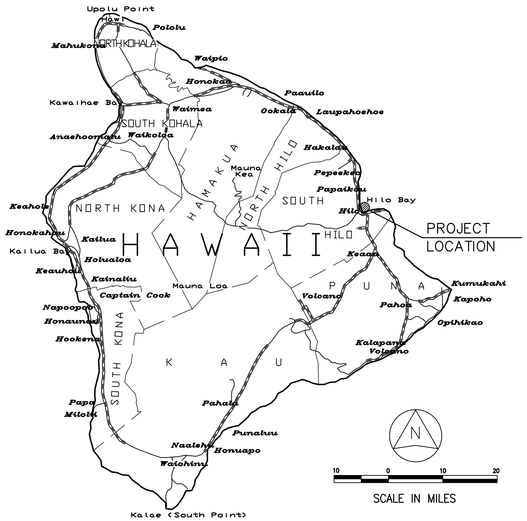
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

FOR THE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HARBORS DIVISION
HMP 60901



ISLAND OF HAWAII

LOCATION MAP

PREPARED BY:

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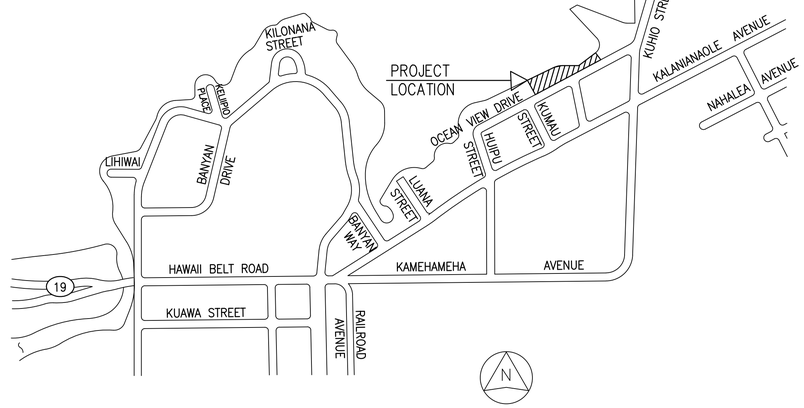


VICINITY MAP

NOT TO SCALE

DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

APPROVED BY:

DIRECTOR OF TRANSPORTATION DATE

MANAGER, DEPT. OF WATER SUPPLY, COUNTY OF HAWAII DATE

SHEET T-1

1 OF 82 SHTS

TITLE: CONSTRUCTION OF PIER 4, PIER 4 INTER-ISLAND CARGO TERMINAL AT HILO HARBOR, HAWAII
LOCATION: HILO HARBOR, HAWAII

HMP 60901

GENERAL NOTES

1. ALL CONSTRUCTION WORK SHALL BE DONE IN ACCORDANCE WITH THE HAWAII STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 2005, AND STANDARD PLANS, DEPARTMENT OF TRANSPORTATION, HIGHWAYS DIVISION, HONOLULU, HAWAII, AND 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, COUNTY OF HAWAII, UNLESS OTHERWISE SPECIFIED.

2. THE CONTRACTOR SHALL VERIFY AND CHECK ALL DIMENSIONS AND DETAILS ON THE DRAWINGS BEFORE PROCEEDING WITH THE WORK. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER FOR CLARIFICATION.

3. RESTORATION OF PAVEMENTS, PAVEMENT MARKERS, PAVEMENT STRIPING, SIGNS, CURBING & ALL OTHER IMPROVEMENTS, UNAVOIDABLY DAMAGED SHALL BE REPAIRED & COST BORNE BY THE CONTRACTOR.

4. ALL VISIBLE UTILITY STRUCTURES HAVE BEEN LOCATED IN THE FIELD, HOWEVER, CONNECTION TO UNDERGROUND UTILITY LINES AS SHOWN ARE UNVERIFIED AND COMPILED FROM EXISTING DATA. UNDERGROUND UTILITIES SHOWN HEREON ARE FOR INFORMATION ONLY, HAVING BEEN OBTAINED FROM BEST AVAILABLE SOURCES. NO GUARANTEE IS MADE ON THE ACCURACY OR COMPLETENESS OF SAID INFORMATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR AND PAY FOR ALL DAMAGED UTILITIES. PERSONAL INJURY RESULTING FROM CONTACT WITH EXISTING UTILITIES SHALL BE THE CONTRACTOR'S RESPONSIBILITY.

5. EXISTING TOPOGRAPHIC DATA WAS TAKEN FROM TOPOGRAPHIC MAP PREPARED BY M & E PACIFIC, INC., JULY 2006.

6. THE CONTRACTOR SHALL BE REQUIRED TO PROVIDE ADEQUATE, SAFE, NON-SKID BRIDGING MATERIAL OVER THE TRENCH, INCLUDING SHORING, WHEN TRENCHING IN PAVEMENT AREAS TO HANDLE ALL TYPES OF VEHICULAR TRAFFIC.

7. CONTRACTOR SHALL PROVIDE ACCESS TO AND FROM DRIVEWAYS AND ROADS AT ALL TIMES.

8. UTILITIES SHALL BE INSTALLED PURSUANT TO THE PROVISIONS OF ORDINANCE NO. 2875 AS AMENDED BY ORDINANCE NO. 3357 (UNDERGROUND UTILITIES).

9. NO BLASTING SHALL BE ALLOWED ON THIS PROJECT.

10. SHOULD THERE BE ANY DISCOVERIES OF ARCHAEOLOGICAL RESOURCES DURING PROJECT CONSTRUCTION, WORK THAT WOULD AFFECT THE ARCHAEOLOGICAL RESOURCES SHALL STOP IMMEDIATELY AND THE CONTRACTOR SHALL NOTIFY THE ENGINEER AND STATE HISTORIC PRESERVATION DIVISION AT (808) 981-2979.

11. THE CONTRACTOR SHALL OBSERVE AND COMPLY WITH ALL FEDERAL, STATE AND LOCAL LAWS REQUIRED FOR THE PROTECTION OF PUBLIC HEALTH AND SAFETY AND ENVIRONMENTAL QUALITY.

12. WHEN EXCAVATION IS ADJACENT TO OR UNDER EXISTING STRUCTURES OR FACILITIES, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROPERLY SHEETING AND BRACING THE EXCAVATION AND STABILIZING THE EXISTING GROUND TO RENDER IT SAFE AND SECURE FROM POSSIBLE SLIDES, CAVE-INS, AND SETTLEMENTS, AND FOR PROPERLY SUPPORTING EXISTING STRUCTURES AND FACILITIES WITH BEAMS, STRUTS OR UNDERPINNING TO FULLY PROTECT IT FROM DAMAGE.

13. BACKFILL UNDER EXISTING STRUCTURES OR FACILITIES SHALL BE SANDY OR GRANULAR MATERIAL COMPLETELY PLACED AS SOON AS THE PIPE IS LAID AND TESTED. THE BACKFILL MATERIAL SHALL BE RAMMED WITH PROPER TOOLS UNTIL COMPACTED TO 90 TO 95 PERCENT OF ITS MAXIMUM DENSITY ACCORDING TO ASTM D-1557.

14. THE CONTRACTOR SHALL NOTIFY ALL AGENCIES TO VERIFY THE ACTUAL LOCATIONS OF ALL UTILITIES IN THE PROJECT AREA PRIOR TO EXCAVATING. THE CONTRACTOR SHALL COORDINATE ALL WORK.

15. ELEVATIONS SHOWN ON THE PLANS ARE BASED ON MEAN LOW LOW WATER (MLLW) DATUM.

16. FOR BENCH MARK, SEE SHEET C-3.
PAVEMENT STRIPING SHALL CONFORM TO HAWAII STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, SECTION 629 – PAVEMENT MARKINGS. PARAGRAPHS REFERRING TO MEASUREMENT AND PAVEMENT SHALL BE EXCLUDED.

17. WHERE PEDESTRIAN WALKWAYS EXIST, THEY SHALL BE MAINTAINED IN PASSABLE CONDITION OR OTHER FACILITIES FOR PEDESTRIANS SHALL BE PROVIDED. PASSAGE BETWEEN WALKWAYS AT INTERSECTIONS SHALL LIKEWISE BE PROVIDED PER ADAAG 4.1.1(4).

18. THE CONTRACTOR SHALL ENSURE THAT ACCESS SHALL BE PROVIDE TO WORK AREAS DURING CONSTRUCTION AS PER ADAAG 4.1.1(3). THE AREAS THAT ARE USED ONLY AS WORK AREAS SHALL BE DESIGNED AND CONSTRUCTED SO THAT INDIVIDUALS WITH DISABILITIES CAN APPROACH, ENTER AND EXIT THE AREAS.

19. EXISTING DRAINAGE SYSTEM WILL BE FUNCTIONAL AT ALL TIMES DURING CONSTRUCTION. THE CONTRACTOR IS TO FURNISH MATERIALS, EQUIPMENT, LABOR, TOOLS AND INCIDENTALS NECESSARY TO MAINTAIN FLOW. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO VARIOUS CONTRACT ITEMS.

20. ALL SAW CUTTING WORK SHALL BE CONSIDERED INCIDENTAL.

21. THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, DISPOSE OF ANY EXCESS DEBRIS DUE TO HIS CONSTRUCTION WORK FROM THE JOB SITE.

22. THE CONTRACTOR SHALL CAREFULLY EXAMINE THE DRAWINGS, READ THE SPECIFICATIONS AND ALL OTHER PROPOSED CONTRACT DOCUMENTS AND SHALL VISIT THE SITE PRIOR TO SUBMITTAL OF HIS BID. THE CONTRACTOR SHALL FULLY INFORM HIMSELF PRIOR TO THE SUBMISSION AS TO ALL EXISTING CONDITIONS AND LIMITATIONS UNDER WHICH THE WORK IS TO BE PERFORMED. HE SHALL INCLUDE IN HIS PROPOSAL, A SUM TO COVER ALL COSTS OF ALL ITEMS NECESSARY TO PERFORM HIS WORK AS SET FORTH IN THE PROPOSED CONTRACT DOCUMENTS. NO ALLOWANCE SHALL BE MADE TO THE CONTRACTOR BECAUSE OF LACK OF SUCH EXAMINATION OR KNOWLEDGE. THE SUBMISSION OF A BID SHALL BE CONSTRUED AS CONCLUSIVE EVIDENCE THAT THE BIDDER HAS MADE SUCH EXAMINATION.

23. ALL MATERIALS FOR THIS PROJECT SHALL BE NEW AND FREE FROM ANY AND ALL DEFECTS UNLESS SPECIFIED OTHERWISE.

24. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL WORK AMONG THE VARIOUS TRADES AS NECESSARY TO AVOID CONFLICTS AND TO ENSURE THAT ALL WORK IS IN COMPLIANCE WITH THE CONTRACT DOCUMENTS.

25. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN A SAFETY BARRICADE AROUND THE PROJECT SITE AND SHALL ASSURE THE SAFETY OF THE PUBLIC AT ALL TIMES.

26. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL BLOCKING, BACKING, BRACKETS, ETC. AS REQUIRED FOR THE PROPER AND SECURED INSTALLATION OF ALL MATERIALS AND PRODUCTS.

27. THE CONTRACTOR SHALL REPORT ANY UNSATISFACTORY CONDITIONS AND/OR DISCREPANCIES TO THE ENGINEER. FAILURE TO COMPLY WITH THIS CONDITION MAY RESULT IN PLACING ANY AND ALL RESPONSIBILITY, LIABILITY AND EXPENSE TO THE CONTRACTOR.

28. THE CONTRACTOR SHALL REVIEW THE PROJECT FOR ANY LONG LEAD ITEMS AND PROVIDE SPECIAL CONSIDERATIONS TO AVOID UNNECESSARY DELAYS TO THE COMPLETION OF THE PROJECT.

29. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY UPON ENCOUNTERING ANY HAZARDOUS MATERIALS, ETC. DURING THE COURSE OF THIS PROJECT. THE CONTRACTOR IS NOT AUTHORIZED TO HANDLE, TEST OR REMOVE SUCH MATERIALS WITHOUT SPECIFIC AUTHORIZATION FROM THE ENGINEER.

30. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND CONDITIONS PRIOR TO THE FABRICATION AND/OR ORDERING HIS MATERIALS.

31. PRODUCTS SPECIFIED AND/OR INDICATED BY NAME IN THESE DRAWINGS AND/OR SPECIFICATIONS ESTABLISH A DESIGN OR MATERIAL QUALITY DESIRED FOR THIS PROJECT. THE PRODUCTS OF OTHER MANUFACTURERS ARE ACCEPTABLE PROVIDED THAT THEY MEET OR EXCEED THE MATERIAL CONSTRUCTION REQUIREMENTS SPECIFIED AND/OR HEREIN ACCEPTED BY WRITTEN ADDENDUM PER THE GENERAL CONDITIONS FOR REQUEST FOR SUBSTITUTION.

32. THE CONTRACTOR SHALL COORDINATE WITH THE HAWAII ONE CALL CENTER (HOCC) AT LEAST FIVE WORKING DAYS, BUT NO MORE THAN TWENTY-EIGHT (28) CALENDAR DAYS PRIOR TO COMMENCING EXCAVATION. HOCC CONTACT INFORMATION: TELEPHONE 811; WEBSITE HTTP://WWW.DIGSAFELYHAWAII.COM

33. THE CONTRACTOR SHALL COORDINATE THE PHASING OF WORK WITH THE HILO HARBOR DISTRICT OFFICE(DOT) AND YOUNG BROTHERS(YB). A CONSTRUCTION SCHEDULE SHALL BE SUBMITTED TO DOT AND YB A MINIMUM FOUR(4) WEEKS PRIOR TO THE START CONSTRUCTION. THE CONTACT PERSON FOR DOT SHALL BE JEFF HOOD, DISTRICT MANAGER, AT (808) 933-8850. THE CONTACT PERSON FOR YB SHALL BE JEFF LOW AT (808) 543-9406.

34. ANY SHUTDOWN OF AN EXISTING UTILITY SYSTEM SHALL BE COORDINATED WITH THE DOT DISTRICT MANAGER AND AFFECTED UTILITY.

35. ANY WORK IN THE KUHIO STREET AREA MAY REQUIRE WORK OUTSIDE OF NORMAL WORKING HOURS. THE CONTRACTOR SHALL COORDINATE THIS EFFORT WITH THE DISTRICT MANAGER. THE STATE SHALL NOT PAY FOR ANY ADDITIONAL COST FOR WORK OUTSIDE OF NORMAL WORKING HOURS.

36. THE CONTRACTOR SHALL COORDINATE CONSTRUCTION WORK WITHIN THE EXISTING HARDENED PAVEMENT AREA, AS IDENTIFIED ON THE PLANS, WITH DOT AND YB TO ENSURE MINIMAL INTERFERENCE OF HARBOR OPERATIONS. NO CONSTRUCTION SHALL BE PERMITTED WITHIN THE EXISTING HARDENED PAVEMENT AREA ON YOUNG BROTHERS BARGE DAYS, WHICH IS CURRENTLY MONDAYS AND FRIDAYS, FROM 5:00 A.M. TO 7:00 P.M. DURING THESE PERIODS, THE CONTRACTOR SHALL MAKE EVERY EFFORT TO NOT PERFORM ANY WORK IN THE AREA SURROUNDING THE EXISTING HARDENED PAVEMENT. WHEN WORK IS BEING DONE IN ANY PART OF THE EXISTING YARD AREA THE CONTRACTOR SHALL PROVIDE A 20' MINIMUM WIDE ACCESS WAY FROM THE EXISTING HARDENED PAVEMENT AREA AND PIERS 2 AND 3 AT ALL TIMES. THE ACCESS WAY SHALL BE LOCATED BETWEEN THE EXISTING WATER TANK AND THE SHORELINE.

37. THE INSTALLATION OF FUEL AND GAS LINES WILL BE INSTALLED BY OTHERS.

ABBREVIATIONS

AC	ASPHALT CONCRETE
ACB	ARTICULATED CONCRETE BLOCK
BFP	BACKFLOW PREVENTER
BGGV	BEVEL GEAR GATE VALVE
℄	BASELINE
BLK	BLOCK
BO	BLOW OFF LINE
BWS	BOARD OF WATER SUPPLY
℄	CENTERLINE
CMP	CORRUGATED METAL PIPE
CFS	CUBIC FEET PER SECOND
DET	DETAIL
DPP	DEPARTMENT OF PLANNING AND PERMITTING
DPW	DEPARTMENT OF PUBLIC WORKS
ELEV	ELEVATION
EMB	EMBANKMENT
EOP	EDGE OF PAVEMENT
EXC	EXCAVATION
EXIST	EXISTING
FPS	FEET PER SECOND
FT	FEET
LT	LEFT
MIN	MINIMUM
PAV'T	PAVEMENT
PRV	PRESSURE REDUCING VALVE
PVC	POLYVINYL CHLORIDE
RT	RIGHT
R/W	RIGHT-OF-WAY
SF	SQUARE FOOT
SHT	SHEET
SP	STATE PLANE COORDINATE SYSTEM
STA	STATION
STD	STANDARD
WL	WATERLINE

REVISION	DATE	DESCRIPTION	BY	APPROVED

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HARBORS DIVISION

CHAD M. MCDONALD
LICENSED PROFESSIONAL ENGINEER
No. 9793-C
HAWAII, U.S.A.

This work was prepared by me or under my supervision

4/30/2014
MITSUNAGA & ASSOCIATES, INC. EXP. DATE

NOTE: Contractor to check and verify dimensions at job before proceeding with work.

JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
CONSTRUCTION NOTES – 1

SUBMITTED BY: _____ SECTION HEAD

RECOMMENDED BY: _____ ENGINEERING PROGRAM MANAGER

DESIGNED BY: DKS
DRAWN BY: CADD
CHECKED BY: CM
DATE: JANUARY 2014
SCALE:

APPROVED BY: _____ HARBORS ADMINISTRATOR

JOB NUMBER
HMP 60901

SHEET
C-1
2 OF 82 SHTS

GRADING NOTES

1. ALL GRADING SHALL BE DONE IN ACCORDANCE WITH CHAPTER 10, EROSION AND SEDIMENT CONTROL, HAWAII COUNTY CODE 1983 (2005 EDITION), AS AMENDED, AND SOILS REPORT BY GEOLABS HAWAII INC., ENTITLED GEOTECHNICAL EXPLORATION INTER-ISLAND CARGO TERMINAL FACILITY PHASE 3 – CARGO YARD IMPROVEMENTS, HILO HARBOR, ISLAND OF HAWAII DATED NOVEMBER 14, 2006.
2. NO CONTRACTOR SHALL PERFORM ANY GRADING OPERATION SO AS TO CAUSE ROCKS, SOIL OR DEBRIS IN ANY FORM TO FALL, SLIDE OR FLOW ONTO ADJOINING PROPERTIES, STREETS, NATURAL WATERCOURSES, OR INTO STATE DRAINAGE SYSTEMS. SHOULD SUCH VIOLATIONS OCCUR, THE CONTRACTOR SHALL IMMEDIATELY MAKE ALL REMEDIAL ACTIONS NECESSARY AT NO COST TO THE STATE.
3. THE CONTRACTOR, AT HIS OWN EXPENSE, SHALL KEEP THE PROJECT AREA AND SURROUNDING AREA FREE FROM DUST NUISANCE. THE WORK SHALL BE IN COMPLIANCE WITH THE POLLUTION CONTROL STANDARDS CONTAINED IN CHAPTER 11-60, "AIR POLLUTION CONTROL".
4. 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 LOCATION AND DEPTH 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. THE CONTRACTOR SHALL BE RESPONSIBLE AND SHALL PAY FOR FOR ALL DAMAGED UTILITIES.
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 PROVISIONS SHALL BE MADE TO PREVENT SEDIMENT-LADEN RUNOFF FROM LEAVING THE SITE.
6. FILLS ON SLOPES STEEPER THAN 5:1 SHALL BE KEYED.
7. THE LIMITS OF THE AREA TO BE GRADED SHALL BE FLAGGED BEFORE THE COMMENCEMENT OF THE GRADING WORK.
8. ALL GRADING OPERATIONS SHALL BE PERFORMED IN CONFORMANCE WITH THE APPLICABLE PROVISIONS OF THE WATER POLLUTION CONTROL AND WATER QUALITY STANDARDS CONTAINED IN HAWAII ADMINISTRATIVE RULES, CHAPTER 11-55, "WATER POLLUTION CONTROL" AND CHAPTER 11-54 "WATER QUALITY STANDARDS" AND IF APPLICABLE, THE NPDES PERMIT FOR THE PROJECT.
9. TEMPORARY EROSION CONTROLS SHALL NOT BE REMOVED BEFORE PERMANENT EROSION CONTROLS ARE IN-PLACE AND ESTABLISHED.
10. IF CONTAMINATED SOIL IS DISCOVERED DURING THE COURSE OF GRADING WORK THE CONTRACTOR SHALL CONTACT DEPARTMENT OF HEALTH, HAZARD- EVALUATION AND EMERGENCY RESPONSE OFFICE(HEER) AT (808) 586-4249, MONDAY-FRIDAY 7:45 AM-4:30PM, AND (808) 247-2191 DURING NON-WORKING HOURS INCLUDING HOLIDAYS.
11. NON-COMPLIANCE TO ANY OF THE ABOVE REQUIREMENTS SHALL MEAN IMMEDIATE SUSPENSION OF ALL WORK, AND REMEDIAL WORK SHOULD COMMENCE IMMEDIATELY. ALL COSTS INCURRED SHALL BE BILLED TO THE PERMITEE. FURTHERMORE, VIOLATORS SHALL BE SUBJECTED TO ADMINISTRATIVE, CIVIL AND/OR CRIMINAL PENALTIES.
12. NO GRADING WORK SHALL BE DONE ON SATURDAYS, SUNDAYS, AND STATE HOLIDAYS AT ANY TIME WITHOUT PRIOR APPROVAL BY THE ENGINEER.
13. BUILDING AND GRADING PERMITS FROM THE COUNTY OF HAWAII ARE NOT REQUIRED FOR THIS PROJECT.

TEMPORARY EROSION CONTROL MEASURES

1. TEMPORARY VEGETATIVE COVER SHALL BE PLANTED WITHIN A PERIOD OF 30 CALENDAR DAYS AFTER THE SITE HAS BEEN GRADED OR BARED OF VEGETATION OR IF FINAL GRADING OF THE SITE WILL BE SUSPENDED FOR MORE THAN 30 CALENDAR DAYS.
2. TEMPORARY VEGETATIVE COVER SHALL CONSIST OF 40 LBS. COMMON RYE GRASS SEED PER ACRE, 400 LBS. PER ACRE 10-10-10 OR EQUIVALENT FERTILIZER WORKED INTO THE SEED BED BEFORE PLANTING. TEMPORARY SPRINKLER SYSTEM IS TO BE INSTALLED CONCURRENTLY WITH ALL PLANTINGS. PLANTING AND MAINTENANCE OF GRASS SHALL CONFORM TO THE "HAWAII STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION," 2005.

WATER NOTES

1. ALL WORK SHALL BE DONE ACCORDING TO THE WATER SYSTEM STANDARS, STATE OF HAWAII, DATED 2002 AS AMENDED.
2. THE CONTRACTOR SHALL INFORM THE DEPARTMENT OF WATER SUPPLY (DWS) ENGINEER 72 HOURS PRIOR TO THE BEGINNING OF ANY WATERLINE WORK AND TWO WEEKS PRIOR TO ANY CONNECTION, CHLORINATION, SHUT-OFF OR RELOCATION WORK.
3. THE CONTRACTOR SHALL PAY FOR ALL WORK, EQUIPMENT AND MATERIALS FURNISHED BY THE DWS.
4. ALL EXISTING WATERLINES, WATERLINE APPURTENANCES AND OTHER UTILITY LOCATIONS SHOWN ON THE PLANS ARE OBTAINED FROM THE LATEST RELIABLE SOURCES. THE CONTRACTOR SHALL BE RESPONSIBLE TO VERIFY THE EXACT LOCATION OF ALL UTILITIES IN THE FIELD AND SHALL BEAR ALL COST FOR DAMAGES DONE TO THE WATER SYSTEM.
5. ALL CONNECTIONS TO EXISTING WATERLINES SHALL BE DONE BY THE DWS. CONTRACTOR SHALL PERFORM ALL EXCAVATION, BACKFILL, PAVEMENT REPAIR, TRAFFIC CONTROL, AND PROVIDE EQUIPMENT NECESSARY TO COMPLETE THE CONNECTION.
6. WHERE WATER SHUT-OFF OF MORE THAN 3 HOURS BECOMES NECESSARY, THE CONTRACTOR, AT HIS OWN EXENSE, SHALL PROVIDE A TEMPORARY BY-PASS LINE. THE DWS ENGINEER SHALL DETERMINE THE BY-PASS LINE SIZE. IF NECESSARY, THE DWS ENGINEER MAY REQUIRE A BY-PASS LINE REGARDLESS OF THE EXPECTED SHUT-OFF PERIOD.
7. MINIMUM HORIZONTAL CLEARANCE BETWEEN WATERLINE AND OTHER UTILITIES SHALL BE 8 FEET UNLESS OTHERWISE SPECIFIED. MINIMUM VERTICAL CLEARANCE BETWEEN WATERLINES AND OTHER UTILITIES SHALL BE 12" PROVIDED CONCRETE JACKETS ARE USED, AND 18" IF NO CONCRETE JACKETS ARE USED. IN ALL APPLICABLE INSTANCES, THE WATERLINES SHALL BE AT A GRADE HIGHER THAN OTHER UTILITIES.
8. ALL FITTING (CLASS 250 MINIMUM) AND ALL GATE VALVES (CLASS 200) SHALL BE DUCTILE IRON, WITH MECHANICAL JOINTS UNLESS OTHERWISE SPECIFIED. BUTTERFLY VALVES SHALL BE CLASS 250 WITH EPOXY-COATED INTERIOR UNLESS OTHERWISE SPECIFIED.
9. THE WATERLINE SHALL BE TESTED AT A MINIMUM OF 225 PSI OR ONE AND A HALF TIMES THE STATIC PRESSURE AT THE LOW POINT, WHICHEVER IS GREATER, UNDER DWS SUPERVISION JUST PRIOR TO PAVING.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CHLORINATION OF THE WATER SYSTEM AND SHALL BEAR ALL COSTS. THE PERSON(S) ENGAGED TO DO THE CHLORINATION WORK MUST HAVE THE APPORPRIATE LICENSE TO PERFORM THE WORK IN THE STATE OF HAWAII.
11. EXISTING VALVES, F.H. UNITS, VALVE BOXES, FRAMES AND COVERS DESIGNTATED "REMOVE AND SALVAGE" SHALL BE CLEARED OF ALL DIRT, SCABS, AND CONCRETE AND DELIVERED TO THE RESPECTIVE DWS BASEYARD. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE VARIOUS BID ITEMS, UNLESS SPECIFIED OTHERWISE.
12. EXISTING WATERLINES, VALVES, FITTINGS AND APPURTENANCES NOT DESIGNATED "REMOVE AND SALVAGE" SHALL BE ABANDONED IN PLACE. ALL EXPOSED VALVE BOXES, VALVES, PIPES AND APPURTENANCES SHALL BE REMOVED AND DISPOSED OF PROPERLY AT NO COST TO THE DWS.
13. RELOCATION OF EXISTING METERS SHALL BE DONE BY OR UNDER DWS SUPERVISION. RELOCATIONS OF CUSTOMER SERVICE LINES TO RELOCATED METERS SHALL BE COPPER AND DONE BY THE CONTRACTOR. ALL WORK AND MATERIALS REQUIRED SHALL BE PROVIDED BY THE CONTRACTOR AND CONSIDERED INCIDENTAL TO THE RELOCATION WORK. EXISTING METER BOXES DAMAGED BY THE CONTRACTOR SHALL BE REPLACED AT THE CONTRACTOR'S COST. A DIELECTRIC UNION SHALL BE USED TO CONNECT THE COPPER PIPE TO THE CUSTOMER'S G.I. PIPE (IF APPLICABLE).
14. THE DWS WILL NOT ASSUME OWNERSHIP OF NOR GRANT ANY WATER SERVICE UNTIL THE WATER SYSTEM IS DEDICATED TO THE DWS ALONG WITH ALL NECESSARY EASEMENTS AND DOCUMENTS.
15. WHEN COMPACTION TESTS ARE REQUIRED, THE CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE THE DWS WITH PROCTOR RESULTS OF MATERIALS TO BE USED FOR THAT PORTION OF WORK REQUIRING COMPACTION. THESE RESULTS SHALL BE CERTIFIED AND SHALL BE FURNISHED TO DWS ONE WEEK PRIOR TO COMMENCEMENT OF WORK. COST FOR COMPACTION TESTS SHALL BE INCIDENTAL TO PIPELINE INSTALLATION.
16. THE CONTRACTOR SHALL INSTALL ELECTRONIC MARKERS TO ALL MAINS AND TEST THE ELECTRONIC MARKERS PRIOR TO INSTALLATIONS TO VERIFY OPERATION. DWS PERSONNEL SHALL VERIFY THE NUMBER AND LOCATIONS OF PLACED ELECTRONIC MARKERS BEFORE FINAL PAVING OF THE PROJECT.
17. CONSTRUCTION PROJECTS REQUIRING TEMPORARY WATER SERVICE SHALL BE METERED AND PAID FOR BY THE CONTRACTOR.
18. INSTALL DEPARTMENT OF WATER SUPPLY APPROVED TYPE BACKFLOW PREVENTION ASSEMBLY, PER DEPARTMENT STANDARD V-9. AND DIVISION 100 SECTION 107. THE SERVICE OWNER SHALL BE RESPONSIBLE FOR THE INSTALLATION, YEARLY TESTING AND MAKING OF PROVISIONS FOR WATER DURING THE TESTING AND MAINTENANCE OF THE BACKFLOW ASSEMBLY. INSTALLATION SHALL BE APPROVED BY THE DEPARTMENT BEFORE SERVICE IS ACTIVATED.

PUBLIC HEALTH SAFETY & CONVENIENCE NOTES

1. THE CONTRACTOR SHALL PROVIDE, INSTALL AND MAINTAIN ALL NECESSARY SIGNS, LIGHTS, FLARES, BARRICADES, MARKERS, CONES AND OTHER PROTECTIVE FACILITIES AND SHALL TAKE ALL NECESSARY PRECAUTIONS FOR THE PROTECTION, CONVENIENCE AND SAFETY OF THE PUBLIC. INCLUDING HRS 103.50 AND ADAAG 4.1.1(4) & 4.3.
2. THE CONTRACTOR'S ATTENTION IS DIRECTED TO TITLE 11, NOISE CONTROL, IN WHICH MAXIMUM ALLOWABLE NOISE LEVELS HAVE BEEN SET. IF THE CONSTRUCTION WILL BE REQUIRED TO OBTAIN A PERMIT FROM THE DIRECTOR OF THE DEPARTMENT OF PUBLIC HEALTH, THE CONTRACTOR SHALL OBTAIN A COPY OF CHAPTER 46 AND BECOME FAMILIAR WITH THE NOISE LEVEL RESTRICTIONS AND THE PROCEDURES FOR OBTAINING A PERMIT FOR CONSTRUCTION ACTIVITIES. APPLICATION AND INFORMATION ON VARIANCES MAY BE OBTAINED FROM THE INDOOR AND RADIOLOGICAL HEALTH BRANCH, 591 ALA MOANA BLVD., RM. 133, HONOLULU, HAWAII OR BY TELEPHONE 586-4700.

GUIDELINES FOR WORK NEAR FUEL/OIL PIPELINES

1. CHEVRON PRODUCTS COMPANY HAS ONE OR MORE PETROLEUM PRODUCT PIPELINES IN AN EASEMENT THAT RUNS THROUGH OR IMMEDIATELY ADJACENT TO CONTRACTOR'S PROPOSED PROJECT. THESE PIPELINES ARE USED FOR THE TRANSMISSION OF PETROLEUM PRODUCTS AT HIGH TEMPERATURES AND PRESSURES. THE PIPELINES ARE COATED AND CATHODICALLY PROTECTED. THEY REQUIRE FREQUENT INSPECTION AND MAINTENANCE.
2. IT IS ABSOLUTELY NECESSARY THAT CHEVRON BE PROVIDED ACCESS TO THESE BURIED PIPELINES AT ALL TIMES, 24 HOURS A DAY, SEVEN DAYS A WEEK. THEREFORE, CONTRACTOR'S PROPOSED PROJECT MUST ADHERE TO THE FOLLOWING GUIDELINES:
3. IF THE EASEMENT AREA IS FENCED OR WALLED IN, CHEVRON MUST HAVE A GATE KEY UNLESS THE AREA IS ATTENDED ON A 24-HOUR BASIS.
4. STORAGE OF MATERIAL ON THE EASEMENT SHALL BE AVOIDED. THIS INCLUDES PARKING LOTS.
5. A MINIMUM OVERHEAD CLEARANCE OF 15 FEET MUST BE MAINTAINED WITHIN THE EASEMENT.
6. HEAVY LANDSCAPING (TREES, SHRUBS, SPRINKLERS, ETC.) SHOULD BE KEPT OFF THE EASEMENT.
7. HEAVY OBSTRUCTIONS SHOULD BE KEPT OFF THE EASEMENT (E.G. BUILDINGS, WALLS, EQUIPMENT PADS, ETC.).
8. NO TOP-TO-BOTTOM OBSTRUCTIONS WILL BE PERMITTED IN THE EASEMENT (E.G. POWER POLES, SEWER MANHOLES, SEWER CLEAN-OUTS, BRIDGE ABUTMENTS, ETC.).
9. LIGHT OBSTRUCTIONS (E.G. GRASS, PAVING (CONCRETE), CURB CROSSINGS, ETC.) ARE CONSIDERED REASONABLE. GRASSED AREAS MUST BE SUITABLE FOR ALL-WEATHER VEHICULAR TRAVEL.
10. CHEVRON'S COMPANY REPRESENTATIVE WILL STAKE THE PIPELINES AT CONTRACTOR'S REQUEST. DETERMINATION OF PIPELINE ELEVATIONS SHALL BE THE CONTRACTOR'S RESPONSIBILITY AND AT CONTRACTOR'S EXPENSE.
11. THE PIPELINE EASEMENT ACCESS ROAD MUST BE KEPT OPEN AT ALL TIMES. AUTHORIZATION TO BLOCK ACCESS ROADS AT ANY TIME DURING YOUR CONSTRUCTION PERIOD MUST BE OBTAINED FROM CHEVRON PRODUCTS COMPANY.
12. AVOID RUNNING ANY SEWERS, FENCES, SPRINKLER LINES, PIPELINES, CABLES, CURBS, ETC., WITHIN THE EASEMENT IN A PARALLEL ORIENTATION TO THE EASEMENT CENTERLINE. CROSSING ARE PERMITTED BUT MUST BE HELD TO A MINIMUM OF 45 DEGREES TO EASEMENT CENTERLINE.
13. SEWER AND ELECTRICAL CONDUIT CROSSING SHOULD BE KEPT A MINIMUM OF FOUR FEET CLEAR BELOW CHEVRON'S PIPELINES FOR THE FULL EASEMENT WIDTH. IF THIS CONDITION CANNOT BE MET, THE CROSSINGS SHOULD BE ENCASED IN SIX INCHES OF CONCRETE, WITH A MINIMUM TWO FEET CLEAR BELOW CHEVRON'S PIPELINES.
14. EXCEPT FOR ITEM 13 ABOVE, ALL CROSSING FACILITIES SHOULD BE AT LEAST 24 INCHES CLEAR BELOW CHEVRON'S PIPELINES FOR THE FULL EASEMENT WIDTH. CROSSING ABOVE CHEVRON'S PIPELINES ARE NOT PERMITTED.
15. REMOVAL OF FILL FROM THE EASEMENT SHOULD NOT RESULT IN THERE BEING LESS THAN THREE FEET MINIMUM COVER OVER THE LINES.
16. TRENCHES ACROSS THE PIPELINES SHALL BE LIMITED TO A MAXIMUM WIDTH OF FIVE FEET UNLESS THE LINES ARE SUPPORTED IN A MANNER ACCEPTED IN ADVANCE BY CHEVRON PRODUCTS COMPANY.
17. ALL EXCAVATIONS AND BACKFILLING OPERATIONS IN CHEVRON'S EASEMENT MUST BE WITNESSED BY A CHEVRON COMPANY REPRESENTATIVE. CONTRACTOR SHALL PROVIDE CHEVRON WITH 48 HOURS NOTICE PRIOR TO BEGINNING WORK WITHIN CHEVRON'S EASEMENT. ALL BACKFILL MATERIAL WITHIN SIX INCHES OF OUR PIPELINES MUST BE OF FINELY GRADED DIRT OR SAND. ALL EXCAVATIONS WITHIN TWO FEET OF OUR PIPELINES MUST BE ACCOMPLISHED BY HAND DIGGING. WORK SHALL BE HANDLED IN A EXPEDITIOUS MANNER IN ORDER TO KEEP CHEVRON'S PIPELINES UNCOVERED FOR AS SHORT A PERIOD AS POSSIBLE.
18. FILL OVER CHEVRON'S EASEMENT SHOULD BE LIMITED TO FOUR FEET MAXIMUM COVER OVER CHEVRON'S PIPELINES. CHEVRON WILL STAKE THE PIPELINES UPON REQUEST SO THAT CONTRACTOR CAN EXCAVATE TO DETERMINE THE DEPTH OF THE PIPELINES.
19. REGRADING OF ADJACENT PROPERTY SHOULD NOT AVERSELY AFFECT DRAINAGE OF THE EASEMENT AREA OR POSE A HAZARD TO THE EASEMENT SUCH AS LANDSLIDES OR EROSION.
20. THE SLOPE MUST BE KEPT REASONABLY LEVEL ACROSS THE EASEMENT. MAXIMUM SHOULD BE 5:1 TO PROVIDE FOR BACKHOE OPERATION.
21. ALL COSTS PERTAINING TO DAMAGE OF CHEVRON'S PIPELINES, THEIR COATINGS, OR THE CATHODIC PROTECTION DEVICES, OR DAMAGE OF PROPERTY AND INJURY TO PERSONS CAUSED DIRECTLY OR INDIRECTLY BY THIS WORK, WILL BE TO CONTRACTOR'S ACCOUNT. ANY REPAIR WORK ON THE LINES RESULTING FROM CONTRACTOR'S PROJECT SHALL BE PERFORMED BY CHEVRON PRODUCTS COMPANY AND BILLED TO THE CONTRACTOR.
22. THE CONTRACTOR SHALL COORDINATE WITH THE HILO HARBOR PIPELINE CONSORTIUM TO PROVIDE ACCESS TO THEIR PIPELINES EXPOSED DURING CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL ALLOW THE CONSORTIUM ACCESS TO TEST THE INTEGRITY OF THEIR LINES. THE CONTRACTOR SHALL CONTACT TIM CLARK AT (808) 882-7311 AND WILSON RIVERA AT (808) 682-2259 AT LEAST TWO WEEKS PRIOR TO THE START OF CONSTRUCTION WORK NEAR OIL AND FUEL LINES. THE STATE SHALL NOT INCUR ADDITIONAL COST TO PROVIDE ACCESS FOR THE CONSORTIUM.

REVISION	DATE	DESCRIPTION	BY	APPROVED

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HARBORS DIVISION

CHAD M. McDONALD ★ LICENSED PROFESSIONAL ENGINEER ★ No. 9793-C ★ HAWAII, U.S.A.

This work was prepared by me or under my supervision

4/30/2014
MITSUNAGA & ASSOCIATES, INC. EXP. DATE

NOTE: Contractor to check and verify dimensions at job before proceeding with work.

JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
CONSTRUCTION NOTES – 2

SUBMITTED BY: _____ SECTION HEAD

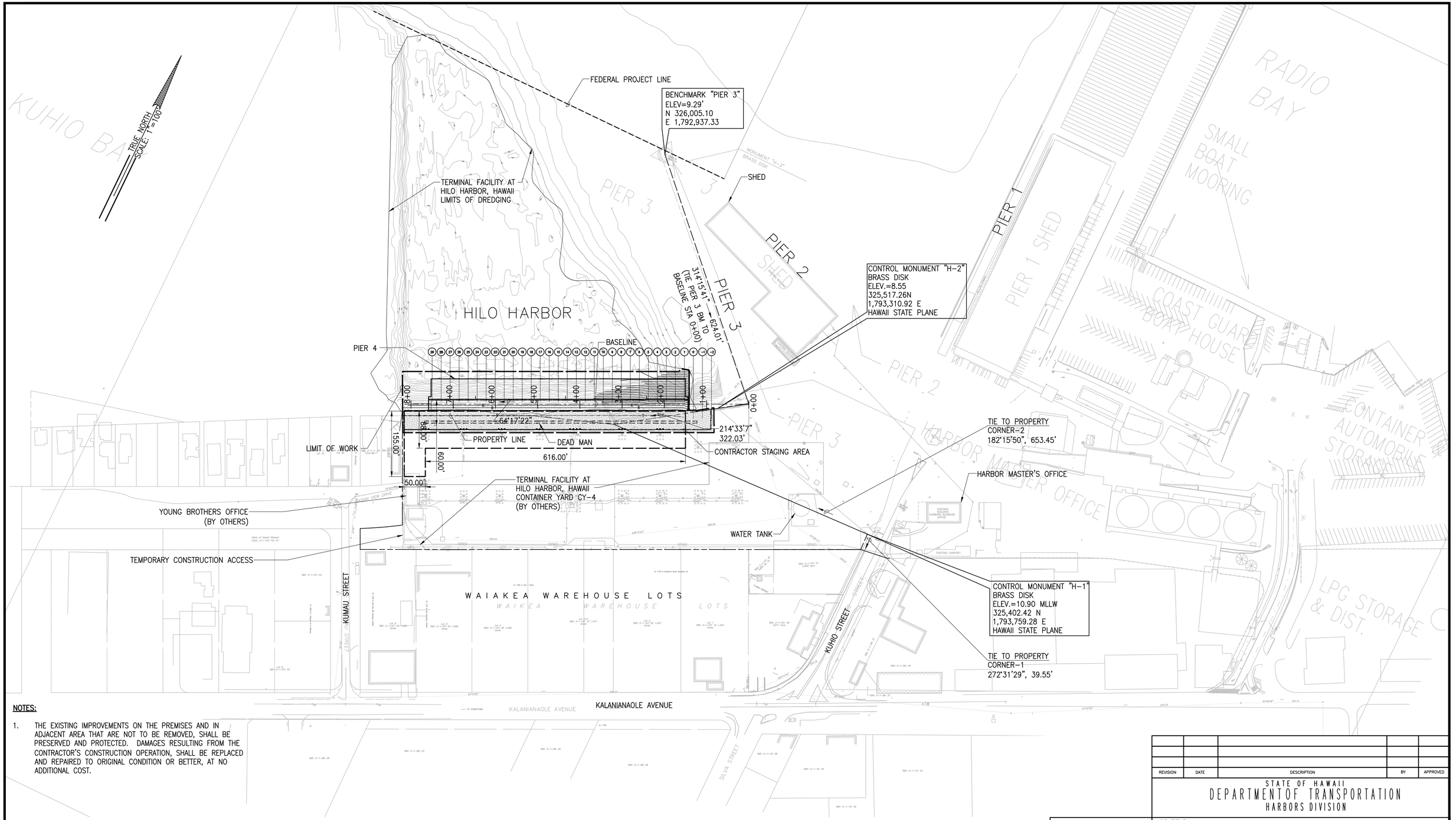
RECOMMENDED BY: _____ ENGINEERING PROGRAM MANAGER

DESIGNED BY: DKS
DRAWN BY: CADD
CHECKED BY: CM
DATE: JANUARY 2014
SCALE:

APPROVED BY: _____ HARBORS ADMINISTRATOR

JOB NUMBER
HMP 60901

SHEET
C-2
3 OF 82 SHTS



NOTES:

1. THE EXISTING IMPROVEMENTS ON THE PREMISES AND IN ADJACENT AREA THAT ARE NOT TO BE REMOVED, SHALL BE PRESERVED AND PROTECTED. DAMAGES RESULTING FROM THE CONTRACTOR'S CONSTRUCTION OPERATION, SHALL BE REPLACED AND REPAIRED TO ORIGINAL CONDITION OR BETTER, AT NO ADDITIONAL COST.

LEGEND:

— — — LIMIT OF WORK

— – – – PROPERTY LINE

GENERAL SITE PLAN

SCALE: 1" = 100'

GRAPHIC SCALE

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

REVISION	DATE	DESCRIPTION	BY	APPROVED

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HARBORS DIVISION

JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
GENERAL SITE PLAN

CHAD M. MCDONALD
LICENSED PROFESSIONAL ENGINEER
No. 9793-C
HAWAII, U.S.A.

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SUBMITTED BY: SECTION HEAD

RECOMMENDED BY: ENGINEERING PROGRAM MANAGER

APPROVED BY: HARBORS ADMINISTRATOR

DESIGNED BY: DKS
DRAWN BY: CADD
CHECKED BY: CM
DATE: JANUARY 2014
SCALE:

JOB NUMBER
HMP 60901

SHEET
C-3
4 OF 82 SHTS

HILO HARBOR

PIER 3

TRUE NORTH
SCALE: 1" = 40'

315°44'19" 604.01'
(TIE TO PIER 3")

B.L. STA 7+52.33
o/s 60.00'
CORNER OF PIER

WL STA. 0+08.45
1-1/4 BEND
1-CONC. BLOCK

B.L. STA 7+52.33
o/s 19.82'
CORNER OF PIER

B.L. STA 7+58.33
o/s 19.82'
CORNER OF PIER

B.L. STA 7+50.00
o/s 10.83'
TRENCH DRAIN

154°17'22"
25.00'

REMOVABLE
BULL RAIL BEGIN

W2.5
SEE C-9
54.08',
154°17'22"

WATER HATCH, TYP.
SEE DET. 2/C-9

WL STA 0+53.50
1-4"X2 1/2" TEE
1-2 1/2" G.V. CL.150
2-4" G.V. CL. 150
3-VALVE BOX
1-CONC. BLOCK

12" DRAIN LINE
L = 6.33'

REMOVABLE BULL RAIL,
(67 TOTAL)
SEE DET. S/5.05

W2.5
SEE C-9
54.08',
154°17'22"

WL STA 1+81.50
1-4"X2 1/2" TEE
1-2 1/2" G.V. CL.150
2-4" G.V. CL. 150
3-VALVE BOX
1-CONC. BLOCK

WATER HATCH, TYP.
SEE DET. 2/C-9

12" DRAIN LINE
L = 6.33'

W2.5
SEE C-9
54.08',
154°17'22"

WATER HATCH, TYP.
SEE DET. 2/C-9

W2.5
SEE C-9
54.08',
154°17'22"

WL STA 3+52.17
1-4"X2 1/2" TEE
1-2 1/2" G.V. CL. 150
2-4" G.V. CL. 150
3-VALVE BOX
1-CONC. BLOCK

12" DRAIN LINE
L = 6.33'

B.L. STA 2+41.84
o/s 12.33'
8" DRAIN LINE

B.L. STA 1+42 o/s 79.50
STRUCTURAL SHEET PILE END
SEE STRUCTURAL DWG S-3.30.1

B.L. STA 1+50 o/s 60.00'
CORNER OF PIER

B.L. STA 1+50 o/s 17.58'
CORNER OF PIER
STRUCTURAL SHEET PILE BEGIN
SEE STRUCTURAL DWS S-3.30.1

B.L. STA 1+43.95 o/s 17.58'
CORNER OF PIER

B.L. STA 1+44.83
o/s 10.83'
TRENCH DRAIN

254°17'22"
25.00'

B.L. STA 1+42 o/s 15.00
STRUCTURAL SHEET PILE BEGIN
SEE STRUCTURAL DWS S-3.30.1

244°17'22"
18.99'

REMOVABLE EXIST.
BULL RAIL TO
REMAIN BEGIN

REMOVABLE EXIST.
BULL RAIL TO
REMAIN END

BASELINE "A"

8+00 7+00 6+00 5+00 4+00 3+00 2+00 1+00 0+00

W4
64°17'22" 602.33' (PIER LENGTH)

50'
40'
25'
3'
2'

B.L. STA 6+47.06
o/s 12.33'
8" DRAIN LINE

ANCHOR BLOCK

RELOCATE EXIST.
BULL RAIL

D.W. STA 0+9.95
1-3" METER
SEE BWS STD. M16 & M17

B.L. STA 7+21.22
o/s 51.50'
BEGIN WL STA 0+00
CONN. TO EXIST 4" WL
REMOVE 4" CAP

LIMIT OF WORK

RELOCATE EXIST.
BULL RAIL (54)
BEGIN

W4
8.45',
154°17'22"

B.L. STA 5+35.63
o/s 10.83'
TRENCH DRAIN

B.L. STA 5+37.38
o/s 10.83'
TRENCH DRAIN

17.5" HARDENED CONCRETE
PAVEMENT
SEE STRUCTURAL DRAWINGS

STANCHION, TYP.
(22 TOTAL)
SEE STRUCTURAL &
ELECTRICAL DRAWINGS

TERMINAL FACILITY
HILO HARBOR HAWAII
CONTAINER YARD CY-4
(BY OTHERS)

B.L. STA 4+33.85
o/s 12.33'
8" DRAIN LINE

TRENCH DRAIN,
SEE STRUCTURAL DRAWINGS
TRENCH DRAIN FILTER INSERT
SEE DET C1/10, KRISTAR
FLOGARD MODEL FG-TDOF18 OR
APPROVED EQUAL

64°17'22"
725.99'

W4
272.72',
244°17'22"

B.L. STA 3+43.63
o/s 10.83'
TRENCH DRAIN

B.L. STA 3+45.38
o/s 10.83'
TRENCH DRAIN

WL STA 4+80.17
1-4"X2½" TEE
1-2 1/2" G.V. CL. 150
1-4" G.V. CL. 150
2-VALVE BOX
1-4" CAP
1-CONC. BLOCK

17.5" HARDENED
CONCRETE PAVEMENT,
(32,657 S.F.) - PHASE 2
SEE TYP. SECTION 1/C-8 &
STRUCTURAL DRAWINGS

B.L. STA. 0+90.00
o/s 12.88' LT.
CORNER OF
HARDENED CONC.
PAV'T.

B.L. STA. 0+90.00
o/s 60.00' LT.
CORNER OF
HARDENED CONC.
PAV'T.

OCEAN VIEW DRIVE

KUMAU STREET

LEGEND:

- LIMIT OF WORK
- HARDENED PAVEMENT - PHASE 2
- EXIST. ACB MAT
- PROPOSED ACB MAT (SEE DET. 5/C-9)

SITE AND UTILITY PLAN

SCALE: 1" = 40'

GRAPHIC SCALE

1" = 40' 40' 20' 0 40' 80'

REVISION	DATE	DESCRIPTION	BY	APPROVED

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HARBORS DIVISION

CHAD M. MCDONALD
LICENSED PROFESSIONAL ENGINEER
No. 9793-C
HAWAII, U.S.A.

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4/30/2014
MITSUNAGA & ASSOCIATES, INC. EXP. DATE

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JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
SITE AND UTILITY PLAN

SUBMITTED BY: SECTION HEAD

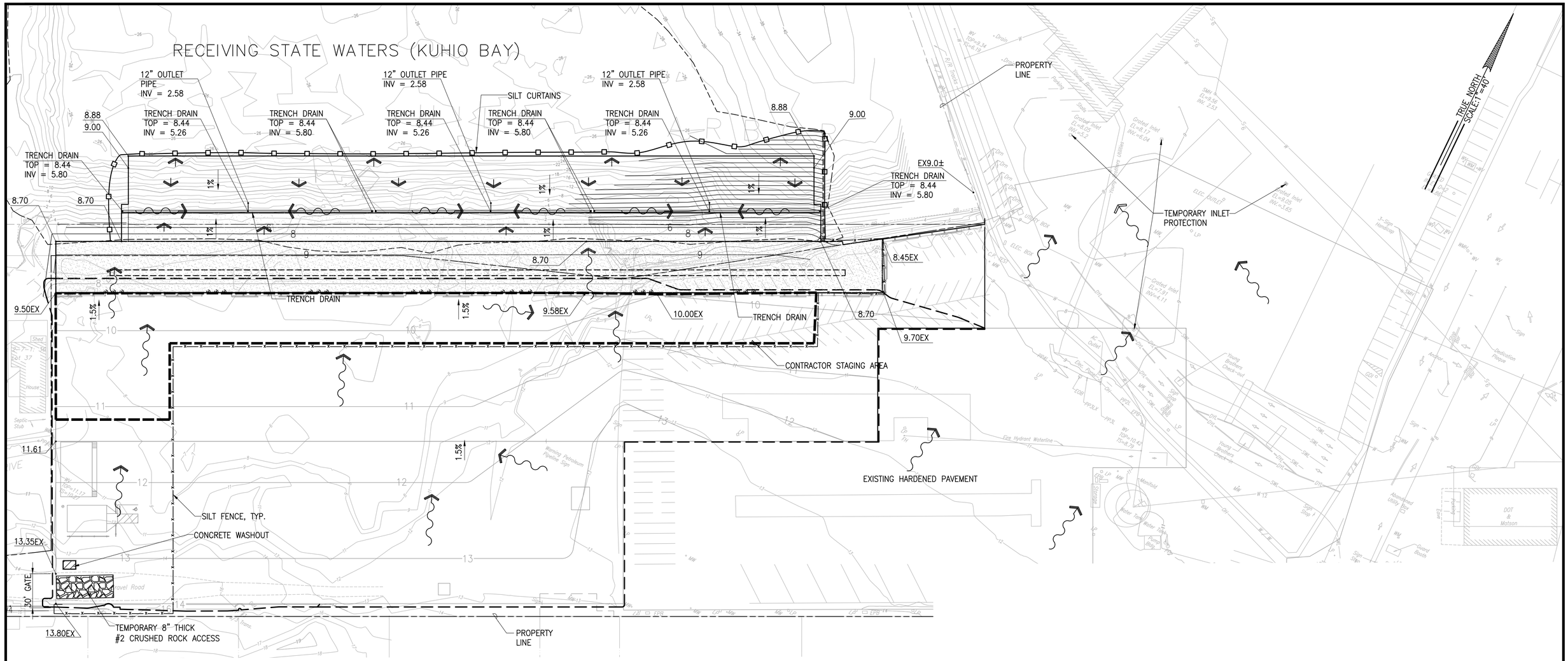
RECOMMENDED BY: ENGINEERING PROGRAM MANAGER

DESIGNED BY: DKS
DRAWN BY: CADD
CHECKED BY: CM
DATE: JANUARY 2014
SCALE:

APPROVED BY: HARBORS ADMINISTRATOR

JOB NUMBER
HMP 60901

SHEET
C-4
5 OF 82 SHTS



GRADING & EROSION CONTROL PLAN

SCALE 1"=40'

EROSION CONTROL NOTES / BMP'S

TEMPORARY EROSION CONTROL NOTES:

1. THE CONTRACTOR CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS OF SECTION 209 – WATER POLLUTION AND EROSION CONTROL, IN THE "HAWAII STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND PUBLIC WORKS CONSTRUCTION," 1994. SECTION 209 DESCRIBES BUT IS NOT LIMITED TO: SUBMITTAL REQUIREMENTS; SCHEDULING OF A WATER POLLUTION AND EROSION CONTROL CONFERENCE WITH THE ENGINEER; CONSTRUCTION REQUIREMENTS; METHOD OF MEASUREMENT; AND BASIS OF PAYMENT.
2. THE CONTRACTOR SHALL MINIMIZE THE AMOUNT OF LAND TO BE EXPOSED AT ANY TIME.
3. EXPOSED AREAS THAT ARE NOT AT FINAL GRADE AND ARE EXPECTED TO BE EXPOSED FOR MORE THAN 30 DAYS SHALL BE PLACED WITH A VEGETATIVE COVER OR BE MULCHED (AT A RATE OF 45 CUBIC FEET PER 1,000 SQUARE FEET) IN ORDER TO PREVENT EROSION AND SILT RUNOFF.
4. TEMPORARY EROSION CONTROLS SHALL NOT BE REMOVED BEFORE PERMANENT EROSION CONTROLS ARE IN PLACE AND ESTABLISHED.
5. TEMPORARY #2 CRUSHED ROCK ACCESS 8" THICK SHALL BE USED AT ALL CONSTRUCTION ENTRY AND EXIT LOCATIONS.
6. PORTABLE CONTAINERS OR A PLASTIC LINED PIT SHALL BE USED FOR THE CONCRETE WASH WATER DISCHARGE. THE DISCHARGE SHALL BE ALLOWED TO DRY AND SHALL BE PROPERLY DISPOSED OF AT AN APPROVED DISPOSAL SITE. THE CONTAINERS OR PIT SHALL BE ELEVATED ABOVE THE SURROUNDING GROUND TO PREVENT ANY STORM WATER FROM MIXING WITH THE DISCHARGE.

BMP NOTES:

TEMPORARY EROSION CONTROL MEASURES:

1. PRIOR TO CLEARING LAND FOR GRADING, TEMPORARY EROSION CONTROL MEASURES, SUCH AS SILT FENCES SHALL BE INSTALLED.
2. #2 CRUSHED ROCK CONSTRUCTION ACCESS SHALL BE ESTABLISHED PRIOR TO CLEARING OPERATIONS. CONSTRUCTION ACCESS SHALL BE 8" THICK, 20' WIDE AND 50' LONG, MINIMUM.
3. OPENING AND CLEARING OF LAND FOR GRADING SHALL BE PERFORMED INCREMENTALLY TO MINIMIZE EROSION POTENTIAL.
4. AREAS NOT WITHIN THE LIMITS OF GRADING SHALL REMAIN VEGETATED DURING GRADING OPERATIONS.
5. WHEN CLEARED OR GRUBBED AREAS ARE NOT TO BE GRADED OR DISTURBED FOR 30 DAYS OR MORE, SEED, PLANT OR HYDROSEED TEMPORARY VEGETATION.
6. THE CONTRACTOR'S EQUIPMENT STORAGE AREAS SHALL BE PROTECTED THROUGH THE USE OF EARTH BERMS AND/OR ABSORPTION MATERIALS TO PREVENT POLLUTANTS FROM DISCHARGING INTO STATE WATERS. THE CONTRACTOR SHALL INSPECT AND MAINTAIN STORAGE AREAS.

SEQUENCE FOR SEDIMENT CONTROL:

1. INSTALL SILT FENCE, TEMPORARY INLET & CATCH BASIN PROTECTION AND TEMPORARY #2 CRUSHED ROCK ENTRY/EXIT.
2. COMMENCE CONSTRUCTION OPERATIONS.

LEGEND:

- SILT FENCE
- SILT CURTAIN
- TEMPORARY #2 CRUSHED ROCK ACCESS
- EXISTING RUNOFF FLOW DIRECTION
- CONTRACTOR STAGING AREA

REVISION	DATE	DESCRIPTION	BY	APPROVED

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HARBORS DIVISION

JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
GRADING & EROSION CONTROL PLAN

CHAD M. MCDONALD
LICENSED PROFESSIONAL ENGINEER
No. 9793-C
HAWAII, U.S.A.

This work was prepared by me or under my supervision

4/30/2014
MITSUNAGA & ASSOCIATES, INC. EXP. DATE

NOTE: Contractor to check and verify dimensions at job before proceeding with work.

SUBMITTED BY: _____ SECTION HEAD

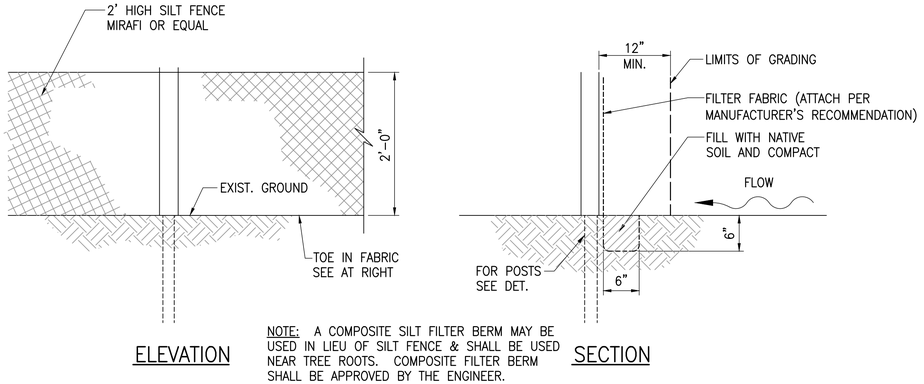
RECOMMENDED BY: _____ ENGINEERING PROGRAM MANAGER

APPROVED BY: _____ HARBORS ADMINISTRATOR

DESIGNED BY:	DKS
DRAWN BY:	CADD
CHECKED BY:	CM
DATE:	JANUARY 2014
SCALE:	

JOB NUMBER
HMP 60901

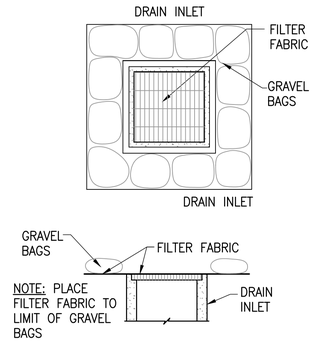
SHEET
C-5
6 OF 82 SHTS



NOTE: A COMPOSITE SILT FILTER BERM MAY BE USED IN LIEU OF SILT FENCE & SHALL BE USED NEAR TREE ROOTS. COMPOSITE FILTER BERM SHALL BE APPROVED BY THE ENGINEER.

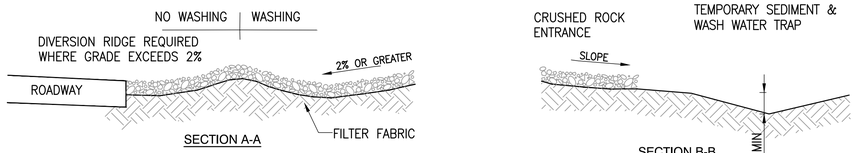
SILT FENCE DETAIL

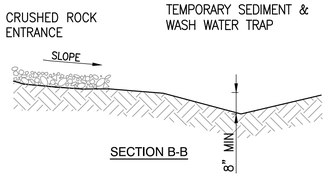
SCALE: 1" = 1'-0"

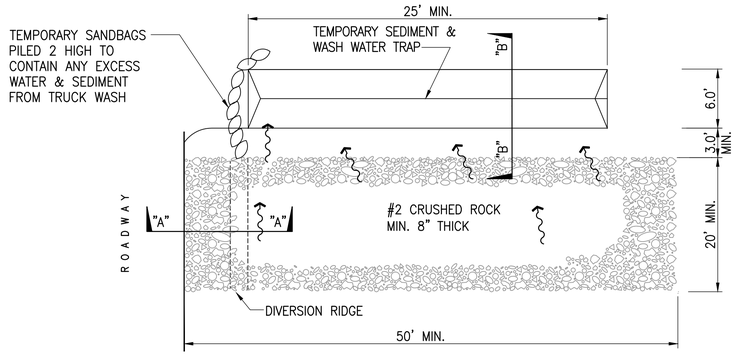


TEMPORARY DRAIN INLET PROTECTION DETAIL

NOT TO SCALE



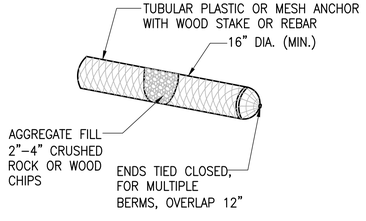




NOTES:
1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAYS AND PREVENT WASH WATER FROM FLOWING OFF-SITE. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
2. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY.
3. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.

TEMPORARY 8" THICK #2 CRUSHED ROCK ACCESS

SCALE: 3/8" = 1'-0"



COMPOSITE FILTER BERM

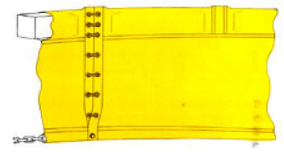
NOT TO SCALE

Lightweight Turbidity Curtain

Application: Calm waters with little current, such as lakes, ponds, canals and shoreline areas.

Specifications

- Fabric - Polyester reinforced vinyl high visibility yellow
- Connector - Sections are laced together through grommets and load lines are bolted together.
- Flotation - 6" expanded polystyrene over 9 lbs./ft. buoyancy.
- Ballast - 1/4" galvanized chain (.7 lbs/ft).



SILT CURTAIN

NOT TO SCALE

REVISION	DATE	DESCRIPTION	BY	APPROVED

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HARBORS DIVISION

JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
EROSION CONTROL DETAILS

CHAD M. MCDONALD
LICENSED PROFESSIONAL ENGINEER
No. 9793-C
HAWAII, U.S.A.

This work was prepared by me or under my supervision

4/30/2014
MITSUNAGA & ASSOCIATES, INC. EXP. DATE

NOTE: Contractor to check and verify dimensions at job before proceeding with work.

SUBMITTED BY: ---------- SECTION HEAD

RECOMMENDED BY: ---------- ENGINEERING PROGRAM MANAGER

DESIGNED BY: DKS
DRAWN BY: CADD
CHECKED BY: CM
DATE: JANUARY 2014
SCALE:

APPROVED BY: ---------- HARBORS ADMINISTRATOR

JOB NUMBER
HMP 60901

SHEET
C-6
7 OF 82 SHTS

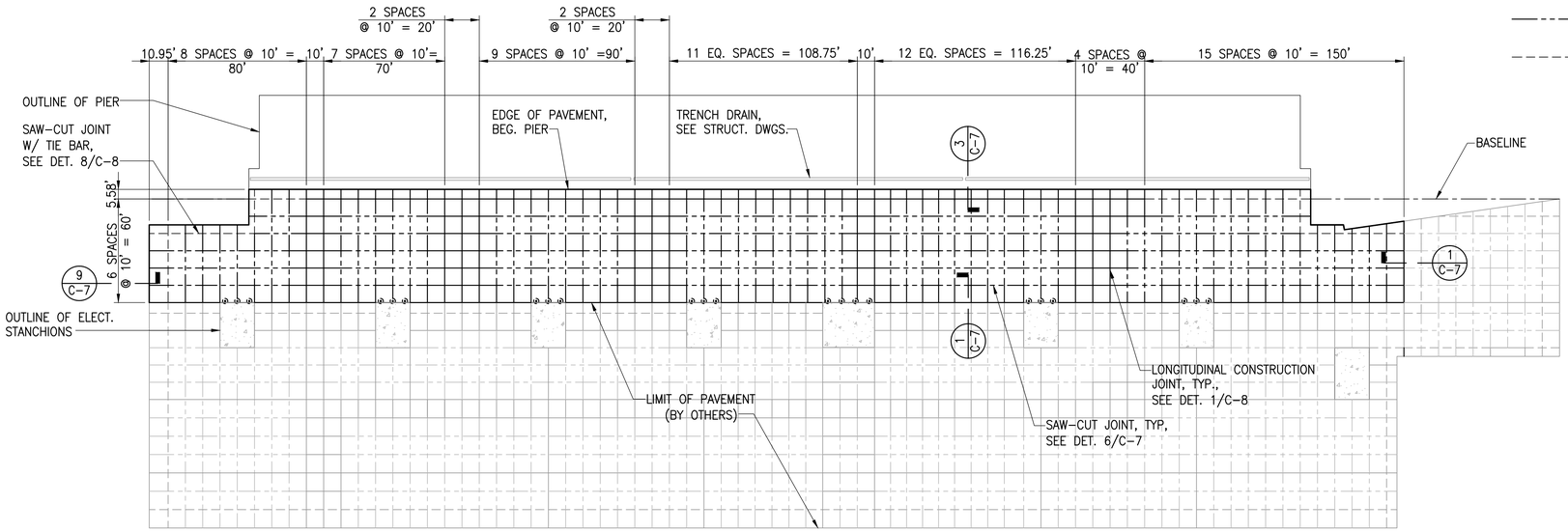
TRUE NORTH
SCALE: 1" = 40'

LEGEND

LONGITUDINAL CONSTRUCTION JOINT (LCJ) (1/C-7)

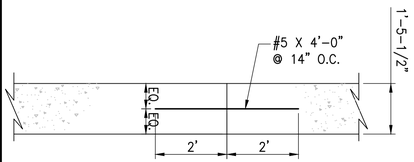
SAW-CUT JOINT(SCJ) (6/C-7)

SAW-CUT JOINT WITH TIE BARS (SCJT) (8/C-7)



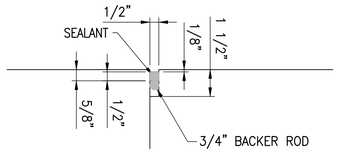
JOINTING PLAN – PIER

SCALE: 1" = 40'



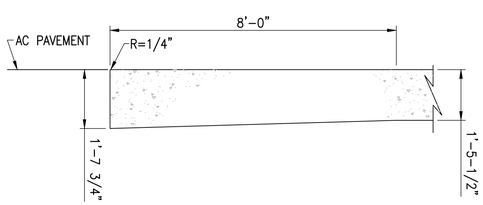
1/C-7 TYP. LONGITUDINAL CONSTRUCTION JOINT

SCALE: 1/2" = 1'-0"



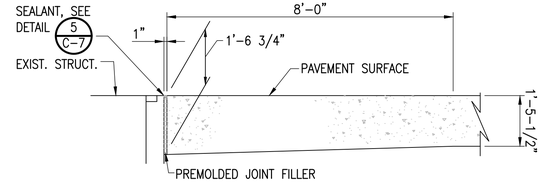
2/C-7 SEALANT DETAIL AT CONSTRUCTION JOINT

SCALE: 3" = 1'-0"



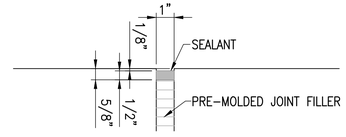
3/C-7 SECTION AT EDGE OF SLAB

SCALE: 1/2" = 1'-0"



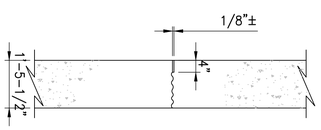
4/C-7 EXPANSION JOINT

SCALE: 1/2" = 1'-0"



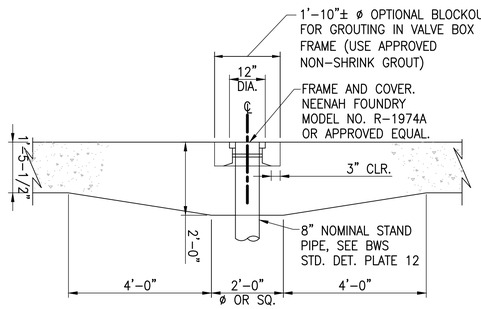
5/C-7 SEALANT DETAIL AT EXPANSION JOINT

SCALE: 3" = 1'-0"



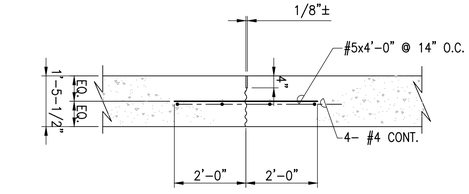
6/C-7 TYP. SAW-CUT JOINT

SCALE: 1/2" = 1'-0"



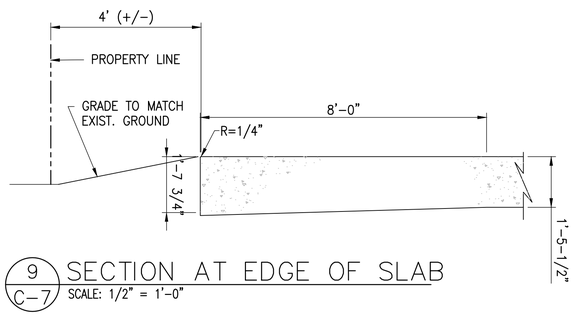
7/C-7 TYP. THICKENED SLAB AT VALVE BOX

SCALE: 1/2" = 1'-0"



8/C-7 TYP. SAW CUT JOINT WITH TIE BAR

SCALE: 1/2" = 1'-0"



9/C-7 SECTION AT EDGE OF SLAB

SCALE: 1/2" = 1'-0"

REVISION	DATE	DESCRIPTION	BY	APPROVED

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HARBORS DIVISION

JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
JOINTING PLAN

CHAD M. MCDONALD
LICENSED PROFESSIONAL ENGINEER
No. 9793-C
HAWAII, U.S.A.

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4/30/2014
MITSUNAGA & ASSOCIATES, INC. EXP. DATE

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SUBMITTED BY: ---------- SECTION HEAD

RECOMMENDED BY: ---------- ENGINEERING PROGRAM MANAGER

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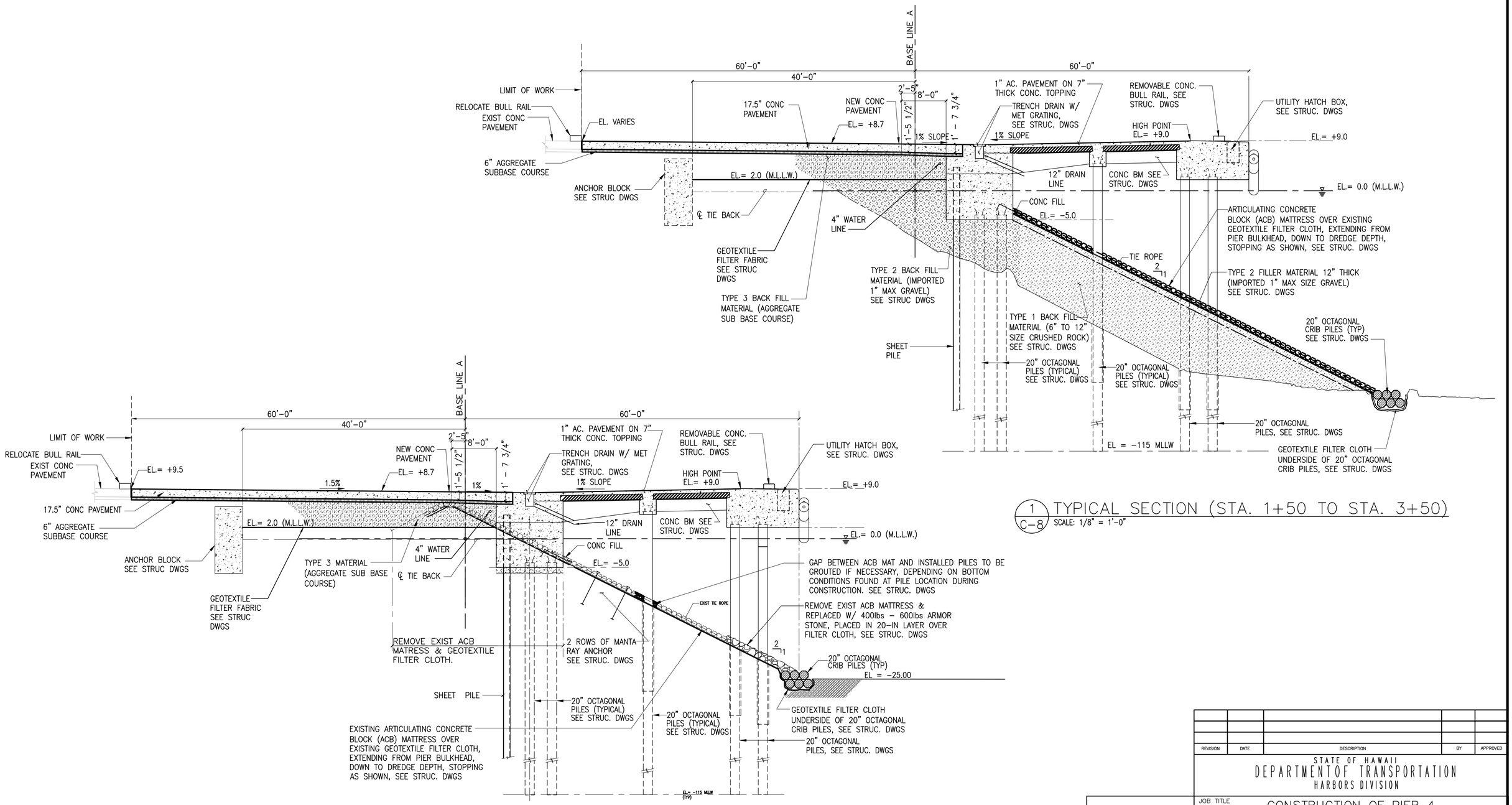
DRAWN BY: CADD
CHECKED BY: CM
DATE: JANUARY 2014
SCALE:

APPROVED BY: ---------- HARBORS ADMINISTRATOR

JOB NUMBER
HMP 60901

SHEET
C-7
8 OF 82 SHTS



1 C–8 TYPICAL SECTION (STA. 1+50 TO STA. 3+50)
SCALE: 1/8" = 1'–0"

2 C–8 TYPICAL SECTION (STA. 3+50 TO STA. 7+52)
SCALE: 1/8" = 1'–0"

GRAPHIC SCALE
0 4' 8' 16'
1/8" = 1'–0"

REVISION	DATE	DESCRIPTION	BY	APPROVED

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HARBORS DIVISION

JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER–ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
TYPICAL SECTION

CHAD M. MCDONALD
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JOB NUMBER
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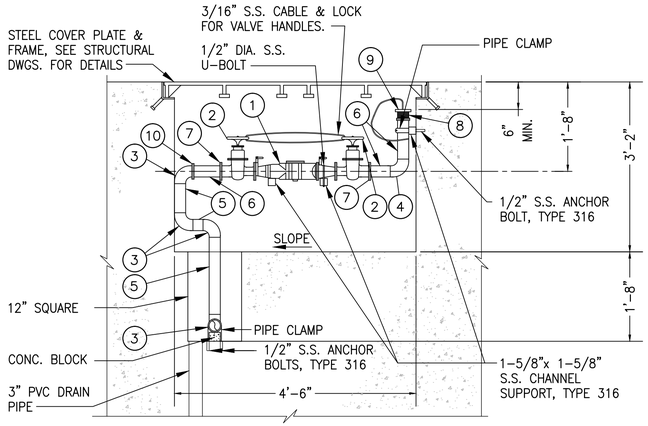
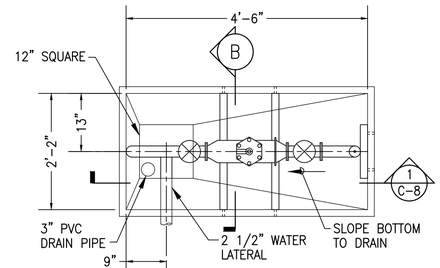
SHEET
C–8
9 OF 82 SHTS

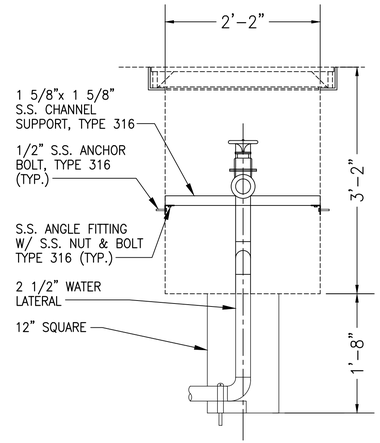


1 / C-9 TYPICAL SECTION THRU HATCH
SCALE: 3/4" = 1'-0"

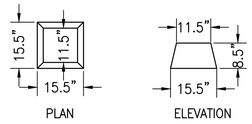
MATERIAL LIST (FOR EA. WATER HATCH)		
ITEM	QUALITY	DESCRIPTION
①	1	2 1/2" REDUCED PRESSURE BACKFLOW PREVENTER (WATTS 009NRS OR APPROVED EQUAL)
②	2	2 1/2" GATE VALVE WITH NONRISING STEM, 150#, FLANGED
③	4	2 1/2" 90° ELBOW, COPPER, SILVER SOLDER
④	1	2 1/2" 90° ELBOW, BRASS
⑤	3	2 1/2" NIPPLE, COPPER,SILVER SOLDER (LENGTH TO SUIT)
⑥	3	2 1/2" NIPPLE, BRASS (LENGTH TO SUIT)
⑦	2	COMPANION FLANGE, BRASS
⑧	1	2 1/2" FEMALE NPT PIPE THREAD X 2 1/2" MALE NST HOSE THREAD ADAPTER, BRASS
⑨	1	2 1/2" BRASS HOSE CAP W/ BRASS CHAIN AND RING
⑩	1	2 1/2" FEMALE ADAPTER, BRASS



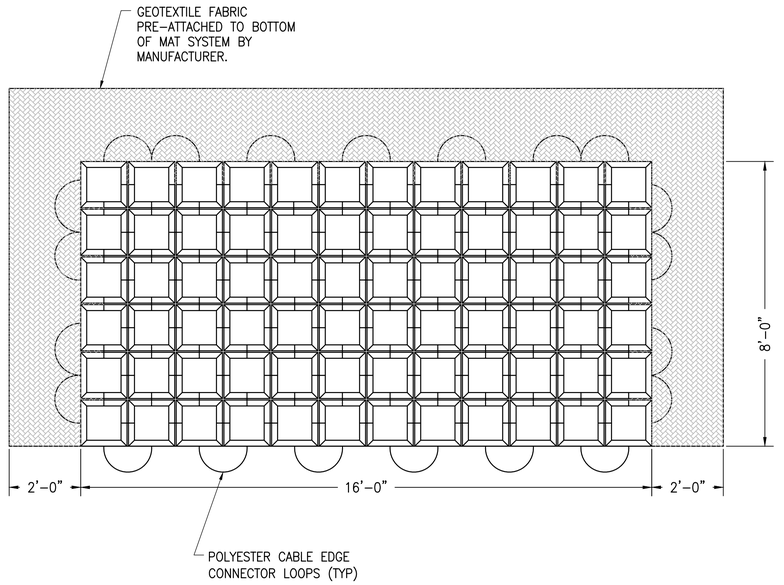
2 / C-9 TYP. WATER HATCH PLAN
SCALE: 3/4" = 1'-0"



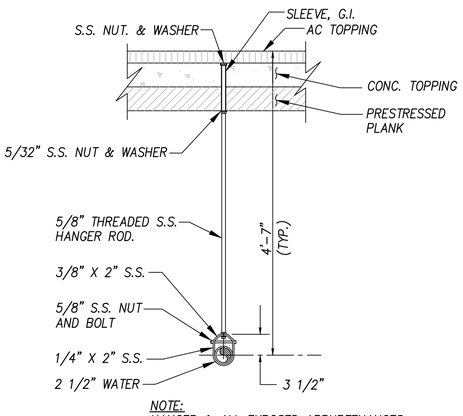
B SECTION
SCALE: 1" = 1'-0"



BLOCK DIMENSIONS

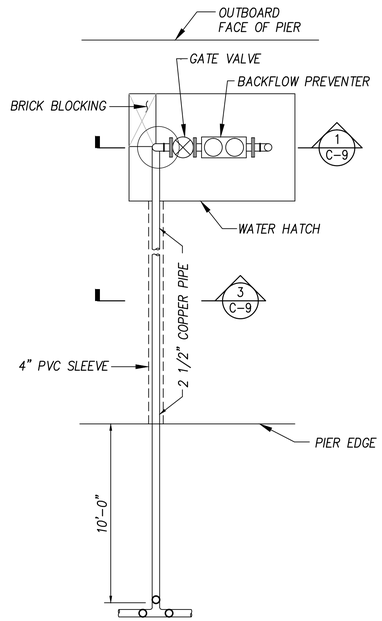


5 / C-9 ACB MAT DETAIL
SCALE: 1/2" = 1'-0"

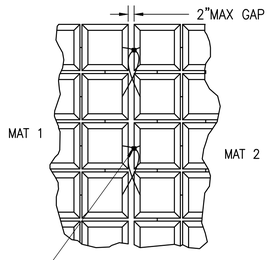


NOTE:
HANGER & ALL EXPOSED APPURTENANCES SHALL BE COATED WITH AMERCOAT 351 OR APPROVED EQUAL AFTER ASSEMBLY.

3 / C-9 2 1/2" WATER PIPE HANGER
NOT TO SCALE

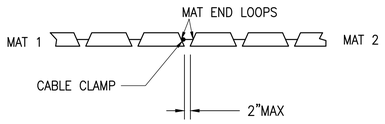


4 / C-9 TYP. WATER SEVICE LATERAL
NOT TO SCALE



NOTE: THE CABLE OF OPPOSITE MAT IS PULLED TO, AND CLAMPED AS CLOSE TO, THE NEAREST MAT TO ELIMINATE SLACK BETWEEN THE TWO MATS

PLAN VIEW



PROFILE VIEW

6 / C-9 ACB CLAMP DETAIL
SCALE: 1/2" = 1'-0"

REVISION	DATE	DESCRIPTION	BY	APPROVED

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HARBORS DIVISION

JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
DETAILS – 1

CHAD M. MCDONALD
LICENSED PROFESSIONAL ENGINEER
No. 9793-C
HAWAII, U.S.A.

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4/30/2014
MITSUNAGA & ASSOCIATES, INC. EXP. DATE

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APPROVED BY: HARBORS ADMINISTRATOR

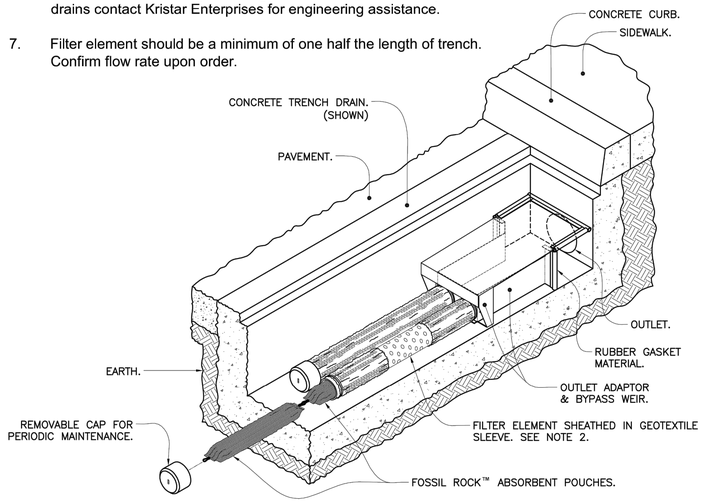
DESIGNED BY: DKS
DRAWN BY: CADD
CHECKED BY: CM
DATE: JANUARY 2014
SCALE:

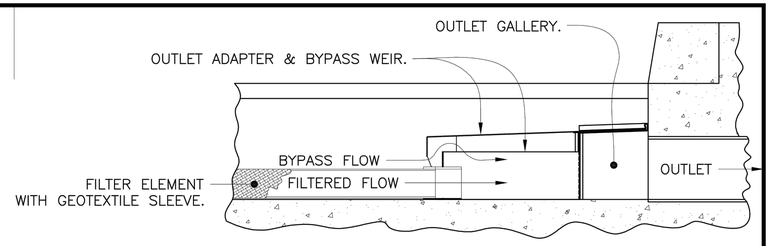
JOB NUMBER HMP 60901

SHEET C-9
10 OF 82 SHTS

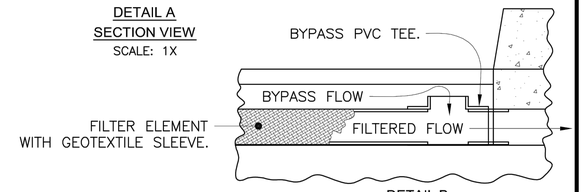
NOTES:

1. Filter outlet adapter shall be constructed from stainless steel Type 304.
2. Filter element is constructed from polypropylene woven monofilament geotextile surrounding a perforated filter housing. Filter element shall not allow the retention of water between storm events.
3. Filter inserts are supplied with "clip-in" filter pouches utilizing Fossil Rock ™ filter medium for the collection and retention of petroleum hydrocarbons (oils & greases).
4. FloGard® LoPro™ filter inserts and Fossil Rock™ filter medium pouches must be maintained in accordance with manufacturer recommendations.
5. Outlet adapter can accommodate outlet openings at right angles and/or bottom outlet openings.
6. For alternate outlet adapter configurations used for extremely shallow trench drains contact Kristar Enterprises for engineering assistance.
7. Filter element should be a minimum of one half the length of trench. Confirm flow rate upon order.





DETAIL A
SECTION VIEW
SCALE: 1X



DETAIL B
SECTION VIEW
ALTERNATE ADAPTER CONFIGURATION
SCALE: 1X

C1 / C-10 TRENCH DRAIN FILTER INSERT
SCALE: NTS

GRAPHIC SCALE
3/4" = 1'-0"
1' 6" 0 1' 2' 3'

REVISION	DATE	DESCRIPTION	BY	APPROVED

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HARBORS DIVISION

CHAD M. MCDONALD
LICENSED PROFESSIONAL ENGINEER
No. 9793-C
HAWAII, U.S.A.

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4/30/2014
MITSUNAGA & ASSOCIATES, INC. EXP. DATE

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JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
DETAILS – 2

SUBMITTED BY: _____ SECTION HEAD

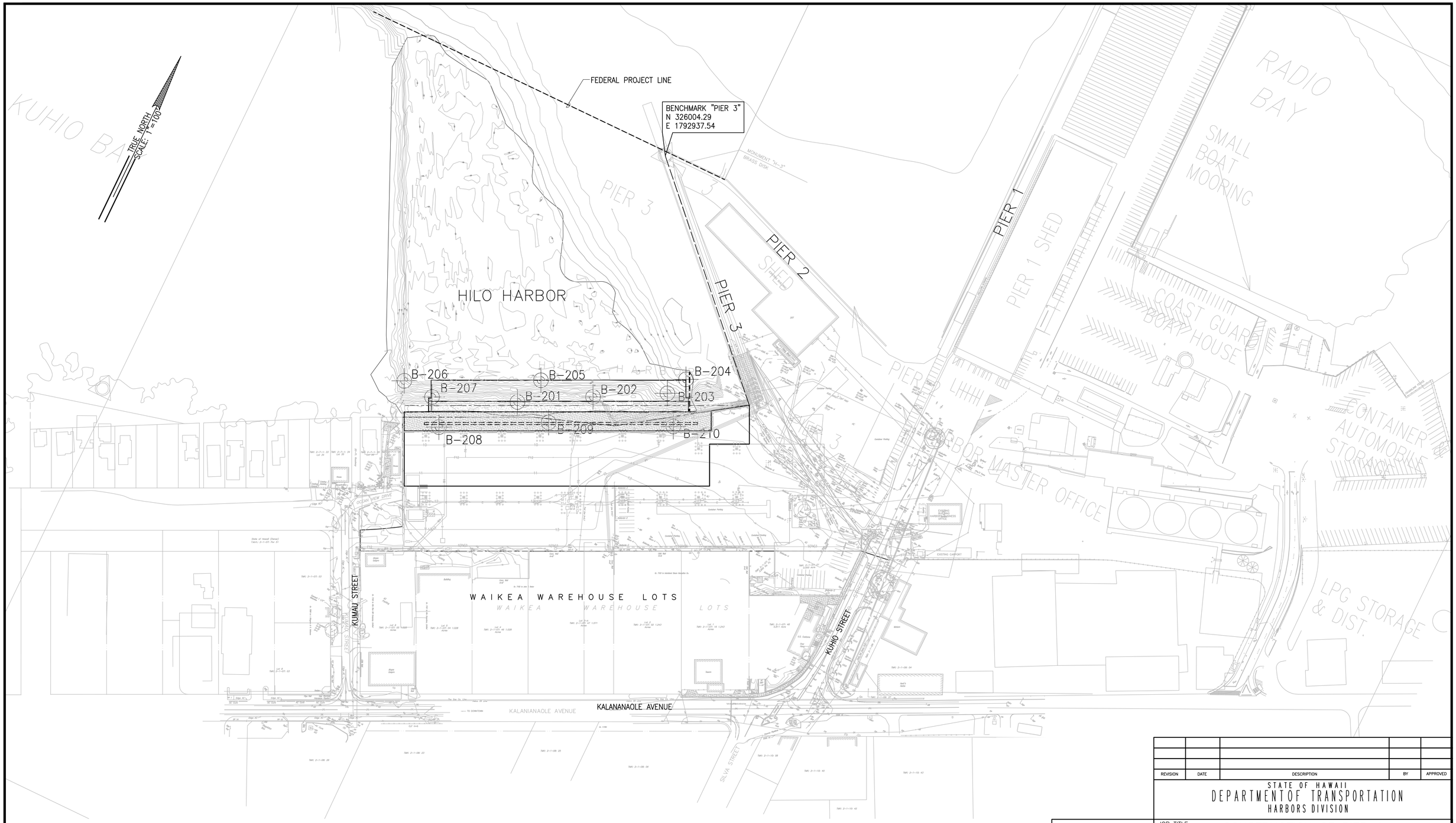
RECOMMENDED BY: _____ ENGINEERING PROGRAM MANAGER

DESIGNED BY:	DKS
DRAWN BY:	CADD
CHECKED BY:	CM
DATE:	JANUARY 2014
SCALE:	

APPROVED BY: _____ HARBORS ADMINISTRATOR

JOB NUMBER
HMP 60901

SHEET
C-10
11 OF 82 SHTS



LEGEND:

⊕ APPROXIMATE BORING LOCATION (10 TOTAL)

REFERENECE: TOPOGRAPHIC SURVEY MAP PROVIDED BY MITSUNAGA & ASSOCIATES, INC. ON JUNE 16, 2006

GRAPHIC SCALE

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

REVISION	DATE	DESCRIPTION	BY	APPROVED

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HARBORS DIVISION

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LICENSED PROFESSIONAL ENGINEER
No. 9793-C
HAWAII, U.S.A.

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JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
BORING LOG LOCATION PLAN

SUBMITTED BY: _____ SECTION HEAD

RECOMMENDED BY: _____ ENGINEERING PROGRAM MANAGER

DESIGNED BY: DKS
DRAWN BY: CADD
CHECKED BY: CM
DATE: JANUARY 2014
SCALE:

APPROVED BY: _____ HARBORS ADMINISTRATOR

JOB NUMBER
HMP 60901

SHEET
C-11
12 OF 82 SHTS

GEOLABS, INC. — Geotechnical Engineering

INTER-ISLAND CARGO TERMINAL FACILITY
PHASE 3 - CARGO YARD IMPROVEMENTS
HILO HARBOR, ISLAND OF HAWAII

Log of Boring **201**

Approximate Ground Surface Elevation (feet MSL): 5.5 *

Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
			89	24			5			GW	Tannish white **SANDY GRAVEL**, loose, wet (beach deposit)
											Gray coarsely vesicular **BASALT**, closely fractured, unweathered to slightly weathered, hard very hard (pahoehoe basalt formation)
			83	43							
			73	45			10				Gray **GRAVEL AND COBBLES (BASALTIC)**, medium dense (clinker)
											Gray vesicular to vugular **BASALT**, moderately fractured, unweathered, hard (a'a basalt)
			60	10			15				**VOID**
			10				20			SP	Black **SAND (BASALTIC)**, loose (littoral deposit/black sand beach deposit)
	19				9		25				
			42								
	22				24		30			SW	Tannish white **GRAVELLY SAND (CORALLINE)**, medium dense (coralline detritus)
			0								
	30				28		35			SM/ SP	Light gray **SILTY POORLY GRADED SAND** with traces gravel, medium dense (shallow marine deposit)
			0				40			ML	

Date Started:	September 20, 2006	Water Level: ▽ 4.4 ft. 09/20/2006 1305 HRS	Plate
Date Completed:	September 21, 2006		
Logged By:	S. Latronic	Drill Rig: MOBILE B-53	A - 1.1
Total Depth:	138.5 feet	Drilling Method: 4" Auger, 4" Casing & HQ Coring	
Work Order:	5669-00	Driving Energy: 140 lb. wt., 30 in. drop	

BORING LOG 5669-00.GPJ GEOLABS.GDT 7/31/13

GEOLABS, INC. — Geotechnical Engineering

INTER-ISLAND CARGO TERMINAL FACILITY
PHASE 3 - CARGO YARD IMPROVEMENTS
HILO HARBOR, ISLAND OF HAWAII

Log of Boring **201**

(Continued from previous plate)

Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
	31		0		7		45			ML	Light gray **GRAVELLY SILT** with sand, soft (lagoonal deposit)
	32				6						
			0				50			SM	Light gray **SILTY SAND**, loose to medium dense (lagoonal deposit shallow marine deposit)
	41				6						
	41				6		55				
	43				8		60				
	65				8		65				
	43				3		70			ML	Gray **SILT**, very soft (lagoonal deposit)
							75				
							80				

Date Started:	September 20, 2006	Water Level: ▽ 4.4 ft. 09/20/2006 1305 HRS	Plate
Date Completed:	September 21, 2006		
Logged By:	S. Latronic	Drill Rig: MOBILE B-53	A - 1.2
Total Depth:	138.5 feet	Drilling Method: 4" Auger, 4" Casing & HQ Coring	
Work Order:	5669-00	Driving Energy: 140 lb. wt., 30 in. drop	

BORING LOG 5669-00.GPJ GEOLABS.GDT 7/31/13

GEOLABS, INC. — Geotechnical Engineering

INTER-ISLAND CARGO TERMINAL FACILITY
PHASE 3 - CARGO YARD IMPROVEMENTS
HILO HARBOR, ISLAND OF HAWAII

Log of Boring **201**

(Continued from previous plate)

Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
							85			ML	grades with sand and shell fragments
							90				
							95				
							100				
	46				2	0.8	105				grades to medium stiff
							110			SM	Light gray **SILTY SAND**, dense (shallow marine deposit)
	15		50	22	45/.5' +25/.0' Ref.						Gray **GRAVEL AND COBBLES (BASALTIC)**, dense (clinker)
							115				Gray vugular **BASALT**, closely fractured, unweathered, very hard (a'a basalt)
			0	0			120				Gray **GRAVEL AND COBBLES (BASALTIC)** with sand and silt, dense (clinker)

Date Started:	September 20, 2006	Water Level: ▽ 4.4 ft. 09/20/2006 1305 HRS	Plate
Date Completed:	September 21, 2006		
Logged By:	S. Latronic	Drill Rig: MOBILE B-53	A - 1.3
Total Depth:	138.5 feet	Drilling Method: 4" Auger, 4" Casing & HQ Coring	
Work Order:	5669-00	Driving Energy: 140 lb. wt., 30 in. drop	

BORING LOG 5669-00.GPJ GEOLABS.GDT 7/31/13

GEOLABS, INC. — Geotechnical Engineering

INTER-ISLAND CARGO TERMINAL FACILITY
PHASE 3 - CARGO YARD IMPROVEMENTS
HILO HARBOR, ISLAND OF HAWAII

Log of Boring **201**

(Continued from previous plate)

Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
Sieve - #200 = 5.0%	8		41	0	40		125				
			0	0			130				
	4		25	0	30		135				
	3				44		140				Boring terminated at 138.5 feet
							145				
							150				
							155				
							160				

Date Started:	September 20, 2006	Water Level: ▽ 4.4 ft. 09/20/2006 1305 HRS	Plate
Date Completed:	September 21, 2006		
Logged By:	S. Latronic	Drill Rig: MOBILE B-53	A - 1.4
Total Depth:	138.5 feet	Drilling Method: 4" Auger, 4" Casing & HQ Coring	
Work Order:	5669-00	Driving Energy: 140 lb. wt., 30 in. drop	

BORING LOG 5669-00.GPJ GEOLABS.GDT 7/31/13

GEOLABS, INC. — Geotechnical Engineering

INTER-ISLAND CARGO TERMINAL FACILITY
PHASE 3 - CARGO YARD IMPROVEMENTS
HILO HARBOR, ISLAND OF HAWAII

Log of Boring **202**

Approximate Ground Surface Elevation (feet MSL): -1 *

Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
							5				**RAFT DECK**
											WATER
							10				Mudline at 12.2 feet
	38				25/.0' Ref.		15			SM	Tan to gray **SILTY SAND**, loose (harbor deposit)
										ML	Light gray **SANDY SILT**, very soft (lagoonal deposit)
											Gray **GRAVEL AND COBBLES (BASALTIC)**, very dense (littoral deposit)
			67	0			20				Gray vesicular to vugular **BASALT**, severely fractured, unweathered, very hard (a'a basalt)
			50	0							
	7				17		25			SP/ SM	Dark gray to black poorly graded **SILTY SAND**, medium dense (littoral deposit/black sand beach deposit and shallow marine deposit)
							30				
	26				32					SM	Light gray **SILTY SAND** with gravel (coralline), medium dense (shallow marine deposit)
							35				
	27				25		40				

Date Started:	October 12, 2006	Water Level:	Plate
Date Completed:	October 12, 2006		
Logged By:	S. Latronic	Drill Rig: DIEDRICH D-25 ON RAFT	A - 2.1
Total Depth:	121.5 feet	Drilling Method: 4" & 3" Casing & HQ Coring	
Work Order:	5669-00	Driving Energy: 140 lb. wt., 30 in. drop	

BORING LOG 5669-00.GPJ GEOLABS.GDT 7/31/13

GEOLABS, INC. — Geotechnical Engineering

INTER-ISLAND CARGO TERMINAL FACILITY
PHASE 3 - CARGO YARD IMPROVEMENTS
HILO HARBOR, ISLAND OF HAWAII

Log of Boring **202**

(Continued from previous plate)

Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
	32				9		45			SM	grades to loose locally
Sieve - #200 = 18.1%	33				14		50				
	32				13						grades more gravelly locally
	30				13		55				
							60			GM	Light gray **SILTY GRAVEL (CORALLINE)** with sand, loose to medium dense (lagoonal deposit and coralline detritus)
	26				11		65				
	34				10						grades with occasional cobbles (coralline)
LL=38 PI=10	41				8		70			ML	Light gray fine **SANDY SILT** with traces gravel, medium stiff (lagoonal deposit)
	52				9		75				
							80				

Date Started:	October 12, 2006	Water Level:	Plate
Date Completed:	October 12, 2006		
Logged By:	S. Latronic	Drill Rig: DIEDRICH D-25 ON RAFT	A - 2.2
Total Depth:	121.5 feet	Drilling Method: 4" & 3" Casing & HQ Coring	
Work Order:	5669-00	Driving Energy: 140 lb. wt., 30 in. drop	

BORING LOG 5669-00.GPJ GEOLABS.GDT 7/31/13

REVISION	DATE	DESCRIPTION	BY	APPROVED

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HARBORS DIVISION

JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
BORING LOG LOCATION PLAN

CLAYTON S. MINURA
LICENSED PROFESSIONAL ENGINEER
No. 4176-C
HAWAII, U.S.A.

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

Clayton S. Minura
GEOLABS, INC.
LICENSE EXPIRES 4-30-14

SUBMITTED BY: _____ SECTION HEAD

RECOMMENDED BY: _____ ENGINEERING PROGRAM MANAGER

DESIGNED BY:
DRAWN BY:
CHECKED BY:
DATE: AUGUST 2013
SCALE:

APPROVED BY: _____ HARBORS ADMINISTRATOR

JOB NUMBER
HMP 60901

SHEET
C-12
13 OF 82 SHTS

GEOLABS, INC. — Geotechnical Engineering

INTER-ISLAND CARGO TERMINAL FACILITY
PHASE 3 - CARGO YARD IMPROVEMENTS
HILO HARBOR, ISLAND OF HAWAII

Log of Boring **202**

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
	46				11	0.5	85			ML	grades to soft locally
	44				9	0.8	90				
	45				27	1.0	95				
	43				12	0.3					grades to clayey silt
							100			MH/OH	Gray **CLAYEY ORGANIC SILT**, soft (lagoonal deposit)
	49				8					SM	Light gray **SILTY SAND** with abundant shell fragments, medium dense (shallow marine deposit)
	49				27		105				
			100								grades to dense
			50	25			110				grades with gravel (coralline)
											Gray vesicular to vugular **BASALT**, closely fractured, unweathered, very hard (a'a basalt)
			100	93			115				
							120				

Date Started:	October 12, 2006	Water Level:	Plate
Date Completed:	October 12, 2006		
Logged By:	S. Latronic	Drill Rig: DIEDRICH D-25 ON RAFT	A - 2.3
Total Depth:	121.5 feet	Drilling Method: 4" & 3" Casing & HQ Coring	
Work Order:	5669-00	Driving Energy: 140 lb. wt., 30 in. drop	

BORING_LOG_5669-00.GPJ GEOLABS.GDT 7/31/13

GEOLABS, INC. — Geotechnical Engineering

INTER-ISLAND CARGO TERMINAL FACILITY
PHASE 3 - CARGO YARD IMPROVEMENTS
HILO HARBOR, ISLAND OF HAWAII

Log of Boring **202**

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
							125				Boring terminated at 121.5 feet
							130				
							135				
							140				
							145				
							150				
							155				
							160				

Date Started:	October 12, 2006	Water Level:	Plate
Date Completed:	October 12, 2006		
Logged By:	S. Latronic	Drill Rig: DIEDRICH D-25 ON RAFT	A - 2.4
Total Depth:	121.5 feet	Drilling Method: 4" & 3" Casing & HQ Coring	
Work Order:	5669-00	Driving Energy: 140 lb. wt., 30 in. drop	

BORING_LOG_5669-00.GPJ GEOLABS.GDT 7/31/13

GEOLABS, INC. — Geotechnical Engineering

INTER-ISLAND CARGO TERMINAL FACILITY
PHASE 3 - CARGO YARD IMPROVEMENTS
HILO HARBOR, ISLAND OF HAWAII

Log of Boring **203**

Approximate Ground Surface Elevation (feet MSL): -8 *

Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
											VOID
							5				**WATER**
							10				
							15				
							20				
											Mudline at 24.5 feet
							25			ML	Dark gray **SILT** with sand and traces of gravel, very soft (harbor deposit)
	24				4		30				
										SM	Light gray **SILTY SAND** with gravel, loose to medium dense (shallow marine deposit)
Sieve - #200 = 15.8%	37				8		35				
							40				

Date Started:	October 16, 2006	Water Level:	Plate
Date Completed:	October 17, 2006		
Logged By:	S. Latronic	Drill Rig: DIEDRICH D-25 ON RAFT	A - 3.1
Total Depth:	121.5 feet	Drilling Method: 3" Casing & HQ Coring	
Work Order:	5669-00	Driving Energy: 140 lb. wt., 30 in. drop	

BORING_LOG_5669-00.GPJ GEOLABS.GDT 7/31/13

GEOLABS, INC. — Geotechnical Engineering

INTER-ISLAND CARGO TERMINAL FACILITY
PHASE 3 - CARGO YARD IMPROVEMENTS
HILO HARBOR, ISLAND OF HAWAII

Log of Boring **203**

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
	30				13		45			SM	
										GW	grades to sandy gravel
Sieve - #200 = 1.8%	35				10					SM	grades to silty sand
	32				9		50			GM	Light gray **SILTY GRAVEL (CORALLINE)** with sand, loose to medium dense (lagoonal deposit and coralline detritus)
	26				13		55				grades with occasional cobble (coralline)
	23				29		60			SM	Light gray **SILTY SAND** with gravel, medium dense (shallow marine deposit and coralline detritus)
	25				16		65				
	27				15		70				
	27				19		75				
							80				

Date Started:	October 16, 2006	Water Level:	Plate
Date Completed:	October 17, 2006		
Logged By:	S. Latronic	Drill Rig: DIEDRICH D-25 ON RAFT	A - 3.2
Total Depth:	121.5 feet	Drilling Method: 3" Casing & HQ Coring	
Work Order:	5669-00	Driving Energy: 140 lb. wt., 30 in. drop	

BORING_LOG_5669-00.GPJ GEOLABS.GDT 7/31/13

GEOLABS, INC. — Geotechnical Engineering

INTER-ISLAND CARGO TERMINAL FACILITY
PHASE 3 - CARGO YARD IMPROVEMENTS
HILO HARBOR, ISLAND OF HAWAII

Log of Boring **203**

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
Direct Shear	22				84		85			SM	grades to dense locally
	20				26						
	38				16		90			ML	Tan **GRAVELLY SILT** with sand, soft to medium stiff (lagoonal deposit and coralline detritus)
	52				11		95				grades more gravelly
	45				13		100			GM	Tan **SILTY GRAVEL (CORALLINE)** with sand, medium dense (coralline detritus)
Sieve - #200 = 24.3%	54				13		105				
	11		63	0	50/.5' Ref.		110				Gray finely vesicular **BASALT**, severely fractured, unweathered, hard (pahoehoe basalt formation)
			80	0			115				
							120				

Date Started:	October 16, 2006	Water Level:	Plate
Date Completed:	October 17, 2006		
Logged By:	S. Latronic	Drill Rig: DIEDRICH D-25 ON RAFT	A - 3.3
Total Depth:	121.5 feet	Drilling Method: 3" Casing & HQ Coring	
Work Order:	5669-00	Driving Energy: 140 lb. wt., 30 in. drop	

BORING_LOG_5669-00.GPJ GEOLABS.GDT 7/31/13

GEOLABS, INC. — Geotechnical Engineering

INTER-ISLAND CARGO TERMINAL FACILITY
PHASE 3 - CARGO YARD IMPROVEMENTS
HILO HARBOR, ISLAND OF HAWAII

Log of Boring **203**

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
							125				Boring terminated at 121.5 feet
							130				
							135				
							140				
							145				
							150				
							155				
							160				

Date Started:	October 16, 2006	Water Level:	Plate
Date Completed:	October 17, 2006		
Logged By:	S. Latronic	Drill Rig: DIEDRICH D-25 ON RAFT	A - 3.4
Total Depth:	121.5 feet	Drilling Method: 3" Casing & HQ Coring	
Work Order:	5669-00	Driving Energy: 140 lb. wt., 30 in. drop	

BORING_LOG_5669-00.GPJ GEOLABS.GDT 7/31/13

REVISION	DATE	DESCRIPTION	BY	APPROVED

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HARBORS DIVISION

JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
BORING LOG LOCATION PLAN

CLAYTON S. MIMURA — LICENSED PROFESSIONAL ENGINEER No. 4176-C — HAWAII, U.S.A.

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

Clayton S. Mimura
GEOLABS, INC.
LICENSE EXPIRES 4-30-14

SUBMITTED BY: _____ SECTION HEAD

RECOMMENDED BY: _____ ENGINEERING PROGRAM MANAGER

APPROVED BY: _____ HARBORS ADMINISTRATOR

DESIGNED BY:
DRAWN BY:
CHECKED BY:
DATE: AUGUST 2013
SCALE:

JOB NUMBER
HMP 60901

SHEET
C-13
14 OF 82 SHTS

GEOLABS, INC.
Geotechnical Engineering

INTER-ISLAND CARGO TERMINAL FACILITY
PHASE 3 - CARGO YARD IMPROVEMENTS
HILO HARBOR, ISLAND OF HAWAII

Log of Boring 204

Laboratory: Other Tests | Moisture Content (%) | Dry Density (pcf)
Field: Core Recovery (%) | RQD (%) | Penetration Resistance (blows/foot) | Pocket Pen. (tsf) | Depth (feet) | Sample | Graphic | USCS

Approximate Ground Surface Elevation (feet MSL): -29 *

Description

RAFT DECK

WATER

Mudline at 37 feet

ML — Dark gray **SILT**, very soft (harbor deposit)

Date Started:	October 13, 2006	Water Level:	Plate
Date Completed:	October 14, 2006		
Logged By:	S. Latronic	Drill Rig: DIEDRICH D-25 ON RAFT	A - 4.1
Total Depth:	120 feet	Drilling Method: 3" Casing & HQ Coring	
Work Order:	5669-00	Driving Energy: 140 lb. wt., 30 in. drop	

BORING_LOG_5669-00.GPJ GEOLABS.GDT 7/31/13

GEOLABS, INC.
Geotechnical Engineering

INTER-ISLAND CARGO TERMINAL FACILITY
PHASE 3 - CARGO YARD IMPROVEMENTS
HILO HARBOR, ISLAND OF HAWAII

Log of Boring 204

Laboratory: Other Tests | Moisture Content (%) | Dry Density (pcf)
Field: Core Recovery (%) | RQD (%) | Penetration Resistance (blows/foot) | Pocket Pen. (tsf) | Depth (feet) | Sample | Graphic | USCS

(Continued from previous plate)

Description

Other Tests	Moisture Content (%)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	USCS	Description
	39			8	SM	Tan **SILTY SAND** with gravel (coralline), medium dense (shallow marine deposit and coralline detritus)
						grades with more gravel
Sieve - #200 = 12.2%	24			15	GM	Tan **SILTY GRAVEL (CORALLINE)** with sand, medium dense (coralline detritus)
	26			15		
	28			18	SM/ GM	Grayish tan **SILTY SAND AND GRAVEL**, medium dense (coralline detritus)
	26			12		
	36			17		
	45			13		grades with more sand

Date Started:	October 13, 2006	Water Level:	Plate
Date Completed:	October 14, 2006		
Logged By:	S. Latronic	Drill Rig: DIEDRICH D-25 ON RAFT	A - 4.2
Total Depth:	120 feet	Drilling Method: 3" Casing & HQ Coring	
Work Order:	5669-00	Driving Energy: 140 lb. wt., 30 in. drop	

BORING_LOG_5669-00.GPJ GEOLABS.GDT 7/31/13

GEOLABS, INC.
Geotechnical Engineering

INTER-ISLAND CARGO TERMINAL FACILITY
PHASE 3 - CARGO YARD IMPROVEMENTS
HILO HARBOR, ISLAND OF HAWAII

Log of Boring 204

Laboratory: Other Tests | Moisture Content (%) | Dry Density (pcf)
Field: Core Recovery (%) | RQD (%) | Penetration Resistance (blows/foot) | Pocket Pen. (tsf) | Depth (feet) | Sample | Graphic | USCS

(Continued from previous plate)

Description

Other Tests	Moisture Content (%)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	USCS	Description
	41			12	SM	Grayish tan **SILTY SAND** with some gravel (coralline), medium dense (coralline detritus)
	35			14		
	43			6	ML	Gray **GRAVELLY SILT**, soft to medium stiff (lagoonal deposit and coralline detritus)
LL=51 PI=26	45			10	CH	Gray **CLAY** with sand, soft to medium stiff (lagoonal deposit)
	45			13	SM	Tan **SILTY SAND** with gravel (coralline), medium dense (coralline detritus)
	45			11		
		74	12			Gray vugular **BASALT**, closely fractured, unweathered to slightly weathered, very hard (a'a basalt)
		71	8			
		30	0			Gray **GRAVEL (BASALTIC)**, medium dense to dense (clinker)

Date Started:	October 13, 2006	Water Level:	Plate
Date Completed:	October 14, 2006		
Logged By:	S. Latronic	Drill Rig: DIEDRICH D-25 ON RAFT	A - 4.3
Total Depth:	120 feet	Drilling Method: 3" Casing & HQ Coring	
Work Order:	5669-00	Driving Energy: 140 lb. wt., 30 in. drop	

BORING_LOG_5669-00.GPJ GEOLABS.GDT 7/31/13

GEOLABS, INC.
Geotechnical Engineering

INTER-ISLAND CARGO TERMINAL FACILITY
PHASE 3 - CARGO YARD IMPROVEMENTS
HILO HARBOR, ISLAND OF HAWAII

Log of Boring 204

Laboratory: Other Tests | Moisture Content (%) | Dry Density (pcf)
Field: Core Recovery (%) | RQD (%) | Penetration Resistance (blows/foot) | Pocket Pen. (tsf) | Depth (feet) | Sample | Graphic | USCS

(Continued from previous plate)

Description

Boring terminated at 120 feet

Date Started:	October 13, 2006	Water Level:	Plate
Date Completed:	October 14, 2006		
Logged By:	S. Latronic	Drill Rig: DIEDRICH D-25 ON RAFT	A - 4.4
Total Depth:	120 feet	Drilling Method: 3" Casing & HQ Coring	
Work Order:	5669-00	Driving Energy: 140 lb. wt., 30 in. drop	

BORING_LOG_5669-00.GPJ GEOLABS.GDT 7/31/13

GEOLABS, INC.
Geotechnical Engineering

INTER-ISLAND CARGO TERMINAL FACILITY
PHASE 3 - CARGO YARD IMPROVEMENTS
HILO HARBOR, ISLAND OF HAWAII

Log of Boring 205

Laboratory: Other Tests | Moisture Content (%) | Dry Density (pcf)
Field: Core Recovery (%) | RQD (%) | Penetration Resistance (blows/foot) | Pocket Pen. (tsf) | Depth (feet) | Sample | Graphic | USCS

Approximate Ground Surface Elevation (feet MSL): 0 *

Description

VOID

WATER

Mudline at 11.5 feet

	27			8	SM	Tan to gray **SILTY SAND** with traces of gravel, loose (harbor deposit)
		22	0			Gray **COBBLES, GRAVEL, AND SAND (BASALTIC)**, dense (littoral deposit and pillow lava)
	4			12	SM	Tan **SILTY SAND** with gravel (coralline and basaltic), medium dense (coralline detritus)
	18			10		
	21			30	SM	Light gray **SILTY SAND** with gravel (coralline), medium dense (lagoonal deposit and coralline detritus)
	26			33		

Date Started:	October 10, 2006	Water Level:	Plate
Date Completed:	October 11, 2006		
Logged By:	S. Latronic	Drill Rig: DIEDRICH D-25 ON RAFT	A - 5.1
Total Depth:	118.5 feet	Drilling Method: 4" & 3" Casing & HQ Coring	
Work Order:	5669-00	Driving Energy: 140 lb. wt., 30 in. drop	

BORING_LOG_5669-00.GPJ GEOLABS.GDT 7/31/13

GEOLABS, INC.
Geotechnical Engineering

INTER-ISLAND CARGO TERMINAL FACILITY
PHASE 3 - CARGO YARD IMPROVEMENTS
HILO HARBOR, ISLAND OF HAWAII

Log of Boring 205

Laboratory: Other Tests | Moisture Content (%) | Dry Density (pcf)
Field: Core Recovery (%) | RQD (%) | Penetration Resistance (blows/foot) | Pocket Pen. (tsf) | Depth (feet) | Sample | Graphic | USCS

(Continued from previous plate)

Description

Other Tests	Moisture Content (%)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	USCS	Description
	31			17	SM	
Sieve - #200 = 14.0%	27			10		grades more gravelly locally
	32			15		
	27			14		
Sieve - #200 = 23.3%	34			11	SM	Light gray **SILTY FINE SAND**, medium dense
	35			12		grades finer and loose locally
	41			4		
	37			21	ML	

Date Started:	October 10, 2006	Water Level:	Plate
Date Completed:	October 11, 2006		
Logged By:	S. Latronic	Drill Rig: DIEDRICH D-25 ON RAFT	A - 5.2
Total Depth:	118.5 feet	Drilling Method: 4" & 3" Casing & HQ Coring	
Work Order:	5669-00	Driving Energy: 140 lb. wt., 30 in. drop	

BORING_LOG_5669-00.GPJ GEOLABS.GDT 7/31/13

REVISION	DATE	DESCRIPTION	BY	APPROVED

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HARBORS DIVISION

JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
BORING LOG LOCATION PLAN

CLAYTON S. MINURA
LICENSED PROFESSIONAL ENGINEER
No. 4176-C
HAWAII, U.S.A.

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

Clayton S. Minura
GEOLABS, INC.
LICENSE EXPIRES 4-30-14

SUBMITTED BY: _____ SECTION HEAD
RECOMMENDED BY: _____ ENGINEERING PROGRAM MANAGER
APPROVED BY: _____ HARBORS ADMINISTRATOR

DESIGNED BY:
DRAWN BY:
CHECKED BY:
DATE: AUGUST 2013
SCALE:

JOB NUMBER
HMP 60901

SHEET
C-14
15 OF 82 SHTS

GEOLABS, INC.
Geotechnical Engineering

INTER-ISLAND CARGO TERMINAL FACILITY
PHASE 3 - CARGO YARD IMPROVEMENTS
HILO HARBOR, ISLAND OF HAWAII

Log of Boring **205**

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
	47				24	1.0				ML	Light gray fine **SANDY SILT**, medium stiff to stiff (lagoonal deposit)
	47				33	1.0	85				
											grades to soft locally
	46				5	0.3	90			MH	Light gray **CLAYEY SILT**, soft
LL=52 PI=22	55				12	0.8	95			SM	Light gray **SILTY SAND** with abundant shell fragments, loose (shallow marine deposit)
	47				5		100				
Sieve - #200 = 47.6%	54				9		105				Gray **GRAVEL AND SAND (BASALTIC)** with some gravel (coralline), dense (littoral deposit and clinker)
	20		34	8	50/.1' Ref.		110				
			100	0			115				Gray vugular **BASALT**, severely fractured, unweathered, very hard
							120				Boring terminated at 118.5 feet

Date Started:	October 10, 2006	Water Level:	Plate
Date Completed:	October 11, 2006		
Logged By:	S. Latronic	Drill Rig: DIEDRICH D-25 ON RAFT	A - 5.3
Total Depth:	118.5 feet	Drilling Method: 4" & 3" Casing & HQ Coring	
Work Order:	5669-00	Driving Energy: 140 lb. wt., 30 in. drop	

BORING_LOG_5669-00.GPJ GEOLABS.GDT 7/31/13

GEOLABS, INC.
Geotechnical Engineering

INTER-ISLAND CARGO TERMINAL FACILITY
PHASE 3 - CARGO YARD IMPROVEMENTS
HILO HARBOR, ISLAND OF HAWAII

Log of Boring **206**

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): -4 * Description
											RAFT DECK
							5				**WATER**
											Mudline at 9.5 feet
	25				6		10			SM	Light tannish gray **SILTY POORLY GRADED FINE SAND** with traces of gravel, loose (harbor deposit)
					3						grades to medium dense
			37	0			15			ML	Gray **SILT**, very soft (lagoonal deposit)
											Gray **BOULDERS AND COBBLES (BASALTIC)**, very dense
Sieve - #200 = 4.2%	13				36		20			SW	Black well-graded **SAND** with some gravel (basaltic and coralline), dense (black sand beach deposit/littoral deposit)
			0				25				
	13				39					SP/ SM	Light grayish white **SILTY POORLY GRADED SAND**, dense (shallow marine deposit)
	38				12		30			SM	Light gray **SILTY SAND** with gravel, medium dense (shallow marine deposit/lagoonal deposit)
							35				grades more gravelly
	32				11					SM	Light gray **SILTY SAND (CORALLINE)** with gravel, medium dense (lagoonal deposit and coralline detritus)
							40				

Date Started:	October 3, 2006	Water Level:	Plate
Date Completed:	October 4, 2006		
Logged By:	S. Latronic	Drill Rig: DIEDRICH D-25 ON RAFT	A - 6.1
Total Depth:	118 feet	Drilling Method: 4" & 3" Casing & HQ Coring	
Work Order:	5669-00	Driving Energy: 140 lb. wt., 30 in. drop	

BORING_LOG_5669-00.GPJ GEOLABS.GDT 7/31/13

GEOLABS, INC.
Geotechnical Engineering

INTER-ISLAND CARGO TERMINAL FACILITY
PHASE 3 - CARGO YARD IMPROVEMENTS
HILO HARBOR, ISLAND OF HAWAII

Log of Boring **206**

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
Sieve - #200 = 18.9%	35				11					SM	
							45				grades to loose
	38				7					SM	Light gray **SILTY SAND** with traces of gravel, loose (lagoonal deposit and shallow marine deposit)
Sieve - #200 = 25.6%	43				7		50				
							55				grades finer
	44				4					ML	Light gray **SANDY SILT** with shell fragments, soft to medium stiff (lagoonal deposit)
	48				9		60				
	19				17						
			24	0			65				
Sieve - #200 = 44.3%	45				2					SM	grades to silty sand, very soft locally
	16				13		70				
			25	0							
	41				6		75				grades more sandy
	25				16						
			0	0							
	47				8					SM	Light gray **SILTY SAND** with shell fragments, loose (lagoonal deposit/shallow marine deposit)
	11				3/.5' +50/.5' Ref.		80				

Date Started:	October 3, 2006	Water Level:	Plate
Date Completed:	October 4, 2006		
Logged By:	S. Latronic	Drill Rig: DIEDRICH D-25 ON RAFT	A - 6.2
Total Depth:	118 feet	Drilling Method: 4" & 3" Casing & HQ Coring	
Work Order:	5669-00	Driving Energy: 140 lb. wt., 30 in. drop	

BORING_LOG_5669-00.GPJ GEOLABS.GDT 7/31/13

GEOLABS, INC.
Geotechnical Engineering

INTER-ISLAND CARGO TERMINAL FACILITY
PHASE 3 - CARGO YARD IMPROVEMENTS
HILO HARBOR, ISLAND OF HAWAII

Log of Boring **206**

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
	49				8					SM	
							85				grades to medium dense
	50				10					ML	Gray **SILT**, medium stiff (lagoonal deposit)
	43				22		90			GM	Gray **SILTY GRAVEL (CORALLINE)**, medium dense (lagoonal deposit and coralline detritus)
	54				16		95				
										ML	Gray **SILT** with some sand and gravel, soft (lagoonal deposit)
	19				17		100				Gray **GRAVEL (BASALTIC)** with sand, medium dense (littoral deposit and clinker)
			24	0							
	16				13		105				
			25	0							
Sieve - #200 = 1.8%	25				16		110				
			0	0							
	11				3/.5' +50/.5' Ref.		115				
							120				Boring terminated at 118 feet

Date Started:	October 3, 2006	Water Level:	Plate
Date Completed:	October 4, 2006		
Logged By:	S. Latronic	Drill Rig: DIEDRICH D-25 ON RAFT	A - 6.3
Total Depth:	118 feet	Drilling Method: 4" & 3" Casing & HQ Coring	
Work Order:	5669-00	Driving Energy: 140 lb. wt., 30 in. drop	

BORING_LOG_5669-00.GPJ GEOLABS.GDT 7/31/13

GEOLABS, INC.
Geotechnical Engineering

INTER-ISLAND CARGO TERMINAL FACILITY
PHASE 3 - CARGO YARD IMPROVEMENTS
HILO HARBOR, ISLAND OF HAWAII

Log of Boring **207**

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): -1 * Description
											RAFT DECK
							5				**WATER**
											Mudline at 7 feet
					15					SP/ SM	Tannish gray **SILTY FINE POORLY GRADED SAND** with traces of gravel, loose to medium dense (shallow marine deposit)
							10				
										ML	Gray **SILT**, soft (lagoonal deposit)
	28		40	0	70/.3' Ref.		15				Gray **COBBLES AND GRAVEL (BASALTIC)** with sand, dense (littoral deposit)
			50	0	25/.0' Ref.						grades with gravel (coralline)
	4		0		50/.1' Ref.		20			SP	Tan poorly graded fine **SAND** with traces of gravel (basaltic), medium dense (shallow marine deposit)
	33				30		25				
											grades to loose
Sieve - #200 = 3.5%	31				7		30			GW	Tan to gray **GRAVEL** with traces of sand, loose (shallow marine deposit/lagoonal deposit)
	36				20		35				
							40				

Date Started:	October 5, 2006	Water Level:	Plate
Date Completed:	October 6, 2006		
Logged By:	S. Latronic	Drill Rig: DIEDRICH D-25 ON RAFT	A - 7.1
Total Depth:	115 feet	Drilling Method: 4" & 3" Casing & HQ Coring	
Work Order:	5669-00	Driving Energy: 140 lb. wt., 30 in. drop	

BORING_LOG_5669-00.GPJ GEOLABS.GDT 7/31/13

GEOLABS, INC.
Geotechnical Engineering

INTER-ISLAND CARGO TERMINAL FACILITY
PHASE 3 - CARGO YARD IMPROVEMENTS
HILO HARBOR, ISLAND OF HAWAII

Log of Boring **207**

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
										GW	
Sieve - #200 = 13.5%	32				8					SM	Tan to gray **SILTY SAND** with traces of gravel, loose (shallow marine deposit deposit and lagoonal deposit)
	22				12		45				
										GM	Light gray **SILTY GRAVEL (CORALLINE)**, loose to medium dense (lagoonal deposit and coralline detritus)
	23				9		50				
	22				13		55				
	23				2		60			ML	Light gray **SANDY SILT** with gravel (coralline), soft (lagoonal deposit and coralline detritus)
	30				11		65			GM	Light gray **SILTY GRAVEL (CORALLINE)** with some cobbles (coralline), medium dense (coralline detritus)
Sieve - #200 = 16.6%	38				7		70			SM	Tan to gray **SILTY SAND** with gravel (coralline), loose (shallow marine deposit)
	45				8		75				
							80				

Date Started:	October 5, 2006	Water Level:	Plate
Date Completed:	October 6, 2006		
Logged By:	S. Latronic	Drill Rig: DIEDRICH D-25 ON RAFT	A - 7.2
Total Depth:	115 feet	Drilling Method: 4" & 3" Casing & HQ Coring	
Work Order:	5669-00	Driving Energy: 140 lb. wt., 30 in. drop	

BORING_LOG_5669-00.GPJ GEOLABS.GDT 7/31/13

REVISION	DATE	DESCRIPTION	BY	APPROVED

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HARBORS DIVISION

JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
BORING LOG LOCATION PLAN

CLAYTON S. MIMURA
LICENSED PROFESSIONAL ENGINEER
No. 4176-C
HAWAII, U.S.A.

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

Clayton S. Mimura
GEOLABS, INC.
LICENSE EXPIRES 4-30-14

SUBMITTED BY: _____ SECTION HEAD

RECOMMENDED BY: _____ ENGINEERING PROGRAM MANAGER

DESIGNED BY:
DRAWN BY:
CHECKED BY:
DATE: AUGUST 2013
SCALE:

APPROVED BY: _____ HARBORS ADMINISTRATOR

JOB NUMBER
HMP 60901

SHEET
C-15
16 OF 82 SHTS

GEOLABS, INC.

Geotechnical Engineering

INTER-ISLAND CARGO TERMINAL FACILITY
PHASE 3 - CARGO YARD IMPROVEMENTS
HILO HARBOR, ISLAND OF HAWAII

Log of Boring 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
	46				19					SM	grades to medium dense
	43				15					GM	Tan **SILTY GRAVEL (CORALLINE)** with sand, medium dense (coralline detritus)
	51				13						
Sieve - #200 = 1.8%	15				33						Gray **GRAVEL AND SAND (BASALTIC)**, medium dense to dense (littoral deposit and clinker)
	8		31	8	12/.5' +20/.0' Ref.						grades with cobbles (basaltic)
			0	0	25/.0' Ref.						
	4		67	31	70/.5' Ref.						Gray vugular **BASALT**, closely fractured, unweathered, very hard (a'a basalt)
											Boring terminated at 115 feet

Date Started:	October 5, 2006	Water Level:	Plate
Date Completed:	October 6, 2006		
Logged By:	S. Latronic	Drill Rig: DIEDRICH D-25 ON RAFT	A - 7.3
Total Depth:	115 feet	Drilling Method: 4" & 3" Casing & HQ Coring	
Work Order:	5669-00	Driving Energy: 140 lb. wt., 30 in. drop	

BORING_LOG_5669-00.GPJ GEOLABS.GDT 7/31/13

GEOLABS, INC.

Geotechnical Engineering

INTER-ISLAND CARGO TERMINAL FACILITY
PHASE 3 - CARGO YARD IMPROVEMENTS
HILO HARBOR, ISLAND OF HAWAII

Log of Boring 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): 6 * Description
											4-inch **CONCRETE**
			17	0						SP	Gray **COBBLES AND GRAVEL (BASALTIC)**, dense, moist (fill)
	6		92	27	50/.3' Ref.						Grayish tan poorly graded **SAND** with gravel (basaltic), medium dense, moist to wet (beach deposit)
			78	43							grades with gravel (coralline)
			90	13							Gray vugular **BASALT**, closely fractured, unweathered to slightly weathered, hard (a'a basalt)
			20	0							grades with clinker, medium dense locally
	29				13					SM	Tannish to grayish white **SILTY SAND** with gravel (coralline), loose to medium dense (coralline detritus)
											Boring terminated at 28.5 feet

Date Started:	September 25, 2006	Water Level: ▽ 4.3 ft. 09/25/2006 0930 HRS	Plate
Date Completed:	September 25, 2006		
Logged By:	S. Latronic	Drill Rig: MOBILE B-53	A - 8
Total Depth:	28.5 feet	Drilling Method: 4" Auger & HQ Coring	
Work Order:	5669-00	Driving Energy: 140 lb. wt., 30 in. drop	

BORING_LOG_5669-00.GPJ GEOLABS.GDT 7/31/13

GEOLABS, INC.

Geotechnical Engineering

INTER-ISLAND CARGO TERMINAL FACILITY
PHASE 3 - CARGO YARD IMPROVEMENTS
HILO HARBOR, ISLAND OF HAWAII

Log of Boring 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): 6 * Description
										SM	Brownish gray **SILTY SAND** with gravel, loose, moist (fill)
			67	0							Gray **COBBLES AND GRAVEL (BASALTIC)** with sand, dense, moist (fill)
			12	0							Gray **GRAVEL AND COBBLES (BASALTIC)**, medium dense, moist to wet (clinker)
	6		64	19	7/.5' +50/.1" Ref.						
			20	0							Gray vesicular **BASALT**, closely fractured, unweathered, hard (a'a basalt)
											Gray **GRAVEL AND COBBLES (BASALTIC)**, dense (clinker)
	9		71	7	50/.3' Ref.						Gray vesicular **BASALT**, severely fractured, unweathered, hard (a'a basalt)
											Boring terminated at 26.5 feet

Date Started:	September 25, 2006	Water Level: ▽ 6.3 ft. 09/25/2006 1145 HRS	Plate
Date Completed:	September 25, 2006		
Logged By:	S. Latronic	Drill Rig: MOBILE B-53	A - 9
Total Depth:	26.5 feet	Drilling Method: 4" Auger & HQ Coring	
Work Order:	5669-00	Driving Energy: 140 lb. wt., 30 in. drop	

BORING_LOG_5669-00.GPJ GEOLABS.GDT 7/31/13

GEOLABS, INC.

Geotechnical Engineering

INTER-ISLAND CARGO TERMINAL FACILITY
PHASE 3 - CARGO YARD IMPROVEMENTS
HILO HARBOR, ISLAND OF HAWAII

Log of Boring 210

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 : N/A Description
										GW-SP-SM	4-inch **ASPHALTIC CONCRETE** 3-inch **BASE COURSE** Tannish to grayish white **GRAVELLY SAND** with silt, medium dense, moist (fill)
	9				23						
Sieve - #200 = 9.6%	21				10						grades to loose
										SM	Tannish to grayish white **SILTY SAND** with gravel, loose, wet (fill)
	32				6						
	45				3					ML	Light gray **SANDY SILT** with traces of gravel, very soft (lagoonal deposit)
	55		52	9	20/.0' Ref.						Gray vugular **BASALT**, severely fractured, unweathered, hard
	10				20/.0' Ref.						grades with clinker, medium dense
											Boring terminated at 27 feet

Date Started:	September 26, 2006	Water Level: ▽ 7.7 ft. 09/26/2006 0000 HRS	Plate
Date Completed:	September 26, 2006		
Logged By:	S. Latronic	Drill Rig: MOBILE B-53	A - 10
Total Depth:	27 feet	Drilling Method: 4" & 3" Casing & HQ Coring	
Work Order:	5669-00	Driving Energy: 140 lb. wt., 30 in. drop	

BORING_LOG_5669-00.GPJ GEOLABS.GDT 7/31/13

REVISION	DATE	DESCRIPTION	BY	APPROVED

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HARBORS DIVISION

CLAYTON S. MINURA
LICENSED PROFESSIONAL ENGINEER
No. 4176-C
HAWAII, U.S.A.

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

Clayton S. Minura
GEOLABS, INC.
LICENSE EXPIRES 4-30-14

JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
BORING LOG LOCATION PLAN

SUBMITTED BY: _____ SECTION HEAD

RECOMMENDED BY: _____ ENGINEERING PROGRAM MANAGER

DESIGNED BY:
DRAWN BY:
CHECKED BY:
DATE: AUGUST 2013
SCALE:

APPROVED BY: _____ HARBORS ADMINISTRATOR

JOB NUMBER
HMP 60901

SHEET
C-16
17 OF 82 SHTS

G E N E R A L N O T E S

A. G E N E R A L N O T E S

1. THE CONTRACTOR SHALL VERIFY LOCATIONS AND DIMENSIONS OF EXISTING STRUCTURES SHOWN ON ALL DRAWINGS PRIOR TO COMMENCING CONSTRUCTION WORK.

2. ALL PRECAST PILES ARE DESIGNED FOR AN ALLOWABLE PILE BEARING LOAD OF 120 TONS, AND AN ULTIMATE BEARING LOAD OF 240 TONS. SEE SPECIFICATION ARTICLE XXIV FOR ALL PILE DRIVING REQUIREMENTS. ALL PILING ADJACENT TO UTILITY PIPING OR SLEEVES SHALL BE DRIVEN TO ACCURATE LOCATIONS DUE TO LIMITED TOLERANCE OF PIPING OR SLEEVES.

3. ALL CONCRETE SHALL HAVE A 28 DAY COMPRESSIVE STRENGTH AS FOLLOWS:
(USE TYPE II CEMENT FOR ALL CONCRETE)
   A. PILE CAP, BEAMS, SLAB AND TOPPING . . . . . 4,000 PSI
   B. PRECAST PRESTRESSED PLANKS . . . . . 6,000 PSI
      f'c = 4,500 PSI AT TRANSFER
   C. PRECAST PRESTRESSED PILES . . . . . 7,000 PSI
   D GROUT
   NONMETALLIC, SHRINKAGE-RESISTANT GROUT: PREMIXED, NONMETALLIC, NONCORROSIVE, NONSTAINING GROUT CONTAINING SELECTED SILICA SAND, PORTLAND CEMENT, SHRINKAGE COMPENSATING AGENTS, PLASTICIZING AND WATER-REDUCING AGENTS, COMPLYING WITH ASTM C1107, OF CONSISTENCY SUITABLE FOR APPLICATION, AND A 30-MINUTE WORKING TIME.

4. ALL REINFORCING STEEL SHALL CONFORM TO THE "SPECIFICATION FOR DEFORMED BILLET-STEEL BARS FOR CONCRETE REINFORCEMENT" ASTM A615 GRADE 60.
   ALL REINFORCING IN THE CAST-IN-PLACE PIER AND BULKHEAD CONCRETE SHALL BE EPOXY COATED BARS CONFORMING TO ASTM A934.
   ALL REINFORCING OTHER THAN IN THE CAST-IN-PLACE PIER AND BULKHEAD SHALL BE NON-EPOXY COATED REBARS.
   EPOXY COATED REINFORCING BARS SHALL BE CUT AND FABRICATED BEFORE EPOXY COATING. EPOXY COATED BARS SHALL BE STORED AND HANDLED IN ACCOEDANCE WITH ASTM A775. ALL FIELD CUT ENDS AND DAMAGED EPOXY COATING SHALL BE REPAIRED WITH PATCHING MATERIAL CONFORMING TO ASTM A775 AND MANUFACTURER'S RECOMMENDATION.

5. ALL REBARS MARKED CONTINUOUS (CONT.) SHALL BE LAPPED 48 BAR DIAMETERS FOR ORDINARY REBARS (58 BAR DIAMETERS FOR EPOXY COATED REBARS), AT ALL SPLICES, CORNERS, AND INTERSECTIONS. SPLICE TOP BARS AT MIDSPAN AND BOTTOM BARS AT ℄ SUPPORTS. SPLICES IN DECK SLAB REBARS SHALL BE STAGGERED AT LEAST 48 BAR DIAMETER BETWEEN ADJACENT REBARS.

6. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A82 AND A185.

7. UNLESS OTHERWISE SHOWN ON THE DRAWINGS, CONSTRUCTION JOINTS SHALL BE LOCATED NEAR THE MIDDLE OF SLABS OR BEAMS. ALL CONSTRUCTION JOINTS SHALL BE KEYED.

8. UNLESS OTHERWISE INDICATED, CONCRETE COVER OVER REINFORCING BARS SHALL BE AS FOLLOWS:
   SOFFITS AND SIDES OF BEAMS AND PILE CAPS . . . . . 3"
   SOFFITS OF CAST-IN-PLACE SLABS . . . . . 3"
   TOP SURFACE OF PILE CAPS AND BEAMS . . . . . 3"
   TOP SURFACE OF CAST-IN-PLACE SLABS . . . . . 2"
   CLEAR DISTANCE TO PRECAST PILES . . . . . 4" MIN.

9. DESIGN LOADINGS
   A. TYPICAL DECK AREAS
      1) UNIFORM LIVE LOAD . . . . . 1,000 PSF
      2) HYSTER H1150HD CH-LIFT AXLE LOAD . . . . 303 ^{K} (INCLUDES 30% IMPACT) (LOAD CAPACITY OF 40 T)
   B. EARTHQUAKE: MCE: Ss =1.5g S1 = 0.6g
   C. WIND VELOCITY = 105 MPH
   D. MAXIMUM MOORING BITT CAPACITY = 100 TON

10. EXCEPT AS OTHERWISE NOTED, PROVIDE 1" CHAMFER AT ALL CORNERS OF C.I.P. BEAMS AND SLABS.

B. SPECIAL CONTRUCTION NOTES

1. RESPONSIBILITY OF BIDDERS TO STUDY SITE:
   AT THE TIME OF OPENING OF BIDS, EACH BIDDER WILL BE PRESUMED TO HAVE CONDUCTED A DETAILED INSPECTION OF THE PROJECT TO HAVE READ AND TO BE FAMILIAR WITH THE PLANS, SPECIFICATIONS AND OTHER CONTRACT DOCUMENTS, INCLUDING ALL ADDENDA AND AS-BUILT DRAWINGS WHICH ARE AVAILABLE AT HARBORS DIVISION, ENGINEERING BRANCH FOR REVIEW. THE FAILURE OR OMISSION OF ANY BIDDER TO THOROUGHLY INSPECT THE SITE OR TO RECEIVE OR EXAMINE ANY FORM, INSTRUMENT OR DOCUMENT SHALL IN NO WAY RELIEVE HIM FROM ANY OBLIGATION REGARDING HIS BID.

   THE BIDDER ACKNOWLEDGES THAT HE HAS INVESTIGATED AND SATISFIED HIMSELF AS TO THE CONDITIONS AFFECTING THE PROJECT SITE. THESE CONDITIONS INCLUDE, BUT ARE NOT LIMITED TO, THOSE BEARING ON TRANSPORTATION, ACCESS, ROADS, UNCERTAINTIES OF WEA-THER, TIDES, UNDERWATER TOPOGRAPHY, SIMILAR PHYSICAL CONDITIONS, CONCRETE PILE BARRIERS PLACED ON THE GROUND AND OTHER OBSTACLES AT THE SITE. THE BIDDER FUR-THER ACKNOWLEDGES THAT HE HAS SATISFIED HIMSELF AS TO THE CHARACTER, QUALITY AND QUANTITY OF SURFACE AND SUB-SURFACE MATERIALS OR OBSTACLES TO BE ENCOUNTERED INSOFAR AS IS REASONABLY ASCERTAINED FROM AN INSPECTION OF THE SITE AND INFOR-MATION PRESENTED IN THE PLANS, SPECIFICATIONS AND OTHER CONTRACT DOCUMENTS, INCLUDING ALL ADDENDA.

   FAILURE OF THE BIDDER TO ACQUAINT HIMSELF WITH THE AVAILABLE INFORMATION WILL NOT RELIEVE HIM FROM RESPONSIBILITY FOR ESTIMATING THE DIFFICULTY OR COST OF SUCCESS-FULLY PERFORMING THE WORK, NOR WILL THE BIDDER BE RELIEVED OF HIS OBLIGATIONS TO FURNISH ALL MATERIALS AND LABOR, EQUIPMENT AND INCIDENTALS NECESSARY TO PERFORM THE WORK AS SET FORTH IN HIS BID AND TO PERFORM THE CONTRACT, IF AWARDED TO HIM.

2. IF THE CONTRACTOR DAMAGES ANY EXISTING PIPE LINES (ABOVE AND UNDERGROUND), AND STRUCTURES INCLUDING CONCRETE PAVING.
   HE SHALL BE RESPONSIBLE TO REMEDY THE DAMAGES TO THE SATISFACTION OF THE STATE.

C. MANTA RAY ANCHOR SYSTEM NOTES

1. MANTA RAY EARTH ANCHOR SYSTEM SHALL BE MANUFACTURED BY "FORESIGHT PRODUCT, INC", 6430 EAST 49TH DRIVE COMMERCE CITY, COLORADO 80022 USA, TEL: (800)-325-5360/(303)286-8955. FAX: (303)287-3866.

2. EARTH ANCHOR SPECIFICATION
   (1) ANCHOR TYPE: MR88-RA4 ASSEMBLY
   (2) ANCHOR PARTS: 6 FT STEEL THREADED ANCHOR ROD, SPREADER PLATE AND NUT.
   (3) ALL COMPONENTS ZINC COATED.

3. ANCHOR INSTALLATION
   (1) ACB CONCRETE BLOCK SIZE IS 15.5"x15.5"x8.5" DEEP AND BLOCKS ARE TOUCHING EACH OTHER WITHOUT ANY SPACE IN BETWEEN. ABC MAT IS CONSISTED WITH 6 BLOCKS IN SHORT DIRECTION AND 12 BLOCKS IN LONG DIRECTION. JOINT SPACE OF ACB MAT IS 2" WIDE. REF TO ACB MAT DETAILS ON CIVIL DRAWING SHEET C-9 AND STRUCTURAL DRAWING S3.01A.
   (2) CONTRACTOR SHALL PROVIDE RECTANGULAR HOLES AT THE INTER SECTION OF ACB BLOCKS TO INSTALL MANTA RAY ANCHORS AS REQUIRED. CORING OR CHIPPING METHODS SHALL BE EMPLOYED TO MAKE THE HOLES TO MINIMIZE THE DAMAGED TO THE ACB BLOCKS.
   (3) AFTER INSTALLATION OF MANTA RAY ANCHORS, DAMAGED ABC BLOCKS SHALL BE REPAIRED BY GROUTING METHOD. AFTER GROUT IS FULLY CURED, SPRADER AND ANCHOR PLATE INSTALLATION AND NUT TIGHTENING OPERATION TO FOLLOW.
   (4) SPRADER PLATE SIZE SHALL BE AT LEAST FOUR TIMES BIGGER THAN DAMAGED CONCRETE FUEFACE AREA AND THICKNESS SHALL BE AT LEAST 3/4" THICK.

5. ANCHOR INSTALLATION DAILY REPORT.
   THE CONTRACTOR SHALL SUBMIT DOCUMENTS TO THE STATE AS FOLLOWS:
   (1) CONSTRUCTION SCHEDULE
   (2) DAILY REPORT OF ANCHOR INSTALLATION WORK.
   (3) SUBMIT FINAL REPORT AFTER COMPLETION OF ANCHOR INSTALLATION WORK

6. UNDER WATER INSPECTION BY THE CONTRACTOR
   (1) THE CONTRACTOR SHALL RETAIN THE STRUCTURAL ENGINEER/DIVER TO INSPECT THE INSTALLATION OF THE MANTA RAY ANCHORS WITH SOIL ENGINEERS HELP.
   (2) THE CONTRACTOR SHALL PAY TO THE STRUCTURAL ENGINEER/DIVER AND SOIL ENGINEER FOR THEIR EFFORTS FOR UNDER WATER INSPECTION.

D. FUEL, OIL AND GAS PIPE LINES

(1) CHEVRON, ALOHA AND OTHER CONSORTIUMS SHALL BE RESPONSIBLE FOR FURNISHINGAND INSTALLATION OF PIPE LINES INCLUDING ANCHOR INSERTS EMBEDDED IN THE CONCRETE, HANGING BARS AND SEISMIC BRACINGS AS SHOWN ON THE STRUCTURAL SHEETS, S2.04 AND S.05.

(2) CHEVRON, ALOHA AND OTHER CONSORTIUMS SHALL NEGOTIATE WITH THE CONTRACTOR FOR FURNISHING AND INSTALLATION OF INSERTS TO BE EMBEDDED INTO PRESTRESSED PRECAST CONCRETE PLANKS AND LET THE CONTRACTOR DO THE WORK.

(3) CHEVRON, ALOHA AND OTHER CONSORTIUMS SHALL HAVE THE OPTION TO NEGOTIATE AND SUBOUT TO THE CONTRACTOR FOR FURNISHING AND INSTALLATION OF ALL THE PIPES INSERTS TO BE EMBEDDED INTO PRESTRESSED PRECAST CONCRETE PLANKS AND LET THE CONTRACTOR DO THE WORK.

REVISION	DATE	DESCRIPTION	BY	APPROVED

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HARBORS DIVISION

JONG NAMGUNG ★ LICENSED PROFESSIONAL ENGINEER No. 3513-S ★ HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

Jong Namgung 4/30/2014

SIGNATURE EXP. DATE

JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
GENERAL NOTES

SUBMITTED BY: _____ SECTION HEAD _____

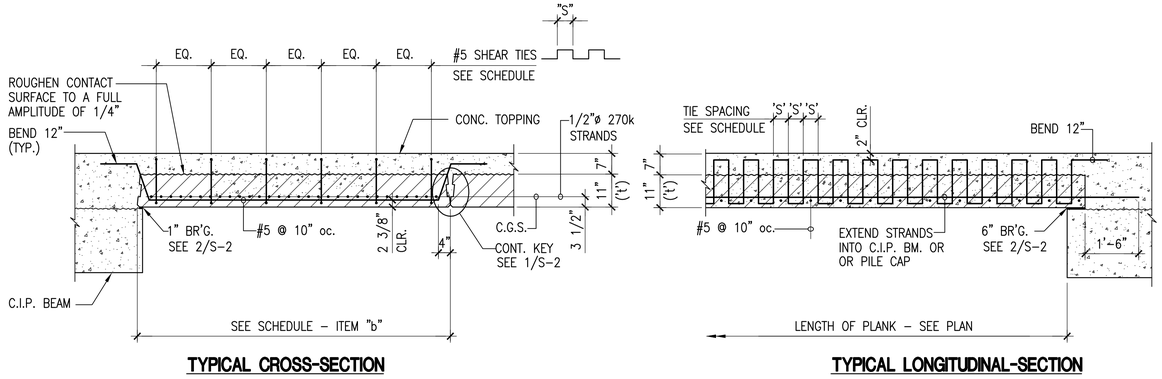
RECOMMENDED BY: _____ ENGINEERING PROGRAM MANAGER _____

DESIGNED BY: JN
DRAWN BY: FM
CHECKED BY: JN
DATE: FEB 2013
SCALE:

APPROVED BY: _____ HARBORS ADMINISTRATOR _____

JOB NUMBER
HMP 60901

SHEET
S0.01
13 OF 73 SHTS



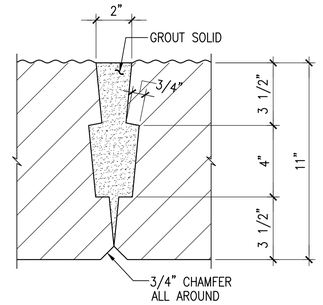
TYPICAL CROSS-SECTION

TYPICAL LONGITUDINAL-SECTION

TYPICAL PRECAST PRESTRESSED PLANK SECTIONS

SC: 1/2"= 1'-0"

A
S0.02 | S0.02

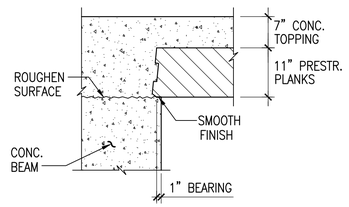


TYPICAL SLAB

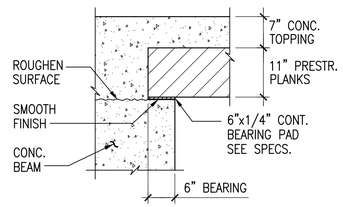
TYPICAL CONT. KEY DETAIL

SC: 3"= 1'-0"

1
S0.02 | S0.02



CONDITION AT SIDES



CONDITION AT ENDS

TYPICAL PLANK BEARING PAD DETAIL

SC: 3/4"= 1'-0"

2
S0.02 | S0.02

PRECAST PRESTRESSED PLANK SCHEDULE

MARK	THICKNESS 't'	WIDTH 'b'	LENGTH	NO. OF 1/2"ø 270k STRANDS	#5 SHEAR TIE	
					NO. OF ROWS	TIE SPACING 'S'
PS-1	11"	9'-0"	14'-8"	34	6	5"
PS-1A	11"	9'-0"	13'-8"	34	6	5"
PS-2	11"	9'-3"	14'-8"	35	7	5"
PS-2A	11"	9'-3"	13'-8"	35	7	5"
PS-3	11"	8'-9'	14'-8"	33	5	5"
PS-3A	11"	8'-9"	13'-8"	33	5	5"

PRECAST PRESTRESSED PLANK NOTES:

1. REFER TO GENERAL NOTES SHEET S-1 FOR CONCRETE STRENGTH AND GROUT MIX.
2. ALL PRESTRESSED STRANDS SHALL BE 1/2"ø 270k STRAND STRESSED TO 28.9k/STRAND.
3. ALL REINFORCING STEEL AND SHEAR TIE SHALL BE GRADE 60.
4. CONTRACTOR SHALL VERIFY LOCATION OF ALL INSERTS, ANCHORS, AND SLEEVES RELATED TO MECHANICAL AND ELECTRICAL WORK BEFORE FABRICATION. HOLES THROUGH PLANK ARE NOT ALLOWED TO BE DRILLED AFTER CASTING. STRANDS SHALL NOT BE CUT NOR BE IN CONTACT WITH ANY HANGERS OR ANCHOR BOLTS.

GRAPHIC SCALE:

1 0 1 2
SCALE: 3/4"= 1'-0"

2 1 0 2 4
SCALE: 1/2"= 1'-0"

6" 4" 2" 0 6"
SCALE: 3"= 1'-0"

JONG NAMGUNG
LICENSED PROFESSIONAL ENGINEER
No. 3513-S
HAWAII, U.S.A.

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Jong Namgung
SIGNATURE

4/30/2014
EXP. DATE

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HARBORS DIVISION

JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
PRECAST PRESTRESSED PLANK DETAILS

SUBMITTED BY: _____ SECTION HEAD

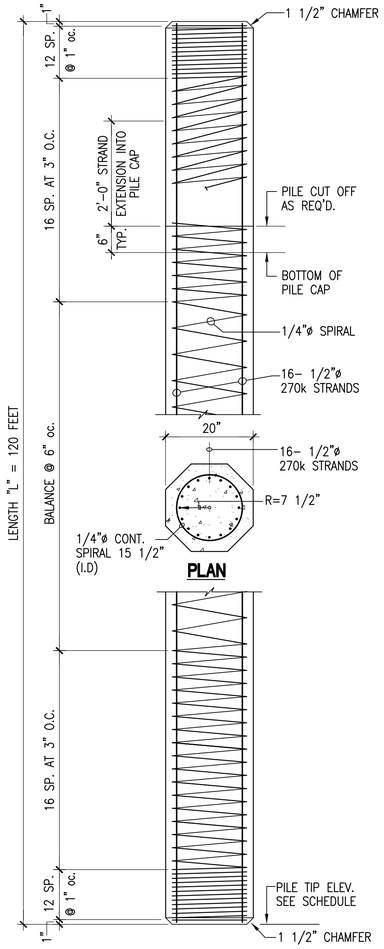
RECOMMENDED BY: _____ ENGINEERING PROGRAM MANAGER

APPROVED BY: _____ HARBORS ADMINISTRATOR

DESIGNED BY: JN
DRAWN BY: FM
CHECKED BY: JN
DATE: FEB 2013
SCALE:

JOB NUMBER
HMP 60901

SHEET
S0.02
22 OF 73 SHTS



TYPICAL SECTION

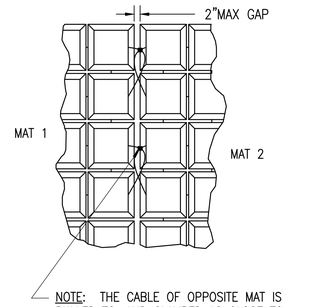
20" OCTAGONAL PRECAST PRESTRESSED PILE DETAILS

SC: 3/4"= 1'-0"

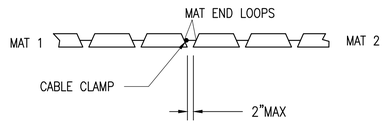
A S0.03 | S0.03

CONCRETE PILE NOTES:

1. MINIMUM CONCRETE STRENGTH
   - A. AT 28 DAYS . . . . . 7,000 PSI
   - B. AT RELEASE . . . . . 4,500 PSI
   - C. AT DRIVING . . . . . 7,000 PSI OR 7 DAYS AFTER CASTING, WHICHEVER COMES FIRST
2. PRESTRESSED STRANDS SHALL CONFORM TO ASTM A416 AND STRESSED TO 28.9k EACH.
3. SPIRAL TIES SHALL CONFORM TO ASTM A-82. REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMED TO ASTM A615, GRADE 60.
4. ALL PILES SHALL BE HANDLED, STORED, SUPPORTED AND DRIVEN IN SUCH A MANNER AS TO PREVENT SPALLING AND CRACKING OF CONCRETE. SEE SPECIFICATIONS FOR REQUIREMENTS.
5. ALL PILES SHALL HAVE A MINIMUM ALLOWABLE DESIGN BEARING CAPACITY OF 120 TONS. PILES SHALL BE DRIVEN TO A MINIMUM ULTIMATE BEARING CAPACITY OF 240 TONS. SEE SPECIFICATIONS, ARTICLE XXIV FOR ALL PILE DRIVING REQUIREMENTS.
6. IF PILE SPLICE IS REQUIRED, SEE SHEET S0.04 FOR DETAILS.
7. FINAL DRIVEN LOCATION OF PILING AT ALL SLEEVES AND FUTURE PIPES ARE CRITICAL FOR PILE CLEARANCES. SEE SHEETS S2.01, S2.02, S2.03, S2.04 & S2.05 FOR PILE LOCATIONS AT SLEEVES AND FUTURE PIPES.
8. REFER TO SHT. S2.01 & S2.02 FOR LOCATIONS OF PILING AT HATCHES, PIPES, WHICH HAVE BEEN MOVED FROM ITS TYPICAL PILE SPACING.

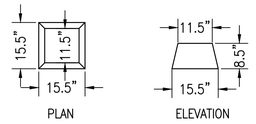


PLAN VIEW

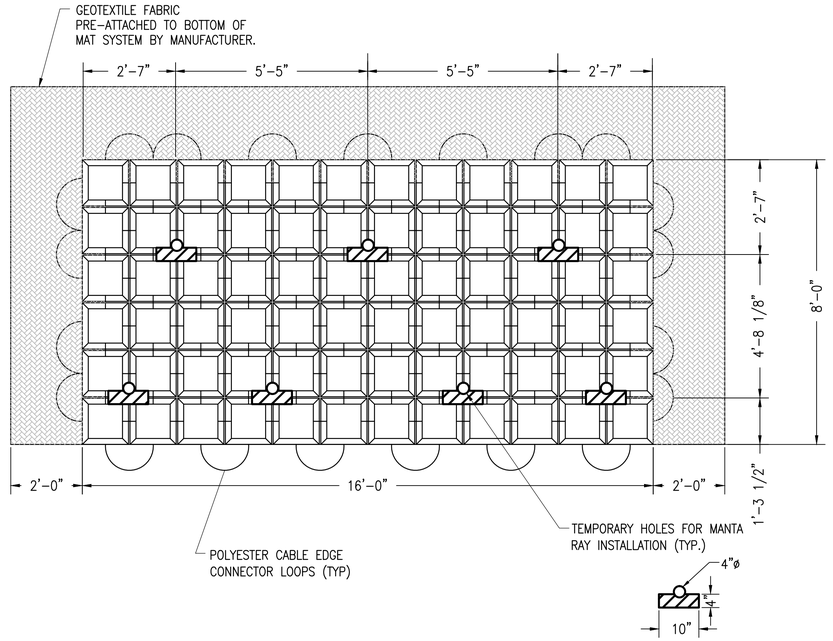


PROFILE VIEW

1 **ACB CLAMP DETAIL**



BLOCK DIMENSIONS



ACB MAT PLAN & ANCHOR LAYOUT PLAN

SC: 1/2"= 1'-0"

B S3.01A | S0.03

GRAPHIC SCALE:

1 0 1 2FT
SCALE: 3/4"= 1'-0"
2 1 0 2 4FT
SCALE: 1/2"= 1'-0"

REVISION	DATE	DESCRIPTION	BY	APPROVED

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HARBORS DIVISION

JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
PRECAST PRESTRESSED PILE DETAILS
ACB MAT PLAN & MANT RAY ANCHOR LAYOUT PLAN

JONG NAMGUNG LICENSED PROFESSIONAL ENGINEER No. 3513-S HAWAII, U.S.A.

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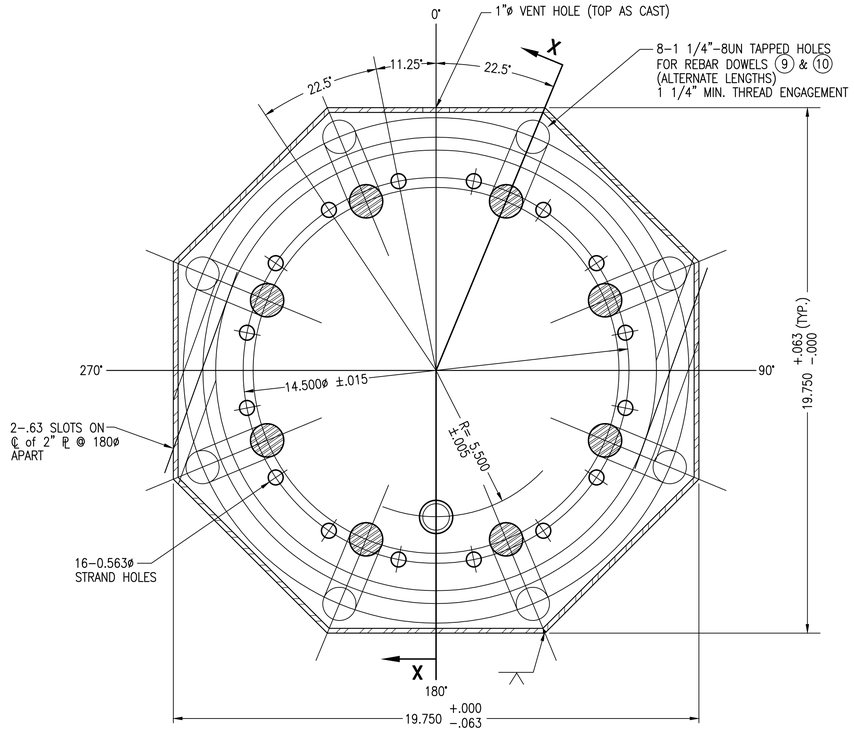
SIGNATURE 4/30/2014 EXP. DATE

SUBMITTED BY: SECTION HEAD
RECOMMENDED BY: ENGINEERING PROGRAM MANAGER
APPROVED BY: HARBORS ADMINISTRATOR

DESIGNED BY:	JN
DRAWN BY:	FM
CHECKED BY:	JN
DATE:	FEB 2013
SCALE:	

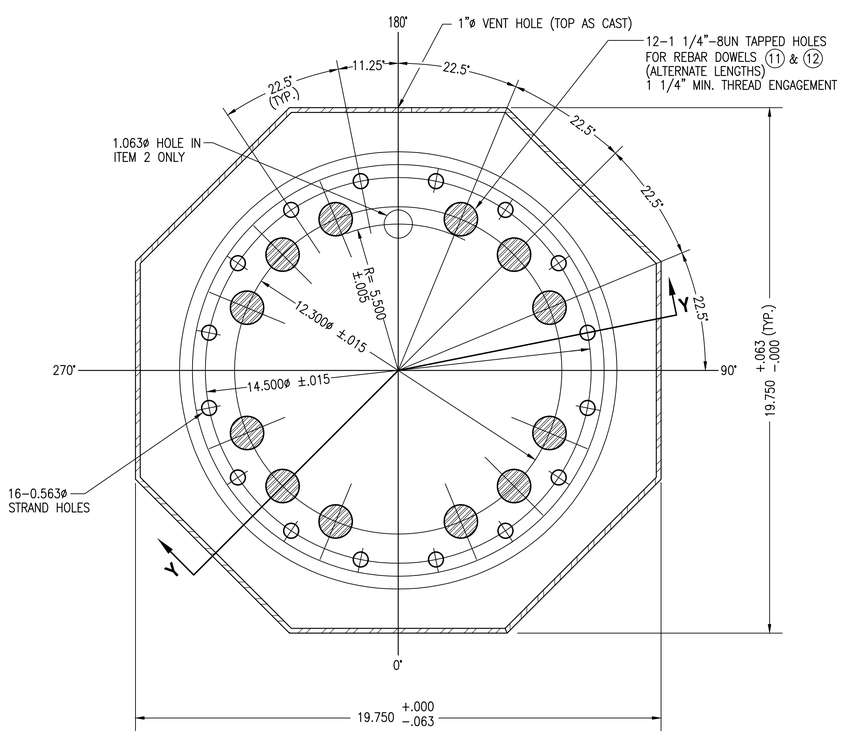
JOB NUMBER HMP 60901

SHEET S0.03
15 OF 73 SHTS



PLAN - FEMALE

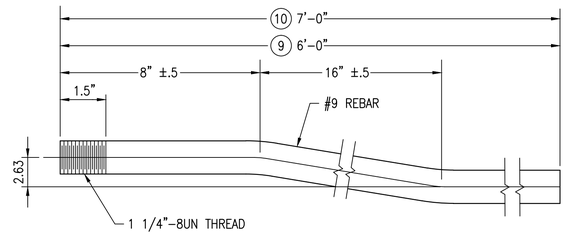
SC: 3/8"= 1"



PLAN - MALE

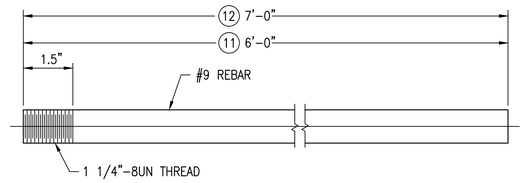
SC: 3/8"= 1'-0"

BILL OF MATERIALS			
ITEM	DESCRIPTION	REQ'D	MATERIAL
1	2" THK. PL. FEMALE	1	A-572-50
2	2" THK. PL. MALE	1	A-572-50
3	.25" THK. PL. FEMALE	1	A-36
4	.25" THK. PL. MALE	1	A-36
5	.13" FEMALE SKIRT	1	MILD STEEL
6	.13" MALE SKIRT	1	MILD STEEL
7	LOCKING PIN (PER DETAIL)	1	CF 1018
8	1/2"x3/4"x26" LOCKING BARS	2	CF 1018
9	DOWELS FEMALE #9 REBAR x 6'-0"	4	A-615-60
10	DOWELS FEMALE #9 REBAR x 7'-0"	4	A-615-60
11	DOWELS MALE #9 REBAR x 6'-0"	6	A-615-60
12	DOWELS MALE #9 REBAR x 7'-0"	6	A-615-60



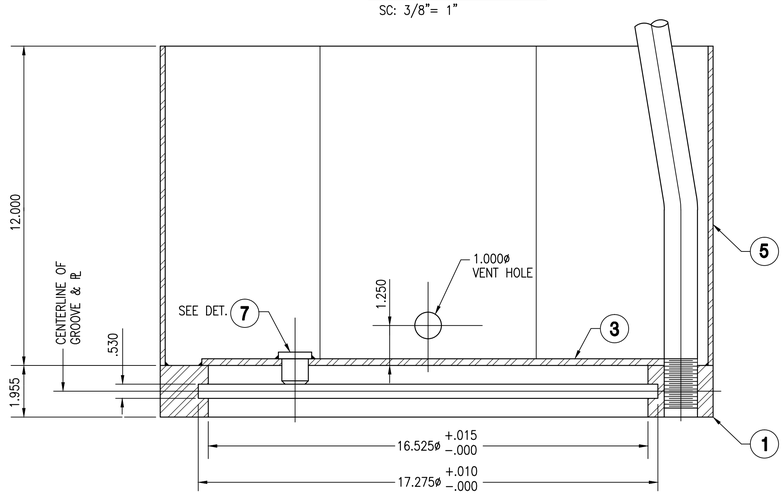
FEMALE DOWEL (9) & (10)

NTS



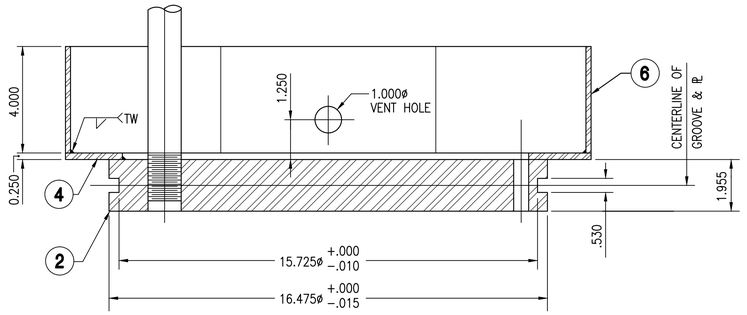
MALE DOWEL (11) & (12)

NTS



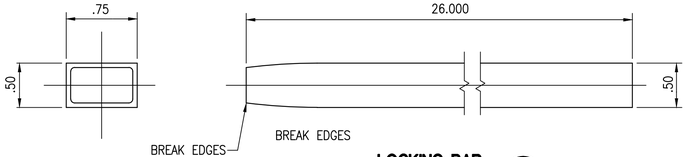
SECTION X-X

NTS



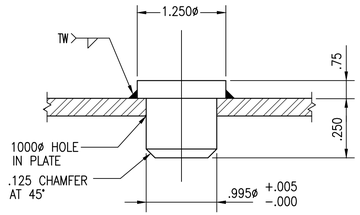
SECTION Y-Y

NTS



LOCKING BAR (8)

NTS



LOCKING PIN DETAIL (7)

NTS

20" OCTAGONAL PRESTRESSED CONCRETE PILE SPLICE CONNECTION DETAILS

SCALE AS NOTED

A
S0.04 | S0.04

GRAPHIC SCALE:

2 0 2 4FT

SCALE: 3/8"= 1'-0"

REVISION	DATE	DESCRIPTION	BY	APPROVED

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HARBORS DIVISION

JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
CONCRETE PILE SPLICE CONNECTION DETAILS

JONG NAMGUNG
LICENSED PROFESSIONAL ENGINEER
No. 3513-S
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
Jong Namgung 4/30/2014
SIGNATURE EXP. DATE

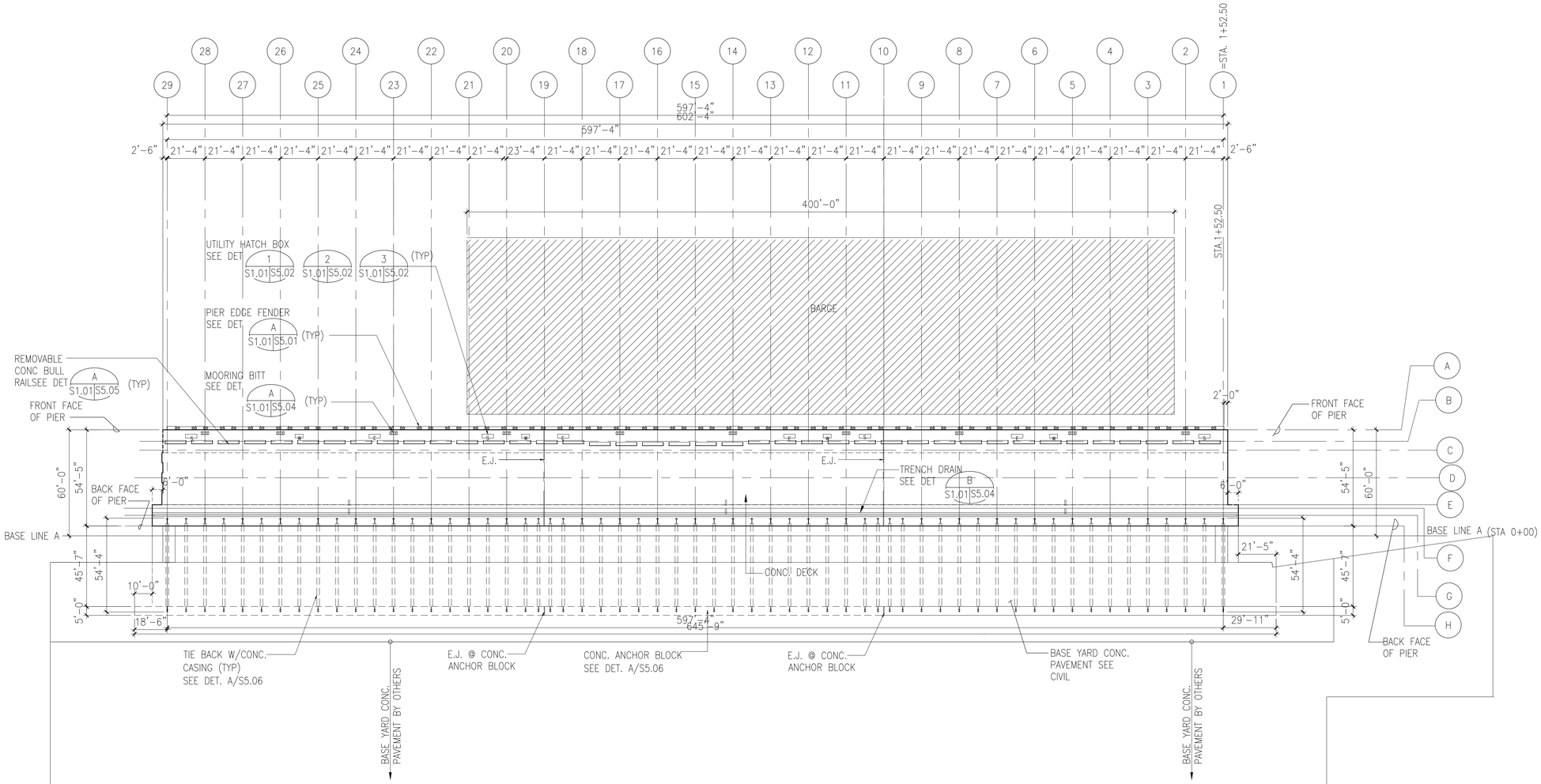
SUBMITTED BY: SECTION HEAD
RECOMMENDED BY: ENGINEERING PROGRAM MANAGER

DESIGNED BY: JN
DRAWN BY: FM
CHECKED BY: JN
DATE: FEB 2013
SCALE:

APPROVED BY: HARBORS ADMINISTRATOR

JOB NUMBER
HMP 60901

SHEET
S0.04
24 OF 73 SHTS



1 / S1.01 | S1.01 OVERALL PIER DECK PLAN

SCALE: 1/32" = 1'-0"

LEGEND

W – WATER
E – ELECTRICAL
S – SPARE

GRAPHIC SCALE:

32 24 16 8 0 32 64

SCALE: 1/32"= 1'-0"

REVISION	DATE	DESCRIPTION	BY	APPROVED

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HARBORS DIVISION

JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER–ISLAND CARGO TERMINAL
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SHEET TITLE
OVERALL PIER DECK PLAN

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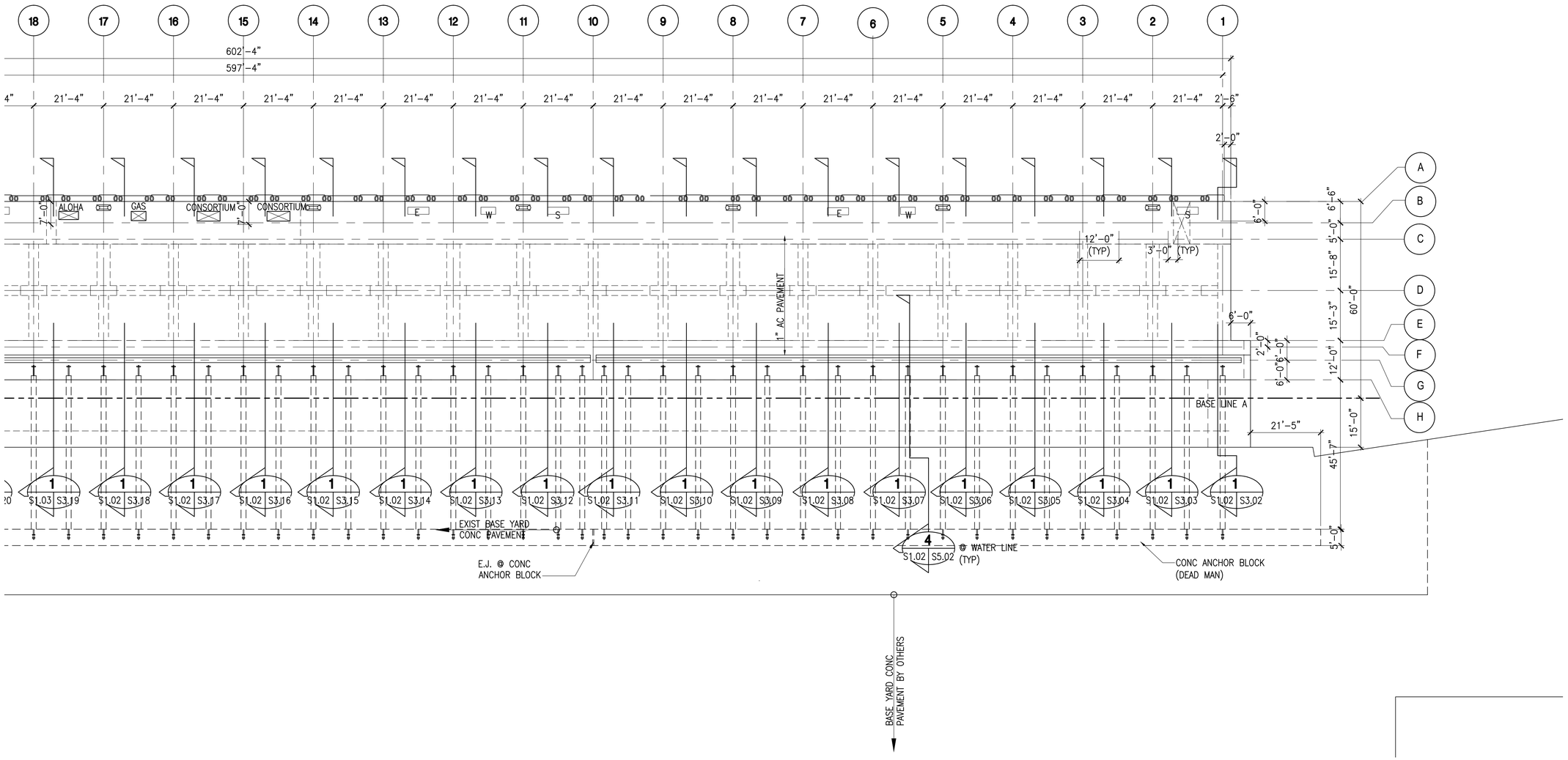
SHEET S1.01
24 OF 73 SHTS



1 / S1.02 | S1.02 PARTIAL SECTION KEY PLAN

SCALE: 1/16" = 1'-0"

LEGEND

W – WATER
E – ELECTRICAL
S – SPARE

GRAPHIC SCALE:

16 8 0 16 32FT

SCALE: 1/16"= 1'-0"

REVISION	DATE	DESCRIPTION	BY	APPROVED

STATE OF HAWAII
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HARBORS DIVISION

JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
PARTIAL SECTION KEY PLAN

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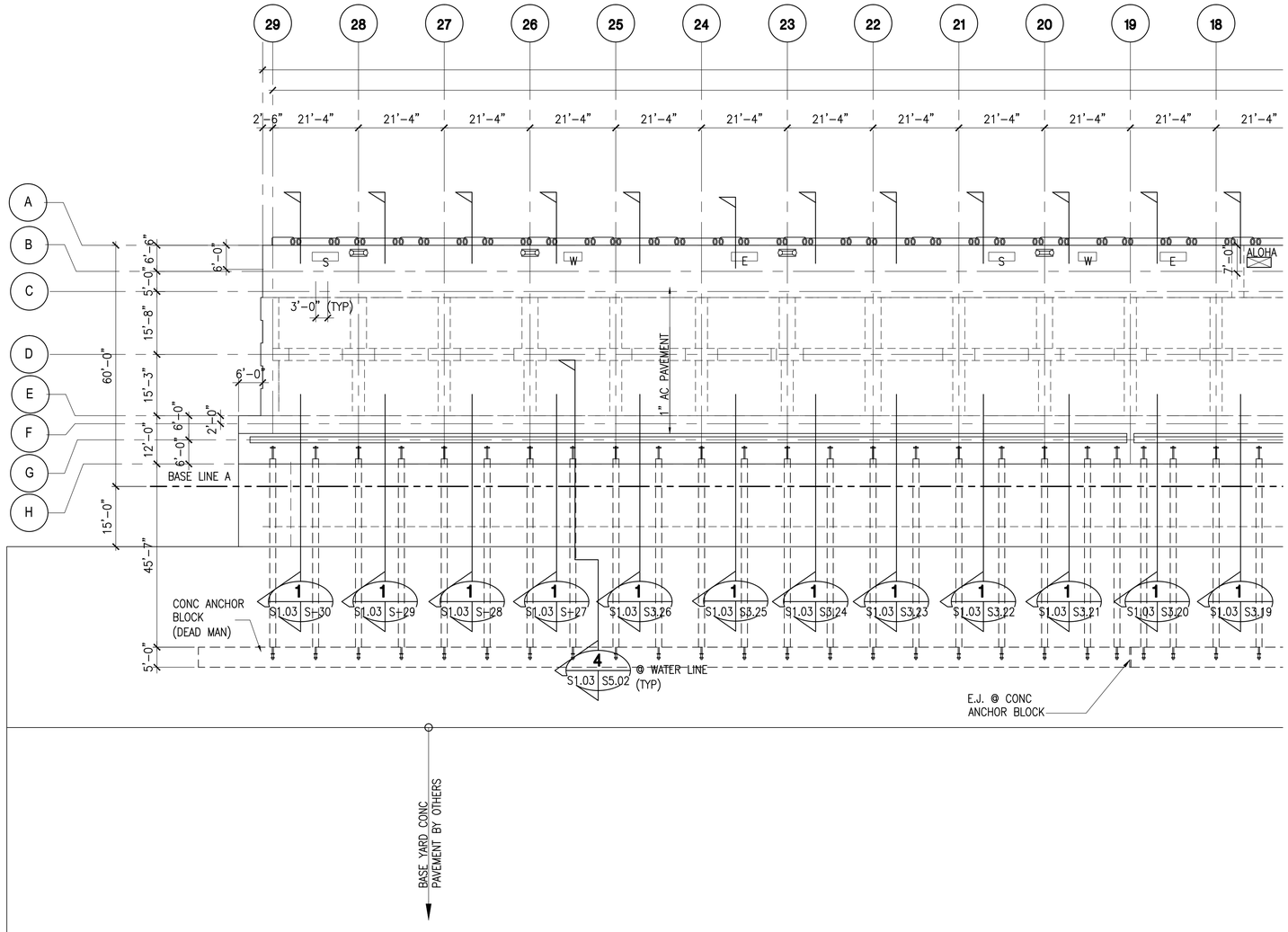
DATE: FEB 2013
SCALE:

APPROVED BY: ---------- HARBORS ADMINISTRATOR

JOB NUMBER
HMP 60901

SHEET
S1.02
18 OF 73 SHTS



1 S1.03 | S1.03 PARTIAL SECTION KEY PAN

SCALE: 1/16" = 1'-0"

LEGEND

W – WATER
E – ELECTRICAL
S – SPARE

GRAPHIC SCALE:

16 8 0 16 32FT

SCALE: 1/16"= 1'-0"

REVISION	DATE	DESCRIPTION	BY	APPROVED

STATE OF HAWAII
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HARBORS DIVISION

JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
PARTIAL SECTION KEY PLAN

JONG NAMGUNG
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HAWAII, U.S.A.

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JOB NUMBER
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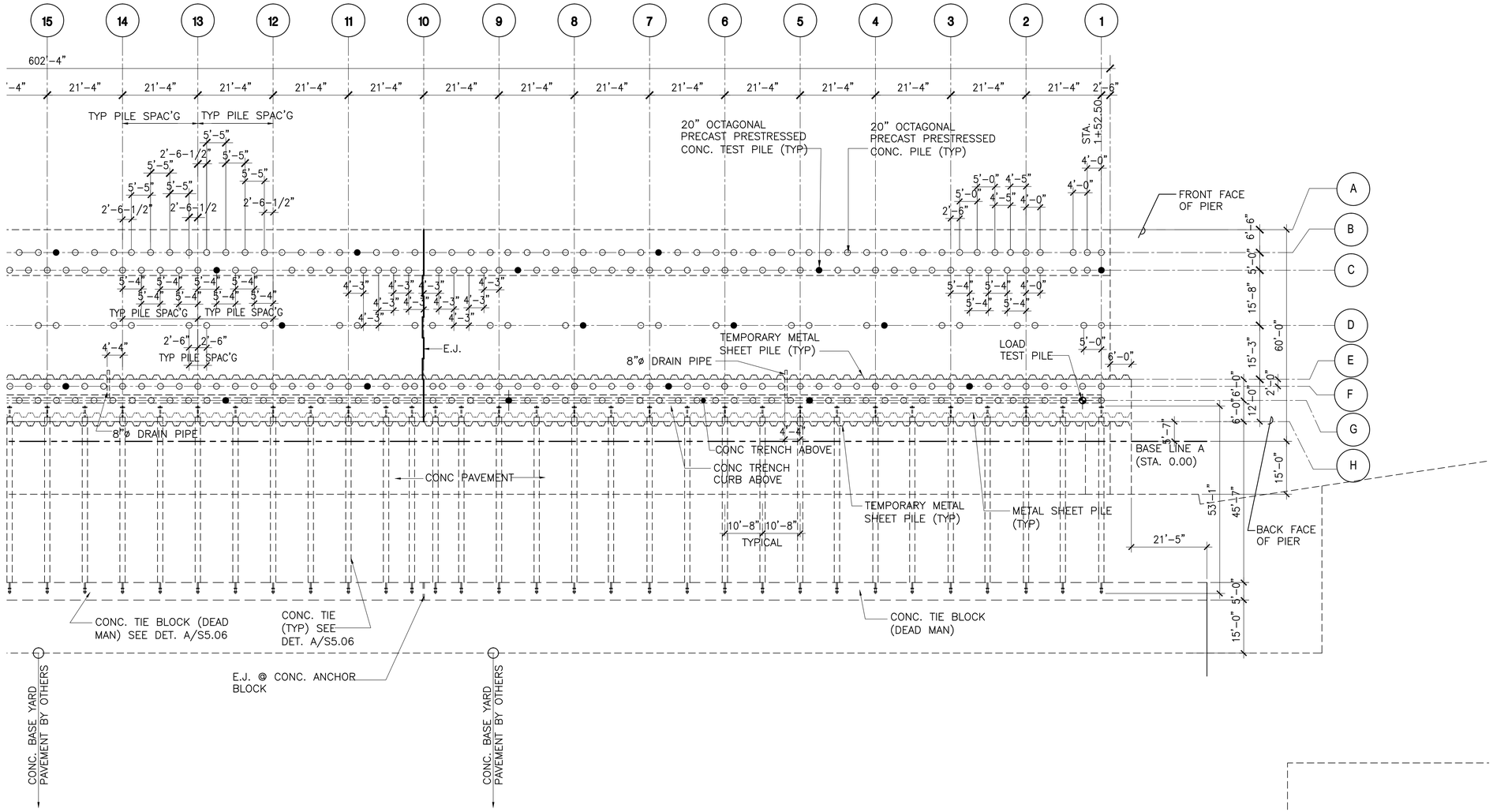
SHEET
S1.03
25 OF 73 SHTS



LEGEND:

- ○ DENOTES 20" OCTAGONAL PRECAST PRESTRESSED CONCRETE PRODUCTION PILES.
- ● DENOTES 20" OCTAGONAL PRECAST PRESTRESSED CONCRETE PROB TEST PILES.
- ⊕ DENOTES 20" OCTAGONAL PRECAST PRESTRESSED LOAD TEST PILES.

1 / S2.01 | S2.01

PARTIAL PILE LAYOUT PLAN

SCALE: 1/16" = 1'-0"

GRAPHIC SCALE:

16 8 0 16 32

SCALE: 1/16"= 1'-0"

REVISION	DATE	DESCRIPTION	BY	APPROVED

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HARBORS DIVISION

JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
PARTIAL PILE LAYOUT PLAN

JONG NAMGUNG ★ LICENSED PROFESSIONAL ENGINEER ★ No. 3513-S ★ HAWAII, U.S.A.

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DATE: FEB 2013
SCALE:

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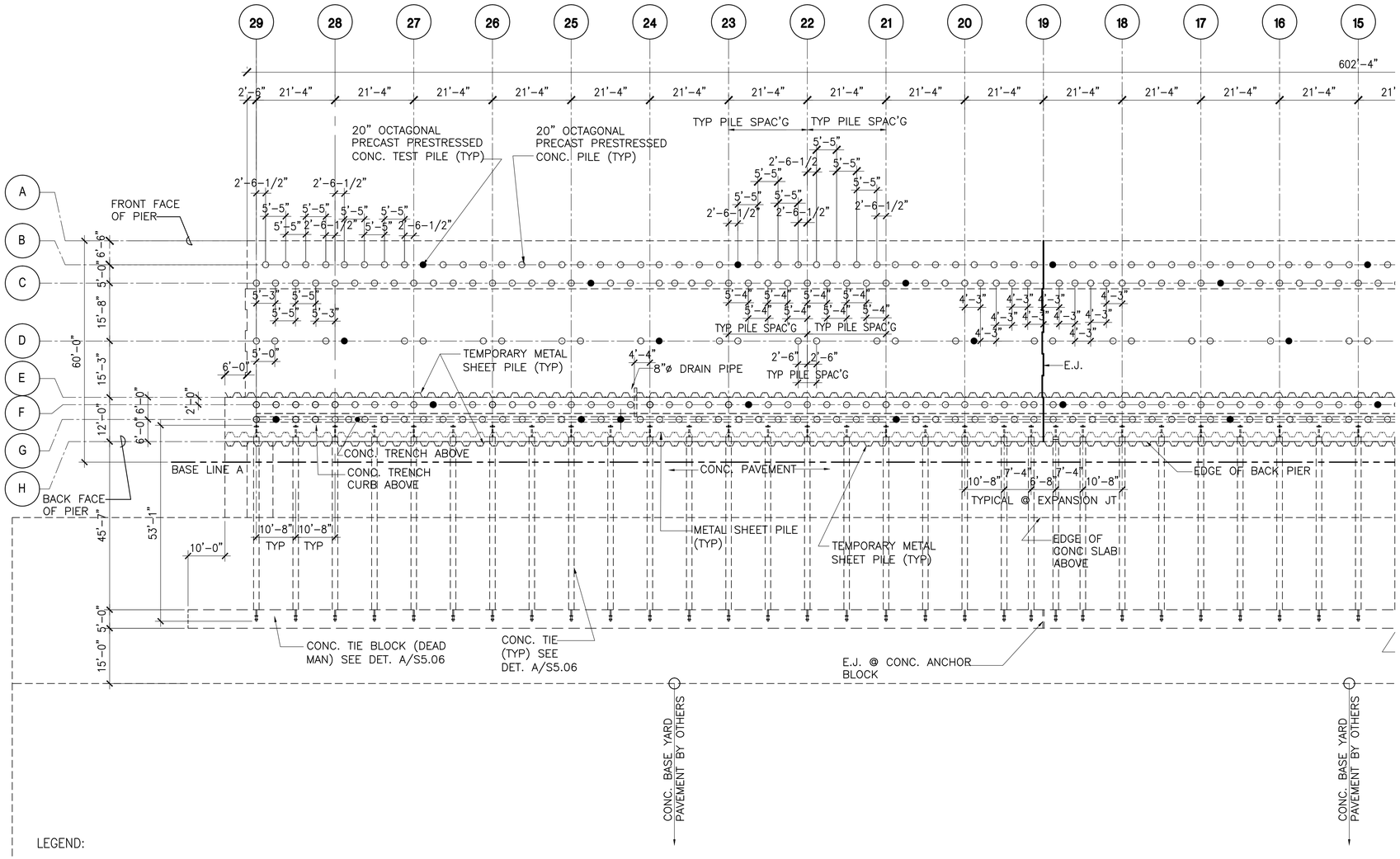
JOB NUMBER **HMP 60901**

SHEET **S2.01**

20 OF 73 SHTS



LEGEND:

- ○ DENOTES 20" OCTAGONAL PRECAST PRESTRESSED CONCRETE PRODUCTION PILES.
- ● DENOTES 20" OCTAGONAL PRECAST PRESTRESSED CONCRETE PROB TEST PILES.
- ⊕ DENOTES 20" OCTAGONAL PRECAST PRESTRESSED LOAD TEST PILES.

1 / S2.01 | S2.01 **PARTIAL PILE LAYOUT PLAN**

SCALE: 1/16" = 1'-0"

GRAPHIC SCALE:

16 8 0 16 32

SCALE: 1/16"= 1'-0"

REVISION	DATE	DESCRIPTION	BY	APPROVED

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HARBORS DIVISION

JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
PARTIAL PILE LAYOUT PLAN

JONG NAMGUNG ★ LICENSED PROFESSIONAL ENGINEER ★ No. 3513-S ★ HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

Jong Namgung 4/30/2014
SIGNATURE EXP. DATE

SUBMITTED BY: SECTION HEAD

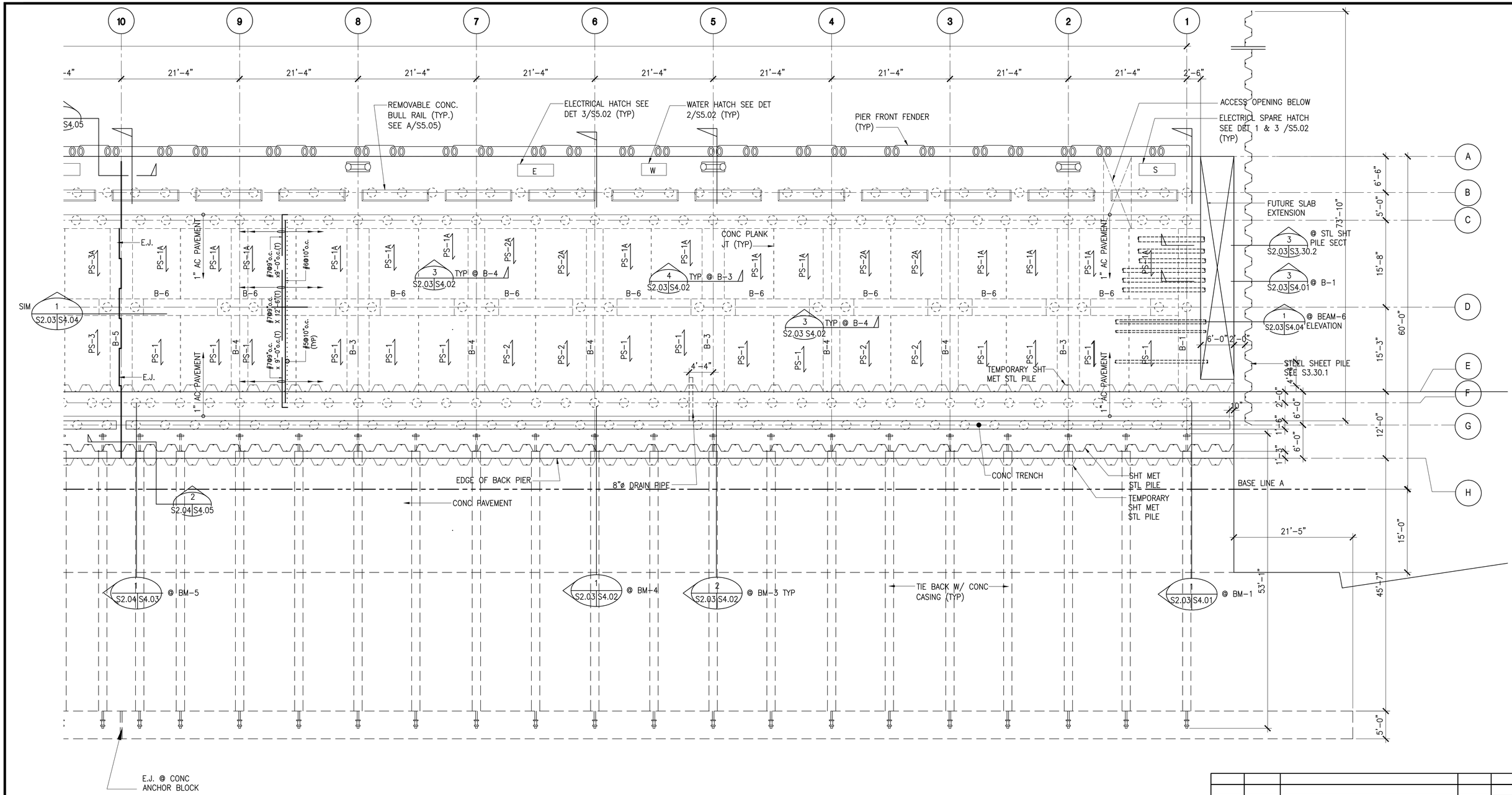
RECOMMENDED BY: ENGINEERING PROGRAM MANAGER

DESIGNED BY:	JN
DRAWN BY:	FM
CHECKED BY:	JN
DATE:	FEB 2013
SCALE:	

APPROVED BY: HARBORS ADMINISTRATOR

JOB NUMBER
HMP 60901

SHEET
S2.02
26 OF 73 SHTS



1 / S2.03 | S2.03 PARTIAL PIER DECK FRAMING PLAN

SCALE: 1/8" = 1'-0"

GRAPHIC SCALE:

8 6 4 2 0 8 16

SCALE: 1/8"= 1'-0"

REVISION	DATE	DESCRIPTION	BY	APPROVED

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HARBORS DIVISION

JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
PARTIAL PIER DECK FRAMING PLAN

JONG NAMGUNG
LICENSED PROFESSIONAL ENGINEER
No. 3513-S
HAWAII, U.S.A.

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Jong Namgung
4/30/2014
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DESIGNED BY: JN
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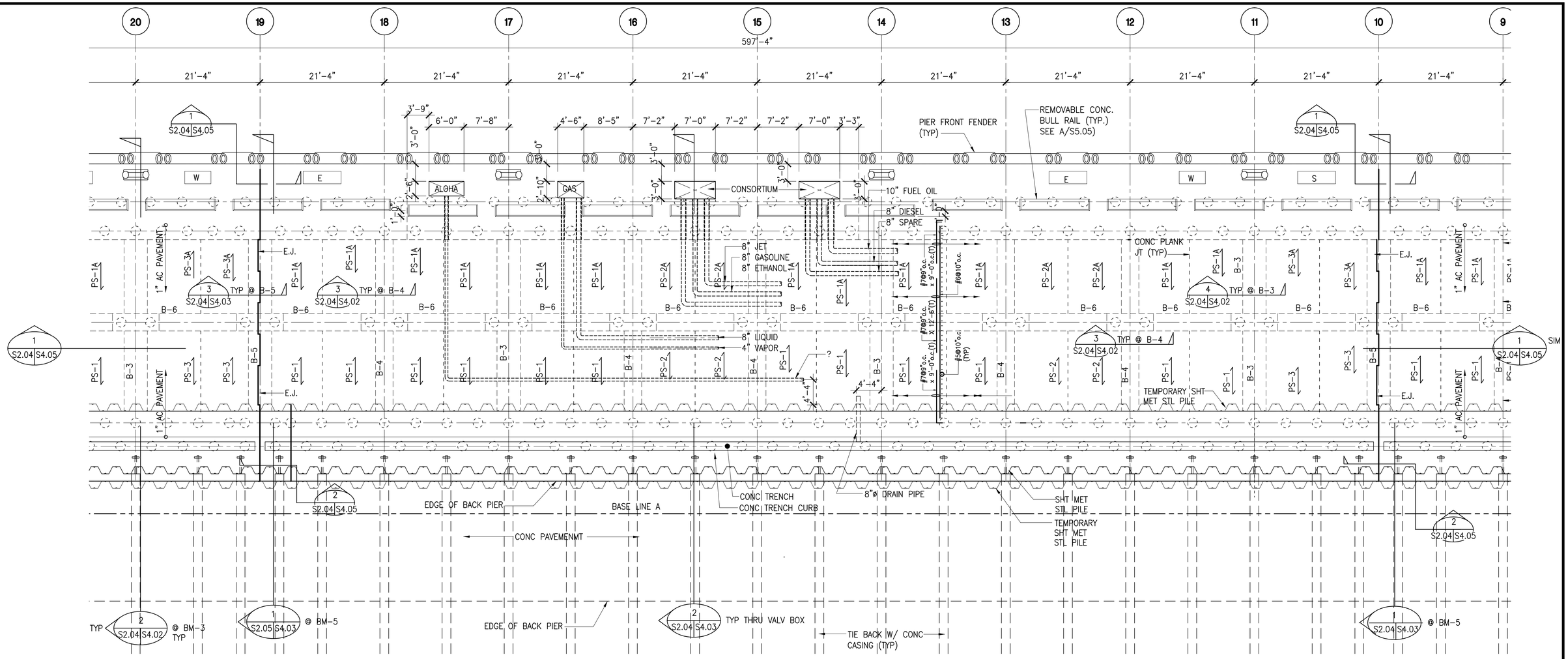
DATE: FEB 2013
SCALE:

APPROVED BY: _____ HARBORS ADMINISTRATOR

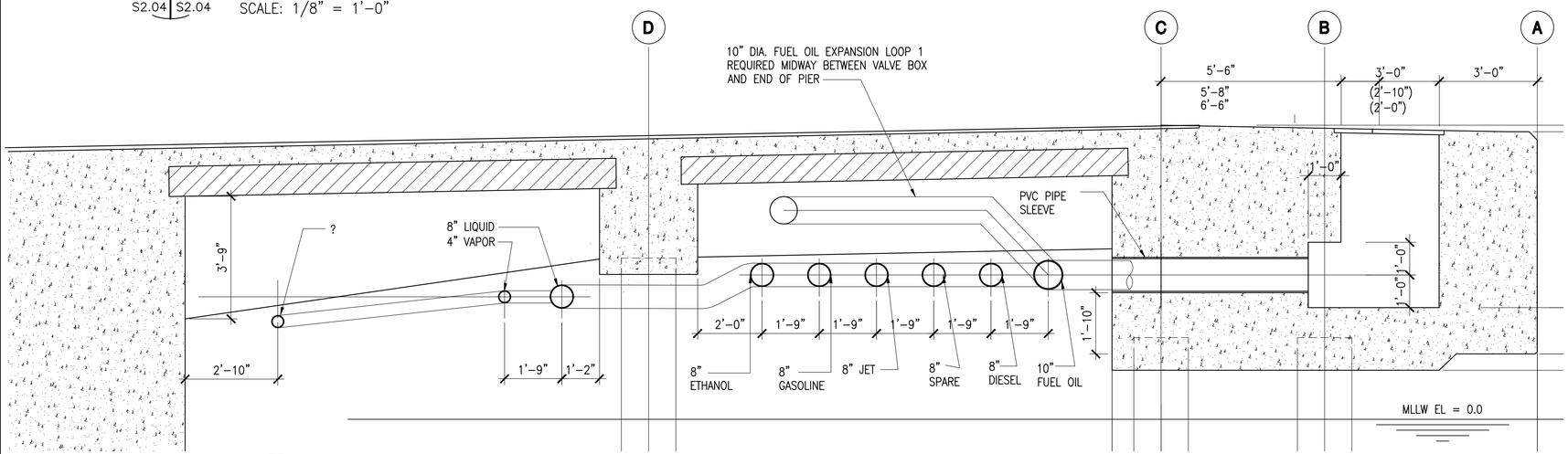
JOB NUMBER
HMP 60901

SHEET
S2.03
27 OF 73 SHTS



PARTIAL PIER DECK FRAMING PLAN

SCALE: 1/8" = 1'-0"



SECTION THROUGH VALVE BOX FOR CHEVRON, ALOHA AND OTHER CONSORTIUMS FUEL, OIL AND GAS PIPE LINES

SCALE: 1/2" = 1'-0"

NOTES FOR PIPE LINES

1. FUEL, OIL AND GAS LINES SHWN ON SHEETS S2.03 & S2.04 WILL BE FURNISHED AND INSTALLED BY OTHERS
2. SEE S0.01 GENERAL STRUCTURAL NOTES, D FUEL,OIL, AND GAS LNES.

GRAPHIC SCALE:

8 6 4 2 0 8 16
SCALE: 1/8"= 1'-0"

2 1 0 2 4
SCALE: 1/2"= 1'-0"

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STATE OF HAWAII
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JOB TITLE
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PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
PARTIAL PIER DECK FRAMING PLAN
SECTION THROUGH VALVE BOX

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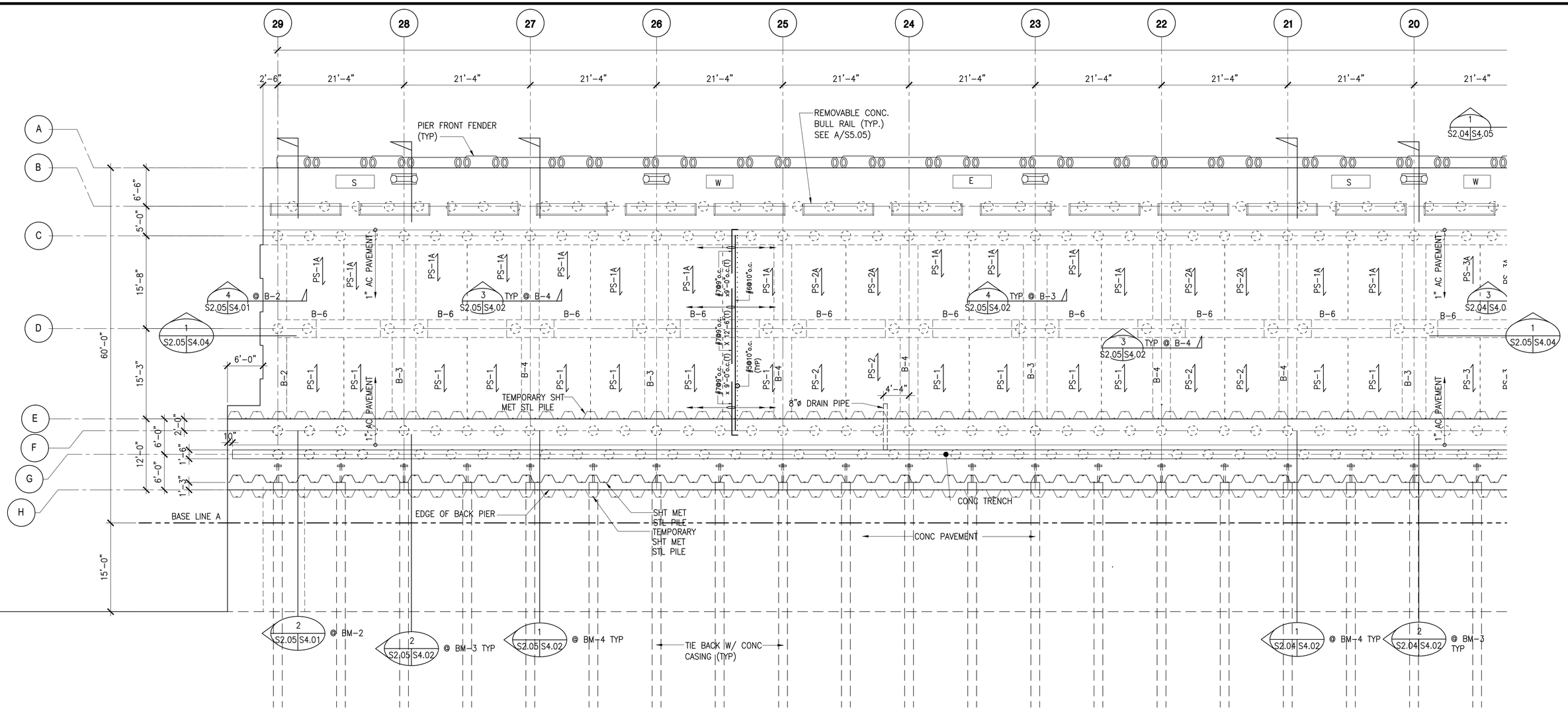
DATE: FEB 2013
SCALE:

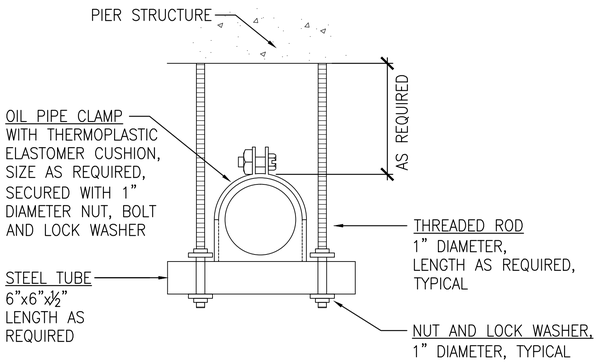
JOB NUMBER HMP 60901

SHEET S2.04
28 OF 73 SHTS



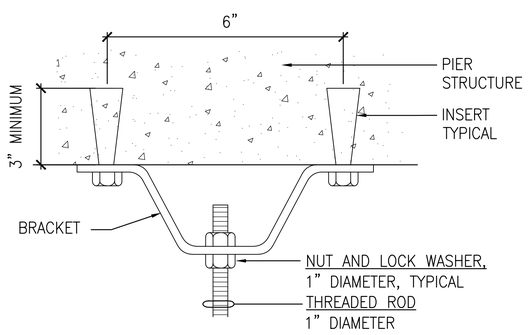
1 S2.05 S2.05 PARTIAL PIER DECK FRAMING PLAN

SCALE: 1/8" = 1'-0"



2 S2.05 S2.05 UNDERPIER OIL PIPE SUPPORT

NOT TO SCALE



3 S2.05 S2.05 THREADED ROD CONNECTION

NOT TO SCALE

PIPE SUPPORT DETAIL NOTES:

1. REFER 1/S2.04 AND 2/S2.04 FOR LOCATION OF PIPES.
2. PIPE SUPPORT SPACING SHALL BE 6 FEET SPACE AND TO BE STAGGERED 3 FEET WITH EVERY NEXT PIPES.
3. SUBMIT SHOP DRAWING FOR REVIEW AND APPROVE BY THE STATE.
4. SEISMIC BRACING OF PIPES:
   (1) THE CONTRACTOR SHALL PROVIDE SEISMIC BRACING DESIGN DRAWING & SPECIFICATIONS AND SUBMIT THE DOCUMENTS FOR REVIEW AND APPROVAL OF THE STATE
   (2) SEISMIC BRACING STRUCTURAL COMPONENTS AND DESIGN SYSTEM SHALL BE OF "TOLCO" COMPANY DESIGN METHOD.

GENERAL NOTE:

ALL METALLIC COMPONENTS ON THE UNDERSIDE OF THE PIER SHALL BE STAINLESS STEEL, TYPE 316.

GRAPHIC SCALE:

8 6 4 2 0 8 16

SCALE: 1/8"= 1'-0"

REVISION	DATE	DESCRIPTION	BY	APPROVED

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HARBORS DIVISION

JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
PARTIAL PIER DECK FRAMING PLAN

JONG NAMGUNG LICENSED PROFESSIONAL ENGINEER No. 3513-S HAWAII, U.S.A.

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SIGNATURE Jong Namgung 4/30/2014 EXP. DATE

SUBMITTED BY: SECTION HEAD

RECOMMENDED BY: ENGINEERING PROGRAM MANAGER

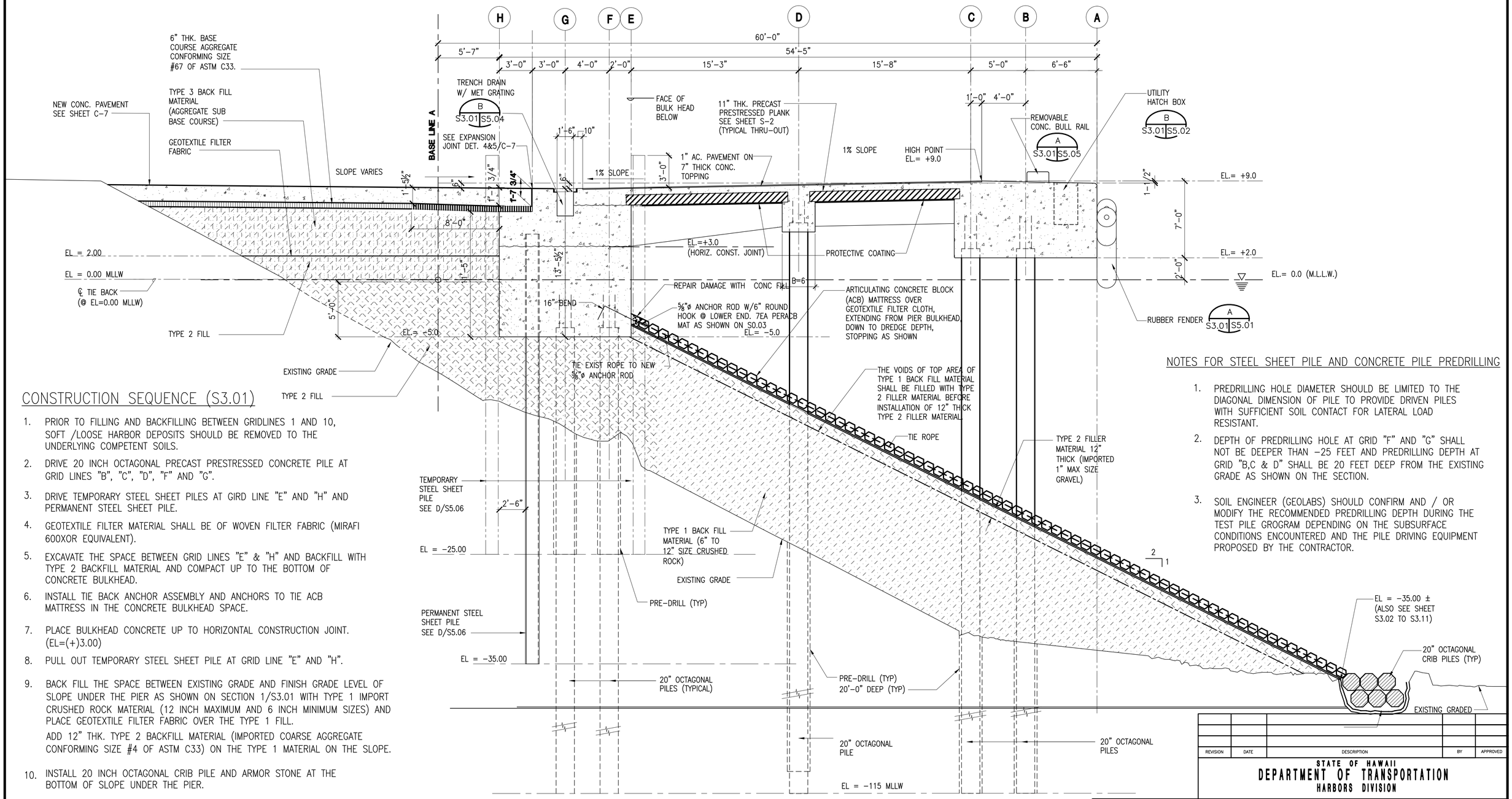
DESIGNED BY: JN
DRAWN BY: FM
CHECKED BY: JN
DATE: FEB 2013
SCALE:

APPROVED BY: HARBORS ADMINISTRATOR

JOB NUMBER HMP 60901

SHEET S2.05

29 OF 73 SHTS



CONSTRUCTION SEQUENCE (S3.01)

1. PRIOR TO FILLING AND BACKFILLING BETWEEN GRIDLINES 1 AND 10, SOFT /LOOSE HARBOR DEPOSITS SHOULD BE REMOVED TO THE UNDERLYING COMPETENT SOILS.
2. DRIVE 20 INCH OCTAGONAL PRECAST PRESTRESSED CONCRETE PILE AT GRID LINES "B", "C", "D", "F" AND "G".
3. DRIVE TEMPORARY STEEL SHEET PILES AT GIRD LINE "E" AND "H" AND PERMANENT STEEL SHEET PILE.
4. GEOTEXTILE FILTER MATERIAL SHALL BE OF WOVEN FILTER FABRIC (MIRAFI 600XOR EQUIVALENT).
5. EXCAVATE THE SPACE BETWEEN GRID LINES "E" & "H" AND BACKFILL WITH TYPE 2 BACKFILL MATERIAL AND COMPACT UP TO THE BOTTOM OF CONCRETE BULKHEAD.
6. INSTALL TIE BACK ANCHOR ASSEMBLY AND ANCHORS TO TIE ACB MATTRESS IN THE CONCRETE BULKHEAD SPACE.
7. PLACE BULKHEAD CONCRETE UP TO HORIZONTAL CONSTRUCTION JOINT. (EL=(+)3.00)
8. PULL OUT TEMPORARY STEEL SHEET PILE AT GRID LINE "E" AND "H".
9. BACK FILL THE SPACE BETWEEN EXISTING GRADE AND FINISH GRADE LEVEL OF SLOPE UNDER THE PIER AS SHOWN ON SECTION 1/S3.01 WITH TYPE 1 IMPORT CRUSHED ROCK MATERIAL (12 INCH MAXIMUM AND 6 INCH MINIMUM SIZES) AND PLACE GEOTEXTILE FILTER FABRIC OVER THE TYPE 1 FILL.
   ADD 12" THK. TYPE 2 BACKFILL MATERIAL (IMPORTED COARSE AGGREGATE CONFORMING SIZE #4 OF ASTM C33) ON THE TYPE 1 MATERIAL ON THE SLOPE.
10. INSTALL 20 INCH OCTAGONAL CRIB PILE AND ARMOR STONE AT THE BOTTOM OF SLOPE UNDER THE PIER.
11. INSTALL ACB MATTRESS AND TIE TO CONCRETE BULKHEAD.
12. PLACE BACKFILL MATERIAL TYPE 2 UP TO EL = 0.00 AND CONSTRUCT TIE BACK SYSTEM INCLUDING 5' X 12' CONCRETE ANCHOR WALL AND TIE ROD ASSEMBLY.
13. PLACE BACKFILL MATERIAL TYPE 2 BETWEEN EL = +0.00 AND EL = +2.00
14. FINISH PIER DECK CONSTRUCTION.
15. INSTALL GEOTEXTILE FILTER FABRIC AT EL = 2.00 AND PLACE TYPE 3 BACK FILL MATERIAL UP TO UNDER THE 6" BASE COURSE AGGREGATE LAYER. TYPE 3 BACK FILL MATERIAL REQUIRES COMPACTION.
16. FINISH BACKFILL AND CONSTRUCT CONCRETE PAVEMENT.

NOTES FOR STEEL SHEET PILE AND CONCRETE PILE PREDRILLING

1. PREDRILLING HOLE DIAMETER SHOULD BE LIMITED TO THE DIAGONAL DIMENSION OF PILE TO PROVIDE DRIVEN PILES WITH SUFFICIENT SOIL CONTACT FOR LATERAL LOAD RESISTANT.
2. DEPTH OF PREDRILLING HOLE AT GRID "F" AND "G" SHALL NOT BE DEEPER THAN -25 FEET AND PREDRILLING DEPTH AT GRID "B,C & D" SHALL BE 20 FEET DEEP FROM THE EXISTING GRADE AS SHOWN ON THE SECTION.
3. SOIL ENGINEER (GEOLABS) SHOULD CONFIRM AND / OR MODIFY THE RECOMMENDED PREDRILLING DEPTH DURING THE TEST PILE GROGRAM DEPENDING ON THE SUBSURFACE CONDITIONS ENCOUNTERED AND THE PILE DRIVING EQUIPMENT PROPOSED BY THE CONTRACTOR.

1 / S3.01 S3.01 **TYPICAL CROSS SECTION - A (GRID LINE 1 TO GRID LINE 10)**

SC: 1/4"= 1'-0"

GRAPHIC SCALE:

4 3 2 1 0 4

SCALE: 1/4"= 1'-0"

REVISION	DATE	DESCRIPTION	BY	APPROVED

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HARBORS DIVISION

JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
TYPICAL CROSS SECTION - A (GRID LINE 1 TO GRID LINE 10)

JONG NAMGUNG ★ LICENSED PROFESSIONAL ENGINEER No. 3513-S ★ HAWAII, U.S.A.

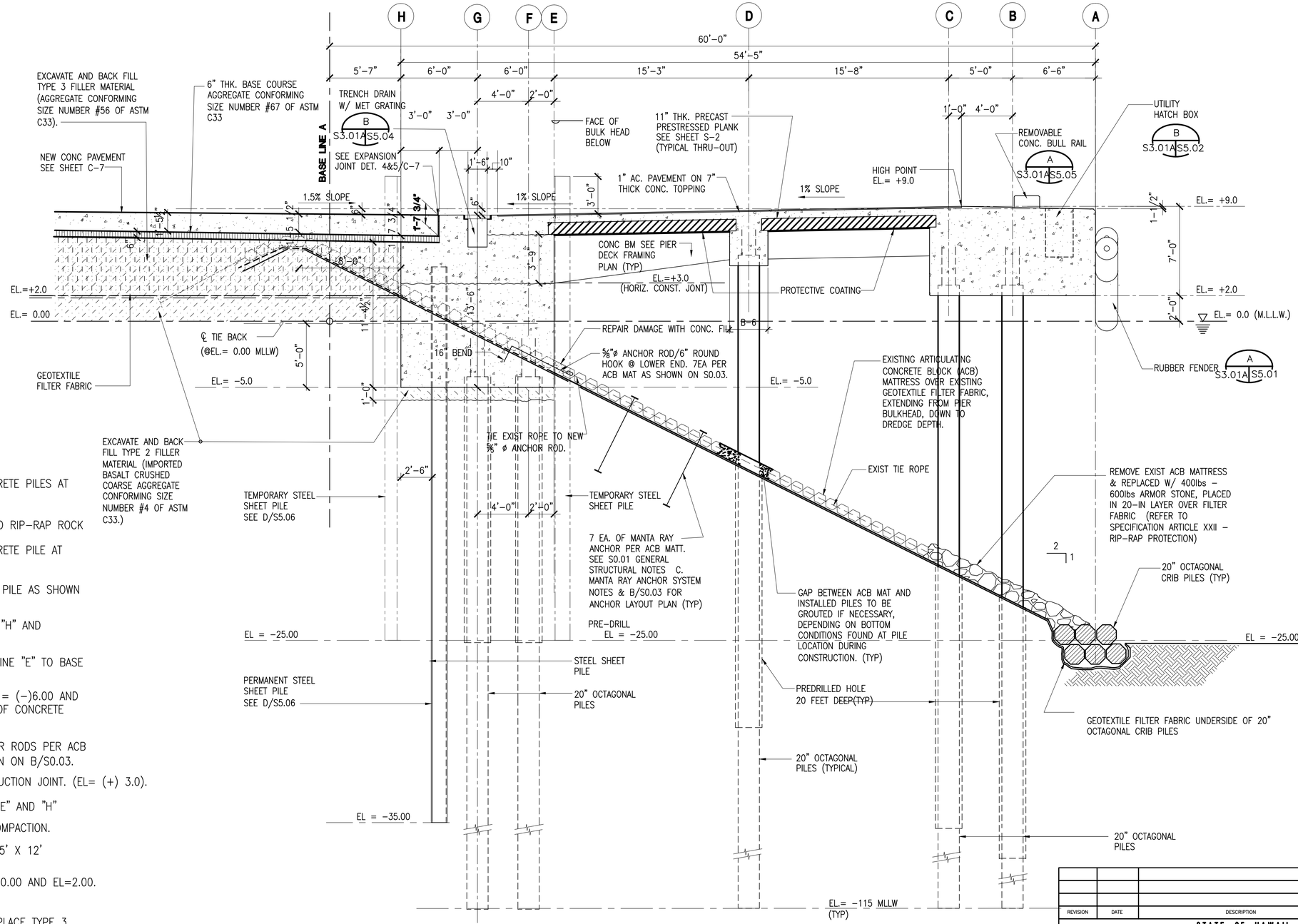
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
Jong Namgung
4/30/2014
SIGNATURE EXP. DATE

SUBMITTED BY: SECTION HEAD
RECOMMENDED BY: ENGINEERING PROGRAM MANAGER
APPROVED BY: HARBORS ADMINISTRATOR

DESIGNED BY: JN
DRAWN BY: FM
CHECKED BY: JN
DATE: FEB 2013
SCALE:

JOB NUMBER
HMP 60901

SHEET
S3.01
30 OF 73 SHTS



CONSTRUCTION SEQUENCE (S3.01A)

1. INSTALL MANTA RAY ANCHORS AS SHOWN ON SECTION–B.
2. DRIVE 20 INCH OCTAGONAL PRECAST PRESTRESSED CONCRETE PILES AT GRID LINES "B" AND "C".
3. INSTALL 20 INCH OCTAGONAL CRIB PILES AT GRID "A" AND RIP–RAP ROCK AT GRID LINES "A", "B" AND "C".
4. DRIVE 20 INCH OCTAGONAL PRECAST PRESTRESSED CONCRETE PILE AT GRID LINES "D", "F" AND "G".
5. REPAIR DAMAGED ACB MATTRESS ADJACENT TO CONCRETE PILE AS SHOWN ON SECTION–B.
6. DRIVE TEMPORARY STEEL SHEET PILES AT GRID LINE "E", "H" AND PERMANENT STEEL SHEET PILE.
7. REMOVE EXISTING CONCRETE ACB MATTRESS FROM GRID LINE "E" TO BASE LINE AND BEYOND.
8. EXCAVATE THE SPACE BETWEEN GRID "E" AND "H" TO EL = (–)6.00 AND PLACE BACK FILL MATERIAL TYPE 2 UP TO THE BOTTOM OF CONCRETE BULKBEAD.
9. INSTALL TIE BACK ANCHOR SYSTYEM AND 7 EACH ANCHOR RODS PER ACB MATTRESS IN THE CONCRETE BULKHEAD SPACE AS SHOWN ON B/S0.03.
10. PLACE BULKHEAD CONCRETE UP TO HORIZONTAL CONSTRUCTION JOINT. (EL= (+) 3.0).
11. PULL OUT TEMPORARY STEEL SHEET PILE AT GRID LINE "E" AND "H"
12. EXCAVATE SITE TO EL=0.00 AND PROOF ROLLING FOR COMPACTION.
13. CONSTRUCT TIE BACK SYSTEM AT EL = 0.00 INCLUDING 5' X 12' CONCRERTE ANCHOR WALL AND TIE ROD ASSEMBLY.
14. PLACE BACK FILL TYPE 2 FILTER MATERIAL BETWEEN EL=0.00 AND EL=2.00.
15. FINISH PIER DECK CONSTRUCTION.
16. INSTALL GEOTEXTOLE FILTER FABRIC AT EL = 2.00 AND PLACE TYPE 3 BACK FILL MATERIAL UP TO UNDER THE 6" THK. BASE COURSE AGGREGATE LAYER. TYPE 3 BACK FILL MATERIAL REQUIRES COMPACTION.
17. FINISH BACK FILL AND CONSTRUCT CONCRETE PAVEMENT.

NOTES FOR STEEL SHEET PILE AND CONCRETE PILE PREDRILLING

1. PREDRILLING HOLE DIAMETER SHOULD BE LIMITED TO THE DIAGONAL DIMENSION OF PILE TO PROVIDE DRIVEN PILES WITH SUFFICIENT SOLE CONTACT FOR LATERAL LOAD RESISTANT.
2. DEPTH OF PREDRILLING HOLE AT GRID "F" AND "G" SHALL NOT BE DEEPER THAN –25 FEET AND PREDRILLING DEPTH AT GRID "B,C & D" SHALL BE 20 FEET DEEP FROM THE EXISTING GRADE AS SHOWN ON THE SECTION.
3. SOIL ENGINEER (GEOLABS) SHOULD CONFIRM AND/OR MODIFY THE RECOMMENDED PREDRILLING DEPTH DURING THE TEST PILE GROGRAM DEPENDING ON THE SUBSURFACE CONDITIONS ENCOUNTERED AND THE PILE DRIVING EQUIPMENT PROPOSED BY THE CONTRACTOR.

1 / S3.01A | S3.01A

TYPICAL CROSS SECTION - B (GRID LINE 10 TO GRID LINE 29)

SC: 1/4"= 1'-0"

GRAPHIC SCALE:

4 3 2 1 0 4

SCALE: 1/4"= 1'-0"

JONG NAMGUNG
LICENSED PROFESSIONAL ENGINEER
No. 3513-S
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

Jong Namgung 4/30/2014

SIGNATURE EXP. DATE

REVISION	DATE	DESCRIPTION	BY	APPROVED

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HARBORS DIVISION

JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
TYPICAL CROSS SECTION - B
(GRID LINE 10 TO GRID LINE 29)

SUBMITTED BY: _____ SECTION HEAD

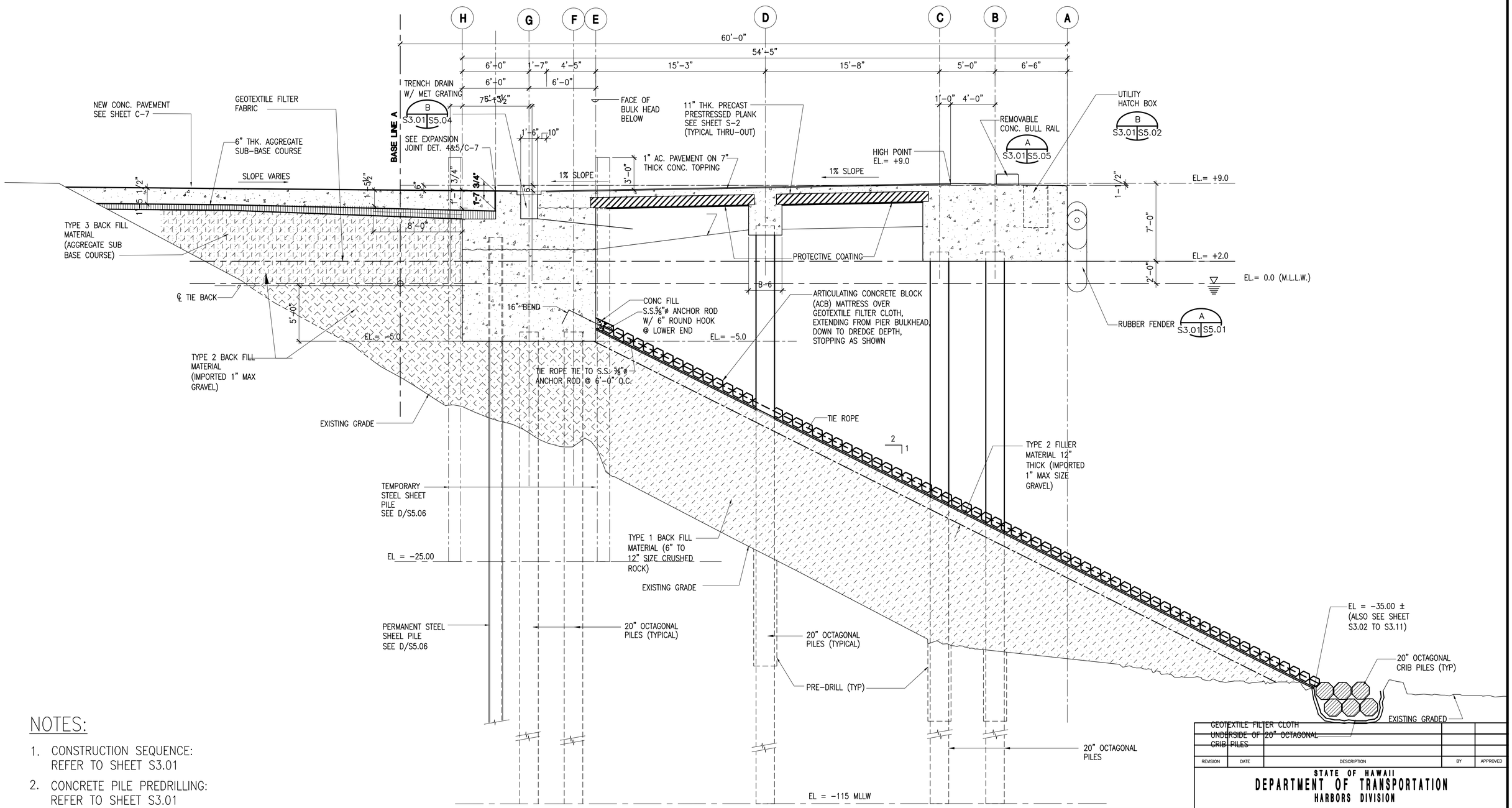
RECOMMENDED BY: _____ ENGINEERING PROGRAM MANAGER

DESIGNED BY: JN
DRAWN BY: FM
CHECKED BY: JN
DATE: FEB 2013
SCALE:

APPROVED BY: _____ HARBORS ADMINISTRATOR

JOB NUMBER
HMP 60901

SHEET
S3.01A
31 OF 73 SHTS



NOTES:

1. CONSTRUCTION SEQUENCE: REFER TO SHEET S3.01
2. CONCRETE PILE PREDRILLING: REFER TO SHEET S3.01
3. REFER TO SEE SHEET 3.01 FOR ANY MISSING INFORMATION.

STA 1+52.50

1 / S1.02 S3.02 — **CROSS SECTION @ GRID LINE 1 (STA. 1+52.50)**

SC: 1/4"= 1'-0"

GRAPHIC SCALE:

4 3 2 1 0 4

SCALE: 1/4"= 1'-0"

REVISION	DATE	DESCRIPTION	BY	APPROVED

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HARBORS DIVISION

JONG NAMGUNG — LICENSED PROFESSIONAL ENGINEER — No. 3513-S — HAWAII, U.S.A.

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Jong Namgung 4/30/2014

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JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
CROSS SECTION @ GRID LINE 1

SUBMITTED BY: ---------- SECTION HEAD

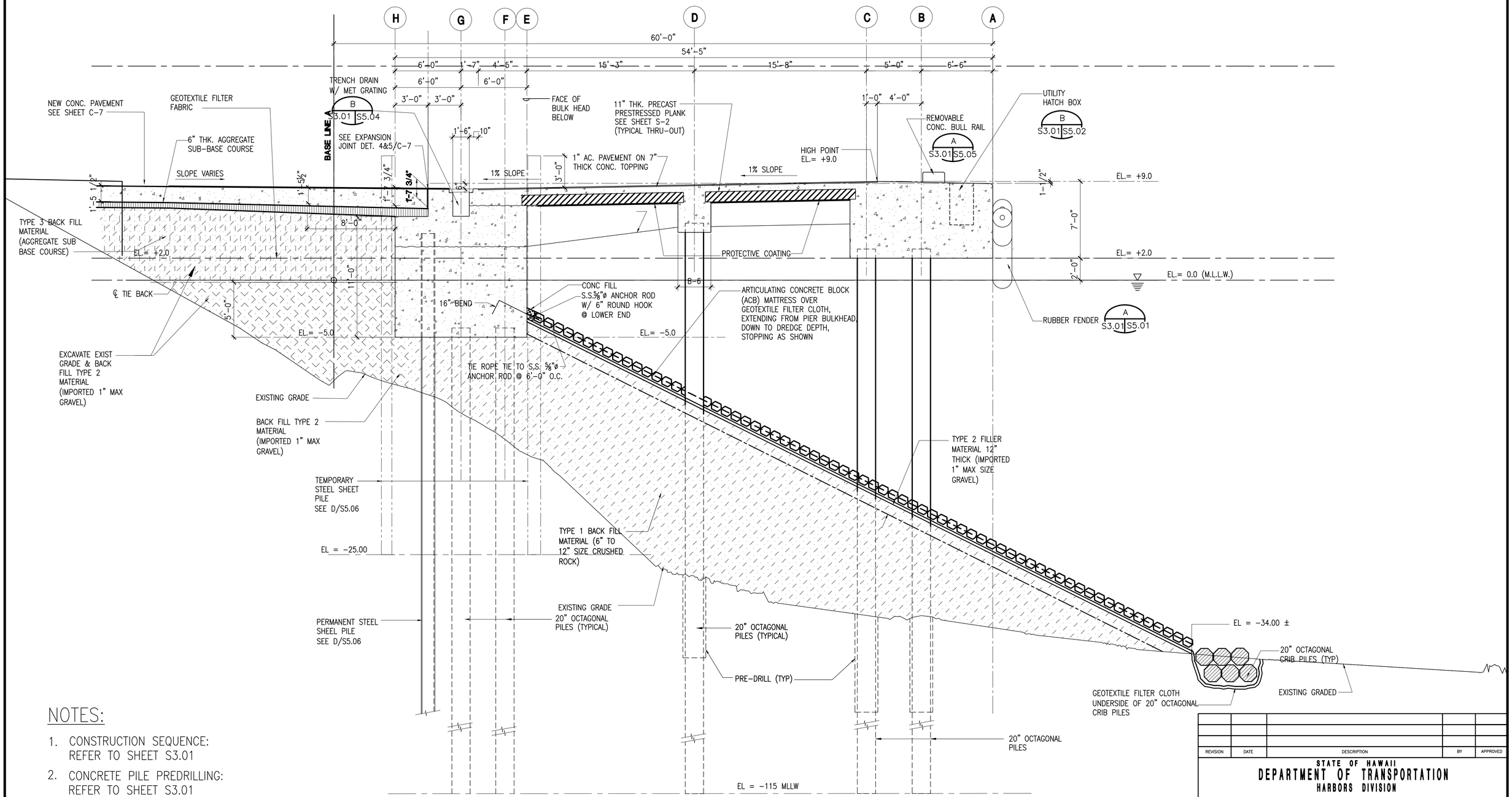
RECOMMENDED BY: ---------- ENGINEERING PROGRAM MANAGER

DESIGNED BY: JN
DRAWN BY: FM
CHECKED BY: JN
DATE: FEB 2013
SCALE:

APPROVED BY: ---------- HARBORS ADMINISTRATOR

JOB NUMBER
HMP 60901

SHEET
S3.02
32 OF 73 SHTS



NOTES:

1. CONSTRUCTION SEQUENCE: REFER TO SHEET S3.01
2. CONCRETE PILE PREDRILLING: REFER TO SHEET S3.01
3. REFER TO SEE SHEET 3.01 FOR ANY MISSING INFORMATION.

STA 1+73.83

1 S1.02 S3.03 **CROSS SECTION @ GRID LINE 2**

SC: 1/4"= 1'-0"

GRAPHIC SCALE:

4 3 2 1 0 4

SCALE: 1/4"= 1'-0"

REVISION	DATE	DESCRIPTION	BY	APPROVED

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HARBORS DIVISION

JOB TITLE
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PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
CROSS SECTION @ GRID LINE 2

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No. 3513-S
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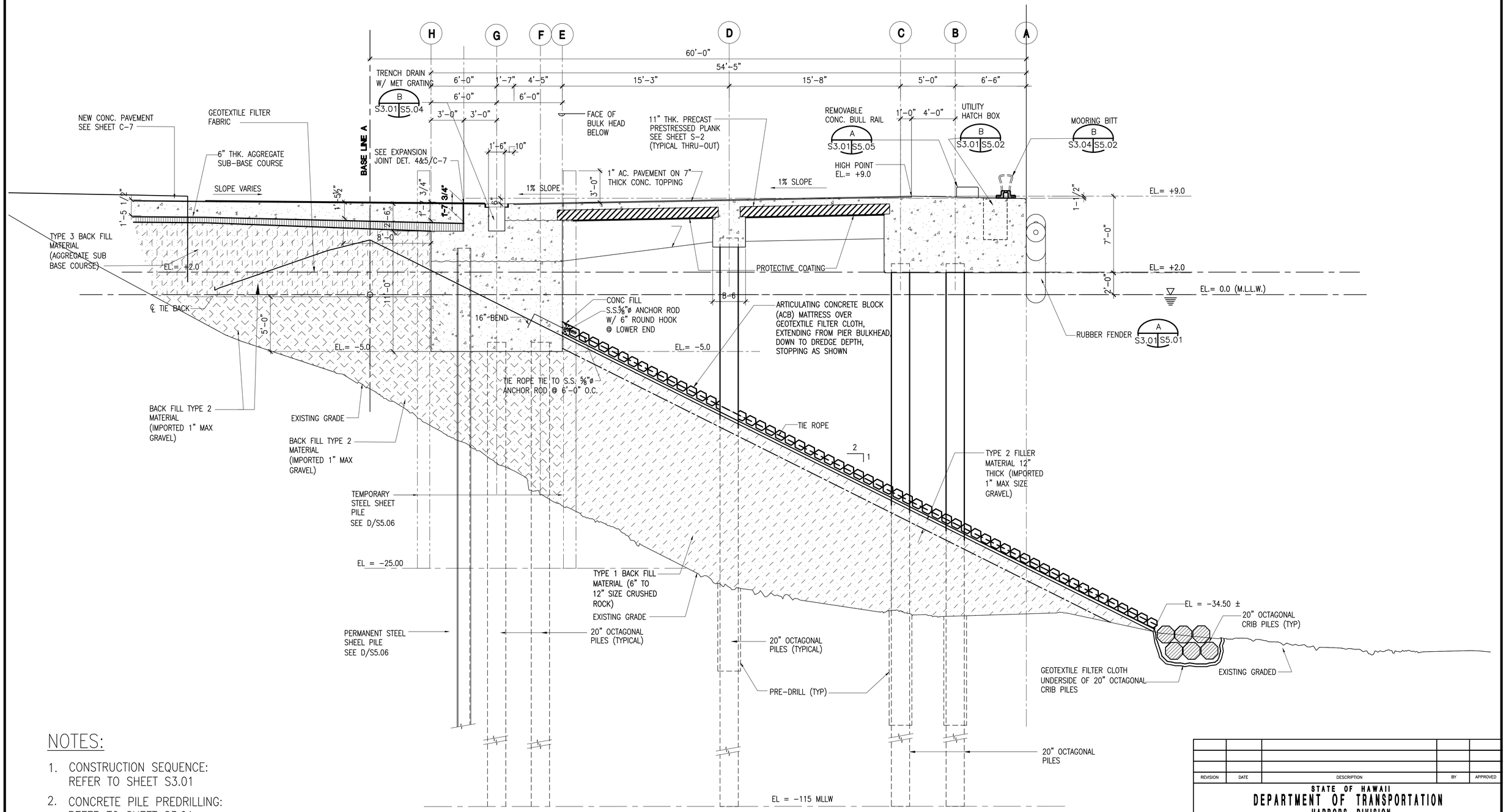
DATE:	FEB 2013
SCALE:	

JOB NUMBER **HMP 60901**

SHEET **S3.03**

33 OF 73 SHTS



STA 1+95.16

1 S1.02 S3.04 **CROSS SECTION @ GRID LINE 3**

SC: 1/4"= 1'-0"

NOTES:

1. CONSTRUCTION SEQUENCE: REFER TO SHEET S3.01
2. CONCRETE PILE PREDRILLING: REFER TO SHEET S3.01
3. REFER TO SEE SHEET 3.01 FOR ANY MISSING INFORMATION.

GRAPHIC SCALE:

4 3 2 1 0 4

SCALE: 1/4"= 1'-0"

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HILO HARBOR

SHEET TITLE
CROSS SECTION @ GRID LINE 3

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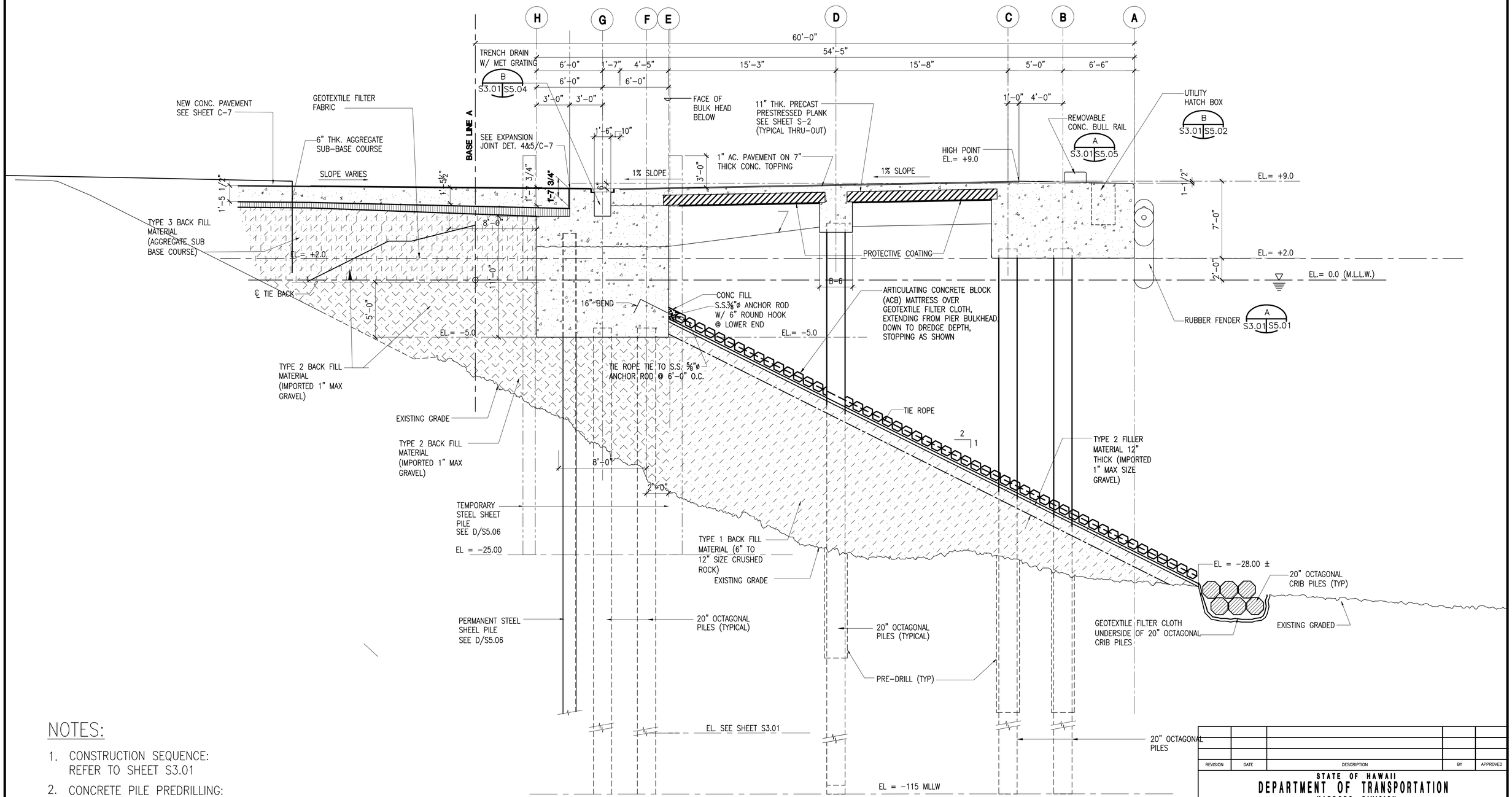
SHEET **S3.04**

34 OF 73 SHTS



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3. REFER TO SEE SHEET 3.01 FOR ANY MISSING INFORMATION.

STA 2+16.49

1 / S1.02 | S3.05 **CROSS SECTION @ GRID LINE 4**

SC: 1/4"= 1'-0"

GRAPHIC SCALE:

4 3 2 1 0 4

SCALE: 1/4"= 1'-0"

REVISION	DATE	DESCRIPTION	BY	APPROVED

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PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
CROSS SECTION @ GRID LINE 4

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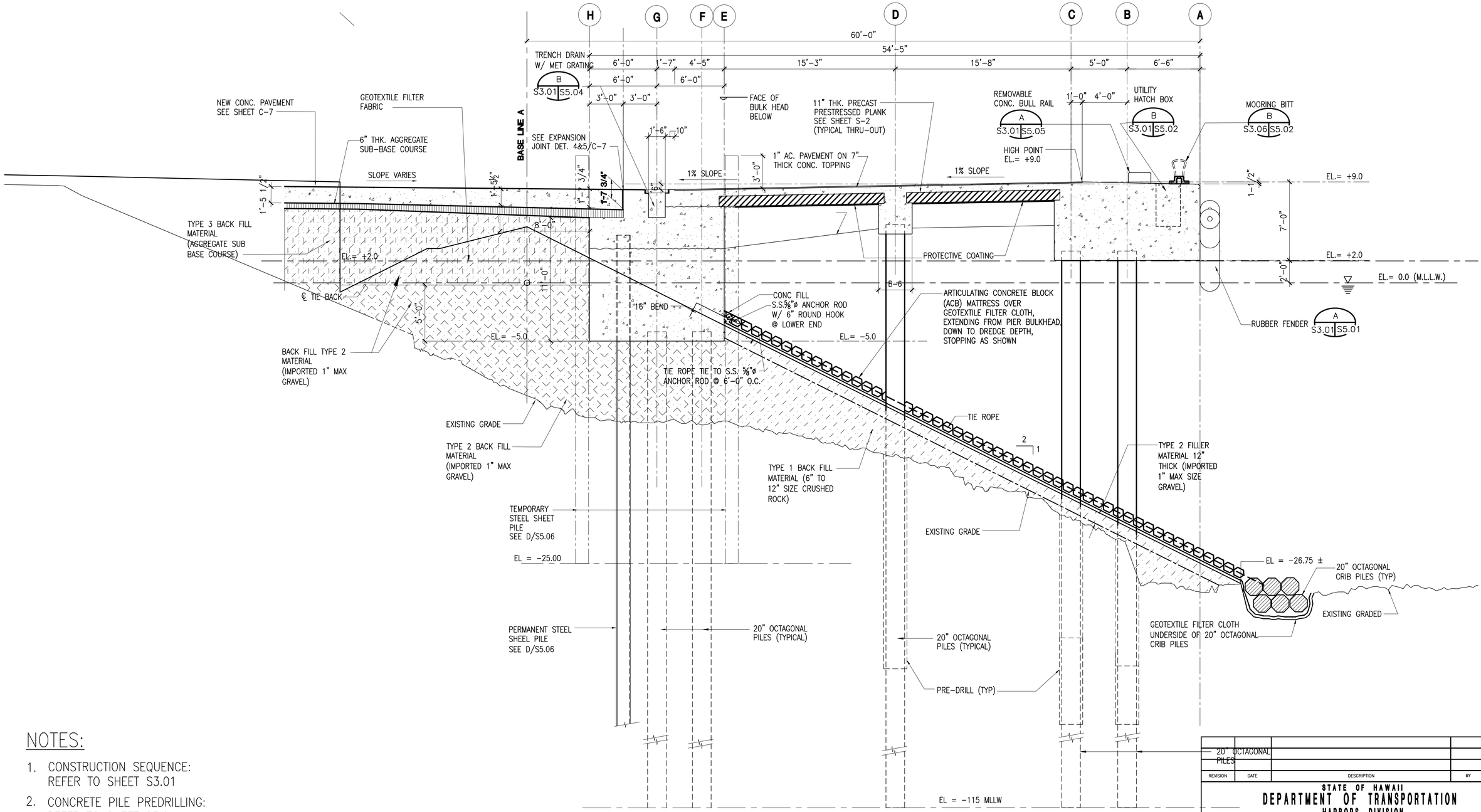
SHEET **S3.05**

35 OF 73 SHTS



NOTES:

1. CONSTRUCTION SEQUENCE: REFER TO SHEET S3.01
2. CONCRETE PILE PREDRILLING: REFER TO SHEET S3.01
3. REFER TO SEE SHEET 3.01 FOR ANY MISSING INFORMATION.

STA 2+37.82

1 / S1.02 | S3.06 — **CROSS SECTION @ GRID LINE 5**

SC: 1/4"= 1'-0"

GRAPHIC SCALE:

4 3 2 1 0 4

SCALE: 1/4"= 1'-0"

REVISION	DATE	DESCRIPTION	BY	APPROVED

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HARBORS DIVISION

JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
CROSS SECTION @ GRID LINE 5

JONG NAMGUNG
LICENSED PROFESSIONAL ENGINEER
No. 3513-S
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

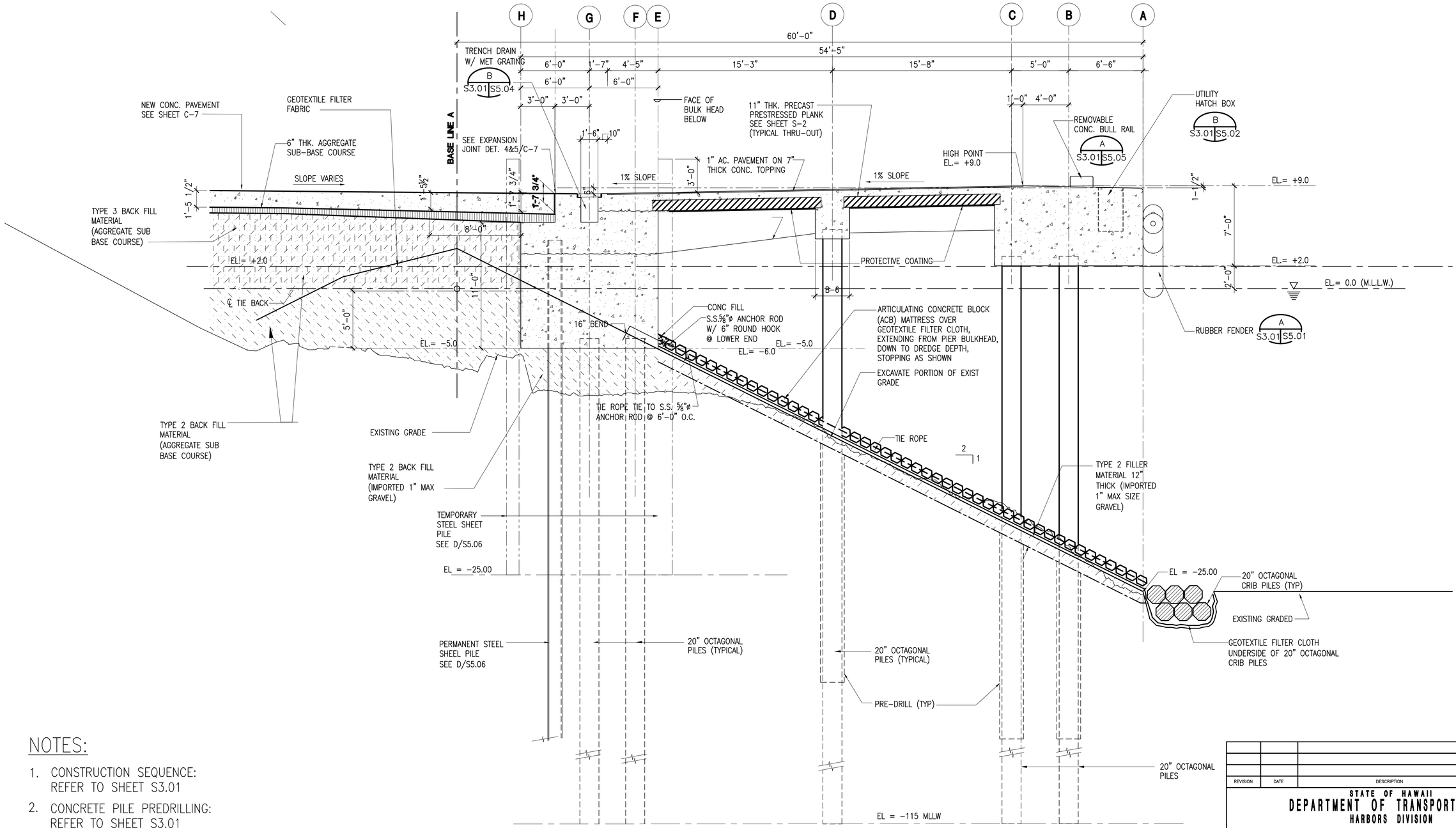
Jong Namgung 4/30/2014
SIGNATURE EXP. DATE

SUBMITTED BY: SECTION HEAD
RECOMMENDED BY: ENGINEERING PROGRAM MANAGER
APPROVED BY: HARBORS ADMINISTRATOR

DESIGNED BY: JN
DRAWN BY: FM
CHECKED BY: JN
DATE: FEB 2013
SCALE:

JOB NUMBER
HMP 60901

SHEET
S3.06
36 OF 73 SHTS



NOTES:

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1 / S1.02 | S3.07

STA 2+59.15
CROSS SECTION @ GRID LINE 6

SC: 1/4"= 1'-0"

GRAPHIC SCALE:

4 3 2 1 0 4

SCALE: 1/4"= 1'-0"

REVISION	DATE	DESCRIPTION	BY	APPROVED

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JOB TITLE
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HILO HARBOR

SHEET TITLE
CROSS SECTION @ GRID LINE 6

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SCALE:

APPROVED BY: ---------- HARBORS ADMINISTRATOR

JOB NUMBER
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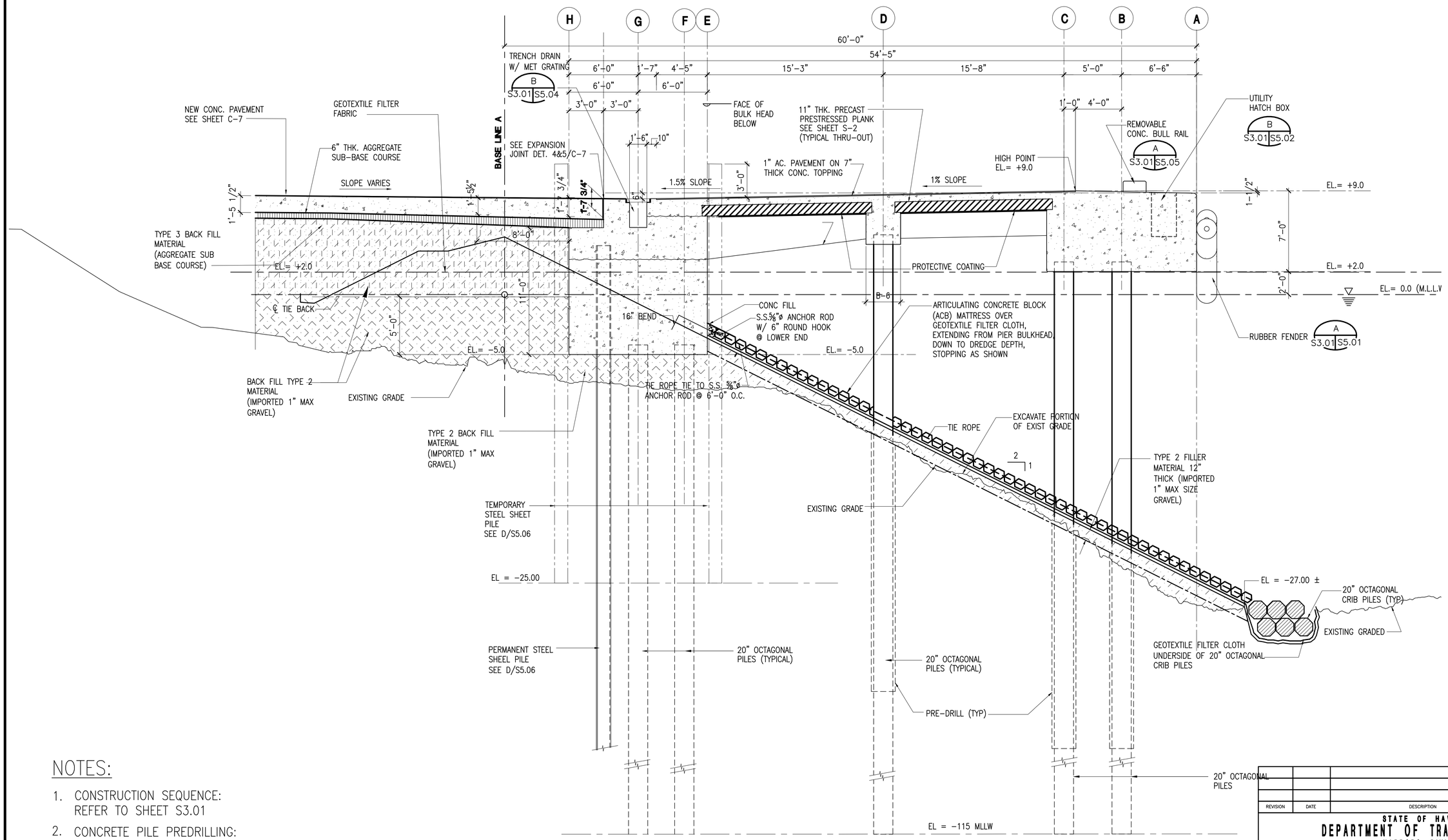
SHEET
S3.07
37 OF 73 SHTS



NOTES:

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STA 2+80.52

1 / S1.02 | S3.08 **CROSS SECTION @ GRID LINE 7**

SC: 1/4"= 1'-0"

GRAPHIC SCALE:

4 3 2 1 0 4

SCALE: 1/4"= 1'-0"

REVISION	DATE	DESCRIPTION	BY	APPROVED

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JOB TITLE
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PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
CROSS SECTION @ GRID LINE 7

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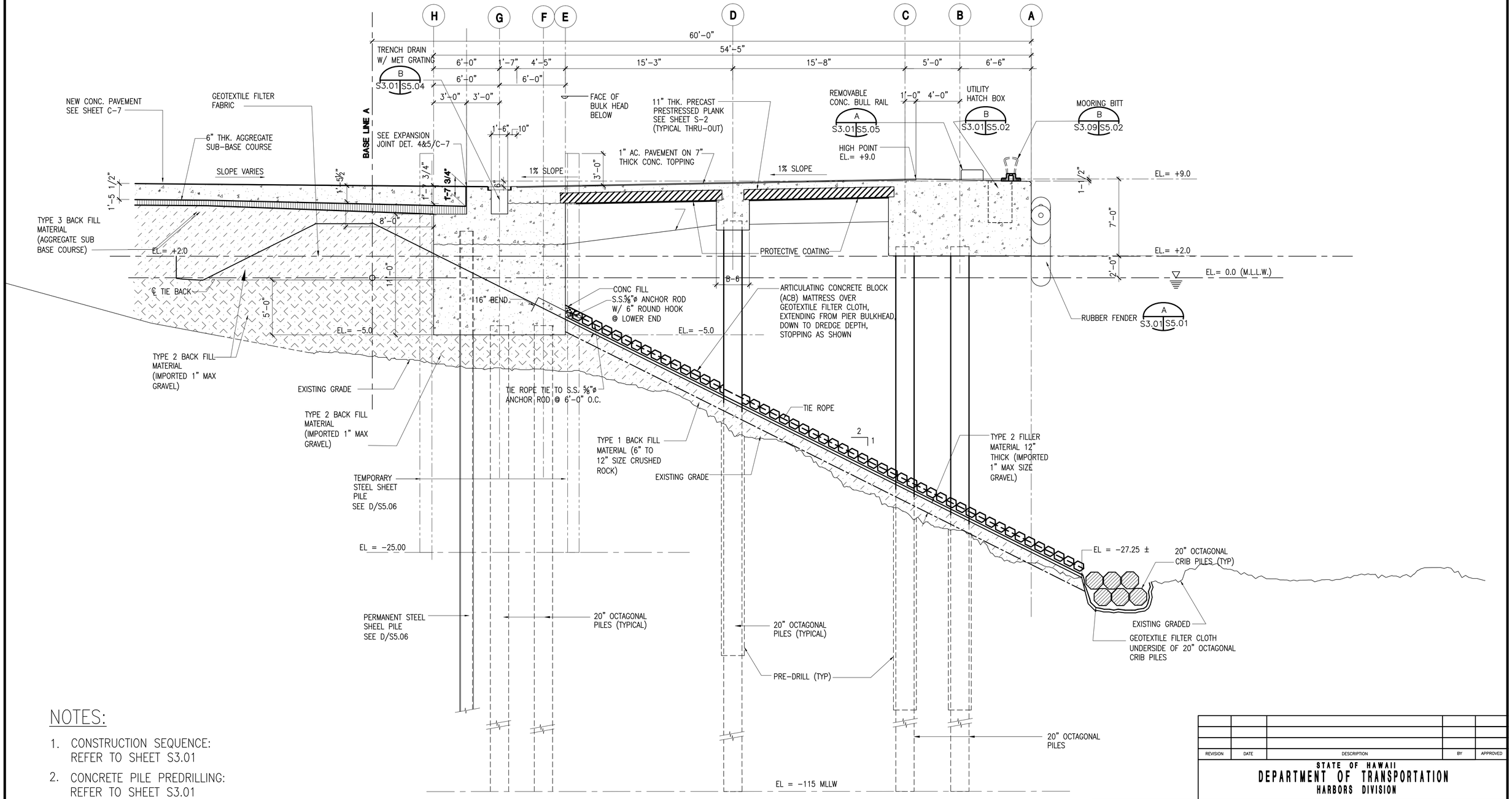
DATE: FEB 2013
SCALE:

APPROVED BY: HARBORS ADMINISTRATOR

JOB NUMBER **HMP 60901**

SHEET **S3.08**

38 OF 73 SHTS



STA 3+01.81

CROSS SECTION @ GRID LINE 8

1 S1.02 S3.09

SC: 1/4"= 1'-0"

NOTES:

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GRAPHIC SCALE:

4 3 2 1 0 4

SCALE: 1/4"= 1'-0"

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JOB TITLE
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HILO HARBOR

SHEET TITLE
CROSS SECTION @ GRID LINE 8

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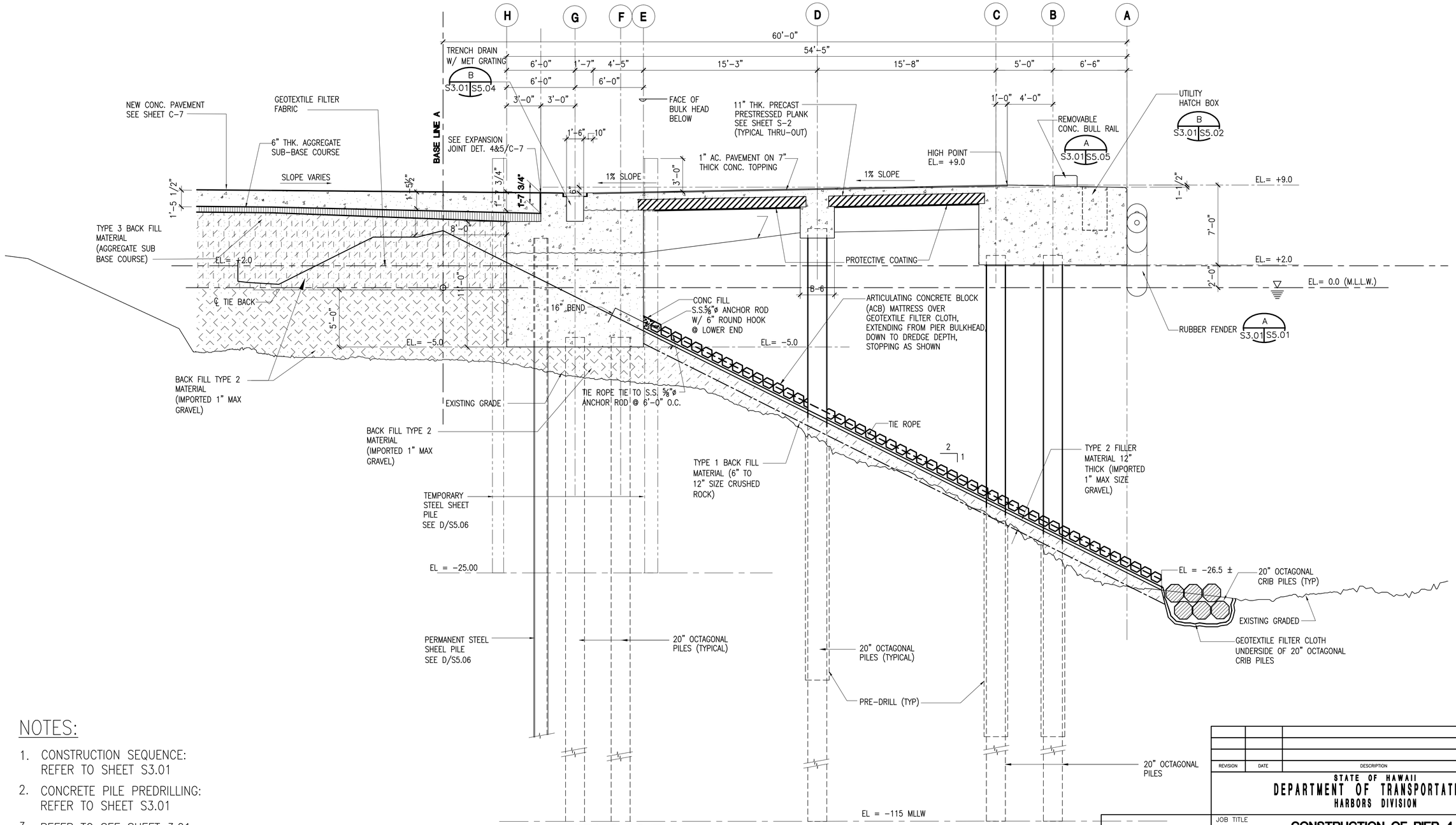
DATE: FEB 2013
SCALE:

APPROVED BY: HARBORS ADMINISTRATOR

JOB NUMBER
HMP 60901

SHEET
S3.09
39 OF 73 SHTS



NOTES:

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STA 3+23.17

CROSS SECTION @ GRID LINE 9

1 / S1.02 | S3.10

SC: 1/4"= 1'-0"

GRAPHIC SCALE:

4 3 2 1 0 4

SCALE: 1/4"= 1'-0"

REVISION	DATE	DESCRIPTION	BY	APPROVED

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HARBORS DIVISION

JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
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SHEET TITLE
CROSS SECTION @ GRID LINE 9

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Jong Namgung 4/30/2014
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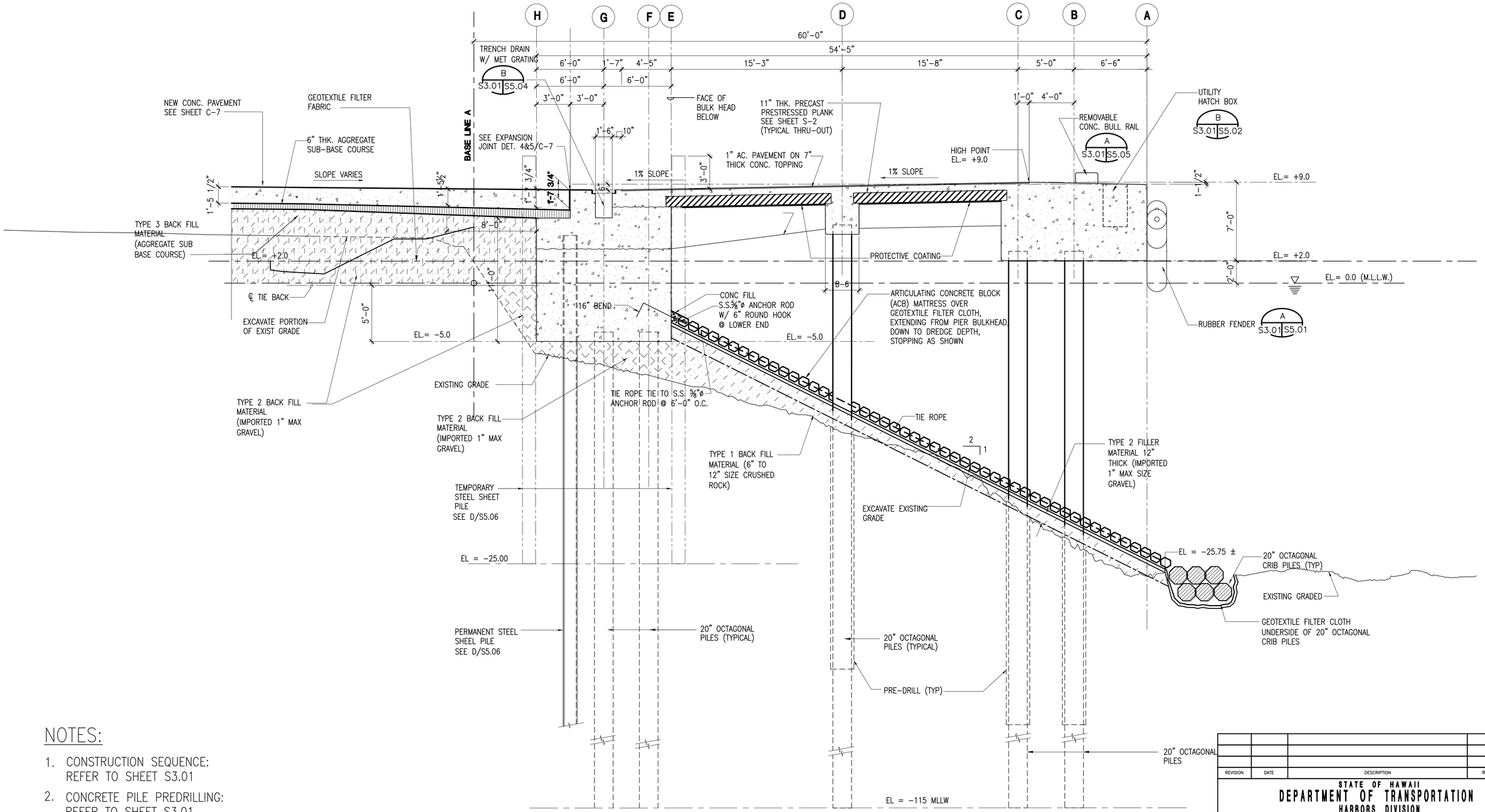
DATE: FEB 2013
SCALE:

APPROVED BY: HARBORS ADMINISTRATOR

JOB NUMBER
HMP 60901

SHEET
S3.10
39 OF 73 SHTS



NOTES:

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3. REFER TO SEE SHEET 3.01 FOR ANY MISSING INFORMATION.

STA 3+44.47

1 / S1.02 | S3.11 **CROSS SECTION @ GRID LINE 10**

SC: 1/4"= 1'-0"

GRAPHIC SCALE:

4 3 2 1 0 4

SCALE: 1/4"= 1'-0"

REVISION	DATE	DESCRIPTION	BY	APPROVED

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JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
CROSS SECTION @ GRID LINE 10

SUBMITTED BY: SECTION HEAD

RECOMMENDED BY: ENGINEERING PROGRAM MANAGER

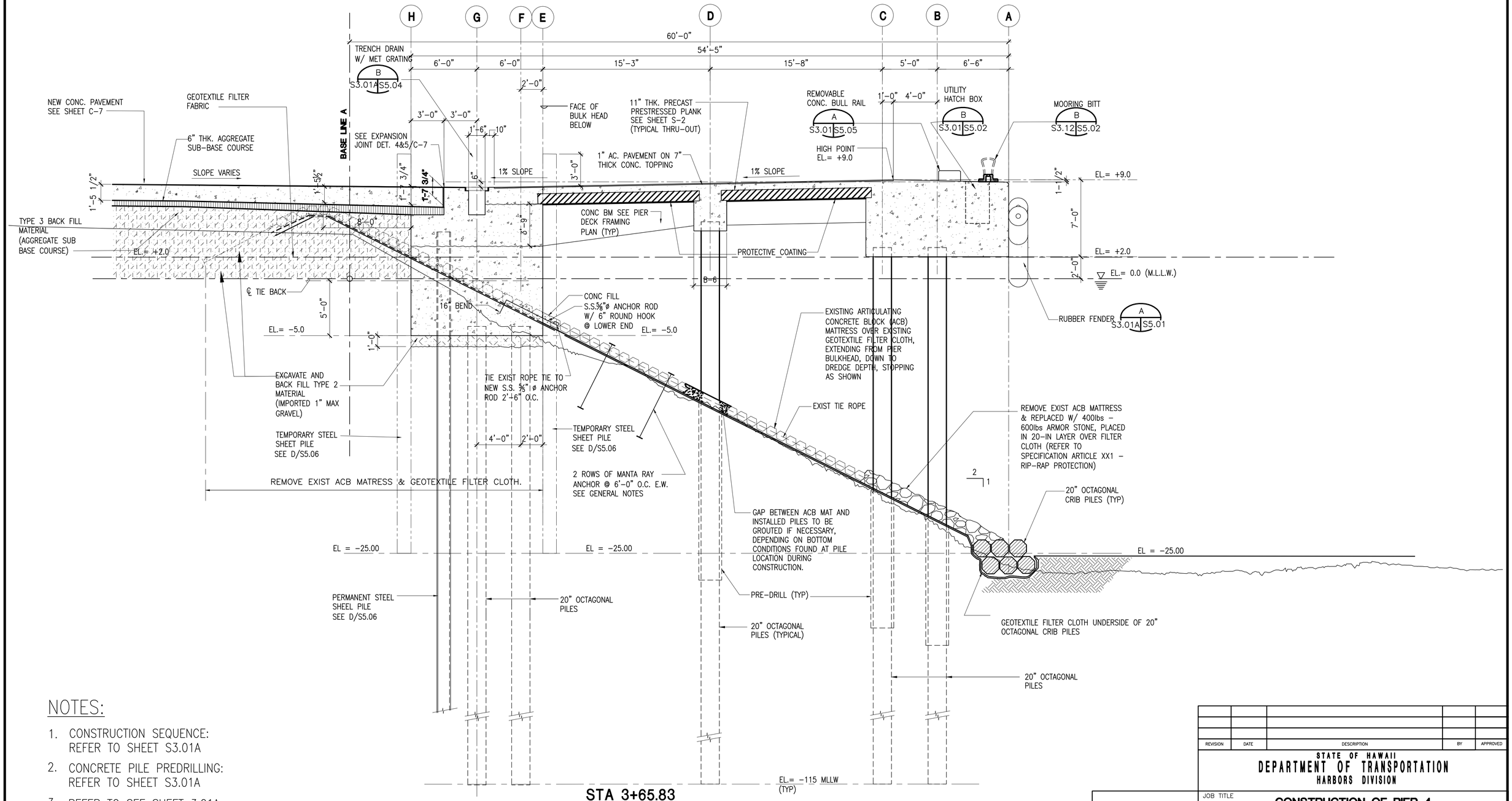
DESIGNED BY: JN
DRAWN BY: FM
CHECKED BY: JN
DATE: FEB 2013
SCALE:

APPROVED BY: HARBORS ADMINISTRATOR

JOB NUMBER **HMP 60901**

SHEET **S3.11**

41 OF 73 SHTS



STA 3+65.83

1 / S1.02 S3.12 **CROSS SECTION @ GRID LINE 11**

SC: 1/4"= 1'-0"

NOTES:

1. CONSTRUCTION SEQUENCE: REFER TO SHEET S3.01A
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GRAPHIC SCALE:

4 3 2 1 0 4

SCALE: 1/4"= 1'-0"

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CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
CROSS SECTION @ GRID LINE 11

SUBMITTED BY: SECTION HEAD

RECOMMENDED BY: ENGINEERING PROGRAM MANAGER

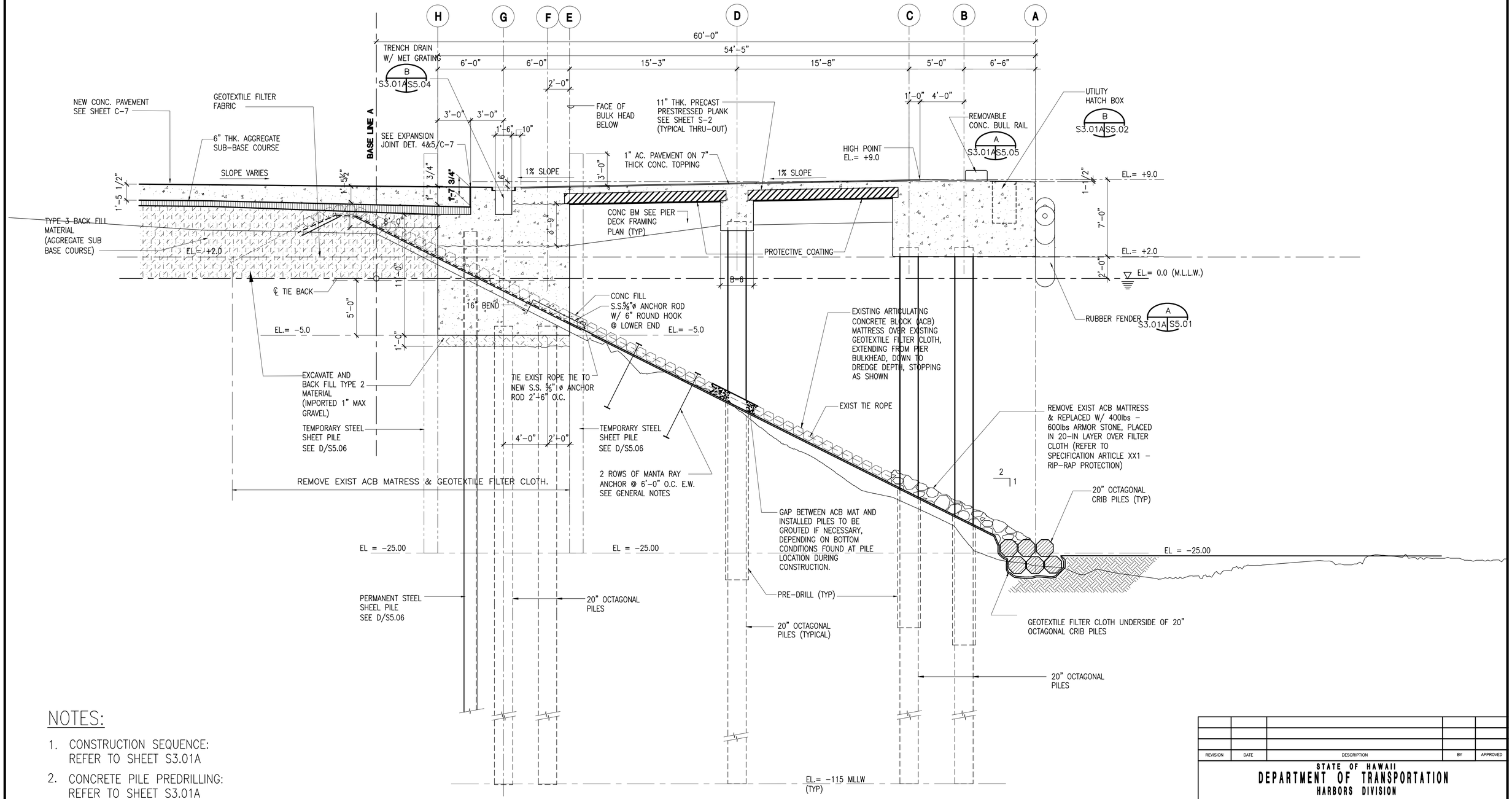
APPROVED BY: HARBORS ADMINISTRATOR

DESIGNED BY:	JN
DRAWN BY:	FM
CHECKED BY:	JN
DATE:	FEB 2013
SCALE:	

JOB NUMBER **HMP 60901**

SHEET **S3.12**

42 OF 73 SHTS



NOTES:

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STA 3+87.13

CROSS SECTION @ GRID LINE 12

1 / S1.02 | S3.13

SC: 1/4"= 1'-0"

GRAPHIC SCALE:

4 3 2 1 0 4

SCALE: 1/4"= 1'-0"

REVISION	DATE	DESCRIPTION	BY	APPROVED

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JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
CROSS SECTION @ GRID LINE 12

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Jong Namgung 4/30/2014

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RECOMMENDED BY: ENGINEERING PROGRAM MANAGER

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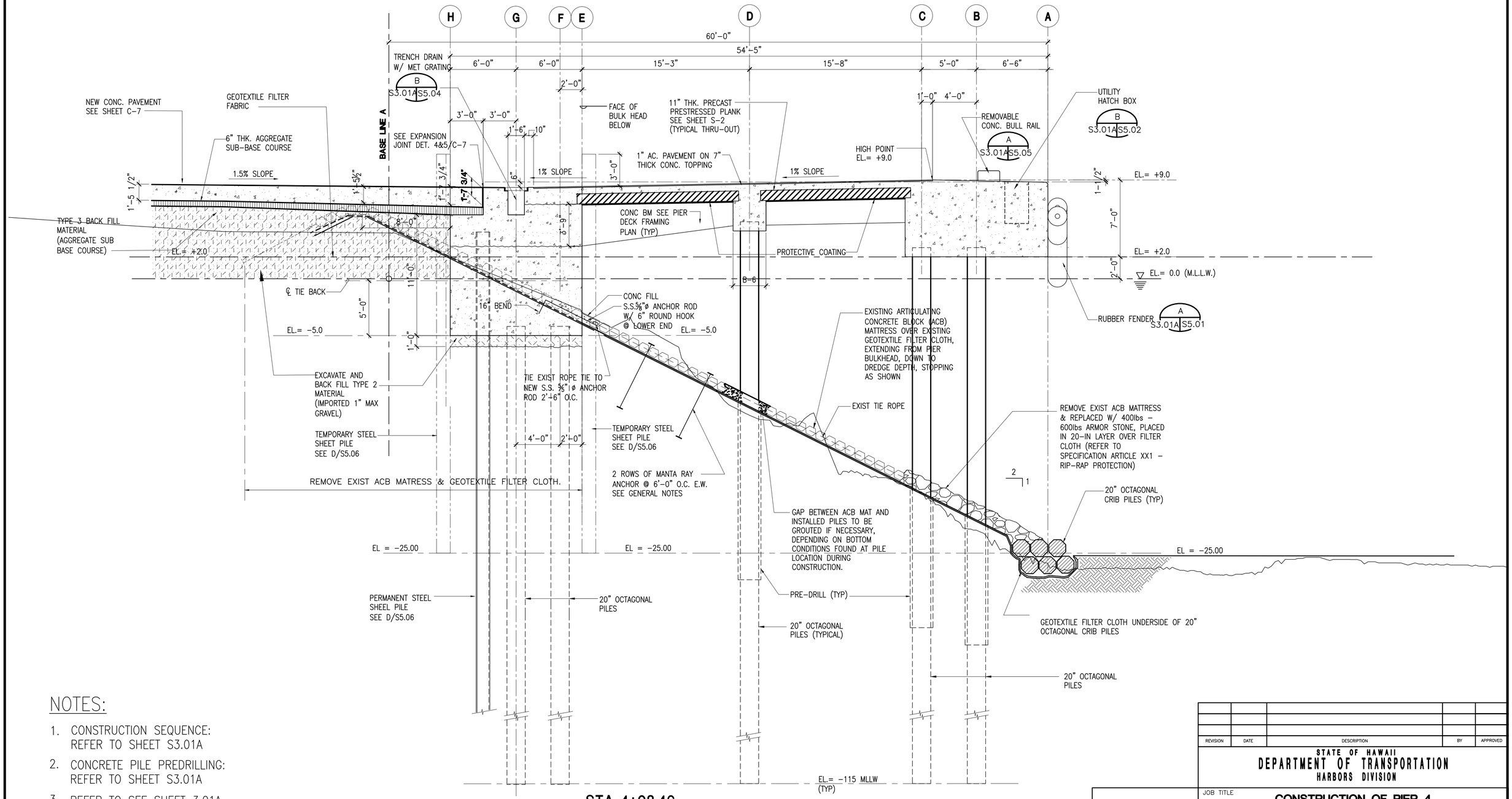
CHECKED BY:	JN
DATE:	FEB 2013
SCALE:	

JOB NUMBER
HMP 60901

SHEET
S3.13
43 OF 73 SHTS



STA 4+08.46

1 / S1.02 | S3.14 **CROSS SECTION @ GRID LINE 13**

SC: 1/4"= 1'-0"

GRAPHIC SCALE:

4 3 2 1 0 4

SCALE: 1/4"= 1'-0"

NOTES:

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JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
CROSS SECTION @ GRID LINE 13

SUBMITTED BY: SECTION HEAD

RECOMMENDED BY: ENGINEERING PROGRAM MANAGER

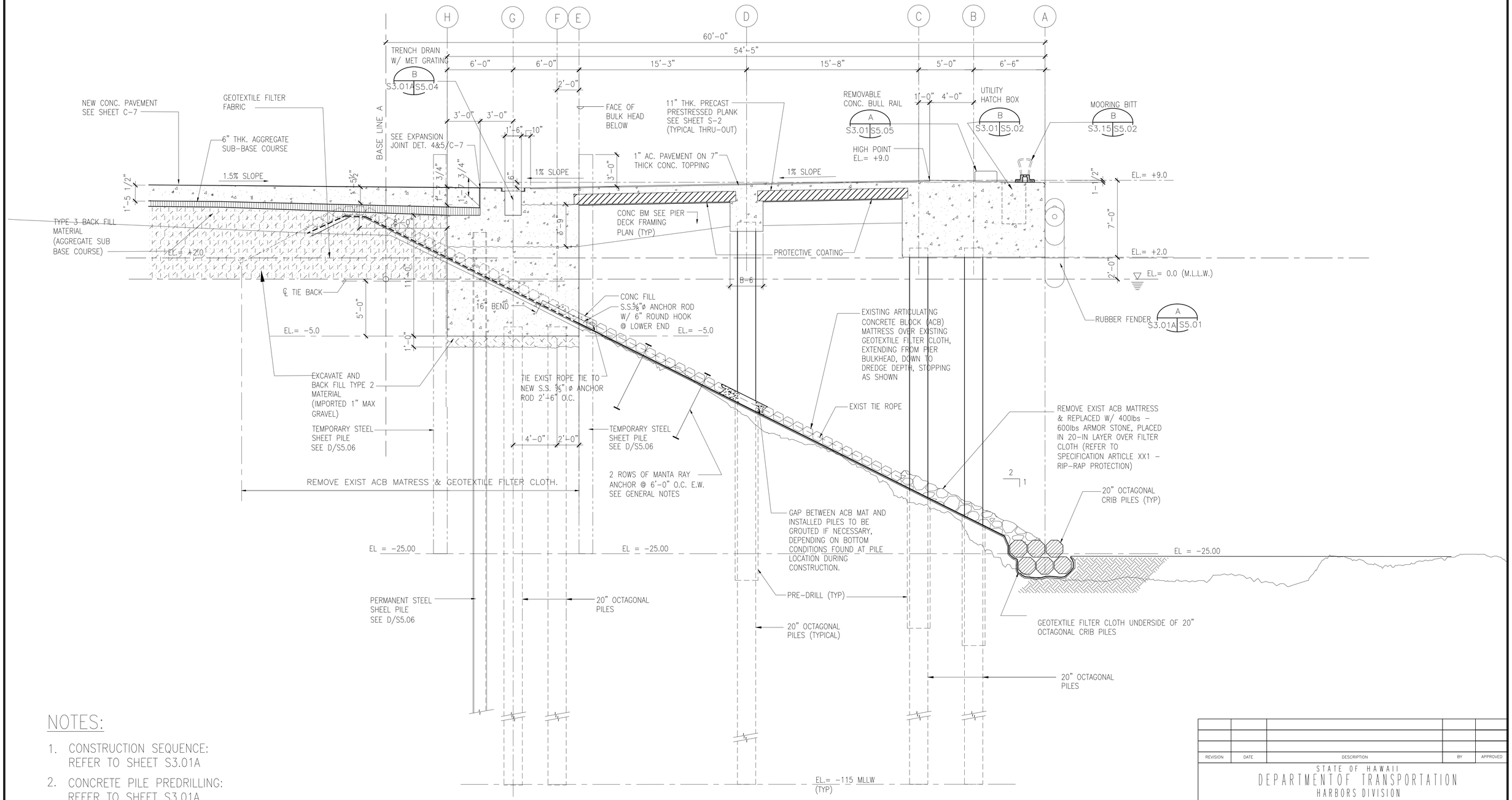
DESIGNED BY: JN
DRAWN BY: FM
CHECKED BY: JN
DATE: FEB 2013
SCALE:

APPROVED BY: HARBORS ADMINISTRATOR

JOB NUMBER **HMP 60901**

SHEET **S3.14**

44 OF 73 SHTS



NOTES:

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STA 4+29.83

1 / S1.02 | S3.15 — CROSS SECTION @ GRID LINE 14

SC: 1/4"= 1'-0"

GRAPHIC SCALE:

4 3 2 1 0 4

SCALE: 1/4"= 1'-0"

REVISION	DATE	DESCRIPTION	BY	APPROVED

STATE OF HAWAII
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CONSTRUCTION OF PIER 4
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HILO HARBOR

SHEET TITLE
CROSS SECTION @ GRID LINE 14

SUBMITTED BY: ---------- SECTION HEAD

RECOMMENDED BY: ---------- ENGINEERING PROGRAM MANAGER

DESIGNED BY:	JN
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CHECKED BY:	JN
DATE:	FEB 2013
SCALE:	

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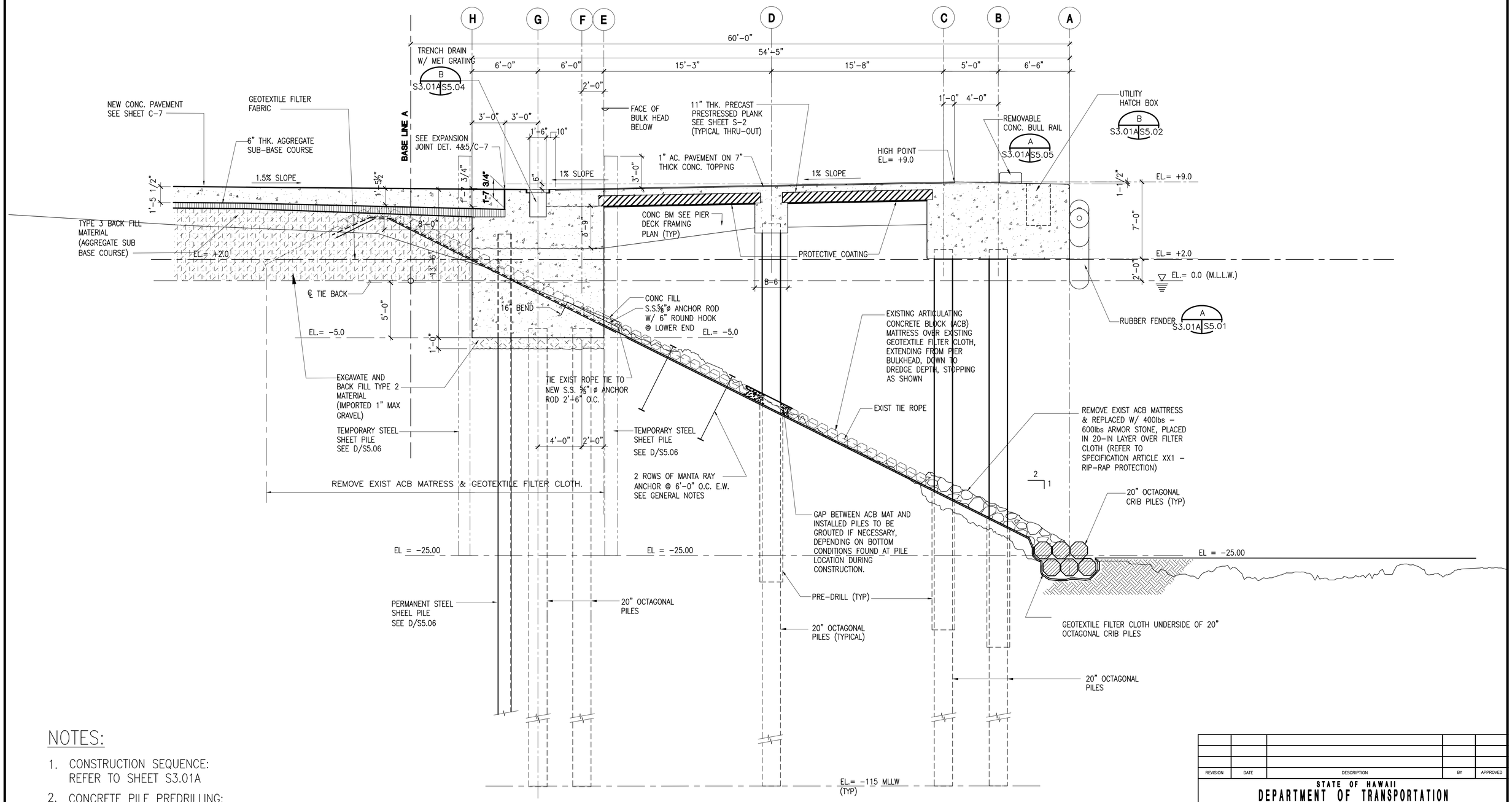
SHEET
S3.15
45 OF 73 SHTS



STA 4+51.12

1 / S1.02 | S3.16 **CROSS SECTION @ GRID LINE 15**

SC: 1/4"= 1'-0"

NOTES:

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GRAPHIC SCALE:

4 3 2 1 0 4

SCALE: 1/4"= 1'-0"

REVISION	DATE	DESCRIPTION	BY	APPROVED

STATE OF HAWAII
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JOB TITLE
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SHEET TITLE
CROSS SECTION @ GRID LINE 15

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SCALE:	

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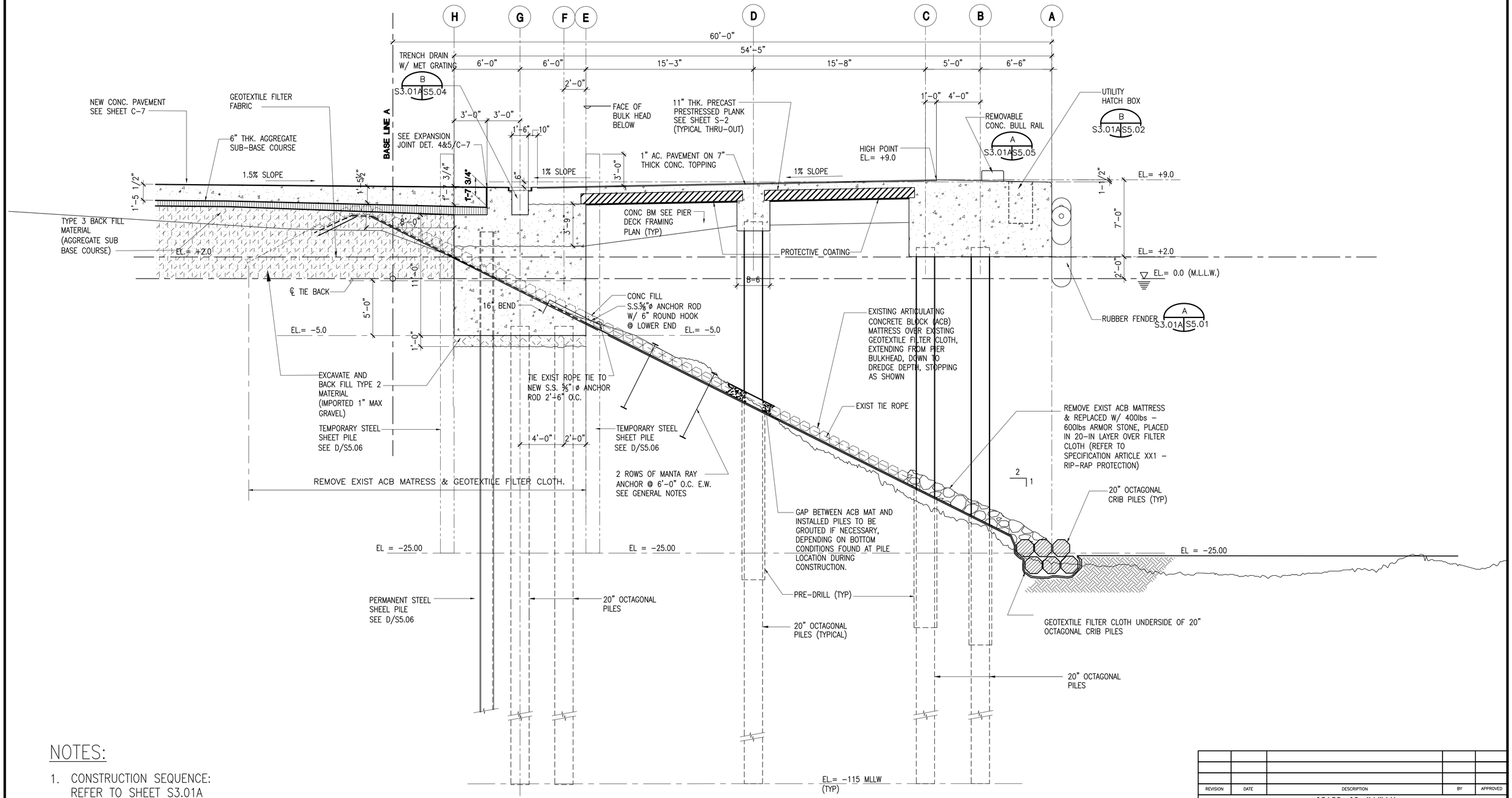
JOB NUMBER **HMP 60901**

SHEET **S3.16**

45 OF 73 SHTS



STA 4+72.45

1 / S1.02 S3.17 **CROSS SECTION @ GRID LINE 16**

SC: 1/4"= 1'-0"

NOTES:

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GRAPHIC SCALE:

4 3 2 1 0 4

SCALE: 1/4"= 1'-0"

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HILO HARBOR

SHEET TITLE
CROSS SECTION @ GRID LINE 16

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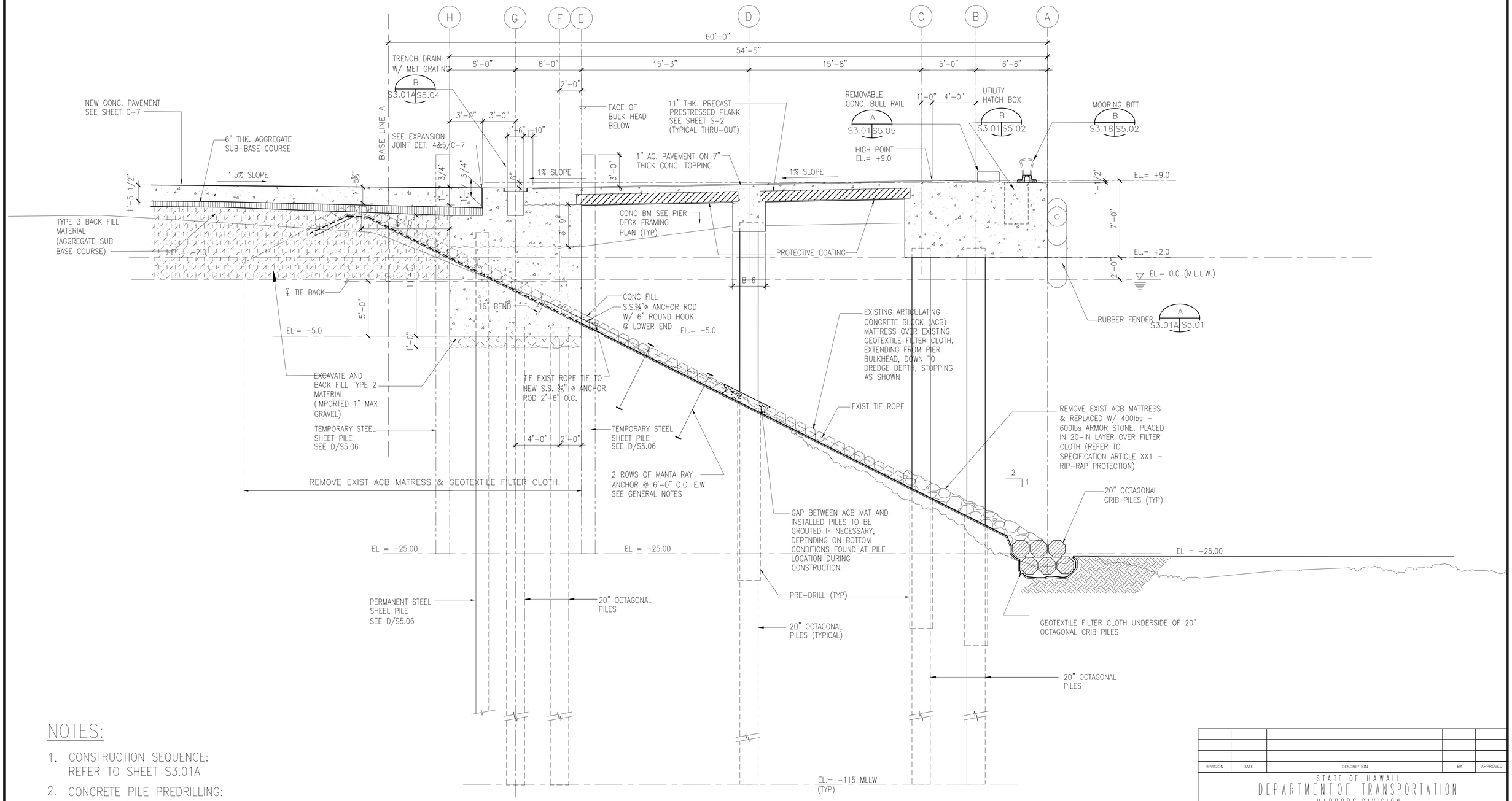
SHEET **S3.17**

47 OF 73 SHTS



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STA 4+93.83

1 / S1.02 S3.18 CROSS SECTION @ GRID LINE 17

SC: 1/4"= 1'-0"

GRAPHIC SCALE:

4 3 2 1 0 4

SCALE: 1/4"= 1'-0"

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HILO HARBOR

SHEET TITLE
CROSS SECTION @ GRID LINE 17

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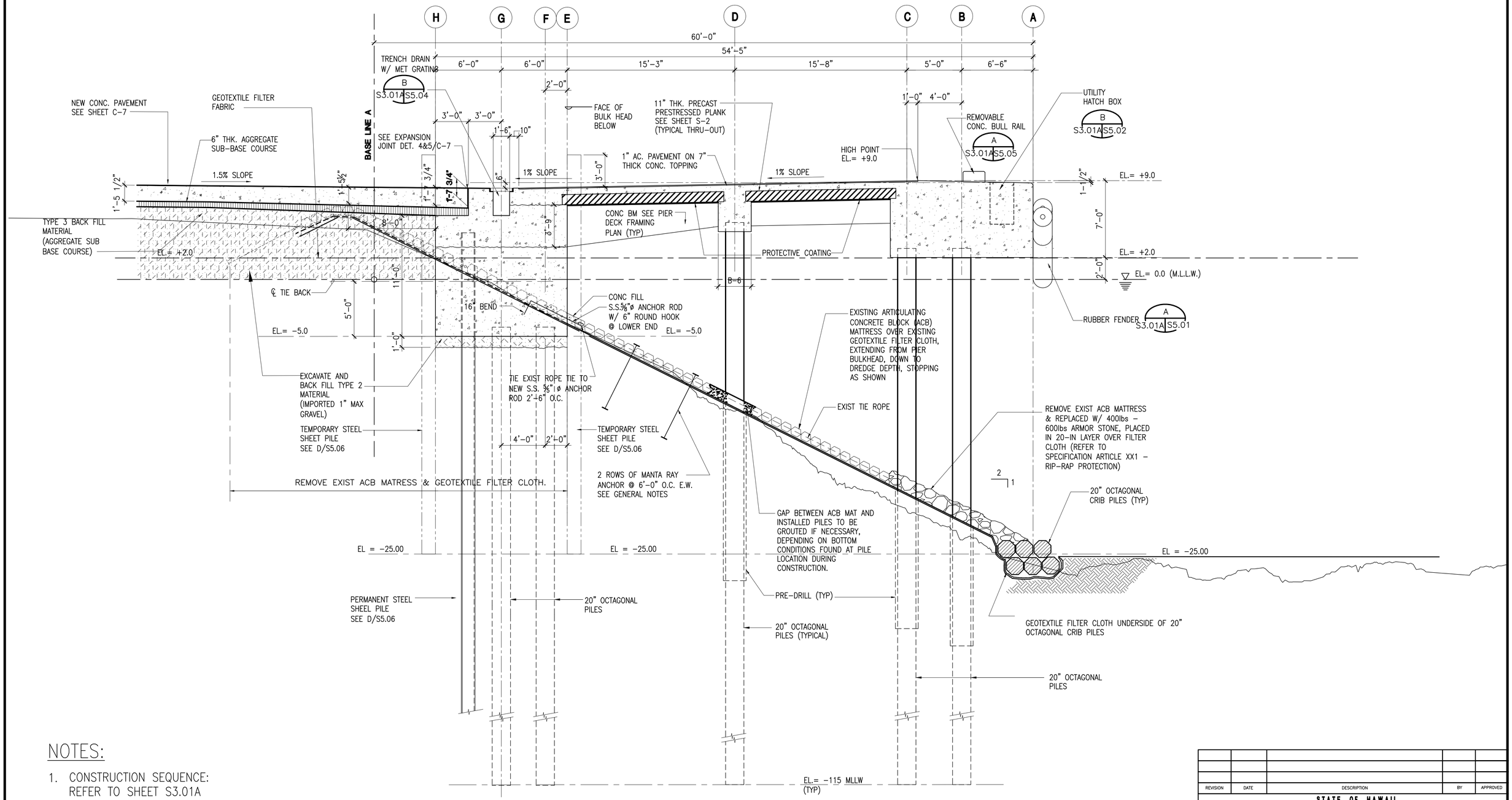
CHECKED BY: JN
DATE: FEB 2013
SCALE:

APPROVED BY: HARBORS ADMINISTRATOR

JOB NUMBER HMP 60901

SHEET S3.18

48 OF 73 SHTS



NOTES:

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STA 5+15.11

1 S1.03 S3.19 **CROSS SECTION @ GRID LINE 18**

SC: 1/4"= 1'-0"

GRAPHIC SCALE:

4 3 2 1 0 4

SCALE: 1/4"= 1'-0"

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SHEET TITLE
CROSS SECTION @ GRID LINE 18

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RECOMMENDED BY: ENGINEERING PROGRAM MANAGER

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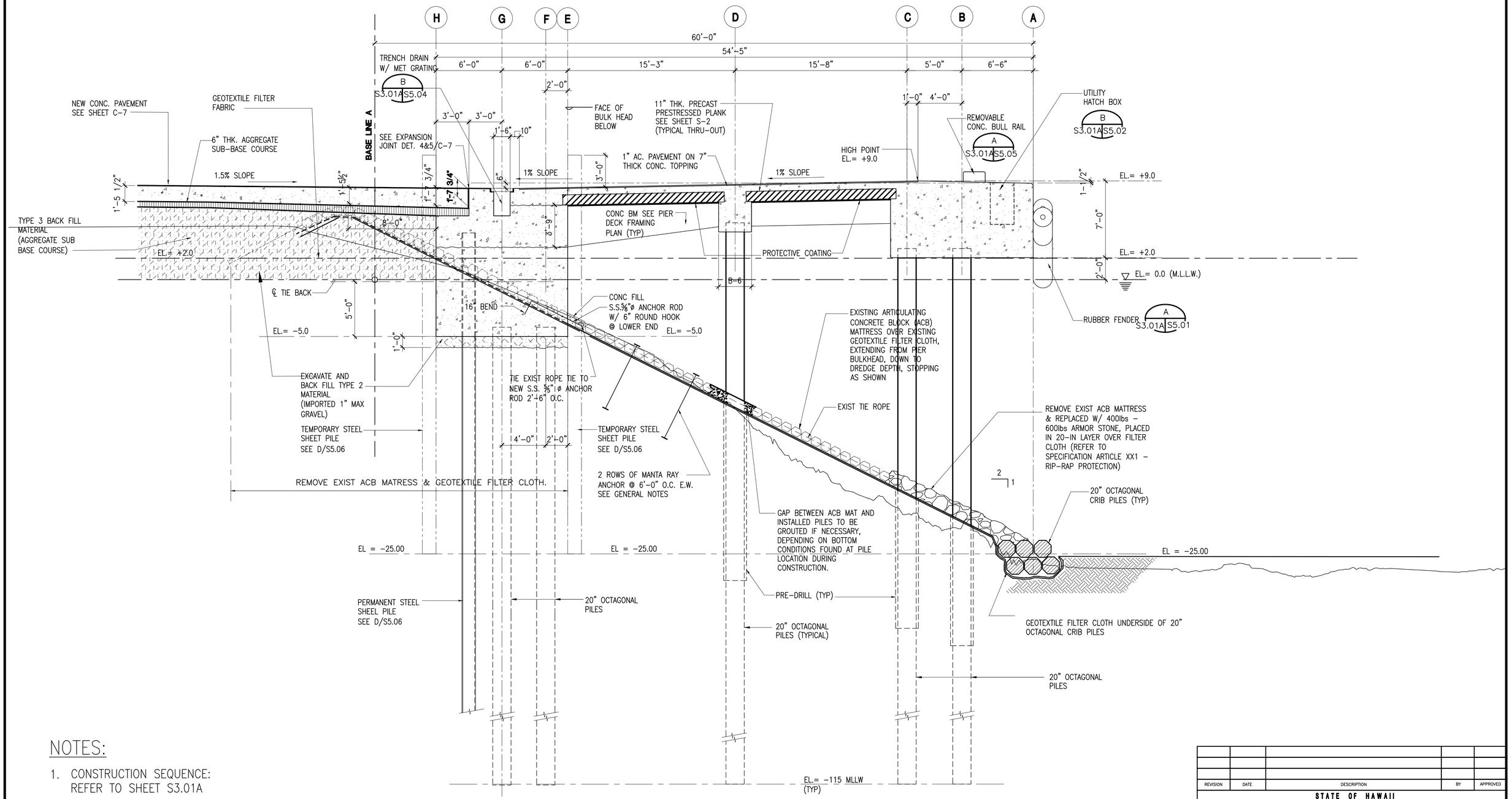
DRAWN BY:	FM
CHECKED BY:	JN
DATE:	FEB 2013
SCALE:	

JOB NUMBER **HMP 60901**

SHEET **S3.19**

49 OF 73 SHTS



NOTES:

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3. REFER TO SEE SHEET 3.01A FOR ANY MISSING INFORMATION.

STA 5+36.44

1 / S1.03 | S3.20 **CROSS SECTION @ GRID LINE 19**

SC: 1/4"= 1'-0"

GRAPHIC SCALE:

4 3 2 1 0 4

SCALE: 1/4"= 1'-0"

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SHEET TITLE
CROSS SECTION @ GRID LINE 19

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Jong Namgung 4/30/2014
SIGNATURE EXP. DATE

SUBMITTED BY: SECTION HEAD
RECOMMENDED BY: ENGINEERING PROGRAM MANAGER

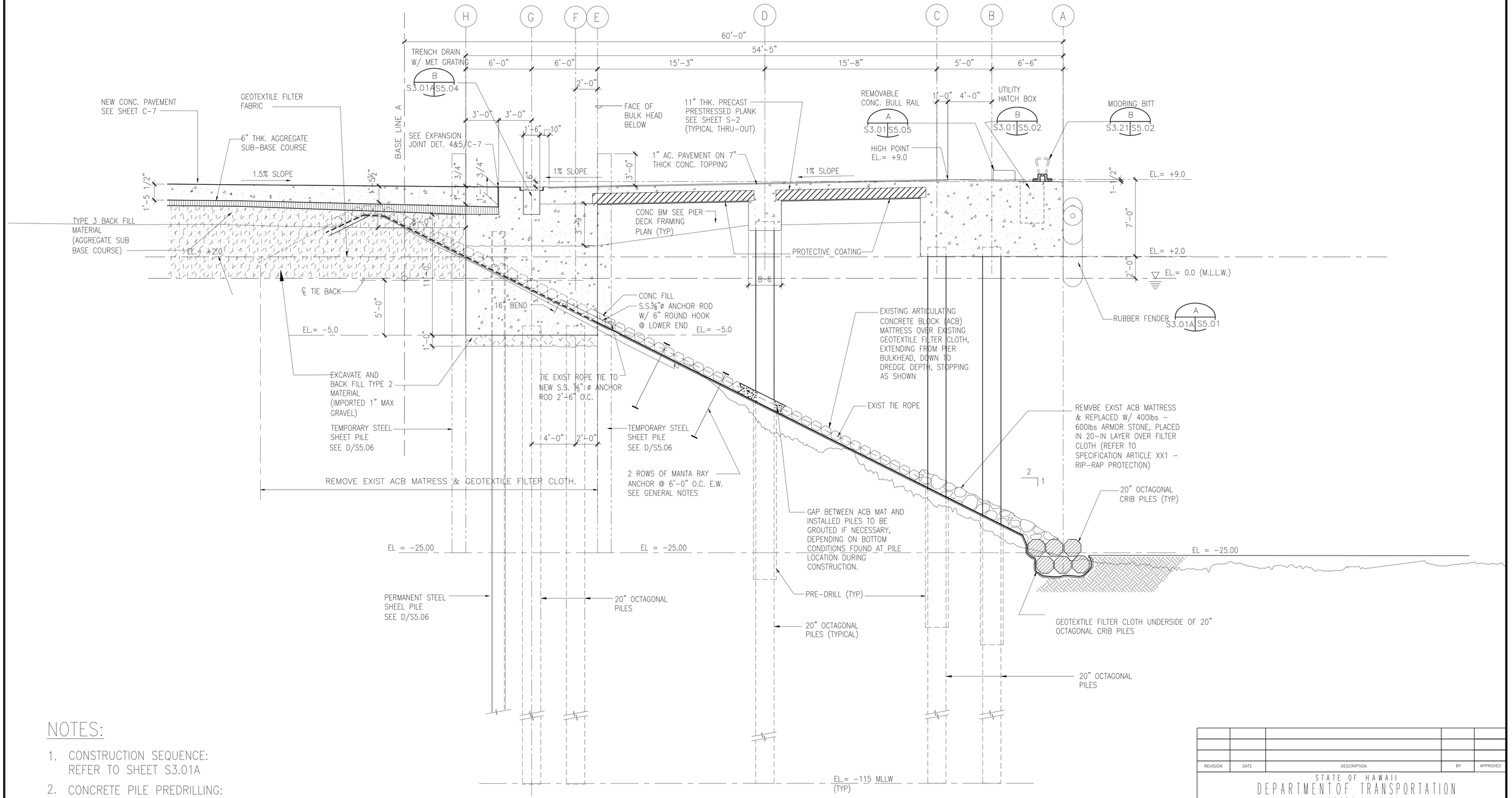
DESIGNED BY: JN
DRAWN BY: FM
CHECKED BY: JN
DATE: FEB 2013
SCALE:

APPROVED BY: HARBORS ADMINISTRATOR

JOB NUMBER **HMP 60901**

SHEET **S3.20**

50 OF 73 SHTS



NOTES:

1. CONSTRUCTION SEQUENCE: REFER TO SHEET S3.01A
2. CONCRETE PILE PREDRILLING: REFER TO SHEET S3.01A
3. REFER TO SEE SHEET 3.01A FOR ANY MISSING INFORMATION.

STA 5+57.83

1 / S1.03 S3.21 CROSS SECTION @ GRID LINE 20

SC: 1/4"= 1'-0"

GRAPHIC SCALE:

4 3 2 1 0 4

SCALE: 1/4"= 1'-0"

REVISION	DATE	DESCRIPTION	BY	APPROVED

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HARBORS DIVISION

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Jong Namgung 4/30/2014

SIGNATURE EXP. DATE

JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
CROSS SECTION @ GRID LINE 20

SUBMITTED BY: SECTION HEAD

RECOMMENDED BY: ENGINEERING PROGRAM MANAGER

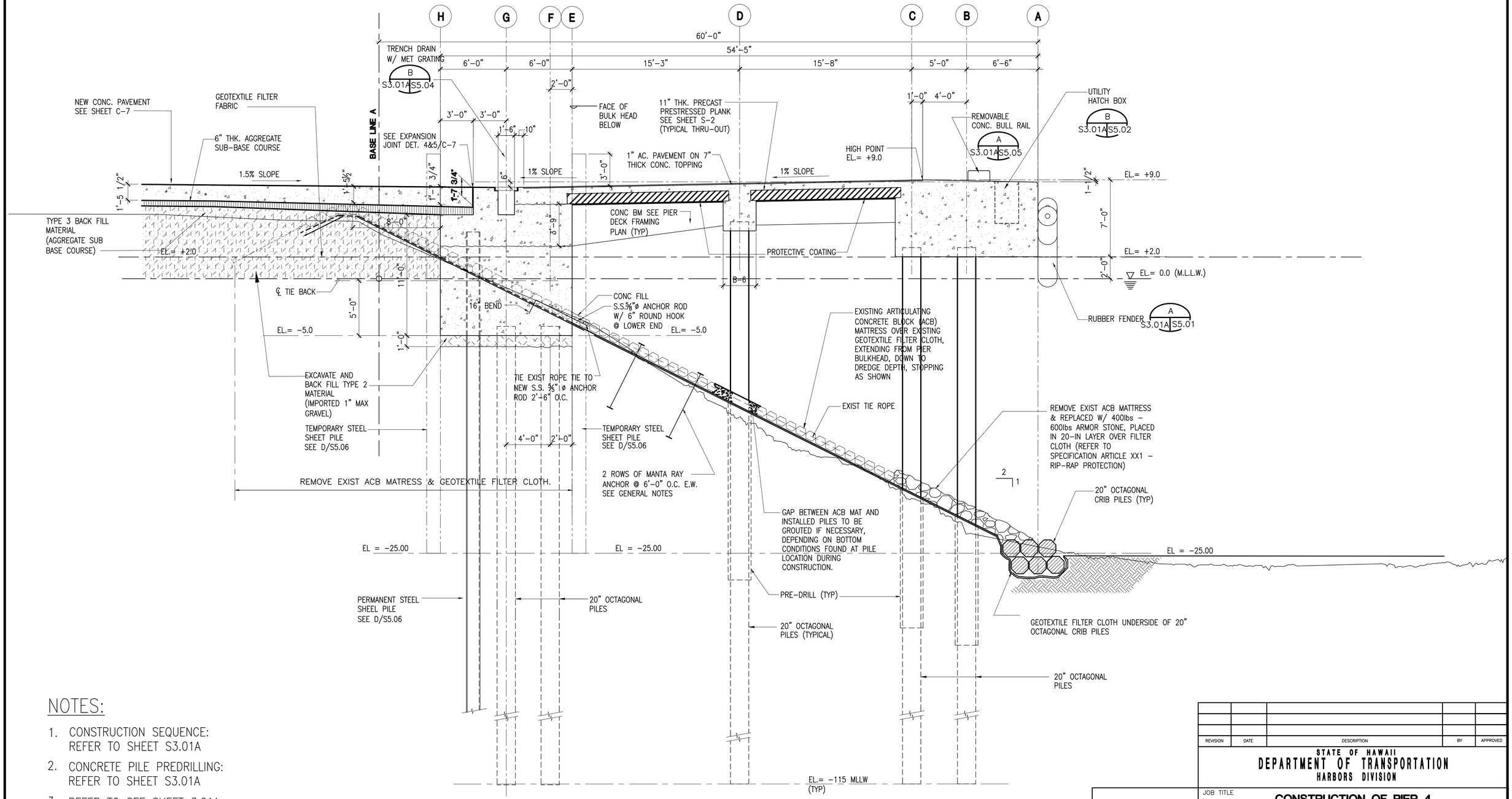
DESIGNED BY: JN
DRAWN BY: FM
CHECKED BY: JN
DATE: FEB 2013
SCALE:

APPROVED BY: HARBORS ADMINISTRATOR

JOB NUMBER HMP 60901

SHEET S3.21

51 OF 73 SHTS



STA 5+79.10

1 S1.03 S3.22 **CROSS SECTION @ GRID LINE 21**

SC: 1/4"= 1'-0"

NOTES:

1. CONSTRUCTION SEQUENCE: REFER TO SHEET S3.01A
2. CONCRETE PILE PREDRILLING: REFER TO SHEET S3.01A
3. REFER TO SEE SHEET 3.01A FOR ANY MISSING INFORMATION.

GRAPHIC SCALE:

4 3 2 1 0 4

SCALE: 1/4"= 1'-0"

REVISION	DATE	DESCRIPTION	BY	APPROVED

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HARBORS DIVISION

JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
CROSS SECTION @ GRID LINE 21

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4/30/2014
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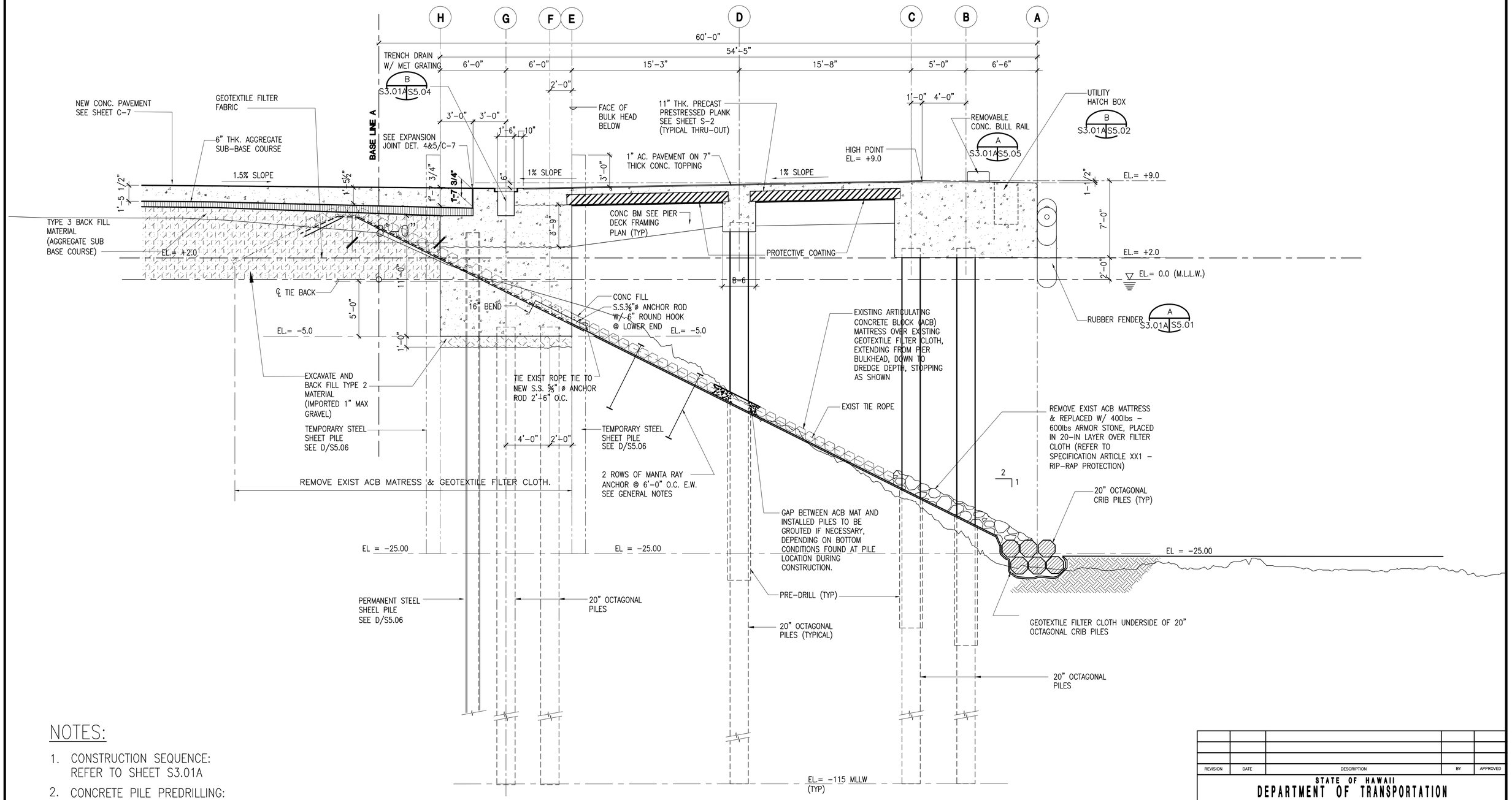
DESIGNED BY: JN
DRAWN BY: FM
CHECKED BY: JN
DATE: FEB 2013
SCALE:

APPROVED BY: HARBORS ADMINISTRATOR

JOB NUMBER **HMP 60901**

SHEET **S3.22**

52 OF 73 SHTS



NOTES:

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2. CONCRETE PILE PREDRILLING: REFER TO SHEET S3.01A
3. REFER TO SEE SHEET 3.01A FOR ANY MISSING INFORMATION.

STA 6+00.43

1 / S1.03 | S3.23 **CROSS SECTION @ GRID LINE 22**

SC: 1/4"= 1'-0"

GRAPHIC SCALE:

4 3 2 1 0 4

SCALE: 1/4"= 1'-0"

REVISION	DATE	DESCRIPTION	BY	APPROVED

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HARBORS DIVISION

JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
CROSS SECTION @ GRID LINE 22

JONG NAMGUNG
LICENSED PROFESSIONAL ENGINEER
No. 3513-S
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SIGNATURE — EXP. DATE: 4/30/2014

SUBMITTED BY: SECTION HEAD

RECOMMENDED BY: ENGINEERING PROGRAM MANAGER

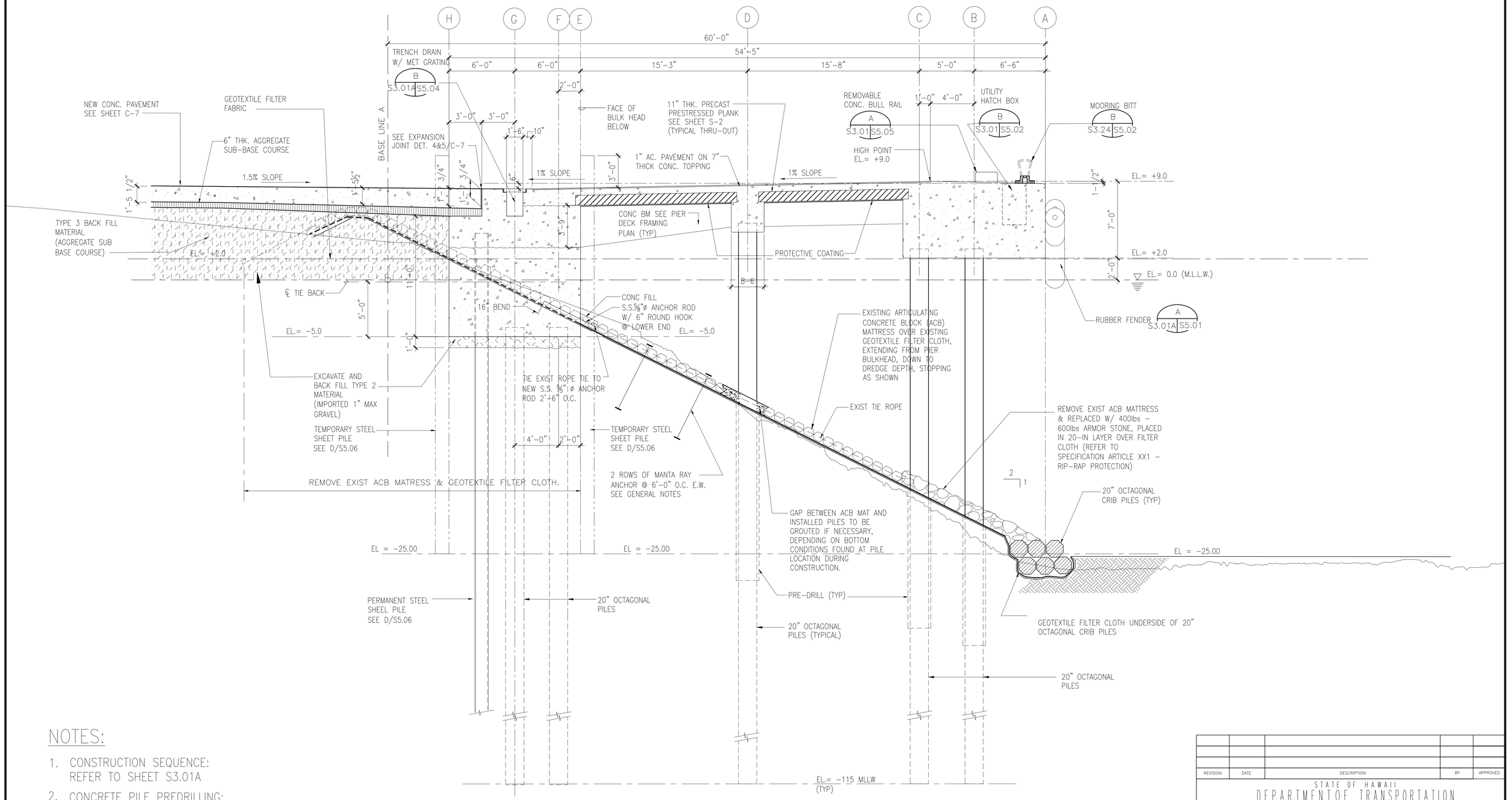
APPROVED BY: HARBORS ADMINISTRATOR

DESIGNED BY:	JN
DRAWN BY:	FM
CHECKED BY:	JN
DATE:	FEB 2013
SCALE:	

JOB NUMBER **HMP 60901**

SHEET **S3.23**

53 OF 73 SHTS



NOTES:

1. CONSTRUCTION SEQUENCE: REFER TO SHEET S3.01A
2. CONCRETE PILE PREDRILLING: REFER TO SHEET S3.01A
3. REFER TO SEE SHEET 3.01A FOR ANY MISSING INFORMATION.

STA 6+21.83

1 / S1.03 S3.24 CROSS SECTION @ GRID LINE 23

SC: 1/4"= 1'-0"

GRAPHIC SCALE:

4 3 2 1 0 4

SCALE: 1/4"= 1'-0"

REVISION	DATE	DESCRIPTION	BY	APPROVED

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HARBORS DIVISION

JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
CROSS SECTION @ GRID LINE 23

JONG NAMGUNG
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No. 3513-S
HAWAII, U.S.A.

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Jong Namgung 4/30/2014
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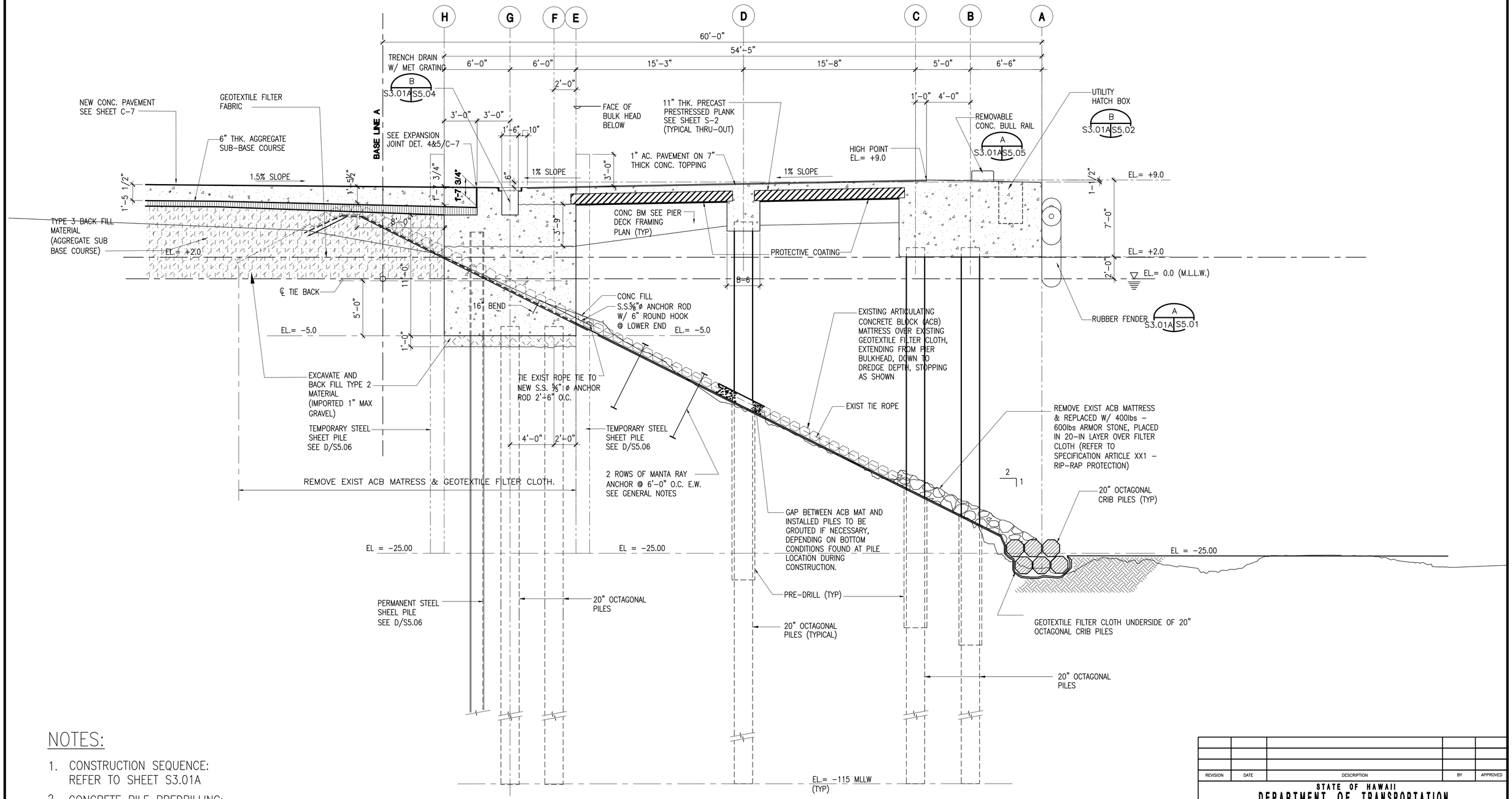
DESIGNED BY: JN
DRAWN BY: FM
CHECKED BY: JN
DATE: FEB 2013
SCALE:

JOB NUMBER HMP 60901

SHEET S3.24
54 OF 73 SHTS



NOTES:

1. CONSTRUCTION SEQUENCE: REFER TO SHEET S3.01A
2. CONCRETE PILE PREDRILLING: REFER TO SHEET S3.01A
3. REFER TO SEE SHEET 3.01A FOR ANY MISSING INFORMATION.

STA 6+43.09

1 / S1.03 | S3.25 **CROSS SECTION @ GRID LINE 24**

SC: 1/4"= 1'-0"

GRAPHIC SCALE:

4 3 2 1 0 4

SCALE: 1/4"= 1'-0"

REVISION	DATE	DESCRIPTION	BY	APPROVED

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HARBORS DIVISION

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Jong Namgung 4/30/2014

SIGNATURE EXP. DATE

JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
CROSS SECTION @ GRID LINE 24

SUBMITTED BY: SECTION HEAD

RECOMMENDED BY: ENGINEERING PROGRAM MANAGER

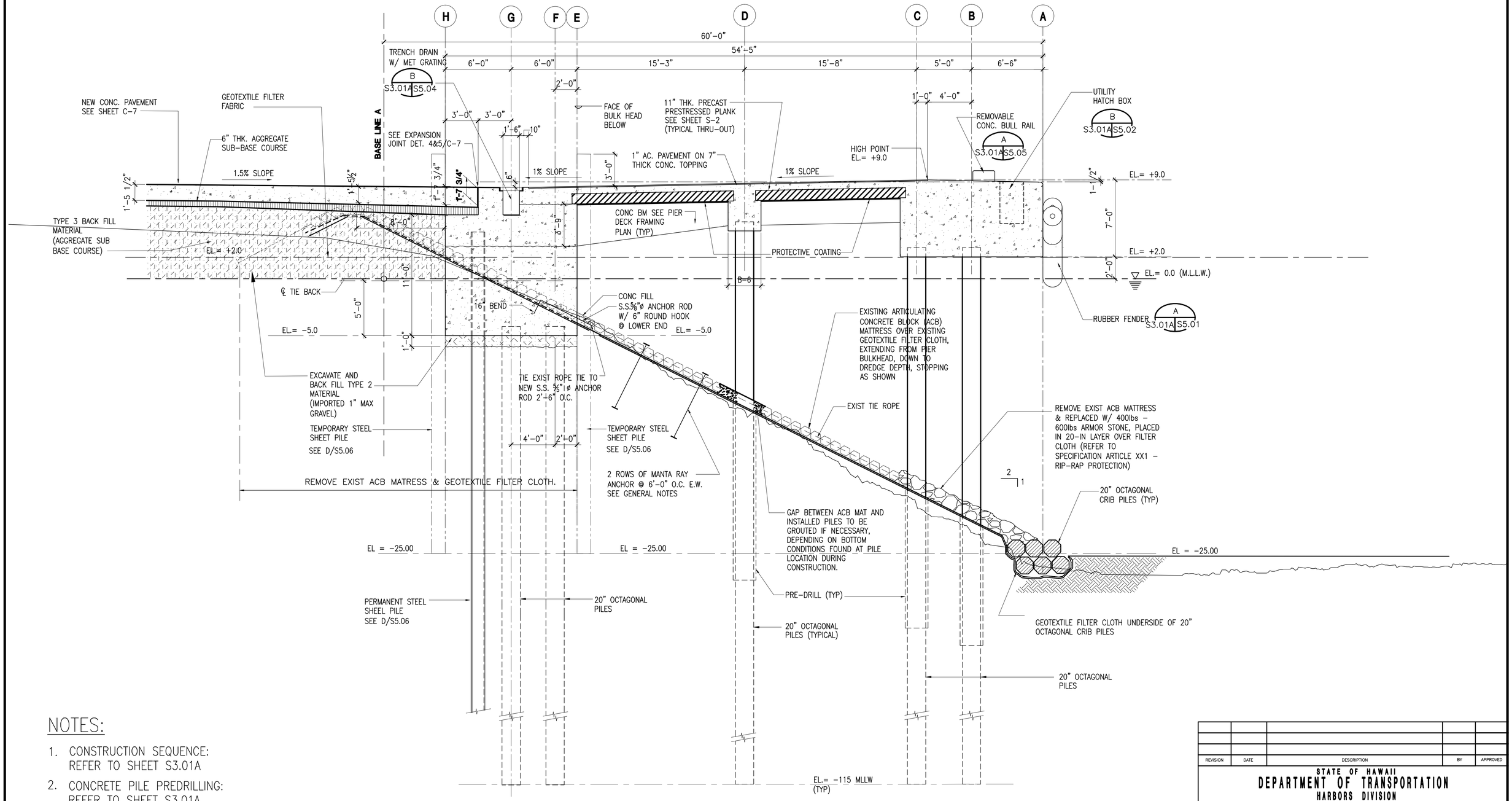
APPROVED BY: HARBORS ADMINISTRATOR

DESIGNED BY:	JN
DRAWN BY:	FM
CHECKED BY:	JN
DATE:	FEB 2013
SCALE:	

JOB NUMBER **HMP 60901**

SHEET **S3.25**

55 OF 73 SHTS



NOTES:

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3. REFER TO SEE SHEET 3.01A FOR ANY MISSING INFORMATION.

STA 6+64.42

1 / S1.03 | S3.26

CROSS SECTION @ GRID LINE 25

SC: 1/4"= 1'-0"

GRAPHIC SCALE:

4 3 2 1 0 4

SCALE: 1/4"= 1'-0"

REVISION	DATE	DESCRIPTION	BY	APPROVED

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HARBORS DIVISION

JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
CROSS SECTION @ GRID LINE 25

JONG NAMGUNG
LICENSED PROFESSIONAL ENGINEER
No. 3513-S
HAWAII, U.S.A.

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Jong Namgung
4/30/2014
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SUBMITTED BY: SECTION HEAD
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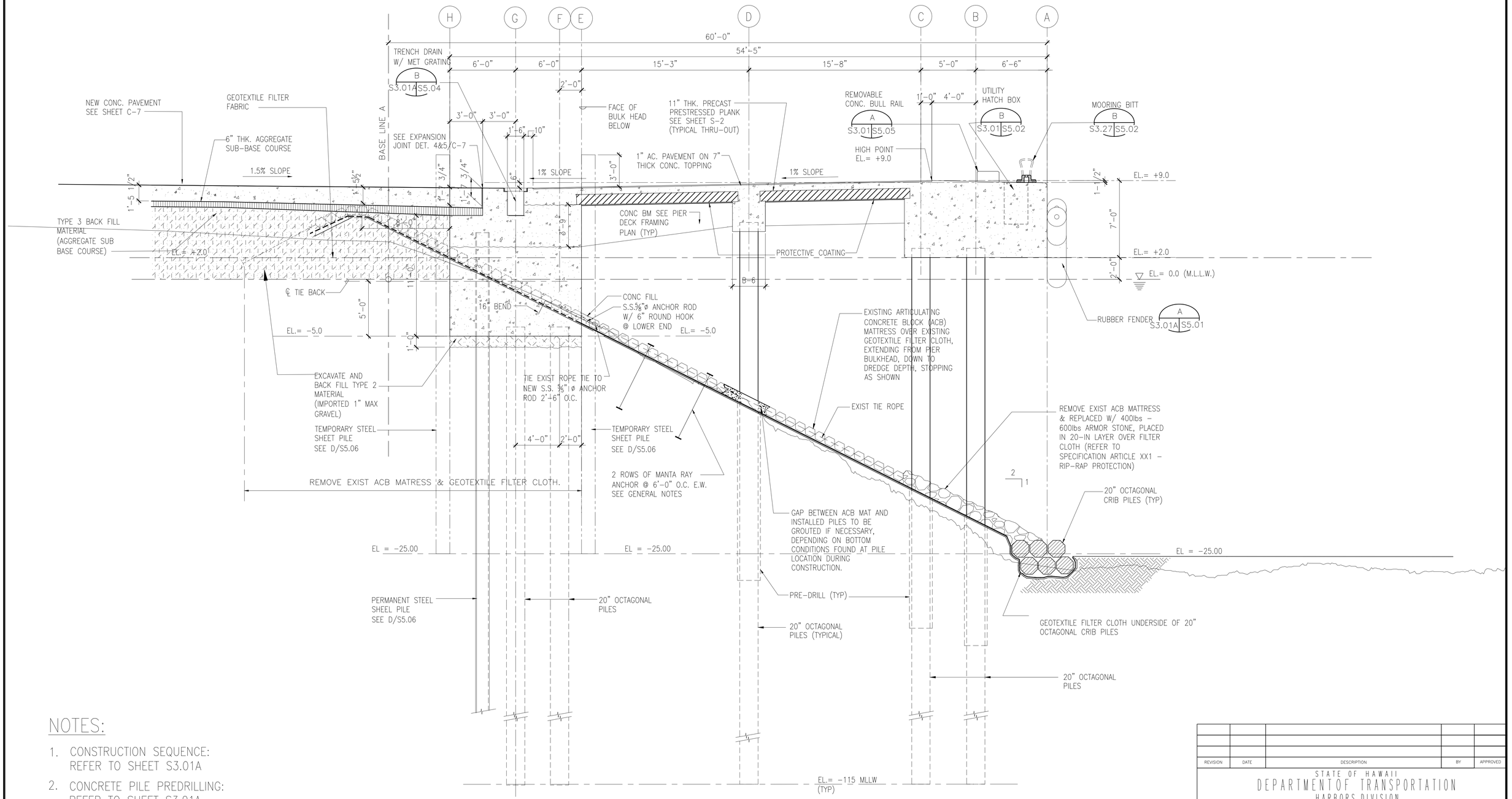
DESIGNED BY: JN
DRAWN BY: FM
CHECKED BY: JN
DATE: FEB 2013
SCALE:

JOB NUMBER
HMP 60901

SHEET
S3.26
56 OF 73 SHTS



NOTES:

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3. REFER TO SEE SHEET 3.01A FOR ANY MISSING INFORMATION.

STA 6+85.83

1 / S1.03 | S3.27 — CROSS SECTION @ GRID LINE 26

SC: 1/4"= 1'-0"

GRAPHIC SCALE:

4 3 2 1 0 4

SCALE: 1/4"= 1'-0"

REVISION	DATE	DESCRIPTION	BY	APPROVED

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HARBORS DIVISION

JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
CROSS SECTION @ GRID LINE 26

JONG NAMGUNG — LICENSED PROFESSIONAL ENGINEER — No. 3513-S — HAWAII, U.S.A.

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SIGNATURE — 4/30/2014 — EXP. DATE

SUBMITTED BY: ____ SECTION HEAD

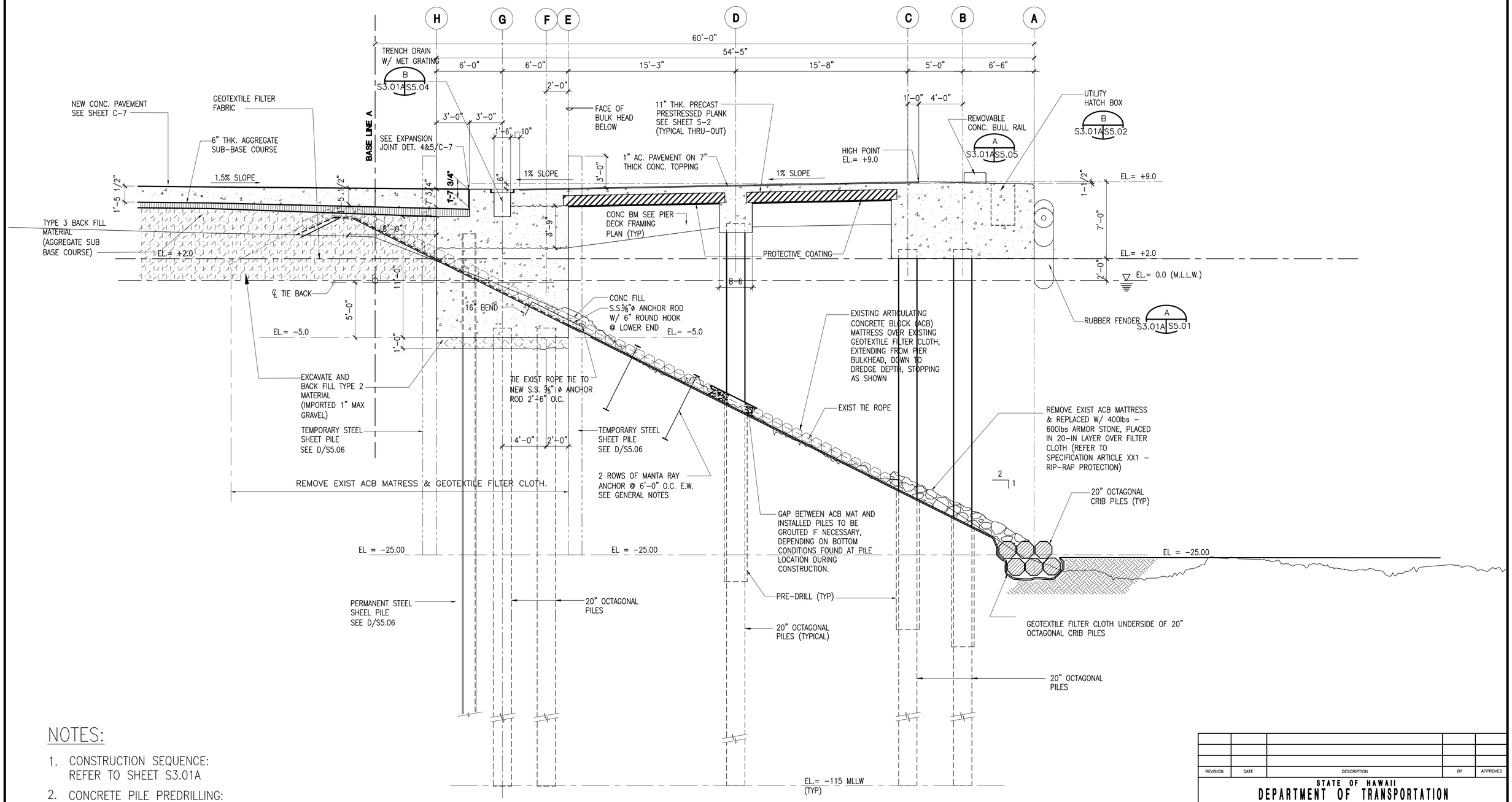
RECOMMENDED BY: ____ ENGINEERING PROGRAM MANAGER

DESIGNED BY:	JN
DRAWN BY:	FM
CHECKED BY:	JN
DATE:	FEB 2013
SCALE:	

APPROVED BY: ____ HARBORS ADMINISTRATOR

JOB NUMBER
HMP 60901

SHEET
S3.27
57 OF 73 SHTS



NOTES:

1. CONSTRUCTION SEQUENCE: REFER TO SHEET S3.01A
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STA 7+07.08

1 S1.03 S3.28 **CROSS SECTION @ GRID LINE 27**

SC: 1/4"= 1'-0"

GRAPHIC SCALE:

4 3 2 1 0 4

SCALE: 1/4"= 1'-0"

REVISION	DATE	DESCRIPTION	BY	APPROVED

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HARBORS DIVISION

JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
CROSS SECTION @ GRID LINE 27

JONG NAMGUNG LICENSED PROFESSIONAL ENGINEER No. 3513-S HAWAII, U.S.A.

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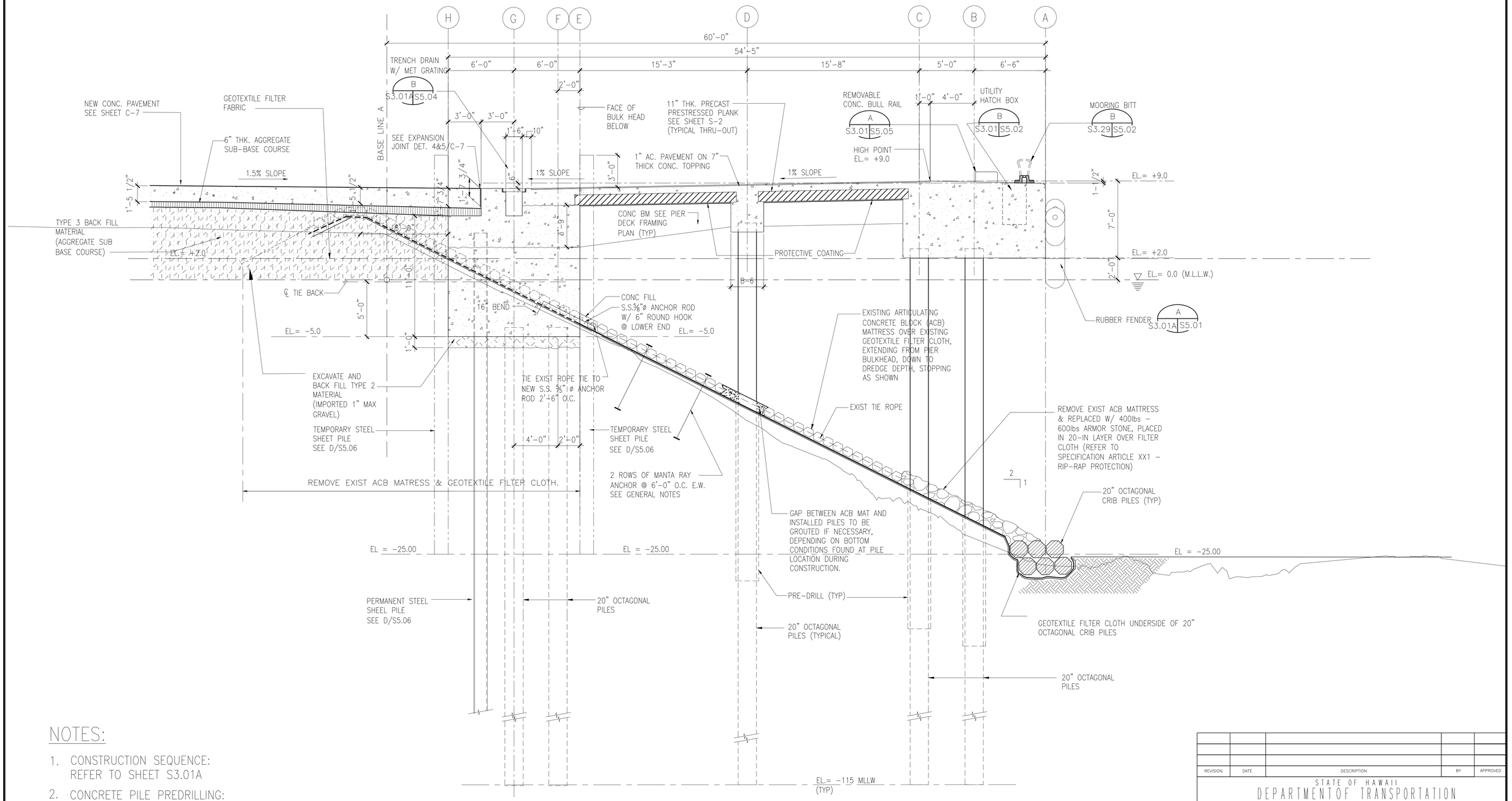
DATE: FEB 2013
SCALE:

APPROVED BY: HARBORS ADMINISTRATOR

JOB NUMBER HMP 60901

SHEET S3.28

58 OF 73 SHTS



NOTES:

1. CONSTRUCTION SEQUENCE: REFER TO SHEET S3.01A
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3. REFER TO SEE SHEET 3.01A FOR ANY MISSING INFORMATION.

STA 7+28.50

1 / S1.03 | S3.29 — CROSS SECTION @ GRID LINE 28

SC: 1/4"= 1'-0"

GRAPHIC SCALE:

4 3 2 1 0 4

SCALE: 1/4"= 1'-0"

REVISION	DATE	DESCRIPTION	BY	APPROVED

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HARBORS DIVISION

JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
CROSS SECTION @ GRID LINE 28

JONG NAMGUNG — LICENSED PROFESSIONAL ENGINEER — No. 3513-S — HAWAII, U.S.A.

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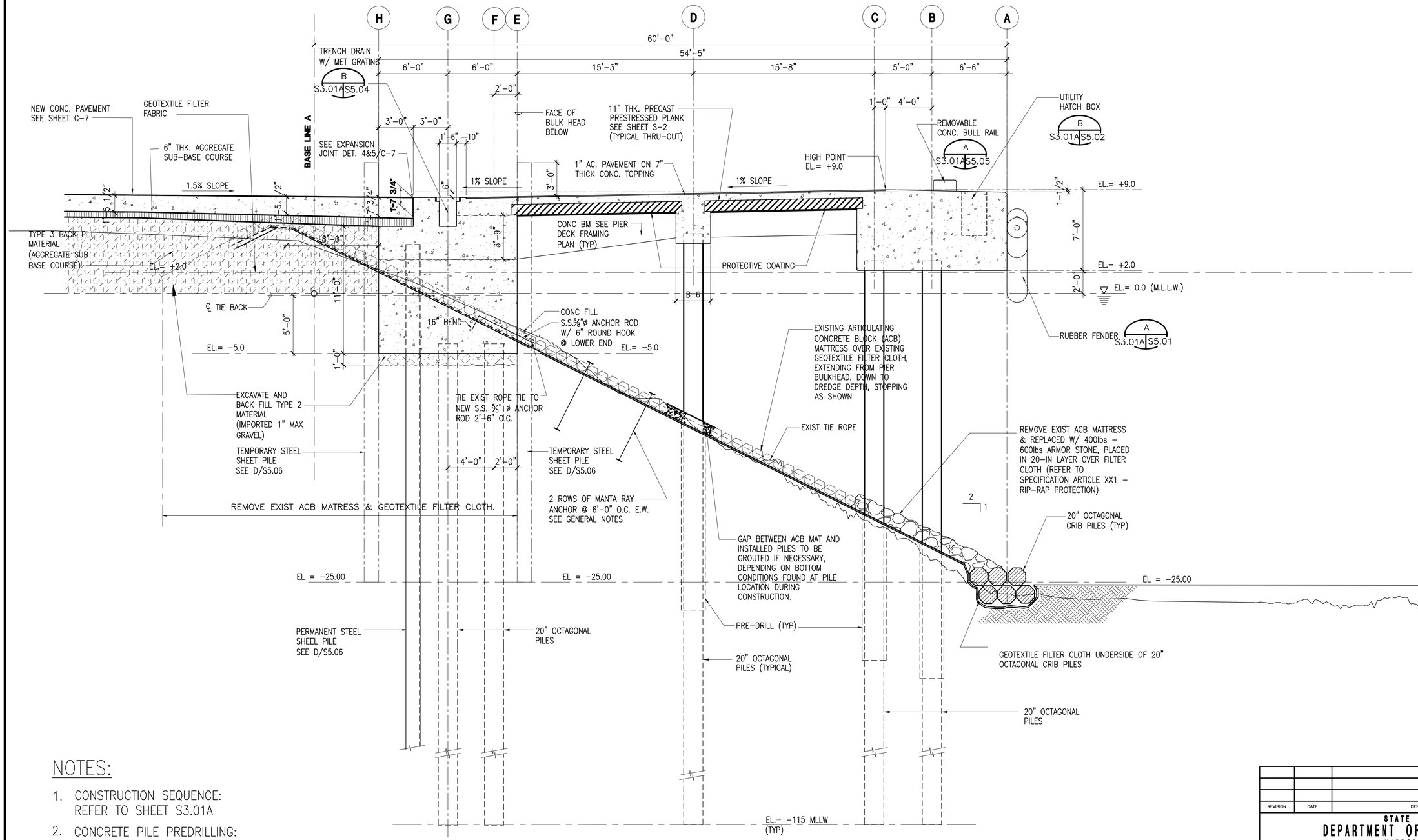
DRAWN BY:	FM
CHECKED BY:	JN
DATE:	FEB 2013
SCALE:	

APPROVED BY: HARBORS ADMINISTRATOR

JOB NUMBER HMP 60901

SHEET S3.29

59 OF 73 SHTS



STA 7+49.74

1 S1.03 S3.30

CROSS SECTION @ GRID LINE 29

SC: 1/4"= 1'-0"

NOTES:

1. CONSTRUCTION SEQUENCE: REFER TO SHEET S3.01A
2. CONCRETE PILE PREDRILLING: REFER TO SHEET S3.01A
3. REFER TO SEE SHEET 3.01A FOR ANY MISSING INFORMATION.

GRAPHIC SCALE:

4 3 2 1 0 4

SCALE: 1/4"= 1'-0"

REVISION	DATE	DESCRIPTION	BY	APPROVED

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HARBORS DIVISION

JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
CROSS SECTION @ GRID LINE 29

JONG NAMGUNG
LICENSED PROFESSIONAL ENGINEER
No. 3513-S
HAWAII, U.S.A.

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DATE: FEB 2013
SCALE:

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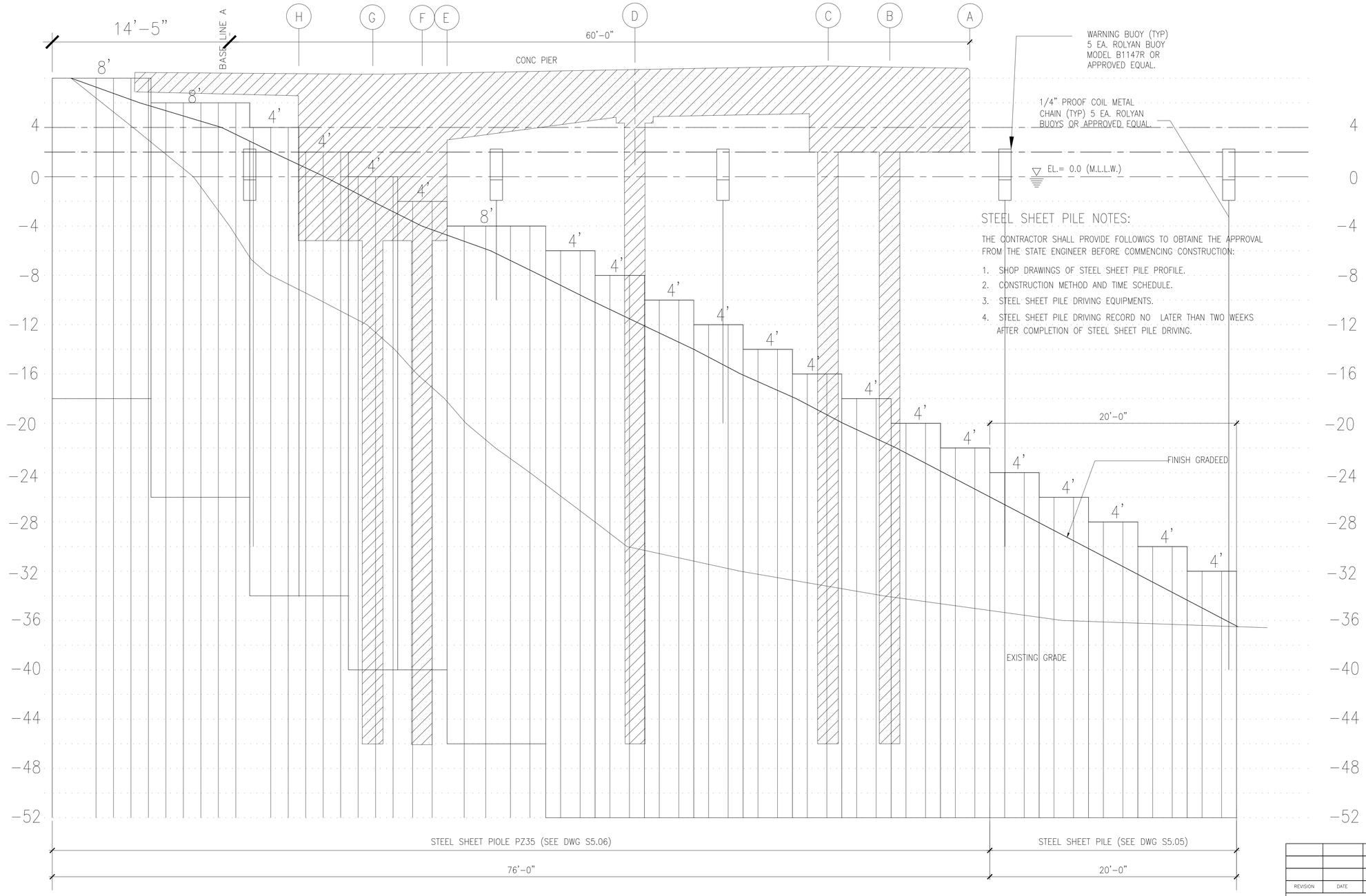
JOB NUMBER HMP 60901

SHEET S3.30

60 OF 73 SHTS



1
C-3 S3.30.1

CROSS SECTION @ STA 1+42 (SEE CIVIL PLAN FOR LOCATION)

SC: 1/4"= 1'-0"

GRAPHIC SCALE:

4 3 2 1 0 4

SCALE: 1/4"= 1'-0"

REVISION	DATE	DESCRIPTION	BY	APPROVED

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HARBORS DIVISION

JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
STEEL SHEET PILE PROFILE AND DETAILS @STA 1+42

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HAWAII, U.S.A.

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Jong Namgung 4/30/2014
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DESIGNED BY: JN
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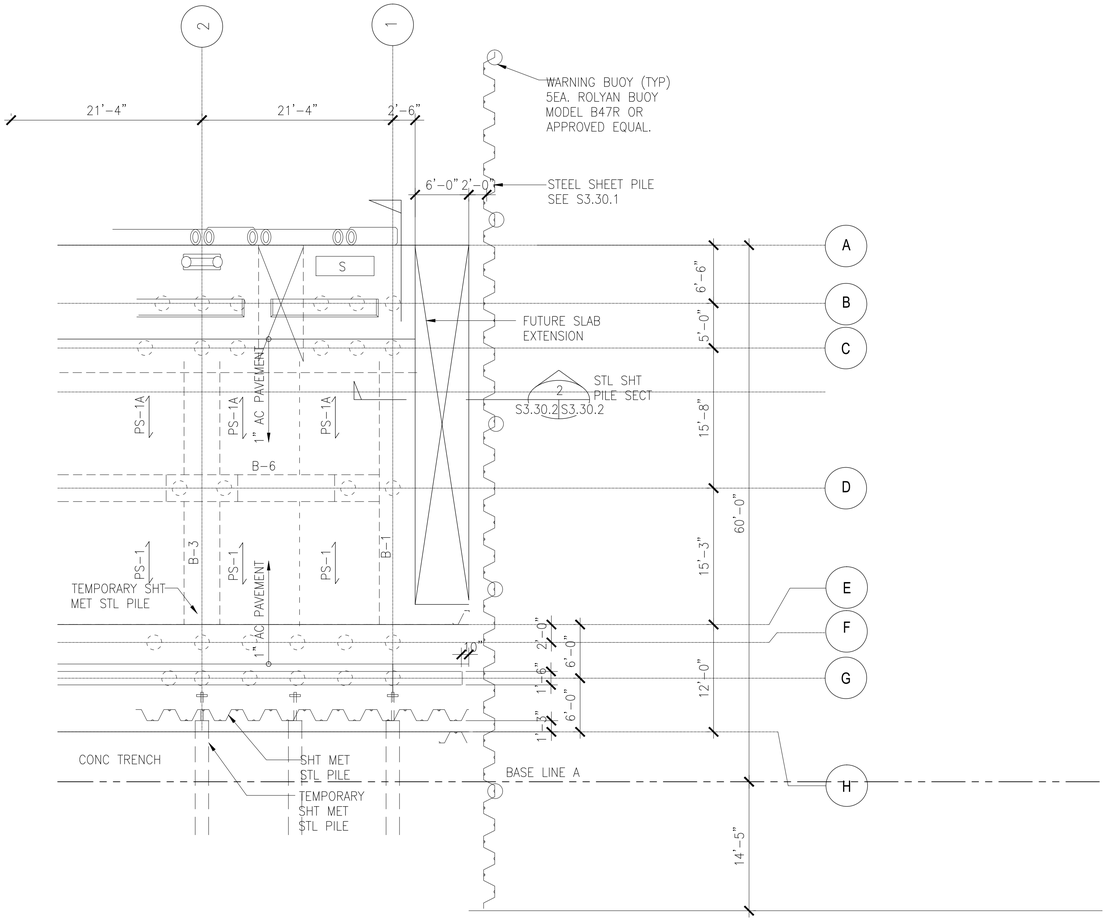
DATE: FEB 2013
SCALE:

APPROVED BY: HARBORS ADMINISTRATOR

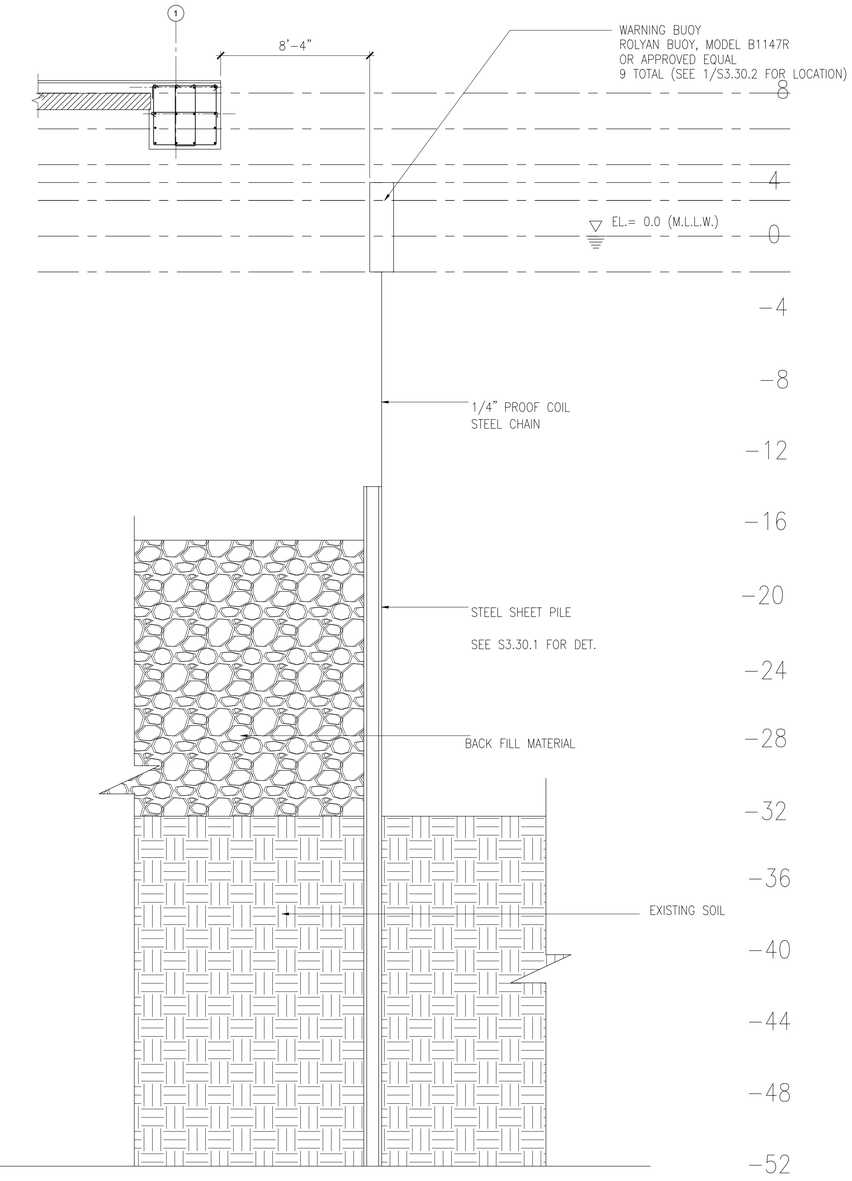
JOB NUMBER
HMP 60901

SHEET
S3.30.1
61 OF 73 SHTS



1 / S3.30.2 | S3.30.2 STEEL SHEET PILE AND WARNING BUOY LOCATION PLAN @ STA 1+42

SC: 1/8"= 1'-0"



2 / S3.30.2 | S3.30.2 STEEL SHEET PILE CROSS SECTION AND WARNING BUOY SIDE VIEW @ STA 1+42

SC: 1/4"= 1'-0"

GRAPHIC SCALE:

4 3 2 1 0 4

SCALE: 1/4"= 1'-0"

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HAWAII, U.S.A.

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DEPARTMENT OF TRANSPORTATION
HARBORS DIVISION

JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
STEEL SHEET PILE SECTION AND DETAILS @STA 1+50

SUBMITTED BY: SECTION HEAD

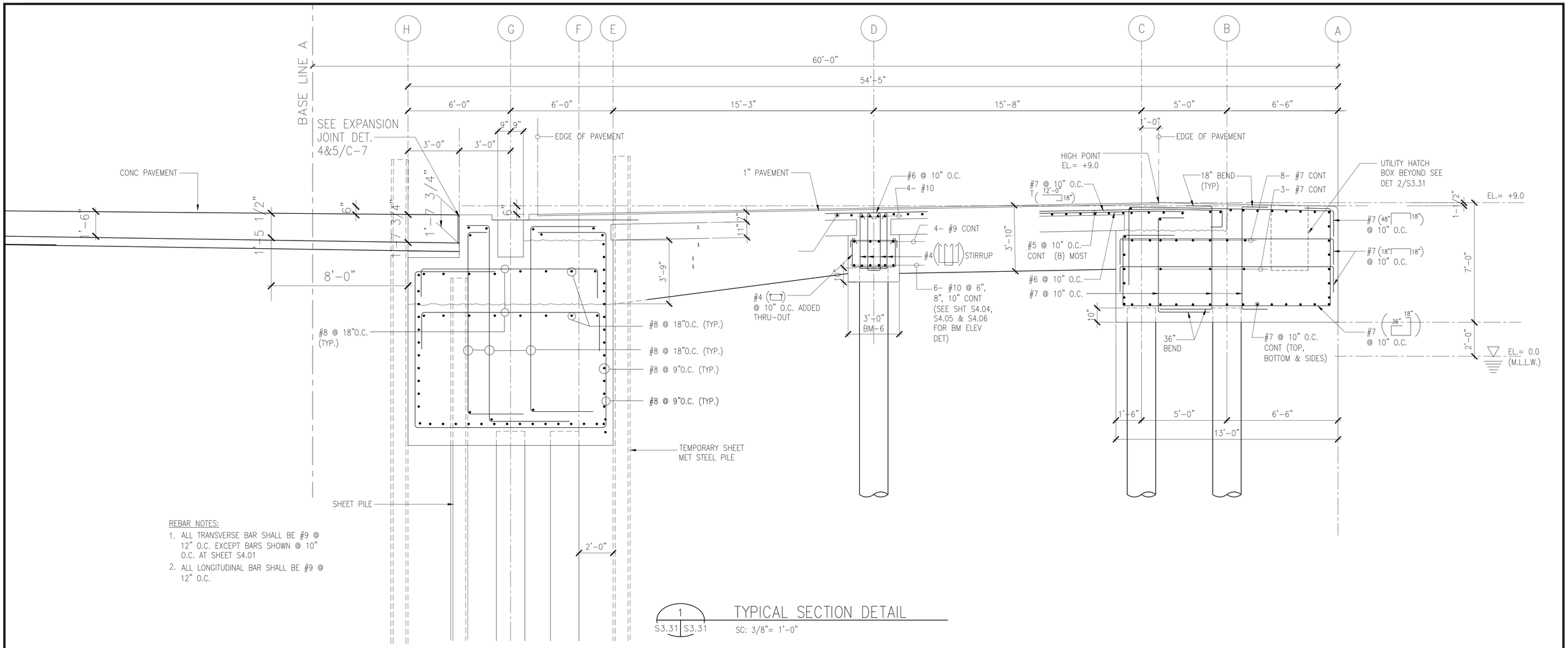
RECOMMENDED BY: ENGINEERING PROGRAM MANAGER

DESIGNED BY: JN
DRAWN BY: FM
CHECKED BY: JN
DATE: FEB 2013
SCALE:

APPROVED BY: HARBORS ADMINISTRATOR

JOB NUMBER
HMP 60901

SHEET
S3.30.2
62 OF 73 SHTS

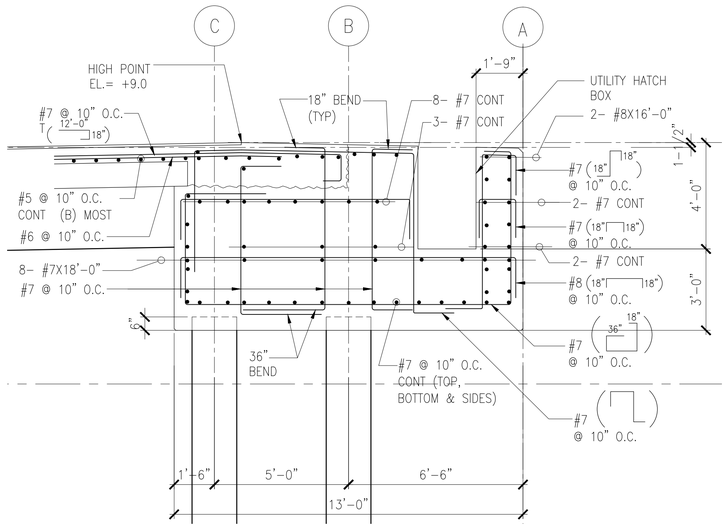


REBAR NOTES:

1. ALL TRANSVERSE BAR SHALL BE #9 @ 12" O.C. EXCEPT BARS SHOWN @ 10" O.C. AT SHEET S4.01
2. ALL LONGITUDINAL BAR SHALL BE #9 @ 12" O.C.

1 / S3.31 | S3.31 TYPICAL SECTION DETAIL

SC: 3/8"= 1'-0"



2 / S5.02 | S3.31 UTILITY HATCH BOX DETAIL

SC: 3/8"= 1'-0"

GRAPHIC SCALE:

2 0 2 4

SCALE: 3/8"= 1'-0"

REVISION	DATE	DESCRIPTION	BY	APPROVED

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HARBORS DIVISION

JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
TYPICAL SECTION DETALS

JONG NAMGUNG LICENSED PROFESSIONAL ENGINEER No. 3513-S HAWAII, U.S.A.

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Jong Namgung
SIGNATURE

4/30/2014
EXP. DATE

SUBMITTED BY: _____ SECTION HEAD

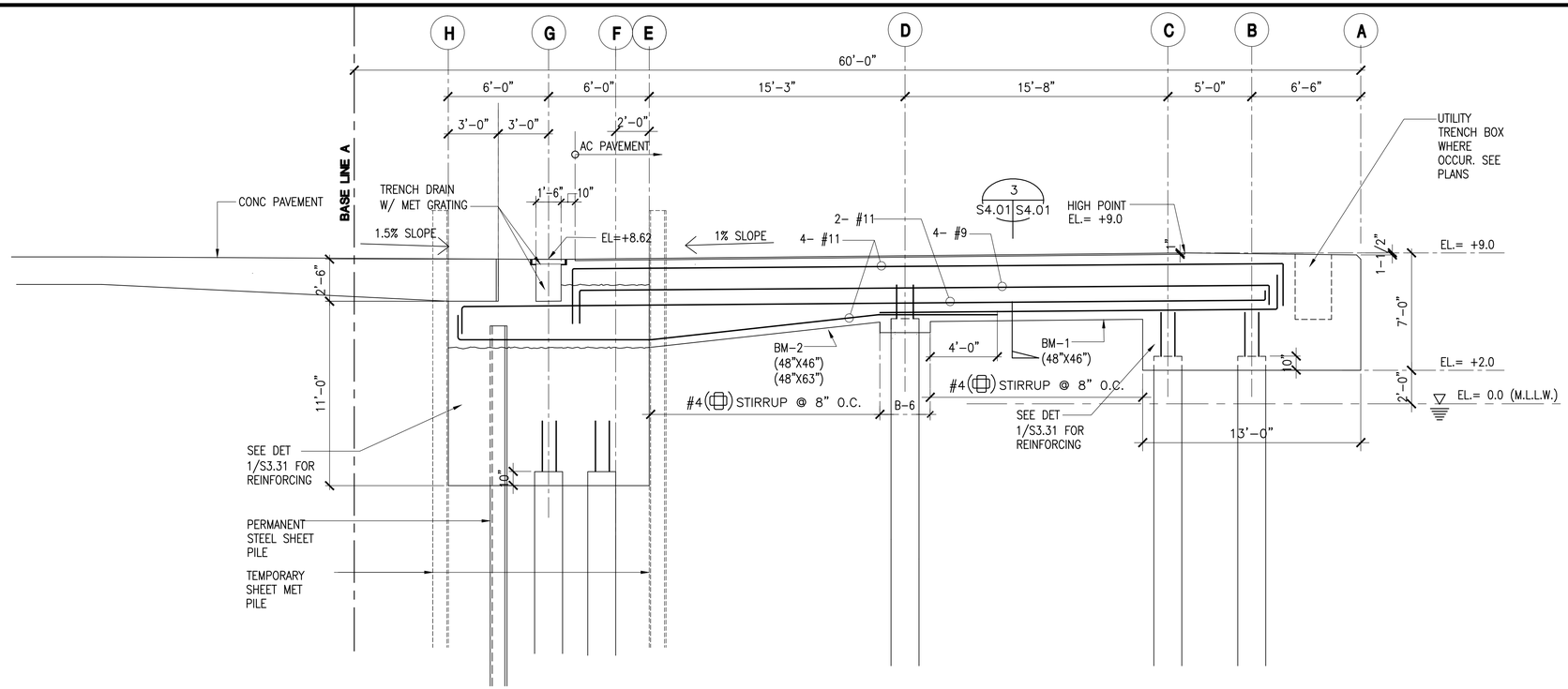
RECOMMENDED BY: _____ ENGINEERING PROGRAM MANAGER

DESIGNED BY: JN
DRAWN BY: FM
CHECKED BY: JN
DATE: FEB 2013
SCALE:

APPROVED BY: _____ HARBORS ADMINISTRATOR

JOB NUMBER
HMP 60901

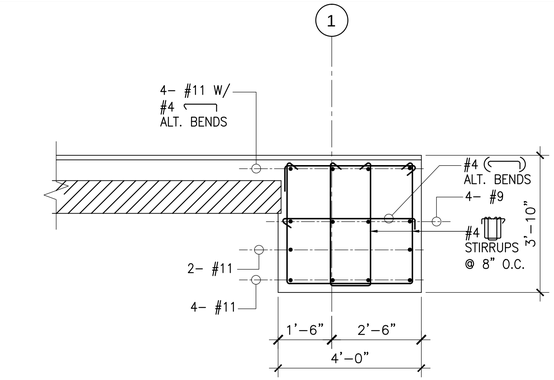
SHEET
S3.31
63 OF 73 SHTS



1
S2.03 S4.01

BEAM-1 LOGITUDINAL SECTION

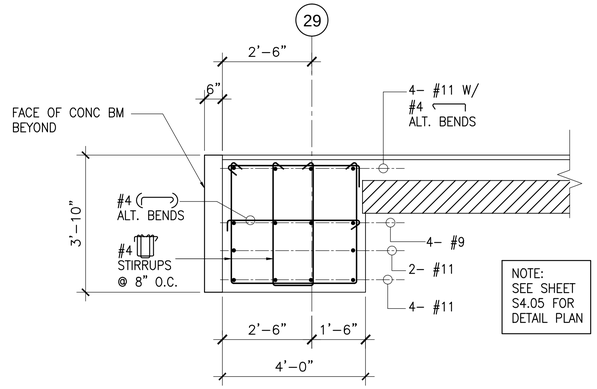
SC: 1/4"= 1'-0"



3
S4.01 S4.01
S2.03

BEAM-1 CROSS SECTION

SC: 1/2"= 1'-0"

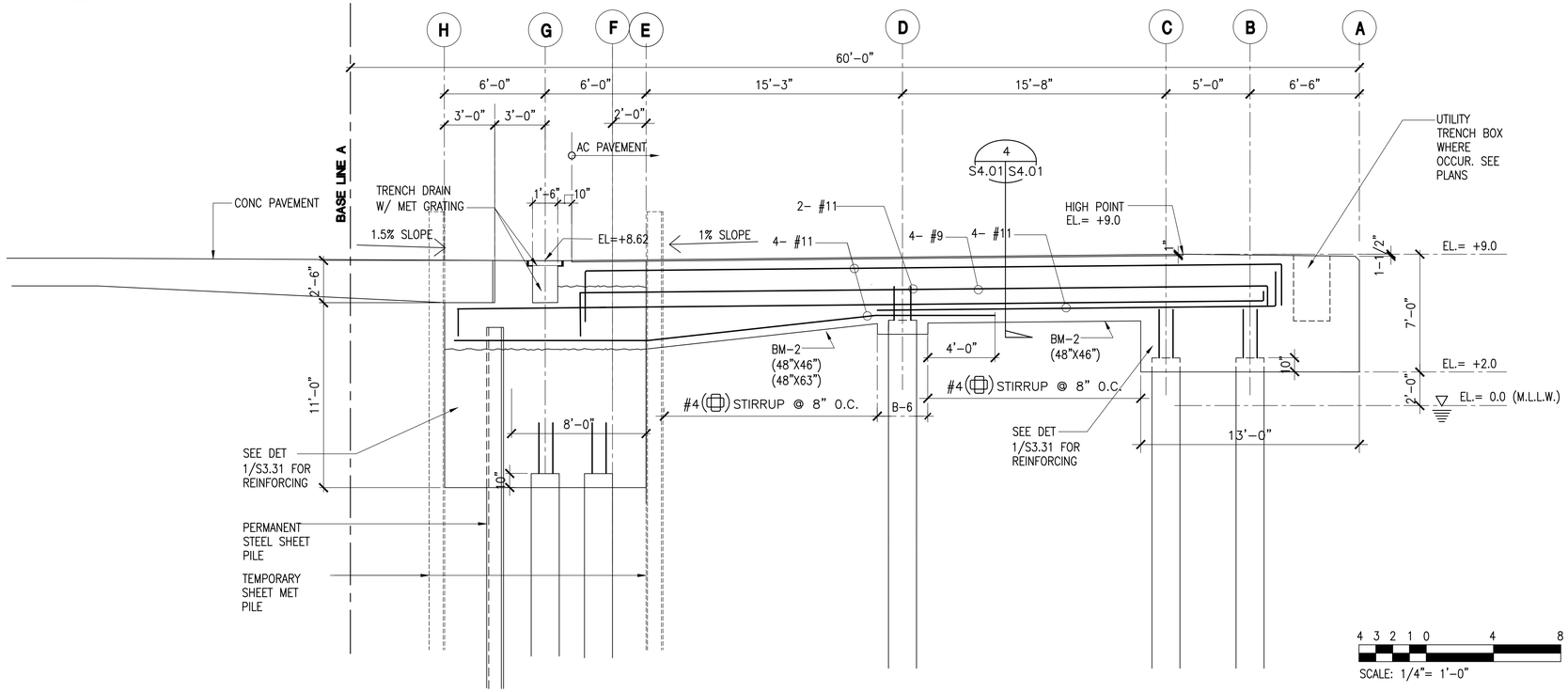


NOTE:
SEE SHEET
S4.05 FOR
DETAIL PLAN

4
S4.01 S4.01
S2.05

BEAM-2 CROSS SECTION

SC: 1/2"= 1'-0"



2
S2.05 S4.01

BEAM-2 LOGITUDINAL SECTION

SC: 1/4"= 1'-0"

4 3 2 1 0 4 8
SCALE: 1/4"= 1'-0"

2 1 0 2 4
SCALE: 1/2"= 1'-0"

REVISION	DATE	DESCRIPTION	BY	APPROVED

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HARBORS DIVISION

JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
PIER DECK BEAM SECTIONS

JONG NAMGUNG
LICENSED PROFESSIONAL ENGINEER
No. 3513-S
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

4/30/2014
SIGNATURE EXP. DATE

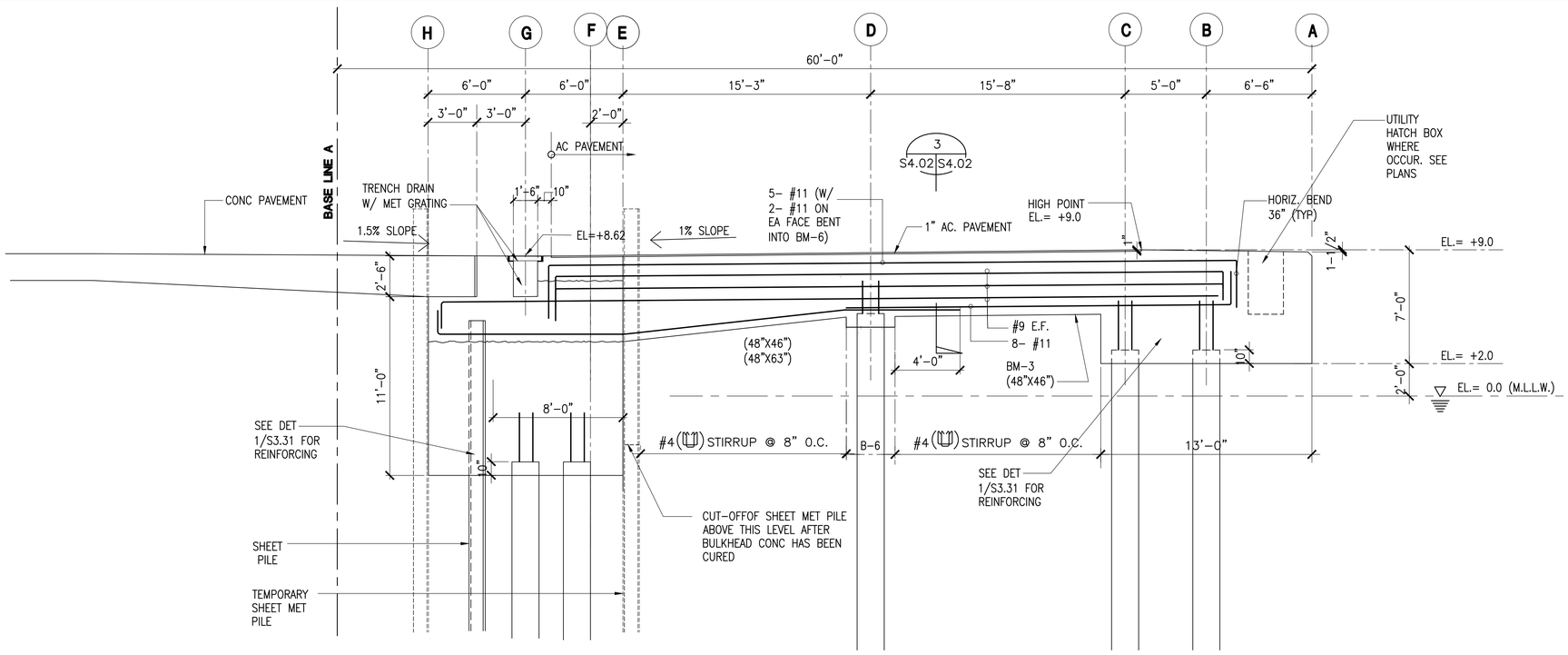
SUBMITTED BY: SECTION HEAD
RECOMMENDED BY: ENGINEERING PROGRAM MANAGER

DESIGNED BY: JN
DRAWN BY: FM
CHECKED BY: JN
DATE: FEB 2013
SCALE:

APPROVED BY: HARBORS ADMINISTRATOR

JOB NUMBER
HMP 60901

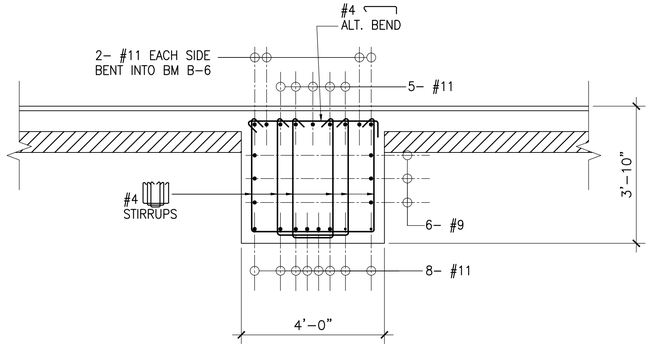
SHEET
S4.01
64 OF 73 SHTS



1
S2.03 S4.02
S2.04,
S2.05

BEAM-3 LOGITUDINAL SECTION

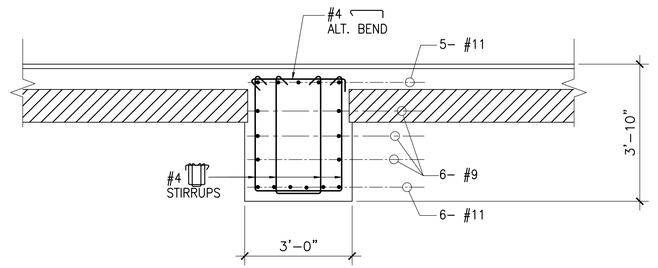
SC: 1/4"= 1'-0"



3
S4.02 S4.02
S2.03
S2.04
S2.05

BEAM-3 CROSS SECTION

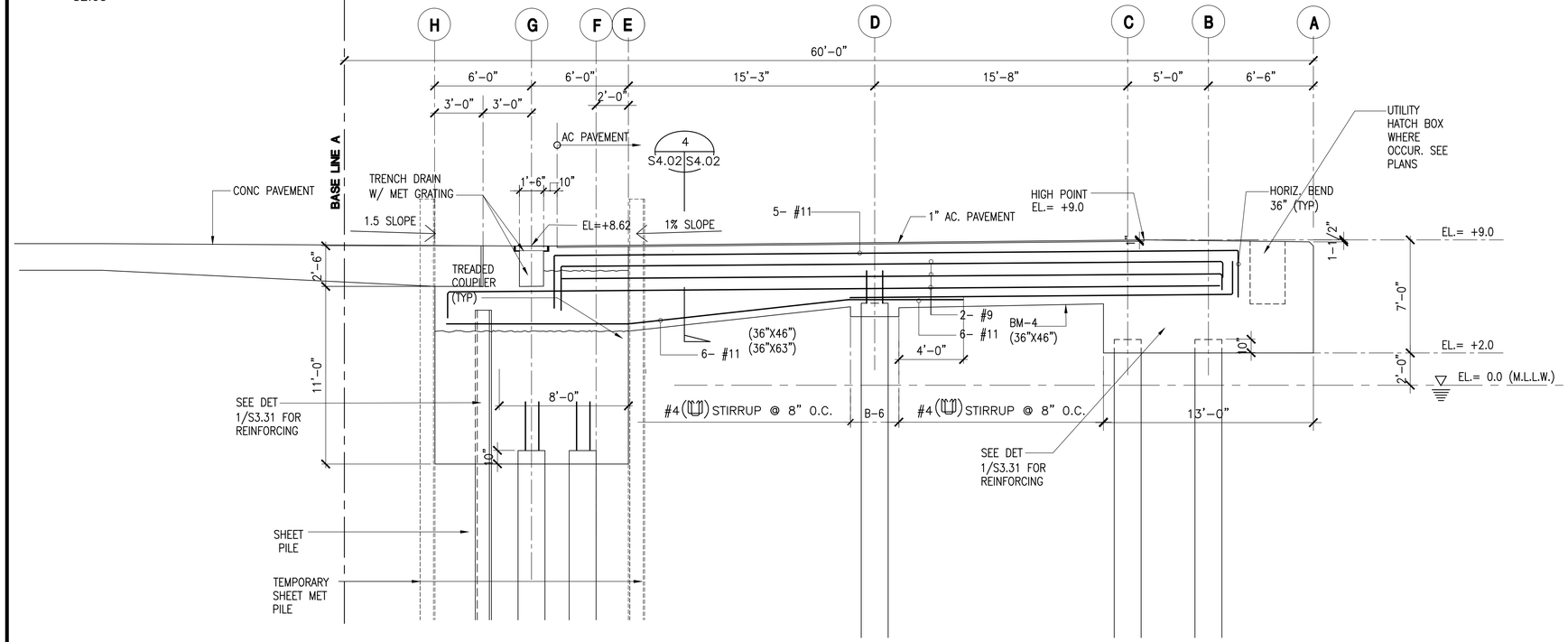
SC: 1/2"= 1'-0"



4
S4.02 S4.02
S2.03
S2.04
S2.05

BEAM-4 CROSS SECTION

SC: 1/2"= 1'-0"



2
S2.03 S4.02
S2.04,
S2.05

BEAM-4 LOGITUDINAL SECTION

SC: 1/4"= 1'-0"

4 3 2 1 0 4 8

SCALE: 1/4"= 1'-0"

2 1 0 2 4

SCALE: 1/2"= 1'-0"

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HARBORS DIVISION

JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
PIER DECK BEAM SECTIONS

JONG NAMGUNG
LICENSED PROFESSIONAL ENGINEER
No. 3513-S
HAWAII, U.S.A.

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Jong Namgung 4/30/2014
SIGNATURE EXP. DATE

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RECOMMENDED BY: ENGINEERING PROGRAM MANAGER

DESIGNED BY: JN
DRAWN BY: FM
CHECKED BY: JN
DATE: FEB 2013
SCALE:

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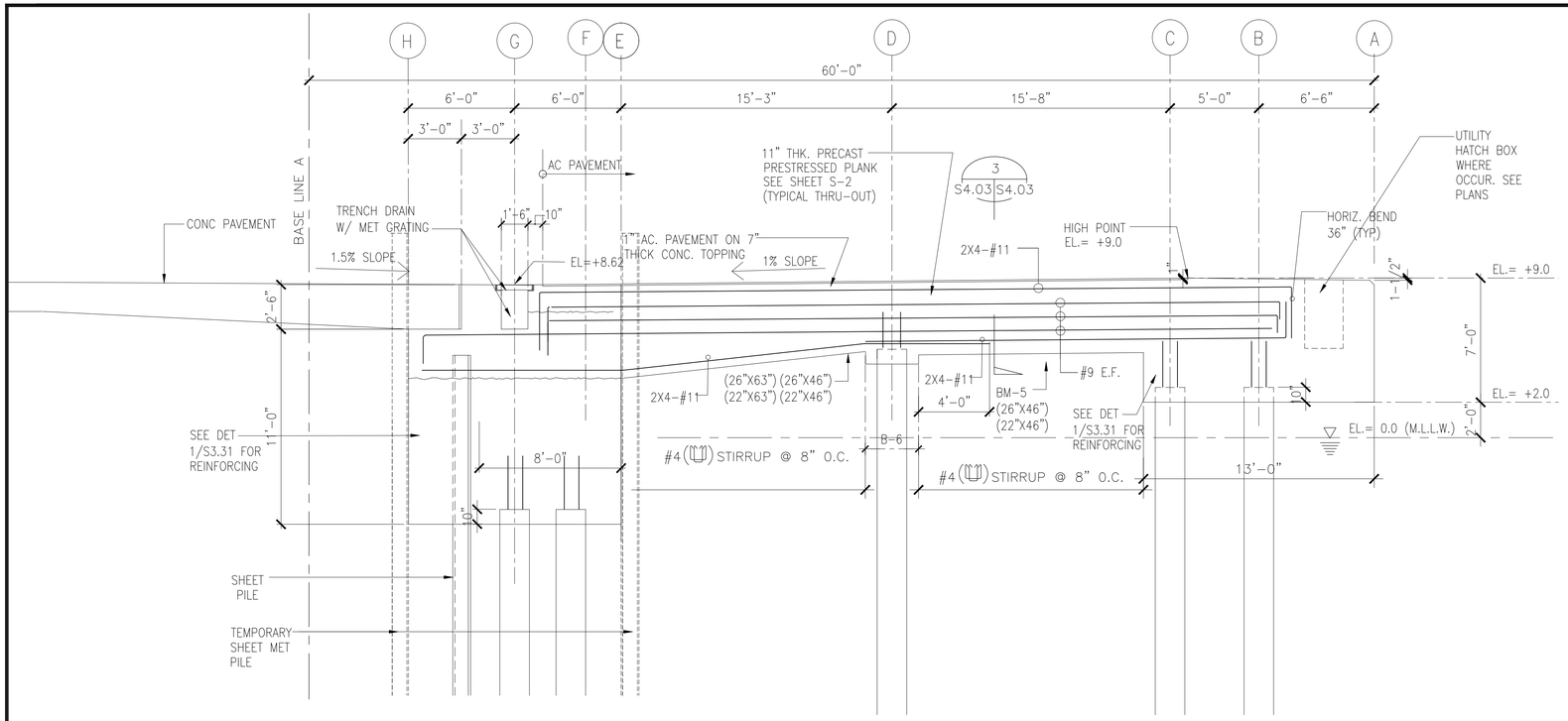
JOB NUMBER
HMP 60901

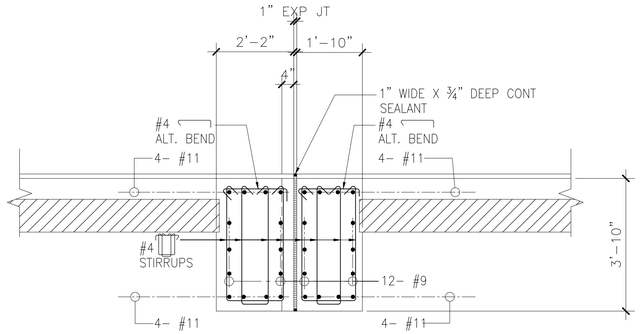
SHEET
S4.02
65 OF 73 SHTS



1
S2.04 S4.03
S2.05

BEAM-5 LOGITUDINAL SECTION

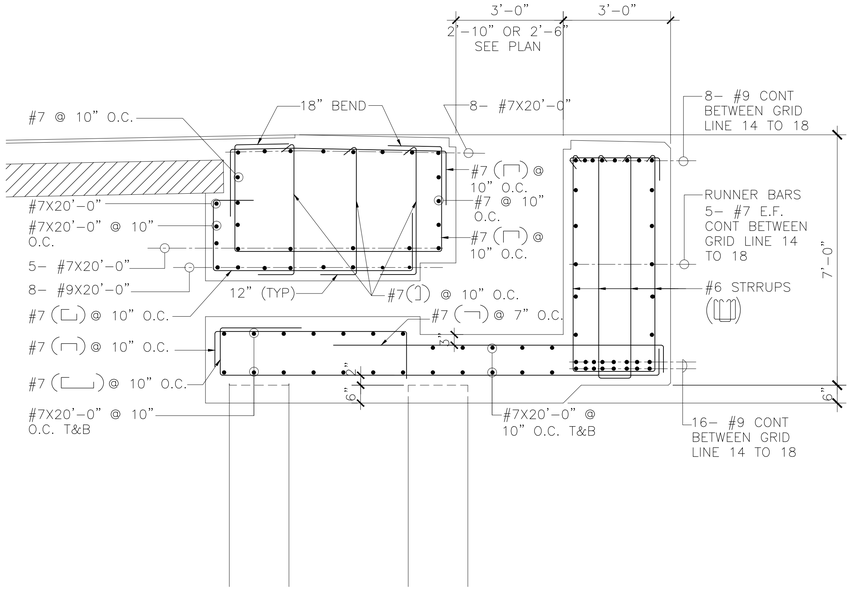
SC: 1/4"= 1'-0"



3
S4.03 S4.03
S2.03
S2.04
S2.05

BEAM-5 CROSS SECTION @ EXP JT

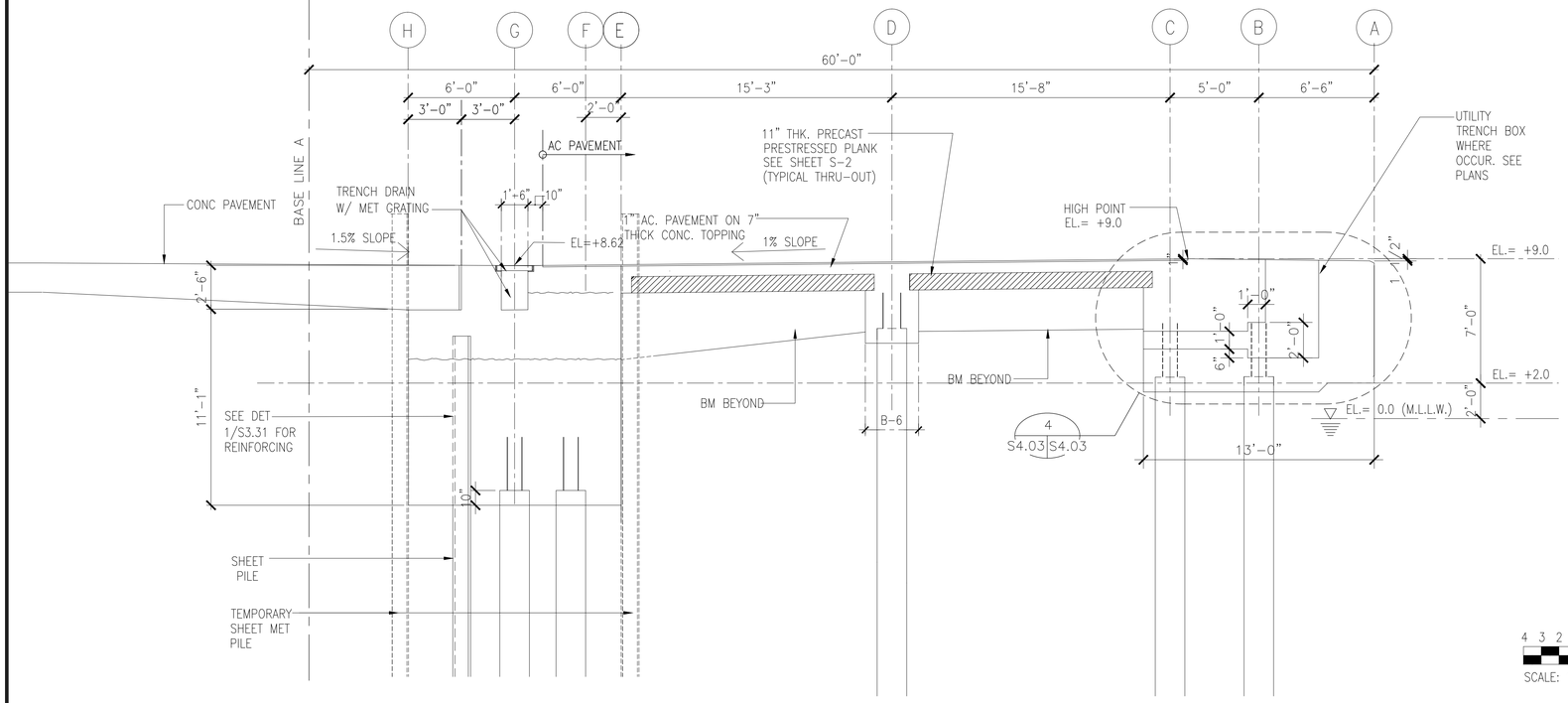
SC: 1/2"= 1'-0"



4
S4.03 S4.03
S2.03
S2.04
S2.05

GAS VALVE BOX DETAIL

SC: 1/2"= 1'-0"



2
S2.04 S4.03
S2.05

CONSORTIUM FUEL VALVE BOX SECTION

SC: 1/4"= 1'-0"

4 3 2 1 0 4 8
SCALE: 1/4"= 1'-0"

2 1 0 2 4
SCALE: 1/2"= 1'-0"

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HARBORS DIVISION

JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
PIER DECK BEAM SECTIONS

JONG NAMGUNG
LICENSED PROFESSIONAL ENGINEER
No. 3513-S
HAWAII, U.S.A.

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Jong Namgung
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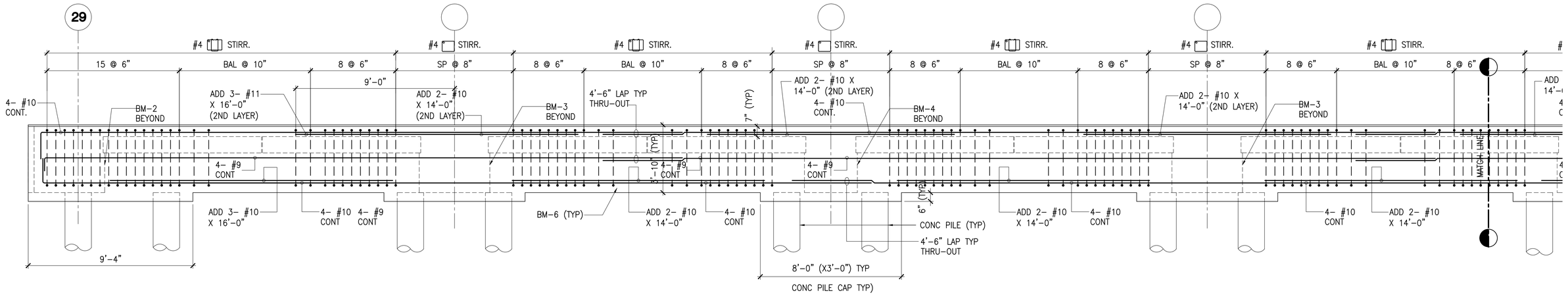
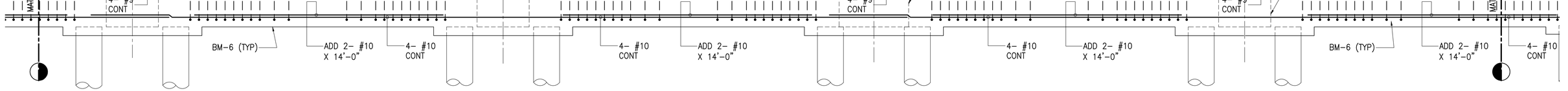
SCALE:

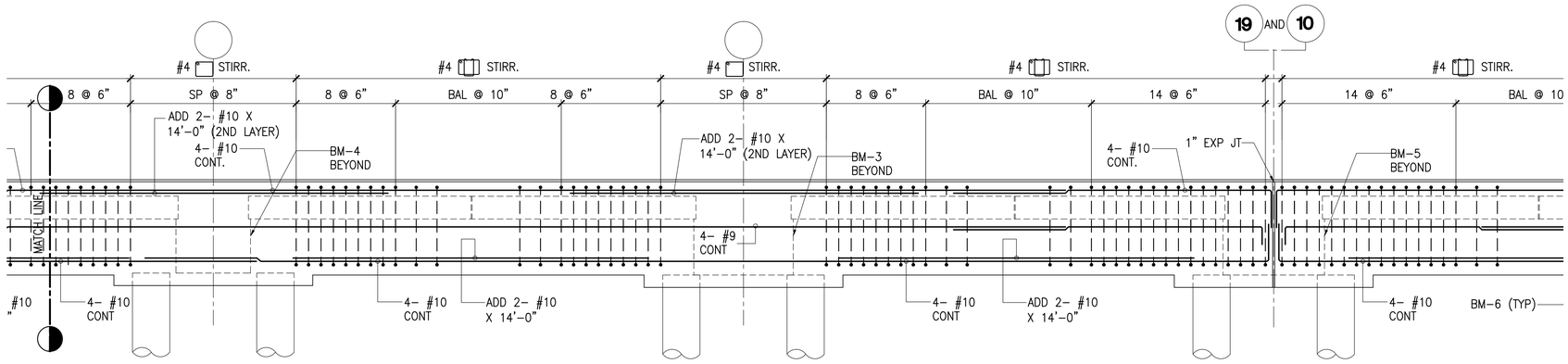
APPROVED BY: HARBORS ADMINISTRATOR

JOB NUMBER HMP 60901

SHEET S4.03
66 OF 73 SHTS







PARTIAL BEAM-6 LONGITUDINAL SECTION DETAIL

1 / S2.05 | S4.04

SCALE: 3/8" = 1'–0"

GRAPHIC SCALE:

2 0 2 4

SCALE: 3/8"= 1'–0"

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HARBORS DIVISION

JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
PARTIAL BEAM LONGITUDINAL SECTION DETAIL

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LICENSED PROFESSIONAL ENGINEER
No. 3513–S
HAWAII, U.S.A.

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SIGNATURE — 4/30/2014 EXP. DATE

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RECOMMENDED BY: ENGINEERING PROGRAM MANAGER

DESIGNED BY: JN
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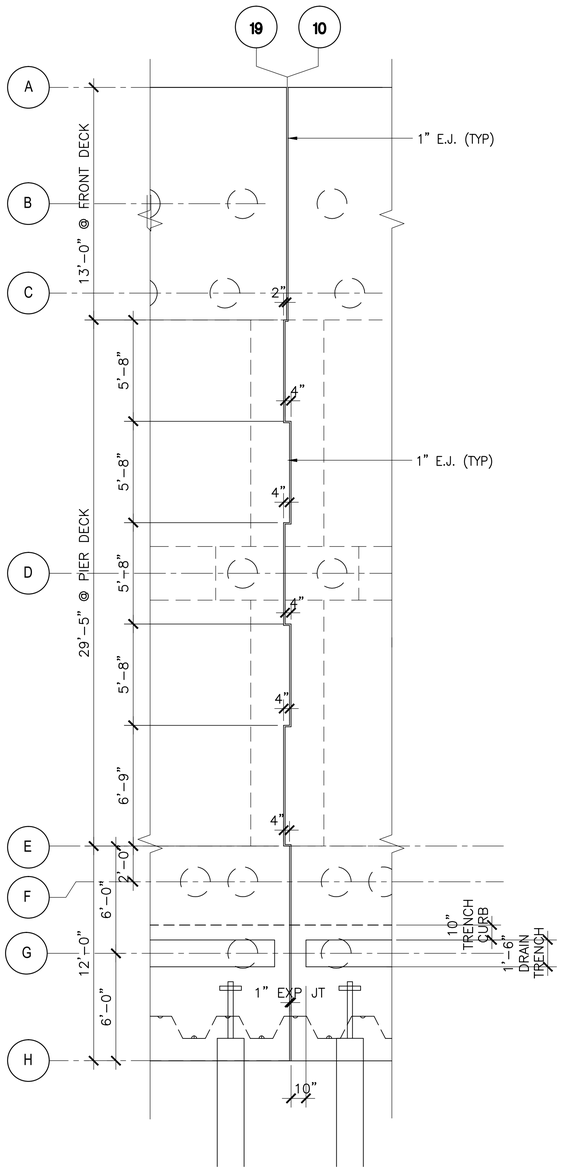
CHECKED BY: JN
DATE: FEB 2013
SCALE:

APPROVED BY: HARBORS ADMINISTRATOR

JOB NUMBER **HMP 60901**

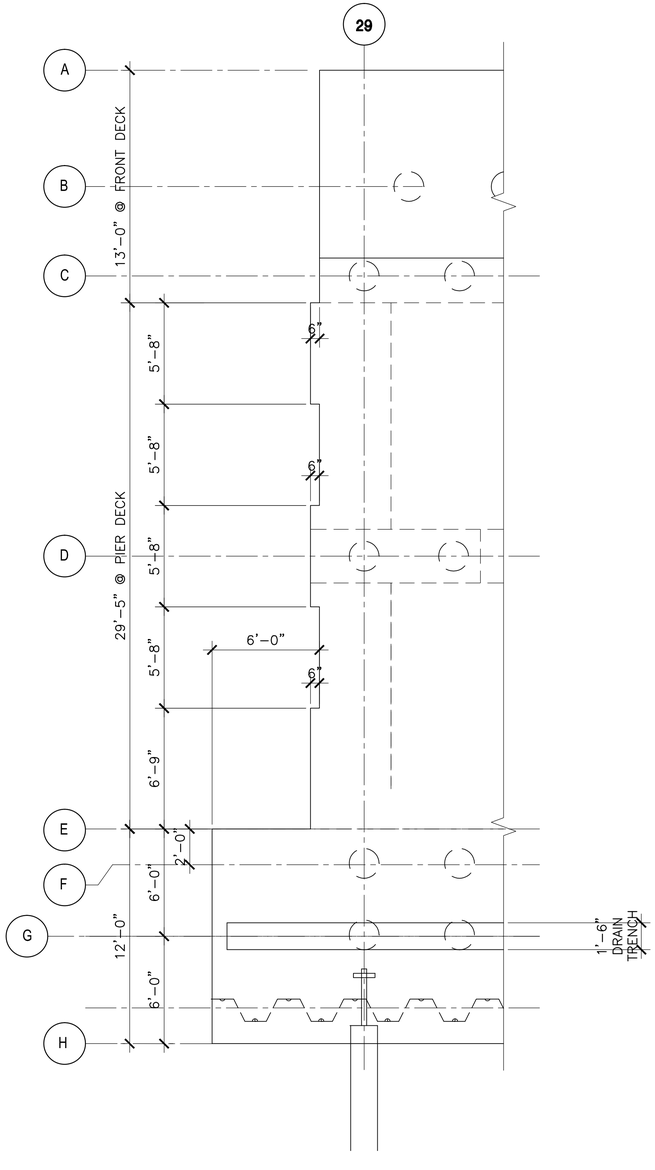
SHEET **S4.04**

67 OF 73 SHTS



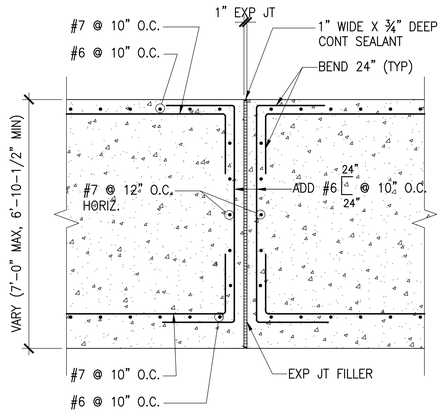
3 S2.04 S4.05 S4.05 **EXP JT DETAIL PLAN @ GRID LINE 10 & 19**

SC: 1/4"= 1'-0"



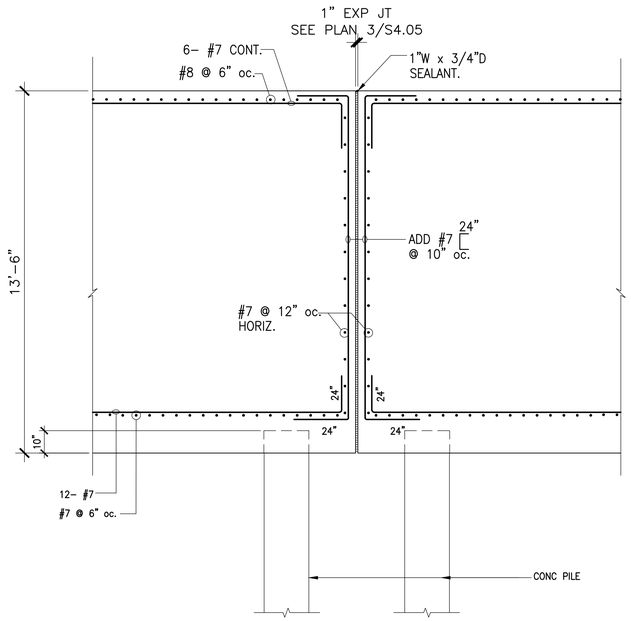
4 S4.01 S4.05 **FUTURE EXP JT DETAIL PLAN @ GRID LINE 29**

SC: 1/4"= 1'-0"



1 S2.04 S4.05 **EXP JT SECTION @ DOCKING SIDE**

SC: 1/2"= 1'-0"



2 S2.04 S4.05 **EXP JT @ BULK HEAD SIDE**

SC: 3/8"= 1'-0"

GRAPHIC SCALE:

4 3 2 1 0 4 8

SCALE: 1/4"= 1'-0"

2 1 0 2 4

SCALE: 1/2"= 1'-0"

REVISION	DATE	DESCRIPTION	BY	APPROVED

STATE OF HAWAII
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HARBORS DIVISION

JONG NAMGUNG ★ LICENSED PROFESSIONAL ENGINEER No. 3513-S ★ HAWAII, U.S.A.

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Jong Namgung 4/30/2014

SIGNATURE EXP. DATE

JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
EXPANSION JOINT DETAIL PLANS AND SECTIONS

SUBMITTED BY: _____ SECTION HEAD

RECOMMENDED BY: _____ ENGINEERING PROGRAM MANAGER

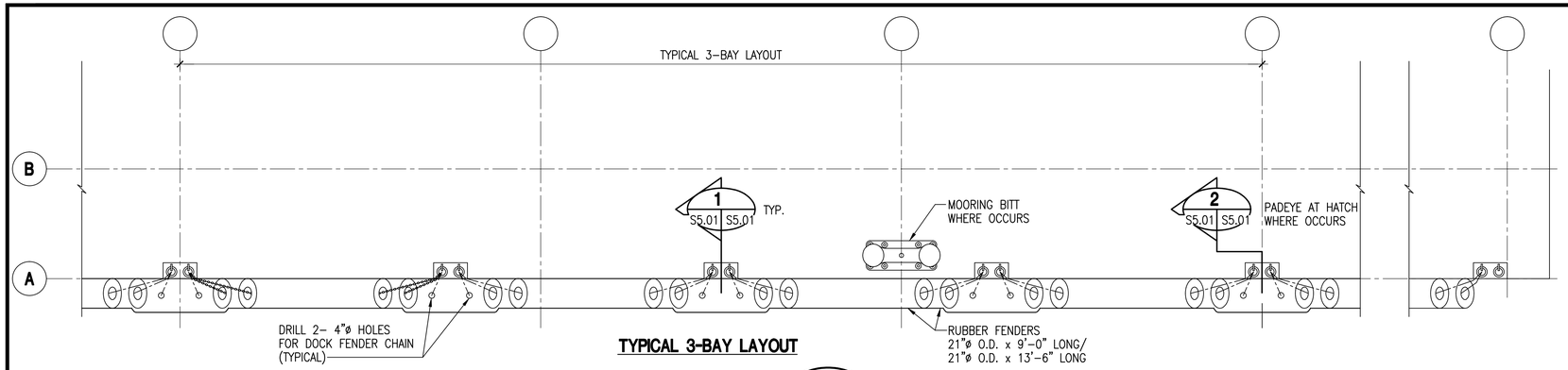
DESIGNED BY: JN
DRAWN BY: FM
CHECKED BY: JN
DATE: FEB 2013
SCALE:

APPROVED BY: _____ HARBORS ADMINISTRATOR

JOB NUMBER **HMP 60901**

SHEET **S4.05**

68 OF 73 SHTS



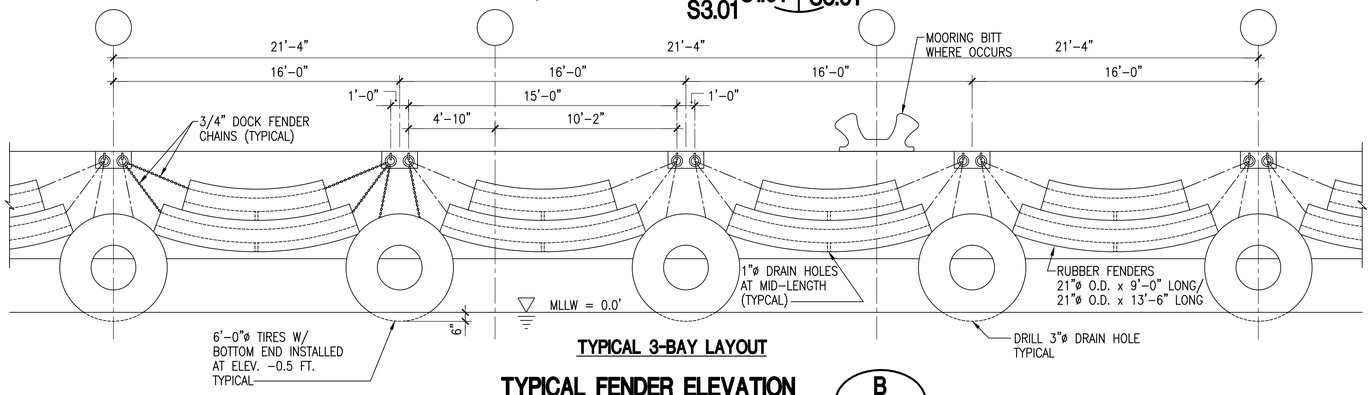
TYPICAL 3-BAY LAYOUT

TYPICAL FENDER PLAN

A
S1.01 | S5.01
S3.01

SC: 1/4"= 1'-0"

AT ENDS



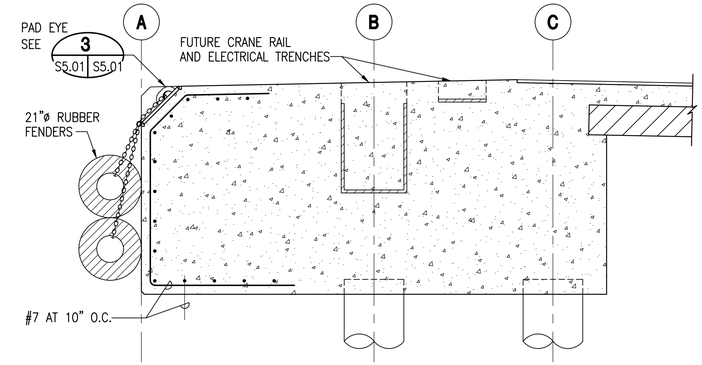
TYPICAL 3-BAY LAYOUT

TYPICAL FENDER ELEVATION

B
S5.01 | S5.01

SC: 1/4"= 1'-0"

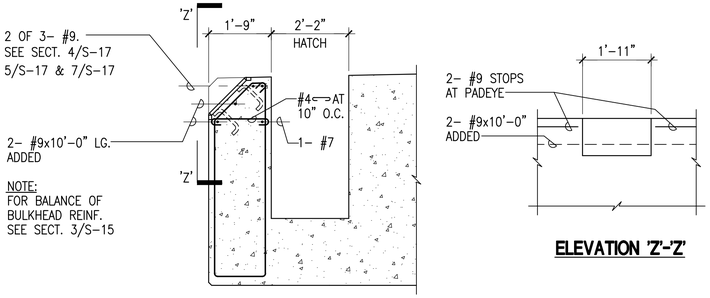
AT ENDS



SECTION

1
S5.01 | S5.01

SC: 1/2"= 1'-0"



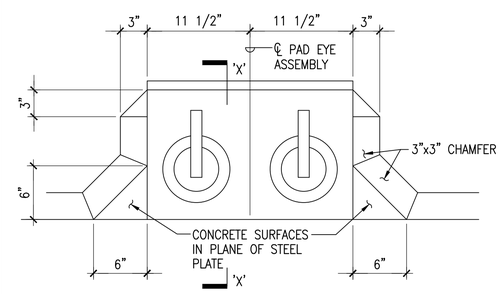
FENDER PAD EYE @ HATCH

ELEVATION 'Z'-'Z'

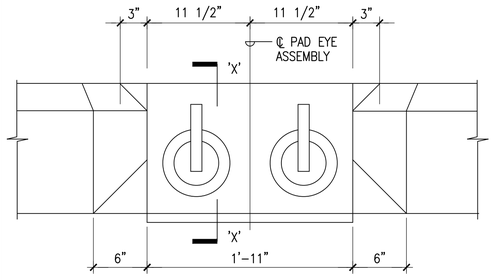
SECTION

2
S5.01 | S5.01

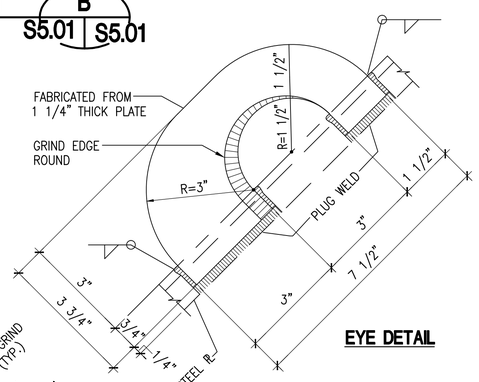
SC: 1/2"= 1'-0"



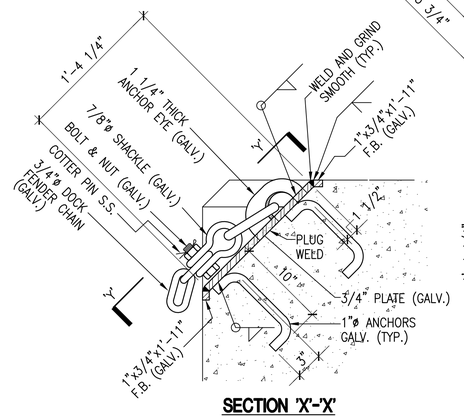
PLAN



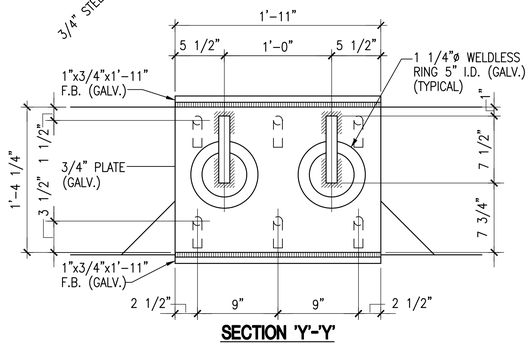
ELEVATION



EYE DETAIL



SECTION 'X'-'X'



SECTION 'Y'-'Y'

TYPICAL ANCHOR PAD EYE ASSEMBLY DETAILS

3
S5.01 | S5.01

SC: 1 1/2"= 1'-0"

4 3 2 1 0 4 8
SCALE: 1/4"= 1'-0"

2 1 0 2 4
SCALE: 1/2"= 1'-0"

1 0 1FT
SCALE: 1 1/2"= 1'-0"

REVISION	DATE	DESCRIPTION	BY	APPROVED

STATE OF HAWAII
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HARBORS DIVISION

JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
FENDER DETAILS

LICENSED PROFESSIONAL ENGINEER
JONG NAMGUNG
No. 3513-S
HAWAII, U.S.A.

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SIGNATURE
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SECTION HEAD

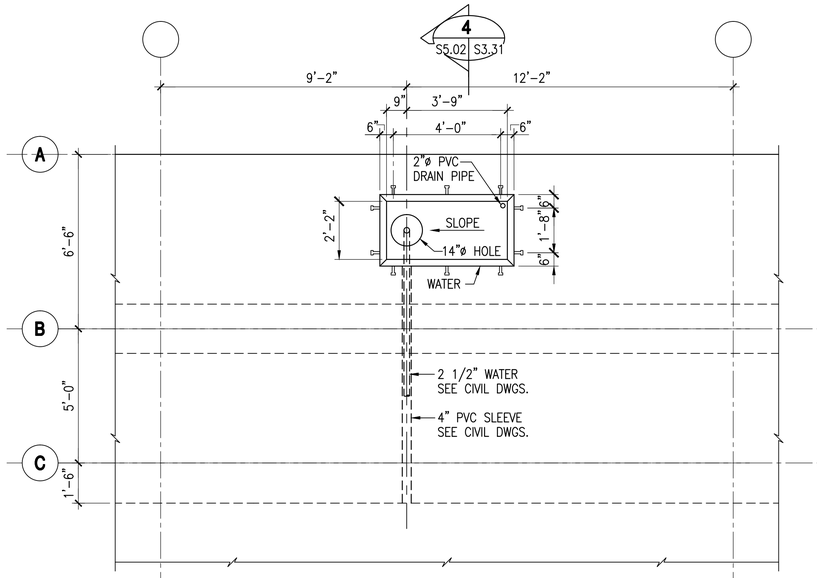
RECOMMENDED BY:
ENGINEERING PROGRAM MANAGER

APPROVED BY:
HARBORS ADMINISTRATOR

DESIGNED BY:	JN
DRAWN BY:	FM
CHECKED BY:	JN
DATE:	FEB 2013
SCALE:	

JOB NUMBER
HMP 60901

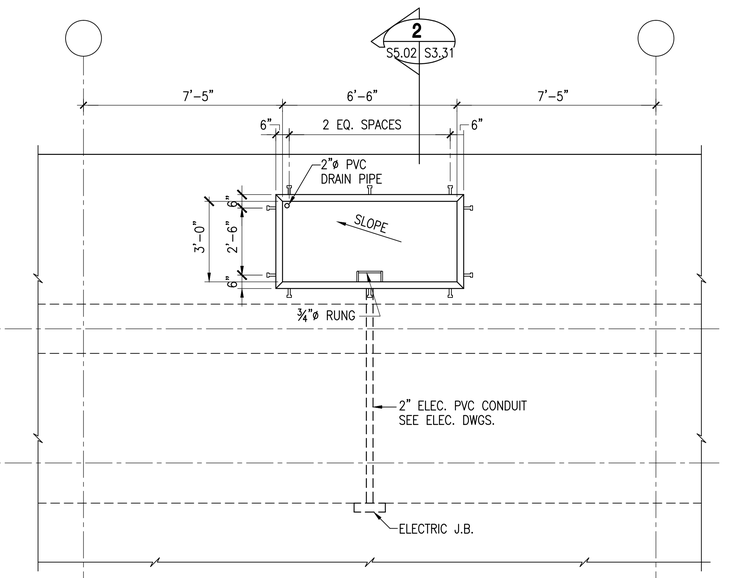
SHEET
S5.01
69 OF 73 SHTS



WATER (W) HATCH PLAN

SC: 3/8"= 1'-0"

1
S2.03 S5.02
S1.01



ELECTRIC (E) & SPARE HATCH PLAN

SC: 3/8"= 1'-0"

2
S2.03 S5.02
S1.01

GRAPHIC SCALE:

4 3 2 1 0 4 8

SCALE: 1/4"= 1'-0"

2 0 2 4

SCALE: 3/8"= 1'-0"

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LICENSED PROFESSIONAL ENGINEER
No. 3513-S
HAWAII, U.S.A.

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Jong Namgung

4/30/2014

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HARBORS DIVISION

JOB TITLE

CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE

WATER AND ELECTRIC HATCH PLANS

SUBMITTED BY: _____ SECTION HEAD

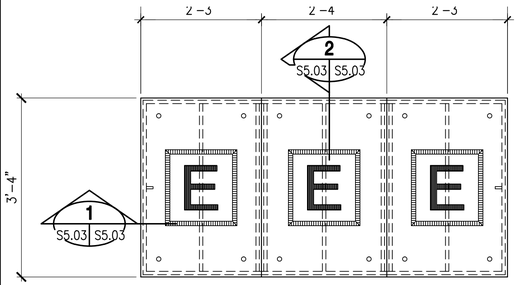
RECOMMENDED BY: _____ ENGINEERING PROGRAM MANAGER

DESIGNED BY: JN
DRAWN BY: FM
CHECKED BY: JN
DATE: FEB 2013
SCALE:

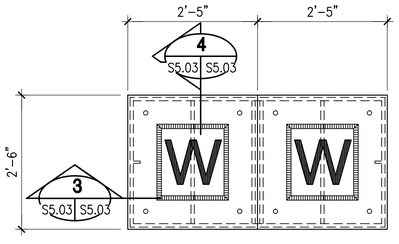
APPROVED BY: _____ HARBORS ADMINISTRATOR

JOB NUMBER
HMP 60901

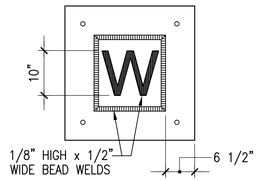
SHEET
S5.02
70 OF 73 SHTS



ELECTRICAL



WATER



COVER

1. HATCH COVER LETTERS TO BE CENTERED ON EACH COVER. LETTERS AND BORDERS TO BE BEAD WELDS 1/8" HIGH x 1/2" WIDE WITH ROUNDED EDGES.
2. ALL STRUCTURAL STEEL FRAMES AND COVERS SHALL BE ASTM A242, CORROSION RESISTANT, HIGH STRENGTH STEEL AND GALVANIZED.

UTILITIES TRENCH HATCH COVER PLATE FRAMING PLANS

SC: 3/4"= 1'-0"

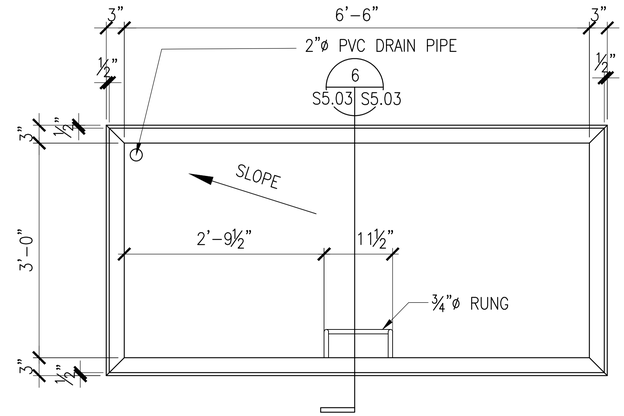
A S1.01 S5.03

S3.01

TYP. COVER AND DETAILS

SC: 3/4"= 1'-0"

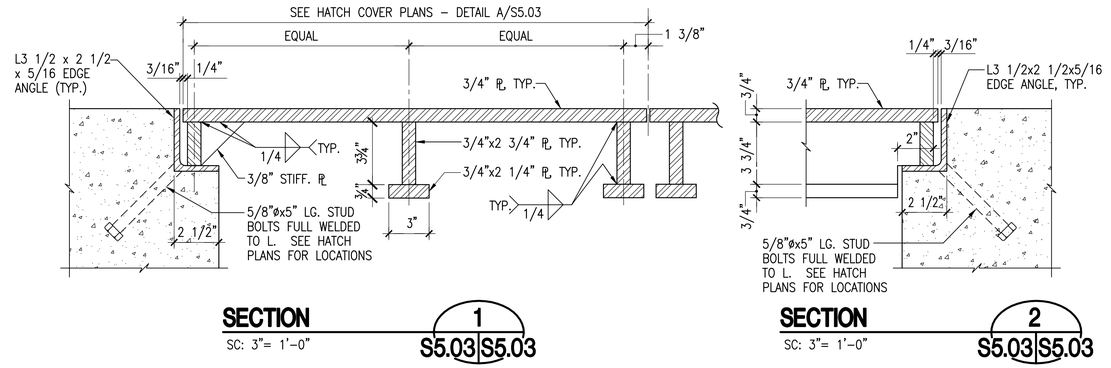
B S5.03 S5.03



ELECTRICAL UTILITY PLAN

SC: 3/4"= 1'-0"

5 S5.03 S5.03



SECTION 1

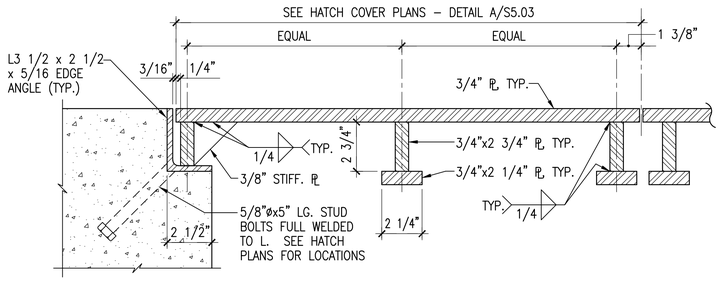
SC: 3"= 1'-0"

S5.03 S5.03

SECTION 2

SC: 3"= 1'-0"

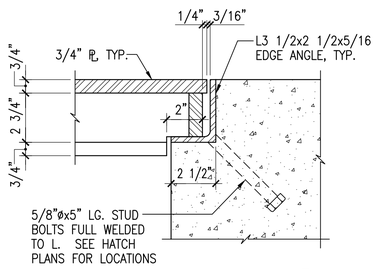
S5.03 S5.03



SECTION 3

SC: 3"= 1'-0"

S5.03 S5.03



SECTION 4

SC: 3"= 1'-0"

S5.03 S5.03

ELECTRICAL UTILITY SECTION

SC: 3/4"= 1'-0"

6 S5.03 S5.03

GRAPHIC SCALE:

1 0 1 2

SCALE: 3/4"= 1'-0"

6 4 2 0 6IN

SCALE: 3"= 1'-0"

REVISION	DATE	DESCRIPTION	BY	APPROVED

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HARBORS DIVISION

JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
DECK HATCH SECTIONS and COVER DETAILS

JONG NAMGUNG LICENSED PROFESSIONAL ENGINEER No. 3513-S HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SIGNATURE 4/30/2014 EXP. DATE

SUBMITTED BY: SECTION HEAD

RECOMMENDED BY: ENGINEERING PROGRAM MANAGER

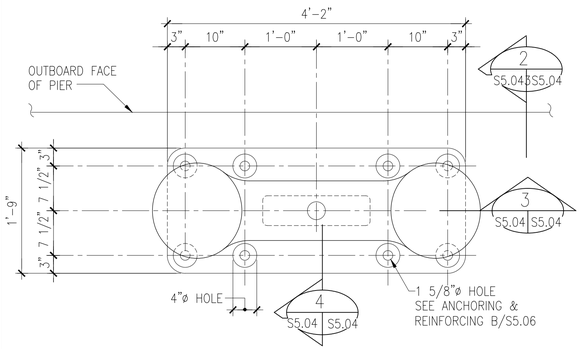
DESIGNED BY: JN
DRAWN BY: FM
CHECKED BY: JN
DATE: FEB 2013
SCALE:

APPROVED BY: HARBORS ADMINISTRATOR

JOB NUMBER HMP 60901

SHEET S5.03

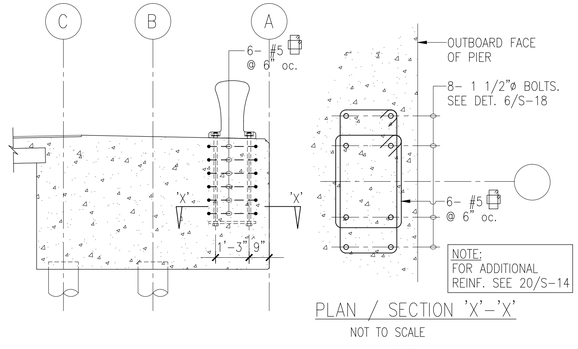
71 OF 73 SHTS



MOORING BITT PLAN

SC: 1"= 1'-0"

1 S5.04|S5.04



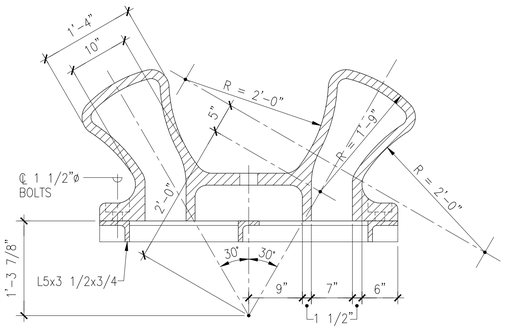
PLAN / SECTION 'X'-'X'

NOT TO SCALE

SECTION

SC: 1/4"= 1'-0"

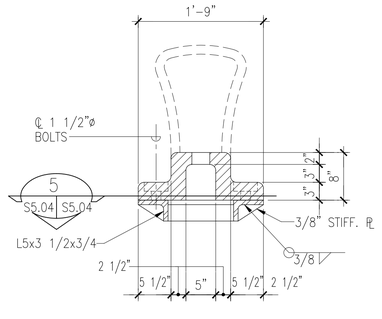
2 S5.04|S5.04



SECTION

SC: 1"= 1'-0"

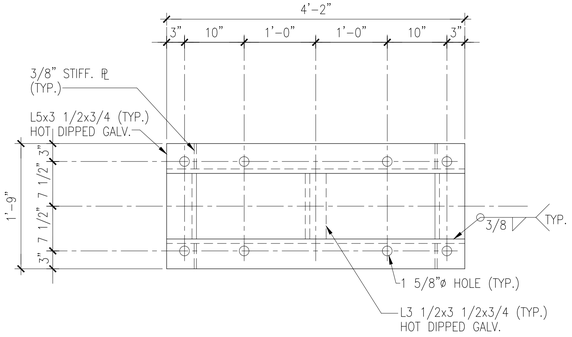
3 S5.04|S5.04



SECTION

SC: 1"= 1'-0"

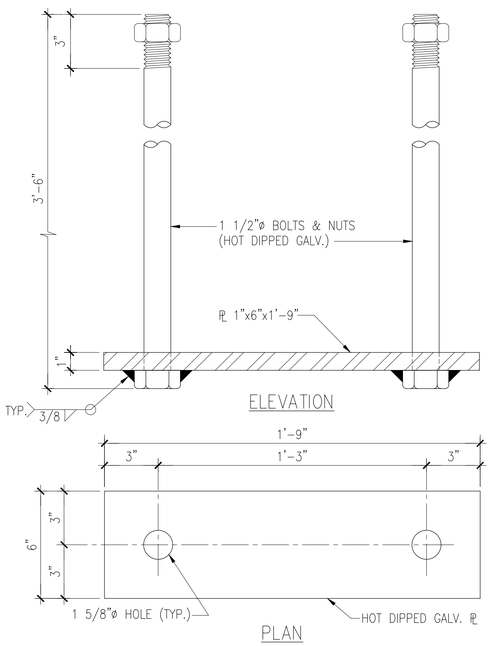
4 S5.04|S5.04



SETTING FRAME PLAN

SC: 1"= 1'-0"

5 S5.04|S5.04



ANCHOR BOLT DETAIL

SC: 3"= 1'-0"

6 S5.04|S5.04

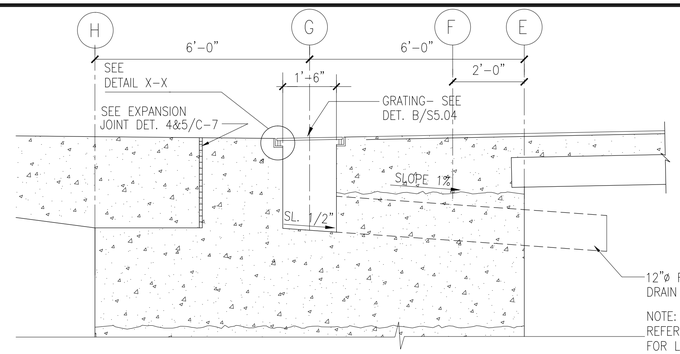
NOTES:

1. MOORING BITT SHALL HAVE A CAPACITY OF 100 TONS.
2. MOORING BITT SHOWN IS DIMENSIONED FROM ONE MANUFACTURER. SIMILAR SIZED MOORING BITT FROM OTHER MANUFACTURERS IS ACCEPTABLE.
3. SEE SPECIFICATIONS FOR ALL OTHER REQUIREMENTS.
4. MOORING BITT SHALL BE COATED WITH 5-MIL. AMERLOCK 400 AND 5-MIL. AMERSHIELD.

TYPICAL MOORING BITT DETAILS

SCALE AS NOTED

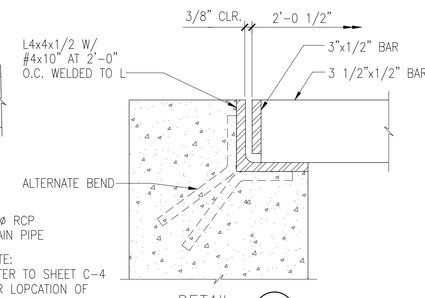
(S3.04, 3.06, 3.09,3.12, 3.15, 3.18. 3.21, 3.24, 3.27, 3.29) → A S1.01|S5.04



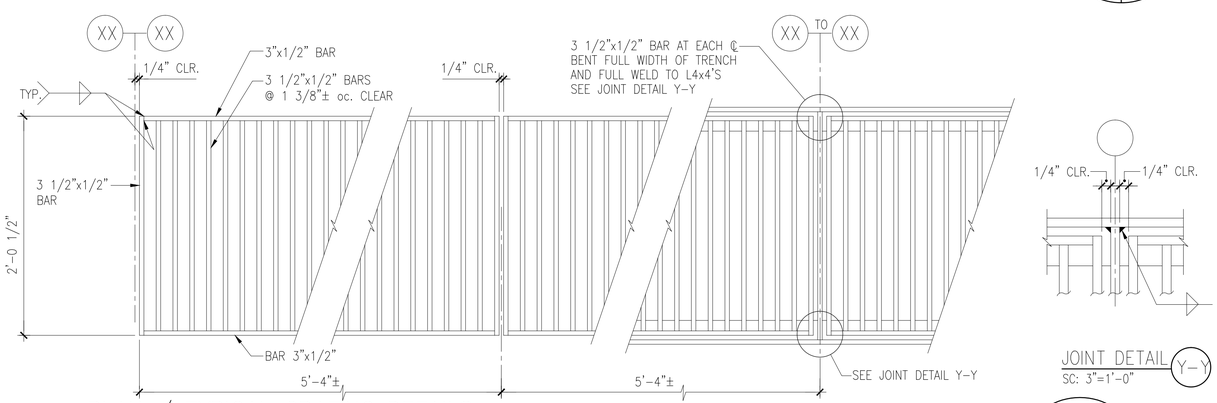
SECTION ℄ DRILL SHAFT

SC: 1/2"= 1'-0"

7 S5.04|S5.04



DETAIL X-X



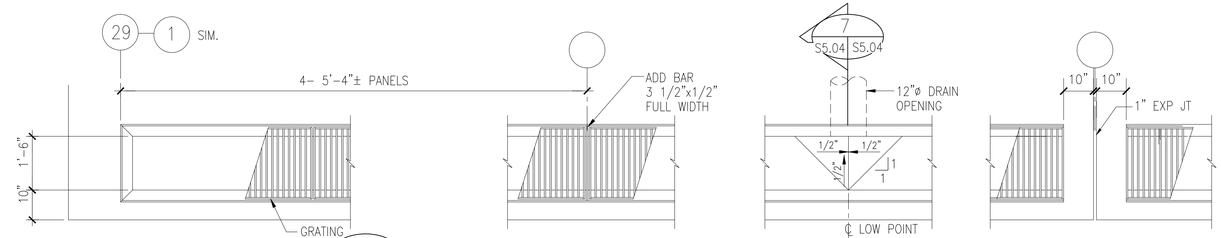
PLAN / TYPICAL GRATING DETAILS

SC: 1 1/2" =1'-0"

8 S5.04|S5.04

JOINT DETAIL Y-Y

SC: 3"=1'-0"



PLAN AT ENDS

TYPICAL PLAN AT BENT LINE

TYPICAL PLAN @ LOW POINT & DRAIN

PLAN @ EXP JT

GRATING AND CONTINUOUS TRENCH DRAIN DETAILS

SCALE" 1/2" = 1'-0"

B S1.01|S5.04

NOTE:

ALL STRUCTURAL STEEL FOR GRATINGS AND FRAMES SHALL CONFORM TO ASTM A-36 AND SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION.

GRAPHIC SCALE

4 3 2 1 0 4 8
SCALE: 1/4"= 1'-0"

2 1 0 2 4
SCALE: 1/2"= 1'-0"

1 0 1 2
SCALE: 1"= 1'-0"

1 0 1
SCALE: 1 1/2"= 1'-0"

6 4 2 0 6
SCALE: 3"= 1'-0"

REVISION	DATE	DESCRIPTION	BY	APPROVED

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HARBORS DIVISION

JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
MOORING BITT AND TRENCH DRAIN DETAILS

JONG NAMGUNG LICENSED PROFESSIONAL ENGINEER No. 3513-S HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

4/30/2014
SIGNATURE EXP. DATE

SUBMITTED BY: SECTION HEAD

RECOMMENDED BY: ENGINEERING PROGRAM MANAGER

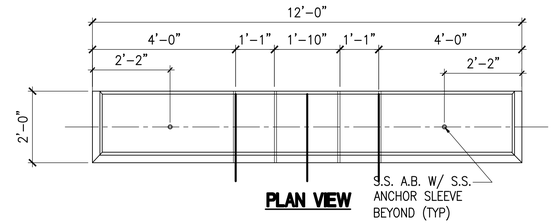
DESIGNED BY: JN
DRAWN BY: FM
CHECKED BY: JN
DATE: FEB 2013
SCALE:

APPROVED BY: HARBORS ADMINISTRATOR

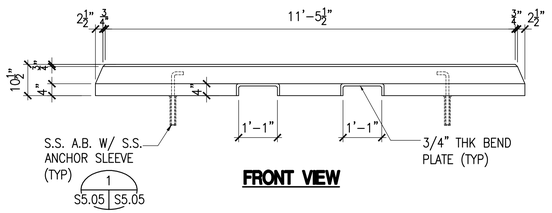
JOB NUMBER HMP 60901

SHEET S5.04

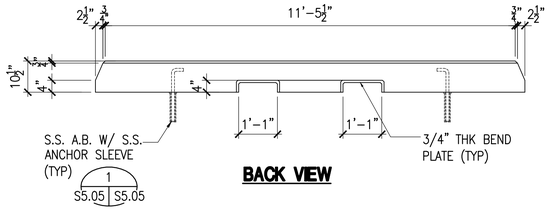
72 OF 73 SHTS



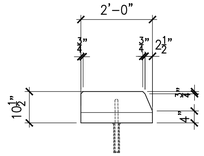
PLAN VIEW



FRONT VIEW



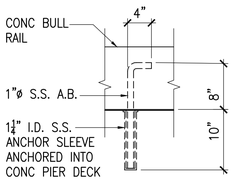
BACK VIEW



REMOVABLE CONCRETE BULL RAIL DETAIL

SC: 1/2"= 1'-0"

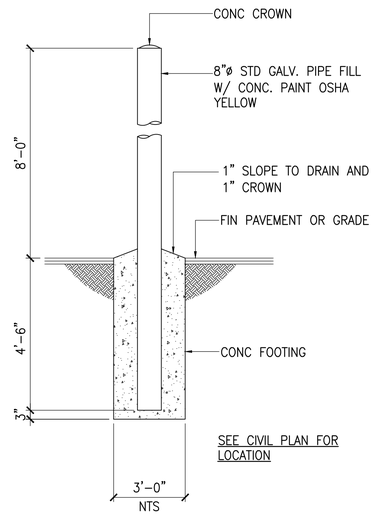
A
S1.01 | S5.05
S3.01



BULL RAIL FASTENING DET

SC: 1"= 1'-0"

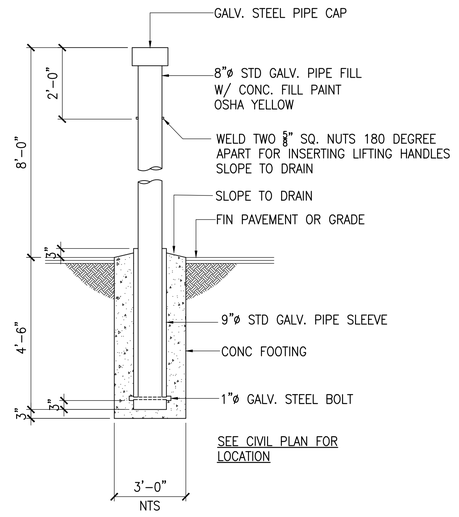
1
S5.05 | S5.05



FIXED PROTECTIVE STANCHION

SC: 1/2"= 1'-0"

2
C-4 | S5.05



REMOVABLE STANCHION (PER HELCO STANDARDS)

SC: 1/2"= 1'-0"

3
C-4 | S5.05

STRUCTURAL NOTES FOR PIPE STANCHION FOUNDATIONS

UNLESS OTHERWISE NOTED, ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION", STATE OF HAWAII, 2005.

CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR COORDINATING THE WORK OF ALL TRADES AND SHALL CHECK ALL DIMENSIONS. ALL DISCREPANCIES SHALL BE CALLED TO THE ATTENTION OF THE CONSTRUCTION ENGINEER AND SHALL BE RESOLVED PRIOR TO PROCEEDING WITH ANY WORK OR ORDERING OF MATERIALS.

CONTRACTOR SHALL BE SOLELY REPSONSIBLE FOR ALL EXCAVATION PROCEDURES, INCLUDING LAGGING, SHORING AND PROTECTION OF ADJACENT STRUCTURES, ROADWAYS AND UTILITIES.

THE PRESENCE OF EXISTING UNDERGROUND UTILITY LINES, IF ANY, IN THE VICINITY OF THE NEW POLE FOUNDATIONS ARE NOT KNOWN. CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS DURING EXCAVATION TO AVOID DAMAGING ANY UTILITY LINES. NOTIFY THE CONSTRUCTION ENGINEER OF ANY CONFLICT.

ALL CONCRETE SHALL BE 3,000 PSI WITH A WATER-CEMENT RATIO OF 0.45 MAX. SUBMIT CONCRETE MIX DESIGN FOR CONSTRUCTION ENGINEER'S REVIEW.

ALL REINFORCING STEEL SHALL BE ASTM A 615, GRADE 60. SPLICES IN REINFORCING STEEL SHALL NOT BE PERMITTED.

SEE ELECTRICAL DRAWINGS FOR NUMBER AND PLAN LOCATION OF PIPE STANCHIONS.

GRAPHIC SCALE:

4 3 2 1 0 4 8
SCALE: 1/4"= 1'-0"

2 1 0 2 4
SCALE: 1/2"= 1'-0"

1 0 1 2
SCALE: 1"= 1'-0"

REVISION	DATE	DESCRIPTION	BY	APPROVED

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HARBORS DIVISION

JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
REMOVABLE BULL RAIL DETAILS & STANCHION DETAIL

JONG NAMGUNG
LICENSED PROFESSIONAL ENGINEER
No. 3513-S
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

Jong Namgung
4/30/2014
SIGNATURE EXP. DATE

SUBMITTED BY: _____ SECTION HEAD

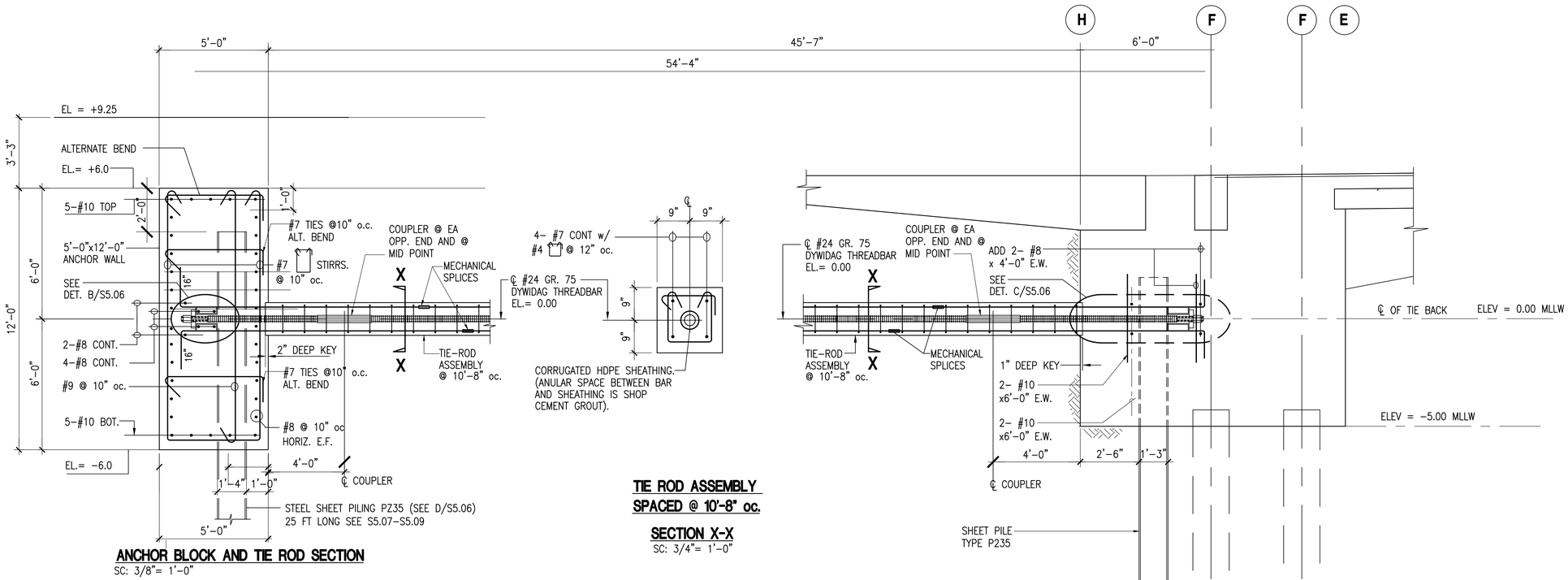
RECOMMENDED BY: _____ ENGINEERING PROGRAM MANAGER

DESIGNED BY: JN
DRAWN BY: FM
CHECKED BY: JN
DATE: FEB 2013
SCALE:

APPROVED BY: _____ HARBORS ADMINISTRATOR

JOB NUMBER
HMP 60901

SHEET
S5.05
73 OF 73 SHTS



ANCHOR BLOCK AND TIE ROD SECTION
SC: 3/8"= 1'-0"

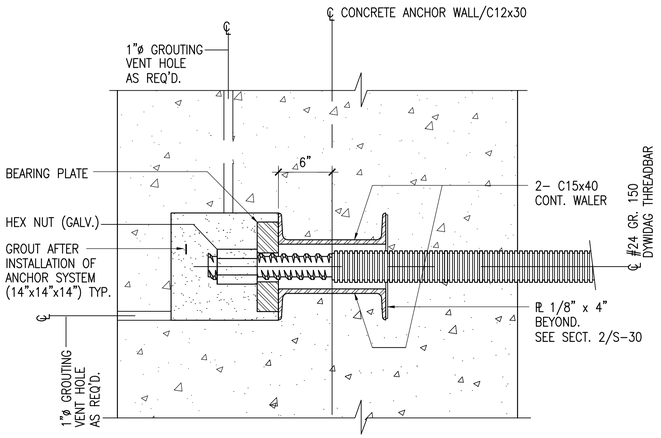
TIE ROD ASSEMBLY SPACED @ 10'-8" oc.

SECTION X-X
SC: 3/4"= 1'-0"

TYPICAL TIE-BACK SECTIONS and DETAILS

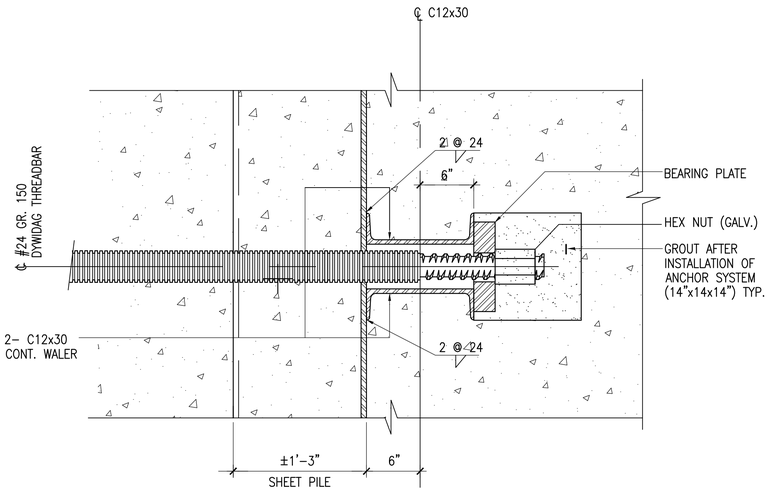
SCALE AS NOTED

A S1.01, S2.01, S2.03, S3.01, S3.01A, S5.06



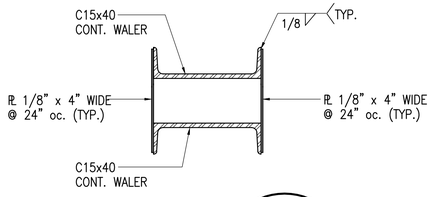
DETAIL
SC: 1 1/2"= 1'-0"

B S5.06 | S5.06



DETAIL
SC: 1 1/2"= 1'-0"

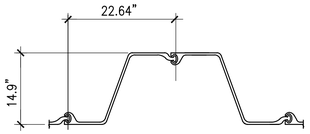
C S5.06 | S5.06



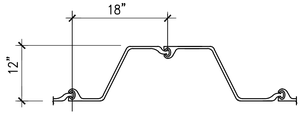
SECTION
SC: 1 1/2"= 1'-0"

2 S5.06 | S5.06

TYPE	AREA SQ. IN.	MOMENT OF INERTIA IN^4	SECTION MODULUS IN^3
PZ27	11.91	276.3	45.3
PZ35	19.41	681.5	91.4



BETHLEHEM "TYPE PZ35" OR EQUAL
PERMANENT- TO REMAIN



BETHLEHEM "TYPE PZ27" OR EQUAL
TEMPORARY -TO BE REMOVED

TYPICAL STEEL PILING DETAIL

NOT TO SCALE

D S3-01A, S3-01 | S5.06

REVISION	DATE	DESCRIPTION	BY	APPROVED

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HARBORS DIVISION

JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
ANCHOR BLOCK, TIE BACK DETAILS AND METAL SHEET PILE DETAIL

JONG NAMGUNG LICENSED PROFESSIONAL ENGINEER No. 3513-S HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
SIGNATURE 4/30/2014 EXP. DATE

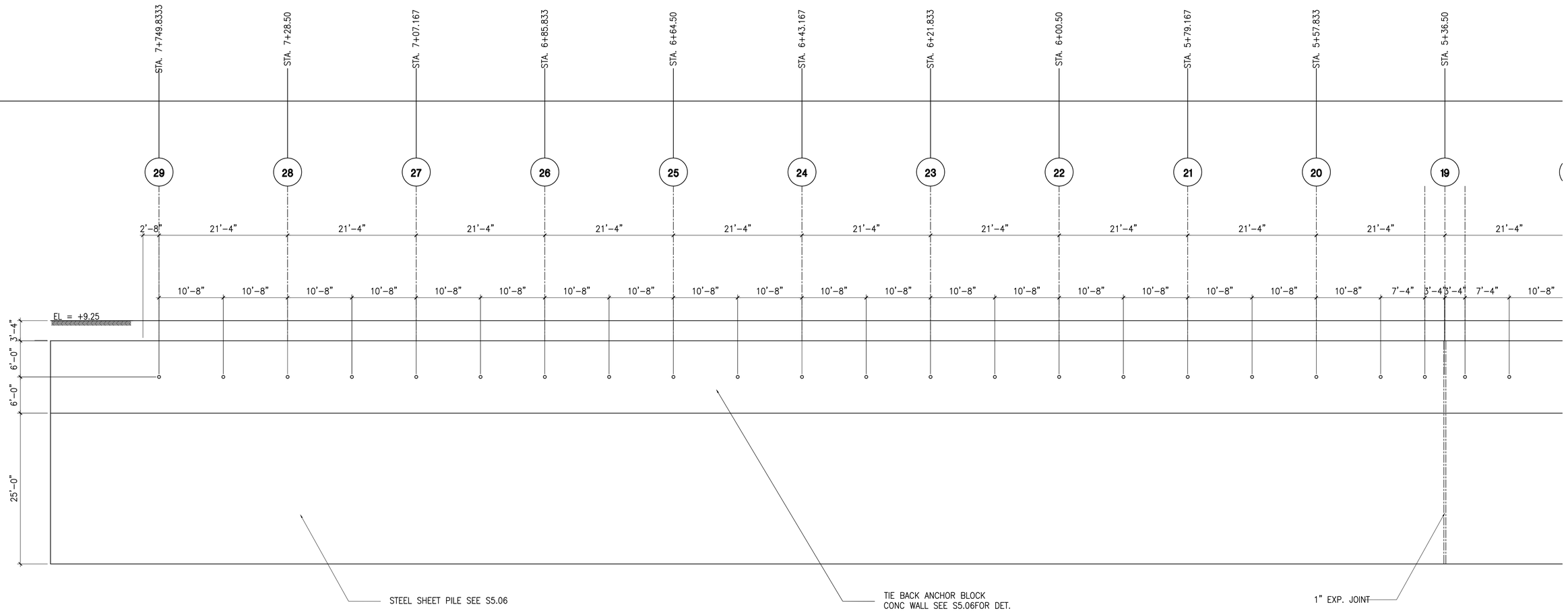
SUBMITTED BY: SECTION HEAD
RECOMMENDED BY: ENGINEERING PROGRAM MANAGER
APPROVED BY: HARBORS ADMINISTRATOR

DESIGNED BY: JN
DRAWN BY: FM
CHECKED BY: JN
DATE: FEB 2013
SCALE:

JOB NUMBER **HMP 60901**

SHEET S5.06

74 OF 73 SHTS



TIE-BACK WALL AND STEEL SHEET PILE ELEVATION - 1

SC: 1/8"= 1'-0"

A
S5.06 | S5.07

REVISION	DATE	DESCRIPTION	BY	APPROVED

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HARBORS DIVISION

JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
PROFILE OF ANCHOR BLOCK AND METAL SHEET PILE

JONG NAMGUNG
LICENSED PROFESSIONAL ENGINEER
No. 3513-S
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SIGNATURE — EXP. DATE 4/30/2014

SUBMITTED BY: SECTION HEAD

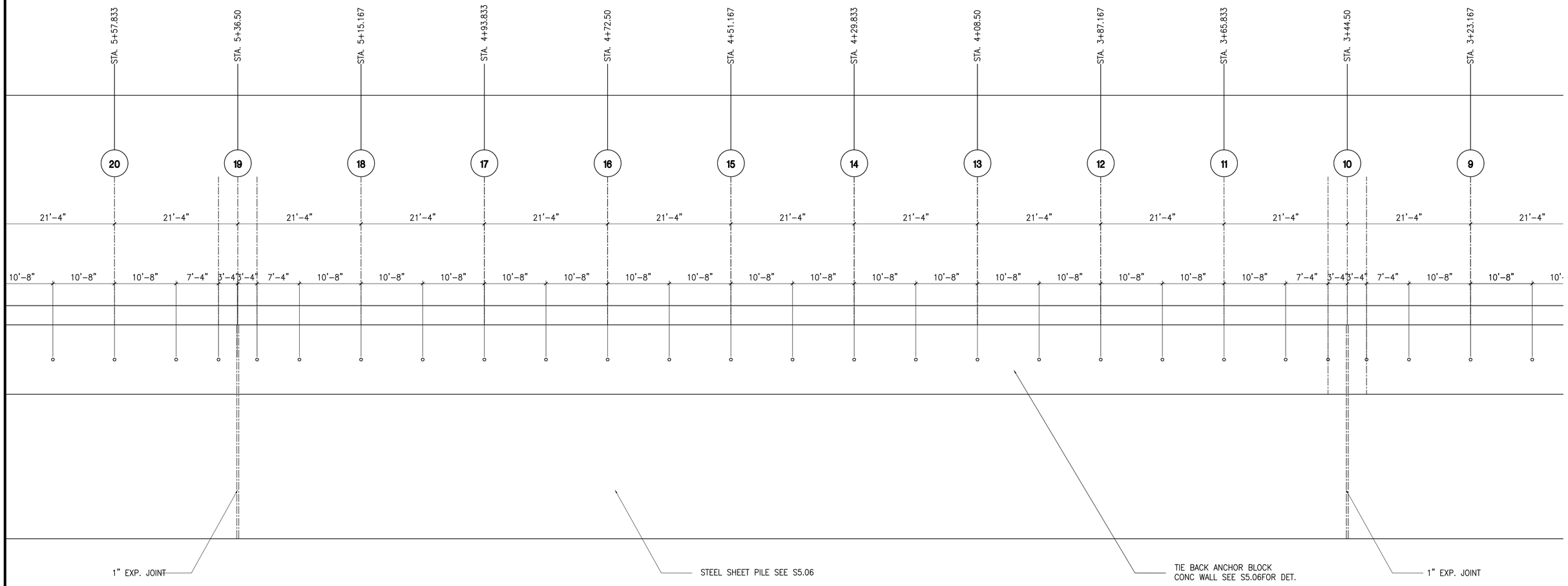
RECOMMENDED BY: ENGINEERING PROGRAM MANAGER

APPROVED BY: HARBORS ADMINISTRATOR

DESIGNED BY:	JN
DRAWN BY:	FM
CHECKED BY:	JN
DATE:	FEB 2013
SCALE:	

JOB NUMBER
HMP 60901

SHEET
S5.07
75 OF 73 SHTS



TIE-BACK WALL AND STEEL SHEET PILE ELEVATION - 2

SC: 1/8"= 1'-0"

A
S5.06 | S5.08

REVISION	DATE	DESCRIPTION	BY	APPROVED

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HARBORS DIVISION

JONG NAMGUNG ★ LICENSED PROFESSIONAL ENGINEER No. 3513-S ★ HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

Jong Namgung
4/30/2014
SIGNATURE EXP. DATE

JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
PROFILE OF ANCHOR BLOCK AND METAL SHEET PILE

SUBMITTED BY: ____ SECTION HEAD

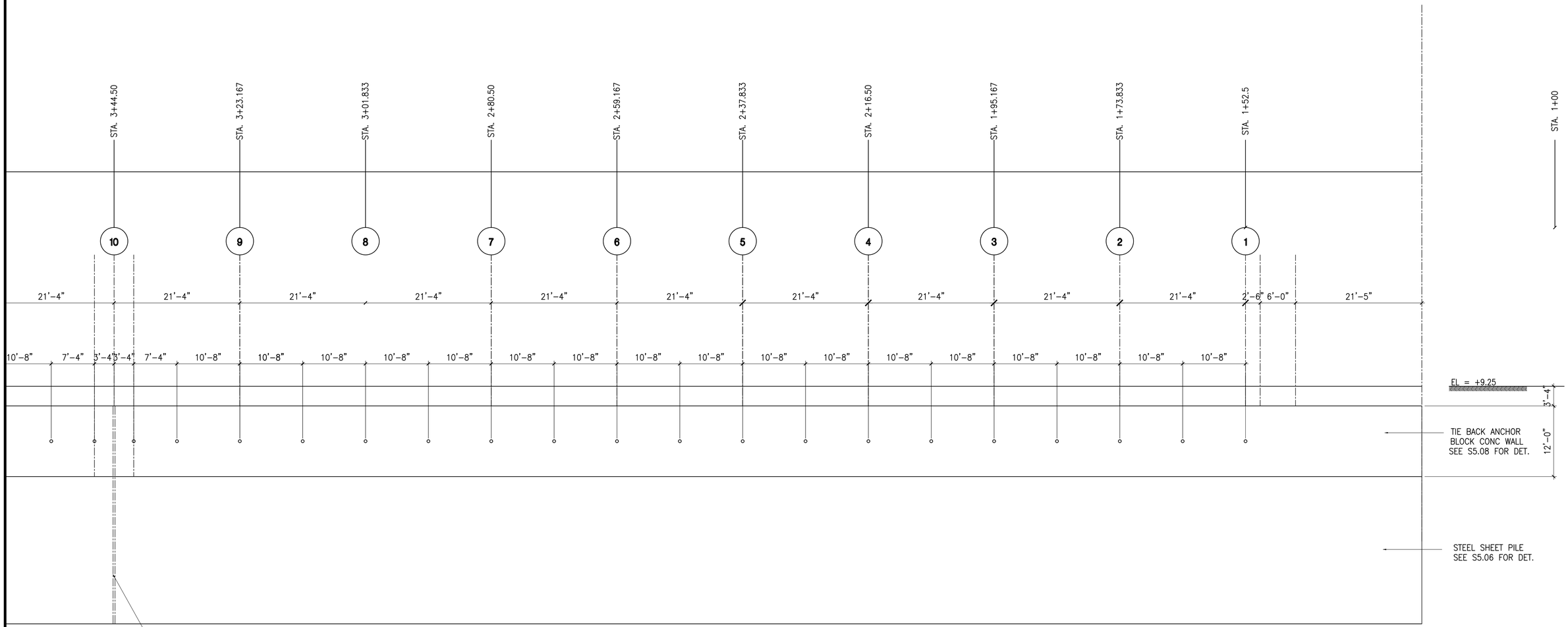
RECOMMENDED BY: ____ ENGINEERING PROGRAM MANAGER

DESIGNED BY: JN
DRAWN BY: FM
CHECKED BY: JN
DATE: FEB 2013
SCALE:

APPROVED BY: ____ HARBORS ADMINISTRATOR

JOB NUMBER
HMP 60901

SHEET
S5.08
76 OF 73 SHTS



TIE-BACK WALL AND STEEL SHEET PILE ELEVATION - 3

SC: 1/8"= 1'-0"

A
S5.06 | S5.09

REVISION	DATE	DESCRIPTION	BY	APPROVED

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HARBORS DIVISION

JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
PROFILE OF ANCHOR BLOCK AND METAL SHEET PILE

JONG NAMGUNG ★ LICENSED PROFESSIONAL ENGINEER No. 3513-S ★ HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

Jong Namgung 4/30/2014
SIGNATURE EXP. DATE

SUBMITTED BY: ___ SECTION HEAD

RECOMMENDED BY: ___ ENGINEERING PROGRAM MANAGER

DESIGNED BY:	JN
DRAWN BY:	FM
CHECKED BY:	JN
DATE:	FEB 2013
SCALE:	

APPROVED BY: ___ HARBORS ADMINISTRATOR

JOB NUMBER
HMP 60901

SHEET
S5.09
77 OF 73 SHTS

ELECTRICAL SYMBOL LIST

EXISTING	NEW	DESCRIPTION	EXISTING	NEW	DESCRIPTION
⊡		FLOODLIGHT POLE		EHH	ELECTRICAL HANDHOLE
				ELEC	ELECTRICAL
				FLP	FLOODLIGHT POLE
▨		ELECTRICAL EQUIPMENT		GND	GROUND
[T]		PAD MOUNTED TRANSFORMER		GRS	GALVANIZED RIGID STEEL
				HELCo	HAWAII ELECTRIC LIGHT COMPANY
				HH	HANDHOLE
				HHG	HANDHOLE GROUP
	- - - - - - -	CONDUIT SUSPENDED BELOW PIER DECK		HPS	HIGH PRESSURE SODIUM
—-—e—	—— - ——	CONDUIT BELOW GRADE		HTCo	HAWAIIAN TELEPHONE COMPANY
—e—⌐		CONDUIT STUB		KVA	KILOVOLT–AMPERE
—eOH—		EXISTING OVERHEAD LINES		KW	KILOWATT
				KWH	KILOWATT–HOUR
				NL	NIGHT LIGHT CIRCUIT
⬚		EXISTING HANDHOLE		PVC	POLYVINYL CHLORIDE CONDUIT
				SL	STREET LIGHT
	◇1 ——►	NOTE INDICATOR		S/S	STAINLESS STEEL
	1/E2	DETAIL INDICATOR: TOP HALF DENOTES DETAIL NUMBER, BOTTOM HALF DENOTES SHEET NUMBER		TEL	TELEPHONE
				THH	TELEPHONE HANDHOLE
				T/S	TIME SWITCH
	+42"	DENOTES 42" ABOVE FINISHED FLOOR OR GRADE		WP	WEATHERPROOF

NOTES:

1. ALL WORK SHOWN ON ELECTRICAL DRAWINGS IS NEW UNLESS OTHERWISE NOTED.
2. CONTRACTOR TO VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS IN THE FIELD PRIOR TO COMMENCEMENT OF NEW WORK.
3. TONE ALL DUCTLINE ROUTES PRIOR TO EXCAVATION. PROTECT EXISTING UNDERGROUND UTILITIES FROM DAMAGE DURING EXCAVATION. REPAIR ALL DAMAGE AT NO ADDITIONAL COST TO THE STATE.
4. THE WORK SCHEDULE AND ANY REQUIRED POWER OUTAGES SHALL BE COORDINATED WITH THE CONSTRUCTION ENGINEER PRIOR TO CONSTRUCTION.
5. THE ELECTRICAL CONTRACTOR SHALL COORDINATE HIS WORK WITH THE OTHER TRADES TO AVOID CONFLICTS WITH CIVIL AND STRUCTURAL ELEMENTS OF THE PROJECT.

REVISION	DATE	DESCRIPTION	BY	APPROVED

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HARBORS DIVISION

MICHELE N. ADOLPHO
LICENSED PROFESSIONAL ENGINEER
No. 10017-E
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

PROJECT ENGINEER for ECS, Inc.

APRIL 30, 2014
EXPIRATION DATE OF THE LICENSE

JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
ELECTRICAL SYMBOL LIST AND GENERAL NOTES

SUBMITTED BY: _____ SECTION HEAD

RECOMMENDED BY: _____ ENGINEERING PROGRAM MANAGER

DESIGNED BY: MA
DRAWN BY: MC
CHECKED BY: MA
DATE: JANUARY 2014
SCALE: AS NOTED

APPROVED BY: _____ HARBORS ADMINISTRATOR

JOB NUMBER
HMP 60901

SHEET
E-1
78 OF 82 SHTS

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NEW ELECTRICAL HATCH, TYPICAL FOR 4 SEE 4/E-4

EXPANSION FITTING, TYPICAL

BULKHEAD FACE

3" PVC SCHEDULE 80 AT UNDERSIDE OF PIER, TYPICAL

CONNECT TO 3" CONDUIT STUBOUT, TYPICAL FOR 4

2' x 4' EHH 5

2' x 4' EHH 6

3' X 5' EHH 2

2' x 4' EHH 3

2' x 4' EHH 4

3"C STUBOUT, BY H.C. 50006.3, TYPICAL FOR 4

CONCRETE DEADMAN, SEE STRUCTURAL DRAWINGS

UNDERGROUND DUCTLINE BY H.C. 50006.3, TYPICAL

SEE ENLARGED PLAN 2/E-5

FUTURE OFFICE, BY OTHERS

FLOODLIGHT POLE ASSEMBLY AND HANDHOLE GROUP, BY H.C. 50006.3, TYPICAL

FUTURE CONTAINER CHECK-IN/CHECK-OUT STATION (BY OTHERS)

COMFORT STATION, BY H.C. 50006.3

SWITCHBOARD "4A", BY H.C. 50006.3

3' x 5' EHH 1, BY H.C. 50006.3

FUTURE SECURITY BOOTH AND CRASH GATES, BY OTHERS

FUTURE CONTAINER CHECK-IN/CHECK-OUT STATION, BY OTHERS

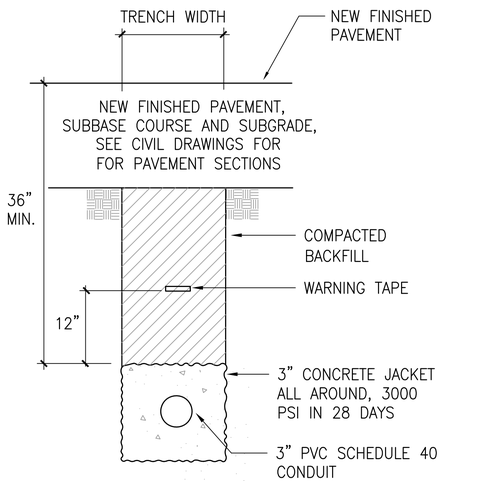
HELCO PAD MOUNTED TRANSFORMER, BY H.C. 50006.3

TO EXISTING UTILITY POLE

EXISTING JOINT UTILITY POLE, TYPICAL

1/E-2 ELECTRICAL SITE PLAN

SCALE: 1" = 40'



2/E-2 TYPICAL CONCRETE ENCASED DUCT SECTION

NOT TO SCALE

NOTES:

1. 3" PVC SCHEDULE 40, CONCRETE ENCASED, FOR DUCT SECTION, SEE 2/E-2
2. FOR CONDUIT ROUTING THROUGH BULKHEAD, SEE 1/E-4
3. SEE ENLARGED PLAN 1/E-5
4. IN SLEEVE THROUGH DEADMAN, SEE STRUCTURAL DRAWINGS FOR DETAILS.

GRAPHIC SCALE

40' 0' 40' 80' 120' 160'

1" = 40'

REVISION	DATE	DESCRIPTION	BY	APPROVED

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HARBORS DIVISION

JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
ELECTRICAL SITE PLAN

MICHELE N. ADOLPHO
LICENSED PROFESSIONAL ENGINEER
No. 10017-E
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

PROJECT ENGINEER for ECS, Inc.

APRIL 30, 2014
EXPIRATION DATE OF THE LICENSE

SUBMITTED BY: SECTION HEAD

RECOMMENDED BY: ENGINEERING PROGRAM MANAGER

APPROVED BY: HARBORS ADMINISTRATOR

DESIGNED BY:	MA
DRAWN BY:	MC
CHECKED BY:	MA
DATE:	JANUARY 2014
SCALE:	AS NOTED

JOB NUMBER HMP 60901

SHEET E-2

79 OF 82 SHTS

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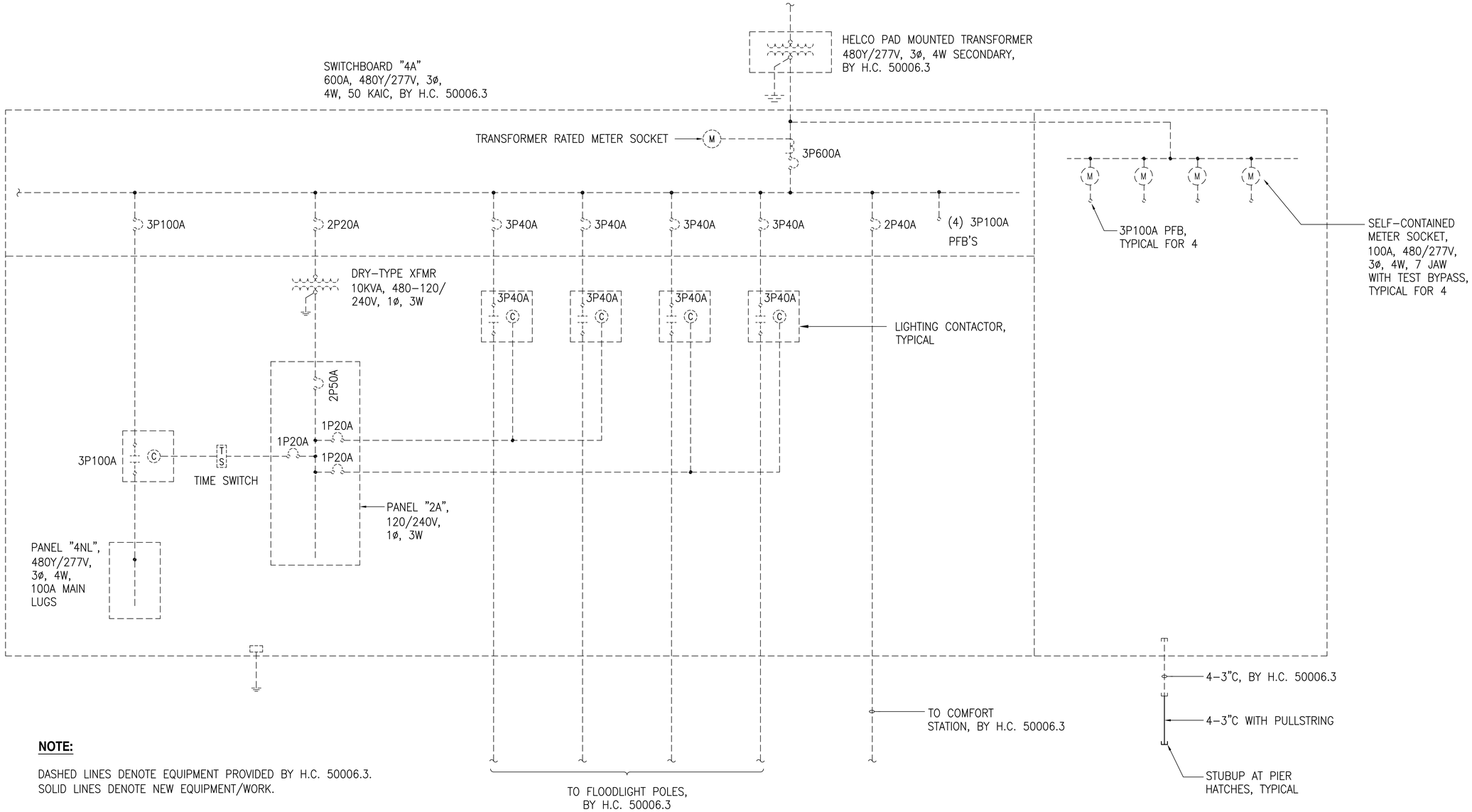

NOTE:

DASHED LINES DENOTE EQUIPMENT PROVIDED BY H.C. 50006.3.
SOLID LINES DENOTE NEW EQUIPMENT/WORK.

1 / E-3 ONE-LINE DIAGRAM
NO SCALE

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JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
ONE-LINE DIAGRAM

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SHEET
E-3
80 OF 82 SHTS

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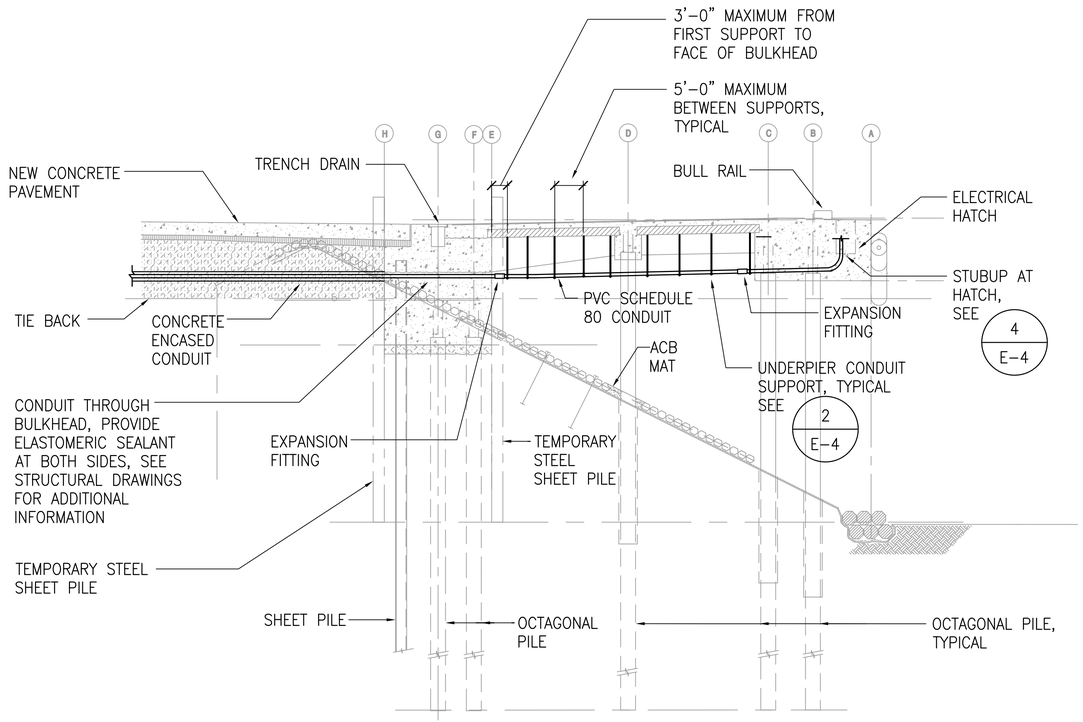
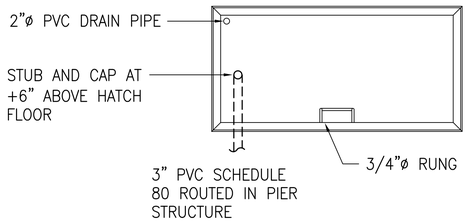


1/E-4 TYPICAL PIER SECTION
NOT TO SCALE

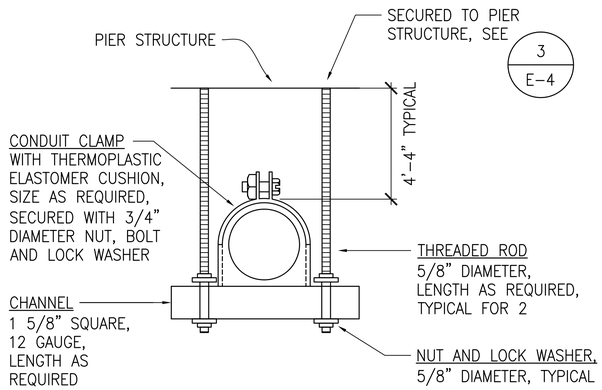


4/E-4 ELECTRICAL HATCH PLAN
SCALE: 1/2" = 1'–0"

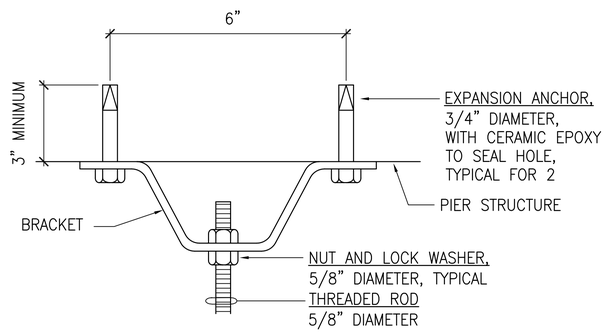
GENERAL NOTE:
(THIS SHEET ONLY)
ALL METALLIC COMPONENTS ON THE UNDERSIDE OF THE PIER SHALL BE STAINLESS STEEL, TYPE 316.

NOTES:

1. CONTRACTOR TO COORDINATE ROUTING OF CONDUITS WITH STRUCTURAL DRAWINGS, STRUCTURAL PENETRATIONS AND OTHER UNDERPIER OBSTRUCTIONS.
2. SUBMIT SHOP DRAWINGS OF CONDUIT SUPPORT MATERIALS AND DETAILS FOR REVIEW.



2/E-4 UNDERPIER CONDUIT SUPPORT
NOT TO SCALE



3/E-4 THREADED ROD CONNECTION
NOT TO SCALE

GRAPHIC SCALE
1' 0 1' 2' 3' 4' 5' 6' 7' 8' 9' 10'
1/2" = 1'–0"

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JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
TYPICAL PIER SECTION

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No. 10017-E
HAWAII, U.S.A.

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PROJECT ENGINEER for ECS, Inc.
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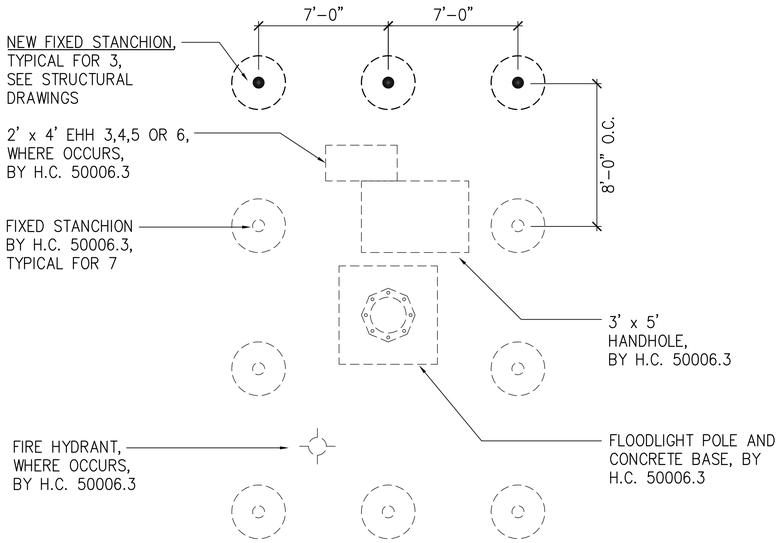
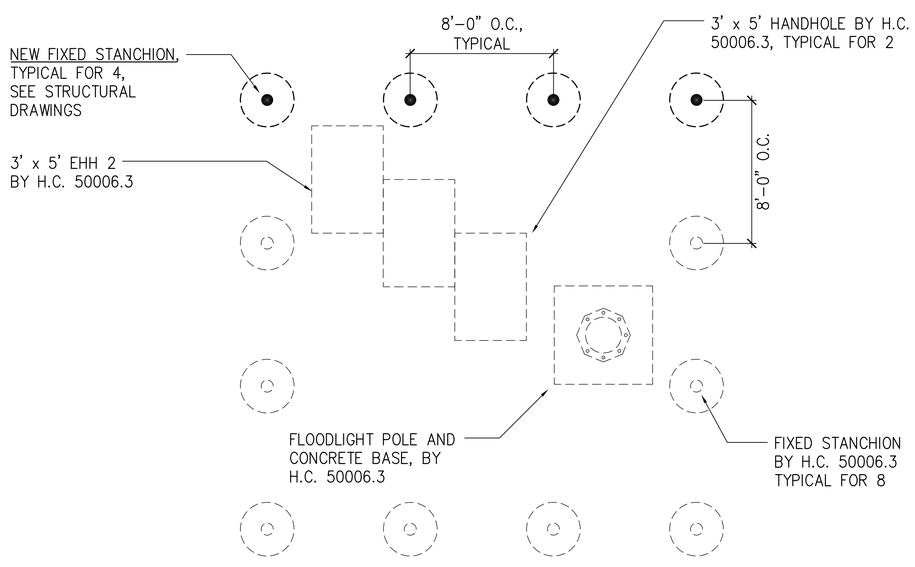
SHEET
E-4
81 OF 82 SHTS

1/16/14–14:06 Y:\087\087.149\87.149 E04 D01.dwg



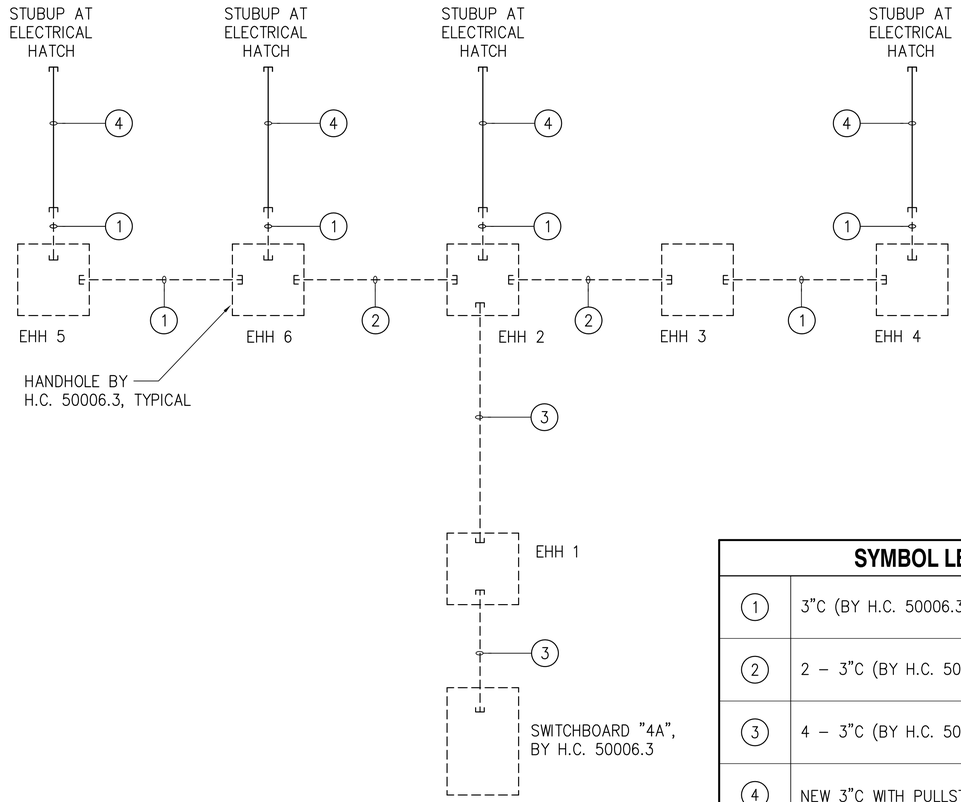
1 E-5 ENLARGED DETAIL PLAN

SCALE: 1/4" = 1'–0"



2 E-5 ENLARGED DETAIL PLAN

SCALE: 1/4" = 1'–0"



3 E-5 PIER POWER SECONDARY DISTRIBUTION DIAGRAM

NO SCALE

SYMBOL LEGEND	
1	3"C (BY H.C. 50006.3)
2	2 – 3"C (BY H.C. 50006.3)
3	4 – 3"C (BY H.C. 50006.3)
4	NEW 3"C WITH PULLSTRING

REVISION	DATE	DESCRIPTION	BY	APPROVED

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APRIL 30, 2014
EXPIRATION DATE OF THE LICENSE

JOB TITLE
CONSTRUCTION OF PIER 4
PIER 4 INTER-ISLAND CARGO TERMINAL
HILO HARBOR

SHEET TITLE
ENLARGED PLANS AND PIER POWER DISTRIBUTION DIAGRAM

SUBMITTED BY: (SECTION HEAD)
RECOMMENDED BY: (ENGINEERING PROGRAM MANAGER)

DESIGNED BY:	MA
DRAWN BY:	MC
CHECKED BY:	MA
DATE:	JANUARY 2014
SCALE:	AS NOTED

APPROVED BY: (HARBORS ADMINISTRATOR)

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HMP 60901

SHEET
E-5
82 OF 82 SHTS

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