

GENERAL NOTES:

- A. CONTRACTOR SHALL VERIFY ALL FIELD DIMENSIONS AND CONDITIONS PRIOR TO STARTING WORK. ALL DISCREPANCIES SHALL BE REPORTED TO THE ENGINEER.
- B. ALL OMISSIONS OR CONFLICTS BETWEEN THE VARIOUS ELEMENTS OF THE WORKING DRAWINGS AND/OR SPECIFICATIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER BEFORE STARTING ANY WORK SO INVOLVED.
- C. ALL WORK SHALL CONFORM TO THE "HAWAII STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" AND THE "AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES", 1998 EDITION, AND ALL SUBSEQUENT INTERIM REPORTS.
- D. UNLESS SPECIFICALLY DETAILED ELSEWHERE, CONTRACTOR SHALL FOLLOW TYPICAL DETAILS ON THIS SHEET.
- E. DURING CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR JOBSITE SAFETY. THE CONTRACTOR SHALL ASSUME RESPONSIBILITY FOR THE DESIGN AND PROVISION OF ALL TEMPORARY BRACING, SHORING, GUYS, DEWATERING STRUCTURES, ETC.
- F. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL EXCAVATION PROCEDURES INCLUDING SHORING, LAGGING, DEWATERING, AND PROTECTION OF ADJACENT PROPERTIES AND UTILITIES.

CONCRETE:

- A. IN GENERAL BOX CULVERT WALLS AND SLABS SHALL BE POURED SEPARATELY. COLD JOINTS SHALL BE AT LOCATIONS INDICATED ON THE PLANS. PROVIDE A MINIMUM OF ONE DAY DELAY BETWEEN SLAB AND WALL POURS.

- B. 28 DAY COMPRESSIVE STRENGTH, AGGREGATE SIZE AND SLUMP SHALL BE AS FOLLOWS:

	STRENGTH	MAXIMUM AGGREGATE	SLUMP
SLAB-ON-GRADE (APRONS)	3000	1-1/2"	3-1/2"
BOX CULVERTS	4000	3/4"	3-1/2"

- C. SPECIAL CONCRETE CONSIDERATIONS: AS THE BOX CULVERTS FOR THIS PROJECT IS LOCATED CLOSE TO THE OCEAN, A SPECIAL CONSIDERATION SHOULD BE GIVEN TO PROTECTION AGAINST A HIGH CHLORIDE ENVIRONMENT. IN ORDER TO PROTECT AGAINST PREMATURE CORROSION DUE TO CHLORIDE PENETRATION INTO THE CONCRETE, THE FOLLOWING CRITERIA SHALL BE MET FOR ALL CONCRETE USED IN CONSTRUCTION OF THE BOX CULVERTS.

TYPE II CEMENT WITH A MAXIMUM TRICALCIUM ALUMINATE CONTENT OF 8 PERCENT.

MAXIMUM WATER/CEMENT RATIO 0.50.

REINFORCING STEEL:

- A. ALL REINFORCING BARS SHALL CONFORM TO ASTM A615-S1, GRADE 60.
- B. WELDING TO REINFORCING BARS SHALL BE PROHIBITED EXCEPT BY SPECIFIC AUTHORIZATION OF THE STRUCTURAL ENGINEER.
- C. REINFORCING SHALL BE SPLICED ONLY AS SHOWN ON DRAWINGS. ALL OTHER SPLICES SHALL BE APPROVED BY THE STRUCTURAL ENGINEER.
- D. BARS NOTED "CONT." SHALL BE SPLICED A MINIMUM OF 32 BAR DIAMETERS, BUT NEVER LESS THAN 2'-0".
- E. PROVIDE DOUELS IN ADJACENT POURS THE SAME SIZE AND SPACING AS SLAB OR WALL BARS. UNLESS NOTED OTHERWISE, PROVIDE A MINIMUM LAP OF 32 BAR DIAMETERS BUT NEVER LESS THAN 2'-0".
- F. MINIMUM CONCRETE COVER FOR REINFORCING BARS SHALL BE:
- | | |
|-------------------------------|---------------------------|
| CONCRETE CAST AGAINST EARTH | 3" |
| EXPOSED TO EARTH OR WEATHER | 2" |
| SURFACE EXPOSED TO TRAFFIC | AS INDICATED ON DRAWINGS. |
| SURFACES EXPOSED TO CHLORIDES | AS INDICATED ON DRAWINGS. |

FOUNDATION NOTES:

- A. FOUNDATION IS DESIGNED BASED ON SOIL REPORT TITLED, "GEOTECHNICAL ENGINEERING EXPLORATION - PROPOSED HANAPEPE DRAIN PROJECT - HANAPEPE, KAUAI, HAWAII", AS PREPARED BY GEOLABS HAWAII, AND DATED APRIL 19, 1992. CONTRACTOR SHALL REFER TO THIS REPORT IN PREPARING SUBGRADE AND FOUNDATION. SOIL REPORT SHALL BE USED AS A GUIDE IN PREPARING FOUNDATIONS AND SUBGRADE. THE SOIL REPORT CONTAINS DETAILED INFORMATION ON THE PROJECT SITE. THIS REPORT, HOWEVER, SHALL NOT SUPERSEDE THE DESIGN DRAWINGS AND SPECIFICATIONS. CONTRACTOR SHALL AT ALL TIMES ADHERE TO THE REQUIREMENTS OF THE CONTRACT DRAWINGS AND SPECIFICATIONS.
- B. ALL TRENCHES, FILL, AND BACKFILL OPERATIONS SHALL BE MONITORED BY THE ABOVE-NAMED SOIL ENGINEER. CONTRACTOR SHALL MAKE APPROPRIATE ARRANGEMENTS FOR INSPECTIONS AS REQUIRED.
- C. DESIGN ALLOWABLE FOUNDATION BEARING IS 2500 PSF.
- D. BACKFILL AT BOX CULVERTS:
- BENEATH BOX CULVERTS PROVIDE A 12" THICK CUSHION LAYER OF #35 FINE.
 - BACKFILL AT SIDES OF CULVERT AND TO A DISTANCE 1'-0" ABOVE THE CULVERT SHALL BE NO.3 FINE GRAVEL OR ASTM C33-NO.67 GRAVEL. TAMP FILL WITH HAND OPERATED TAMPERS TO REDUCE THE POSSIBILITY OF EXERTING EXCESSIVE PRESSURES ON THE CULVERT STRUCTURE.
 - FILL 1'-0" ABOVE THE CULVERT TO FINISH GRADE SHALL BE NONEXPANSIVE, GRANULAR MATERIAL, SUCH AS THE ONSITE SAND. PLACE IN HORIZONTAL LOOSE LIFTS, 10 INCHES THICK. COMPACT TO 90% MAXIMUM DRY DENSITY PER ASTM D1557-78.
- E. BACKFILL AT HEADWALL STRUCTURES:
- BACKFILL MATERIAL SHALL BE BASE COURSE ROCK, NO.35 FINE GRAVEL, ASTM C33-NO.67 GRAVEL OR SAND.
 - THE TOP 1'-0" OF BACKFILL SHALL BE A NONEXPANSIVE, LOW PERMEABLE MATERIAL TO ACT AS A BARRIER AND REDUCE INFILTRATION OF SURFACE WATER BEHIND THE WALL.
- F. SPECIAL DEWATERING CONSIDERATIONS: THE PROPOSED CULVERTS WILL BE CONSTRUCTED CLOSE TO OR BELOW THE WATER TABLE. CONTRACTOR SHALL PROVIDE AND MAINTAIN ADEQUATE DEWATERING STRUCTURES AS REQUIRED. DEWATERING PROVISIONS SHALL BE CONTINUOUSLY MAINTAINED UNTIL CONCRETE HAS ATTAINED INITIAL SET AND WILL NOT BE ADVERSELY AFFECTED BY WATER INFILTRATION. IN ADDITION THE CONTRACTOR SHALL TAKE PROPER PRECAUTIONS TO PROTECT THE STRUCTURE FROM INUNDATION BY THE SEA AT THE PUOLO CULVERT SITE, AS THIS CULVERT IS ON THE BEACH FRONT. CONTRACTOR SHALL SUBMIT FOR REVIEW ALL DEWATERING AND SHORING PLANS AND DESIGNS FOR REVIEW AND RECORD.
- G. ADDITIONAL SOIL INFORMATION: AS SOIL DATA IS CURRENTLY NOT AVAILABLE AT THE INLET END OF THE DOUBLE 11'-0"x6'-0" CULVERT, ADDITIONAL SOIL STUDY OR EXAMINATION DURING EXCAVATION NEED TO BE DONE TO CONFIRM SOIL DESIGN PARAMETERS. IF REQUIRED, REVISED CR1 WALL AND BOX CULVERT DESIGNS WILL BE ISSUED. AT THIS TIME ADJUSTMENTS TO CONTRACTS WILL BE MADE AS REQUIRED.

CONCRETE RUBBLE MASONRY WALLS (CRM):

- A. AT ALL RETAINING WALLS PROVIDE 4" DIAMETER WEEPS AT 6'-0" O.C. BED ALL WEEPS WITH A MINIMUM OF FOUR SQUARE FEET OF CONTINUOUS FILTER ROCK WRAPPED IN GEOTEXTILE FILTER FABRIC. ALTERNATIVELY, PROVIDE 4" DIAMETER PERFORATED DRAIN PIPE SLOPED TO DAYLIGHT. PLACE PERFORATIONS DOWNWARDS. BED PIPE IN A MINIMUM OF FOUR SQUARE FEET OF GRAVEL WRAPPED IN GEOTEXTILE FILTER FABRIC.
- B. ALL GRADE DISCREPANCIES AND DISCREPANCIES IN THE HEIGHT OF THE RETAINING WALLS SHALL BE REPORTED TO THE ENGINEER.
- C. BEAR ALL FOOTINGS ON FIRM UNDISTURBED SOIL.
- D. GROUT ALL VOIDS IN RUBBLE MASONRY WALL SOLID. USE LARGEST PIECES OF ROCK POSSIBLE.

HOOK SCHEDULE

BAR SIZE	L1 INCHES	L2 INCHES	L3 INCHES
#3	4 1/2	1 1/2	2 1/2
#4	6	2	2 1/2
#5	7 1/2	2 1/2	2 1/2
#6	9	3	3
#7	10 1/2	3 1/2	3 1/2
#8	12	4	4
#9	13 1/2	5 5/8	4 1/2
#10	15	6 1/4	5
#11	16 1/2	6 7/8	5 1/2

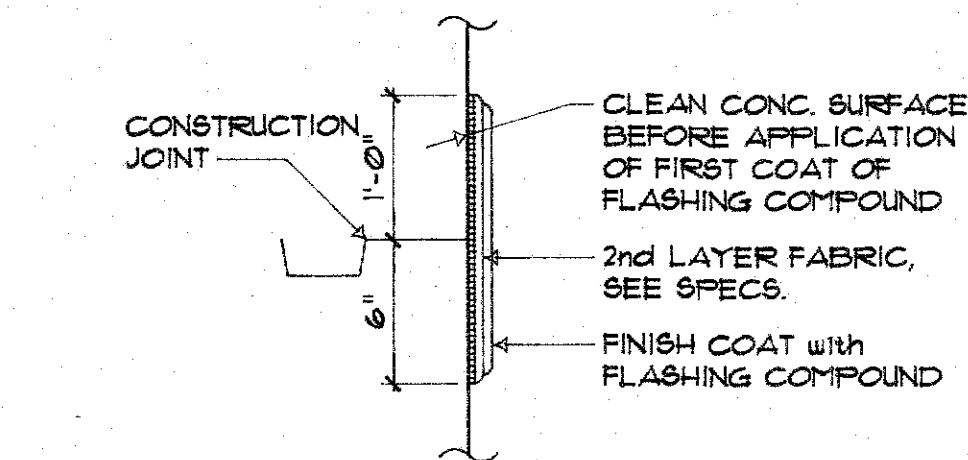
NOTES:

- A. UNLESS NOTED OTHERWISE, AT ALL LOCATIONS INDICATED ON PLANS AND SCHEDULES, PROVIDE THE FOLLOWING STANDARD HOOK BENDS AT BAR ENDS.
- B. IN SLABS WHERE 90° BEND IS LONGER THAN SLAB THICKNESS, TILT BENT END IN SLAB. DO NOT SHORTEN BEND TAIL.

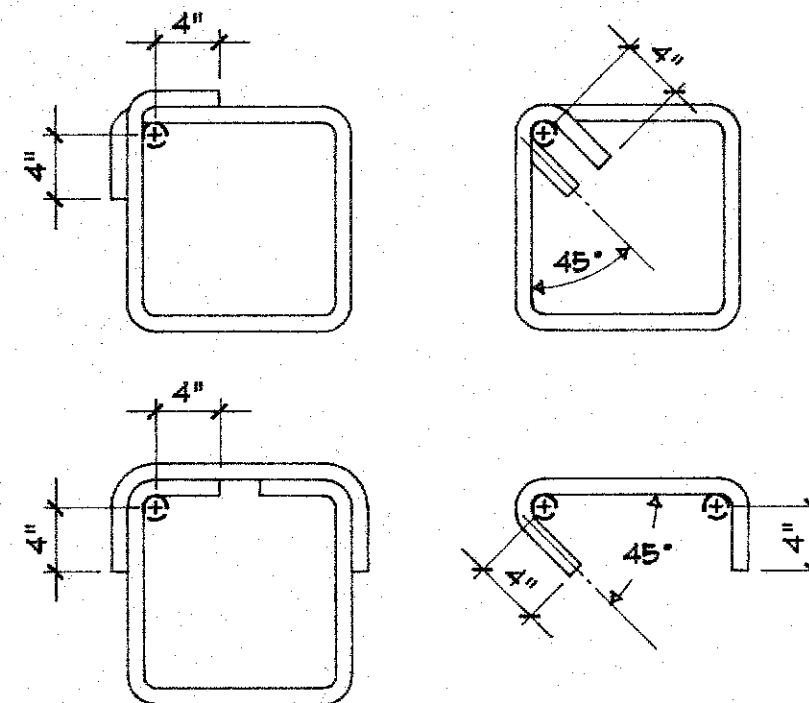
A STANDARD HOOK DETAIL

NOT TO SCALE

FLASHING COMPOUND FOR CONSTRUCTION JOINT WATERPROOFING SHALL CONFORM TO THE REQUIREMENT OF ASTM SPECIFICATION D 4886 AS A PLYING CEMENT IN THE CONSTRUCTION OF MEMBRANE WATERPROOFING SYSTEMS WITH FABRICS CONFORMING TO ASTM SPECIFICATION D 1668 (ASPHALT TYPES). THE PRODUCT SHALL ADHERE TO DAMP CONCRETE AND MASONRY SURFACES.



D TYP. FLASHING COMPOUND WATERPROOFING DET. SC: N.T.S.

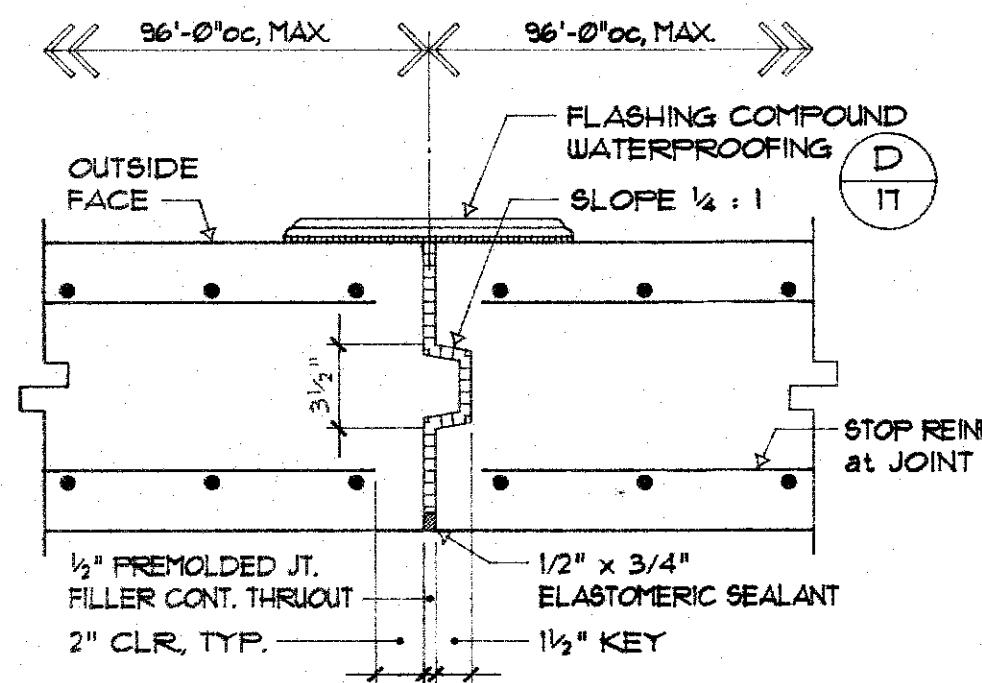


NOTE:

1. THESE DETAILS APPLY TO #3, #4, #5, BARS, ASTM A615-S1, GRADE 60.
2. ALL BARS SHALL BE BENT COLD.

B TIE/STIRRUP DET.

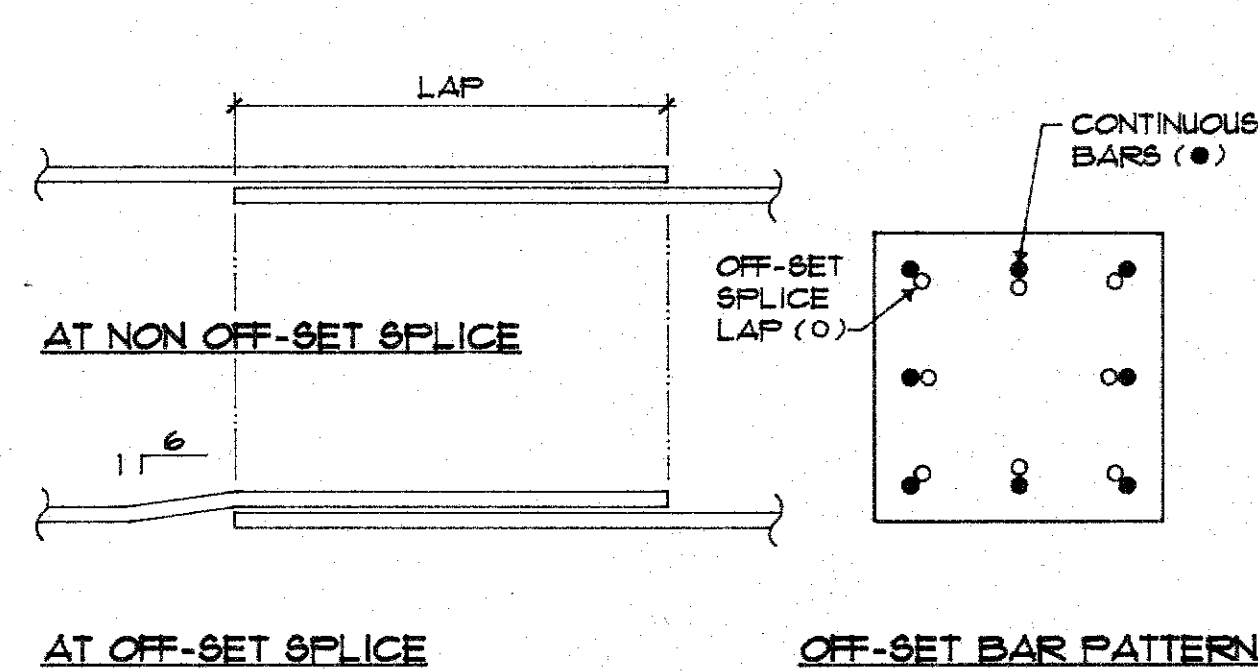
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EXPANSION JOINT

E JOINT DETAILS

NOT TO SCALE

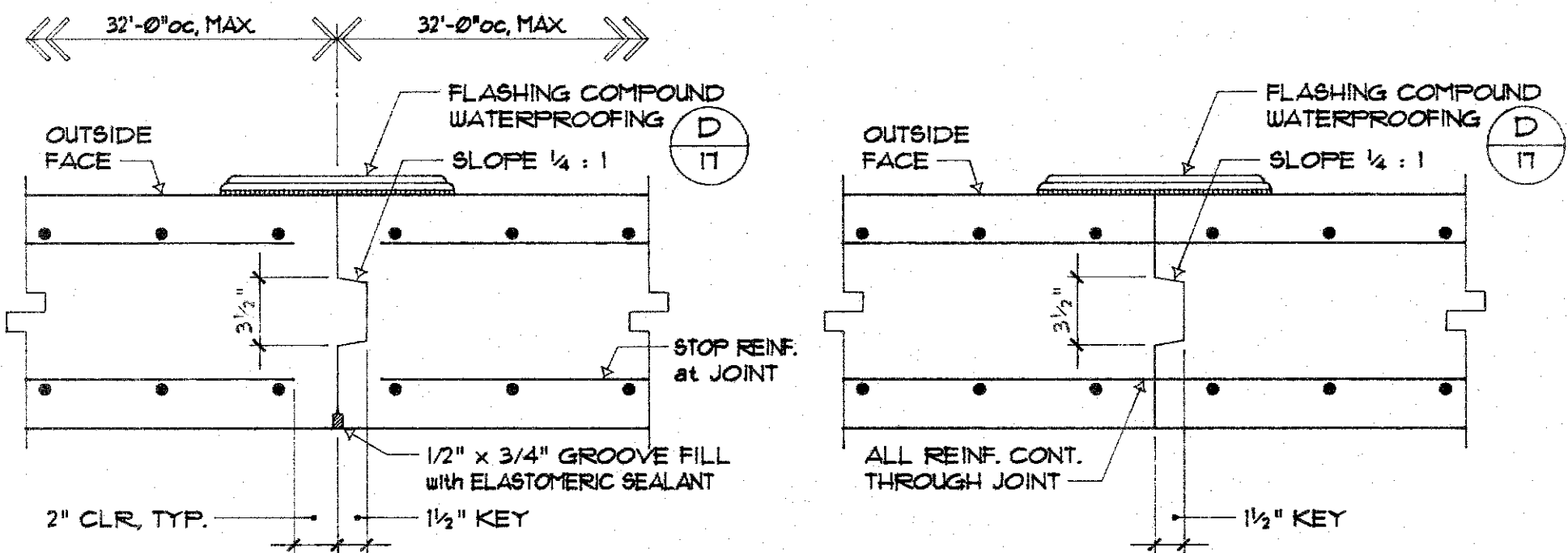


NOTES:

- A. UNLESS NOTED OTHERWISE, PROVIDE THE FOLLOWING MINIMUM LAP SPLICE FOR ALL REBAR IN LOCATIONS NOTED ON PLANS.
- B. IN COLUMN AND BEAM CORNER BAR SPLICES, USE OFF-SET SPLICE.

C TYPICAL LAP SPLICE DETAIL

NOT TO SCALE

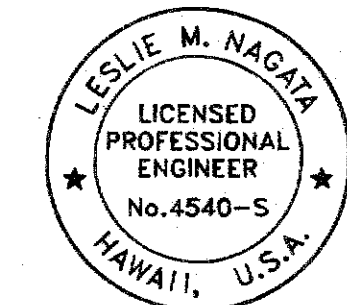


CONTRACTION JOINT

CONSTRUCTION JOINT

NOTES:

- A. AT CONSTRUCTION JOINT LOCATIONS. CLEAN JOINT PRIOR TO POURING ADJACENT SECTION. BE SURE JOINT SURFACE IS CLEAN AND FREE OF BOND REDUCING CONTAMINANTS.
- B. PRIOR TO APPLYING ELASTOMERIC JOINT SEALANT, BLOW OUT JOINT WITH COMPRESSED AIR. ENSURE THAT JOINT IS CLEAN AND FREE OF BOND REDUCING CONTAMINANTS.



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

Signature

REVISION	DATE	DESCRIPTION	BY	APPROVED
STATE OF HAWAII				
HOUSING AND FINANCE DEVELOPMENT CORPORATION				
HANAPEPE DRAINAGE IMPROVEMENT PROJECT				
GENERAL NOTES and TYPICAL DETAILS				
KODANI AND ASSOCIATES, INC.				
LIHUE, KAUAI, HAWAII 96766				
DESIGNED BY: LMN	DRAWN BY: SMY	CHECKED BY: LMN	SHEET 17 OF 20 SHEETS	