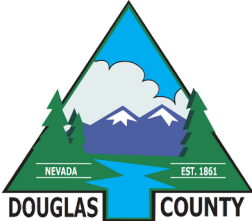


Plan Check Comments

**Douglas County
Community Development**

1594 Esmeralda Ave
Minden, NV 89423



Permit Type: Commercial Permit

Application Number: DB23-0477

Project Description: Genoa Church Foundation Repair, structural only

Site Address:
182 NIXON ST
Genoa, NV 89411

Document Name: Plan SUB 3

Report Date: 03-29-2023

Reviewer Contact Information:

Reviewer Name	Reviewer Email	Reviewer Phone No.:
Tim Davis	tdavis@douglasnv.us	775-782-6224
Rebecca Spates	rspates@douglasnv.us	775-782-6226

General Comments

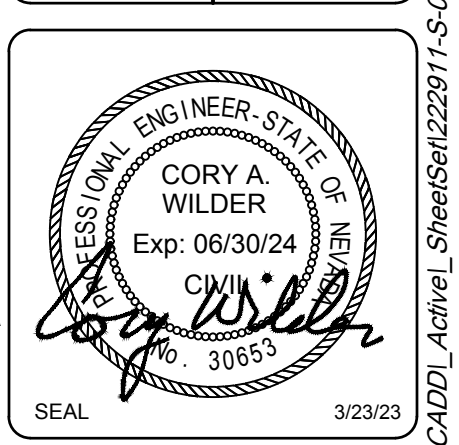
Corrections in the following table need to be applied before a permit can be issued



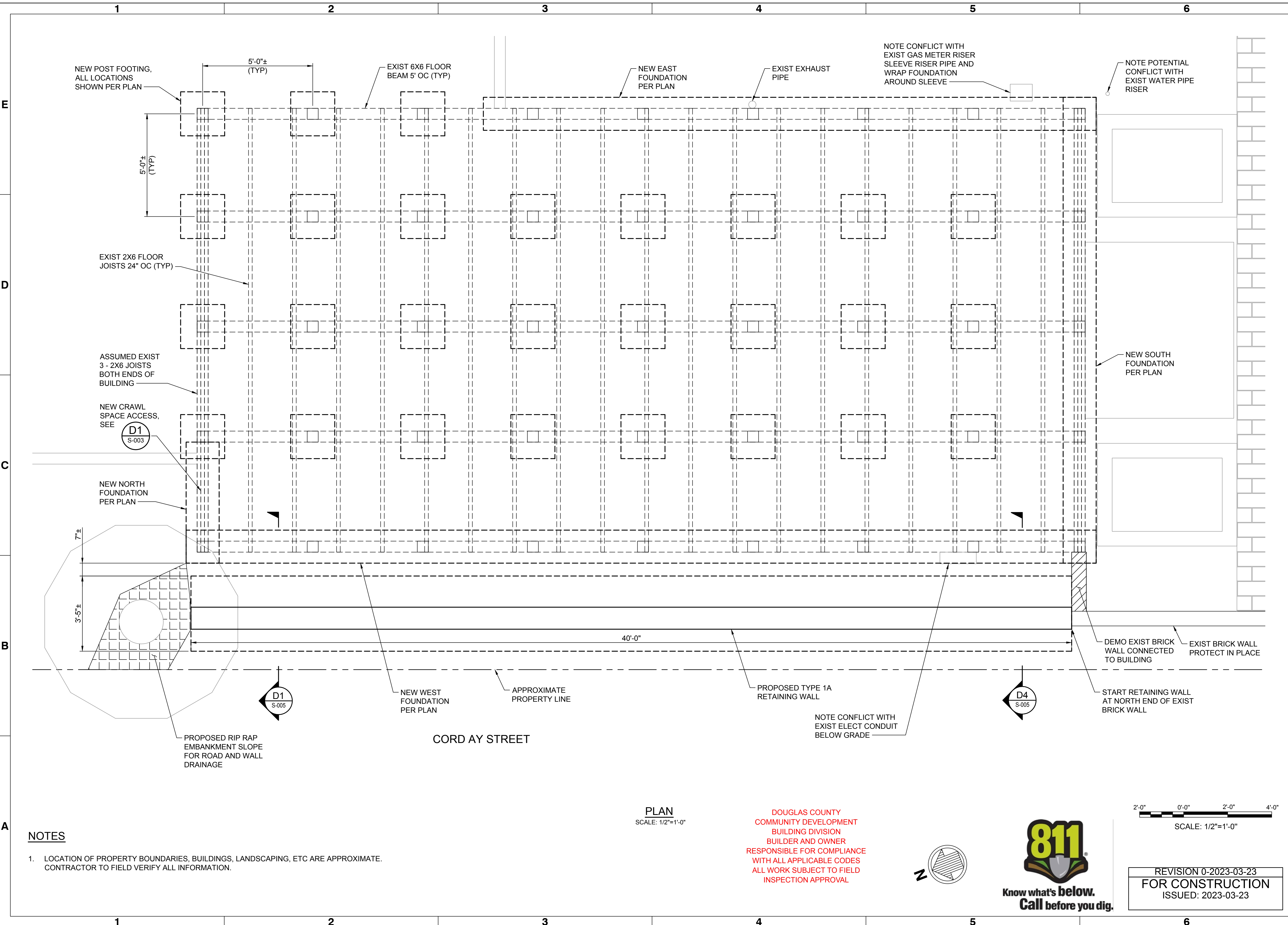
Rev.	Date	Description
0		

TOWN OF GENOA
CHURCH FOUNDATION REPAIR
FOUNDATION PLAN

Designed by:	OW	Date:	3/17/23	Rev.	0
Drawn by:	FS	MAN Project No.:	222911		
Checked by:	ME	Drawing code:			
Reviewed by:	GN	Submitted by:	MOFFATT & NICHOL	Per Scale:	1" = 10' (0 SHEET)



Sheet Reference No.
S-002
INDEX: 03 OF 10

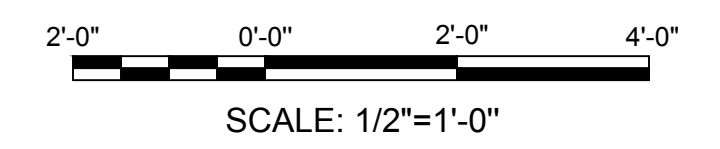
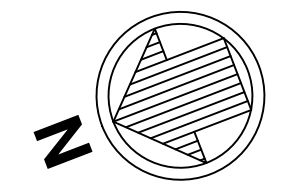


NOTES

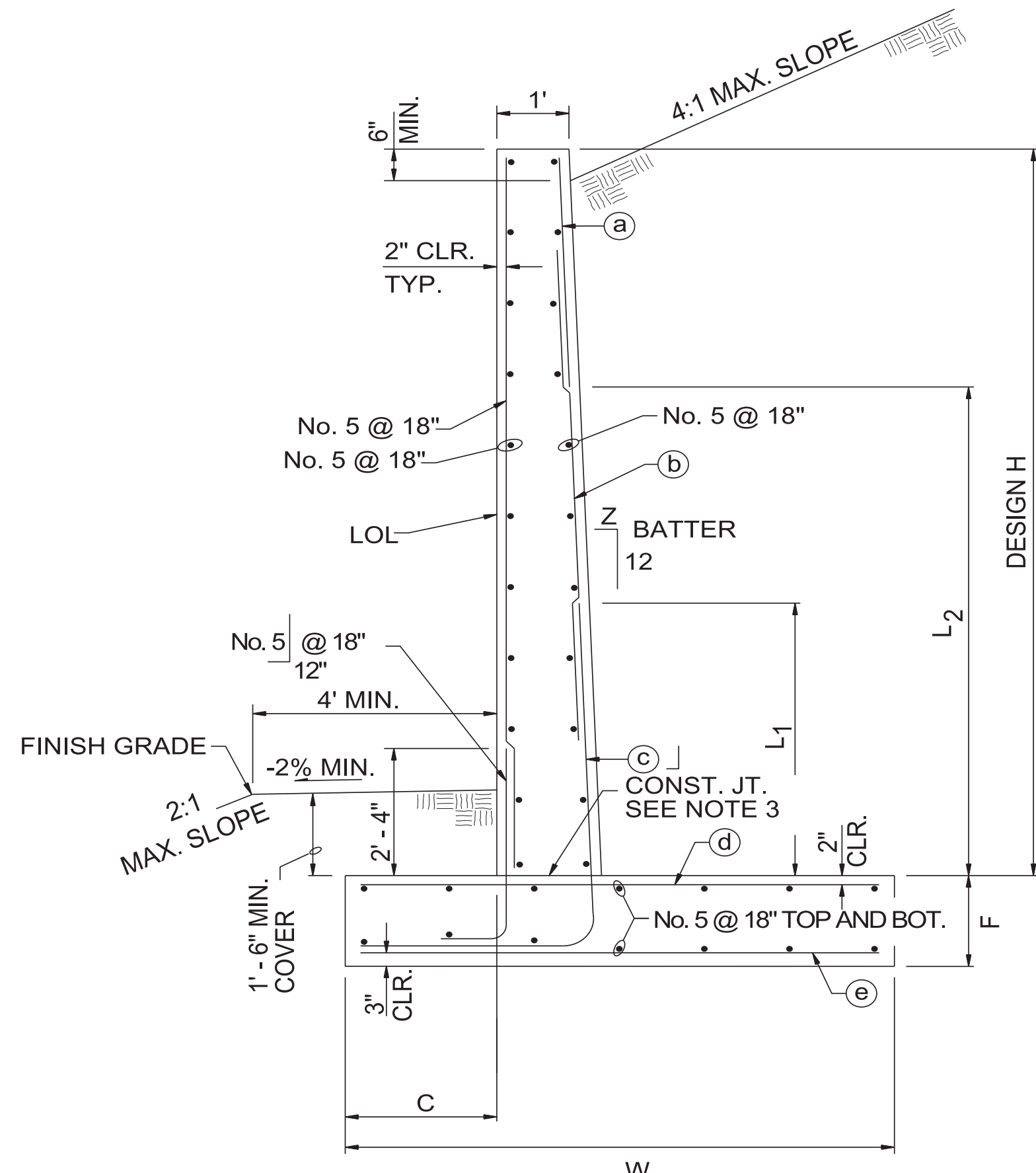
1. LOCATION OF PROPERTY BOUNDARIES, BUILDINGS, LANDSCAPING, ETC ARE APPROXIMATE. CONTRACTOR TO FIELD VERIFY ALL INFORMATION.

PLAN
SCALE: 1/2"=1'-0"

DOUGLAS COUNTY
COMMUNITY DEVELOPMENT
BUILDING DIVISION
BUILDER AND OWNER
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WITH ALL APPLICABLE CODES
ALL WORK SUBJECT TO FIELD
INSPECTION APPROVAL



REVISION 0-2023-03-23
FOR CONSTRUCTION
ISSUED: 2023-03-23



TYPICAL SECTION: TYPE 1A

NOTES:

- For additional notes see detail CW-4.
- For details not shown and drainage requirements see details CW-4 thru CW-6.
- Roughen construction joint surface to 1/4-inch amplitude.
- Geotechnical Engineer will verify maximum allowable bearing pressures for actual site soil conditions.

REINFORCED CONCRETE RETAINING WALL TYPES 1A, 1B AND 1C					
BACKFILL CONDITION	WALL TYPE REQUIRED FOR SEISMIC ACCELERATION				
	0.15G	0.25G	0.35G	0.40G	0.50G
LEVEL BACKFILL WITH SURCHARGE	1A	1A	1A	1A	1A
SLOPING BACKFILL WITHOUT SURCHARGE					
SLOPE ≤ 4:1	1A	1B	1B	1B	1B
4:1 SLOPE ≤ 3:1	1B	1B	1B	1B	*
3:1 SLOPE ≤ 2:1	1C	*	*	*	*

* SPECIAL DESIGN REQUIRED

23

		TYPE 1A - REINFORCED CONCRETE RETAINING WALL TABLE OF DIMENSIONS AND REINFORCING STEEL															
LAYOUT AND REINFORCEMENT DATA	DESIGN H	4'	6'	8'	10'	12'	14'	16'	18'	20'	22'	24'	26'	28'	30'		
	W	3' - 5"	4' - 10"	6' - 2"	7' - 8"	9'	10' - 4"	11' - 7"	12' - 11"	14' - 8"	16' - 4"	18' - 1"	19' - 9"	21' - 4"	22' - 11"		
	F	1'	1'	1'	1' - 4"	1' - 4"	1' - 4"	1' - 4"	1' - 6"	1' - 8"	2'	2' - 4"	2' - 9"	3' - 3"	3' - 9"		
	C	1'	1' - 3"	1' - 6"	1' - 9"	2' - 1"	2' - 5"	2' - 10"	3' - 3"	3' - 9"	4' - 3"	4' - 10"	5' - 5"	6'	6' - 7"		
	BATTER, Z	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	5/8	5/8	3/4	3/4	7/8		
	(a) BARS	-	-	-	-	-	-	-	-	-	No. 5 @ 18"	No. 5 @ 18"	No. 5 @ 12"	No. 5 @ 12"	No. 5 @ 12"	No. 5 @ 12"	
	(b) BARS	-	-	-	-	-	No. 5 @ 12"	No. 5 @ 12"	No. 6 @ 12"	No. 5 @ 6"	No. 5 @ 6"	No. 5 @ 6"	No. 6 @ 6"	No. 6 @ 6"	No. 7 @ 6"	No. 7 @ 6"	
	(c) BARS	No. 5 @ 12"	No. 5 @ 12"	No. 5 @ 12"	No. 5 @ 12"	No. 5 @ 6"	No. 5 @ 6"	No. 6 @ 6"	No. 7 @ 6"	No. 7 @ 6"	No. 8 @ 6"	No. 9 @ 6"	No. 9 @ 6"	No. 10 @ 6"	No. 10 @ 6"	No. 11 @ 6"	No. 11 @ 6"
	(d) BARS	No. 5 @ 12"	No. 5 @ 12"	No. 5 @ 12"	No. 5 @ 6"	No. 5 @ 6"	No. 5 @ 6"	No. 6 @ 6"	No. 7 @ 6"	No. 7 @ 6"	No. 8 @ 6"	No. 9 @ 6"	No. 9 @ 6"	No. 9 @ 6"	No. 9 @ 6"	No. 9 @ 6"	No. 9 @ 6"
	(e) BARS	No. 5 @ 12"	No. 5 @ 12"	No. 5 @ 12"	No. 5 @ 12"	No. 5 @ 12"	No. 6 @ 12"	No. 5 @ 6"	No. 5 @ 6"	No. 5 @ 6"	No. 5 @ 6"	No. 5 @ 6"	No. 5 @ 6"	No. 6 @ 6"	No. 6 @ 6"	No. 6 @ 6"	No. 6 @ 6"
L1	-	-	-	-	5'	6'	6' - 6"	7'	7'	No. 7' - 6"	8'	8' - 6"	9'	9' - 6"	10'	10'	
L2	-	-	-	-	-	-	-	-	-	14'	15' - 6"	17'	18' - 6"	20'	22'	22'	
EST. QTY.	CONCRETE FT. ³ /FT.	7.8	11.6	15.5	22.4	27.0	31.9	36.8	44.2	52.8	67.3	81.2	101.5	121.9	148.8	148.8	
	REINF. LBS./FT.	31	42	53	88	108	151	193	259	329	364	455	514	629	679	679	
MAX TOE PRESSURE (KSF)	LEVEL SLOPE WITH SURCH.	1.0	1.3	1.6	1.9	2.2	2.4	2.6	2.9	3.0	3.2	3.4	3.7	3.9	4.2	4.2	
	LEVEL SLOPE @ 0.15G	0.9	1.2	1.5	1.9	2.1	2.4	2.6	2.9	3.1	3.3	3.5	3.8	4.1	4.5	4.5	
	LEVEL SLOPE @ 0.25G	0.9	1.2	1.5	1.9	2.1	2.4	2.6	2.9	3.1	3.3	3.6	3.8	4.1	4.5	4.8	
	LEVEL SLOPE @ 0.35G	1.0	1.3	1.6	2.1	2.4	2.7	3.0	3.3	3.6	3.9	4.1	4.5	4.9	5.3	5.3	
	LEVEL SLOPE @ 0.40G	1.0	1.3	1.7	2.2	2.5	2.8	3.1	3.5	3.7	4.0	4.3	4.6	5.1	5.5	5.5	
	LEVEL SLOPE @ 0.50G	1.1	1.4	1.8	2.3	2.7	3.0	3.4	3.8	4.0	4.4	4.7	5.1	5.5	6.0	6.0	
	SLOPE ≤ 4:1	0.7	1.1	1.4	1.8	2.1	2.4	2.7	3.0	3.2	3.6	3.8	4.1	4.5	4.9	4.9	
SLOPE ≤ 4:1 @ 0.15G	0.8	1.2	1.6	2.1	2.5	2.8	3.2	3.6	3.9	4.2	4.6	4.9	5.4	5.8	5.8		

STANDARD BAR LAPS		
BAR No.	UNCOATED	EPOXIED
4	20"	24"
5	26"	30"
6	31"	36"
7	39"	45"
8	51"	60"
9	64"	78"
10	82"	98"
11	100"	120"

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NEVADA DEPARTMENT
OF TRANSPORTATION

CHIEF BRIDGE ENGR.
SIGNED ORIGINAL ON FILE

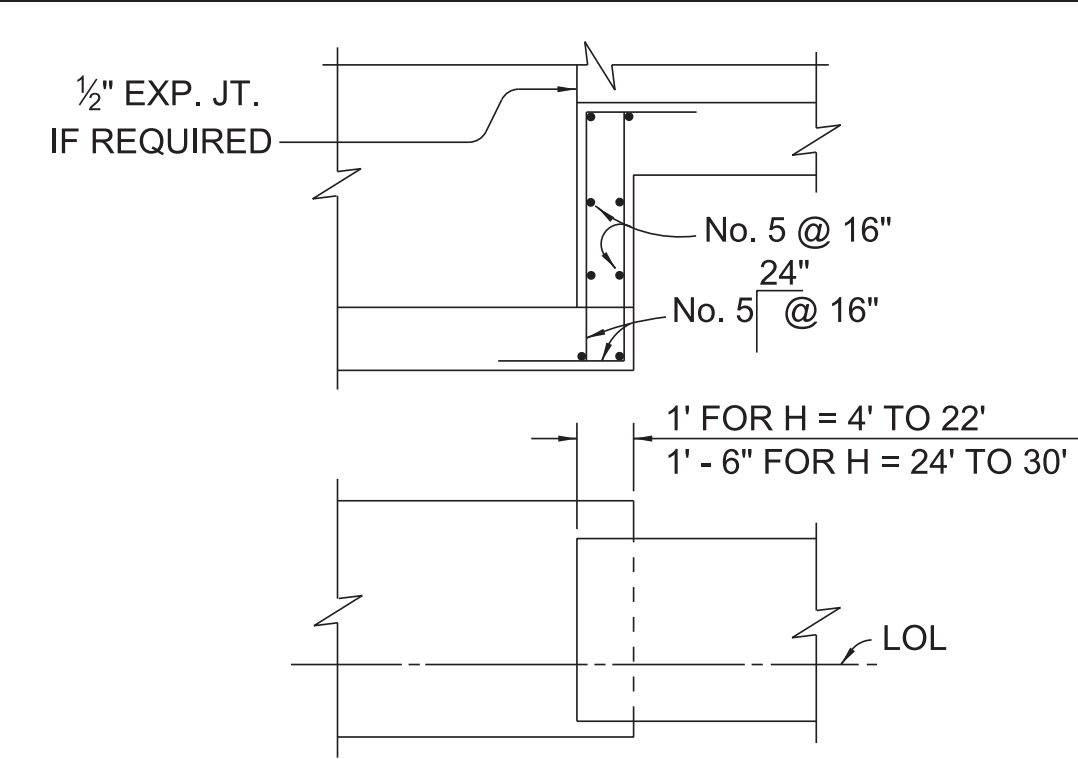
ADOPTED
12/2002

REVISED
10/2015

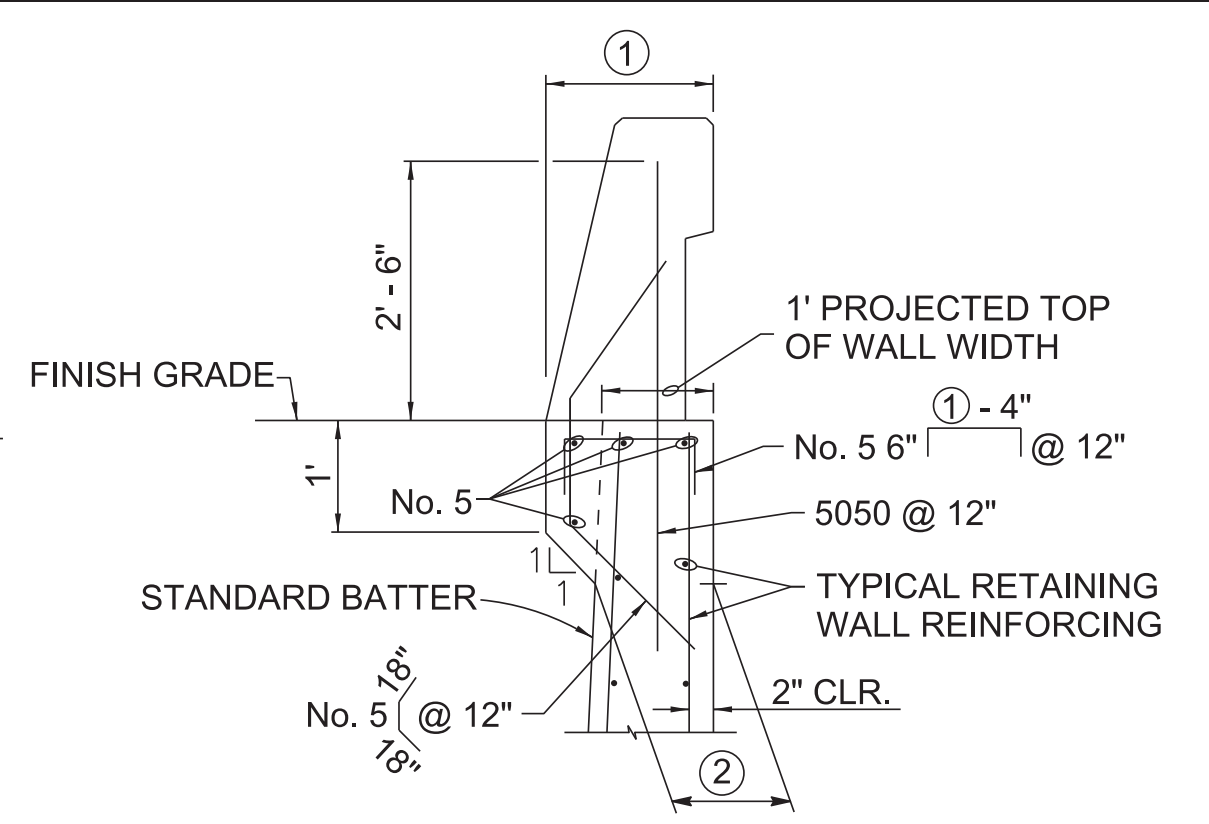
CANTILEVER CONCRETE
RETAINING WALL TYPE 1A

SPEC. #
502

DETAIL
NUMBER
CW-1

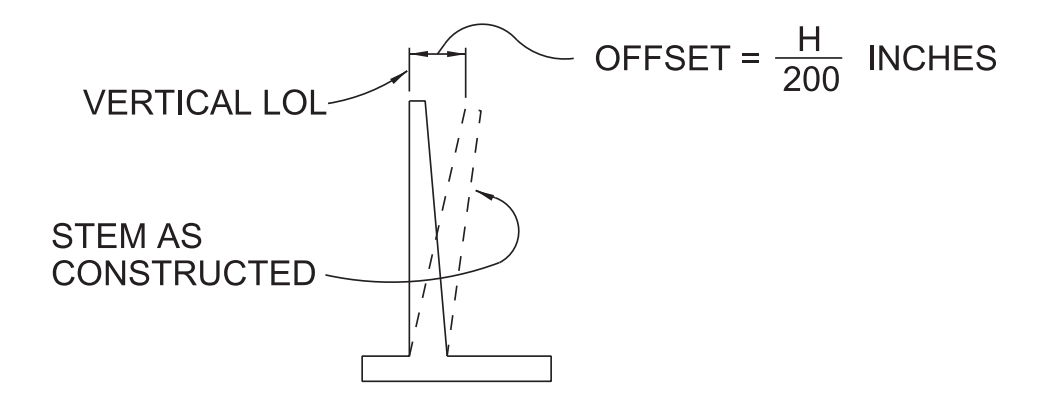


FOOTING STEP



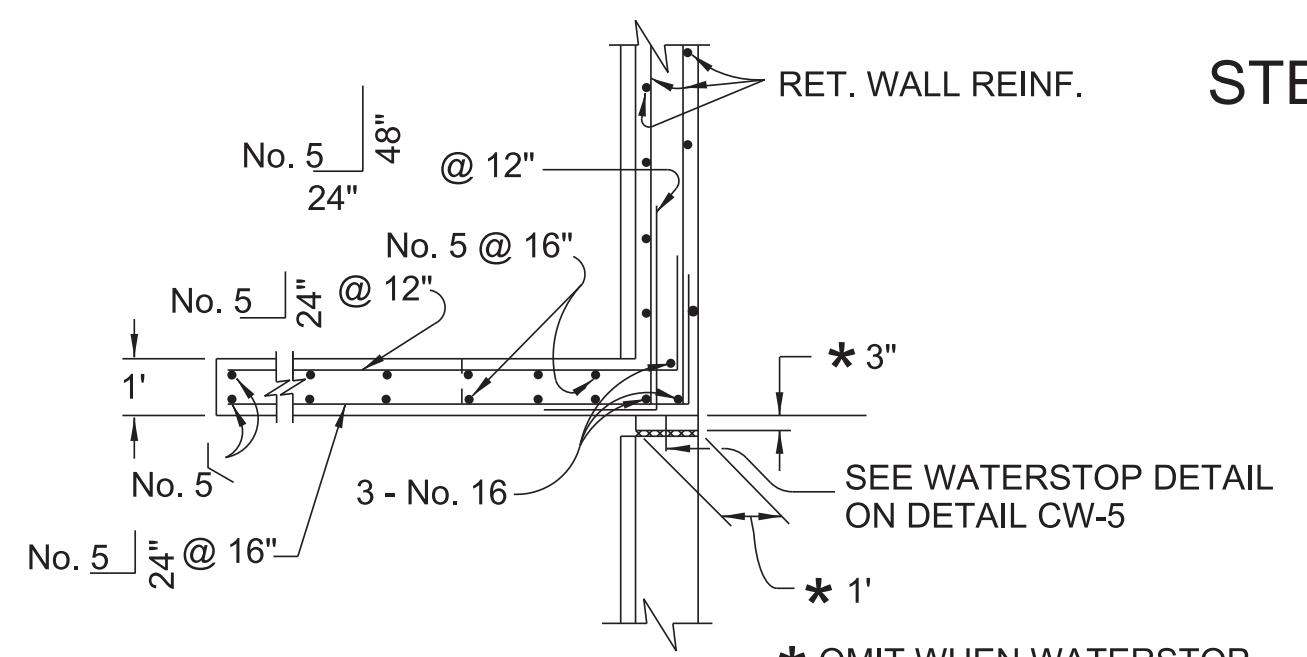
DIMENSION ①, BARRIER RAIL WIDTH, TO BE AS SHOWN IN THE PROJECT PLANS. STEM WIDTH ② AT BASE OF HAUNCH TO BE DETERMINED AS SHOWN.

STEM HAUNCH FOR BARRIER RAIL



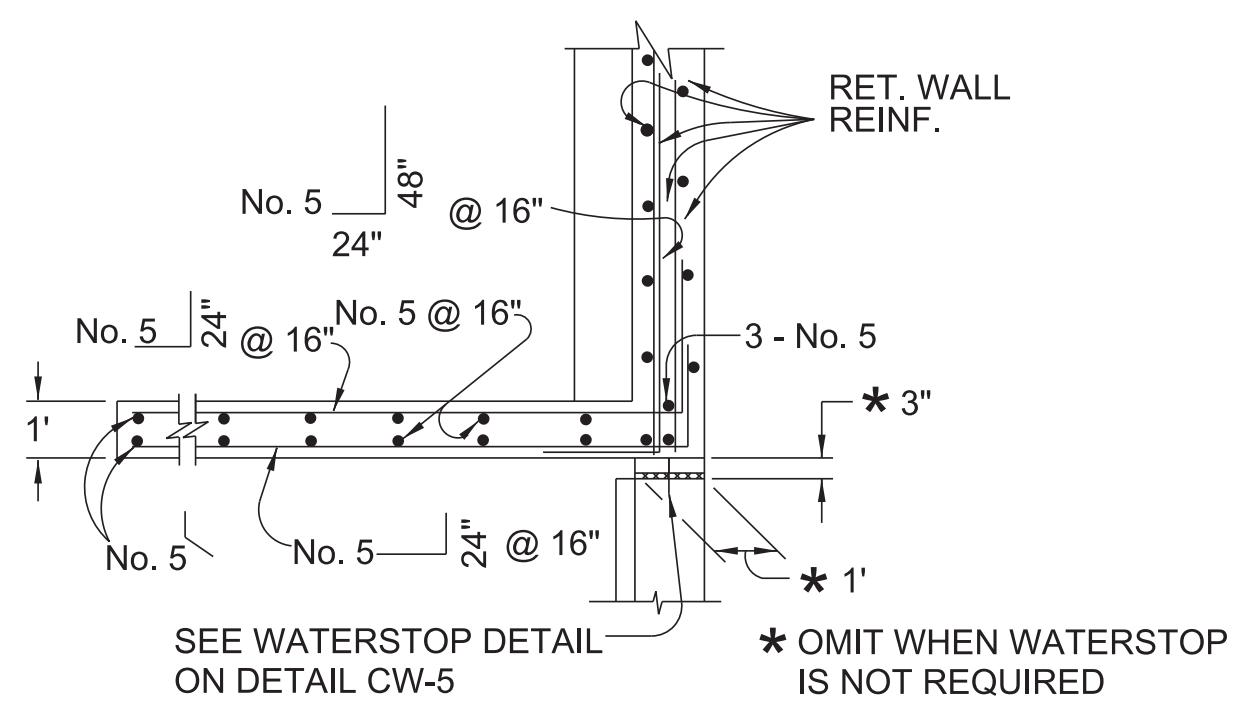
VALUES FOR OFFSETTING FORMS TO BE DETERMINED BY THE ENGINEER

APPROXIMATE WALL OFFSET VALUES



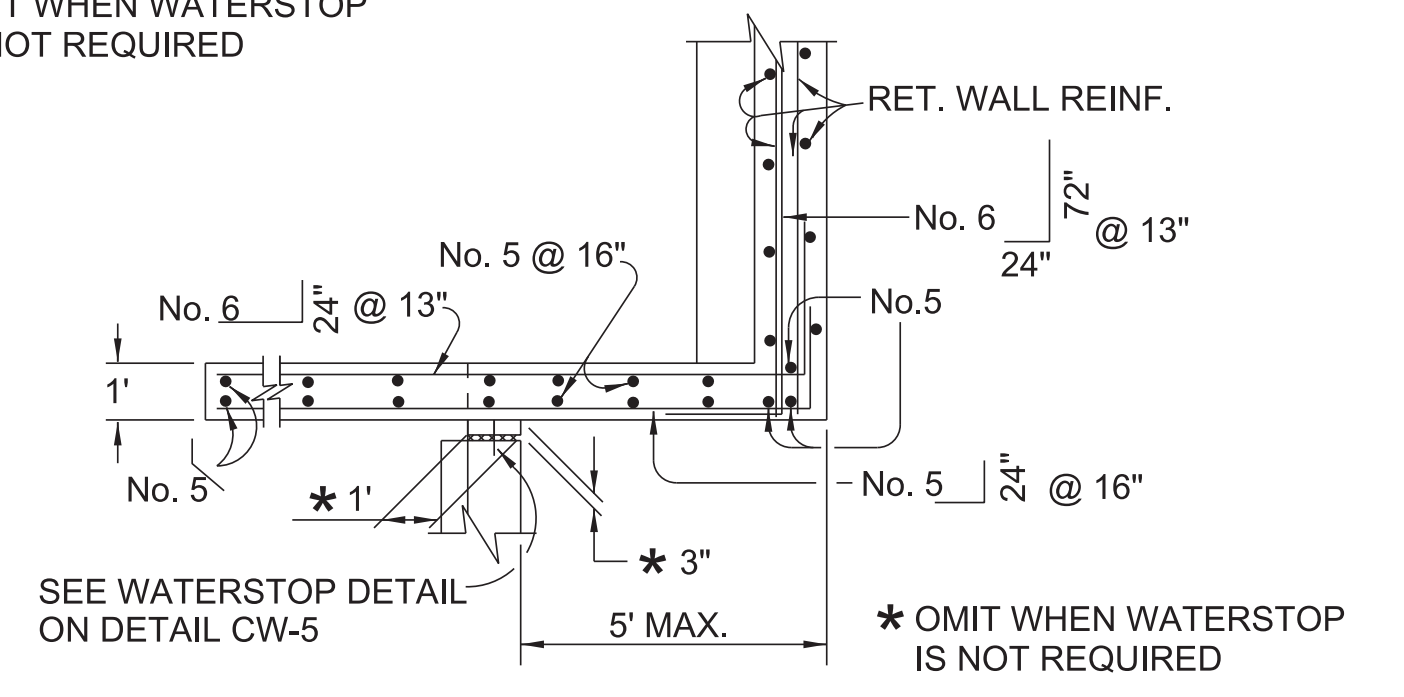
* OMIT WHEN WATERSTOP IS NOT REQUIRED

PLAN RETURN WALL TYPE A



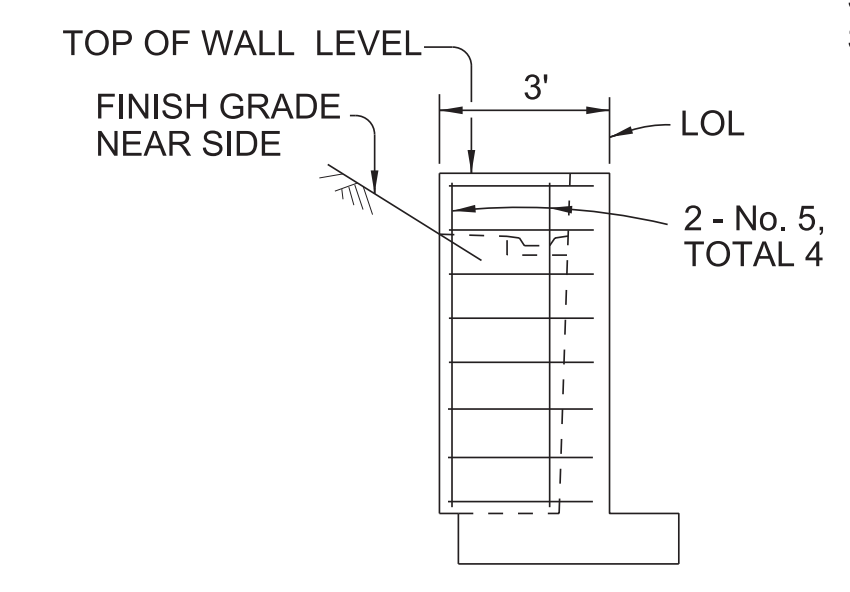
* OMIT WHEN WATERSTOP IS NOT REQUIRED

PLAN RETURN WALL TYPE C



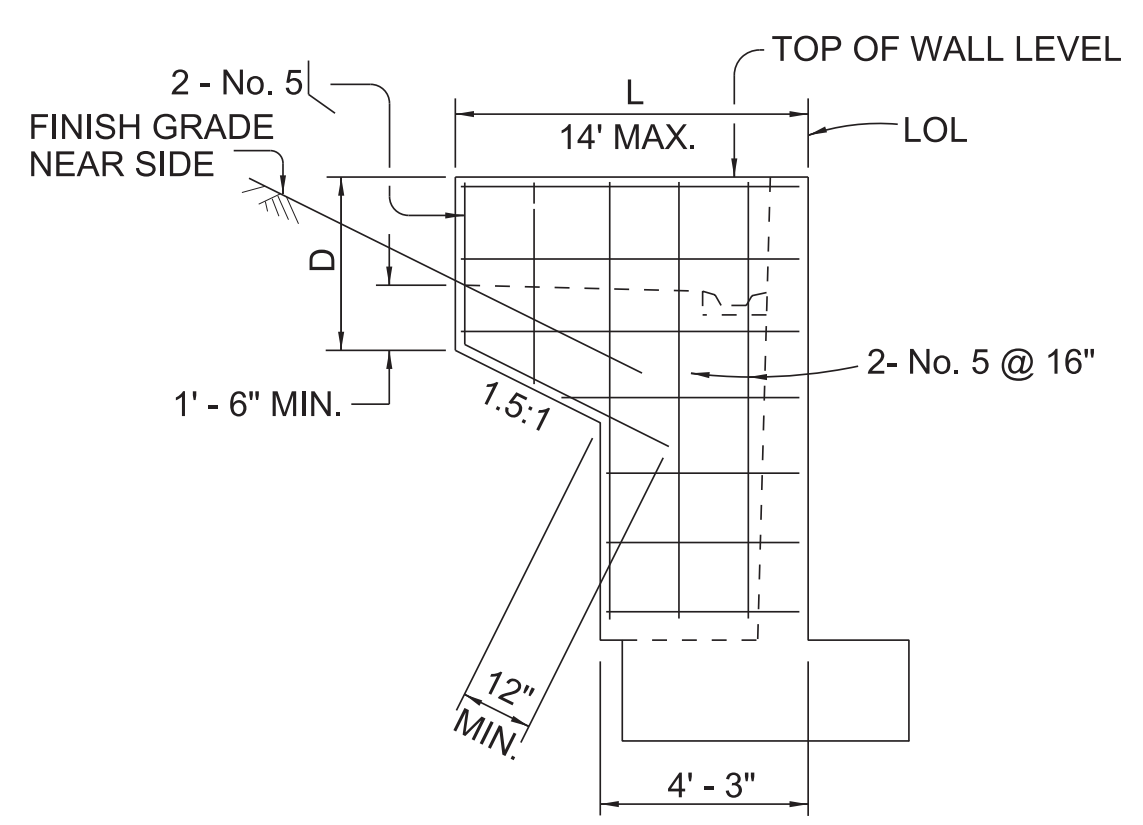
* OMIT WHEN WATERSTOP IS NOT REQUIRED

PLAN RETURN WALL TYPE B



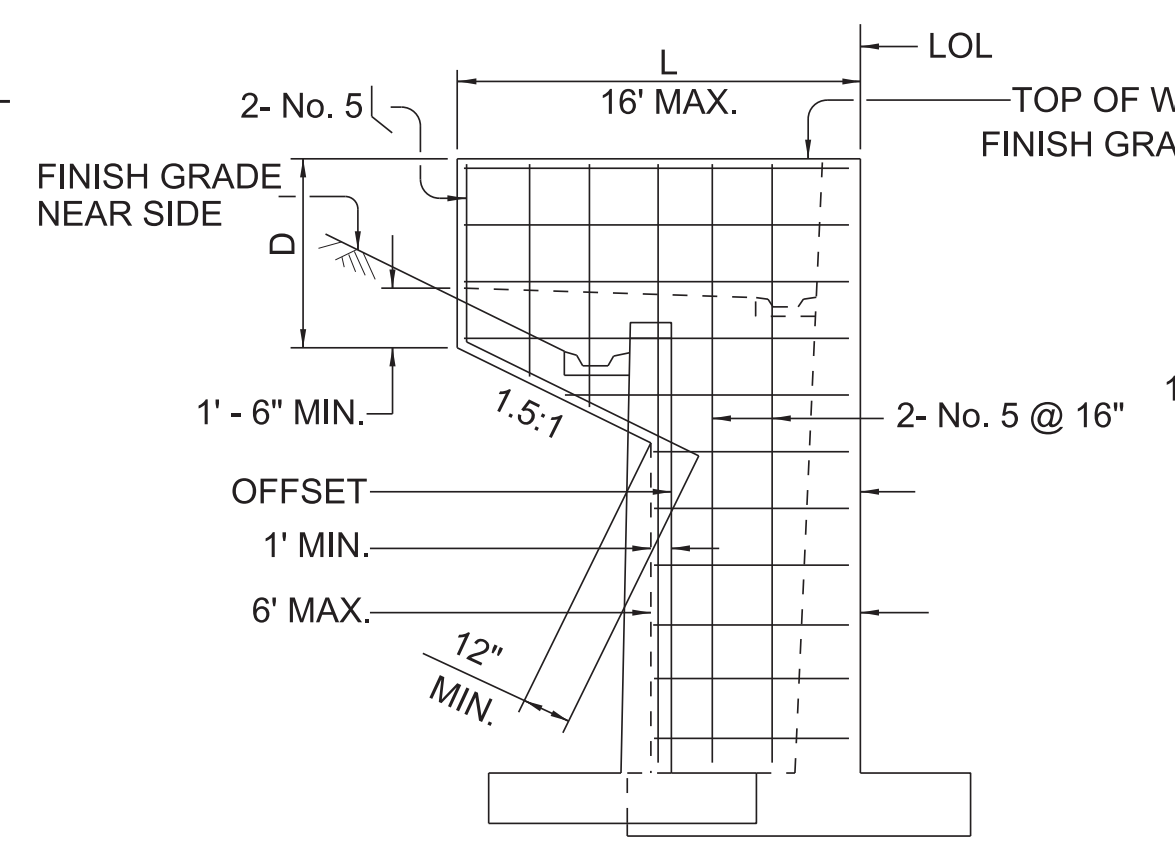
USE WHERE H = 6' OR LESS

ELEVATION RETURN WALL TYPE D



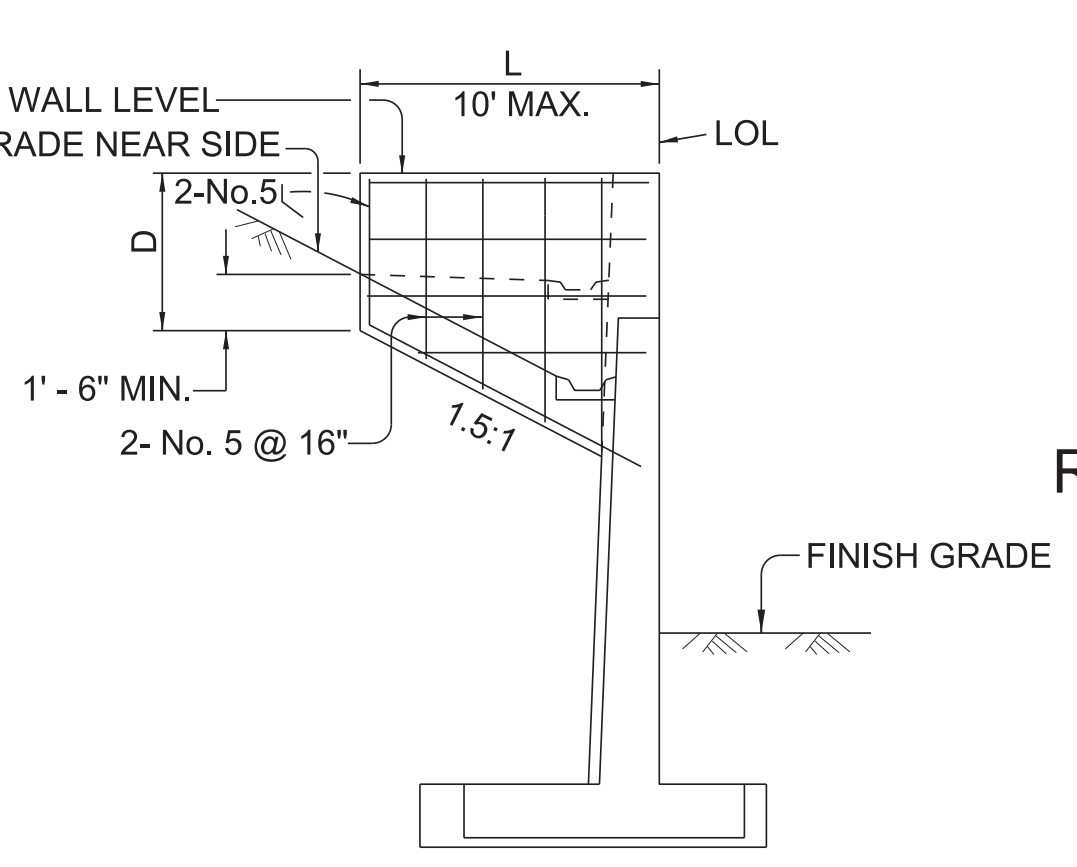
USE WHERE H = 8' OR LESS

ELEVATION RETURN WALL TYPE A



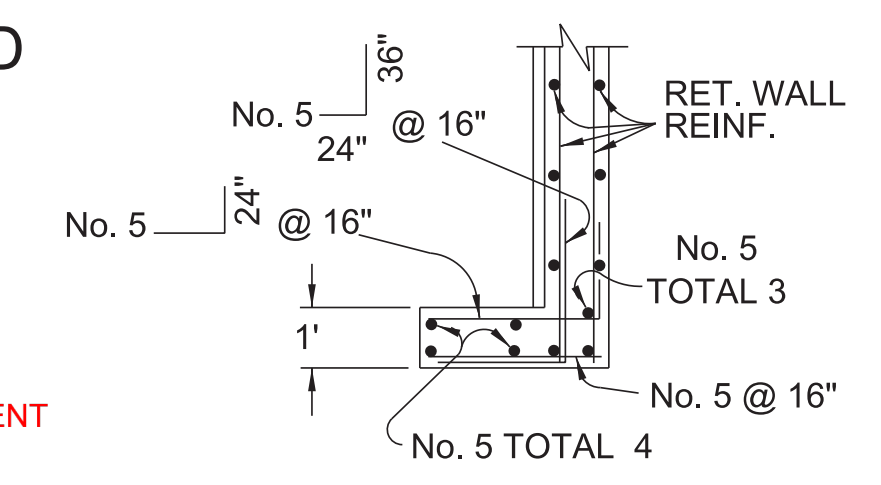
USE WHERE H = 10' OR MORE ON OFFSET WALLS

ELEVATION RETURN WALL TYPE B



USE WHERE H = 10' OR MORE ON STRAIGHT WALLS

ELEVATION RETURN WALL TYPE C



PLAN RETURN WALL TYPE D

NOTES:

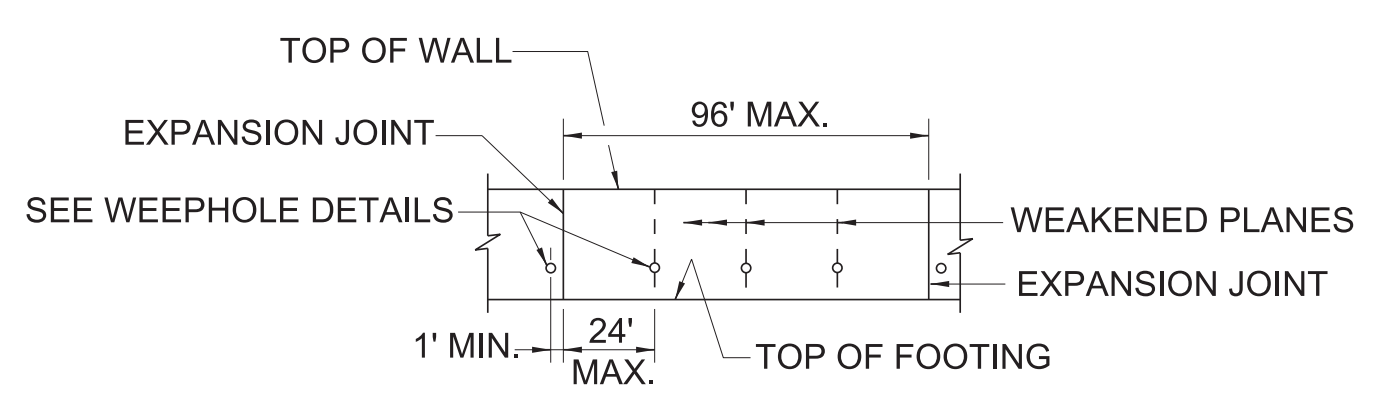
- Design Specifications: AASHTO LRFD Bridge Design Specifications, 6th Edition 2012.
- Loading: Live load surcharge pressure equal to 2-feet of earth.

Seismic Acceleration = 0.15g, 0.25g, 0.35g, 0.40g and 0.50g, where 1/2 the peak ground acceleration is used in the design.
- Concrete: All concrete shall be class A or AA modified, major, with F'c = 4 ksi at 28 days.
- Reinforcing Steel: All reinforcing steel shall be ASTM A615 grade 60 or A706.
- Design Data: Cantilevered Walls are designed based on the following parameters.

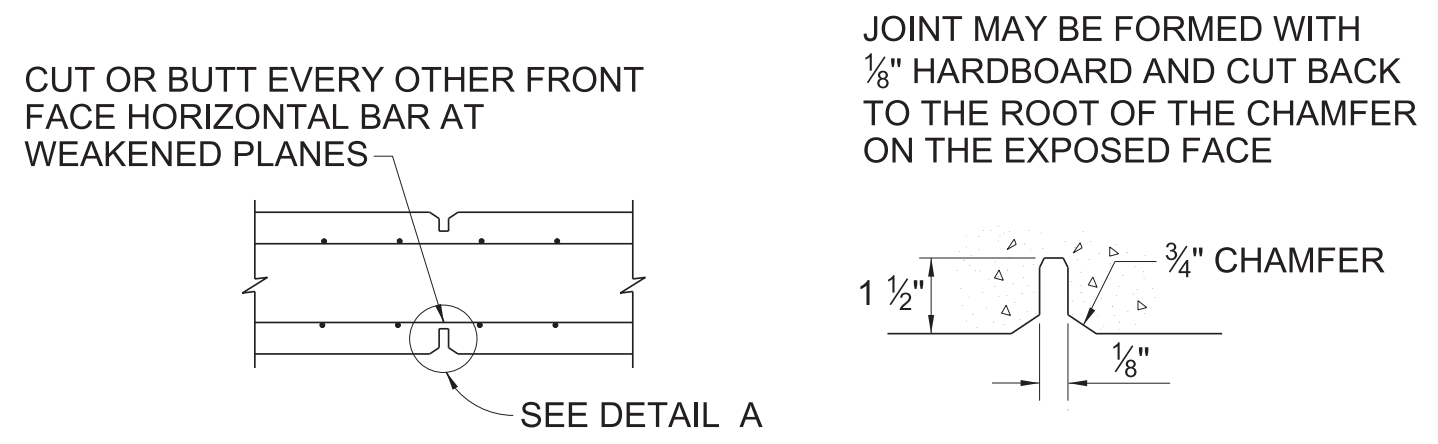
Soil Properties:
Internal Angle of Friction = 32°
Unit Weight = 0.120 kcf
Cohesion = 0.200 ksf
Equivalent Active Fluid Pressure = 0.036 kcf Level Backfill
Equivalent Active Fluid Pressure = 0.060 kcf 2H: 1V Backfill
Equivalent Active Fluid Pressure = Rankine Method, Sloping Backfill
Equivalent Passive Fluid Pressure = 0.360 kcf Top of Footing Down
Coefficient of Friction between Concrete Footing and Foundation Soil = 0.450
Static + Seismic Earth Pressure Coefficient: K_{ae}: Mononobe-Okabe Method, If can be determined. Otherwise, special design required.
- Footings Steps: Footing steps not required unless shown in plans. For dimension, D, see project plans.
- Return Walls: Return wall not required unless shown in plans. For dimension, D, see project plans.
- Drainage: Drainage system, gutter, drain, pipe, not required unless specified in the plans.
- Stability Factors, For check only:
Static Overturning = 2.0
Static Sliding = 1.5
Seismic Overturning = 1.5
Seismic Sliding = 1.1

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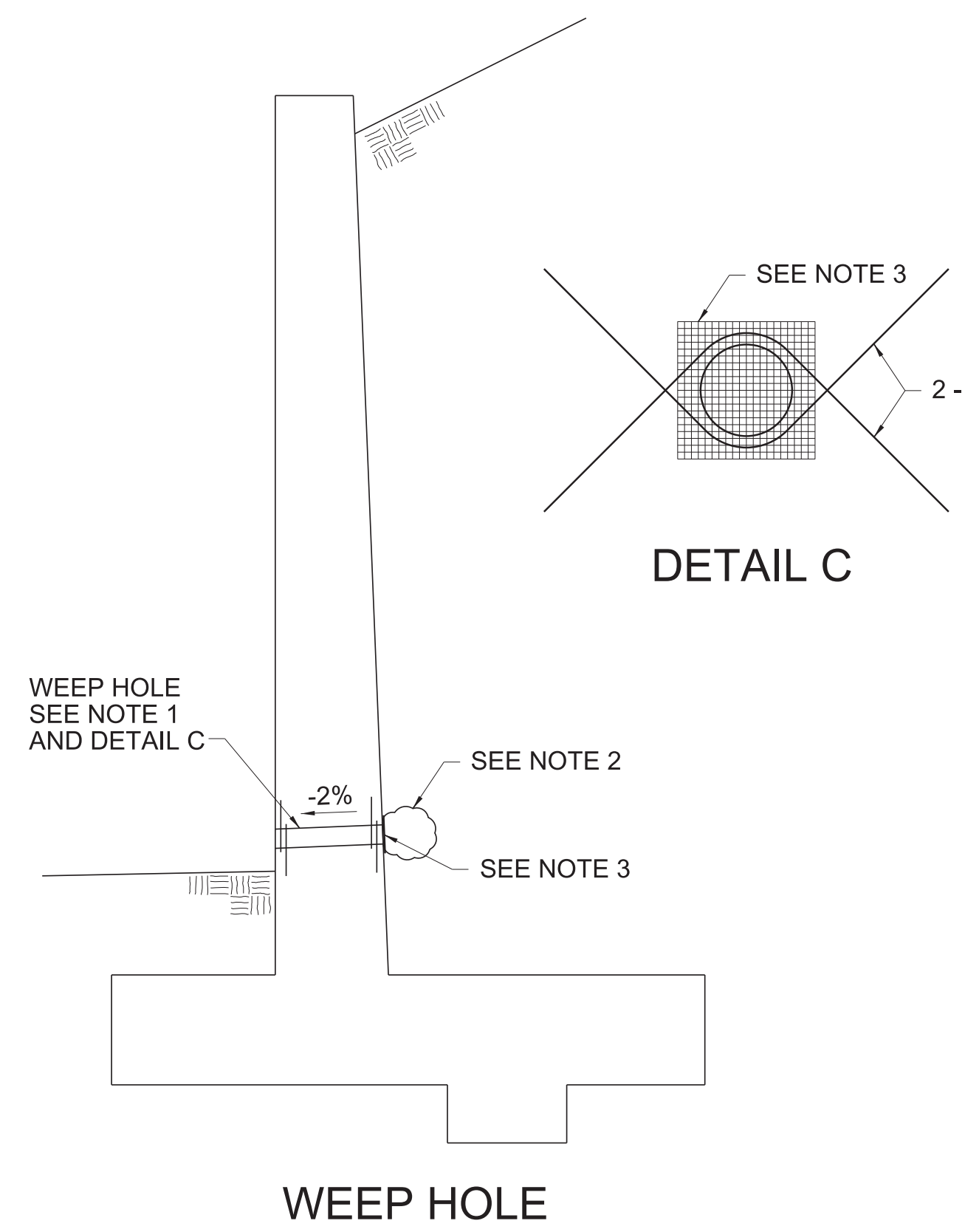
NEVADA DEPARTMENT OF TRANSPORTATION	CHIEF BRIDGE ENGR. SIGNED ORIGINAL ON FILE	ADOPTED 10/2002	REVISED 10/2015	CANTILEVER CONCRETE RETAINING WALL DETAILS NO. 1
SPEC. # 502				
DETAIL NUMBER CW-4				



WALL EXPANSION JOINTS AND WEAKENED PLANES



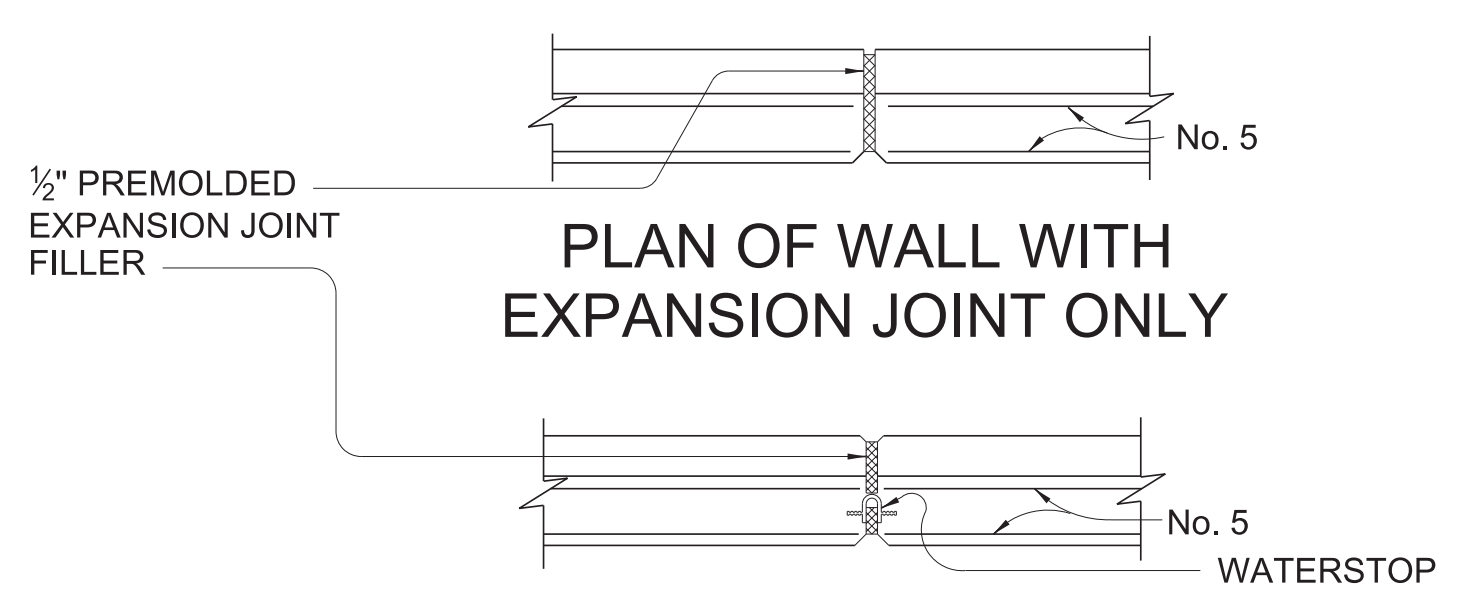
SECTION WEAKENED PLANES
DETAIL A



WEEP HOLE

WEEP HOLE NOTES:

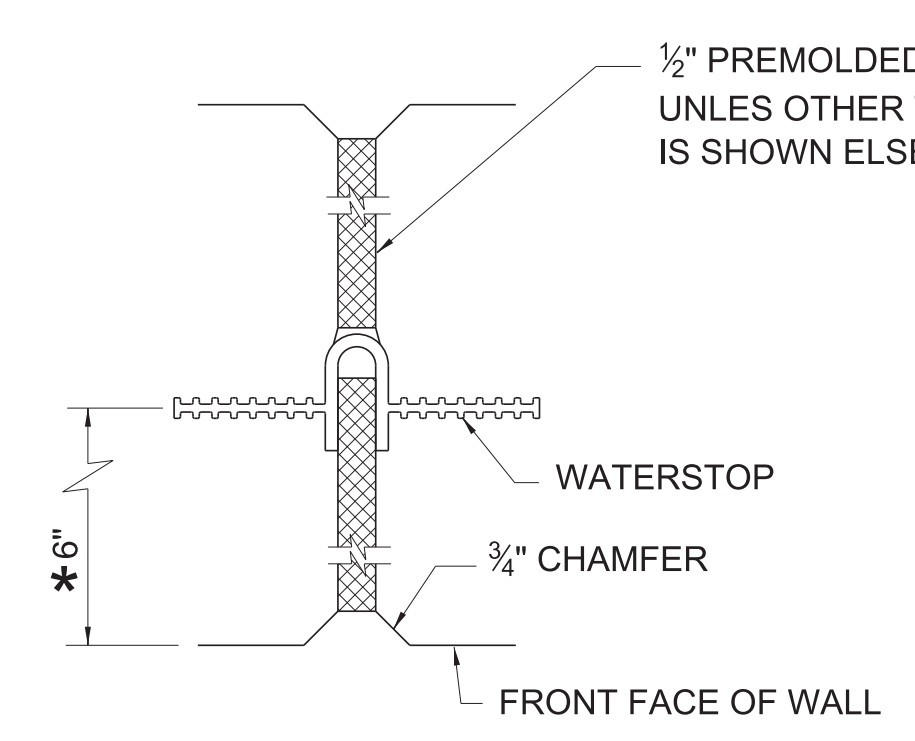
1. 4-inch dia. drains at 25-foot maximum center to center. Exposed drains shall be located 3-inches ± above finish grade.
2. 2-cubic feet of type 2 drain backfill encapsulated in a geotextile fabric securely tied. Geotextile shall meet the following:
 - A. Meet at least class 2 strength requirement per AASHTO M288 test method.
 - B. Have an AOS not greater than U.S. sieve No. 40.
 - C. Have a permittivity of at least 0.5 Sec.⁻¹
3. 6-inch square aluminum or galvanized steel wire mesh hardware cloth, 4 openings per inch and minimum wire diameter 0.03-inches.



PLAN OF WALL WITH EXPANSION JOINT ONLY

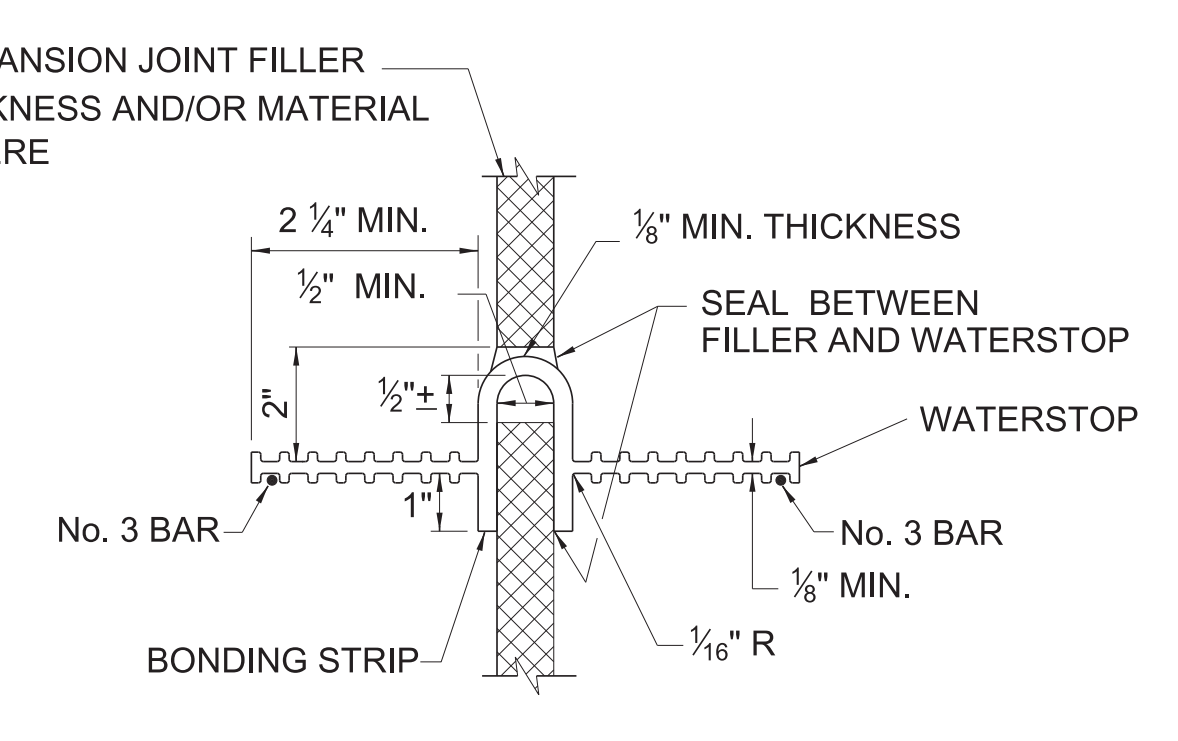


PLAN OF WALL WITH EXPANSION JOINT AND WATERSTOP



WALL EXPANSION JOINT WITH WATERSTOP

* FOR WALL THICKNESS LESS THAN 12", USE 1/2 THE WALL THICKNESS



WATERSTOP

WATERSTOP NOTES:

1. Holes will be permitted in the outer 1/2-inch of the web for wire, rings, etc. tie web to No. 3 reinforcing bars @ 16-inch maximum intervals to support the waterstop in proper position during concrete placement. Alternative detail may be submitted for approval of the engineer.
2. Waterstop to have 5 or more pairs of raised ribs to provide 0.1-square inches minimum rib cross-section area on each half of the waterstop.

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OF TRANSPORTATION

CHIEF BRIDGE ENGR.
SIGNED ORIGINAL ON FILE

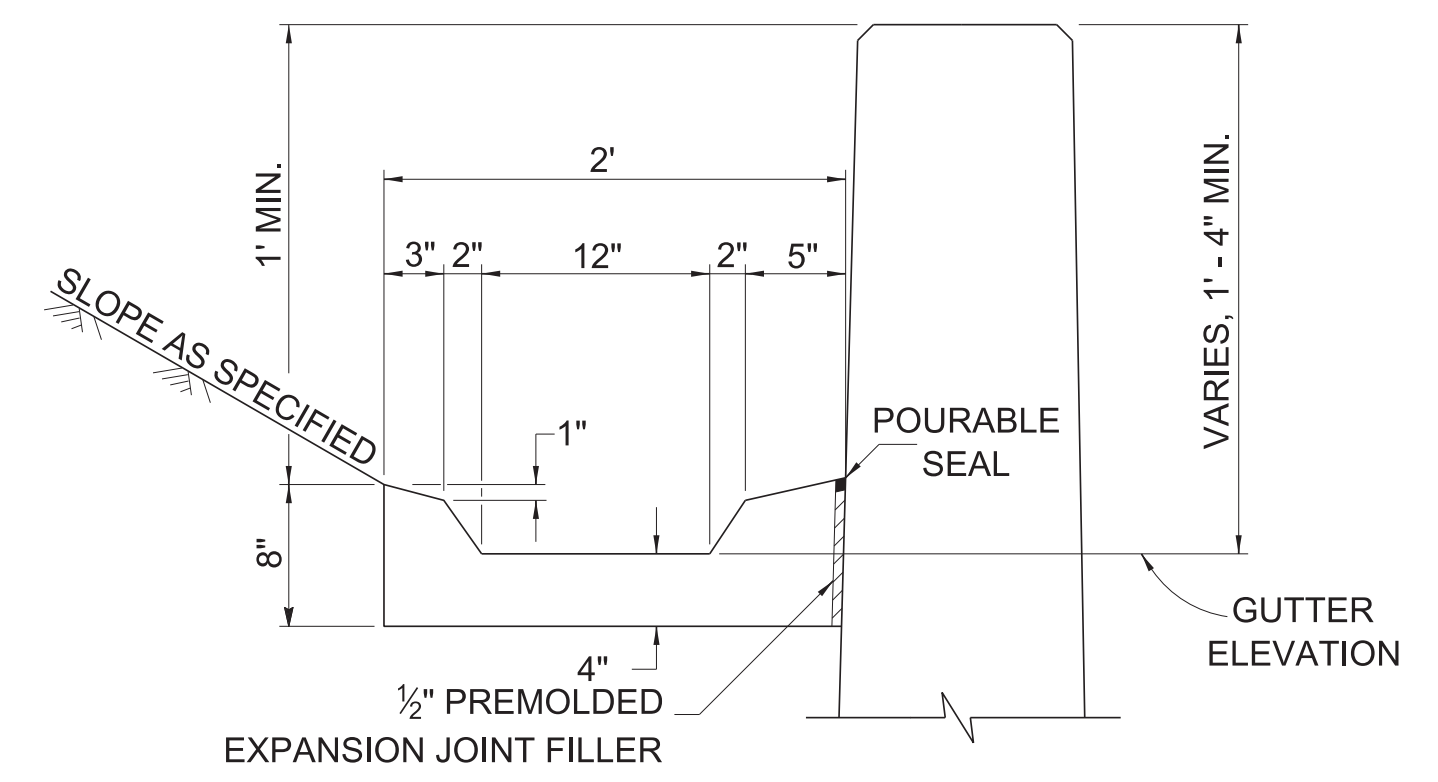
ADOPTED
10/2002

REVISED
6/2004

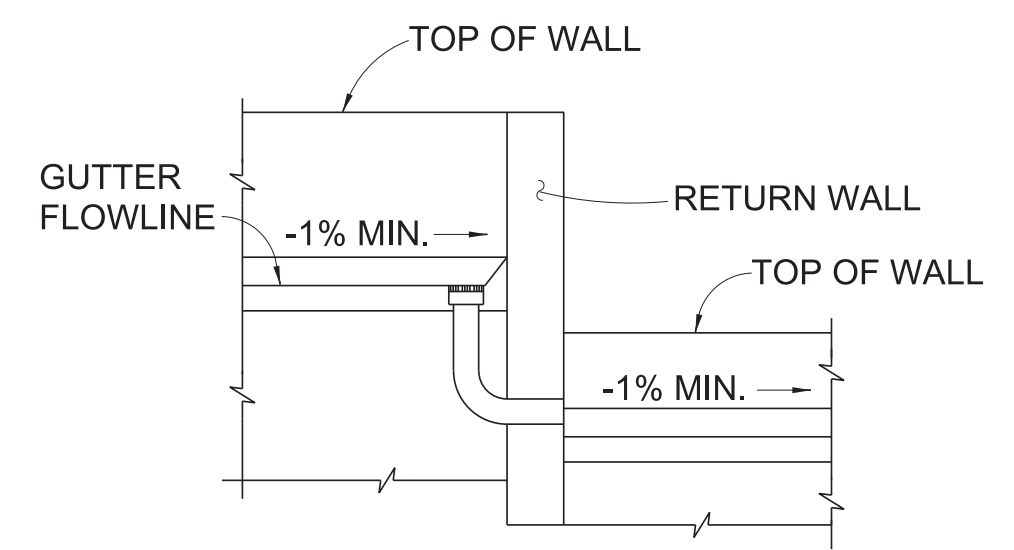
CANTILEVER CONCRETE
RETAINING WALL DETAILS NO. 2

SPEC. #
502

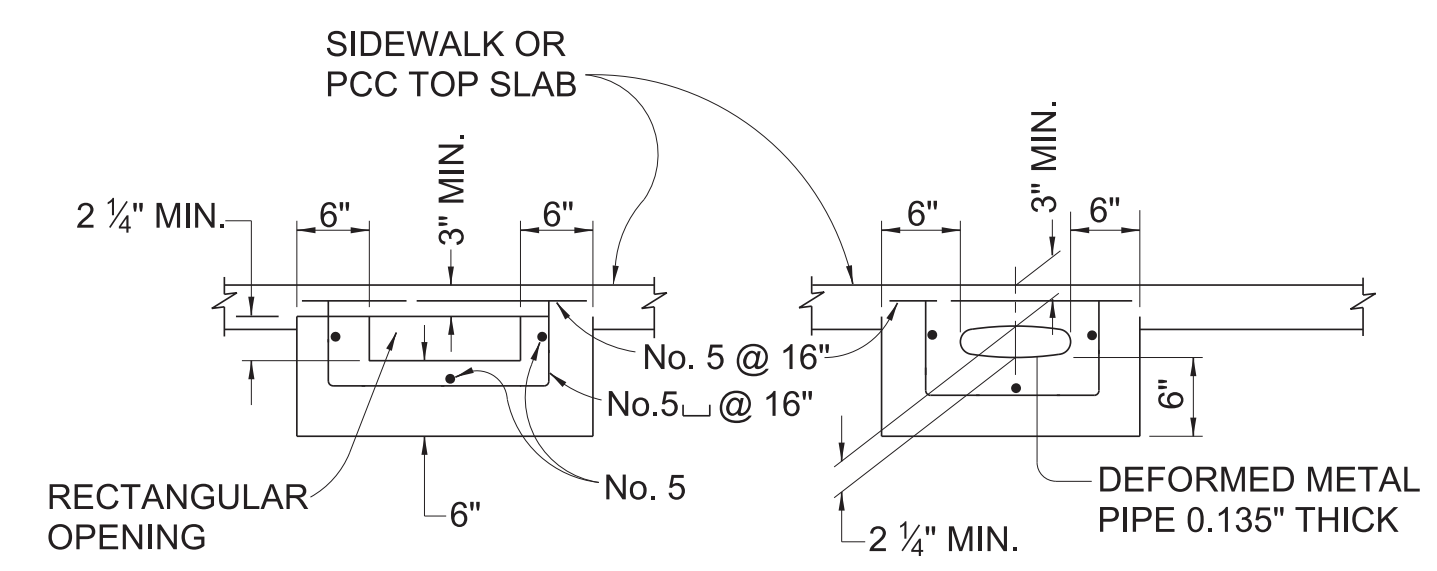
DETAIL
NUMBER
CW-5



TYPICAL GUTTER DETAIL

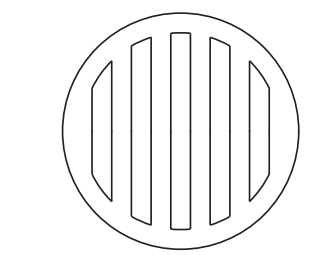


SECTION A-A

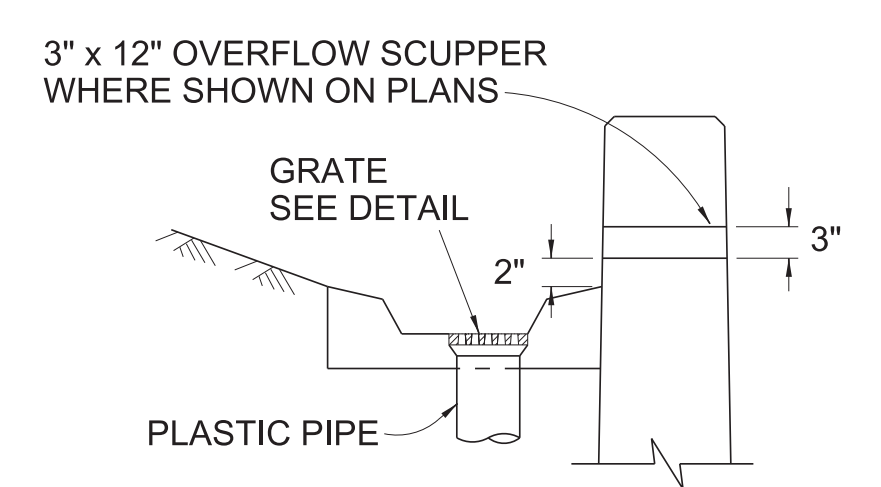


AREA OF OPENING TO BE NOT LESS THAN THAT OF PIPE FROM WALL GUTTER. MAKE OPENING TRANSITION IN WALL. EDGE OPENING IN CURB FACE TO 3/4" MINIMUM RADIUS.

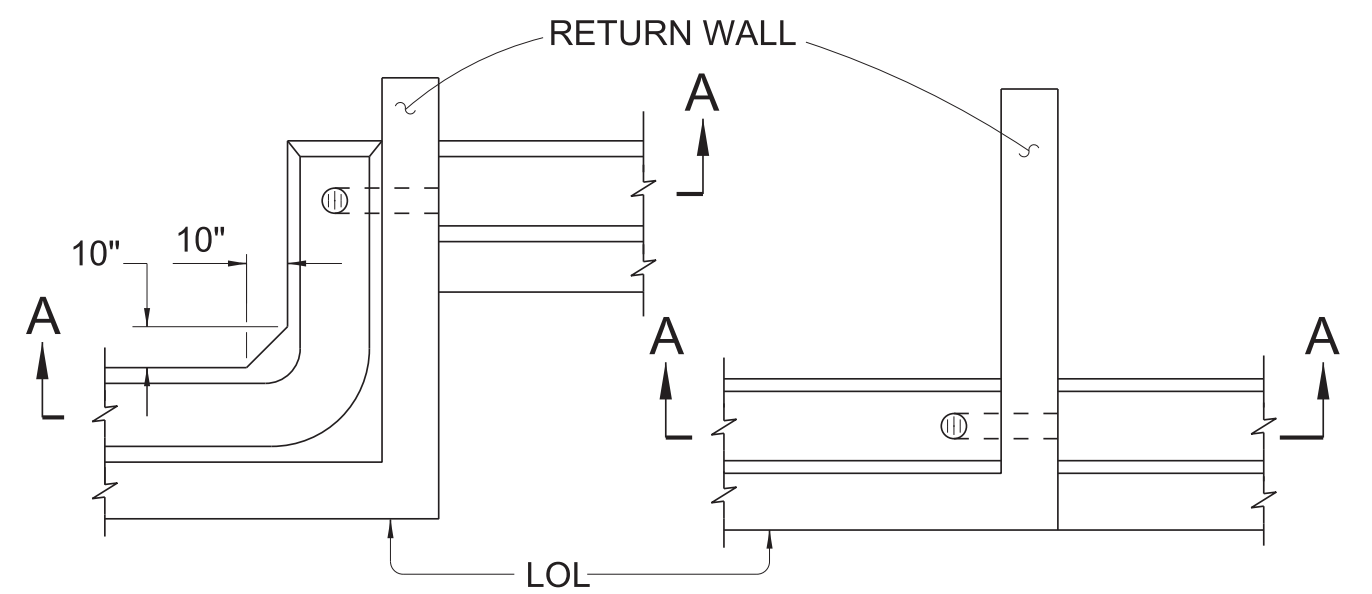
OUTLET DETAIL - SECTION B-B



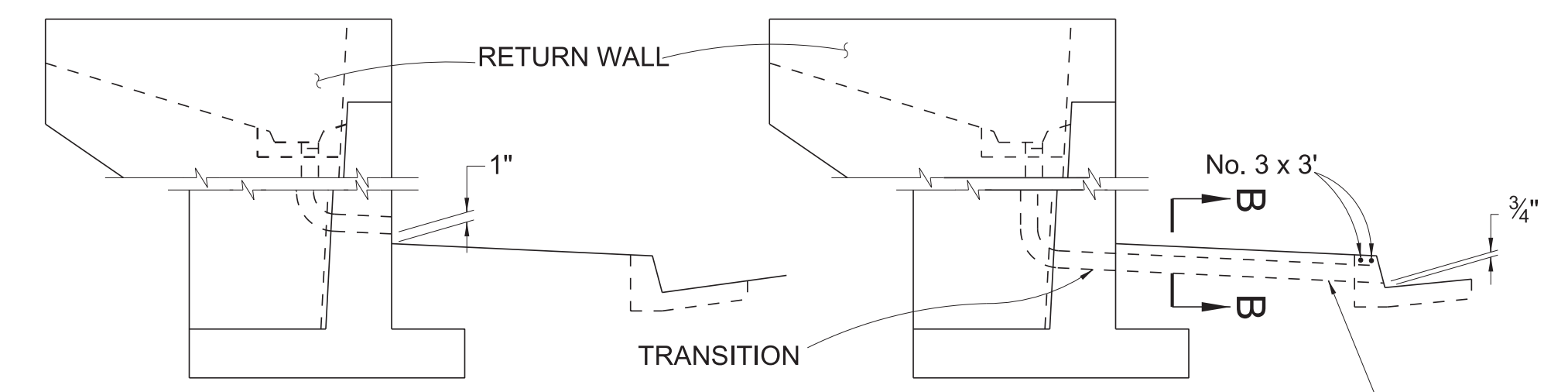
SIZES TO FIT STANDARD HUBS
GRATE DETAIL



WALL DRAIN DETAIL



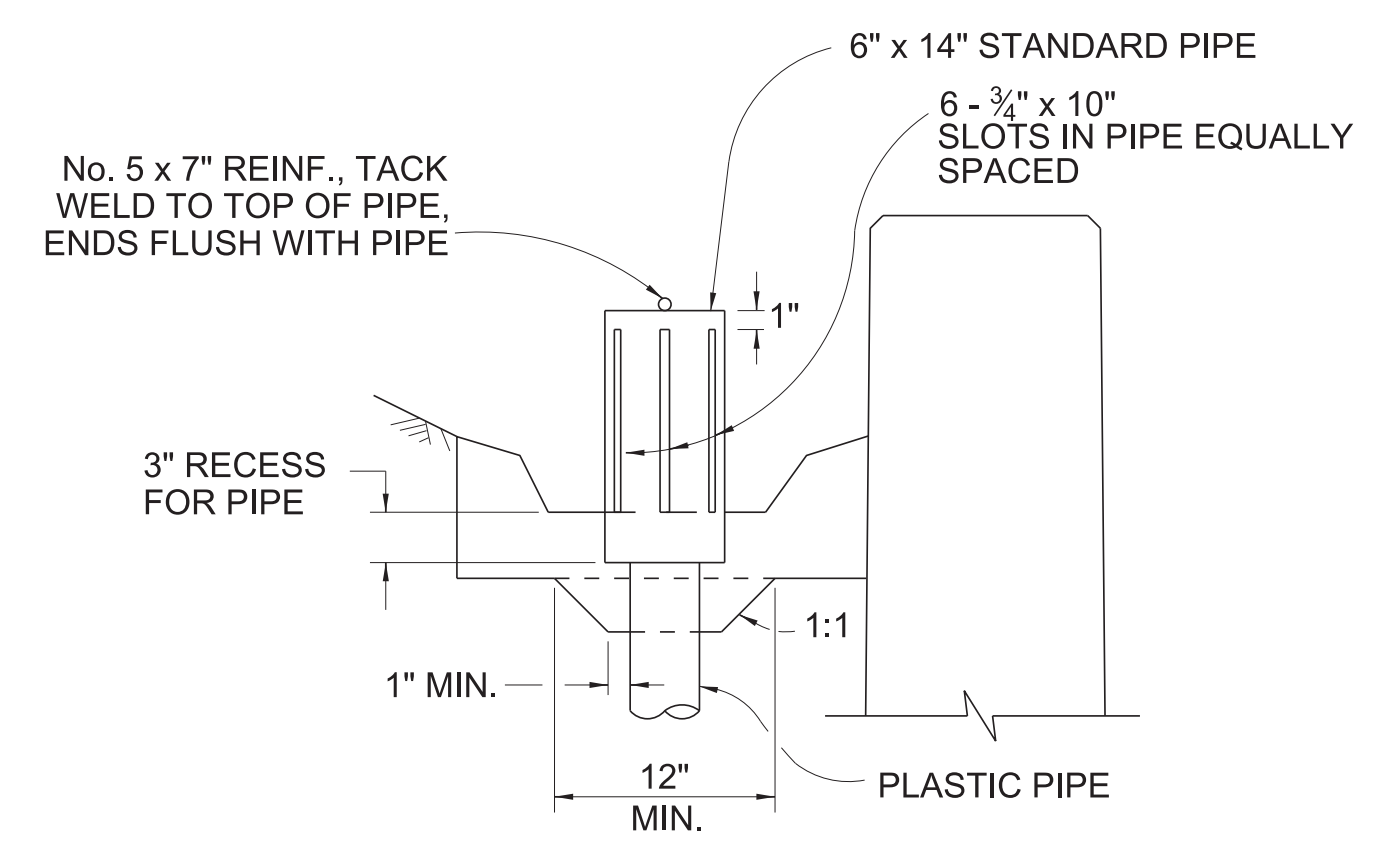
PLAN-OFFSET WALL DRAIN THROUGH RETURN WALL
PLAN-CONTINUOUS WALL DRAIN THROUGH RETURN WALL



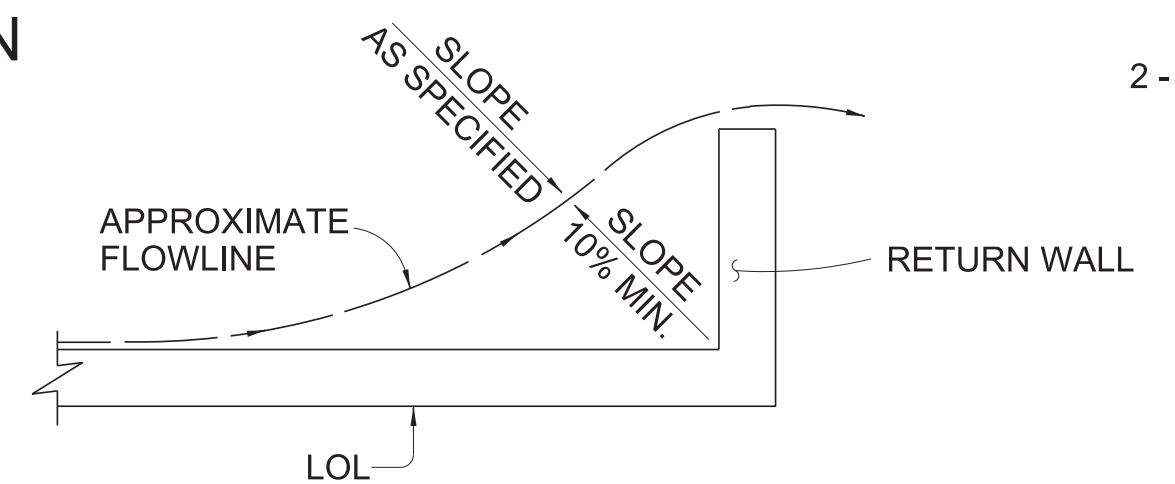
RETAINING WALL FACE OF WALL OUTLET

RETAINING WALL GUTTER OUTLET

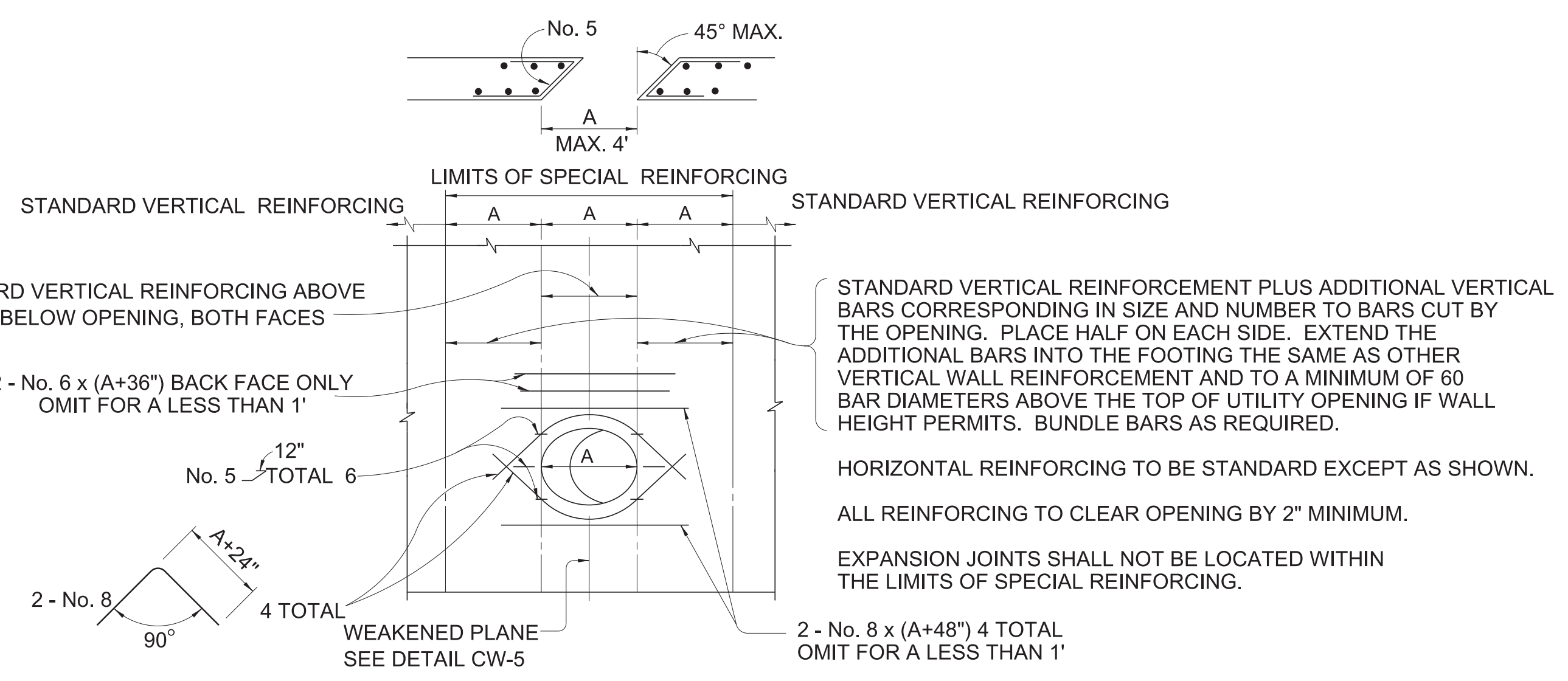
4" PLASTIC PIPE WHEN WALL DRAIN IS 4" OR LESS. FOR LARGER PIPE SEE OUTLET DETAIL



ALTERNATIVE WALL DRAIN WITH PIPE DOME



WALL DRAINAGE WHERE GUTTER NOT REQUIRED



RETAINING WALL UTILITY OPENING

STANDARD VERTICAL REINFORCEMENT PLUS ADDITIONAL VERTICAL BARS CORRESPONDING IN SIZE AND NUMBER TO BARS CUT BY THE OPENING. PLACE HALF ON EACH SIDE. EXTEND THE ADDITIONAL BARS INTO THE FOOTING THE SAME AS OTHER VERTICAL WALL REINFORCEMENT AND TO A MINIMUM OF 60 BAR DIAMETERS ABOVE THE TOP OF UTILITY OPENING IF WALL HEIGHT PERMITS. BUNDLE BARS AS REQUIRED.

HORIZONTAL REINFORCING TO BE STANDARD EXCEPT AS SHOWN.

ALL REINFORCING TO CLEAR OPENING BY 2" MINIMUM.

EXPANSION JOINTS SHALL NOT BE LOCATED WITHIN THE LIMITS OF SPECIAL REINFORCING.

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NEVADA DEPARTMENT OF TRANSPORTATION

CHIEF BRIDGE ENGR. SIGNED ORIGINAL ON FILE

ADOPTED 12/2002

REVISED

CANTILEVER CONCRETE RETAINING WALL DETAILS NO. 3

SPEC. # 502

DETAIL NUMBER

CW-6