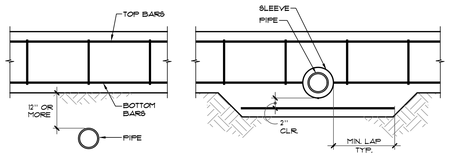
PIPES & CONDUITS IN CONTIN. FOOTINGS

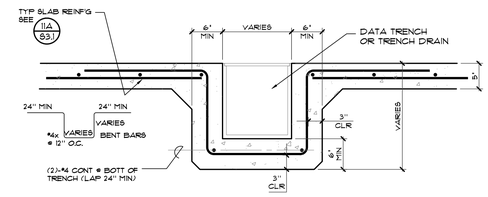
ELECTRICAL CONDUITS, PLUMBING SUPPLY AND WASTE LINES AND OTHER SIMILAR UTILITY ELEMENTS ARE NOT PERMITTED TO OCCUR WITHIN THE WIDTH OF CONTINUOUS FOOTINGS WHEN THEY ARE ORIENTED OTHER THAN 90 DEGREES TO THE FOOTING DIRECTION. CONDUIT OR PIPE ELEMENTS NOT AT 90 DEGREES TO THE FOOTING SHALL BE LOCATED COMPLETELY OUTSIDE THE REQUIRED FOOTING WIDTH AND RE-ORIENTED TO 90 DEGREES WHEN CROSSING IS REQUIRED. CLUSTERS OF CONDUITS OR PIPES CROSSING THE FOOTING SHALL NOT OCCUR IN CLUSTERS WIDER THAN 18" FOR EACH 6'-0" OF FOOTING LENGTH.



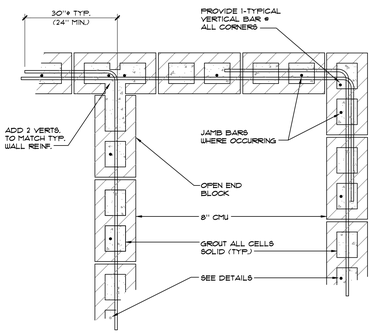
BELOW BOTTOM | AT BOTTOM REBAR | CLOSE TO BOTTOM | CLEAR OF TOP & BOTTOM REBAR

CRITICAL
PIPES OR CONDUITS NOT @ 90 DEGREES TO THE FOOTING LENGTH MAY NOT CROSS OR OCCUR WITHIN THE STRUCTURAL WIDTH OF THE FOOTING. THEY MAY OCCUR OUTSIDE THE STRUCTURAL WIDTH AND CROSS AS INDICATED ABOVE WHEN REQUIRED.

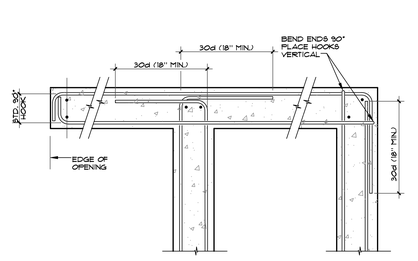
20 / S3.1 **FOUNDATION DETAIL:** PIPES & CONDUITS PERPENDICULAR TO LENGTH OF CONTIN. FOOTINGS
SCALE: 1" = 1'-0"



15 / S3.1 **FOUNDATION DETAIL:** CONCRETE & REINFORCING REQMENTS AT DATA TRENCH & TRENCH DRAIN
SCALE: 1" = 1'-0"

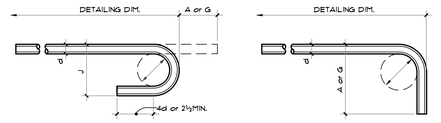


19 / S3.1 **FOUNDATION DETAIL:** TYPICAL BENDS FOR REINFORCED CONCRETE MASONRY WALLS
SCALE: 1" = 1'-0"



NOTE:
WHERE SINGLE LAYER OF REINF. OCCURS BEND STEEL AS SHOWN FOR OUTSIDE BARS.

18 / S3.1 **FOUNDATION DETAIL:** TYP. BENDS FOR HORIZ. REINF. IN CONCRETE WALLS AND FOOTINGS
SCALE: 1" = 1'-0"

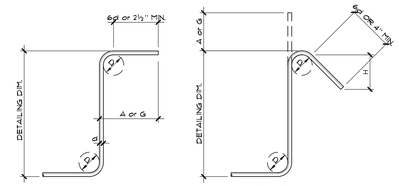


180° HOOK | 90° HOOK

BAR SIZE	STANDARD 180° HOOKS				STANDARD 90° HOOKS		
	A or G	J	D		A or G	D	
# 3	5"	3"	2½"	6d	6"	2½"	6d
# 4	6"	4"	3"		8"	3"	
# 5	7"	5"	3¾"		10"	3¾"	
# 6	8"	6"	4½"		12"	4½"	
# 7	10"	7"	5¼"		14"	5¼"	
# 8	11"	8"	6"		16"	6"	
# 9	15"	11¼"	9"	8d	19"	9"	8d
# 10	17"	12¾"	10¼"		22"	10¼"	
# 11	19"	14¼"	11¼"		24"	11¼"	
# 14	26"	20½"	17"	10d	31"	17"	10d
# 18	35"	27"	22¾"		41"	22¾"	10d

NOTE:
WHEN AVAILABLE DEPTH IS LIMITED TO #5 THROUGH #11 GRADE 40 BARS HAVING 180° HOOKS MAY BE BENT W/D=5d AND CORRESPONDINGLY SMALLER A and J DIMENSIONS.

17 / S3.1 **STANDARD HOOKS:**
SCALE: 1" = 1'-0"



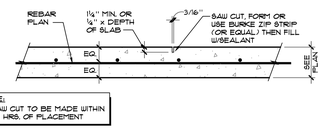
90° HOOK | 135° HOOK

BAR SIZE	STIRRUP & TIE 90° HOOK		STIRRUP & TIE 135° HOOK	
	D	A or G	H (Approx.)	A or G
#3	1½"	4"	3½"	5"
#4	2"	4½"	4½"	6½"
#5	2½"	6"	5½"	8"

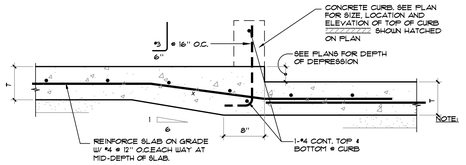
NOTES: 135° COLUMN TIE HOOKS MAY NOT BE BENT TO LESS THAN DIAMETER OF COLUMN VERT. BAR ENCLOSED IN HOOK.

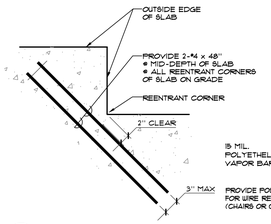
HOOKS & BENDS OF WELDED WIRE FABRIC: INSIDE DIA. OF BENDS IN WELDED WIRE FABRIC, PLAIN OR DEFORMED, FOR STIRRUPS AND TIES SHALL BE AT LEAST FOUR WIRE DIA. FOR WIRE LARGER THAN D6 OR W6 AND TWO WIRE DIA. FOR ALL OTHER WIRES. BENDS WITH INSIDE DIA. OR LESS THAN EIGHT WIRE DIA. SHALL NOT BE LESS THAN FOUR WIRE DIA. FROM NEAREST WELDED INTERSECTION.

18 / S3.1 **REINFORCING DETAIL:** TYP. STIRRUP AND TIE BENDS
SCALE: 1" = 1'-0"

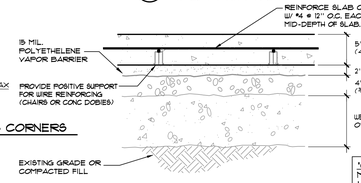


NOTE:
SAW CUT TO BE MADE WITHIN 24 HRS. OF PLACEMENT





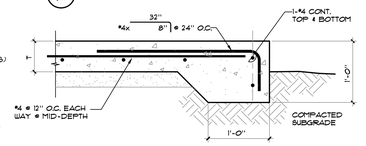
C REINF. @ REENTRANT SLAB CORNERS



D TYPICAL CONTROL JOINT
(NOTED AS C.J. ON PLAN)

"CRUSHED ROCK"
MATERIAL SHOULD BE GRADED SUCH THAT 100% WILL PASS A 1 INCH SIEVE AND NONE WILL PASS A NO. 4 SIEVE, PER ASTM DESIGNATION D422-90.

A SLAB ON GRADE REQUIREMENTS



B EXTERIOR LANAI SLAB EDGE

E RECESSED SLAB ON GRADE

11 / S3.1 **TYP. SLAB ON GRADE REQUIREMENTS:**
SCALE: 1" = 1'-0"

ENERGY LAB
Hawai'i Preparatory Academy

Kamuela, Hawaii
TMK: 6-5-1: 33

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ELECTRICAL ENGINEERING
Wallace T. Oki, PE, Inc.

WALTER T. VORFELD
LICENSED PROFESSIONAL ENGINEER
NO. 7004 S
HAWAII, U.S.A.
Signature

This work was performed by me or under my supervision and construction of this project will be under my observation (observation of construction as defined in section 16-115-2 of the rules and regulations of the Board of Professional Engineers, Architects and Surveyors of the State of Hawaii).
EXP. 4/30/2010

	PERMIT SET	1/19/09

TYPICIAL REBAR, CMU & CONCRETE DETAILS

PERMIT SET 01-19-09

Drawn by: WTV, RD, KC	Job Number: WVA-28012
Checked by: WTV, RD, KC	Scale: AS NOTED
PERMIT SET	Date: 01/19/2009

S
3.1