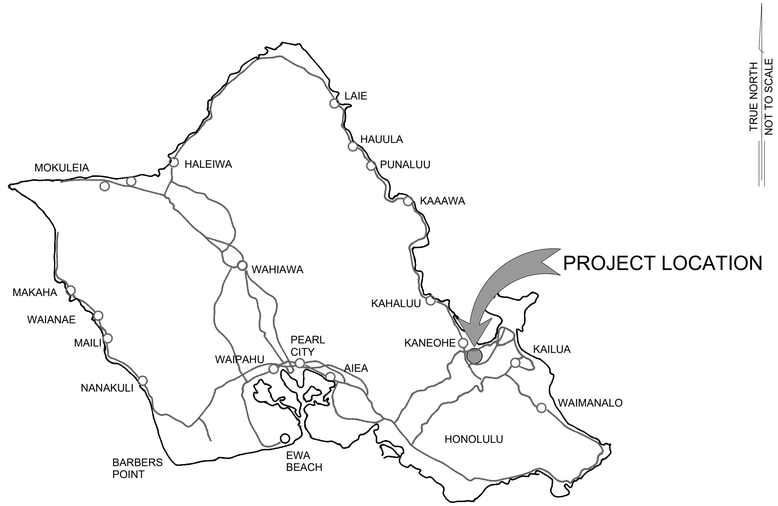
HAWAIIAN MEMORIAL PARK

HAWAIIAN MEMORIAL PARK EXPANSION

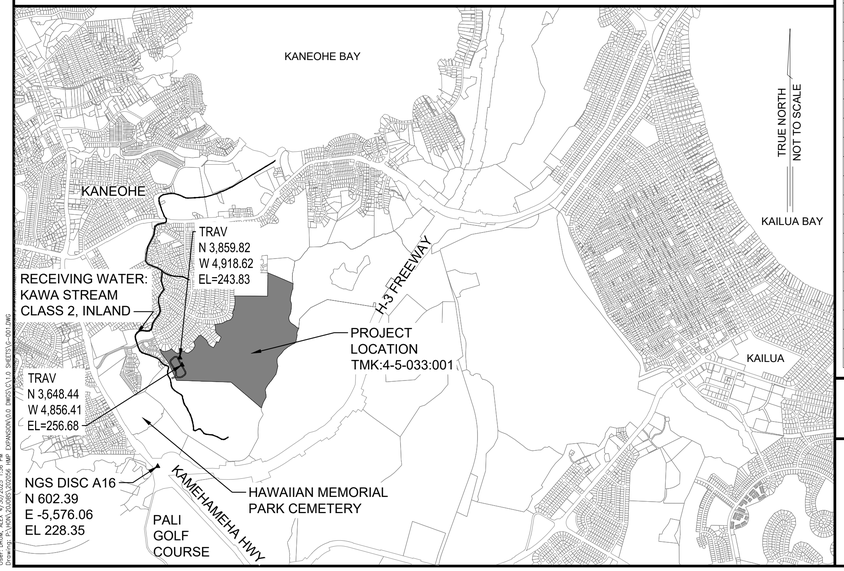
45-425 Kamehameha Highway, Kaneohe, HI

TMK 4-5-033:001

LOCATION MAP



VICINITY MAP



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COFFMAN ENGINEERS, INC.
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HONOLULU, HAWAI'I 96813

GEOTECHNICAL ENGINEER
GEOLABS, INC.
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LANDSCAPE ARCHITECT
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15420 LAGUNA CANYON ROAD, STE 210
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APPROVAL

APPROVAL:

DIRECTOR, DEPARTMENT OF PLANNING AND PERMITTING (FOR GRADING AND CONSTRUCTION WITHIN CITY ROW ONLY) DATE

Revisions

2023/CP-133

COFFMAN ENGINEERS
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ph 808.687.8884 | fax 808.687.8883
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THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.

Jamie Hirota
Signature

APRIL 30, 2026
Expiration Date of the License

JAMIE S. HIROTA U.S.A. HAWAII LICENSED PROFESSIONAL ENGINEER No. 9776-C

OWNER / DEVELOPER
HAWAIIAN MEMORIAL LIFE PLAN
1330 MAUNAKEA ST.
HONOLULU, HI 96817

HAWAIIAN MEMORIAL PARK EXPANSION
45-425 Kamehameha Highway, Kaneohe, HI
TMK 4-5-033:001

TITLE, INDEX AND VICINITY MAP

Date	5/1/2025
Design	JH/MKU
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Job No.	202056
Sheet No.	G-001
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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 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.

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.

4. THE GENERAL CONTRACTOR/DEVELOPER/OWNER 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 18A OF THE REVISED ORDINANCES OF HONOLULU, AS AMENDED. BEST MANAGEMENT PRACTICES SHALL BE EMPLOYED AT ALL TIMES DURING CONSTRUCTION.

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

   4.1 STORM WATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES THAT DISTURB ONE (1) ACRE OR MORE, AND

   4.2 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. THE OWNER/DEVELOPER/CONTRACTOR IS RESPONSIBLE FOR OBTAINING OTHER FEDERAL, STATE, OR LOCAL AUTHORIZATIONS AS REQUIRED BY LAW.

5. 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:

   5.1 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.

   5.2 CONTINUOUS FORCED AIR VENTILATION ADEQUATE TO PROVIDE SAFE ENTRY CONDITIONS.

   5.3 ONE ATTENDANT/RESCUE PERSONNEL TOPSIDE (TWO, IF CONDITIONS WARRANT IT).

6. 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.

7. 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.

8. FOR BENCH MARK, SEE SHEET. V-100.

9. 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 APPROVAL 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.

GRADING NOTES:

1. ALL GRADING WORK SHALL BE DONE IN ACCORDANCE WITH CHAPTER 18A, ARTICLES 1,2,3, AND 4, AS RELATED TO GRADING, SOIL EROSION AND SEDIMENT CONTROL, OF THE REVISED ORDINANCES OF HONOLULU, 2021, AS AMENDED, AND GEOTECHNICAL ENGINEERING EXPLORATION, HAWAIIAN MEMORIAL PARK EXPANSION, KANEOHE, OAHU, HAWAII DATED APRIL 30, 2025. A REPORT AFTER GRADING, PREPARED BY A PROFESSIONAL ENGINEER, IS REQUIRED UPON COMPLETION OF THIS PROJECT.

2. NO CONTRACTOR SHALL PERFORM ANY GRADING OPERATION SO AS TO CAUSE FALLING ROCKS, SOIL OR DEBRIS IN ANY FORM TO FALL, SLIDE OR FLOW INTO 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.

3. THE CONTRACTOR AT HIS OWN EXPENSE, SHALL KEEP THE PROJECT AREA AND SURROUNDING AREA FREE FROM DUST NUISANCE. THE WORK SHALL BE IN CONFORMANCE WITH THE AIR POLLUTION CONTROL STANDARDS CONTAINED IN THE HAWAII ADMINISTRATIVE RULES, TITLE 11, CHAPTER 60.1, "AIR POLLUTION CONTROL".

4. THE UNDERGROUND PIPES, CABLES OR DUCT LINES 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. WHENEVER CONNECTIONS OF A NEW 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 OF NEW LINES.

5. ADEQUATE PROVISIONS SHALL BE MADE TO PREVENT SURFACE WATERS FROM DAMAGING THE CUT FACE OF AN EXCAVATION OR THE SLOPED SURFACES OF A FILL. FURTHERMORE, ADEQUATE PROVISION SHALL BE MADE TO PREVENT SEDIMENT-LADEN RUNOFF FROM LEAVING THE SITE.

6. ALL SLOPES AND EXPOSED SLOPES SHALL BE SODDED OR PLANTED AS SOON AS FINAL GRADES HAVE BEEN ESTABLISHED. PLANTING SHALL NOT BE DELAYED UNTIL ALL GRADING IS COMPLETED. GRADING TO FINAL GRADE SHALL BE CONTINUOUS, AND ANY AREA WITHIN WHICH WORK HAS BEEN INTERRUPTED OR DELAYED SHALL BE PLANTED.

7. FILLS ON SLOPES STEEPER THAN 5:1 SHALL BE KEYED AND BENCHED.

8. THE CITY SHALL BE INFORMED ON THE LOCATION OF THE BORROW/DISPOSAL SITE FOR THE PROJECT WHEN THE APPLICATION FOR GRADING PERMIT IS MADE. THE BORROW/DISPOSAL SITE MUST ALSO FULFILL THE REQUIREMENTS OF THE GRADING ORDINANCE.

9. NO GRADING WORK SHALL BE DONE ON SATURDAY, SUNDAY AND HOLIDAYS AT ANY TIME WITHOUT PRIOR NOTICE TO THE DIRECTOR, DEPARTMENT OF PLANNING AND PERMITTING, PROVIDED SUCH GRADING WORK IS IN CONFORMANCE WITH HAWAII ADMINISTRATIVE RULES, TITLE 11, CHAPTER 46, "COMMUNITY NOISE CONTROL".

10. THE LIMITS OF THE AREA TO BE GRADED SHALL BE FLAGGED BEFORE COMMENCEMENT OF THE GRADING WORK.

GRADING NOTES (CONT):

11. THE GENERAL CONTRACTOR/DEVELOPER/OWNER OF THE PROJECT SHALL BE RESPONSIBLE FOR ALL GRADING OPERATIONS TO BE PERFORMED IN 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/DEVELOPER/OWNER OF THE PROJECT SHALL OBTAIN NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT COVERAGE(S) FOR THE FOLLOWING:

    STORM WATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES THAT DISTURB ONE (1) ACRE OR MORE, AND

    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. THE OWNER/DEVELOPER/CONTRACTOR OS RESPONSIBLE FOR OBTAINING OTHER FEDERAL, STATE, OR LOCAL AUTHORIZATIONS AS REQUIRED BE LAW.

12. WHERE APPLICABLE AND FEASIBLE THE MEASURES TO CONTROL EROSION AND OTHER POLLUTANTS SHALL BE IN PLACE BEFORE ANY EARTH-MOVING PHASE OF THE GRADING IS INITIATED.

13. TEMPORARY EROSION CONTROLS SHALL NOT BE REMOVED BEFORE PERMANENT EROSION CONTROLS ARE IN-PLACE AND ESTABLISHED.

14. TEMPORARY EROSION CONTROL PROCEDURES SHALL BE SUBMITTED FOR APPROVAL PRIOR TO APPLICATION FOR GRADING PERMIT.

15. IF GRADING WORK INVOLVES CONTAMINATED SOIL, THEN ALL GRADING SHALL BE DONE IN CONFORMANCE WITH APPLICABLE STATE AND FEDERAL REQUIREMENTS.

16. BUILDING PERMIT FOR RETAINING WALLS SHALL BE OBTAINED PRIOR TO COMMENCEMENT OF GRADING WORK ON SITE.

17. 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 APPROVAL 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.

18. PURSUANT TO CHAPTER 6E, HRS, IN THE EVENT ANY ARTIFACTS OR HUMAN REMAINS ARE UNCOVERED DURING CONSTRUCTION, 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, D.P.P (768-8084); AND FOR CITY PROJECTS, NOTIFY THE RESPONSIBLE CITY AGENCY.

19. FOR ALL PROJECTS, WHICH WILL DISTURB ONE (1) ACRE OR MORE OF LAND, THE CONTRACTOR SHALL NOT START CONSTRUCTION UNTIL A NOTICE OF GENERAL PERMIT COVERAGE (NGPC) IS RECEIVED FROM THE DEPARTMENT OF HEALTH, STATE OF HAWAII, AND HAS SATISFIED ANY OTHER APPLICABLE REQUIREMENTS OF THE NPDES PERMIT PROGRAM. ALSO, FOR NON-CITY AND OTHER NON-GOVERNMENTAL AGENCY PROJECTS, THE CONTRACTOR SHALL PROVIDE A WRITTEN COPY OF THE NGPC TO THE PERMITTING AND INSPECTION SECTION, CIVIL ENGINEERING BRANCH, D.P.P., AT LEAST SEVEN (7) CALENDAR DAYS BEFORE THE START OF THE CONSTRUCTION. FOR CITY OR OTHER GOVERNMENT PROJECTS, THE CONTRACTOR SHOULD PROVIDE A WRITTEN COPY OF THE NGPC TO THE APPROPRIATE CITY DEPARTMENT OR GOVERNMENTAL AGENCY PER THEIR REQUIREMENTS.

20. ALL GRADING AND CONSTRUCTION WORK SHALL IMPLEMENT MEASURES TO ENSURE THAT THE DISCHARGE OF POLLUTANTS FROM THE CONSTRUCTION SITE WILL BE REDUCED TO THE MAXIMUM EXTENT PRACTICABLE AND WILL NOT CAUSE OR CONTRIBUTE TO AN EXCEEDANCE OF WATER QUALITY STANDARDS.

21. NONCOMPLIANCE WITH ANY OF THE ABOVE REQUIREMENTS SHALL MEAN IMMEDIATE SUSPENSION OF ALL WORK, AND REMEDIAL WORK SHALL COMMENCE IMMEDIATELY. ALL COSTS INCURRED SHALL BE BILLED TO THE PERMITTEE. FURTHERMORE, VIOLATORS SHALL BE SUBJECTED TO ADMINISTRATIVE, CIVIL AND/OR CRIMINAL PENALTIES.

22. MAXIMUM CUT AND FILL SLOPES SHALL BE VERIFIED AND REVISED AS NECESSARY ONSITE BY A LICENSED GEOTECHNICAL ENGINEER.

23. FOR BENCHMARK, SEE SHEET V-100.

24. CONTRACTOR TO PLACE ANY EXCESS SOIL MATERIAL ON SITE AND STABILIZE AT THE DIRECTION OF THE HAWAIIAN MEMORIAL PARK STAFF.

25. MATERIALS USED TO BACKFILL THE OVER-EXCAVATION DUE TO ROCK SHALL CONSIST OF COHESIVE SOILS CLASSIFIED AS ML, MH, ML-MH, CL, CH, AND CL-CH BASED ON ASTM D2487 AND ASTM D2488. MATERIALS ALSO SHALL CONTAIN LESS THAN 10% PARTICLES CONSISTING OF GRAVEL-SIZED MATERIALS (#4 SIEVE OR LARGER).

EROSION PREVENTION / SEDIMENT CONTROL NOTES:

1. THE CONTRACTOR SHALL FOLLOW THE GUIDELINES IN THE CITY AND COUNTY OF HONOLULU'S "RULES RELATING TO WATER QUALITY".

2. MEASURES TO CONTROL EROSION AND OTHER POLLUTANTS SHALL BE IN PLACE BEFORE ANY EARTHWORK IS INITIATED.

3. REGULARLY INSPECT AND MAINTAIN ALL EROSION AND SEDIMENT CONTROLS TO ENSURE CONTINUED PERFORMANCE.

4. SLOPE PROTECTION
   SLOPE PROTECTION IS REQUIRED ON AREAS WITH SLOPES GREATER GREATER THAN 15% AND ON AREAS OF MODERATE SLOPE THAT ARE PRONE TO EROSION UNLESS THEY ARE BEING ACTIVELY WORKED. USE DIVERSION UPSTREAM OF SLOPE (DIKES, SWALES, SLOPE DRAINS) TO DIVERS WATER AROUND THE SLOPE. PROVIDE A 10-FT BUFFER ZONE AT THE TOE OF SLOPE. ONLY 5 ACRES MAY BE DISTURBED AT ANYTIME ON SLOPES GREATER THAN 15%.

5. TEMPORARY STABILIZATION
   TEMPORARY STABILIZATION IS REQUIRED ON DISTURBED AREAS WHICH ARE AT FINAL GRADE OR WHEN THE DISTURBED AREA WILL NOT BE WORKED FOR 7 CONSECUTIVE DAYS OR MORE.

6. 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.

7. PRESERVE EXISTING VEGETATION
   CLEARLY MARK THE AREAS TO BE PRESERVED WITH FLAGS OR TEMPORARY FENCING. WHERE TEMPORARY FENCING IS USED, FENCING MUST BE ADEQUATELY SUPPORTED BY POSTS AND MAINTAINED IN AN UPRIGHT POSITION.

8. MINIMIZE SOIL COMPACTION
   AREAS WHERE FINAL STABILIZATION OR INFILTRATION PRACTICES WILL BE INSTALLED SHALL BE PROTECTED FROM EXCESSIVE COMPACTION DURING CONSTRUCTION. VEHICLE AND EQUIPMENT USE SHALL BE RESTRICTED OR TECHNIQUES TO CONDITION THE SOILS SUPPORT VEGETATION SHALL BE IMPLEMENTED IN THE AREAS THAT HAVE BEEN COMPACTED AND ARE DESIGNATED TO REMAIN VEGETATIVE OR POST-CONSTRUCTION INFILTRATION AREAS. CLEARLY MARK THE AREAS TO BE AVOIDED WITH FLAGS OR TEMPORARY FENCING. WHERE TEMPORARY FENCING IS USED, FENCING MUST BE ADEQUATELY SUPPORTED BY POSTS AND MAINTAINED IN AN UPRIGHT POSITION.

9. SEDIMENT BARRIER AND FENCES
   SEDIMENT BARRIERS SHALL BE USED TO PROTECT DISTURBED OR DENUDED AREAS THAT ARE NOT SCHEDULED FOR ACTIVE GRADING WORK WITHIN 24 HOURS. THE SEDIMENT BARRIERS SHALL BE INSTALLED AT THE TOE OF THE SLOPE AND ON CONTOURS AT THE FOLLOWING SPACING:

SLOPE < 5%	---> 50 FEET SPACING
SLOPE ≥ 5% AND ≤ 15%	---> 30 FEET SPACING
SLOPE < 15%	---> 20 FEET SPACING

EROSION PREVENTION / SEDIMENT CONTROL NOTES (CONT):

10. PERIMETER CONTROLS
    PERIMETER CONTROLS ARE REQUIRED DOWNSLOPE OF ALL DISTURBED AREAS. MAINTAIN DOWNSTREAM VEGETATED BUFFER AREA.

11. 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.

12. SEDIMENT BASINS MUST BE KEPT IN EFFECTIVE OPERATING CONDITION AND SEDIMENT SHALL BE REMOVED TO MAINTAIN AT LEAST ONE HALF OF THE DESIGN CAPACITY AT ALL TIMES.

13. 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.

13. BEST MANAGEMENT PRACTICES (BMPS) SHALL NOT BE REMOVED UNTIL FINAL STABILIZATION IS COMPLETE FOR THAT PHASE.

14. REFER TO CITY AND COUNTY OF HONOLULU BEST MANAGEMENT PRACTICES MANUAL-CONSTRUCTION, FOR MORE INFORMATION ON BMPS.

15. THE FOLLOWING BMPS WERE DETERMINED TO BE NOT APPLICABLE BASED ON THE SPECIFIC SITE CONDITIONS. AS CONSTRUCTION PROGRESSES, REVISIONS MAY BE NECESSARY AND WILL BE PROVIDED TO DPP INSPECTORS.
    - SEDIMENT BASINS - SEPARATE DOCUMENTATION PROVIDED TO DPP.

16. THE OWNER OF THE PROPERTY OR THEIR AUTHORIZED AGENT MUST DESIGNATE A PERSON RESPONSIBLE FOR IMPLEMENTING THE ESCP AT THE PROJECT SITE ("ESCP COORDINATOR") PRIOR TO PERMIT ISSUANCE USING THE FORM PROVIDED AS APPENDIX A TO THE RULES RELATING TO WATER QUALITY.

17. THE SCHEDULED START DATE SHALL BE SUBMITTED TO THE DIRECTOR IN WRITING OR BY TELEPHONE TWO WEEKS PRIOR TO COMMENCING ANY WORK GOVERNED BY THE RULES RELATING TO WATER QUALITY.

18. REVISIONS TO A PROJECT SCHEDULE MUST BE PROPOSED BY THE SUBMISSION OF A REVISED PROJECT SCHEDULE TO DPP AND APPROVED BY THE DIRECTOR BEFORE WORK MAY BE PERFORMED PURSUANT TO THE REVISED SCHEDULE.

19. PRACTICE GOOD HOUSEKEEPING MEASURES THROUGHOUT THE DURATION OF CONSTRUCTION.

20. REGULARLY INSPECT AND MAINTAIN ALL EROSION AND SEDIMENT CONTROLS TO ENSURE CONTINUED PERFORMANCE.

21. INSPECTIONS WILL BE PERFORMED WEEKLY.

22. CONTRACTOR SHALL COMPLY WITH THE PROJECT SCHEDULING REQUIREMENTS.

RAIN RESPONSE PLAN:

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

- TEMPORARY SUSPENSION OF ACTIVE GRADING AND TRENCHING.
- INSPECT ALL PERIMETER CONTROLS, INLET PROTECTION DEVICES, SWALES, SEDIMENT TRAPS, DIVERSION PIPES, CHECK DAMS, GRAVEL BERMS, AND MAINTAIN AS NEEDED. REINSTALL ANY PERIMETER CONTROLS THAT WERE REMOVED DUE TO ACTIVE WORK IN THE AREA. 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.

GOOD HOUSEKEEPING BMPS:

1. INSPECT BMPS AND SITE WEEKLY. MAINTAIN BMPS AND SITE AS REQUIRED TO ENSURE CONTINUED PERFORMANCE.

2. DUST CONTROL
   DUST FROM THE PROJECT SITE SHALL NOT BE TRANSPORTED OR DISCHARGED TO OFF-SITE AREAS. WATERING SHALL BE USED TO CONTROL DUST DURING THE GRADING PHASES. THE WORK MUST BE DONE IN CONFORMANCE WITH AIR POLLUTION CONTROL STANDARDS CONTAINED IN THE HAR TITLE 11, CHAPTER 60.1 "AIR POLLUTION CONTROL".

3. STREET SWEEPING AND VACUUMING
   ALL POLLUTANTS DISCHARGED FROM CONSTRUCTION SITE TO OFF-SITE AREAS MUST BE SWEPT OR VACUUMED EACH DAY BEFORE LEAVING THE JOB SITE.

4. 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 MEP.

5. 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.

6. 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.

7. 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.

8. 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.

GOOD HOUSEKEEPING BMPS (CONT.):

9. 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.

10. 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.

11. SOLID WASTE MANAGEMENT
    PREVENT OR REDUCE DISCHARGE OF POLLUTANTS TO THE LAND, GROUNDWATER, AND IN 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.

12. 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.

13. 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-WA

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. THE BOARD OF WATER SUPPLY WILL COLLECT GPS COORDINATE DATA FOR ALL INSTALLED WATERLINES AND APPURTENANCES PRIOR TO FINAL ACCEPTANCE OF THE PROJECT.
3. THE CONTRACTOR SHALL FURNISH AND INSTALL POLYETHYLENE WRAP, 3 FEET MINIMUM AT ALL TAPS (FOR DI PIPE AND COPPER LATERAL COMBINATION ONLY).
4. NO DEVIATION TO THE BOARD OF WATER SUPPLY 2002 WATER SYSTEM STANDARDS AS AMENDED, SHALL BE ALLOWED WITHOUT THE MANAGER AND CHIEF ENGINEER'S APPROVAL.
5. ALL PLANS APPROVED BY THE BOARD OF WATER SUPPLY ARE BASED SOLELY ON THE ADEQUACY OF THE WATER SUPPLY.
6. 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.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL 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 BOARD OF WATER SUPPLY APPROVAL) AND/OR MODIFYING THEIR CONSTRUCTION METHOD.
8. THE CONTRACTOR SHALL NOTIFY BWS 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.
9. RE-APPROVAL SHALL BE REQUIRED IF THIS PROJECT IS NOT UNDER CONSTRUCTION WITHIN A PERIOD OF TWO (2) YEARS.
10. PRIOR TO ANY EXCAVATION, THE CONTRACTOR SHALL VERIFY IN THE FIELD, THE LOCATION OF EXISTING WATERLINES AND APPURTENANCES.
11. ANY ADJUSTMENTS TO THE EXISTING WATER SYSTEM REQUIRED DURING CONSTRUCTION, TO MEET THE REQUIREMENTS OF THE BOARD OF WATER SUPPLY WATER SYSTEM STANDARDS, WHETHER SHOWN ON THE PLANS OR NOT, SHALL BE DONE BY THE CONTRACTOR AT NO COST TO THE BOARD OF WATER SUPPLY.
12. 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.
13. AT UTILITY CROSSINGS WHERE PROPER COMPACTION UNDER A WATER MAIN IS DIFFICULT TO ACHIEVE, CLSM SHALL BE INSTALLED IN PLACE OF BACKFILL MATERIAL AND PIPE CUSHION MATERIAL. CLSM MIXTURE TO BE FURNISHED SHALL BE IN ACCORDANCE WITH DIVISION 200 - MATERIALS, SECTION 209.06 CONTROLLED LOW STRENGTH MATERIAL (CLSM) OF THE WATER SYSTEM STANDARDS AS AMENDED.
14. NUTS AND BOLTS FOR FLANGE CONNECTIONS WITHIN METER BOXES SHALL BE BRONZE OR STAINLESS STEEL EXCEPT COUPLING ADAPTERS WHERE "COR-TEN" (U.S. STEEL) OR "MAYARI" (BETHLEHEM STEEL) MAY BE USED. FLANGE CONNECTIONS OUTSIDE OF METER BOX MAY USE "COR-TEN" OR "MAYARI" TYPE NUTS AND BOLTS.
15. ALL WATER MAINS AND APPURTENANCES SHALL BE SUBJECT TO HYDROSTATIC TEST PRESSURE OF 150 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 10PSI.
16. THE CONTRACTOR SHALL CHLORINATE THE ENTIRE INSIDE OF EACH SURFACE OF EACH PIPE AND FITTING WITH DISINFECTION SOLUTION OF 5 OUNCES OF SODIUM HYPOCHLORITE MIXED WITH 10 GALLONS OF WATER. (FOR CONNECTION ONLY)
17. ALL DUCTILE IRON FITTINGS AND METALLIC VALVES SHALL HAVE A FACTORY APPLIED COATING AND WRAPPED WITH PETROLEUM WAX TAPE.
18. ALL DUCTILE IRON PIPE, INCLUDING SECTIONS REQUIRING REINFORCED CONCRETE JACKETING, SHALL BE DUCTILE IRON CLASS 53 WITH A BONDED DIELECTRIC COATING AS PER THE BOARD OF WATER SUPPLY 2002 WATER SYSTEM STANDARDS AS AMENDED.
19. THE PROJECT SHALL PAY THE APPLICABLE WATER SYSTEM FACILITIES AND/OR ONE-TIME SERVICE CHARGE AND FOR THE METER WHICH WILL BE FURNISHED BY BOARD OF WATER SUPPLY AND INSTALLED BY THE CONTRACTOR WHEN THE LATERAL IS INSTALLED.
20. 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.
21. AFTER INSTALLATION OF TAPPING SLEEVE AND TAPPING VALVE AND PRIOR TO TAPPING THE EXISTING WATER MAIN, THE ASSEMBLY SHALL BE PRESSURE TESTED AT 150 PSI ON BOTH SIDES OF THE VALVE AND IN ACCORDANCE WITH THE WATER SYSTEM STANDARDS, DATED 2002.
22. FOR METERS 3 INCHES AND LARGER (COMPOUND, F.M., TURBINE AND DETECTOR CHECK), CONTRACTOR SHALL NOTIFY CUSTOMER CARE DIVISION - SERVICE ENGINEERING SECTION IN WRITING AFTER THE PLANS IS APPROVED, NO LATER THAT 120 DAYS, PRIOR TO WITHDRAWING METER FROM BOARD OF WATER SUPPLY STOREYARD. SUCH NOTICE SHALL INDICATE NUMBER, SIZE, AND TYPE OF METER (COMPOUND, F.M., OR DETECTOR CHECK) AND APPROXIMATE MONTH AND YEAR METER IS ANTICIPATED TO BE DRAWN OUT. IF THE APPROVED PLAN IS ALLOWED TO LAPSE, THE 120-DAY NOTICE WILL BE VOIDED.
23. BOARD OF WATER SUPPLY APPROVAL OF THESE PLANS DOES NOT CONSTITUTE A WATER COMMITMENT. AVAILABILITY OF WATER WILL BE DETERMINED WHEN BUILDING PERMIT IS PRESENTED TO THE DEPARTMENT. WATER COMMITMENT WILL DEPEND UPON THE STATUS OF THE WATER SYSTEM AT THAT TIME. SHOULD WATER SERVICE BE MADE AVAILABLE, THE WATER COMMITMENT WILL BE EFFECTIVE WHEN THE PROJECT RECEIVES AN APPROVED BUILDING PERMIT FROM THE BUILDING DEPARTMENT. ALL WATER COMMITMENTS WILL BE CANCELED IN THE EVENT THE BUILDING PERMIT IS CANCELED.
24. THE PROJECT SHALL BE SUBJECT TO THE BOARD OF WATER SUPPLY'S CROSS-CONNECTION CONTROL REQUIREMENTS PRIOR TO ISSUANCE OF THE BUILDING PERMIT.
25. THE INSTALLATION, CHLORINATION AND TESTING OF THE WATER MAIN AND FACILITIES AFTER THE PROPERTY LINE SHALL NOT BE THE RESPONSIBILITY OF THE BOARD OF WATER SUPPLY.
26. 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 BOARD OF WATER SUPPLY WATER SYSTEM STANDARDS, DATED 2002 AND ADDENDUMS.
27. 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.
28. THE BACKFLOW PREVENTER DEVICE MUST BE INSTALLED BEFORE METER IS ISSUED.
29. 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 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).
30. 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.
31. 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). INSTALL 4 MIL THICK, NON-METALLIC, BLUE COLORED, 6 INCHED 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 WATERLINE BURIED BELOW".

WATER NOTES (CONT.):

32. AT THE ELECTRICAL/CABLE/SIGNAL DUCTLINE WATER CROSSINGS, ADJUST ALL ELECTRICAL/CABLE/SIGNAL DUCTLINE ELEVATIONS TO MAINTAIN THE REQUIRED VERTICAL CLEAR SEPARATION FROM ALL WATER MAINS. CONFORMANCE TO THE BOARD OF WATER SUPPLY 2002 WATER SYSTEM STANDARDS AS AMENDED SHALL BE AT NO COST AND ADHERED TO.
33. MAINTAIN THE REQUIRED MINIMUM HORIZONTAL CLEAR SEPARATION BETWEEN ALL WATER MAINS, AND THE NEAREST ELECTRICAL/CABLE/SIGNAL DUCTLINES PARALLELING THE WATER SYSTEM. CONFORMANCE TO THE BOARD OF WATER SUPPLY 2002 WATER SYSTEM STANDARDS AS AMENDED SHALL BE AT NO COST AND ADHERED TO.
34. MAINTAIN THE REQUIRED MINIMUM HORIZONTAL CLEAR SEPARATION BETWEEN ELECTRICAL/CABLE/SIGNAL APPURTENANCES, (INCLUDING ANY MODULAR UNITS) AND THE NEAREST WATER MAINS OR WATER APPURTENANCE. CONTRACTOR SHALL FIELD VERIFY FOR ANY CONFLICTS AT EACH ELECTRICAL/CABLE/ SIGNAL APPURTENANCE LOCATION. WHERE CONFLICTS OCCUR, THE CONTRACTOR SHALL COORDINATE WITH THE PROJECT ENGINEER TO REVISE THE ELECTRICAL/CABLE/SIGNAL APPURTENANCE TO PROVIDE THE REQUIRED CLEARANCES. CONFORMANCE TO THE BOARD OF WATER SUPPLY 2002 WATER SYSTEM STANDARDS AS AMENDED SHALL BE AT NO COST AND ADHERED TO.
35. WATERLINE WORK SEQUENCE. THE FOLLOWING STEPS ARE ONE POTENTIAL APPROACH FOR WATERLINE INSTALLATION. CONTRACTOR SHALL PREPARE A WORK SEQUENCE PLAN AND SCHEDULE AND SUBMIT TO OWNER AND ENGINEER FOR REVIEW PRIOR TO STARTING WORK.

A. PERFORM EXPLORATORY EXCAVATION TO LOCATE THE EXISTING WATERLINES IN THE VICINITY OF THE TIE-IN POINTS WITH THE NEW SYSTEM, AS SHOWN ON SHEETS CU102 AND CU103.

B. CUT AND CAP THE EXISTING WATERLINE AS SHOWN ON SHEETS CU102 AND CU103. THIS SHOULD ISOLATE THE PORTION OF THE EXISTING WATERLINE IN THE AREA WHERE THE NEW WATERLINE WILL BE INSTALLED, BUT LEAVE THE REMAINING PORTIONS OF THE EXISTING SYSTEM "LIVE" AND IN SERVICE. CONTRACTOR SHALL VERIFY WATER AVAILABILITY PRIOR TO BACKFILLING THE CUT AND CAP EXCAVATIONS.

C. CONSTRUCT WATERLINE "A" FROM STATION 0+00 TO STATION 10+38 AS-SHOWN ON SHEETS CU101 THROUGH CU103.

D. PERFORM DISINFECTION TESTING AND PRESSURE TESTING ON THE NEW WATERLINE "A".

E. REMOVE THE TEMPORARY CAPS FROM THE EXISTING WATERLINE AND CONNECT TO THE NEW SYSTEM, AS SHOWN ON SHEET C-503.

F. PERFORM SURFACE REPAIR FOR WATERLINE "A" AREAS.

G. CONSTRUCT WATERLINE "B" FROM STATION 1+00 TO STATION 4+37 AS-SHOWN ON SHEET CU104.

H. PERFORM DISINFECTION TESTING AND PRESSURE TESTING ON THE NEW WATERLINE "B".

I. PERFORM SURFACE REPAIR FOR WATERLINE "B" AREAS.

ABBREVIATIONS

ABBREVIATION	DESCRIPTION	ABBREVIATION	DESCRIPTION
&	AND	MAX	MAXIMUM
℄	CENTERLINE	ME	MATCH EXISTING
Ø	DIAMETER	MH	MANHOLE
#	NUMBER	MIN	MINIMUM
%	PERCENT		
℄	PROPERTY LINE	N	NORTH
AC	ASPHALT CONCRETE	NE	NORTHEAST
AD	AREA DRAIN	NIC	NOT IN CONTRACT
BLDG	BUILDING	OHE	OVERHEAD ELECTRIC
BC	BOTTOM CURB	O.D.	OUTSIDE DIAMETER
CB	CATCH BASIN	POC	POINT OF CONNECTION
CO	CLEANOUT	PSI	PRESSURE PER SQUARE INCH
CONC	CONCRETE	PCC	PORTLAND CONCRETE CEMENT
COR	CONTRACING OFFICER'S REPRESENTATIVE	PVMT	PAVEMENT
DI	DRAIN INLET		
DB	DRAIN BASIN	R&R	REMOVE AND REPLACE
DIP	DUCTILE IRON PIPE	REC	RECORD
DND	DO NOT DISTURB	REINF	REINFORCING
DPW	DEPT OF PUBLIC WORKS	REQ'D	REQUIRED
DMH	DRAIN MANHOLE		
		S	SEWER, SOUTH
E	EAST	SD	STORM DRAIN
EL	ELEVATION	SE	SOUTHEAST
EOC	EDGE OF CONCRETE	SEC	SECTION
EP	EDGE OF PAVEMENT	SF	SQUARE FEET
EW	EACH WAY	SMH	SANITARY SEWER MANHOLE
EX	EXISTING	STA	STATION
		STL	STEEL
FOC	FACE OF CURB	S/W	SIDEWALK
FH	FIRE HYDRANT		
FG	FINISH GRADE	TBC	TOP BACK OF CURB
FT	FEET	TBM	TEMPORARY BENCH MARK
		TBR	TO BE REMOVED
G	GAS	TBREL	TO BE RELOCATED
GB	GRADE BREAK	TC	TOP OF CURB
GR	GRATE	TYP	TYPICAL
H	HEIGHT		
HDPE	HIGH DENSITY POLYETHYLENE	UGE	UNDERGROUND ELECTRIC
HORIZ	HORIZONTAL		
HP	HIGH POINT	VERT	VERTICAL
HSS	HOLLOW STRUCTURAL SECTION		
		W	WATER, WEST
ID	INLINE DRAIN	WWF	WELDED WIRE FABRIC
IE	INVERT ELEVATION		
IN	INCH		
INV	INVERT		
LONG	LONGITUDINAL		
LUC	LAND USE COMMISSION		

SYMBOLS LEGEND

SHADED ARROW SIGNIFIES A SECTION CUT OR AN ELEVATION

2 / C-501 — DETAIL, SECTION, OR ELEVATION NUMBER; SHEET ON WHICH DETAIL, SECTIONS, OR ELEVATION IS DRAWN

DETAIL OR SECTION LINE
SCALE: 1" = XX" X-XXX — SHEET ON WHICH DETAIL, SECTION, OR ELEVATION IS CUT

CIVIL LEGEND

EXISTING	NEW	DESCRIPTION
		STRUCTURE
W	W	WATERLINE
ES		ELECTRICAL SERVICE LINE
	SD	UPSLOPE DIVERSION SWALE
		UPSLOPE DIVERSION PIPE
		COLLECTION SWALE
		DOUBLE LAYER COMPOST FILTER SOCK PERIMETER CONTROL (BUFFER)
x	x	CHAIN LINK FENCE
		CONCRETE SIDEWALK
		LIGHT POLE
		CLEANOUT
		SIGN
400	400	ELEVATION CONTOUR
		CULTURAL PRESERVATION AREA
		FILTER SOCK
		FLOW DIRECTION
		DAMSELFLY BUFFER LINE
		SELF MITIGATING LINE
		LUC BOUNDARY
		ADDITIONAL LIMITS OF DISTURBANCE
		LIMITS OF GRADING/DISTURBANCE
		SET BACK LINE
		CONSTRUCTION ENTRANCE
		GRASS
		COARSE GRAVEL
		MANHOLE
		DRAIN INLET
		ASPHALT CONCRETE PAVEMENT
		CONCRETE PAVEMENT
		ANCHORED WIRE MESH
		FIBER REINFORCED SHOTCRETE
		GRAVEL PATH

APPROVAL:

MANAGER AND CHIEF ENGINEER, BWS (FOR WORK AFFECTING BWS FACILITIES IN CITY/STATE R/W AND BWS EASEMENTS ONLY) — DATE

Revisions		

2023/CP-133

COFFMAN ENGINEERS
745 Fort Street, Suite 400 | Honolulu, Hawaii 96813
ph 808.687.8884 | fax 808.687.8883
coffman.com

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Signature — APRIL 30, 2026 — Expiration Date of the License

JAMES K. HIRATA — No. 9776-C — LICENSED PROFESSIONAL ENGINEER — HAWAII, U.S.A.

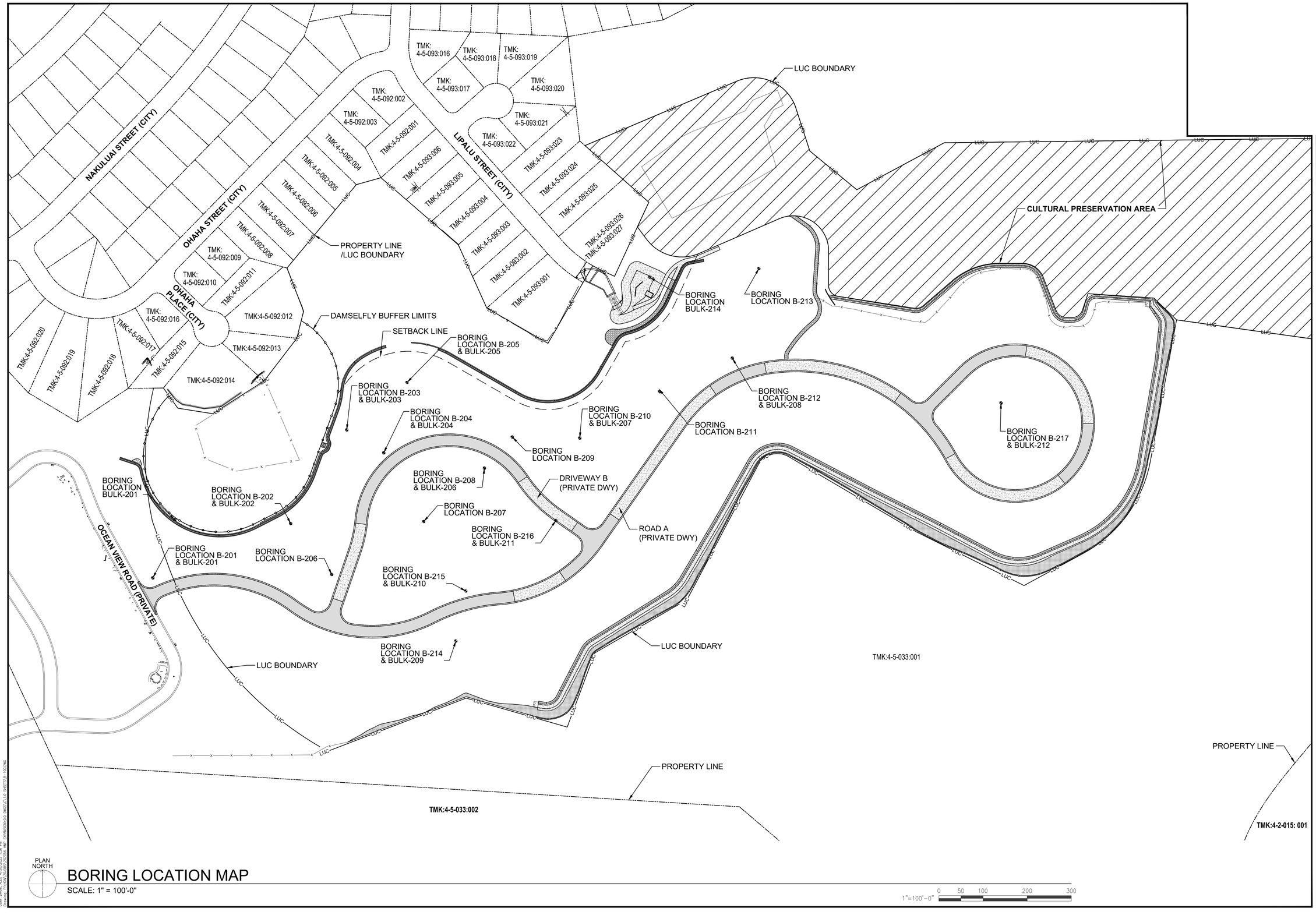
OWNER / DEVELOPER
HAWAIIAN MEMORIAL LIFE PLAN
1330 MAUNAKEA ST.
HONOLULU, HI 96817

HAWAIIAN MEMORIAL PARK EXPANSION
45-425 Kamehameha Highway, Kaneohe, HI
TMK 4-5-033:001

WATER NOTES, LEGEND AND ABBREVIATIONS

Date	5/1/2025
Design	CJH
Drawn	LYY
Job No.	202056
Sheet No.	G-003
	3 of 107 SHEETS

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Drawing: K:\BWS\202056\CAD\Water Waste\EXHWGWW.DWG DWG\V3.1.0 SHEETSY.C--ROLLING



PLAN NORTH

BORING LOCATION MAP

SCALE: 1" = 100'-0"

1"=100'-0" 0 50 100 200 300

2023/CP-133

Revisions		

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Signature

APRIL 30, 2026

Expiration Date of the License

JAMES S. HIROTA — LICENSED PROFESSIONAL ENGINEER — No. 9776-C — HAWAII — U.S.A.

OWNER / DEVELOPER
HAWAIIAN MEMORIAL LIFE PLAN
1330 MAUNAKEA ST.
HONOLULU, HI 96817

HAWAIIAN MEMORIAL PARK EXPANSION
45-425 Kamehameha Highway, Kaneohe, HI
TMK 4-5-033:001

BORING LOCATION MAP

Date	5/1/2025
Design	JH/MKU
Drawn	DH
Job No.	202056

Sheet No.
B-100
4 of 107 SHEETS

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GEOLABS, INC. — Geotechnical Engineering

HAWAIIAN MEMORIAL PARK EXPANSION
KANEOHE, OAHU, HAWAII

Log of Boring B-201

Approximate Ground Surface Elevation (feet MSL): 260 *

Laboratory: Other Tests	Moisture Content (%)	Dry Density (pcf)	Field: Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
	36	83			42	4.3				MH	Brown with gray mottling **CLAYEY SILT** with some sand and a little gravel (basaltic), very stiff, moist (till)
	30				9/6" +50/3"		5				Gray **COBBLES AND BOULDERS (BASALTIC)**, very dense, dry (till)
										ML	Orangish brown with gray mottling **CLAYEY SILT** with some decomposed gravel and remnant rock structure, stiff, moist (saprolite)
	44	74			21	4.3	10				
	47				9		15				
										MH	Orangish brown and gray **CLAYEY SILT** with some sand and a little decomposed gravel, medium stiff, moist (saprolite)
Sieve -#200 = 81.3%	65	49			8	1.0	20				
	66				8		25				grades with traces of decomposed gravel
TXUU S_u=2.4 ksf	99	45			7	1.0	30				

Date Started:	October 4, 2022	Water Level: ▼ Not Encountered	Plate
Date Completed:	October 5, 2022		
Logged By:	S. Latronic	Drill Rig: CME-45CY TRACK	A - 1.1
Total Depth:	51.5 feet	Drilling Method: 4" Solid-Stem Auger	
Work Order:	7604-20	Driving Energy: 140 lb. wt., 30 in. drop	

GEOLABS, INC. — Geotechnical Engineering

HAWAIIAN MEMORIAL PARK EXPANSION
KANEOHE, OAHU, HAWAII

Log of Boring B-202

Approximate Ground Surface Elevation (feet MSL): 243 *

Laboratory: Other Tests	Moisture Content (%)	Dry Density (pcf)	Field: Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
LL=52 PI=12	43	71			22	3.0				MH	Reddish brown **CLAYEY SILT** with a little gravel, very stiff, moist (residual soil)
	43				5		5			ML	grades with gray basaltic dike seams locally
											Orangish brown with multi-color mottling **CLAYEY SILT** with a little sand and some remnant rock structure, stiff, moist (saprolite)
Direct Shear	36	58			11	1.5	10				
	6				50/1"		15				Gray **BASALT**, moderately fractured, unweathered to slightly weathered, hard to very hard (basaltic dike/sill formation)
			100	53			20				
UC= 3160 psi			100	43							
			100	80			25				grades to slightly fractured
			100	75			30				

Date Started:	October 3, 2022	Water Level: ▼ Not Encountered	Plate
Date Completed:	October 4, 2022		
Logged By:	S. Latronic	Drill Rig: CME-45CY TRACK	A - 2.1
Total Depth:	47 feet	Drilling Method: 4" Solid-Stem Auger & PQ Coring	
Work Order:	7604-20	Driving Energy: 140 lb. wt., 30 in. drop	

GEOLABS, INC. — Geotechnical Engineering

HAWAIIAN MEMORIAL PARK EXPANSION
KANEOHE, OAHU, HAWAII

Log of Boring B-203

Approximate Ground Surface Elevation (feet MSL): 222.5 *

Laboratory: Other Tests	Moisture Content (%)	Dry Density (pcf)	Field: Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
	40	76			22	3.5				MH	Orangish brown with multi-color mottling **CLAYEY SILT** with traces of decomposed gravel, very stiff, moist (residual soil)
	45				17		5			ML	Orangish brown with multi-color mottling **CLAYEY SILT** with remnant rock structure, very stiff, moist (saprolite)
Consol.	37	69			17	3.5	10				
	25				25		15			ML	Yellowish brown to yellowish gray **SANDY SILT** with some gravel and remnant rock structure, very stiff to hard, moist (saprolite)
					50	4.3	20				
LL=32 PI=6	14				30		25				
	12	80			50/2"	4.5	30				Yellowish gray to gray **BASALT**, medium hard (basalt formation)

Date Started:	September 29, 2022	Water Level: ▼ Not Encountered	Plate
Date Completed:	September 30, 2022		
Logged By:	S. Latronic	Drill Rig: CME-45CY TRACK	A - 3.1
Total Depth:	47 feet	Drilling Method: 4" Solid-Stem Auger	
Work Order:	7604-20	Driving Energy: 140 lb. wt., 30 in. drop	

GEOLABS, INC. — Geotechnical Engineering

HAWAIIAN MEMORIAL PARK EXPANSION
KANEOHE, OAHU, HAWAII

Log of Boring B-204

Approximate Ground Surface Elevation (feet MSL): 230.5 *

Laboratory: Other Tests	Moisture Content (%)	Dry Density (pcf)	Field: Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
	34	83			22	3.0				MH	Orangish brown **CLAYEY SILT**, stiff, moist (residual soil)
	33				15		5			ML	Yellowish brown with gray mottling **SANDY SILT** with remnant rock structure, very stiff, moist (saprolite)
LL=48 PI=10 TXUU S_u=2.5 ksf	38	70			27	4.3	10				
	22				23		15				grades to yellowish gray
	28	88			68	4.5	20				grades to gray, hard
	20				52/6" +50/4"		25				
	22	99			48/6" +50/5"	4.5	30				grades with some gravel (basaltic) locally
										ML	

Date Started:	September 30, 2022	Water Level: ▼ Not Encountered	Plate
Date Completed:	September 30, 2022		
Logged By:	S. Latronic	Drill Rig: CME-45CY TRACK	A - 4.1
Total Depth:	50.2 feet	Drilling Method: 4" Solid-Stem Auger	
Work Order:	7604-20	Driving Energy: 140 lb. wt., 30 in. drop	

GEOLABS, INC. — Geotechnical Engineering

HAWAIIAN MEMORIAL PARK EXPANSION
KANEOHE, OAHU, HAWAII

Log of Boring B-205

Approximate Ground Surface Elevation (feet MSL): 283.5 *

Laboratory: Other Tests	Moisture Content (%)	Dry Density (pcf)	Field: Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
	37	73			20	2.8				MH	Reddish brown **CLAYEY SILT** with a little sand, stiff, moist (residual soil)
LL=65 PI=23	36				4		5				grades to medium stiff locally
	51	60			11	2.0	10			MH	Orangish brown with multi-color mottling **CLAYEY SILT** with remnant rock structure, medium stiff, moist (saprolite)
	40				15		15				grades to very stiff locally
	42	70			9	2.5	20				
	50				6		25			ML	Yellowish gray with black mottling **CLAYEY SILT** with remnant rock structure, very stiff, moist (saprolite)
	37	82			31	4.3	30				grades to stiff

Date Started:	September 15, 2022	Water Level: ▼ Not Encountered	Plate
Date Completed:	September 16, 2022		
Logged By:	S. Latronic	Drill Rig: CME-45CY TRACK	A - 5.1
Total Depth:	101.5 feet	Drilling Method: 4" Solid-Stem Auger	
Work Order:	7604-20	Driving Energy: 140 lb. wt., 30 in. drop	

GEOLABS, INC. — Geotechnical Engineering

HAWAIIAN MEMORIAL PARK EXPANSION
KANEOHE, OAHU, HAWAII

Log of Boring B-201

(Continued from previous plate)

Laboratory: Other Tests	Moisture Content (%)	Dry Density (pcf)	Field: Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
	42				14					CH	Brown and gray **SILTY CLAY** with some gravel (basaltic) and alluvial structure, stiff to very stiff, moist (volcanic mudflow)
LL=73 PI=45 TXUU S_u=2.7 ksf	44	80			28	1.5	40				
										MH	Brown and gray **CLAYEY SILT** with some gravel (basaltic) and alluvial structure, stiff to very stiff, moist (volcanic mudflow)
	40				14		45				
	42	82			25	1.5	50				Boring terminated at 51.5 feet
							55				* Elevations estimated from Topographic Survey Map transmitted by Coffman Engineers, Inc. on October 18, 2022.
							60				
							65				
							70				

Date Started:	October 4, 2022	Water Level: ▼ Not Encountered	Plate
Date Completed:	October 5, 2022		
Logged By:	S. Latronic	Drill Rig: CME-45CY TRACK	A - 1.2
Total Depth:	51.5 feet	Drilling Method: 4" Solid-Stem Auger	
Work Order:	7604-20	Driving Energy: 140 lb. wt., 30 in. drop	

GEOLABS, INC. — Geotechnical Engineering

HAWAIIAN MEMORIAL PARK EXPANSION
KANEOHE, OAHU, HAWAII

Log of Boring B-202

(Continued from previous plate)

Laboratory: Other Tests	Moisture Content (%)	Dry Density (pcf)	Field: Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
UC= 9140 psi			100	100			40				grades to massive
			100	70			45				Boring terminated at 47 feet
							50				
							55				
							60				
							65				
							70				

Date Started:	October 3, 2022	Water Level: ▼ Not Encountered	Plate
Date Completed:	October 4, 2022		
Logged By:	S. Latronic	Drill Rig: CME-45CY TRACK	A - 2.2
Total Depth:	47 feet	Drilling Method: 4" Solid-Stem Auger & PQ Coring	
Work Order:	7604-20	Driving Energy: 140 lb. wt., 30 in. drop	

GEOLABS, INC. — Geotechnical Engineering

HAWAIIAN MEMORIAL PARK EXPANSION
KANEOHE, OAHU, HAWAII

Log of Boring B-203

(Continued from previous plate)

Laboratory: Other Tests	Moisture Content (%)	Dry Density (pcf)	Field: Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
	7				50/1"						grades to very hard
	8				50/1"		40				
	9				50/1"		45				Boring terminated at 47 feet
							50				
							55				
							60				
							65				
							70				

Date Started:	September 29, 2022	Water Level: ▼ Not Encountered	Plate
Date Completed:	September 30, 2022		
Logged By:	S. Latronic	Drill Rig: CME-45CY TRACK	A - 3.2
Total Depth:	47 feet	Drilling Method: 4" Solid-Stem Auger	
Work Order:	7604-20	Driving Energy: 140 lb. wt., 30 in. drop	

GEOLABS, INC. — Geotechnical Engineering

HAWAIIAN MEMORIAL PARK EXPANSION
KANEOHE, OAHU, HAWAII

Log of Boring B-204

(Continued from previous plate)

Laboratory: Other Tests	Moisture Content (%)	Dry Density (pcf)	Field: Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
	17				50/5"					ML	Yellowish gray to gray **SANDY SILT** with some gravel (basaltic) and remnant rock structure, hard, moist (weathered basalt)
	13				50/3"		40				Yellowish gray to gray **BASALT**, medium hard to hard (basalt formation)
	10				50/3"		45				
	8				50/2"		50				Boring terminated at 50.2 feet
							55				
							60				
							65				
							70				

Date Started:	September 30, 2022	Water Level: ▼ Not Encountered	Plate
Date Completed:	September 30, 2022		
Logged By:	S. Latronic	Drill Rig: CME-45CY TRACK	A - 4.2
Total Depth:	50.2 feet	Drilling Method: 4" Solid-Stem Auger	
Work Order:	7604-20	Driving Energy: 140 lb. wt., 30 in. drop	

GEOLABS, INC. — Geotechnical Engineering

HAWAIIAN MEMORIAL PARK EXPANSION
KANEOHE, OAHU, HAWAII

Log of Boring B-205

(Continued from previous plate)

Laboratory: Other Tests	Moisture Content (%)	Dry Density (pcf)	Field: Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
	42				12					ML	
	39	71			15	2.0	40				grades to very stiff
	38				19		45				
TXUU S_u=5.5 ksf	54	71			27	3.3	50				
LL=45 PI=15	29				34		55				grades with some sand locally
Direct Shear	41	79			30	4.3	60				
	35				22		65				grades to hard locally
							70				

Date Started:	September 15, 2022	Water Level: ▼ Not Encountered	Plate
Date Completed:	September 16, 2022		
Logged By:	S. Latronic	Drill Rig: CME-45CY TRACK	A - 5.2
Total Depth:	101.5 feet	Drilling Method: 4" Solid-Stem Auger	
Work Order:	7604-20	Driving Energy: 140 lb. wt., 30 in. drop	

A-5.3 CONTINUES TO NEXT SHEET SEE B-102

Revisions

2023/CP-133

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HONOLULU, HI 96817

HAWAIIAN MEMORIAL PARK EXPANSION
45-425 Kamehameha Highway, Kaneohe, HI
TMK 4-5-033:001

BORING LOGS 1

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Design	JH/MKU
Drawn	DH
Job No.	202056

Sheet No.
B-101
5 of 107 SHEETS

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GEOLABS, INC. Geotechnical Engineering | HAWAIIAN MEMORIAL PARK EXPANSION KANEOHE, OAHU, HAWAII | Log of Boring **B-205**

Laboratory				Field								
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	(Continued from previous plate) Description
	34	86			43	4.5				ML	
										MH	Brown with black mottling **CLAYEY SILT** with some sand and remnant rock structure, very stiff, moist (saprolite)
	46				14		75				
Sieve - #200 = 83.6%	42	79			46	4.0	80				
	43				18		85				
TXUU S_u=5.9 ksf	71	64			27	4.0	90				
	44				19		95				
	39	81			39	4.3	100				Boring terminated at 101.5 feet
							105				

Date Started:	September 15, 2022	Water Level: ▼ Not Encountered	Plate
Date Completed:	September 16, 2022		
Logged By:	S. Latronic	Drill Rig: CME-45CY TRACK	A - 5.3
Total Depth:	101.5 feet	Drilling Method: 4" Solid-Stem Auger	
Work Order:	7604-20	Driving Energy: 140 lb. wt., 30 in. drop	

GEOLABS, INC. Geotechnical Engineering | HAWAIIAN MEMORIAL PARK EXPANSION KANEOHE, OAHU, HAWAII | Log of Boring **B-206**

Laboratory				Field								
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 310 ± Description
	48	72			16	2.5				MH	Reddish brown **CLAYEY SILT** with traces of organics, very stiff, moist (fill)
	38				8		5			MH	Reddish brown with multi-color mottling **CLAYEY SILT** with remnant rock structure, stiff, moist (residual soil)
LL=80 PI=30					20	3.8	10				
	38				10		15				
	43	70			22	4.0	20				
	44				10		25			ML	Yellowish brown and gray **CLAYEY SILT** with remnant rock structure, stiff, moist (saprolite)
Consol.	43	77			27	4.3	30				grades with some decomposed gravel locally
							35				grades to very stiff

Date Started:	September 28, 2022	Water Level: ▼ Not Encountered	Plate
Date Completed:	September 29, 2022		
Logged By:	S. Latronic	Drill Rig: CME-45CY TRACK	A - 6.1
Total Depth:	50.2 feet	Drilling Method: 4" Solid-Stem Auger	
Work Order:	7604-20	Driving Energy: 140 lb. wt., 30 in. drop	

GEOLABS, INC. Geotechnical Engineering | HAWAIIAN MEMORIAL PARK EXPANSION KANEOHE, OAHU, HAWAII | Log of Boring **B-207**

Laboratory				Field								
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 294 ± Description
	47	69			15	2.5				MH	Orangish brown and gray **CLAYEY SILT**, stiff, moist (residual soil)
	43				9		5				grades with some remnant rock structure
LL=64 PI=21	43	62			12	2.5	10			MH	Yellowish brown and gray **CLAYEY SILT** with a little decomposed gravel and remnant rock structure, medium stiff, moist (saprolite)
	33				23		15				grades to very stiff
					29	3.8	20				
	45				14		25			ML	Brownish gray with multi-color mottling **SANDY SILT** with remnant rock structure, hard, moist (saprolite)
TXUU S_u=5.1 ksf	32	90			55	4.5	30				

Date Started:	September 27, 2022	Water Level: ▼ Not Encountered	Plate
Date Completed:	September 28, 2022		
Logged By:	S. Latronic	Drill Rig: CME-45CY TRACK	A - 7.1
Total Depth:	65.1 feet	Drilling Method: 4" Solid-Stem Auger	
Work Order:	7604-20	Driving Energy: 140 lb. wt., 30 in. drop	

GEOLABS, INC. Geotechnical Engineering | HAWAIIAN MEMORIAL PARK EXPANSION KANEOHE, OAHU, HAWAII | Log of Boring **B-208**

Laboratory				Field								
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 275 ± Description
	41	74			28	4.3				MH	Reddish brown **CLAYEY SILT** with traces of organics, stiff to very stiff, moist (fill)
	35				24		5			MH	Reddish brown **CLAYEY SILT**, very stiff, moist (older alluvium)
LL=90 PI=47							10			MH	Reddish brown with multi-color mottling **CLAYEY SILT**, stiff, moist (residual soil)
Direct Shear	40	70			22	3.5					
	47				10		15				grades with remnant rock structure
TXUU S_u=3.2 ksf	60	62			11	2.5	20				
	47				13		25			ML	Yellowish brown and gray **CLAYEY SILT** with remnant rock structure, stiff to very stiff, moist (saprolite)
	43	75			21	4.3	30				grades with traces of decomposed gravel, locally

Date Started:	September 26, 2022	Water Level: ▼ Not Encountered	Plate
Date Completed:	September 27, 2022		
Logged By:	S. Latronic	Drill Rig: CME-45CY TRACK	A - 8.1
Total Depth:	65.9 feet	Drilling Method: 4" Solid-Stem Auger	
Work Order:	7604-20	Driving Energy: 140 lb. wt., 30 in. drop	

GEOLABS, INC. Geotechnical Engineering | HAWAIIAN MEMORIAL PARK EXPANSION KANEOHE, OAHU, HAWAII | Log of Boring **B-209**

Laboratory				Field								
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 253 ± Description
	42	70			18	3.3				MH	Reddish brown **CLAYEY SILT** with traces of sand, very stiff, moist (residual soil)
	40				14		5				
LL=92 PI=46 TXUU S_u=3.0 ksf	78	56			16	3.0	10				
	58				9		15			ML	Orangish brown with multi-color mottling **CLAYEY SILT** with remnant rock structure, stiff, moist (saprolite)
	41	78			22	3.0	20				grades to reddish brown with multi color mottling locally
	54				7		25				grades with purple mottling
	56	70			19	3.0	30				

Date Started:	September 15, 2022	Water Level: ▼ Not Encountered	Plate
Date Completed:	September 15, 2022		
Logged By:	S. Latronic	Drill Rig: CME-45CY TRACK	A - 9.1
Total Depth:	51.5 feet	Drilling Method: 4" Solid-Stem Auger	
Work Order:	7604-20	Driving Energy: 140 lb. wt., 30 in. drop	

GEOLABS, INC. Geotechnical Engineering | HAWAIIAN MEMORIAL PARK EXPANSION KANEOHE, OAHU, HAWAII | Log of Boring **B-206**

Laboratory				Field								
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	(Continued from previous plate) Description
	35				22					ML	
	32	96			75	4.5	40				Yellowish gray to gray **BASALT**, hard (basalt formation)
	21				50/3"		45				
	8				50/2"		50				Boring terminated at 50.2 feet
							55				
							60				
							65				
							70				

Date Started:	September 28, 2022	Water Level: ▼ Not Encountered	Plate
Date Completed:	September 29, 2022		
Logged By:	S. Latronic	Drill Rig: CME-45CY TRACK	A - 6.2
Total Depth:	50.2 feet	Drilling Method: 4" Solid-Stem Auger	
Work Order:	7604-20	Driving Energy: 140 lb. wt., 30 in. drop	

GEOLABS, INC. Geotechnical Engineering | HAWAIIAN MEMORIAL PARK EXPANSION KANEOHE, OAHU, HAWAII | Log of Boring **B-207**

Laboratory				Field								
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	(Continued from previous plate) Description
	27				46					ML	
	20	107			88	4.5	40				
	17				50/5"		45				Brownish gray to gray **BASALT**, hard (basalt formation)
	14				50/2"		50				
	14				50/4"		55				grades to very hard locally
	13				50/3"		60				
	8				50/1"		65				Boring terminated at 65.1 feet
							70				

Date Started:	September 27, 2022	Water Level: ▼ Not Encountered	Plate
Date Completed:	September 28, 2022		
Logged By:	S. Latronic	Drill Rig: CME-45CY TRACK	A - 7.2
Total Depth:	65.1 feet	Drilling Method: 4" Solid-Stem Auger	
Work Order:	7604-20	Driving Energy: 140 lb. wt., 30 in. drop	

GEOLABS, INC. Geotechnical Engineering | HAWAIIAN MEMORIAL PARK EXPANSION KANEOHE, OAHU, HAWAII | Log of Boring **B-208**

Laboratory				Field								
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	(Continued from previous plate) Description
	65				5					ML	grades to medium stiff locally
	48	74			22	3.0	40				
	33				52		45			ML	Gray with multi-color mottling **SANDY SILT** with some decomposed gravel and remnant rock structure, hard, moist (saprolite)
TXUU S_u=2.5 ksf	48	77			59	4.5	50				
	29				39		55				
	36	85			63	4.5	60				
	18				50/5"		65				grades to highly weathered basalt
							70				Boring terminated at 65.9 feet

Date Started:	September 26, 2022	Water Level: ▼ Not Encountered	Plate
Date Completed:	September 27, 2022		
Logged By:	S. Latronic	Drill Rig: CME-45CY TRACK	A - 8.2
Total Depth:	65.9 feet	Drilling Method: 4" Solid-Stem Auger	
Work Order:	7604-20	Driving Energy: 140 lb. wt., 30 in. drop	

GEOLABS, INC. Geotechnical Engineering | HAWAIIAN MEMORIAL PARK EXPANSION KANEOHE, OAHU, HAWAII | Log of Boring **B-209**

Laboratory				Field								
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	(Continued from previous plate) Description
	54				9					ML	
	54	71			17	2.0	40				
	55				8		45				
TXUU S_u=2.1 ksf	70	61			15	2.0	50				Boring terminated at 51.5 feet
							55				
							60				
							65				
							70				

Date Started:	September 15, 2022	Water Level: ▼ Not Encountered	Plate
Date Completed:	September 15, 2022		
Logged By:	S. Latronic	Drill Rig: CME-45CY TRACK	A - 9.2
Total Depth:	51.5 feet	Drilling Method: 4" Solid-Stem Auger	
Work Order:	7604-20	Driving Energy: 140 lb. wt., 30 in. drop	

Revisions

2023/CP-133

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

Signature

APRIL 30, 2026
Expiration Date of the License

JAMES S. HIROTA LICENSED PROFESSIONAL ENGINEER No. 9776-C HAWAII U.S.A.

OWNER / DEVELOPER
HAWAIIAN MEMORIAL LIFE PLAN
1330 MAUNAKEA ST.
HONOLULU, HI 96817

HAWAIIAN MEMORIAL PARK EXPANSION
45-425 Kamehameha Highway, Kaneohe, HI
TMK 4-5-033:001

BORING LOGS 2

Date	5/1/2025
Design	JH/MKU
Drawn	DH
Job No.	202056

Sheet No.
B-102
6 of 107 SHEETS

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GEOLABS, INC.

Geotechnical Engineering

HAWAIIAN MEMORIAL PARK EXPANSION
KANEOHE, OAHU, HAWAII

Log of Boring B-210

Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
											Approximate Ground Surface Elevation (feet MSL): 248 *
	38	77			30	3.5				MH	Orangish brown with multi-color mottling **CLAYEY SILT**, moist (fill)
	44				16		5			MH	Orangish brown **CLAYEY SILT** with a little remnant rock structure, very stiff, moist (residual soil)
Consol.	44	74			20	3.5	10				grades to stiff
	52				9		15			MH	Brown with multi-color mottling **CLAYEY SILT** with a little sand and remnant rock structure, stiff, moist (saprolite)
LL=73 PI=36 TXUU S_u=3.7 ksf	61	60			19	4.0	20				
	37				21		25				grades to yellowish brown locally grades to stiff
	43	78			34	4.3	30				grades to gray, with some decomposed gravel locally
							35				

Date Started:	September 12, 2022	Water Level: ▼ Not Encountered	Plate
Date Completed:	September 12, 2022		
Logged By:	S. Latronic	Drill Rig: CME-45CY TRACK	A - 10.1
Total Depth:	51.5 feet	Drilling Method: 4" Solid-Stem Auger	
Work Order:	7604-20	Driving Energy: 140 lb. wt., 30 in. drop	

GEOLABS, INC.

Geotechnical Engineering

HAWAIIAN MEMORIAL PARK EXPANSION
KANEOHE, OAHU, HAWAII

Log of Boring B-211

Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
											Approximate Ground Surface Elevation (feet MSL): 223 *
	44	75			28	4.0				MH	Orangish brown with gray mottling **CLAYEY SILT** with some cobbles (basaltic), stiff to very stiff, moist (fill)
LL=87 PI=50	46				36		5			CH	Orangish brown with multi-color mottling **SILTY CLAY** with a little cobbles (basaltic), very stiff, moist (older alluvium)
	40	78			26	4.0	10			MH	Yellowish brown with gray mottling **CLAYEY SILT** with remnant rock structure, stiff to very stiff, moist (saprolite)
	48				12		15				
	49	71			14	3.0	20				grades with cobbles locally
	44				24		25				
	26	95			50/3"		30				grades with a little cobbles locally
							35				

Date Started:	September 13, 2022	Water Level: ▼ Not Encountered	Plate
Date Completed:	September 13, 2022		
Logged By:	S. Latronic	Drill Rig: CME-45CY TRACK	A - 11.1
Total Depth:	51.5 feet	Drilling Method: 4" Solid-Stem Auger	
Work Order:	7604-20	Driving Energy: 140 lb. wt., 30 in. drop	

GEOLABS, INC.

Geotechnical Engineering

HAWAIIAN MEMORIAL PARK EXPANSION
KANEOHE, OAHU, HAWAII

Log of Boring B-212

Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
											Approximate Ground Surface Elevation (feet MSL): 211 *
	42	76			21	4.0				CH	Orangish brown with multi-color mottling **SILTY CLAY** with a little gravel (basaltic), stiff, moist (older alluvium)
LL=99 PI=59	40				21		5			CH	Orangish brown **SILTY CLAY** with a little gravel and remnant rock structure, stiff to very stiff, moist (residual soil)
Direct Shear	45	74			20	3.8	10				grades with multi-color mottling
	47				17		15			ML	Yellowish brown with gray mottling **CLAYEY SILT** with some remnant rock structure, stiff to very stiff, moist (saprolite)
	49	71			14	3.0	20				grades to gray with multi-color mottling
	47				17		25				
Consol.	39	81			29	4.3	30				
							35				

Date Started:	September 12, 2022	Water Level: ▼ Not Encountered	Plate
Date Completed:	September 13, 2022		
Logged By:	S. Latronic	Drill Rig: CME-45CY TRACK	A - 12.1
Total Depth:	51.5 feet	Drilling Method: 4" Solid-Stem Auger	
Work Order:	7604-20	Driving Energy: 140 lb. wt., 30 in. drop	

GEOLABS, INC.

Geotechnical Engineering

HAWAIIAN MEMORIAL PARK EXPANSION
KANEOHE, OAHU, HAWAII

Log of Boring B-213

Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
											Approximate Ground Surface Elevation (feet MSL): 233 *
	38	74			20	3.5				MH	Dark brown **CLAYEY SILT** with a little organics, moist (fill)
	42				15		5			CH	Orangish brown with multi-color mottling **SILTY CLAY**, stiff, moist (older alluvium)
LL=64 PI=34	33	73			22	3.3	10			MH	Orangish brown **CLAYEY SILT**, stiff, moist (residual soil)
	40				12		15			MH	Orangish brown to yellowish brown **CLAYEY SILT** with remnant rock structure, stiff, moist (saprolite)
	35	76			24	2.5	20			ML	Yellowish brown with gray mottling **CLAYEY SILT** with some sand and remnant rock structure, stiff to very stiff, moist (saprolite)
	44				13		25				
	29	88			17	3.0	30				grades with traces of decomposed gravel locally
							35				

Date Started:	September 13, 2022	Water Level: ▼ Not Encountered	Plate
Date Completed:	September 14, 2022		
Logged By:	S. Latronic	Drill Rig: CME-45CY TRACK	A - 13.1
Total Depth:	51.5 feet	Drilling Method: 4" Solid-Stem Auger	
Work Order:	7604-20	Driving Energy: 140 lb. wt., 30 in. drop	

GEOLABS, INC.

Geotechnical Engineering

HAWAIIAN MEMORIAL PARK EXPANSION
KANEOHE, OAHU, HAWAII

Log of Boring B-214

Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
											Approximate Ground Surface Elevation (feet MSL): 438 *
	38	72			25	3.0				MH	Reddish brown to orangish brown **CLAYEY SILT**, stiff, moist (residual soil)
	45				13		5				
	39	66			15	2.0	10				
	28				14		15			ML	Yellowish brown and gray **CLAYEY SILT** with some sand (basaltic) and remnant rock structure, stiff to very stiff, moist (saprolite)
LL=42 PI=5 TXUU S_u=4.8 ksf	32	66			32	4.0	20				
Sieve - #200 = 85.0%	19				59		25				grades with dark gray basaltic dike seams locally
	44				13		30				
	21	99			82	4.5	35				
										ML	

Date Started:	September 16, 2022	Water Level: ▼ Not Encountered	Plate
Date Completed:	September 20, 2022		
Logged By:	S. Latronic	Drill Rig: CME-45CY TRACK	A - 14.1
Total Depth:	85.3 feet	Drilling Method: 4" Solid-Stem Auger	
Work Order:	7604-20	Driving Energy: 140 lb. wt., 30 in. drop	

GEOLABS, INC.

Geotechnical Engineering

HAWAIIAN MEMORIAL PARK EXPANSION
KANEOHE, OAHU, HAWAII

Log of Boring B-210

Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	(Continued from previous plate) Description
	39				20					MH	
					27	4.3	40				grades with multi-color mottling
	37				28		45				
	40	78			42	4.3	50				grades with some decomposed gravel, hard
											Boring terminated at 51.5 feet
							55				
							60				
							65				
							70				

Date Started:	September 12, 2022	Water Level: ▼ Not Encountered	Plate
Date Completed:	September 12, 2022		
Logged By:	S. Latronic	Drill Rig: CME-45CY TRACK	A - 10.2
Total Depth:	51.5 feet	Drilling Method: 4" Solid-Stem Auger	
Work Order:	7604-20	Driving Energy: 140 lb. wt., 30 in. drop	

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Geotechnical Engineering

HAWAIIAN MEMORIAL PARK EXPANSION
KANEOHE, OAHU, HAWAII

Log of Boring B-211

Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	(Continued from previous plate) Description
LL=57 PI=24	50				19					MH	
Direct Shear Consol.	40	83			39	4.3	40				grades with multi-color mottling
	42				27		45				
	31	94			71	4.5	50				grades with some decomposed gravel, hard
											Boring terminated at 51.5 feet
							55				
							60				
							65				
							70				

Date Started:	September 13, 2022	Water Level: ▼ Not Encountered	Plate
Date Completed:	September 13, 2022		
Logged By:	S. Latronic	Drill Rig: CME-45CY TRACK	A - 11.2
Total Depth:	51.5 feet	Drilling Method: 4" Solid-Stem Auger	
Work Order:	7604-20	Driving Energy: 140 lb. wt., 30 in. drop	

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HAWAIIAN MEMORIAL PARK EXPANSION
KANEOHE, OAHU, HAWAII

Log of Boring B-212

Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	(Continued from previous plate) Description
	32				46					ML	grades with cobble sized decomposed basaltic corestones locally
TXUU S_u=4.0 ksf	44	79			42	3.5	40				
	38				24		45				grades to hard
	38	84			56	4.5	50				
											Boring terminated at 51.5 feet
							55				
							60				
							65				
							70				

Date Started:	September 12, 2022	Water Level: ▼ Not Encountered	Plate
Date Completed:	September 13, 2022		
Logged By:	S. Latronic	Drill Rig: CME-45CY TRACK	A - 12.2
Total Depth:	51.5 feet	Drilling Method: 4" Solid-Stem Auger	
Work Order:	7604-20	Driving Energy: 140 lb. wt., 30 in. drop	

GEOLABS, INC.

Geotechnical Engineering

HAWAIIAN MEMORIAL PARK EXPANSION
KANEOHE, OAHU, HAWAII

Log of Boring B-213

Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	(Continued from previous plate) Description
	27				27					ML	grades to orangish brown locally
Direct Shear	48	76			13	3.0	40				grades to gray with multi-color mottling grades without sand locally
	29				16		45				
	43	76			24	3.5	50				grades more clayey locally
											Boring terminated at 51.5 feet
							55				
							60				
							65				
							70				

Date Started:	September 13, 2022	Water Level: ▼ Not Encountered	Plate
Date Completed:	September 14, 2022		
Logged By:	S. Latronic	Drill Rig: CME-45CY TRACK	A - 13.2
Total Depth:	51.5 feet	Drilling Method: 4" Solid-Stem Auger	
Work Order:	7604-20	Driving Energy: 140 lb. wt., 30 in. drop	

GEOLABS, INC.

Geotechnical Engineering

HAWAIIAN MEMORIAL PARK EXPANSION
KANEOHE, OAHU, HAWAII

Log of Boring B-214

Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	(Continued from previous plate) Description
	15				25/1"					ML	Yellowish gray to gray **SANDY SILT** with some decomposed gravel and remnant rock structure, hard, moist (weathered basalt)
	18	99			41/6" +50/4"	4.5	40				
	9				50/5"		45				Gray **BASALT**, hard to very hard (basaltic dike formation)
	7				50/5"		50				
					50/3"		55				Yellowish gray to gray **BASALT**, medium hard to hard (basalt formation)
	25				50/3"		60				
							65				
							70				

Date Started:	September 16, 2022	Water Level: ▼ Not Encountered	Plate
Date Completed:	September 20, 2022		
Logged By:	S. Latronic	Drill Rig: CME-45CY TRACK	A - 14.2
Total Depth:	85.3 feet	Drilling Method: 4" Solid-Stem Auger	
Work Order:	7604-20	Driving Energy: 140 lb. wt., 30 in. drop	

A-14.2 CONTINUES TO NEXT SHEET SEE B-104

Revisions		

2023/CP-133

COFFMAN ENGINEERS
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Signature

APRIL 30, 2026

Expiration Date of the License

JAMES S. HIROTA — LICENSED PROFESSIONAL ENGINEER — No. 9776-C — HAWAII, U.S.A.

OWNER / DEVELOPER
HAWAIIAN MEMORIAL LIFE PLAN
1330 MAUNAKEA ST.
HONOLULU, HI 96817

HAWAIIAN MEMORIAL PARK EXPANSION
45-425 Kamehameha Highway, Kaneohe, HI
TMK 4-5-033:001

BORING LOGS 3

Date	5/1/2025
Design	JH/MKU
Drawn	DH
Job No.	202056

Sheet No.
B-103
7 of 107 SHEETS

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A-14.2 CONTINUES TO PREVIOUS SHEET SEE B-103

GEOLABS, INC. Geotechnical Engineering | HAWAIIAN MEMORIAL PARK EXPANSION KANEOHE, OAHU, HAWAII | Log of Boring **B-214**

Laboratory				Field								
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	(Continued from previous plate) Description
	10				25/1"						grades with dike seams widely
	8				50/5"		75				
	10				75/4"		80				
	10				75/4"		85				Boring terminated at 85.3 feet
							90				
							95				
							100				
							105				

Date Started:	September 16, 2022	Water Level: ▼ Not Encountered	Plate
Date Completed:	September 20, 2022		
Logged By:	S. Latronic	Drill Rig: CME-45CY TRACK	A - 14.3
Total Depth:	85.3 feet	Drilling Method: 4" Solid-Stem Auger	
Work Order:	7604-20	Driving Energy: 140 lb. wt., 30 in. drop	

GEOLABS, INC. Geotechnical Engineering | HAWAIIAN MEMORIAL PARK EXPANSION KANEOHE, OAHU, HAWAII | Log of Boring **B-215**

Laboratory				Field								
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 363 * Description
	22	86			42	2.0				MH	Orangish brown **CLAYEY SILT**, very stiff, moist (residual soil)
	13				19		5				Gray **BASALT**, medium hard (basalt dike formation)
	20	91			69	4.5				ML	Yellowish brown and gray **SANDY SILT** with some decomposed gravel and remnant rock structure, very stiff, moist (saprolite)
	14				76		10				Yellowish gray **BASALT**, medium hard to hard (basalt formation)
	11		68	0	50/5"		15				grades with basaltic dikes locally
UC= 7500 psi			100	13			20				Brownish gray to gray **BASALT**, moderately to closely fractured, moderately weathered, hard (basalt dike formation)
			100	50			25				
UC= 3770 psi			100	48			30				

Date Started:	September 20, 2022	Water Level: ▼ Not Encountered	Plate
Date Completed:	September 23, 2022		
Logged By:	S. Latronic	Drill Rig: CME-45CY TRACK	A - 15.1
Total Depth:	64.5 feet	Drilling Method: 4" Solid-Stem Auger & PQ Coring	
Work Order:	7604-20	Driving Energy: 140 lb. wt., 30 in. drop	

GEOLABS, INC. Geotechnical Engineering | HAWAIIAN MEMORIAL PARK EXPANSION KANEOHE, OAHU, HAWAII | Log of Boring **B-216**

Laboratory				Field								
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 296 * Description
	43	65			17	2.5				MH	Orangish brown **CLAYEY SILT**, moist (residual soil)
	38				20		5			MH	Reddish brown with multi-color mottling **CLAYEY SILT** with some remnant rock structure, very stiff, moist (saprolite)
TXUU S_u=3.4 ksf	51	67			24	4.0	10				grades with gray mottling locally
	45				13		15			ML	Yellowish gray **CLAYEY SILT** with some sand and remnant rock structure, very stiff, moist (saprolite)
Direct Shear	30	71			23	3.0	20				
	30				15		25				
	32	70			25	2.0	30				

Date Started:	September 26, 2022	Water Level: ▼ Not Encountered	Plate
Date Completed:	September 26, 2022		
Logged By:	S. Latronic	Drill Rig: CME-45CY TRACK	A - 16.1
Total Depth:	50.9 feet	Drilling Method: 4" Solid-Stem Auger	
Work Order:	7604-20	Driving Energy: 140 lb. wt., 30 in. drop	

GEOLABS, INC. Geotechnical Engineering | HAWAIIAN MEMORIAL PARK EXPANSION KANEOHE, OAHU, HAWAII | Log of Boring **B-217**

Laboratory				Field								
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 306.5 * Description
	39	73			26	4.0				CH	Orangish brown **SILTY CLAY**, stiff to very stiff, moist (older alluvium)
	39				17		5			MH	Brown with multi-color mottling **CLAYEY SILT** with remnant vesicular structure, medium stiff to stiff, moist (saprolite)
Direct Shear	43	75			13	3.0	10				
	40				7		15				
LL=58 PI=24	36				12		25				grades to gray locally
	40	76			19	2.5	20				
TXUU S_u=4.9 ksf	36	83			30	4.0	30				

Date Started:	September 14, 2022	Water Level: ▼ Not Encountered	Plate
Date Completed:	September 14, 2022		
Logged By:	S. Latronic	Drill Rig: CME-45CY TRACK	A - 17.1
Total Depth:	51.5 feet	Drilling Method: 4" Solid-Stem Auger	
Work Order:	7604-20	Driving Energy: 140 lb. wt., 30 in. drop	

GEOLABS, INC. Geotechnical Engineering | HAWAIIAN MEMORIAL PARK EXPANSION KANEOHE, OAHU, HAWAII | Log of Boring **LID-201**

Laboratory				Field								
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 260.5 * Description
	36				16					MH	Brown with gray mottling **CLAYEY SILT** with a little sand and traces of gravel (basaltic), very stiff to hard, moist (fill)
	35				32		5				Boring terminated at 5 feet
							10				
							15				
							20				
							25				
							30				

Date Started:	October 4, 2022	Water Level: ▼ Not Encountered	Plate
Date Completed:	October 4, 2022		
Logged By:	S. Latronic	Drill Rig: CME-45CY TRACK	A - 18
Total Depth:	5 feet	Drilling Method: 5" Solid-Stem Auger	
Work Order:	7604-20	Driving Energy: 140 lb. wt., 30 in. drop	

GEOLABS, INC. Geotechnical Engineering | HAWAIIAN MEMORIAL PARK EXPANSION KANEOHE, OAHU, HAWAII | Log of Boring **B-215**

Laboratory				Field								
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	(Continued from previous plate) Description
			100	22							
UC= 460 psi			100	40			40				
UC= 440 psi			100	58			45				
			77	0			50				grades to very hard and severely fractured
			75	0			55				
			75	0			60				
							65				Boring terminated at 64.5 feet
							70				

Date Started:	September 20, 2022	Water Level: ▼ Not Encountered	Plate
Date Completed:	September 23, 2022		
Logged By:	S. Latronic	Drill Rig: CME-45CY TRACK	A - 15.2
Total Depth:	64.5 feet	Drilling Method: 4" Solid-Stem Auger & PQ Coring	
Work Order:	7604-20	Driving Energy: 140 lb. wt., 30 in. drop	

GEOLABS, INC. Geotechnical Engineering | HAWAIIAN MEMORIAL PARK EXPANSION KANEOHE, OAHU, HAWAII | Log of Boring **B-216**

Laboratory				Field								
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	(Continued from previous plate) Description
	33				15					ML	
TXUU S_u=0.5 ksf	66	61			23	3.0	40				grades with decomposed gravel locally
Sieve - #200 = 85.7%	27				55		45				grades with some basaltic dike seams, hard
	19	99			50/5"	4.5	50				Boring terminated at 50.9 feet
							55				
							60				
							65				
							70				

Date Started:	September 26, 2022	Water Level: ▼ Not Encountered	Plate
Date Completed:	September 26, 2022		
Logged By:	S. Latronic	Drill Rig: CME-45CY TRACK	A - 16.2
Total Depth:	50.9 feet	Drilling Method: 4" Solid-Stem Auger	
Work Order:	7604-20	Driving Energy: 140 lb. wt., 30 in. drop	

GEOLABS, INC. Geotechnical Engineering | HAWAIIAN MEMORIAL PARK EXPANSION KANEOHE, OAHU, HAWAII | Log of Boring **B-217**

Laboratory				Field								
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	(Continued from previous plate) Description
	28				40					MH	grades with some sand
	37	86			30	4.3	40				grades to hard locally
	26				42		45				
	30	87			49	2.5	50				Boring terminated at 51.5 feet
							55				
							60				
							65				
							70				

Date Started:	September 14, 2022	Water Level: ▼ Not Encountered	Plate
Date Completed:	September 14, 2022		
Logged By:	S. Latronic	Drill Rig: CME-45CY TRACK	A - 17.2
Total Depth:	51.5 feet	Drilling Method: 4" Solid-Stem Auger	
Work Order:	7604-20	Driving Energy: 140 lb. wt., 30 in. drop	

GEOLABS, INC. Geotechnical Engineering | HAWAIIAN MEMORIAL PARK EXPANSION KANEOHE, OAHU, HAWAII | Log of Boring **LID-202**

Laboratory				Field								
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 283.5 * Description
	35				17					MH	Reddish brown **CLAYEY SILT**, very stiff, moist (residual soil)
	26				10		5				grades to stiff
							10				Boring terminated at 5 feet
							15				
							20				
							25				
							30				
							35				

Date Started:	September 15, 2022	Water Level: ▼ Not Encountered	Plate
Date Completed:	September 15, 2022		
Logged By:	S. Latronic	Drill Rig: CME-45CY TRACK	A - 19
Total Depth:	5 feet	Drilling Method: 5" Solid-Stem Auger	
Work Order:	7604-20	Driving Energy: 140 lb. wt., 30 in. drop	

Revisions

2023/CP-133

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Signature

APRIL 30, 2026
Expiration Date of the License



OWNER / DEVELOPER
HAWAIIAN MEMORIAL LIFE PLAN
1330 MAUNAKEA ST.
HONOLULU, HI 96817

HAWAIIAN MEMORIAL PARK EXPANSION
45-425 Kamehameha Highway, Kaneohe, HI
TMK 4-5-033:001

BORING LOGS 4

Date	5/1/2025
Design	JH/MKU
Drawn	DH
Job No.	202056

Sheet No.
B-104
8 of 107 SHEETS

User: DRUM_ALEX, 4/29/2025 1:37 PM
Dwg: P:\GEO\202056\CP\202056 BORE EXPANSION.GD DWG\LOG SHEETS\B-104.DWG

GEOLABS, INC.
Geotechnical Engineering

HAWAIIAN MEMORIAL PARK EXPANSION
KANEOHE, OAHU, HAWAII

Log of Boring: LID-203

Laboratory		Field										Approximate Ground Surface Elevation (feet MSL): 307 *
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
	41				11					MH	Reddish brown **CLAYEY SILT**, stiff to very stiff, moist (residual soil)
	40				14					MH	Reddish brown with multi-color mottling **CLAYEY SILT** with traces of remnant rock structure, stiff to very stiff, moist (residual soil)
							5				Boring terminated at 5 feet
							10				
							15				
							20				
							25				
							30				
							35				

Date Started:	September 28, 2022	Water Level: ▼ Not Encountered	Plate
Date Completed:	September 28, 2022		
Logged By:	S. Latronic	Drill Rig: CME-45CY TRACK	A - 20
Total Depth:	5 feet	Drilling Method: 5" Solid-Stem Auger	
Work Order:	7604-20	Driving Energy: 140 lb. wt., 30 in. drop	

BORING LOG 2022-7604-20.GPJ GEO_GEOLABS.GDT 4/29/22

GEOLABS, INC.
Geotechnical Engineering

HAWAIIAN MEMORIAL PARK EXPANSION
KANEOHE, OAHU, HAWAII

Log of Boring: LID-205

Laboratory		Field										Approximate Ground Surface Elevation (feet MSL): 234 *
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
	36				13					MH	Dark brown **CLAYEY SILT** with a little organics, stiff, moist (fill)
	43				23					MH	Orangish brown to reddish brown **CLAYEY SILT** with a little gravel (basaltic), stiff to very stiff, moist (older alluvium)
											grades with cobbles (basaltic)
							5				Boring terminated at 5 feet
							10				
							15				
							20				
							25				
							30				
							35				

Date Started:	September 13, 2022	Water Level: ▼ Not Encountered	Plate
Date Completed:	September 13, 2022		
Logged By:	S. Latronic	Drill Rig: CME-45CY TRACK	A - 22
Total Depth:	5 feet	Drilling Method: 5" Solid-Stem Auger	
Work Order:	7604-20	Driving Energy: 140 lb. wt., 30 in. drop	

BORING LOG 2022-7604-20.GPJ GEO_GEOLABS.GDT 4/29/22

GEOLABS, INC.
Geotechnical Engineering

HAWAIIAN MEMORIAL PARK EXPANSION
KANEOHE, OAHU, HAWAII

Log of Boring: LID-204

Laboratory		Field										Approximate Ground Surface Elevation (feet MSL): 275 *
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
	44				20					MH	Reddish brown **CLAYEY SILT**, very stiff to hard, moist (older alluvium)
	39				29						
							5				Boring terminated at 5 feet
							10				
							15				
							20				
							25				
							30				
							35				

Date Started:	September 26, 2022	Water Level: ▼ Not Encountered	Plate
Date Completed:	September 26, 2022		
Logged By:	S. Latronic	Drill Rig: CME-45CY TRACK	A - 21
Total Depth:	5 feet	Drilling Method: 5" Solid-Stem Auger	
Work Order:	7604-20	Driving Energy: 140 lb. wt., 30 in. drop	

BORING LOG 2022-7604-20.GPJ GEO_GEOLABS.GDT 4/29/22

GEOLABS, INC.
Geotechnical Engineering

HAWAIIAN MEMORIAL PARK EXPANSION
KANEOHE, OAHU, HAWAII

Log of Boring: LID-206

Laboratory		Field										Approximate Ground Surface Elevation (feet MSL): 308 *
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
	37				19					MH	Brown **CLAYEY SILT**, moist (fill)
	34				25					MH	Orangish brown **SILTY CLAY**, very stiff, moist (older alluvium)
											Gray **BOULDERS (BASALTIC)**, very dense, dry (older alluvium)
							5				Boring terminated at 5 feet
							10				
							15				
							20				
							25				
							30				
							35				

Date Started:	September 14, 2022	Water Level: ▼ Not Encountered	Plate
Date Completed:	September 14, 2022		
Logged By:	S. Latronic	Drill Rig: CME-45CY TRACK	A - 23
Total Depth:	5 feet	Drilling Method: 5" Solid-Stem Auger	
Work Order:	7604-20	Driving Energy: 140 lb. wt., 30 in. drop	

BORING LOG 2022-7604-20.GPJ GEO_GEOLABS.GDT 4/29/22

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Dwg No: P:\PROJECTS\2023\2023CP-133\DWG\1.0 SHEETS\B-105.DWG EXPANSION 1.0

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Signature

APRIL 30, 2026
Expiration Date of the License

LICENSED PROFESSIONAL ENGINEER
No. 9776-C
JAMES S. HIROTA
U.S.A.
HAWAII

OWNER / DEVELOPER
HAWAIIAN MEMORIAL LIFE PLAN
1330 MAUNAKEA ST.
HONOLULU, HI 96817

HAWAIIAN MEMORIAL PARK EXPANSION
45-425 Kamehameha Highway, Kaneohe, HI
TMK 4-5-033:001

BORING LOGS 5

Date	5/1/2025
Design	JH/MKU
Drawn	DH
Job No.	202056

Sheet No.
B-105
9 of 107 SHEETS

NOTES:

1. ELEVATIONS ARE REFERRED TO NGS DISK "A16", ELEV.=228.35 (ADJUSTED 0 FT., MEAN SEA LEVEL, LOCAL TIDAL DATUM, (NGS DATASHEET TU0410 - RETRIEVAL DATA 10/24/2020). SEE SHT G-001 - VICINITY MAP FOR RELATIVE LOCATION.
2. AZIMUTHS AND COORDINATES ARE REFERRED TO TRIANGULATION STATION "KAILUA RESET"Δ
3. SURVEY COMPLETED BY KN SURVEYING, LLC ON OCT. 29, 2020, FB# 436, 430, 439, & 445.

NAKULUAI STREET (CITY)
OHAHA STREET (CITY)
OHAHA PLACE (CITY)
LIPALU STREET (CITY)
OCEAN VIEW ROAD (PRIVATE)

TMK: 4-5-092:002
TMK: 4-5-092:003
TMK:4-5-092:001
TMK:4-5-092:004
TMK:4-5-092:005
TMK:4-5-092:006
TMK:4-5-092:007
TMK:4-5-092:008
TMK: 4-5-092:009
TMK: 4-5-092:010
TMK:4-5-092:011
TMK:4-5-092:012
TMK:4-5-092:013
TMK:4-5-092:014
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TMK:4-5-092:017
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TMK: 4-5-093:016
TMK: 4-5-093:018
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TMK: 4-5-093:017
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TMK: 4-5-093:022
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TMK:4-5-093:024
TMK:4-5-093:025
TMK:4-5-093:026
TMK:4-5-093:006
TMK:4-5-093:005
TMK:4-5-093:004
TMK:4-5-093:003
TMK:4-5-093:002
TMK:4-5-093:001
TMK:4-5-093:027

PROPERTY LINE /LUC BOUNDARY
LUC BOUNDARY
CULTURAL PRESERVATION AREA
LUC BOUNDARY
PROPERTY LINE

TRAV
N 3,859.82
W 4,918.62
EL= 243.83

TRAV
N 3,648.44
W 4,856.41
EL= 256.68

TRAV
N 3,198.62
W 4,653.65
EL= 273.62

TMK:4-5-033:001
TMK:4-5-033:002
TMK:4-2-015: 001

PLAN NORTH

EXISTING SITE TOPOGRAPHY

SCALE: 1" = 100'-0"

1"=100'-0" 0 50 100 200 300

2023/CP-133

Revisions

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JAMES S. HIROTA LICENSED PROFESSIONAL ENGINEER No. 9776-C HAWAII U.S.A.

Signature

APRIL 30, 2026
Expiration Date of the License

OWNER / DEVELOPER
HAWAIIAN MEMORIAL LIFE PLAN
1330 MAUNAKEA ST.
HONOLULU, HI 96817

HAWAIIAN MEMORIAL PARK EXPANSION
45-425 Kamehameha Highway, Kaneohe, HI
TMK 4-5-033:001

EXISTING SITE TOPOGRAPHY

Date	5/1/2025
Design	JH/MKU
Drawn	DH
Job No.	202056
Sheet No.	V-100
	10 of 107 SHEETS

User: DRHA, ALEX 4/30/2025 1:37 PM
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COORDINATE TABLE		
POINT #	NORTHING	EASTING
1	4217.84	-3727.01
2	4154.62	-3690.92
3	4198.16	-3751.13
4	4099.15	-3915.46
5	4068.93	-3932.65
6	4100.41	-3948.58
7	3911.67	-4334.96
8	3901.74	-4338.03
9	3884.47	-4380.62
10	3939.55	-4363.56
11	3826.04	-4876.02
12	3861.47	-4873.16
13	3816.30	-4849.57
14	3808.93	-4863.75
15	3293.11	-4701.07
16	3260.73	-4679.12
17	3251.96	-4693.32
18	3283.76	-4715.97

COORDINATE TABLE		
POINT #	NORTHING	EASTING
19	3718.60	-4612.24
20	3661.99	-4604.01
21	3567.48	-4537.64
22	3570.76	-4449.92
23	3246.62	-4351.43
24	3628.19	-4423.42
25	3692.56	-4059.16
26	3763.24	-3955.17
27	4107.79	-4096.85
28	3462.23	-3779.28
29	4099.10	-3786.63
30	3803.86	-3471.62
31	4300.19	-3271.93
32	4103.62	-3318.92
33	3878.23	-3334.20
34	4205.87	-2734.98
35	4020.16	-2906.10
36	3703.76	-3036.98

LEGEND

- LIMITS OF DISTURBANCE/GRADING
- 400 GRADED CONTOUR W/ ELEVATION
- 400 EXISTING CONTOUR W/ ELEVATION
- COLLECTION SWALE
- UPSLOPE DIVERSION SWALE
- SD UPSLOPE DIVERSION PIPE
- DOUBLE LAYER COMPOST FILTER SOCK PERIMETER CONTROL (BUFFER)
- GRADING PHASE LIMITS
- 12" Ø FILTER SOCK SEDIMENT BARRIER
- CHECK DAM

ESCP NOTES:

1. SITE GRADING SHALL BE PHASED AND GRADING AREAS SHALL NOT EXCEED 5 ACRES.
2. EXISTING DRAIN INLETS SHALL BE PROTECTED AS SHOWN ON THIS PLAN. NEW INLETS INSTALLED AS PART OF THE PROJECT SHALL BE PROTECTED PER DETAILS 1 AND 6 ON SHEET C-101.
3. ESCP BMP DETAILS ARE LOCATED ON SHEET C-101 AND C-102.
4. RECEIVING WATER IS SHOWN IN THE VICINITY MAP ON SHEET G-001.

OHAHA STREET (CITY)
LIPALU STREET (CITY)
OHAHA STREET (CITY)
OCEAN VIEW ROAD (PRIVATE)
PROPERTY LINE /LUC BOUNDARY
LUC BOUNDARY
DRAIN INLET PROTECTION SEE DET. 6 C-101
COLLECTION SWALE MIN. DEPTH = 24" FLOW DEPTH ($Q_{10YR/1HR}$) = 21"
EMERGENCY SPILLWAY
RIPRAP AT DIVERSION PIPE OUTLET (VELOCITY DISSIPATION DEVICE), TYP. SEE DET. 1 C-102
DOUBLE LAYER COMPOST FILTER SOCK PERIMETER CONTROL (BUFFER), TYP. SEE DET. 7 C-101
UPSLOPE DIVERSION SWALE MIN. DEPTH = 12" FLOW DEPTH ($Q_{10YR/1HR}$) = 8"
UPSLOPE DIVERSION PIPE INLET, SEE DET. 2 C-102
CULTURAL PRESERVATION AREA
COLLECTION SWALE MIN. DEPTH = 18" FLOW DEPTH ($Q_{10YR/1HR}$) = 14"
COLLECTION SWALE MIN. DEPTH = 12" FLOW DEPTH ($Q_{10YR/1HR}$) = 4"
SEDIMENT TRAP #1 8 C-101
SEDIMENT TRAP #2 8 C-101
EMERGENCY SPILLWAY
UPSLOPE DIVERSION PIPE
PHASE 5 4.92 ACRES
DRAIN INLET PROTECTION SEE DET. 6 C-101
EMERGENCY SPILLWAY
SEDIMENT TRAP #3 8 C-101
EMERGENCY SPILLWAY
COLLECTION SWALE MIN. DEPTH = 12" FLOW DEPTH ($Q_{10YR/1HR}$) = 3"
COLLECTION SWALE MIN. DEPTH = 12" FLOW DEPTH ($Q_{10YR/1HR}$) = 10"
UPSLOPE DIVERSION PIPE
PHASE 6 4.99 ACRES
UPSLOPE DIVERSION SWALE MIN. DEPTH = 24" FLOW DEPTH ($Q_{10YR/1HR}$) = 20"
SEDIMENT TRAP #4 8 C-101
PHASE 2 4.90 ACRES
PHASE 4 4.95 ACRES
PHASE 7 4.99 ACRES
FILTER SOCK SEDIMENT BARRIER TO BE RELOCATED AS REQUIRED, TYP.
SEE C-102 FOR WATER LINE TRENCH ESCP
UPSLOPE DIVERSION PIPE INLET, SEE DET. 2 C-102
UPSLOPE DIVERSION SWALE MIN. DEPTH = 24" FLOW DEPTH ($Q_{10YR/1HR}$) = 22"
CHECK DAM, TYP. SEE DET. 5 C-101
STABILIZED CONSTRUCTION INGRESS/EGRESS SEE DET. 2 C-101
PHASE 3 4.98 ACRES
UPSLOPE DIVERSION SWALE MIN. DEPTH = 18" FLOW DEPTH ($Q_{10YR/1HR}$) = 13"
COLLECTION SWALE MIN. DEPTH = 12" FLOW DEPTH ($Q_{10YR/1HR}$) = 6"
12" Ø FILTER SOCK SEDIMENT BARRIER AS NECESSARY (PLACEMENT SHOWN ON THIS PLAN IS APPROXIMATE). SEE SEDIMENT BARRIER NOTE ON G-002, TYP.
PHASE 1 4.97 ACRES
TMK:4-5-033: 001
LUC BOUNDARY
LIMITS OF GRADING/DISTURBANCE
EMERGENCY SPILLWAY
COLLECTION SWALE MIN. DEPTH = 12" FLOW DEPTH ($Q_{10YR/1HR}$) = 9"
PROPERTY LINE
SEDIMENT TRAP #5 8 C-101
CHECK DAM, TYP. SEE DET. 5 C-101
TMK:4-5-033: 002

SEDIMENT TRAP #	MAXIMUM TREATMENT AREA PER PHASE (ACRES)	TOP ELEV	TOP$_{FB}$ ELEV	BOTTOM ELEV	BOTTOM AREA (SF)	SQ VOLUME REQUIRED (CF) (3,600CF/ACRE)	SQ VOLUME PROVIDED (CF)	PHASES DRAINING TO TRAP	EMERGENCY SPILLWAY			
									CREST WIDTH	CREST DEPTH	RIPRAP WIDTH	RIPRAP LENGTH
1	4.99	181.00	179.00	175.00	3,104	17,964	18,675	5,6,7 & POR. OF 2,3,4	15	2	25	35
2	0.60	210.00	209.00	205.00	512	2,160	5,108	POR. OF 4	10	1	15	20
3	3.59	209.00	208.00	203.00	1,210	12,924	12,986	POR. OF 1,2,3	10	1	15	30
4	2.75	220.00	219.00	214.33	960	9,900	10,012	POR. OF 1	10	1	15	30
5	2.00	271.00	270.00	265.33	676	7,200	7,765	POR. OF 1,3	10	1	15	30

PLAN NORTH

EROSION AND SEDIMENT CONTROL PLAN

SCALE: 1" = 100'-0"

1"=100'-0" 0 50 100 200 300

APPROVAL:

CHIEF, CIVIL ENGINEERING BRANCH, D.P.P. DATE

2023/CP-133

Revisions

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coffman.com

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Signature

APRIL 30, 2026

Expiration Date of the License

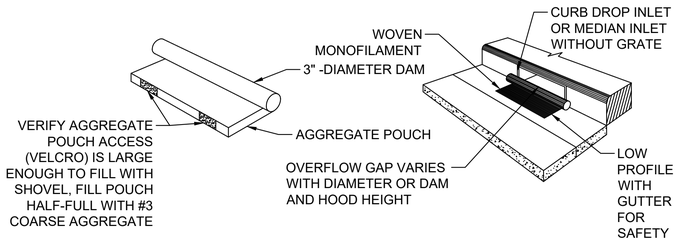
JAMES S. HIROTA LICENSED PROFESSIONAL ENGINEER No. 9776-C HAWAII U.S.A.

OWNER / DEVELOPER
HAWAIIAN MEMORIAL LIFE PLAN
1330 MAUNAKEA ST.
HONOLULU, HI 96817

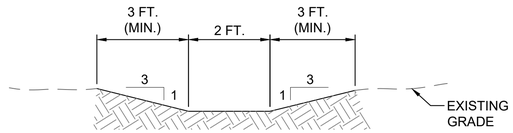
HAWAIIAN MEMORIAL PARK EXPANSION
45-425 Kamehameha Highway, Kaneohe, HI
TMK 4-5-033:001
EROSION AND SEDIMENT CONTROL PLAN

Date	5/1/2025
Design	JH/MKU
Drawn	DH
Job No.	202056
Sheet No.	C-100
	11 of 107 SHEETS

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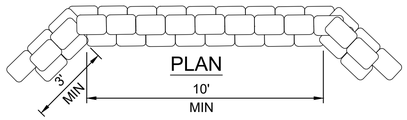
1 SEDIMENT FILTER FOR CATCH BASINS
SCALE: NTS

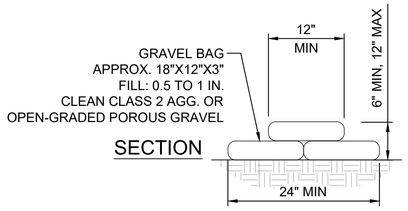


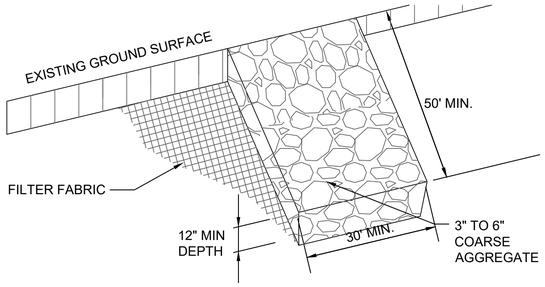
NOTES:

1. MINIMUM SWALE CENTERLINE GRADE SHALL BE 1%.
2. MINIMUM DEPTH AS SPECIFIED ON C-100

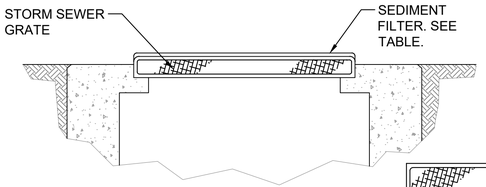
3 DIVERSION AND COLLECTION SWALE SECTION
SCALE: NTS



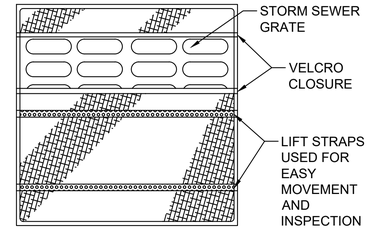




2 STABILIZED CONSTRUCTION INGRESS/EGRESS
SCALE: NTS



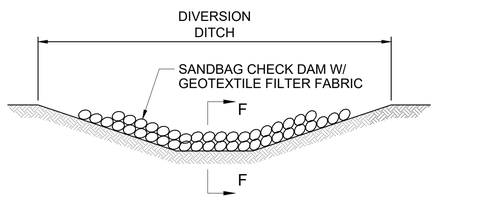
SECTION



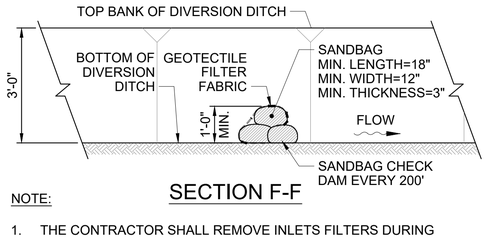
PLAN

SEDIMENT FILTER FOR DRAIN INLETS

MECHANICAL PROPERTIES	TEST METHODS	UNITS	MARV
GRAB TENSILE STRENGTH	ASTM D 4632	kN (lbs)	1.62 (365) X 0.89 (200)
GRAB TENSILE ELONGATION	ASTM D 4632	%	24 X 10
PUNCTURE STRENGTH	ASTM D 4633	kN (lbs)	0.40 (90)
MULLEN BURST STRENGTH	ASTM D 3786	kPa (psi)	3097 (450)
TRAPEZOID TEAR STRENGTH	ASTM D 4533	kN (lbs)	0.51 (115) X 0.33 (75)
UV RESISTANCE	ASTM D 4355	%	90
APPARENT OPENING SIZE	ASTM D 4751	Mm (US Std Sieve)	0.425 (40)
FLOW RATE	ASTM D 4491	1 / min/m² (gal/min/ft)²	5907 (145)
PERMITTIVITY	ASTM D 4491	Sec-1	2.1



SWALE CROSS SECTION

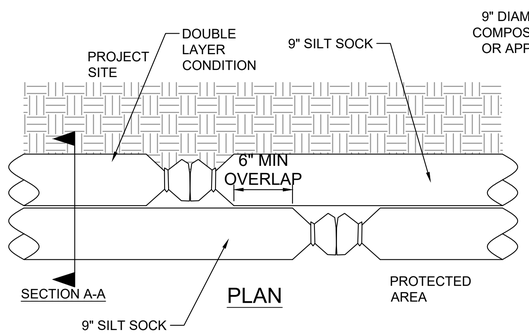


SECTION F-F

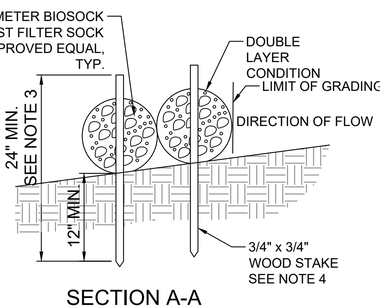
NOTE:

1. THE CONTRACTOR SHALL REMOVE INLETS FILTERS DURING TIMES OF ABOVE-NORMAL RAINFALL EVENTS AND REPLACE THEM WITH THE EVENT HAS PASSED.

4 GRAVEL BAG BERM
SCALE: NTS



5 CHECK DAM
SCALE: NTS

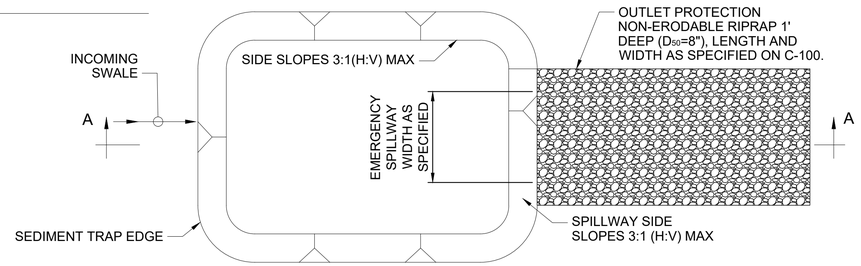


SECTION A-A

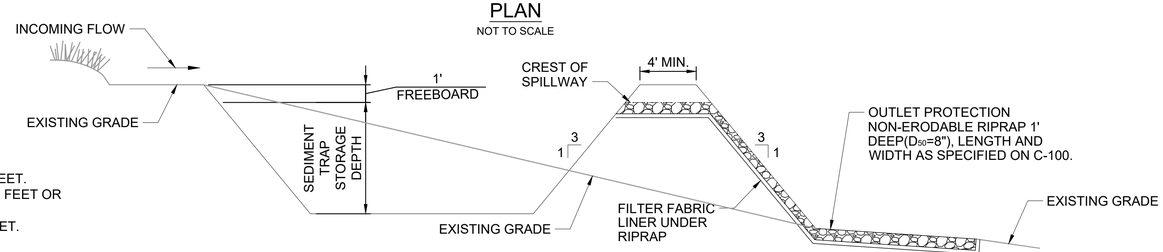
NOTE:

1. COMPOST FILTER SOCKS SHOULD BE EITHER PREFABRICATED OR ASSEMBLED AT THE SITE.
2. LOCATE COMPOST FILER SOCKS ON LEVEL CONTOURS SPACED AS FOLLOWS:
   - 2.1. SLOPE INCLINATION OF 4:1 (H:V) OR FLATTER: COMPOST FILTER SOCKS SHOULD BE PLACED AT A MAXIMUM INTERVAL OF 20 FEET.
   - 2.2. SLOPE INCLINATION BETWEEN 4:1 AND 2:1 (H:V): COMPOST FILTER SOCKS SHOULD BE PLACED AT A MAXIMUM INTERVAL OF 15 FEET OR CLOSER
   - 2.3. SLOPE INCLINATION OF 2:1 (H:V) OR GREATER: COMPOST FILTER SOCKS SHOULD BE PLACED AT MAXIMUM INTERVAL OF 10 FEET.
3. TURN ENDS OF THE COMPST FILTER SOCKS UP SLOPE TO PREVENT RUNOFF FROM GOING AROUND THE ROLL.
4. STAKE COMPOST FILTER SOCKS WITH STAKES WITH A MINIMUM LENGTH OF 14 INCHES AND SPACED 4 FEET ON CENTER.
5. IF MORE THAN 1 COMPOST FILTER SOCKS IN PLACED IN A ROC, THE ROLLS SHOULD BE OVERLAPPED, NOT ABUTTED

6 DRAIN INLET PROTECTION
SCALE: NTS



PLAN
NOT TO SCALE



SECTION A-A
NOTE TO SCALE

APPROVAL:

CHIEF, CIVIL ENGINEERING BRANCH, D.P.P. DATE

7 DOUBLE LAYER COMPOST FILTER SOCK
SCALE: NTS

8 TEMPORARY SEDIMENT TRAP WITH SPILLWAY
SCALE: NTS

Revisions

2023/CP-133

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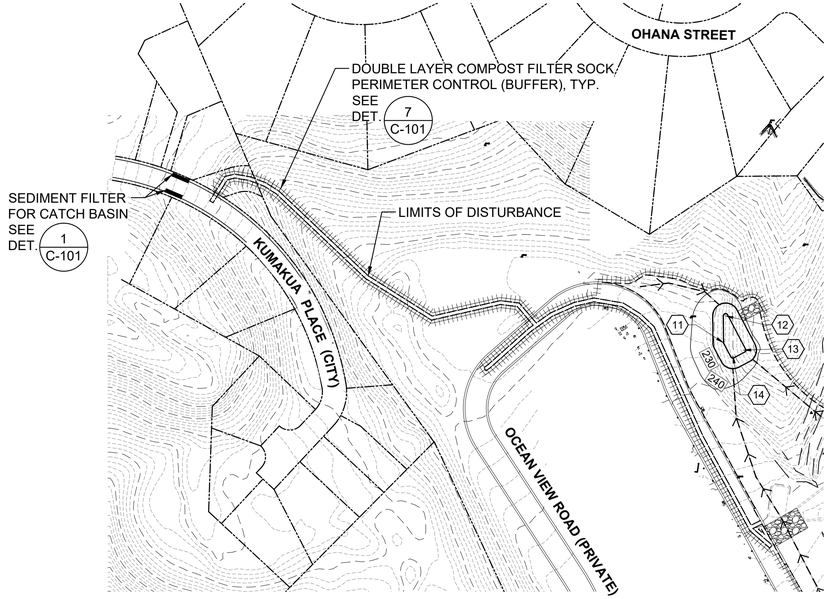
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HONOLULU, HI 96817

HAWAIIAN MEMORIAL PARK EXPANSION
45-425 Kamehameha Highway, Kaneohe, HI
TMK 4-5-033:001

EROSION AND SEDIMENT CONTROL DETAILS

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Design	JH/MKU
Drawn	DH
Job No.	202056
Sheet No.	C-101
	12 of 107 SHEETS

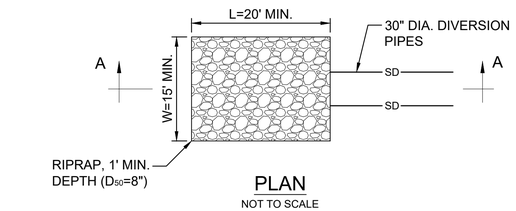
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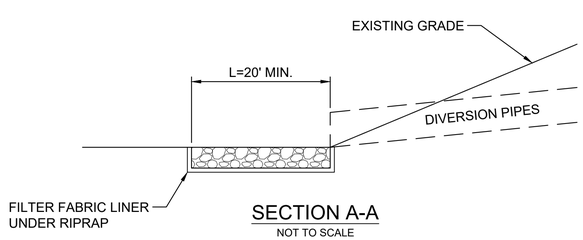
PLAN NORTH

EROSION AND SEDIMENT CONTROL WATER LINE TRENCH PLAN (TRENCHING PROJECT)

SCALE: 1" = 100'-0"

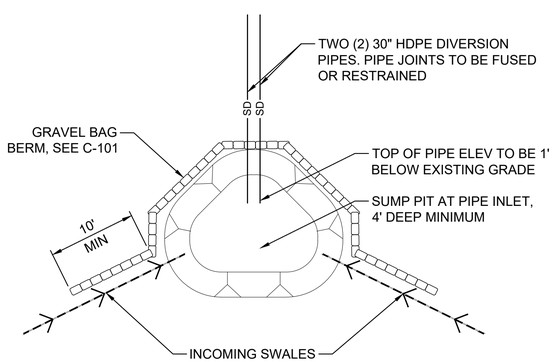


PLAN
NOT TO SCALE

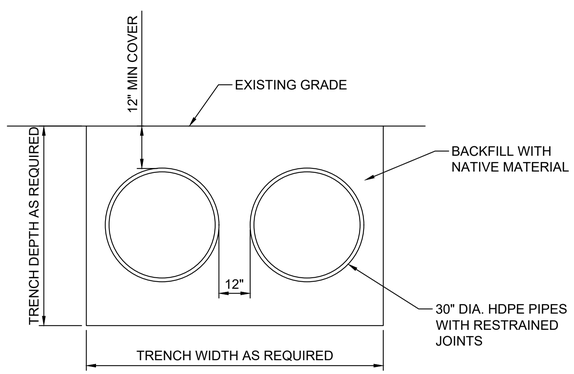


SECTION A-A
NOT TO SCALE

1 DIVERSION PIPE OUTLET
SCALE: NTS



2 DIVERSION PIPE INLET
SCALE: NTS



3 DIVERSION PIPE TRENCH
SCALE: NTS

1"=100'-0" 0 50 100 200 300

APPROVAL:

CHIEF, CIVIL ENGINEERING BRANCH, D.P.P. DATE

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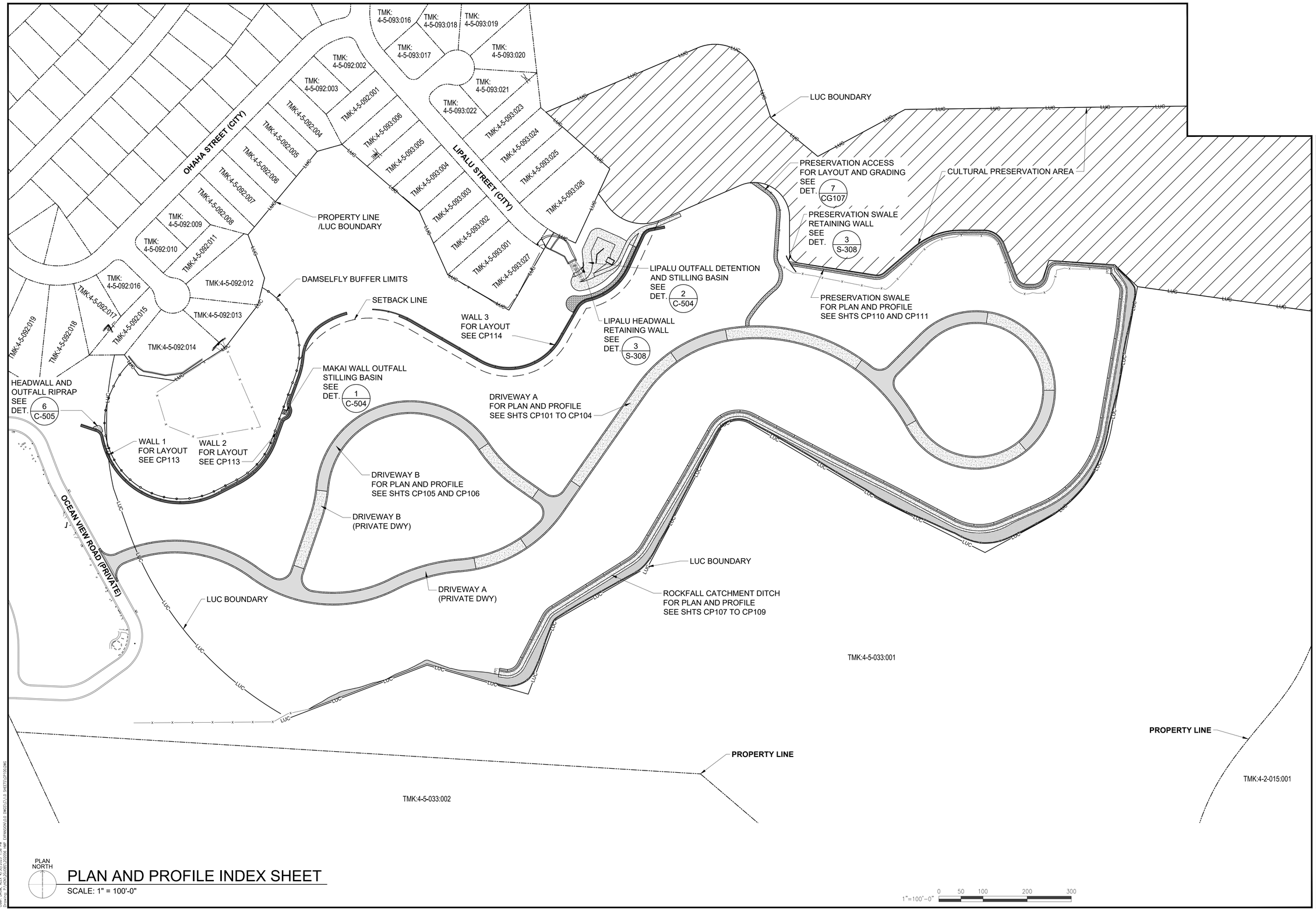
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EROSION AND SEDIMENT CONTROL DETAILS

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Design	JH/MKU
Drawn	JS
Job No.	202056
Sheet No.	C-102
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2023/CP-133

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PLAN NORTH

PLAN AND PROFILE INDEX SHEET

SCALE: 1" = 100'-0"

1"=100'-0" 0 50 100 200 300

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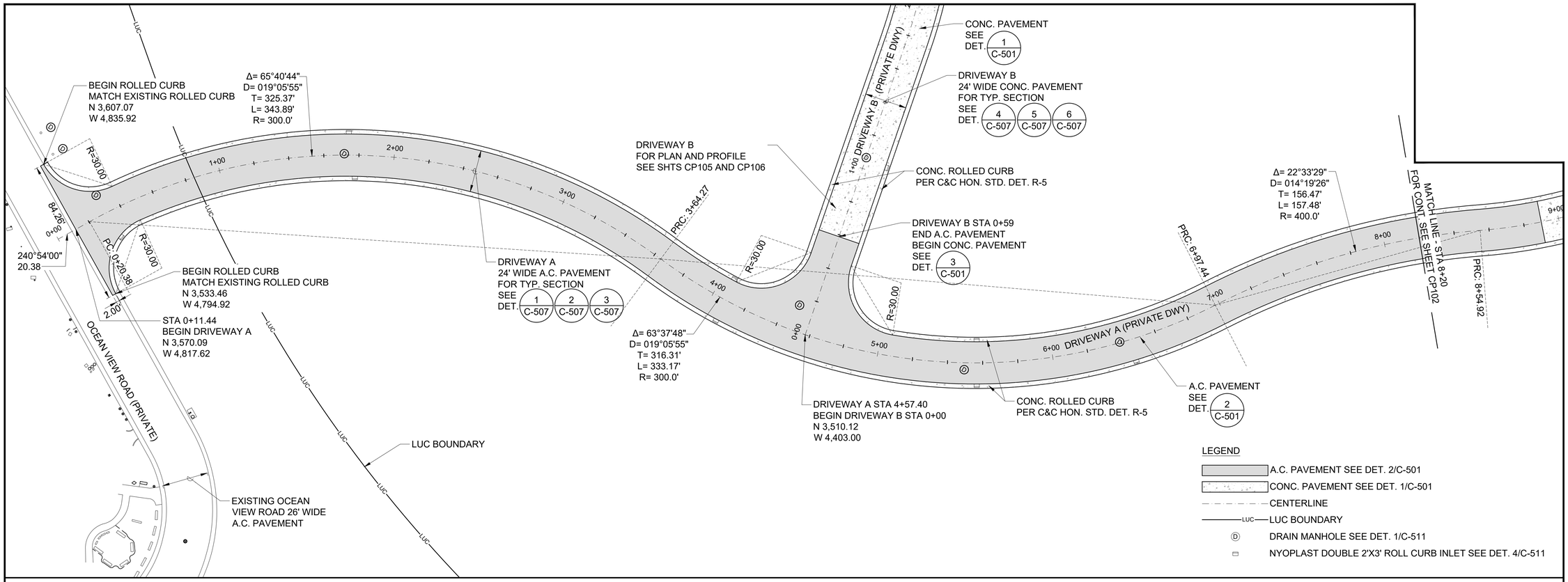
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HONOLULU, HI 96817

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45-425 Kamehameha Highway, Kaneohe, HI
TMK 4-5-033:001

PLAN AND PROFILE INDEX SHEET

Date	5/1/2025
Design	JH/MKU
Drawn	DH
Job No.	202056
Sheet No.	CP100
	14 of 107 SHEETS

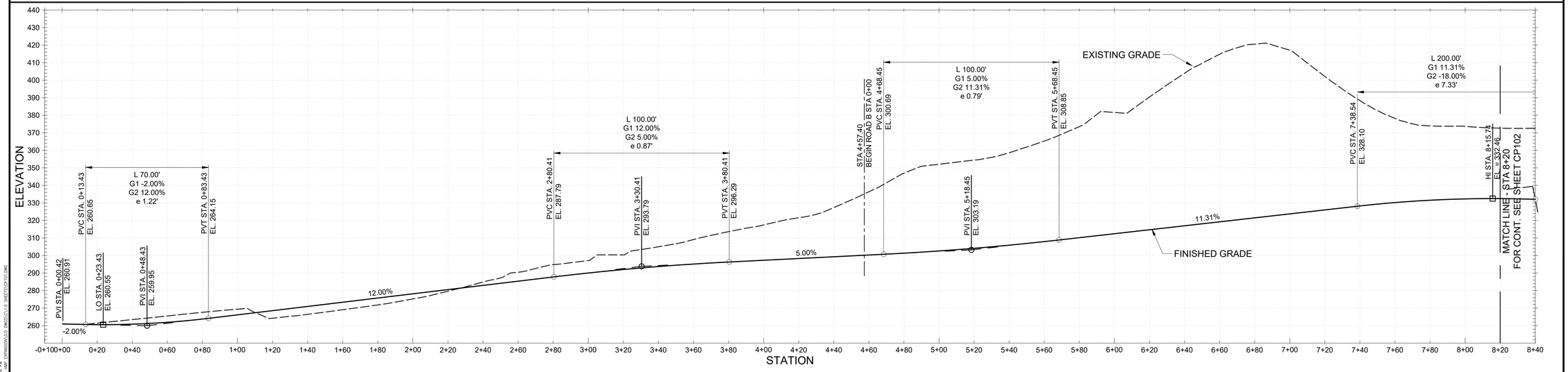
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PLAN NORTH

DRIVEWAY A - PLAN STA 0+00 TO STA 8+20

SCALE: 1" = 30'-0"



DRIVEWAY A - PROFILE STA 0+00 TO STA 8+20

SCALE: 1" = 30'-0"

SCALE: HORIZ. 1"=30'-0" 0 10 20 30 60 90

SCALE: VERT. 1"=30'-0" 0 10 20 30 60 90

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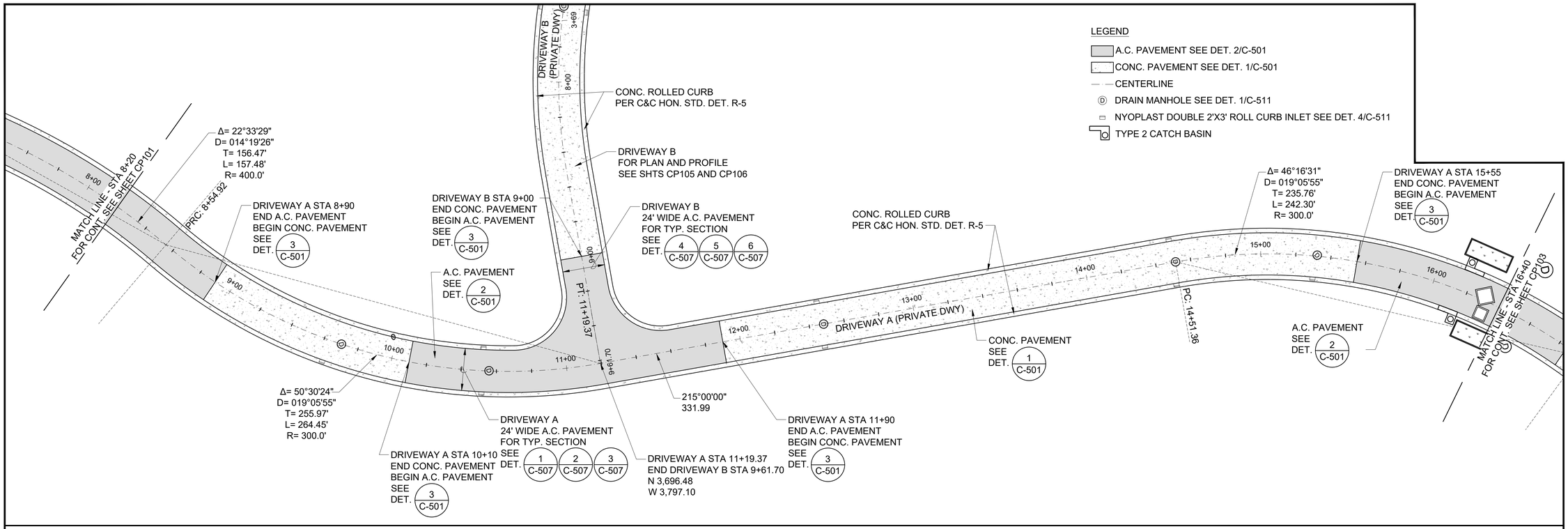
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DRIVEWAY A - PLAN AND PROFILE STA 0+00 TO 8+20

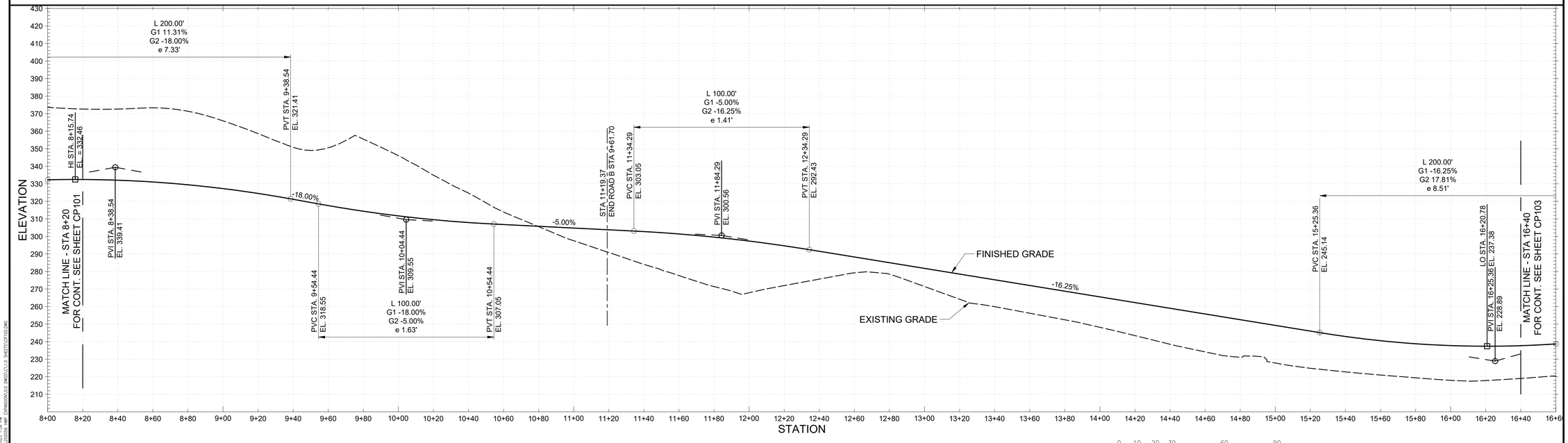
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Job No.	202056
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PLAN NORTH

DRIVEWAY A - PLAN STA 8+20 TO STA 16+40

SCALE: 1" = 30'-0"



DRIVEWAY A - PROFILE STA 8+20 TO STA 16+40

SCALE: 1" = 30'-0"

SCALE: HORIZ. 1"=30'-0" 0 10 20 30 60 90

SCALE: VERT. 1"=30'-0" 0 10 20 30 60 90

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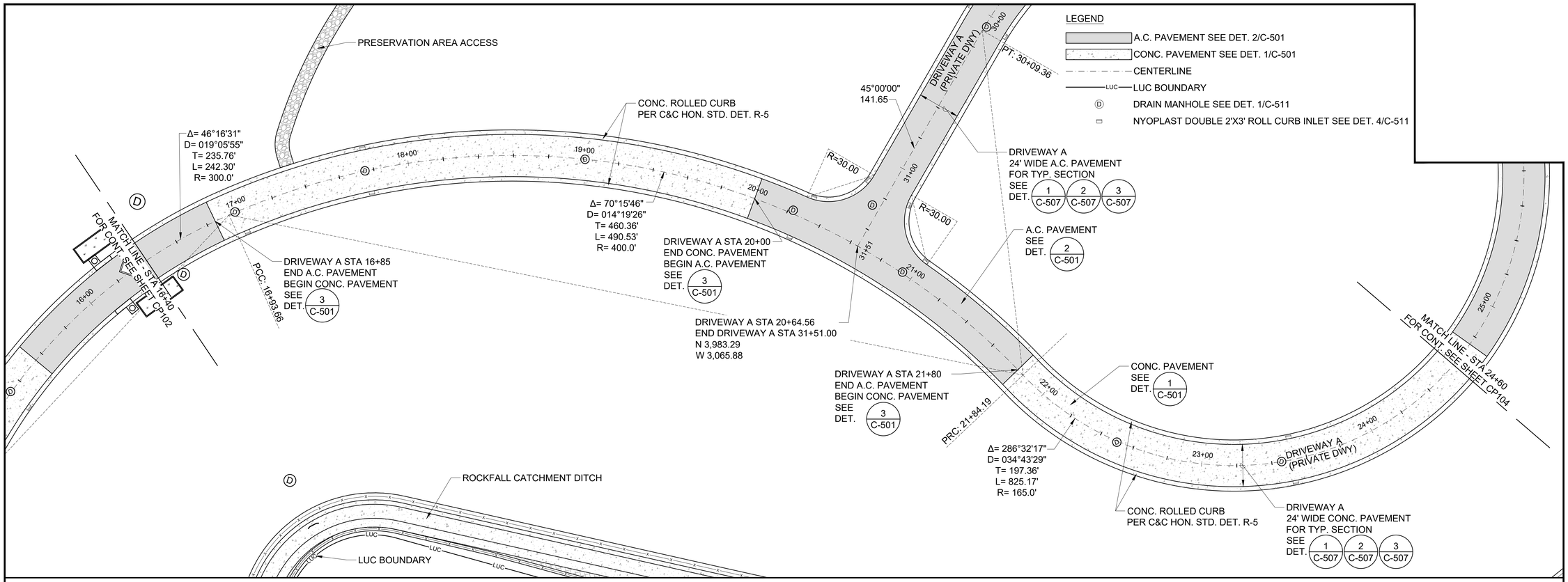
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DRIVEWAY A - PLAN AND PROFILE STA 8+20 TO 16+40

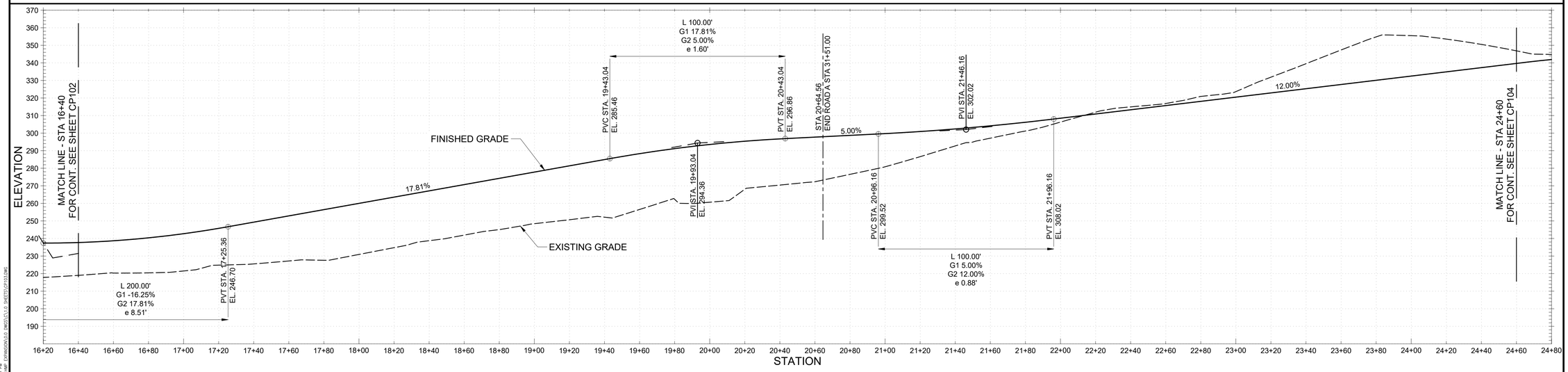
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Drawn	DH
Job No.	202056
Sheet No.	CP102
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PLAN NORTH

DRIVEWAY A - PLAN AND PROFILE STA 16+40 TO 24+60

SCALE: 1" = 30'-0"



DRIVEWAY A - PLAN AND PROFILE STA 16+40 TO 24+60

SCALE: 1" = 30'-0"

SCALE: HORIZ. 1"=30'-0" 0 10 20 30 60 90

SCALE: VERT. 1"=30'-0" 0 10 20 30 60 90

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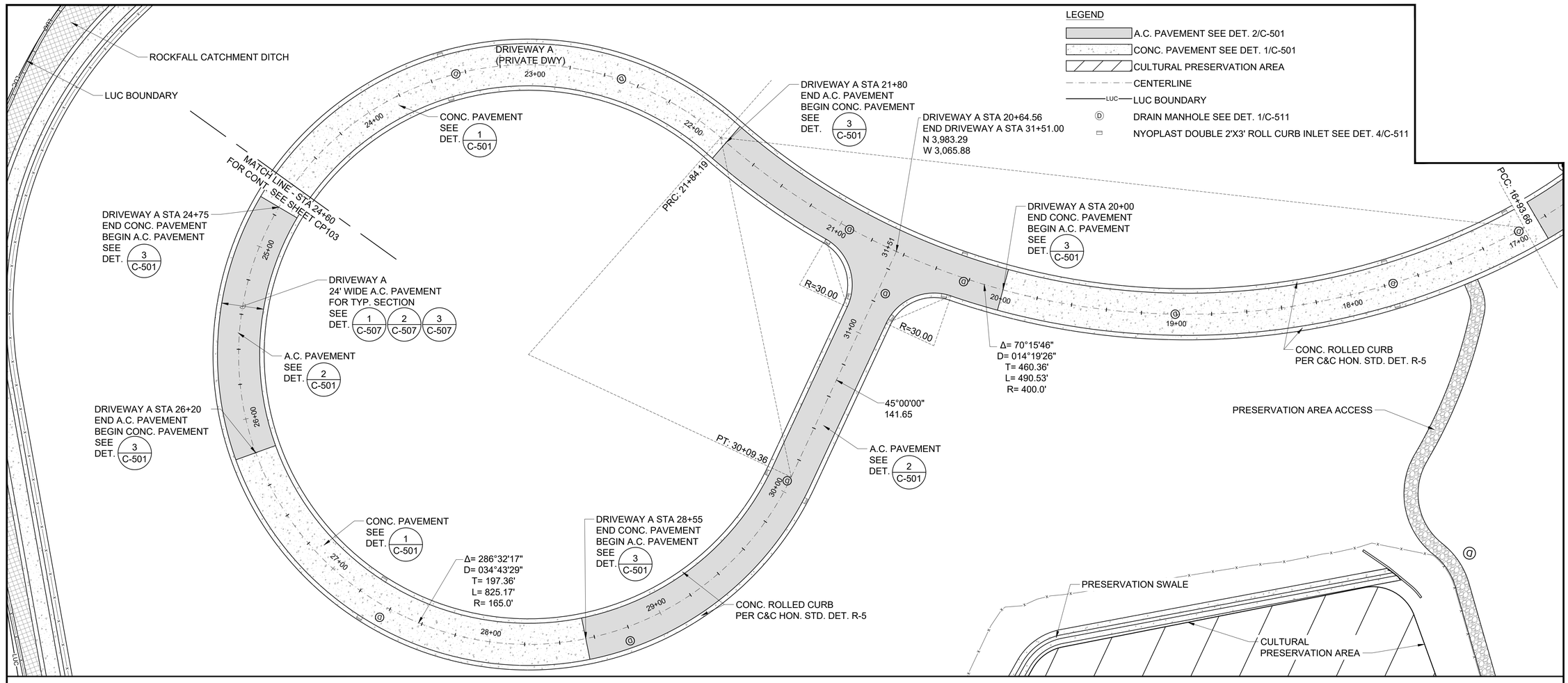
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DRIVEWAY A - PLAN AND PROFILE STA 16+40 TO 24+60

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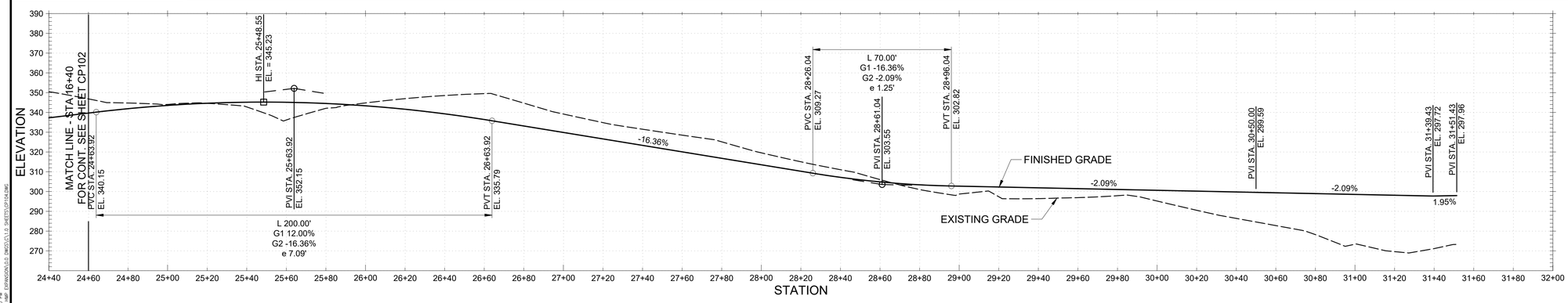
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PLAN NORTH

DRIVEWAY A - PLAN AND PROFILE STA 24+60 TO END

SCALE: 1" = 30'-0"



DRIVEWAY A - PLAN AND PROFILE STA 24+60 TO END

SCALE: 1" = 30'-0"

SCALE: HORIZ. 1"=30'-0" 0 10 20 30 60 90

SCALE: VERT. 1"=30'-0" 0 10 20 30 60 90

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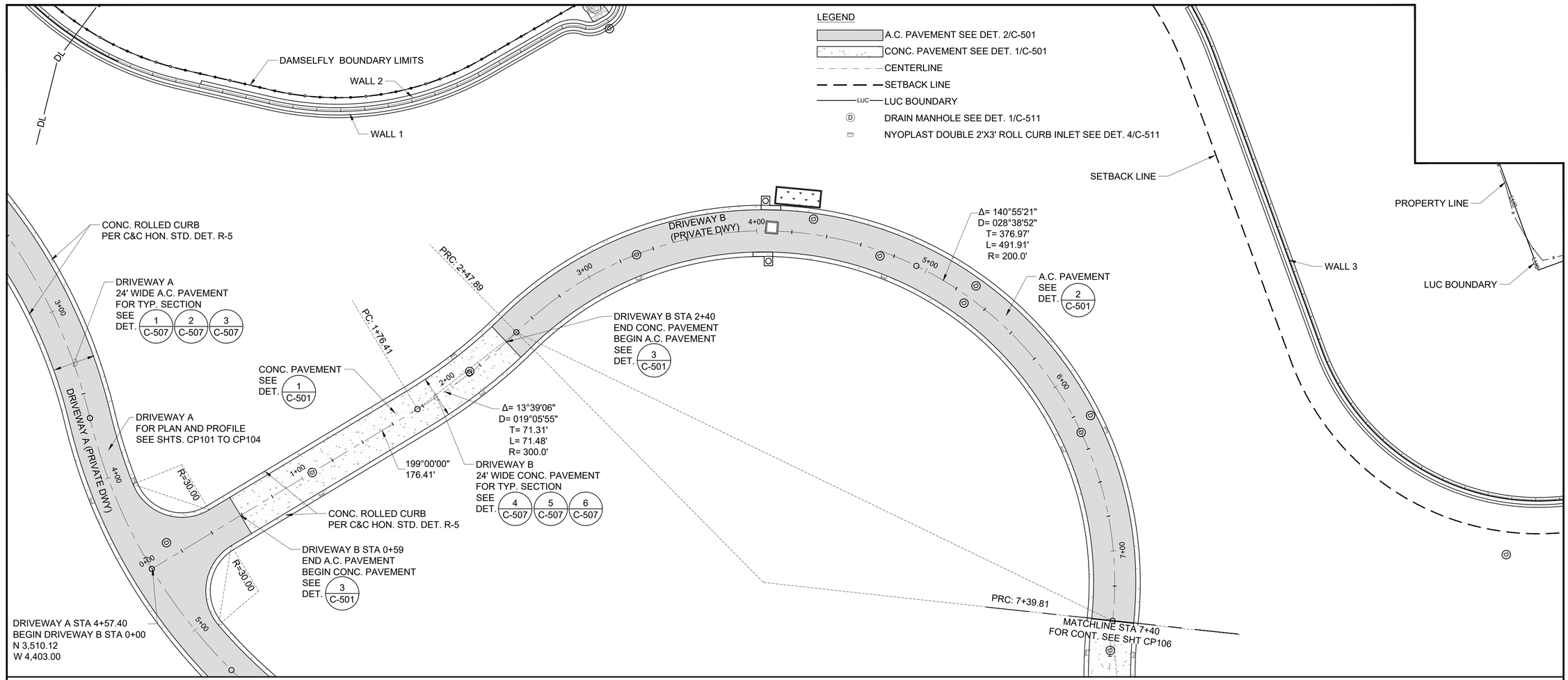
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DRIVEWAY A - PLAN AND PROFILE STA 24+60 TO END

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Drawn	DH
Job No.	202056

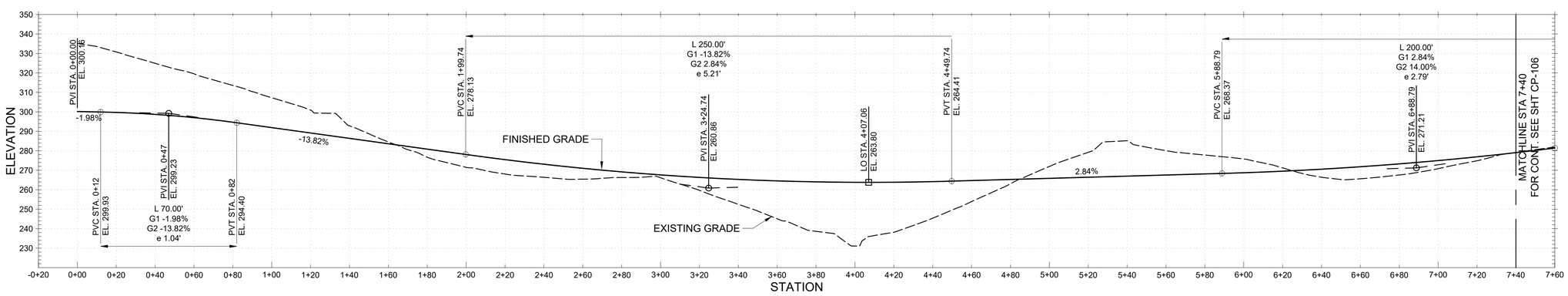
Sheet No.
CP104
18 of 107 SHEETS



PLAN NORTH

DRIVEWAY B - PLAN STA 0+00 TO 7+40

SCALE: 1" = 30'-0"



DRIVEWAY B - PROFILE STA 0+00 TO 7+40

SCALE: 1" = 30'-0"

SCALE: HORIZ. 1"=30'-0" 0 10 20 30 60 90

SCALE: VERT. 1"=30'-0" 0 10 20 30 60 90

User: DHMK, ALEX 4/30/2025 - 1:45 PM
File: C:\ACTIVE PROJECTS\2023\CP-133\DRAWINGS\CP105.DWG

2023/CP-133

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Signature

APRIL 30, 2026

Expiration Date of the License

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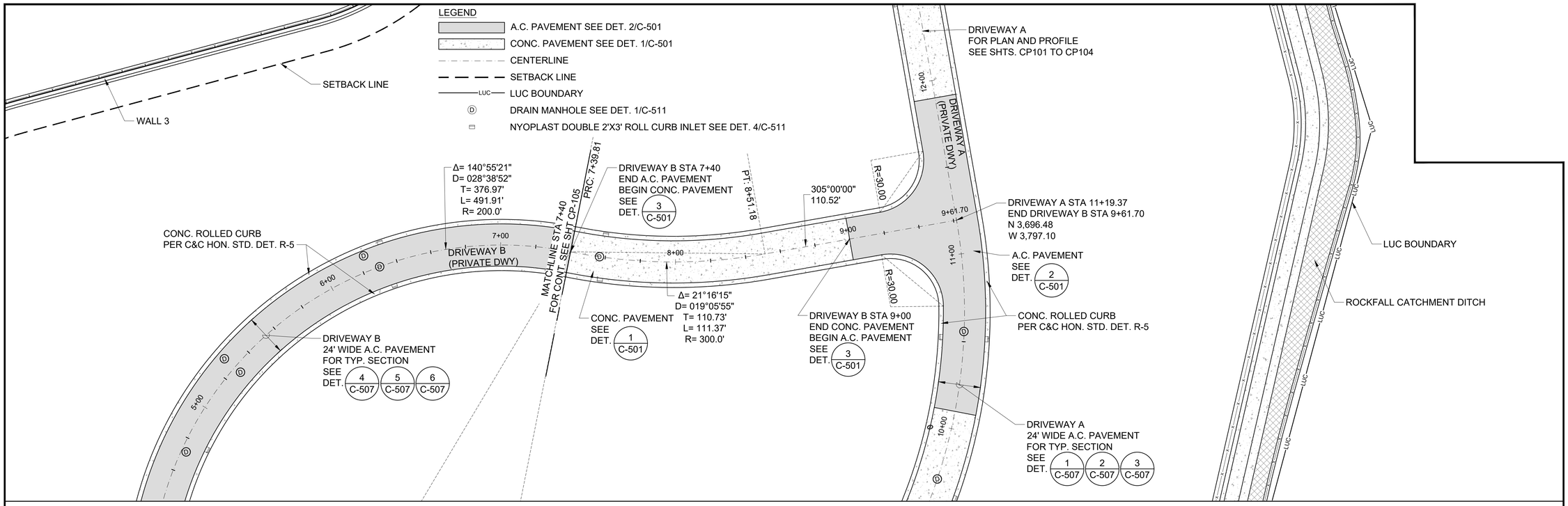
OWNER / DEVELOPER
HAWAIIAN MEMORIAL LIFE PLAN
1330 MAUNAKEA ST.
HONOLULU, HI 96817

HAWAIIAN MEMORIAL PARK EXPANSION
45-425 Kamehameha Highway, Kaneohe, HI
TMK 4-5-033:001

DRIVEWAY B - PLAN AND PROFILE STA 0+00 TO 7+40

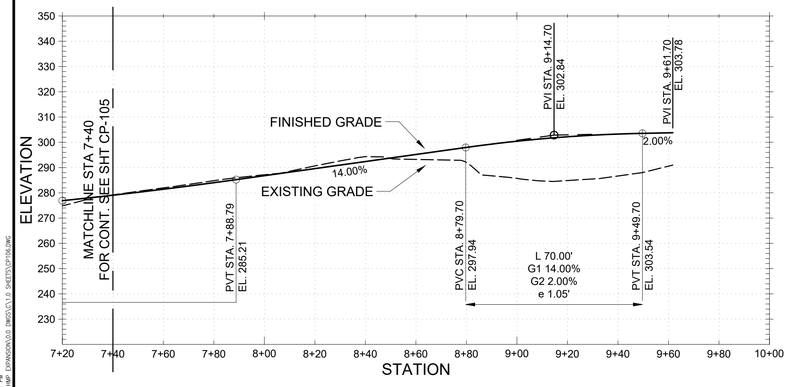
Date	5/1/2025
Design	JH/MKU
Drawn	DH
Job No.	202056

Sheet No.
CP105
19 of 107 SHEETS



DRIVEWAY B - PLAN STA 7+40 TO END

SCALE: 1" = 30'-0"



DRIVEWAY B - PROFILE STA 7+40 TO END

SCALE: 1" = 30'-0"

SCALE: HORIZ. 1"=30'-0" 0 10 20 30 60 90

SCALE: VERT. 1"=30'-0" 0 10 20 30 60 90

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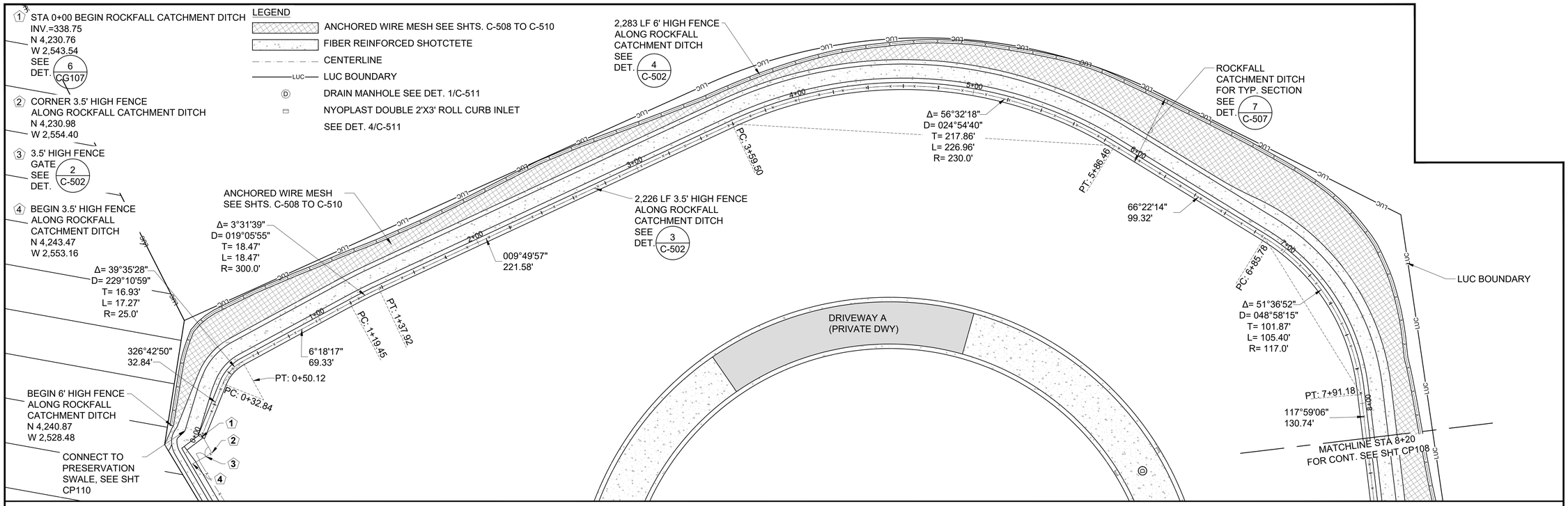
OWNER / DEVELOPER
HAWAIIAN MEMORIAL LIFE PLAN
1330 MAUNAKEA ST.
HONOLULU, HI 96817

HAWAIIAN MEMORIAL PARK EXPANSION
45-425 Kamehameha Highway, Kaneohe, HI
TMK 4-5-033:001

DRIVEWAY B - PLAN AND PROFILE STA 7+40 TO END

Date	5/1/2025
Design	JH/MKU
Drawn	DH
Job No.	202056
Sheet No.	CP106
	20 of 107 SHEETS

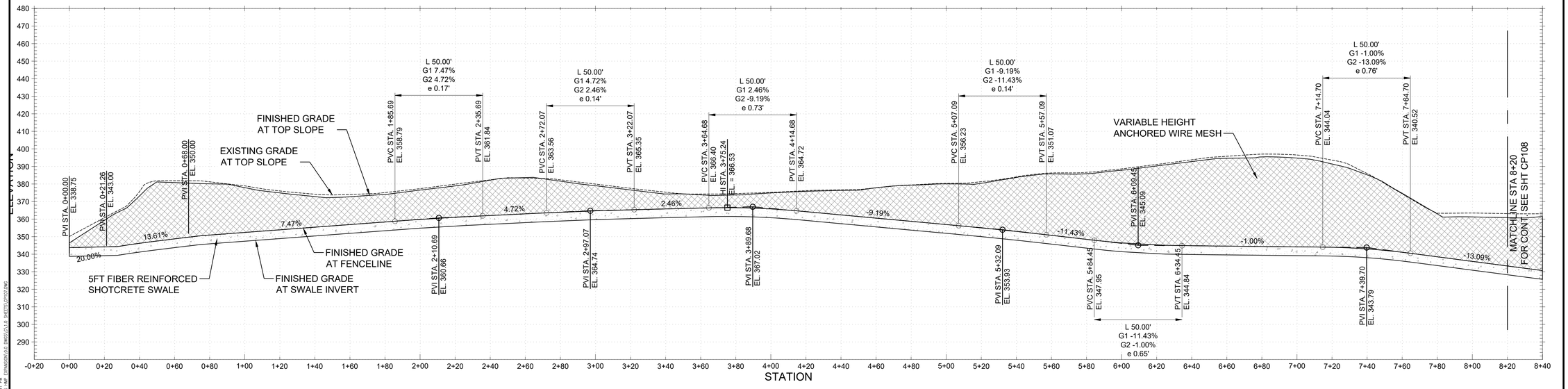
User: DRAK_ACS 4/30/2025 1:41 PM
Plot By: DONG HOON KANG
Date: J:\PROJ\202056\CP\CP106.dwg



PLAN NORTH

ROCKFALL CATCHMENT DITCH - PLAN STA 0+00 TO STA 8+20

SCALE: 1" = 30'-0"



ROCKFALL CATCHMENT DITCH - PROFILE STA 0+00 TO STA 8+20

SCALE: 1" = 30'-0"

SCALE: HORIZ. 1"=30'-0" (0 10 20 30 60 90)

SCALE: VERT. 1"=30'-0" (0 10 20 30 60 90)

APPROVAL:

CHIEF, CIVIL ENGINEERING BRANCH, D.P.P. (FOR GRADING ONLY) DATE

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1330 MAUNAKEA ST.
HONOLULU, HI 96817

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45-425 Kamehameha Highway, Kaneohe, HI
TMK 4-5-033:001

ROCKFALL CATCHMENT DITCH - PLAN AND PROFILE STA 0+00 TO 8+20

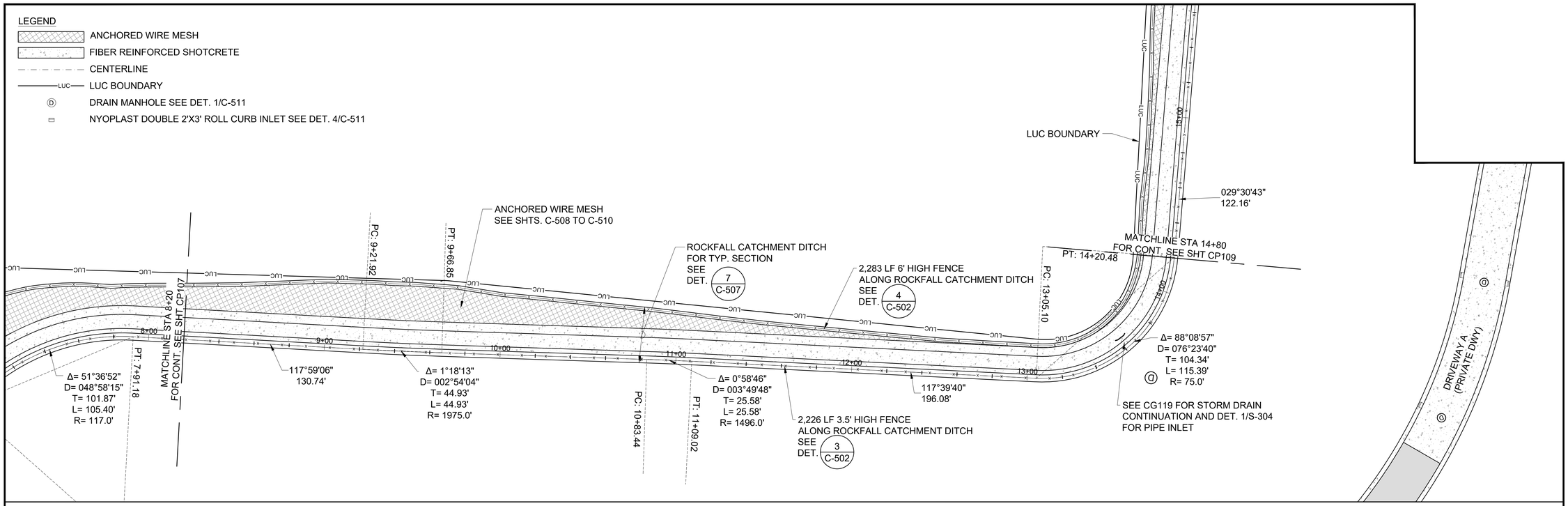
Date	5/1/2025
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Drawn	DH
Job No.	202056
Sheet No.	CP107
	21 of 107 SHEETS

2023/CP-133

User: DRAK, ALEX 4/30/2025 1:41 PM
Date: 5/1/2025 8:00:00 AM
DWG: L:\2020\202056\CP\CP107.DWG

LEGEND

- ANCHORED WIRE MESH
- FIBER REINFORCED SHOTCRETE
- CENTERLINE
- LUC — LUC BOUNDARY
- (D) DRAIN MANHOLE SEE DET. 1/C-511
- NYOPLAST DOUBLE 2'X3' ROLL CURB INLET SEE DET. 4/C-511



PLAN NORTH

ROCKFALL CATCHMENT DITCH - PLAN STA 8+20 TO STA 14+80

SCALE: 1" = 30'-0"

ROCKFALL CATCHMENT DITCH - PROFILE STA 8+20 TO STA 14+80

SCALE: 1" = 30'-0"

SCALE: HORIZ. 1"=30'-0" (0 10 20 30 60 90)

SCALE: VERT. 1"=30'-0" (0 10 20 30 60 90)

APPROVAL:

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Signature — APRIL 30, 2026 — Expiration Date of the License

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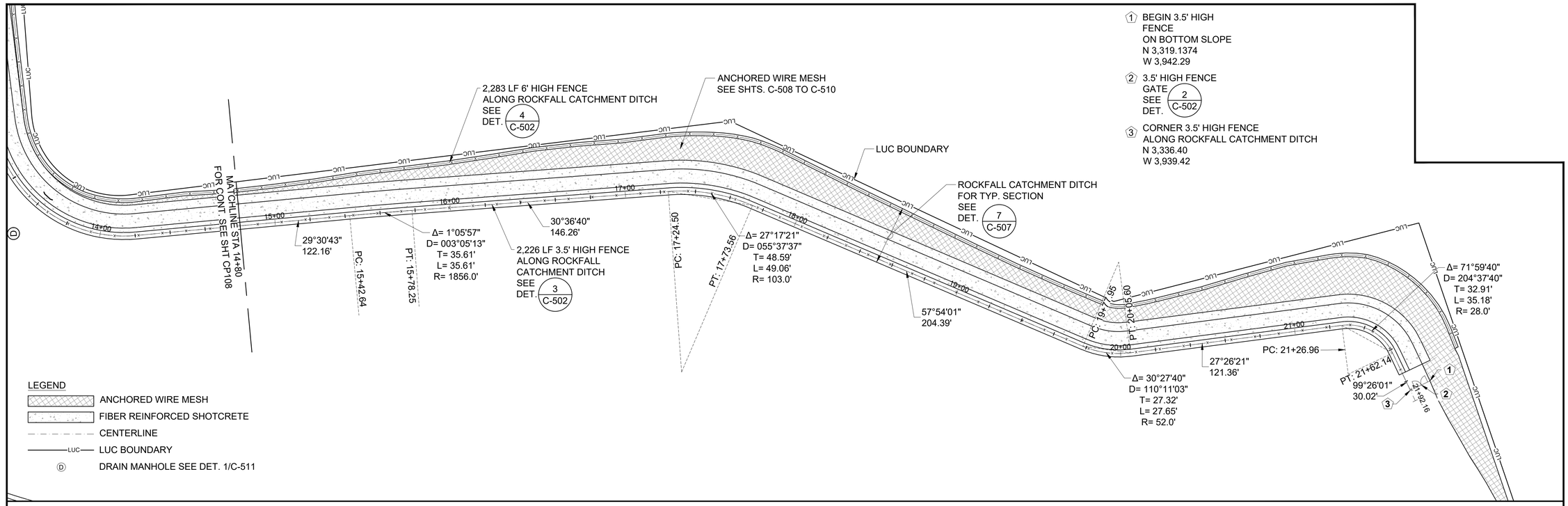
OWNER / DEVELOPER
HAWAIIAN MEMORIAL LIFE PLAN
1330 MAUNAKEA ST.
HONOLULU, HI 96817

HAWAIIAN MEMORIAL PARK EXPANSION
45-425 Kamehameha Highway, Kaneohe, HI
TMK 4-5-033:001

ROCKFALL CATCHMENT DITCH - PLAN AND PROFILE STA 8+20 TO 14+80

Date	5/1/2025
Design	JH/MKU
Drawn	DH
Job No.	202056
Sheet No.	CP108
	22 of 107 SHEETS

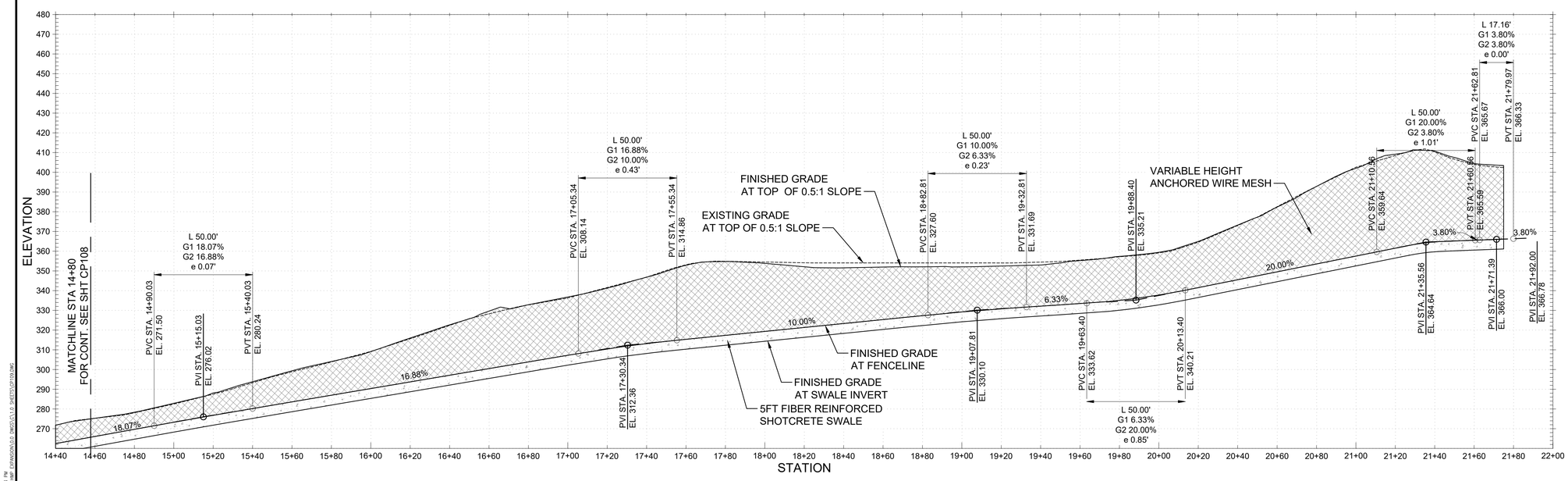
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PLAN NORTH

ROCKFALL CATCHMENT DITCH - PLAN STA 14+80 TO END

SCALE: 1" = 30'-0"



ROCKFALL CATCHMENT DITCH - PROFILE STA 14+80 TO END

SCALE: 1" = 30'-0"

SCALE: HORIZ. 1"=30'-0" 0 10 20 30 60 90

SCALE: VERT. 1"=30'-0" 0 10 20 30 60 90

APPROVAL:

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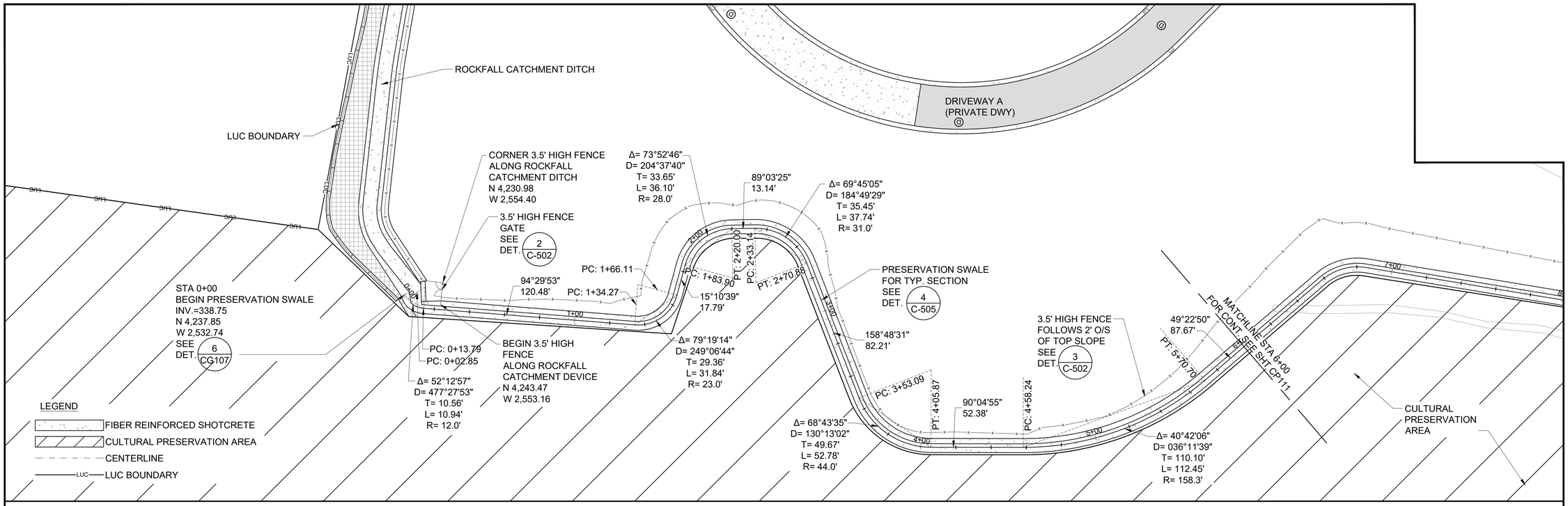
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1330 MAUNAKEA ST.
HONOLULU, HI 96817

HAWAIIAN MEMORIAL PARK EXPANSION
45-425 Kamehameha Highway, Kaneohe, HI
TMK 4-5-033:001

ROCKFALL CATCHMENT DITCH - PLAN AND PROFILE STA 14+80 TO END

Date	5/1/2025
Design	JH/MKU
Drawn	DH
Job No.	202056
Sheet No.	CP109
	23 of 107 SHEETS

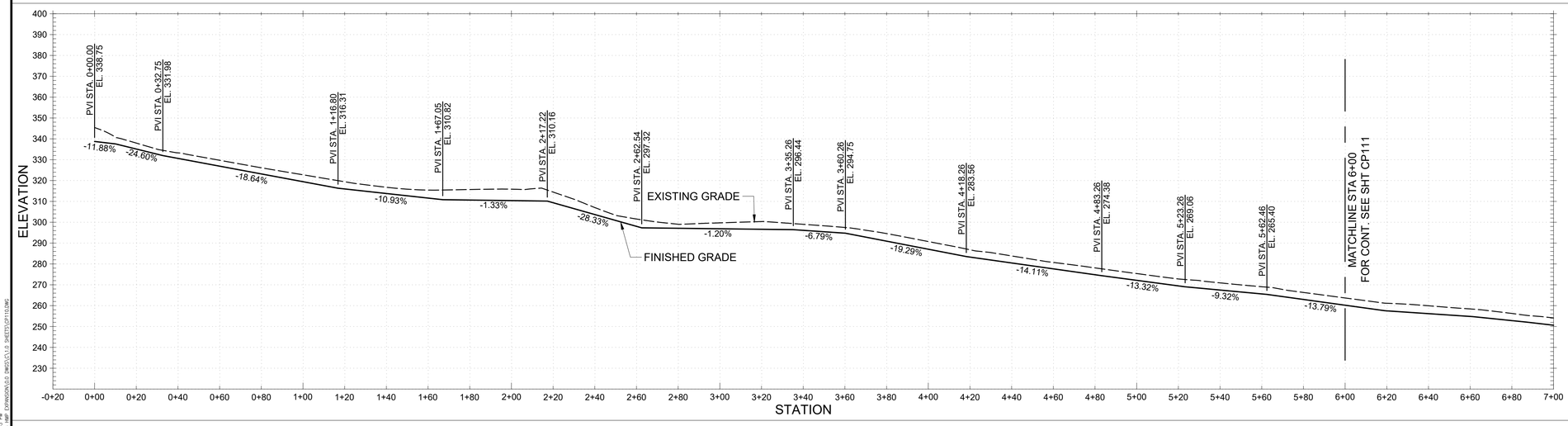
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PLAN NORTH

PRESERVATION SWALE - PLAN STA 0+00 TO 6+00

SCALE: 1" = 30'-0"



PRESERVATION SWALE - PROFILE STA 0+00 TO 6+00

SCALE: 1" = 30'-0"

SCALE: HORIZ. 1"=30'-0" 0 10 20 30 60 90

SCALE: VERT. 1"=30'-0" 0 10 20 30 60 90

APPROVAL:

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User: DRAK, ADS 4/30/2025 1:43 PM
Plot By: DONOVAN@COFFMAN.COM
DWG:\LV1.0 SHEETS\CP110.DWG

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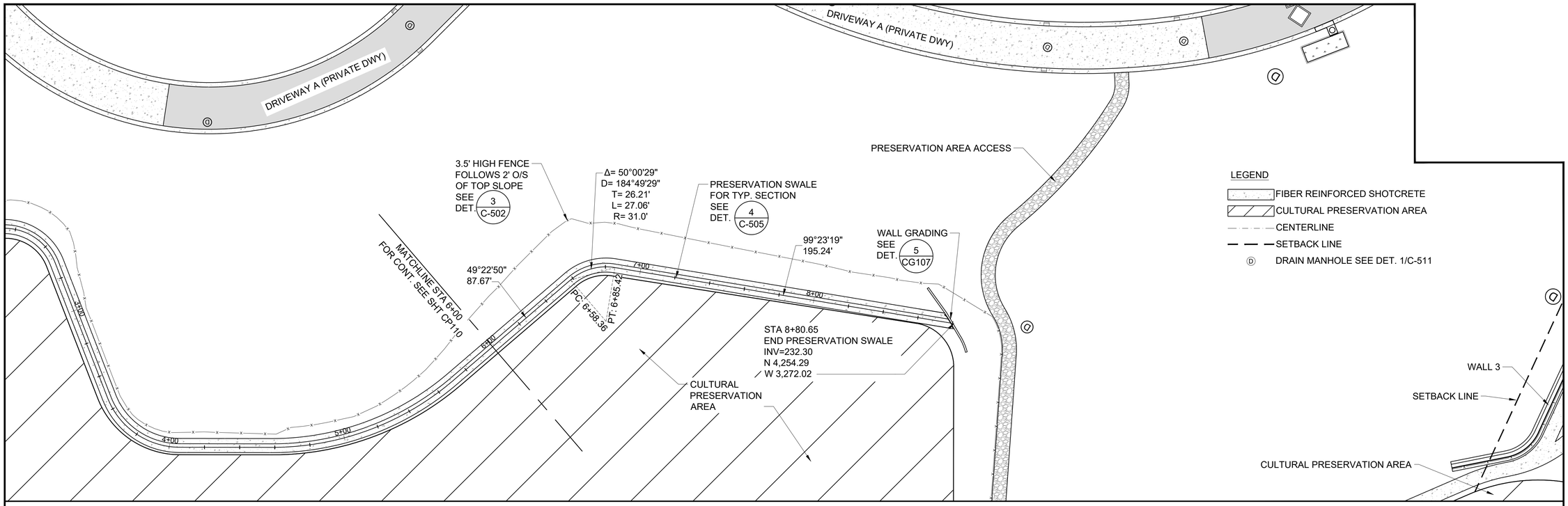
MUNEKI S. HIMOTA LICENSED PROFESSIONAL ENGINEER No. 9776-C HAWAII U.S.A.

OWNER / DEVELOPER
HAWAIIAN MEMORIAL LIFE PLAN
1330 MAUNAKEA ST.
HONOLULU, HI 96817

HAWAIIAN MEMORIAL PARK EXPANSION
45-425 Kamehameha Highway, Kaneohe, HI
TMK 4-5-033:001

PRESERVATION SWALE - PLAN AND PROFILE
STA 0+00 TO 6+00

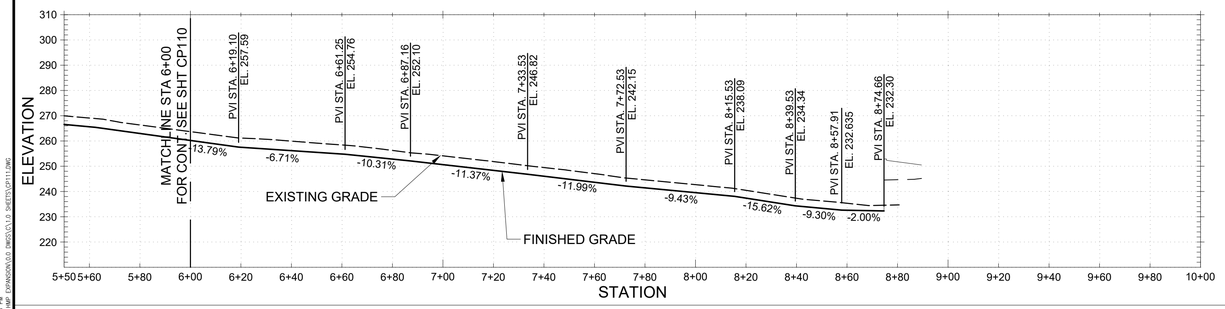
Date	5/1/2025
Design	JH/MKU
Drawn	DH
Job No.	202056
Sheet No.	CP110
	24 of 107 SHEETS



PLAN NORTH

PRESERVATION SWALE - PLAN STA 6+00 TO END

SCALE: 1" = 30'-0"



PRESERVATION SWALE - PROFILE STA 6+00 TO END

SCALE: 1" = 30'-0"

SCALE: HORIZ. 1"=30'-0" 0 10 20 30 60 90

SCALE: VERT. 1"=30'-0" 0 10 20 30 60 90

APPROVAL:

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HAWAIIAN MEMORIAL LIFE PLAN
1330 MAUNAKEA ST.
HONOLULU, HI 96817

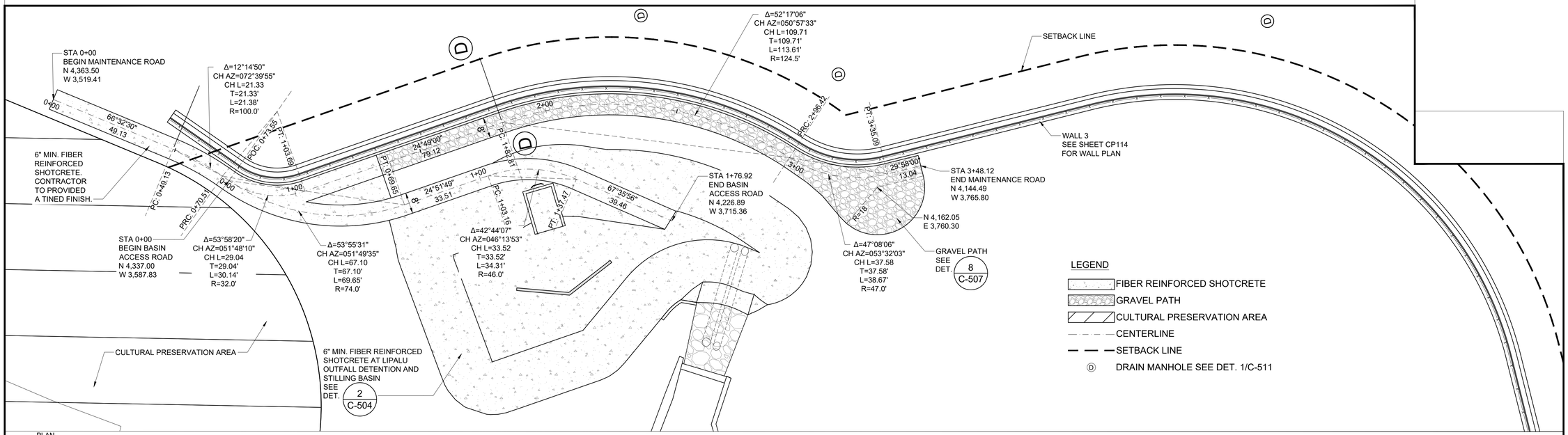
HAWAIIAN MEMORIAL PARK EXPANSION

45-425 Kamehameha Highway, Kaneohe, HI
TMK 4-5-033:001

PRESERVATION SWALE - PLAN AND PROFILE
STA 6+00 TO END

Date	5/1/2025
Design	JH/MKU
Drawn	DH
Job No.	202056
Sheet No.	CP111
	25 of 107 SHEETS

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Plot By: DONG HOON HA
Date: 4/30/2025 1:44 PM
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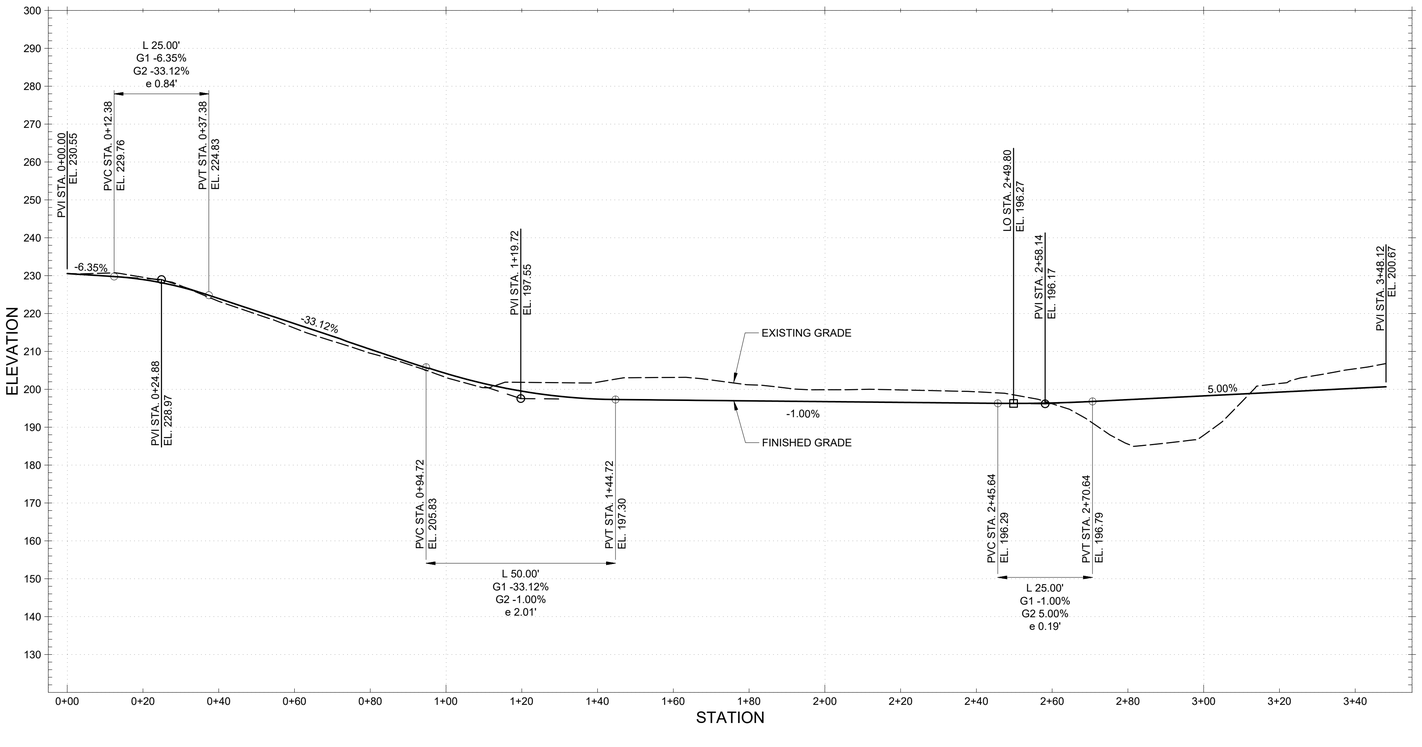


PLAN NORTH

LIPALU BASIN ACCESS AND MAINTENANCE ROAD PLAN

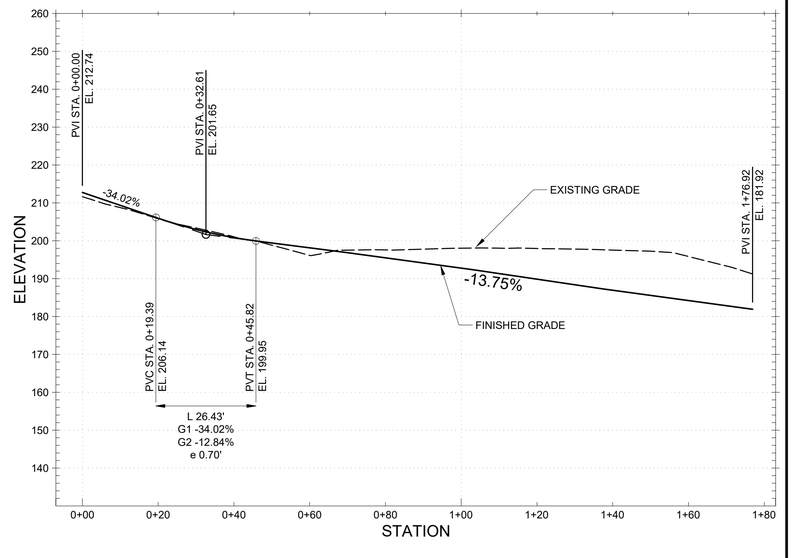
SCALE: 1" = 20'-0"

1"=20'-0" 0 10 20 40 60



LIPALU BASIN ACCESS ROAD PROFILE

SCALE: 1" = 20'-0"



LIPALU BASIN MAINTENANCE ROAD PROFILE

SCALE: 1" = 20'-0"

SCALE: HORIZ. 1"=20'-0" 0 10 20 40 60

SCALE: VERT. 1"=20'-0" 0 10 20 40 60

User: DKIM, 4:13, 4/30/2025, 1:14 PM
Drawing: J:\PROJECTS\202056\CP\DWG\MP_EXHIBIT\DWG\V3.0_SHEETS\CP112.DWG

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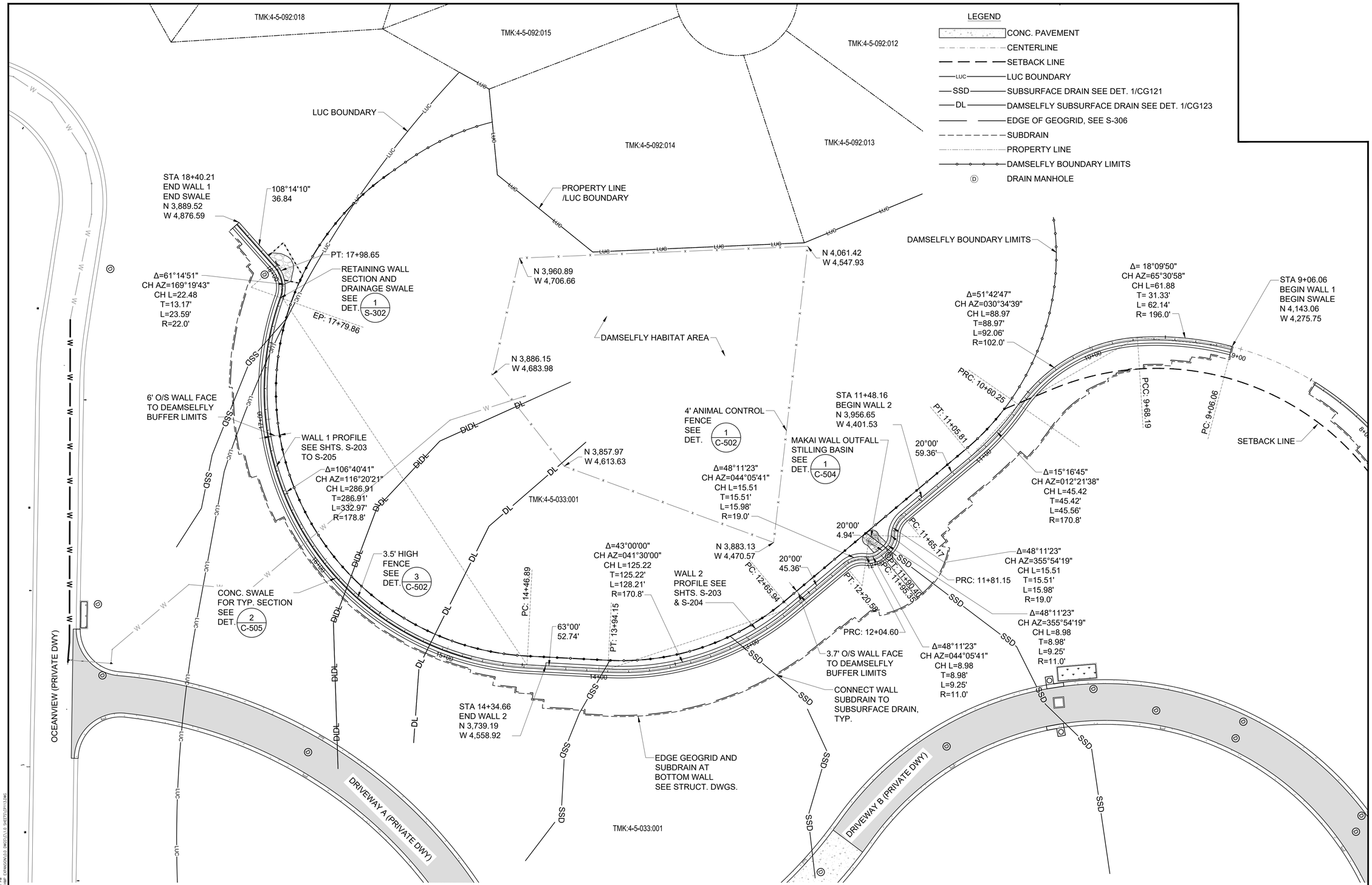
LINDSEY S. HINOTA LICENSED PROFESSIONAL ENGINEER No. 9776-C HAWAII U.S.A.

OWNER / DEVELOPER
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1330 MAUNAKEA ST.
HONOLULU, HI 96817

HAWAIIAN MEMORIAL PARK EXPANSION
45-425 Kamehameha Highway, Kaneohe, HI
TMK 4-5-033:001

LIPALU BASIN ACCESS AND MAINTENANCE ROAD PLAN AND PROFILE

Date	5/1/2025
Design	DH
Drawn	DH
Job No.	202056
Sheet No.	CP112
	26 of 107 SHEETS



2023/CP-133

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HAWAIIAN MEMORIAL LIFE PLAN
1330 MAUNAKEA ST.
HONOLULU, HI 96817

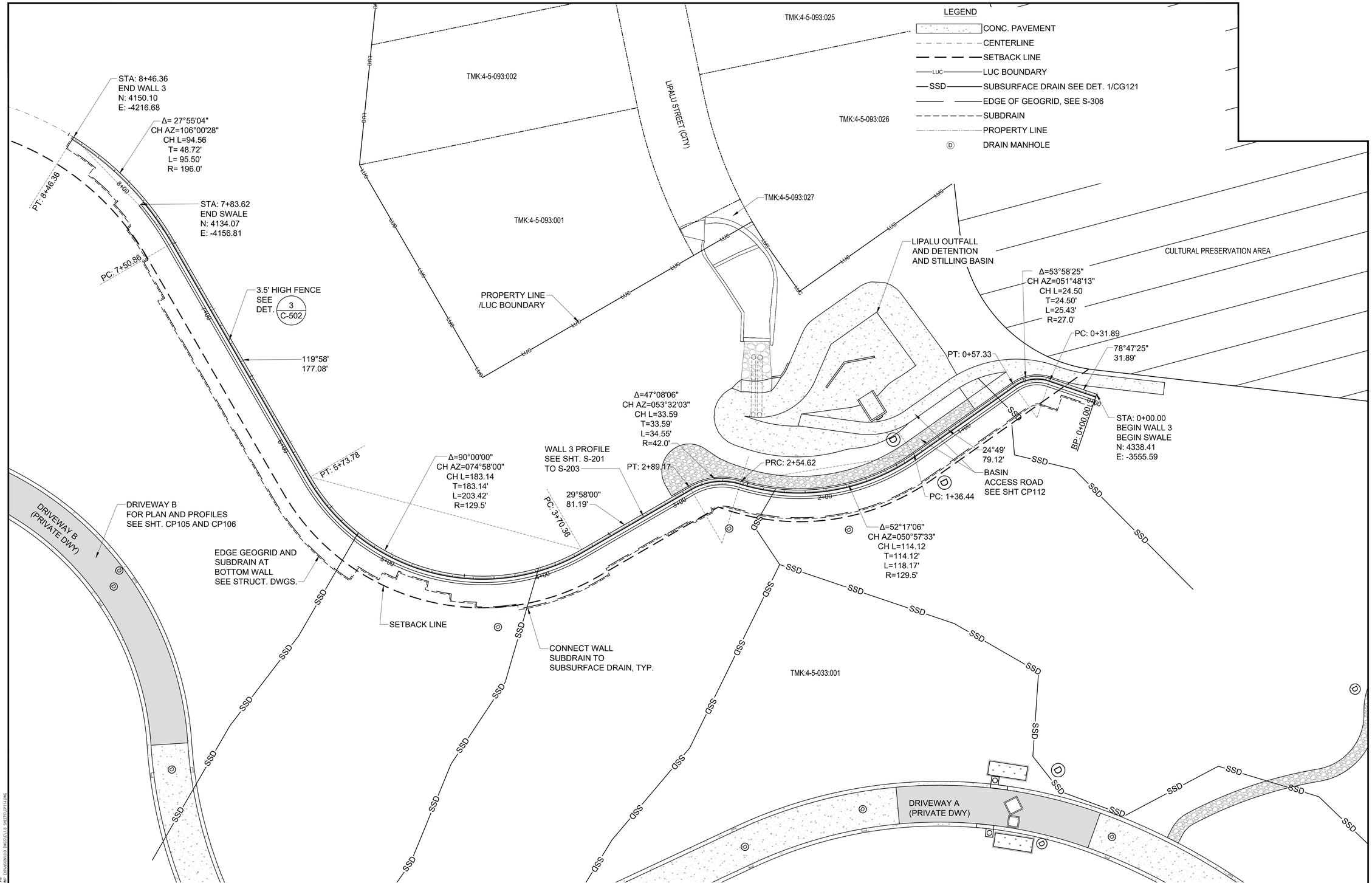
HAWAIIAN MEMORIAL PARK EXPANSION

45-425 Kamehameha Highway, Kaneohe, HI
TMK 4-5-033:001

WALLS 1 AND 2 LAYOUT PLAN

Date	5/1/2025
Design	JH/MKU
Drawn	DH
Job No.	202056
Sheet No.	CP113
	27 of 107 SHEETS

User: DRHA_ADS 4/30/2025 1:44 PM
Dwg: L:\2020\202056\CP\CP113.dwg



PLAN NORTH

WALL 3 LAYOUT PLAN

SCALE: 1" = 30'-0"

1"=30'-0" 0 10 20 30 60 90

2023/CP-133

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HONOLULU, HI 96817

HAWAIIAN MEMORIAL PARK EXPANSION
45-425 Kamehameha Highway, Kaneohe, HI
TMK 4-5-033:001

WALL 3 LAYOUT PLAN

Date	5/1/2025
Design	JH/MKU
Drawn	DH
Job No.	202056
Sheet No.	CP114
	28 of 107 SHEETS

User: DRUM_ALEX 4/30/2025 1:45 PM
Date: J:\2020\202056\CIVIL\PLANS\WORKING\0.0 (MISC)\CU\0 SHEETS\CP114.DWG

LEGEND

- 325 EXISTING CONTOUR W/ ELEV
- 200 FINISHED CONTOUR W/ ELEV.
- LIMITS OF GRADING/DISTURBANCE
- ADDITIONAL LIMITS OF DISTURBANCE
- SETBACK LINE
- DAMSELFLY BOUNDARY LIMITS
- SSD SUBSURFACE DRAIN SEE DET. 1/CG121
- DL DAMSELFLY SUBSURFACE DRAIN SEE DET. 1/CG123
- CULTURAL PRESERVATION AREA
- EXISTING SWALE
- SETTLEMENT GAUGE SEE DET. 9/C-510

SUMMARY OF EARTHWORK QUANTITIES (FOR PERMIT PURPOSES ONLY)

AREA OF WORK	1,511,725 SF (34.704 AC)
GRADED/DISTURBED AREA	1,511,725 SF (34.704 AC)
ESTIMATED GRUBBING (1FT)	55,936 CY
ESTIMATED EXCAVATION	556,045 CY
ESTIMATED EXCAVATION x 0.85	472,638 CY
ESTIMATED EMBANKMENT	437,962 CY
NEW EARTHWORK	34,676 CY (CUT)

NOTE:
EARTHWORK QUANTITIES WERE TAKEN FROM EXISTING TO FINISHED GRADE ELEVATION. CONTRACTOR SHALL DETERMINE HIS OWN QUANTITIES FOR TAKEOFF AND BIDDING PURPOSES, PER THE CONTRACT DOCUMENTS.

NAKULUAI STREET (CITY)
OHAHA STREET (CITY)
OHAHA PLACE (CITY)
LIPALU STREET (CITY)
OCEAN VIEW ROAD (PRIVATE)
ROAD A (PRIVATE DWY)
ROAD B (PRIVATE DWY)
TMK: 4-5-092:001 TMK: 4-5-092:002 TMK: 4-5-092:003 TMK: 4-5-092:004 TMK: 4-5-092:005 TMK: 4-5-092:006 TMK: 4-5-092:007 TMK: 4-5-092:008 TMK: 4-5-092:009 TMK: 4-5-092:010 TMK: 4-5-092:011 TMK: 4-5-092:012 TMK: 4-5-092:013 TMK: 4-5-092:014 TMK: 4-5-092:015 TMK: 4-5-092:016 TMK: 4-5-092:017 TMK: 4-5-092:018 TMK: 4-5-092:019 TMK: 4-5-092:020
TMK: 4-5-093:001 TMK: 4-5-093:002 TMK: 4-5-093:003 TMK: 4-5-093:004 TMK: 4-5-093:005 TMK: 4-5-093:006 TMK: 4-5-093:016 TMK: 4-5-093:017 TMK: 4-5-093:018 TMK: 4-5-093:019 TMK: 4-5-093:020 TMK: 4-5-093:021 TMK: 4-5-093:022 TMK: 4-5-093:023 TMK: 4-5-093:024 TMK: 4-5-093:025 TMK: 4-5-093:026 TMK: 4-5-093:027
TMK:4-5-033:001
TMK:4-5-033:002
TMK:4-2-015: 001

EXIST DRAIN INLET
EXIST. DRAINAGE STRUCTURE
PROPERTY LINE /LUC BOUNDARY
LIMITS OF GRADING/DISTURBANCE
ADDITIONAL LIMITS OF DISTURBANCE
SETBACK LINE
EXIST. PRIVATE DIVERSION DITCH, TYP.
DAMSELFLY BUFFER
SIGN: "WARNING ROCKFALL HAZARD AREA, ENTER AT YOUR OWN RISK"
PRESERVATION ACCESS
CULTURAL PRESERVATION
LUC BOUNDARY
1:1 FILL SLOPE AREA FOR EROSION CONTROL MATTING SEE DET. 7/C-505
2:1 FILL SLOPE AREA FOR EROSION CONTROL MATTING SEE DET. 7/C-505
PRESERVATION SWALE
5:1 MAX SLOPE
3:1 SLOPE
0.5:1 SLOPE AREA FOR ANCHORED WIRE MESH SEE SHTS. C-508 TO 510
ROCKFALL CATCHMENT DITCH
GRASS SWALE SEE DET. 1/C-505
0.5:1 CUT SLOPE AREA FOR ANCHORED WIRE MESH SEE SHTS. C-508 TO 510
SUBSURFACE DRAINAGE SEE SHTS. CG121-CG123
1:1 FILL SLOPE AREA SLOPE HEIGHT LESS THAN 30FT. FOR EROSION CONTROL MATTING SEE DET. 7/C-505
PROPERTY LINE

NOTE:

1. SEE DETAIL 8/C-510 FOR KEYING AND BENCHING OF EXISTING GRADE FOR FILL SLOPES ON AREAS WITH EXISTING GRADE GREATER THAN 5:1 AND/OR AREAS WITH FILL SLOPES GREATER THAN 20'.
2. A REDUCED COMPACTION REQUIREMENT OF 85 PERCENT RELATIVE COMPACTION MAY BE USED TO FACILITATE PLACEMENT OF FILLS AND REDUCE THE POTENTIAL OF INDUCING PUMPING CONDITIONS.
3. GENERAL FILLS AND BACKFILLS CONSISTING OF THE ON-SITE SOILS WITH HIGH IN-SITU MOISTURE CONTENTS SHOULD BE MOISTURE-CONDITIONED TO ABOUT 2 PERCENT ABOVE THE OPTIMUM MOISTURE, PLACED IN LEVEL LIFTS NOT EXCEEDING 8 INCHES IN LOOSE THICKNESS, AND COMPACTED TO AT LEAST 85 PERCENT RELATIVE COMPACTION.
4. THE NON-EXPANSIVE SELECT GRANULAR FILL MATERIALS SHOULD BE PLACED IN LEVEL LIFTS OF ABOUT 8 INCHES IN LOOSE THICKNESS, MOISTURE-CONDITIONED TO ABOVE THE OPTIMUM MOISTURE, AND COMPACTED TO AT LEAST 90 PERCENT RELATIVE COMPACTION.
5. AGGREGATE BASE COURSE AND SUBBASE COURSE MATERIALS SHOULD BE MOISTURE-CONDITIONED TO ABOVE THE OPTIMUM MOISTURE CONTENT, PLACED IN LEVEL LIFTS NOT EXCEEDING 8 INCHES IN LOOSE THICKNESS, AND COMPACTED TO A MINIMUM OF 95 PERCENT RELATIVE COMPACTION.
6. IN GENERAL, EXCAVATED ROCK MATERIALS LESS THAN 6 INCHES IN SIZE MAY BE USED AS FILL MATERIAL. ROCK FRAGMENTS AND ROCKY MATERIALS GREATER THAN 6 INCHES IN DIMENSION MAYNEED TO BE PROCESSED AND CRUSHED TO A RELATIVELY WELL-GRADED GRANULAR MATERIAL WITH A MAXIMUM PARTICAL SIZE OF 6 INCHES. THESE EXCAVATED ROCK MATERIALS SHOULD BE MOISTURE-CONDITIONED TO ABOVE THE OPTIMUM MOISTURE, PLACED IN LEVEL LIFTS NOT EXCEEDING 12 INCHES IN LOOSE THICKNESS, AND COMPACTED TO AT LEAST 90 PERCENT RELATIVE COMPACTION. COMPACTION EQUIPMENT (SUCH AS A D-9 BULLDOZER, VIBRATORY DRUM ROLLER, OR SIMILAR HEAVY COMPACTION EQUIPMENT) PROVIDING SUITABLE ENERGY TO ACHIEVE THE REQUIRED COMPACTION SHOULD BE UTILIZED TO COMPACT THE 6-INCH MINUS GRANULAR FILL.
7. FOR COMPACTION TESTING IN AREAS WITH ROCK FILL SEE GEOTECHNICAL REPORT.
8. FOR SETTLEMENT REQUIREMENTS, SEE GEOTECH REPORT AND DET. 9/C-510. PROPOSED GRADES SHOWN ON THE PLANS ARE TO BE ACHIEVED AFTER SETTLEMENT HAS STABILIZED PER THE GEOTECH REPORT.

SETTLEMENT MONITORING:

1. IN AREAS UP TO 35 FEET OF FILL, POTENTIAL GROUND SETTLEMENTS ARE ESTIMATED ON THE ORDER OF BETWEEN 2 AND 6 INCHES.
2. IT IS ESTIMATED THAT THE MAJORITY OF THE PRIMARY SETTLEMENT WILL OCCUR IN ABOUT 1 TO 3 MONTHS AFTER THE NEW FILLS ARE PLACED.
3. TO MONITOR THE SETTLEMENT RATE, SETTLEMENT GAUGES ARE TO BE PLACED AT THE DEEP FILL LOCATION NEAR THE BOTTOM OF THE FILL SLOPE AND AT THE TOP OF THE FILL SLOPE NEAR THE FUTURE RIGHT-OF-WAY.
4. AT LEAST 20 SETTLEMENT GAUGES SHALL BE INSTALLED IN AREAS WITH SUBSTANTIAL NEW FILLS (GREATER THAN 20 FEET THICK) ARE PLACED.
5. THE SETTLEMENT GAUGES AND MARKERS SHALL BE READ OPTICALLY AND SUBMITTED FOR REVIEW TO THE GEOTECHNICAL ENGINEER BY A LICENSED SURVEYOR. THERE SHALL BE TWO READINGS TAKEN A MINIMUM OF 24 HOURS APART FOR EACH SETTLEMENT GAUGE 10 DAYS PRIOR TO ANY SITE FILLING TO ESTABLISH A BASELINE FOR THE SETTLEMENT GAUGES. THESE BASELINE READINGS SHALL BE TAKEN AFTER FILLS ARE PLACED TO THE FINISHED SUBGRADE LEVEL. SUBSEQUENT READINGS SHALL BE TAKEN ON A WEEKLY BASIS FOR THE ENTIRE SETTLEMENT WAITING PERIOD.
6. FUTURE ROADWAY PAVING AND UTILITY INSTALLATION SHALL NOT BE PERFORMED IN THE FILL AREA UNTIL THE SETTLEMENT WAITING PERIOD IS COMPLETED, AS DETERMINED BY THE GEOTECHNICAL ENGINEER.

APPROVAL:

CHIEF, CIVIL ENGINEERING BRANCH, D.P.P. DATE

PLAN NORTH

GRADING OVERALL PLAN

SCALE: 1" = 100'-0"

1"=100'-0" 0 50 100 200 300

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JAMES S. HIROTA — LICENSED PROFESSIONAL ENGINEER No. 9776-C — U.S.A. HAWAII

Signature

APRIL 30, 2026

Expiration Date of the License

OWNER / DEVELOPER
HAWAIIAN MEMORIAL LIFE PLAN
1330 MAUNAKEA ST.
HONOLULU, HI 96817

HAWAIIAN MEMORIAL PARK EXPANSION
45-425 Kamehameha Highway, Kaneohe, HI
TMK 4-5-033:001

GRADING OVERALL PLAN

Date	5/1/2025
Design	JH/MKU
Drawn	DH
Job No.	202056
Sheet No.	CG100
	29 of 107 SHEETS

User: DHUK, ALEX 4/30/2025 1:45 PM
I:\Jobs\2020\202056\Civil\Grading\Plans\GRADING OVERALL PLAN.DWG

LEGEND

- 325 EXISTING CONTOUR W/ ELEV
- 200 FINISHED CONTOUR W/ ELEV.
- LIMITS OF GRADING/DISTURBANCE
- ADDITIONAL LIMITS OF DISTURBANCE
- SETBACK LINE
- LUC BOUNDARY
- DAMSELFLY BOUNDARY LIMITS
- SSD SUBSURFACE DRAIN SEE DET. 1/CG121
- DL DAMSELFLY SUBSURFACE DRAIN SEE DET. 1/CG123
- CHAIN LINK FENCE

NOTE:
SEE DETAIL 8/C-510 FOR KEYING AND BENCHING OF EXISTING GRADE FOR FILL SLOPES ON AREAS WITH EXISTING GRADE GREATER THAN 5:1 AND/OR AREAS WITH FILL SLOPES GREATER THAN 20'.

TMK:4-5-092:017
TMK:4-5-092:018
TMK:4-5-092:015
TMK:4-5-092:014
TMK:4-5-092:012
TMK:4-5-092:013
TMK:4-5-033:001

OHAHA PLACE (CITY)

PROPERTY LINE /LUC BOUNDARY

3 CG309
4 CG309
5 CG310

LIMITS OF GRADING\DISTURBANCE

STA 9+06.06
BEGIN WALL 1
N 4,143.06
W 4,275.75

STA: 8+13.96
END WALL 3
N: 4,150.10
W: 4,216.68

3.5' HIGH FENCE SEE DET. 3 C-502

SETBACK LINE

DRIVEWAY B
FOR PLAN AND PROFILES
SEE SHTS. CP105 & CP106
FOR SECTIONS SEE SHT. CG303
FOR TYP. SECTION
SEE DET. 4 C-507, 5 C-507, 6 C-507

STA 11+48.16
BEGIN WALL 2
N 3,956.65
W 4,401.53

20% MAX. SLOPE

STA 18+40.21
END WALL 1
N 3,889.52
W 4,876.59

SDMH-A2
TOP=246.59

SDMH-A1
TOP=239.13

ADDITIONAL LIMITS OF DISTURBANCE

DAMSELFLY HABITAT AREA

WALL 2
FOR PROFILE
SEE SHTS
S-203 AND
S-204

SUBSURFACE DRAINAGE
SEE SHTS. CG121-CG123

WALL 1
FOR PROFILE
SEE SHTS
S-203 TO S-205

DAMSELFLY BOUNDARY LIMITS

STA 14+34.66
END WALL 2
N 3,739.19
W 4,558.92

SDMH-B5
TOP=266.49

SDCB-B1
TOP=263.87

SDMH-B6
TOP=263.83

SDMH-C1
TOP=265.00

DRIVEWAY B
(PRIVATE)

SDMH-C2
TOP=266.56

SDFC-BC
TOP=263.76

SDMH-B7
TOP=265.79

OCEAN VIEW ROAD (PRIVATE)

LUC BOUNDARY

20% MAX. SLOPE

SDMH-A3
TOP=258.09

MATCH LINE - SEE SHEET CG102

MATCH LINE - SEE SHEET CG103

PLAN NORTH

GRADING PLAN 1

SCALE: 1" = 30'-0"

1"=30'-0" 0 10 20 30 60 90

APPROVAL:

CHIEF, CIVIL ENGINEERING BRANCH, D.P.P. DATE

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LANCE S. HIROTA
LICENSED PROFESSIONAL ENGINEER
No. 9776-C
U.S.A. HAWAII

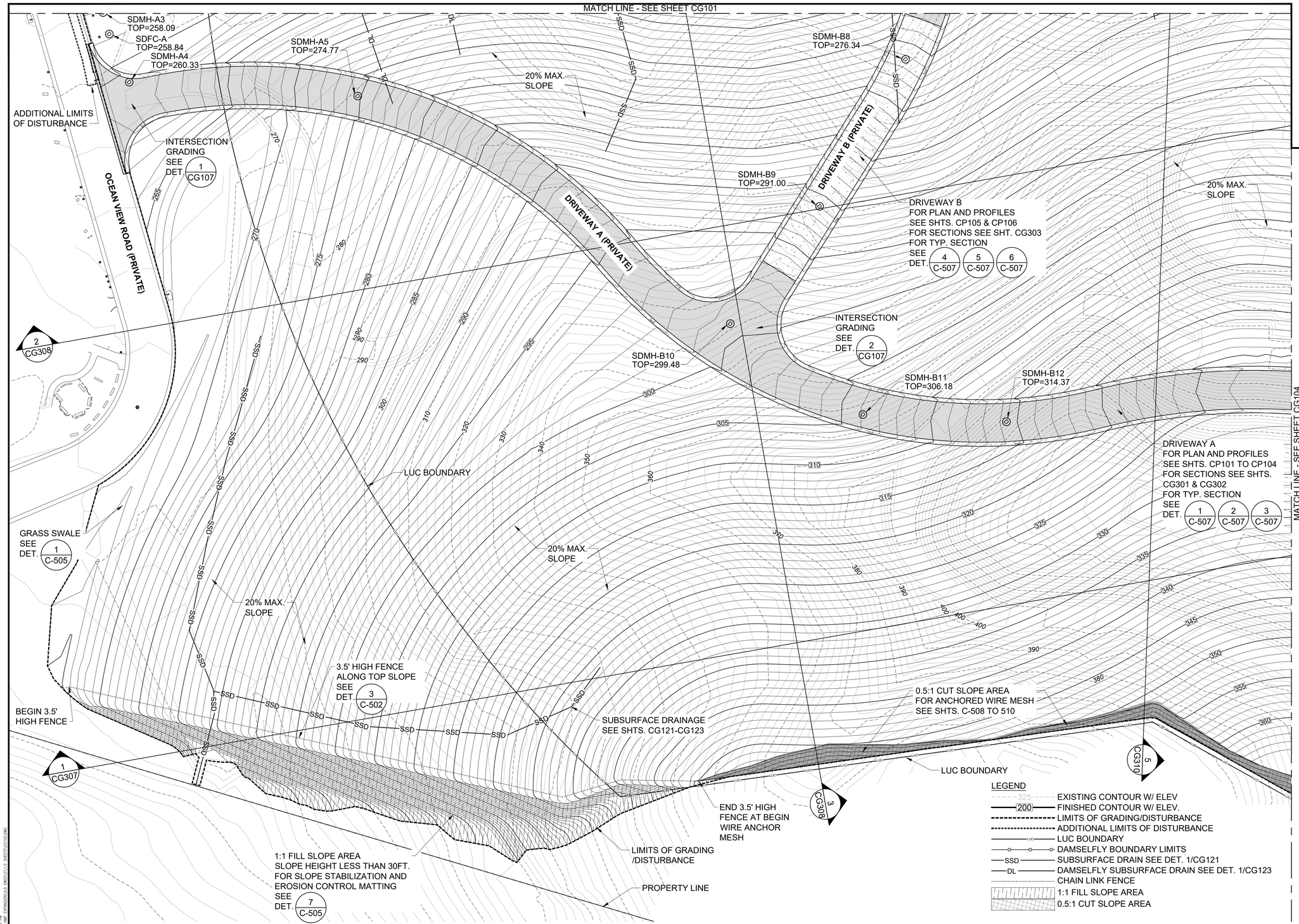
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HAWAIIAN MEMORIAL PARK EXPANSION
45-425 Kamehameha Highway, Kaneohe, HI
TMK 4-5-033:001

GRADING PLAN 1

Date	5/1/2025
Design	JH/MKU
Drawn	DH
Job No.	202056
Sheet No.	CG101
	30 of 107 SHEETS

User: DRAK, ALEX Y:\2021\202056\Design\Civil\Drawings\CG\CG101 GRADING PLAN 1.DWG 4/30/2025 1:41 PM



PLAN NORTH

GRADING PLAN 2

SCALE: 1" = 30'-0"

NOTE:
SEE DETAIL 8/C-510 FOR KEYING AND BENCHING OF EXISTING GRADE FOR FILL SLOPES ON AREAS WITH EXISTING GRADE GREATER THAN 5:1 AND/OR AREAS WITH FILL SLOPES GREATER THAN 20'.

1"=30'-0" 0 10 20 30 60 90

APPROVAL:

CHIEF, CIVIL ENGINEERING BRANCH, D.P.P. DATE

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JAMES S. HIROJA LICENSED PROFESSIONAL ENGINEER No. 9776-C HAWAII U.S.A.

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GRADING PLAN 2

Date	5/1/2025
Design	JH/MKU
Drawn	DH
Job No.	202056
Sheet No.	CG102
	31 of 107 SHEETS

User: DRAK, ALEX Y:\50\2025\202056\Civil\CAD\GRADING\GD PLANS\GD PLAN 2.DWG\CLD SHEETS\GD102.DWG

LEGEND

- 325 EXISTING CONTOUR W/ ELEV
- 200 FINISHED CONTOUR W/ ELEV.
- LIMITS OF GRADING/DISTURBANCE
- ADDITIONAL LIMITS OF DISTURBANCE
- SETBACK LINE
- LUC BOUNDARY
- DAMSELFLY BOUNDARY LIMITS
- SSD SUBSURFACE DRAIN SEE DET. 1/CG121
- CHAIN LINK FENCE
- CULTURAL PRESERVATION AREA

NOTE:
SEE DETAIL 8/C-510 FOR KEYING AND BENCHING OF EXISTING GRADE FOR FILL SLOPES ON AREAS WITH EXISTING GRADE GREATER THAN 5:1 AND/OR AREAS WITH FILL SLOPES GREATER THAN 20'.

MATCH LINE - SEE SHEET CG101

MATCH LINE - SEE SHEET CG105

PROPERTY LINE /LUC BOUNDARY

SETBACK LINE

ADDITIONAL LIMITS OF DISTURBANCE

LIMITS OF GRADING/DISTURBANCE

3:1 SLOPE

LIPALU OUTFALL DETENTION AND STILLING BASIN SEE DET. 2 / C-504

6 / CG309

7 / CG311

CULTURAL PRESERVATION AREA

0+00.00
BEGIN WALL 3
N: 4,338.41
W: 3,555.59

BOTTOM BASIN = 182.00

1:1 SLOPE

SDMH-H1
TOP=193.34

SDMH-H2
TOP=219.21

SDMH-B1
TOP=222.77

SDMH-B2
TOP=227.86

SUBSURFACE DRAINAGE
SEE SHTS. CG121-CG123

CULTURAL PRESERVATION ACCESS GRADING SEE DET. 7 / CG107

EDGE OF FILL SWALE (CONCRETE) SEE DET. 3 / C-505

SDMH-B3
TOP=248.68

SDMH-B4
TOP=269.51

SDMH-C3
TOP=270.00

DRIVEWAY B (PRIVATE)

20% MAX. SLOPE

DRIVEWAY A
FOR PLAN AND PROFILES
SEE SHTS. CP101 TO CP104
FOR SECTIONS SEE SHTS.
CG301 & CG302
FOR TYP. SECTION
SEE DET. 1 / C-507, 2 / C-507, 3 / C-507

SDFC-D
TOP=237.42

SDMH-H3
TOP=240.96

DRIVEWAY A (PRIVATE)

SDFC-E
TOP=237.65

SDMH-H4
TOP=239.00

SDMH-E1
TOP=242.43

SDMH-D1
TOP=244.00

SDMH-D2
TOP=257.09

20% MAX. SLOPE

DRIVEWAY B
FOR PLAN AND PROFILES
SEE SHTS. CP105 & CP106
FOR SECTIONS SEE SHT. CG303
FOR TYP. SECTION
SEE DET. 4 / C-507, 5 / C-507, 6 / C-507

MATCH LINE - SEE SHEET CG104

PLAN NORTH

GRADING PLAN 3

SCALE: 1" = 30'-0"

1"=30'-0" 0 10 20 30 60 90

APPROVAL:

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JAMES S. HIROTA U.S.A. HAWAII LICENSED PROFESSIONAL ENGINEER No. 9776-C

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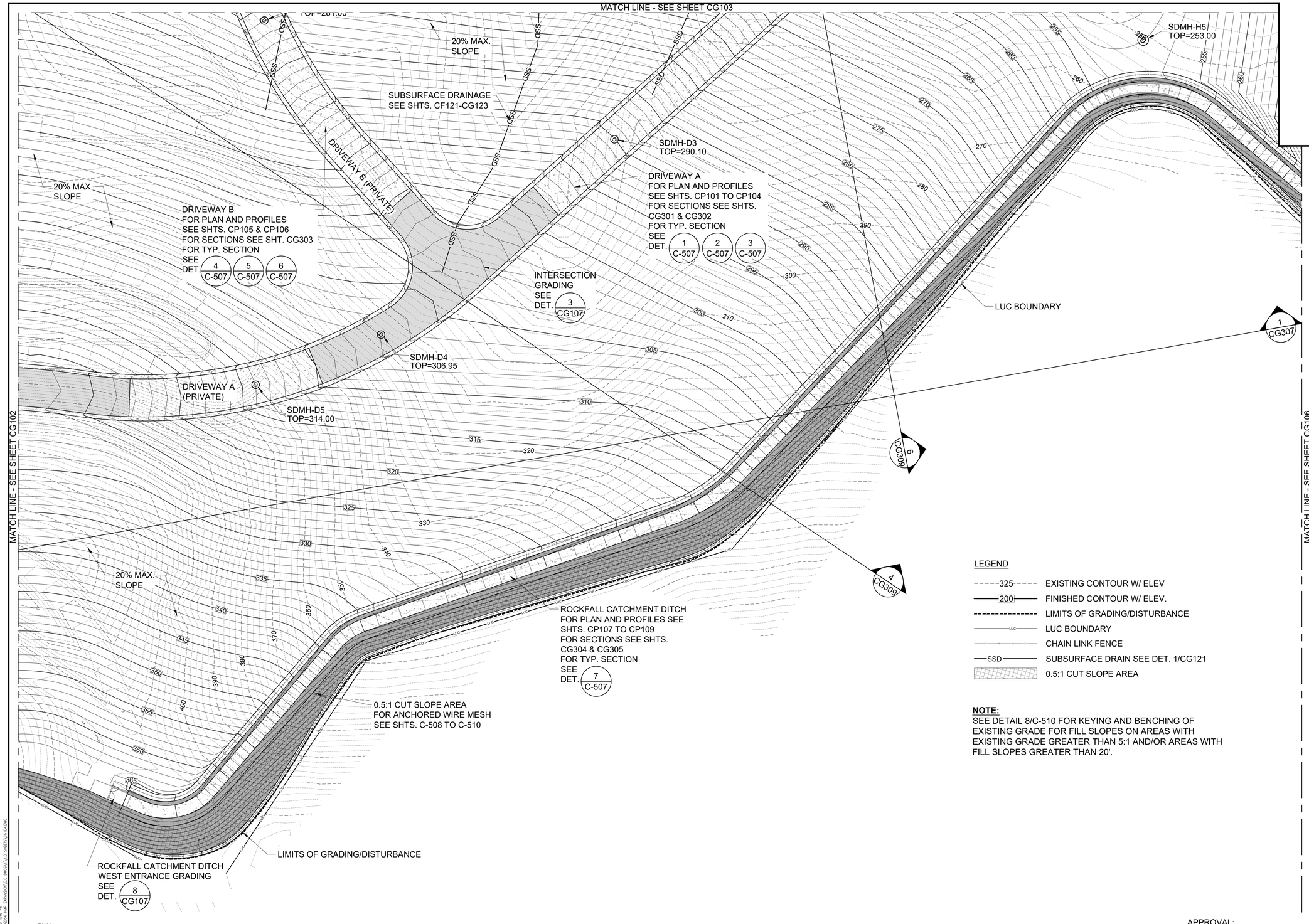
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TMK 4-5-033:001

GRADING PLAN 3

Date	5/1/2025
Design	JH/MKU
Drawn	DH
Job No.	202056
Sheet No.	CG103

32 of 107 SHEETS

User: DRHA, ALEX K 5/30/2025 1:46 PM
Drawing: K:\2020\202056\Civil\Grading\Plans\202056CG103.dwg(LYT:LO SHEET)(CG103.DWG



PLAN NORTH

GRADING PLAN 4

SCALE: 1" = 30'-0"

LEGEND

- 325 — EXISTING CONTOUR W/ ELEV
- 200 — FINISHED CONTOUR W/ ELEV.
- LIMITS OF GRADING/DISTURBANCE
- LUC — LUC BOUNDARY
- CHAIN LINK FENCE
- SSD — SUBSURFACE DRAIN SEE DET. 1/CG121
- 0.5:1 CUT SLOPE AREA

NOTE:
SEE DETAIL 8/C-510 FOR KEYING AND BENCHING OF EXISTING GRADE FOR FILL SLOPES ON AREAS WITH EXISTING GRADE GREATER THAN 5:1 AND/OR AREAS WITH FILL SLOPES GREATER THAN 20'.

APPROVAL:

CHIEF, CIVIL ENGINEERING BRANCH, D.P.P. DATE

1"=30'-0" 0 10 20 30 60 90

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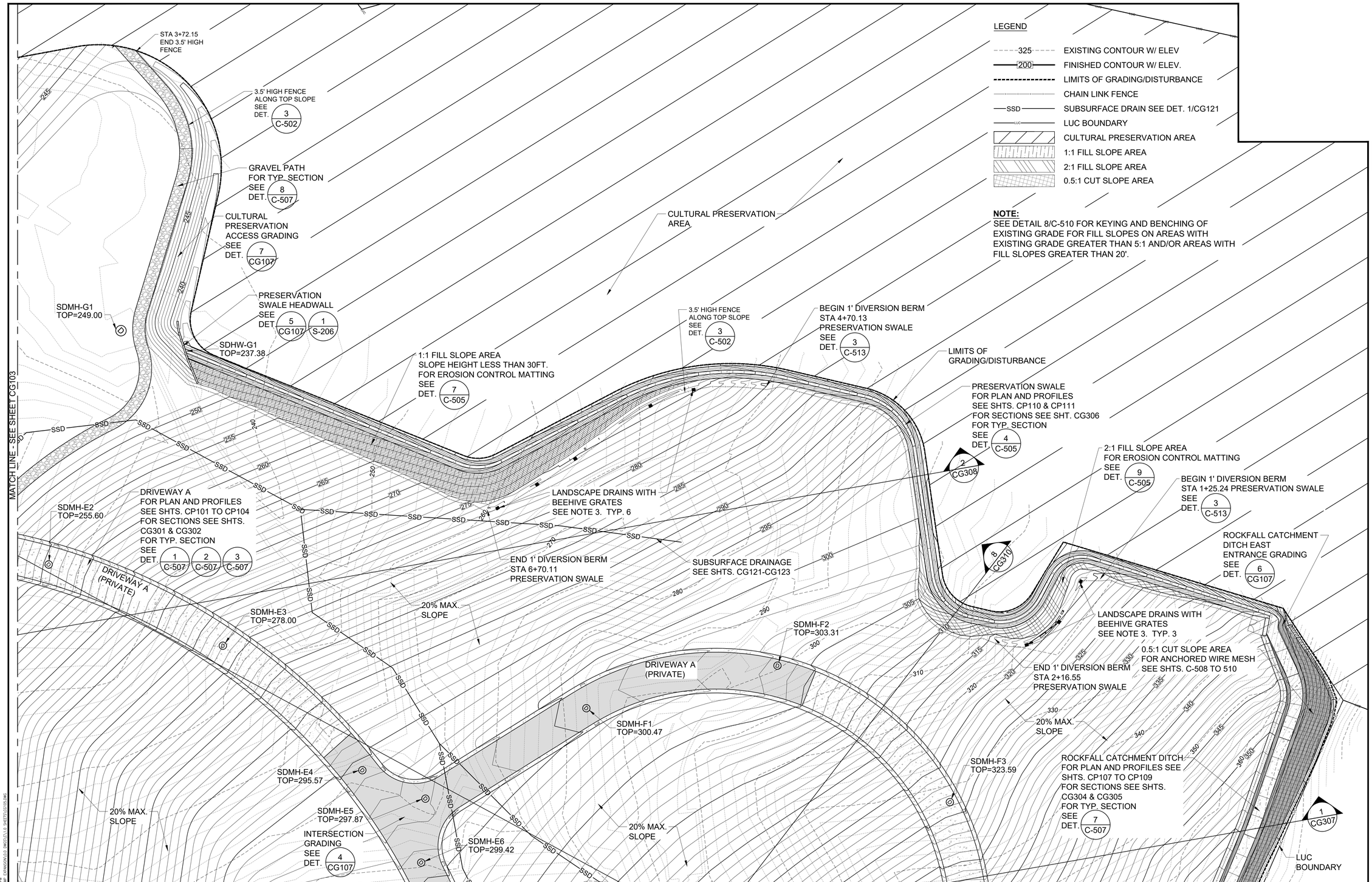
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1330 MAUNAKEA ST.
HONOLULU, HI 96817

HAWAIIAN MEMORIAL PARK EXPANSION
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GRADING PLAN 4

Date	5/1/2025
Design	JH/MKU
Drawn	DH
Job No.	202056
Sheet No.	CG104
	33 of 107 SHEETS

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PLAN NORTH

GRADING PLAN 5

SCALE: 1" = 30'-0"

1"=30'-0" 0 10 20 30 60 90

APPROVAL:

CHIEF, CIVIL ENGINEERING BRANCH, D.P.P. DATE

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Expiration Date of the License

LICENSED PROFESSIONAL ENGINEER No. 9776-C JAMES S. HIROTA U.S.A. HAWAII

OWNER / DEVELOPER
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GRADING PLAN 5

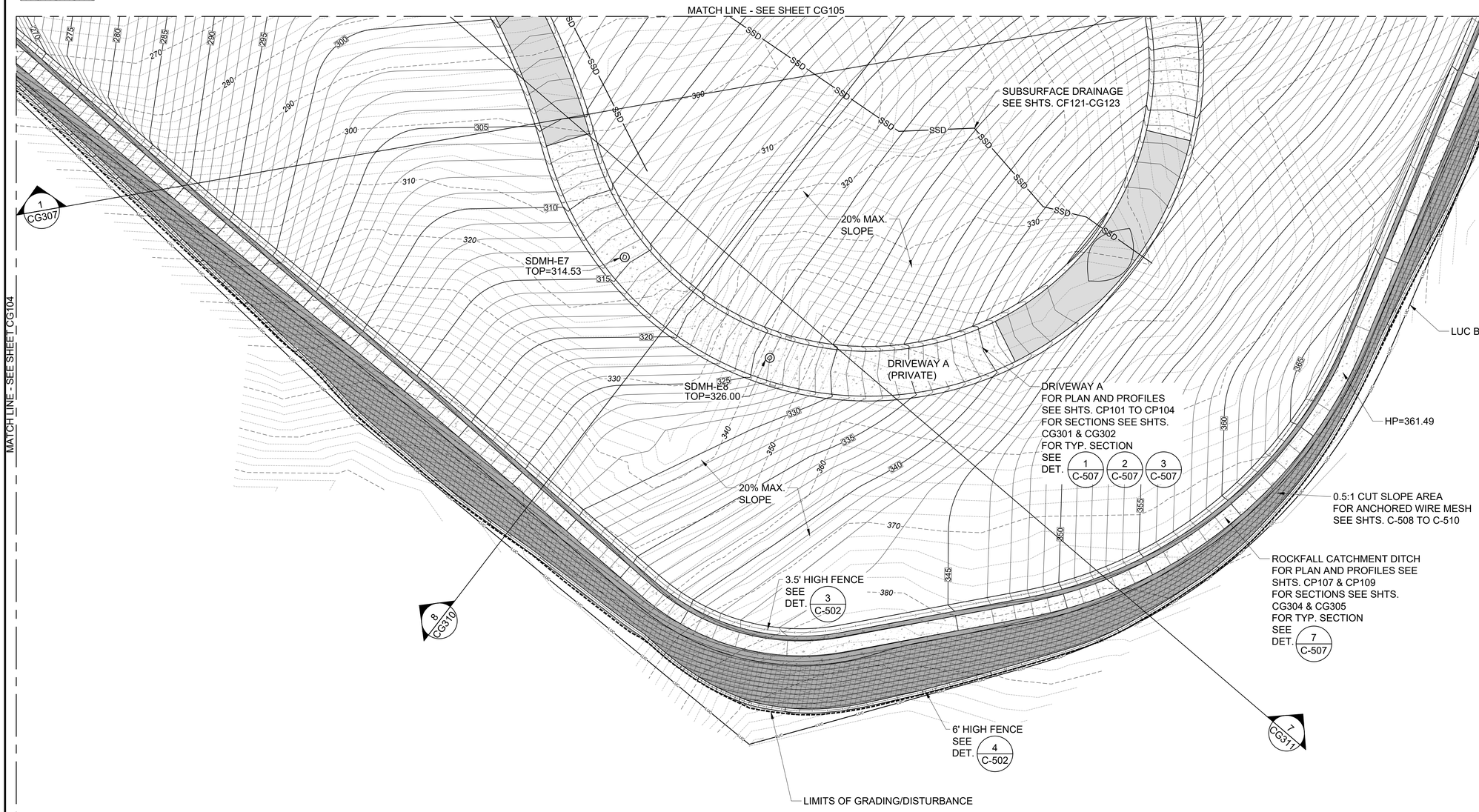
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Design	JH/MKU
Drawn	DH
Job No.	202056
Sheet No.	CG105
	34 of 107 SHEETS

User: DRW_ALEX 4/30/2025 1:47 PM
Data: G:\2020\202056\Civil\Plan Exhibits\GRADING\G1.0_SHEETS\G0105.DWG

LEGEND

- 325 EXISTING CONTOUR W/ ELEV
- 200 FINISHED CONTOUR W/ ELEV.
- LIMITS OF GRADING/DISTURBANCE
- LUC BOUNDARY
- FENCE
- SSD SUBSURFACE DRAIN SEE DET. 1/CG121
- 0.5:1 CUT SLOPE AREA

NOTE:
SEE DETAIL 8/C-510 FOR KEYING AND BENCHING OF EXISTING GRADE FOR FILL SLOPES ON AREAS WITH EXISTING GRADE GREATER THAN 5:1 AND/OR AREAS WITH FILL SLOPES GREATER THAN 20'.



PLAN NORTH

GRADING PLAN 6

SCALE: 1" = 30'-0"

1"=30'-0" 0 10 20 30 60 90

APPROVAL:

CHIEF, CIVIL ENGINEERING BRANCH, D.P.P. DATE

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James Hirota Signature

APRIL 30, 2026

Expiration Date of the License

JAMES S. HIROTA U.S.A. HAWAII LICENSED PROFESSIONAL ENGINEER No. 9776-C

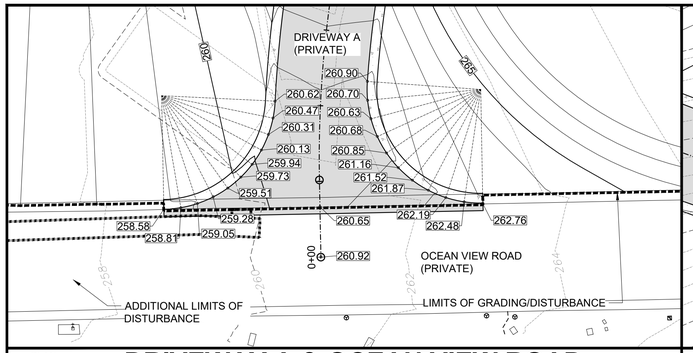
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GRADING PLAN 6

Date	5/1/2025
Design	JH/MKU
Drawn	DH
Job No.	202056
Sheet No.	CG106
	35 of 107 SHEETS

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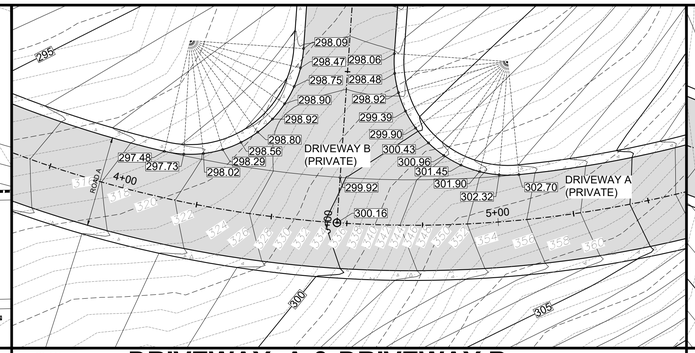


PLAN NORTH

1 DRIVEWAY A & OCEAN VIEW ROAD INTERSECTION GRADING

SCALE: 1"=20'-0"

1"=20'-0" 0 10 20 40 60

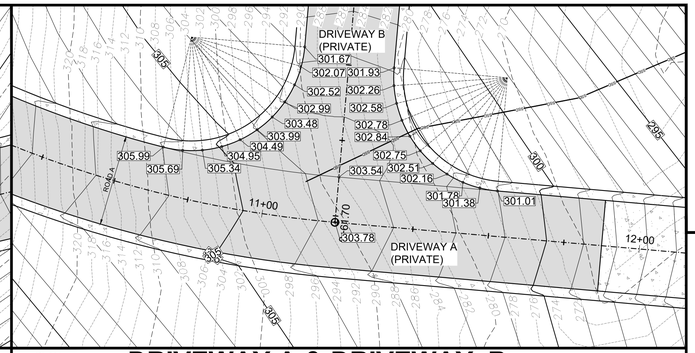


PLAN NORTH

2 DRIVEWAY A & DRIVEWAY B INTERSECTION GRADING

SCALE: 1"=20'-0"

1"=20'-0" 0 10 20 40 60

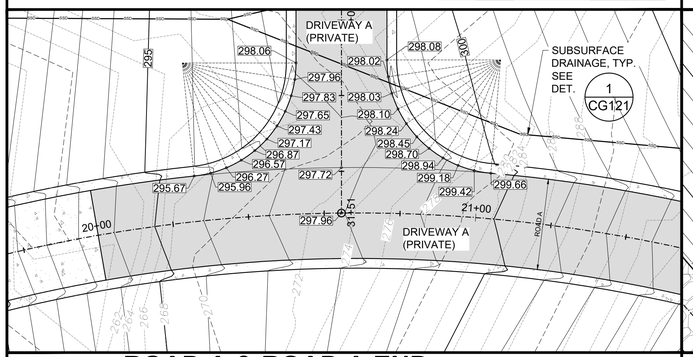


PLAN NORTH

3 DRIVEWAY A & DRIVEWAY B INTERSECTION GRADING

SCALE: 1"=20'-0"

1"=20'-0" 0 10 20 40 60

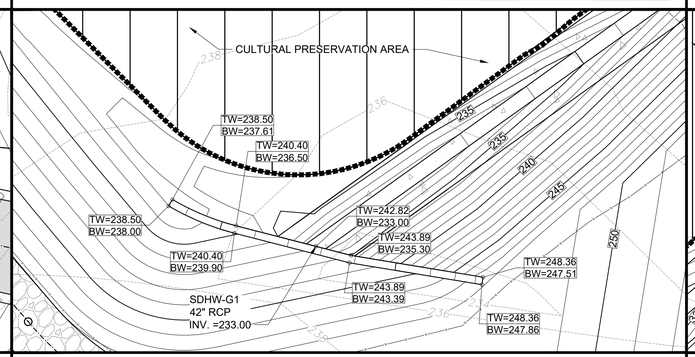


PLAN NORTH

4 ROAD A & ROAD A END INTERSECTION GRADING

SCALE: 1"=20'-0"

1"=20'-0" 0 10 20 40 60

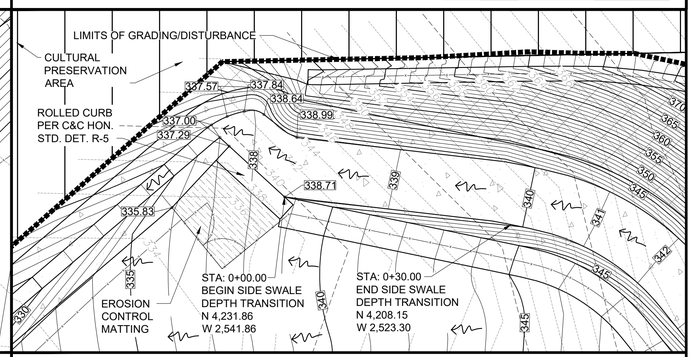


PLAN NORTH

5 PRESERVATION SWALE HEADWALL

SCALE: 1"=10'-0"

1"=10'-0" 0 5 10 20 30

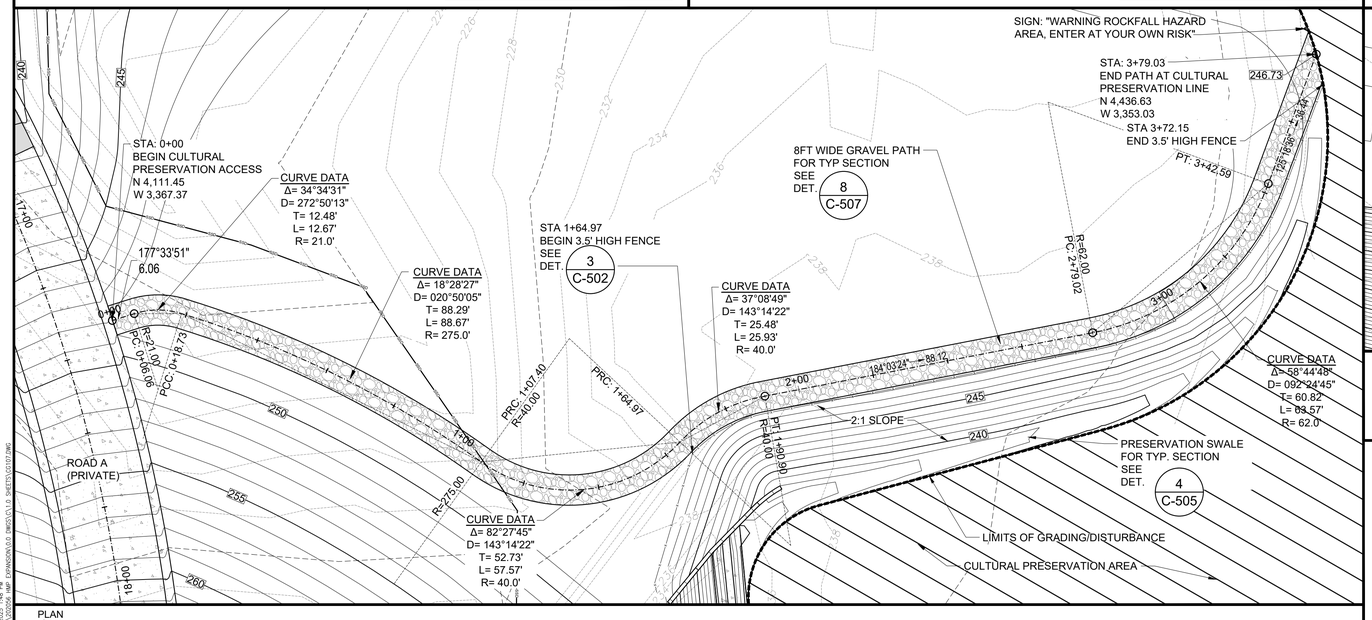


PLAN NORTH

6 ROCKWALL CATCHMENT DITCH EAST

SCALE: 1"=10'-0"

1"=10'-0" 0 5 10 20 30

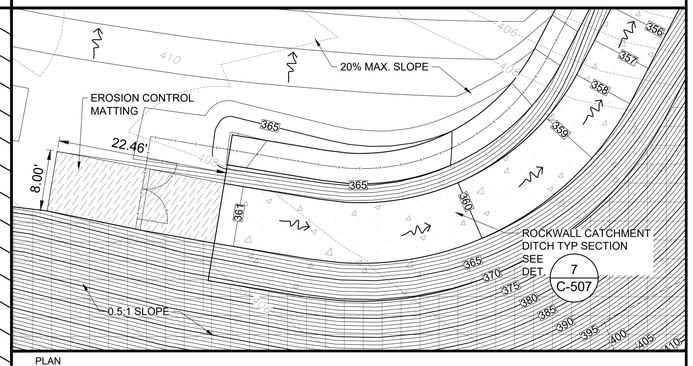


PLAN NORTH

7 CULTURAL PRESERVATION ACCESS

SCALE: 1"=20'-0"

1"=20'-0" 0 10 20 40 60



PLAN NORTH

8 ROCKWALL CATCHMENT DITCH WEST

SCALE: 1"=10'-0"

1"=10'-0" 0 5 10 20 30

LEGEND

- EXISTING CONTOUR W/ ELEV
- FINISHED CONTOUR W/ ELEV.
- LIMITS OF GRADING/DISTURBANCE
- ADDITIONAL LIMITS OF DISTURBANCE
- SETBACK LINE
- SUBSURFACE DRAIN SEE DET. 1/CG121
- CULTURAL PRESERVATION AREA

NOTE:
SEE DETAIL 8/C-510 FOR KEYING AND BENCHING OF EXISTING GRADE FOR FILL SLOPES ON AREAS WITH EXISTING GRADE GREATER THAN 5:1 AND/OR AREAS WITH FILL SLOPES GREATER THAN 20'.

APPROVAL:

CHIEF, CIVIL ENGINEERING BRANCH, D.P.P. DATE

2023/CP-133

Revisions

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Jamie Hirota Signature

APRIL 30, 2026

Expiration Date of the License

JAMIE S. HIROTA LICENSED PROFESSIONAL ENGINEER No. 9776-C HAWAII U.S.A.

OWNER / DEVELOPER
HAWAIIAN MEMORIAL LIFE PLAN
1330 MAUNAKEA ST.
HONOLULU, HI 96817

HAWAIIAN MEMORIAL PARK EXPANSION
45-425 Kamehameha Highway, Kaneohe, HI
TMK 4-5-033:001

DETAILED GRADING

Date	5/1/2025
Design	JH/MKU
Drawn	DH
Job No.	202056
Sheet No.	CG107
	36 of 107 SHEETS

User: DRUM_ALEX 4/30/2025 1:48 PM
Date: 4/30/2025 1:48 PM AUTOCAD/DWG 2018/DWG/CU1.0_SHEETS/CG107.DWG

LEGEND

- EXISTING CONTOUR W/ ELEV
- FINISHED CONTOUR W/ ELEV.
- SETBACK LINE
- DAMSELFLY BUFFER LINE
- LIMITS OF GRADING/DISTURBANCE
- ADDITIONAL LIMITS OF DISTURBANCE
- SUBSURFACE DRAINAGE LINE
- STORM DRAIN LINE
- CULTURAL PRESERVATION AREA
- EXISTING SWALES

NOTE:

FOR SUBSURFACE DRAINAGE PLAN, SEE SHEET CG121

EXIST PRIVATE DIVERSION DITCH, TYP.

EXIST DRAIN INLET

LIPALU OUTFALL DETENTION AND STILLING BASIN

PRESERVATION ACCESS

PRESERVATION SWALE

EXISTING LIPALU ST. DRAIN INLET

PROPERTY LINE

DAMSELFLY BUFFER

LIMITS OF GRADING/DISTURBANCE

ADDITIONAL LIMITS OF DISTURBANCE

MAKAI WALL SWALE

HMP MAKAI WALL 2 OUTFALL WITH STILLING BASIN

HMP MAKAI WALL 1 OUTFALL WITH LEVELING POOL

STORM DRAIN A

STORM DRAIN B

STORM DRAIN C

STORM DRAIN D

STORM DRAIN E

STORM DRAIN F

STORM DRAIN G

STORM DRAIN H

DRIVEWAY A

DRIVEWAY B

ROCKFALL CATCHMENT DITCH

GRASS SWALE SEE DET. 1 C-505

KAWA STREAM OUTFALL

OCEAN VIEW ROAD (PRIVATE)

OHAHA STREET (CITY)

OHAHA PLACE (CITY)

LIPALU STREET (CITY)

TMK: 4-5-092:002, 003, 001, 004, 005, 006, 007, 008, 009, 010, 011, 012, 013, 014, 015, 016, 017, 018, 019, 020

TMK: 4-5-093:016, 018, 019, 017, 020, 021, 022, 023, 024, 025, 026, 027, 003, 004, 005, 006, 001, 002

TMK:4-5-033: 001

TMK:4-5-033: 002

TMK:4-2-015: 001

PROPERTY LINE, TYP

PROPERTY LINE

HYDRAULIC DATA LEGEND:

60" HDPE/RCP	PIPE DIAMETER & TYPE
A	DRAINAGE AREA ACRES
Q_{10}	SURFACE RUNOFF, cfs, FOR TM = 10 YRS
Q_{50}	SURFACE RUNOFF, cfs, FOR TM = 50 YRS
V	FULL FLOW VELOCITY, FPS
D_N	NORMAL DEPTH OF FLOW, FT

HYDROLOGIC DATA*:

	TM=10 YEARS	TM=50 YEARS
RUNOFF COEFFICENT	C=0.30 (AVERAGE)	C=0.30 (AVERAGE)
1-HOUR RAINFALL INTENSITY	I=2.96 IN/HR	I=4.11 IN/HR
TIME IN CONCENTRATION	TC=13 MINUTES	TC=13 MINUTES
CORRECTION FACTOR	CF=2.08	CF=2.08
RAINFALL INTENSITY	I_{10}=6.16 IN/HR	I_{50}=8.55 IN/HR
UNIT DISCHARGE	Q_{10}/A=1.85 CFS/AC	Q_{50}/A=2.56 CFS/AC

* HYDROLOGIC DATA FOR NEW WORK ONLY.

APPROVAL:

CHIEF, CIVIL ENGINEERING BRANCH, D.P.P. (FOR GRADING ONLY) — DATE

PLAN NORTH

DRAINAGE OVERALL PLAN

SCALE: 1" = 100'-0"

1"=100'-0" 0 50 100 200 300

User: DRUM, ALEX 4/30/2025 1:48 PM
Dwg: J:\JOBS\202056\CIVIL\PLAN SET\GRADING\0.0 DWGS\CV1.0_SHEETS\CG108.DWG

Revisions

2023/CP-133

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Signature

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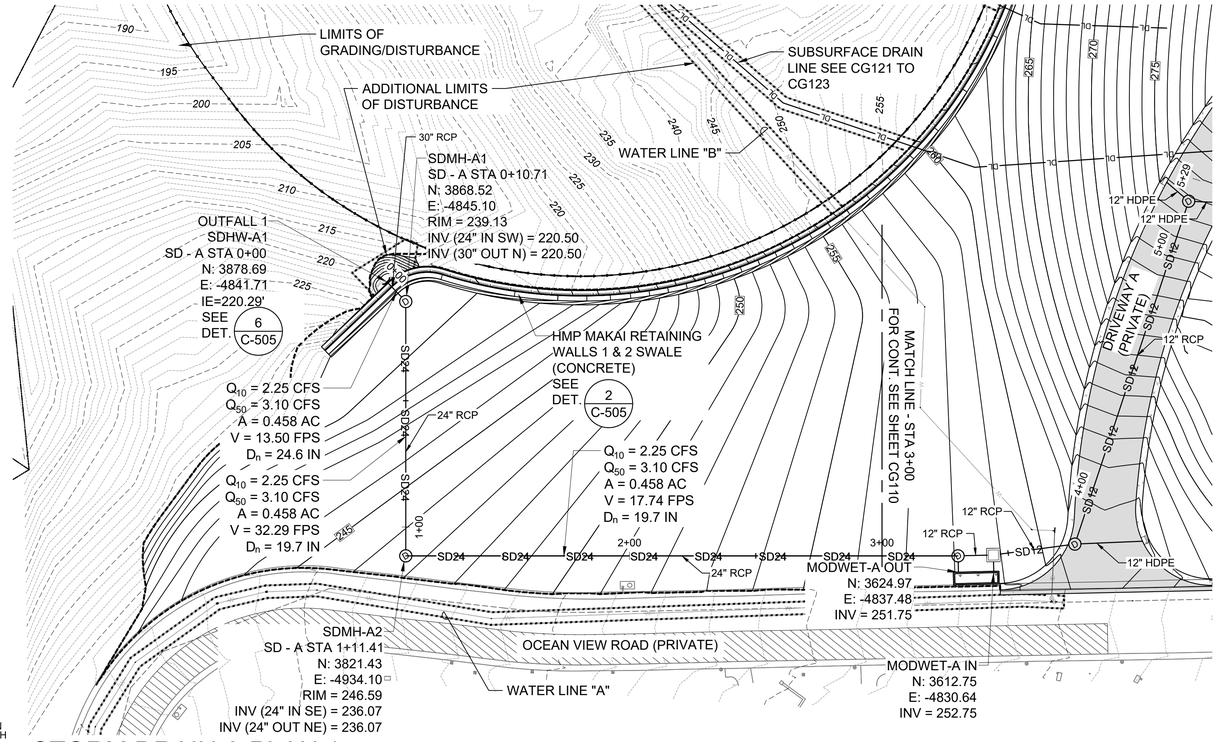
JAMES S. HIROTA — LICENSED PROFESSIONAL ENGINEER — No. 9776-C — U.S.A. HAWAII

OWNER / DEVELOPER
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TMK 4-5-033:001

DRAINAGE OVERALL PLAN

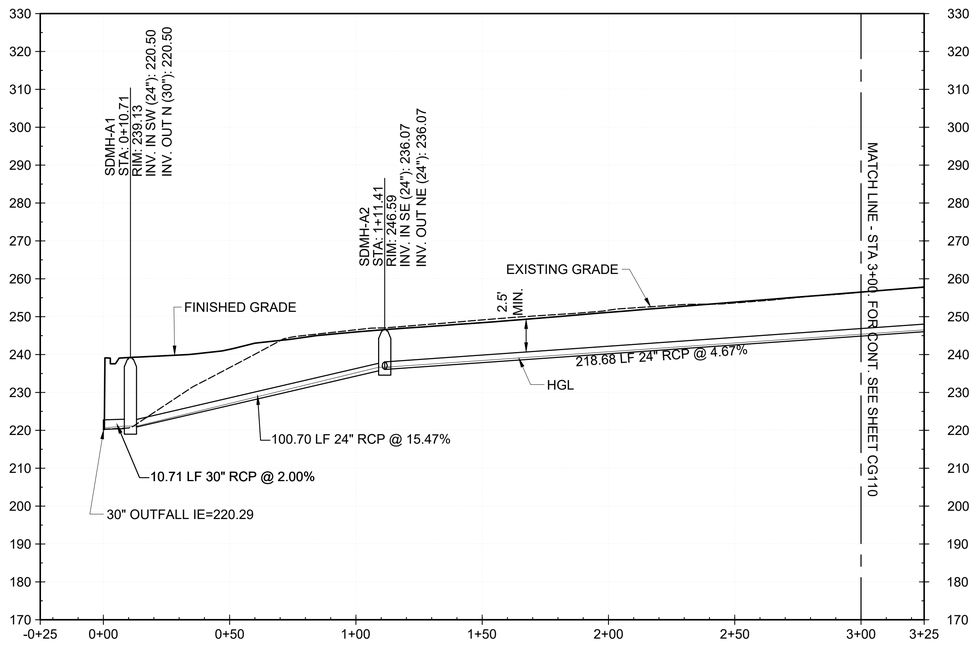
Date	5/1/2025
Design	JH/MKU
Drawn	LYY
Job No.	202056
Sheet No.	CG108
	37 of 107 SHEETS



PLAN NORTH

STORM DRAIN A PLAN 1

SCALE: 1" = 30'-0"



STORM DRAIN A PROFILE 1

SCALE: 1" = 30'-0"H, 1" = 20'-0"V

LEGEND

- 325 EXISTING CONTOUR W/ ELEV
- 200 FINISHED CONTOUR W/ ELEV.
- SETBACK LINE
- DAMSELFLY BOUNDARY LIMITS
- LIMITS OF GRADING/DISTURBANCE
- ADDITIONAL LIMITS OF DISTURBANCE
- FENCE
- SDXX STORM DRAIN SIZE XX INCHES
- DL SUBSURFACE DRAIN
- STORM DRAIN MANHOLE
- W PROPOSED WATER LINE
- (E) WATER LINE (TO BE REMOVED)
- MODULAR WETLAND (VEGETATED BIOFILTER)
- DIVERSION STRUCTURE
- TYPE 2 CATCH BASIN
- ROLL CURB INLET

NOTE:

1. ROLL CURB INLET SHALL BE ADS NYLOPLAST 2-FT BY 3-FT ROLL CURB INLET OR APPROVED EQUAL. SEE DET. 4, SHT. C-511.
2. DIVERSION STRUCTURES (JUNCTION BOXES) SHALL BE JENSEN PRECAST "JUNCTION DIVERSION VAULTS" MODELS JDV-4848, JDV-7272, AND JDV-9696. SEE DETAILS 1 & 2 SHEET C-512, AND DETAIL 1, SHT. C-513.
3. 24-IN BEEHIVE GRATE SHALL BE ADS NYLOPLAST 24-IN DOME GRATE OR APPROVED EQUAL. C&C HON. DET. G-14F, OR APPROVED EQUAL. SEE DETAIL 2, SHT C-513.
4. 48-IN, 60-IN, 72-IN, AND 96-IN PRECAST CONCRETE MANHOLES BY JENSEN PRECAST OR APPROVED EQUAL. SEE DET. 1, 2, AND 3, SHT. C-511. MANHOLES SHALL BE FITTED WITH 24-IN CAST IRON FRAMES AND LIDS CAST WITH "STORM" LETTERING. 60-IN, 72-IN, AND 96-IN MANHOLES HAVE ECCENTRICALLY PLACED LIDS. ALL MANHOLES SHALL HAVE LADDER RUNGS THE FULL HEIGHT OF THE STRUCTURE. ALL MANHOLES SHALL HAVE 3-FT SUMPS BELOW LOWEST PIPE INVERT AND SHALL NOT BE CHANNELIZED. MANHOLES ARE 48" DIAMETER UNLESS OTHERWISE NOTED.
5. TYPE "B" CATCH BASIN SHALL BE PER CITY AND COUNTY OF HONOLULU DETAIL D-5 OR APPROVED EQUAL. SEE DET. 4, SHT. C-506.
6. HDPE PIPE SHALL BE CORRUGATED HIGH DENSITY POLYETHYLENE PIPE NPS 12 TO 18, IN CONFORMANCE WITH AASHTO M 294, TYPE S, WITH SMOOTH WATERWAY FOR COUPLING JOINTS.
7. REINFORCED CONCRETE PIPE (RCP) SHALL BE IN CONFORMANCE WITH ASTM C76, CLASS III WITH BELL-AND-SPIGOT ENDS WITH GASKETED JOINTS WITH ASTM C443 RUBBER GASKETS. WHERE BURY DEPTH EXCEEDS 22 FEET, RCP SHALL BE CLASS IV. CLASS IV PIPE SECTIONS ARE LABELED ON PROFILES. ALL STORM PIPING SHALL BE INSTALLED WITH CLASS 1 BEDDING. STORM DRAIN PIPE TRENCHING SHALL COMPLY WITH CITY AND COUNTY OF HONOLULU DETAIL D-34. SEE DET. 1, SHT. C-514. WHERE PIPE SLOPES EXCEED 20%, PROVIDE PIPE ANCHORS. SEE DET. 2, SHT. C-503.
8. MODULAR WETLANDS (VEGETATED BIOFILTERS SHALL BE CONTECH MODULAR WETLANDS. SEE DET. 1, 2, AND 3, SHT. C-506.

SCALE: HORIZ. 1"=30'-0" 0 10 20 30 60 90

SCALE: VERT. 1"=20'-0" 0 10 20 40 60

APPROVAL:

CHIEF, CIVIL ENGINEERING BRANCH, D.P.P. (FOR GRADING ONLY) DATE

Revisions

2023/CP-133

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Signature

APRIL 30, 2026

Expiration Date of the License

JAMES S. HIMOTA U.S.A. HAWAII LICENSED PROFESSIONAL ENGINEER No. 9776-C

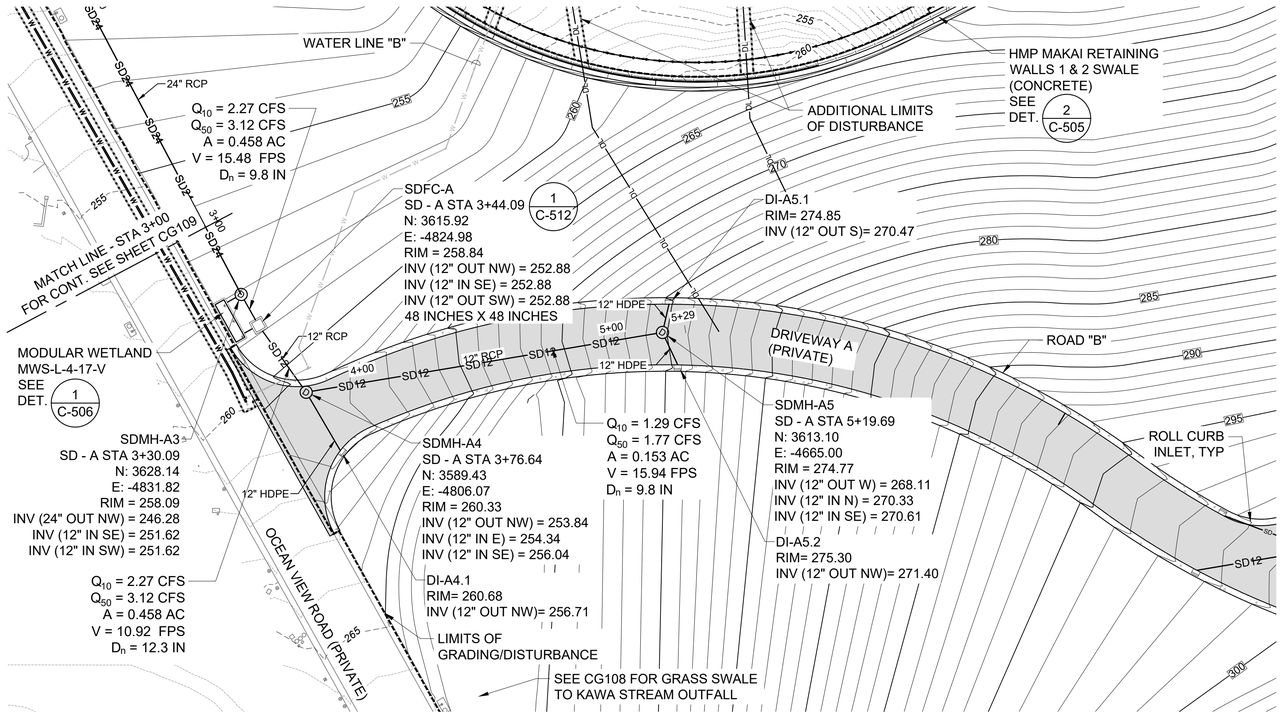
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STORM DRAIN A - PLAN AND PROFILE 1

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Design	JH/MKU
Drawn	LYY
Job No.	202056
Sheet No.	CG109
	38 of 107 SHEETS

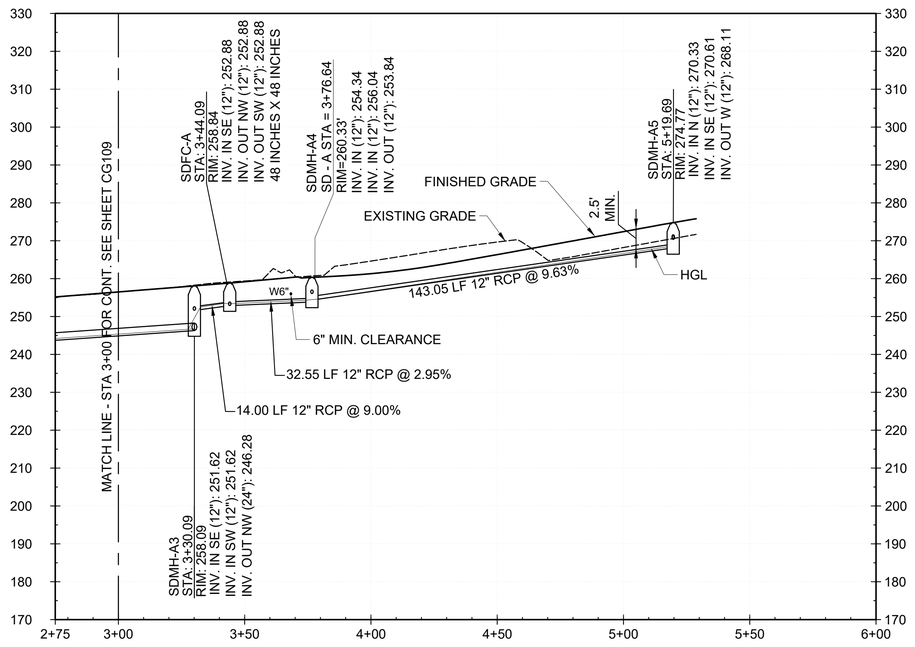
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PLAN NORTH

STORM DRAIN A PLAN 2

SCALE: 1" = 30'-0"



STORM DRAIN A PROFILE 2

SCALE: 1" = 30'-0"H, 1" = 20'V

LEGEND

- 325 — EXISTING CONTOUR W/ ELEV
- 200 — FINISHED CONTOUR W/ ELEV.
- SETBACK LINE
- DAMSELFLY BOUNDARY LIMITS
- LIMITS OF GRADING/DISTURBANCE
- ADDITIONAL LIMITS OF DISTURBANCE
- FENCE
- SDXX — STORM DRAIN SIZE XX INCHES
- DL — SUBSURFACE DRAIN
- D — STORM DRAIN MANHOLE
- W — PROPOSED WATER LINE
- (E) WATER LINE (TO BE REMOVED)
- MODULAR WETLAND (VEGETATED BIOFILTER)
- DIVERSION STRUCTURE
- TYPE 2 CATCH BASIN
- ROLL CURB INLET

NOTE:

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8. MODULAR WETLANDS (VEGETATED BIOFILTERS SHALL BE CONTECH MODULAR WETLANDS. SEE DET. 1, 2, AND 3, SHT. C-506.

SCALE: HORIZ. 1"=30'-0" (0, 10, 20, 30, 60, 90)

SCALE: VERT. 1"=20'-0" (0, 10, 20, 40, 60)

APPROVAL:

CHIEF, CIVIL ENGINEERING BRANCH, D.P.P. (FOR GRADING ONLY) DATE

Revisions

2023/CP-133

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Jamie Hirota
Signature
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Expiration Date of the License

JAMES S. HIROTA
LICENSED PROFESSIONAL ENGINEER
No. 9776-C
U.S.A. HAWAII

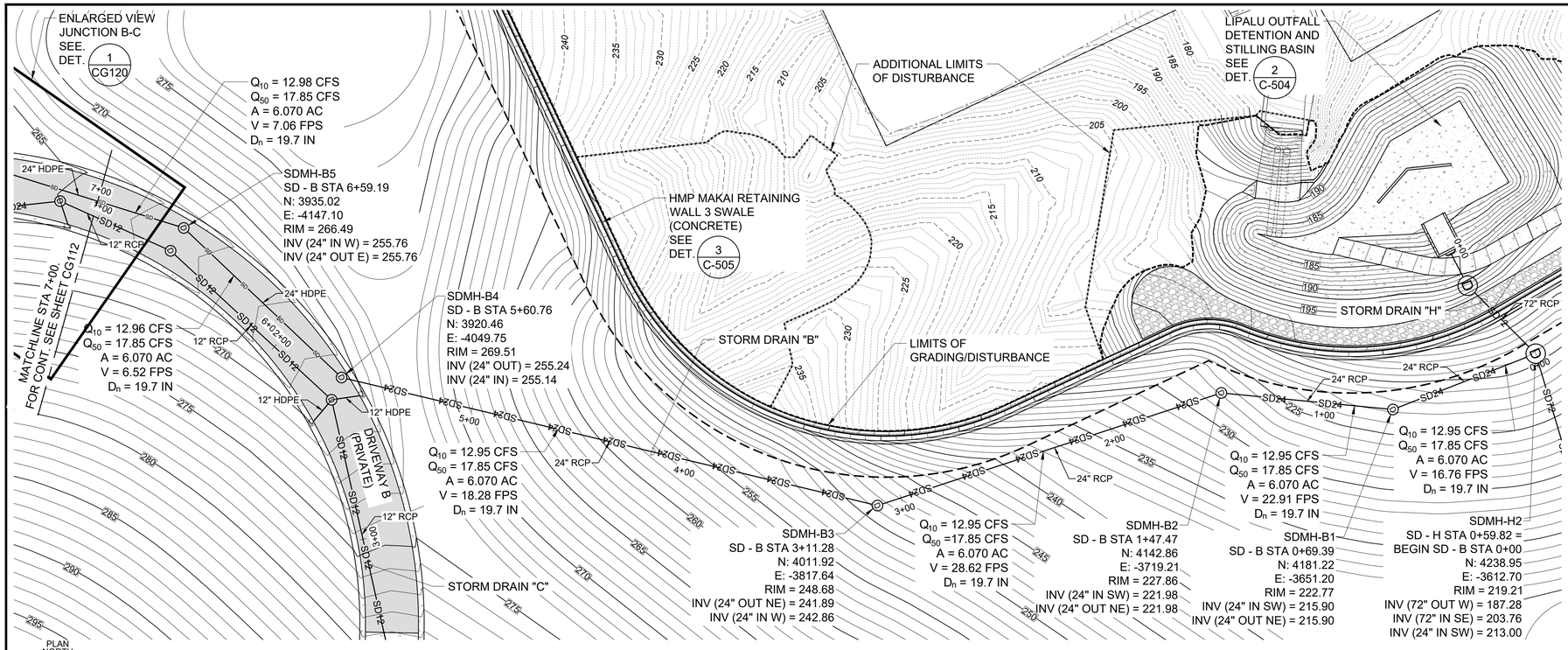
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STORM DRAIN A - PLAN AND PROFILE 2

Date	5/1/2025
Design	JH/MKU
Drawn	LYY
Job No.	202056
Sheet No.	CG110
	39 of 107 SHEETS

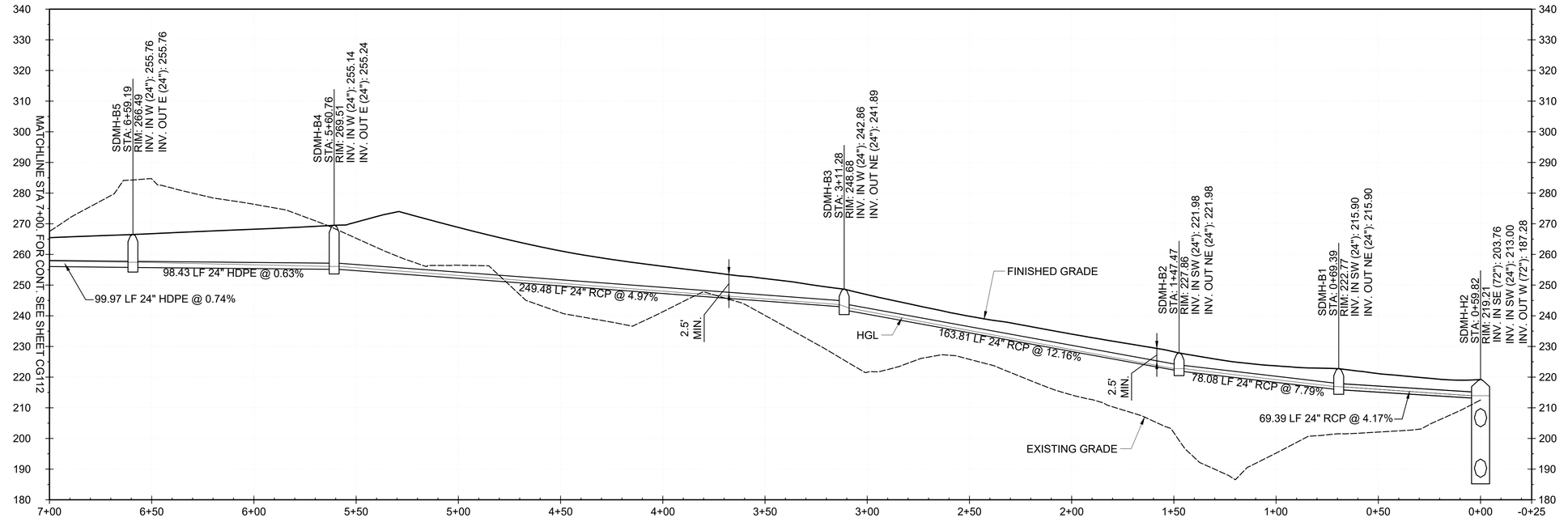
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PLAN NORTH

STORM DRAIN B PLAN 1

SCALE: 1" = 30'-0"



STORM DRAIN B PROFILE 1

SCALE: 1" = 30'-0"H, 1" = 20'V

SCALE: HORIZ. 1"=30'-0" 0 10 20 30 60 90

SCALE: VERT. 1"=20'-0" 0 10 20 40 60

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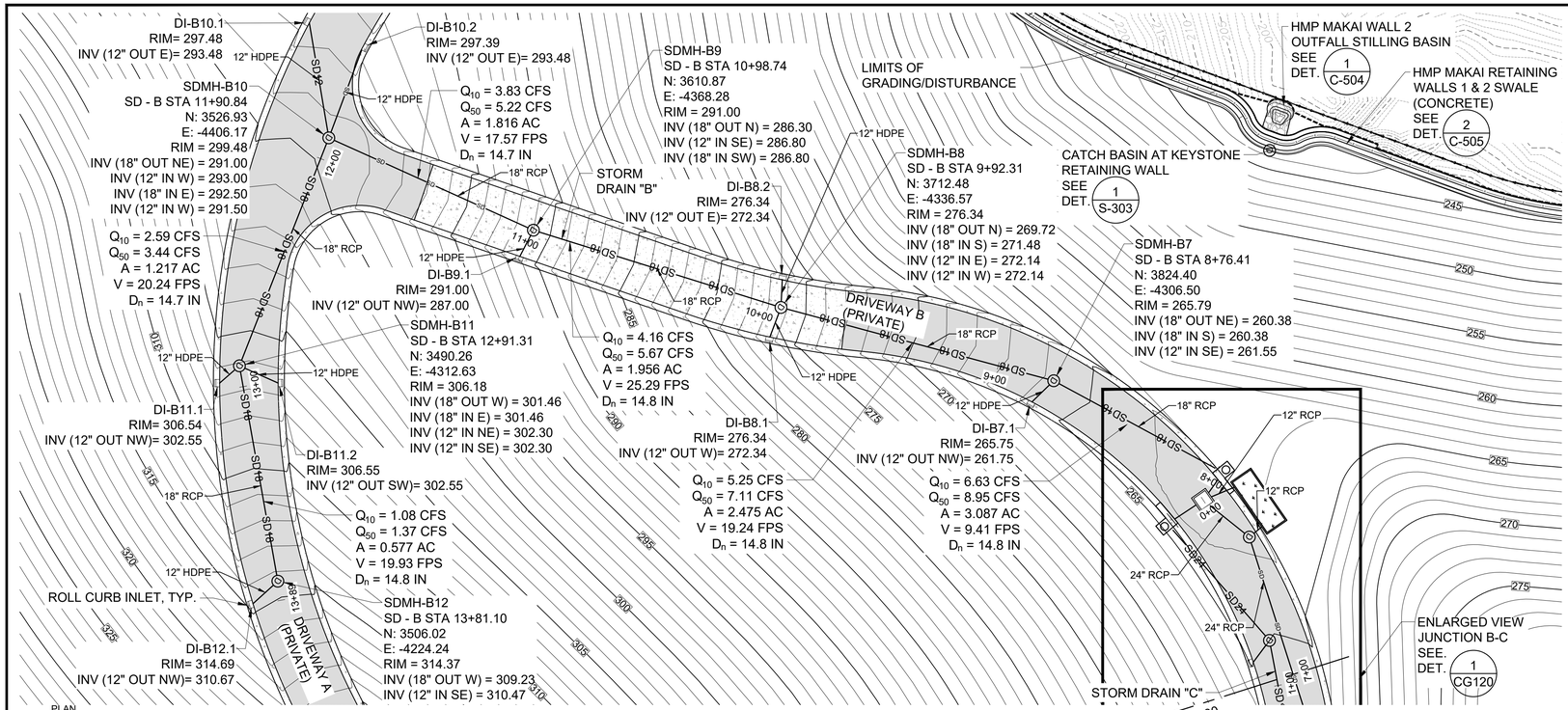
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STORM DRAIN B - PLAN AND PROFILE 1

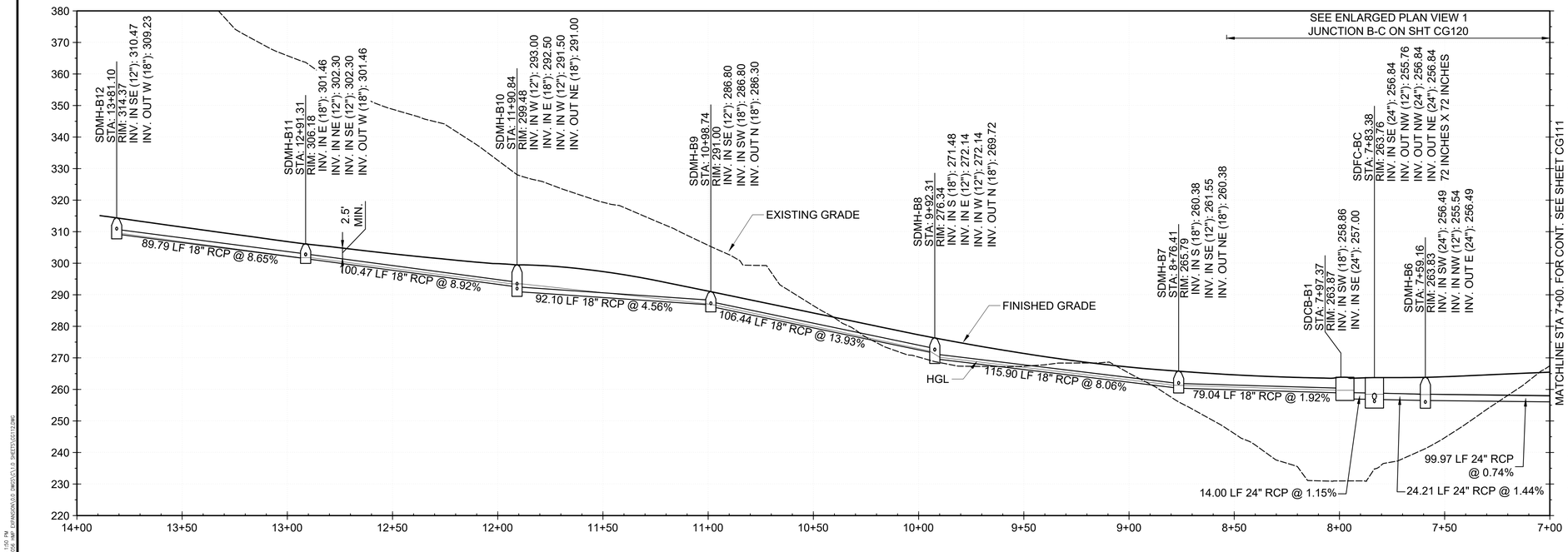
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Drawn	LYY
Job No.	202056
Sheet No.	CG111
	40 of 107 SHEETS

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Drawing: C:\Work\202056\Civil\Plans\Grading\202056_SHEETS\CG111.DWG



STORM DRAIN B PLAN 2

SCALE: 1" = 30'-0"



STORM DRAIN B PROFILE 2

SCALE: 1" = 30'-0"H, 1" = 20'V

SCALE: HORIZ. 1"=30'-0" 0 10 20 30 60 90

SCALE: VERT. 1"=20'-0" 0 10 20 40 60

APPROVAL:

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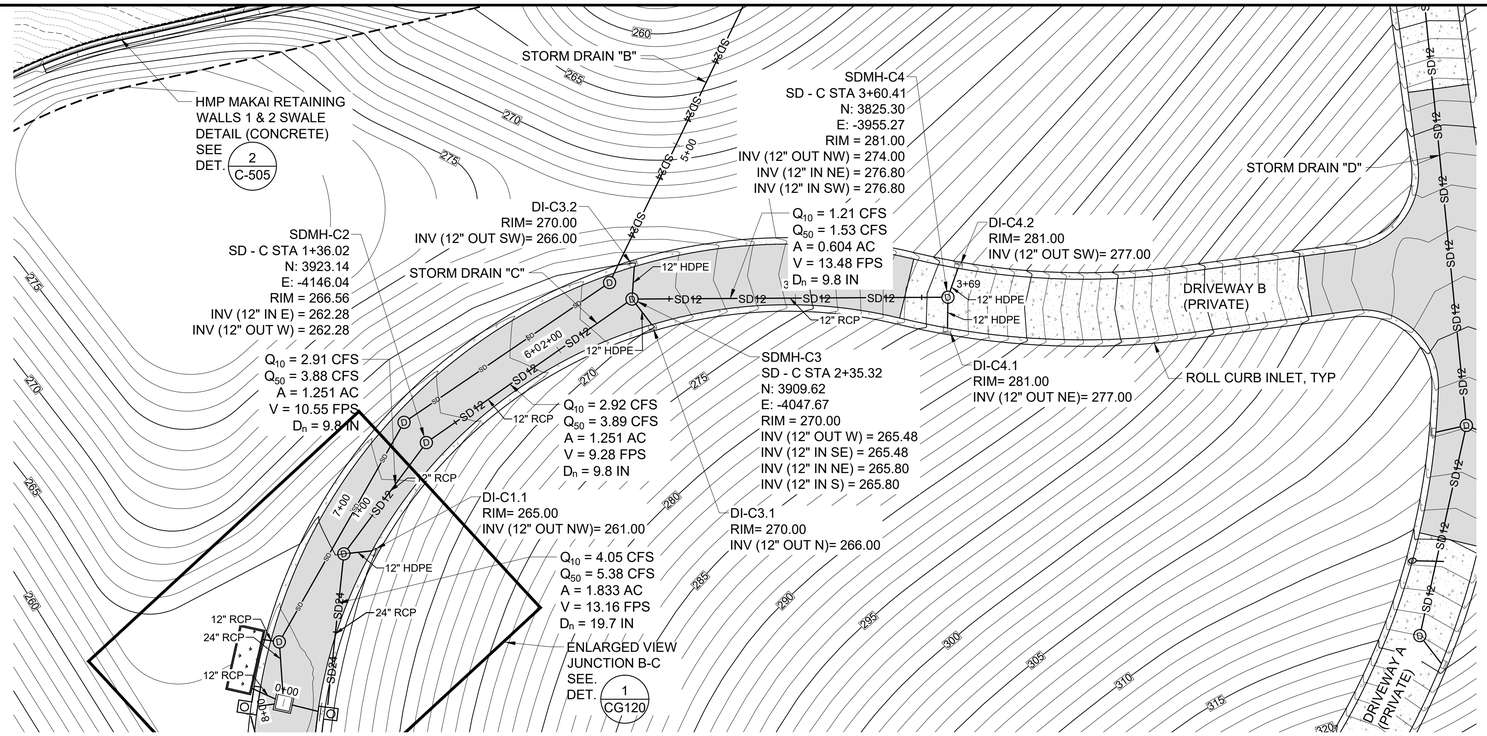
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STORM DRAIN B - PLAN AND PROFILE 2

Date	5/1/2025
Design	JH/MKU
Drawn	LYY
Job No.	202056
Sheet No.	CG112
	41 of 107 SHEETS

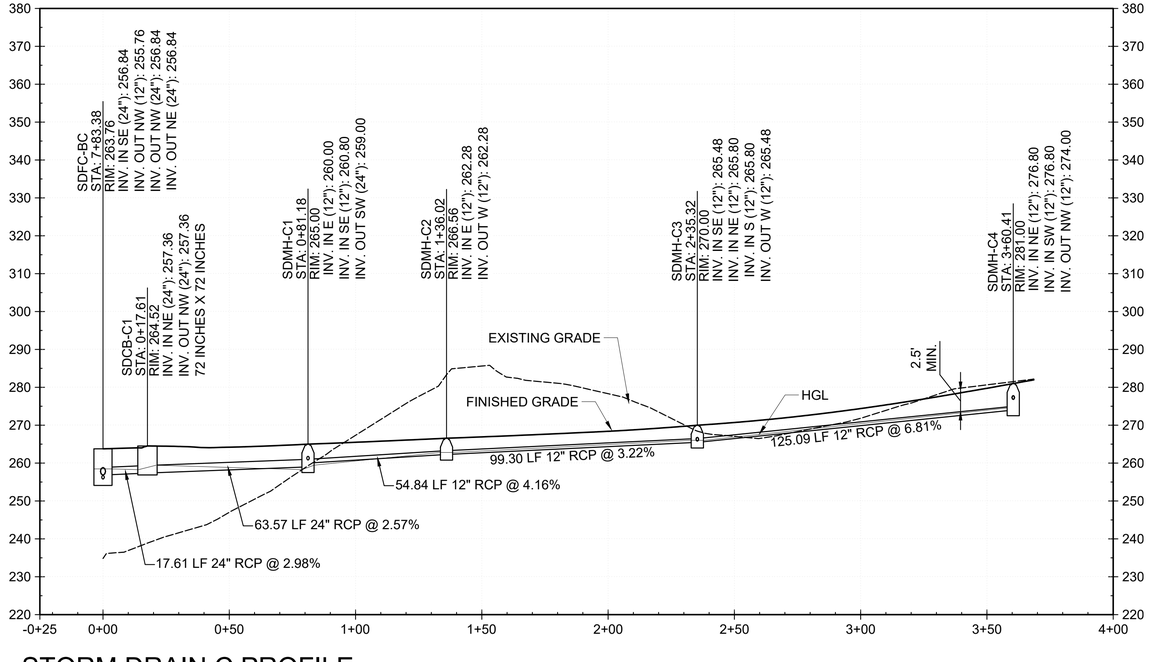
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PLAN NORTH

STORM DRAIN C PLAN

SCALE: 1"=30'-0"



STORM DRAIN C PROFILE

SCALE: 1" = 30'-0"H, 1" = 20'V

LEGEND

- EXISTING CONTOUR W/ ELEV
- FINISHED CONTOUR W/ ELEV.
- SETBACK LINE
- DAMSELFLY BOUNDARY LIMITS
- LIMITS OF GRADING/DISTURBANCE
- ADDITIONAL LIMITS OF DISTURBANCE
- FENCE
- STORM DRAIN SIZE XX INCHES
- SUBSURFACE DRAIN
- STORM DRAIN MANHOLE
- PROPOSED WATER LINE
- (E) WATER LINE (TO BE REMOVED)
- MODULAR WETLAND (VEGETATED BIOFILTER)
- DIVERSION STRUCTURE
- TYPE 2 CATCH BASIN
- ROLL CURB INLET

NOTE:

1. ROLL CURB INLET SHALL BE ADS NYLOPLAST 2-FT BY 3-FT ROLL CURB INLET OR APPROVED EQUAL. SEE DET. 4, SHT. C-511.
2. DIVERSION STRUCTURES (JUNCTION BOXES) SHALL BE JENSEN PRECAST "JUNCTION DIVERSION VAULTS" MODELS JDV-4848, JDV-7272, AND JDV-9696. SEE DETAILS 1 & 2 SHEET C-512, AND DETAIL 1, SHT. C-513.
3. 24-IN BEEHIVE GRATE SHALL BE ADS NYLOPLAST 24-IN DOME GRATE OR APPROVED EQUAL. C&C HON. DET. G-14F, OR APPROVED EQUAL. SEE DETAIL 2, SHT C-513.
4. 48-IN, 60-IN, 72-IN, AND 96-IN PRECAST CONCRETE MANHOLES BY JENSEN PRECAST OR APPROVED EQUAL. SEE DET. 1, 2, AND 3, SHT. C-511. MANHOLES SHALL BE FITTED WITH 24-IN CAST IRON FRAMES AND LIDS CAST WITH "STORM" LETTERING. 60-IN, 72-IN, AND 96-IN MANHOLES HAVE ECCENTRICALLY PLACED LIDS. ALL MANHOLES SHALL HAVE LADDER RUNGS THE FULL HEIGHT OF THE STRUCTURE. ALL MANHOLES SHALL HAVE 3-FT SUMPS BELOW LOWEST PIPE INVERT AND SHALL NOT BE CHANNELIZED. MANHOLES ARE 48" DIAMETER UNLESS OTHERWISE NOTED.
5. TYPE "B" CATCH BASIN SHALL BE PER CITY AND COUNTY OF HONOLULU DETAIL D-5 OR APPROVED EQUAL. SEE DET. 4, SHT. C-506.
6. HDPE PIPE SHALL BE CORRUGATED HIGH DENSITY POLYETHYLENE PIPE NPS 12 TO 18, IN CONFORMANCE WITH AASHTO M 294, TYPE S, WITH SMOOTH WATERWAY FOR COUPLING JOINTS.
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8. MODULAR WETLANDS (VEGETATED BIOFILTERS SHALL BE CONTECH MODULAR WETLANDS. SEE DET. 1, 2, AND 3, SHT. C-506.

SCALE: HORIZ. 1"=30'-0" 0 10 20 30 60 90

SCALE: VERT. 1"=20'-0" 0 10 20 40 60

APPROVAL:

CHIEF, CIVIL ENGINEERING BRANCH, D.P.P. (FOR GRADING ONLY) DATE

Revisions

2023/CP-133

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745 Fort Street, Suite 400 | Honolulu, Hawaii 96813
ph 808.687.8884 | fax 808.687.8883
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Signature

APRIL 30, 2026
Expiration Date of the License

LANCE S. HINOTA
LICENSED PROFESSIONAL ENGINEER
No. 9776-C
U.S.A. HAWAII

OWNER / DEVELOPER
HAWAIIAN MEMORIAL LIFE PLAN
1330 MAUNAKEA ST.
HONOLULU, HI 96817

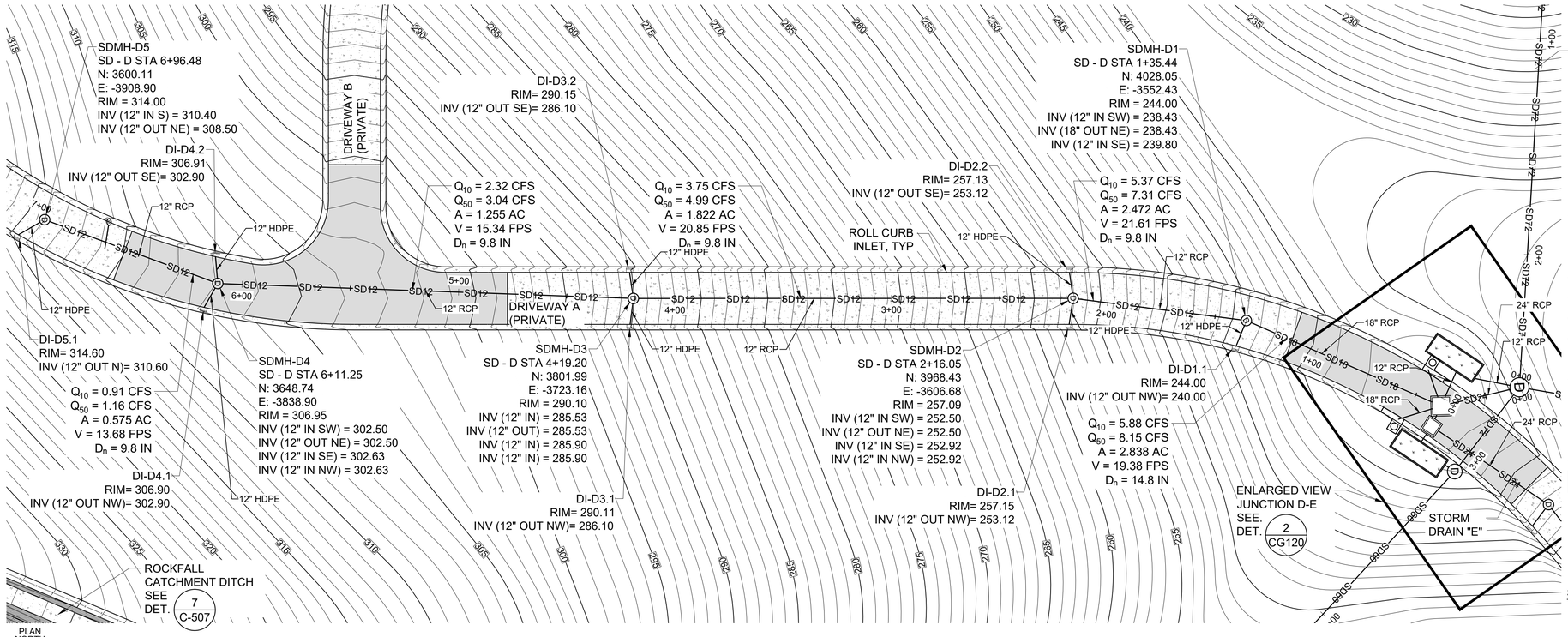
HAWAIIAN MEMORIAL PARK EXPANSION
45-425 Kamehameha Highway, Kaneohe, HI
TMK 4-5-033:001

STORM DRAIN C - PLAN AND PROFILE

Date	5/1/2025
Design	JH/MKU
Drawn	LYY
Job No.	202056

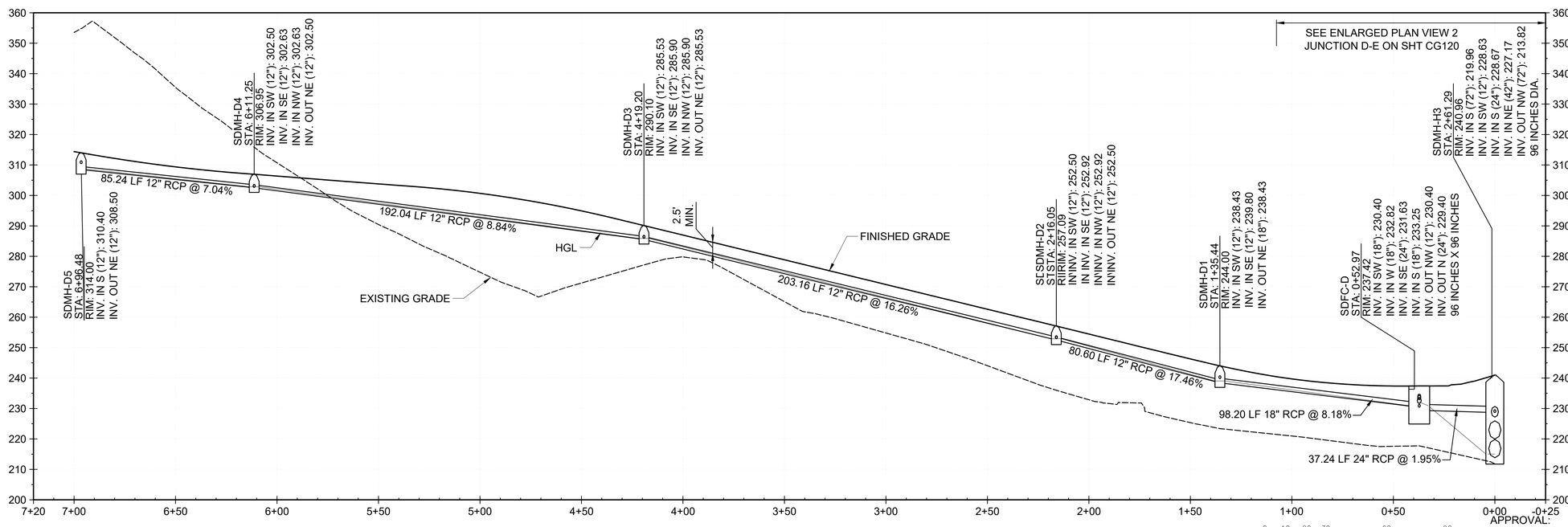
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CG113
42 of 107 SHEETS

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STORM DRAIN D PLAN

SCALE: 1" = 30'-0"



STORM DRAIN D PROFILE

SCALE: 1" = 30'-0"H, 1" = 20'V

SCALE: HORIZ. 1"=30'-0" 0 10 20 30 60 90

SCALE: VERT. 1"=20'-0" 0 10 20 40 60

CHIEF, CIVIL ENGINEERING BRANCH, D.P.P. (FOR GRADING ONLY) DATE

Revisions

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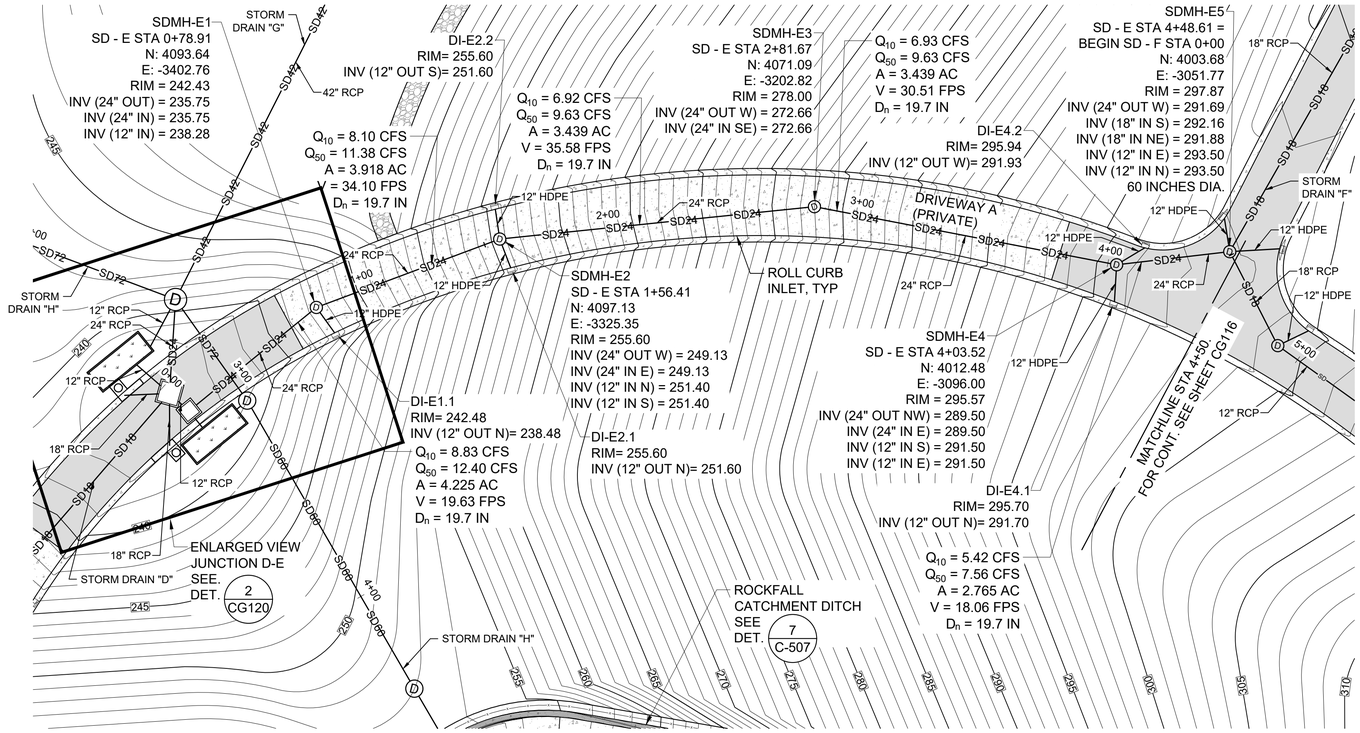
HAWAIIAN MEMORIAL PARK EXPANSION
45-425 Kamehameha Highway, Kaneohe, HI
TMK 4-5-033:001

STORM DRAIN D - PLAN AND PROFILE

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Design	JH/MKU
Drawn	LYY
Job No.	202056

Sheet No.
CG114
43 of 107 SHEETS

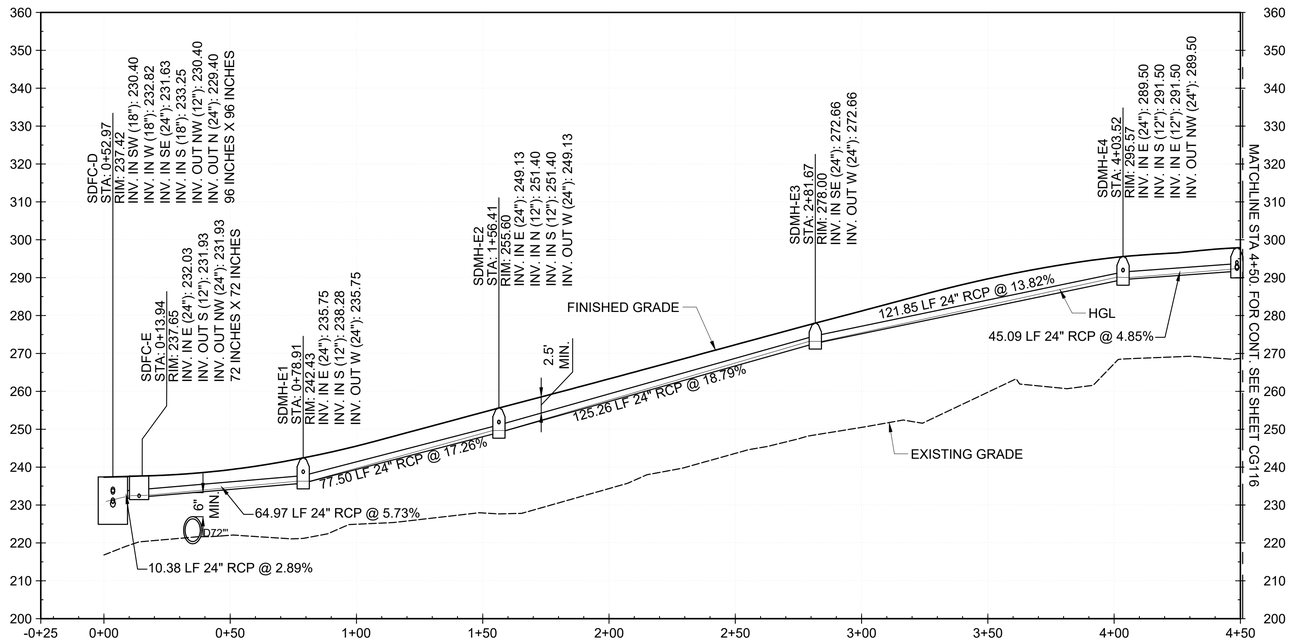
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PLAN NORTH

STORM DRAIN E PLAN 1

SCALE: 1" = 30'-0"



STORM DRAIN E PROFILE 1

SCALE: 1" = 30'-0"H, 1" = 20'V

LEGEND

- 325 — EXISTING CONTOUR W/ ELEV
- 200 — FINISHED CONTOUR W/ ELEV.
- SETBACK LINE
- DAMSELFLY BOUNDARY LIMITS
- LIMITS OF GRADING/DISTURBANCE
- ADDITIONAL LIMITS OF DISTURBANCE
- FENCE
- SDXX — STORM DRAIN SIZE XX INCHES
- SUBSURFACE DRAIN
- D — STORM DRAIN MANHOLE
- W — PROPOSED WATER LINE
- (E) WATER LINE (TO BE REMOVED)
- MODULAR WETLAND (VEGETATED BIOFILTER)
- DIVERSION STRUCTURE
- TYPE 2 CATCH BASIN
- ROLL CURB INLET

NOTE:

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SCALE: HORIZ. 1"=30'-0" 0 10 20 30 60 90

SCALE: VERT. 1"=20'-0" 0 10 20 40 60

APPROVAL:

CHIEF, CIVIL ENGINEERING BRANCH, D.P.P. (FOR GRADING ONLY) DATE

Revisions

2023/CP-133

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1330 MAUNAKEA ST.
HONOLULU, HI 96817

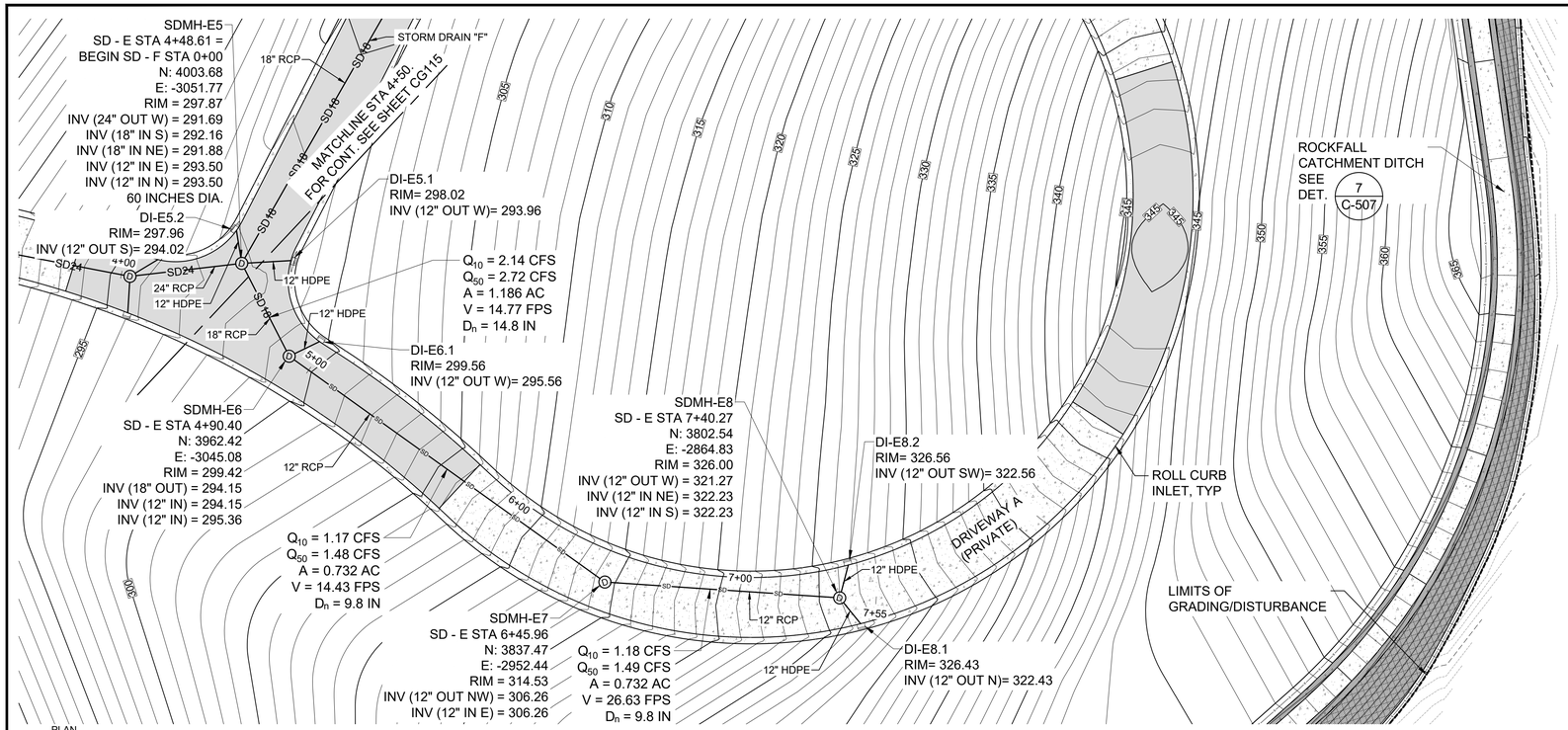
HAWAIIAN MEMORIAL PARK EXPANSION

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TMK 4-5-033:001

STORM DRAIN E - PLAN AND PROFILE 1

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Design	JH/MKU
Drawn	LYY
Job No.	202056
Sheet No.	CG115
	44 of 107 SHEETS

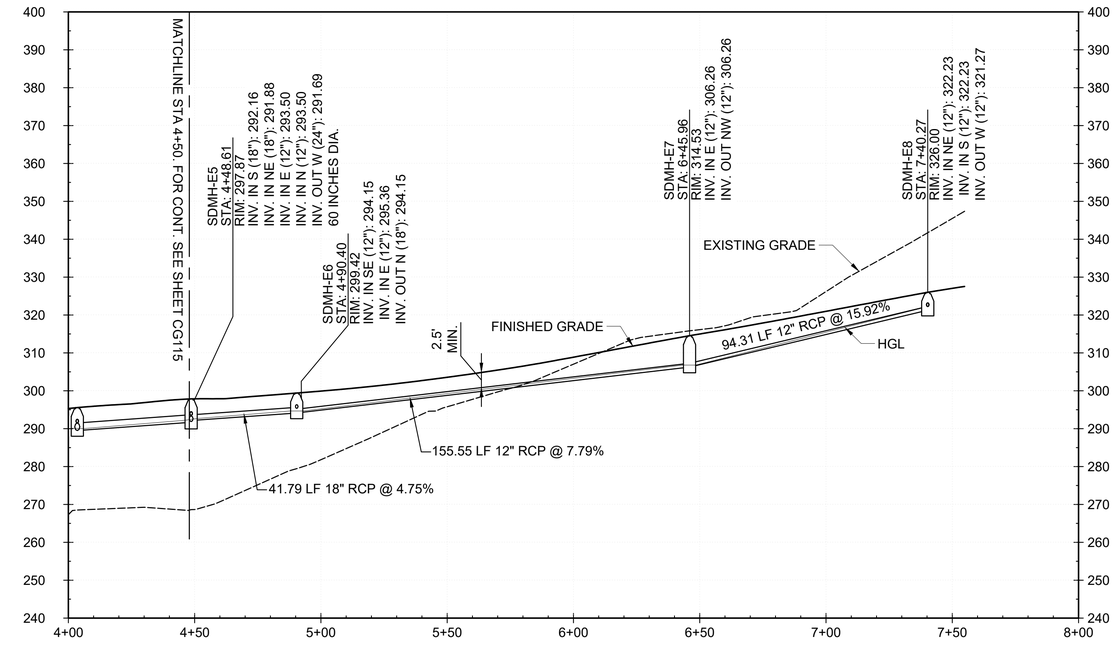
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PLAN NORTH

STORM DRAIN E PLAN 2

SCALE: 1" = 30'-0"



STORM DRAIN E PROFILE 2

SCALE: 1" = 30'-0"H, 1" = 20'V

LEGEND

- 325 EXISTING CONTOUR W/ ELEV
- 200 FINISHED CONTOUR W/ ELEV.
- SETBACK LINE
- DAMSELFLY BOUNDARY LIMITS
- LIMITS OF GRADING/DISTURBANCE
- ADDITIONAL LIMITS OF DISTURBANCE
- FENCE
- SDXX STORM DRAIN SIZE XX INCHES
- SUBSURFACE DRAIN
- D STORM DRAIN MANHOLE
- W PROPOSED WATER LINE
- (E) WATER LINE (TO BE REMOVED)
- MODULAR WETLAND (VEGETATED BIOFILTER)
- DIVERSION STRUCTURE
- TYPE 2 CATCH BASIN
- ROLL CURB INLET

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SCALE: HORIZ. 1"=30'-0" 0 10 20 30 60 90

SCALE: VERT. 1"=20'-0" 0 10 20 40 60

APPROVAL:

CHIEF, CIVIL ENGINEERING BRANCH, D.P.P. (FOR GRADING ONLY) DATE

Revisions

2023/CP-133

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Expiration Date of the License

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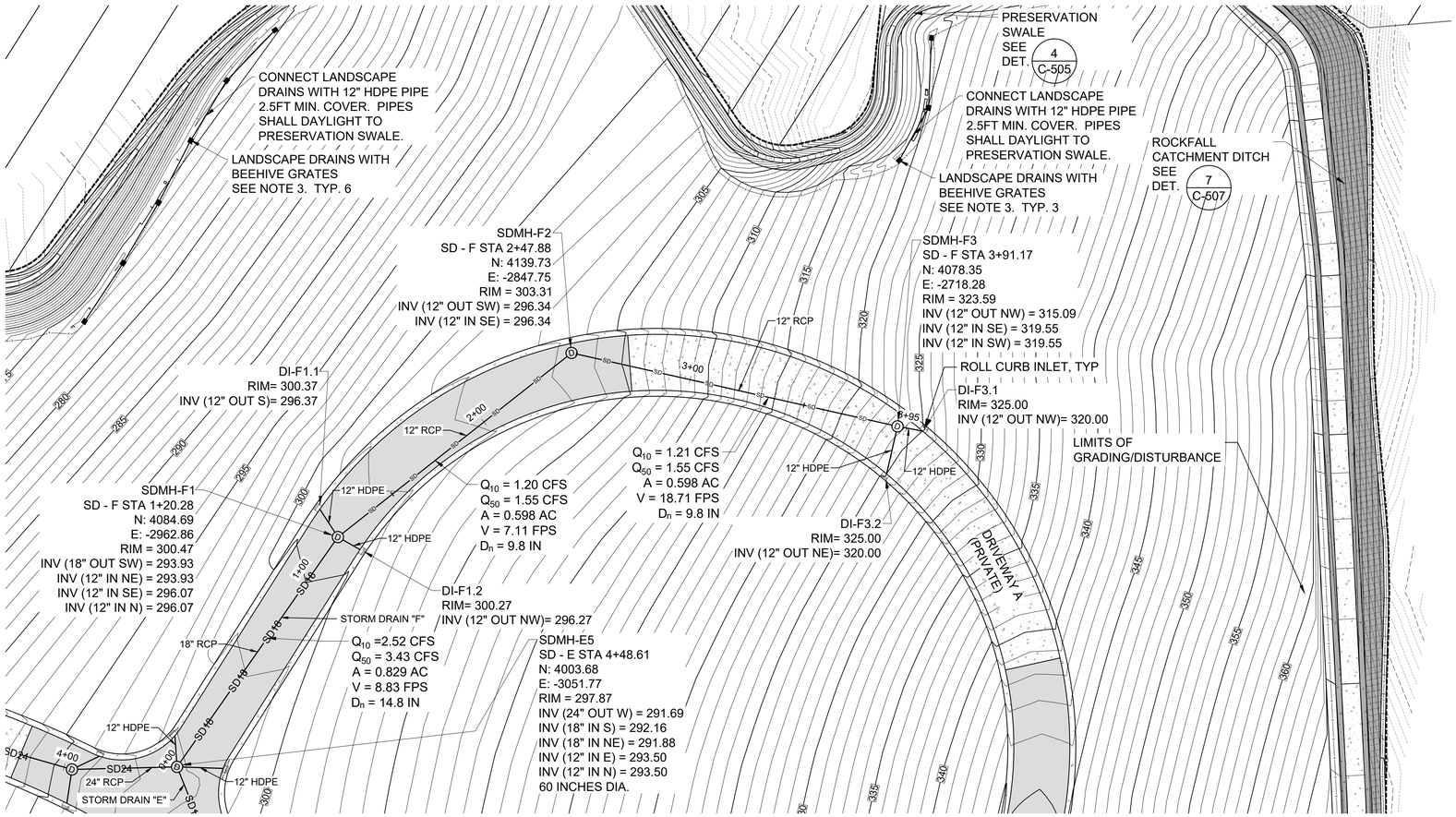
HAWAIIAN MEMORIAL PARK EXPANSION
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TMK 4-5-033:001

STORM DRAIN E - PLAN AND PROFILE 2

Date	5/1/2025
Design	JH/MKU
Drawn	LYY
Job No.	202056

Sheet No.
CG116
45 of 107 SHEETS

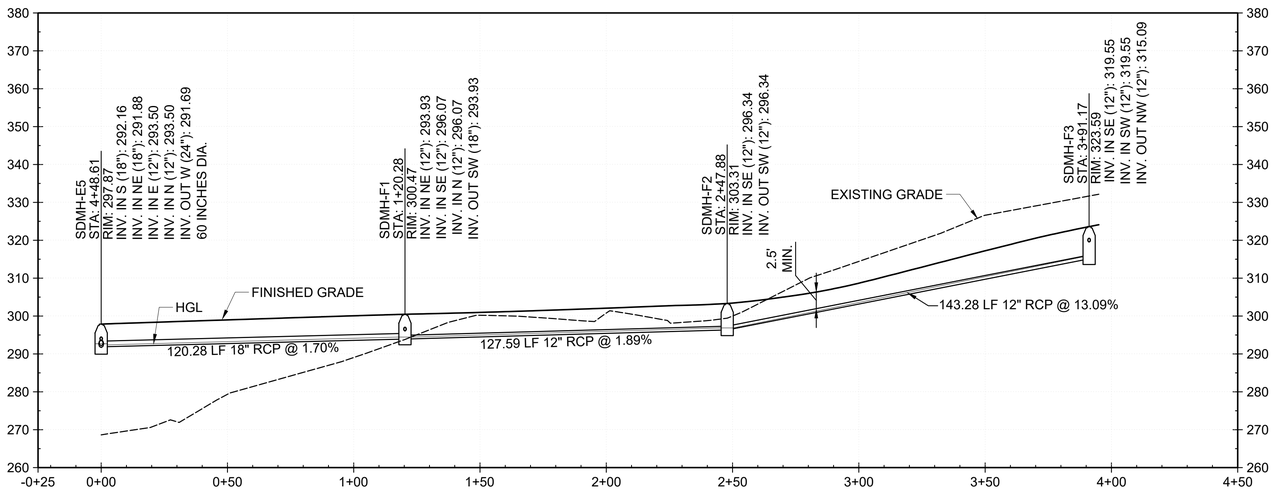
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PLAN NORTH

STORM DRAIN F PLAN

SCALE: 1" = 30'-0"



STORM DRAIN F PROFILE

SCALE: 1" = 30'-0"H, 1" = 20'V

LEGEND

- EXISTING CONTOUR W/ ELEV
- FINISHED CONTOUR W/ ELEV.
- SETBACK LINE
- DAMSELFLY BOUNDARY LIMITS
- LIMITS OF GRADING/DISTURBANCE
- ADDITIONAL LIMITS OF DISTURBANCE
- FENCE
- SDXX STORM DRAIN SIZE XX INCHES
- SUBSURFACE DRAIN
- STORM DRAIN MANHOLE
- PROPOSED WATER LINE
- (E) WATER LINE (TO BE REMOVED)
- MODULAR WETLAND (VEGETATED BIOFILTER)
- DIVERSION STRUCTURE
- TYPE 2 CATCH BASIN
- ROLL CURB INLET
- LANDSCAPE DRAINS

NOTE:

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SCALE: HORIZ. 1"=30'-0" 0 10 20 30 60 90

SCALE: VERT. 1"=20'-0" 0 10 20 40 60

APPROVAL:

CHIEF, CIVIL ENGINEERING BRANCH, D.P.P. (FOR GRADING ONLY) DATE

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Revisions

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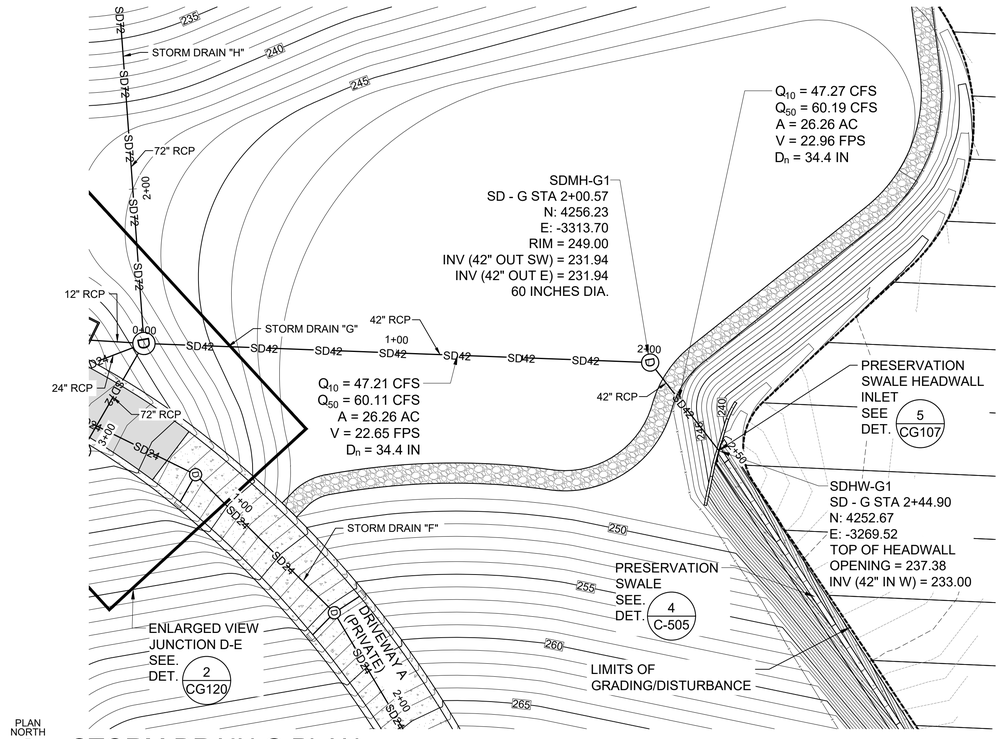
OWNER / DEVELOPER
HAWAIIAN MEMORIAL LIFE PLAN
1330 MAUNAKEA ST.
HONOLULU, HI 96817

HAWAIIAN MEMORIAL PARK EXPANSION
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TMK 4-5-033:001

STORM DRAIN F - PLAN AND PROFILE

Date	5/1/2025
Design	JH/MKU
Drawn	LYY
Job No.	202056
Sheet No.	CG117
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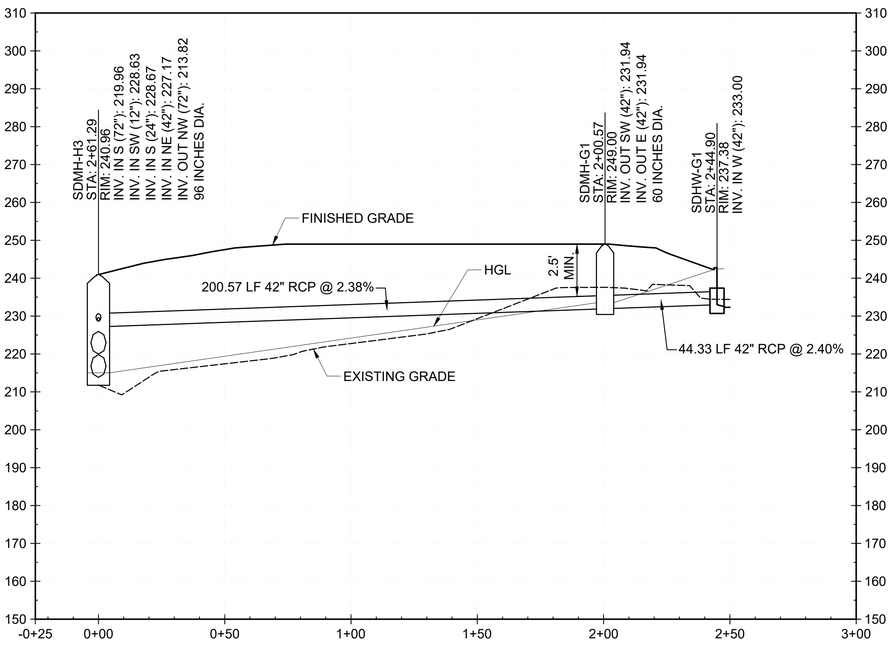
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PLAN NORTH

STORM DRAIN G PLAN

SCALE: 1" = 30'-0"



STORM DRAIN G PROFILE

SCALE: 1" = 30'-0"H, 1" = 20'V

LEGEND

- 325 EXISTING CONTOUR W/ ELEV
- 200 FINISHED CONTOUR W/ ELEV.
- SETBACK LINE
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- LIMITS OF GRADING/DISTURBANCE
- ADDITIONAL LIMITS OF DISTURBANCE
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5. TYPE "B" CATCH BASIN SHALL BE PER CITY AND COUNTY OF HONOLULU DETAIL D-5 OR APPROVED EQUAL. SEE DET. 4, SHT. C-506.
6. HDPE PIPE SHALL BE CORRUGATED HIGH DENSITY POLYETHYLENE PIPE NPS 12 TO 18, IN CONFORMANCE WITH AASHTO M 294, TYPE S, WITH SMOOTH WATERWAY FOR COUPLING JOINTS.
7. REINFORCED CONCRETE PIPE (RCP) SHALL BE IN CONFORMANCE WITH ASTM C76, CLASS III WITH BELL-AND-SPIGOT ENDS WITH GASKETED JOINTS WITH ASTM C443 RUBBER GASKETS. WHERE BURY DEPTH EXCEEDS 22 FEET, RCP SHALL BE CLASS IV. CLASS IV PIPE SECTIONS ARE LABELED ON PROFILES. ALL STORM PIPING SHALL BE INSTALLED WITH CLASS 1 BEDDING. STORM DRAIN PIPE TRENCHING SHALL COMPLY WITH CITY AND COUNTY OF HONOLULU DETAIL D-34. SEE DET. 1, SHT. C-514. WHERE PIPE SLOPES EXCEED 20%, PROVIDE PIPE ANCHORS. SEE DET. 2, SHT. C-503.
8. MODULAR WETLANDS (VEGETATED BIOFILTERS SHALL BE CONTECH MODULAR WETLANDS. SEE DET. 1, 2, AND 3, SHT. C-506.

SCALE: HORIZ. 1"=30'-0" 0 10 20 30 60 90

SCALE: VERT. 1"=20'-0" 0 10 20 40 60

APPROVAL:

CHIEF, CIVIL ENGINEERING BRANCH, D.P.P. DATE
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2023/CP-133

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Expiration Date of the License

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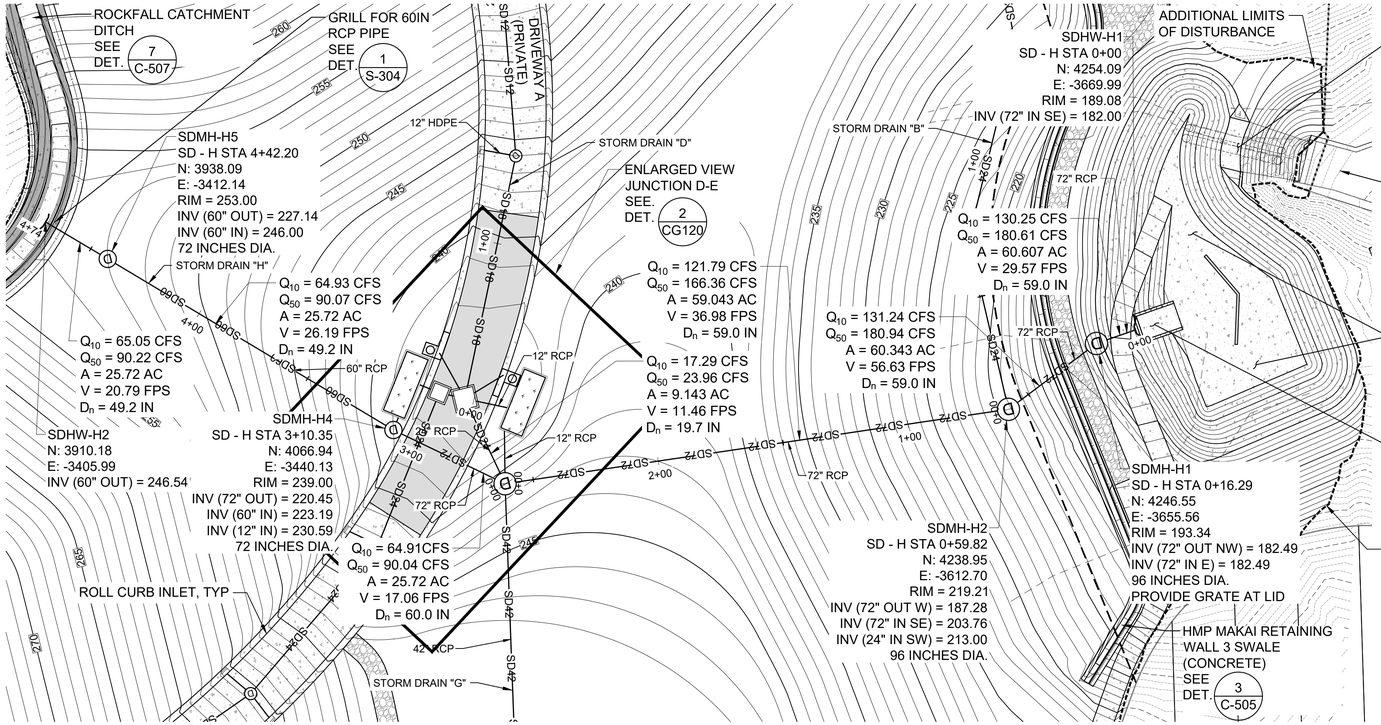
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HONOLULU, HI 96817

HAWAIIAN MEMORIAL PARK EXPANSION
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TMK 4-5-033:001

STORM DRAIN G - PLAN AND PROFILE

Date	5/1/2025
Design	JH/MKU
Drawn	LYY
Job No.	202056
Sheet No.	CG118
	47 of 107 SHEETS

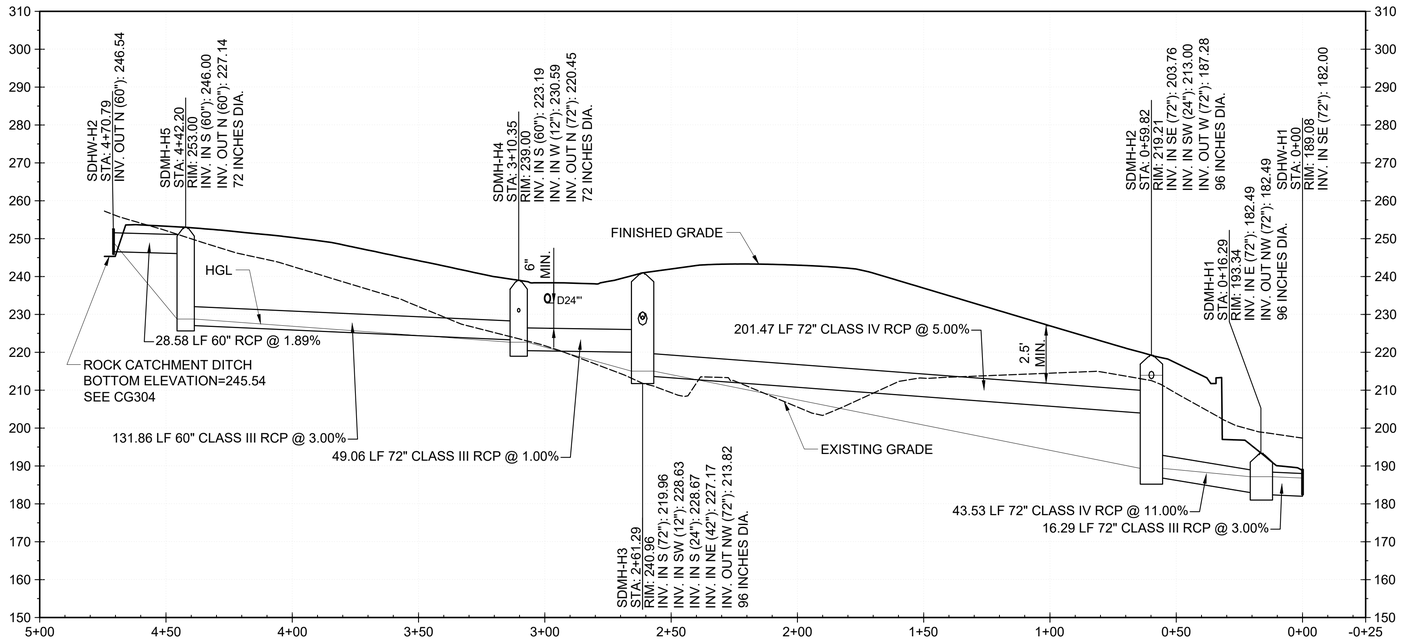
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Plot By: LYOYOGI\DOCS\PW_ENGINEERING\0.0 DWGS\CV\1.0 SHEETS\CG118.DWG



PLAN NORTH

STORM DRAIN H PLAN

SCALE: 1" = 30'-0"



STORM DRAIN H PROFILE

SCALE: 1" = 30'-0"H, 1" = 20'V

SCALE: HORIZ. 1"=30'-0" 0 10 20 30 60 90

SCALE: VERT. 1"=20'-0" 0 10 20 40 60

LEGEND

- 325 EXISTING CONTOUR W/ ELEV
- 200 FINISHED CONTOUR W/ ELEV.
- SETBACK LINE
- DAMSELFLY BOUNDARY LIMITS
- LIMITS OF GRADING/DISTURBANCE
- ADDITIONAL LIMITS OF DISTURBANCE
- FENCE
- SDXX STORM DRAIN SIZE XX INCHES
- SUBSURFACE DRAIN
- D STORM DRAIN MANHOLE
- W PROPOSED WATER LINE
- (E) WATER LINE (TO BE REMOVED)
- MODULAR WETLAND (VEGETATED BIOFILTER)
- DIVERSION STRUCTURE
- TYPE 2 CATCH BASIN
- ROLL CURB INLET

NOTE:

1. ROLL CURB INLET SHALL BE ADS NYLOPLAST 2-FT BY 3-FT ROLL CURB INLET OR APPROVED EQUAL. SEE DET. 4, SHT. C-511.
2. DIVERSION STRUCTURES (JUNCTION BOXES) SHALL BE JENSEN PRECAST "JUNCTION DIVERSION VAULTS" MODELS JDV-4848, JDV-7272, AND JDV-9696. SEE DETAILS 1 & 2 SHEET C-512, AND DETAIL 1, SHT. C-513.
3. 24-IN BEEHIVE GRATE SHALL BE ADS NYLOPLAST 24-IN DOME GRATE OR APPROVED EQUAL. C&C HON. DET. G-14F, OR APPROVED EQUAL. SEE DETAIL 2, SHT C-513.
4. 48-IN, 60-IN, 72-IN, AND 96-IN PRECAST CONCRETE MANHOLES BY JENSEN PRECAST OR APPROVED EQUAL. SEE DET. 1, 2, AND 3, SHT. C-511. MANHOLES SHALL BE FITTED WITH 24-IN CAST IRON FRAMES AND LIDS CAST WITH "STORM" LETTERING. 60-IN, 72-IN, AND 96-IN MANHOLES HAVE ECCENTRICALLY PLACED LIDS. ALL MANHOLES SHALL HAVE LADDER RUNGS THE FULL HEIGHT OF THE STRUCTURE. ALL MANHOLES SHALL HAVE 3-FT SUMPS BELOW LOWEST PIPE INVERT AND SHALL NOT BE CHANNELIZED. MANHOLES ARE 48" DIAMETER UNLESS OTHERWISE NOTED.
5. TYPE "B" CATCH BASIN SHALL BE PER CITY AND COUNTY OF HONOLULU DETAIL D-5 OR APPROVED EQUAL. SEE DET. 4, SHT. C-506.
6. HDPE PIPE SHALL BE CORRUGATED HIGH DENSITY POLYETHYLENE PIPE NPS 12 TO 18, IN CONFORMANCE WITH AASHTO M 294, TYPE S, WITH SMOOTH WATERWAY FOR COUPLING JOINTS.
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8. MODULAR WETLANDS (VEGETATED BIOFILTERS SHALL BE CONTECH MODULAR WETLANDS. SEE DET. 1, 2, AND 3, SHT. C-506.

APPROVAL:

CHIEF, CIVIL ENGINEERING BRANCH, D.P.P. (FOR GRADING ONLY) DATE

2023/CP-133

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Jamison Hiroja signature

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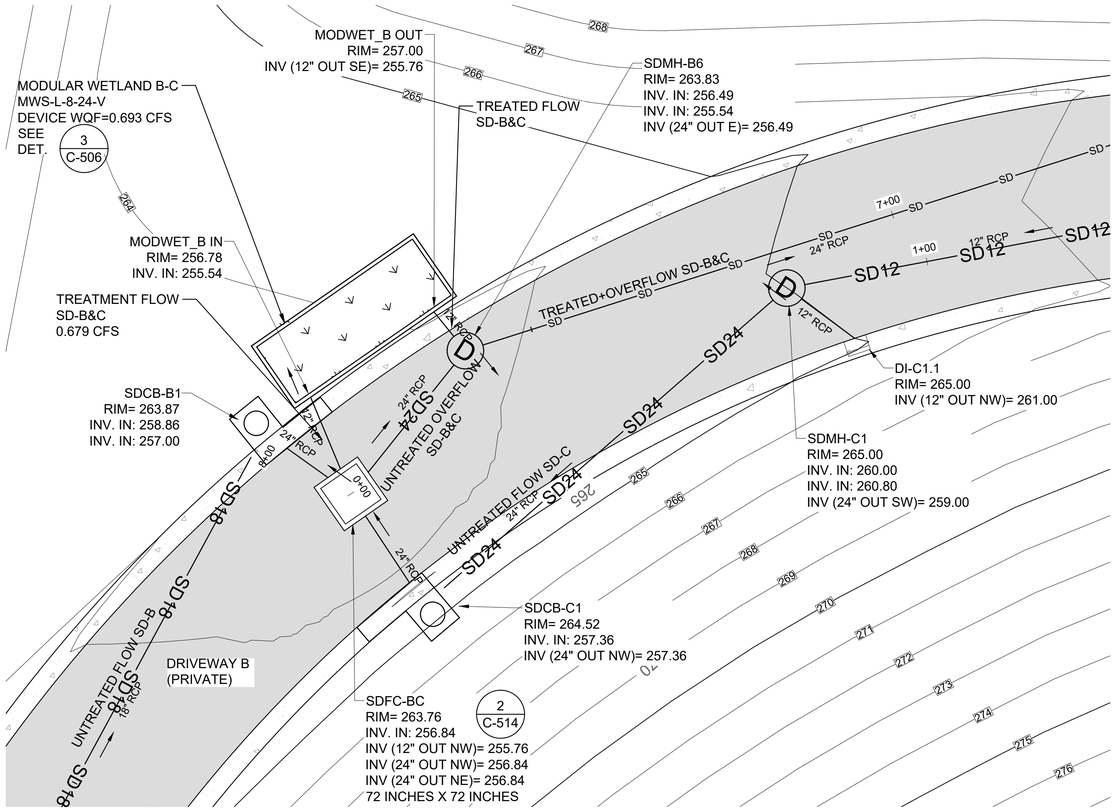
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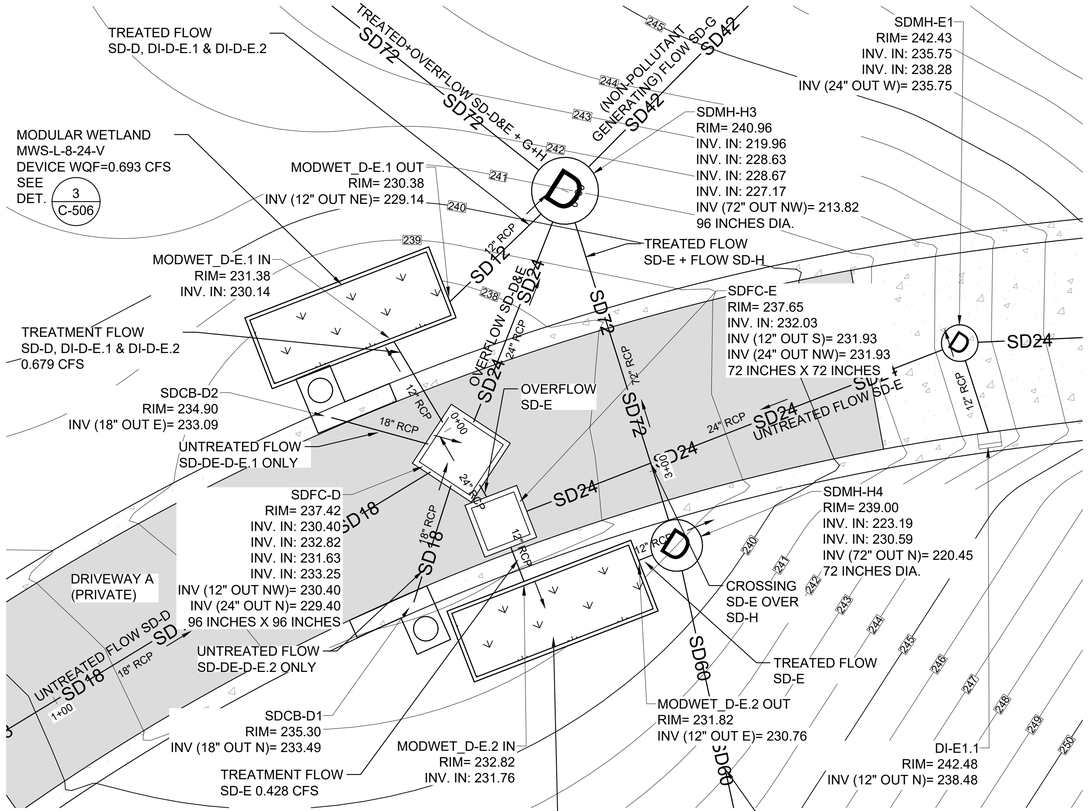
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STORM DRAIN H - PLAN AND PROFILE

Date	5/1/2025
Design	JH/MKU
Drawn	DH
Job No.	202056
Sheet No.	CG119
	48 of 107 SHEETS

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Jamie Hirota
Signature
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ENLARGED STORM DRAIN INTERSECTIONS

Date	5/1/2025
Design	JH
Drawn	DH
Job No.	202056
Sheet No.	CG120
	49 of 107 SHEETS

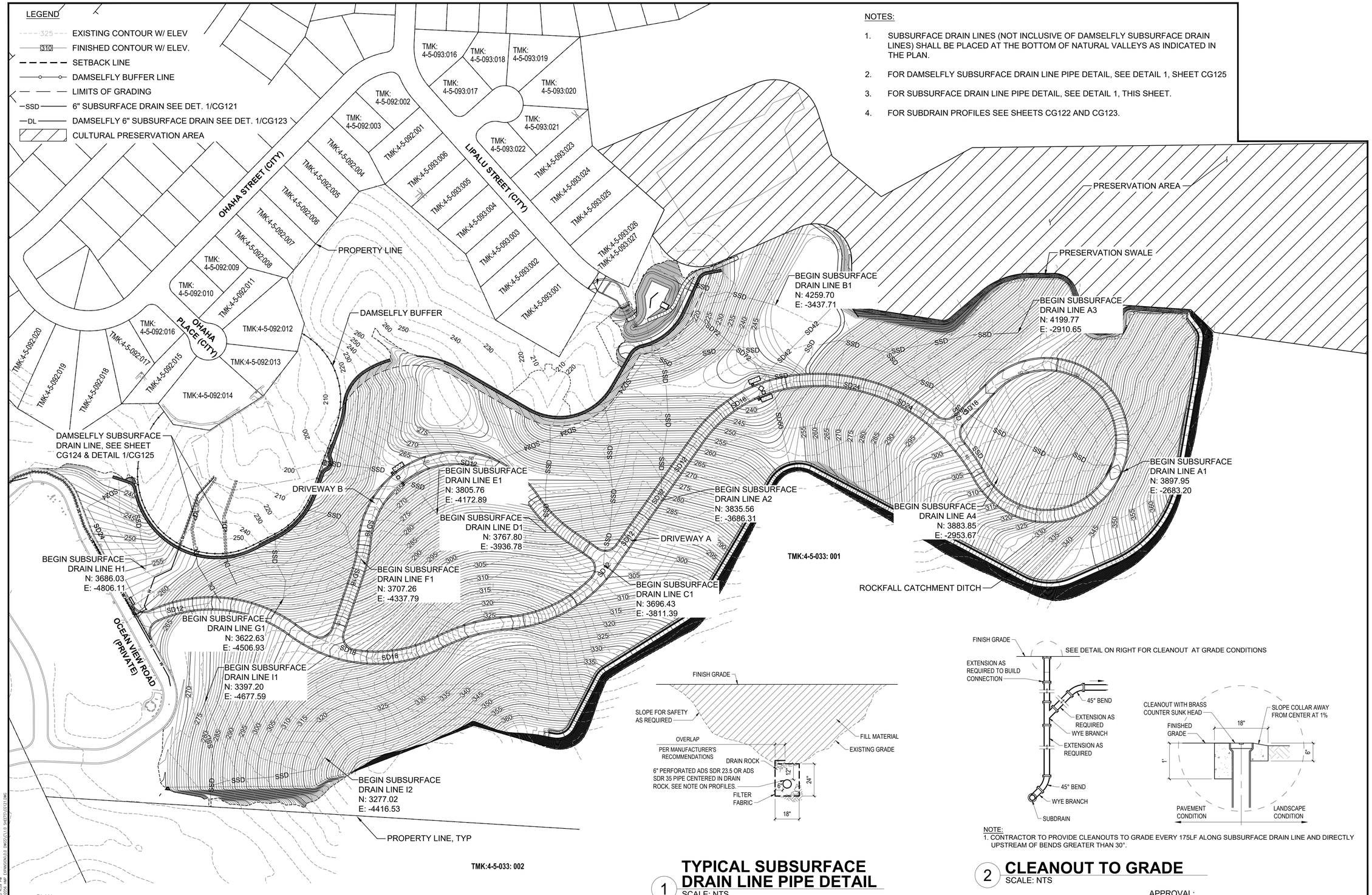
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LEGEND

- 325 EXISTING CONTOUR W/ ELEV
- 310 FINISHED CONTOUR W/ ELEV.
- SETBACK LINE
- DAMSELFLY BUFFER LINE
- LIMITS OF GRADING
- SSD 6" SUBSURFACE DRAIN SEE DET. 1/CG121
- DL DAMSELFLY 6" SUBSURFACE DRAIN SEE DET. 1/CG123
- CULTURAL PRESERVATION AREA

NOTES:

1. SUBSURFACE DRAIN LINES (NOT INCLUSIVE OF DAMSELFLY SUBSURFACE DRAIN LINES) SHALL BE PLACED AT THE BOTTOM OF NATURAL VALLEYS AS INDICATED IN THE PLAN.
2. FOR DAMSELFLY SUBSURFACE DRAIN LINE PIPE DETAIL, SEE DETAIL 1, SHEET CG125
3. FOR SUBSURFACE DRAIN LINE PIPE DETAIL, SEE DETAIL 1, THIS SHEET.
4. FOR SUBDRAIN PROFILES SEE SHEETS CG122 AND CG123.



SUBSURFACE DRAIN LINE OVERALL PLAN

SCALE: 1" = 100'-0"

1"=100'-0" 0 50 100 200 300

1 TYPICAL SUBSURFACE DRAIN LINE PIPE DETAIL

SCALE: NTS

NOTE:
1. CONTRACTOR TO PROVIDE CLEANOUTS TO GRADE EVERY 175LF ALONG SUBSURFACE DRAIN LINE AND DIRECTLY UPSTREAM OF BENDS GREATER THAN 30°.

2 CLEANOUT TO GRADE

SCALE: NTS

APPROVAL:

CHIEF, CIVIL ENGINEERING BRANCH, D.P.P. (FOR GRADING ONLY) DATE

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2023/CP-133

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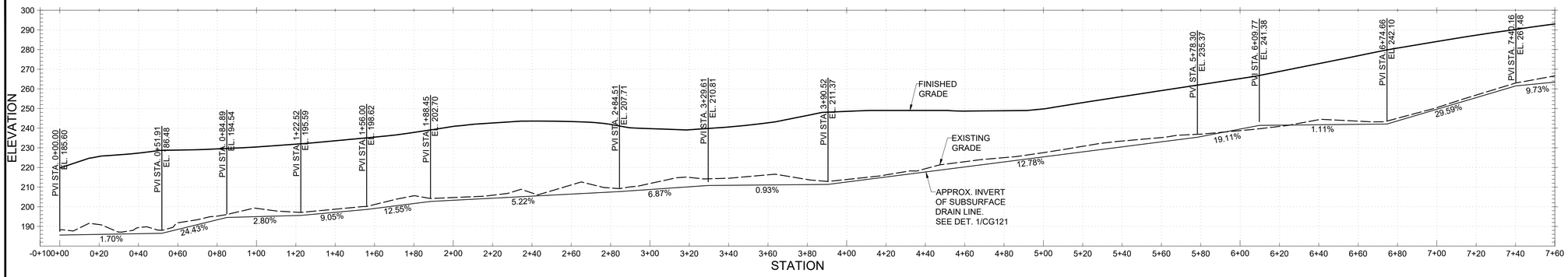
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45-425 Kamehameha Highway, Kaneohe, HI
TMK 4-5-033:001

SUBSURFACE DRAIN LINE OVERALL PLAN

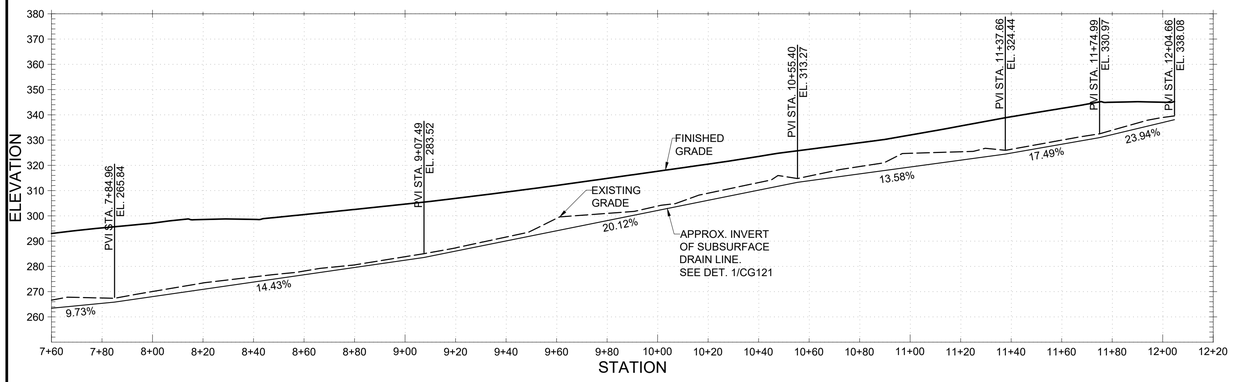
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Drawn	DH
Job No.	202056
Sheet No.	CG121
	50 of 107 SHEETS

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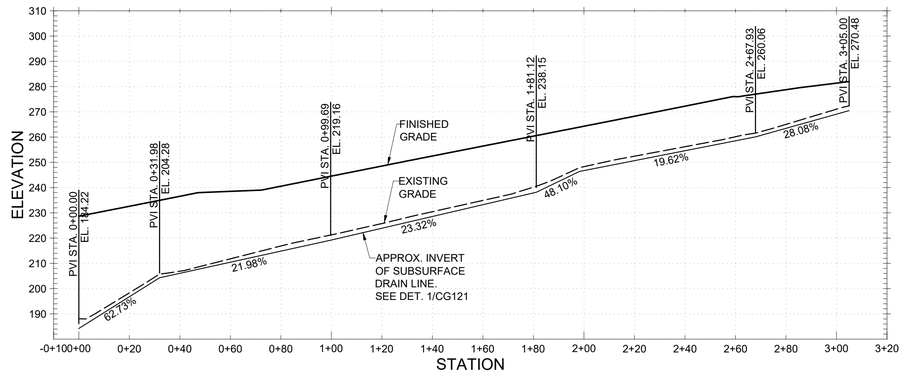
SUBSURFACE DRAIN LINE A1 STA 0+00 TO STA 7+60

SCALE: 1" = 30'-0"H, 1" = 30'V



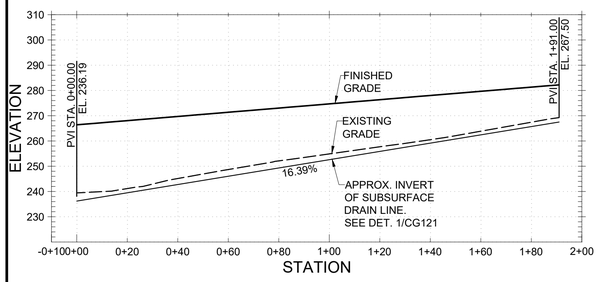
SUBSURFACE DRAIN LINE A1 STA 7+60 TO END

SCALE: 1" = 30'-0"H, 1" = 30'V



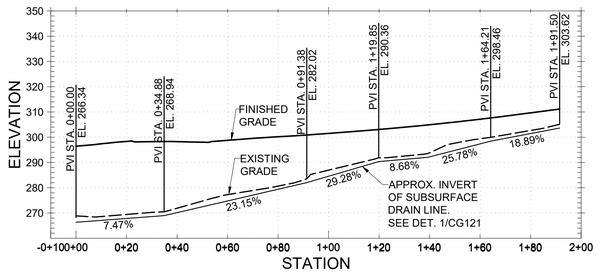
SUBSURFACE DRAIN LINE A2

SCALE: 1" = 30'-0"H, 1" = 30'V



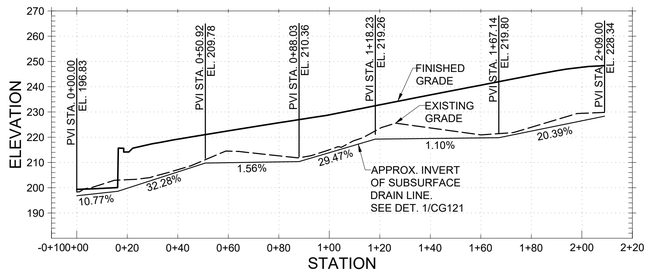
SUBSURFACE DRAIN LINE A3

SCALE: 1" = 30'-0"H, 1" = 30'V



SUBSURFACE DRAIN LINE A4

SCALE: 1" = 30'-0"H, 1" = 30'V



SUBSURFACE DRAIN LINE B1

SCALE: 1" = 30'-0"H, 1" = 30'V

NOTES:

1. FOR DRAINLINES A1 AND A2 USE 6" ADS SDR 23.5 PIPE. OTHERWISE USE 6" ADS SDR 35 PIPE.
2. CONTRACTOR SHALL FIELD BEND 6" PERFORATED ADS PIPE AS REQUIRED TO ACHIEVE THE DEFLECTIONS INDICATED.
3. TERMINATE PIPE 18" BEYOND DAYLIGHT LOCATION AND PROVIDE A PIPE CAP WITH A SCREEN.
4. CONTRACTOR TO PROVIDE CLEANOUTS TO GRADE EVERY 175LF ALONG SUBSURFACE DRAIN LINE AND DIRECTLY UPSTREAM OF BENDS GREATER THAN 30°. SEE DET. 2/CG121

SCALE: HORIZ. 1"=30'-0" 0 10 20 30 60 90

SCALE: VERT. 1"=30'-0" 0 10 20 30 60 90

APPROVAL:

CHIEF, CIVIL ENGINEERING BRANCH, D.P.P. (FOR GRADING ONLY) DATE

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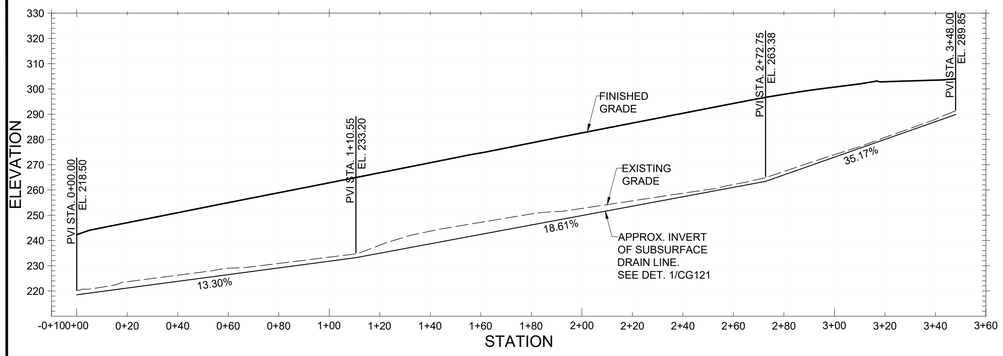
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TMK 4-5-033:001

SUBSURFACE DRAIN LINE PROFILES

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Design	DH
Drawn	DH
Job No.	202056
Sheet No.	CG122
	51 of 107 SHEETS

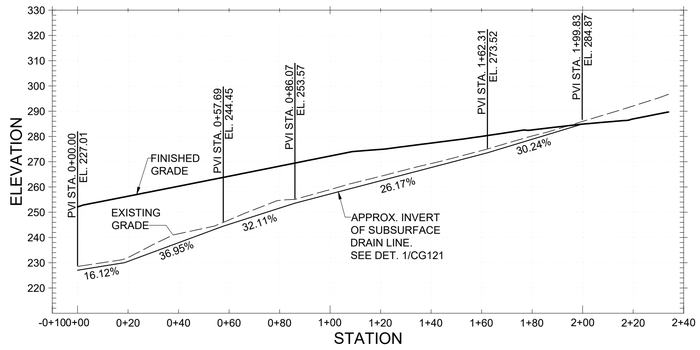
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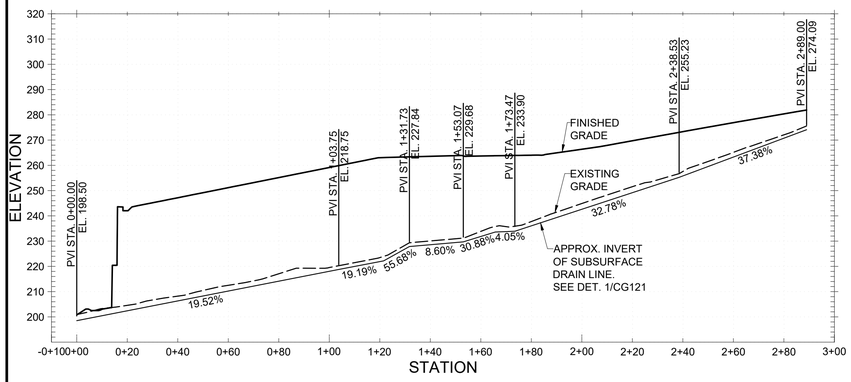
SUBSURFACE DRAIN LINE C1

SCALE: 1" = 30'-0"H, 1" = 30'V



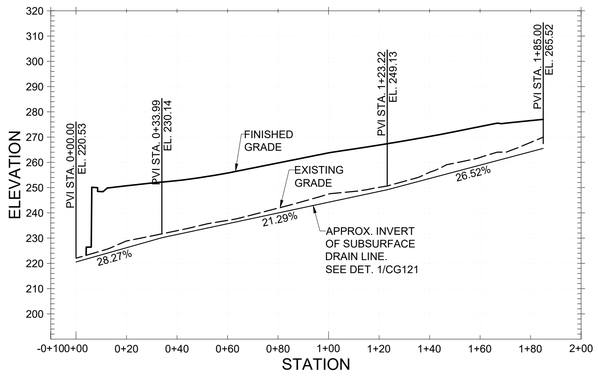
SUBSURFACE DRAIN LINE D1

SCALE: 1" = 30'-0"H, 1" = 30'V



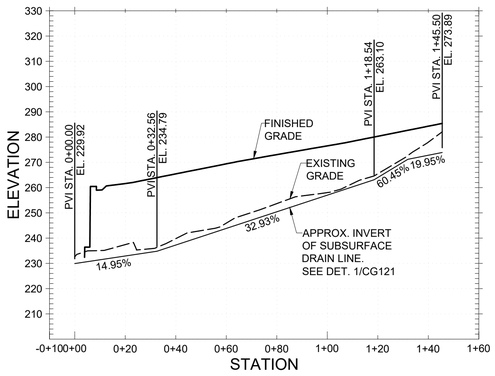
SUBSURFACE DRAIN LINE E1

SCALE: 1" = 30'-0"H, 1" = 30'V



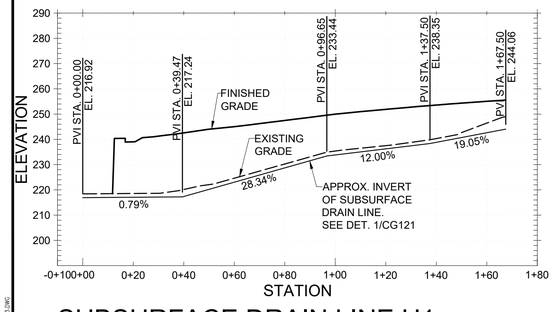
SUBSURFACE DRAIN LINE F1

SCALE: 1" = 30'-0"H, 1" = 30'V



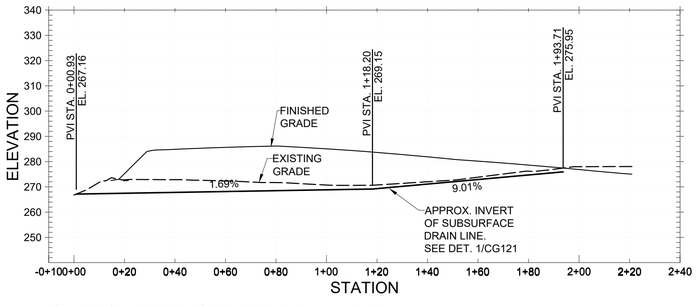
SUBSURFACE DRAIN LINE G1

SCALE: 1" = 30'-0"H, 1" = 30'V



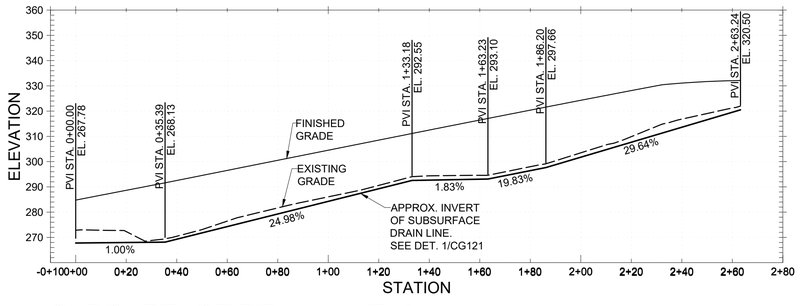
SUBSURFACE DRAIN LINE H1

SCALE: 1" = 30'-0"H, 1" = 30'V



SUBSURFACE DRAIN LINE I1

SCALE: 1" = 30'-0"H, 1" = 30'V



SUBSURFACE DRAIN LINE I2

SCALE: 1" = 30'-0"H, 1" = 30'V

NOTES:

1. FOR SUBSURFACE DRAINLINE E1 USE 6" ADS SDR 23.5 PIPE. OTHERWISE USE 6" ADS SDR 35 PIPE.
2. CONTRACTOR SHALL FIELD BEND 6" PERFORATED ADS PIPE AS REQUIRED TO ACHIEVE THE DEFLECTIONS INDICATED.
3. TERMINATE PIPE 18" BEYOND DAYLIGHT LOCATION AND PROVIDE A PIPE CAP WITH A SCREEN.
4. CONTRACTOR TO PROVIDE CLEANOUTS TO GRADE EVERY 175LF ALONG SUBSURFACE DRAIN LINE AND DIRECTLY UPSTREAM OF BENDS GREATER THAN 30°. SEE DET. 2/CG121

SCALE: HORIZ. 1"=30'-0" 0 10 20 30 60 90

SCALE: VERT. 1"=30'-0" 0 10 20 30 60 90

APPROVAL:

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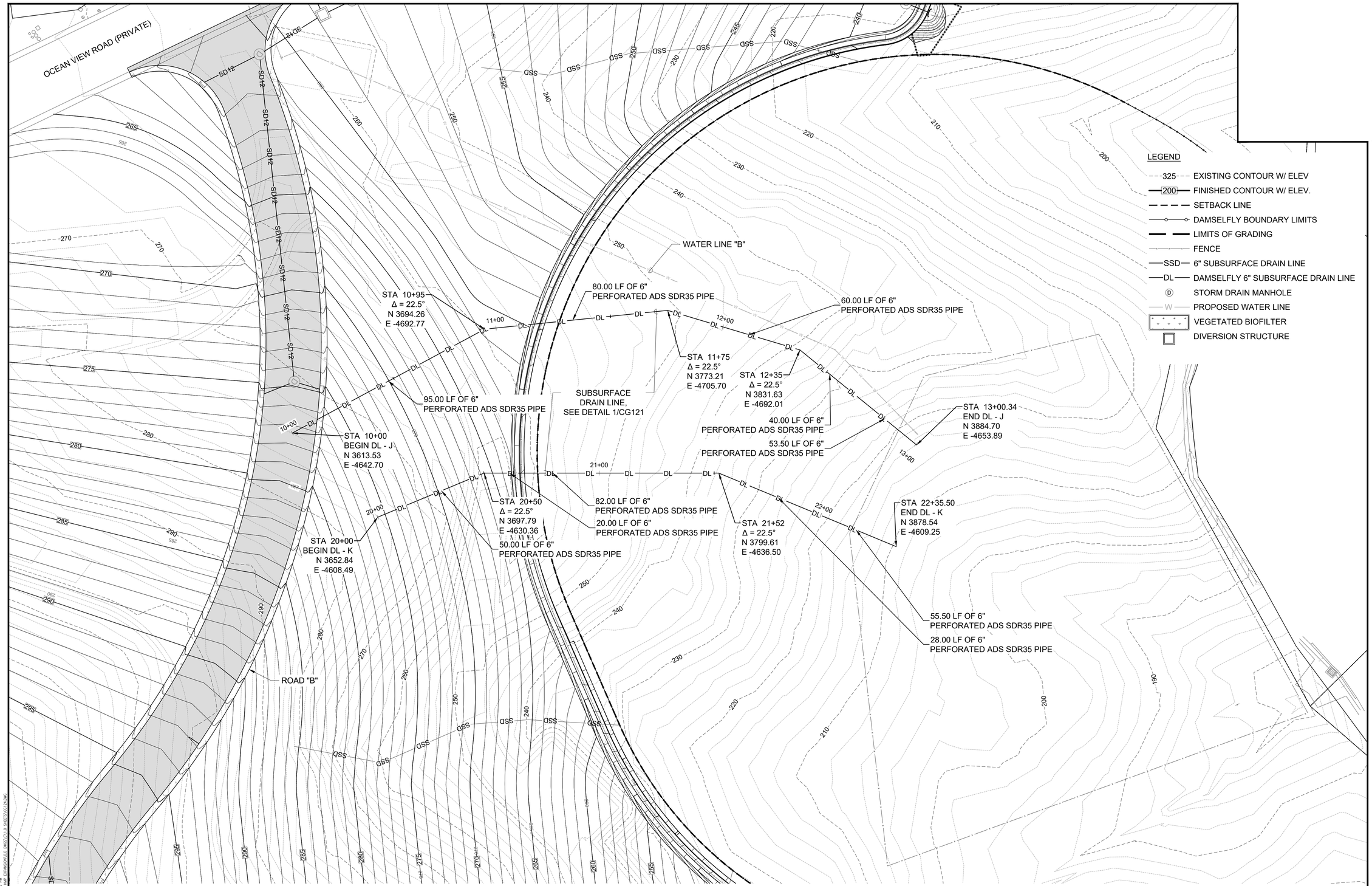
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SUBSURFACE DRAIN LINE PROFILES

Date	5/1/2025
Design	DH
Drawn	DH
Job No.	202056
Sheet No.	CG123
	52 of 107 SHEETS

2023/CP-133

User: DRHA, ALEX 4/30/2025 3:58 PM
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PLAN NORTH

ENLARGED DAMSELFLY SUBSURFACE DRAIN LINE PLAN

SCALE: 1" = 20'-0"

1"=20'-0" 0 10 20 40 60

APPROVAL:

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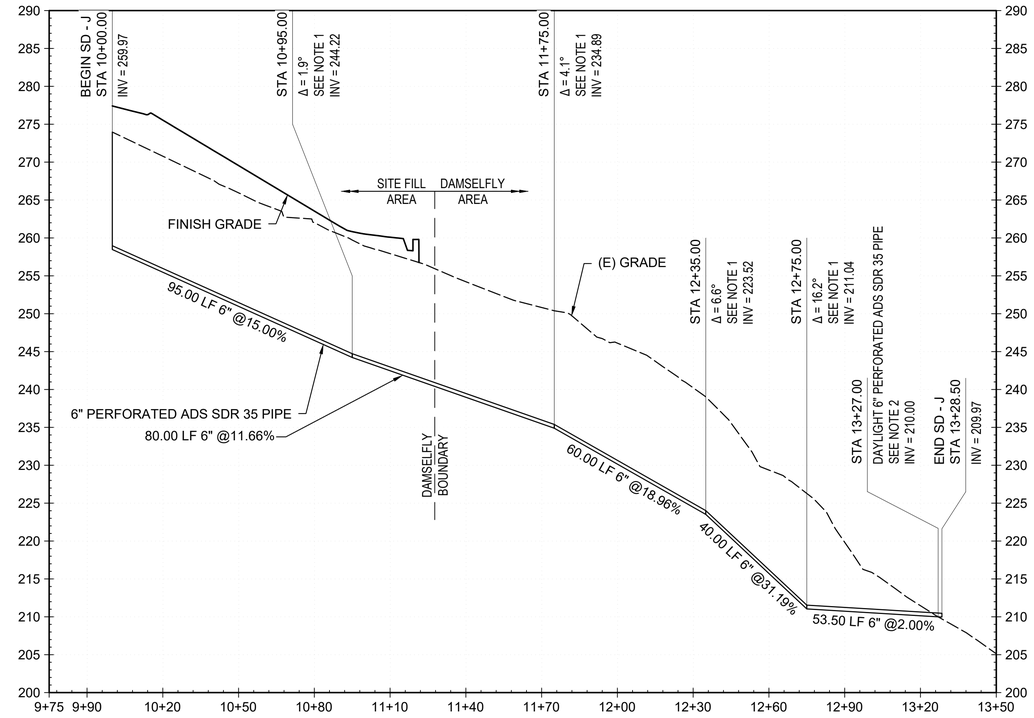
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HAWAIIAN MEMORIAL LIFE PLAN
1330 MAUNAKEA ST.
HONOLULU, HI 96817

HAWAIIAN MEMORIAL PARK EXPANSION
45-425 Kamehameha Highway, Kaneohe, HI
TMK 4-5-033:001

ENLARGED DAMSELFLY SUBSURFACE DRAIN LINE PLAN

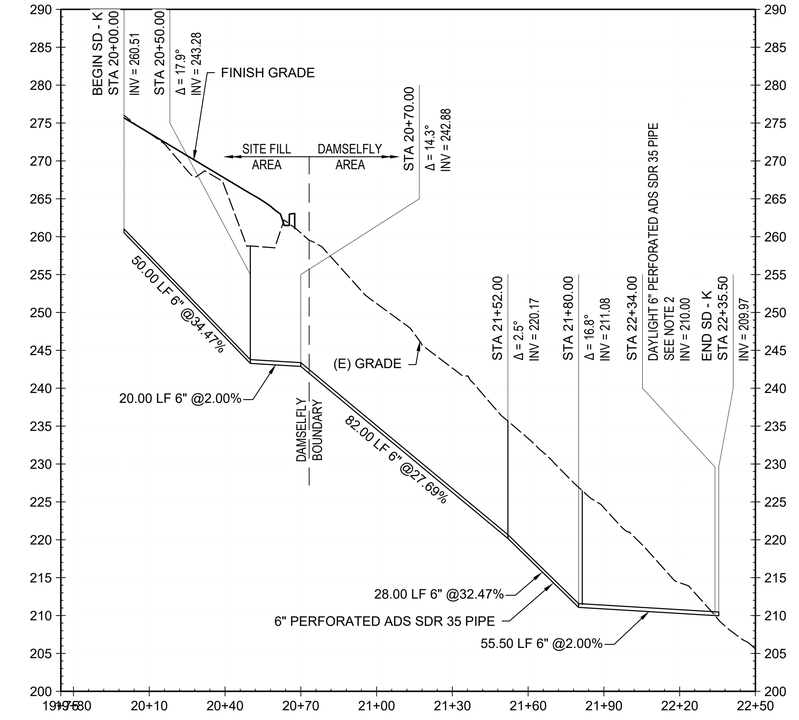
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Drawn	DH
Job No.	202056
Sheet No.	CG124
	53 of 107 SHEETS

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DAMSELFLY SUBSURFACE DRAIN LINE J PROFILE

SCALE: 1" = 30'-0"H, 1" = 10'V

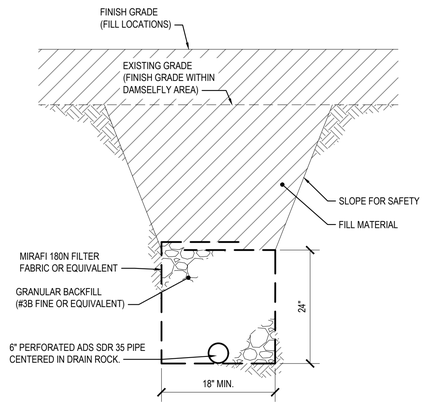


DAMSELFLY SUBSURFACE DRAIN LINE K PROFILE

SCALE: 1" = 30'-0"H, 1" = 10'V

NOTES:

1. CONTRACTOR SHALL FIELD BEND 6" PERFORATED ADS PIPE AS REQUIRED TO ACHIEVE THE DEFLECTIONS INDICATED.
2. TERMINATE PIPE 18" BEYOND DAYLIGHT LOCATION AND PROVIDE A PIPE CAP WITH A SCREEN.
3. CONTRACTOR TO PROVIDE CLEANOUTS TO GRADE EVERY 175LF ALONG SUBSURFACE DRAIN LINE AND DIRECTLY UPSTREAM OF BENDS GREATER THAN 30°. SEE DET. 2/CG121.



1 DAMSELFLY SUBSURFACE DRAIN LINE PIPE DETAIL

SCALE: NTS

SCALE: HORIZ. 1"=30'-0" 0 10 20 30 60 90

SCALE: VERT. 1"=10'-0" 0 5 10 20 30

APPROVAL:

CHIEF, CIVIL ENGINEERING BRANCH, D.P.P. DATE
(FOR GRADING ONLY)

Revisions

2023/CP-133

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745 Fort Street, Suite 400 | Honolulu, Hawaii 96813
ph 808.687.8884 | fax 808.687.8883
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Signature

APRIL 30, 2026
Expiration Date of the License

JAMESON S. HIMOTA U.S.A. LICENSED PROFESSIONAL ENGINEER No. 9776-C HAWAII

OWNER / DEVELOPER
HAWAIIAN MEMORIAL LIFE PLAN
1330 MAUNAKEA ST.
HONOLULU, HI 96817

HAWAIIAN MEMORIAL PARK EXPANSION
45-425 Kamehameha Highway, Kaneohe, HI
TMK 4-5-033:001

DAMSELFLY SUBSURFACE DRAIN LINE PROFILES

Date	5/1/2025
Design	JH/MKU
Drawn	DH
Job No.	202056
Sheet No.	CG125
	54 of 107 SHEETS

User: DHNA, ADS 4/30/2025, 5:00 PM
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LEGEND

- EXISTING CONTOUR W/ ELEV
- FINISHED CONTOUR W/ ELEV.
- SETBACK LINE
- DAMSELFLY BUFFER LINE
- CULTURAL PRESERVATION AREA
- CONCRETE PAVEMENT
- GRASS
- VEGETATED BIOFILTER TREATED AREAS
- SELF-MITIGATING AREAS

NAKULUAI STREET (CITY)
OHAHA STREET (CITY)
OHAHA PLACE (CITY)
LIPALU STREET (CITY)
OCEAN VIEW ROAD (PRIVATE)

TMK: 4-5-092:002, 003, 004, 005, 006, 007, 008, 009, 010, 012, 013, 014, 015, 016, 017, 018, 019, 020
TMK: 4-5-093:001, 002, 003, 004, 005, 006, 016, 017, 018, 019, 020, 021, 022, 023, 024, 025, 026, 027
TMK:4-5-033:001
TMK:4-5-033:002

LUC BOUNDARY
PROPERTY LINE /LUC BOUNDARY
LIMITS OF GRADING
SETBACK LINE
OFFSET LINE FOR CLARITY
DAMSELFLY BUFFER
CULTURAL PRESERVATION
PRESERVATION SWALE
PRESERVATION ACCESS
SELF MITIGATING AREAS
ALL NON-PAVED AREAS SHALL BE GRASSED
ROCKFALL CATCHMENT DITCH
DRIVEWAY A (PRIVATE)
DRIVEWAY B (PRIVATE)
LIPALU OUTFALL DETENTION AND STILLING BASIN SEE DET. 2 / C-504
MAKAI WALL OUTFALL 2 STILLING BASIN SEE DET. 1 / C-504
MAKAI WALL OUTFALL 1 RIPRAP SEE DET. 6 / C-505

VEGETATED BIO-FILTER SWT-1
VEGETATED BIO-FILTER SWT-2
VEGETATED BIO-FILTER SWT-3
VEGETATED BIO-FILTER SWT-4

DMA-1
AREA = 0.40 ACRES
WQF REQUIRED = 0.117 CFS
WQF PROVIDED = 0.206 CFS

DMA-2
AREA = 5.75 ACRES
WQF REQUIRED = 0.689 CFS
WQF PROVIDED = 0.693 CFS

DMA-3
AREA = 4.28 ACRES
WQF REQUIRED = 0.505 CFS
WQF PROVIDED = 0.577 CFS

DMA-4
AREA = 5.01 ACRES
WQF REQUIRED = 0.664 CFS
WQF PROVIDED = 0.693 CFS

DE MINIMIS AREA
AREA = 0.03 ACRES

POST CONSTRUCTION STRUCTURAL CONTROL BMPS:

- PERMANENT STABILIZATION (HARDSCAPED AND LANDSCAPE AREAS)

GOOD HOUSEKEEPING BMPS:

- SEE EROSION AND SEDIMENT CONTROL NOTE C-003
- REGULARLY INSPECT AND MAINTAIN EROSION CONTROL DEVICES AND REPLACE AS NECESSARY.
- MAINTAIN INVERTS AND CUT BACK OVERGROWN VEGETATION.

LID SITE DESIGN STRATEGIES:

- CONSERVE NATURAL AREAS, SOILS, AND VEGETATION
- MINIMIZE IMPERVIOUS SURFACE

SOURCE CONTROL BMPS:

- LANDSCAPE AREAS
- AUTOMATIC IRRIGATION
- STORM DRAIN INLETS

TREATMENT CONTROL BMPS:

- SELF MITIGATING AREAS = 18.66 ACRES
- VEGETATED BIO-FILTER = 15.44 ACRES, SWF 1.90 CFS

APPROVAL:

CHIEF, CIVIL ENGINEERING BRANCH, D.P.P. DATE

PLAN NORTH

POST CONTRUCTION BEST MANAGEMENT PRACTICES PLAN

SCALE: 1" = 100'-0"

1"=100'-0" 0 50 100 200 300

2023/CP-133

Revisions

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Jamie Hirota
Signature
APRIL 30, 2026
Expiration Date of the License

JAMIE S. HIROTA LICENSED PROFESSIONAL ENGINEER No. 9776-C HAWAII U.S.A.

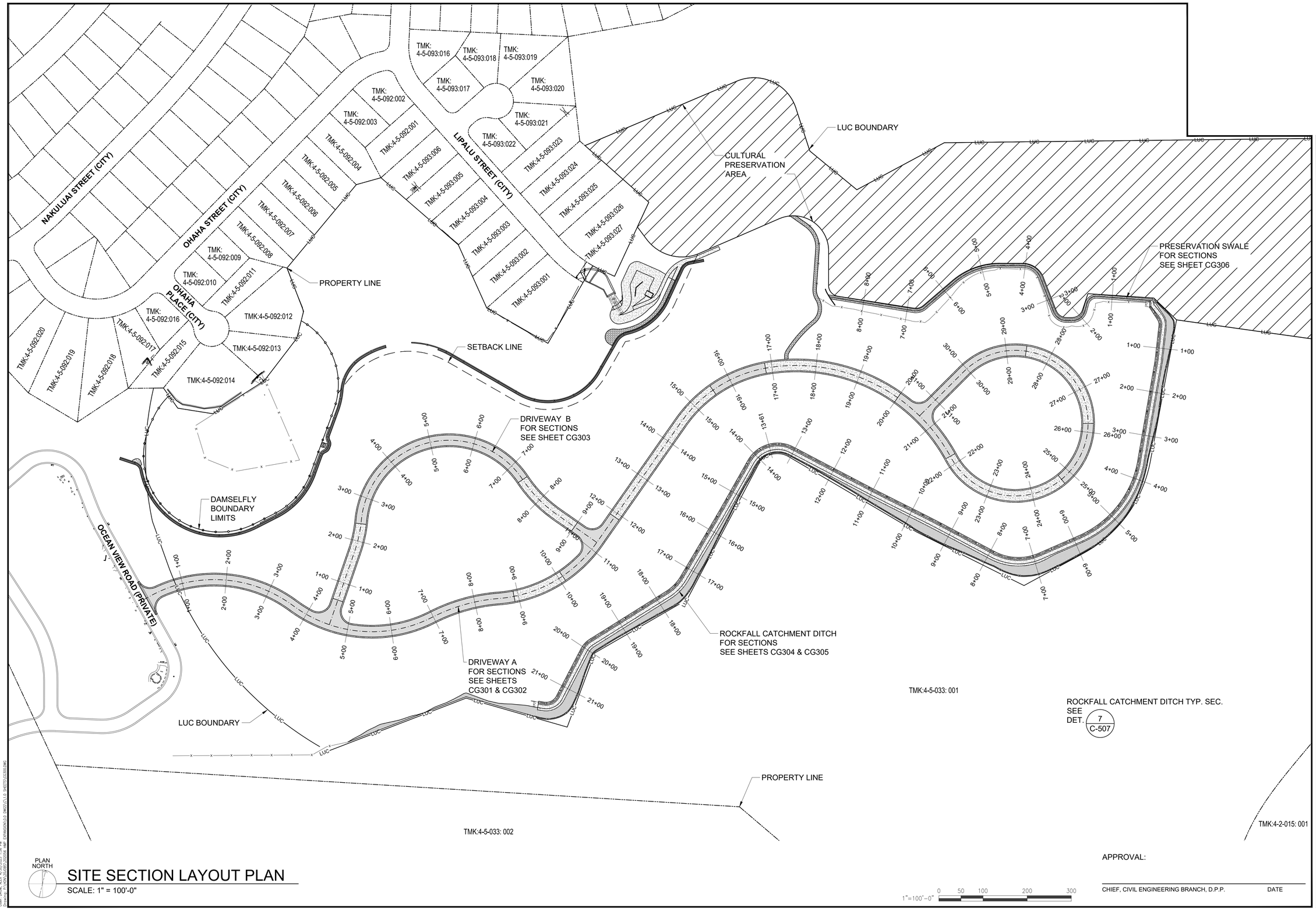
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HONOLULU, HI 96817

HAWAIIAN MEMORIAL PARK EXPANSION
45-425 Kamehameha Highway, Kaneohe, HI
TMK 4-5-033:001

POST CONTRUCTION BEST MANAGEMENT PRACTICES PLAN

Date	5/1/2025
Design	JH/MKU
Drawn	DH
Job No.	202056
Sheet No.	CG200
	55 of 107 SHEETS

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PLAN NORTH

SITE SECTION LAYOUT PLAN

SCALE: 1" = 100'-0"

1"=100'-0" 0 50 100 200 300

APPROVAL:

CHIEF, CIVIL ENGINEERING BRANCH, D.P.P. DATE

2023/CP-133

Revisions

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Jamison Hiroka
Signature

APRIL 30, 2026
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JAMISON S. HIROKA
LICENSED PROFESSIONAL ENGINEER
No. 9776-C
HAWAII
U.S.A.

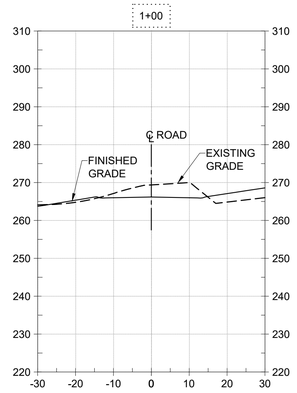
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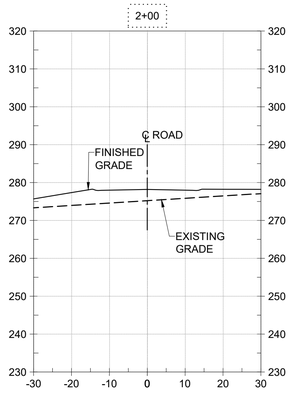
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45-425 Kamehameha Highway, Kaneohe, HI
TMK 4-5-033:001

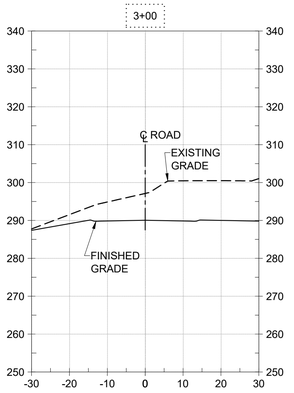
SITE SECTION LAYOUT PLAN

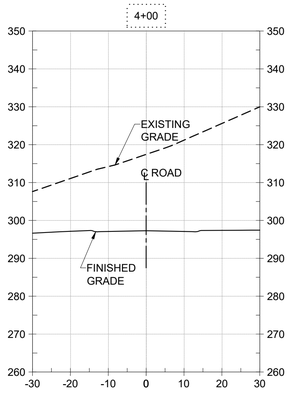
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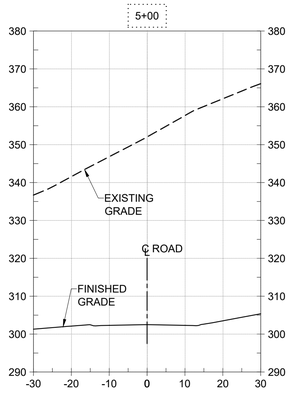
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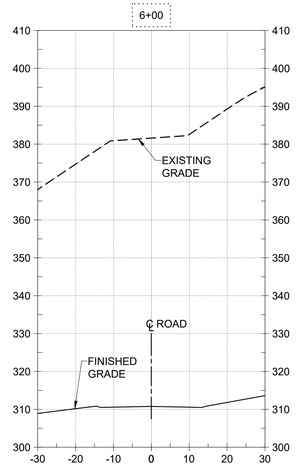


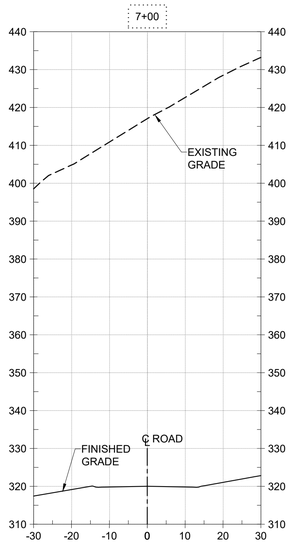


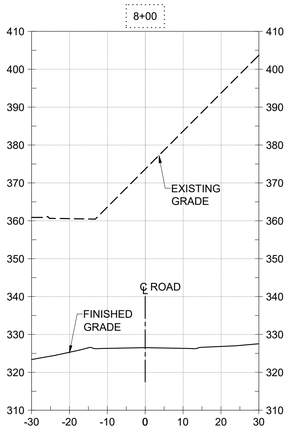


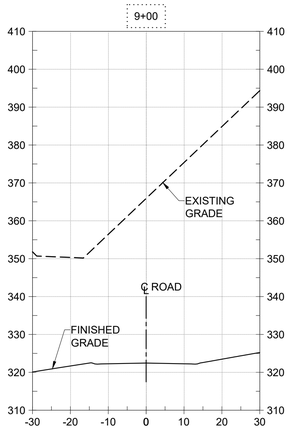


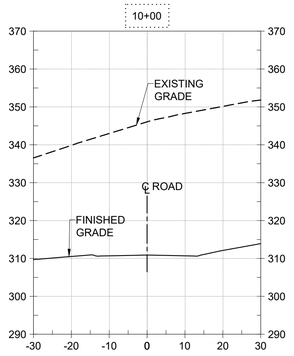


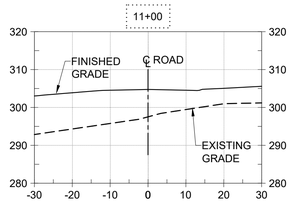


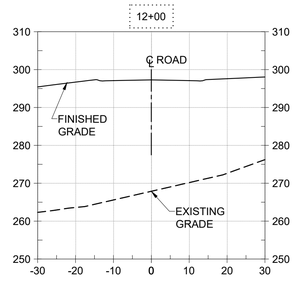


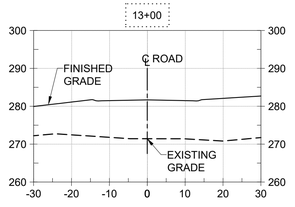


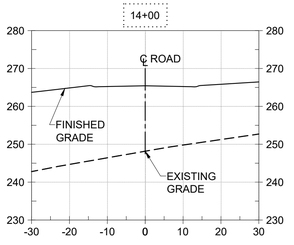


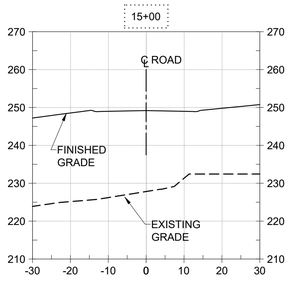


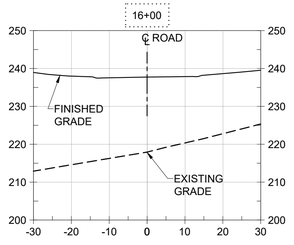


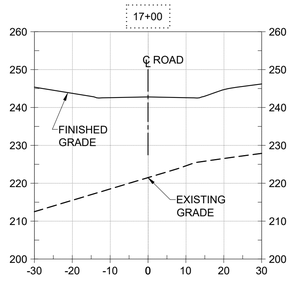












DRIVEWAY A SECTIONS

HORIZONTAL & VERTICAL SCALE:1"=20'-0"

DRIVEWAY A A.C. PAVEMENT TYP. SECTION SEE DET. 1 / C-507

DRIVEWAY A CONC. PAVEMENT TYP. SECTION SEE DET. 2 / C-507

SCALE: HORIZ. 1"=20'-0" 0 10 20 40 60

SCALE: VERT. 1"=20'-0" 0 10 20 40 60

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Signature

APRIL 30, 2026

Expiration Date of the License

MASSEY S. HIROTA LICENSED PROFESSIONAL ENGINEER No. 9776-C U.S.A. HAWAII

OWNER / DEVELOPER
HAWAIIAN MEMORIAL LIFE PLAN
1330 MAUNAKEA ST.
HONOLULU, HI 96817

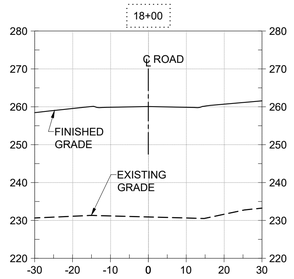
HAWAIIAN MEMORIAL PARK EXPANSION
45-425 Kamehameha Highway, Kaneohe, HI
TMK 4-5-033:001

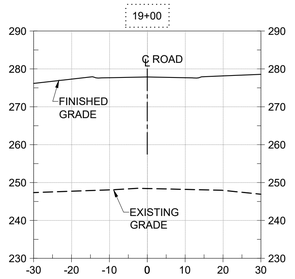
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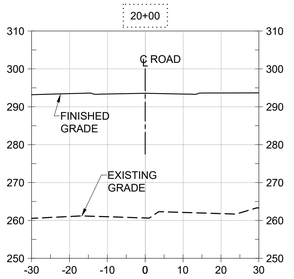
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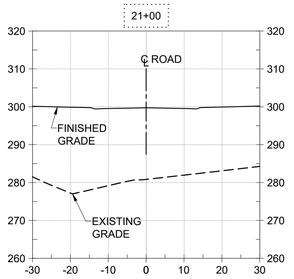
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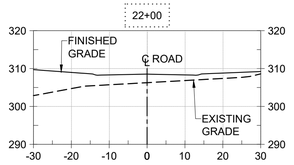
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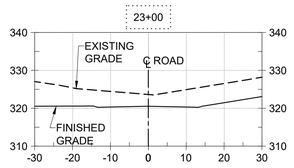


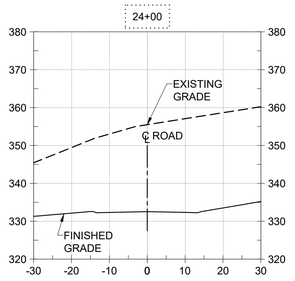


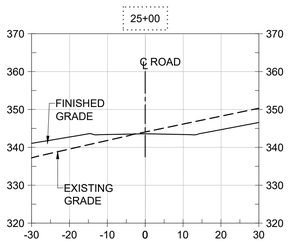


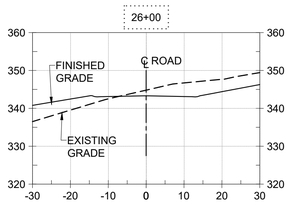


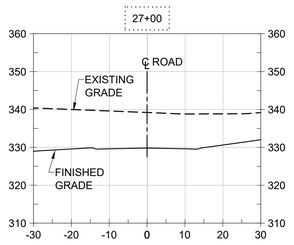


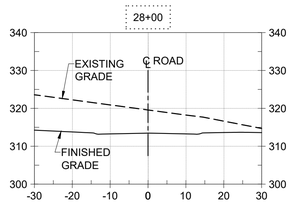


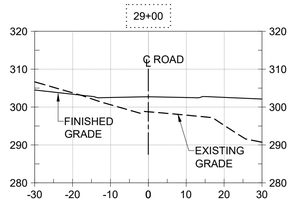


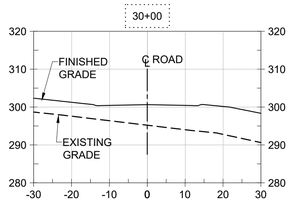


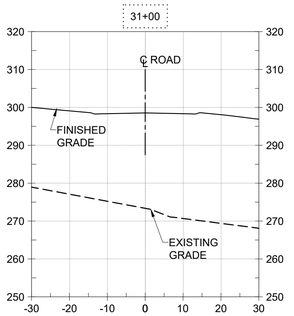












DRIVEWAY A SECTIONS

HORIZONTAL & VERTICAL SCALE:1"=20'-0"

DRIVEWAY A A.C.
PAVEMENT TYP. SECTION
SEE DET. 1&3 / C-507

DRIVEWAY A CONC.
PAVEMENT TYP. SECTION
SEE DET. 2 / C-507

SCALE: HORIZ. 1"=20'-0" (0 10 20 40 60)

SCALE: VERT. 1"=20'-0" (0 10 20 40 60)

Revisions		

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APRIL 30, 2026
Expiration Date of the License

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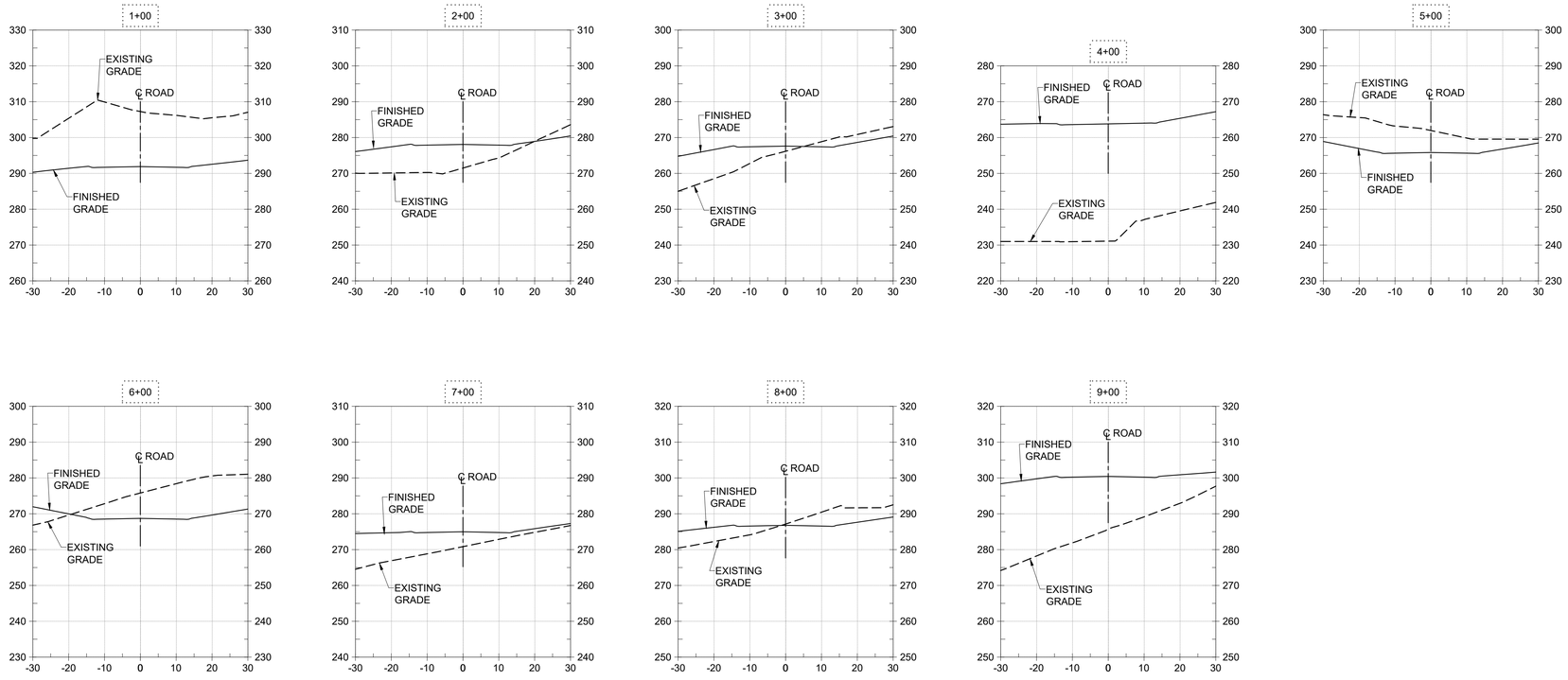
OWNER / DEVELOPER
HAWAIIAN MEMORIAL LIFE PLAN
1330 MAUNAKEA ST.
HONOLULU, HI 96817

HAWAIIAN MEMORIAL PARK EXPANSION
45-425 Kamehameha Highway, Kaneohe, HI
TMK 4-5-033:001

DRIVEWAY A SECTIONS

Date	5/1/2025
Design	JH/MKU
Drawn	DH
Job No.	202056
Sheet No.	CG302
	58 of 107 SHEETS

User: DRHK, ALEX 4/30/2025 1:56 PM
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DRIVEWAY B SECTIONS

HORIZONTAL & VERTICAL SCALE:1"=20'-0"

DRIVEWAY B A.C. PAVEMENT TYP. SECTION SEE DET. 5 / C-507

DRIVEWAY B CONC. PAVEMENT TYP. SECTION SEE DET. 6 / C-507

SCALE: HORIZ. 1"=20'-0" (0, 10, 20, 40, 60)

SCALE: VERT. 1"=20'-0" (0, 10, 20, 40, 60)

User: DRMK, ALEX 4/30/2025 1:56 PM
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Revisions

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Expiration Date of the License

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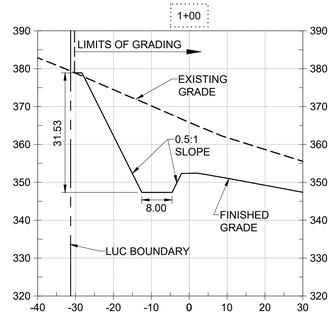
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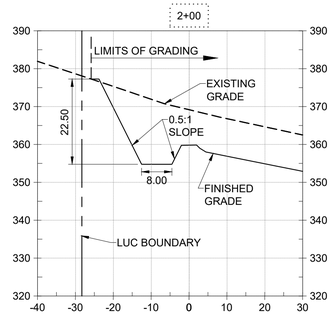
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HONOLULU, HI 96817

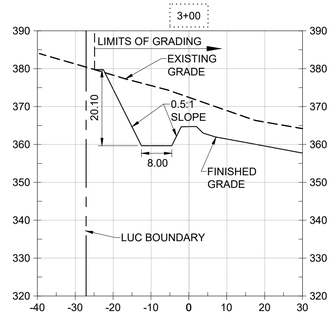
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45-425 Kamehameha Highway, Kaneohe, HI
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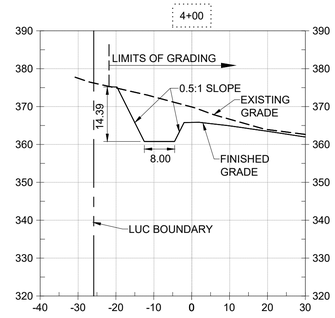
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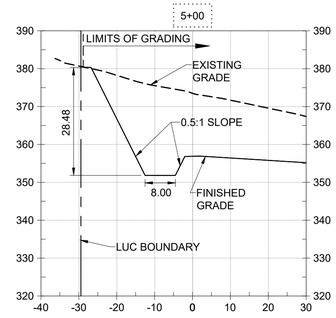
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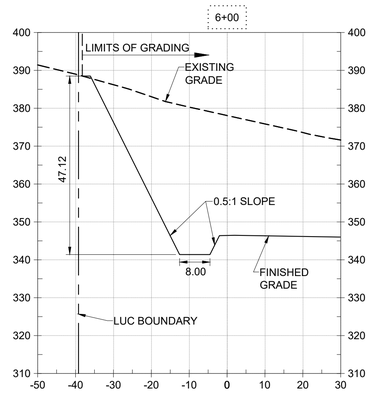


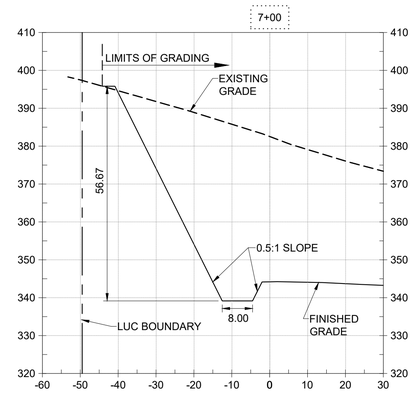


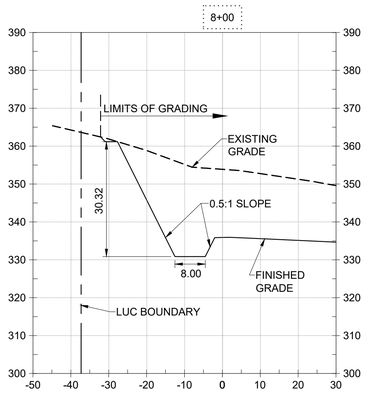


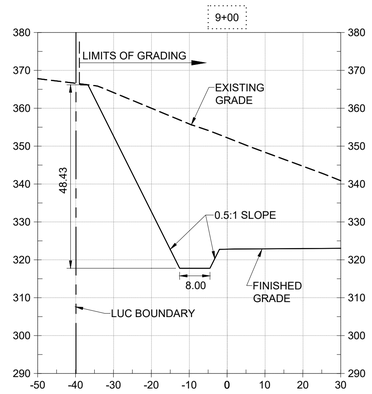


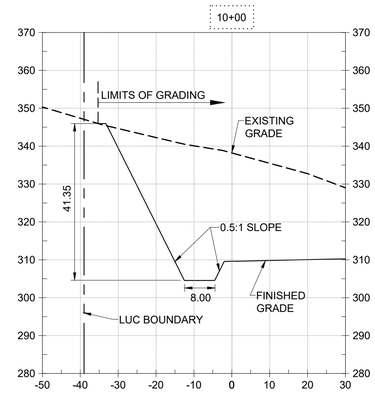


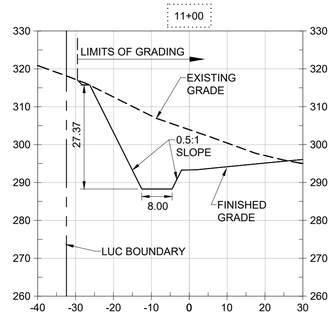


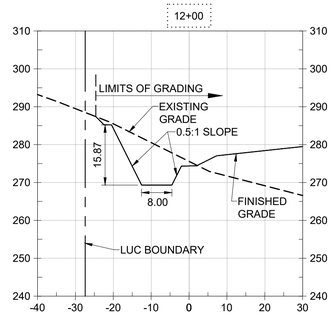


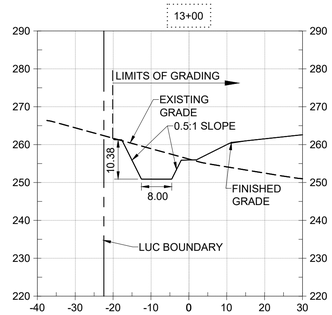


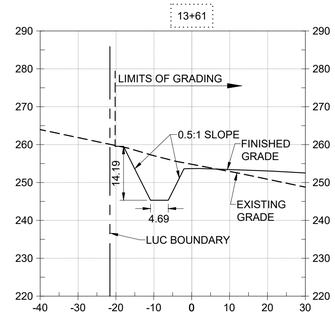


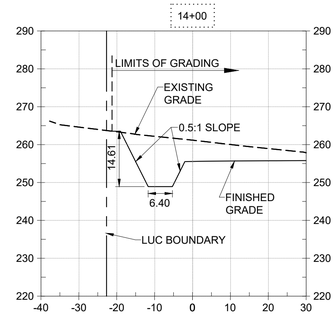












ROCKFALL CATCHMENT DITCH SECTIONS

HORIZONTAL & VERTICAL SCALE:1"=20'-0"

ROCKFALL CATCHMENT DITCH TYP. SECTION SEE DET. 7 / C-507

SCALE: HORIZ. 1"=20'-0" 0 10 20 40 60

SCALE: VERT. 1"=20'-0" 0 10 20 40 60

APPROVAL:

CHIEF, CIVIL ENGINEERING BRANCH, D.P.P. DATE

Revisions

2023/CP-133

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APRIL 30, 2026

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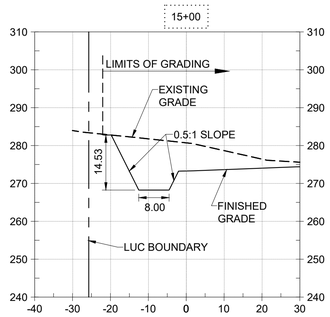
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1330 MAUNAKEA ST.
HONOLULU, HI 96817

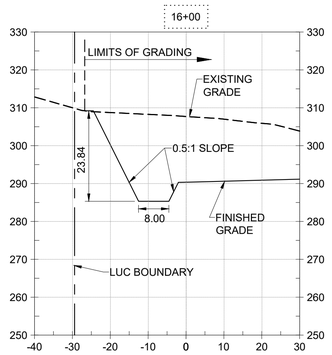
HAWAIIAN MEMORIAL PARK EXPANSION
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TMK 4-5-033:001

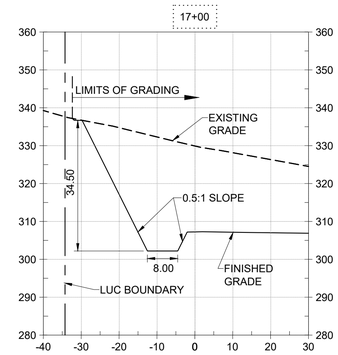
ROCKFALL CATCHMENT DITCH SECTIONS

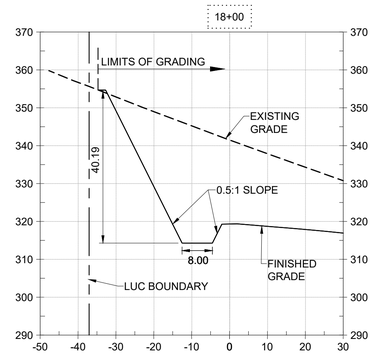
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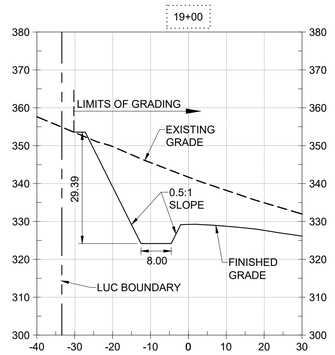
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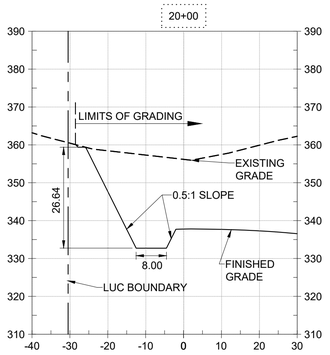


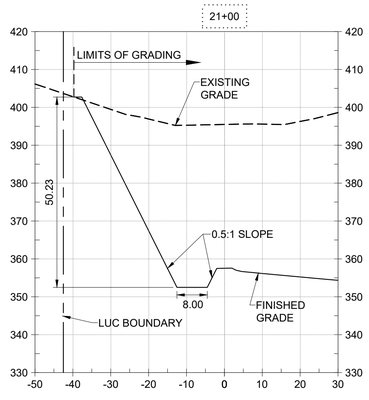












ROCKFALL CATCHMENT DITCH SECTIONS

HORIZONTAL & VERTICAL SCALE:1"=20'-0"

ROCKFALL CATCHMENT DITCH TYP. SECTION SEE DET. 7 / C-507

SCALE: HORIZ. 1"=20'-0" 0 10 20 40 60

SCALE: VERT. 1"=20'-0" 0 10 20 40 60

APPROVAL:

CHIEF, CIVIL ENGINEERING BRANCH, D.P.P. DATE

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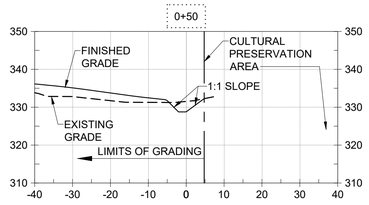
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1330 MAUNAKEA ST.
HONOLULU, HI 96817

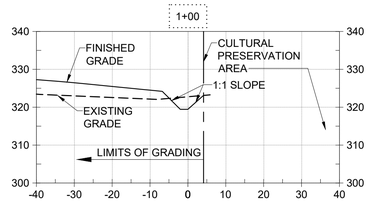
HAWAIIAN MEMORIAL PARK EXPANSION
45-425 Kamehameha Highway, Kaneohe, HI
TMK 4-5-033:001

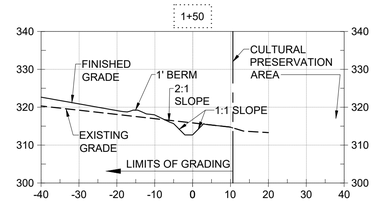
ROCKFALL CATCHMENT DITCH SECTIONS

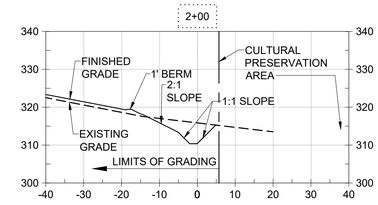
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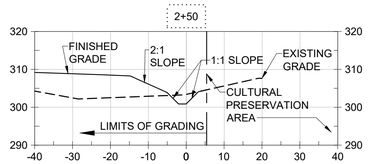
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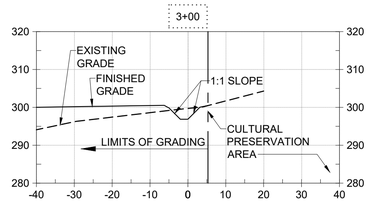


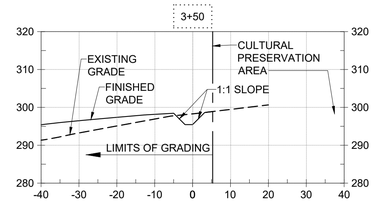


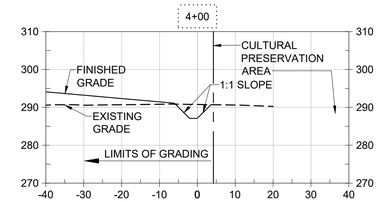


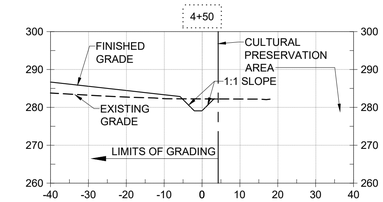


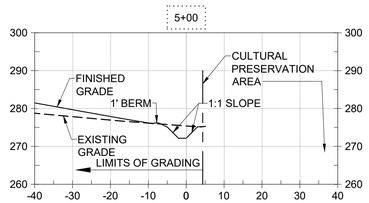


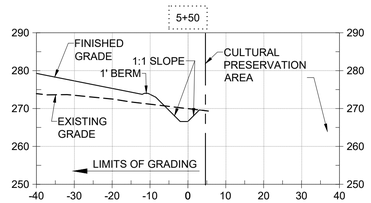


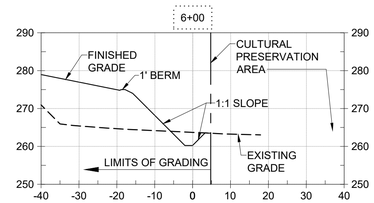


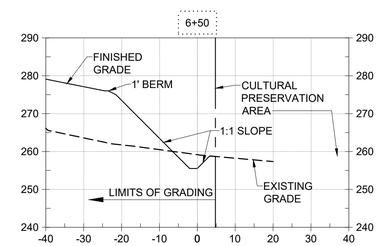


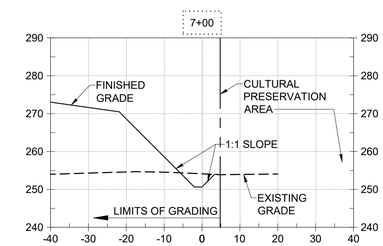


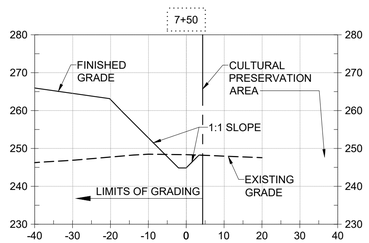


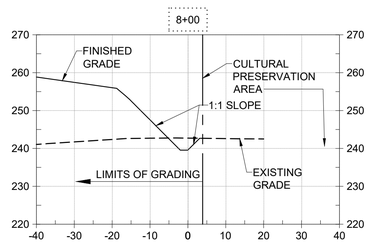


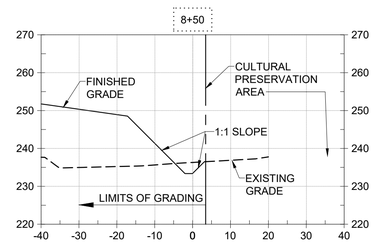












PRESERVATION SWALE SECTIONS

HORIZONTAL & VERTICAL SCALE:1"=20'-0"

PRESERVATION SWALE
TYP. SECTION
SEE DET. 4 / C-505

SCALE: HORIZ. 1"=20'-0" 0 10 20 40 60

SCALE: VERT. 1"=20'-0" 0 10 20 40 60

APPROVAL:

CHIEF, CIVIL ENGINEERING BRANCH, D.P.P. DATE

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2023/CP-133

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Expiration Date of the License

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LICENSED PROFESSIONAL ENGINEER
No. 9776-C
U.S.A. HAWAII

OWNER / DEVELOPER
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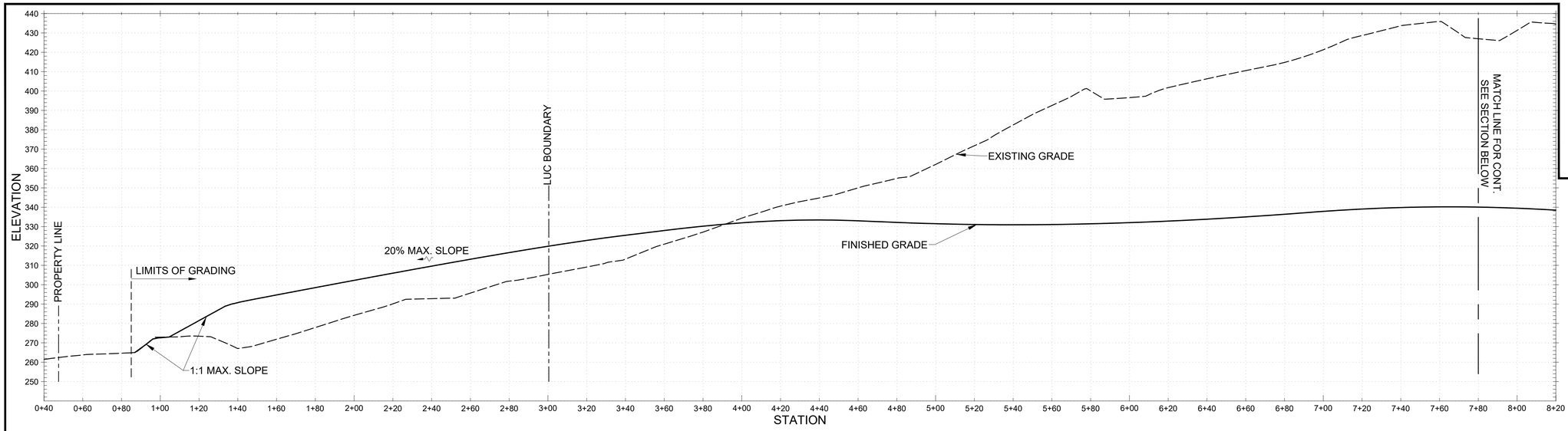
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45-425 Kamehameha Highway, Kaneohe, HI
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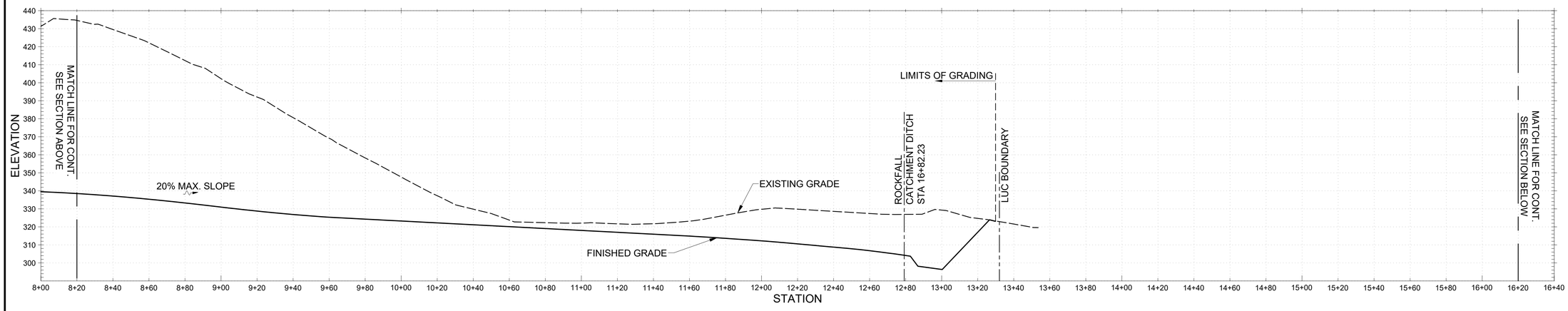
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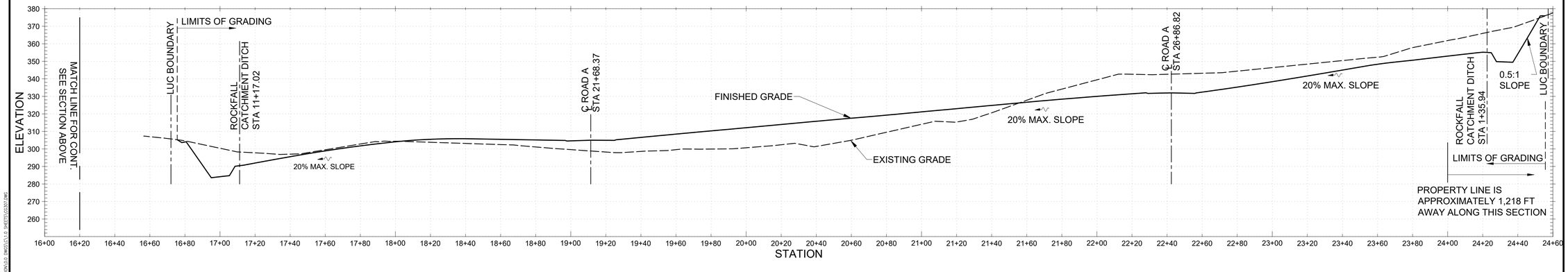
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Sheet No.
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62 of 107 SHEETS

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SITE SECTION 1

HORIZONTAL & VERTICAL SCALE:1"=30'-0"

SCALE: HORIZ. 1"=30'-0" 0 10 20 30 60 90

SCALE: VERT. 1"=30'-0" 0 10 20 30 60 90

APPROVAL:

CHIEF, CIVIL ENGINEERING BRANCH, D.P.P. DATE

2023/CP-133

Revisions

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Jamie Hirota
Signature
APRIL 30, 2026
Expiration Date of the License

JAMES S. HIROTA U.S.A. LICENSED PROFESSIONAL ENGINEER No. 9776-C HAWAII

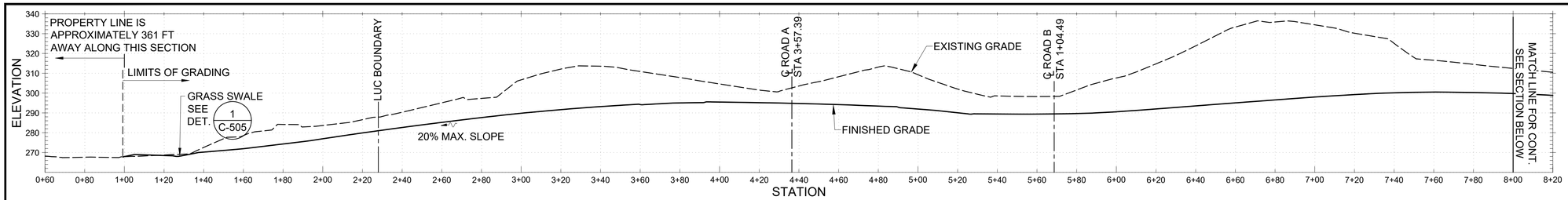
OWNER / DEVELOPER
HAWAIIAN MEMORIAL LIFE PLAN
1330 MAUNAKEA ST.
HONOLULU, HI 96817

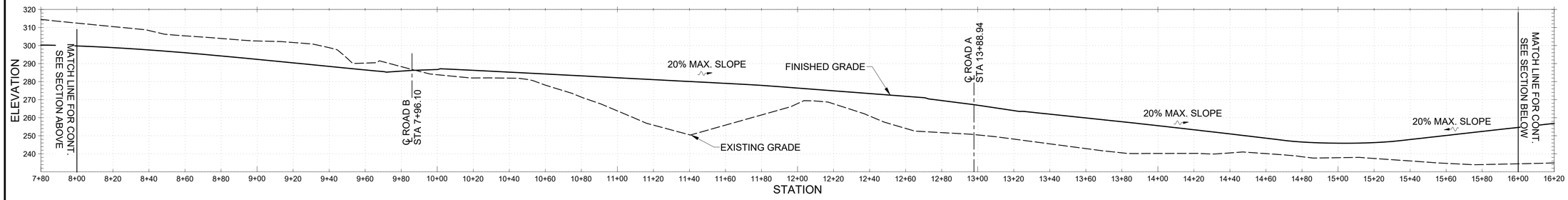
HAWAIIAN MEMORIAL PARK EXPANSION
45-425 Kamehameha Highway, Kaneohe, HI
TMK 4-5-033:001

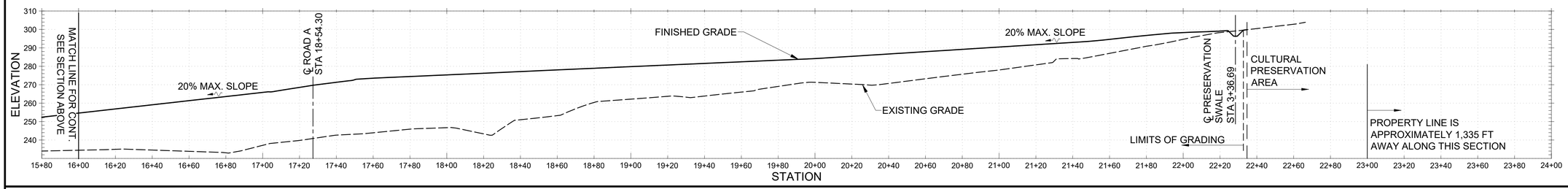
SITE SECTION 1

Date	5/1/2025
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Drawn	DH
Job No.	202056
Sheet No.	CG307
	63 of 107 SHEETS

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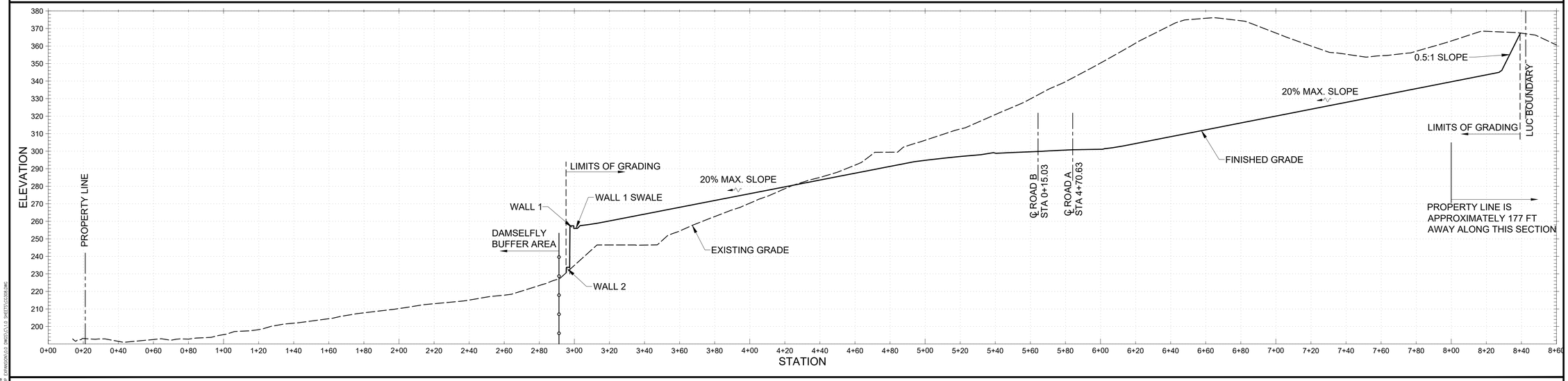


SITE SECTION 2

HORIZONTAL & VERTICAL SCALE:1"=30'-0"

SCALE: HORIZ. 1"=30'-0" 0 10 20 30 60 90

SCALE: VERT. 1"=30'-0" 0 10 20 30 60 90



SITE SECTION 3

HORIZONTAL & VERTICAL SCALE:1"=30'-0"

SCALE: HORIZ. 1"=30'-0" 0 10 20 30 60 90

SCALE: VERT. 1"=30'-0" 0 10 20 30 60 90

APPROVAL:

CHIEF, CIVIL ENGINEERING BRANCH, D.P.P. DATE

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MASSEN S. HIROTA LICENSED PROFESSIONAL ENGINEER No. 9776-C U.S.A. HAWAII

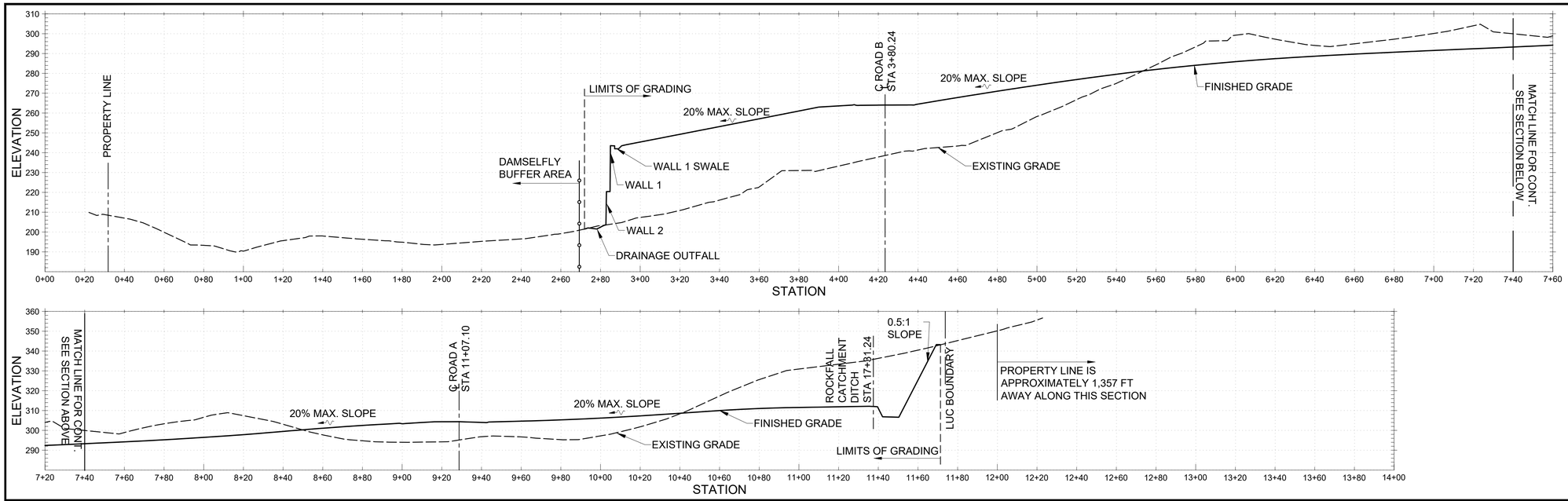
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1330 MAUNAKEA ST.
HONOLULU, HI 96817

HAWAIIAN MEMORIAL PARK EXPANSION
45-425 Kamehameha Highway, Kaneohe, HI
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SITE SECTIONS 2 AND 3

Date	5/1/2025
Design	JH/MKU
Drawn	DH
Job No.	202056
Sheet No.	CG308
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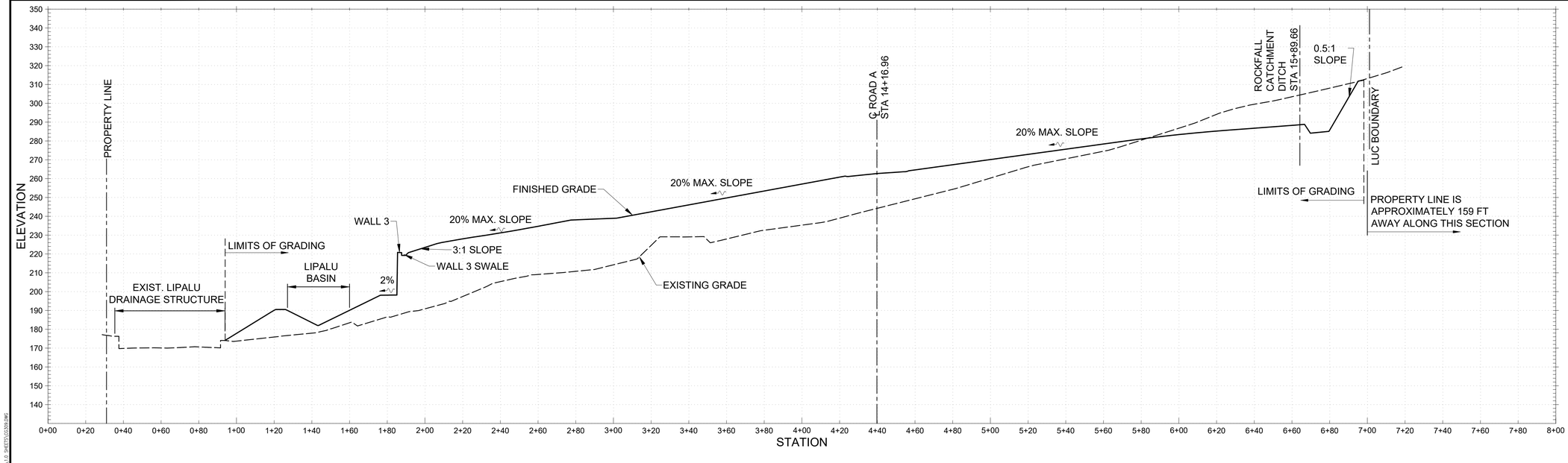


SITE SECTION 4

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SCALE: HORIZ. 1"=30'-0" 0 10 20 30 60 90

SCALE: VERT. 1"=30'-0" 0 10 20 30 60 90



SITE SECTION 6

HORIZONTAL & VERTICAL SCALE:1"=30'-0"

SCALE: HORIZ. 1"=30'-0" 0 10 20 30 60 90

SCALE: VERT. 1"=30'-0" 0 10 20 30 60 90

APPROVAL:

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Expiration Date of the License

JAMES S. HIROTA
LICENSED PROFESSIONAL ENGINEER
No. 9776-C
HAWAII U.S.A.

OWNER / DEVELOPER
HAWAIIAN MEMORIAL LIFE PLAN
1330 MAUNAKEA ST.
HONOLULU, HI 96817

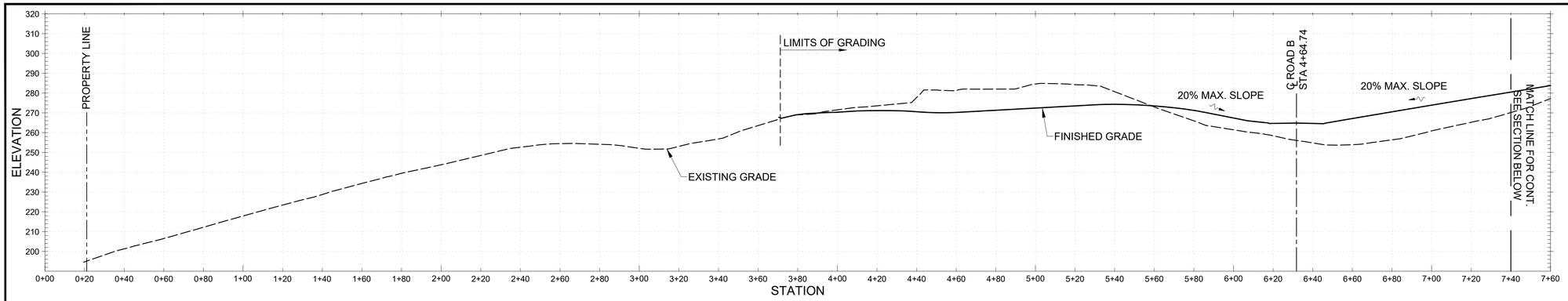
HAWAIIAN MEMORIAL PARK EXPANSION
45-425 Kamehameha Highway, Kaneohe, HI
TMK 4-5-033:001

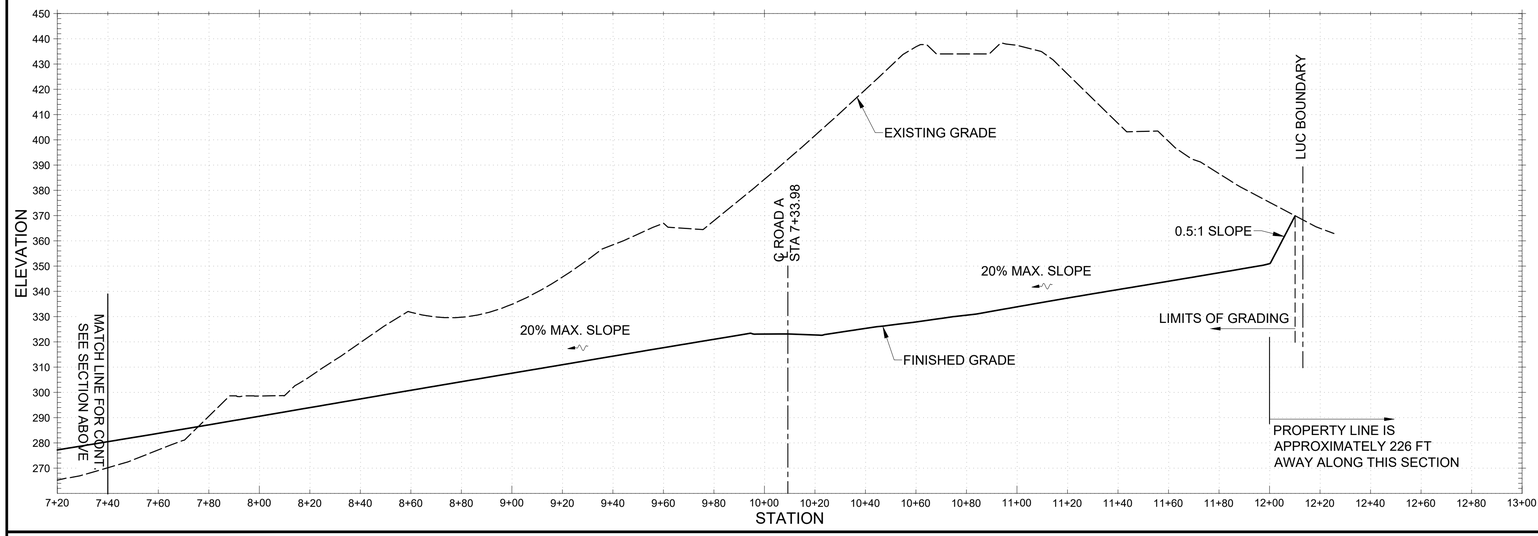
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Date	5/1/2025
Design	JH/MKU
Drawn	DH
Job No.	202056

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CG309
65 of 107 SHEETS

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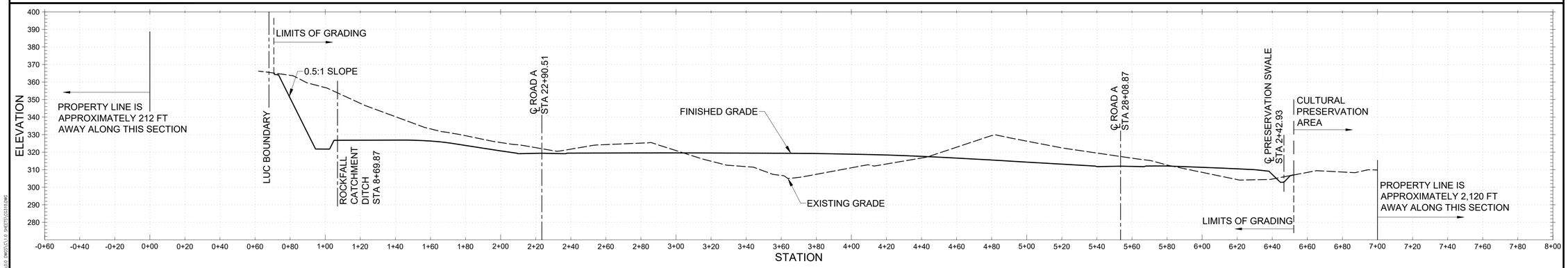


SITE SECTION 5

HORIZONTAL & VERTICAL SCALE:1"=30'-0"

SCALE: HORIZ. 1"=30'-0" 0 10 20 30 60 90

SCALE: VERT. 1"=30'-0" 0 10 20 30 60 90



SITE SECTION 8

HORIZONTAL & VERTICAL SCALE:1"=30'-0"

SCALE: HORIZ. 1"=30'-0" 0 10 20 30 60 90

SCALE: VERT. 1"=30'-0" 0 10 20 30 60 90

APPROVAL:

CHIEF, CIVIL ENGINEERING BRANCH, D.P.P. DATE

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JAMES S. HIROTA
LICENSED PROFESSIONAL ENGINEER
No. 9776-C
U.S.A.
HAWAII

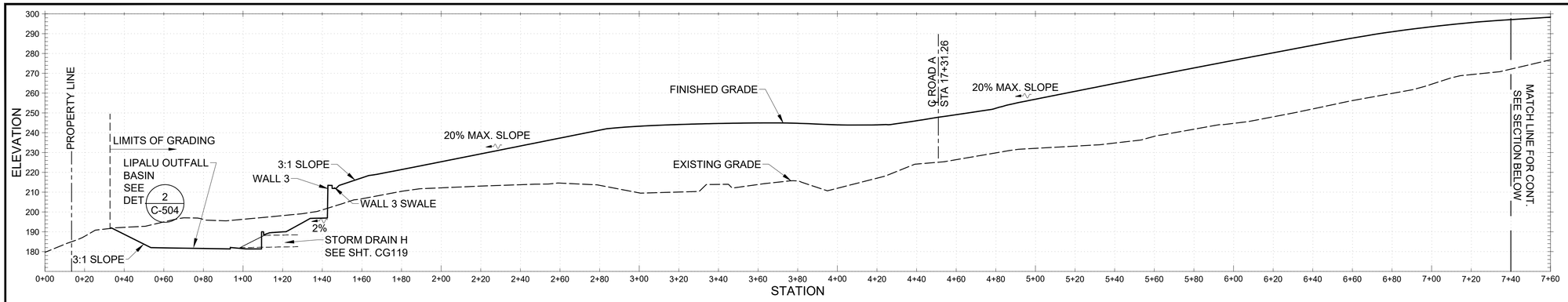
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1330 MAUNAKEA ST.
HONOLULU, HI 96817

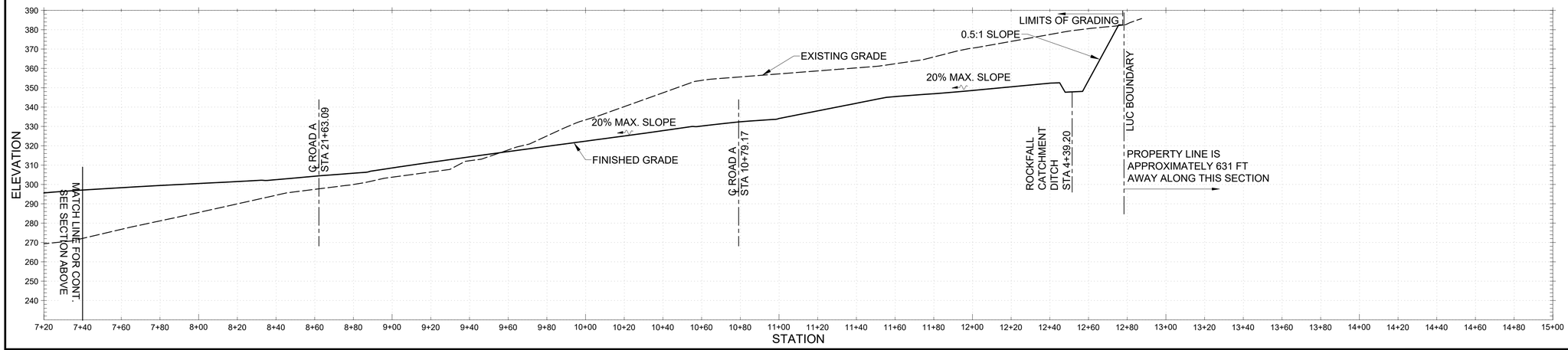
HAWAIIAN MEMORIAL PARK EXPANSION
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TMK 4-5-033:001

SITE SECTIONS 5 AND 8

Date	5/1/2025
Design	JH/MKU
Drawn	DH
Job No.	202056
Sheet No.	CG310
	66 of 107 SHEETS

User: DHUK, ALEX Date: 4/30/2025 1:29 PM
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SITE SECTION 7

HORIZONTAL & VERTICAL SCALE:1"=30'-0"

SCALE: HORIZ. 1"=30'-0" 0 10 20 30 60 90

SCALE: VERT. 1"=30'-0" 0 10 20 30 60 90

APPROVAL:

CHIEF, CIVIL ENGINEERING BRANCH, D.P.P. DATE

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Signature

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MARSHALL S. HIMOTA LICENSED PROFESSIONAL ENGINEER No. 9776-C HAWAII U.S.A.

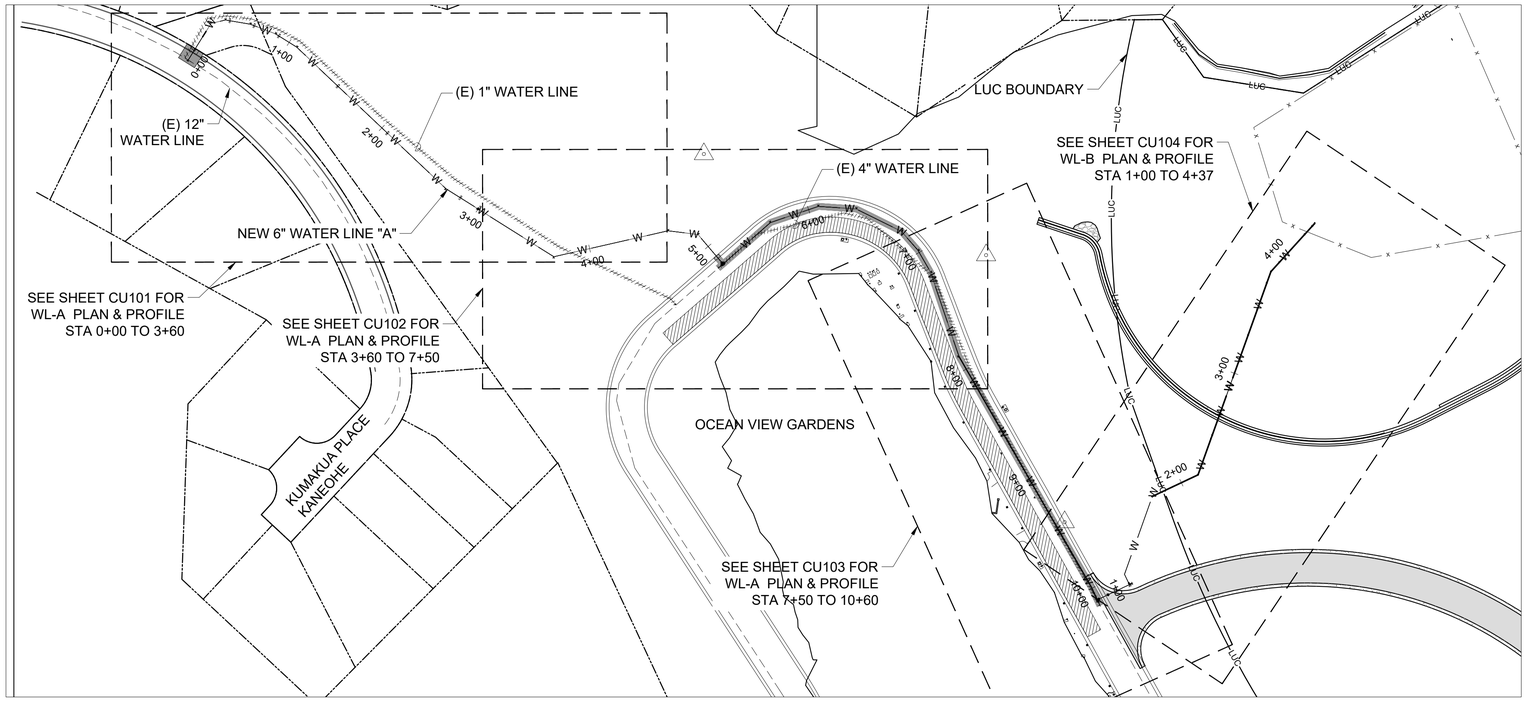
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1330 MAUNAKEA ST.
HONOLULU, HI 96817

HAWAIIAN MEMORIAL PARK EXPANSION
45-425 Kamehameha Highway, Kaneohe, HI
TMK 4-5-033:001

SITE SECTION 7

Date	5/1/2025
Design	JH/MKU
Drawn	DH
Job No.	202056
Sheet No.	CG311
	67 of 107 SHEETS

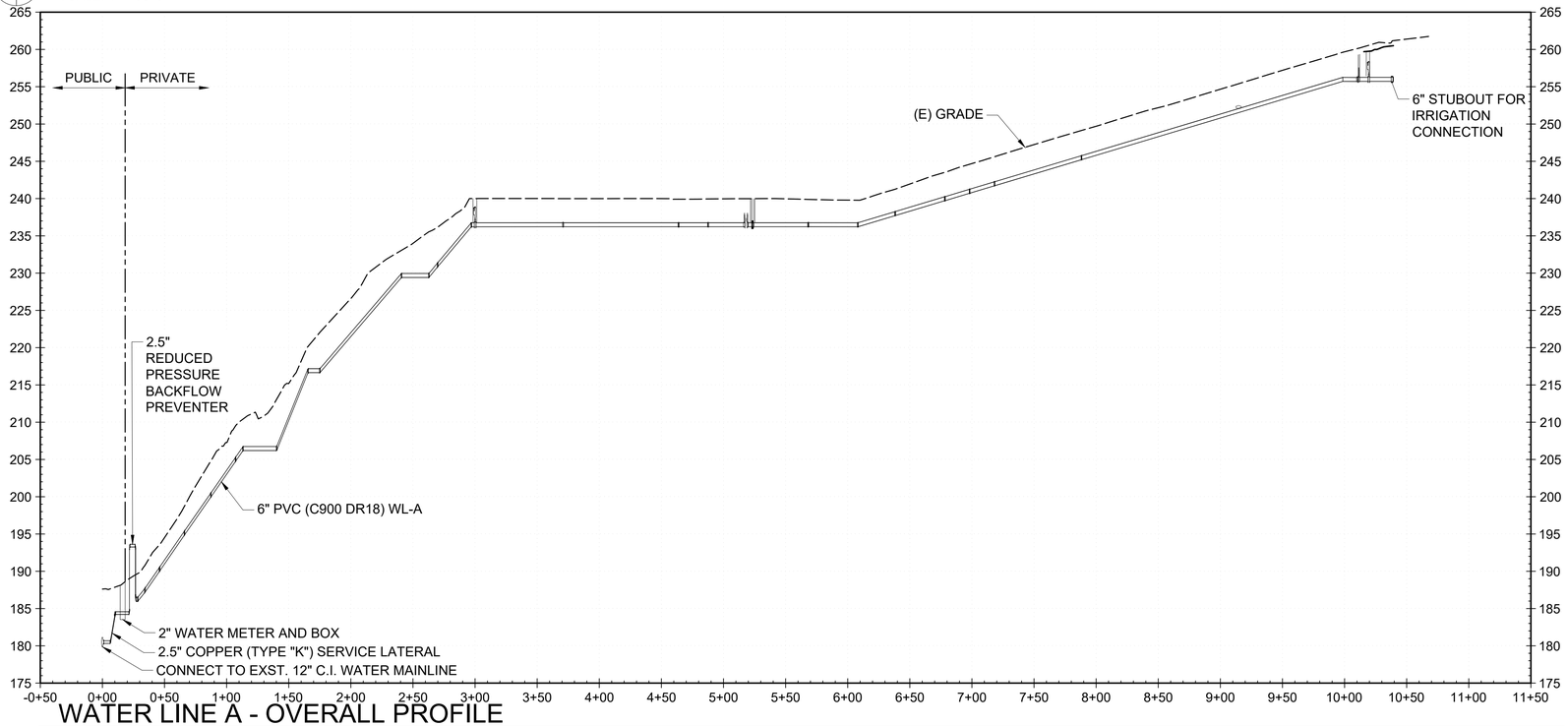
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PLAN NORTH

WATER LINE - OVERALL PLAN

SCALE: 1" = 60'-0"



WATER LINE A - OVERALL PROFILE

SCALE: 1" = 60'-0" H, 1" = 10'-0"

LEGEND

- (E) WATER LINE
- W (N) WATER LINE
- BENCH MARK
- PROPERTY LINE

NOTE:

1. SEE SHEET G-003 FOR WATERLINE WORK SEQUENCE.

BWS FLOW REQUIREMENTS

PREMISE ID#: 0780381456

METER NUMBER# (MN): 1903000123

	DESCRIPTION	FU	GPM	GPD
A.	PROPOSED DOMESTIC:	0	0	0
B.	PROPOSED IRRIGATION:	0	15-30	3,500
C.	OTHER:	0	0	0
D.	TOTAL PROPOSED:	0	130	3,500
E.	DEMOLITION:	0	0	0
	DEMO PERMIT #:	N/A	DATE: N/A	
F.	NET CHANGE:	0	130	3,500
G.	EXISTING TO REMAIN:	0	30	6,925 (a)
H.	GRAND TOTAL:	0	160	10,425

FOOTNOTES

(a) BASED ON WATER METER READINGS PROVIDED BY BWS.

FOR ESTIMATING PURPOSES ONLY	ESTIMATE
DESCRIPTION OF WORK: 2.5" DOMESTIC SERVICE	
WATER SYSTEMS FACILITIES CHARGES	
0FU @ $620.85/FU (COMM.) = $0.00	$0.00
0FU @ $220.29/FU (COMM.) = $0.00	$0.00
1 - 2" METER INSTALLATION CHARGE	$249.00
*CREDIT	
P/ID: 0780381456	TBD
TOTAL	$249.00

* CREDITS WILL BE DETERMINED WHEN BUILDING PERMIT APPLICATION IS SUBMITTED FOR BWS REVIEW AND APPROVAL.

THE ESTIMATE IS SUBJECT TO CHANGE. A FORMAL WRITTEN QUOTATION MAY BE OBTAINED AND ALL PAYMENTS FOR THE CHARGES SHOWN ON THE QUOTATION MADE WITHIN 30 DAYS AFTER THE CONSTRUCTION PLAN IS APPROVED BY BWS. IF PAYMENTS ARE NOT RECEIVED WITHIN THE 30 DAY PERIOD, THE PROJECT WILL BE SUBJECT TO THE PREVAILING RATES.

1"=60'-0" VERT. 0 30 60 120 180

1"=10'-0" HORIZ. 0 5 10 20 30

APPROVAL:

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

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2023/CP-133

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APRIL 30, 2026
Expiration Date of the License

JAMES S. HIROTA
LICENSED PROFESSIONAL ENGINEER
No. 9776-C
U.S.A. HAWAII

OWNER / DEVELOPER
HAWAIIAN MEMORIAL LIFE PLAN
1330 MAUNAKEA ST.
HONOLULU, HI 96817

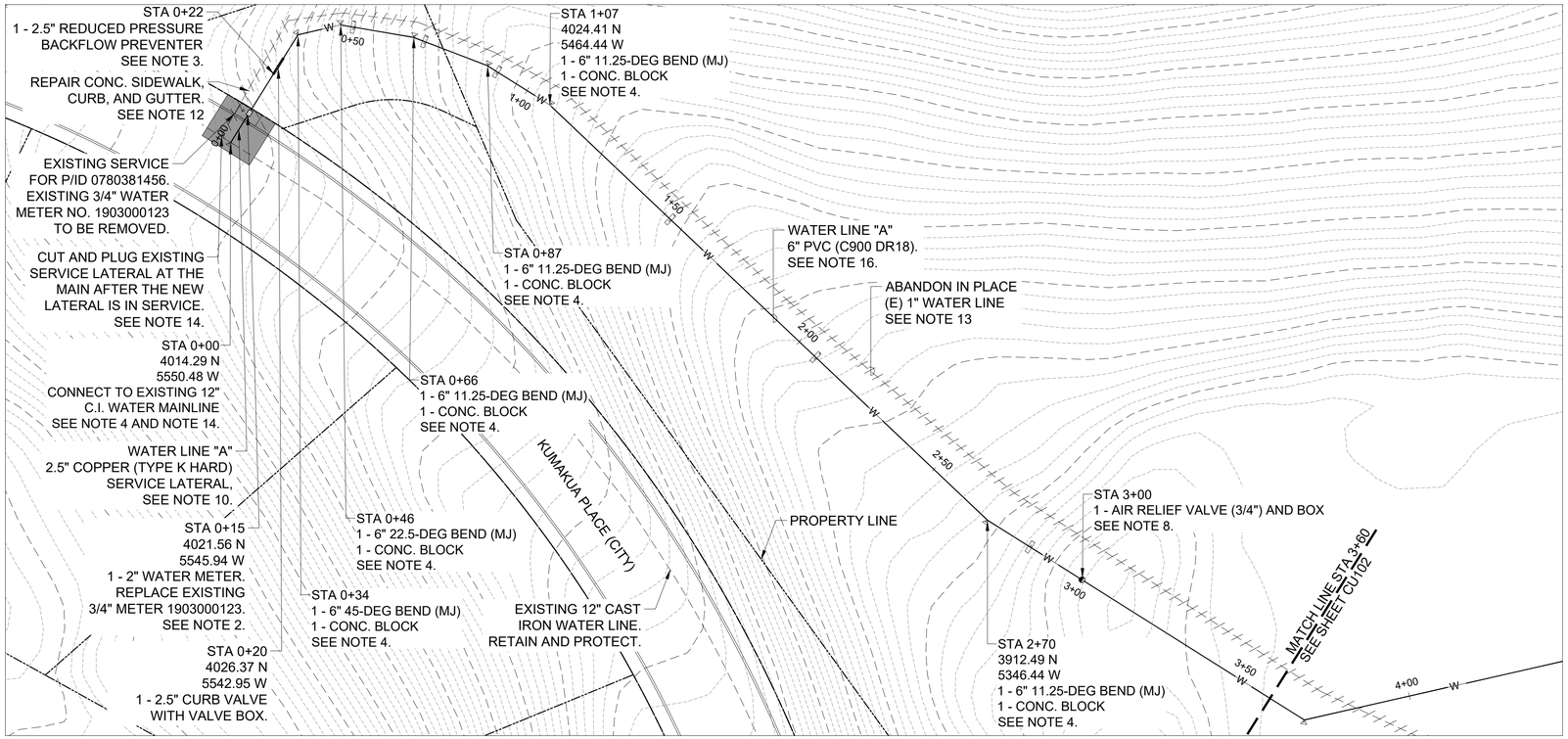
HAWAIIAN MEMORIAL PARK EXPANSION
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TMK 4-5-033:001

WATER OVERALL PLAN

Date	5/1/2025
Design	CJH
Drawn	LYY
Job No.	202056

Sheet No.
CU100
68 of 107 SHEETS

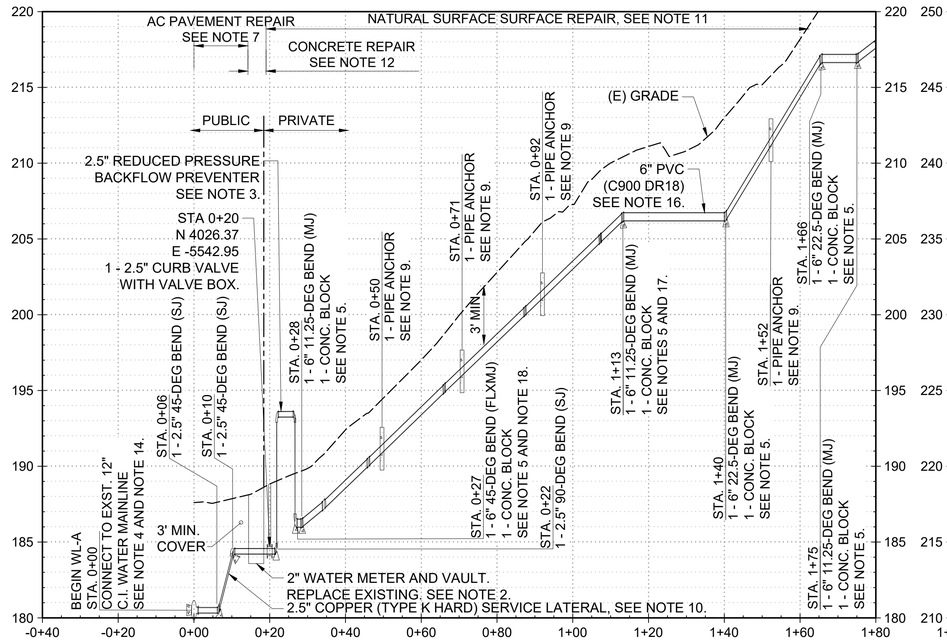
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PLAN NORTH

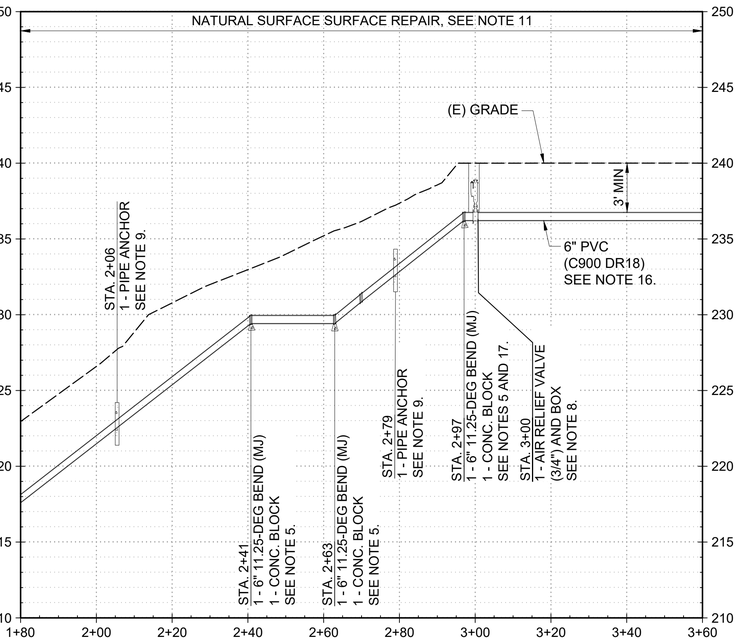
PLAN - WATERLINE "A" STA 0+00 TO 3+60

SCALE: 1" = 20'-0"



PROFILE - WATER LINE "A" STA 0+00 TO 1+80

SCALE: 1" = 20'-0" H, 1" = 5'-0" V



PROFILE - WATER LINE "A" STA 1+80 TO 3+60

SCALE: 1" = 20'-0" H, 1" = 5'-0" V

LEGEND

- (E) WATER LINE
- W (N) WATER LINE
- ABANDON IN PLACE
- MATCH LINE
- ASPHALT PAVEMENT
- CONCRETE PAVEMENT
- PROPERTY LINE

NOTES:

1. CONTRACTOR TO VERIFY LOCATION AND DEPTH OF EXISTING WATER LINE.
2. FOR WATER METER, SEE BWS STANDARD DETAIL M5 FOR 2" METER. CONTRACTOR TO RELOCATE AND ENLARGE THE EXISTING METER TO NEW 2-INCH WATER METER. CONTRACTOR SHALL REMOVE AND DISPOSE OF EXISTING METER BOX. ALL RELOCATION WORK AND OTHER WORK ON BWS SYSTEM COMPONENTS SHALL BE COORDINATED WITH BWS INSPECTOR.
3. FOR REDUCED PRESSURE BACKFLOW PREVENTER, PROVIDE 2.5" BOARD OF WATER SUPPLY APPROVED REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLY(S) AFTER THE WATER METER(S) PRIOR TO ANY TEES OR BRANCHES PER BWS STANDARD DETAIL V9.
4. FOR HORIZONTAL CONCRETE BLOCK, SEE BWS STANDARD DETAIL B3.
5. FOR VERTICAL CONCRETE BLOCK, SEE BWS STANDARD DETAIL B7.
6. FOR GATE VALVE WITH VALVE BOX, SEE BWS STANDARD DETAILS V14 AND V16.
7. REPAIR AC PAVEMENT TO MATCH EXISTING SECTION AND GRADES. 5' (MINIMUM) WIDTH. PROVIDE A SMOOTH RIDING CONNECTION. SEE DETAIL 1/C-503.
8. FOR AIR RELIEF VALVE, SEE BWS STANDARD DETAIL V2.
9. FOR PIPE ANCHOR, SEE DETAIL 2/C-503.
10. PROVIDE 2.5" COPPER (TYPE K HARD) SERVICE LATERAL, PER BWS SECTION 208.01, FROM THE MAINLINE CONNECTION THROUGH THE BACKFLOW PREVENTER, REDUCING TO 2" FOR THE FLOW METER PER BWS STANDARD DETAIL L12 AND L15.
11. FOR REPAIR OF NATURAL SURFACE, SEE DETAIL 1/C-503.
12. REPAIR CONCRETE SIDEWALK, CURB AND GUTTER TO MATCH EXISTING SECTION, GRADES, AND DIMENSIONS.
13. RETAIN AND PROTECT EXISTING WATER LINE UNTIL NEW WATERLINE IS INSTALLED, TESTED, AND PUT INTO SERVICE, THEN ABANDON EXISTING IN PLACE.
14. PROVIDE 12" X 2.5" SERVICE SADDLE (ROMAC 304, OR EQUAL), 2.5" CORPORATION STOP, AND 2.5" COMPRESSION COUPLING. WRAP SADDLE IN PETROLATUM WAX TAPE. REFERENCE BWS STANDARD DETAIL L15. CUT AND PLUG EXISTING SERVICE LATERAL AT THE MAIN AFTER THE NEW LATERAL IS INSTALLED, TESTED, AND PUT INTO SERVICE. CLOSE CORP STOP ON THE MAINLINE OR OTHERWISE PROVIDE A WATERTIGHT SEAL AT THE TAP LOCATION FOR THE EXISTING SERVICE TO BE ABANDONED. CONTRACTOR SHALL REMOVE AND DISPOSE OF EXISTING METER BOX. ALL RELOCATION WORK AND OTHER WORK ON BWS SYSTEM COMPONENTS SHALL BE COORDINATED WITH BWS INSPECTOR.
15. FOR CLARITY, HORIZONTAL FITTINGS ARE CALLED OUT ONLY IN THE PLAN VIEW, WHILE VERTICAL FITTINGS ARE ONLY CALLED OUT IN THE PROFILE VIEW.
16. PVC PIPE PER BWS STANDARDS SECTION 204.
17. CONTRACTOR TO PROVIDE DEFLECTIONS AS NECESSARY, IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND BWS STANDARDS SECTION 102.07.
18. PROVIDE BLIND FLANGE WITH 2.5" THREADED TAP ON VERTICAL LEG OF ELBOW. PROVIDE 2.5" COPPER X MALE ADAPTER TO CONNECT COPPER PIPE TO BLIND FLANGE. PROVIDE ALL OTHER FITTINGS, ADAPTERS, COUPLERS, AND APPURTENANCES FOR A WATERTIGHT ASSEMBLY.
19. SEE SHEET G-003 FOR WATERLINE WORK SEQUENCE.

1"=20'-0" HORIZ. 0 10 20 40 60

1"=5'-0" VERT. 0 5 10 15

APPROVAL:

CHIEF, CIVIL ENGINEERING BRANCH, D.P.P. DATE

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

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Signature

APRIL 30, 2026
Expiration Date of the License

JAMES S. HIROTA U.S.A. HAWAII LICENSED PROFESSIONAL ENGINEER No. 9776-C

OWNER / DEVELOPER
HAWAIIAN MEMORIAL LIFE PLAN
1330 MAUNAKEA ST.
HONOLULU, HI 96817

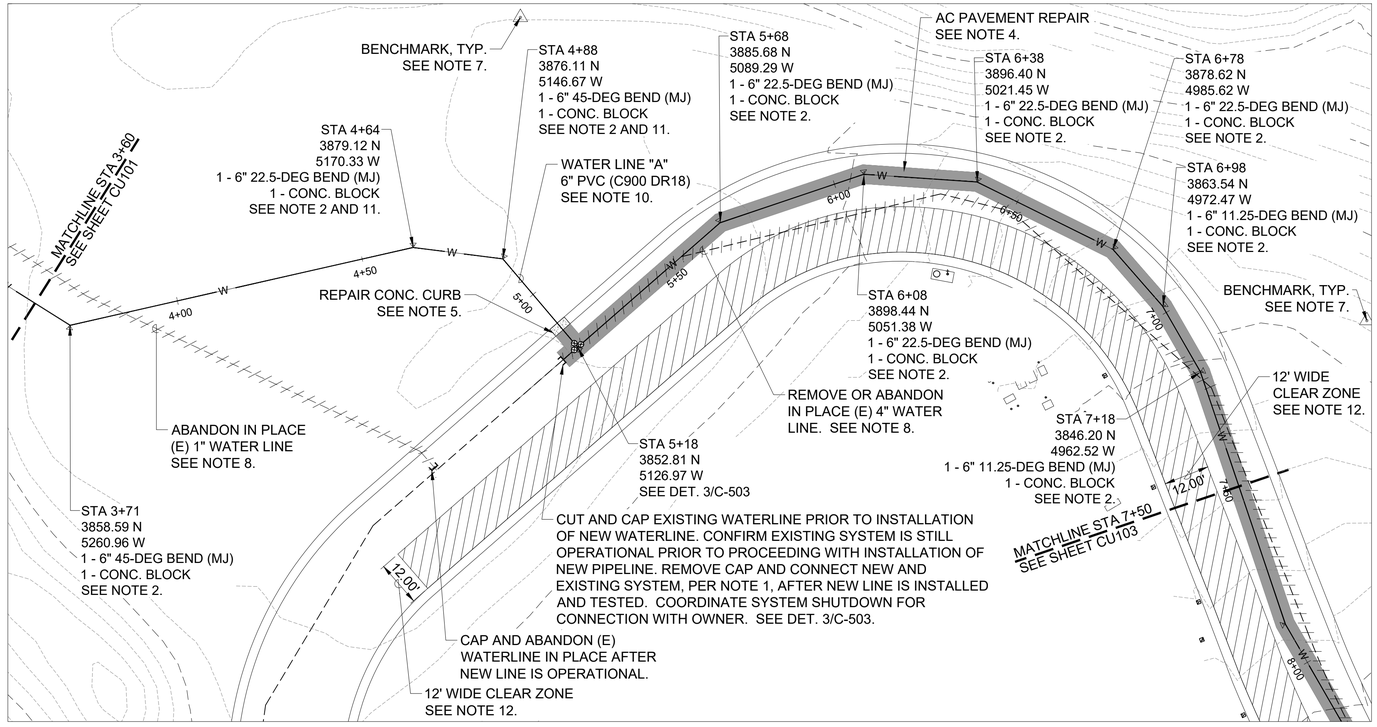
HAWAIIAN MEMORIAL PARK EXPANSION
45-425 Kamehameha Highway, Kaneohe, HI
TMK 4-5-033:001

WATER LINE A - PLAN AND PROFILE 0+00 TO 3+60

Date	5/1/2025
Design	CJH
Drawn	LYY
Job No.	202056
Sheet No.	CU101
	69 of 107 SHEETS

2023/CP-133

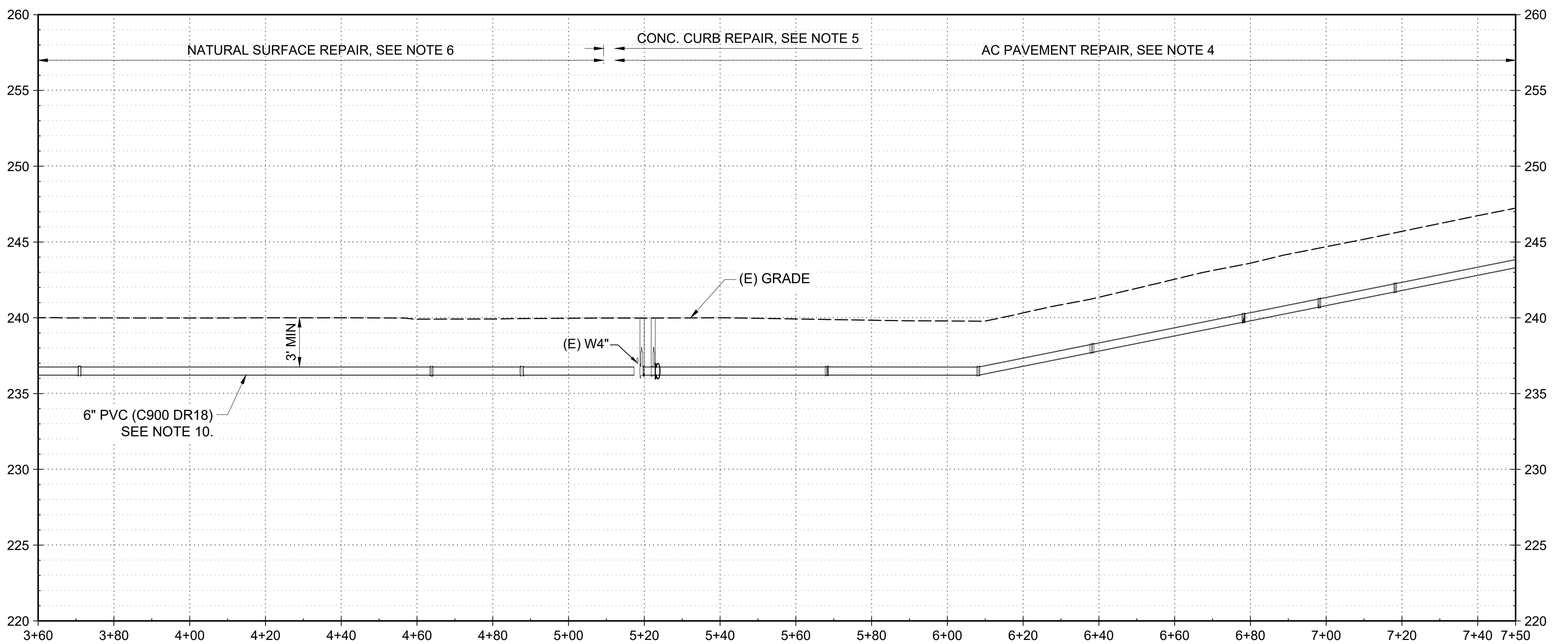
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PLAN NORTH

PLAN - WATERLINE "A" STA 3+60 TO 7+50

SCALE: 1" = 20'-0"



PROFILE - WATERLINE "A" STA 3+60 TO 7+50

SCALE: 1" = 20'-0" H, 1" = 5'-0" V

LEGEND

- (E) WATER LINE
- W (N) WATER LINE
- ABANDON IN PLACE
- MATCH LINE
- BENCHMARK
- ASPHALT PAVEMENT

NOTES:

1. CONTRACTOR TO VERIFY LOCATION AND DEPTH OF EXISTING WATER LINE. SEE DETAIL 3/C-503 FOR A CONNECTION SCHEMATIC. CONTRACTOR SHALL PROVIDE ALL FITTINGS, APPURTENANCES, AND OTHER ITEMS REQUIRED FOR THE CONNECTION.
2. FOR HORIZONTAL CONCRETE BLOCK, SEE BWS STANDARD DETAIL B3.
3. FOR VERTICAL CONCRETE BLOCK, SEE BWS STANDARD DETAIL B7.
4. REPAIR AC PAVEMENT TO MATCH EXISTING SECTION AND GRADES. 5' (MIN.) WIDTH. PROVIDE A SMOOTH RIDING CONNECTION. SEE DETAIL 1/C-503.
5. REPAIR CONCRETE ROLLED CURB TO MATCH EXISTING GRADES AND DIMENSIONS. SEE CITY AND COUNTY OF HONOLULU STANDARD DETAIL R-5.
6. FOR REPAIR OF NATURAL SURFACE, SEE DETAIL 1/C-503.
7. RETAIN AND PROTECT BENCHMARKS.
8. RETAIN AND PROTECT EXISTING WATER LINE UNTIL NEW WATERLINE IS INSTALLED, TESTED, AND PUT INTO SERVICE, THEN ABANDON EXISTING IN PLACE.
9. FOR CLARITY, HORIZONTAL FITTINGS ARE ONLY CALLED OUT IN THE PLAN VIEW, WHILE VERTICAL FITTINGS ARE ONLY CALLED OUT IN THE PROFILE VIEW.
10. PVC PIPE PER BWS STANDARDS SECTION 204.
11. CONTRACTOR TO PROVIDE DEFLECTIONS AS NECESSARY, IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND BWS STANDARDS SECTION 102.07.
12. CONTRACTOR SHALL PROVIDE AT LEAST ONE LANE (MINIMUM 12 FEET) FOR VEHICULAR TRAFFIC AT ALL TIMES DURING CONSTRUCTION. PROVIDE TRAFFIC CONTROL DEVICES, FLAGGERS, AND OTHER ITEMS, AS NEEDED, TO MAINTAIN ACCESS.
13. SEE SHEET G-003 FOR WATERLINE WORK SEQUENCE.

1"=20'-0" HORIZ. 0 10 20 40 60

1"=5'-0" VERT. 0 5 10 15

Revisions

2023/CP-133

COFFMAN ENGINEERS
745 Fort Street, Suite 400 | Honolulu, Hawaii 96813
ph 808.687.8884 | fax 808.687.8883
coffman.com

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

Signature

APRIL 30, 2026

Expiration Date of the License

SAMUEL S. HIROTA LICENSED PROFESSIONAL ENGINEER No. 9776-C U.S.A. HAWAII

OWNER / DEVELOPER
HAWAIIAN MEMORIAL LIFE PLAN
1330 MAUNAKEA ST.
HONOLULU, HI 96817

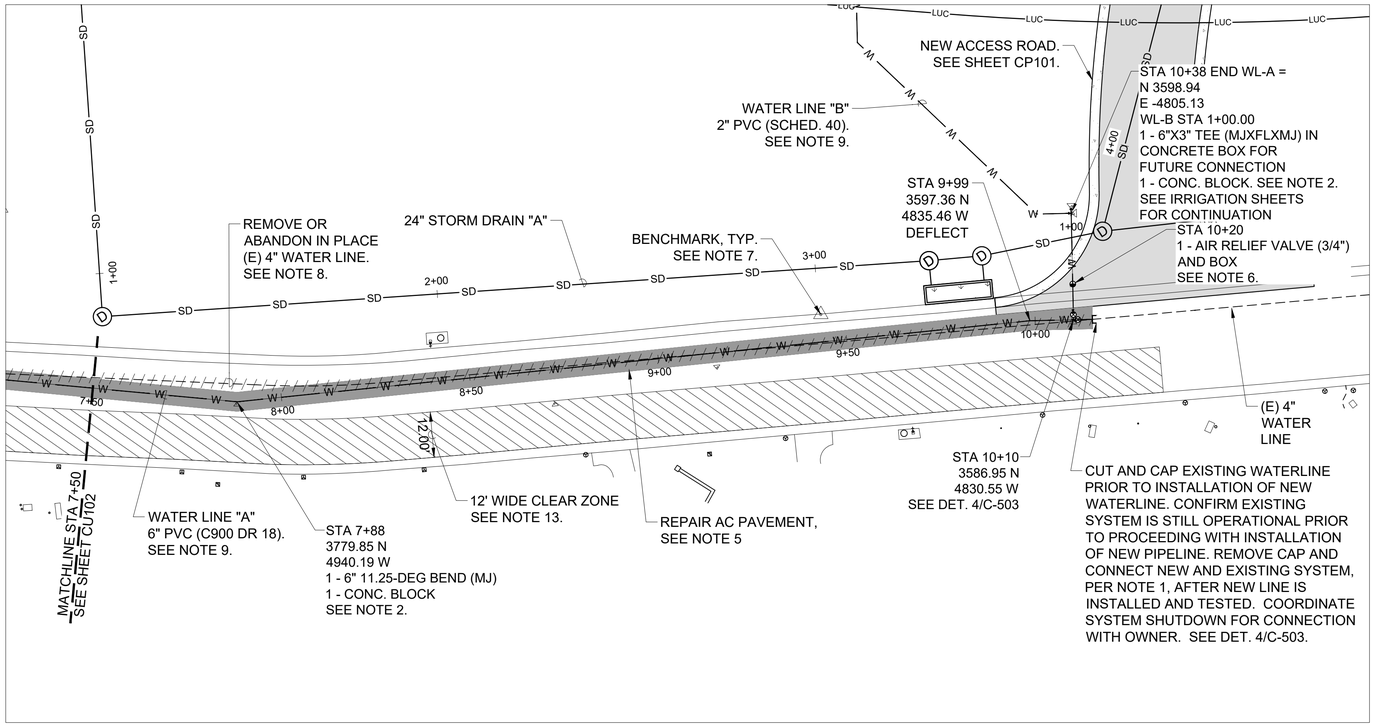
HAWAIIAN MEMORIAL PARK EXPANSION
45-425 Kamehameha Highway, Kaneohe, HI
TMK 4-5-033:001

WATER LINE A - PLAN AND PROFILE 3+60 TO 7+50

Date	5/1/2025
Design	CJH
Drawn	LYY
Job No.	202056

Sheet No.
CU102
70 of 107 SHEETS

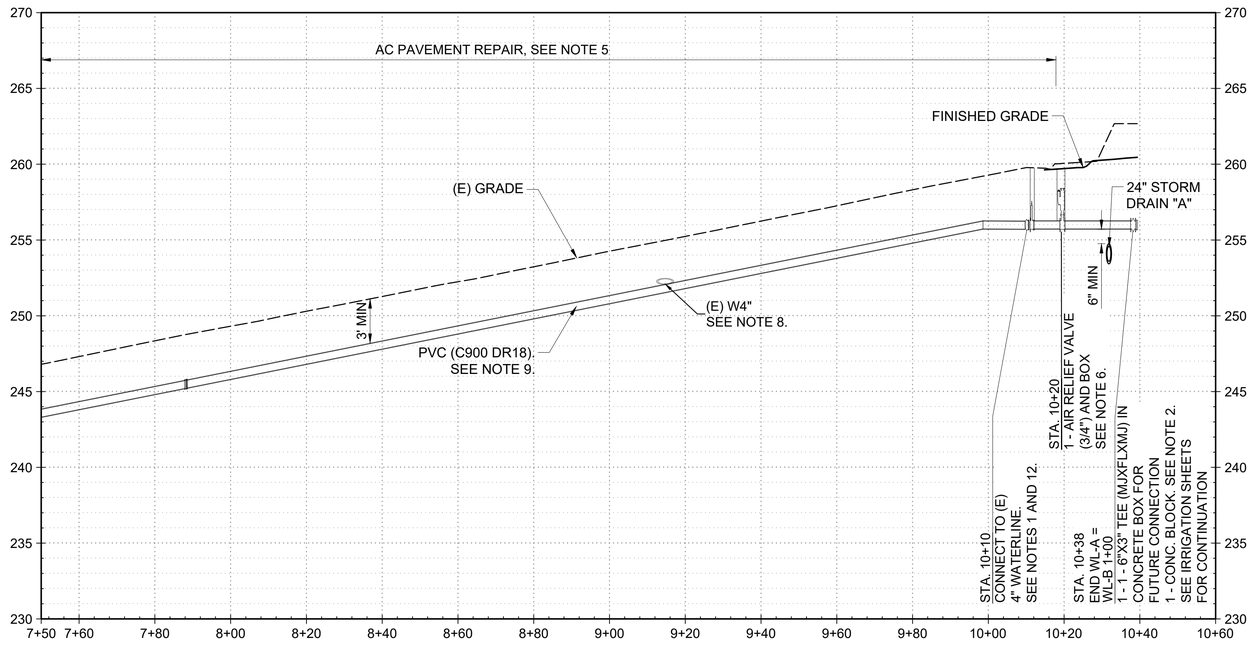
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PLAN NORTH

PLAN - WATERLINE "A" STA 7+50 TO 10+60

SCALE: 1" = 20'-0"



PROFILE - WATERLINE "A" STA 7+50 TO 10+60

SCALE: 1" = 20'-0" H, 1" = 5'-0" V

LEGEND

- (E) WATER LINE
- W (N) WATER LINE
- ABANDON IN PLACE
- MATCH LINE
- BENCHMARK
- ASPHALT PAVEMENT
- CONCRETE PAVEMENT

NOTES:

1. CONTRACTOR TO VERIFY LOCATION AND DEPTH OF EXISTING WATER LINE. FOR CONNECTION SCHEMATIC, SEE DETAIL 4/C-503.
2. FOR HORIZONTAL CONCRETE BLOCK, SEE BWS STANDARD DETAIL B3.
3. FOR VERTICAL CONCRETE BLOCK, SEE BWS STANDARD DETAIL B7.
4. FOR CLARITY, HORIZONTAL FITTINGS ARE CALLED OUT ONLY IN THE PLAN VIEW, WHILE VERTICAL FITTINGS ARE ONLY CALLED OUT IN THE PROFILE VIEW.
5. REPAIR AC PAVEMENT TO MATCH EXISTING SECTION. PROVIDE A SMOOTH RIDING CONNECTION. SEE DETAIL 1/C-503.
6. FOR AIR RELIEF VALVE, SEE BWS STANDARD DETAIL V2.
7. RETAIN AND PROTECT BENCHMARKS.
8. RETAIN AND PROTECT EXISTING WATER LINE UNTIL NEW WATERLINE IS INSTALLED, TESTED, AND PUT INTO SERVICE, THEN ABANDON EXISTING IN PLACE.
9. PVC PIPE PER BWS STANDARDS SECTION 204.
10. REPAIR CONCRETE ROLLED CURB TO MATCH EXISTING GRADES AND DIMENSIONS. SEE CITY AND COUNTY OF HONOLULU STANDARD DETAIL R-5.
11. FOR REPAIR OF NATURAL SURFACE, SEE DETAIL 1/C-503.
12. CONTRACTOR TO PROVIDE DEFLECTIONS AS NECESSARY, IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND BWS STANDARDS SECTION 102.07.
13. CONTRACTOR SHALL PROVIDE AT LEAST ONE LANE (MINIMUM 12 FEET) FOR VEHICULAR TRAFFIC AT ALL TIMES DURING CONSTRUCTION. PROVIDE TRAFFIC CONTROL DEVICES, FLAGGERS, AND OTHER ITEMS, AS NEEDED, TO MAINTAIN ACCESS.
14. SEE SHEET G-003 FOR WATERLINE WORK SEQUENCE.

1"=20'-0" HORIZ. 0 10 20 40 60

1"=5'-0" VERT. 0 5 10 15

Revisions

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Signature

APRIL 30, 2026

Expiration Date of the License

SAMUEL S. HIROTA U.S.A. HAWAII LICENSED PROFESSIONAL ENGINEER No. 9776-C

OWNER / DEVELOPER
HAWAIIAN MEMORIAL LIFE PLAN
1330 MAUNAKEA ST.
HONOLULU, HI 96817

HAWAIIAN MEMORIAL PARK EXPANSION

45-425 Kamehameha Highway, Kaneohe, HI
TMK 4-5-033:001

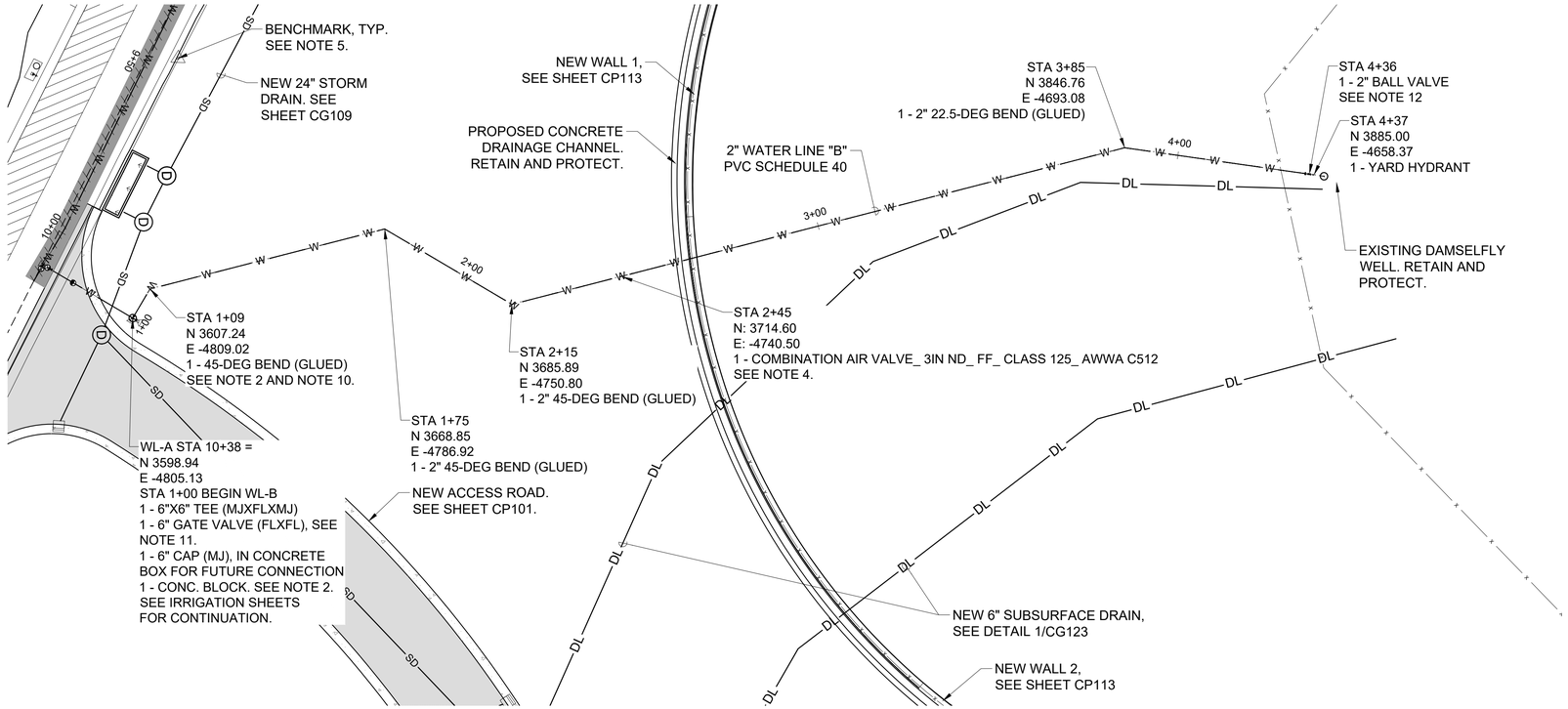
WATER LINE A - PLAN AND PROFILE 7+50 TO 10+60

Date	5/1/2025
Design	CJH
Drawn	LYY
Job No.	202056

Sheet No.
CU103
71 of 107 SHEETS

2023/CP-133

User: DBell, Xref: 4/30/2026, 2:07 PM
Drawing: P:\HON_JOB\202\202056.HMP EXHIBIT\DWG\A3.2 (NEW)\CU1.1-3 SHEETS\CU103.DWG



LEGEND

- (E) WATER LINE
- W (N) WATER LINE
- ABANDON IN PLACE
- MATCH LINE
- BENCHMARK
- ASPHALT PAVEMENT
- CONCRETE PAVEMENT

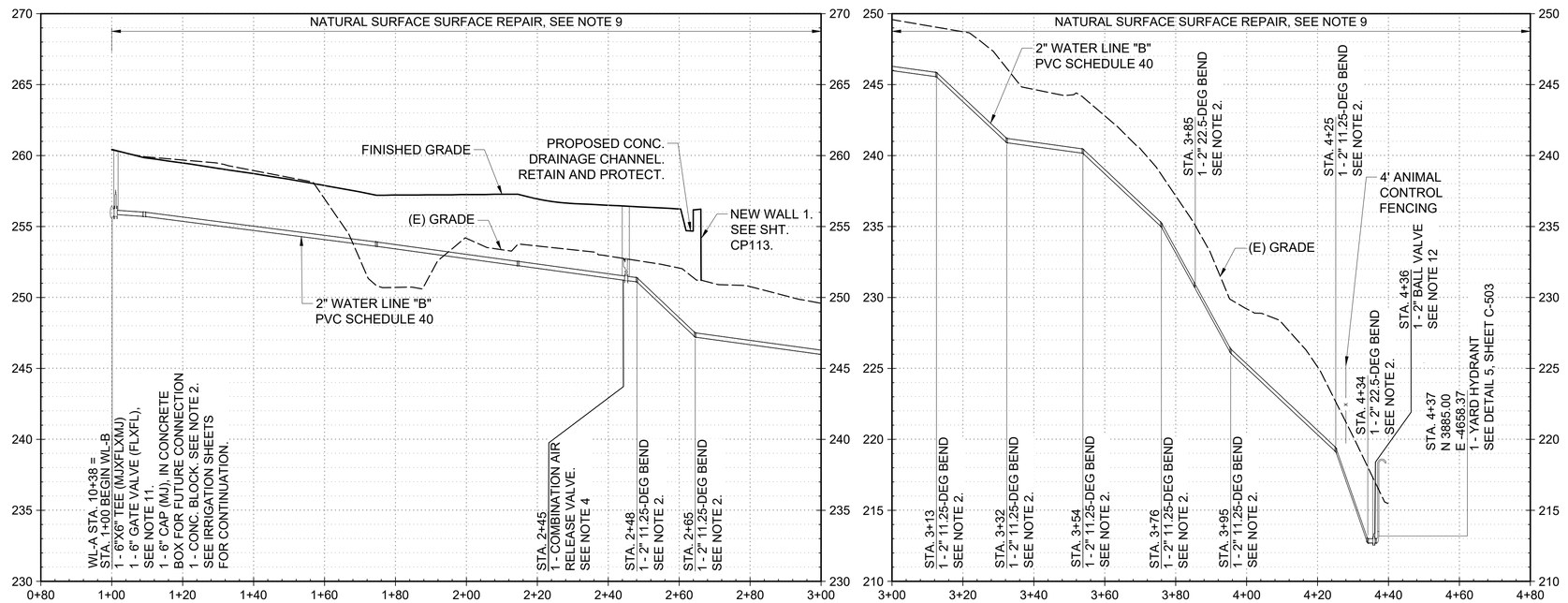
NOTES:

1. CONTRACTOR TO VERIFY LOCATION AND DEPTH OF EXISTING WATER LINE.
2. FOR VERTICAL CONCRETE BLOCK, SEE BWS STANDARD DETAIL B7.
3. FOR CLARITY, HORIZONTAL FITTINGS ARE CALLED OUT ONLY IN THE PLAN VIEW, WHILE VERTICAL FITTINGS ARE ONLY CALLED OUT IN THE PROFILE VIEW.
4. FOR AIR RELIEF VALVE, SEE BWS STANDARD DETAIL V2. REPLACE 3/4" AIR VALVE WITH 3/4" COMBINATION AIR RELIEF VALVE.
5. RETAIN AND PROTECT BENCHMARKS.
6. RETAIN AND PROTECT EXISTING WATER LINE UNTIL NEW WATERLINE IS INSTALLED, TESTED, AND PUT INTO SERVICE, THEN ABANDON EXISTING IN PLACE.
7. NOT USED.
8. REPAIR CONCRETE ROLLED CURB TO MATCH EXISTING GRADES AND DIMENSIONS. SEE CITY AND COUNTY OF HONOLULU STANDARD DETAIL R-5.
9. FOR REPAIR OF NATURAL SURFACE, SEE DETAIL 1/C-503.
10. CONTRACTOR TO PROVIDE DEFLECTIONS AS NECESSARY, IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND BWS STANDARDS SECTION 102.07.
11. PROVIDE BLIND FLANGE WITH 2" THREADED TAP. PROVIDE 2" PVC SCHEDULE 40 ADAPTER TO CONNECT PVC PIPE TO THE BLIND FLANGE. PROVIDE ALL OTHER FITTINGS, ADAPTERS, COUPLERS, AND APPURTENANCES FOR A WATERTIGHT ASSEMBLY. PROVIDE GATE VALVE WITH BOX PER BWS STANDARD DETAIL V14 AND V16.
12. PROVIDE 2" BALL VALVE WITH GLUED ENDS OR COMPRESSION FITTINGS TO CONNECT TO NEW PIPELINE. PROVIDE WATERTIGHT CONNECTION. PROVIDE VALVE BOX PER BWS STANDARDS V14 AND V16.
13. SEE SHEET G-003 FOR WATERLINE WORK SEQUENCE.

PLAN NORTH

PLAN - WATERLINE "B" STA 1+00 TO 4+37

SCALE: 1" = 20'-0"



PROFILE - WATERLINE "B" STA 1+00 TO 4+37

SCALE: 1" = 20'-0" H, 1" = 5'-0" V

1"=20'-0" HORIZ. 0 10 20 40 60

1"=5'-0" VERT. 0 5 10 15

Revisions		

2023/CP-133

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James Hirota
Signature
APRIL 30, 2026
Expiration Date of the License

JAMES S. HIROTA
LICENSED PROFESSIONAL ENGINEER
No. 9776-C
U.S.A. HAWAII

OWNER / DEVELOPER
HAWAIIAN MEMORIAL LIFE PLAN
1330 MAUNAKEA ST.
HONOLULU, HI 96817

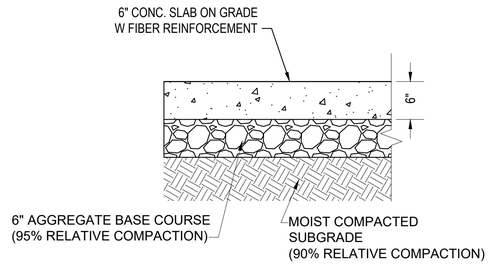
HAWAIIAN MEMORIAL PARK EXPANSION
45-425 Kamehameha Highway, Kaneohe, HI
TMK 4-5-033:001

WATER LINE B - PLAN AND PROFILE 1+00 TO 4+37

Date	5/1/2025
Design	CJH
Drawn	LYY
Job No.	202056

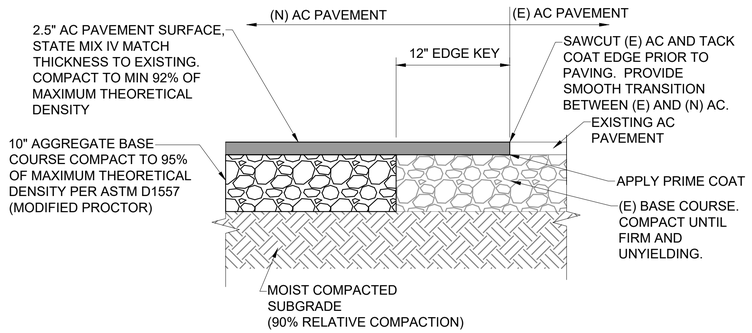
Sheet No.
CU104
72 of 107 SHEETS

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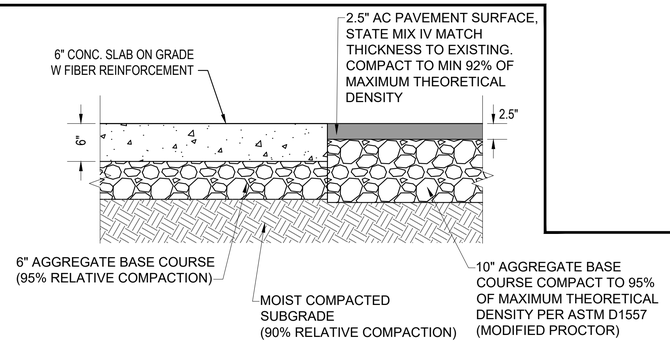
NOTES:
1. CONTRACTOR TO PROVIDE 3000 PSI CONCRETE MIX DESIGN FOR ENGINEERS REVIEW. CONCRETE MIX DESIGN, PLACEMENT, AND FINISHING TO CONFORM WITH COUNTY STANDARDS

1 CONCRETE PAVEMENT
SCALE: NTS



NOTE:
1. PAVEMENT STRUCTURE SHALL BE RESTORED TO EQUAL OR BETTER CONDITION THAN EXISTING.

2 A.C. PAVEMENT AND CONNECTION
SCALE: NTS



3 A.C. & CONC. PAVEMENT CONNECTION
SCALE: NTS

2023/CP-133

Revisions

COFFMAN ENGINEERS
745 Fort Street, Suite 400 | Honolulu, Hawaii 96813
ph 808.687.8884 | fax 808.687.8883
coffman.com

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JAMES S. HIROTA — LICENSED PROFESSIONAL ENGINEER — No. 9776-C — HAWAII — U.S.A.

Signature

APRIL 30, 2026
Expiration Date of the License

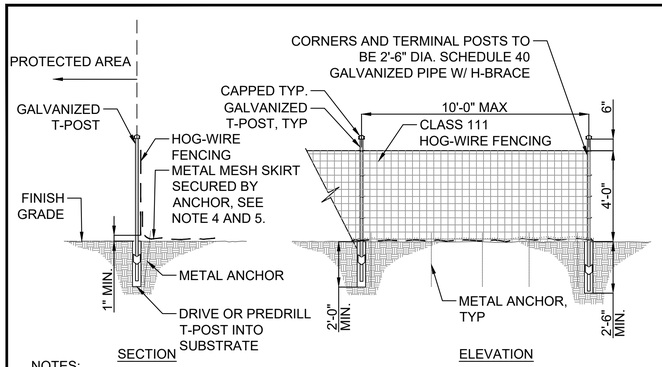
OWNER / DEVELOPER
HAWAIIAN MEMORIAL LIFE PLAN
1330 MAUNAKEA ST.
HONOLULU, HI 96817

HAWAIIAN MEMORIAL PARK EXPANSION
45-425 Kamehameha Highway, Kaneohe, HI
TMK 4-5-033:001

PAVEMENT DETAILS

Date	5/1/2025
Design	JH/MKU
Drawn	AS
Job No.	202056
Sheet No.	C-501
	73 of 107 SHEETS

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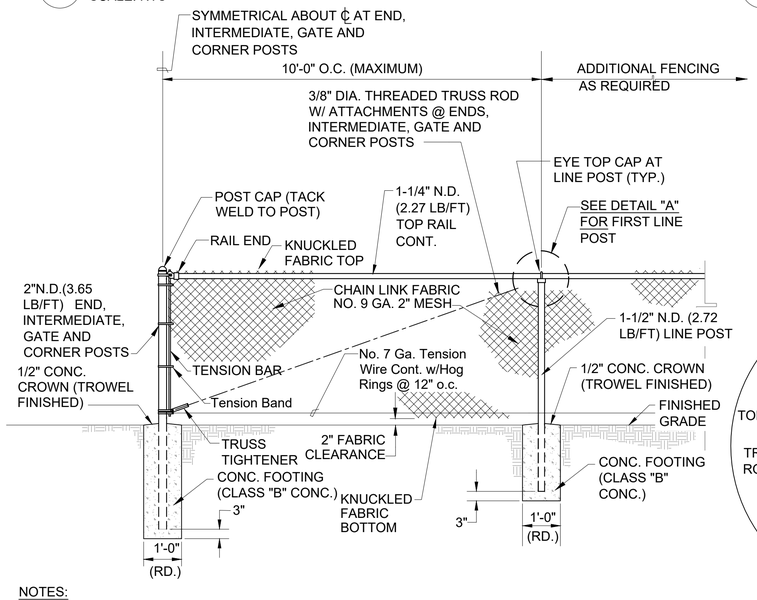


NOTES:

1. LINE POSTS TO BE AMERICAN MADE GALVANIZED CLASS 2 AND DRIVEN INTO THE GROUND 2'.
2. GATE TO BE NO MORE THAN 1" ABOVE GROUND IN CLOSED POSITION.
3. CLASS 111 HOG-WIRE FENCING SHALL BE WOVEN WITH GRADUATED 6-INCH SPACING AT THE TOP GRADUATING TO SIMILAR SPACES ON THE BOTTOM. HOG-WIRE FENCING SHOULD BE NO MORE THAN 1" ABOVE THE EXISTING GRADE.
4. ANCHORS TO BE CUT 2' SECTIONS OF T-POST. ANCHORS TO BE DRIVEN INTO THE GROUND MINIMUM 2'
5. SKIRT TO BE ON OUTSIDE OF FINISHED FENCING ATTACHED WITH HOG RINGS EVERY 12 INCHES OR 2 SQUARES. HOG RINGS TO BE 11 GAUGE, MINIMUM 9 GAUGE. HOG RINGS TO OVERLAP TWO SQUARES AND BE HELD DOWN WITH ANCHORS.
6. SKIRT TO BE EXTENDED AROUND THE ENTIRE FENCE LINE.

1 4' ANIMAL CONTROL FENCING

SCALE: NTS

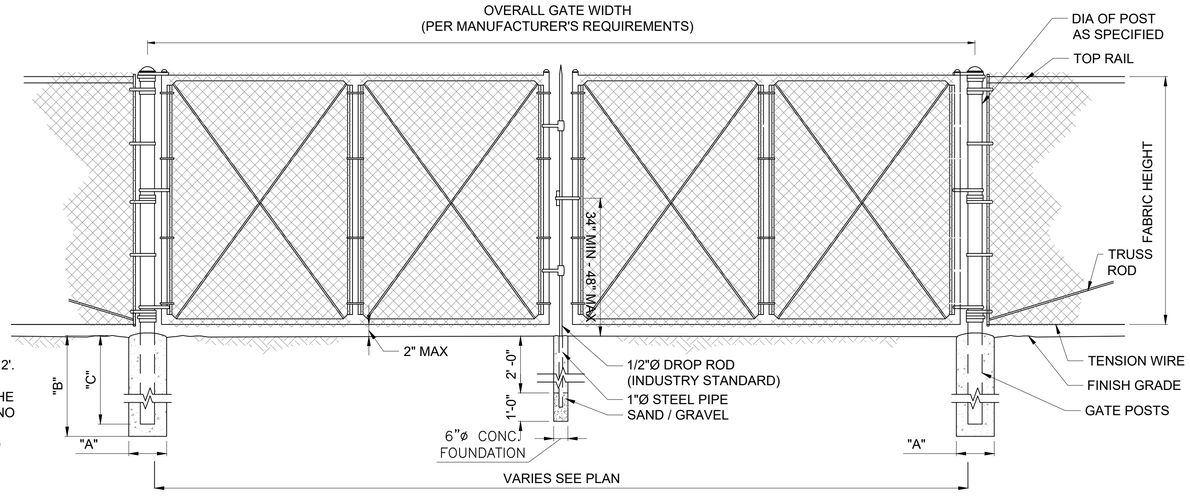


NOTES:

1. ALL PIPE AND POST SIZES ARE NOMINAL DIAMETER (N.D.).
2. CHAIN LINK FABRIC, PIPES, FITTING, FASTENERS, TRUSS ROD, POSTS, HOG RINGS AND TENSION WIRE SHALL BE HOT-DIP GALVANIZED.
3. CHAIN LINK FABRIC SHALL BE CONTINUOUS AND FASTENED TO END, INTERMEDIATE, GATE AND CORNER POSTS BY TENSION BARS WITH TENSION BANDS EVENLY SPACED AT 15" O.C. (MAX.).
4. WIRE FASTENINGS SHALL BE NO. 12 GAUGE GALVANIZED TIE WIRE.
5. CHAIN LINK FABRIC SHALL BE FASTENED TO LINE POSTS WITH WIRE FASTENINGS EVENLY SPACED AT 12" O.C. (MAX.).
6. CHAIN LINK FABRIC SHALL BE FASTENED TO HORIZONTAL RAILS WITH WIRE FASTENINGS EVENLY SPACED AT 12" O.C. (MAX.).
7. ALL WIRE FASTENING ENDS SHALL BE WRAPPED AROUND CHAIN LINK A MINIMUM OF ONE COMPLETE TURN. (HOOKING OF WIRE ENDS SHALL NOT BE PERMITTED).
8. CHAIN LINK FABRIC SHALL BE FASTENED TO TRUSS ROD WITH NO. 9 GAUGE HOG RINGS AT 12" O.C.
9. NO SPLICING SHALL BE ALLOWED ON ALL STRAIGHT-RUN PIPES.
10. TOP AND BOTTOM SELVAGES OF CHAIN LINK FABRIC SHALL BE KNUCKLED.
11. INSTALL INTERMEDIATE POSTS AT 200' MAX. INTERVALS.
12. ALL FIELD WELDS AND DAMAGED GALVANIZED SURFACES SHALL BE PAINTED WITH TWO COATS OF Z.R.C. COLD GALVANIZING COMPOUND.
13. ALL FENCE POSTS SHALL BE INSTALLED EVENLY SPACED.
14. AFTER INSTALLATION, ALL BOLT ENDS SHALL BE CUT FLUSH WITH THE NUTS AND GROUND SMOOTH.
15. CHAIN LINK FENCE TO BE HIGH QUALITY HOT DIPPED 9 GA GALVANIZED, COATED AFTER WEAVING (GAW CLASS 2).

3 3.5' HIGH CHAIN LINK FENCE

SCALE: NTS



LINE AND TERMINAL POSTS

FABRIC HEIGHT	TYPE POST	"A" DIA	"B" DEPTH	"C" POST EMBEDMENT
3'-0" TO 4'-0"	LINE	6"	26"	24"
	TERMINAL	10"	32"	30"

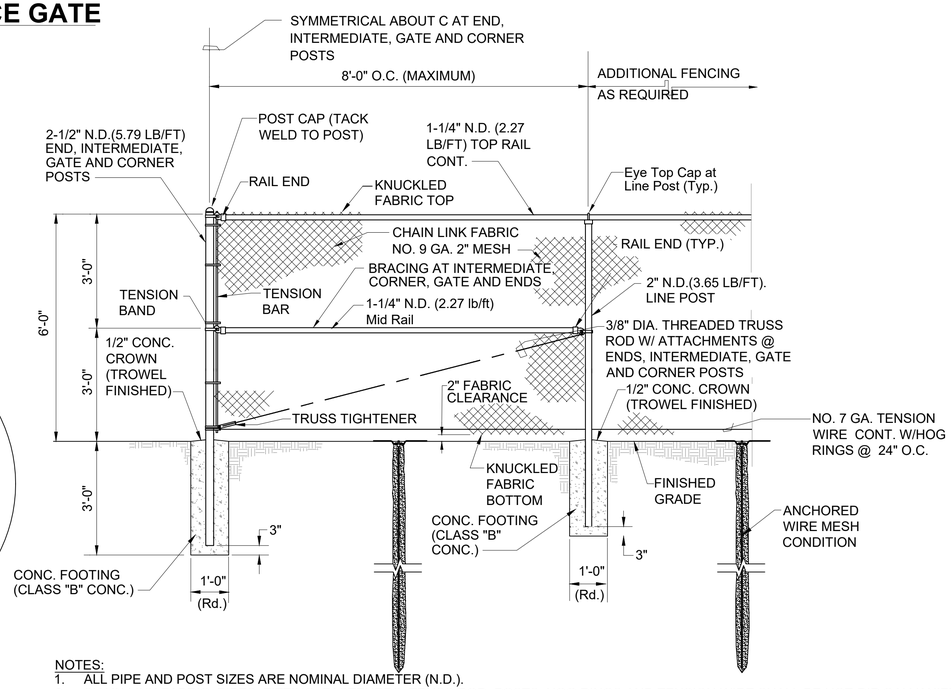
GATE POST

GATE LEAF WIDTH	GATE POST (OD)	FABRIC HEIGHT	"A" DIA	"B" DEPTH	"C" POST EMBEDMENT
3' TO 6'	2.875"	3' TO 5'	12"	38"	36"

NOTE: TERMINAL POSTS INCLUDE END, CORNER, AND PULL POSTS

2 CHAIN LINK FENCE GATE

SCALE: NTS



NOTES:

1. ALL PIPE AND POST SIZES ARE NOMINAL DIAMETER (N.D.).
2. CHAIN LINK FABRIC, PIPES, FITTING, FASTENERS, TRUSS ROD, POSTS, HOG RINGS AND TENSION WIRE SHALL BE HOT-DIP GALVANIZED.
3. CHAIN LINK FABRIC SHALL BE CONTINUOUS AND FASTENED TO END, INTERMEDIATE, GATE AND CORNER POSTS BY TENSION BARS WITH TENSION BANDS EVENLY SPACED AT 15" O.C. (MAX.).
4. WIRE FASTENINGS SHALL BE NO. 12 GAUGE GALVANIZED TIE WIRE.
5. CHAIN LINK FABRIC SHALL BE FASTENED TO LINE POSTS WITH WIRE FASTENINGS EVENLY SPACED AT 12" O.C. (MAX.).
6. CHAIN LINK FABRIC SHALL BE FASTENED TO HORIZONTAL RAILS WITH WIRE FASTENINGS EVENLY SPACED AT 12" O.C. (MAX.).
7. ALL WIRE FASTENING ENDS SHALL BE WRAPPED AROUND CHAIN LINK A MINIMUM OF ONE COMPLETE TURN. (HOOKING OF WIRE ENDS SHALL NOT BE PERMITTED).
8. CHAIN LINK FABRIC SHALL BE FASTENED TO TRUSS ROD WITH NO. 9 GAUGE HOG RINGS AT 12" O.C.
9. NO SPLICING SHALL BE ALLOWED ON ALL STRAIGHT-RUN PIPES.
10. TOP AND BOTTOM SELVAGES OF CHAIN LINK FABRIC SHALL BE KNUCKLED.
11. INSTALL INTERMEDIATE POSTS AT 200' MAX. INTERVALS.
12. ALL FIELD WELDS AND DAMAGED GALVANIZED SURFACES SHALL BE PAINTED WITH TWO COATS OF Z.R.C. COLD GALVANIZING COMPOUND.
13. ALL FENCE POSTS SHALL BE INSTALLED EVENLY SPACED.
14. AFTER INSTALLATION, ALL BOLT ENDS SHALL BE CUT FLUSH WITH THE NUTS AND GROUND SMOOTH.
15. CHAIN LINK FENCE TO BE HIGH QUALITY HOT DIPPED 9 GA GALVANIZED, COATED AFTER WEAVING (GAW CLASS 2).

4 6' HIGH CHAIN LINK FENCE

SCALE: NTS

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coffman.com

Revisions

2023/CP-133

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Signature

APRIL 30, 2026

Expiration Date of the License

JAMES S. HIROTA LICENSED PROFESSIONAL ENGINEER No. 9776-C HAWAII U.S.A.

OWNER / DEVELOPER
HAWAIIAN MEMORIAL LIFE PLAN
1330 MAUNAKEA ST.
HONOLULU, HI 96817

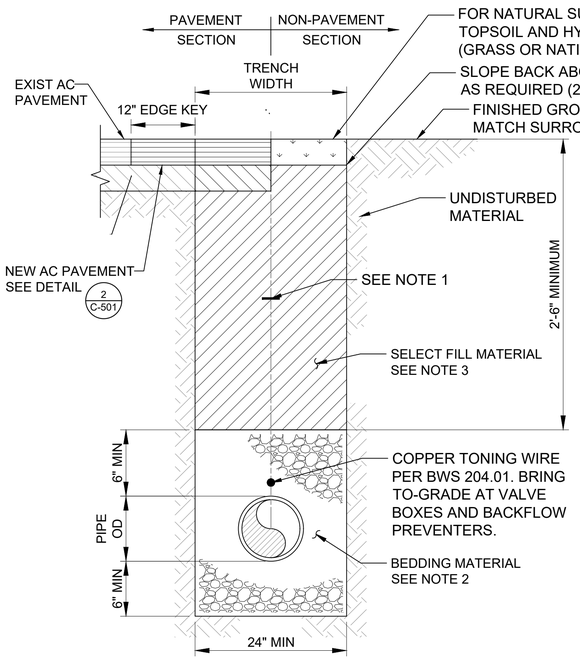
HAWAIIAN MEMORIAL PARK EXPANSION
45-425 Kamehameha Highway, Kaneohe, HI
TMK 4-5-033:001

FENCE DETAILS

Date	5/1/2025
Design	JH/MKU
Drawn	AS
Job No.	202056

Sheet No.
C-502
74 of 107 SHEETS

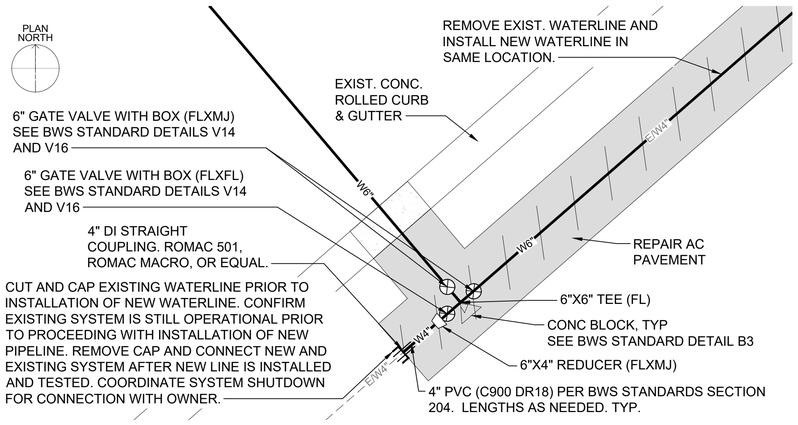
User: DRAK, ALEX 4/30/2025 2:51 PM
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NOTES:

1. INSTALL 4 MIL THICK, NON-METALLIC, BLUE COLORED, 6 INCHED 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". THE TAPE SHALL BE A MINIMUM 12" BELOW THE FINISHED GRADE.
2. SEE BWS DIVISION 200 SECTION 209.02 FOR PIPE CUSHION REQUIREMENTS AND GRADATION TABLE.
3. SEE HDOT STANDARD SPECIFICATION SECTION 624.03 (C) AND 703.21 FOR TRENCH BACKFILL MATERIAL REQUIREMENTS AND GRADATION TABLE.

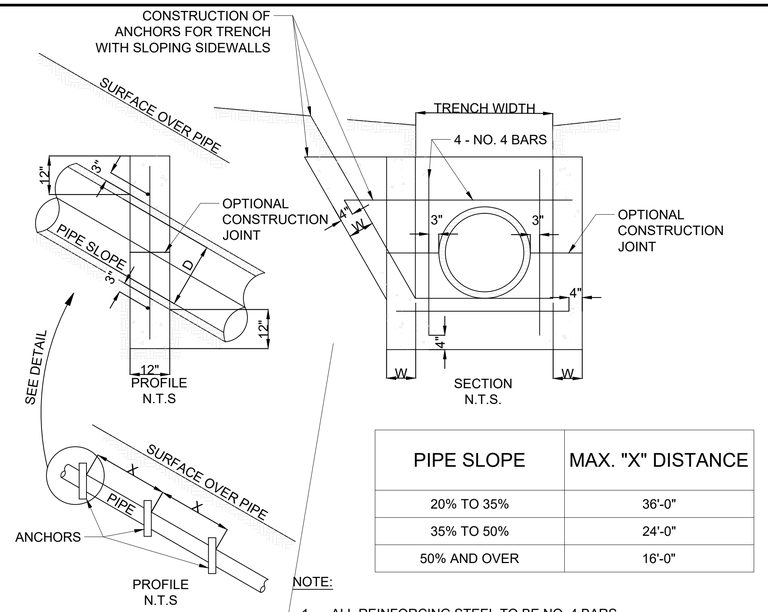
1 UTILITY TRENCH
SCALE: NTS



NOTE:

1. CONTRACTOR TO PROVIDE PIPE DEFLECTIONS AS NECESSARY, IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND BWS STANDARDS SECTION 102.07.

3 CONNECTION TO EXISTING WATERLINE - STA 5+18
SCALE: 1"=5'

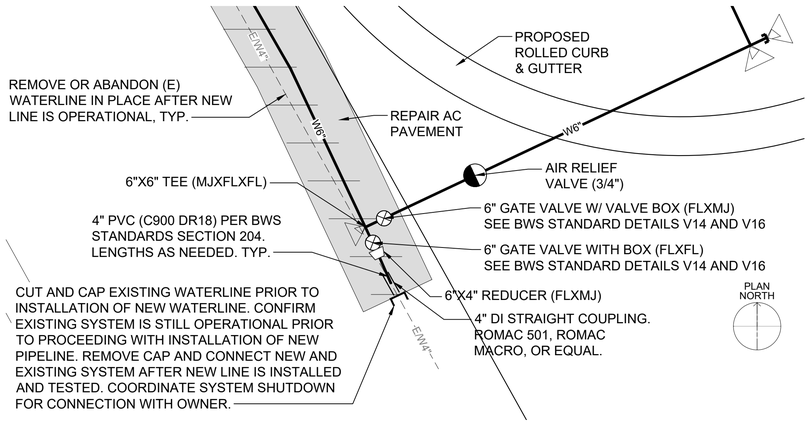


PIPE SLOPE	MAX. "X" DISTANCE
20% TO 35%	36'-0"
35% TO 50%	24'-0"
50% AND OVER	16'-0"

NOTE:

1. ALL REINFORCING STEEL TO BE NO. 4 BARS.
2. "W" = 8" UNLESS OTHERWISE SPECIFIED.
3. CONCRETE TO BE 5.5 SK/C.Y. AND 2500 P.S.I.
4. POUR CONCRETE AGAINST UNDISTURBED EARTH.
5. NOT REQUIRED FOR PIPES INSTALLED WITH SLOPES UNDER 20%.

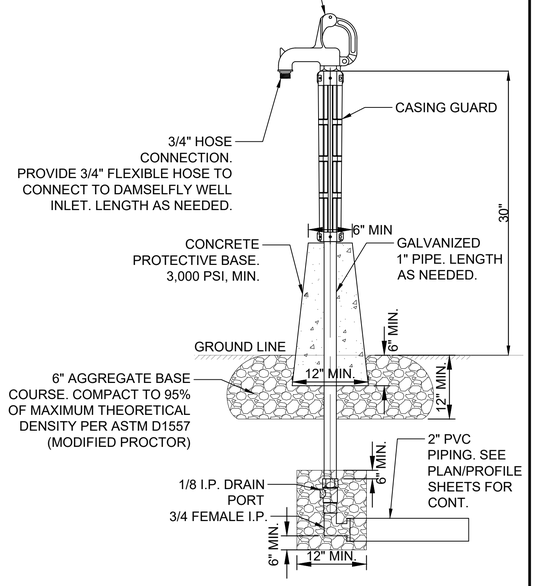
2 PIPE ANCHORS
SCALE: NTS



NOTE:

1. CONTRACTOR TO PROVIDE PIPE DEFLECTIONS AS NECESSARY, IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND BWS STANDARDS SECTION 102.07.

4 CONNECTION TO EXISTING WATERLINE - STA 10+10
SCALE: 1"=5'



5 YARD HYDRANT
SCALE: NTS

APPROVAL:

MANAGER AND CHIEF ENGINEER, BWS — DATE
(FOR WORK AFFECTING BWS FACILITIES IN CITY/STATE R/W AND BWS EASEMENTS ONLY)

2023/CP-133

Revisions

COFFMAN ENGINEERS
745 Fort Street, Suite 400 | Honolulu, Hawaii 96813
ph 808.687.8884 | fax 808.687.8883
coffman.com

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Jasmine Hirota — Signature
APRIL 30, 2026
Expiration Date of the License

MASAMISE S. HIROTA — LICENSED PROFESSIONAL ENGINEER No. 9776-C — U.S.A. HAWAII

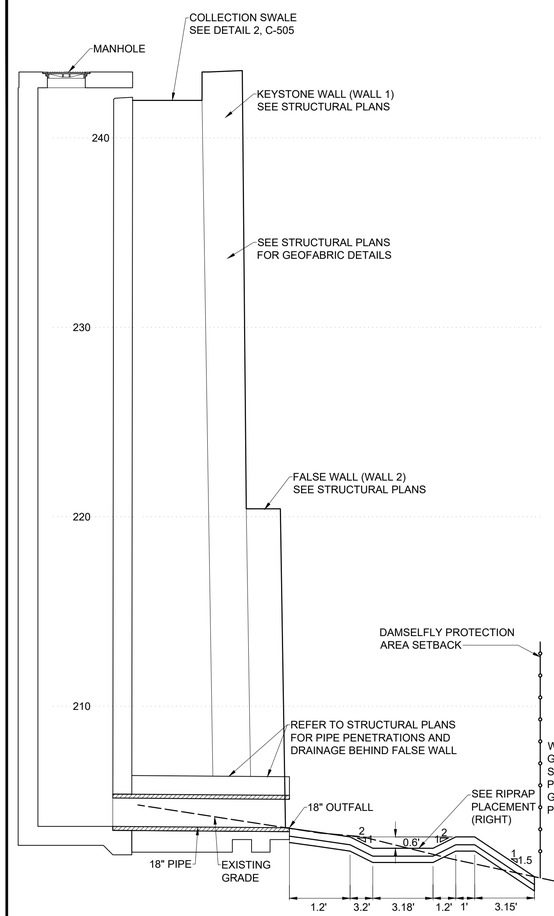
OWNER / DEVELOPER
HAWAIIAN MEMORIAL LIFE PLAN
1330 MAUNAKEA ST.
HONOLULU, HI 96817

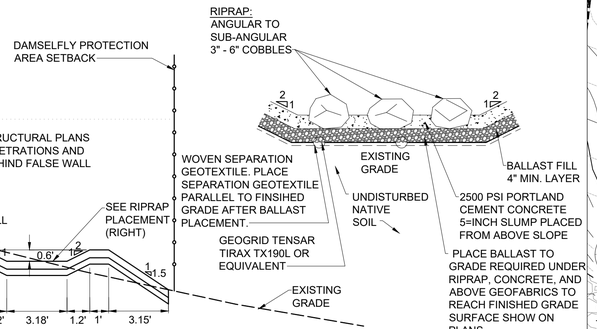
HAWAIIAN MEMORIAL PARK EXPANSION
45-425 Kamehameha Highway, Kaneohe, HI
TMK 4-5-033:001

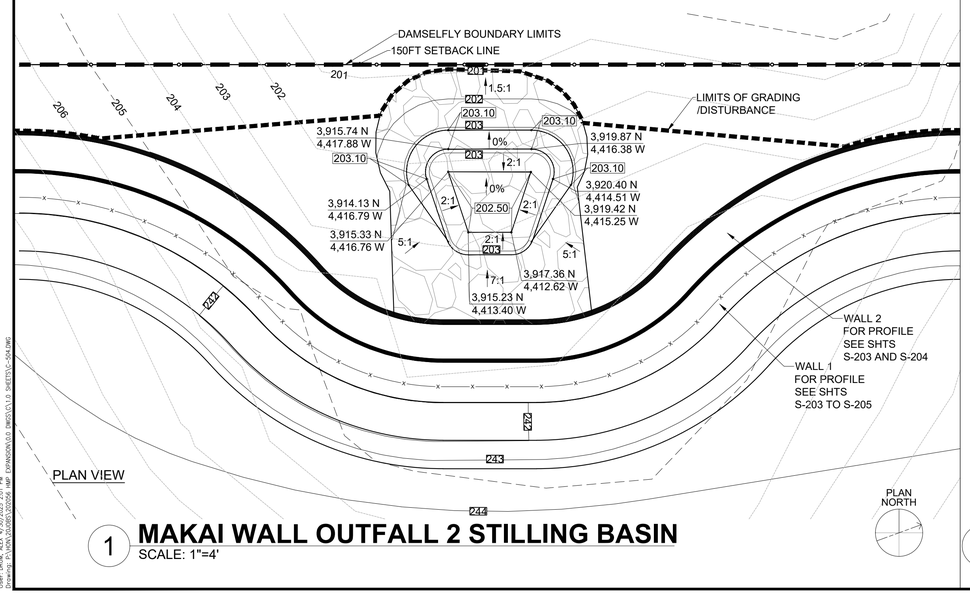
WATER DETAILS

Date	5/1/2025
Design	CJH
Drawn	LYY
Job No.	202056
Sheet No.	C-503
	75 of 107 SHEETS

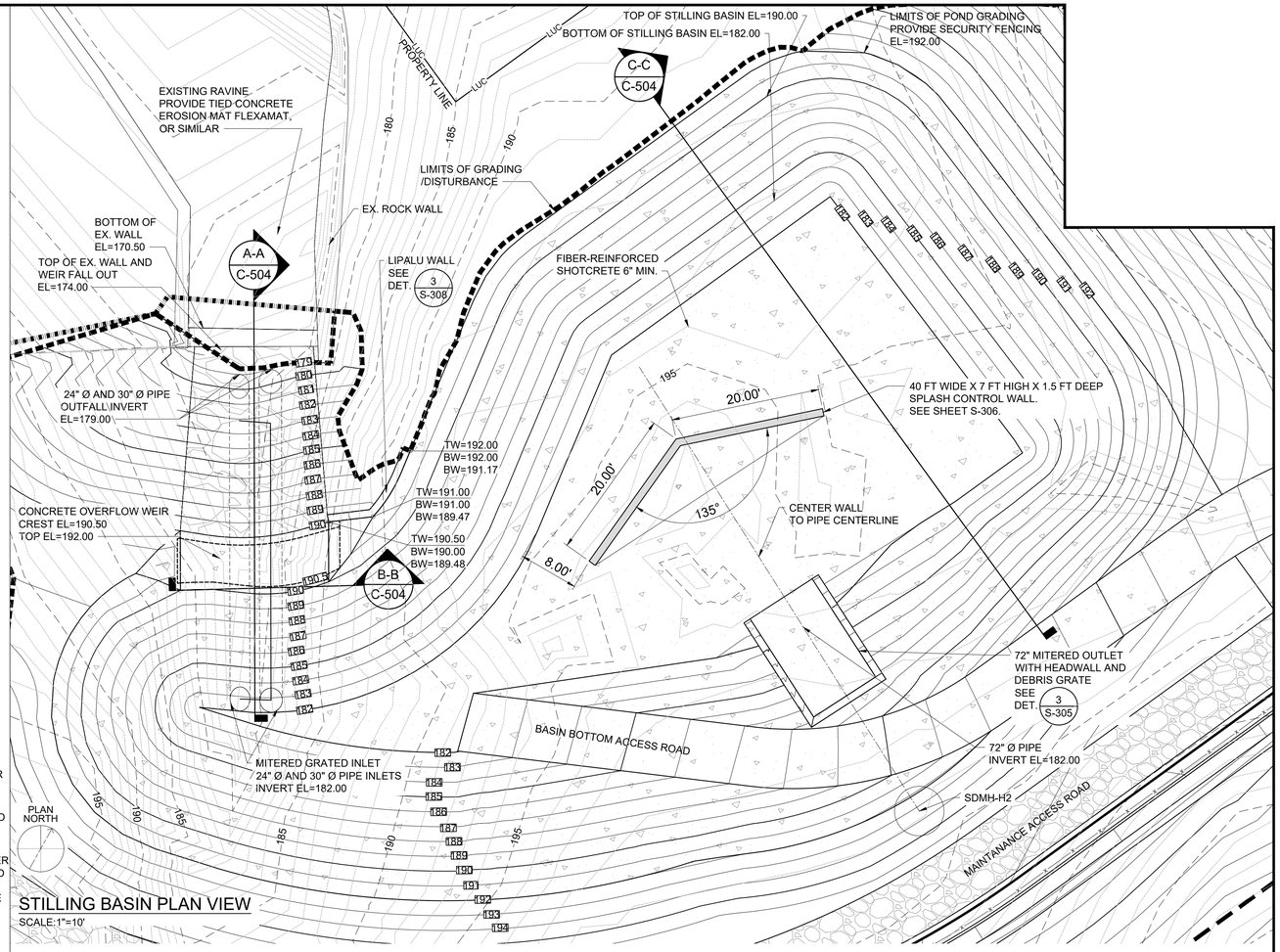
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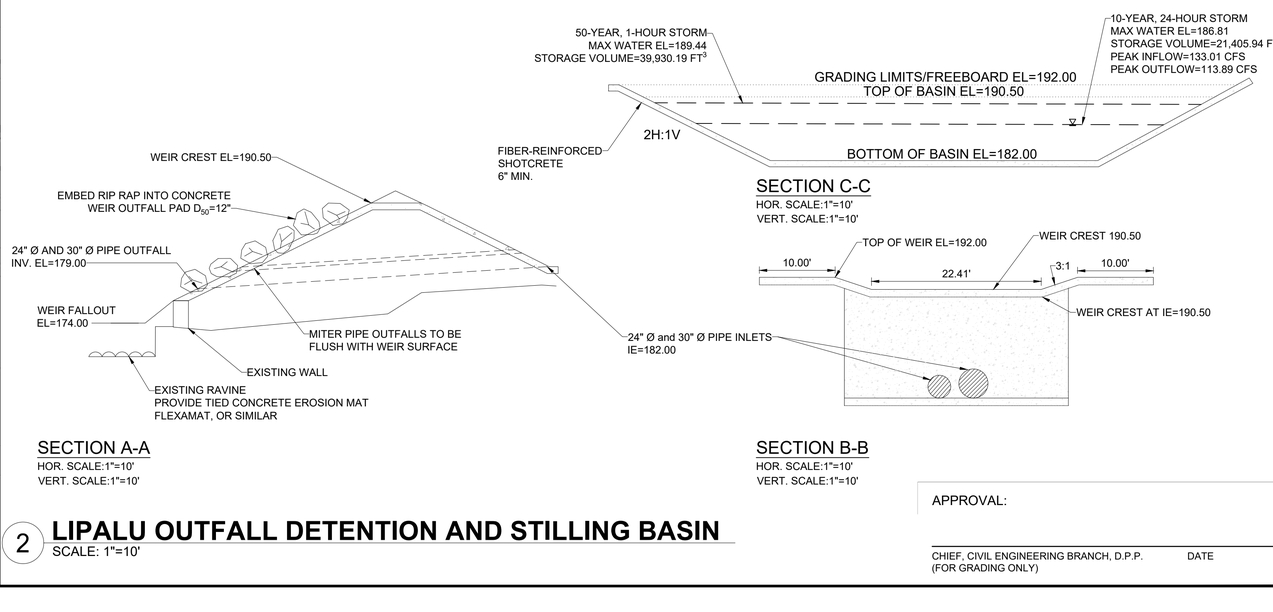




1 MAKAI WALL OUTFALL 2 STILLING BASIN
SCALE: 1"=4'



STILLING BASIN PLAN VIEW
SCALE:1"=10'



SECTION C-C
HOR. SCALE:1"=10'
VERT. SCALE:1"=10'

SECTION A-A
HOR. SCALE:1"=10'
VERT. SCALE:1"=10'

SECTION B-B
HOR. SCALE:1"=10'
VERT. SCALE:1"=10'

2 LIPALU OUTFALL DETENTION AND STILLING BASIN
SCALE: 1"=10'

APPROVAL:

CHIEF, CIVIL ENGINEERING BRANCH, D.P.P. DATE
(FOR GRADING ONLY)

Revisions

2023/CP-133

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Signature

APRIL 30, 2026

Expiration Date of the License

LICENSED PROFESSIONAL ENGINEER No. 9776-C JAMES S. HIROTA HAWAII U.S.A.

OWNER / DEVELOPER
HAWAIIAN MEMORIAL LIFE PLAN
1330 MAUNAKEA ST.
HONOLULU, HI 96817

HAWAIIAN MEMORIAL PARK EXPANSION
45-425 Kamehameha Highway, Kaneohe, HI
TMK 4-5-033:001

DRAINAGE DETAILS

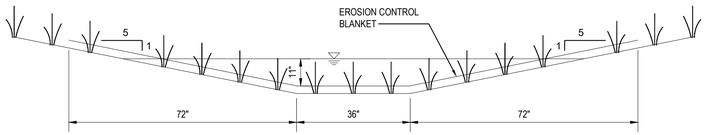
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Design	CJH
Drawn	LYY
Job No.	202056

Sheet No.
C-504
76 of 107 SHEETS

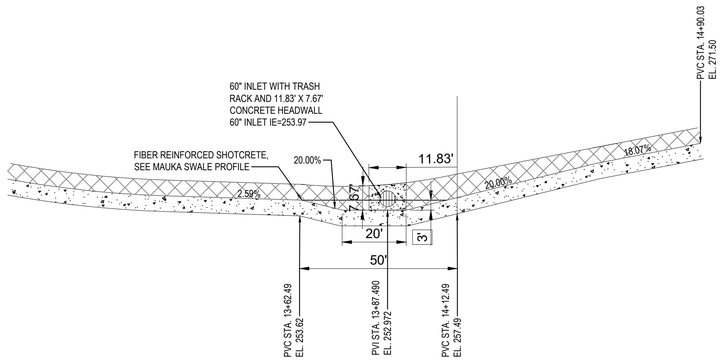
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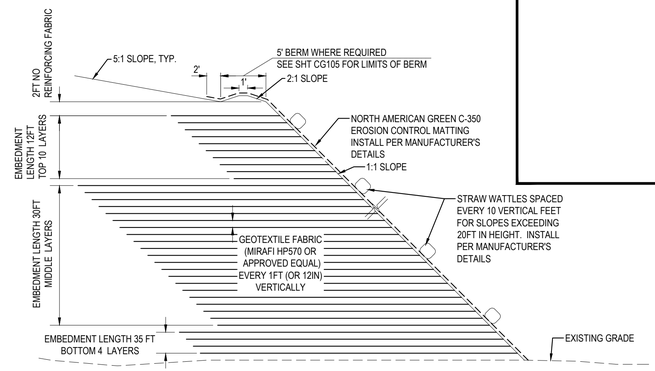
GENERAL SWALE NOTES:

1. USE NORTH AMERICAN GREEN EROSION CONTROL BLANKET S75BN. INSTALL EROSION CONTROL BLANKET PER MANUFACTURER'S RECOMMENDATIONS.
2. CONCRETE STRENGTH SHALL NOT BE LESS THAN 3000 PSI WITH A MAXIMUM SLUMP OF 4".
3. FLOW DEPTHS SHOWN REPRESENT MAX FLOW DEPTH PER CHANNEL TYPE.

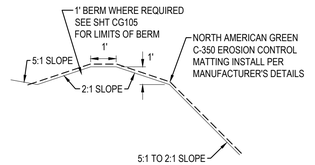


1 TYP GRASS SWALE DETAIL
SCALE: NTS





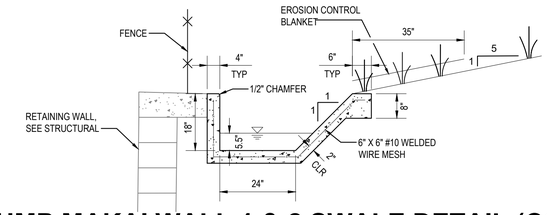
1H:1V SLOPES (INCLUDING TRANSITION FROM 1H:1V TO 2H:1V FILL SLOPES)



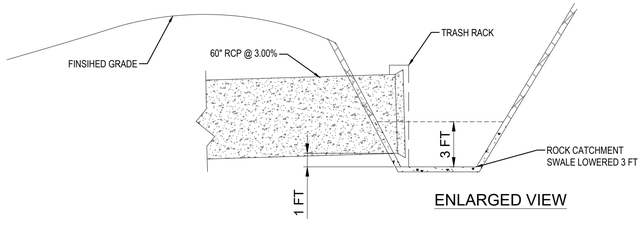
SLOPES 5H:1V TO 2H:1V

NOTE:
1. GEOTEXTILE FABRIC SHALL BE PLACED FOR FILL CONDITION ONLY.

7 SLOPE STABILIZATION & EROSION CONTROL MATTING
SCALE: NTS

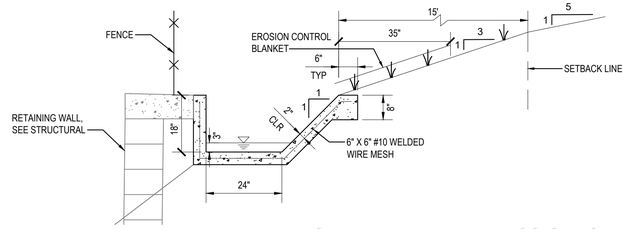


2 HMP MAKAI WALL 1 & 2 SWALE DETAIL (CONCRETE)
SCALE: NTS

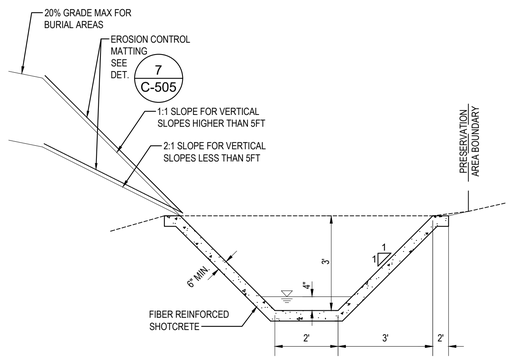


ENLARGED VIEW

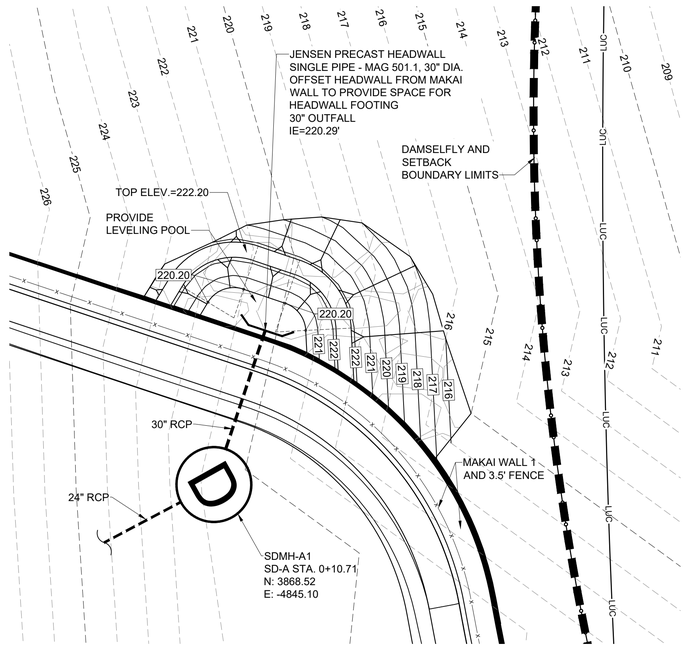
5 ROCKFALL CATCHMENT DITCH HEADWALL INLET
SCALE: NTS



3 HMP MAKAI WALL 3 SWALE DETAIL (CONCRETE)
SCALE: NTS



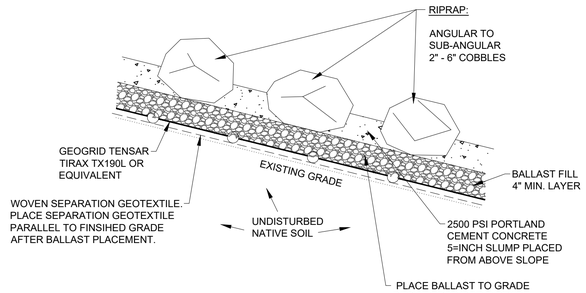
4 LOWER PRESERVATION SWALE DETAIL (SHOTCRETE)
SCALE: NTS



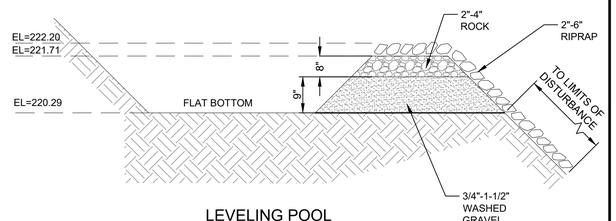
6 MAKAI WALL HEADWALL AND OUTFALL 1 RIPRAP (SDHW-A1)
SCALE: 1"=5'

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

PLAN NORTH



RIPRAP PLACEMENT



LEVELING POOL

APPROVAL:

CHIEF, CIVIL ENGINEERING BRANCH, D.P.P. (FOR GRADING ONLY) DATE

Revisions

2023/CP-133

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JAMES S. HIROTA LICENSED PROFESSIONAL ENGINEER No. 9776-C HAWAII U.S.A.

James Hirota Signature

APRIL 30, 2026

Expiration Date of the License

OWNER / DEVELOPER
HAWAIIAN MEMORIAL LIFE PLAN
1330 MAUNAKEA ST.
HONOLULU, HI 96817

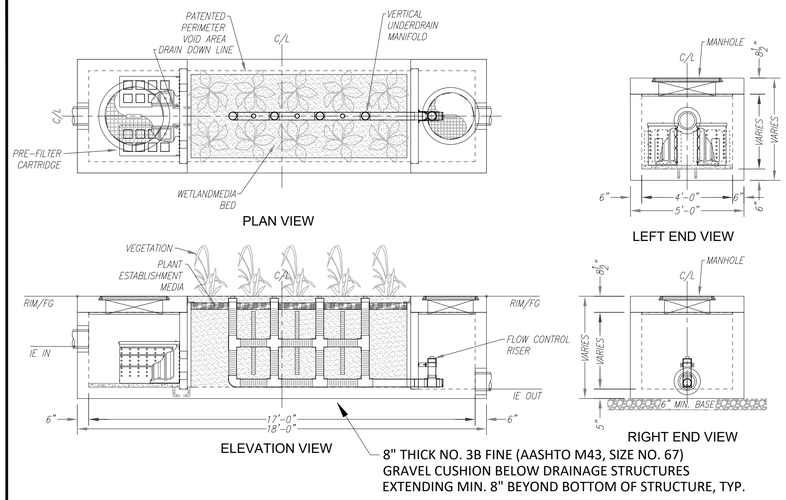
HAWAIIAN MEMORIAL PARK EXPANSION
45-425 Kamehameha Highway, Kaneohe, HI
TMK 4-5-033:001

DRAINAGE DETAILS

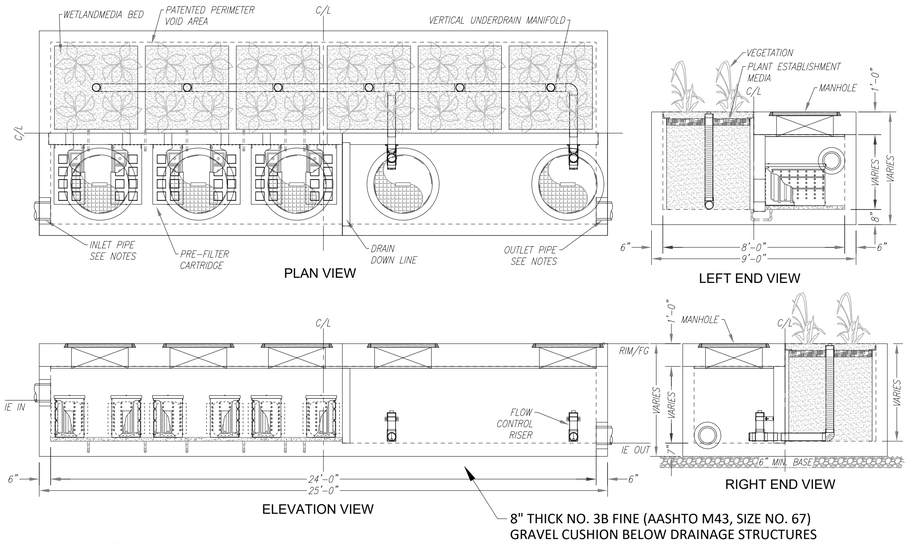
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Sheet No.
C-505
77 of 107 SHEETS

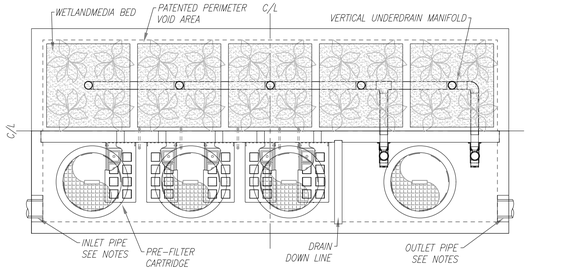
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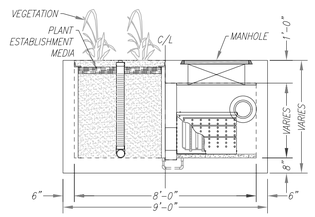


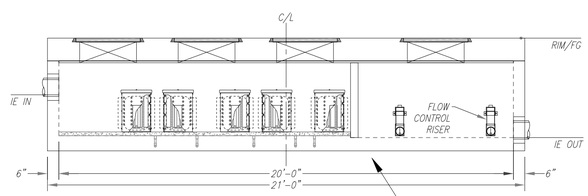
1 MWS-L-4-17-V
SCALE: NTS

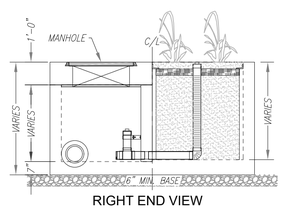


3 MWS-L-8-24-V
SCALE: NTS



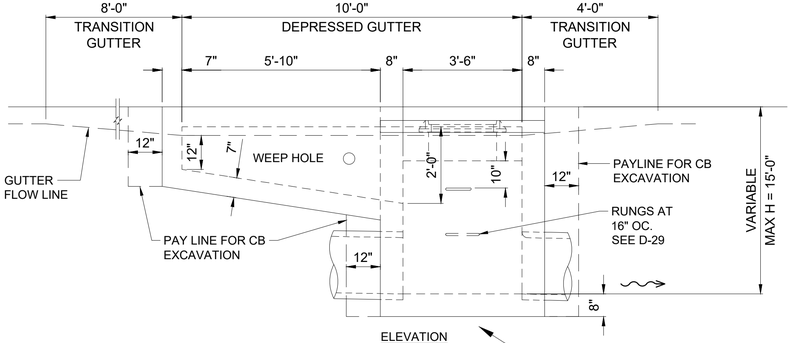


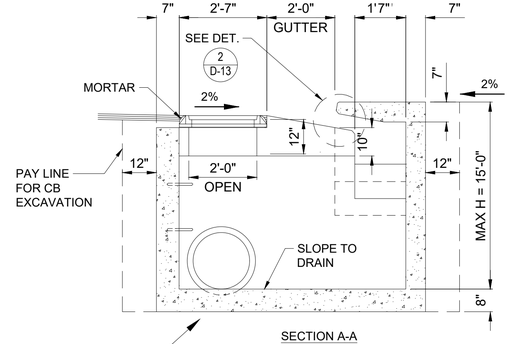




8" THICK NO. 3B FINE (AASHTO M43, SIZE NO. 67)
GRAVEL CUSHION BELOW DRAINAGE STRUCTURES
EXTENDING MIN. 8" BEYOND BOTTOM OF STRUCTURE, TYP.

2 MWS-L-8-20-V
SCALE: NTS





8" THICK NO. 3B FINE (AASHTO M43, SIZE NO. 67)
GRAVEL CUSHION BELOW DRAINAGE STRUCTURES
EXTENDING MIN. 8" BEYOND BOTTOM OF STRUCTURE, TYP.

4 C & C HON. STD. DET. D-5 TYPE "B" CATCH BASIN
SCALE: NTS

APPROVAL:

CHIEF, CIVIL ENGINEERING BRANCH, D.P.P. DATE
(FOR CONFORMANCE WITH WATER QUALITY RULES ONLY)

DETAILS 1-3

INSTALLATION NOTES

1. CONTRACTOR TO PROVIDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS REQUIRED TO OFFLOAD AND INSTALL THE SYSTEM AND APPURTENANCES IN ACCORDANCE WITH THIS DRAWING AND THE MANUFACTURERS' SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURER'S CONTRACT.
2. UNIT MUST BE INSTALLED ON LEVEL BASE. MANUFACTURER RECOMMENDS A MINIMUM 6" LEVEL ROCK BASE UNLESS SPECIFIED BY THE PROJECT ENGINEER. CONTRACTOR IS RESPONSIBLE FOR VERIFYING PROJECT ENGINEER'S RECOMMENDED BASE SPECIFICATIONS.
4. CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES. ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE (PIPES CANNOT INTRUDE BEYOND FLUSH). INVERT OF OUTFLOW PIPE MUST BE FLUSH WITH DISCHARGE CHAMBER FLOOR. ALL PIPES SHALL BE SEALED WATERTIGHT PER MANUFACTURER'S STANDARD CONNECTION DETAIL.
5. CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL PIPES, RISERS, MANHOLES, AND HATCHES. CONTRACTOR TO USE GROUT AND/OR BRICKS TO MATCH COVERS WITH FINISHED SURFACE UNLESS SPECIFIED OTHERWISE.
6. VEGETATION SUPPLIED AND INSTALLED BY OTHERS. ALL UNITS WITH VEGETATION MUST HAVE DRIP OR SPRAY IRRIGATION SUPPLIED AND INSTALLED BY OTHERS.
7. CONTRACTOR RESPONSIBLE FOR CONTACTING CONTECH FOR ACTIVATION OF UNIT. MANUFACTURER'S WARRANTY IS VOID WITHOUT PROPER ACTIVATION BY A CONTECH REPRESENTATIVE.

GENERAL NOTES

1. MANUFACTURER TO PROVIDE ALL MATERIALS UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS, ELEVATIONS, SPECIFICATIONS AND CAPACITIES ARE SUBJECT TO CHANGE. FOR PROJECT SPECIFIC DRAWINGS DETAILING EXACT DIMENSIONS, WEIGHTS AND ACCESSORIES PLEASE CONTACT CONTECH.

NOTES:

1. PROVIDE 1 CU FT OF ASTM C33, NO. 67 GRADATION WRAPPED IN NON-WOVEN GEOTEXTILE FABRIC (MIRAFI 180N OR EQUIVALENT), SECURELY TIED. WEEP HOLE SHALL HAVE 6" SQUARE STAINLESS STEEL ¼-INCH HARDWARE CLOTH ANCHORED FIRMLY TO THE OUTSIDE OF THE STRUCTURE PRIOR TO PLACING WRAPPED GRAVEL.
2. CB WING SHALL BE INSTALLED TO FAVOR UPSTREAM OF GUTTER FLOW.
3. SEE D-6 FOR REINFORCEMENT DETAILS.
4. RUNGS SHALL NOT BE INSTALLED OVER A PIPE CONNECTION AND THE LOWEST RUNG SHALL NOT BE MORE THAN 2'-0" ABOVE THE INVERT. SEE D-29.
5. AUTOMATIC RETRACTABLE SCREENS MAY BE INSTALLED AT CURB INLETS. COMPLY WITH MANUFACTURER'S TECHNICAL AND INSTALLATION REQUIREMENTS. REFER TO APPROVED MATERIALS LIST FOR APPROVED MANUFACTURERS.

Revisions

2023/CP-133

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Signature
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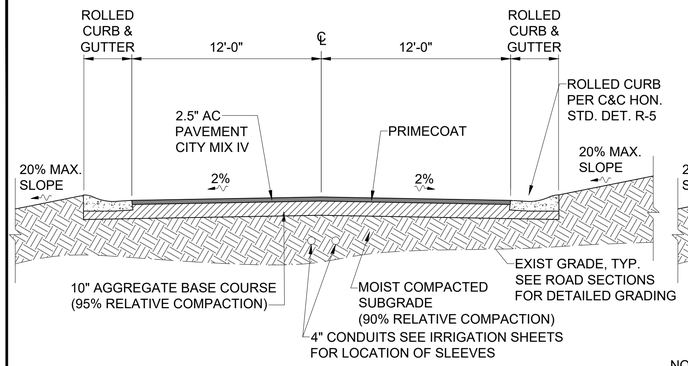
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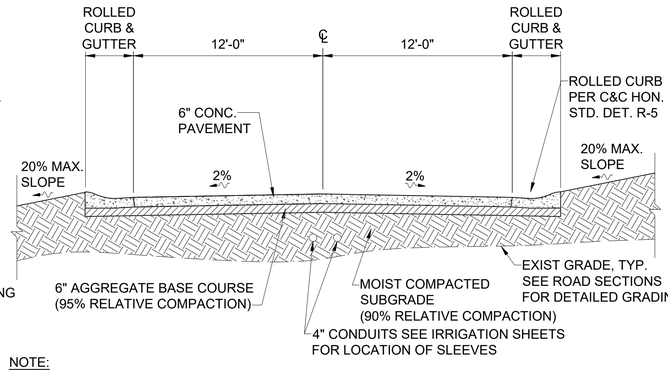
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Job No.	202056
Sheet No.	C-506
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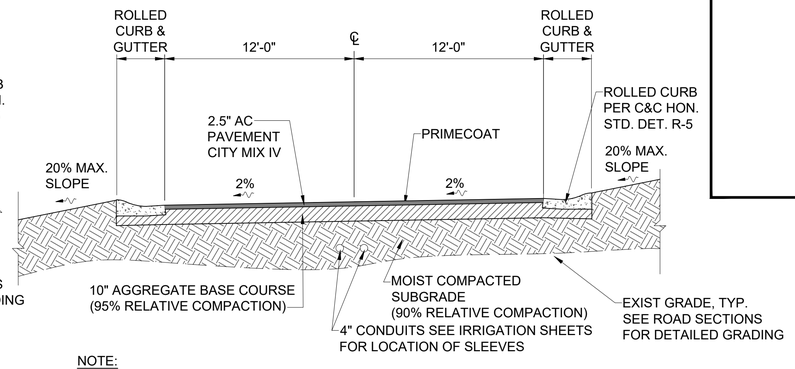
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NOTE:
1. SEE LAYOUT PLAN FOR A.C. PAVEMENT STATIONING.

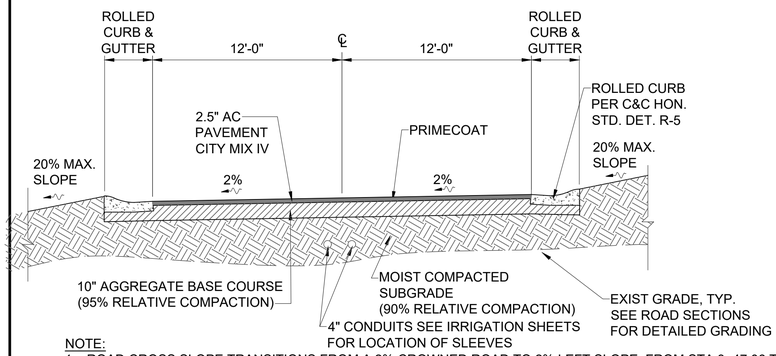


NOTE:
1. SEE LAYOUT PLAN FOR CONC. PAVEMENT STATIONING.
2. GUTTERS ON GRADES AT 12% OR LESS SHALL BE STEEL TROWEL FINISHED AND GUTTERS ON GRADES GREATER THAN 12% SHALL BE BROOM FINISHED LONGITUDINALLY.
3. PAVEMENT ON GRADES GREATER THAN 12% SHALL BE BRISTLE BRUSH FINISHED.



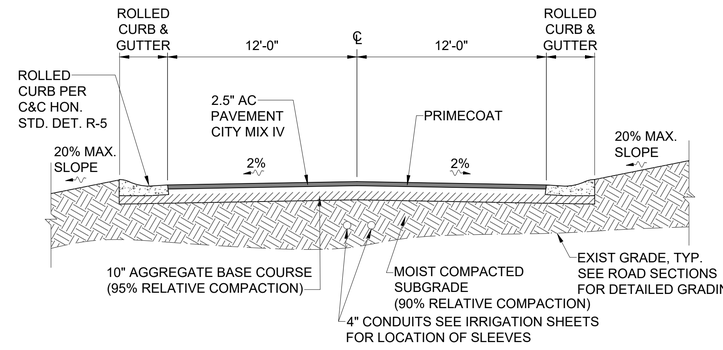
NOTE:
1. ROAD CROSS SLOPE TRANSITIONS FROM A 2% CROWNED ROAD TO 2% LEFT SLOPE FROM STA 15+60.78 TO STA 16+10.78 AND THEN FROM 2% LEFT SLOPE TO A 2% CROWNED ROAD FROM STA 16+30.78 TO STA 16+80.78

1 DRIVEWAY A - A.C. PAVEMENT TYP. SECTION
SCALE: NTS



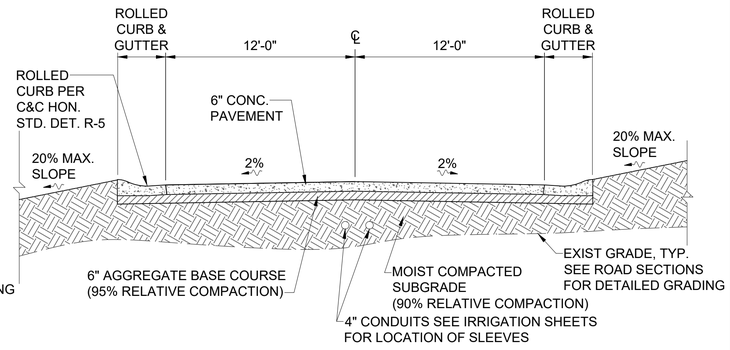
NOTE:
1. ROAD CROSS SLOPE TRANSITIONS FROM A 2% CROWNED ROAD TO 2% LEFT SLOPE FROM STA 3+47.06 TO STA 3+97.06 AND THEN FROM 2% LEFT SLOPE TO A 2% CROWNED ROAD FROM STA 4+17.06 TO STA 4+67.06

2 DRIVEWAY A - CONC. PAVEMENT TYP. SECTION
SCALE: NTS



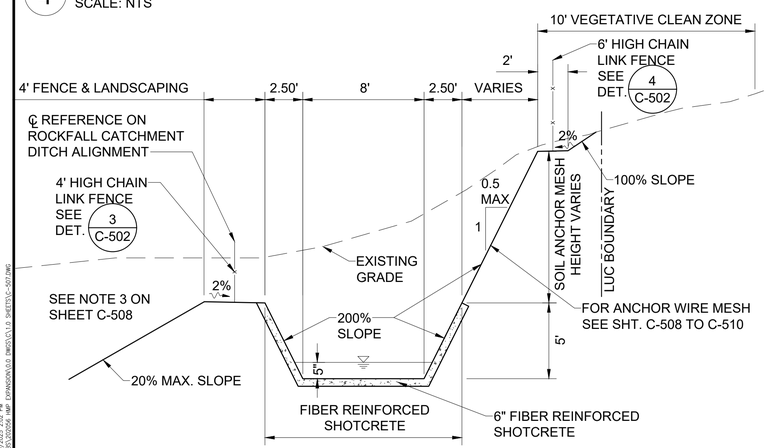
NOTE:
1. SEE LAYOUT PLAN FOR A.C. PAVEMENT STATIONING.

3 ROAD A A.C. PAVEMENT TYPICAL SECTION STA 16+10.78 TO STA 16+30.78
SCALE: NTS

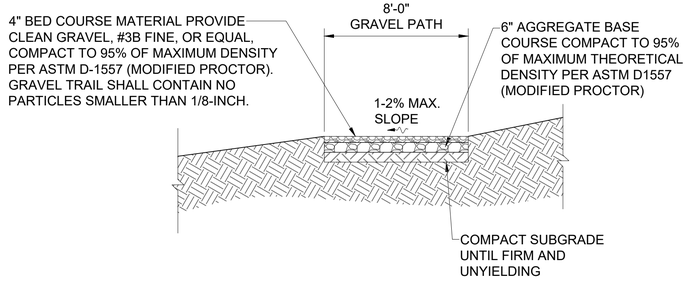


NOTE:
1. SEE LAYOUT PLAN FOR CONC. PAVEMENT STATIONING.
2. GUTTERS ON GRADES AT 12% OR LESS SHALL BE STEEL TROWEL FINISHED AND GUTTERS ON GRADES GREATER THAN 12% SHALL BE BROOM FINISHED LONGITUDINALLY.
3. PAVEMENT ON GRADES GREATER THAN 12% SHALL BE BRISTLE BRUSH FINISHED.

4 ROAD B A.C. PAVEMENT TYPICAL SECTION STA 3+97.06 TO STA 4+17.06
SCALE: NTS



5 ROAD B A.C. PAVEMENT TYPICAL SECTION
SCALE: NTS



NOTE:
1. PLACE ACCEPTABLE SOIL MATERIAL IN LAYERS TO REQUIRED SUBGRADE ELEVATION.

6 ROAD B CONC. PAVEMENT TYPICAL SECTION
SCALE: NTS

7 ROCKFALL CATCHMENT DITCH
SCALE: NTS

8 GRAVEL PATH
SCALE: NTS

APPROVAL:

CHIEF, CIVIL ENGINEERING BRANCH, D.P.P. (FOR GRADING ONLY) — DATE

Revisions

2023/CP-133

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745 Fort Street, Suite 400 | Honolulu, Hawaii 96813
ph 808.687.8884 | fax 808.687.8883
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Signature

APRIL 30, 2026

Expiration Date of the License

JAMES S. HIROTA — LICENSED PROFESSIONAL ENGINEER — No. 9776-C — U.S.A. HAWAII

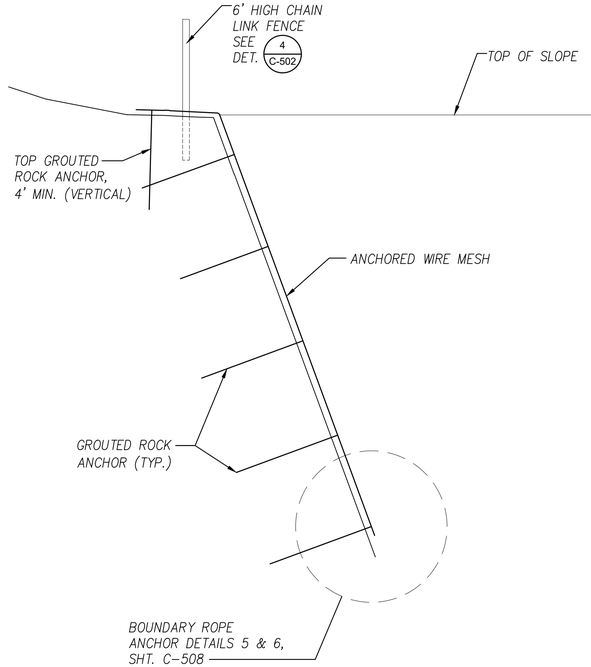
OWNER / DEVELOPER
HAWAIIAN MEMORIAL LIFE PLAN
1330 MAUNAKEA ST.
HONOLULU, HI 96817

HAWAIIAN MEMORIAL PARK EXPANSION
45-425 Kamehameha Highway, Kaneohe, HI
TMK 4-5-033:001

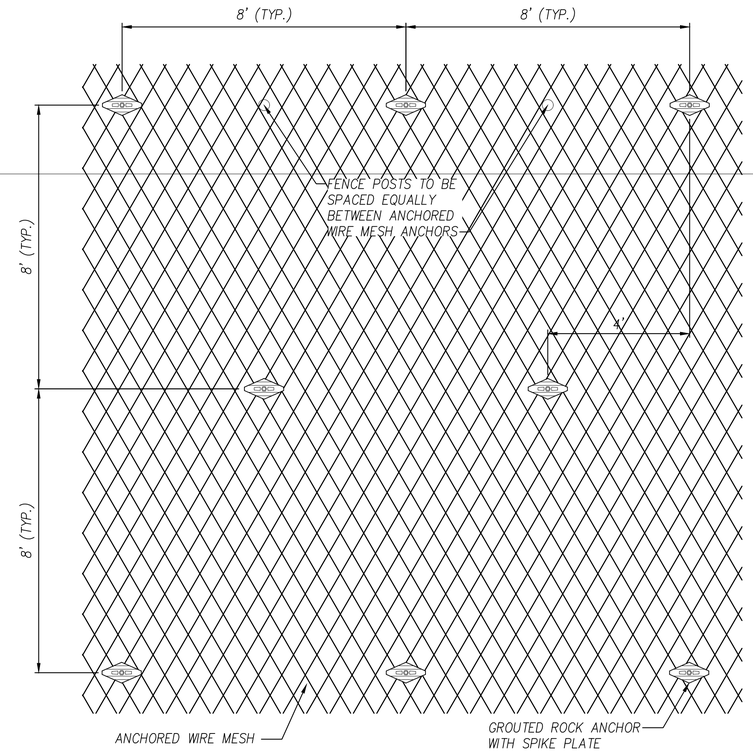
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Drawn	AS
Job No.	202056
Sheet No.	C-507
	79 of 107 SHEETS

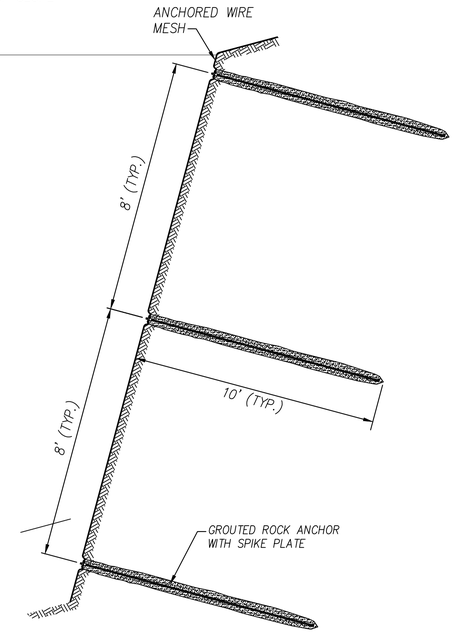
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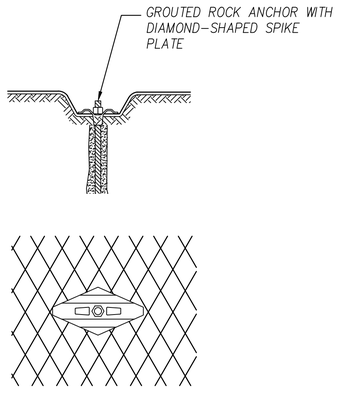
1 TYPICAL SECTION
SCALE: NTS



2 TYPICAL ANCHOR SPACING
SCALE: NTS

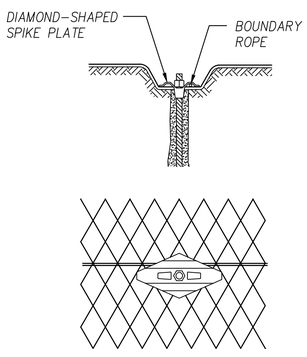


3 TYPICAL ANCHOR SECTION
SCALE: NTS



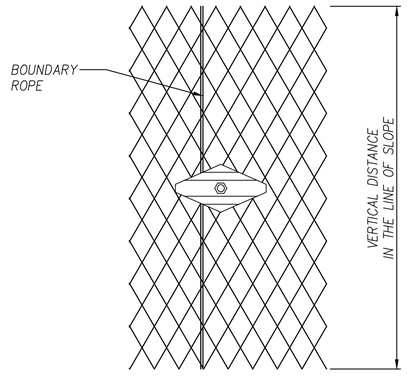
GROUTED ROCK ANCHOR AND SPIKE PLATE (AS APPROVED BY THE ENGINEER)

4 TYPICAL SPIKE PLATE
SCALE: NTS



GROUTED ROCK ANCHOR AND SPIKE PLATE WITH HORIZONTAL BOUNDARY ROPE

5 SPIKE PLATE AT HORIZONTAL BOUNDARY ROPE
SCALE: NTS



GROUTED ROCK ANCHOR AND SPIKE PLATE WITH VERTICAL BOUNDARY ROPE

6 SPIKE PLATE AT VERTICAL BOUNDARY ROPE
SCALE: NTS

NOTES:

1. ANCHORED WIRE MESH DETAILS SHOWN HERE ARE FOR GENERAL GUIDANCE ONLY. CONTRACTOR SHALL FOLLOW THE MANUFACTURER'S DESIGN DRAWINGS AND DETAILS WHICH HAVE BEEN ACCEPTED BY THE ENGINEER. GROUT REQUIREMENTS CAN BE FOUND IN SPEC SECTION 10100.
2. SEE THE SPECIFICATIONS FOR REQUIREMENTS FOR SLOPE PREPARATION BEFORE INSTALLING THE ANCHORED WIRE MESH.
3. IN ACCORDANCE WITH SECTION 18A-3.1(n)(2) OF THE REVISED ORDINANCES OF HONOLULU (ROH), A FINAL ASSESSMENT REPORT (FAR) PREPARED BY A LICENSED GEOTECHNICAL ENGINEER SHALL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND PERMITTING UPON THE COMPLETION OF THE MITIGATION WORK. THE FAR SHALL CONTAIN VERIFICATION THAT THE MITIGATION MEASURES WERE CONSTRUCTED IN ACCORDANCE WITH THE ROH APPROVAL PLANS AND SPECIFICATION AND THE REPORT PREPARED BY GEOLABS, INC. ENTITLED "GEOTECHNICAL ENGINEERING EXPLORATION, HAWAIIAN MEMORIAL PARK EXPANSION, KANEOHE, OAHU, HAWAII" DATED APRIL 30, 2025.
4. THE ANCHORED WIRE MESH SYSTEM AND ALL ASSOCIATED HARDWARE, SUCH AS THE HIGH-STRENGTH STEEL WIRE MESH, PRESS CLAWS, AND SPIKE PLATES SHOULD BE POWDER COATED WITH A BLACK PIGMENT OR ANOTHER COLOR AS DIRECTED BY THE OWNER. BOUNDARY WIRE ROPES SHOULD BE PVC COATED IN A BLACK MATTE FINISH UNLESS DIRECTED BY THE OWNER. ALL OTHER EXPOSED STEEL ELEMENTS SHOULD BE PAINTED WITH A BLACK COLORED RUBBERIZED PAINT. THE FOLLOWING PROVIDES A BRIEF OUTLINE OF THE ANCHORED WIRE MESH INSTALLATION PROCEDURES.
   - 4.1. EXCAVATE THE STEEPENED CUT SLOPE FACE TO THE SPECIFIED SLOPE INCLINATION (0.5H:1V OR FLATTER).
   - 4.2. TRIM SLOPE FACE OF LOOSE MATERIALS AND PROTRUDING ROCK OUTCROPS TO PRODUCE A SMOOTH SURFACE. HIGHLY IRREGULAR SURFACES WOULD NOT BE ACCEPTABLE.
   - 4.3. STAKEOUT GROUTED SOIL/ROCK ANCHORS IN GENERAL ACCORDANCE WITH THE PROJECT SPACING REQUIREMENTS CONSIDERING THE LOW SPOTS ON THE SLOPE.
   - 4.4. EXCAVATE THE DELL FOR PRE-TENSIONING OF THE ANCHORED WIRE MESH BEFORE DRILLING THE GROUTED SOIL/ROCK ANCHORS.
   - 4.5. INSTALL THE GROUTED SOIL/ROCK ANCHORS (ANCHOR HEADS SHOULD NOT PROJECT ABOVE THE TERRAIN LINE OR PREDOMINANT SLOPE LINE)
   - 4.6. LAY THE EROSION CONTROL MATTING (NORTH AMERICAN GREEN P300 OR EQUIVALENT) ON THE SLOPE.
   - 4.7. LAY THE STEEL WIRE MESH PANELS ON THE SLOPE OVER THE EROSION CONTROL MATTING.
   - 4.8. JOIN OR SEAM THE STEEL WIRE MESH PANELS TOGETHER.
   - 4.9. FIT THE BOUNDARY WIRE ROPES AROUND THE PERIMETER OF THE ANCHORED WIRE MESH SYSTEM.
   - 4.10. INSTALL THE SPIKE PLATES AND PRE-TENSION WITH A TORQUE WRENCH OR HYDRAULIC PRESS TO THE SPECIFIED FORCES.
   - 4.11. HYDROMULCH ALL EXPOSED CUT SLOPE AREAS AFTER MESH INSTALLATION.

APPROVAL:

CHIEF, CIVIL ENGINEERING BRANCH, D.P.P. DATE

2023/CP-133

Revisions

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Jamie Hirota
Signature
APRIL 30, 2026
Expiration Date of the License

JAMES S. HIROTA
LICENSED PROFESSIONAL ENGINEER
No. 9776-C
HAWAII U.S.A.

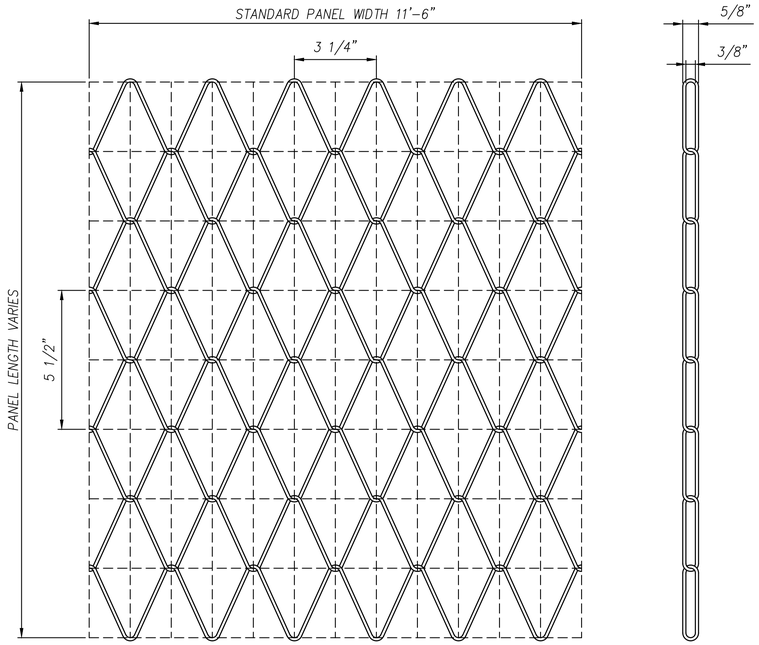
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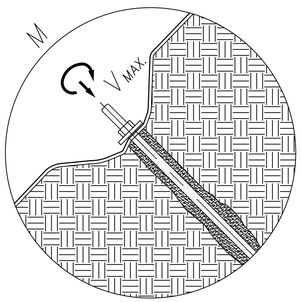
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Design	JH/MKU
Drawn	AS
Job No.	202056
Sheet No.	C-508
	80 of 107 SHEETS

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1 WIRE MESH PANEL (TYP.)
SCALE: NTS

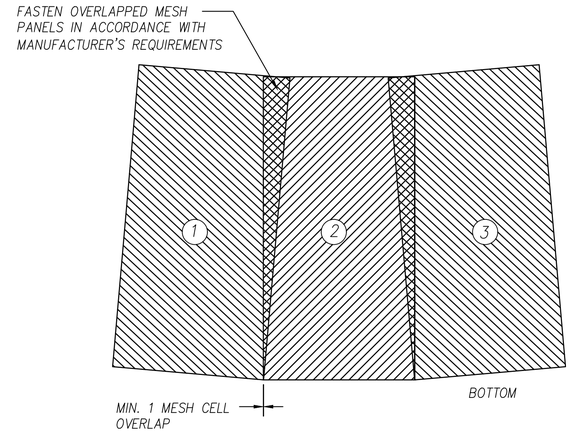


2 TENSIONING THE ANCHORED WIRE MESH SYSTEM
SCALE: NTS

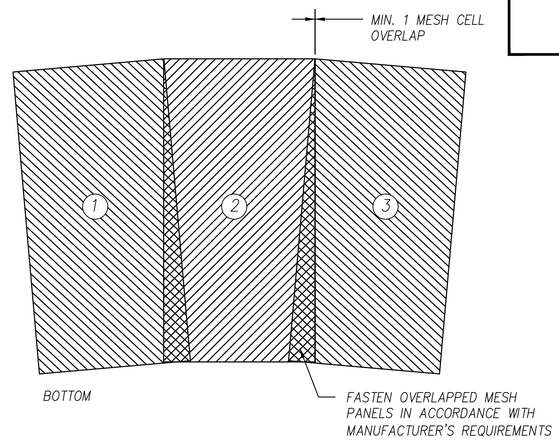
LOAD TABLE

GROUTED ANCHOR	FORCE (V)	REQUIRED TORQUE (M)
DIA. = 1 1/4"	6.7 KIPS	*

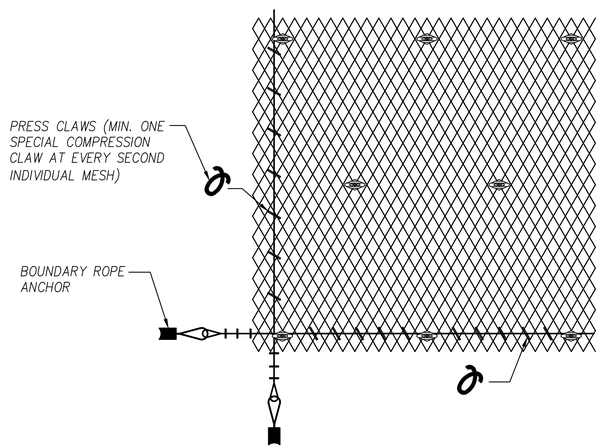
* CONTRACTOR SHALL DETERMINE BOTH THE REQUIRED TORQUE VALUE TO ACHIEVE 6.7 KIP LOAD, IN THE FIELD UNDER EXISTING CONDITIONS, IN THE PRESENCE OF THE ENGINEER, USING THE TEST METHOD RECOMMENDED BY THE MANUFACTURER AND AS ACCEPTED BY THE ENGINEER.



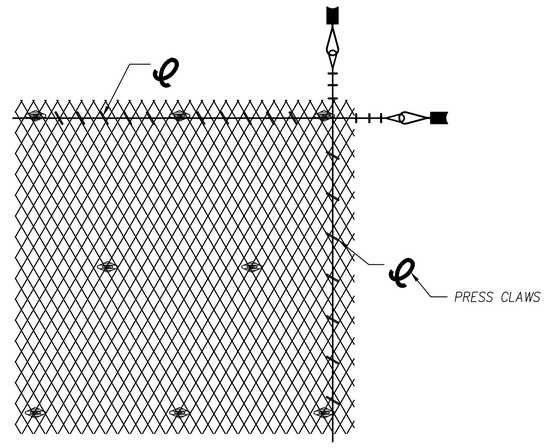
3 MESH OVERLAP FOR CONCAVE SLOPE
SCALE: NTS



4 MESH OVERLAP FOR CONVEX SLOPE
SCALE: NTS



5 BOUNDARY ROPE AT THE BOTTOM AND SIDE OF ANCHORED WIRE MESH SYSTEM
SCALE: NTS



6 BOUNDARY ROPE AT THE TOP AND SIDE OF ANCHORED WIRE MESH SYSTEM
SCALE: NTS

NOTES:
1. ANCHORED WIRE MESH DETAILS SHOWN HERE ARE FOR GENERAL GUIDANCE ONLY. CONTRACTOR SHALL FOLLOW THE MANUFACTURER'S DESIGN DRAWINGS AND DETAILS, SUBJECT TO ACCEPTANCE BY THE ENGINEER.
2. CONTRACTOR SHALL DOCUMENT DRILLING DATE FOR EACH BORE HOLE. SEE SPEC ANCHOR WIRE MESH SYSTEM 10100 3.01E.

APPROVAL:

CHIEF, CIVIL ENGINEERING BRANCH, D.P.P. DATE

Revisions

2023/CP-133

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JAMES S. HIROTA LICENSED PROFESSIONAL ENGINEER No. 9776-C HAWAII U.S.A.

APRIL 30, 2026
Expiration Date of the License

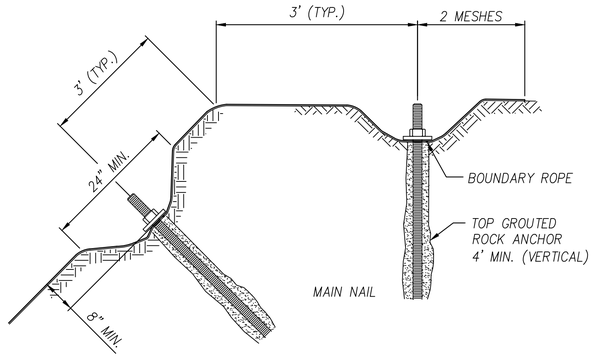
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GEOTECH DETAILS

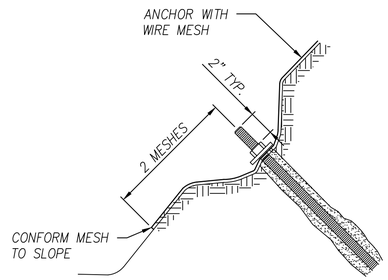
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Design	JH/MKU
Drawn	AS
Job No.	202056
Sheet No.	C-509
	81 of 107 SHEETS

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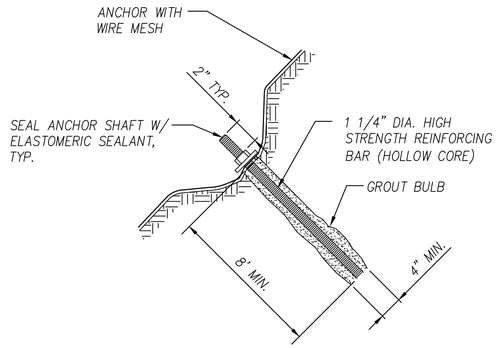
1 DELL OR DEPRESSION AROUND GROUTED ANCHOR AT TOP EDGE OF ANCHORED WIRE MESH

SCALE: NTS



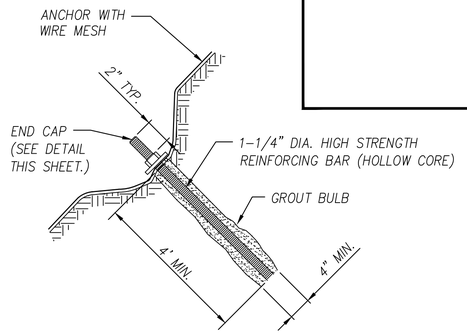
2 DELL OR DEPRESSION AROUND GROUTED ANCHOR AT BOTTOM EDGE OF ANCHORED WIRE MESH

SCALE: NTS



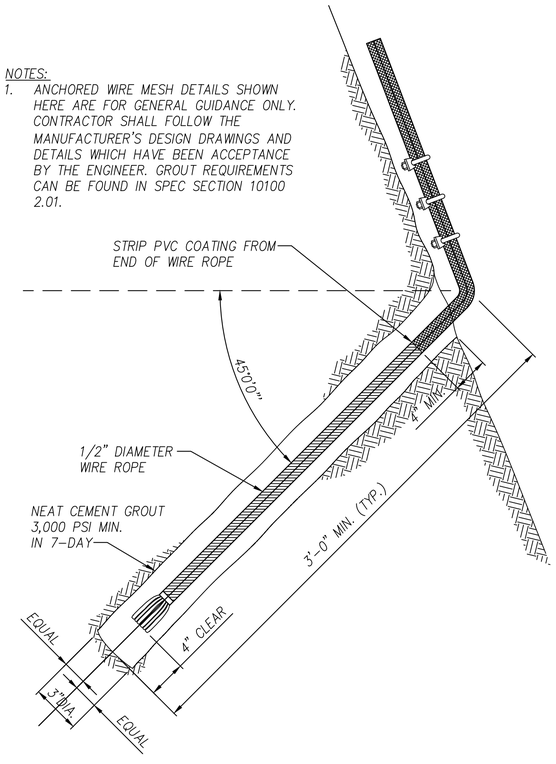
3 GROUTED ROCK ANCHOR (TYP.)

SCALE: NTS



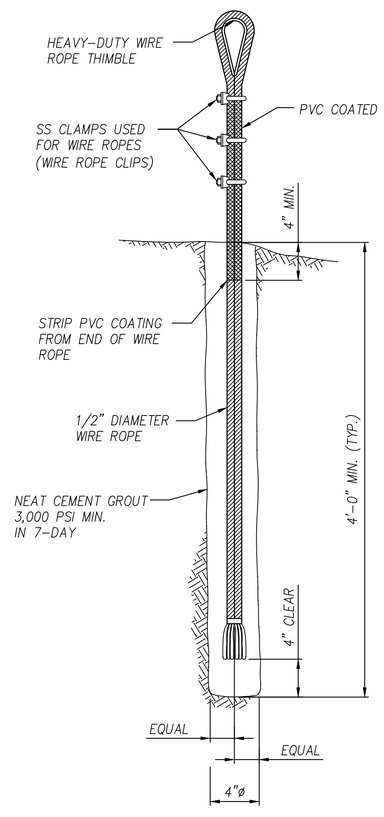
4 SUPPLEMENTAL (SHORT) ANCHOR (TYP.)

SCALE: NTS



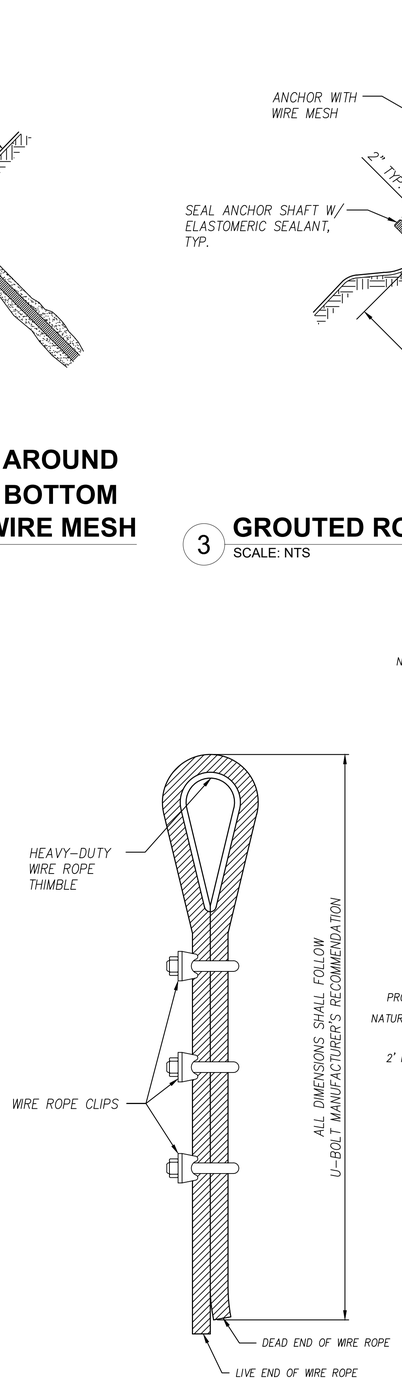
5 BOUNDARY ROPE ANCHOR DETAIL

SCALE: NTS



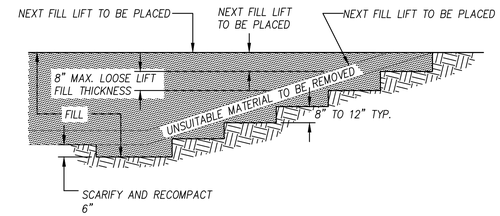
6 BOUNDARY ROPE ANCHOR (FRONT VIEW)

SCALE: NTS

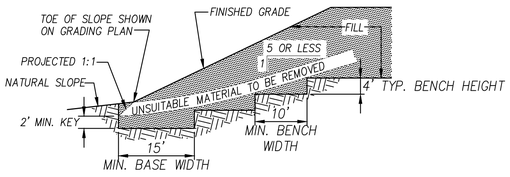


7 WIRE ROPE CLIP LOOP

SCALE: NTS



LEVEL FILL ON SLOPING GROUND



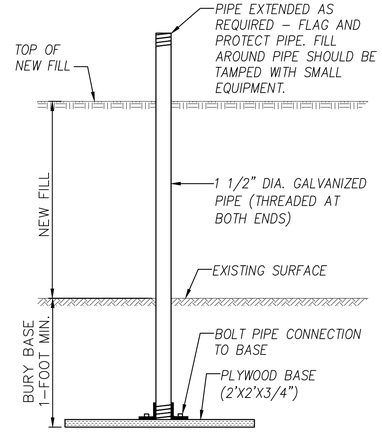
FILL SLOPE ON SLOPING GROUND

NOTE:

1. WHERE NATURAL SLOPE IS FLATTER THAN 5:1 (H:V), BENCHING IS NOT NECESSARY. FILL SHOULD NOT BE PLACED ON COMPRESSIBLE OR UNSUITABLE MATERIAL.
2. FOR FILL SLOPES WITH A VERTICAL HEIGHT GREATER THAN 20', PROVIDE A KEY AT THE TOE OF THE SLOPE. THE KEY SHOULD BE MINIMUM 2' BELOW THE ADJACENT GRADE AND WITH A MINIMUM WIDTH OF 8' WIDE. THE KEY SHALL BE SLOPED BACK AT AN INCLINATION OF 10H:1V AS SHOWN IN THE DETAIL ABOVE.

8 KEYING AND BENCHING

SCALE: NTS



9 SETTLEMENT GAUGE

SCALE: NTS

APPROVAL:

CHIEF, CIVIL ENGINEERING BRANCH, D.P.P. DATE

2023/CP-133

Revisions	

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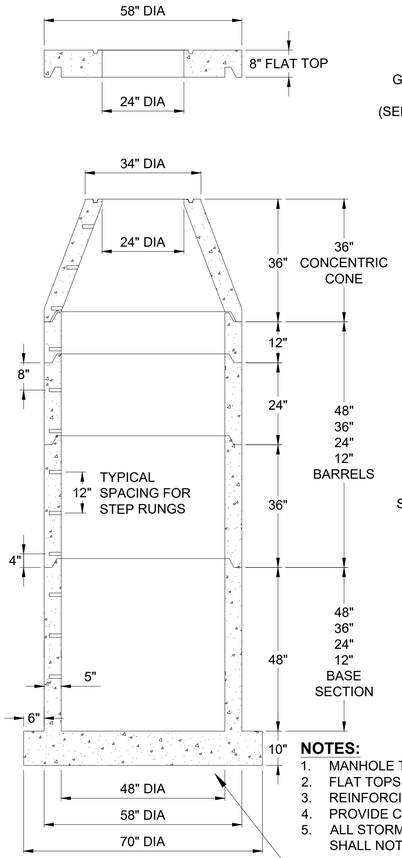
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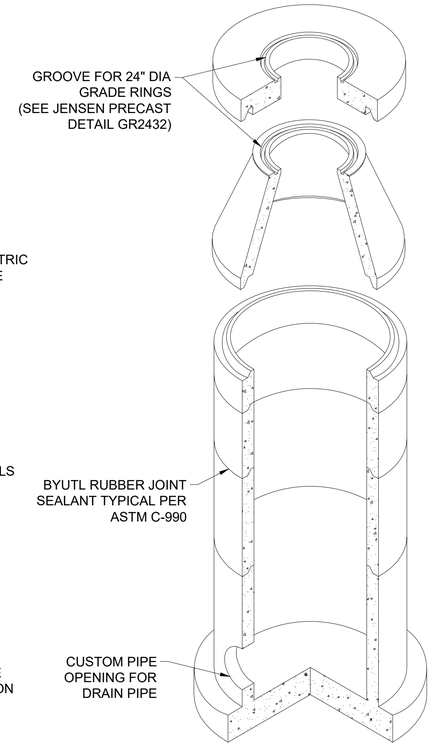
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82 of 107 SHEETS

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ELEVATION VIEW



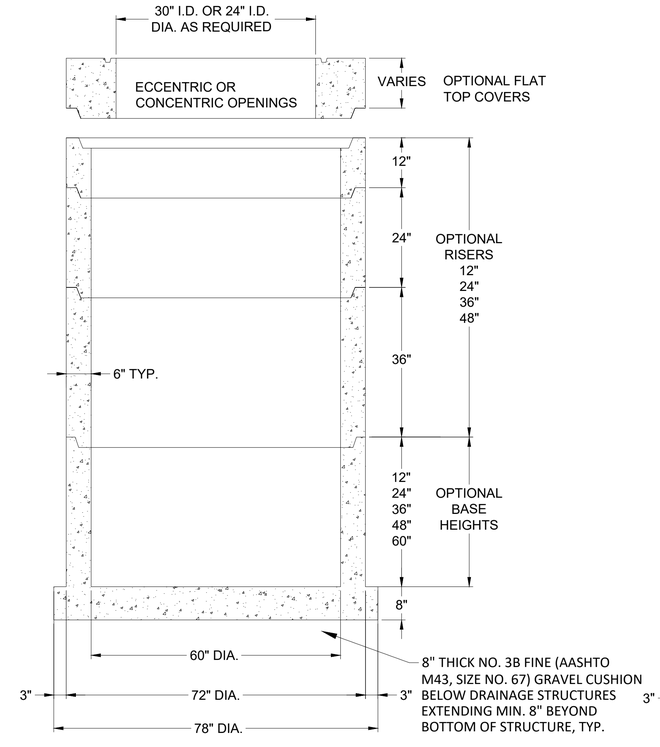
NOTES:

1. MANHOLE TO CONFORM TO ASTM C-478 AND AASHTO M-199
2. FLAT TOPS AND BASE SLABS TO MEET AASHTO HS-20 WHEEL LOADING
3. REINFORCING STEEL NOT SHOWN FOR CLARITY
4. PROVIDE CCH STD MANHOLE "DA" OR "DB" FRAME AND COVER
5. ALL STORM DRAIN MANHOLES SHALL HAVE A 36 INCH SUMP AND SHALL NOT BE CHANNELIZED.

8" THICK NO. 3B FINE (AASHTO M43, SIZE NO. 67) GRAVEL CUSHION BELOW DRAINAGE STRUCTURES EXTENDING MIN. 8" BEYOND BOTTOM OF STRUCTURE, TYP.

1 48" DIA PRE-CAST CONCRETE STORM DRAIN MANHOLE

SCALE: NTS



8" THICK NO. 3B FINE (AASHTO M43, SIZE NO. 67) GRAVEL CUSHION BELOW DRAINAGE STRUCTURES EXTENDING MIN. 8" BEYOND BOTTOM OF STRUCTURE, TYP.

MANHOLE COMPONENTS CONFORM TO CURRENT SPECIFICATIONS, ASTM C-478 AND AASHTO NO. M199

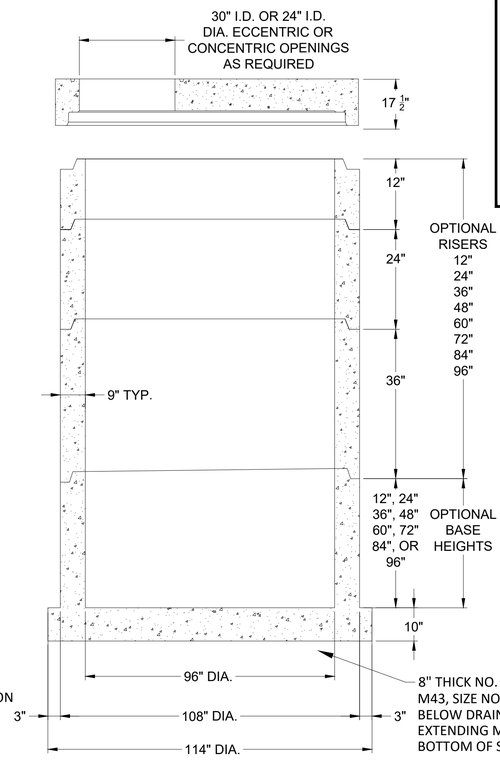
FLAT TOPS AND BASE SLABS ARE DESIGNED FOR AASHTO HS-20 WHEEL LOADING.

NOTES:

1. ALL STORM DRAIN MANHOLES SHALL HAVE A 36 INCH SUMP AND SHALL NOT BE CHANNELIZED.

2 60" DIA PRE-CAST CONCRETE STORM DRAIN MANHOLE

SCALE: NTS



8" THICK NO. 3B FINE (AASHTO M43, SIZE NO. 67) GRAVEL CUSHION BELOW DRAINAGE STRUCTURES EXTENDING MIN. 8" BEYOND BOTTOM OF STRUCTURE, TYP.

MANHOLE COMPONENTS CONFORM TO CURRENT SPECIFICATIONS, ASTM C-478 AND AASHTO NO. M199

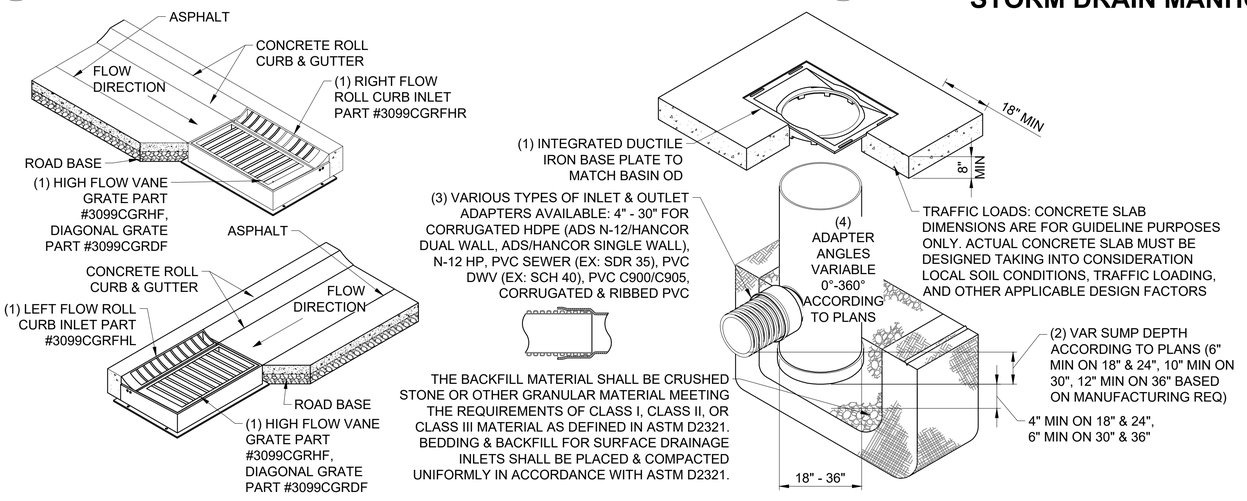
FLAT TOPS AND BASE SLABS ARE DESIGNED FOR AASHTO HS-20 WHEEL LOADING.

NOTES:

1. ALL STORM DRAIN MANHOLES SHALL HAVE A 36 INCH SUMP AND SHALL NOT BE CHANNELIZED.

3 96" DIA PRE-CAST CONCRETE STORM DRAIN MANHOLE

SCALE: NTS



THE BACKFILL MATERIAL SHALL BE CRUSHED STONE OR OTHER GRANULAR MATERIAL MEETING THE REQUIREMENTS OF CLASS I, CLASS II, OR CLASS III MATERIAL AS DEFINED IN ASTM D2321. BEDDING & BACKFILL FOR SURFACE DRAINAGE INLETS SHALL BE PLACED & COMPACTED UNIFORMLY IN ACCORDANCE WITH ASTM D2321.

1. 18"-30" GRATES, FRAMES, HOODS, & BASE PLATES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
2. DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS.
3. DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS N-12/HANCOR DUAL WALL), N-12 HP, & PVC SEWER (4"-36").
4. ADAPTERS CAN BE MOUNTED ON ANY ANGLE 0 TO 360 DEGREES. TO DETERMINE MINIMUM ANGLE BETWEEN ADAPTERS SEE DRAWING NO. 7001-110-012.
5. VARIABLE INVERT HEIGHTS AVAILABLE (ACCORDING TO PLANS).
6. MINIMUM PIPE BURIAL DEPTH PER PIPE MANUFACTURER RECOMMENDATION (MIN MANUFACTURING REQ SAME AS MIN SUMP EXCEPT FOR 36" BASIN. 36" DRAIN BASIN REQ 2.25 FT FROM RIM TO TOP OF PIPE).
7. ALL ROLL CURB INLET GRATE OPTIONS (DIAGONAL & HIGH FLOW) SHALL MEET H-20 LOAD RATING.

4 NYLOPLAST DOUBLE 2'X3' ROLL CURB INLET STRUCTURE

SCALE: NTS

COFFMAN ENGINEERS
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ph 808.687.8884 | fax 808.687.8883
coffman.com

Revisions

2023/CP-133

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Signature

APRIL 30, 2026

Expiration Date of the License

JAMES S. HIROTA U.S.A. HAWAII LICENSED PROFESSIONAL ENGINEER No. 9776-C

OWNER / DEVELOPER
HAWAIIAN MEMORIAL LIFE PLAN
1330 MAUNAKEA ST.
HONOLULU, HI 96817

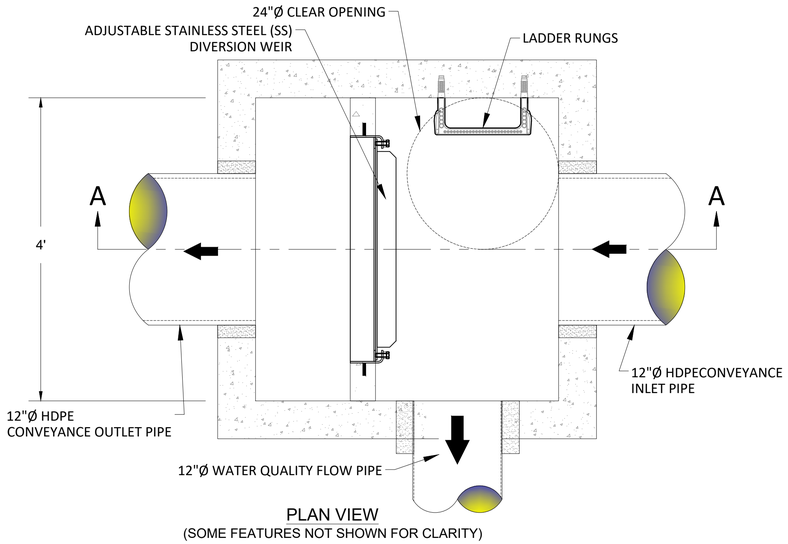
HAWAIIAN MEMORIAL PARK EXPANSION
45-425 Kamehameha Highway, Kaneohe, HI
TMK 4-5-033:001

DRAINAGE DETAILS

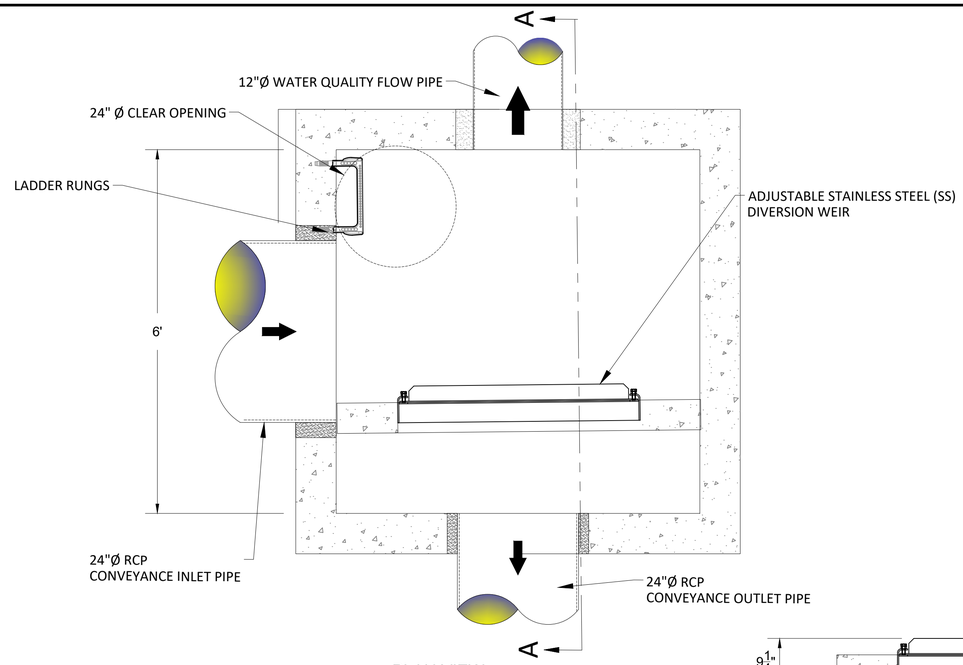
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Design	JH
Drawn	DH
Job No.	202056

Sheet No.
C-511
83 of 107 SHEETS

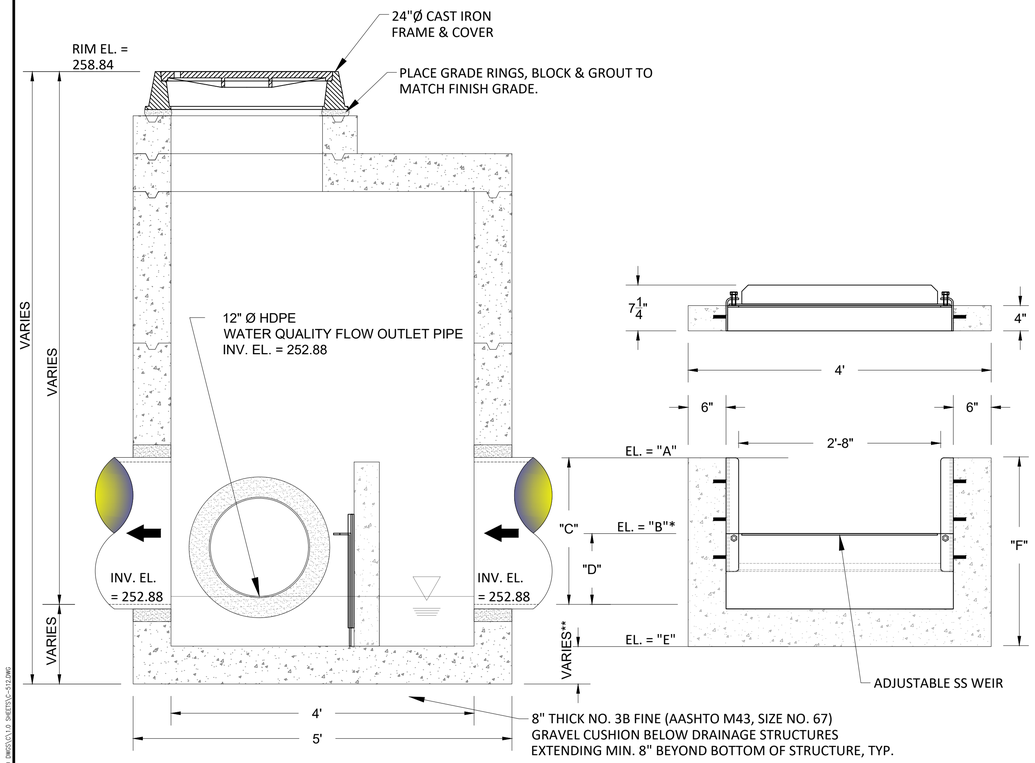
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PLAN VIEW
(SOME FEATURES NOT SHOWN FOR CLARITY)

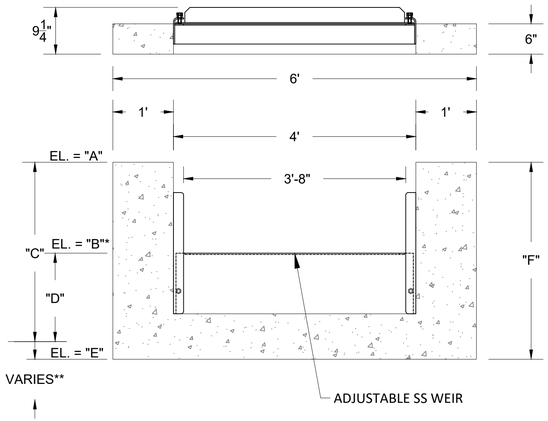


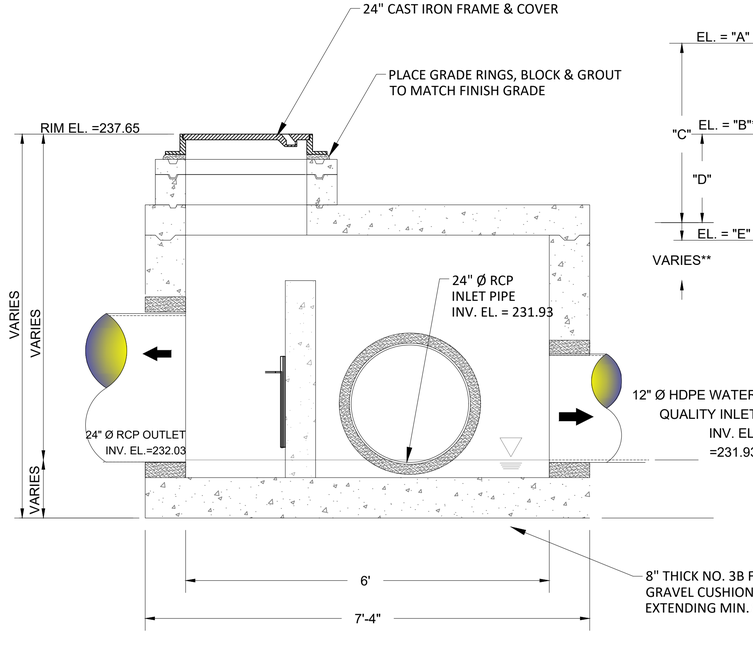
PLAN VIEW
(SOME FEATURES NOT SHOWN FOR CLARITY)



ELEVATION VIEW A-A
(SOME FEATUES NOT SHOWN FOR CLARITY)

ADJUSTABLE SS DIVERSION WEIR





ELEVATION VIEW - A-A
(SOME FEATURES NOT SHOWN FOR CLARITY)

ADJUSTABLE SS DIVERSION WEIR

1 JENSEN DIVERSION VAULT, MODEL: JDV-4848 (SDFC-A)
SCALE: NTS

2 JENSEN DIVERSION VAULT, MODEL: JDV-7272 (SDFC-E)
SCALE: NTS

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2023/CP-133

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JAMES S. HIROTA
LICENSED PROFESSIONAL ENGINEER
No. 9776-C
U.S.A. HAWAII

OWNER / DEVELOPER
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1330 MAUNAKEA ST.
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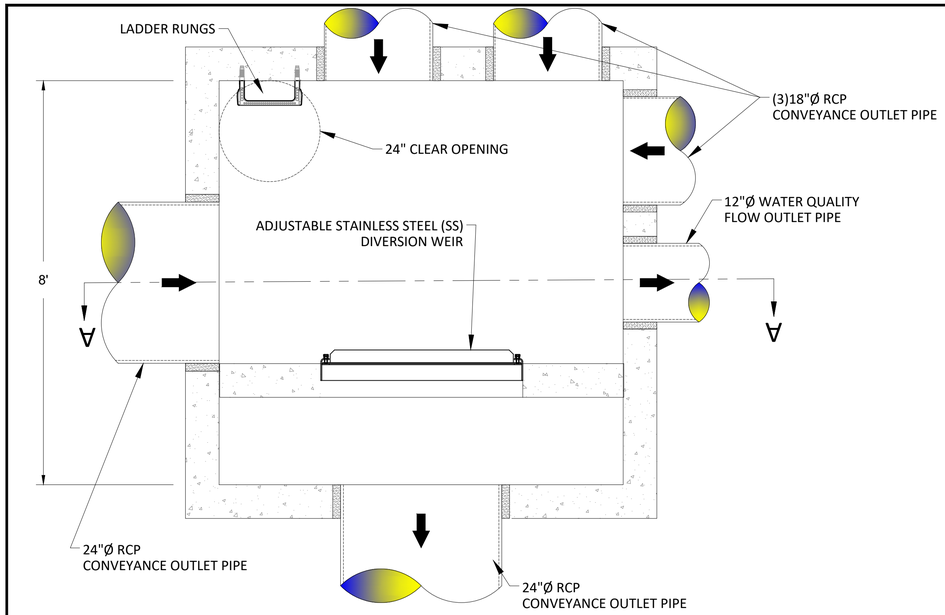
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45-425 Kamehameha Highway, Kaneohe, HI
TMK 4-5-033:001

DRAINAGE DETAILS

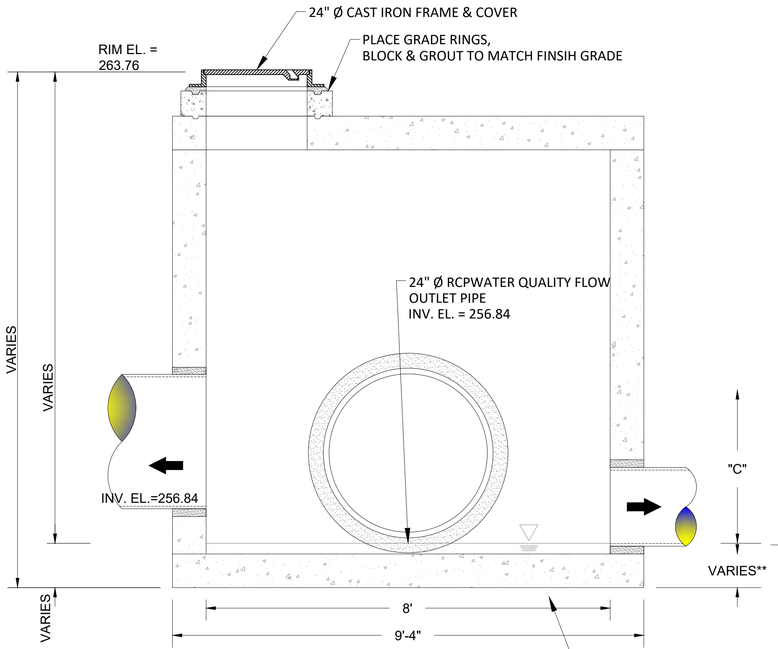
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Design	JH
Drawn	DH
Job No.	202056

Sheet No.
C-512
84 of 107 SHEETS

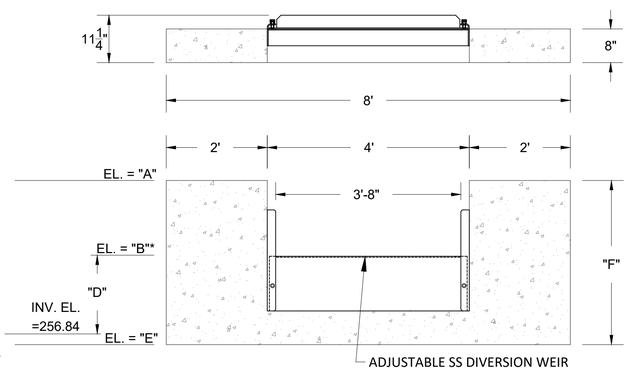
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PLAN VIEW
(SOME FEATURES NOT SHOWN FOR CLARITY)



ELEVATION VIEW A-A
(SOME FEATURES NOT SHOWN FOR CLARITY)

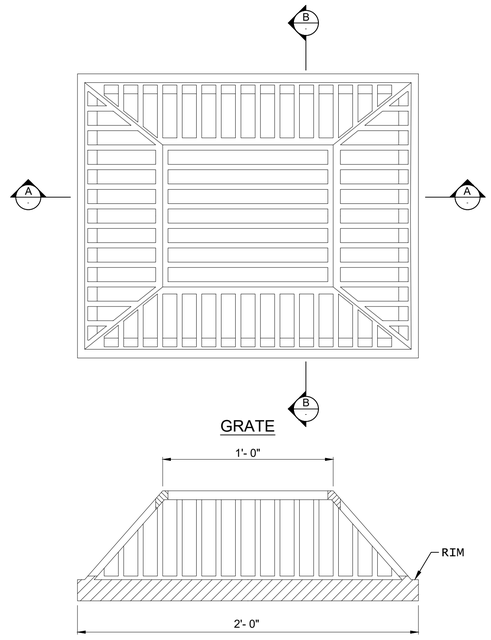


ADJUSTABLE SS DIVERSION WEIR

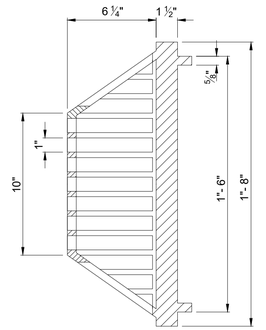
8" THICK NO. 3B FINE (AASHTO M43, SIZE NO. 67)
GRAVEL CUSHION BELOW DRAINAGE STRUCTURES
EXTENDING MIN. 8" BEYOND BOTTOM OF STRUCTURE, TYP.

1 JENSEN DIVERSION VAULT, MODEL: JDV-9696 (SDFC-BC)

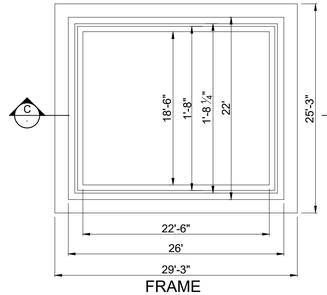
SCALE: NTS



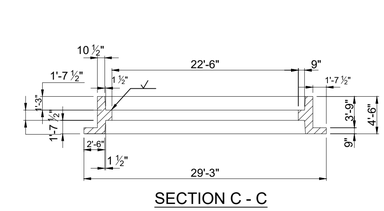
SECTION A - A



SECTION B - B



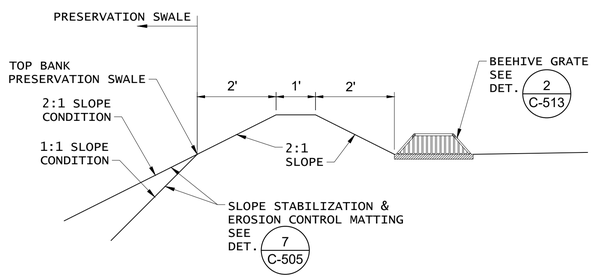
FRAME



SECTION C - C

2 CITY & COUNTY OF HONOLULU G-14F, BEEHIVE GRATE

SCALE: NTS



3 1' DIVERSION BERM

SCALE: NTS

Revisions

2023/CP-133

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Signature

APRIL 30, 2026

Expiration Date of the License

LANCE S. HIROTA U.S.A. HAWAII LICENSED PROFESSIONAL ENGINEER No. 9776-C

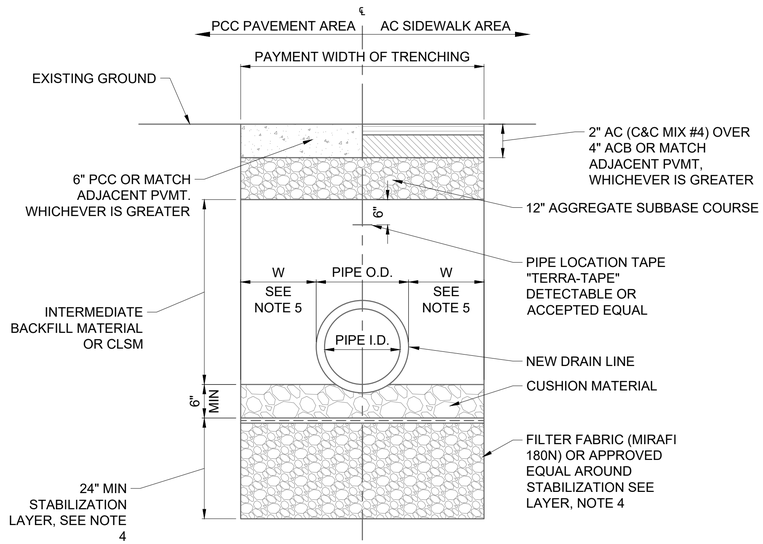
OWNER / DEVELOPER
HAWAIIAN MEMORIAL LIFE PLAN
1330 MAUNAKEA ST.
HONOLULU, HI 96817

HAWAIIAN MEMORIAL PARK EXPANSION
45-425 Kamehameha Highway, Kaneohe, HI
TMK 4-5-033:001

DRAINAGE DETAILS

Date	5/1/2025
Design	JH
Drawn	DH
Job No.	202056
Sheet No.	C-513
	85 of 107 SHEETS

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A TYP DRAIN PIPE TRENCH (IN PCC OR PVMT)

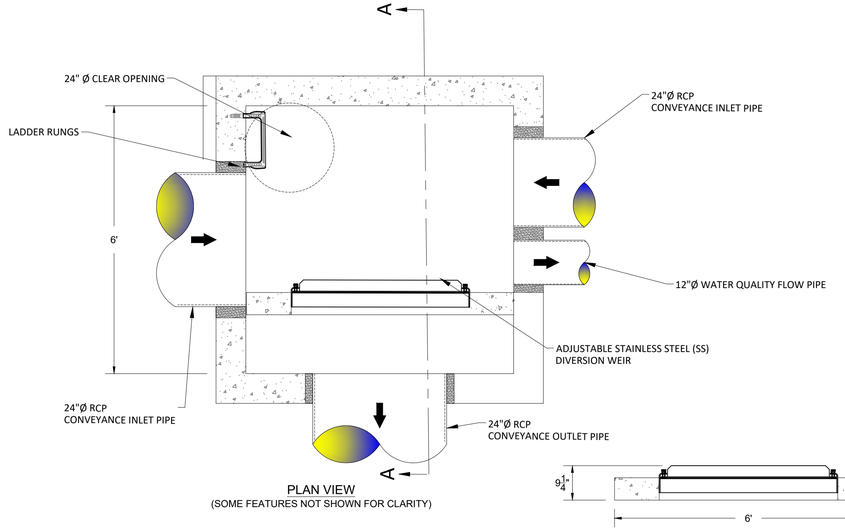
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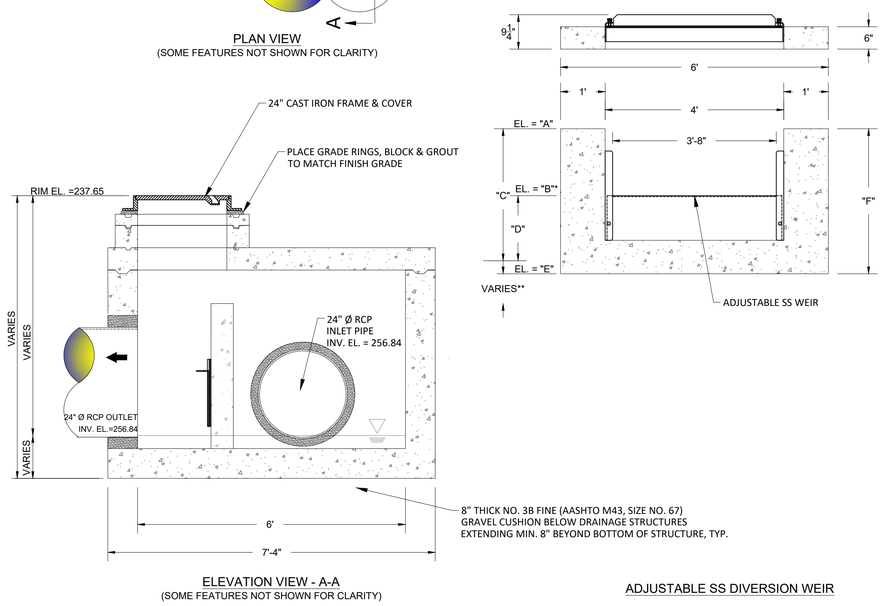
1. MINIMUM COVER FOR PIPELINES TO BE INSTALLED IN PCC PAVEMENT AREA OR AC PAVEMENT AREA SHALL BE 3 FEET.
2. PAVEMENT STRUCTURE SHALL BE EQUAL TO OR BETTER THAN ADJACENT IN THICKNESS AND QUALITY.
3. TRENCH SHORING NOT SHOWN.
4. WHERE INVERT OF PIPE IS BELOW +8 FEET MSL, A STABILIZATION LAYER CONSISTING OF AN ADDITIONAL 24 INCHES MINIMUM OF OPEN-GRADED GRAVEL, SUCH AS ASTM NO. 67 GRAVEL OR 3B FINE GRAVEL WRAPPED IN A NON-WOVEN FILTER FABRIC (MIRAFI 180N OR EQUIVALENT) SHALL BE PROVIDED BELOW THE CUSHION LAYER FOR UNIFORM SUPPORT.
5. FOR PIPELINES 30" DIAMETER OR SMALLER, W = 1'-0" MIN, FOR PIPELINE 36" DIAMETER OR LARGER, W = 1'-6" MIN.

1 CITY AND COUNTY OF HONOLULU PAYMENT TRENCH WIDTH AND REPAVING FOR DRAIN PIPES

SCALE: NTS



PLAN VIEW
(SOME FEATURES NOT SHOWN FOR CLARITY)



ELEVATION VIEW - A-A
(SOME FEATURES NOT SHOWN FOR CLARITY)

ADJUSTABLE SS DIVERSION WEIR

2 JENSEN DIVERSION VAULT, MODEL: JDV-7272 (SDFC-BC)

SCALE: NTS

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OWNER / DEVELOPER
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1330 MAUNAKEA ST.
HONOLULU, HI 96817

HAWAIIAN MEMORIAL PARK EXPANSION
45-425 Kamehameha Highway, Kaneohe, HI
TMK 4-5-033:001

DRAINAGE DETAILS

Date	5/1/2025
Design	JH
Drawn	DH
Job No.	202056

Sheet No.
C-514
86 of 107 SHEETS

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GENERAL NOTES:

1. THE CONTRACTOR SHALL VERIFY ALL FIELD DIMENSIONS AND CONDITIONS PRIOR TO STARTING WORK. ALL DISCREPANCIES SHALL BE PROMPTLY REPORTED TO THE ENGINEER.
2. ALL OMISSIONS OR CONFLICTS BETWEEN THE VARIOUS ELEMENTS OF THE WORKING DRAWING AND/OR SPECIFICATIONS SHALL BE BROUGHT TO THE ATTENTION OF THE STRUCTURAL ENGINEER BEFORE PROCEEDING WITH ANY WORK SO INVOLVED.
3. ALL WORK SHALL CONFORM TO THE UNIFORM BUILDING CODE. LATEST EDITION, AS ADOPTED BY THE CITY AND COUNTY OF HONOLULU.
4. UNLESS SPECIFICALLY DETAILED ELSEWHERE, CONTRACTOR SHALL FOLLOW TYPICAL DETAILS ON THIS SHEET.
5. IF A SOILS INVESTIGATION REPORT HAS BEEN DONE FOR THIS PROJECT, EITHER FOR THE ARCHITECT OR THE OWNER, IT SHALL BE MADE PART OF THESE PLANS. THE CONTRACTOR SHALL FOLLOW ALL RECOMMENDATIONS CONTAINED IN THE REPORT.

REINFORCING STEEL:

1. ALL REINFORCING BARS SHALL CONFORM TO ASTM A615 GRADE 60,
2. LOW HYDROGEN WELDING RODS SHALL BE USED FOR ALL WELDING TO REINFORCING BARS.
3. REINFORCING SHALL BE SPLICED ONLY AS NOTED IN DRAWINGS. ALL OTHER SPLICES SHALL BE REVIEWED BY THE STRUCTURAL ENGINEER.
4. BARS NOTED "CONT." SHALL HAVE A MINIMUM SPLICE LENGTH OF 48 BAR DIAMETER, BUT NOT LESS THAN 2'-0".
5. PROVIDE DOWELS IN FOOTINGS AND/OR GRADE BEAMS THE SAME SIZE AND SPACING AS COLUMN AND WALL REINFORCING. UNLESS NOTED OTHERWISE, PROVIDE A MINIMUM PROJECTION OF 48 BAR DIAMETER, BUT NOT LESS THAN 2'-0".
6. MINIMUM CONCRETE COVER FOR REINFORCING BARS SHALL BE, UNLESS OTHERWISE NOTED:

CONCRETE CAST AGAINST EARTH	3"
EXPOSED TO EARTH OR WEATHER	2"
FORMED SURFACE BELOW GRADE	2"
WALLS INTERIOR EXPOSURE	2"
STRUCTURAL SLAB TOP AND BOT BARS	1"
SLAB-ON-GRADE TOP BARS	1"

CONCRETE:

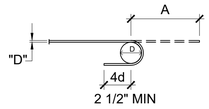
1. ALL CONCRETE WORK SHALL CONFORM TO ACI 318-14.
2. THE MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF CONCRETE AT 28 DAYS SHALL BE:

CATCH BASIN CB-1	4,000 PSI (W/C = 0.45 MAX)
SEGMENTAL RETAINING WALL FOOTING	3,000 PSI
ALL OTHER CONCRETE (U.O.N.)	3,000 PSI

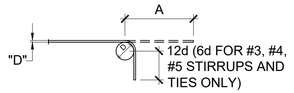
3. LOCATIONS OF ALL CONSTRUCTION OR COLD JOINTS MUST BE REVIEWED BY THE ENGINEER. IN GENERAL, CONSTRUCTION JOINTS SHALL BE LOCATED NOT MORE THAN 25'-0" APART IN EACH DIRECTION.
4. PIPES OR DUCTS EXCEEDING ONE THIRD THE SLAB OR WALL THICKNESS SHALL NOT BE PLACED IN STRUCTURAL CONCRETE UNLESS SPECIFICALLY DETAILED. PIPES MAY PASS THROUGH STRUCTURAL CONCRETE IN SLEEVES BUT SHALL NOT BE EMBEDDED THEREIN.
5. SECURE ALL ANCHORS, BOLTS, INSERTS, ETC. PRIOR TO POURING CONCRETE. VERIFY ALL SLOTS, GROOVES, FINISHES, ETC. PRIOR TO POURING CONCRETE.
6. 48 HOURS PRIOR TO THE POURING OF ANY STRUCTURAL CONCRETE THE CONTRACTOR SHALL NOTIFY THE ENGINEER, SO AN INSPECTION CAN BE MADE OF ALL FORMS AND REINFORCING.

SEGMENTAL RETAINING WALL (AKA: MECHANICALLY STABILIZED EARTH (MSE) WALL NOTES:

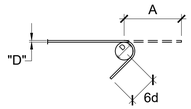
1. THE MSE RETAINING WALLS ARE SHOWN SCHEMATICALLY ON PROFILE ELEVATIONS AND SECTIONS.
2. THE MSE RETAINING WALL MANUFACTURER SHALL DESIGN THE RETAINING WALL. A COMPLETE SET OF SHOP DRAWINGS AND CALCULATIONS MUST BE SUBMITTED BY THE MSE WALL MANUFACTURER FOR REVIEW AND APPROVAL. THE SHOP DRAWINGS MUST INDICATE THE PROCEDURE OF INSTALLATION OF THE MSE WALL, INCLUDING PROCEDURE OF CONSTRUCTION, SUBGRADE PREPARATION, MATERIAL WHICH MAY BE USE IN THE MSE RETAINING WALL SYSTEM., COMPACTION REQUIREMENTS, ETC. THE DESIGN MUST BE BASED ON THE SOILS PARAMETERS AS PRESENTED IN THE GEOTECHNICAL REPORT DONE BY GEOLABS INC., WHICH HAS BEEN PREPARED FOR THIS PROJECT.
3. BASE OF WALL ELEVATION SHALL BE STEPPED UP IN INCREMENTS IN ACCORDANCE WITH WALL MANUFACTURER'S RECOMMENDATIONS.



STANDARD HOOK 180°



BAR BEND 90°



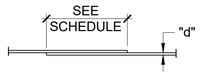
BAR BEND 135°

MINIMUM EXTENSION LENGTHS "A"				
BAR SIZE	STANDARD HOOKS		TIES AND STIRRUPS	
	180° HOOKS	90° HOOKS	90° HOOKS	135° HOOKS
#3	6"	7"	5"	6"
#4	8"	9"	6"	7"
#5	9"	11"	7"	9"
#6	11"	13"	14"	12"
#7	12"	15"	16"	14"

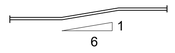
BAR SIZE	"D"
#3,#4,#5 #6,#7,#8	6d
#9,#10,#11	8d
#14,#18	10d

1 TYPICAL REBAR BENDING

NOT TO SCALE



LAP SPLICE



BAR OFFSET

BAR SIZE	f'c=3000 PSI		f'c=4000 PSI		f'c=5000 PSI		f'c=6000 PSI	
	TOP BARS	OTHER BARS	TOP BARS	OTHER BARS	TOP BARS	OTHER BARS	TOP BARS	OTHER BARS
#3	24"	24"	24"	24"	24"	24"	24"	24"
#4	29"	24"	25"	24"	24"	24"	24"	24"
#5	36"	28"	31"	24"	28"	24"	26"	24"
#6	43"	33"	37"	29"	34"	26"	31"	24"
#7	63"	48"	54"	42"	49"	38"	45"	34"

NOTES

1. LAP SPLICE LENGTHS ARE FOR CLASS A LAP SPLICES ONLY.
2. LAP SPLICE LENGTHS ARE FOR GRADE 60 DEFORMED BARS.
3. LAP SPLICE LENGTHS SHALL BE IN ACCORDANCE WITH THIS TABLE, UNLESS OTHERWISE SHOWN OR NOTED.

3 TYPICAL LAP SPLICE DETAIL

NOT TO SCALE

STANDARD DETAIL FOR PUBLIC WORKS:

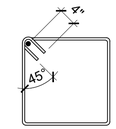
1. REFERENCES ARE MADE TO "STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION", DATED SEPTEMBER 1984.
2. ONLY THOSE DETAILS WHICH APPLY TO THE CITY AND COUNTY OF HONOLULU AND REFERENCED IN THESE PLANS APPLY.
3. UNLESS STATED OTHERWISE, THE FOLLOWING DETAILS SHALL APPLY TO THESE PLANS:
   A. TYPE "DB" FRAME AND COVER ON D-29.

DESIGN LOADS AND CRITERIA FOR SPECIAL INLET AND DRAIN MANHOLES:

1. TOP SLAB DESIGN LIVE LOAD = 90 PSF PEDESTRIAN LOAD (NO VEHICULAR ACCESS)
2. DESIGN IS BASED ON AASHTO LFRD.

DESIGN CRITERIA:

1. CODES:
   2018 INTERNATIONAL BUILDING CODE WITH STATE OF HAWAII AMENDMENTS (NEW CONSTRUCTION ONLY)
2. WIND DESIGN CRITERIA
   - BASIC WIND VELOCITY (ASCE 7-16) . . . 170 MPH (RISK CATEGORY II)
   - EXPOSURE CATEGORY . . . B
   - TOPOGRAPHY FACTOR K_{zt} . . . 1.0
3. SEISMIC DESIGN DATA
   - SITE CLASS . . . D
   - SEISMIC DESIGN CATEGORY . . . D
   - S_s . . . 0.589 g
   - S_1 . . . 0.173 g
   - S_{D1} . . . 0.260 g
   - S_{DS} . . . 0.522 g
   - IMPORTANCE FACTOR . . . 1.0 (RISK CATEGORY II)



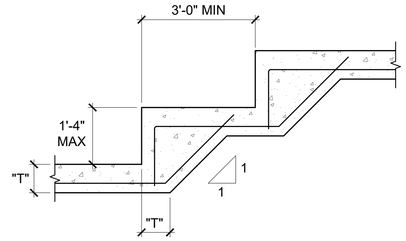
AT BEAMS

NOTE:

1. THESE DETAILS SHALL APPLY TO #3, #4, AND #5 BARS- GRADE 40 AND GRADE 60.
2. ALL BARS SHALL BE BENT COLD.

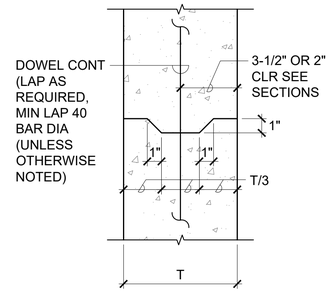
2 TYPICAL TIE AND STIRRUP DETAIL

NOT TO SCALE



4 TYP STEPPED FOOTING

NOT TO SCALE



5 CONSTRUCTION JOINT (C.J.) DETAIL

NOT TO SCALE

FOUNDATION:

1. THE FOUNDATION DESIGN AT THE PROJECT SITE IS BASED ON GEOTECHNICAL REPORT BY GEOLABS, INC. DATED AUGUST 1, 2024. THE CONTRACTOR SHALL REVIEW GEOTECHNICAL REPORT FOR GROUND PREPARATION AND SUBSEQUENT RECOMMENDATIONS BEFORE PROCEEDING WITH WORK

ALLOWABLE BEARING PRESSURE	2,000 PSF (CATCH BASIN)
	6,500 PSF (MSE WALLS)
COEFFICIENT OF FRICTION	0.38
LATERAL PASSIVE RESISTANCE	285 PCF

LATERAL EARTH PRESSURES FOR DESIGN OF MSE RETAINING WALLS			
BACKFILL CONDITION	EARTH PRESSURE COMPONENT	ACTIVE (pcf)	AT-REST (pcf)
LEVEL BACKFILL	HORIZONTAL	37	59
	VERTICAL	NONE	NONE
MAXIMUM 5H:1V SLOPING BACKFILL	HORIZONTAL	42	60
	VERTICAL	12	16

Revisions

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APRIL 30, 2026

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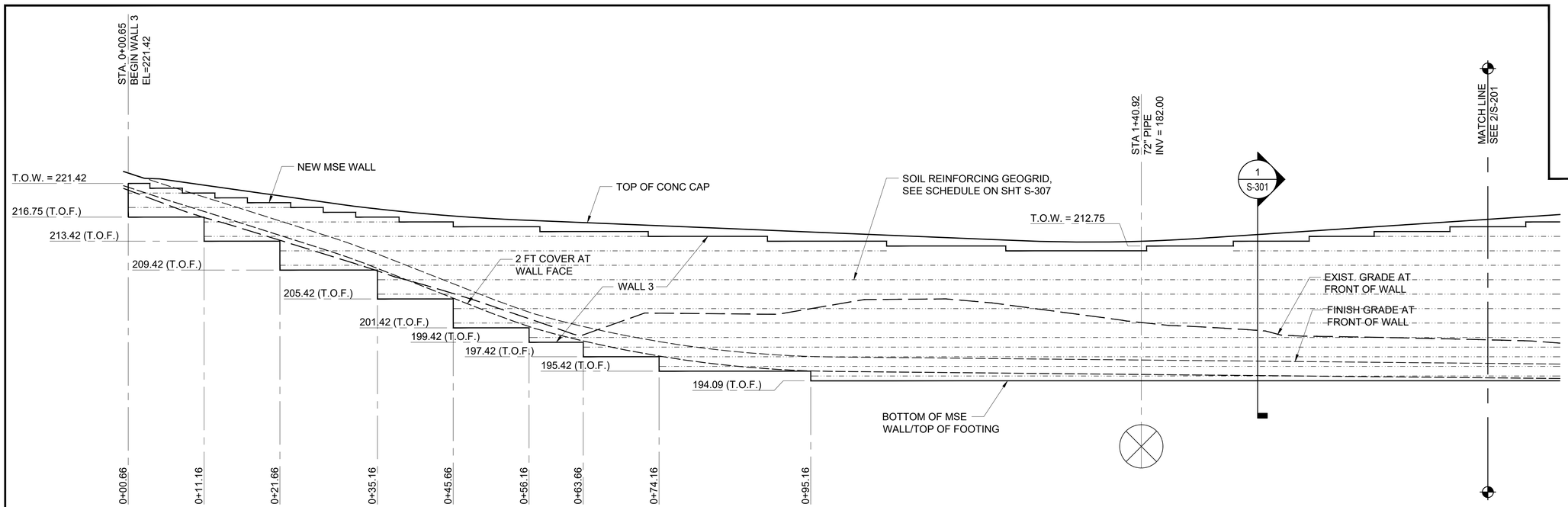
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HONOLULU, HI 96817

HAWAIIAN MEMORIAL PARK EXPANSION
45-425 Kamehameha Highway, Kaneohe, HI
TMK 4-5-033:001

STRUCTURAL GENERAL NOTES

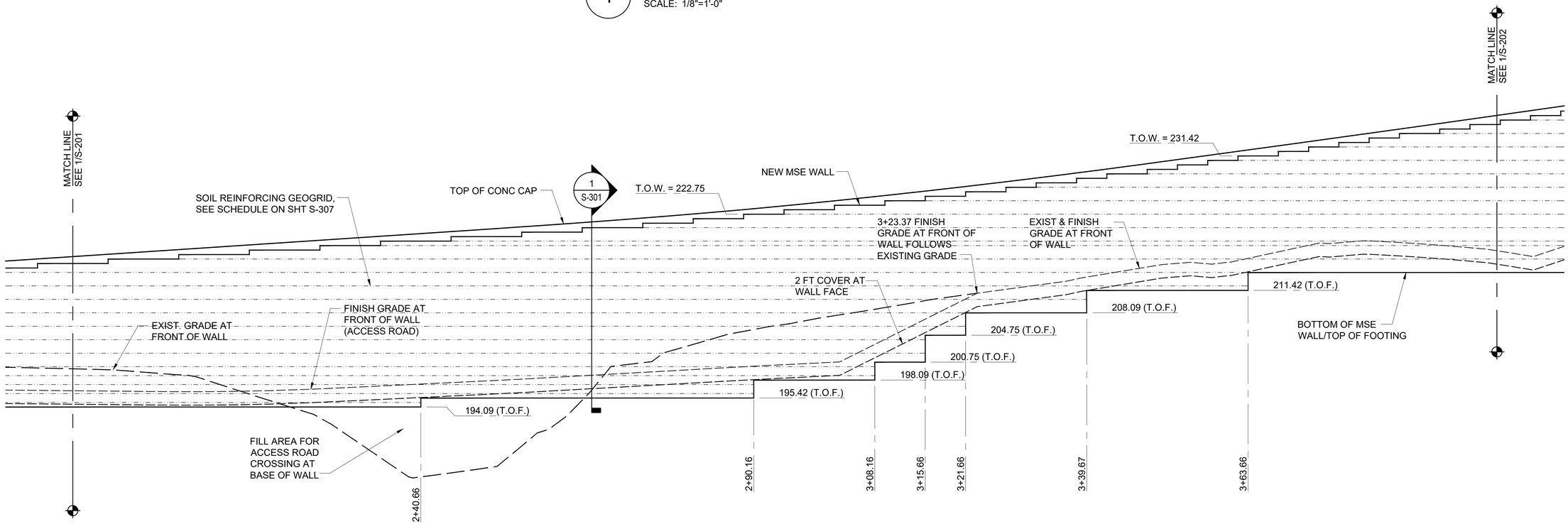
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Job No.	202056
Sheet No.	S-001
	87 of 107 SHEETS

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1 HMP MAKAI WALL 3 PROFILE

SCALE: 1/8"=1'-0"



2 HMP MAKAI WALL 3 PROFILE

SCALE: 1/8"=1'-0"

GRAPHIC SCALE

1/8"=1'-0" 8' 4' 0 8' 16'

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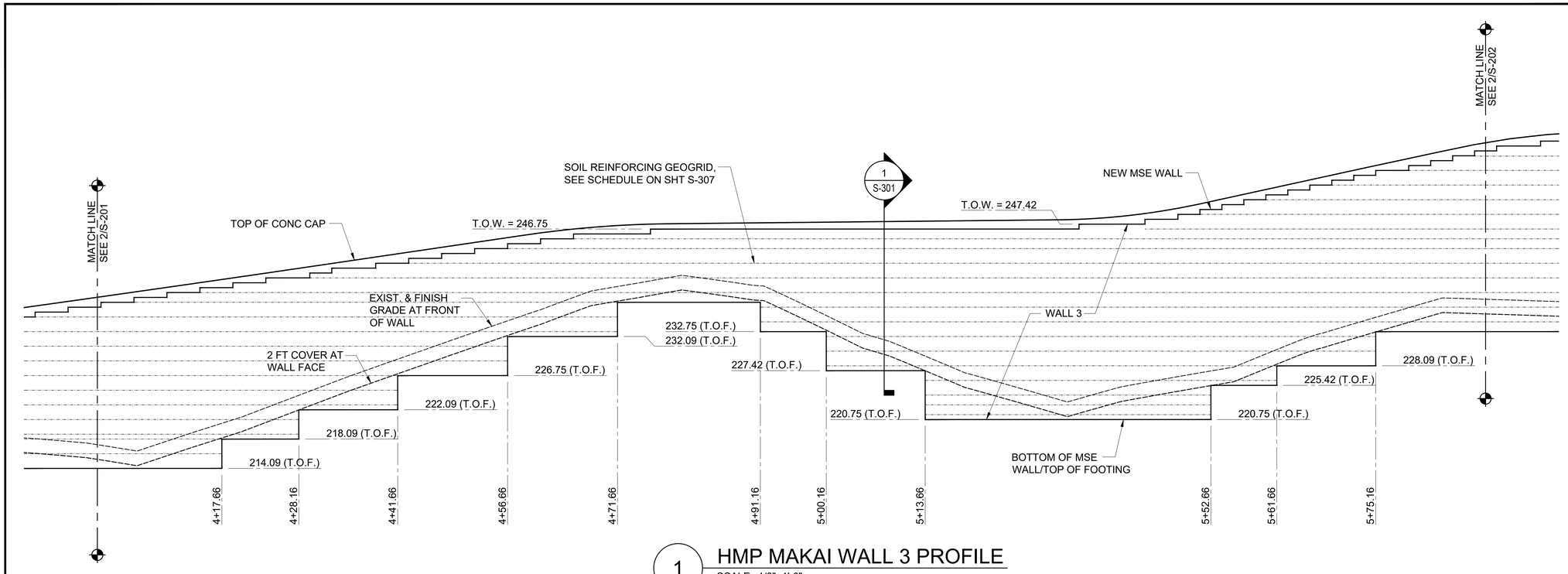
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RETAINING WALL PROFILES

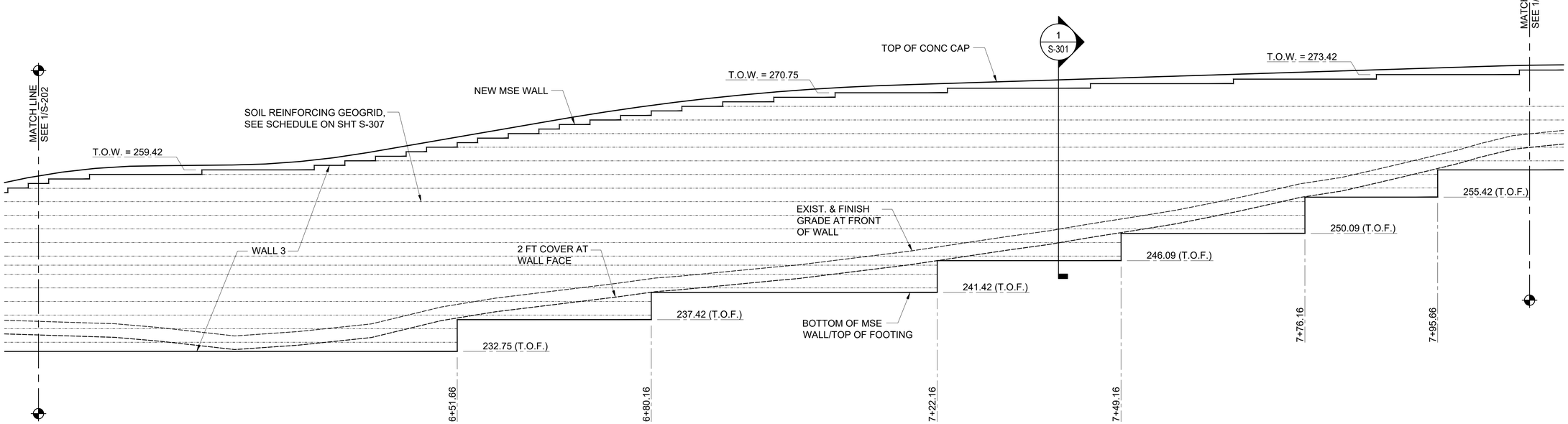
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1 HMP MAKAI WALL 3 PROFILE

SCALE: 1/8"=1'-0"



2 HMP MAKAI WALL 3 PROFILE

SCALE: 1/8"=1'-0"

GRAPHIC SCALE

1/8"=1'-0" 8' 4' 0 8' 16'

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Date: J:\JOBS\202056\202056_MAP-ATKWGDN\0.0 DWGS\S\202056_S-202.DWG

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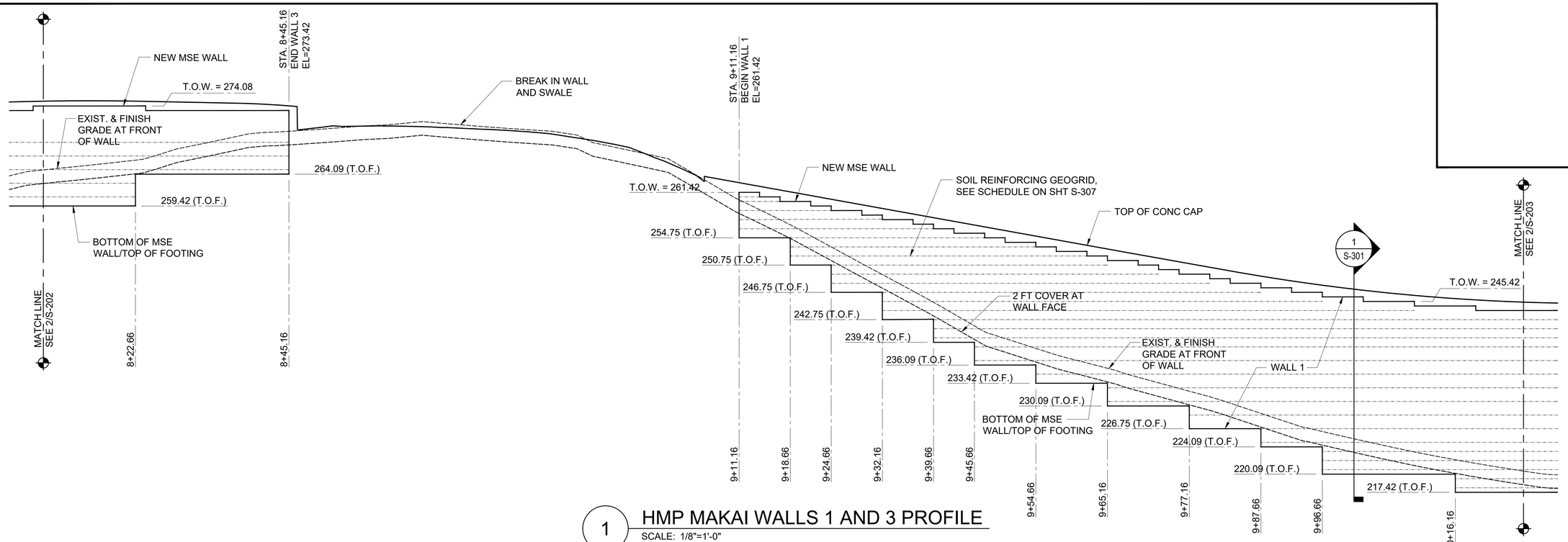
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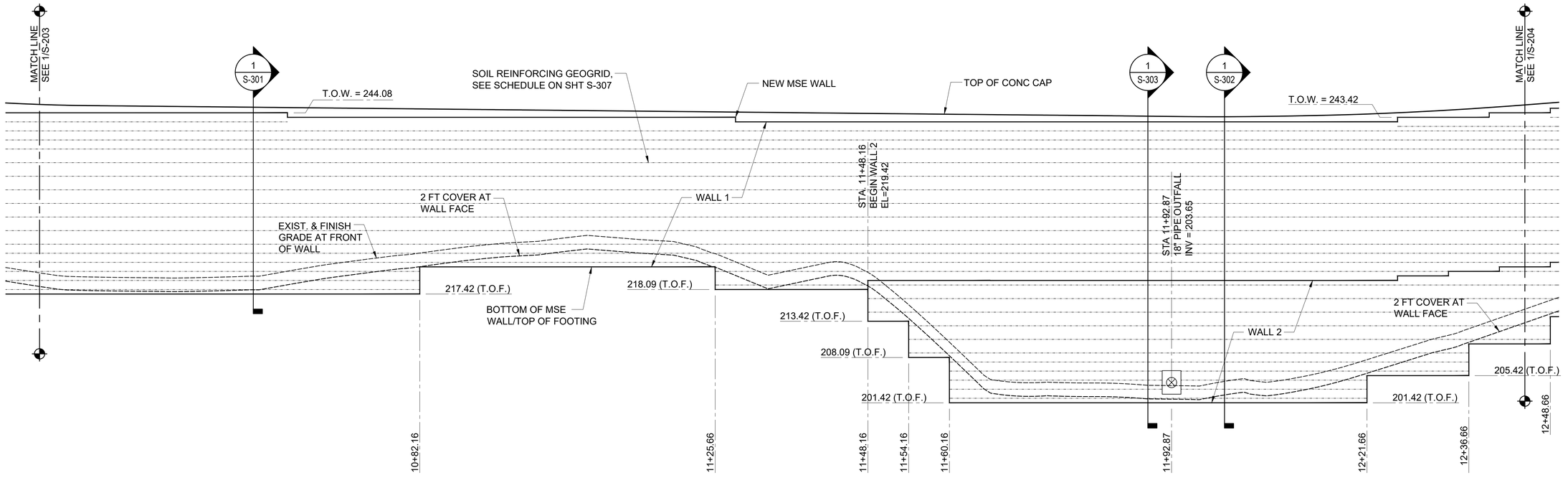
RETAINING WALL PROFILES

Date	5/1/2025
Design	CK
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Job No.	202056
Sheet No.	S-202
	89 of 107 SHEETS



1 HMP MAKAI WALLS 1 AND 3 PROFILE

SCALE: 1/8"=1'-0"



2 HMP MAKAI WALLS 1 AND 2 PROFILE

SCALE: 1/8"=1'-0"

GRAPHIC SCALE

1/8"=1'-0" 8' 4' 0 8' 16'

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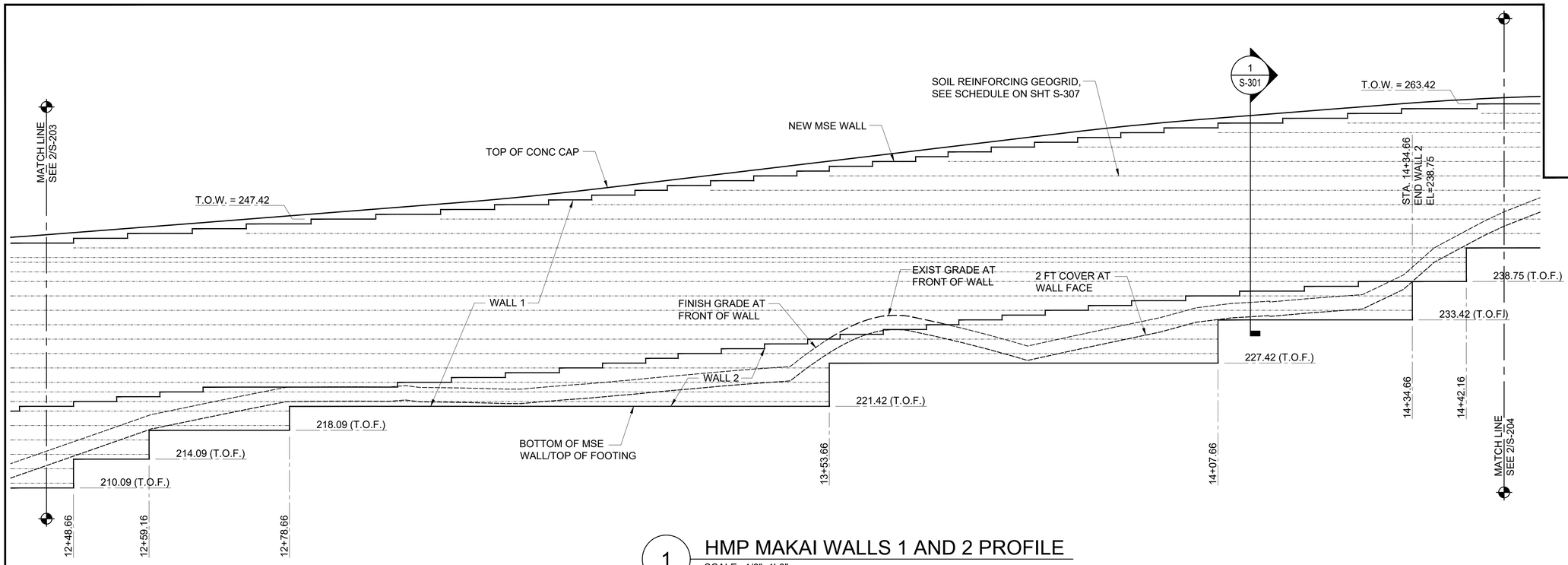
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RETAINING WALL PROFILES

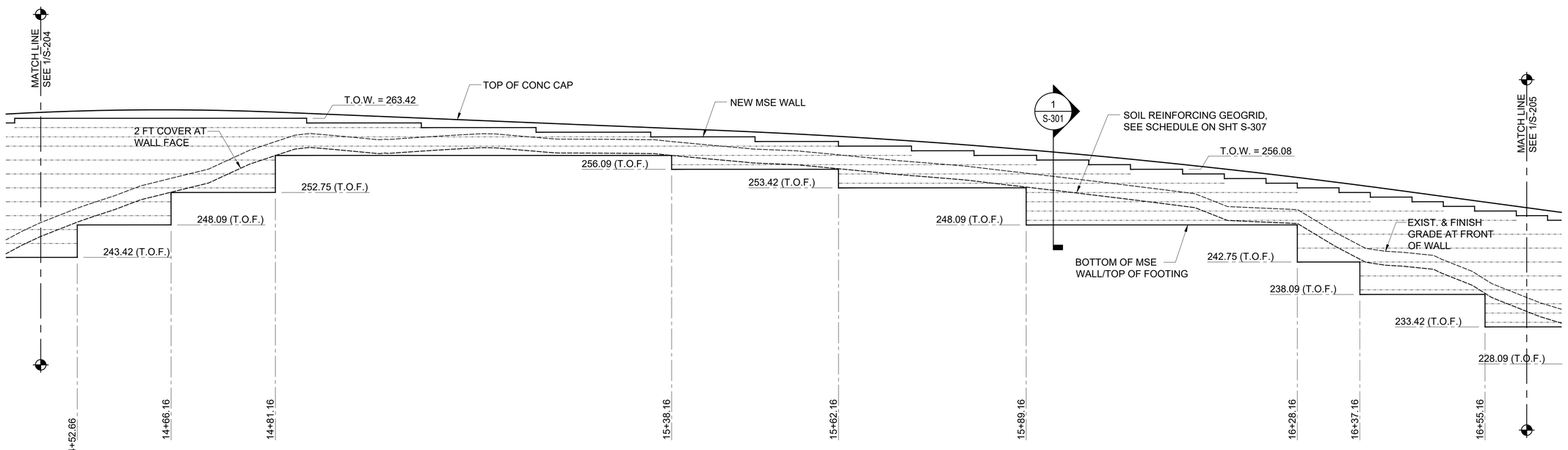
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Sheet No.	S-203
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1 HMP MAKAI WALLS 1 AND 2 PROFILE

SCALE: 1/8"=1'-0"



2 HMP MAKAI WALL 1 PROFILE

SCALE: 1/8"=1'-0"

GRAPHIC SCALE

1/8"=1'-0" 8' 4' 0 8' 16'

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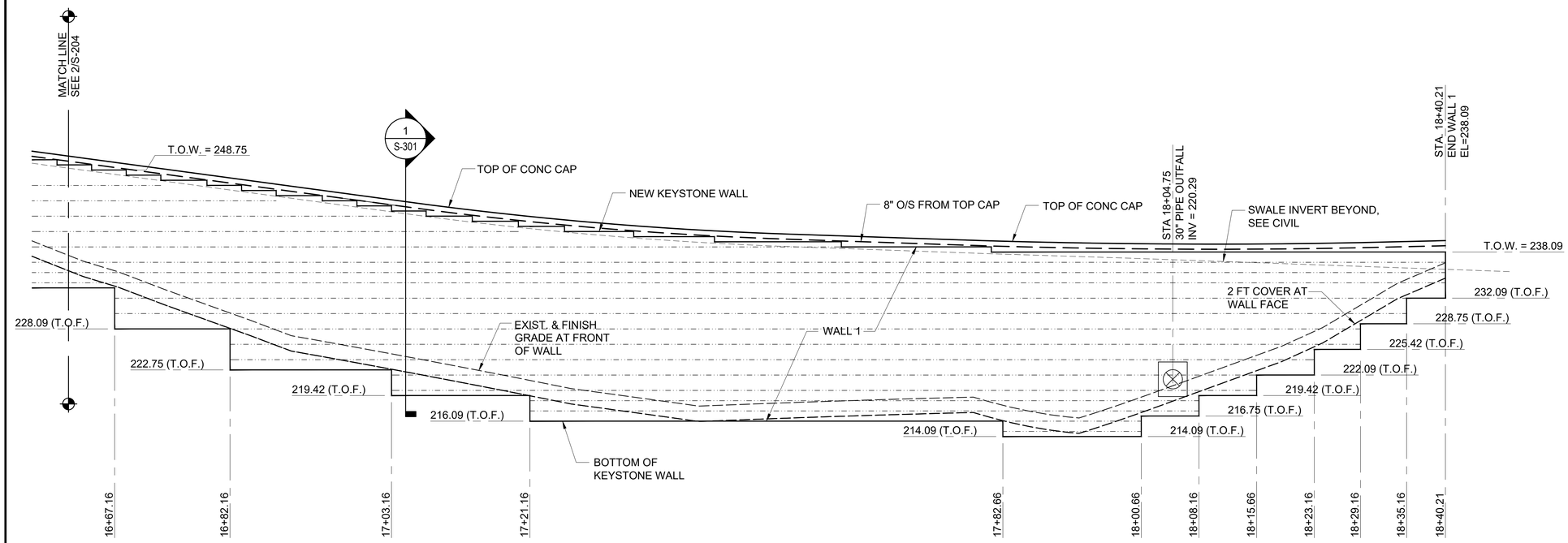
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TMK 4-5-033:001

RETAINING WALL PROFILES

Date	5/1/2025
Design	CK
Drawn	MM
Job No.	202056
Sheet No.	S-204
	91 of 107 SHEETS



1 HMP MAKAI WALL 1 PROFILE

SCALE: 1/8"=1'-0"

GRAPHIC SCALE

1/8"=1'-0" 8' 4' 0 8' 16'

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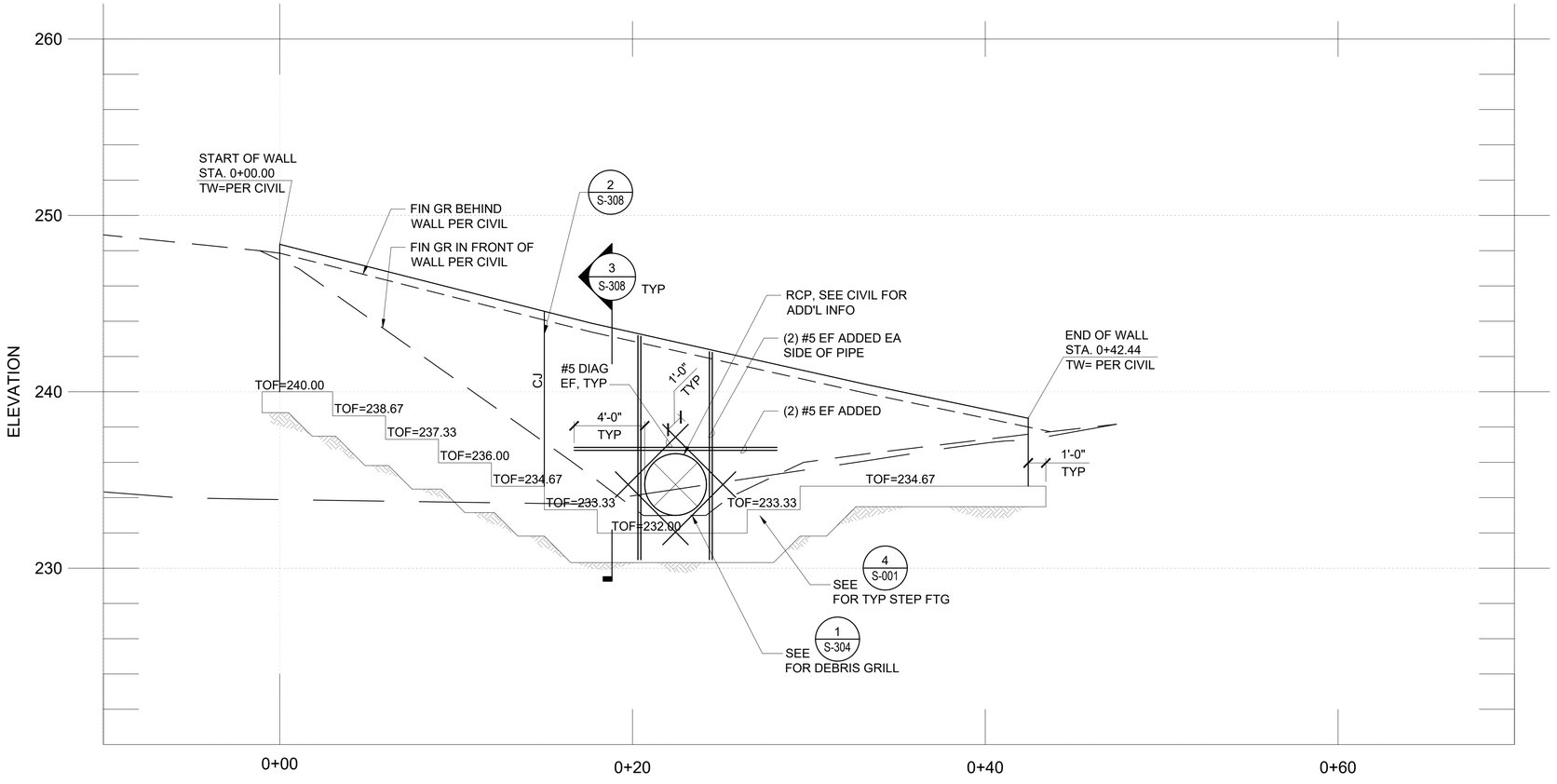
HAWAIIAN MEMORIAL PARK EXPANSION

45-425 Kamehameha Highway, Kaneohe, HI
TMK 4-5-033:001

RETAINING WALL PROFILE

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Job No.	202056
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	92 of 107 SHEETS

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1 PRESERVATION HEADWALL PROFILE

SCALE: 1/4"=1'-0"

GRAPHIC SCALE

1/4"=1'-0" 4' 2' 0 4' 8'

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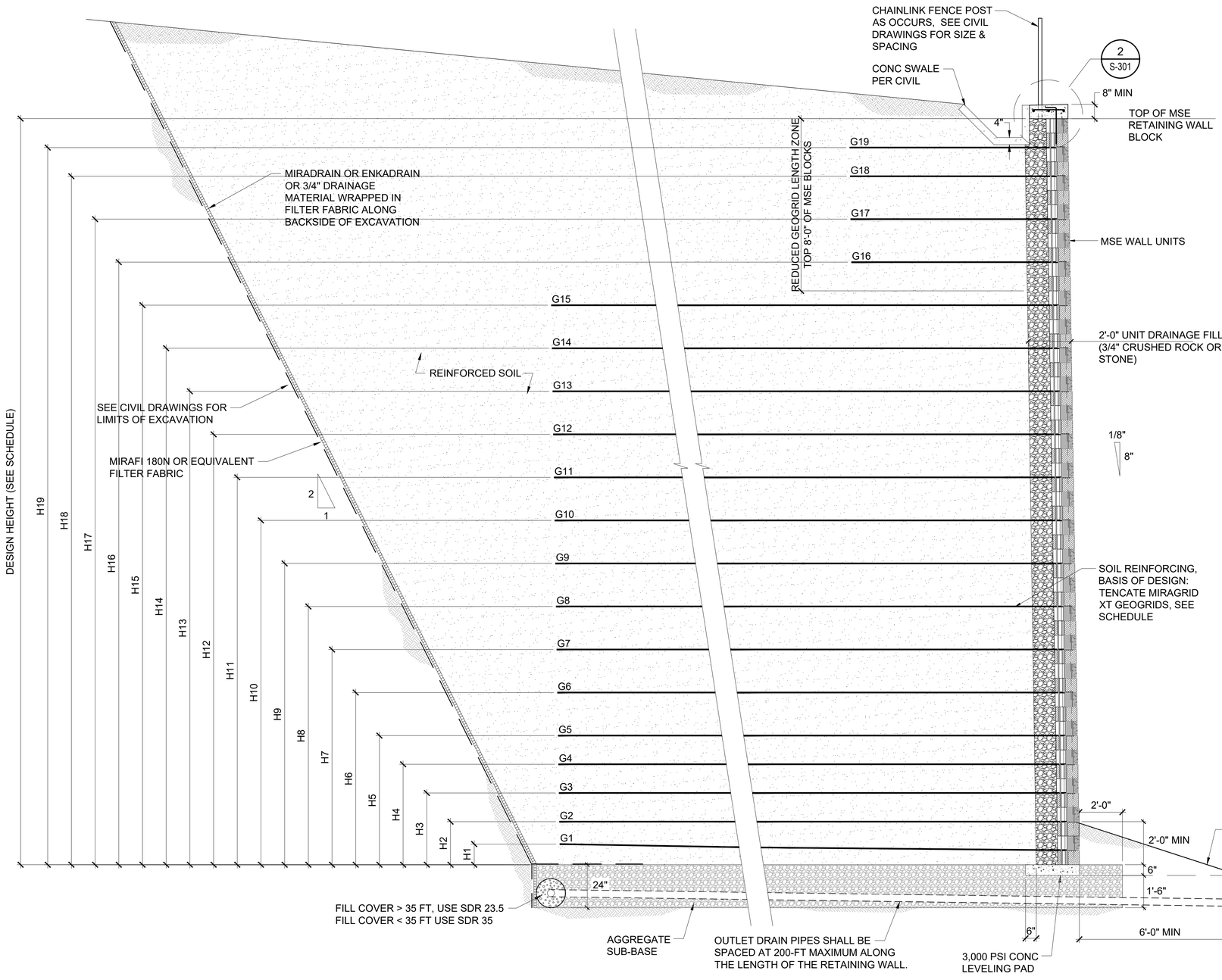
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45-425 Kamehameha Highway, Kaneohe, HI
TMK 4-5-033:001

RETAINING WALL PROFILE

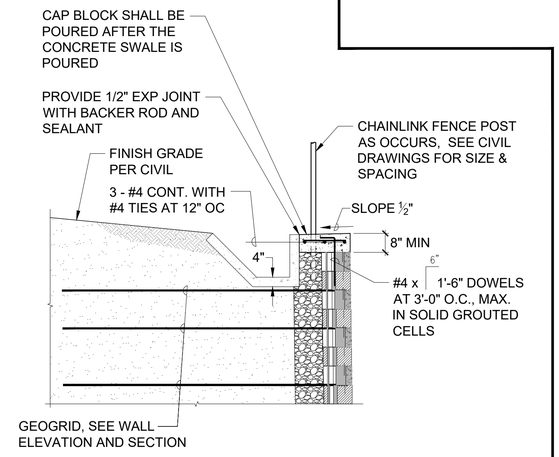
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1 TYPICAL MSE RETAINING WALL SECTION

SCALE: 3/8"=1'-0"



2 REINFORCED CONCRETE COPING DETAIL

SCALE: 3/8"=1'-0"

GRAPHIC SCALE

3/8"=1'-0" 1' 0 1' 2' 3' 4' 5' 6' 7'

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HONOLULU, HI 96817

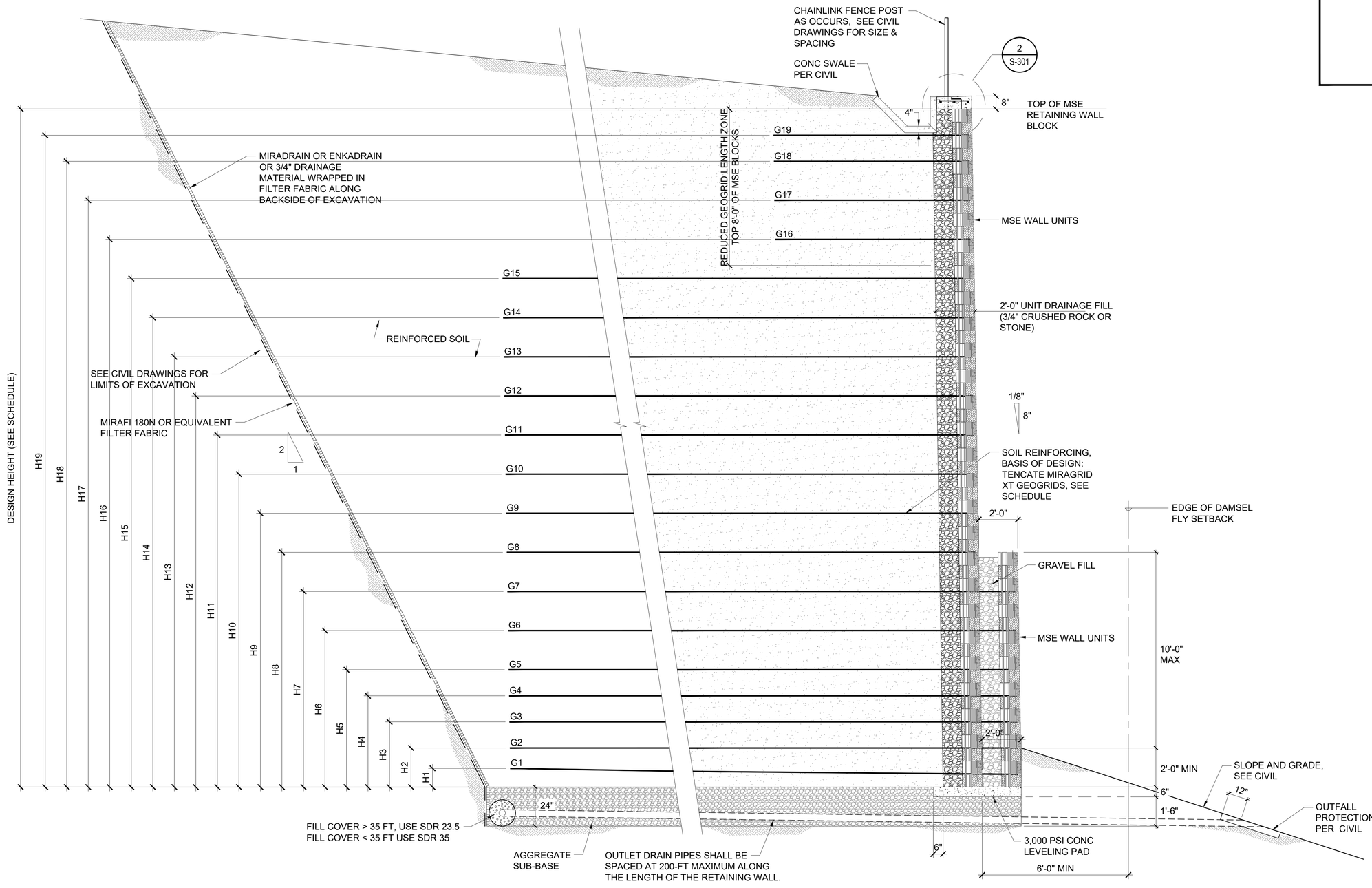
HAWAIIAN MEMORIAL PARK EXPANSION

45-425 Kamehameha Highway, Kaneohe, HI
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RETAINING WALL SECTION AND DETAILS

Date	5/1/2025
Design	CK
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Job No.	202056
Sheet No.	S-301
	94 of 107 SHEETS

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1 MSE RETAINING WALL SECTION AT DESIGN HEIGHT > 25'-0"

SCALE: 3/8"=1'-0"

GRAPHIC SCALE

3/8"=1'-0" 1' 0 1' 2' 3' 4' 5' 6' 7'

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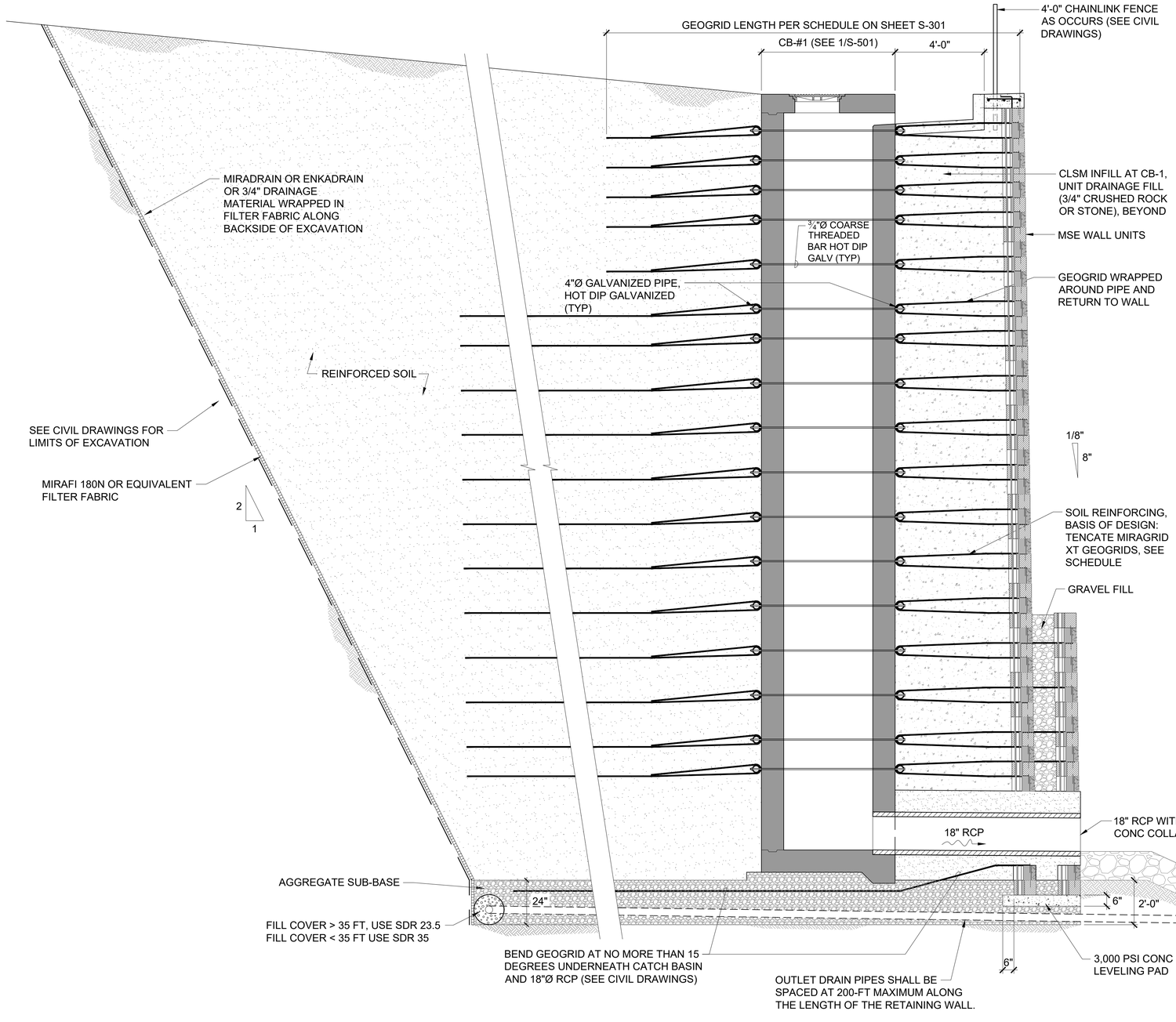
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TMK 4-5-033:001

RETAINING WALL SECTION

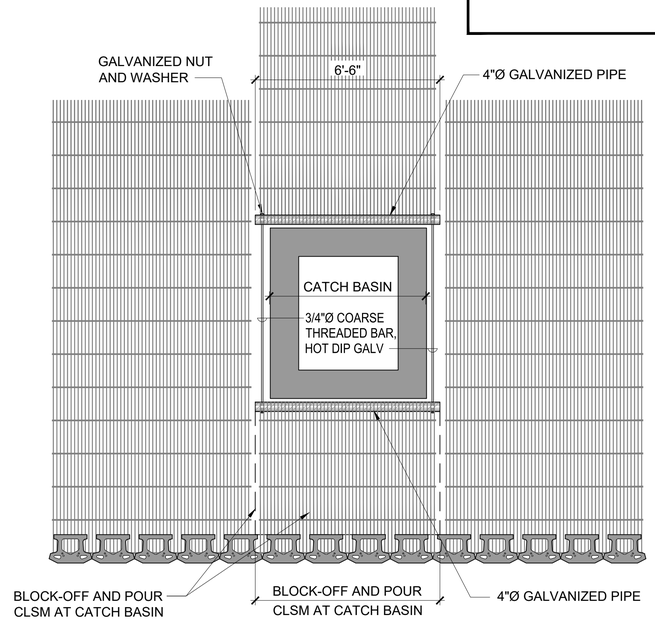
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1 MSE RETAINING WALL SECTION AT CATCH BASIN/MANHOLE
SCALE: 3/8"=1'-0"



2 WALL PLAN AT CATCH BASIN
SCALE: 3/8"=1'-0"

GRAPHIC SCALE
3/8"=1'-0"
1' 0 1' 2' 3' 4' 5' 6' 7'

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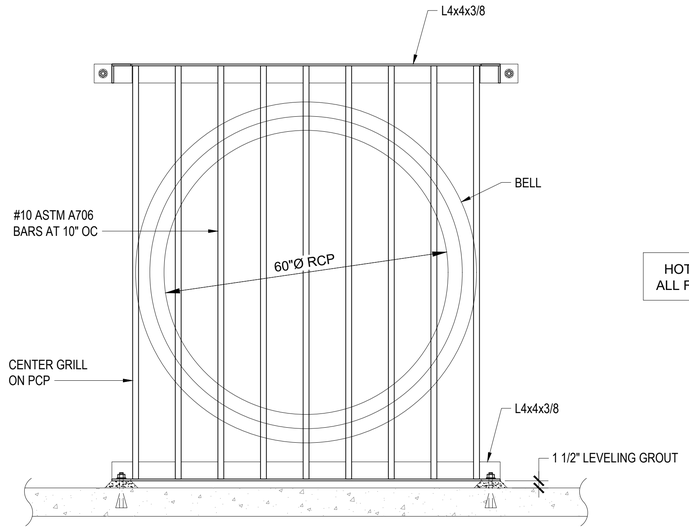
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RETAINING WALL SECTION

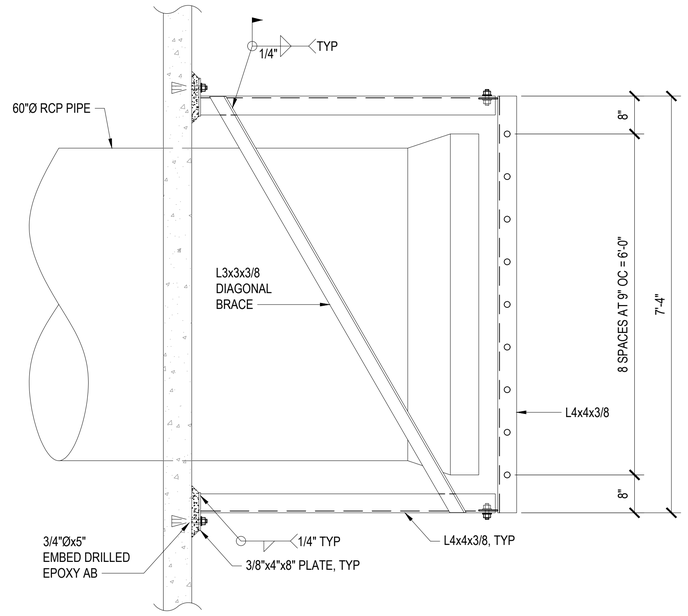
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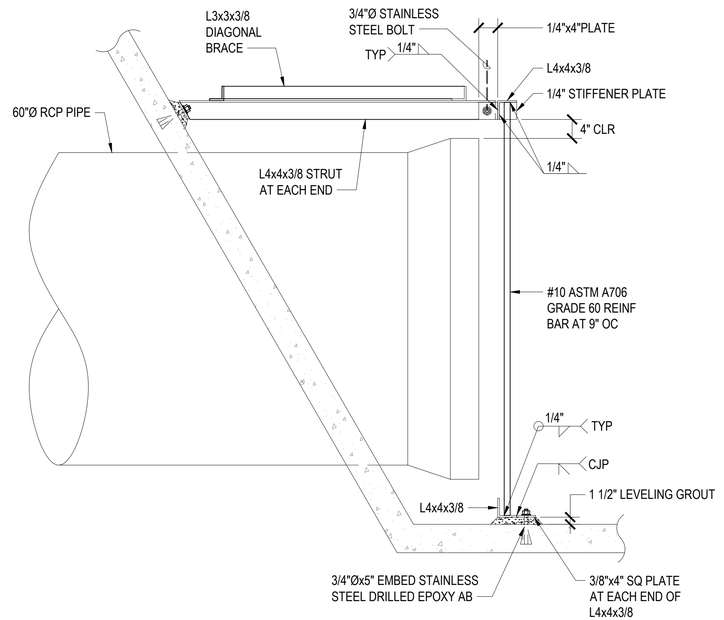


ELEVATION

HOT DIP GALVANIZE
ALL FERROUS METALS



TOP VIEW



SECTION

1 GRILL FOR 60-INCH RCP PIPE

SCALE: 3/4"=1'-0"

GRAPHIC SCALE

3/4"=1'-0" 1' 0 1' 2' 3'

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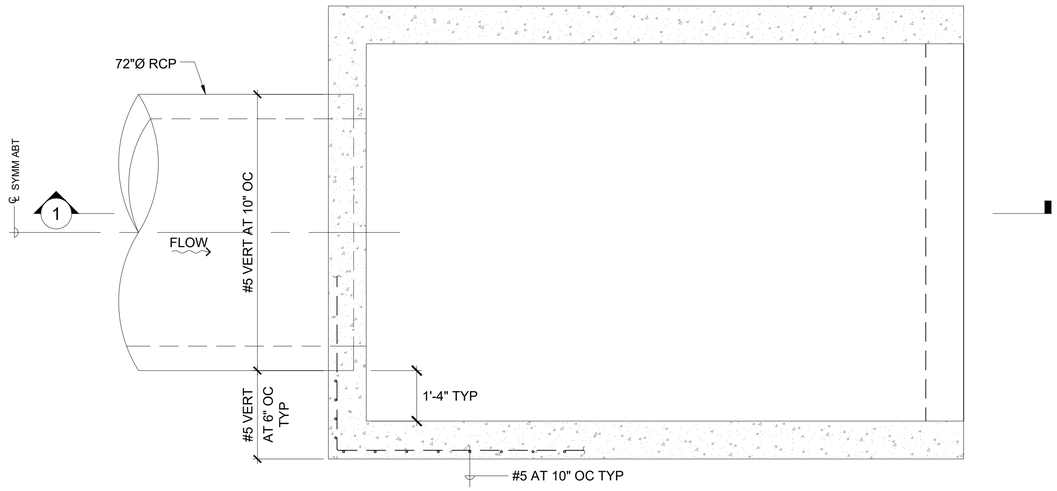
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GRILL FOR 60-INCH RCP PIPE

Date	5/1/2025
Design	CK
Drawn	MM
Job No.	202056
Sheet No.	S-304
	97 of 107 SHEETS

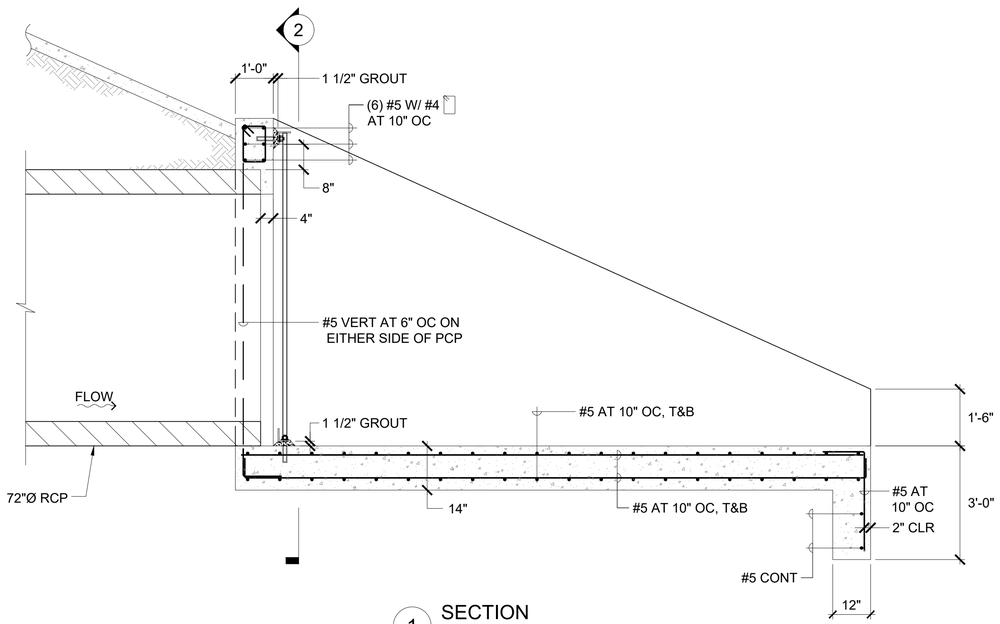
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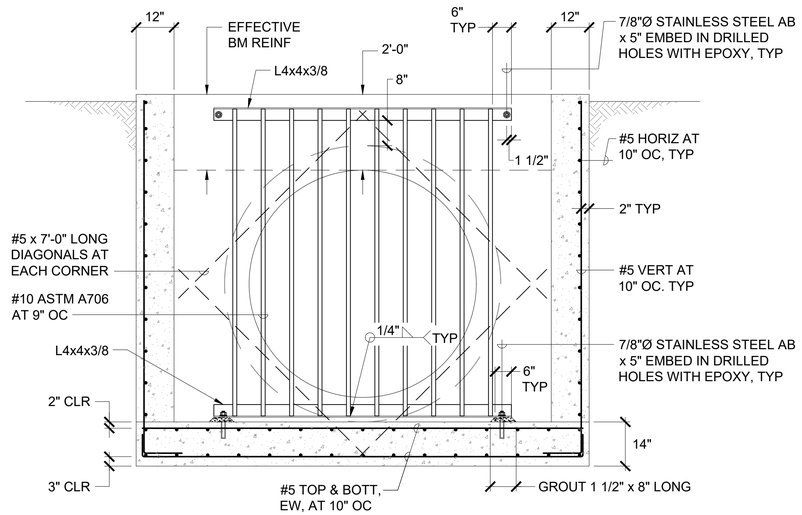
PLAN VIEW

NOTES:

1. CONCRETE f'c = 4,000 PSI, W/C ≤ 0.45
2. ALL PARTS OF GRATING SHALL BE HOT DIP GALVANIZED.



1 SECTION



2 SECTION

1 72-INCH RCP OUTLET AND DEBRIS GRATE

SCALE: 1/2"=1'-0"

GRAPHIC SCALE

1/2"=1'-0" 1' 0 1' 2' 3' 4' 5'

Revisions

COFFMAN ENGINEERS
745 Fort Street, Suite 400 | Honolulu, Hawaii 96813
ph 808.687.8884 | fax 808.687.8883
coffman.com

2023/CP-133

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T. K. KODAMA COLIN LICENSED PROFESSIONAL ENGINEER No. 19241-S U.S.A. HAWAII

Signature

APRIL 30, 2026

Expiration Date of the License

OWNER / DEVELOPER
HAWAIIAN MEMORIAL LIFE PLAN
1330 MAUNAKEA ST.
HONOLULU, HI 96817

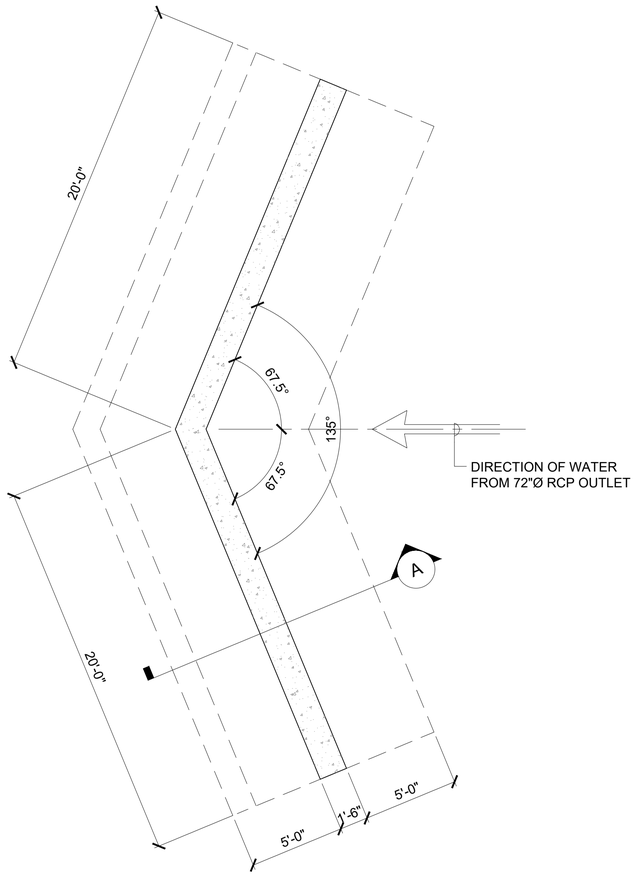
HAWAIIAN MEMORIAL PARK EXPANSION
45-425 Kamehameha Highway, Kaneohe, HI
TMK 4-5-033:001

72-INCH RCP OUTLET AND DEBRIS GRATE

Date	5/1/2025
Design	CK
Drawn	MM
Job No.	202056

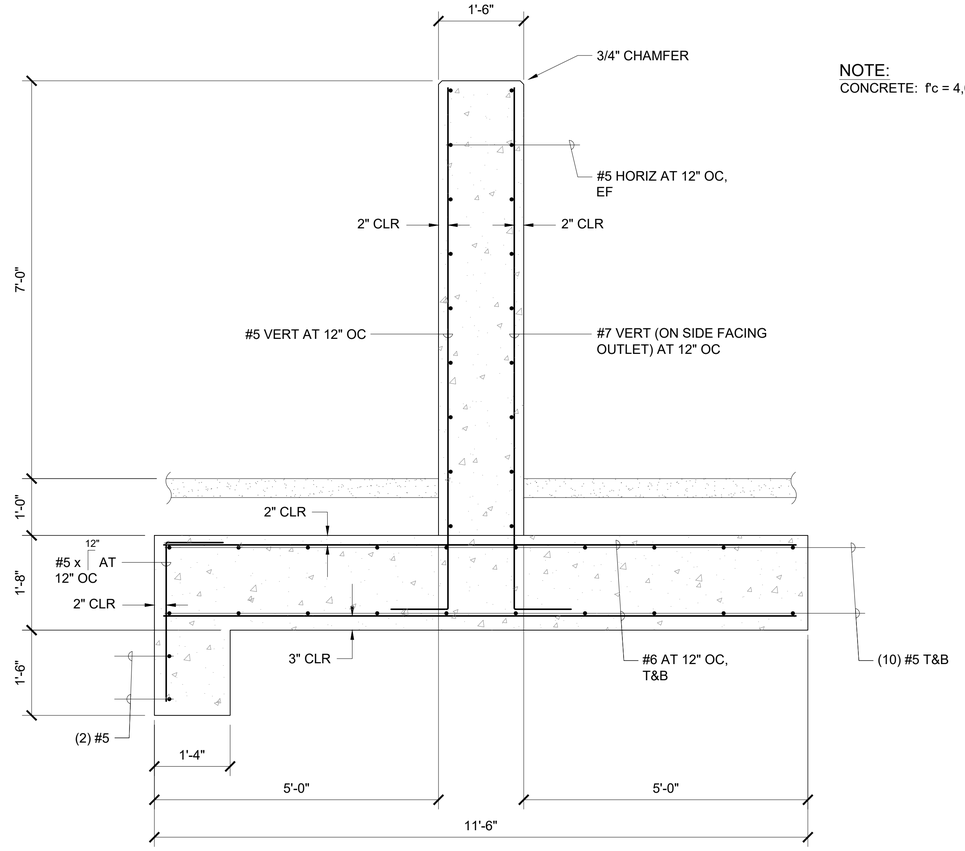
Sheet No.
S-305
98 of 107 SHEETS

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BAFFLE WALL PLAN

SCALE: 1/4" = 1'-0"



NOTE:
CONCRETE: f'c = 4,000 PSI, W/C = 0.45

A SECTION

SCALE: 3/4"=1'-0"

GRAPHIC SCALES

1/4"=1'-0" 4' 2' 0 4' 8'

3/4"=1'-0" 1' 0 1' 2' 3'

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HONOLULU, HI 96817

HAWAIIAN MEMORIAL PARK EXPANSION

45-425 Kamehameha Highway, Kaneohe, HI
TMK 4-5-033:001

BAFFLE WALL PLAN AND SECTION

Date	5/1/2025
Design	CK
Drawn	MM
Job No.	202056
Sheet No.	S-306
	99 of 107 SHEETS

2023/CP-133

User: DRUM, ALEX 4/30/2026 2:03 PM
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RETAINING WALL GEOGRID SCHEDULE

DESIGN HEIGHT	GEOGRID LENGTH	SOIL REINFORCING (GEOGRID) LENGTH / SOIL REINFORCING (GEOGRID) TYPE																				
		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	H11	H12	H13	H14	H15	H16	H17	H18	H19	H20	H21	H22
<10'-0"	8'-0" *	0'-8"	2'-8"	4'-8"	6'-8"	8'-8"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		3XT	3XT	3XT	3XT	3XT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<16'-0"	15'-0" *	0'-8"	2'-8"	4'-8"	6'-8"	8'-8"	10'-8"	12'-8"	14'-8"	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<20'-0"	18'-0" *	0'-8"	2'-8"	4'-8"	6'-8"	8'-8"	10'-8"	12'-8"	13'-8"	14'-8"	16'-8"	18'-8"	-	-	-	-	-	-	-	-	-	-	-
		3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	-	-	-	-	-	-	-	-	-	-	-
<26'-0"	24'-0" *	0'-8"	2'-8"	4'-8"	6'-8"	8'-8"	10'-8"	12'-8"	13'-8"	14'-8"	16'-8"	18'-8"	20'-8"	22'-8"	24'-8"	-	-	-	-	-	-	-	-
		8XT	8XT	8XT	8XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	-	-	-	-	-	-	-	-
<30'-0"	27'-0" *	0'-8"	2'-8"	4'-8"	6'-8"	8'-8"	10'-8"	12'-8"	13'-8"	14'-8"	16'-8"	18'-8"	20'-8"	22'-8"	24'-8"	26'-8"	28'-8"	-	-	-	-	-	-
		8XT	8XT	8XT	8XT	8XT	8XT	8XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	8XT	8XT	-	-	-	-	-	-
<36'-0"	33'-0" *	0'-8"	2'-0"	3'-4"	4'-8"	6'-0"	8'-0"	10'-0"	12'-0"	14'-0"	16'-0"	18'-0"	20'-0"	22'-0"	24'-0"	26'-0"	28'-0"	30'-0"	32'-0"	33'-4"	34'-8"	-	-
		8XT	8XT	8XT	8XT	8XT	8XT	8XT	8XT	8XT	8XT	8XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	-	-
<41'-4"	37'-6" *	0'-8"	2'-0"	3'-4"	4'-8"	6'-0"	8'-0"	10'-0"	12'-0"	14'-0"	16'-0"	18'-0"	20'-0"	22'-0"	24'-0"	26'-0"	28'-0"	30'-0"	32'-0"	34'-0"	36'-0"	38'-0"	40'-0"
		8XT	8XT	8XT	8XT	8XT	8XT	8XT	8XT	8XT	8XT	8XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT	3XT

* NOTE: SOIL REINFORCING (GEOGRID) LENGTHS SHALL BE 8'-0" MAXIMUM WITHIN THE UPPER 8'-0" OF WALL AS INDICATED ON SHEET S-301.

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45-425 Kamehameha Highway, Kaneohe, HI
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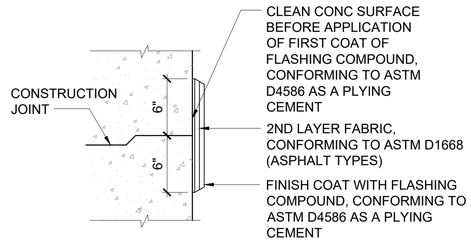
RETAINING WALL GEOGRID SCHEDULE

Date	5/1/2025
Design	CK
Drawn	MM
Job No.	202056
Sheet No.	S-307
	100 of 107 SHEETS

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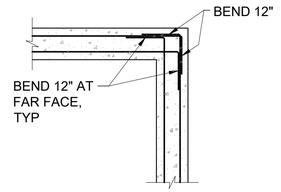
RETAINING WALL SCHEDULE

"HT"	4'-0"	6'-0"	8'-0"	10'-0"	12'-0"
"L"	3'-0"	4'-6"	5'-6"	7'-6"	8'-6"
"t"	14"	14"	14"	18"	20"
"a"	12"	12"	12"	18"	18"
KEY	NO	NO	YES	YES	YES
"A" BAR	#5 AT12"	#5 AT12"	#5 AT12"	#5 AT 6"	#6 AT 6"
"B" BAR	#5 AT12"	#5 AT12"	#5 AT 6"	#6 AT 12"	#6 AT 6"
"C" BAR	#5 AT12"	#5 AT12"	#5 AT12"	#5 AT12"	#6 AT 12"



1 TYP FLASHING COMPOUND WATERPROOFING DETAIL

SCALE: 1-1/2"=1'-0"

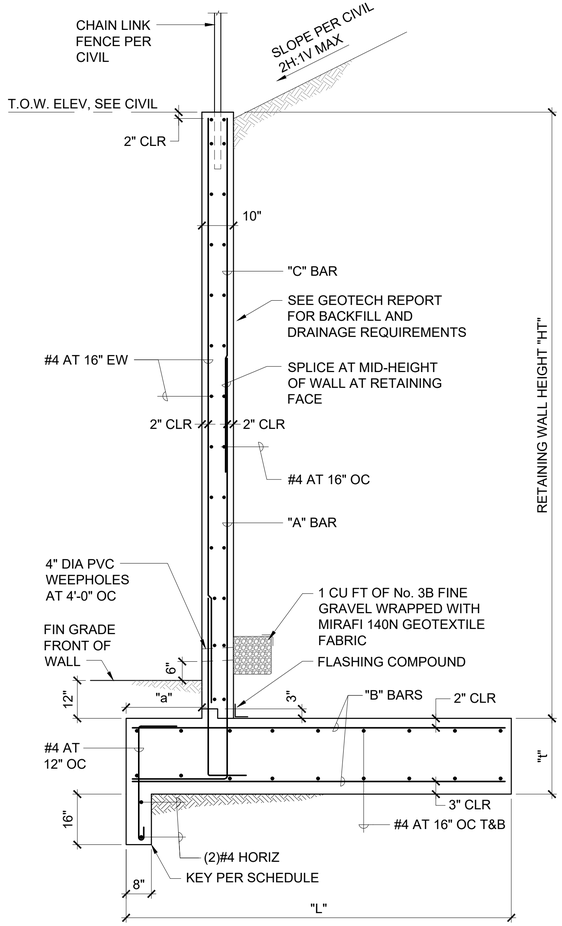


AT CORNER

DOUBLE LAYER WALL REINFORCING

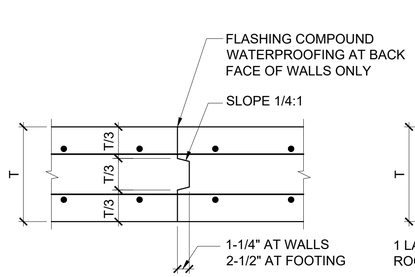
5 CONCRETE WALL DETAIL

SCALE: NOT TO SCALE

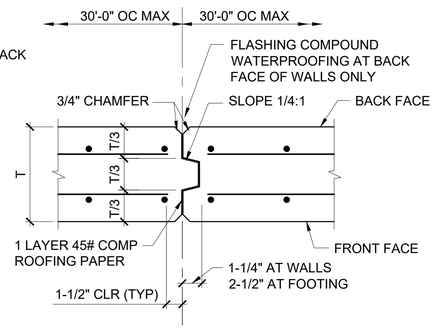


3 TYP RETAINING WALL SECTION AND SCHEDULE - PRESERVATION SWALE AND LIPALU HEADWALL

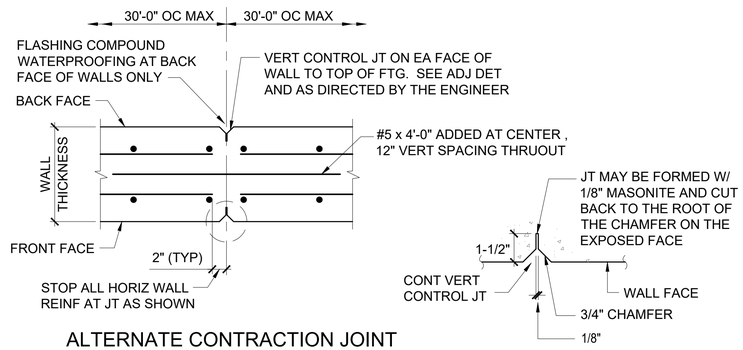
SCALE: 1/2"=1'-0"



AT CONSTRUCTION JOINT



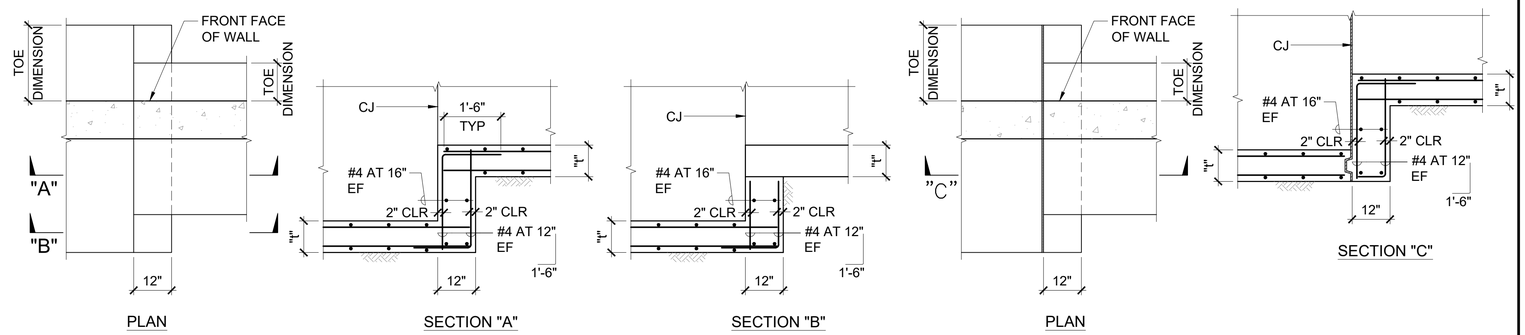
AT CONTRACTION JOINT



ALTERNATE CONTRACTION JOINT OR CONTROL JOINT

2 TYPICAL JOINT DETAILS

SCALE: 1-1/2"=1'-0"



AT CONTINUOUS FOOTING

AT JOINT

4 TYPICAL CONCRETE RETAINING WALL FOOTING STEP

SCALE: 1/2"=1'-0"

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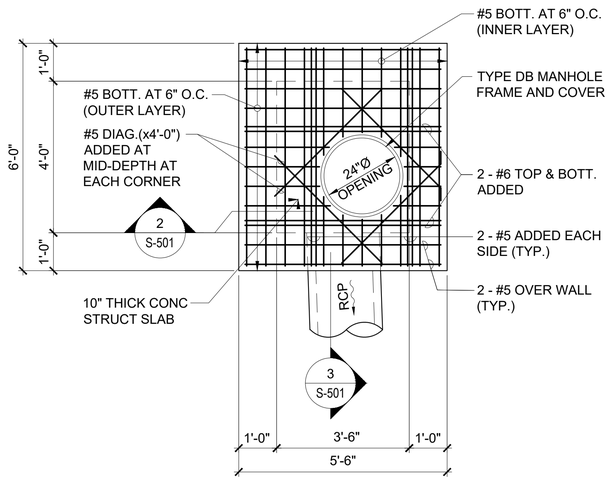
OWNER / DEVELOPER
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1330 MAUNAKEA ST.
HONOLULU, HI 96817

HAWAIIAN MEMORIAL PARK EXPANSION
45-425 Kamehameha Highway, Kaneohe, HI
TMK 4-5-033:001

RETAINING WALL DETAILS

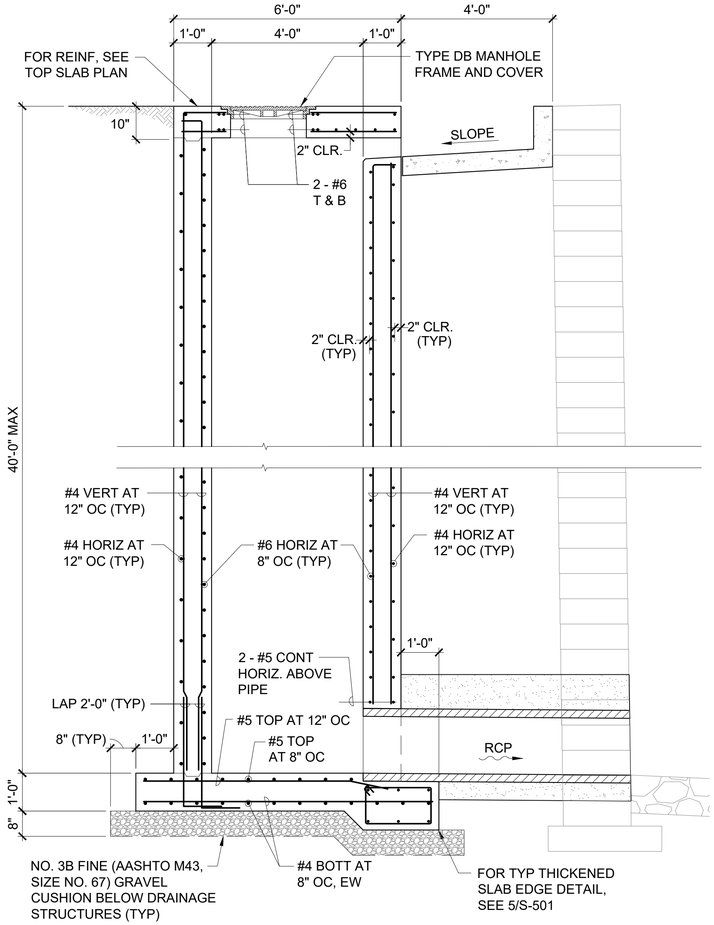
Date	5/1/2025
Design	CK
Drawn	MM
Job No.	202056
Sheet No.	S-308
	101 of 107 SHEETS

User: DRUM_ALEX 4/30/2025 2:03 PM
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1 CATCH BASIN CB-1 TOP SLAB PLAN

SCALE: 1/2"=1'-0"

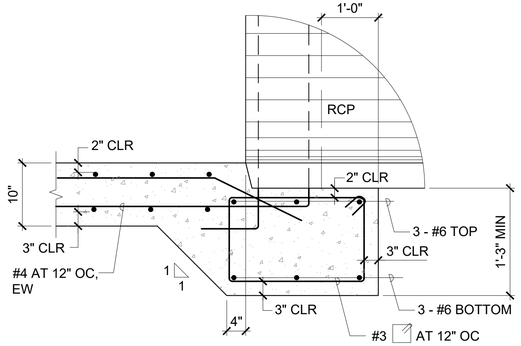


3 SECTION

SCALE: 1/2"=1'-0"

PRECAST OPTION:

1. CATCH BASIN CB-1 MAY BE RE-DESIGNED TO PRECAST. CONTRACTOR SHALL HIRE A STRUCTURAL ENGINEER TO DESIGN THE PRECAST CATCH BASIN.
2. STRUCTURAL ENGINEER SHALL BE LICENSED IN THE STATE OF HAWAII. CALCULATIONS AND SHOP DRAWINGS SHALL BE STAMPED BY THE STRUCTURAL ENGINEER AND SUBMITTED FOR REVIEW.
3. ALLOWABLE BEARING PRESSURE = 2,000 PSF
   AT-REST LATERAL PRESSURE = 60 PSF



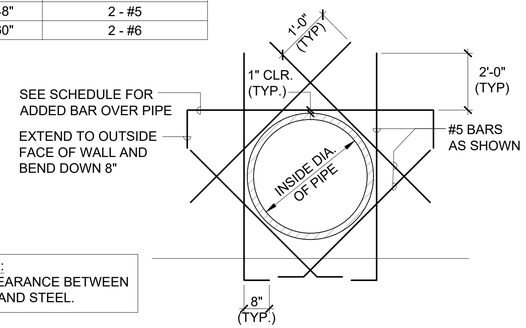
5 TYPICAL SECTION OF THICKENED EDGE FOR SPECIAL CB

NOT TO SCALE

2 CATCH BASIN CB-1 TOP SLAB PLAN

SCALE: 1/2"=1'-0"

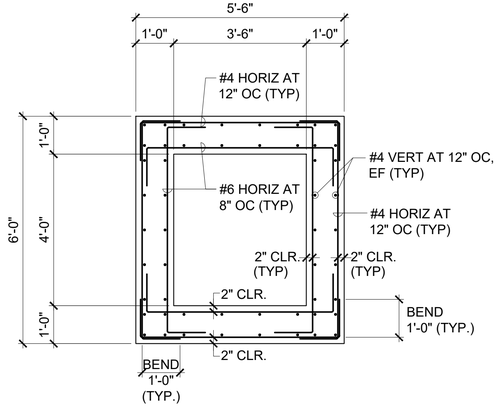
ADDED REINFORCEMENT OVER PIPE	
PIPE I.D.	ADDED REINF.
≤ 48"	2 - #5
≤ 60"	2 - #6



NOTE:
1" CLEARANCE BETWEEN PIPE AND STEEL.

6 ADDED REINF AT PIPE OPENING DETAIL

NOT TO SCALE



PLAN VIEW

4 SECTION

SCALE: 1/2"=1'-0"

GRAPHIC SCALE

1/2"=1'-0" 1' 0 1' 2' 3' 4' 5'

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2023/CP-133

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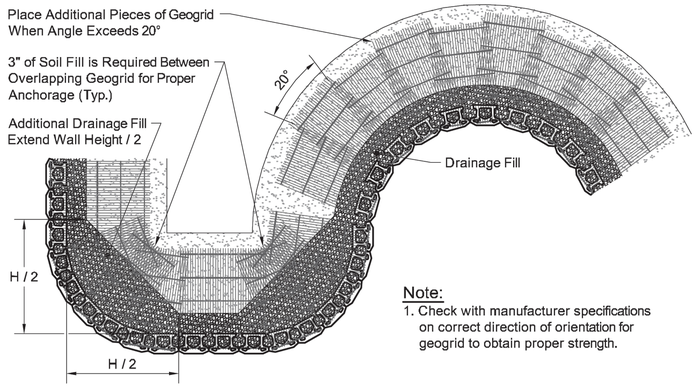
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HAWAIIAN MEMORIAL PARK EXPANSION
45-425 Kamehameha Highway, Kaneohe, HI
TMK 4-5-033:001

CATCH BASIN - MANHOLE - DETAILS

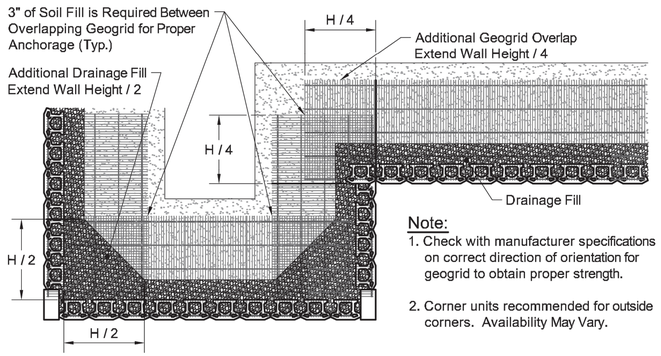
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Design	CK
Drawn	MM
Job No.	202056
Sheet No.	S-501
	102 of 107 SHEETS

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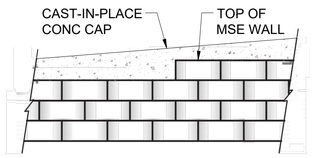
Note:
1. Check with manufacturer specifications on correct direction of orientation for geogrid to obtain proper strength.

Geogrid Installation on Curves

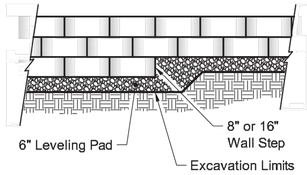


Note:
1. Check with manufacturer specifications on correct direction of orientation for geogrid to obtain proper strength.
2. Corner units recommended for outside corners. Availability May Vary.

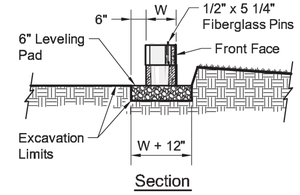
Geogrid Installation at Corners



Top of Wall Steps

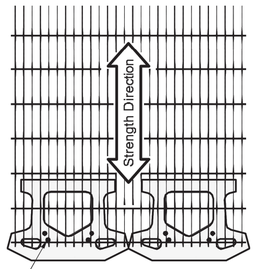


Note:
1. The leveling pad is to be constructed of crushed stone or 2000 psi ± unreinforced concrete.



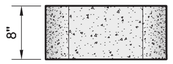
Section

Leveling Pad Detail

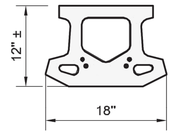


Geogrid is to be Placed on Level Backfill and Extended Over the Fiberglass Pins. Place Next Unit. Pull Grid Taught and Backfill. Stake as required.

Grid & Pin Connection



Compac III Elevation



Compac III Plan

Compac III Unit

* Dimensions May Vary by Region

NOTE:
DETAILS ARE BASED ON BASIS OF DESIGN PRODUCT KEYSTONE COMPACT III.

2023/CP-133

Revisions

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TMK 4-5-033:001

KEYSTONE WALL DETAILS

Date	5/1/2025
Design	CK
Drawn	MM
Job No.	202056
Sheet No.	S-502
	103 of 107 SHEETS

User: DRM, ALEX 4/30/2025 2:04 PM
Dwg: K:\PROJ\2020\202056 HMP EXPANSION\0.0 DWGS\S\202056_S-502.DWG

SYMBOL INDICATES:

(1) 3" DIAMETER CLASS 315 PVC IRRIGATION MAINLINE
(1) 1 1/4" DIAMETER SCHEDULE 40 GRAY PVC IRRIGATION CONTROL WIRE CONDUIT WITH PULL BOXES EVERY 200 FEET

(2) 8" DIAMETER AND (1) 6" DIAMETER SCHEDULE 40 PVC SLEEVE, TYPICAL EACH LOCATION.

PROPOSED STORM DRAIN SYSTEM PER CIVIL PLANS. FIELD ADJUSTMENTS TO SLEEVING AND ELECTRICAL MAY BE REQUIRED. (TYP.)

(1) 4" DIAMETER SCHEDULE 40 GRAY PVC ELECTRICAL. SEE DETAIL G ON SHEET L-1.2

IRRIGATION POINT OF CONNECTION (POC). SEE CIVIL ENGINEERS PLAN AND VERIFY LOCATION. MAKE CODE COMPLIANT CONNECTION INCLUDING REDUCED PRESSURE BACK FLOW PREVENTER (3" LINE SIZE) IF REQUIRED.

STUB AND CAP CROSSINGS AT 24" BEHIND CURB, TYPICAL

IRRIGATION EQUIPMENT LEGEND

SYMBOL LEGEND	MANUF.	MODEL NUMBER / DESCRIPTION	DETAIL	SHEET
●		2.5" X 24" LONG PVC CAPPED STUB OUT IN VALVE BOX. LOCATE ADDITIONAL PULL BOXES AT EVERY OTHER STUB OUT (APPROXIMATELY 200FT. ON CENTER) WITH 1 1/4" GRAY SCHEDULE 40 PVC SWEEPS OFF 1 1/4" GRAY SCHEDULE 40 PVC CONTROL WIRE (CONDUIT ONLY).	--	L-1.2
	CHAMPION	BENT NOSE GARDEN VALVE MODEL B-401. 3/4" BRASS HOSE BIB WITH CHRISTY ID TAG MODEL ID.MAX.Y2.NP012. LOCATE HOSE BIB IN SHRUB AREAS ONLY.	D	L-1.2
	HAMMOND	GATE VALVE, TO MATCH MAINLINE SIZE. • MODEL IB-645 CLASS 125 BRONZE BODY GATE VALVE.	C	L-1.2
	APPROVED	SYMBOL INDICATES MAINLINE PIPE AND CONTROL WIRE CONDUIT. SIZE AND LOCATION PER PLAN. • WHITE PVC SCH 40 IPS FOR MAINLINES SIZES 1" TO 1 1/2". • WHITE PVC CLASS 315 IPS FOR MAINLINES SIZES 2" TO 3", INSTALL WITH CONCRETE THRUST BLOCKS.	E	L-1.2
	EXISTING	EXISTING IRRIGATION MAINLINE PER CIVIL ENGINEERS PLANS.	--	--
	APPROVED	PVC SCHEDULE 40 SLEEVES TWO (2) 6" DIAMETER AND ONE (1) 4" DIAMETER SIZE SLEEVE EACH LOCATION.	--	L-1.2
NOT SHOWN	CHRISTY'S	VALVE ID TAGS MODEL T-CHRISTY ID-STD-Y2 YELLOW ID TAG PER REMOTE CONTROL VALVE, GATE VALVE AND QUICK COUPLER VALVE. SEE TYPICAL VALVE BOX LAYOUT.	A	--

0 50' 100' 200'

NORTH

Revisions

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IRRIGATION MAINLINE AND CONDUIT PLAN

Date	11/08/2024
Design	
Drawn	
Job No.	20-286
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2023/CP-133

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Drawings: R:\Jobs\20-286 Hawaiian Memorial Park\Civil\Irrigation\Plan Sheets\20-286 IRRIGATION PLAN_EXHIBIT_2024-09-30.dwg

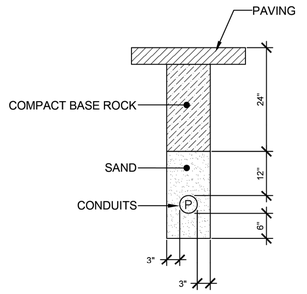
ELECTRICAL CONDUIT LEGEND

▨	3' X 5' X 3'–6" DEEP FLUSH MOUNTED CONCRETE BOX WITH VEHICLE TRAFFIC COVER, BOLT DOWN, MARK COVER "ELECTRICAL".
_ _ _ _ _ _ _	CONDUIT RUN CONCEALED IN SLAB, UNDERSLAB OR UNDERGROUND.
——————]	CONDUIT OR DUCT STUB, MARK THE EXACT LOCATION ON THE AS–BUILT DRAWINGS.

ELECTRICAL CONDUIT NOTES

THIS SCOPE INCLUDES PLACEMENT OF CONDUIT FOR POTENTIAL FUTURE USE. CONTRACTOR SHALL PREPARE PLANS, IF NECESSARY, OBTAIN PERMITS AND ALL AGENCY OR HEC INSPECTIONS FOR THE PLACEMENT OF THE CONDUIT, CONCRETE VAULTS AND RELATED ITEMS. COMPLETE AS BUILT PLANS OF ACTUAL INSTALLED LOCATIONS SHALL BE PROVIDED. FUTURE PERMITS AND APPROVALS FOR ACTUAL POWER CONNECTION SHALL BE THE RESPONSIBILTY OF OWNER.

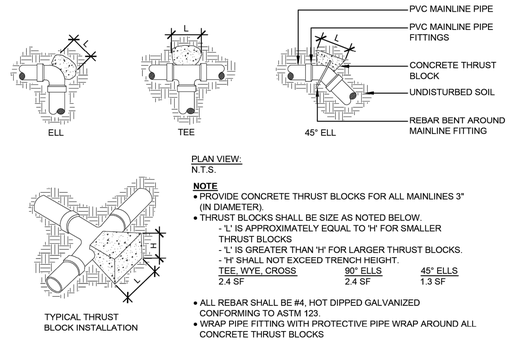
1. PRECAST CONCRETE BOXES SHALL BE HIGH DENSITY REINFORCED CONCRETE PULL BOX WITH END AND SIDE KNOCKOUTS AND NON–SETTING SHOULDERS. PEDESTRIAN COVERS IN PLANTER AREA AND FULL VEHICULAR TRAFFIC COVERS IN AREAS SUBJECT TO TRAFFIC.
2. PROVIDE A NYLON PULL LINE IN ALL EMPTY CONDUITS OR DUCTS.
3. RIGID NON–METALLIC CONDUIT (PVC) SHALL BE RIGID POLYVINYLCHLORIDE CONDUIT, SCHEDULE 40, CONFIRMING TO NEMA TC2, LATEST EDITION. UL LISTED FOR EXPOSED AND DIRECT–BURIAL APPLICATIONS AND FOR 90 DEGREE C CONDUCTOR INSULATION, PVC CONDUIT SHALL BE USE FOR UNDERGROUND POWER.



TYPICAL TRENCH DETAIL

NOT TO SCALE

G ELECTRICAL LEGEND, CONDUIT DETAIL AND NOTES



PLAN VIEW:
N.T.S.

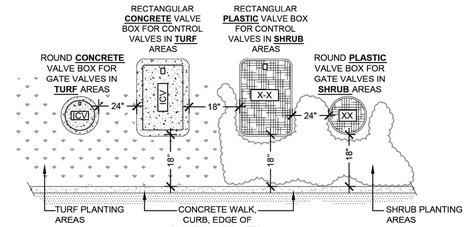
NOTE

- PROVIDE CONCRETE THRUST BLOCKS FOR ALL MAINLINES 3" (IN DIAMETER).
- THRUST BLOCKS SHALL BE SIZE AS NOTED BELOW.
  - 'L' IS APPROXIMATELY EQUAL TO 'H' FOR SMALLER THRUST BLOCKS
  - 'L' IS GREATER THAN 'H' FOR LARGER THRUST BLOCKS.
  - 'H' SHALL NOT EXCEED TRENCH HEIGHT.

TEE, WYE, CROSS	90° ELLS	45° ELLS
2.4 SF	2.4 SF	1.3 SF

- ALL REBAR SHALL BE #4, HOT DIPPED GALVANIZED CONFORMING TO ASTM 123.
- WRAP PIPE FITTING WITH PROTECTIVE PIPE WRAP AROUND ALL CONCRETE THRUST BLOCKS

B PIPE THRUST BLOCKS

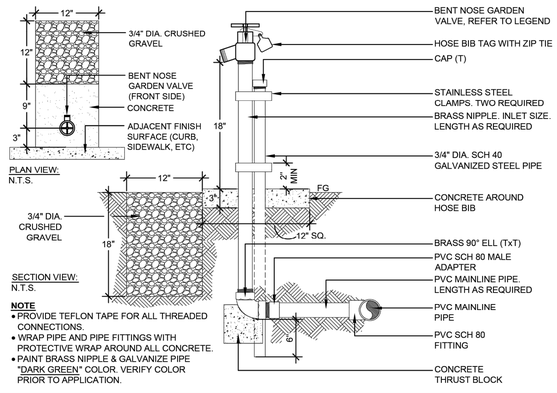


PLAN VIEW:
N.T.S.

NOTES:

- ALL VALVE BOXES SHALL BE LOCATED IN SHRUB PLANTING AREAS **UNLESS DIRECTED** BY OWNER'S REPRESENTATIVE.
- ALL VALVE BOXES MUST BE PLACE PARALLEL TO ONE ANOTHER AND PERPENDICULAR TO ADJACENT SURFACE.
- CONTRACTOR SHALL CENTER VALVE BOX OVER VALVE TO FACILITATE SERVICING OF VALVE.
- AVOID HEAVY COMPACTING OF SOIL AROUND VALVE BOXES TO PREVENT ANY DAMAGE OR DEFORMATION.

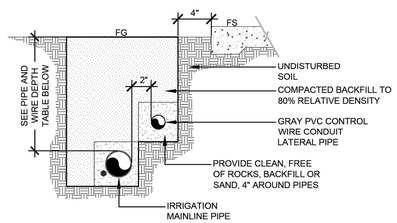
A VALVE BOX LAYOUT



NOTE

- PROVIDE TEFLON TAPE FOR ALL THREADED CONNECTIONS.
- WRAP PIPE AND PIPE FITTINGS WITH PROTECTIVE WRAP AROUND ALL CONCRETE.
- PAINT BRASS NIPPLE & GALVANIZE PIPE "DARK GREEN" COLOR. VERIFY COLOR PRIOR TO APPLICATION.

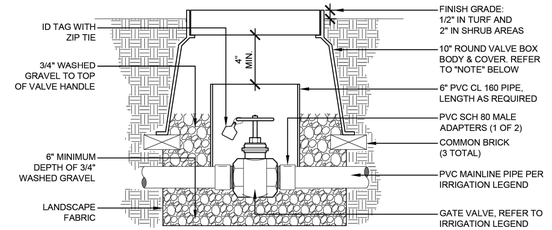
D HOSE BIB



SECTION VIEW:
N.T.S.

IRRIGATION PIPE SIZE	PIPE & WIRE DEPTH	
	CONTROL WIRE CONDUIT	MAINLINE PIPE
3" & LARGER	12"	24"
2-1/2" & SMALLER	12"	24"
WIRING	---	---

E PIPE TRENCHING



NOTE

- VALVE BOXES **LOCATED IN SHRUB AREAS** SHALL BE **PLASTIC** WITH BOLT DOWN LOCKING COVER. LABEL VALVE COVER WITH 3" HEAT BRANDED LETTERS INDICATING CONTROLLER "NUMBER" AND "GV".
  - -- 10" BLACK ROUND VALVE BOX MODEL - CARSON 910-10 - BY CARSON INDUSTRIES
  - -- 10" BLACK ROUND VALVE BOX LID MODEL - T-COVER 910-4B / RWDNDES - BY CARSON INDUSTRIES
- VALVE BOXES **LOCATED IN TURF AREAS** SHALL BE **POLYMER CONCRETE** H-20 HEAVY DUTY POLYMER CONCRETE WITH BOLT DOWN LOCKING COVER. LABEL COVER WITH 3" LETTERS INDICATING "ICV". CONTACT CARSON INDUSTRIES FOR LABELING.
  - -- 10" ROUND VALVE BOX MODEL - H910-10 - BY CARSON INDUSTRIES
  - -- 10" ROUND VALVE BOX LID MODEL - H910-P1 - BY CARSON INDUSTRIES
- PROVIDE VALVE BOX EXTENSIONS AS NECESSARY TO ACHIEVE PROPER MAINLINE DEPTH.
- PROVIDE TEFLON TAPE FOR "ADAPTER TO GATE VALVE" CONNECTION.
- PROVIDE STAINLESS STEEL NUTS AND BOLTS FOR VALVE BOX.

SECTION VIEW:
N.T.S.

C GATE VALVE

Revisions	

2023/CP-133

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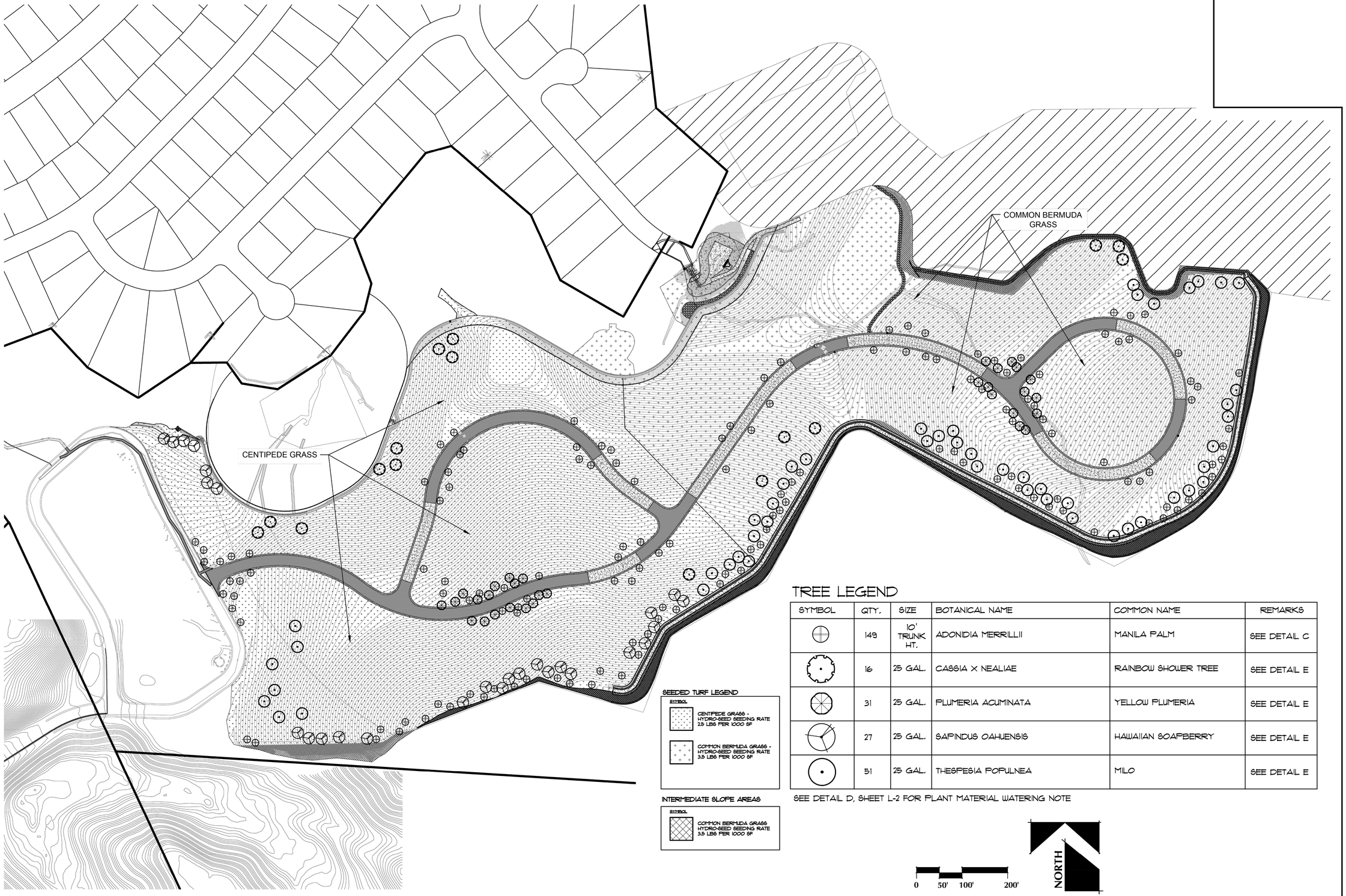
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IRRIGATION MAINLINE AND CONDUIT PLAN

Date	11/08/2024
Design	
Drawn	
Job No.	20-286
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SEEDED TURF LEGEND

SYMBOL

CENTIPEDE GRASS - HYDRO-SEED SEEDING RATE 2.5 LBS PER 1000 SF

COMMON BERMUDA GRASS - HYDRO-SEED SEEDING RATE 3.5 LBS PER 1000 SF

INTERMEDIATE SLOPE AREAS

SYMBOL

COMMON BERMUDA GRASS HYDRO-SEED SEEDING RATE 3.5 LBS PER 1000 SF

TREE LEGEND

SYMBOL	QTY.	SIZE	BOTANICAL NAME	COMMON NAME	REMARKS
	149	10' TRUNK HT.	ADONIDIA MERRILLII	MANILA PALM	SEE DETAIL C
	16	25 GAL.	CASSIA X NEALIAE	RAINBOW SHOWER TREE	SEE DETAIL E
	31	25 GAL.	PLUMERIA ACUMINATA	YELLOW PLUMERIA	SEE DETAIL E
	27	25 GAL.	SAPINDUS OAHUENSIS	HAWAIIAN SOAPBERRY	SEE DETAIL E
	51	25 GAL.	THESPESIA POPULNEA	MILO	SEE DETAIL E

SEE DETAIL D, SHEET L-2 FOR PLANT MATERIAL WATERING NOTE

0 50' 100' 200'

NORTH

Revisions

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LANDSCAPE PLAN

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Drawn	
Job No.	20-286
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	106 of 107 SHEETS

2023/CP-133

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D GENERAL PLANTING NOTES

GENERAL PLANTING NOTES

1. THE CONTRACTOR SHALL MAINTAIN A QUALIFIED SUPERVISOR ON THE SITE AT ALL TIMES DURING CONSTRUCTION THROUGH COMPLETION OF PICK-UP WORK. ALL EMPTY BAGGED AMENDMENTS, FERTILIZERS, SEEDS, ETC. USED ON PROJECT SHALL STAY ON SITE IN A NEAT, CLEAN AND ORDERLY MANNER UNTIL FINAL APPROVAL BY LANDSCAPE ARCHITECT.
ALL MATERIALS OTHER THAN SOIL ORGANIC AMENDMENTS SHALL BE DELIVERED IN UNOPENED BAGS. PACKING LISTS SHALL BE PROVIDED TO VERIFY FURNISHED QUANTITIES. ANY EXCESS MATERIALS REMOVED FROM THE JOB SITE SHALL BE IDENTIFIED PRIOR TO THEIR REMOVAL.

2. THE CONTRACTOR SHALL VERIFY ALL PLANT MATERIAL QUANTITIES PRIOR TO INSTALLATION. PLANT MATERIAL QUANTITIES LISTED FOR CONVENIENCE OF CONTRACTOR. ACTUAL NUMBER OF SYMBOLS SHALL HAVE PRIORITY OVER QUANTITY DESIGNATED.

3. THE CONTRACTOR SHALL FURNISH AND PAY FOR ALL CONTAINER GROWN TREES, SHRUBS AND VINES, INCLUDING SEEDED AND SODDED TURF, HYDROMULCHES AND FLATTED GROUNDCOVERS. THE CONTRACTOR SHALL ALSO BE RESPONSIBLE AND PAY FOR: PLANTING OF ALL PLANT MATERIALS; THE SPECIFIED GUARANTEE OF ALL PLANT MATERIALS; THE STAKING AND GUYING OF TREES AND THE CONTINUOUS PROTECTION OF ALL PLANT MATERIALS UPON THEIR ARRIVAL AT THE SITE.

4. GROUNDCOVER PLANTING
GROUNDCOVER PLANTING SHALL BE AS SHOWN ON PLAN UNLESS OTHER-WISE NOTED. SEE DETAIL A & B THIS SHEET FOR FLATTED GROUND COVER PLANTING.

5. PLANT MATERIAL
ALL PLANT MATERIAL SHALL BE SUBJECT TO APPROVAL BY THE LANDSCAPE ARCHITECT AND/OR OWNER PRIOR TO INSTALLATION.

6. BOXED TREES
ALL BOXED TREES SHALL BE SELECTED AND SPOTTED BY THE LANDSCAPE ARCHITECT OR OWNER'S REPRESENTATIVE.

7. VINES
ALL VINE RUNNERS SHALL BE INSTALLED WITH THE NURSERY STAKES REMOVED AND VINE RUNNERS SHALL BE ESPALIERED TO THE ADJACENT WALL USING WIRE OR AS DIRECTED BY THE LANDSCAPE ARCHITECT.

8. LEACHING- ALL SOILS WHERE THE SOIL SALINITY IS GREATER THAN 3 MILLIMHO/CM SHALL BE PRELEACHED PRIOR TO PLANTING.

AFTER TREE PLANTING PITS HAVE BEEN EXCAVATED, AND PRIOR TO THE INSTALLATION OF TREES, THE PLANTING PITS SHALL BE LEACHED BY FILLING PITS 1/2 FULL WITH GOOD QUALITY WATER AND ALLOW TO DRAIN COMPLETELY PRIOR TO PLANTING.

AFTER THE IRRIGATION IS INSTALLED AND PRIOR TO THE PLANTING OF SHRUBS AND GROUND COVER, THE PLANTING AREA SHALL BE LEACHED SO THAT A MINIMUM OF 6" OF GOOD QUALITY WATER PASSES THROUGH SOIL PROFILE BEYOND ROOT ZONE. PRIOR TO LEACHING, PLANT PITS SHALL BE DUG LEAVING SPOILS IN THE PITS. LEACHING IRRIGATION SHALL BE PROGRAMED TO AVOID EROSION/RUN-OFF.

9. SOIL AMENDMENTS, FERTILZERS & SOIL CONDITIONERS
THE SOIL AMENDMENTS SPECIFIED BELOW ARE FOR BIDDING AND INSTALLATION. THE OWNER SHALL PROVIDE AND PAY FOR THE SOILS AGRONOMY REPORT FROM AN APPROVED SOILS LABORATORY AND ADDITIONAL SPECIFICATIONS MAYBE PROVIDED BY THE LANDSCAPE ARCHITECT PRIOR TO INSTALLATION OF PLANT MATERIALS. ANY MODIFICATION TO THE BELOW SPECIFICATION MUST BE IN WRITING FROM THE OWNER OR LANDSCAPE ARCHITECT.

10. GENERAL PLANTING AREAS
GENERAL SOIL PREPARATION FOR TURF, GROUND COVER AND SHRUB AREAS. BROADCAST THE FOLLOWING MATERIALS UNIFORMLY. THE RATES ARE PER 1,000 SQUARE FEET. INCORPORATE THEM HOMOGENEOUSLY 6 INCHES DEEP:

- Calcium nitrate (15.5-0-0) - 6 pounds
- Potassium sulfate (0-0-50) - 6 pounds
- K-Mag (sul-po-mag) (0-0-22) - 10 pounds
- Triple superphosphate (0-45-0) - 4 pounds
- agricultural gypsum - 10 pounds
- agricultural limestone - about 80 pounds for 1 and 100 pounds for 2, sufficient for pH of about 6.5
- Organic soil amendment - about 3 cubic yards, sufficient for 3% to 5% soil organic matter on a dry weight basis

11. PLANTING BACKFILL
FOR PREPARATION OF BACKFILL MIX FOR CONTAINER PLANTS/BOXED TREES, INCORPORATE UNIFORMLY THE FOLLOWING MATERIALS INTO LEACHED SOIL. RATES ARE EXPRESSED PER CUBIC YARD:

CONTRACTOR TO PROVIDE COMPLETE NUTRITION PLANTER BACKFILL SOIL FROM OUTSIDE SORCES. PLANTER SOIL SHALL BE NO LESS THAN 80% MINERAL SANDY LOAM SOIL TO 20% COMPOSTED ORGANIC AMENDMENT AS DEFINED HERE-IN. SOIL SHALL BE NEUTRAL pH WITH FULLY BLENDED NUTRIENT ARRAY. BLEND AT 75% IMPORTED BACKFILL SOIL TO 25% MAXIMUM NATIVE SOIL. CONTRACTOR TO PROVIDE FULL LAB ANALYSIS FOR LANDSCAPE ARCHITECTS REVIEW AND APPROVAL PRIOR TO ANY PLANTING WORK.

IN ALL CASES, THERE SHALL BE POSITIVE DRAINAGE AWAY FROM THE ROOT CROWN OF THE PLANT MATERIAL

SITE MAINTENANCE

12. For site maintenance, apply calcium nitrate (15.5-0-0) at 6 pounds per 1,000 square feet about once per quarter. Monitor the site with periodic soil testing. Correct iron deficiency with chelated iron.

ALL MATERIALS SHALL BE THOROUGHLY IRRIGATED INTO SOILS IMMEDIATELY AFTER APPLICATION.

13. STAKED TREES - OMIT

14. FOR ALL PALMS, SEE DETAIL C , THIS SHEET.

15. FOR SHRUB PLANTING, SEE DETAIL A & B , THIS SHEET.

16. PRE-INSTALLATION WEED ABATEMENT
ON IRRIGATED FILL SLOPES AND FLAT AREAS TO BE SEEDED REMOVE ALL EXISTING VEGETATION, EXCEPT AS IDENTIFIED BY LANDSCAPE ARCHITECT FOR PRESERVATION IN PLACE. THE SHRUBS OR TREES TO BE PRESERVED SHALL BE CLEARLY MARKED WITH AN ORANGE RIBBON. FERTILIZE THESE AREAS WITH 300 LBS. PER ACRE OF 14-4-9, OR EQUIVALENT. IRRIGATION FOR 2-4 WEEKS, 2-4 TIMES DAILY TO KEEP THE SOIL SURFACE MOIST IN ORDER TO GERMINATE THE WEED SEEDS EXISTING IN THE SOIL. ONCE THE WEED SEEDS HAVE GERMINATED AND ATTAINED SUFFICIENT GROWTH, APPLY A BROAD SPECTRUM, NON-SELECTIVE HERBICIDE ACCORDING TO THE MANUFACTURER'S LABEL RECOMMENDATIONS AND LICENSED PCA. AFTER SEVEN DAYS, GRUB ALL WEED GROWTH FROM AREAS TO OWNER'S APPROVAL. REPEAT ENTIRE PROCEDURE IF DIRECTED BY LANDSCAPE ARCHITECT OR OWNER.

17. SHRUB PLANTING METHOD
EXCAVATE PLANTING PIT TO TWO (2) TIMES THE DIAMETER OF ROOTBALL AND 1-1/2 TIMES ITS DEPTH. AUGER 4" ON CENTER X 2' DEEP AT BOTTOM OF PIT. LEAVE AUGERED SOIL IN PLACE, UNCOMPACTED. FILL BOTTOM OF PLANTING PIT WITH AMENDED SOIL TO BRING LEVEL TO PROPER PLANTING DEPTH. BACKFILL AROUND ROOTBALL WITH AMENDED SOIL. FORM BASIN ON DOWN-SLOPE SIDE OF PLANTING PIT TO HOLD MOISTURE WITHIN THE ROOT ZONE. REMOVE BASINS WITHIN 30 DAYS OF START OF MAINTENANCE AS IDENTIFIED BY OWNER IN WRITING.

18. FIRST WATERING OF NEWLY PLANTED MATERIAL
WET THE ROOT ZONE BY HAND WATERING THE PITS TO THE LOWEST EDGE BASIN. AFTER AMENDED SOIL HAS BEEN WETTED, THE SPRINKLERS SHOULD CONTROL THE MOISTURE FROM THAT POINT ON.

19. ESTABLISHMENT/MAINTENANCE PERIOD
THE CONTRACTOR SHALL PROVIDE FOR A 60 DAY ESTABLISHMENT AND A 60 DAY MAINTENANCE PERIOD AFTER THE APPROVAL IN WRITING OF THE INSTALLATION OF THE PROJECT. THE MAINTENANCE SHALL BE PER THE ABOVE NOTES AND THE PROJECT LANDSCAPE SPECIFICATIONS.

20. TREE ROOT BARRIERS - OMIT
INSTALL "DEEP ROOT" (OR APPROVED EQUAL) TREE ROOT BARRIERS ON ALL TREES WITHIN 5'-0" OF SIDEWALKS OR HARD SURFACES. CHECK MANUFACTURERS CALCULATOR CHART FOR NUMBER OF PANELS REQUIRED FOR EACH SIZE TREE.

21. MULCH
CONTRACTOR SHALL PROVIDE 2" LAYER OF FOREST FLOOR (0"-4") OR EQUAL MULCH IN ALL SHRUB PLANTING AREAS INCLUDING SLOPES 2:1 AND LESS.
PROVIDE 2" LAYER OF MULCH AROUND TREE TRUNK IN TURF AREAS. MULCH SHALL EXTEND IN A 12" DIAMETER CIRCLE FROM TRUNK, BUT KEEP 3" CLEAR AROUND SURFACE OF BARK.
DO NOT MULCH SURFACE OF ROOTBALLS.
PROVIDE SAMPLE TO OWNER'S REPRESENTATIVE FOR APPROVAL.

DEFINITION OF COMPOSTED ORGANIC AMENDMENT

A. Humus material shall have an acid-soluble ash content of no less than 6% and no more than 20%. Organic matter shall be at least 50% on a dry weight basis.
B. The pH of the material shall be between 6 and 7.5.
C. The salt content shall be less than 10 millimho/cm @ 25° C. in a saturated paste extract.
D. Boron content of the saturated extract shall be less than 1.0 part per million.
E. Silicon content (acid-insoluble ash) shall be less than 50%.
F. Calcium carbonate shall not be present if to be applied on alkaline soils.
G. Types of acceptable products are composts, manures, mushroom composts, straw, alfalfa, peat mosses etc. low in salts, low in heavy metals, free from weed seeds, free of pathogens and other deleterious materials.
H. Composted wood products are conditionally acceptable [stable humus must be present]. Wood based products are not acceptable which are based on red wood or cedar.
I. Sludge-based materials are not acceptable.
J. Carbon:nitrogen ratio is less than 25:1.
K. The compost shall be aerobic without malodorous presence of decomposition products.
L. The maximum particle size shall be 0.5 inch, 80% or more shall pass a No. 4 screen for soil amending.

Maximum total permissible pollutant concentrations in amendment in parts per million on a dry weight basis:

arsenic	20	copper	150	selenium	50
cadmium	15	lead	200	silver	10
chromium	300	mercury	10	vanadium	500
cobalt	50	molybdenum	20	zinc	300
		nickel	100		

Evaluate the suitability of amended soils.

PALM TREE PLANTING NOTES

1. PALMS SHALL BE PLANTED USING ESTABLISHED PLANTING PROCEDURES.

2. SOILS GENERATED FROM THE PALM TREE EXCAVATION SHALL BE DISPERSED IN THE ADJACENT AREA, AND LEVELED TO BLEND INTO THE EXISTING GRADE CONTOURS.

3. WHEN REPLACING A PALM THE PREVIOUS SOIL MUST BE REMOVED AND REPLACED WITH NEW SOIL THAT IS SATISFACTORY FOR PALM PLANTING CONDITIONS AS NOTED IN THE FOLLOWING STATEMENTS.

4. PALM TREE ROOTBALLS SHALL BE TRIMMED OR CUT TO ENSURE RECOVERY FROM TRANSPLANTING SHOCK. ALL DEAD ROOTS TRIMMED AND REMOVED.

5. PALM TREES MUST BE IN A HEALTHY CONDITION AT TIME OF DELIVERY. PALM TREES DETERMINED UNHEALTHY OR DAMAGED AT TIME OF DELIVERY OR INSTALLATION SHALL BE REJECTED BY THE OWNER AND REPLACED BY CONTRACTOR AT HIS EXPENSE.

6. ALL PALMS SHALL BE CLEANED OF EXCESSIVE DEAD AND RAGGED FRONDS OR FROND STUBBLE.

7. CALLED OUT HEIGHTS OF PALMS SHALL BE THE HEIGHT FROM TOP OF ROOTBALL TO BOTTOM OF THE NEWEST HEART LEAF.

8. PALM TREES SHALL BE PROPERLY WATERED IN AND SOILS PROPERLY LEAVING NO VOIDS OF SOIL AROUND ROOTBALLS.

9. PALM TREES SHALL BE PLANTED VERTICALLY, UNLESS SPECIFICALLY CHANGED BY THE LANDSCAPE ARCHITECT.

10. NO SEVERE CRACKING OR HOLES IN THE BASAL TRUNK AREA WILL BE ACCEPTABLE.

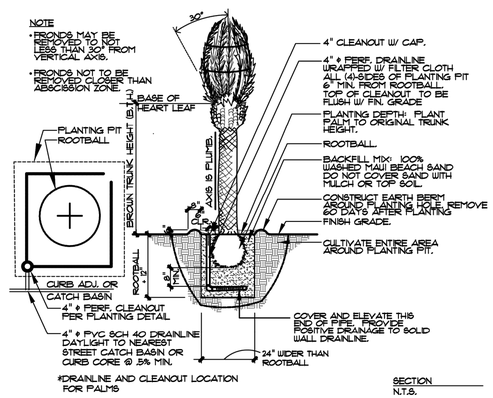
11. CONTRACTOR TO UNTIE FROND TOPS SIXTY (60) DAYS AFTER PLANTING.

12. PALMS SHALL BE PLANTED IN A BACKFILL OF CLEAN, WASHED, SIZED (#20) SAND 24" WIDER THAN ROOTBALL. PALMS SHALL BE PLANTED WITH ROOTBALL AT A DEPTH SUFFICIENT TO MAINTAIN STABILITY OF TREE, BUT DO NOT BURY THE ROOTBALL.

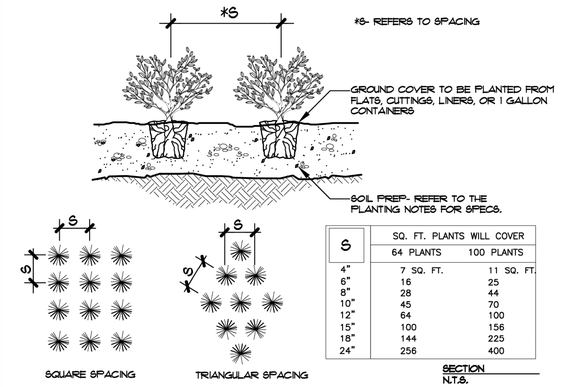
13. FILL PLANTING HOLES WITH WATER TO MAKE SURE THAT IT DRAINS WITHIN TWENTY-FOUR (24) HOURS. PROPER SOIL AND DRAINAGE ADJUSTMENTS MUST BE MADE TO SATISFY THIS REQUIREMENT POSITIVE DRAINAGE IS KEY TO THE HEALTH OF PALM.

14. PALM TREES
SHALL BE INSTALLED WITH PERFORATED PIPE DRAINAGE PER DETAIL C THIS SHEET

C PALM DETAIL

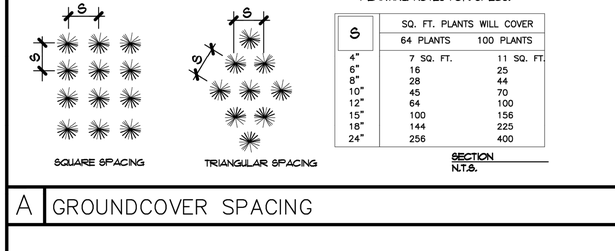


A GROUNDCOVER SPACING



S	SQ. FT. PLANTS WILL COVER	
	64 PLANTS	100 PLANTS
4"	7 SQ. FT.	11 SQ. FT.
6"	16	25
8"	28	44
10"	45	70
12"	64	100
15"	100	156
18"	144	225
24"	256	400

B SHRUB PLANTING

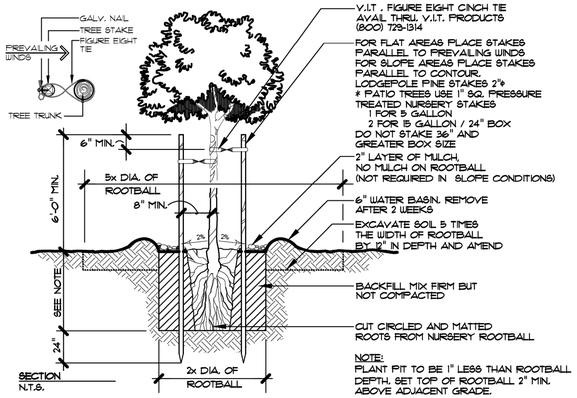


E TREE DETAIL

PLANT WATERING AND ESTABLISHMENT

CONTRACTOR SHALL PROVIDE TEMPORARY WATERING OF ALL CONTAINER PLANTING AND SEEDED AREAS UNTIL ESTABLISHED AND CAPABLE OF SUSTAINING ON NATURAL PRECIPITATION ON A HEALTHY BASIS. THIS MAY BE THROUGH TEMPORARY SPRAY IRRIGATION SYSTEMS OR OTHER APPLICATION METHOD. CONTRACTOR IS RESPONSIBLE FOR COSTS ASSOCIATED WITH ESTABLISHING AND MAINTAINING IRRIGATION SYSTEMS, METHODS AND APPLICATION AND SHALL REPLACE ALL PLANT MATERIAL THAT HAS NOT FULLY ESTABLISHED AND SHALL BEGIN THE NEW ESTABLISHMENT PERIOD UPON REPLANTING. NO ADDITIONAL COMPENSATION.

D PLANT MATERIAL WATERING AND ESTABLISHMENT



Revisions

2023/CP-133

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TMK 4-5-033:001

LANDSCAPE PLAN

Date	11/08/2024
Design	
Drawn	
Job No.	20-286
Sheet No.	L2.2
	107 of 107 SHEETS

BID SET

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