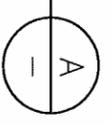


RETAINING WALL SECTION
SCALE: N.T.S.

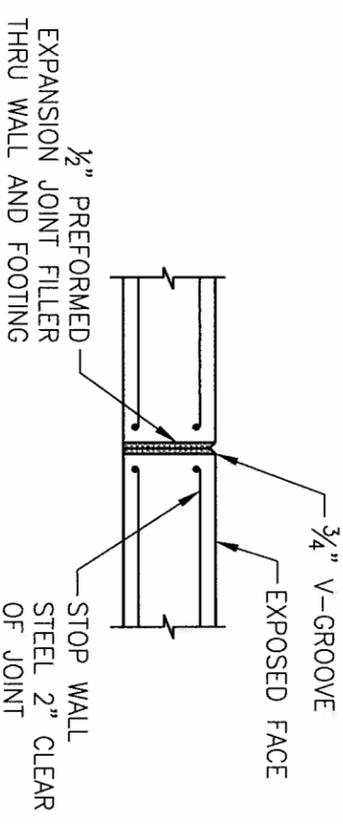


WALL DIMENSIONS				CONC.		REINF. STEEL *					REINF. STEEL
F	B	T	H	D	S	a	b	c	d	e	LB/LF
2'	4'-3"	1'-10"	1'-9"	10"	8"	#4@12"	#4@12"	#4@12"	#4@12"	#4@12"	16.3
4'	4'-8"	1'-6"	2'-6"	10"	8"	#4@12"	#4@12"	#4@12"	#4@10"	#4@12"	18.9

*REINFORCING SPACING IS THE MAXIMUM ALLOWED SPACING.

NOTES:

- BACKFILL SHALL BE LOW-PLASTICITY SILTS AND CLAYS WITH SOME SAND AND/OR GRAVEL (50% OR MORE FINES), FINE SANDS WITH SILT AND/OR CLAY (LESS THAN 50% FINES) (CL, ML, CL-ML, SC, SM, SC-SM), OR BETTER. SUITABLE ON-SITE MATERIALS MEETING THESE CRITERIA MAY BE USED. OTHERWISE, SUITABLE MATERIAL SHALL BE IMPORTED AND PLACED IN THE BACKFILL ZONE AS SHOWN.
 - BACKFILL SHALL BE COMPACTED IN ACCORDANCE WITH THE SPECIFICATIONS TO PREVENT FUTURE SETTLEMENT. HEAVY COMPACTION EQUIPMENT SHALL NOT BE USED WITHIN 2-FT OF THE WALL.
 - SURFACE AND BACKFILL DRAINAGE SHALL BE DESIGNED BY NRCS DESIGN STAFF. SURFACE RUNOFF SHALL BE DIRECTED AWAY FROM THE WALL BACKFILL. IF REQUIRED, A DRAINAGE COLLECTION PIPE CAN BE INSTALLED NEAR THE HEEL OF THE FOOTING AT THE BASE OF THE WALL IN THE DRAINAGE FILL. THE DRAIN PIPE MUST GRAVITY FLOW TO AN EROSION PROTECTED OUTLET AWAY FROM ANY ANIMAL WASTE COLLECTION AREAS.
 - WALLS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE 2006 IBC, ACI 318-05 AND ACI 350-01.
 - DESIGN LOADS:
SOIL UNIT WT=120 PCF
ACTIVE SOIL PRESSURE (HEEL SIDE)=45 PCF
CONCRETE/SOIL FRICTION=0.50
MANURE LATERAL PRESSURE (TOE SIDE)=65 PCF
MANURE UNIT WT=65 PCF
LIVE LOAD SURCHARGE (HEEL SIDE)=240 PSF (2-FT OF FILL)
- ALLOWABLE LOADS:**
PASSIVE SOIL PRESSURE (TOE AND HEEL SIDE)=150 PCF
MIN. ALLOWABLE BEARING PRESSURE=2000 PSF
- CONCRETE:**
F_c'=4000 PSI
SLUMP=5" MAX.
AIR ENTRAINMENT=5-8%
REINFORCING STEEL=ASTM A706 OR A615, GRADE 60.
- PLACE EXPANSION JOINTS THROUGH WALL ONLY. PLACE EXPANSION JOINTS AT APPROX. 40'-0" CTRS.



EXPANSION JOINT (PLAN VIEW)

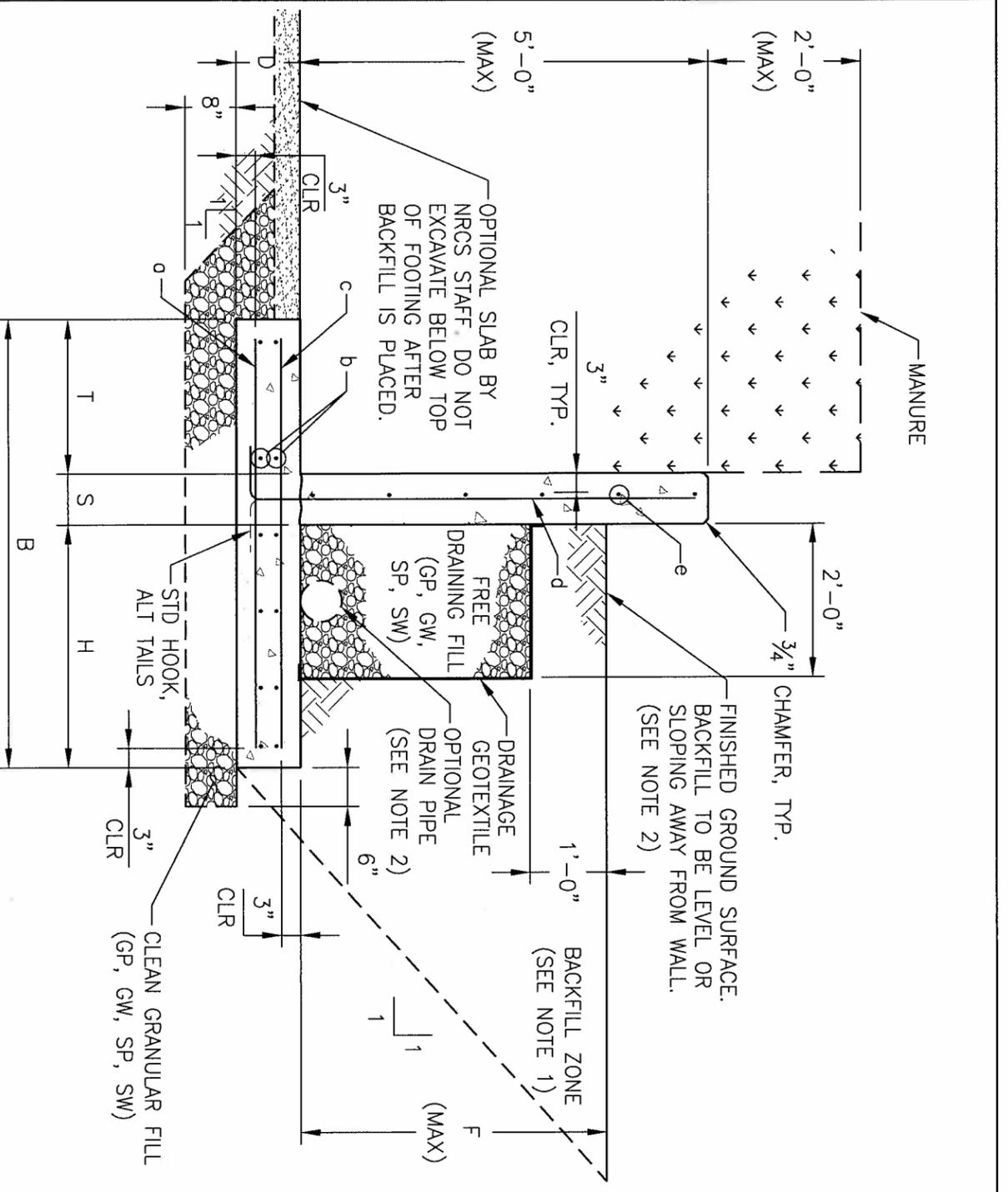
(WITHOUT SCORING)
SCALE: NTS



4'-0" RETAINING WALL
STANDARD DRAWING
TYPICAL SECTION AND NOTES

Date	
Designed	C. BOYD 01/29/09
Drawn	R. GUERRERO 01/29/09
Checked	D. AXNESS 01/29/09
Approved	M. McMILLEN 01/29/09





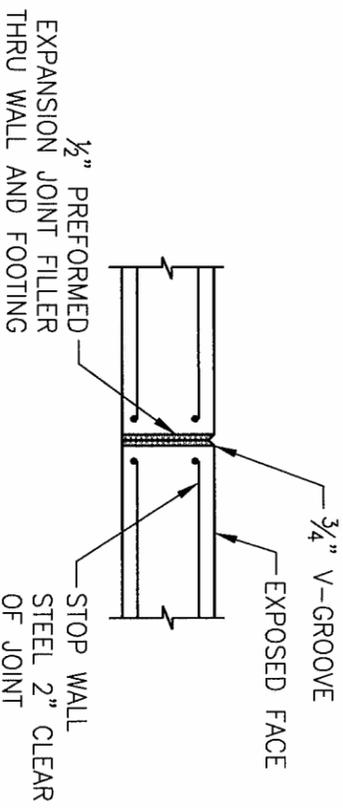
RETAINING WALL SECTION
SCALE: N.T.S.

WALL DIMENSIONS				CONC.		REINF. STEEL*					REINF. STEEL	
F	B	T	H	D	S	CY/LF	a	b	c	d	e	LB/LF
2'	7'-6"	5'-10"	1'-0"	12"	8"	0.40	#4@12"	#4@8"	#4@12"	#5@8"	#5@9"	41.2
5'	6'-9"	2'-4"	3'-9"	12"	8"	0.37	#5@12"	#4@8"	#4@12"	#4@6"	#5@9"	39.5

*REINFORCING SPACING IS THE MAXIMUM ALLOWED SPACING.

NOTES:

- BACKFILL SHALL BE LOW-PLASTICITY SILTS AND CLAYS WITH SOME SAND AND/OR GRAVEL (50% OR MORE FINES), FINE SANDS WITH SILT AND/OR CLAY (LESS THAN 50% FINES) (CL, ML, CL-ML, SC, SM, SC-SW), OR BETTER. SUITABLE ON-SITE MATERIALS MEETING THESE CRITERIA MAY BE USED. OTHERWISE, SUITABLE MATERIAL SHALL BE IMPORTED AND PLACED IN THE BACKFILL ZONE AS SHOWN.
 - BACKFILL SHALL BE COMPACTED IN ACCORDANCE WITH THE SPECIFICATIONS TO PREVENT FUTURE SETTLEMENT. HEAVY COMPACTION EQUIPMENT SHALL NOT BE USED WITHIN 2-FT OF THE WALL.
 - SURFACE AND BACKFILL DRAINAGE SHALL BE DESIGNED BY NRCS DESIGN STAFF. SURFACE RUNOFF SHALL BE DIRECTED AWAY FROM THE WALL BACKFILL. IF REQUIRED, A DRAINAGE COLLECTION PIPE CAN BE INSTALLED NEAR THE HEEL OF THE FOOTING AT THE BASE OF THE WALL IN THE DRAINAGE FILL. THE DRAIN PIPE MUST GRAVITY FLOW TO AN EROSION PROTECTED OUTLET AWAY FROM ANY ANIMAL WASTE COLLECTION AREAS.
 - WALLS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE 2006 IBC, ACI 318-05 AND ACI 350-01.
 - DESIGN LOADS:
SOIL UNIT WT=120 PCF
ACTIVE SOIL PRESSURE (HEEL SIDE)=45 PCF
CONCRETE/SOIL FRICTION=0.50
MANURE LATERAL PRESSURE (TOE SIDE)=65 PCF
MANURE UNIT WT=65 PCF
LIVE LOAD SURCHARGE (HEEL SIDE)=240 PSF (2-FT OF FILL)
- ALLOWABLE LOADS:
PASSIVE SOIL PRESSURE (TOE AND HEEL SIDE)=150 PCF
MIN. ALLOWABLE BEARING PRESSURE=2000 PSF
- CONCRETE:
F_c'=4000 PSI
SLUMP=5" MAX.
AIR ENTRAINMENT=5-8%
REINFORCING STEEL=ASTM A706 OR A615, GRADE 60.
- PLACE EXPANSION JOINTS THROUGH WALL ONLY. PLACE EXPANSION JOINTS AT APPROX. 40'-0" CTRS.



EXPANSION JOINT (PLAN VIEW)
SCALE: NTS

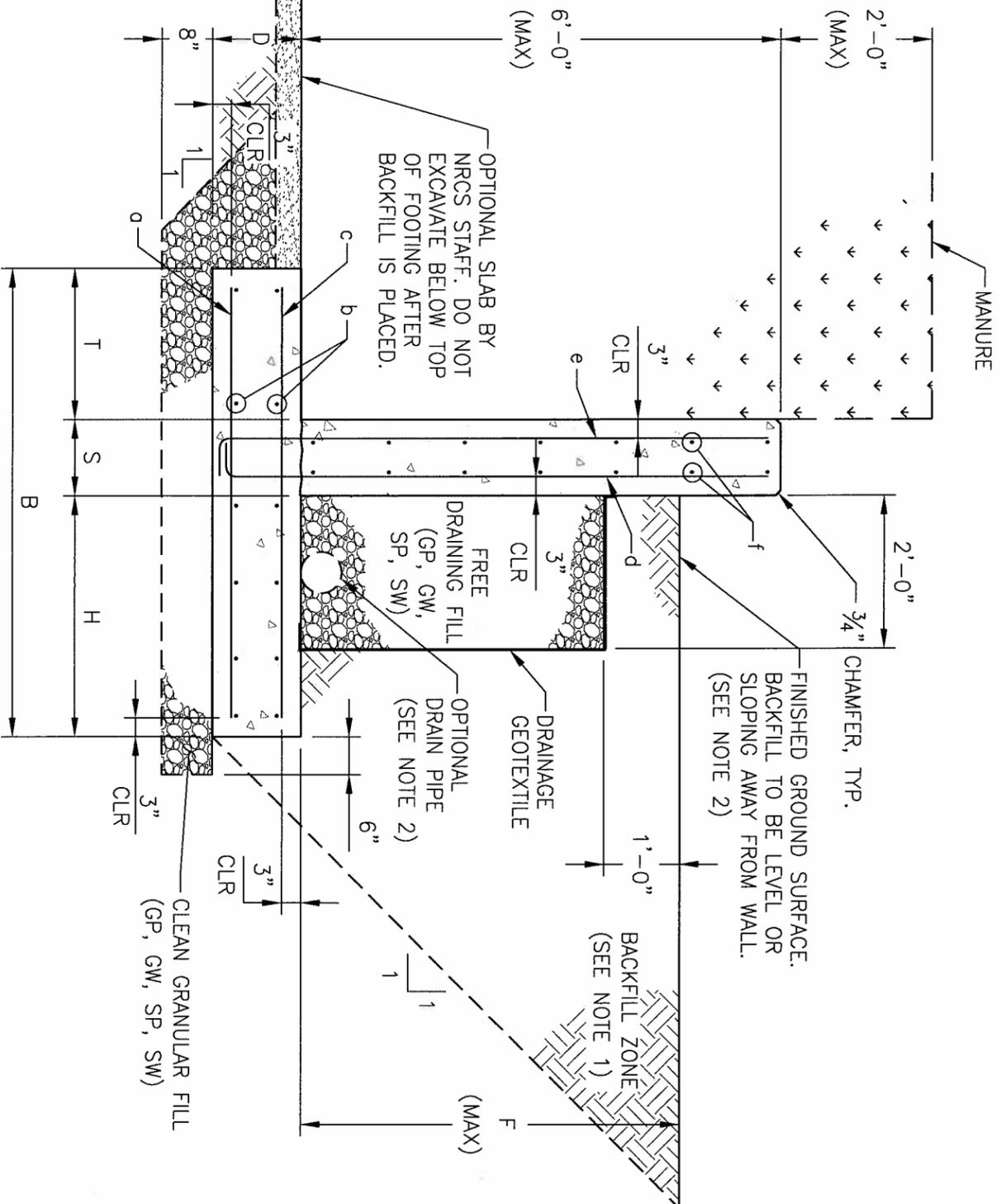
(WITHOUT SCORING)



Date	Design	Drawn	Checked	Approved
01/29/09	C. BOYD	R. GUERRERO	D. AXNESS	M. McMILLEN

5'-0" RETAINING WALL
STANDARD DRAWING
TYPICAL SECTION AND NOTES





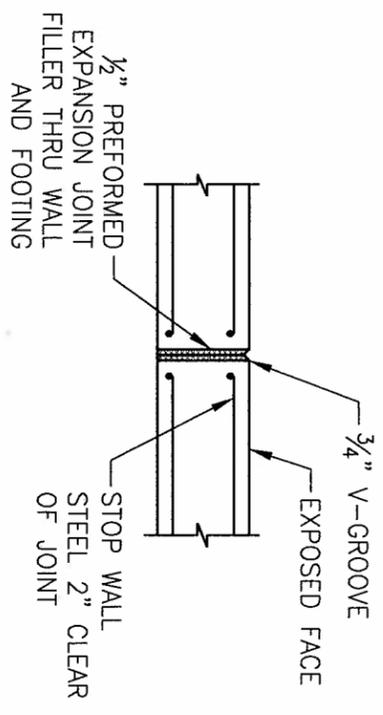
RETAINING WALL SECTION
SCALE: N.T.S.

WALL DIMENSIONS				REINFC. STEEL*						REINFC. STEEL			
F	B	T	H	D	S	CONC. CY/LF	a	b	c	d	e	f	LB/LF
2'	9'-2"	7'-4"	1'-0"	12"	10"	0.52	#4@8"	#4@8"	#4@12"	#4@12"	#5@8"	#4@10"	56.0
4'	7'-6"	3'-0"	3'-8"	12"	10"	0.46	#5@9"	#4@8"	#4@12"	#4@12"	#5@9"	#4@10"	53.3
6'	7'-11"	3'-4"	3'-9"	12"	10"	0.48	#5@10"	#4@8"	#4@10"	#4@10"	#5@10"	#4@10"	55.4

*REINFORCING SPACING IS THE MAXIMUM ALLOWED SPACING.

NOTES:

- BACKFILL SHALL BE GRAVEL, SAND, SILT AND CLAY MIXTURES (LESS THAN 50% FINES), COARSE SANDS WITH SILT AND/OR CLAY (LESS THAN 50% FINES), OR BETTER (GP, GW, SP, SW, GM, GC, SC, SM, SC-SM). SUITABLE ON-SITE MATERIALS MEETING THESE CRITERIA MAY BE USED. OTHERWISE, SUITABLE MATERIAL SHALL BE IMPORTED AND PLACED IN THE BACKFILL ZONE AS SHOWN. BACKFILL SHALL BE COMPACTED IN ACCORDANCE WITH THE SPECIFICATIONS TO PREVENT FUTURE SETTLEMENT. HEAVY COMPACTION EQUIPMENT SHALL NOT BE USED WITHIN 2-FT OF THE WALL.
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 - WALLS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE 2006 IBC, ACI 318-05 AND ACI 350-01.
 - DESIGN LOADS:
SOIL UNIT WT=120 PCF
ACTIVE SOIL PRESSURE (HEEL SIDE)=35 PCF
CONCRETE/SOIL FRICTION=0.50
MANURE LATERAL PRESSURE (TOE SIDE)=65 PCF
MANURE UNIT WT=65 PCF
LIVE LOAD SURCHARGE (HEEL SIDE)=240 PSF (2-FT OF FILL)
- ALLOWABLE LOADS:
PASSIVE SOIL PRESSURE (TOE AND HEEL SIDE)=150 PCF
MIN. ALLOWABLE BEARING PRESSURE=2000 PSF
- CONCRETE:
F_c'=4000 PSI
SLUMP=5" MAX.
AIR ENTRAINMENT=5-8%
REINFORCING STEEL=ASTM A706 OR A615, GRADE 60.
- PLACE EXPANSION JOINTS THROUGH WALL ONLY. PLACE EXPANSION JOINTS AT APPROX. 40'-0" CTRS.



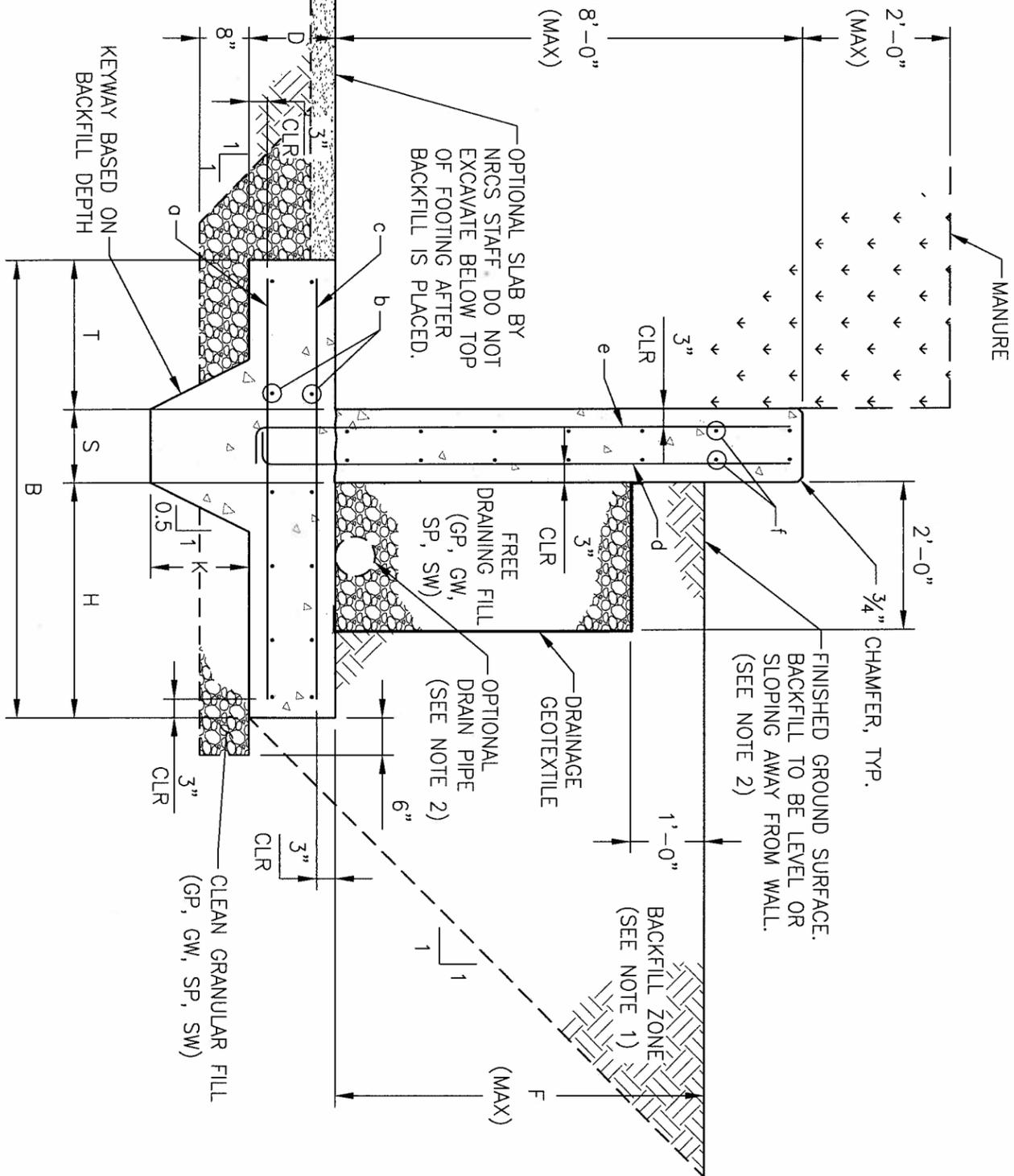
EXPANSION JOINT (PLAN VIEW)
(WITHOUT SCORING)
SCALE: NTS



Date	01/29/09
Designed	C. BOYD
Drawn	R. GUERRERO
Checked	D. AXNESS
Approved	M. McMILLEN

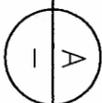
6'-0" RETAINING WALL
STANDARD DRAWING
TYPICAL SECTION AND NOTES





RETAINING WALL SECTION

SCALE: N.T.S.

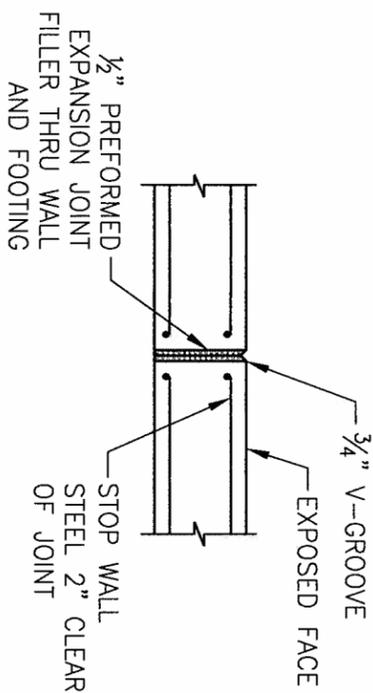


WALL DIMENSIONS				CONC.		REINF. STEEL*						REINF. STEEL		
F	B	T	H	D	S	K	CY/LF	a	b	c	d	e	f	LB/LF
2'	9'-9"	7'-9"	1'-0"	16"	12"	1'-6"	0.85	#4@6"	#4@12"	#4@9"	#4@12"	#7@9"	#4@12"	78.0
4'	9'-7"	4'-10"	3'-9"	16"	12"	N/A	0.77	#4@6"	#4@12"	#4@9"	#4@12"	#7@9"	#4@12"	77.6
6'	9'-0"	1'-0"	7'-0"	14"	12"	N/A	0.69	#7@6"	#4@12"	#4@12"	#4@12"	#7@9"	#4@12"	97.3
8'	9'-8"	1'-0"	7'-8"	12"	12"	N/A	0.65	#7@6"	#4@12"	#4@12"	#4@12"	#7@12"	#4@12"	99.5

*REINFORCING SPACING IS THE MAXIMUM ALLOWED SPACING.

NOTES:

- BACKFILL SHALL BE GRAVEL, SAND, SILT AND CLAY MIXTURES (LESS THAN 50% FINES), COARSE SANDS WITH SILT AND/OR CLAY (LESS THAN 50% FINES), OR BETTER (GP, GW, SP, SW, GM, GC, SC, SM, SC-SM). SUITABLE ON-SITE MATERIALS MEETING THESE CRITERIA MAY BE USED. OTHERWISE, SUITABLE MATERIAL SHALL BE IMPORTED AND PLACED IN THE BACKFILL ZONE AS SHOWN. BACKFILL SHALL BE COMPACTED IN ACCORDANCE WITH THE SPECIFICATIONS TO PREVENT FUTURE SETTLEMENT. HEAVY COMPACTION EQUIPMENT SHALL NOT BE USED WITHIN 2-FT OF THE WALL.
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 - WALLS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE 2006 IBC, ACI 318-05 AND ACI 350-01.
 - DESIGN LOADS:
SOIL UNIT WT=120 PCF
ACTIVE SOIL PRESSURE (HEEL SIDE)=35 PCF
CONCRETE/SOIL FRICTION=0.50
MANURE LATERAL PRESSURE (TOE SIDE)=65 PCF
MANURE UNIT WT=65 PCF
LIVE LOAD SURCHARGE (HEEL SIDE)=240 PSF (2-FT OF FILL)
- ALLOWABLE LOADS:
PASSIVE SOIL PRESSURE (TOE AND HEEL SIDE)=150 PCF
MIN. ALLOWABLE BEARING PRESSURE=2000 PSF
- CONCRETE:
F_c'=4000 PSI
SLUMP=5" MAX.
AIR ENTRAINMENT=5-8%
REINFORCING STEEL=ASTM A706 OR A615, GRADE 60.
- PLACE EXPANSION JOINTS THROUGH WALL ONLY. PLACE EXPANSION JOINTS AT APPROX. 40'-0" CTRS.



EXPANSION JOINT (PLAN VIEW)

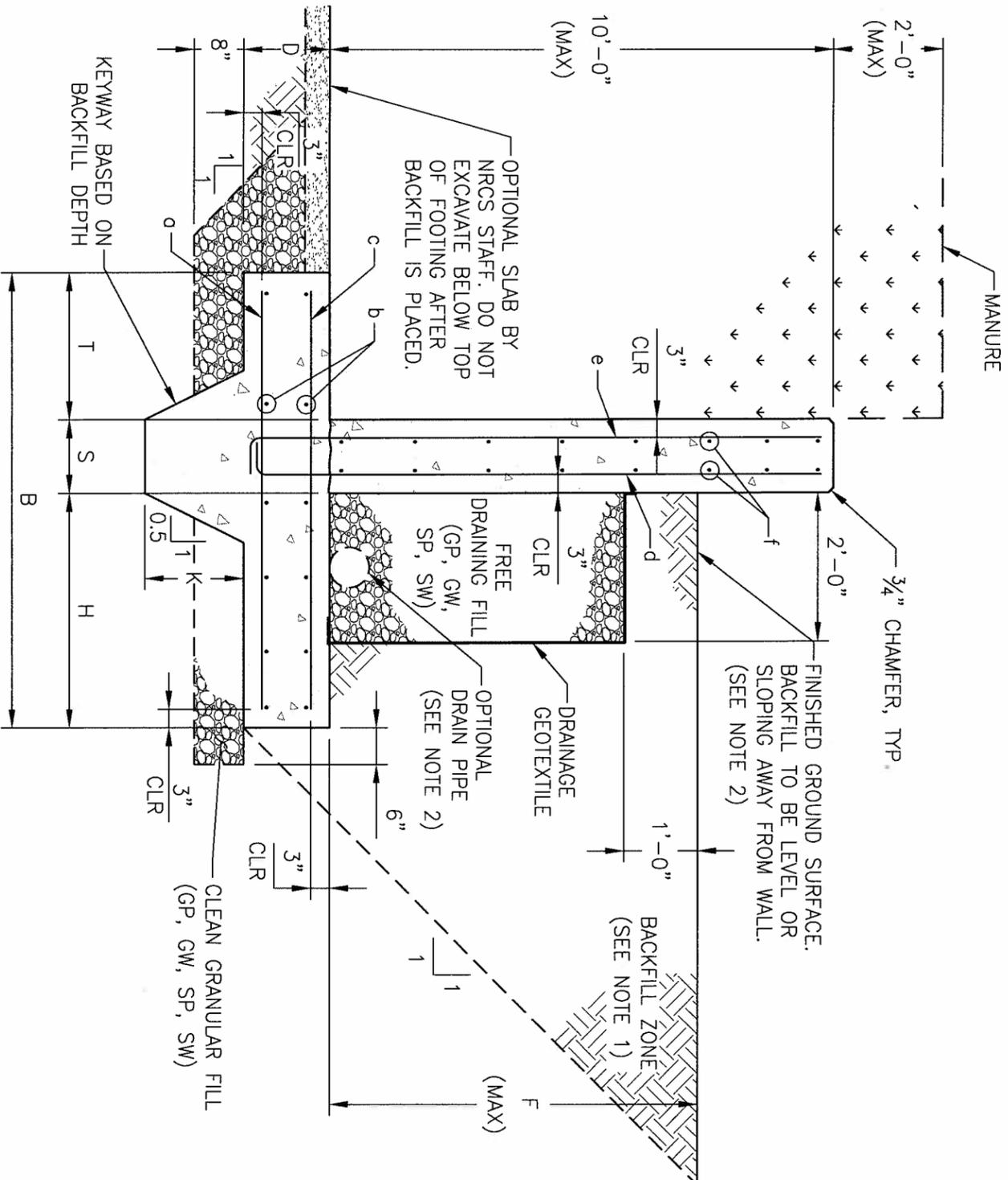
(WITHOUT SCORING)
SCALE: NTS



Designed	C. BOYD	Date	01/29/09
Drawn	R. GUERRERO		01/29/09
Checked	D. AXNESS		01/29/09
Approved	M. McMILLEN		01/29/09

8'-0" RETAINING WALL
STANDARD DRAWING
TYPICAL SECTION AND NOTES





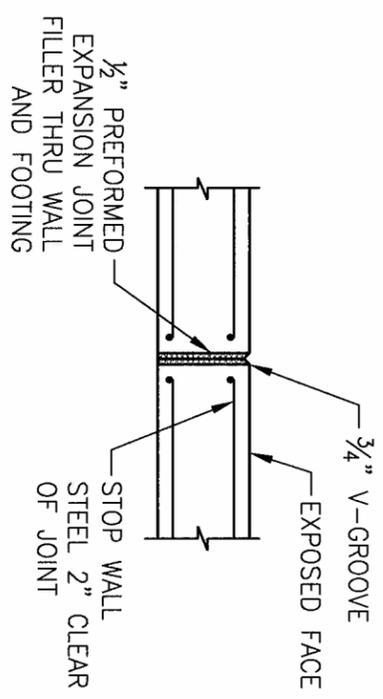
RETAINING WALL SECTION
SCALE: N.T.S.

WALL DIMENSIONS				CONC.		REINF. STEEL*						REINF. STEEL		
F	B	T	H	D	S	K	CY/LF	a	b	c	d	e	f	LB/LF
2'	12'-6"	10'-1"	1'-3"	16"	14"	2'-0"	1.28	#5@6"	#5@9"	#4@6"	#4@12"	#7@6"	#5@12"	153.8
4'	11'-2"	5'-0"	5'-0"	16"	14"	1'-4"	1.14	#5@6"	#5@9"	#4@8"	#4@12"	#7@6"	#5@12"	145.7
6'	10'-10"	1'-0"	8'-8"	14"	14"	N/A	0.90	#8@6"	#5@12"	#4@12"	#4@12"	#8@9"	#5@12"	156.9
8'	10'-4"	1'-0"	8'-2"	14"	14"	N/A	0.88	#6@6"	#5@12"	#4@12"	#4@6"	#5@6"	#5@12"	117.8
10'	15'-2"	1'-0"	13'-0"	18"	14"	N/A	1.28	#8@6"	#5@9"	#4@12"	#5@6"	#6@6"	#5@12"	211.8

*REINFORCING SPACING IS THE MAXIMUM ALLOWED SPACING.

NOTES:

- BACKFILL SHALL BE GRAVEL, SAND, SILT AND CLAY MIXTURES (LESS THAN 50% FINES), COARSE SANDS WITH SILT AND/OR CLAY (LESS THAN 50% FINES), OR BETTER (GP, GW, SP, SW, GM, GC, SC, SM, SC-SM). SUITABLE ON-SITE MATERIALS MEETING THESE CRITERIA MAY BE USED. OTHERWISE, SUITABLE MATERIAL SHALL BE IMPORTED AND PLACED IN THE BACKFILL ZONE AS SHOWN. BACKFILL SHALL BE COMPACTED IN ACCORDANCE WITH THE SPECIFICATIONS TO PREVENT FUTURE SETTLEMENT. HEAVY COMPACTION EQUIPMENT SHALL NOT BE USED WITHIN 2-FT OF THE WALL.
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 - DESIGN LOADS:
SOIL UNIT WT=120 PCF
ACTIVE SOIL PRESSURE (HEEL SIDE)=35 PCF
CONCRETE/SOIL FRICTION=0.50
MANURE LATERAL PRESSURE (TOE SIDE)=65 PCF
MANURE UNIT WT=65 PCF
LIVE LOAD SURCHARGE (HEEL SIDE)=240 PSF (2-FT OF FILL)
 - ALLOWABLE LOADS:
PASSIVE SOIL PRESSURE (TOE AND HEEL SIDE)=150 PCF
MIN. ALLOWABLE BEARING PRESSURE=2000 PSF
- CONCRETE:
F_c'=4000 PSI
SLUMP=5" MAX.
AIR ENTRAINMENT=5-8%
REINFORCING STEEL=ASTM A706 OR A615, GRADE 60.
5. PLACE EXPANSION JOINTS THROUGH WALL ONLY. PLACE EXPANSION JOINTS AT APPROX. 40'-0" CTRS.



EXPANSION JOINT (PLAN VIEW)
(WITHOUT SCORING)
SCALE: NTS



Date	
01/29/09	Designed C. BOYD
01/29/09	Drawn R. GUERRERO
01/29/09	Checked D. AXNESS
01/29/09	Approved M. McMILLEN

10'-0" RETAINING WALL
STANDARD DRAWING
TYPICAL SECTION AND NOTES

