DEFORMED BAR TENSION DEVELOPMENT LENGTH (Ld)										
FOR NORMAL WEIGHT STONE CONCRETE & UNCOATED BARS										
BAR SIZE	3000 PSI CONCRETE		4000 PSI CONCRETE		5000 PSI CONCRETE		6000 PSI CONCRETE		8000 PSI CONCRETE	
	CASE I	CASE II	CASE I	CASE II	CASE I	CASE II	CASE I	CASE II	CASE I	CASE II
#3	17	25	15	22	13	20	12	18	12	16
#4	22	33	19	29	17	26	16	24	14	21
#5	28	42	24	36	22	32	20	30	17	26
#6	33	50	29	43	26	39	24	35	21	31
#7	48	72	42	63	38	56	34	51	30	45
#8	55	83	48	72	43	64	39	59	34	51
#9	62	93	54	81	48	72	44	66	38	57
#10	70	105	61	91	54	81	50	74	43	64
#11	78	116	67	101	60	90	55	82	48	71

DEFORMED TENSION BAR NOTES:

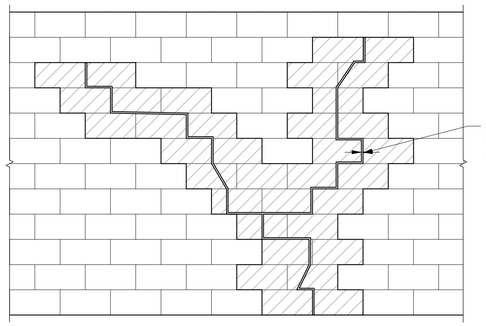
1. FOR HORIZONTAL REINFORCEMENT WITH 12 INCH OR MORE FRESH CONCRETE CAST BELOW IT, TENSION DEVELOPMENT LENGTH/ TENSION LAP SPLICE LENGTH SHALL BE 1.3x THE VALUES GIVEN.
2. FOR REINFORCEMENT IN LIGHTWEIGHT CONCRETE, TENSION DEVELOPMENT LENGTH/TENSION LAP LENGTH SHALL BE 1.3x THE VALUES GIVEN.
3. FOR EPOXY-COATED BARS:
   A. WHERE CONCRETE COVER IS LESS THAN 3x BAR DIAMETER, OR CLEAR SPACING IS LESS THAN 6x BAR DIAMETER, TENSION DEVELOPMENT LENGTH/ TENSION LAP SPLICE LENGTH SHALL BE 1.5x THE VALUES GIVEN.
   B. WHERE CONCRETE COVER IS EQUAL TO OR GREATER THAN 3x BAR DIAMETER AND CLEAR SPACING IS GREATER THAN 6x BAR DIAMETER, TENSION DEVELOPMENT LENGTH/ TENSION LAP SPLICE LENGTH SHALL BE 1.2x THE VALUES GIVEN.
4. CASE I APPLIES WHEN EITHER OF THE FOLLOWING SETS OF CONDITIONS ARE MET:
   A. ALL THREE OF THESE:
      a. CLEAR SPACING OF BARS BEING DEVELOPED OR SPLICED IS NOT LESS THAN DB AND
      b. CLEAR COVER IS NOT LESS THAN DB AND
      c. STIRRUPS OR TIES ARE PROVIDED THROUGHOUT THE DEVELOPMENT LENGTH AND THE QUANTITY IS NOT LESS THAN THE CODE MINIMUM.
   B. OR BOTH OF THESE:
      a. CLEAR SPACING OF BARS BEING DEVELOPED OR SPLICED IS NOT LESS THAN 2DB AND
      b. CLEAR COVER IS NOT LESS THAN DB.

   CASE II APPLIES TO ALL OTHER CONDITIONS NOT DESCRIBED IN CASE I

DEFORMED BAR TENSION LAP SPLICE - CLASS B										
FOR NORMAL WEIGHT STONE CONCRETE & UNCOATED BARS										
BAR SIZE	3000 PSI CONCRETE		4000 PSI CONCRETE		5000 PSI CONCRETE		6000 PSI CONCRETE		8000 PSI CONCRETE	
	CASE I	CASE II	CASE I	CASE II	CASE I	CASE II	CASE I	CASE II	CASE I	CASE II
#3	22	33	19	28	17	25	16	23	14	20
#4	29	43	25	37	23	34	21	31	18	27
#5	36	54	31	47	28	42	26	38	22	33
#6	43	65	37	56	34	50	31	46	27	40
#7	63	94	54	81	49	73	45	67	39	58
#8	72	107	62	93	56	83	51	76	44	66
#9	81	121	70	105	63	94	57	86	50	74
#10	91	136	79	118	71	106	64	96	56	84
#11	101	151	87	131	78	117	71	107	62	93

DEFORMED BAR COMPRESSION DEVELOPMENT LENGTH (Ldc)					
FOR NORMAL WEIGHT STONE CONCRETE & UNCOATED BARS					
BAR SIZE	3000 PSI CONCRETE	4000 PSI CONCRETE	5000 PSI CONCRETE	6000 PSI CONCRETE	8000 PSI CONCRETE
#3	9	8	8	8	8
#4	11	10	9	9	9
#5	14	12	12	12	12
#6	17	15	14	14	14
#7	20	17	16	16	16
#8	22	19	18	18	18
#9	25	22	21	21	21
#10	28	25	23	23	23
#11	31	27	26	26	26

DEFORMED BAR COMPRESSION LAP SPLICE					
FOR NORMAL WEIGHT STONE CONCRETE & UNCOATED BARS					
BAR SIZE	3000 PSI CONCRETE	4000 PSI CONCRETE	5000 PSI CONCRETE	6000 PSI CONCRETE	8000 PSI CONCRETE
#3	12	12	12	12	12
#4	15	15	15	15	15
#5	19	19	19	19	19
#6	23	23	23	23	23
#7	27	27	27	27	27
#8	30	30	30	30	30
#9	34	34	34	34	34
#10	39	39	39	39	39
#11	43	43	43	43	43



NOTES:

1. ▨ DENOTES BRICK TO BE REPLACED. WHERE CRACK IS THRU WALL REPLACE ALL WYTHES OF BRICK ON EACH SIDE OF CRACK TO 1ST MORTAR JOINT. REPLACE EXISTING HEADERS WITH NEW HEADERS. REPLACE LOOSE AND CRACKED BRICKS. WHERE CRACK IS ONLY IN OUTER WYTHE, REPLACE ONLY OUTER WYTHE.
2. WHERE CRACK IS OPEN AND 1/4" OR LESS AND IS PRESENT ONLY IN OUTER WYTHE AND ONLY IN JOINTS, RAKE AND REPOINT JOINTS ONLY.

1 / S5.3 TYPICAL REPAIR IN BRICK MASONRY

N.T.S. SCALE A

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 14677
10/27/2023
NATHANIEL OPPENHEIMER

A/E FIRMS	DESIGNED:	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO.
ARCH: QUINN EVANS, 219 1/2 N. MAIN STREET, ANN ARBOR, MI, T: 734.663.5888 ENG: SIMAN, 211 N 4TH AVE, ANN ARBOR, MI, T: 734.800.2460	KH CADD: CM TECH. REVIEW: NH DATE: 10.27.2023	04 S5.3	HOSP BUCKSTAFF + FORDYCE ROOFS TYPICAL DETAILS REHABILITATE BATHHOUSES HOT SPRINGS NATIONAL PARK	128 182951 PMIS/PKG NO. 318915 SHEET 283 OF 286

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