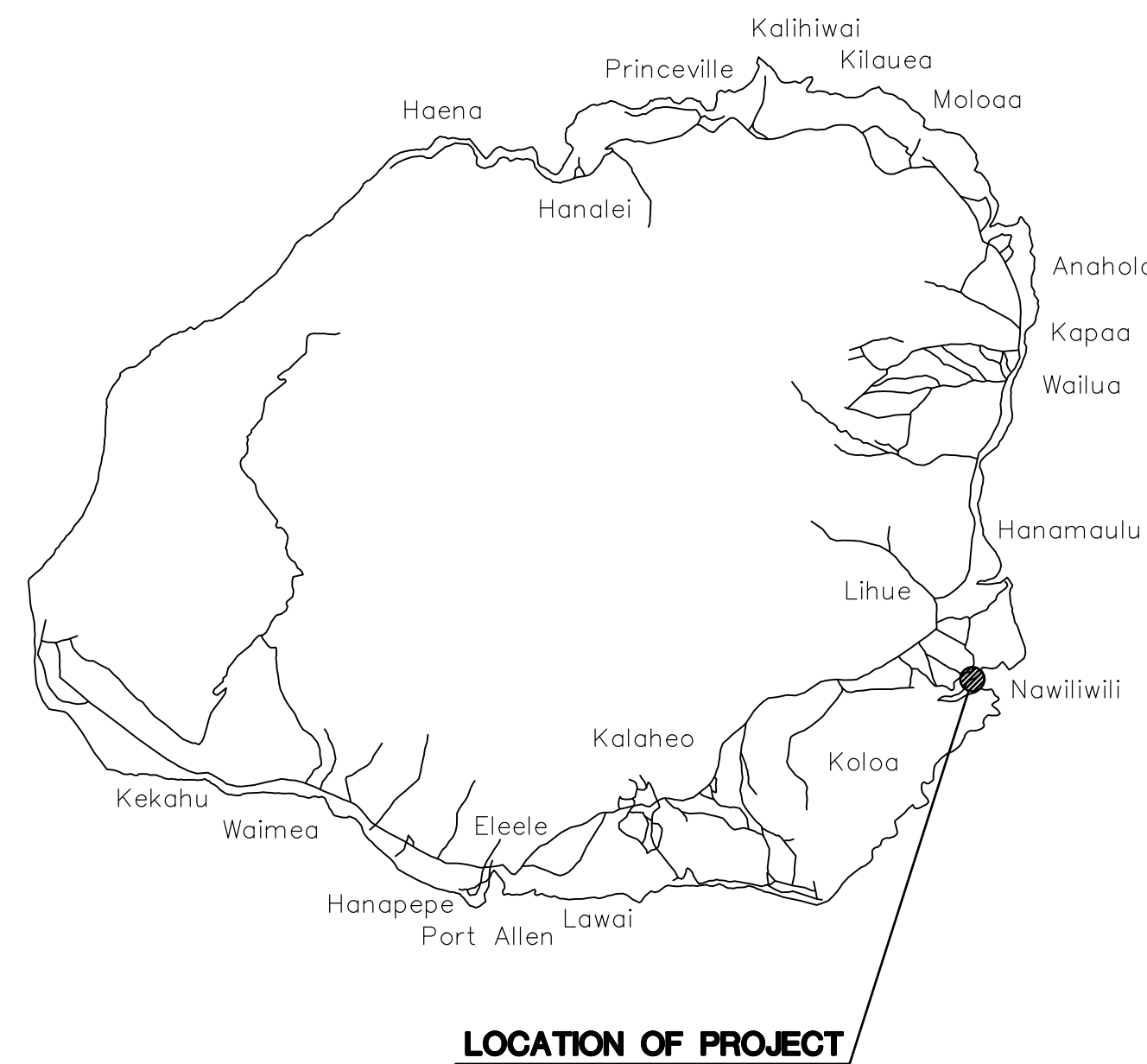


CONCRETE PAVEMENT REPAIRS AT PIER 3 NAWILIWILI HARBOR, KAUAI, HAWAII

FOR THE
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HARBORS DIVISION
S70141

CONSULTANT:

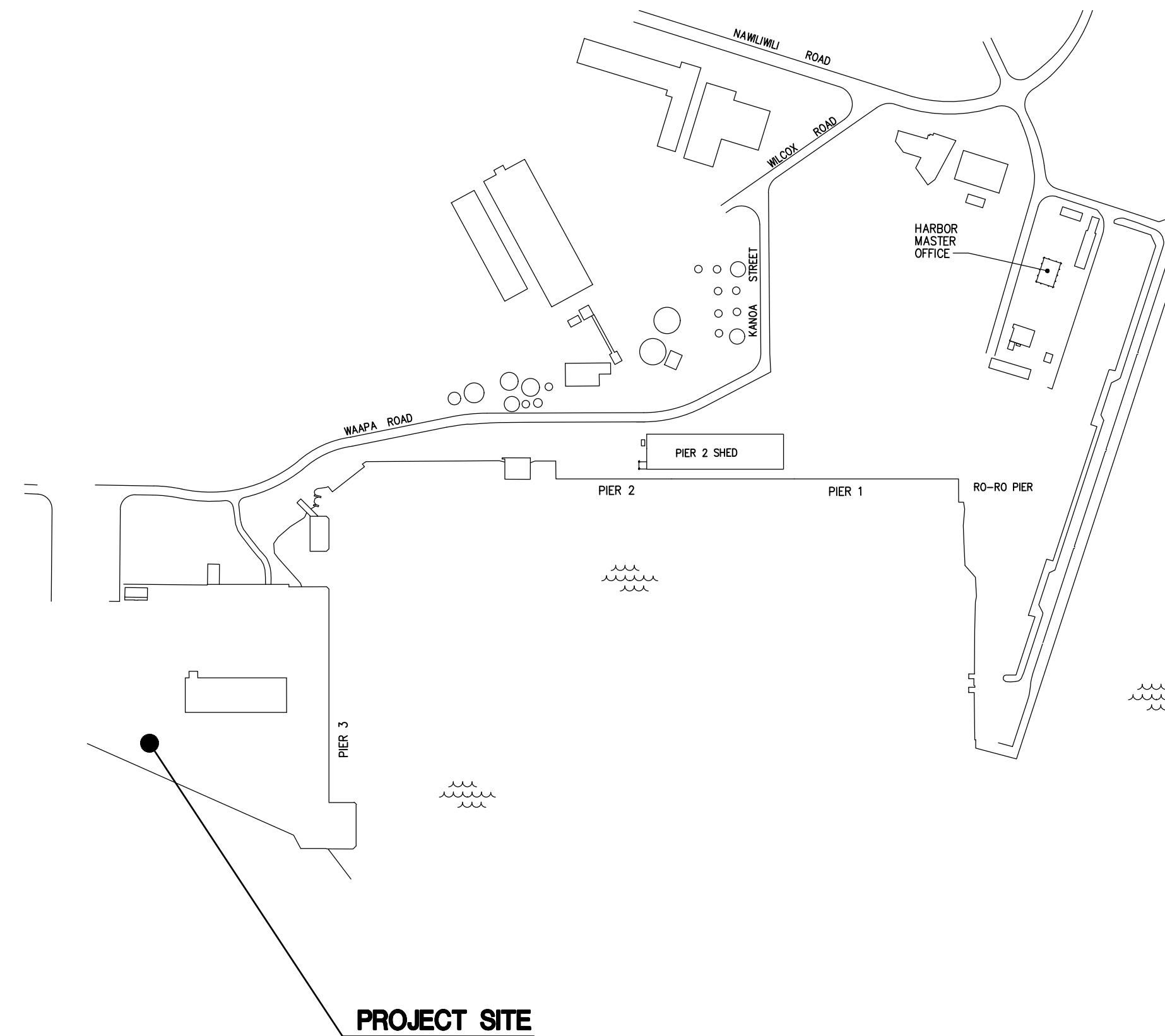
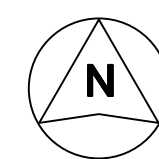
MKE ASSOCIATES LLC
STRUCTURAL ENGINEER



ISLAND OF KAUAI

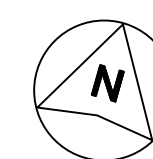
LOCATION MAP


NOT TO SCALE



VICINITY MAP

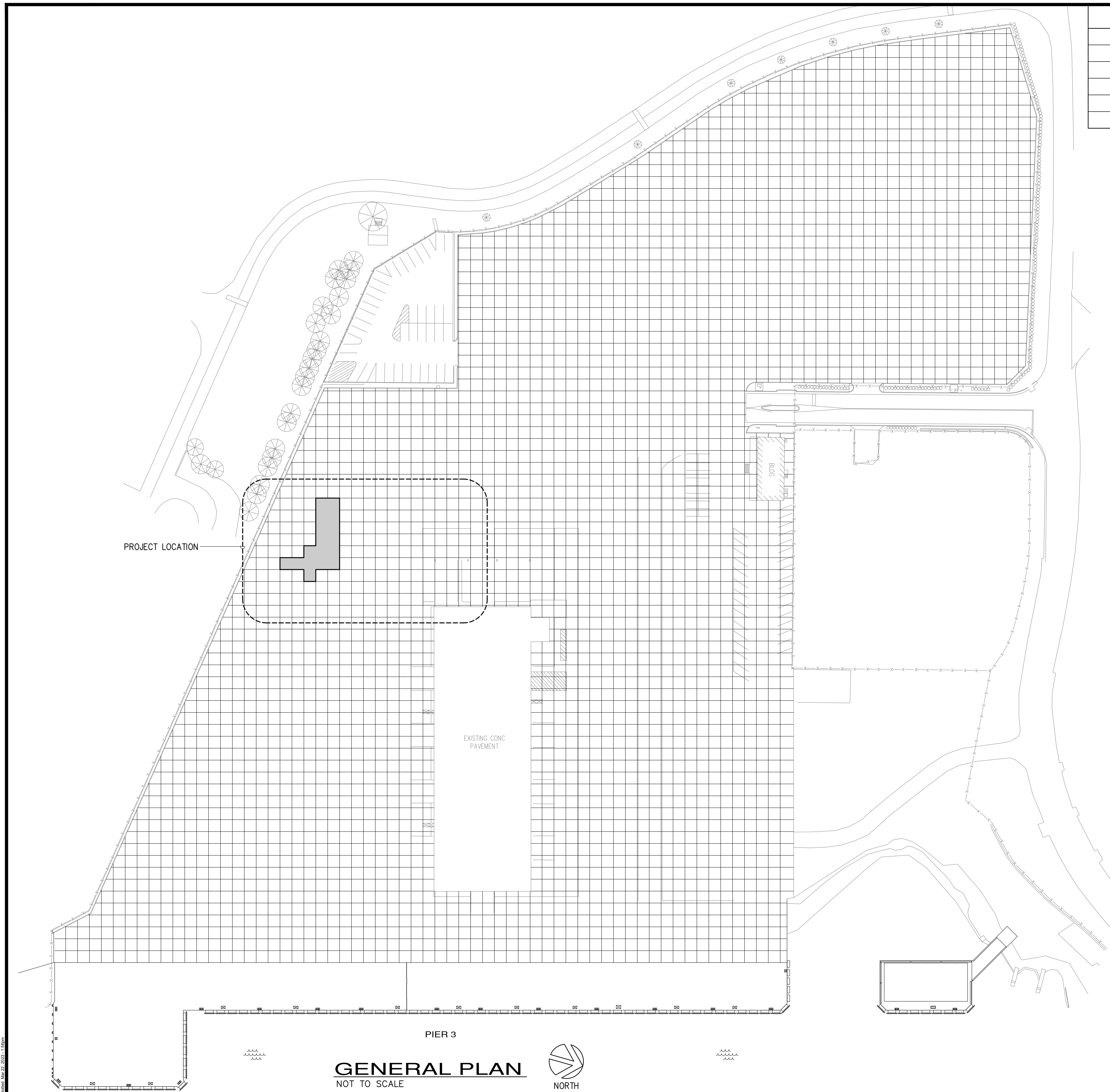
NOT TO SCALE



DEPARTMENT OF TRANSPORTATION STATE OF HAWAII		SHEET T-1
APPROVED BY:		Apr 17, 2023
FOR DIRECTOR OF TRANSPORTATION		DATE
		1 of 5 SHS

INDEX TO DRAWINGS

SHEET NO.	TITLE
T-1	TITLE SHEET, LOCATION AND VICINITY MAPS
T-2	INDEX TO DRAWINGS AND GENERAL PLAN
S-1	STRUCTURAL NOTES
S-2	PARTIAL PAVEMENT REPAIR PLAN
S-3	CONCRETE PAVEMENT REPAIR DETAILS

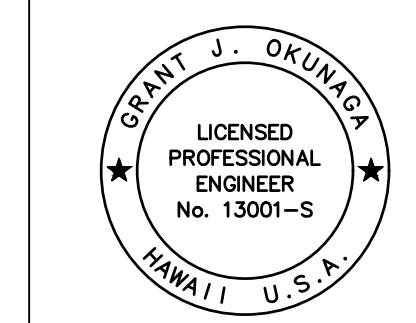


PROJECT LOCATION

EXISTING CONC PAVEMENT

PIER 3

GENERAL PLAN
NOT TO SCALE



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OR UNDER MY SUPERVISION
EXP. 4-30-24
Grant J. Okuniga
MKE ASSOCIATES LLC

REVISION	DATE	DESCRIPTION	BY	APPROVED
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION				
JOB TITLE CONCRETE PAVEMENT REPAIRS AT PIER 3 NAWILIWILI HARBOR, KAUAI, HAWAII				
SHEET TITLE INDEX TO DRAWINGS AND GENERAL PLAN				
DESIGNED BY: GO				SHEET T-2
DRAWN BY: DL				JOB NUMBER S70141
CHECKED BY: GM				
DATE: 03/2023				
SCALE: AS SHOWN				2 of 5 SHEETS

STRUCTURAL NOTES:

GENERAL:

1. WORKMANSHIP AND MATERIALS SHALL CONFORM TO THE HAWAII STANDARD SPECIFICATION FOR ROAD AND BRIDGE CONSTRUCTION, 2005, FOR THE STATE OF HAWAII, UNLESS OTHERWISE INDICATED. HOWEVER, WHERE REFERENCE IS MADE TO PERFORMANCE CONFORMING TO OTHER STANDARDS THE MORE STRINGENT SHALL APPLY.
2. THE CONTRACTOR SHALL COMPARE PLANS, SPECIFICATIONS AND ALL OTHER CONTRACT DOCUMENTS WITH EACH OTHER AND REPORT IN WRITING TO THE HARBORS DIVISION CONSTRUCTION ENGINEER ALL INCONSISTENCIES AND OMISSIONS.
3. THE CONTRACTOR SHALL TAKE FIELD MEASUREMENTS AND VERIFY FIELD CONDITIONS AND SHALL COMPARE SUCH FIELD MEASUREMENTS AND CONDITIONS WITH THE DRAWINGS BEFORE COMMENCING WORK. REPORT IN WRITING TO THE HARBORS DIVISION CONSTRUCTION ENGINEER ALL INCONSISTENCIES AND OMISSIONS.
4. CONTRACTOR SHALL RESOLVE ANY DISCREPANCIES AND QUESTIONS PRIOR TO THE START OF WORK. NO EXTRA PAYMENT SHALL BE ALLOWED ON ACCOUNT OF WORK MADE NECESSARY BY CONTRACTORS FAILURE TO VISIT THE SITE AND/OR FAILURE TO RESOLVE DISCREPANCIES AND QUESTIONS.
5. THE CONTRACTOR SHALL PROTECT ALL UTILITIES AND STRUCTURES IN AND ADJACENT TO THE PROJECT SITE. ANY DAMAGE SHALL BE REPAIRED TO THE SATISFACTION OF THE HARBORS DIVISION CONSTRUCTION ENGINEER AND PAID FOR BY THE CONTRACTOR.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE WORK OF ALL TRADES.
7. THE CONTRACTOR SHALL COORDINATE HIS/HER WORK WITH OTHER CONTRACTORS WITHIN THE PROJECT AREA. THE CONTRACTOR SHALL ALSO COORDINATE WITH THE HARBORS DIVISION KAUAI DISTRICT MANAGER AND CONSTRUCTION ENGINEER FOR AN APPROVED STAGING AND STORAGE AREA AND FOR RESTRICTIONS OF HARBORS OPERATIONS OVER REPAIR AREAS.
8. THE CONTRACTOR SHALL REMOVE ALL DEBRIS RESULTING FROM HIS/HER WORK AS REQUIRED FOR PUBLIC HEALTH AND SAFETY AND TO THE SATISFACTION OF THE HARBORS DIVISION CONSTRUCTION ENGINEER. SHOULD THE STATE PERFORM ANY OF THE ABOVE WORK DUE TO NON-PERFORMANCE BY THE CONTRACTOR, THE CONTRACTOR AGREES TO REIMBURSE THE STATE FOR ALL COSTS INCURRED.
9. HARBOR OPERATIONS TAKE PRECEDENCE OVER CONSTRUCTION ACTIVITY. THE CONTRACTOR MUST WORK AROUND HARBOR OPERATIONS SO THAT THE PIER WILL REMAIN OPERATIONAL. WEEKEND WORK MAY BE REQUIRED AND SHALL BE COORDINATED WITH THE HARBORS DIVISION CONSTRUCTION ENGINEER AND TENANTS IN ADVANCE.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR METHODS OF CONSTRUCTION, WORKMANSHIP AND JOB SAFETY. THE CONTRACTOR SHALL PROVIDE TEMPORARY SHORING AND BRACING AS REQUIRED FOR STABILITY OF STRUCTURAL MEMBERS AND SYSTEMS.
11. ALL WORK SPECIFIED IN THE CONTRACT BUT NOT LISTED SEPARATELY SHALL BE CONSIDERED INCIDENTAL AND WILL NOT BE PAID FOR SEPARATELY.
12. NOTES AND DETAILS ON THE PLANS SHALL TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS. SHOULD THERE BE CONFLICTS BETWEEN THE REQUIREMENTS OF THE PLANS OR SPECIFICATIONS, THE MORE STRINGENT SHALL APPLY.
13. THE CONTRACTOR SHALL COMPLY WITH THE CLEAN WATER ACT AND THE STATE HARBORS DIVISION STORMWATER MANAGEMENT PROGRAM. NO POLLUTANTS ARE ALLOWED TO BE DISCHARGED DIRECTLY OR INDIRECTLY THROUGH THE HARBORS SMALL MS4 OR OTHER POTENTIAL PATHWAY INTO HARBOR WATERS.
14. THE CONTRACTOR WILL BE RESPONSIBLE FOR REGULATORY FINES OR PENALTIES THAT MAY BE IMPOSED BY ENVIRONMENTAL REGULATORY AGENCIES (EPA AND/OR STATE DOH) IN THE EVENT OF VIOLATIONS.
15. THE CONTRACTOR SHALL SUBMIT A SITE-SPECIFIC BEST MANAGEMENT PRACTICES (BMP) PLAN TO HARBORS DIVISION ENGINEER BRANCH PRIOR TO THE START OF ANY CONSTRUCTION WORK. THE SITE SPECIFIC BMP PLAN SHALL COMPLY WITH ENVIRONMENTAL PROTECTION AND TEMPORARY WATER POLLUTION, DUST, AND EROSION CONTROL ARTICLES IN THE SPECIFICATIONS AND PROPOSAL.
16. IN CASE OF SPILL, LEAK, OR OTHER RELEASE CONTAINING A HAZARDOUS SUBSTANCE OR OIL, THE CONTRACTOR SHALL NOTIFY APPROPRIATE FACILITY PERSONNEL, EMERGENCY RESPONSE AGENCIES, AND REGULATORY AGENCIES FOLLOWING NOTIFICATION PROCEDURES, AND SHALL NOTIFY THE HARBORS DIVISION CONSTRUCTION ENGINEER IMMEDIATELY (I.E. WITHIN 24 HOURS). SUCH CONTACT INFORMATION MUST BE IN LOCATIONS THAT ARE READILY ACCESSIBLE AND AVAILABLE. THE CONTRACTOR SHALL ALSO NOTIFY THE HARBORS ENGINEERING BRANCH ENVIRONMENTAL HOTLINE (808) 587-1962 OF ANY ILLICIT DISCHARGE.

FOUNDATION:


1. FOUNDATION DESIGN IS BASED ON GEOTECHNICAL INVESTIGATION REPORT PREPARED BY GEOLABS, INC. AND DATED DECEMBER 7, 2022.
2. CONTRACTOR SHALL PROVIDE FOR DE-WATERING OF EXCAVATION FROM SURFACE WATER, GROUND WATER OR SEEPAGE.
3. CONTRACTOR SHALL PROVIDE FOR DESIGN AND INSTALLATION OF ALL UNDERPINNING, CRIBBING, SHEETING, AND SHORING NECESSARY TO PRESERVE EXCAVATIONS AND EARTH BANKS.
4. THE CONTRACTOR SHALL GIVE TIMELY NOTICE TO THE HARBORS DIVISION CONSTRUCTION ENGINEER AND THE GEOTECHNICAL ENGINEER OF WHEN EXCAVATION AND SUBGRADE PREPARATION WORK ARE TO BE PERFORMED AND PROVIDE ACCESS TO THE PROJECT SITE.
5. NOTIFY THE HARBORS DIVISION CONSTRUCTION ENGINEER AND GEOTECHNICAL ENGINEER IF LOOSE AND/OR SOFT MATERIALS ARE ENCOUNTERED AT THE BOTTOM OF THE CONCRETE PAVEMENT REPAIRS. A STABILIZATION LAYER SHALL BE PROVIDED AT THE BOTTOM OF THE PAVEMENT REPAIRS. THE STABILIZATION LAYER SHALL BE CONSTRUCTED BY OVER-EXCAVATING THE SUBSURFACE MATERIALS TO A MINIMUM DEPTH OF 6 INCHES BELOW THE BOTTOM OF THE PAVEMENT REPAIRS. THE OVER-EXCAVATION SHALL BE BACKFILLED WITH A STABILIZATION LAYER CONSISTING OF AGGREGATE SUBBASE WITH ONE LAYER OF TRIAXIAL GEOGRID (TENSAR TX7 OR EQUAL) WRAPPED IN A NON-WOVEN GEOTEXTILE FABRIC (MIRAFI 180N OR EQUIVALENT). THE LAYER OF TRIAXIAL GEOGRID SHALL BE PLACED AT THE BOTTOM OF THE EXCAVATION DIRECTLY ABOVE THE NON-WOVEN FILTER FABRIC.
6. THE SUBGRADE SOILS UNDER CONCRETE PAVEMENT REPAIRS SHALL BE SCARIFIED TO A MINIMUM DEPTH OF 8 INCHES, MOISTURE-CONDITIONED TO ABOVE THE OPTIMUM MOISTURE CONTENT, AND RECOMPACTED TO A MINIMUM OF 95 PERCENT RELATIVE COMPACTION. THE AGGREGATE SUBBASE SHALL BE MOISTURE-CONDITIONED TO ABOVE THE OPTIMUM MOISTURE CONTENT AND COMPACTED TO AT LEAST 95 PERCENT RELATIVE COMPACTION. COMPACTION SHALL BE ACCOMPLISHED BY USING SHEEPSFOOT ROLLERS, VIBRATORY ROLLERS, OR OTHER TYPES OF ACCEPTABLE COMPACTION EQUIPMENT.
7. A MINIMUM OF 6 INCHES OF AGGREGATE SUBBASE SHALL BE PROVIDED BETWEEN THE CONCRETE PAVEMENT AND THE UNDERLYING SUBGRADE SOILS. AGGREGATE SUBBASE SHALL CONSIST OF CRUSHED BASALT AGGREGATES AND SHALL CONFORM TO SECTION 703.17 OF THE STATE OF HAWAII, STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION. IMPORTED FILL MATERIALS SHALL BE TESTED FOR CONFORMANCE WITH THESE RECOMMENDATIONS PRIOR TO DELIVERY TO THE PROJECT SITE FOR THE INTENDED USE.
8. DURING CONSTRUCTION, DRAINAGE SHALL BE PROVIDED TO MINIMIZE PONDING OF WATER ADJACENT TO OR ON FOUNDATION AND PAVEMENT AREAS. PONDED AREAS SHALL BE DRAINED IMMEDIATELY. ANY SUBGRADE SOIL THAT HAS BECOME SOFT DUE TO PONDING SHALL BE REMOVED TO FIRM MATERIAL AND REPLACED WITH COMPACTED STRUCTURAL FILL.

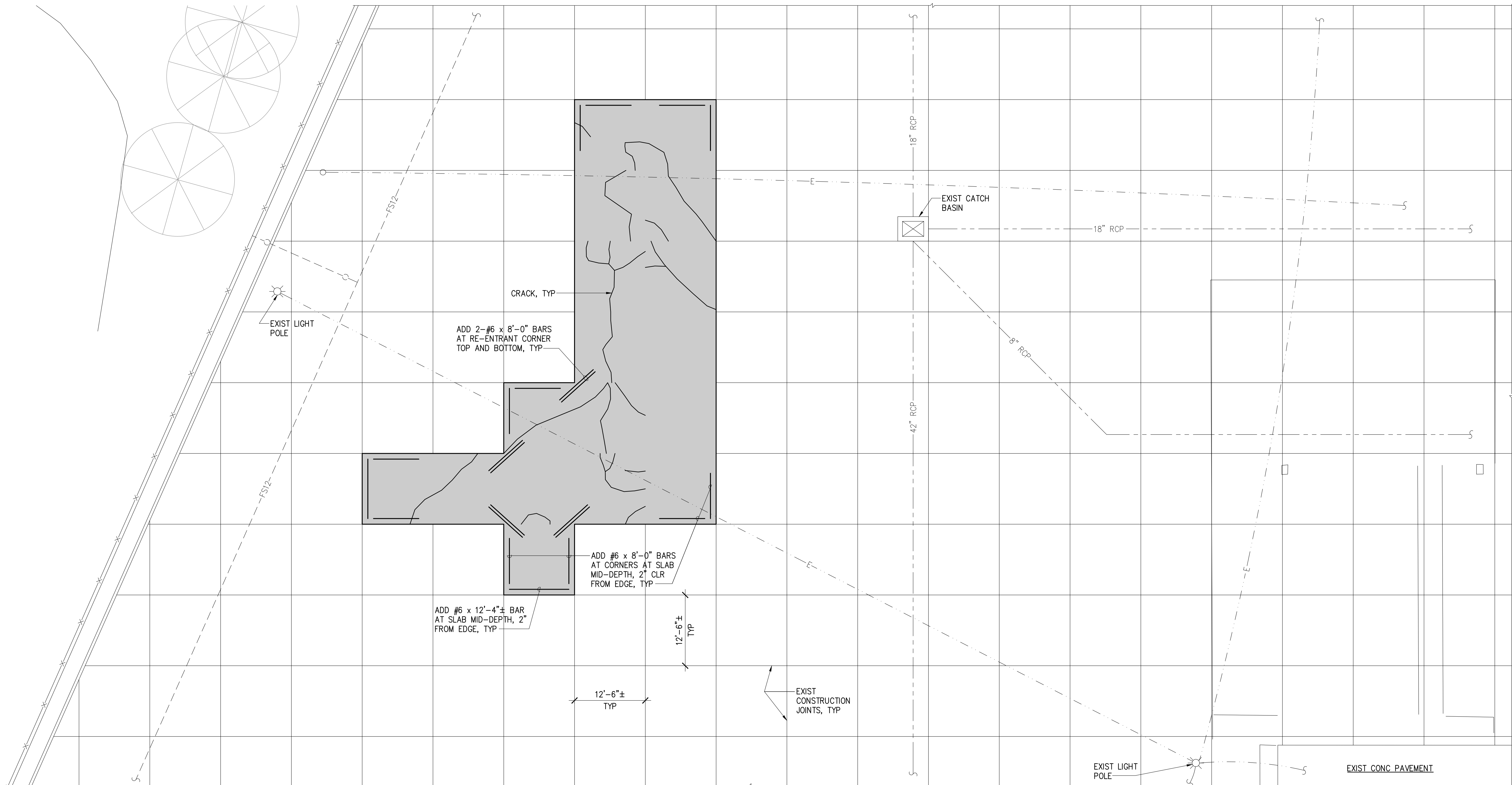
CONCRETE:

1. FORMED CONCRETE SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF $f'_c=6000$ PSI WITH BOTH MACROFIBERS AND MICROFIBERS PER SPECIFICATIONS. CONCRETE SHALL OBTAIN A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI AT 1 DAY.
2. REINFORCING BARS AND OTHER ITEMS TO BE CAST IN THE CONCRETE SHALL BE SECURED IN POSITION PRIOR TO PLACEMENT OF CONCRETE.
3. SNAP TIES AND INSERTS SHALL BE PLASTIC OR STAINLESS STEEL.
4. PRIOR TO PLACEMENT OF REPAIR CONCRETE, ALL CONCRETE REPAIR SURFACES SHALL BE THOROUGHLY WASHED WITH CLEAN WATER AND THE EXPOSED CONCRETE SURFACE SHALL BE SATURATED WITH NO WATER ACCUMULATION ON THE SURFACE.
5. THE REPAIR CONCRETE SHALL BE VIBRATED, RODDED OR TAMPED DURING PLACEMENT TO CONSOLIDATE THE POUR AND FILL ALL CORNERS OF THE PATCH AND BENEATH THE REINFORCING.
6. THERE SHALL BE NO COLD JOINTS IN THE FIELD OF THE REPAIR.
7. CONCRETE REPAIRS SHALL BE BUILT UP TO THE ORIGINAL CONCRETE SURFACE.
8. THE REPAIRED SURFACE FINISH SHALL MATCH THE ORIGINAL SURFACE FINISH.
9. FORKLIFT AND HEAVY LIVE LOADS SHALL REMAIN A MINIMUM OF 20 FEET AWAY FROM THE REPAIRS IN ALL DIRECTIONS STARTING FROM THE TIME OF REMOVAL OF EXISTING CONCRETE UNTIL 48 HOURS AFTER CONCRETE PLACEMENT.
10. CONCRETE REPAIRS SHALL BE CURED A MINIMUM 48 HOURS BY COVERING THE SURFACE WITH A POLYETHYLENE SHEET OVER WET BURLAP.

REINFORCING STEEL:


1. REINFORCING STEEL SHALL CONFORM TO ASTM A615.
2. CLEAR CONCRETE COVER FOR REINFORCING BARS SHALL BE 3 INCHES, UNLESS OTHERWISE NOTED.
3. BAR BENDS AND HOOKS SHALL BE STANDARD HOOKS IN ACCORDANCE WITH ACI 318.
4. REINFORCING STEEL SHALL BE SPLICED IN ACCORDANCE WITH ACI 318.
5. EPOXY FOR GROUTING OF REINFORCING STEEL DOWELS SHALL BE SET-3G BY SIMPSON STRONG-TIE CO. OR APPROVED EQUAL.
6. BLOW HOLES COMPLETELY CLEAN OF ALL CONCRETE DEBRIS TO ALLOW FOR ADEQUATE BONDING OF THE EPOXY. THE HOLES SHALL BE FILLED WITH EPOXY GEL BEFORE INSERTING AND TURNING THE SUPPLEMENTAL REINFORCEMENT TO DISPLACE THE GROUT.

 <p>THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION <i>Grant J. Okunaka</i> MKE ASSOCIATES LLC</p>	REVISION	DATE	DESCRIPTION	BY	APPROVED
	STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION				
	JOB TITLE CONCRETE PAVEMENT REPAIRS AT PIER 3 NAWILIWILI HARBOR, KAUAI, HAWAII				
	SHEET TITLE STRUCTURAL NOTES				
DESIGNED BY: GO	JOB NUMBER			SHEET	
DRAWN BY: DL	S70141			S-1	
CHECKED BY: GM					
DATE: 03/2023					
SCALE: AS SHOWN					

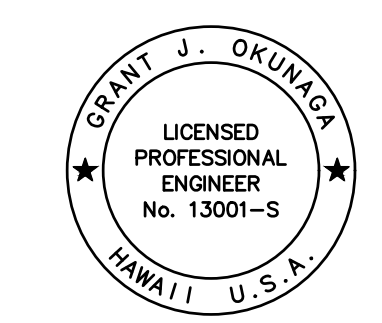


PARTIAL PAVEMENT REPAIR PLAN
SCALE: 1/8" = 1'-0"



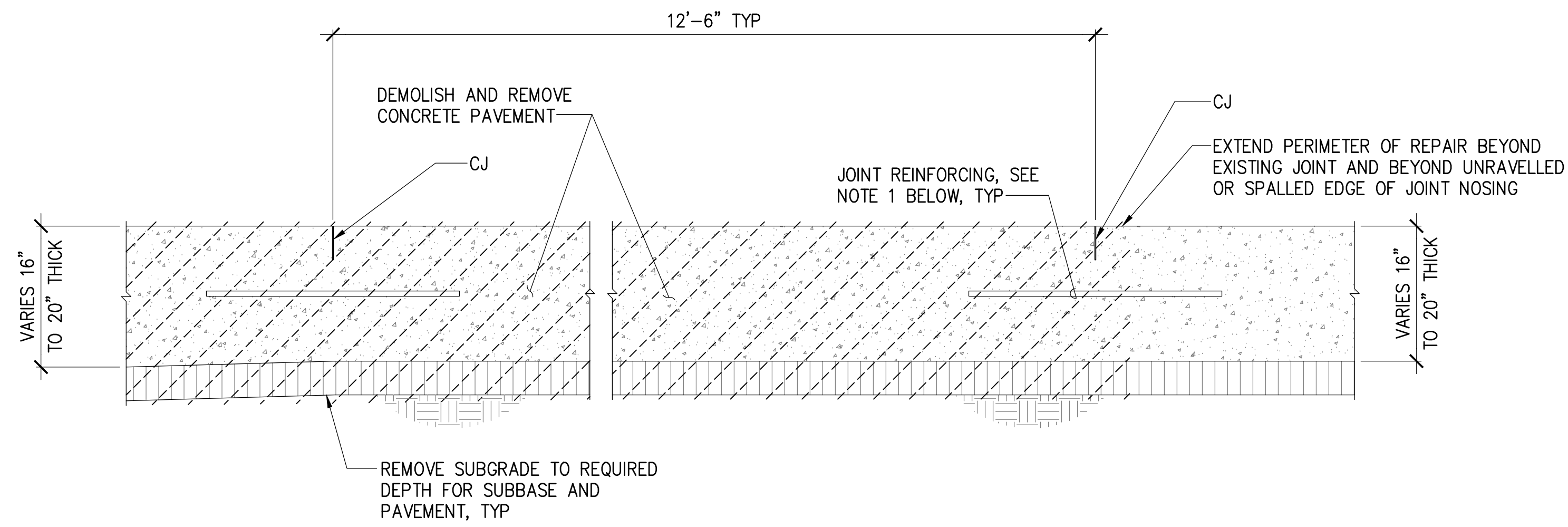
REPAIR LEGEND:
 INDICATES CONCRETE PAVEMENT REPLACEMENT, SEE SHEET S-3

- NOTES:**
- ALL UTILITIES SHOWN ARE BASED ON AVAILABLE RECORD DRAWINGS AND EXISTING VISIBLE CONDITIONS WITHOUT GUARANTEE OF ACCURACY. ADDITIONAL UTILITIES MAY EXIST THROUGHOUT THE PROJECT SITE. CONTRACTOR SHALL CONFIRM LOCATIONS AND AVOID DAMAGING EXISTING UTILITIES.
 - LOCATION OF REPAIRS SHOWN IS APPROXIMATE. VERIFY EXTENT AND LOCATION OF REPAIRS PRIOR TO SAWCUTTING. HARBORS DIVISION CONSTRUCTION ENGINEER MAY CHANGE REPAIR PRIOR TO STARTING CONSTRUCTION.
 - EPOXY EMBED REINFORCING STEEL BARS AROUND PERIMETER NOT SHOWN FOR CLARITY.



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JOB TITLE CONCRETE PAVEMENT REPAIRS AT PIER 3 NAWILIWILI HARBOR, KAUAI, HAWAII				
SHEET TITLE PARTIAL PAVEMENT REPAIR PLAN				
DESIGNED BY: GO	JOB NUMBER		SHEET	
DRAWN BY: DL	S70141		S-2	
CHECKED BY: GM	DATE: 03/2023		4 OF 5 SHEETS	
SCALE: AS SHOWN				

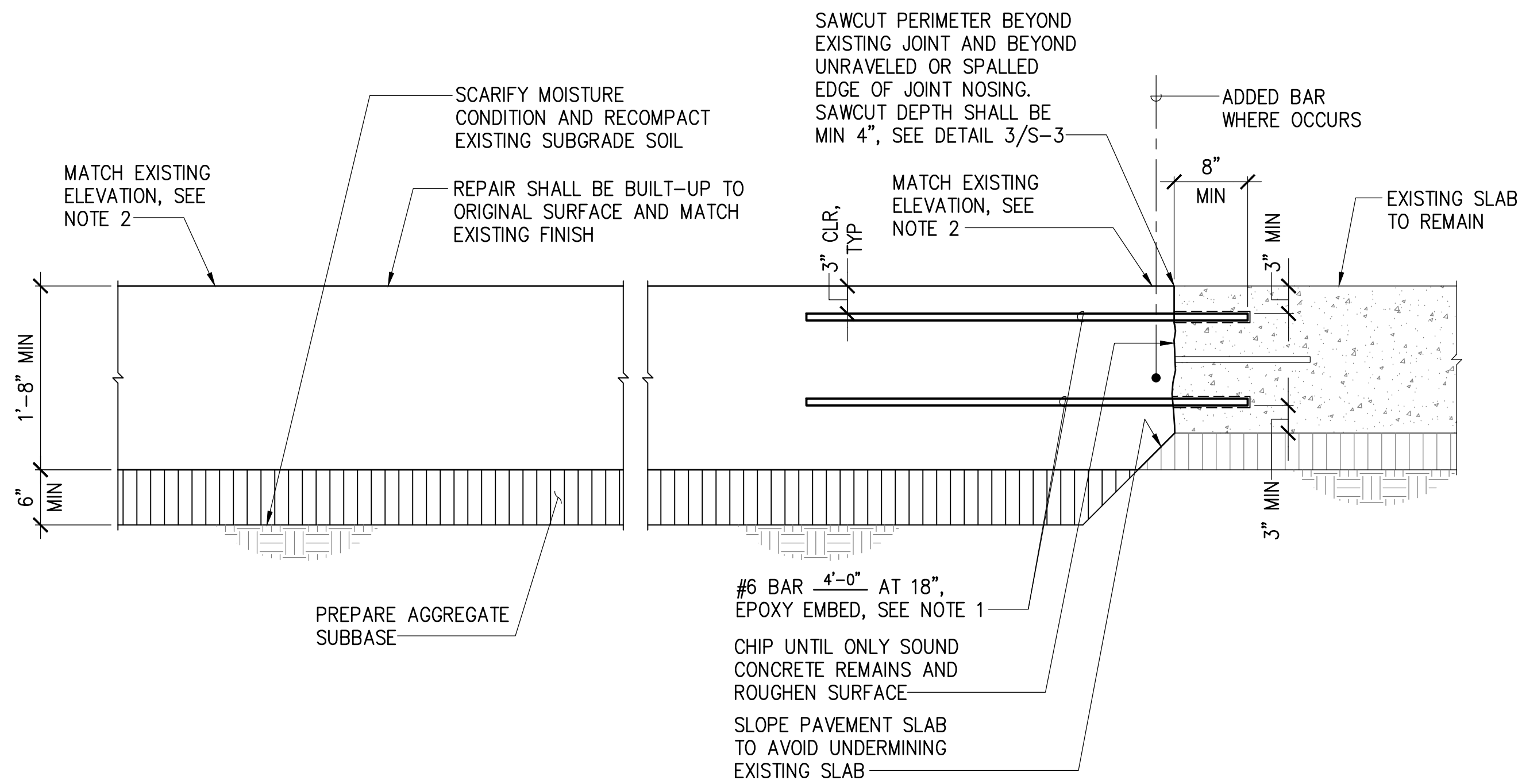


TYPICAL SLAB

NOTE:

1. JOINT REINFORCING ALONG THE PERIMETER OF REPAIR AREA IS UNKNOWN.

1 EXISTING CONCRETE PAVEMENT SECTION
S-3 SCALE: 1" = 1'-0"



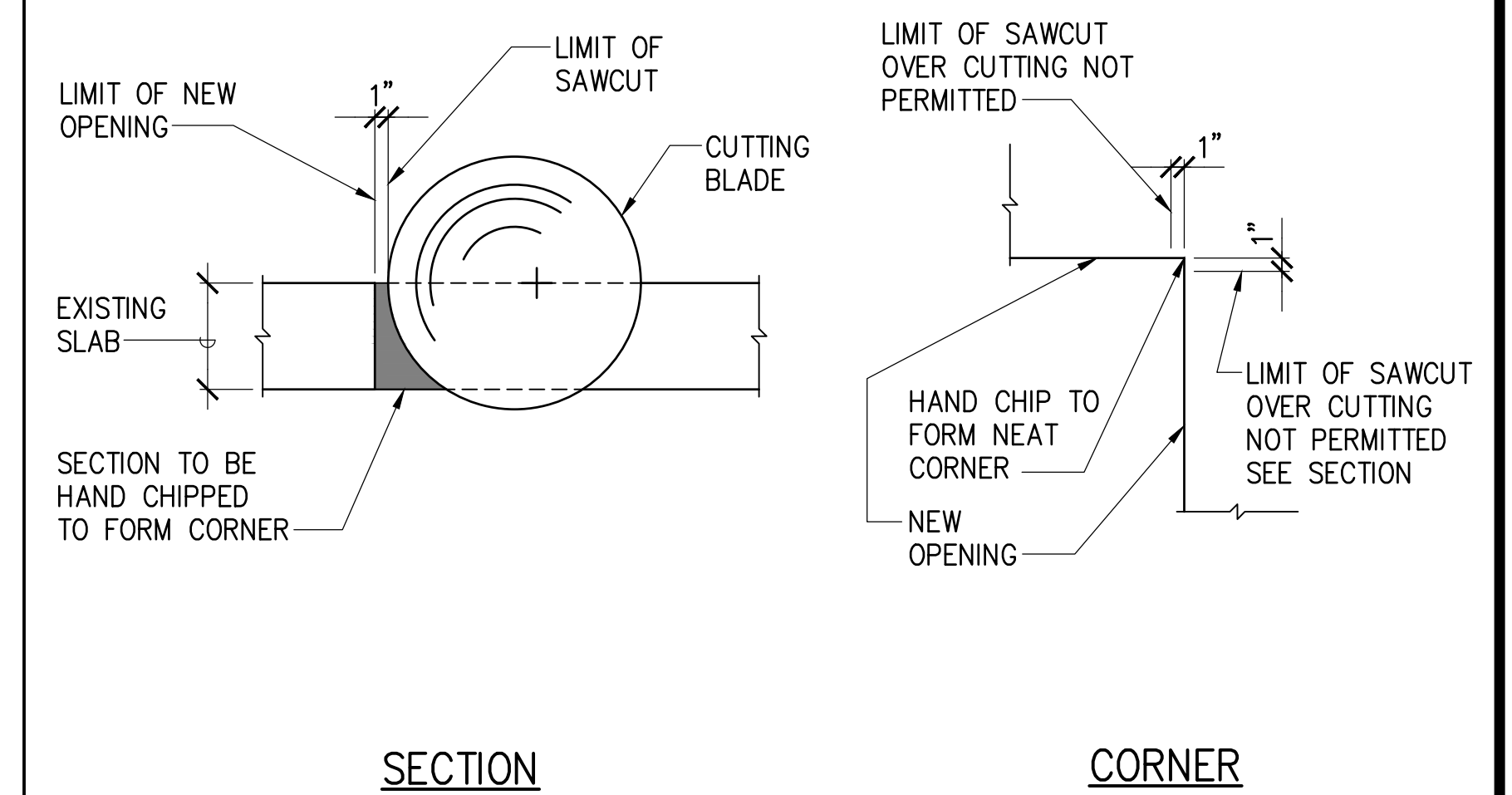
TYPICAL PAVEMENT REPAIR

END CONDITION

NOTES:

1. EPOXY EMBED BARS SHALL BE INSTALLED ON THE PERIMETER OF THE REPAIR AREA.
2. TOP OF NEW PAVEMENT ELEVATION SHALL MATCH ADJACENT EXISTING CONCRETE PAVEMENT SLAB ELEVATIONS AT PERIMETER OF REPAIR. NEW PAVEMENT SHALL HAVE A UNIFORM SLOPE BETWEEN EXISTING PERIMETER ELEVATIONS.
3. DO NOT SAWCUT JOINTS IN NEW PAVEMENT.

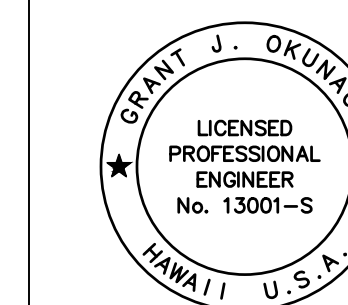
2 CONCRETE PAVEMENT REPAIR SECTION
S-3 SCALE: 1" = 1'-0"



SECTION

CORNER

3 TYPICAL SAWCUT DETAIL
S-3 NOT TO SCALE



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SHEET TITLE CONCRETE PAVEMENT REPAIR DETAILS				
DESIGNED BY: GO	DRAWN BY: DL			CHECKED BY: GM
DATE: 03/2023	JOB NUMBER: S70141			SCALE: AS SHOWN
				SHEET S-3 5 OF 5 SHEETS