



STATE OF HAWAI'I
DEPARTMENT OF HAWAIIAN HOME LANDS
91-5420 Kapolei Parkway,
Kapolei, HI. 96707

SECTION 4

PLANS

for

**WEST O'AHU SEWER IMPROVEMENTS –
WAI'ANAE SUBDIVISION**

WAI'ANAE, O'AHU, HAWAI'I

T.M.K. (1) 8-5-30:52-54, 88-99, & 111-125

(1) 8-5-31:13-25, 32-34, & 69-72

(1) 8-5-32:37-38

(1) 8-5-033:1-3, 35, 113-117, & 130-134

IFB No.: IFB-22-HHL-001

November 2022



WAIANAE SUBDIVISION

IFB-22-HHL-001

WAIANAE, OAHU, HAWAII

TAX MAP KEYS: (1ST DIVISION) 8-5-30, 31, 32 & 33

OWNER: DEPARTMENT OF HAWAIIAN HOME LANDS

ADDRESS: HALE KALANIANA'OLE

91-5420 KAPOLEI PARKWAY

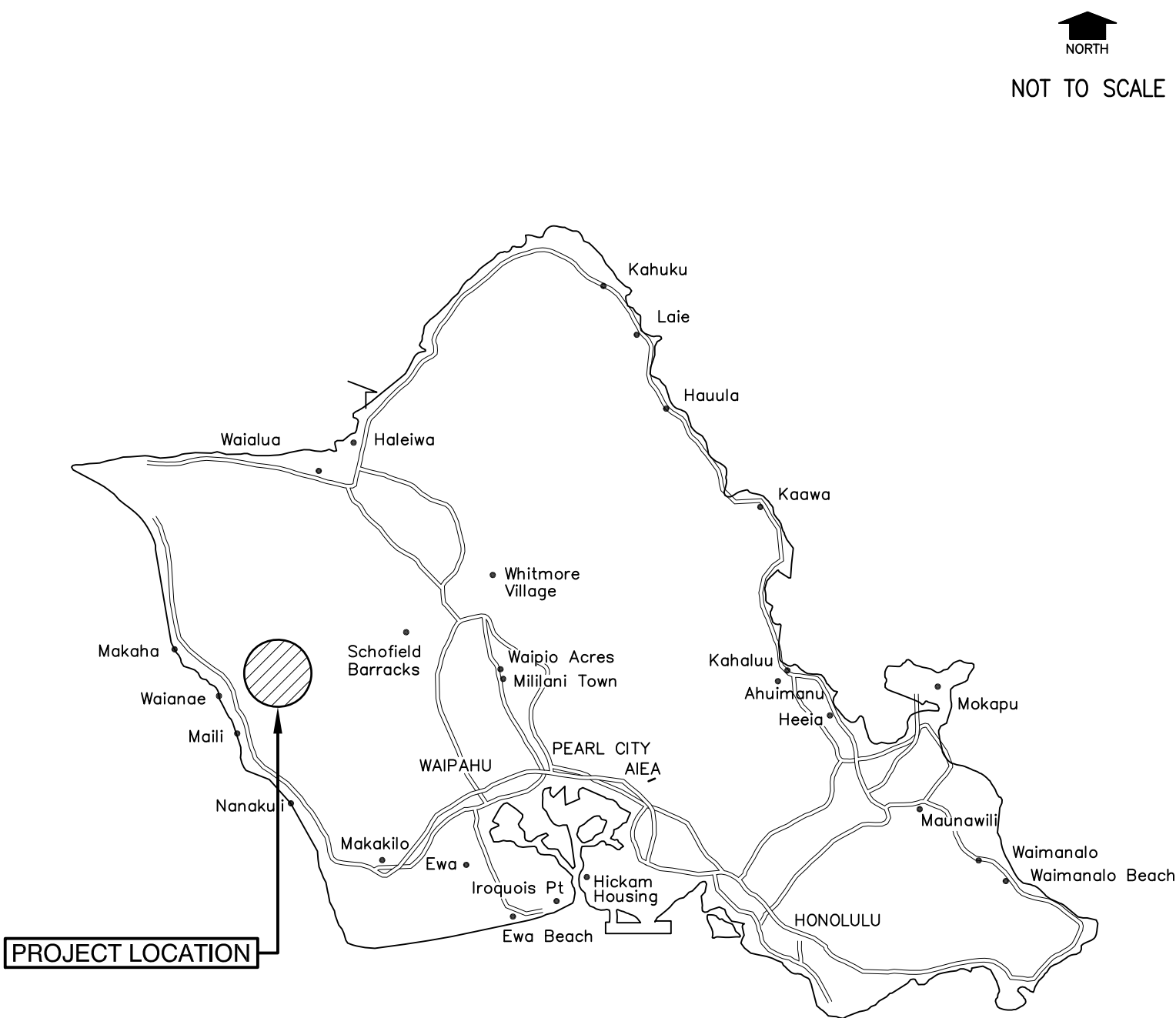
KAPOLEI, HAWAII, 96707

Prepared By:

FUKUNAGA & ASSOCIATES, INC.

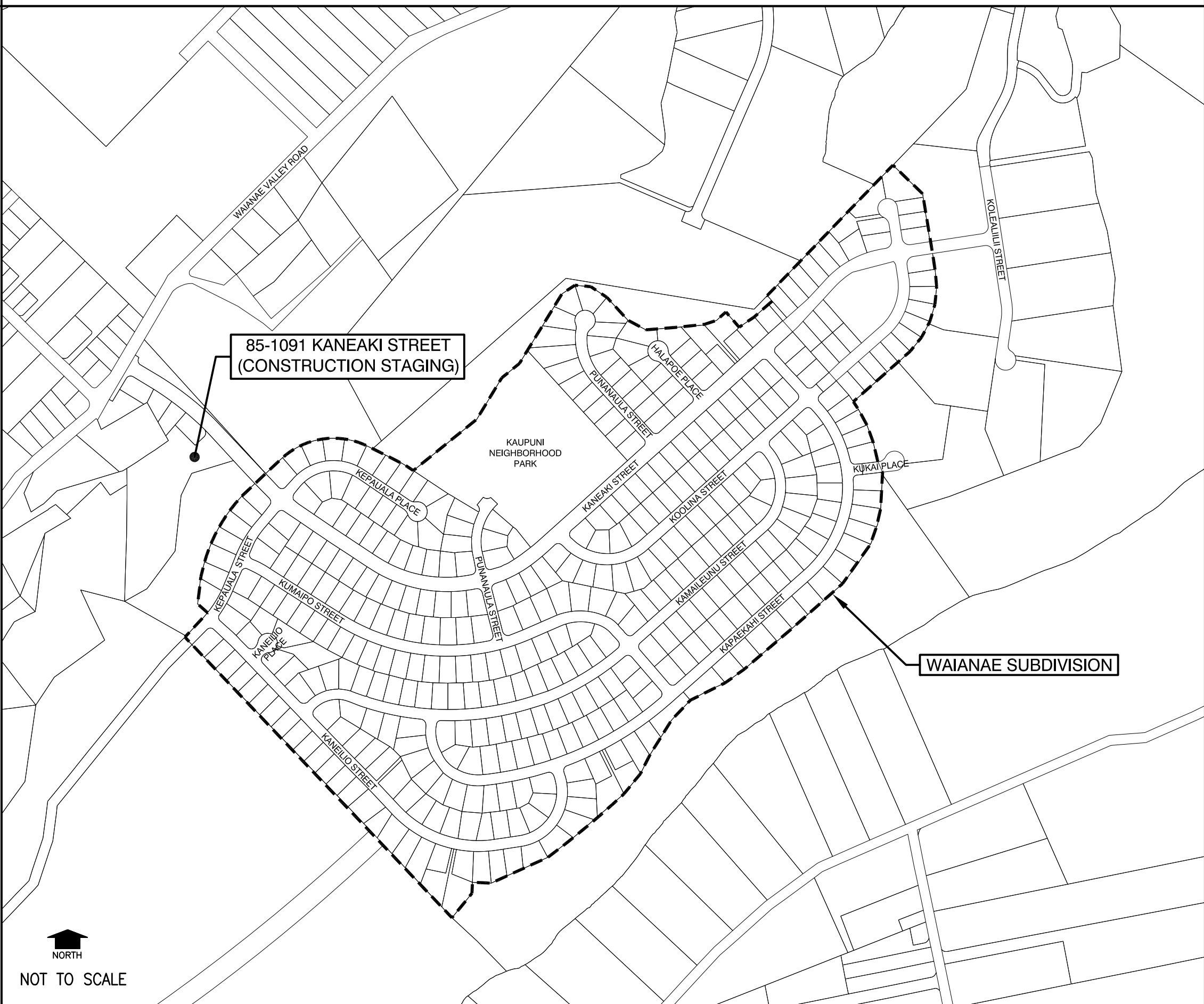
1357 Kapiolani Blvd., Suite 1530
Honolulu, Hawaii 96814

VICINITY MAP



ISLAND OF OAHU
NOT TO SCALE

LOCATION MAP



APPROVALS

WILLIAM J. AILA, JR., CHAIRMAN
HAWAIIAN HOMES COMMISSION
STATE OF HAWAII

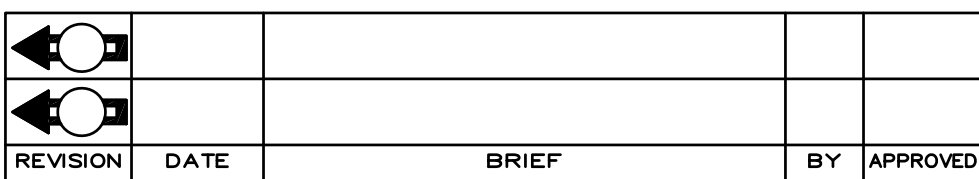
DATE _____

CHIEF, ENVIRONMENTAL MANAGEMENT DIVISION,
DEPARTMENT OF HEALTH
STATE OF HAWAII

DATE _____

DIRECTOR, DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU
(FOR CONSTRUCTION WITHIN CITY MAINTAINED RIGHT-OF-WAY ONLY)

DATE _____



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Last plotted 7/7/2022 11:17:17 AM

INDEX OF DRAWINGS

SHEET NO.	DWG NO.	DRAWING TITLE	SHEET NO.	DWG NO.	DRAWING TITLE	SHEET NO.	DWG NO.	DRAWING TITLE	SHEET NO.	DWG NO.	DRAWING TITLE
		<u>GENERAL</u>			<u>CIVIL (continued)</u>			<u>TRAFFIC CONTROL (continued)</u>			
1	G-1	TITLE SHEET	40	C-31	REPAVING PLAN-SL "H"	79	T-36	DETOUR PLAN - 25 & 26			
2	G-2	INDEX OF DRAWINGS	41	C-32	REPAVING NOTES AND DETAILS	80	T-37	TRAFFIC CONTROL PLAN - 27			
3	G-3	NOTES-1	42	C-33	BORING LOGS-1	81	T-38	TRAFFIC CONTROL PLAN - 28			
4	G-4	NOTES-2	43	C-34	BORING LOGS-2	82	T-39	TRAFFIC CONTROL PLAN - 29A			
5	G-5	NOTES-3: ESCP NOTES			<u>TRAFFIC CONTROL</u>	83	T-40	TRAFFIC CONTROL PLAN - 29B			
6	G-6	NOTES-4				84	T-41	TRAFFIC CONTROL PLAN - 30			
7	G-7	NOTES-5	44	T-1	TRAFFIC CONTROL NOTES						
8	G-8	NOTES-6: WATER NOTES	45	T-2	TRAFFIC CONTROL PLAN - 1						
9	G-9	NOTES & ABBREVIATIONS	46	T-3	TRAFFIC CONTROL PLAN - 2						
		<u>CIVIL</u>	47	T-4	TRAFFIC CONTROL PLAN - 3						
			48	T-5	TRAFFIC CONTROL PLAN - 4						
10	C-1	GENERAL SITE PLAN	49	T-6	DETOUR PLAN - 3 & 4						
11	C-2	EROSION & SEDIMENT CONTROL PLAN-1	50	T-7	TRAFFIC CONTROL PLAN - 5						
12	C-3	EROSION & SEDIMENT CONTROL PLAN-2	51	T-8	TRAFFIC CONTROL PLAN - 6A						
13	C-4	EROSION & SEDIMENT CONTROL PLAN-3	52	T-9	TRAFFIC CONTROL PLAN - 6B						
14	C-5	EROSION & SEDIMENT CONTROL PLAN-4	53	T-10	TRAFFIC CONTROL PLAN - 7A						
15	C-6	EROSION & SEDIMENT CONTROL PLAN-5	54	T-11	TRAFFIC CONTROL PLAN - 7B						
16	C-7	PLAN & PROFILE-SL "A" (1 OF 3)	55	T-12	DETOUR PLAN - 6 & 7						
17	C-8	PLAN & PROFILE-SL "A" (2 OF 3)	56	T-13	TRAFFIC CONTROL PLAN - 8						
18	C-9	PLAN & PROFILE-SL "A" (3 OF 3) & SL "B"	57	T-14	TRAFFIC CONTROL PLAN - 9						
19	C-10	PLAN & PROFILE-SL "C" & SL "D"	58	T-15	TRAFFIC CONTROL PLAN - 10						
20	C-11	PLAN & PROFILE-SL "E"	59	T-16	TRAFFIC CONTROL PLAN - 11						
21	C-12	PLAN & PROFILE-SL "F" & SL "G"	60	T-17	TRAFFIC CONTROL PLAN - 12						
22	C-13	PLAN & PROFILE-SL "H"	61	T-18	TRAFFIC CONTROL PLAN - 13						
23	C-14	SEWER LATERAL PROFILES AT WATER MAIN CROSSINGS (1 OF 4)	62	T-19	DETOUR PLAN - 12 & 13						
24	C-15	SEWER LATERAL PROFILES AT WATER MAIN CROSSINGS (2 OF 4)	63	T-20	TRAFFIC CONTROL PLAN - 14						
25	C-16	SEWER LATERAL PROFILES AT WATER MAIN CROSSINGS (3 OF 4)	64	T-21	DETOUR PLAN - 14						
26	C-17	SEWER LATERAL PROFILES AT WATER MAIN CROSSINGS (4 OF 4)	65	T-22	TRAFFIC CONTROL PLAN - 15						
27	C-18	SEWER MANHOLE REPAIR MAP-1	66	T-23	TRAFFIC CONTROL PLAN - 16						
28	C-19	SEWER MANHOLE REPAIR MAP-2	67	T-24	TRAFFIC CONTROL PLAN - 17						
29	C-20	FLOW DIVERSION DETAILS	68	T-25	TRAFFIC CONTROL PLAN - 18						
30	C-21	SEWER MANHOLE DETAILS-1	69	T-26	TRAFFIC CONTROL PLAN - 19						
31	C-22	SEWER MANHOLE DETAILS-2	70	T-27	TRAFFIC CONTROL PLAN - 20						
32	C-23	TRENCH DETAILS	71	T-28	DETOUR PLAN - 19 & 20						
33	C-24	SEWER DETAILS	72	T-29	TRAFFIC CONTROL PLAN - 21						
34	C-25	PLAN & PROFILE-WL "A" & WL "B"	73	T-30	TRAFFIC CONTROL PLAN - 22						
35	C-26	MISCELLANEOUS DETAILS-1	74	T-31	TRAFFIC CONTROL PLAN - 23						
36	C-27	MISCELLANEOUS DETAILS-2	75	T-32	DETOUR PLAN - 22 & 23						
37	C-28	MISCELLANEOUS DETAILS-3	76	T-33	TRAFFIC CONTROL PLAN - 24						
38	C-29	REPAVING PLAN-SL "A" & "B"	77	T-34	TRAFFIC CONTROL PLAN - 25						
39	C-30	REPAVING PLAN-SL "C", "D", "E", & "F"	78	T-35	TRAFFIC CONTROL PLAN - 26						

REVISIONDATEBRIEFBYAPPROVED

JOHN T. MURAKA

LICENSED PROFESSIONAL ENGINEER

No. 8843-C

HAWAII, USA

This work was prepared by me or under my supervision and construction of this project will be under my observation. Observation of construction as defined by Hawaii Administrative Rules, Title 16, Dept. of Commerce & Consumer Affairs, Chapter 115, Professional Engineers, Architects, Surveyors and Landscape Architects.

FUKUNAGA & ASSOCIATES, INC.

License Expiration Date: April 30, 2024

DEPARTMENT OF HAWAIIAN HOME LANDS

STATE OF HAWAII

PROJECT:

WEST OAHU SEWER IMPROVEMENTS

WAIANAE SUBDIVISION

ITEM:

INDEX OF DRAWINGS

DESIGNED BY: WC

CHECKED BY: JM

DRAWN BY: JT

APPROVED:

CHEFDATE

FUKUNAGA AND ASSOCIATES, INC.

Consulting Engineers

IFB-22-HHL-001

DRAWINGG-2SHEET2 OF 84

FILE	POCKET	FOLDER	NO.

U:_PROJECT\2019-1202 DHHL West Oahu Sewer Improvements\~Plans\G-3 NOTES-1.dwg
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GENERAL NOTES:

1. THE EXISTING UTILITIES HAVE BEEN SHOWN ON THESE PLANS INSOFAR AS IT IS POSSIBLE TO DO SO. THEIR LOCATIONS AS SHOWN ARE APPROXIMATE ONLY AND THE CONTRACTOR SHALL MAKE AN INDEPENDENT CHECK ON THE GROUND BY PROBING AND WITH THE VARIOUS UTILITY COMPANIES AND GOVERNMENTAL AGENCIES TO ASCERTAIN THEIR EXACT LOCATIONS.
2. CONTACT THE HAWAII ONE CALL CENTER PRIOR TO ANY EXCAVATION AT 1-866-423-7287 OR <http://callbeforeyoudig.org>.
3. THE CONTRACTOR SHALL PROTECT ALL EXISTING UTILITIES WHETHER SHOWN ON THE PLANS OR NOT. BEFORE DISRUPTING SERVICE OF ANY UTILITY, THE CONTRACTOR SHALL CONTACT THE CITY'S REPRESENTATIVE AND APPROPRIATE RESPONSIBLE UTILITY AUTHORITY. DAMAGE TO EXISTING UTILITIES AS A RESULT OF CONSTRUCTION ACTIVITIES SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE STATE.
4. THE CONTRACTOR SHALL MAKE ARRANGEMENTS FOR UTILITIES SUCH AS ELECTRICITY, ETC. REQUIRED FOR HIS OPERATIONS, AND ALL COSTS FOR THESE UTILITIES SHALL BE BORNE BY THE CONTRACTOR.
5. UNLESS RELOCATION IS CALLED FOR ON THE PLANS, EXISTING UTILITIES SHALL REMAIN IN SERVICE AND IN PLACE. IF RELOCATION OF EXISTING UTILITIES IS REQUIRED FOR THE CONTRACTOR'S CONVENIENCE, INTERRUPTION OF SERVICE SHALL BE KEPT TO A MINIMUM AND SHALL BE DONE AT THE CONTRACTOR'S EXPENSE, AND ONLY WITH THE APPROVAL OF THE OFFICER-IN-CHARGE.
6. UTILITIES SHALL BE INSTALLED IN ACCORDANCE WITH PROVISIONS OF CHAPTER 22, REVISED ORDINANCES, 1969, AS AMENDED (UNDERGROUND UTILITIES).
7. THE CONTRACTOR SHALL VERIFY AND CHECK ALL DIMENSIONS AND DETAILS SHOWN ON THE DRAWINGS PRIOR TO THE START OF CONSTRUCTION. ANY DISCREPANCY SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ENGINEER FOR CLARIFICATION.
8. FOR NON-CITY PROJECTS, THE CONTRACTOR SHALL NOTIFY THE CIVIL ENGINEERING BRANCH, D.P.P. AT 768-8084 TO ARRANGE FOR INSPECTIONAL SERVICES AND SUBMIT TWO (2) SETS OF APPROVED CONSTRUCTION PLANS SEVEN (7) DAYS PRIOR TO COMMENCEMENT OF CONSTRUCTION WORK. FOR CITY PROJECTS, THE CONTRACTOR SHALL COORDINATE INSPECTIONAL SERVICES WITH THE RESPONSIBLE CITY AGENCY.
9. THE CONTRACTOR SHALL OBSERVE AND COMPLY WITH ALL FEDERAL, STATE AND LOCAL LAWS REQUIRED FOR THE PROTECTION OF PUBLIC HEALTH AND SAFETY AND ENVIRONMENTAL QUALITY.
10. THE CONTRACTOR SHALL PROVIDE, INSTALL AND MAINTAIN ALL NECESSARY SIGNS, BARRICADES AND OTHER PROTECTIVE FACILITIES AND SHALL TAKE ALL NECESSARY PRECAUTIONS FOR THE PROTECTION, CONVENIENCE AND SAFETY OF THE PUBLIC.
11. THE CONTRACTOR SHALL APPLY FOR A PERMIT WITH A NOISE CONTROL PLAN AND OTHER REQUIRED POLLUTION CONTROL PLANS.
12. IF THERE ARE ANY FUEL SPILLAGES, EXISTING LEAKS, ETC. FOUND DURING CONSTRUCTION, REPORT THE FOREGOING TO THE HAZARD EVALUATION AND EMERGENCY RESPONSE UNIT (PH. NO. 586-4248) OF THE DEPARTMENT OF HEALTH. FOR NON-WORKING HOURS, CALL THE STATE HOSPITAL OPERATOR (PH. NO. 247-2191).
13. NO BLASTING SHALL BE PERMITTED ON THIS PROJECT.
14. THE CONTRACTOR SHALL NOT DISPOSE GROUNDWATER REMOVED FROM DEWATERING ACTIVITIES TO STATE WATERS WITHOUT TREATMENT.
15. CONSTRUCTION ACTIVITIES MUST COMPLY WITH PROVISIONS OF HAWAII ADMINISTRATIVE RULES 11-60.1-33 ON FUGITIVE DUST. THE CONTRACTOR SHALL PROVIDE ADEQUATE MEANS TO CONTROL DUST FROM ROAD AREAS AND DURING THE VARIOUS PHASES OF CONSTRUCTION ACTIVITIES, INCLUDING BUT NOT LIMITED TO:
 - A. PLANNING THE DIFFERENT PHASES OF CONSTRUCTION, FOCUSING ON MINIMIZING THE AMOUNT OF DUST-GENERATING MATERIALS AND ACTIVITIES, CENTRALIZING MATERIAL TRANSFER POINTS AND ON-SITE VEHICULAR TRAFFIC ROUTES, AND LOCATING POTENTIALLY DUSTY EQUIPMENT IN AREAS OF THE LEAST IMPACT;
 - B. PROVIDING AN ADEQUATE WATER SOURCE AT THE SITE PRIOR TO START-UP OF CONSTRUCTION ACTIVITIES;
 - C. LANDSCAPING AND RAPID COVERING OF BARE AREAS, INCLUDING SLOPES, STARTING FROM THE INITIAL GRADING PHASE;
 - D. CONTROLLING OF DUST FROM SHOULDER, PROJECT ENTRANCES, AND ACCESS ROADS; AND
 - E. PROVIDING ADEQUATE DUST CONTROL MEASURES DURING WEEKENDS, AFTER HOURS AND PRIOR TO DAILY START-UP OF CONSTRUCTION ACTIVITIES.
16. THE CONTRACTOR SHALL PROVIDE TEMPORARY SAFE PEDESTRIAN ACCESS THROUGHOUT THE CONSTRUCTION SITE.
17. BENCHMARKS SHALL BE ESTABLISHED ON NEW STREET MONUMENTS AND DATA SUBMITTED TO THE DEPARTMENT OF DESIGN AND CONSTRUCTION CITY AND COUNTY OF HONOLULU.

GENERAL NOTES (continued):

18. THE CONTRACTOR SHALL CONDUCT ALL TESTS REQUIRED BY THE OFFICER-IN-CHARGE AND BE RESPONSIBLE FOR ALL EXPENSES INCURRED IN CONDUCTING THESE TESTS.
19. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE OFFICER-IN-CHARGE OF ANY DISCREPANCY OR CONFLICT FOUND IN THE FIELD PRIOR TO OR DURING THE COURSE OF CONSTRUCTION AND SHALL NOT PROCEED WITH CONSTRUCTION UNTIL THE CONSTRUCTION MANAGER RESOLVES THE SAID DISCREPANCY OR CONFLICT.
20. UNLESS OTHERWISE NOTED, ALL EXISTING PAVEMENT, UTILITY LINES, AND OTHER IMPROVEMENTS DAMAGED OR UNDERMINED AS A RESULT OF THE CONTRACTOR'S OPERATION, SHALL BE RECONSTRUCTED OR REPLACED BY THE CONTRACTOR AT HIS OWN EXPENSE TO MATCH EXISTING CONDITIONS.
21. WHEN TRENCH EXCAVATION IS ADJACENT TO OR UNDER EXISTING STRUCTURES OR FACILITIES, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROPERLY SHEETING AND BRACING THE EXCAVATION AND SECURE FROM POSSIBLE SLIDES, CAVE-INS AND SETTLEMENT, AND FOR PROPERLY SUPPORTING EXISTING STRUCTURES AND SETTLEMENT, AND FOR PROPERLY SUPPORTING EXISTING STRUCTURES AND FACILITIES WITH BEAMS, STRUTS OR UNDERPINNING TO FULLY PROTECT THE EXISTING STRUCTURES FROM DAMAGE.
22. ALL ABANDONED PIPE OPENINGS SHALL BE PLUGGED WITH CLASS "C" CONCRETE TO A DEPTH OF ONE AND ONE-HALF TIMES THE DIAMETER OF THE PIPE.
23. DEBRIS GENERATED FROM CONSTRUCTION WORK SHALL BE DISPOSED OF "OFF-SITE" BY THE CONTRACTOR.
24. ALL EXISTING IMPROVEMENTS, IN THE WAY OF NEW CONSTRUCTION WHETHER SHOWN OR NOT ON THE DEMOLITION PLAN SHALL BE REMOVED AND/OR RELOCATED BY THE CONTRACTOR WITH THE APPROVAL OF THE OFFICER-IN-CHARGE.
25. THE EXISTING IMPROVEMENTS ON THE PREMISES AND IN THE ADJACENT AREA THAT ARE NOT TO BE REMOVED SHALL BE PRESERVED AND PROTECTED. ANY DAMAGES RESULTING FROM THE CONTRACTORS CONSTRUCTION OPERATION SHALL BE REPLACED AND REPAIRED TO ORIGINAL OR BETTER CONDITION TO THE SATISFACTION OF THE OWNER.

TOPOGRAPHIC SURVEY NOTES:

1. TOPOGRAPHIC FEATURES ARE BASED ON A TOPOGRAPHIC SURVEY PREPARED BY CONTROLPOINT SURVEYING, INC. IN 2021.
2. AZIMUTHS AND COORDINATES ARE REFERRED TO HAWAII STATE PLANE GRID SYSTEM, NAD 83, ZONE 3, U.S. FOOT.
3. ELEVATIONS ARE REFERRED TO MEAN SEA LEVEL.
4. PROJECT BENCHMARK:
C&C STREET SURVEY MONUMENT TOP OF BRASS PIN
ELEV.=192.59 FEET, MSL
N: 105363.31
E: 1584450.10
5. PT MON LOCATED 110 FT FROM THE INTERSECTION OF KANEAKI AND KOOLINA STREETS (HAWAIIAN HOME LANDS FILE NO. 21-8-2-6)
6. THE TOPOGRAPHIC SURVEY MAP DEPICTS PARCELS OF THE PROJECT SITE, AND BOUNDARIES AND ENCUMBRANCES AFFECTING THE PROJECT SITE. THE DEPICTION IS TAKEN FROM THE LATEST TAX MAPS.
7. LOCATIONS OF UNDERGROUND UTILITIES ARE APPROXIMATE AND ARE BASED ON INFORMATION SHOWN ON PLANS/MAPS PREPARED BY OTHERS. THE INFORMATION SHOWN, THEREFORE, MAY OR MAY NOT BE REPRESENTATIVE OF ACTUAL FIELD CONDITIONS. THE CONTRACTOR SHALL VERIFY THE INFORMATION AS NEEDED DURING CONSTRUCTION.
8. REFERENCE CONSTRUCTION PLANS MAY HAVE BEEN PREPARED USING DIFFERENT ORIGIN AND DATUM.

SURVEY MONUMENT NOTES:

1. WHENEVER THE CENTER OF A STREET SURVEY MONUMENT IS LESS THAN THREE (3) FEET AWAY FROM THE EDGE OF TRENCH, THE CONTRACTOR SHALL RETAIN A LICENSED LAND SURVEYOR TO REFERENCE THE LOCATION OF SAID STREET MONUMENT. ALL REFERENCING WORK SHALL BE SUBMITTED TO THE DEPARTMENT OF DESIGN AND CONSTRUCTION, DIVISION OF LAND SURVEY AND ACQUISITION, FOR REVIEW AND APPROVAL BEFORE COMMENCEMENT OF CONSTRUCTION ADJACENT TO STREET MONUMENTS.
2. STREET MONUMENTS THAT ARE DISTURBED SHALL BE RESTORED UNDER THE LICENSED LAND SURVEYOR'S DIRECTION. ANY NEW DATA SUCH AS ELEVATIONS SHALL BE CERTIFIED BY THE SURVEYOR AND SUBMITTED TO THE DEPARTMENT OF DESIGN AND CONSTRUCTION, DIVISION OF LAND SURVEY AND ACQUISITION.

CONSTRUCTION NOTES:

1. ALL APPLICABLE CONSTRUCTION WORK SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, SEPTEMBER 1986 AND STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION, SEPTEMBER 1984, AS AMENDED, OF THE DEPARTMENT OF PUBLIC WORKS, CITY AND COUNTY OF HONOLULU AND THE COUNTIES OF KAUAI, MAUI, AND HAWAII.
2. THE UNDERGROUND PIPES, CABLES OR DUCTLINES KNOWN TO EXIST BY THE OFFICER-IN-CHARGE FROM HIS SEARCH OF RECORDS ARE INDICATED ON THE PLANS. THE CONTRACTOR SHALL VERIFY THE LOCATIONS AND DEPTHS OF THE FACILITIES AND EXERCISE PROPER CARE IN EXCAVATING IN 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.
3. NO CONTRACTOR SHALL PERFORM ANY CONSTRUCTION OPERATION SO AS TO CAUSE FALLING ROCKS, SOIL OR DEBRIS IN ANY FORM TO FALL, SLIDE OR FLOW INTO EXISTING CITY DRAINAGE SYSTEMS, OR ADJOINING PROPERTIES, STREETS OR NATURAL WATERCOURSES. SHOULD SUCH VIOLATIONS OCCUR, THE CONTRACTOR MAY BE CITED AND THE CONTRACTOR SHALL IMMEDIATELY MAKE ALL REMEDIAL ACTIONS NECESSARY. ALL CORRECTIVE WORK SHALL BE PERFORMED AND PAID FOR BY THE CONTRACTOR.
4. THE GENERAL CONTRACTOR OF THE PROJECT SHALL BE RESPONSIBLE FOR CONFORMANCE WITH APPLICABLE PROVISIONS OF THE HAWAII ADMINISTRATIVE RULES, TITLE 11, CHAPTER 54, "WATER QUALITY STANDARDS," AND TITLE 11, CHAPTER 55, "WATER POLLUTION CONTROL", AS WELL AS CHAPTER 14 OF THE REVISED ORDINANCES OF HONOLULU, AS AMENDED. BEST MANAGEMENT PRACTICES SHALL BE EMPLOYED AT ALL TIMES DURING CONSTRUCTION.

THE GENERAL CONTRACTOR OF THE PROJECT SHALL OBTAIN NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT COVERAGE(S) FOR THE FOLLOWING:

1. STORM WATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES THAT DISTURB ONE (1) ACRE OR MORE, AND
2. DISCHARGES OF HYDROTESTING EFFLUENT, DEWATERING EFFLUENT, AND WELL DRILLING EFFLUENT TO STATE WATERS.

IN ACCORDANCE WITH STATE LAW, ALL DISCHARGES RELATED TO PROJECT CONSTRUCTION OR OPERATIONS ARE REQUIRED TO COMPLY WITH STATE WATER QUALITY STANDARDS (HAWAII ADMINISTRATIVE RULES, CHAPTER 11-54). BEST MANAGEMENT PRACTICES SHALL BE USED TO MINIMIZE OR PREVENT THE DISCHARGE OF SEDIMENT, DEBRIS, AND OTHER POLLUTANTS TO STATE WATERS. PERMIT COVERAGE IS AVAILABLE FROM THE DEPARTMENT OF HEALTH, CLEAN WATER BRANCH AT [HTTP://HEALTH.HAWAII.GOV/CWB](http://health.hawaii.gov/cwb). THE OWNER/DEVELOPER/CONTRACTOR IS RESPONSIBLE FOR OBTAINING OTHER FEDERAL, STATE, OR LOCAL AUTHORIZATIONS AS REQUIRED BY LAW.

5. FOR NON-CITY PROJECTS, THE CONTRACTOR SHALL NOTIFY THE CIVIL ENGINEERING BRANCH, D.P.P. AT 768-8084 TO ARRANGE FOR INSPECTIONAL SERVICES AND SUBMIT TWO (2) SETS OF APPROVED CONSTRUCTION PLANS SEVEN (7) DAYS PRIOR TO COMMENCEMENT OF CONSTRUCTION WORK. FOR CITY PROJECTS, THE CONTRACTOR SHALL COORDINATE INSPECTIONAL SERVICES WITH THE RESPONSIBLE CITY AGENCY.
6. CONFINED SPACE
FOR ENTRY BY CITY PERSONNEL, INCLUDING INSPECTORS, INTO A PERMIT REQUIRED CONFINED SPACE AS DEFINED IN 29 CFR PART 1910.146(B), THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING:
 - I. ALL SAFETY EQUIPMENT REQUIRED BY THE CONFINED SPACE REGULATIONS APPLICABLE TO ALL PARTIES OTHER THAN THE CONSTRUCTION INDUSTRY, TO INCLUDE, BUT NOT LIMITED TO, THE FOLLOWING:
 - a. FULL BODY HARNESSES FOR UP TO TWO PERSONNEL.
 - b. LIFELINE AND ASSOCIATED CLIPS.
 - c. INGRESS/EGRESS AND FALL PROTECTION EQUIPMENT.
 - d. TWO-WAY RADIOS (WALKIE-TALKIES) IF OUT OF LINE-OF-SIGHT.
 - e. EMERGENCY (ESCAPE) RESPIRATOR (10 MINUTE DURATION).
 - f. CELLULAR TELEPHONE TO CALL FOR EMERGENCY ASSISTANCE.
 - g. CONTINUOUS GAS DETECTOR (CALIBRATED) TO MEASURE OXYGEN, HYDROGEN SULFIDE, CARBON MONOXIDE AND FLAMMABLES (CAPABLE OF MONITORING AT A DISTANCE AT LEAST 20- FEET AWAY).
 - h. PERSONAL MULTI-GAS DETECTOR TO BE CARRIED BY INSPECTOR.
 - II. CONTINUOUS FORCED AIR VENTILATION ADEQUATE TO PROVIDE SAFE ENTRY CONDITIONS.
 - III. ONE ATTENDANT/RESCUE PERSONNEL TOPSIDE (TWO, IF CONDITIONS WARRANT IT).
7. PURSUANT TO CHAPTER 6E, HRS, IN THE EVENT ANY ARTIFACTS OR HUMAN REMAINS ARE UNCOVERED DURING CONSTRUCTION OPERATIONS, THE CONTRACTOR SHALL IMMEDIATELY SUSPEND WORK AND NOTIFY THE HONOLULU POLICE DEPARTMENT, THE STATE DEPARTMENT OF LAND AND NATURAL RESOURCES-HISTORIC PRESERVATION DIVISION (692-8015). IN ADDITION, FOR NON-CITY PROJECTS, THE CONTRACTOR SHALL INFORM THE CIVIL ENGINEERING BRANCH, DEPARTMENT OF PLANNING AND PERMITTING (768-8084); AND FOR CITY PROJECTS, NOTIFY THE RESPONSIBLE CITY AGENCY.

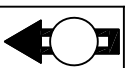
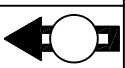
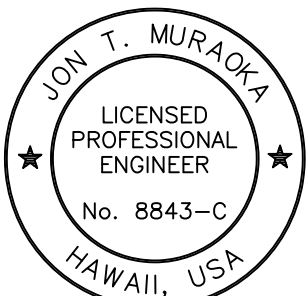
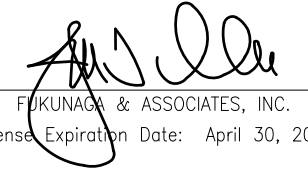
CONSTRUCTION NOTES (continued):

8. FOR PROJECTS ABUTTING STATE HIGHWAYS' RIGHTS-OF-WAY, THE OWNER OR HIS AUTHORIZED REPRESENTATIVE SHALL NOTIFY THE STATE DEPARTMENT OF TRANSPORTATION, HIGHWAYS DIVISION, OAHU DISTRICT, DRAINAGE DISCHARGE UNIT AT 831-6793 FOR AN ASSESSMENT OF STATE HIGHWAYS PERMIT REQUIREMENTS.
9. THE CONTRACTOR, AT HIS EXPENSE, SHALL RESTORE TO THE ORIGINAL CONDITION OR BETTER ALL EXISTING UTILITIES, FACILITIES AND LANDSCAPING TO REMAIN THAT ARE DAMAGED AS A RESULT OF CONSTRUCTION.
10. CONTRACTOR SHALL PROVIDE AN ADEQUATE AND SAFE NON-SKID BRIDGING MATERIAL, INCLUDING SHORING, OVER TRENCHES IN PAVEMENT AREAS. THE BRIDGING SHALL BE ABLE TO SUPPORT ALL TYPES OF VEHICULAR TRAFFIC. BRIDGING MATERIALS SHALL NOT BE USED ON HIGH SPEED ROADWAYS, WHICH ARE ROADS WITH A DESIGN SPEED OF 50 MPH OR HIGHER. SMOOTH RIDING CONNECTION BETWEEN ROADWAY SURFACES AND BRIDGING MATERIAL SHALL BE PROVIDED TO THE SATISFACTION OF THE OFFICER-IN-CHARGE. SHOULD COMPLAINTS BE RECEIVED DUE TO NOISE GENERATED FROM THIS WORK, THE CONTRACTOR SHALL IMMEDIATELY ADDRESS THOSE COMPLAINTS.

APPROVAL:

CHIEF, CIVIL ENGINEERING BRANCH, DPP

DATE

				
				
REVISION	DATE	BRIEF	BY	APPROVED
<div><div><p>This work was prepared by me or under my supervision and construction of this project will be under my observation. Observation of construction as defined by Hawaii Administrative Rules, Title 16, Dept. of Commerce & Consumer Affairs, Chapter 115, Professional Engineers, Architects, Surveyors and Landscape Architects.</p><p>FUKUNAGA & ASSOCIATES, INC. License Expiration Date: April 30, 2024</p></div><div><div>DEPARTMENT OF HAWAIIAN HOME LANDS STATE OF HAWAII</div><div>PROJECT: WEST OAHU SEWER IMPROVEMENTS WAIANAE SUBDIVISION</div><div>ITEM: NOTES-1</div><div>DESIGNED BY: WC DRAWN BY: JT APPROVED:</div><div>CHECKED BY: JM</div><div>_____ CHIEF</div><div>_____ DATE</div><div>FUKUNAGA AND ASSOCIATES, INC. Consulting Engineers</div></div></div>				
IFB-22-HHL-001				
FILE	POCKET	FOLDER	NO.	

1. ALL SEWER CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH THE CITY'S "STANDARD SPECIFICATIONS," SEPT. 1986, THE DEPARTMENT OF ENVIRONMENTAL SERVICES "WASTEWATER SYSTEM DESIGN STANDARDS," JULY 2017, AND "WASTEWATER SYSTEM STANDARD DETAILS," JULY 2017, CURRENT CITY PRACTICES AND REVISED ORDINANCES OF HONOLULU, 1990 AS AMENDED.
2. IN THE EVENT THAT ANY CHANGE IN ALIGNMENT OR GRADE FOR THE PROPOSED SEWERS ARE REQUIRED DUE TO UNFORESEEN CONFLICT WITH OTHER UTILITIES, THE ENGINEER IN CHARGE OR THE MAKER OF THE PLANS SHALL BE RESPONSIBLE FOR THE REQUIRED CHANGES WHICH ARE TO BE PRESENTED TO THE DEPARTMENT OF PLANNING AND PERMITTING (DPP) FOR APPROVAL.
3. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGEMENT BRANCH, WASTEWATER ENGINEERING AND CONSTRUCTION DIVISION, ENV, AT (808) 768-8785, 768-8769, OR 768-8755 TO ARRANGE FOR INSPECTION SERVICES AND SUBMIT FIVE (5) SETS OF APPROVED CONSTRUCTION PLANS TO THE WASTEWATER BRANCH, DPP SEVEN (7) DAYS PRIOR TO COMMENCEMENT OF SEWER WORK. THE CONTRACTOR SHALL PAY FOR ALL INSPECTION COSTS.
4. CRUSHED ROCK CRADLE IS PERMITTED WHERE SOIL IS STABLE. IN AREAS OF UNSTABLE SOIL, THE MAKER OF THE PLANS AND THE OFFICER-IN-CHARGE WILL DETERMINE THE PIPE SUPPORT REQUIRED.
5. THE UNDERGROUND PIPES, CABLES OR DUCTLINES KNOWN TO EXIST BY THE ENGINEER FROM HIS RESEARCH OF RECORDS ARE INDICATED ON THE PLANS. THE CONTRACTOR SHALL VERIFY THE LOCATION AND DEPTH OF THE FACILITIES, INCLUDING AND AFFECTING SEWER LINES, IN THE PRESENCE OF THE WASTEWATER INSPECTOR AND EXERCISE PROPER CARE IN EXCAVATING THE AREA. THE CONTRACTOR SHALL BE RESPONSIBLE AND SHALL PAY FOR ALL DAMAGED UTILITIES.
6. SEWER LATERALS SHALL BE CLEAR OF AND NOT CONFLICTING WITH ANY OTHER UTILITY. MINIMUM HORIZONTAL AND VERTICAL CLEARANCES SHALL BE STRICTLY OBSERVED AND FOLLOWED.
7. SLOPE FOR SEWER LATERALS SHALL BE A MINIMUM OF 2.00% UNLESS OTHERWISE NOTED.
8. BUILDING PLUMBING FACILITIES SHALL BE CONTROLLED BY SEWER LATERAL INVERTS.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING CONTINUOUS SEWER SERVICE TO ALL AFFECTED AREAS DURING CONSTRUCTION.
10. THE CONSULTING ENGINEER SHALL SUBMIT TO THE WASTEWATER BRANCH, DPP "AS-BUILT" TRACINGS AND ELECTRONIC FILES OF THE CONSTRUCTION PLANS AS ACTUALLY CONSTRUCTED, SHOWING ALL CHANGES FROM THE ORIGINAL PLANS.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY SEWAGE SPILLS CAUSED DURING CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE STATE DEPARTMENT OF HEALTH AND UTILIZE APPROPRIATE SAMPLING AND ANALYZING PROCEDURES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL PUBLIC NOTIFICATIONS AND PRESS RELEASES.
12. THE CONTRACTOR SHALL INSTALL "RAINSTOPPER" MANHOLE INSERTS IN ALL SEWER MANHOLES WITH TYPE "SA" FRAME AND COVER.
13. THE CONTRACTOR SHALL OBTAIN APPROVAL FOR ADVANCE SEWER RISER AGREEMENT AT THE DPP AND OBTAIN BUILDING PERMIT FOR PLUMBING WORK BEFORE ANY ADVANCE RISER IS MADE.
14. ALL SEWER PIPE JOINTS WITHIN EASEMENTS SHALL BE WRAPPED WITH GEOTEXTILE ROOT BARRIER.
15. S4C PIPE CRADLE SEALS SHALL BE INSTALLED 10 FEET FROM ALL SEWER MANHOLES TO PREVENT SOIL MIGRATION. SEE DETAIL 3/C-23.
16. CONFINED SPACE
FOR ENTRY BY CITY PERSONNEL, INCLUDING INSPECTORS, INTO A PERMIT-REQUIRED CONFINED SPACE AS DEFINED IN 29 CFR PART 1910.146(B), THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING:
 1. ALL SAFETY EQUIPMENT REQUIRED BY THE CONFINED SPACE REGULATIONS APPLICABLE TO ALL PARTIES OTHER THAN THE CONSTRUCTION INDUSTRY, TO INCLUDE, BUT NOTLIMITED TO, THE FOLLOWING:
 - a. FULL BODY HARNESSES FOR UP TO TWO PERSONNEL.
 - b. LIFELINE AND ASSOCIATED CLIPS.
 - c. INGRESS/EGRESS AND FALL PROTECTION EQUIPMENT.
 - d. TWO-WAY RADIOS (WALKIE-TALKIES) IF OUT OF LINE-OF-SIGHT.
 - e. EMERGENCY (ESCAPE) RESPIRATOR (10 MINUTE DURATION).
 - f. CELLULAR TELEPHONE TO CALL FOR EMERGENCY ASSISTANCE.
 - g. CONTINUOUS GAS DETECTOR (CALIBRATED) TO MEASURE OXYGEN, HYDROGEN SULFIDE, CARBON MONOXIDE AND FLAMMABLES (CAPABLE OF MONITORING AT A DISTANCE AT LEAST 20- FEET AWAY).
 - h. PERSONAL MULTI-GAS DETECTOR TO BE CARRIED BY INSPECTOR.
 2. CONTINUOUS FORCED AIR VENTILATION ADEQUATE TO PROVIDE SAFE ENTRY CONDITIONS.
 3. ONE ATTENDANT/RESCUE PERSONNEL TOPSIDE (TWO, IF CONDITIONS WARRANT IT).
17. WHEN CONNECTING TO A LIVE SEWER LINE, THE CONTRACTOR SHALL ABIDE BY ALL CONDITIONS THAT THE STATE DEPARTMENT OF HEALTH SETS FORTH TO MITIGATE ANY WASTEWATER SPILL THAT MAY OCCUR. THE CONTRACTOR SHALL INFORM THE CITY INSPECTOR FIVE (5) WORKING DAYS PRIOR TO THE ACTUAL CONNECTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY FINES AND PENALTIES DUE TO ANY SPILLS RESULTING FROM THE CONNECTION.

18. NO RUNGS SHALL BE INSTALLED INSIDE NEW SEWER MANHOLES.
19. FOR SEWER MANHOLE ADJUSTMENTS UPWARD LESS THAN 3", SEE STD. DETAIL S-28. FOR SMH ADJUSTMENTS UPWARD GREATER THAN 3" OR FOR ANY ADJUSTMENTS DOWNWARD, RECONSTRUCT SMH TOP FROM BELOW THE CONE SECTION.
20. IF THE CONTRACTOR ENCOUNTERS FLOW MONITORING DEVICES, SUCH AS SPECIAL SEWER MANHOLE COVERS EMBEDDED WITH SOLAR PANELS, CONTACT COLLECTION SYSTEMS MAINTENANCE (CSM), ENV AT (808) 768-7272 TO COORDINATE TEMPORARY REMOVAL.
21. THE CONTRACTOR SHALL MAINTAIN VISIBILITY AND MAINTENANCE ACCESS TO LIVE SEWER MANHOLE LOCATIONS AT ALL TIMES, INCLUDING DURING NON-WORK HOURS AND PAVING OPERATIONS.
22. THE CONTRACTOR SHALL USE A MANHOLE DEBRIS CATCHING DEVICE WHEN PERFORMING MANHOLE HEIGHT ADJUSTMENT WORK AND REMOVE ANY CONSTRUCTION DEBRIS THAT HAS FALLEN INTO THE MANHOLE. DISPOSAL OF CONSTRUCTION DEBRIS IN THE SEWER SYSTEM IS STRICTLY PROHIBITED.
23. FOR PRECAST SEWER MANHOLES, THE CONSULTING ENGINEER SHALL SUBMIT FOUR (4) SETS OF SHOP DRAWINGS TO THE WASTEWATER BRANCH, DPP FOR APPROVAL. AFTER THE SHOP DRAWINGS ARE APPROVED, THE MANUFACTURER SHALL NOTIFY THE CONSTRUCTION MANAGEMENT BRANCH, WASTEWATER ENGINEERING AND CONSTRUCTION DIVISION, ENV, AT (808) 768-8785, 768-8769, OR 768-8755 TO ARRANGE FOR INSPECTION SERVICES FOR CONCRETE POURS MADE AT ITS PLANT SEVEN (7) DAYS PRIOR TO POUR.
24. PROPERTY OWNERS WITH LATERALS AFFECTED BY THE CONSTRUCTION SHALL BE NOTIFIED BY THE CONTRACTOR PRIOR TO COMMENCEMENT OF ANY WORK ON THE LATERAL.
25. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING SEWER LATERAL AND CLEANOUT LOCATIONS WHETHER SHOWN OR NOT SHOWN ON PLANS PRIOR TO COMMENCING WITH ANY WORK AND SHALL NOT ASSUME THAT WHERE NO LATERALS ARE SHOWN, NONE EXIST. THE CONTRACTOR SHALL BE RESPONSIBLE AND SHALL PAY FOR ALL DAMAGED UTILITIES. THE LOCATION AND DEPTHS OF ALL EXISTING SEWER LATERALS ARE APPROXIMATE.
26. ALL DROP AND SHALLOW DROP SEWER MANHOLES SHALL BE CORROSION PROTECTED, EITHER BY EPOXY COATING OR POLYMER CONCRETE. ALSO, IF THE VELOCITY EXCEEDS TEN (10) FEET PER SECOND (FPS), THE SEWER MANHOLE CHANNEL SHALL BE ABRASION RESISTANT.
27. ALL NEW PVC SEWER MAINS SHALL PASS A MANDREL TEST AS A CONDITION OF ACCEPTANCE. THE MANDREL DIAMETER SHALL BE 95% OR MORE OF THE INSIDE DIAMETER OF THE PIPE BEING TESTED. SEWER MAIN MAY NOT BE VIBRATED TO PASS MANDREL TEST.
28. PRIOR TO FINAL ACCEPTANCE ALL SEWER LINES INSTALLED SHALL BE FLUSHED WITH WATER AND ANY ACCUMULATED CONSTRUCTION DEBRIS AND OTHER FOREIGN MATERIALS SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR.
29. SEWERS ARE DHHL OWNED AND MAINTAINED, SUBJECT TO FUTURE AGREEMENT TO TRANSFER RESPONSIBILITIES TO THE CITY AND EXECUTION OF NECESSARY TRANSFER DOCUMENTS.

1. SUBGRADE PREPARATION: SCARIFY TO A MINIMUM DEPTH OF 6 INCHES. SUBGRADE IN COHESIONLESS MATERIALS SHALL BE COMPACTED TO A MINIMUM 95 PERCENT OF ASTM D1557 MAXIMUM DENSITY. WHERE COHESIVE MATERIALS ARE ENCOUNTERED, DENSITY REQUIREMENTS MAY BE REDUCED TO A MINIMUM 90 PERCENT.
2. WHERE SOFT OR LOOSE MATERIALS ARE ENCOUNTERED AT THE BOTTOM OF THE EXCAVATION, REMOVE SUCH MATERIAL TO THE DEPTH INDICATED OR AS DIRECTED BY THE OFFICER-IN-CHARGE, AND REPLACE IT TO THE PROPER GRADE WITH 3B FINE MATERIAL WRAPPED IN FILTER FABRIC (SEE NOTES 4 AND 5 FOR MATERIAL REQUIREMENTS).
3. ANY CAVITIES OR VOIDS EXPOSED OR COLLAPSED DURING SUBGRADE PREPARATION AND COMPACTION SHALL BE CLEANED AND BACKFILLED WITH CONTROLLED LOW STRENGTH MATERIALS (CLSM), LEAN CONCRETE, 3B FINE MATERIAL, OR PROPERLY COMPACTED SELECT MATERIAL.
4. CARE SHALL BE TAKEN TO PROTECT THE SEWER PIPES FROM DAMAGE DURING ALL STORAGE, HANDLING, INSTALLATION, BACKFILL OPERATIONS.
5. CRUSHED ROCK BEDDING: CRUSHED ROCK BEDDING SHALL BE PLACED AND COMPACTED, WITH HAND SHOVELING AND COMPACTION AS NECESSARY, TO PROVIDE FULL CONTACT WITH THE ENTIRE PERIPHERY OF THE PIPES. CRUSHED ROCK BEDDING SHALL CONSIST OF 3B FINE MATERIAL CONFORMING TO ASTM C33 / C33M SIZE NUMBER 67 GRADATION, WRAPPED IN FILTER FABRIC. AN ADEQUATE MINIMUM AMOUNT OF CRUSHED ROCK BEDDING SHALL BE PROVIDED ALONG THE SIDES OF THE PIPELINE TO PROVIDE SUFFICIENT LATERAL SUPPORT FOR THE PIPES IN VARIOUS SOIL CONDITIONS AND TO ALLOW SUFFICIENT WORKING ROOM TO PROPERLY PLACE AND COMPACT THE CRUSHED ROCK BEDDING ON THE SIDES OF THE PIPES IN ACCORDANCE WITH THE PIPE MANUFACTURER'S RECOMMENDATIONS.
6. FILTER FABRIC: MIRAFI 500X OR APPROVED SUBSTITUTE.

7. IMPORTED SELECT BORROW AND AGGREGATE BASE COURSE: IMPORTED SELECT BORROW SHALL MEET THE REQUIREMENTS OF SECTION 30, "SELECT BORROW FOR SUBBASE COURSE", OF THE STANDARD SPECIFICATIONS. AGGREGATE BASE COURSE SHALL MEET THE REQUIREMENTS OF SECTION 31, "AGGREGATE BASE COURSE", OF THE STANDARD SPECIFICATIONS.
8. SUBGRADE TESTING:
 - A. PERFORM AT LEAST ONE LABORATORY MOISTURE-DENSITY RELATION TEST USING REPRESENTATIVE SAMPLES FOR EACH SUBGRADE MATERIAL TYPE IN ACCORDANCE WITH ASTM D1557. FOR EACH ASTM D1557 TEST SAMPLE, PERFORM AT LEAST ONE GRADATION TEST IN ACCORDANCE WITH ASTM D6913. TEST SUBGRADE MATERIALS FOR MOISTURE-DENSITY RELATIONS AT LEAST 5 WORKING DAYS PRIOR TO THE START OF FIELD DENSITY TESTING.
 - B. PERFORM AT LEAST ONE FIELD DENSITY AND MOISTURE CONTENT TEST IN ACCORDANCE WITH ASTM D1556 OR ASTM D6938 PER LIFT FOR EACH UNDERGROUND STRUCTURE.
 - C. PERFORM AT LEAST ONE FIELD DENSITY AND MOISTURE CONTENT TEST IN ACCORDANCE WITH ASTM D1556 OR ASTM D6938 PER LIFT FOR EVERY 250 FEET OR FRACTION THEREOF OF TRENCH SUBGRADE.
9. IMPORTED SELECT BORROW, AND AGGREGATE BASE COURSE TESTING:
 - A. PERFORM AT LEAST ONE LABORATORY MOISTURE-DENSITY RELATION TEST USING REPRESENTATIVE SAMPLES FOR EACH BACKFILL MATERIAL USED IN ACCORDANCE WITH ASTM D1557, AND PROVIDE ADDITIONAL TESTS FOR EACH CHANGE OF SOURCE. FOR EACH ASTM D1557 TEST SAMPLE, PERFORM AT LEAST ONE GRADATION TEST IN ACCORDANCE WITH ASTM D6913. TEST BACKFILL MATERIALS FOR MOISTURE-DENSITY RELATIONS AT LEAST 5 WORKING DAYS PRIOR TO THE START OF FIELD DENSITY TESTING.
 - B. PERFORM AT LEAST ONE FIELD DENSITY AND MOISTURE CONTENT TEST IN ACCORDANCE WITH ASTM D1556 OR ASTM D6938 PER LIFT FOR EACH UNDERGROUND STRUCTURE.
 - C. PERFORM AT LEAST ONE FIELD DENSITY AND MOISTURE CONTENT TEST IN ACCORDANCE WITH ASTM D1556 OR ASTM D6938 PER LIFT FOR EVERY 250 FEET OR FRACTION THEREOF OF TRENCH EXCAVATION BACKFILL.
10. REFER TO SECTION 02221, "TRENCH AND EXCAVATION AND BACKFILL" FOR FURTHER REQUIREMENTS.

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN, INSTALLATION, OPERATION AND MAINTENANCE OF THE FLOW DIVERSION PUMPING AND/OR DIVERSION OF FLOWS NECESSARY TO COMPLETE THE SEWER WORK AS INDICATED.
2. PRIOR TO CONSTRUCTION OF SEWERLINE WORK, ALL FLOW DIVERSION PUMPING AND/OR DIVERSION OF FLOWS SHALL BE IN PLACE, TESTED AND COMPLETE.
3. THE TEMPORARY FLOW DIVERSION SEWER LINES SHALL USE ROAD RAMPS AT EACH INTERSECTION AND DRIVEWAY CROSSING TO ALLOW FOR VEHICULAR AND PEDESTRIAN ACCESS.
4. CONTRACTOR SHALL REMOVE ALL DIVERSION PIPING AND RESTORE PAVEMENT TO ITS ORIGINAL CONDITION FOLLOWING THE COMPLETION OF REQUIRED WORK.
5. ALL JOINTS FOR THE TEMPORARY SEWER LINE(S) SHALL BE POSITIVELY SEALED WITH NO LEAKS OCCURRING.
6. THE ENTIRE FLOW DIVERSION SYSTEM FOR EACH WORK AREA SHALL BE CONTINUOUSLY MONITORED AND MAINTAINED BY THE CONTRACTOR TO AVOID ANY SEWAGE SPILLAGE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH DAMAGE AND FLOODING OF ANY PUBLIC OR PRIVATE PROPERTY AND THE CLEAN UP AND REPAIR FROM ANY SEWAGE SPILLS RESULTING FROM SEWER FLOW CONTROLS. DAMAGE OR FLOODING TO PUBLIC OR PRIVATE PROPERTY CAUSED BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED AND CLEANED BY THE CONTRACTOR AT HIS EXPENSE.
7. ALL DIVERTED SEWAGE SHALL BE CONVEYED IN PIPES SIZED TO HANDLE DESIGN PEAK FLOWS, ADEQUATELY PROTECTED FROM TRAFFIC, AND SHALL BE DIRECTED INTO THE SANITARY SEWER SYSTEM ONLY.

CHIEF, WASTEWATER BRANCH, DPP
(FOR CONFORMANCE TO CITY STANDARDS)

JON T. MURAKA

★

LICENSED PROFESSIONAL ENGINEER

★

No. 8843-C

HAWAII, USA

This work was prepared by me or under my supervision and construction of this project will be under my observation. Observation of construction as defined by Hawaii Administrative Rules, Title 16, Dept. of Commerce & Consumer Affairs, Div. 115, Professional Engineers, Architects, Surveyors and Landscape Architects.

[Signature]

FUKUNAGA & ASSOCIATES, INC.
License Expiration Date: April 30, 2024

DEPARTMENT OF HAWAIIAN HOME LANDS

STATE OF HAWAII

PROJECT:

WEST OAHU SEWER IMPROVEMENTS
WAIANAE SUBDIVISION

ITEM:

NOTES-2

DESIGNED BY: WC

CHECKED BY: JM

DRAWN BY: JT

APPROVED:

CHIEF

DATE

FUKUNAGA AND ASSOCIATES, INC.
Consulting Engineers

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Last plotted 7/7/2022 11:17:29 AM

GOOD HOUSEKEEPING BMP:

- STREET SWEEPING AND VACUUMING. ALL POLLUTANTS DISCHARGED FROM CONSTRUCTION SITE TO OFF-SITE AREAS MUST BE SWEEPED OR VACUUMED EACH DAY BEFORE LEAVING THE JOB SITE.
- MATERIALS DELIVERY, STORAGE AND USE MANAGEMENT. PREVENT, REDUCE, OR ELIMINATE THE DISCHARGE OF POLLUTANTS FROM MATERIAL DELIVERY, STORAGE, AND USE TO THE STORM WATER SYSTEM OR WATERCOURSES BY MINIMIZING THE STORAGE OF HAZARDOUS MATERIALS ONSITE, STORING MATERIALS IN A DESIGNATED AREA, INSTALLING SECONDARY CONTAINMENT. CONSTRUCTION MATERIALS, WASTE, TOXIC AND HAZARDOUS SUBSTANCES, STOCKPILES AND OTHER SOURCES OF POLLUTION SHALL NOT BE STORED IN BUFFER AREAS, NEAR AREAS OF CONCENTRATED FLOW, OR AREAS ABUTTING THE MS4, RECEIVING WATERS, OR DRAINAGE IMPROVEMENTS THAT DISCHARGE OFF-SITE. PRIMARY AND SECONDARY CONTAINMENT CONTROLS AND COVERS SHALL BE IMPLEMENTED TO THE MAXIMUM EXTENT PRACTICABLE.
- SPILL PREVENTION AND CONTROL. CREATE AND IMPLEMENT SPILL PREVENTION AND RESPONSE PLANS TO ELIMINATE AND MINIMIZE THE DISCHARGE OF POLLUTANTS TO THE MS4 AND RECEIVING WATERS FROM LEAKS AND SPILLS BY REDUCING THE CHANCE FOR SPILLS, ABSORBING, CONTAINING, AND CLEANING UP SPILLS AND PROPERLY DISPOSING OF SPILL MATERIALS. AT A MINIMUM, ALL PROJECTS SHALL CLEANUP ALL LEAKS AND SPILLS IMMEDIATELY.
- HAZARDOUS MATERIALS. PREVENT OR REDUCE THE DISCHARGE OF POLLUTANTS TO STORM WATER FROM HAZARDOUS WASTE THROUGH PROPER MATERIAL USE AND WASTE DISPOSAL. IN THE EVENT THAT HAZARDOUS MATERIALS ARE DISCHARGED TO THE MS4, THE PROPERTY OWNER OR ESCP COORDINATOR SHALL IMMEDIATELY NOTIFY THE DEPARTMENT OF FACILITIES MAINTENANCE, HONOLULU FIRE DEPARTMENT, AND HONOLULU POLICE DEPARTMENT OF THE DISCHARGE BY TELEPHONE. A WRITTEN REPORT DESCRIBING THE POLLUTANTS THAT WERE DISCHARGED, THE REASONS FOR THE DISCHARGE, AND THE MEASURES THAT HAVE BEEN TAKEN OR WILL BE TAKEN TO PREVENT A REOCCURRENCE OF THE DISCHARGE SHALL BE SUBMITTED TO THE DIRECTOR NO LESS THAN 3 DAYS AFTER NOTIFICATION BY PHONE.
- NONHAZARDOUS MATERIALS. IN THE EVENT THAT NONHAZARDOUS MATERIALS ARE DISCHARGED TO THE MS4, THE PROPERTY OWNER OR ESCP COORDINATOR SHALL NOTIFY THE CITY DEPARTMENT OF FACILITIES MAINTENANCE BY TELEPHONE NO LATER THAN THE NEXT BUSINESS DAY. A WRITTEN REPORT DESCRIBING THE POLLUTANTS THAT WERE DISCHARGED, THE REASONS FOR THE DISCHARGE, AND THE MEASURES THAT HAVE BEEN TAKEN OR WILL BE TAKEN TO PREVENT A REOCCURRENCE OF THE DISCHARGE SHALL BE SUBMITTED TO THE DIRECTOR NO LESS THAN 3 DAYS AFTER NOTIFICATION BY PHONE.
- VEHICLE AND EQUIPMENT CLEANING. ELIMINATE AND MINIMIZE THE DISCHARGE OF POLLUTANTS TO STORM WATER FROM VEHICLE AND EQUIPMENT CLEANING OPERATIONS BY USING OFF-SITE FACILITIES WHEN FEASIBLE. WASHING IN DESIGNATED, CONTAINED AREAS ONLY, AND ELIMINATING DISCHARGES TO THE STORM DRAIN SYSTEM BY EVAPORATING AND/OR TREATING WASH WATER, AS APPROPRIATE OR INFILTRATING WASH WATER FOR EXTERIOR CLEANING ACTIVITIES THAT USE WATER ONLY.
- VEHICLE AND EQUIPMENT FUELING. PREVENT FUEL SPILLS AND LEAKS BY USING OFF-SITE FACILITIES, FUELING ONLY IN DESIGNATED AREAS, ENCLOSING OR COVERING STORED FUEL, AND IMPLEMENTING SPILL CONTROLS SUCH AS SECONDARY CONTAINMENT AND ACTIVE MEASURES USING SPILL RESPONSE KITS.
- VEHICLE AND EQUIPMENT MAINTENANCE. ELIMINATE AND MINIMIZE THE DISCHARGE OF POLLUTANTS TO STORM WATER FROM VEHICLE AND EQUIPMENT MAINTENANCE OPERATIONS BY USING OFF-SITE FACILITIES WHEN FEASIBLE, PERFORMING WORK IN DESIGNATED AREAS ONLY, USING SPILL PADS UNDER VEHICLES AND EQUIPMENT, CHECKING FOR LEAKS AND SPILLS, AND CONTAINING AND CLEANING UP SPILLS IMMEDIATELY.
- SOLID WASTE MANAGEMENT. PREVENT OR REDUCE DISCHARGE OF POLLUTANTS TO THE LAND, GROUNDWATER, AND STORM WATER FROM SOLID WASTE OR CONSTRUCTION AND DEMOLITION WASTE BY PROVIDING DESIGNATED WASTE COLLECTION AREAS, COLLECT SITE TRASH DAILY, AND ENSURING THAT CONSTRUCTION WASTE IS COLLECTED, REMOVED, AND DISPOSED OF ONLY AT AUTHORIZED DISPOSAL AREAS.
- SANITARY/SEPTIC WASTE MANAGEMENT. TEMPORARY AND PORTABLE SANITARY AND SEPTIC WASTE SYSTEMS SHALL BE MOUNTED OR STAKED IN, WELL-MAINTAINED AND SCHEDULED FOR REGULAR WASTE DISPOSAL AND SERVICING. SOURCES OF SANITARY AND/OR SEPTIC WASTE SHALL NOT BE STORED NEAR THE MS4 OR RECEIVING WATERS.
- STOCKPILE MANAGEMENT. STOCKPILES SHALL NOT BE LOCATED IN DRAINAGE WAYS, WITHIN 50 FEET FROM AREAS OF CONCENTRATED FLOWS, AND ARE NOT ALLOWED IN THE CITY RIGHT-OF-WAY. SEDIMENT BARRIERS OR SILT FENCES SHALL BE USED AROUND THE BASE OF ALL STOCKPILES. STOCKPILES SHALL NOT EXCEED 15 FEET IN HEIGHT. STOCKPILES GREATER THAN 15 FEET IN HEIGHT SHALL REQUIRE 8 FOOT WIDE BENCHING IN ACCORDANCE WITH ROH CHAPTER ARTICLE 15. STOCKPILES MUST BE COVERED WITH PLASTIC SHEETING OR A COMPARABLE MATERIAL IF THEY WILL NOT BE ACTIVELY USED WITHIN 7 DAYS.
- LIQUID WASTE MANAGEMENT. LIQUID WASTE SHALL BE CONTAINED IN A CONTROLLED AREA SUCH AS A HOLDING PIT, SEDIMENT BASIN, ROLL-OFF BIN, OR PORTABLE TANK OF SUFFICIENT VOLUME AND TO CONTAIN THE LIQUID WASTES GENERATED. CONTAINMENT AREAS OR DEVICES MUST BE IMPERMEABLE AND LEAK FREE AND SHOULD NOT BE LOCATED WHERE ACCIDENTAL RELEASE OF THE CONTAINED LIQUID CAN DISCHARGE TO WATER BODIES, CHANNELS, OR STORM DRAINS.
- CONCRETE WASTE MANAGEMENT. PREVENT OR REDUCE THE DISCHARGE OF POLLUTANTS TO STORM WATER FROM CONCRETE WASTE BY CONDUCTING WASHOUT OFFSITE OR PERFORMING ONSITE WASHOUT IN A DESIGNATED AREA CONSTRUCTED AND MAINTAINED IN SUFFICIENT QUANTITY AND SIZE TO CONTAIN ALL LIQUID AND CONCRETE WASTE GENERATED BY WASHOUT OPERATIONS. PLASTIC LINING MATERIAL SHOULD BE A MINIMUM OF 10 MILLIMETER POLYETHYLENE SHEETING AND SHOULD BE FREE OF HOLES, TEARS, OR OTHER DEFECTS THAT COMPROMISE THE IMPERMEABILITY OF THE MATERIAL. CONTAINMENT AREAS OR DEVICES SHOULD NOT BE LOCATED WHERE ACCIDENTAL CHANNELS, OR STORM DRAINS. WASHOUT FACILITIES DISCHARGE TO WATER BODIES, CHANNELS, OR STORM DRAINS. WASHOUT FACILITIES MUST BE CLEANED, OR NEW FACILITIES MUST BE CONSTRUCTED AND READY FOR USE ONCE THE WASHOUT IS 75 PERCENT FULL. ONCE CONCRETE WASTES ARE WASHED INTO THE DESIGNATED AREA AND ALLOWED TO HARDEN, THE CONCRETE SHOULD BE BROKEN UP, REMOVED, AND DISPOSED OF AS SOLID WASTES.

GOOD HOUSEKEEPING BMP (continued):

- CONTAMINATED SOIL MANAGEMENT. AT MINIMUM CONTAIN CONTAMINATED MATERIAL SOIL BY SURROUNDING WITH IMPERMEABLE LINED BERMS OR COVER EXPOSED CONTAMINATED MATERIAL WITH PLASTIC SHEETING. CONTAMINATED SOIL SHOULD BE DISPOSED OF PROPERLY IN ACCORDANCE WITH ALL APPLICABLE REGULATIONS.
- DUST CONTROL. DUST FROM A PROJECT SITE SHALL NOT BE TRANSPORTED OR DISCHARGED TO OFF-SITE AREAS. THE WORK MUST BE IN CONFORMANCE WITH AIR POLLUTION CONTROL STANDARDS CONTAINED IN THE HAWAII ADMINISTRATIVE RULES: TITLE 11 CHAPTER 60.1 "AIR POLLUTION CONTROL." ALL ESCPS SHALL PROVIDE FOR THE CONTROL OF DUST BY ONE OR MORE OF THE FOLLOWING:
 - MULCHING TO A DEPTH OF NO LESS THAN 1 INCH.
 - SPRINKLING EXPOSED SOILS WITH WATER TO MAINTAIN MOISTNESS AT A DEPTH OF 2-3 INCHES DURING WORKING HOURS AND NOT TO GENERATE ANY RUNOFF.
 - VERTICAL DUST BARRIERS NO LESS THAN 6 FEET IN HEIGHT, CONSTRUCTED OF MATERIALS CAPABLE OF EFFECTIVELY PREVENTING THE SPREAD OF DUST PARTICLES.
- REGULARLY INSPECT AND MAINTAIN REQUIRED EROSION AND SEDIMENT CONTROLS TO ENSURE CONTINUED PERFORMANCE.

PROJECT SEQUENCE:

- INSTALL INLET PROTECTION AND PERIMETER CONTROLS AROUND STAGING AREAS AND MATERIAL STOCKPILES AS NEEDED.
- PROCEED WITH CONSTRUCTION WITH LEAST POSSIBLE DISTURBANCE OF VEGETATIVE AREAS AND TEMPORARY STRUCTURES.
- INSTALL PERIMETER CONTROLS AROUND ACTIVE WORK AREAS AT THE END OF EACH BUSINESS DAY IF NOT STABILIZED.
- PLANT PERMANENT GROUND COVER ACCORDING TO THE LANDSCAPING PLAN AS SOON AS POSSIBLE.
- REMOVE OR DISMANTLE TEMPORARY EROSION CONTROL STRUCTURES AFTER PERMANENT STABILIZATION.

RAIN RESPONSE PLAN:

THE FOLLOWING WILL BE PERFORMED WHEN RAIN IS IMMINENT OR IS FORECASTED IN THE NEXT 48 HOURS:

- TEMPORARY SUSPENSION OF ACTIVE TRENCHING.
- INSPECT ALL PERIMETER CONTROLS, AND INLET PROTECTION DEVICES, AND MAINTAIN AS NEEDED. REINSTALL ANY PERIMETER CONTROLS THAT WERE REMOVED DUE TO ACTIVE WORK IN THE AREAS. IF A SEVERE STORM IS EXPECTED, REMOVE INLET PROTECTION DEVICES TO PREVENT FLOODING ON SURROUNDING STREETS.
- COVER OR RELOCATE MATERIAL STOCKPILES AND LIQUID MATERIAL CONTAINERS TO AVOID CONTACT WITH RAINWATER.
- PLACE SPILL PANS OR OIL-ONLY SPILL PADS UNDER CONSTRUCTION VEHICLES TO PREVENT RUNOFF FROM CONTACTING ANY SPILLED PETROLEUM PRODUCTS. PROPERLY DISPOSE OF ANY ACCUMULATED OILY WATER AFTER THE RAIN EVENT.
- RE-INSPECT AFTER THE RAIN EVENT AND REPLACE OR MAINTAIN BMPS AS NEEDED.

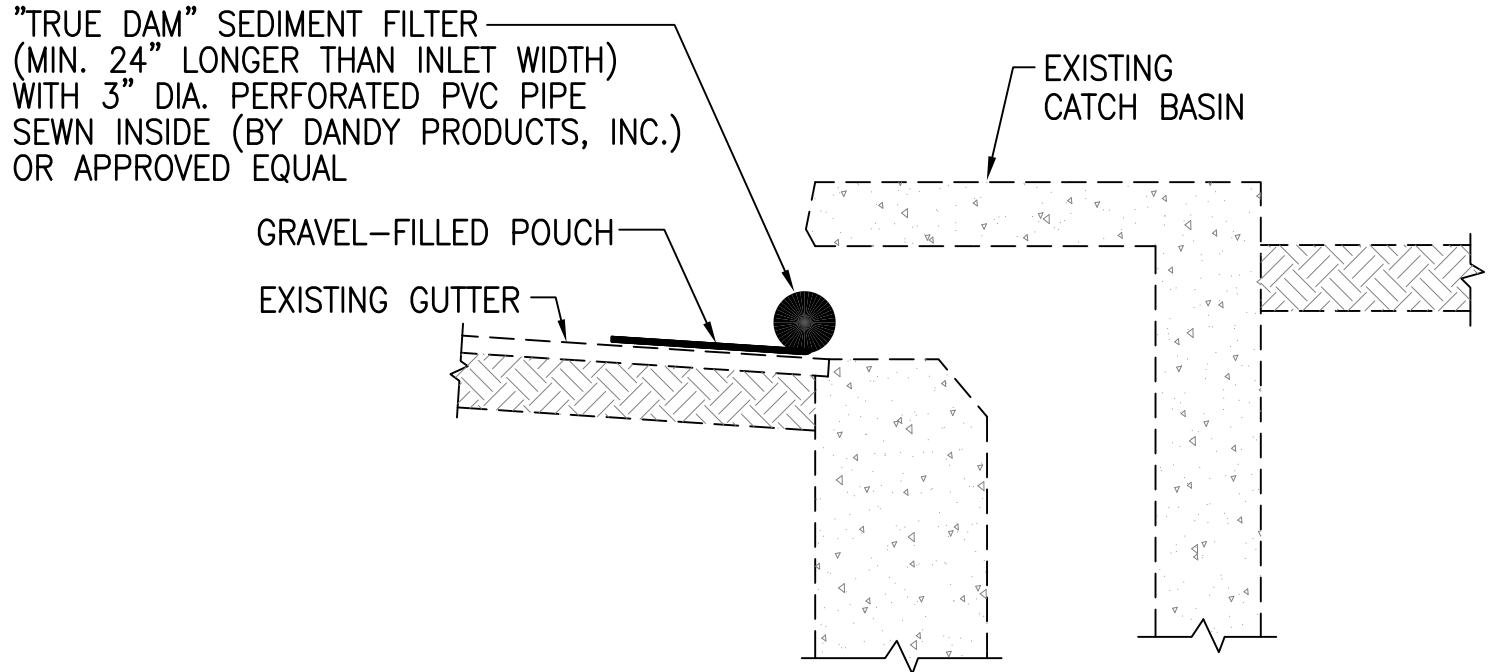
EROSION AND SEDIMENT CONTROL NOTES:

- THE CONTRACTOR SHALL FOLLOW THE GUIDELINES IN THE CITY AND COUNTY OF HONOLULU'S "RULES RELATING TO WATER QUALITY".
- MEASURES TO CONTROL EROSION AND OTHER POLLUTANTS SHALL BE IN PLACE BEFORE ANY CONSTRUCTION IS INITIATED.
- REGULARLY INSPECT AND MAINTAIN ALL EROSION AND SEDIMENT CONTROLS TO ENSURE CONTINUED PERFORMANCE.
- PERMANENT STABILIZATION
ALL DISTURBED AREAS SHALL BE PERMANENTLY STABILIZED USING VEGETATIVE COVERING, PAVEMENT, OR EQUIVALENT, PRIOR TO REMOVING EROSION AND SEDIMENT MEASURES. TRAPPED SEDIMENT AND AREAS OF DISTURBED SOIL WHICH RESULT FROM THE REMOVAL OF THE TEMPORARY MEASURES SHALL BE IMMEDIATELY AND PERMANENTLY STABILIZED.
- PERIMETER CONTROLS
PERIMETER CONTROLS ARE REQUIRED DOWNSLOPE OF EQUIPMENT/VEHICLE STAGING AREAS AT THE END OF EACH BUSINESS DAY AND AROUND MATERIAL STOCKPILES THAT ARE NOT ACTIVELY BEING USED. STOCKPILES ARE NOT ALLOWED IN THE CITY RIGHT-OF-WAY.
- INLET PROTECTION

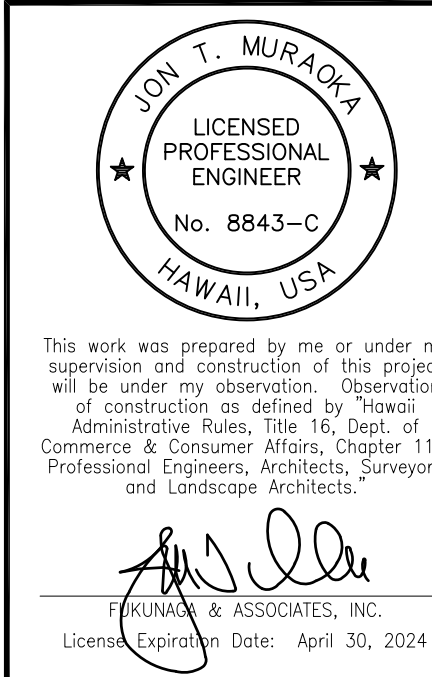
- ALL STORM DRAIN INLETS ONSITE AND THOSE OFFSITE WHICH MAY RECEIVE RUNOFF FROM THE SITE SHALL USE AN INLET PROTECTION DEVICE UNLESS THEY ARE DIRECTED TO A SEDIMENT BASIN.
- SEDIMENT LEVELS MAY NOT EXCEED ONE THIRD OF THE HEIGHT OF A SEDIMENT BARRIER OR INLET PROTECTION DEVICE AT ANY POINT ALONG THE LENGTH OF THE SEDIMENT BARRIER OR THE INLET PROTECTION DEVICE.
- SEDIMENT BARRIERS AND INLET PROTECTION DEVICES MUST BE UNCLOGGED AND CLEANED WHEN PERFORMANCE IS COMPROMISED.
- TORN, WEATHERED OR SAGGING SEDIMENT BARRIERS OR INLET PROTECTION DEVICES MUST BE REPAIRED OR REPLACED IMMEDIATELY.

EROSION AND SEDIMENT CONTROL NOTES (continued):

- TRACKING CONTROL
 - MINIMIZE SEDIMENT TRACK-OUT ONTO OFF-SITE STREETS, OTHER PAVED AREAS, AND SIDEWALKS FROM VEHICLES EXITING THE CONSTRUCTION SITE BY RESTRICTING VEHICLE TRAFFIC TO PROPERLY DESIGNATED AREAS AND USING ADDITIONAL CONTROLS TO REMOVE SEDIMENT FROM VEHICLE TIRES PRIOR TO EXITING THE SITE.
 - VEHICULAR PARKING AND MOVEMENTS ON PROJECT SITES MUST BE CONFINED TO PAVED SURFACES OR PREDEFINED PARKING AREAS AND VEHICLE PATHS, WHICH SHALL BE MARKED WITH FLAGS OR BOUNDARY FENCING.
 - ALL POLLUTANTS AND MATERIALS THAT ARE DROPPED, WASHED, TRACKED, SPILLED, OR OTHERWISE DISCHARGED FROM A PROJECT SITE TO OFF-SITE STREETS, OTHER PAVED AREAS, SIDEWALKS OR THE MS4 MUST BE CLEANED USING DRY METHODS SUCH AS SWEEPING OR VACUUMING.
 - WASHING POLLUTANTS AND MATERIALS THAT ARE DISCHARGED FROM THE PROJECT SITE TO THE MS4 INTO DRAIN INLETS OR CATCH BASINS IS PROHIBITED UNLESS THE MATERIAL IS SEDIMENT AND THE INLETS ARE DIRECTED TO A SEDIMENT BASIN OR SEDIMENT TRAP.
- BEST MANAGEMENT PRACTICES (BMPS) SHALL NOT BE REMOVED UNTIL FINAL STABILIZATION IS COMPLETE FOR THAT PHASE.
- REFER TO CITY AND COUNTY OF HONOLULU BEST MANAGEMENT PRACTICES MANUAL- CONSTRUCTION, FOR MORE INFORMATION ON BMPS.
- THE FOLLOWING BMPS WERE DETERMINED TO BE NOT APPLICABLE BASED ON THE SPECIFIC SITE CONDITIONS.
 - DEWATERING OPERATION - NO GROUNDWATER IS ANTICIPATED
- AN ESCP COORDINATOR FOR THE PROJECT MUST BE DESIGNATED TO DPP IN WRITING AT LEAST TWO WEEKS PRIOR TO STARTING WORK.
- NOTIFY DPP IN WRITING OF PROJECT START DATE TWO WEEKS PRIOR TO STARTING WORK.
- PRACTICE GOOD HOUSEKEEPING MEASURES THROUGHOUT THE DURATION OF CONSTRUCTION.
- INSPECTIONS SHALL BE PERFORMED WEEKLY.



1 CURB INLET FILTER DETAIL
G-5 NOT TO SCALE



APPROVAL:

CHIEF, CIVIL ENGINEERING BRANCH, DPP

DATE

REVISION	DATE	BRIEF	BY	APPROVED
DEPARTMENT OF HAWAIIAN HOME LANDS STATE OF HAWAII				
PROJECT: WEST OAHU SEWER IMPROVEMENTS WAIANAE SUBDIVISION				
ITEM: NOTES-3: ESCP NOTES				
DESIGNED BY: <u>WC</u>		CHECKED BY: <u>JM</u>		
DRAWN BY: <u>JT</u>				
APPROVED:				
_____ CHIEF		_____ DATE		
FUKUNAGA AND ASSOCIATES, INC. Consulting Engineers				

IFB-22-HHL-001

FILE	POCKET	FOLDER	NO.

1. A PERMIT SHALL BE OBTAINED FROM THE DEPARTMENT OF TRANSPORTATION SERVICES BEFORE WORK ON ANY PORTION OF A PUBLIC STREET OR HIGHWAY MAY BEGIN. CONSTRUCTION TRAFFIC CONTROL PLANS APPROVED BY THE DEPARTMENT OF TRANSPORTATION SERVICES AND/OR THE DEPARTMENT OF PLANNING AND PERMITTING MUST BE PROVIDED WHEN APPLYING FOR THE PERMIT.
2. THE CONTRACTOR SHALL PROVIDE, INSTALL AND MAINTAIN ALL NECESSARY SIGNS AND OTHER PROTECTIVE FACILITIES, WHICH SHALL CONFORM TO THE "HAWAII ADMINISTRATION RULES GOVERNING THE USE OF TRAFFIC CONTROL DEVICES AT WORK SITES ON OR ADJACENT TO PUBLIC STREETS AND HIGHWAYS" ADOPTED BY THE DIRECTOR OF TRANSPORTATION, AND THE CURRENT U.S. FEDERAL HIGHWAYS ADMINISTRATION'S "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREET AND HIGHWAYS, PART VI - TRAFFIC CONTROLS FOR STREET AND HIGHWAY CONSTRUCTION AND MAINTENANCE OPERATIONS."
3. WORK ON ANY CITY STREET AREA MAY BE PERFORMED ONLY BETWEEN THE HOURS OF 8:30 A.M. TO 3:30 P.M., MONDAY THROUGH FRIDAY UNLESS OTHERWISE PERMITTED BY THE DEPARTMENT OF TRANSPORTATION SERVICES.
4. DURING WORKING HOURS, THE CONTRACTOR SHALL PROVIDE FOR THROUGH TRAFFIC. DURING NON-WORKING HOURS, ALL TRENCHES SHALL BE COVERED WITH A SAFE NON-SKID BRIDGING MATERIAL AND ALL LANES SHALL BE OPEN TO TRAFFIC.
5. AS REQUIRED BY THE DEPARTMENT OF TRANSPORTATION SERVICES, THE CONTRACTOR SHALL PROVIDE OFF-DUTY POLICE OFFICERS TO CONTROL THE FLOW OF TRAFFIC.
6. WHERE PEDESTRIAN WALKWAYS EXIST, THEY SHALL BE MAINTAINED IN PASSABLE CONDITION OR OTHER FACILITIES FOR PEDESTRIANS SHALL BE PROVIDED. PASSAGE BETWEEN WALKWAYS AT INTERSECTIONS SHALL LIKEWISE BE PROVIDED.
7. DRIVEWAYS SHALL BE KEPT OPEN UNLESS THE OWNERS OF THE PROPERTY USING THESE RIGHTS-OF-WAY ARE OTHERWISE PROVIDED FOR SATISFACTORILY.
8. THE CONTRACTOR SHALL REFERENCE TO THE APPROVAL OF THE DEPARTMENT OF TRANSPORTATION SERVICES AND THE DEPARTMENT OF PLANNING AND PERMITTING, ALL EXISTING TRAFFIC SIGNS, POSTS AND PAVEMENT MARKINGS PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. THE CONTRACTOR SHALL REPLACE OR REPAIR ALL TRAFFIC SIGNS, POSTS AND PAVEMENT MARKINGS DISTURBED BY HIS ACTIVITIES.
9. THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PLANNING AND PERMITTING AT (808) 768-8084 ONE (1) WEEK PRIOR TO ANY WORK TO BE DONE ON SIGNS, POST AND PAVEMENT MARKINGS.
10. NO EQUIPMENT SHALL BE STORED WITHIN STREET RIGHTS-OF-WAY EXCEPT AT LOCATIONS DESIGNATED IN WRITING AND APPROVED BY THE DEPARTMENT OF TRANSPORTATION SERVICES.
11. DHHL SHALL ENSURE THAT THE CONTRACTOR INSTALLS THE CONSTRUCTION TRAFFIC CONTROL DEVICES IN ACCORDANCE WITH THE MUTCD AND THE HAWAII ADMINISTRATION RULES AS SPECIFIED IN TRAFFIC NOTE #2.

1. THE CONTRACTOR SHALL RETAIN THE SERVICES OF A CERTIFIED ARBORIST DURING CONSTRUCTION.
2. THE ARBORIST SHALL PERFORM QUALITY ASSURANCE DUTIES DURING THE CONTRACT PERIOD. THE ARBORIST SHALL ENSURE TREE PRUNING AND RELOCATION WORK IS PERFORMED IN ACCORDANCE WITH STANDARDS OF THE NATIONAL ARBORIST ASSOCIATION AND THE INTERNATIONAL SOCIETY OF ARBORICULTURE; PROPER MEASURES ARE TAKEN TO PROTECT TREES' CANOPY AND ROOT SYSTEM FROM DAMAGE FROM CONSTRUCTION ACTIVITY; WHEN POTENTIALLY DAMAGING CONSTRUCTION ACTIVITY IS PERFORMED THAT SUCH ACTIVITY IS PERFORMED IN A MANNER THAT WILL MINIMIZE DAMAGE TO THE TREE; AND TREES ARE PROVIDED PROPER CARE AND REMAIN IN GOOD HEALTH DURING THE DEMOLITION AND CONSTRUCTION PERIOD.
3. ALL EXCAVATION WORK REQUIRED UNDER THE CANOPY OF THE TREE SHALL BE PERFORMED UNDER THE DIRECTION OF THE ARBORIST. MATERIAL AND TOPSOIL STOCK PILING, VEHICLE PARKING, TEMPORARY ROADWAYS, AND CONSTRUCTION MATERIAL MIXING WILL NOT BE ALLOWED UNDER THE CANOPY. SPOILS, WASTE, AND WASHOUT WATER SHALL NOT BE DEPOSITED OR STORED, EITHER TEMPORARILY OR PERMANENTLY, UNDER THE CANOPY.
4. A CERTIFIED TREE WORKER UNDER THE SUPERVISION OF A CERTIFIED ARBORIST SHALL PERFORM THE TREE PRUNING WORK.
5. BEFORE GRADING OR EXCAVATION FOR FOUNDATIONS, FOOTINGS, OR TRENCHING, ROOTS THAT ARE GREATER THAN TWO (2) INCHES IN DIAMETER SHALL BE PRUNED BY MANUALLY DIGGING A TRENCH WITH SHARP BLADE, OR OTHER APPROVED ROOT PRUNING EQUIPMENT. ANY ROOTS DAMAGED DURING GRADING OR CONSTRUCTION SHALL BE EXPOSED TO SOUND TISSUE AND CUT CLEANLY WITH A SAW.

1. ALL TRAFFIC SIGN AND PAVEMENT MARKING INSTALLATIONS SHALL BE DONE IN ACCORDANCE WITH THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS," 2009 EDITION, AS AMENDED, THE LATEST SPECIFICATIONS FROM THE TRAFFIC REVIEW BRANCH, DEPARTMENT OF PLANNING AND PERMITTING AND AS SHOWN ON THE PLANS.
2. THE CONTRACTOR SHALL NOTIFY AND COORDINATE WORK WITH THE CIVIL ENGINEERING BRANCH, DEPARTMENT OF PLANNING AND PERMITTING, AT 768-8084 ONE (1) WEEK IN ADVANCE OF COMMENCING WORK.
3. THE CONTRACTOR SHALL SUBMIT MATERIAL BROCHURES FOR ALL SIGNS AND PAINT MATERIALS TO CIVIL ENGINEERING BRANCH, DEPARTMENT OF PLANNING AND PERMITTING.
4. THE SIGNING AND/OR STRIPING CONTRACTOR SHALL KEEP ONE (1) SET OF APPROVED PLANS AT THE PROJECT SITE AT ALL TIMES DURING CONSTRUCTION WORK.
5. THE CONTRACTOR SHALL PAINT TEMPORARY GUIDELINES AND OUTLINE OF ARROWS, LEGENDS AND CROSSWALKS WITH A TWO (2) INCH WIDE BRUSHED LINE ON THE DAY OF THE ROADWAY IS OPENED TO TRAFFIC. THESE MARKINGS MUST BE APPROVED BY THE INSPECTOR FROM THE CIVIL ENGINEERING BRANCH, DEPARTMENT OF PLANNING AND PERMITTING.
6. THE CONTRACTOR SHALL NOTIFY THE CIVIL ENGINEERING BRANCH, DEPARTMENT OF PLANNING AND PERMITTING AT 768-8084, THREE (3) DAYS IN ADVANCE OF FINAL INSPECTION.
7. THE CONTRACTOR SHALL MEET WITH THE INSPECTOR FROM THE CIVIL ENGINEERING BRANCH, DEPARTMENT OF PLANNING AND PERMITTING DURING THE FINAL INSPECTION.
8. WITHIN TEN (10) DAYS FOLLOWING NOTIFICATION OF AWARD OF CONTRACT, THE CONTRACTOR SHALL SUBMIT TO DEPARTMENT OF PLANNING AND PERMITTING (768-8084) FOR APPROVAL, A LIST OF ANY SIGNING AND PAVEMENT MARKING MATERIAL, WHICH HE PROPOSES TO INSTALL. THE LIST SHALL BE COMPLETE AS TO THE NAME OF MANUFACTURER, CATALOG NUMBER AND SHALL BE SUPPLEMENTED WITH MATERIAL BROCHURES.
9. UPON FINAL INSPECTION OF THE PROJECT, THE CONTRACTOR SHALL SUBMIT A LETTER OF CERTIFICATION FOR ALL TRAFFIC SIGNING AND PAVEMENT MARKING MATERIALS INSTALLED.
10. SIGNS SHALL BE ATTACHED TO BRACKETS WITH 5/16" ZINC PLATED STEEL BOLTS, NUTS AND WASHERS. SIGNS 48" WIDE OR LARGER THAN 10 SQUARE FEET IN AREA SHALL BE MOUNTED ON TWO-2" GALVANIZED PIPE POST. THE SIGN SHALL BE INSTALLED WITH AT LEAST ONE (1) FOOT CLEARANCE FROM THE SIGN EDGE TO THE CURB FACE.
11. ALL TRAFFIC SIGNS SHALL BE REFLECTORIZED.

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HAWAIIAN ELECTRIC COMPANY NOTES:

1. LOCATION OF HAWAIIAN ELECTRIC FACILITIES
THE LOCATION OF HAWAIIAN ELECTRIC'S 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 VERIFY IN THE FIELD THE LOCATIONS OF THE FACILITIES AND SHALL EXERCISE PROPER CARE IN EXCAVATING AND WORKING IN THE AREA. WHEREVER CONNECTIONS OF NEW UTILITIES TO EXISTING UTILITIES AND UTILITY CROSSINGS ARE SHOWN, THE CONTRACTOR SHALL EXPOSE THE EXISTING LINES AT THE PROPOSED CONNECTIONS AND CROSSINGS TO VERIFY THE DEPTHS PRIOR TO EXCAVATION FOR THE NEW LINES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGES TO HAWAIIAN ELECTRIC'S FACILITIES WHETHER SHOWN OR NOT SHOWN ON THE PLANS.
2. COMPLIANCE WITH HAWAII OCCUPATIONAL SAFETY AND HEALTH LAWS
THE CONTRACTOR SHALL COMPLY WITH THE STATE OF HAWAII'S OCCUPATIONAL SAFETY AND HEALTH LAWS AND REGULATIONS, INCLUDING WITHOUT LIMITATION, THOSE RELATED TO WORKING ON OR NEAR EXPOSED OR ENERGIZED ELECTRICAL LINES AND EQUIPMENT.
3. EXCAVATION CLEARANCE
THE CONTRACTOR SHALL OBTAIN AN EXCAVATION CLEARANCE FROM HAWAIIAN ELECTRIC'S PLANNING AND DESIGN SECTION OF THE TRANSMISSION & DISTRIBUTION ENGINEERING DEPARTMENT (543-5654) LOCATED AT 820 WARD AVENUE, 4TH FLOOR, A MINIMUM OF TEN (10) WORKING DAYS PRIOR TO STARTING CONSTRUCTION.
4. CAUTION!!! ELECTRICAL HAZARD!!!
EXISTING HAWAIIAN ELECTRIC OVERHEAD AND UNDERGROUND LINES ARE ENERGIZED AND WILL REMAIN ENERGIZED DURING CONSTRUCTION UNLESS PRIOR SPECIAL ARRANGEMENTS HAVE BEEN MADE WITH HAWAIIAN ELECTRIC. ONLY HAWAIIAN ELECTRIC 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 HAWAIIAN ELECTRIC FACILITIES, WHICH CAN RESULT IN ELECTROCUTION.
5. OVERHEAD LINES
STATE LAW (OSHA) REQUIRES THAT A WORKER AND THE LONGEST OBJECT HE OR SHE MAY CONTACT CANNOT COME CLOSER THAN A SPECIFIED MINIMUM RADIAL CLEARANCE WHEN WORKING CLOSE TO OR UNDER ANY OVERHEAD LINES. IT IS THE CONTRACTOR'S RESPONSIBILITY TO BE INFORMED OF AND COMPLY WITH THE LAW.

AT ANY TIME SHOULD THE CONTRACTOR ANTICIPATE THAT HIS WORK WILL RESULT IN THE NEED TO ENCR OACH WITHIN THE MINIMUM REQUIRED CLEARANCE AS STATED IN THE LAW, THE CONTRACTOR SHALL NOTIFY HAWAIIAN ELECTRIC AT LEAST THREE (3) MONTHS PRIOR TO THE PLANNED ENCR OACHMENT SO THAT, IF FEASIBLE, THE NECESSARY PROTECTIONS (E.G. RELOCATE OR DE-ENERGIZE HAWAIIAN ELECTRIC LINES) CAN BE INVESTIGATED. HAWAIIAN ELECTRIC MAY ALSO BE ABLE TO BLANKET ITS DISTRIBUTION (12KV AND BELOW) LINES TO PROVIDE A VISUAL AID IN PREVENTING ACCIDENTAL CONTACT. HAWAIIAN ELECTRIC'S COST OF SAFEGUARDING OR IDENTIFYING ITS LINES WILL BE CHARGED TO THE CONTRACTOR.

CONTACT HAWAIIAN ELECTRIC'S CUSTOMER RELATIONS AT 543-7070 FOR ASSISTANCE IN IDENTIFYING AND SAFEGUARDING OVERHEAD POWER LINES.
6. POLE BRACING
a) CONTRACTOR SHALL NOT EXCAVATE WITHIN 10 FEET OF HAWAIIAN ELECTRIC'S UTILITY POLES OR ANY ANCHOR SYSTEM SUPPORTING THE UTILITY POLE. IF CONTRACTOR MUST EXCAVATE AN AREA MORE THAN 12 INCHES DEEP BY 12 INCHES WIDE, AND CLOSER THAN 10 FEET FROM A UTILITY POLE OR ITS ANCHOR SYSTEM, EXCEPT WHEN EXCAVATING FOR RISERS IN A SINGLE TRENCH NOT WIDER THAN 12 INCHES AND NOT DEEPER THAN 3 FEET, CONTRACTOR WILL BE RESPONSIBLE FOR PROTECTING, SUPPORTING, SECURING AND TAKING ALL PRECAUTIONS TO PREVENT DAMAGE TO OR LEANING OF EXISTING POLES. BEFORE COMMENCING SUCH EXCAVATION, CONTRACTOR MUST NOTIFY HAWAIIAN ELECTRIC WHICH MAY LEAD TO IMPLEMENTING POLE BRACING REQUIREMENTS. HAWAIIAN ELECTRIC REQUIRES A MINIMUM OF TEN (10) WORKING DAYS TO CONDUCT THE REVIEW OF CONTRACTOR'S SUBMITTAL. CONTRACTOR SHALL SUBMIT ITS BRACING CALCULATIONS AND DRAWINGS, PREPARED AND STAMPED BY A LICENSED STRUCTURAL ENGINEER, TO HAWAIIAN ELECTRIC'S CUSTOMER RELATIONS (543-7070) FOR REVIEW. CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN, INSTALLATION, AND REMOVAL OF THE TEMPORARY POLE BRACING SYSTEM, AS WELL AS ALL COSTS INCURRED BY HAWAIIAN ELECTRIC TO REVIEW CONTRACTOR'S DRAWINGS AND TO REPAIR OR STRAIGHTEN POLES IMPACTED BY CONTRACTOR'S ACTIVITIES, INCLUDING RESPONSE AND RESTORATION COSTS INCURRED BY HAWAIIAN ELECTRIC ARISING OUT OF OR RELATED TO OUTAGES CAUSED BY CONTRACTOR'S FAILURE TO MEET THE FOREGOING REQUIREMENTS. HAWAIIAN ELECTRIC'S RECEIPT OF POLE BRACING CALCULATION OR DRAWING SUBMITTALS OF ANY CONTRACTOR, INCLUDING WORK PROCEDURE, SHALL NOT RELIEVE CONTRACTOR FROM ANY LIABILITY RESULTING FROM CONTRACTOR'S EXCAVATION NEAR OR AROUND HAWAIIAN ELECTRIC'S UTILITY POLES.

b) HAWAIIAN ELECTRIC MAY PROVIDE TO THE CUSTOMER INFORMATION RELATED TO POLE BRACING, INCLUDING CALCULATIONS AND OTHER BASIC ENGINEERING. HOWEVER, HAWAIIAN ELECTRIC PROVIDES THIS INFORMATION FOR INFORMATIONAL PURPOSES ONLY AND DOES NOT WARRANT ANY OF THE INFORMATION PROVIDED TO CUSTOMER. HAWAIIAN ELECTRIC HEREBY DISCLAIMS ANY LIABILITY ASSOCIATED WITH THE CUSTOMER'S USE OF INFORMATION PROVIDED TO THE CUSTOMER FROM HAWAIIAN ELECTRIC. IT IS THE CUSTOMER'S DUTY TO OBTAIN ENGINEERING FROM ITS OWN ENGINEER OR CONTRACTOR IN ORDER TO BRACE POLES AND THE USE OF HAWAIIAN ELECTRIC'S INFORMATION DOES NOT EXCUSE THE CUSTOMER FROM PERFORMING ITS OWN EVALUATION OF THE BRACING NEEDS. SHOULD THE CUSTOMER INSTALL BRACING AT ANY POLE LOCATION, CUSTOMER SHALL DEFEND, INDEMNIFY AND HOLD HARMLESS HAWAIIAN ELECTRIC FROM ANY THIRD-PARTY CLAIMS ASSOCIATED WITH THE CUSTOMER'S BRACING OF A POLE. SHOULD THE WORK CUSTOMER PERFORM AT OR NEAR THE POLE LOCATION COMPROMISE THE POLE OR ITS SURROUNDINGS IN ANY WAY, CUSTOMER SHALL RESTORE OR REPLACE THE POLE SO THAT IT IS NO LONGER COMPROMISED.

HAWAIIAN ELECTRIC COMPANY NOTES (CONT.):

7. UNDERGROUND LINES
THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION WHENEVER CONSTRUCTION CROSSES OR IS IN CLOSE PROXIMITY OF UNDERGROUND LINES. HAWAIIAN ELECTRIC'S EXISTING ELECTRICAL CABLES ARE ENERGIZED AND WILL REMAIN ENERGIZED DURING CONSTRUCTION. ONLY HAWAIIAN ELECTRIC PERSONNEL ARE TO BREAK INTO EXISTING HAWAIIAN ELECTRIC FACILITIES, HANDLE THESE CABLES, AND ERECT TEMPORARY GUARDS TO PROTECT THESE CABLES FROM DAMAGE. THE COST OF HAWAIIAN ELECTRIC'S ASSISTANCE IN PROVIDING PROPER SUPPORT AND PROTECTION OF ITS UNDERGROUND LINES WILL BE CHARGED TO THE CONTRACTOR. FOR ASSISTANCE/COORDINATION IN PROVIDING PROPER SUPPORT AND PROTECTION OF THESE LINES, THE CONTRACTOR SHALL CALL HAWAIIAN ELECTRIC'S CUSTOMER RELATIONS AT 543-7070 A MINIMUM OF TEN (10) WORKING DAYS IN ADVANCE.

SPECIAL PRECAUTIONS ARE REQUIRED WHEN EXCAVATING NEAR HAWAIIAN ELECTRIC'S 138KV OR 46KV UNDERGROUND LINES (SEE HAWAIIAN ELECTRIC INSTRUCTIONS TO CONSULTANTS/CONTRACTORS ON "EXCAVATION NEAR HAWAIIAN ELECTRIC'S UNDERGROUND 138KV AND/OR 46KV LINES" FOR DETAILED REQUIREMENTS).

FOR VERIFICATION OF UNDERGROUND LINES, THE CONTRACTOR SHALL CALL THE HAWAII ONE CALL CENTER AT 866-423-7287 MINIMUM OF FIVE (5) WORKING DAYS IN ADVANCE.
8. UNDERGROUND FUEL PIPELINES
THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION WHENEVER CONSTRUCTION CROSSES OR IS IN CLOSE PROXIMITY OF HAWAIIAN ELECTRIC'S UNDERGROUND FUEL OIL PIPELINES. SPECIAL PRECAUTIONS ARE REQUIRED WHEN EXCAVATING NEAR HAWAIIAN ELECTRIC'S UNDERGROUND FUEL OIL PIPELINES (SEE HAWAIIAN ELECTRIC'S SPECIFIC FUEL PIPELINE "GUIDELINES" TO CONSULTANTS/CONTRACTORS ON EXCAVATION NEAR HAWAIIAN ELECTRIC'S UNDERGROUND FUEL PIPELINES FOR DETAILED REQUIREMENTS).
9. EXCAVATIONS
WHEN TRENCH EXCAVATION IS ADJACENT TO OR BENEATH HAWAIIAN ELECTRIC'S EXISTING STRUCTURES OR FACILITIES, THE CONTRACTOR IS RESPONSIBLE FOR:
a) ARRANGING FOR HAWAIIAN ELECTRIC STANDBY PERSONNEL TO OBSERVE WORK AT CONTRACTOR'S COST.
b) SHEETING, BRACING, OR OTHERWISE SUPPORTING THE EXCAVATION AND STABILIZING THE EXISTING GROUND TO RENDER IT SAFE AND SECURE AND TO PREVENT POSSIBLE SLIDES, CAVE-INS, AND SETTLEMENTS.
c) PROPERLY SUPPORTING EXISTING STRUCTURES OR FACILITIES WITH BEAMS, STRUTS, UNDER-PINNINGS, OR OTHER NECESSARY METHODS TO FULLY PROTECT IT FROM DAMAGE.
d) BACKFILLING WITH PROPER BACKFILL MATERIAL INCLUDING SPECIAL THERMAL BACKFILL WHERE EXISTING (REFER TO ENGINEERING DIVISION FOR THERMAL BACKFILL SPECIFICATIONS).
10. RELOCATION OF HAWAIIAN ELECTRIC FACILITIES
ANY WORK REQUIRED TO RELOCATE OR MODIFY HAWAIIAN ELECTRIC FACILITIES SHALL BE DONE BY HAWAIIAN ELECTRIC, OR BY THE CONTRACTOR UNDER HAWAIIAN ELECTRIC'S SUPERVISION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COORDINATION, AND SHALL PROVIDE NECESSARY SUPPORT FOR HAWAIIAN ELECTRIC'S WORK, WHICH MAY INCLUDE, BUT NOT BE LIMITED TO, STAKING OF POLE/ANCHOR LOCATIONS, IDENTIFYING RIGHT OF WAY AND PROPERTY LINES, EXCAVATION AND BACKFILL, PERMITS AND TRAFFIC CONTROL, BARRICADING, AND RESTORATION OF PAVEMENT, SIDEWALKS, AND OTHER FACILITIES.

ALL COSTS ASSOCIATED WITH ANY RELOCATION OR MODIFICATION (EITHER TEMPORARY OR PERMANENT) FOR THE CONVENIENCE OF THE CONTRACTOR, OR TO ENABLE THE CONTRACTOR TO PERFORM HIS WORK IN A SAFE AND EXPEDITIOUS MANNER IN FULFILLING HIS CONTRACT OBLIGATIONS SHALL BE BORNE BY THE CONTRACTOR.
11. CONFLICTS
ANY REDESIGN OR RELOCATION OF HAWAIIAN ELECTRIC'S FACILITIES NOT SHOWN ON THE PLANS MAY BE CAUSE FOR LENGTHY DELAYS. THE CONTRACTOR ACKNOWLEDGES THAT HAWAIIAN ELECTRIC IS NOT RESPONSIBLE FOR ANY DELAY OR DAMAGE THAT MAY ARISE AS A RESULT OF ANY CONFLICTS DISCOVERED OR IDENTIFIED WITH RESPECT TO THE LOCATION OR CONSTRUCTION OF HAWAIIAN ELECTRIC'S ELECTRICAL FACILITIES IN THE FIELD, REGARDLESS OF WHETHER THE CONTRACTOR HAS MET THE REQUESTED MINIMUM ADVANCE NOTICES. IN ORDER TO MINIMIZE ANY DELAY OR IMPACT ARISING FROM SUCH CONFLICTS, HAWAIIAN ELECTRIC SHOULD BE NOTIFIED IMMEDIATELY UPON DISCOVERY OR IDENTIFICATION OF SUCH CONFLICT.
12. DAMAGE TO HAWAIIAN ELECTRIC FACILITIES
THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL HAWAIIAN ELECTRIC SURFACE AND SUBSURFACE UTILITIES AND SHALL BE RESPONSIBLE FOR ANY DAMAGES TO HAWAIIAN ELECTRIC'S FACILITIES AS A RESULT OF HIS OPERATIONS. THE CONTRACTOR SHALL IMMEDIATELY REPORT SUCH DAMAGES OR ANY HAZARDOUS CONDITIONS RELATED TO HAWAIIAN ELECTRIC'S LINES TO HAWAIIAN ELECTRIC'S TROUBLE DISPATCHER AT 548-7961. REPAIR WORK SHALL BE DONE BY HAWAIIAN ELECTRIC OR BY THE CONTRACTOR UNDER HAWAIIAN ELECTRIC'S SUPERVISION. COSTS FOR DAMAGES TO HAWAIIAN ELECTRIC'S FACILITIES SHALL BE BORNE BY THE CONTRACTOR.

IN CASE OF DAMAGE OR SUSPECTED DAMAGE TO HAWAIIAN ELECTRIC'S FUEL PIPELINE, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY HAWAIIAN ELECTRIC'S SECURITY COMMAND CENTER AT 543-7685 (A 24-HOUR NUMBER) SO HAWAIIAN ELECTRIC PERSONNEL CAN SECURE THE DAMAGED SECTION AND REPORT ANY OIL SPILLS TO THE PROPER AUTHORITIES. ALL COSTS ASSOCIATED WITH THE DAMAGE, REPAIR, AND OIL SPILL CLEANUP SHALL BE BORNE BY THE CONTRACTOR.
13. HAWAIIAN ELECTRIC STAND-BY PERSONNEL
THE CONTRACTOR MAY REQUEST HAWAIIAN ELECTRIC TO PROVIDE AN INSPECTOR TO STAND-BY DURING CONSTRUCTION NEAR HAWAIIAN ELECTRIC'S FACILITIES. THE COST OF SUCH INSPECTION WILL BE CHARGED TO THE CONTRACTOR.

THE CONTRACTOR SHALL CALL HAWAIIAN ELECTRIC'S CUSTOMER RELATIONS AT 543-7070 A MINIMUM OF THREE (3) MONTHS IN ADVANCE TO ARRANGE FOR HAWAIIAN ELECTRIC STAND-BY PERSONNEL.

HAWAIIAN ELECTRIC COMPANY NOTES (CONT.):

14. CLEARANCES
THE FOLLOWING CLEARANCES SHALL BE MAINTAINED BETWEEN HAWAIIAN ELECTRIC'S DUCTLINE AND ALL ADJACENT STRUCTURES (CHARTED AND UNCHARTED) IN THE TRENCH:
- | GUIDELINES FOR MINIMUM HORIZONTAL (PARALLEL) CLEARANCES BETWEEN HAWAIIAN ELECTRIC AND OTHER UNDERGROUND UTILITIES | | | | |
|---|---------------------------------------|---|--|-------------------|
| UNDERGROUND UTILITY | HAWAIIAN ELECTRIC DIRECT BURIED CABLE | HAWAIIAN ELECTRIC DIRECT BURIED IN CONDUIT (no concrete encasement) | HAWAIIAN ELECTRIC 3" (MINIMUM) CONCRETE ENCASEMENT | APPLICABLE NOTES: |
| Hawaiian Electric DB Conduits | 12" | 3" | 0" | |
| Hawaiian Electric 3" Encasement | 0" | 0" | 0" | |
| Telephone / CATV DB | 12" | 12" | 6" | |
| Telephone / CATV DB Ducts | 12" | 12" | 6" | |
| Telephone / CATV 3" Encasement | 0" | 0" | 0" | 5 |
| Traffic Signal | 12" | 12" | 12" | |
| Water DB (BWS Owned) | 36" | 36" | 36" | 1, 4 |
| Customer Owned Water Service Laterals | 12" | 12" | 12" | |
| Water (Concrete Jacketed) (BWS Owned) | 36" | 36" | 36" | 1, 4 |
| Gas DB | 12" | 12" | 12" | 1 |
| Gas (Concrete Jacketed) | 12" | 12" | 12" | 1 |
| Sewer DB | 36" | 36" | 36" | 1, 2 |
| Sewer (Concrete Jacketed) | 36" | 36" | 36" | 1, 2 |
| Drain | 12" | 12" | 12" | 1 |
| Fuel Pipelines | | | | 3 |
- Notes:
1. Where space is available, parallel clearance to other utilities, or foreign structures other than communication or traffic signal shall be 36".
2. If 36" clearance cannot be met:
- If clearance is less than 12", Jacket sewer line with reinforced concrete (per HAWAIIAN ELECTRIC's std. 30-1030) for a distance of 5' plus pipe diameter.
- If clearance is between 12" and 36", jacket sewer line with plain concrete.
3. All Fuel Pipeline crossings shall be reviewed and approved by the company that owns and maintains it.
4. 5 feet clear to water mains 16" and larger.
5. For situations with 0" minimum separation, a 6" separation is recommended.
6. Clearances measured from outer edges or diameters of utilities. Whenever concrete jackets are involved, clearances shall be total clear distance between the concrete jacket and utility concerned.
- | GUIDELINES FOR MINIMUM VERTICAL (CROSSING) CLEARANCES BETWEEN HAWAIIAN ELECTRIC AND OTHER UNDERGROUND UTILITIES | | | | |
|---|---------------------------------------|---|--|-------------------|
| UNDERGROUND UTILITY | HAWAIIAN ELECTRIC DIRECT BURIED CABLE | HAWAIIAN ELECTRIC DIRECT BURIED IN CONDUIT (no concrete encasement) | HAWAIIAN ELECTRIC 3" (MINIMUM) CONCRETE ENCASEMENT | APPLICABLE NOTES: |
| Hawaiian Electric DB Conduits | 6" | 3" | 0" | |
| Hawaiian Electric 3" Encasement | 0" | 0" | 0" | |
| Telephone / CATV DB | 12" | 12" | 6" | |
| Telephone / CATV DB Ducts | 12" | 12" | 6" | |
| Telephone / CATV 3" Encasement | 0" | 0" | 0" | 3 |
| Traffic Signal | 12" | 12" | 6" | |
| Water DB (BWS Owned) | 12" | 12" | 12" | 5 |
| Customer Owned Water Service Laterals | 6" | 6" | 6" | |
| Water (Concrete Jacketed) (BWS Owned) | 12" | 12" | 12" | 5 |
| Gas DB | 12" | 12" | 12" | |
| Gas (Concrete Jacketed) | 12" | 12" | 12" | |
| Sewer DB | 24" | 24" | 24" | 1 |
| Sewer (Concrete Jacketed) | 24" | 24" | 24" | 1 |
| Drain | 12" | 12" | 6" | |
| Fuel Pipelines | | | | 2 |
- Notes:
1. If clearance cannot be met:
- If clearance is less than 12", Jacket sewer line with reinforced concrete (per HAWAIIAN ELECTRIC's std. 30-1030) for a distance of 5' plus pipe diameter.
- If clearance is between 12" and 24", jacket sewer line with plain concrete.
2. All Fuel Pipeline crossings shall be reviewed and approved by the company that owns and maintains it.
3. For situations with 0" minimum separation, a 6" separation is recommended.
4. Clearances measured from outer edges or diameters of utilities. Whenever concrete jackets are involved, clearances shall be total clear distance between the concrete jacket and utility concerned.
5. 36" clearance is required for trenchless installation work.

THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER & HAWAIIAN ELECTRIC OF ANY HEAT SOURCES (POWER CABLE DUCT BANK, STEAMLINE, ETC.) ENCOUNTERED THAT ARE NOT PROPERLY IDENTIFIED ON THE DRAWING.

HAWAIIAN ELECTRIC COMPANY NOTES (CONT.):

15. INDEMNITY
THE CONTRACTOR SHALL INDEMNIFY, DEFEND AND HOLD HARMLESS HAWAIIAN ELECTRIC FROM AND AGAINST ALL LOSSES, DAMAGES, CLAIMS, AND ACTIONS, INCLUDING BUT NOT LIMITED TO REASONABLE ATTORNEY'S FEES AND COSTS BASED UPON OR ARISING OUT OF DAMAGE TO PROPERTY OR INJURIES TO PERSONS, OR OTHER TORTIOUS ACTS CAUSED OR CONTRIBUTED TO BY CONTRACTOR OR ANYONE ACTING UNDER ITS DIRECTION OR CONTROL OR ON ITS BEHALF; PROVIDED CONTRACTOR'S INDEMNITY SHALL NOT BE APPLICABLE TO ANY LIABILITY BASED UPON THE SOLE NEGLIGENCE OF HAWAIIAN ELECTRIC.
- ADDITIONAL NOTES WHEN WORK INVOLVES CONSTRUCTION OF HAWAIIAN ELECTRIC FACILITIES
16. SCHEDULE
CONTRACTOR SHALL FURNISH HIS CONSTRUCTION SCHEDULE SIX (6) MONTHS PRIOR TO STARTING WORK ON HAWAIIAN ELECTRIC FACILITIES. CONTRACTOR SHALL GIVE HAWAIIAN ELECTRIC, IN WRITING, THREE (3) MONTHS NOTICE TO PROCEED WITH HAWAIIAN ELECTRIC'S PORTION OF WORK.
17. AUTHORITY
ALL CONSTRUCTION, RESTORATION WORK, AND INSPECTION SHALL BE SUBJECT TO WHICHEVER GOVERNMENTAL AGENCY HAS AUTHORITY OVER THE WORK.
18. SPECIFICATIONS
CONSTRUCTION OF HAWAIIAN ELECTRIC'S UNDERGROUND FACILITIES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST REVISIONS OF HAWAIIAN ELECTRIC SPECIFICATIONS CS7001, CS7003, CS7202, CS9301, AND CS9401 AND APPLICABLE HAWAIIAN ELECTRIC STANDARDS.
19. CONSTRUCTION
CONTRACTOR SHALL FURNISH ALL LABOR, MATERIALS, EQUIPMENT, AND SERVICES TO PROPERLY PERFORM AND FULLY COMPLETE ALL WORK SHOWN ON THE CONTRACT, DRAWINGS, AND SPECIFICATIONS. ALL MATERIALS SHALL BE NEW AND MANUFACTURED IN THE UNITED STATES OF AMERICA. ALL MANHOLE, HANDHOLE, AND DUCTLINE INSTALLATIONS SHALL BE INSPECTED AND APPROVED BY HAWAIIAN ELECTRIC PRIOR TO EXCAVATION AND PRIOR TO PLACING CONCRETE. CONTRACTOR SHALL NOTIFY HAWAIIAN ELECTRIC'S INSPECTION GROUP AT 543-2567 AT LEAST FIVE (5) WORKING DAYS PRIOR TO INSTALLING FACILITIES OR PLACING CONCRETE.

CONTRACTOR TO COORDINATE WORK TO BREAK INTO HAWAIIAN ELECTRIC'S EXISTING ELECTRICAL FACILITIES WITH HAWAIIAN ELECTRIC'S INSPECTION GROUP AT 543-2567 AT LEAST TEN (10) WORKING DAYS IN ADVANCE.
20. STAKEOUT
THE CONTRACTOR SHALL ARRANGE FOR TONEOUTS OF ALL UNDERGROUND FACILITIES AND SHALL STAKEOUT ALL PROPOSED HAWAIIAN ELECTRIC FACILITIES WITHIN THE PROJECT AREA SO AS TO NOT CONFLICT WITH ANY UTILITY (EXISTING OR PROPOSED) AND ANY PROPOSED CONSTRUCTION OR IMPROVEMENT WORK FOR VERIFICATION BY HAWAIIAN ELECTRIC BEFORE PROCEEDING WITH HAWAIIAN ELECTRIC WORK.
21. DUCTLINES
ALL DUCTLINE INSTALLATIONS SHALL BE PVC SCHEDULE 40 ENCASED IN CONCRETE, UNLESS OTHERWISE NOTED. ALL COMPLETED DUCTLINES SHALL BE MANDREL TESTED BY THE CONTRACTOR IN THE PRESENCE OF HAWAIIAN ELECTRIC'S INSPECTOR USING HAWAIIAN ELECTRIC'S STANDARD PRACTICE. THE CONTRACTOR SHALL INSTALL 1800# TENSILE STRENGTH MULETAPE PULL LINE IN ALL COMPLETED DUCTLINES AFTER MANDREL TESTING IS COMPLETE.
22. JOINT POLE REMOVAL
THE LAST JOINT POLE OCCUPANT OFF THE POLES SHALL REMOVE THE POLES.
23. AS-BUILT PLANS
THE CONTRACTOR SHALL PROVIDE HAWAIIAN ELECTRIC WITH A SET OF ELECTRONIC AND HARD COPY PLANS OF EACH SHEET SHOWING THE OFFSETS, STATIONING, AND VERTICAL ELEVATION OF THE DUCT LINE(S) CONSTRUCTED.

TON T. MURAKA

LICENSED PROFESSIONAL ENGINEER

No. 8843-C

HAWAII, USA

This work was prepared by me or under my supervision and construction of this project will be under my observation. Observation of construction as defined by Hawaii Administrative Rules, Title 16, Dept. of Commerce & Consumer Affairs, Chapter 115, Professional Engineers, Architects, Surveyors and Landscape Architects.

FUKUNAGA & ASSOCIATES, INC.

License Expiration Date: April 30, 2024

REVISION	DATE	BRIEF	BY	APPROVED
DEPARTMENT OF HAWAIIAN HOME LANDS				
STATE OF HAWAII				
PROJECT:				
WEST OAHU SEWER IMPROVEMENTS				
WAIANAE SUBDIVISION				
ITEM:				
NOTES--5				
DESIGNED BY: WC		CHECKED BY: JM		
DRAWN BY: JT				
APPROVED:				
CHIEF		DATE		
FUKUNAGA AND ASSOCIATES, INC.				
Consulting Engineers				

IFB-22-HHL-001

DRAWING G-7

SHEET 7 OF 84

FILE	POCKET	FOLDER	NO.

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Last plotted 7/7/2022 11:17:38 AM

WATER NOTES:

1. UNLESS OTHERWISE SPECIFIED, ALL MATERIALS AND CONSTRUCTION OF WATER SYSTEM FACILITIES AND APPURTENANCES SHALL BE IN ACCORDANCE WITH THE CITY AND COUNTY OF HONOLULU BOARD OF WATER SUPPLY'S "WATER SYSTEM STANDARDS", DATED 2002, THE "WATER SYSTEM EXTERNAL CORROSION CONTROL STANDARDS", VOLUME 3, DATED 2021, AND ALL SUBSEQUENT AMENDMENTS AND ADDITIONS.
2. NO DEVIATION TO THE BOARD OF WATER SUPPLY 2002 WATER SYSTEM STANDARDS SHALL BE ALLOWED WITHOUT THE MANAGER AND CHIEF ENGINEER'S APPROVAL.
3. THE EXISTENCE AND LOCATION OF UNDERGROUND UTILITIES AND STRUCTURES AS SHOWN ON THE PLANS ARE FROM THE LATEST AVAILABLE DATA, BUT ARE NOT GUARANTEED AS TO THEIR ACCURACY OR THE ENCOUNTERING OF OTHER OBSTACLES DURING THE COURSE OF THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE AND PAY FOR ALL DAMAGES TO EXISTING UTILITIES. THE CONTRACTOR SHALL NOT ASSUME THAT WHERE NO UTILITIES ARE SHOWN, THAT NONE EXIST.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL WATERLINES DURING CONSTRUCTION. THE CONTRACTOR SHALL BE ESPECIALLY CAREFUL WHEN EXCAVATING BEHIND WATERLINES, TEES, AND BENDS WHEREVER THERE IS A POSSIBILITY OF WATERLINE MOVEMENT DUE TO THE REMOVAL OF THE SUPPORTING EARTH BEYOND THE EXISTING REACTION BLOCKS. THE CONTRACTOR SHALL TAKE WHATEVER MEASURES NECESSARY TO PROTECT THE WATERLINES, SUCH AS CONSTRUCTING SPECIAL REACTION BLOCKS (WITH BWS APPROVAL) AND/OR MODIFYING HIS CONSTRUCTION METHOD.
5. WHEN A UTILITY (GAS, SEWER, ELECTRICAL DUCT LINE, FIBER OPTIC, DRAINAGE, ETC.) CROSSES BELOW A BOARD OF WATER SUPPLY WATER MAIN, THE DESIGNER OF RECORD AND THEIR CONSTRUCTION ENGINEER SHALL BE RESPONSIBLE FOR DETERMINING THE ADEQUATE WATER MAIN STRUCTURAL SUPPORT AND SUBMIT THE CONSTRUCTION METHOD AND SHOP DRAWING, STAMPED BY A LICENSED ENGINEER AND REVIEWED AND ACCEPTED BY THE DESIGNER OF RECORD, TO THE BOARD OF WATER SUPPLY FOR REVIEW AND APPROVAL. ALL WORK SHALL BE AT NO COST TO THE BOARD OF WATER SUPPLY.
6. THE CONTRACTOR SHALL NOTIFY BOARD OF WATER SUPPLY CAPITAL PROJECTS DIVISION, CONSTRUCTION SECTION IN WRITING OR CALL (808) 748-5730, AND SUBMIT SIX (6) SETS OF 24"x 36" APPROVED CONSTRUCTION DRAWINGS, ONE WEEK PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES.
7. RE-APPROVAL SHALL BE REQUIRED IF THIS PROJECT IS NOT UNDER CONSTRUCTION WITHIN A PERIOD OF TWO (2) YEARS.
8. PRIOR TO ANY EXCAVATION, THE CONTRACTOR SHALL VERIFY IN THE FIELD, THE LOCATION OF EXISTING WATERLINES AND APPURTENANCES.
9. ANY ADJUSTMENTS TO THE EXISTING WATER SYSTEM REQUIRED DURING CONSTRUCTION, TO MEET THE REQUIREMENTS OF THE BOARD OF WATER SUPPLY STANDARDS, WHETHER SHOWN ON THE PLANS OR NOT, SHALL BE DONE BY THE CONTRACTOR AT NO COST TO THE BOARD OF WATER SUPPLY.
10. ALL PLANS APPROVED BY THE BOARD OF WATER SUPPLY ARE BASED SOLELY ON THE ADEQUACY OF THE WATER SUPPLY.
11. ALL WATER MAINS AND APPURTENANCES SHALL BE SUBJECT TO HYDROSTATIC TEST PRESSURE OF 200 PSI BY THE CONTRACTOR IN ACCORDANCE WITH DIVISION 300 - CONSTRUCTION, SECTION 302.28, PIPE PRESSURE TEST OF THE "WATER SYSTEM STANDARDS", DATED 2002. DURING THE 30-MINUTE PRESSURE TEST, THE PRESSURE SHALL NOT DROP MORE THAN 10 PSI.
12. ALL WATERLINE CONSTRUCTION REQUIRING SHUTDOWN CONNECTION SHALL BE SCHEDULED FOR NORMAL WORKING HOURS AT SIX (6) HOURS MAXIMUM DOWNTIME.
13. THE CONTRACTOR SHALL CHLORINATE THE ENTIRE INSIDE SURFACE OF EACH PIPE AND FITTING WITH DISINFECTION SOLUTION OF 5 OUNCES OF SODIUM HYPOCHLORITE MIXED WITH 10 GALLONS OF WATER. (FOR CONNECTION ONLY)
14. PRIOR TO INSTALLATION, THE CONTRACTOR SHALL SUBMIT FOR APPROVAL BY BOARD OF WATER SUPPLY, THE MANUFACTURER'S CERTIFICATION THAT ALL CAST IRON (GRAY OR DUCTILE) FITTINGS FOR THE PROJECT CONFORM IN ALL RESPECTS TO THE WATER SYSTEM STANDARDS, DATED 2002 AND ADDENDUMS.
15. POLYGON SHAPE FOR MECHANICAL JOINT GLANDS AS DESCRIBED IN AWWA STANDARD C111 SHALL BE "STRAIGHT-SIDED" OR AN APPROVED EQUAL ON A JOB-TO-JOB BASIS.
16. CONTRACTOR SHALL CUT AND PLUG AND REMOVE ALL EXISTING UNUSED LATERALS AT THE MAIN WHETHER OR NOT SHOWN ON THE PLANS. METER AND VALVE BOXES TO BE OR ALREADY ABANDONED SHALL BE DEMOLISHED OR REMOVED AND PROPERLY DISPOSED OF. THE DAMAGED AREA SHALL BE REPAIRED TO AN EQUAL OR BETTER CONDITION THAN THE IMMEDIATE AREA. ALL WORK SHALL BE DONE AT THE EXPENSE OF THE CONTRACTOR.
17. PIPE CUSHION SHALL BE OF HIGH RESISTIVITY MATERIAL. THE CONTRACTOR SHALL SUBMIT A SOIL CERTIFICATION THAT HIGH RESISTANT CUSHION MATERIAL HAS A RESISTIVITY GREATER THAN 5,000 OHM-CM. REMAINDER OF THE BACKFILL MATERIAL SHALL BE AS SPECIFIED IN THE BOARD OF WATER SUPPLY WATER SYSTEM STANDARDS. PIPE CUSHION AND BACKFILL MATERIAL SHALL CONTAIN NO HAZARDOUS SUBSTANCES ABOVE REGULATORY ACTION LEVELS INCLUDING BUT NOT LIMITED TO LEAD, ASBESTOS, MERCURY, CHROMIUM, CADMIUM, ZINC, STRONTIUM, AND POLYCHLORINATED BIPHENYLS (PCB).
18. ALL DUCTILE IRON PIPE AND FITTINGS, INCLUDING SECTIONS REQUIRING REINFORCED CONCRETE JACKETING, SHALL BE DUCTILE IRON CLASS 53, AND BONDED DIELECTRIC COATED AS PER THE BOARD OF WATER SUPPLY WATER SYSTEM STANDARDS AS AMENDED.
19. CLEANING SHALL BE BY THE USE OF "PIGS" INTRODUCED INTO THE PIPELINE AND RUN COMPLETELY THROUGH ALL INSTALLED PIPELINES AND ALL BRANCH LINES FOR FIRE HYDRANTS. "PIGGING" OF SERVICE LATERALS IS NOT REQUIRED. BARE FOAM "PIGS" SHALL BE USED TO SWAB PIPING CLEAN AS EACH LENGTH OF THE PIPELINE IS INSTALLED. THE TYPE, DENSITY, SIZE, DIAMETER AND LENGTH OF THE PIG SHALL BE SUBMITTED FOR REVIEW AND APPROVAL BY THE MANAGER PRIOR TO PIGGING WORK. "PIG" SHALL BE USED PER MANUFACTURER'S SPECIFICATIONS. PRIOR TO USE, THE "PIG" SHALL BE SUBMERGED IN A CHLORINE SOLUTION OF 1 OZ. OF 5% CHLORINE BLEACH IN 5 GALLONS OF WATER. "PIGGING" OF THE PIPELINE SHALL BE CONSIDERED INCIDENTAL TO THE INSTALLATION OF THE NEW PIPELINE. MANUAL SWEEPING, HAND CLEANING OR SWABBING MAY BE ALLOWED IN LIEU OF "PIGGING" AS APPROVED BY THE BOARD OF WATER SUPPLY MANAGER.

WATER NOTES (continued):

20. INSTALL 4 MIL THICK, NON-METALLIC, BLUE COLORED, 6 INCHES WIDE WARNING TAPE OVER CENTERLINE OF THE PIPE AND BELOW THE BASE COURSE ALONG THE ENTIRE LENGTH OF TRENCH. TAPE SHOULD BE MARKED WITH "CAUTION WATER LINE BURIED BELOW".
21. THE CONTRACTOR SHALL INSTALL ELECTRONIC MARKERS TO ALL MAINS AND TEST THE ELECTRONIC MARKERS PRIOR TO INSTALLATIONS TO VERIFY PROPER OPERATION. BOARD OF WATER SUPPLY PERSONNEL SHALL VERIFY THE NUMBER AND LOCATIONS OF PLACED ELECTRONIC MARKERS BEFORE FINAL PAVING OF THE PROJECT.
22. THE CONTRACTOR SHALL FURNISH AND INSTALL AN INSULATING CORPORATION STOP AND PETROLATUM WAX TAPE AT ALL TAPS (FOR DI PIPE AND COPPER LATERAL COMBINATION ONLY).

WATERLINE CHLORINATION AND TESTING PROCEDURES

- A. THE FOLLOWING CHLORINATION AND WATER SAMPLE COLLECTION PROCEDURE SHALL APPLY TO ALL WATER PIPELINE PROJECTS (ALL WORK TO BE COORDINATED THROUGH BOARD OF WATER SUPPLY INSPECTOR):
1. CHLORINATION OF WATER SYSTEMS
- a. THE CONTRACTOR SHALL PROVIDE A 4-WEEK ADVANCE NOTICE, IN WRITING, TO THE OFFICER-IN-CHARGE FOR PROPOSED FLUSHING, FILLING AND BACTERIAL TESTING OF THE NEW PIPELINE.

b. THE CONTRACTOR SHALL HIRE A STATE OF HAWAII - DEPARTMENT OF HEALTH CERTIFIED LABORATORY TO PROVIDE WATER SAMPLING SERVICES AND TO DELIVER WATER SAMPLES TO THE MICRO LAB FOR ANALYSIS. WATER SAMPLES FOR BACTERIAL TESTING SHALL BE DELIVERED NO LATER THAN 2:30 P.M. ON THE DAY THE SAMPLES ARE TAKEN TO THE BOARD OF WATER SUPPLY MICROLAB LOCATED AT 630 S. BERETANIA ST., HONOLULU, HI 96843. THE MICRO LAB SHALL PERFORM ANALYSIS AND PROVIDE THEIR RESULTS TO THE OFFICER-IN-CHARGE BY 4:30 P.M. ON THE FOLLOWING DAY (IN SOME CASES, FINAL RESULTS NOTIFICATION MAY TAKE UP TO 48 HOURS).

c. WATER MAINS SHALL BE DISINFECTED IN ACCORDANCE WITH THE BOARD OF WATER SUPPLY WATER SYSTEM STANDARDS (2002), AS AMENDED, SECTION 302.29.
- STEP 1 - PRELIMINARY FLUSHING (PRIOR TO CHLORINATION): THE MAINS SHALL BE FLUSHED WITH MAXIMUM AVAILABLE PRESSURE AND VELOCITY. ADEQUACY OF TURNOVERS SHALL BE DETERMINED BY THE ABSENCE OF PARTICLES. TURBIDITY SHALL BE LESS THAN 1.0 NTU BEFORE CHLORINATION. DURING ALL FLUSHING OPERATIONS, THE MANAGER OR THE MANAGER'S AUTHORIZED REPRESENTATIVE SHALL DETERMINE THE RATE OF WATER USE.
- STEP 2 - CHLORINATION: THE CONTRACTOR SHALL SUBMIT TO THE MANAGER, FOR APPROVAL, A SKETCH SHOWING LOCATIONS OF SAMPLING POINTS AND A PLAN OR SCHEDULE DELINEATING THE METHOD OR STEPS THE CONTRACTOR PROPOSES TO USE TO ACCOMPLISH THE WORK. THE FOLLOWING METHODS FOR CHLORINATION SHALL BE USED:
- a. THE FOLLOWING CHLORINATION AND WATER SAMPLE COLLECTION PROCEDURE SHALL APPLY TO ALL WATER PIPELINE PROJECTS:

i. STEP 1: CHLORINATE MAIN BY FILLING WITH WATER AND INTRODUCING CHLORINE IN SUFFICIENT QUANTITY TO OBTAIN A MINIMUM CHLORINE CONCENTRATION OF 50 PARTS PER MILLION. LEAVE CHLORINATED WATER IN MAIN OVERNIGHT.

ii. STEP 2: FLUSH MAIN WITH FRESH WATER UNTIL ALL CHLORINE HAS BEEN FLUSHED OUT AS EVIDENCED BY THE N,N-DIETHYL-P-PHENYLENEDIAMINE (DPD) TEST, THEN COLLECT A WATER SAMPLE WHILE CONTINUING TO FLUSH THE MAIN.

iii. STEP 3: REPEAT STEPS 1 AND 2. AFTER COLLECTING THE SECOND WATER SAMPLE, STOP FLUSHING AND ALLOW THE WATER TO STAND IN THE MAIN OVERNIGHT.

iv. STEP 4: THOROUGHLY FLUSH THE MAIN WITH FRESH WATER UNTIL ALL WATER THAT HAD BEEN STANDING IN THE MAIN OVERNIGHT HAS BEEN FLUSHED OUT. STOP FLUSHING AND LET THE WATER STAND IN THE MAIN FOR ONE HOUR. COLLECT A WATER SAMPLE.

b. THE MAIN IS DEEMED ACCEPTABLE AND CERTIFIED WHEN (i) THE THREE CONSECUTIVE WATER SAMPLES, COLLECTED 24 HOURS APART UNDER STEPS 1 AND 2, SHOW NO TC (TOTAL COLIFORM BACTERIA), NO E. COLI, LESS THAN 200 CFU/ML (COLONY FORMING UNITS PER ML) OF HPC (HETEROTROPHIC PLATE COUNT BACTERIA) OR LESS THAN 202 HPC USING THE MPN (MOST PROBABLE NUMBER) METHOD AND TURBIDITY <1.0 NTU AND (ii) THE SAMPLE OF WATER HELD IN THE MAIN FOR ONE HOUR, COLLECTED UNDER STEP 4, ALSO SHOWS NO TC, NO E. COLI, LESS THAN 200 CFU/ML OF HPC OR LESS THAN 202 HPC USING THE MPN METHOD AND TURBIDITY <1.0 NTU.

c. CHLORINATION, FLUSHING, SAMPLING AND TESTING WILL BE EXTENDED SHOULD UNSATISFACTORY RESULTS BE ENCOUNTERED. ANY SAMPLE THAT SHOWS POSITIVE TC, E. COLI, HPC >200 CFU/ML, HPC >202 MPN OR TURBIDITY> 1.0 NTU IS UNSATISFACTORY.

d. STEPS 1 AND 2 MAY BE REPEATED BEFORE COLLECTING THE ONE HOUR HOLD SAMPLE SPECIFIED IN STEP 4. REPEATING STEPS 1 AND 2 IS RECOMMENDED IN THE EVENT SAMPLES SHOW THE PRESENCE OF TC AND/OR E. COLI AND/OR INCREASING TOTAL BACTERIAL RESULTS FROM ONE SAMPLE TO THE NEXT.

WATER NOTES (continued):

- e. WATER SAMPLES THAT SHOW THE PRESENCE OF ATYPICAL RESULTS, DEBRIS, HIGH TURBIDITY OR RESULTS INCONSISTENT WITH EXISTING WATER ARE SUBJECT TO RECONFIRMATION. THE MANAGER RESERVES THE RIGHT TO REQUEST AND TEST ADDITIONAL WATER SAMPLES IN THE INTEREST OF SAFEGUARDING PUBLIC HEALTH AND SAFETY AT NO ADDITIONAL COST TO THE DEPARTMENT.
- f. LIQUID CHLORINE, CHLORINE BASED LIQUID DISINFECTANTS OR CALCIUM HYPOCHLORITE THAT HAS BEEN TESTED AND CERTIFIED AS MEETING THE SPECIFICATIONS OF ANSI/NSF STANDARD 60, DRINKING WATER TREATMENT CHEMICALS - HEALTH EFFECTS, SHALL BE USED FOR THE CHLORINATION OF THE WATER MAINS.
- d. PRIOR TO CHLORINATION, THE WATER MAINS SHALL BE THOROUGHLY FLUSHED.
- e. THE INTERIOR SURFACES OF THE WATER MAINS SHALL BE EXPOSED TO THE CHLORINATING SOLUTION BY COMPLETELY FILLING THE MAIN REMOVE AIR POCKETS, FOR A MINIMUM OF 24-HOURS AND THE FREE CHLORINE RESIDUAL SHALL NOT BE LESS THAN 10 PPM AFTER SUCH TIME.
- f. SHOULD THE CALCIUM HYPOCHLORITE BE USED, NO SOLID AND/OR UNDISSOLVED PORTION OF THE COMPOUND SHALL BE INTRODUCED INTO ANY SECTION OF THE WATER MAINS TO BE CHLORINATED.
- g. AT THE END OF THE 24-HOUR DISINFECTION PERIOD, REPRESENTATIVE SAMPLES SHALL BE TAKEN AND ANALYZED TO ASSURE A FREE CHLORINE RESIDUAL OF A LEAST 10 PPM.
- h. SHOULD THE FREE CHLORINE RESIDUAL RESULTS INDICATE ADEQUATE CHLORINATION, THE WATER MAINS SHALL BE THOROUGHLY FLUSHED AND FILLED WITH WATER FROM THE EXISTING SYSTEM AND AGAIN TESTED FOR FREE CHORINE RESIDUAL. THE FLUSHING SHALL BE CONSIDERED ADEQUATE IF THE FREE CHLORINE RESIDUAL TEST RESULTS INDICATE THAT THE WATER IN THE WATER MAINS HAS A COMPARABLE CHLORINE RESIDUAL AS THE WATER IN THE EXISTING SYSTEM.
- i. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER DISPOSAL OF CHLORINATED WATER TO SAFEGUARD PUBLIC HEALTH AND THE ENVIRONMENT IN ACCORDANCE WITH APPLICABLE STATE OF HAWAII DEPARTMENT OF HEALTH REQUIREMENTS. A NEUTRALIZING CHEMICAL SHALL BE APPLIED TO THE WATER TO BE DISPOSED TO THOROUGHLY NEUTRALIZE THE CHLORINE RESIDUAL REMAINING IN THE WATER IN ACCORDANCE WITH BOARD OF WATER SUPPLY WATER SYSTEM STANDARDS (2002), AS AMENDED.
- j. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING A NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT FROM THE DEPARTMENT OF HEALTH, CLEAN WATER BRANCH PRIOR TO THE START OF CONSTRUCTION, FOR THE DISPOSAL OF WATER USED FOR HYDRO TESTING AND CHLORINATION, AS REQUIRED BY THE CONTRACT DOCUMENTS.
- k. FOLLOWING THE ACCEPTABLE FLUSHING OF THE WATER MAINS, THREE (3) CONSECUTIVE DAYS OF ACCEPTABLE SAMPLES, TAKEN AT LEAST 24-HOURS APART, FROM REPRESENTATIVE POINTS SHALL BE TAKEN AND SUBJECTED TO MICROBIOLOGICAL TESTS. FOR WATER LINES, AT LEAST ONE SET OF SAMPLES SHALL BE COLLECTED FROM EVERY 1,200 FEET OF THE NEW WATER MAIN, PLUS ONE FROM THE END OF THE LINE AND AT LEAST ONE SET FROM EACH BRANCH. POSITIVE OR INVALID TEST RESULTS WILL NOT BE ACCEPTABLE, AND THE PROCESS WILL BE REPEATED.
- l. ALL MEASUREMENTS FOR CHLORINE RESIDUAL SHALL BE ANALYZED USING E.P.A. APPROVED METHODS FOR DRINKING WATER.
- m. ALL MICROBIOLOGICAL TESTS SHALL BE PERFORMED BY A LABORATORY APPROVED BY THE DEPARTMENT OF HEALTH, STATE OF HAWAII AND THE WATER QUALITY DIVISION OF THE BOARD OF WATER SUPPLY.
- n. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH ALL OF THE FOREGOING.
- o. CLEANING AND SWABBING PROCEDURES SHALL BE IN ACCORDANCE WITH BOARD OF WATER SUPPLY WATER SYSTEM STANDARDS (2002), AS AMENDED.
- p. ALL MATERIALS IN DIRECT CONTACT WITH THE POTABLE WATER SHALL HAVE NATIONAL SANITATION FOUNDATIONS (NSF) APPROVALS. THE CONTRACTOR SHALL SUBMIT THESE APPROVALS TO THE BOARD OF WATER SUPPLY FOR INFORMATION ONLY PRIOR TO ITS APPLICATION.

APPROVAL:

MANAGER & CHIEF ENGINEER, BWS

DATE

(FOR WORK AFFECTING BWS FACILITIES IN CITY/STATE R-O-W AND BWS EASEMENT ONLY)

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REVISION

DATE

BRIEF

BY

APPROVED

JOHN T. MURAKA

LICENSED PROFESSIONAL ENGINEER

No. 8843-C

HAWAII, USA

This work was prepared by me or under my supervision and construction of this project will be under my observation. Observation of construction as defined by "Hawaii Administrative Rules, Title 16, Dept. of Commerce & Consumer Affairs, Chapter 115, Professional Engineers, Architects, Surveyors and Landscape Architects."

FUKUNAGA & ASSOCIATES, INC.

License Expiration Date: April 30, 2024

DEPARTMENT OF HAWAIIAN HOME LANDS

STATE OF HAWAII

PROJECT:

WEST OAHU SEWER IMPROVEMENTS

WAIANA'E SUBDIVISION

ITEM:

NOTES-6: WATER NOTES

DESIGNED BY: WC

CHECKED BY: JM

DRAWN BY: JT

APPROVED:

CHIEF

DATE

FUKUNAGA AND ASSOCIATES, INC.

Consulting Engineers

DRAWING G-8 SHEET 8 OF 84

FILE		FOLDER		NO.	

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Last plotted 7/7/2022 11:17:43 AM

HAWAIIAN TELCOM GENERAL CONSTRUCTION/DESIGN NOTES:

- THE CONTRACTOR SHALL PROCURE AND PAY FOR ALL LICENSES AND PERMITS AND SHALL GIVE ALL NOTICES NECESSARY AND INCIDENT TO THE DUE AND LAWFUL PROSECUTION OF THE WORK.
- THE CONTRACTOR SHALL OBTAIN AN EXCAVATION PERMIT AND TONING REQUEST FROM HAWAIIAN TELCOM'S EXCAVATION PERMIT SECTION, LOCATED AT 1177 BISHOP STREET, TWO WEEKS PRIOR TO THE START OF CONSTRUCTION. HOURS OF BUSINESS ARE 8:00 A.M. TO 11:00 A.M. AND 12:00 P.M. TO 3:00 P.M. MONDAY THROUGH FRIDAY, EXCEPT HOLIDAYS.
- PRIOR TO THE EXCAVATION OF THE DUCTLINE, THE CONTRACTOR SHALL REQUEST HAWAIIAN TELCOM TO LOCATE EXISTING DUCTLINE WHEREVER REQUIRED. FOR UNDERGROUND CABLE LOCATING AND MARKING, FIVE (5) WORKING DAYS ADVANCE NOTICE IS REQUIRED. THREE (3) WORKING DAYS ADVANCE NOTICE IS REQUIRED FOR ANY INSPECTION BY A DESIGNATED REPRESENTATIVE.
- THE LOCATIONS OF EXISTING UTILITIES ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION AND SHALL MAINTAIN PROPER CLEARANCES WHENEVER CONSTRUCTION CROSSES OR IS IN CLOSE PROXIMITY OF HAWAIIAN TELCOM FACILITIES. THE CONTRACTOR SHALL VERIFY THEIR LOCATIONS AND SHALL BE LIABLE FOR ANY DAMAGES TO HAWAIIAN TELCOM FACILITIES. ANY DAMAGES SHALL BE REPORTED IMMEDIATELY TO HAWAIIAN TELCOM'S REPAIR SECTION AT #611 (24 HOURS) OR TO THE EXCAVATION PERMIT SECTION AT 546-7746 (NORMAL WORKING HOURS, MONDAY THROUGH FRIDAY, EXCEPT HOLIDAYS). AS A RESULT OF HIS OPERATIONS, ADJUSTMENTS TO THE NEW DUCTLINE ALIGNMENT, IF REQUIRED, SHALL BE MADE TO PROVIDE THE REQUIRED CLEARANCES.
- THE CONTRACTOR SHALL TAKE NECESSARY PRECAUTION NOT TO DAMAGE EXISTING CABLES OR DUCTS. A HAWAIIAN TELCOM INSPECTOR OR DESIGNATED REPRESENTATIVE IS REQUIRED TO BE AT ANY JOB SITE WHENEVER THERE WILL BE A BREAKAGE INTO OR ENTRY INTO ANY STRUCTURE THAT CONTAIN HAWAIIAN TELCOM FACILITIES. TEMPORARY CABLE AND DUCT SUPPORTS SHALL BE PROVIDED WHEREVER NECESSARY.
- THE CONTRACTOR SHALL NOTIFY HAWAIIAN TELCOM'S INSPECTOR OR DESIGNATED REPRESENTATIVE A MINIMUM OF 72 HOURS PRIOR TO EXCAVATION, BRACING, OR BACKFILLING OF HAWAIIAN TELCOM'S STRUCTURES OR FACILITIES. NOTIFY HAWAIIAN TELCOM INSPECTOR AT 840-2933 BEFORE THE START OF CONSTRUCTION.
- ALL APPLICABLE CONSTRUCTION WORK SHALL BE DONE IN ACCORDANCE WITH THE "HAWAIIAN TELCOM STANDARD SPECIFICATIONS FOR PLACING TELEPHONE SYSTEMS" DATED JANUARY 2007, ALL SUBSEQUENT AMENDMENTS AND ADDITIONS, AND ALL OTHER PERTINENT STANDARDS FOR TELEPHONE CONSTRUCTION. CONTRACTOR SHALL FAMILIARIZE HIS PERSONNEL BY OBTAINING APPLICABLE SPECIFICATIONS.

HAWAIIAN TELCOM GENERAL CONSTRUCTION/DESIGN NOTES (CONT.):

- WHEN EXCAVATION IS ADJACENT TO OR BENEATH HAWAIIAN TELCOM'S EXISTING STRUCTURES OR FACILITIES, THE CONTRACTOR SHALL:
 - SHEET AND/OR BRACE THE EXCAVATION TO PREVENT SLIDES, CAVE-INS, OR SETTLEMENTS TO ENSURE NO MOVEMENT TO HAWAIIAN TELCOM'S STRUCTURES OR FACILITIES.
 - PROTECT EXISTING STRUCTURES AND/OR FACILITIES WITH BEAMS, STRUTS, OR UNDERPINNING WHILE EXCAVATING BENEATH THEM TO ENSURE NO MOVEMENT TO HAWAIIAN TELCOM'S STRUCTURES OR FACILITIES.
- THE CONTRACTOR SHALL BRACE ALL POLES OR LIGHT STANDARDS NEAR THE NEW DUCTLINE, MANHOLE, OR HANDHOLE DURING HIS OPERATIONS.
- THE CONTRACTOR SHALL SAW-CUT A.C. PAVEMENT AND CONCRETE GUTTER WHEREVER NEW MANHOLES, HANDHOLES, OR DUCTLINES ARE TO BE PLACED AND SHALL RESTORE TO EXISTING CONDITION OR BETTER.
- THE CONTRACTOR SHALL COMPLY WITH THE POLICY ADOPTED BY THE DEPARTMENT OF PLANNING AND PERMITTING, CITY AND COUNTY OF HONOLULU, CONCERNING THE REPLACEMENT OF CONCRETE SIDEWALKS AFTER EXCAVATION WORK.
- THE UNDERGROUND PIPES, CABLES, OR DUCTLINES KNOWN TO EXIST BY THE ENGINEER FROM HIS SEARCH OF RECORDS ARE INDICATED ON THE PLANS. THE CONTRACTOR SHALL VERIFY THE LOCATIONS AND DEPTHS OF THE FACILITIES AND EXERCISE PROPER CARE IN EXCAVATING IN 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.
- WHEREVER CONNECTIONS TO EXISTING UTILITIES ARE SHOWN ON THE PLANS, THE CONTRACTOR SHALL EXPOSE THE EXISTING LINES PRIOR TO EXCAVATION OF THE MAIN TRENCHES TO VERIFY THEIR LOCATIONS AND DEPTHS.
- THE CONTRACTOR, AT HIS OWN EXPENSE, SHALL KEEP THE PROJECT AND SURROUNDING AREA FREE FROM DUST NUISANCE. THE COST FOR SUPPLEMENTARY MEASURES, WHICH WILL BE REQUIRED BY THE CITY AND COUNTY, SHALL BE BORNE BY THE CONTRACTOR.
- THE CONTRACTOR SHALL PUMP ALL MANHOLES DRY DURING FINAL INSPECTION.
- THE CONTRACTOR SHALL NOTIFY HAWAIIAN TELCOM INSPECTOR 24 HOURS PRIOR TO THE POURING OF CONCRETE OR BACKFILLING.
- WHEN CONNECTING TO MANHOLE WALLS, ALL EXISTING REINFORCING BARS SHALL BE LEFT INTACT. DUCTS SHALL BE ADJUSTED IN THE FIELD IN ORDER TO CLEAR REINFORCING.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR LAYING OUT ALL REQUIRED LINES AND GRADES AND SHALL PRESERVE ALL BENCH MARKS AND WORKING POINTS NECESSARY TO LAY OUT THE WORK CORRECTLY. THE NEW DUCTLINE SHALL BE ADJUSTED BY THE CONTRACTOR TO SUIT THE EXISTING CONDITIONS AND THE DETAILS AS DESCRIBED IN THE PLANS.
- MINIMUM CONCRETE STRENGTH SHALL BE:

FOR DUCTLINE	2500 PSI AT 28 DAYS
FOR MANHOLE	3000 PSI AT 28 DAYS OR AS SPECIFIED IN DESIGN NOTES
- BENDS IN THE DUCT ALIGNMENT, DUE TO CHANGES IN GRADE SHALL HAVE A MINIMUM RADIUS OF 25 FEET. ALL 90 DEGREE C-BENDS AT A POLE OR AT THE BUILDING FLOOR SLAB PENETRATION, SHALL HAVE A BEND RADIUS OF TEN TIMES THE DIAMETER OF THE DUCT OR GREATER.
- AFTER DUCTLINE HAS BEEN COMPLETED, A MANDREL WITH A SQUARE FRONT NOT LESS THAN 12" LONG AND HAVING A DIAMETER OF 1/4" LESS THAN THE INSIDE DIAMETER OF THE DUCT, SHALL BE PULLED THROUGH EACH DUCT AFTER WHICH A BRUSH WITH STIFF BRISTLES SHALL BE PULLED THROUGH TO MAKE CERTAIN THAT NO PARTICLES OF EARTH, SAND, OR GRAVEL HAVE BEEN LEFT INSIDE. DUCTS SHALL BE COMPLETELY DRY AND CLEAN.
- ALL DUCTS AND CONDUITS SHALL HAVE AN 1800# POLYESTER MULE-TAPE (NEPTCO, WP1800P, HAWAIIAN TELCOM MATERIAL CODE NO. 571154) INSTALLED THROUGHOUT ITS ENTIRE LENGTH. ALL DUCTS SHALL BE CAPPED TO PREVENT ENTRY OF FOREIGN MATERIAL DURING CONSTRUCTION AND AT THE COMPLETION OF INSTALLATION.

CATV NOTES:

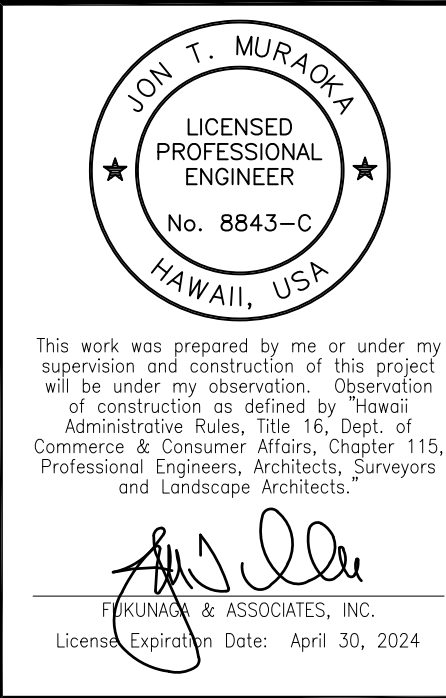
- THE LOCATION OF CATV FACILITIES SHOWN ON THE PLANS ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION AND SHALL MAINTAIN PROPER CLEARANCES WHENEVER CONSTRUCTION CROSSES OR IS IN CLOSE PROXIMITY TO SPECTRUM'S FACILITIES.
- THE CONTRACTOR SHALL OBTAIN AN EXCAVATION PERMIT CLEARANCE FROM SPECTRUM'S ENGINEERING SECTION LOCATED AT 200 AKAMAINUI STREET, MILILANI TECHNOLOGY PARK. (PHONE: 625-8457 OR 625-8345).
- FOR ANY FIELD ASSISTANCE OR VERIFICATION OF SPECTRUM'S FACILITIES, THE CONTRACTOR SHALL CALL THE TECHNICAL OPERATIONS CENTER AT 625-8378 A MINIMUM OF FIVE (5) WORKING DAYS IN ADVANCE.
- THE CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS NOT TO DAMAGE EXISTING CABLES, DUCTS OR FACILITIES. THE CONTRACTOR SHALL VERIFY THEIR LOCATIONS AND SHALL BE LIABLE FOR ANY DAMAGES TO SPECTRUM'S FACILITIES. ANY DAMAGES SHALL BE REPORTED IMMEDIATELY TO SPECTRUM'S REPAIR DISPATCH DEPARTMENT AT 625-8437 OR 625-8666.
- ANY WORK REQUIRED TO RELOCATE OR TEMPORARY RELOCATE EXISTING SPECTRUM'S FACILITIES SHALL BE DONE BY SPECTRUM AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COORDINATION REQUIREMENTS AND ASSOCIATED APPLICABLE COSTS.
- TRENCHING TO BE HAND DIGGING NEAR AND ACROSS EXISTING UTILITIES LINES.
- ALL EXISTING IMPROVEMENTS THAT ARE DISTURBED DURING THE CONSTRUCTION PHASE SHALL BE RESTORED TO ITS ORIGINAL OR BETTER CONDITION AT THE CONTRACTOR'S COST IN ACCORDANCE WITH SPECTRUM'S STANDARDS.

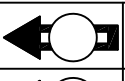

UTILITY NOTES:

- THE EXISTENCE AND LOCATION OF UNDERGROUND UTILITIES, APPURTENANCES AND STRUCTURES SHOWN ARE BASED ON THE TOPOGRAPHIC SURVEY INDICATED AND APPLICABLE UTILITY MAPS, VERIFIED WHENEVER POSSIBLE BY FIELD SURVEYS. THE CONTRACTOR SHALL VERIFY THE LOCATION, SIZE AND INVERTS OF ALL EXISTING UTILITIES (BY TONING AND STAKING PRIOR TO EXCAVATION) AND SHALL PROTECT ALL SUCH UTILITIES AT ALL TIMES. EXISTING UTILITIES SHOWN, WHICH HAVE BEEN DAMAGED AS A RESULT OF THE CONSTRUCTION WORK, SHALL BE RESTORED IMMEDIATELY TO ITS ORIGINAL OR BETTER CONDITION AT THE CONTRACTOR'S EXPENSE.
- IN AREAS WHERE NONMETALLIC PIPE LINES MAY BE PRESENT, ULTRASONIC DETECTION METHODS OR FIELD-LOCATING GRADE NODES (MANHOLES, VALVE BOXES, CLEANOUTS, ETC.) MAY BE USED AS APPROPRIATE. RESEARCH AS-BUILT CONSTRUCTION DRAWINGS AND PERFORM FIELD INVESTIGATIONS TO ENSURE ALL KNOWN UNDERGROUND UTILITY LINES ARE IDENTIFIED ON THE CONSTRUCTION DRAWINGS PRIOR TO ACTUAL FIELD EXCAVATIONS.
- UTILITY PROFILES AND OTHER INFORMATION FROM AVAILABLE PLANS AND FIELD SURVEYS WERE USED TO DETERMINE THEIR ELEVATIONS SHOWN ON THE PLANS. ANY EXISTING UTILITY LINES NOT SHOWN ON THE UTILITY PROFILES OR CONDITIONS DISCOVERED IN THE FIELD THAT PROHIBITS THE INSTALLATION OF THE NEW UTILITIES AS INDICATED SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE OFFICER-IN-CHARGE FOR RESOLUTION.
- WHENEVER NEW UTILITIES CONNECT TO OR CROSS EXISTING UTILITIES, THE CONTRACTOR SHALL CAREFULLY EXPOSE THE UTILITY BY HAND EXCAVATION TO VERIFY THEIR LOCATIONS AND DEPTHS PRIOR TO EXCAVATING TRENCHES FOR THE NEW UTILITY LINES.
- THE CONTRACTOR SHALL SCHEDULE HIS WORK TO MINIMIZE UTILITY OUTAGES. THE CONTRACTOR SHALL NOTIFY THE OFFICER-IN-CHARGE IN WRITING 30 DAYS PRIOR TO ANY OUTAGES. THE CONTRACTOR SHALL ALSO COORDINATE ALL UTILITY OUTAGES WITH UTILITY COMPANIES AND PROVIDE ADEQUATE ADVANCE NOTICE PRIOR TO ALL OUTAGES. THE CONTRACTOR ALSO SHALL COORDINATE WATER OUTAGES WITH THE FIRE DEPARTMENT.
- EXISTING UTILITIES SHALL REMAIN IN-SERVICE AND IN PLACE UNLESS NOTED OTHERWISE. INTERRUPTION OF SERVICE SHALL BE KEPT TO A MINIMUM AND SHALL BE DONE AT THE CONTRACTOR'S EXPENSE AND ONLY WITH THE APPROVAL OF THE OFFICER-IN-CHARGE.
- IF WORK ON EXISTING SEWER LINES AND MANHOLES IS REQUIRED, THE CONTRACTOR SHALL PROVIDE EQUIPMENT NECESSARY TO REDIRECT SEWAGE AROUND THESE SEWER LINES AND MANHOLES.
- IN PAVED AREAS, THE TOP OF MANHOLES SHALL MATCH THE FINISHED PAVEMENT GRADE.

ABBREVIATIONS:

AC	ASPHALT CONCRETE
BC	BOTTOM CURB
BW	BOTTOM WALL
CATV	CABLE TELEVISION
CB	CATCH BASIN
CLF	CHAIN LINK FENCE
CLSM	CONTROLLED LOW STRENGTH MATERIAL
CMU	CONCRETE MASONRY UNIT (HOLLOW TILE)
COMM	COMMUNICATION
CRM	CONCRETE RUBBLE MASONRY (ROCK) WALL
D	DIAMETER OR DRAIN
DWY	DRIVEWAY
ELEC	ELECTRIC
FH	FIRE HYDRANT
FT	FEET
G	GROUND
H	HEIGHT
IN	INCHES
S	SEWER
SDMH	STORM DRAIN MANHOLE
SL	STREET LIGHT/SEWERLINE
SIC MH	SANDWICH ISLES COMMUNICATIONS
SMH	SEWER MANHOLE
TC	TOP CURB
TEL	TELEPHONE
TW	TOP WALL
W	WATER
WM	WATER METER
WMH	WATER MANHOLE
WV	WATER VALVE BOX



				
				
REVISION	DATE	BRIEF	BY	APPROVED
DEPARTMENT OF HAWAIIAN HOME LANDS STATE OF HAWAII				
PROJECT: WEST OAHU SEWER IMPROVEMENTS WAIANAE SUBDIVISION				
ITEM: NOTES & ABBREVIATIONS				
DESIGNED BY: <u>WC</u>		CHECKED BY: <u>JM</u>		
DRAWN BY: <u>JT</u>				
APPROVED:				
_____ CHIEF		_____ DATE		
FUKUNAGA AND ASSOCIATES, INC. Consulting Engineers				

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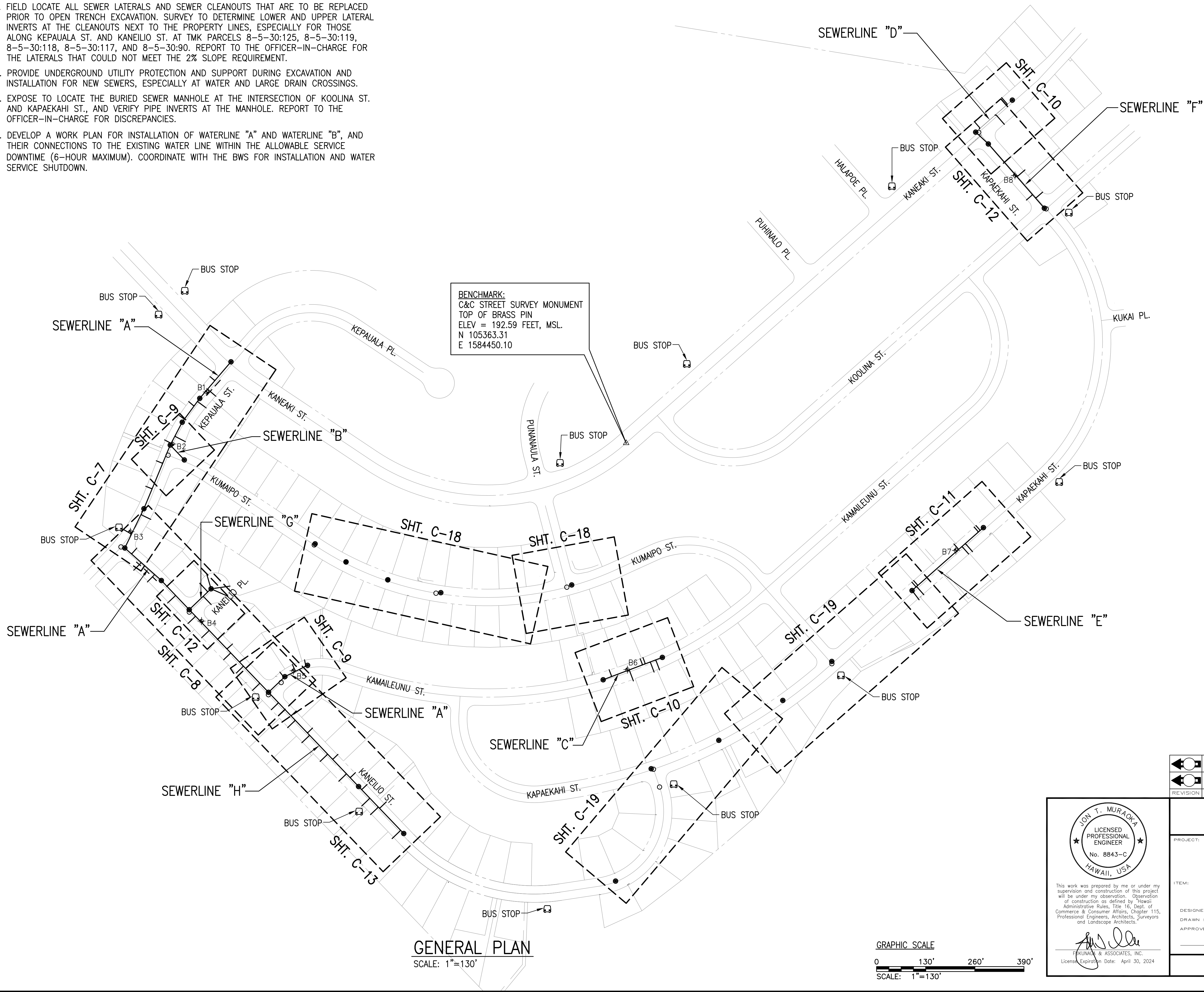
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TRUE NORTH
SCALE: 1" = 130'

SPECIAL NOTES:

1. FIELD LOCATE ALL SEWER LATERALS AND SEWER CLEANOUTS THAT ARE TO BE REPLACED PRIOR TO OPEN TRENCH EXCAVATION. SURVEY TO DETERMINE LOWER AND UPPER LATERAL INVERTS AT THE CLEANOUTS NEXT TO THE PROPERTY LINES, ESPECIALLY FOR THOSE ALONG KEPAUALA ST. AND KANEILIO ST. AT TMK PARCELS 8-5-30:125, 8-5-30:119, 8-5-30:118, 8-5-30:117, AND 8-5-30:90. REPORT TO THE OFFICER-IN-CHARGE FOR THE LATERALS THAT COULD NOT MEET THE 2% SLOPE REQUIREMENT.
2. PROVIDE UNDERGROUND UTILITY PROTECTION AND SUPPORT DURING EXCAVATION AND INSTALLATION FOR NEW SEWERS, ESPECIALLY AT WATER AND LARGE DRAIN CROSSINGS.
3. EXPOSE TO LOCATE THE BURIED SEWER MANHOLE AT THE INTERSECTION OF KOOLINA ST. AND KAPAEKAHI ST., AND VERIFY PIPE INVERTS AT THE MANHOLE. REPORT TO THE OFFICER-IN-CHARGE FOR DISCREPANCIES.
4. DEVELOP A WORK PLAN FOR INSTALLATION OF WATERLINE "A" AND WATERLINE "B", AND THEIR CONNECTIONS TO THE EXISTING WATER LINE WITHIN THE ALLOWABLE SERVICE DOWNTIME (6-HOUR MAXIMUM). COORDINATE WITH THE BWS FOR INSTALLATION AND WATER SERVICE SHUTDOWN.

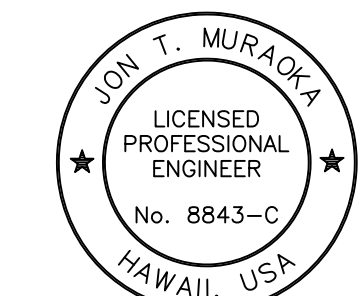


LEGEND

- NEW SMH OR REHABILITATED SMH
- NEW SEWER MAIN OR LATERAL
- ⊕ SOIL BORING LOCATION
- STREET MONUMENT
- BUS STOP

REVISION	DATE	BRIEF	BY	APPROVED

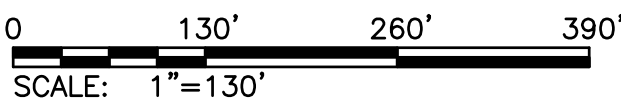
DEPARTMENT OF HAWAIIAN HOME LANDS STATE OF HAWAII	
PROJECT: WEST OAHU SEWER IMPROVEMENTS WAIANAE SUBDIVISION	
ITEM: GENERAL SITE PLAN	
DESIGNED BY: WC	CHECKED BY: JM
DRAWN BY: JL	
APPROVED: [Signature]	DATE:
FUKUNAGA & ASSOCIATES, INC. Consulting Engineers	



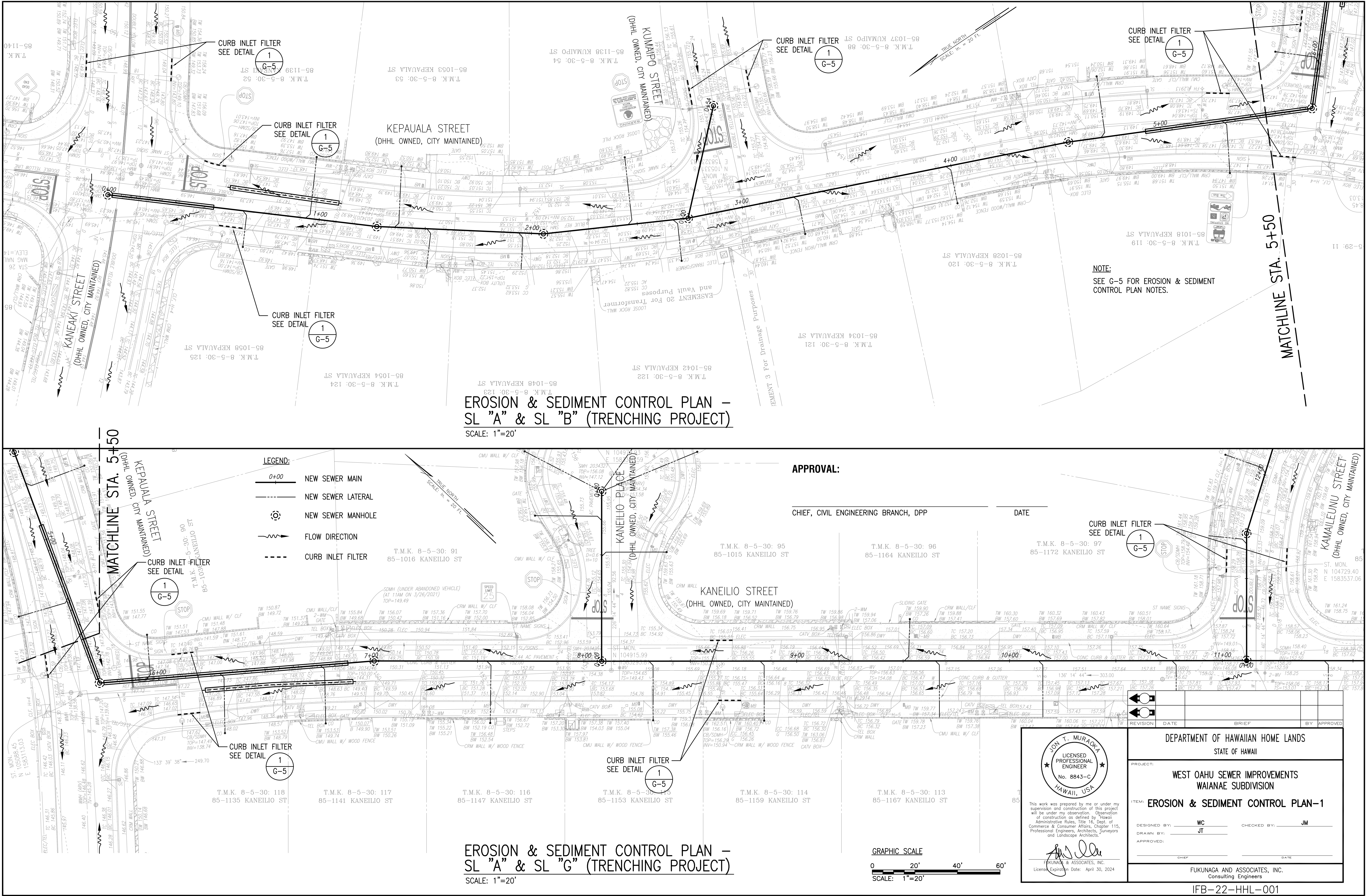
This work was prepared by me or under my supervision and construction of this project will be under my observation. Observation of construction as defined by Hawaii Administrative Rules, Title 16, Dept. of Commerce & Consumer Affairs, Chapter 115, Professional Engineers, Architects, Surveyors and Landscape Architects.

[Signature]
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License Expiration Date: April 30, 2024

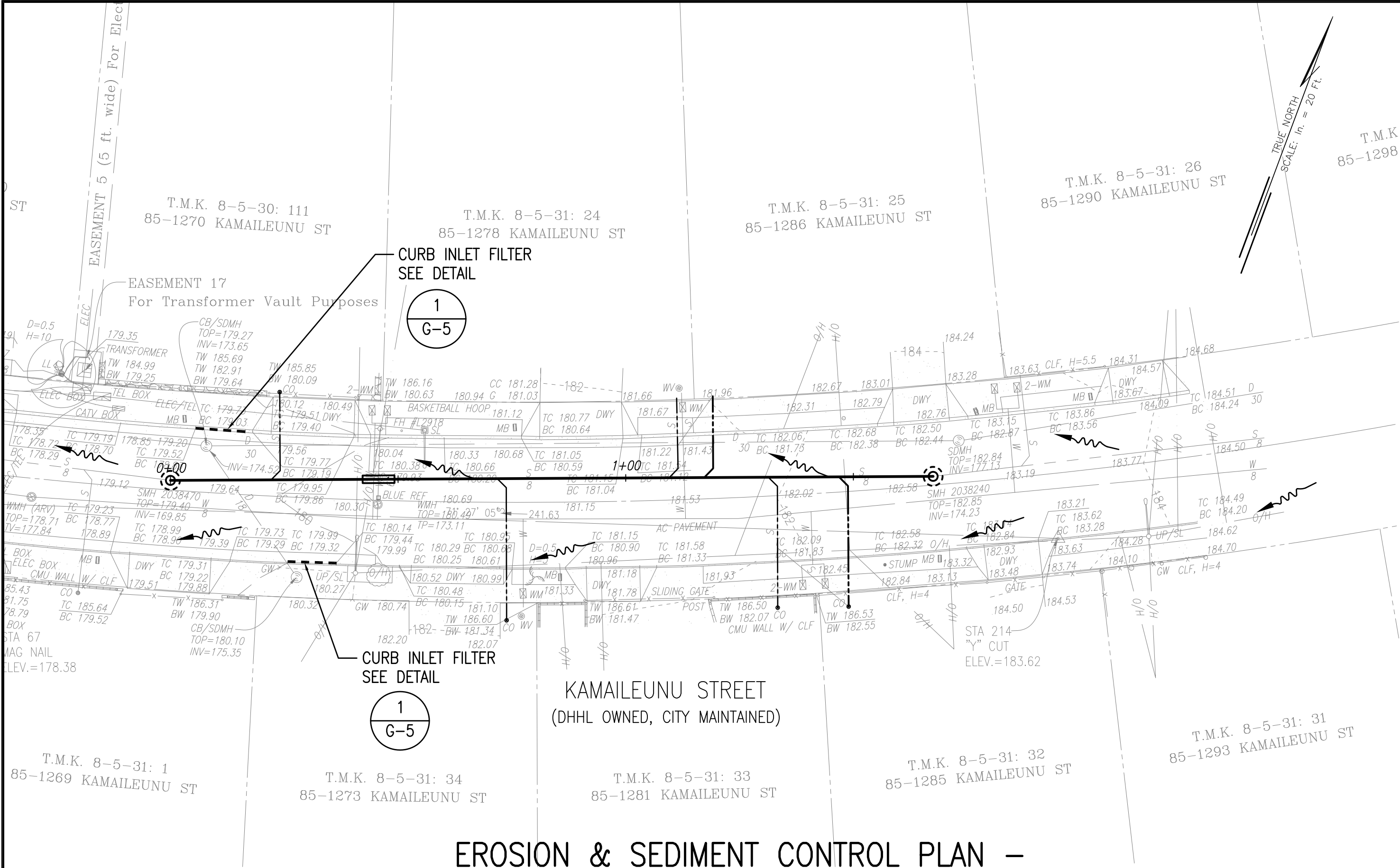
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NOTE:
SEE G-5 FOR EROSION & SEDIMENT
CONTROL PLAN NOTES.

- LEGEND:
- 0+00 NEW SEWER MAIN
 - NEW SEWER LATERAL
 - NEW SEWER MANHOLE
 - REHABILITATED SEWER MANHOLE
 - FLOW DIRECTION
 - CURB INLET FILTER

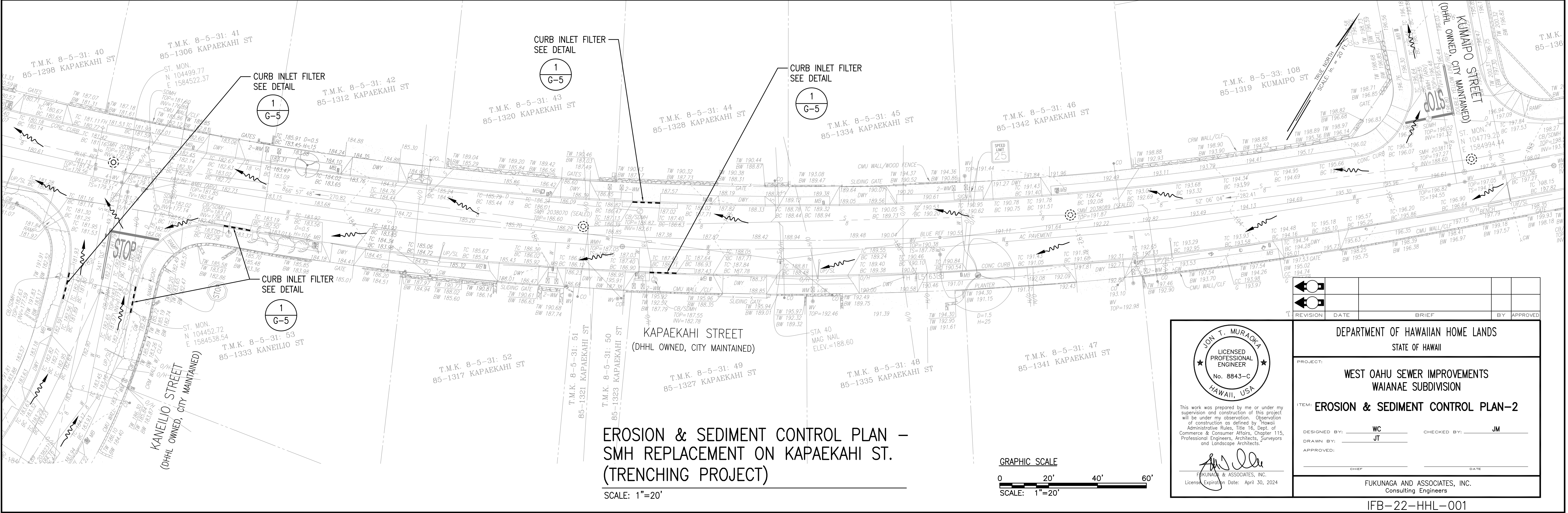
APPROVAL:

CHIEF, CIVIL ENGINEERING BRANCH, DPP

DATE

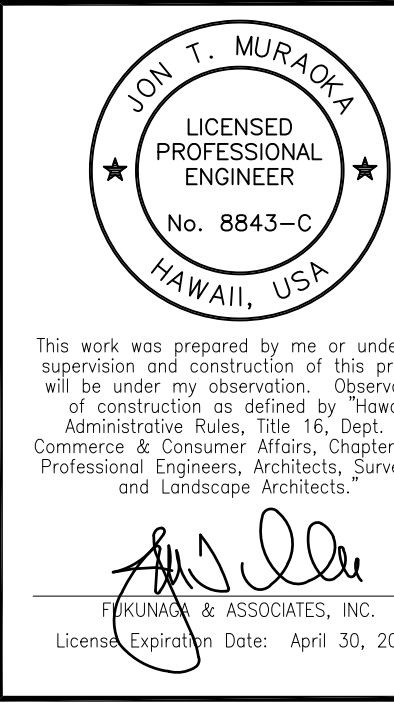
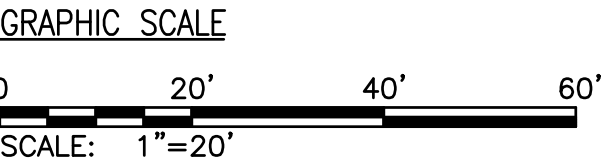
EROSION & SEDIMENT CONTROL PLAN – SL “C” (TRENCHING PROJECT)

SCALE: 1”=20’



EROSION & SEDIMENT CONTROL PLAN – SMH REPLACEMENT ON KAPAЕKAHI ST. (TRENCHING PROJECT)

SCALE: 1”=20’



DEPARTMENT OF HAWAIIAN HOME LANDS STATE OF HAWAII	
PROJECT: WEST OAHU SEWER IMPROVEMENTS WAIANAE SUBDIVISION	
ITEM: EROSION & SEDIMENT CONTROL PLAN-2	
DESIGNED BY: WC	CHECKED BY: JM
DRAWN BY: JT	
APPROVED:	
_____ CHIEF	_____ DATE
FUKUNAGA AND ASSOCIATES, INC. Consulting Engineers	

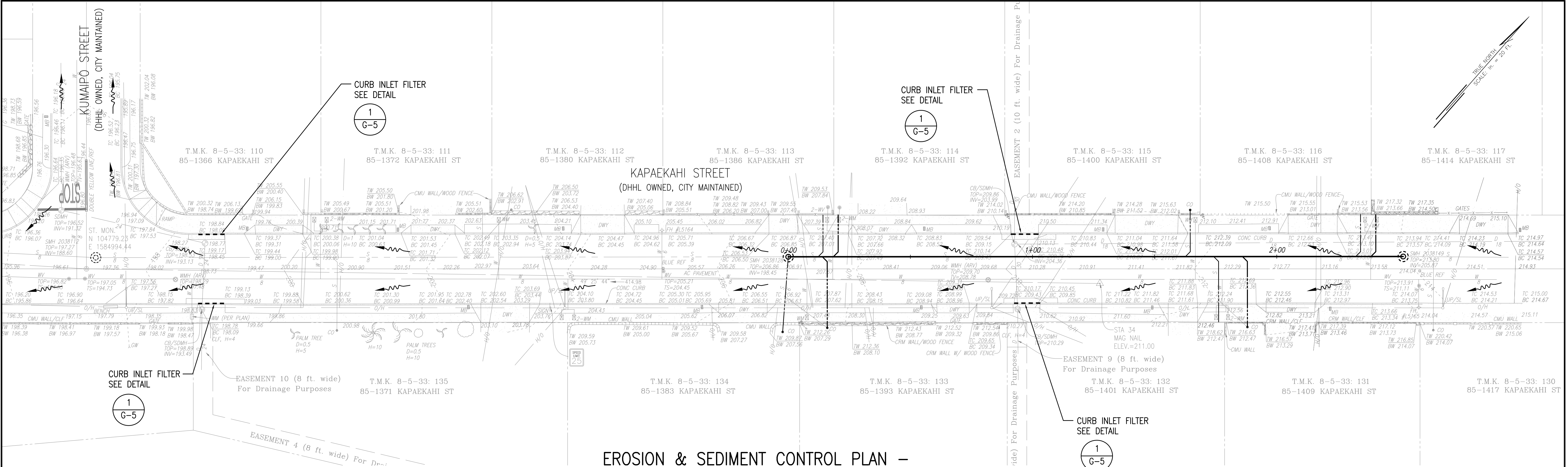
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SHEET 12 OF 84

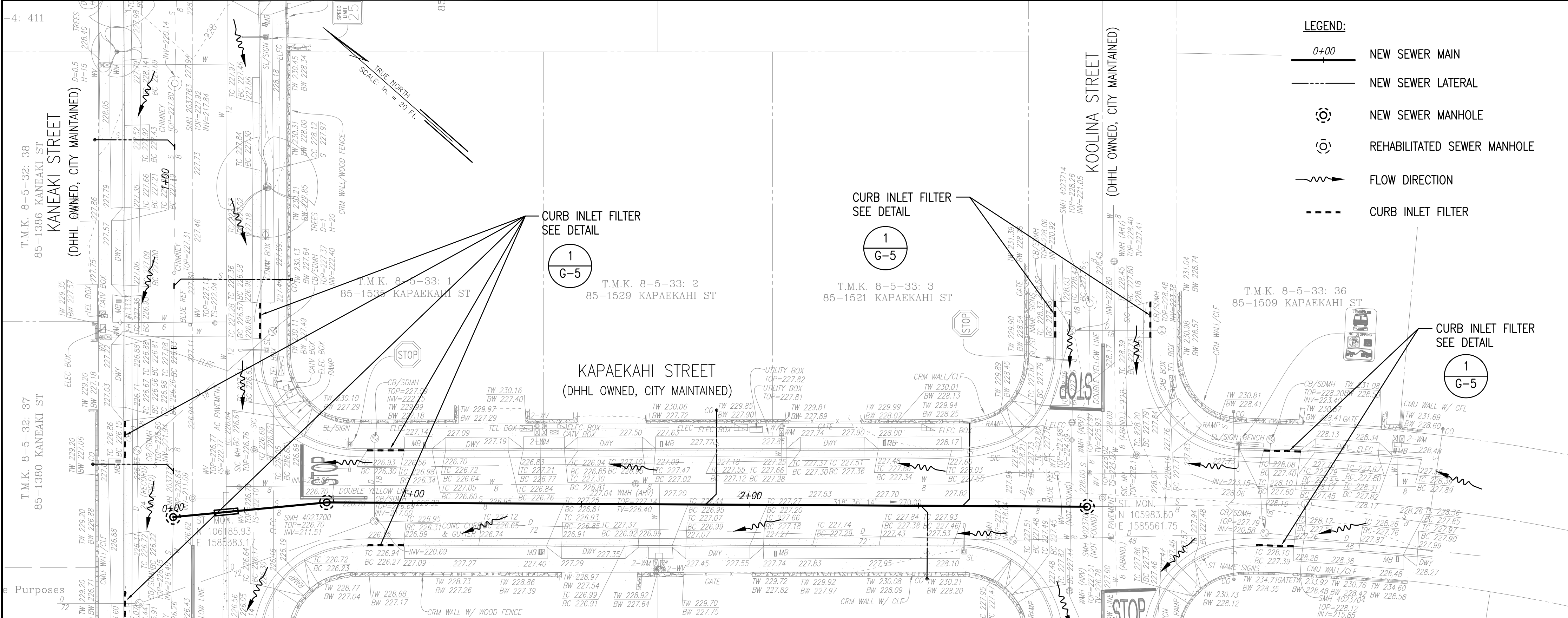
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EROSION & SEDIMENT CONTROL PLAN –
SL "E" (TRENCHING PROJECT)

SCALE: 1"=20'



EROSION & SEDIMENT CONTROL PLAN –
SL "F" & SL "D" (TRENCHING PROJECT)

SCALE: 1"=20'

- LEGEND:**
- 0+00 NEW SEWER MAIN
 - NEW SEWER LATERAL
 - ⊙ NEW SEWER MANHOLE
 - ⊙ REHABILITATED SEWER MANHOLE
 - ~ FLOW DIRECTION
 - CURB INLET FILTER

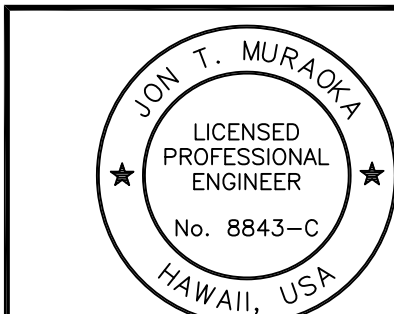
APPROVAL:

CHIEF, CIVIL ENGINEERING BRANCH, DPP

DATE

NOTE:

SEE G-5 FOR EROSION & SEDIMENT
CONTROL PLAN NOTES.



This work was prepared by me or under my supervision and construction of this project will be under my observation. Observation of construction as defined by Hawaii Administrative Rules, Title 16, Dept. of Commerce & Consumer Affairs, Chapter 115, Professional Engineers, Architects, Surveyors and Landscape Architects.

FUKUNAGA & ASSOCIATES, INC.
License Expiration Date: April 30, 2024

REVISION	DATE	BRIEF	BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

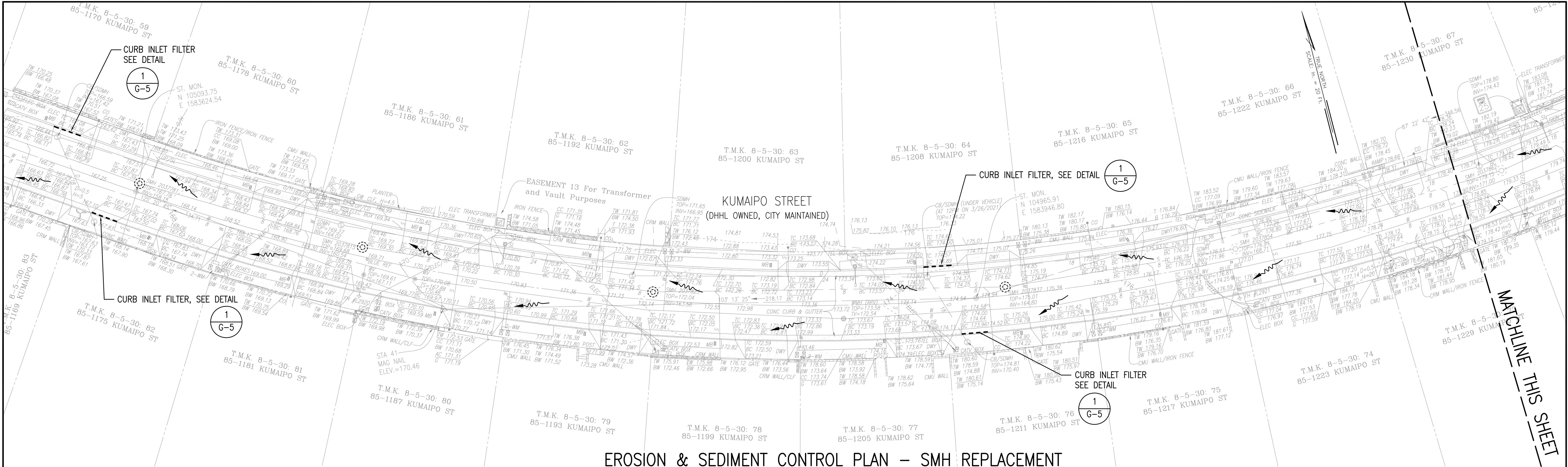
PROJECT: WEST OAHU SEWER IMPROVEMENTS
WAIANAE SUBDIVISION
ITEM: EROSION & SEDIMENT CONTROL PLAN-3

DESIGNED BY: WC CHECKED BY: JM
DRAWN BY: JT
APPROVED: _____

FUKUNAGA AND ASSOCIATES, INC.
Consulting Engineers

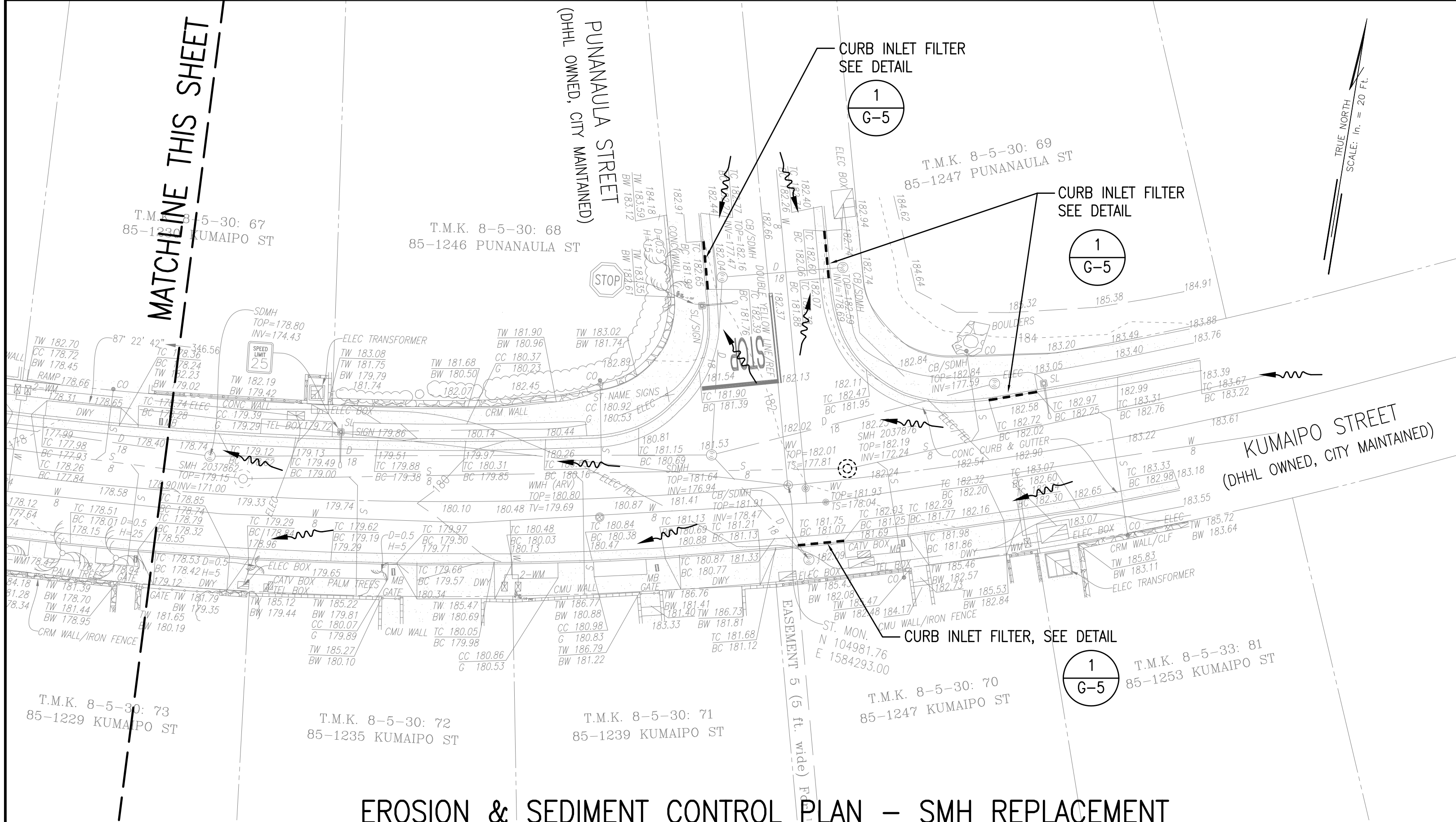
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EROSION & SEDIMENT CONTROL PLAN – SMH REPLACEMENT ON KUMAIPO ST. (TRENCHING PROJECT)

SCALE: 1"=20'



EROSION & SEDIMENT CONTROL PLAN – SMH REPLACEMENT ON KUMAIPO ST. (TRENCHING PROJECT)

SCALE: 1"=20'

NOTE:
SEE G-5 FOR EROSION & SEDIMENT CONTROL PLAN NOTES.

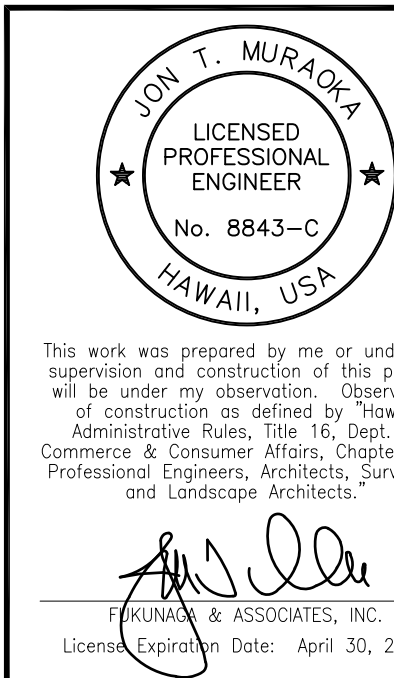
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 - NEW SEWER LATERAL
 - NEW SEWER MANHOLE
 - REHABILITATED SEWER MANHOLE
 - FLOW DIRECTION
 - CURB INLET FILTER

APPROVAL:

CHIEF, CIVIL ENGINEERING BRANCH, DPP

DATE

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REVISION	DATE	BRIEF	BY	APPROVED
DEPARTMENT OF HAWAIIAN HOME LANDS STATE OF HAWAII				
PROJECT: WEST OAHU SEWER IMPROVEMENTS WAIANAE SUBDIVISION				
ITEM: EROSION & SEDIMENT CONTROL PLAN-4				
DESIGNED BY: WC		CHECKED BY: JM		
DRAWN BY: JT				
APPROVED:				
CHIEF		DATE		
FUKUNAGA AND ASSOCIATES, INC. Consulting Engineers				

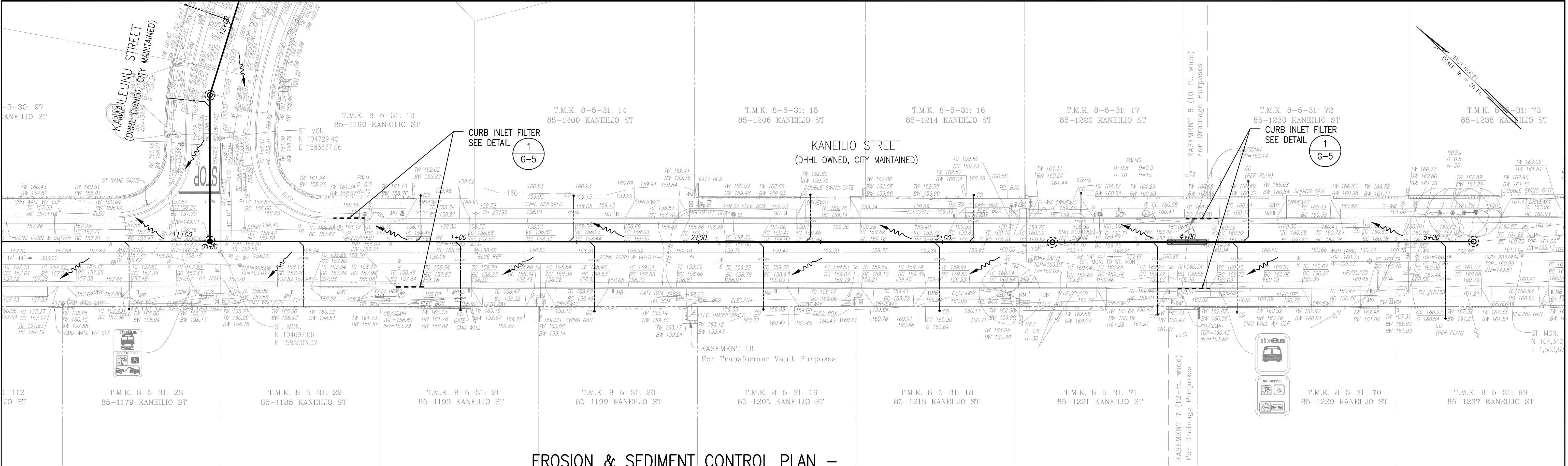
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SHEET 14 OF 84

FILE	POCKET	FOLDER	NO.

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Last plotted 7/7/2022 11:18:34 AM



EROSION & SEDIMENT CONTROL PLAN –
SL "H" (TRENCHING PROJECT)
SCALE: 1"=20'

NOTE:
SEE G-5 FOR EROSION & SEDIMENT
CONTROL PLAN NOTES.

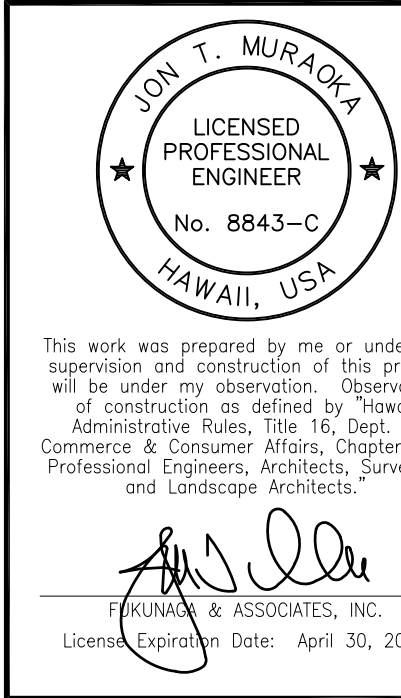
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 - NEW SEWER LATERAL
 - NEW SEWER MANHOLE
 - REHABILITATED SEWER MANHOLE
 - FLOW DIRECTION
 - CURB INLET FILTER

APPROVAL:

CHIEF, CIVIL ENGINEERING BRANCH, DPP

DATE

GRAPHIC SCALE



REVISION	DATE	BRIEF	BY	APPROVED
DEPARTMENT OF HAWAIIAN HOME LANDS STATE OF HAWAII				
PROJECT: WEST OAHU SEWER IMPROVEMENTS WAIANAE SUBDIVISION				
ITEM: EROSION & SEDIMENT CONTROL PLAN-5				
DESIGNED BY: WC/RM		CHECKED BY: JM		
DRAWN BY: JL				
APPROVED:				
CHIEF		DATE		
FUKUNAGA & ASSOCIATES, INC. Consulting Engineers				
IFB-22-HHL-001				

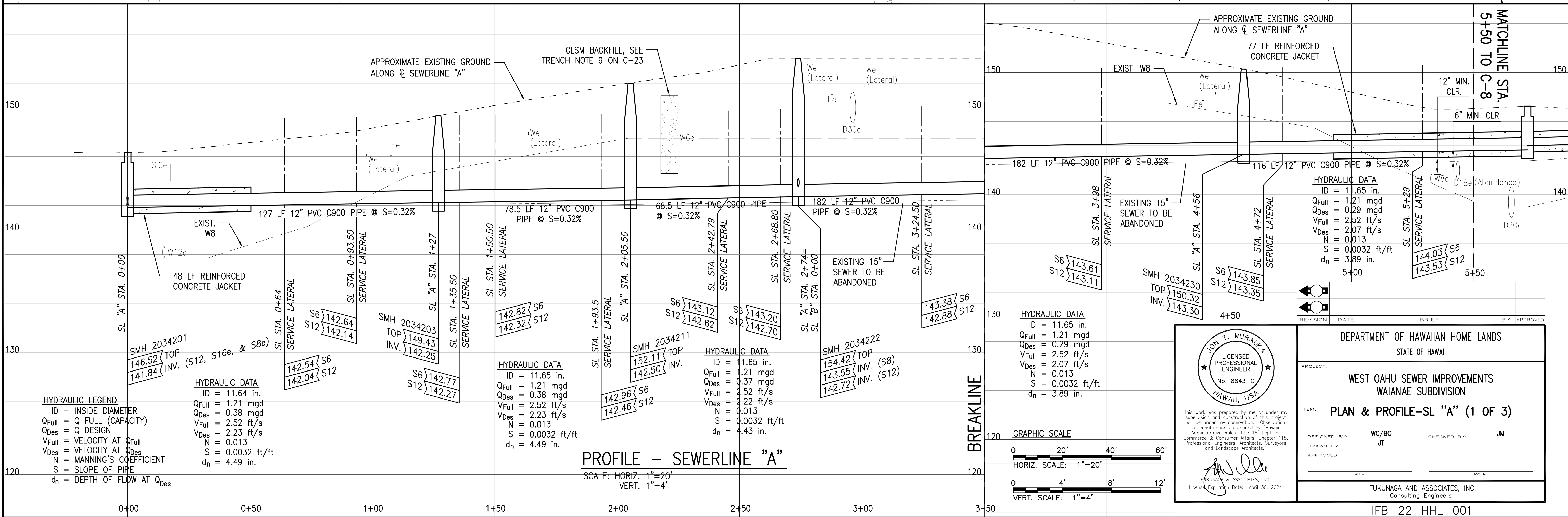
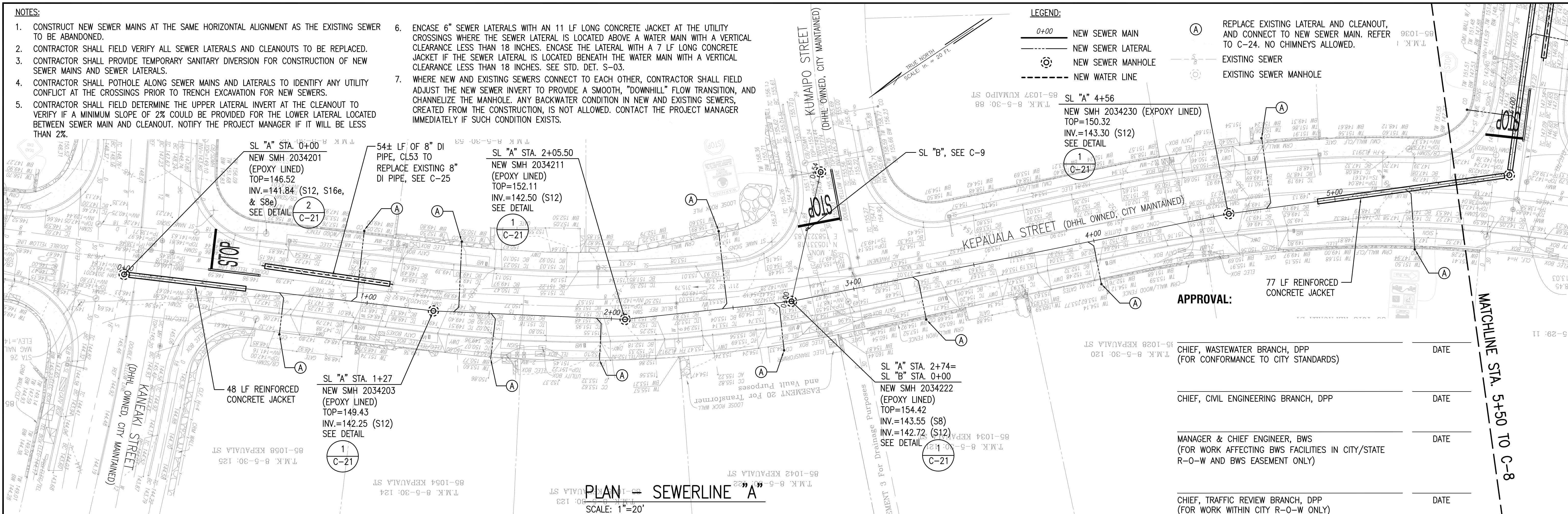
1. CONSTRUCT NEW SEWER MAINS AT THE SAME HORIZONTAL ALIGNMENT AS THE EXISTING SEWER TO BE ABANDONED.
2. CONTRACTOR SHALL FIELD VERIFY ALL SEWER LATERALS AND CLEANOUTS TO BE REPLACED.
3. CONTRACTOR SHALL PROVIDE TEMPORARY SANITARY DIVERSION FOR CONSTRUCTION OF NEW SEWER MAINS AND SEWER LATERALS.
4. CONTRACTOR SHALL POTHOLE ALONG SEWER MAINS AND LATERALS TO IDENTIFY ANY UTILITY CONFLICT AT THE CROSSINGS PRIOR TO TRENCH EXCAVATION FOR NEW SEWERS.
5. CONTRACTOR SHALL FIELD DETERMINE THE UPPER LATERAL INVERT AT THE CLEANOUT TO VERIFY IF A MINIMUM SLOPE OF 2% COULD BE PROVIDED FOR THE LOWER LATERAL LOCATED BETWEEN SEWER MAIN AND CLEANOUT. NOTIFY THE PROJECT MANAGER IF IT WILL BE LESS THAN 2%.

6. ENCASE 6" SEWER LATERALS WITH AN 11 LF LONG CONCRETE JACKET AT THE UTILITY CROSSINGS WHERE THE SEWER LATERAL IS LOCATED ABOVE A WATER MAIN WITH A VERTICAL CLEARANCE LESS THAN 18 INCHES. ENCASE THE LATERAL WITH A 7 LF LONG CONCRETE JACKET IF THE SEWER LATERAL IS LOCATED BENEATH THE WATER MAIN WITH A VERTICAL CLEARANCE LESS THAN 18 INCHES. SEE STD. DET. S-03.
7. WHERE NEW AND EXISTING SEWERS CONNECT TO EACH OTHER, CONTRACTOR SHALL FIELD ADJUST THE NEW SEWER INVERT TO PROVIDE A SMOOTH, "DOWNHILL" FLOW TRANSITION, AND CHANNELIZE THE MANHOLE. ANY BACKWATER CONDITION IN NEW AND EXISTING SEWERS, CREATED FROM THE CONSTRUCTION, IS NOT ALLOWED. CONTACT THE PROJECT MANAGER IMMEDIATELY IF SUCH CONDITION EXISTS.

0+00 NEW SEWER MAIN
 --- NEW SEWER LATERAL
 (O) NEW SEWER MANHOLE
 - - - - NEW WATER LINE

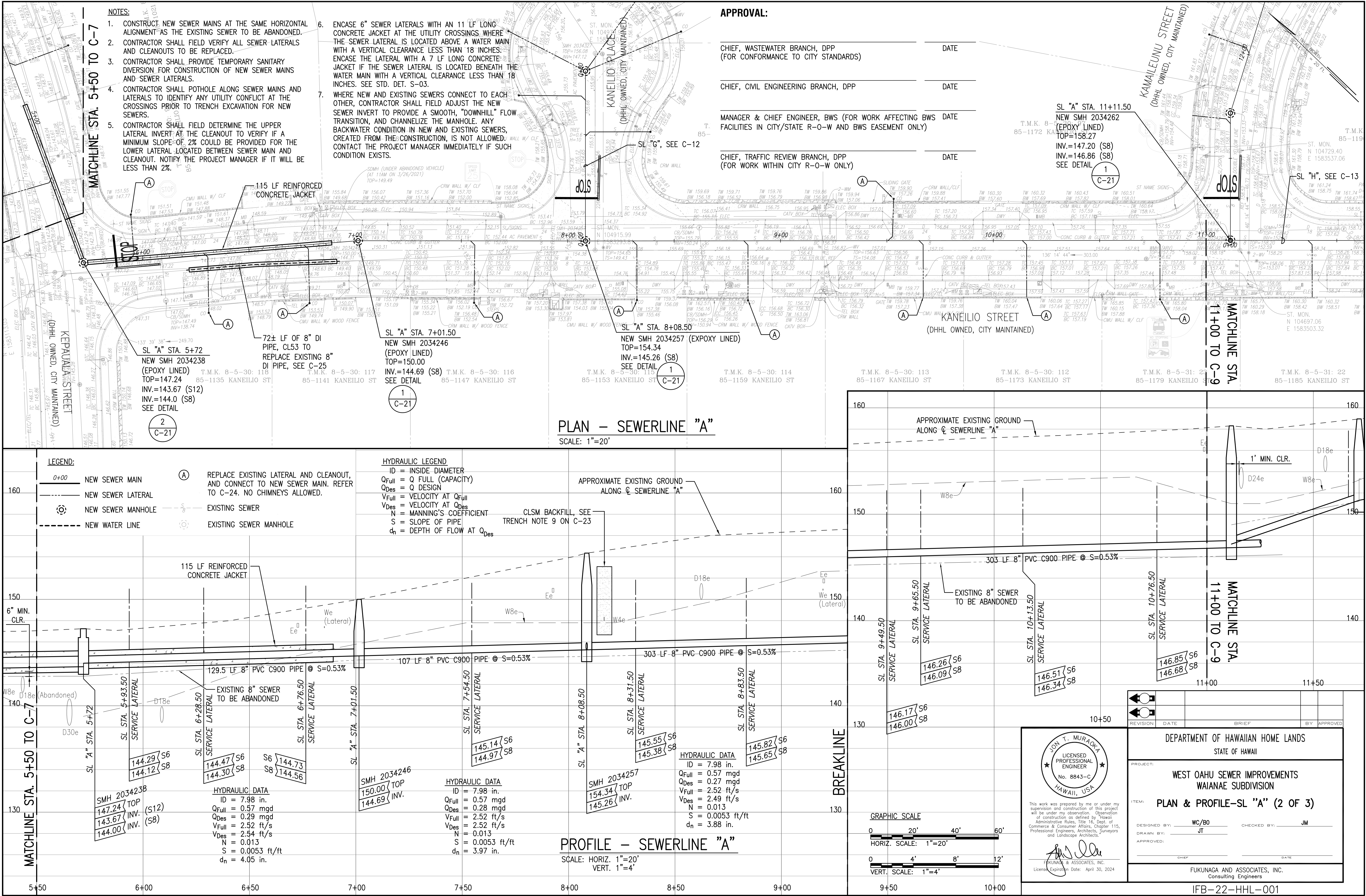
(A) REPLACE EXISTING LATERAL AND CLEANOUT, AND CONNECT TO NEW SEWER MAIN. REFER TO C-24. NO CHIMNEYS ALLOWED.

EXISTING SEWER
EXISTING SEWER MANHOLE

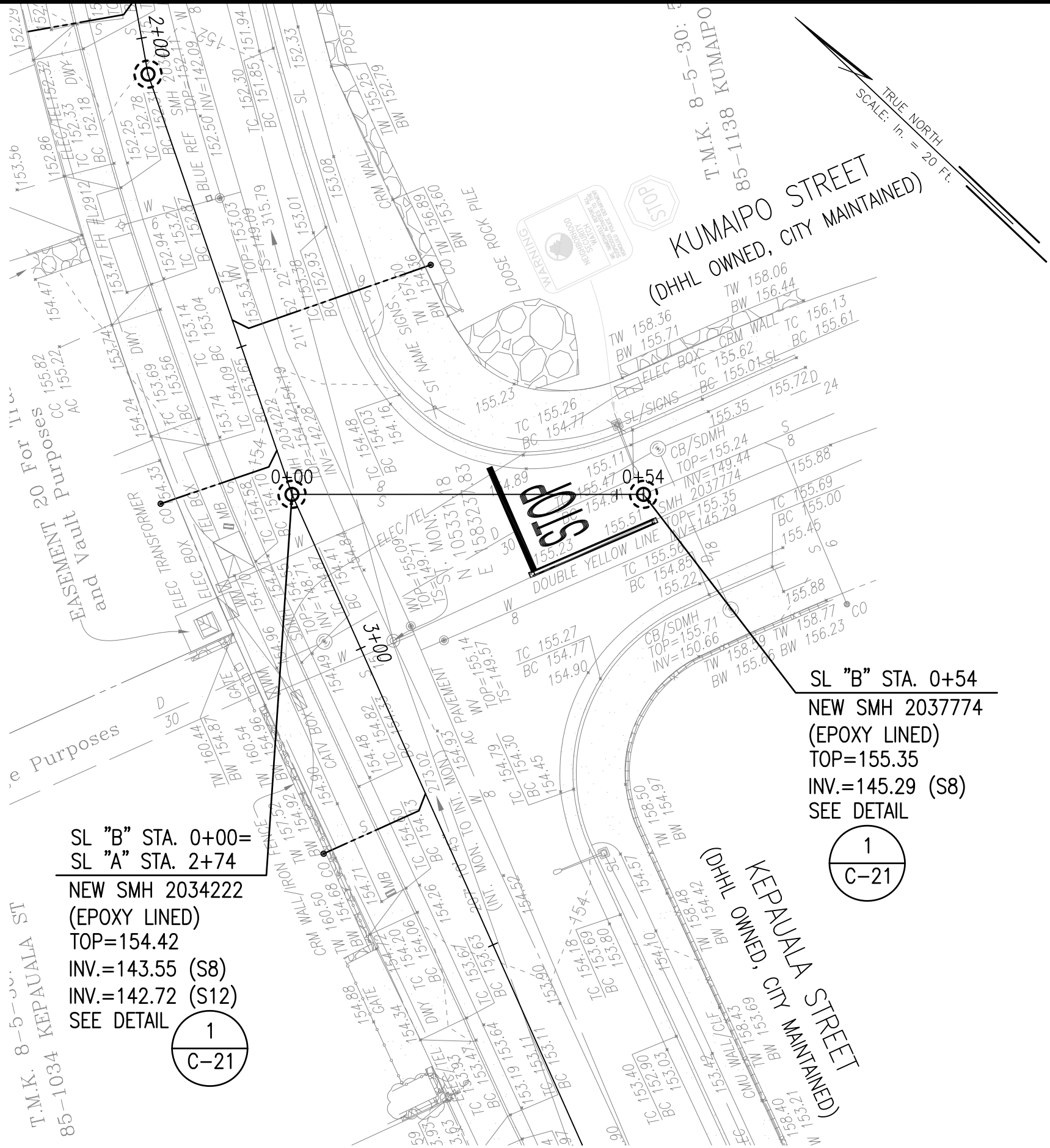
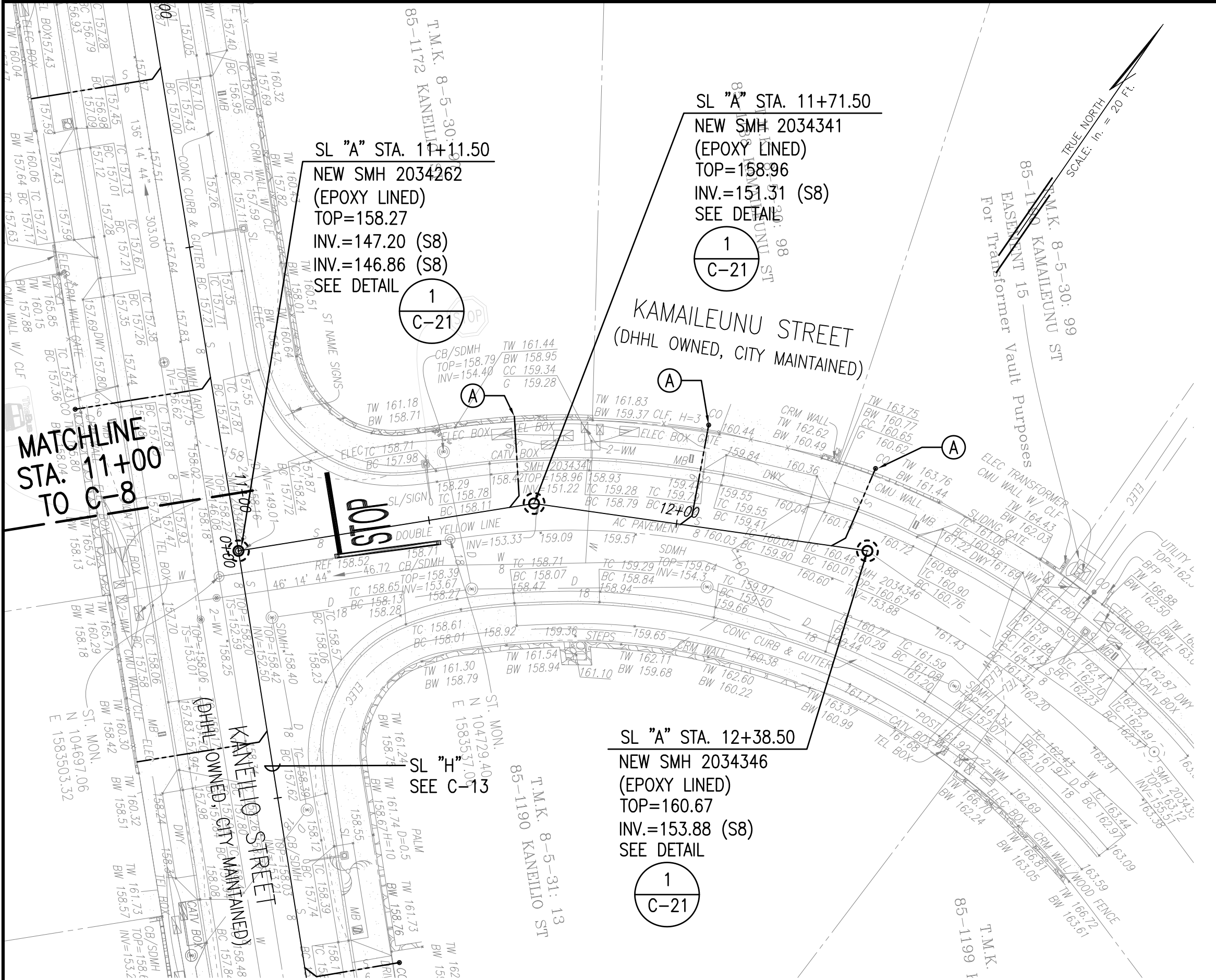


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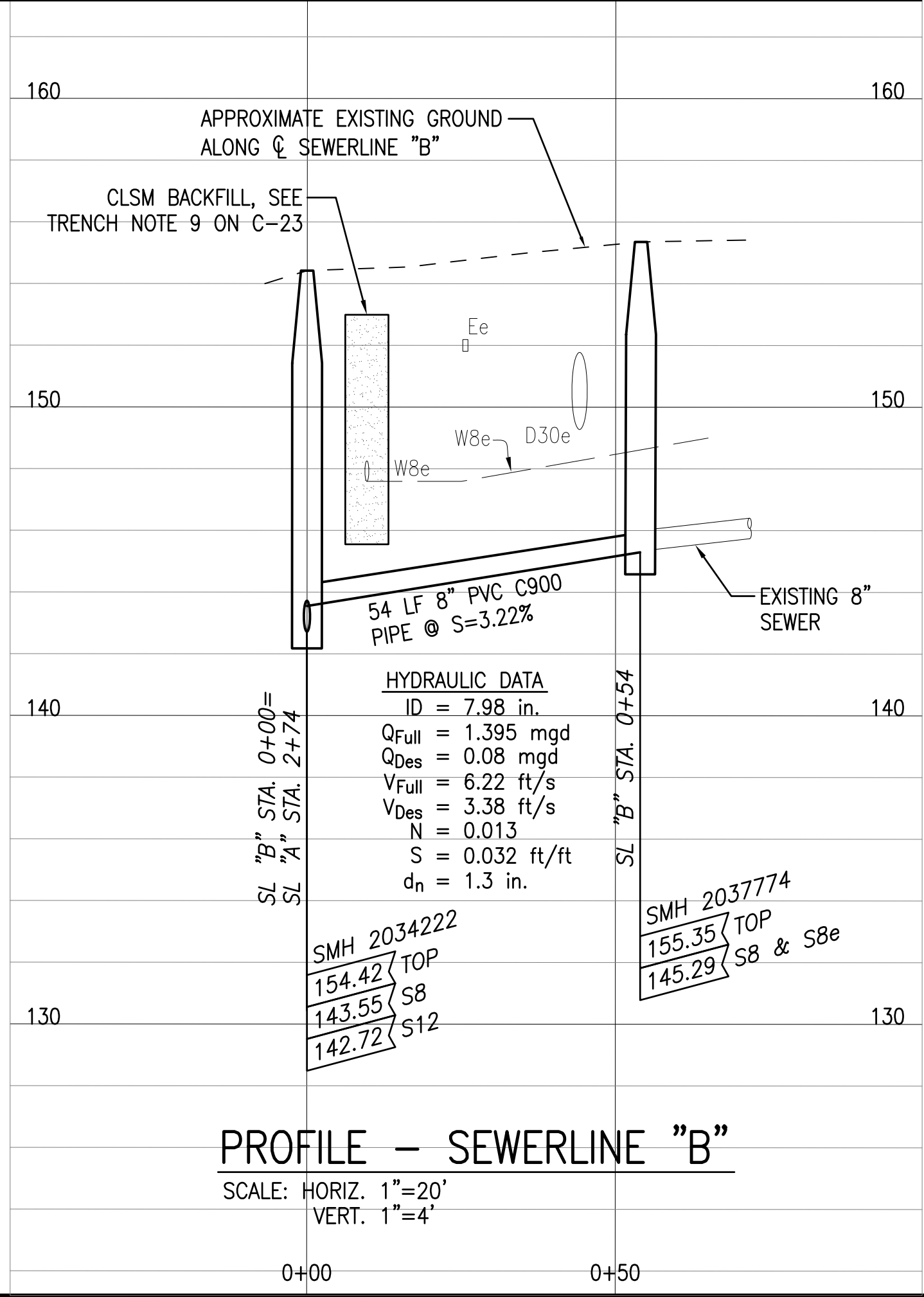
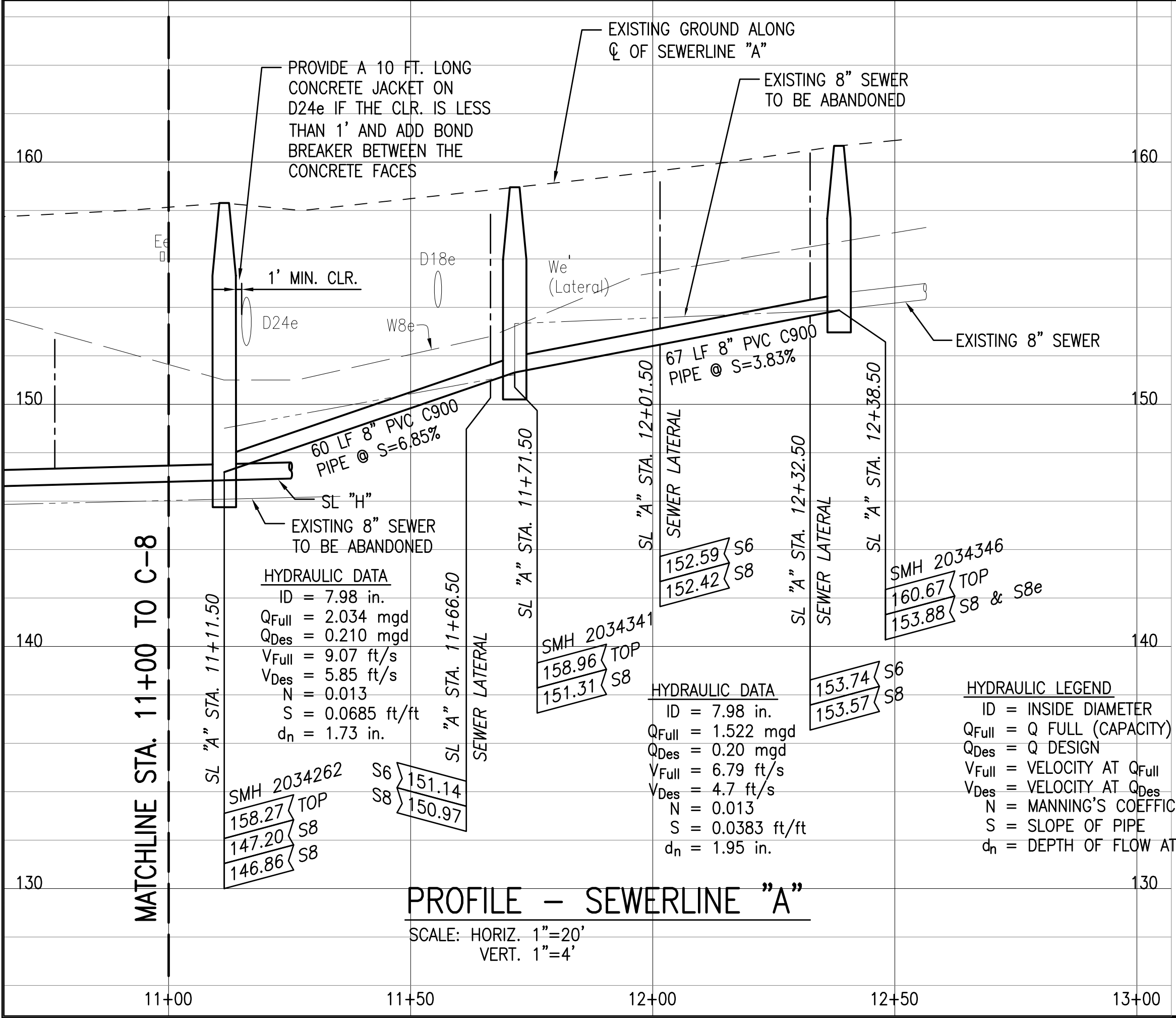


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Last plotted 8/1/2022 7:37:54 AM



- LEGEND:**
- 0+00 NEW SEWER MAIN
 - NEW SEWER LATERAL
 - NEW SEWER MANHOLE
 - REPLACE EXISTING LATERAL AND CLEANOUT, AND CONNECT TO NEW SEWER MAIN. REFER TO C-24. NO CHIMNEYS ALLOWED.
 - EXISTING SEWER
 - EXISTING SEWER MANHOLE

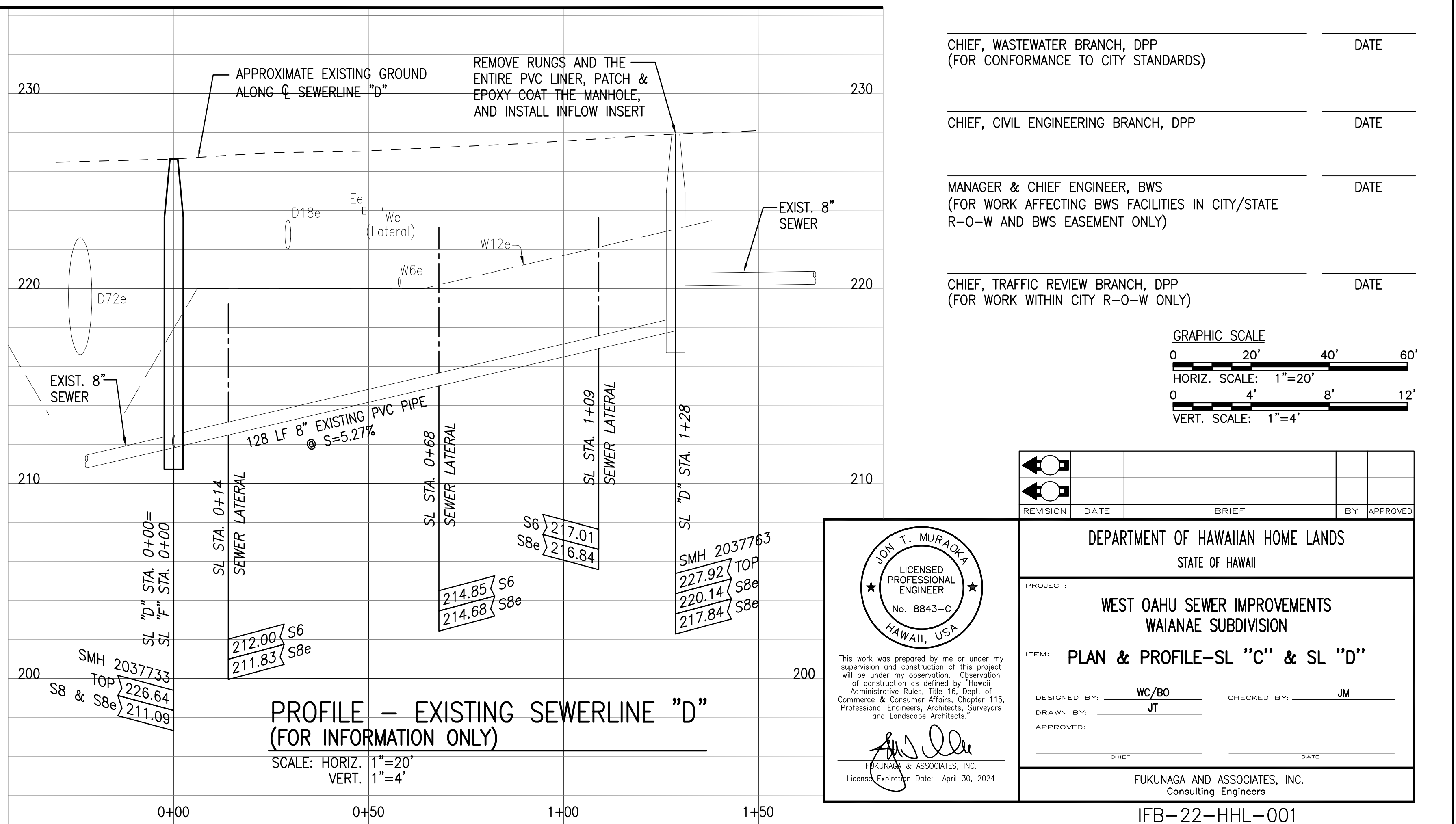
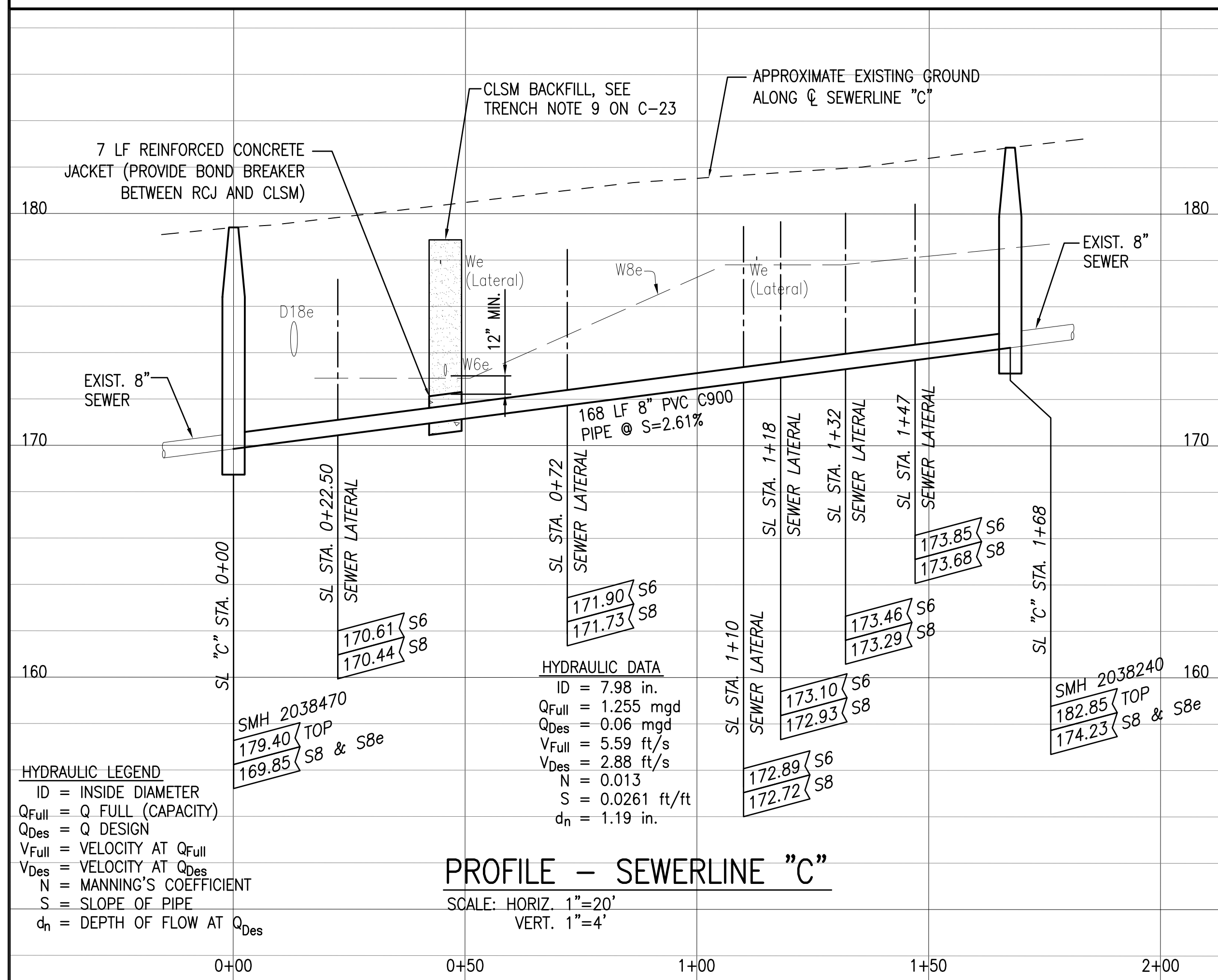
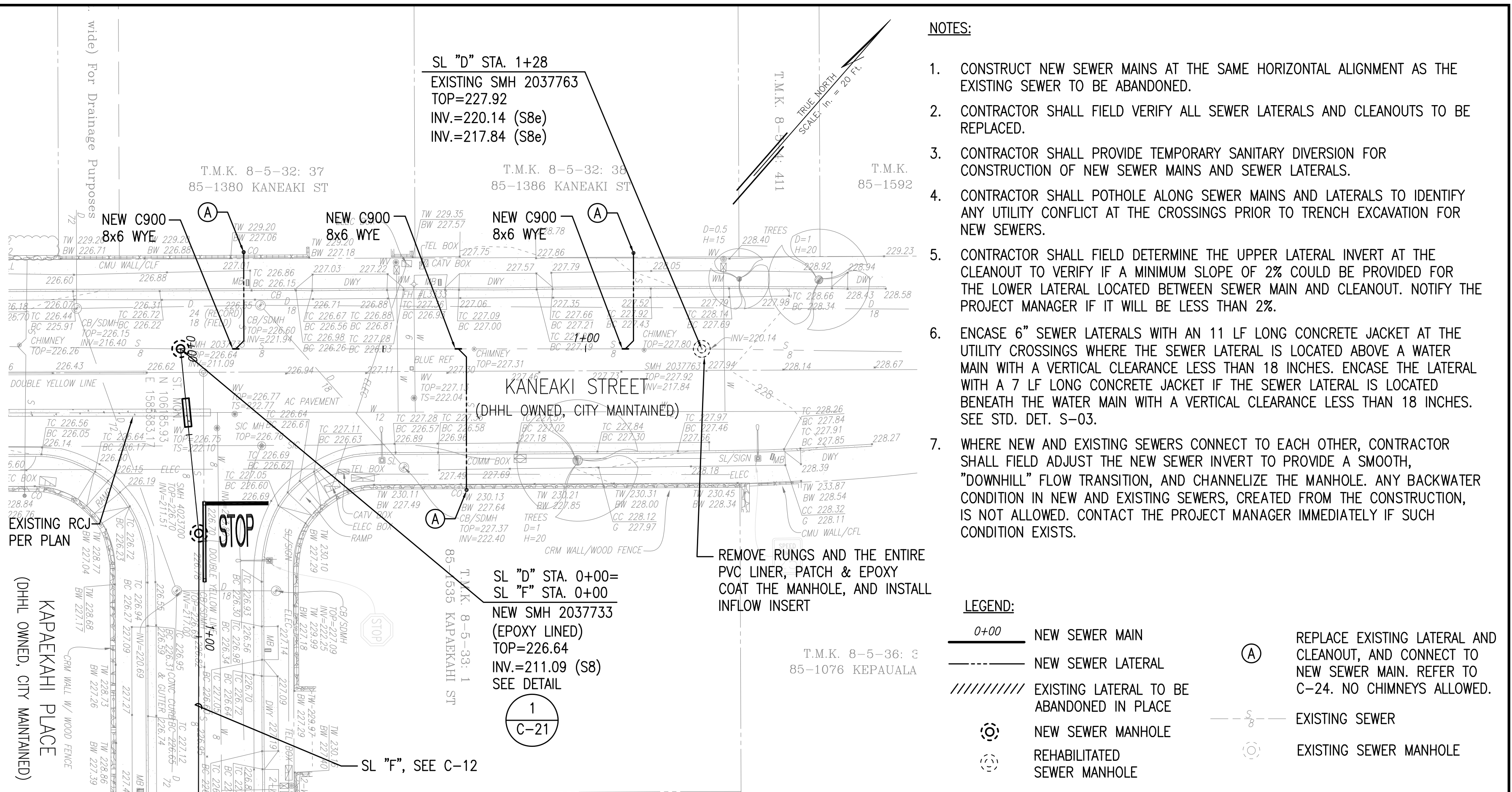
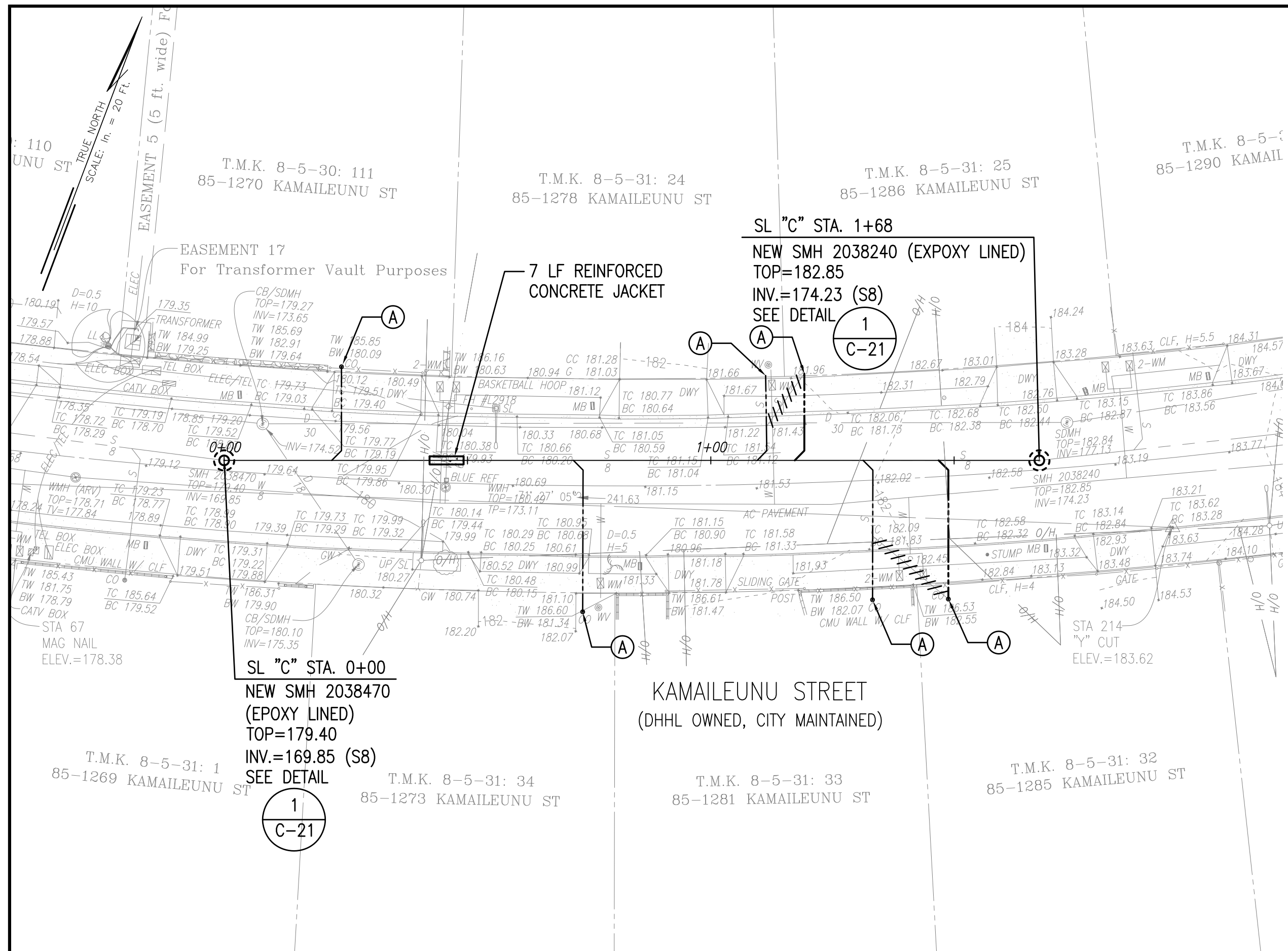
- NOTES:**
- CONSTRUCT NEW SEWER MAINS AT THE SAME HORIZONTAL ALIGNMENT AS THE EXISTING SEWER TO BE ABANDONED.
 - CONTRACTOR SHALL FIELD VERIFY ALL SEWER LATERALS AND CLEANOUTS TO BE REPLACED.
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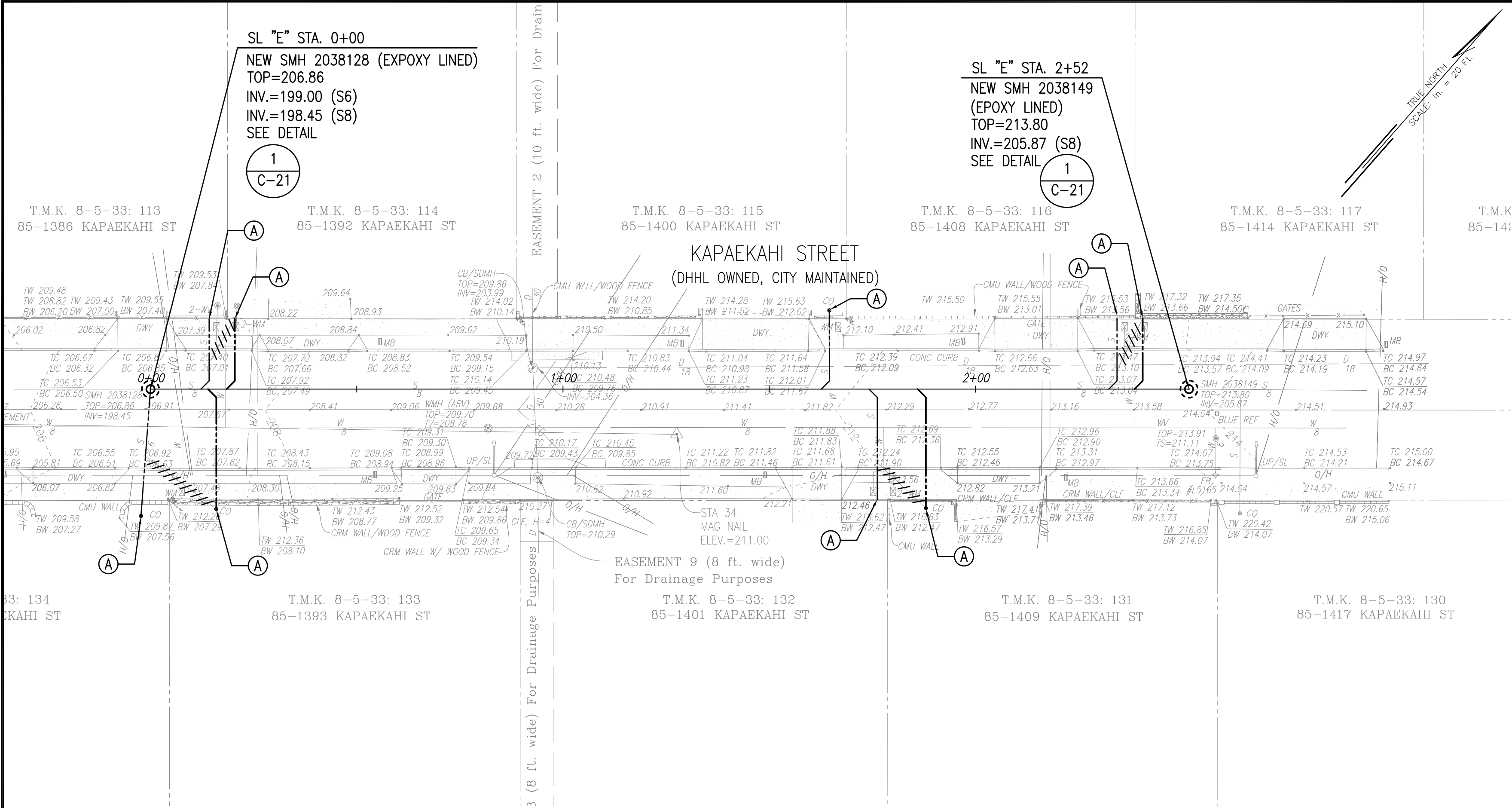
APPROVAL:

CHIEF, WASTEWATER BRANCH, DPP (FOR CONFORMANCE TO CITY STANDARDS)	DATE
CHIEF, CIVIL ENGINEERING BRANCH, DPP	DATE
MANAGER & CHIEF ENGINEER, BWS (FOR WORK AFFECTING BWS FACILITIES IN CITY/STATE R-O-W AND BWS EASEMENT ONLY)	DATE
CHIEF, TRAFFIC REVIEW BRANCH, DPP (FOR WORK WITHIN CITY R-O-W ONLY)	DATE

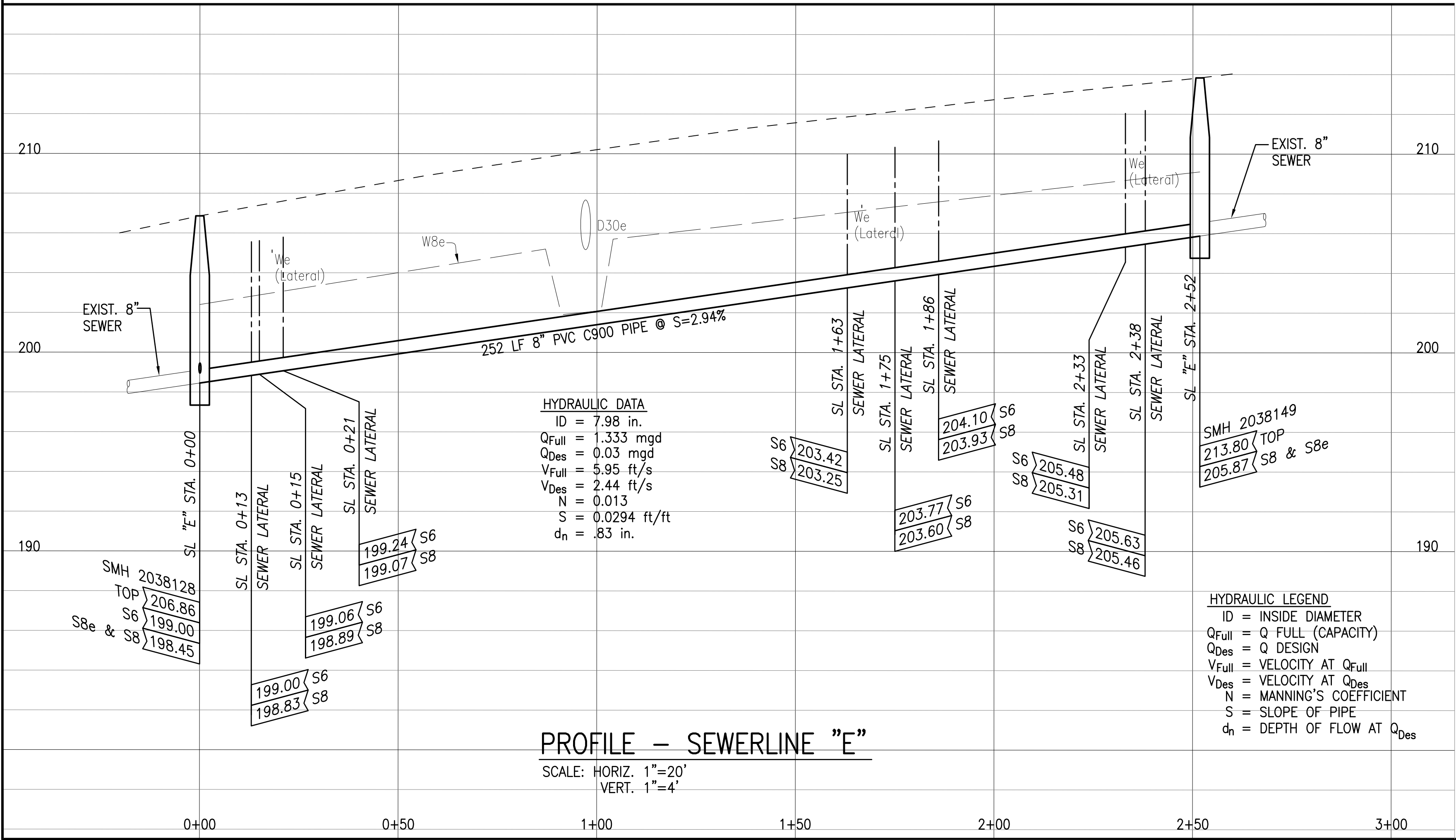
	DEPARTMENT OF HAWAIIAN HOME LANDS STATE OF HAWAII			
	PROJECT: WEST OAHU SEWER IMPROVEMENTS WAIANAE SUBDIVISION			
	ITEM: PLAN & PROFILE-SL "A" (3 OF 3) & SL "B"			
	DESIGNED BY: WC/BO	CHECKED BY: JM		
	DRAWN BY: JT	APPROVED: _____		DATE
FUKUNAGA & ASSOCIATES, INC. License Expiration Date: April 30, 2024				
IFB-22-HHL-001				



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Last plotted 7/7/2022 11:19:20 AM



PLAN - SEWERLINE "E"
SCALE: 1"=20'



PROFILE - SEWERLINE "E"
SCALE: HORIZ. 1"=20'
VERT. 1"=4'

NOTES:

- CONSTRUCT NEW SEWER MAINS AT THE SAME HORIZONTAL ALIGNMENT AS THE EXISTING SEWER TO BE ABANDONED.
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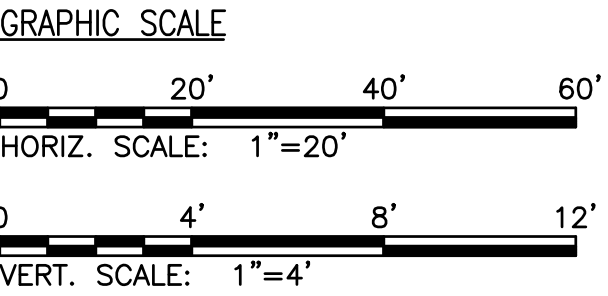
LEGEND:

- 0+00 NEW SEWER MAIN
- NEW SEWER LATERAL
- ///////// EXISTING LATERAL TO BE ABANDONED IN PLACE
- ⊙ NEW SEWER MANHOLE
- Ⓐ REPLACE EXISTING LATERAL AND CLEANOUT, AND CONNECT TO NEW SEWER MAIN. REFER TO C-24. NO CHIMNEYS ALLOWED.
- S— EXISTING SEWER
- ⊙ EXISTING SEWER MANHOLE

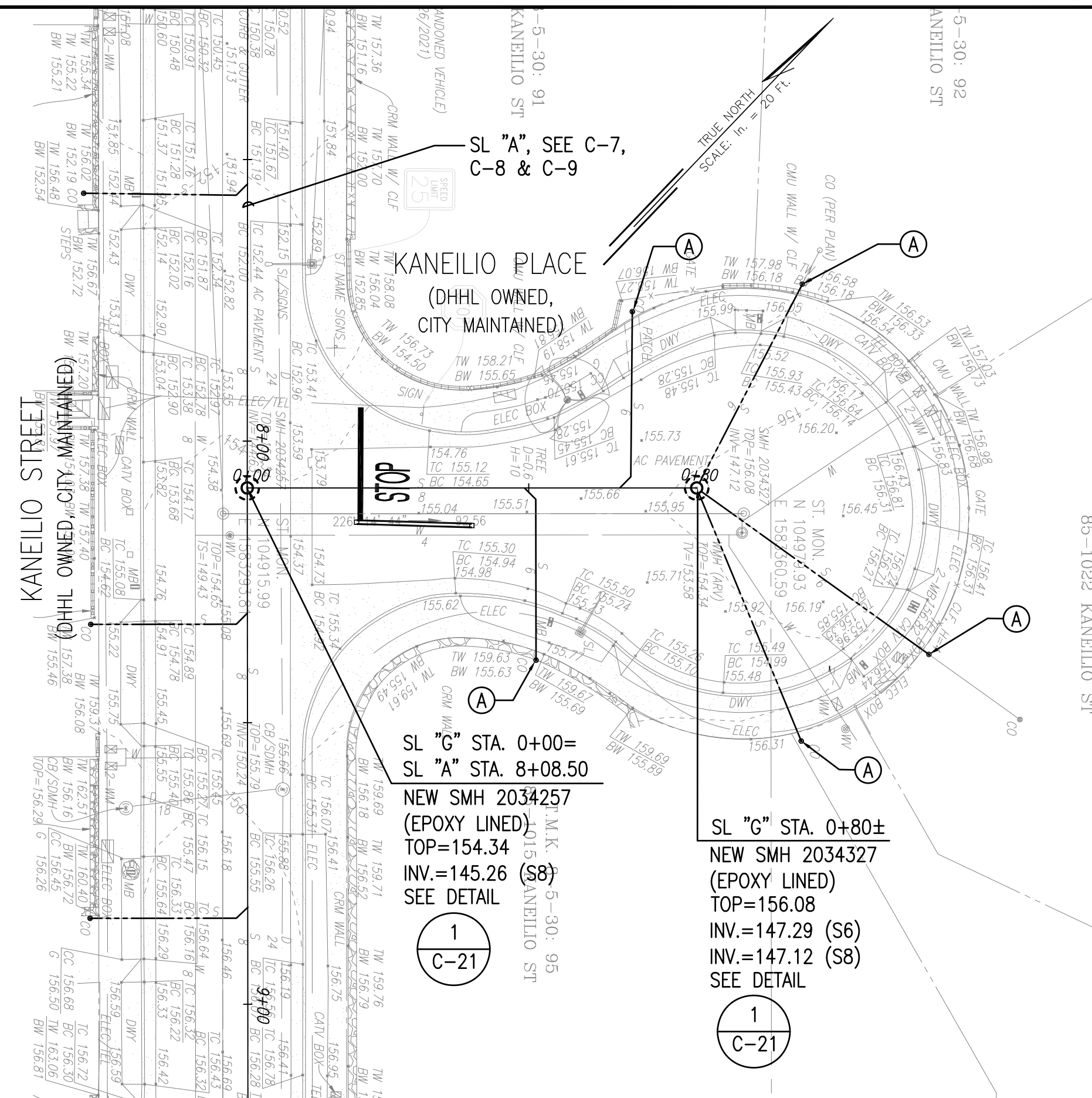
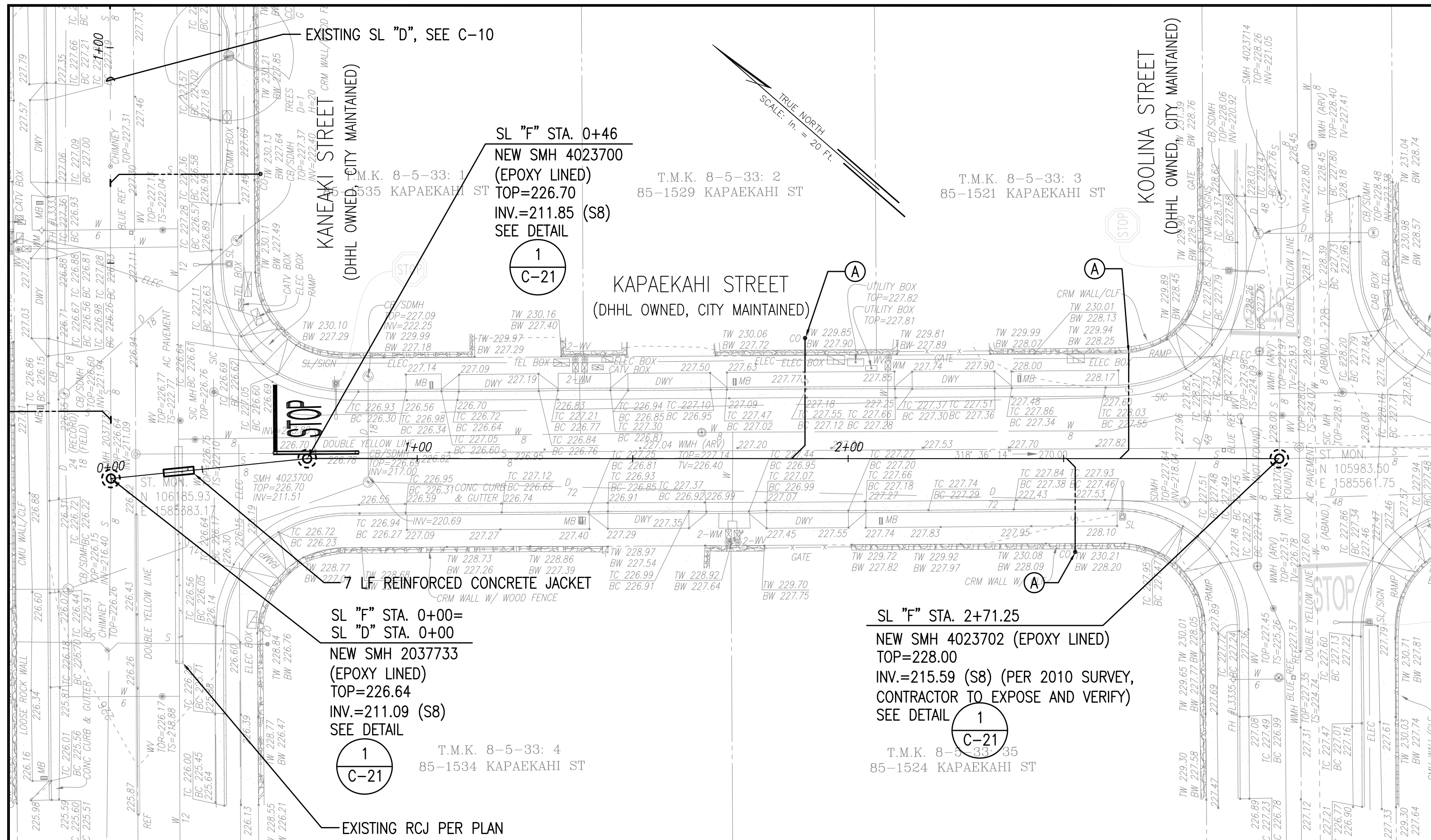
APPROVAL:





CHIEF, WASTEWATER BRANCH, DPP (FOR CONFORMANCE TO CITY STANDARDS)	DATE
CHIEF, CIVIL ENGINEERING BRANCH, DPP	DATE
MANAGER & CHIEF ENGINEER, BWS (FOR WORK AFFECTING BWS FACILITIES IN CITY/STATE R-O-W AND BWS EASEMENT ONLY)	DATE
CHIEF, TRAFFIC REVIEW BRANCH, DPP (FOR WORK WITHIN CITY R-O-W ONLY)	DATE

	REVISION	DATE	BRIEF	BY	APPROVED
	DEPARTMENT OF HAWAIIAN HOME LANDS STATE OF HAWAII				
	PROJECT: WEST OAHU SEWER IMPROVEMENTS WAIANAE SUBDIVISION				
	ITEM: PLAN & PROFILE-SL "E"				
	DESIGNED BY: WC/BO DRAWN BY: JT APPROVED: _____ DATE: _____				
FUKUNAGA & ASSOCIATES, INC. License Expiration Date: April 30, 2024					
FUKUNAGA AND ASSOCIATES, INC. Consulting Engineers					



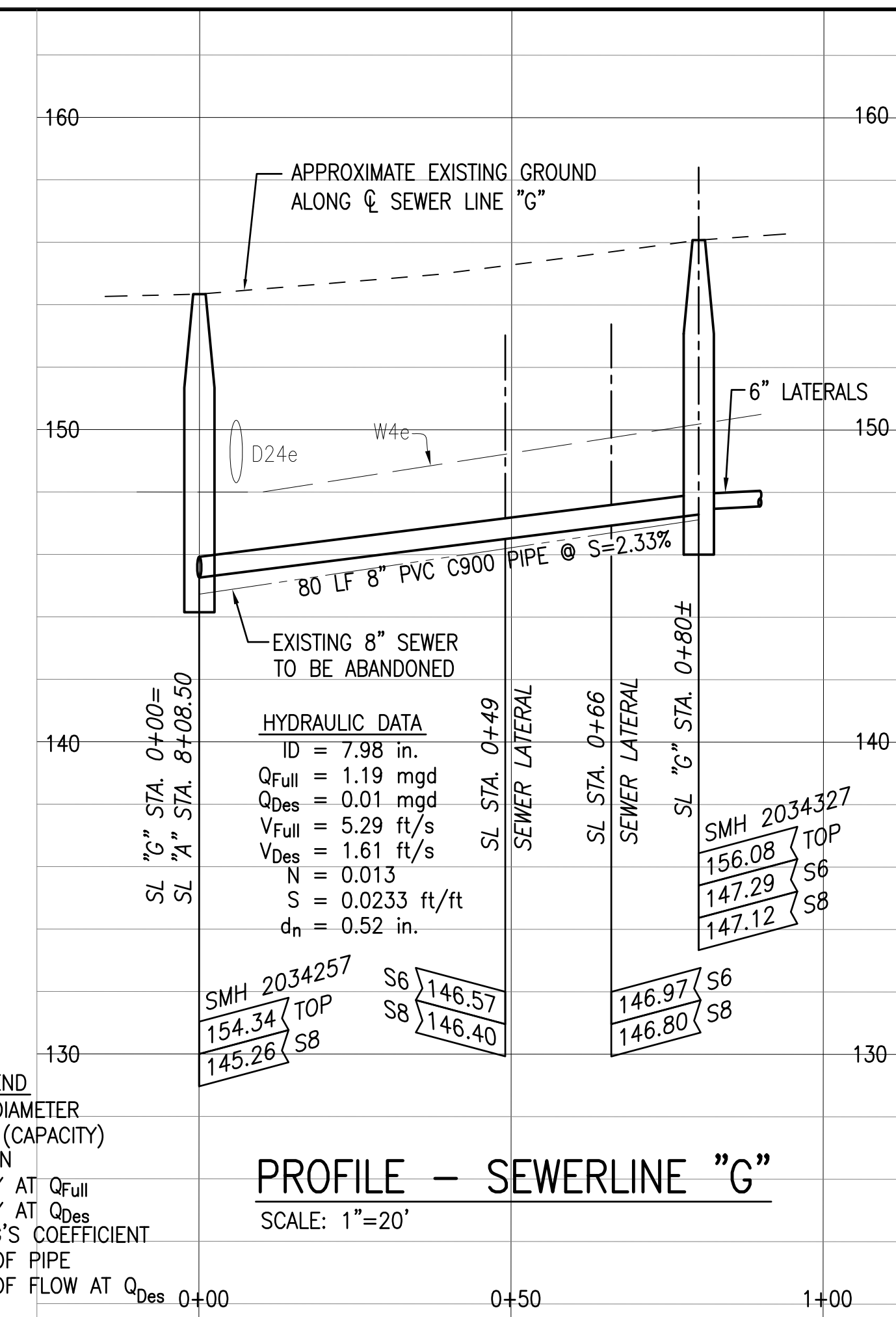
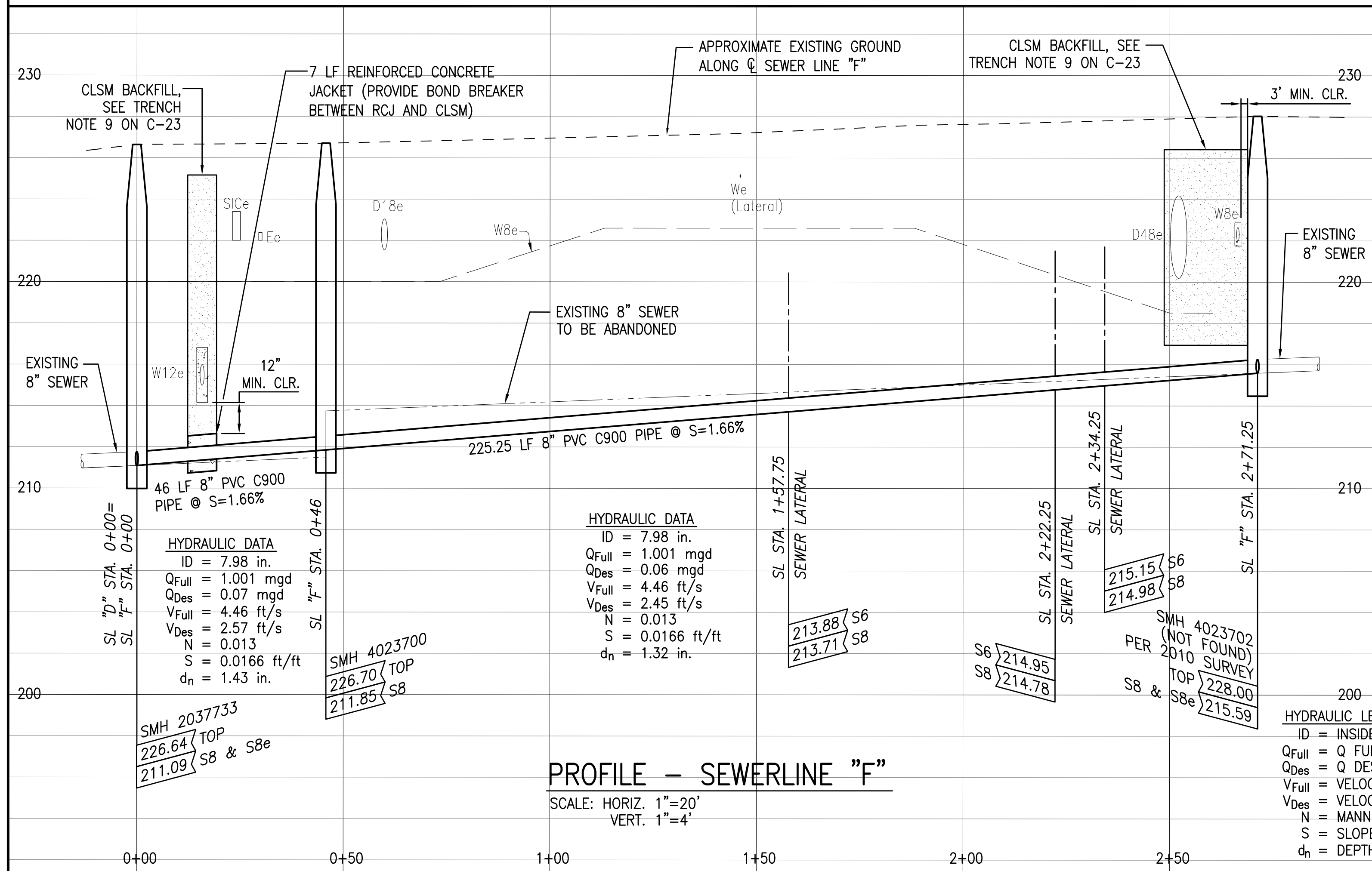
FILE	POCKET	FOLDER	NO.



- | | |
|---|---|
| <u>LEGEND:</u> | |
| <hr style="width: 100px; margin-left: 0;"/> 0+00 | NEW SEWER MAIN |
| ----- | NEW SEWER LATERAL |
|  | NEW SEWER MANHOLE |
|  | REPLACE EXISTING LATERAL AND CLEANOUT, AND
CONNECT TO NEW SEWER MAIN. REFER TO C-24.
NO CHIMNEYS ALLOWED. |
| -----  ----- | EXISTING SEWER |
|  | EXISTING SEWER MANHOLE |

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APPROVAL:

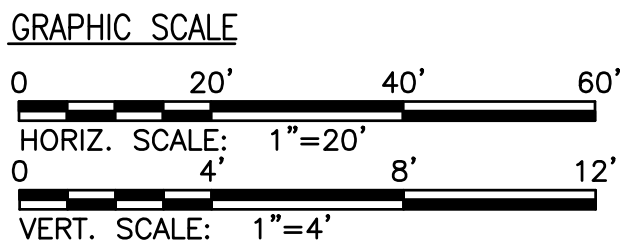




CHIEF, WASTEWATER BRANCH, DPP (FOR CONFORMANCE TO CITY STANDARDS)	DATE
--	------

CHIEF, CIVIL ENGINEERING BRANCH, DPP DATE

MANAGER & CHIEF ENGINEER, BWS (FOR WORK AFFECTING BWS FACILITIES IN CITY/STATE R-O-W AND BWS EASEMENT ONLY)	DATE
---	------

CHIEF, TRAFFIC REVIEW BRANCH, DPP (FOR WORK WITHIN CITY R-O-W ONLY)	DATE
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REVISION	DATE	BRIEF	BY	APPROVED	

DEPARTMENT OF HAWAIIAN HOME LANDS

STATE OF HAWAII

PROJECT: WEST OAHU SEWER IMPROVEMENTS
WAIANA E SUBDIVISION

ITEM: PLAN & PROFILE-SL "F" & SL "G"

DESIGNED BY: WC/BO

DRAWN BY: JT

APPROVED: _____

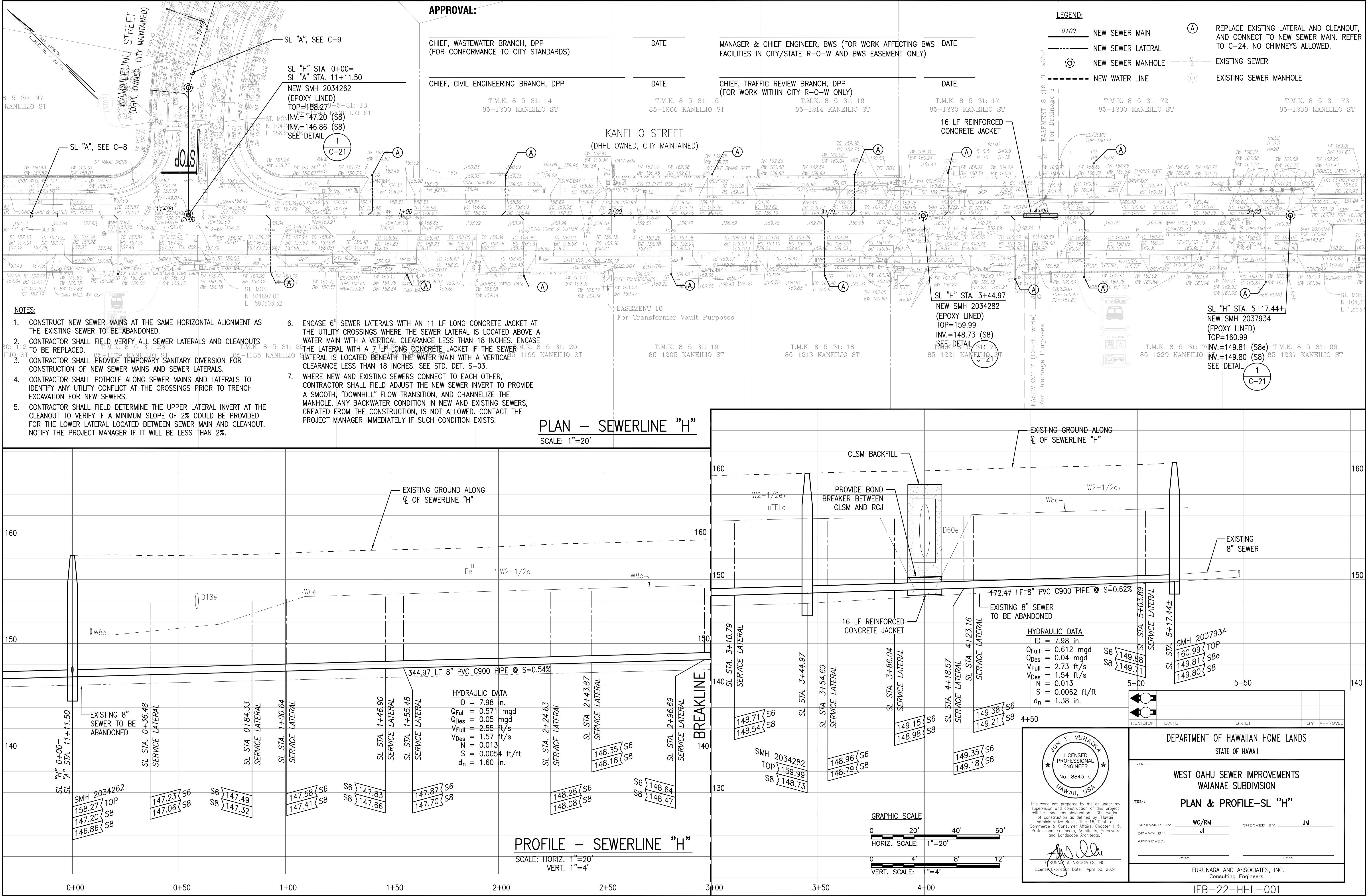
CHECKED BY: JM

_____ CHIEF
_____ DATE

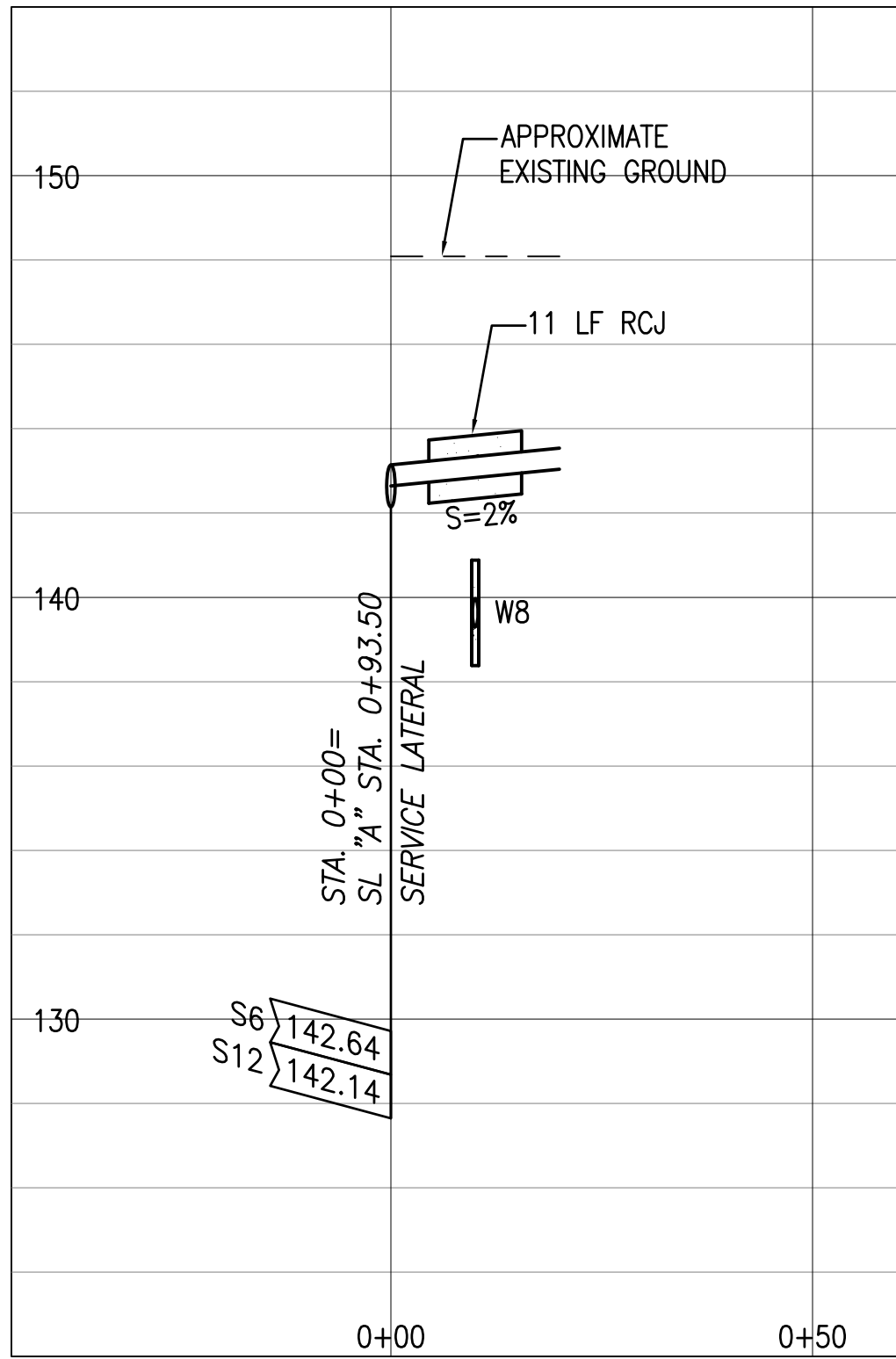
FUKUNAGA AND ASSOCIATES, INC.

Consulting Engineers

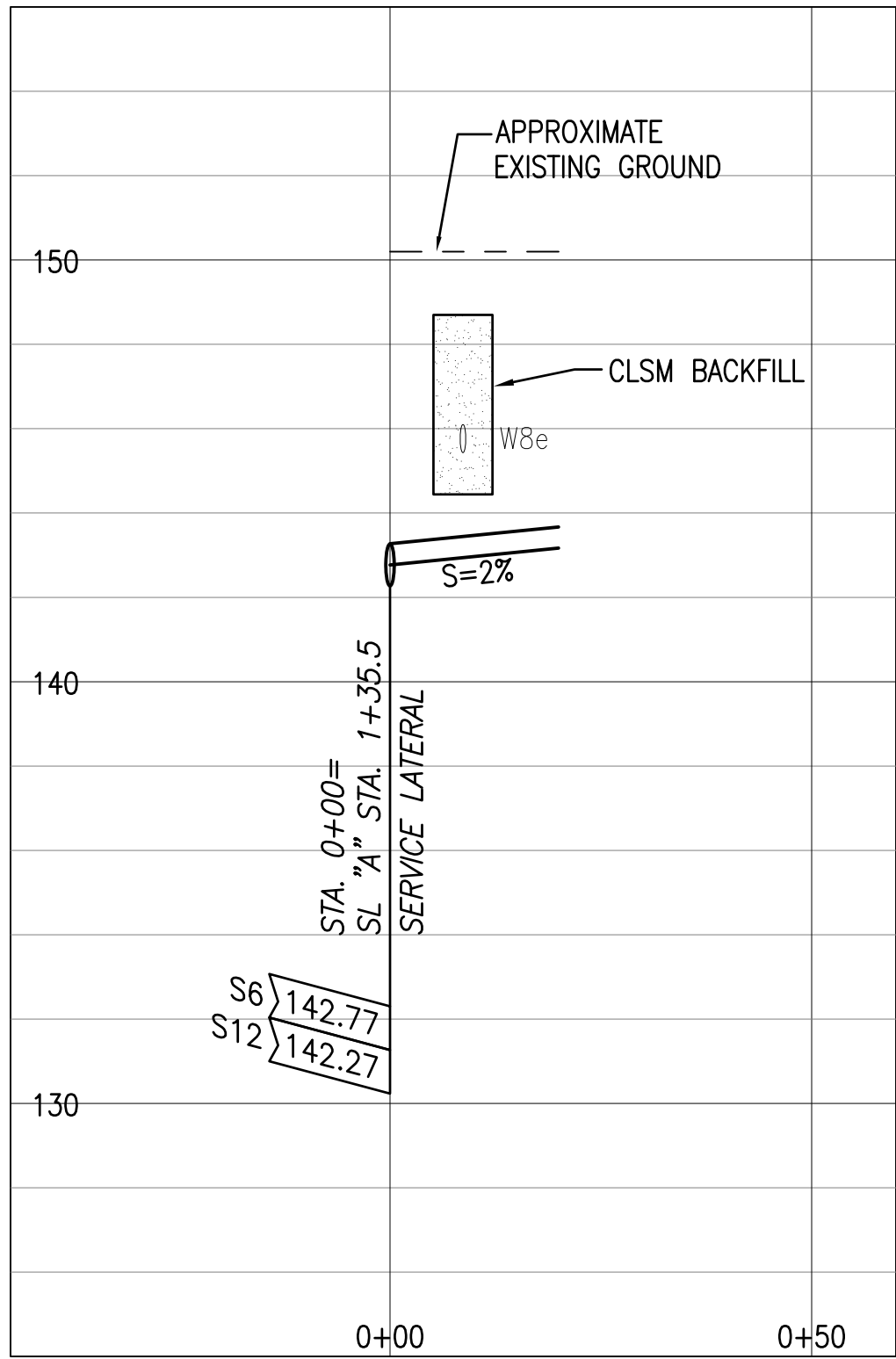
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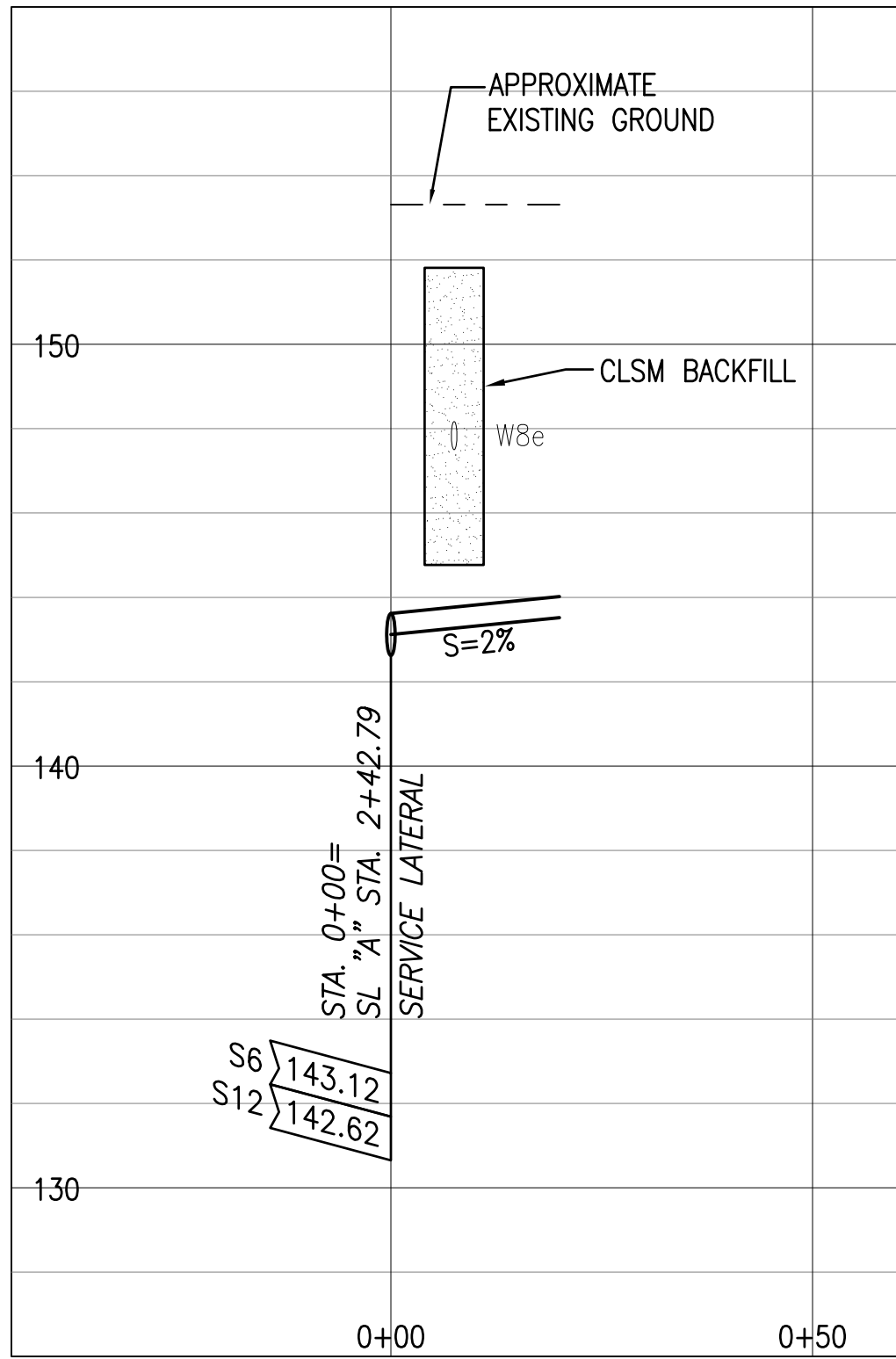
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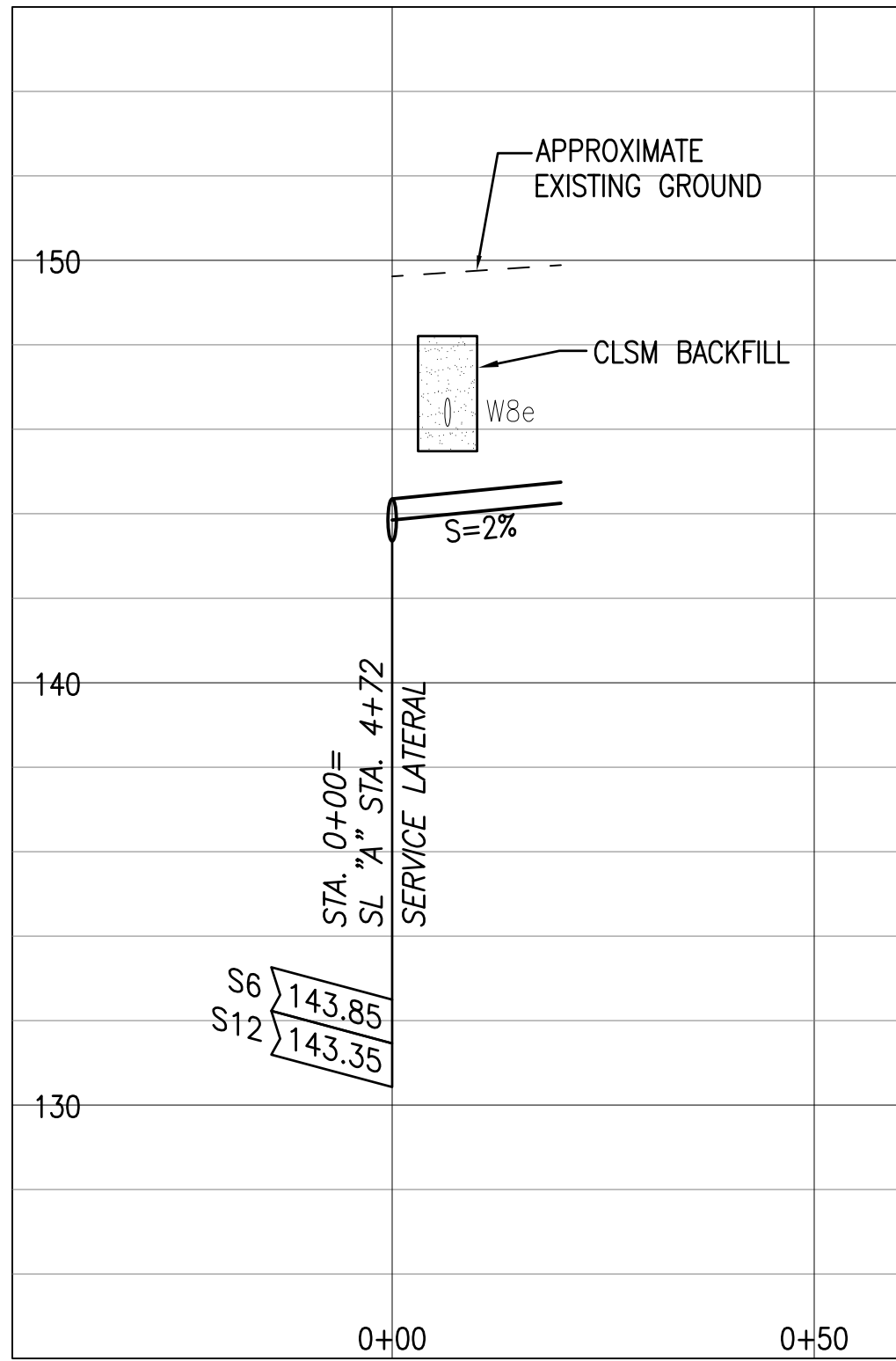
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STA. 0+93.50
SCALE: HORIZONTAL 1" = 20'
VERTICAL 1" = 4'



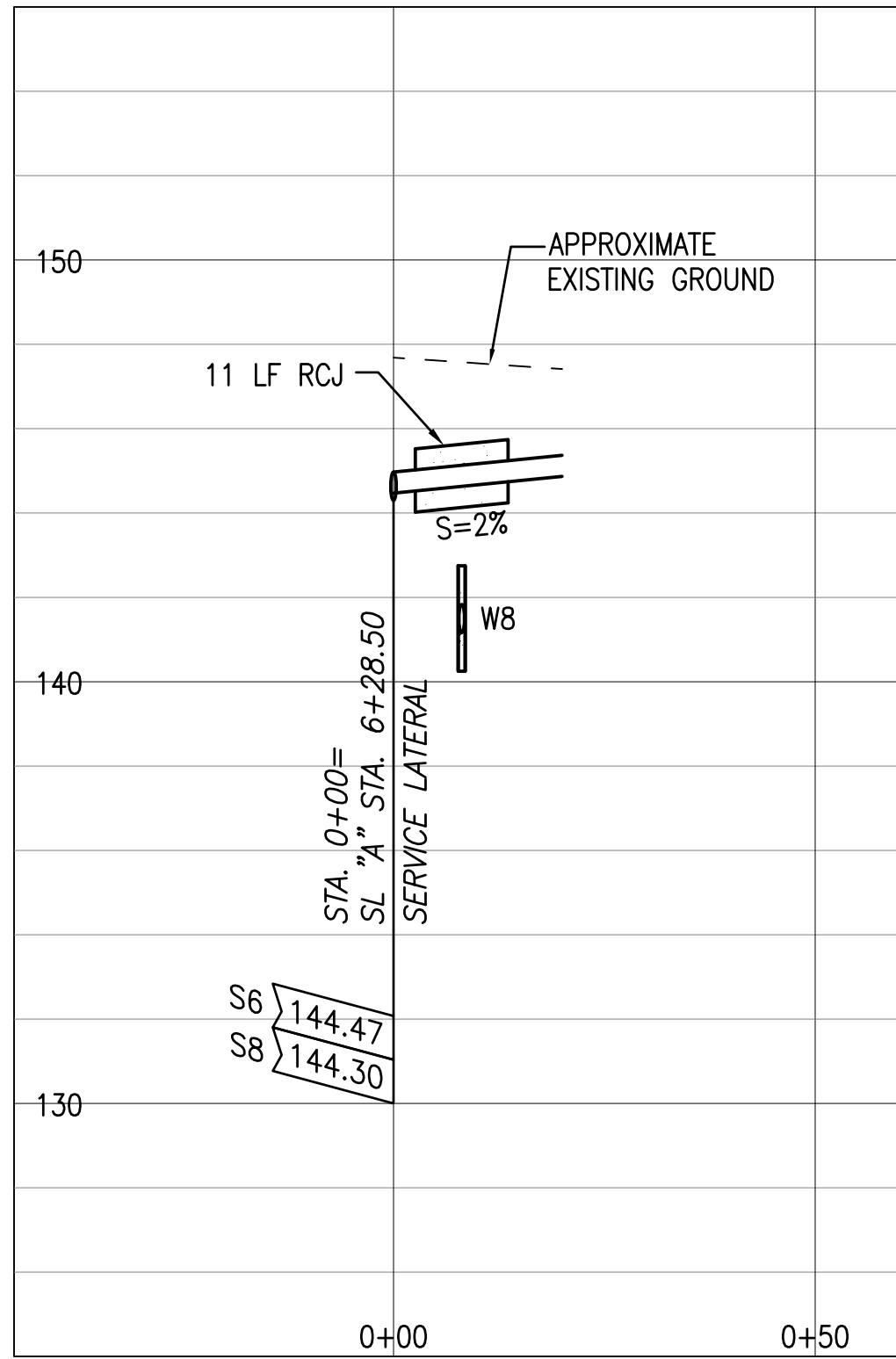
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STA. 1+35.50
SCALE: HORIZONTAL 1" = 20'
VERTICAL 1" = 4'



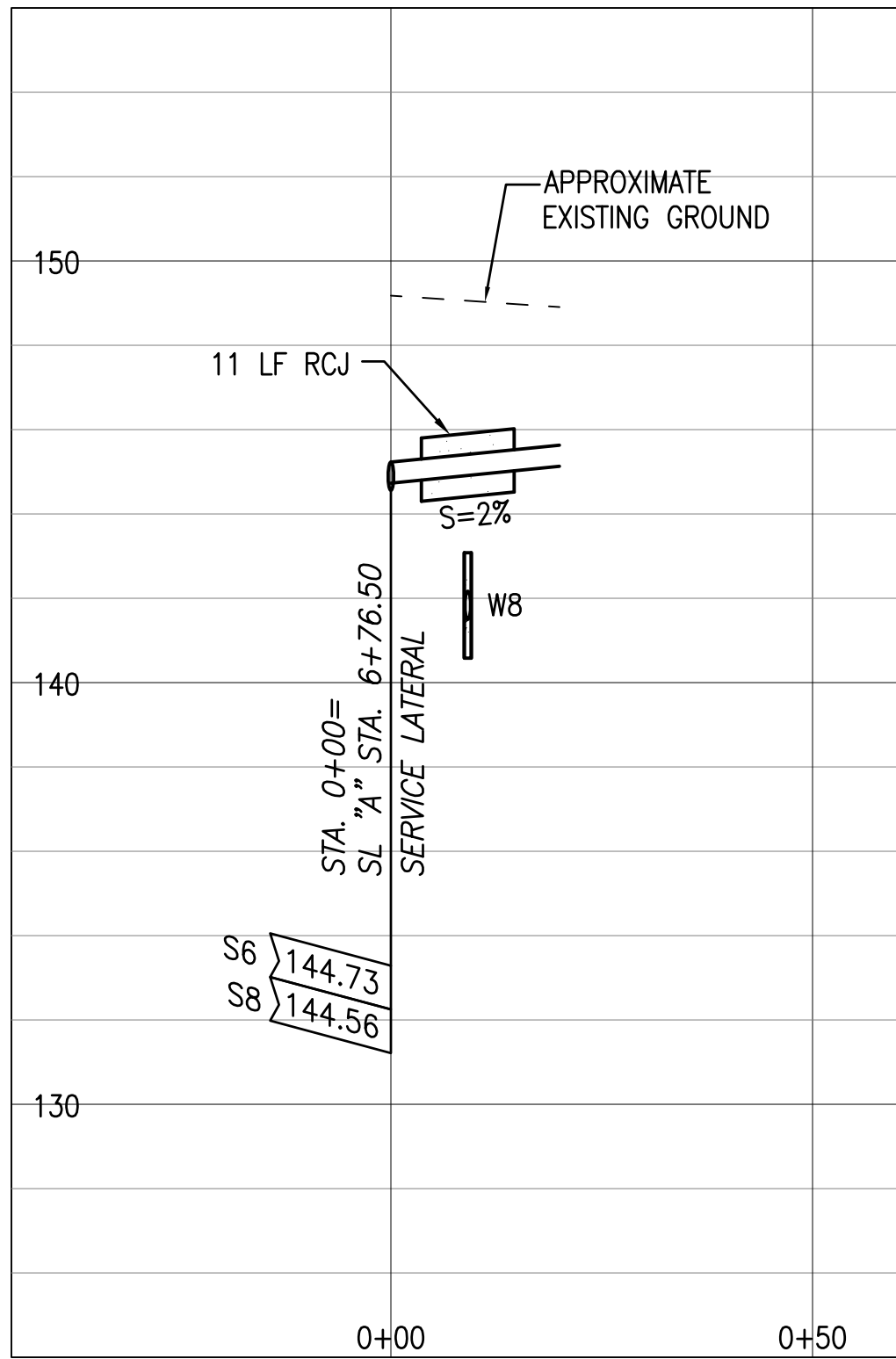
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STA. 2+42.79
SCALE: HORIZONTAL 1" = 20'
VERTICAL 1" = 4'



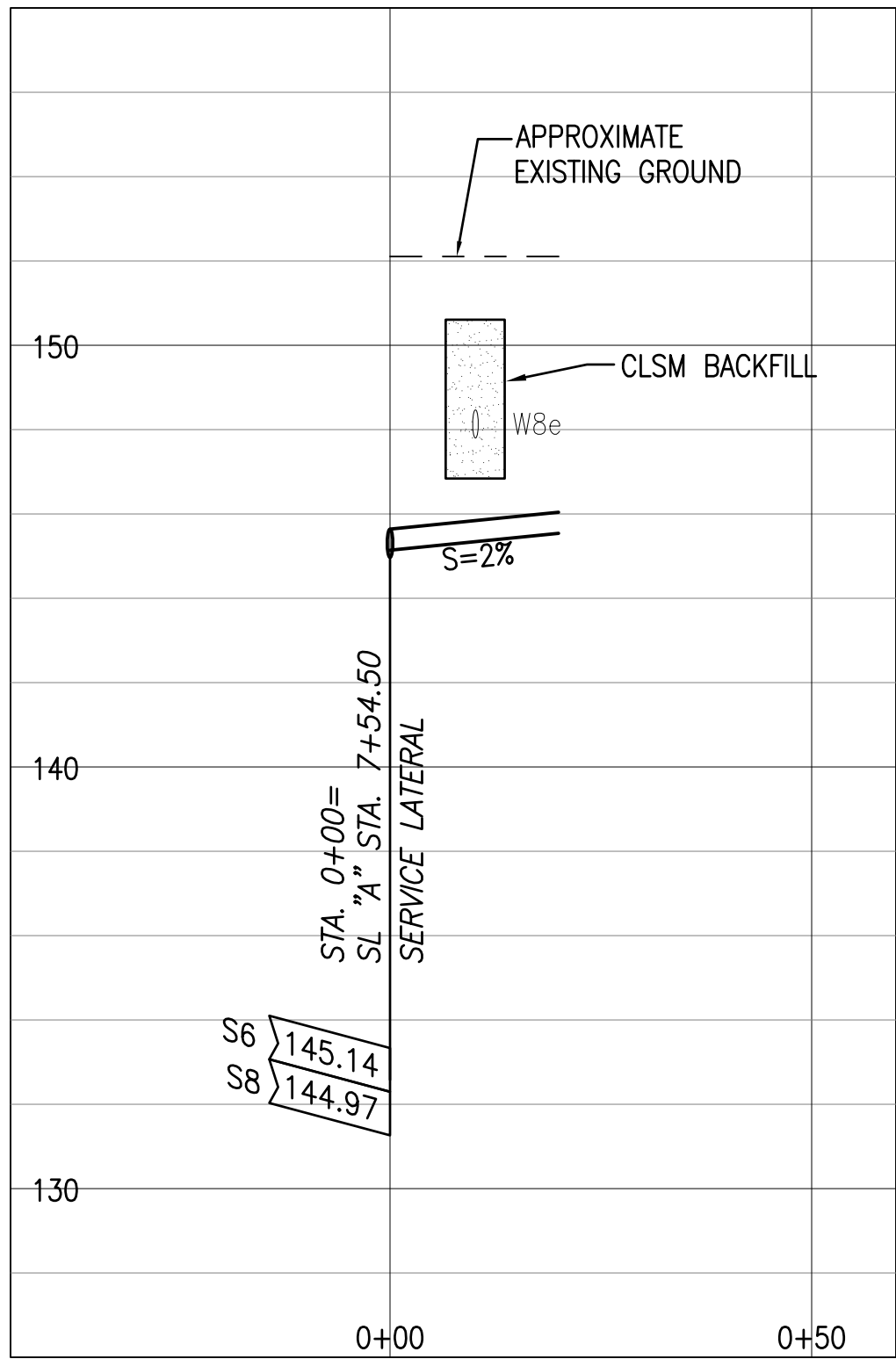
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STA. 4+72
SCALE: HORIZONTAL 1" = 20'
VERTICAL 1" = 4'



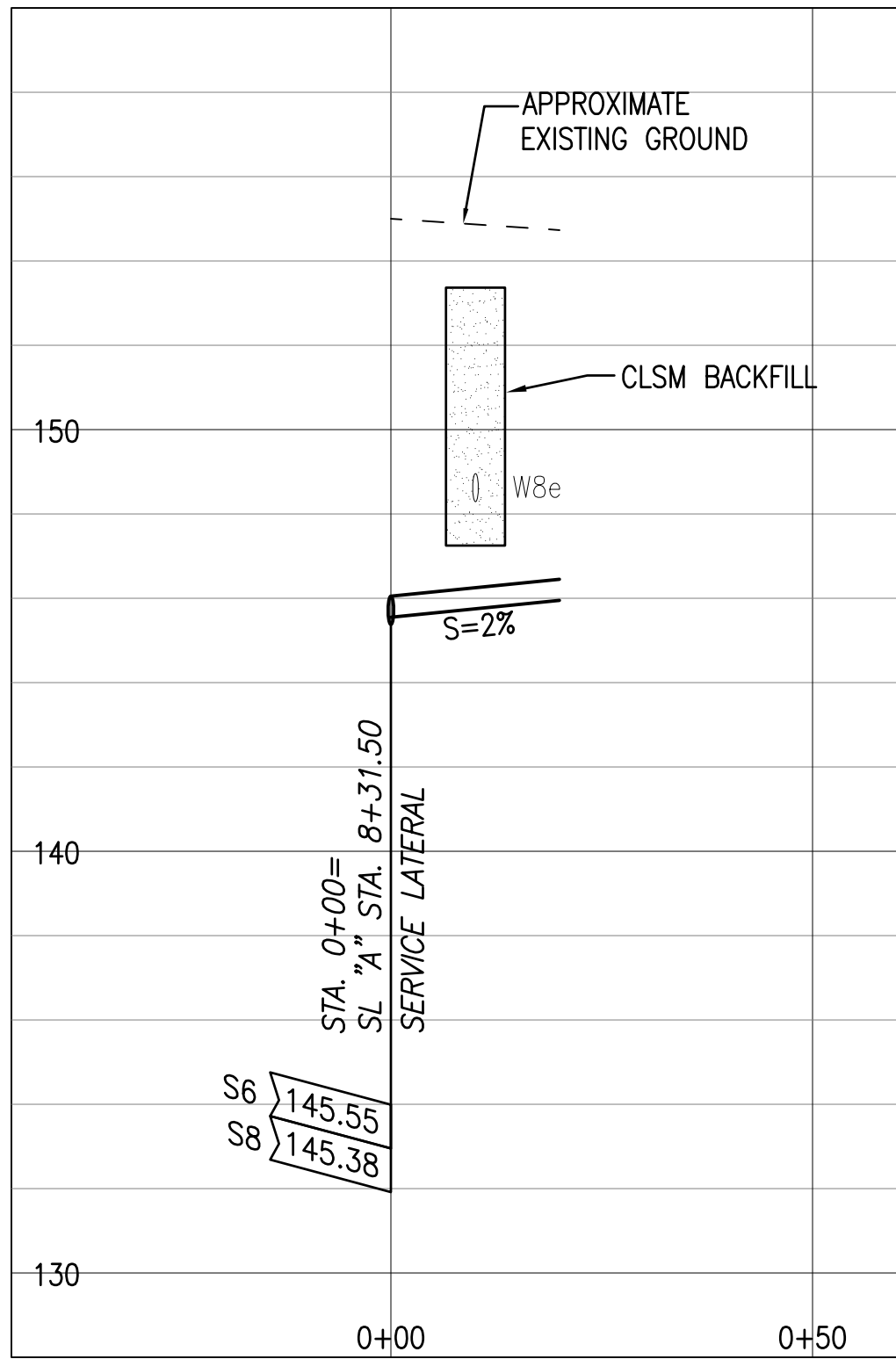
5 SEWER LATERAL @ SL "A"
STA. 6+28.50
SCALE: HORIZONTAL 1" = 20'
VERTICAL 1" = 4'



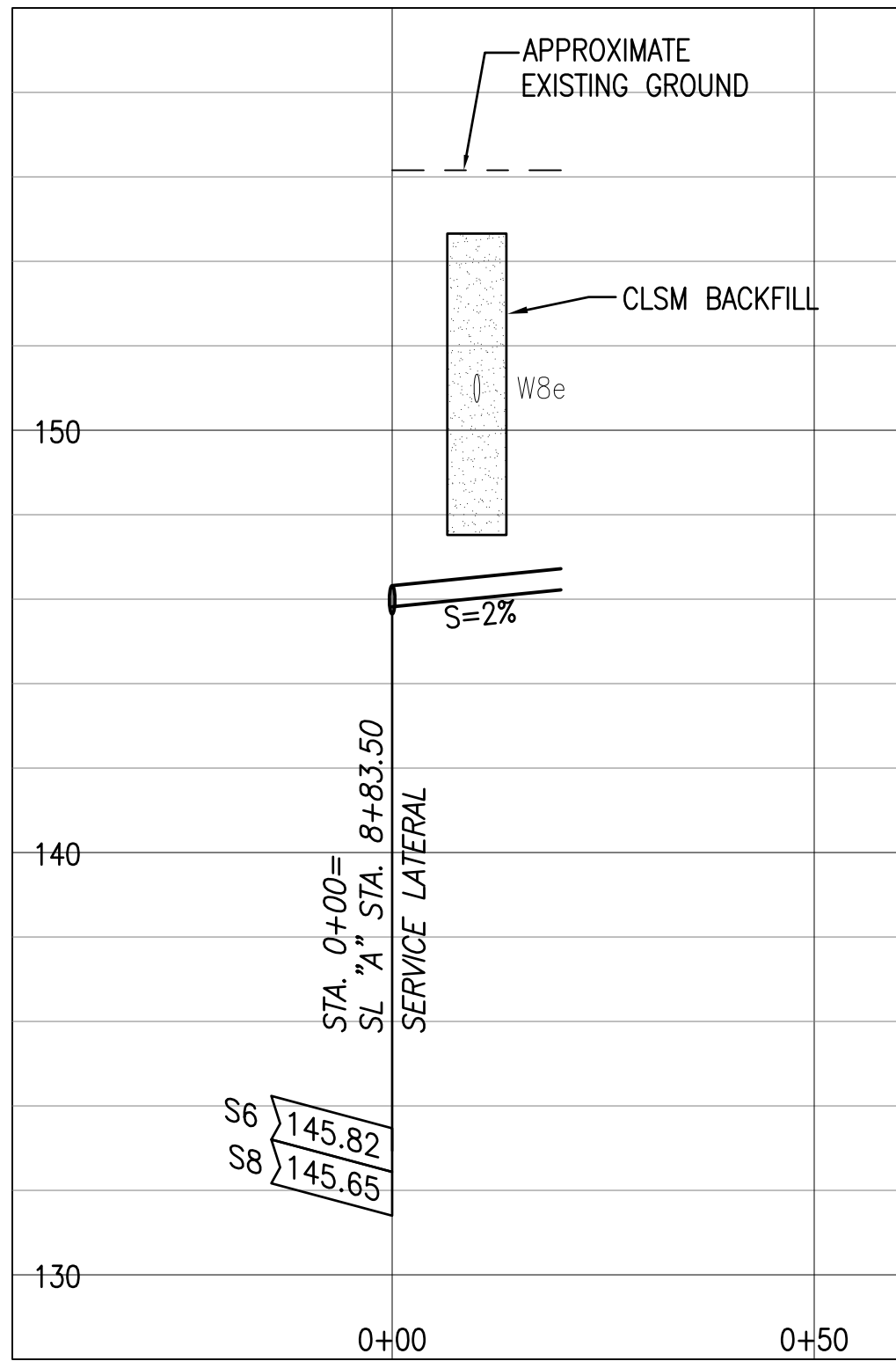
6 SEWER LATERAL @ SL "A"
STA. 6+76.50
SCALE: HORIZONTAL 1" = 20'
VERTICAL 1" = 4'



7 SEWER LATERAL @ SL "A"
STA. 7+54.50
SCALE: HORIZONTAL 1" = 20'
VERTICAL 1" = 4'



8 SEWER LATERAL @ SL "A"
STA. 8+31.50
SCALE: HORIZONTAL 1" = 20'
VERTICAL 1" = 4'



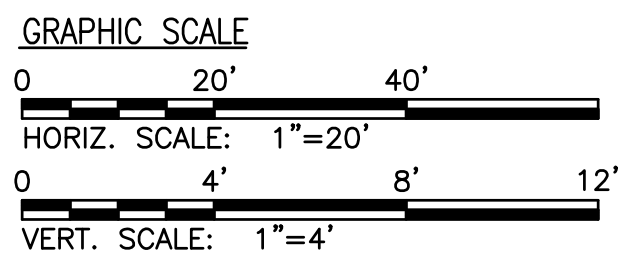
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STA. 8+83.50
SCALE: HORIZONTAL 1" = 20'
VERTICAL 1" = 4'

NOTE:
PROVIDE CLSM BACKFILL AT ALL SEWER CROSSINGS BENEATH WATER MAINS, WHETHER SHOWN OR NOT SHOWN ON THE PLANS. REFER TO TRENCH NOTES ON C-23.

APPROVAL:

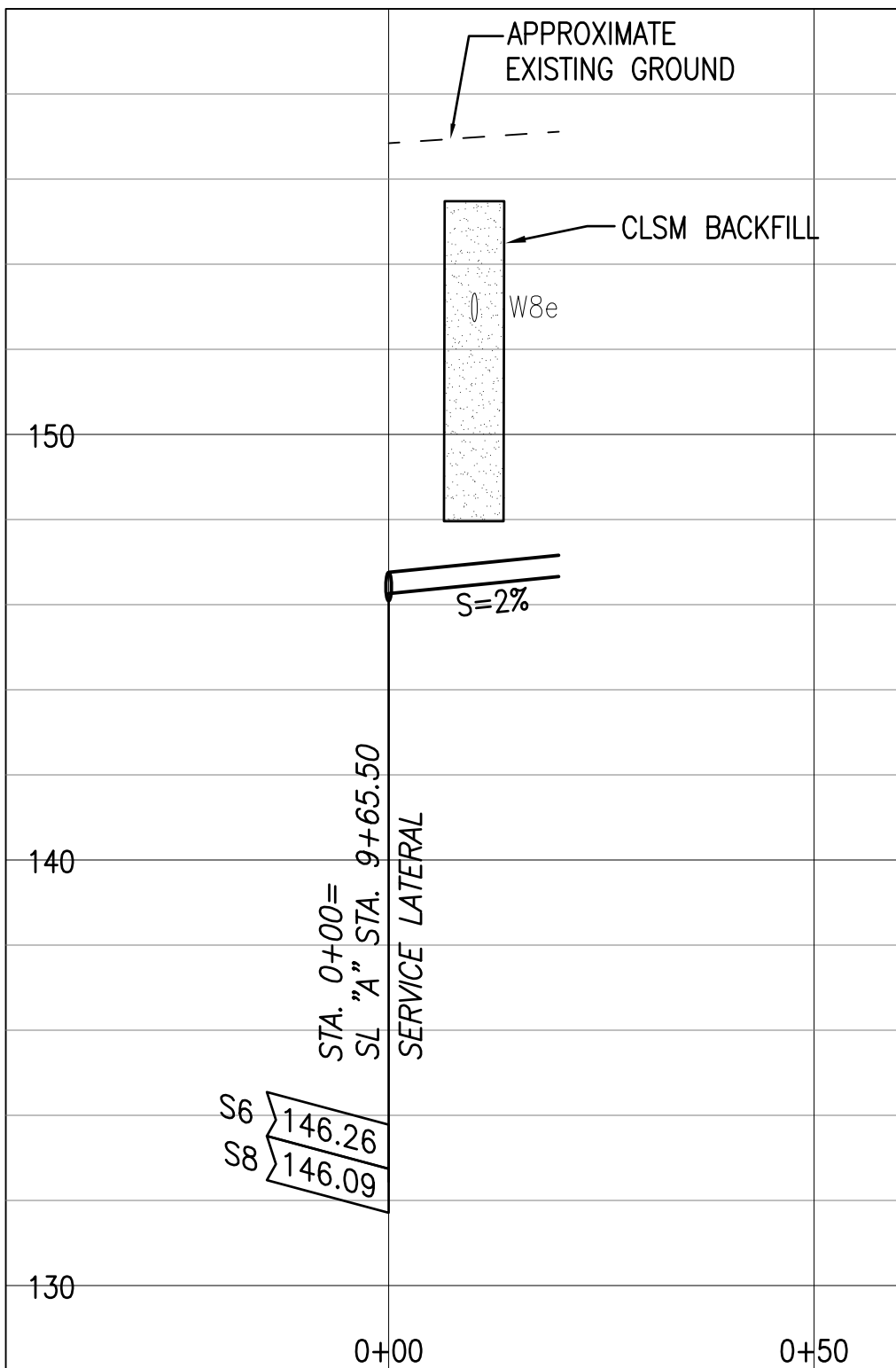
CHIEF, WASTEWATER BRANCH, DPP
(FOR CONFORMANCE TO CITY STANDARDS)

MANAGER & CHIEF ENGINEER, BWS
(FOR WORK AFFECTING BWS FACILITIES IN CITY/STATE
R-O-W AND BWS EASEMENT ONLY)

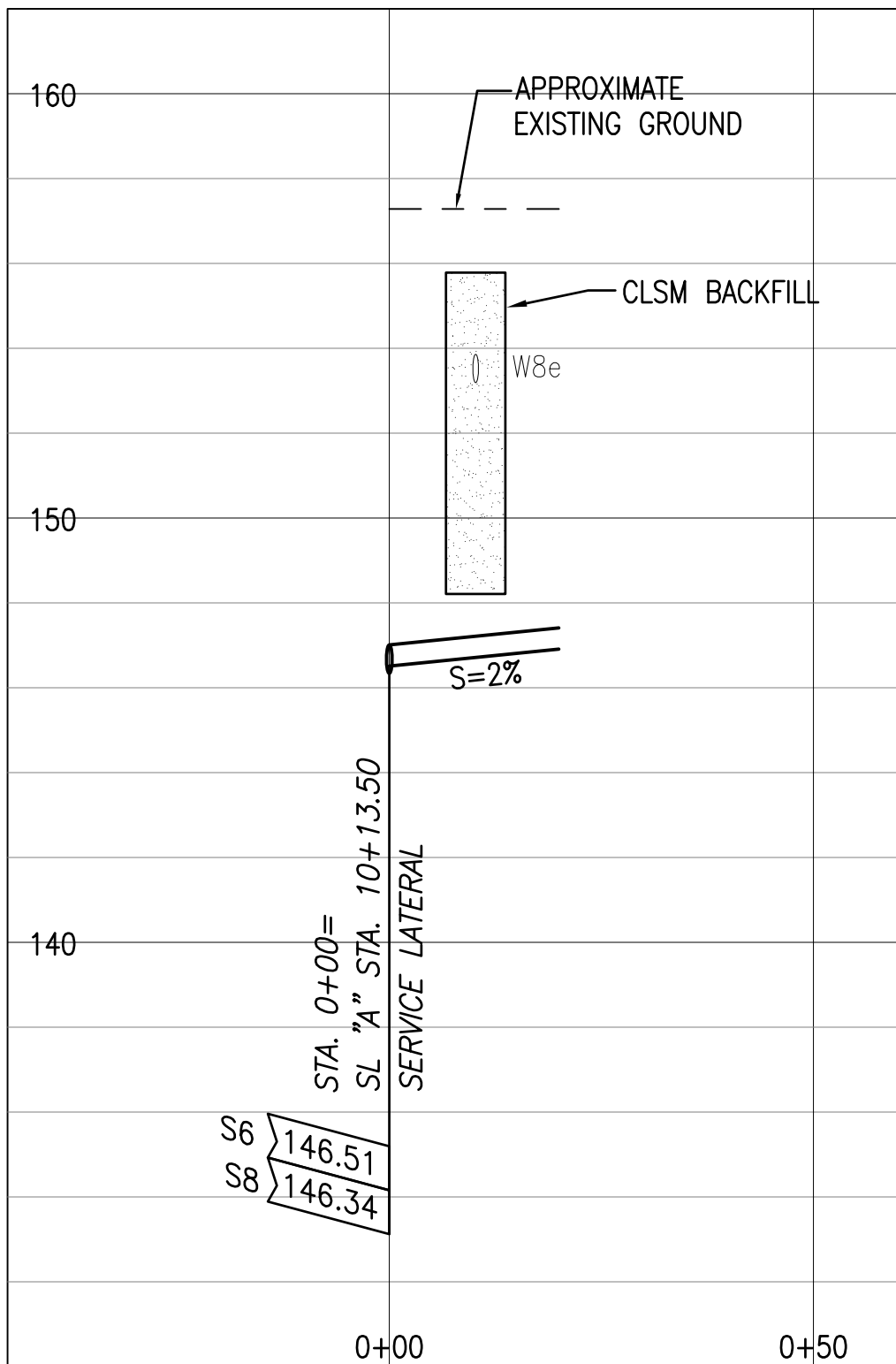


REVISION	DATE	BRIEF	BY	APPROVED
DEPARTMENT OF HAWAIIAN HOME LANDS STATE OF HAWAII				
PROJECT: WEST OAHU SEWER IMPROVEMENTS WAIANAE SUBDIVISION SEWER LATERAL PROFILES AT WATER MAIN CROSSINGS (1 OF 4)				
ITEM:				
DESIGNED BY: WYB DRAWN BY: JL APPROVED:				
CHECKED BY: JM DATE				
FUKUNAGA & ASSOCIATES, INC. Consulting Engineers				

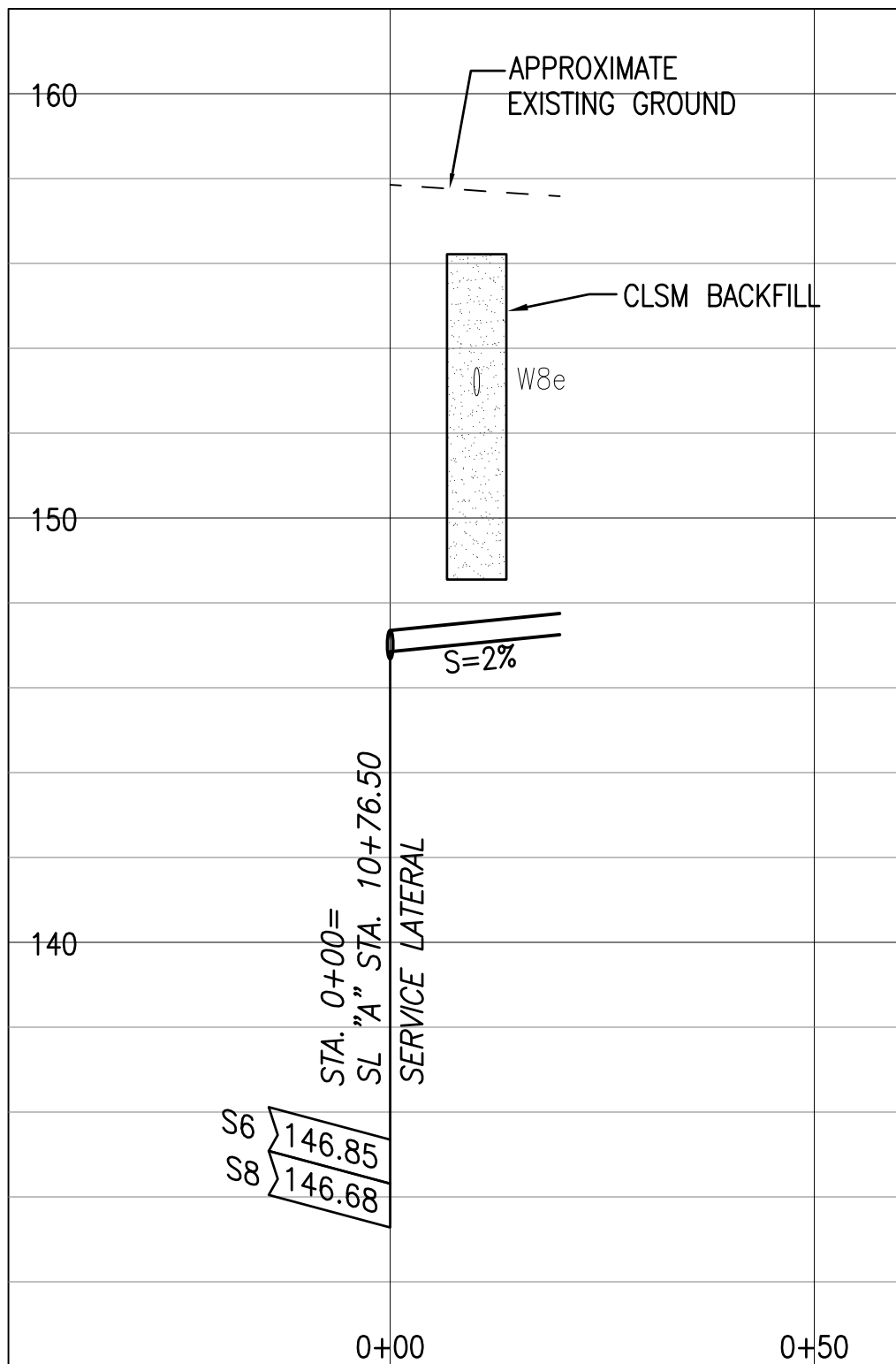
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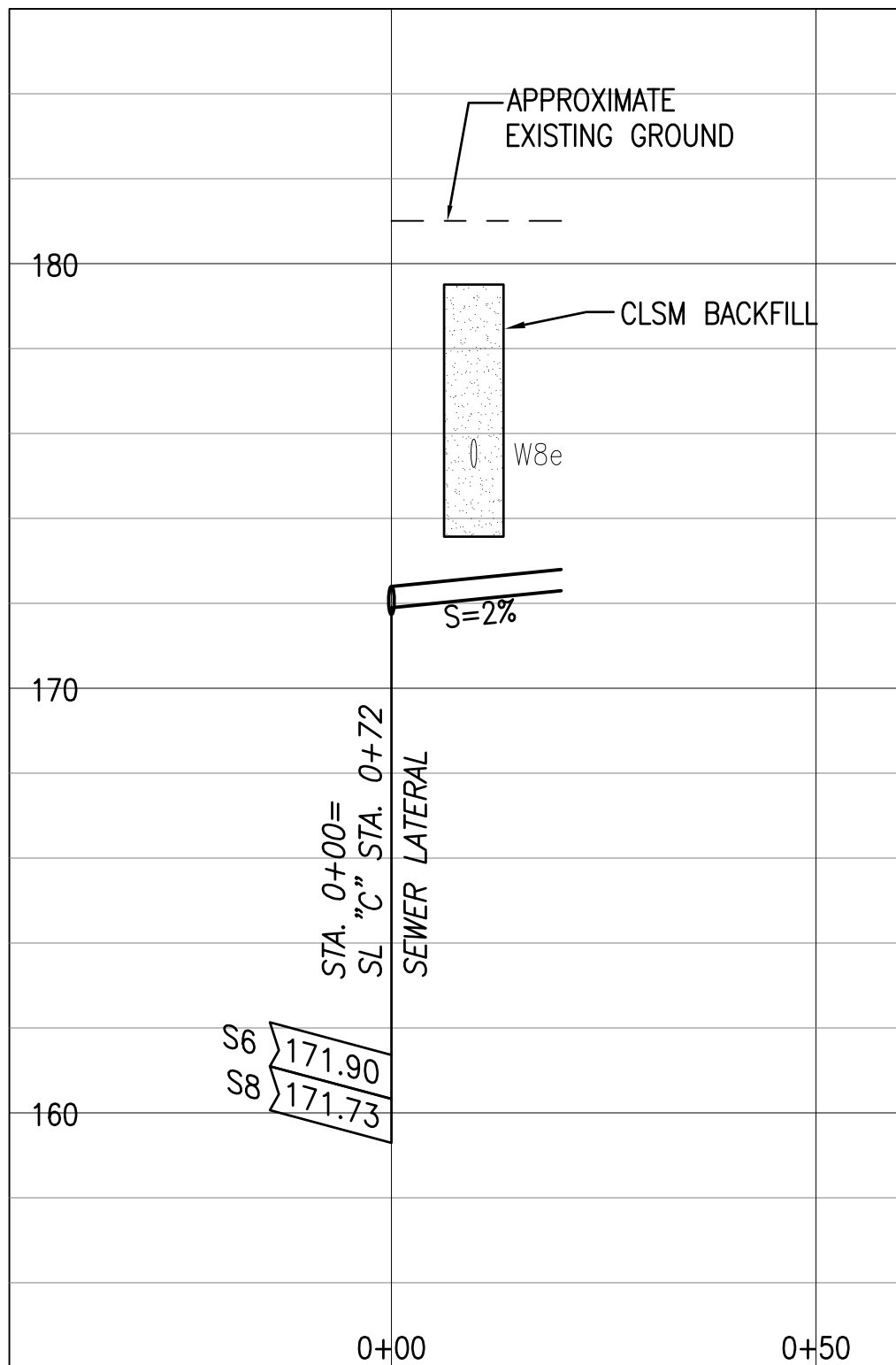
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STA. 9+65.50
SCALE: HORIZONTAL 1" = 20'
VERTICAL 1" = 4'



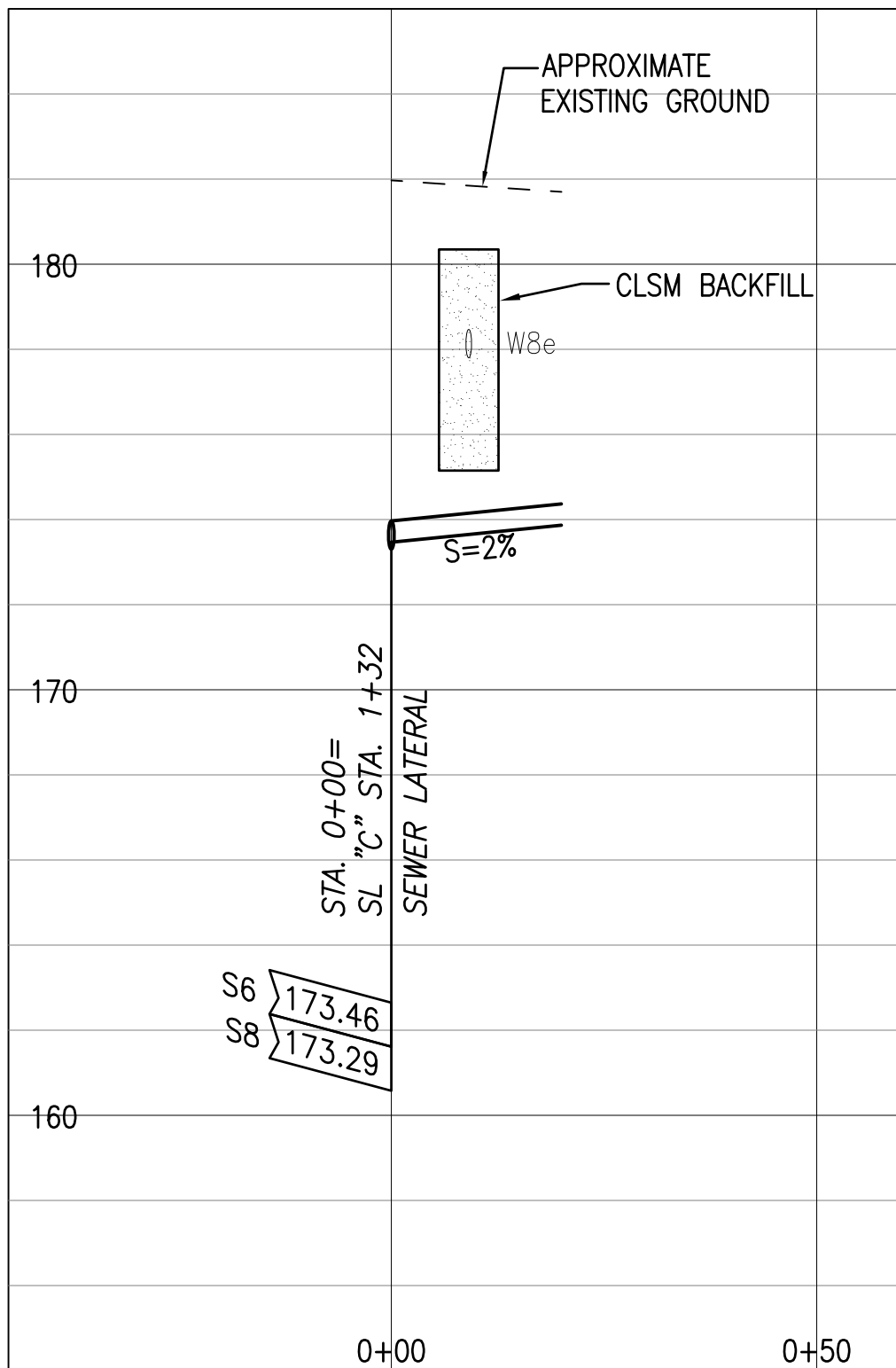
11 SEWER LATERAL @ SL "A"
STA. 10+13.50
SCALE: HORIZONTAL 1" = 20'
VERTICAL 1" = 4'



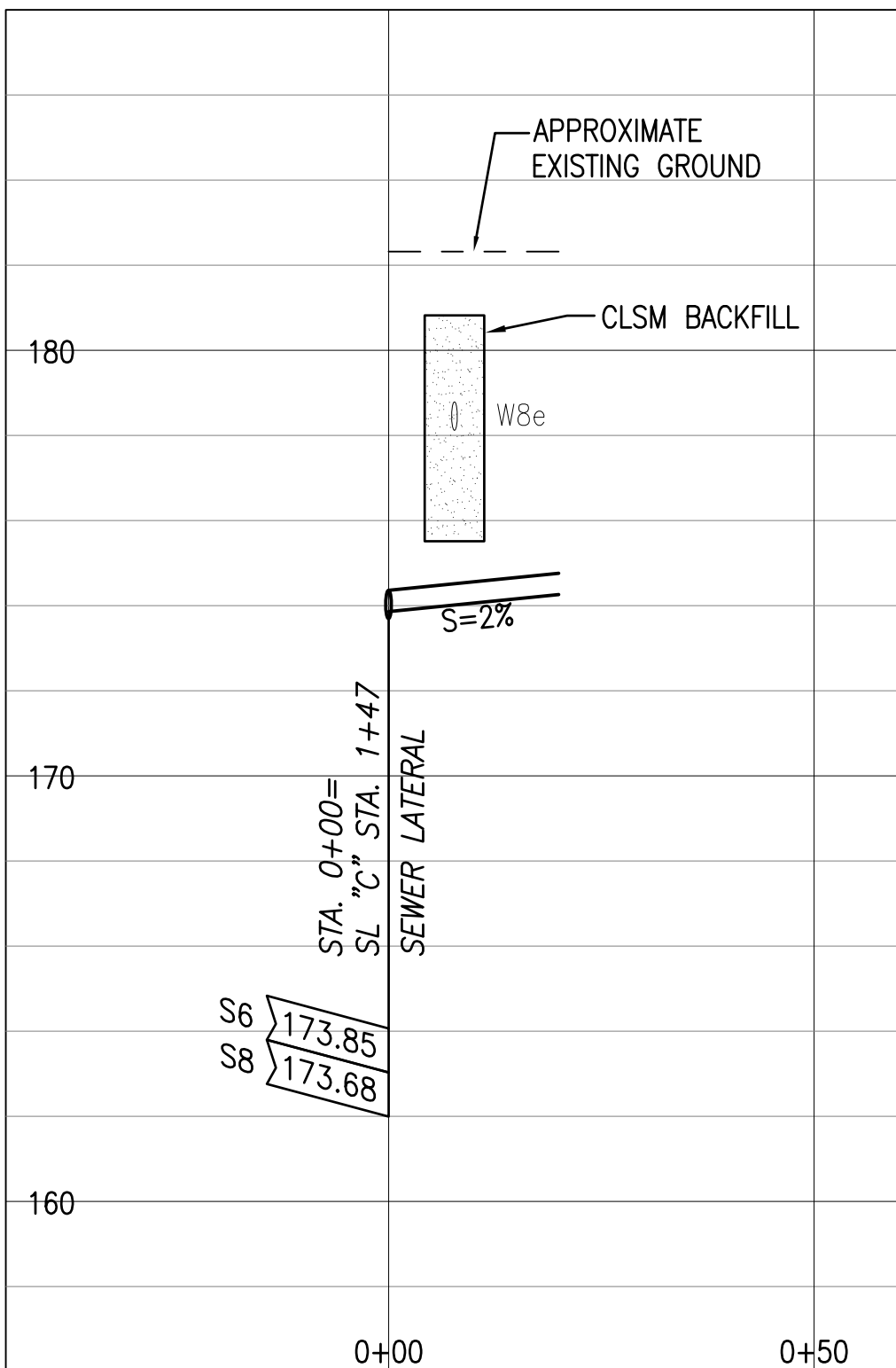
12 SEWER LATERAL @ SL "A"
STA. 10+76.50
SCALE: HORIZONTAL 1" = 20'
VERTICAL 1" = 4'



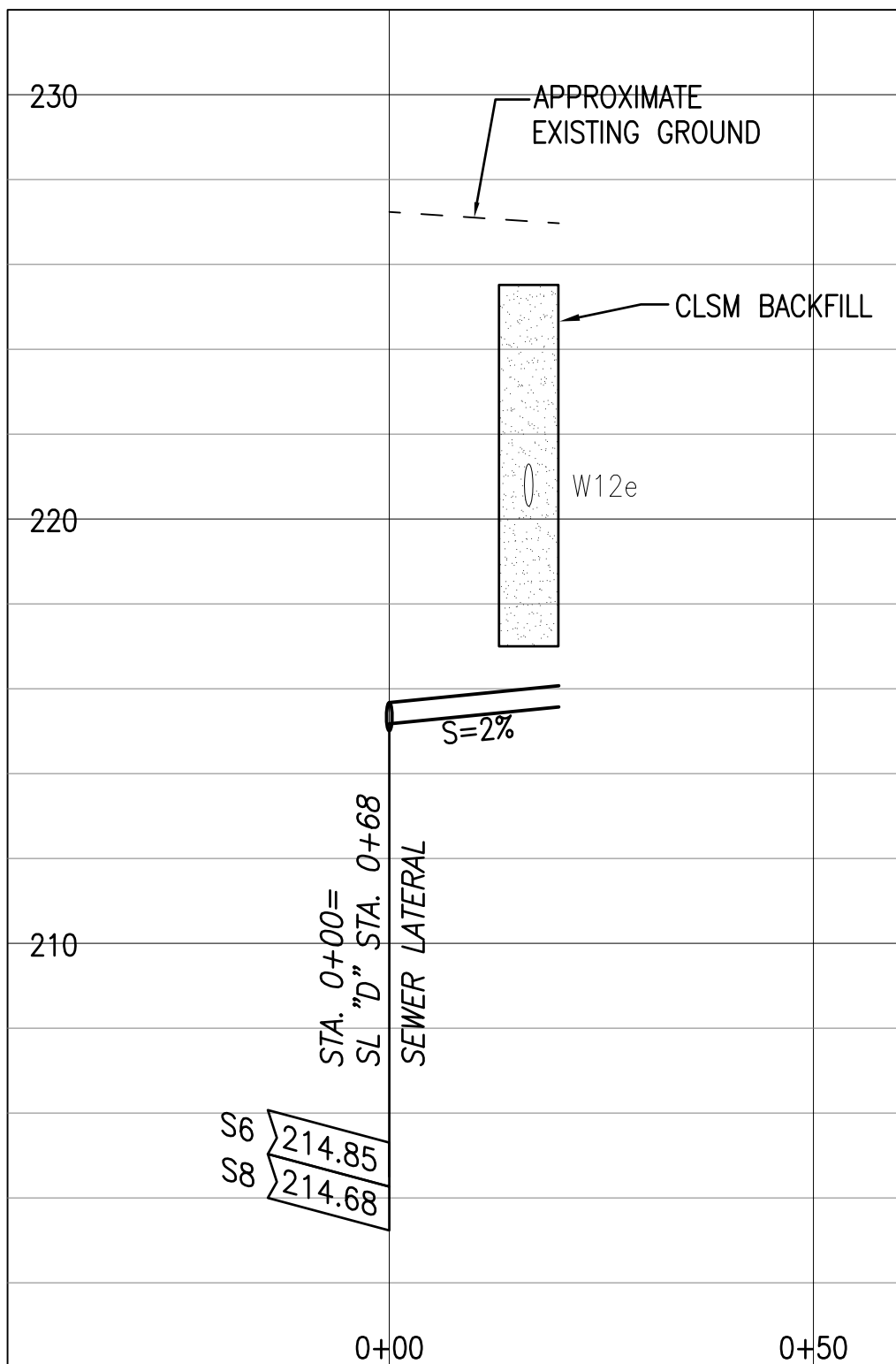
13 SEWER LATERAL @ SL "C"
STA. 0+72
SCALE: HORIZONTAL 1" = 20'
VERTICAL 1" = 4'



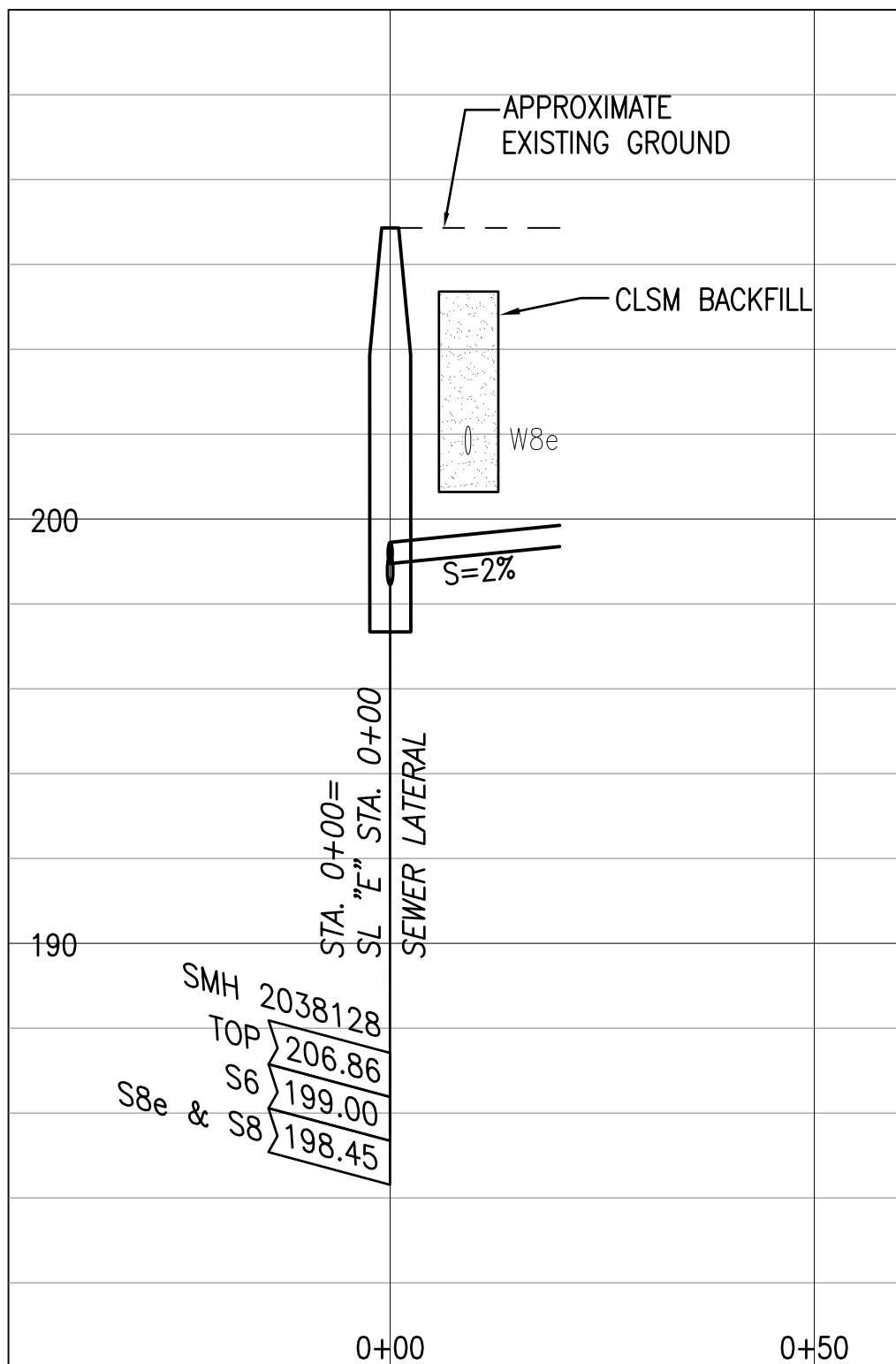
14 SEWER LATERAL @ SL "C"
STA. 1+32
SCALE: HORIZONTAL 1" = 20'
VERTICAL 1" = 4'



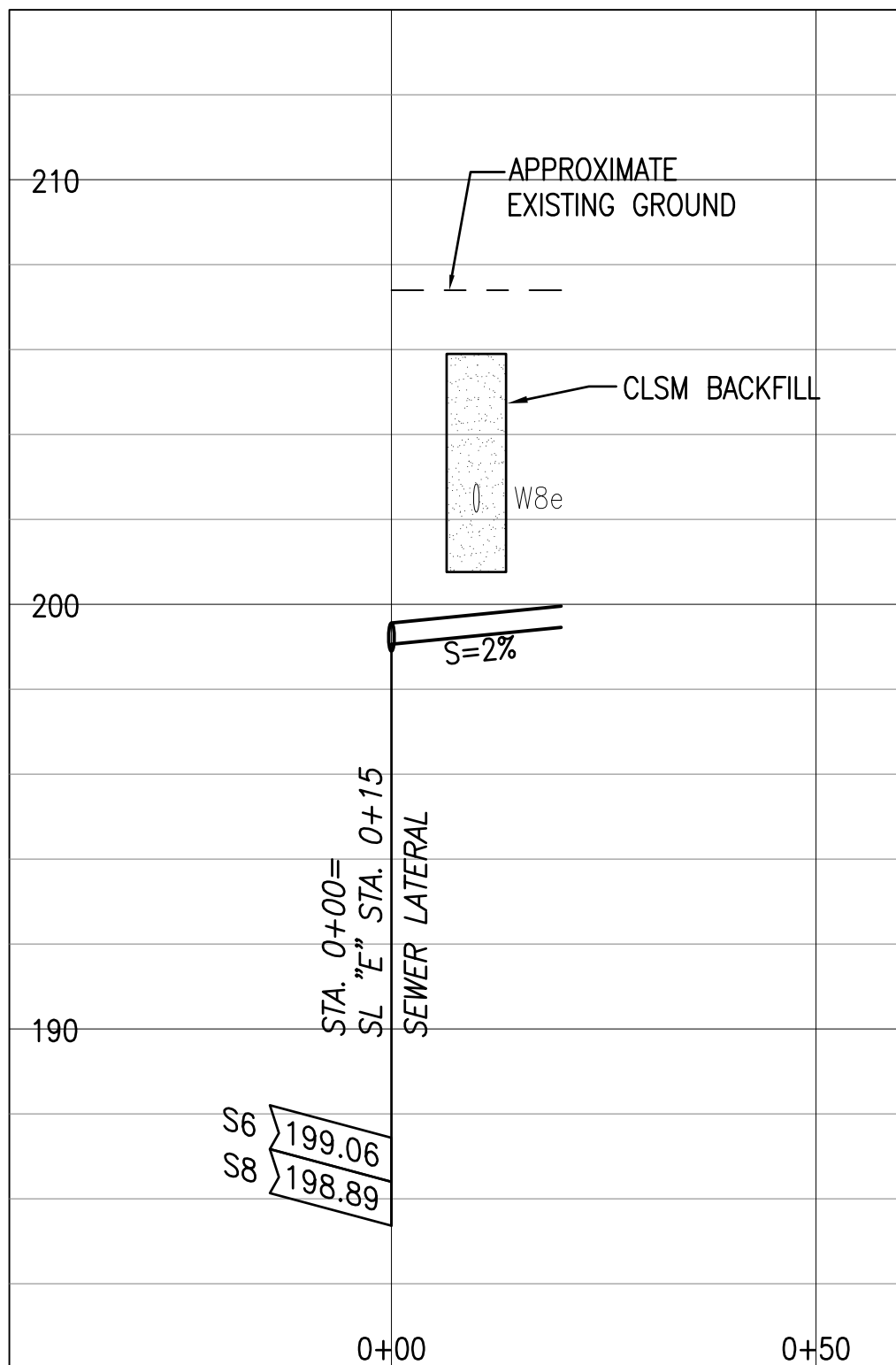
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STA. 1+47
SCALE: HORIZONTAL 1" = 20'
VERTICAL 1" = 4'



16 SEWER LATERAL @ EXISTING
SL "D" STA. 0+68
SCALE: HORIZONTAL 1" = 20'
VERTICAL 1" = 4'



17 SEWER LATERAL @ SL "E"
STA. 0+00
SCALE: HORIZONTAL 1" = 20'
VERTICAL 1" = 4'



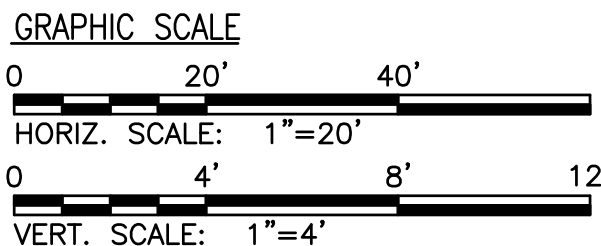
18 SEWER LATERAL @ SL "E"
STA. 0+15
SCALE: HORIZONTAL 1" = 20'
VERTICAL 1" = 4'

NOTE:
PROVIDE CLSM BACKFILL AT ALL SEWER CROSSINGS BENEATH WATER MAINS, WHETHER SHOWN OR NOT SHOWN ON THE PLANS. REFER TO TRENCH NOTES ON C-23.

APPROVAL:

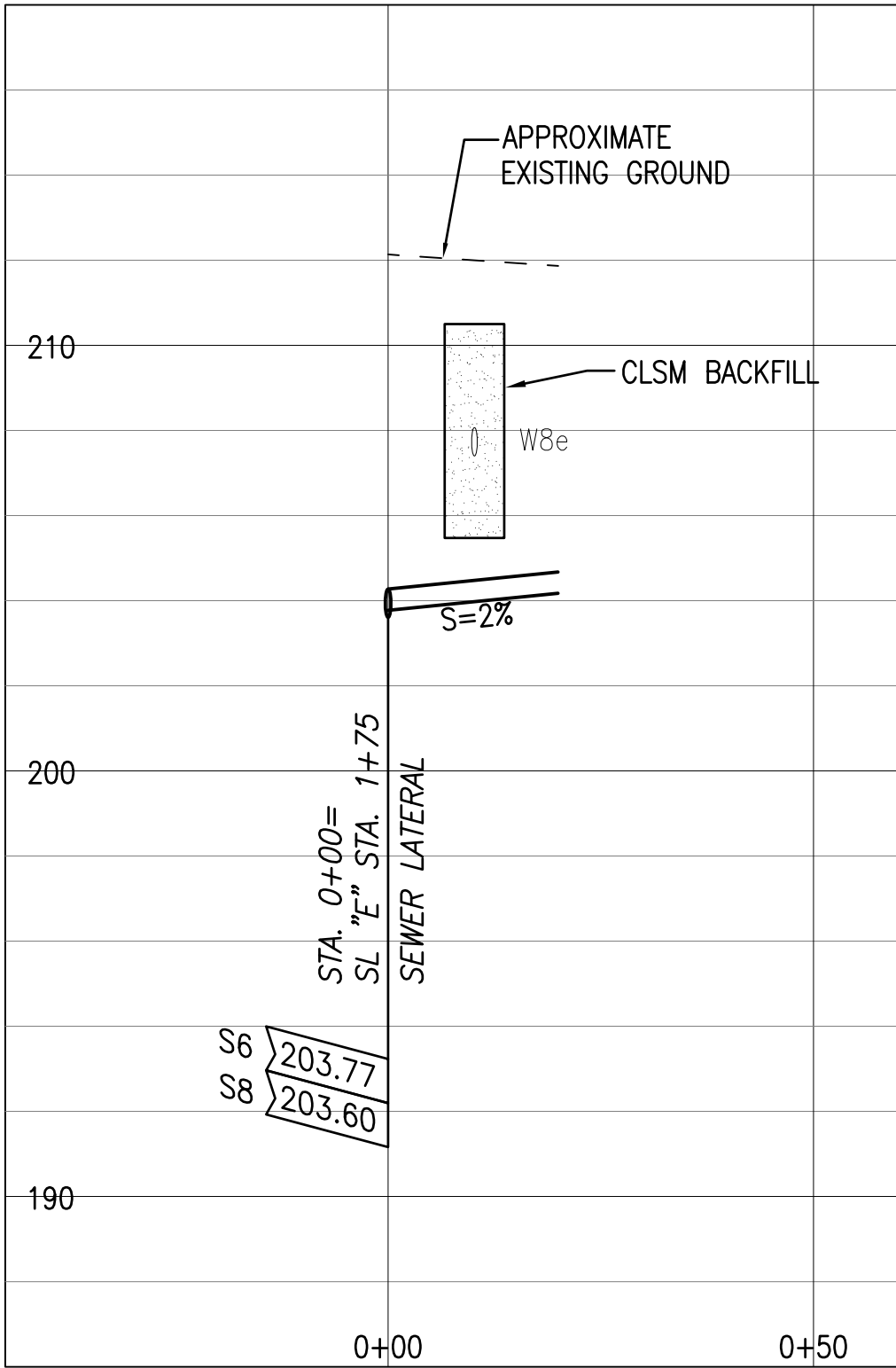
CHIEF, WASTEWATER BRANCH, DPP
(FOR CONFORMANCE TO CITY STANDARDS)

MANAGER & CHIEF ENGINEER, BWS
(FOR WORK AFFECTING BWS FACILITIES IN CITY/STATE
R-O-W AND BWS EASEMENT ONLY)

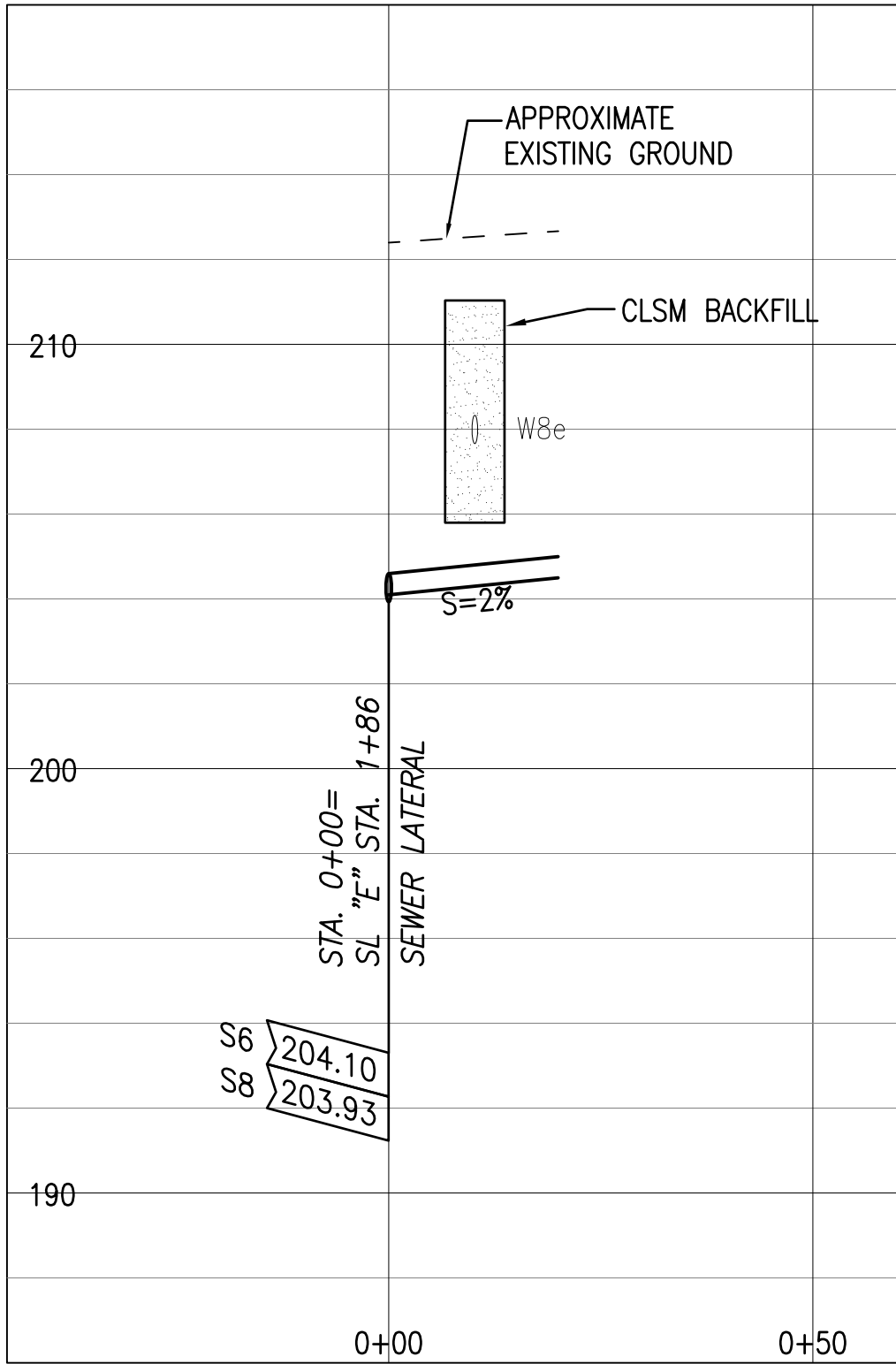


REVISION	DATE	BRIEF	BY	APPROVED
DEPARTMENT OF HAWAIIAN HOME LANDS STATE OF HAWAII				
PROJECT: WEST OAHU SEWER IMPROVEMENTS WAIANAE SUBDIVISION				
ITEM: SEWER LATERAL PROFILES AT WATER MAIN CROSSINGS (2 OF 4)				
DESIGNED BY: WYB		CHECKED BY: JM		
DRAWN BY: JL		APPROVED:		
CHIEF		DATE		
FUKUNAGA & ASSOCIATES, INC. Consulting Engineers				

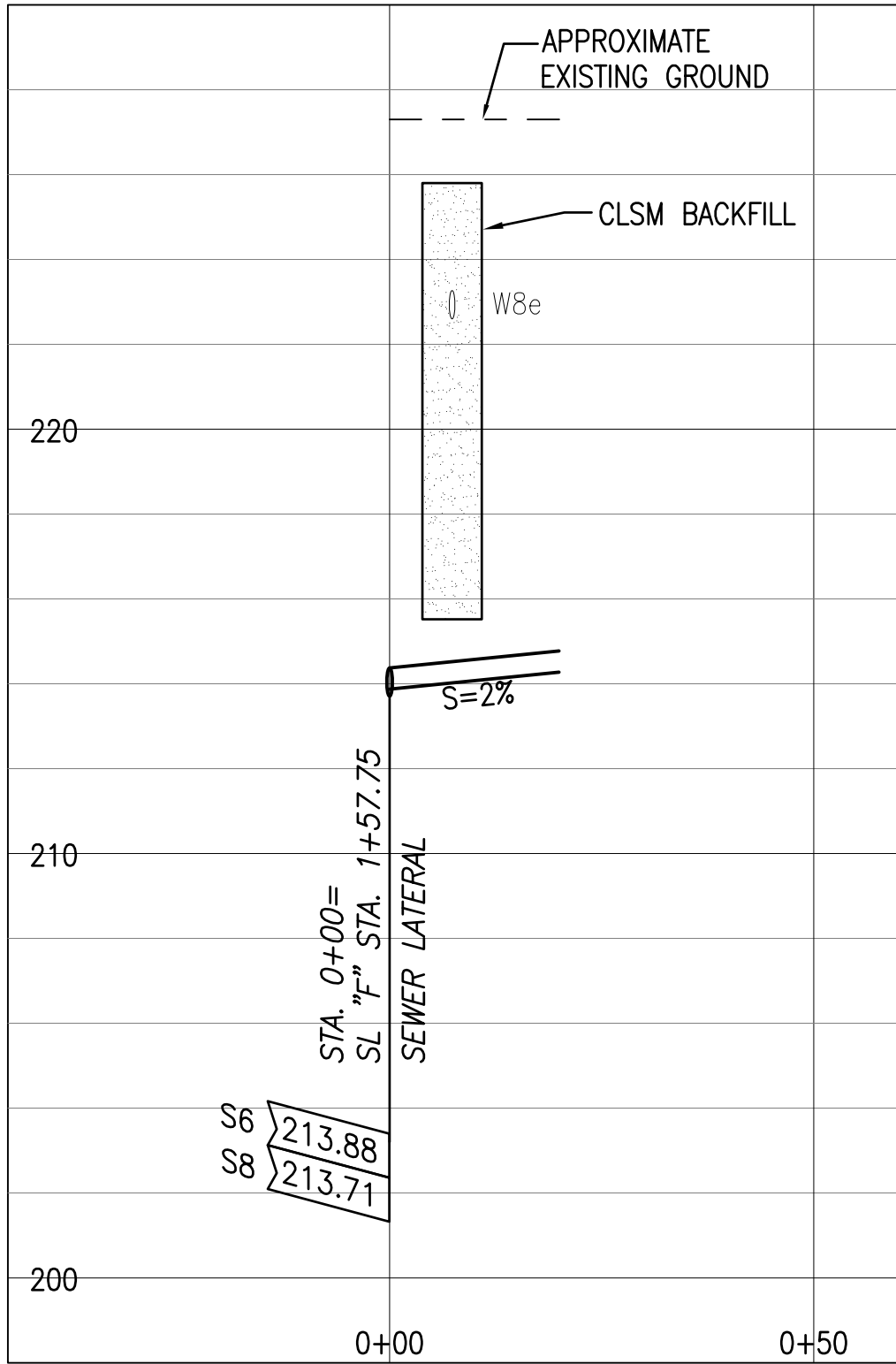
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Last plotted 7/7/2022 11:19:41 AM



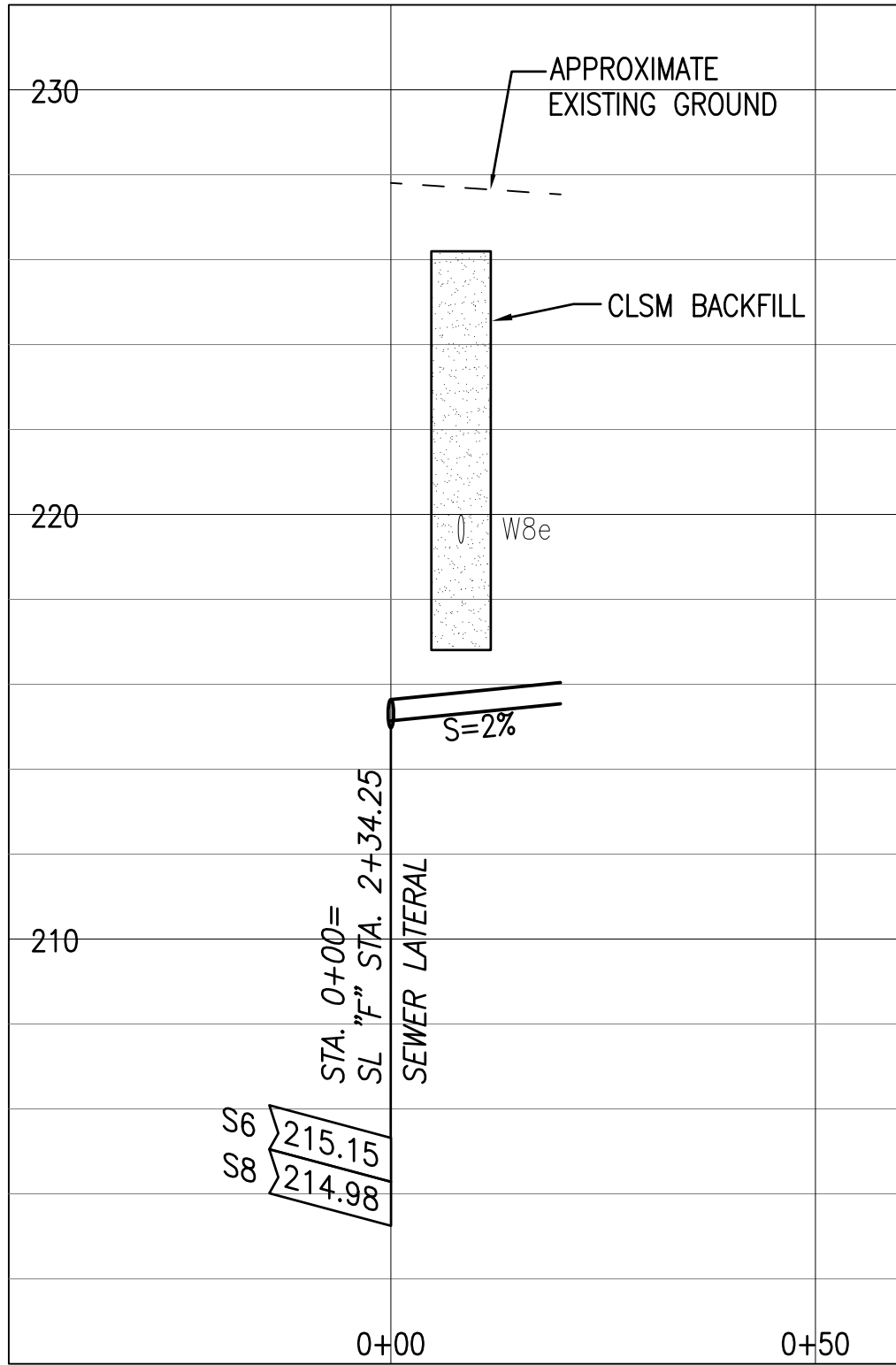
19 SEWER LATERAL @ SL "E"
STA. 1+75
SCALE: HORIZONTAL 1" = 20'
VERTICAL 1" = 4'



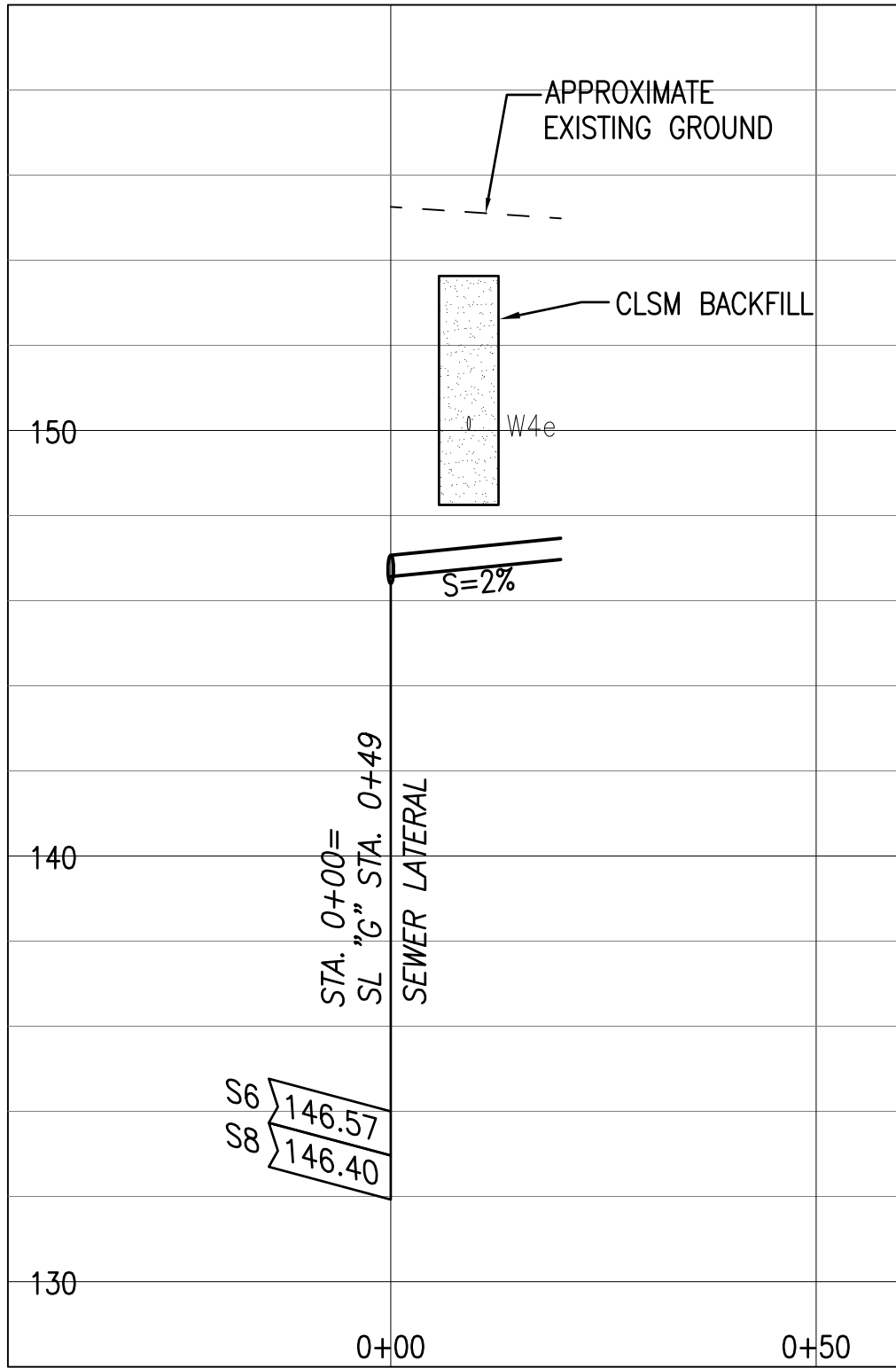
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STA. 1+86
SCALE: HORIZONTAL 1" = 20'
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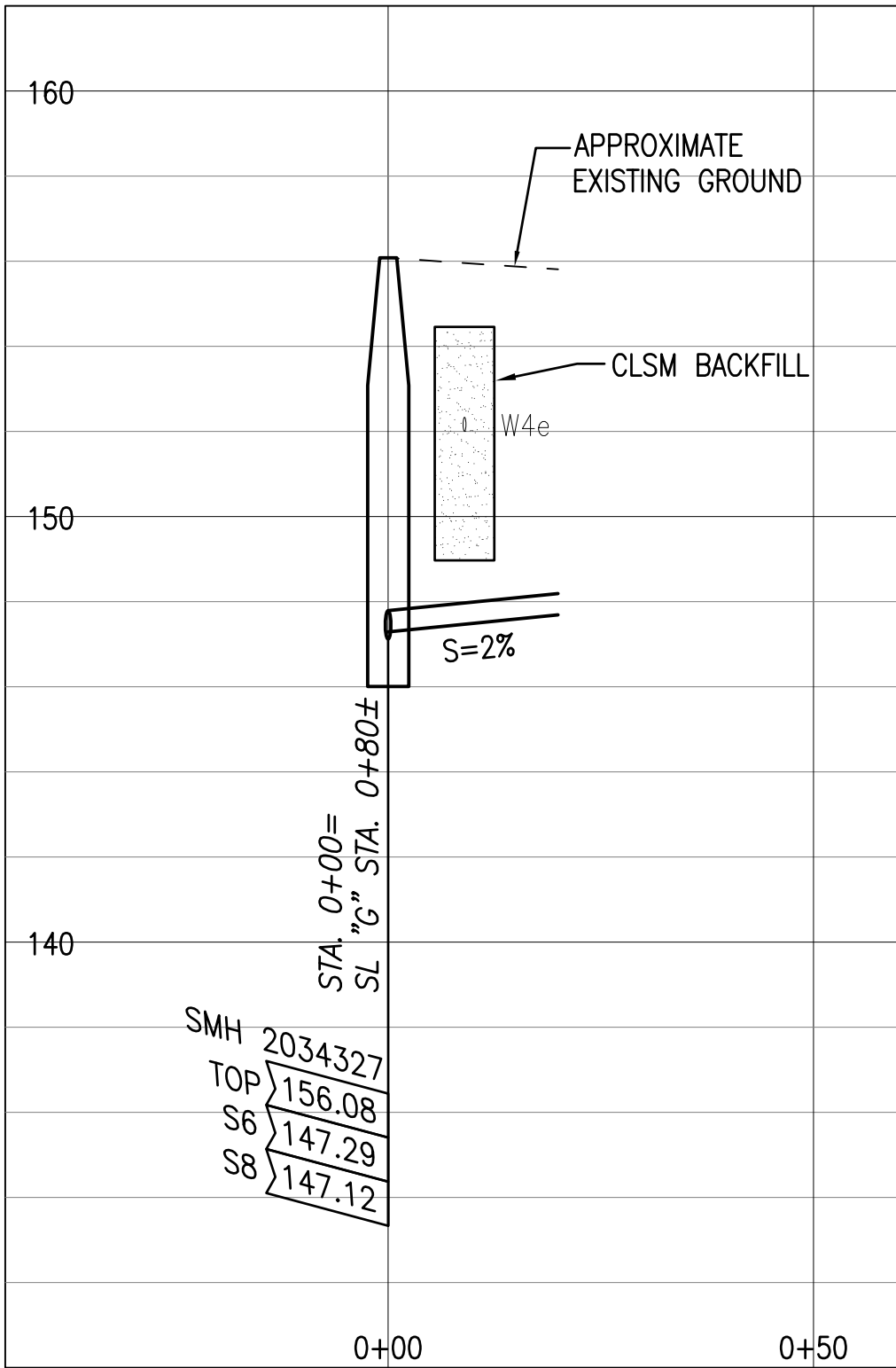
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STA. 1+57.75
SCALE: HORIZONTAL 1" = 20'
VERTICAL 1" = 4'



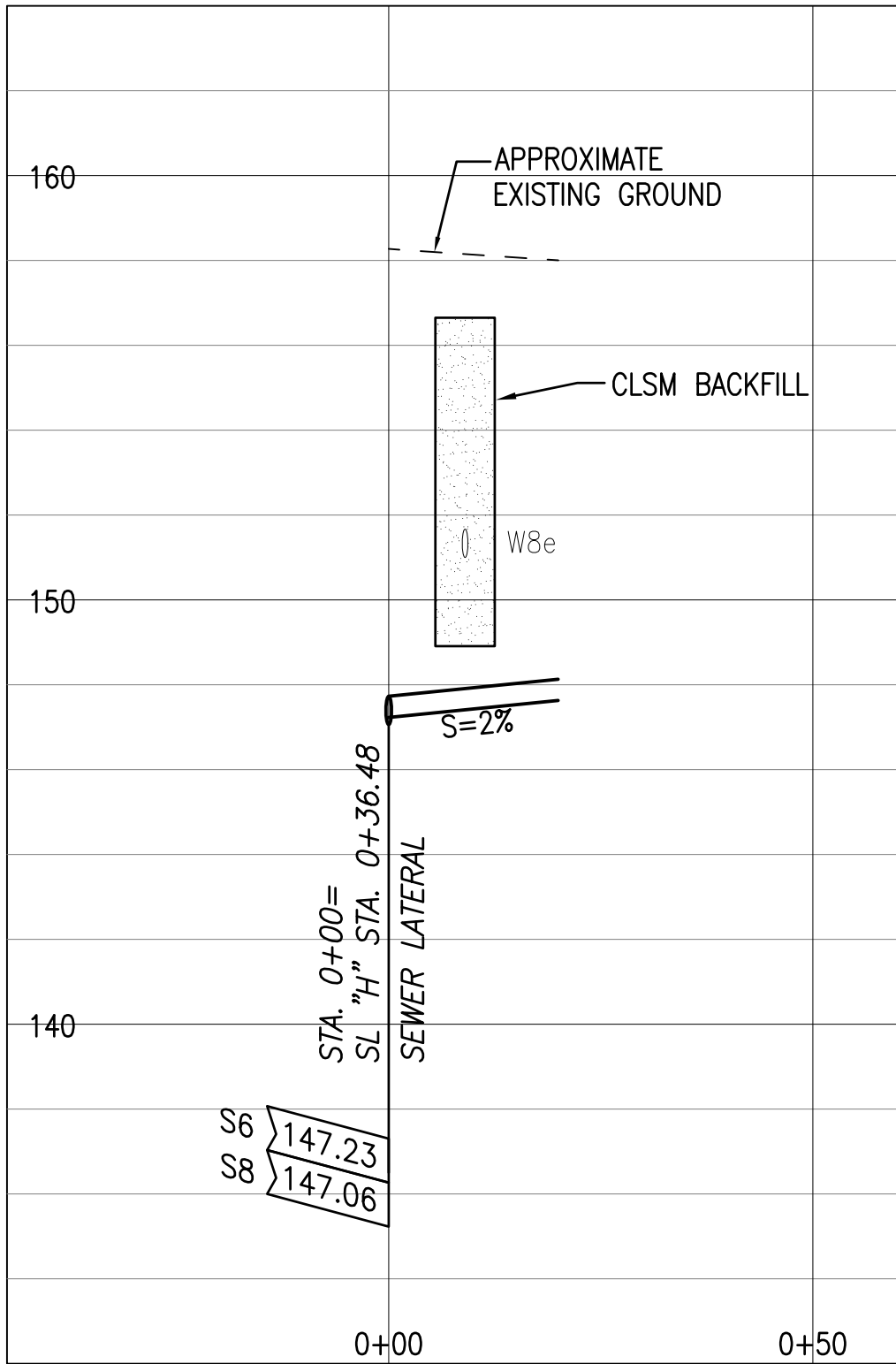
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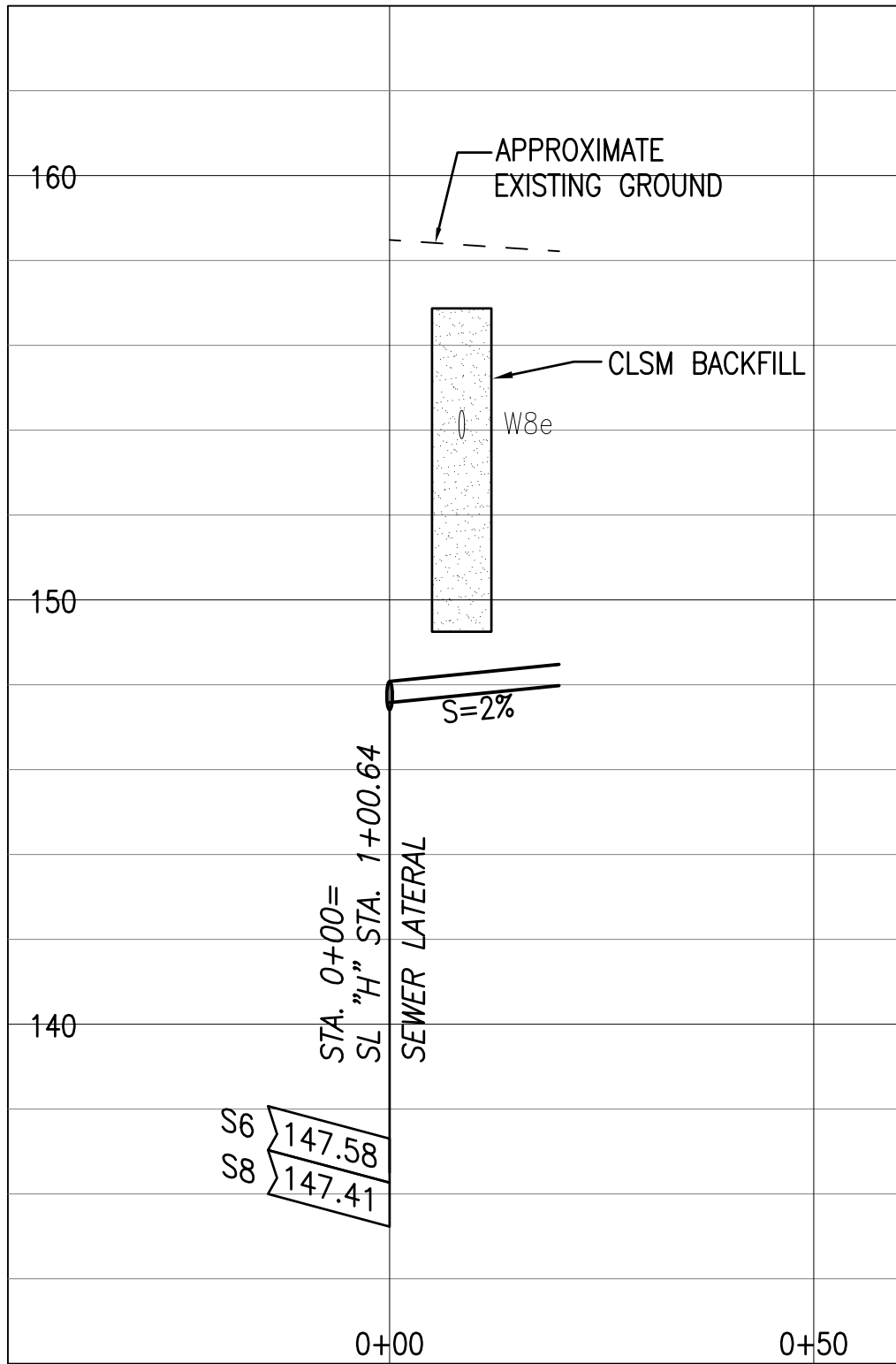
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STA. 0+49
SCALE: HORIZONTAL 1" = 20'
VERTICAL 1" = 4'



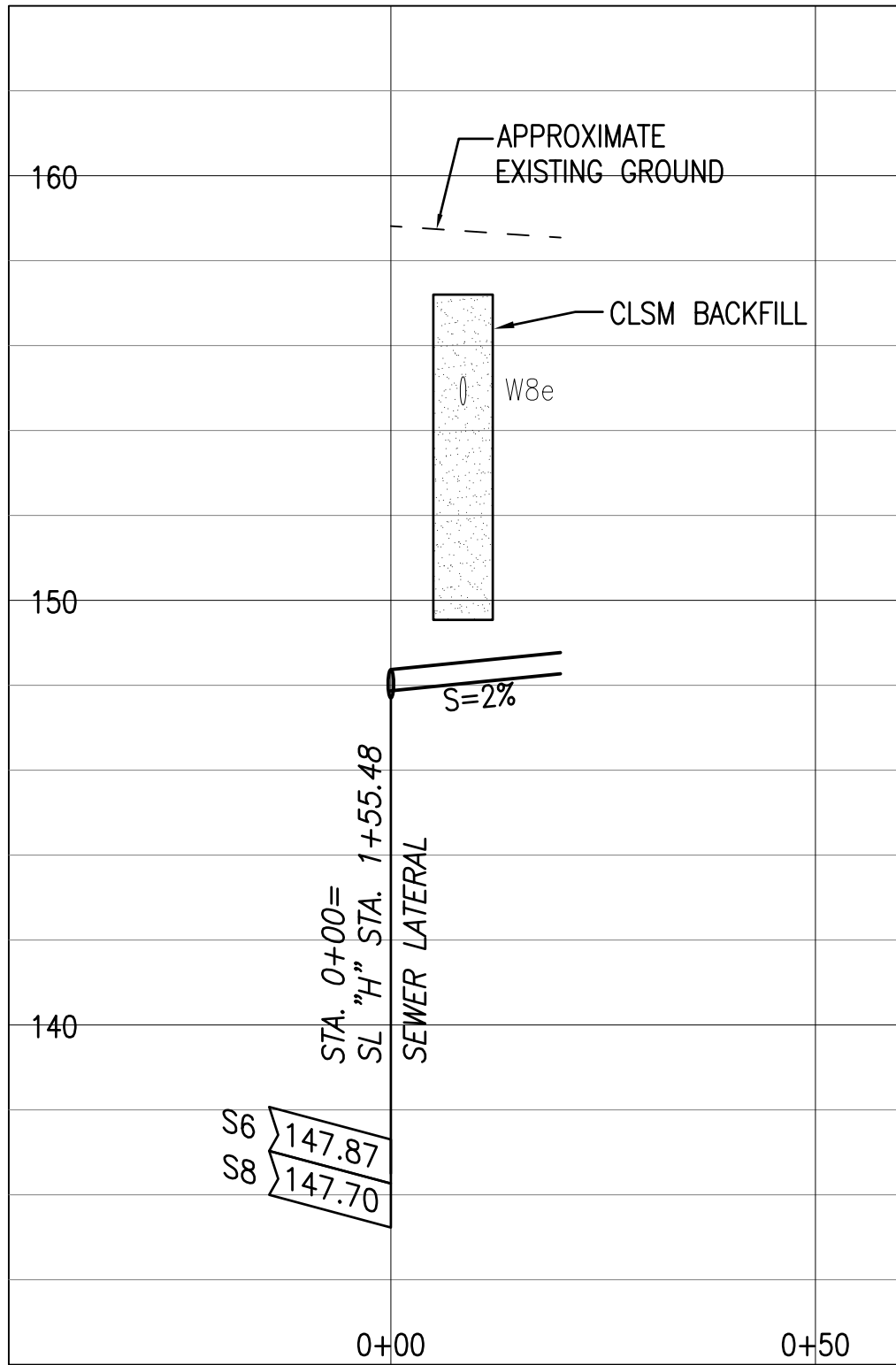
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STA. 0+80±
SCALE: HORIZONTAL 1" = 20'
VERTICAL 1" = 4'



25 SEWER LATERAL @ SL "H"
STA. 0+36.48
SCALE: HORIZONTAL 1" = 20'
VERTICAL 1" = 4'



26 SEWER LATERAL @ SL "H"
STA. 1+00.64
SCALE: HORIZONTAL 1" = 20'
VERTICAL 1" = 4'



27 SEWER LATERAL @ SL "H"
STA. 1+55.48
SCALE: HORIZONTAL 1" = 20'
VERTICAL 1" = 4'

NOTE:
PROVIDE CLSM BACKFILL AT ALL SEWER CROSSINGS BENEATH WATER MAINS, WHETHER SHOWN OR NOT SHOWN ON THE PLANS. REFER TO TRENCH NOTES ON C-23.

APPROVAL:

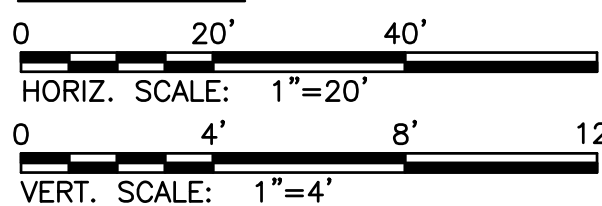
CHIEF, WASTEWATER BRANCH, DPP
(FOR CONFORMANCE TO CITY STANDARDS)

DATE

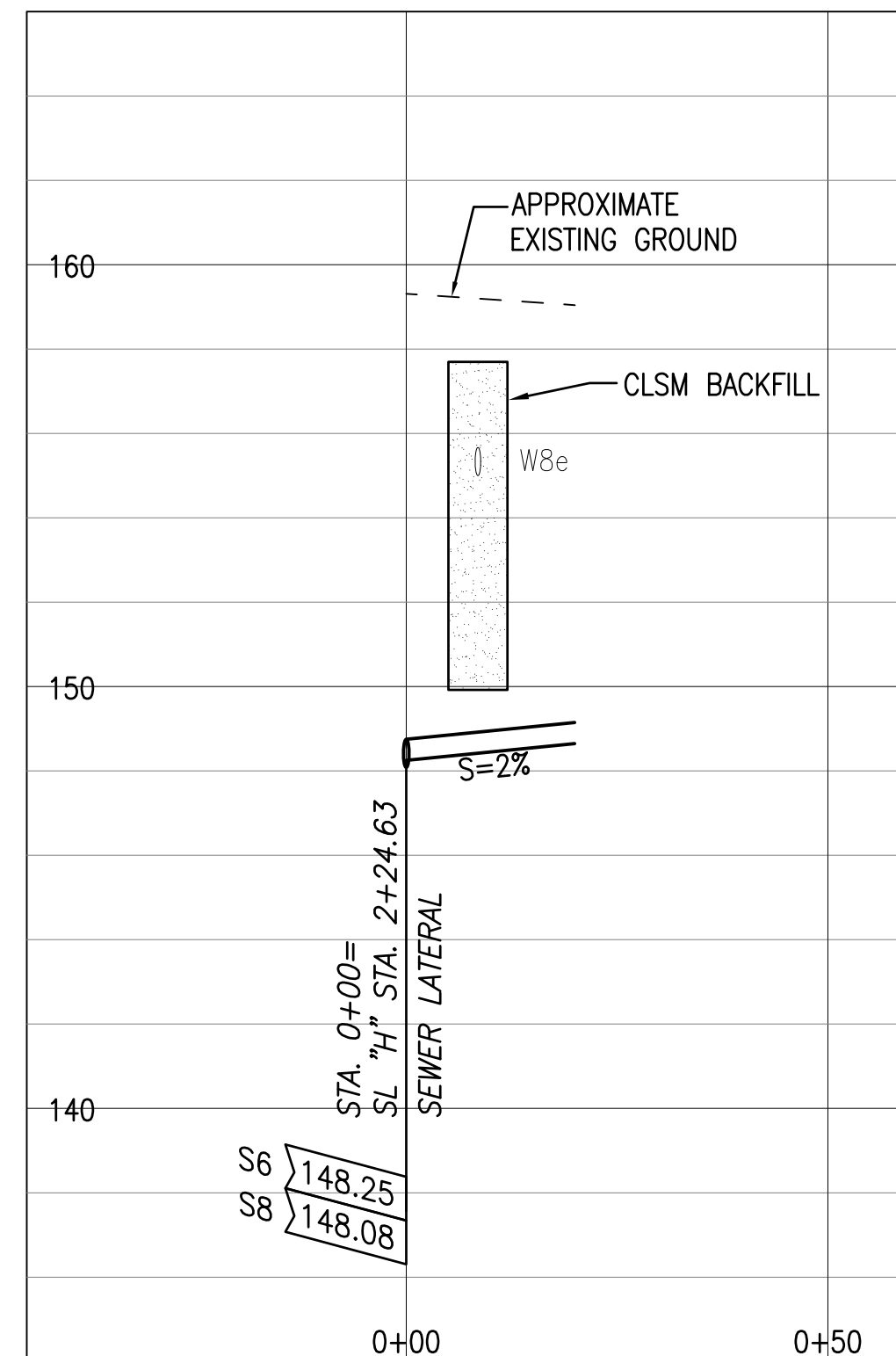
MANAGER & CHIEF ENGINEER, BWS
(FOR WORK AFFECTING BWS FACILITIES IN CITY/STATE
R-O-W AND BWS EASEMENT ONLY)

DATE

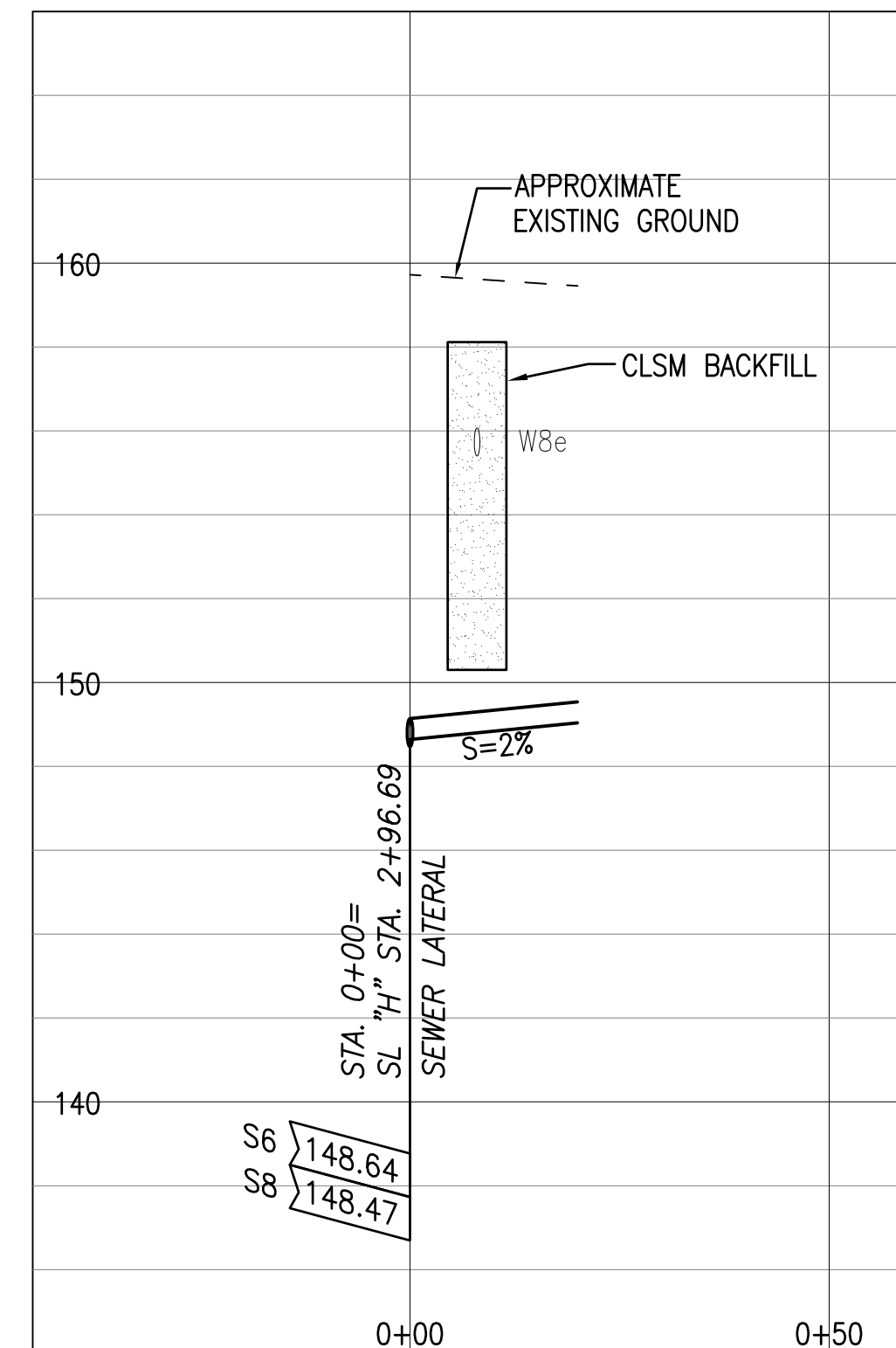
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REVISION	DATE	BRIEF	BY	APPROVED
DEPARTMENT OF HAWAIIAN HOME LANDS STATE OF HAWAII				
PROJECT: WEST OAHU SEWER IMPROVEMENTS WAIANAE SUBDIVISION				
ITEM: SEWER LATERAL PROFILES AT WATER MAIN CROSSINGS (3 OF 4)				
DESIGNED BY: WC/RM		CHECKED BY: JM		
DRAWN BY: JL				
APPROVED:				
FUKUNAGA & ASSOCIATES, INC.		FUKUNAGA AND ASSOCIATES, INC. Consulting Engineers		
License Expiration Date: April 30, 2024				



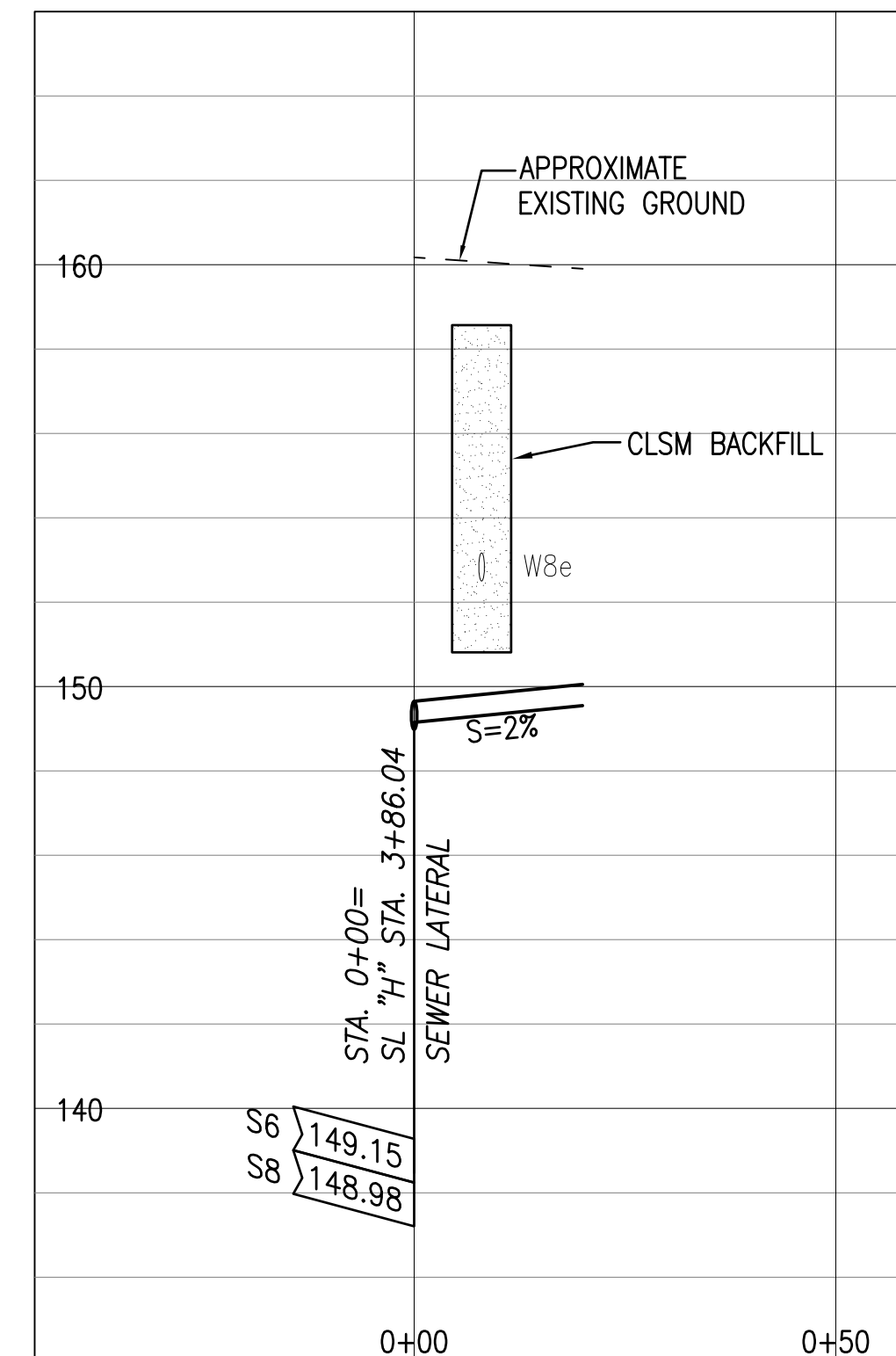
SEWER LATERAL @ SL "H"
STA. 2+24.63
28 SCALE: HORIZONTAL 1" = 20'
VERTICAL 1" = 4'



SEWER LATERAL @ SL "H"
STA. 2+96.69

29

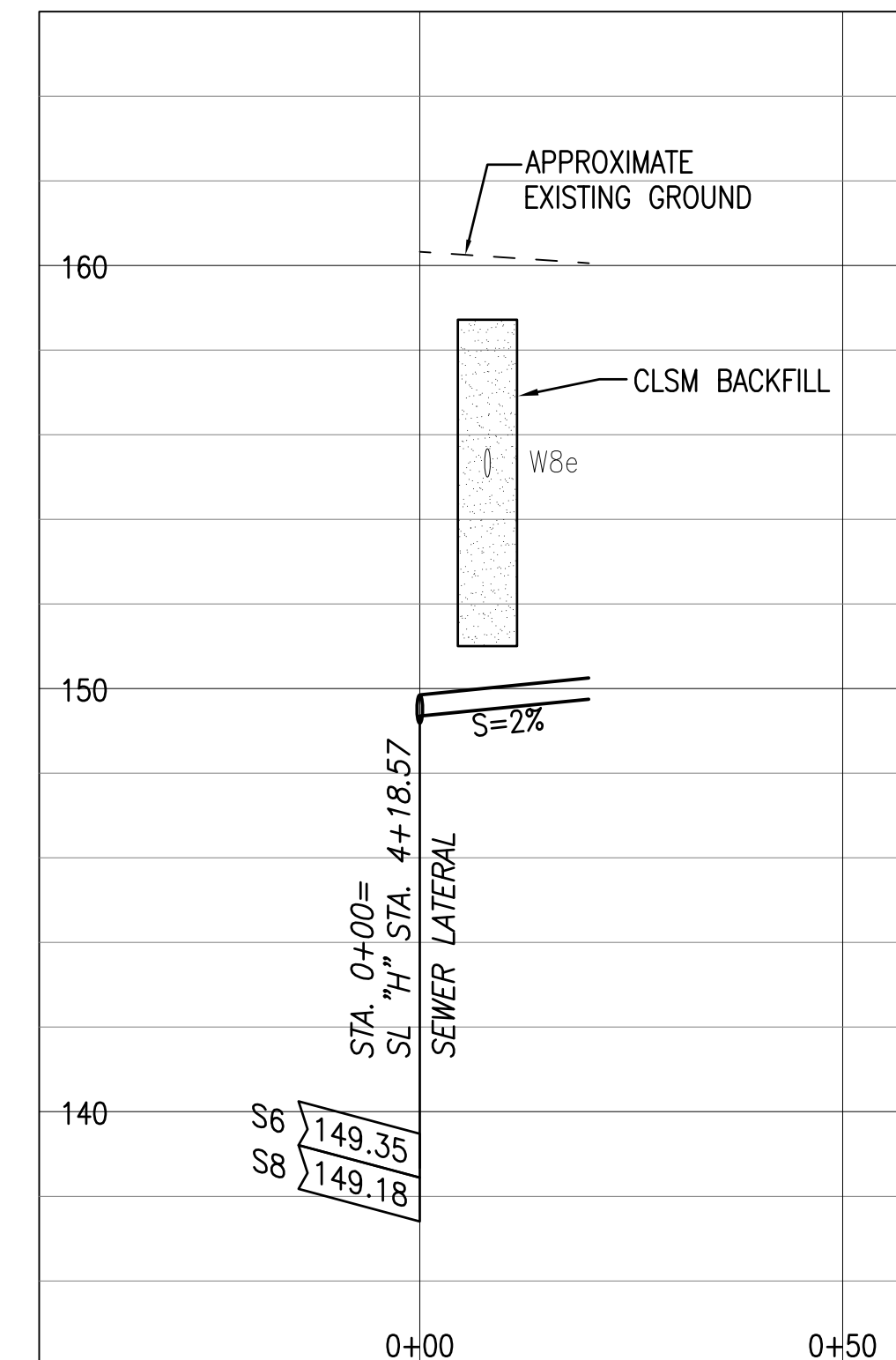
SCALE: HORIZONTAL 1" = 20'
VERTICAL 1" = 4'



SEWER LATERAL @ SL "H"
STA. 3+86.04

30

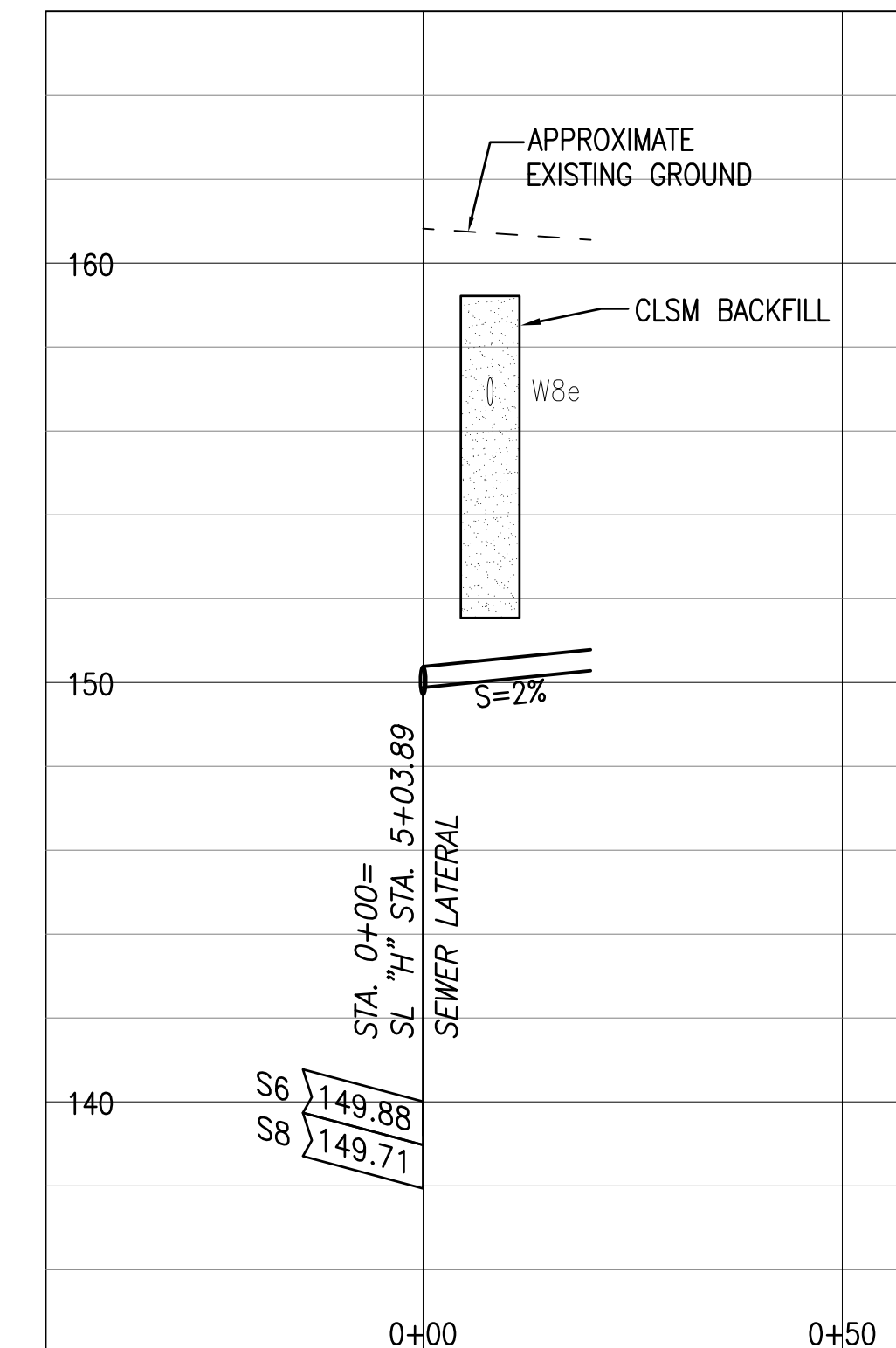
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VERTICAL 1" = 4'



SEWER LATERAL @ SL "H"
STA. 4+18.57

31

SCALE: HORIZONTAL 1" = 20'
VERTICAL 1" = 4'



SEWER LATERAL @ SL "H"
STA. 5+03.89

32

SCALE: HORIZONTAL 1" = 20'
VERTICAL 1" = 4'

NOTE:
PROVIDE CLSM BACKFILL AT ALL SEWER CROSSINGS BENEATH WATER MAINS, WHETHER SHOWN OR NOT SHOWN ON THE PLANS. REFER TO TRENCH NOTES ON C-23.

APPROVAL:

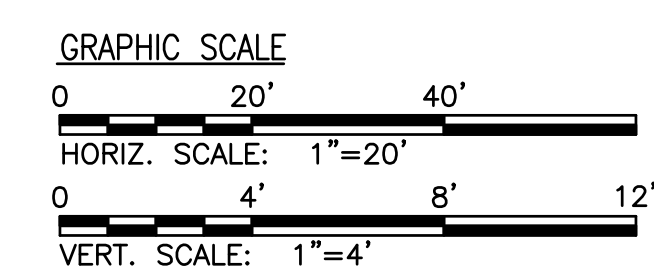
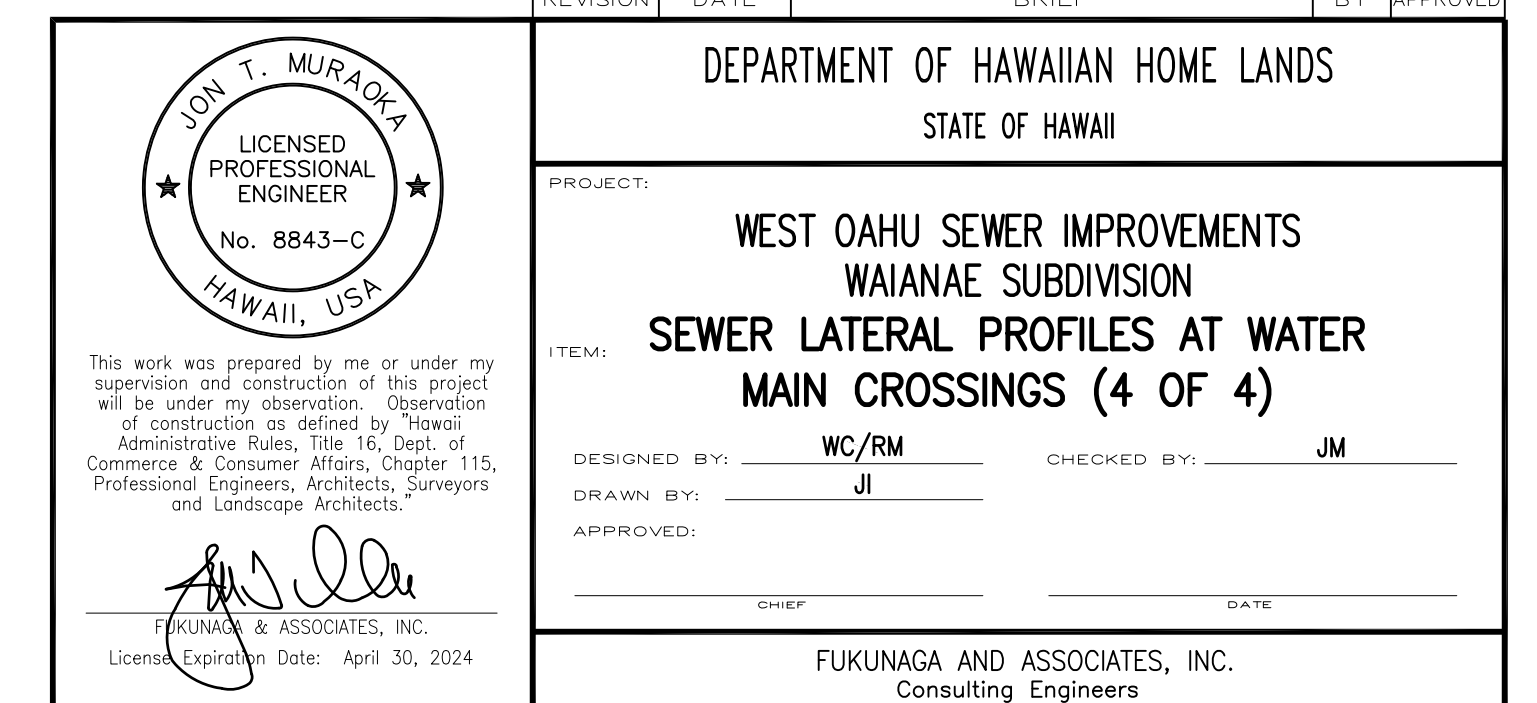
CHIEF, WASTEWATER BRANCH, DPP
(FOR CONFORMANCE TO CITY STANDARDS)

DATE _____

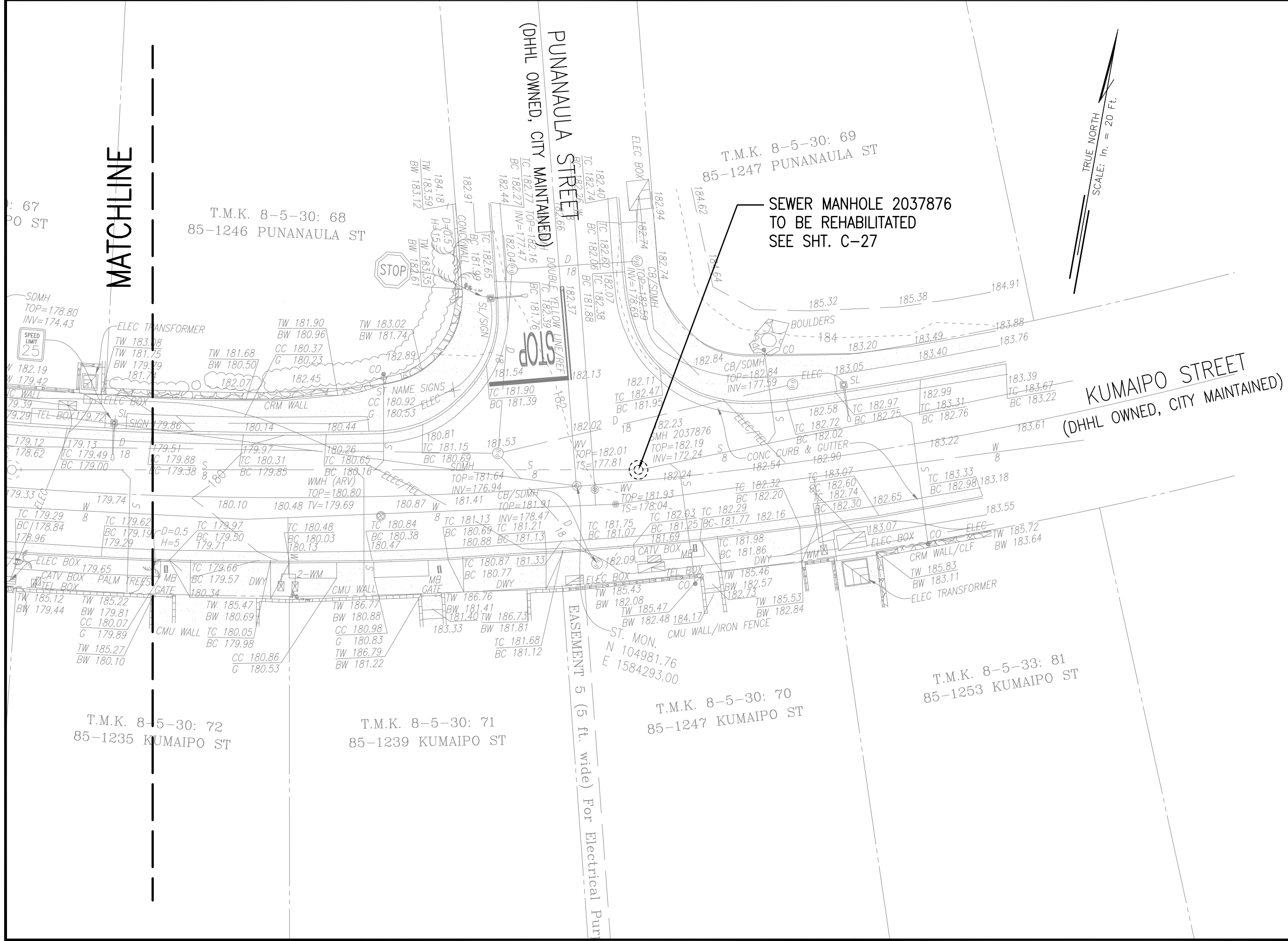
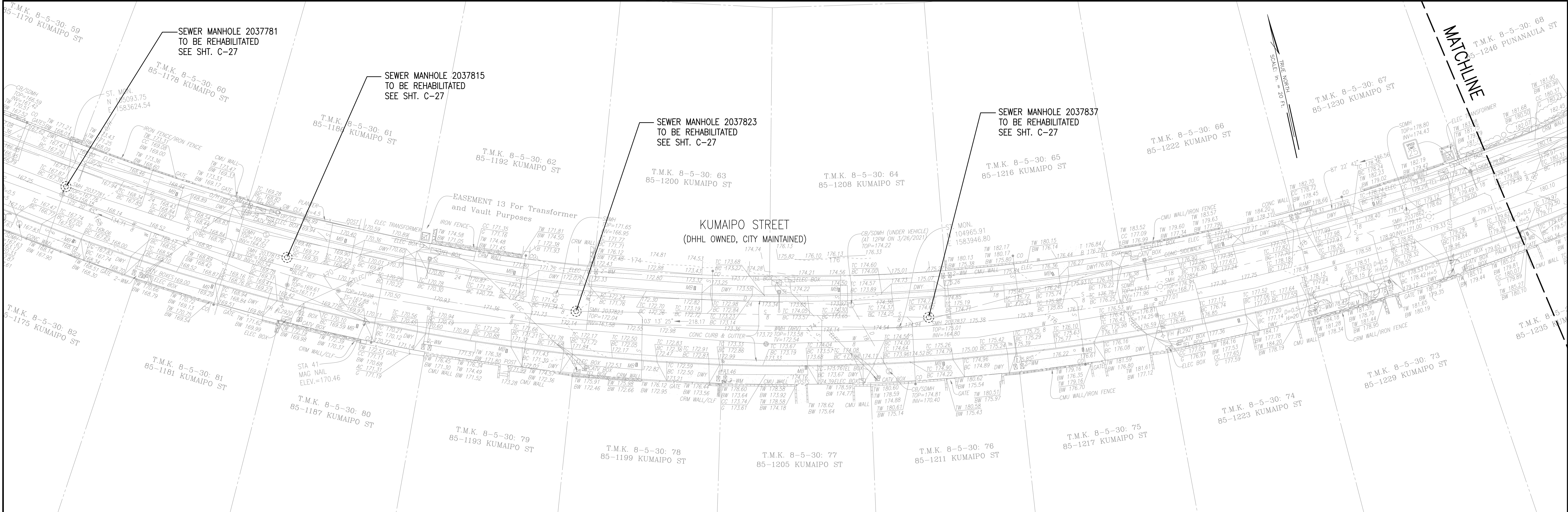
MANAGER & CHIEF ENGINEER, BWS
(FOR WORK AFFECTING BWS FACILITIES IN CITY/STATE
R-O-W AND BWS EASEMENT ONLY)

DATE _____

				
				
REVISION	DATE	BRIEF	BY	APPROVED



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Last saved 1/14/2022 1:29:37 PM by Jing
Last plotted 7/7/2022 11:19:54 AM



SEWER MANHOLE REHAB SCHEDULE			
MH GIS ID	COMPONENTS	DEFECTS	REPAIR WORK DESCRIPTION
2037781	CONE	FRACTURE-MULTIPLE	REMOVE RUNGS, PATCH & EPOXY COAT THE MANHOLE, AND INSTALL INFLOW INSERT
2037815	MH FRAME	CRACK	REMOVE RUNGS, PATCH & EPOXY COAT THE MANHOLE, REPLACE FRAME/COVER, AND INSTALL INFLOW INSERT
2037823	CHIMNEY	CRACKS	REMOVE RUNGS, PATCH & EPOXY COAT THE MANHOLE, AND INSTALL INFLOW INSERT
2037837	FRAME AND CHIMNEY	CRACKS	REMOVE RUNGS, PATCH & EPOXY COAT THE MANHOLE, REPLACE FRAME/COVER, AND INSTALL INFLOW INSERT
2037876	FRAME AND CHIMNEY	CRACKS	REMOVE RUNGS, PATCH & EPOXY COAT THE MANHOLE, REPLACE FRAME/COVER, AND INSTALL INFLOW INSERT

APPROVAL:

CHIEF, TRAFFIC REVIEW BRANCH, DPP
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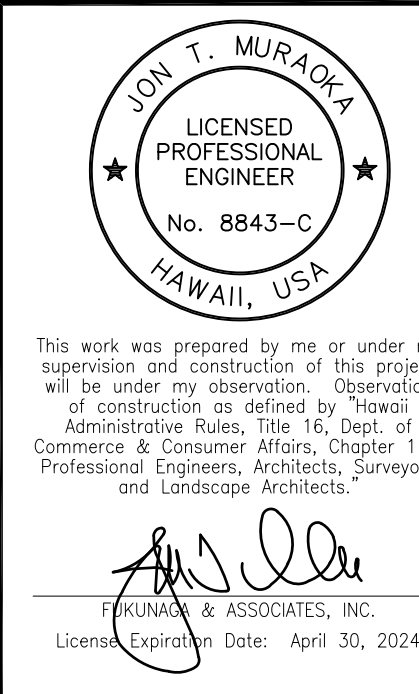
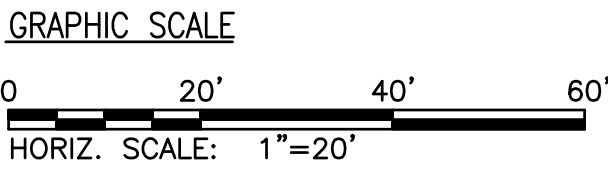
DATE

CHIEF, WASTEWATER BRANCH, DPP
(FOR CONFORMANCE TO CITY STANDARDS)

DATE

CHIEF, CIVIL ENGINEERING BRANCH, DPP

DATE

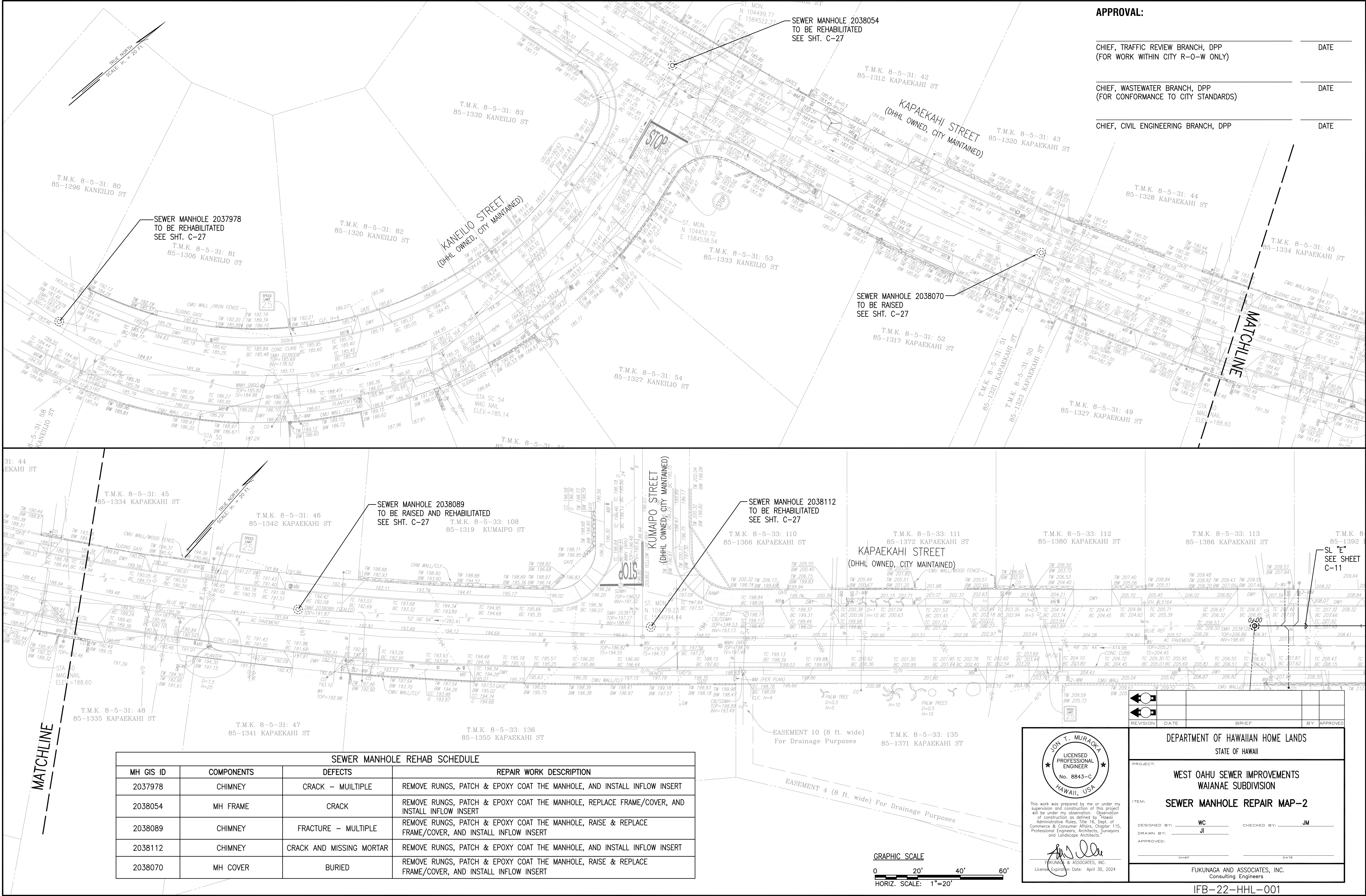


REVISION	DATE	BRIEF	BY
PROJECT:		DEPARTMENT OF HAWAIIAN HOME LANDS STATE OF HAWAII	
ITEM:		WEST OAHU SEWER IMPROVEMENTS WAIANAE SUBDIVISION SEWER MANHOLE REPAIR MAP-1	
DESIGNED BY:	WC	CHECKED BY:	JM
DRAWN BY:	JL		
APPROVED:			
FUKUNAGA & ASSOCIATES, INC.		Consulting Engineers	

IFB-22-HHL-001

FILE	POCKET	FOLDER	NO.

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APPROVAL:

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(FOR WORK WITHIN CITY R-O-W ONLY)

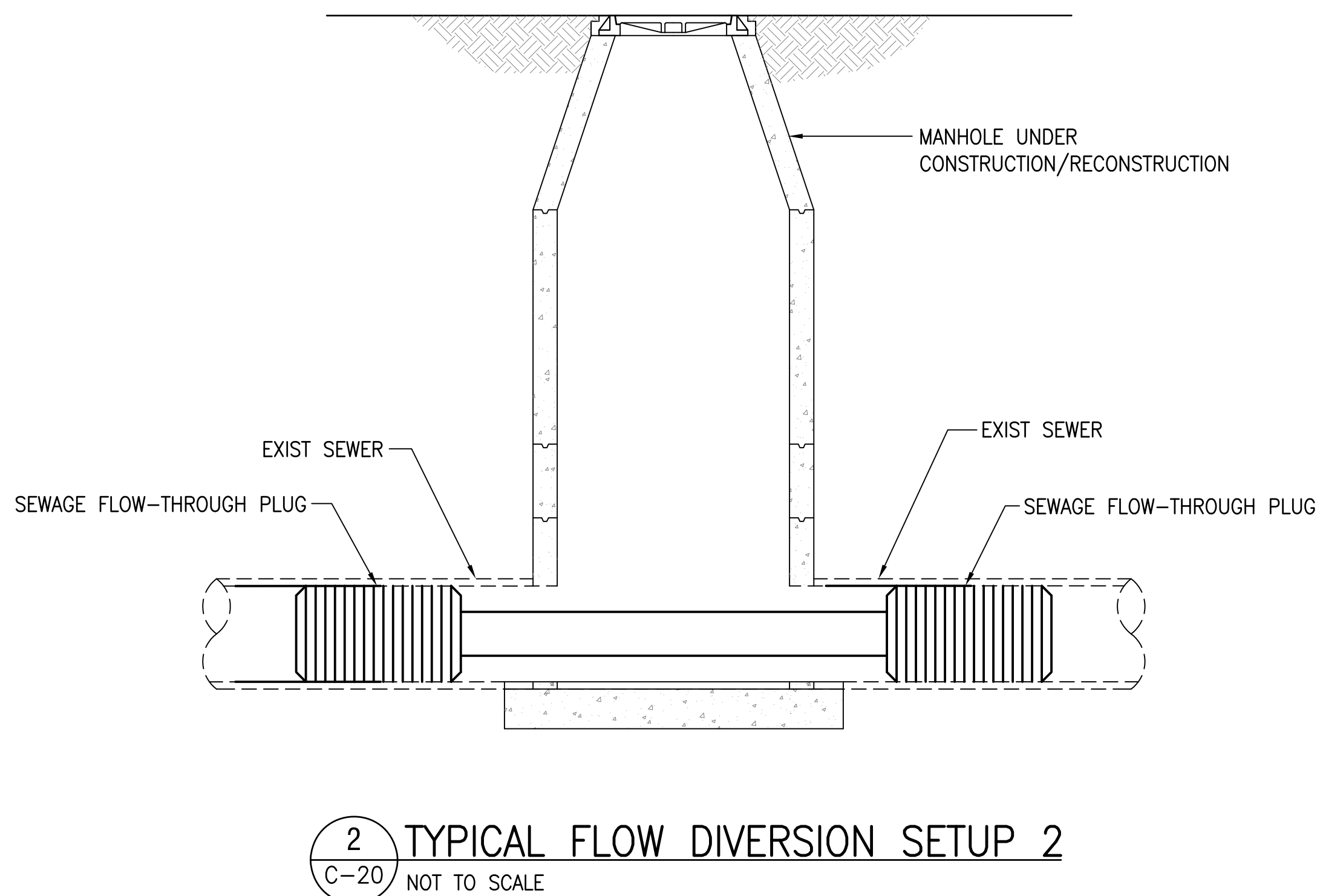
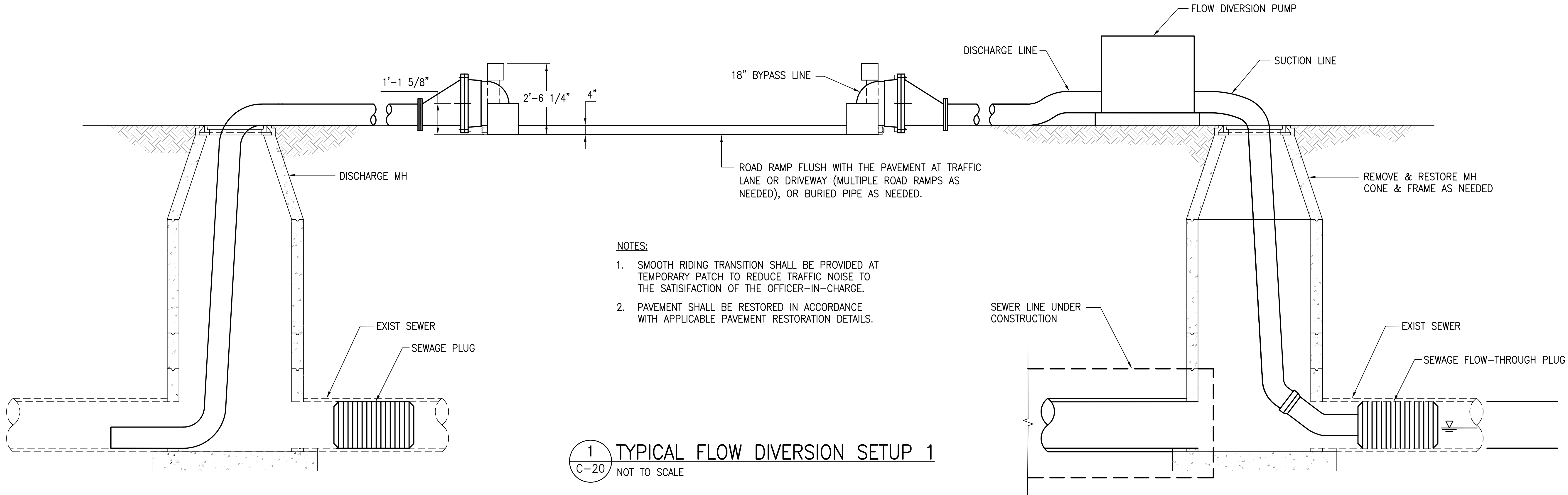
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DATE

CHIEF, CIVIL ENGINEERING BRANCH, DPP

DATE

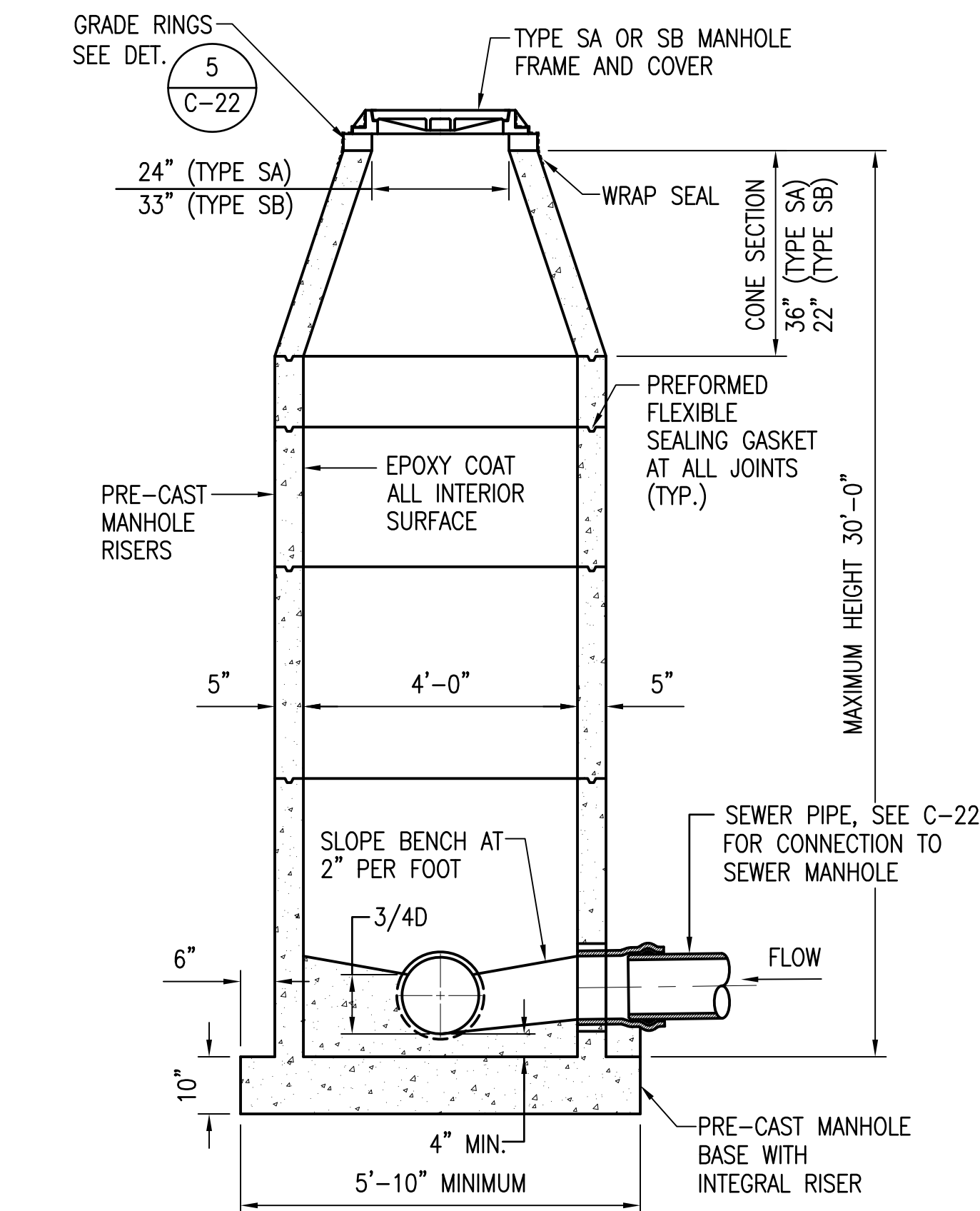


NOTES FOR TEMPORARY BYPASS:

- THE SUGGESTED FLOW DIVERSION IS PROVIDED TO MINIMIZE GROUND DISTURBANCE AND TRAFFIC DISRUPTIONS. THE CONTRACTOR MAY DEViate FROM THE PLAN AND DEVELOP HIS WASTEWATER DIVERSION PLAN. THE PROPOSED WASTEWATER DIVERSION PLAN SHALL BE SUBMITTED WITHIN 60 DAYS AFTER THE NTP AND APPROVED 30 DAYS PRIOR TO THE START OF THE ACTUAL FLOW BYPASSES. THE PLAN SHALL COMPLY WITH CONDITIONS STATED IN THE SPECIAL PROVISIONS OF SECTION 01350 "TRAFFIC CONTROL", SECTION 02731 "SEWER FLOW CONTROL", AND OTHER RELATED SECTIONS.
- WHERE ALLOWED BY THE OFFICER-IN-CHARGE, THE TEMPORARY PIPE LINES CAN BE LAID ON THE SURFACE AND SHALL BE PINNED FIRMLY IN PLACE TO PREVENT MOVEMENT AND/OR BREAKAGE DURING USAGE.
- THE CONTRACTOR SHALL KEEP EXISTING DRAIN SYSTEMS FREE FROM ANY BLOCKAGE AND ALLOW STORM WATER RUNOFF TO ENTER CATCH BASINS, DRAIN INLETS, AND DRAIN DITCH.
- SEE SHEET G-4 FOR TEMPORARY FLOW DIVERSION NOTES.

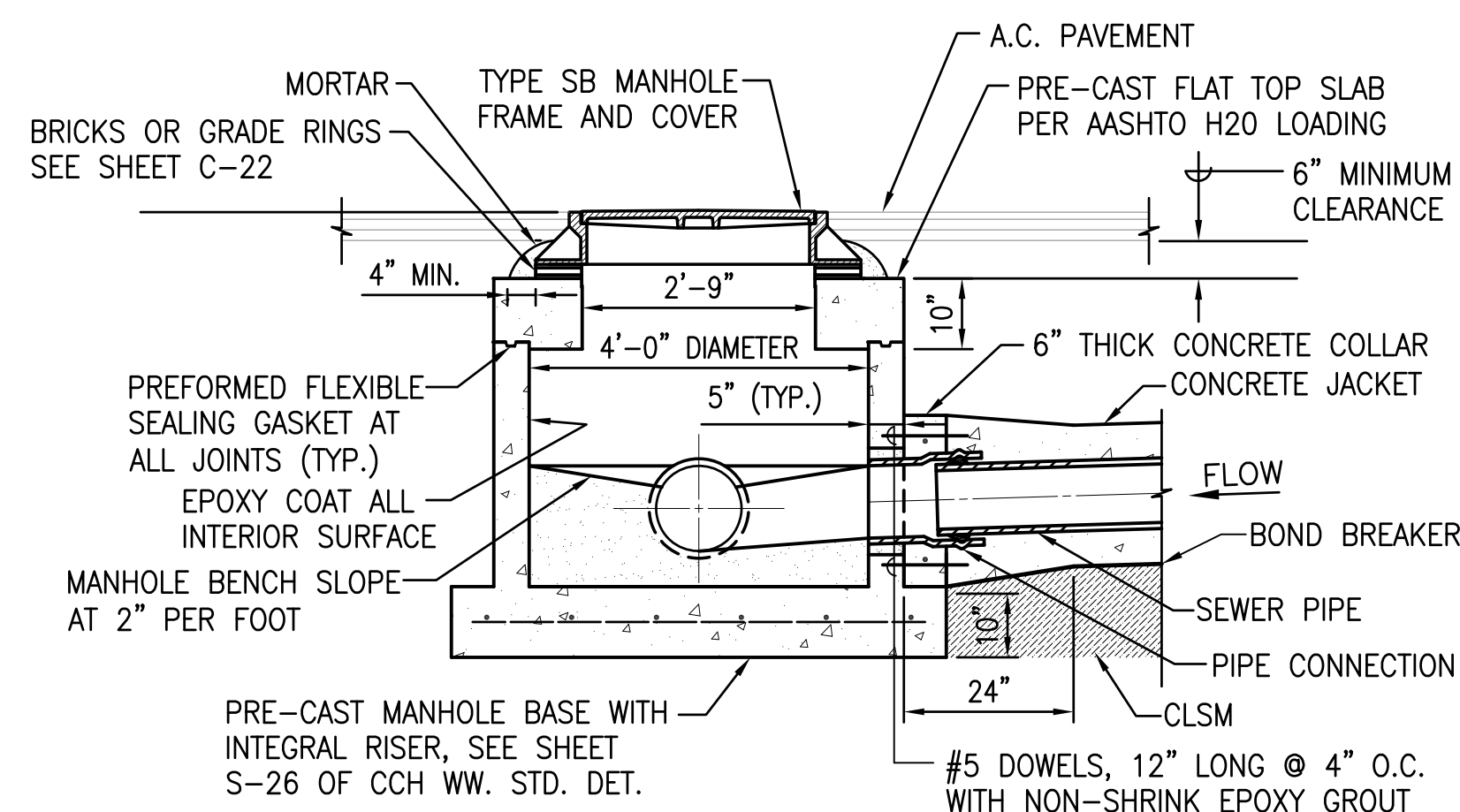
REVISION	DATE	BRIEF	BY	APPROVED
DEPARTMENT OF HAWAIIAN HOME LANDS STATE OF HAWAII				
PROJECT: WEST OAHU SEWER IMPROVEMENTS WAIANAE SUBDIVISION				
ITEM: FLOW DIVERSION DETAILS				
DESIGNED BY: WC		CHECKED BY: JM		
DRAWN BY: JT				
APPROVED:				
FUKUNAGA & ASSOCIATES, INC. License Expiration Date: April 30, 2024				
FUKUNAGA AND ASSOCIATES, INC. Consulting Engineers				

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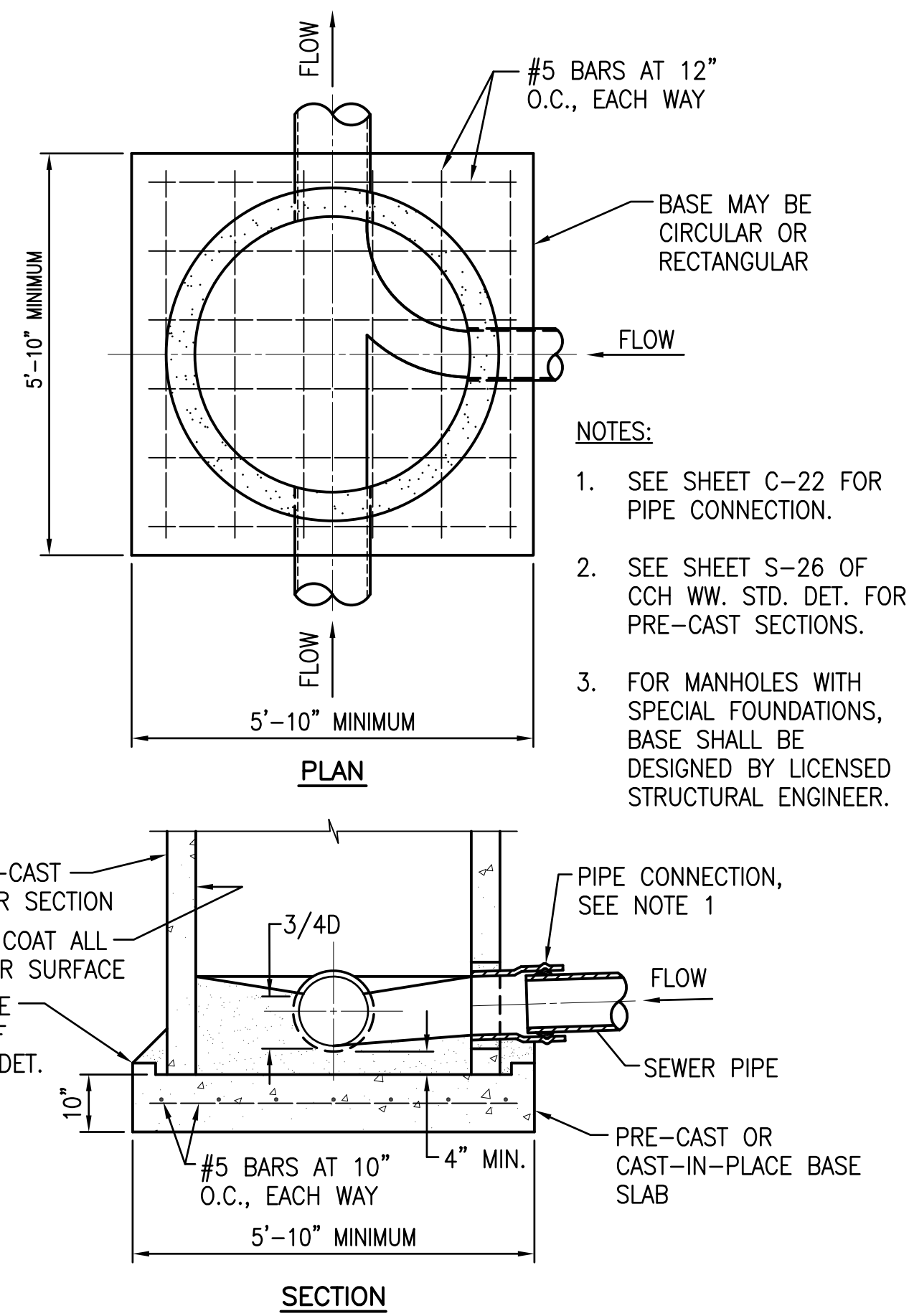
- MANHOLE NOTES:**
- WHEN PRE-CAST CONCRETE BASE IS USED, A MINIMUM 6" THICKNESS OF CRUSHED ROCK BEDDING MATERIAL SHALL BE USED FOR LEVELING. THE CRUSHED ROCK LEVELING COURSE SHALL BE ENVELOPED IN FILTER FABRIC AND EXTEND A MINIMUM 6" BEYOND THE CONCRETE BASE OUTER EDGES. FILTER FABRIC JOINTS SHALL BE OVERLAPPED 12".
 - APPROVED PRE-CAST MONOLITHIC BASE WITH INTEGRAL RISER SECTION MAY BE USED IN LIEU OF SEPARATE PRE-CAST OR CAST-IN-PLACE BASE SLABS.
 - THE PRE-CAST MANHOLE RISER SECTION SHALL BE CAST WITH OPENINGS WHENEVER SEWER PIPES MUST PASS THROUGH THE WALL.

1 48-INCH DIAMETER PRE-CAST CONC. MANHOLE
C-21 SCALE: 1/2" = 1'-0"

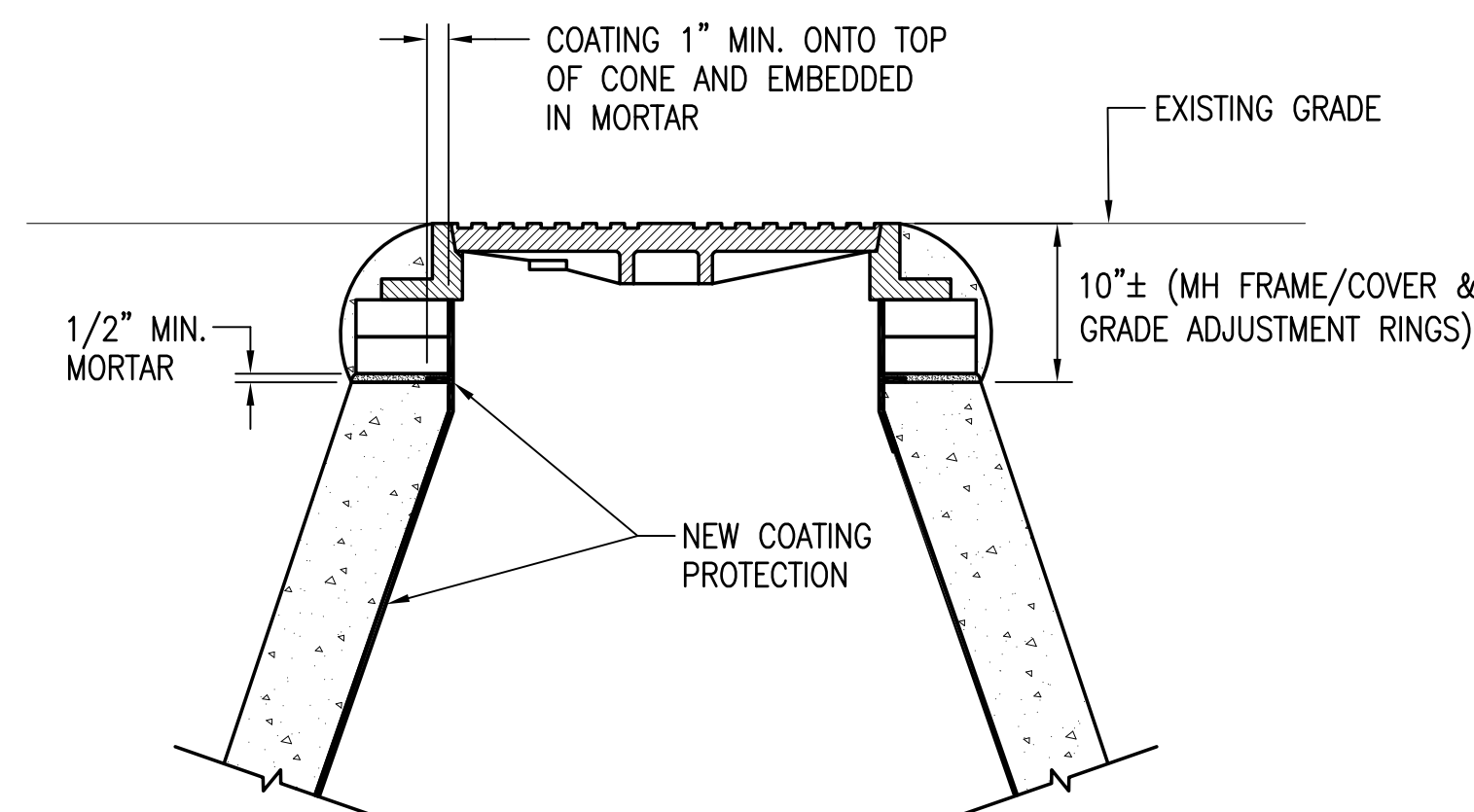


- NOTES:**
- SEE DETAIL 3 C-21 FOR ALTERNATE BASE. ONLY ONE RISER SECTION SHALL BE USED.
 - SEE SHEET C-22 FOR PIPE CONNECTION.
 - SEE SHEET S-26 OF CCH WW. STD. DET. FOR PRE-CAST SECTIONS.
 - CONTRACTOR TO PROVIDE THE STRUCTURAL CALCULATION AND REINFORCEMENT REQUIREMENTS FOR SHOP DRAWINGS.

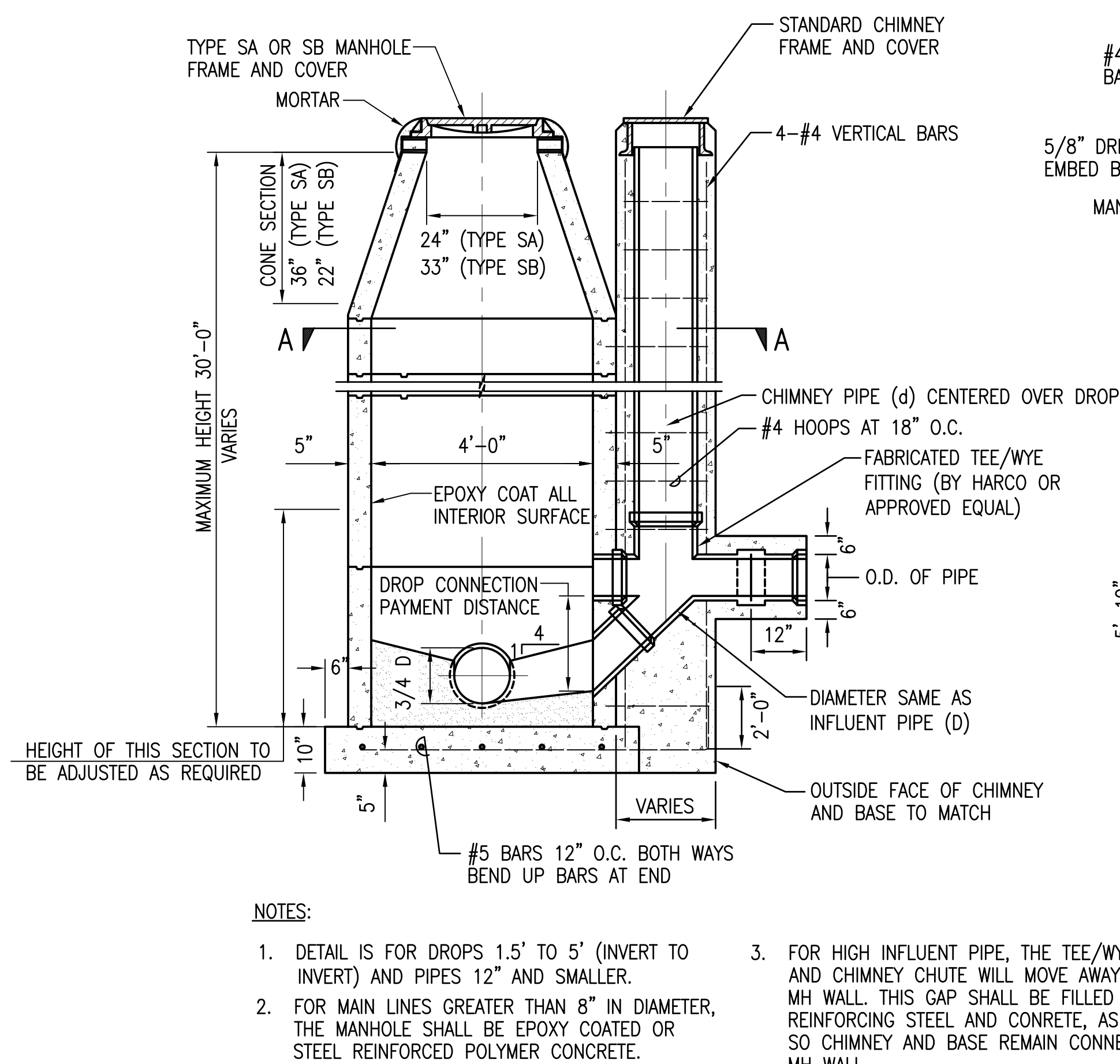
2 4-FOOT DIAMETER PRE-CAST CONCRETE SHALLOW MANHOLE
C-21 SCALE: 1/2" = 1'-0"



3 PRE-CAST CONC. MANHOLE - ALTERNATE BASE AND SECTION
C-21 SCALE: 1/2" = 1'-0"



4 COATING PROTECTION OF INTERIOR SURFACE OF BRICK GRADE COLLAR FOR NEW SEWER MANHOLES
C-21 NOT TO SCALE



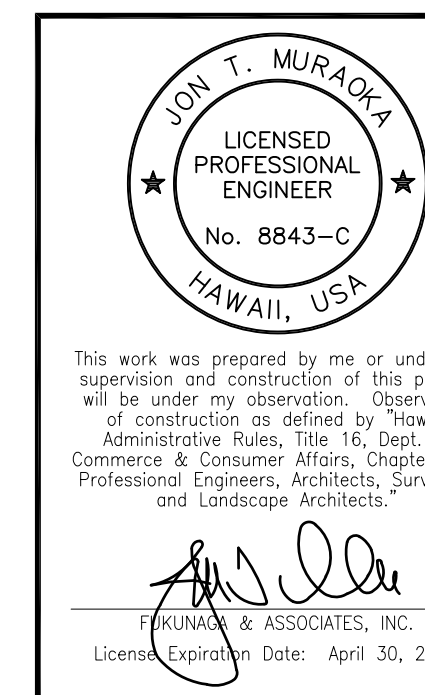
- NOTES:**
- DETAIL IS FOR DROPS 1.5' TO 5' (INVERT TO INVERT) AND PIPES 12" AND SMALLER.
 - FOR MAIN LINES GREATER THAN 8" IN DIAMETER, THE MANHOLE SHALL BE EPOXY COATED OR STEEL REINFORCED POLYMER CONCRETE.
 - FOR HIGH INFLUENT PIPE, THE TEE/WYE FITTING AND CHIMNEY CHUTE WILL MOVE AWAY FROM THE MH WALL. THIS GAP SHALL BE FILLED WITH REINFORCING STEEL AND CONCRETE, AS SHOWN, SO CHIMNEY AND BASE REMAIN CONNECTED TO MH WALL.

5 SHALLOW DROP MANHOLE (SEWER MAINS 12-INCH AND SMALLER)
C-21 NOT TO SCALE

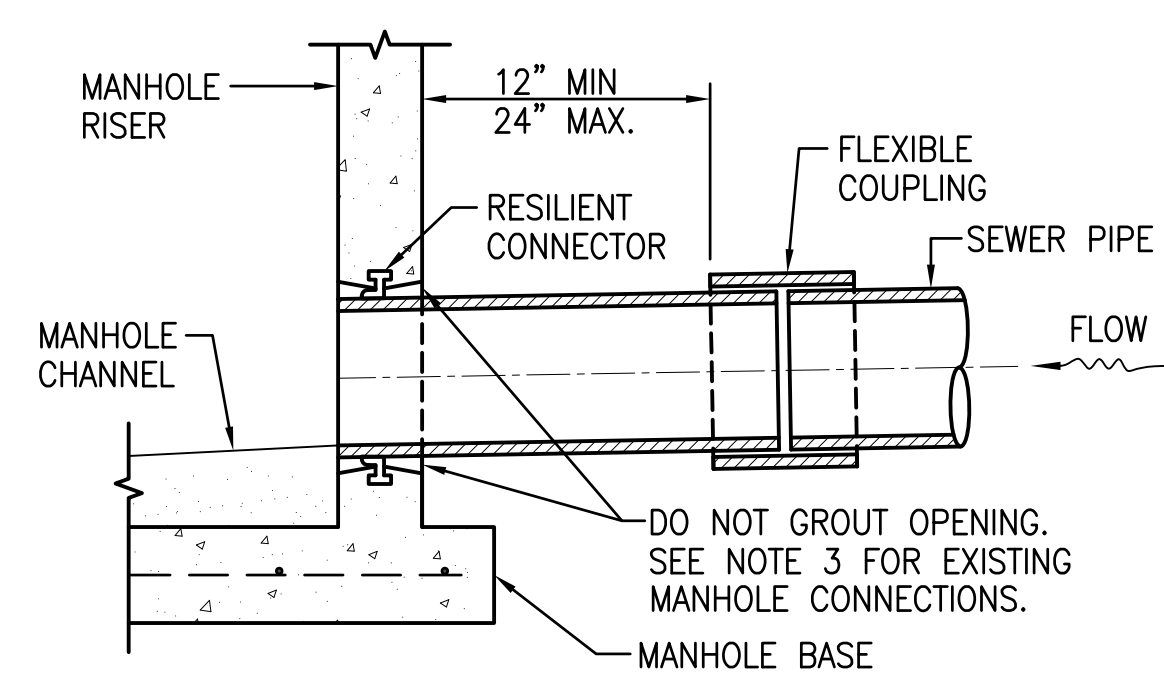
APPROVAL:

CHIEF, WASTEWATER BRANCH, DPP
(FOR CONFORMANCE TO CITY STANDARDS)

DATE



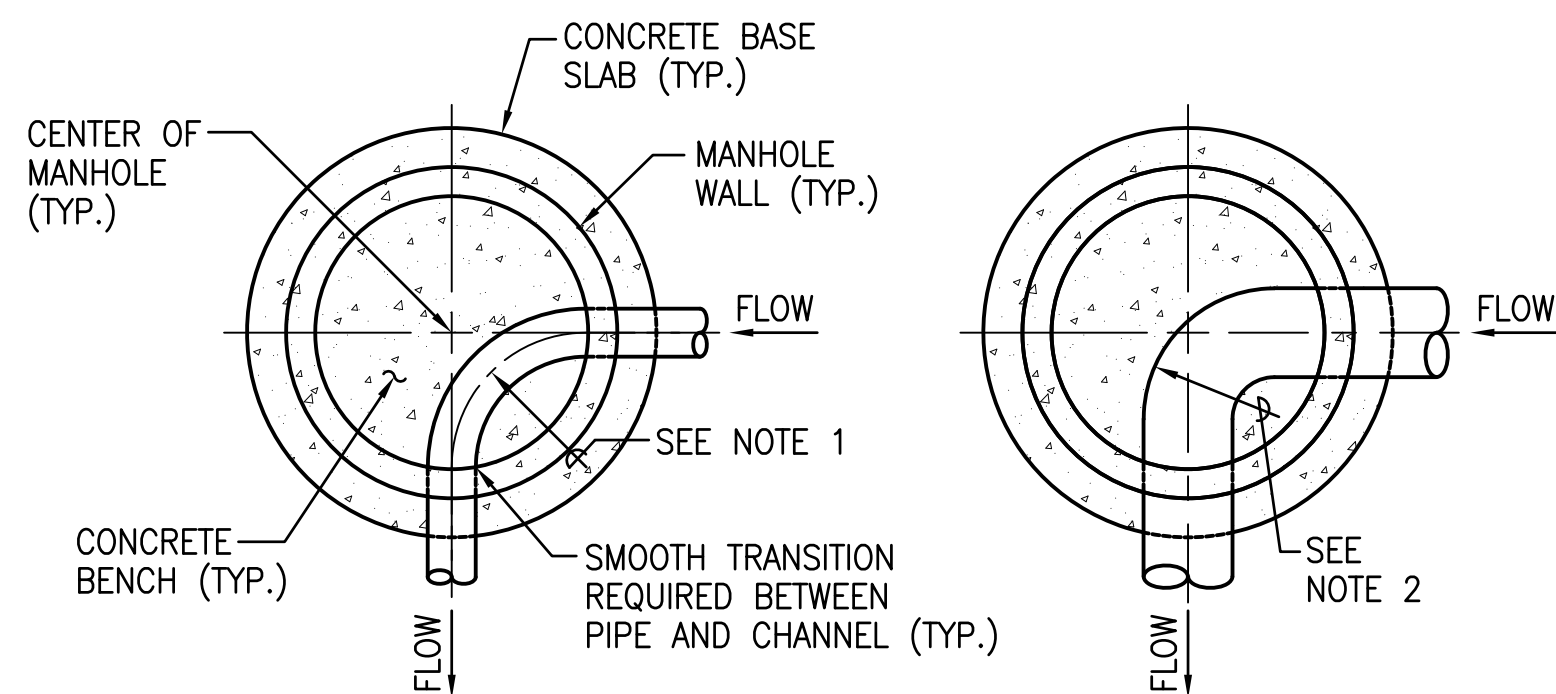
REVISION	DATE	BRIEF	BY	APPROVED
DEPARTMENT OF HAWAIIAN HOME LANDS STATE OF HAWAII				
PROJECT: WEST OAHU SEWER IMPROVEMENTS WAIANAE SUBDIVISION				
ITEM: SEWER MANHOLE DETAILS-1				
DESIGNED BY: WC		CHECKED BY: JM		
DRAWN BY: JT				
APPROVED:				
FUKUNAGA & ASSOCIATES, INC.		FUKUNAGA AND ASSOCIATES, INC. Consulting Engineers		
License Expiration Date: April 30, 2024				



NOTES:

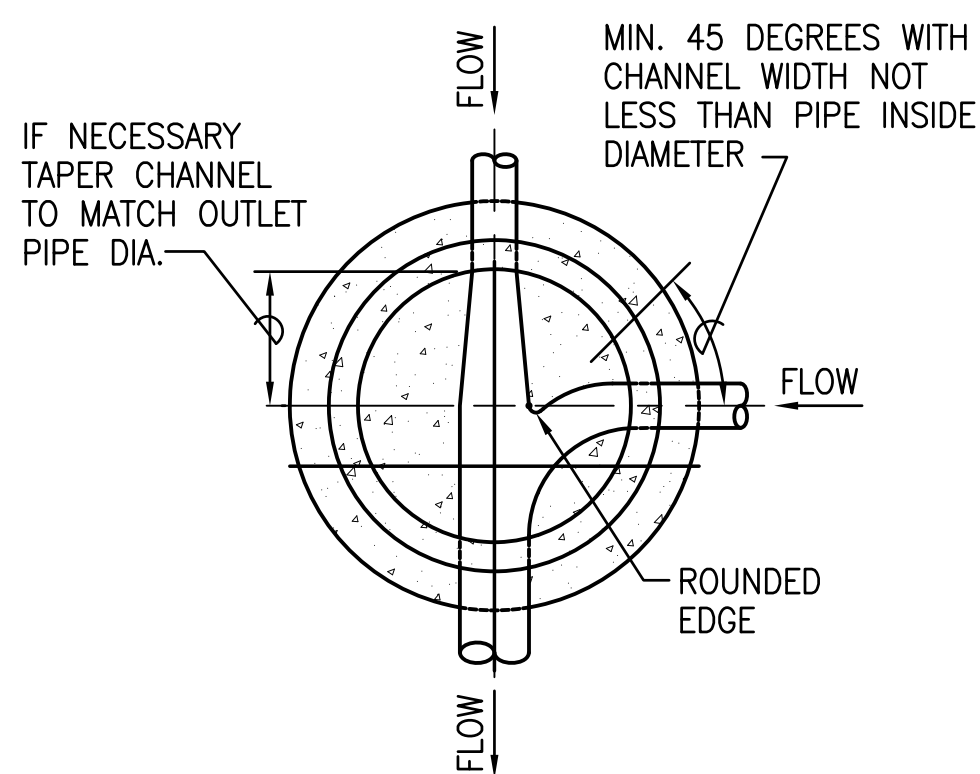
1. RESILIENT CONNECTORS SHALL CONFORM WITH ASTM C923.
2. RESILIENT CONNECTOR SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
3. FOR PIPE CONNECTIONS AT EXISTING MANHOLES, THE CONTRACTOR MAY CORE OR DRILL AN OPENING IN THE MANHOLE WALL AND GROUT IN THE RESILIENT CONNECTOR PER THE RESILIENT CONNECTOR MANUFACTURER'S RECOMMENDATIONS.

1 MANHOLE PIPE CONNECTION – RESILIENT CONNECTOR
C-22
SCALE: 3/4" = 1'-0"



PLAN A – PIPE DIA. < 12"

PLAN B – PIPE DIA. 12" TO 36"

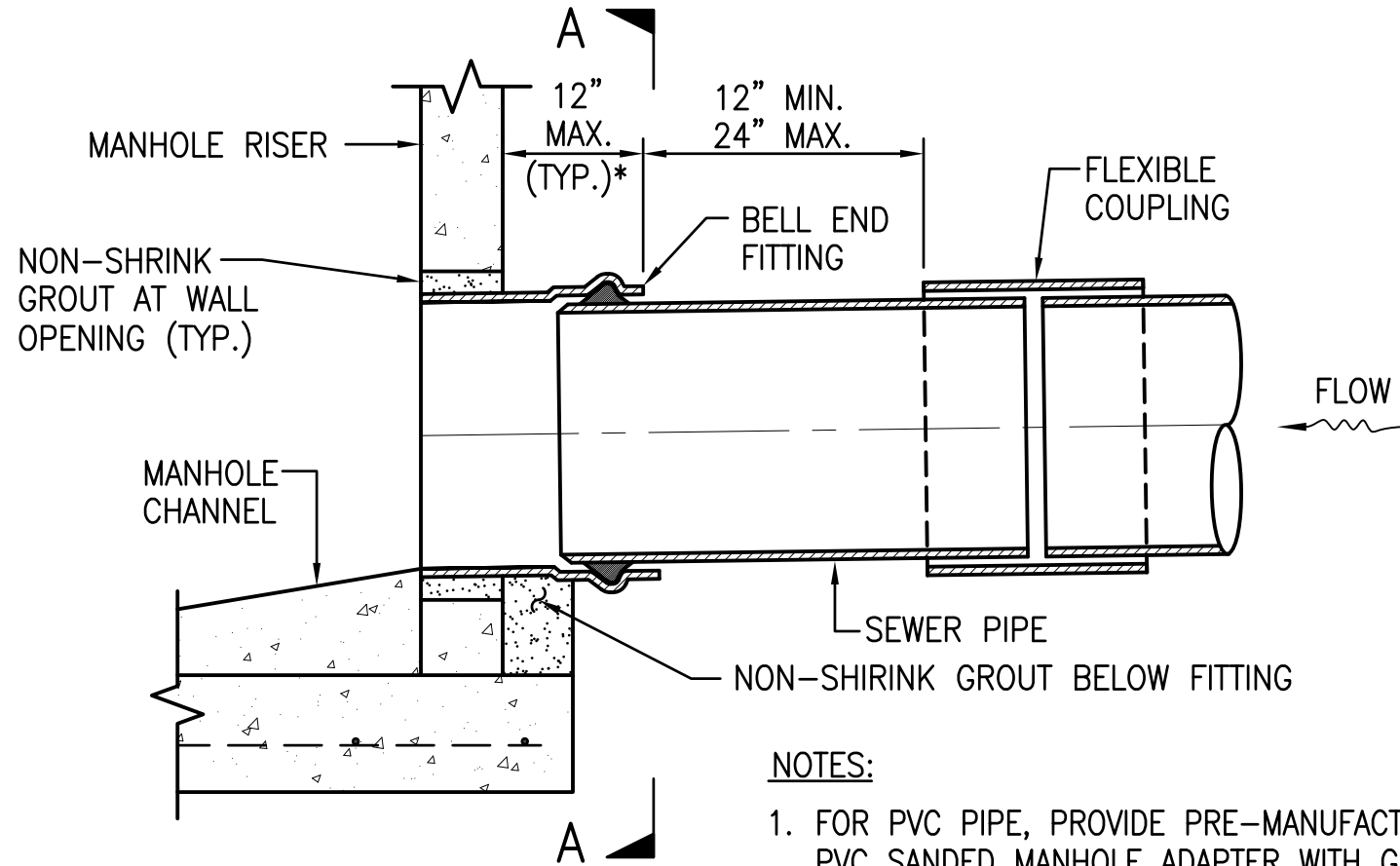


PLAN C – 90 DEGREE BRANCH LINE

NOTES:

1. THE RADIUS OF THE CHANNEL CENTERLINE FOR PIPES SMALLER THAN 12" SHALL BE 1/2 X INSIDE DIAMETER OF MANHOLE.
2. THE RADIUS OF OUTER CHANNEL WALL FOR PIPES 12" AND LARGER PIPES SHALL BE 1/2 X INSIDE DIAMETER OF MANHOLE.
3. ALL CHANNEL EDGES SHALL BE PROVIDED WITH SMOOTH ROUNDED EDGE.

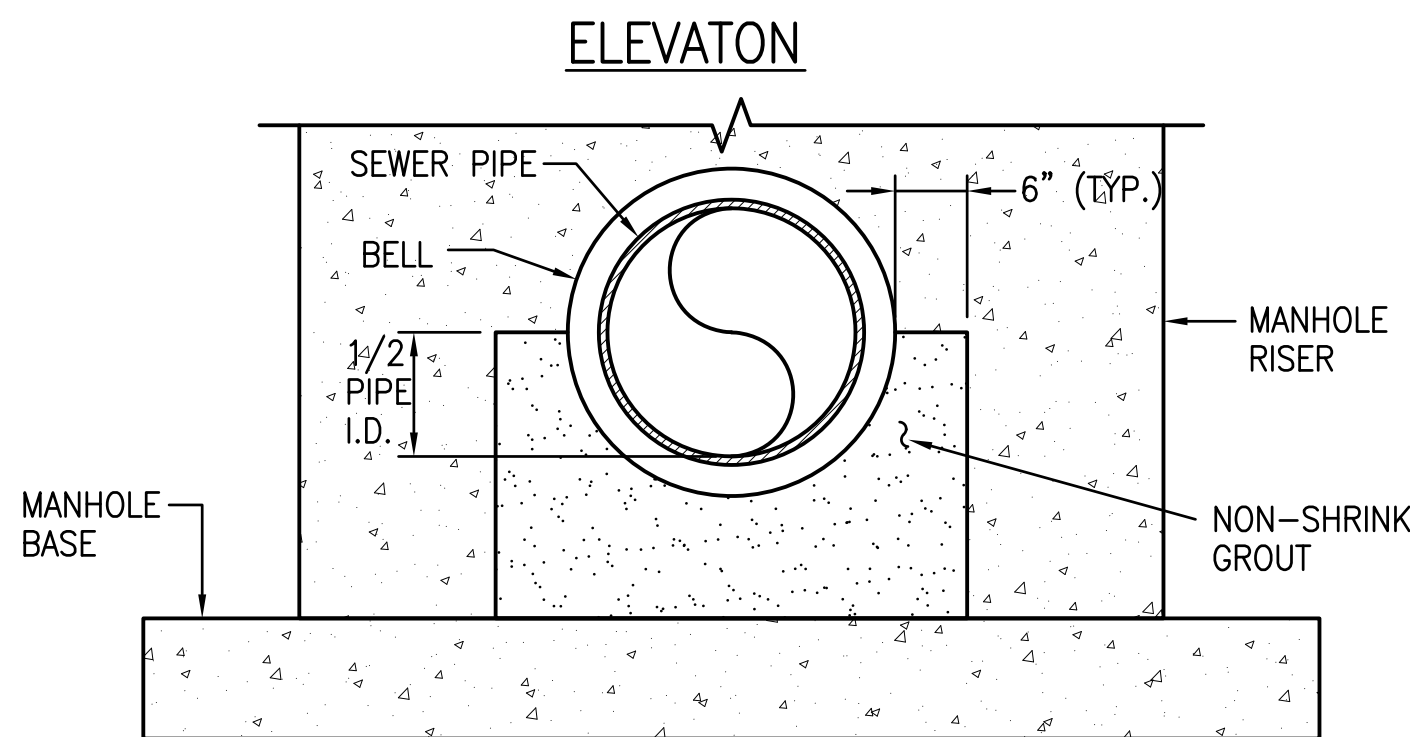
2 TYPICAL CHANNELIZATION OF SEWER MANHOLE
C-22
NOT TO SCALE



NOTES:

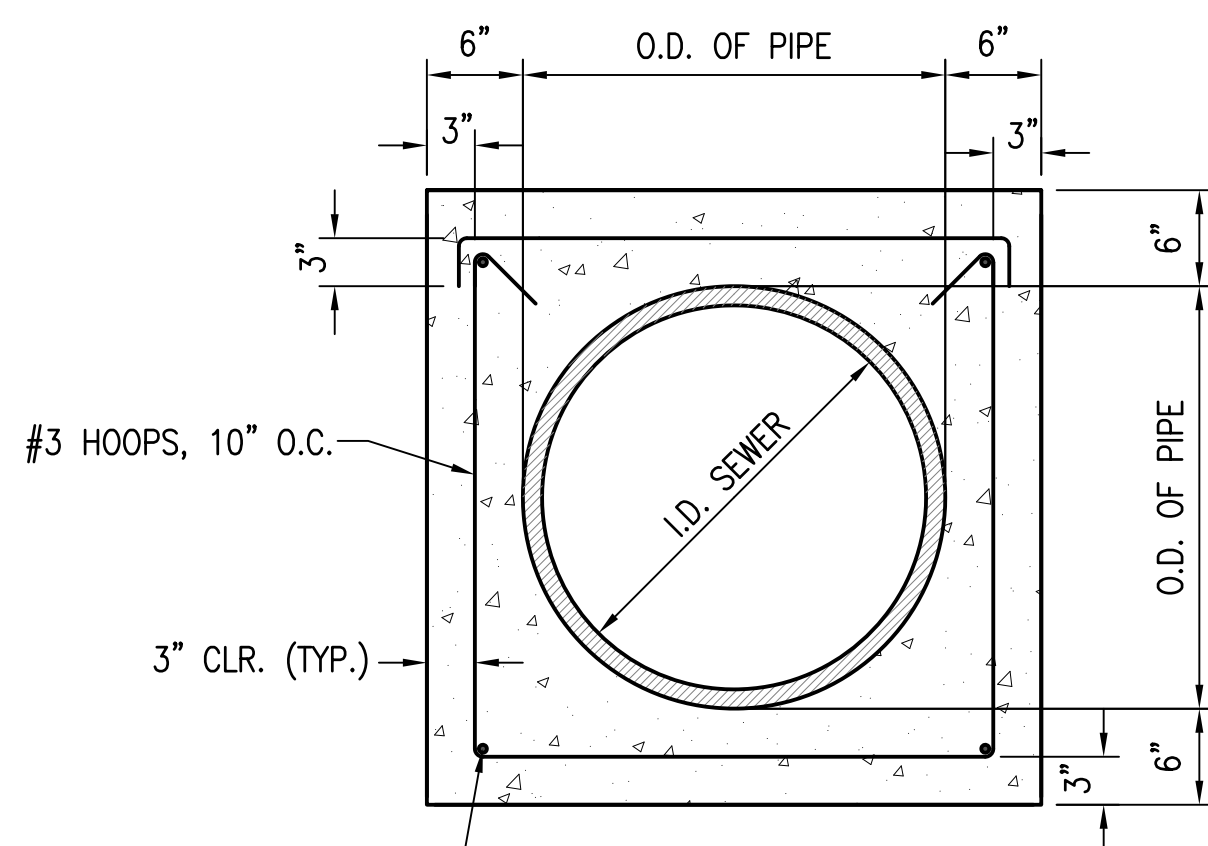
1. FOR PVC PIPE, PROVIDE PRE-MANUFACTURED, APPROVED PVC SANDED MANHOLE ADAPTER WITH GASKETED BELL END. FOR VCP, PROVIDE GASKETED BELL END.
2. A GASKETED FLEXIBLE BELL END MAY BE USED IN LIEU OF A FLEXIBLE COUPLING.
3. BELL END FITTING USED ON INFLUENT SEWER PIPE. PLAIN END USED ON EFFLUENT PIPE.

* INCREASE AS REQUIRED FOR PIPES GREATER THAN 18"



SECTION A-A

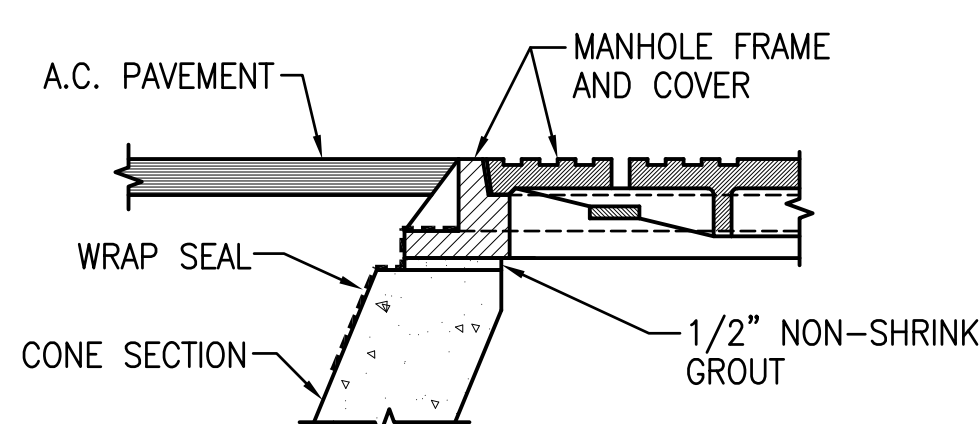
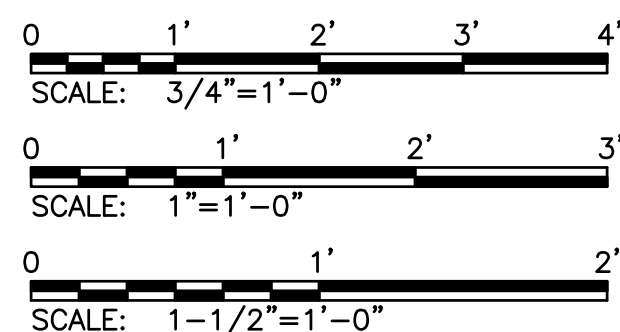
3 MANHOLE PIPE CONNECTION – WALL PIPE FITTING
C-22
SCALE: 3/4" = 1'-0"



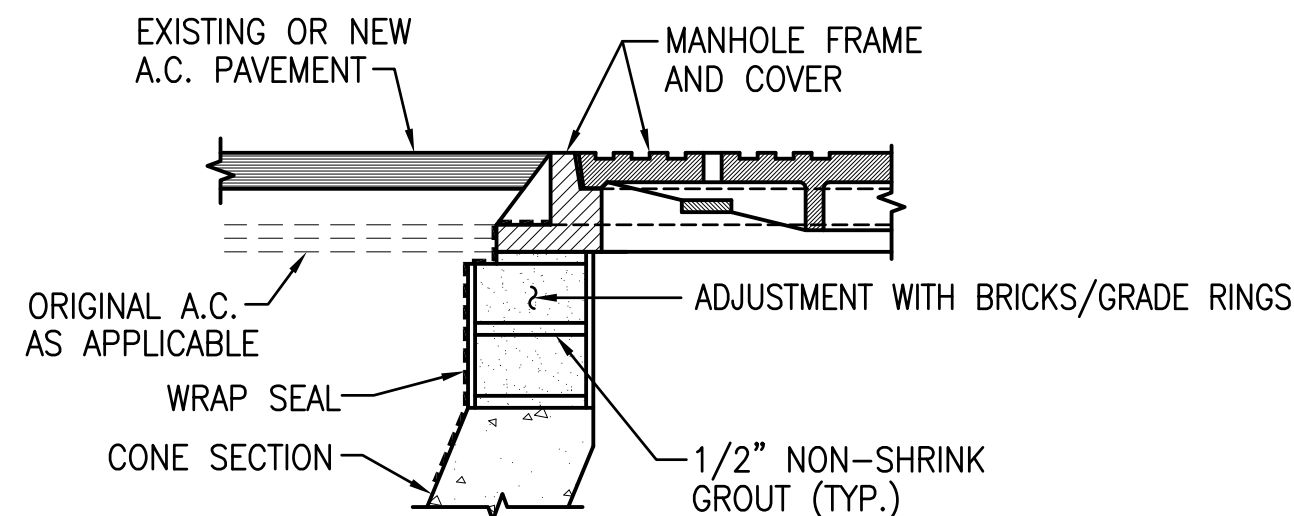
NOTE:

1. REFER TO BWS WASTEWATER DESIGN STANDARD FOR PIPES GREATER THAN 12-INCH.
2. PROVIDE DEFLECTION COUPLING OR BELL JOINT AT EACH END FACE OF CONCRETE JACKET. SEE CCH WW STD. DET. S-03

4 REINFORCED CONCRETE JACKET FOR SEWER PIPES 12-INCH AND SMALLER
C-22
SCALE: 1" = 1'-0"



DETAIL A – SHOWN WITHOUT GRADE RING



DETAIL B – SHOWN WITH GRADE RING

NOTE:

1. APPLY GROUT TO INSIDE AND OUTSIDE OF BRICKS TO FORM CONTINUOUS CYLINDRICAL SURFACE.

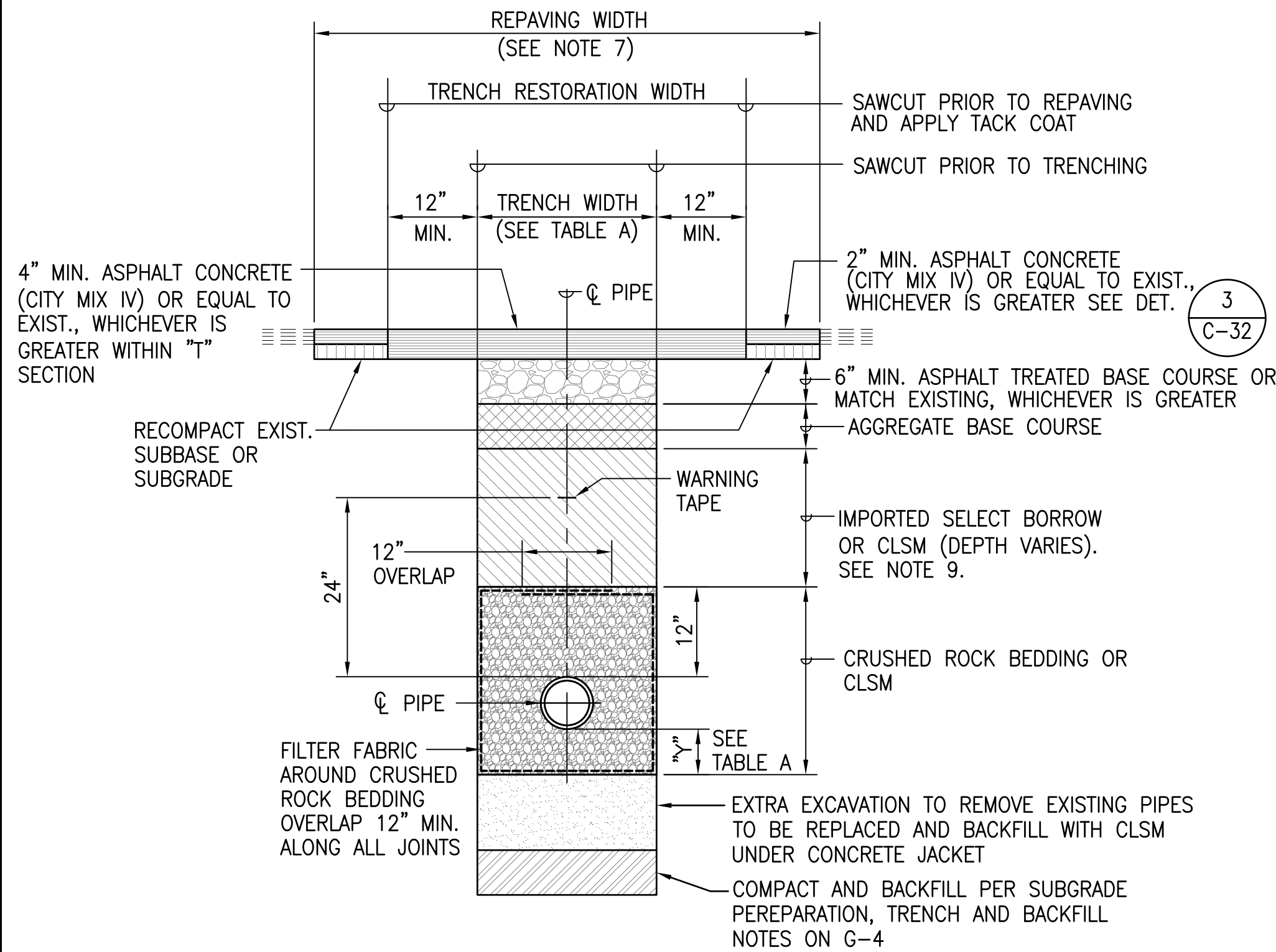
5 MANHOLE COVER LOCATED IN A.C. PAVEMENT
C-22
SCALE: 1-1/2" = 1'-0"

APPROVAL:

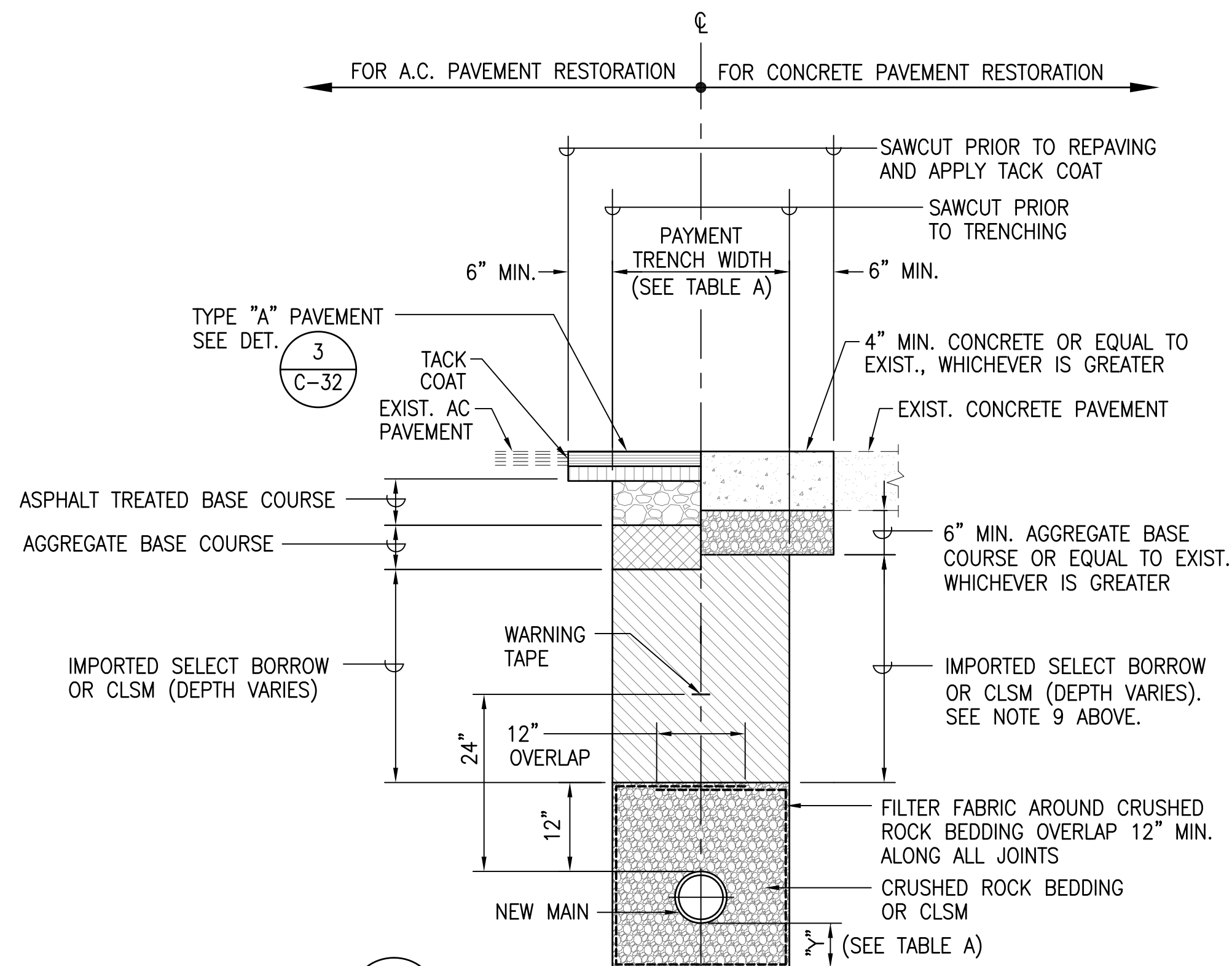
CHIEF, WASTEWATER BRANCH, DPP
(FOR CONFORMANCE TO CITY STANDARDS)

DATE

REVISION	DATE	BRIEF	BY	APPROVED
DEPARTMENT OF HAWAIIAN HOME LANDS STATE OF HAWAII				
PROJECT: WEST OAHU SEWER IMPROVEMENTS WAIANAE SUBDIVISION				
ITEM: SEWER MANHOLE DETAILS-2				
DESIGNED BY: WC		CHECKED BY: JM		
DRAWN BY: JT				
APPROVED: _____		DATE: _____		
FUKUNAGA & ASSOCIATES, INC. Consulting Engineers				
IFB-22-HHL-001				



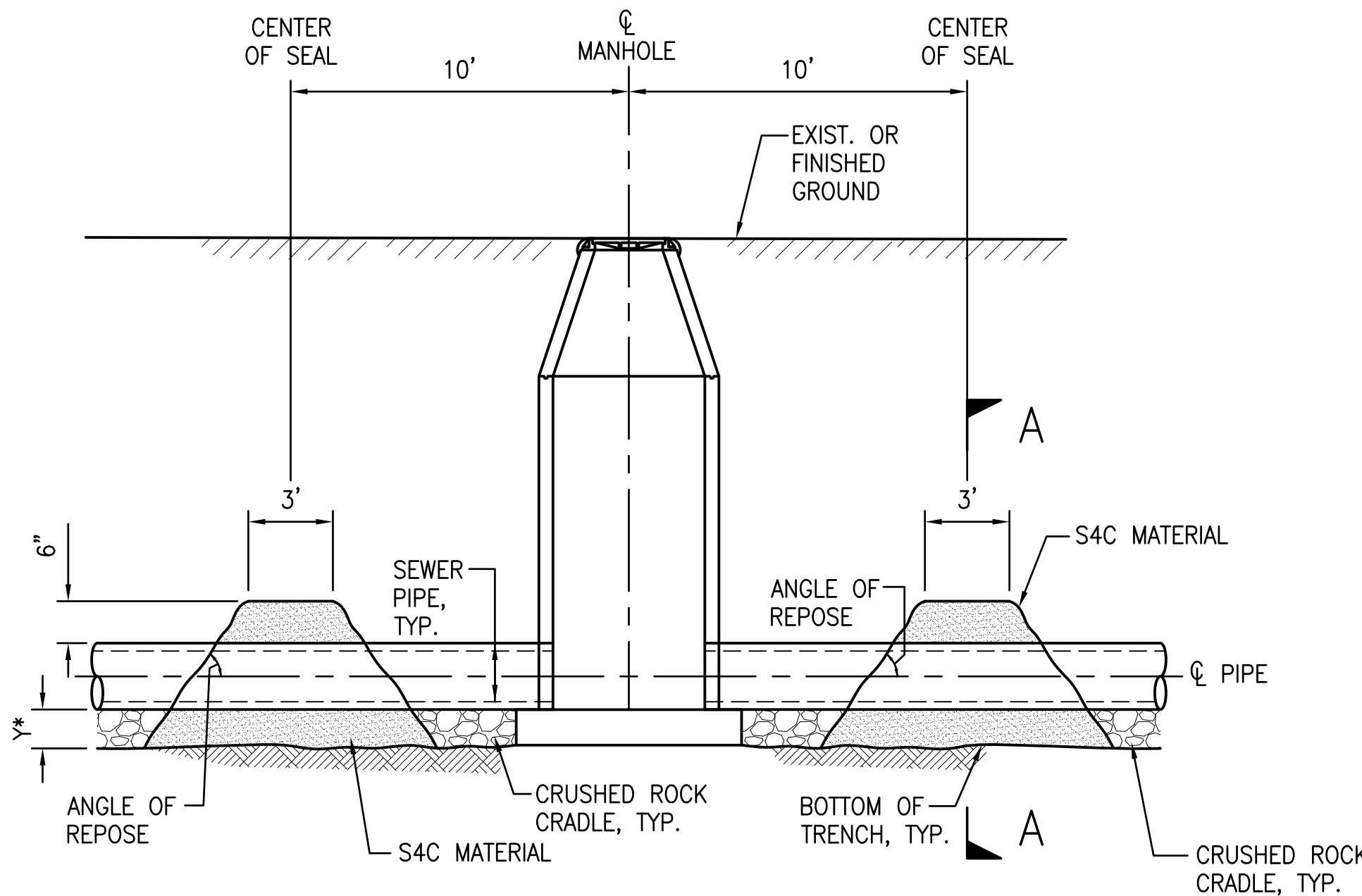
1
C-23
**TYPICAL TRENCH RESTORATION
DETAIL WITHIN STREET**
NOT TO SCALE



2
C-23
**FOR OPEN-CUT INSTALLATION
WITHIN PRIVATE PROPERTY**
NOT TO SCALE

NOTES:

- PAVEMENT STRUCTURE SHALL BE EQUAL OR BETTER THAN EXISTING IN THICKNESS AND QUALITY.
- THE EXISTING PAVEMENT MAY VARY IN THICKNESS. CONTRACTOR SHALL BE RESPONSIBLE FOR SAWCUTTING, EXCAVATION, DISPOSAL, AND RESTORATION OF AC PAVEMENT, REGARDLESS OF ACTUAL PAVEMENT THICKNESS AT NO ADDITIONAL COST TO THE CITY.
- FOR ROAD GRADES 8.0% TO 11.99% AND PRIME COAT IS UNAVAILABLE, USE 4" ASPHALT TREATED BASE IN LIEU OF 6" MIN. BASE COURSE.
- REMOVE AND RECONSTRUCT A.C. PAVEMENT IN ACCORDANCE WITH REPAVING NOTES.
- ALL DISTURBED PAVEMENT MARKINGS SHALL BE REPLACED AND ALL REQUIRED UTILITY ADJUSTMENTS SUCH AS MANHOLE COVERS ETC. SHALL BE DONE BY THE PERMITTEE.
- PERMITTEE SHALL COORDINATE WORK WITH ALL OTHER UTILITY ENTITIES AND DEPT. OF FACILITY MAINTENANCE.
- 4'-6" MIN. OR TO THE EDGE OF PAVEMENT OR TRAFFIC LANE DIVIDER LINE. SEE REPAVING PLAN.
- FOR SUBGRADE PREPARATION, TRENCH AND BACKFILL NOTES, SEE G-4.
- CLSM SHALL BE USED FOR TRENCH BACKFILL AT ALL SEWER CROSSINGS BENEATH WATER MAINS. THE CLSM BACKFILL SHALL BE A MINIMUM OF 7 FEET LONG AND THE CLSM MIXTURE SHALL MEET A 28-DAY UNCONFINED COMPRESSIVE STRENGTH BETWEEN 50 AND 150 PSI. THE CONTRACTOR SHALL FOLLOW THE REQUIREMENTS OF SPECIFICATION SECTION 03030 - CONTROLLED LOW STRENGTH MATERIAL AND LIGHTWEIGHT CELLULAR CONCRETE. PRIOR TO START OF CONSTRUCTION, THE CONTRACTOR SHALL SUBMIT MATERIAL SPECIFICATIONS TO THE OFFICER-IN-CHARGE FOR APPROVAL OF THE CLSM.
- SEE TABLE A FOR PAYMENT WIDTHS AND BEDDING DIMENSIONS.
- FILTER FABRIC NOT REQUIRED FOR CLSM BEDDING.
- FOR SEWER JOINTS LOCATED 5' BEYOND ANTICIPATED DRIP LINE OF TREES AND SHRUBS, WRAP WILL BE A GEOTEXTILE FABRIC WITH HERBICIDE.



* FROM CITY AND COUNTY WASTEWATER STANDARD DETAILS, SHT. S-2 OR AS SPECIFIED ON CONSTRUCTION PLANS.

NOTES:

- SEALS SHALL BE PLACED 10 FT. UPSTREAM AND DOWNSTREAM FROM EACH MANHOLE.
- THE CONTRACTOR SHALL COMPACT S4C MATERIAL BY PONDING AND DRAINING. UPON DRAINING, A VIBRATORY MACHINE SHALL BE USED UNTIL NO VISABLE EVIDENCE OF FURTHER CONSOLIDATION EXISTS.
- SEALS SHALL NOT BE PAID FOR SEPARATELY BUT SHALL BE CONSIDERED INCIDENTAL TO CRUSHED ROCK CRADLE.

3
C-23
SEWER LINE SEAL AT MANHOLE
NOT TO SCALE

TABLE A		
NOMINAL PIPE SIZE (INCHES)	TRENCH (EXCAVATION AND BACKFILL) PAYMENT WIDTH (INCHES)	BEDDING "Y" (INCHES)
6-12	30	6
16	38	6
18	41	6
20	50	8
24	50	8

GENERAL NOTES FOR PIPE TRENCHING:

- PROVIDE STRUCTURAL SUPPORT FOR ALL EXISTING UTILITY LINES UNCOVERED BY TRENCH EXCAVATION.
- TRENCH WIDTH FOR DETERMINATION OF TRENCH PAYMENT SHALL FOLLOW TABLE A. ADDITIONAL EXCAVATION SHALL BE AT CONTRACTOR'S DISCRETION. TRENCH DEPTH FOR DETERMINATION OF TRENCH PAYMENT SHALL BE BASED ON THE BOTTOM OF THE CLSM OR CRUSHED ROCK PIPE BEDDING.
- WHERE THE PIPE LINE IS TO BE ENCASED WITH CONCRETE, THE WIDTH OF THE TRENCH SHALL BE INCREASED TO THE WIDTH OF THE CONCRETE JACKET PLUS 12 INCHES IF FORMS ARE USED. FORMS SHALL BE REMOVED IF FORMING FOR THE JACKET IS NOT REQUIRED, THE TRENCH WIDTH MAY EQUAL TO THE WIDTH OF THE CONCRETE JACKET. FOR DETERMINATION OF TRENCH PAYMENT, THE DEPTH OF TRENCH SHALL BE TO THE BOTTOM OF THE CONCRETE JACKET.
- THE CONTRACTOR SHALL MAINTAIN THE TEMPORARY TRENCH PATCHES IN GOOD CONDITION AT ALL TIMES UNTIL THE PERMANENT RESTORATION IS COMPLETED. CHALK HOLES, RUTS AND ANY DEPRESSION GREATER THAN 1/2 INCH SHALL BE REPAIRED IMMEDIATELY.
- CONTRACTOR SHALL SECURE PIPES AS REQUIRED TO PREVENT FLOATING AND MISALIGNMENT DURING POURING OF CLSM.
- IN UNPAVED AREAS, INSTALL 6" TOPSOIL AND GRASS TO MATCH EXISTING.
- FOR SUBGRADE PREPARATION, TRENCH AND BACKFILL NOTES, SEE G-4.

APPROVAL:

CHIEF, WASTEWATER BRANCH, DPP
(FOR CONFORMANCE TO CITY STANDARDS)

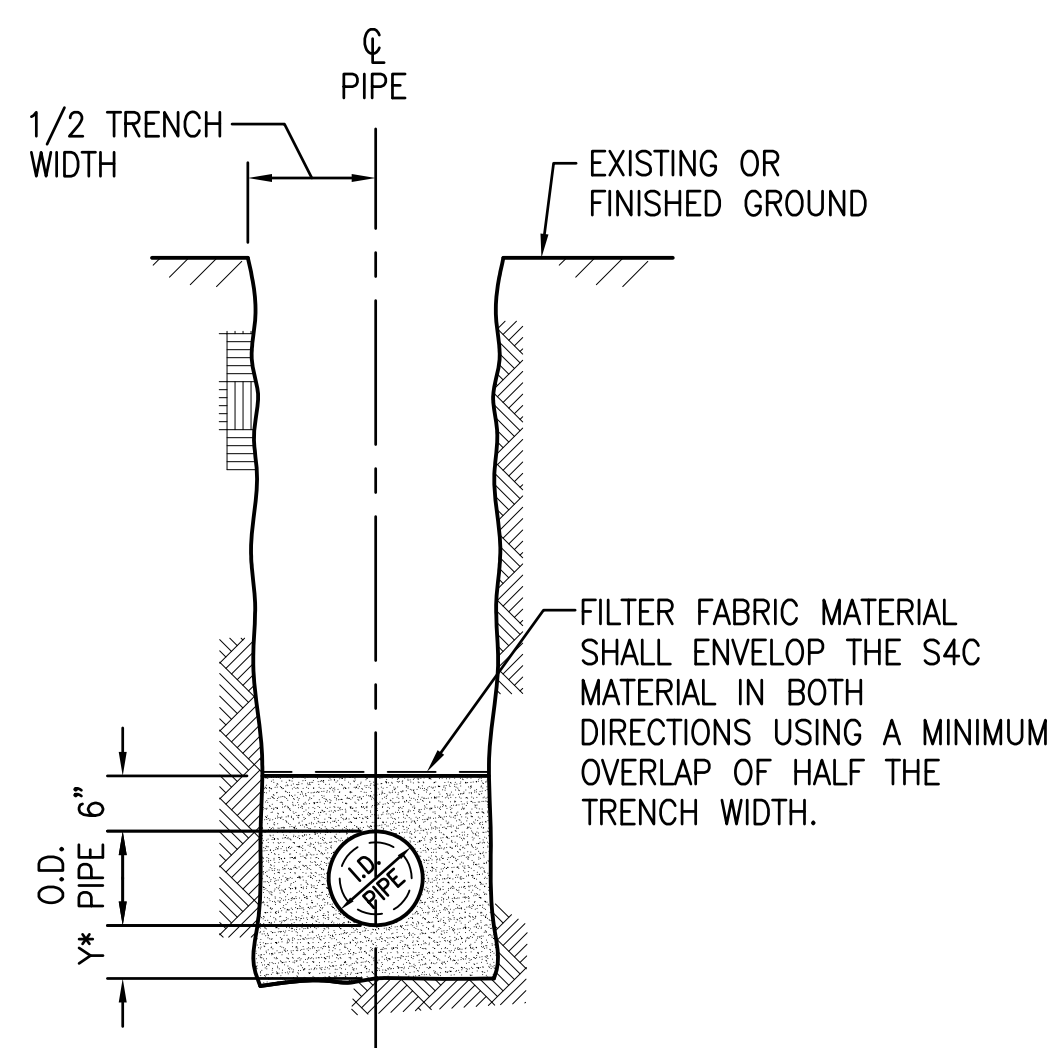
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CHIEF, CIVIL ENGINEERING BRANCH, DPP

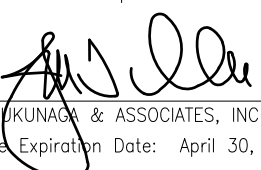
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MANAGER & CHIEF ENGINEER, BWS
(FOR WORK AFFECTING BWS FACILITIES IN CITY/STATE R-O-W AND BWS EASEMENT ONLY)

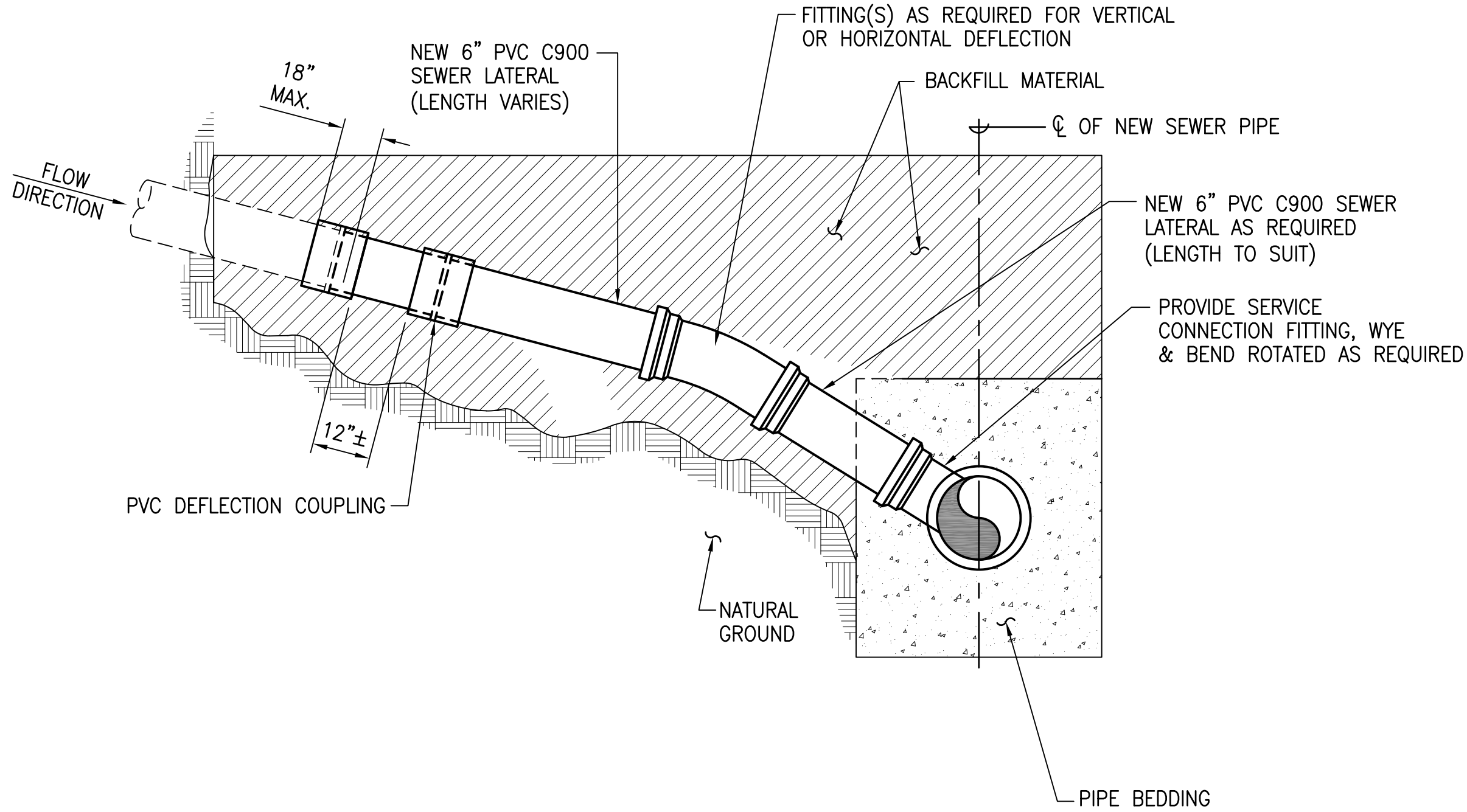
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SECTION A-A

REVISION	DATE	BRIEF	BY	APPROVED
DEPARTMENT OF HAWAIIAN HOME LANDS STATE OF HAWAII				
PROJECT: WEST OAHU SEWER IMPROVEMENTS WAIANAE SUBDIVISION				
ITEM: TRENCH DETAILS				
DESIGNED BY: WC		CHECKED BY: JM		
DRAWN BY: JL				
APPROVED: 				
FUKUNAGA & ASSOCIATES, INC. License Expiration Date: April 30, 2024				
FUKUNAGA AND ASSOCIATES, INC. Consulting Engineers				

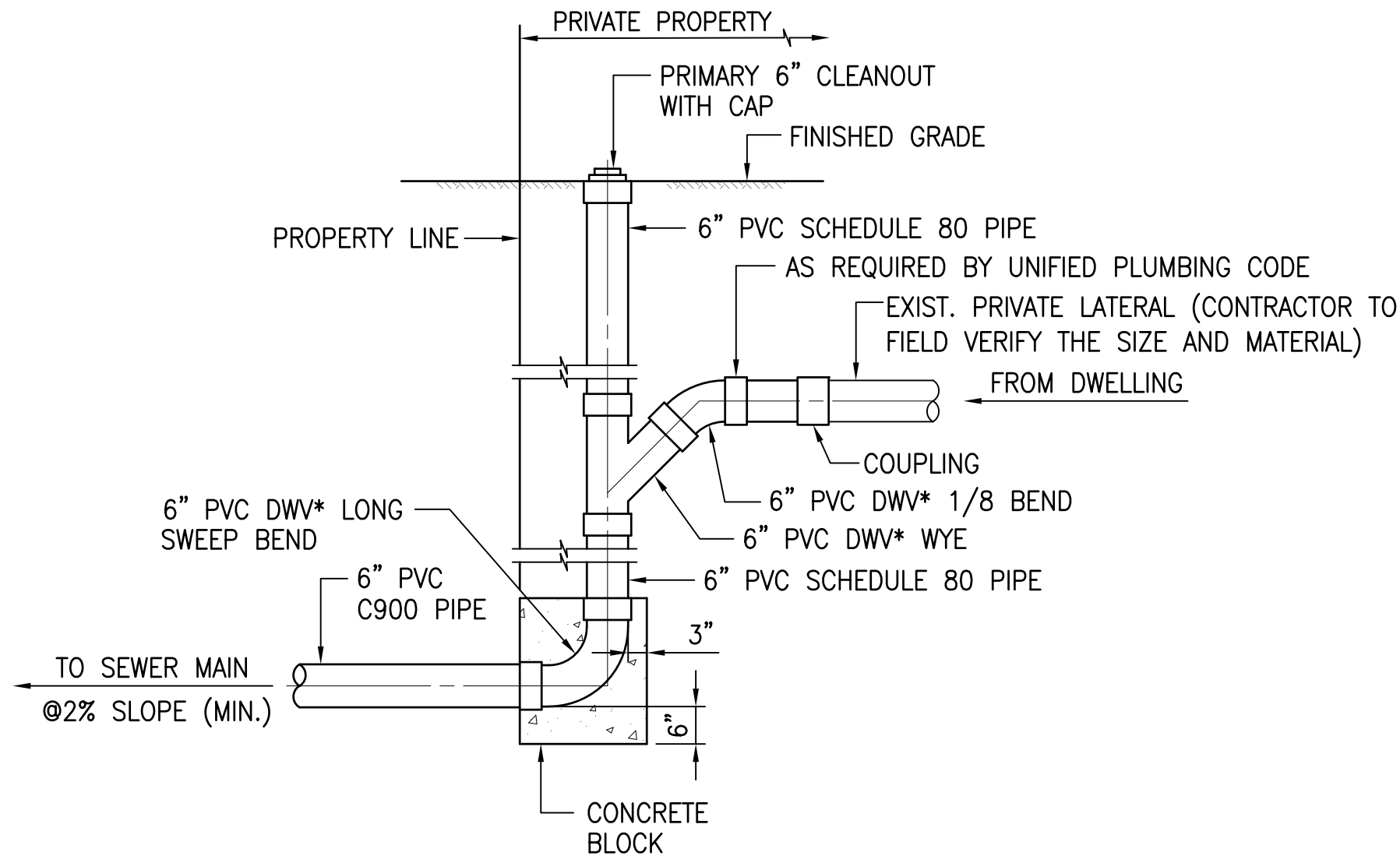
IFB-22-HHL-001



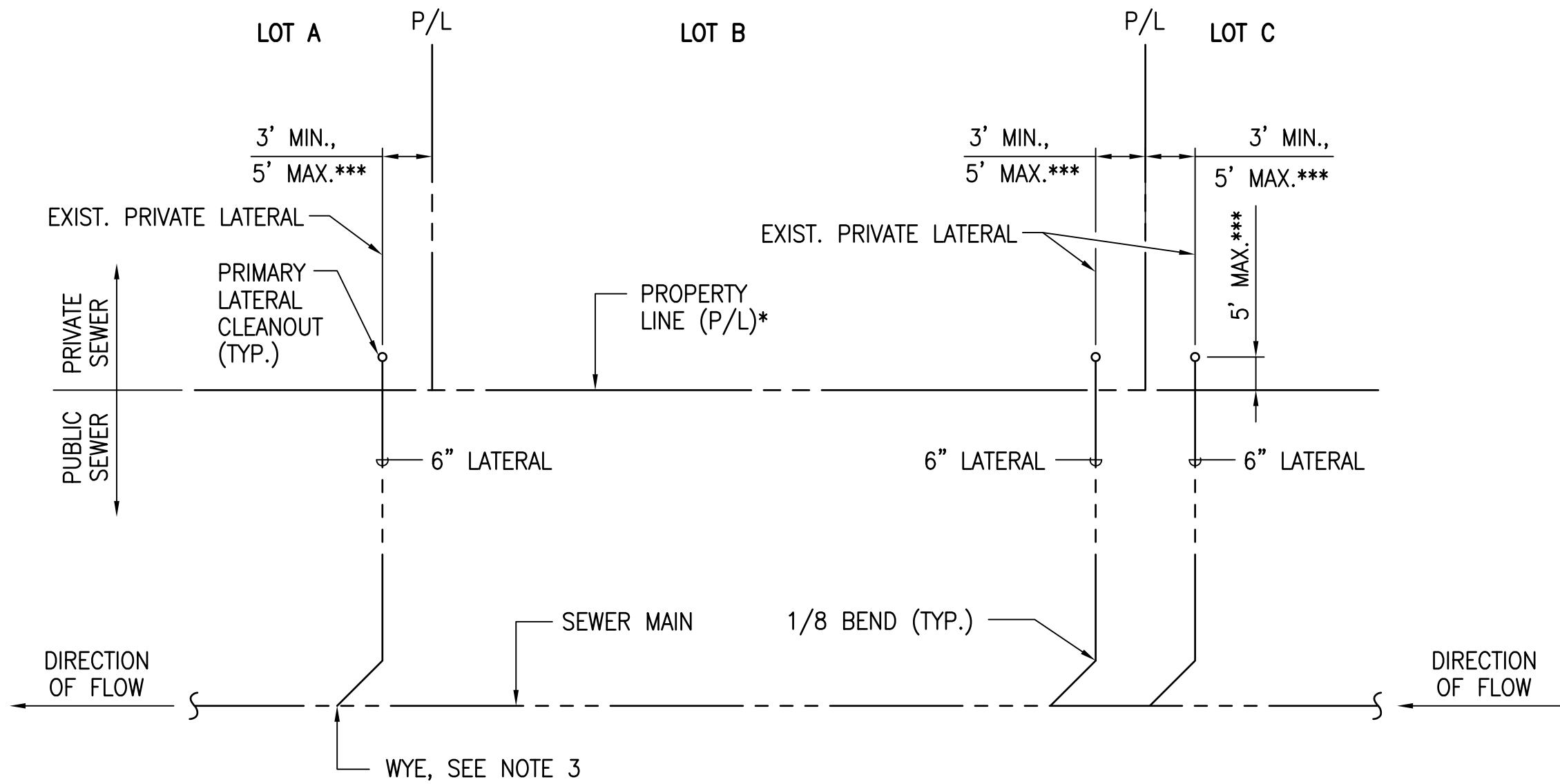
SEWER LATERAL NOTES:

1. SEWER LATERAL CONFIGURATION, INCLUDING FITTING REQUIREMENTS, SHOWN FOR GENERAL GUIDANCE ONLY AND SHALL BE MODIFIED AS REQUIRED TO SUIT FIELD CONDITIONS. ALTERNATE LATERAL CONNECTIONS SHALL BE APPROVED BY THE OFFICER-IN-CHARGE.
2. LATERAL CONNECTION WYES SHALL BE LOCATED AND ROTATED AS REQUIRED TO ELIMINATE OR MINIMIZE NEED FOR HORIZONTAL AND VERTICAL BENDS AND DEFLECTIONS. FIELD VERIFY SEWER CLEANOUT LOCATION. LOCATE EXISTING LATERAL BY TONING AND EXCAVATION AS REQUIRED.
3. FITTINGS SHALL BE PVC C900 (DR 18) AS APPLICABLE.
4. CONTRACTOR SHALL SECURE PIPES AS REQUIRED TO PREVENT FLOATING AND MISALIGNMENT DURING POURING OF BACKFILL MATERIALS.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING SERVICE TO ALL LATERAL CONNECTIONS.
6. RESTORE SURFACE PER TRENCH DETAILS.

1 CONNECTION TO NEW SEWER LINE
C-24 NOT TO SCALE



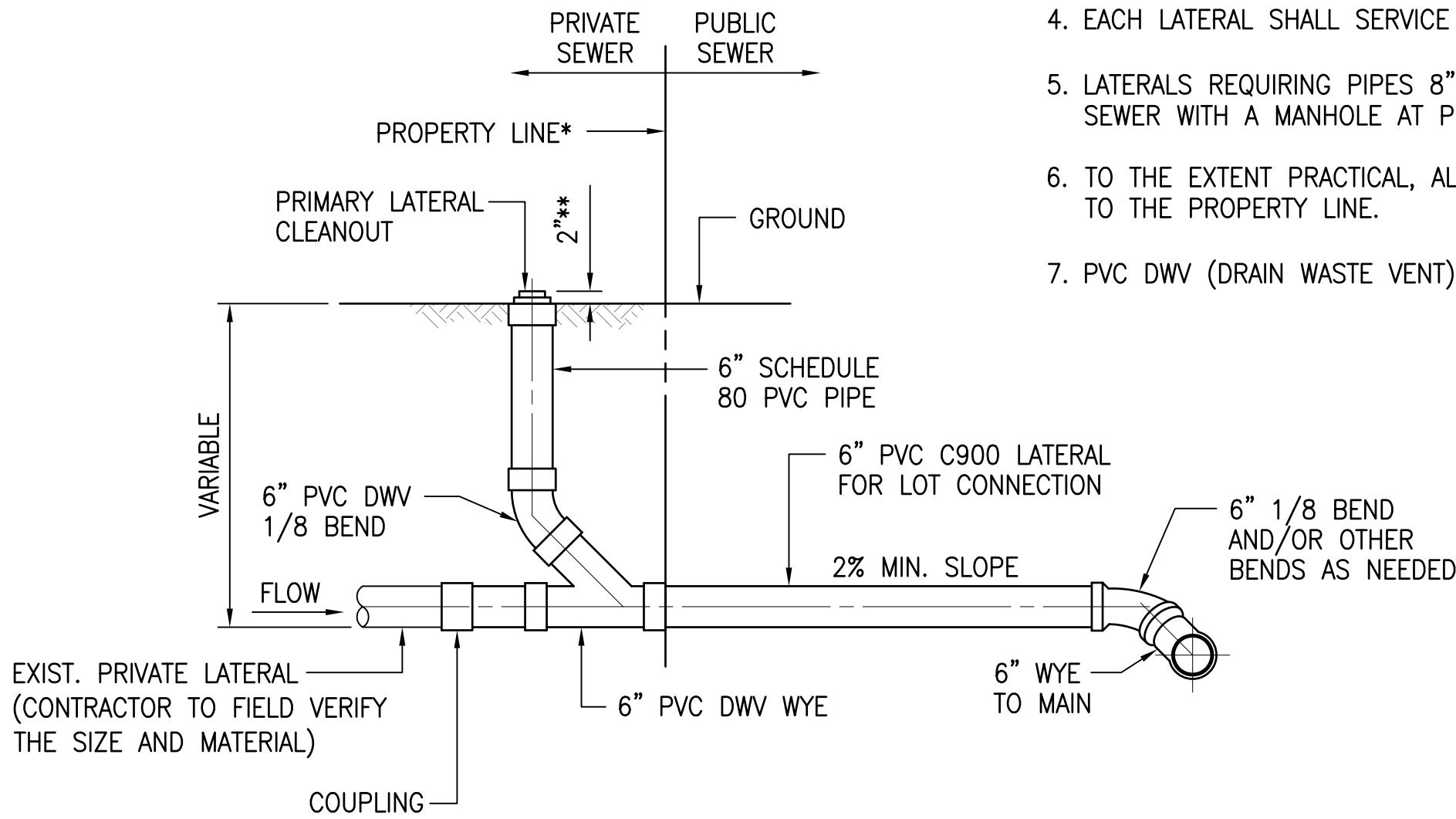
2 ADVANCE RISER CONNECTION – TYPE 2
(AFTER LATERAL INVERT IS DETERMINED)
C-24 NOT TO SCALE



- * EASEMENT BOUNDARY WHERE APPLICABLE (TYP. FOR ALL DETAILS)
- ** FLUSH IN PAVED AREAS OR CONCRETE SLAB
- *** APPLIES TO CLEANOUT LOCATION

NOTES:

1. LOCATE ALL EXISTING PRIMARY LATERAL CLEANOUTS TO BE REPLACED PRIOR TO INSTALLATION OF NEW CLEANOUTS AND SERVICE LATERALS.
2. REPLACE THE EXISTING PRIMARY LATERAL CLEANOUTS WITH DETAIL 2 OR DETAIL 3 ON THIS SHEET (PER FIELD CONDITIONS).
3. PERMISSION IS TO BE SECURED FROM PROPERTY OWNER BEFORE CONSTRUCTION AT PROPERTY LINE IS STARTED.
4. EACH LATERAL SHALL SERVICE ONLY ONE LOT.
5. LATERALS REQUIRING PIPES 8 inch AND LARGER SHALL BE DESIGNED AS A BRANCH SEWER WITH A MANHOLE AT PROPERTY LINE.
6. TO THE EXTENT PRACTICAL, ALL LATERALS SHALL BE CONSTRUCTED PERPENDICULAR TO THE PROPERTY LINE.
7. PVC DWV (DRAIN WASTE VENT) FITTINGS SHALL BE SCHEDULE 80.



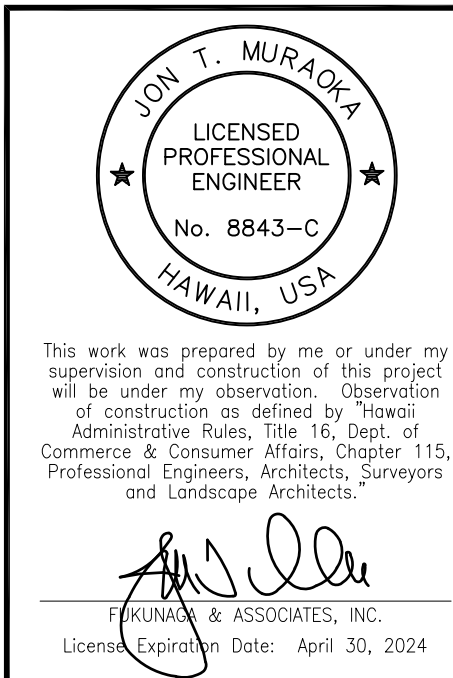
3 DETAIL AT PROPERTY LINE AND MAIN LINE
C-24 NOT TO SCALE

APPROVAL:

CHIEF, WASTEWATER BRANCH, DPP
(FOR CONFORMANCE TO CITY STANDARDS)

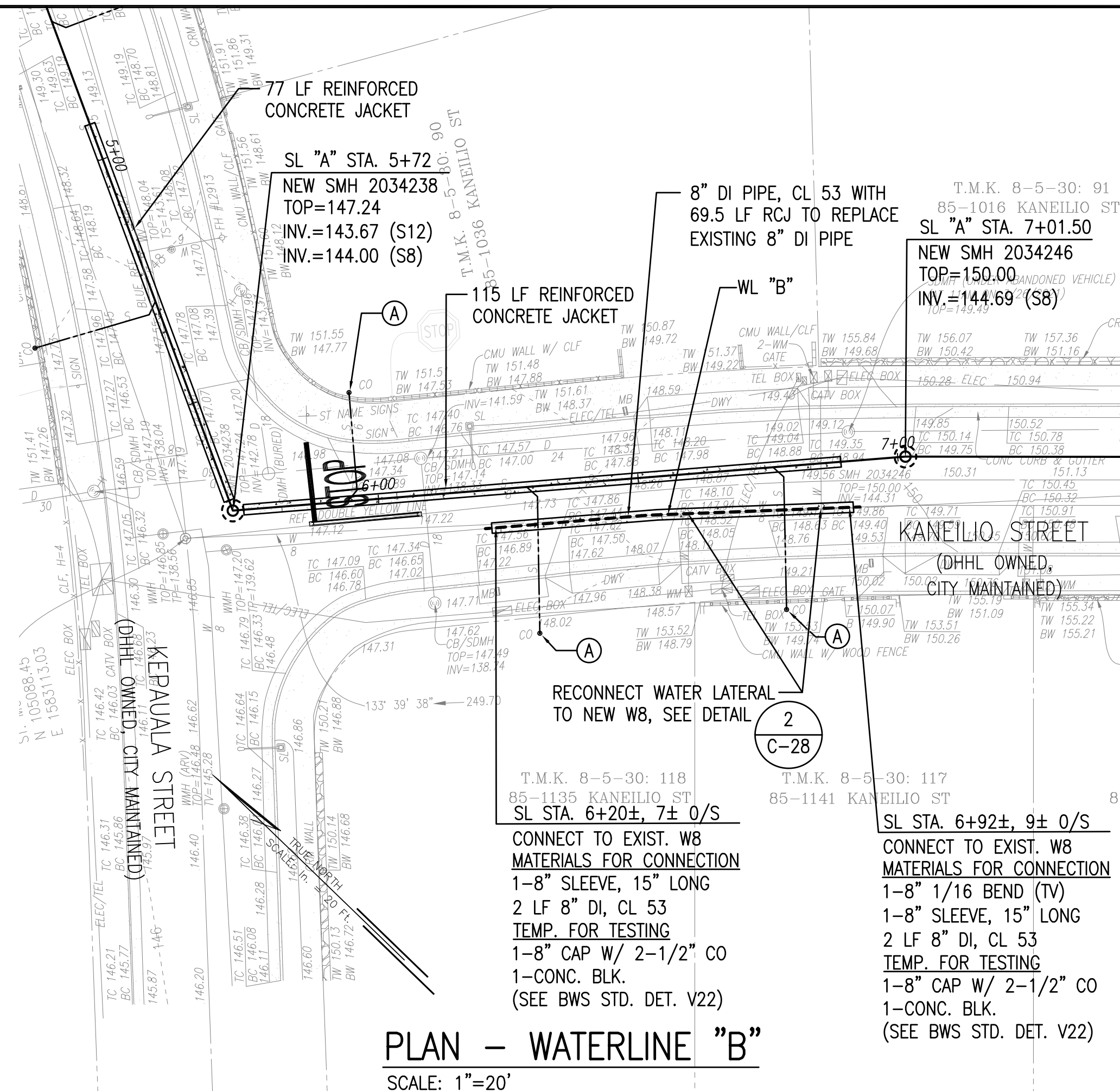
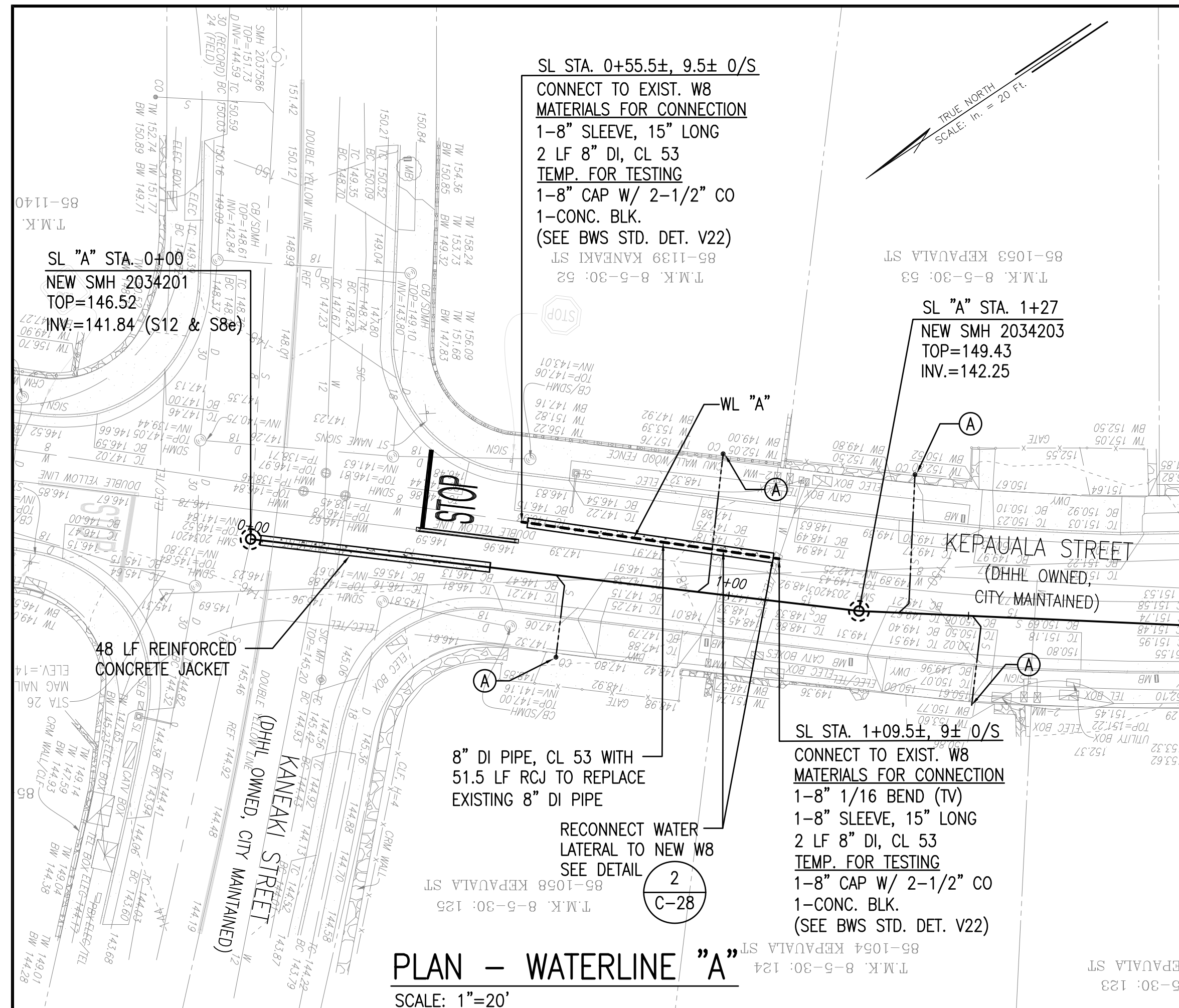
DATE

0 5' 10' 15'
SCALE: 1"=5'-0"



REVISION	DATE	BRIEF	BY	APPROVED
DEPARTMENT OF HAWAIIAN HOME LANDS STATE OF HAWAII				
PROJECT: WEST OAHU SEWER IMPROVEMENTS WAIANAE SUBDIVISION				
ITEM: SEWER DETAILS				
DESIGNED BY: WC		CHECKED BY: JM		
DRAWN BY: JT				
APPROVED:				
CHIEF		DATE		
FUKUNAGA AND ASSOCIATES, INC. Consulting Engineers				

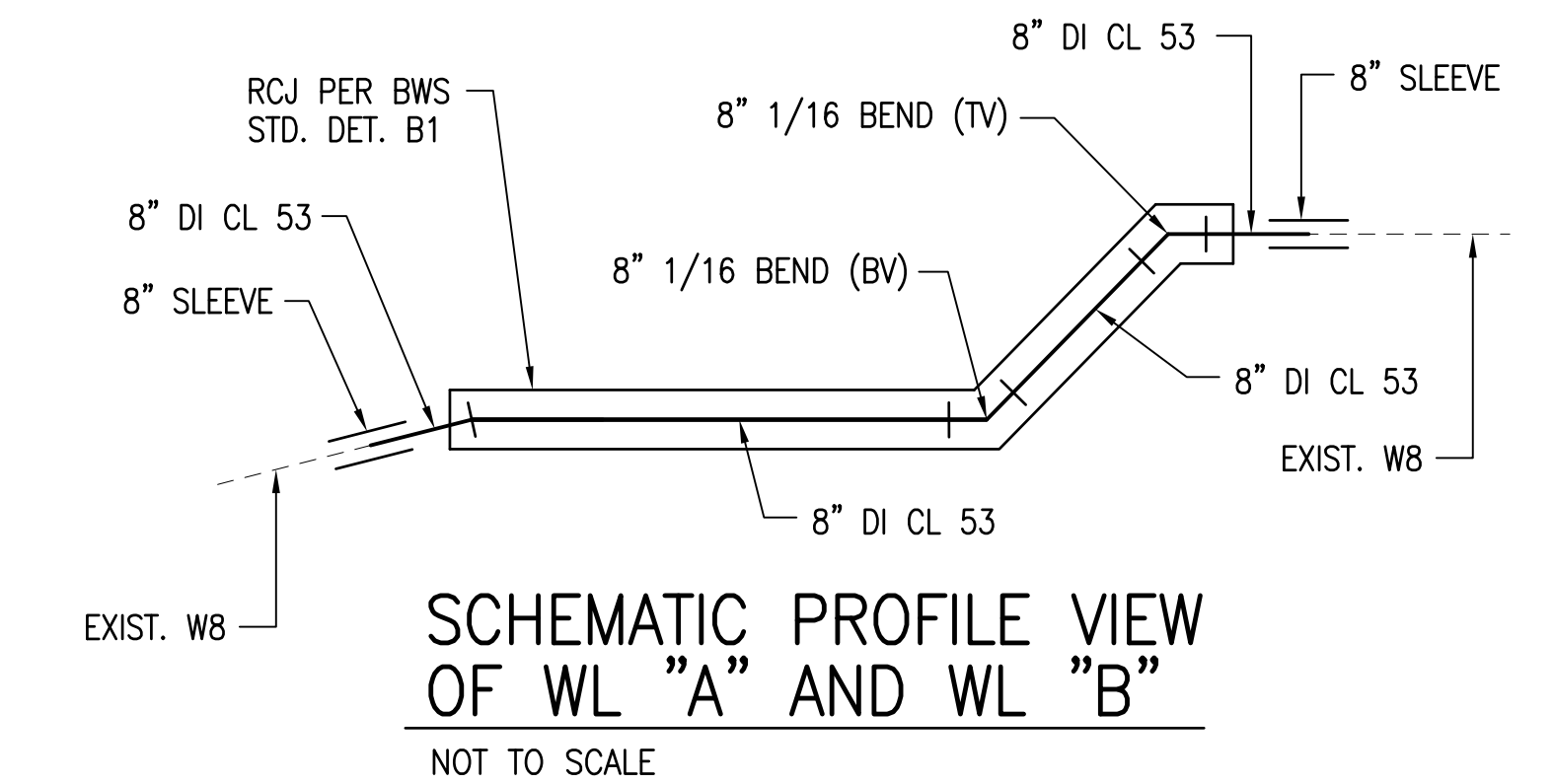
IFB-22-HHL-001



1. TO LOWER THE EXISTING WATER MAINS AND LATERALS, THE CONTRACTOR SHALL FOLLOW SECTION 302.30, "CONNECTIONS, RELOCATIONS & LOWERING OF WATER MAINS AND LATERALS", OF THE BWS WATER SYSTEM STANDARDS, DATED 2002.
2. CONSTRUCT NEW WATER MAINS AND LATERALS AT THE SAME HORIZONTAL ALIGNMENT AS THE EXISTING.
3. NEW 8" WATER MAIN SHALL BE DUCTILE IRON, AWWA C151, CLASS 53, BONDED DIELECTRIC COATING.
4. CONTRACTOR SHOULD POTHOLE ALONG WATER MAINS AND LATERALS TO IDENTIFY ANY UTILITY CONFLICT AT THE CROSSINGS PRIOR TO TRENCH EXCAVATION FOR REPLACEMENT.
5. REFER TO WATER NOTES ON G-8 FOR THE REQUIRED APPROVAL FROM THE BOARD OF WATER SUPPLY PRIOR TO STARTING THE WATER LINE WORK.
6. COORDINATE WITH THE BWS FOR SHUTDOWN OF VALVES AND SERVICES TO ISOLATE THE EXISTING WATER LINES TO BE REPLACED. THE MAXIMUM ALLOWABLE SERVICE DOWNTIME IS 6 HOURS.
7. RCJ SHALL BE INSTALLED FLUSHED AT THE PIPE BELL OR HALFWAY THROUGH MJ FITTING TO FACILITATE REMOVAL OF BOLTS PER BWS STANDARD DETAIL B1.

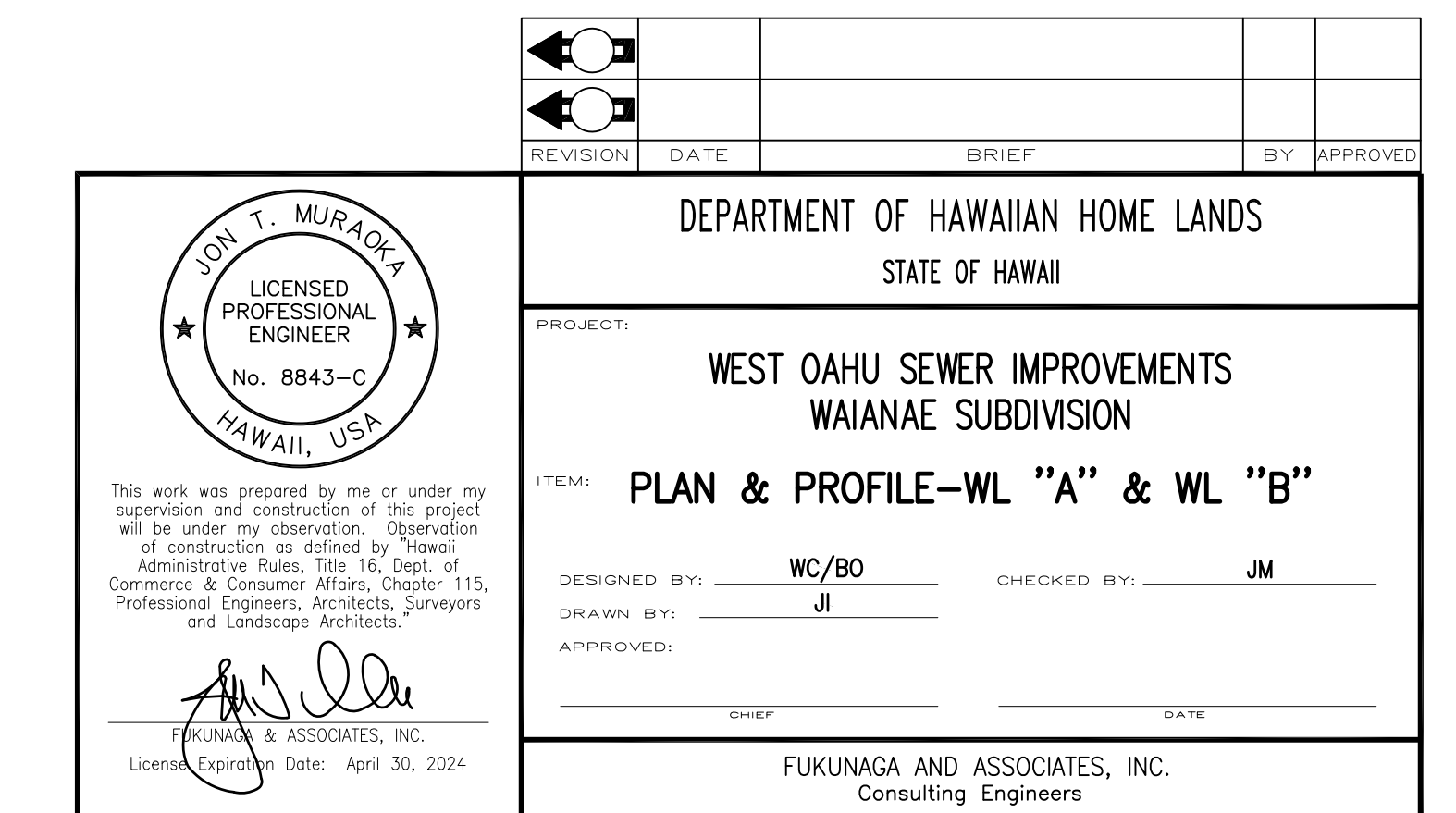
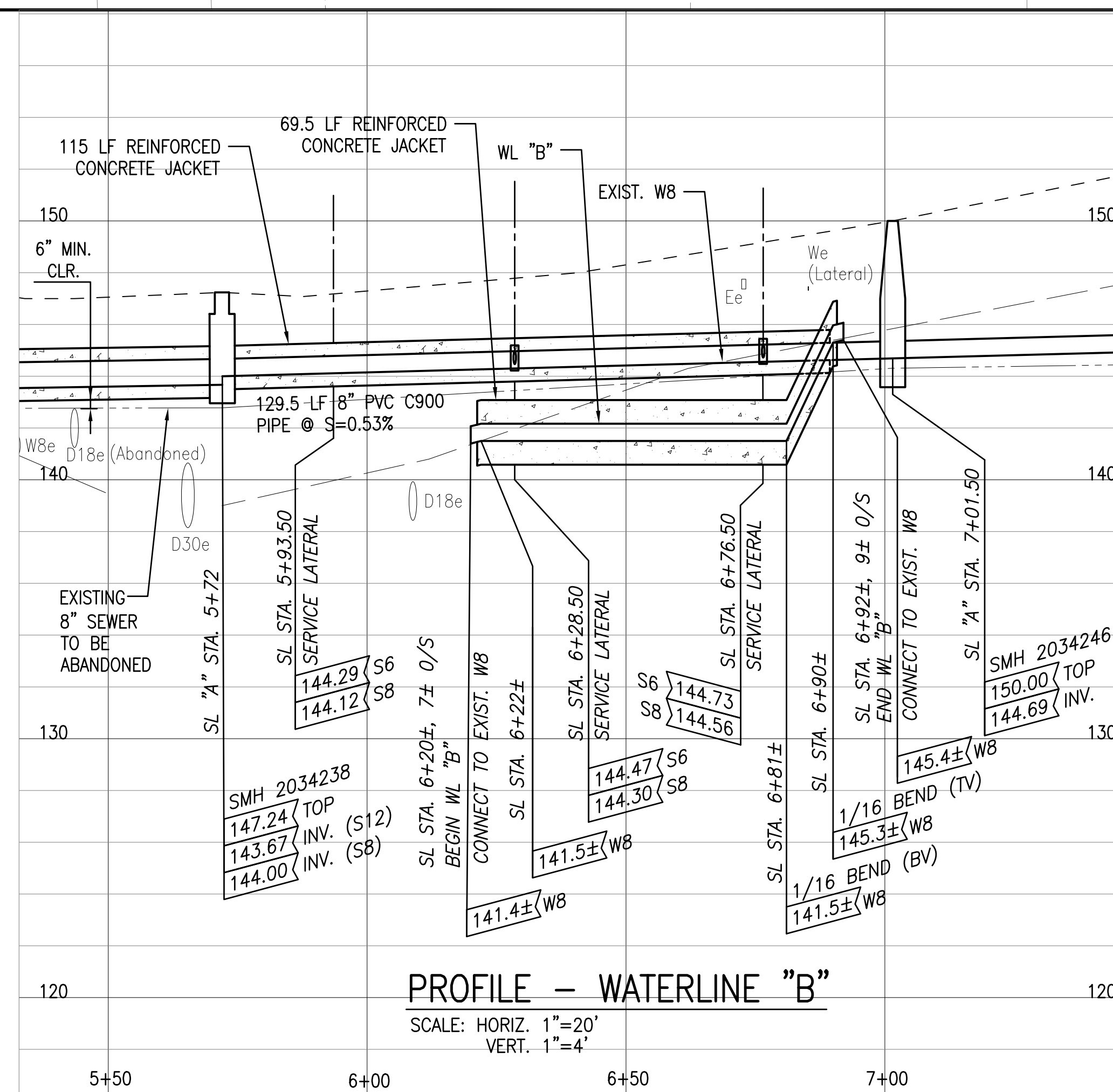
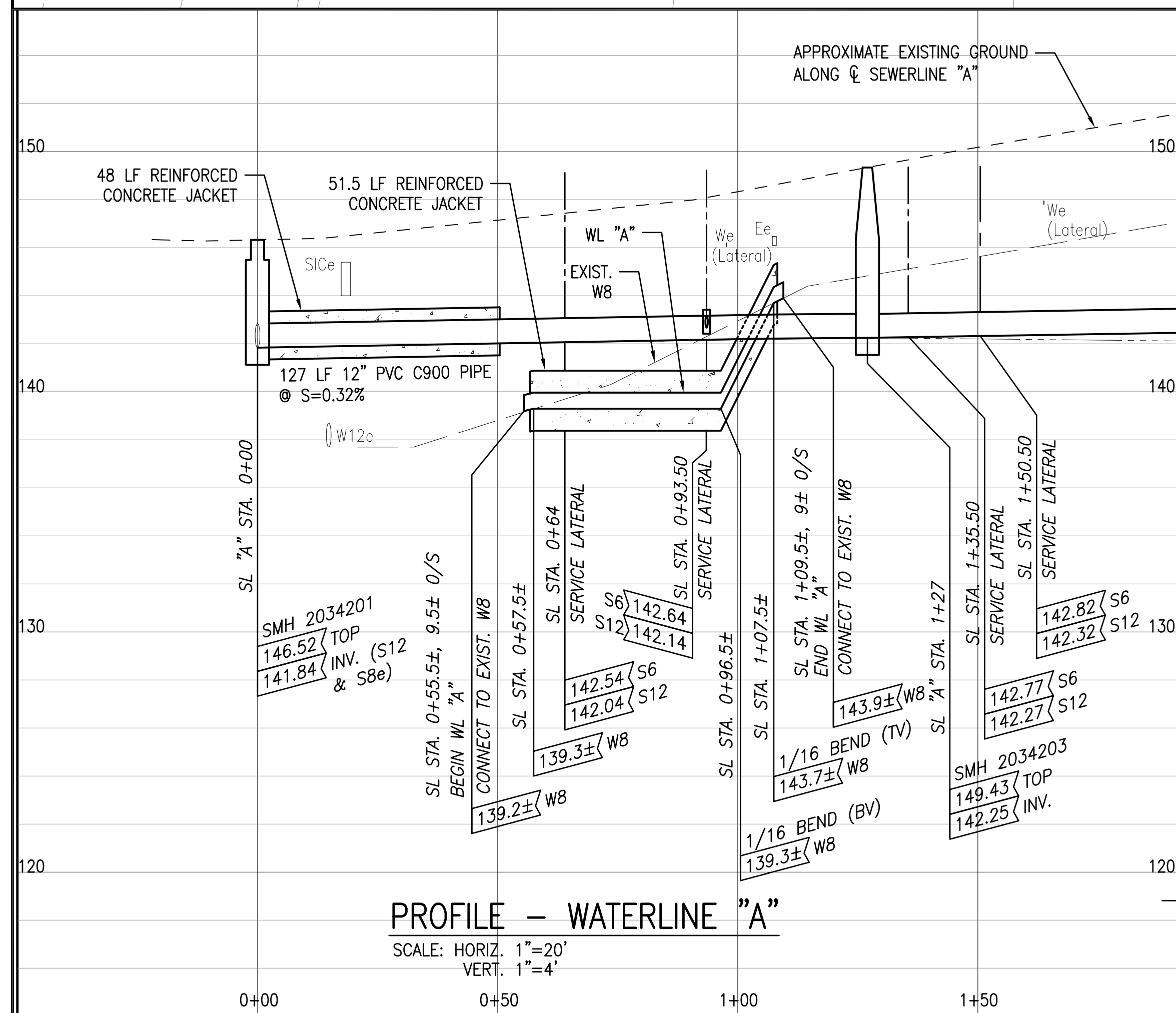
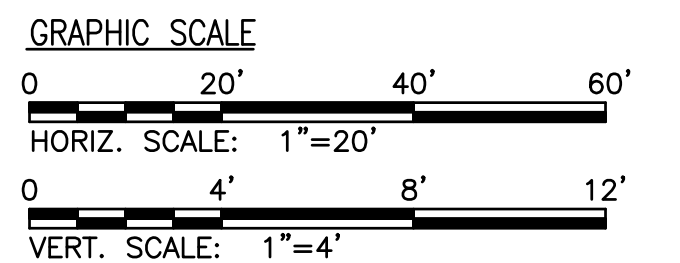
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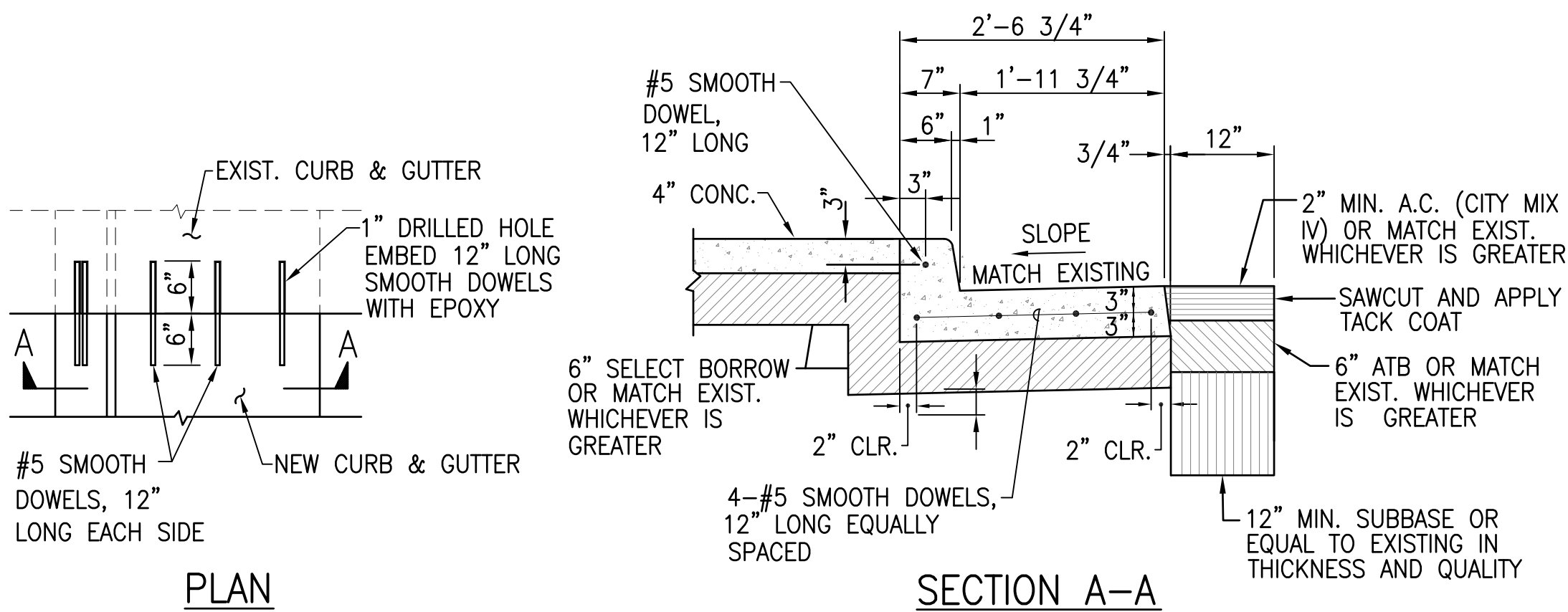
0+00 NEW SEWER MAIN (A) REPLACE EXISTING LATERAL AND CLEANOUT,
 ----- NEW SEWER LATERAL AND CONNECT TO NEW SEWER MAIN. REFER
 TO C-24. NO CHIMNEYS ALLOWED.
 (S) NEW SEWER MANHOLE ---S--- EXISTING SEWER
 (S) NEW WATER LINE (S) EXISTING SEWER MANHOLE



APPROVAL:

CHIEF, WASTEWATER BRANCH, DPP (FOR CONFORMANCE TO CITY STANDARDS)	DATE
CHIEF, CIVIL ENGINEERING BRANCH, DPP	DATE
MANAGER & CHIEF ENGINEER, BWS (FOR WORK AFFECTING BWS FACILITIES IN CITY/STATE R-O-W AND BWS EASEMENT ONLY)	DATE
CHIEF, TRAFFIC REVIEW BRANCH, DPP (FOR WORK WITHIN CITY R-O-W ONLY)	DATE

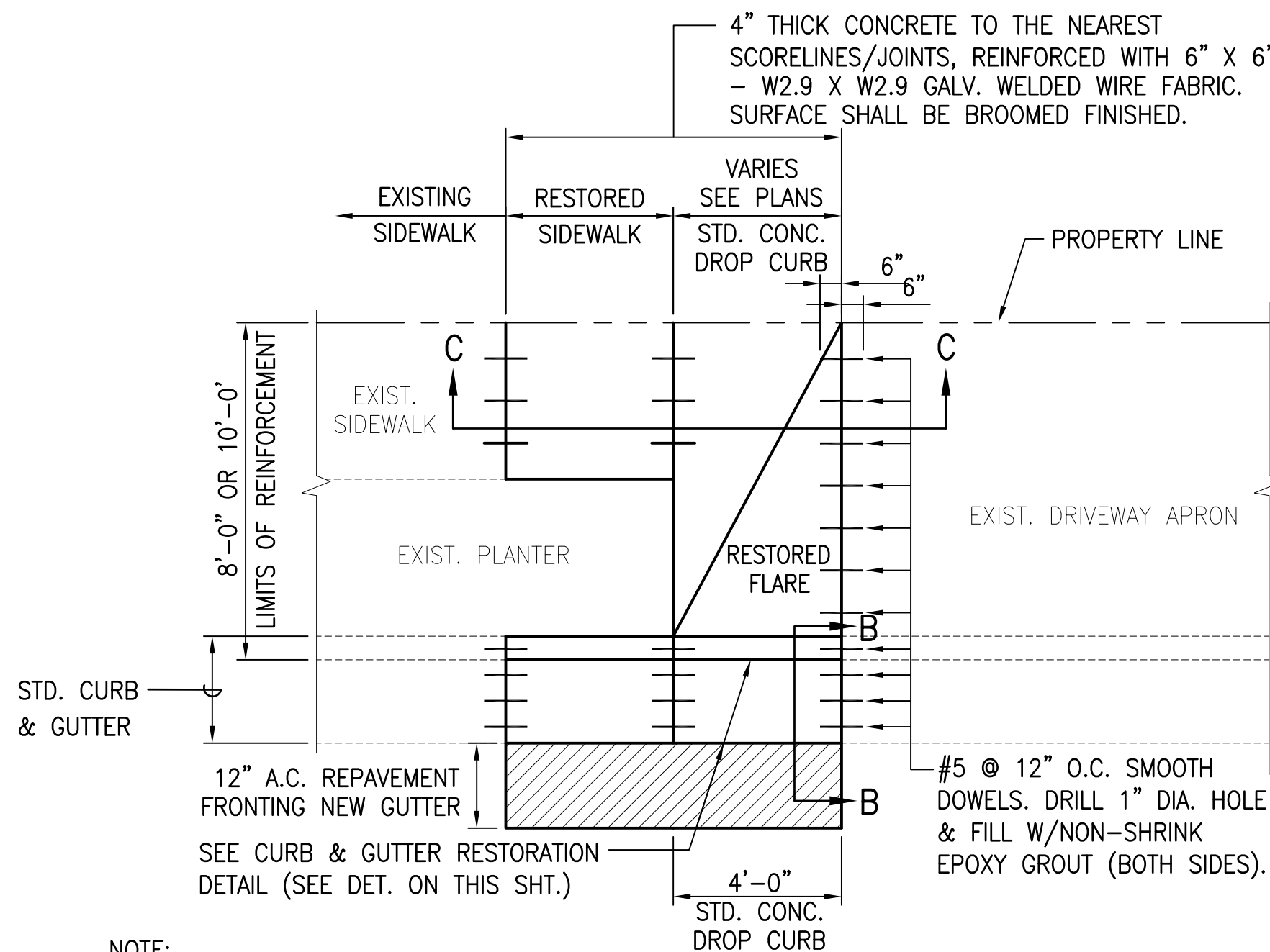




NOTE:

FOR DIMENSIONS OF CURB & GUTTER, SEE DPW STD. DETAIL R-4.
REPLACEMENT CURB & GUTTER SHALL MATCH EXISTING.

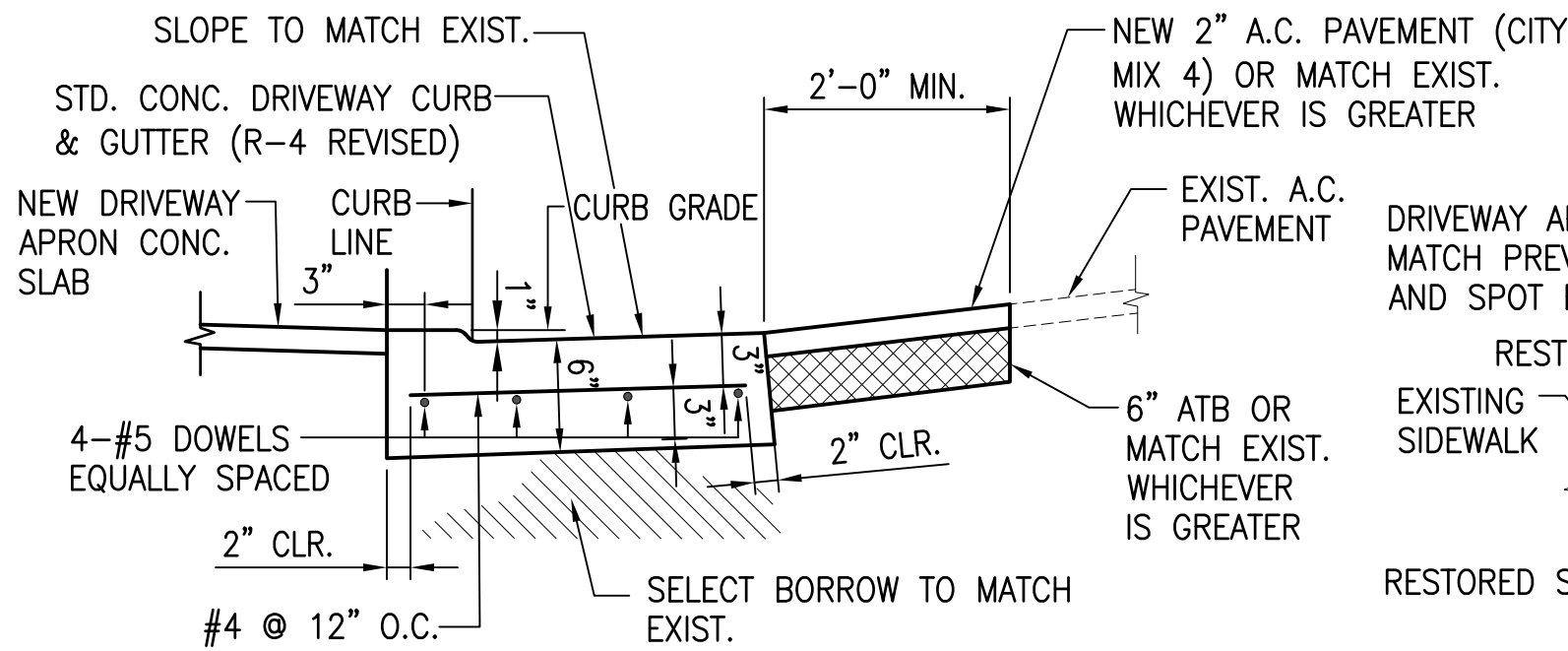
1 CURB AND GUTTER CONNECTION DETAIL
C-26 NOT TO SCALE



NOTE:

CONTRACTOR SHALL COMPLY WITH JOINTING REQUIREMENTS OF THE CITY & COUNTY OF HONOLULU, DEPARTMENT OF PLANNING & PERMITTING ENGINEERING AND POLICY MEMORANDUM NO. CEB-1-09, DATED APRIL 6, 2009 AND STANDARD DETAIL R-29.
FLARE RESTORATION SHALL MATCH PREVIOUSLY EXISTING SLOPES, DIMENSIONS AND SPOT ELEVATIONS.

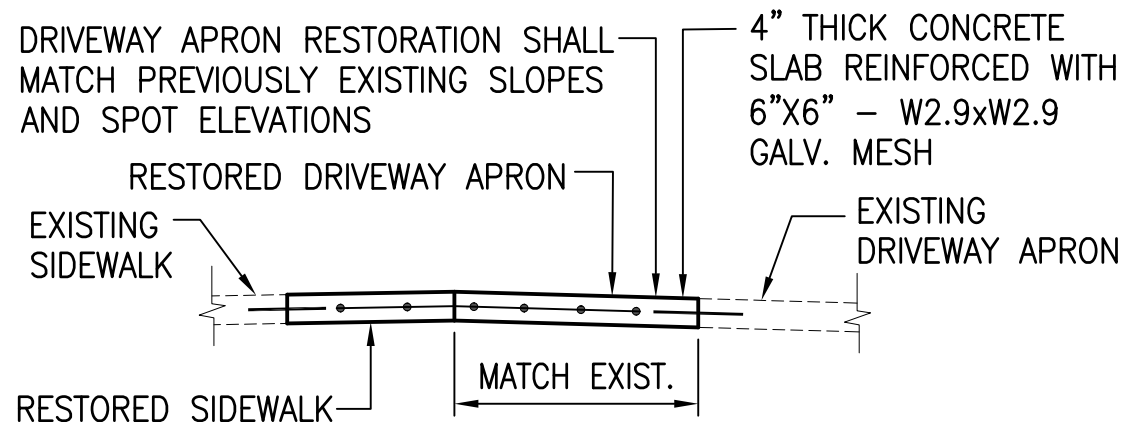
SECTION B-B



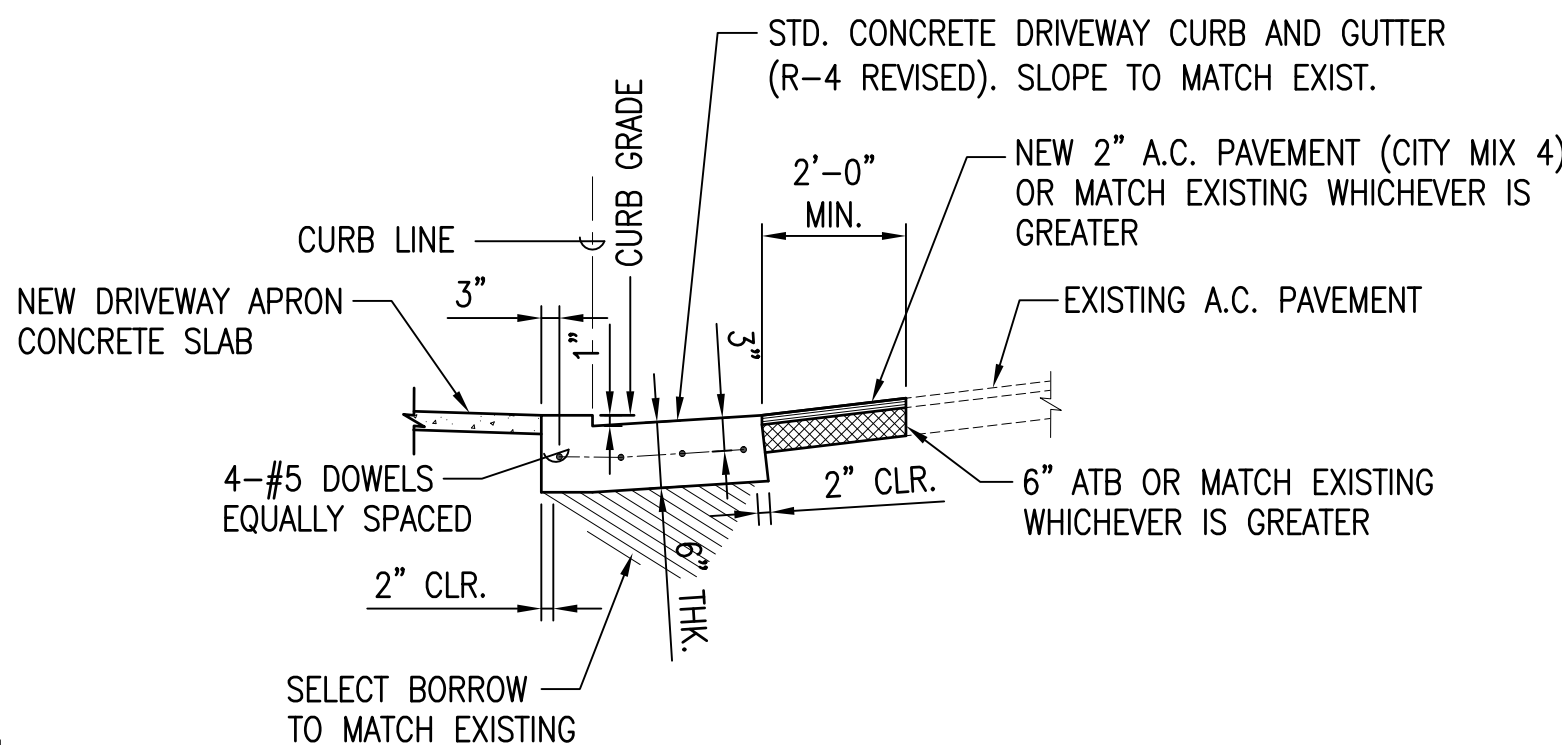
SECTION B-B

2 DRIVEWAY APRON FLARE RESTORATION DETAIL
C-26 NOT TO SCALE

SECTION C-C



SECTION A-A

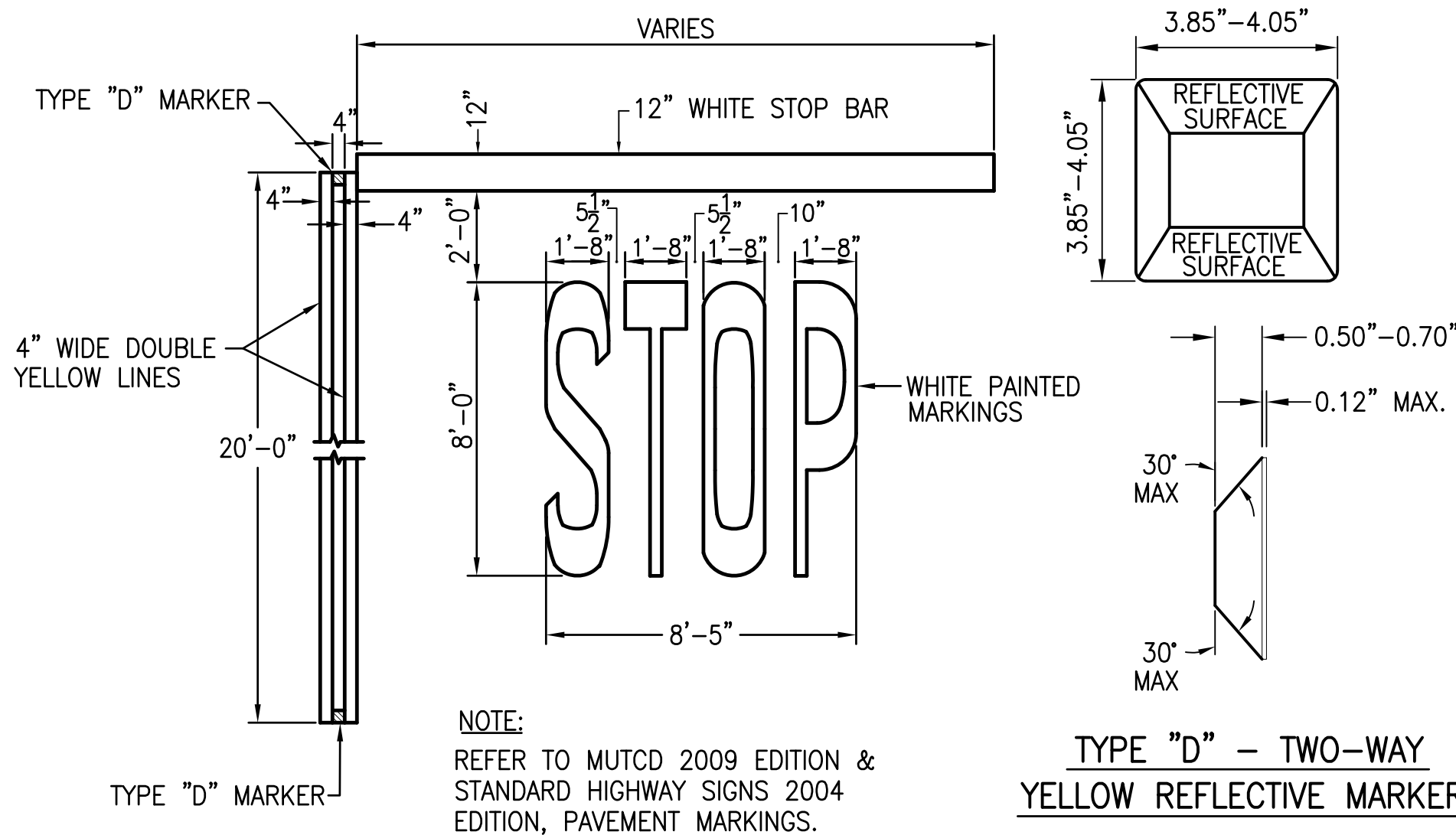


NOTES:

- ALL DRIVEWAY APRONS SHALL BE CONSTRUCTED PER CITY AND COUNTY STANDARD DETAIL R-29.
- REFER TO C-29, C-30 AND C-31 FOR THE RESTORATION LIMITS. CONTRACTOR TO ADJUST TO SUIT THE FIELD CONDITIONS.

SECTION B-B

3 PARTIAL DRIVEWAY APRON RESTORATION DETAIL
C-26 NOT TO SCALE

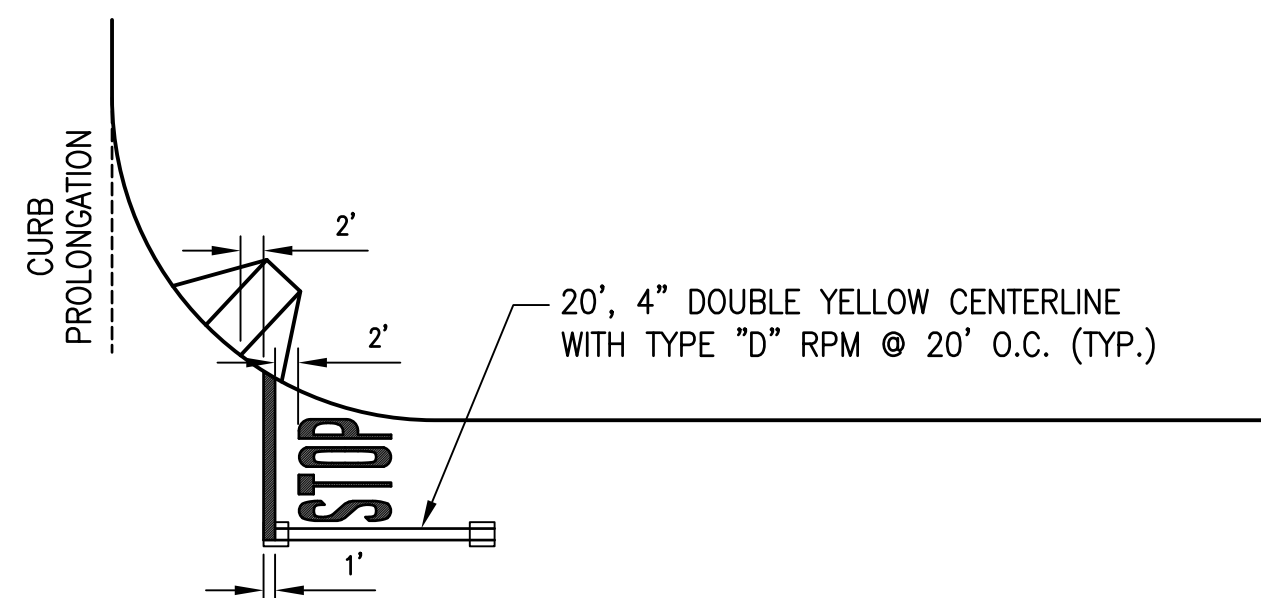


NOTE:

REFER TO MUTCD 2009 EDITION & STANDARD HIGHWAY SIGNS 2004 EDITION, PAVEMENT MARKINGS.

TYPE \"D\" - TWO-WAY
YELLOW REFLECTIVE MARKER

4 STANDARD VERSION PAVEMENT MARKINGS DETAIL
C-26 NOT TO SCALE



NOTES:

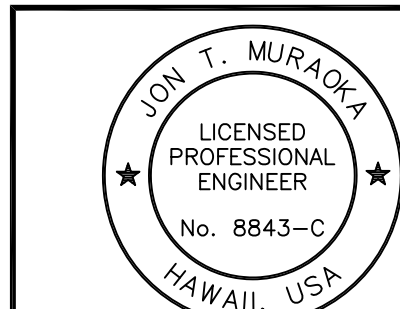
- STANDARD VERSION FOR ROADWAY WIDTH GREATER THAN OR EQUAL TO 20 FEET.
- PLACEMENT OF STOP BAR: MINIMUM 10-FOOT CLEAR FROM CURB PROLONGATION OR 2-FOOT CLEAR FROM BOTTOM AREA OF WHEELCHAIR RAMP, WHICHEVER IS GREATER.

5 PLACEMENT OF STOP BAR DETAIL
C-26 NOT TO SCALE

APPROVAL:

CHIEF, CIVIL ENGINEERING BRANCH, DPP DATE

CHIEF, TRAFFIC REVIEW BRANCH, DPP DATE
(FOR WORK WITHIN CITY R-O-W ONLY)



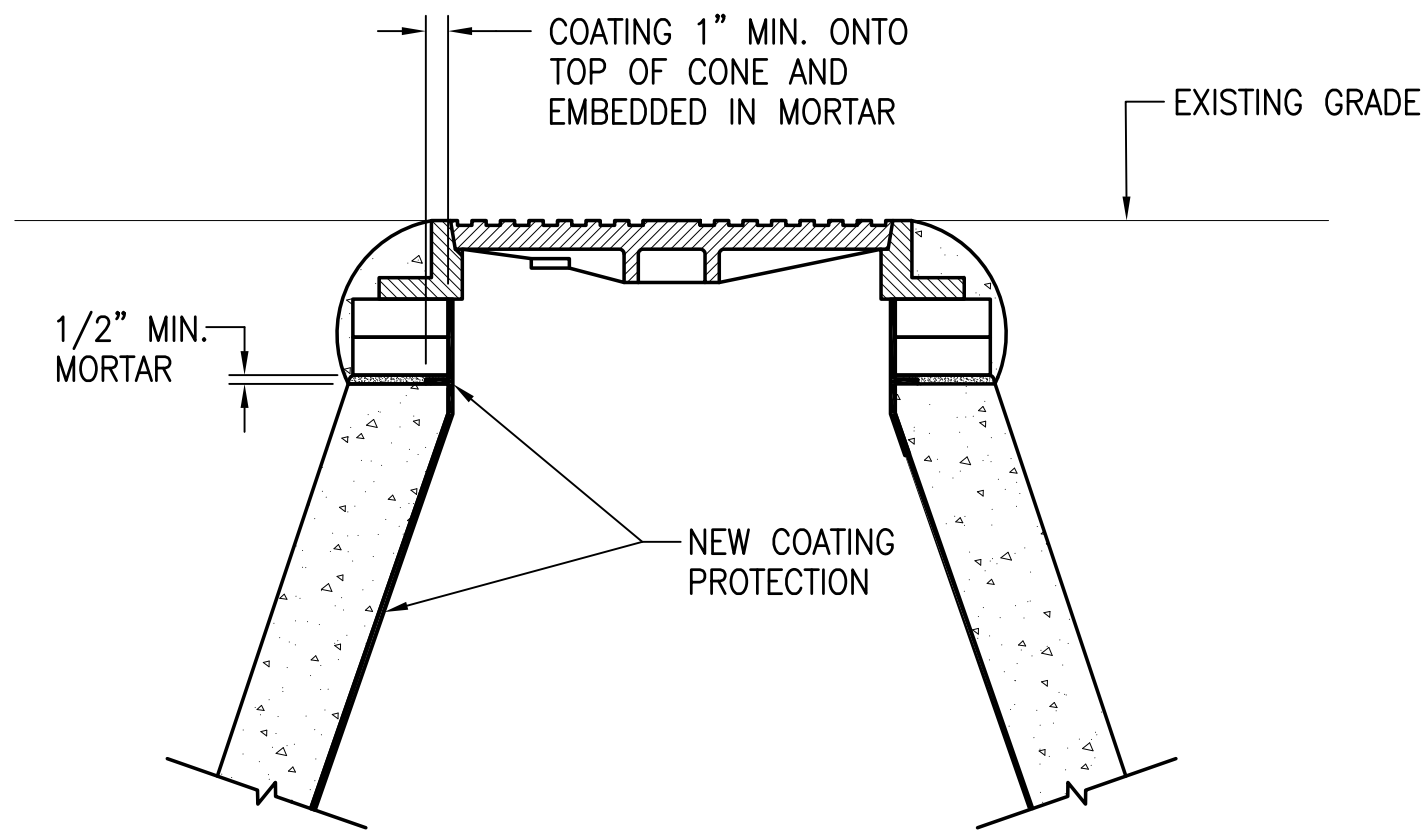
This work was prepared by me or under my supervision and construction of this project will be under my observation. Observation of construction as defined by Hawaii Administrative Rules, Title 16, Dept. of Commerce & Consumer Affairs, Chapter 115, Professional Engineers, Architects, Surveyors and Landscape Architects.

FUKUNAGA & ASSOCIATES, INC.
License Expiration Date: April 30, 2024

REVISION	DATE	BRIEF	BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS STATE OF HAWAII	
PROJECT: WEST OAHU SEWER IMPROVEMENTS WAIANAE SUBDIVISION	
ITEM: MISCELLANEOUS DETAILS-1	
DESIGNED BY: WC	CHECKED BY: JM
DRAWN BY: JL	
APPROVED: [Signature]	
FUKUNAGA AND ASSOCIATES, INC. Consulting Engineers	

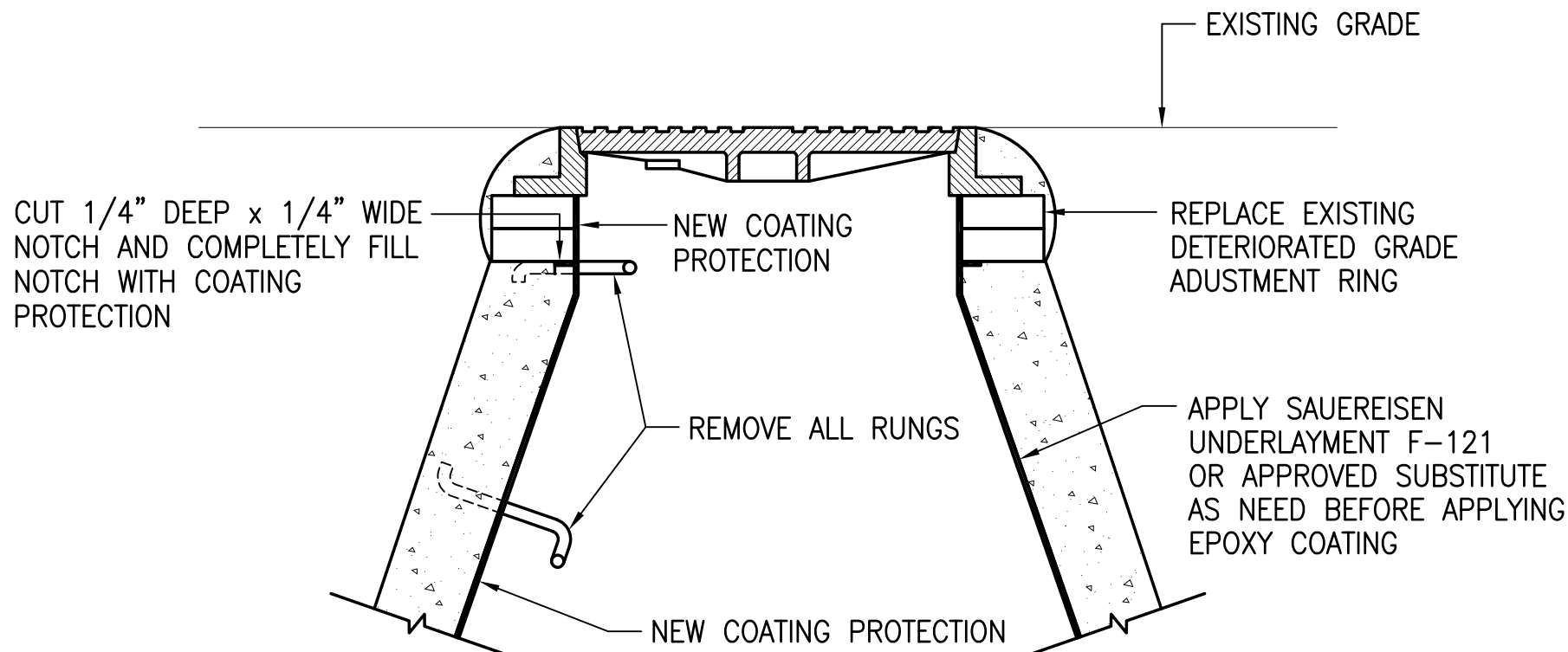
IFB-22-HHL-001



COATING PROTECTION OF INTERIOR
SURFACE OF BRICK GRADE COLLAR
FOR NEW SEWER MANHOLES

1
C-27

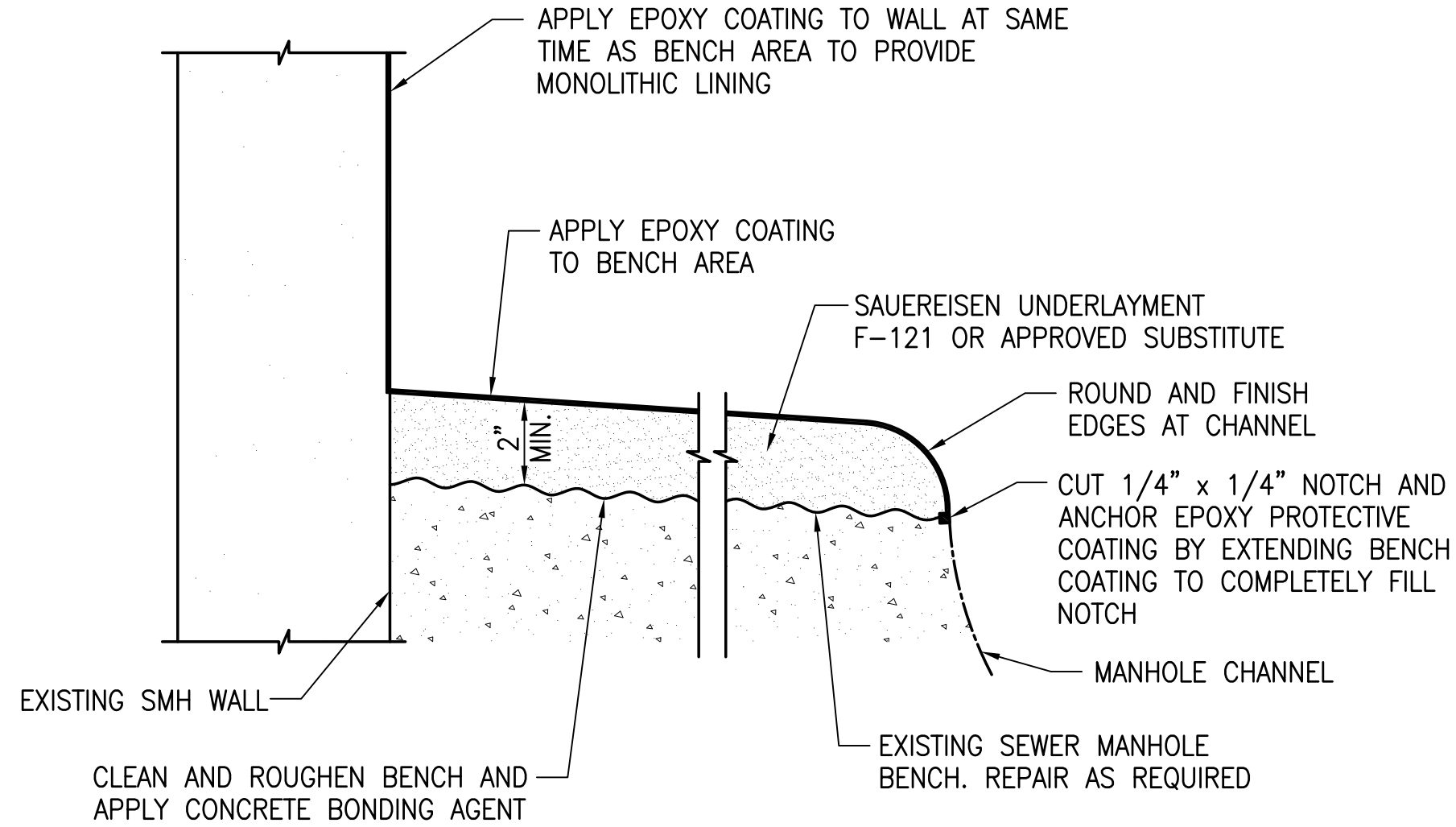
NOT TO SCALE



COATING PROTECTION OF INTERIOR SURFACE
OF BRICK GRADE COLLAR FOR EXISTING
SEWER MANHOLES TO BE REHABILITATED

3
C-27

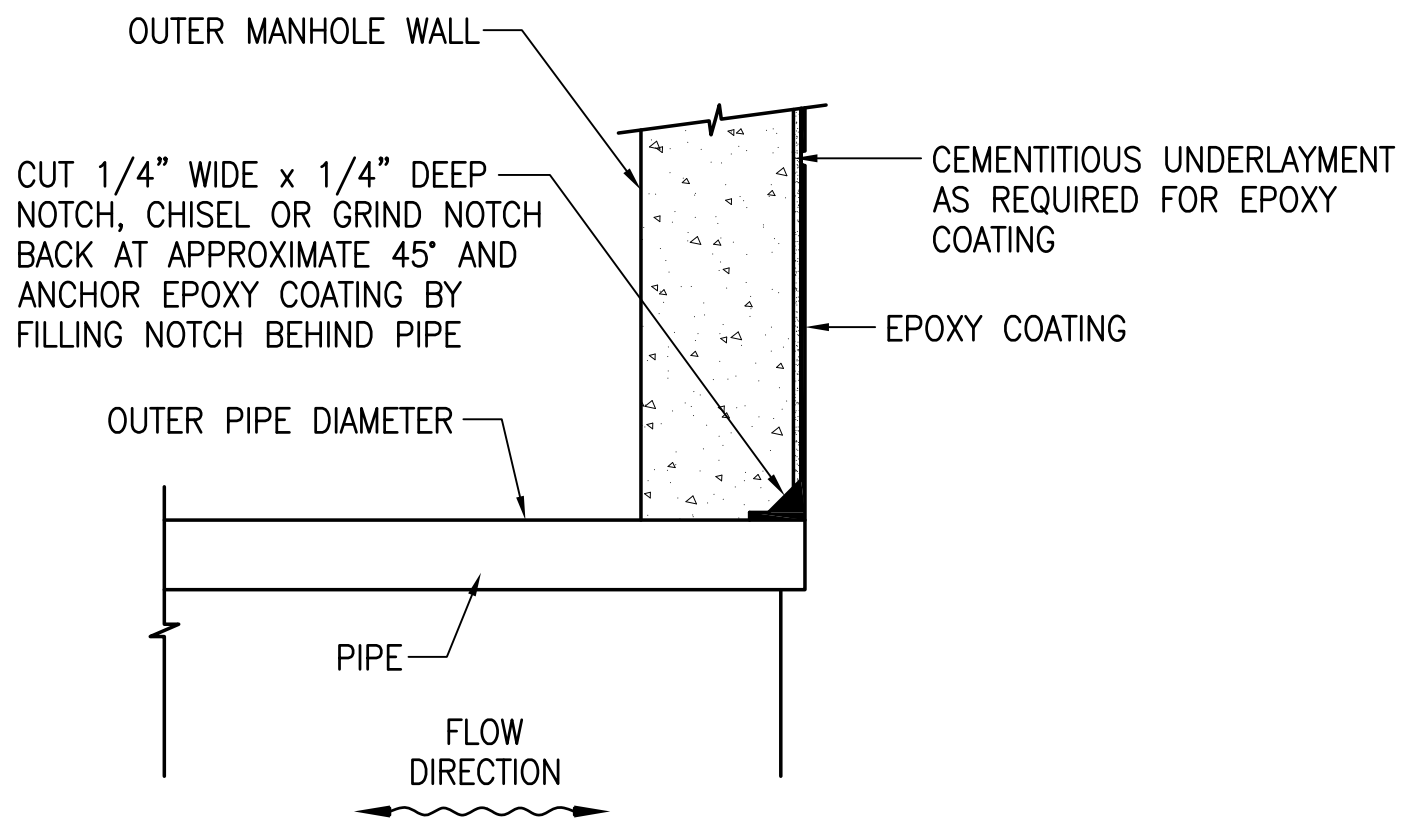
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EPOXY COATING AT EXIST. MANHOLE BENCH

5
C-27

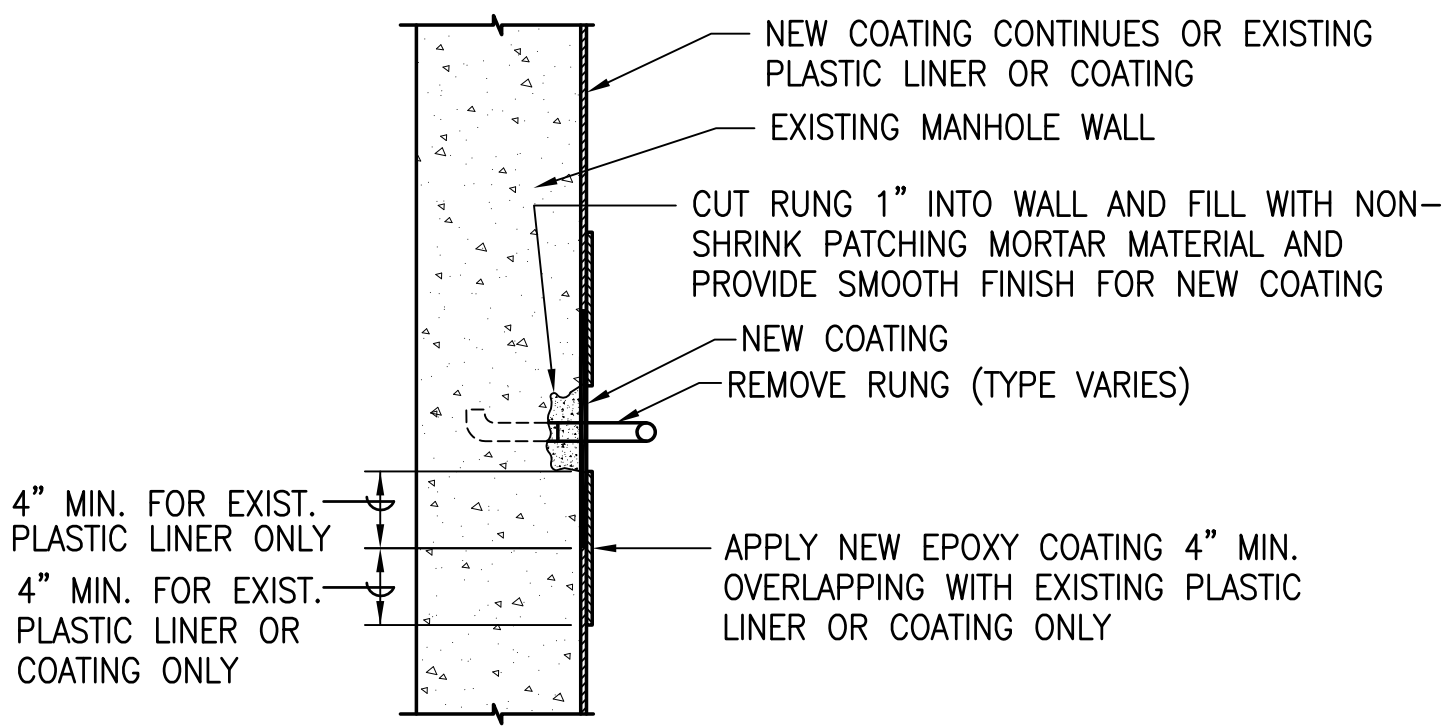
NOT TO SCALE



EPOXY COATING TERMINATION AT
MANHOLE PIPE PENETRATION (WITHOUT
EXISTING COATING OR PLASTIC LINER)

2
C-27

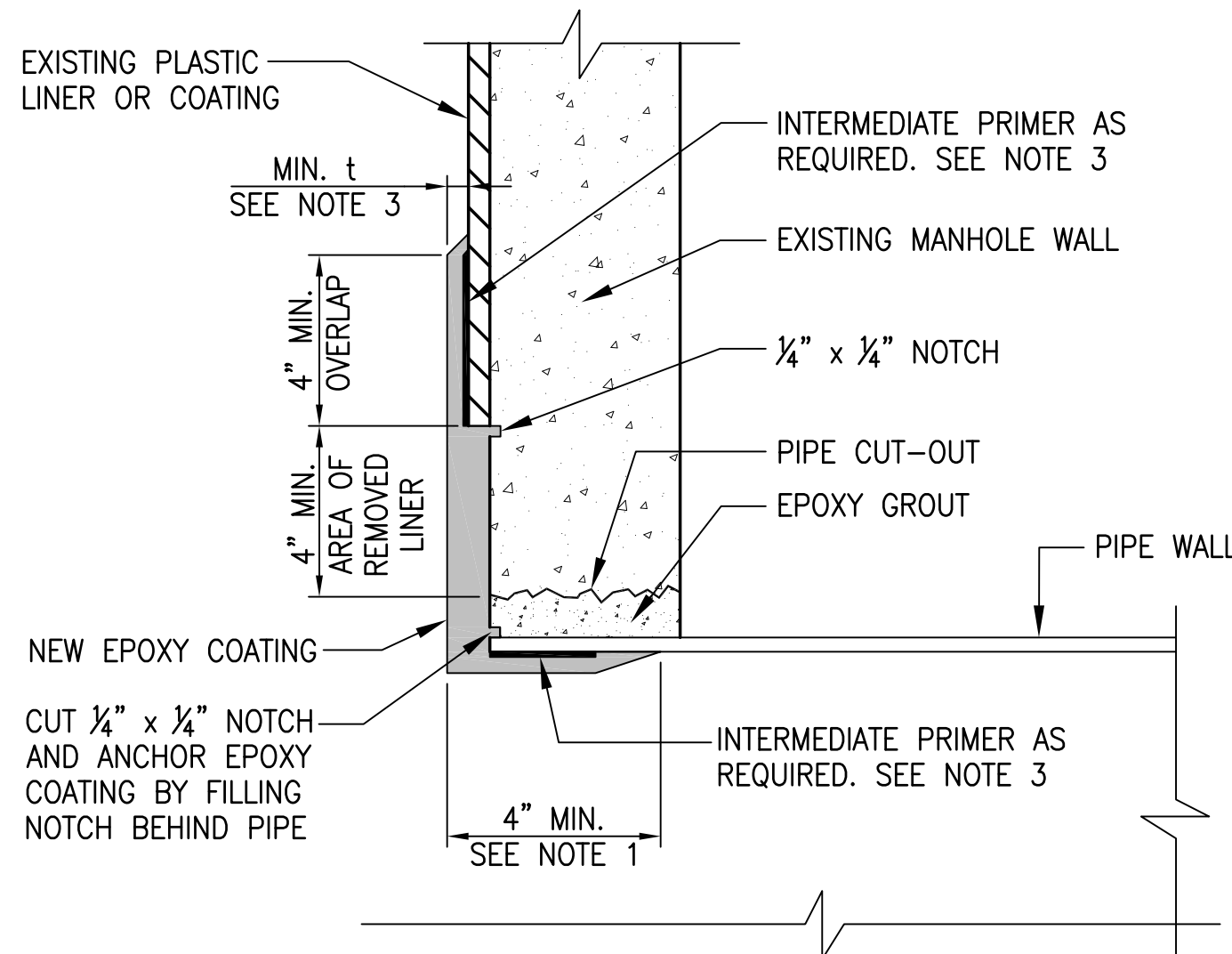
NOT TO SCALE



EXISTING MANHOLE
RUNG REMOVAL

4
C-27

NOT TO SCALE



EPOXY COATING TERMINATION AT
MANHOLE PIPE PENETRATION (WITH
EXISTING COATING OR PLASTIC LINER)

6
C-27

NOT TO SCALE

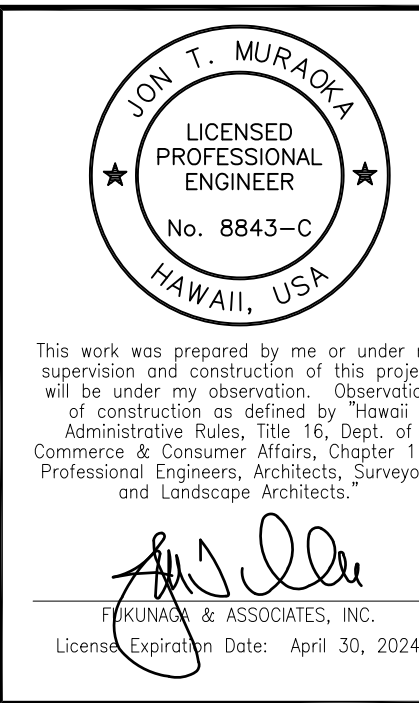
NOTES:

- EPOXY COATING EXTENDING BEYOND NOTCH COVERING END AND INSIDE OF PIPE ONLY APPLIES TO PIPE HAVING A NON-CORROSION RESISTANT CROSS-SECTIONAL MATERIAL (EX. RCP, FRP). PREPARATION OF PIPE SURFACE SHALL FOLLOW THE COATING AND PRIMER MANUFACTURER'S RECOMMENDATIONS.
- FOR MANHOLES WITH EITHER EXISTING PLASTIC LINER OR COATING PROTECTION, REMOVAL OF THE PROTECTIVE SURFACE SHALL BE REQUIRED AS INDICATED ON THE PLAN DETAILS AND SPECIAL PROVISION SECTION 02631, "SEWER MANHOLE RECONSTRUCTION".
 - FOR MANHOLES WITH PLASTIC LINER, ANY EMBEDDED "T" ANCHOR SHALL BE CUT FLUSH WITH THE MANHOLE WALL WITH NO JAGGED EDGES. EXISTING LINER TO BE OVERLAPPED WITH EPOXY COATING (4" MIN.) SHALL BE CLEANED, THEN ABRASIVE-BLASTED OR SANDED WITH 60-GRIT SANDPAPER TO REMOVE GLOSS. SOLVENT WIPE LINER TO REMOVE ANY RESIDUE AND TO TACK THE SURFACE PRIOR TO APPLYING COATING.
 - FOR MANHOLES WITH COATING PROTECTION, ONLY DAMAGED COATED AREAS (EX. FLAKING, CRACKED, BLISTERED, ETC.) NEED TO BE REMOVED.
 - EXISTING PLASTIC LINER OR COATING TO BE OVERLAPPED WITH EPOXY COATING (4" MIN.) SHALL BE CLEANED BY WATER BLASTING (4,000 PSI), PRIOR TO APPLYING COATING.
- FOR PLASTIC LINER: INTERMEDIATE PRIMER RAVEN P-150 IS REQUIRED FOR RAVEN 405 TOPCOAT. FOR BINDING INTERMEDIATE PRIMER FOR OTHER TOPCOATS, FOLLOW THE MANUFACTURER'S RECOMMENDATION.

APPROVAL:

CHIEF, WASTEWATER BRANCH, DPP
(FOR CONFORMANCE TO CITY STANDARDS)

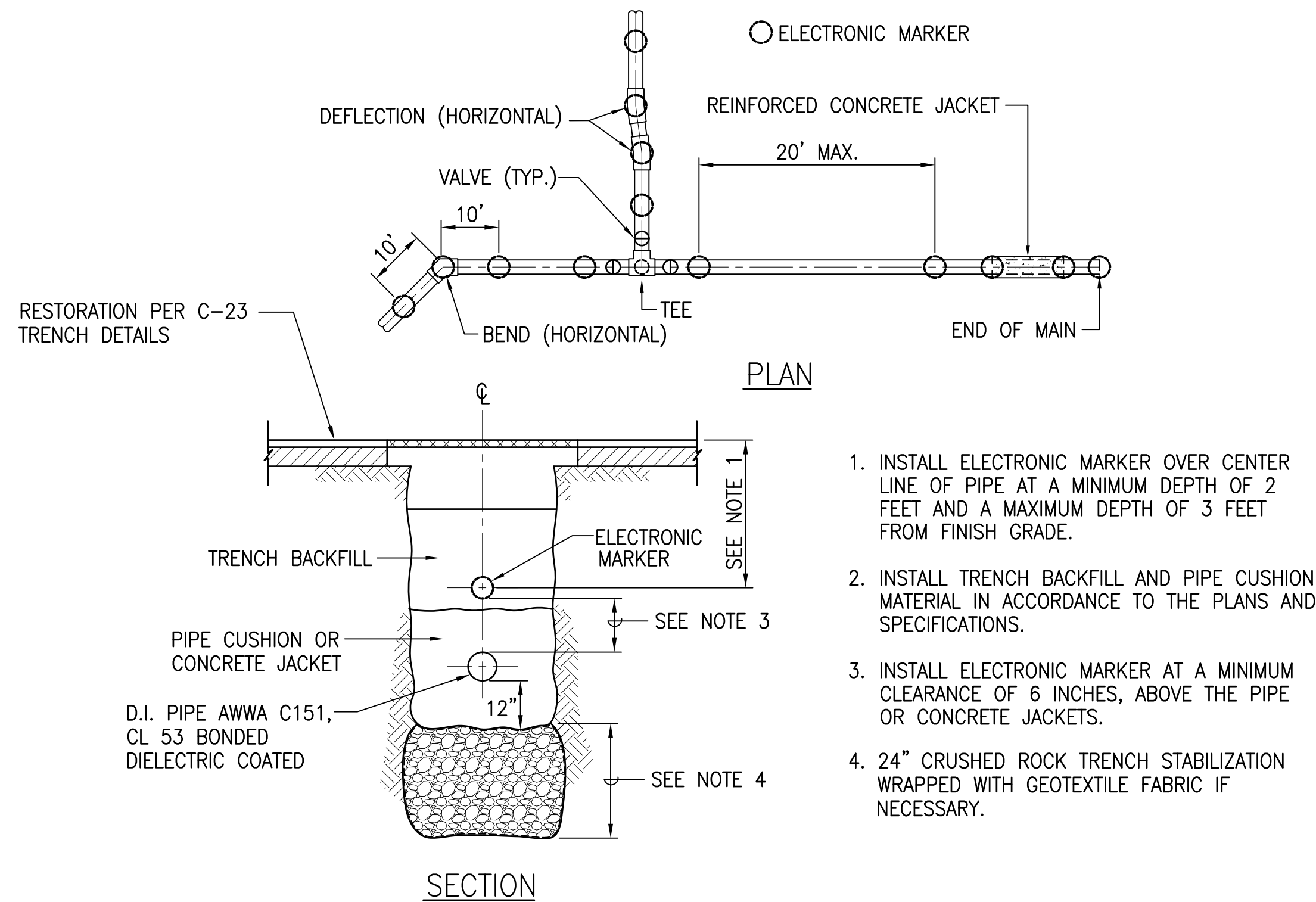
DATE



REVISION	DATE	BRIEF	BY	APPROVED
DEPARTMENT OF HAWAIIAN HOME LANDS STATE OF HAWAII				
PROJECT: WEST OAHU SEWER IMPROVEMENTS WAIANAE SUBDIVISION				
ITEM: MISCELLANEOUS DETAILS-2				
DESIGNED BY: WC		CHECKED BY: JM		
DRAWN BY: JL				
APPROVED:				
CHIEF		DATE		
FUKUNAGA AND ASSOCIATES, INC. Consulting Engineers				

IFB-22-HHL-001

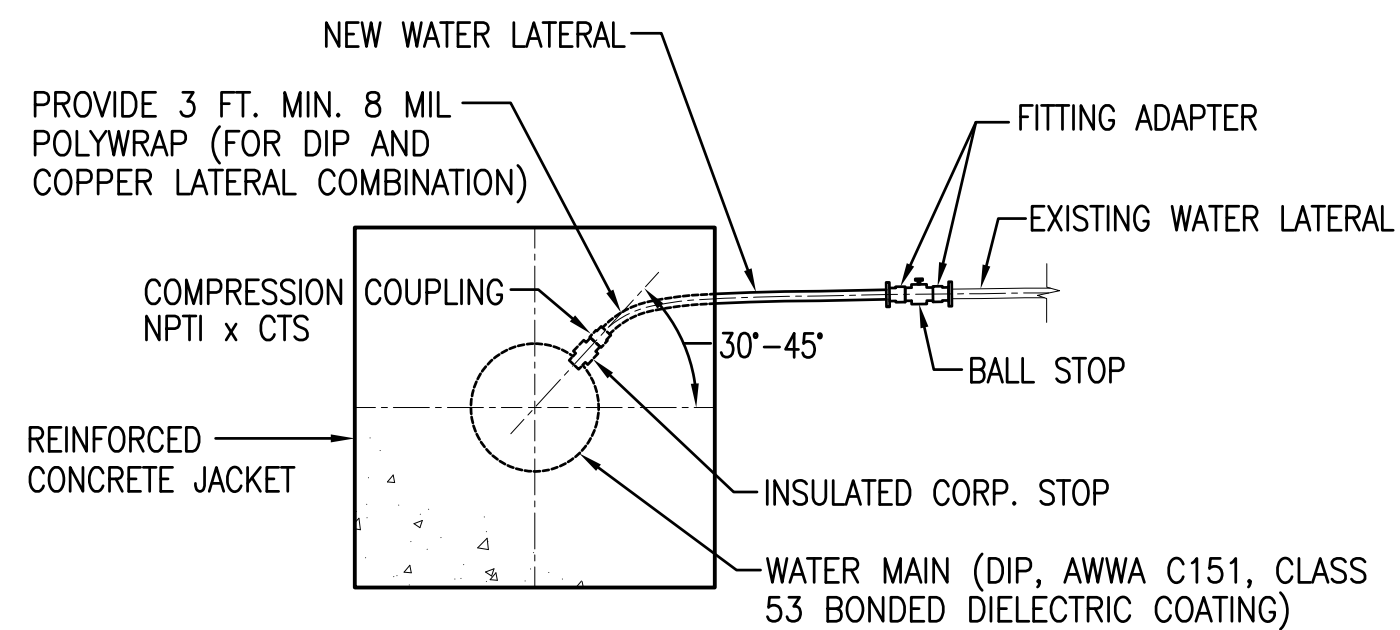
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Last plotted 7/7/2022 11:20:46 AM



1
C-28

TYPICAL TRENCH AND ELECTRONIC MARKER INSTALLATION (FOR WATER LINE)

NOT TO SCALE



NOTES:

- CONTRACTOR TO FIELD DETERMINE EXISTING WATER LATERAL SIZE AND MATERIAL PRIOR TO ORDERING NEW MATERIALS REQUIRED FOR THE CONNECTION. REFER TO C-25 FOR LATERAL RECONNECTION LOCATIONS.
- FOLLOW THE APPLICABLE BWS STANDARD DETAILS FROM L12 TO L22 FOR LATERAL RECONNECTION.

2
C-28

TYPICAL LATERAL RECONNECTION DETAIL

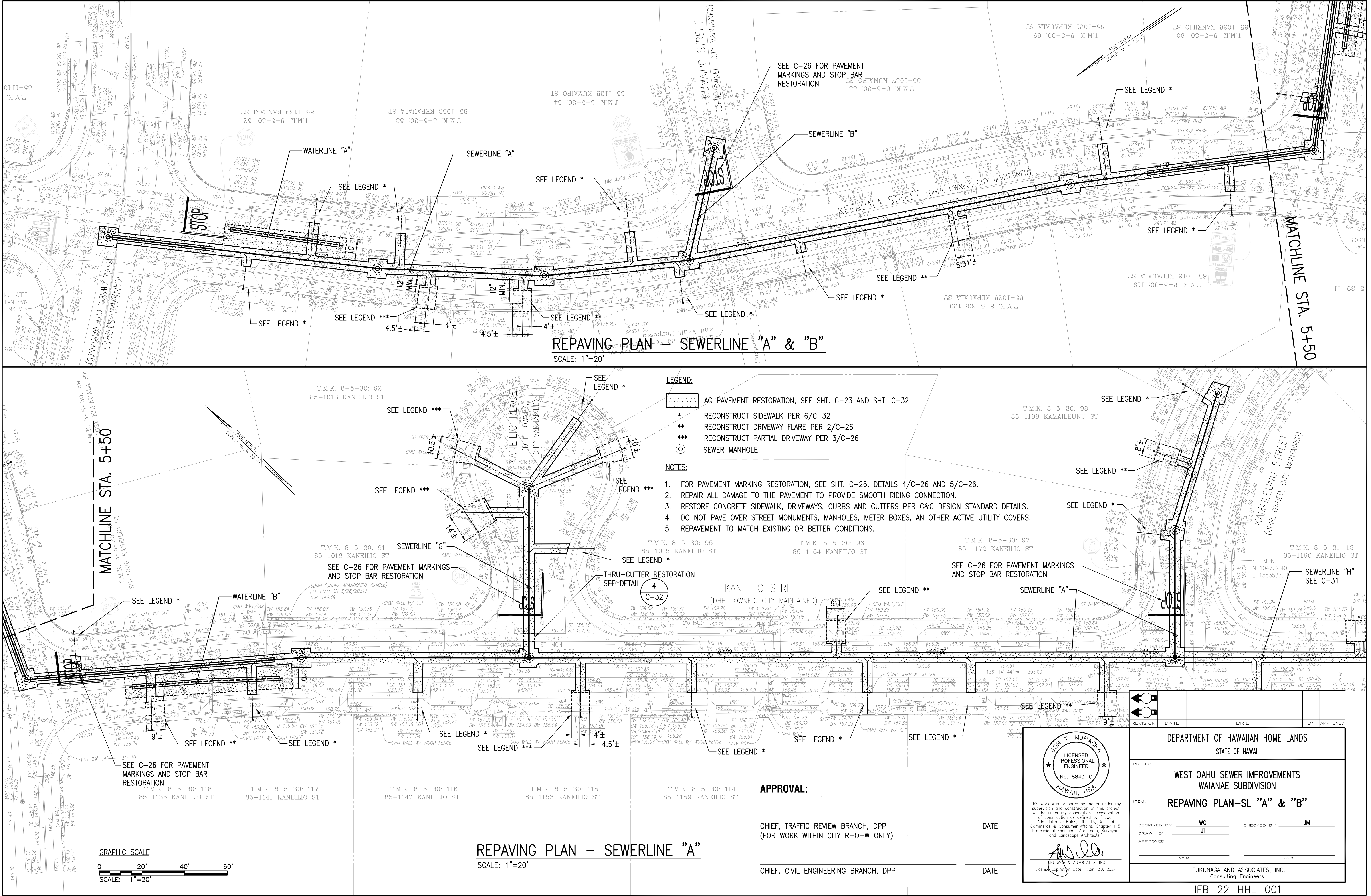
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MANAGER & CHIEF ENGINEER, BWS
(FOR WORK AFFECTING BWS FACILITIES IN CITY/STATE
R-O-W AND BWS EASEMENT ONLY)

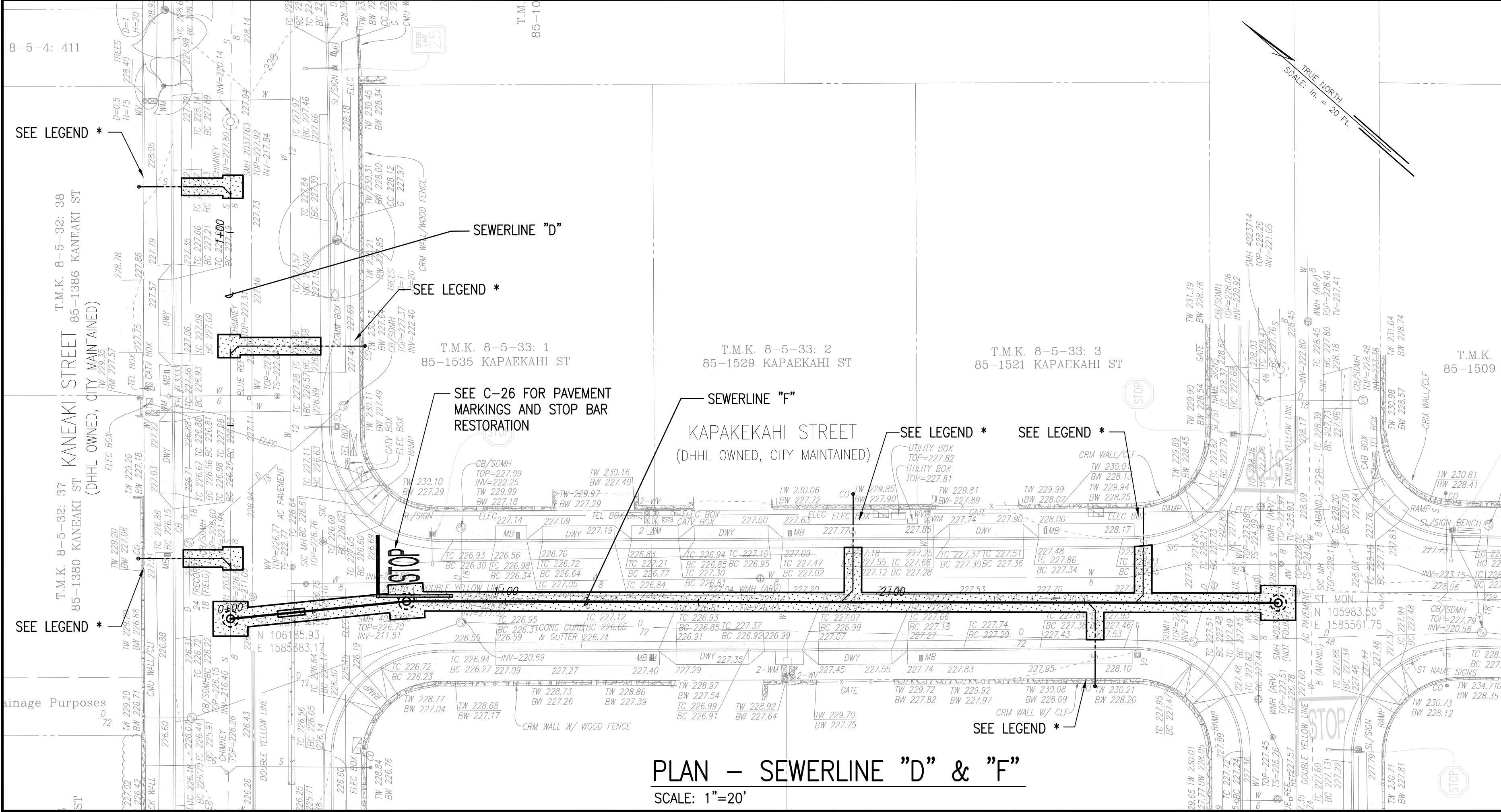
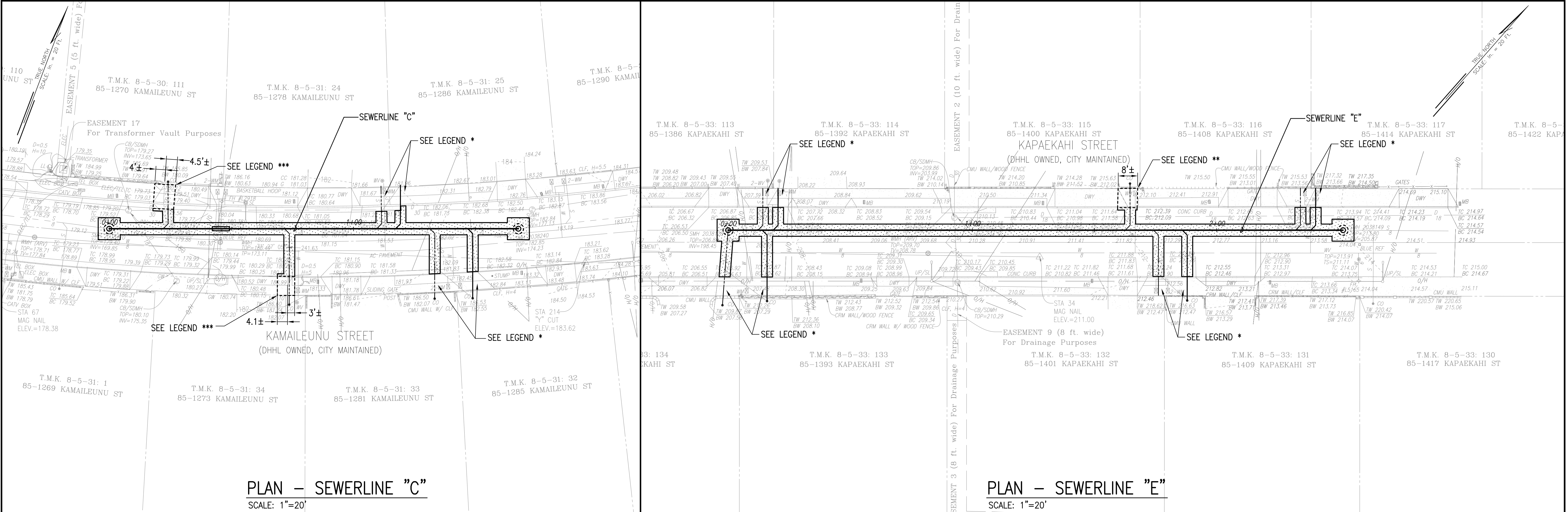
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REVISION	DATE	BRIEF	BY	APPROVED
DEPARTMENT OF HAWAIIAN HOME LANDS STATE OF HAWAII				
PROJECT: WEST OAHU SEWER IMPROVEMENTS WAIANAE SUBDIVISION				
ITEM: MISCELLANEOUS DETAILS-3				
DESIGNED BY: WC		CHECKED BY: JM		
DRAWN BY: JI				
APPROVED:				
CHIEF		DATE		
FUKUNAGA & ASSOCIATES, INC. Consulting Engineers				
IFB-22-HHL-001				

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Last plotted 7/17/2022 11:20:57 AM



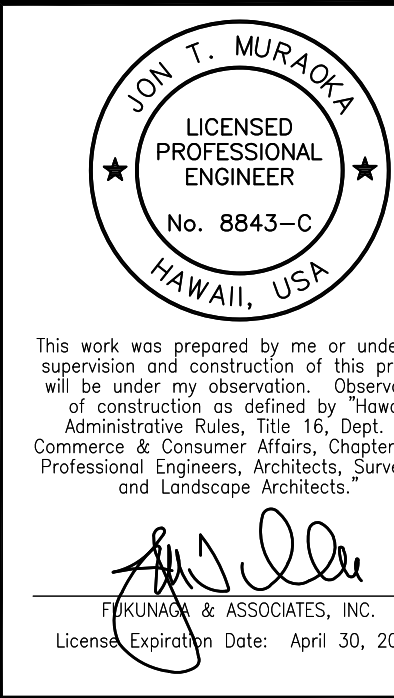
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Last saved 5/23/2022 2:58:39 PM by Jtucub
Last plotted 7/7/2022 11:21:06 AM



- LEGEND:**
- AC PAVEMENT RESTORATION, SEE SHT. C-23 AND SHT. C-32
 - * RECONSTRUCT SIDEWALK PER 6/C-32
 - ** RECONSTRUCT DRIVEWAY FLARE PER 2/C-26
 - *** RECONSTRUCT PARTIAL DRIVEWAY PER 3/C-26
 - SEWER MANHOLE

- NOTES:**
- FOR PAVEMENT MARKING RESTORATION, SEE SHT. C-26, DETAILS 4/C-26 AND 5/C-26.
 - REPAIR ALL DAMAGE TO THE PAVEMENT TO PROVIDE SMOOTH RIDING CONNECTION.
 - RESTORE CONCRETE SIDEWALK, DRIVEWAYS, CURBS AND GUTTERS PER C&C DESIGN STANDARD DETAILS.
 - DO NOT PAVE OVER STREET MONUMENTS, MANHOLES, METER BOXES, AN OTHER ACTIVE UTILITY COVERS.
 - REPAVEMENT TO MATCH EXISTING OR BETTER CONDITIONS.

APPROVAL:			
CHIEF, TRAFFIC REVIEW BRANCH, DPP (FOR WORK WITHIN CITY R-O-W ONLY)		DATE	
CHIEF, CIVIL ENGINEERING BRANCH, DPP		DATE	

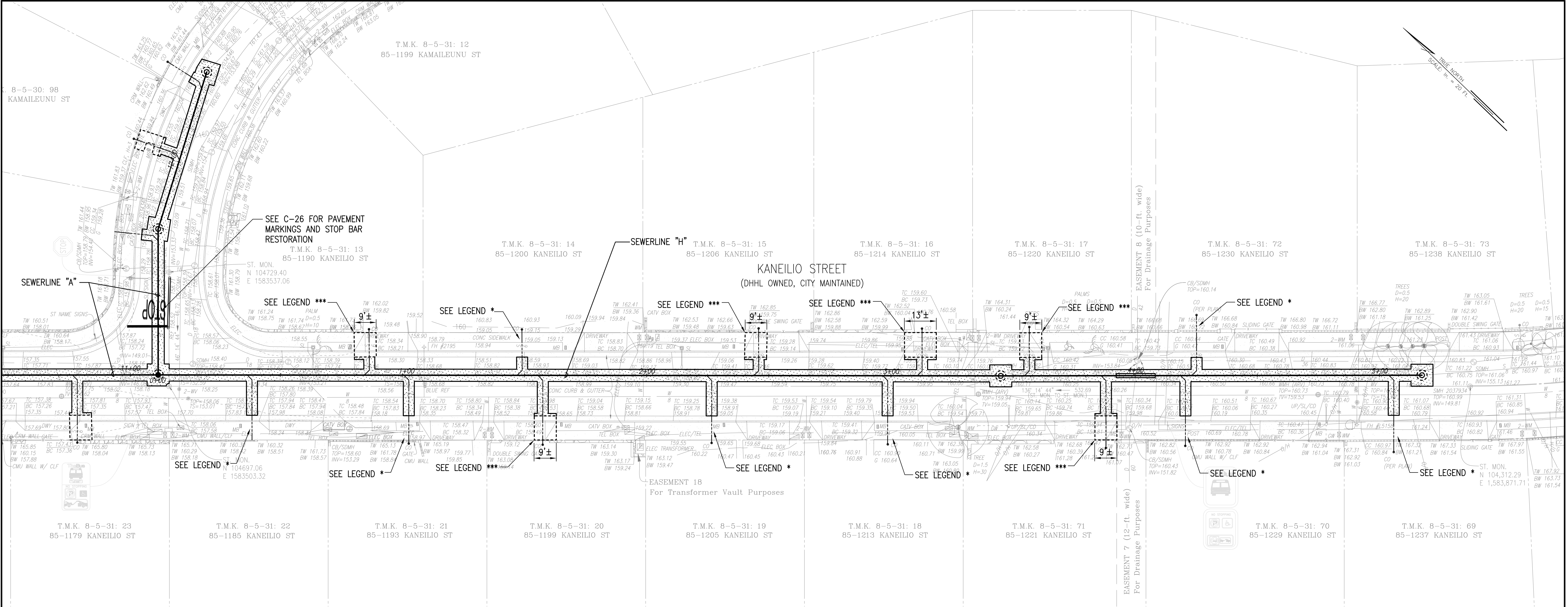


This work was prepared by me or under my supervision and construction of this project will be under my observation. Observation of construction as defined by Hawaii Administrative Rules, Title 16, Dept. of Commerce & Consumer Affairs, Chapter 115, Professional Engineers, Architects, Surveyors and Landscape Architects.

[Signature]
FUKUNAGA & ASSOCIATES, INC.
License Expiration Date: April 30, 2024

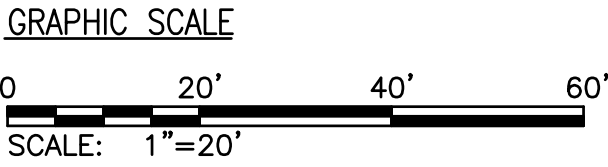
REVISION	DATE	BRIEF	BY	APPROVED
DEPARTMENT OF HAWAIIAN HOME LANDS STATE OF HAWAII				
PROJECT: WEST OAHU SEWER IMPROVEMENTS WAIANAE SUBDIVISION				
ITEM: REPAVING PLAN-SL "C", "D", "E", & "F"				
DESIGNED BY: WC		CHECKED BY: JM		
DRAWN BY: JI				
APPROVED:				
FUKUNAGA AND ASSOCIATES, INC. Consulting Engineers		DATE		

U:_PROJECT\2019-1202 DHHL West Oahu Sewer Improvements\~Plans\C-29 REPAVING PLAN.dwg
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Last plotted 7/7/2022 11:21:10 AM



- LEGEND:**
- AC PAVEMENT RESTORATION, SEE SHT. C-23 AND SHT. C-32
 - * RECONSTRUCT SIDEWALK PER 6/C-32
 - ** RECONSTRUCT DRIVEWAY FLARE PER 2/C-26
 - *** RECONSTRUCT PARTIAL DRIVEWAY PER 3/C-26
 - SEWER MANHOLE

- NOTES:**
- FOR PAVEMENT MARKING RESTORATION, SEE SHT. C-26, DETAILS 4/C-26 AND 5/C-26.
 - REPAIR ALL DAMAGE TO THE PAVEMENT TO PROVIDE SMOOTH RIDING CONNECTION.
 - RESTORE CONCRETE SIDEWALK, DRIVEWAYS, CURBS AND GUTTERS PER C&C DESIGN STANDARD DETAILS.
 - DO NOT PAVE OVER STREET MONUMENTS, MANHOLES, METER BOXES, AN OTHER ACTIVE UTILITY COVERS.
 - REPAVEMENT TO MATCH EXISTING OR BETTER CONDITIONS.



REPAVING PLAN – SEWERLINE "H"

SCALE: 1"=20'

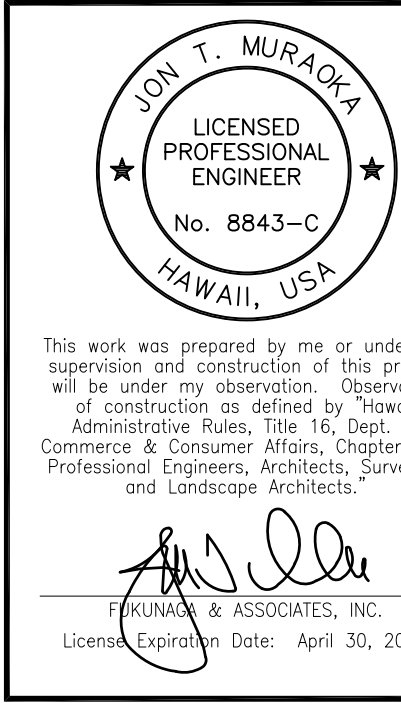
APPROVAL:

CHIEF, TRAFFIC REVIEW BRANCH, DPP
(FOR WORK WITHIN CITY R-O-W ONLY)

DATE

CHIEF, CIVIL ENGINEERING BRANCH, DPP

DATE



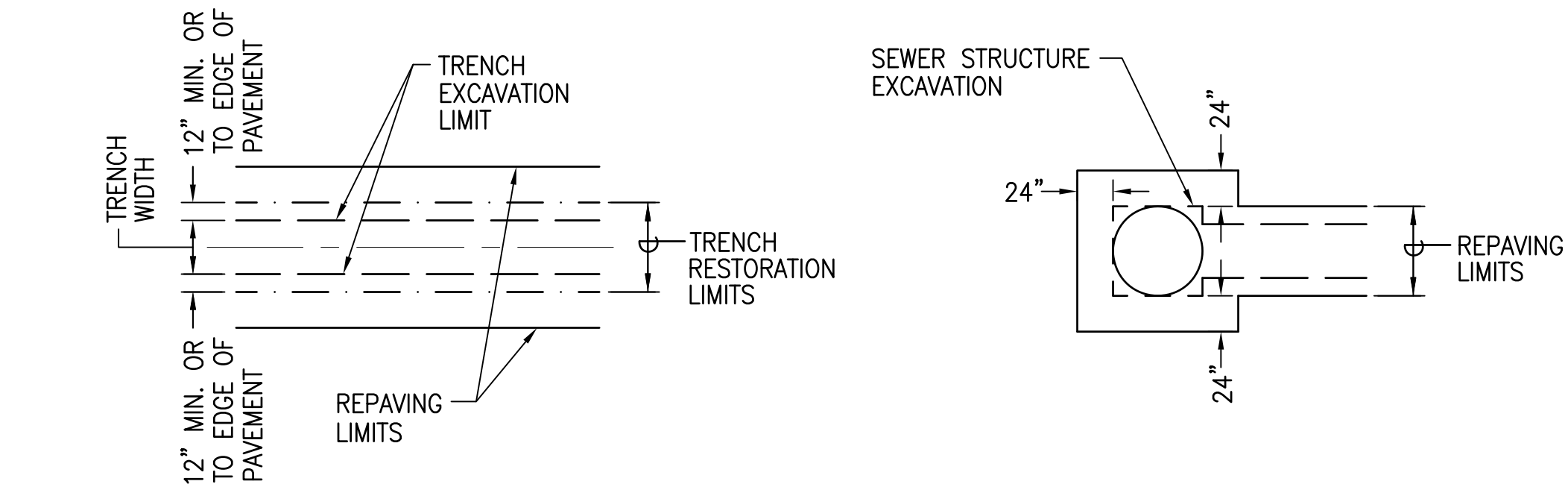
This work was prepared by me or under my supervision and construction of this project will be under my observation. Observation of construction as defined by Hawaii Administrative Rules, Title 16, Dept. of Commerce & Consumer Affairs, Chapter 115, Professional Engineers, Architects, Surveyors and Landscape Architects.

[Signature]
FUKUNAGA & ASSOCIATES, INC.
License Expiration Date: April 30, 2024

REVISION	DATE	BRIEF	BY	APPROVED
DEPARTMENT OF HAWAIIAN HOME LANDS STATE OF HAWAII				
PROJECT: WEST OAHU SEWER IMPROVEMENTS WAIANAE SUBDIVISION				
ITEM: REPAVING PLAN-SL "H"				
DESIGNED BY: WC		CHECKED BY: JM		
DRAWN BY: JL				
APPROVED:				
CHIEF		DATE		
FUKUNAGA AND ASSOCIATES, INC. Consulting Engineers				

IFB-22-HHL-001

FILE	POCKET	FOLDER	NO.



1
C-32

REPAVING ALONG TRENCH

NOT TO SCALE

2
C-32

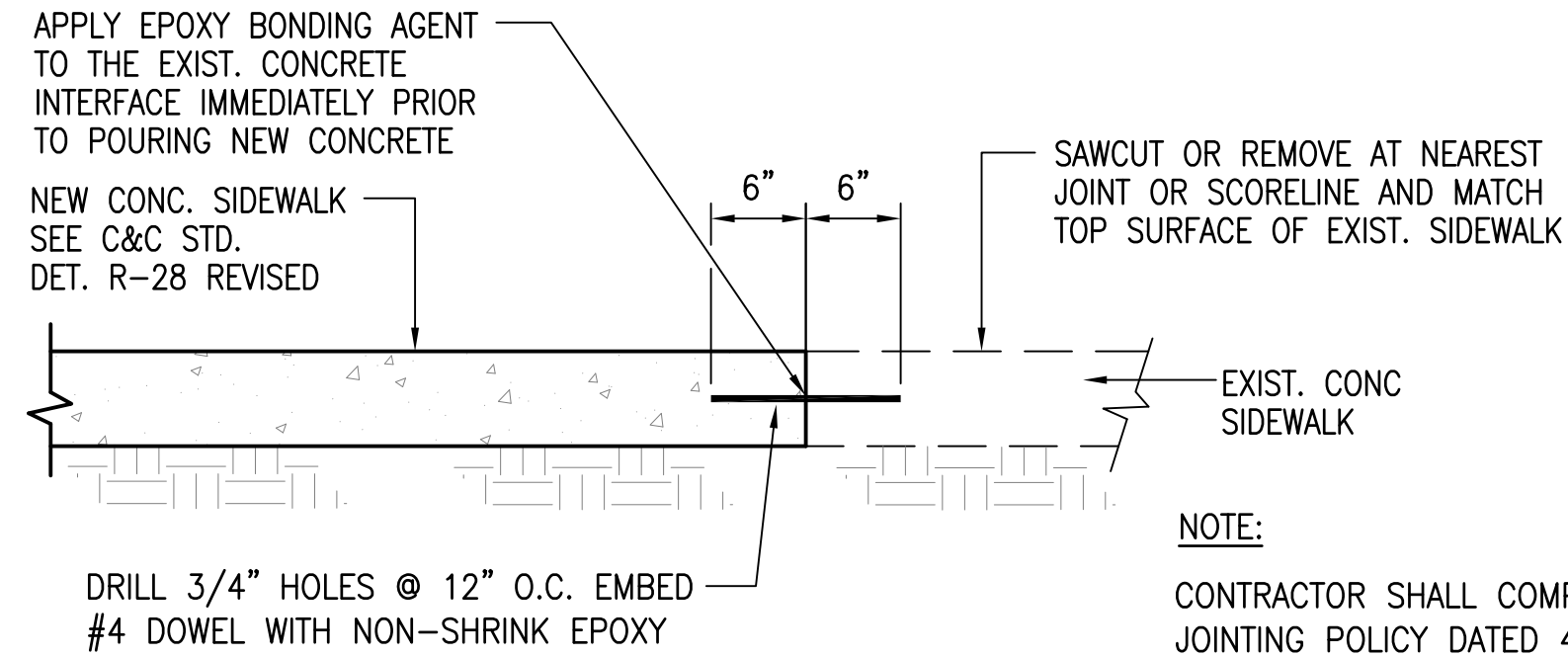
REPAVING AT SEWER STRUCTURE

NOT TO SCALE

3
C-32

TYPE "A" PAVEMENT (CITY R-O-W)

NOT TO SCALE



5
C-32

TYPICAL SIDEWALK CONNECTION TO EXISTING

NOT TO SCALE

NOTES:

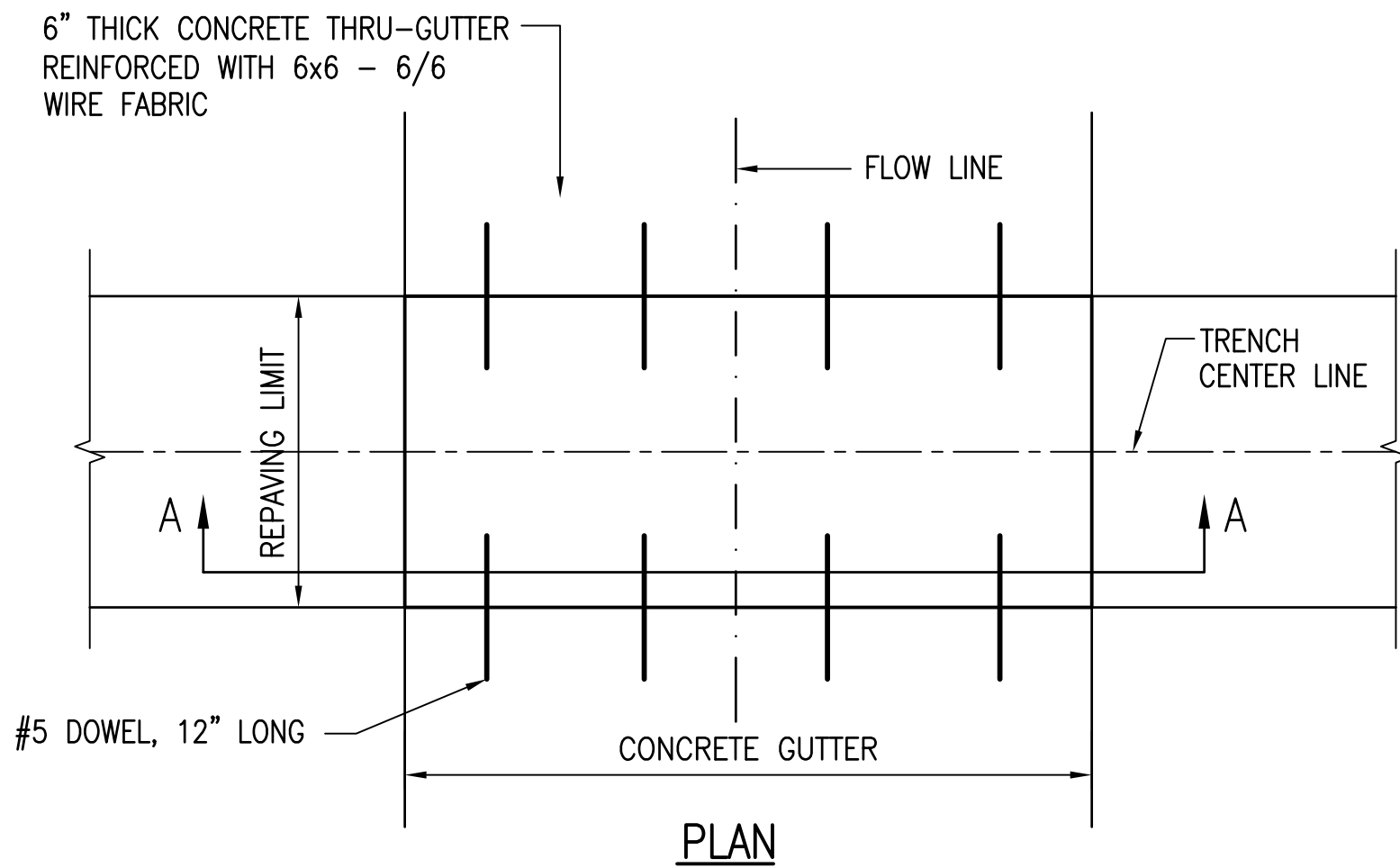
- FOR TRENCH RESTORATION WITHIN STREET OR PUBLIC R-O-W, SEE
- UPON RESTORATION OF PAVEMENTS, RESTORE ALL PAVEMENT MARKINGS TO MATCH EXISTING.
- FOR TRENCH RESTORATION IN PRIVATE PROPERTY, SEE
- NEW PAVEMENT STRUCTURE SHALL BE EQUAL TO OR BETTER THAN EXISTING IN THICKNESS AND QUALITY.

1
C-23

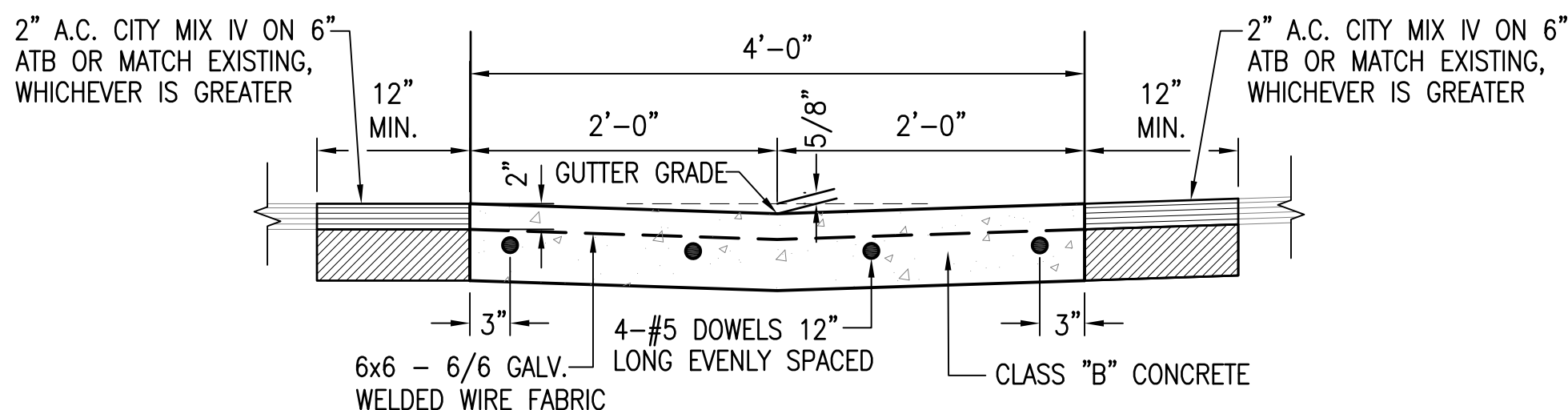
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C-23

RESTORATION OF PAVEMENT SURFACE IN CITY R-O-W

- TRENCHES RUNNING LONGITUDINALLY TO THE TRAVEL WAY ON ROADWAYS WHERE THE PAVED TRAVEL WAY IS GREATER THAN 36 FEET, SHALL BE COLD PLANED A MINIMUM OF TWO INCHES AND REPAVED TO THE ORIGINAL GRADE. THE PAVING SHALL BE A MINIMUM WIDTH OF ONE LANE NOT EXCEEDING 15 FEET IN WIDTH WITH A MINIMUM OF TWO FEET IN ADDED LENGTH TO EACH END OF THE LONGITUDINAL TRENCH. THE REPLACED PAVEMENT WITHIN THE TRENCH LIMITS, PLUS AN ADDITIONAL ONE FOOT ON EACH SIDE OF THE TRENCH (T-SECTION), SHALL HAVE A MINIMUM THICKNESS OF FOUR INCHES OF A.C. OR MATCH THE EXISTING PAVEMENT THICKNESS, WHICH EVER IS GREATER.
- TRENCHES RUNNING LONGITUDINALLY TO THE TRAVEL WAY ON ROADWAYS WHERE THE PAVED TRAVEL WAY IS 36 FEET OR LESS SHALL BE REPAVED TO THE TRENCH WIDTH PLUS AN ADDITIONAL ONE FOOT ON EACH SIDE OF THE TRENCH (T-SECTION) WITH A MINIMUM TWO FEET IN ADDED LENGTH TO EACH END OF THE LONGITUDINAL TRENCH. THE REPLACED PAVEMENT SHALL HAVE A MINIMUM THICKNESS OF FOUR INCHES OF A.C. OR MATCH THE EXISTING PAVEMENT THICKNESS, WHICHEVER IS GREATER.
- TRENCHES RUNNING PERPENDICULAR OR SKEW TO THE TRAVEL WAY AND/OR LONGITUDINAL TRENCHES LESS THAN TEN FEET IN LENGTH SHALL BE REPAVED A MINIMUM OF FOUR FEET WIDE WITH THE TRENCH CENTERED WITHIN THE PAVED WIDTH (T-SECTION) OR THE PAVED AREA SHALL BE THE TRENCH WIDTH PLUS AN ADDITIONAL ONE FOOT ON EACH SIDE OF THE TRENCH (T-SECTION), WHICHEVER IS GREATER. THE LENGTH OF THE REPAVED TRENCH SHALL BE REPAVED A RECOMMENDED TWO FEET IN ADDED LENGTH TO EACH END OF THE TRENCH. THE REPLACED PAVEMENT SHALL HAVE A MINIMUM THICKNESS OF FOUR INCHES OF ASPHALT CONCRETE OR MATCH THE EXISTING PAVEMENT THICKNESS, WHICHEVER IS GREATER.
- RECTANGULAR EXCAVATIONS (MANHOLES OR PITS) SHALL BE A MINIMUM OF THREE FEET BY FOUR FEET OR TWO FEET LARGER IN EACH DIMENSION THAN THE EXCAVATED AREA, WHICHEVER IS GREATER. THE REPLACED PAVEMENT SHALL HAVE A MINIMUM THICKNESS OF FOUR INCHES OF ASPHALT CONCRETE OR MATCH THE EXISTING PAVEMENT THICKNESS, WHICHEVER IS GREATER.
- RESTORE PAVEMENT STRIPINGS, RAISED PAVEMENT MARKER, AND PAVEMENT MARKINGS WHETHER IT IS SHOWN OR NOT ON THE PLANS WITHIN THE OVERLAY LIMIT OF WORK AREA DENOTED BY HATCHED SYMBOL.
- FOR LANE AND EDGE STRIPINGS RESTORATION EXTEND 12" FROM LIMIT OF WORK.
- CONTRACTOR TO MATCH WIDTH (WHICHEVER IS GREATER) AND COLOR OF STRIPING, TYPE OF RAISED PAVEMENT MARKERS, PAVEMENT WORDS, AND PAVEMENT DIRECTIONAL ARROW.
- THE PERMANENT PAVEMENT RESTORATION SHALL BE ACCOMPLISHED AS SOON AS PRACTICABLE BUT NOT TO EXCEED TWO MONTHS AFTER TRENCH IS BACKFILLED.



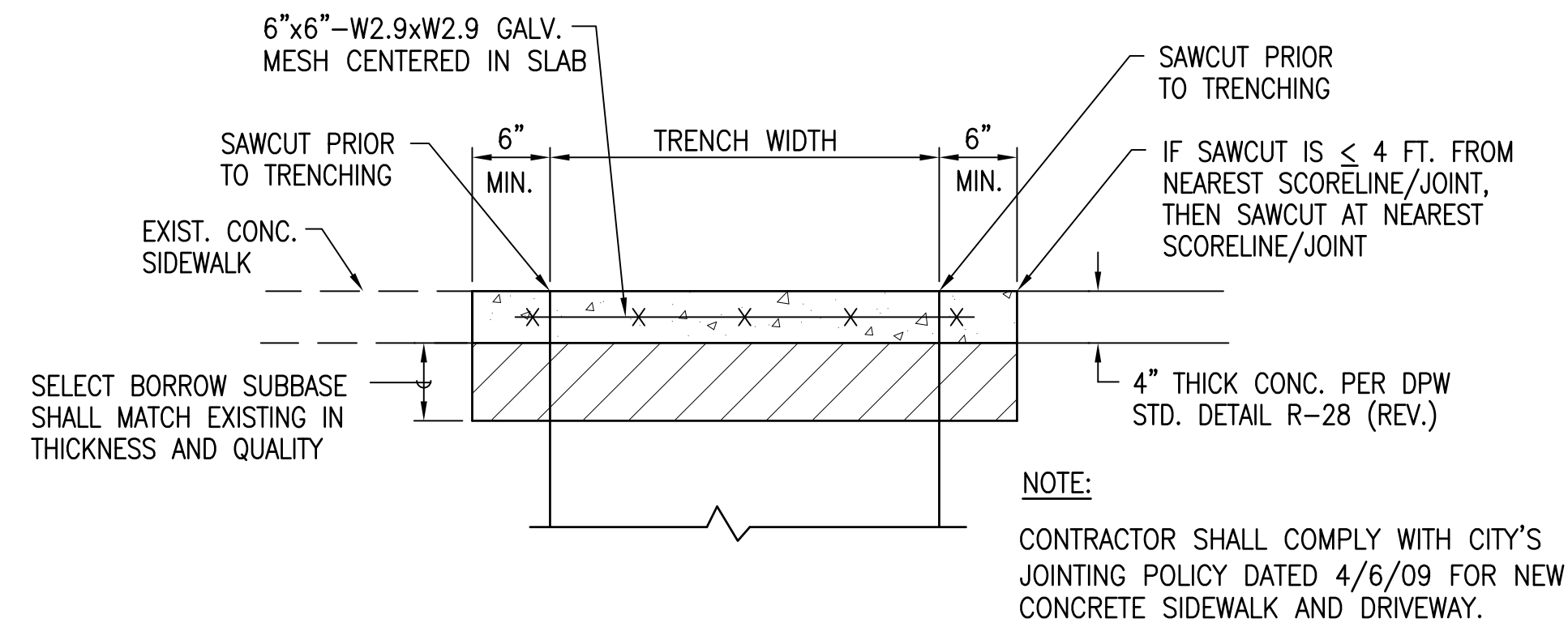
NOTE:
RECONSTRUCT CONCRETE THRU-GUTTER PER CITY STANDARD DETAIL R-8.



4
C-32

THRU-GUTTER RESTORATION DETAIL

NOT TO SCALE



6
C-32

SIDEWALK RESTORATION DETAIL

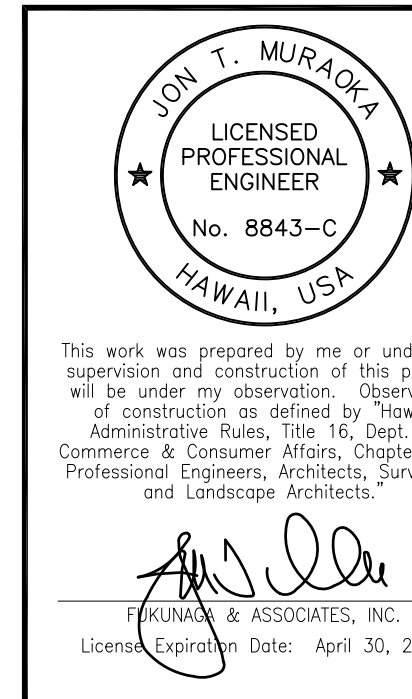
NOT TO SCALE

APPROVAL:

CHIEF, CIVIL ENGINEERING BRANCH, DPP

DATE

REVISION	DATE	BRIEF	BY	APPROVED
DEPARTMENT OF HAWAIIAN HOME LANDS STATE OF HAWAII				
PROJECT: WEST OAHU SEWER IMPROVEMENTS WAIANAE SUBDIVISION				
ITEM: REPAVING NOTES AND DETAILS				
DESIGNED BY: WC		CHECKED BY: JM		
DRAWN BY: JT				
APPROVED:				
FUKUNAGA & ASSOCIATES, INC.		DATE		
FUKUNAGA AND ASSOCIATES, INC. Consulting Engineers				



BORING LOCATION MAP

Map showing the layout of streets and the locations of eight borings (B1 through B8).

Streets shown include:

- KEPAULA STREET
- KANEAKI STREET
- KUMAIPO STREET
- KANEILIO STREET
- PUNANAULA STREET
- HALAPOE PLACE
- PUHINALO PLACE
- KANBAKI STREET
- KOOLINA STREET
- KAMAILEUNU STREET
- KAPAEKAHI STREET

Boring locations are marked with numbered boxes:

- B1
- B2
- B3
- B4
- B5
- B6
- B7
- B8

A north arrow is located at the top center of the map.

NOTES:

1. THE BORING LOG INFORMATION WAS EXTRACTED FROM THE GEOTECHNICAL REPORT TITLED "GEOTECHNICAL INVESTIGATION: DHHL WEST OAHU SEWER IMPROVEMENTS, RESIDENTIAL SUBDIVISION WAIANAE, HAWAII, TMK: 8-5-030 THROUGH 033", DATED APRIL 14, 2021, PREPARED BY HIRATA & ASSOCIATES, INC.
2. NEITHER GROUNDWATER NOR SEEPAGE WATER WAS ENCOUNTERED IN SOIL BORINGS.
3. COBBLES AND BOULDERS WERE ENCOUNTERED AT DEPTHS BETWEEN 4 AND 16 FEET BELOW GRADE.
4. REFER TO THE GEOTECHNICAL REPORT ABOVE FOR SPECIFIC DESCRIPTIONS OF THE GEOLOGIC UNITS AND THE RANGE OF ANTICIPATED SUBSURFACE CONDITIONS.

Hirata & Associates, Inc.

GEOTECHNICAL ENGINEERING

Boring No.

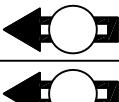
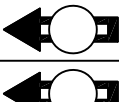
B3

BORING LOG

PROJECT NAME	DHHL West Oahu Sewer Improvements, Residential Subdivision, Waianae, Hawaii	DRIVING WT.	140 lb.	START DATE	2/8/21
WORK ORDER NO.	20-6561	DROP	30 in.	END DATE	2/8/21
SURFACE ELEV.	148 ±				

SEPARATE SAMPLE NO.	CORE RECOVERY (%)	ROD (%)	BLOWS PER FOOT	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION
			79/10"	121	4	0		Silty GRAVEL (GM) - Reddish brown, slightly moist, dense, with sand. Covered by 2 inches of AC over 5.5 inches of base material.
			65	104	16	5		Gravelly at 3 feet.
NP = No Penetration			26/6" 10/NP	98	11	10		COBBLES AND BOULDERS - Brown, slightly moist, dense, in a matrix of sandy silt.
			71/11"	88	30	15		Sandy SILT (ML) - Brown, moist, stiff to hard.
						20		End boring at 15.0 feet. Neither groundwater nor seepage water encountered.
						25		
						30		

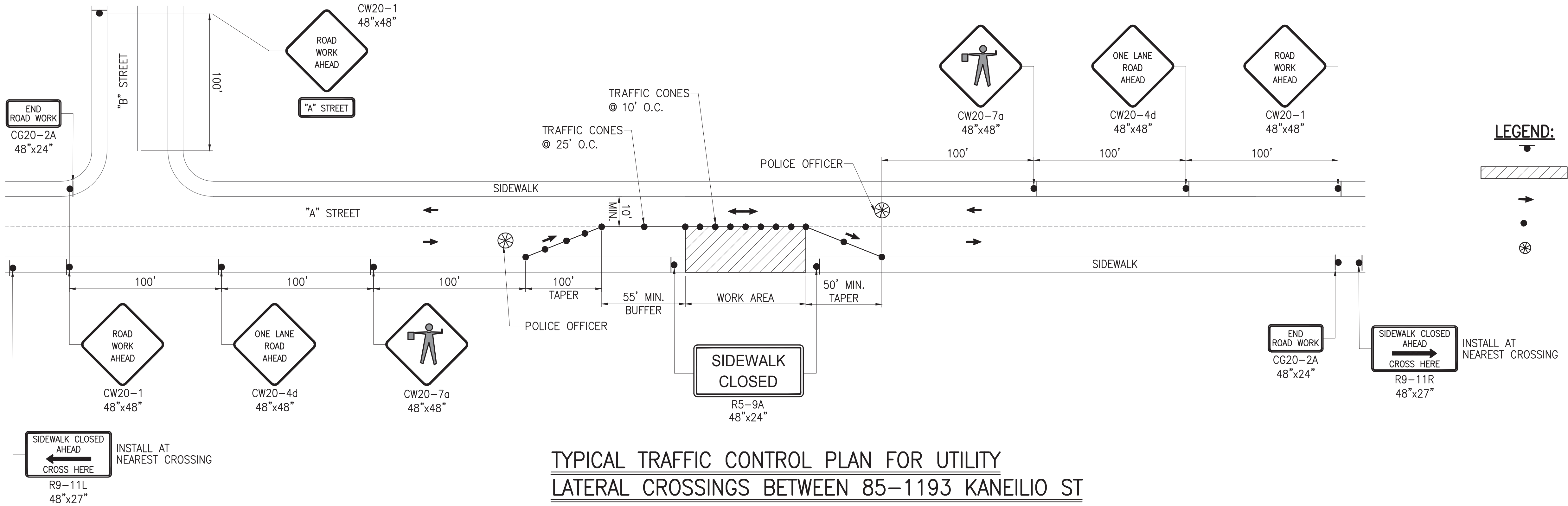
Plate A4.3
1 of 1

					
					
REVISION	DATE	BRIEF	BY	APPROVED	
<div style="font-size: 1.2em; font-weight: bold; margin-bottom: 5px;">DEPARTMENT OF HAWAIIAN HOME LANDS</div> <div style="font-size: 1.2em; font-weight: bold; margin-bottom: 5px;">STATE OF HAWAII</div>					
<div style="margin-bottom: 10px;">PROJECT:</div> <div style="text-align: center; font-size: 1.2em; font-weight: bold; margin-bottom: 10px;">WEST OAHU SEWER IMPROVEMENTS WAIANA E SUBDIVISION</div> <div style="margin-bottom: 10px;">ITEM:</div> <div style="text-align: center; font-size: 1.2em; font-weight: bold; margin-bottom: 10px;">BORING LOGS-1</div> <div style="display: flex; justify-content: space-between; margin-bottom: 10px;"> <div style="width: 45%;">DESIGNED BY: <u>WC</u></div> <div style="width: 45%;">CHECKED BY: <u>JM</u></div> </div> <div style="display: flex; justify-content: space-between; margin-bottom: 10px;"> <div style="width: 45%;">DRAWN BY: <u>JL</u></div> <div style="width: 45%;"></div> </div> <div style="display: flex; justify-content: space-between; margin-bottom: 10px;"> <div style="width: 45%;">APPROVED: _____</div> <div style="width: 45%;"></div> </div> <div style="display: flex; justify-content: space-between; margin-bottom: 10px;"> <div style="width: 45%;">_____ <small>CHEF</small></div> <div style="width: 45%;">_____ <small>DATE</small></div> </div> <div style="text-align: center; font-weight: bold; margin-top: 20px;"> FUKUNAGA AND ASSOCIATES, INC. Consulting Engineers </div>					

IFB-22-HHL-001

FILE	POCKET	FOLDER	NO.

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Last saved 6/21/2022 4:37:43 PM by Elnada
Last plotted 7/6/2022 3:06:45 PM



**TYPICAL TRAFFIC CONTROL PLAN FOR UTILITY
LATERAL CROSSINGS BETWEEN 85-1193 KANEILIO ST
AND 85-1237 KANEILIO ST**
NOT TO SCALE

**GENERAL NOTES FOR TRAFFIC CONTROL
PLANS (FOR WORK WITHIN CITY R.O.W.)**

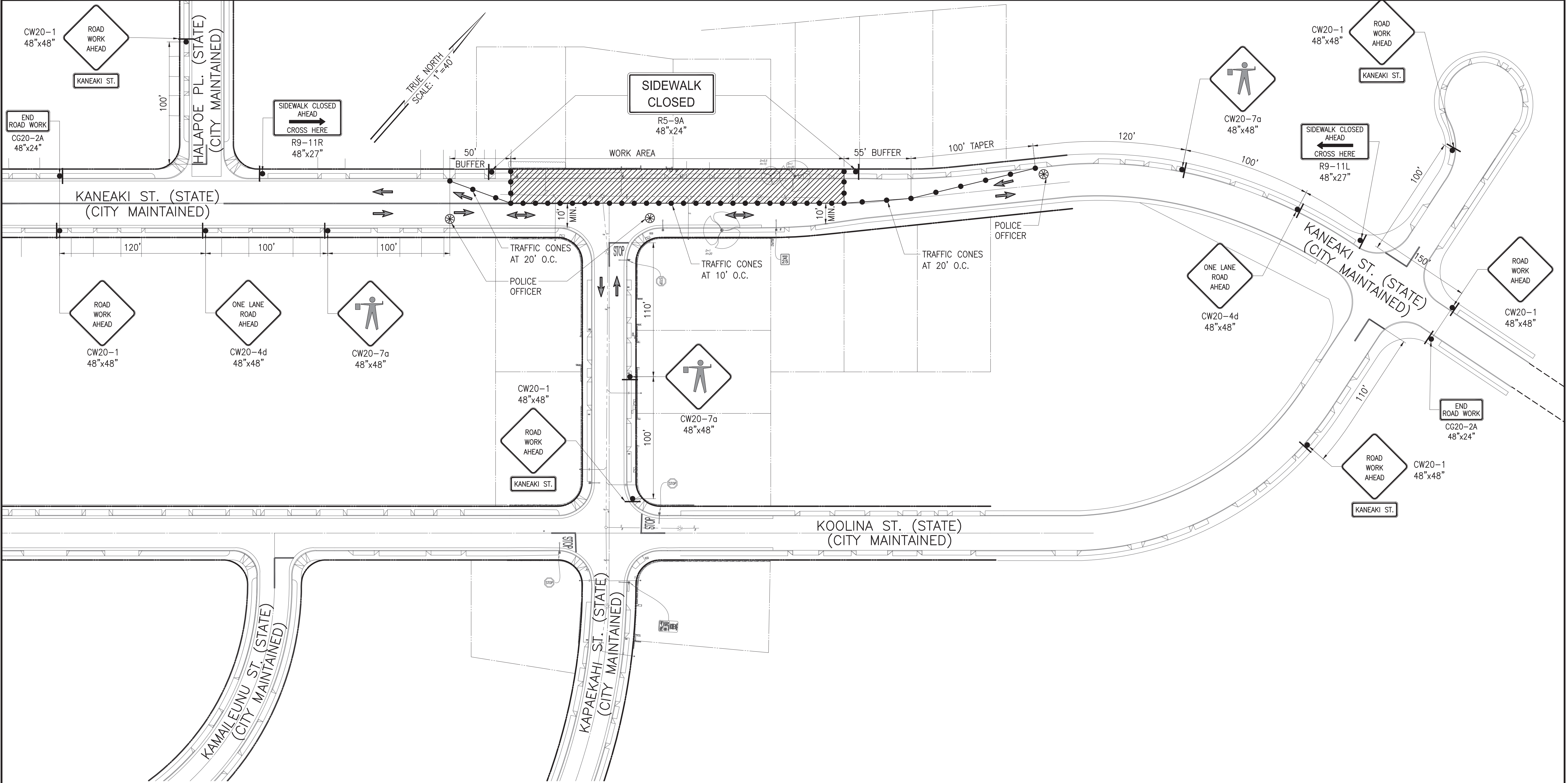
1. THE PERMITTEE SHALL MAKE MINOR ADJUSTMENTS AT INTERSECTIONS, DRIVEWAYS, BRIDGES, STRUCTURES, ETC., TO FIT FIELD CONDITIONS.
2. CONES OR DELINEATORS SHALL BE EXTENDED TO A POINT WHERE THEY ARE VISIBLE TO APPROACHING TRAFFIC.
3. TRAFFIC CONTROL DEVICES SHALL BE INSTALLED SUCH THAT THE SIGN OR DEVICE FARTEST FROM THE WORK AREA IS PLACED FIRST. THE OTHERS SHALL THEN BE PLACED PROGRESSIVELY TOWARD THE WORK AREA.
4. REGULATORY AND WARNING SIGNS WITHIN THE CONSTRUCTION ZONE THAT ARE IN CONFLICT WITH THE TRAFFIC CONTROL PLANS SHALL BE REMOVED OR COVERED.
5. POLICE OFFICERS SHALL BE IN SIGHT OF EACH OTHER OR IN DIRECT COMMUNICATION AT ALL TIMES.
6. WHEN REQUIRED BY THE ISSUING OFFICE, THE PERMITTEE SHALL INSTALL A FLASHING ARROW SIGNAL AS SHOWN ON THE TRAFFIC CONTROL PLANS.
7. ALL TRAFFIC LANES SHALL BE A MINIMUM OF 10 FEET WIDE.
8. ALL CONSTRUCTION WARNING SIGNS SHALL BE PROMPTLY REMOVED OR COVERED WHENEVER THE MESSAGE IS NOT APPLICABLE OR NOT IN USE.
9. THE BACKS OF ALL SIGNS USED FOR TRAFFIC CONTROL SHALL BE APPROPRIATELY COVERED TO PRECLUDE THE DISPLAY OF INAPPLICABLE SIGN MESSAGES (I.E., WHEN SIGNS HAVE MESSAGES ON BOTH FACES).
10. LANE CLOSURE SHALL BE LIMITED ONLY TO THE EXTENT OF ACCOMPLISHING EACH DAY'S WORK. AS SOON AS EACH DAY'S WORK IS COMPLETED, THE PERMITTEE SHALL REMOVE ALL TRAFFIC CONTROL DEVICES NO LONGER NEEDED TO PERMIT FREE AND SAFE PASSAGE OF PUBLIC TRAFFIC. REMOVAL SHALL BE IN THE REVERSE ORDER OF INSTALLATION. EXISTING FADED OR OBLITERATED PAVEMENT MARKINGS THAT ARE NECESSARY FOR SAFE TRAFFIC FLOW IN THE CONSTRUCTION AREA SHALL BE REPLACED WITH TEMPORARY OR PERMANENT MARKINGS BEFORE OPENING THE ROADWAY TO PUBLIC TRAFFIC EACH DAY.
11. PERMANENT PAVEMENT MARKING AND TRAFFIC SIGNS SHALL BE REPLACED UPON COMPLETION OF EACH PHASE OF WORK.
12. CONES AND DELINEATORS SHALL BE SPACED AT A MAXIMUM DISTANCE OF 20 FEET APART. A MINIMUM OF SIX CHANNELIZING DEVICES SHALL BE USED FOR EACH TAPER LENGTH.
13. DRIVEWAYS SHALL BE KEPT OPEN UNLESS THE OWNERS OF THE PROPERTY USING THE DRIVEWAY ARE OTHERWISE PROVIDED FOR SATISFACTORILY. FURTHER, THE PERMITTEE SHALL CONTROL TRAFFIC GOING INTO AND OUT OF DRIVEWAYS.
14. BUFFER AND TAPER AREAS ON APPROACH TO ANY WORK AREA SHALL BE KEPT CLEAR OF VEHICLES AND EQUIPMENT.
15. A HIGH LEVEL WARNING DEVICE (FLAG TREE) SHALL BE INSTALLED ON APPROACH TO ALL WORK AREAS.
16. "NO PARKING" SIGNS SHALL BE POSTED WITHIN ANY WORK AREA AND FOR THE BUFFER AND TAPER AREAS APPROACHING THE WORK AREA.

17. WHERE AN ACCESSIBLE PEDESTRIAN ROUTE IS CLOSED OR BLOCKED DURING CONSTRUCTION, CONTRACTOR TO PROVIDE TEMPORARY, ACCESSSSIBLE PEDESTRIAN ROUTE.
18. TRAFFIC CONTROL PLANS ARE APPROVED FOR WORK ON ANY CITY STREET AREA ONLY BETWEEN THE HOURS OF 08:30 A.M. AND 03:30 P.M. (MONDAY-FRIDAY).
19. IN THE CASE OF 8:30 AM - 3:30 PM WORK, AT NO TIME PRIOR TO 8:30 AM SHALL ANY LANES BE OBSTRUCTED EITHER TEMPORARILY OR MOMENTARILY THAT PREVENTS THE FREE MOVEMENT OF TRAFFIC BY ANY EQUIPMENT, VEHICLE, TRAFFIC CONTROL DEVICE, SIGNAGE OR PERSON CONTROLLED BY THE CONTRACTOR. NON-COMPLIANCE WILL RESULT IN THE IMMEDIATE REVOCATION OF THE STREET USAGE PERMIT. DTS WILL CAUSE ALL CONSTRUCTION ACTIVITIES TO CEASE. CONTRACTOR MAY APPLY FOR A NEW STREET USAGE PERMIT ONLY AFTER MEETING WITH DTS. THERE WILL BE NO EXTENSION OF CONTRACT TIME OR COMPENSATION GRANTED DUE TO DELAYS IN THE APPLICATION AND IN THE OBTAINING OF A NEW STREET USAGE PERMIT.
20. EXISTING BUS STOPS SHOWN ON THE TCPS WILL NEED TO BE TEMPORARILY RELOCATED DURING VARIOUS PHASES OF THE PROJECT. CONTRACTOR SHALL COORDINATE WITH APPROPRIATE AGENCIES IN COMPLIANCE WITH SCHEDULE AND PARTIES OUTLINED IN THE GENERAL NOTES-4, DEPARTMENT OF TRANSPORTATION SERVICES (DTS) AND TRANSPORTATION MOBILITY DIVISION (TMD) NOTES, SEE SHEET G-6.

CHIEF, TRAFFIC REVIEW BRANCH, DPP
(FOR WORK WITHIN CITY RIGHT OF WAY ONLY)

REVISION	DATE	BRIEF	BY	APPROVED
DEPARTMENT OF HAWAIIAN HOME LANDS STATE OF HAWAII				
PROJECT: WEST OAHU SEWER IMPROVEMENTS WAIANAE SUBDIVISION				
ITEM: TRAFFIC CONTROL NOTES				
DESIGNED BY: CKK		CHECKED BY: TSA		
DRAWN BY: ATA				
APPROVED:				
CHIEF		DATE		
FUKUNAGA AND ASSOCIATES, INC. Consulting Engineers				
IFB-22-HHL-001				

\\ATA-HNL-ENG2020\Projects\2021\21-205 DHHL West Oahu Sewer Improvements\DWG\T-02 TRAFFIC CONTROL PLAN - 1.dwg
Last saved 1/18/2022 12:53:08 AM by Ckadoawa
Last plotted 7/6/2022 3:07:12 PM



POSTED SPEED LIMIT: 25 MPH

LEGEND:

- SIGN
- DIRECTION OF TRAFFIC
- WORK AREA
- POLICE OFFICER
- CONE WITH RETROREFLECTIVE TAPE

TRAFFIC CONTROL PLAN - 1
SCALE: 1"=40'

CHIEF, TRAFFIC REVIEW BRANCH, DPP
(FOR WORK WITHIN CITY RIGHT OF WAY ONLY)

TERENCE S. ARASHIRO

LICENSED PROFESSIONAL ENGINEER

No. 6998-C

HAWAII, U.S.A.

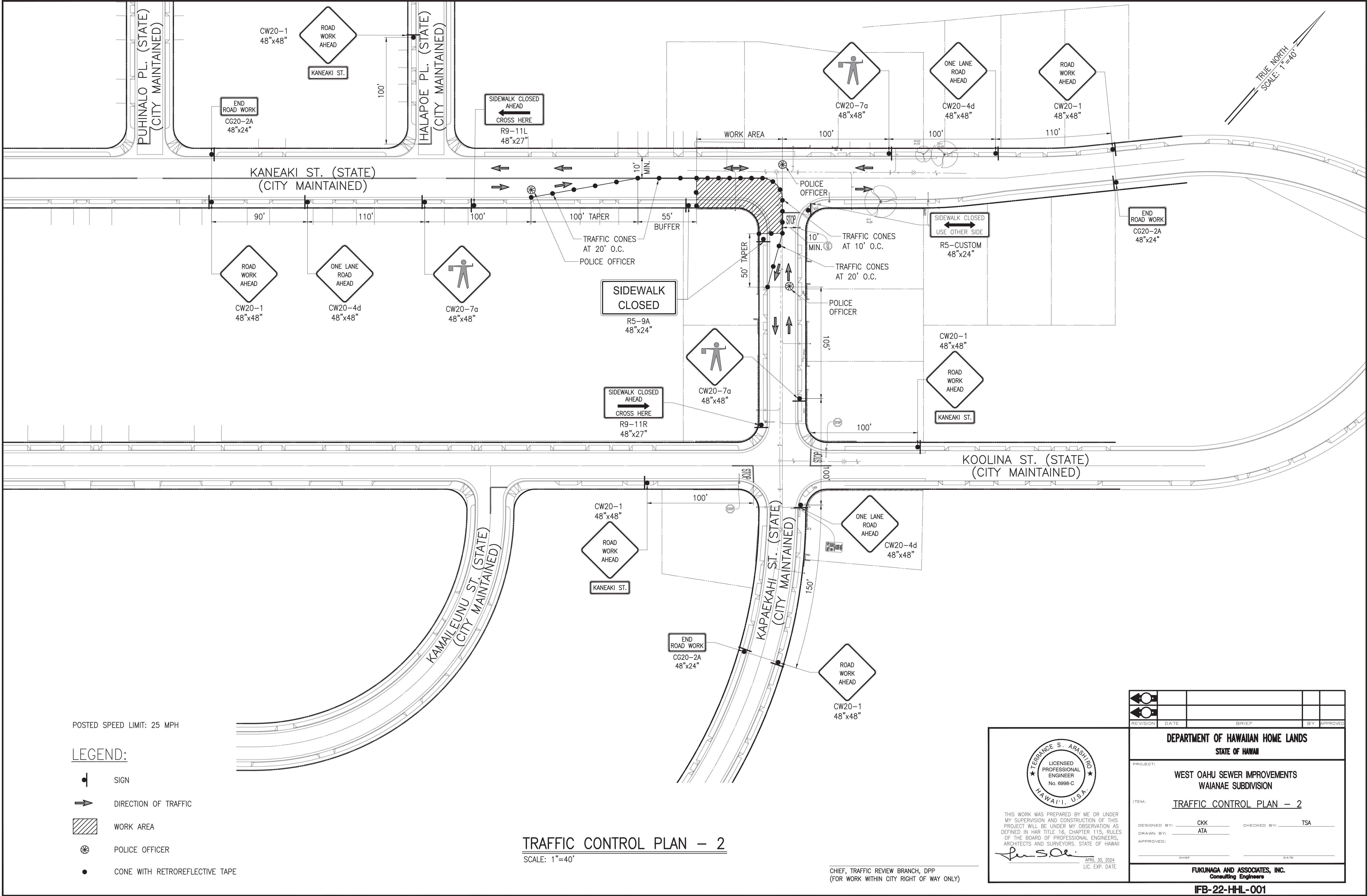
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS, STATE OF HAWAII

APRIL 30, 2024
LIC. EXP. DATE

REVISION	DATE	BRIEF	BY	APPROVED
DEPARTMENT OF HAWAIIAN HOME LANDS STATE OF HAWAII				
PROJECT: WEST OAHU SEWER IMPROVEMENTS WAIANAE SUBDIVISION				
ITEM: TRAFFIC CONTROL PLAN - 1				
DESIGNED BY: CKK		CHECKED BY: TSA		
DRAWN BY: ATA				
APPROVED:				
CHIEF		DATE		
FUKUNAGA AND ASSOCIATES, INC. Consulting Engineers				
IFB-22-HHL-001				

FILE	PROJECT	FOLDER	NO.

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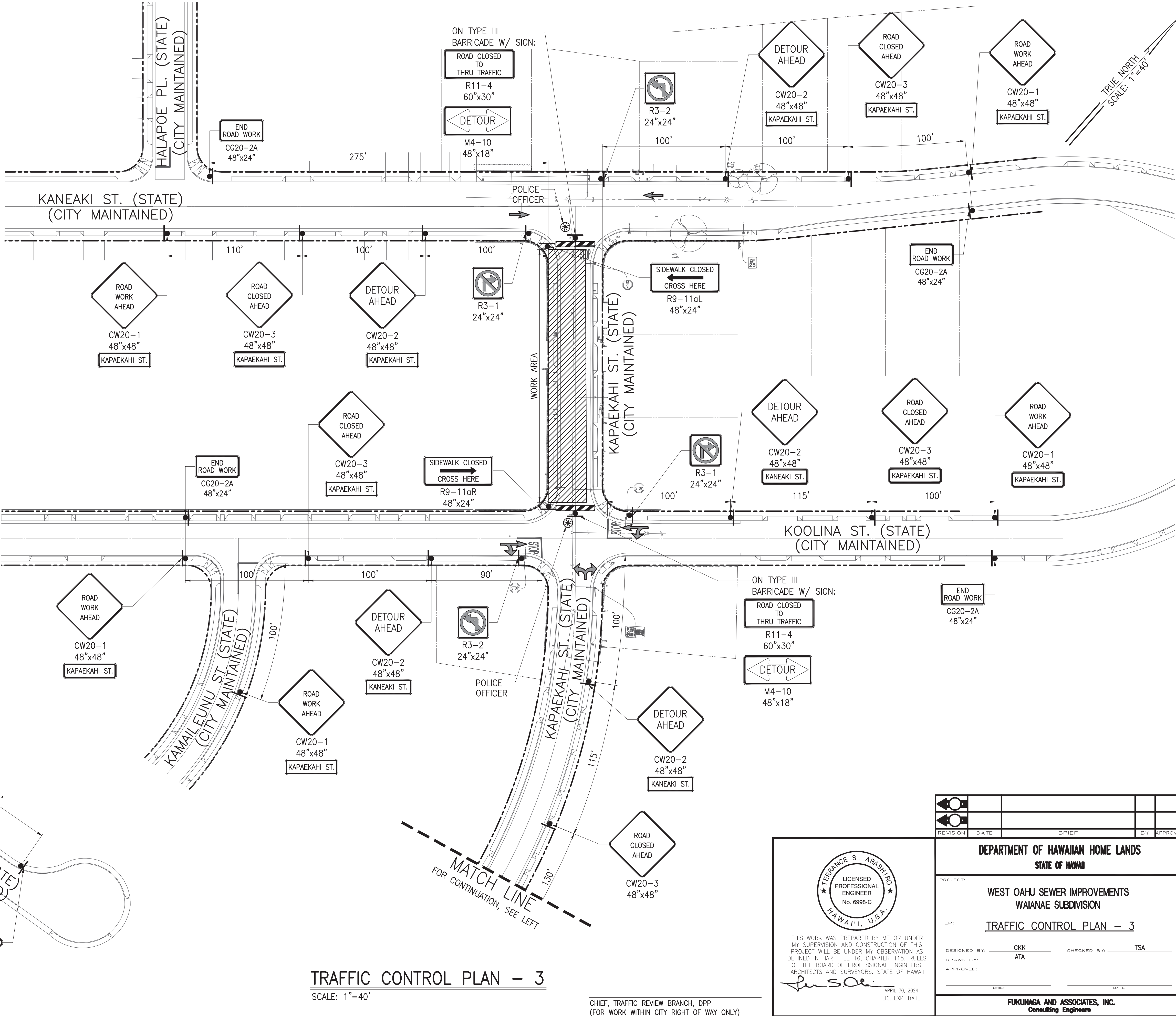


POSTED SPEED LIMIT: 25 MPH

LEGEND:

- SIGN
- DIRECTION OF TRAFFIC
- WORK AREA
- POLICE OFFICER
- TYPE III BARRICADE WITH STEADY BURN

- NOTE:
- CONTRACTOR TO PROVIDE ACCESS TO DRIVEWAYS AT ALL TIMES. SHOULD A PROPERTY OWNER WANT TO ENTER OR LEAVE THEIR DRIVEWAY, CONTRACTOR SHALL PROVIDE A SAFE ROUTE AND GUIDE THE VEHICLE THROUGH THE WORK AREA
 - TRAFFIC CONTROL PLAN ESTIMATED DURATION: 10 WORKING DAYS.
 - FOR DETOUR PLAN, SEE DWG. T-6.



TRAFFIC CONTROL PLAN - 3

SCALE: 1"=40'

CHIEF, TRAFFIC REVIEW BRANCH, DPP
(FOR WORK WITHIN CITY RIGHT OF WAY ONLY)

TERENCE S. ARASHIRO
LICENSED PROFESSIONAL ENGINEER
No. 6998-C
HAWAII, U.S.A.



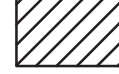


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APRIL 30, 2024
LIC. EXP. DATE

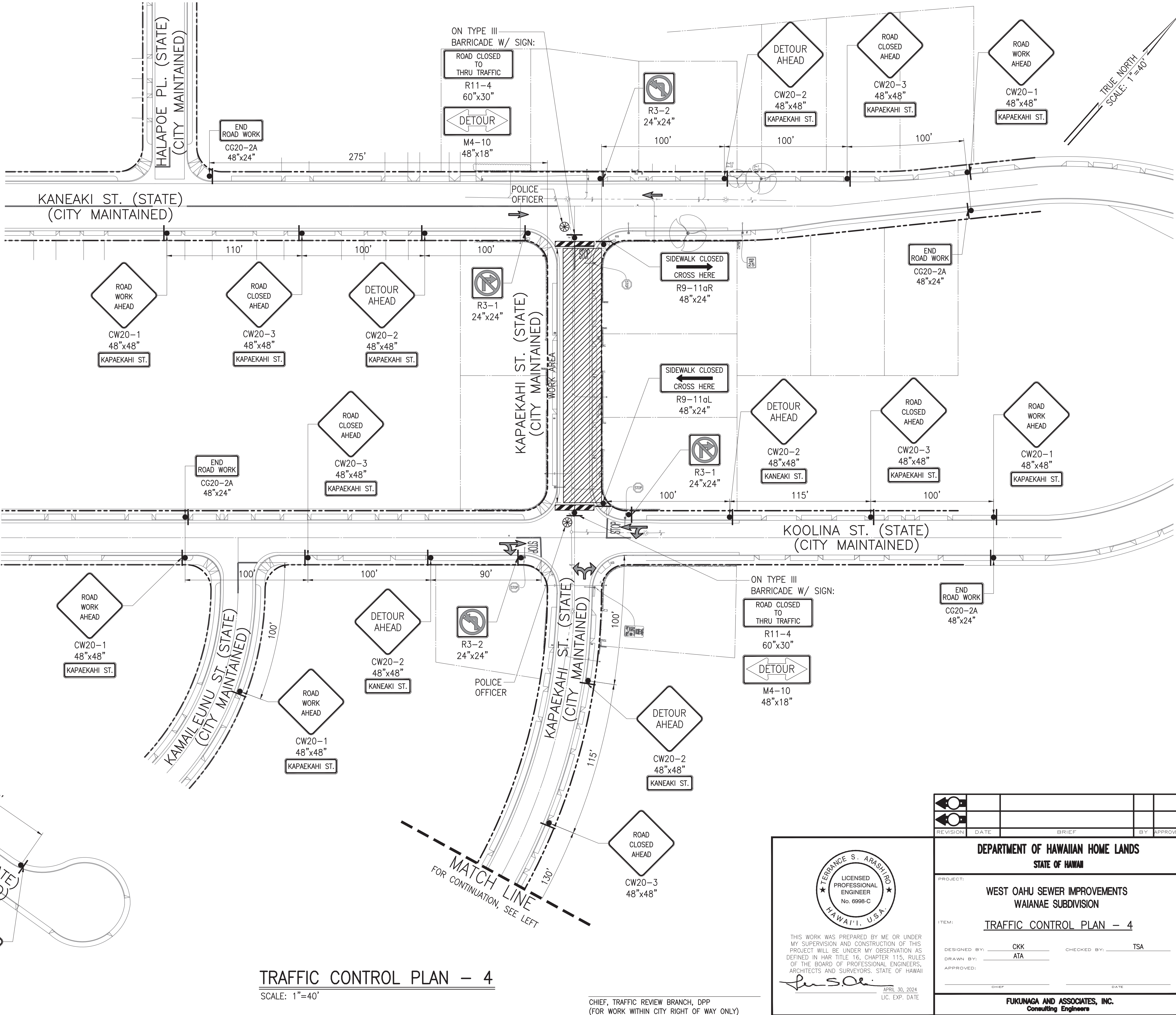
REVISION	DATE	BRIEF	BY	APPROVED
DEPARTMENT OF HAWAIIAN HOME LANDS STATE OF HAWAII				
PROJECT: WEST OAHU SEWER IMPROVEMENTS WAIANAE SUBDIVISION				
ITEM: TRAFFIC CONTROL PLAN - 3				
DESIGNED BY: CKK		CHECKED BY: TSA		
DRAWN BY: ATA				
APPROVED:				
CHIEF		DATE		
FUKUNAGA AND ASSOCIATES, INC. Consulting Engineers				
IFB-22-HHL-001				

POSTED SPEED LIMIT: 25 MPH

LEGEND:

-  SIGN
-  DIRECTION OF TRAFFIC
-  WORK AREA
-  POLICE OFFICER
-  TYPE III BARRICADE WITH STEADY BURN

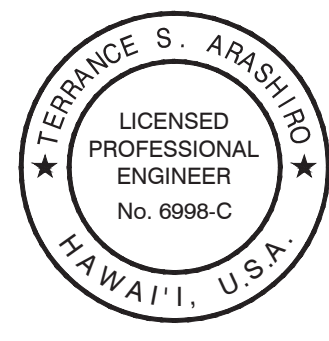
- NOTE:
1. CONTRACTOR TO PROVIDE ACCESS TO DRIVEWAYS AT ALL TIMES. SHOULD A PROPERTY OWNER WANT TO ENTER OR LEAVE THEIR DRIVEWAY, CONTRACTOR SHALL PROVIDE A SAFE ROUTE AND GUIDE THE VEHICLE THROUGH THE WORK AREA.
2. TRAFFIC CONTROL PLAN ESTIMATED DURATION: 10 WORKING DAYS.
3. FOR DETOUR PLAN, SEE DWG. T-6.



TRAFFIC CONTROL PLAN - 4

SCALE: 1"=40'

CHIEF, TRAFFIC REVIEW BRANCH, DPP
(FOR WORK WITHIN CITY RIGHT OF WAY ONLY)



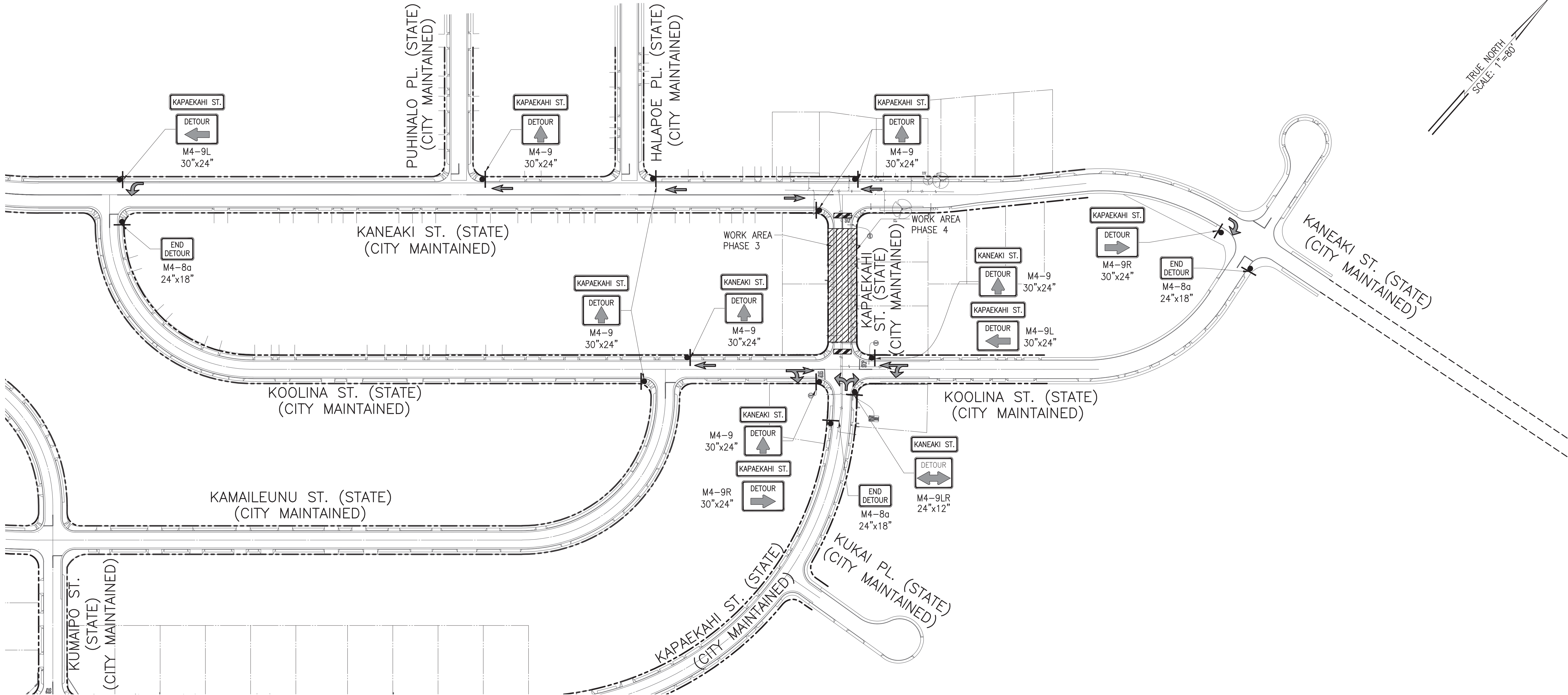
TERENCE S. ARASHIRO
LICENSED PROFESSIONAL ENGINEER
No. 6998-C
HAWAII, U.S.A.

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Terence S. Arashiro
APRIL 30, 2024
LIC. EXP. DATE

REVISION	DATE	BRIEF	BY	APPROVED
DEPARTMENT OF HAWAIIAN HOME LANDS STATE OF HAWAII				
PROJECT: WEST OAHU SEWER IMPROVEMENTS WAIANAE SUBDIVISION				
ITEM: TRAFFIC CONTROL PLAN - 4				
DESIGNED BY: CKK		CHECKED BY: TSA		
DRAWN BY: ATA				
APPROVED:				
CHIEF		DATE		
FUKUNAGA AND ASSOCIATES, INC. Consulting Engineers				
IFB-22-HHL-001				

\\ATA-HNL-ENG2020\Projects\2021\21-205 DHHL West Oahu Sewer Improvements\DWG\T-06 DETOUR PLAN - 3 & 4.dwg
Last saved 1/18/2022 12:50:09 AM by jding
Last plotted 7/6/2022 3:10:06 PM



DETOUR PLAN - 3 & 4
SCALE: 1"=80'

POSTED SPEED LIMIT: 25 MPH

LEGEND:

- SIGN
- DIRECTION OF TRAFFIC
- WORK AREA
- TYPE III BARRICADE WITH STEADY BURN

- NOTE:
- DETOUR PLAN ESTIMATED DURATION: 20 WORKING DAYS.
 - FOR TRAFFIC CONTROL PLAN, SEE DWG. T-4 & T-5.

CHIEF, TRAFFIC REVIEW BRANCH, DPP
(FOR WORK WITHIN CITY RIGHT OF WAY ONLY)

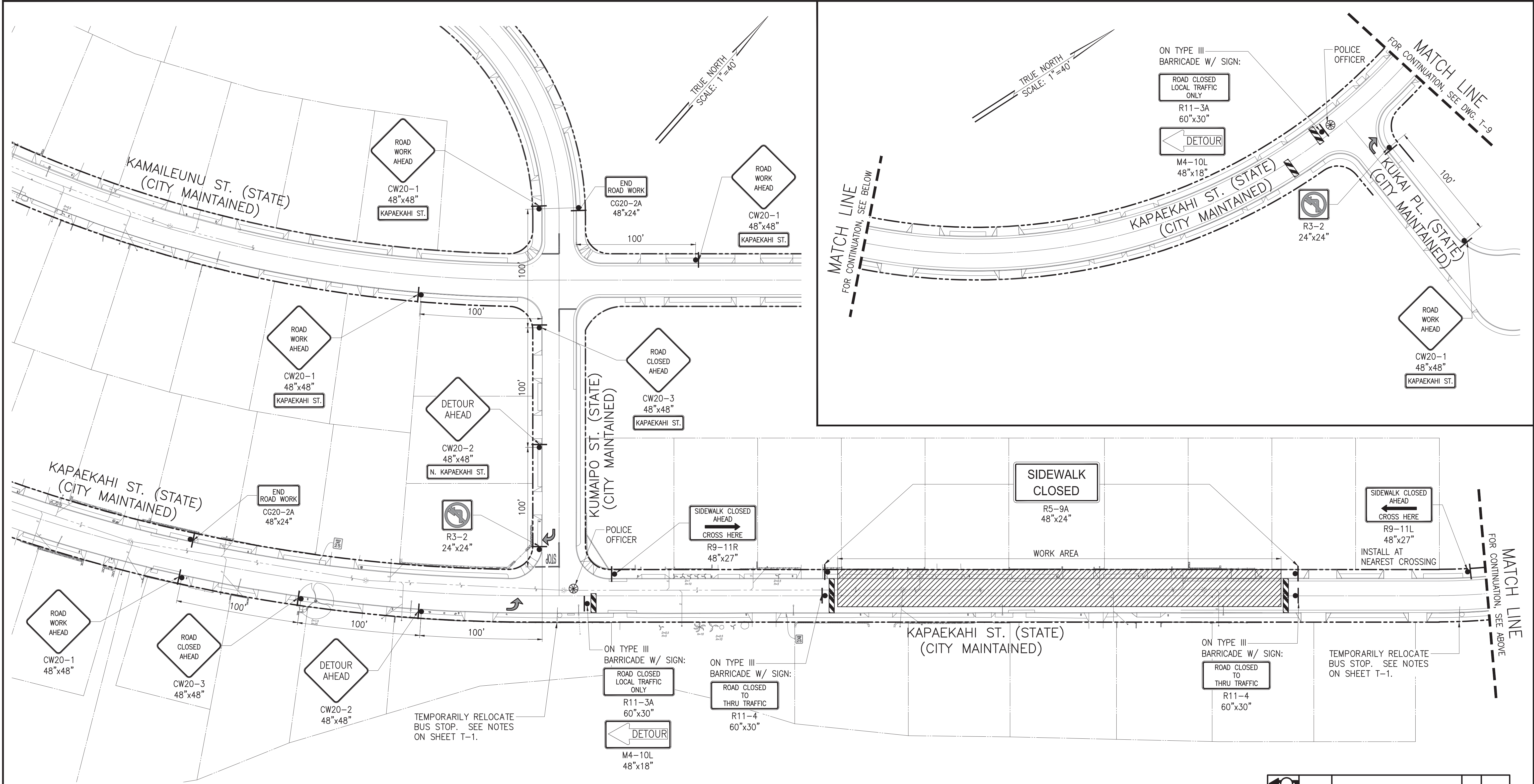
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Terrance S. Arashiro
APRIL 30, 2024
LIC. EXP. DATE

REVISION	DATE	BRIEF	BY	APPROVED
DEPARTMENT OF HAWAIIAN HOME LANDS STATE OF HAWAII				
PROJECT: WEST OAHU SEWER IMPROVEMENTS WAIANAE SUBDIVISION				
ITEM: DETOUR PLAN - 3 & 4				
DESIGNED BY: CKK		CHECKED BY: TSA		
DRAWN BY: ATA				
APPROVED:				
CHIEF		DATE		
FUKUNAGA AND ASSOCIATES, INC. Consulting Engineers				
IFB-22-HHL-001				

FILE	PROJECT	FOLDER	NO.

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Last plotted 7/6/2022 3:11:54 PM



POSTED SPEED LIMIT: 25 MPH

LEGEND:

- SIGN
- DIRECTION OF TRAFFIC
- WORK AREA
- POLICE OFFICER
- TYPE III BARRICADE WITH STEADY BURN

NOTE:

- CONTRACTOR TO PROVIDE ACCESS TO DRIVEWAYS AT ALL TIMES. SHOULD A PROPERTY OWNER WANT TO ENTER OR LEAVE THEIR DRIVEWAY, CONTRACTOR SHALL PROVIDE A SAFE ROUTE AND GUIDE THE VEHICLE THROUGH THE WORK AREA.
- TRAFFIC CONTROL PLAN ESTIMATED DURATION: 10 WORKING DAYS.
- FOR DETOUR PLAN, SEE DWG. T-12.

TRAFFIC CONTROL PLAN - 6A

SCALE: 1"=40'

CHIEF, TRAFFIC REVIEW BRANCH, DPP
(FOR WORK WITHIN CITY RIGHT OF WAY ONLY)

TERENCE S. ARASHIRO

LICENSED PROFESSIONAL ENGINEER

No. 6998-C

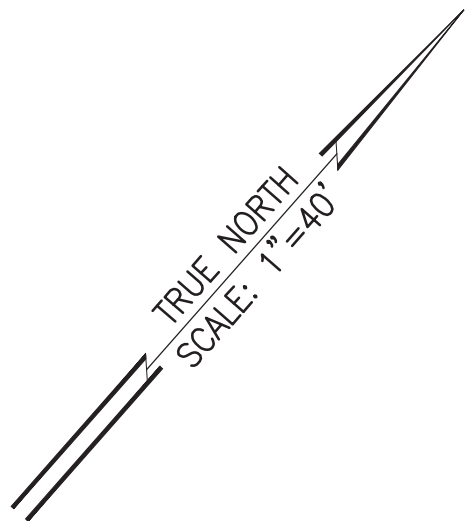
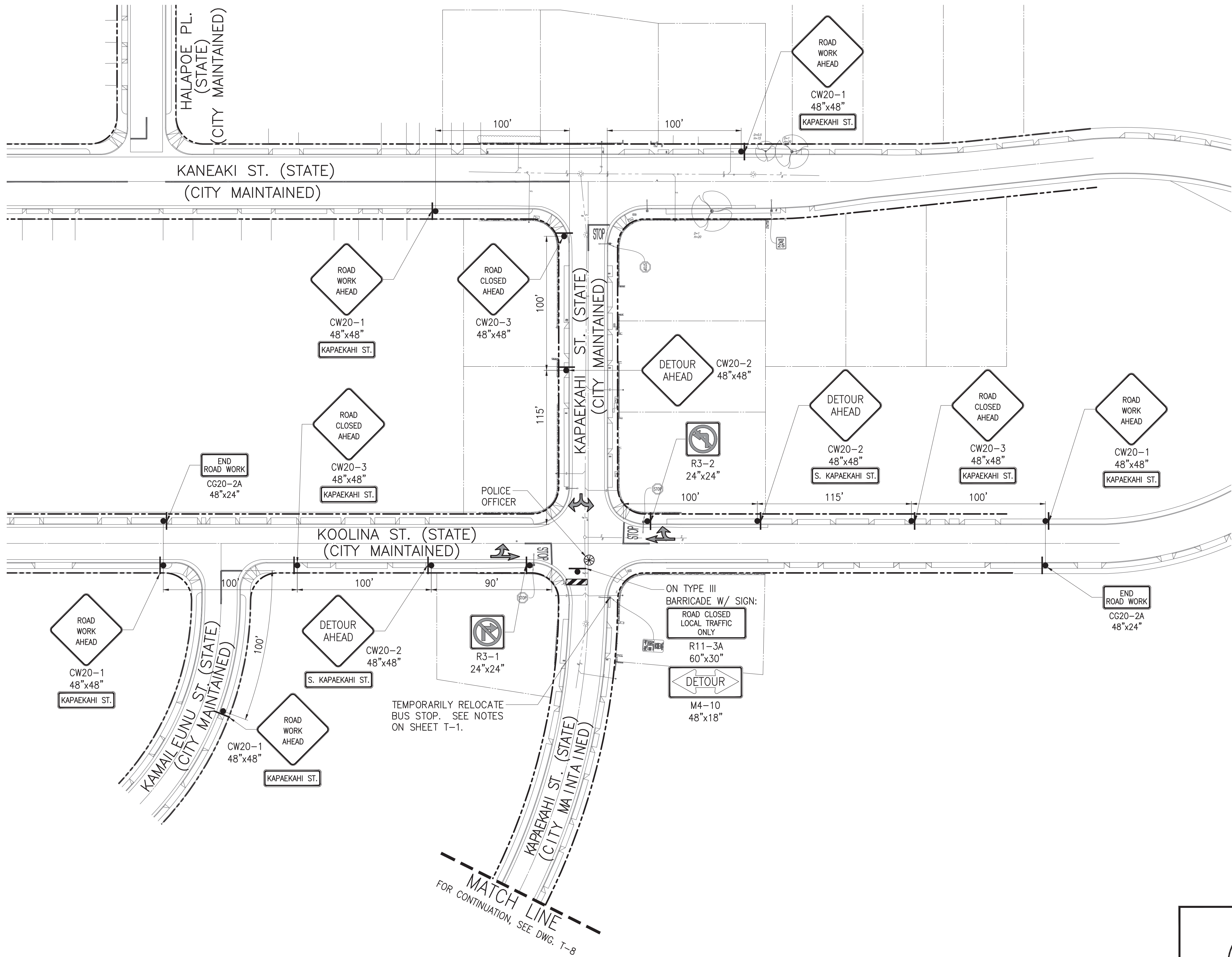
HAWAII, U.S.A.

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APRIL 30, 2024
LIC. EXP. DATE

REVISION	DATE	BRIEF	BY	APPROVED
DEPARTMENT OF HAWAIIAN HOME LANDS STATE OF HAWAII				
PROJECT: WEST OAHU SEWER IMPROVEMENTS WAIANAE SUBDIVISION				
ITEM: TRAFFIC CONTROL PLAN - 6A				
DESIGNED BY: CCK		CHECKED BY: TSA		
DRAWN BY: ATA		SECTION HEAD:		
APPROVED:		BRANCH HEAD:		
CHIEF		DATE		
FUKUNAGA AND ASSOCIATES, INC. Consulting Engineers				
IFB-22-HHL-001				
FILE	PROJECT	FOLDER	NO.	

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POSTED SPEED LIMIT: 25 MPH

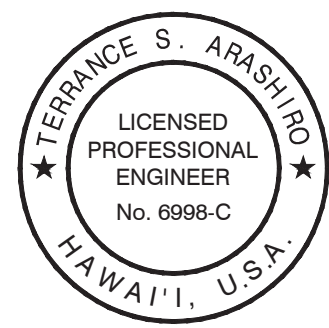
LEGEND:

- SIGN
- ➔ DIRECTION OF TRAFFIC
- ▨ WORK AREA
- ⊗ POLICE OFFICER
- ▨ TYPE III BARRICADE WITH STEADY BURN

NOTE:

- CONTRACTOR TO PROVIDE ACCESS TO DRIVEWAYS AT ALL TIMES. SHOULD A PROPERTY OWNER WANT TO ENTER OR LEAVE THEIR DRIVEWAY, CONTRACTOR SHALL PROVIDE A SAFE ROUTE AND GUIDE THE VEHICLE THROUGH THE WORK AREA.
- TRAFFIC CONTROL PLAN ESTIMATED DURATION: 10 WORKING DAYS.
- FOR DETOUR PLAN, SEE DWG. T-12.

REVISION	DATE	BRIEF	BY	APPROVED

	
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS, STATE OF HAWAII	
APRIL 30, 2024 LIC. EXP. DATE	

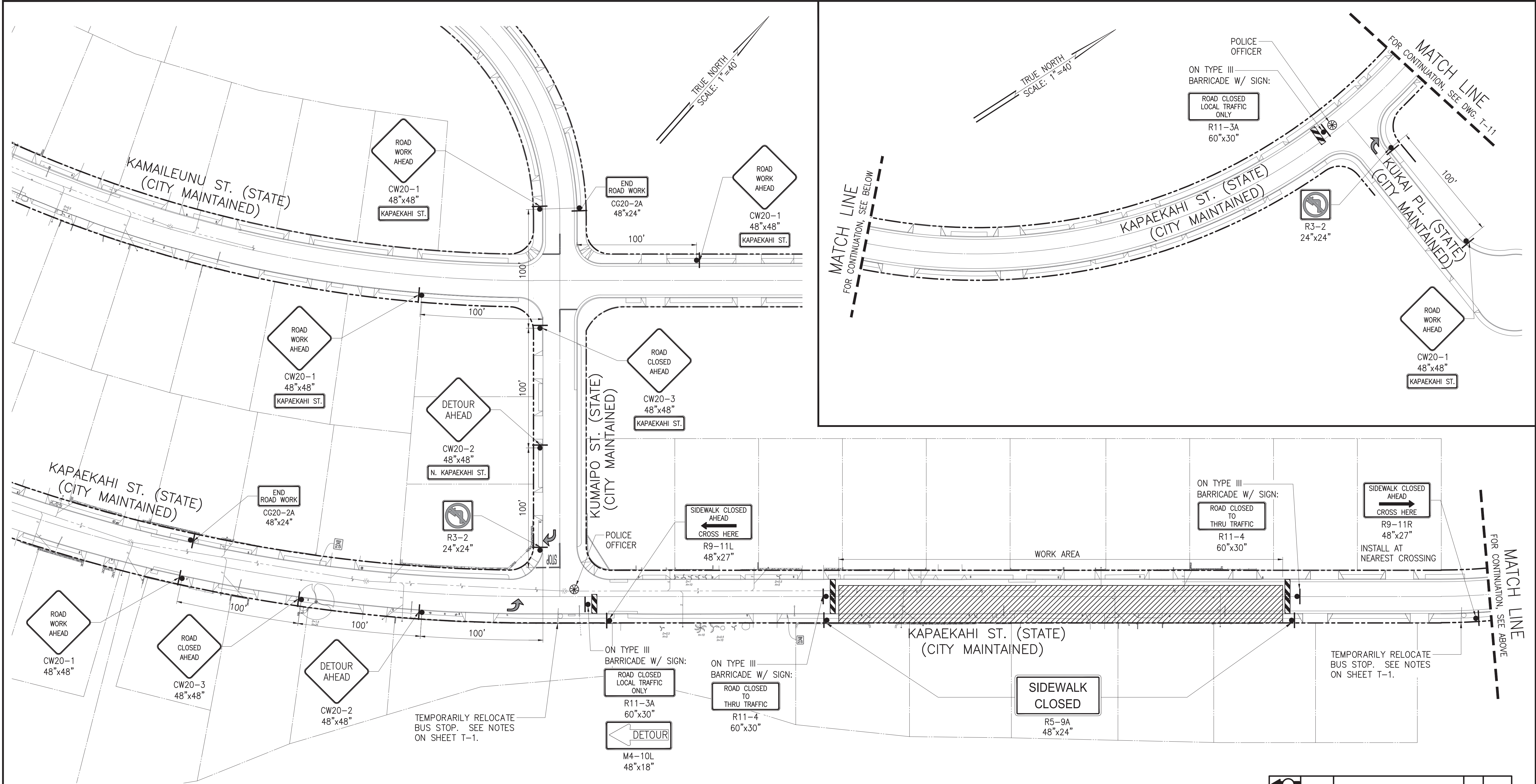
DEPARTMENT OF HAWAIIAN HOME LANDS STATE OF HAWAII	
PROJECT: WEST OAHU SEWER IMPROVEMENTS WAIANAE SUBDIVISION	
ITEM: TRAFFIC CONTROL PLAN - 6B	
DESIGNED BY: CKK	CHECKED BY: TSA
DRAWN BY: ATA	SECTION HEAD:
APPROVED:	BRANCH HEAD:
CHIEF	DATE
FUKUNAGA AND ASSOCIATES, INC. Consulting Engineers	
IFB-22-HHL-001	

TRAFFIC CONTROL PLAN - 6B
SCALE: 1"=40'

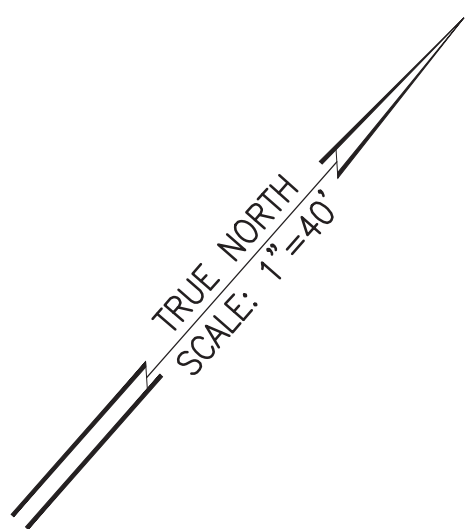
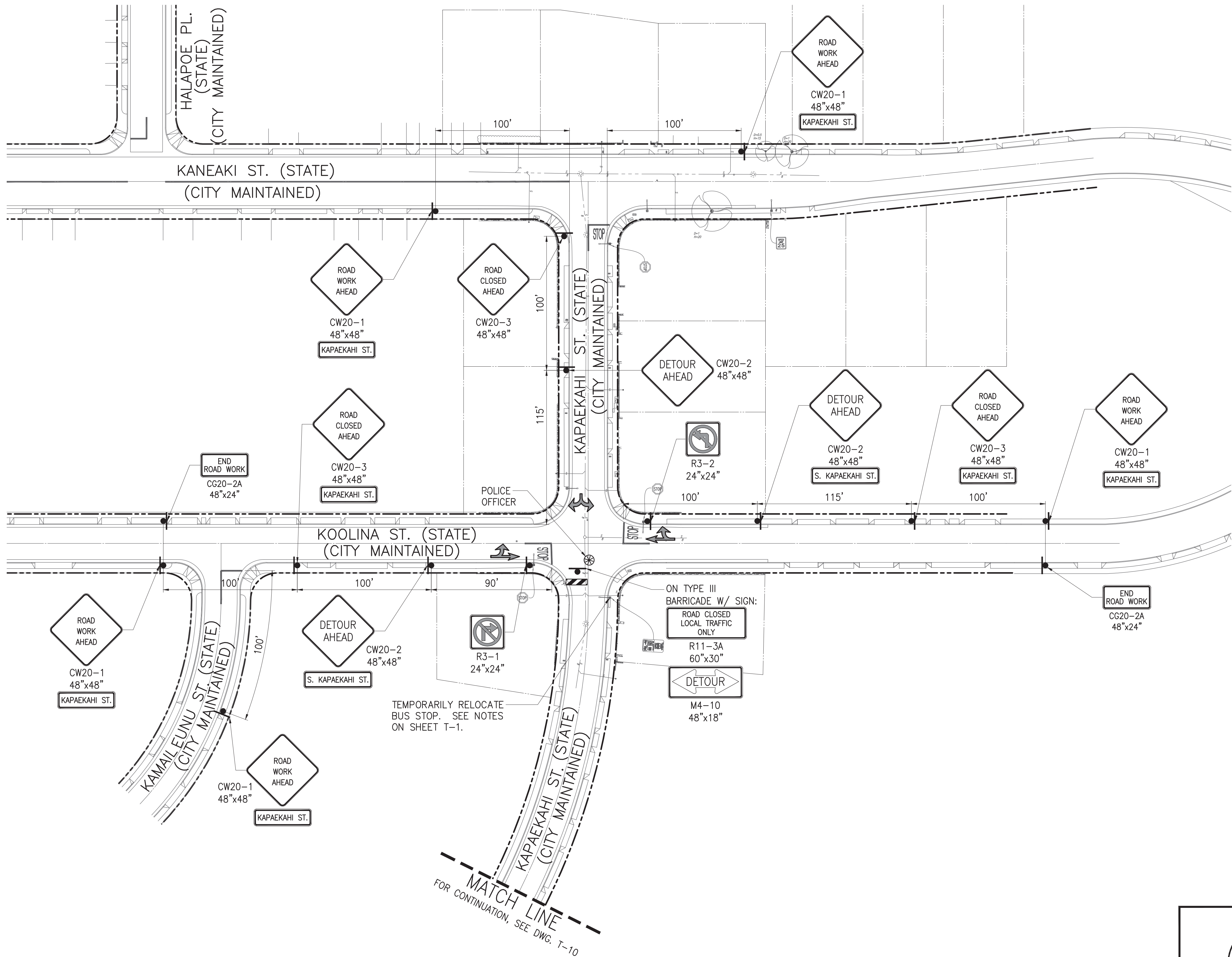
CHIEF, TRAFFIC REVIEW BRANCH, DPP
(FOR WORK WITHIN CITY RIGHT OF WAY ONLY)

FILE	PROJECT	FOLDER	NO.

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Last plotted 7/6/2022 3:13:22 PM



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Last plotted 7/6/2022 3:13:51 PM



POSTED SPEED LIMIT: 25 MPH

LEGEND:

- SIGN
- DIRECTION OF TRAFFIC
- WORK AREA
- POLICE OFFICER
- TYPE III BARRICADE WITH STEADY BURN

NOTE:

- CONTRACTOR TO PROVIDE ACCESS TO DRIVEWAYS AT ALL TIMES. SHOULD A PROPERTY OWNER WANT TO ENTER OR LEAVE THEIR DRIVEWAY, CONTRACTOR SHALL PROVIDE A SAFE ROUTE AND GUIDE THE VEHICLE THROUGH THE WORK AREA.
- TRAFFIC CONTROL PLAN ESTIMATED DURATION: 10 WORKING DAYS.
- FOR DETOUR PLAN, SEE DWG. T-12.

REVISION	DATE	BRIEF	BY	APPROVED

<p>THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS, STATE OF HAWAII</p> <p>APRIL 30, 2024 LIC. EXP. DATE</p>		<p>DEPARTMENT OF HAWAIIAN HOME LANDS STATE OF HAWAII</p> <p>PROJECT: WEST OAHU SEWER IMPROVEMENTS WAIANAE SUBDIVISION</p> <p>ITEM: TRAFFIC CONTROL PLAN - 7B</p> <p>DESIGNED BY: CKK CHECKED BY: TSA DRAWN BY: ATA SECTION HEAD: _____ APPROVED: _____ BRANCH HEAD: _____ _____ CHIEF DATE</p> <p>FUKUNAGA AND ASSOCIATES, INC. Consulting Engineers</p> <p>IFB-22-HHL-001</p>	
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TRAFFIC CONTROL PLAN - 7B
SCALE: 1"=40'



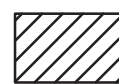

CHIEF, TRAFFIC REVIEW BRANCH, DPP
(FOR WORK WITHIN CITY RIGHT OF WAY ONLY)

FILE	PROJECT	FOLDER	NO.

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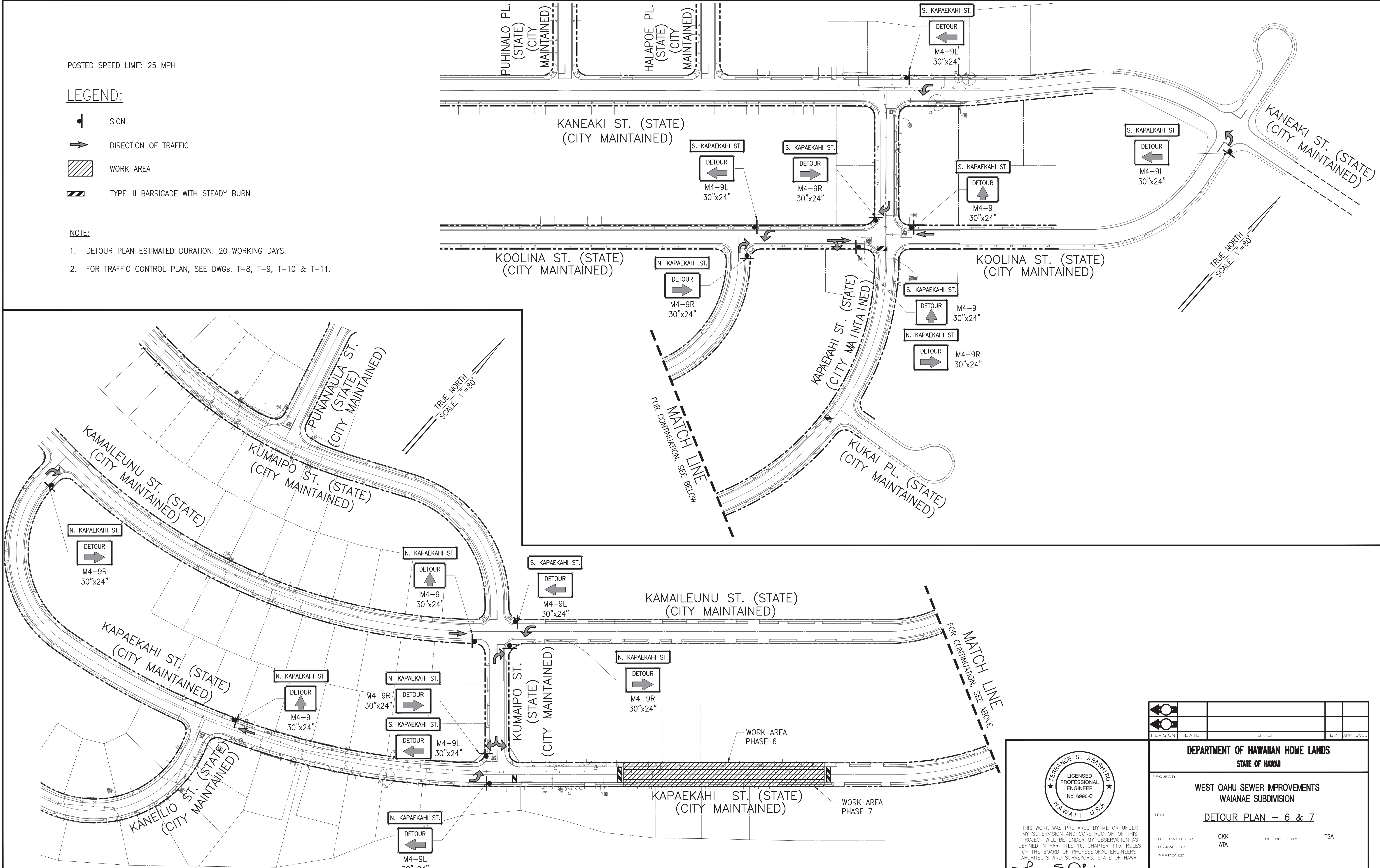
POSTED SPEED LIMIT: 25 MPH

LEGEND:

-  SIGN
-  DIRECTION OF TRAFFIC
-  WORK AREA
-  TYPE III BARRICADE WITH STEADY BURN

NOTE:

- DETOUR PLAN ESTIMATED DURATION: 20 WORKING DAYS.
- FOR TRAFFIC CONTROL PLAN, SEE DWGS. T-8, T-9, T-10 & T-11.



DETOUR PLAN - 6 & 7
SCALE: 1"=80'

CHIEF, TRAFFIC REVIEW BRANCH, DPP
(FOR WORK WITHIN CITY RIGHT OF WAY ONLY)

TERENCE S. ARASHIRO

LICENSED PROFESSIONAL ENGINEER



No. 6998-C

HAWAII, U.S.A.

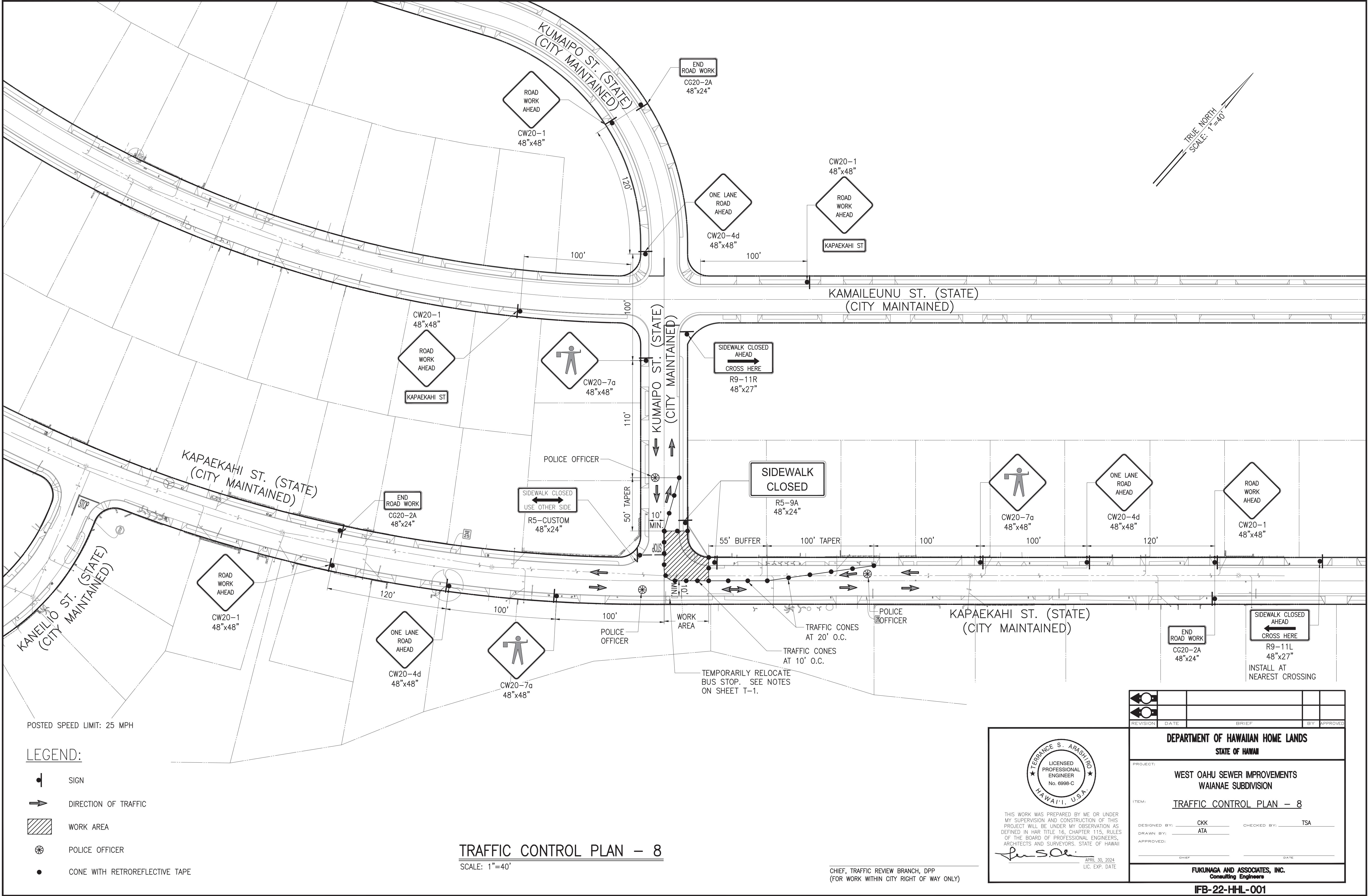
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS, STATE OF HAWAII

APRIL 30, 2024

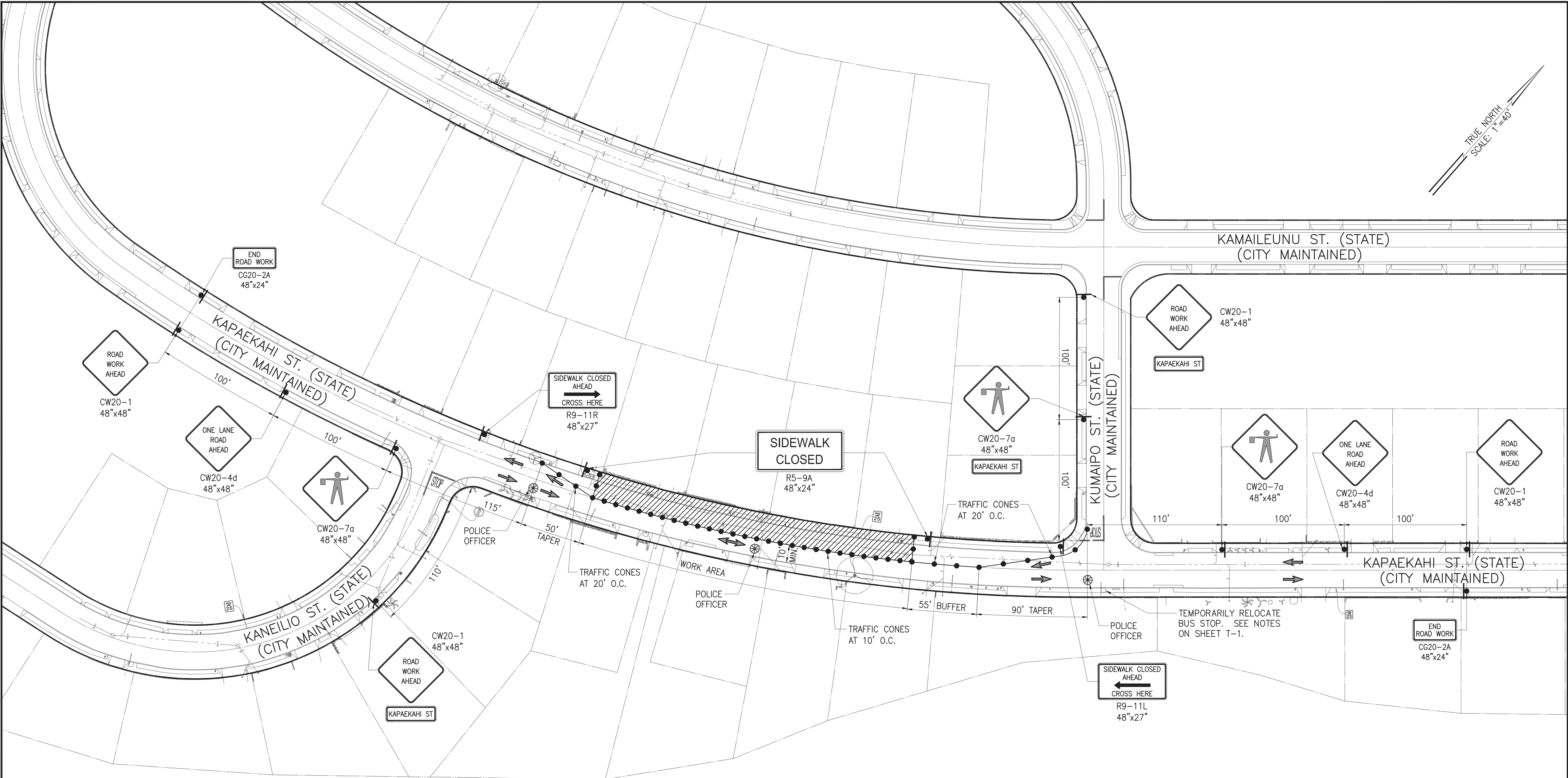
LIC. EXP. DATE

					
REVISION	DATE	BRIEF	BY	APPROVED	
<div>DEPARTMENT OF HAWAIIAN HOME LANDS</div> <div>STATE OF HAWAII</div>					
PROJECT: <div>WEST OAHU SEWER IMPROVEMENTS</div> <div>WAIANAE SUBDIVISION</div>					
ITEM: <div><u>DETOUR PLAN – 6 & 7</u></div>					
DESIGNED BY: <div>CKK</div>		CHECKED BY: <div>TSA</div>			
DRAWN BY: <div>ATA</div>					
APPROVED: <div></div>					
<div>CHIEF</div>		<div>DATE</div>			
<div>FUKUNAGA AND ASSOCIATES, INC.</div> <div>Consulting Engineers</div>					
FILE	PROJECT	FOLDER	NO.		

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Last plotted 7/6/2022 3:15:24 PM



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Last plotted 7/6/2022 3:15:53 PM



POSTED SPEED LIMIT: 25 MPH

LEGEND:

- SIGN
- DIRECTION OF TRAFFIC
- WORK AREA
- POLICE OFFICER
- CONE WITH RETROREFLECTIVE TAPE

TRAFFIC CONTROL PLAN - 9
SCALE: 1"=40'

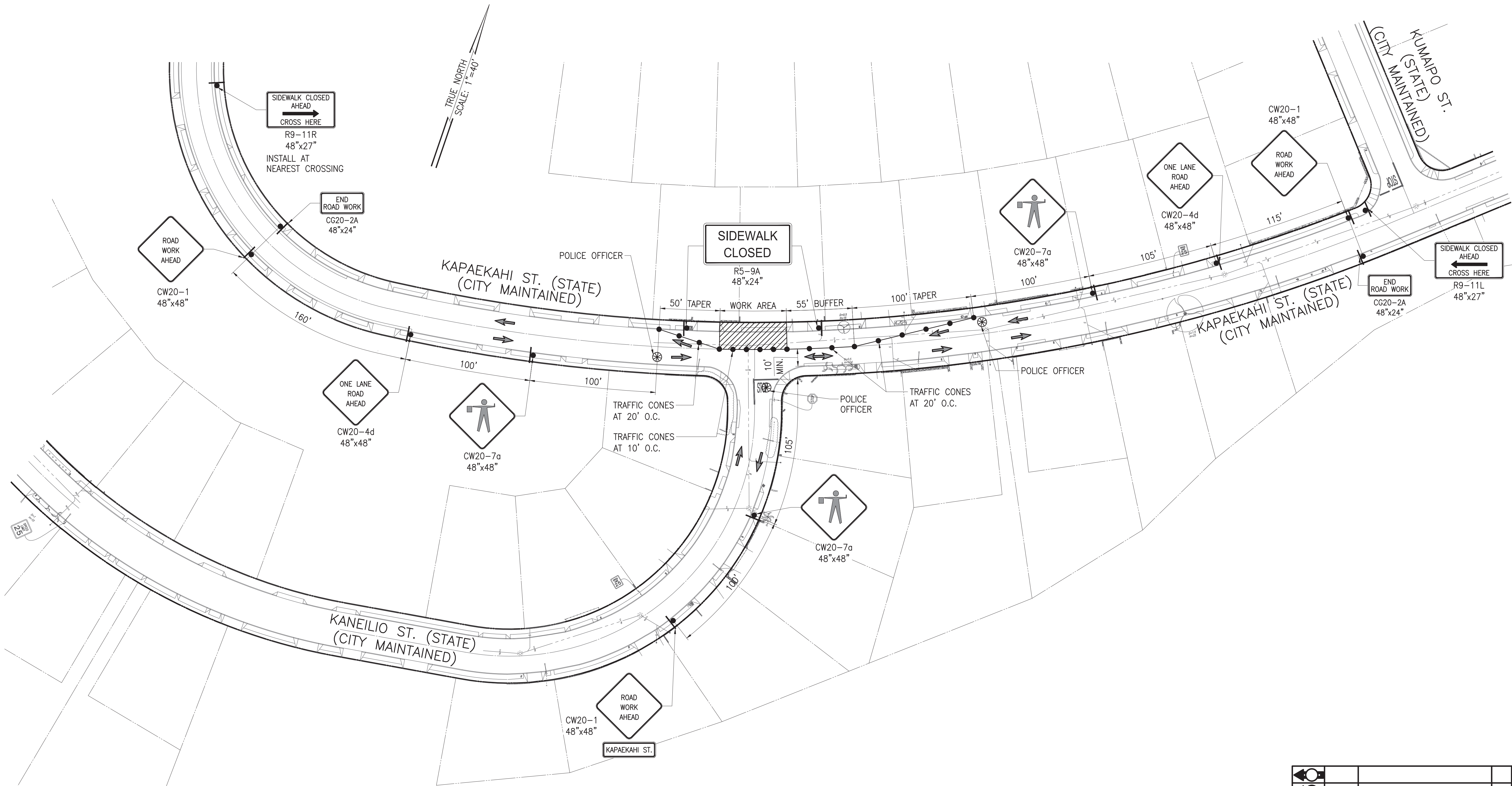
CHIEF, TRAFFIC REVIEW BRANCH, DPP
(FOR WORK WITHIN CITY RIGHT OF WAY ONLY)

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Terrence S. Arashiro
APRIL 30, 2024
LIC. EXP. DATE

REVISION	DATE	BRIEF	BY	APPROVED
DEPARTMENT OF HAWAIIAN HOME LANDS STATE OF HAWAII				
PROJECT: WEST OAHU SEWER IMPROVEMENTS WAIANAE SUBDIVISION				
ITEM: TRAFFIC CONTROL PLAN - 9				
DESIGNED BY: CKK		CHECKED BY: TSA		
DRAWN BY: ATA				
APPROVED:		DATE		
FUKUNAGA AND ASSOCIATES, INC. Consulting Engineers				
IFB-22-HHL-001				

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Last plotted 7/6/2022 3:16:22 PM



POSTED SPEED LIMIT: 25 MPH

LEGEND:

- SIGN
- DIRECTION OF TRAFFIC
- WORK AREA
- POLICE OFFICER
- CONE WITH RETROREFLECTIVE TAPE

TRAFFIC CONTROL PLAN - 10
SCALE: 1"=40'

CHIEF, TRAFFIC REVIEW BRANCH, DPP
(FOR WORK WITHIN CITY RIGHT OF WAY ONLY)

TERENCE S. ARASHIRO

LICENSED PROFESSIONAL ENGINEER

No. 6998-C

HAWAII, U.S.A.

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LIC. EXP. DATE

REVISION	DATE	BRIEF	BY
DEPARTMENT OF HAWAIIAN HOME LANDS STATE OF HAWAII			
PROJECT: WEST OAHU SEWER IMPROVEMENTS WAIANAE SUBDIVISION			
ITEM: TRAFFIC CONTROL PLAN - 10			
DESIGNED BY:	CKK	CHECKED BY:	TSA
DRAWN BY:	ATA		
APPROVED:			
FUKUNAGA AND ASSOCIATES, INC. Consulting Engineers			
IFB-22-HHL-001			

\\ATA-HNL-ENG2020\Projects\2021\21-205 DHHL West Oahu Sewer Improvements\DWG\T-16 TRAFFIC CONTROL PLAN - 11.dwg
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Last plotted 7/6/2022 3:16:53 PM


POSTED SPEED LIMIT: 25 MPH

LEGEND:

-  SIGN
-  DIRECTION OF TRAFFIC
-  WORK AREA
-  POLICE OFFICER
-  CONE WITH RETROREFLECTIVE TAPE

TRAFFIC CONTROL PLAN - 11
SCALE: 1"=40'

CHIEF, TRAFFIC REVIEW BRANCH, DPP
(FOR WORK WITHIN CITY RIGHT OF WAY ONLY)

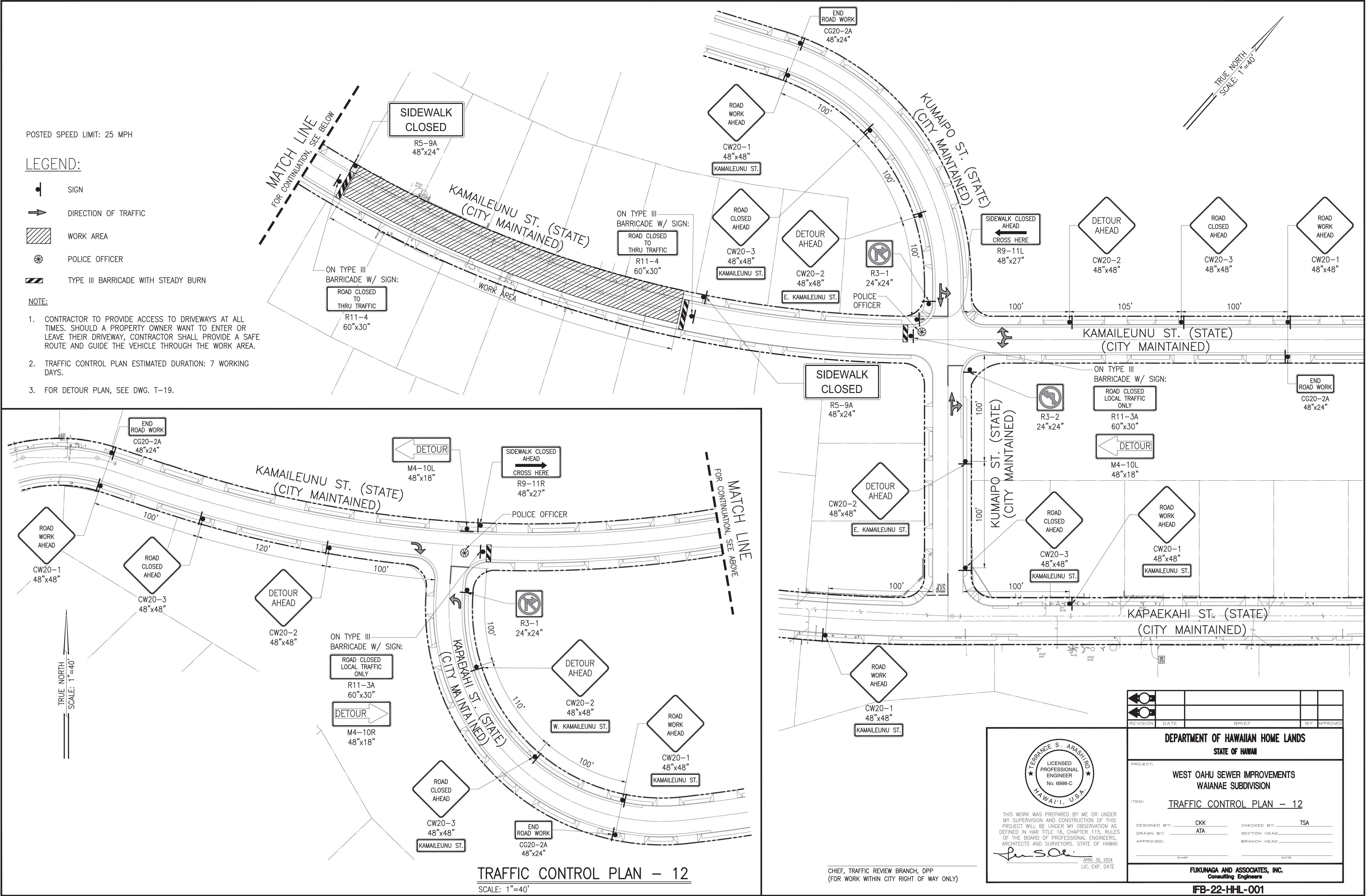


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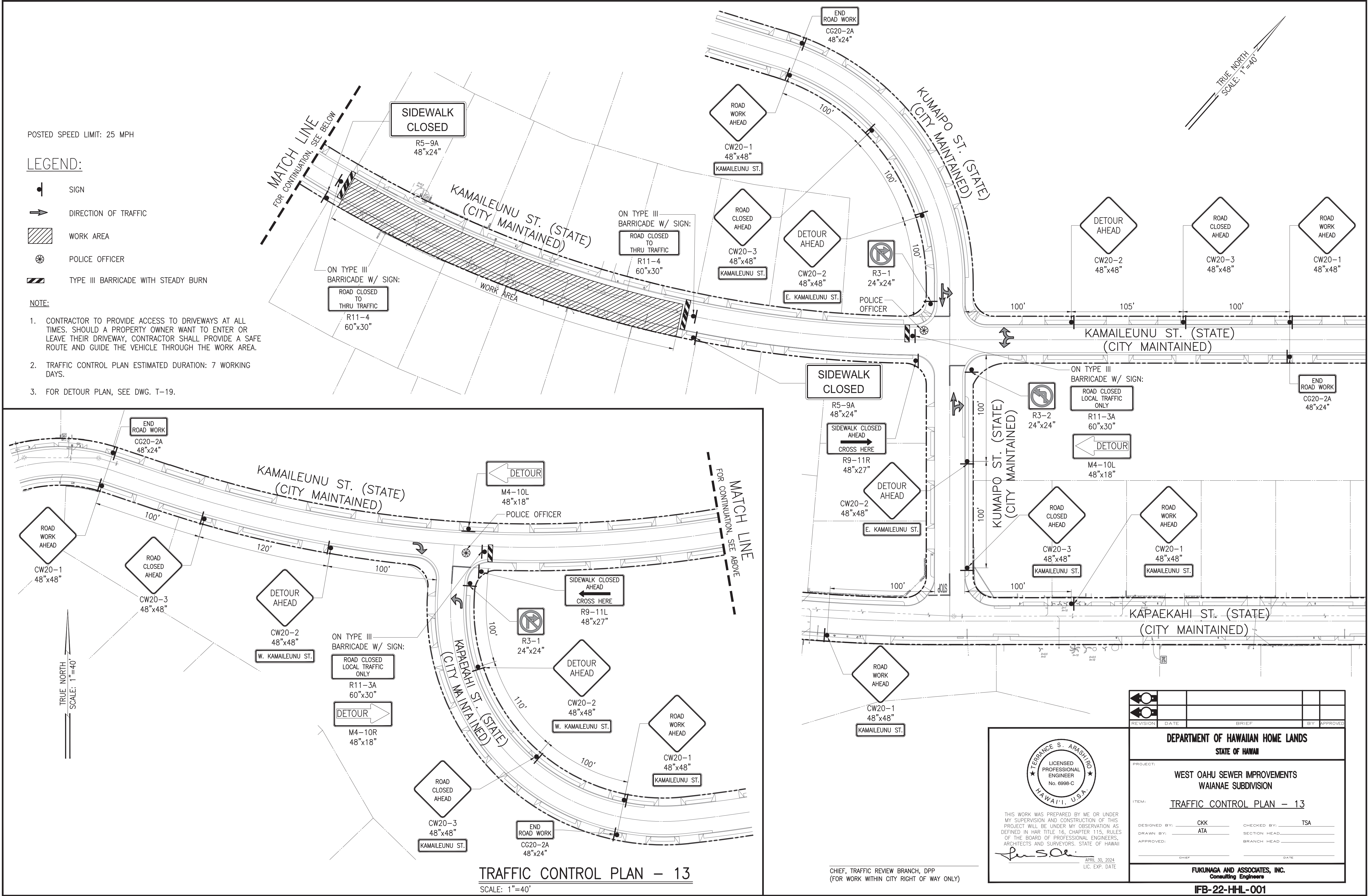
Terrance S. Arashiro
APRIL 30, 2024
LIC. EXP. DATE

REVISION	DATE	BRIEF	BY	APPROVED
DEPARTMENT OF HAWAIIAN HOME LANDS STATE OF HAWAII				
PROJECT: WEST OAHU SEWER IMPROVEMENTS WAIANAE SUBDIVISION				
ITEM: TRAFFIC CONTROL PLAN - 11				
DESIGNED BY: CKK		CHECKED BY: TSA		
DRAWN BY: ATA				
APPROVED:				
CHIEF		DATE		
FUKUNAGA AND ASSOCIATES, INC. Consulting Engineers				
IFB-22-HHL-001				

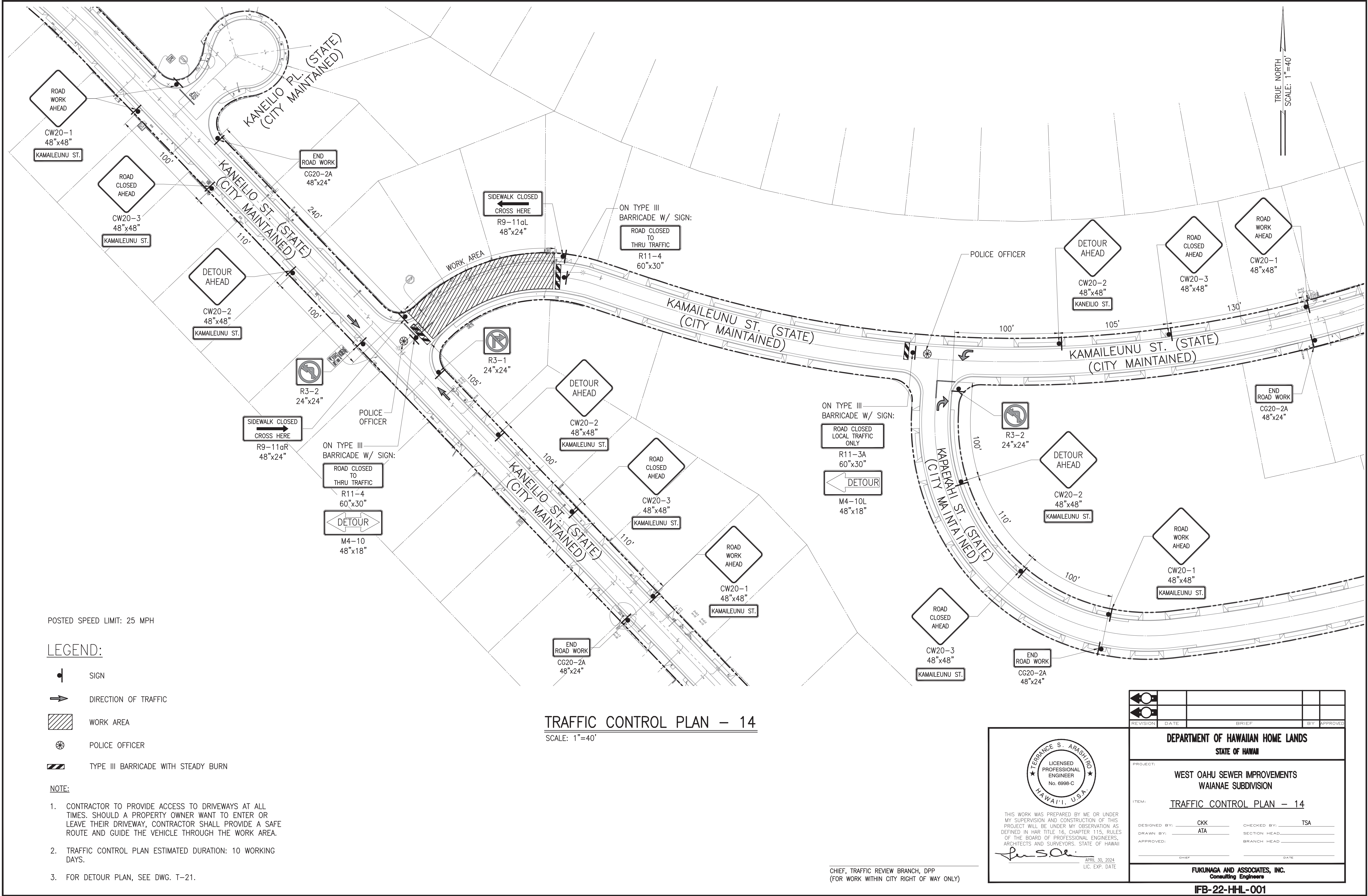
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POSTED SPEED LIMIT: 25 MPH

LEGEND:

-  SIGN
-  DIRECTION OF TRAFFIC
-  WORK AREA
-  TYPE III BARRICADE WITH STEADY BURN

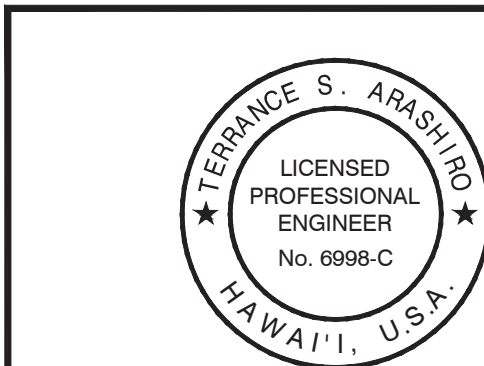
NOTE:

- DETOUR PLAN ESTIMATED DURATION: 10 WORKING DAYS.
- FOR TRAFFIC CONTROL PLAN, SEE DWG. T-20.

DETOUR PLAN - 14



SCALE: 1"=80'

CHIEF, TRAFFIC REVIEW BRANCH, DPP
(FOR WORK WITHIN CITY RIGHT OF WAY ONLY)



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Terrance S. Arashiro
APRIL 30, 2024
LIC. EXP. DATE

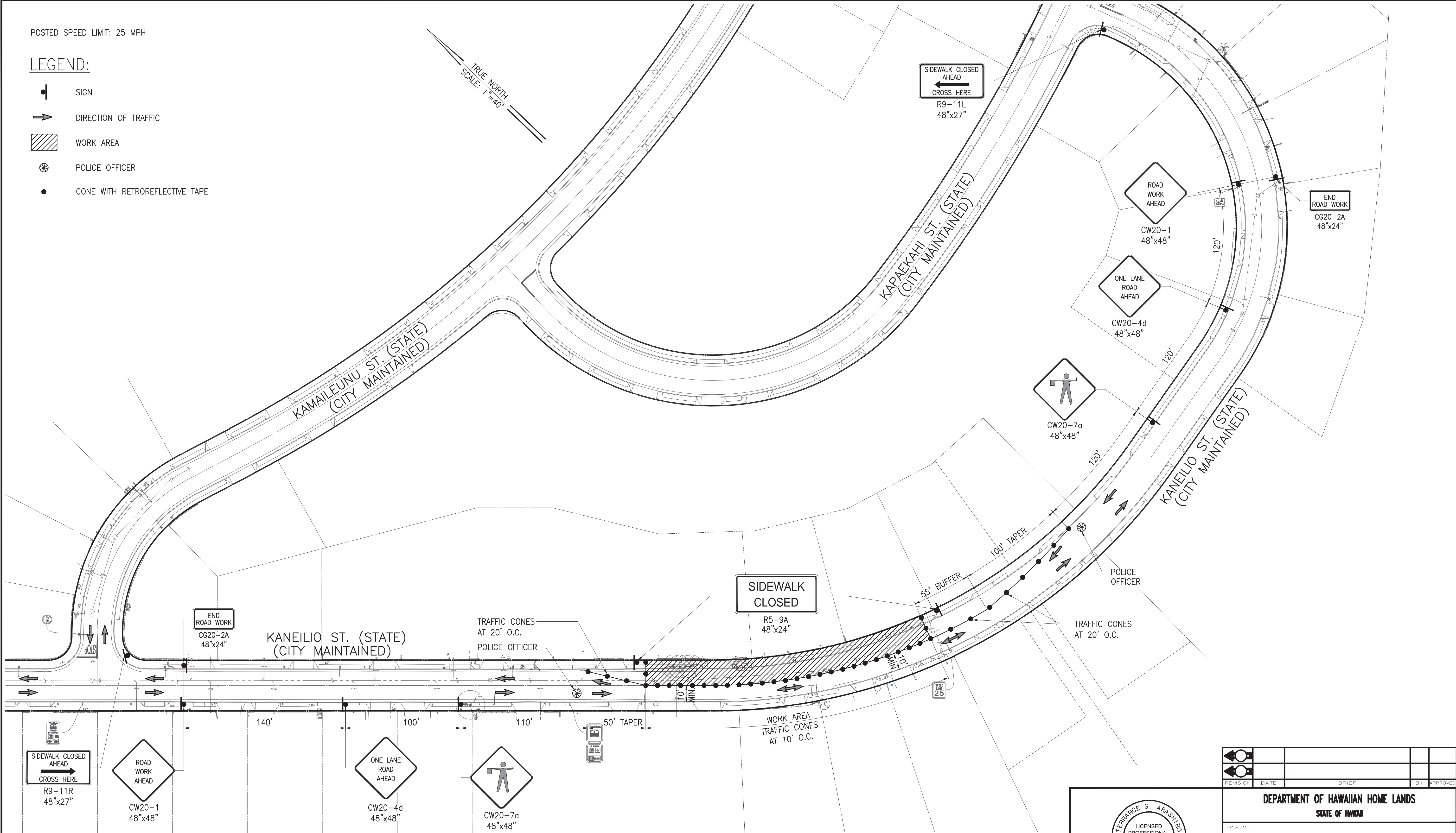
			
			
REVISION	DATE	BRIEF	BY
DEPARTMENT OF HAWAIIAN HOME LANDS STATE OF HAWAII			
PROJECT: WEST OAHU SEWER IMPROVEMENTS WAIANAE SUBDIVISION			
ITEM: DETOUR PLAN - 14			
DESIGNED BY: CKK	CHECKED BY: TSA		
DRAWN BY: ATA	SECTION HEAD:		
APPROVED:	BRANCH HEAD:		
CHIEF	DATE		
FUKUNAGA AND ASSOCIATES, INC. Consulting Engineers			
IFB-22-HHL-001			

POSTED SPEED LIMIT: 25 MPH

LEGEND:

- SIGN
- DIRECTION OF TRAFFIC
- WORK AREA
- POLICE OFFICER
- CONE WITH RETROREFLECTIVE TAPE

TRUE NORTH
SCALE: 1"=40'



TRAFFIC CONTROL PLAN - 15
SCALE: 1"=40'

CHIEF, TRAFFIC REVIEW BRANCH, DPP
(FOR WORK WITHIN CITY RIGHT OF WAY ONLY)

TERENCE S. ARASHIRO

LICENSED PROFESSIONAL ENGINEER

No. 6998-C

HAWAII, U.S.A.

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Terence S. Arashiro

APRIL 30, 2024
LIC. EXP. DATE

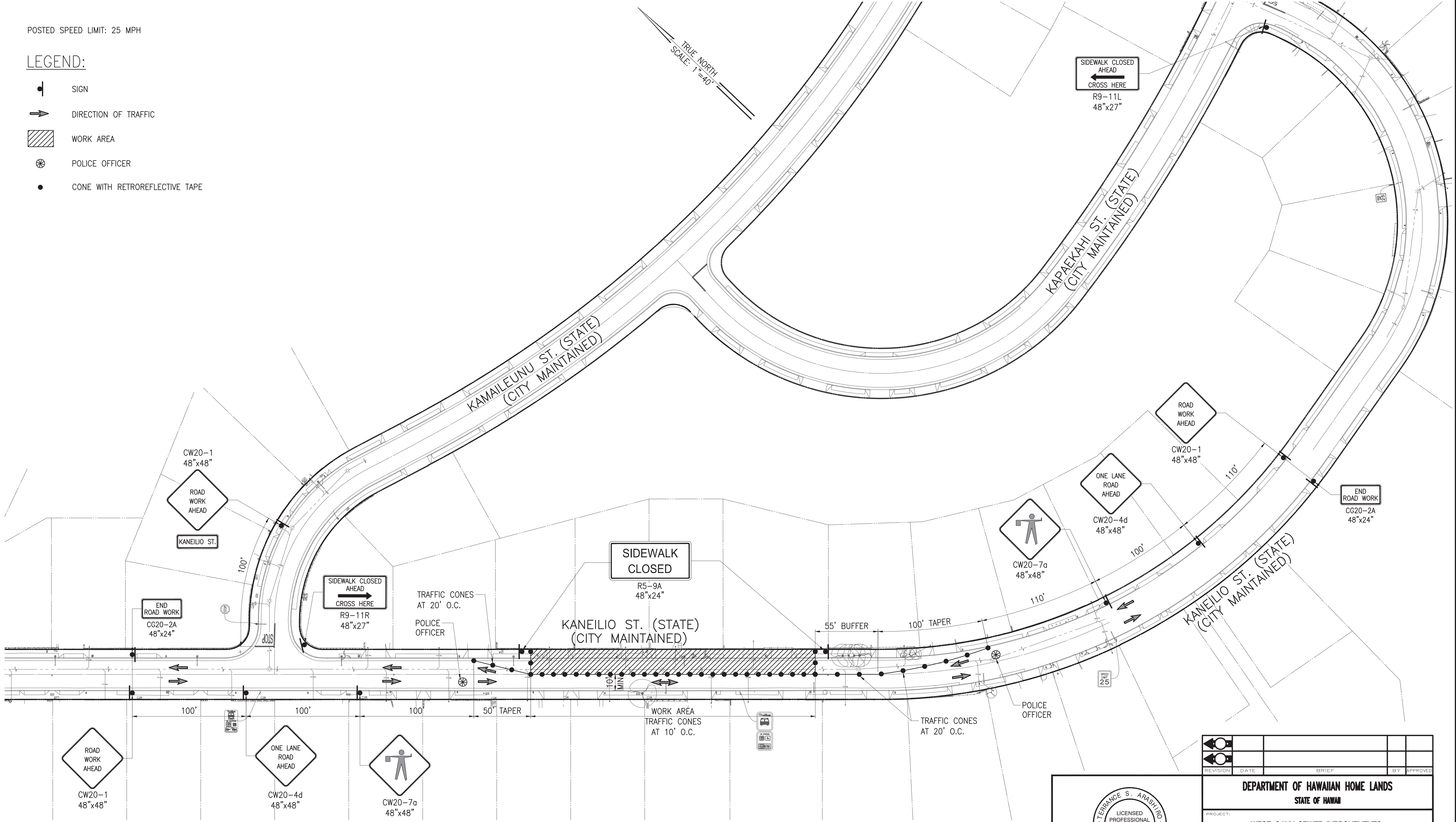
REVISION	DATE	BRIEF	BY	APPROVED
DEPARTMENT OF HAWAIIAN HOME LANDS STATE OF HAWAII				
PROJECT: WEST OAHU SEWER IMPROVEMENTS WAIANAE SUBDIVISION				
ITEM: TRAFFIC CONTROL PLAN - 15				
DESIGNED BY: CKK		CHECKED BY: TSA		
DRAWN BY: ATA				
APPROVED:				
CHIEF		DATE		
FUKUNAGA AND ASSOCIATES, INC. Consulting Engineers				
IFB-22-HHL-001				

\\ATA-HNL-ENG2020\Projects\2021\21-205 DHHL West Oahu Sewer Improvements\DWG\T-23 TRAFFIC CONTROL PLAN - 16.dwg
Last saved 3/31/2022 8:41:54 AM by OkadaKawa
Last plotted 7/6/2022 3:22:04 PM

POSTED SPEED LIMIT: 25 MPH

LEGEND:

- SIGN
- DIRECTION OF TRAFFIC
- WORK AREA
- POLICE OFFICER
- CONE WITH RETROREFLECTIVE TAPE



TRAFFIC CONTROL PLAN - 16
SCALE: 1"=40'

CHIEF, TRAFFIC REVIEW BRANCH, DPP
(FOR WORK WITHIN CITY RIGHT OF WAY ONLY)

TERENCE S. ARASHIRO

LICENSED PROFESSIONAL ENGINEER



No. 6998-C

HAWAII, U.S.A.

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APRIL 30, 2024

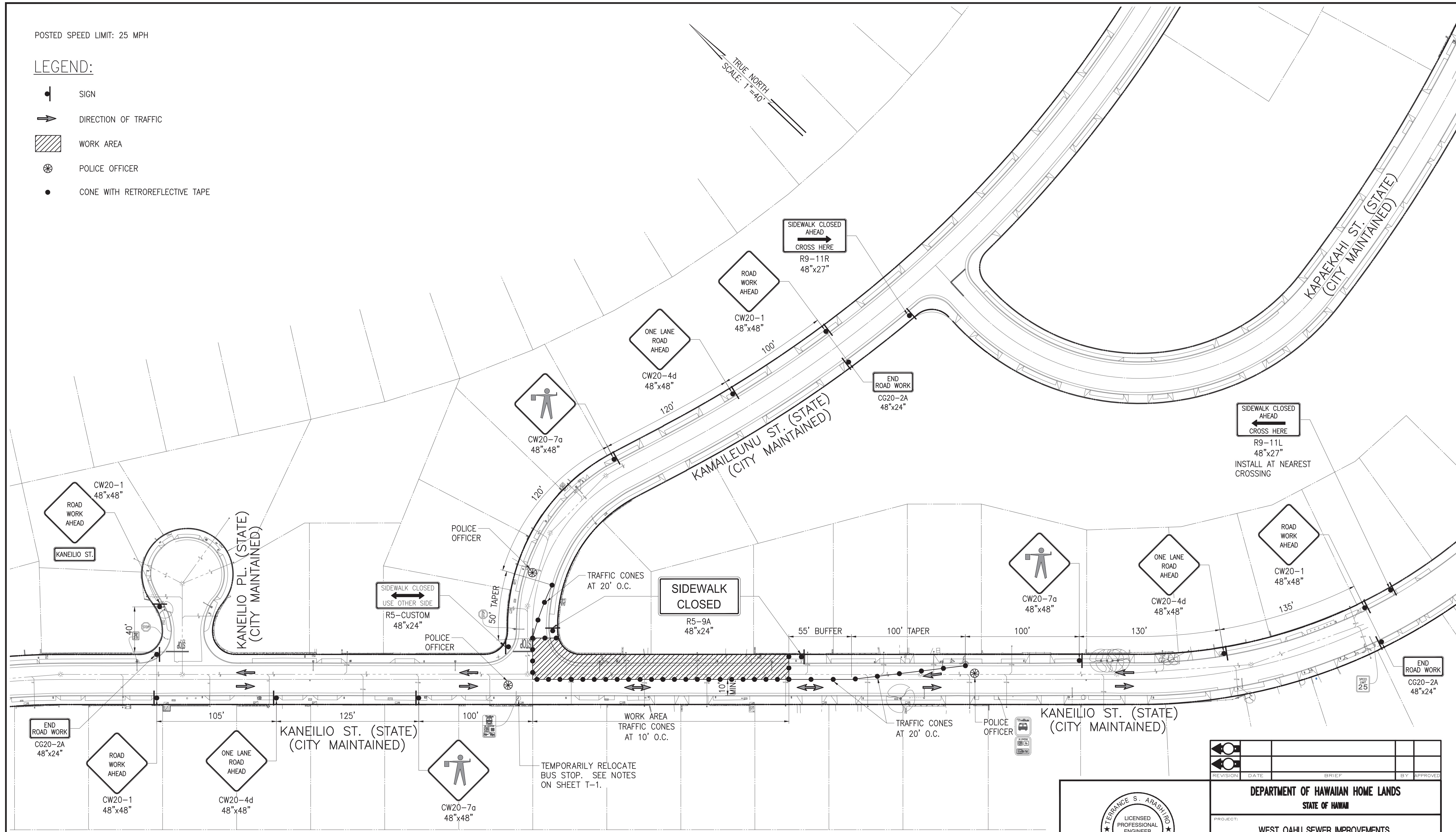
LIC. EXP. DATE

					
REVISION	DATE	BRIEF	BY	APPROVED	
<div>DEPARTMENT OF HAWAIIAN HOME LANDS</div> <div>STATE OF HAWAII</div>					
PROJECT: WEST OAHU SEWER IMPROVEMENTS WAIANAE SUBDIVISION					
ITEM: <u>TRAFFIC CONTROL PLAN — 16</u>					
DESIGNED BY: CKK		CHECKED BY: TSA			
DRAWN BY: ATA					
APPROVED:					
_____ CHIEF		_____ DATE			
<div>FUKUNAGA AND ASSOCIATES, INC.</div> <div>Consulting Engineers</div>					
FILE	PROJECT	FOLDER	NO.		

POSTED SPEED LIMIT: 25 MPH

LEGEND:

- SIGN
- DIRECTION OF TRAFFIC
- WORK AREA
- POLICE OFFICER
- CONE WITH RETROREFLECTIVE TAPE



TRAFFIC CONTROL PLAN - 17

SCALE: 1"=40'

CHIEF, TRAFFIC REVIEW BRANCH, DPP
(FOR WORK WITHIN CITY RIGHT OF WAY ONLY)

TERENCE S. ARASHIRO
LICENSED PROFESSIONAL ENGINEER
No. 6998-C
HAWAII, U.S.A.






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APRIL 30, 2024
LIC. EXP. DATE

REVISION	DATE	BRIEF	BY	APPROVED
DEPARTMENT OF HAWAIIAN HOME LANDS STATE OF HAWAII				
PROJECT: WEST OAHU SEWER IMPROVEMENTS WAIANAE SUBDIVISION				
ITEM: TRAFFIC CONTROL PLAN - 17				
DESIGNED BY: CKK		CHECKED BY: TSA		
DRAWN BY: ATA				
APPROVED:				
CHIEF		DATE		
FUKUNAGA AND ASSOCIATES, INC. Consulting Engineers				
IFB-22-HHL-001				

POSTED SPEED LIMIT: 25 MPH

LEGEND:

- | | |
|---|--------------------------------|
|  | SIGN |
|  | DIRECTION OF TRAFFIC |
|  | WORK AREA |
|  | POLICE OFFICER |
|  | CONE WITH RETROREFLECTIVE TAPE |



TRAFFIC CONTROL PLAN – 18

SCALE: 1"=40'

CHIEF, TRAFFIC REVIEW BRANCH, DPP
(FOR WORK WITHIN CITY RIGHT OF WAY ONLY)

DRAWING T-25

SHEET 68 OF 84

					
					
REVISION	DATE	BRIEF	BY	APPROVED	

DEPARTMENT OF HAWAIIAN HOME LANDS
 STATE OF HAWAII

PROJECT: WEST OAHU SEWER IMPROVEMENTS
WAIANAE SUBDIVISION

ITEM: TRAFFIC CONTROL PLAN — 18

DESIGNED BY: CKK
 DRAWN BY: ATA
 APPROVED:

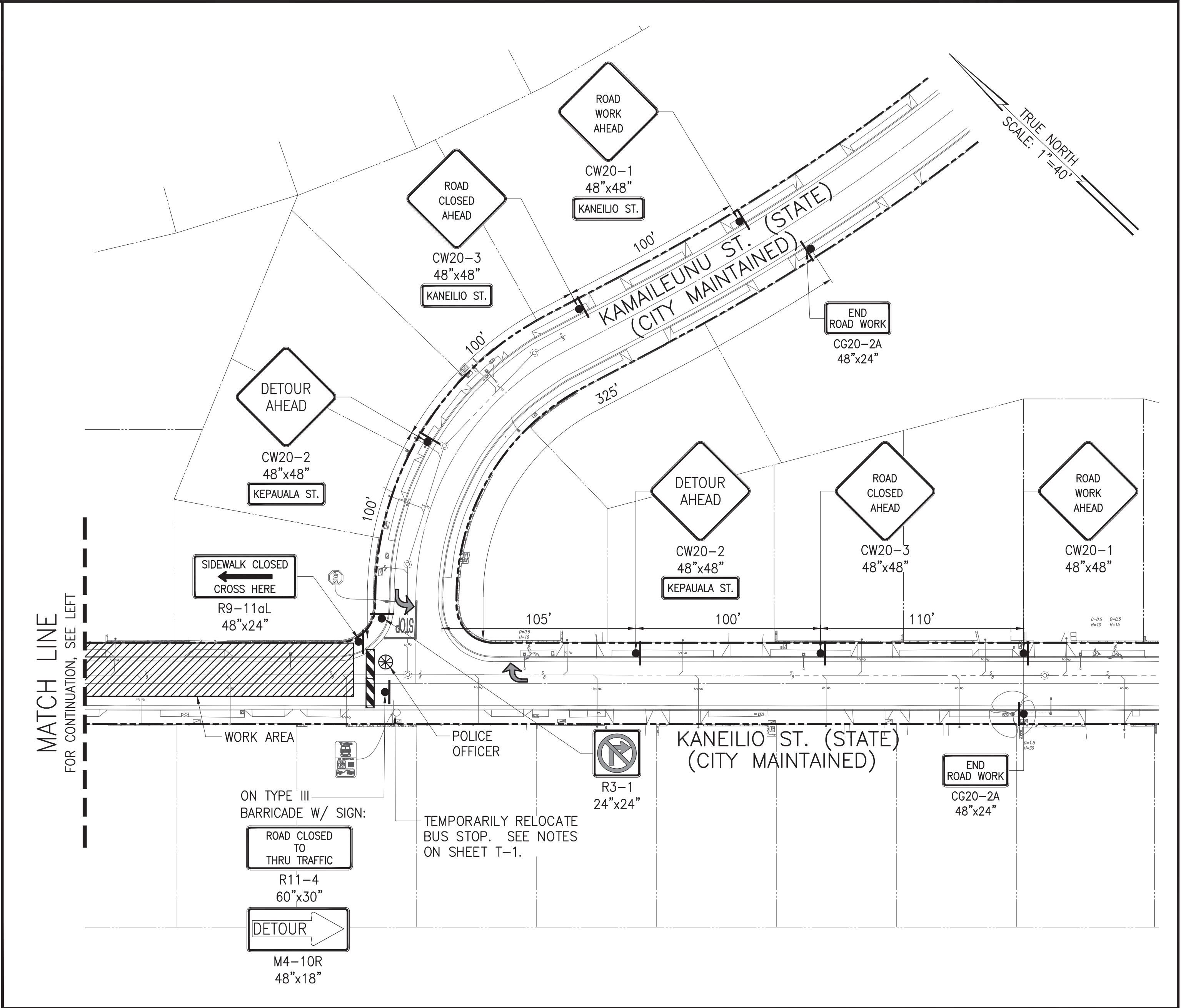
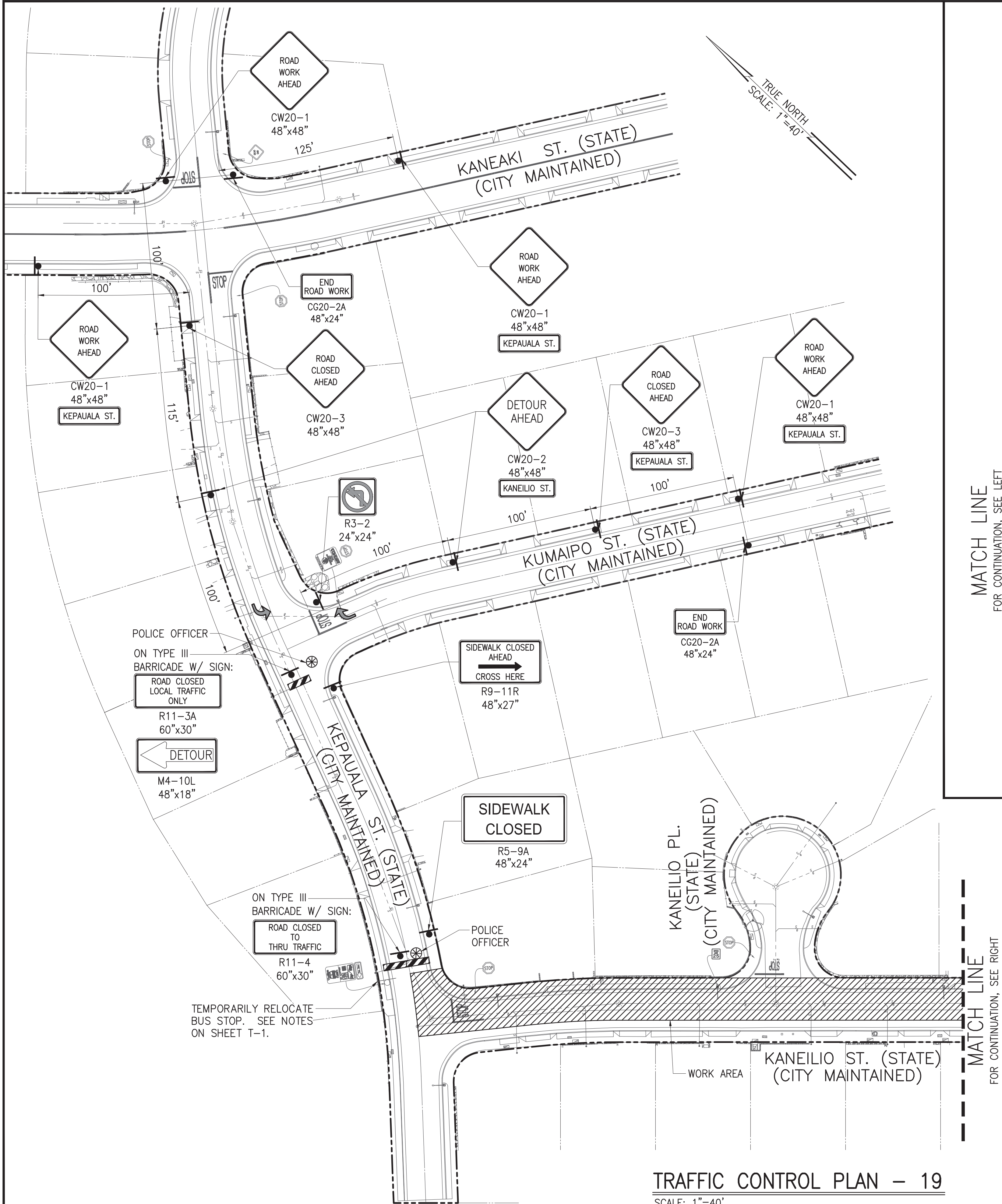
CHECKED BY: TSA

 DATE

FUKUNAGA AND ASSOCIATES, INC.
 Consulting Engineers

FILE	POCKET	FOLDER	NO.

\\ATA-HNL-ENG2020\Projects\2021\21-205 DHHL West Oahu Sewer Improvements\DWG\T-26 TRAFFIC CONTROL PLAN - 19.dwg
Last saved 4/11/2022 12:50:23 PM by Ckadoawa
Last plotted 7/6/2022 3:24:13 PM



POSTED SPEED LIMIT: 25 MPH

LEGEND:

- SIGN
- DIRECTION OF TRAFFIC
- WORK AREA
- POLICE OFFICER
- TYPE III BARRICADE WITH STEADY BURN

NOTE:

- CONTRACTOR TO PROVIDE ACCESS TO DRIVEWAYS AT ALL TIMES. SHOULD A PROPERTY OWNER WANT TO ENTER OR LEAVE THEIR DRIVEWAY, CONTRACTOR SHALL PROVIDE A SAFE ROUTE AND GUIDE THE VEHICLE THROUGH THE WORK AREA.
- TRAFFIC CONTROL PLAN ESTIMATED DURATION: 22 WORKING DAYS.
- FOR DETOUR PLAN, SEE DWG. T-28.

TERENCE S. ARASHIRO
LICENSED PROFESSIONAL ENGINEER
No. 6998-C
HAWAII, U.S.A.

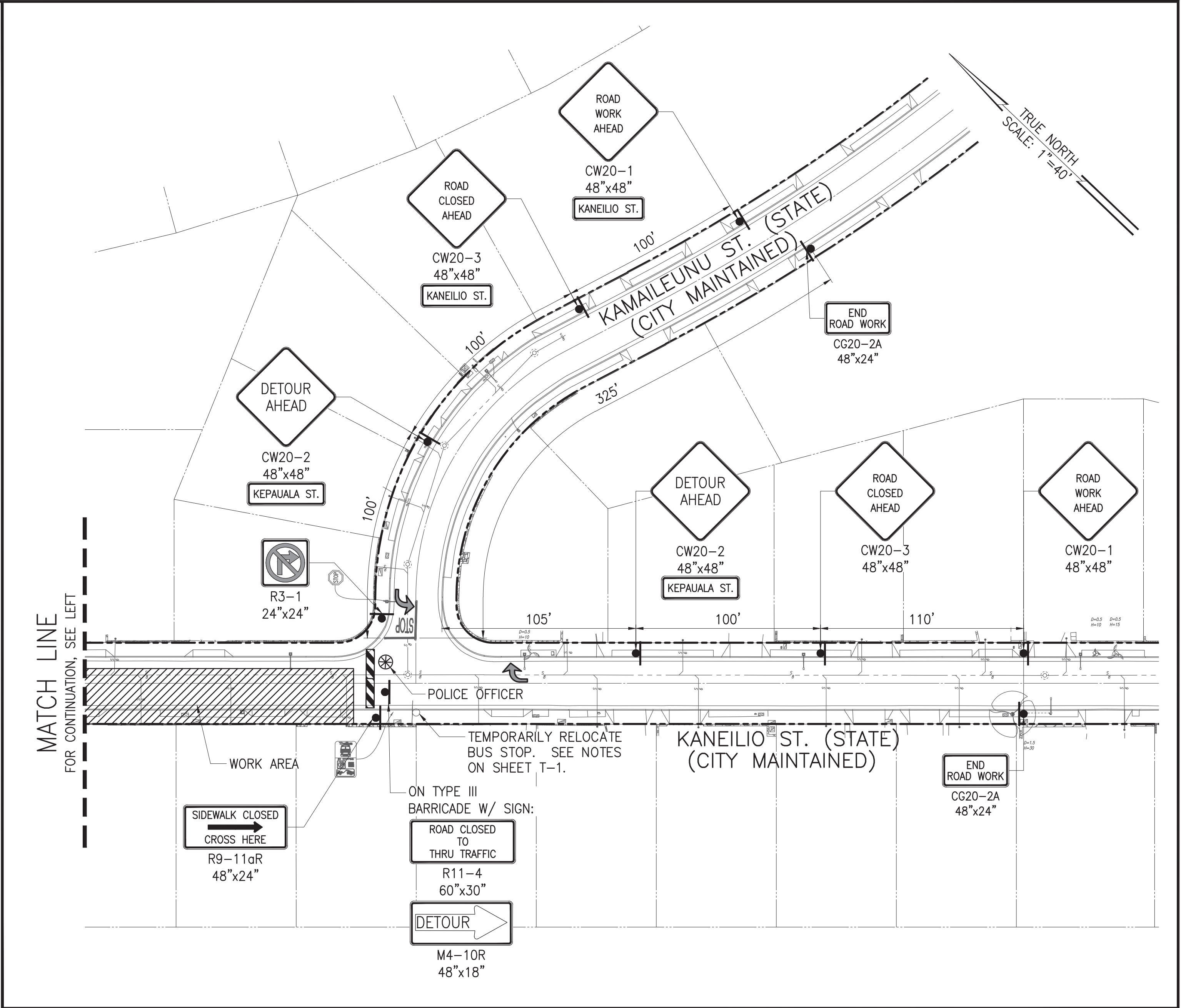
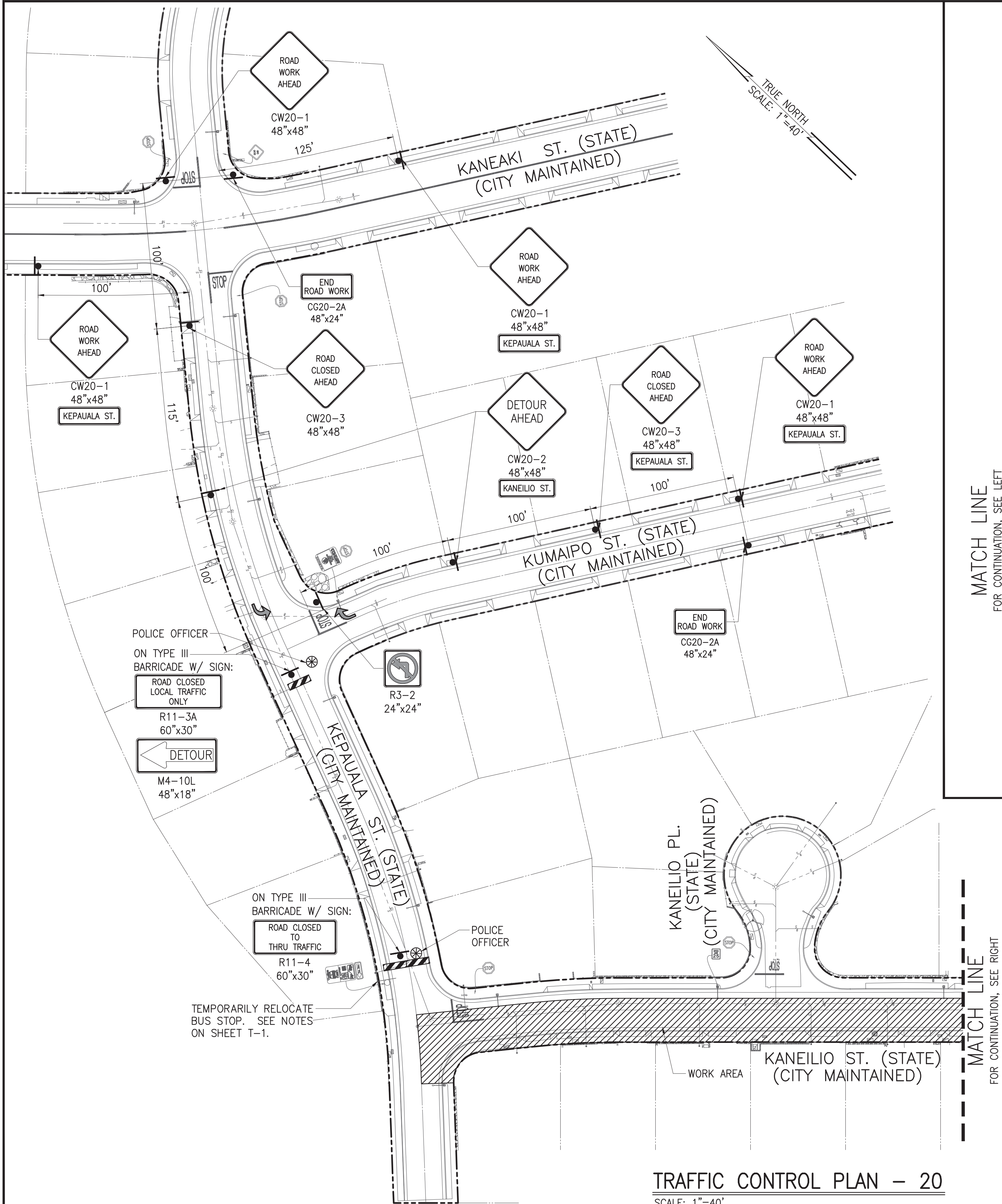
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APRIL 30, 2024
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REVISION	DATE	BRIEF	BY	APPROVED
DEPARTMENT OF HAWAIIAN HOME LANDS STATE OF HAWAII				
PROJECT: WEST OAHU SEWER IMPROVEMENTS WAIANAE SUBDIVISION				
ITEM: TRAFFIC CONTROL PLAN - 19				
DESIGNED BY:	CKK	CHECKED BY:	TSA	
DRAWN BY:	ATA	SECTION HEAD:		
APPROVED:		BRANCH HEAD:		
CHIEF		DATE		
FUKUNAGA AND ASSOCIATES, INC. Consulting Engineers				
IFB-22-HHL-001				

\\ATA-HNL-ENG2020\Projects\2021\21-205 DHHL West Oahu Sewer Improvements\DWG\T-27 TRAFFIC CONTROL PLAN - 20.dwg
Last saved 4/11/2022 12:51:23 PM by Ckadoawa
Last plotted 7/6/2022 3:25:18 PM



POSTED SPEED LIMIT: 25 MPH

LEGEND:

- SIGN
- DIRECTION OF TRAFFIC
- WORK AREA
- POLICE OFFICER
- TYPE III BARRICADE WITH STEADY BURN

NOTE:

- CONTRACTOR TO PROVIDE ACCESS TO DRIVEWAYS AT ALL TIMES. SHOULD A PROPERTY OWNER WANT TO ENTER OR LEAVE THEIR DRIVEWAY, CONTRACTOR SHALL PROVIDE A SAFE ROUTE AND GUIDE THE VEHICLE THROUGH THE WORK AREA.
- TRAFFIC CONTROL PLAN ESTIMATED DURATION: 22 WORKING DAYS.
- FOR DETOUR PLAN, SEE DWG. T-28.

TERENCE S. ARASHIRO
LICENSED PROFESSIONAL ENGINEER
No. 6998-C
HAWAII, U.S.A.

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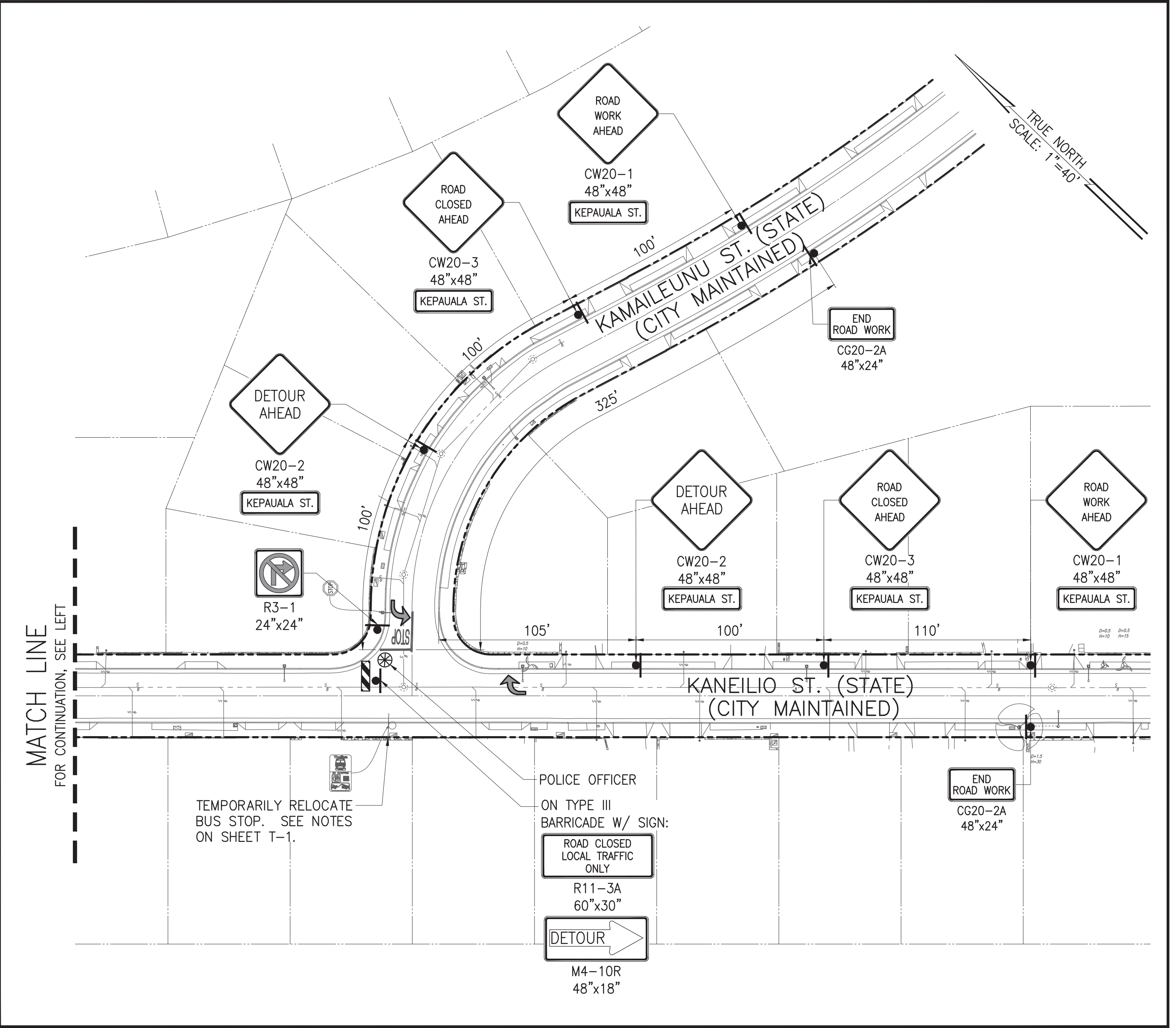
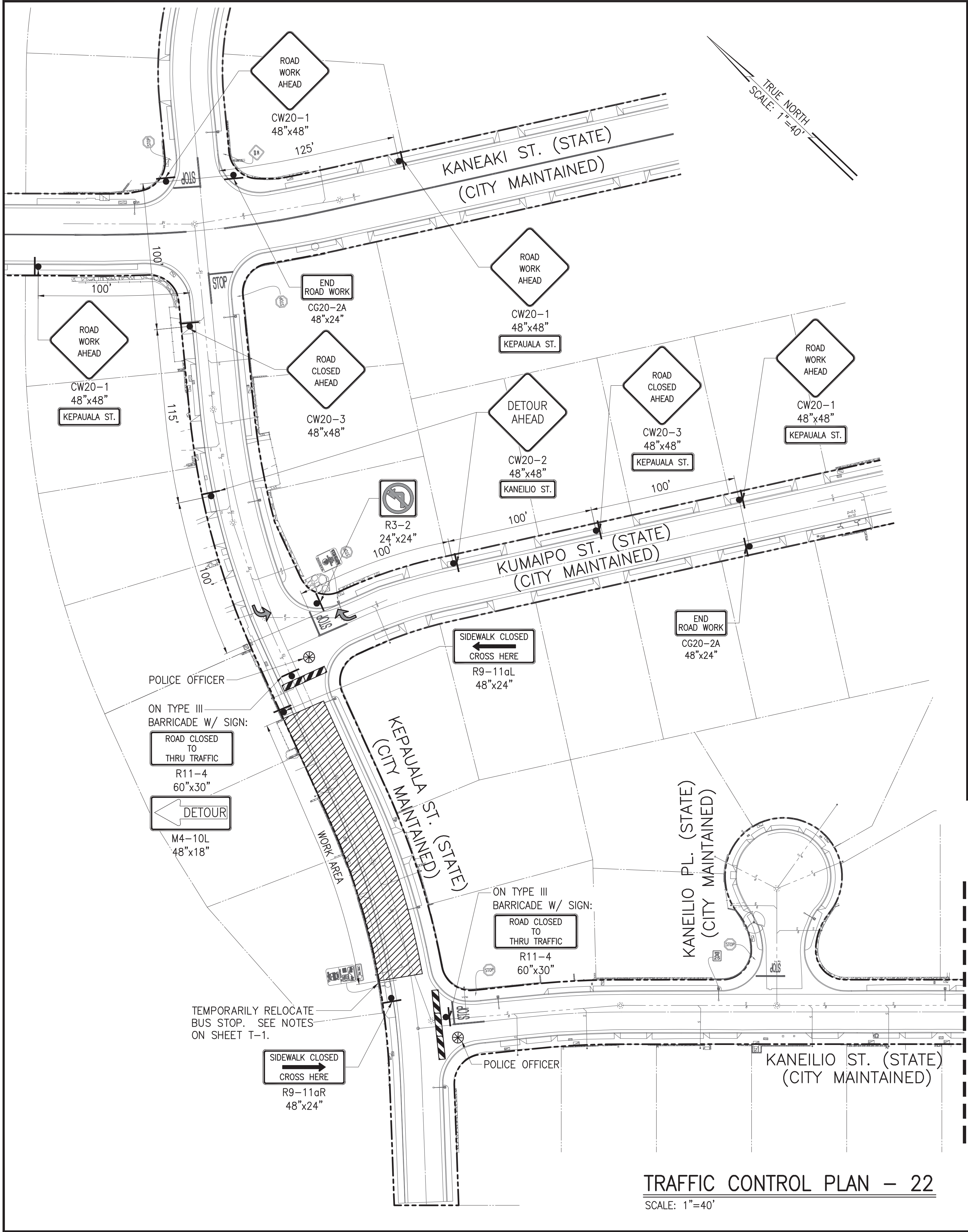
APRIL 30, 2024
LIC. EXP. DATE

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(FOR WORK WITHIN CITY RIGHT OF WAY ONLY)

REVISION	DATE	BRIEF	BY	APPROVED
DEPARTMENT OF HAWAIIAN HOME LANDS STATE OF HAWAII				
PROJECT: WEST OAHU SEWER IMPROVEMENTS WAIANAE SUBDIVISION				
ITEM: TRAFFIC CONTROL PLAN - 20				
DESIGNED BY:	CKK	CHECKED BY:	TSA	
DRAWN BY:	ATA	SECTION HEAD:		
APPROVED:		BRANCH HEAD:		
CHIEF		DATE		
FUKUNAGA AND ASSOCIATES, INC. Consulting Engineers				
IFB-22-HHL-001				
FILE	PROJECT	FOLDER	NO.	

SHEET 71 OF 84

\\ATA-HNL-ENG2020\Projects\2021\21-205 DHHL West Oahu Sewer Improvements\DWG\T-30 TRAFFIC CONTROL PLAN - 22.dwg
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Last plotted 7/6/2022 3:27:26 PM



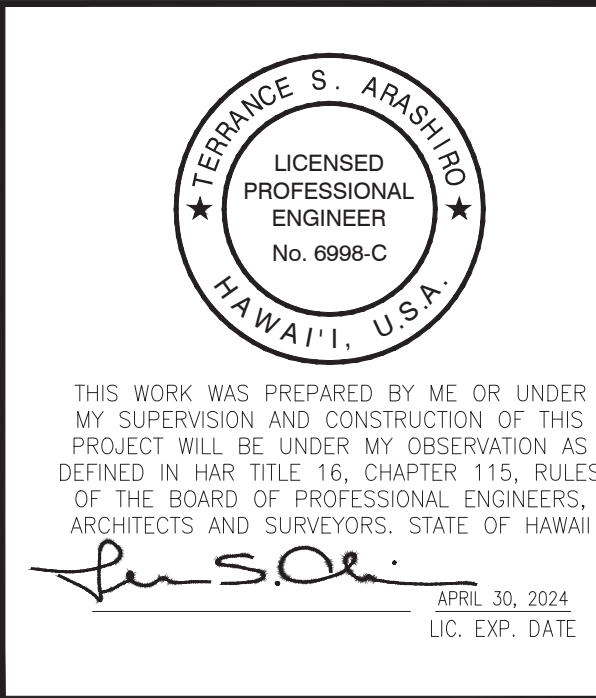
POSTED SPEED LIMIT: 25 MPH

NOTE:

- CONTRACTOR TO PROVIDE ACCESS TO DRIVEWAYS AT ALL TIMES. SHOULD A PROPERTY OWNER WANT TO ENTER OR LEAVE THEIR DRIVEWAY, CONTRACTOR SHALL PROVIDE A SAFE ROUTE AND GUIDE THE VEHICLE THROUGH THE WORK AREA.
- TRAFFIC CONTROL PLAN ESTIMATED DURATION: 11 WORKING DAYS.
- FOR DETOUR PLAN, SEE DWG. T-32.

LEGEND:

- SIGN
- DIRECTION OF TRAFFIC
- WORK AREA
- POLICE OFFICER
- TYPE III BARRICADE WITH STEADY BURN



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REVISION	DATE	BRIEF	BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

PROJECT:
WEST OAHU SEWER IMPROVEMENTS
WAIANAE SUBDIVISION

ITEM:
TRAFFIC CONTROL PLAN - 22

DESIGNED BY: CCK
DRAWN BY: ATA
APPROVED: _____

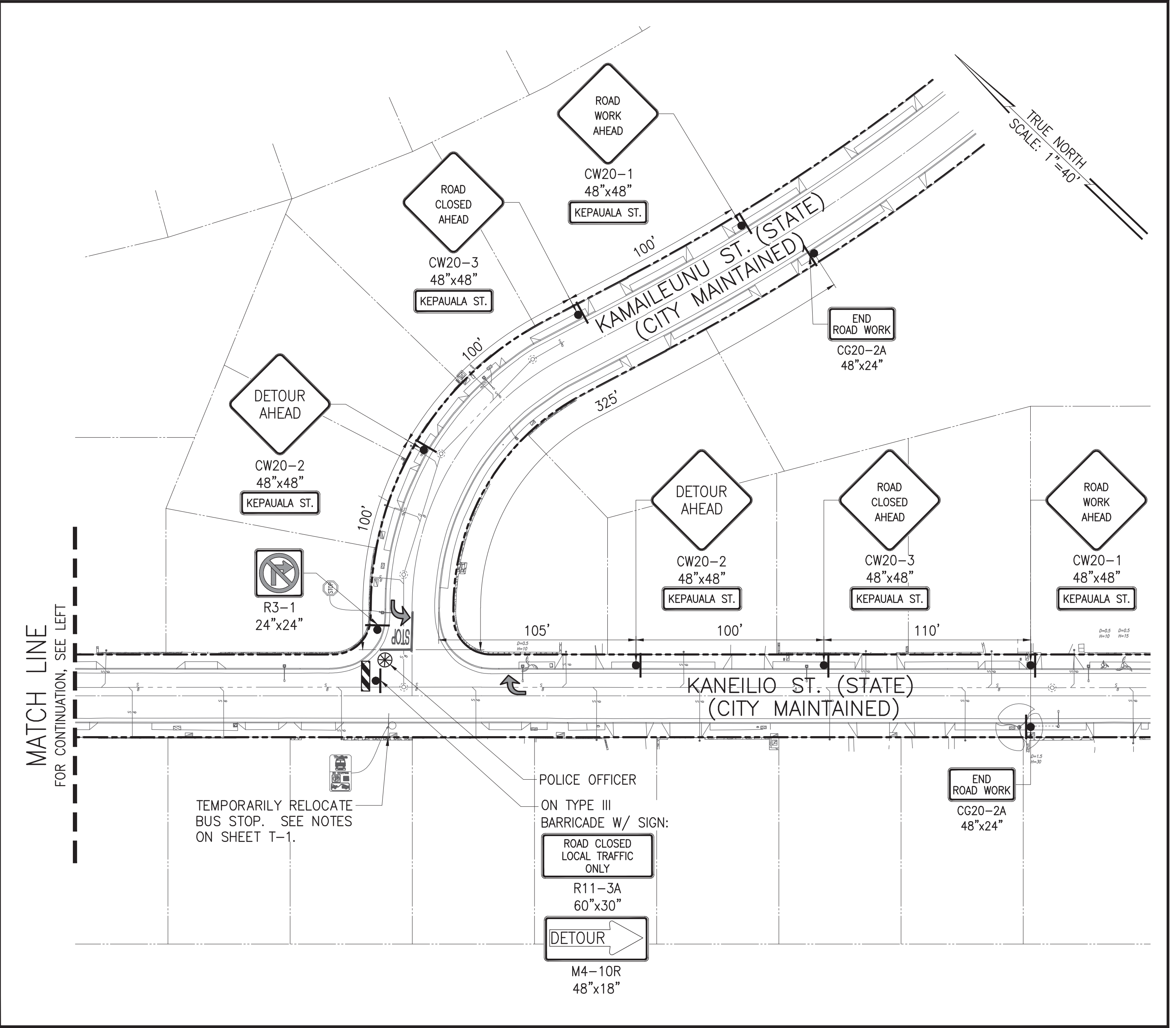
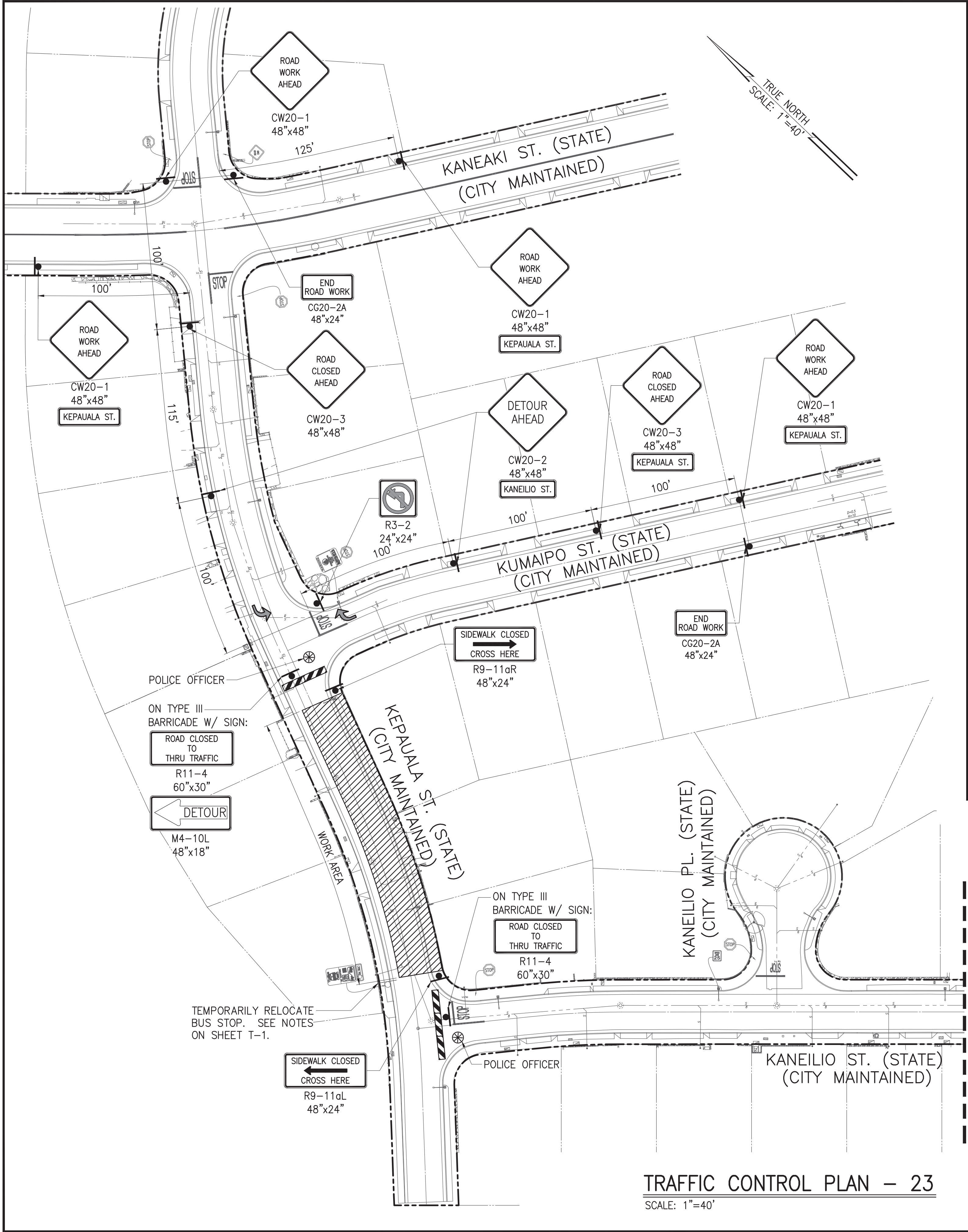
CHECKED BY: TSA
SECTION HEAD: _____
BRANCH HEAD: _____

DATE: _____

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Consulting Engineers

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\\ATA-HNL-ENG2020\Projects\2021\21-205 DHHL West Oahu Sewer Improvements\DWG\T-31 TRAFFIC CONTROL PLAN - 23.dwg
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Last plotted 7/6/2022 3:28:32 PM



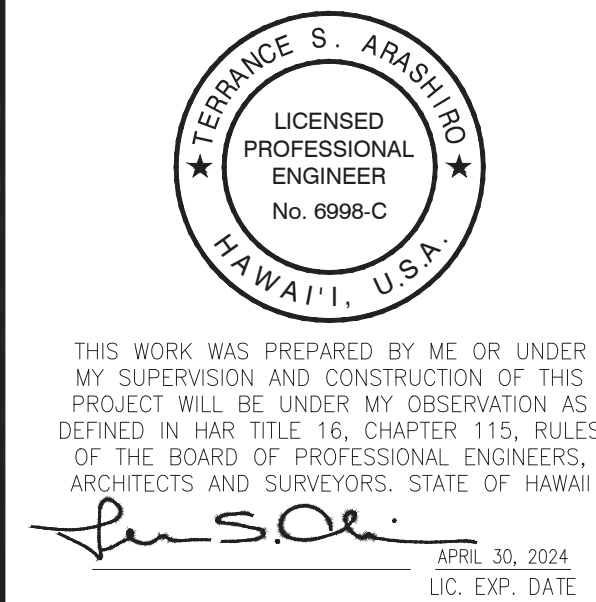
POSTED SPEED LIMIT: 25 MPH

NOTE:

- CONTRACTOR TO PROVIDE ACCESS TO DRIVEWAYS AT ALL TIMES. SHOULD A PROPERTY OWNER WANT TO ENTER OR LEAVE THEIR DRIVEWAY, CONTRACTOR SHALL PROVIDE A SAFE ROUTE AND GUIDE THE VEHICLE THROUGH THE WORK AREA.
- TRAFFIC CONTROL PLAN ESTIMATED DURATION: 11 WORKING DAYS.
- FOR DETOUR PLAN, SEE DWG. T-32.

LEGEND:

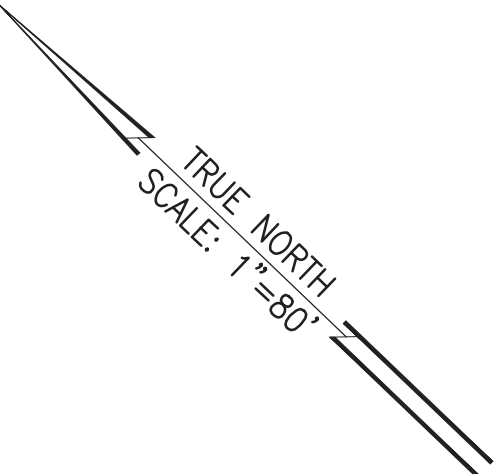
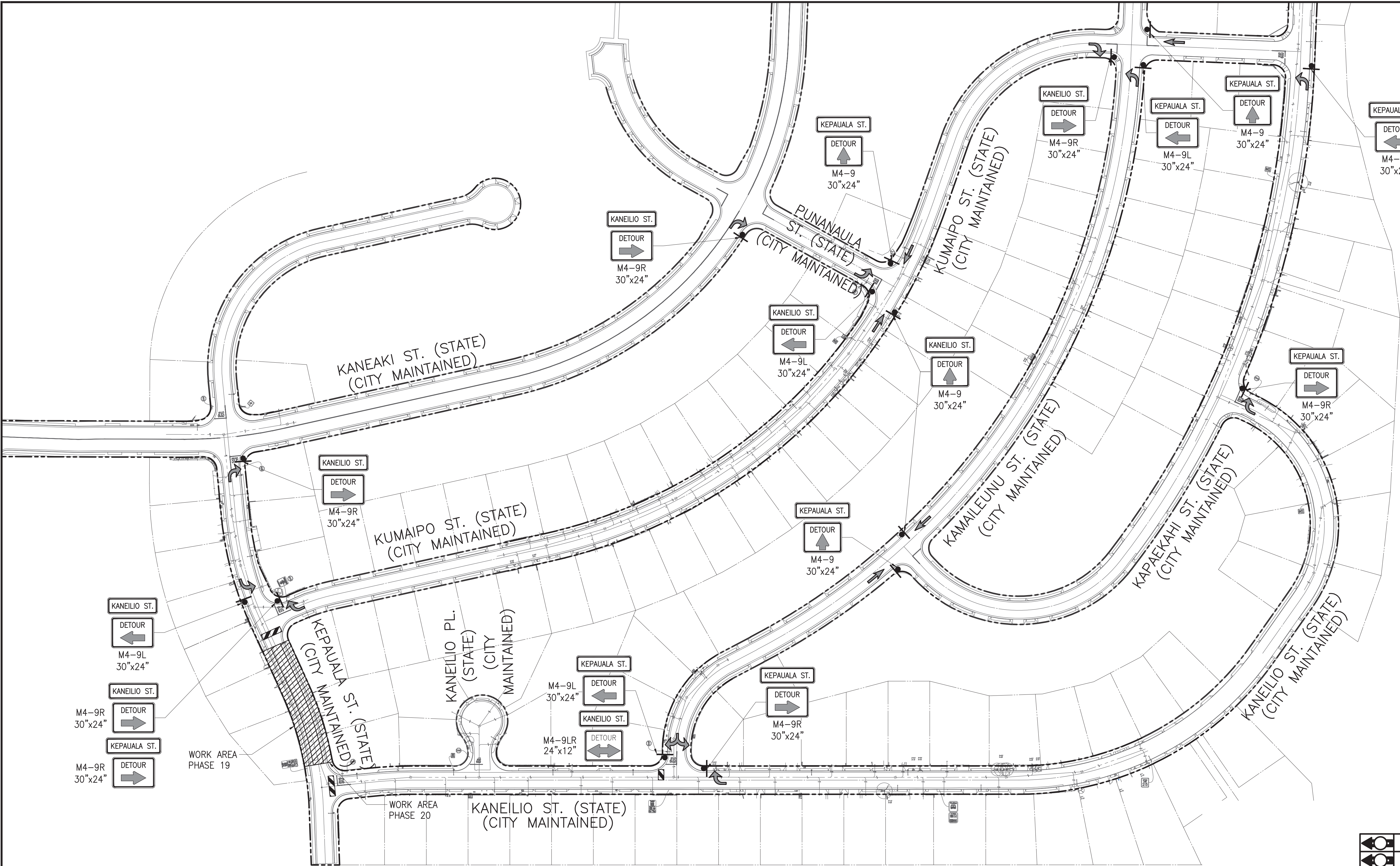
- SIGN
- DIRECTION OF TRAFFIC
- WORK AREA
- POLICE OFFICER
- TYPE III BARRICADE WITH STEADY BURN



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REVISION	DATE	BRIEF	BY	APPROVED
DEPARTMENT OF HAWAIIAN HOME LANDS STATE OF HAWAII				
PROJECT: WEST OAHU SEWER IMPROVEMENTS WAIANAE SUBDIVISION				
ITEM: TRAFFIC CONTROL PLAN - 23				
DESIGNED BY:	CKK	CHECKED BY:	TSA	
DRAWN BY:	ATA	SECTION HEAD:		
APPROVED:		BRANCH HEAD:		
CHIEF		DATE		
FUKUNAGA AND ASSOCIATES, INC. Consulting Engineers				
IFB-22-HHL-001				

\\ATA-HNL-ENG2020\Projects\2021\21-205 DHHL West Oahu Sewer Improvements\DWG\T-32 DETOUR PLAN - 22 & 23.dwg
Last saved 4/11/2022 12:55:45 PM by Ckadoakawa
Last plotted 7/6/2022 3:29:06 PM



POSTED SPEED LIMIT: 25 MPH

LEGEND:

- SIGN
- DIRECTION OF TRAFFIC
- WORK AREA
- POLICE OFFICER
- TYPE III BARRICADE WITH STEADY BURN

- NOTE:
- 1. DETOUR PLAN ESTIMATED DURATION: 22 WORKING DAYS.
 - 2. FOR TRAFFIC CONTROL PLAN, SEE DWGS. T-30 & T-31.

DETOUR PLAN – 22 & 23

SCALE: 1"=80'

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Terrence S. Arashiro
APRIL 30, 2024
LIC. EXP. DATE






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REVISION	DATE	BRIEF	BY	APPROVED
<div>DEPARTMENT OF HAWAIIAN HOME LANDS STATE OF HAWAII</div> <div>PROJECT: WEST OAHU SEWER IMPROVEMENTS WAIANAE SUBDIVISION</div> <div>ITEM: DETOUR PLAN – 22 & 23</div> <div>DESIGNED BY: CCK DRAWN BY: ATA APPROVED: _____</div> <div>CHECKED BY: TSA SECTION HEAD: _____ BRANCH HEAD: _____</div> <div>DATE: _____</div> <div>FUKUNAGA AND ASSOCIATES, INC. Consulting Engineers</div> <div>IFB-22-HHL-001</div>				

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Last plotted 7/6/2022 3:29:40 PM



POSTED SPEED LIMIT: 25 MPH

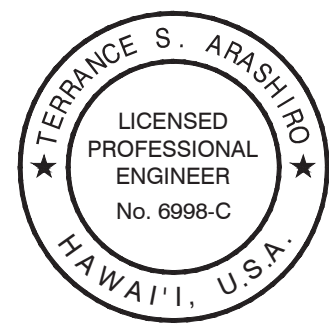
LEGEND:

-  SIGN
-  DIRECTION OF TRAFFIC
-  WORK AREA
-  POLICE OFFICER
-  CONE WITH RETROREFLECTIVE TAPE

TRAFFIC CONTROL PLAN - 24
SCALE: 1"=40'

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(FOR WORK WITHIN CITY RIGHT OF WAY ONLY)

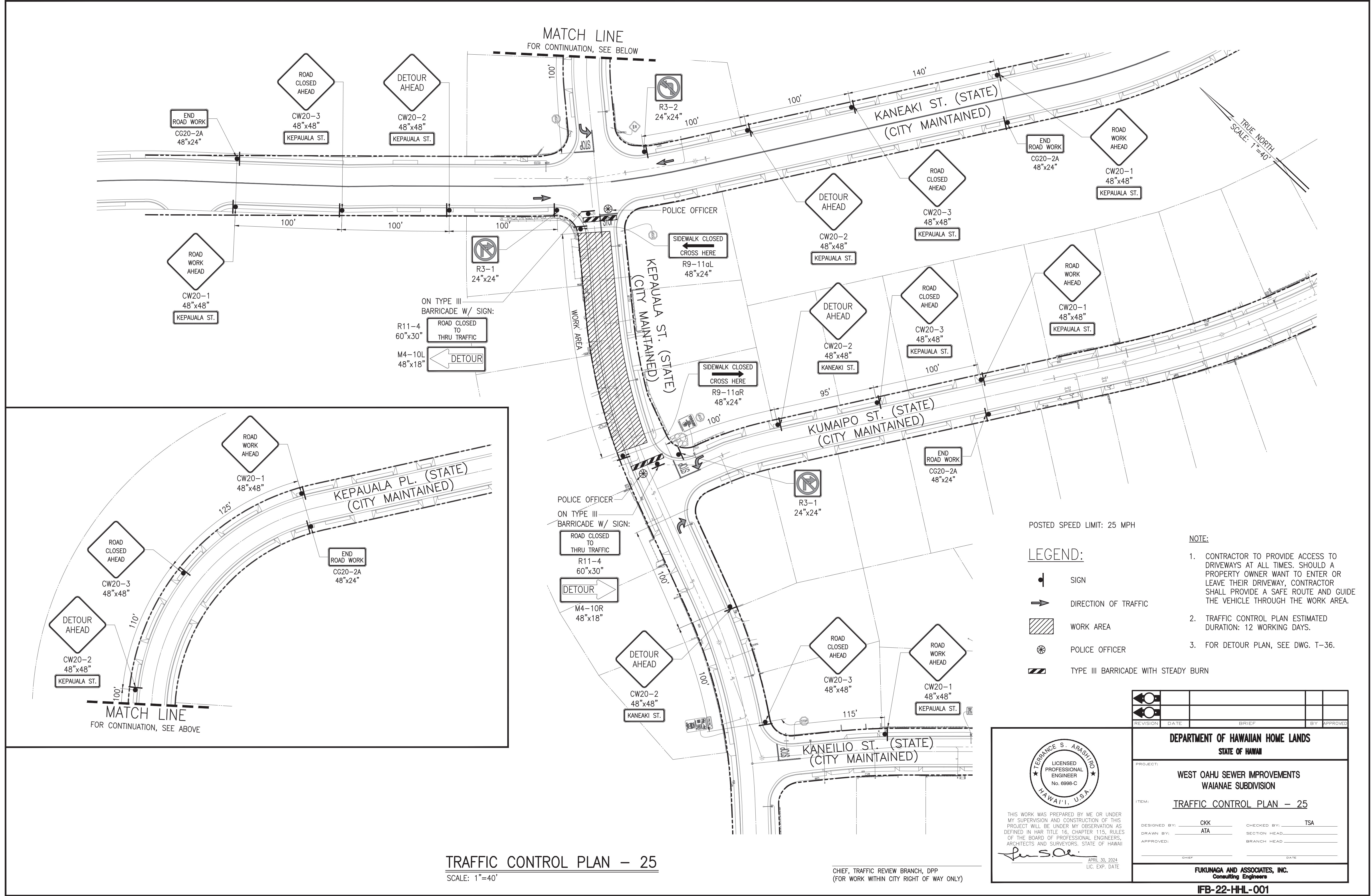
			
			
REVISION	DATE	BRIEF	BY APPROVED
DEPARTMENT OF HAWAIIAN HOME LANDS STATE OF HAWAII			
PROJECT: WEST OAHU SEWER IMPROVEMENTS WAIANAE SUBDIVISION			
ITEM: TRAFFIC CONTROL PLAN - 24			
DESIGNED BY: CCK		CHECKED BY: TSA	
DRAWN BY: ATA			
APPROVED:			
CHIEF		DATE	
FUKUNAGA AND ASSOCIATES, INC. Consulting Engineers			
IFB-22-HHL-001			



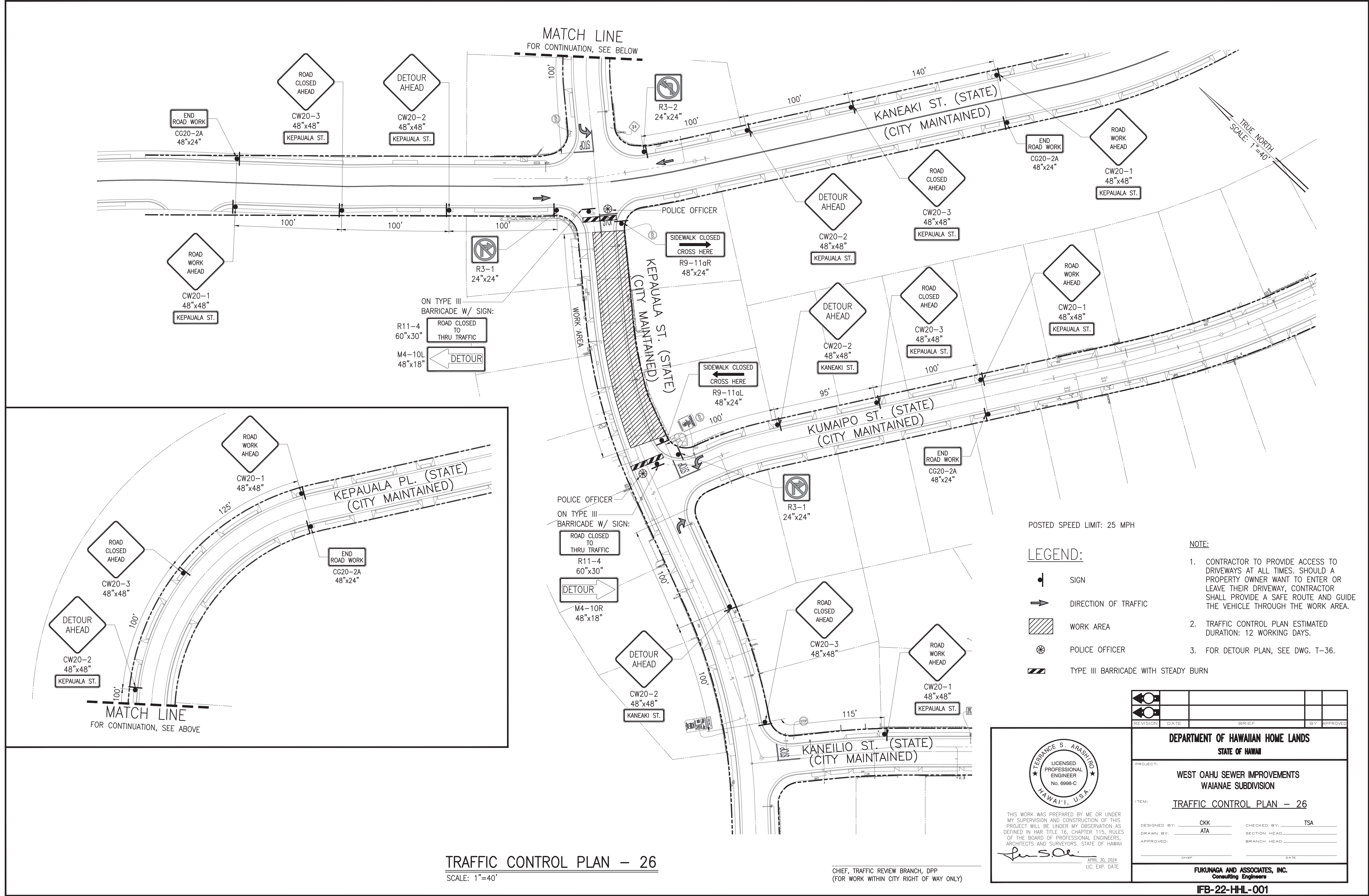
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS, STATE OF HAWAII

Terrence S. Arashiro
APRIL 30, 2024
LIC. EXP. DATE

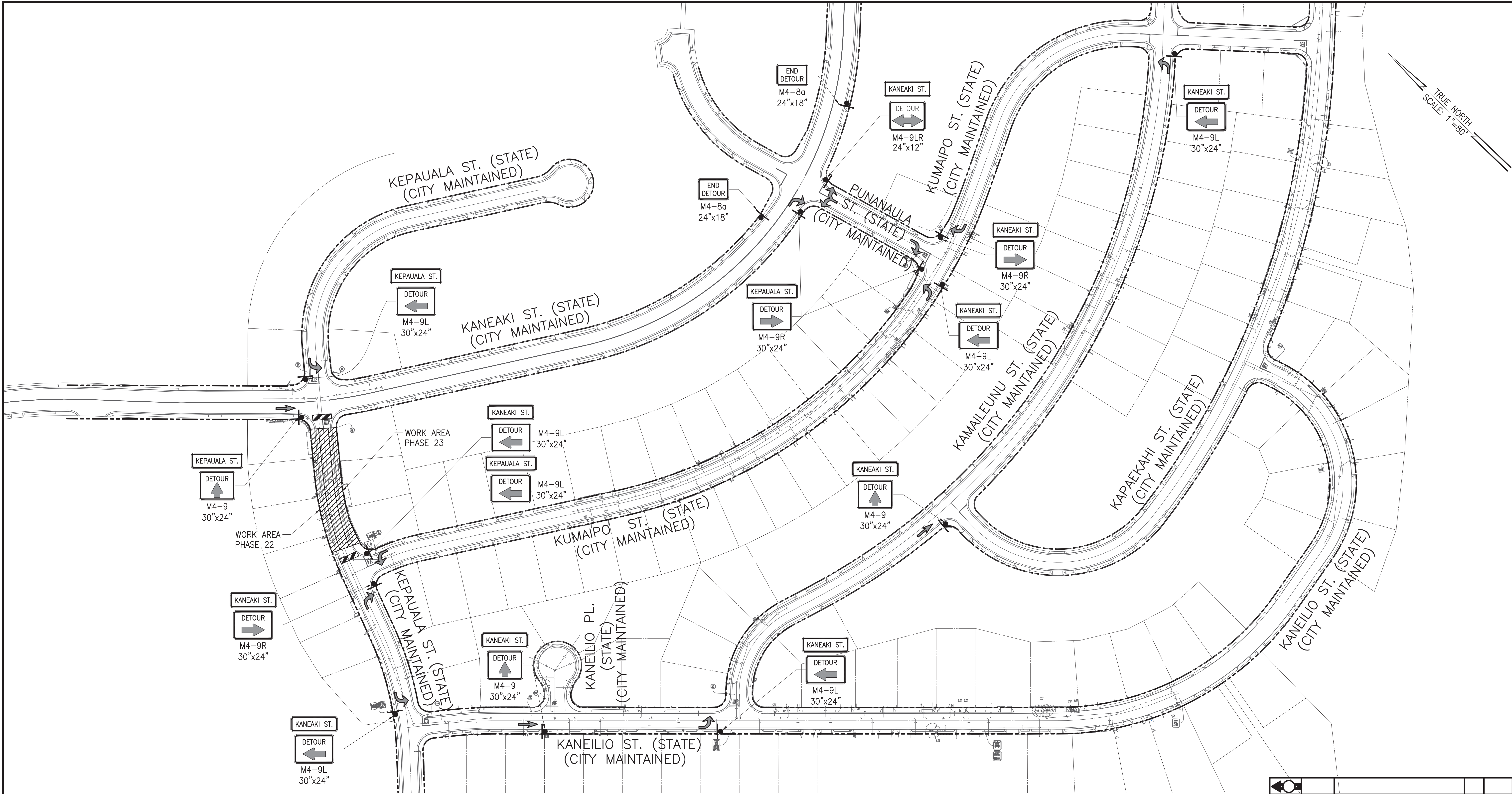
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Last plotted 7/6/2022 3:30:49 PM



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Last plotted 7/6/2022 3:31:57 PM



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Last saved 1/18/2022 12:53:35 AM by Ckadoawa
Last plotted 7/6/2022 3:32:32 PM



POSTED SPEED LIMIT: 25 MPH

LEGEND:

- SIGN
- DIRECTION OF TRAFFIC
- WORK AREA
- POLICE OFFICER
- TYPE III BARRICADE WITH STEADY BURN

- NOTE:
- DETOUR PLAN ESTIMATED DURATION: 24 WORKING DAYS.
 - FOR TRAFFIC CONTROL PLAN, SEE DWGs. T-34 & T-35.

DETOUR PLAN - 25 & 26
SCALE: 1"=80'

CHIEF, TRAFFIC REVIEW BRANCH, DPP
(FOR WORK WITHIN CITY RIGHT OF WAY ONLY)

TERENCE S. ARASHIRO

LICENSED PROFESSIONAL ENGINEER

No. 6998-C

HAWAII, U.S.A.






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APRIL 30, 2024
LIC. EXP. DATE

REVISION	DATE	BRIEF	BY	APPROVED
<div>DEPARTMENT OF HAWAIIAN HOME LANDS STATE OF HAWAII</div> <div>PROJECT: WEST OAHU SEWER IMPROVEMENTS WAIANAE SUBDIVISION</div> <div>ITEM: DETOUR PLAN - 25 & 26</div> <div>DESIGNED BY: CKK DRAWN BY: ATA APPROVED: _____</div> <div>CHECKED BY: TSA SECTION HEAD: _____ BRANCH HEAD: _____</div> <div>DATE: _____</div> <div>FUKUNAGA AND ASSOCIATES, INC. Consulting Engineers</div> <div>IFB-22-HHL-001</div>				

\\ATA-HNL-ENG2020\Projects\2021\21-205 DHHL West Oahu Sewer Improvements\DWG\T-37 TRAFFIC CONTROL PLAN - 27.dwg
Last saved 1/18/2022 12:54:33 AM by Ckadoawa
Last plotted 7/6/2022 3:33:07 PM

LEGEND:

-  SIGN
-  DIRECTION OF TRAFFIC
-  WORK AREA
-  POLICE OFFICER
-  CONE WITH RETROREFLECTIVE TAPE

POSTED SPEED LIMIT: 25 MPH

TRAFFIC CONTROL PLAN - 27

SCALE: 1"=40'

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(FOR WORK WITHIN CITY RIGHT OF WAY ONLY)


TERENCE S. ARASHIRO

LICENSED PROFESSIONAL ENGINEER

No. 6998-C

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APRIL 30, 2024
LIC. EXP. DATE






REVISION	DATE	BRIEF	BY	APPROVED
DEPARTMENT OF HAWAIIAN HOME LANDS STATE OF HAWAII				
PROJECT: WEST OAHU SEWER IMPROVEMENTS WAIANAE SUBDIVISION				
ITEM: TRAFFIC CONTROL PLAN - 27				
DESIGNED BY: CKK		CHECKED BY: TSA		
DRAWN BY: ATA				
APPROVED:				
CHIEF		DATE		
FUKUNAGA AND ASSOCIATES, INC. Consulting Engineers				
IFB-22-HHL-001				

FILE	PROJECT	FOLDER	NO.

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Last plotted 7/6/2022 3:33:41 PM

POSTED SPEED LIMIT: 25 MPH

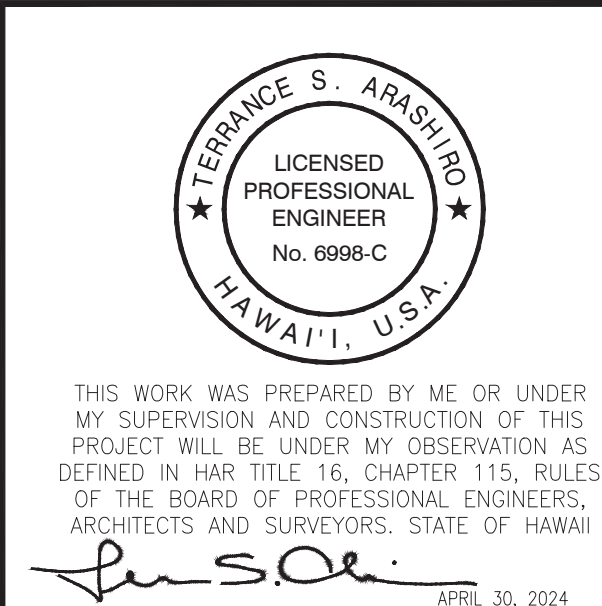
LEGEND:

-  SIGN
-  DIRECTION OF TRAFFIC
-  WORK AREA
-  POLICE OFFICER
-  CONE WITH RETROREFLECTIVE TAPE

TRAFFIC CONTROL PLAN - 28

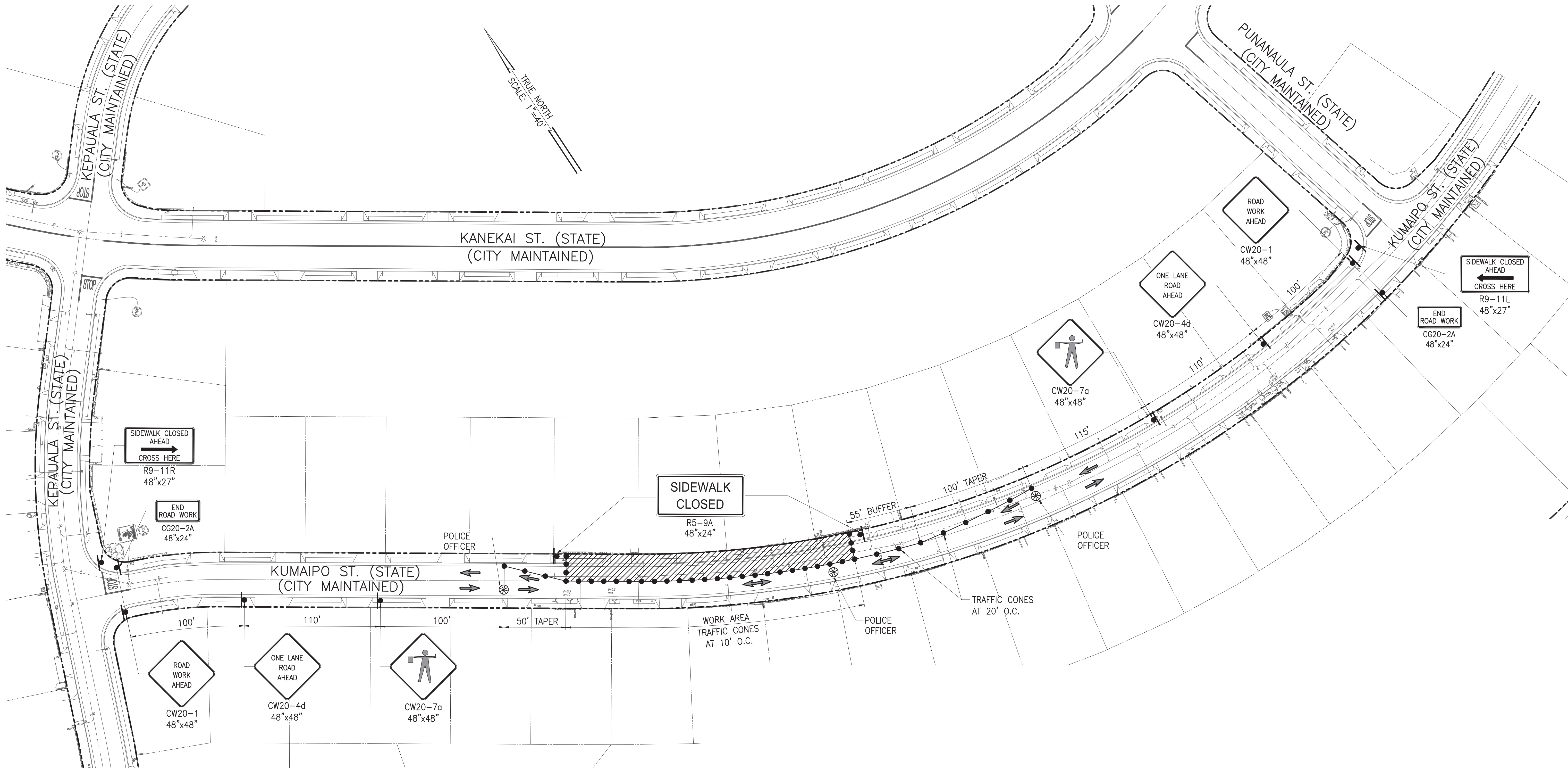
SCALE: 1"=40'

CHIEF, TRAFFIC REVIEW BRANCH, DPP
(FOR WORK WITHIN CITY RIGHT OF WAY ONLY)



REVISION	DATE	BRIEF	BY	APPROVED
DEPARTMENT OF HAWAIIAN HOME LANDS STATE OF HAWAII				
PROJECT: WEST OAHU SEWER IMPROVEMENTS WAIANAE SUBDIVISION				
ITEM: TRAFFIC CONTROL PLAN - 28				
DESIGNED BY: CCK		CHECKED BY: TSA		
DRAWN BY: ATA				
APPROVED:				
CHIEF		DATE		
FUKUNAGA AND ASSOCIATES, INC. Consulting Engineers				
IFB-22-HHL-001				

\\ATA-HNL-ENG2020\Projects\2021\21-205 DHHL West Oahu Sewer Improvements\DWG\T-39 TRAFFIC CONTROL PLAN - 29A.dwg
Last saved 1/18/2022 12:51:50 AM by Ckadoawa
Last plotted 7/6/2022 3:34:22 PM



NOTE:

1. TRAFFIC CONTROL PLAN ESTIMATED
DURATION: 2 WORKING DAYS.

POSTED SPEED LIMIT: 25 MPH

LEGEND:

- SIGN
- DIRECTION OF TRAFFIC
- WORK AREA
- POLICE OFFICER
- CONE WITH RETROREFLECTIVE TAPE

TRAFFIC CONTROL PLAN - 29A

SCALE: 1"=40'

CHIEF, TRAFFIC REVIEW BRANCH, DPP
(FOR WORK WITHIN CITY RIGHT OF WAY ONLY)

TERENCE S. ARASHIRO

LICENSED PROFESSIONAL ENGINEER

No. 6998-C

HAWAII, U.S.A.

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Terence S. Arashiro

APRIL 30, 2024
LIC. EXP. DATE

REVISION	DATE	BRIEF	BY	APPROVED
DEPARTMENT OF HAWAIIAN HOME LANDS STATE OF HAWAII				
PROJECT: WEST OAHU SEWER IMPROVEMENTS WAIANAE SUBDIVISION				
ITEM: TRAFFIC CONTROL PLAN - 29A				
DESIGNED BY: CKK		CHECKED BY: TSA		
DRAWN BY: ATA				
APPROVED:				
CHIEF		DATE		
FUKUNAGA AND ASSOCIATES, INC. Consulting Engineers				
IFB-22-HHL-001				

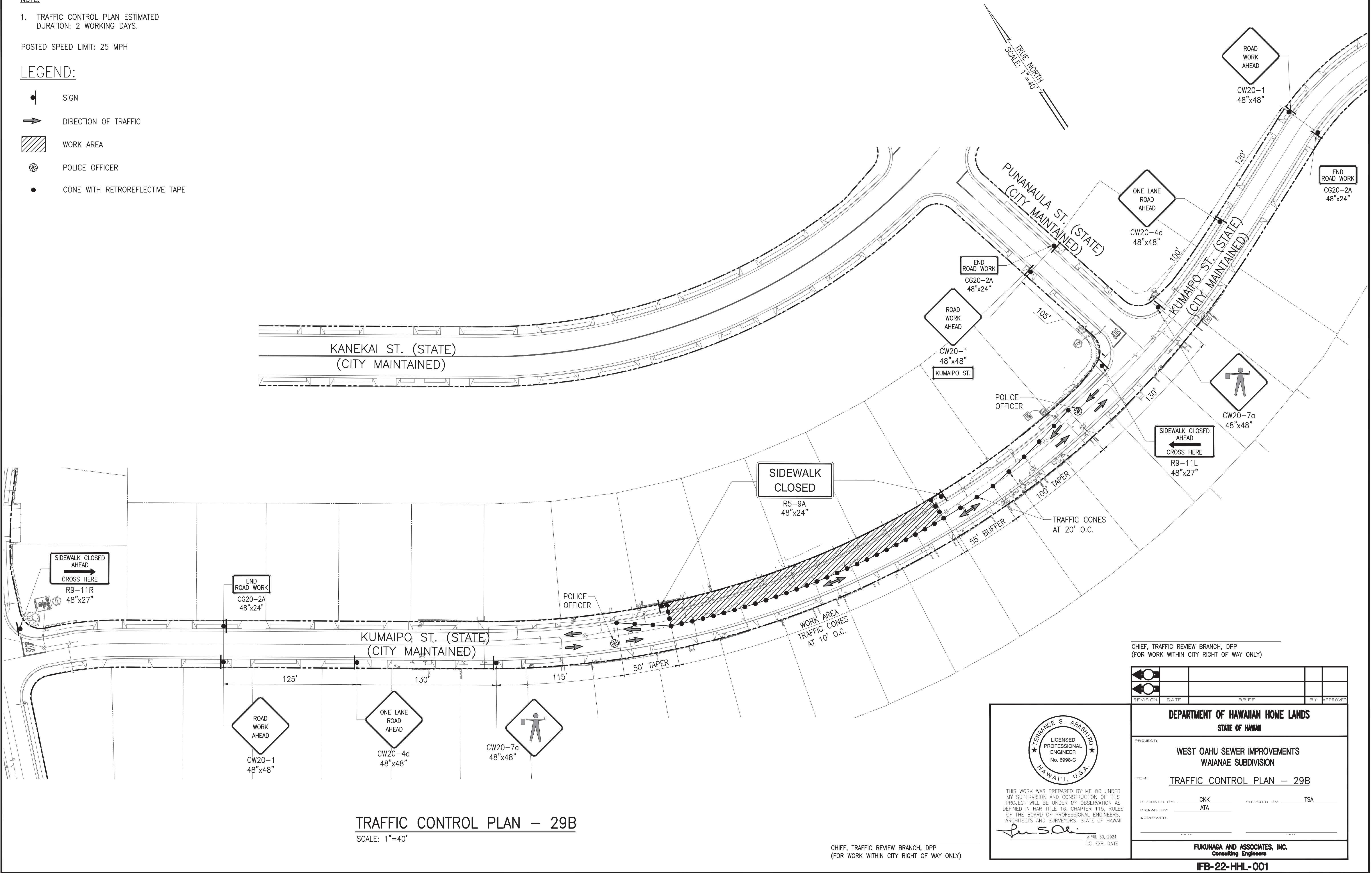
NOTE:

1. TRAFFIC CONTROL PLAN ESTIMATED
DURATION: 2 WORKING DAYS.

POSTED SPEED LIMIT: 25 MPH

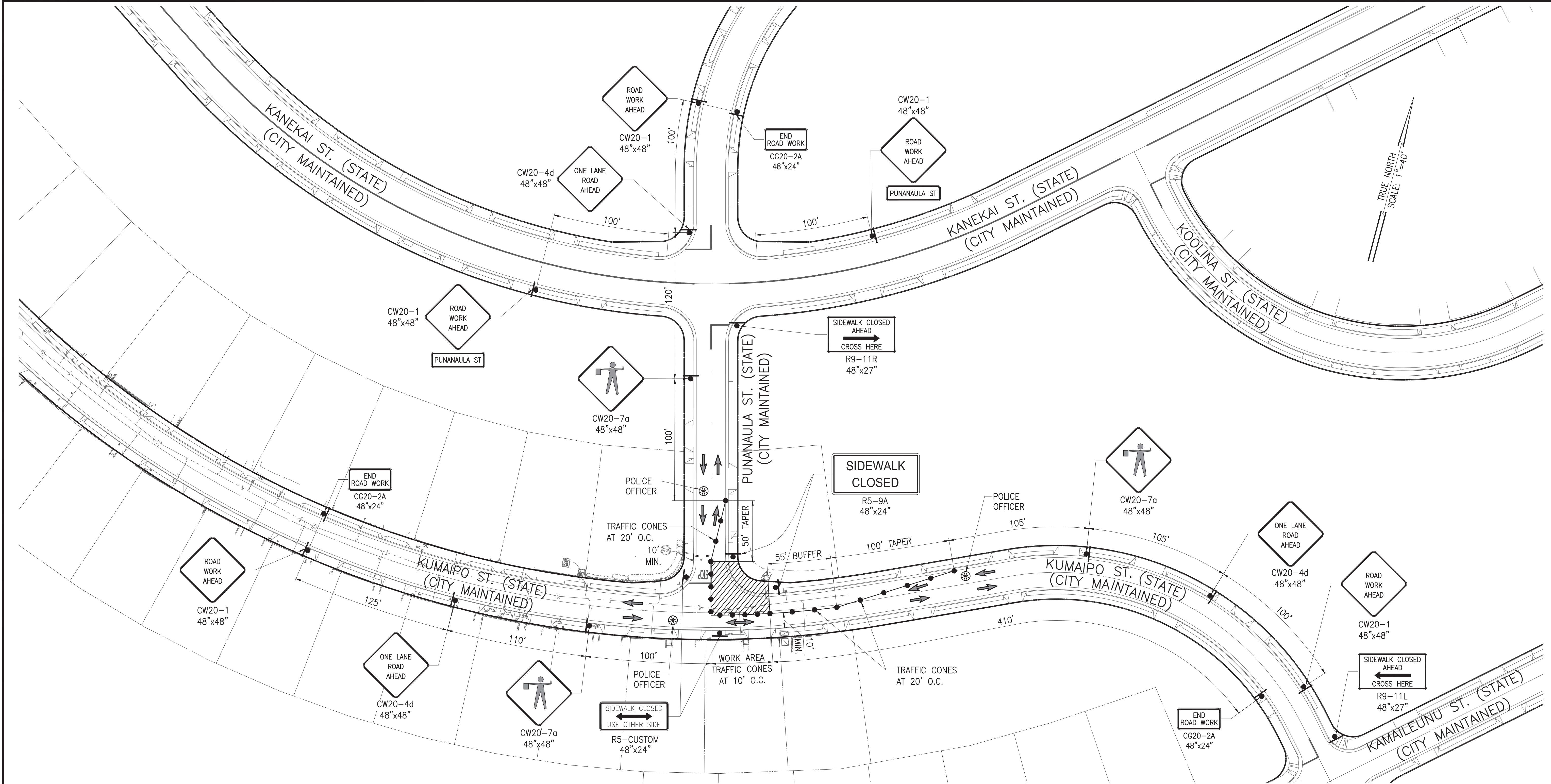
LEGEND:

- SIGN
- ➔ DIRECTION OF TRAFFIC
- ▨ WORK AREA
- ⊗ POLICE OFFICER
- CONE WITH RETROREFLECTIVE TAPE








\\ATA-HNL-ENG2020\Projects\2021\21-205 DHHL West Oahu Sewer Improvements\DWG\T-40 TRAFFIC CONTROL PLAN - 29B.dwg
Last saved 1/18/2022 12:52:06 AM by Ckadoawa
Last plotted 7/6/2022 3:34:59 PM

\\ATA-HNL-ENG2020\Projects\2021\21-205 DHHL West Oahu Sewer Improvements\DWG\T-41 TRAFFIC CONTROL PLAN - 30.dwg
Last saved 1/18/2022 12:54:14 AM by Tdoon
Last plotted 7/6/2022 3:35:35 PM



POSTED SPEED LIMIT: 25 MPH

LEGEND:

-  SIGN
-  DIRECTION OF TRAFFIC
-  WORK AREA
-  POLICE OFFICER
-  CONE WITH RETROREFLECTIVE TAPE

TRAFFIC CONTROL PLAN - 30
SCALE: 1"=40'

CHIEF, TRAFFIC REVIEW BRANCH, DPP
(FOR WORK WITHIN CITY RIGHT OF WAY ONLY)

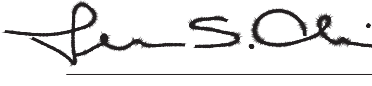
TERENCE S. ARASHIRO

LICENSED PROFESSIONAL ENGINEER

No. 6998-C

HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS, STATE OF HAWAII



APRIL 30, 2024
LIC. EXP. DATE

REVISION	DATE	BRIEF	BY	APPROVED
DEPARTMENT OF HAWAIIAN HOME LANDS STATE OF HAWAII				
PROJECT: WEST OAHU SEWER IMPROVEMENTS WAIANAE SUBDIVISION				
ITEM: TRAFFIC CONTROL PLAN - 30				
DESIGNED BY: CKK		CHECKED BY: TSA		
DRAWN BY: ATA				
APPROVED:				
CHIEF		DATE		
FUKUNAGA AND ASSOCIATES, INC. Consulting Engineers				
IFB-22-HHL-001				