

STENNIS RIVERINE

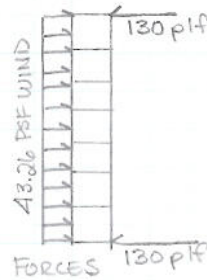
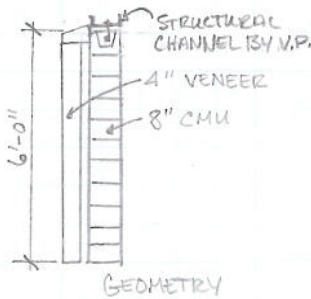
DESIGN OF REINFORCED CMU NON LOADBEARING WALL FOR FLEXURE BLDG 2A42 ALL EXTERIOR MASONRY WALLS

MATERIALS:

UNIT STRENGTH	2,150 psi
MORTAR	TYPE N
f'_m	1,500 psi
E_m	1.9×10^6 psi
n (modular ratio)	15.26
REINFORCEMENT	GRADE 60

LOADING:

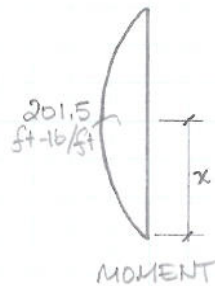
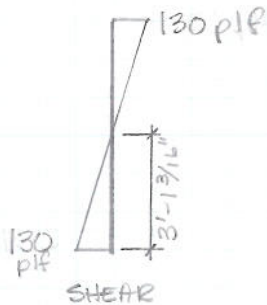
WIND 130 MPH = 43.26 psf
NEGLECT SELF WEIGHT



REACTIONS:

$$R_r = \text{REACTION @ WIND BEAM} = \frac{(43.3 \text{ psf} \cdot (6 \text{ ft})^2)}{2} = 129.9 \text{ plf}$$

$$R_f = \text{REACTION @ SLAB} = \frac{(43.3 \text{ psf} \cdot (6 \text{ ft})^2)}{2} = 129.9 \text{ plf}$$



$$x = \frac{130 \text{ plf}}{43.3 \text{ psf}} = 3.1' = 3' - 1\frac{3}{16}''$$

$$M = 130 \text{ plf} \cdot \left(\frac{3.1'}{2}\right) = 201.5 \text{ ft-lb./ft.}$$

ESTIMATE REINFORCEMENTS:

TRY 8" CMU, ASSUME STEEL @ MID-DEPTH.

d = CENTROID OF STEEL = 3.8", ASSUME $j = 1$ FOR INITIAL ESTIMATE

$$A_s = \frac{M}{F_s \cdot j \cdot d} = \frac{201.5 \text{ ft-lb.} \cdot 12 \text{ in/ft.}}{24000 \text{ psi} \cdot 1 \cdot 1.33 \cdot 3.8''} = 0.02 \text{ in}^2/\text{ft.}$$

TRY #4 @ 32" O.C.

$$A_{s \text{ provided}} = 0.20 \cdot \frac{12}{32} = 0.075 \text{ (REDUCE)}$$

TRY #4 @ 40" O.C.

$$A_{s \text{ prov.}} = 0.20 \cdot \left(\frac{12}{40}\right) = 0.06 \text{ (REDUCE)}$$

TRY #1 @ 48" O.C.

$$A_{s \text{ prov.}} = 0.20 \cdot \left(\frac{12}{48}\right) = 0.05 \text{ in}^2/\text{ft.}$$

1095 Florida Ave.
Slidell, LA 70458P.O. Box 2830
Slidell, LA 70459985-649-5832
FAX 985-641-5950CHECK STRENGTH: (USING 24" WIDE STRIP)

DESIGN MOMENT = $201.5 \cdot 2' = 403 \text{ ft-lb/ft}$

$$p = \frac{A_s}{bd} = \frac{0.20 \text{ in}^2/\text{ft}}{24 \text{ in} \cdot 3.8 \text{ in}} = 0.002 \quad np = 15.26 \cdot 0.002 = 0.035$$

$$K^2 + 2p_n k - 2p_n = 0 \Rightarrow K^2 + 2(0.03)K - 2(0.03) = 0 \Rightarrow K^2 + 0.06K - 0.06$$

$$K = \frac{-0.06 \pm \sqrt{(0.06)^2 - 4(1)(-0.06)}}{2} = \frac{-0.06 \pm 0.49}{2} = 0.215 = K \quad \text{Now } j = \left(1 - \frac{K}{3}\right) = 0.928$$

ALLOWABLE TENSION FLEXURAL CAPACITY:

$$M_t = A_s \cdot j \cdot d \cdot F_s = (0.05 \text{ in}^2/\text{ft}) \cdot 0.928 \cdot 3.8 \cdot 24000 \text{ psi} \cdot \frac{1.33}{12 \text{ in/ft}} = 469 \text{ ft-lb/ft.}$$

$$469 \text{ ft-lb/ft} > 201.5 \text{ ft-lb/ft.} \quad \text{OK}$$

ALLOWABLE COMPRESSION FLEXURAL CAPACITY:

$$F_b = \frac{1}{3} f'_m \cdot 1.33 = 665 \text{ psi}$$

$$M_m = \frac{b \cdot d^2}{2} \cdot K \cdot j \cdot F_b = \frac{24 \text{ in} \cdot (3.8 \text{ in})^2}{2} \cdot 0.215 \cdot 0.928 \cdot \frac{665 \text{ psi}}{12 \text{ in/ft.}} = 1916 \text{ ft-lb/ft.}$$

$$1916 \text{ ft-lb/ft.} > 201.5 \text{ ft-lb/ft.} \quad \text{OK}$$

USE #4 REBAR @ 48" o.c.

ANCHORAGEUSE #4 DOWEL, GRADE 60 l_d = REQ'D DEVELOPMENT LENGTH

$$l_d = \frac{0.13 \cdot d_b^2 \cdot f \cdot \gamma}{K \cdot \sqrt{f'_m}} = \frac{0.13 \cdot 0.5^2 \cdot 60,000 \cdot 1}{5(0.5) \cdot \sqrt{1500}} = 20.1" = 20 - 3/32"$$

$$l_e = 13 d_b = 6.5"$$

SPLICESTHE MINIMUM LENGTH OF LAP FOR SPLICES SHALL BE EQUAL TO $l_d = 20.1"$ VENEER WALL CONNECTION

USE "POS-1-TIE" TAPCON SCREW FOR CMU EMBED. @ 8" VERTICAL O.C. AND 16" HORIZ. ON CENTER. MIN. EMBEDMENT LENGTH 1-3/4".

USE 3/16" ϕ x 3" STAINLESS STEEL TRIANGLE WIRE TIES @ EA. CONNECTION. SEE ATTACHED PRODUCT SHEET.HORIZONTAL JOINT REINFORCEMENT

USE HECKMANN #110085 STAINLESS STEEL LADDER-TYPE MASONRY WALL REINFORCEMENT @ EVERY OTHER COURSE. SEE ATTACHED PRODUCT SHEET.

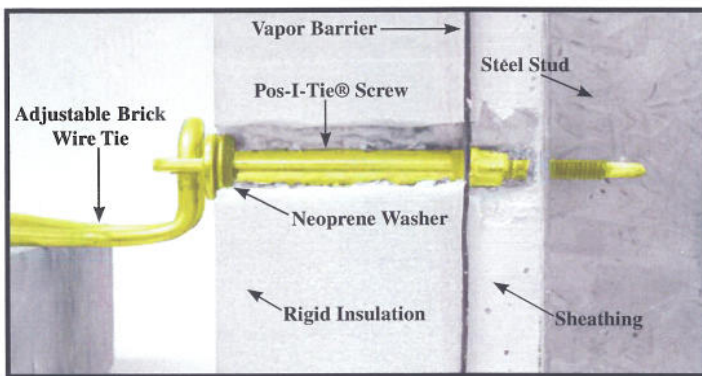


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 Email: info@heckmannbuildingprods.com

ARCHITECTURAL SPECIFICATION INFORMATION

THE ORIGINAL POS-I-TIE®

U.S. Patent# 4473984 & 4764069 Canada Patent#1224344



Seven Barrel lengths available for insulation/gypsum board sizes and combinations:
 1/2" & 5/8", 1", 1-1/2", 2", 2-1/2", 3", and 3-1/2"



The Pos-I-Tie® conforms with the Energy Conservation Requirements of the Massachusetts State Building Code (780 CMR 13 Envelope)

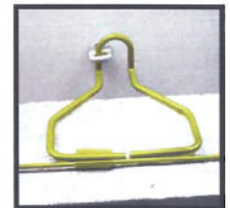
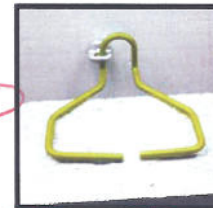
NO. 75 POS-I-TIE® ADVANTAGES

1. Pos-I-Tie® system fully complies with the ACI 530 Code. The Barrel Screw is one piece. No more plates, screws and gaskets. Installs in seconds.
2. Uses consistent screw. Screw is provided as a part of the Pos-I-Tie® System. - No inferior screws can be substituted.
3. Provides positive connections. The Barrel Section actually penetrates sheathing and makes a Positive Lateral Connection with the backup for transfer of compression and tension loads to structural backup.
4. Enables speedy cost-saving installation. Only one screw needs to be placed, rather than two screws.
5. Corrosion Resistant. Pos-I-Tie® seals the hole it makes when it seats itself in the backup. Barrel section is made of ZAMAC 3, a 92% zinc alloy. Screws are Zinc electro plated.
6. Slotted Barrel allows for differential movement due to temperature variations. Tie design provides for allowable ACI 530 code vertical adjustment.
7. Allows for use of 4' x 8' insulation sheets. The Pos-I-Tie® holds the insulation in place!

Test Data Available Upon Request

WIRE TIES

Ties are 3/16" diameter x 3", 3 1/2", 4", or 5" Long in Hotdip Galvanized, Mill Galvanized and Stainless Steel.



Special Lengths available.

(Check for local code acceptance of single wire tie.)



Heckmann Building Products Inc.

1501 N. 31st Avenue

Melrose Park, IL 60160-2911

800-621-4140 or 708-865-2403 Fax: 708-865-2640

www.heckmannbuildingprods.com

SUBMITTAL SHEET: #1100 Ladder-Type Masonry Wall Reinforcement.

Manufactured from 9 Gage wire, 10' 8" long with butt-welded perpendicular cross wires welded 16" on center to avoid interference with reinforcement in block cores.

Wire is deformed for maximum bonding in mortar joints.

Packaged in 50 pc (500 lin ft) bundles

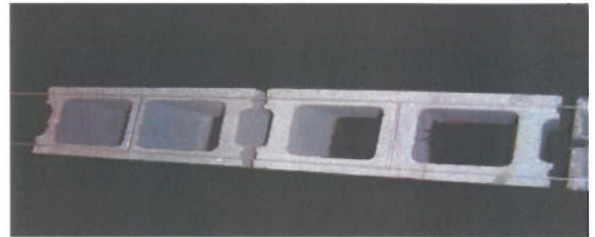
Special sizes and lengths are available.

- Reduces Cracking.
- Increases lateral flexural strength.
- Increases ductility and elasticity.

Standard Catalog Numbers

Size

Mill Galv	Hotdip Galv	Stainless Steel	Width	Wall Size
11006G	11006H	11006S	4	6
11008G	11008H	11008S	6	8
110010G	110010H	110010S	8	10
110012G	110012H	110012S	10	12



ASTM A82 cold drawn steel wire.
Tensile Strength 80,000 PSI
Yield Point 70,000 PSI minimum
Reduction of Area 30%

Finishes:

Stainless Steel:

ASTM A 580 Type 304.

Hotdip Galvanized:

ASTM A 153 Class B-2: (1.50 oz/ ft²).(0.46kg/m²)

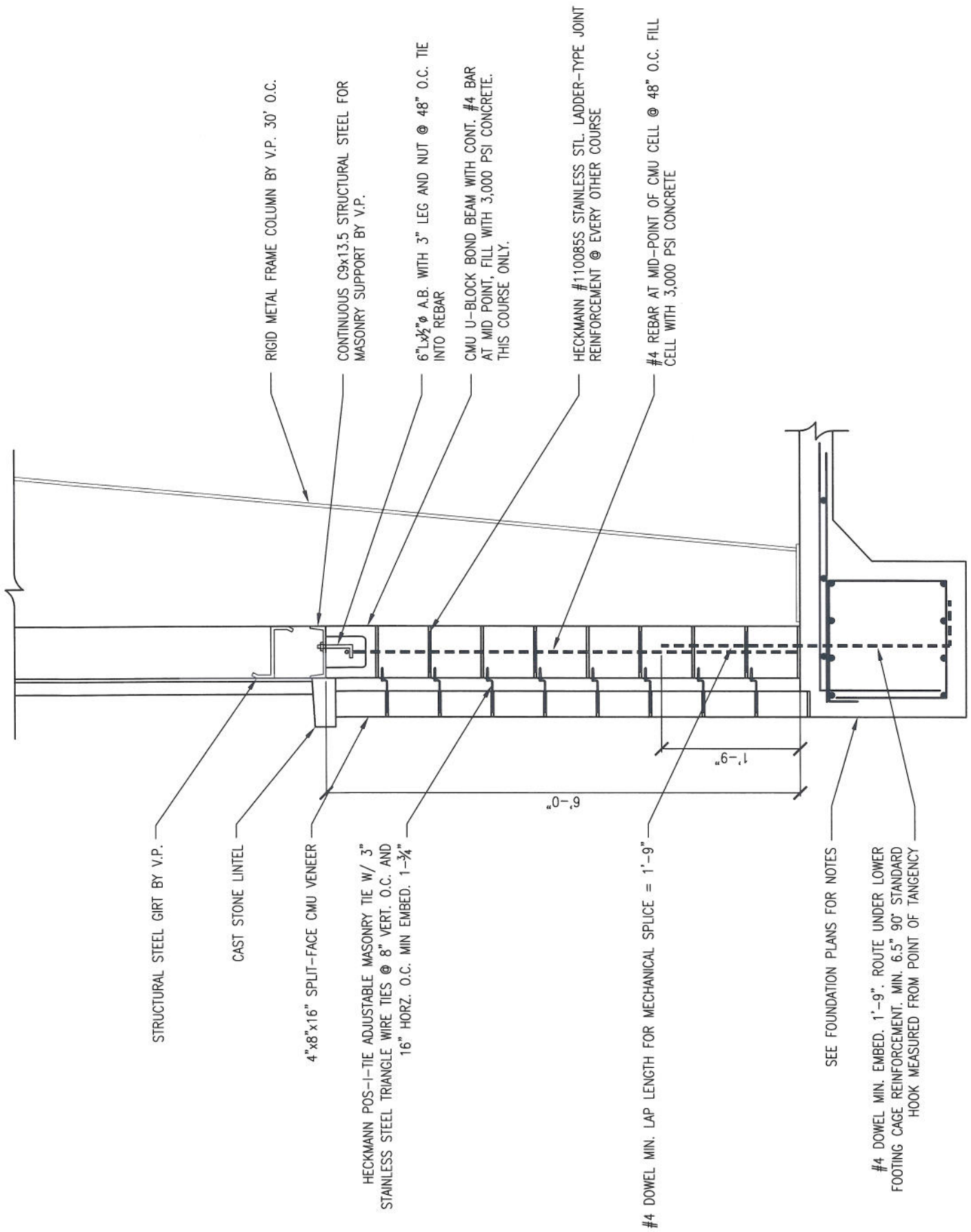
Mill Galvanized:

Wire: ASTM A 641 (0.1 oz/ ft².)

Conforms to requirements of ASCE / ACI 530 / TMS402 Building Code requirements for masonry structures.

Approvals:

Comments:



8" CMU WALL WITH 4" CMU VENEER DETAIL
N.T.S.