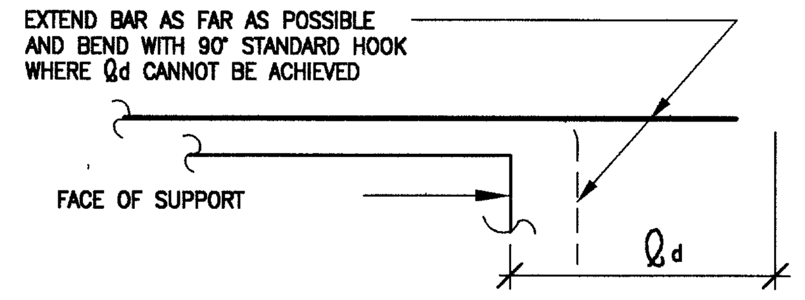
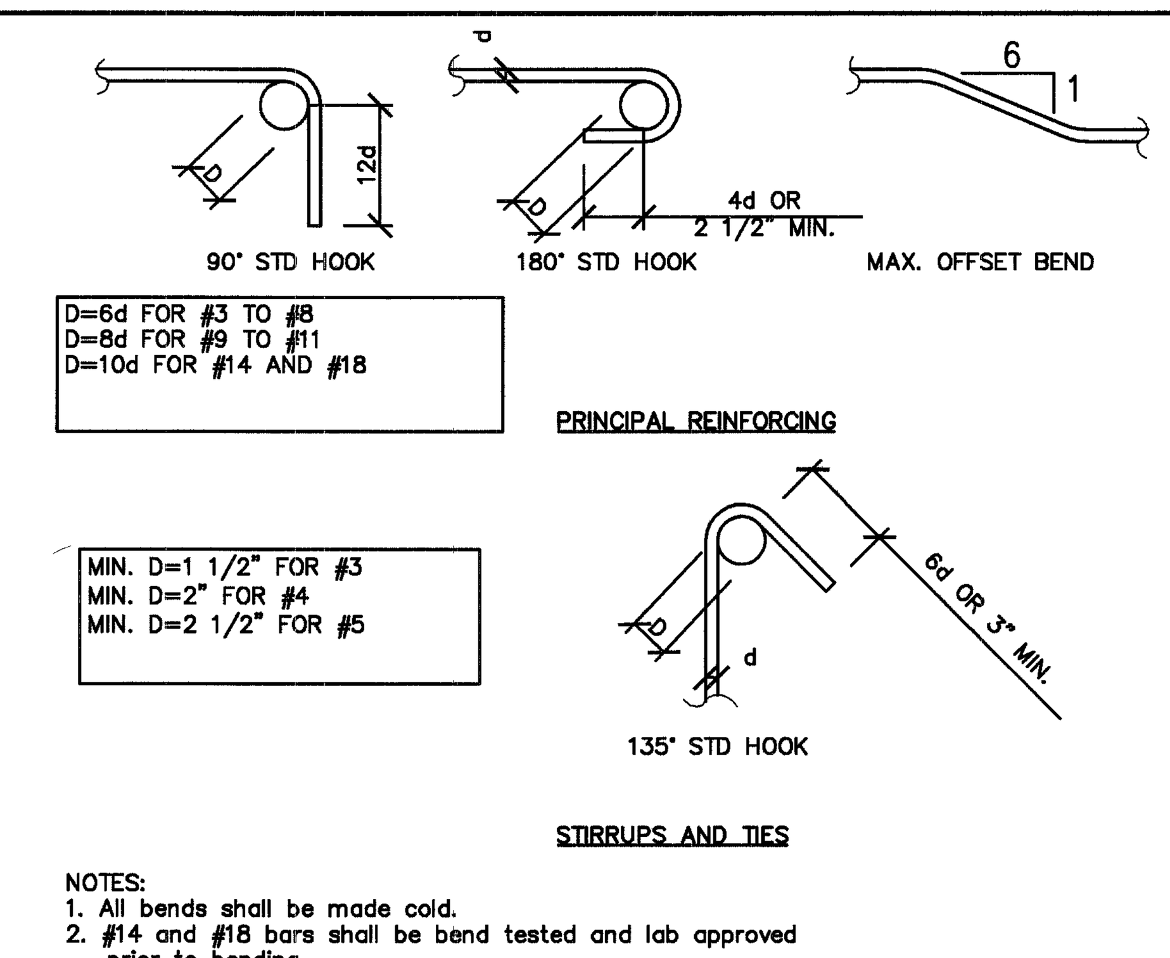


BAR SIZE	f'c = 4500 psi			
	TOP BARS		OTHER BARS	
	CASE 1	CASE 2	CASE 1	CASE 2
#3	18	27	14	21
#4	24	35	18	27
#5	29	44	23	34
#6	35	53	27	41
#7	51	77	40	59
#8	59	88	45	68
#9	66	99	51	76
#10	73	109	56	84
#11	80	120	62	93
#14	99	148	76	114
#18	132	197	101	152

NOTES:
1. Table for use with normal weight hardrock concrete and grade 60 uncoated reinforcing bars. For lightweight aggregate use 1.3ℓ
2. Top bars are horizontal bars with 12" or more of concrete cast in the member below the bar.
3. For bars enclosed in standard column spirals, use 0.75ℓ or 12" min.
4. Development length of individual bars within a bundle shall be 1.2ℓ d for that bar in a 3–bar bundle and 1.33ℓ d for a 4–bar bundle.
5. Compression development length (only where indicated on drawings) For grade 60 bars use 22 bar diameters.
6. Case Selection
   –For foundation reinforcement use Case 1 uno.
   –For column reinforcement and dowels use case 1 uno.
   –For beam reinforcement use Case 1 uno.
   –For structural slab reinforcement use Case 2 uno.
   –For slab on grade reinforcement use Case 1 uno.
   –For wall reinforcement and dowels use Case 1 (Except as noted below) uno.
   –For walls with a single mat of steel centered in the wall, use Case 1 for wall reinforcement and dowels uno.
   –For chord steel reinforcement use Case 2 uno.

A TENSION DEVELOPMENT LENGTH (CONCRETE ONLY)

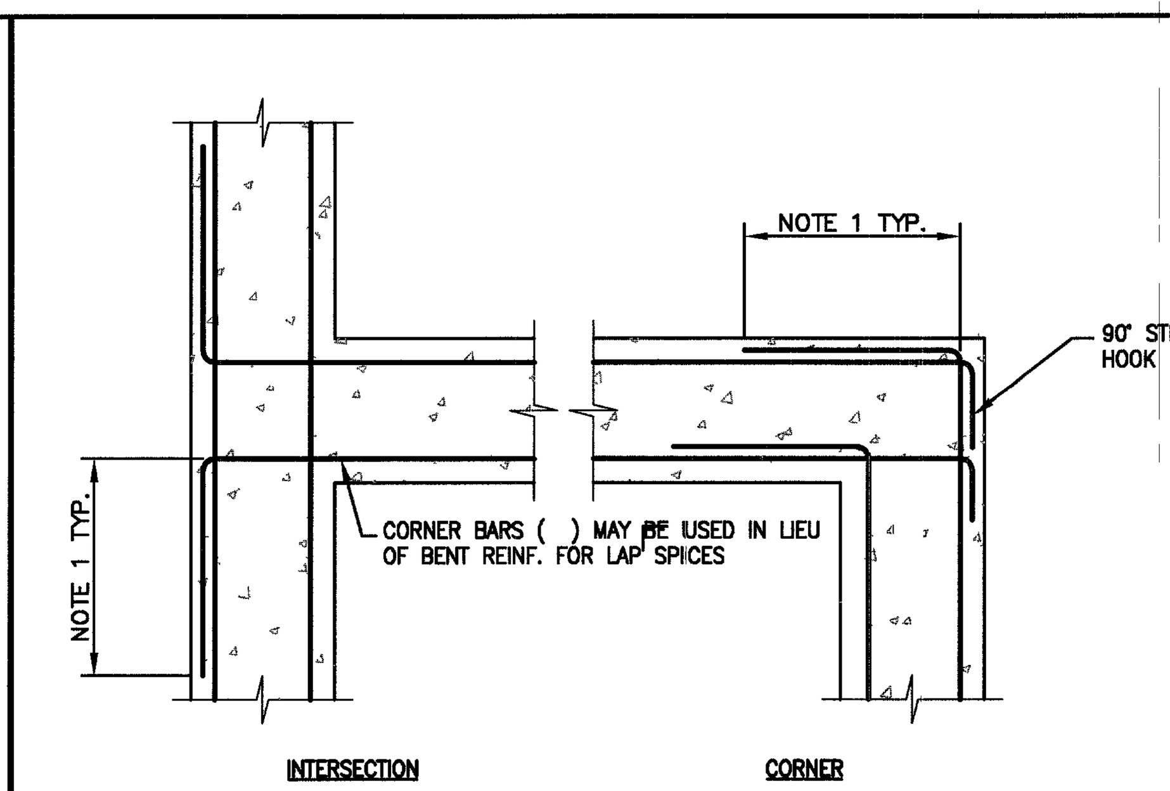
NOT TO SCALE C0041



NOTES:
1. All bends shall be made cold.
2. #14 and #18 bars shall be bend tested and lab approved prior to bending.

B BAR BENDS

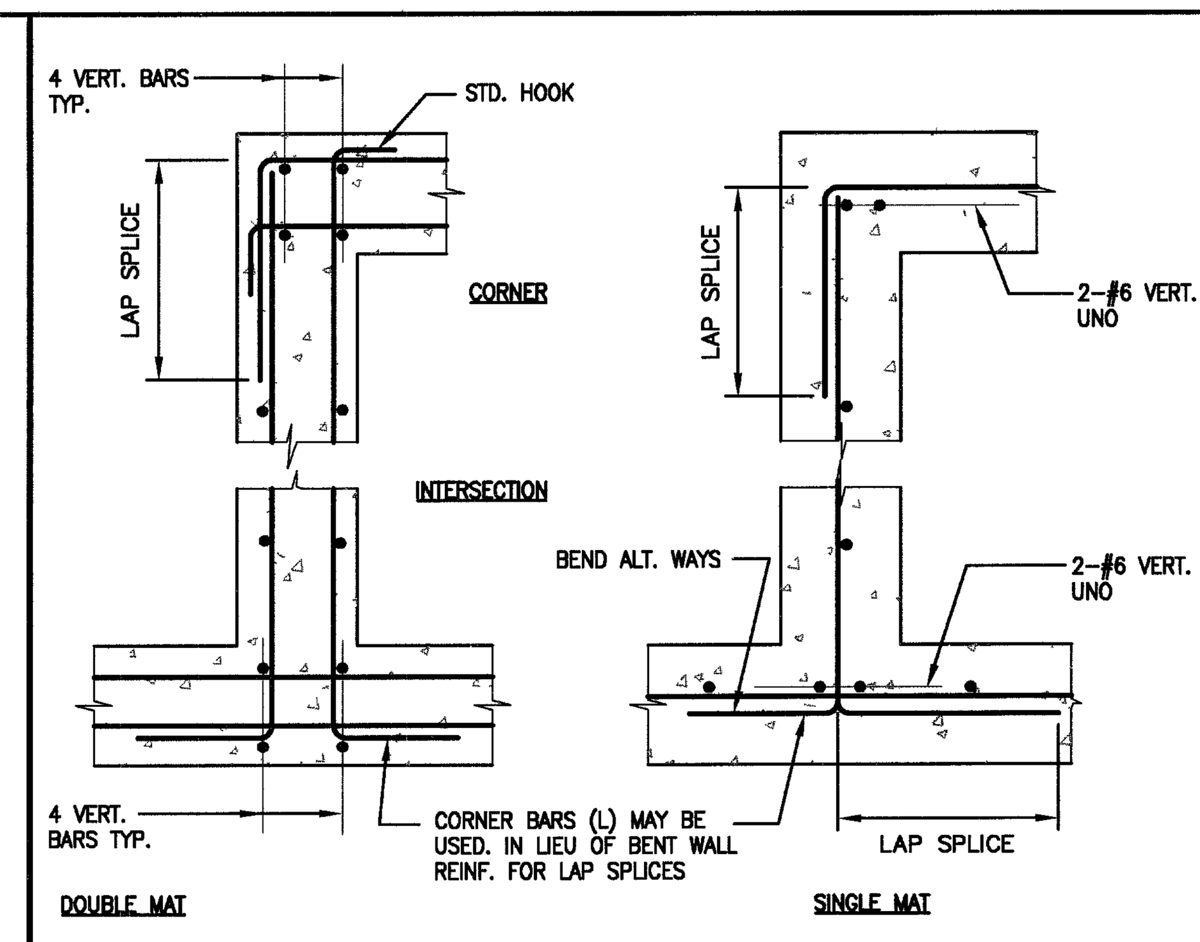
NOT TO SCALE C0005



NOTES:
1. Use tension lap splices per detail E/–.
2. Where more than 2–longitudinal footing bars occur, all longitudinal bars shall dowel as shown.

C REINFORCING AT FOOTING INTERSECTIONS

NOT TO SCALE C0047



Notes:
1. Use Tension Lap Splices Per Detail E/–.

D REINFORCING AT WALL INTERSECTIONS

NOT TO SCALE C0027

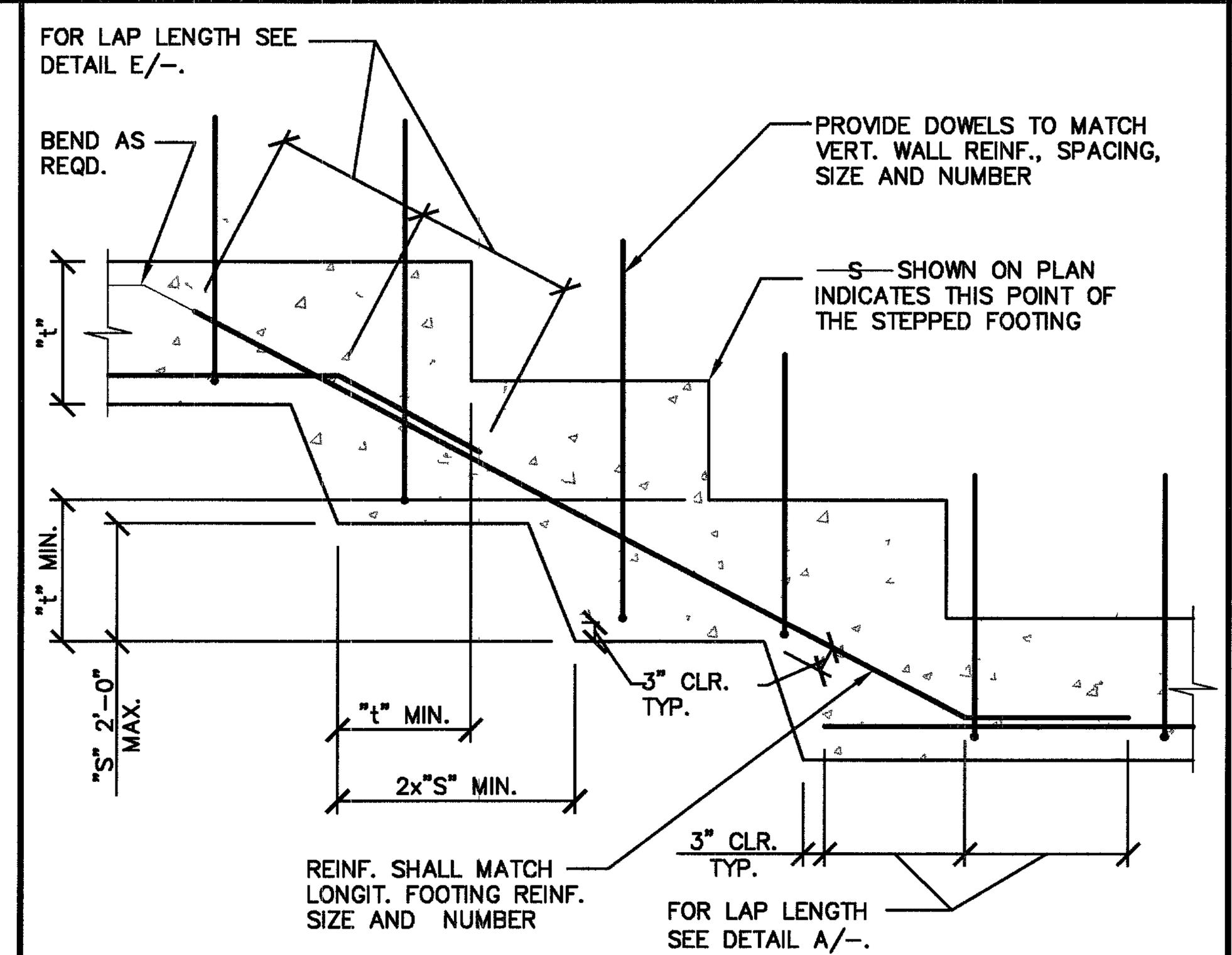
BAR SIZE	LAP CLASS	f'c = 4500 psi			
		TOP BARS		OTHER BARS	
		CASE 1	CASE 2	CASE 1	CASE 2
#3	A	18	27	14	21
	B	23	34	18	27
#4	A	24	35	18	27
	B	31	46	24	35
#5	A	29	44	23	34
	B	38	57	29	44
#6	A	35	53	27	41
	B	46	68	35	53
#7	A	51	77	40	59
	B	67	100	51	77
#8	A	59	88	45	68
	B	76	114	59	88
#9	A	66	99	51	76
	B	85	128	66	99
#10	A	73	109	56	84
	B	95	142	73	109
#11	A	80	120	62	93
	B	104	156	80	120

NOTES:
1. Table for use with normal weight hardrock concrete and grade 60 uncoated reinforcing bars. For lightweight aggregate use 1.3ℓ
2. Class A – Half or less of the bars are spliced within a required lap length.
   Class B – More than half of the bars are spliced within a required lap length.
3. Top bars are horizontal bars with 12" or more of concrete cast in the member below the bar.
4. For bars enclosed in standard column spirals, use 0.75ℓ or 12" min.
5. Lap splices of individual bars with a bundle shall be 1.2ℓ for that bar in a 3–bar bundle and 1.33ℓ for a 4–bar bundle. Entire bundles shall not be lap spliced at the same location. Splices for individual bars within a bundle shall be staggered such that they do not overlap.
6. ℓ – Basic lap length, shown at left.
7. Case Selection
   –For foundation reinforcement use Case 1 uno.
   –For column reinforcement and dowels use case 1 uno.
   –For beam reinforcement use Case 1 uno.
   –For structural slab reinforcement use Case 2 uno.
   –For slab on grade reinforcement use Case 1 uno.
   –For wall reinforcement and dowels use Case 1 (Except as noted below) uno.
   –For walls with a single mat of steel centered in the wall, use Case 1 for wall reinforcement and dowels uno.
   –For chord steel reinforcement use Case 2 uno.

E TENSION LAP SPLICE (CONCRETE ONLY)

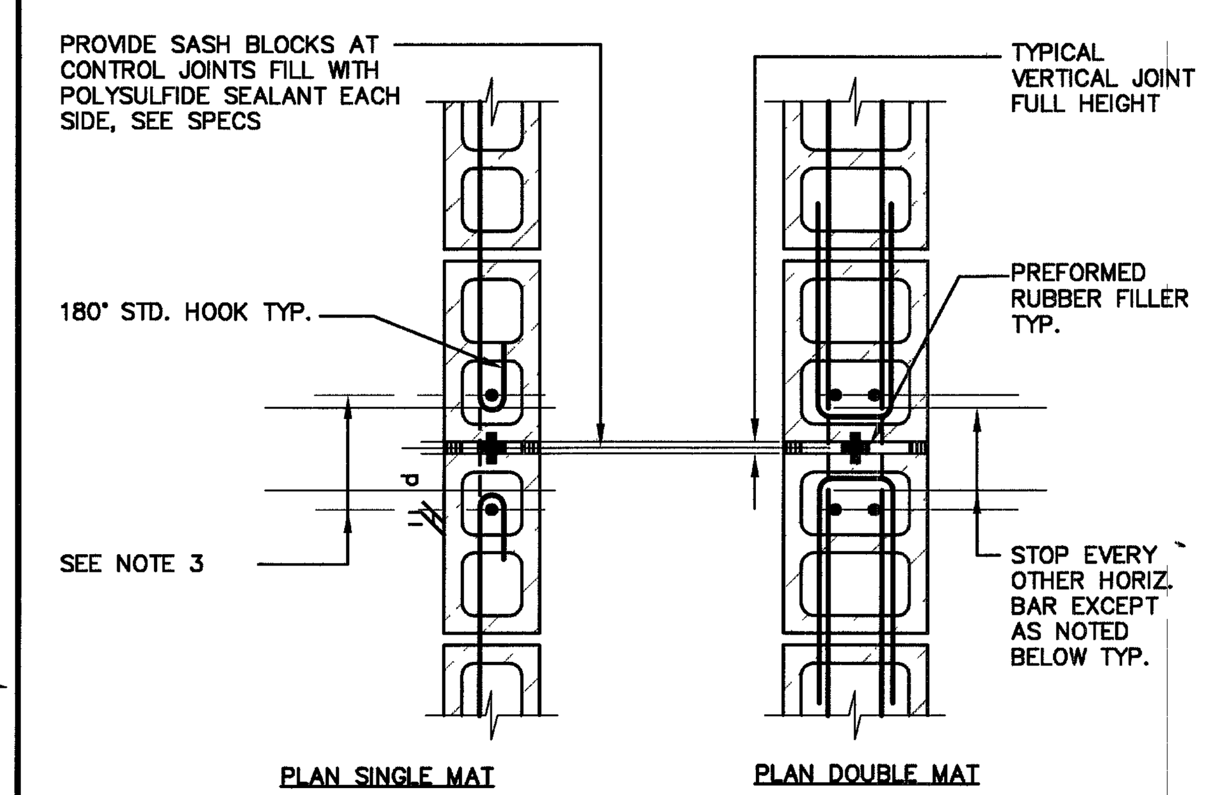
TENSION LAP SPLICE LENGTHS, ℓ (IN INCHES) FOR GRADE 60 UNCOATED BARS

NOT TO SCALE C0040



F STEPPED FOOTING

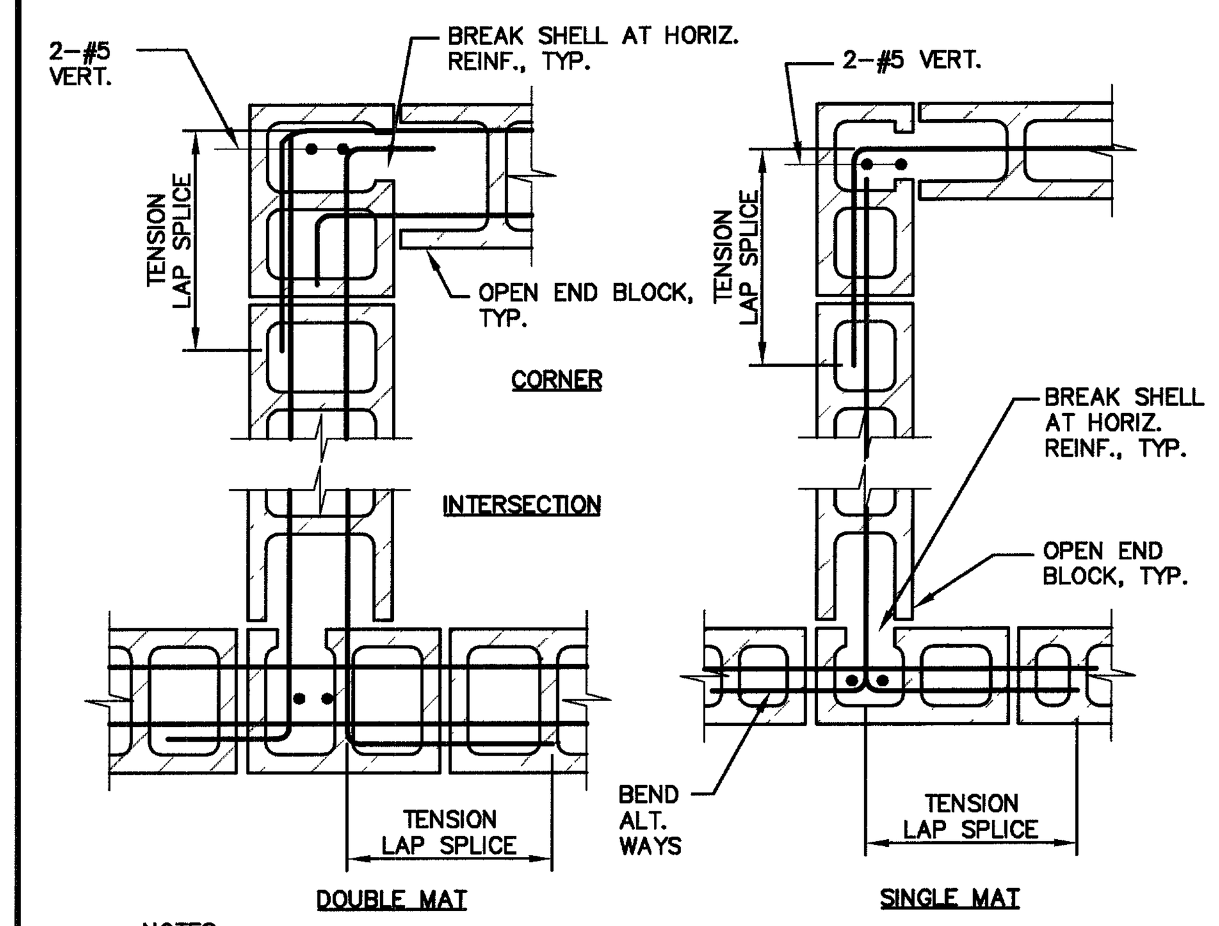
NOT TO SCALE FN015



NOTES:
1. Contractor shall obtain architect's approval of joint locations, which shall not exceed 24'–0" oc.
2. Horizontal reinf. at floor lines, roof lines, and lintel reinf. shall be continuous through joint.
3. Provide vertical wall reinf. each side of joint, #5 bars min.

G PLAN DETAIL CMU WALL CONTROL JOINT

NOT TO SCALE CM007



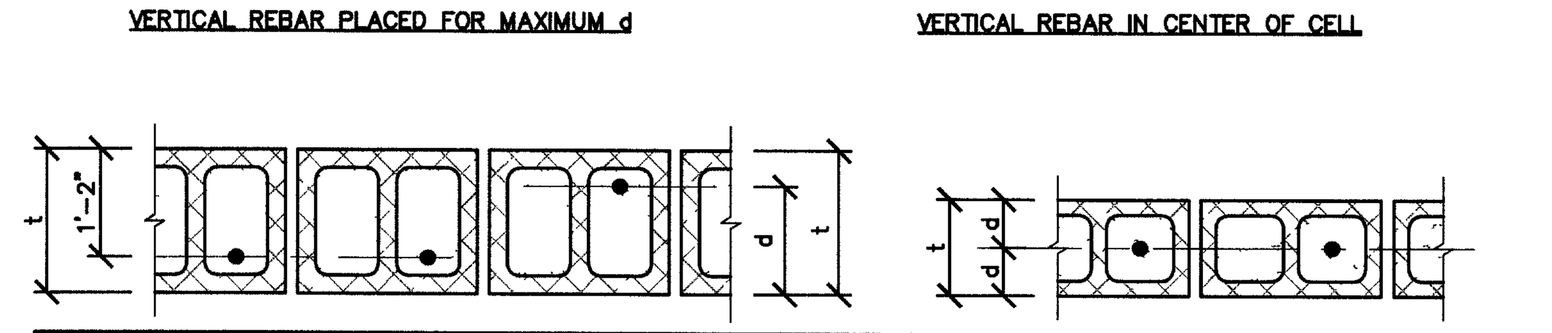
NOTES:
1. Tension lap splice for horizontal bars 48 bar diameters see note 15 for stagger vertical lap splice.

H CMU WALL INTERSECTIONS

NOT TO SCALE CM006–ibc

VERTICAL REBAR PLACED FOR MAXIMUM d

VERTICAL REBAR IN CENTER OF CELL



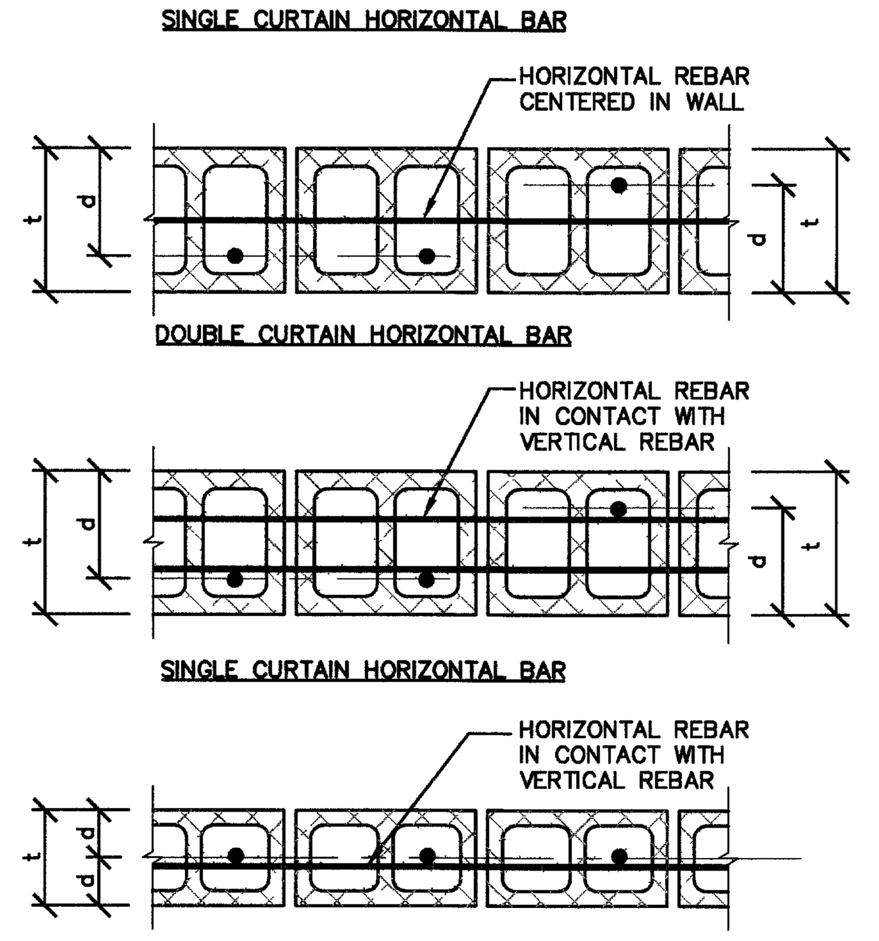
CMU (Concrete Masonry Units)					
NOMINAL THICKNESS	ACTUAL THICKNESS (t)	d (inches)			
		#3–#6	#7	#8	#9
6" CMU	5 5/8"	3.25	NP	NP	NP
8" CMU	7 5/8"	5.25	5	4.625	NP
10" CMU	9 5/8"	7.25	7	6.625	6.25
12" CMU	11 5/8"	9.25	9	8.625	8.25
16" CMU	15 5/8"	13.25	13	12.625	12.25

Concrete Masonry Unit		
NOMINAL THICKNESS	ACTUAL THICKNESS (t)	d (inches)
6" CMU	5 5/8"	2.8
8" CMU	7 5/8"	3.8
10" CMU	9 5/8"	4.8
12" CMU	11 5/8"	5.8
16" CMU	15 5/8"	7.8

SINGLE CURTAIN HORIZONTAL BAR

DOUBLE CURTAIN HORIZONTAL BAR

SINGLE CURTAIN HORIZONTAL BAR



NOTE:
1. Where vertical reinforcing bars occur in a cell, bars shall be secured in place by a bar positioner at the top and bottom, and at the intervals not exceeding 200 diameters.

I PLAN DETAIL FOR REBAR PLACEMENT IN CMU

NOT TO SCALE CM031

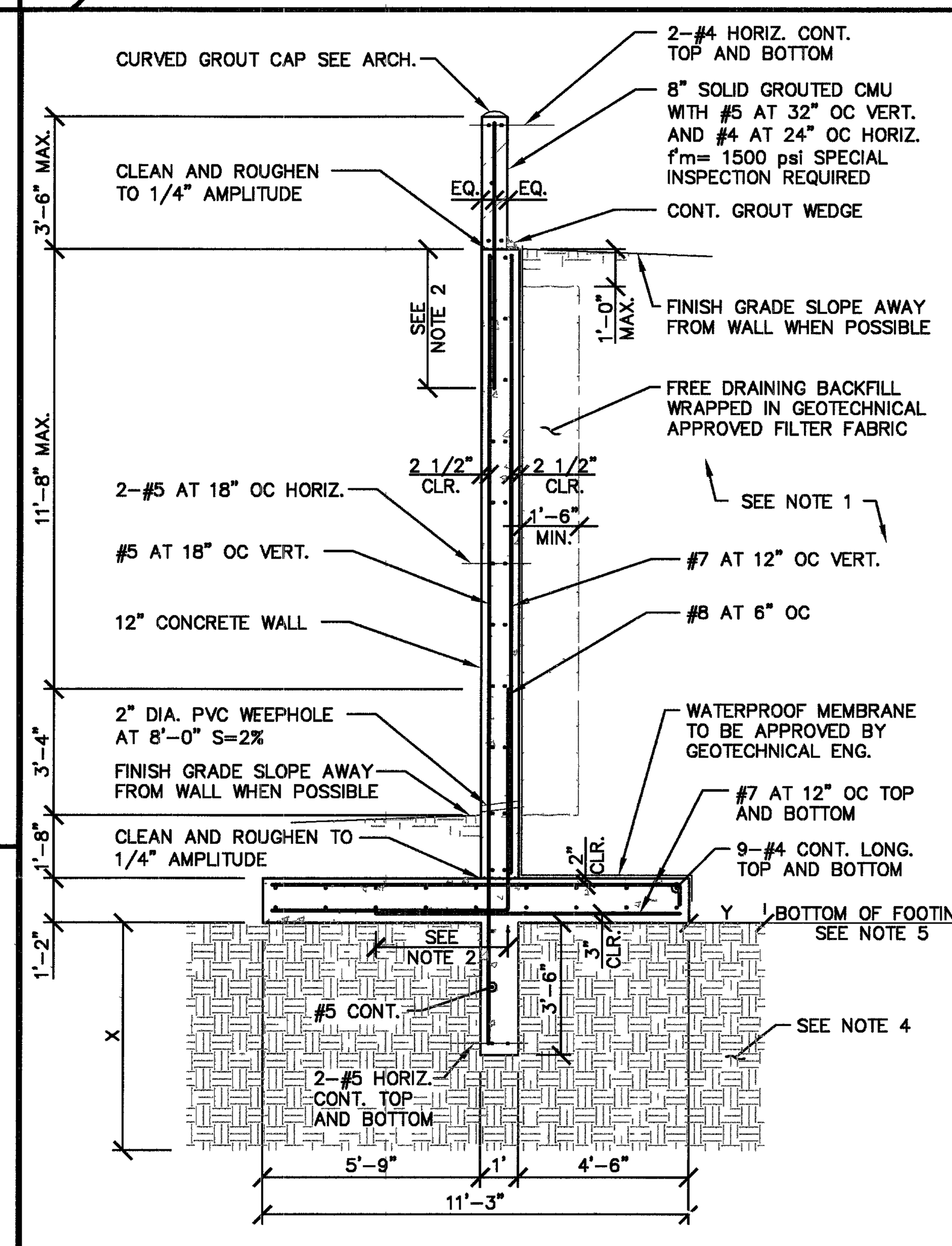
Tension Development and Lap Splice Length (for Masonry only)

CMU Thickness	Masonry Design Strength / Placement of Bar / BAR SIZE	f'm = 1500 psi Center	f'm = 1500 psi Edge	f'm = 2000 psi Center	f'm = 2000 psi Edge	f'm = 2500 psi Center	f'm = 2500 psi Edge	f'm = 3000 psi Center	f'm = 3000 psi Edge	f'm = 3500 psi Center	f'm = 3500 psi Edge	f'm = 4000 psi Center	f'm = 4000 psi Edge
8"	#3	19	19	17	17	15	15	15	15	15	15	15	15
	#4	26	30	22	26	20	23	18	21	17	20	16	19
	#5	32	48	28	42	25	37	23	34	21	32	20	30
	#6	58	100	50	86	45	77	41	71	38	65	36	61
	#7	80	124	70	107	62	96	57	88	53	81	49	76
	#8	114	152	99	131	89	117	81	107	75	99	70	93
	#9	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP
12"	#3	19	19	17	17	15	15	15	15	15	15	15	15
	#4	26	30	22	26	20	23	18	21	17	20	16	19
	#5	32	48	28	42	25	37	23	34	21	32	20	30
	#6	53	100	46	86	41	77	38	71	35	65	33	61
	#7	62	124	54	107	48	96	44	88	41	81	38	76
	#8	76	152	66	131	59	117	54	107	50	99	47	93
	#9	92	171	80	148	71	133	65	121	60	112	57	105

NOTES:
1. All lengths are in inches.
2. For bar placement, edge distance (d Dim.) see detail 5/–
3. Where 2 bars per cell occur they shall be placed per edge condition see note 2.
4. 6" CMU 2 bars per cell is not permitted.
   8" CMU 2 bars per cell up to #5 are permitted.
   10" CMU 2 bars per cell up to #7 are permitted.
5. NP indicates Not Permitted.
6. #10 and #11 bars where shown on plans or details require a mechanical splice.

J TENSION DEVELOPMENT AND LAP SPLICE LENGTH (FOR MASONRY ONLY)

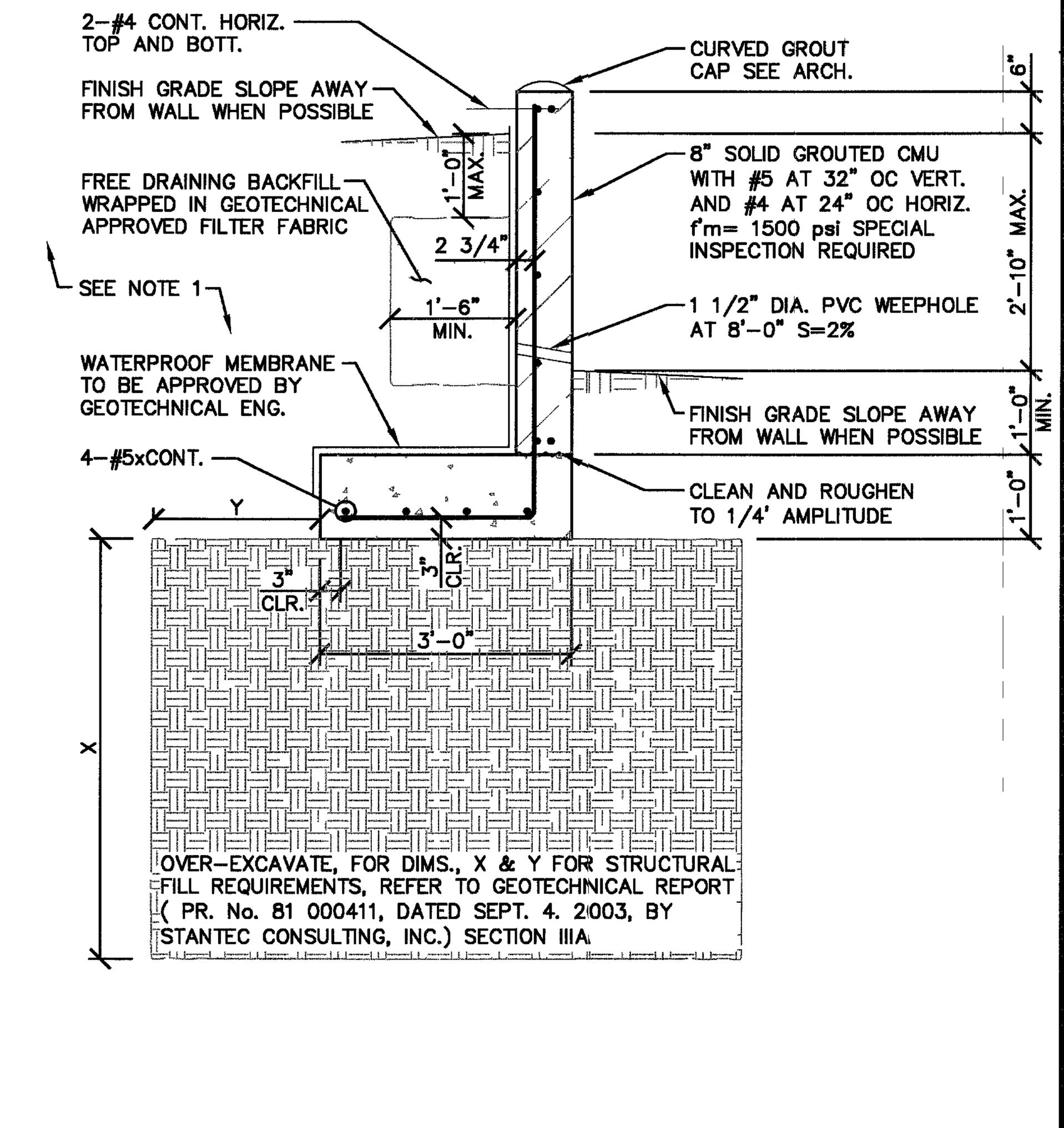
NOT TO SCALE CM033–ibc



NOTES:
1. STRUCTURAL FILL SEE GEOTECHNICAL REPORT FOR REQUIREMENTS.
2. TENSION DEVELOPMENT LENGTH PER A/–
3. SEE DETAIL G/– FOR CRACK CONTROL JOINT SPACING.
4. OVER–EXCAVATE, FOR DIMS., X & Y FOR STRUCTURAL FILL REQUIREMENTS, REFER TO GEOTECHNICAL REPORT (PR. No. 81 000411, DATED SEPT. 4. 2003, BY STANTEC CONSULTING, INC.) SECTION IIIA
5. BOTTOM OF FOOTING TO MATCH ADJACENT BUILDING WALL FOOTING

1 WALL DETAIL

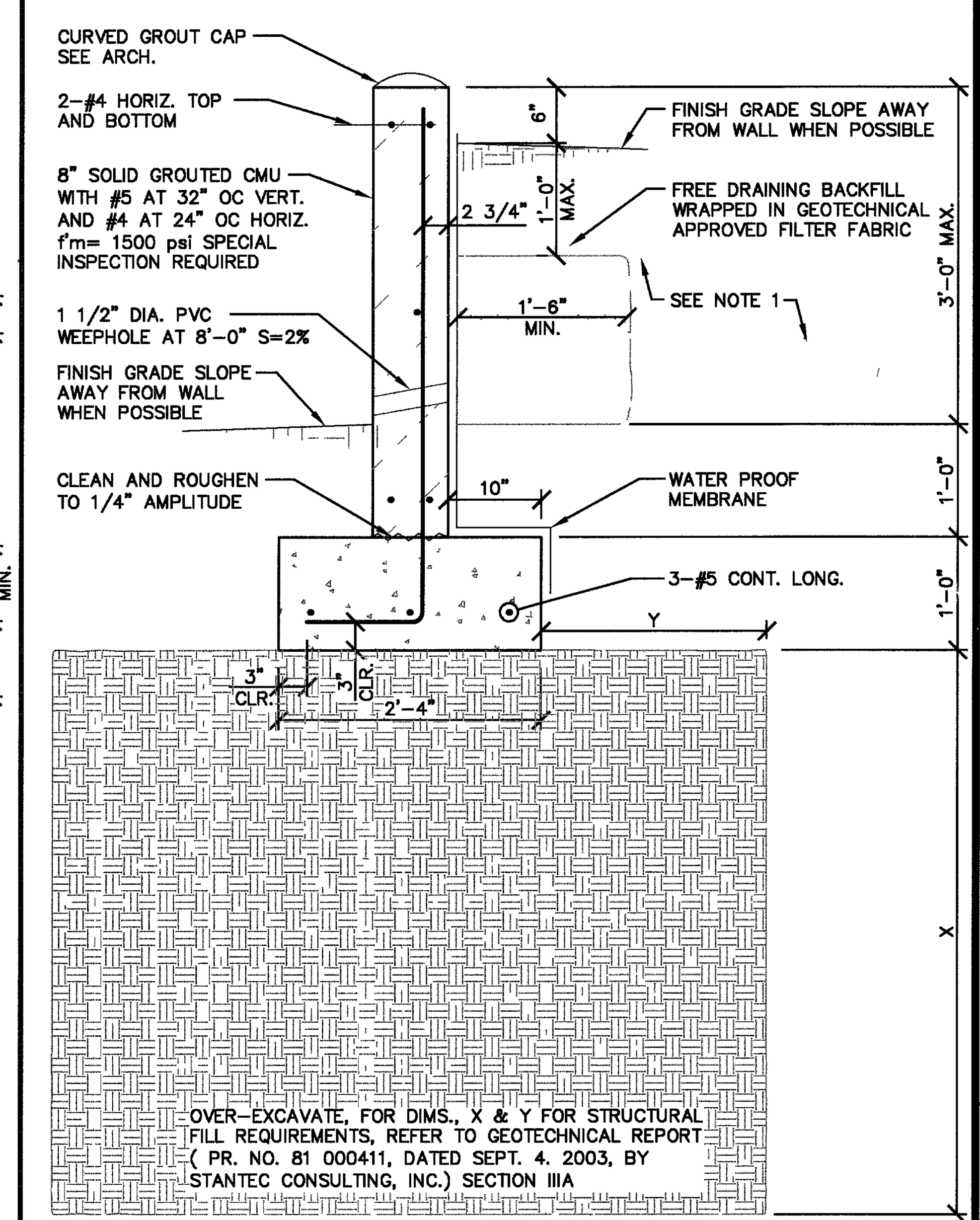
1/4"=1'–0" C7.05



NOTES:
1. STRUCTURAL FILL SEE GEOTECHNICAL REPORT FOR REQUIREMENTS.
2. SEE DETAIL G/– FOR CRACK CONTROL JOINT SPACING.

2 WALL DETAIL

1/2"=1'–0" C7.05



NOTES:
1. STRUCTURAL FILL SEE GEOTECHNICAL REPORT FOR REQUIREMENTS.
2. SEE DETAIL G/– FOR CRACK CONTROL JOINT SPACING.

3 WALL DETAIL

3/4"=1'–0" C7.05

LEGEND

CL OR SURVEY LINE	EASEMENT LINE	HEAVY AC PVMT.
PROPERTY LINE	SAWCUT LINE	LIGHT AC PVMT.
84295 ROW LINE	SCARP LINE	CONCRETE PVMT.

DESCRIPTION:	CONTOUR LINES	EDGE OF PAVEMENT	"A" TYPE CURBS	"L" TYPE CURBS	WALLS	FENCES	AC PAVEMENT	CONCRETE	SPOT ELEVATIONS	SIGNS	MANHOLE W/ DESCRIPTION	MANHOLE DESCRIPTIONS	FIRE HYDRANTS	GATE VALVES	REDUCERS	CLEAN OUTS	UTILITY BOX OR VAULT	100w HPS STREETLIGHTS	150w HPS STREETLIGHTS	200w HPS STREETLIGHTS	250w HPS STREETLIGHTS
EXISTING:	(2210)								12.34 BC			Ⓢ = SANITARY SEWER; Ⓓ = STORM DRAIN; Ⓔ = ELECTRICAL; Ⓣ = TELEPHONE									
PROPOSED:	(2210)								12.34 BC												

LOCHSA ENGINEERING
6345 SOUTH JONES BOULEVARD, SUITE 100
LAS VEGAS, NV 89118
PHONE: (702) 365–9312, FAX: (702) 365–9317

REV	DATE	BY	DESCRIPTION

SHEET: STRUCTURAL TYPICAL DETAILS AND SECTIONS

TITLE: STATE OF NEVADA-SPWB#01-E01
Department Of Employment, Training and Rehabilitation
2300 E. St Louis Avenue, Las Vegas, NV 89104

DRAWN BY	SSY	DATE:	07/20/05
DESIGNED BY:	EZ	DATE:	07/20/05
CHECKED BY:	EZ	DATE:	07/20/05
PROJECT No.:	7112	SCALE:	NTS

SEAL: PROFESSIONAL ENGINEER STATE OF NEVADA GUY M. MORRIS EXP 12-31-05 CIVIL No.14526 08-15-05

SHEET No C7.05
SHEET 16 OF 16
DRAWING No 107U4481

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