Consulwal ™ Engineering Data

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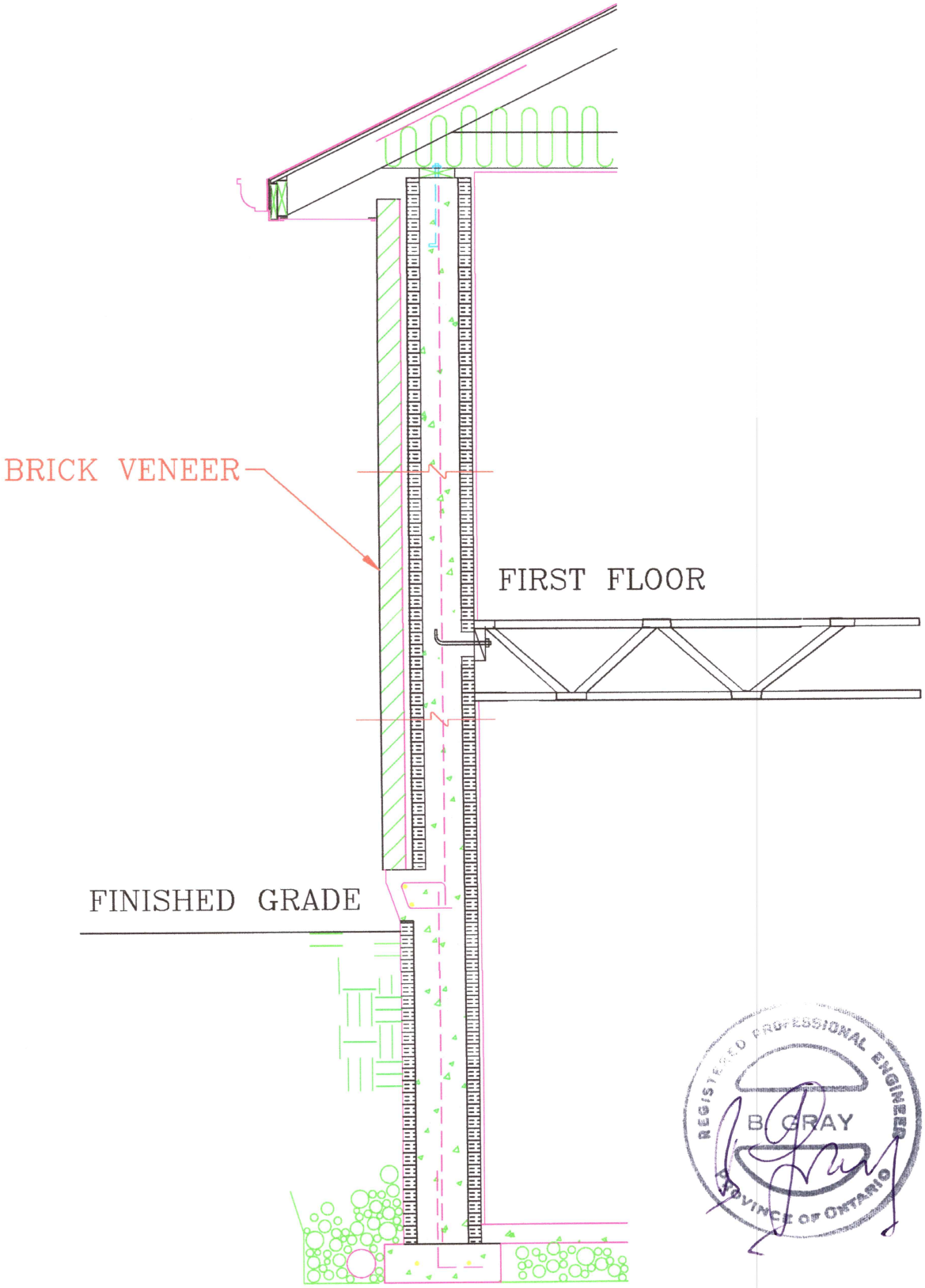
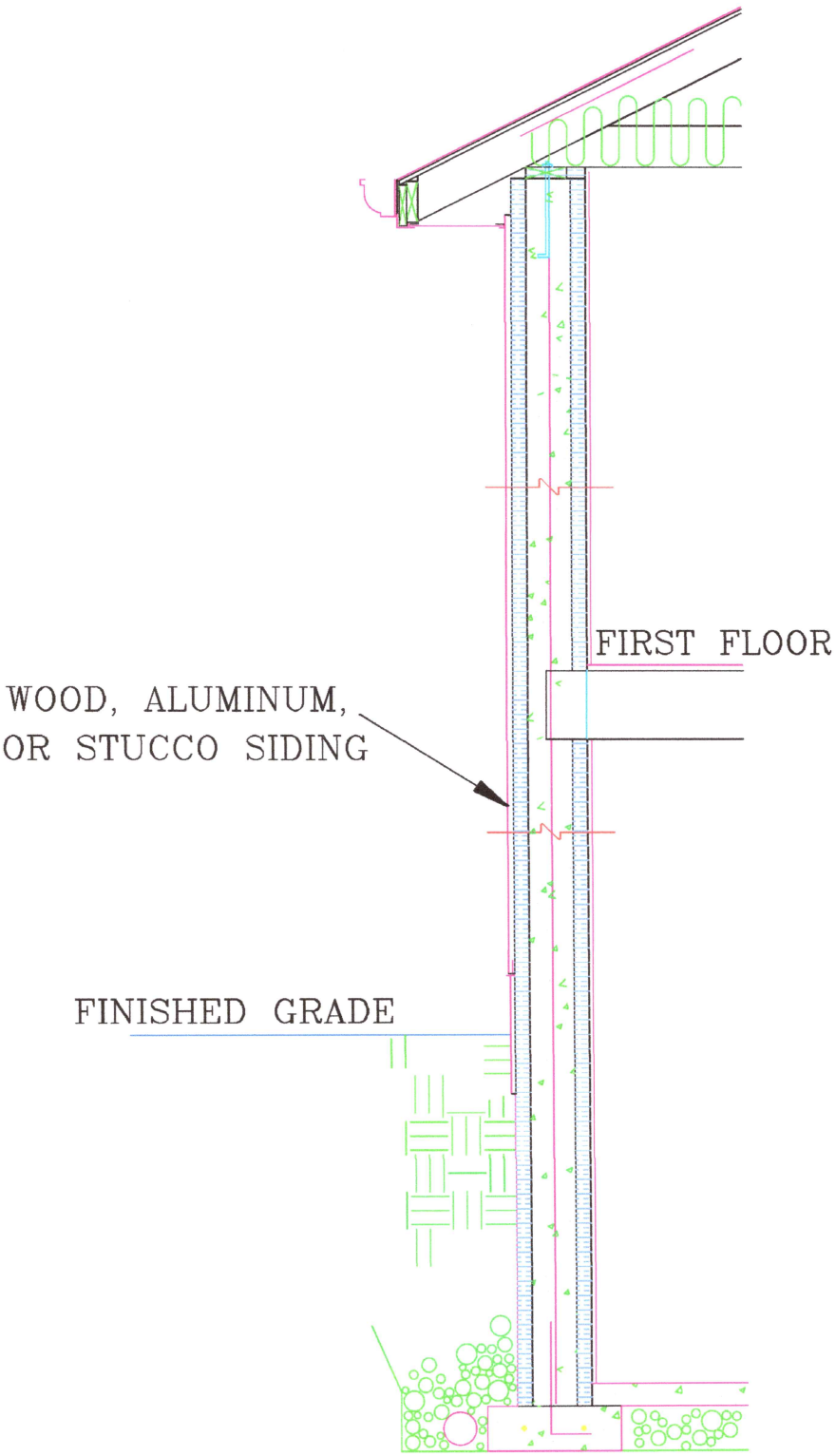


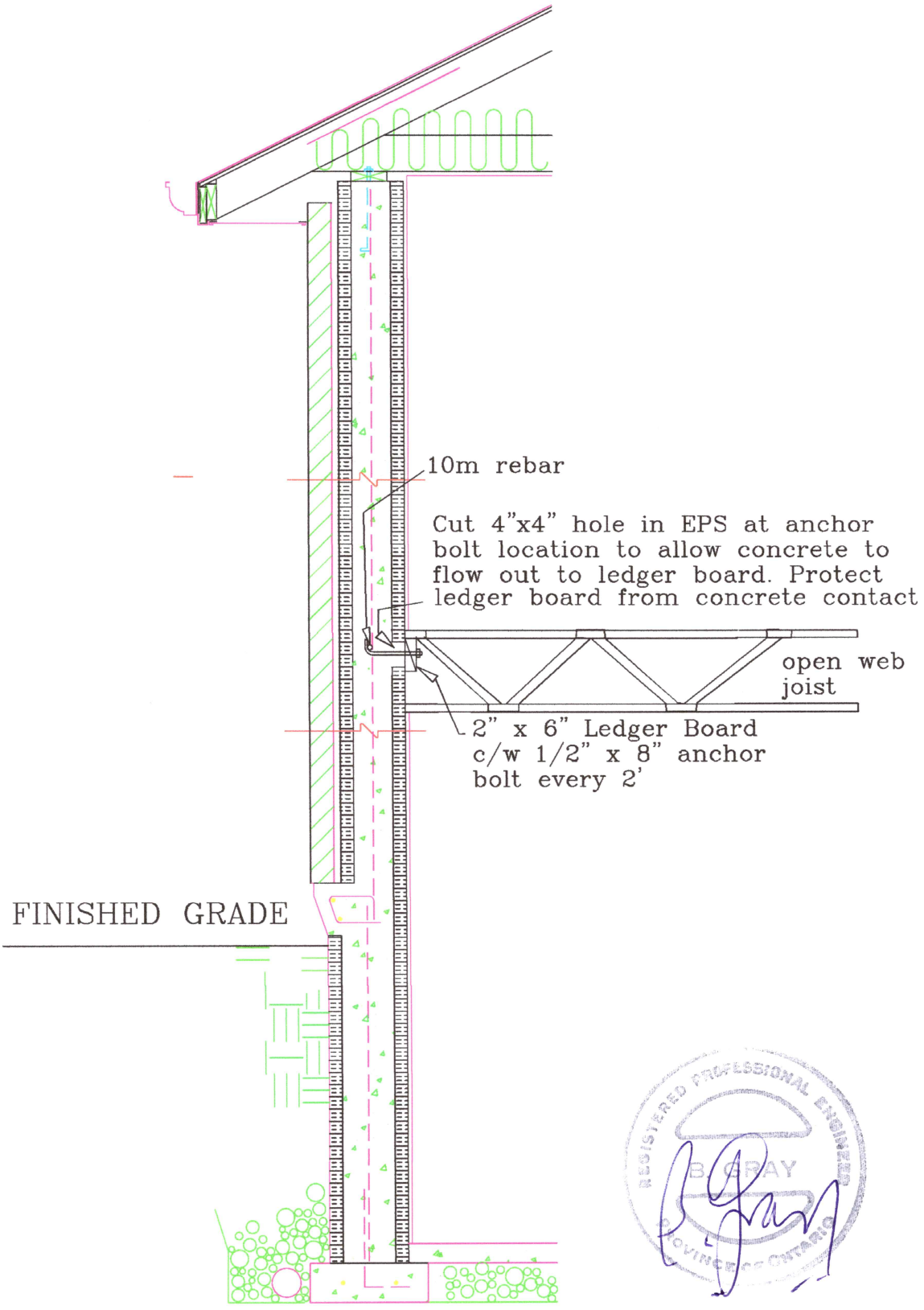
REGISTERED PROFESSIONAL ENGINEER
B. GRAY
PROVINCE OF ONTARIO

Consulwal	Date	01/01/15		
Typical Full Height Wall With Brick Veneer				
	CTI – 100.01			

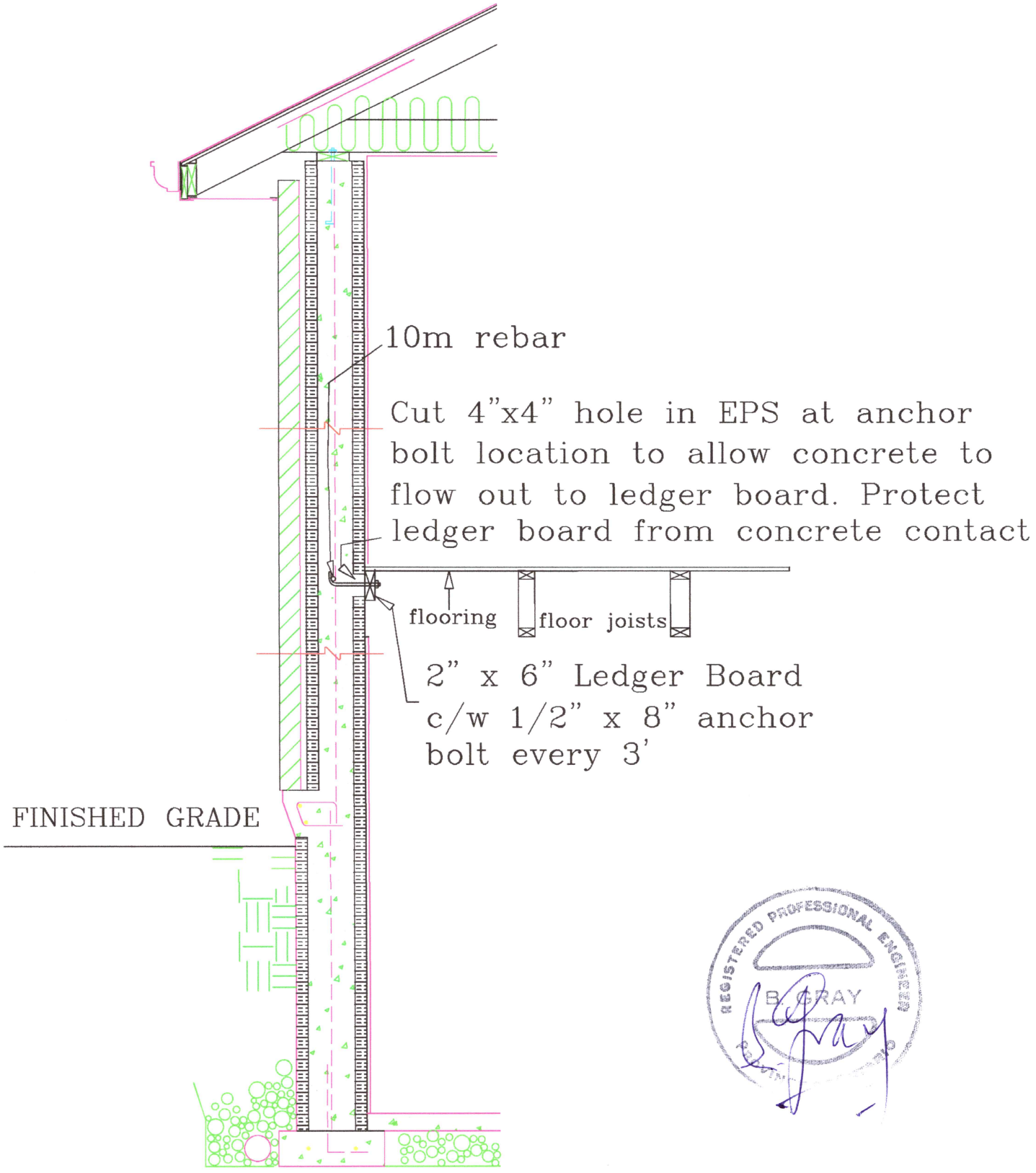


REGISTERED PROFESSIONAL ENGINEER
B. GRAY
PROVINCE OF ONTARIO

Consulwal	Date	01/01/15		
Typical Full Height Wall With Wood, Aluminum, or Stucco Siding				
	CTI – 100.02			



Consulwal	Date	01/01/15		
Open Web Joist Connection				
	C – 100.04			



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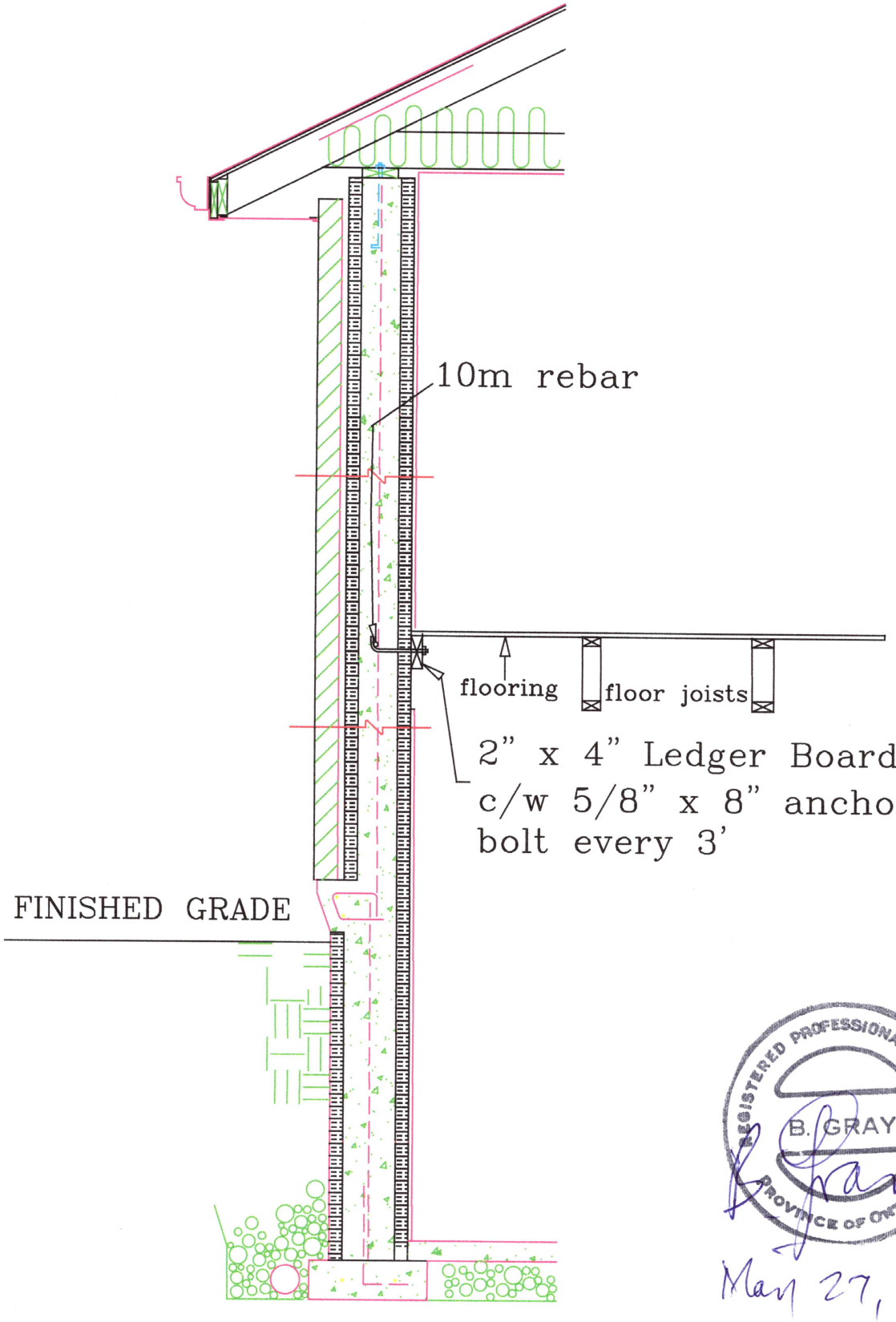
Consulwal	Date	01/01/15		
Floor connection to wall running parallel with joist				
	C – 100.05			



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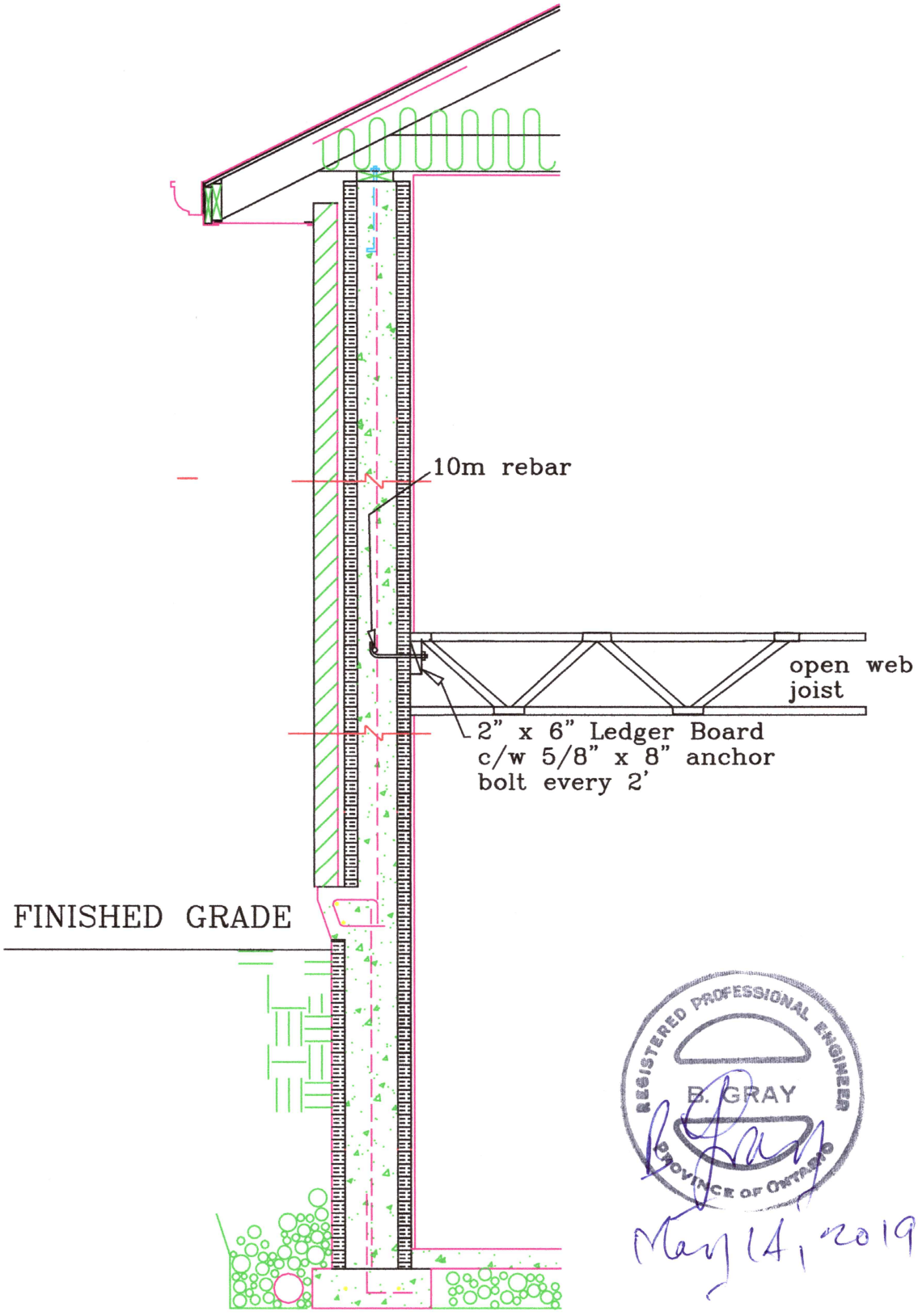
May 27, 2019.

Consulwal	Date	01/01/19		
Floor connection to wall running parallel with joist typical floor connection	05/27/19	revised		
	C – 100.06			



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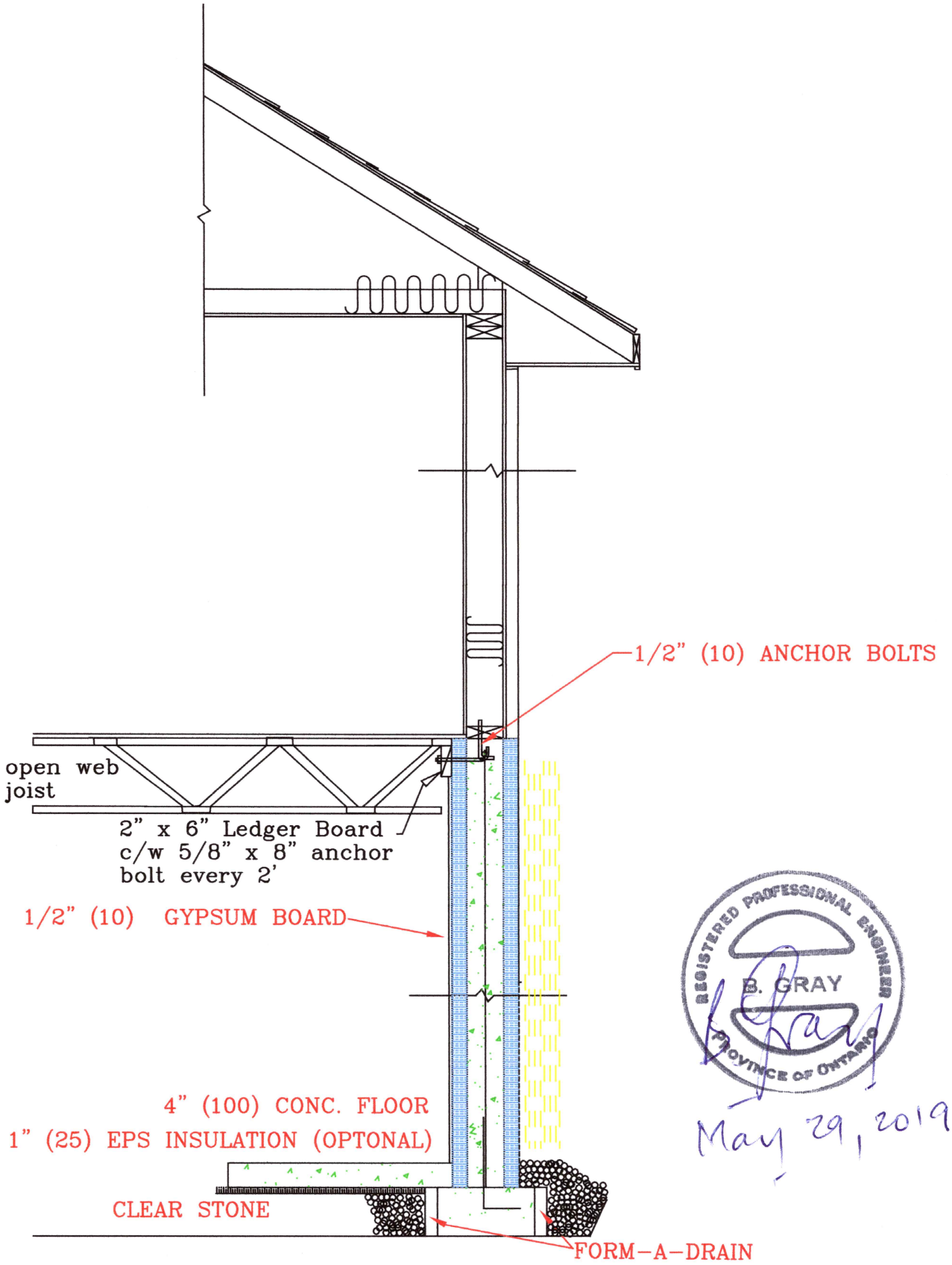
PROVINCE OF ONTARIO

May 14, 2019.

Consulwal	Date	01/01/19		
Open Web Joist Connection				
	C – 100.07			



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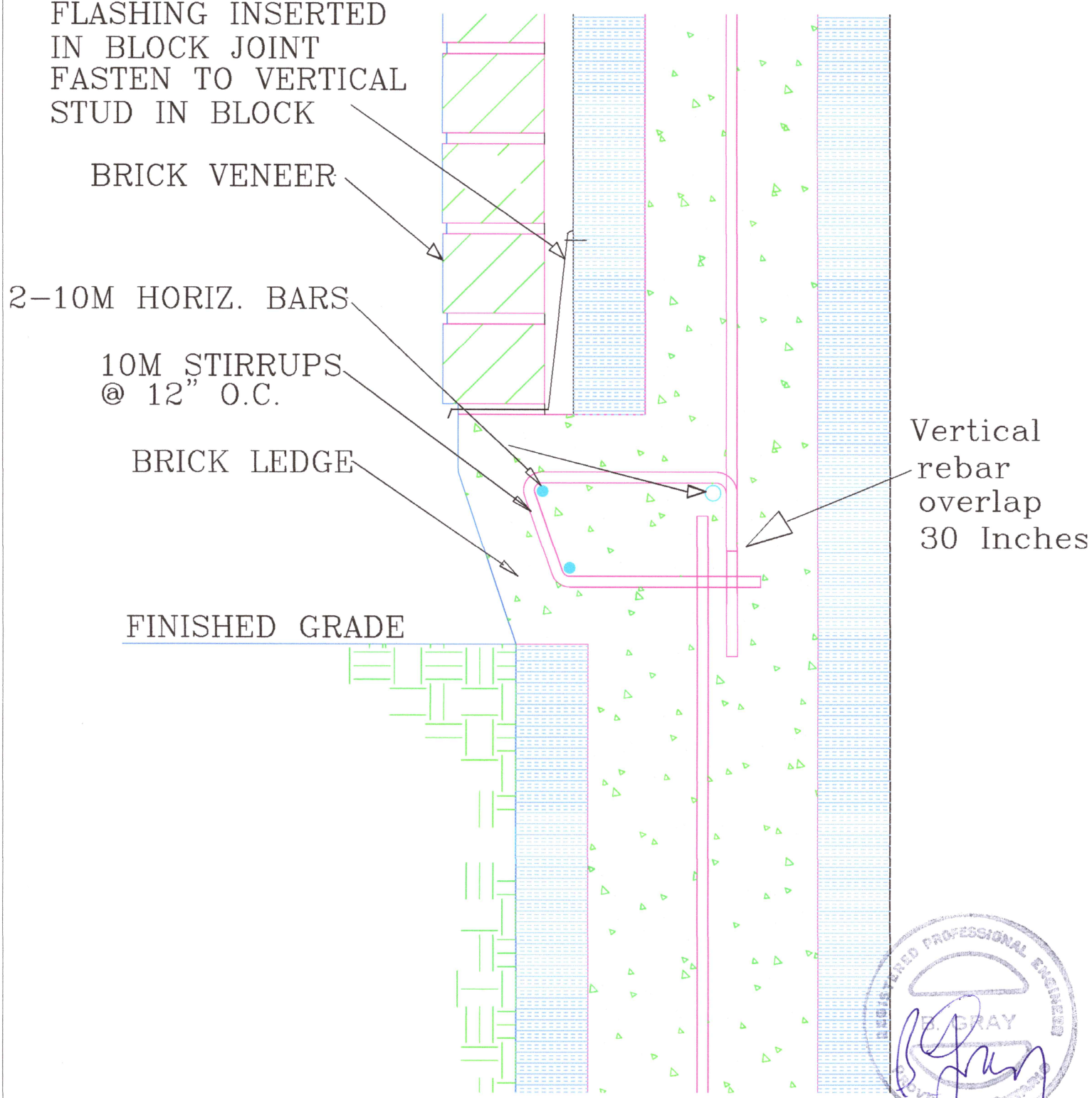
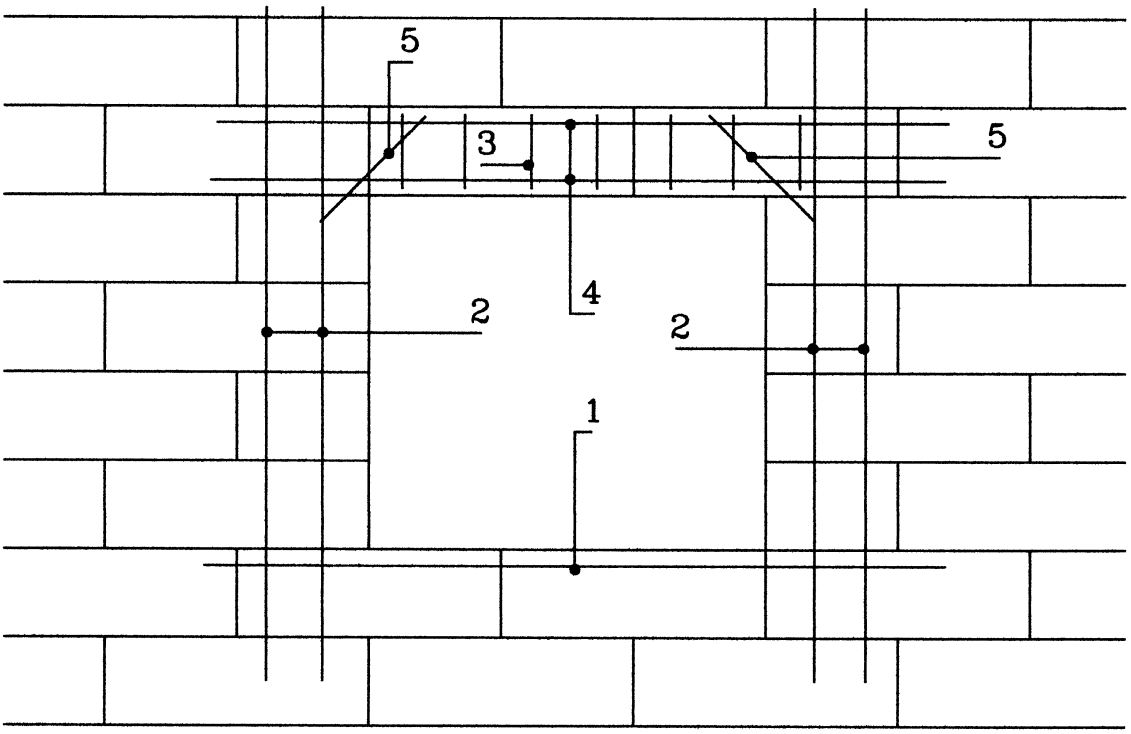
PROVINCE OF ONTARIO

May 29, 2019

Consulwal	Date	01/01/19		
ALTERNATE FLOOR CONNECTION FOR ICF BASEMENT ONLY				
	C – 100.08			



Consulwal	Date	01/01/15		
Typical Brick Ledge				
	CTI – 200.01			



REINFORCING REQUIREMENTS FOR LOAD BEARING OPENING

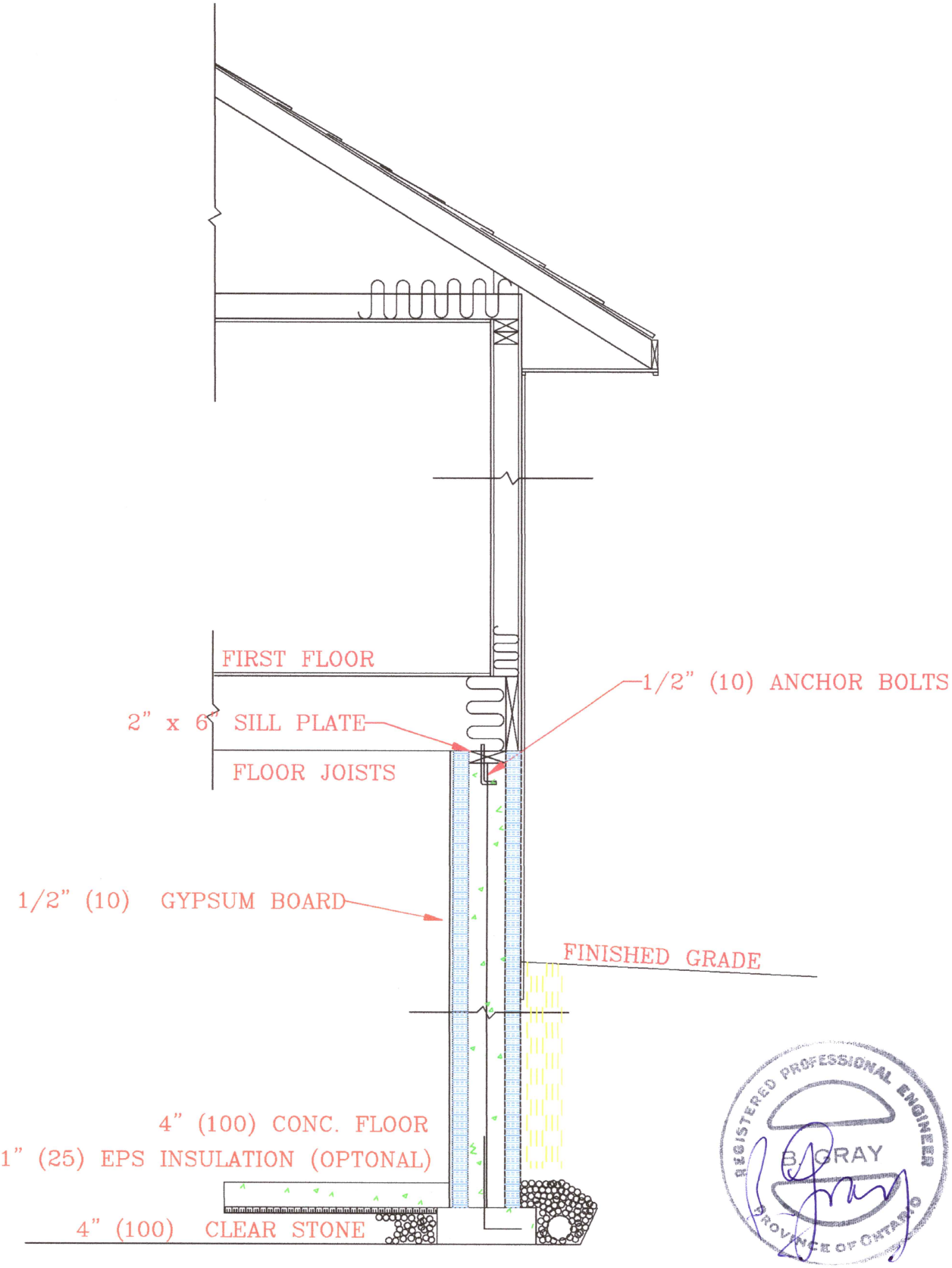
NOTES: ALL BARS TO HAVE 3/4" CONCRETE COVER WHERE APPLICABLE

1	1=10M	
2	2=10M	
3	10M U@12"	OPENINGS OVER 6' WIDE
4	2=10M	OPENINGS UP TO 6' WIDE
	2=10M	OPENINGS 6' TO 8' WIDE
	2=10M	OPENINGS 8' TO 10' WIDE
5	1=10M	
	2=15M	GARAGE OPENING UP TO 13' WIDE

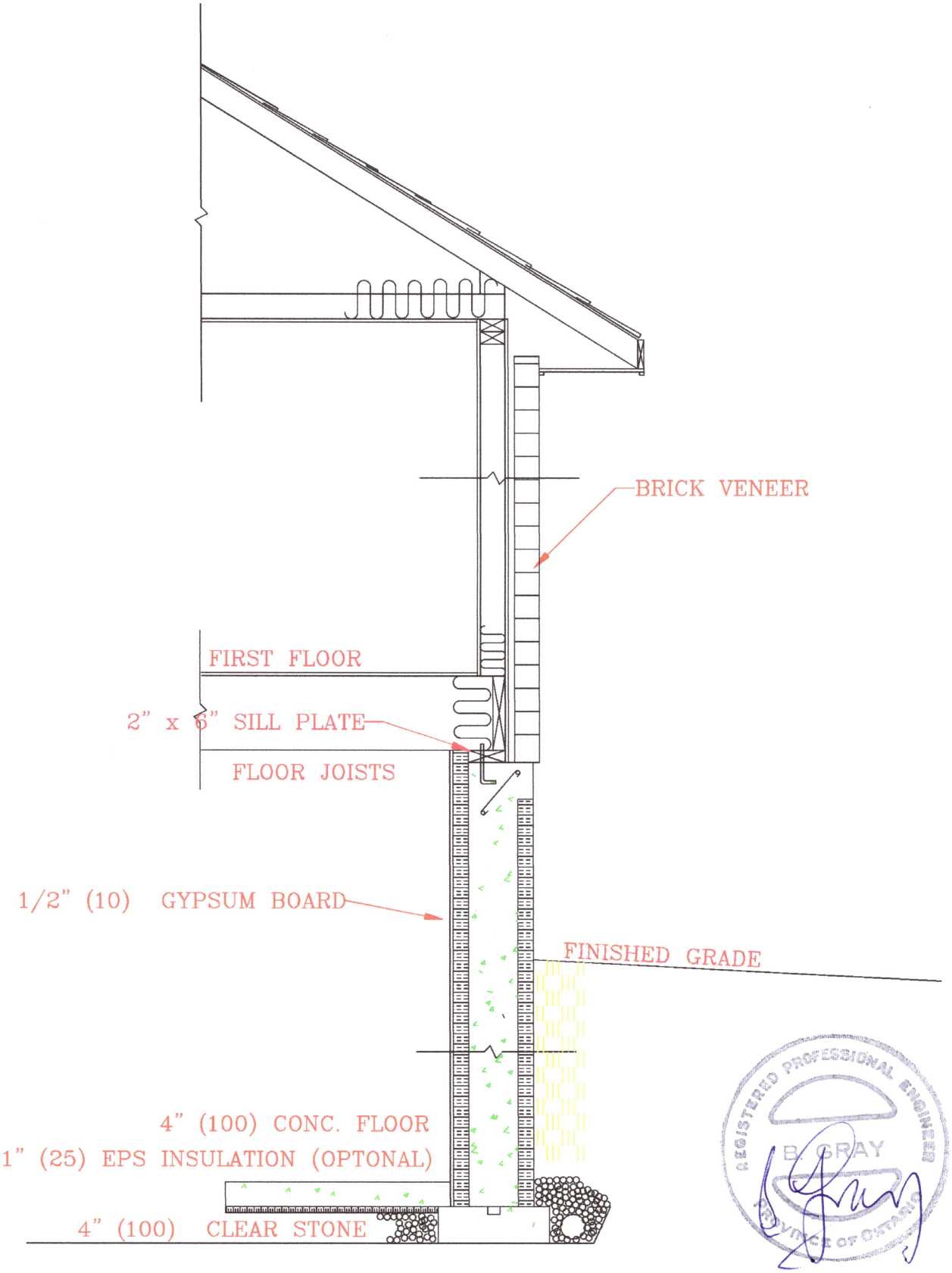
THE ABOVE ARE TYPICAL DETAILS IN BUILDINGS UP TO TWO STOREYS.

FOR OPENINGS GREATER THAN ABOVE, REFER TO CONSULWAL WALL LINTEL SCHEDULE

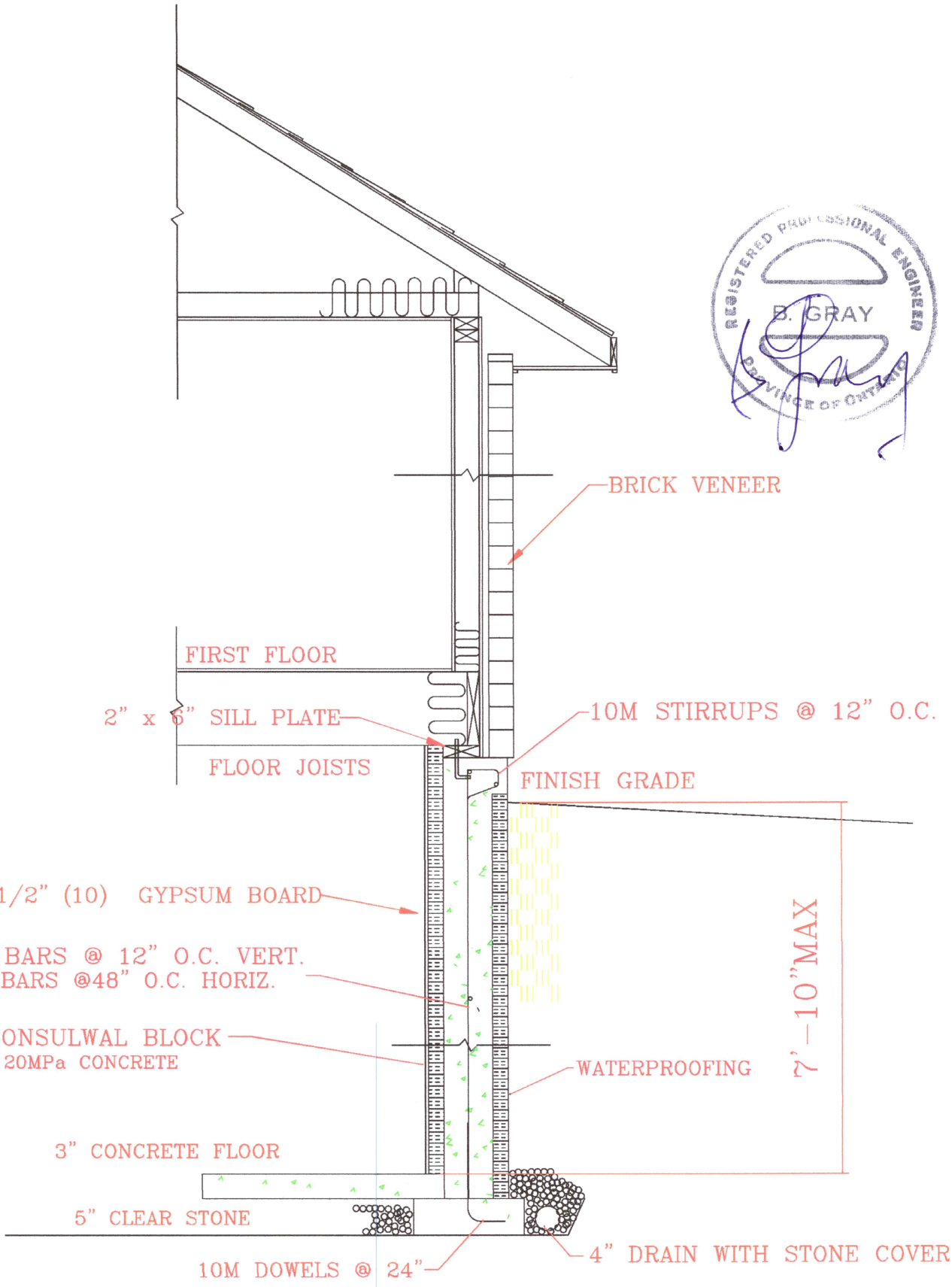
Consulwal	Date	01/01/19		
Concrete Lintel Schedule				
	.CTI – 300.01			



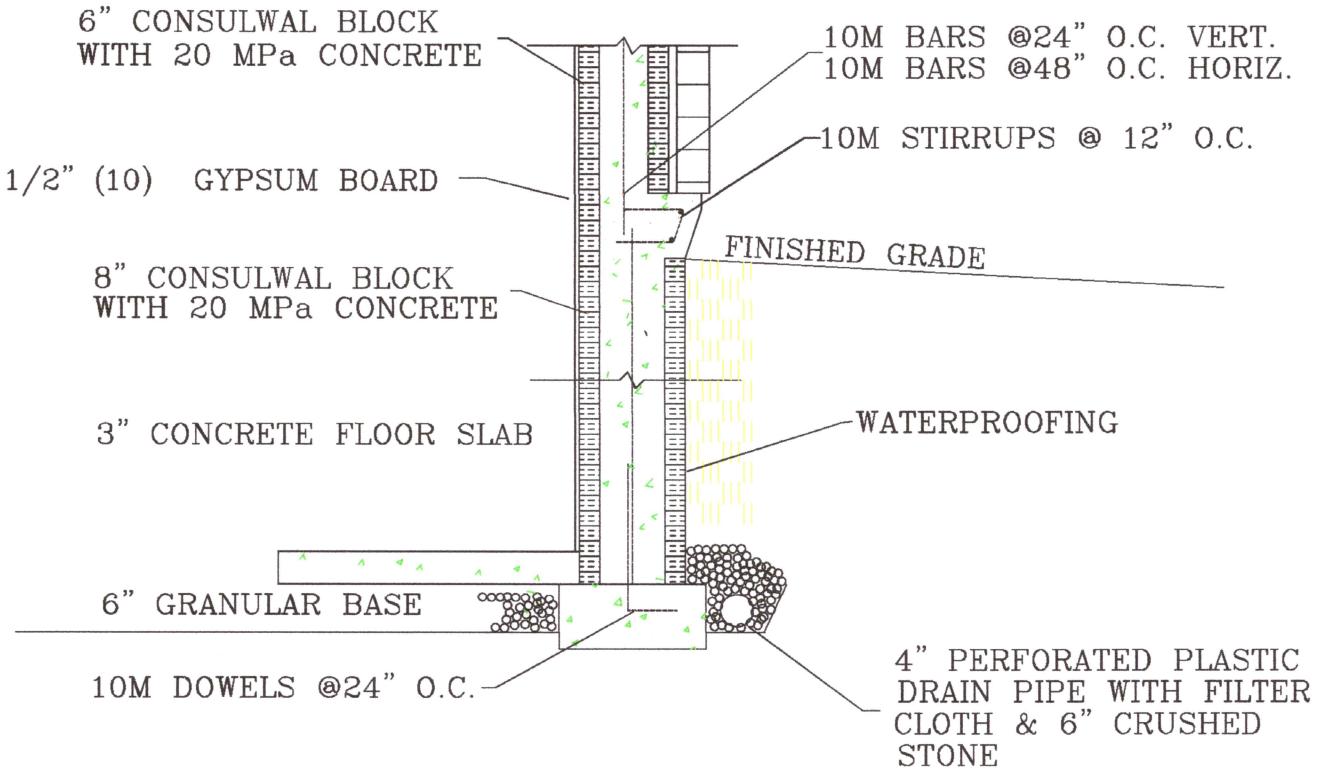
Consulwal	Date	01/01/15		
Typical Wall Section				
	CTI – 400.02			



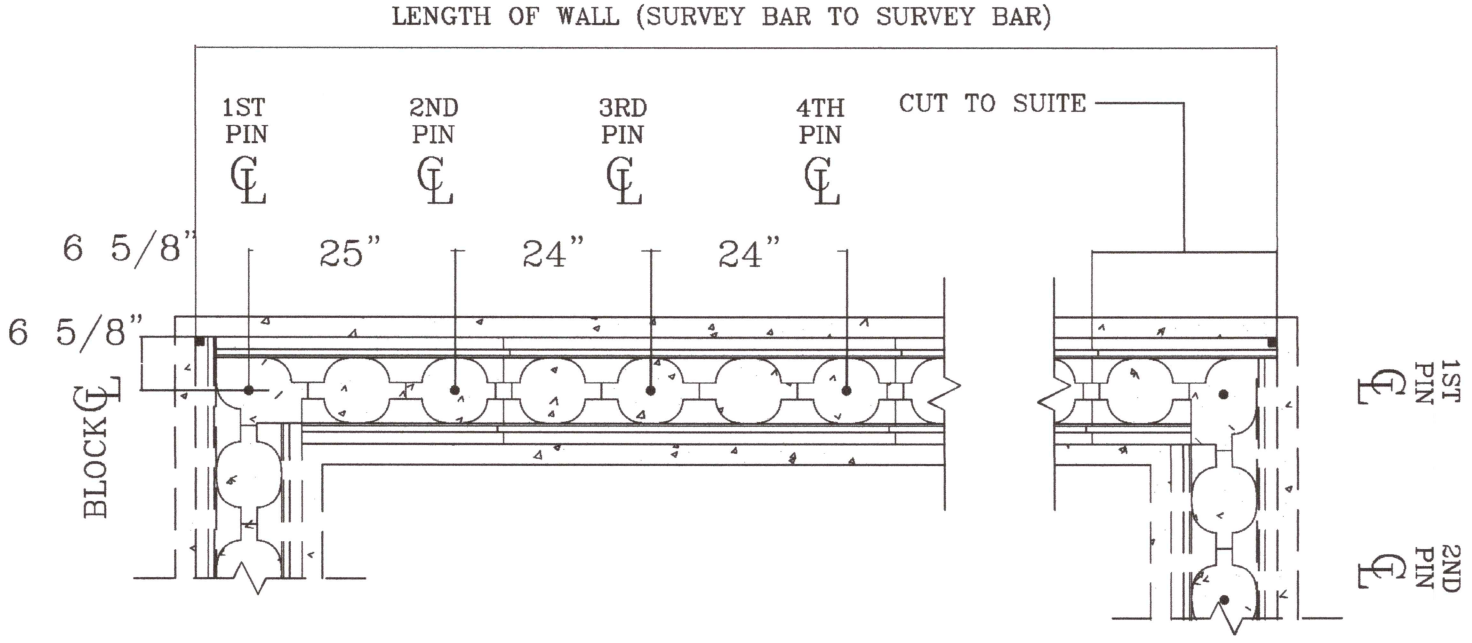
Consulwal	Date	01/01/15		
Typical Wall Section With Formed Brick Ledge				
	CTI – 400.03			



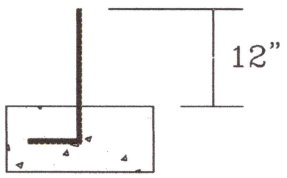
Consulwal	Date	01/01/15		
Typical Basement With Formed Brick Ledge				
	CTI – 400.04			



Consulwal	Date	01/01/15		
Typical Wall Section				
	CTI – 400.05			



PLAN



FOOTING PROFILE

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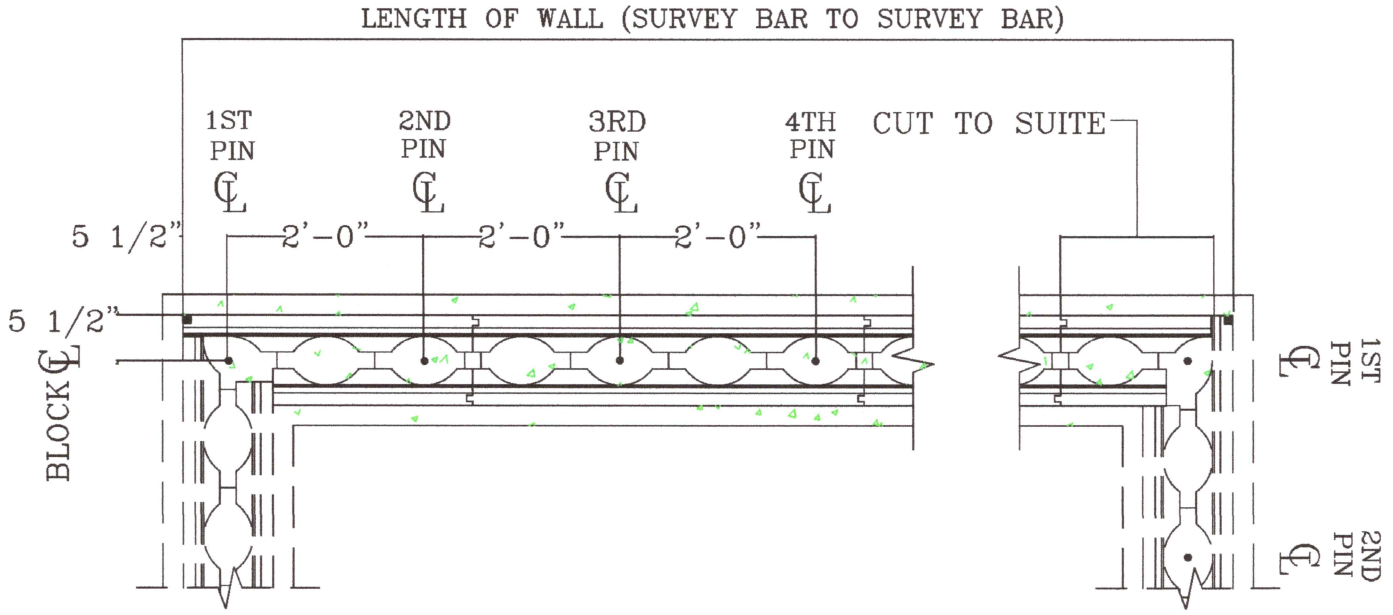
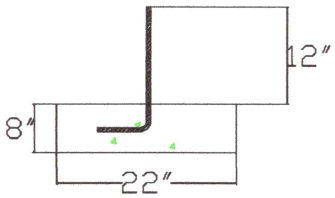
LAYOUT NOTES:

1) The walls are laid out from left to right.
2) All dimensions are taken from the left hand side as you are facing the wall from inside of the building.
3) Each wall is started with a pre – cut corner on the left hand side of the wall. Blocks are then laid down from that left corner towards the right corner. The final block that is to be placed is then cut to size and placed into the pre – cut corner on the right of the wall.

CONSULWAL	Date	01/01/15		
OUTSIDE CORNER LAYOUT DETAIL FOR 8" WALLS				
	CTI – 500.03			



PLAN

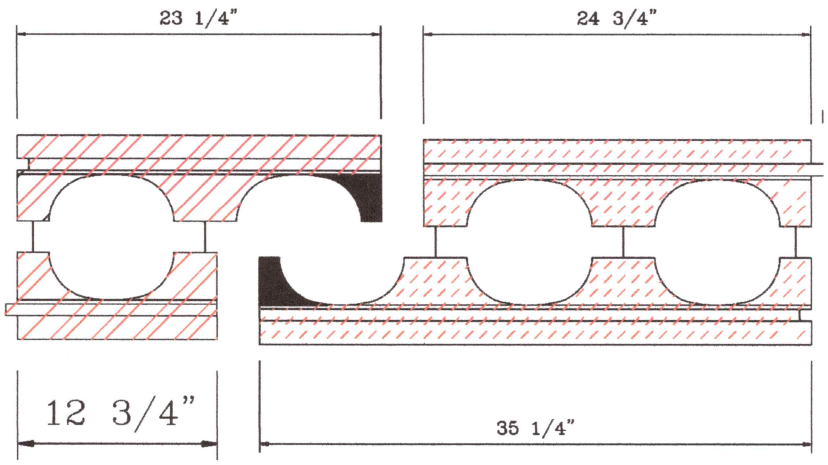


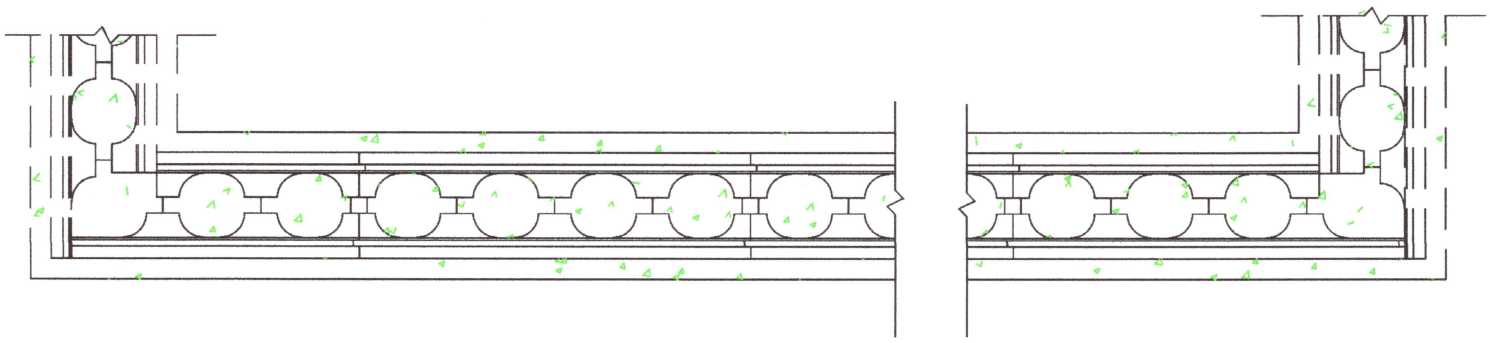
FOOTING PROFILE FOR 6" WALL

LAYOUT NOTES:

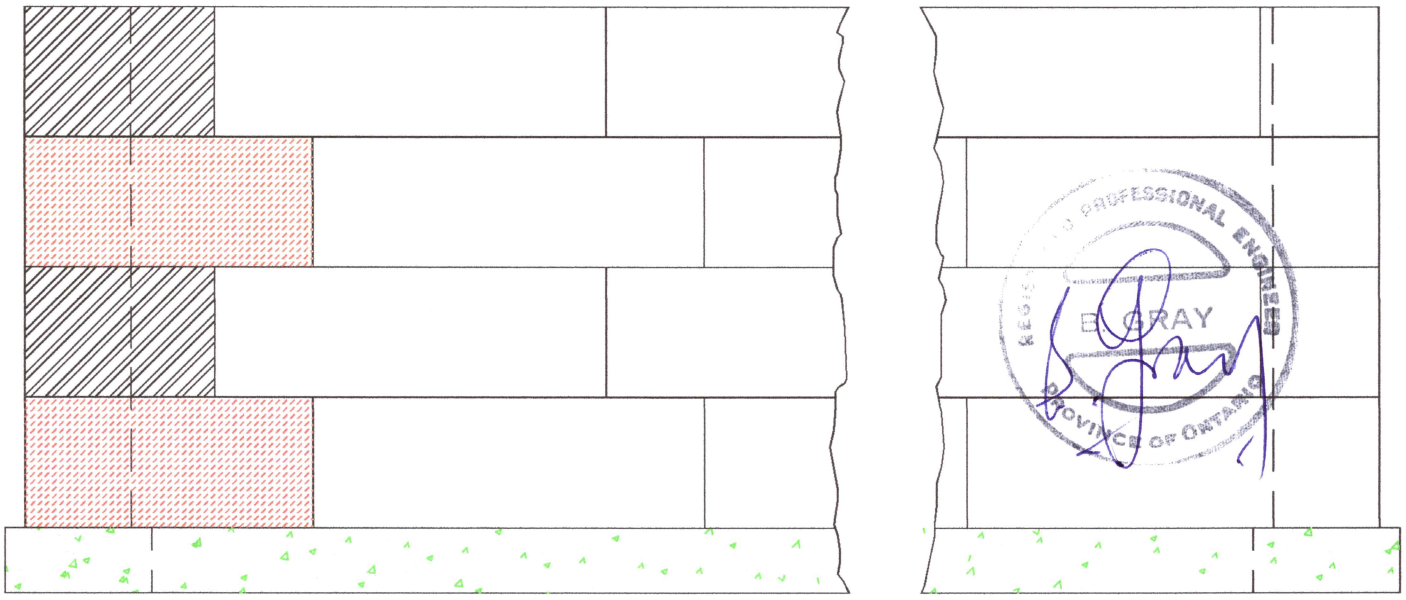
1) The walls are laid out from left to right.
2) All dimensions are taken from the left hand side as you are facing the wall from inside of the building.
3) Each wall is started with a pre-cut corner on the left hand side of the wall. Blocks are then laid down from that left corner towards the right corner. The final block that is to be placed is then cut to size and placed into the pre-cut corner on the right of the wall.

CONSULWAL	Date	01/01/15		
CORNER LAYOUT DETAIL FOR 6" WALL				
	CTI - 500.04			



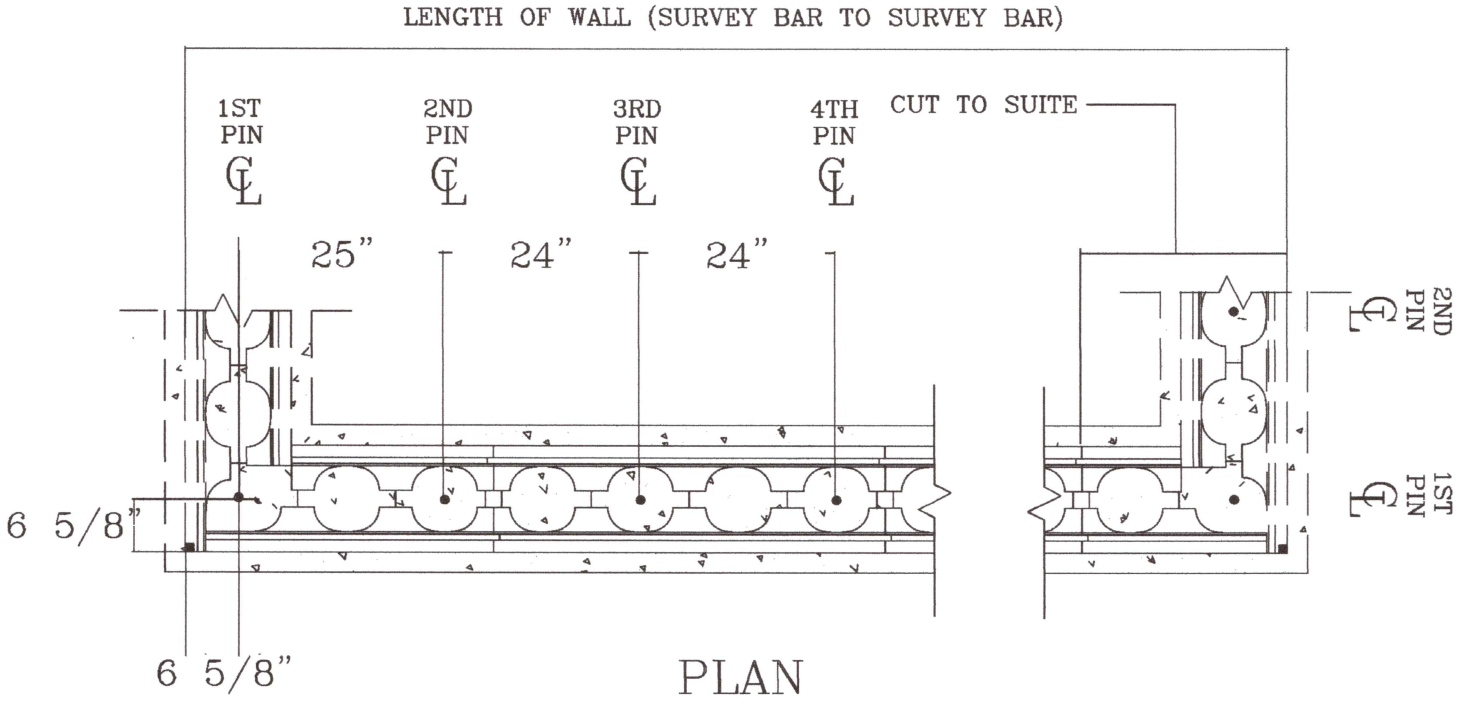


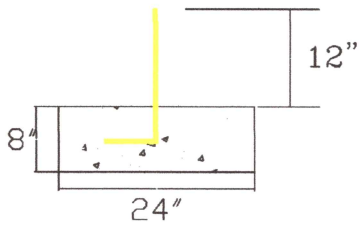
PLAN



PROFILE

Consulwal	Date	01/01/15		
Corner Cut for 8" Blocks for Inside Corner				
	CTI – 500.05			



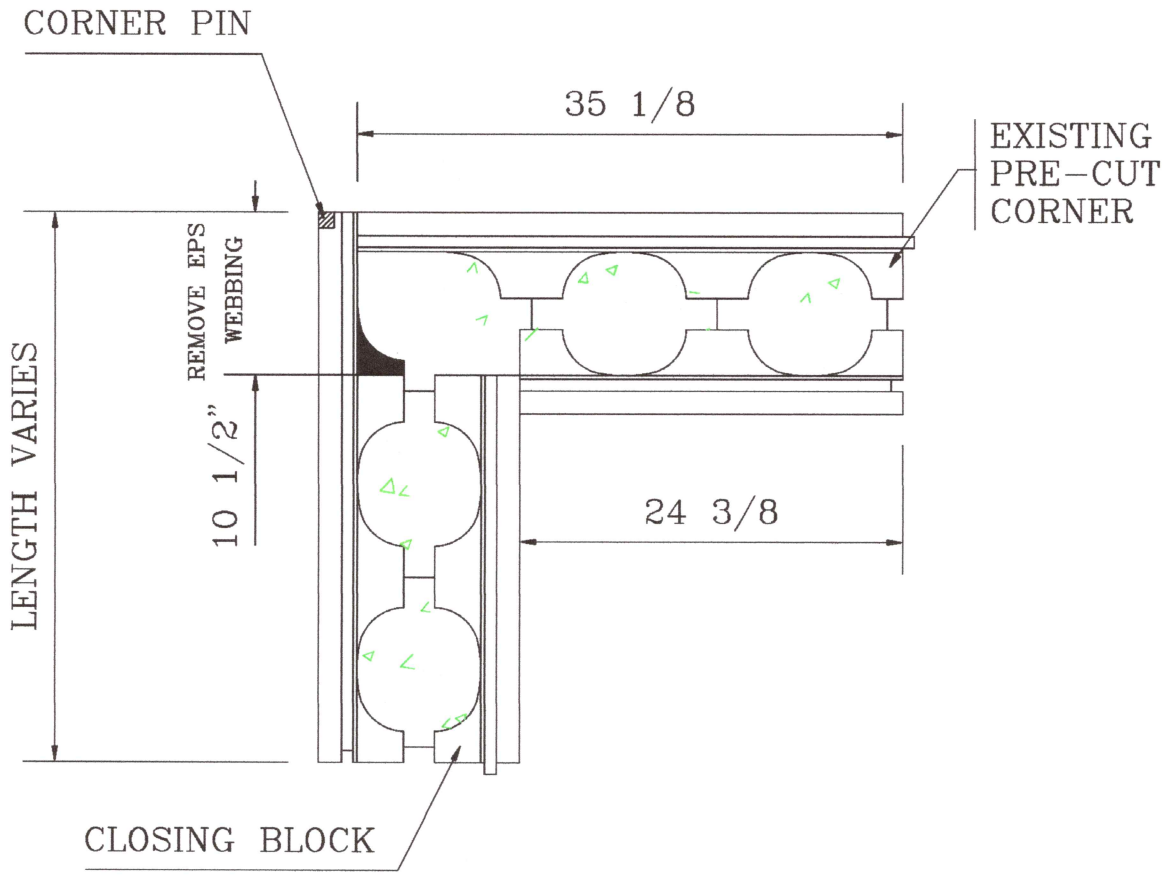


FOOTING PROFILE FOR 8" WALLS

LAYOUT NOTES:

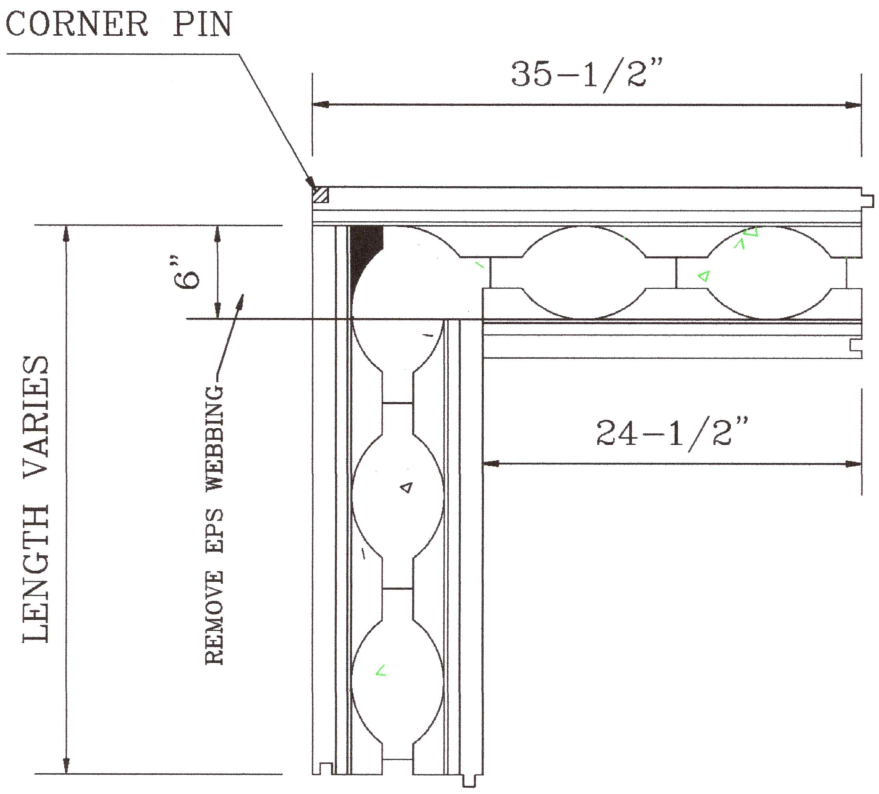
1) The walls are laid out from left to right.
2) All dimensions are taken from the left hand side as you are facing the wall from inside of the building.
3) Each wall is started with a pre – cut corner on the left hand side of the wall. Blocks are then laid down from that left corner towards the right corner. The final block that is to be placed is then cut to size and placed into the pre – cut corner on the right of the wall.

Consulwal	Date	01/01/15		
INSIDE CORNER LAYOUT DETAIL FOR 8" WALLS				
	CTI – 500.06			



■ REMOVE EPS WEBBING FROM THE CLOSING BLOCK WITHIN THE 10 1/2" AS SHOWN ON THE DRAWING.

Consulwal	Date	01/01/15		
Closing Cut Into Existing 8" Outside Corner Block				
	CTI – 500.07			



■ REMOVE EPS WEBBING FROM THE CLOSING BLOCK WITHIN THE 6" AS SHOWN ON THE DRAWING

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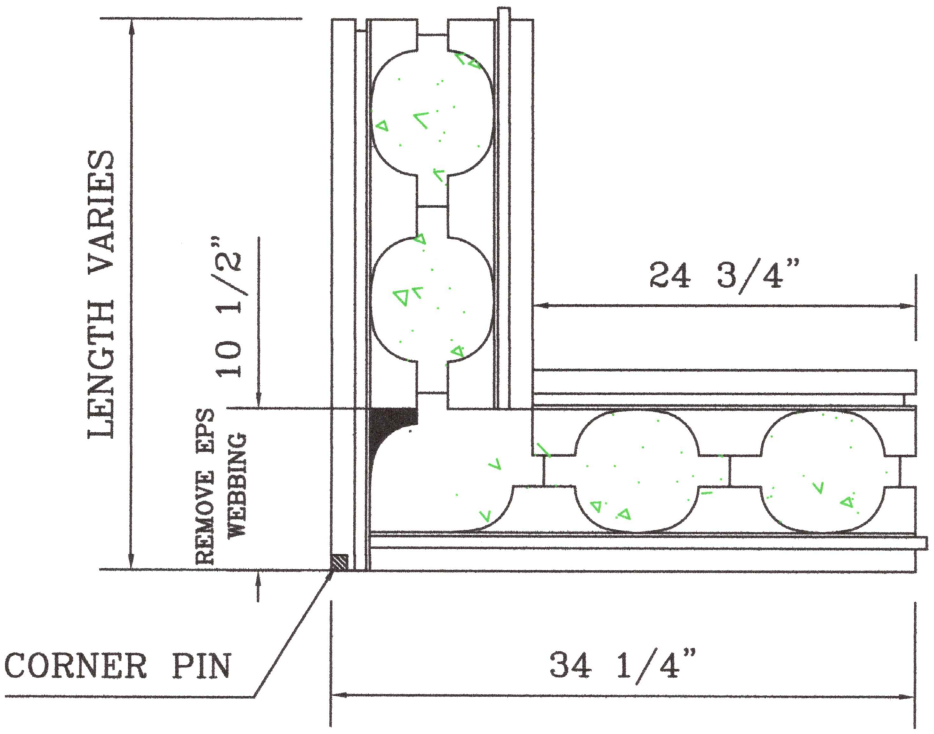
Consulwal	Date	01/01/15		
Closing Cut Into Existing 6" Outside Corner Block				
	CTI – 500.08			



■ REMOVE EPS WEBBING FROM THE CLOSING BLOCK WITHIN THE 10 1/2" AS SHOWN ON THE DRAWING.

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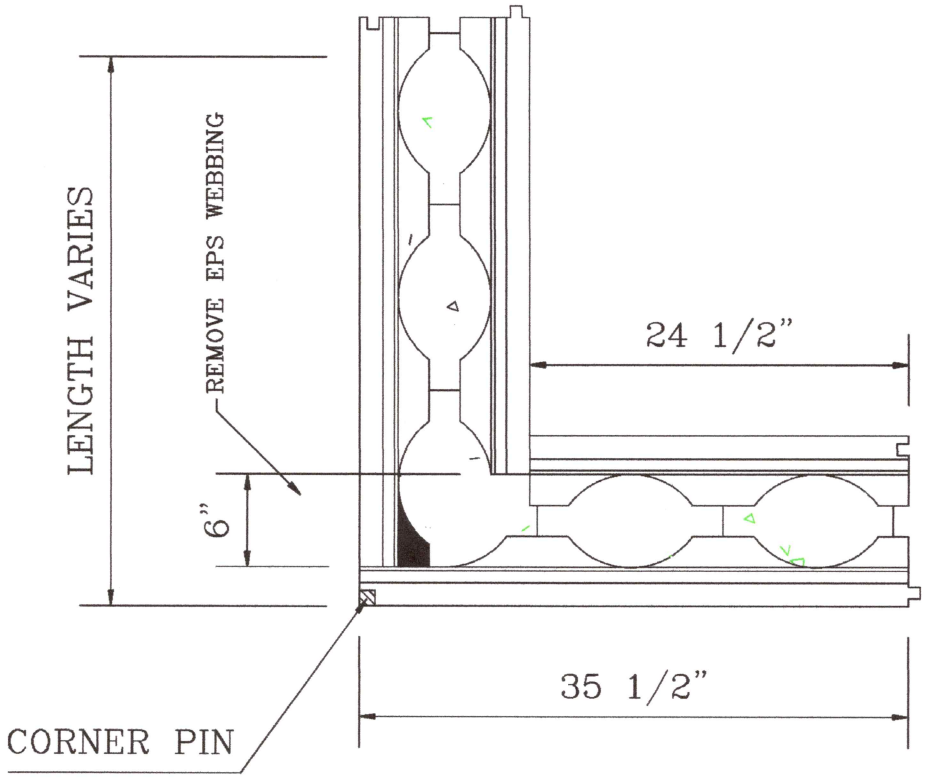
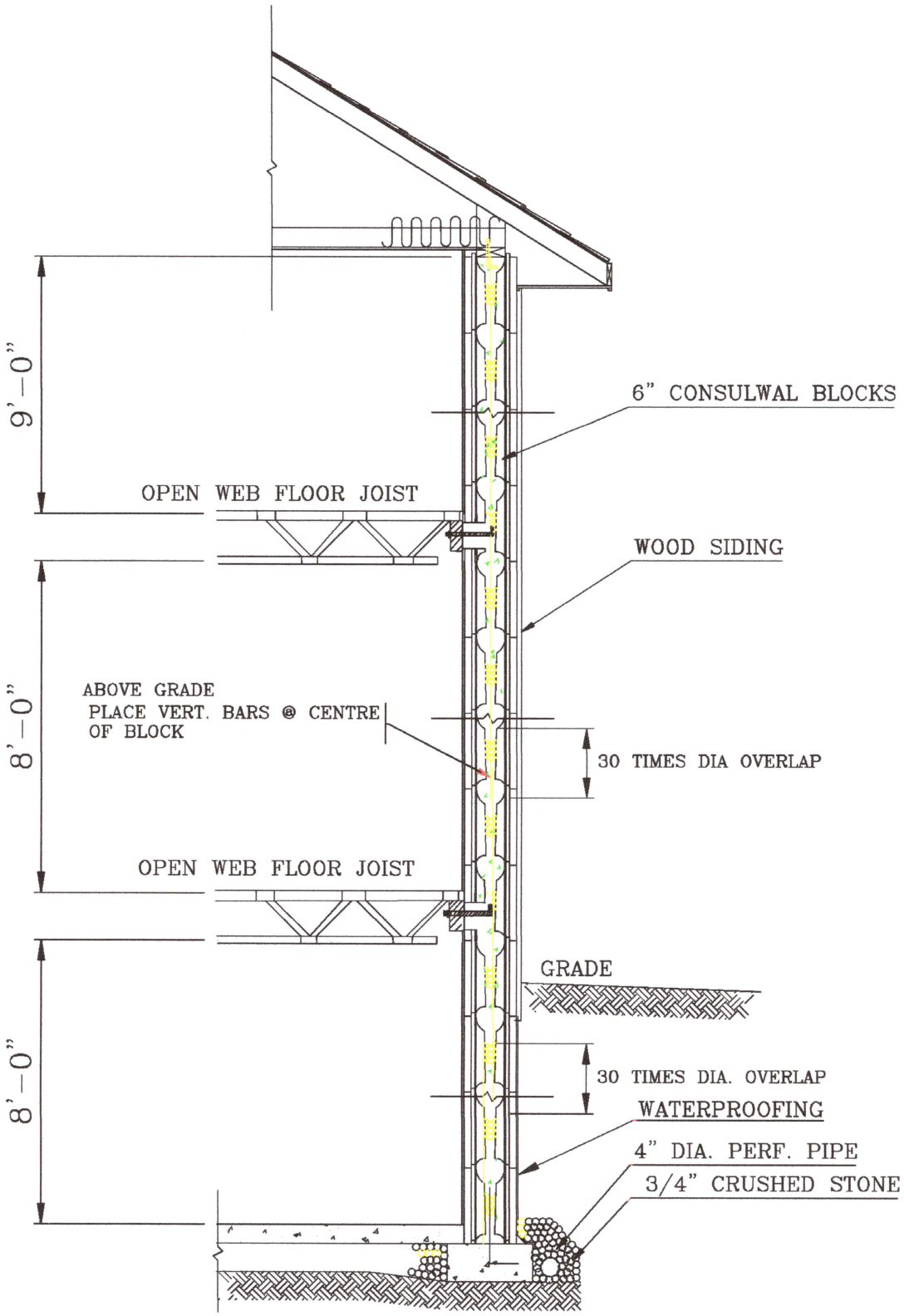
PROVINCE OF ONTARIO

Consulwal	Date	01/01/15		
Closing Cut Into Existing 8" Inside Corner Block				
	CTI – 500.09			

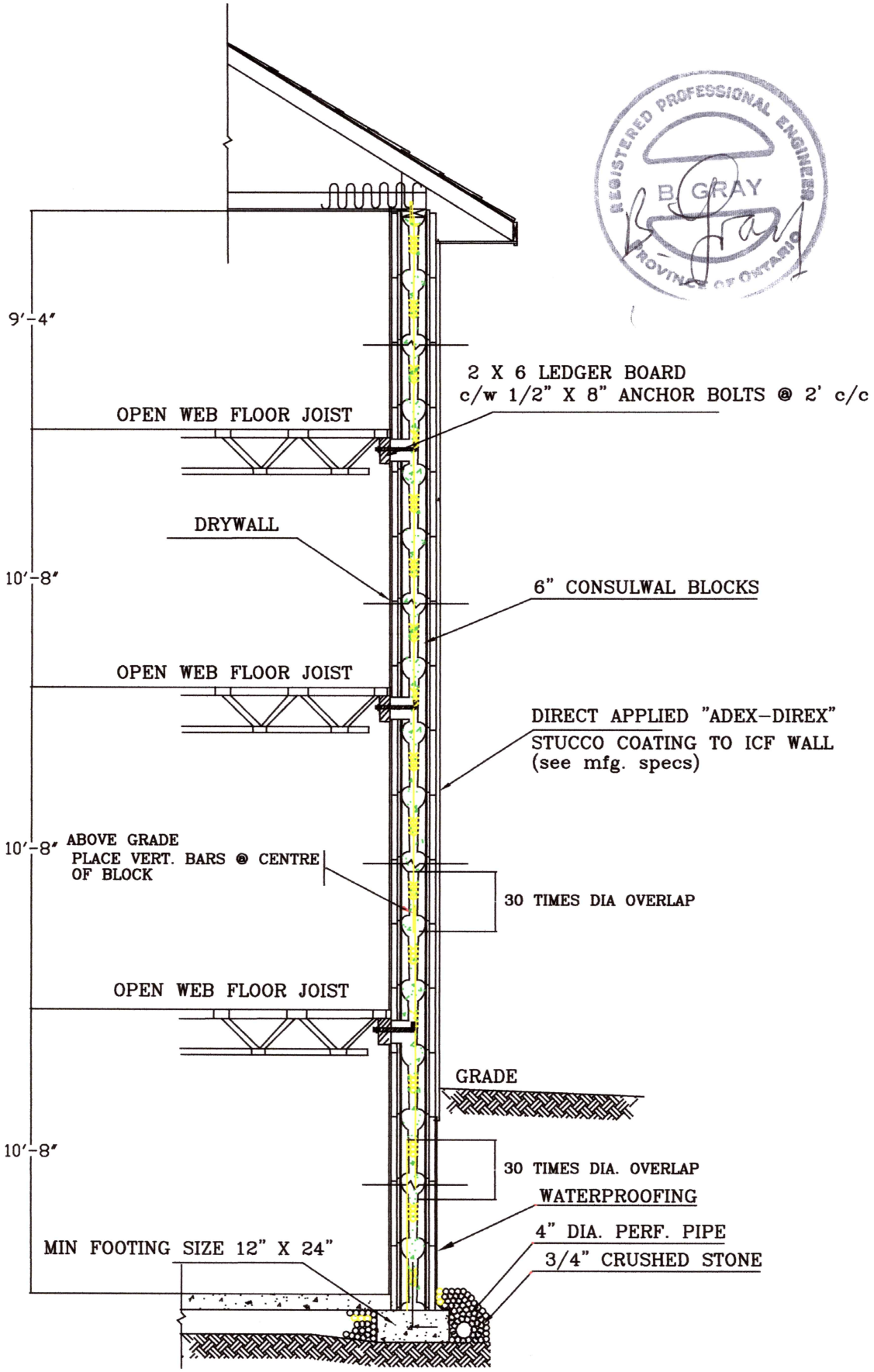


■ REMOVE EPS WEBBING FROM THE CLOSING BLOCK WITHIN THE 6" AS SHOWN ON THE DRAWING

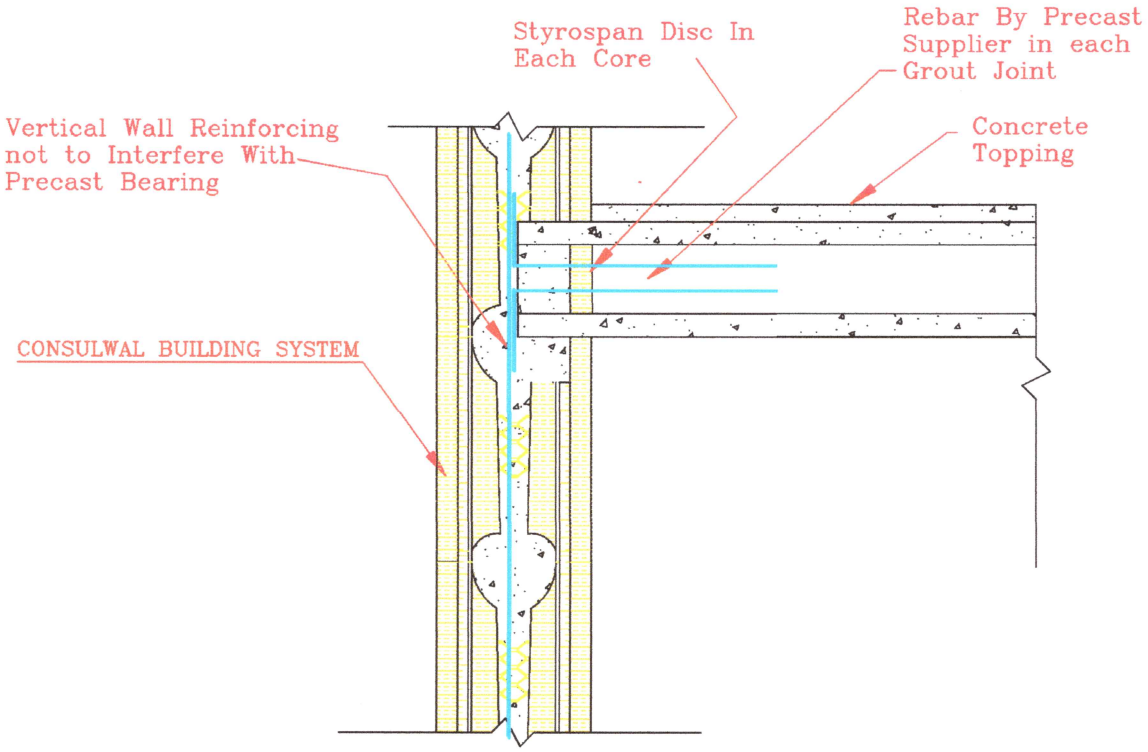
Consulwal	Date	01/01/15		
Closing Cut Into Existing 6" Inside Corner Block				
	CTI – 500.10			



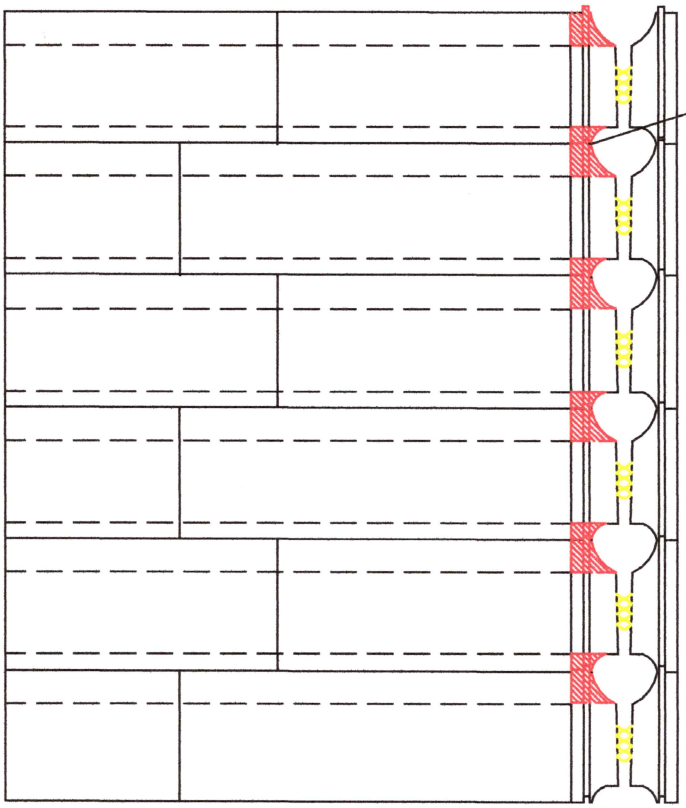
CONSULWAL	Date	01/01/15		
WALL SECTION FOR 2 STOREY AND BASEMENT FOR HOUSE				
	CTI – 900.02			



Consulwal	Date	07/01/18		
WALL SECTION FOR 3 STOREY AND BASEMENT FOR APARTMENT				
	CTI - 900.03			

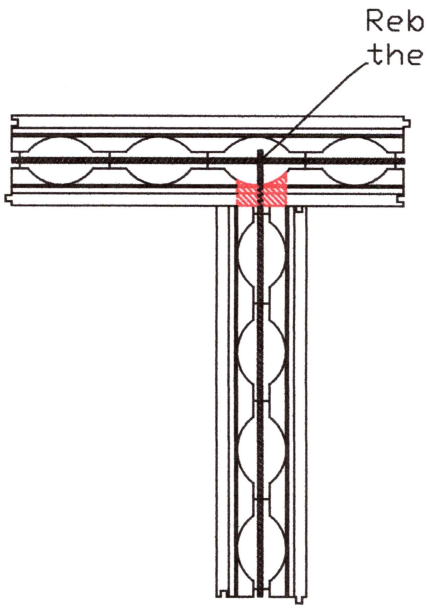


CONSULWAL	Date	01/01/15	
Precast Floor Connection To Consulwal			
	CTI -900.04		

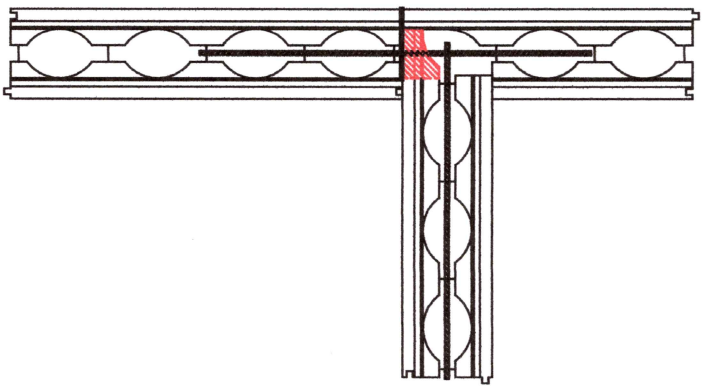


Wall Elevation

May 14, 2019

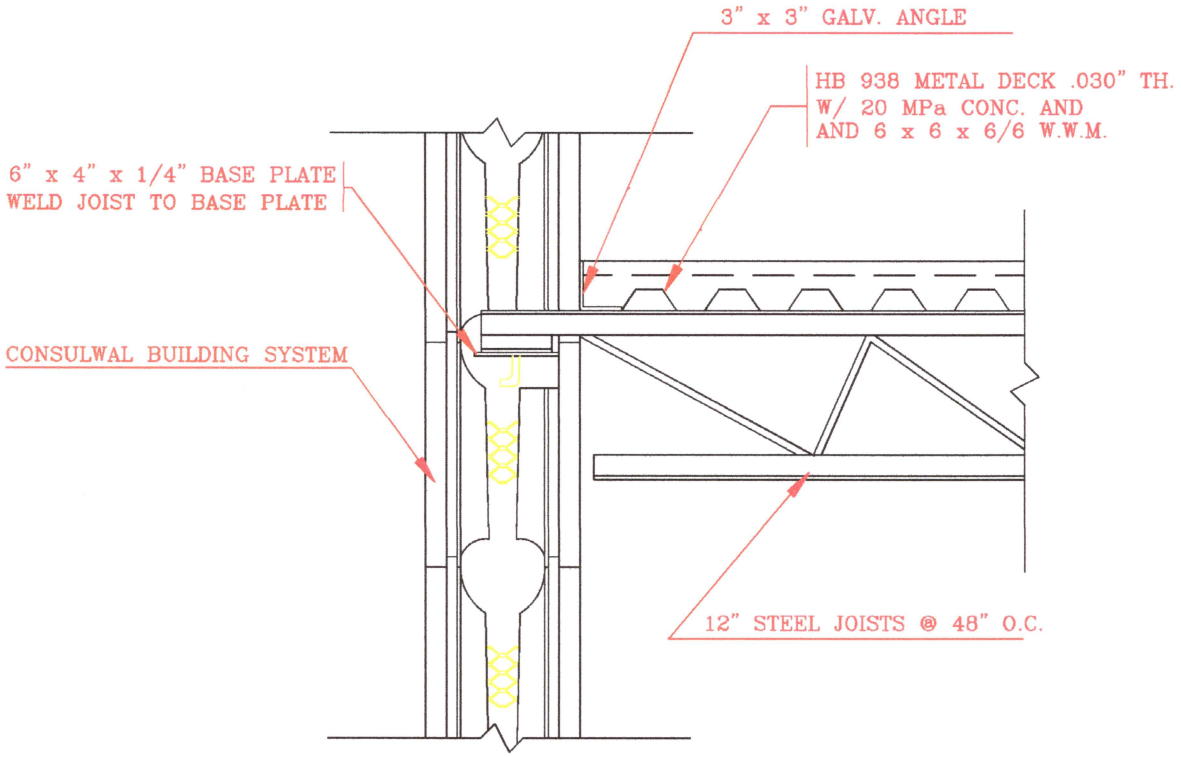


T—Wall Connection



End Wall Conection

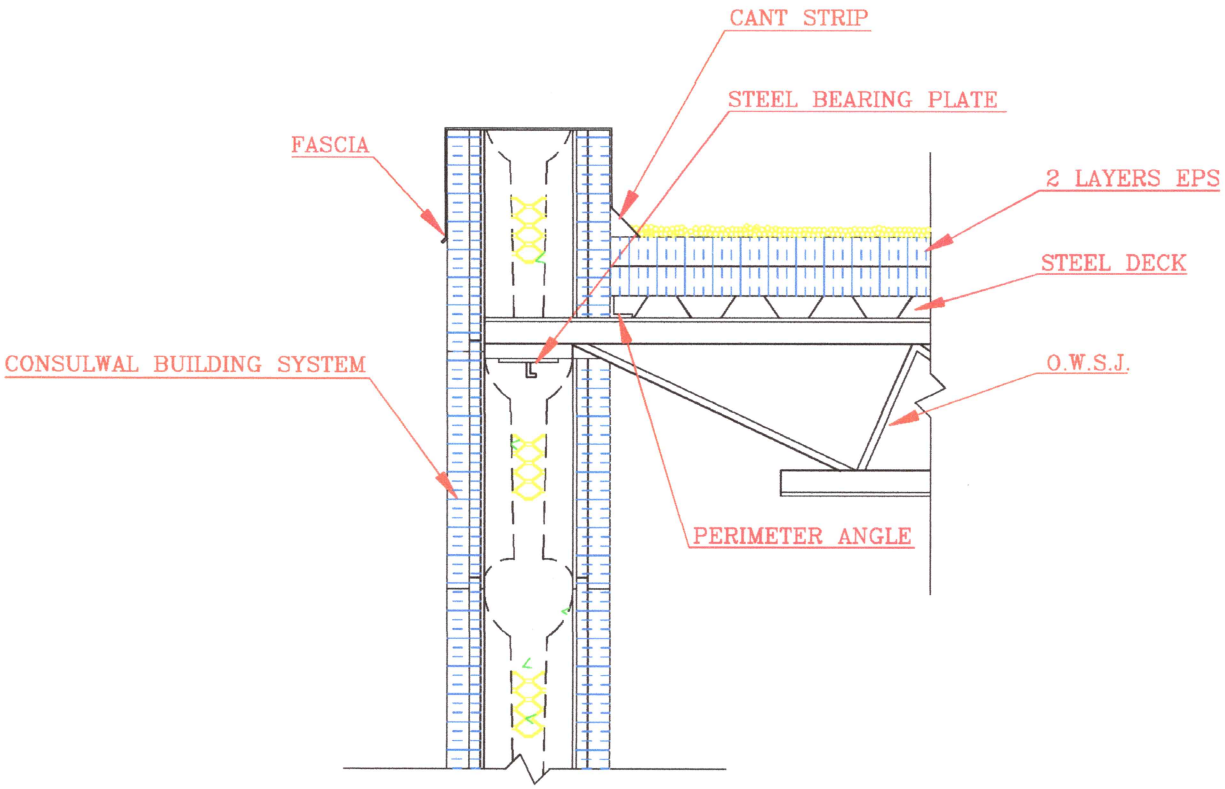
Consulwal	Date	01/01/19		
T—Wall Connection and End Wall Conection				
	CTI – 900.07			



CONCRETE FLOORS WITH STEEL JOISTS

SCALE: 1/2" = 1'

CONSULWAL	Date	01/01/15	
Concrete Floors With Steel Joists			
	CTI –1000.01		



FLAT ROOF CONNECTION

SCALE: 1/2" = 1'

Consulwal	Date	01/01/15		
FLAT ROOF CONNECTION				
	CTI – 1000.02			

C O N S U L W A L

"A One-Step Wall Forming & Insulating System"

VERTICAL REINFORCEMENT FOR 6" (150mm)
CONSULFORM RESIDENTIAL BASEMENT CONSTRUCTION

Average Height of Backfill		Clear Height of Basement		
feet	meters	7.5 ft/2.28 m	8.0 ft/2.44 m	9.0 ft/2.74 m
5.0ft	1.52m	10M @ 24 in./ 610mm	10M @ 24 in. / 610mm	10M @ 24 in. / 610mm
5.5ft	1.68m	15M @ 24 in./ 610mm	15M @ 24 in./ 610mm	15M @ 24 in./ 610mm
6.0ft	1.83m	10M @ 12 in./305mm	10M @ 12 in./305mm	10M @ 12 in./305mm
6.5ft	1.98m	10M @ 12 in./305mm	10M @ 12 in./305mm	10M @ 12 in./305mm
7.0ft	2.13m	10M @ 12 in./305mm	15M @ 12 in./305mm	15M @ 12 in./305mm
7.5ft	2.29m	15M @ 12 in./305mm	15M @ 12 in./305mm	15M @ 12 in./305mm
8.0ft	2.44m	------	15M @ 12 in./305mm	15M @ 12 in./305mm
9.0ft	2.74m	------	------	15M @ 12 in./305mm

NOTES:

-Ultimate strength design according to CAN3 CSA A23.3-M84 with
- (a) Yield strength of steel = 400 MPa (57 Ksi)
- (b) Concrete strength = 25 MPa (3600 psi) @ 28 days
- (c) Unfactored soil pressure = 590 kg/m (120 lb/ft2)
- (d) Wall designed as a Propped Cantilever

-When a reinforcing bar is prevented from running full height due to a small window opening, place bars on either side of the window plus use a 10M bar beneath the window.

-Place 10M bars horizontally every 4 ft. (1.2m)
i. e. every third course.

C O N S U L W A L

"A One-Step Wall Forming & Insulating System"

BAR PLACEMENT FOR 6 INCH CONSULFORM WALLS WITH NO OPENINGS

(for 1 or 2 storey residential housing)

Average Height (ft)	Bar Spacing (feet)			
	1 foot	2 foot	3 foot	4 foot
8.0	-	-	-	10M
8.5	-	-	-	10M
9.0	-	-	10M	15M
9.5	-	-	10M	15M
10.0	-	-	10M	15M
10.5	-	10M	15M	x
11.0	-	10M	15M	x
11.5	-	10M	15M	x
12.0	-	10M	15M	x
12.5	10M	15M	x	x
13.0	10M	15M	x	x
13.5	10M	15M	x	x
14.0	10M	15M	x	x

NOTES:

-4 feet is the maximum spacing recommended for bar bar placement.

-x indicates use closer bar spacing at these heights.

-Ultimate strength design is based on the following parameters:

(a) Yield strength of steel = 400 MPa (57Ksi)

(b) Concrete strength = 25 MPa (3600 psi) @ 28 days

(c) Unfactored wind pressure = 25 psf

(d) Wall simply supported top and bottom

(e) Reinforcement located at centre of wall

-Place 10M bars horizontally every 4 feet (every third course)

Jan 1, 2022.

C O N S U L W A L

"A One-Step Wall Forming & Insulating System"

BAR SIZES FOR 8 INCH CONSULWAL INDUSTRIAL BUILDING WALLS

Unfactored Wind Pressure (psf)	Building Height (feet)						
	8'	10'	12'	14'	16'	18'	20'
15.0	10M es	10M es	10M es	10M es	10M es	10M es	15M es
17.5	10M es	10M es	10M es	10M es	10M es	15M es	15M es
20.0	10M es	10M es	10M es	10M es	10M es	15M es	15M es
22.5	10M es	10M es	10M es	10M es	15M es	15M es	10M e
25.0	10M es	10M es	10M es	10M es	15M es	15M es	10M e
27.5	10M es	10M es	10M es	10M es	15M es	10M e	10M e
30.0	10M es	10M es	10M es	15M es	15M es	10M e	15M e
32.5	10M es	10M es	10M es	15M es	10M e	10M e	15M e
35.0	10M es	10M es	10M es	15M es	10M e	15M e	15M e
37.5	10M es	10M es	10M es	15M es	10M e	15M e	15M e
40.0	10M es	10M es	15M es	15M es	10M e	15M e	15M e
42.5	10M es	10M es	15M es	10M e	10M e	15M e	2-10M
45.0	10M es	10M es	15M es	10M e	15M e	15M e	2-10M
47.5	10M es	10M es	15M es	10M e	15M e	15M e	2-10M
50.0	10M es	10M es	15M es	10M e	15M e	15M e	2-10M

NOTES:

-Ultimate strength design for bar sizes based on the following parameters:

(a) Yield strength of steel = 400 MPa (57 Ksi)
(b) Concrete strength = 25 MPa (3600 psi) @ 28 days
(c) Wall simply supported top and bottom
(d) Equivalent vertical core size of 7 inch thickness by 7-9/16 inch width, thus depth of steel, d= 7/2= 3.5 inches and width, b=7.5625 inches
(e) Unfactored wind pressure – 25 psf

-'es' means every second core
'e' means every core

-Place 10M bars horizontally every 2nd course.

C O N S U L W A L

"A One-Step Wall Forming & Insulating System"

Bar Sizes for Consulform Lintels
AND STIRRUP REQUIREMENTS (16 inch height)

Truss Length (feet)	Lintel Length (feet)													
	4'	6'	7'	8'	9'	10'	11'	12'	13'	14'	15'	16'	18'	20'
6.0	10M	10M	10M	10M	10M	10M	10M	10M	10M	10M	10M	10M	10M	10M
8.0	10M	10M	10M	10M	10M	10M	10M	10M	10M	10M	10M	10M	10M	10M
10.0	10M	10M	10M	10M	10M	10M	10M	10M	10M	10M	10M	10M	10M	15M
12.0	10M	10M	10M	10M	10M	10M	10M	10M	10M	10M	10M	10M	10M	15M
14.0	10M	10M	10M	10M	10M	10M	10M	10M	10M	10M	10M	10M	15M	15M
16.0	10M	10M	10M	10M	10M	10M	10M	10M	10M	10M	10M	10M	15M	15M
18.0	10M	10M	10M	10M	10M	10M	10M	10M	10M	10M	10M	10M	15M	15M
20.0	10M	10M	10M	10M	10M	10M	10M	10M	10M	10M	10M	15M	15M	15M
22.0	10M	10M	10M	10M	10M	10M	10M	10M	10M	10M	10M	15M	15M	15M
24.0	10M	10M	10M	10M	10M	10M	10M	10M	10M	10M	15M	15M	15M	15M
26.0	10M	10M	10M	10M	10M	10M	10M	10M	10M	10M	15M	15M	15M	15M
28.0	10M	10M	10M	10M	10M	10M	10M	10M	10M	15M	15M	15M	15M	15M
30.0	10M	10M	10M	10M	10M	10M	10M	10M	10M	15M	15M	15M	15M	15M
32.0	10M	10M	10M	10M	10M	10M	10M	10M	10M	15M	15M	15M	15M	2-10M
34.0	10M	10M	10M	10M	10M	10M	10M	10M	15M	15M	15M	15M	15M	2-10M
36.0	10M	10M	10M	10M	10M	10M	10M	10M	15M	15M	15M	15M	15M	2-10M
38.0	10M	10M	10M	10M	10M	10M	10M	10M	15M	15M	15M	15M	15M	2-10M
40.0	10M	10M	10M	10M	10M	10M	10M	10M	15M	15M	15M	15M	15M	2-10M
42.0	10M	10M	10M	10M	10M	10M	10M	15M	15M	15M	15M	15M	2-10M	2-15M
44.0	10M	10M	10M	10M	10M	10M	10M	15M	15M	15M	15M	15M	2-10M	2-15M
46.0	10M	10M	10M	10M	10M	10M	10M	15M	15M	15M	15M	15M	2-10M	2-15M
48.0	10M	10M	10M	10M	10M	10M	10M	15M	15M	15M	15M	15M	2-10M	2-15M
50.0	10M	10M	10M	10M	10M	10M	10M	15M	15M	15M	15M	15M	2-10M	2-15M

NOTES:

- Bars to the right of the solid line require 6 inch U-stirrups, each cell.
- Same bar at top and bottom of 16 inch Consulform for lintels situations, for continuous lintel with walls on both ends. Place these top and bottom bars at 2 inches from the top and bottom of the lintel, respectively.
- Design based on 400 MPa (57 ksi) steel, 25 MPa (3600 psi) concrete @ 28 days and an unfactored dead load of 70 lb/ft + (16.35 psf times 1/2 the truss length).

C O N S U L W A L

"A One-Step Wall Forming & Insulating System"

VERTICAL REINFORCEMENT FOR 8" (200mm)
CONSULFORM RESIDENTIAL BASEMENT CONSTRUCTION

Average Height of Backfill		Clear Height of Basement		
feet	meters	7.5 ft/2.28 m	8.0 ft/2.44 m	11.0 ft/3.35 m
5.5ft	1.68m	10M @ 24 in./ 610mm or 15M @ 36 in./914mm	10M @ 24 in. / 610mm or 15M @ 48 in./1219mm	15M @ 48 in./1219mm
6.0ft	1.83m	15M @ 36 in./914mm	15M @ 36 in./914mm	15M @ 36 in./914mm
6.5ft	1.98m	10M @ 12 in./305mm or 15M @ 24 in./610mm	10M @ 12 in./305mm or 15M @ 24 in./610mm	15M @ 24 in./610mm
7.0ft	2.13m	10M @ 12 in./305mm or 15M @ 24 in./610mm	10M @ 12 in./305mm or 15M @ 24 in./610mm	15M @ 24 in./610mm
7.5ft	2.29m	10M @ 12 in./305mm or 15M @ 24 in./610mm	10M @ 12 in./305mm or 15M @ 24 in./610mm	15M @ 12 in./305mm
8.0ft	2.44m	------ ------	15M @ 12 in./305mm ------	15M @ 12 in./610mm
9.0ft	**2.74m**	------	------	**15M @ 12 in./610mm**
10.0ft	**3.05m**	------	------	**15M @ 12 in./610mm**
11.0ft	**3.35m**	------	------	**20M @ 12 in./610mm**

NOTES:

-Ultimate strength design according to CAN3 CSA A23.3-M84 with
- (a) Yield strength of steel = 400 MPa (57 Ksi)
- (b) Concrete strength = 25 MPa (3600 psi) @ 28 days
- (c) Soil density = 590 kg/m (120 lb/ft2)
- (d) Wall designed as a Propped Cantilever
- (e) Reinforcement located at centre of wall
- ****(f) Backfill over 8' rebar located 1" to inside of the centre of the wall****

-When a reinforcing bar is prevented from running full height due to a small window opening, place bars on either side of the window plus use a 10M bar beneath the window.

-Place 10M bars horizontally every 4 ft. (1.2m) i. e. every third course.

C O N S U L W A L

"A One-Step Wall Forming & Insulating System"

BAR PLACEMENT FOR 6 INCH CONSULFORM WALLS WITH OPENINGS
(for 1 and 2 storey residential housing)

Tributary Width (feet)	Average Height (feet)												
	8.0'	8.5'	9.0'	9.5'	10.0'	10.5'	11.0'	11.5'	12.0'	12.5'	13.0'	13.5'	14.0'
1.0	-	-	-	-	-	-	-	-	-	-	-	10M	10M
1.5	-	-	-	-	-	-	10M	10M	10M	10M	10M	10M	10M
2.0	-	-	-	10M	10M	10M	10M	10M	10M	15M	15M	15M	15M
2.5	-	10M	10M	10M	10M	10M	10M	15M	15M	15M	15M	2-10M	2-10M
3.0	10M	10M	10M	10M	10M	15M	15M	15M	15M	2-10M	2-10M	2-10M	2-10M
3.5	10M	10M	10M	15M	15M	15M	15M	2-10M	2-10M	2-10M	2-10M	2-15M	2-15M
4.0	10M	10M	15M	15M	15M	2-10M	2-10M	2-10M	2-10M	2-15M	2-15M	2-15M	2-15M
4.5	10M	15M	15M	15M	2-10M	2-10M	2-10M	2-10M	2-15M	2-15M	2-15M	2-15M	2-10M, 15M
5.0	15M	15M	15M	2-10M	2-10M	2-10M	2-10M	2-15M	2-15M	2-15M	2-15M	2-10M, 15M	2-10M, 15M
5.5	15M	15M	2-10M	2-10M	2-10M	2-10M	2-15M	2-15M	2-15M	2-15M	2-10M, 15M	2-10M, 15M	3-15M
6.0	15M	15M	2-10M	2-10M	2-10M	2-15M	2-15M	2-15M	2-15M	2-10M, 15M	2-10M, 15M	3-15M	3-15M
6.5	15M	2-10M	2-10M	2-10M	2-15M	2-15M	2-15M	2-15M	2-10M, 15M	2-10M, 15M	3-15M	3-15M	3-15M
7.0	2-10M	2-10M	2-10M	2-15M	2-15M	2-15M	2-15M	2-10M, 15M	2-10M, 15M	3-15M	3-15M	3-15M	-
7.5	2-10M	2-10M	2-10M	2-15M	2-15M	2-15M	2-10M, 15M	2-10M, 15M	3-15M	3-15M	3-15M	-	-
8.0	2-10M	2-10M	2-15M	2-15M	2-15M	2-10M, 15M	2-10M, 15M	3-15M	3-15M	3-15M	-	-	-
8.5	2-10M	2-15M	2-15M	2-15M	2-15M	2-10M, 15M	2-10M, 15M	3-15M	3-15M	-	-	-	-
9.0	2-10M	2-15M	2-15M	2-15M	2-10M, 15M	2-10M, 15M	3-15M	3-15M	3-15M	-	-	-	-
9.5	2-10M	2-15M	2-15M	2-15M	2-10M, 15M	2-10M, 15M	3-15M	3-15M	-	-	-	-	-
10.0	2-15M	2-15M	2-15M	2-10M, 15M	2-10M, 15M	3-15M	3-15M	-	-	-	-	-	-
10.5	2-15M	2-15M	2-15M	2-10M, 15M	2-10M, 15M	3-15M	3-15M	-	-	-	-	-	-
11.0	2-15M	2-15M	2-10M, 15M	2-10M, 15M	3-15M	3-15M	-	-	-	-	-	-	-
11.5	2-15M	2-15M	2-10M, 15M	2-10M, 15M	3-15M	3-15M	-	-	-	-	-	-	-
12.0	2-15M	2-15M	2-10M, 15M	3-15M	3-15M	-	-	-	-	-	-	-	-

NOTES:

- Ultimate strength design based on an unfactored wind pressure of 25 psf, 400 MPa (57 ksi) steel, 25 MPa (3600 psi) concrete @ 28 days and simply supported end conditions.
- When 2 bars are required, place in 2 cells. When 3 bars are required, place in 3 cells.
- Round off values for Tributary Width to the next highest value. Round off values for wall height to the nearest height.
- Place 10M bars horizontally every 4' (every 3rd course).