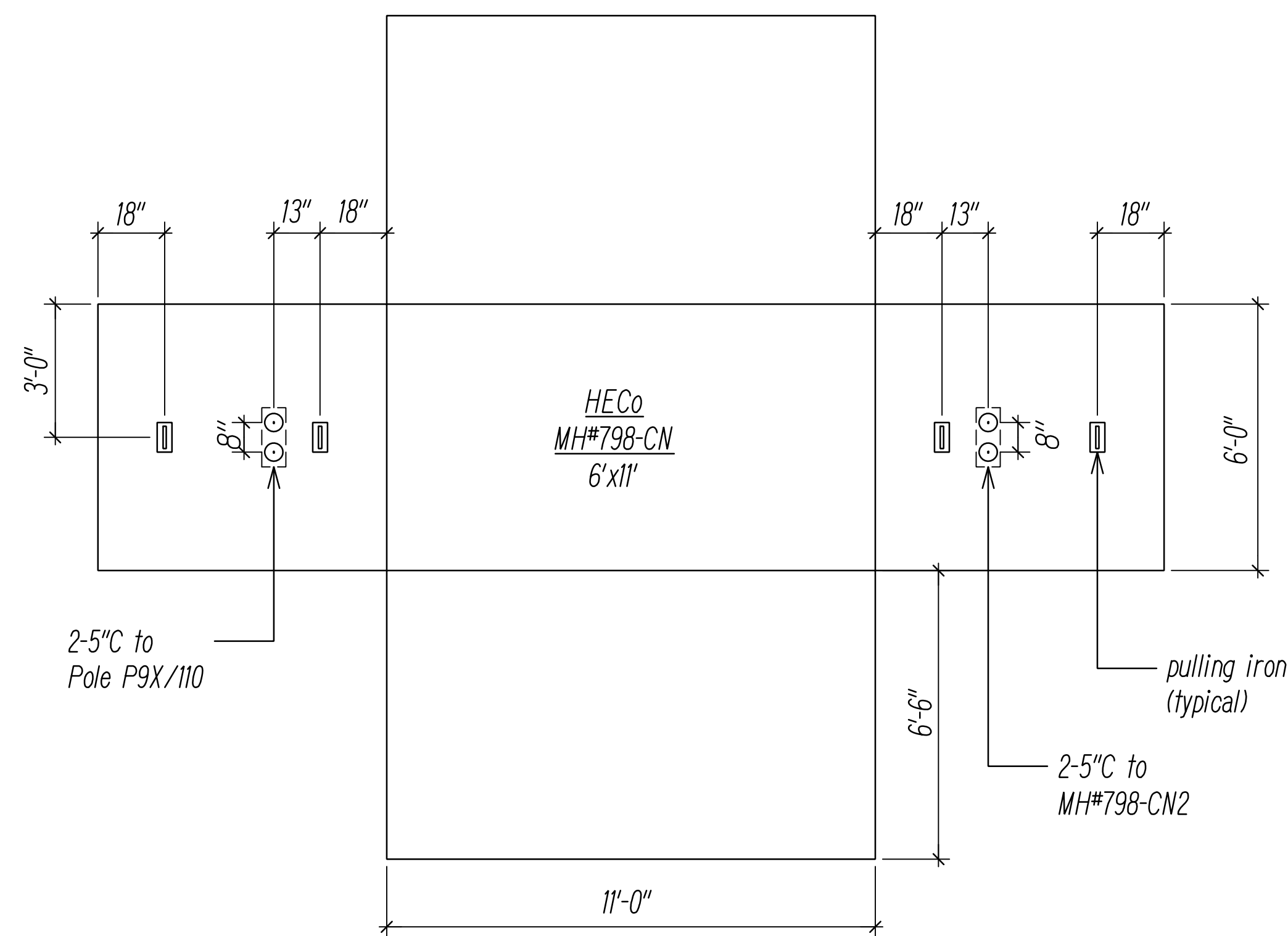
 SIGNATURE April 30, 2024
 EXPIRATION DATE OF THE LICENSE

HECo MANHOLE DIAGRAMS 4
 NOT TO SCALE

DATE	_____
SURVEY PLOTTED BY	_____
DRAWN BY	_____
TRACED BY	_____
DESIGNED BY	_____
QUANTITIES BY	_____
CHECKED BY	_____
No.	_____

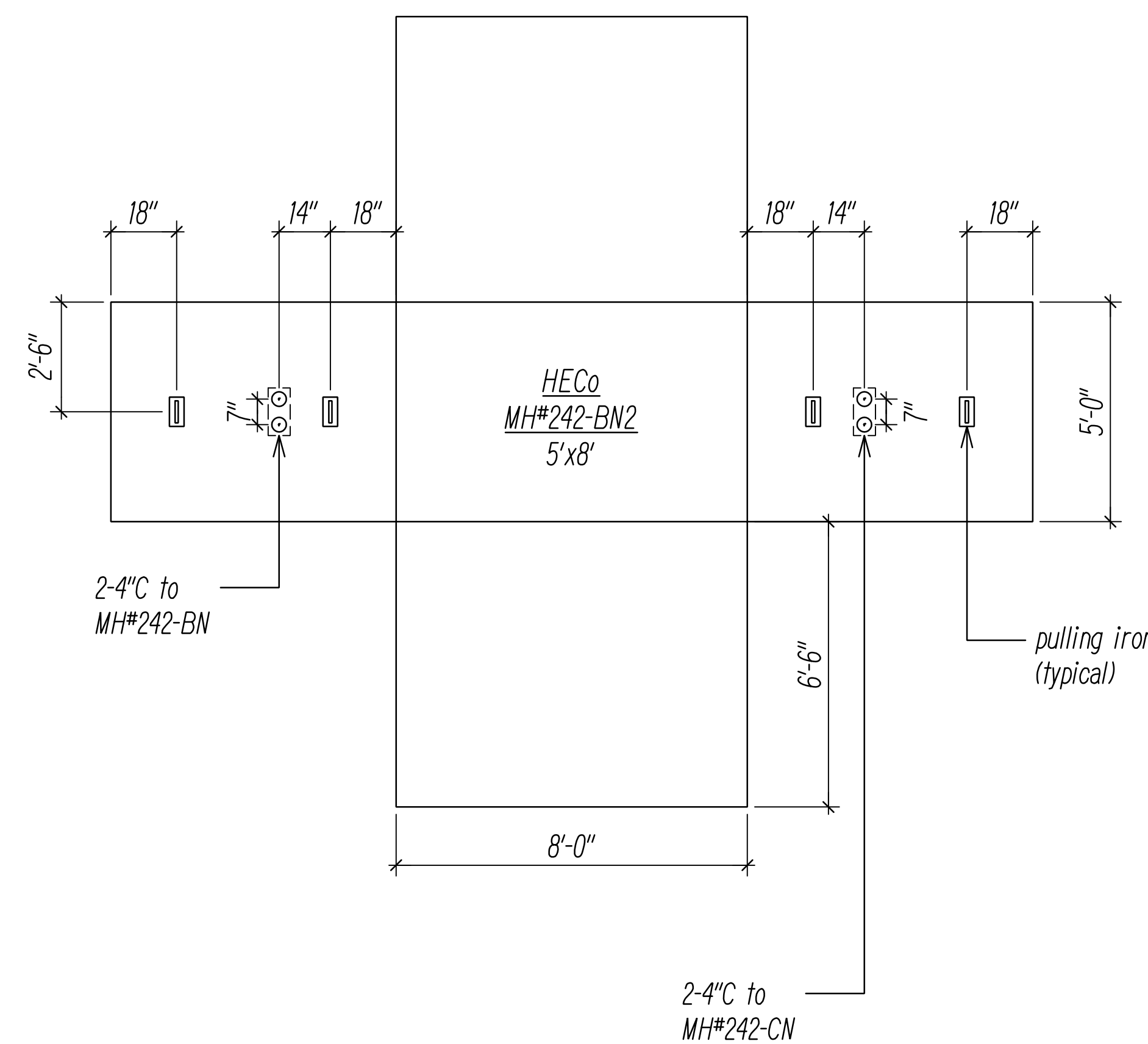
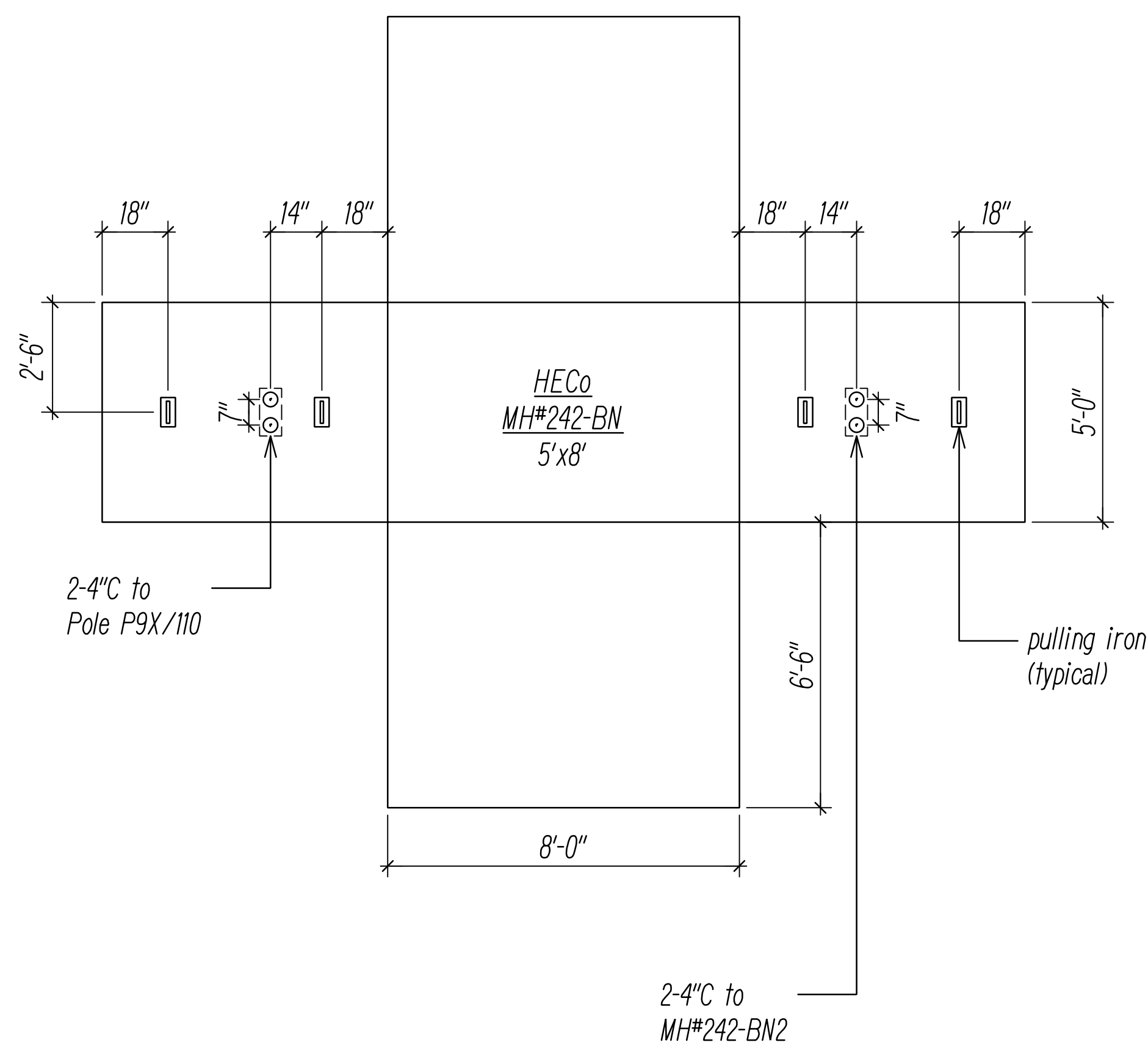
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FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	710A-01-20	2021	EF-09	790



Notes:

1. Manhole Shop Drawings and Structural Calculations shall be submitted to to Utility Company(s) for review and approval prior to fabrication.
2. New Manhole(s) shall be constructed with 12" minimum and 18" maximum neck dimensions.



HECO MANHOLE DIAGRAMS 5
NOT TO SCALE

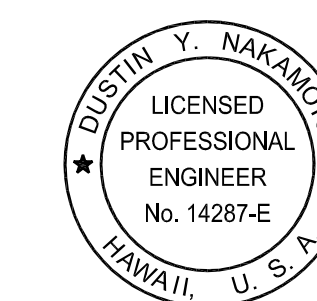
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NOTE BOOK	DRAWN BY	
No. _____	TRACED BY	
	QUANTITIES BY	
	CHECKED BY	

FILE: Z:\ACAD\PROJECTS\220679A\EP9_22\0679A_HECO-MH-BEHAL-05.dwg saved May 31, 2022

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 Transmission & Distribution Engineering
 Hawaiian Electric
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06/08/22	UPDATED SHEET
DATE	REVISION

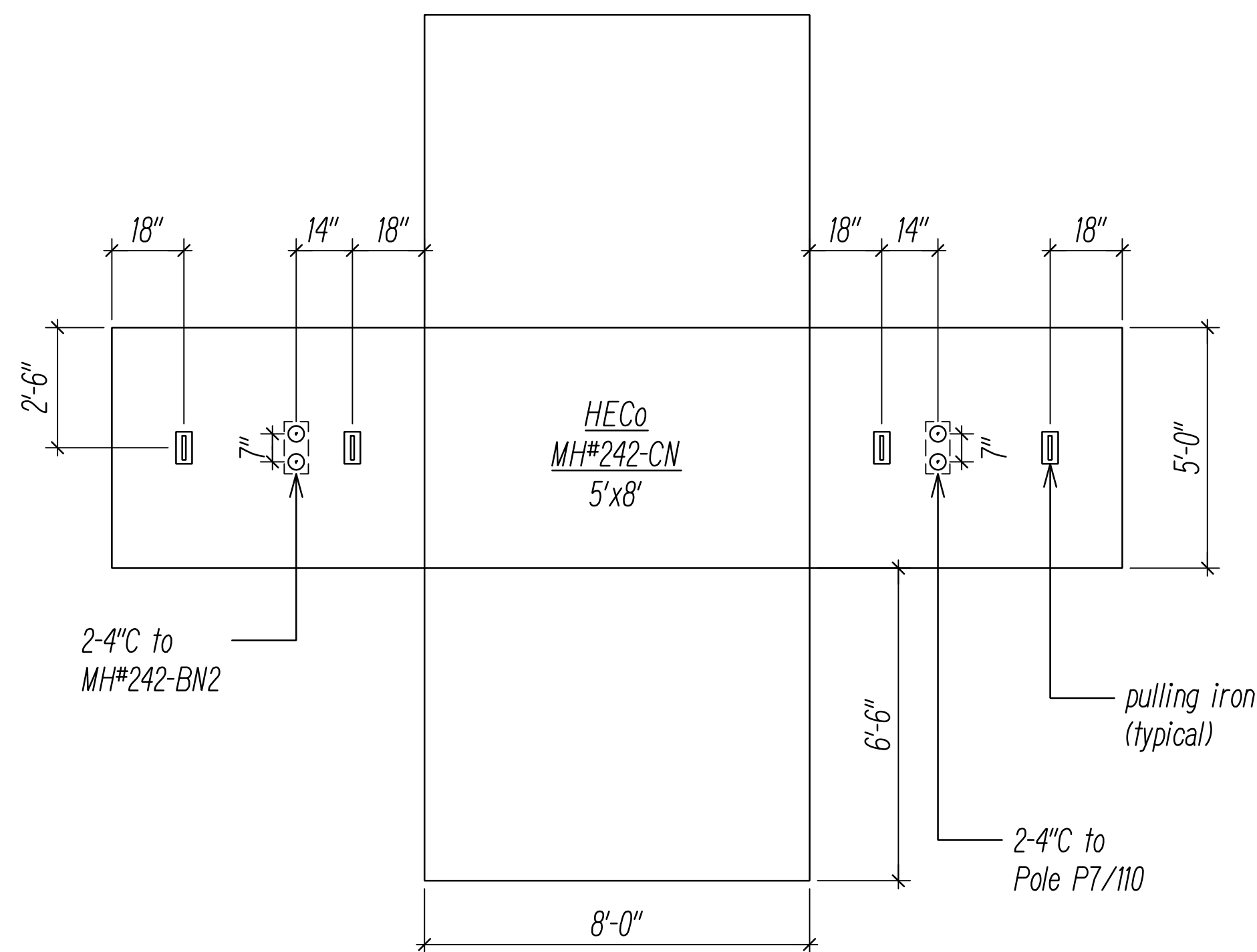
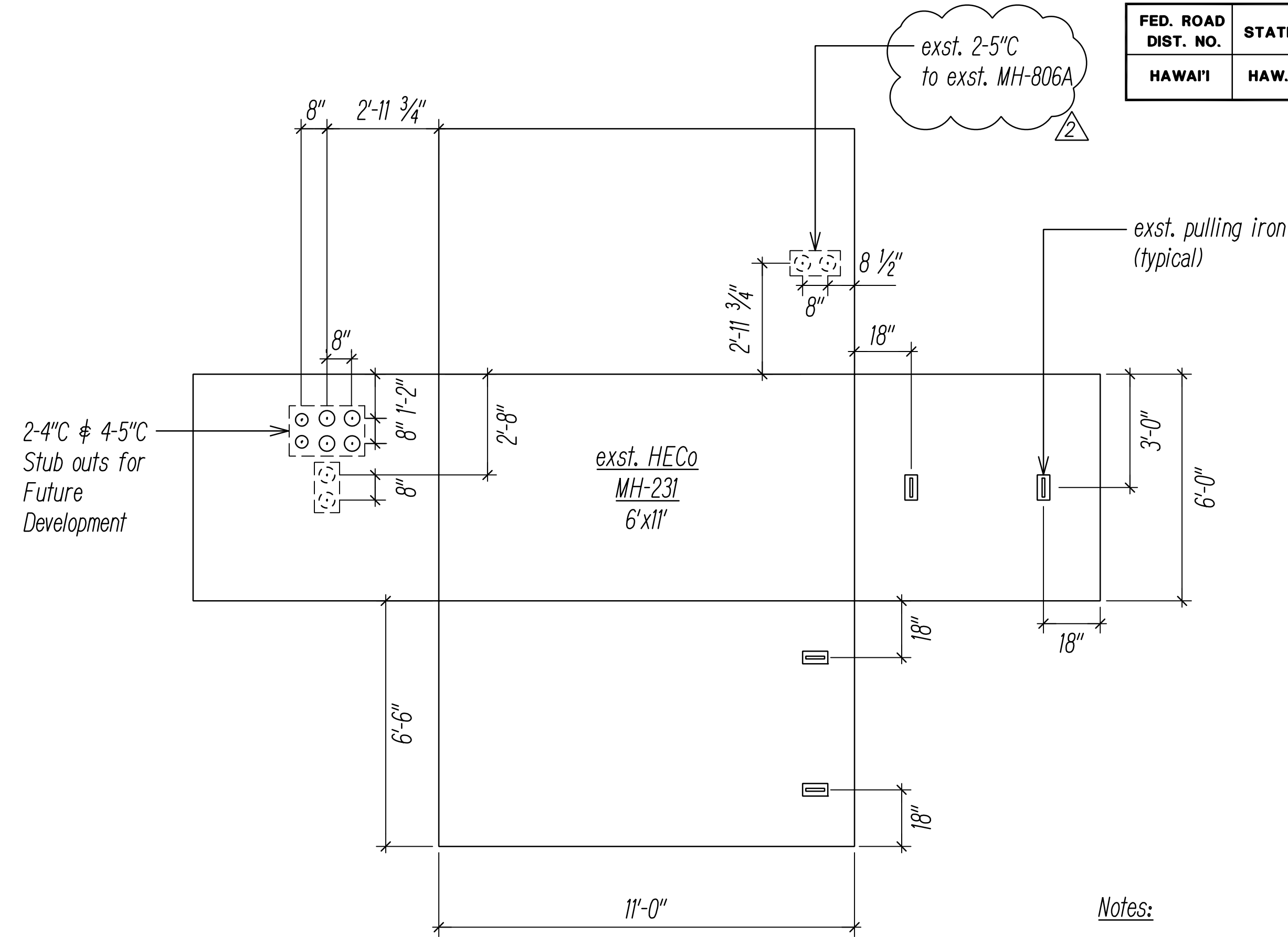
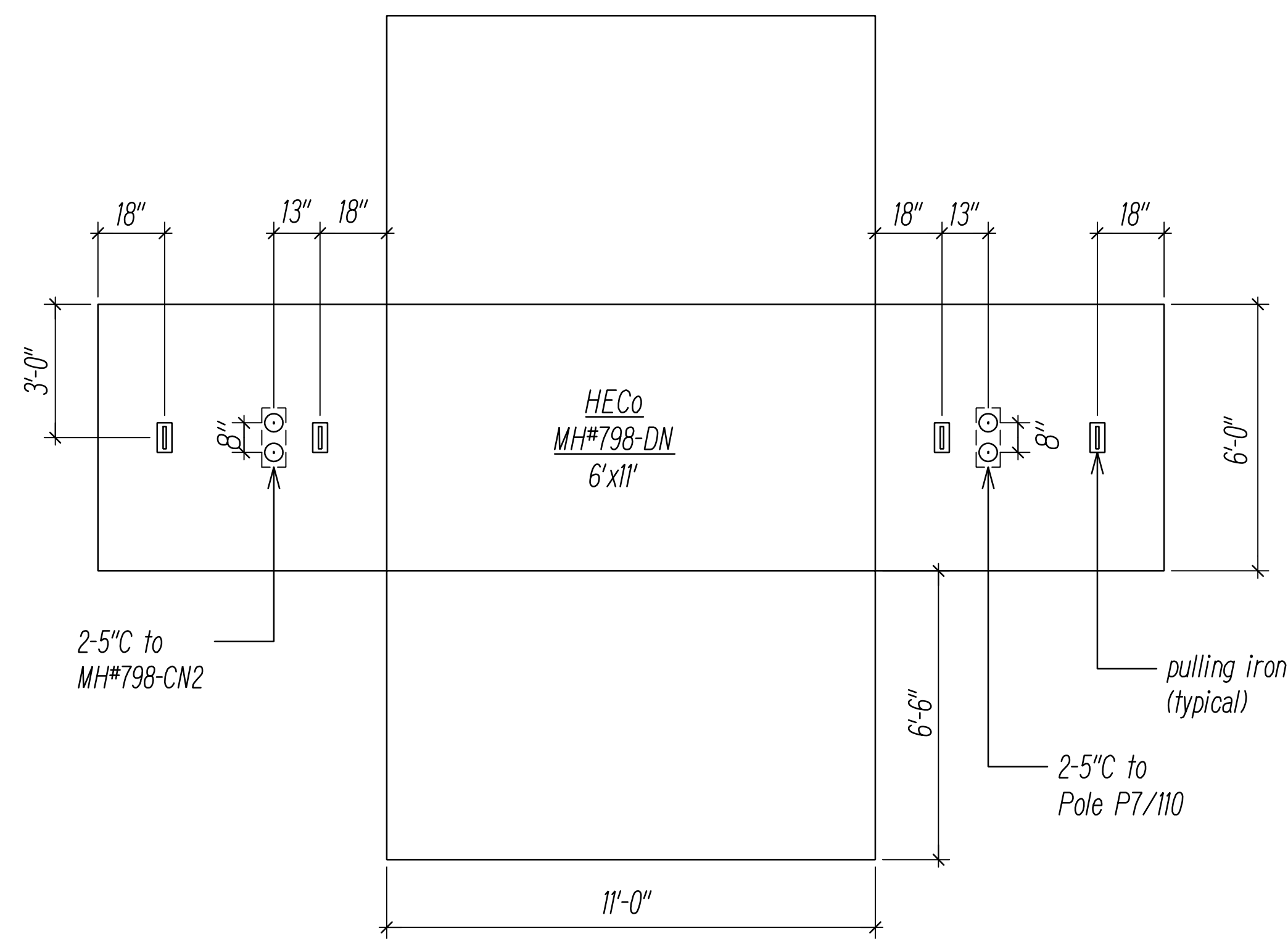


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SIGNATURE: *[Signature]*
 EXPIRATION DATE OF THE LICENSE: April 30, 2024

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
HAWAIIAN ELECTRIC Co. (HECO)
MANHOLE DIAGRAMS 5
 FARRINGTON HIGHWAY WIDENING
 Kapolei Golf Course Road to Fort Weaver Road
 Project No. 7101A-01-20
 Scale: As Shown Date: April 2022

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	710A-01-20	2021	EF-10	790



Notes:

1. Manhole Shop Drawings and Structural Calculations shall be submitted to to Utility Company(s) for review and approval prior to fabrication.
2. New Manhole(s) shall be constructed with 12" minimum and 18" maximum neck dimensions.
3. Verify all dimensions on existing manholes.

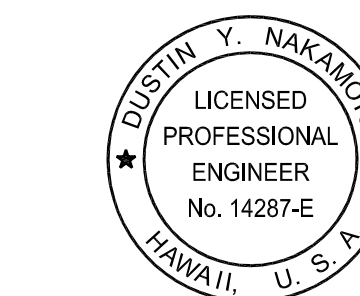
DRAWING REVIEW

Reviewed for Hawaiian Electric Company Facilities Only
 Req# _____ By _____ Date _____
 Transmission & Distribution Engineering
 Hawaiian Electric
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ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	
No. _____	TRACED BY	
	QUANTITIES BY	
	CHECKED BY	

FILE: Z:\ACAD\PROJECTS\220671A\ETO_220671A\HECO-WH-BE\16-6.dwg saved May 31, 2022

HECO MANHOLE DIAGRAMS 6
 NOT TO SCALE

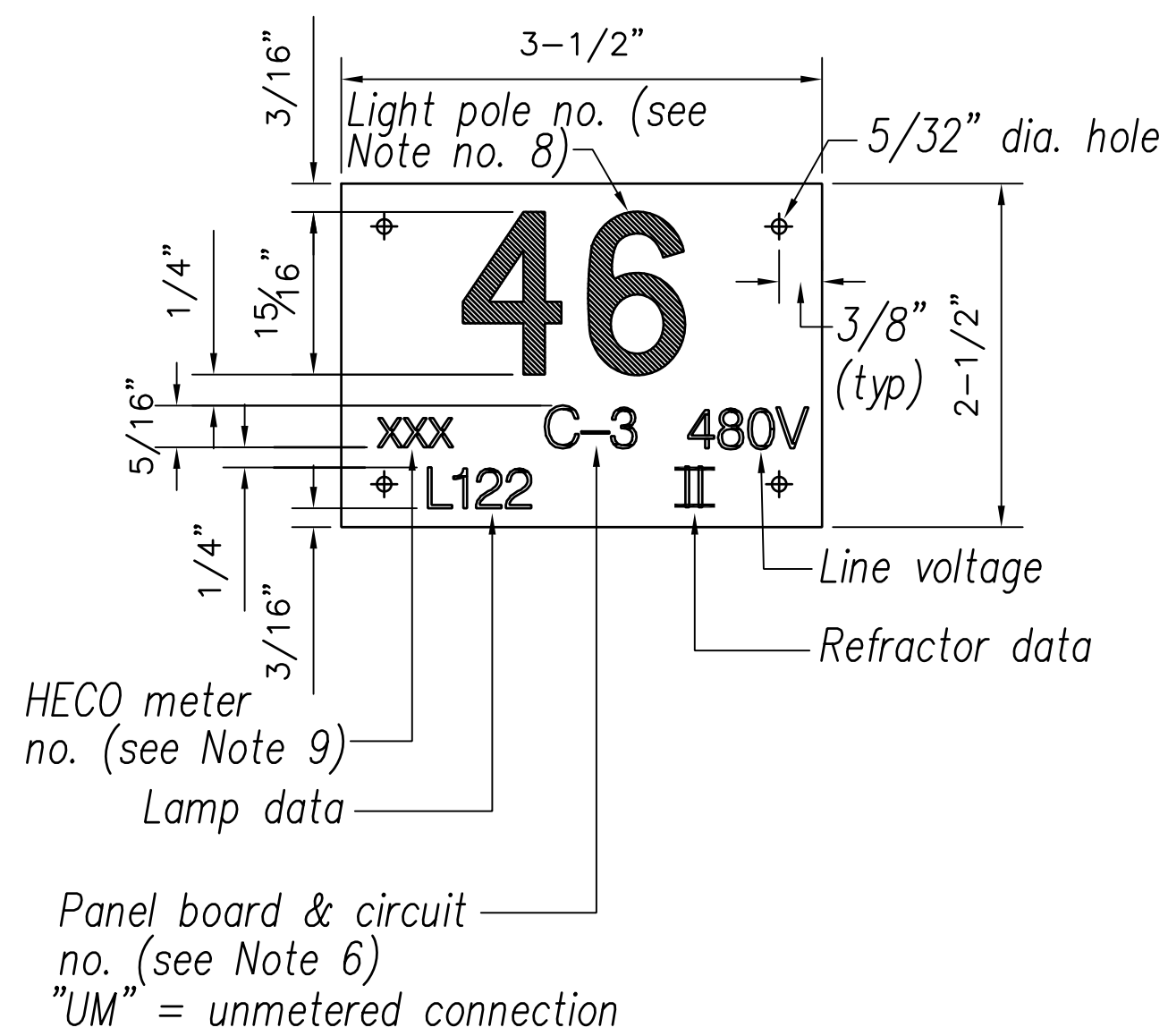


THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.

Signature: *[Signature]*
 April 30, 2024
 EXPIRATION DATE OF THE LICENSE

06/08/22	UPDATED SHEET
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
HAWAIIAN ELECTRIC Co. (HECO) MANHOLE DIAGRAMS 6	
FARRINGTON HIGHWAY WIDENING Kapolei Golf Course Road to Fort Weaver Road Project No. 7101A-01-20	
Scale: As Shown	Date: April 2022
SHEET No. EF-10 OF 21 SHEETS	

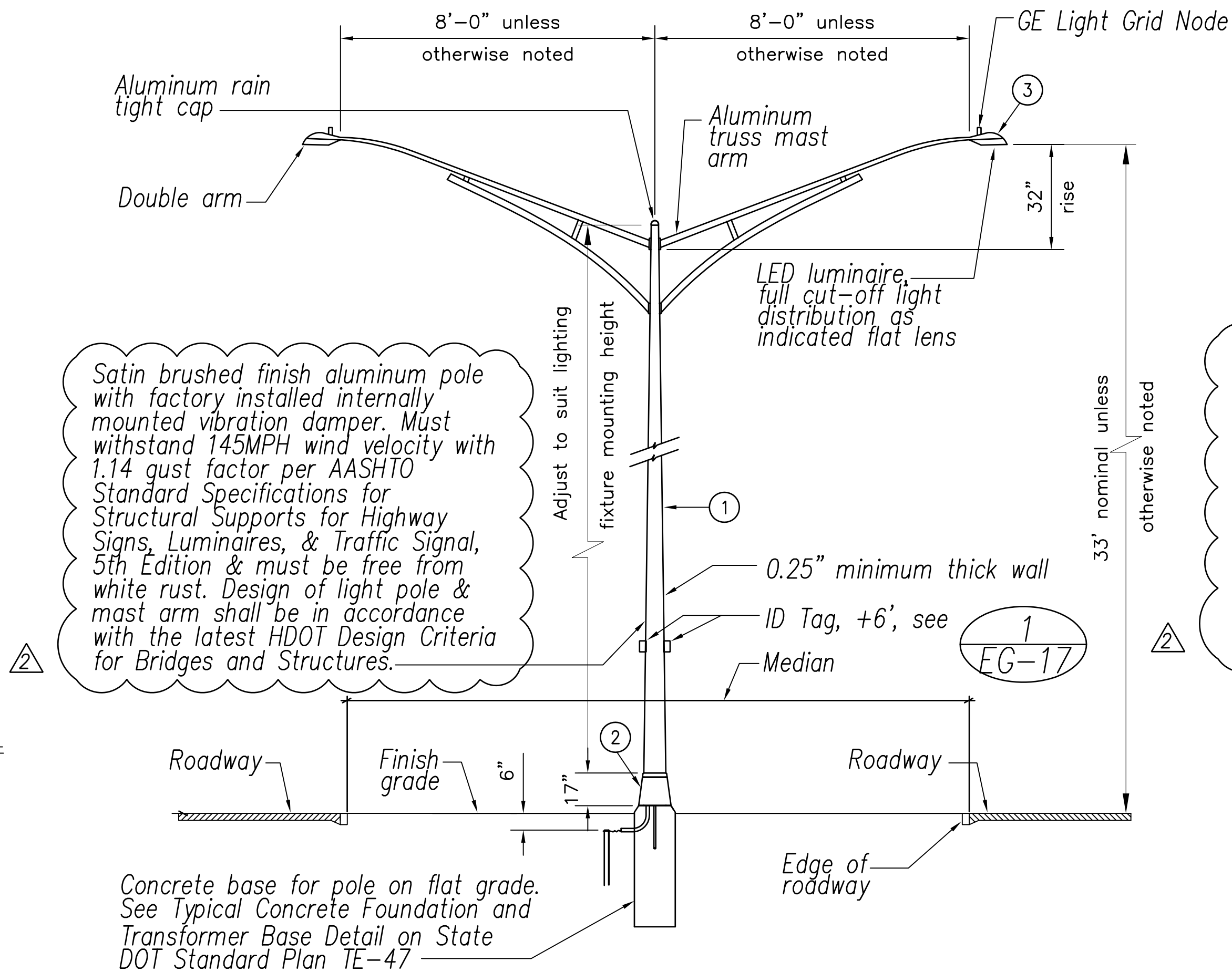
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	710A-01-20	2021	EG-17	790



1 STREET LIGHT POLE TAG DETAIL
EG-17 NOT TO SCALE

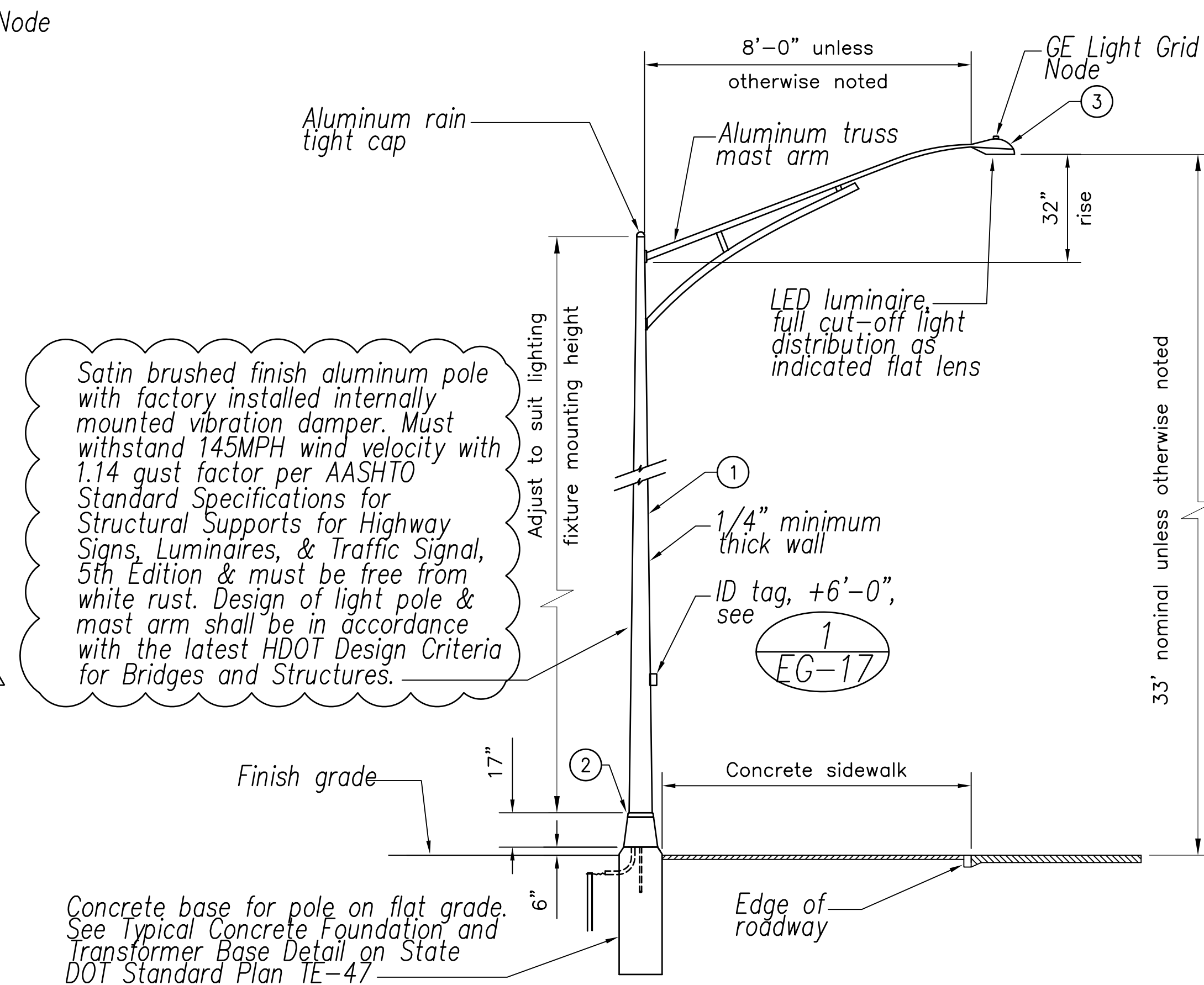
NOTES:

- Use 3 ply laminated flexible plastic black-white-black thickness black cap sheet-0.010", white base sheet-0.052", black base sheet-0.010".
- Light pole number size shall be 1" high and engraved 1/8" wide, white in color (number as required).
- Nomenclature size shall be 5/16" high and engraved 1/32" wide, white in color (HECO meter number, panel board and circuit number, line voltage, lamp data and refractor data as required).
- Attach to aluminum and steel post with no. 8 stainless steel, 1/2" long drive screws in 1/8" drill hole. Attach to wood poles with 4D aluminum nail.
- Numbers are inscribed by cutting through "Black Cap Sheet" to expose "White Letters".
- Nomenclature required for systems with two or more circuits (letter indicates panel board, number indicates circuit).
- For light poles installed on ramp, assign numbers to include ramp I.D. and light number. Legend may be less than one (1) inch in height.
- Light numbers shall be obtained from the State. Use an alphabet suffix to designate lights mounted on the same pole (e.g. 123A & 123B).
- For non-metered system, call out the Contract Number.



2 STREET LIGHT STANDARD DETAIL
EG-17 NOT TO SCALE

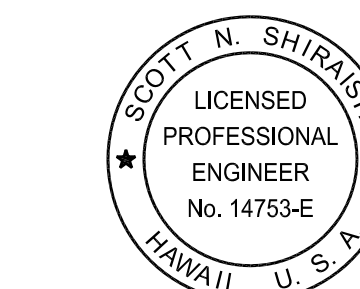
MATERIAL LIST		
Item	Description	Manufacturer
1	Light Pole, Alum	
2	Transformer Base (Alum) (type as indicated)	
3	Luminaire, LED, unless otherwise noted	



3 STREET LIGHT STANDARD DETAIL
EG-17 NOT TO SCALE

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

FILE: Z:\ACAD\PROJECTS\220674\EG17_220674_Hwy_Light_Details_3.dwg saved June 1, 2022



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Signature: Scott Shirasiki
Date: April 30, 2022
Expiration Date of License: April 30, 2022

06/08/22 UPDATED DETAIL

DATE: 06/08/22 REVISION: 2

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

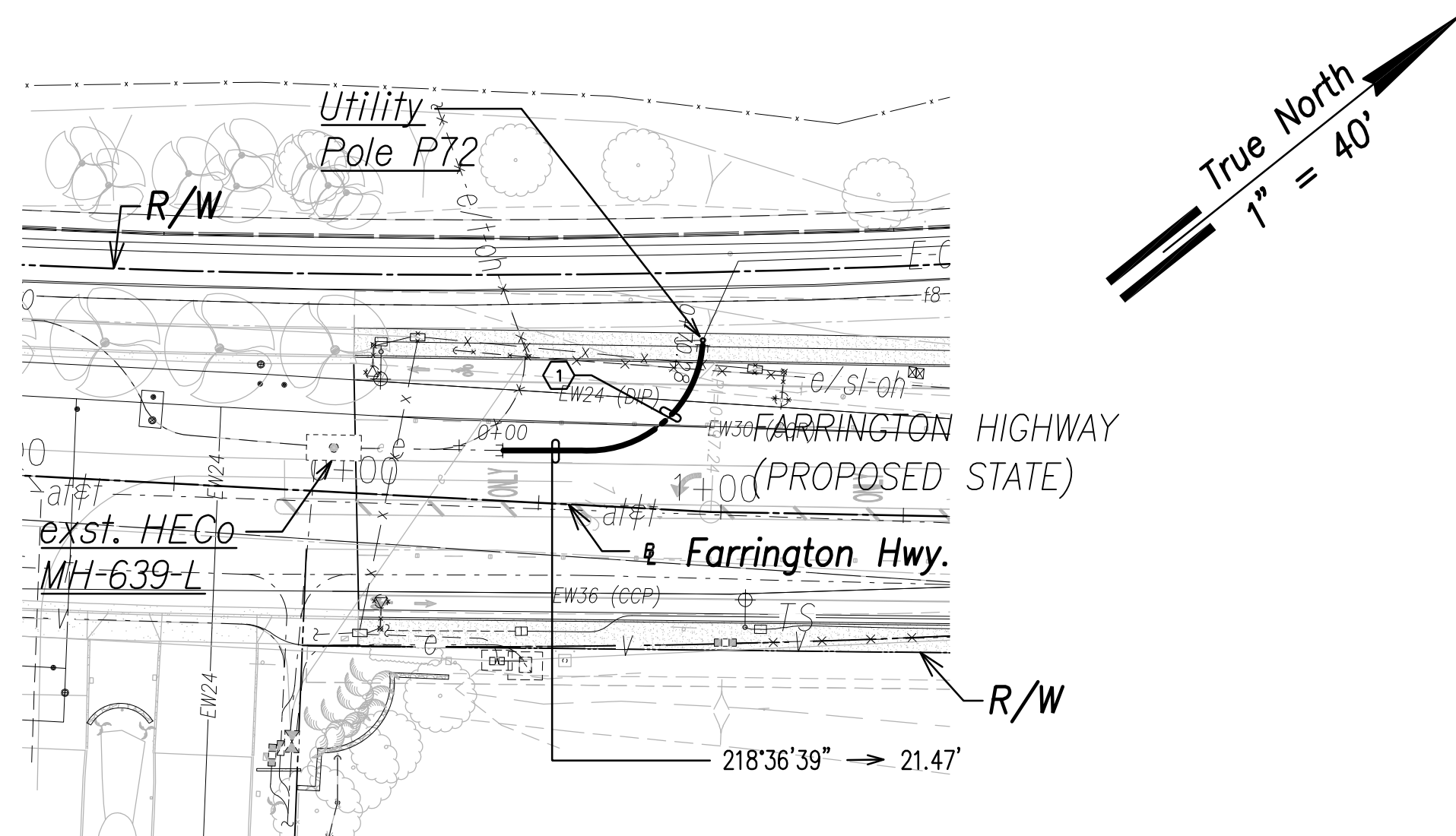
**HIGHWAY LIGHT STANDARD
DETAILS 3**

FARRINGTON HIGHWAY WIDENING
Kapolei Golf Course Road to Fort Weaver Road
Project No. 7101A-01-20

Scale: As Shown Date: April 2022

SHEET No. EG-17 OF 17 SHEETS

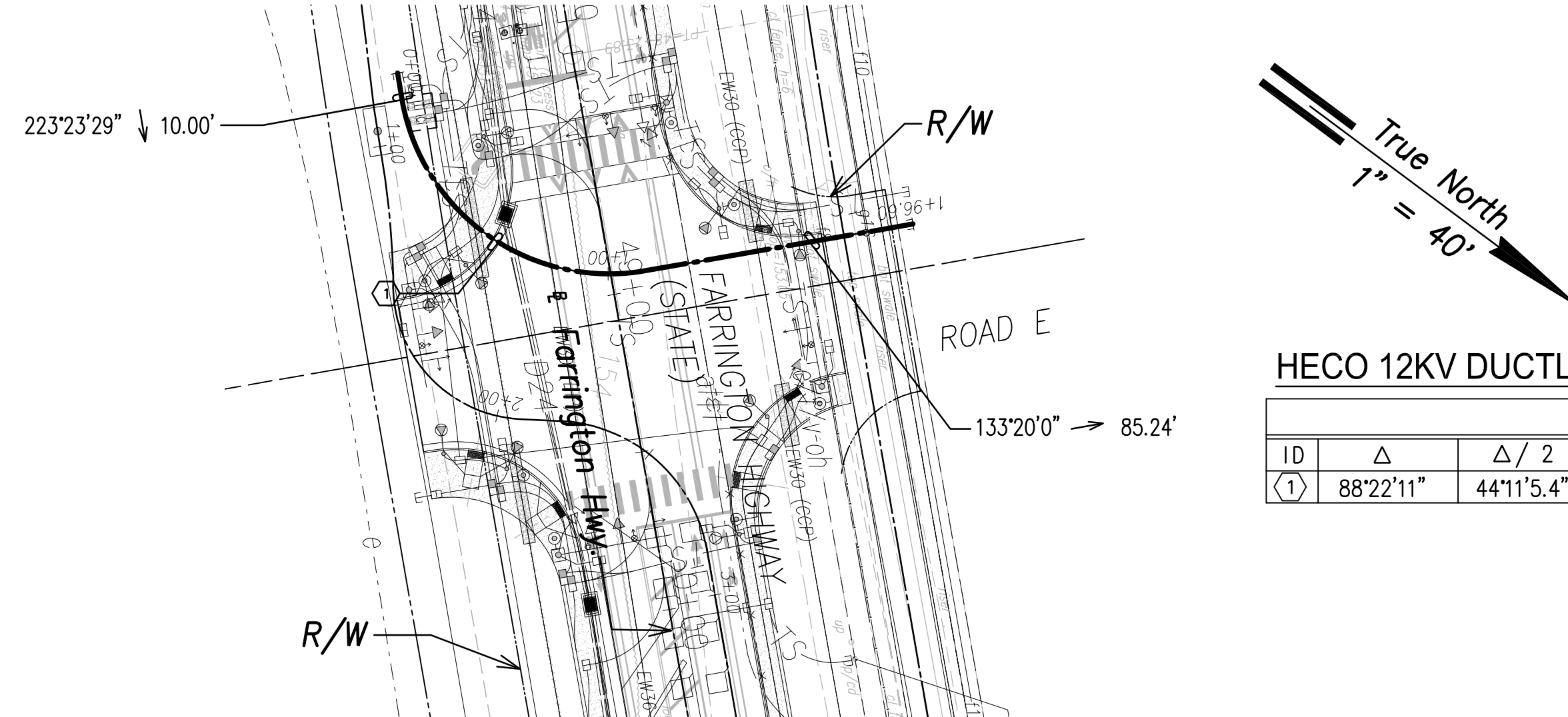
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	710A-01-20	2021	EJ-01	790



HECo 12KV Ductline "A" - Plan
Scale: 1" = 40'

HECO 12KV DUCTLINE "A"

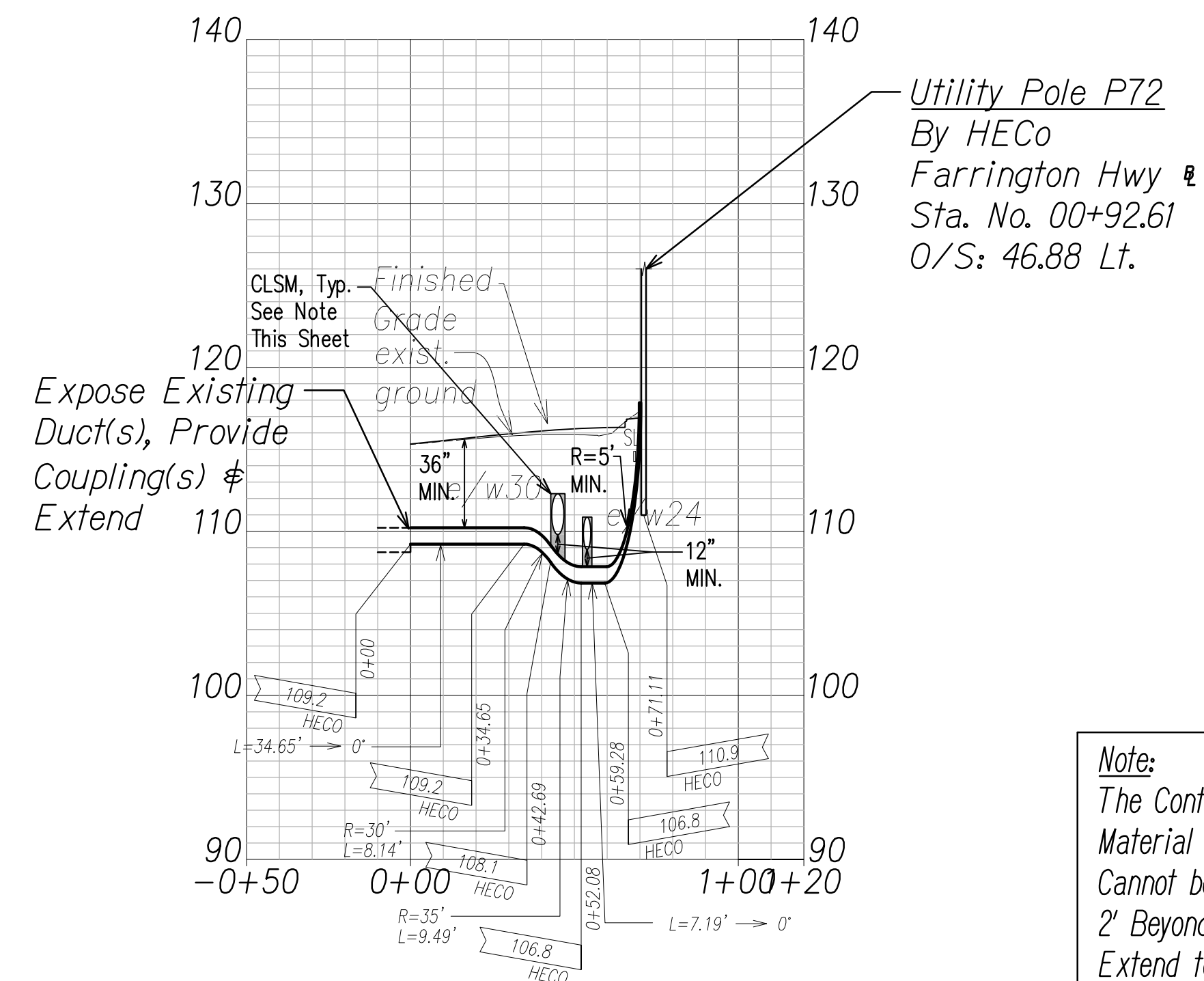
CURVE DATA						
ID	Δ	Δ / 2	RADIUS	T	C	Lc
①	88°25'51"	44°12'55.6"	31.48'	30.63'	43.90'	48.59'



HECo 12KV Ductline "B" - Plan
Scale: 1" = 40'

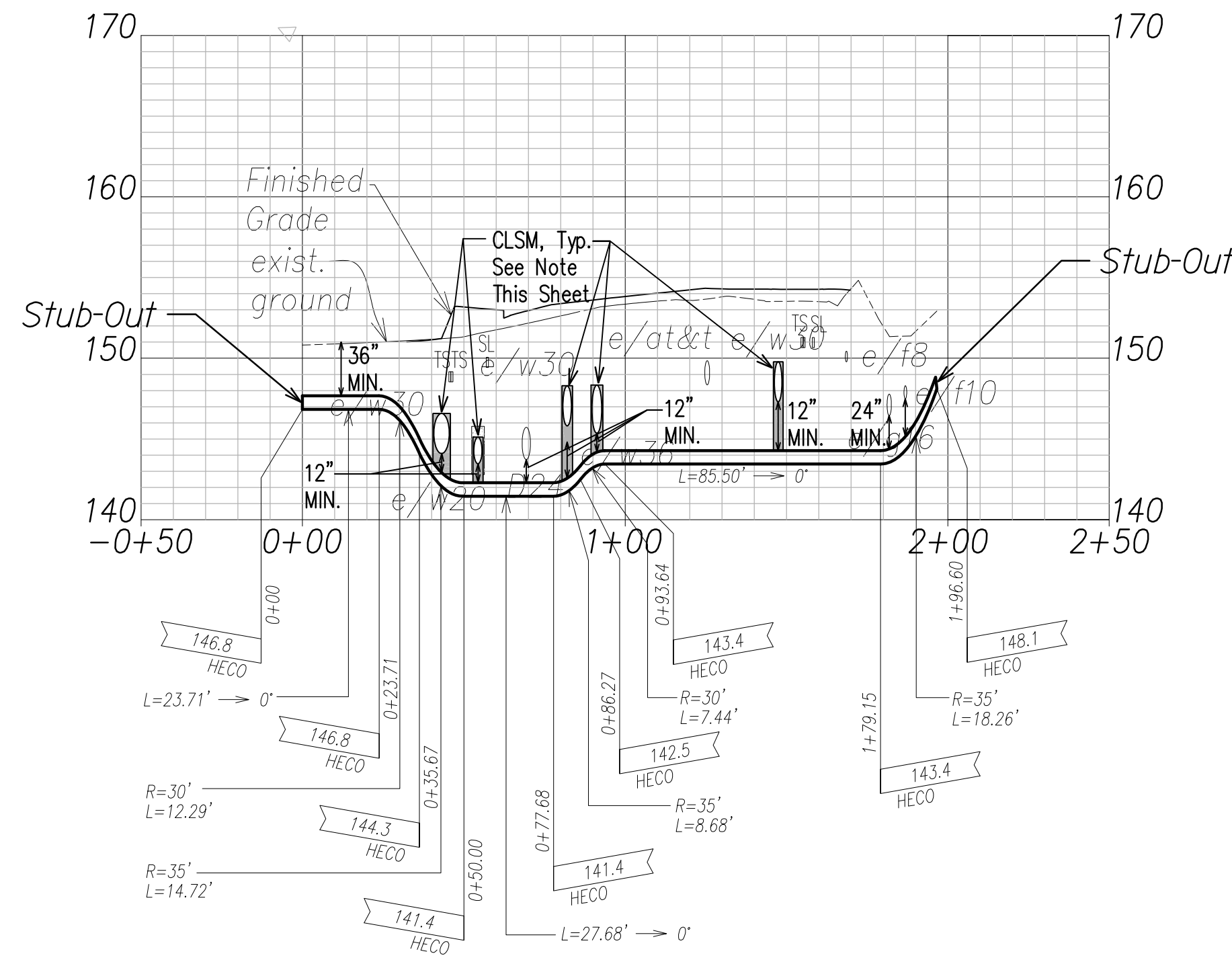
HECO 12KV DUCTLINE "B"

CURVE DATA						
ID	Δ	Δ / 2	RADIUS	T	C	Lc
①	88°22'11"	44°11'5.4"	65.72'	63.88'	91.61'	101.36'

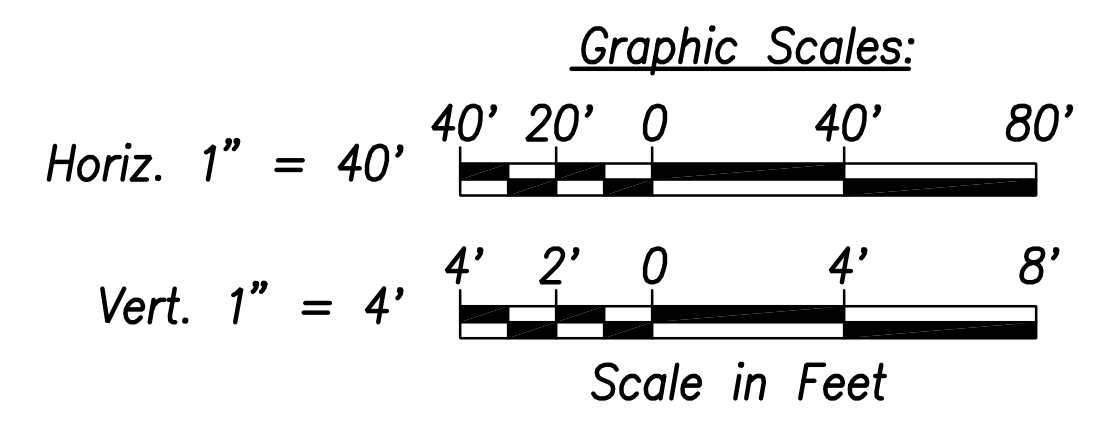


HECo 12KV Ductline "A" - Profile
Scale: Horiz. 1" = 40'
Vert. 1" = 4'

Note:
The Contractor Shall Provide Controlled Low Strength Material (CLSM) in Areas Where Required Compaction Cannot be Met. CLSM Shall be Extended a Minimum of 2' Beyond the Waterline at the Crossing and Shall Extend to the Top of the Crossing Pipe.



HECo 12KV Ductline "B" - Profile
Scale: Horiz. 1" = 40'
Vert. 1" = 4'



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

FILE: Z:\ACAD\PROJECTS\220679A\ED1_220679A-HECO-12KV-Ductline-Plan-Profile-A-B.dwg saved June 2, 2022

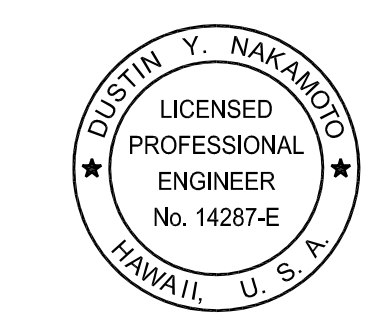
DRAWING REVIEW

Reviewed for Hawaiian Electric Company Facilities Only

Req# _____ By _____ Date _____

Transmission & Distribution Engineering
Hawaiian Electric

Hawaiian Electric's review of these drawings shall in no way relieve the Customer, its Consultant, its Contractor or anyone acting on the Customer's behalf from the responsibility for engineering, design, materials and any other liability associated with this project including revisions made beyond the reviewed date.



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SIGNATURE: [Signature]

April 30, 2024
EXPIRATION DATE OF THE LICENSE

06/08/22	ADDED DRAWING
DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

HECO 12KV DUCTLINE
PLAN & PROFILE "A" & "B"

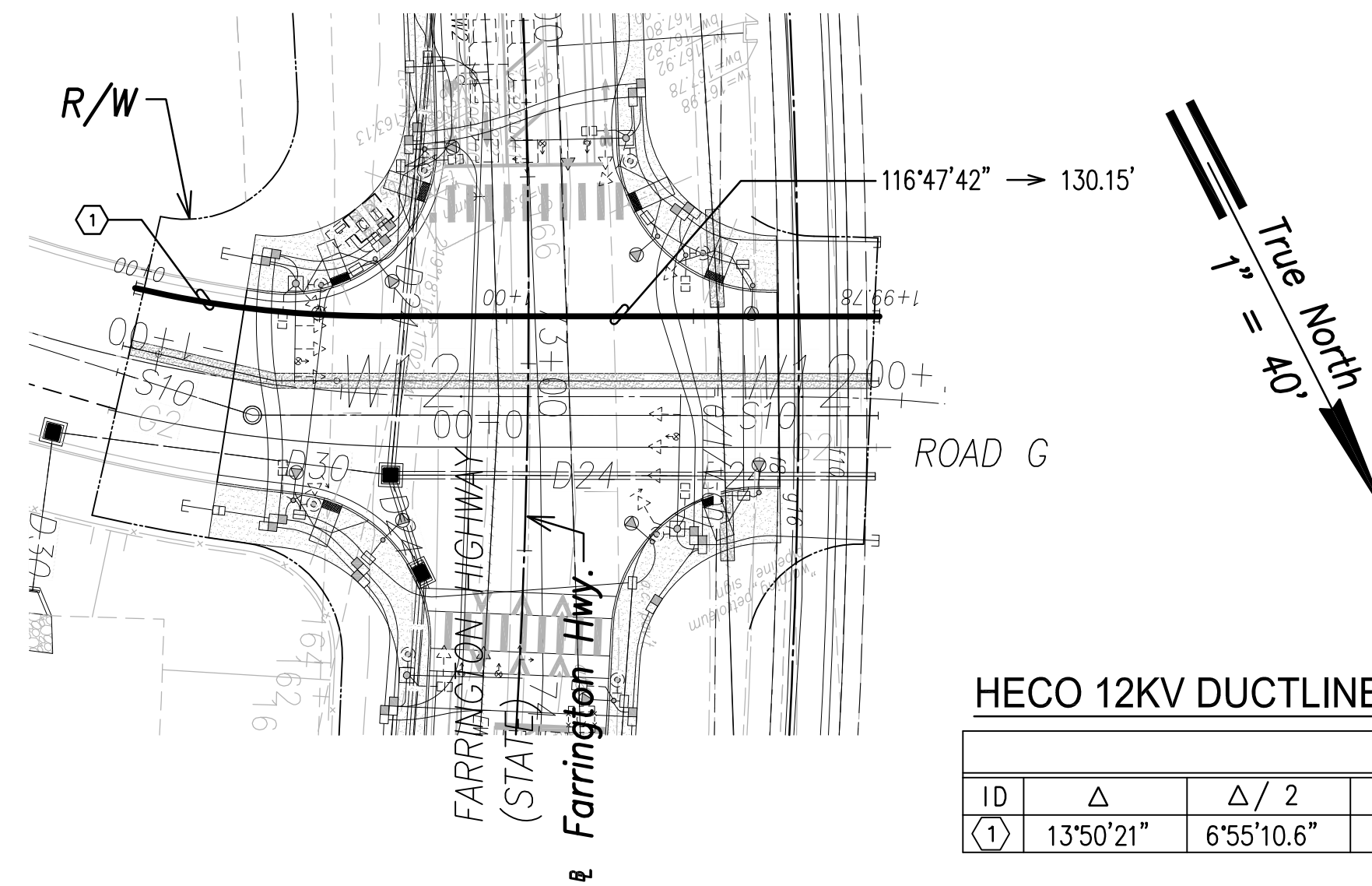
FARRINGTON HIGHWAY WIDENING
Kapolei Golf Course Road to Fort Weaver Road
Project No. 7101A-01-20

Scale: As Shown Date: April 2022

SHEET No. EJ-01 OF 16 SHEETS

ADD. 725

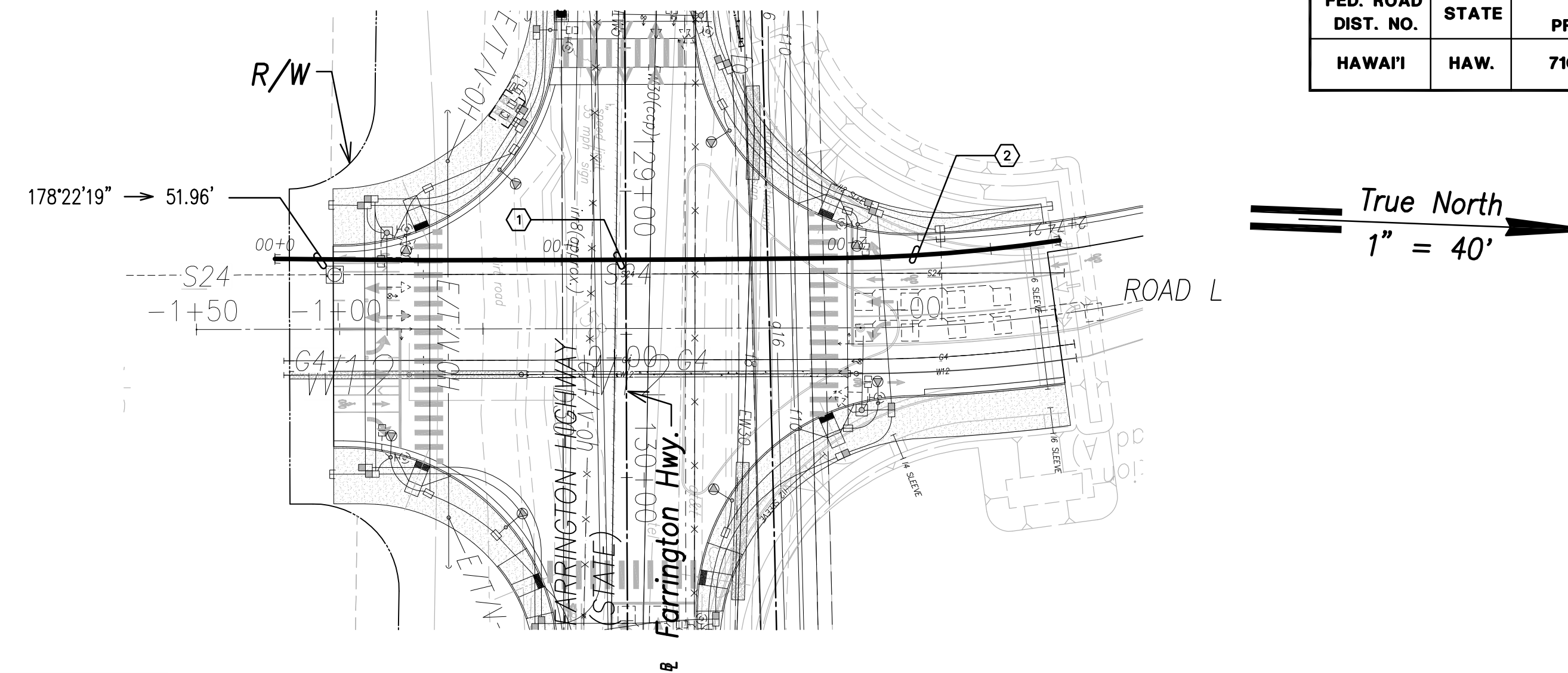
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	710A-01-20	2021	EJ-02	790



HECo 12KV Ductline "D" - Plan
Scale: 1" = 40'

HECO 12KV DUCTLINE "D"

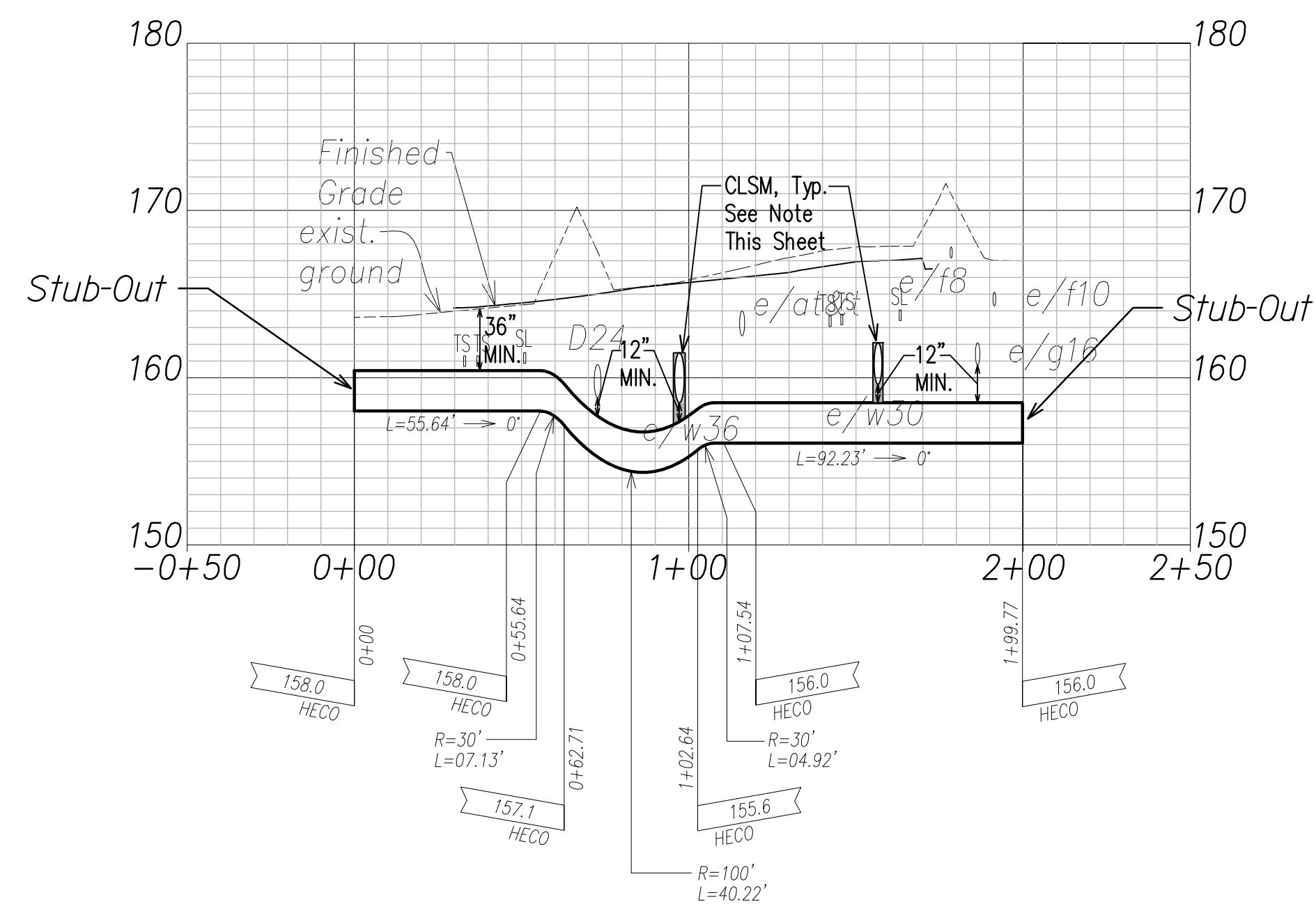
CURVE DATA						
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(1)	13°50'21"	6°55'10.6"	288.26'	34.98'	69.46'	69.63'



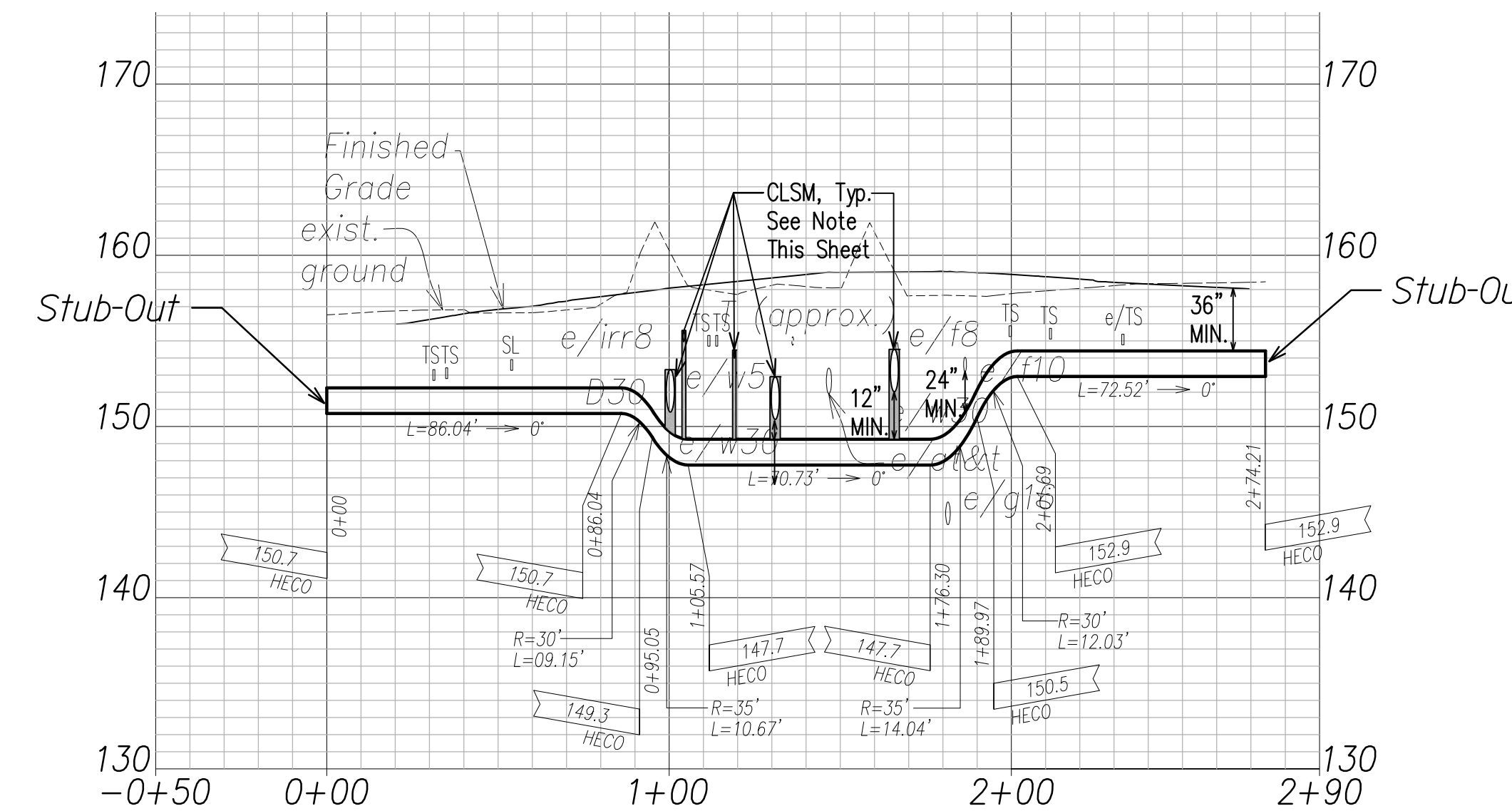
HECo 12KV Ductline "G4" - Plan
Scale: 1" = 40'

HECO 12KV DUCTLINE "G4"

CURVE DATA						
ID	Δ	Δ / 2	RADIUS	T	C	Lc
(1)	0°42'37"	0°21'18.4"	11594.27'	71.86'	143.72'	143.72'
(2)	7°48'38"	3°54'18.9"	576.22'	39.34'	78.49'	78.55'



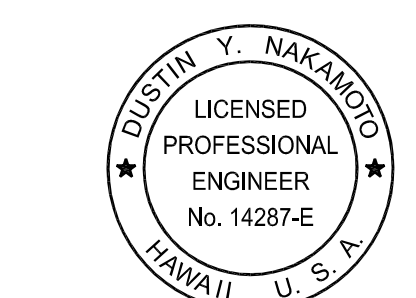
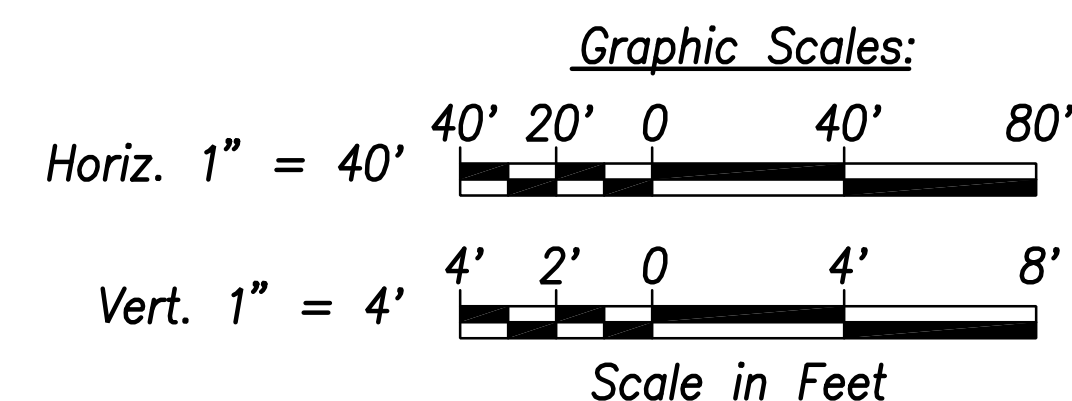
HECo 12KV Ductline "D" - Profile
Scale: Horiz. 1" = 40'
Vert. 1" = 4'



HECo 12KV Ductline "G4" - Profile
Scale: Horiz. 1" = 40'
Vert. 1" = 4'

Note:
The Contractor Shall Provide Controlled Low Strength Material (CLSM) in Areas Where Required Compaction Cannot be Met. CLSM Shall be Extended a Minimum of 2' Beyond the Waterline at the Crossing and Shall Extend to the Top of the Crossing Pipe.

DRAWING REVIEW
Reviewed for Hawaiian Electric Company Facilities Only
Req# _____ By _____ Date _____
Transmission & Distribution Engineering
Hawaiian Electric
Hawaiian Electric's review of these drawings shall in no way relieve the Customer, its Consultant, its Contractor or anyone acting on the Customer's behalf from the responsibility for engineering, design, materials and any other liability associated with this project including revisions made beyond the reviewed date.



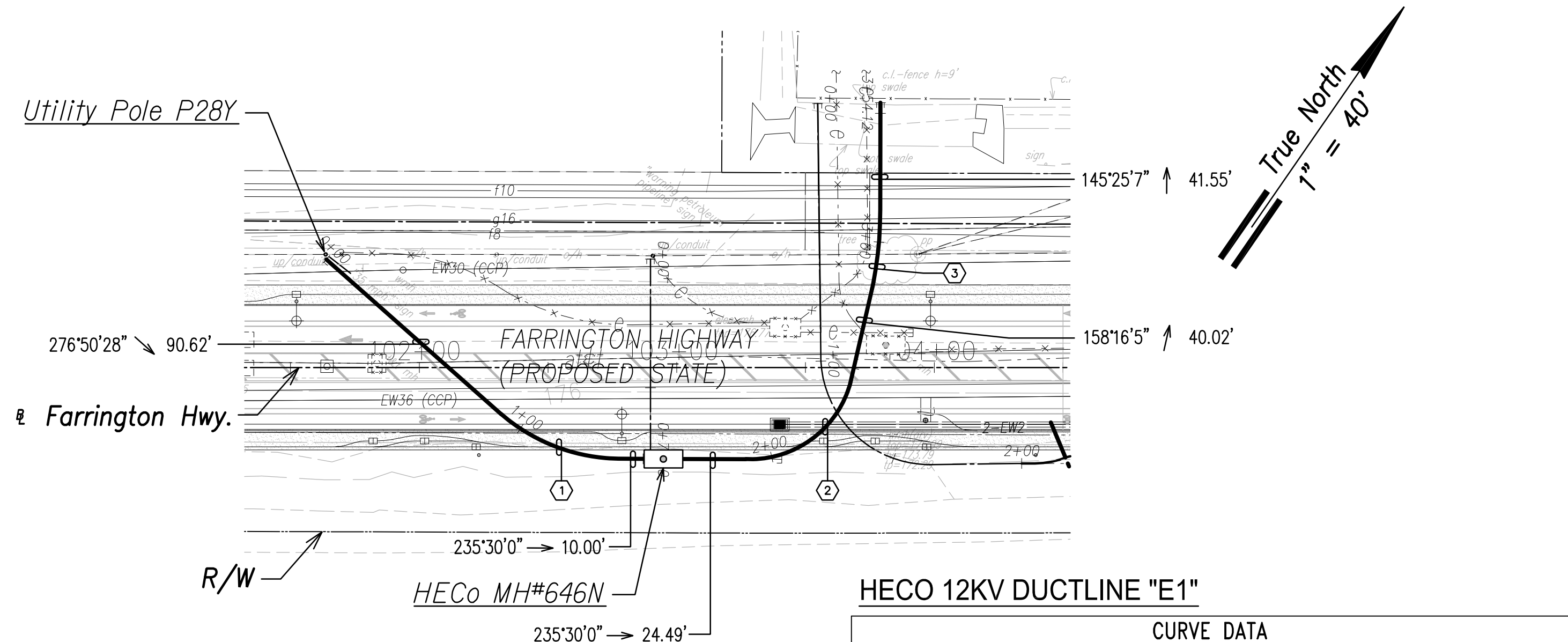
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.
SIGNATURE:
Date: April 30, 2024
EXPIRATION DATE OF THE LICENSE

06/08/22	ADDED DRAWING
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
HECo 12KV DUCTLINE PLAN & PROFILE "D" & "G4"	
FARRINGTON HIGHWAY WIDENING Kapolei Golf Course Road to Fort Weaver Road Project No. 7101A-01-20	
Scale: As Shown	Date: April 2022
SHEET No. EJ-02 OF 16 SHEETS	

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

FILE: Z:\ACAD\PROJECTS\220679A\ED2_220679A\HECO-12KV-Ductline-Plan-Profile-EJ-02.dwg saved June 2, 2022

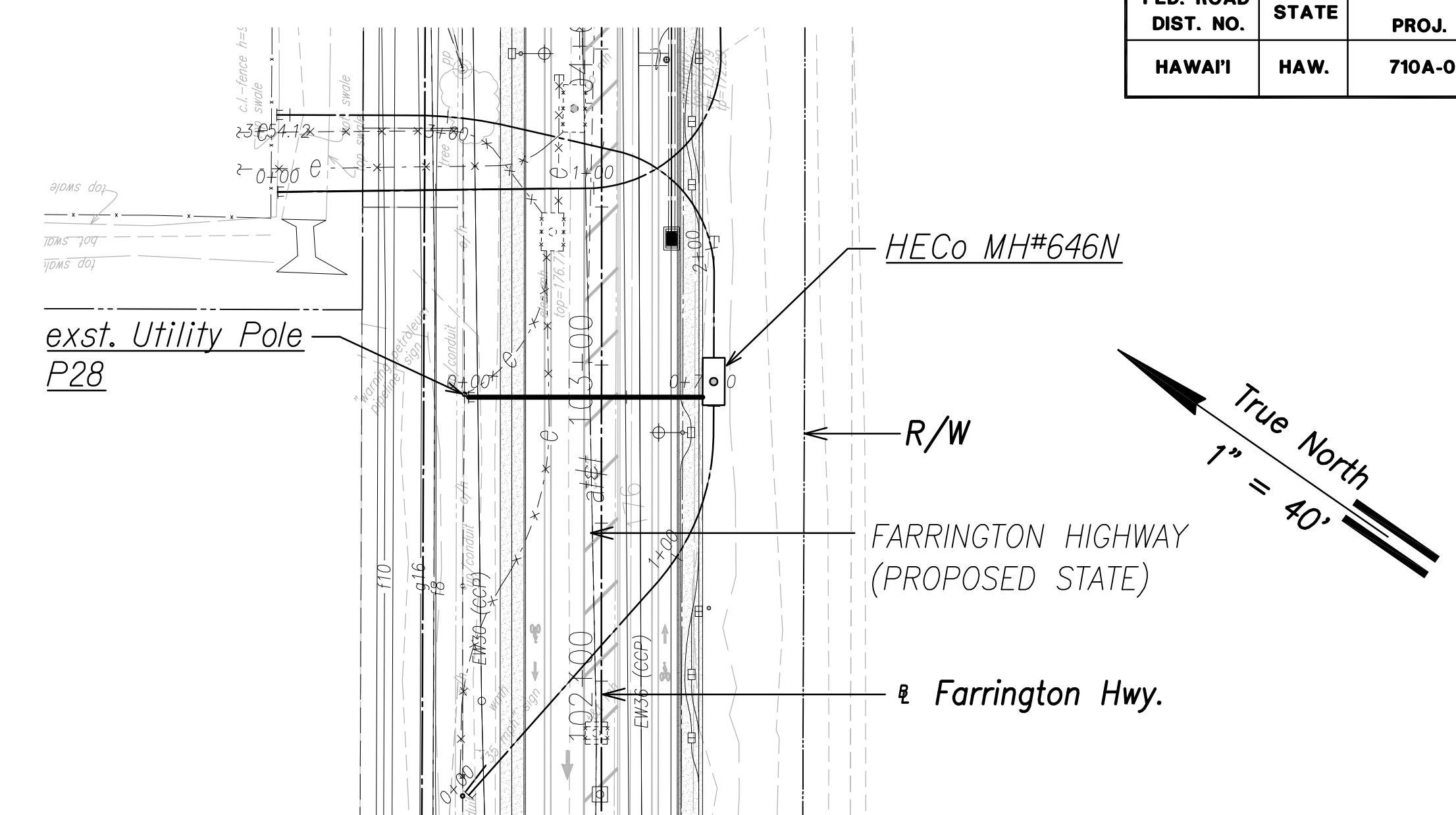
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	710A-01-20	2021	EJ-03	790



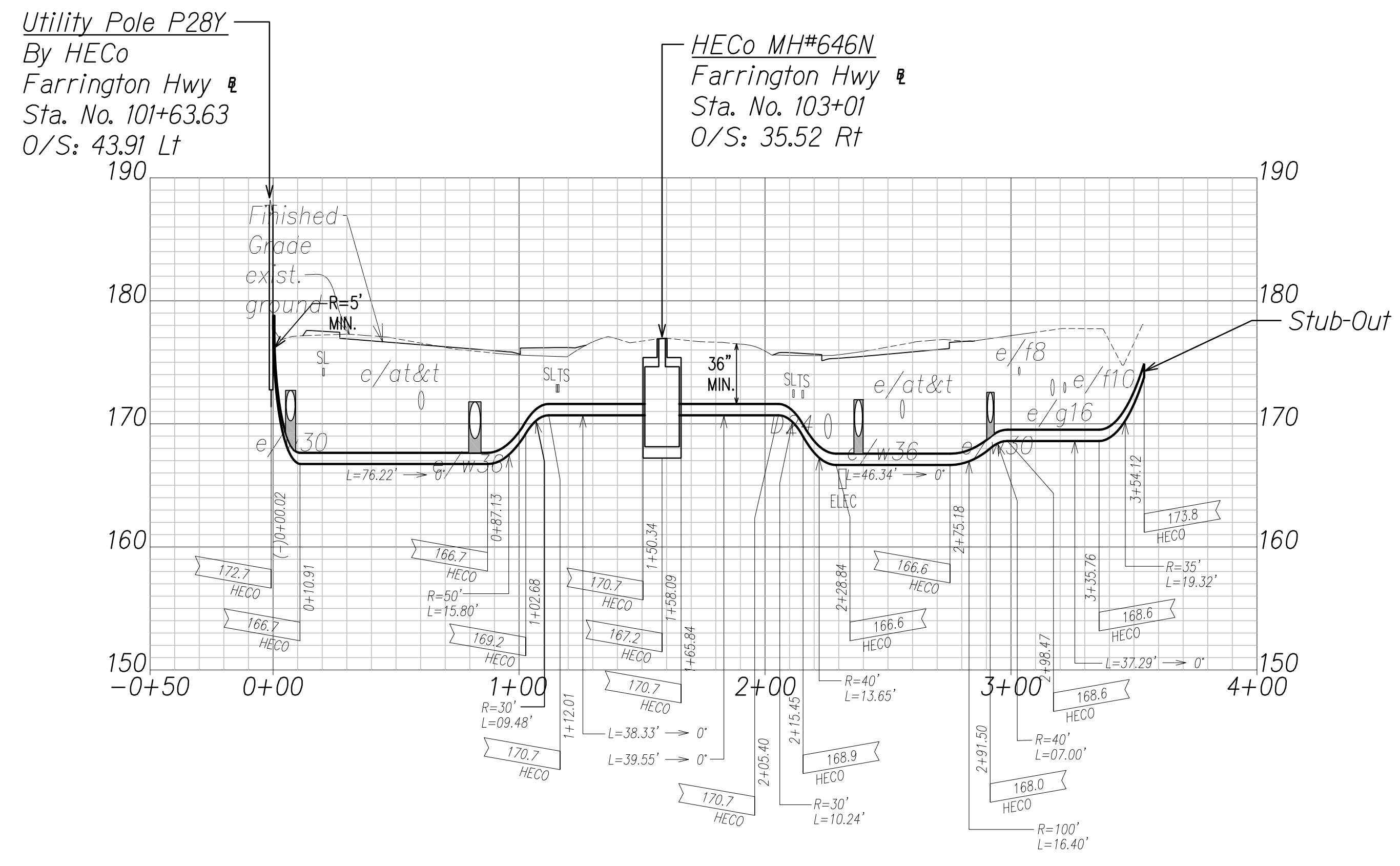
HECO 12KV DUCTLINE "E1"

ID	Δ	$\Delta / 2$	RADIUS	T	C	Lc
(1)	39°41'56"	19°50'57.9"	71.78'	25.91'	48.74'	49.73'
(2)	75°59'53"	37°59'56.3"	40.36'	31.53'	49.69'	53.53'
(3)	11°38'10"	5°49'4.8"	143.58'	14.63'	29.11'	29.16'

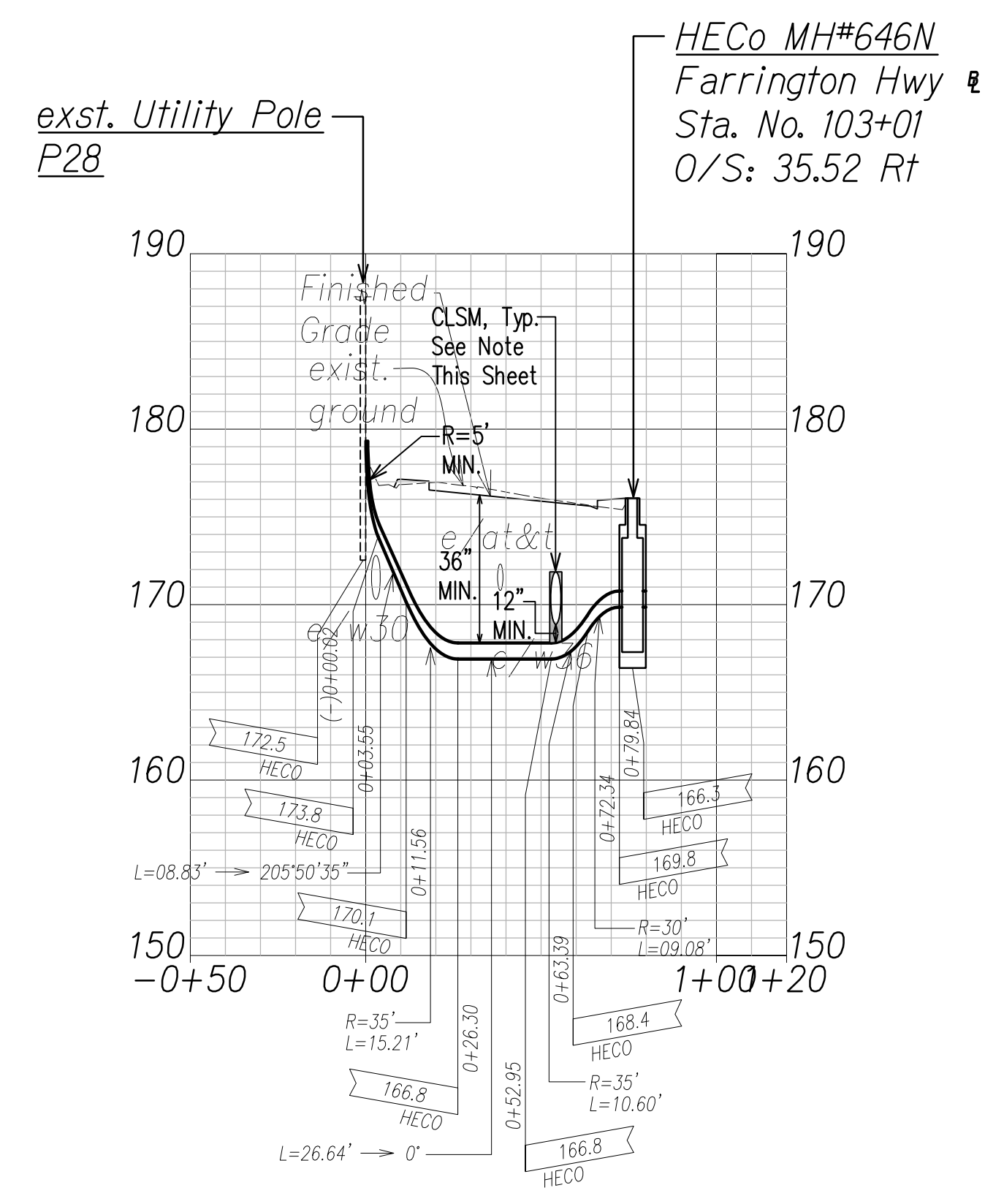
HECO 12KV Ductline "E1" - Plan
Scale: 1" = 40'



HECO 12KV Ductline "E2" - Plan
Scale: 1" = 40'



HECO 12KV Ductline "E1" - Profile
Scale: Horiz. 1" = 40'
Vert. 1" = 4'

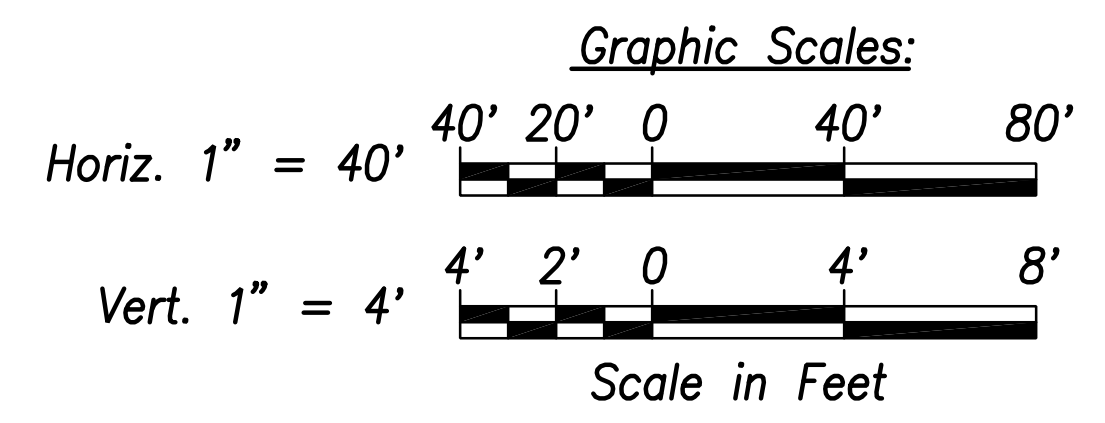


HECO 12KV Ductline "E2" - Profile
Scale: Horiz. 1" = 40'
Vert. 1" = 4'

Note:
The Contractor Shall Provide Controlled Low Strength Material (CLSM) in Areas Where Required Compaction Cannot be Met. CLSM Shall be Extended a Minimum of 2' Beyond the Waterline at the Crossing and Shall Extend to the Top of the Crossing Pipe.

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

DRAWING REVIEW
Reviewed for Hawaiian Electric Company Facilities Only
Req# _____ By _____ Date _____
Transmission & Distribution Engineering
Hawaiian Electric
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DUSTIN Y. NAKAMOTO
LICENSED PROFESSIONAL ENGINEER
No. 14287-E
HAWAII, U.S.A.
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.
SIGNATURE April 30, 2024
EXPIRATION DATE OF THE LICENSE

06/08/22 ADDED DRAWING
DATE REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

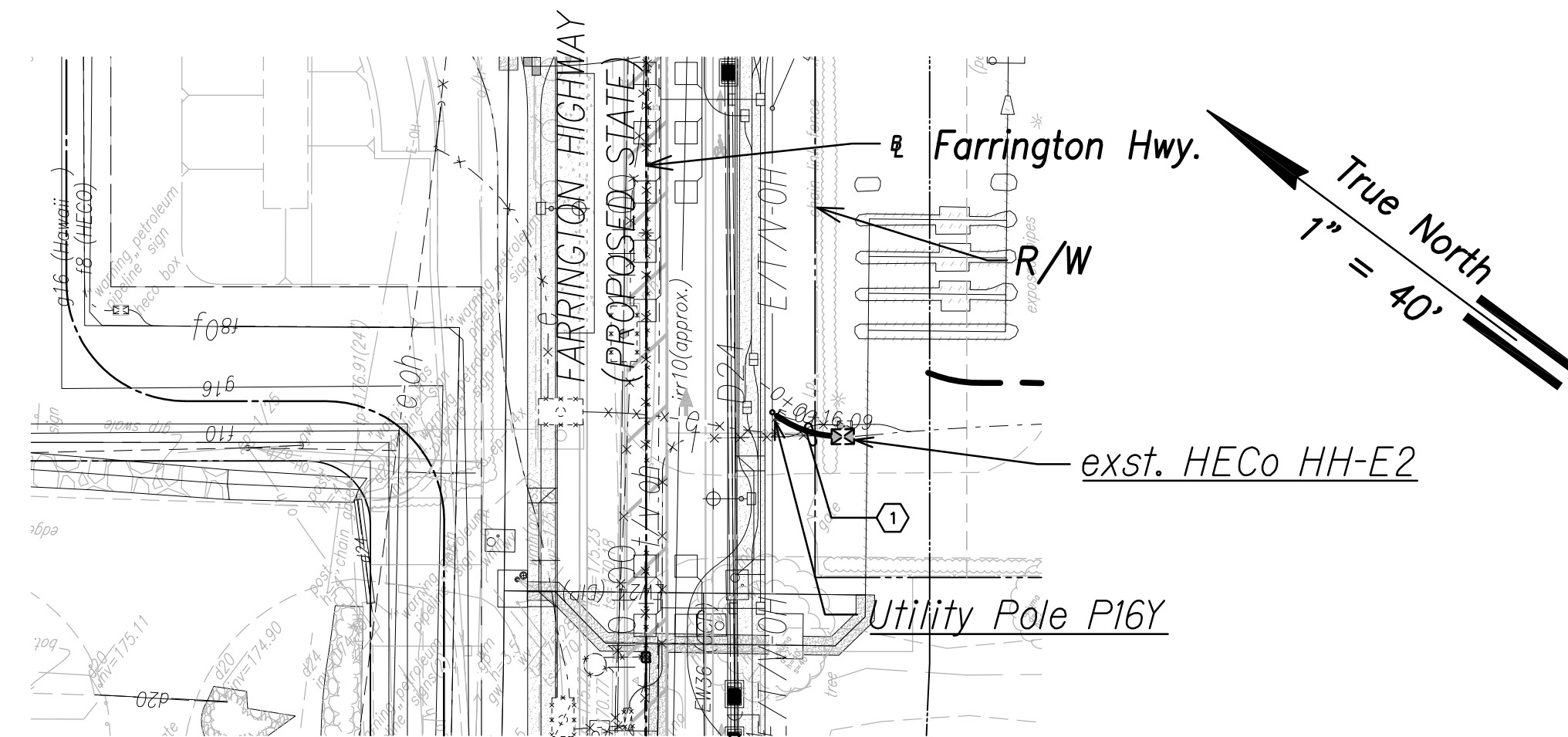
**HECO 12KV DUCTLINE
PLAN & PROFILE "E1" & "E2"**
FARRINGTON HIGHWAY WIDENING
Kapolei Golf Course Road to Fort Weaver Road
Project No. 7101A-01-20

Scale: As Shown Date: April 2022

SHEET NO. EJ-03 OF 16 SHEETS

FILE: Z:\ACAD\PROJECTS\220679A\E03_220679A_HECO-12KV-Ductline-Plan-Profile-E1-E2.dwg saved June 2, 2022

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	710A-01-20	2021	EJ-04	790

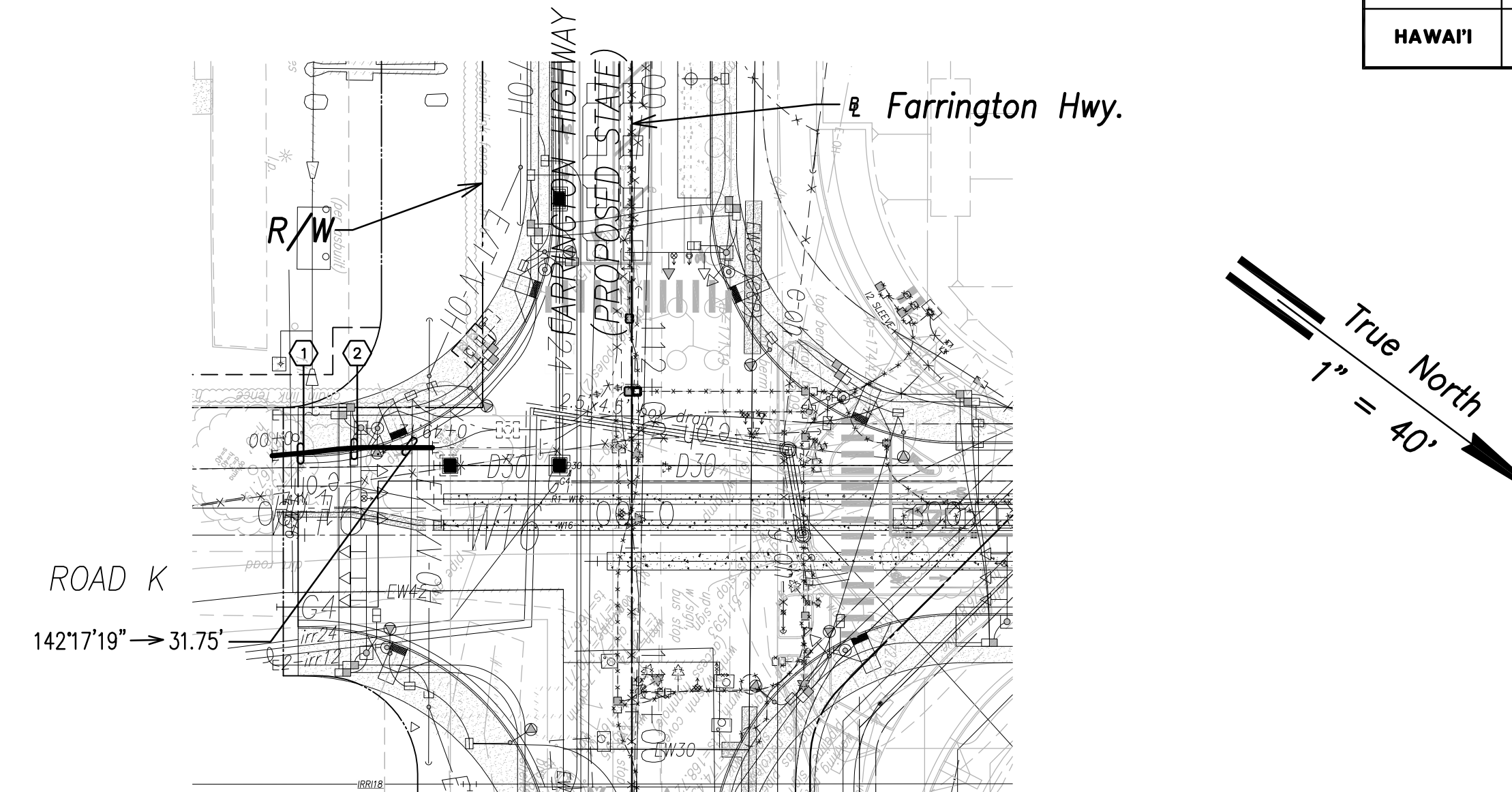


HECO 12KV Ductline "F1" - Plan

Scale: 1" = 40'

HECO 12KV DUCTLINE "F1"

CURVE DATA						
ID	Δ	Δ / 2	RADIUS	T	C	Lc
(1)	31°21'52"	15°40'55.9"	29.28'	8.22'	15.83'	16.03'

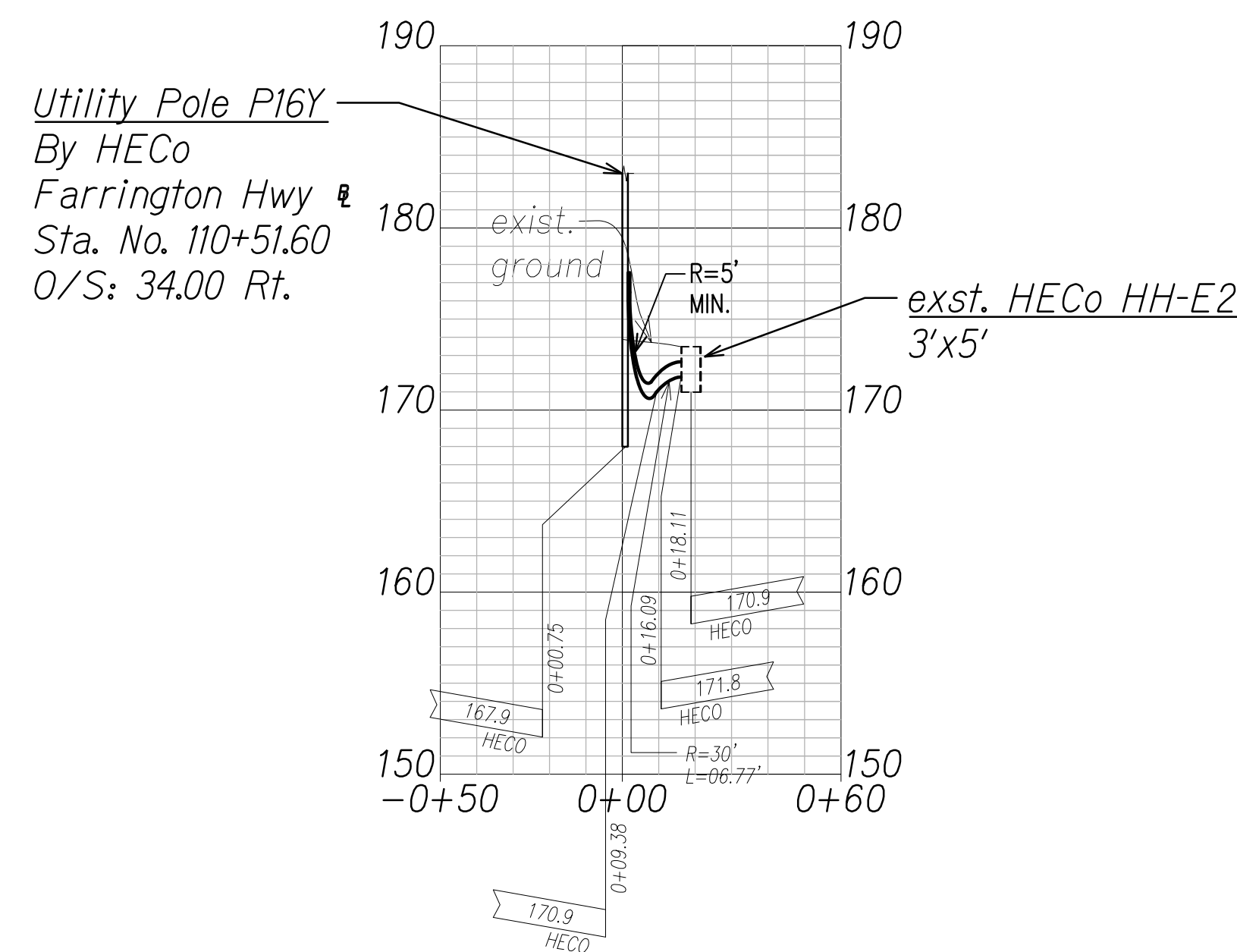


HECO 12KV Ductline "F2" - Plan

Scale: 1" = 40'

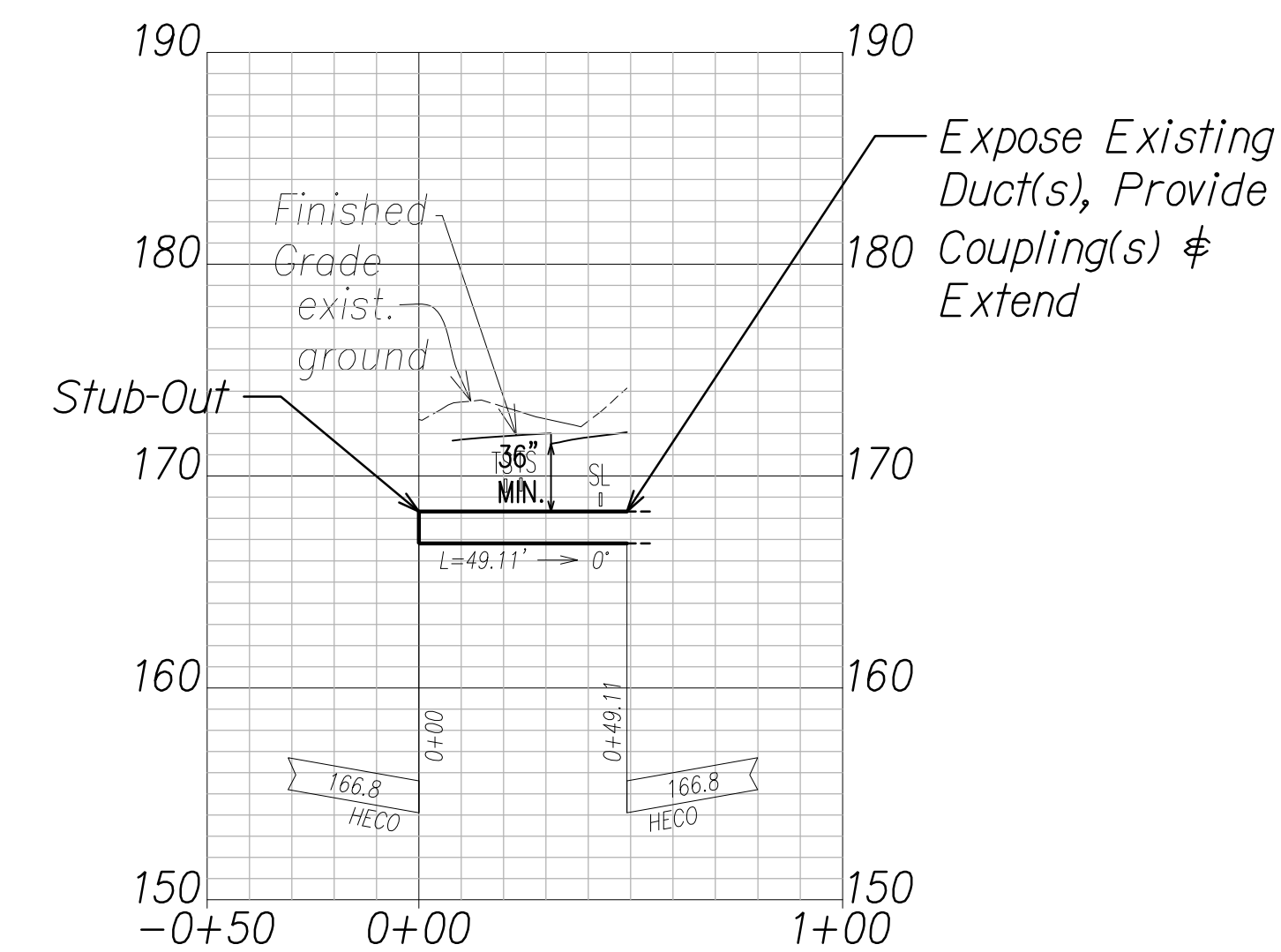
HECO 12KV DUCTLINE "F2"

CURVE DATA						
ID	Δ	Δ / 2	RADIUS	T	C	Lc
(1)	3°37'54"	1°48'57.1"	317.20'	10.06'	20.10'	20.11'
(2)	8°0'47"	4°0'23.4"	118.07'	8.27'	16.50'	16.51'



HECO 12KV Ductline "F1" - Profile

Scale: Horiz. 1" = 40'
Vert. 1" = 4'



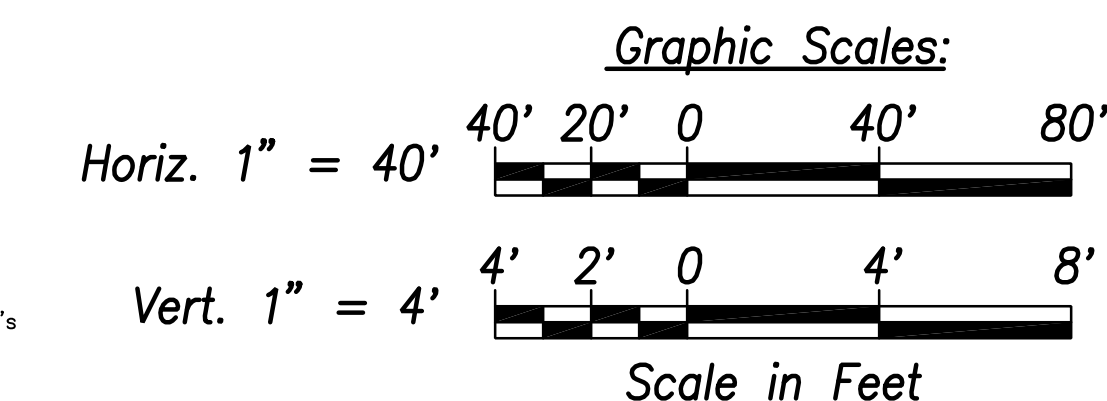
HECO 12KV Ductline "F2" - Profile

Scale: Horiz. 1" = 40'
Vert. 1" = 4'

SURVEY PLOTTED BY	DATE
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NO.	

FILE: Z:\ACAD\PROJECTS\220678A\ED4_220678L\HECO-12KV-Ductline-Plan-Profile-F1-F2.dwg saved June 2, 2022

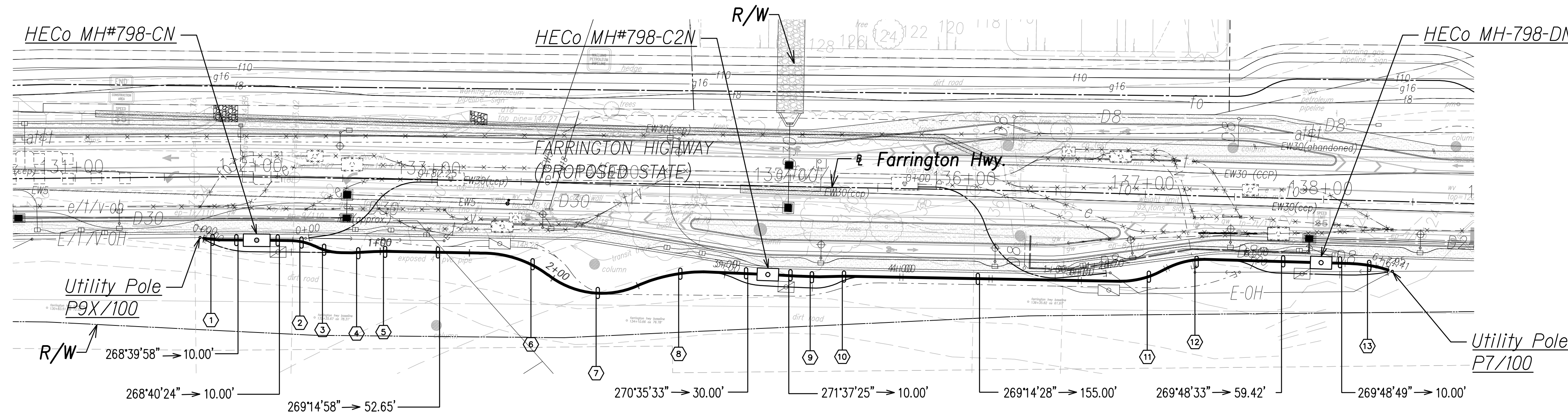
DRAWING REVIEW
Reviewed for Hawaiian Electric Company Facilities Only
Req# _____ By _____ Date _____
Transmission & Distribution Engineering
Hawaiian Electric
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SIGNATURE
April 30, 2024
EXPIRATION DATE OF THE LICENSE

06/08/22	ADDED DRAWING
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
HECO 12KV DUCTLINE PLAN & PROFILE "F1" & "F2"	
FARRINGTON HIGHWAY WIDENING Kapolei Golf Course Road to Fort Weaver Road Project No. 7101A-01-20	
Scale: As Shown	Date: April 2022
SHEET No. EJ-04 OF 16 SHEETS	

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	710A-01-20	2021	EJ-05	790

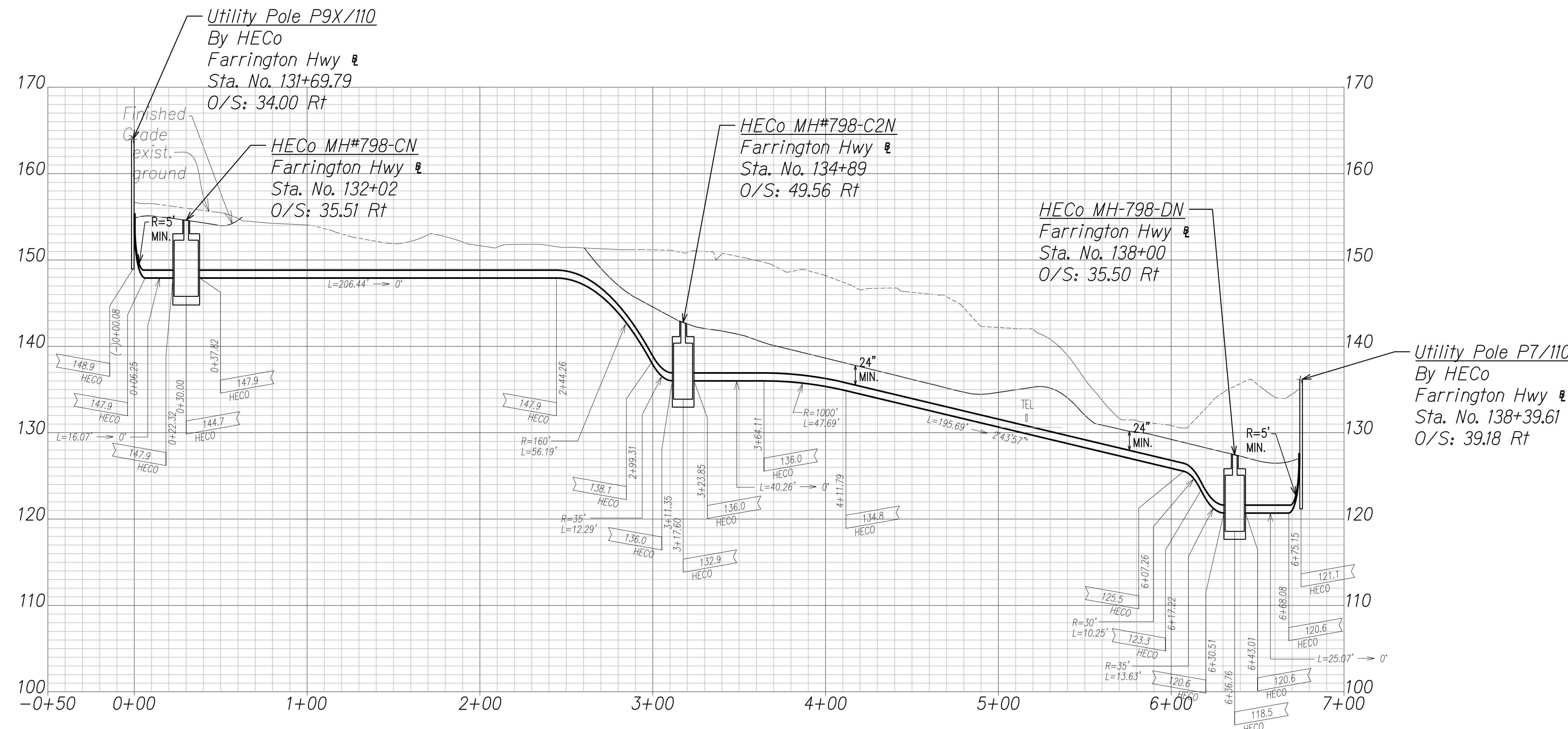


HECO 12KV Ductline "G1" - Plan
Scale: 1" = 40'

True North
1" = 40'

HECO DUCTLINE "G1"

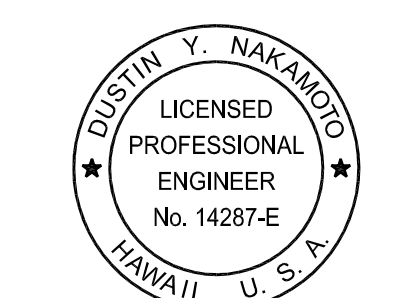
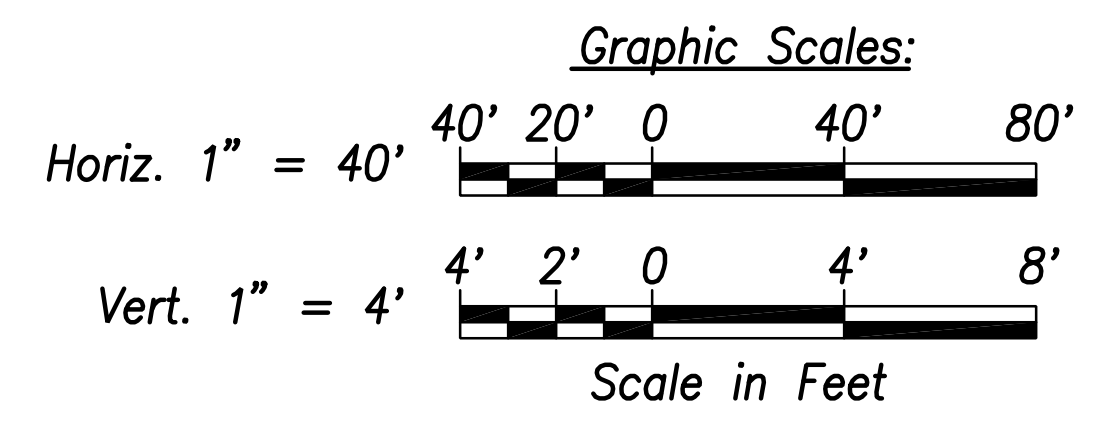
CURVE DATA						
ID	Δ	Δ / 2	RADIUS	T	C	Lc
1	10°42'23"	5°21'11.6"	65.99'	6.18'	12.31'	12.33'
2	26°59'7"	13°29'33.3"	32.69'	7.84'	15.25'	15.39'
3	26°16'13"	13°8'6.3"	34.08'	7.95'	15.49'	15.63'
4	7°27'21"	3°43'40.5"	93.47'	6.09'	12.15'	12.16'
5	4°5'43"	2°2'51.4"	174.48'	6.24'	12.47'	12.47'
6	38°50'10"	19°25'5.1"	60.96'	21.49'	40.53'	41.32'
7	64°13'58"	32°6'59.2"	49.06'	30.80'	52.17'	55.00'
8	22°28'16"	11°14'8.1"	92.36'	18.35'	35.99'	36.22'
9	1°29'0"	0°44'29.8"	495.81'	6.42'	12.83'	12.83'
10	0°53'16"	0°26'38.0"	916.08'	7.10'	14.19'	14.19'
11	28°51'47"	14°25'53.3"	47.82'	12.31'	23.84'	24.09'
12	29°2'30"	14°31'15.1"	48.92'	12.67'	24.53'	24.80'
13	15°25'21"	7°42'40.5"	81.32'	11.01'	21.82'	21.89'



HECO 12KV Ductline "G1" - Profile
Scale: Horiz. 1" = 40'
Vert. 1" = 4'

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

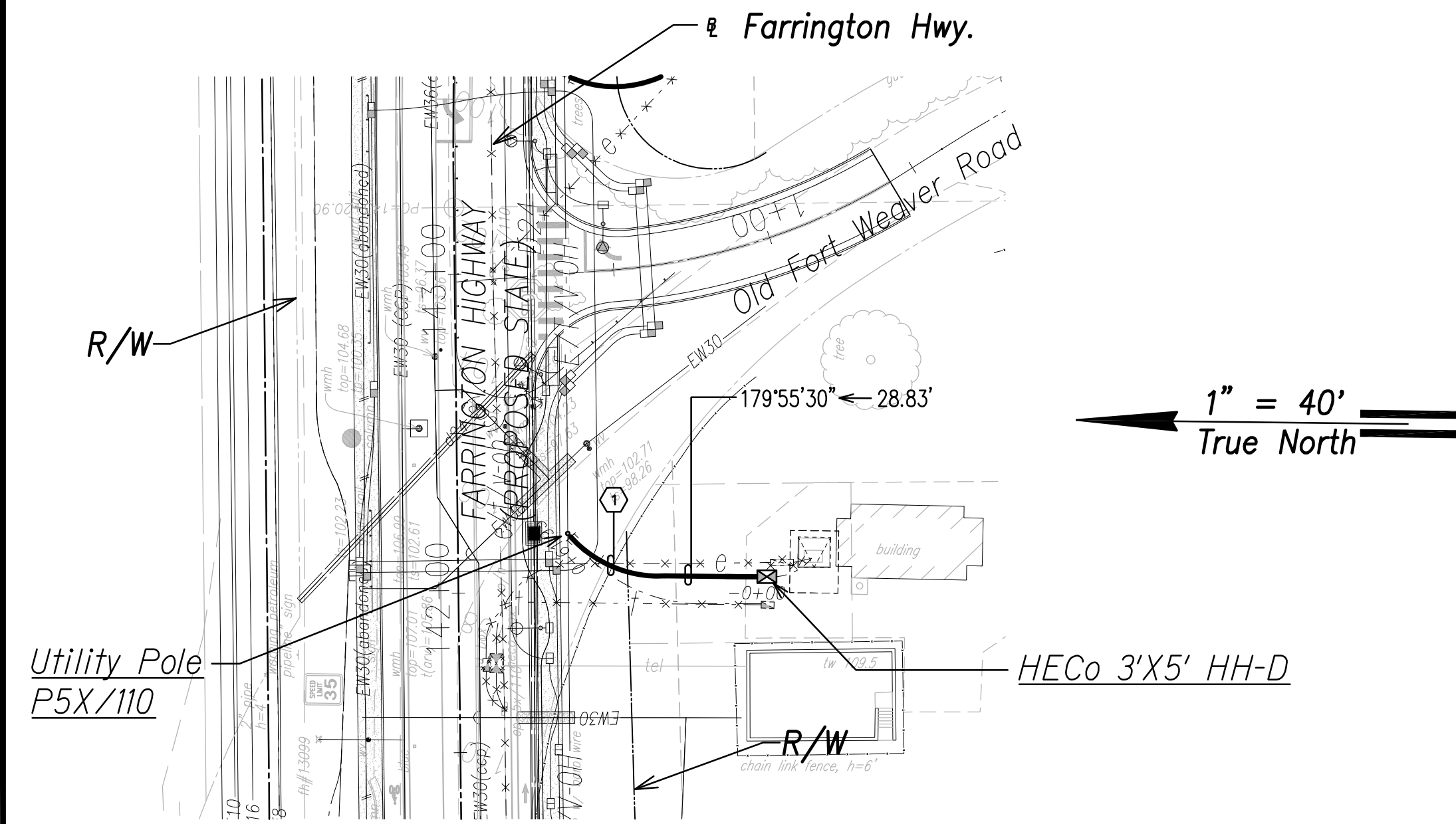
DRAWING REVIEW
Reviewed for Hawaiian Electric Company Facilities Only
Req# _____ By _____ Date _____
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Hawaiian Electric
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April 30, 2024
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06/08/22 ADDED DRAWING
DATE REVISION
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
HECO 12KV DUCTLINE PLAN & PROFILE "G1"
FARRINGTON HIGHWAY WIDENING
Kapolei Golf Course Road to Fort Weaver Road
Project No. 7101A-01-20
Scale: As Shown Date: April 2022
SHEET No. EJ-05 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	710A-01-20	2021	EJ-06	790

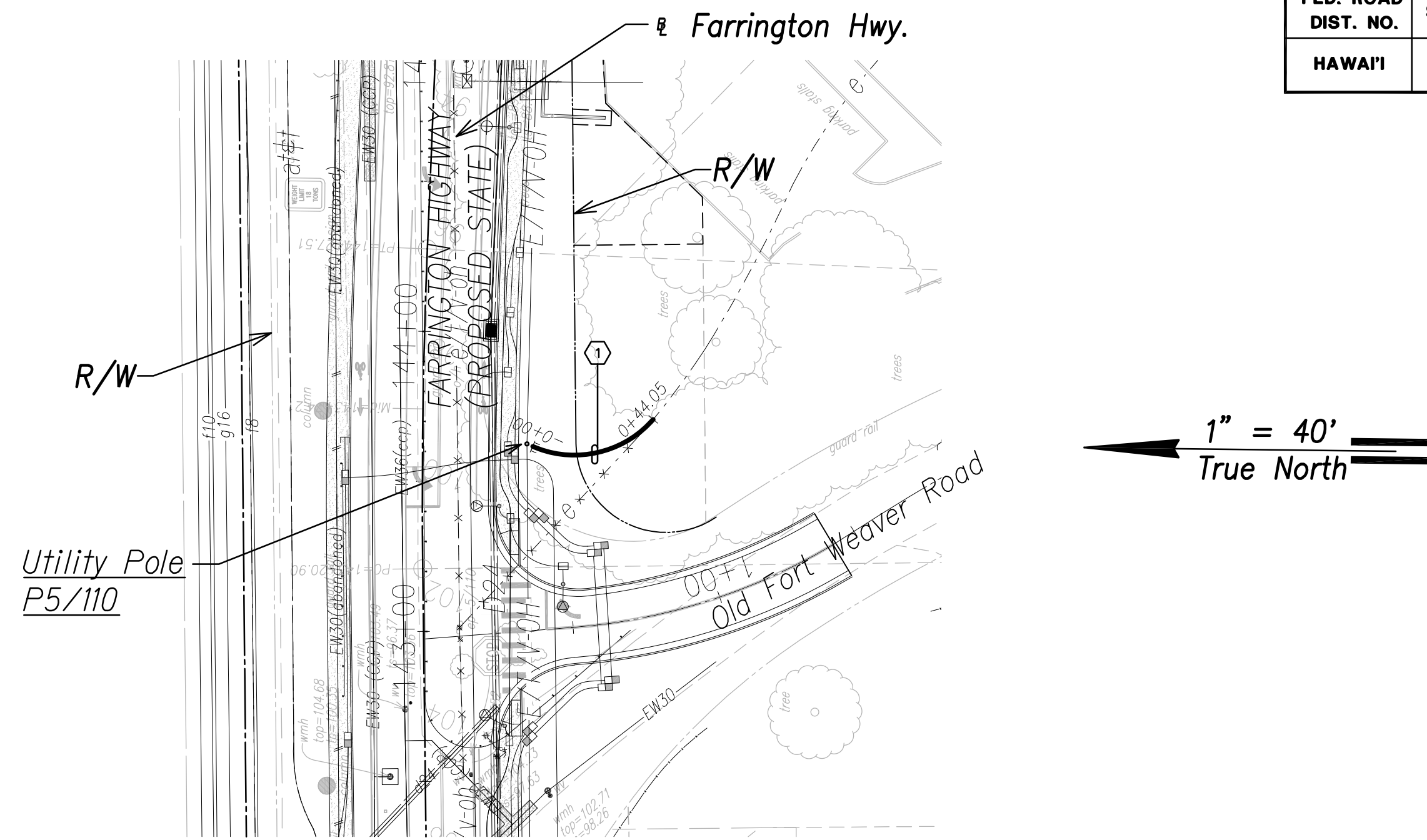


HECO 12KV Ductline "G2" - Plan

Scale: 1" = 40'

HECO 12KV DUCTLINE "G2"

CURVE DATA						
ID	Δ	Δ / 2	RADIUS	T	C	Lc
(1)	50°56'36"	25°28'17.9"	37.22'	17.73'	32.02'	33.10'
(1)	72°2'58"	36°1'29.0"	35.03'	25.47'	41.20'	44.05'

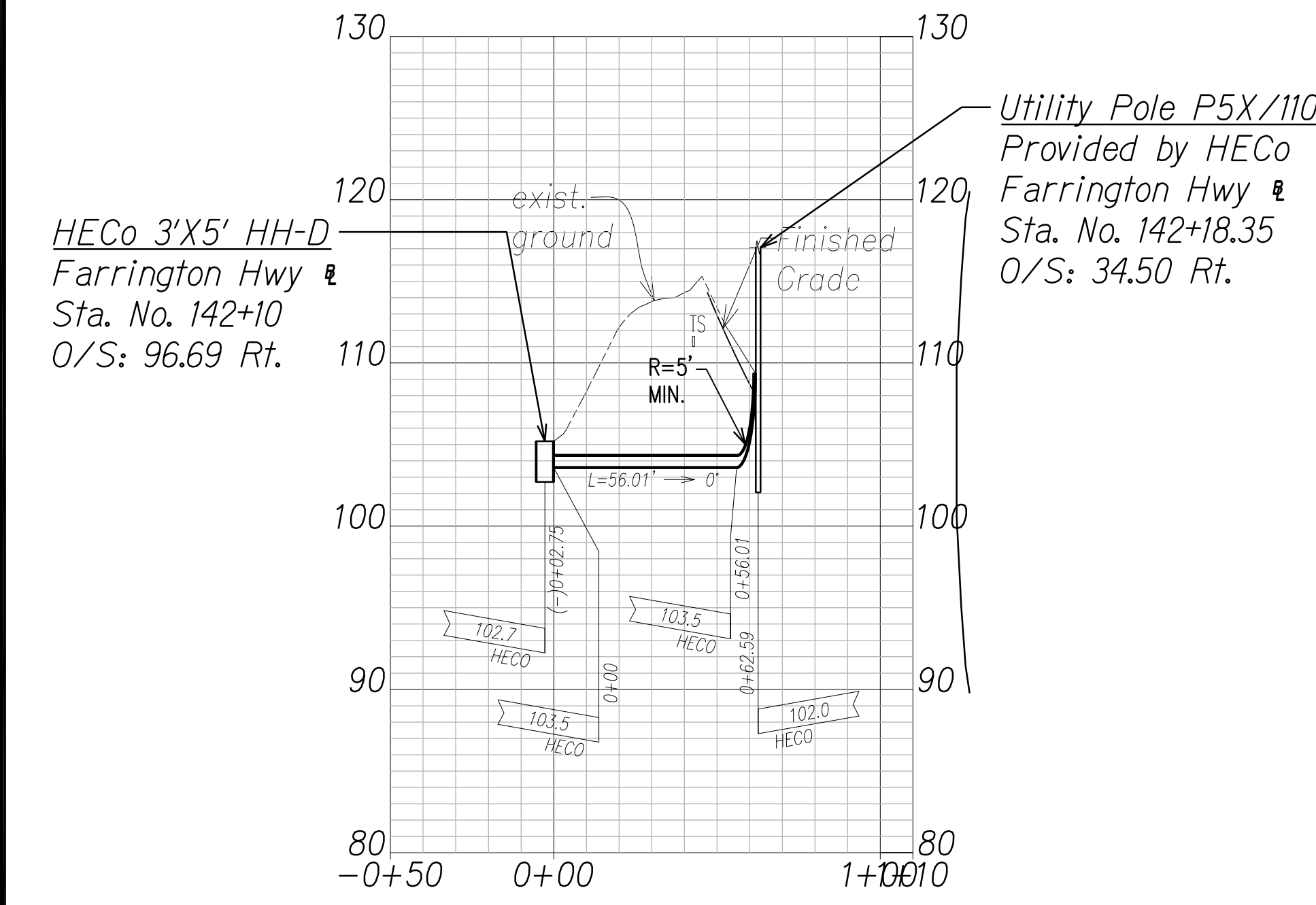


HECO 12KV Ductline "G3" - Plan

Scale: 1" = 40'

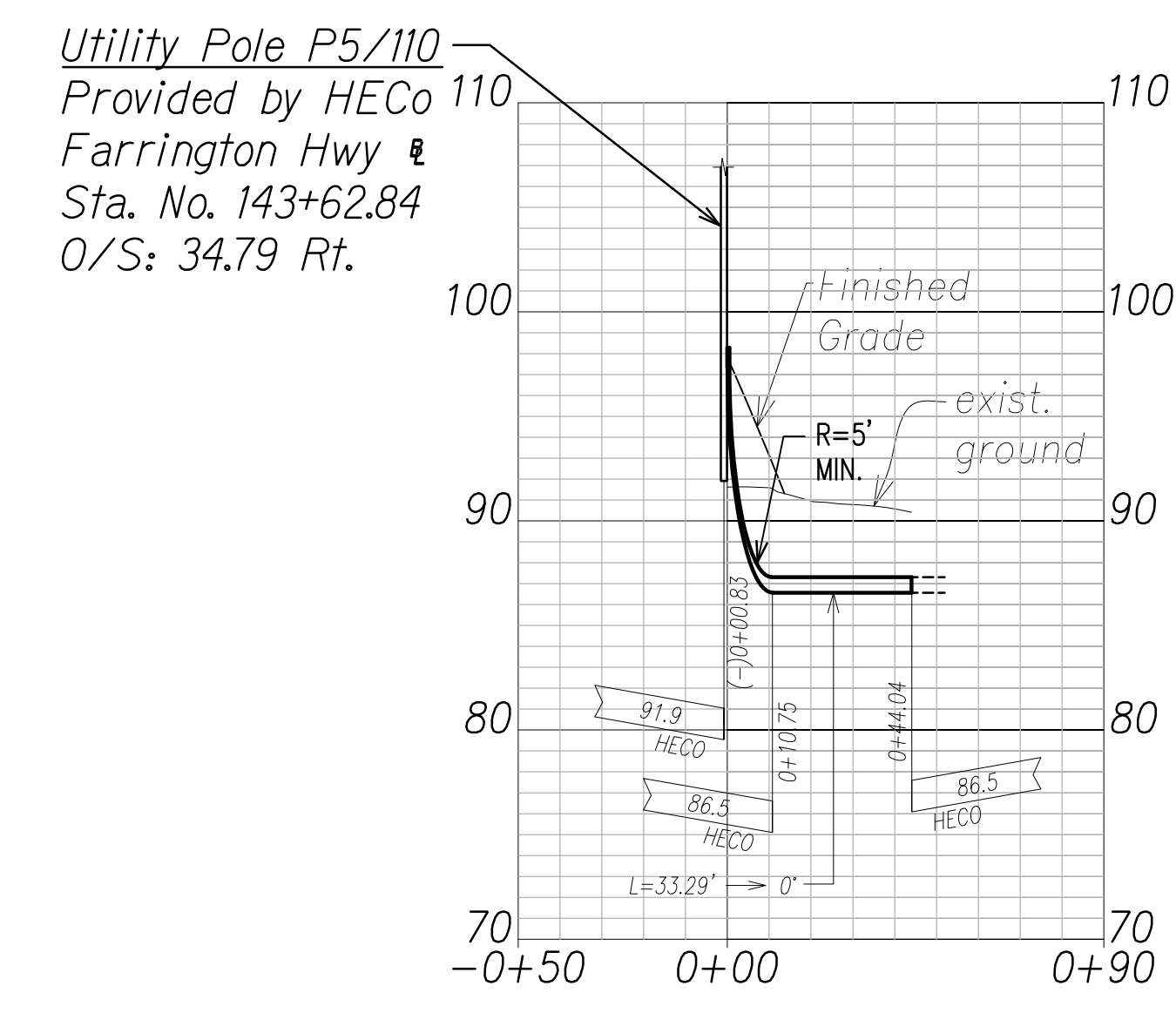
HECO 12KV DUCTLINE "G3"

CURVE DATA						
ID	Δ	Δ / 2	RADIUS	T	C	Lc
(1)	72°2'58"	36°1'29.0"	35.03'	25.47'	41.20'	44.05'



HECO 12KV Ductline "G2" - Profile

Scale: Horiz. 1" = 40'
Vert. 1" = 4'

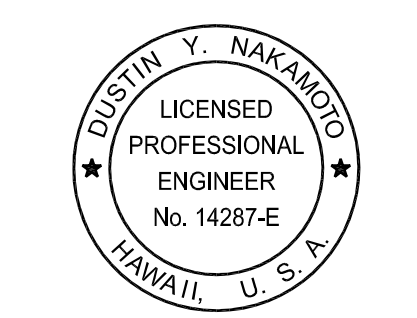
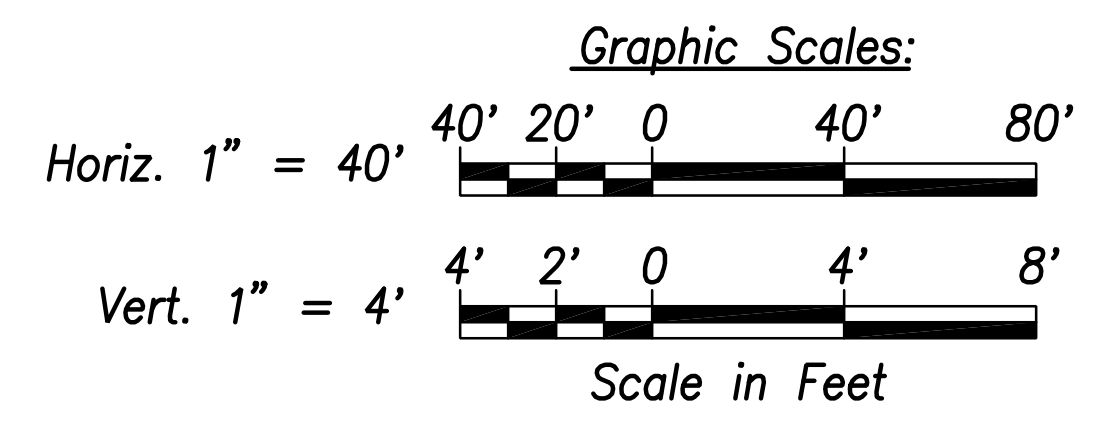


HECO 12KV Ductline "G3" - Profile

Scale: Horiz. 1" = 40'
Vert. 1" = 4'

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ORIGINAL PLAN	
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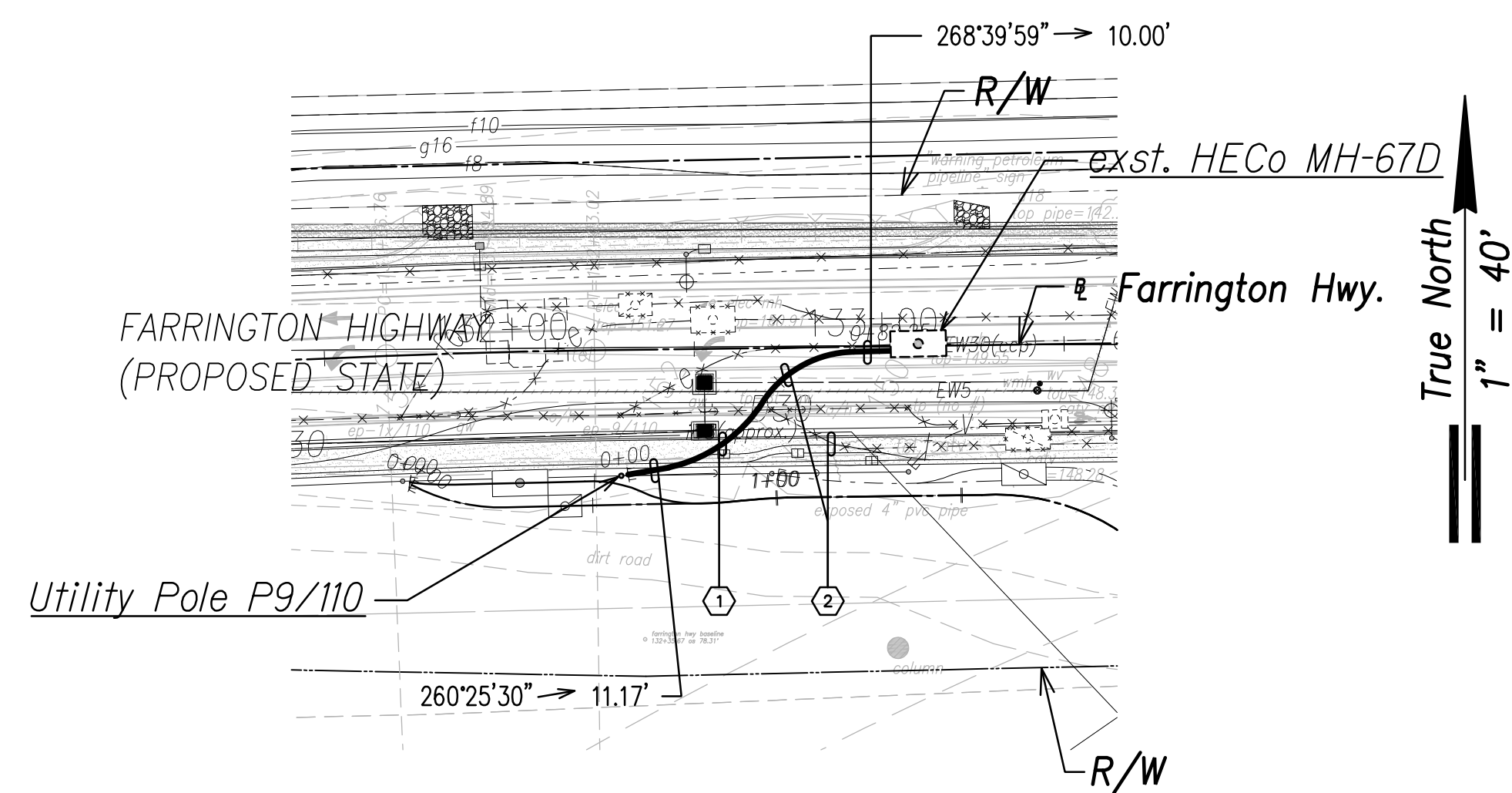


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SIGNATURE
April 30, 2024
EXPIRATION DATE OF THE LICENSE

06/08/22	ADDED DRAWING
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
HECO 12KV DUCTLINE PLAN & PROFILE "G2" & "G3"	
FARRINGTON HIGHWAY WIDENING Kapolei Golf Course Road to Fort Weaver Road Project No. 7101A-01-20	
Scale: As Shown	Date: April 2022
SHEET No. EJ-06 OF 16 SHEETS	

ADD. 730

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	710A-01-20	2021	EJ-07	790

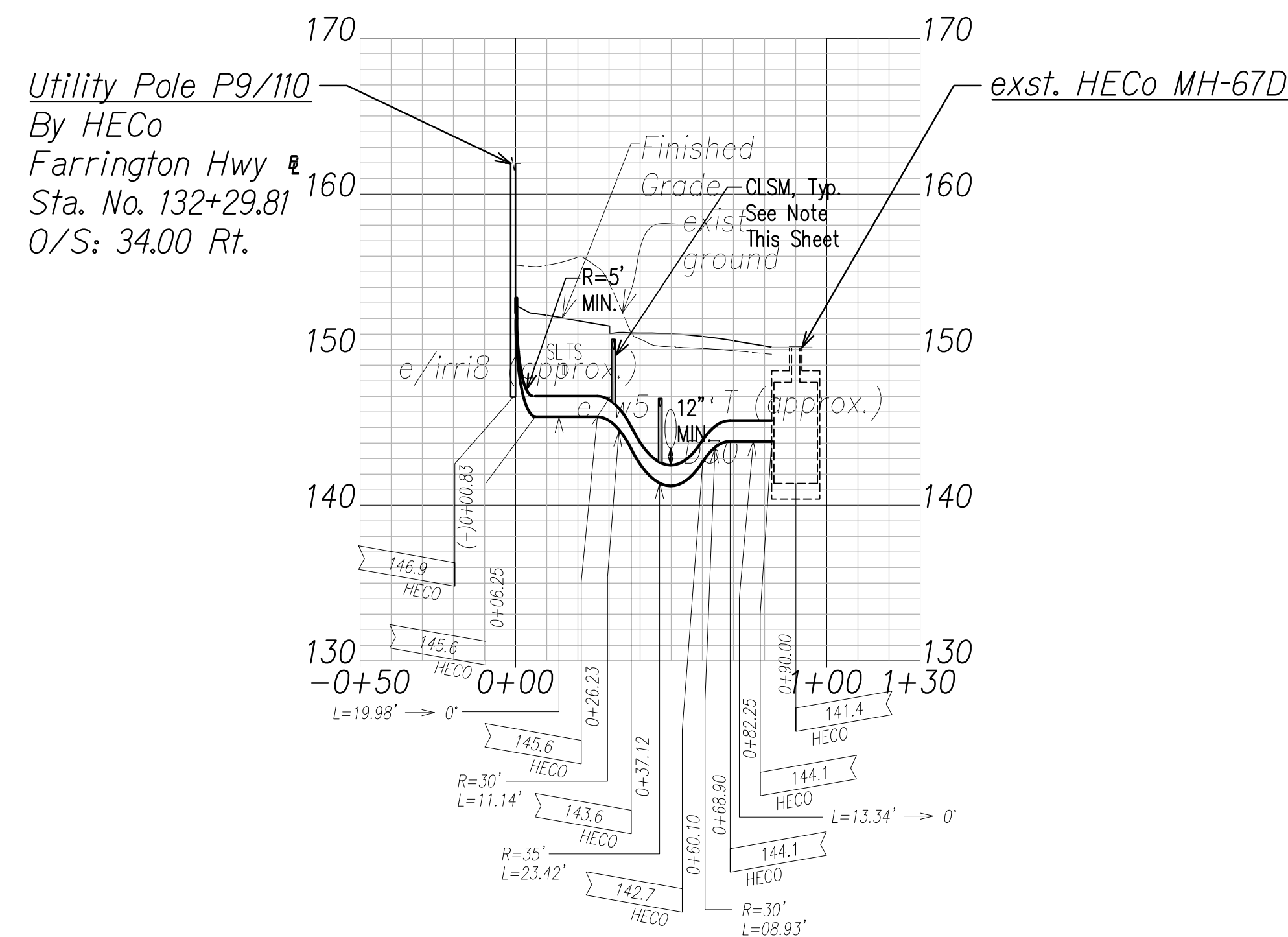


HECO 46KV DUCTLINE "B1"

CURVE DATA						
ID	Δ	Δ / 2	RADIUS	T	C	Lc
(1)	42°8'17"	21°4'8.4"	40.38'	15.55'	29.03'	29.69'
(2)	59°47'34"	29°53'46.9"	30.08'	17.29'	29.98'	31.39'

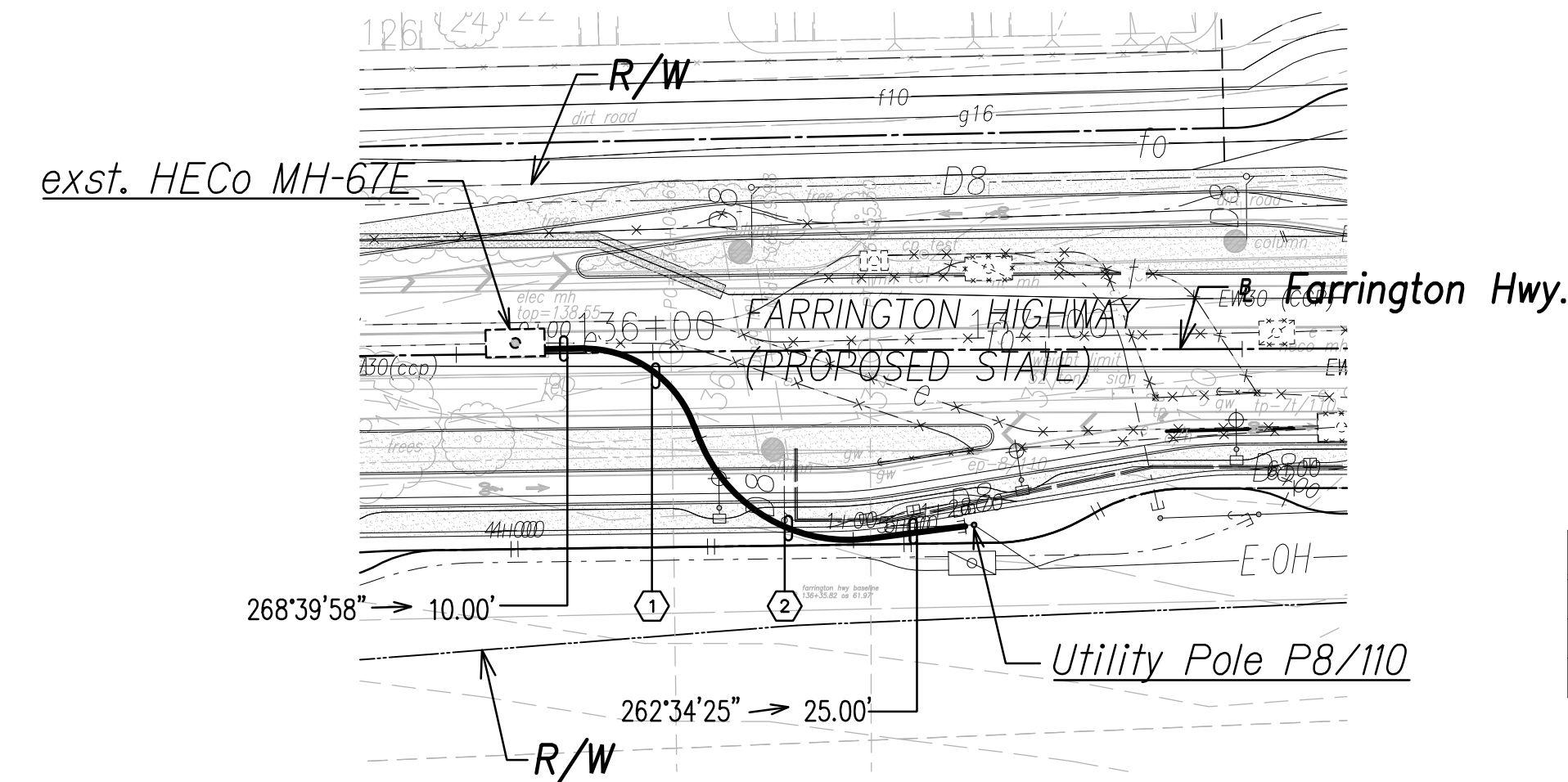
HECO 46KV Ductline "B1" - Plan

Scale: 1" = 40'



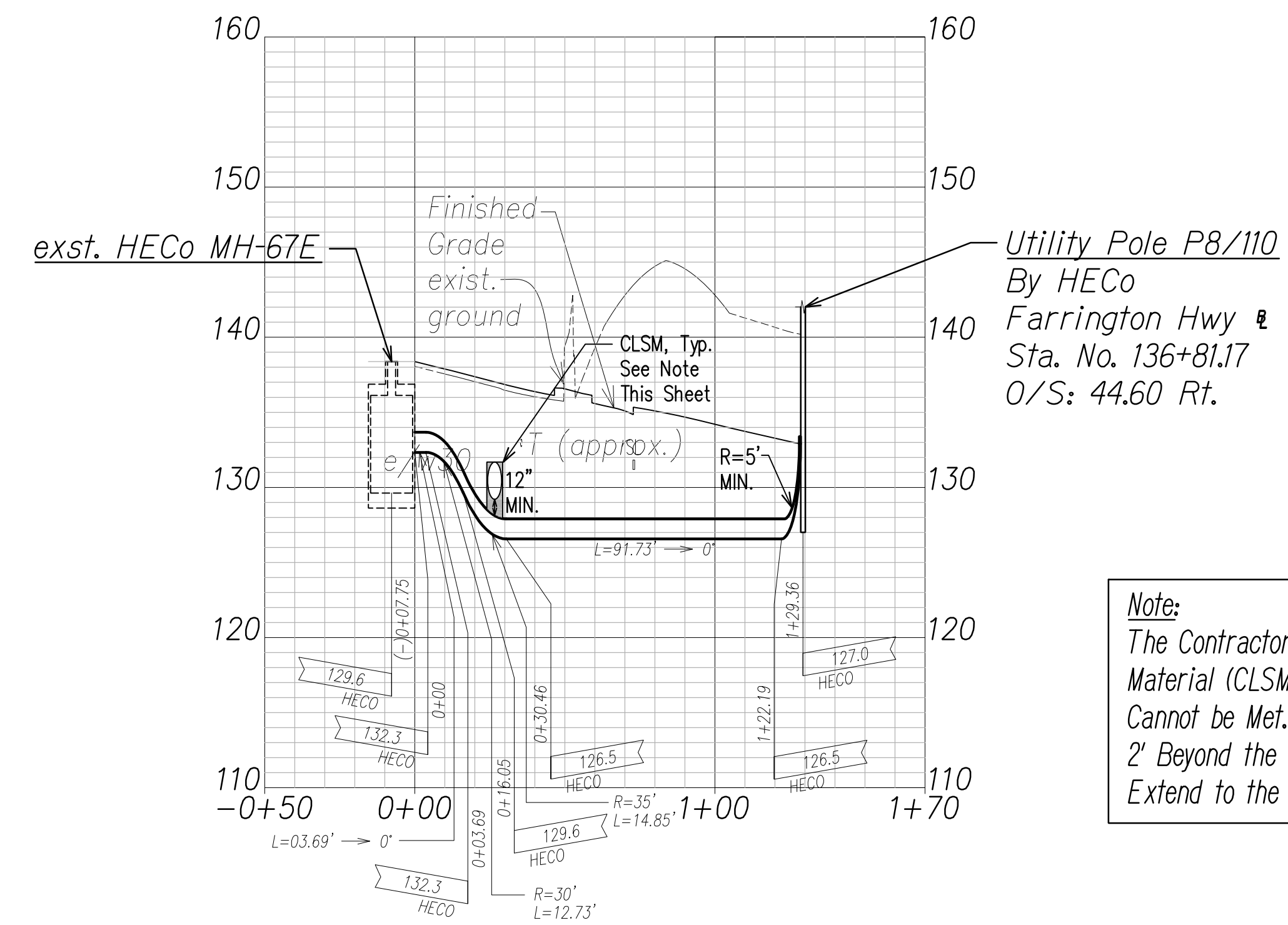
HECO 46KV Ductline "B1" - Profile

Scale: Horiz. 1" = 40'
Vert. 1" = 4'



HECO 46KV Ductline "B2" - Plan

Scale: 1" = 40'



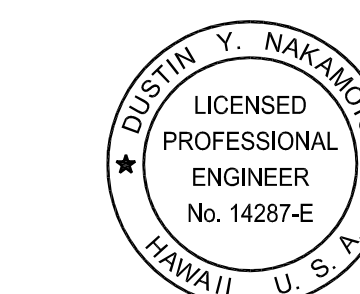
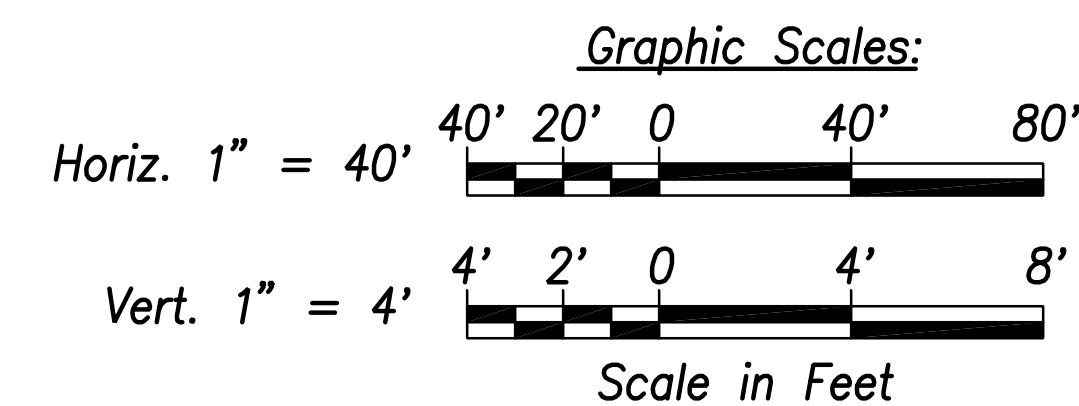
HECO 46KV Ductline "B2" - Profile

Scale: Horiz. 1" = 40'
Vert. 1" = 4'

Note:
The Contractor Shall Provide Controlled Low Strength Material (CLSM) in Areas Where Required Compaction Cannot be Met. CLSM Shall be Extended a Minimum of 2' Beyond the Waterline at the Crossing and Shall Extend to the Top of the Crossing Pipe.

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

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Req# _____ By _____ Date _____
Transmission & Distribution Engineering
Hawaiian Electric
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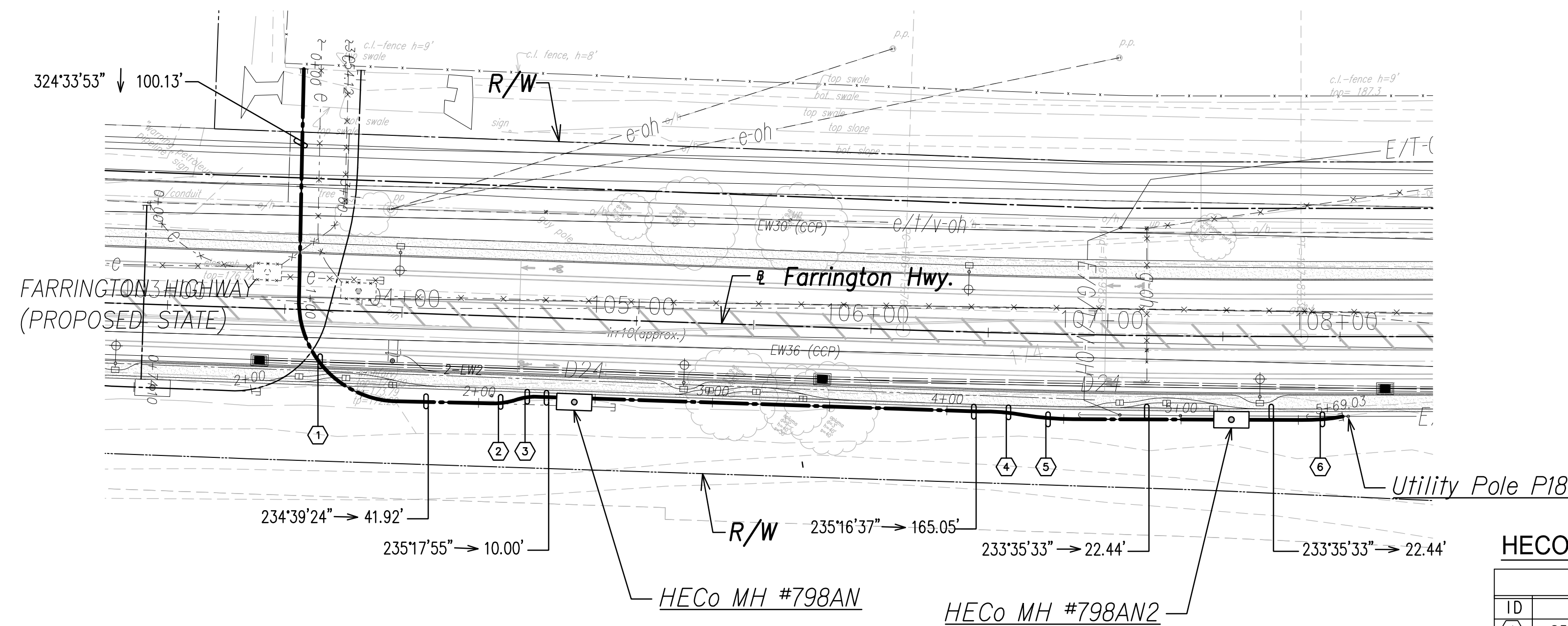


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April 30, 2024
EXPIRATION DATE OF THE LICENSE

06/08/22	ADDED DRAWING
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
HECO 46KV DUCTLINE PLAN & PROFILE "B1" & "B2"	
FARRINGTON HIGHWAY WIDENING Kapolei Golf Course Road to Fort Weaver Road Project No. 7101A-01-20	
Scale: As Shown	Date: April 2022
SHEET No. EJ-07 OF 16 SHEETS	

ADD. 731

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	710A-01-20	2021	EJ-08	790

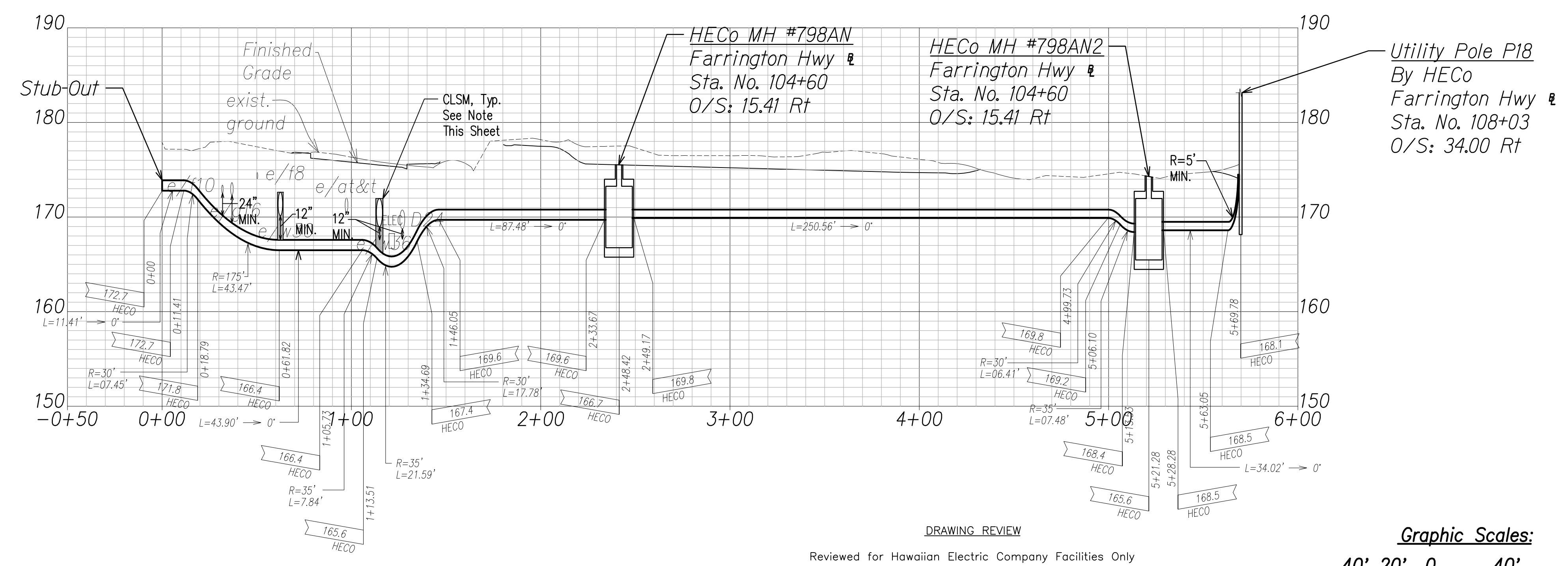


HECO 46KV DUCTLINE "A"

CURVE DATA						
ID	Δ	Δ / 2	RADIUS	T	C	Lc
①	85°2'59"	42°31'29.7"	42.53'	39.00'	57.49'	63.13'
②	17°22'13"	8°41'6.4"	32.20'	4.92'	9.72'	9.76'
③	16°7'47"	8°3'53.3"	31.04'	4.40'	8.71'	8.74'
④	11°16'54"	5°38'26.8"	97.78'	9.66'	19.22'	19.25'
⑤	8°18'11"	4°9'5.6"	144.88'	10.52'	20.98'	21.00'
⑥	10°58'45"	5°29'22.4"	91.96'	8.84'	17.59'	17.62'

HECO 46KV Ductline "A" - Plan

Scale: 1" = 40'

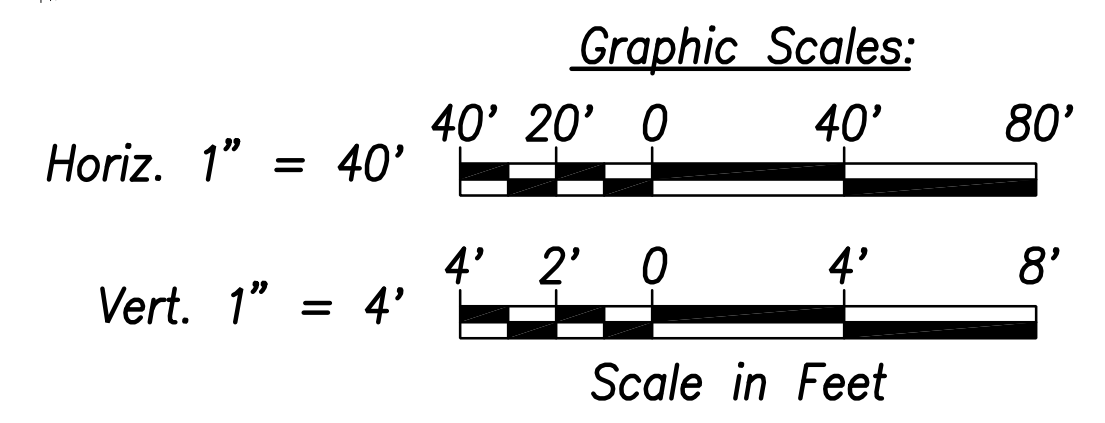


Note:
The Contractor Shall Provide Controlled Low Strength Material (CLSM) in Areas Where Required Compaction Cannot be Met. CLSM Shall be Extended a Minimum of 2' Beyond the Waterline at the Crossing and Shall Extend to the Top of the Crossing Pipe.

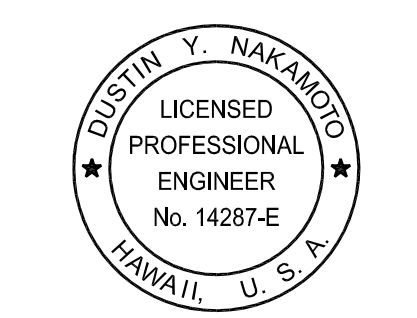
HECO 46KV Ductline "A" - Profile

Scale: Horiz. 1" = 40'
Vert. 1" = 4'

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Transmission & Distribution Engineering
Hawaiian Electric
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SURVEY PLOTTED BY _____	DATE _____
DRAWN BY _____	_____
TRACED BY _____	_____
QUANTITIES BY _____	_____
CHECKED BY _____	_____
ORIGINAL PLAN _____	_____
NOTE BOOK _____	_____
No. _____	_____



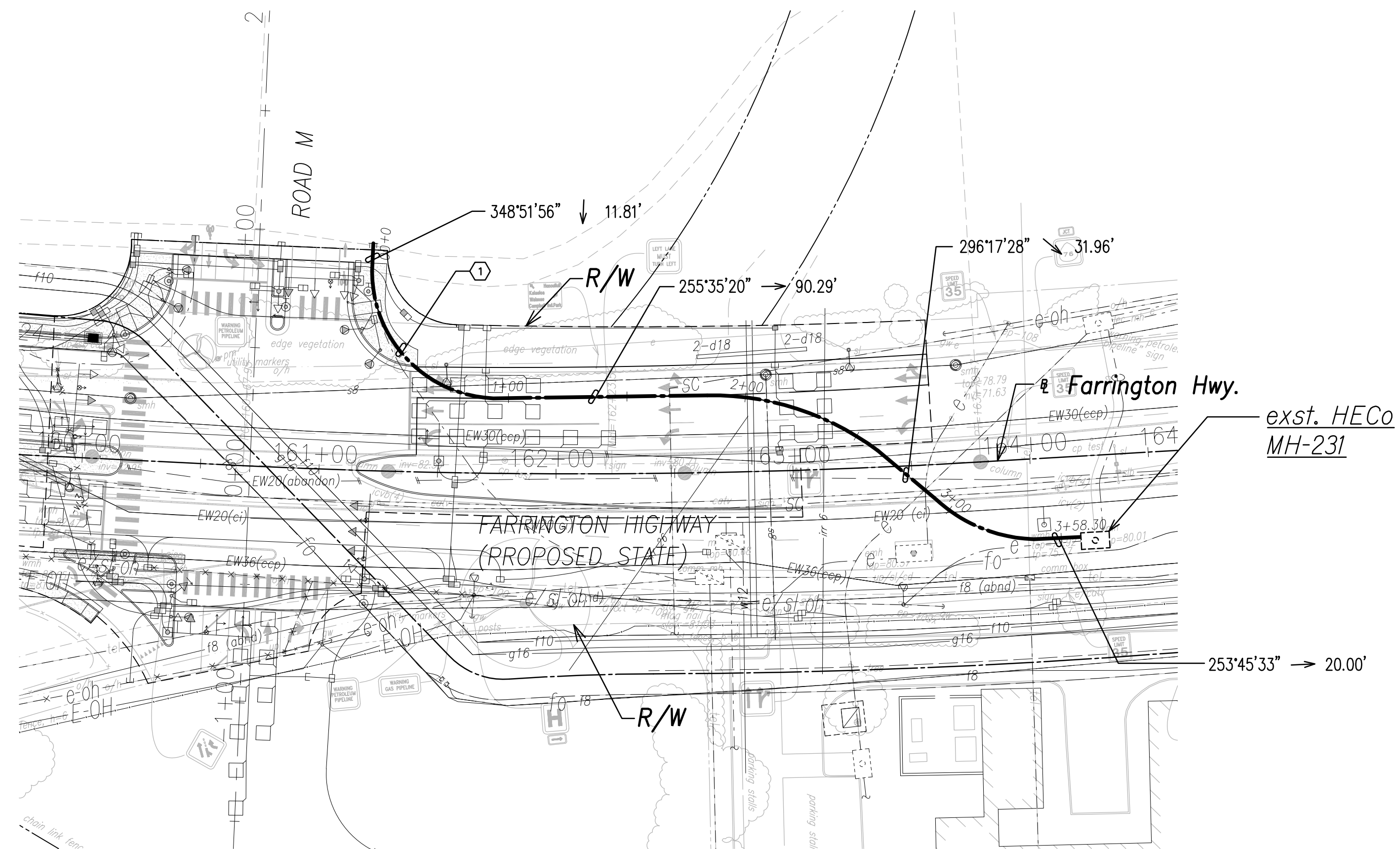
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April 30, 2024
EXPIRATION DATE OF THE LICENSE

06/08/22	ADDED DRAWING
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
HECO 46KV DUCTLINE PLAN & PROFILE "A"	
FARRINGTON HIGHWAY WIDENING Kapolei Golf Course Road to Fort Weaver Road Project No. 7101A-01-20	
Scale: As Shown	Date: April 2022
SHEET No. EJ-08 OF 16 SHEETS	

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ADD. 732

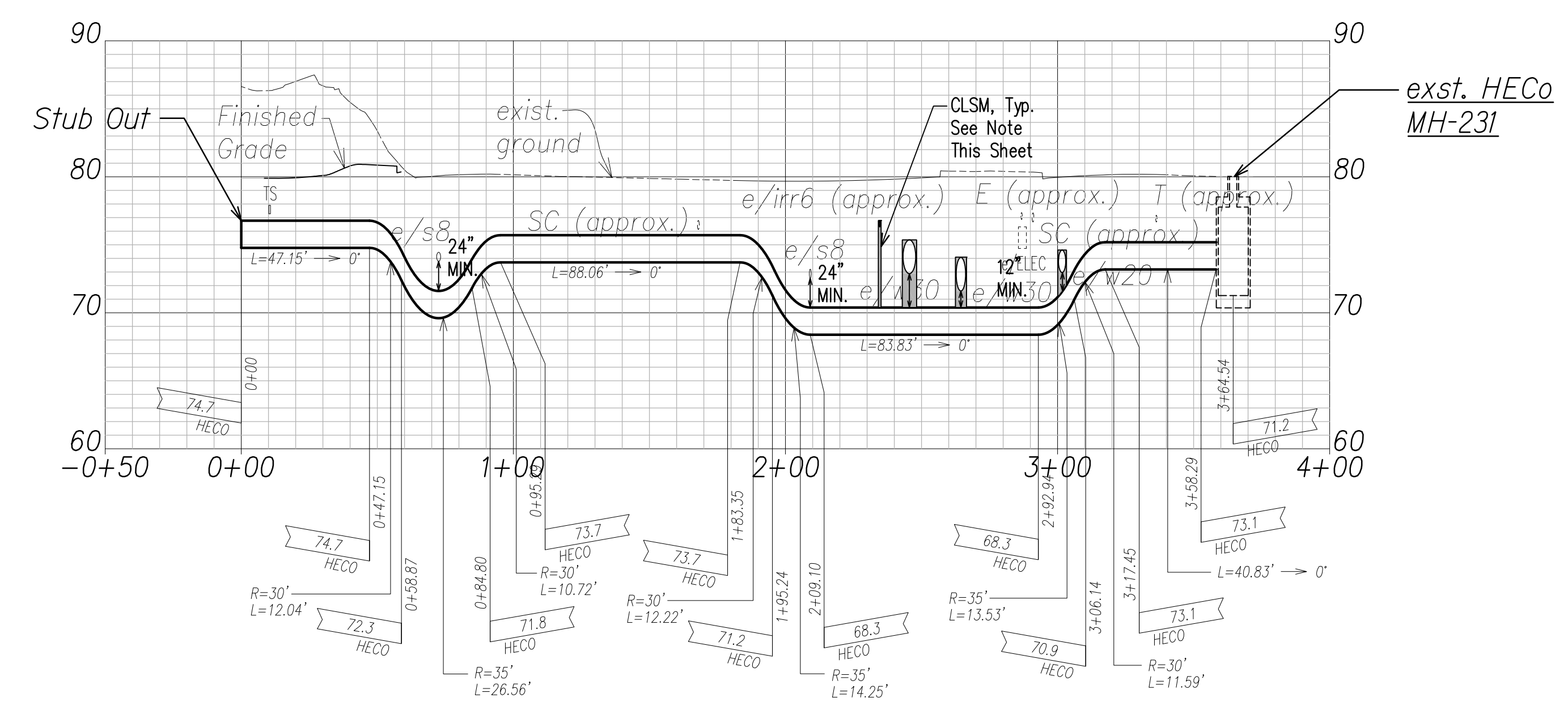
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	710A-01-20	2021	EJ-09	790



HECO 12KV DUCTLINE "H"

CURVE DATA						
ID	Δ	Δ / 2	RADIUS	T	C	Lc
①	87°43'9"	43°51'34.5"	53.42'	51.33'	74.03'	81.78'
②	37°45'50"	18°52'54.8"	116.75'	39.93'	75.57'	76.95'
③	40°43'46"	20°21'52.9"	64.00'	23.76'	44.54'	45.49'

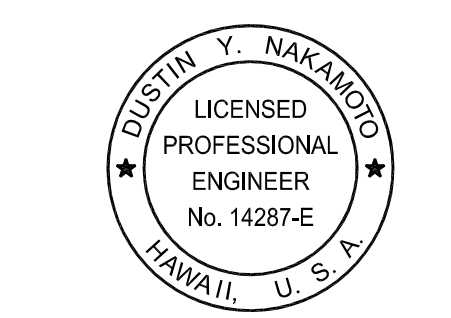
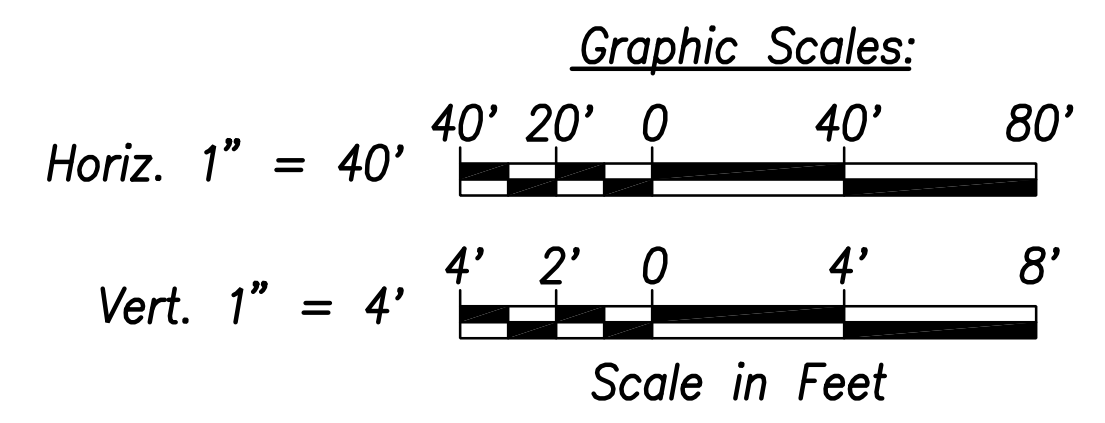
HECO 12KV Ductline "H" - Plan
Scale: 1" = 40'



Note:
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HECO 12KV Ductline "H" - Profile
Scale: Horiz. 1" = 40'
Vert. 1" = 4'

DRAWING REVIEW
Reviewed for Hawaiian Electric Company Facilities Only
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Transmission & Distribution Engineering
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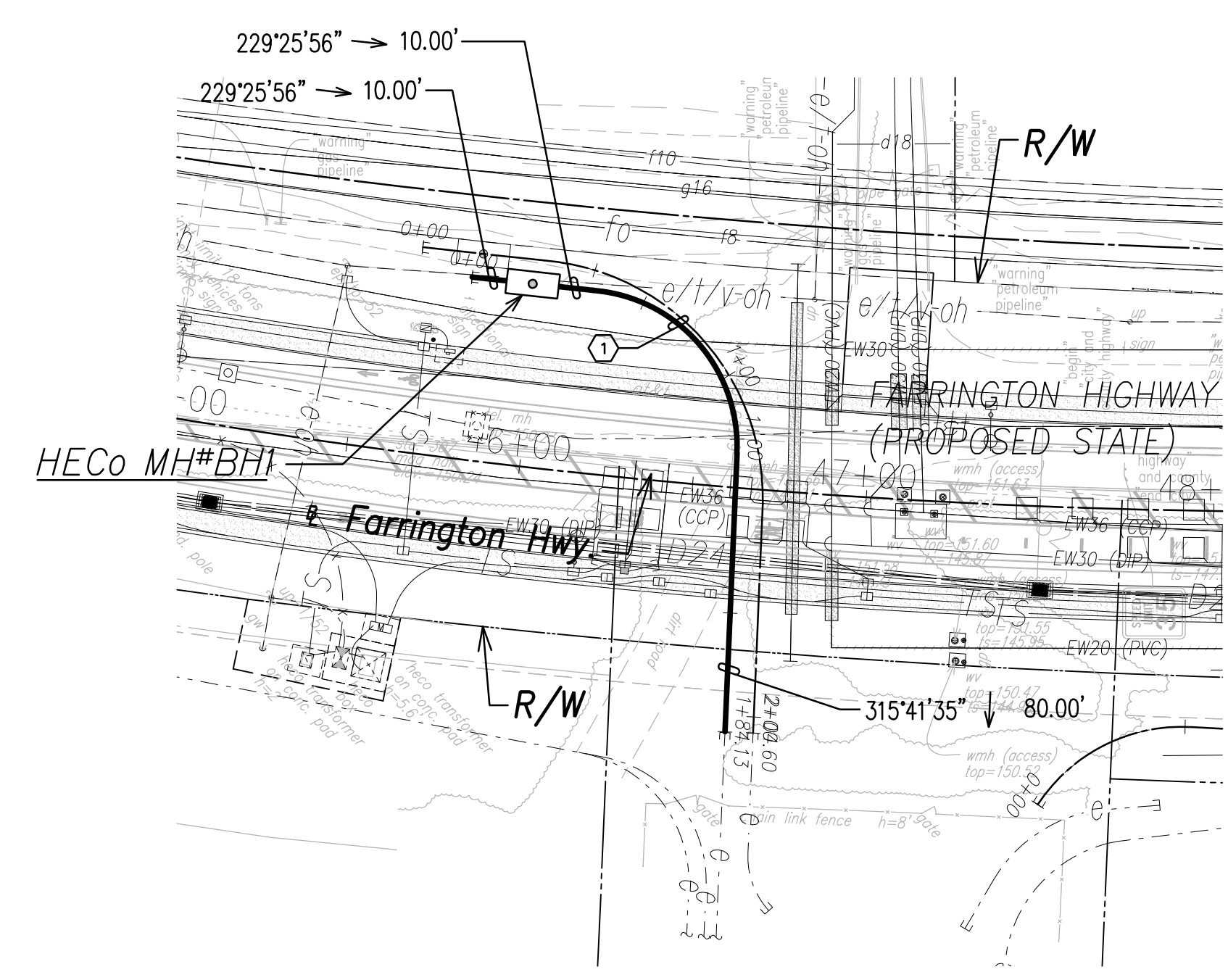
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SIGNATURE April 30, 2024
EXPIRATION DATE OF THE LICENSE

06/08/22	ADDED DRAWING
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
HECO 12KV DUCTLINE PLAN & PROFILE "H"	
FARRINGTON HIGHWAY WIDENING Kapolei Golf Course Road to Fort Weaver Road Project No. 7101A-01-20	
Scale: As Shown	Date: April 2022
SHEET No. EJ-09 OF 16 SHEETS	

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

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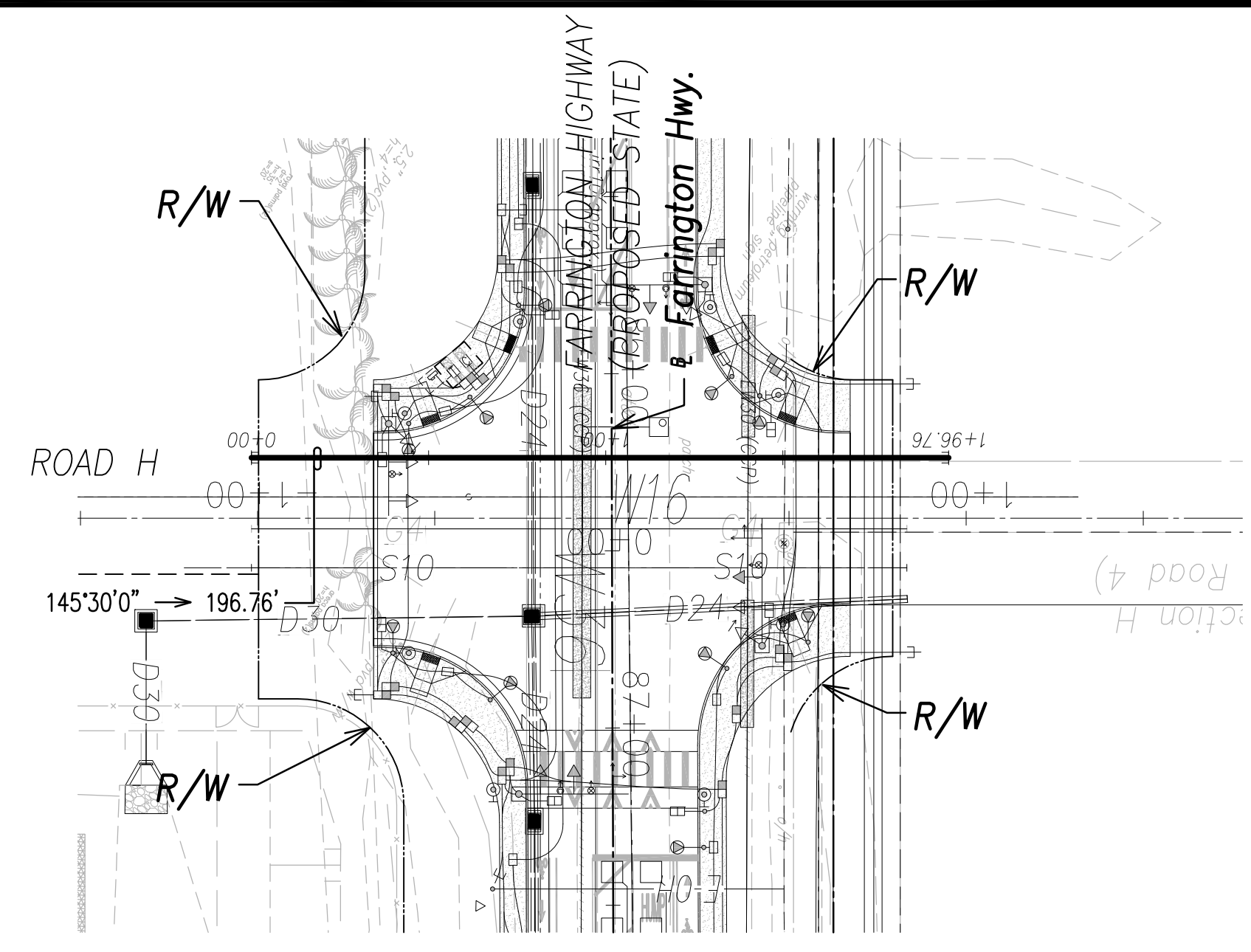
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	710A-01-20	2021	EJ-10	790



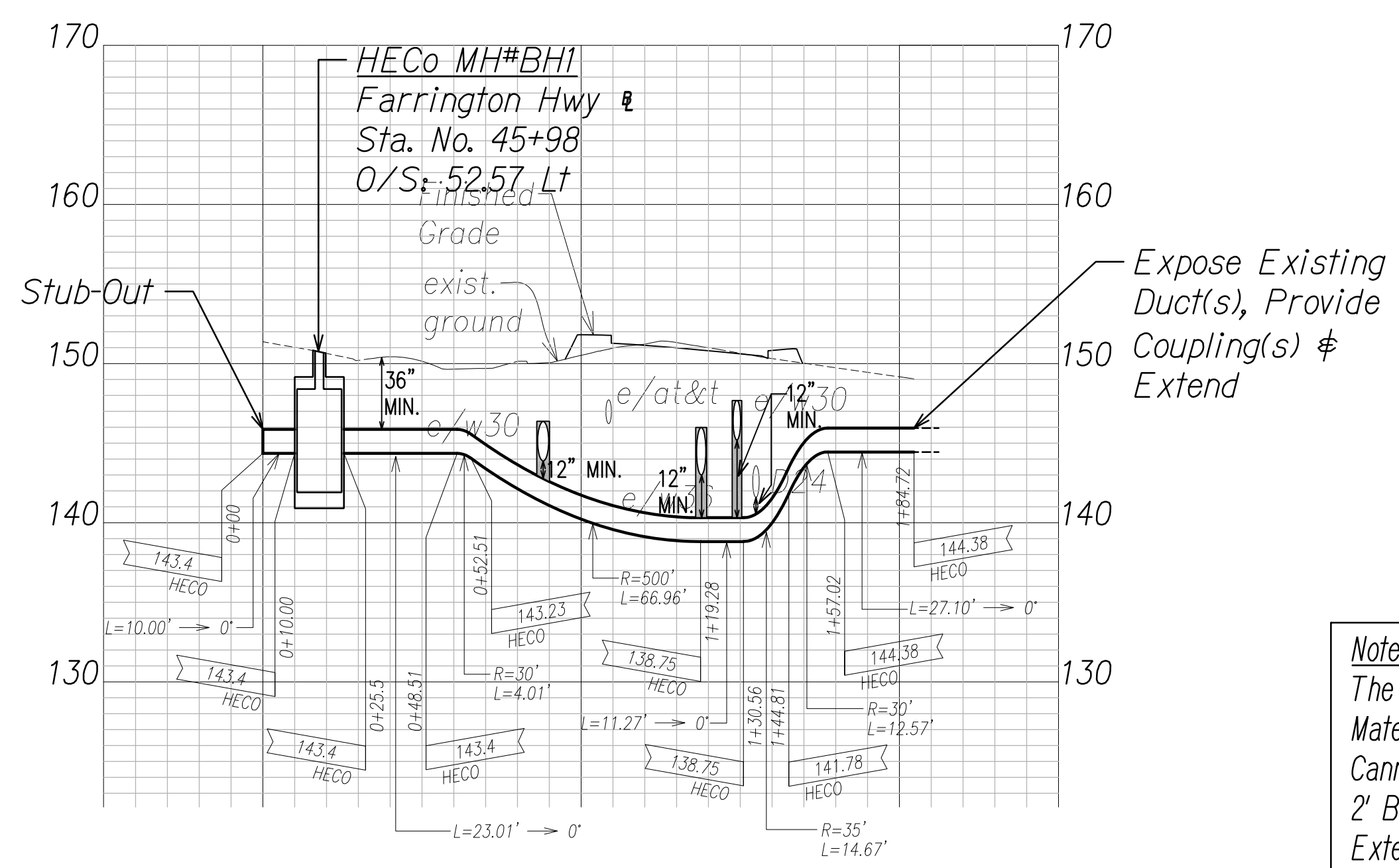
HECO 12KV Ductline "ZB1" - Plan
Scale: 1" = 40'

HECO 12KV DUCTLINE "ZB1"

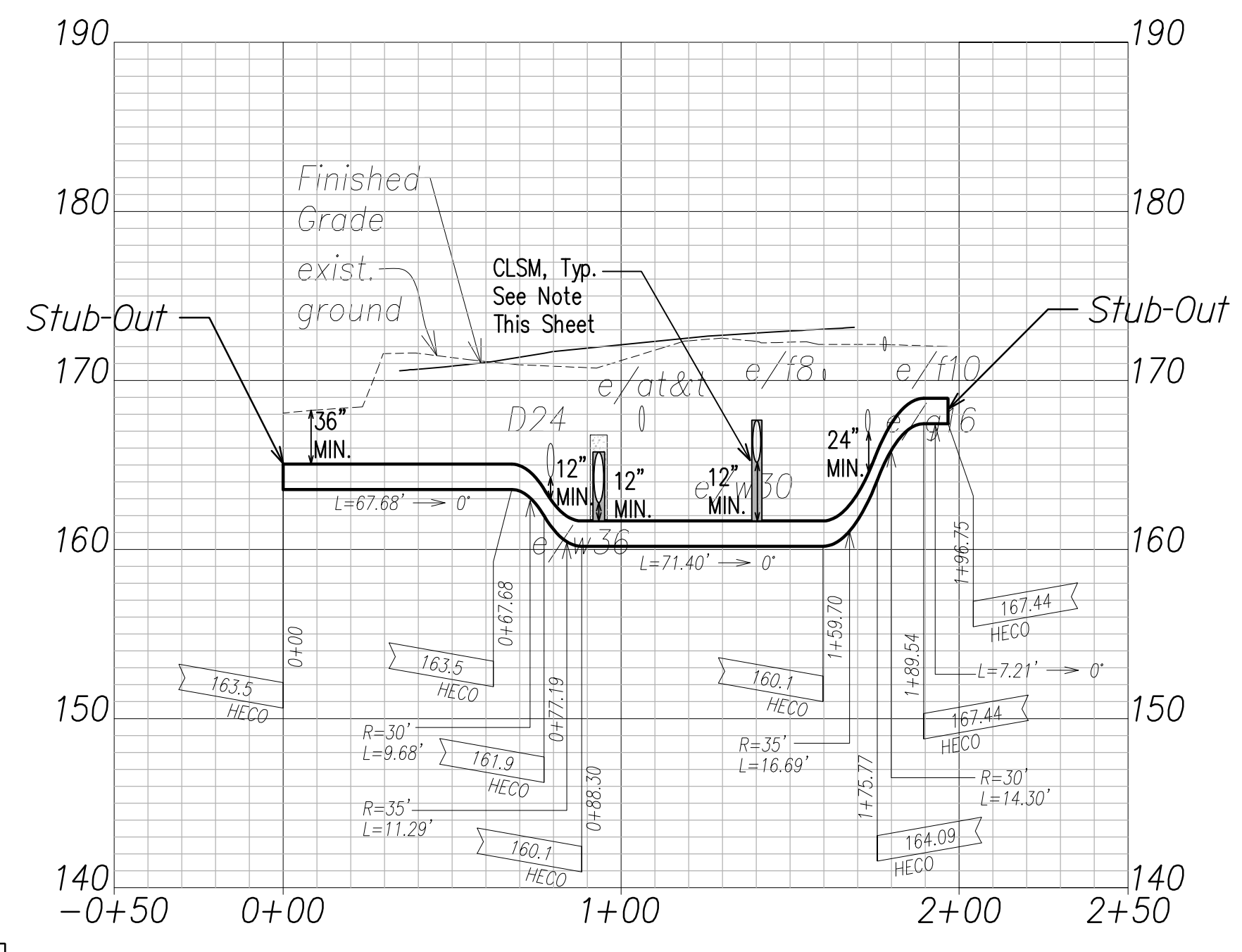
ID	Δ	Δ/2	RADIUS	T	C	Lc
(1)	88°7'32"	44°3'45.9"	44.94'	43.50'	62.51'	69.13'



HECO 12KV Ductline "ZB2" - Plan
Scale: 1" = 40'



HECO 12KV Ductline "ZB1" - Profile
Scale: Horiz. 1" = 40'
Vert. 1" = 4'

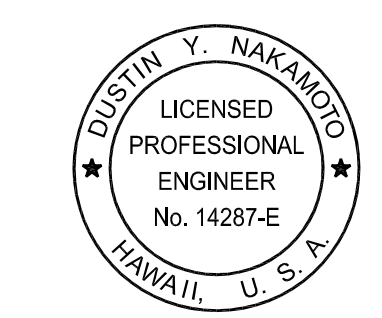
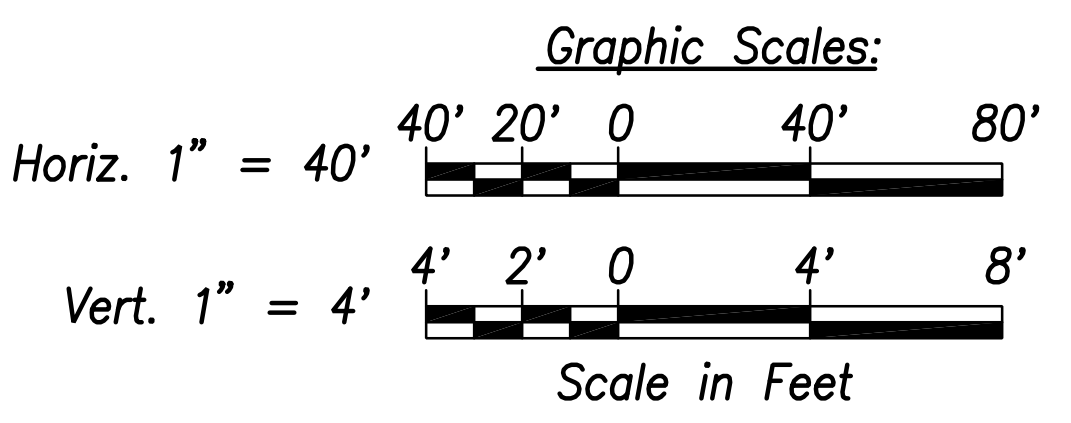


HECO 12KV Ductline "ZB2" - Profile
Scale: Horiz. 1" = 40'
Vert. 1" = 4'

Note:
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DRAWING REVIEW
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Transmission & Distribution Engineering
Hawaiian Electric

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Signature:

April 30, 2024
EXPIRATION DATE OF THE LICENSE

06/08/22 ADDED DRAWING

DATE REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**HECO 12KV DUCTLINE
PLAN & PROFILE "ZB1" & "ZB2"**

FARRINGTON HIGHWAY WIDENING
Kapolei Golf Course Road to Fort Weaver Road
Project No. 7101A-01-20

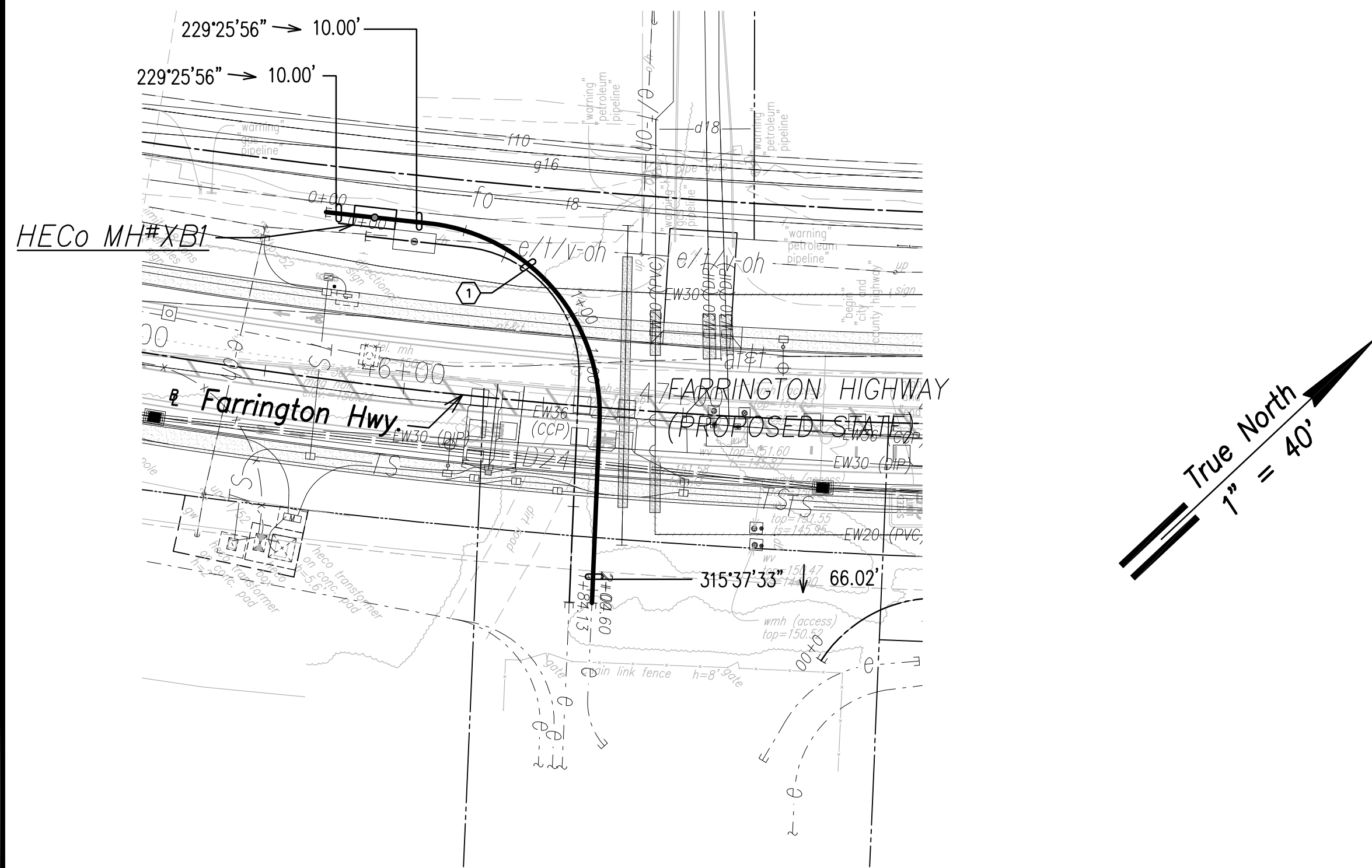
Scale: As Shown Date: April 2022

SHEET No. EJ-10 OF 16 SHEETS

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

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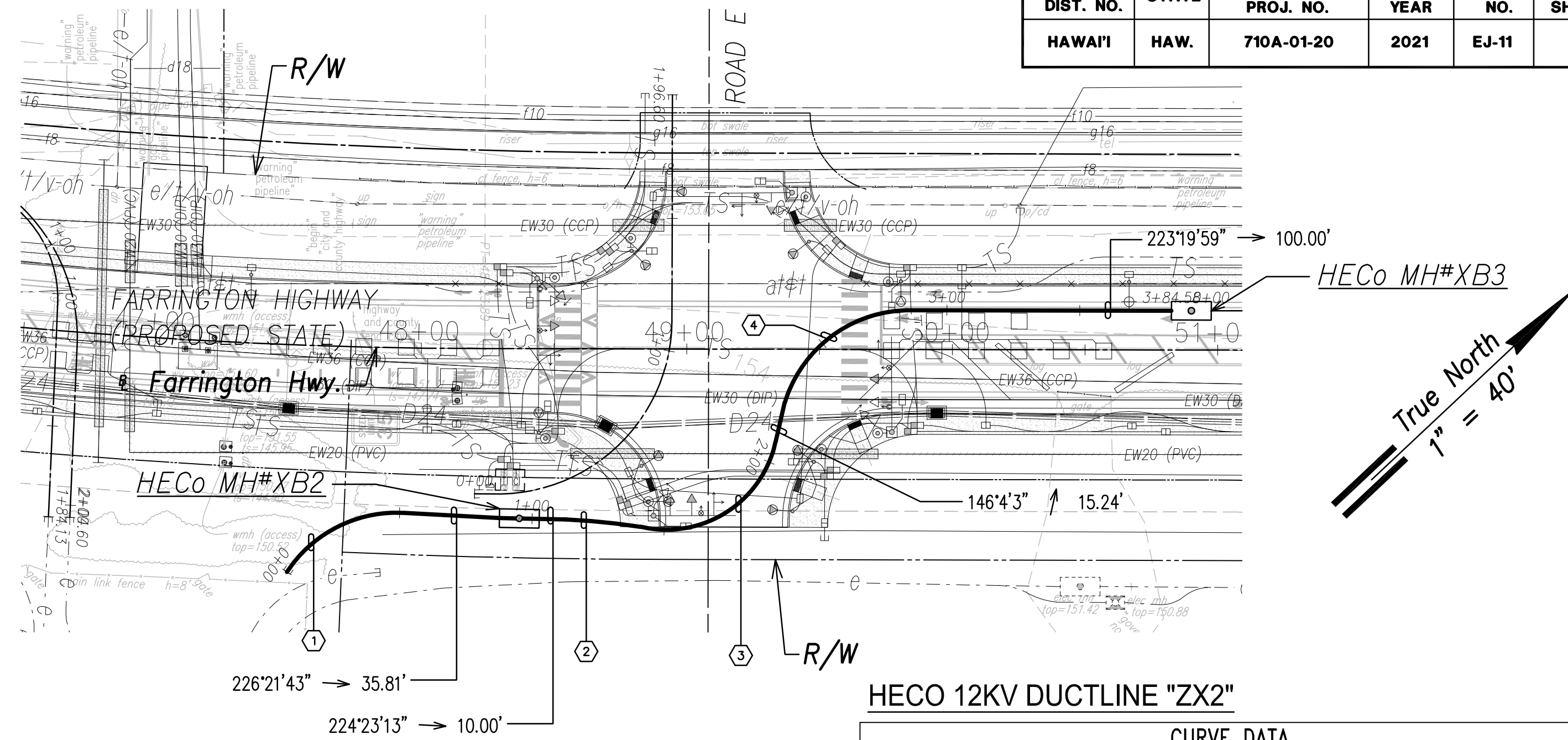
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	710A-01-20	2021	EJ-11	790



HECO 46KV Ductline "ZX1" - Plan
Scale: 1" = 40'

HECO 46KV DUCTLINE "ZX1"

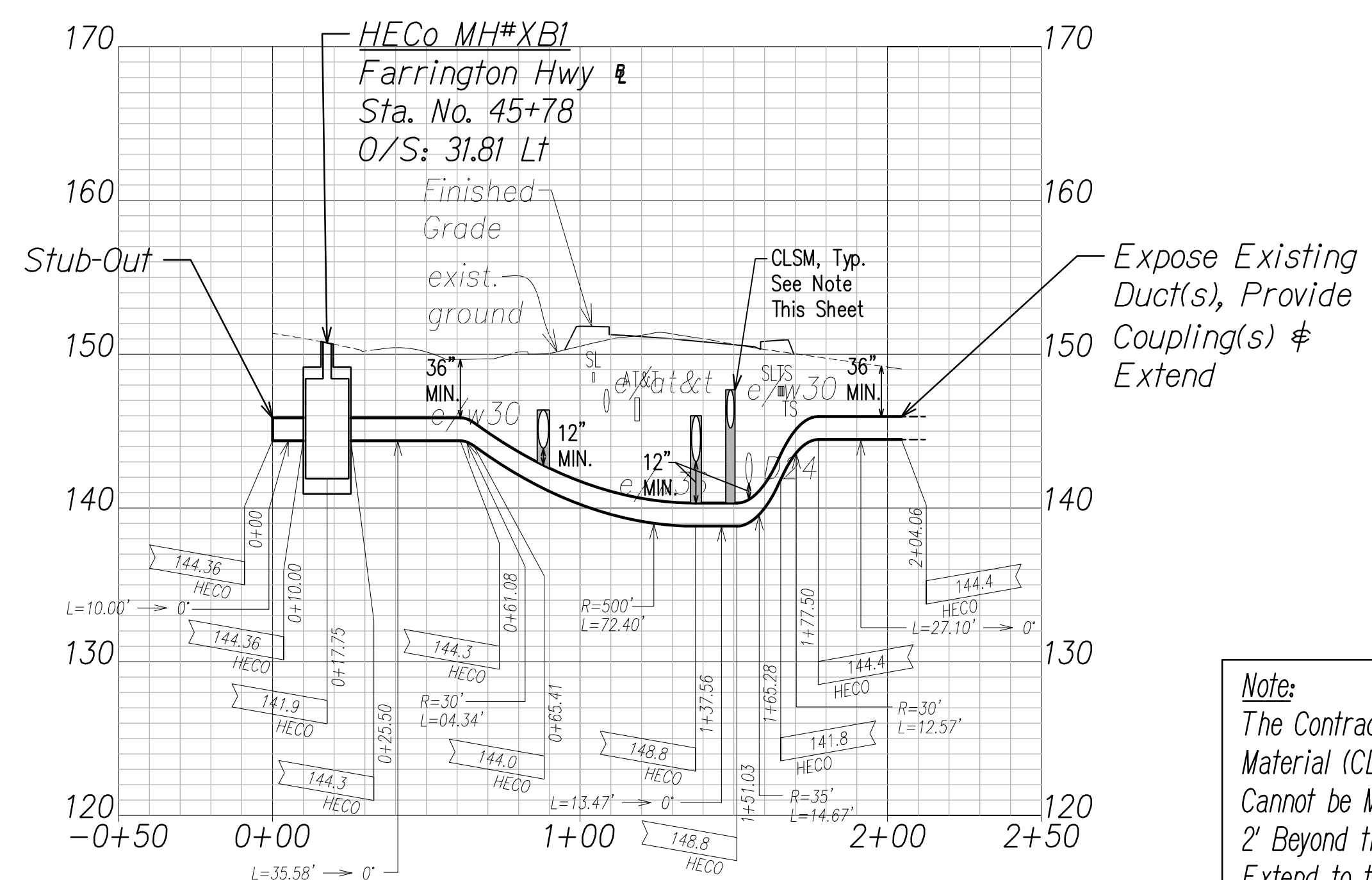
CURVE DATA						
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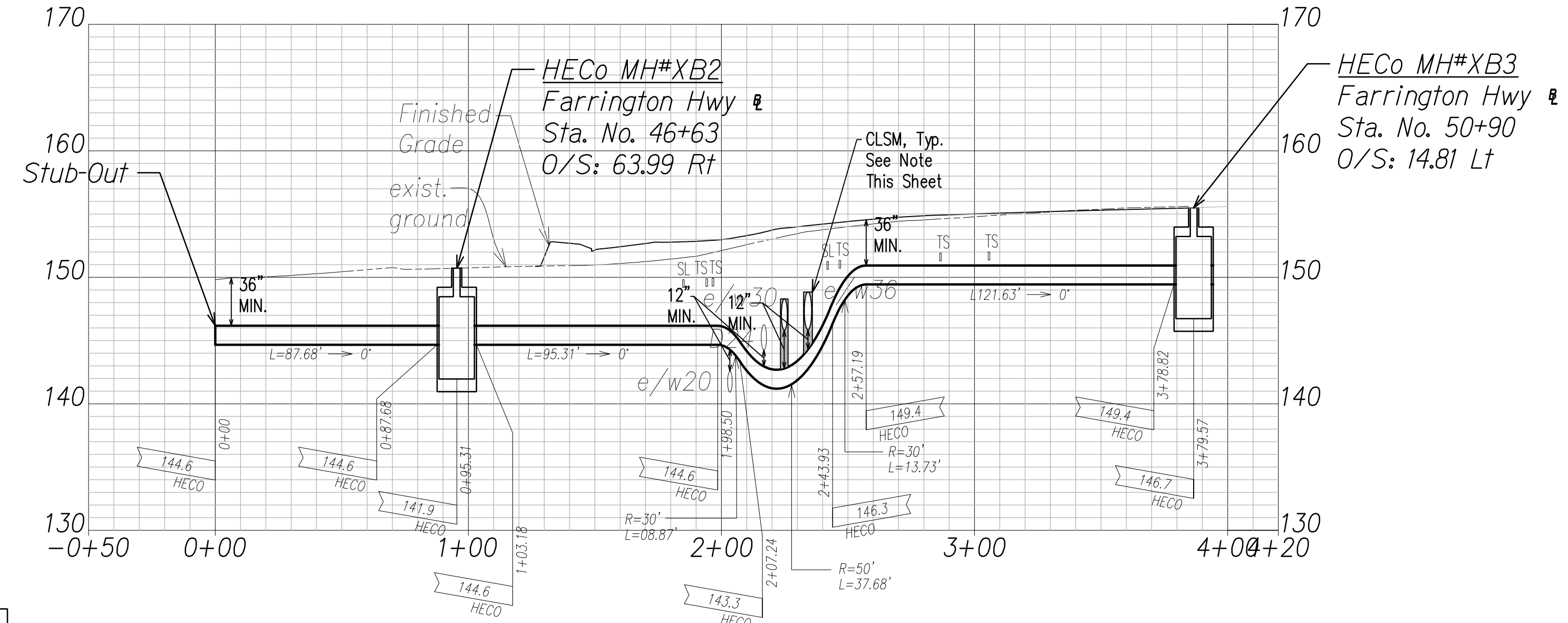
HECO 46KV Ductline "ZX2" - Plan
Scale: 1" = 40'

HECO 12KV DUCTLINE "ZX2"

CURVE DATA						
ID	Δ	Δ / 2	RADIUS	T	C	Lc
(1)	59°57'32"	29°58'46.0"	49.57'	28.60'	49.54'	51.88'
(2)	5°50'54"	2°55'26.8"	277.64'	14.18'	28.33'	28.34'
(3)	91°6'5"	45°33'2.6"	42.09'	42.90'	60.09'	66.92'
(4)	71°26'55"	35°43'27.5"	49.24'	35.41'	57.50'	61.40'



HECO 46KV Ductline "ZX1" - Profile
Scale: Horiz. 1" = 40'
Vert. 1" = 4'

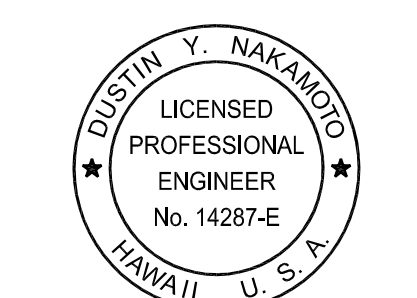
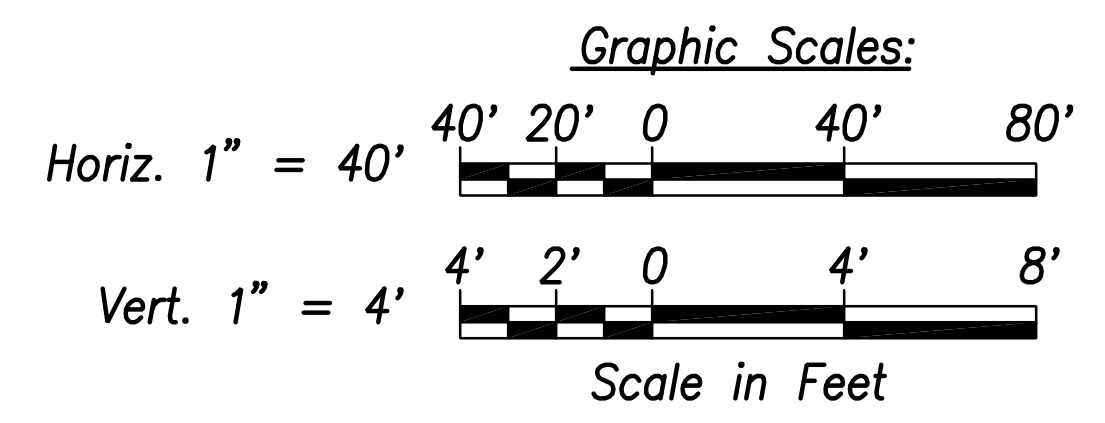


HECO 46KV Ductline "ZX2" - Profile
Scale: Horiz. 1" = 40'
Vert. 1" = 4'

Note:
The Contractor Shall Provide Controlled Low Strength Material (CLSM) in Areas Where Required Compaction Cannot be Met. CLSM Shall be Extended a Minimum of 2' Beyond the Waterline at the Crossing and Shall Extend to the Top of the Crossing Pipe.

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

DRAWING REVIEW
Reviewed for Hawaiian Electric Company Facilities Only
Req# _____ By _____ Date _____
Transmission & Distribution Engineering
Hawaiian Electric
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SIGNATURE _____
April 30, 2024
EXPIRATION DATE OF THE LICENSE

06/08/22 ADDED DRAWING

DATE REVISION

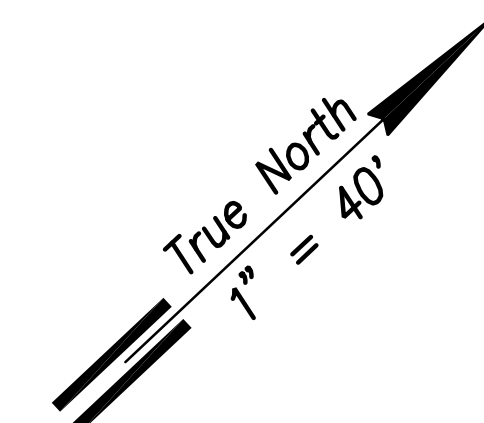
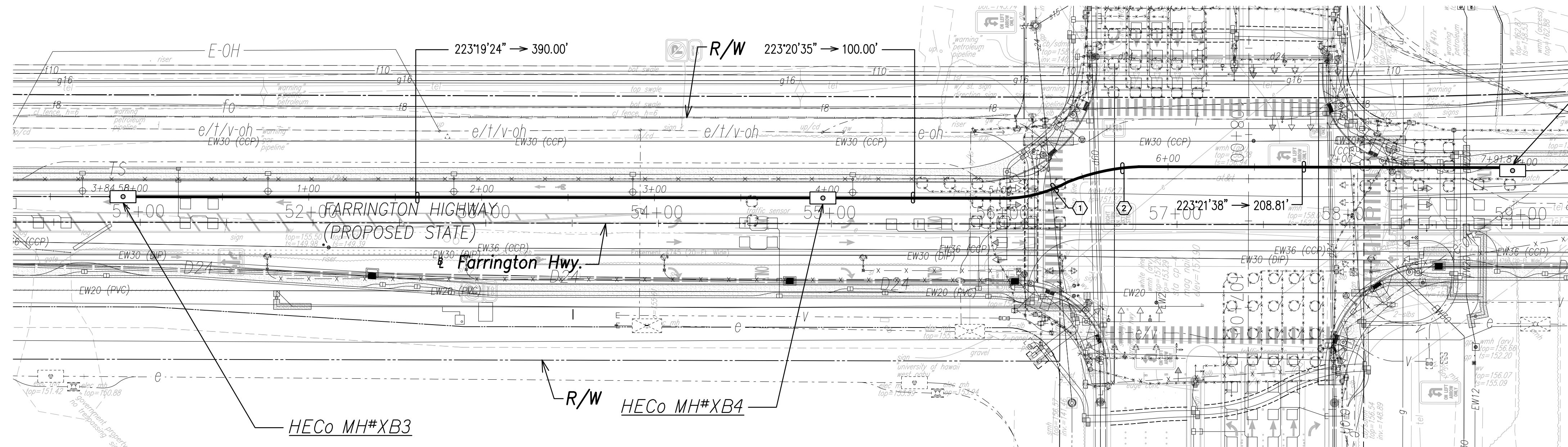
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

HECO 46KV DUCTLINE
PLAN & PROFILE "ZX1" & "ZX2"
FARRINGTON HIGHWAY WIDENING
Kapolei Golf Course Road to Fort Weaver Road
Project No. 7101A-01-20

Scale: As Shown Date: April 2022

SHEET No. EJ-11 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	710A-01-20	2021	EJ-12	790

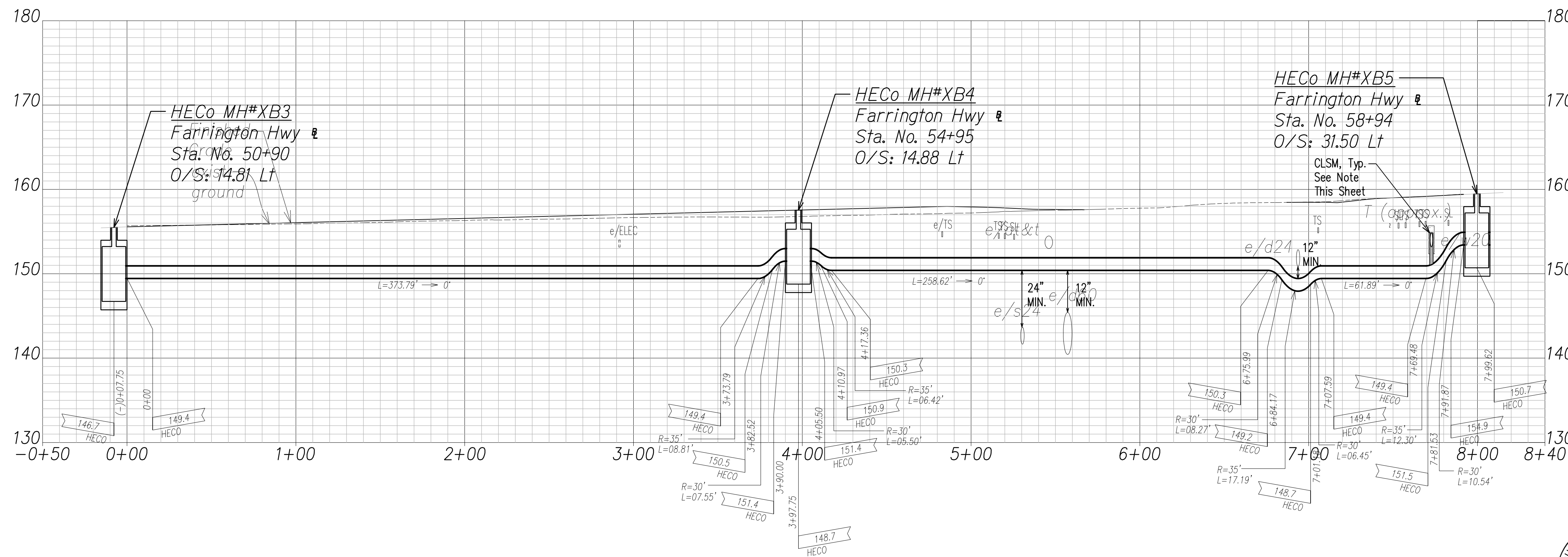


HECO 46KV DUCTLINE "ZX3"

CURVE DATA						
ID	Δ	Δ / 2	RADIUS	T	C	Lc
①	25°43'24"	12°51'42.2"	80.37'	18.35'	35.78'	36.08'
②	19°12'14"	9°36'7.1"	125.24'	21.19'	41.78'	41.98'

HECO 46KV Ductline "ZX3" - Plan

Scale: 1" = 40'



Note:
The Contractor Shall Provide Controlled Low Strength Material (CLSM) in Areas Where Required Compaction Cannot be Met. CLSM Shall be Extended a Minimum of 2' Beyond the Waterline at the Crossing and Shall Extend to the Top of the Crossing Pipe.

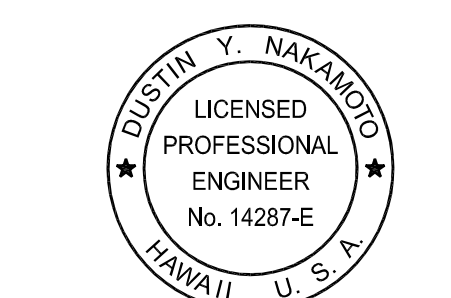
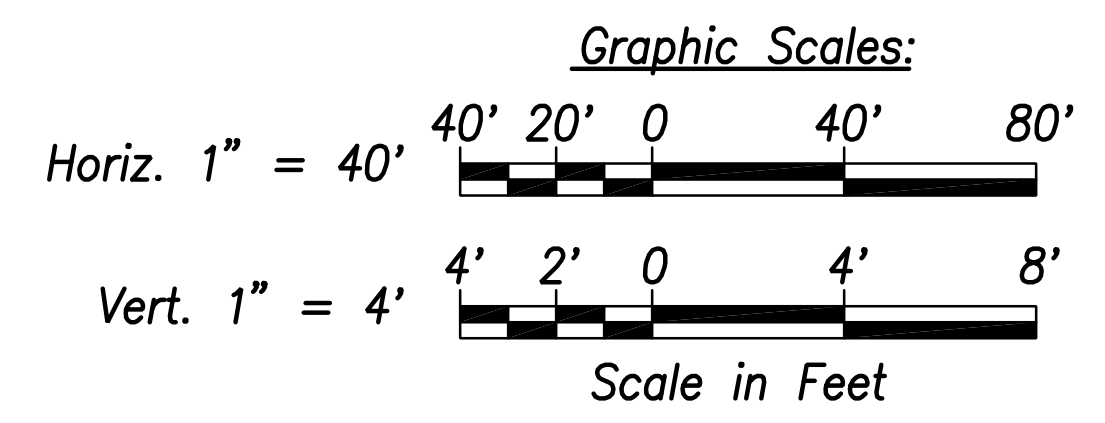
SURVEY PLOTTED BY	DATE
DRAWN BY	
TRACED BY	
QUANTITIES BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
No.	

FILE: Z:\ACAD\PROJECTS\220671A\12_22\0671A-HECO-46KV-Ductline-Plan-Profile-23.dwg saved June 2, 2022

HECO 46KV Ductline "ZX3" - Profile

Scale: Horiz. 1" = 40'
Vert. 1" = 4'

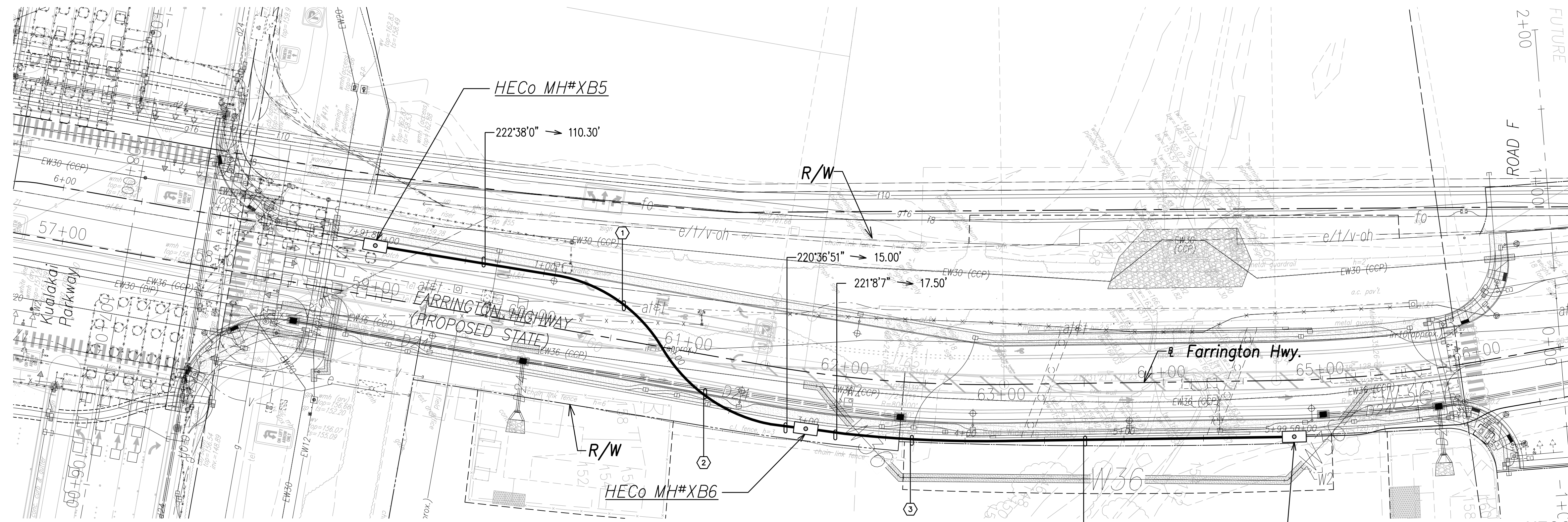
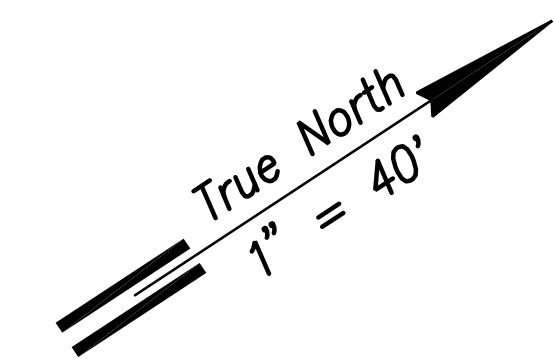
DRAWING REVIEW
Reviewed for Hawaiian Electric Company Facilities Only
Req# _____ By _____ Date _____
Transmission & Distribution Engineering
Hawaiian Electric
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SIGNATURE: *[Signature]* April 30, 2024
EXPIRATION DATE OF THE LICENSE

06/08/22	ADDED DRAWING
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
HECO 46KV DUCTLINE PLAN & PROFILE "ZX3"	
FARRINGTON HIGHWAY WIDENING Kapolei Golf Course Road to Fort Weaver Road Project No. 7101A-01-20	
Scale: As Shown	Date: April 2022
SHEET No. EJ-12 OF 16 SHEETS	

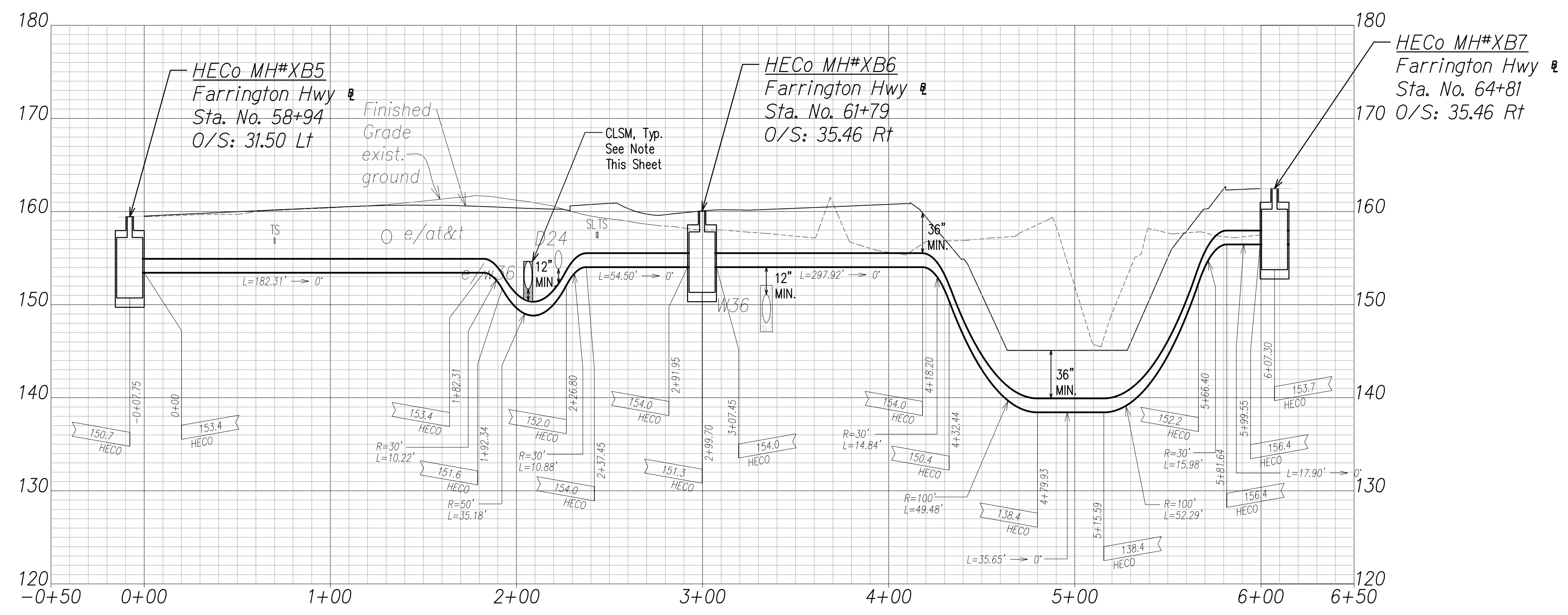
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	710A-01-20	2021	EJ-13	790



HECO 46KV Ductline "ZX4" - Plan
Scale: 1" = 40'

HECO 46KV DUCTLINE "ZX4"

CURVE DATA						
ID	Δ	Δ / 2	RADIUS	T	C	Lc
①	48°4'8"	24°2'4.0"	95.58'	42.62'	77.86'	80.19'
②	49°0'16"	24°30'7.8"	100.91'	45.99'	83.70'	86.30'
③	7°29'27"	3°44'43.5"	815.63'	53.39'	106.56'	106.63'

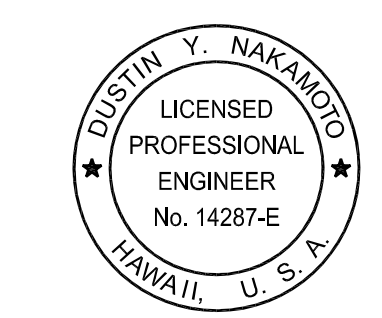
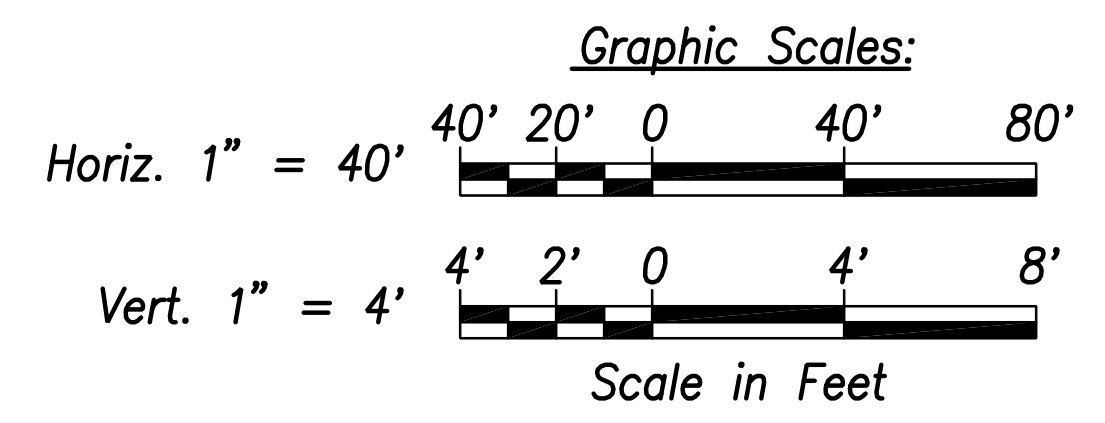


HECO 46KV Ductline "ZX4" - Profile
Scale: Horiz. 1" = 40'
Vert. 1" = 4'

Note:
The Contractor Shall Provide Controlled Low Strength Material (CLSM) in Areas Where Required Compaction Cannot be Met. CLSM Shall be Extended a Minimum of 2' Beyond the Waterline at the Crossing and Shall Extend to the Top of the Crossing Pipe.

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

DRAWING REVIEW
Reviewed for Hawaiian Electric Company Facilities Only
Req# _____ By _____ Date _____
Transmission & Distribution Engineering
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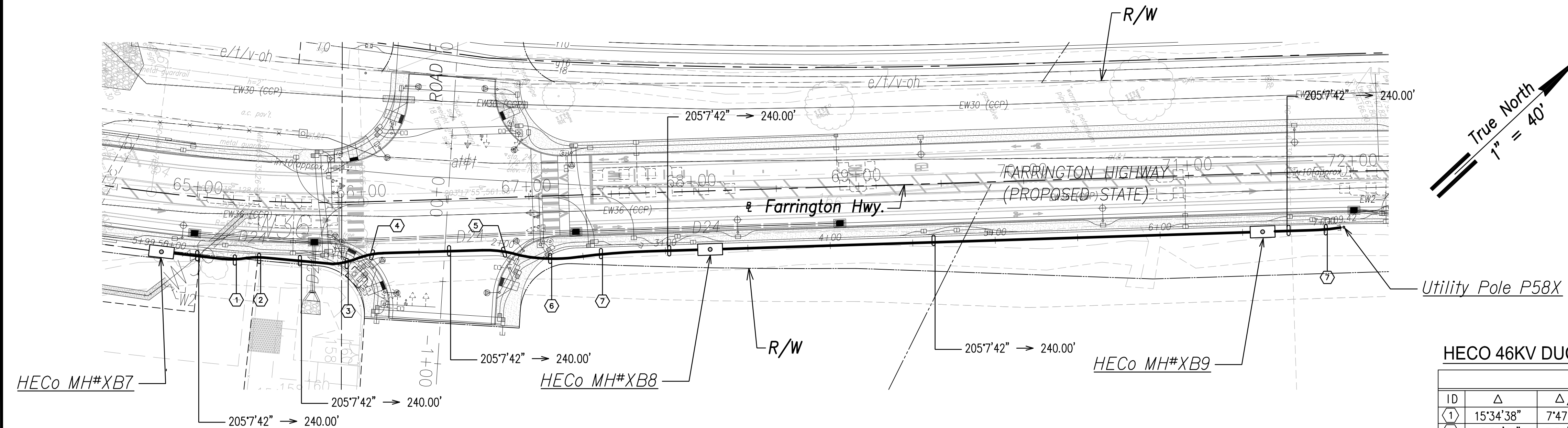


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Date: April 30, 2024
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06/08/22	ADDED DRAWING
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
HECO 46KV DUCTLINE PLAN & PROFILE "ZX4"	
FARRINGTON HIGHWAY WIDENING Kapolei Golf Course Road to Fort Weaver Road Project No. 7101A-01-20	
Scale: As Shown	Date: April 2022
SHEET No. EJ-13 OF 16 SHEETS	

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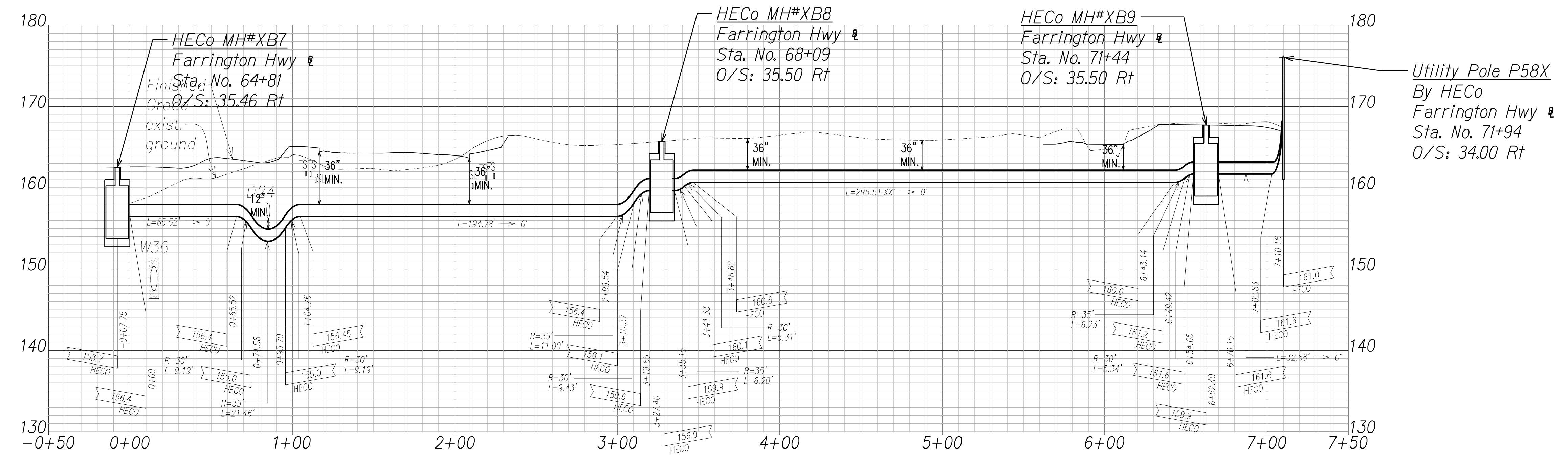
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	710A-01-20	2021	EJ-14	790



HECO 46KV DUCTLINE "ZX5"

CURVE DATA						
ID	Δ	Δ / 2	RADIUS	T	C	Lc
①	15°34'38"	7°47'19.1"	53.92'	7.38'	14.62'	14.66'
②	15°56'31"	7°58'15.6"	45.35'	6.35'	12.58'	12.62'
③	19°34'54"	9°47'27.0"	47.08'	8.12'	16.01'	16.09'
④	20°9'36"	10°4'48.1"	42.12'	7.49'	14.74'	14.82'
⑤	19°4'15"	9°32'7.7"	68.62'	11.53'	22.73'	22.84'
⑥	19°46'27"	9°53'13.6"	103.70'	18.07'	35.61'	35.79'
⑦	5°37'46"	2°48'53.2"	425.10'	20.90'	41.75'	41.77'
⑧	7°15'22"	3°37'40.8"	156.08'	9.90'	19.75'	19.77'

HECO 46KV Ductline "ZX5" - Plan
Scale: 1" = 40'

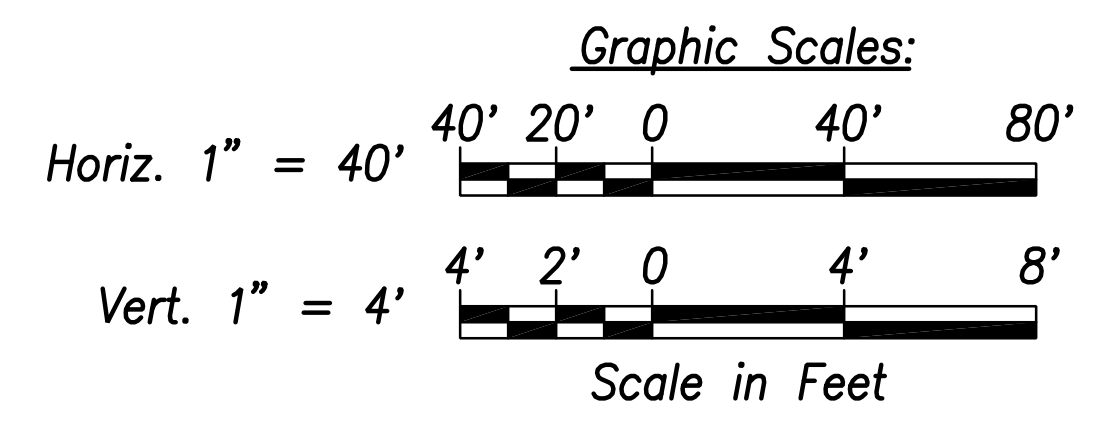


HECO 46KV Ductline "ZX5" - Profile
Scale: Horiz. 1" = 40'
Vert. 1" = 4'

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

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DRAWING REVIEW
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DUSTIN Y. NAKAMOTO
LICENSED PROFESSIONAL ENGINEER
No. 14287-E
HAWAII, U. S. A.

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Signature: _____
Date: April 30, 2022
EXPIRATION DATE OF THE LICENSE

06/08/22	ADDED DRAWING
DATE	REVISION

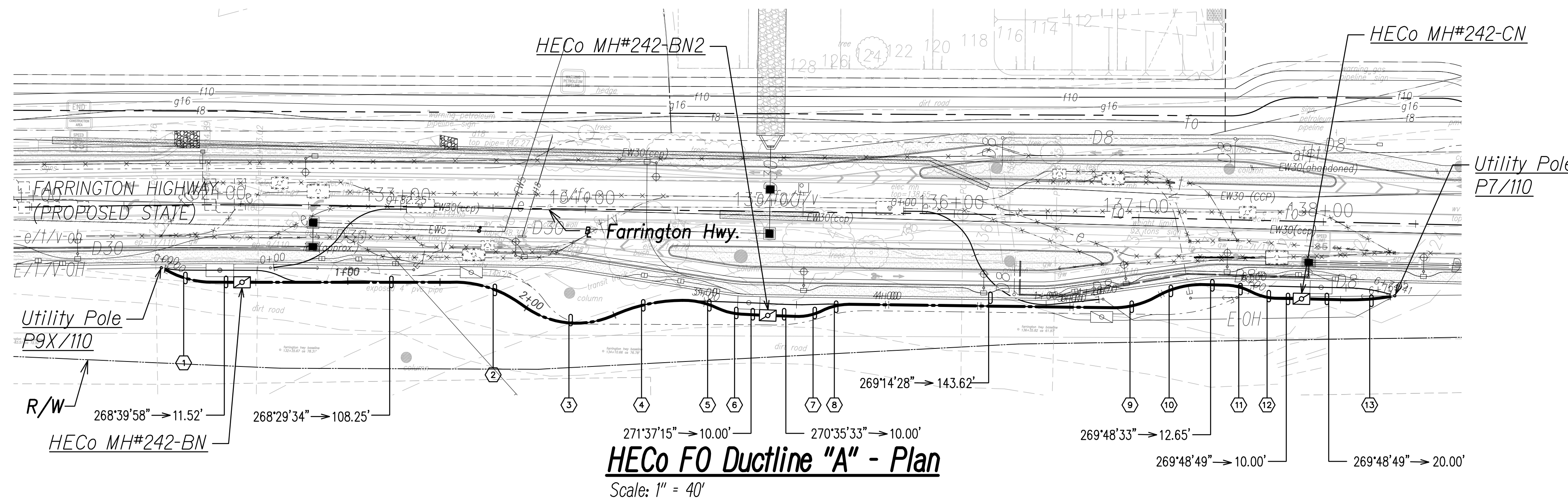
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

HECO 46KV DUCTLINE
PLAN & PROFILE "ZX5"
FARRINGTON HIGHWAY WIDENING
Kapolei Golf Course Road to Fort Weaver Road
Project No. 7101A-01-20

Scale: As Shown Date: April 2022

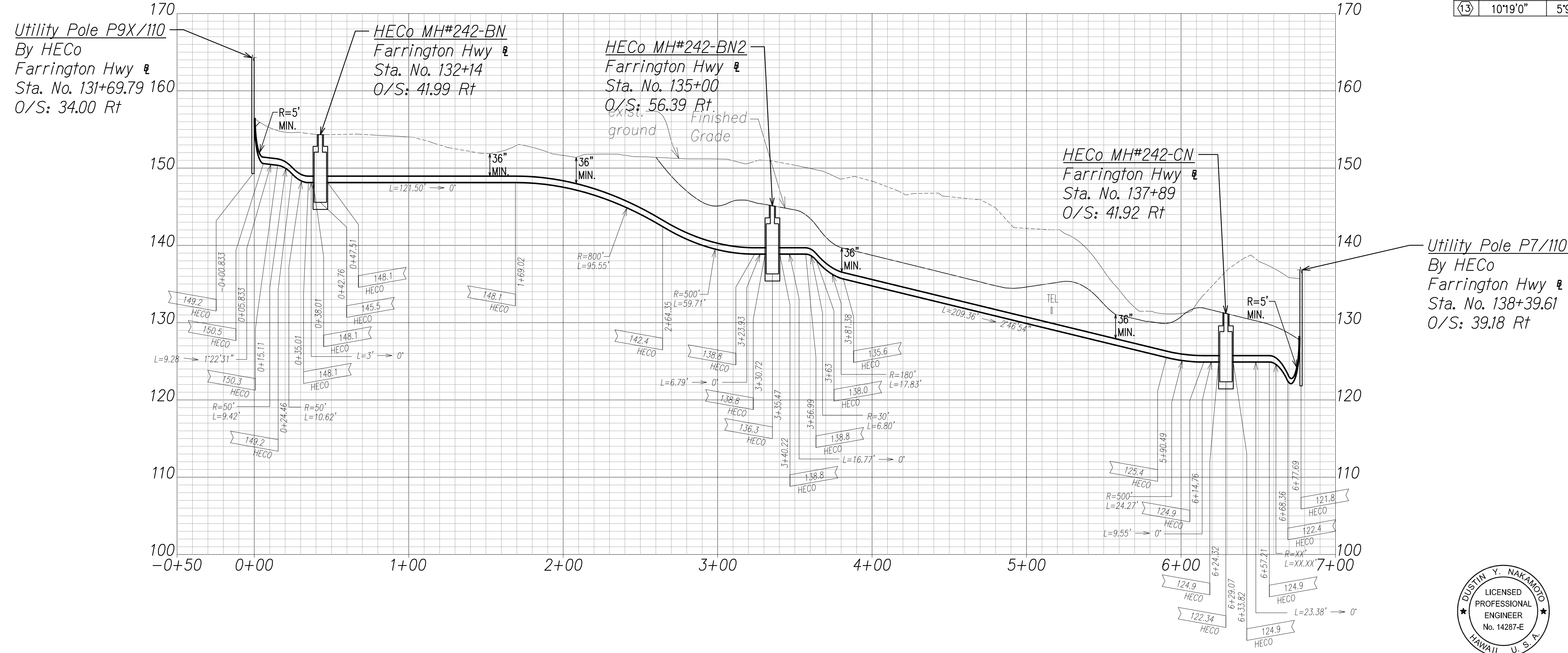
SHEET No. EJ-14 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	710A-01-20	2021	EJ-15	790



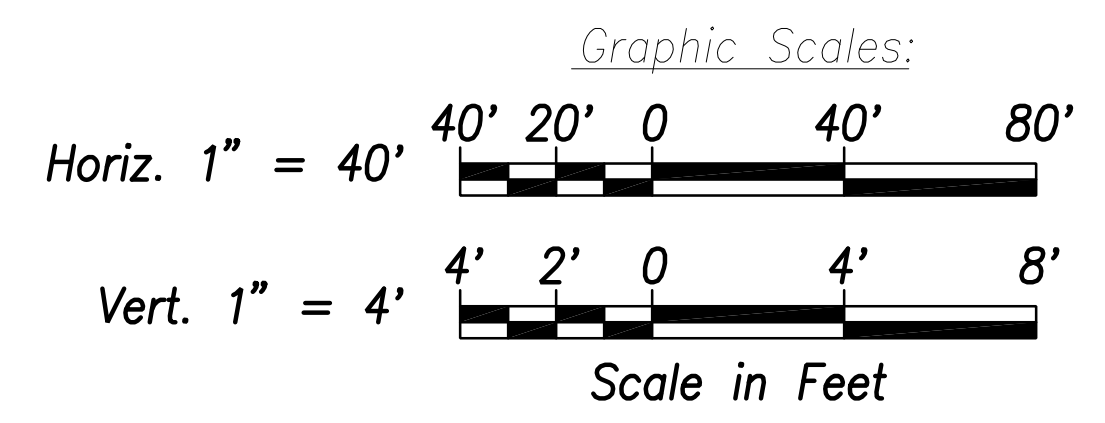
HECO FO DUCTLINE "A"

CURVE DATA						
ID	Δ	Δ / 2	RADIUS	T	C	Lc
1	29°21'14"	14°40'37.2"	51.72'	13.55'	26.21'	26.50'
2	38°50'10"	19°25'5.1"	60.96'	21.49'	40.53'	41.32'
3	64°13'58"	32°6'59.2"	49.06'	30.80'	52.17'	55.00'
4	22°28'16"	11°14'8.1"	92.36'	18.35'	35.99'	36.22'
5	26°39'51"	13°19'55.3"	42.29'	10.02'	19.50'	19.68'
6	21°33'5"	10°46'32.3"	35.07'	6.67'	13.11'	13.19'
7	27°11'3"	13°35'31.7"	30.12'	7.28'	14.16'	14.29'
8	27°58'45"	13°59'22.7"	33.52'	8.35'	16.21'	16.37'
9	28°51'47"	14°25'53.3"	47.82'	12.31'	23.84'	24.09'
10	29°2'30"	14°31'15.1"	48.92'	12.67'	24.53'	24.80'
11	28°24'27"	14°12'13.3"	30.82'	7.80'	15.12'	15.28'
12	24°23'23"	12°11'41.6"	31.71'	6.85'	13.40'	13.50'
13	10°19'0"	5°9'29.9"	131.19'	11.84'	23.59'	23.62'



HECO FO Ductline "A" - Profile
Scale: Horiz. 1" = 40'
Vert. 1" = 4'

DRAWING REVIEW
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Req# _____ By _____ Date _____
Transmission & Distribution Engineering
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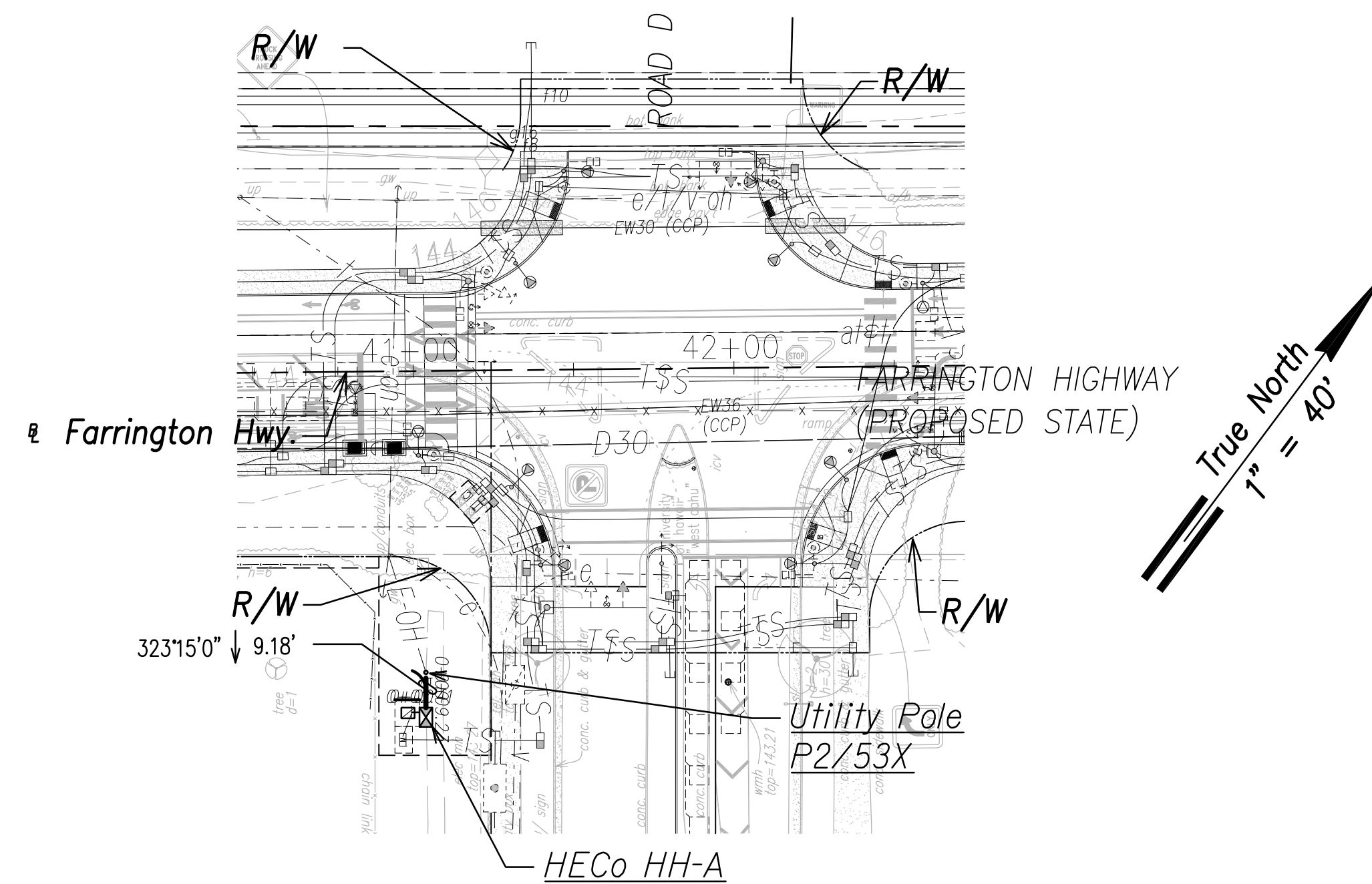
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.
SIGNATURE:
APRIL 30, 2024
EXPIRATION DATE OF THE LICENSE

06/08/22 ADDED DRAWING
DATE REVISION
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
HECO DUCTLINE PLAN & PROFILE
FO "A"
FARRINGTON HIGHWAY WIDENING
Kapolei Golf Course Road to Fort Weaver Road
Project No. 7101A-01-20
Scale: As Shown Date: April 2022
SHEET No. EJ-15 OF 16 SHEETS

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

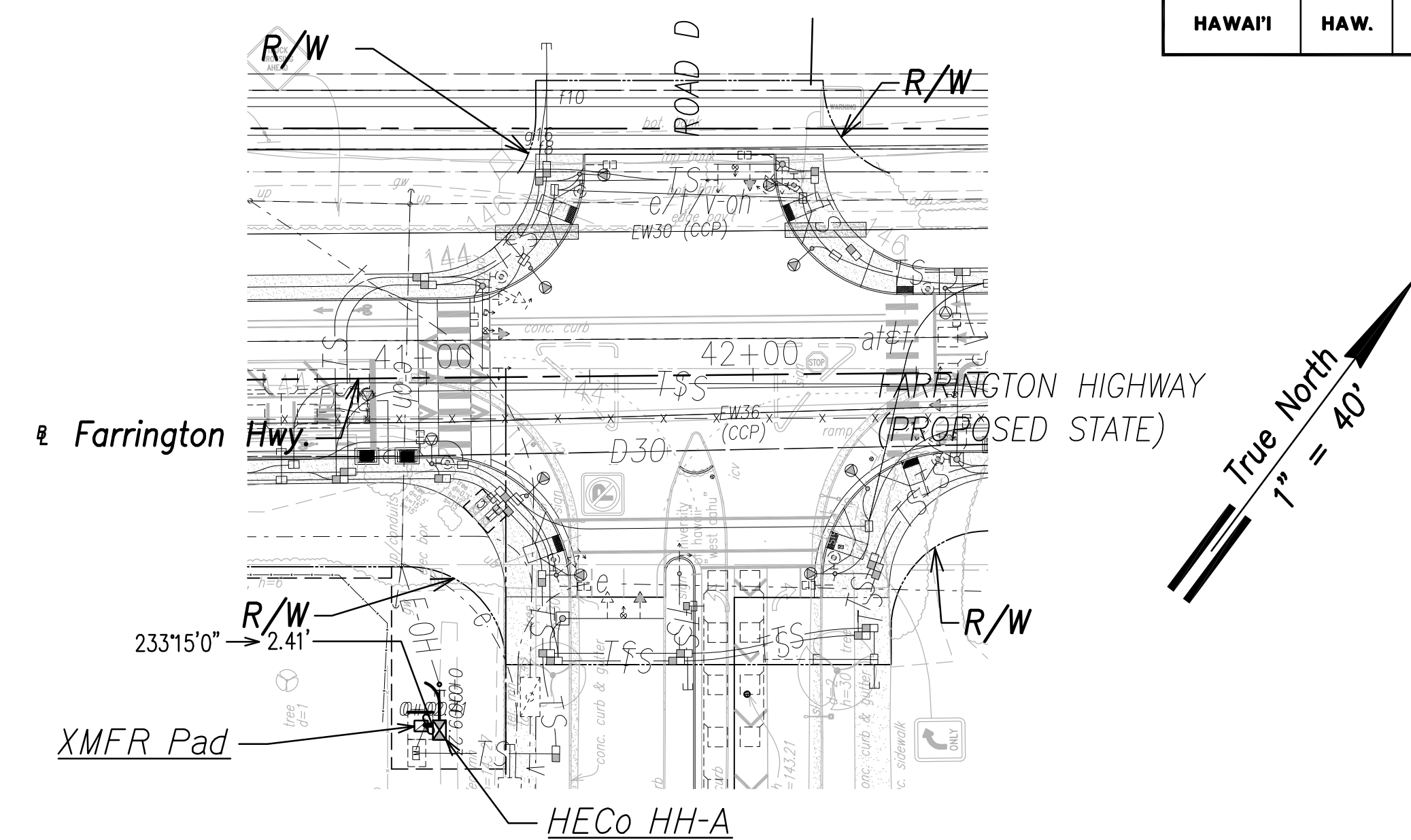
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FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	710A-01-20	2021	EJ-16	790



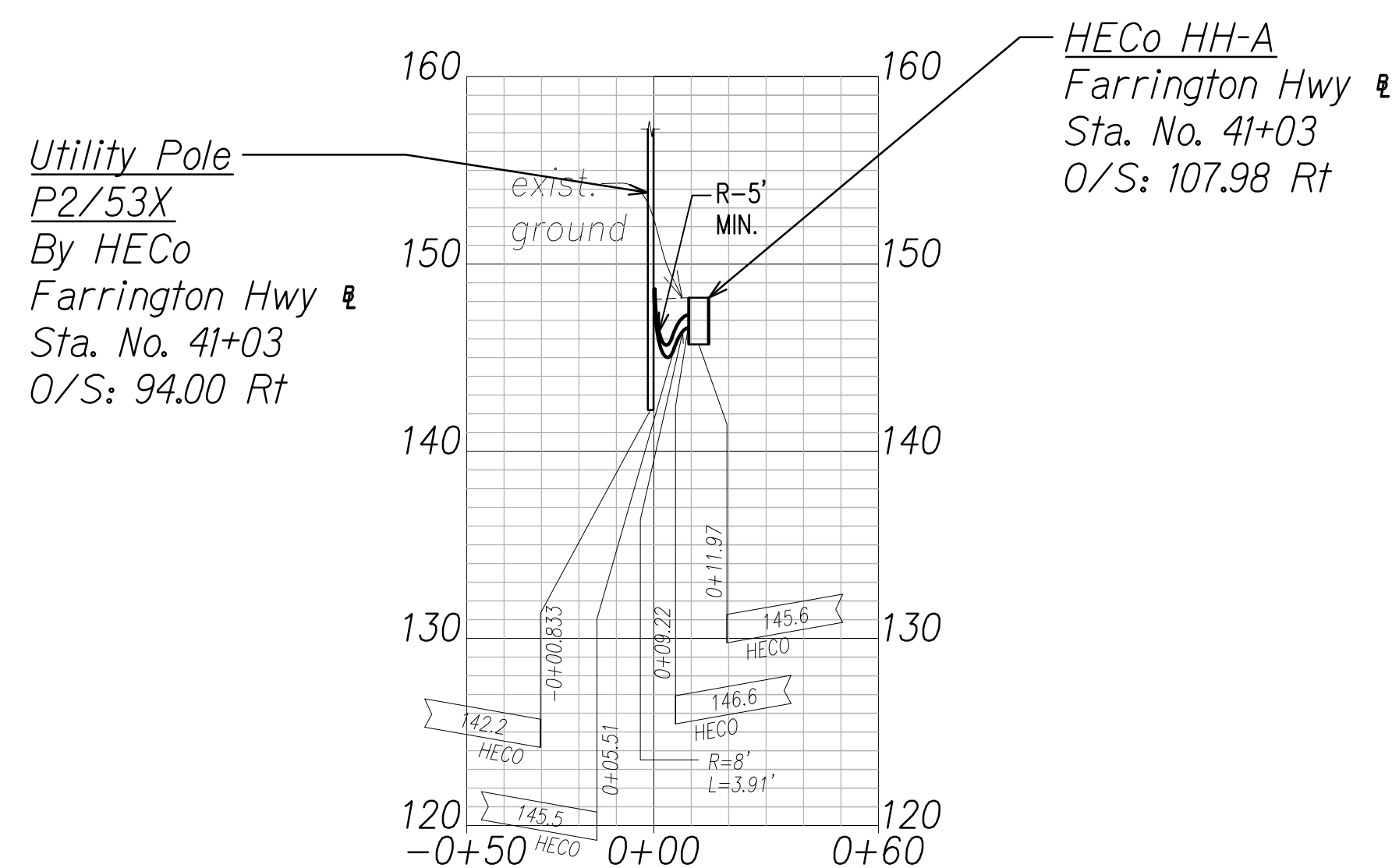
HECO 12KV Ductline "J1" - Plan

Scale: 1" = 40'



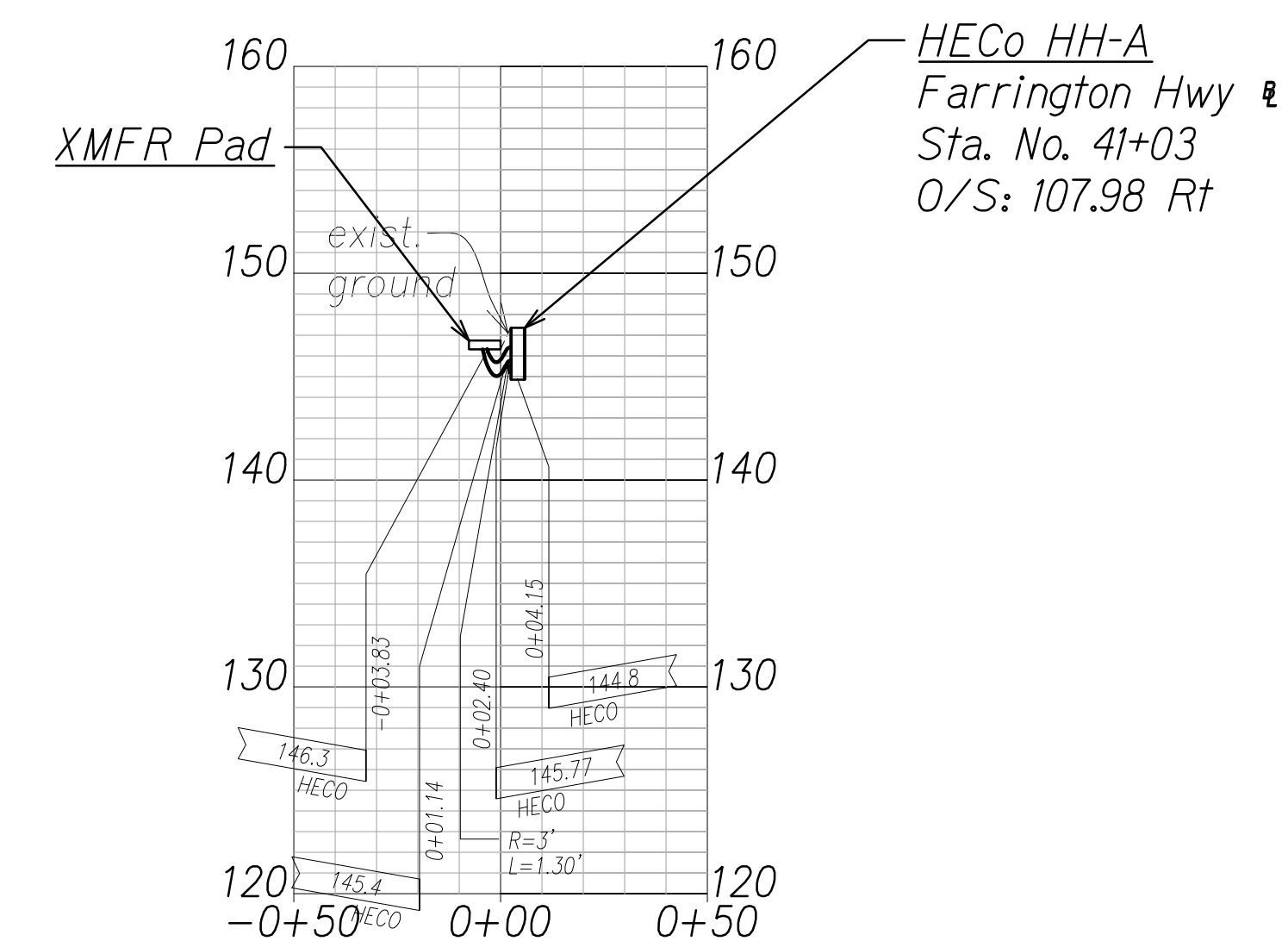
HECO 12KV Ductline "J2" - Plan

Scale: 1" = 40'



HECO 12KV Ductline "J1" - Profile

Scale: Horiz. 1" = 40'
Vert. 1" = 4'



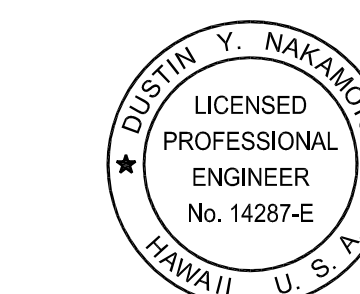
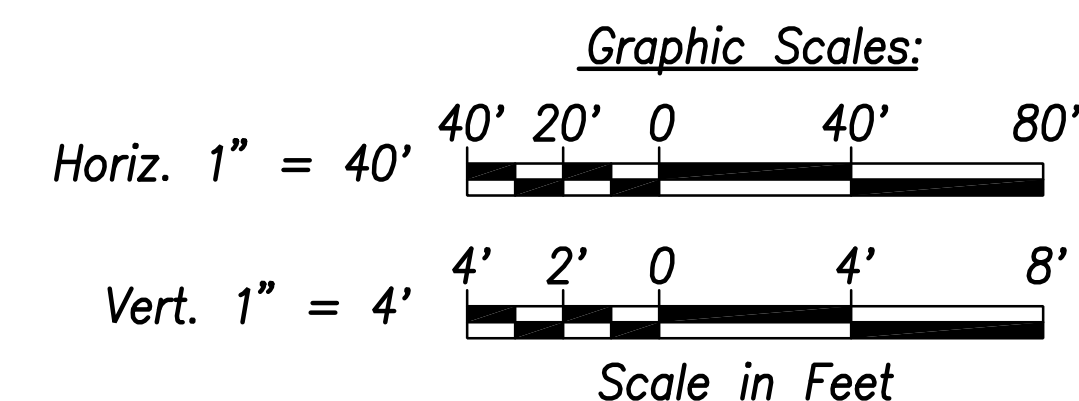
HECO 12KV Ductline "J2" - Profile

Scale: Horiz. 1" = 40'
Vert. 1" = 4'

Note:
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DRAWING REVIEW
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Hawaiian Electric

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Signature:
Date: April 30, 2024
Expiration Date of the License

06/08/22	ADDED DRAWING
DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

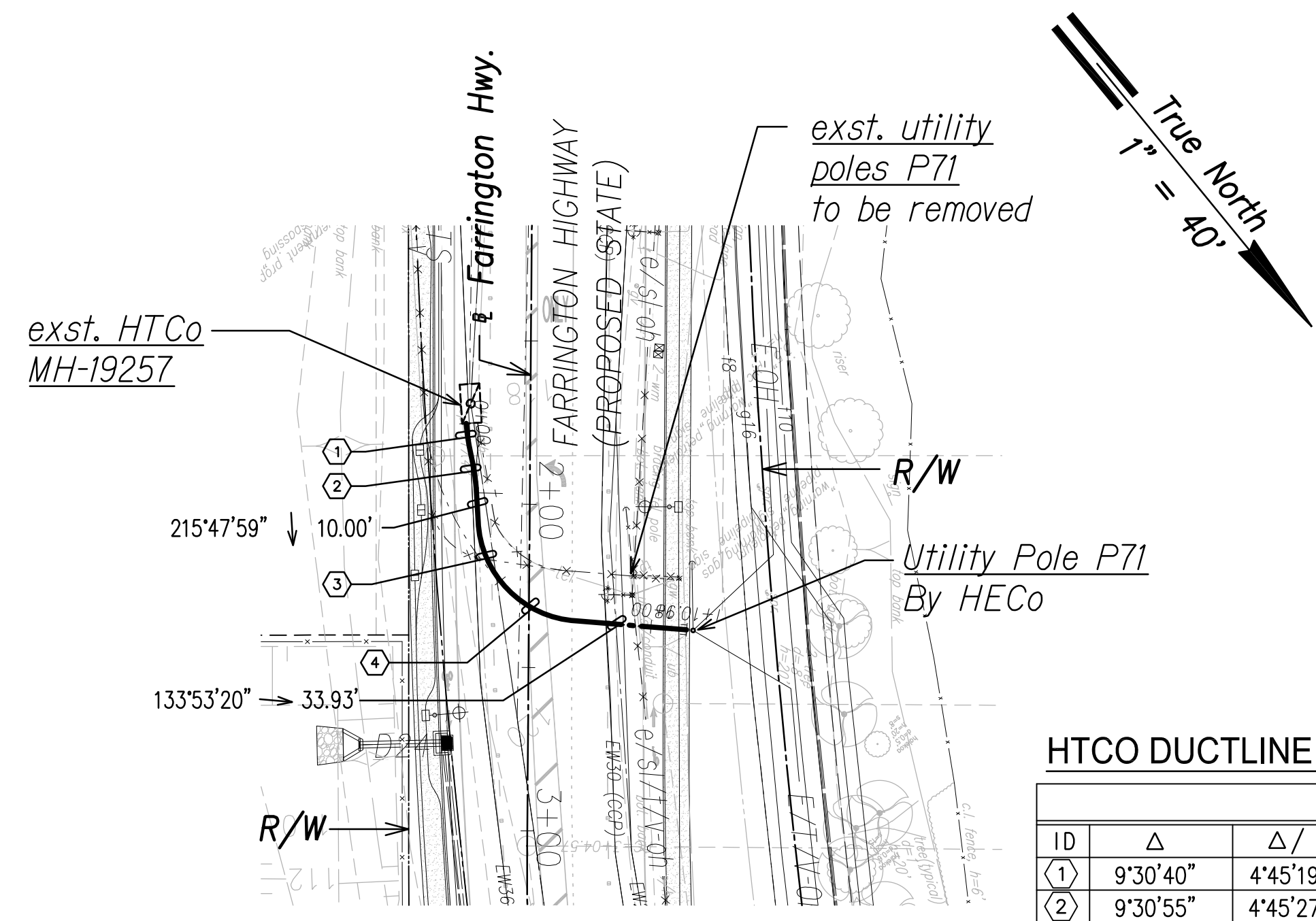
**HECO 12KV DUCTLINE
PLAN & PROFILE "J1" & "J2"**
FARRINGTON HIGHWAY WIDENING
Kapolei Golf Course Road to Fort Weaver Road
Project No. 7101A-01-20

Scale: As Shown Date: April 2022
SHEET No. EJ-16 OF 16 SHEETS

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

FILE: Z:\ACAD\PROJECTS\220671A\E16_22\0671A_HECO-12KV-Ductline-Plan-Profile-11-12.dwg saved June 6, 2022

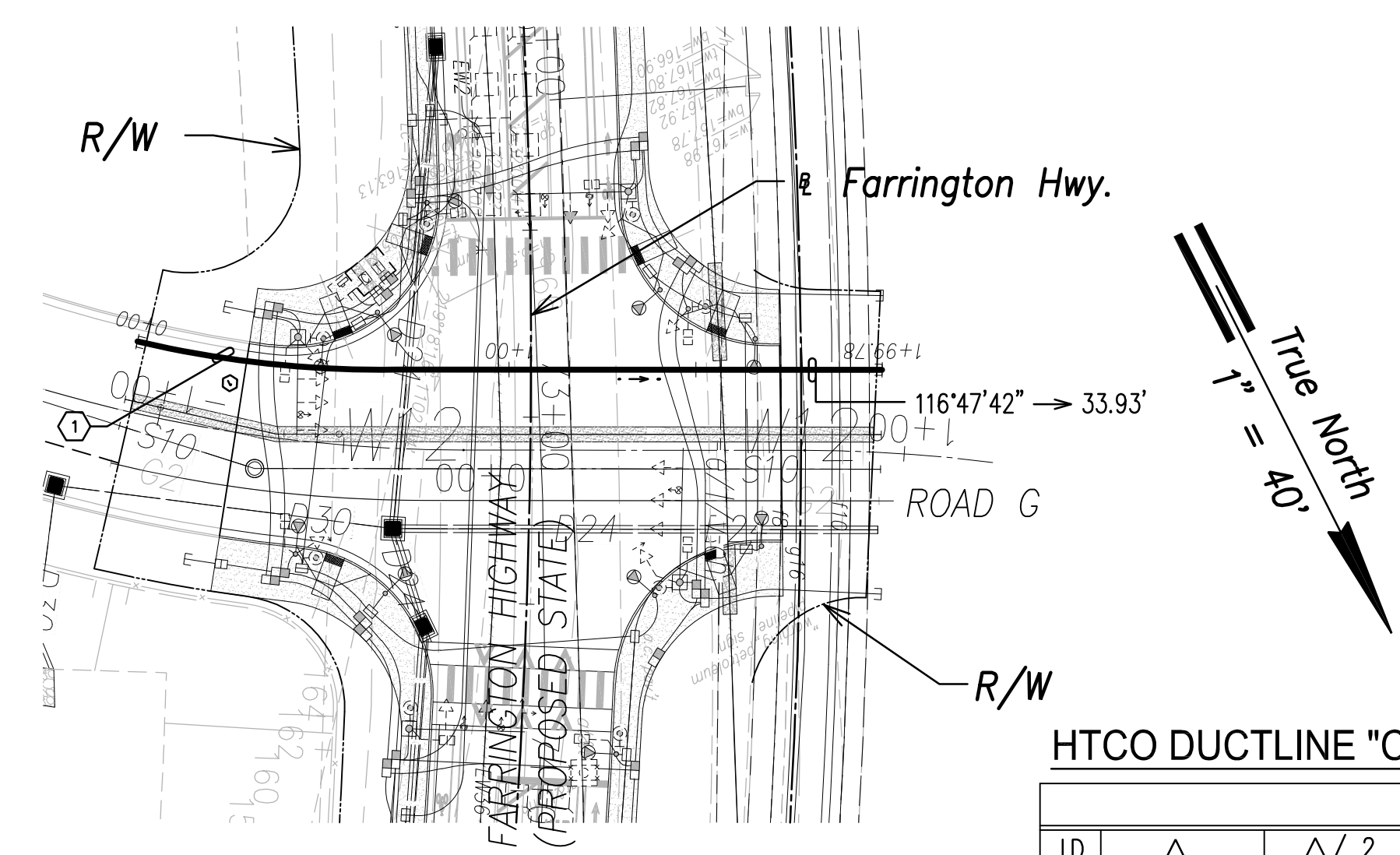
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	710A-01-20	2021	EK-01	790



HTCO DUCTLINE "A"

CURVE DATA						
ID	Δ	Δ / 2	RADIUS	T	C	Lc
(1)	9°30'40"	4°45'19.8"	60.55'	5.04'	10.04'	10.05'
(2)	9°30'55"	4°45'27.3"	60.54'	5.04'	10.04'	10.05'
(3)	41°51'26"	20°55'43.2"	32.13'	12.29'	22.95'	23.47'
(4)	41°51'22"	20°55'41.0"	32.13'	12.29'	22.95'	23.47'

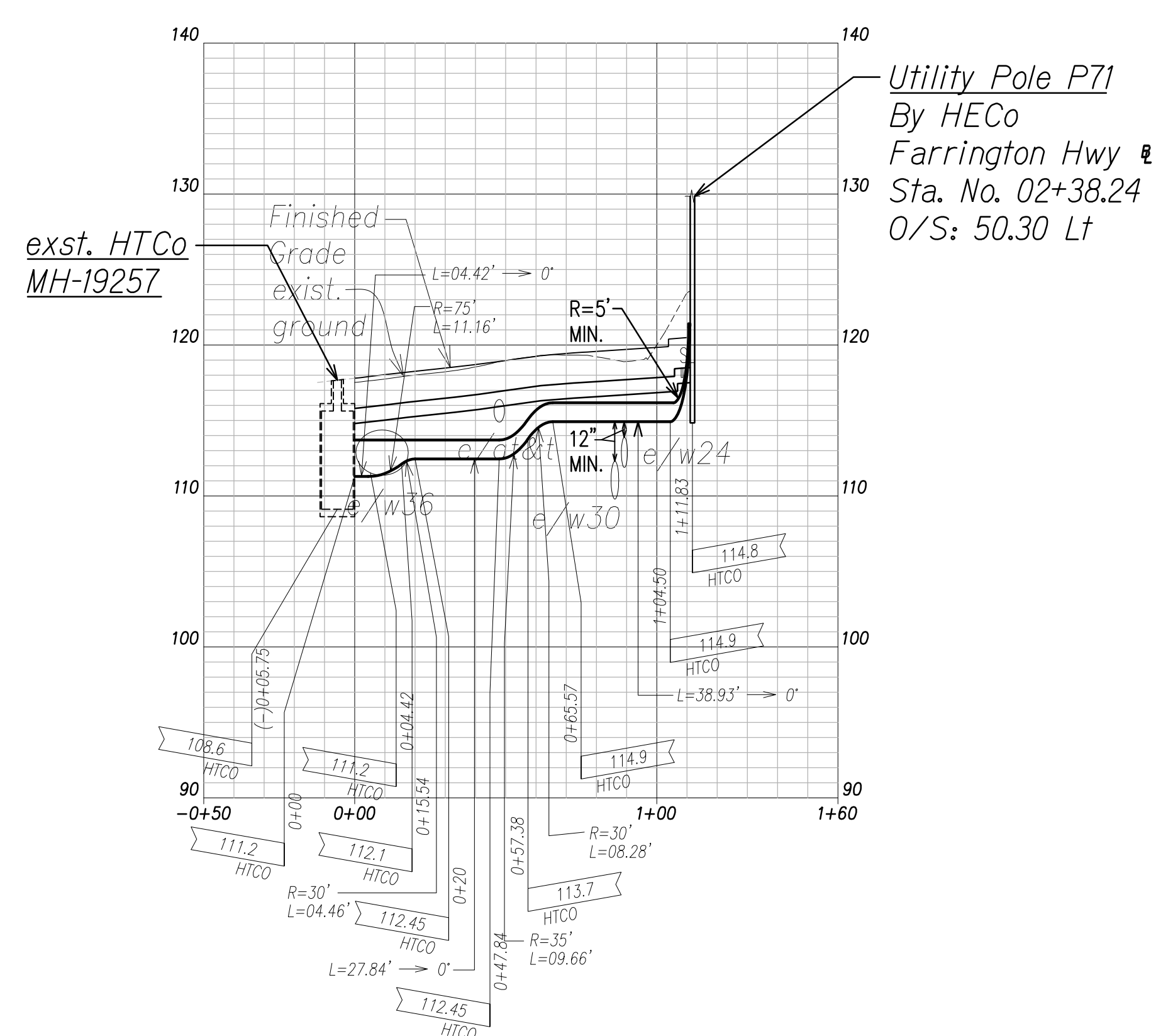
HTCo Ductline "A" - Plan
Scale: 1" = 40'



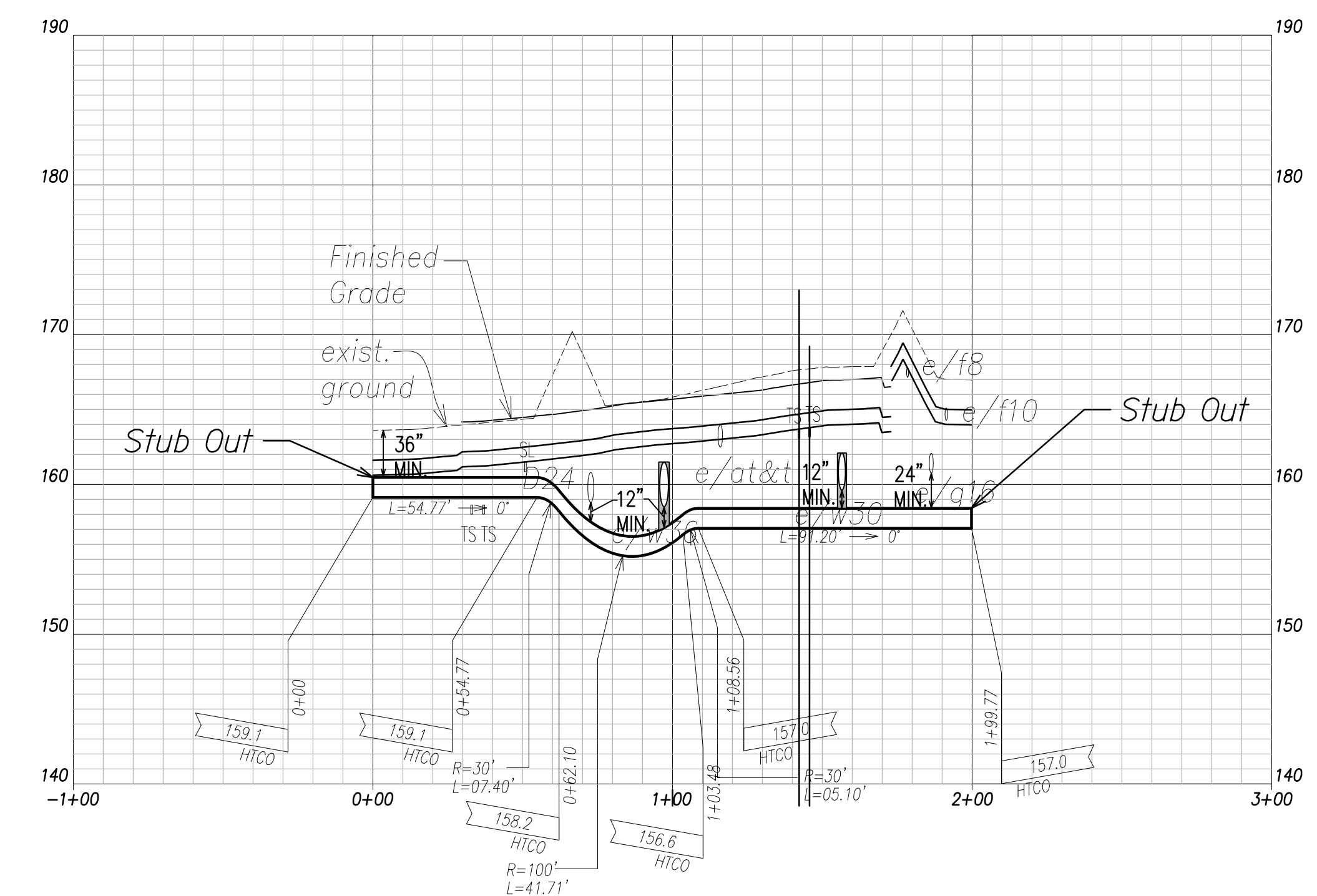
HTCO DUCTLINE "C"

CURVE DATA						
ID	Δ	Δ / 2	RADIUS	T	C	Lc
(1)	13°50'21"	6°55'10.6"	288.26'	34.98'	69.46'	69.63'

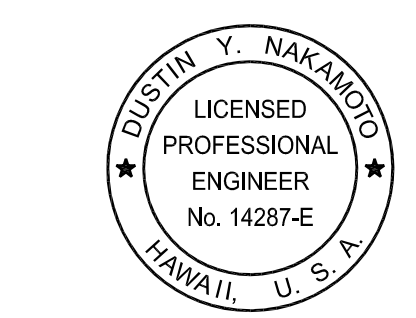
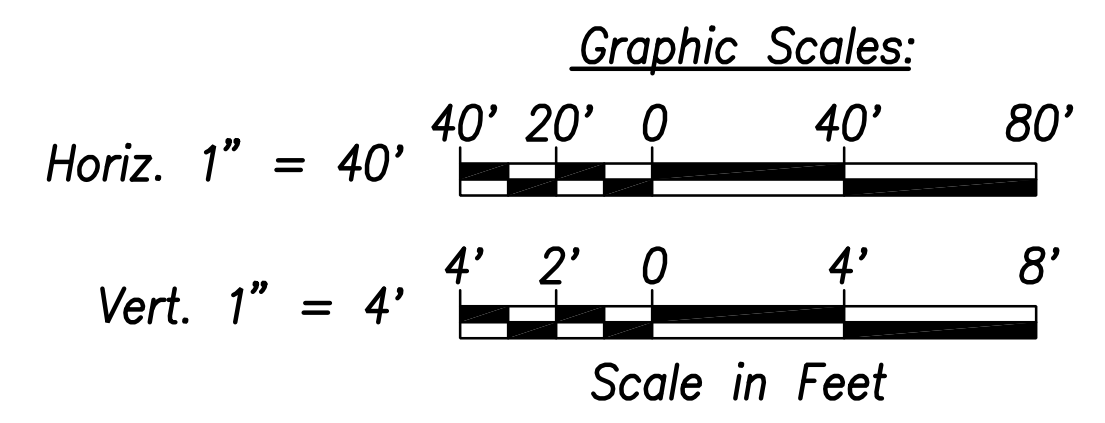
HTCo Ductline "C" - Plan
Scale: 1" = 40'



HTCo Ductline "A" - Profile
Scale: Horiz. 1" = 40'
Vert. 1" = 4'



HTCo Ductline "C" - Profile
Scale: Horiz. 1" = 40'
Vert. 1" = 4'



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APRIL 30, 2024
EXPIRATION DATE OF THE LICENSE

06/08/22	ADDED DRAWING
DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**HTCo DUCTLINE
PLAN & PROFILE "A" & "C"**

FARRINGTON HIGHWAY WIDENING
Kapolei Golf Course Road to Fort Weaver Road
Project No. 7101A-01-20

Scale: As Shown Date: April 2022

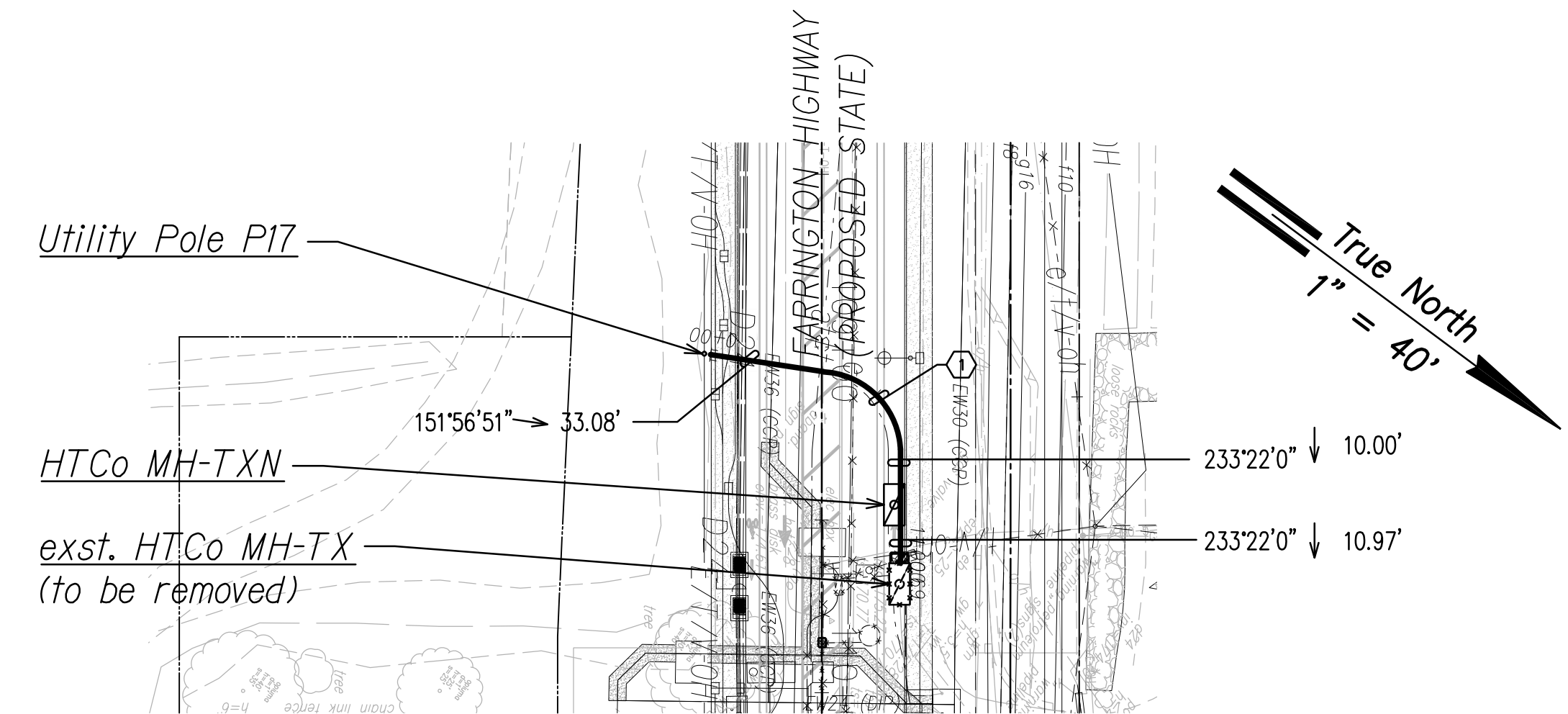
SHEET No. EK-01 OF 5 SHEETS

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

FILE: Z:\ACAD\PROJECTS\220679A\EK01_220679A\HTCo-Ductline-Plan-A-Eding saved June 2, 2022

APPROVED BY _____
HAWAIIAN TELCOM _____ DATE _____

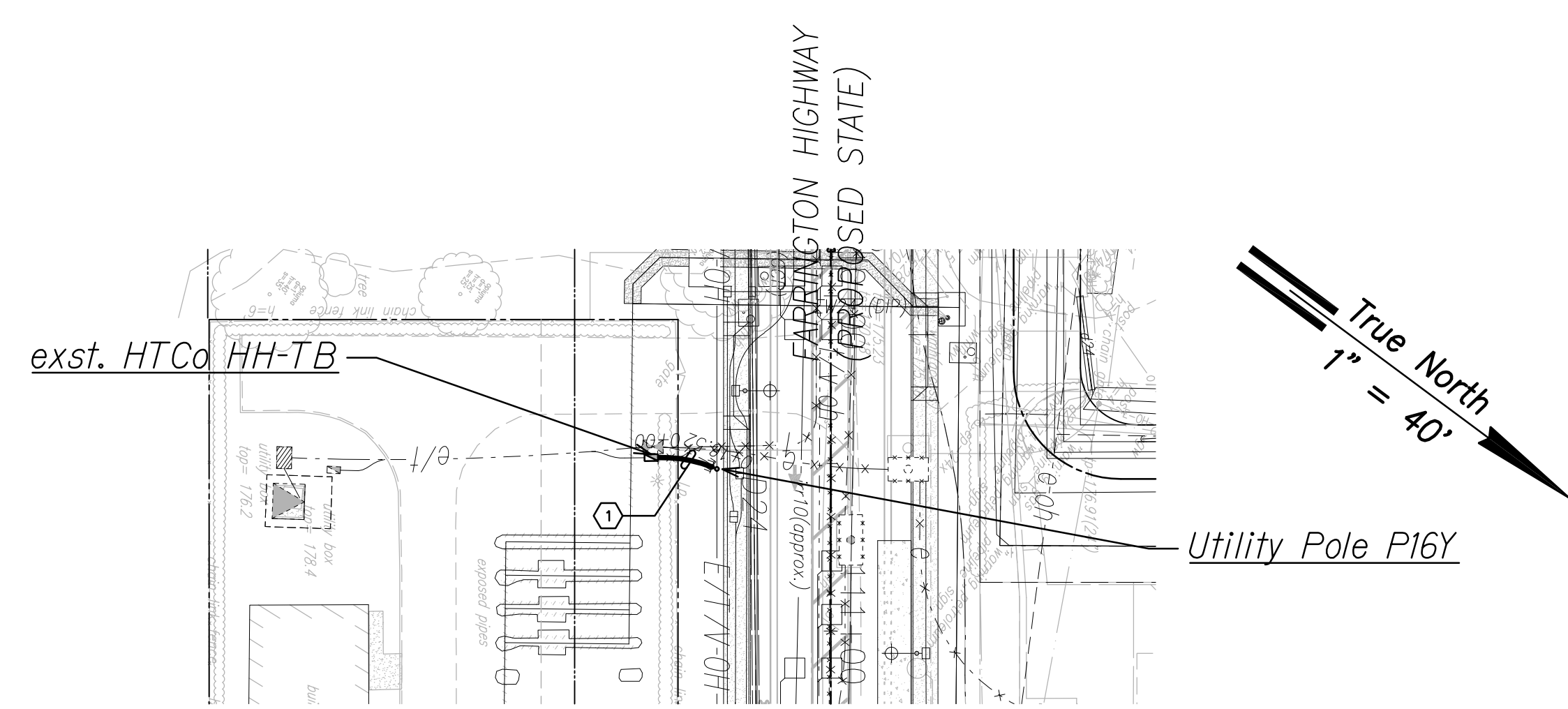
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	710A-01-20	2021	EK-02	790



HTCO DUCTLINE "D1"

CURVE DATA						
ID	Δ	Δ / 2	RADIUS	T	C	Lc
(1)	84°0'46"	42°0'22.9"	23.62'	21.27'	31.62'	34.64'

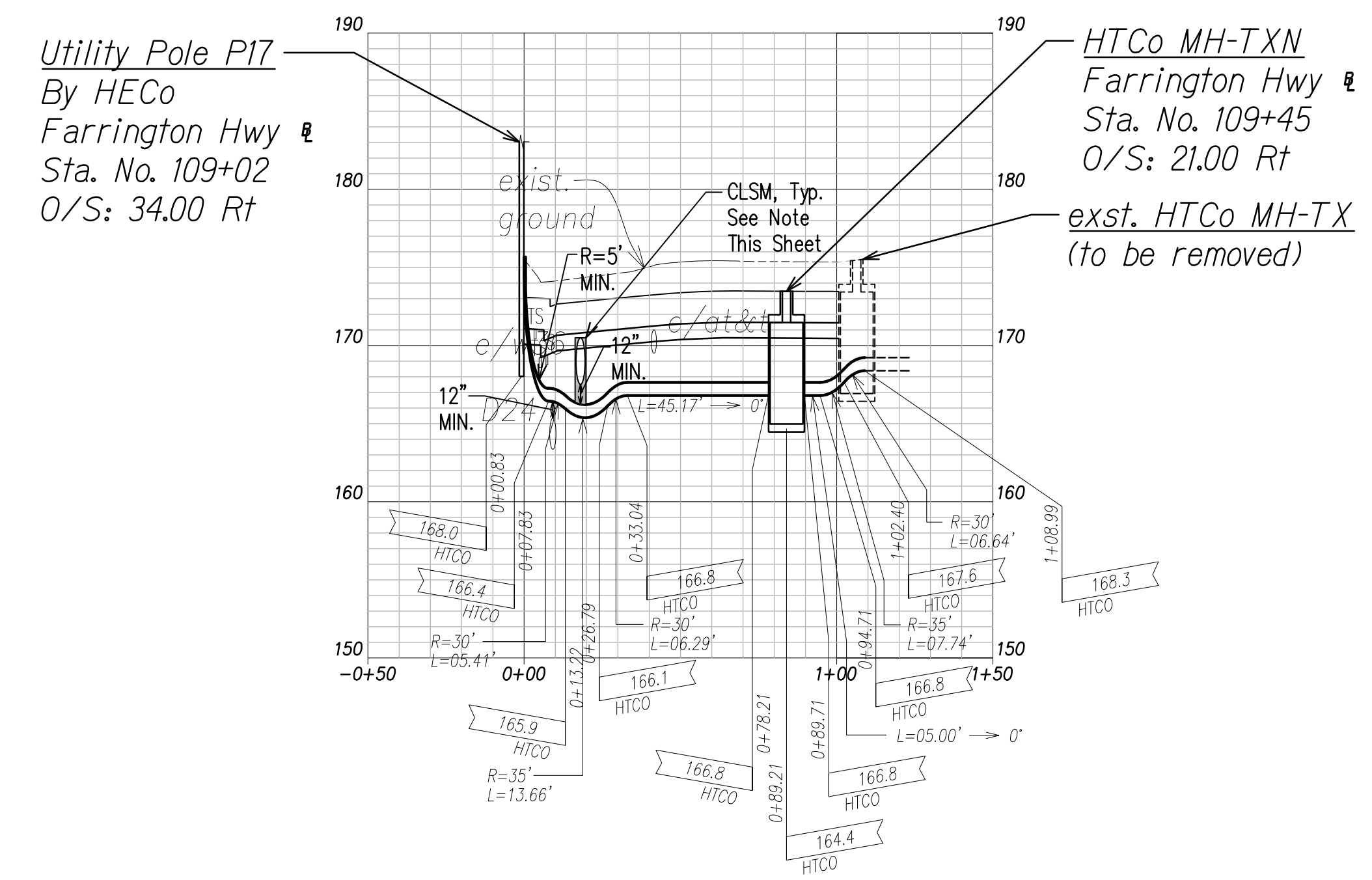
HTCo Ductline "D1" - Plan
Scale: 1" = 40'



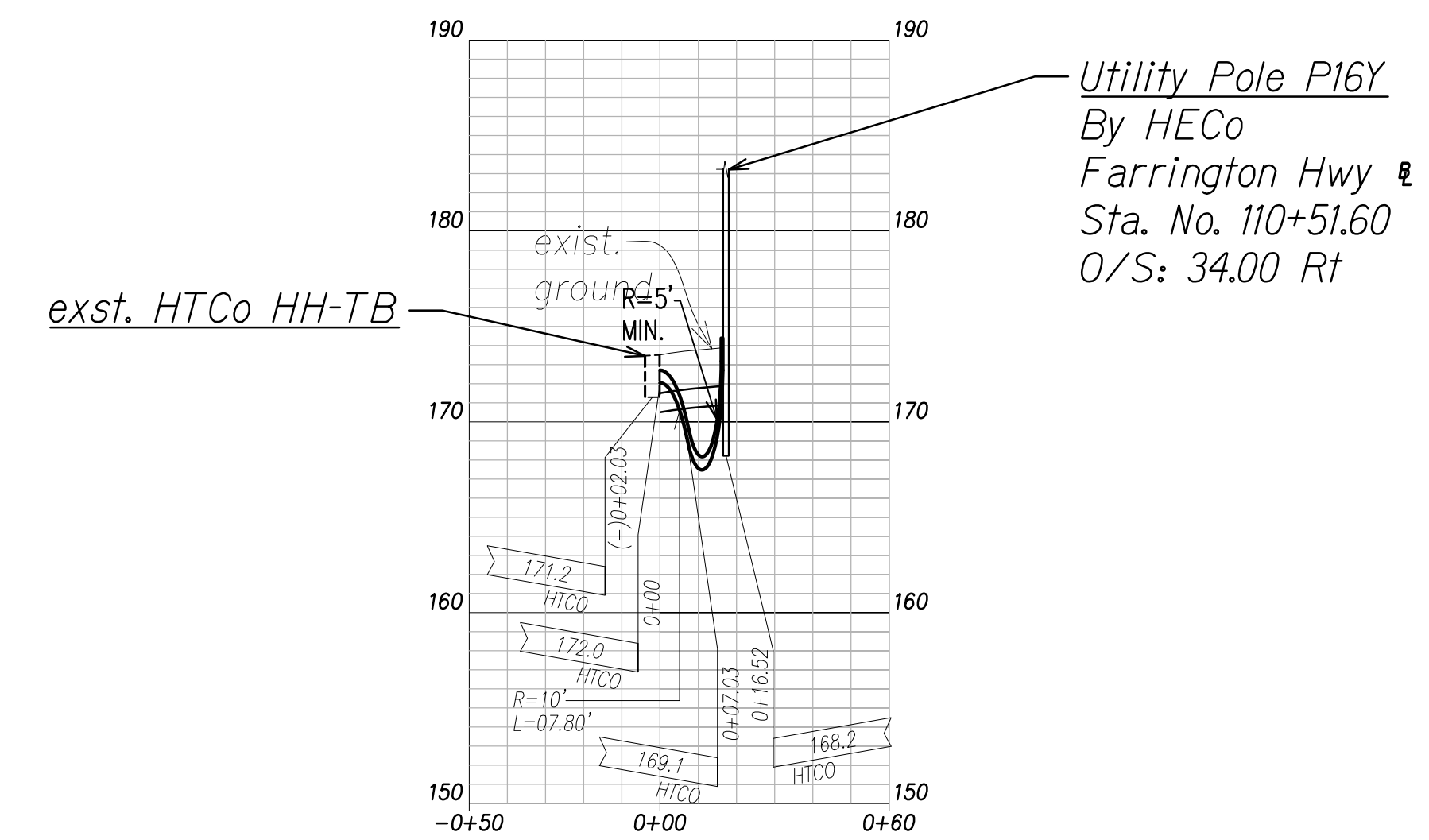
HTCO DUCTLINE "D2"

CURVE DATA						
ID	Δ	Δ / 2	RADIUS	T	C	Lc
(1)	22°21'26"	11°10'43.2"	42.29'	8.36'	16.40'	16.50'

HTCo Ductline "D2" - Plan
Scale: 1" = 40'



HTCo Ductline "D1" - Profile
Scale: Horiz. 1" = 40'
Vert. 1" = 4'



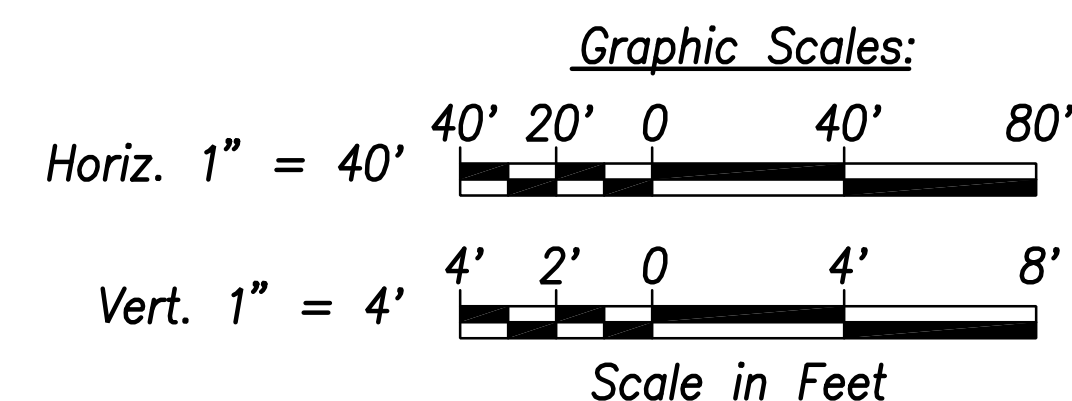
HTCo Ductline "D2" - Profile
Scale: Horiz. 1" = 40'
Vert. 1" = 4'

Note:
The Contractor Shall Provide Controlled Low Strength Material (CLSM) in Areas Where Required Compaction Cannot be Met. CLSM Shall be Extended a Minimum of 2' Beyond the Waterline at the Crossing and Shall Extend to the Top of the Crossing Pipe.

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

FILE: Z:\ACAD\PROJECTS\220671A\EK02_220671A_HTCO-Ductline-Plan-Profile-D1-02.dwg saved June 2, 2022

APPROVED BY
HAWAIIAN TELCOM
DATE



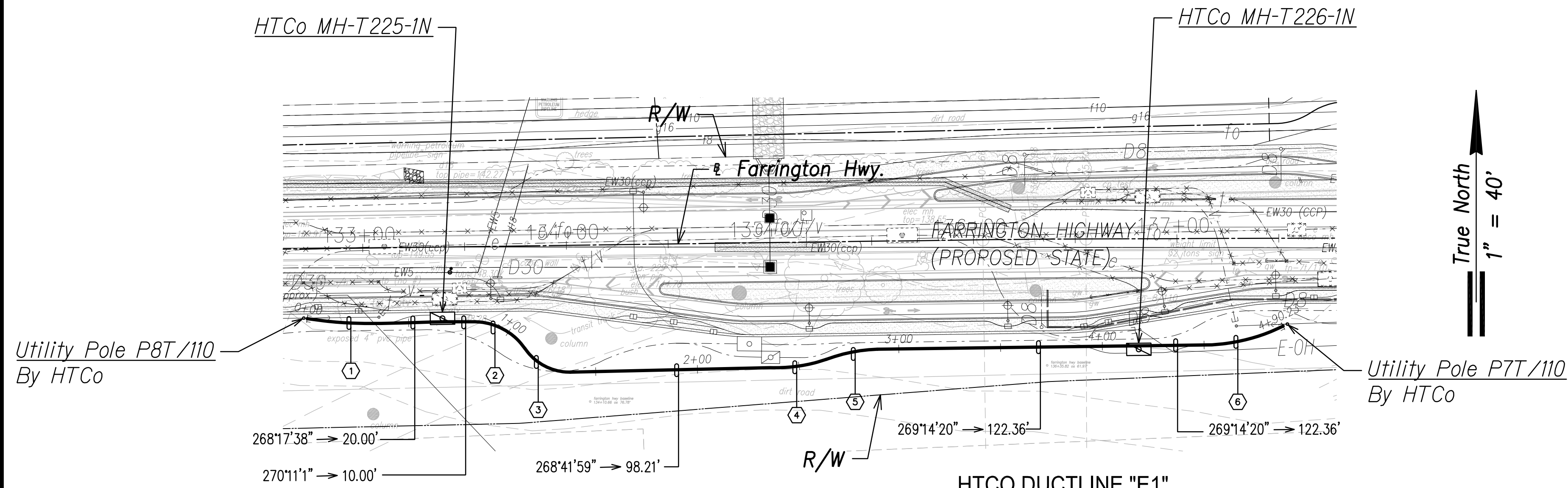
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.

SIGNATURE
April 30, 2024
EXPIRATION DATE OF THE LICENSE

06/08/22	ADDED DRAWING
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
HTCo DUCTLINE PLAN & PROFILE "D1 & "D2"	
FARRINGTON HIGHWAY WIDENING Kapolei Golf Course Road to Fort Weaver Road Project No. 7101A-01-20	
Scale: As Shown	Date: April 2022
SHEET No. EK-02 OF 5 SHEETS	

ADD. 742

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	710A-01-20	2021	EK-03	790

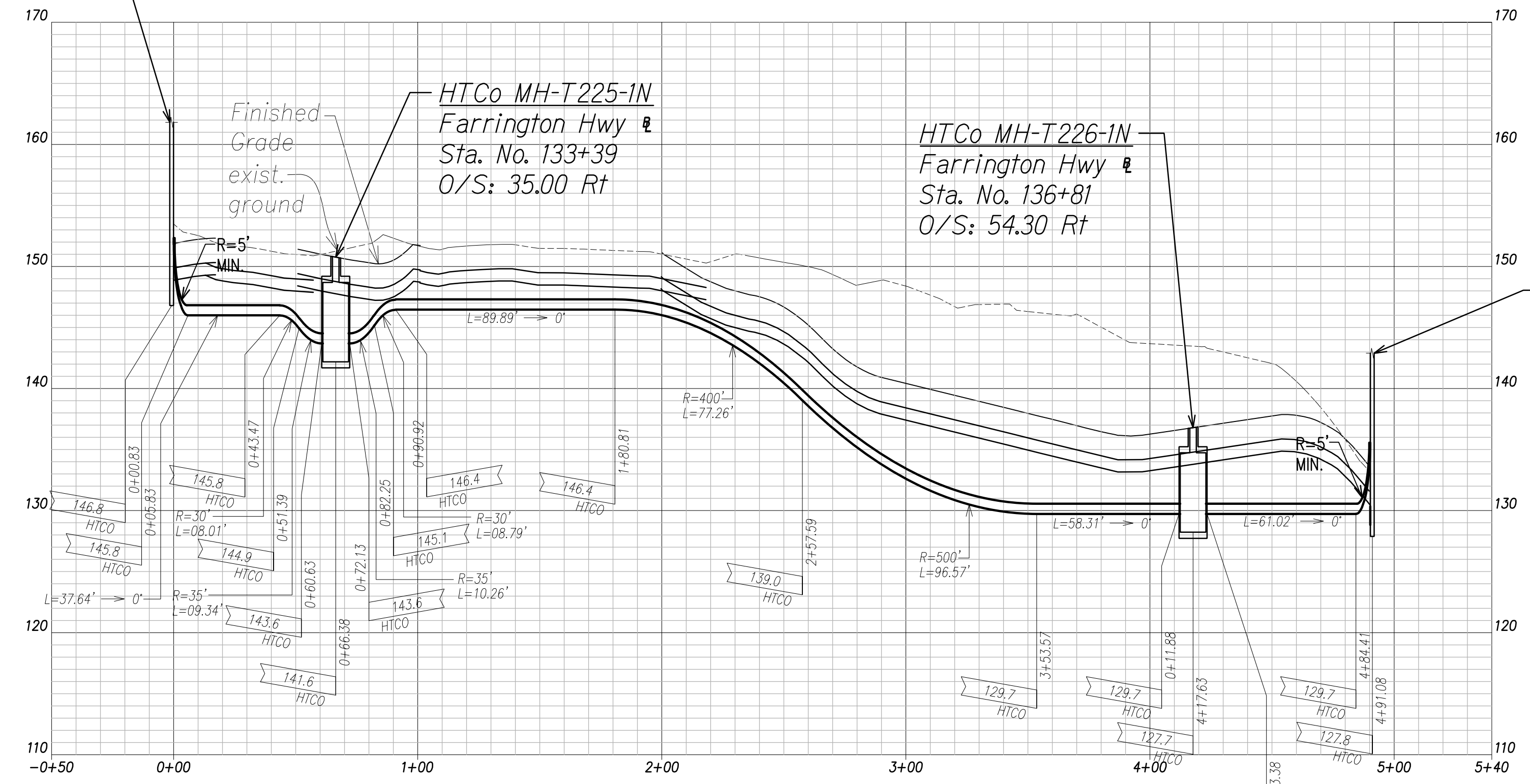


HTCO DUCTLINE "E1"

ID	Δ	Δ / 2	CURVE DATA			
			RADIUS	T	C	Lc
①	10°18'2"	5°9'1.2"	226.03'	20.37'	40.58'	40.64'
②	54°15'30"	27°7'44.9"	30.49'	15.62'	27.81'	28.87'
③	55°51'30"	27°55'45.2"	26.83'	14.22'	25.14'	26.16'
④	20°51'27"	10°25'43.3"	77.27'	14.22'	27.97'	28.13'
⑤	18°40'17"	9°20'8.4"	78.65'	12.93'	25.52'	25.63'
⑥	22°37'47"	11°18'53.7"	92.01'	18.41'	36.10'	36.34'

Utility Pole P8T/110
By HTCO
Farrington Hwy
Sta. No. 132+29.82
O/S: 34.00 Rt

HTCO Ductline "E1" - Plan
Scale: 1" = 40'



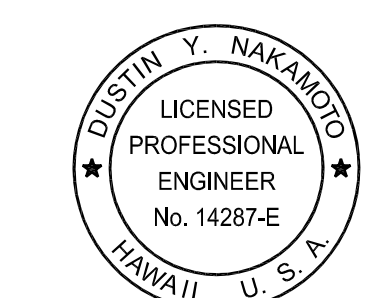
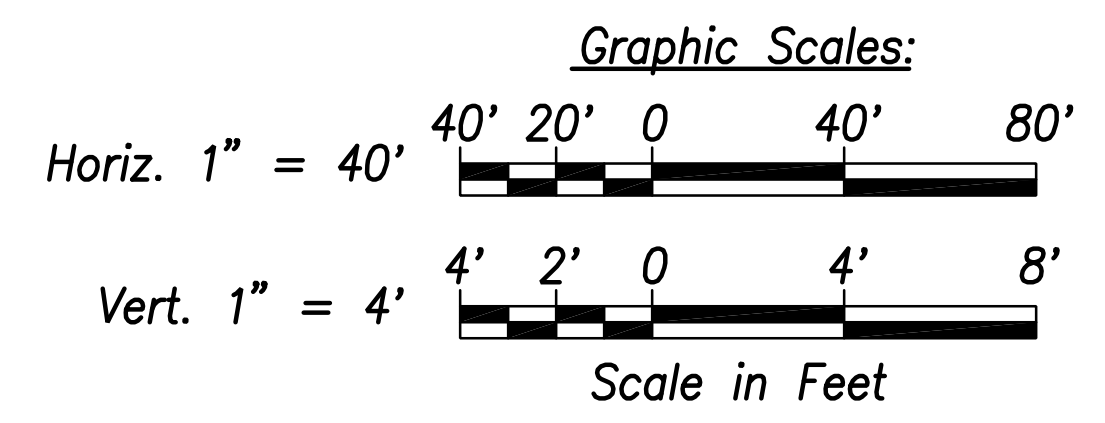
HTCO Ductline "E1" - Profile
Scale: Horiz. 1" = 40'
Vert. 1" = 4'

Utility Pole P7T/110
By HTCO
Farrington Hwy
Sta. No. 137+54.05
O/S: 42.12 Rt

DATE	
SURVEY PLOTTED BY	
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QUANTITIES BY	
CHECKED BY	
No.	

FILE: Z:\ACAD\PROJECTS\220679A\E03_220679A_HTCO-Ductline-Plan-Profile-E1.dwg saved June 2, 2022

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HAWAIIAN TELCOM
DATE



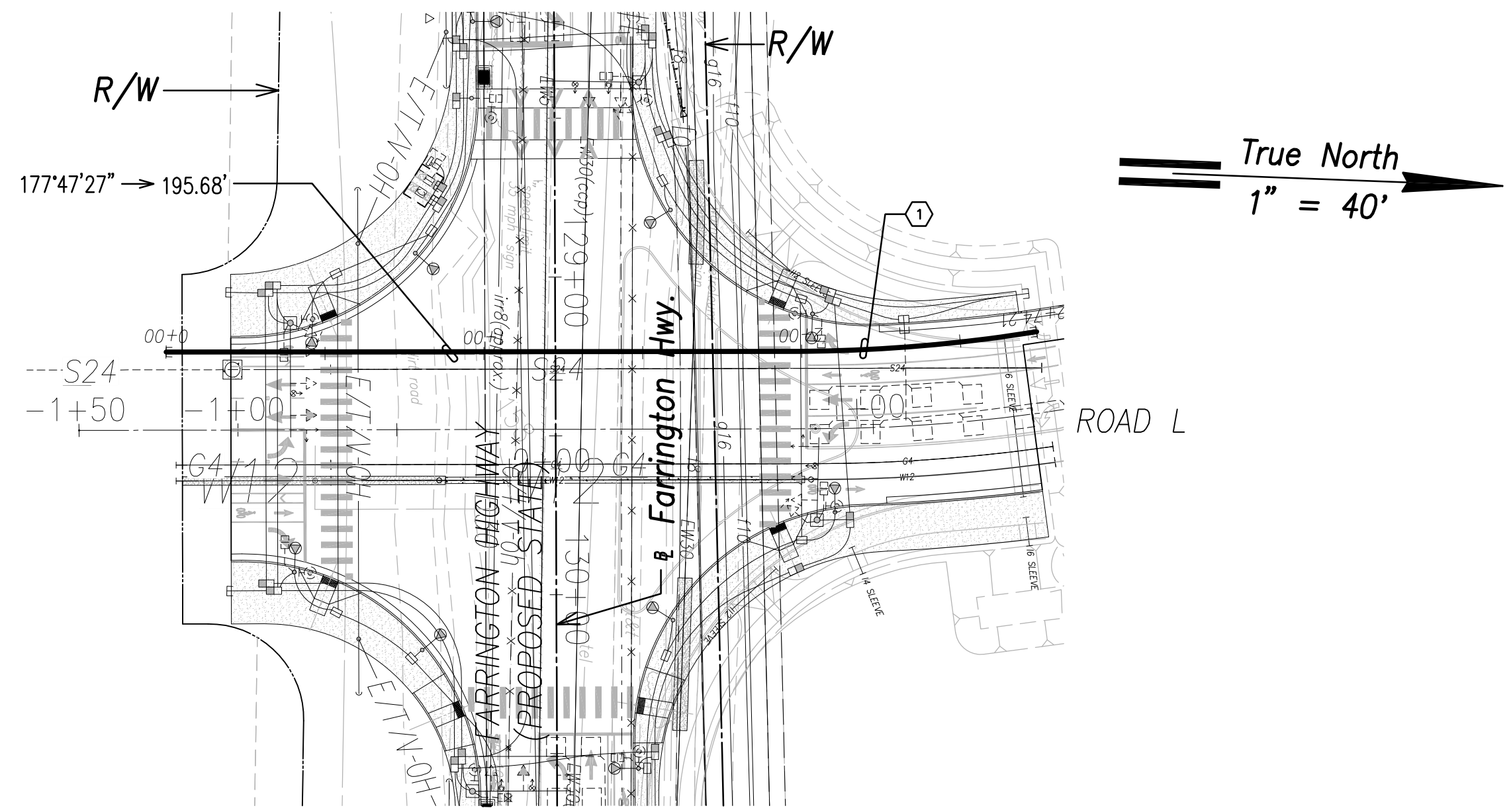
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.

[Signature]
SIGNATURE
April 30, 2024
EXPIRATION DATE OF THE LICENSE

06/08/22	ADDED DRAWING
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
HTCO DUCTLINE PLAN & PROFILE "E1"	
FARRINGTON HIGHWAY WIDENING Kapolei Golf Course Road to Fort Weaver Road Project No. 7101A-01-20	
Scale: As Shown	Date: April 2022
SHEET No. EK-03 OF 5 SHEETS	

ADD. 743

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	710A-01-20	2021	EK-04	790

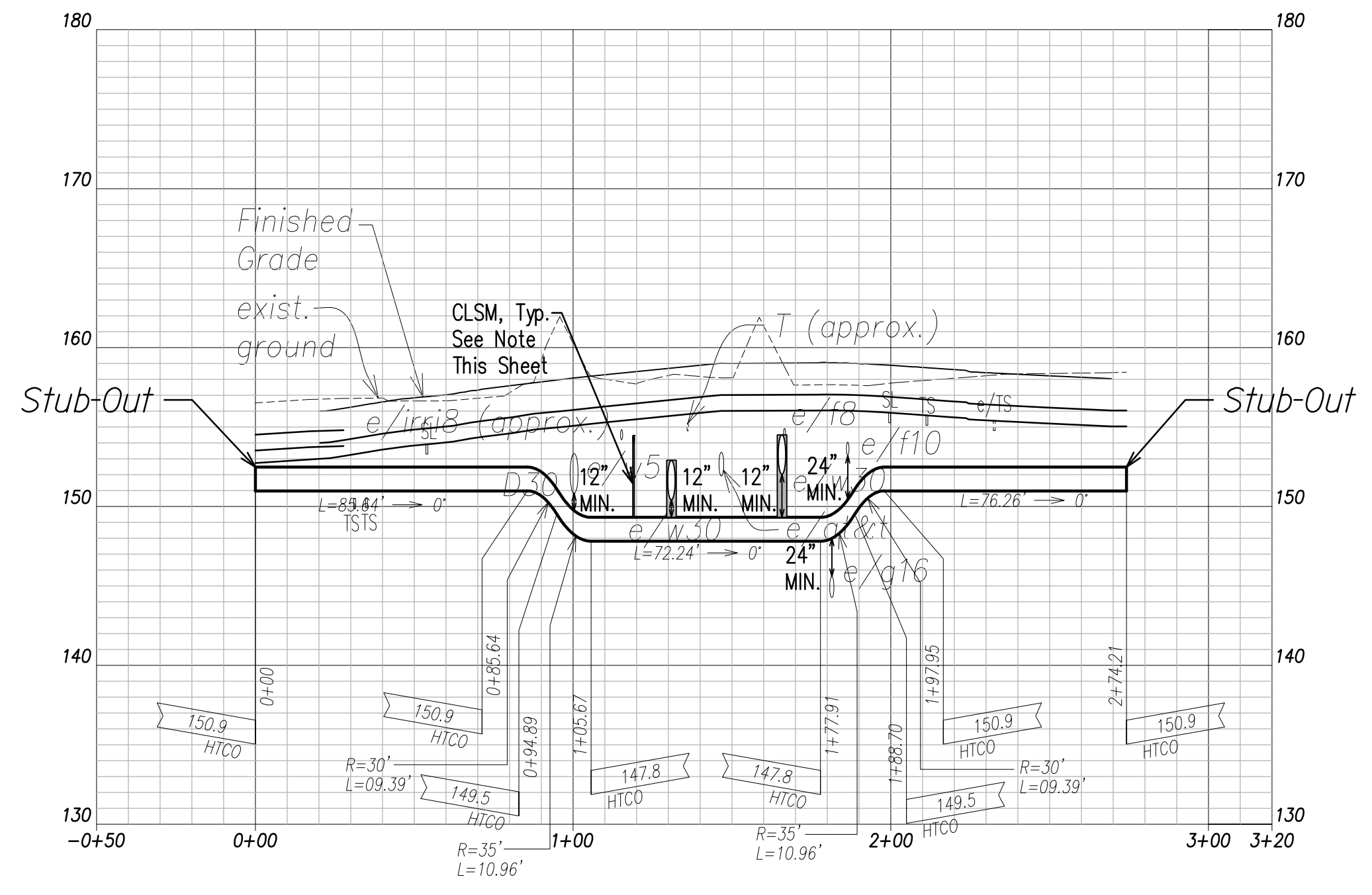


HTCO DUCTLINE "E2"

CURVE DATA					
ID	Δ	Δ / 2	RADIUS	T	Lc
①	8°56'27"	4°28'13.7"	503.49'	39.36'	78.49'

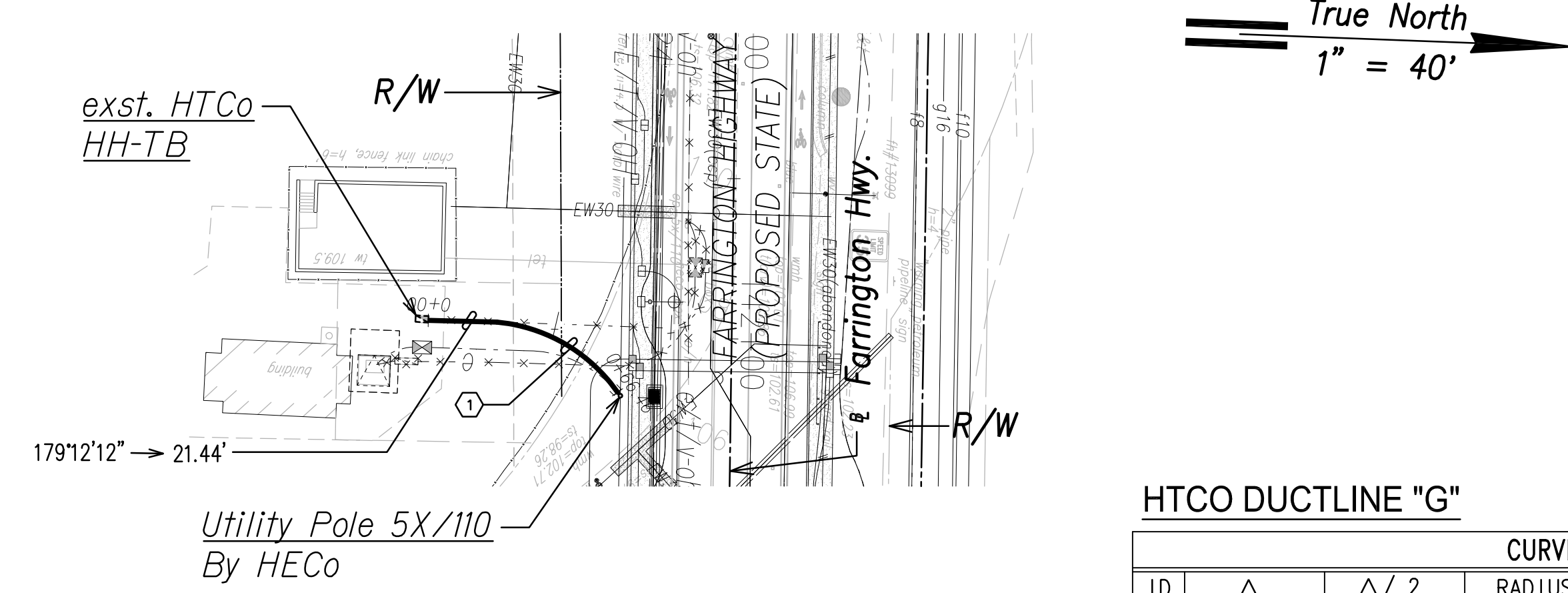
HTCo Ductline "E2" - Plan

Scale: 1" = 40'



HTCo Ductline "E2" - Profile

Scale: Horiz. 1" = 40'
Vert. 1" = 4'

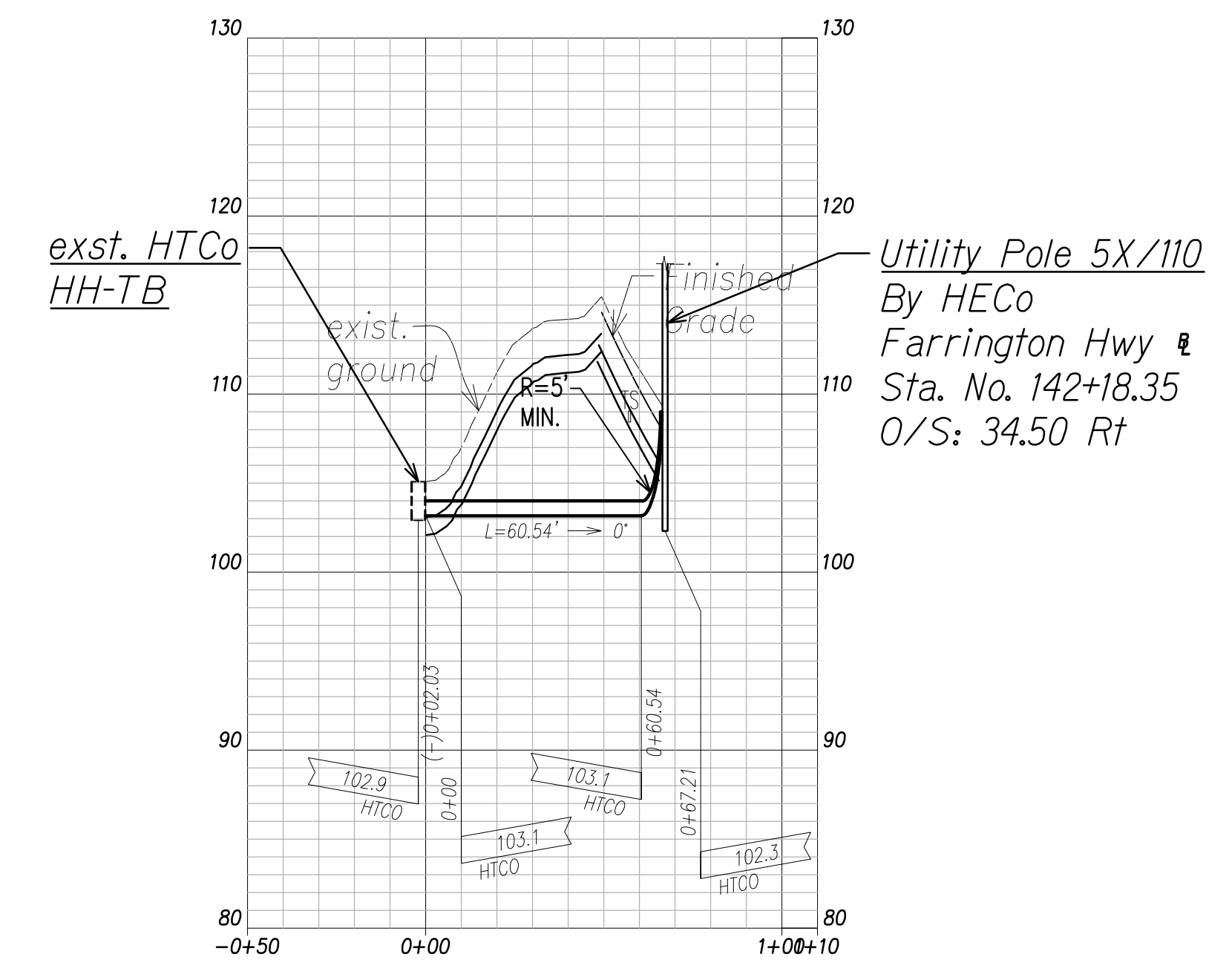


HTCO DUCTLINE "G"

CURVE DATA					
ID	Δ	Δ / 2	RADIUS	T	Lc
①	49°53'14"	24°56'37.2"	51.71'	24.05'	43.61'

HTCo Ductline "G" - Plan

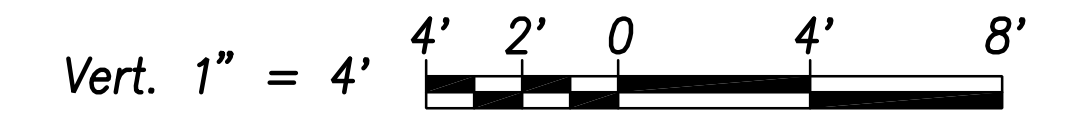
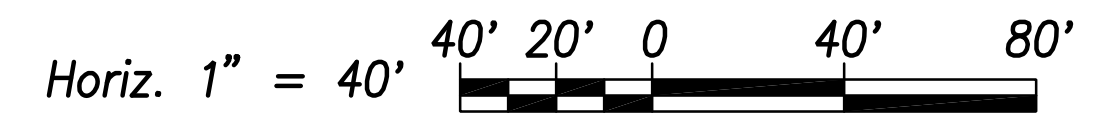
Scale: 1" = 40'



HTCo Ductline "G" - Profile

Scale: Horiz. 1" = 40'
Vert. 1" = 4'

Graphic Scales:



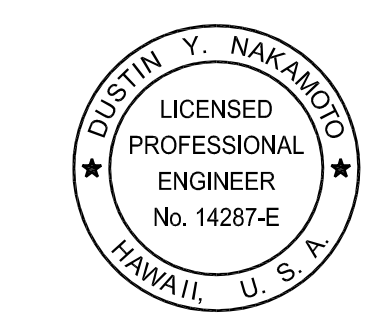
Scale in Feet

Note:
The Contractor Shall Provide Controlled Low Strength Material (CLSM) in Areas Where Required Compaction Cannot be Met. CLSM Shall be Extended a Minimum of 2' Beyond the Waterline at the Crossing and Shall Extend to the Top of the Crossing Pipe.

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

FILE: Z:\ACAD\PROJECTS\220067H\B04_220067H_HTCO-Ductline-Plan-Profile-E2-G.dwg saved June 2, 2022

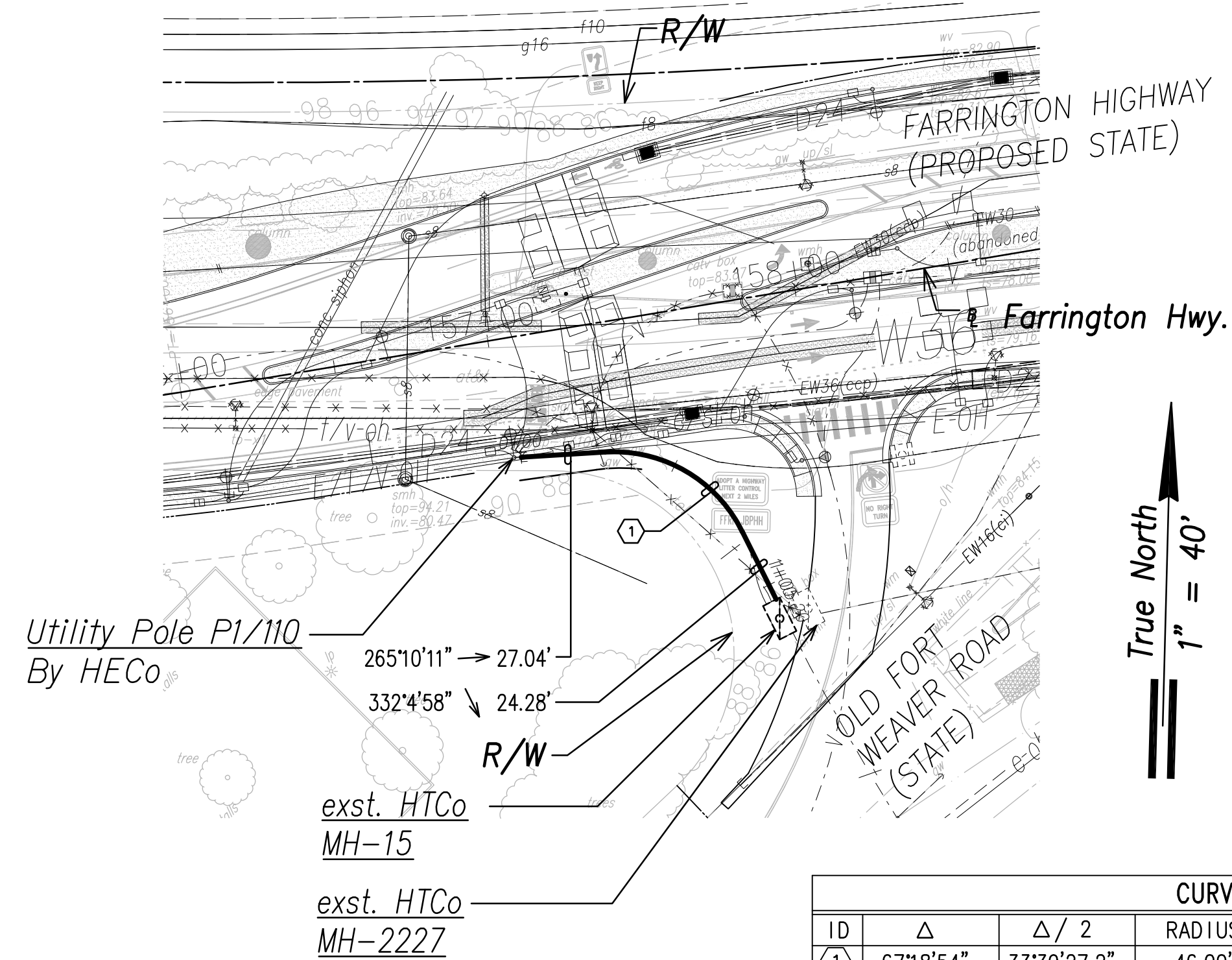
APPROVED BY
HAWAIIAN TELCOM
DATE



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SIGNATURE
April 30, 2024
EXPIRATION DATE OF THE LICENSE

06/08/22	ADDED DRAWING
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
HTCO DUCTLINE PLAN & PROFILE "E2" & "G"	
FARRINGTON HIGHWAY WIDENING Kapolei Golf Course Road to Fort Weaver Road Project No. 7101A-01-20	
Scale: As Shown	Date: April 2022
SHEET No. EK-04 OF 5 SHEETS	

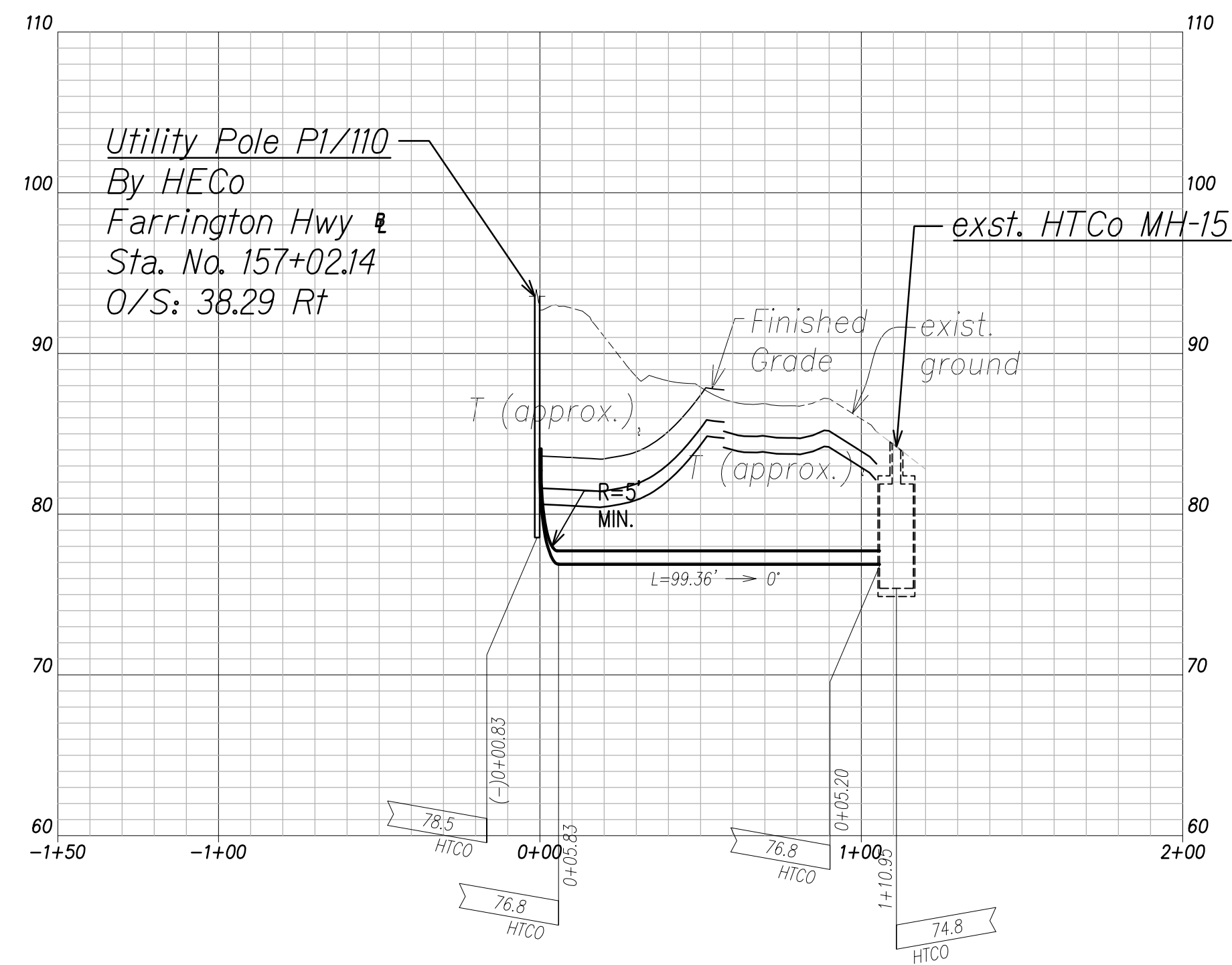
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	710A-01-20	2021	EK-05	790



True North
1" = 40'

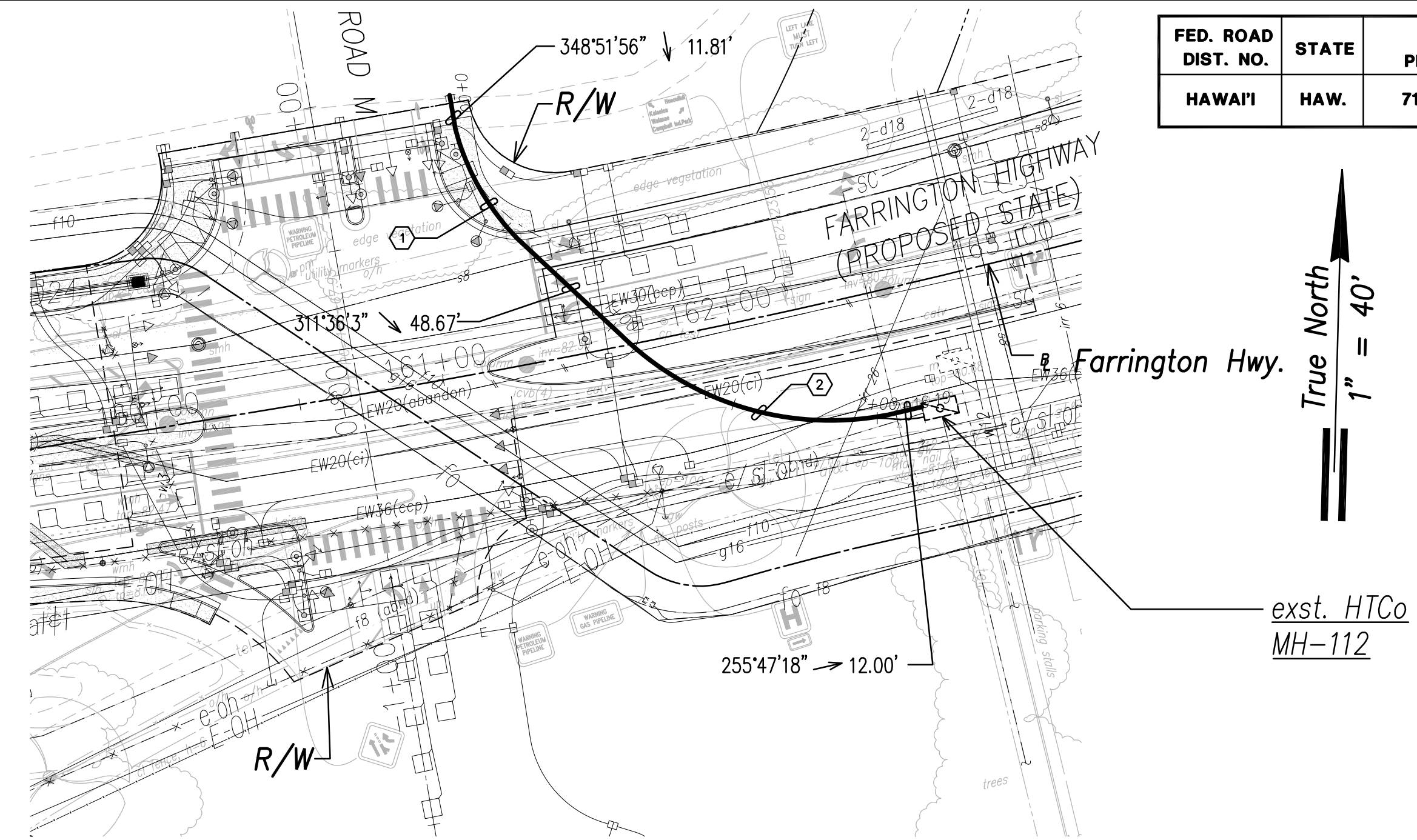
CURVE DATA						
ID	Δ	Δ / 2	RADIUS	T	C	Lc
(1)	67°18'54"	33°39'27.2"	46.00'	30.63'	50.99'	54.04'

HCo Ductline "H1" - Plan
Scale: 1" = 40'



HCo Ductline "H1" - Profile
Scale: Horiz. 1" = 40'
Vert. 1" = 4'

Note:
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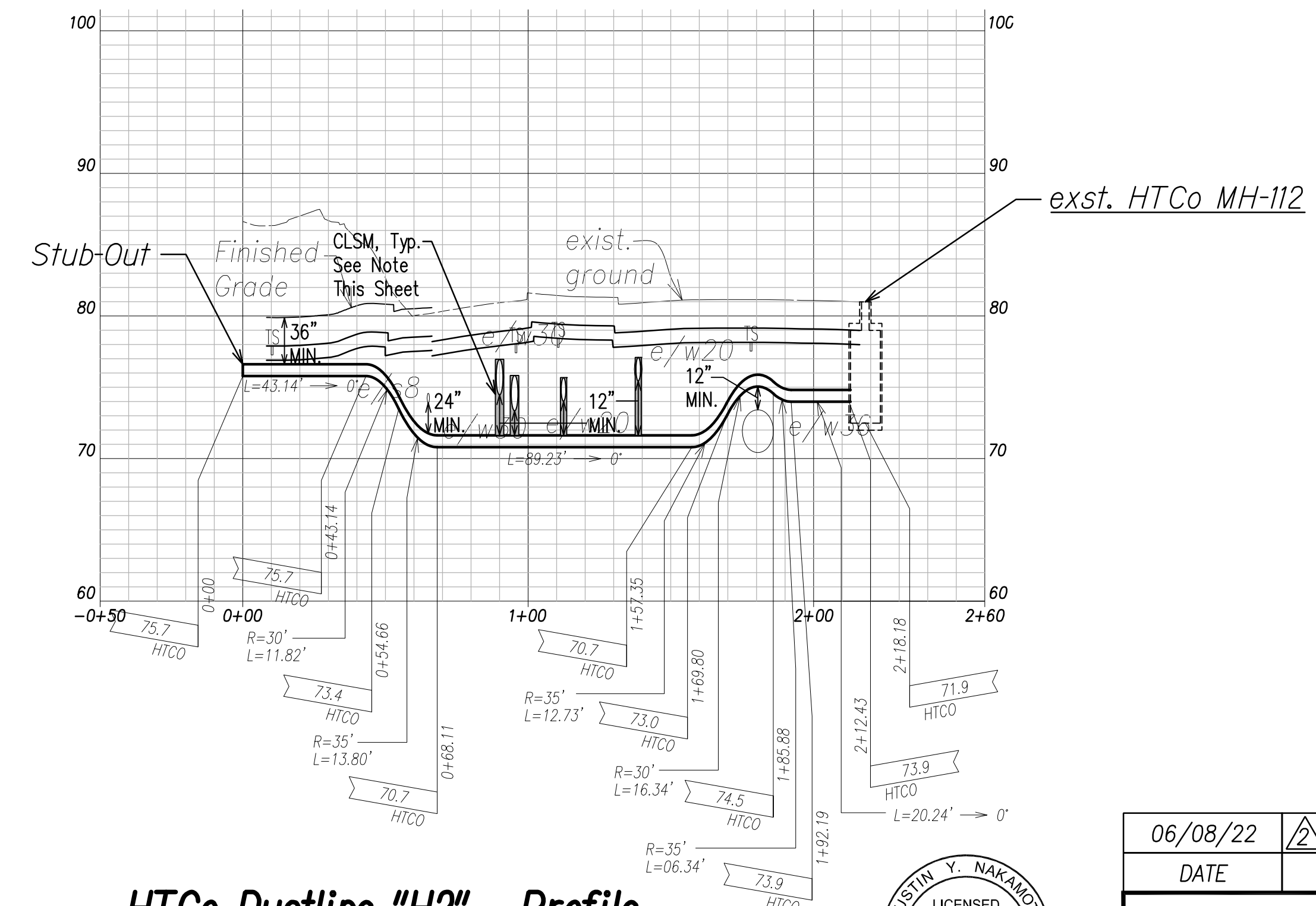


True North
1" = 40'

HCo Ductline "H2" - Plan
Scale: 1" = 40'

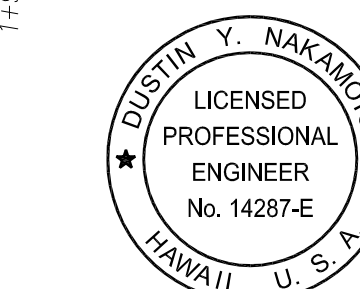
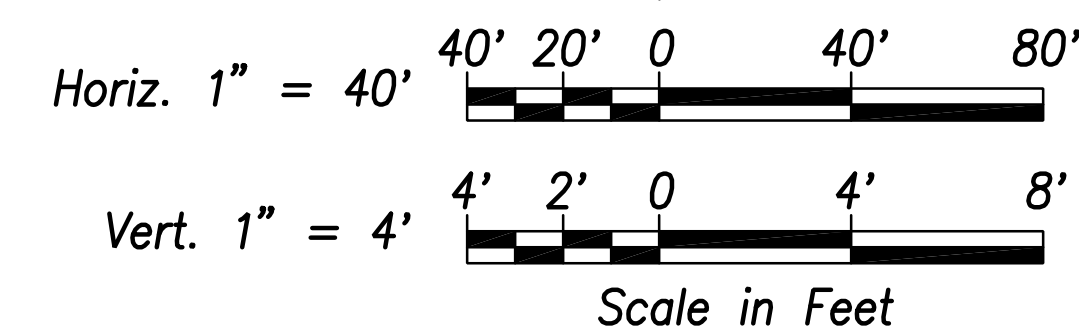
HCO DUCTLINE "H2"

CURVE DATA						
ID	Δ	Δ / 2	RADIUS	T	C	Lc
(1)	29°21'3"	14°40'31.4"	85.32'	22.35'	43.23'	43.71'
(2)	55°32'19"	27°46'9.7"	102.67'	54.06'	95.67'	99.52'



HCo Ductline "H2" - Profile
Scale: Horiz. 1" = 40'
Vert. 1" = 4'

Graphic Scales:



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SIGNATURE
April 30, 2024
EXPIRATION DATE OF THE LICENSE

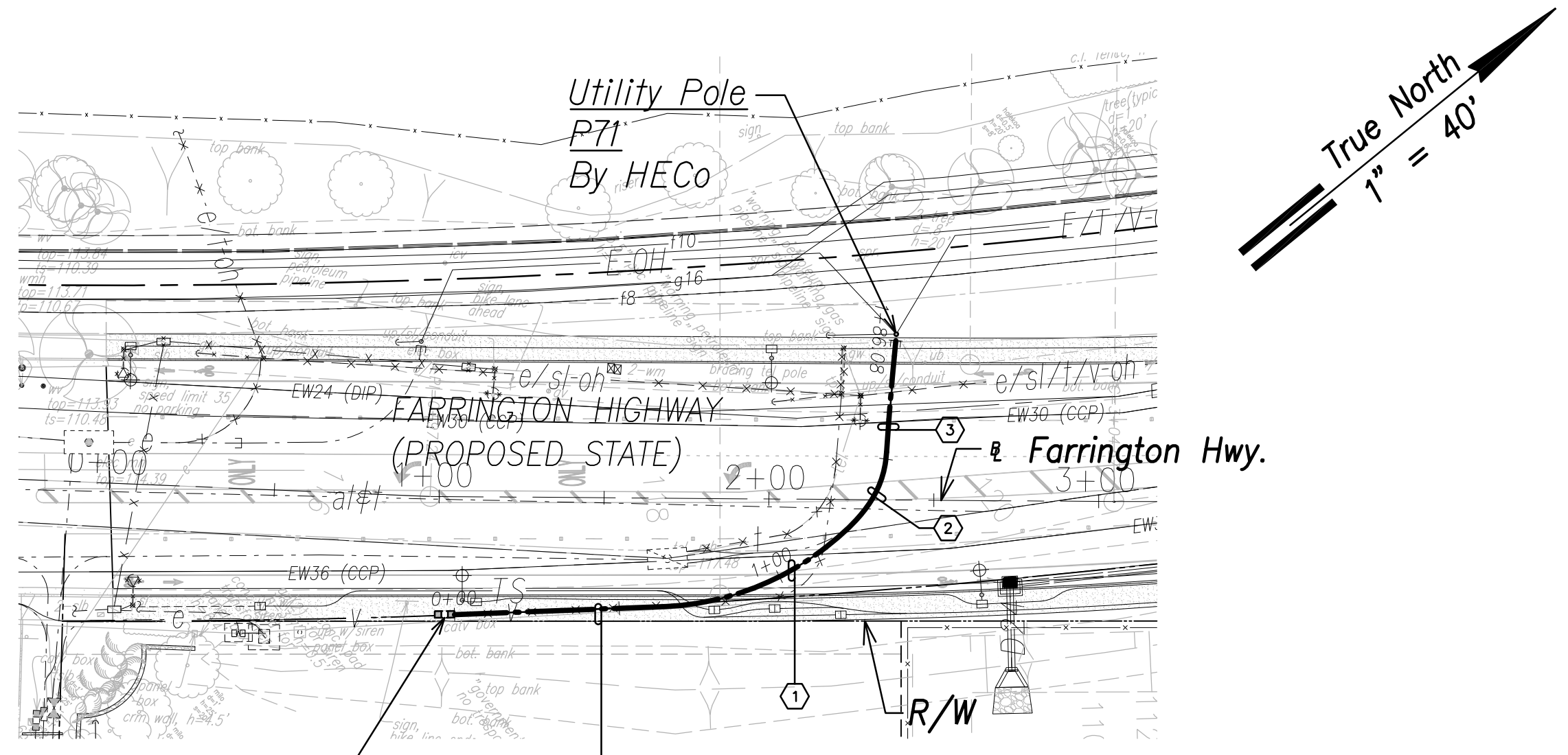
06/08/22	ADDED DRAWING
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
HCO DUCTLINE PLAN & PROFILE "H1" & "H2"	
FARRINGTON HIGHWAY WIDENING Kapolei Golf Course Road to Fort Weaver Road Project No. 7101A-01-20	
Scale: As Shown	Date: April 2022
SHEET No. EK-05 OF 5 SHEETS	

DATE	SURVEY PLOTTED BY
DATE	DRAWN BY
DATE	TRACED BY
DATE	QUANTITIES BY
DATE	CHECKED BY

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APPROVED BY
HAWAIIAN TELCOM
DATE

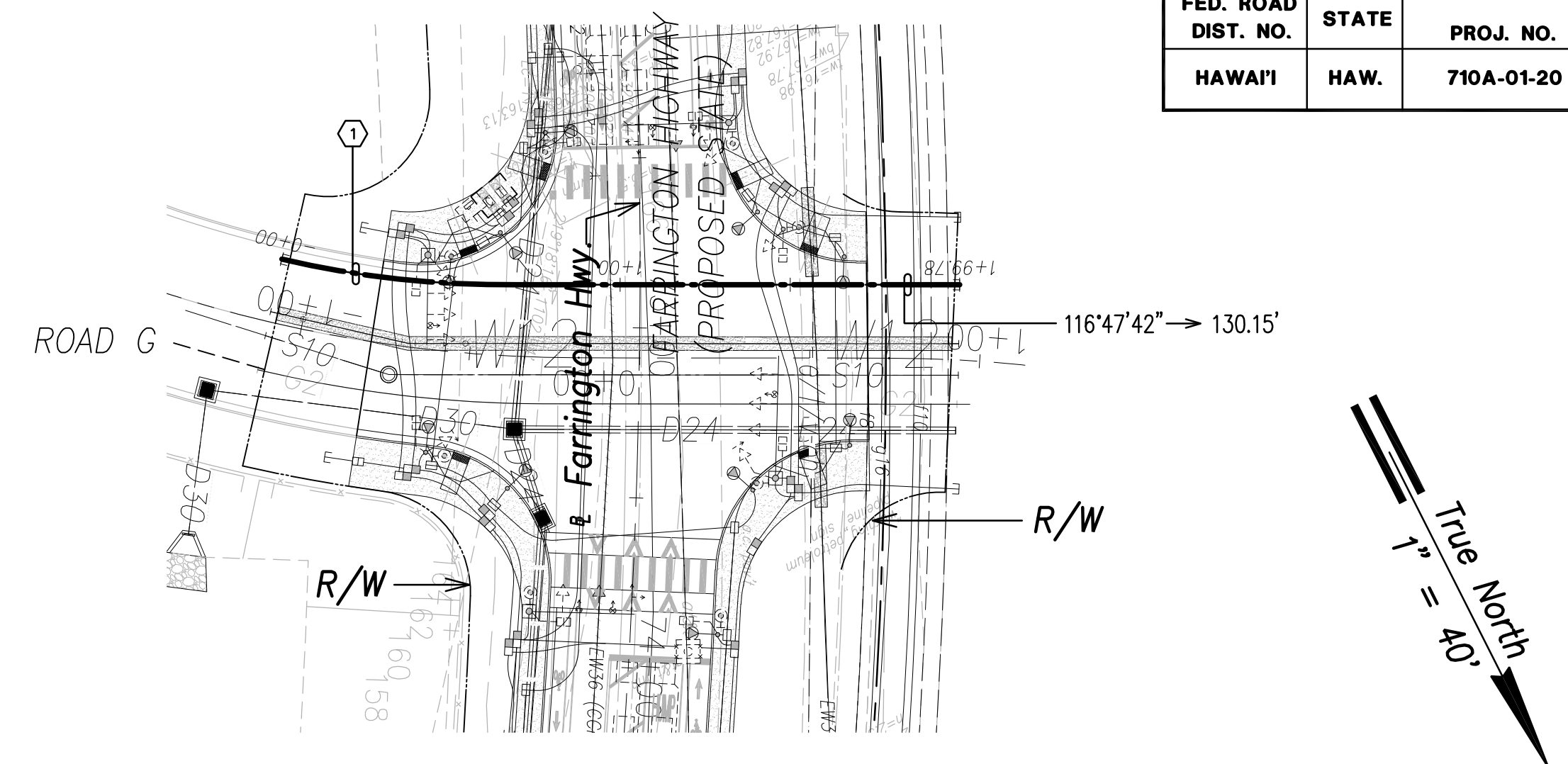
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	710A-01-20	2021	EL-01	790



exst. CATV HH-VA
CATV Ductline "A" - Plan
 Scale: 1" = 40'

CATV DUCTLINE "A"

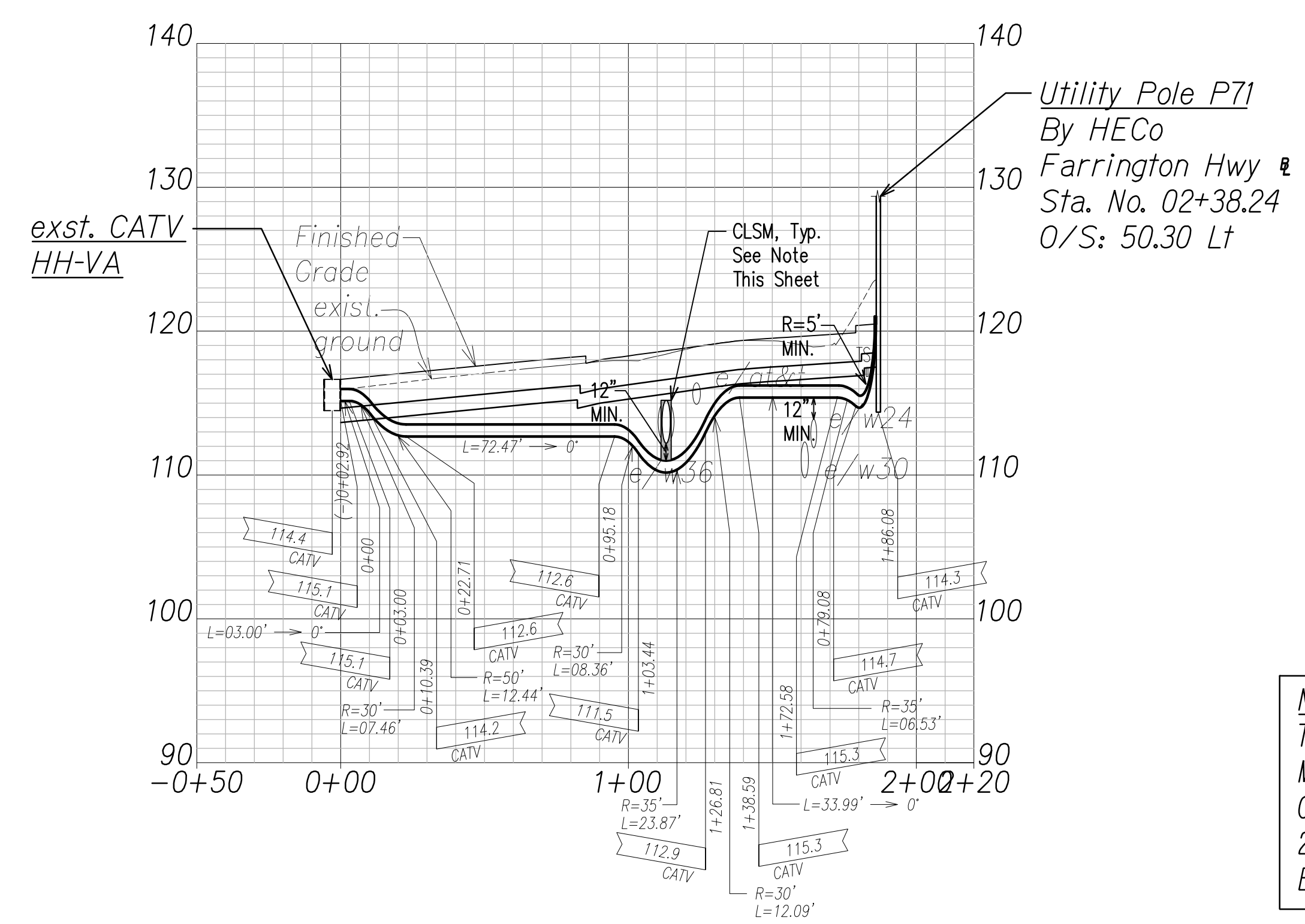
CURVE DATA						
ID	Δ	Δ / 2	RADIUS	T	C	Lc
①	43°15'0"	21°37'29.8"	85.35'	33.84'	62.91'	64.43'
②	41°51'22"	20°55'41.2"	32.13'	12.29'	22.95'	23.47'
③	1°57'0"	0°58'30.2"	996.79'	16.97'	33.93'	33.93'



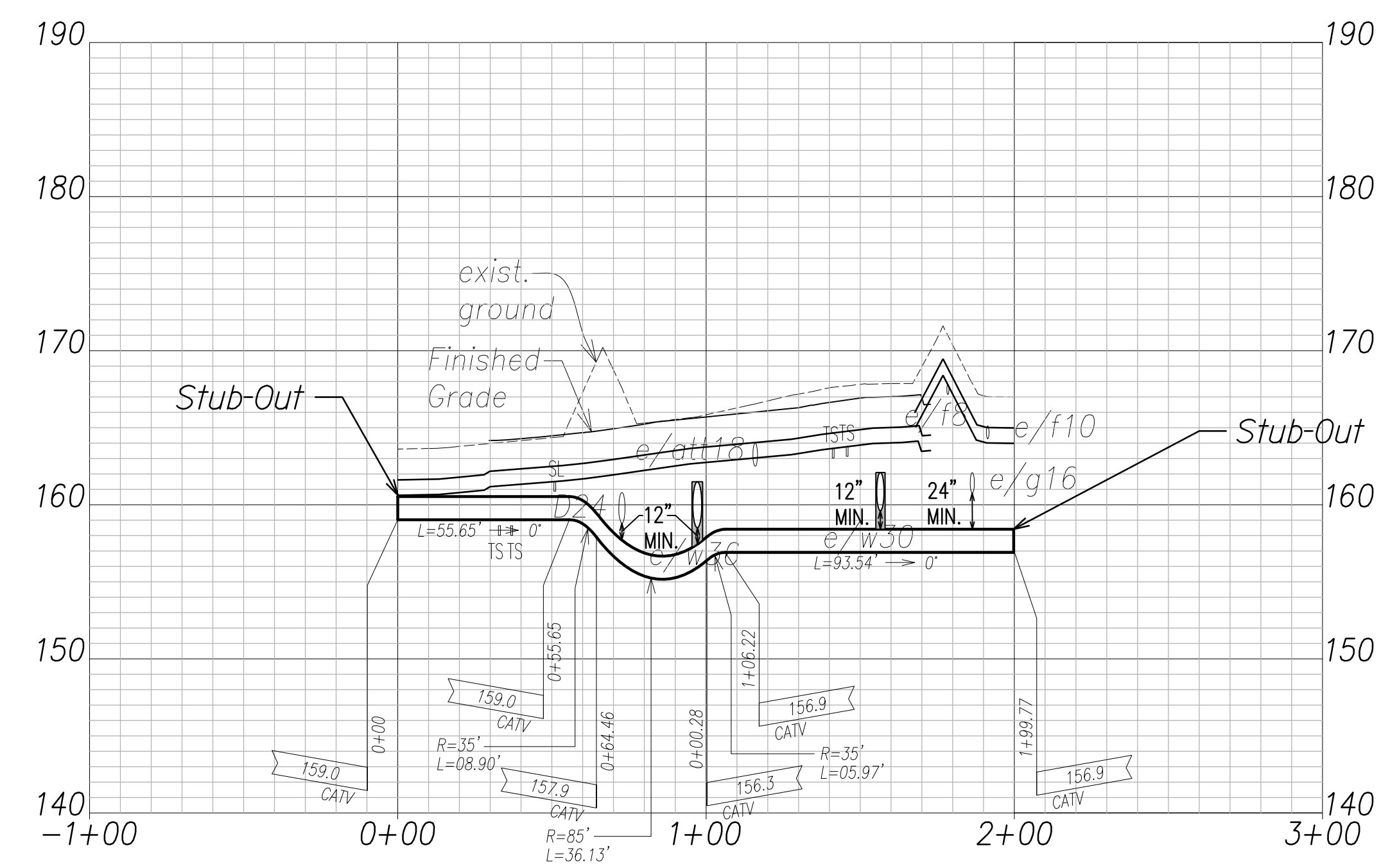
CATV Ductline "B" - Plan
 Scale: 1" = 40'

CATV DUCTLINE "B"

CURVE DATA						
ID	Δ	Δ / 2	RADIUS	T	C	Lc
①	13°50'21"	6°55'10.6"	288.26'	34.98'	69.46'	69.63'



CATV Ductline "A" - Profile
 Scale: Horiz. 1" = 40'
 Vert. 1" = 4'



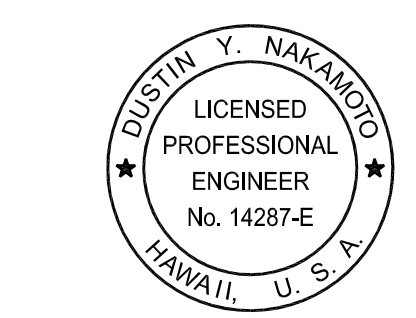
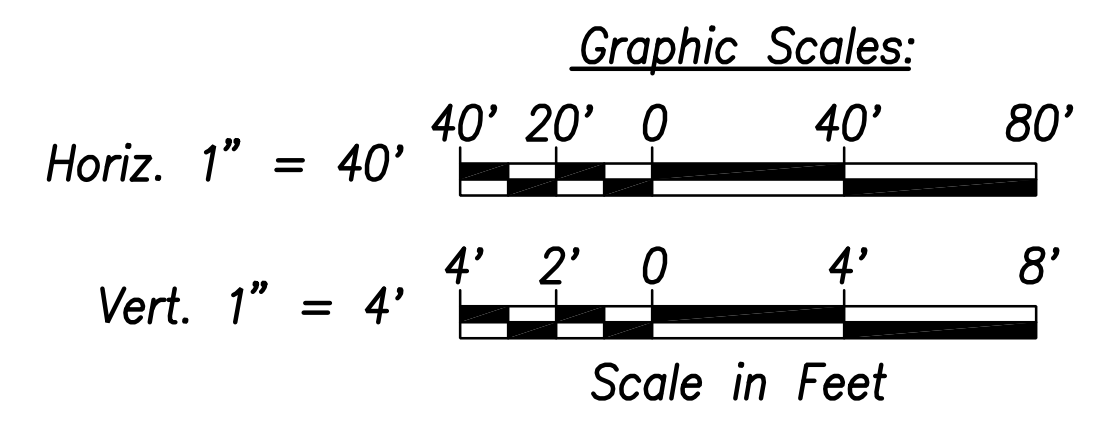
CATV Ductline "B" - Profile
 Scale: Horiz. 1" = 40'
 Vert. 1" = 4'

Note:
 The Contractor Shall Provide Controlled Low Strength Material (CLSM) in Areas Where Required Compaction Cannot be Met. CLSM Shall be Extended a Minimum of 2' Beyond the Waterline at the Crossing and Shall Extend to the Top of the Crossing Pipe.

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

FILE: Z:\ACAD\PROJECTS\220678\EL01_220678\CATV-Ductline-Plan-Profile-A-B.dwg saved June 6, 2022

APPROVED BY _____ DATE _____
 SPECTRUM OCEANIC

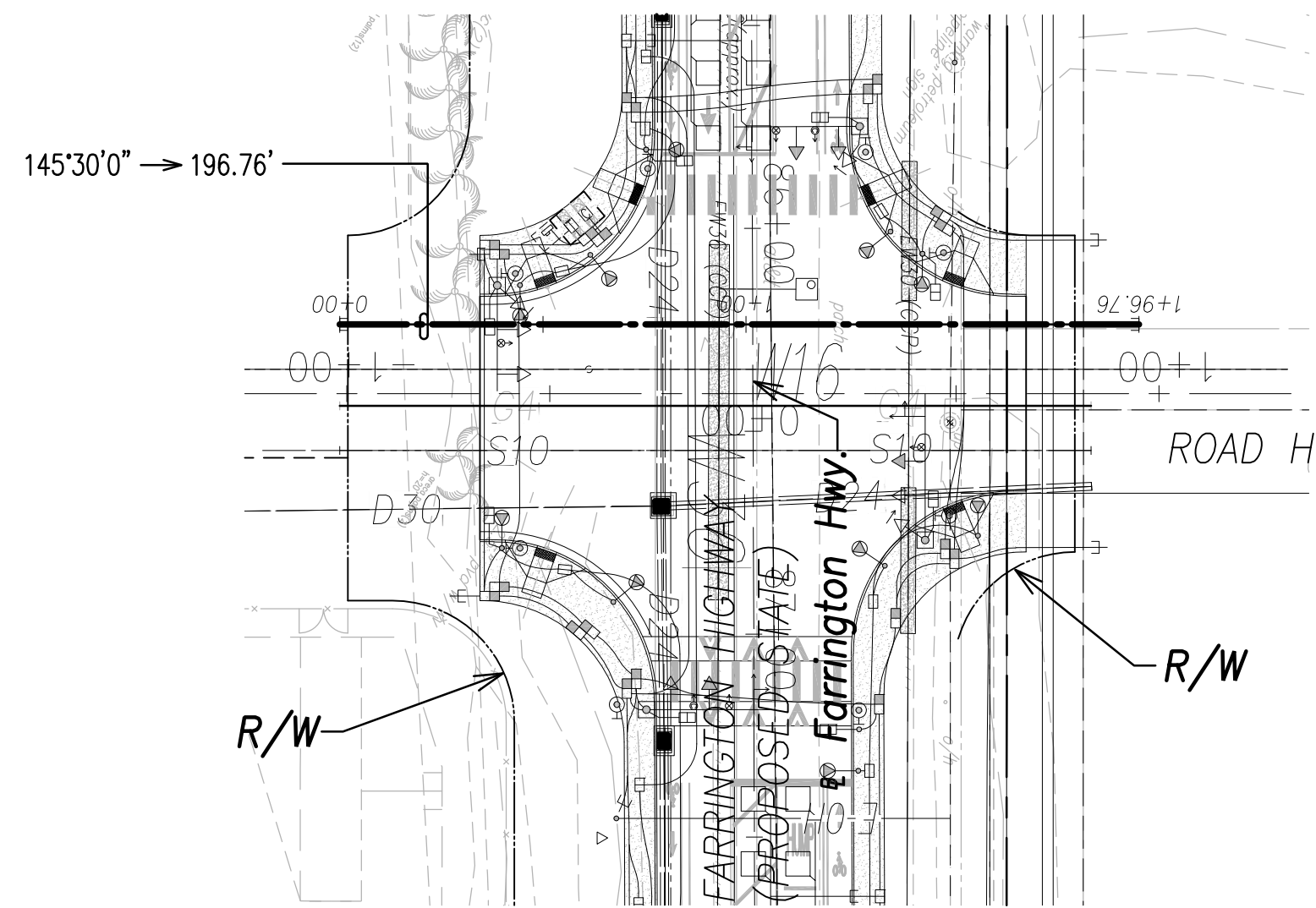


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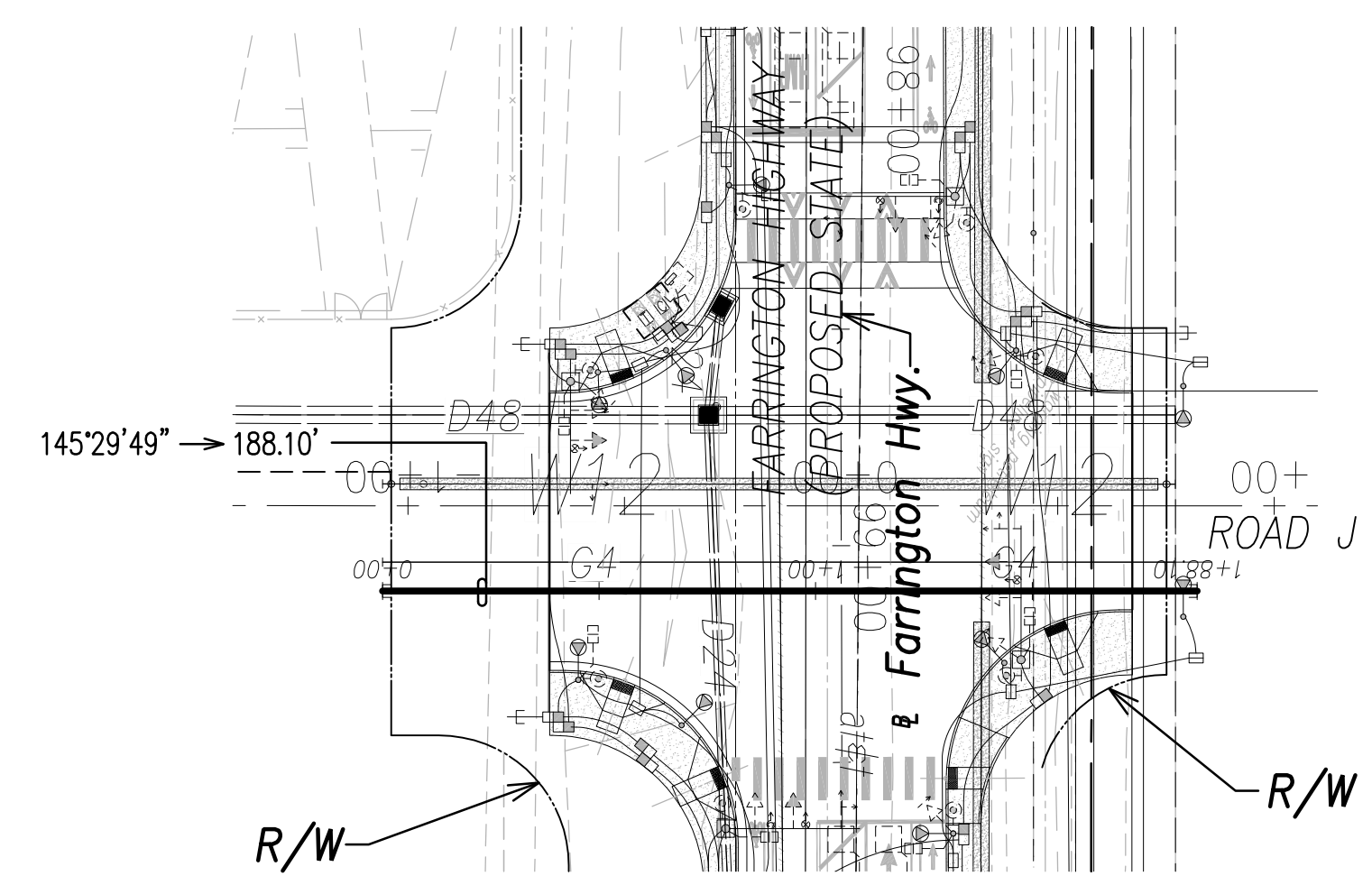
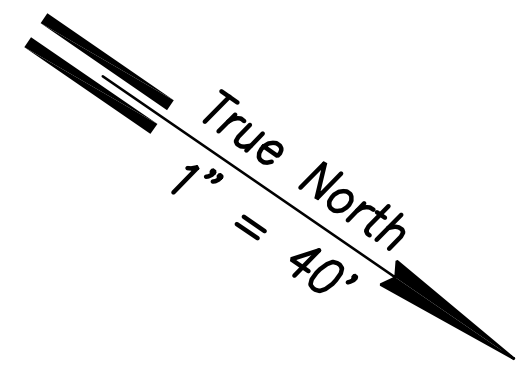
SIGNATURE _____ DATE: April 30, 2024
 EXPIRATION DATE OF THE LICENSE

06/08/22	ADDED DRAWING
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
CATV DUCTLINE PLAN & PROFILE "A" & "B"	
FARRINGTON HIGHWAY WIDENING Kapolei Golf Course Road to Fort Weaver Road Project No. 7101A-01-20	
Scale: As Shown	Date: April 2022
SHEET No. EL-01 OF 6 SHEETS	

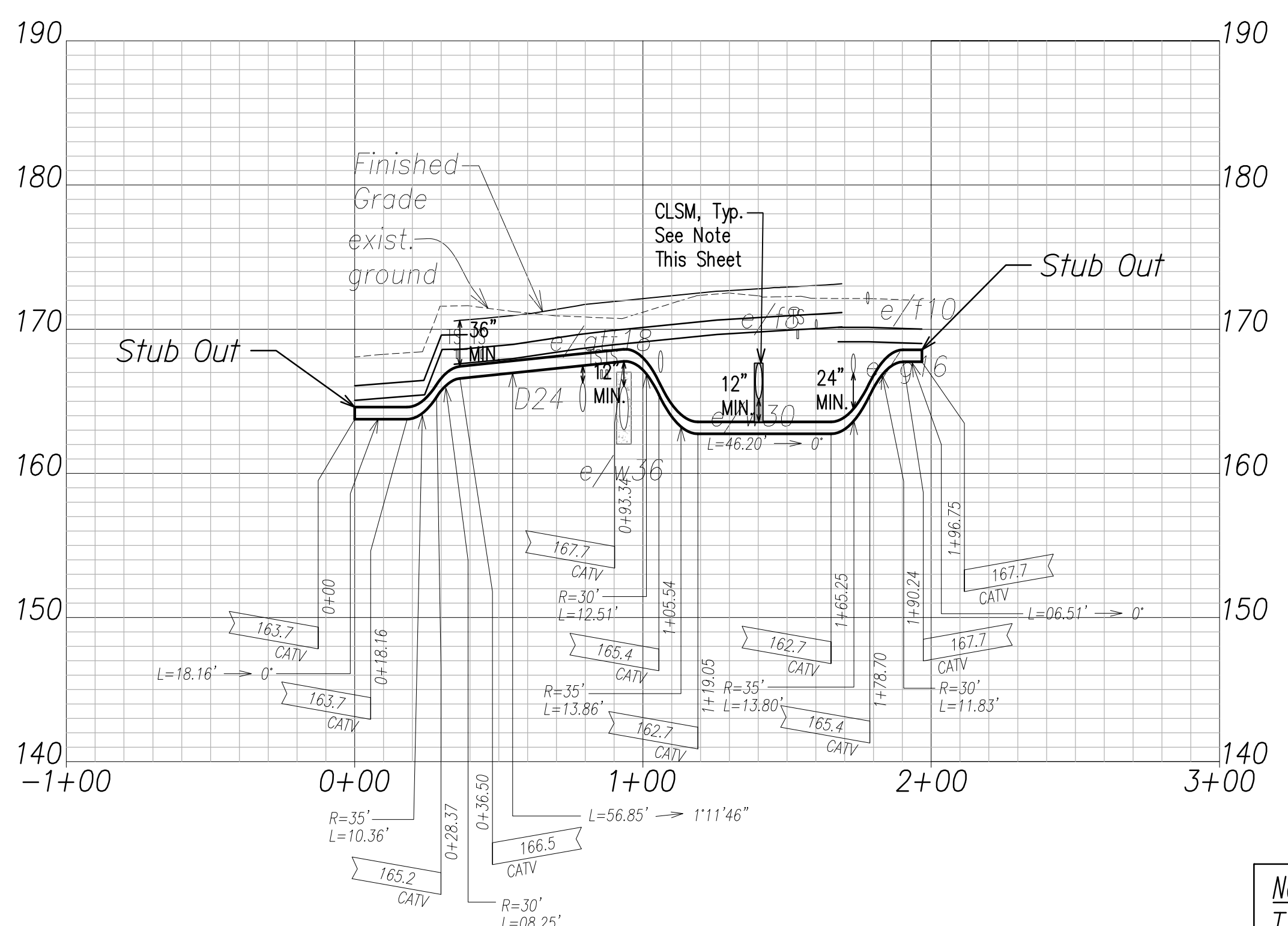
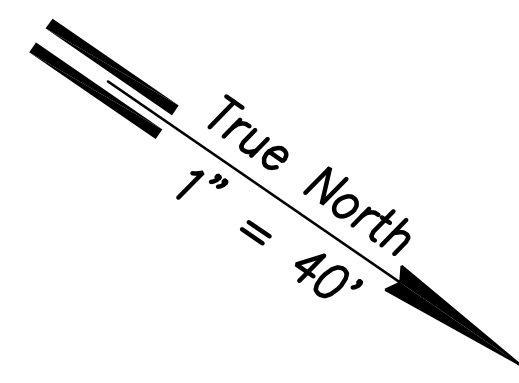
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	710A-01-20	2021	EL-02	790



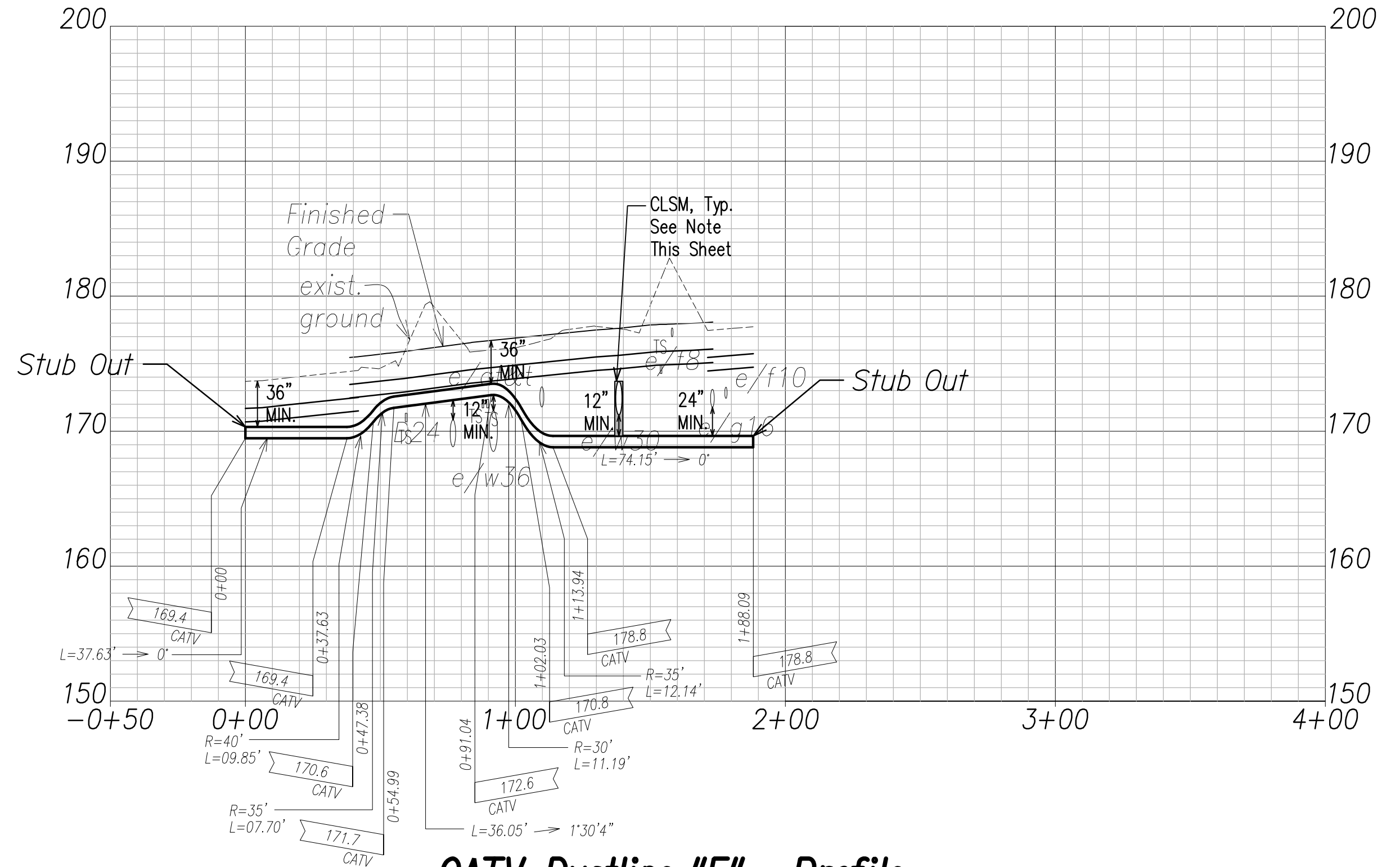
CATV Ductline "D" - Plan
Scale: 1" = 40'



CATV Ductline "E" - Plan
Scale: 1" = 40'



CATV Ductline "D" - Profile
Scale: Horiz. 1" = 40'
Vert. 1" = 4'



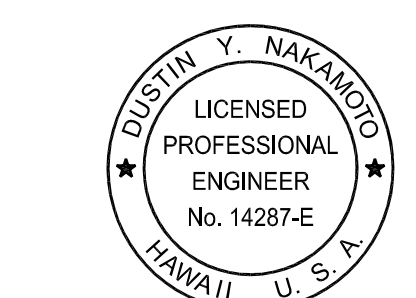
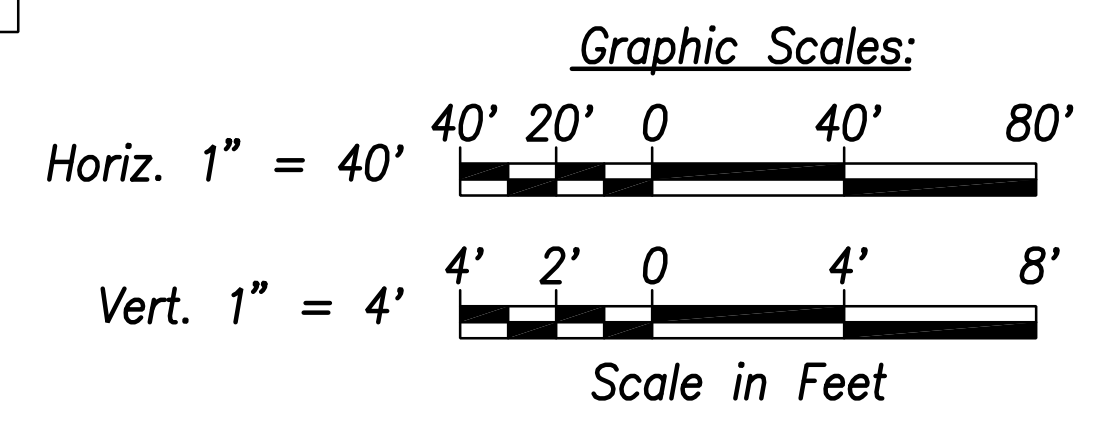
CATV Ductline "E" - Profile
Scale: Horiz. 1" = 40'
Vert. 1" = 4'

Note:
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DATE	_____
SURVEY PLOTTED BY	_____
DRAWN BY	_____
TRACED BY	_____
NOTED BY	_____
QUANTITIES BY	_____
CHECKED BY	_____
No.	_____

FILE: Z:\ACAD\PROJECTS\220679A\EL02_221007H_CATV-Ductline-Plan-Profile-D-E.dwg saved June 2, 2022

APPROVED BY _____
SPECTRUM OCEANIC DATE _____



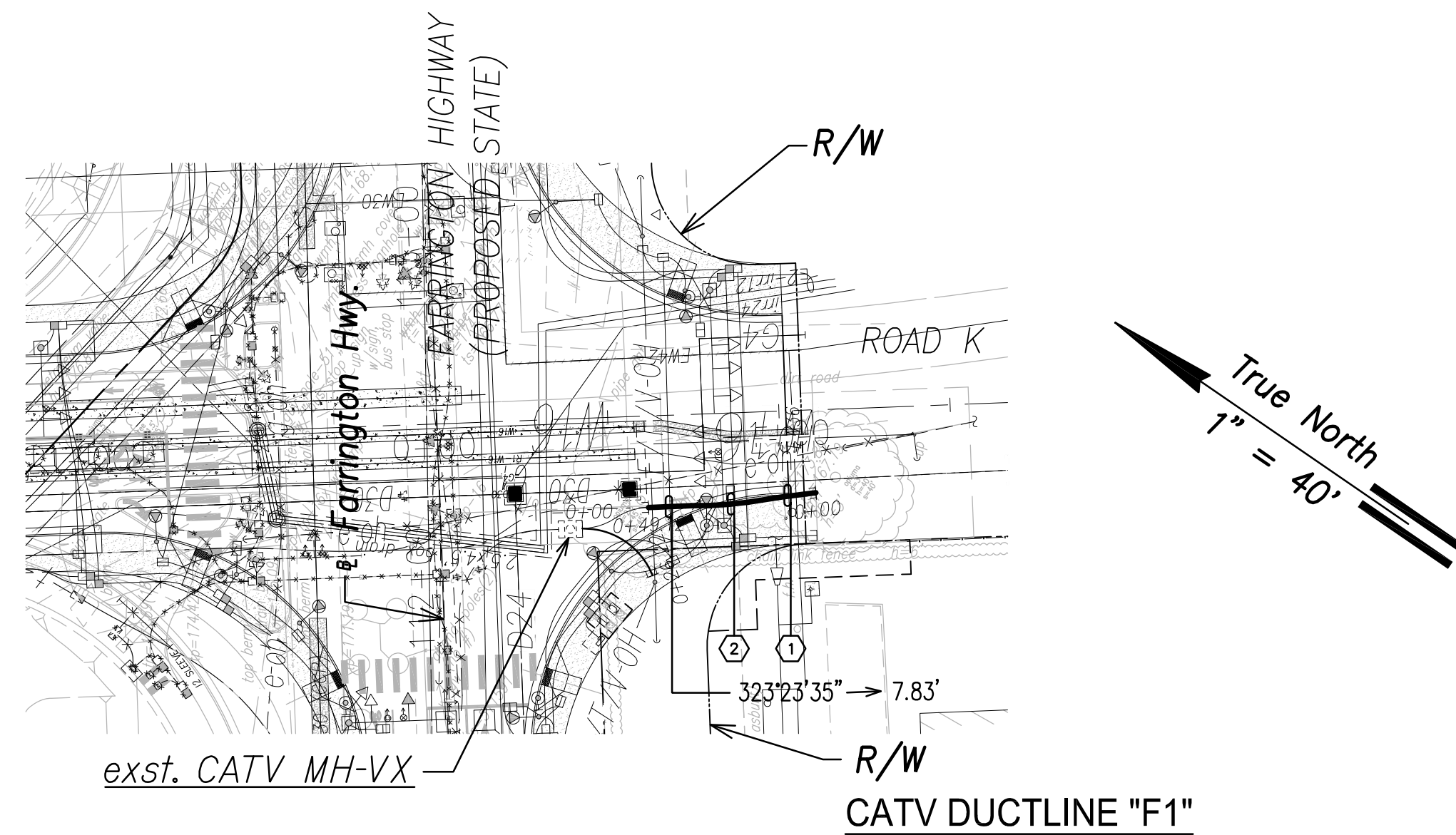
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.

April 30, 2024
SIGNATURE EXPIRATION DATE OF THE LICENSE

06/08/22	ADDED DRAWING
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
CATV DUCTLINE PLAN & PROFILE "D" & "E"	
FARRINGTON HIGHWAY WIDENING Kapolei Golf Course Road to Fort Weaver Road Project No. 7101A-01-20	
Scale: As Shown	Date: April 2022
SHEET No. EL-02 OF 6 SHEETS	

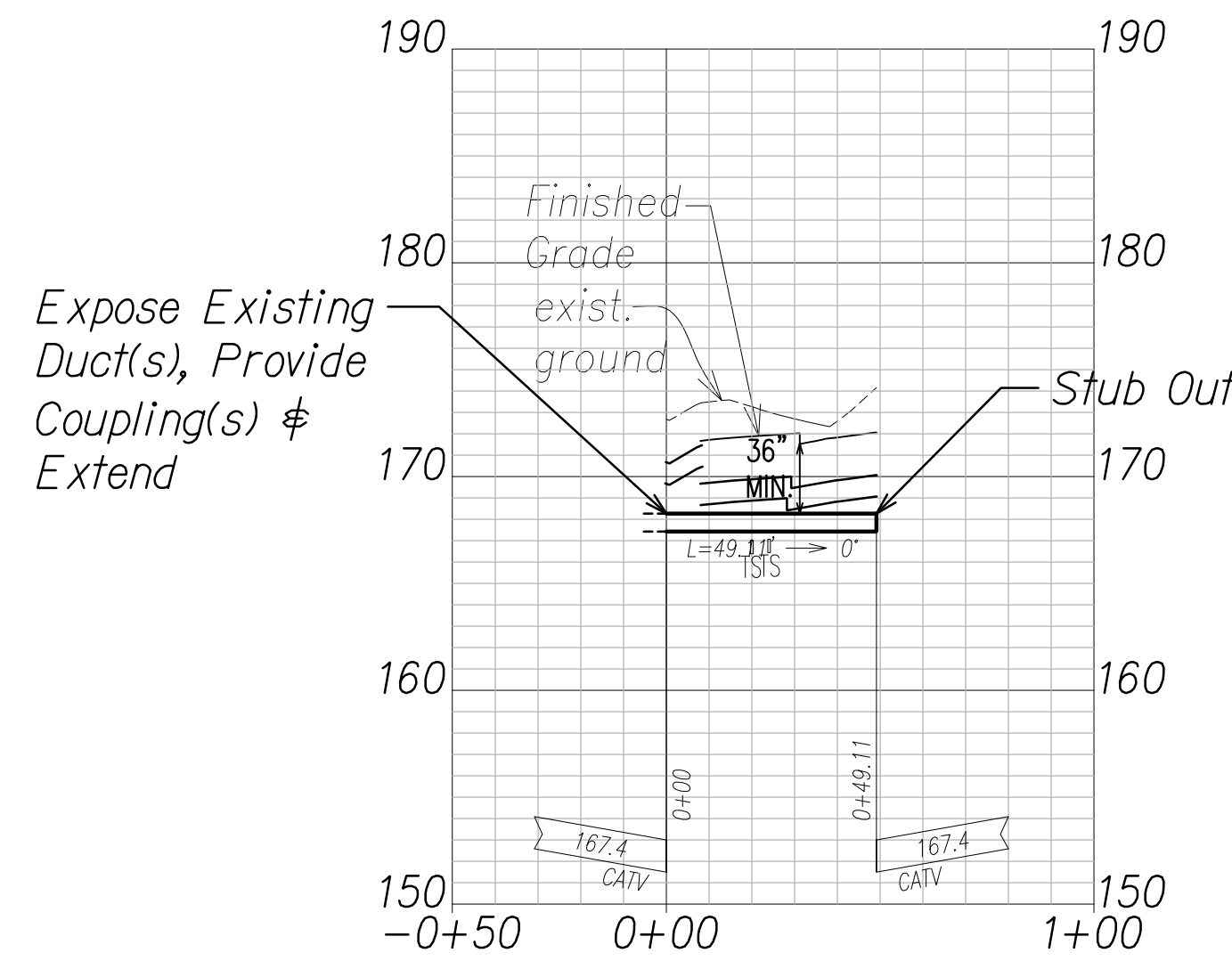
ADD. 747

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	710A-01-20	2021	EL-03	790

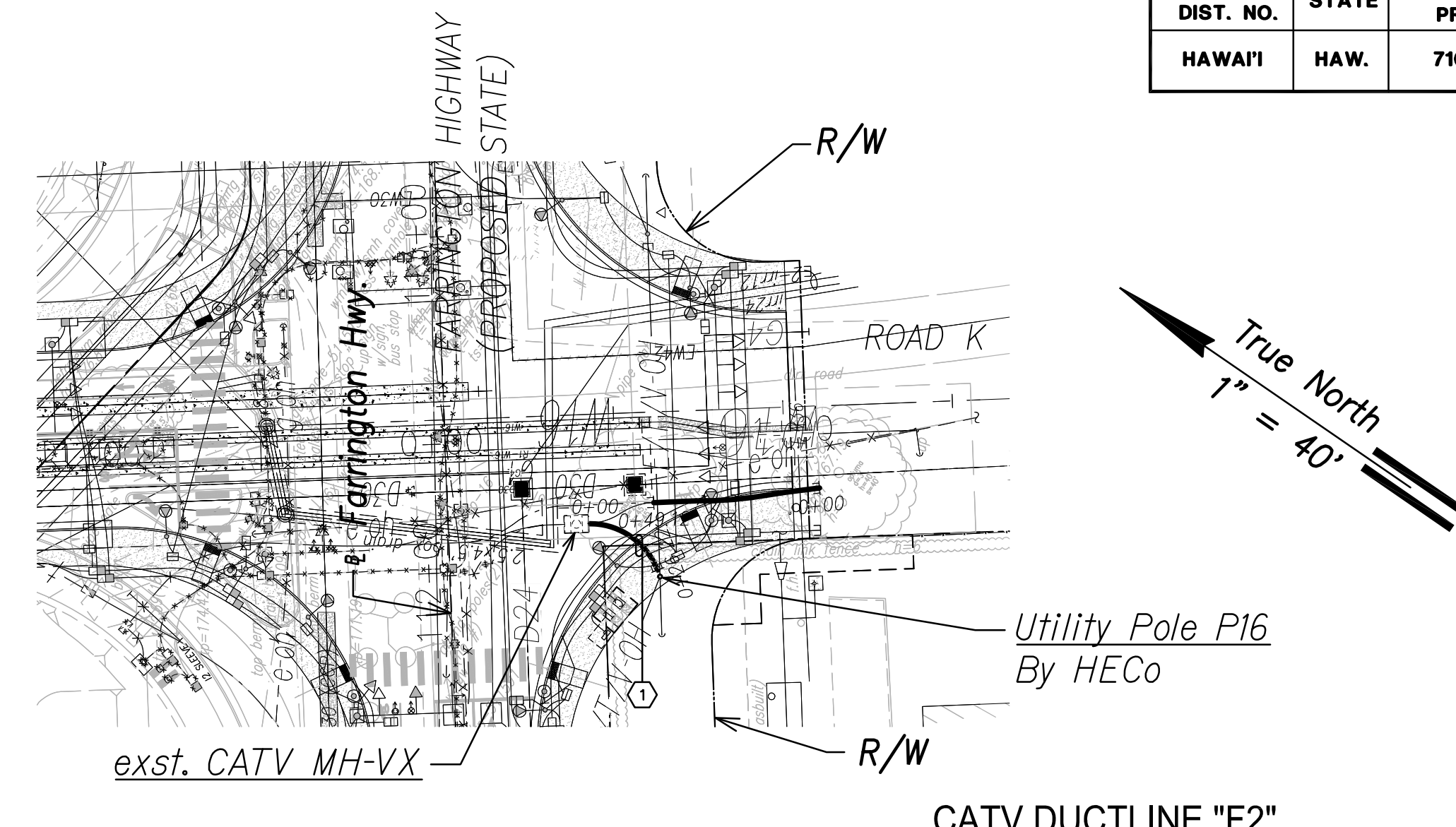


CURVE DATA						
ID	Δ	Δ / 2	RADIUS	T	C	Lc
①	3°37'54"	1°48'57.1"	317.20'	10.06'	20.10'	20.11'
②	8°0'47"	4°0'23.4"	118.07'	8.27'	16.50'	16.51'

CATV Ductline "F1" - Plan
Scale: 1" = 40'

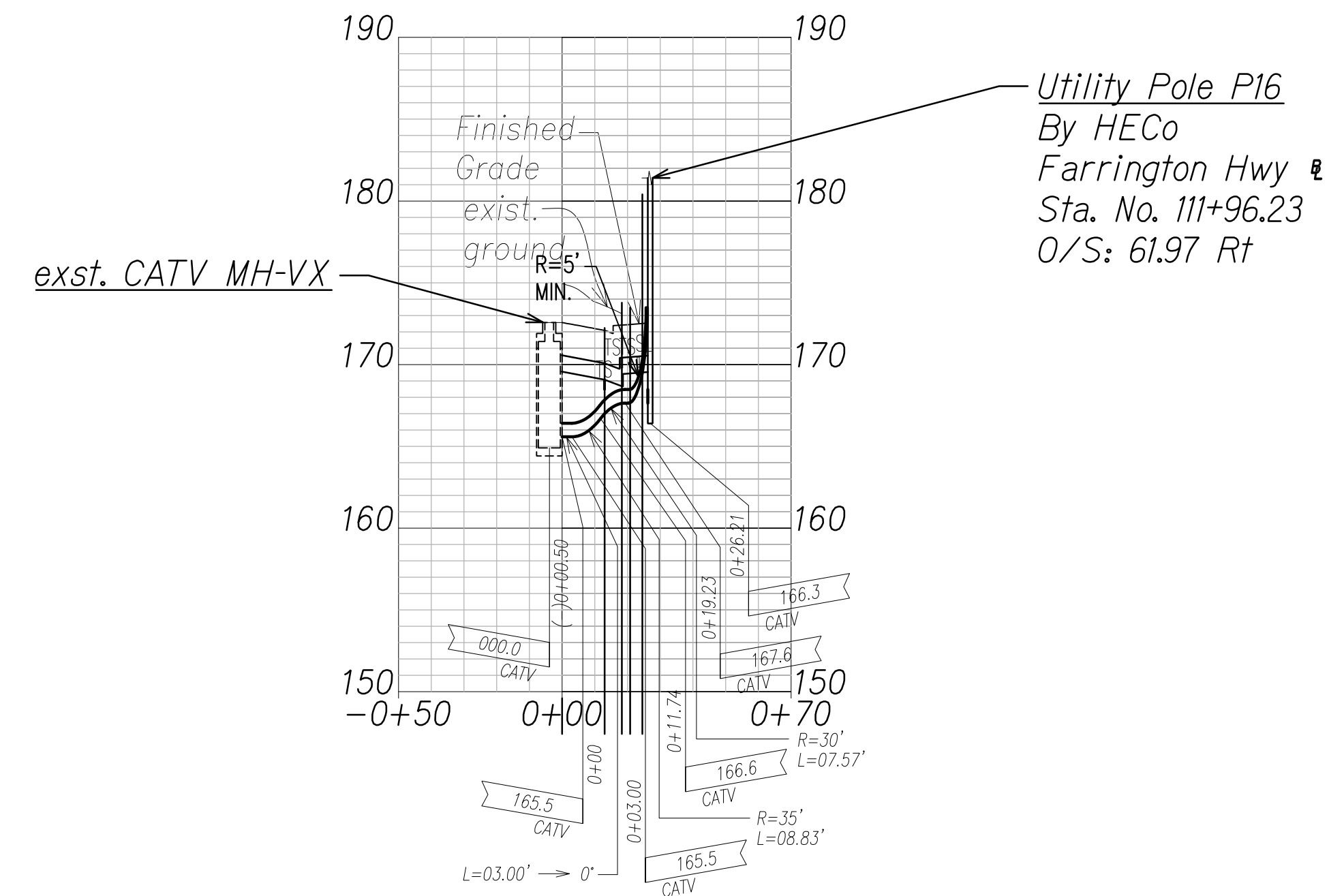


CATV Ductline "F1" - Profile
Scale: Horiz. 1" = 40'
Vert. 1" = 4'



CURVE DATA						
ID	Δ	Δ / 2	RADIUS	T	C	Lc
①	69°20'42"	34°40'21.1"	21.66'	14.98'	24.64'	26.22'

CATV Ductline "F2" - Plan
Scale: 1" = 40'

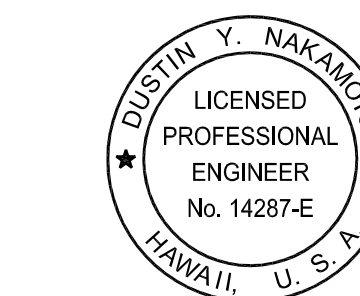
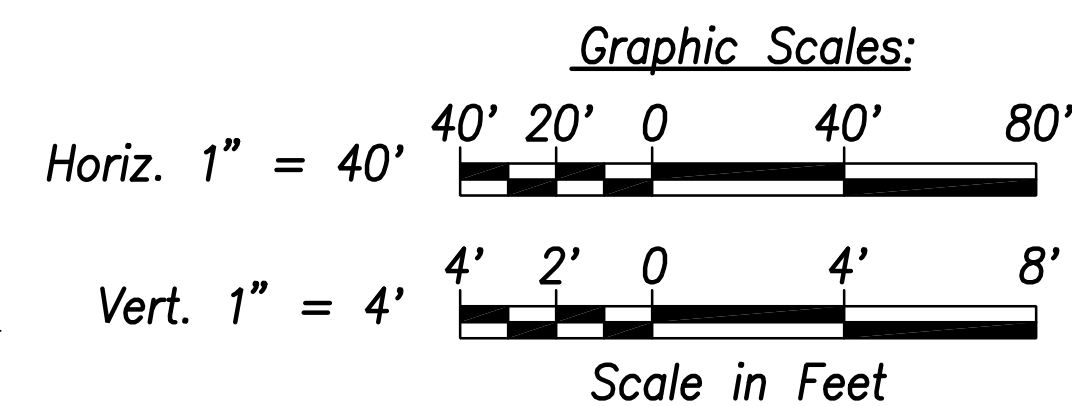


CATV Ductline "F2" - Profile
Scale: Horiz. 1" = 40'
Vert. 1" = 4'

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

FILE: Z:\ACAD\PROJECTS\22067HA\EL03_22067HA_CATV-Ductline-Plan-Profile-F1-F2.dwg saved June 2, 2022

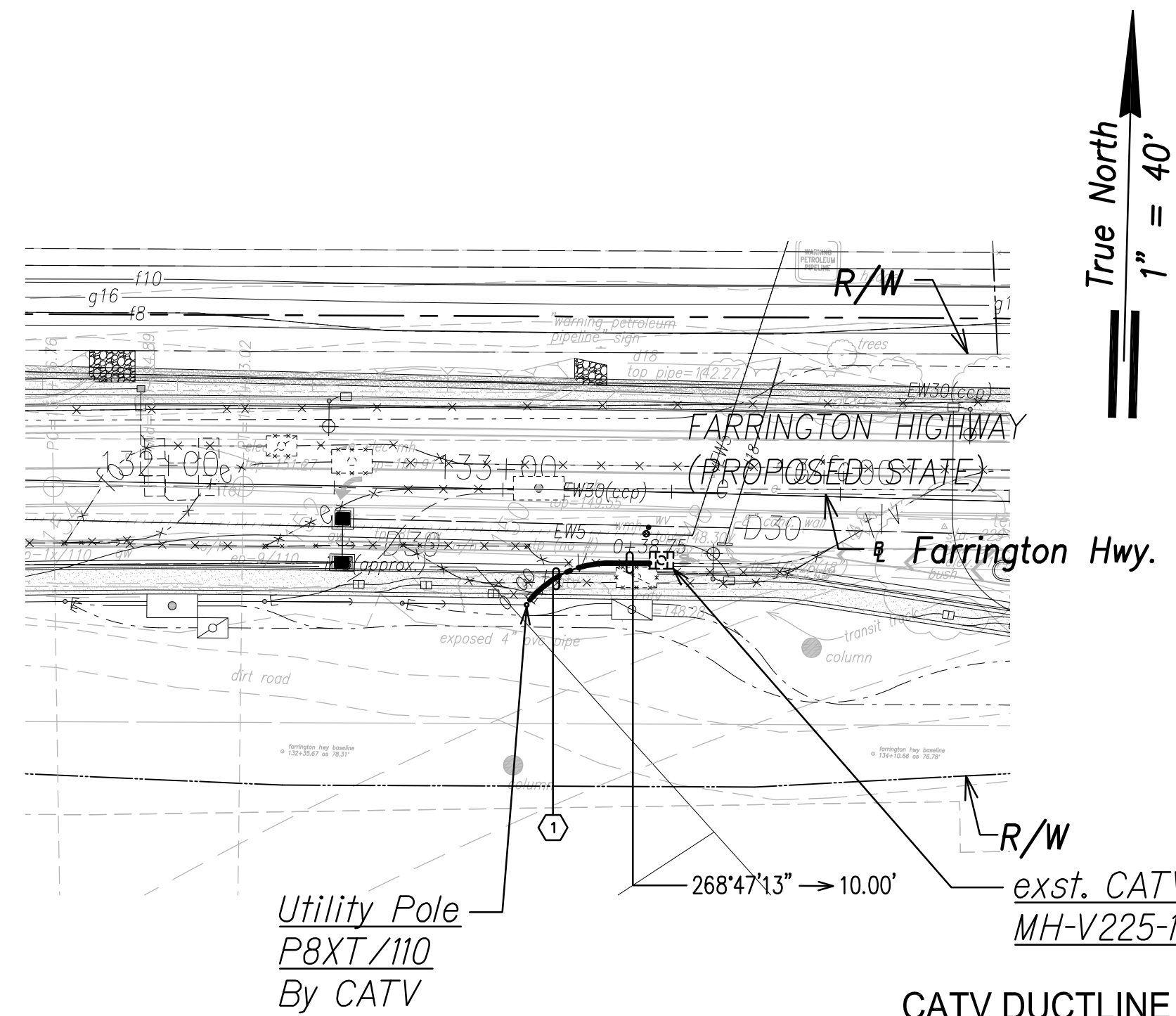
APPROVED BY
SPECTRUM OCEANIC DATE



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.
SIGNATURE DATE: April 30, 2024 EXPIRATION DATE OF THE LICENSE

06/08/22	ADDED DRAWING
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
CATV DUCTLINE PLAN & PROFILE "F1" & "F2"	
FARRINGTON HIGHWAY WIDENING Kapolei Golf Course Road to Fort Weaver Road Project No. 7101A-01-20	
Scale: As Shown	Date: April 2022
SHEET No. EL-03 OF 6 SHEETS	

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	710A-01-20	2021	EL-04	790

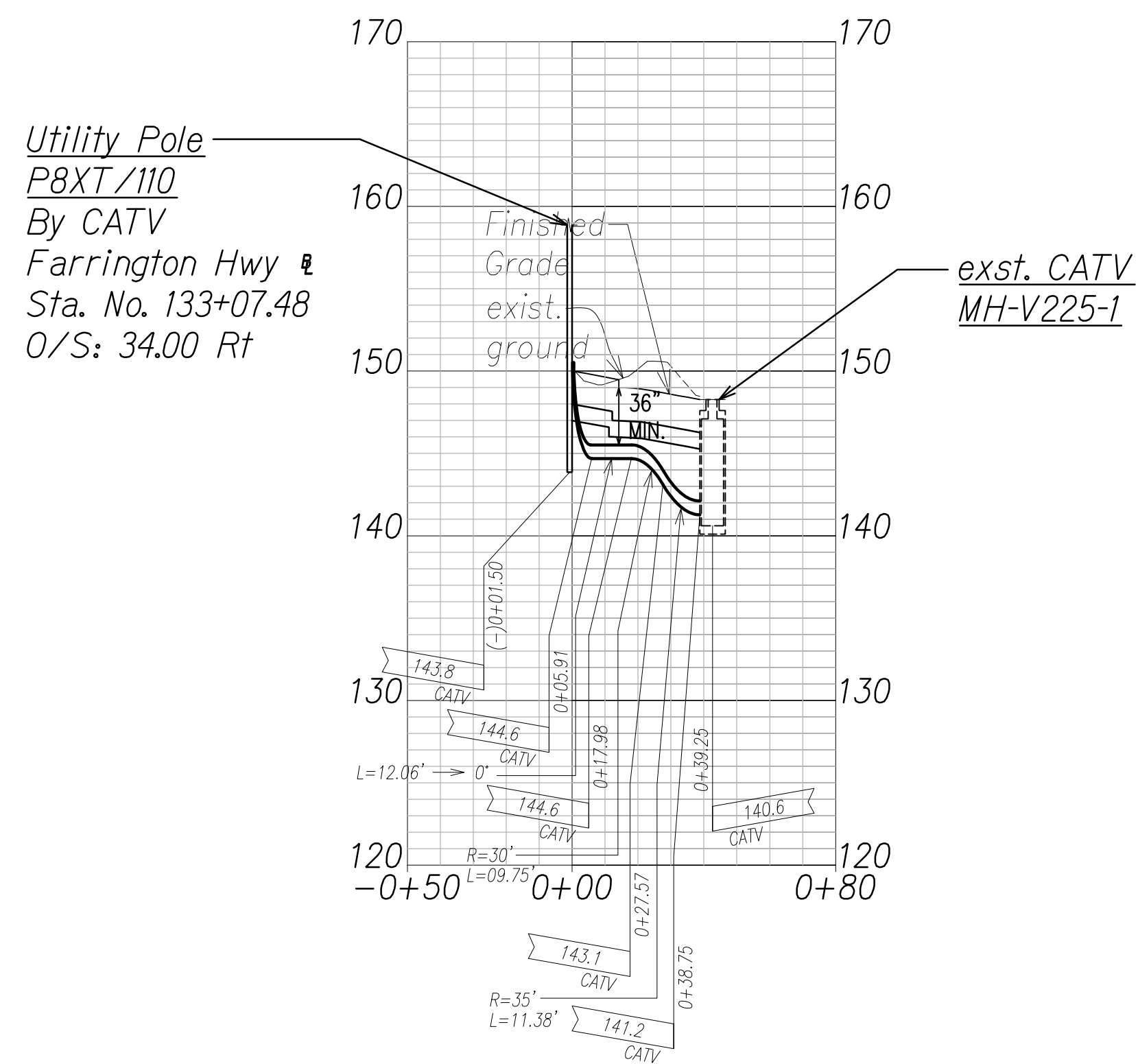


CATV DUCTLINE "G1"

CURVE DATA					
ID	Δ	Δ / 2	RADIUS	T	Lc
(1)	52°47'59"	26°23'59.3"	31.20'	15.49'	28.75'

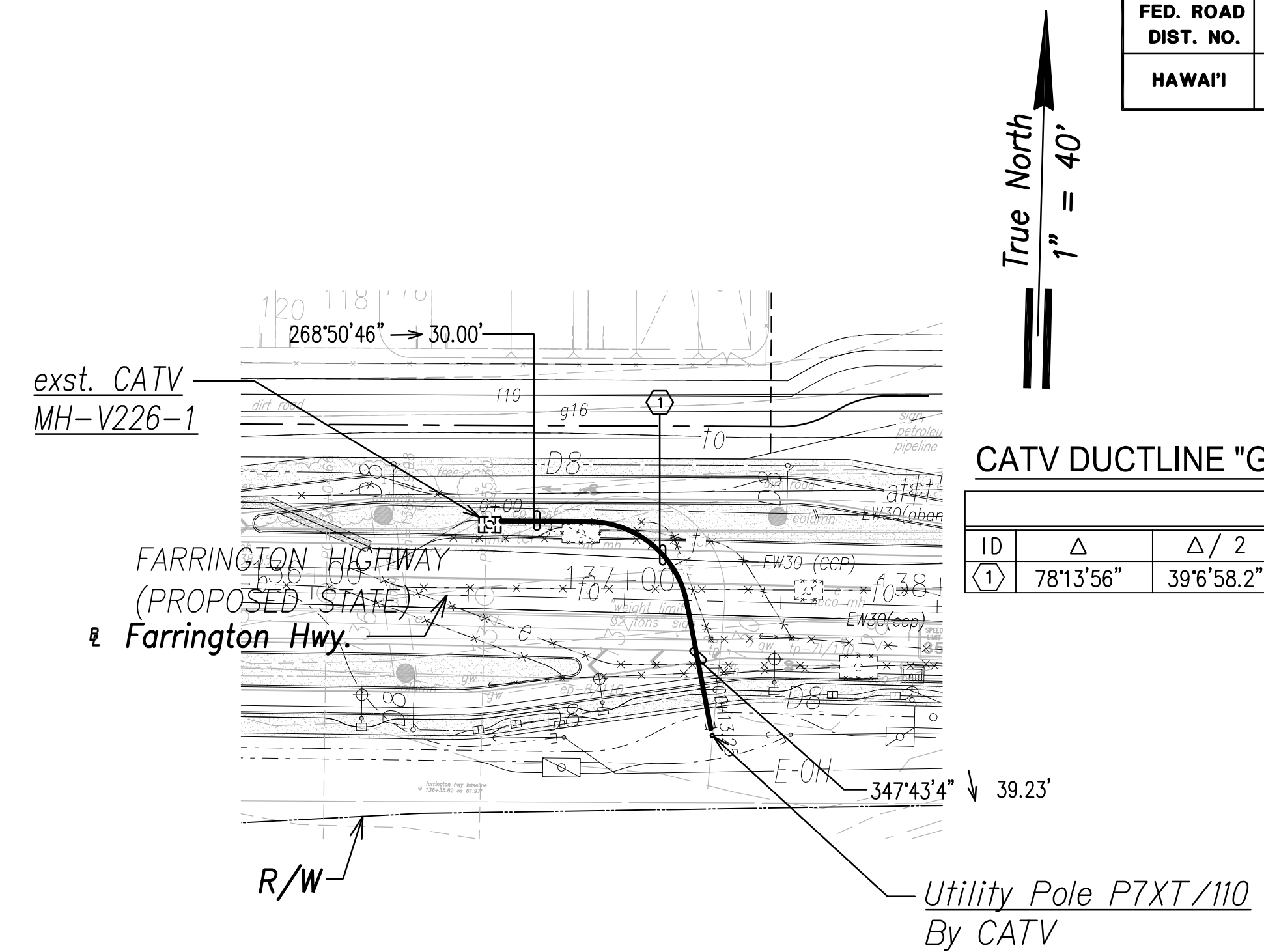
CATV Ductline "G1" - Plan

Scale: 1" = 40'



CATV Ductline "G1" - Profile

Scale: Horiz. 1" = 40'
Vert. 1" = 4'

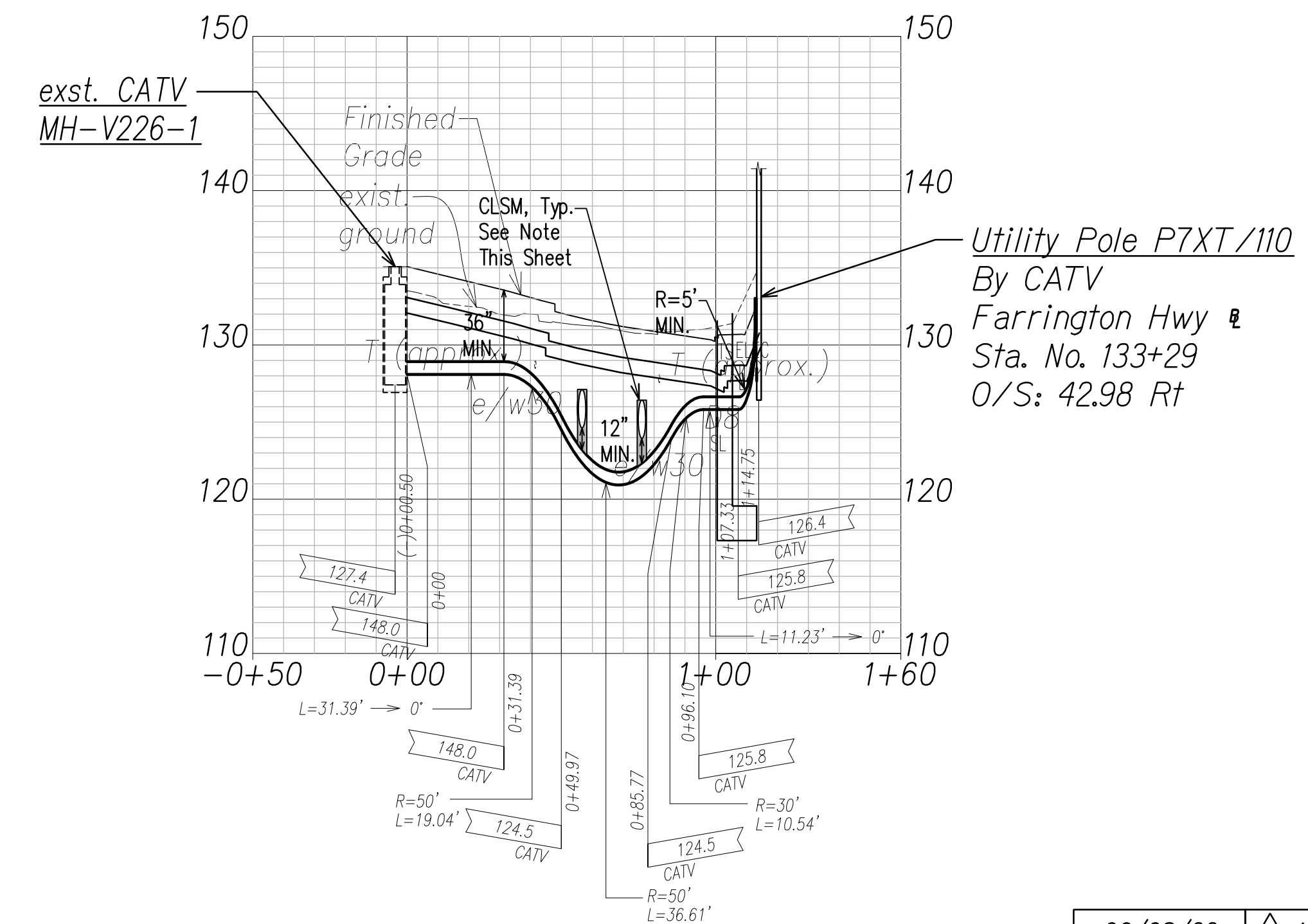


CATV DUCTLINE "G2"

CURVE DATA						
ID	Δ	Δ / 2	RADIUS	T	C	Lc
(1)	78°13'56"	39°6'58.2"	32.24'	26.22'	40.68'	44.02'

CATV Ductline "G2" - Plan

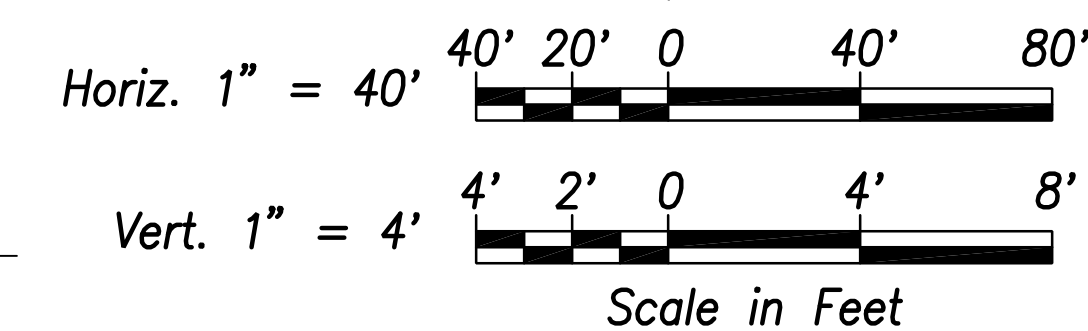
Scale: 1" = 40'



CATV Ductline "G2" - Profile

Scale: Horiz. 1" = 40'
Vert. 1" = 4'

Graphic Scales:

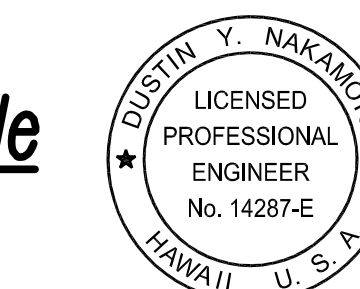


Note:
The Contractor Shall Provide Controlled Low Strength Material (CLSM) in Areas Where Required Compaction Cannot be Met. CLSM Shall be Extended a Minimum of 2' Beyond the Waterline at the Crossing and Shall Extend to the Top of the Crossing Pipe.

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

FILE: Z:\ACAD\PROJECTS\220676\EL04_220676\CATV-Ductline-Plan-Profile-01-02.dwg saved June 2, 2022

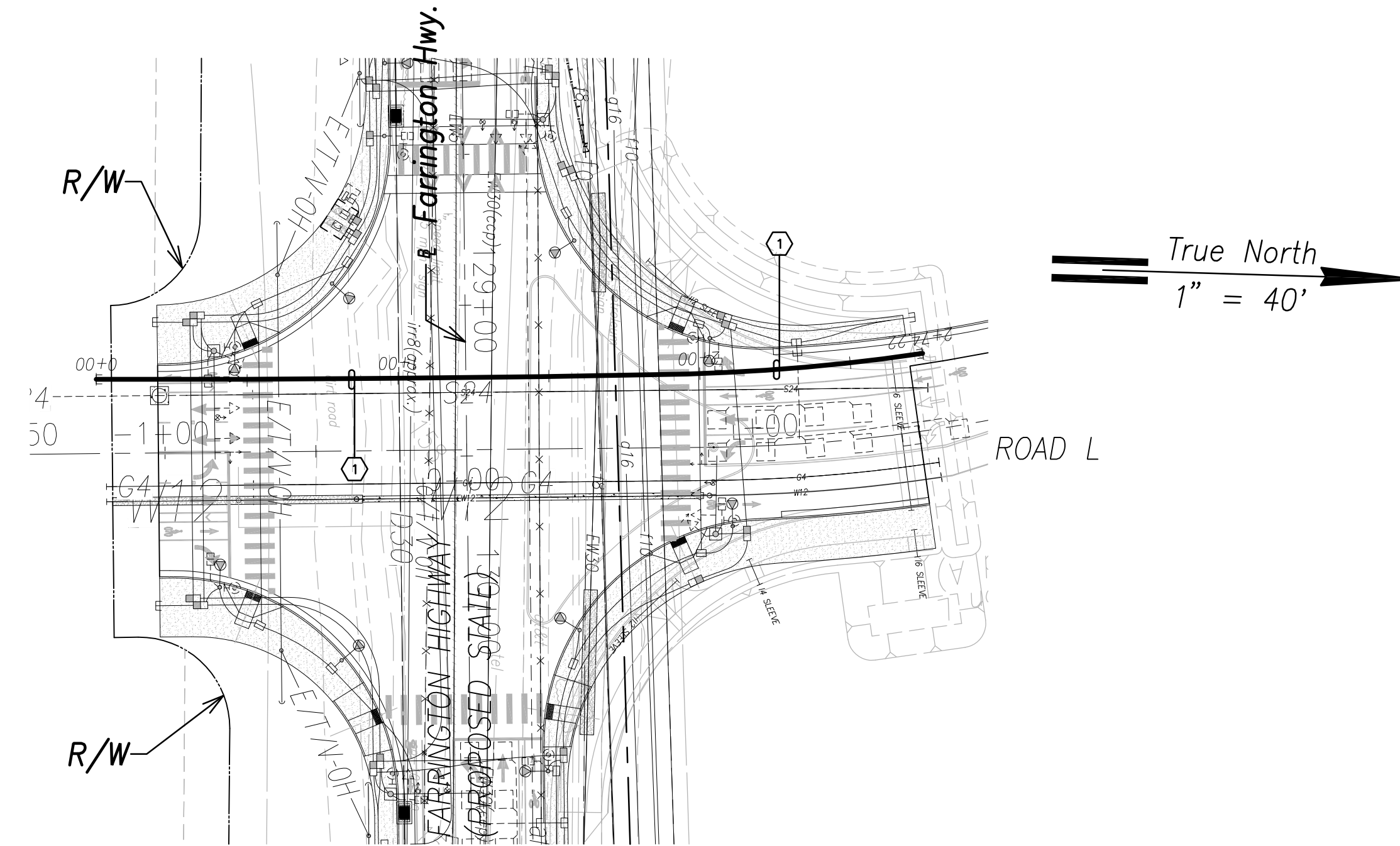
APPROVED BY
SPECTRUM OCEANIC DATE



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SIGNATURE DATE: April 30, 2024
EXPIRATION DATE OF THE LICENSE

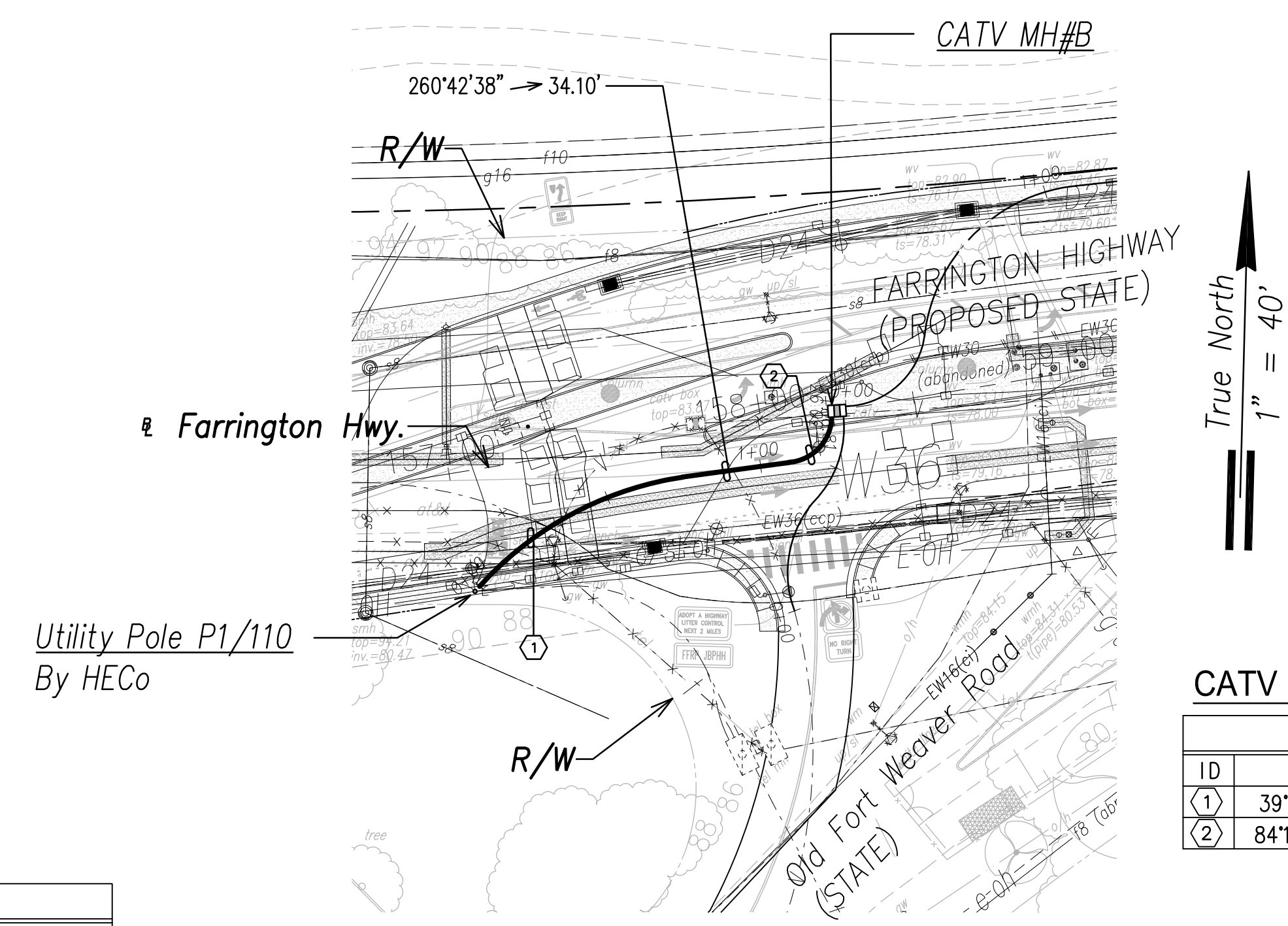
06/08/22	ADDED DRAWING
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
CATV DUCTLINE PLAN & PROFILE "G1" & "G2"	
FARRINGTON HIGHWAY WIDENING Kapolei Golf Course Road to Fort Weaver Road Project No. 7101A-01-20	
Scale: As Shown	Date: April 2022
SHEET No. EL-04 OF 6 SHEETS	

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	710A-01-20	2021	EL-05	790



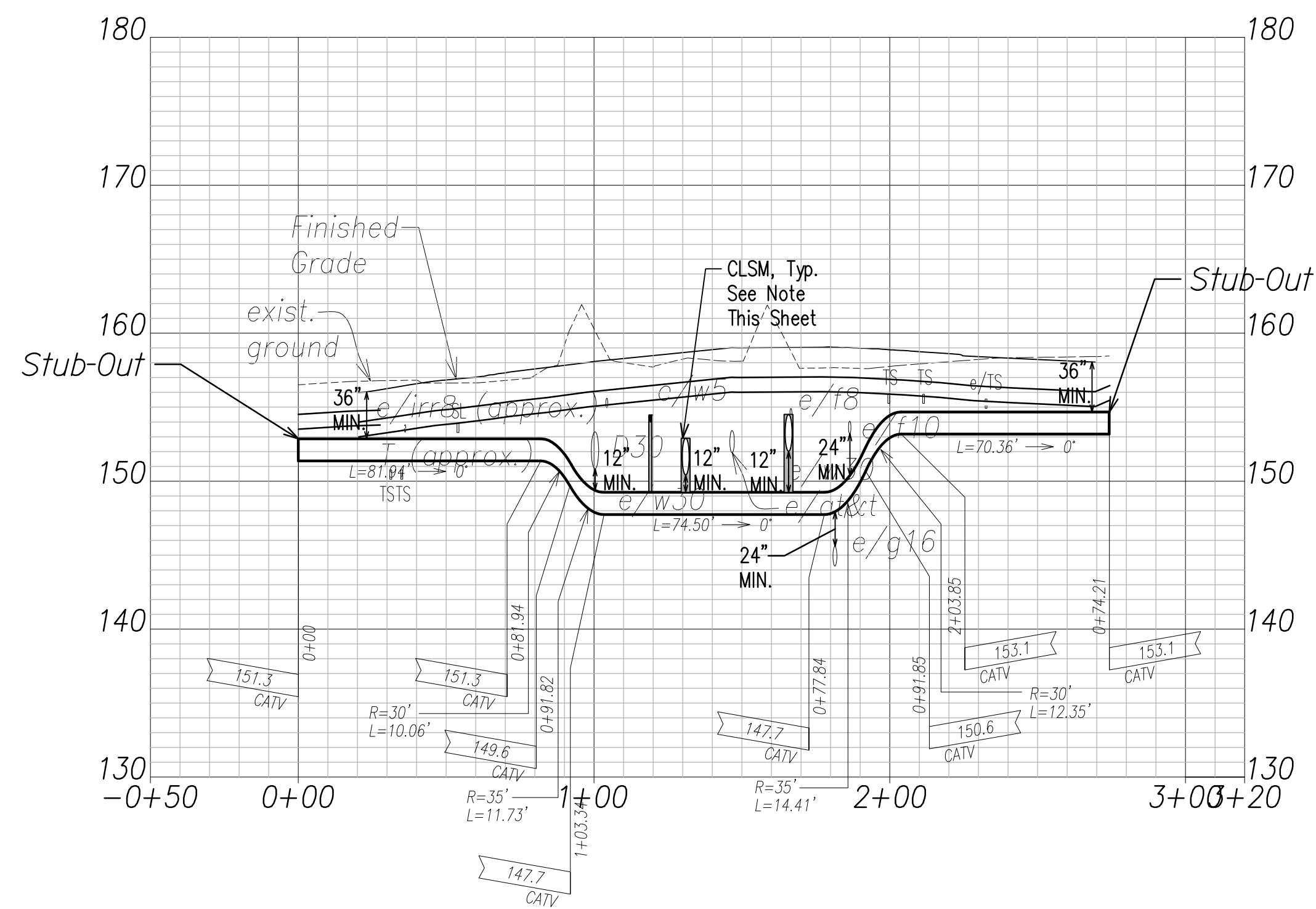
CATV Ductline "G3" - Plan
Scale: 1" = 40'

CURVE DATA						
ID	Δ	Δ / 2	RADIUS	T	C	Lc
①	1°17'38"	0°38'48.9"	8665.42'	97.84'	195.68'	195.68'
②	6°47'38"	3°23'48.9"	662.32'	39.31'	78.49'	78.53'



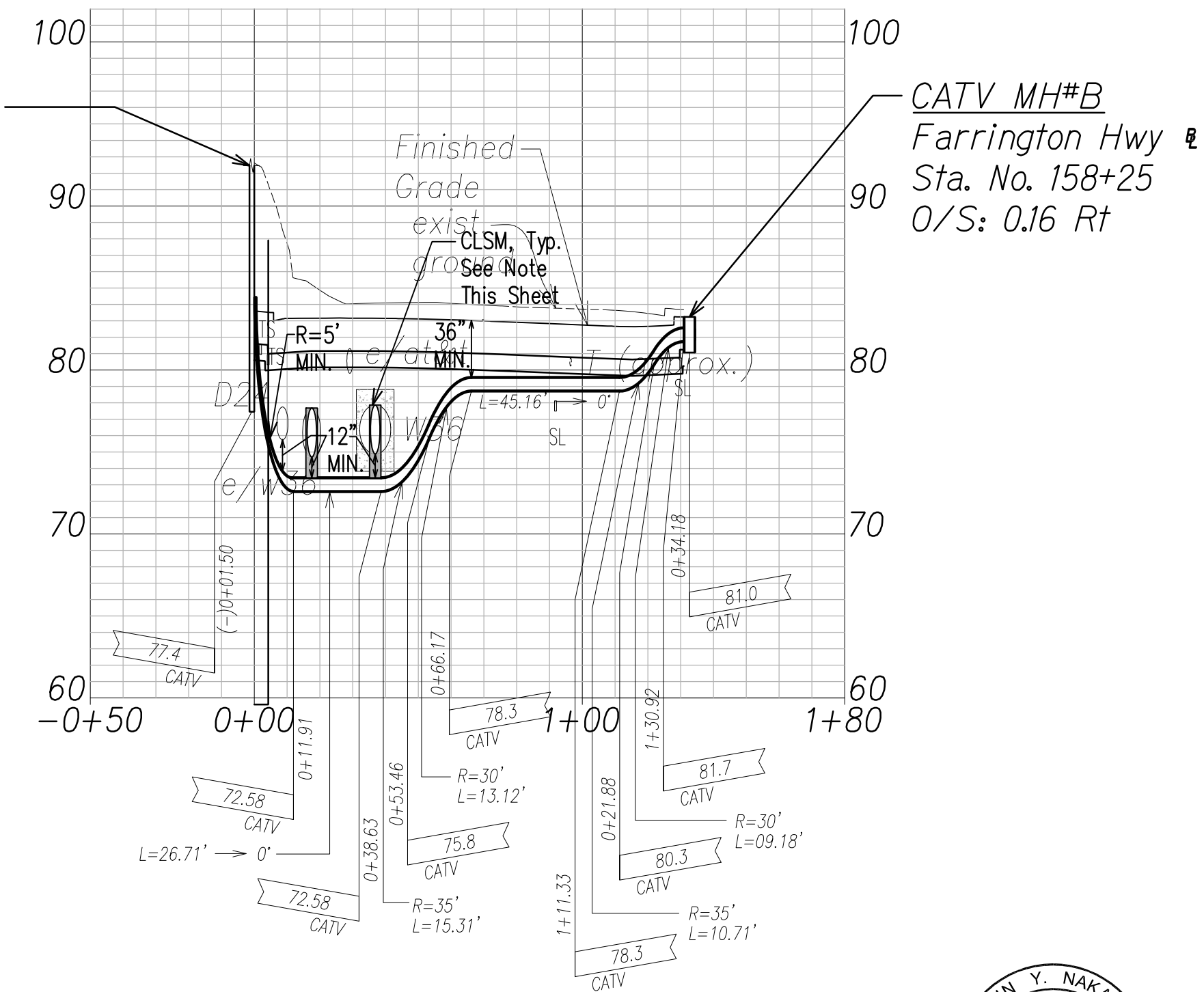
CATV Ductline "H1" - Plan
Scale: 1" = 40'

CURVE DATA						
ID	Δ	Δ / 2	RADIUS	T	C	Lc
①	39°12'5"	19°36'2.6"	109.49'	38.99'	73.46'	74.91'
②	84°11'24"	42°5'41.9"	14.92'	13.48'	20.00'	21.92'

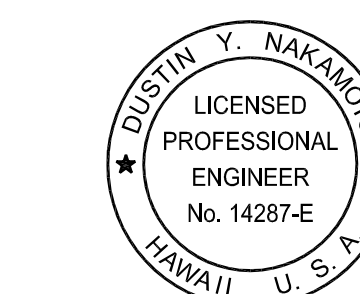
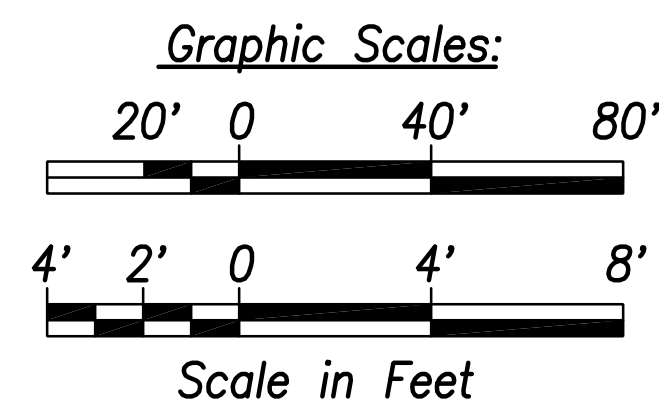


CATV Ductline "G3" - Profile
Scale: Horiz. 1" = 40'
Vert. 1" = 4'

Utility Pole P1/110
By HECO
Farrington Hwy &
Sta. No. 157+02.14
O/S: 38.29 Rt



CATV Ductline "H1" - Profile
Scale: Horiz. 1" = 40'
Vert. 1" = 4'



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SIGNATURE: *[Signature]*
April 30, 2024
EXPIRATION DATE OF THE LICENSE

06/08/22	ADDED DRAWING
DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**CATV DUCTLINE
PLAN & PROFILE "G3" & "H1"**

FARRINGTON HIGHWAY WIDENING
Kapolei Golf Course Road to Fort Weaver Road
Project No. 7101A-01-20

Scale: As Shown Date: April 2022

SHEET No. EL-05 OF 6 SHEETS

DATE	SURVEY PLOTTED BY

DATE	DRAWN BY

DATE	TRACED BY

DATE	QUANTITIES BY

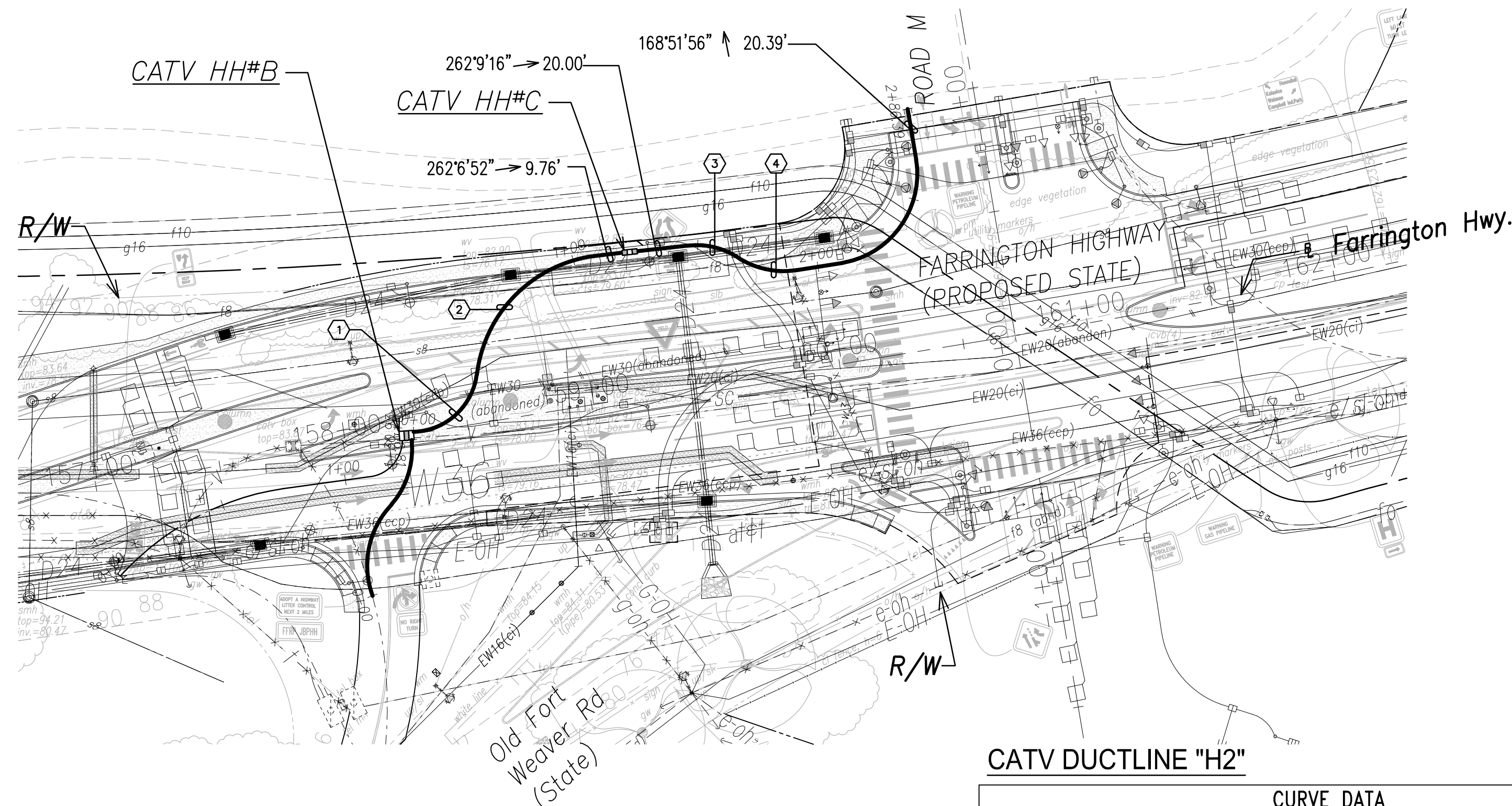
DATE	CHECKED BY

FILE: Z:\ACAD\PROJECTS\220678\EL05_220678-CATV-Ductline-Plan-Profile-G3-H1.dwg saved June 2, 2022

APPROVED BY: SPECTRUM OCEANIC
DATE: _____

ADD. 750

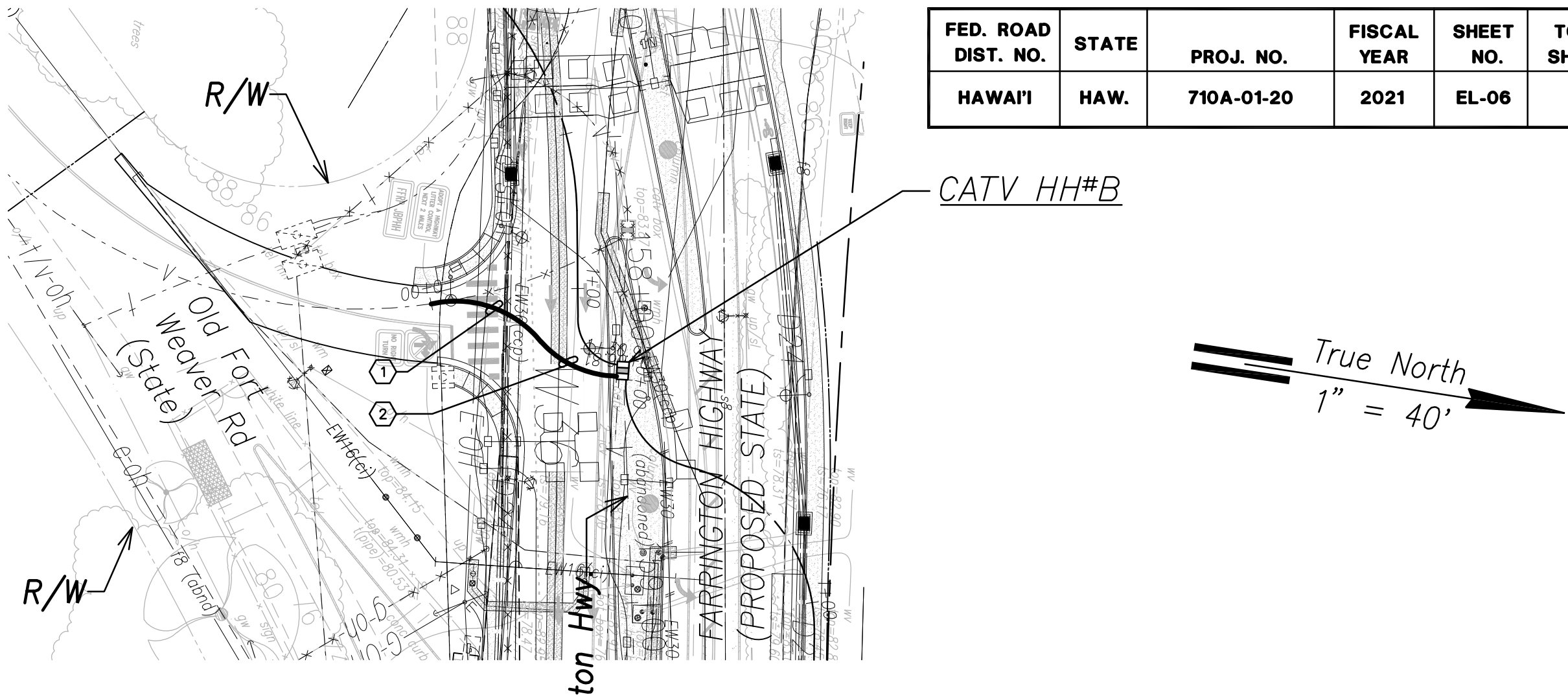
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	710A-01-20	2021	EL-06	790



CATV DUCTLINE "H2"

ID	Δ	Δ / 2	RADIUS	T	C	Lc
①	80°14'45"	40°7'22.4"	26.27'	22.14'	33.85'	36.79'
②	77°23'32"	38°41'46.0"	54.18'	43.40'	67.75'	73.19'
③	43°3'45"	21°31'52.4"	30.33'	11.97'	22.27'	22.80'
④	38°55'43"	19°27'51.6"	33.85'	11.96'	22.56'	23.00'
⑤	89°25'18"	44°42'39.2"	35.85'	35.49'	50.44'	55.95'

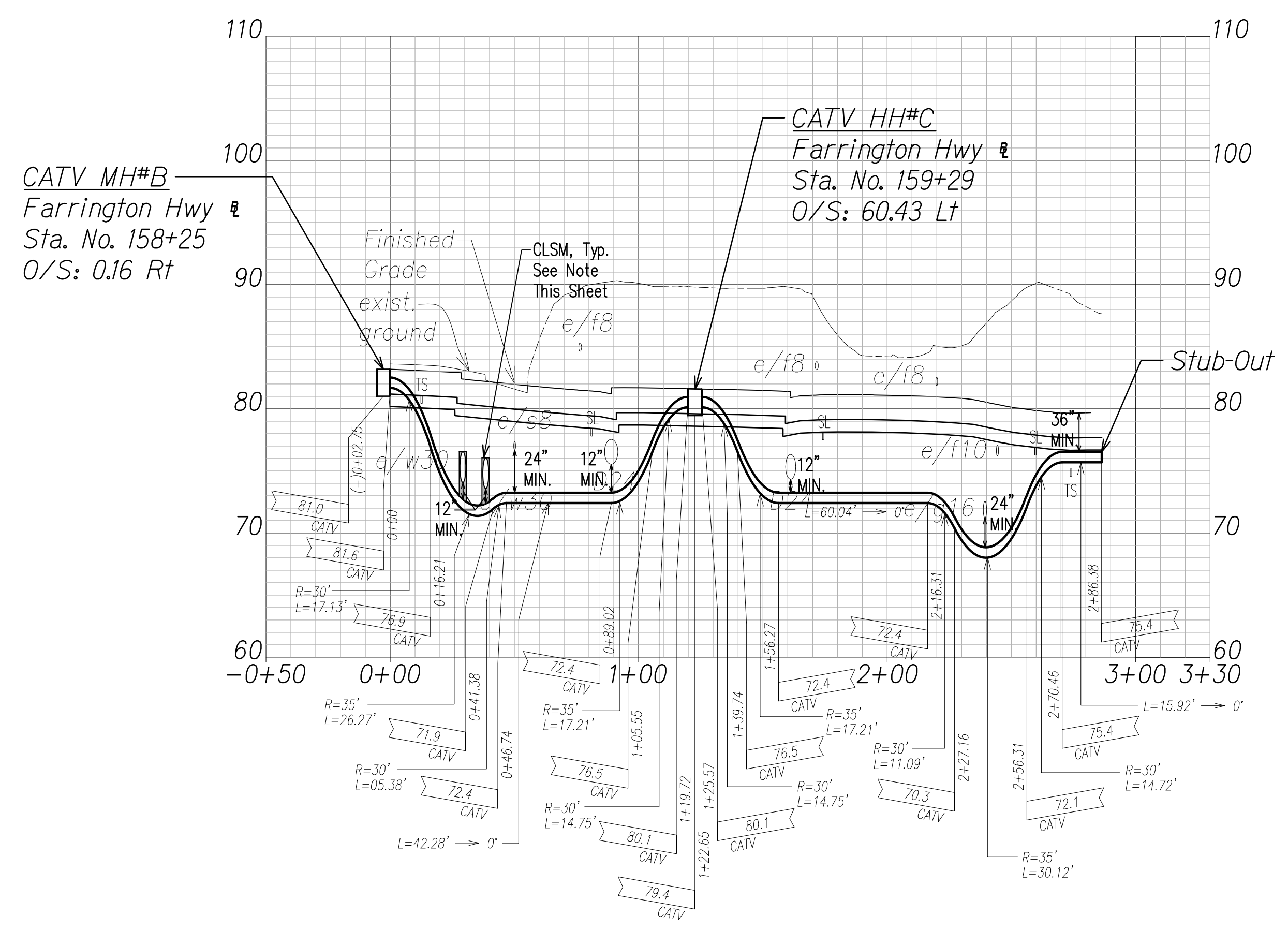
CATV Ductline "H2" - Plan
Scale: 1" = 40'



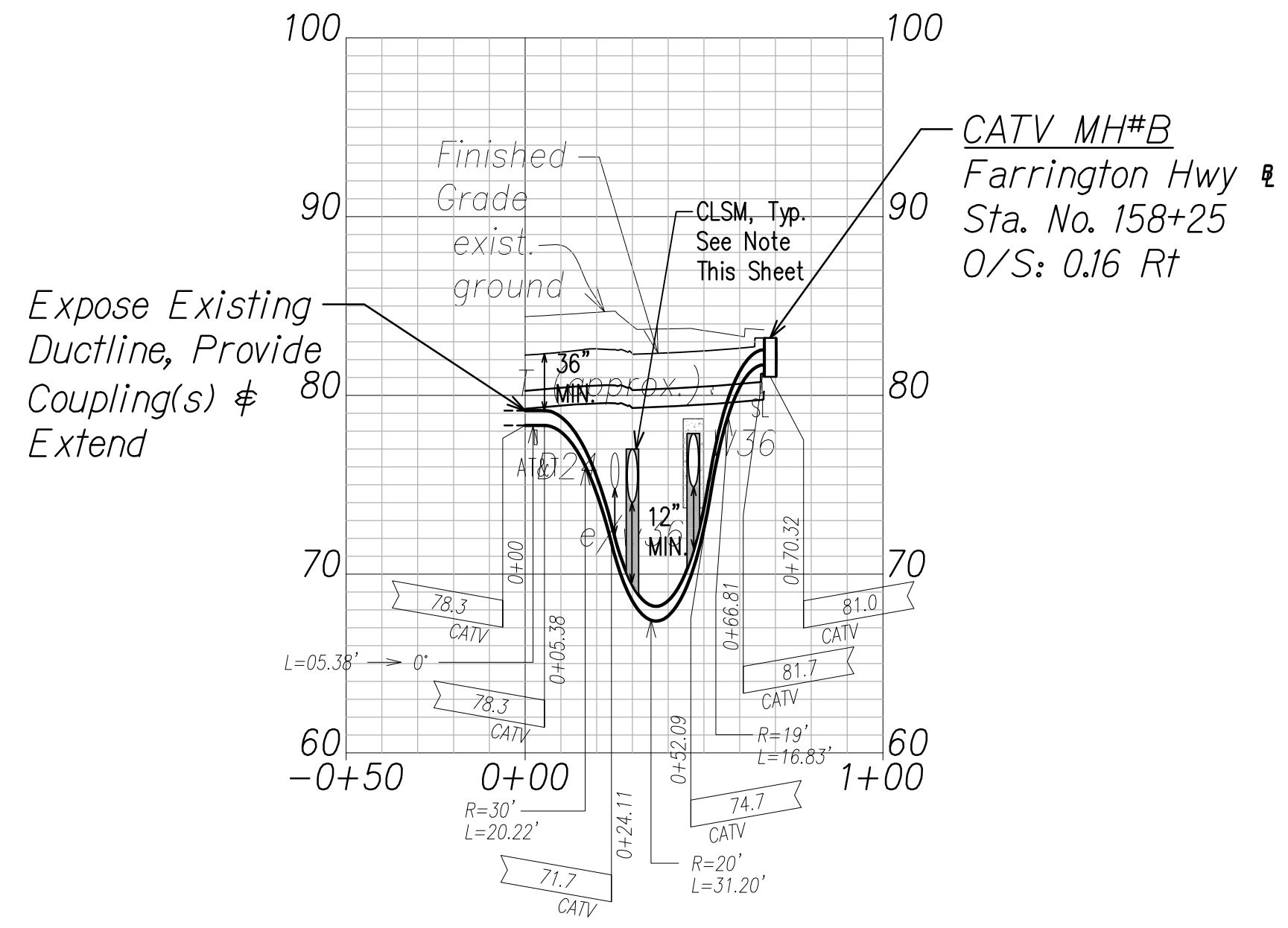
CATV DUCTLINE "H3"

ID	Δ	Δ / 2	RADIUS	T	C	Lc
①	64°14'32"	32°7'16.2"	35.06'	22.01'	37.29'	39.31'
②	45°20'15"	22°40'7.4"	33.57'	14.02'	25.87'	26.56'

CATV Ductline "H3" - Plan
Scale: 1" = 40'



CATV Ductline "H2" - Profile
Scale: Horiz. 1" = 40'
Vert. 1" = 4'

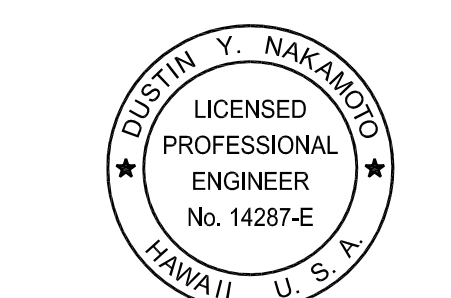
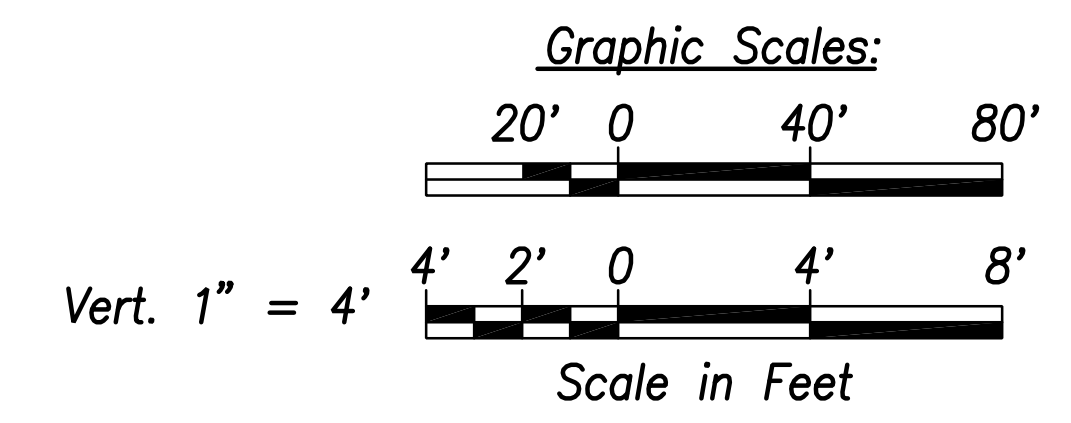


CATV Ductline "H3" - Profile
Scale: Horiz. 1" = 40'
Vert. 1" = 4'

DATE	DATE
SURVEY PLOTTED BY	DRIVEN BY
TRACED BY	NOTED BY
QUANTIFIED BY	CHECKED BY
No.	No.

FILE: Z:\ACAD\PROJECTS\220679\EL-06-22\0679-EL-06-H3.dwg saved June 2, 2022

APPROVED BY
SPECTRUM OCEANIC
DATE

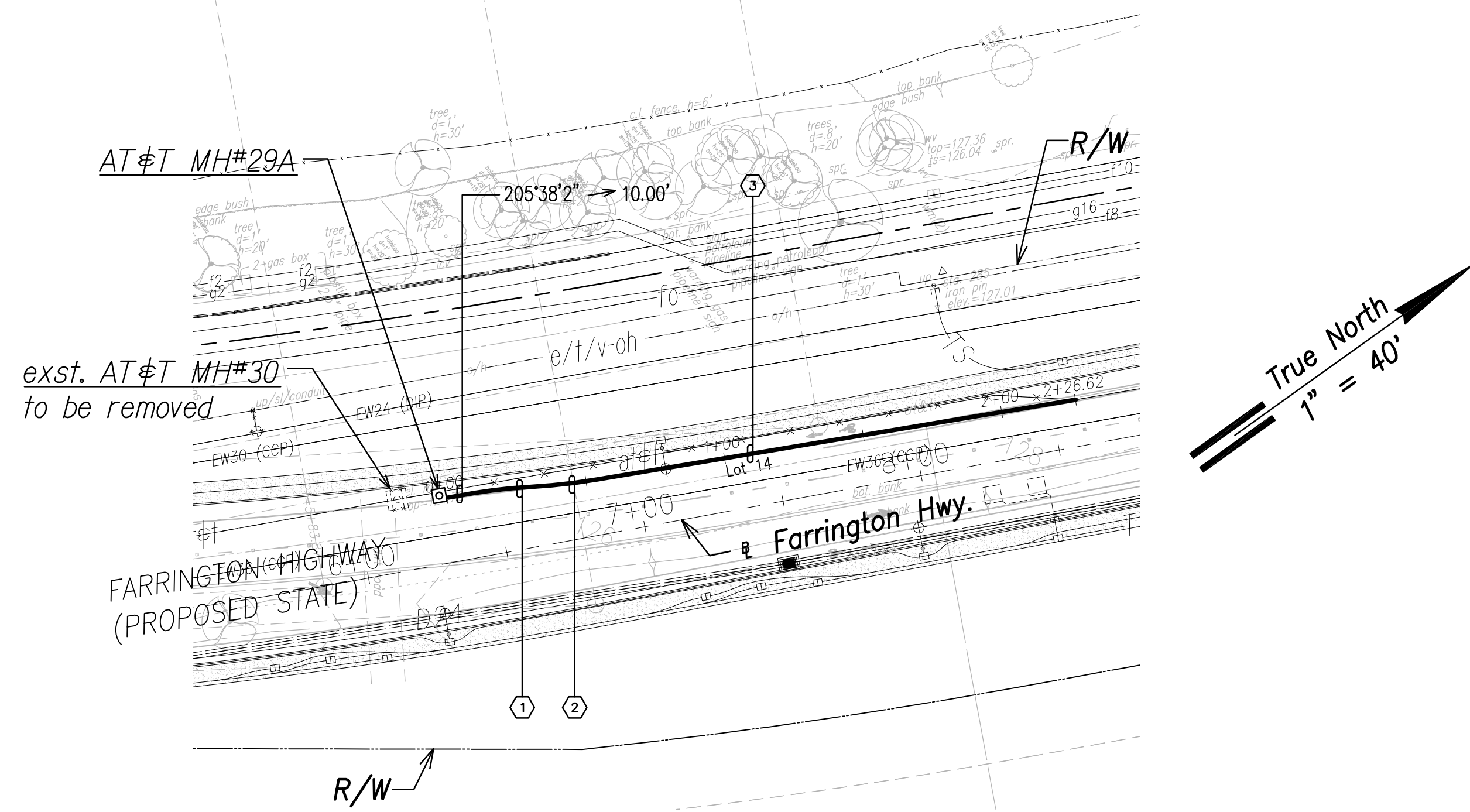


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SIGNATURE
April 30, 2024
EXPIRATION DATE OF THE LICENSE

06/08/22	ADDED DRAWING
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
CATV DUCTLINE PLAN & PROFILE "H2" & "H3"	
FARRINGTON HIGHWAY WIDENING Kapolei Golf Course Road to Fort Weaver Road Project No. 7101A-01-20	
Scale: As Shown	Date: April 2022
SHEET No. EL-06 OF 6 SHEETS	

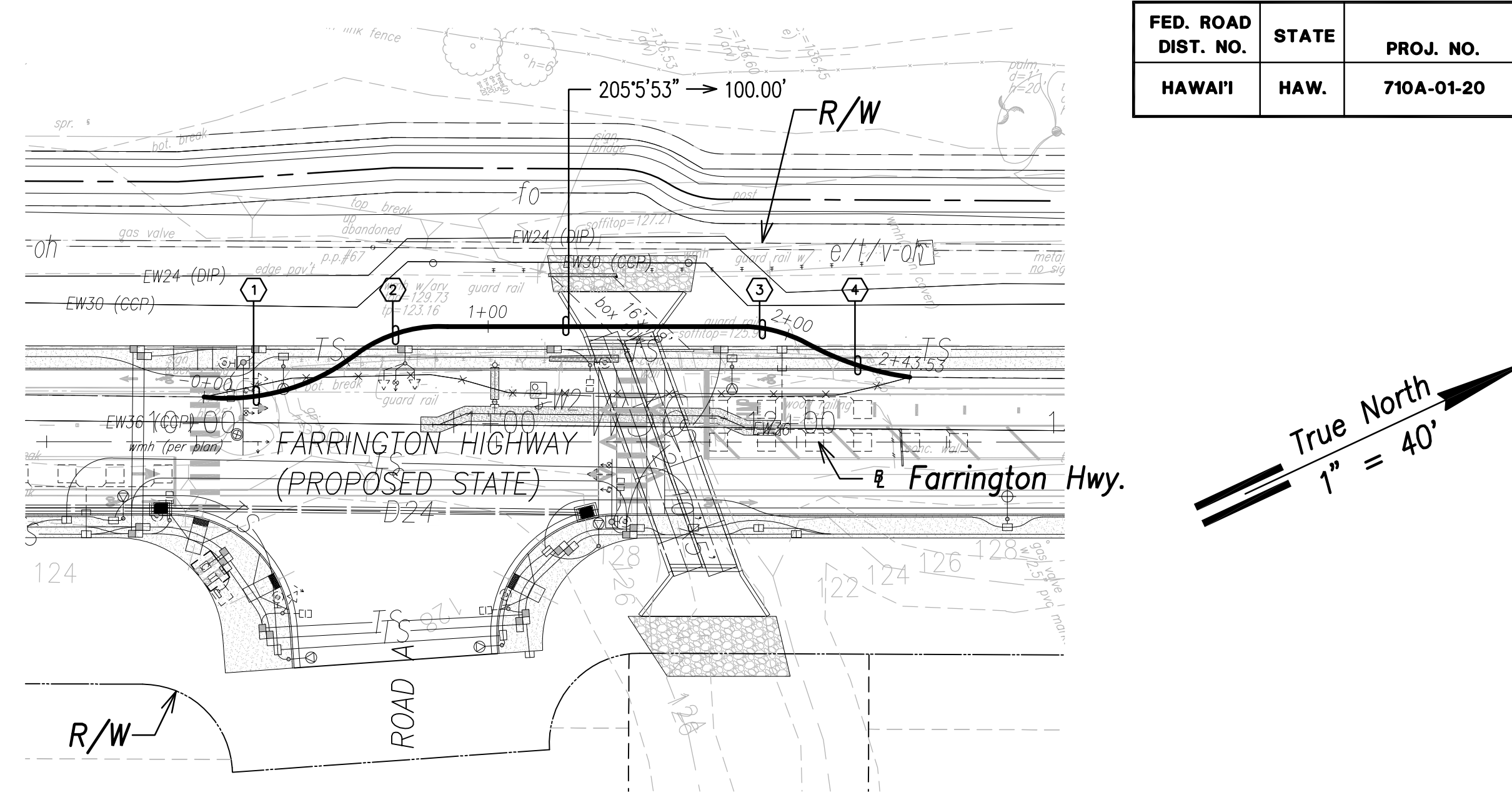
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	710A-01-20	2021	EM-01	790



AT&T Ductline "A1" - Plan
Scale: 1" = 40'

AT&T DUCTLINE "A1"

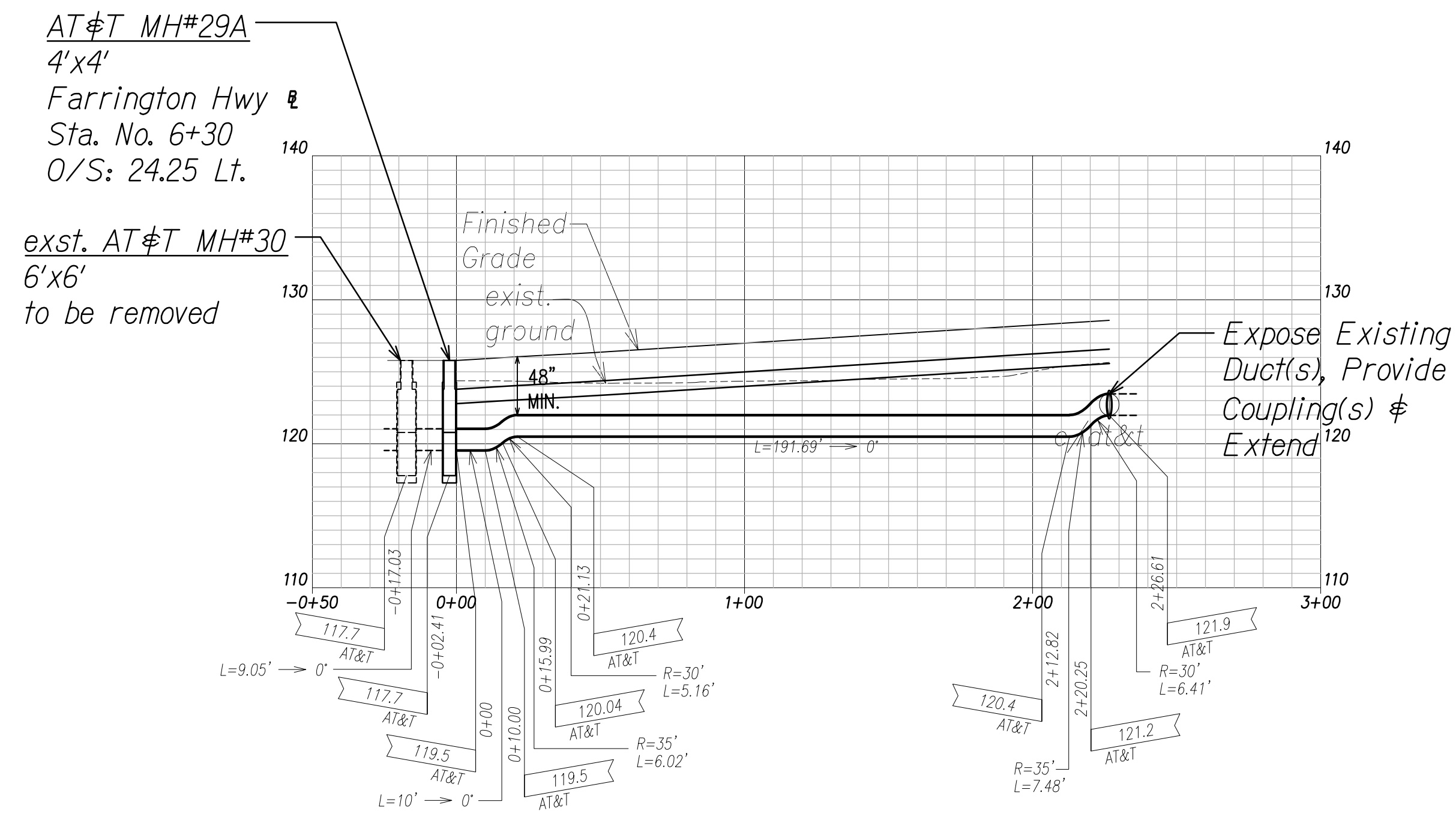
CURVE DATA						
ID	Δ	Δ / 2	RADIUS	T	C	Lc
①	5°45'17"	2°52'38.5"	196.97'	9.90'	19.78'	19.78'
②	6°34'18"	3°17'9.2"	210.66'	12.09'	24.15'	24.16'
③	0°0'4"	0°0'2.0"	9056764.18'	86.39'	172.79'	172.79'



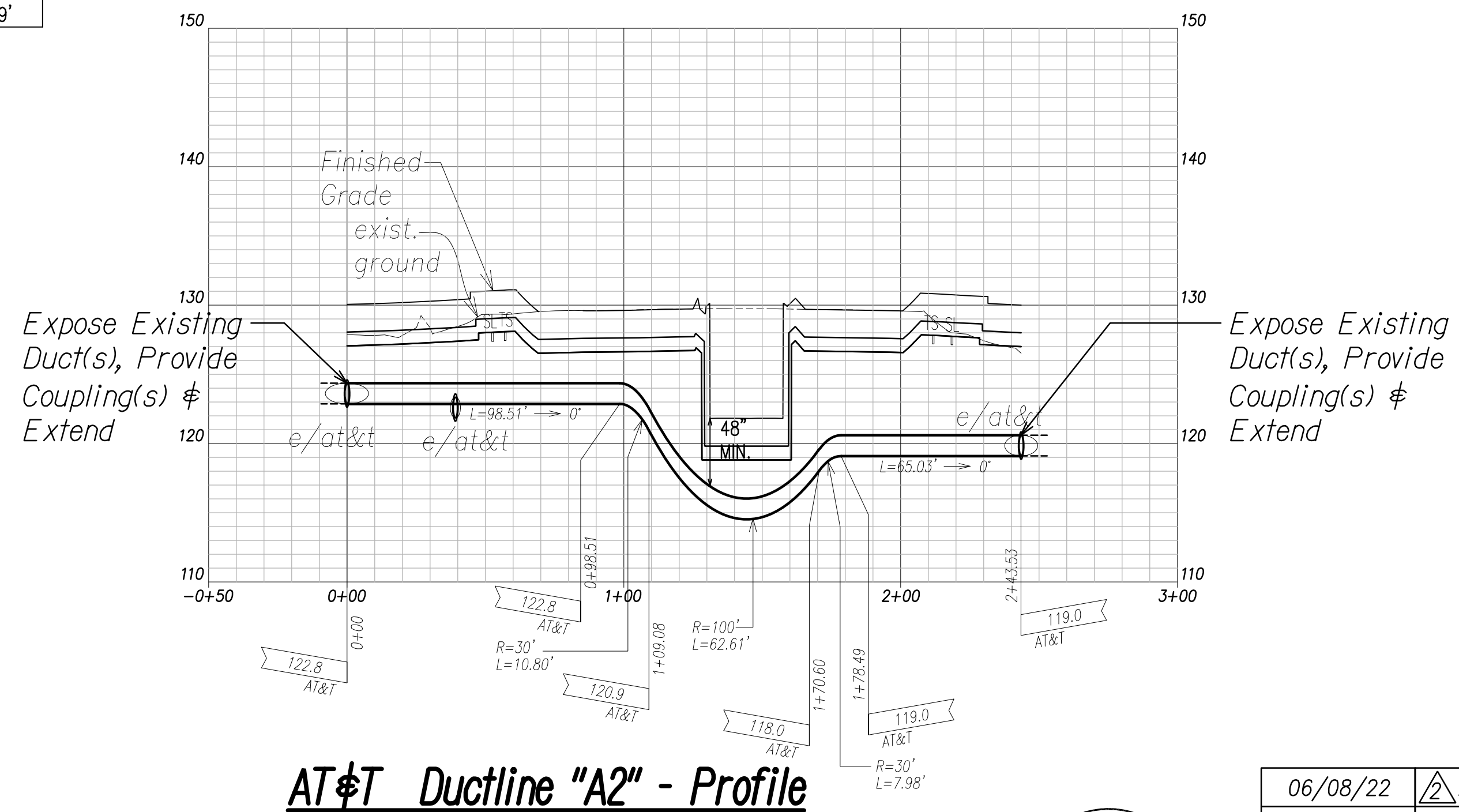
AT&T Ductline "A2" - Plan
Scale: 1" = 40'

AT&T DUCTLINE "A2"

CURVE DATA						
ID	Δ	Δ / 2	RADIUS	T	C	Lc
①	43°3'54"	21°31'56.9"	70.49'	27.81'	51.74'	52.98'
②	40°13'44"	20°6'51.9"	47.70'	17.47'	32.80'	33.49'
③	26°8'16"	13°4'8.1"	48.08'	11.16'	21.74'	21.93'
④	20°21'5"	10°10'32.7"	98.91'	17.75'	34.95'	35.13'

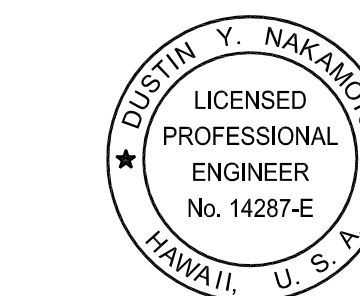
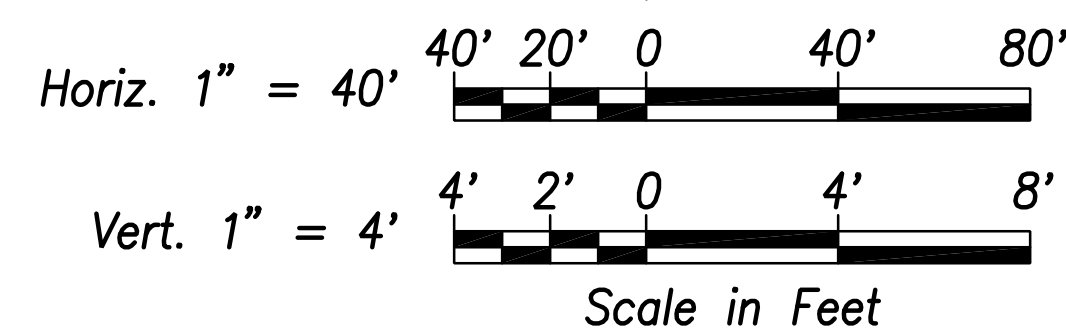


AT&T Ductline "A1" - Profile
Scale: Horiz. 1" = 40'
Vert. 1" = 4'



AT&T Ductline "A2" - Profile
Scale: Horiz. 1" = 40'
Vert. 1" = 4'

Graphic Scales:



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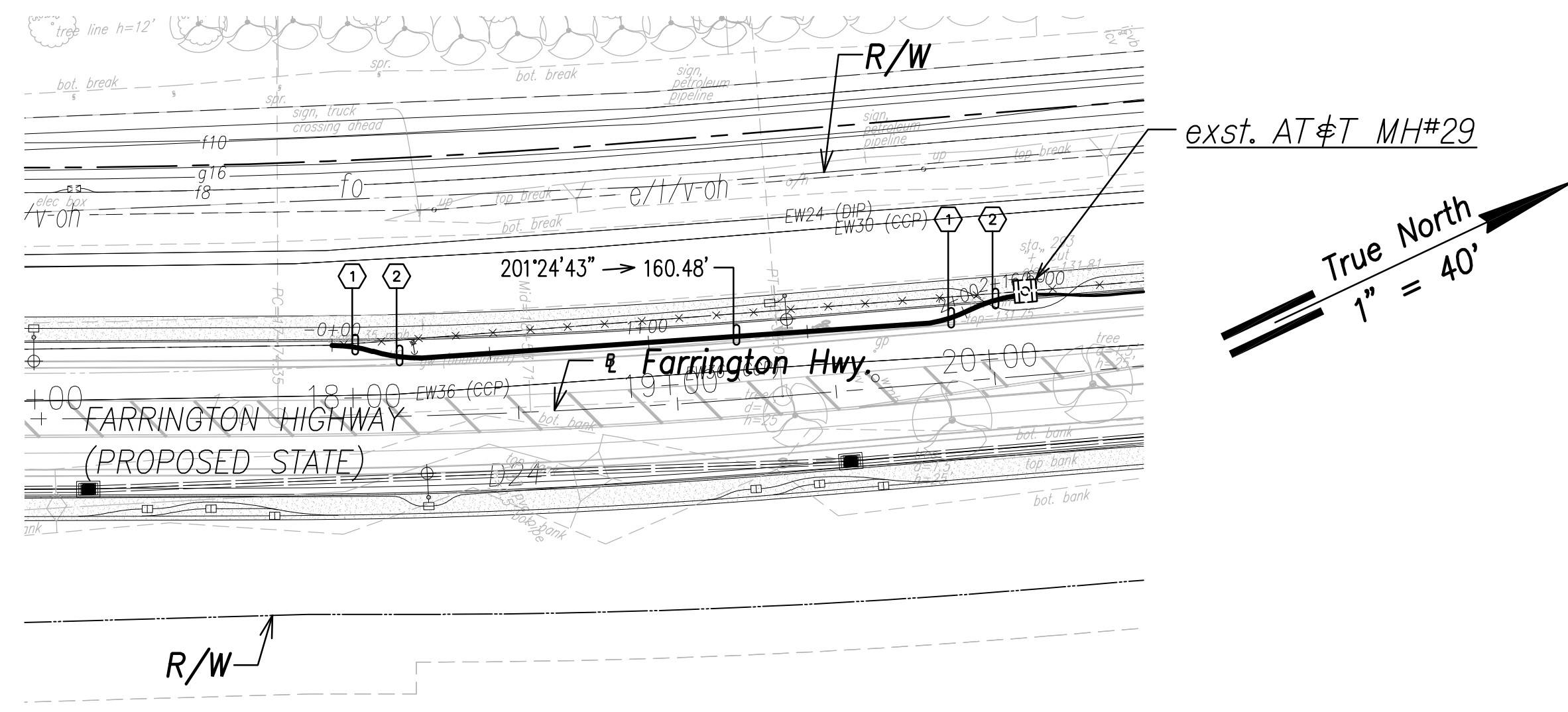
SIGNATURE: [Signature]
April 30, 2024
EXPIRATION DATE OF THE LICENSE

06/08/22	ADDED DRAWING
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
AT&T DUCTLINE PLAN & PROFILE "A1" & "A2"	
FARRINGTON HIGHWAY WIDENING Kapolei Golf Course Road to Fort Weaver Road Project No. 7101A-01-20	
Scale: As Shown	Date: April 2022
SHEET No. EM-01 OF 10 SHEETS	

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

FILE: Z:\ACAD\PROJECTS\220679A\EM01-220679A-ATT-Ductline-Plan-Profile-A1-A2.dwg saved June 2, 2022

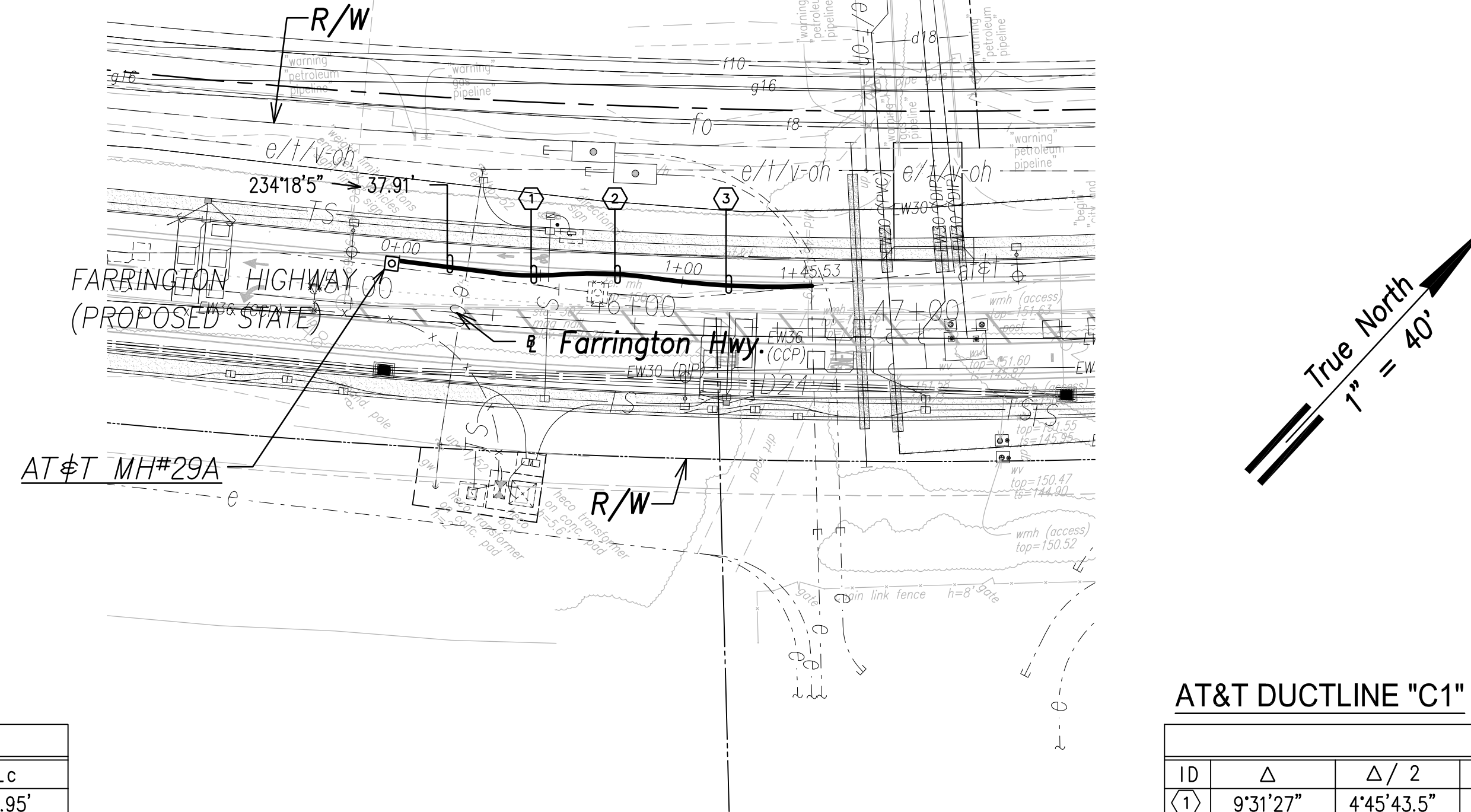
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	710A-01-20	2021	EM-02	790



AT&T Ductline "A3" - Plan
Scale: 1" = 40'

AT&T DUCTLINE "A3"

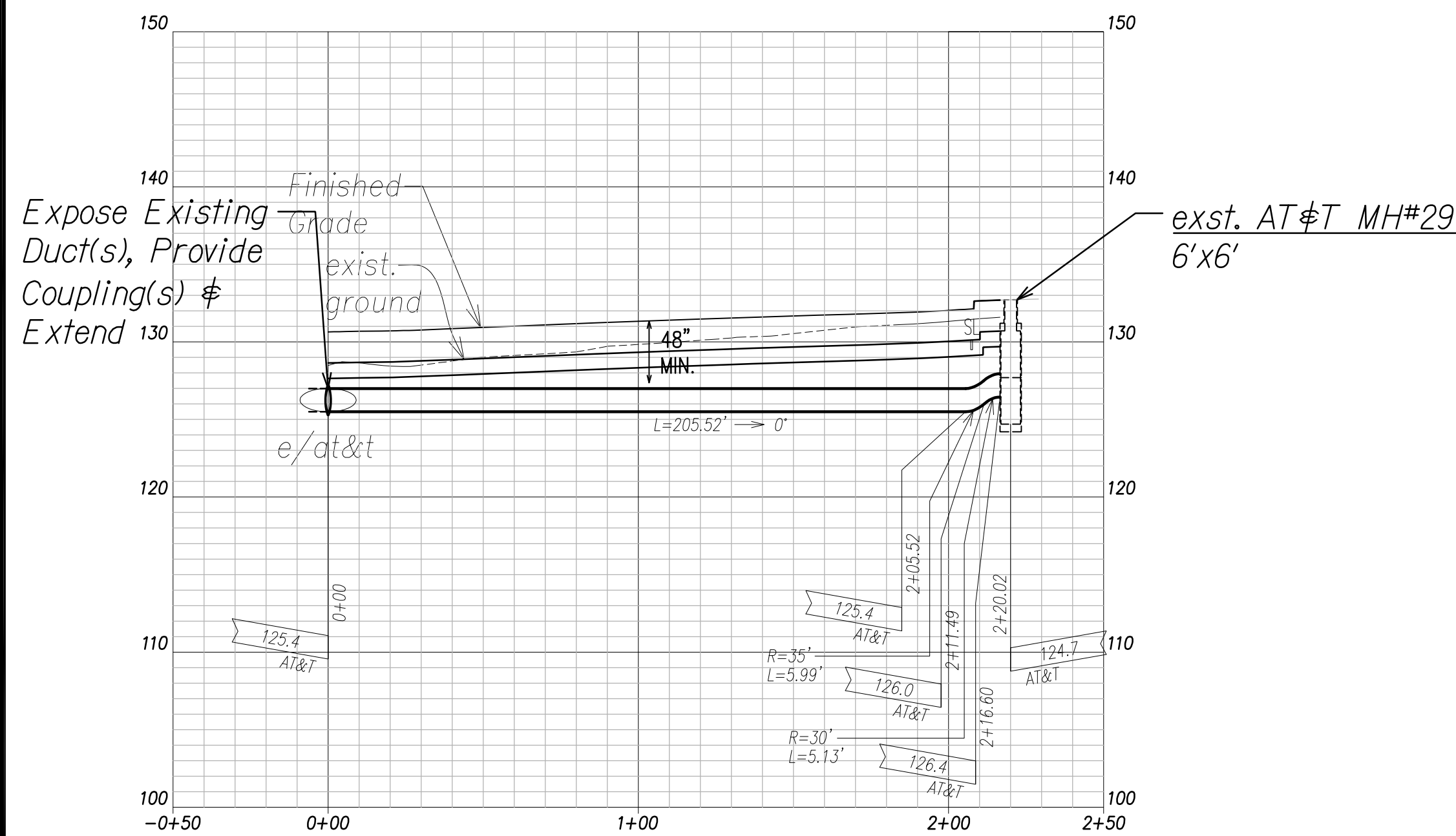
CURVE DATA						
ID	Δ	Δ / 2	RADIUS	T	C	Lc
(1)	16°24'42"	8°12'21.0"	45.21'	6.52'	12.90'	12.95'
(2)	17°22'9"	8°41'4.7"	49.85'	7.61'	15.05'	15.11'



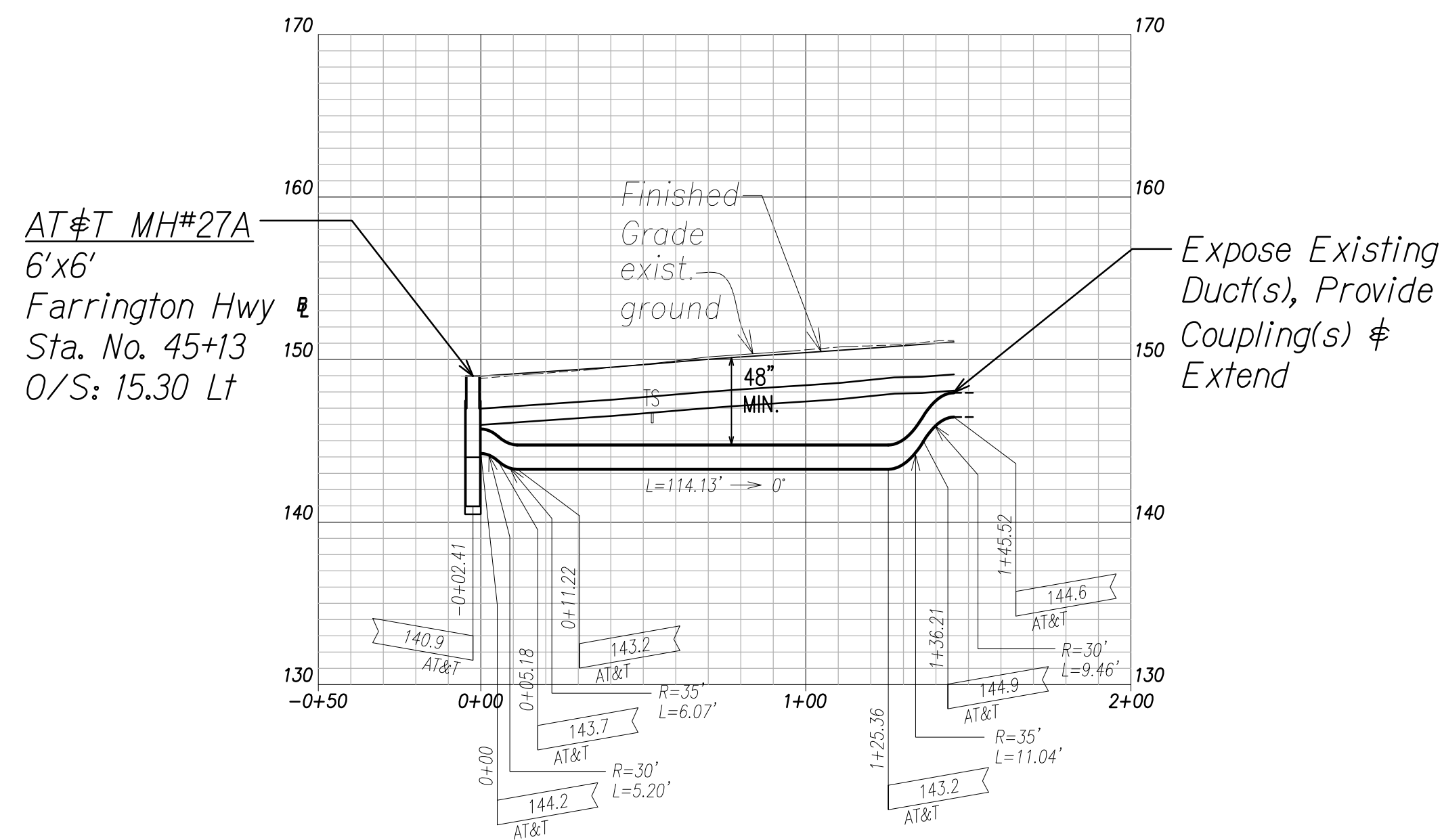
AT&T Ductline "C1" - Plan
Scale: 1" = 40'

AT&T DUCTLINE "C1"

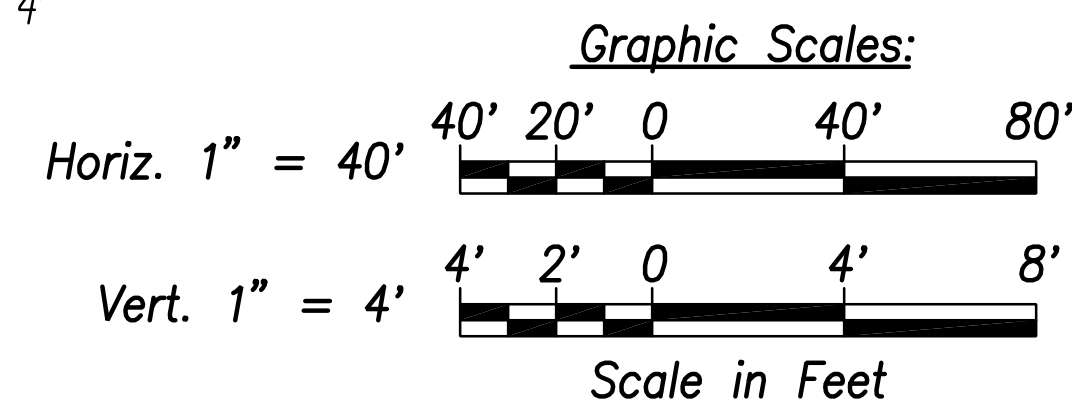
CURVE DATA						
ID	Δ	Δ / 2	RADIUS	T	C	Lc
(1)	9°31'27"	4°45'43.5"	130.81'	10.90'	21.72'	21.74'
(2)	13°10'50"	6°35'24.9"	141.78'	16.38'	32.54'	32.62'
(3)	10°40'51"	5°20'25.7"	285.70'	26.71'	53.18'	53.26'



AT&T Ductline "A3" - Profile
Scale: Horiz. 1" = 40'
Vert. 1" = 4'

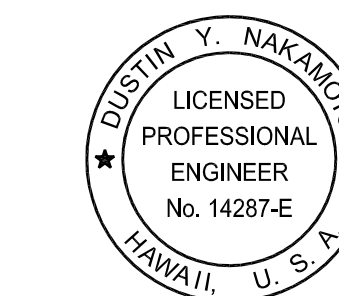


AT&T Ductline "C1" - Profile
Scale: Horiz. 1" = 40'
Vert. 1" = 4'



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

FILE: Z:\ACAD\PROJECTS\220067A\EM02-220067A-ATT-Ductline-Plan-Profile-A3-C1.dwg saved June 2, 2022



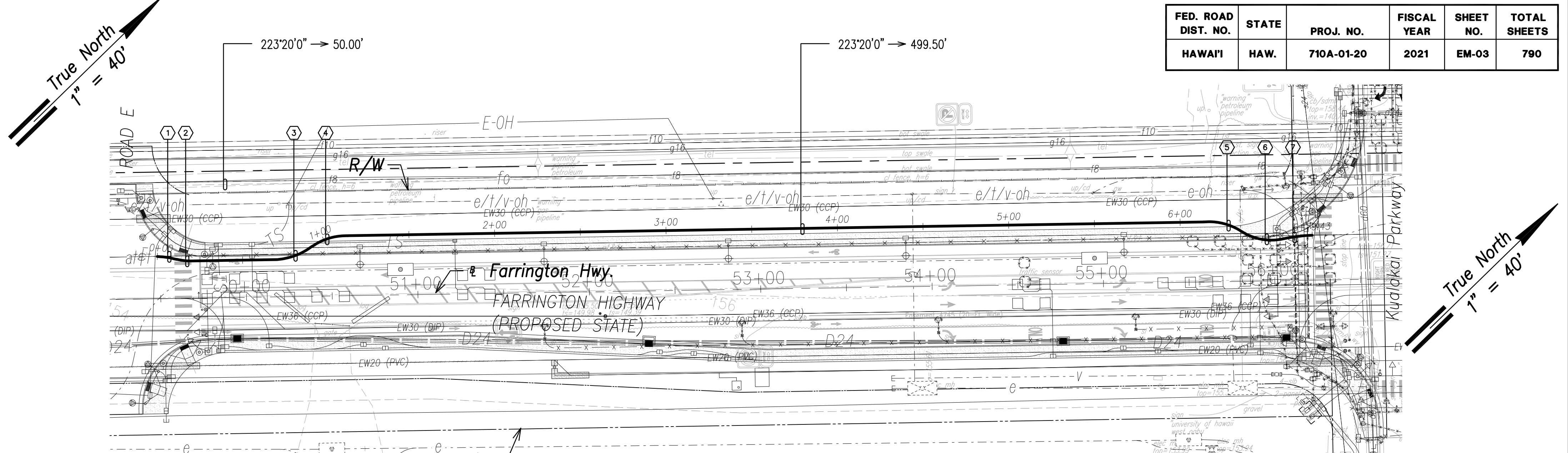
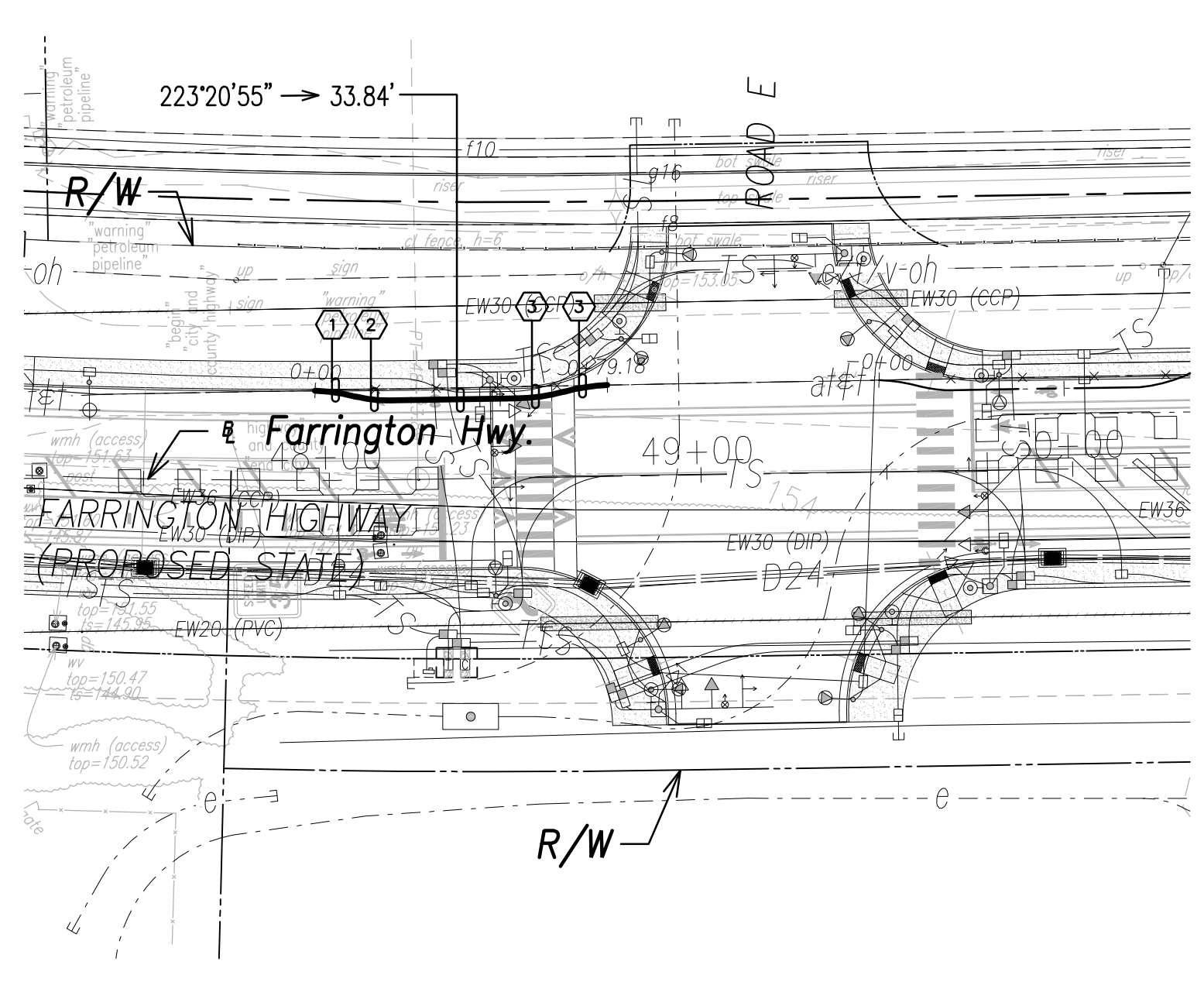
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.

SIGNATURE: DATE: April 30, 2022
EXPIRATION DATE OF THE LICENSE:

06/08/22	ADDED DRAWING
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
AT&T DUCTLINE PLAN & PROFILE "A3" & "C1"	
FARRINGTON HIGHWAY WIDENING Kapolei Golf Course Road to Fort Weaver Road Project No. 7101A-01-20	
Scale: As Shown	Date: April 2022
SHEET No. EM-02 OF 10 SHEETS	

ADD. 753

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	710A-01-20	2021	EM-03	790



AT&T DUCTLINE "C2"

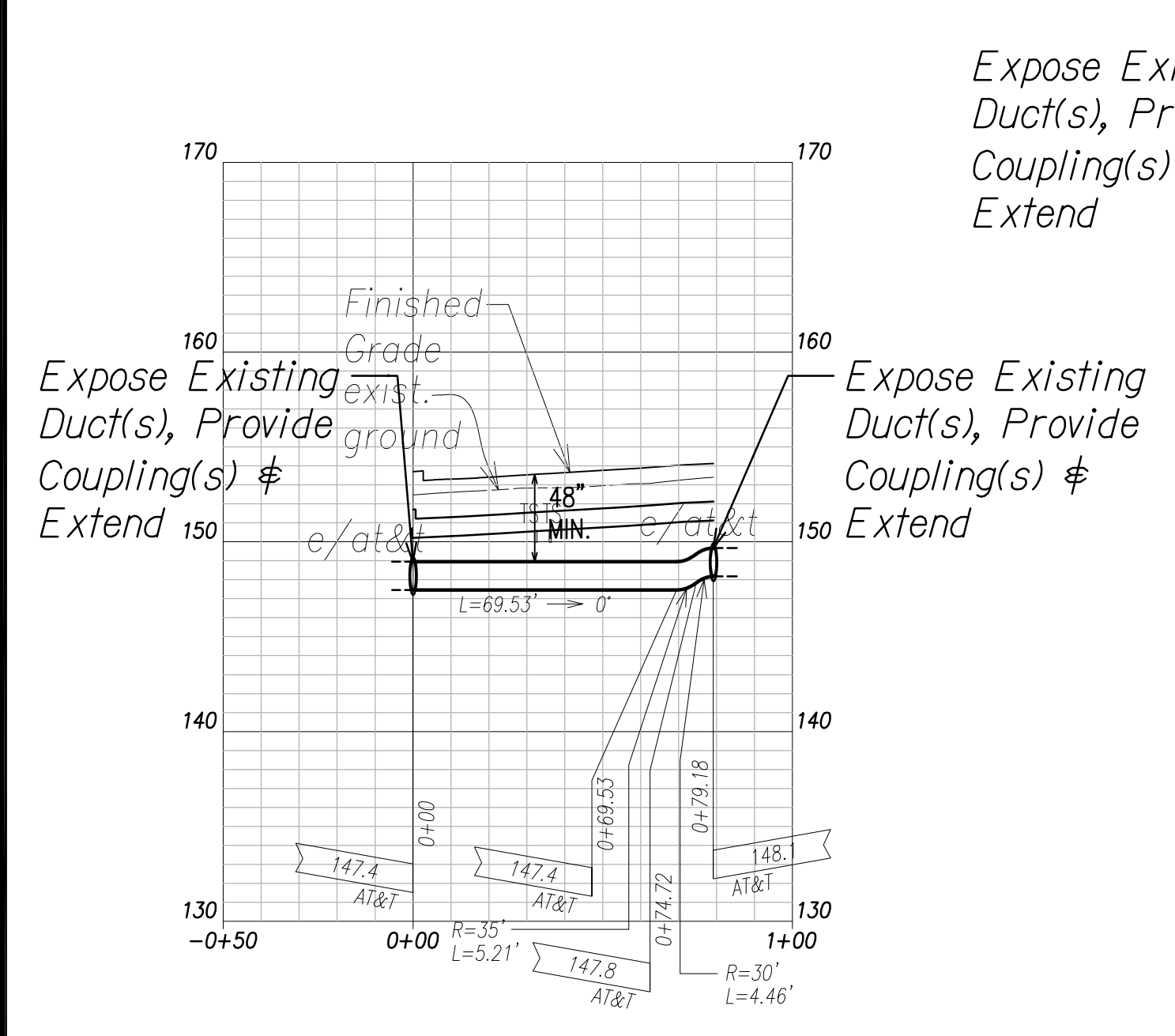
CURVE DATA						
ID	Δ	Δ / 2	RADIUS	T	C	Lc
①	13°0'22"	6°30'11.1"	49.70'	5.66'	11.26'	11.28'
②	16°22'10"	8°11'4.9"	31.37'	4.51'	8.93'	8.96'
③	14°45'37"	7°22'48.4"	52.37'	6.78'	13.45'	13.49'
④	13°22'12"	6°41'6.1"	49.74'	5.83'	11.58'	11.61'

AT&T Ductline "C3" - Plan
Scale: 1" = 40'

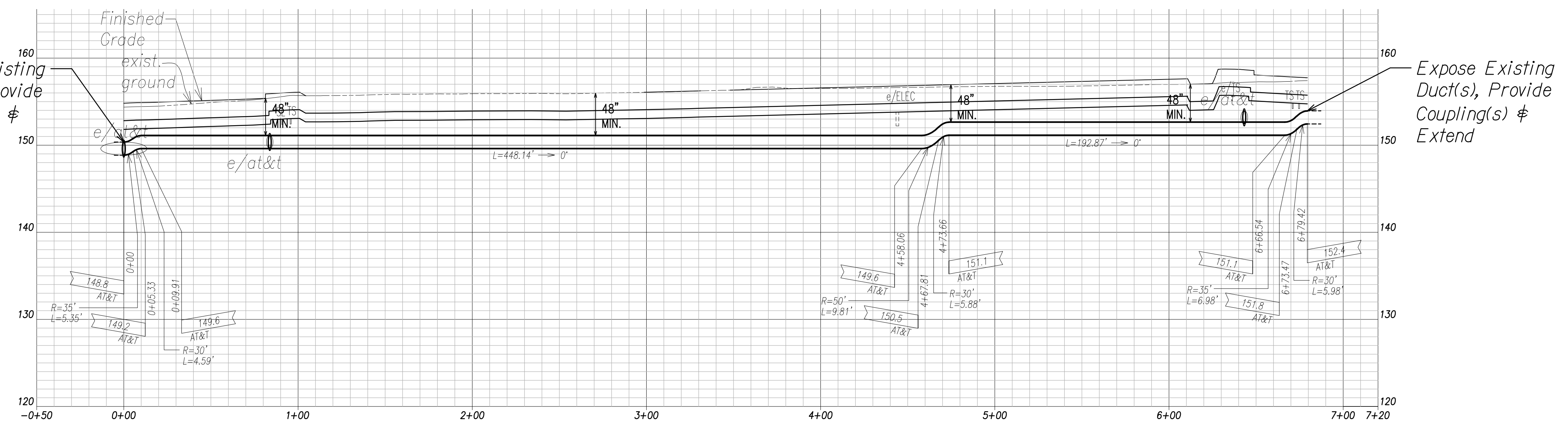
AT&T DUCTLINE "C3"

CURVE DATA						
ID	Δ	Δ / 2	RADIUS	T	C	Lc
①	13°0'22"	6°30'11.1"	49.70'	5.66'	11.26'	11.28'
②	16°22'10"	8°11'4.9"	31.37'	4.51'	8.93'	8.96'
③	32°6'0"	16°3'0.1"	39.20'	11.28'	21.68'	21.96'
④	36°1'53"	18°0'56.6"	35.24'	11.46'	21.80'	22.16'
⑤	38°50'4"	19°25'2.0"	34.81'	12.27'	23.14'	23.59'
⑥	41°24'20"	20°42'10.1"	31.83'	12.03'	22.51'	23.00'
⑦	11°7'21"	5°33'40.5"	97.71'	9.51'	18.94'	18.97'

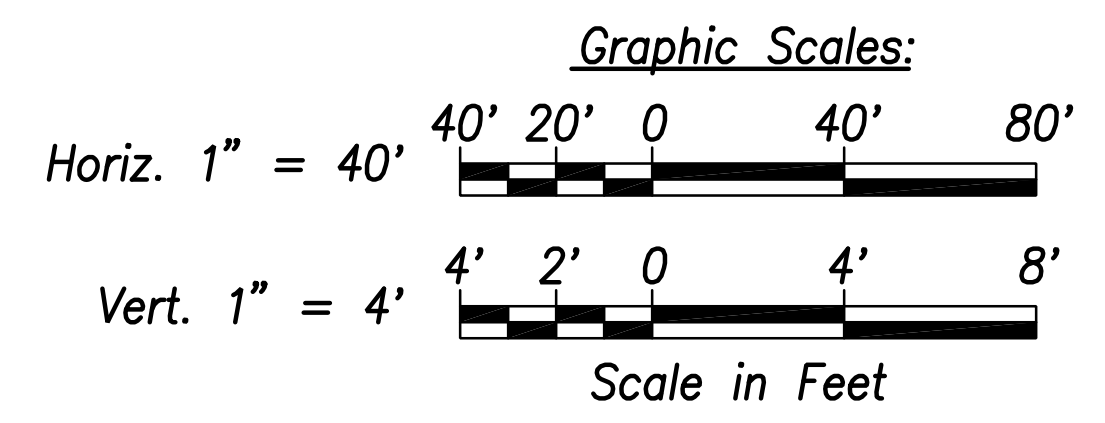
AT&T Ductline "C2" - Plan
Scale: 1" = 40'



AT&T Ductline "C2" - Profile
Scale: Horiz. 1" = 40'
Vert. 1" = 4'

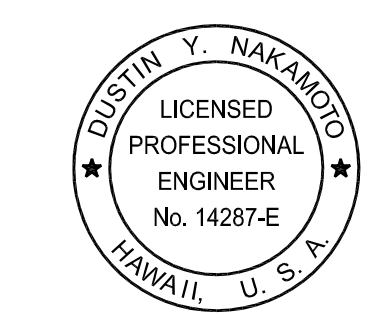


AT&T Ductline "C3" - Profile
Scale: Horiz. 1" = 40'
Vert. 1" = 4'



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ORIGINAL PLAN	
NOTE BOOK	
No.	

FILE: Z:\ACAD\PROJECTS\220067A\EM03-220067A-ATT-Ductline-Plan-Profile-C2-C3.dwg saved June 6, 2022



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SIGNATURE:

April 30, 2024
EXPIRATION DATE OF THE LICENSE

06/08/22 ADDED DRAWING

DATE REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**AT&T DUCTLINE
PLAN & PROFILE "C2" & "C3"**

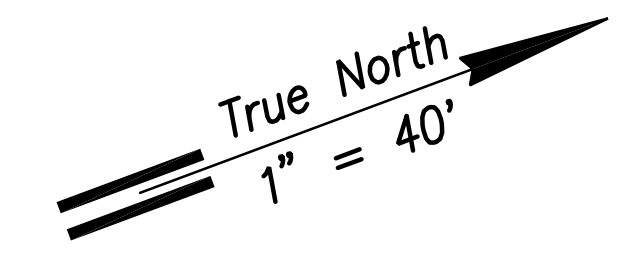
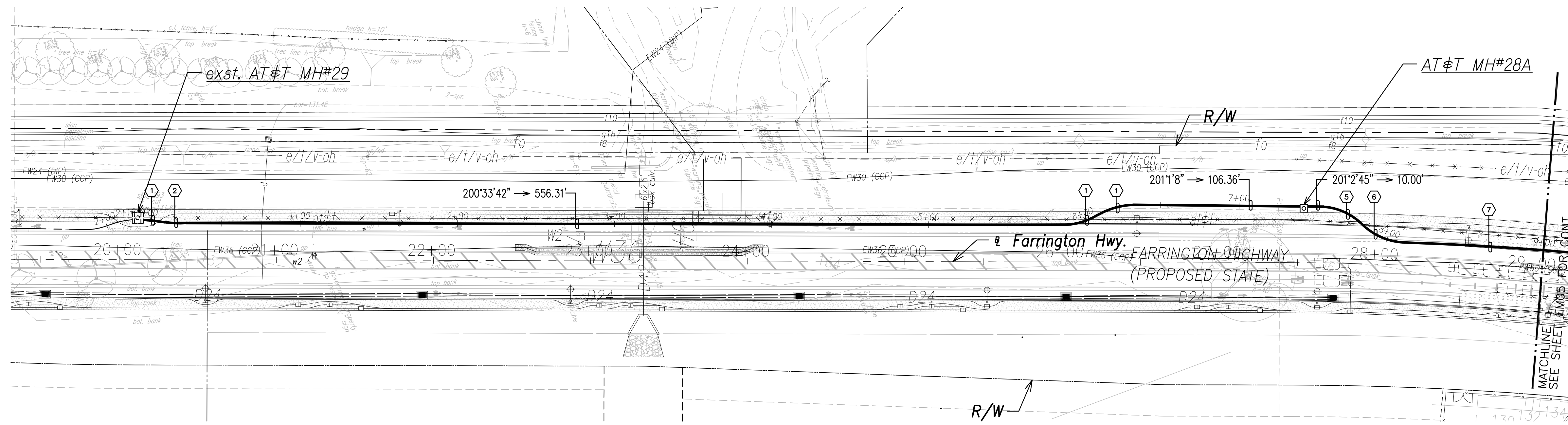
FARRINGTON HIGHWAY WIDENING
Kapolei Golf Course Road to Fort Weaver Road
Project No. 7101A-01-20

Scale: As Shown Date: April 2022

SHEET No. EM-03 OF 10 SHEETS

ADD. 754

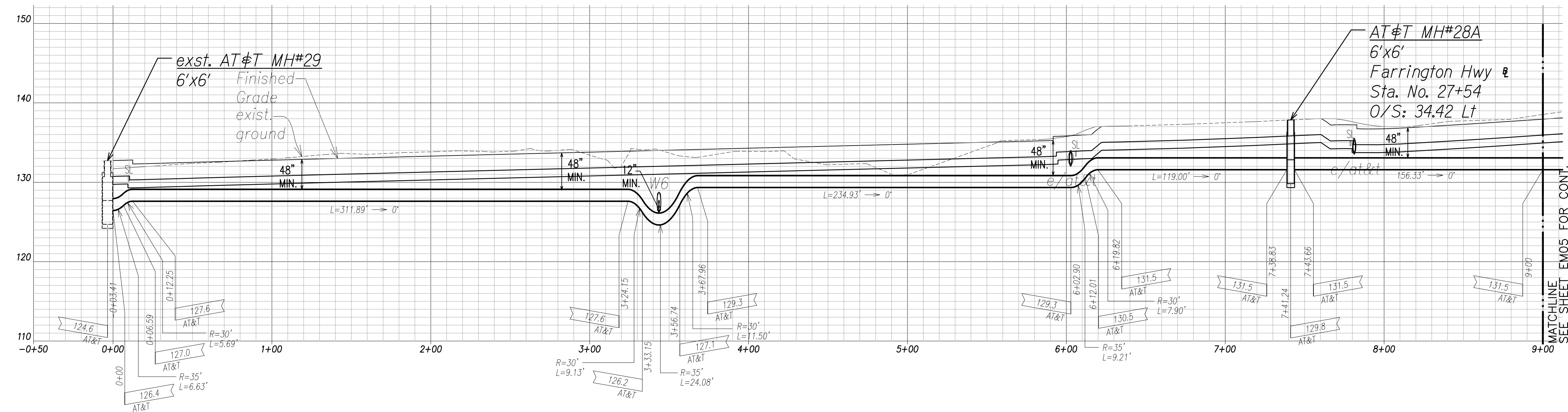
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	710A-01-20	2021	EM-04	790



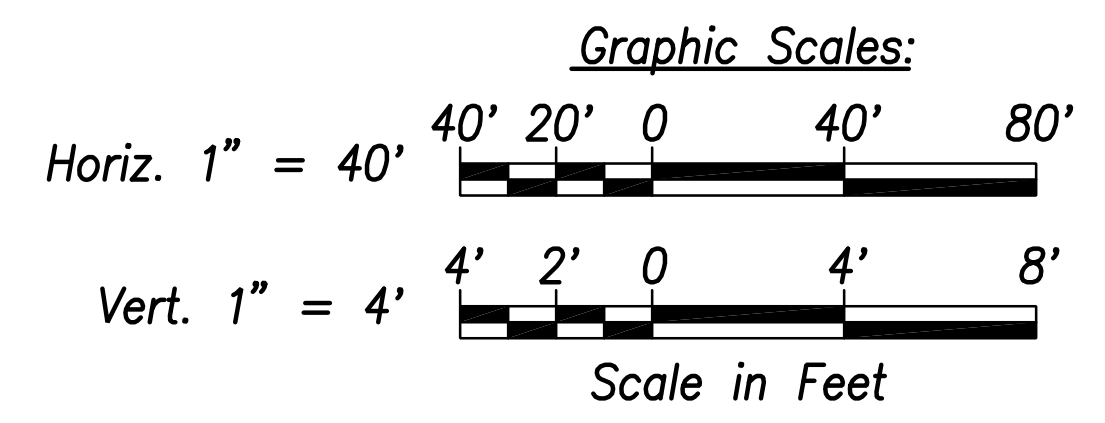
AT&T Ductline "B1" - Plan
Scale: 1" = 40'

AT&T DUCTLINE "B1"

CURVE DATA						
ID	Δ	Δ / 2	RADIUS	T	C	Lc
①	4°30'45"	2°15'22.7"	173.63'	6.84'	13.67'	13.68'
②	11°14'51"	5°37'25.6"	69.21'	6.82'	13.57'	13.59'
③	33°46'5"	16°53'2.4"	42.10'	12.78'	24.46'	24.81'
④	28°53'19"	14°26'39.4"	47.77'	12.30'	23.83'	24.09'
⑤	38°33'14"	19°16'37.0"	39.30'	13.75'	25.95'	26.45'
⑥	43°50'16"	21°55'7.8"	40.71'	16.38'	30.39'	31.15'
⑦	2°42'16"	1°21'7.8"	1880.17'	44.38'	88.73'	88.74'

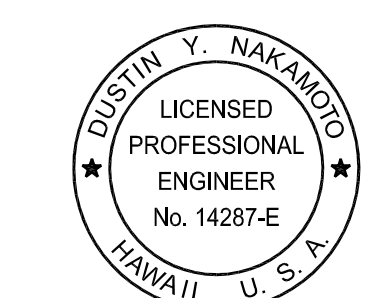


AT&T Ductline "B1" - Profile
Scale: Horiz. 1" = 40'
Vert. 1" = 4'



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

FILE: Z:\ACAD\PROJECTS\220067A\EM04_220067A_ATT-Ductline-Plan-Profile-B1-L.dwg saved June 2, 2022



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SIGNATURE: _____
APRIL 30, 2024
EXPIRATION DATE OF THE LICENSE

06/08/22	ADDED DRAWING
DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**AT&T DUCTLINE
PLAN & PROFILE "B1"**

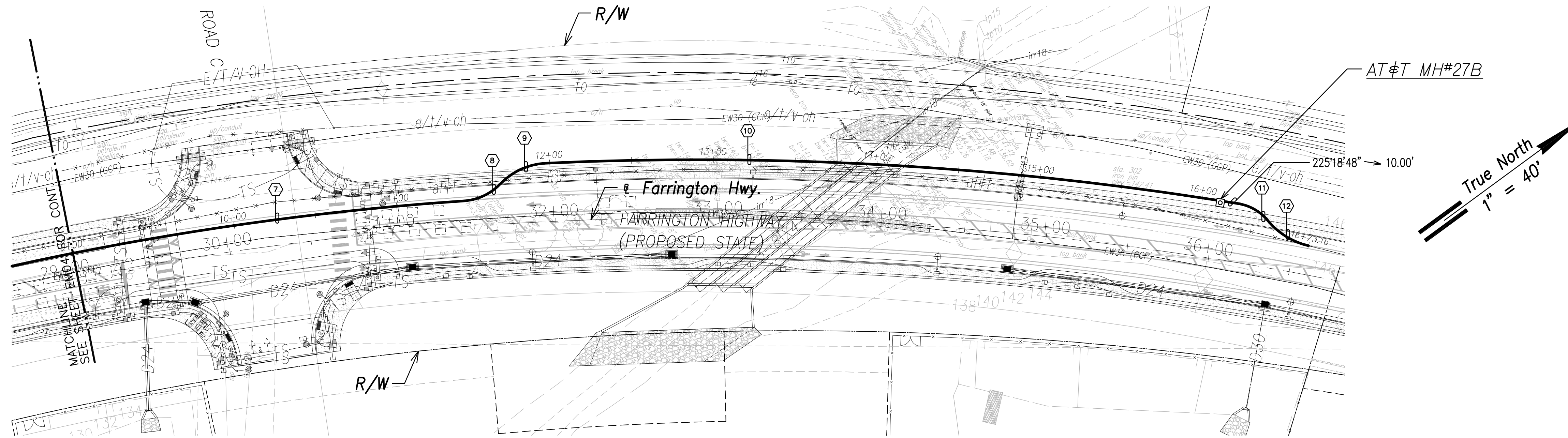
FARRINGTON HIGHWAY WIDENING
Kapolei Golf Course Road to Fort Weaver Road
Project No. 7101A-01-20

Scale: As Shown Date: April 2022

SHEET No. EM-04 OF 10 SHEETS

ADD. 755

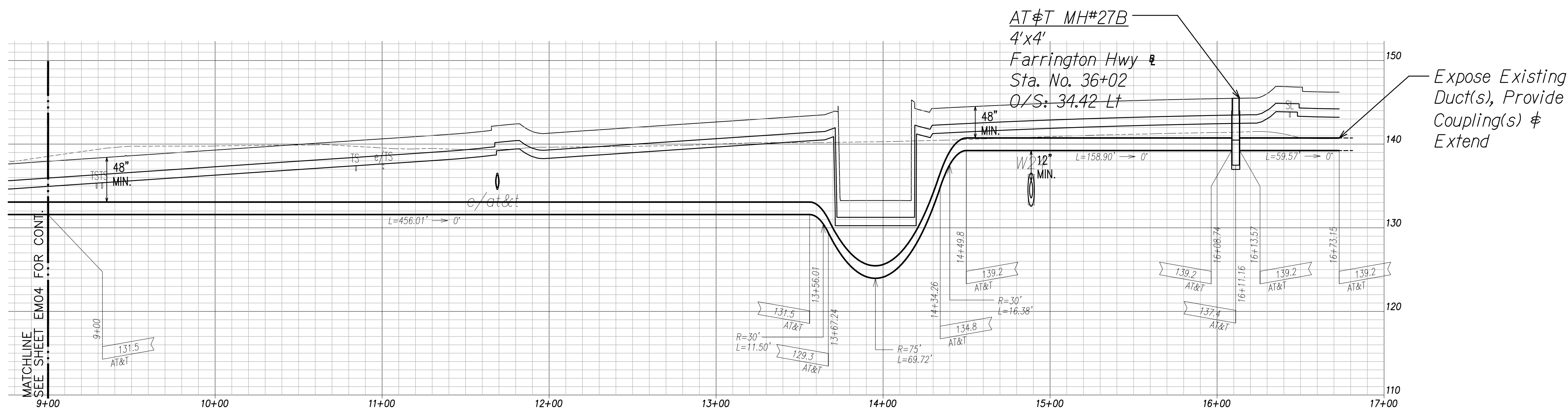
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	710A-01-20	2021	EM-05	790



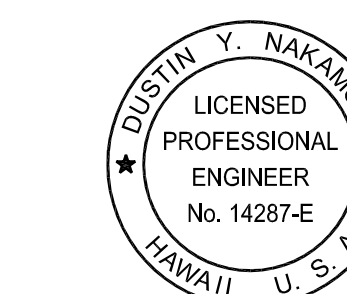
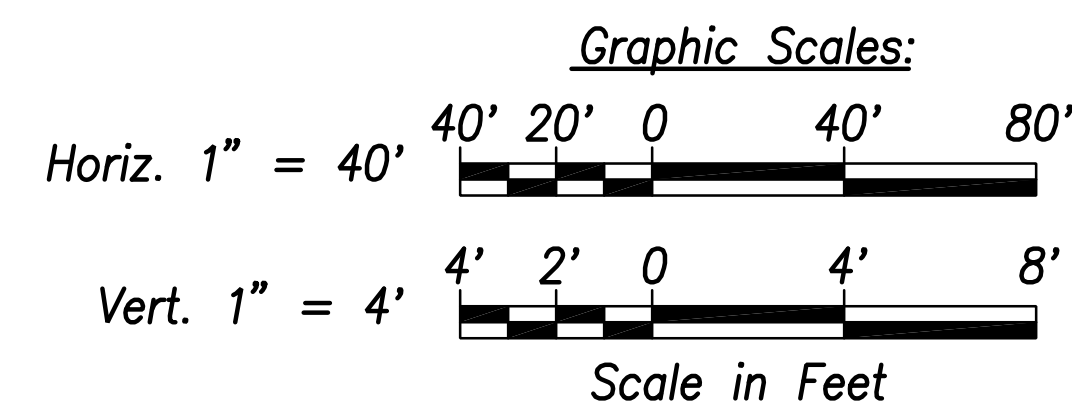
AT&T Ductline "B1" - Plan
Scale: 1" = 40'

AT&T DUCTLINE "B1"

CURVE DATA						
ID	Δ	Δ / 2	RADIUS	T	C	Lc
(7)	7°24'26"	3°42'13.0"	1880.17'	121.70'	242.90'	243.07'
(8)	39°41'57"	19°50'58.6"	33.68'	12.16'	22.87'	23.34'
(9)	42°5'8"	21°2'33.9"	41.01'	15.78'	29.45'	30.12'
(10)	11°34'56"	5°47'28.1"	2039.16'	206.81'	411.51'	412.21'
(11)	40°30'53"	20°15'26.4"	30.18'	11.14'	20.90'	21.34'
(12)	35°2'35"	17°31'17.3"	46.17'	14.58'	27.80'	28.24'



AT&T Ductline "B1" - Profile
Scale: Horiz. 1" = 40'
Vert. 1" = 4'



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[Signature]
SIGNATURE
April 30, 2024
EXPIRATION DATE OF THE LICENSE

06/08/22	ADDED DRAWING
DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

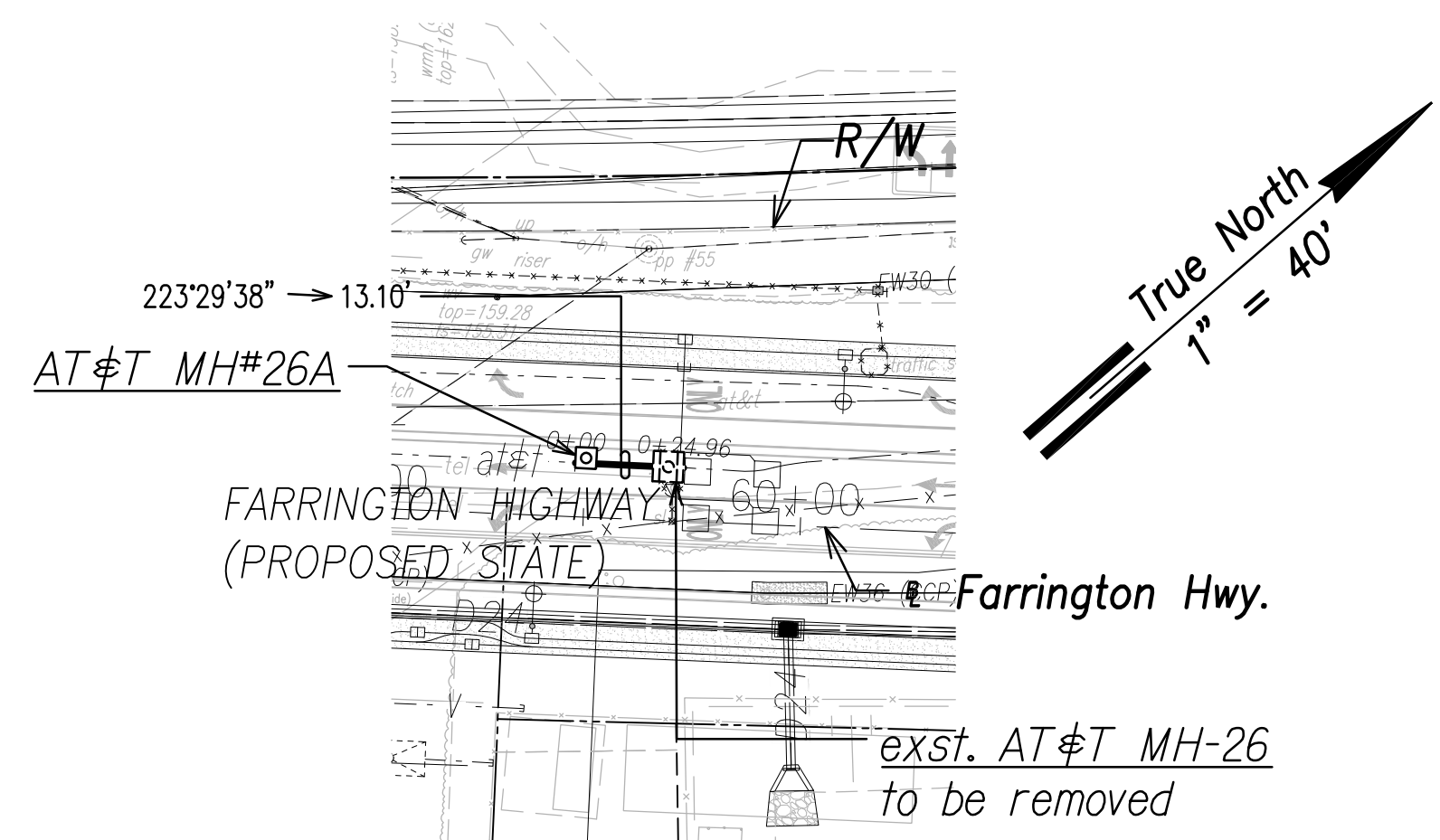
**AT&T DUCTLINE
PLAN & PROFILE "B1"**
FARRINGTON HIGHWAY WIDENING
Kapolei Golf Course Road to Fort Weaver Road
Project No. 7101A-01-20

Scale: As Shown Date: April 2022
SHEET No. EM-05 OF 10 SHEETS

SURVEY PLOTTED BY	DATE
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CHECKED BY	
NO.	

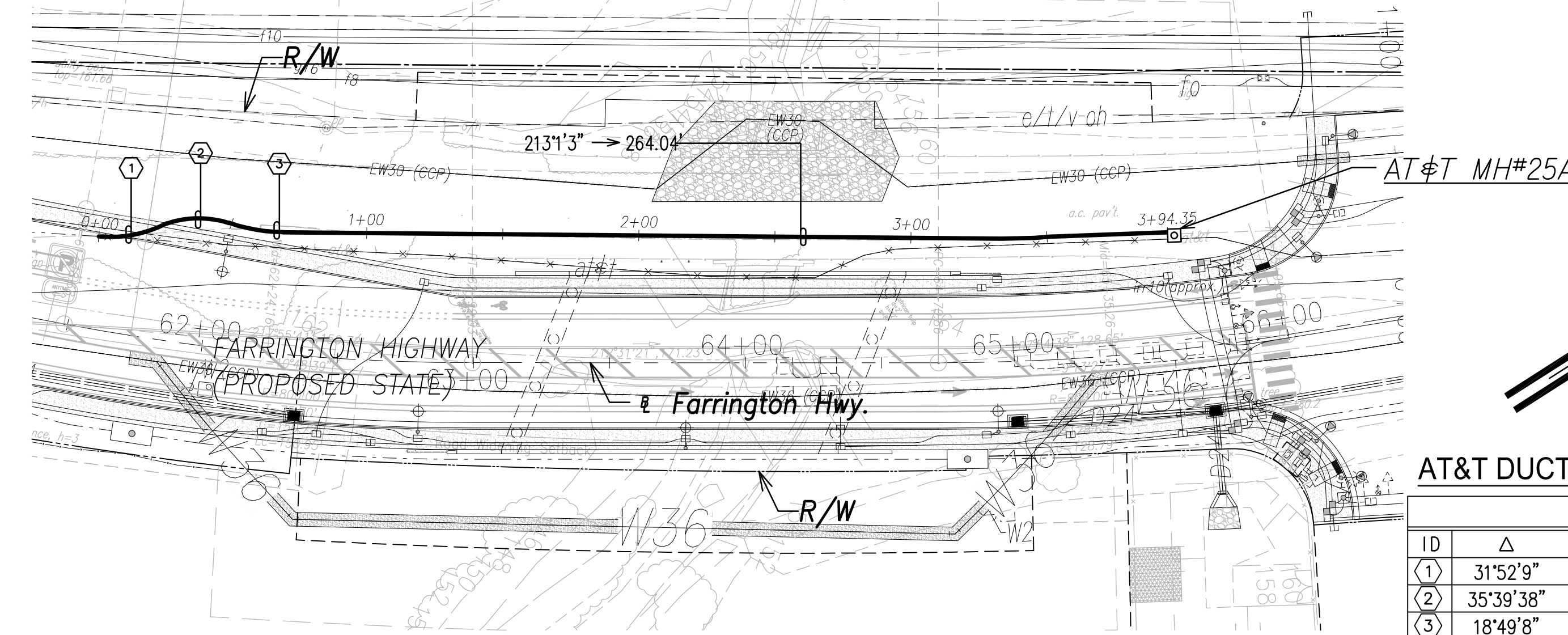
FILE: Z:\ACAD\PROJECTS\220671A\EM05-220671A-ATT-Ductline-Plan-Profile-B1-2.dwg saved June 2, 2022

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	710A-01-20	2021	EM-06	790



AT&T Ductline "D1" - Plan

Scale: 1" = 40'

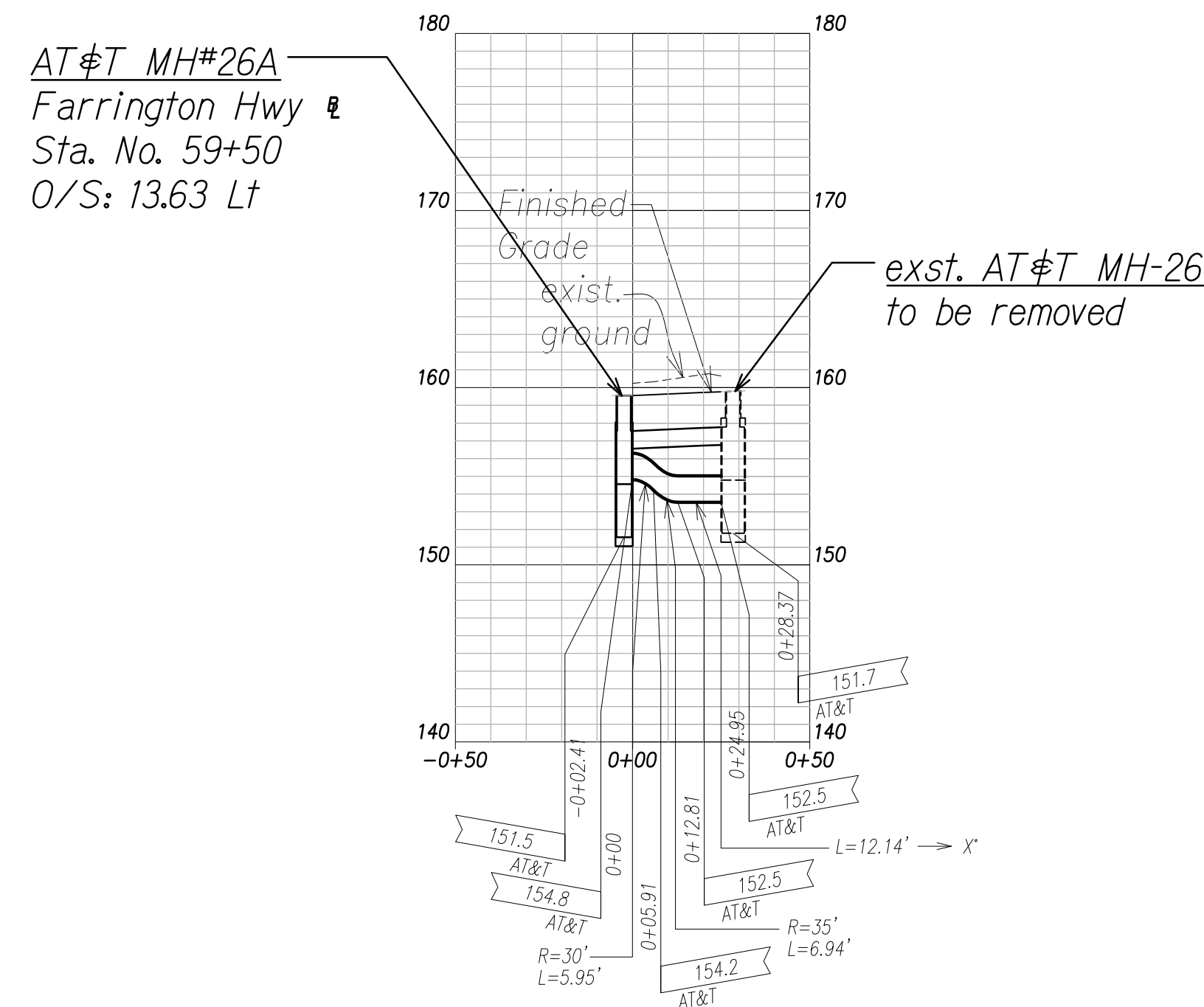


AT&T Ductline "D2" - Plan

Scale: 1" = 40'

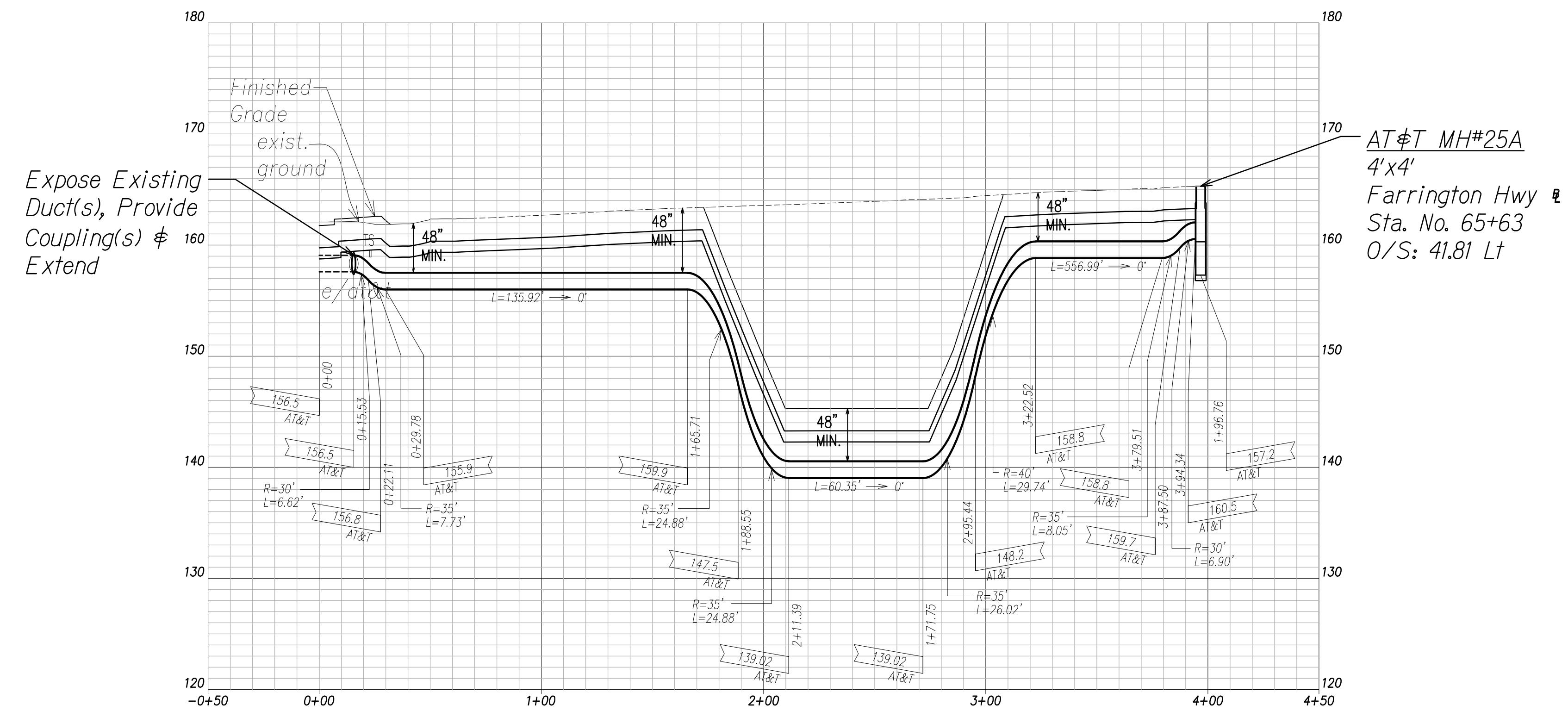
AT&T DUCTLINE "D2"

CURVE DATA						
ID	Δ	Δ / 2	RAD IUS	T	C	Lc
①	31°52'9"	15°56'4.4"	46.50'	13.28'	25.53'	25.86'
②	35°39'38"	17°49'49.2"	37.16'	11.95'	22.76'	23.13'
③	18°49'8"	9°24'33.9"	61.90'	10.26'	20.24'	20.33'



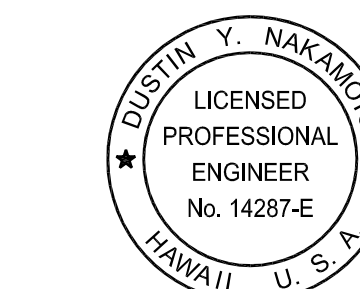
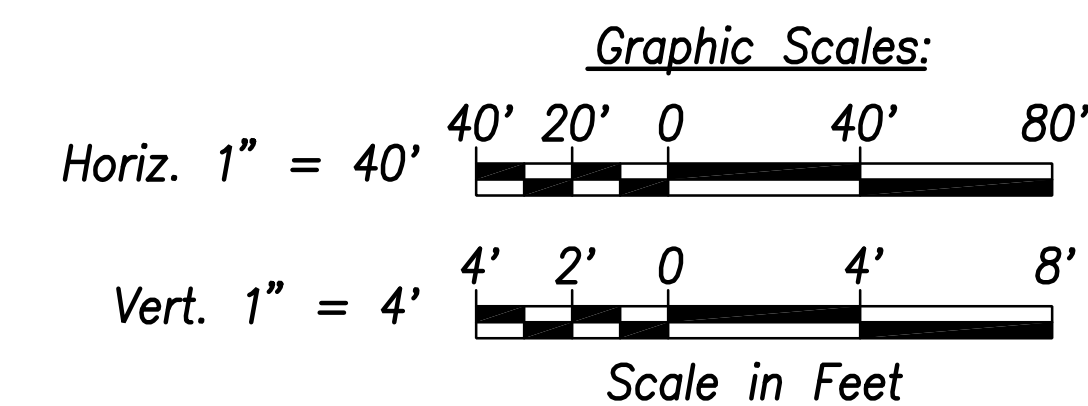
AT&T Ductline "D1" - Profile

Scale: Horiz. 1" = 40'
Vert. 1" = 4'



AT&T Ductline "D2" - Profile

Scale: Horiz. 1" = 40'
Vert. 1" = 4'



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SIGNATURE:
April 30, 2024
EXPIRATION DATE OF THE LICENSE

06/08/22	ADDED DRAWING
DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**AT&T DUCTLINE
PLAN & PROFILE "D1" & "D2"**

FARRINGTON HIGHWAY WIDENING
Kapolei Golf Course Road to Fort Weaver Road
Project No. 7101A-01-20

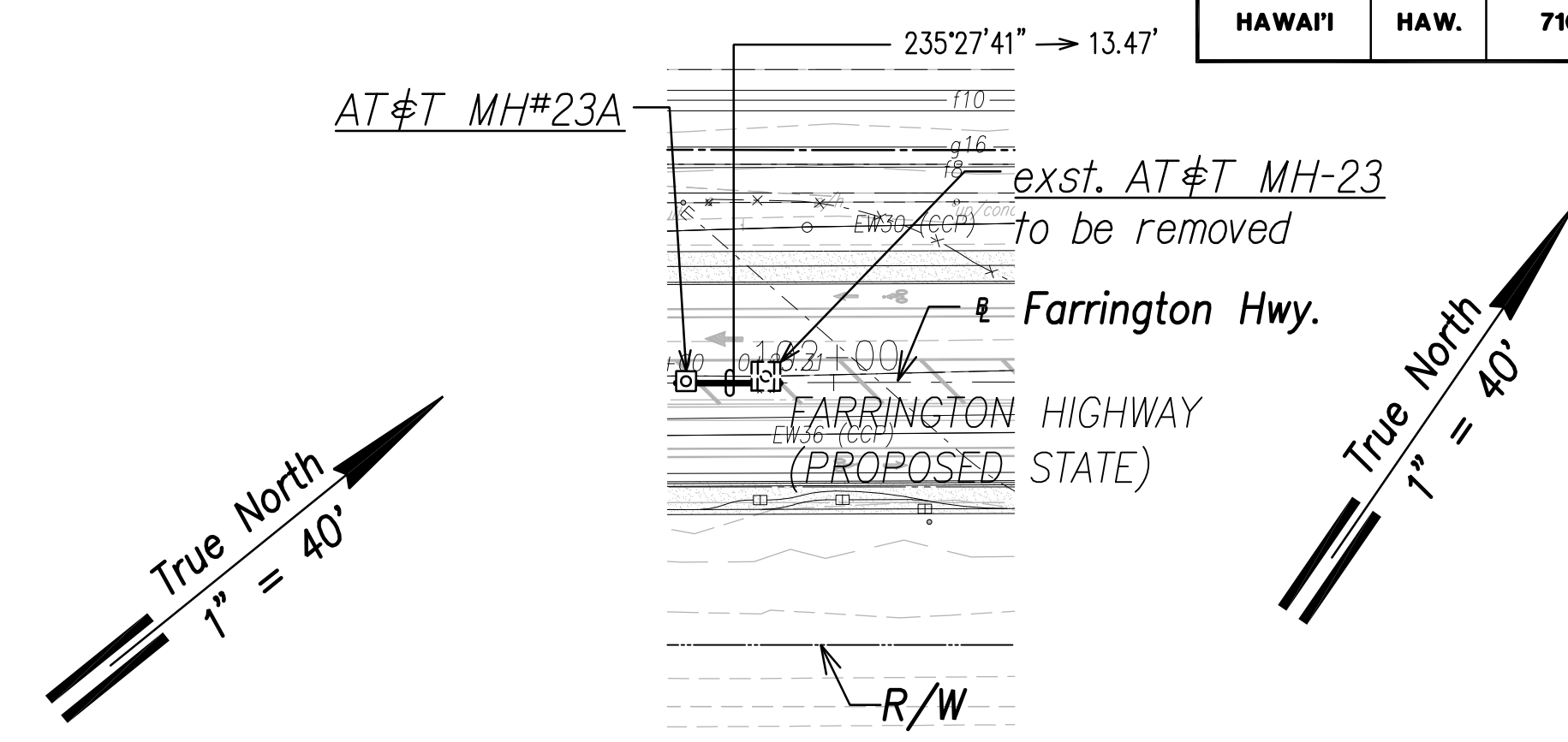
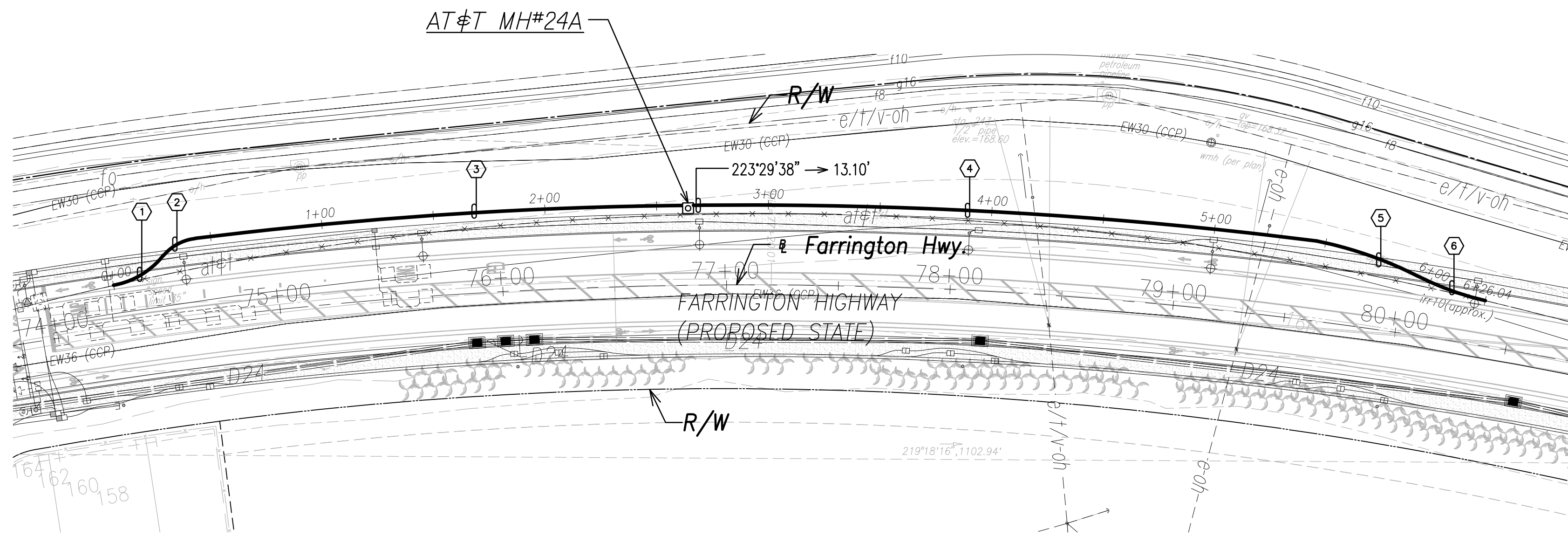
Scale: As Shown Date: April 2022

SHEET No. EM-06 OF 10 SHEETS

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

FILE: Z:\ACAD\PROJECTS\220671A\EM-06-220671A-ATT-Ductline-Plan-Profile-D1-02.dwg saved June 2, 2022

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	710A-01-20	2021	EM-07	790



AT&T DUCTLINE "E1"

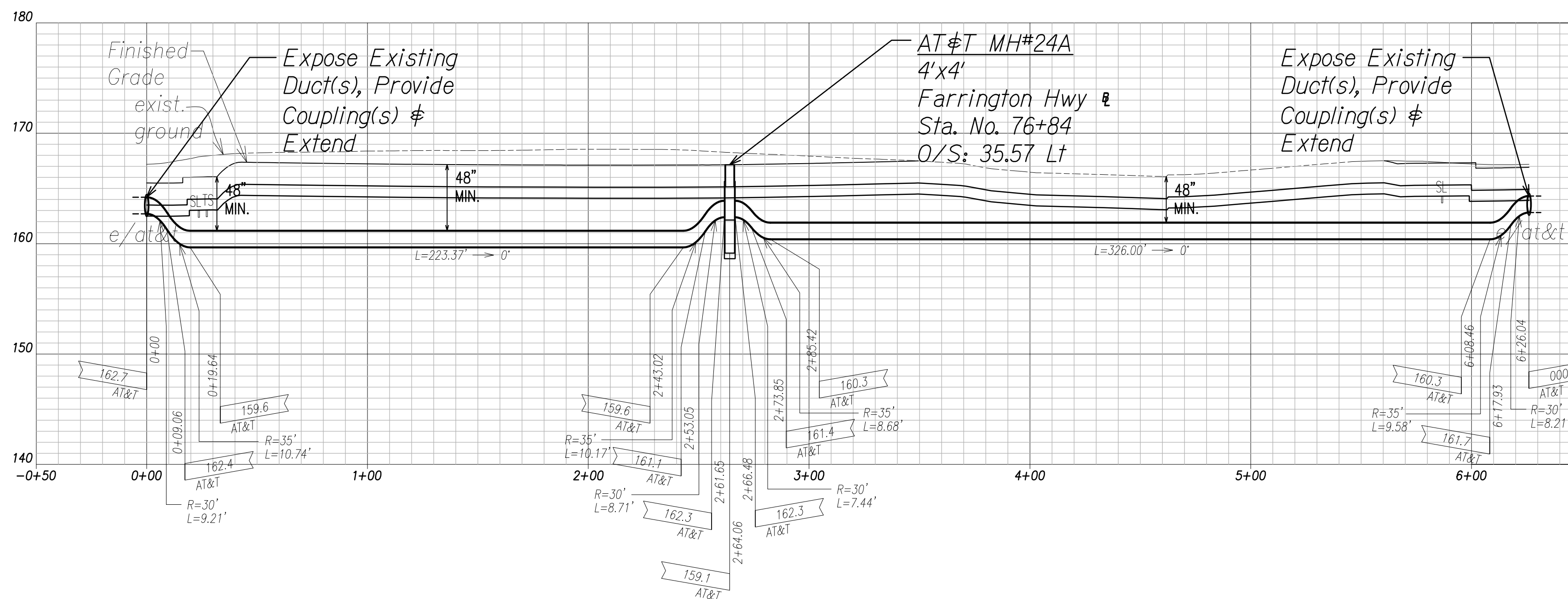
CURVE DATA						
ID	Δ	Δ / 2	RADIUS	T	C	Lc
(1)	40°42'13"	20°21'6.5"	37.43'	13.89'	26.04'	26.59'
(2)	43°4'6"	21°32'3.2"	22.13'	8.73'	16.25'	16.64'
(3)	6°26'41"	3°13'20.4"	1941.88'	109.33'	218.31'	218.42'
(4)	7°45'40"	3°52'50.2"	2026.47'	137.46'	274.29'	274.50'
(5)	15°1'1"	7°30'30.4"	181.98'	23.99'	47.56'	47.70'
(6)	13°55'1"	6°57'30.4"	133.91'	16.34'	32.45'	32.53'

AT&T Ductline "E1" - Plan

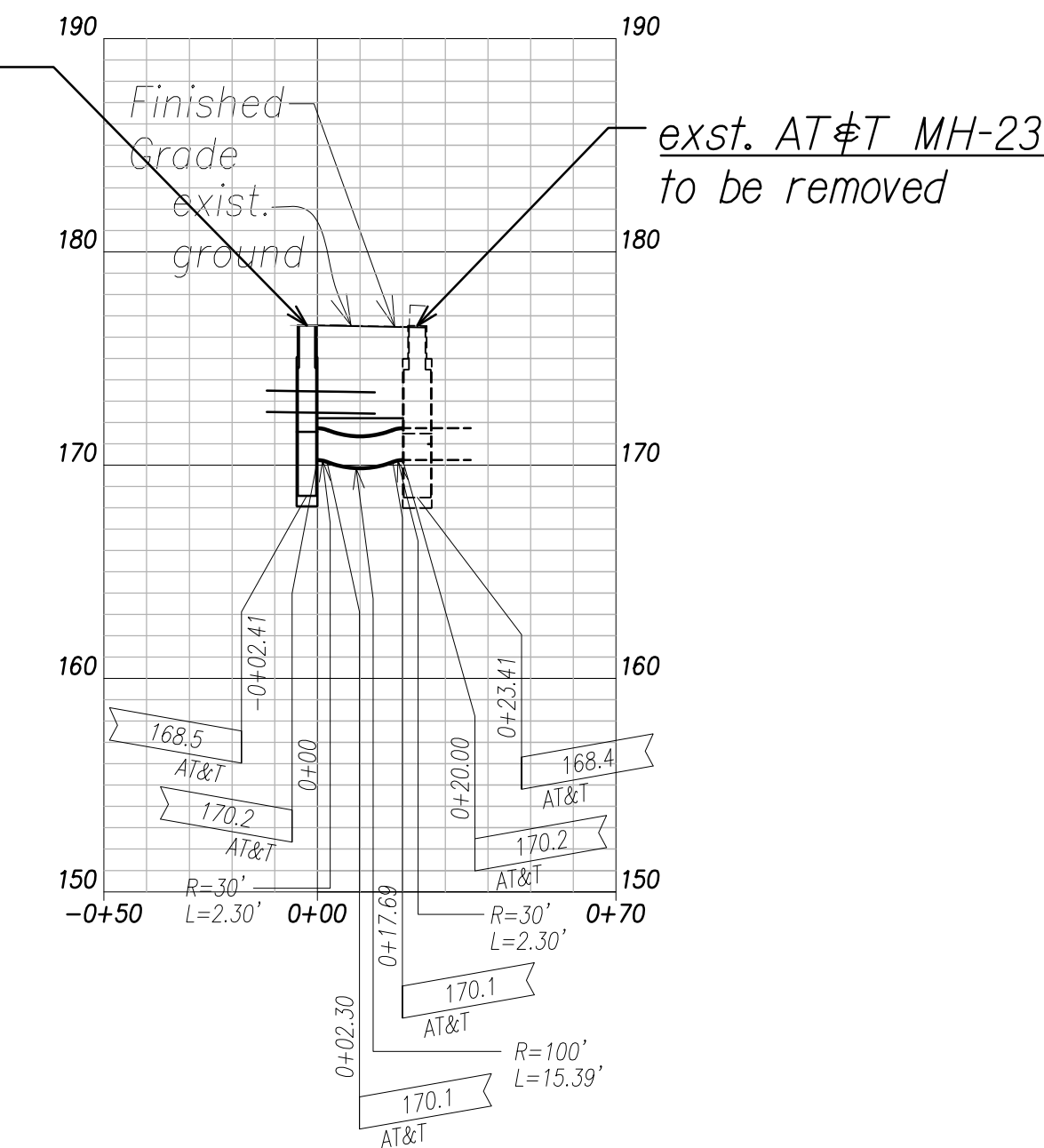
Scale: 1" = 40'

AT&T Ductline "F1" - Plan

Scale: 1" = 40'



AT&T MH#23A
4'x4'
Farrington Hwy
Sta. No. 101+84
O/S: 0.47 Lt



AT&T Ductline "F1" - Profile

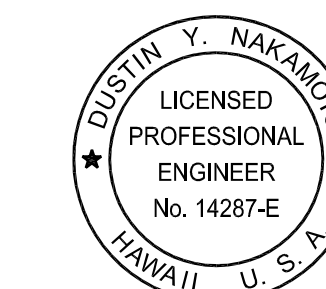
Scale: Horiz. 1" = 40'
Vert. 1" = 4'

AT&T Ductline "E1" - Profile

Scale: Horiz. 1" = 40'
Vert. 1" = 4'

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

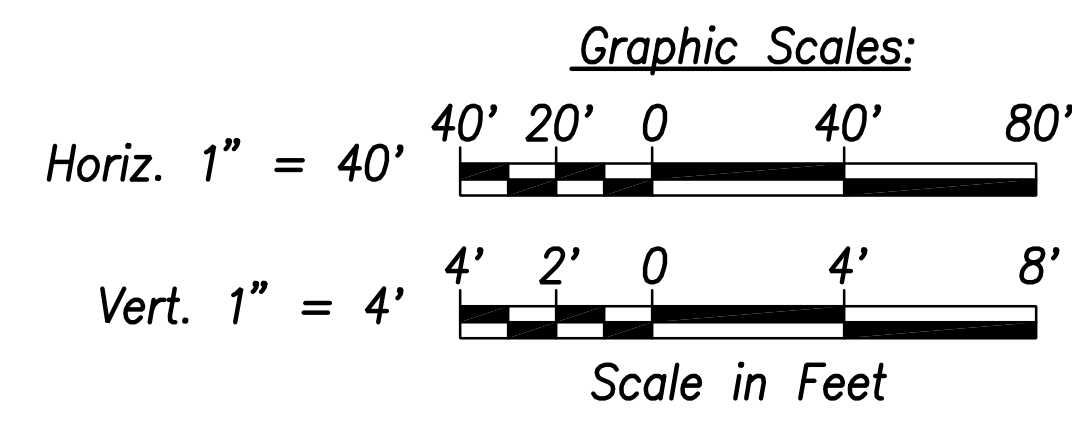
FILE: Z:\ACAD\PROJECTS\220679A\EM07-2200679A-ATT-Ductline-Plan-Profile-ET-1.dwg saved June 2, 2022



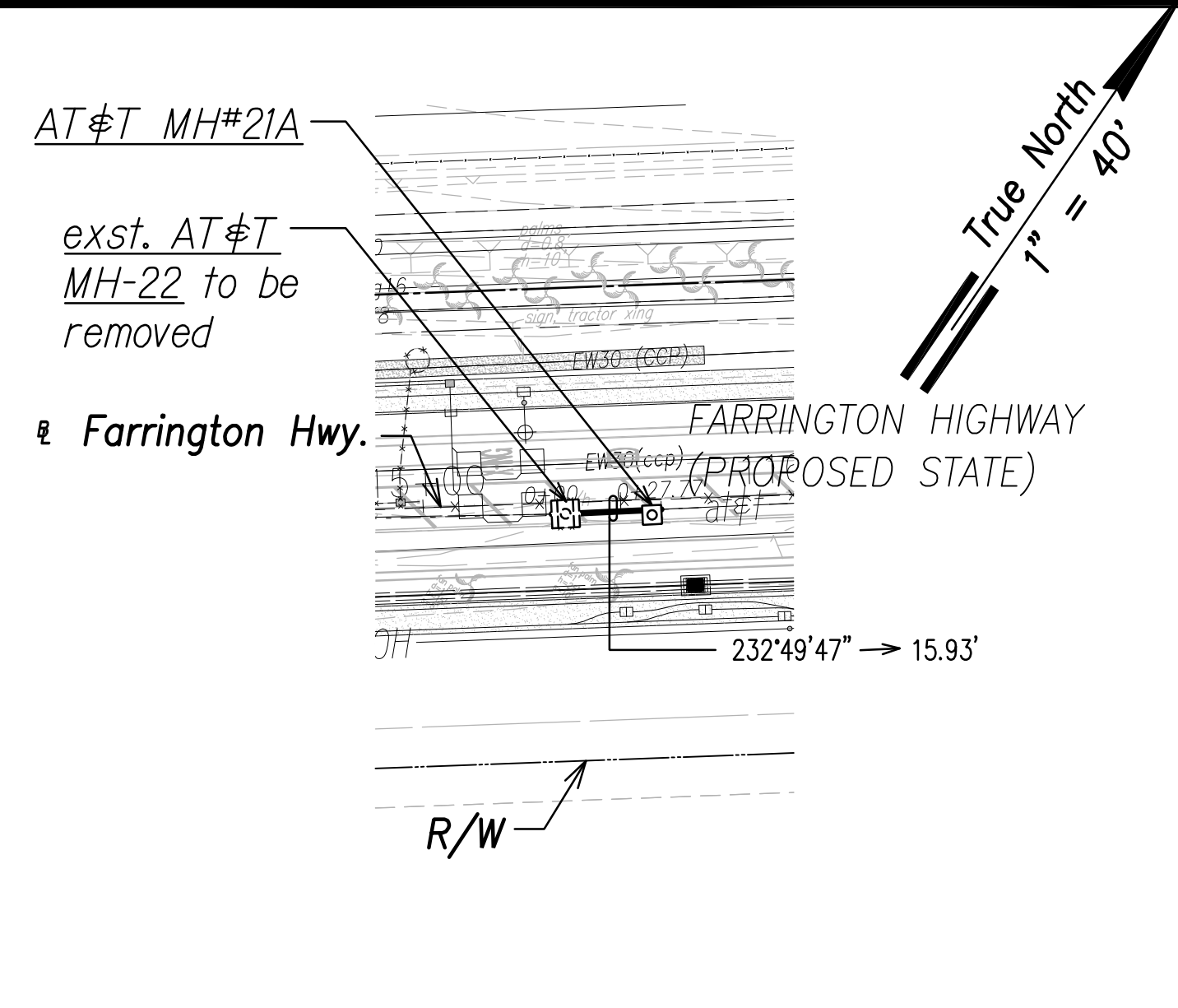
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.

SIGNATURE: [Signature]
Date: April 30, 2022
EXPIRATION DATE OF THE LICENSE

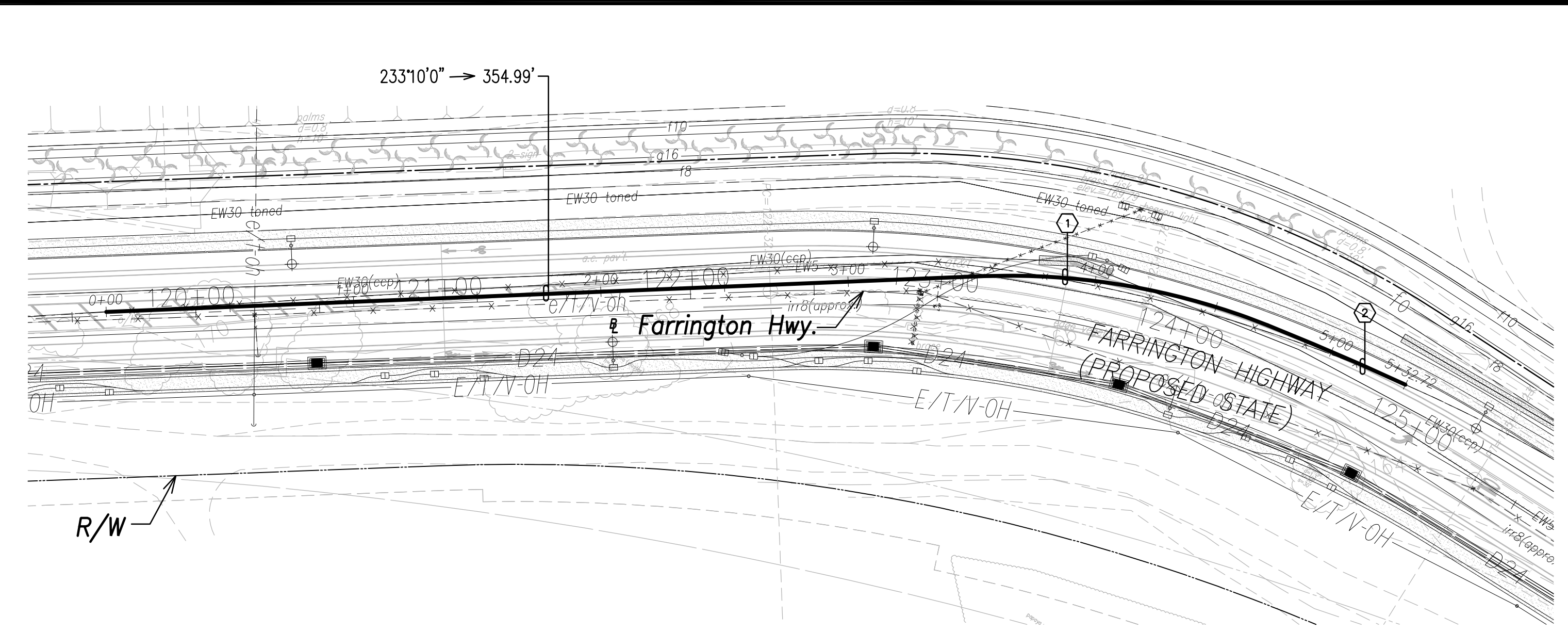
06/08/22	ADDED DRAWING
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
AT&T DUCTLINE PLAN & PROFILE "E1" & "F1"	
FARRINGTON HIGHWAY WIDENING Kapolei Golf Course Road to Fort Weaver Road Project No. 7101A-01-20	
Scale: As Shown	Date: April 2022
SHEET No. EM-07 OF 10 SHEETS	



FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	710A-01-20	2021	EM-08	790



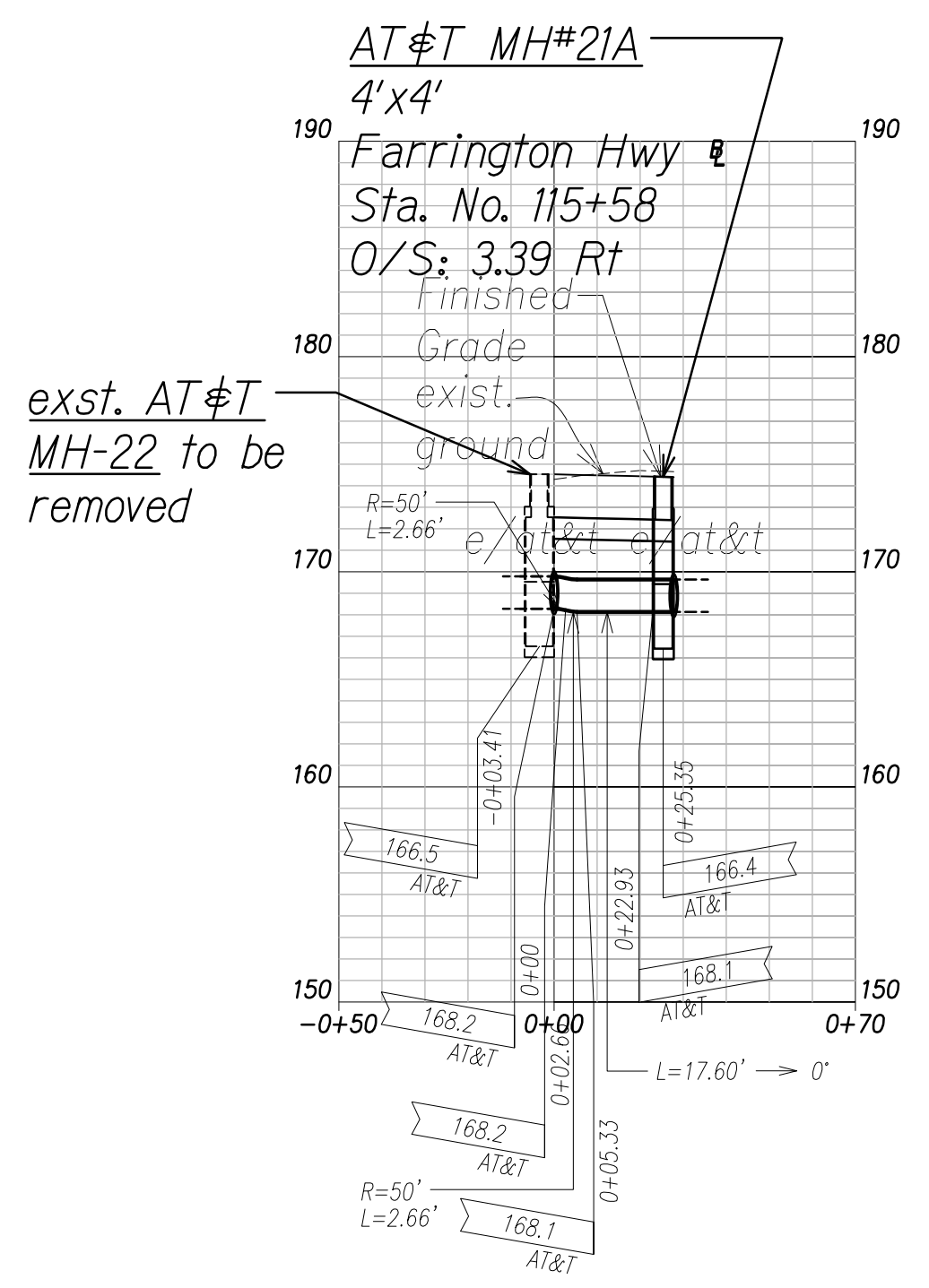
AT&T Ductline "G1" - Plan
Scale: 1" = 40'



AT&T Ductline "H1" - Plan
Scale: 1" = 40'

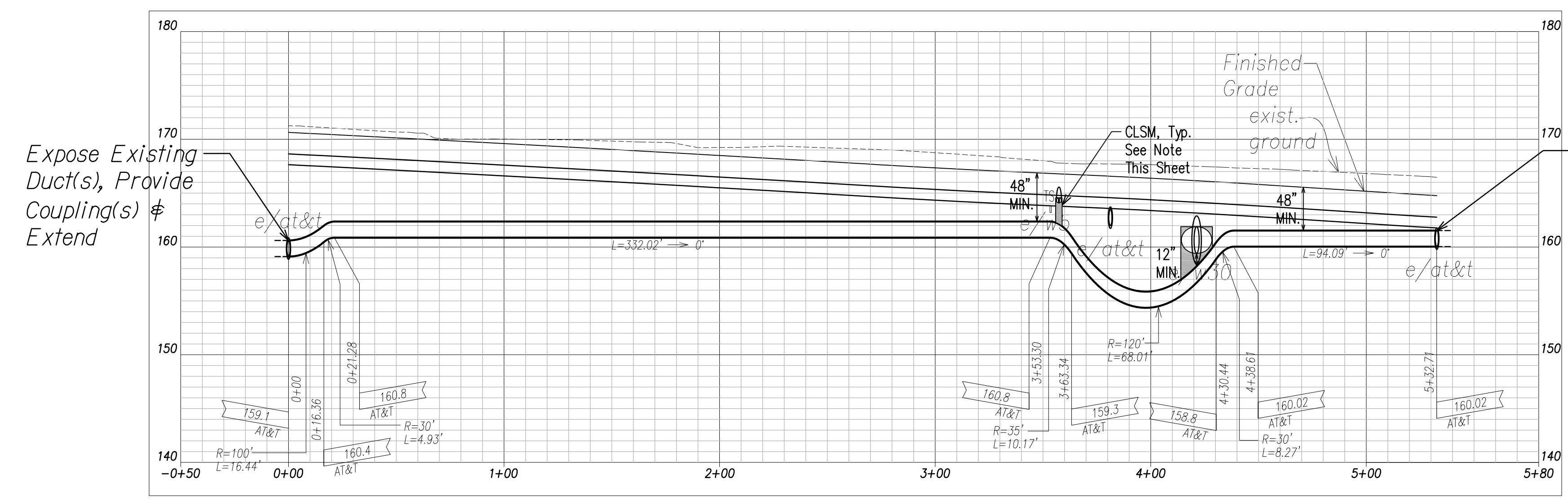
AT&T DUCTLINE "H1"

CURVE DATA						
ID	Δ	Δ / 2	RADIUS	T	C	Lc
(1)	23°42'8"	11°51'4.2"	283.10'	59.41'	116.28'	117.11'
(2)	2°50'27"	1°25'13.4"	1222.53'	30.31'	60.61'	60.61'



AT&T Ductline "G1" - Profile
Scale: Horiz. 1" = 40'
Vert. 1" = 4'

Note:
The Contractor Shall Provide Controlled Low Strength Material (CLSM) in Areas Where Required Compaction Cannot be Met. CLSM Shall be Extended a Minimum of 2' Beyond the Waterline at the Crossing and Shall Extend to the Top of the Crossing Pipe.

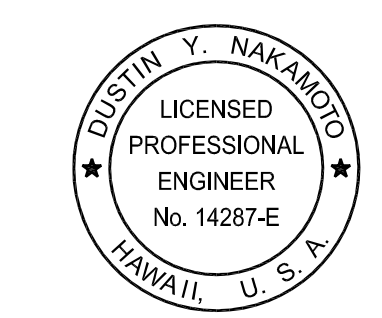


AT&T Ductline "H1" - Profile
Scale: Horiz. 1" = 40'
Vert. 1" = 4'

Expose Existing Duct(s), Provide Coupling(s) & Extend

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

FILE: Z:\ACAD\PROJECTS\220679A\EM08-2200679L-ATT-Ductline-Plan-Profile-G1-H1.dwg saved June 2, 2022



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SIGNATURE: [Signature]
Date: April 30, 2024
EXPIRATION DATE OF THE LICENSE

06/08/22 ADDED DRAWING

DATE: 06/08/22 REVISION: 1

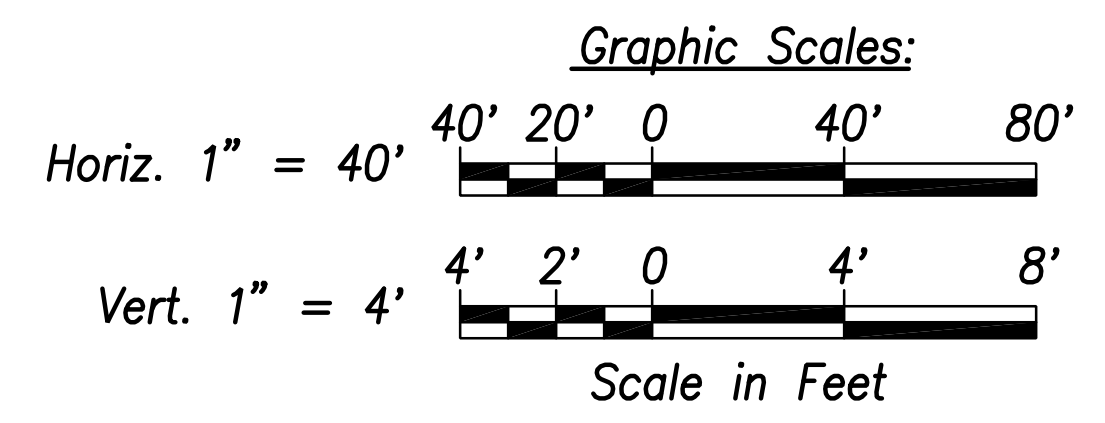
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**AT&T DUCTLINE
PLAN & PROFILE "G1" & "H1"**

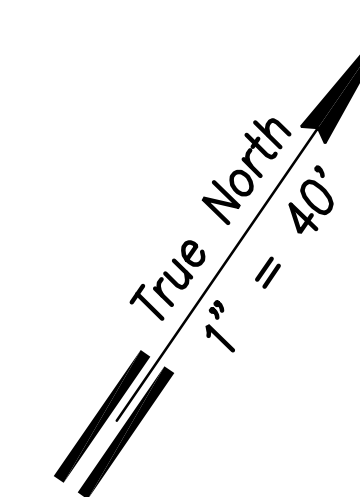
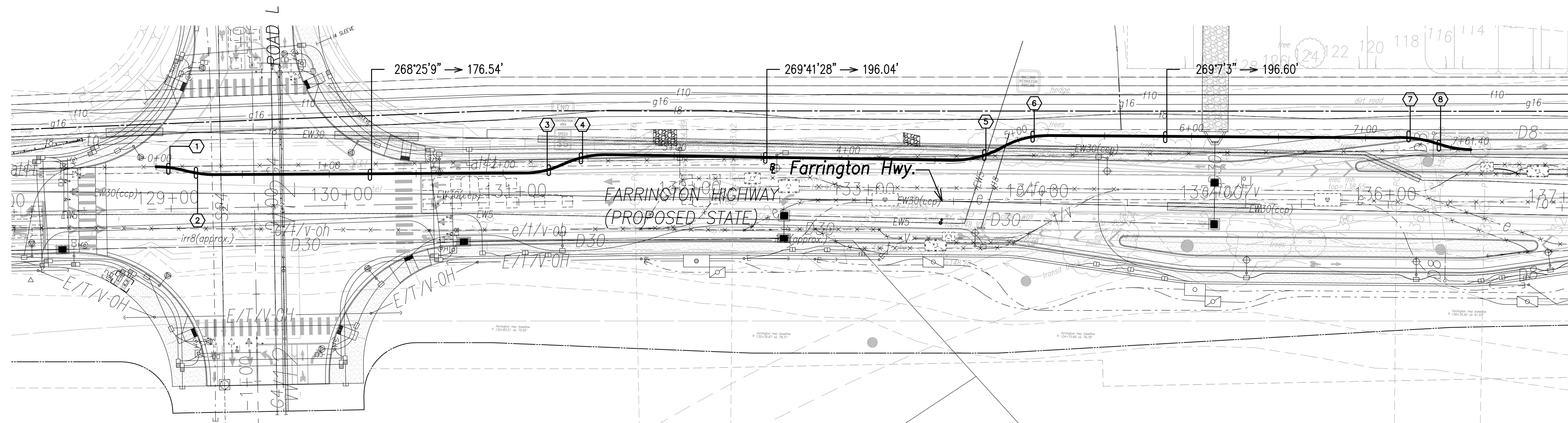
FARRINGTON HIGHWAY WIDENING
Kapolei Golf Course Road to Fort Weaver Road
Project No. 7101A-01-20

Scale: As Shown Date: April 2022

SHEET No. EM-08 OF 10 SHEETS



FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	710A-01-20	2021	EM-09	790

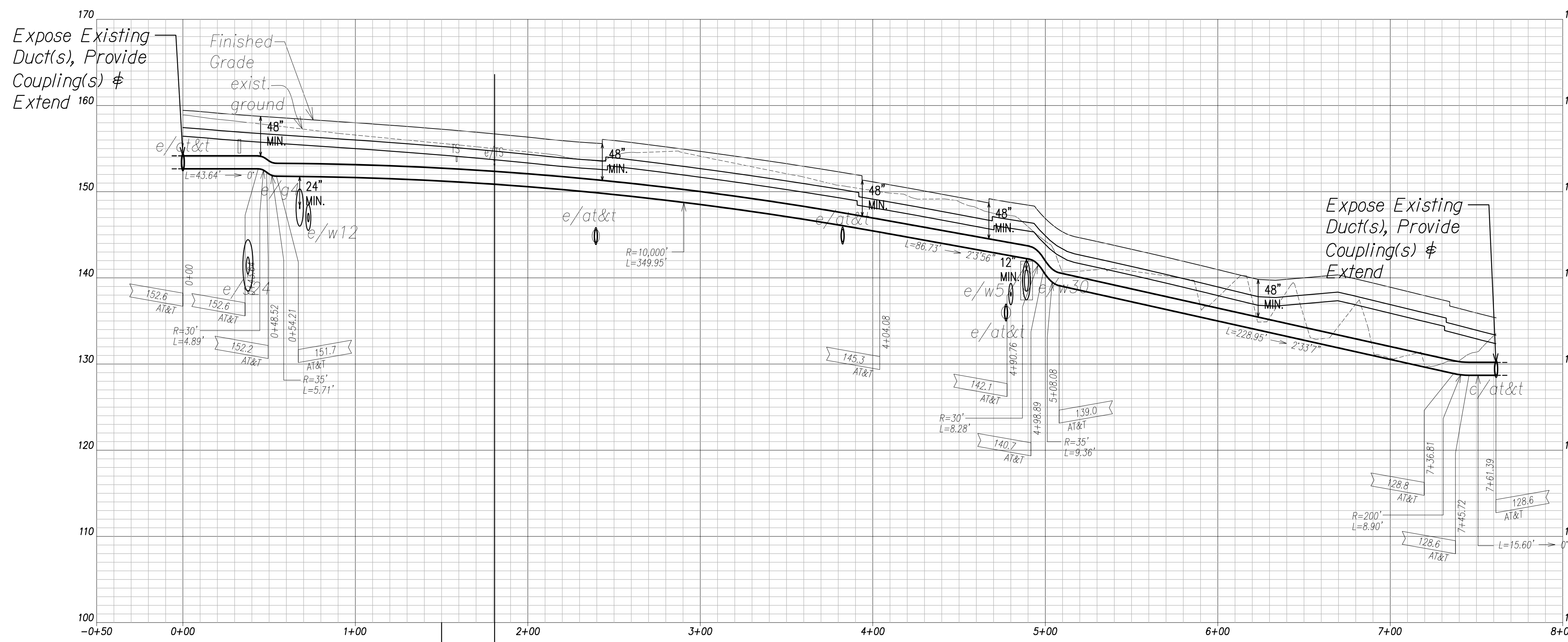


AT&T Ductline "J1" - Plan

Scale: 1" = 40'

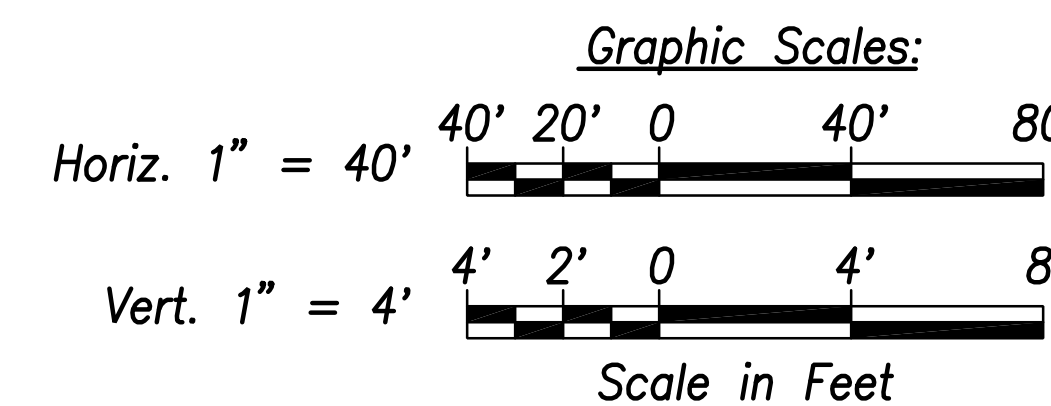
AT&T DUCTLINE "J1"

CURVE DATA						
ID	Δ	Δ / 2	RADIUS	T	C	Lc
①	16°34'50"	8°17'25.2"	64.33'	9.37'	18.55'	18.62'
②	14°1'11"	7°0'35.7"	63.19'	7.77'	15.42'	15.46'
③	28°1'9"	14°0'34.3"	50.42'	12.58'	24.41'	24.65'
④	27°24'41"	13°42'20.3"	58.50'	14.27'	27.72'	27.99'
⑤	29°26'11"	14°43'5.5"	58.01'	15.24'	29.48'	29.80'
⑥	30°40'49"	15°20'24.3"	51.87'	14.23'	27.44'	27.77'
⑦	23°47'38"	11°53'49.2"	69.92'	14.73'	28.83'	29.04'
⑧	18°58'9"	9°29'4.3"	57.16'	9.55'	18.84'	18.92'



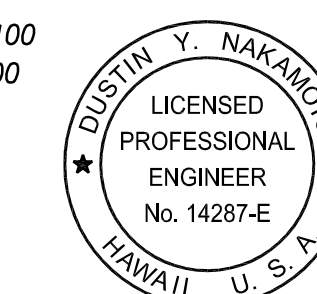
AT&T Ductline "J1" - Profile

Scale: Horiz. 1" = 40'
Vert. 1" = 4'



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

FILE: Z:\ACAD\PROJECTS\220679A\EM09_2200679L_ATT-Ductline-Plan-Profile-J1.dwg saved June 2, 2022



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SIGNATURE: *[Signature]*
Date: April 30, 2024
EXPIRATION DATE OF THE LICENSE

06/08/22	ADDED DRAWING
DATE	REVISION

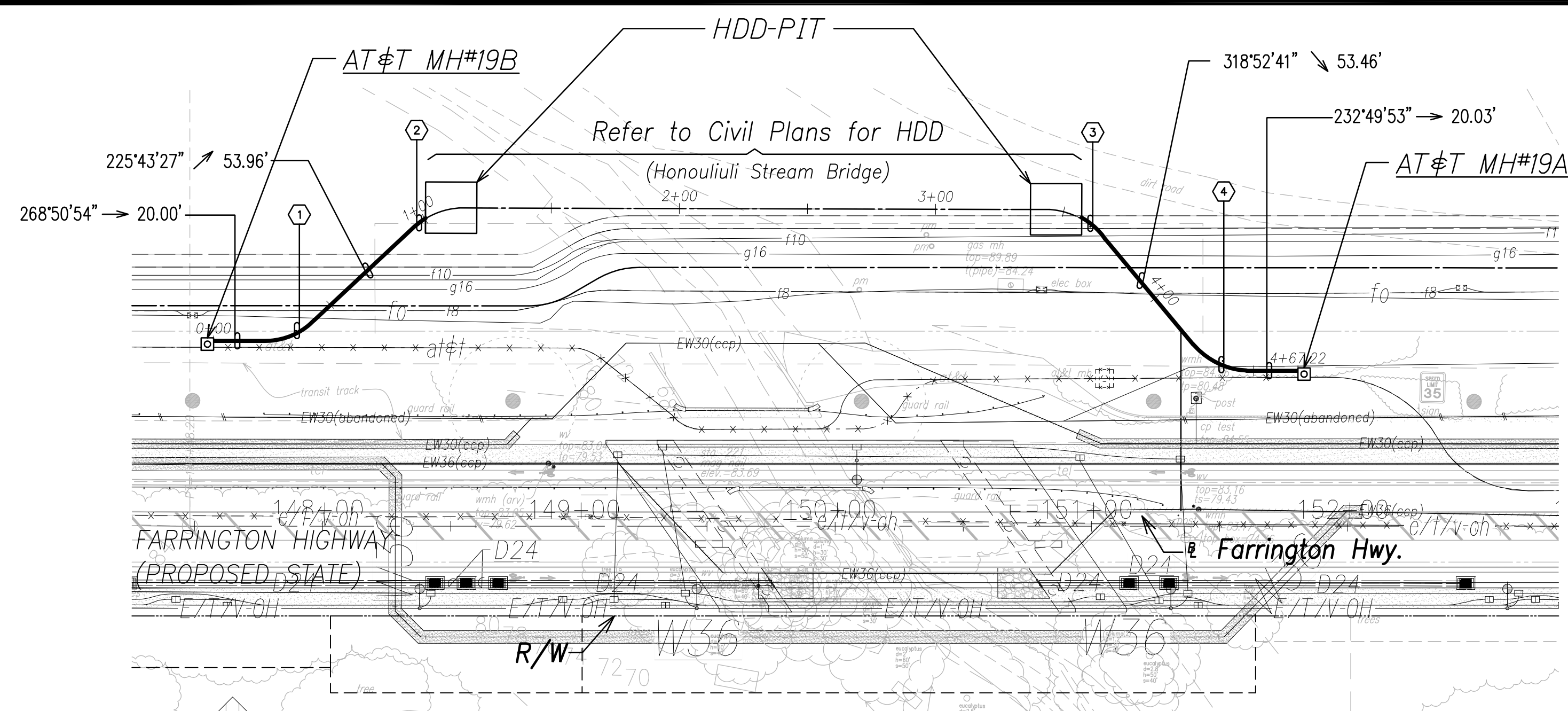
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**AT&T DUCTLINE
PLAN & PROFILE "J1"**
FARRINGTON HIGHWAY WIDENING
Kapolei Golf Course Road to Fort Weaver Road
Project No. 7101A-01-20

Scale: As Shown Date: April 2022
SHEET No. EM-09 OF 10 SHEETS

ADD. 760

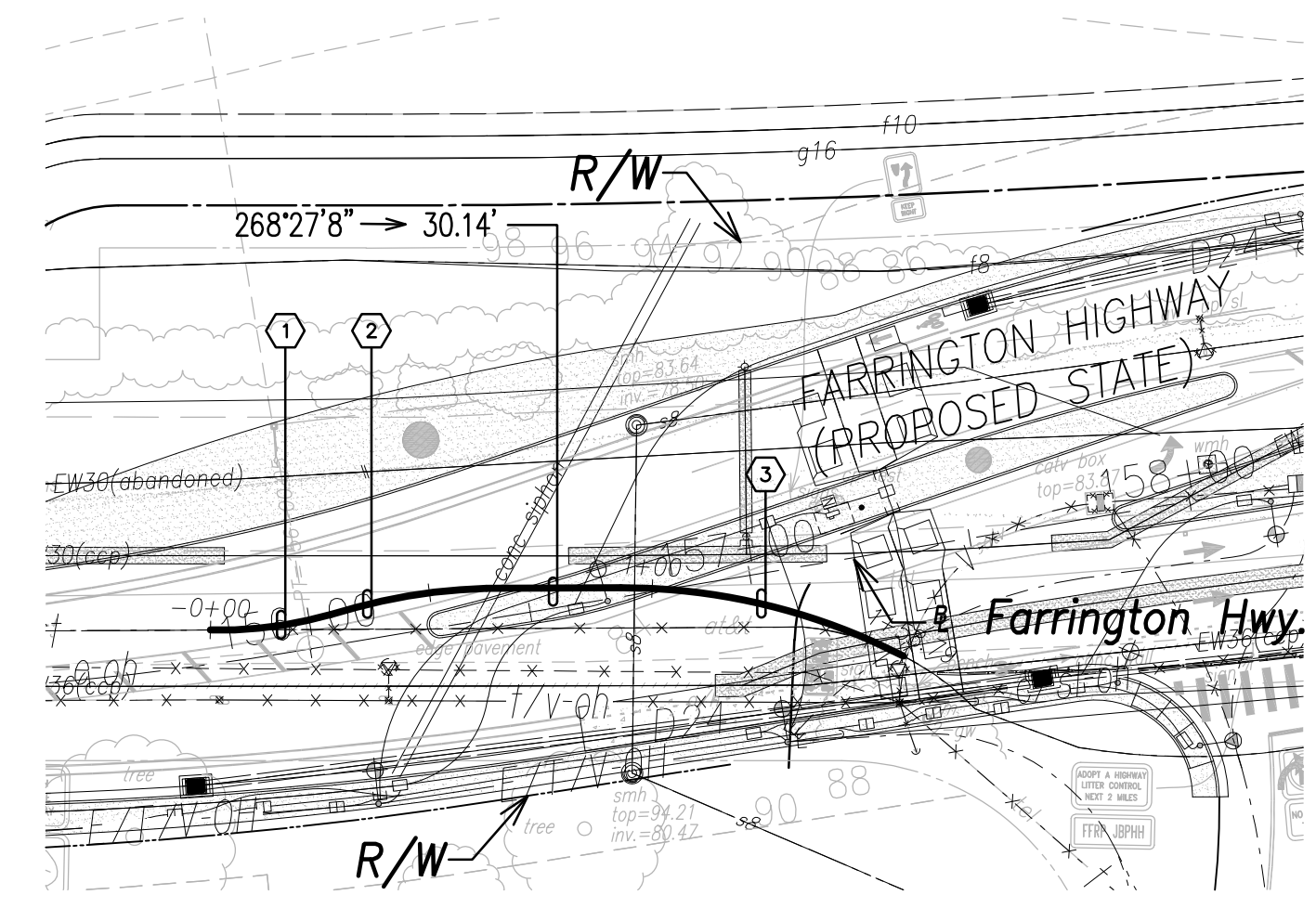
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	710A-01-20	2021	EM-10	790



AT&T Ductline "K1" - Plan
Scale: 1" = 40'

AT&T DUCTLINE "K1"

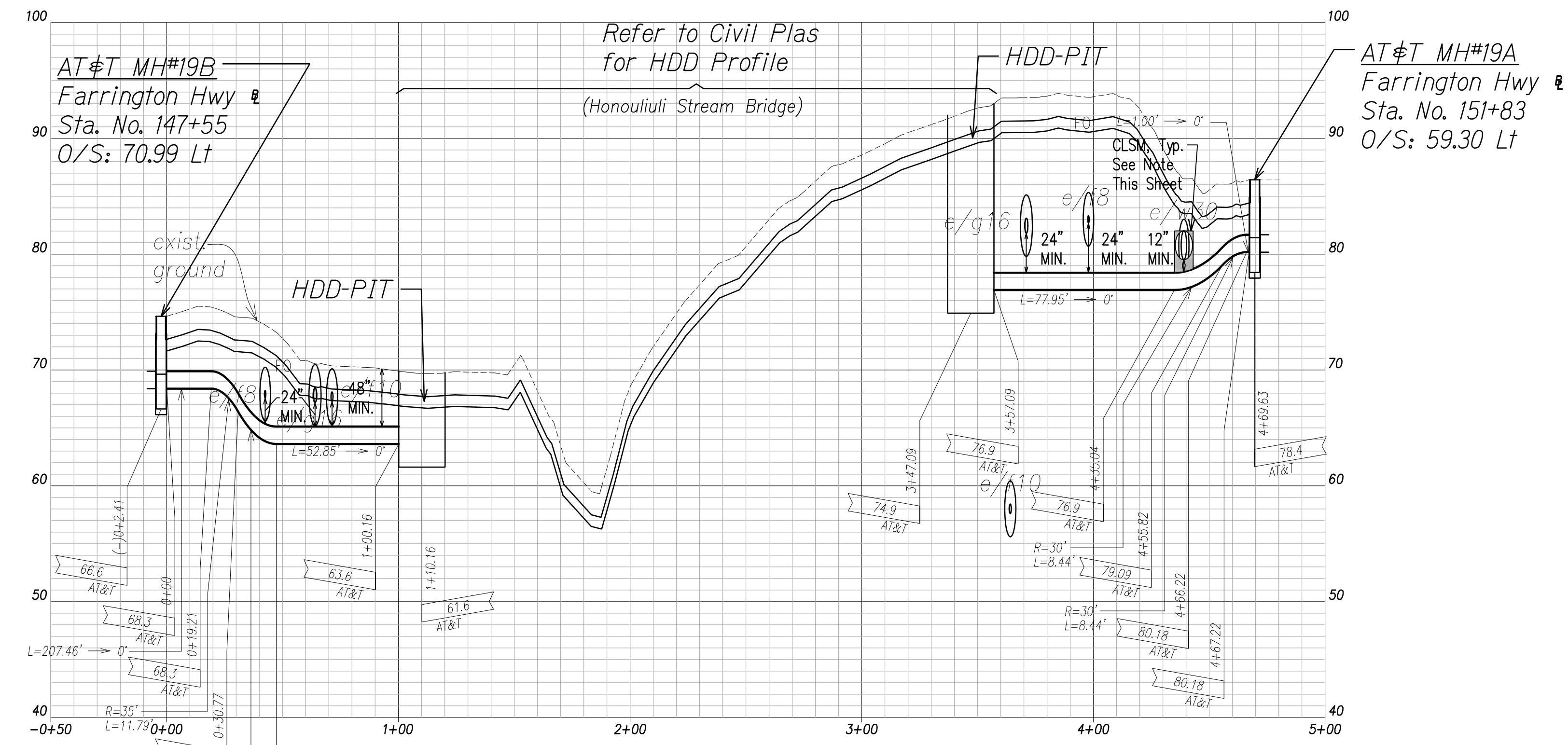
CURVE DATA						
ID	Δ	Δ / 2	RADIUS	T	C	Lc
①	45°31'46"	22°45'53.0"	26.85'	11.27'	20.78'	21.34'
②	10°59'18"	5°29'38.8"	26.61'	2.56'	5.10'	5.10'
③	27°27'5"	13°43'32.7"	26.13'	6.38'	12.40'	12.52'
④	46°19'22"	23°9'40.9"	29.59'	12.66'	23.28'	23.92'



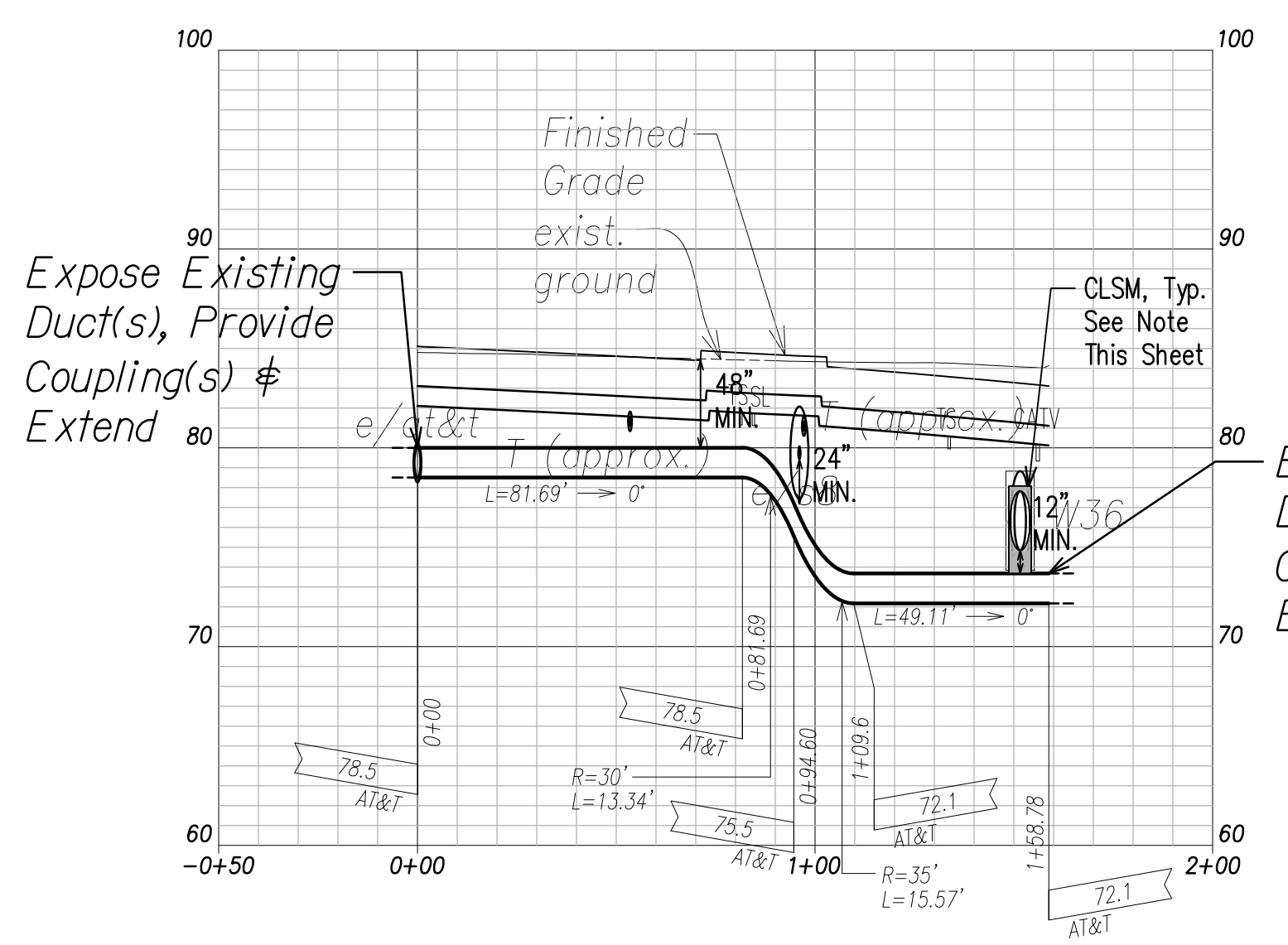
AT&T Ductline "L1" - Plan
Scale: 1" = 40'

AT&T DUCTLINE "L1"

CURVE DATA						
ID	Δ	Δ / 2	RADIUS	T	C	Lc
①	17°2'25"	8°31'12.5"	92.00'	13.78'	27.26'	27.36'
②	16°7'1"	8°3'30.7"	126.17'	17.86'	35.37'	35.49'
③	27°9'39"	13°34'49.4"	138.79'	33.53'	65.18'	65.79'

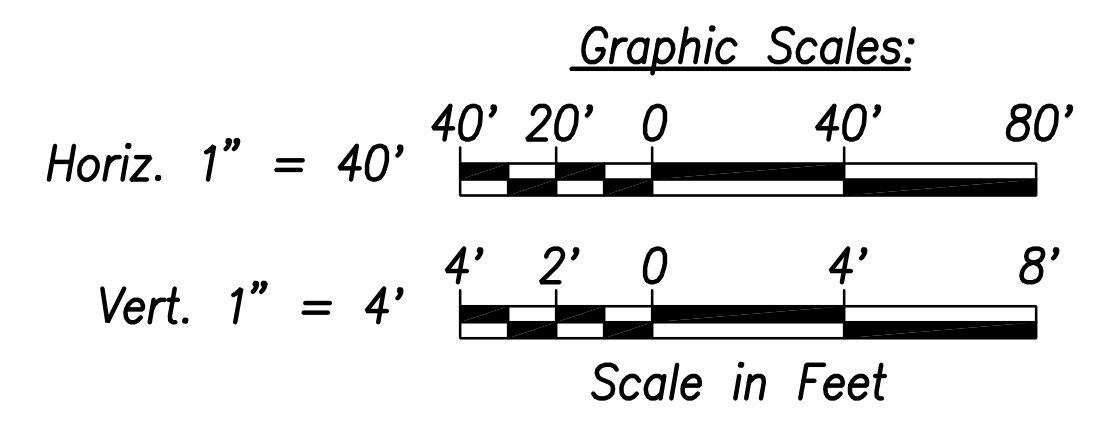


AT&T Ductline "K1" - Profile
Scale: Horiz. 1" = 40'
Vert. 1" = 4'



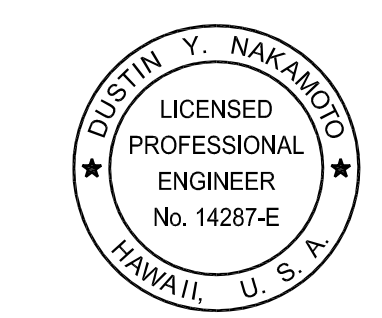
AT&T Ductline "L1" - Profile
Scale: Horiz. 1" = 40'
Vert. 1" = 4'

Note:
The Contractor Shall Provide Controlled Low Strength Material (CLSM) in Areas Where Required Compaction Cannot be Met. CLSM Shall be Extended a Minimum of 2' Beyond the Waterline at the Crossing and Shall Extend to the Top of the Crossing Pipe.



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

FILE: Z:\ACAD\PROJECTS\220679A\EM-10-220679A-ATT-Ductline-Plan-Profile-K1-L1.dwg saved June 6, 2022



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

SIGNATURE: [Signature]

April 30, 2024
EXPIRATION DATE OF THE LICENSE

06/08/22	ADDED DRAWING
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
AT&T DUCTLINE PLAN & PROFILE "L1" & "K1" FARRINGTON HIGHWAY WIDENING Kapolei Golf Course Road to Fort Weaver Road Project No. 7101A-01-20	
Scale: As Shown	Date: April 2022
SHEET No. EM-10 OF 10 SHEETS	