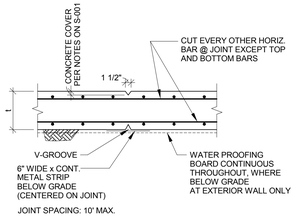
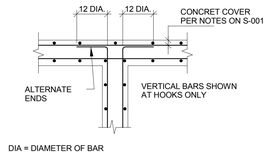


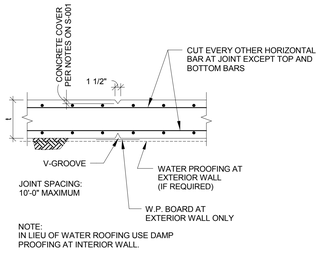
B1 WALL VERTICAL CONTROL JOINT DETAIL

3/4" = 1'-0"



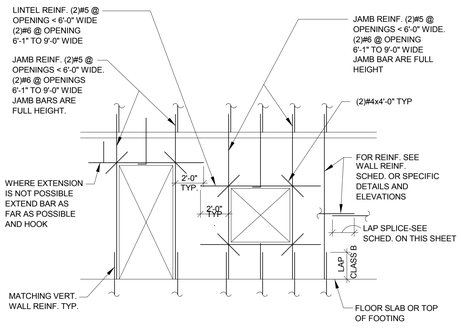
B3 CORNER REINFORCEMENT DETAIL

3/4" = 1'-0"



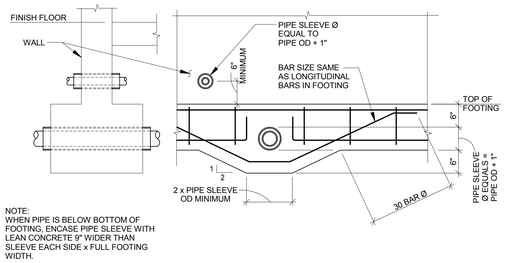
B5 WALL VERTICAL CONTROL JOINT DETAIL

3/4" = 1'-0"



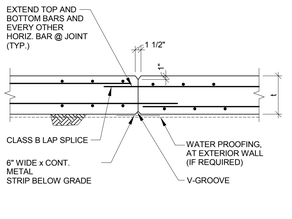
D1 TYPICAL WALL/OPENING REINFORCEMENT DETAIL

3/4" = 1'-0"



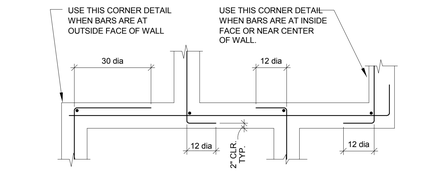
D3 PIPE THROUGH FOOTING AND WALLS DETAIL

3/4" = 1'-0"



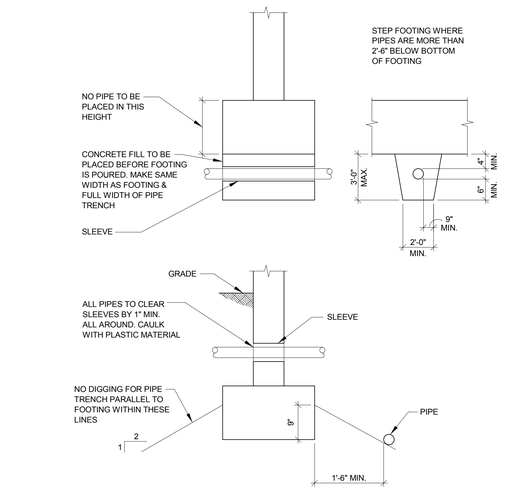
D5 WALL VERTICAL CONSTRUCTION JOINT DETAIL

3/4" = 1'-0"



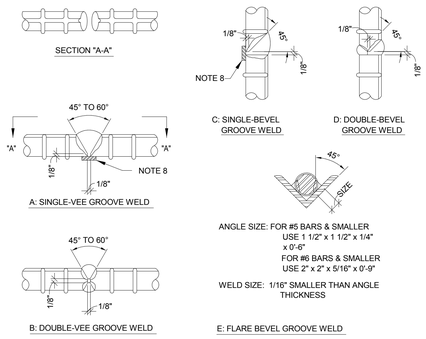
F1 TYPICAL WALL/FOOTING REINFORCING SPLICE DETAIL

3/4" = 1'-0"



F3 PIPE AT CONCRETE FOOTING DETAIL

3/4" = 1'-0"

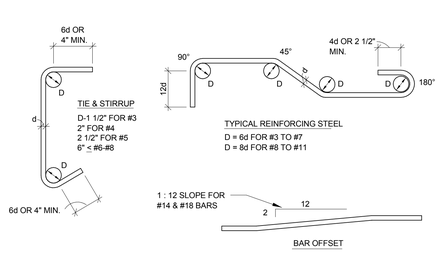


NOTE: ONLY UPON APPROVAL OF ENGINEER

1. USE "A" & "B" FOR #9 BARS AND LARGER IN HORIZONTAL POSITION.
2. USE "C" & "D" FOR #9 BARS AND LARGER IN VERTICAL POSITION.
3. USE "E" FOR #8 BARS AND SMALLER, HORIZONTAL AND VERTICAL.
4. ALL BARS SHALL BE PREHEATED TO 500° F BEFORE WELDING, UNLESS THE CHEMICAL CONTENT CAN BE ACCURATELY IDENTIFIED BY A TESTING AGENCY.
5. ALL WELDING SHALL BE DONE USING E90XX ELECTRODES.
6. ALL WELDING SHALL BE BY WELDERS CERTIFIED IN ACCORDANCE WITH THE LATEST EDITION OF AWS D1.4 REQUIREMENTS.
7. ALL WELDS SHALL BE VISUALLY INSPECTED.
8. BACK-UP BAR REQUIRED FOR #7 BARS & LARGER.
9. TENSILE STRENGTH OF WELD SHALL BE 125% OF YIELD STRENGTH OF BAR.

F5 TYPICAL WELDED SPLICE DETAIL

3/4" = 1'-0"



F7 BAR BENDING DETAIL

3/4" = 1'-0"

DEVELOPMENT LENGTHS OF STANDARD HOOKS SCHEDULE

F'c (psi) \ BAR SIZE	#11	#10	#9	#8	#7	#6	#5	#4	#3
3000 psi	22	19	17	15	13	12	10	8	6
4000 psi	19	17	15	13	12	10	8	7	6
5000 psi	17	15	13	12	10	9	7	6	6
6000 psi	15	14	12	11	9	8	7	6	6
7000 psi	14	13	11	10	9	8	6	6	6
8000 psi	13	12	11	9	8	7	6	6	6

BASED ON ACI 318-11, SECTION 12.5

NOTES:
1. TABULATED VALUES ARE BASED ON UNCOATED GRADE 60 REINFORCING BARS AND FOR NORMAL WEIGHT CONCRETE.

TENSION PROOF LOADS (Min concrete strength 3000 psi)

BOLTS		GRADE 60 REBAR		MIN. EMBEDMENT
DIAMETER	LOAD (lbs)	SIZE	LOAD (lbs)	INCHES
1/2" DIA.	3750	#4	4800	6
5/8"DIA.	4800	#5	7400	9
3/4"DIA.	8400	#6	10500	12
7/8"DIA.	11500	#7	14000	14
1" DIA.	15000	#8	18000	15
1 1/4" DIA.	20000	#9	20000	18
1 1/2" DIA.	22000	#10	20000	20
-		#11	20000	20

REFERENCE: HILTI STRONG TIE ANCHORING SYSTEM.

TENSION LAP SPLICE AND ANCHORAGE SCHEDULE 1,2,3,4 (inches) FOR GRADE 60 BAR

	F'c (psi) \ BAR SIZE	#11		#10		#9		#8		#7		#6		#5		#4		#3	
		TOP	BOT	TOP	BOT	TOP	BOT	TOP	BOT	TOP	BOT	TOP	BOT	TOP	BOT	TOP	BOT	TOP	BOT
STRAIGHT BAR ANCHORAGE	3000 psi	100	77	90	70	80	62	71	55	62	48	43	33	36	27	28	22	21	16
	4000 psi	87	67	78	60	70	54	62	47	54	42	37	28	31	24	25	19	18	14
	5000 psi	78	60	70	54	62	48	55	42	48	37	33	25	28	21	22	17	17	13
	6000 psi	71	55	64	49	57	44	50	39	44	34	30	23	25	19	20	15	15	12
	7000 psi	66	51	59	46	53	41	47	36	41	31	28	22	23	18	19	14	14	12
	8000 psi	61	47	55	43	49	38	44	34	38	29	26	20	22	17	17	13	13	12
CLASS B TENSION LAP																			
	3000 psi	131	100	118	90	105	80	93	71	81	62	56	43	46	36	37	28	28	21
	4000 psi	113	87	102	78	91	70	80	62	70	54	48	37	40	31	32	25	24	18
	5000 psi	101	78	91	70	81	62	72	55	63	48	43	33	36	28	29	22	22	17
	6000 psi	92	71	83	64	74	57	65	50	57	44	39	30	33	25	26	20	20	15
	7000 psi	85	66	77	59	68	53	61	47	53	41	36	28	30	23	24	19	18	14
	8000 psi	80	61	72	55	64	49	57	44	50	38	34	26	28	22	23	17	17	13

BASED ON IBC 2012

NOTES:
1. TABULATED VALUES ARE BASED ON UNCOATED GRADE 60 REINFORCING BARS AND FOR NORMAL WEIGHT CONCRETE.
2. TABULATED VALUES ARE APPLICABLE TO NON-SHEARWALLS, SLABS, STRIP AND MAT FOUNDATION UNLESS NOTED OTHERWISE.
   TABULATED VALUES SHOWN ABOVE ARE BASED ON THE FOLLOWING ASSUMPTIONS:
   a. CONCRETE COVER GREATER AND EQUAL TO DIAMETER OF BAR, db.
   b. CENTER TO CENTER SPACING BETWEEN REBARS IS GREATER AND EQUAL TO 4 TIMES BAR DIAMETER.
3. LAP SPLICES SHALL BE CLASS B (1.3 x ld) SPLICES, AS INDICATED ABOVE.
4. LAP SPLICE LENGTHS FOR EPOXY-COATED REINFORCEMENT SHALL BE OBTAINED USING CRITERIA GIVEN BELOW:
   a. FOR BARS WITH CONCRETE COVER LESS THAN 3 TIMES BAR DIAMETER OR CLEAR SPACING BETWEEN BARS LESS THAN 6 TIMES BAR DIAMETER, MULTIPLY TABULATED VALUES SHOWN ABOVE BY 1.5
   b. FOR ALL OTHER CONDITIONS, MULTIPLY VALUES SHOWN ABOVE BY 1.2.
5. TOP BAR IS DEFINED AS A HORIZONTAL BAR WITH 12" OR MORE OF CONCRETE CAST BELOW.
6. WHEN LAPPING A SMALLER DIAMETER BAR WITH A LARGER DIAMETER BAR USE THE LAP SPLICE LENGTH FOR THE SMALLER DIAMETER BAR.
7. LAP SPLICE LENGTH OF INDIVIDUAL BARS WITHIN A BUNDLE SHALL BE OBTAINED BY MULTIPLYING VALUES SHOWN ABOVE BY 1.2 FOR (3) BAR BUNDLES AND 1.33 FOR (4) BAR BUNDLE.

Date	Revisions:
2-24-14	DD2 COST ESTIMATE SET
3-05-14	35% CD SET - NOT FOR CONSTRUCTION
4-30-14	65% CD SET - NOT FOR CONSTRUCTION
6-03-14	95% CD SET - NOT FOR CONSTRUCTION
7-15-14	100% CD SET

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FIRM CERTIFICATE OF AUTHORITY NUMBER F-004168

Drawing Title	TYPICAL DETAILS
Approved: Project Director	
Project Title	PATIENT PARKING GARAGE EXPANSION DEPARTMENT OF VETERANS AFFIRS NORTH TEXAS VETERANS HEALTH CARE CENTER 4500 S. LANCASTER ROAD DALLAS, TEXAS 75216
Location	
Date	Issue Date
Checked	JEW
Drawn	SOA
Project Number	549-906
Building Number	80
Drawing Number	S-002
	Dwg. 45 of 93

Office of Construction and Facilities Management

Department of Veterans Affairs

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