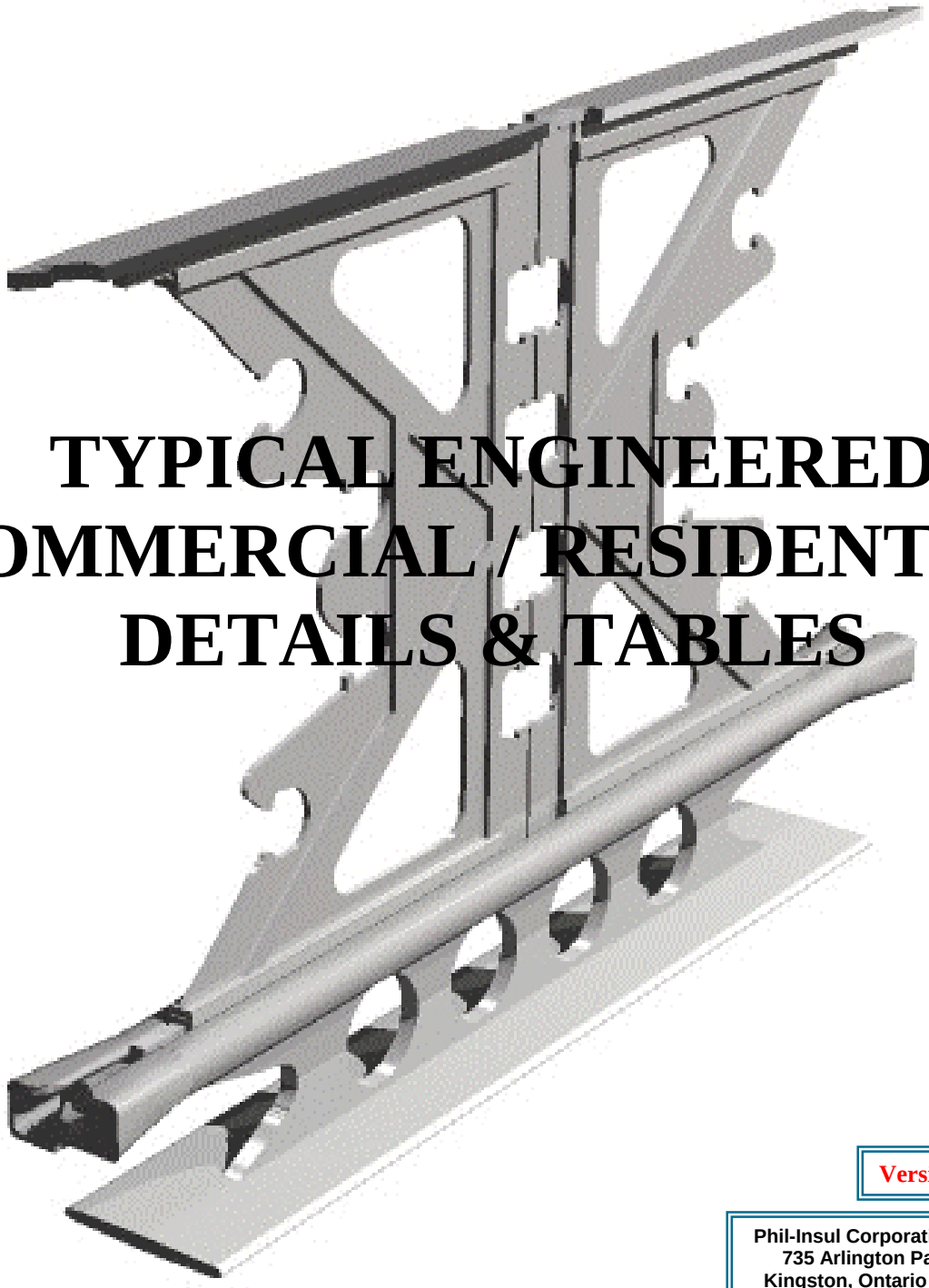
IntegraSpec®

The User Friendly ICF

Insulating Concrete Forms

by Phil-Insul Corp.



TYPICAL ENGINEERED COMMERCIAL / RESIDENTIAL DETAILS & TABLES

Version 7.2

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IntegraSpec Specifications

General Specifications

- **Wall Design Principle** _____ **Monolithic Structural Concrete Wall**
- **Pour Height** _____ **Up to 10 ft., 3.1 m Continuous Pour**
- **Thermal Resistance** _____ **R22+ per ASHRAE Fundamentals (1997)**
- **Sound Resistance** _____ **Minimum STC (Sound Transmission Class) = 51+ (4 in (10 cm) Concrete Core / Wall)**
- **Fire Resistance:** **Flash Ignition @ 705°F (374°C)**
  Self Ignition @ 842°F (450°C)
  Per DIN 54 836
  Fire Channel Profile 8 in (20 cm) O.C.
- **CCMC EVALUATION NUMBER: 12938-R**
- **ICC ES EVALUATION NUMBER: ESR - 1147**
- **WARNOCK HERSHEY / INTERTEK TESTED**
- **ISO 9002**

GREEN PRODUCT

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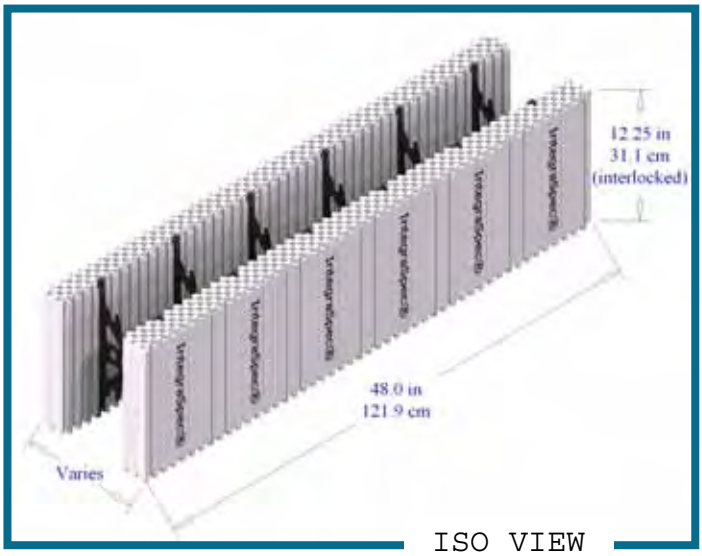
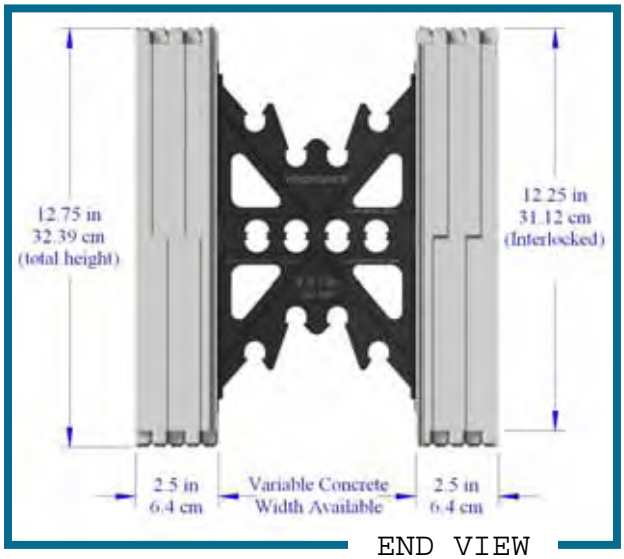
IntegraSpec® - STANDARD PANEL(S)



ISO VIEW



END VIEW

Typical Standard Panel Dimension(s)	Length 48.0 in X Width 2.5 in X Height 12.25 in (interlocked) (Length 122 cm X Width 6.35 cm X Height 31.12 cm) *Note: Part dimensions may vary slightly due to EPS material shrinkage (100% recyclable)*					
Standard Concrete Cavity / Core	**4 in (10.2cm)**	**5 in (12.7 cm)**	**6 in (15.2cm)**	**8 in (20.3cm)**	**10 in (25.4cm)**	**12 in (30.5cm)**
Total Wall Width (2 Integra Panels + Conc. Core)	9 in (22.9 cm)	10 in (25.4 cm)	11 in (27.9 cm)	13 in (33.0 cm)	15 in (38.1 cm)	17 in (43.2 cm)
Integra Foam panel(s) Material	Flame Retardant Type 2, Expanded Polystyrene (EPS), Density = 1.5 + Pounds / Cubic / Feet (pcf) (24.14 kg / m^3)					
Integra Plastic Insert(s) Material	High Impact Polystyrene (HIPS) (100% recycled material)					
Unique & Special Interlocking Features of the Panels	Patented Bi-Directional and or Reversible (No Top, Bottom, Left or Right Hand Side); (Enables faster & accurate installation with eliminating wastes)					
Interlocking Design	Unique Special patented friction and mechanical interlocks					
Typical Fastening Studs/Strapping	Vertical $1^5/_8$ in (4.13 cm) Wide Located every 8 in (20 cm) O.C.					
Exterior Surface Area	4.08 ft^2 (0.38 m^2) (interlocked)					
Concrete Volume w/ 4"(10.16cm) Wall	0.05 yd^3 (0.039 m^3) / Standard Form Unit					
Concrete Volume w/ 5"(12.70cm) Wall	0.06 yd^3 (0.048 m^3) / Standard Form Unit					
Concrete Volume w/ 6"(15.24cm) Wall	0.08 yd^3 (0.058 m^3) / Standard Form Unit					
Concrete Volume w/ 8"(20.32cm) Wall	0.10 yd^3 (0.077 m^3) / Standard Form Unit					
Concrete Volume w/ 10"(25.40cm) Wall	0.12 yd^3 (0.094 m^3) / Standard Form Unit					
Concrete Volume w/ 12"(30.48cm) Wall	0.151 yd^3 (0.11 m^3) / Standard Form Unit					
Qty's / Sq/feet / Meters per Bundle	18 Standard Panels (9 Blocks)	36.72 Sq / ft. (3.42 Sq / M) of wall area (incl. both sides of wall)				
Packaging	Poly-wrapped					
Bundle's Weight	Approx. 43 lbs (19.5 Kg) / bundle					
Bundle Size	25.0 in (63.5 cm) wide X 48.0 in (121.9 cm) long X 22.5 in (57.1 cm) high					

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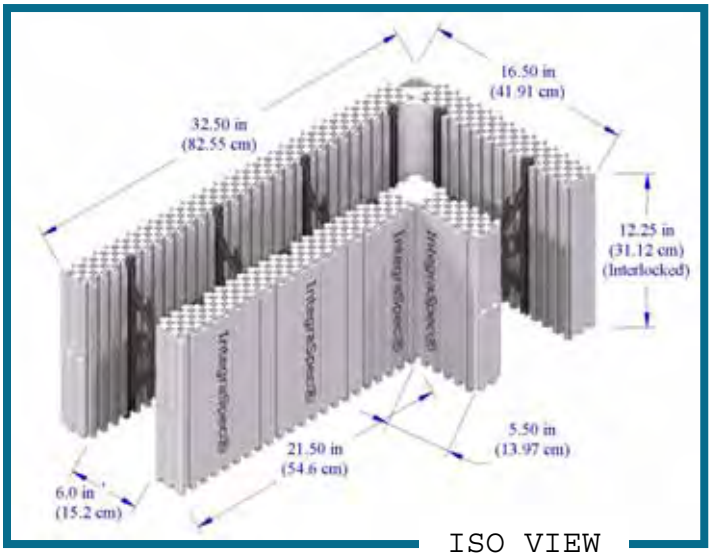
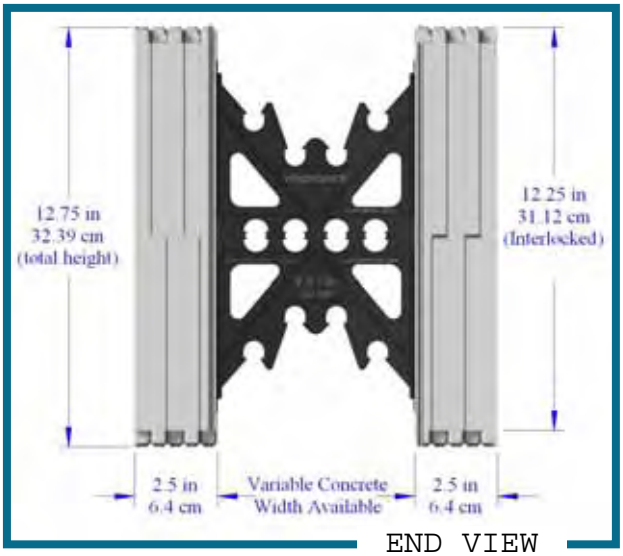
IntegraSpec® - 90° CORNER UNIT 6”(15.2cm)



ISO VIEW



END VIEW

Typical Exterior Panel Dimension(s)	Length 32.5 in X Width 16.5 in X Height 12.25 in (interlocked) (Length 82.6 cm X Width 41.91 cm X Height 31.12 cm) *Note: Part dimensions may vary slightly due to EPS material shrinkage (100% recyclable)*	
Typical Interior Panel Dimension(s)	Length 21.5 in X Width 5.5 in X Height 12.25 in (interlocked) (Length 54.6 cm X Width 14 cm X Height 31.12 cm) *Note: Part dimensions may vary slightly due to EPS material shrinkage (100% recyclable)*	
Concrete Volume per Corner Unit	0.056 yd^3 (0.043 m^3)	
Integra Foam panel(s) Material	Flame Retardant Type 2, Expanded Polystyrene (EPS), Density = 1.5 + Pounds / Cubic / Feet (pcf) (24.14 kg / m^3)	
Integra Plastic Insert(s) Material	High Impact Polystyrene (HIPS) (recycled material)	
Unique & Special Interlocking Features of the Panels	Patented Bi-Directional and or Reversible (No Top, Bottom, Left or Right Hand Side); (Enables faster & accurate installation with eliminating wastes)	
Interlocking Design	Unique Special patented friction and mechanical interlocks	
Typical Fastening Studs/Strapping	Vertical $1^5/_8$ in (4.13 cm) Wide Located every 8 in (20 cm) O.C.	
Exterior Surface Area	4.16 ft^2 (0.40 m^2) (interlocked)	
Qty's / Sq/feet / Meters per Bundle	8 Corner Units (16 Panels)	33.28 ft^2 (3.1 m^2 of wall area (incl. both sides of wall)
Packaging	Poly-wrapped	
Bundle's Weight	Approx. 31 lbs (14 Kg) / bundle	
Bundle Size	21.0 in (53.34 cm) wide X 42.0 in (106.7 cm) long X 25 in (63.5 cm) high	

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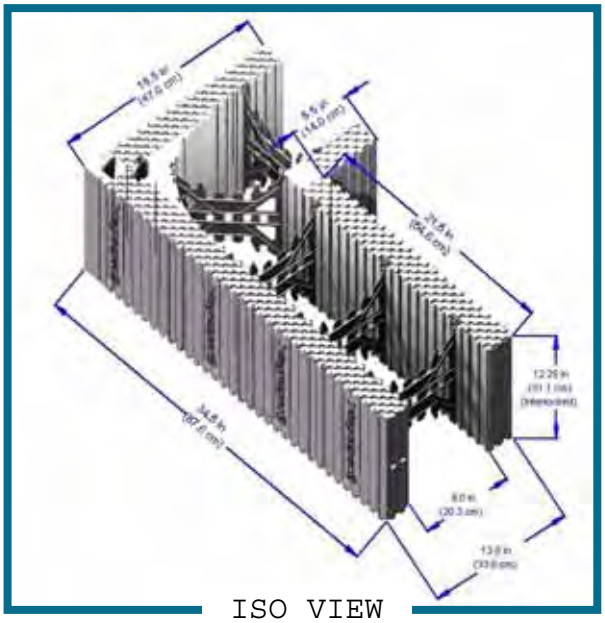
IntegraSpec® - 90° COMMERCIAL CORNER UNIT



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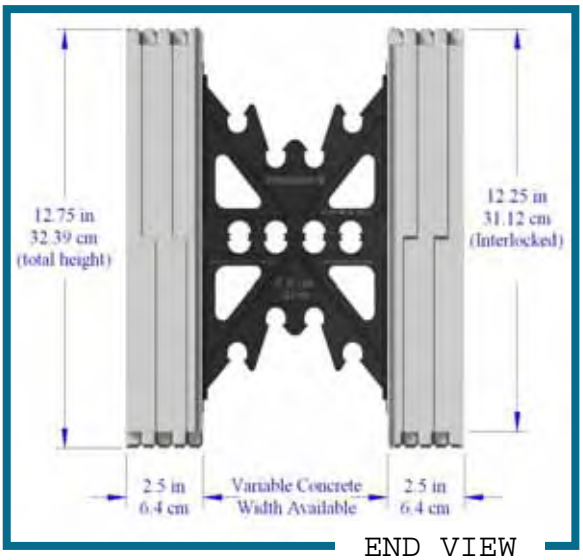

END VIEW

Typical Exterior Panel Dimension(s)	Length 34.5 in X Width 18.5 in X Height 12.25 in (interlocked) (Length 87.6 cm X Width 47 cm X Height 31.12 cm) *Note: Part dimensions may vary slightly due to EPS material shrinkage (100% recyclable)*	
Typical Interior Panel Dimension(s)	Length 21.5 in X Width 5.5 in X Height 12.25 in (interlocked) (Length 54.6 cm X Width 14 cm X Height 31.12 cm) *Note: Part dimensions may vary slightly due to EPS material shrinkage (100% recyclable)*	
Concrete Volume per Corner Unit	0.067 yd^3 (0.051 m^3)	
Integra Foam panel(s) Material	Flame Retardant Type 2, Expanded Polystyrene (EPS), Density = 1.5 + Pounds / Cubic / Feet (pcf) (24.14 kg / m^3)	
Integra Plastic Insert(s) Material	High Impact Polystyrene (HIPS) (recycled material)	
Unique & Special Interlocking Features of the Panels	Patented Bi-Directional and or Reversible (No Top, Bottom, Left or Right Hand Side); (Enables faster & accurate installation with eliminating wastes)	
Interlocking Design	Unique Special patented friction and mechanical interlocks	
Typical Fastening Studs/Strapping	Vertical $1^5/_8$ in (4.13 cm) Wide Located every 8 in (20 cm) O.C.	
Exterior Surface Area	4.51 ft^2 (0.42 m^2) (interlocked)	
Qty's / Sq/feet / Meters per Bundle	8 Corner Units (16 Panels)	36.08 ft^2 (3.35 m^2 of wall area (incl. both sides of wall)
Packaging	Poly-wrapped	
Bundle's Weight	Approx. 32 lbs (14.5 Kg) / bundle	
Bundle Size	25.5 in (64.77 cm) wide X 45.0 in (114.3 cm) long X 25 in (63.5 cm) high	

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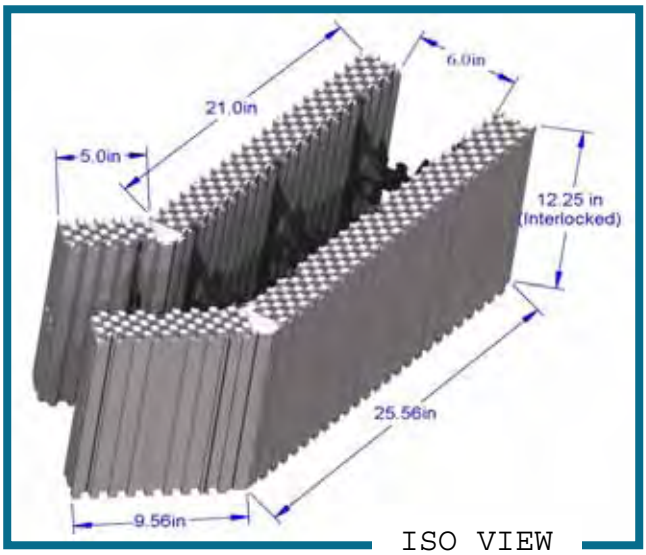
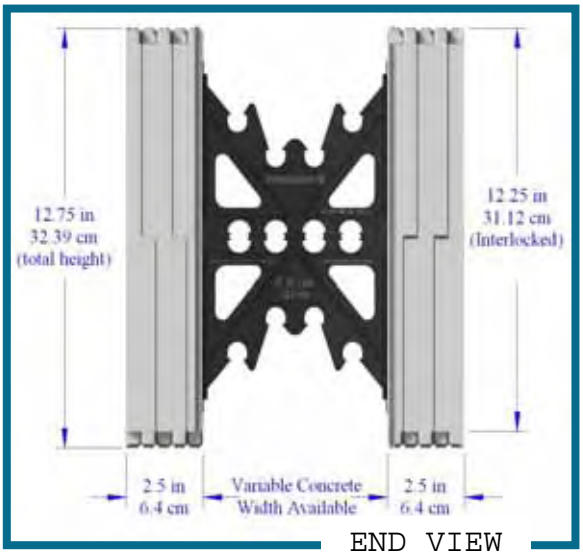
IntegraSpec® - 45° CORNER UNIT 6”(15.2cm)



ISO VIEW



END VIEW

Typical Exterior Panel Dimension(s)	Length 25.56 in X Length 9.56 in X Height 12.25 in (interlocked) (Length 64.92 cm X Width 24.28 cm X Height 31.12 cm) *Note: Part dimensions may vary slightly due to EPS material shrinkage (100% recyclable)*	
Typical Interior Panel Dimension(s)	Length 21.0 in X Width 5.0 in X Height 12.25 in (interlocked) (Length 53.34 cm X Length 12.7 cm X Height 31.12 cm) *Note: Part dimensions may vary slightly due to EPS material shrinkage (100% recyclable)*	
Concrete Volume per Corner Unit	.048 yd^3 (0.036 m^3)	
Integra Foam panel(s) Material	Flame Retardant Type 2, Expanded Polystyrene (EPS), Density = 1.5 + Pounds / Cubic / Feet (pcf) (24.14 kg / m^3)	
Integra Plastic Insert(s) Material	High Impact Polystyrene (HIPS) (recycled material)	
Unique & Special Interlocking Features of the Panels	Bi-Directional and or Reversible (No Top, Bottom, Left or Right Hand Side); (Enables faster & accurate installation with eliminating wastes)	
Interlocking Design	Unique Special patented friction and mechanical interlocks	
Typical Fastening Studs/Strapping	Vertical $1^5/_8$ in (4.13 cm) Wide Located every 8 in (20 cm) O.C. (with an additional located at exterior corner)	
Exterior Surface Area	2.99 ft^2 (0.28 m^2) (interlocked)	
Interior Surface Area	2.21 ft^2 (0.20 m^2) (interlocked)	
Qty's / Sq/feet / Meters per Bundle Exterior Corner Panels	16 Panels / Bundle	47.84 ft^2 (4.48 m^2 of wall area (Exterior face of wall (one side))
Qty's / Sq/feet / Meters per Bundle Interior Corner Panels	16 Panels / Bundle	35.36 ft^2 (3.20 m^2 of wall are Interior face of wall (one side))
Packaging	Poly-wrapped	
Bundle’s Weight & Size Exterior Panels	Weight = Approx. 28 Lbs (12.7 Kg)	Size = H 25 ½ in X L 45 ½ in X W 23 in (H 65 cm X L 116 cm X W 58 cm)
Bundle’s Weight & Size Interior Panels	Weight = Approx. 26 Lbs (11.8 Kg)	Size = H 25 ½ in X L 21 ½ in X W 34 in (H 65 cm X L 55 cm X W 76 cm)

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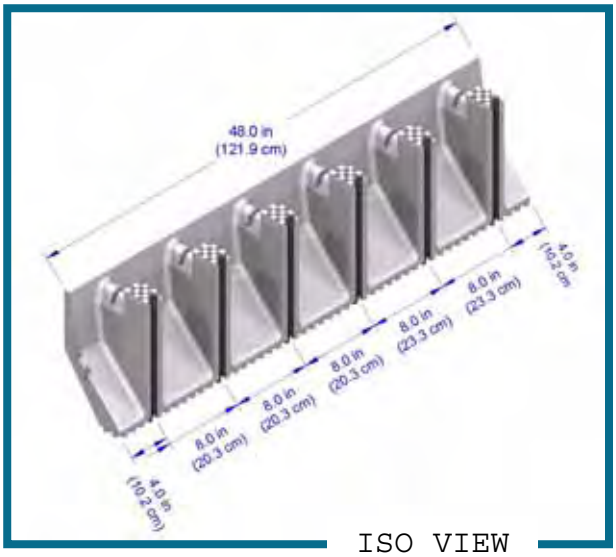
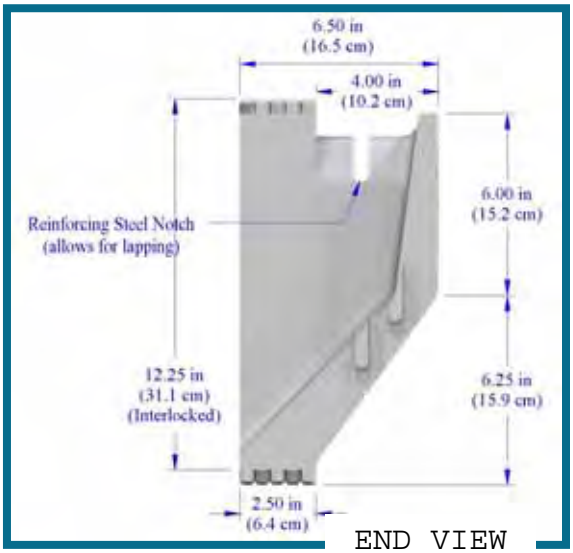
IntegraSpec® - BRICK LEDGE PANEL 4”(10.0cm)



ISO VIEW



END VIEW

Typical Brick Ledge Panel Dimension(s)	Length 48.0 in X Width 6.5 in X Height 12.25 in (interlocked) (Length 122 cm X Width 16.51 cm X Height 31.12 cm) *Note: Part dimensions may vary slightly due to EPS material shrinkage (100% recyclable)*					
Concrete Projection	4 in (10.2 cm) (from face of wall)					
Concrete Core Size	**4 in (10.2cm)**	**5 in (12.7 cm)**	**6 in (15.2cm)**	**8 in (20.3cm)**	**10 in (38.1cm)**	**12 in (30.5cm)**
Overall Wall Width (1 Brick Ledge Panel)	13 in (33.0cm)	14 in (35.6 cm)	15 in (38.1cm)	17 in (43.1cm)	19 in (48.3cm)	21 in (53.3cm)
Overall Wall Width (2 Brick Ledge Panels)	17 in (43.1cm)	18 in (45.7 cm)	19 in (48.3cm)	21 in (53.3cm)	23 in (58.4cm)	25 in (63.5cm)
Integra Foam Panel Material	Flame Retardant Type 2, Expanded Polystyrene (EPS), Density = 1.5 + Pounds / Cubic / Feet (pcf) (24.14 kg / m^3)					
Integra Plastic Insert(s) Material	High Impact Polystyrene (HIPS) (recycled material)					
Unique Panels’ Features	Interlocking Tongue & Grooves on Panel’s ends; can be place any where in the wall(s) and at different elevation(s); interlocks consecutive row(s) on top; incorporate rebar notch					
Interlocking Design	Unique Special patented friction and mechanical interlocks					
Design Principal	Insulated monolithic structural concrete ledger (Brick / Floor)					
Exterior Surface Area	4.08 ft^2 (0.38 m^2) (interlocked)					
Concrete Required per Brick Ledge Panel	0.0286 yd^3 (0.022 m^3) / Panel					
Qty's / Sq/feet / Meters per Bundle	8 Brick Ledge Panels	32.64 Sq / ft. (3.03 Sq / M) (1 side of wall)				
Packaging	Poly-wrapped					
Bundle’s Weight	19 lbs (8.6 Kg) / bundle					
Bundle Size	25.0 in (63.5 cm) wide X 49.0 in (124.46 cm) long X 26.5 in (67.3 cm) high					

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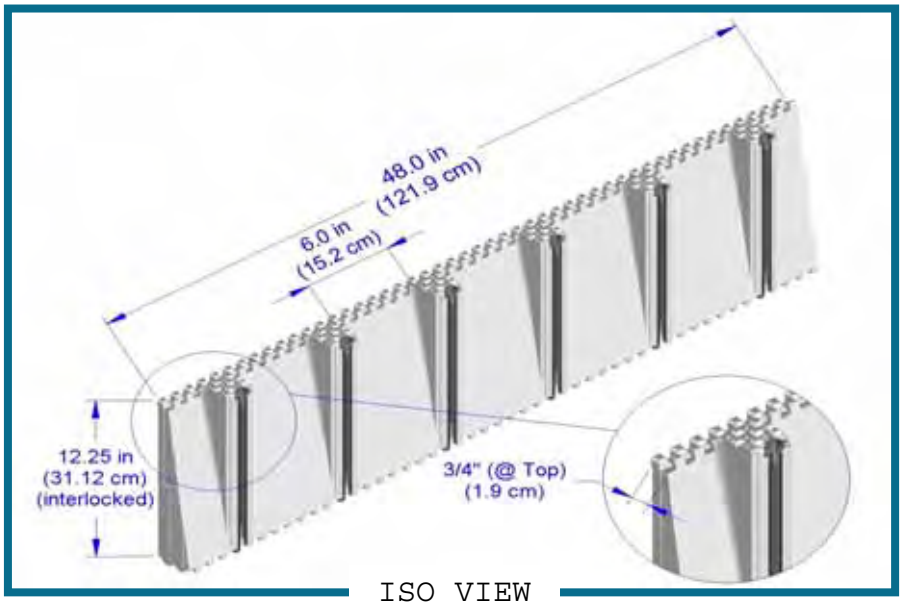
IntegraSpec® - TAPER TOP PANEL



ISO VIEW

Typical Taper Top Panel Dimensions	Length 48.0 in X Width 2.5 in X Height 12.25 in (interlocked) (Length 122 cm X Width 6.4 cm X Height 31.12 cm) *Note: Part dimensions may vary slightly due to EPS material shrinkage (100% recyclable)*					
Additional Concrete at Top	1.75 in (4.5 cm)					
Concrete Core Size	**4 in (10.2cm)**	**5 in (12.7cm**	**6 in (15.2cm)**	**8 in (20.3cm)**	**10 in (38.1cm)**	**12 in (30.5cm)**
Overall Concrete Wall Width at Top (1 Taper Top Panel)	5.75 in (14.6cm)	6.75 in (17.15cm)	7.75 in (19.7cm)	9.75 in (24.8cm)	11.75 in (29.9cm)	13.75 in (34.9cm)
Overall Concrete Wall Width at Top (2 Taper Top Panels)	7.5 in (19.1cm)	8.5 in (21.6cm)	9.5 in (24.1cm)	11.5 in (29.2cm)	13.5 in (34.3cm)	15.5 in (39.4cm)
Integra Foam Panel Material	Flame Retardant Type 2, Expanded Polystyrene (EPS), Density = 1.5 + Pounds / Cubic / Feet (pcf) (24.14 kg / m^3)					
Integra Plastic Insert(s) Material	High Impact Polystyrene (HIPS) (recycled material)					
Unique Panels' Features	Interlocking Tongue & Grooves on Panel's ends; can be place any where in the wall(s) and at different elevation(s); interlocks consecutive row(s) on top;					
Interlocking Design	Unique Special patented friction and mechanical interlocks					
Design Principal	Increases concrete thickness / strength at top of wall					
Exterior Surface Area	4.08 ft^2 (0.38 m^2) (interlocked)					
Concrete Required per Taper Top Panel	0.0083 yd^3 (0.0064 m^3) / Panel					
Qty's / Sq/feet / Meters per Bundle	18 Standard Panels (9 Blocks)	36.72 Sq / ft. (3.42 Sq / M) of wall area (incl. both sides of wall)				
Packaging	Poly-wrapped					
Bundle's Weight	Approx. 35 lbs (15.88 Kg) / bundle					
Bundle Size	25.0 in (63.5 cm) wide X 48.0 in (121.9 cm) long X 22.5 in (57.1 cm) high					

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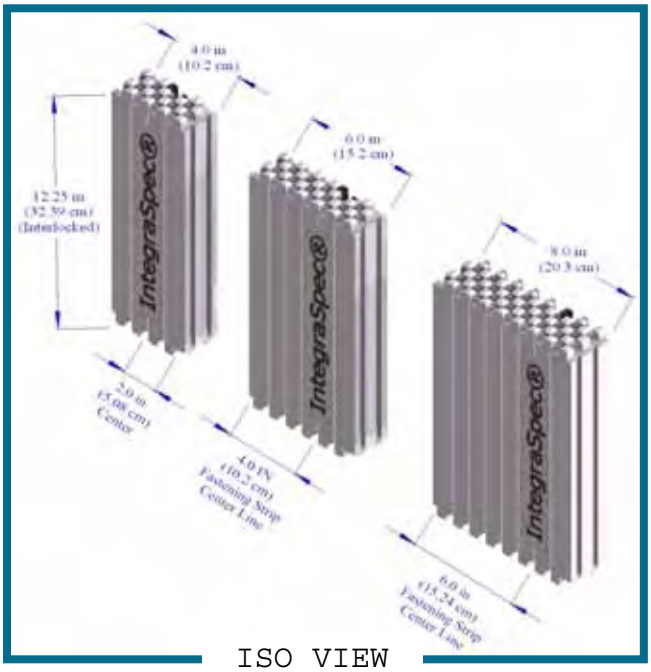
IntegraSpec® - IntegraBucks 4”(10.2cm), 6”(15.2cm), 8”(20.3cm)



ISO VIEW

Staggered Integra-Bucks Shown

Integra Bucks Dimension	**4” (10.2 cm) long X 2” (5.1 cm) wide X 12.25” (31.1cm) high** *Note: Part dimensions may vary slightly due to EPS material shrinkage (100% recyclable)*		
	6” (15.2 cm) long X 2” (5.1 cm) wide X 12.25” (31.1cm) high *Note: Part dimensions may vary slightly due to EPS material shrinkage (100% recyclable)*		
	8” (20.3 cm) long X 2.5” (6.4 cm) wide X 12.25” (31.1cm) high *Note: Part dimensions may vary slightly due to EPS material shrinkage (100% recyclable)*		
Integra Foam panel(s) Material	Flame Retardant Type 2, Expanded Polystyrene (EPS), Density = 1.5 + Pounds / Cubic / Feet (pcf) (24.14 kg / m^3)		
Integra Plastic Insert(s) Material	High Impact Polystyrene (HIPS) (recycled material)		
Unique & Special Interlocking Features of the Panels	Bi-Directional and or Reversible (No Top, Bottom, Left or Right Hand Side); Slides in panel’s dove tails Enables faster & accurate installation of rough openings and includes strapping to fasten window and or door frame(s).		
Interlocking Design	Unique Special patented friction and dove tail interlock(s)		
Typical Fastening Studs/Strapping	Vertical $1^5/_8$ in (4.13 cm) Wide; located inside bucks		
Integra Buck Sizes	**4 in (10.2cm)**	**6 in (15.2cm)**	**8 in (20.3cm)**
Quantity	80 pcs	80 pcs	80 pcs
Packaging	Box	Box	Box
Approx. Box Weight	23 Lbs (10.4 Kg)	27 Lbs (12.25 Kg)	35 lbs (13.15 Kg)
Box Size	20.5 in X 19 in X 26 in (52 cm X 48.3 cm X 66.1 cm)	26 in X 20.5 in X 26.5 in (66.1 cm X 52.1 cm X 67.3 cm)	34.5 in X 25.5 in X 26 in (87.6 cm X 64.8 cm X 66.1 cm)

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IntegraSpec® - IntegraHeaders 4”(10.2cm), 6”(15.2cm), 8”(20.3cm)

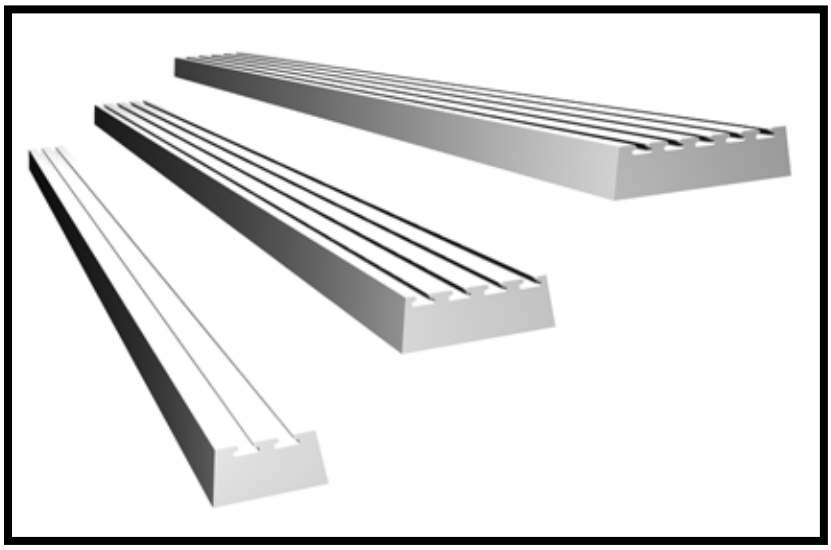

Fig. S-8.0
IntegraHeader (4”(10.2 cm), 6”(15.2 cm), & 8”(20.3 cm) shown)

Fig. S-8.1
IntegraHeader (top) & IntegraBuck (sides)
(optional steel (header) channel shown)

IntegraHeaders Dimension	**4” (10.2 cm) wide X 1.5” (3.8 cm) thick X 8’ (244 cm) long**			
	5” (12.7 cm) wide X 1.5” (3.8 cm) thick X 8’ (244 cm) long			
	6” (15.2 cm) wide X 1.5” (3.8 cm) thick X 8’ (244 cm) long			
	8” (20.3 cm) wide X 1.5” (3.8 cm) thick X 8’ (244 cm) long			
	10” (25.4 cm) wide X 1.5” (3.8 cm) thick X 8’ (244 cm) long			
	12” (30.5 cm) wide X 1.5” (3.8 cm) thick X 8’ (244 cm) long			
IntegraHeader Material	Flame Retardant Type 2, Expanded Polystyrene (EPS), Density = 1.5 + Pounds / Cubic / Feet (pcf) (24.14 kg / m³)			
Incorporated Dove Tail	Perfect Concrete Bonding with EPS			
IntegraHeader Details	**4 in (10.2 cm)**	**5 in (12.7 cm)**	**6 in (15.2 cm)**	**8 in (20.3 cm)**
Quantity	30 pcs	30 pcs	30 pcs	30 pcs
Packaging	Shrink Wrap	Shrink Wrap	Shrink Wrap	Shrink Wrap
Approx. Box Weight	50 Lbs (22.7 Kg)	tba Lbs (Kg)	56 Lbs (25.4 Kg)	62 Lbs (28.1 Kg)
Bundle Size	96 in X 15 in X 12 in (244 cm X 38.1 cm X 30.5 cm)	96 in X tba in X tba in (244 cm X tba cm X tba cm)	96 in X 15 in X 17 in (244 cm X 38.1 cm X 43.2 cm)	96 in X 15 in X 24 in (244 cm X 38.1 cm X 61 cm)

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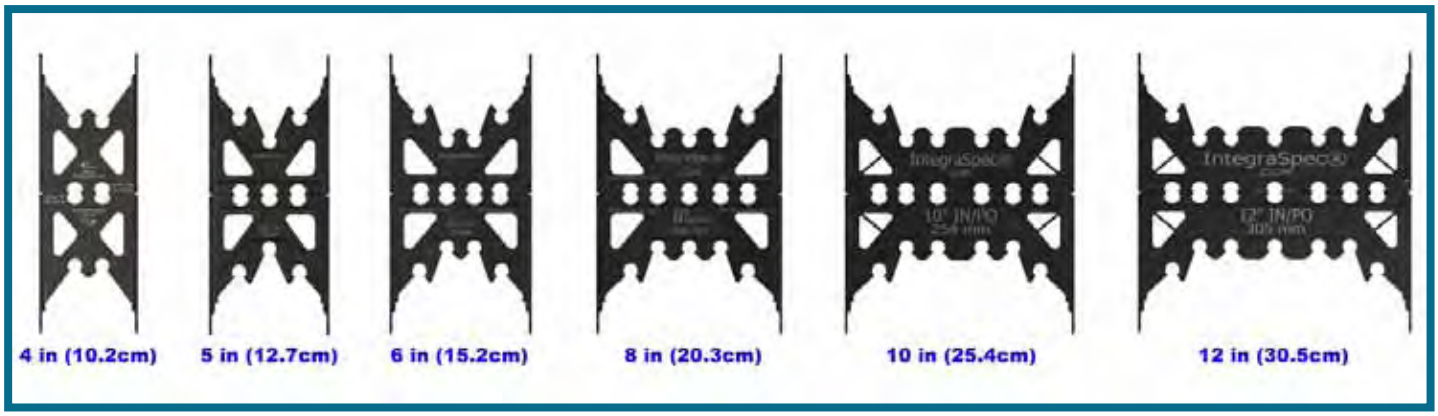
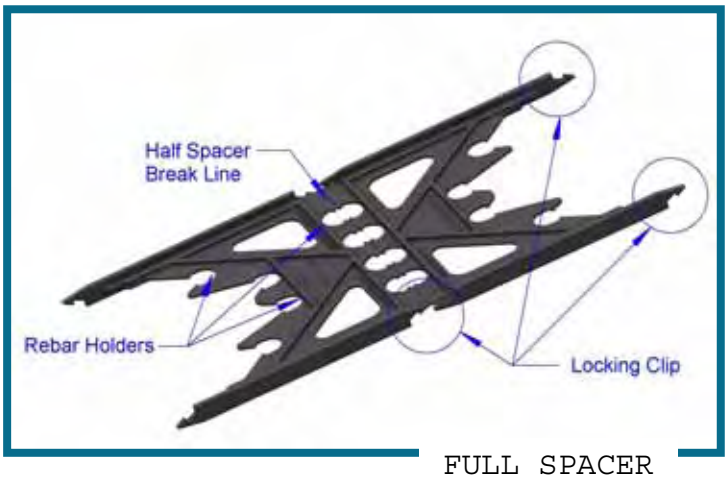
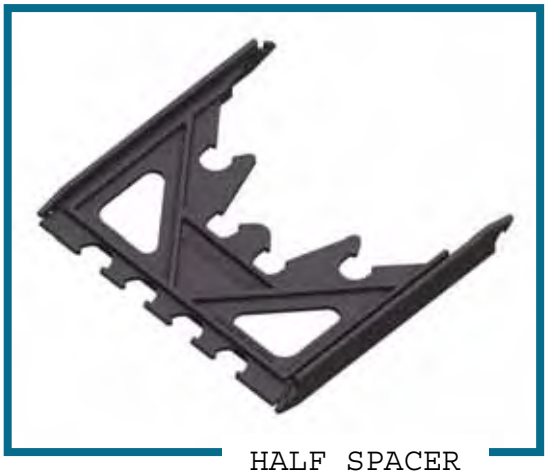
IntegraSpec® - Spacers





FULL SPACER



HALF SPACER

Integra Spacer(s) Plastic Material	High Impact Polystyrene (HIPS) (recycled material)
Unique & Special Spacer Features	Bi-Directional and or Reversible (No Top, Bottom, Left or Right Hand Side). Incorporates assorted rebar holders. Breakable in two halves. Can also be cut for custom applications.
Interlocking Design	Slides in panel's inserts and interlocks one on top of the other.
Typical Fastening Studs/Strapping	Vertical $1^{5}/_{8}$ in (4.13 cm) Wide; located inside bucks

Spacer Sizes	**4 in (10.2cm)**	**5 in (12.7cm)**	**6 in (15.2cm)**	**8 in (20.3cm)**	**10 in (25.4 cm)**	**12 in (30.5 cm)**
Packaging	Box	Box	Box	Box	Box	Box
Quantity	216 / box	216 / box	216 / box	216 / box	108 / box	108 / box
Weight per Box	35 lbs (16 Kg)	38 lbs (17.2 Kg)	41 lbs (18.6 Kg)	48 lbs (21.8 kg)	27 Lbs (12.3 Kg)	38 Lbs (17 Kg)
Bundle Size	20 in X 13.5 in X 17.5 in (51 cm X 34 cm X 45 cm)	25 in X 11.5 in X 17.5 in (64 cm X 29 cm X 45 cm)	25 in X 13.5 in X 17.5 in (64 cm X 34 cm X 45 cm)	35 in X 13.5 in X 17.5 in (89 cm X 34 cm X 45 cm)	22 in X 13.5 in X 18.5 in (56 cm X 34 cm X 45 cm)	25 in X 13.5 in X 17.5 in (64 cm X 34 cm X 45 cm)

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IntegraSpec® - "H" Clip

"H" Clip Plastic Material	High Impact Polystyrene (HIPS)
Unique & Special "H" Clip Features	Joins two or more IntegraSpec Spacers together (for wider concrete wall(s) and more structural requirements)
Packaging	Poly-wrapped
Quantity	216 linear feet / bundle (54 pieces X 4 ft. (122 cm) length / bundle)
Weight per Bundle	27.5 Lbs (12.5 Kg)
Bundle Size	48 in (243.8 cm) High X 5.5 in (14 cm) Long X 8 in (20.0 cm) Wide

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IntegraSpec® - *Shipping / Storage / Handling / Inventory*

IntegraSpec® is cost efficient to transport, handle, and store. **IntegraSpec®** ships flat, in easy to handle packaging that can be stored outside for an extended period. **IntegraSpec®** bundles and spacer boxes are compact and only weigh between 35 - 40 lbs. (16 - 18 kg.) and therefore do not require specialized heavy equipment or multiple people to handle. **IntegraSpec®** bundles can be stacked, requiring less space on construction sites and in warehouses. **IntegraSpec®** is less likely to be damaged; being light weight and tightly wrapped in easy to move bundles. Inventory, storage, and shipping costs are also dramatically reduced because only one style of **IntegraSpec®** panels (standard panels) are required for building different concrete wall thicknesses by inserting different sized spacers.

Fig. S-11.0
Approximately 7,500 total square feet (697 square meters) of wall area can be shipped in a 53 feet (16.15 meters) tractor trailer load.

Fig. S-11.1
More than 1,200 total square feet (112 square meters) of wall area can easily be hauled using a pick-up truck and a small trailer.

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Table1 Required Reinforcement for Varying Height Basement Walls (150mm/6")

MAX. HEIGHT OF FINISHED GRADE ABOVE BASEMENT FLOOR (BACKFILL HEIGHT)	REQUIRED VERTICAL REINFORCEMENT FOR MAXIMUM BASEMENT WALL HEIGHT		
	2.4m (8 ft.)	2.7m (9 ft.)	3.0m (10 ft.)
1.2m (4'– 0")	10M (#4) @ 400 (16")	10M (#4) @ 400 (16")	10M (#4) @ 400 (16")
1.35m (4'– 6")	10M (#4) @ 400 (16")	10M (#4) @ 400 (16")	10M (#4) @ 400 (16")
1.6m (5'- 3")	10M (#4) @ 400 (16")	10M (#4) @ 400 (16")	10M (#4) @ 400 (16")
1.8m (6'- 0")	10M (#4) @ 400 (16")	10M (#4) @ 400 (16")	15M (#5) @ 400 (16")
2.0m (6'- 6")	15M (#5) @ 400 (16")	15M (#5) @ 400 (16")	15M (#5) @ 400 (16")
2.2m (7'- 3")	15M(#5) @ 400 (16")	15M (#5) @ 400 (16")	15M (#5) @ 400 (16")
2.35m (7'- 9")	15M (#5) @ 400 (16")	15M (#5) @ 400 (16")	15M (#5) @ 400 (16")
2.6m (8'- 6")	——	15M (#5) @ 200 (8")	15M (#5) @ 200 (8")
2.8m (9'- 3")	——	——	15M (#5) @ 200 (8")
3.0m (9'- 9")	——	——	15M (#5) @ 200 (8")

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Table 1a Required Reinforcement for Varying Height Basement Walls (200mm / 8")

MAX. HEIGHT OF FINISHED GRADE ABOVE BASEMENT FLOOR (BACKFILL HEIGHT)	REQUIRED VERTICAL REINFORCEMENT FOR MAXIMUM BASEMENT WALL HEIGHT			
	3.0m (10 ft.)	3.3m (11 ft.)	3.6m (12 ft.)	3.9m (13 ft.)
< 2.6m (< 8' – 6")	15M (#5) @ 400 (16")	15M (#5) @ 400 (16")	15M (#5) @ 400 (16")	15M (#5) @ 400 (16")
2.8m (9' – 2")	15M (#5) @ 400 (16")	15M (#5) @ 400 (16")	20M (#6) @ 400 (16")	20M (#6) @ 400 (16")
3.0m (9' – 10")	20M (#6) @ 400 (16")	20M (#6) @ 400 (16")	20M (#6) @ 400 (16")	20M (#6) @ 400 (16")
3.2m (10' – 6")	–	20M (#6) @ 400 (16")	20M (#6) @ 400 (16")	20M (#6) @ 400 (16")
3.4m (11' – 2")	–	–	15M (#5) @ 200 (8")	15M (#5) @ 200 (8")
3.6m (11' – 10")	–	–	15M (#5) @ 200 (8")	15M (#5) @ 200 (8")
3.8m (12' – 6")	–	–	–	15M (#5) @ 200 (8")

Alternative Rebar:

15M (#5) @ 400 (16") may be replaced by 10M (#4) @ 200 (8") or 2-10M (#4) @ 400 (16")
20M (#6) @ 400 (16") may be replaced by 2-15M (#5) @ 400 (16") or 15M (#5) @ 400 (16") + 10M (#4) @ 400 (16") – alternating bars @ 200 (8")

Note: For commercial, industrial or institutional applications, minimum horizontal reinforcing steel shall be 15M (#5) @ 300 (12") or 15M (#5) @ 600 (24") + 10M (#4) @ 600 (24") – alternating bars @ 300 (12").

For residential applications, minimum horizontal steel shall be 10M (#4) @ 600 (24").

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Table 1b Required Reinforcement for Varying Height Basement Walls (250mm / 10")

MAX. HEIGHT OF FINISHED GRADE ABOVE BASEMENT FLOOR (BACKFILL HEIGHT)	REQUIRED VERTICAL REINFORCEMENT FOR MAXIMUM BASEMENT WALL HEIGHT			
	3.9m (13 ft.)	4.2m (14 ft.)	4.5m (15 ft.)	4.8m (16 ft.)
< 2.8m (< 9' – 2")	15M (#5) @ 400 (16")	15M (#5) @ 400 (16")	15M (#5) @ 400 (16")	15M (#5) @ 400 (16")
3.0m (9' – 10")	15M (#5) @ 400 (16")	15M (#5) @ 400 (16")	20M (#6) @ 400 (16")	20M (#6) @ 400 (16")
3.2m (10' – 6")	20M (#6) @ 400 (16")	20M (#6) @ 400 (16")	20M (#6) @ 400 (16")	20M (#6) @ 400 (16")
3.4m (11' – 2")	20M (#6) @ 400 (16")	20M (#6) @ 400 (16")	20M (#6) @ 400 (16")	20M (#6) @ 400 (16")
3.6m (11' – 10")	20M (#6) @ 400 (16")	20M (#6) @ 400 (16")	15M (#5) @ 200 (8")	15M (#5) @ 200 (8")
3.8m (12' – 6")	20M (#6) @ 400 (16")	15M (#5) @ 200 (8")	15M (#5) @ 200 (8")	15M (#5) @ 200 (8")
4.0m (13' – 1")	–	15M (#5) @ 200 (8")	15M (#5) @ 200 (8")	15M (#5) @ 200 (8")
4.2m (13' – 9")	–	15M (#5) @ 200 (8")	20M (#6) @ 200 (8")	20M (#6) @ 200 (8")
4.4m (14' – 5")	–	–	20M (#6) @ 200 (8")	20M (#6) @ 200 (8")
4.6m (15' – 1")	–	–	–	20M (#6) @ 200 (8")
4.8m (15' – 9")	–	–	–	20M (#6) @ 200 (8")

Alternative Rebar:

15M (#5) @ 400 (16") may be replaced by 10M (#4) @ 200 (8") or 2-10M (#4) @ 400 (16")
20M (#6) @ 400 (16") may be replaced by 2-15M (#5) @ 400 (16") or 15M (#5) @ 400 (16") + 10M (#4) @ 400 (16") – alternating bars @ 200 (8").

Note: Indicated reinforcement applies to commercial, industrial and institutional applications. Minimum horizontal steel shall be 15M (#5) @ 300 (12") or 15M (#5) @ 600 (24") + 10M (#4) @ 600 (24") – alternating bars @ 300 (12").

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Notes for Tables 1, 1a and 1b

- Wall is laterally supported at top and bottom.
- Concrete strength: 20 MPa (3000 P.S.I.).
- Lateral pressures on foundation wall are based on a drained earth material and average stable soil conditions.
- 4.8 kPa (100 P.S.F.) surcharge applied adjacent to wall.
- Yield strength of reinforcing bars: 400 MPa (60 K.S.I.).
- Foundation walls containing openings more than 1200mm (4') in length or which contain openings in more than 25% of their length shall be reinforced around the openings to resist the earth pressure.
- When the length of solid wall between windows is less than the average length of the windows, the outside dimension between the windows shall be considered as a single opening.
- Vertical reinforcing bars are to be secured in position at the interior (tension side) of the wall the following dimension from the exterior concrete face:
    - 110 mm (4 1/4") for 150 mm (6") wall
    - 160 mm (6 1/4") for 200 mm (8") wall
    - 210 mm (8 1/4") for 250 mm (10") wall

  Typical horizontal rebar for residential applications shall be 10M (#4) @ 600 (24") and as noted for commercial, industrial or institutional applications. Vertical bars to extend to top of wall.
- Lap length shall be as follows:
    - 450 mm (18") for 10M (#4) bars
    - 650 mm (26") for 15M (#5) bars
    - 850 mm (34") for 20M (#6) bars
- For unsupported wall heights and grade heights between values shown in table, use next higher value.
- Subfloor installation to be completed or adequate bracing to resist lateral earth pressure to be installed prior to backfilling of wall.

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Table 2 Vertical Reinforcement for Basement Walls in Seismic Zones (150mm/6")

BACKFILL HEIGHT	SEISMIC ZONES 0, 1 AND 2		SEISMIC ZONES 3 AND ABOVE	
	2.4m (8 ft.) Wall	3.0m (10 ft.) Wall	2.4m (8 ft.) Wall	3.0m (10 ft.) Wall
1.2m (4' - 0")	10M (#4) @ 400 (16")	10M (#4) @ 400 (16")	15M (#5) @ 400 (16")	15M (#5) @ 400 (16")
1.35m (4' – 6")	10M (#4) @ 400 (16")	10M (#4) @ 400 (16")	15M (#5) @ 400 (16")	15M (#5) @ 400 (16")
1.6m (5' – 3")	10M (#4) @ 400 (16")	10M (#4) @ 400 (16")	15M (#5) @ 400 (16")	15M (#5) @ 400 (16")
1.8m (6' – 0")	10M (#4) @ 400 (16")	15M (#5) @ 400 (16")	15M (#5) @ 400 (16")	15M (#5) @ 400 (16")
2.0m (6' – 6")	15M (#5) @ 400 (16")	15M (#5) @ 400 (16")	15M (#5) @ 400 (16")	15M (#5) @ 400 (16")
2.2m (7' – 3")	15M (#5) @ 400 (16")	15M (#5) @ 400 (16")	15M (#5) @ 400 (16")	15M (#5) @ 400 (16")
2.35m (7' – 9")	15M (#5) @ 400 (16")	15M (#5) @ 400 (16")	15M (#5) @ 400 (16")	15M (#5) @ 400 (16")
2.6m (8' – 6")	——	15M (#5) @ 200 (8")	——	15M (#5) @ 200 (8")
2.8m (9' – 3")	——	15M (#5) @ 200 (8")	——	15M (#5) @ 200 (8")
3.0m (9' – 9")	——	15M (#5) @ 200 (8")	——	15M (#5) @ 200 (8")

- Walls designed for additional earth pressure resulting from seismic activity (shaking).
- Seismic Zone 0,1,2, etc. is equivalent to the factor Zv in the seismic data of the National Building Code.

Other notes as for Table 1, 1a, and 1b

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Table 3 Wall Capacity for Varying Height, Reinforced, Above-Grade Walls* (150mm/6")

Factored Wind Load kPa (PSF)	Horizontal Reinforcing mm (in.)	Vertical Reinforcing mm (in.)	Maximum Factored Axial Load P*f* kN/m (kips/ft)		
			Wall Height		
			2.4 m (8')	3 m (10')	3.6 m (12')
0.50 (10.5)	10M (#4) @ 600 (24")	10M (#4) @ 400 (16")	180 (12.3)	165 (11.3)	135 (9.3)
		15M (#5) @ 400 (16")	330 (22.6)	270 (18.5)	225 (15.4)
0.75 (15.7)	10M (#4) @ 600 (24")	10M (#4) @ 400 (16")	175 (12.0)	155 (10.6)	120 (8.2)
		15M (#5) @ 400 (16")	325 (22.3)	265 (18.2)	215 (14.7)
1.00 (20.9)	10M (#4) @ 600 (24")	10M (#4) @ 400 (16")	170 (11.6)	145 (9.9)	105 (7.2)
		15M (#5) @ 400 (16")	320 (21.9)	260 (17.8)	205 (14.0)
1.25 (26.1)	10M (#4) @ 600 (24")	10M (#4) @ 400 (16")	165 (11.3)	130 (8.9)	90 (6.2)
		15M (#5) @ 400 (16")	315 (21.6)	250 (17.1)	195 (13.4)
1.50 (31.3)	10M (#4) @ 600 (24")	10M (#4) @ 400 (16")	160 (11.0)	120 (8.2)	70 (4.8)
		15M (#5) @ 400 (16")	310 (21.2)	240 (16.4)	180 (12.3)

* Based on the following assumptions:

Concrete strength *f*c = 20 MPa (3000 P.S.I.)
Reinforcing steel *f*y = 400 MPa (60 K.S.I.)
Vertical reinforcing placed at centre of wall
Design to CSA A23.3 - 94
Maximum eccentricity of applied vertical load = 25mm (1")
Single curvature bending assumed
Top of wall laterally supported

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Table 4. Lintel Table - Metric Steel

Minimum Steel Reinforcement of Lintels [either 150mm (6") or 200mm (8") Core]

Uniformly Distributed Load		Lintel Span in metres (feet)								
plf	kN/m	1.0 (3'–3")	1.5 (5'–0")	2.0 (6'–6")	2.5 (8'–3")	3.0 (9'–9")	3.5 (11'–6")	4.0 (13'–0")	4.5 (14'–9")	5.0 (16'–6")
100	1.5	2–10M	2–10M	2–10M	2–10M	2–10M	2–10M	2–10M	2–10M	2–10M
200	2.9	2–10M	2–10M	2–10M	2–10M	2–10M	2–10M	2–10M	2–10M	2–10M
300	4.4	2–10M	2–10M	2–10M	2–10M	2–10M	2–10M	2–10M	2–10M	2–15M
400	5.8	2–10M	2–10M	2–10M	2–10M	2–10M	2–10M	2–10M	2–15M	2–15M
500	7.3	2–10M	2–10M	2–10M	2–10M	2–10M	2–10M	2–15M	2–15M	2–15M
750	11.0	2–10M	2–10M	2–10M	2–10M	2–10M	2–15M	2–15M	2–15M T 2–20M B	2–15M T 2–20M B
1000	14.6	2–10M	2–10M	2–10M	2–10M	2–15M	2–15M	2–15M T 2–20M B	2–15M T 2–20M B	–
1250	18.3	2–10M	2–10M	2–10M	2–15M	2–15M	2–15M T 2–20M B	2–15M T 2–20M B	–	–
1500	21.9	2–10M	2–10M	2–10M	2–15M	2–15M	2–15M T 2–20M B	–	–	–

- Minimum lintel height = 300 mm (12")
- For lintel height = 250mm (10"), increase bar size to next larger, i.e. 10M to 15M, 15M to 20M etc.
- All Bars Top and Bottom, i.e. 2–10M = 2–10M Top + 2–10M Bottom
- Clear concrete cover = 25 mm (1") [Top and Bottom bars]
- Uniformly distributed load includes service (actual) live and dead loads. If concentrated loads are applied, consider the lintel to have a 50% increase in span to produce the same bending as uniformly distributed load.
- Lintel / load combinations to the right and below solid line require shear reinforcement of 10M stirrups ([ ) at 175 mm (7")
- Concrete strength f'c = 20 MPa
- Reinforcing steel fy = 400 MPa
- Design to CSA A23.3–94
- Increase bar size to next larger for 250 mm (10") core, i.e. 10M to 15M, 15M to 20M etc.

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75 Albert Street, Ottawa, Ontario

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Table 4a. Lintel Table - Imperial Steel

Minimum Steel Reinforcement of Lintels [either 150mm (6") or 200mm (8") Core]

Uniformly Distributed Load		Lintel Span in metres (feet)								
plf	kN/m	1.0 (3'–3")	1.5 (5'–0")	2.0 (6'–6")	2.5 (8'–3")	3.0 (9'–9")	3.5 (11'–6")	4.0 (13'–0")	4.5 (14'–9")	5.0 (16'–6")
100	1.5	2#4	2#4	2#4	2#4	2#4	2#4	2#4	2#4	2#4
200	2.9	2#4	2#4	2#4	2#4	2#4	2#4	2#4	2#4	2#4
300	4.4	2#4	2#4	2#4	2#4	2#4	2#4	2#4	2#4	2#5
400	5.8	2#4	2#4	2#4	2#4	2#4	2#4	2#4	2#5	2#5
500	7.3	2#4	2#4	2#4	2#4	2#4	2#4	2#5	2#5	2#5
750	11.0	2#4	2#4	2#4	2#4	2#4	2#5	2#5	2#5 T 2#6 B	2#5 T 2#6 B
1000	14.6	2#4	2#4	2#4	2#4	2#5	2#5	2#5 T 2#6 B	2#5 T 2#6 B	–
1250	18.3	2#4	2#4	2#4	2#5	2#5	2#5 T 2#6 B	2#5 T 2#6 B	–	–
1500	21.9	2#4	2#4	2#4	2#5	2#5	2#5 T 2#6 B	–	–	–

- Minimum lintel height = 300 mm (12")
- For lintel height = 250mm (10"), increase bar size to next larger, i.e. #4 to #5, #5 to #6 etc.
- All Bars Top and Bottom, i.e. 2#4 = 2#4 Top + 2#4 Bottom
- Clear concrete cover = 25 mm (1") [Top and Bottom bars]
- Uniformly distributed load includes service (actual) live and dead loads. If concentrated loads are applied, consider the lintel to have a 50% increase in span to produce the same bending as uniformly distributed load.
- Lintel / load combinations to the right and below solid line require shear reinforcement of #4 stirrups ([ ) at 175 mm (7")
- Concrete strength f'c = 20 MPa (3000 P.S.I.)
- Reinforcing steel fy = 400 MPa (60 K.S.I.)
- Design to CSA A23.3–94
- Increase bar size to next larger for 250 mm (10") core, i.e. #4 to #5, #5 to #6 etc.

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75 Albert Street, Ottawa, Ontario

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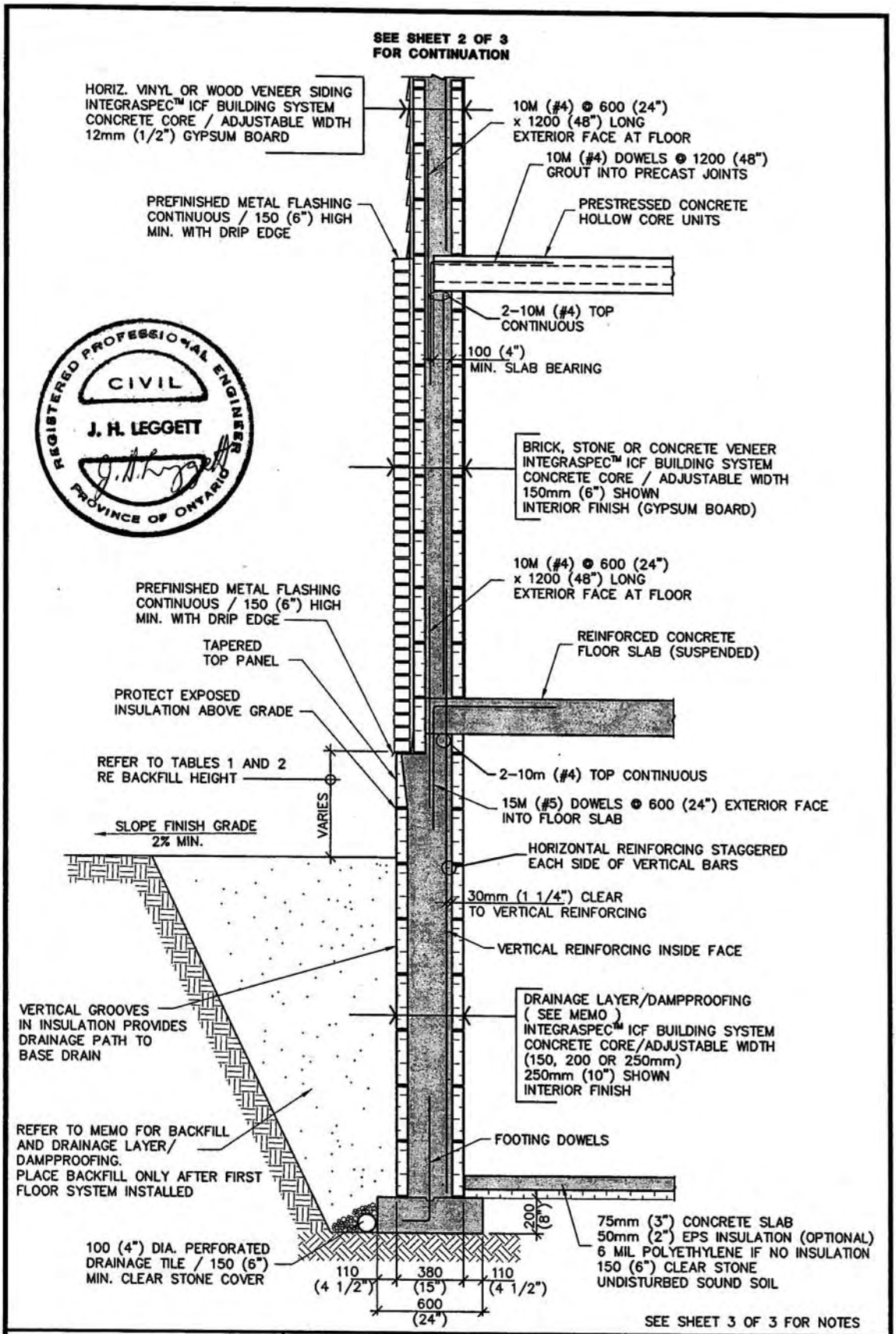

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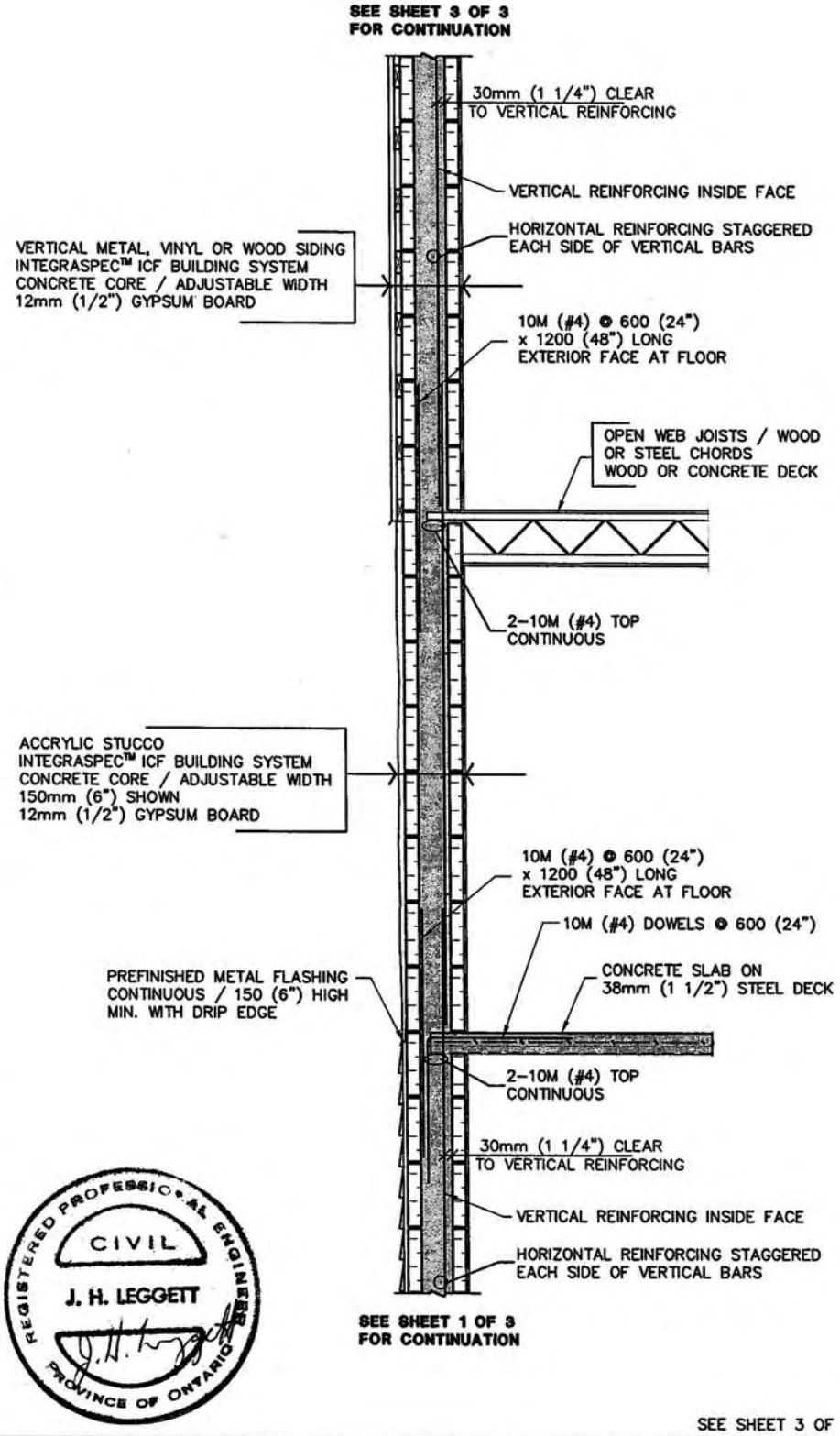

Project: **INTEGRASPEC™ ICF WALL SYSTEM**		Project No. 1635-13
	Adjeleian Allen Rubeli Limited Consulting Engineers 75 Albert street Ottawa, Ontario	Scale: 1 : 20 Date: AUG. 2003
		Sheet **2 OF 3**

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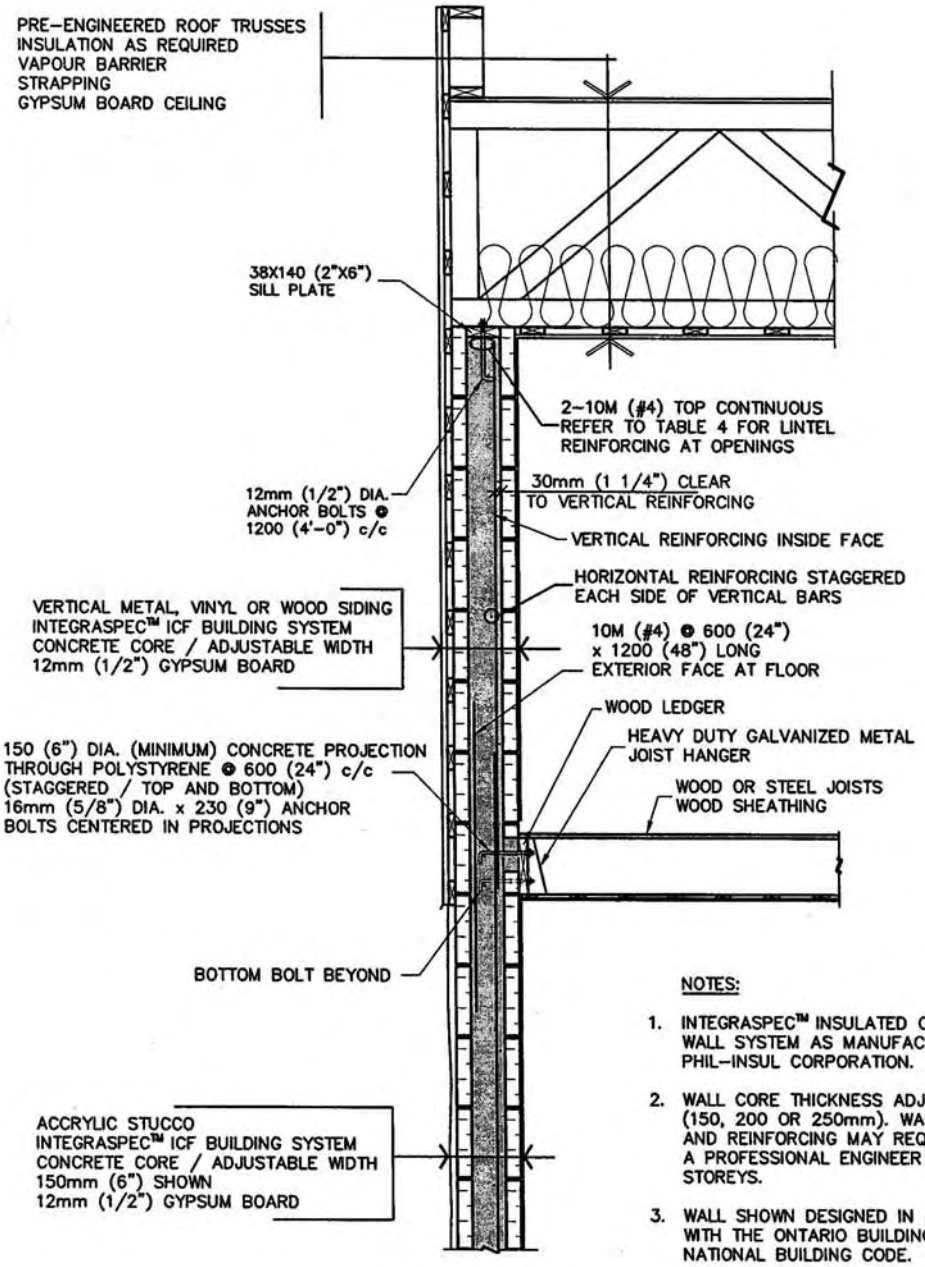

SEE SHEET 2 OF 3 FOR CONTINUATION

NOTES:

1. INTEGRASPEC™ INSULATED CONCRETE FORM WALL SYSTEM AS MANUFACTURED BY PHIL-INSUL CORPORATION.
2. WALL CORE THICKNESS ADJUSTABLE (150, 200 OR 250mm). WALL THICKNESS AND REINFORCING MAY REQUIRE CHECKING BY A PROFESSIONAL ENGINEER ABOVE THREE STOREYS.
3. WALL SHOWN DESIGNED IN ACCORDANCE WITH THE ONTARIO BUILDING CODE AND NATIONAL BUILDING CODE.
4. REFER TO TABLES 1, 2, 3, AND 4 FOR REINFORCING REQUIREMENTS.
5. PROVIDE 600x600 (24"x24") HORIZONTAL L BARS EXTERIOR FACE AT CORNERS AT SAME SIZE AND SPACING AS HORIZONTAL BARS INSIDE FACE.
6. VARIETY OF FLOOR SYSTEMS AND EXTERIOR CLADDING TYPES APPLICABLE AS INDICATED IN SHEETS 1, 2 AND 3.
7. CONCRETE STRENGTH AT 28 DAYS 20 MPa (3,000 P.S.I.)
8. REINFORCING STEEL YIELD STRENGTH 400 MPa (60,000 P.S.I.). ALL BARS DEFORMED.

REGISTERED PROFESSIONAL ENGINEER
CIVIL
J. H. LEGGETT
PROVINCE OF ONTARIO

Project:		Project No.
INTEGRASPEC™ ICF WALL SYSTEM		1635-13
Adjeleian Allen Rubeli Limited Consulting Engineers 75 Albert street Ottawa, Ontario	Scale: 1 : 20 Date: AUG. 2003	Sheet **3 OF 3**

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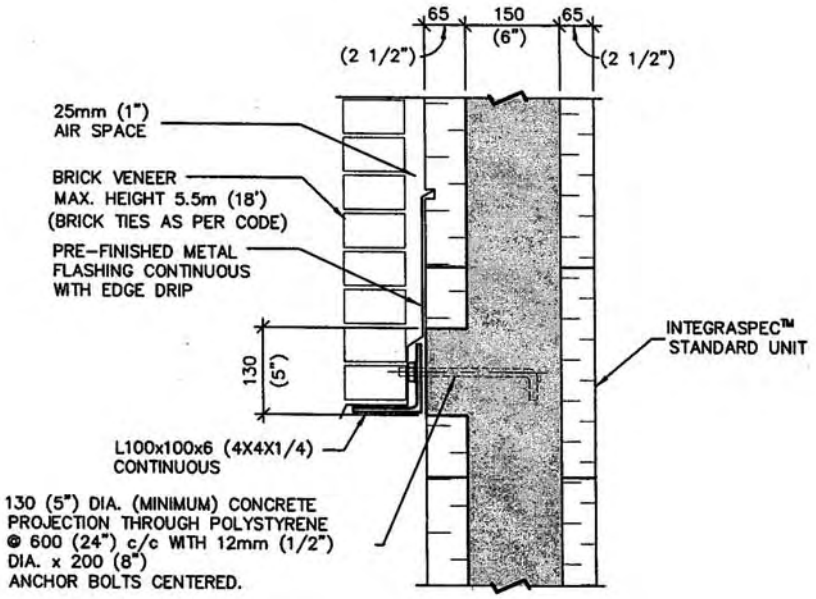
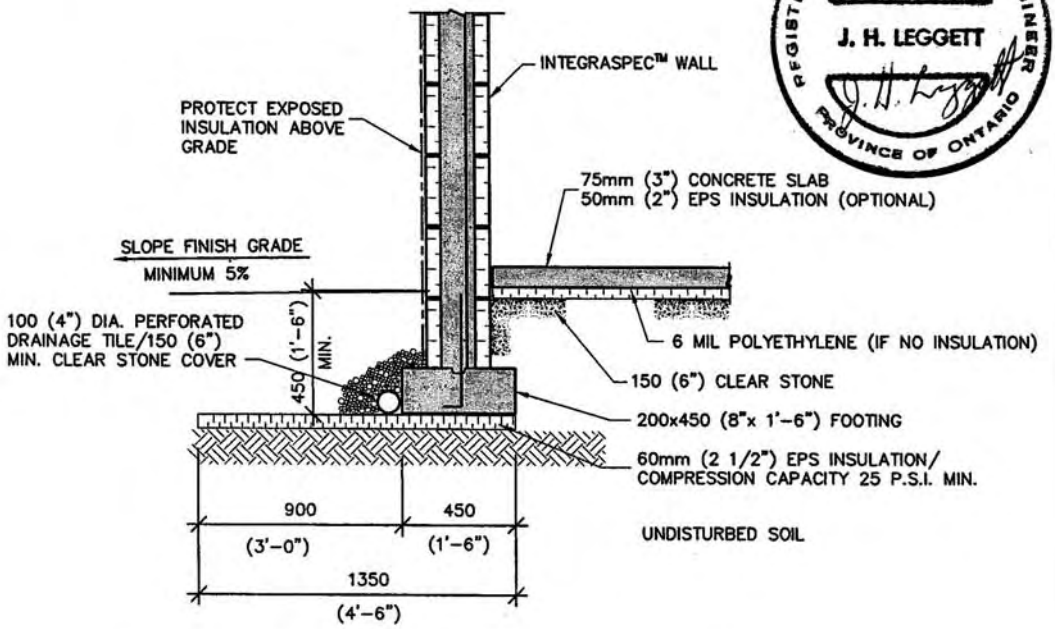
NOTE: ALL DIMENSIONS INDICATED IN MILLIMETERS (mm) WITH INCHES IN BRACKETS



INTEGRASPEC™ WALL / BRICK SUPPORT ANGLE DETAIL

ANGLE LEG MAY BE TURNED UP (AS SHOWN) OR DOWN

REGISTERED PROFESSIONAL ENGINEER
CIVIL
J. H. LEGGETT
PROVINCE OF ONTARIO



INTEGRASPEC™ WALL / SHALLOW FOOTING DETAIL

Project: **INTEGRASPEC™ ICF WALL SYSTEM**			Project No. 1635-13
	Adjeleian Allen Rubeli Limited Consulting Engineers 75 Albert street Ottawa, Ontario	Scale: AS NOTED Date: AUG. 2003	Sheet 4

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MEMORANDUM

ADJELEIAN ALLEN RUBELI LIMITED
TEL: (613) 232-5786
FAX: (613) 230-8916

TO:	Building Officials/Inspectors/Contractors	**DATE**	09-Mar-99
SUBJECT:	"IntegraSpec" Insulated Concrete Wall Forms – Product of Phil–Insul Corporation	**PROJECT #**	1635-13
FROM:	John H. Leggett, P. Eng.	**PAGES (incl this one)**	1

RE: Below Grade Use of "IntegraSpec"

"IntegraSpec" wall forms do not require dampproofing in pervious and semi-pervious soil conditions when free draining material is used as backfill, since "IntegraSpec" wall forms are non capillary and "IntegraSpec's" vertical surface grooves channel the water to the foundation drain (i.e. function in a manner similar to drainage board).

When backfilling with other than free draining material, the attachment of filter cloth to the "IntegraSpec" wall, or the use of a protective membrane or drainage board at the wall becomes essential. With filter cloth (eg. Geo Textile) attached to the wall, "IntegraSpec" wall forms continue to function in a manner similar to drainage board, directing water to the foundation drain. Acceptable protective membrane or drainage board products which may be applied to the wall are: peel and stick bituthene, Delta MS, System Platon, fibre drain board or similar products that are compatible with expanded polystyrene (EPS) and approved for use in drainage or dampproofing applications.

In flood zones, waterproofing of the "IntegraSpec" wall forms is required, as per Code.

ADJELEIAN ALLEN RUBELI LIMITED **CONSULTING ENGINEERS** **OTTAWA / TORONTO**
75 Albert Street, Suite 1005, Ottawa, Ontario K1P 5E7 Telephone: (613) 232-5786 Fax: (613) 230-8916

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MEMORANDUM

ADJELEIAN ALLEN RUBELI LIMITED
TEL: (613) 232-5786
FAX: (613) 230-8916

TO:	Building Officials/Inspectors/Contractors	**DATE:**	21-July-2000
SUBJECT:	'IntegraSpec" Insulated Concrete Wall Forms – Product of Phil-Insul Corporation	**PROJECT:**	1635-13
FROM:	John H. Leggett, P.Eng.	**Pages** (incl this one)	1
RE:	**Attachment of Exterior & Interior Finishes to "IntegraSpec"**		

This memorandum has been prepared to clarify the lack of testing by NRC – CCMC of the attachment of exterior cladding and interior finishing materials to the integral vertical plastic HIP (High Impact Polystyrene) elements which are recessed inside the IntegraSpec insulated concrete wall system.

Mechanical attachment of exterior and interior finishing substrates in the IntegraSpec wall system does not require additional anchoring to the concrete. Interior and exterior finishes such as drywall, siding and brick ties are mechanically attached (with coarse threaded screws or nails) directly to the IntegraSpec wall system as in conventional construction using the built-in HIP (High Impact Polystyrene) vertical plastic studs/strapping embedded (at 8" centers) in the concrete. It is our professional opinion that attachment of finishes to the built-in HIP studs/strapping in this manner meets the requirements of section 9.27., 9.28., and 9.29 of the National Building Code.

For commercial applications, steel "U" channels may be installed/mounted in the pre-formed vertical grooves located (at 8" centres) on both sides of the IntegraSpec wall system. The steel "U" channels may be installed prior to placing the concrete by inserting long anchors such as nails or screws at 12" centres through the channel and EPS, projecting a minimum of 1" into the concrete cavity. Once the core concrete is placed, the steel channels become mechanically fastened to the concrete mass to which finishing substrate is also attached, which meets commercial/institutional fire codes.

Both attachment methods herein mentioned have been used extensively and have proven to be successful.

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MEMORANDUM

ADJELEIAN ALLEN RUBELI LIMITED
TEL: (613) 232-5786
FAX: (613) 230-8916

TO: Building Officials/Inspectors/Contractors **DATE:** 07-December-2000

SUBJECT: IntegraSpec® Insulated Concrete Wall Forms – Product of Phil-Insul Corporation **PROJECT:** 1635-13

FROM: John H. Leggett, P. Eng. **Pages** (incl. this one) 1

RE: **Fire-Resistance Rating of IntegraSpec® Insulated Concrete Wall System**

The IntegraSpec® insulated concrete formwork (ICF) building system is manufactured with flame-retardant additives to prevent the expanded polystyrene foam (EPS) from burning by itself. The 6 inch concrete core of the IntegraSpec® Insulated Concrete Wall System manufactured with a carbonate type concrete provides a minimum fire resistance rating of 3 hours (see references below). A continuous layer of ½ inch gypsum board fastened to the interior of the IntegraSpec® wall system increases the fire resistance rating of the wall assembly by 15 minutes.

References:
1. Uniform Building Code 1997
   Table 7-B, Item 7-1.1
2. Standard Building Code 1999
   Table 709.2.1.1

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Table 5 a **Foundation Wall Footing Sizes**

Roof : Span = 10m (32'-10") +0.5m (1'-8") overhang

Live Load (0.6 Ss + Sr)	2.1 kPa (44 PSF)
Dead Load (wood trusses)	0.6 kPa (12.5 PSF)

Floors: Span = 4.9m (16.1')

Live Load	1.9 kPa (39.7 PSF)
Dead Load (wood framing)	0.25 kPa (5.2 PSF)

Basement Wall: IntegraSpec™ wall with 150mm (6 in.) concrete core

Exterior Wall (Above Ground Floor)	Design Soil Bearing kPa	PSF	Footing Size 2 Storeys	Footing Size 3 Storeys
IntegraSpec™ 150mm (6in.) core c/w Masonry Veneer	50	(1040)	Design Required	Design Required
	75	(1565)	750mm x 200 (2'-6" x 8")	1000mm x 300 (3'-4" x 12")
	100	(2085)	600mm x 200 (2'-0" x 8")	750mm x 250 (2'-6" x 10")
	125	(2605)	450mm x 150 (1'-6" x 6")	600mm x 200 (2'-0" x 8")
	150	(3125)	450mm x 150 (1'-6" x 6")	500mm x 150 (1'-8" x 6")
	200	(4170)	450mm x 150 (1'-6" x 6")	450mm x 150 (1'-6" x 6")

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Exterior Wall (Above Ground Floor)	Design Soil Bearing		Footing Size	
	kPa	PSF	2 Storeys	3 Storeys
IntegraSpec™ 150mm (6 in.) core c/w Wood, Metal or Vinyl Siding	50	(1040)	1050mm x 250 (3'-6" x 10")	Design Required
	75	(1565)	700mm x 200 (2'-4" x 8")	900mm x 250 (3'-0" x 10")
	100	(2085)	550mm x 150 (1'-10" x 6")	650mm x 200 (2'-2" x 8")
	125	(2605)	450mm x 150 (1'-6" x 6")	550mm x 200 (1'-10" x 8")
	150	(3125)	450mm x 150 (1'-6" x 6")	450mm x 150 (1'-6" x 6")
	200	(4170)	450mm x 150 (1'-6" x 6")	450mm x 150 (1'-6" x 6")

Exterior Wall (Above Ground Floor)	Design Soil Bearing		Footing Size	
	kPa	PSF	2 Storeys	3 Storeys
Wood Stud c/w Masonry Veneer	50	(1040)	850mm x 200 (2'-10" x 8")	1000mm x 250 (3'-4"x10")
	75	(1565)	600mm x 150 (2'-0" x 6")	700mm x 200 (2'-4" x 8")
	100	(2085)	450mm x 150 (1'-6" x 6")	500mm x 150 (1'-8" x 6")
	125	(2605)	450mm x 150 (1'-10" x 6")	450mm x 150 (1'-6"x 6")
	150	(3125)	450mm x 150 (1'-6" x 6")	450mm x 150 (1'-6" x 6")
	200	(4170)	450mm x 150 (1'-6" x 6")	450mm x 150 (1'-6" x 6")

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Table 5 b **Foundation Wall Footing Sizes**

Roof : Span = 12m (39'-4") +0.5m (1'-8") overhang

Live Load (0.6 Ss + Sr)	2.1 kPa (44 PSF)
Dead Load (wood trusses)	0.6 kPa (12.5 PSF)

Floors: Span = 6m (19'-8")

Live Load	1.9 kPa (39.7 PSF)
Dead Load (wood framing)	0.25 kPa (5.2 PSF)

Basement Wall: IntegraSpec™ wall with 150mm (6 in.) concrete core

Exterior Wall (Above Ground Floor)	Design Soil Bearing		Footing Size	
	kPa	PSF	2 Storeys	3 Storeys
IntegraSpec™ 150mm (6 in.) core c/w Masonry Veneer	50	(1040)	Design Required	Design Required
	75	(1565)	850mm x 250 (2'-10" x 10")	1050mm x 300 (3'-6" x 12")
	100	(2085)	650mm x 200 (2'-2" x 8")	800mm x 250 (2'-8" x 10")
	125	(2605)	500mm x 150 (1'-8" x 6")	700mm x 250 (2'-4" x 10")
	150	(3125)	450mm x 150 (1'-6" x 6")	550mm x 200 (1'-10" x 8")
	200	(4170)	450mm x 150 (1'-6" x 6")	450mm x 150 (1'-6" x 6")

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Exterior Wall (Above Ground Floor)	Design Soil Bearing		Footing Size	
	kPa	PSF	2 Storeys	3 Storeys
Wood Stud c/w Wood, Metal or Vinyl Siding	50	(1040)	750mm x 150 (2'-6" x 6")	850mm x 200 (2'-10" x 8")
	75	(1565)	500mm x 150 (1'-8" x 6")	600mm x 150 (2'-0" x 6")
	100	(2085)	450mm x 150 (1'-6" x 6")	450mm x 150 (1'-6" x 6")
	125	(2605)	450mm x 150 (1'-6" x 6")	450mm x 150 (1'-6"x 6")
	150	(3125)	450mm x 150 (1'-6" x 6")	450mm x 150 (1'-6" x 6")
	200	(4170)	450mm x 150 (1'-6" x 6")	450mm x 150 (1'-6" x 6")

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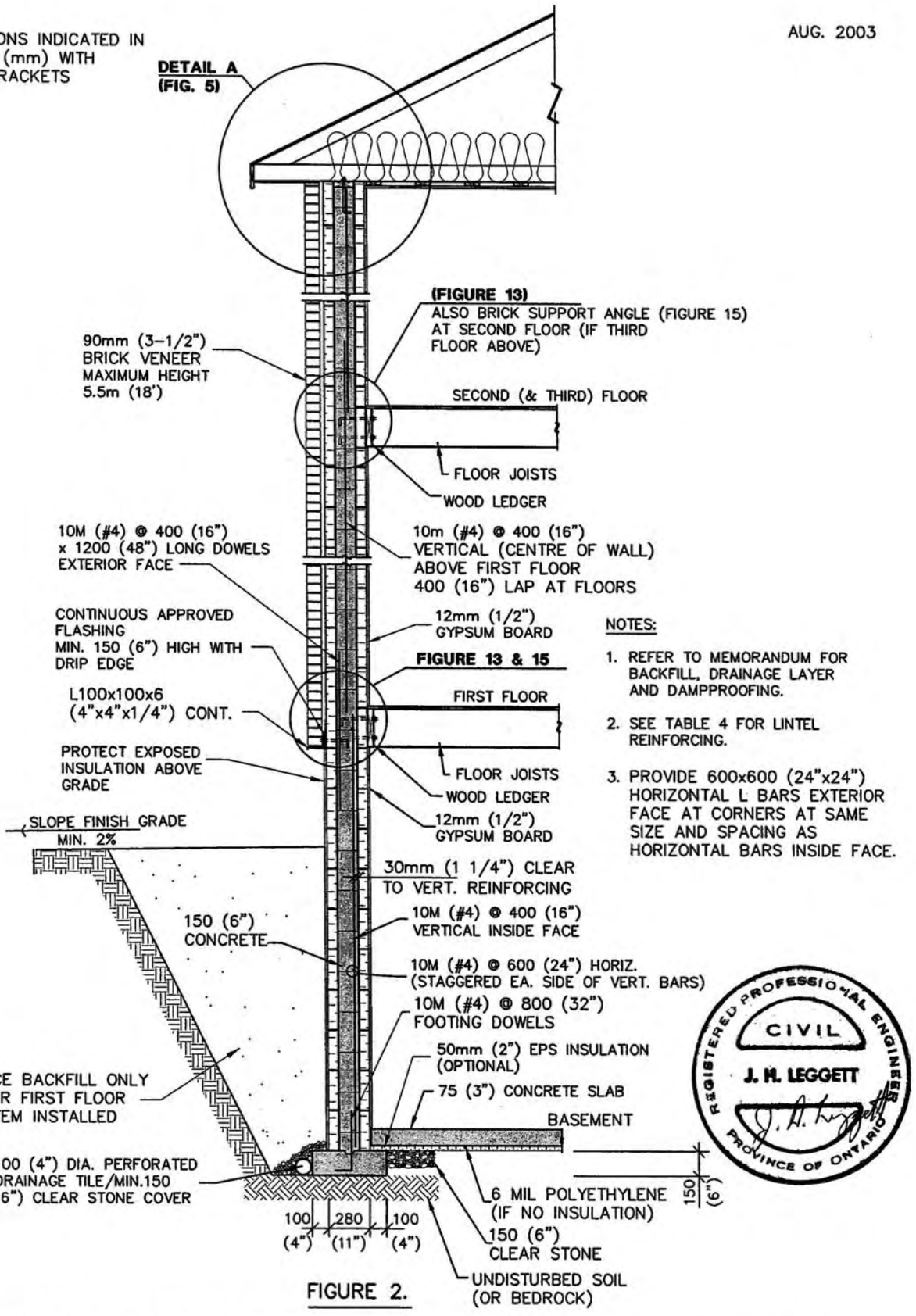
NOTE: ALL DIMENSIONS INDICATED IN MILLIMETERS (mm) WITH INCHES IN BRACKETS



NOTES:

1. REFER TO MEMORANDUM FOR BACKFILL, DRAINAGE LAYER AND DAMPPROOFING.
2. SEE TABLE 4 FOR LINTEL REINFORCING.
3. PROVIDE 600x600 (24"x24") HORIZONTAL L BARS EXTERIOR FACE AT CORNERS AT SAME SIZE AND SPACING AS HORIZONTAL BARS INSIDE FACE.

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FIGURE 2.

INTEGRASPEC® BASEMENT, FIRST, SECOND AND THIRD FLOOR WALL, WITH BRICK VENEER

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Consulting Engineers
75 Albert Street, Ottawa, Ontario

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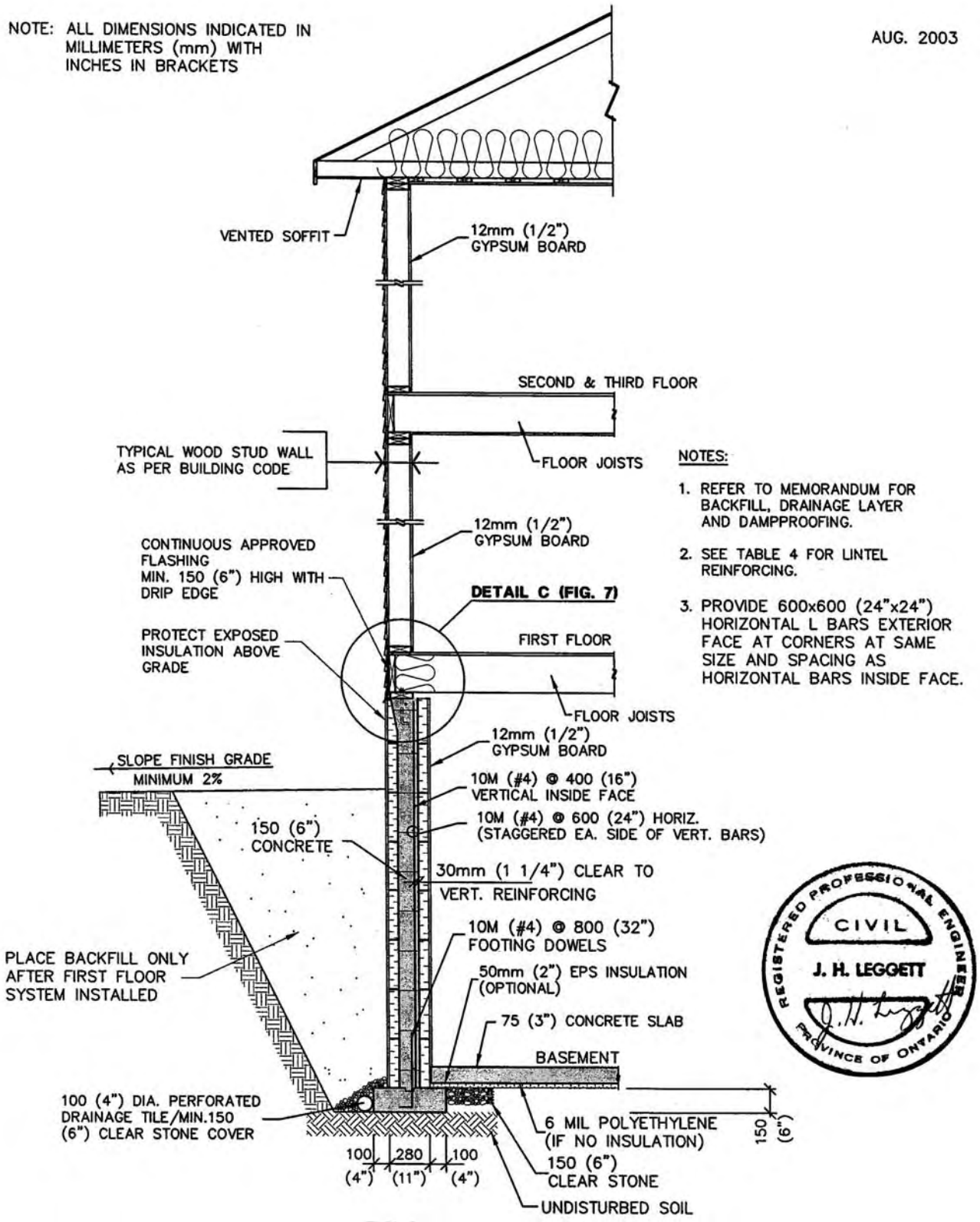

NOTES:

1. REFER TO MEMORANDUM FOR BACKFILL, DRAINAGE LAYER AND DAMPPROOFING.
2. SEE TABLE 4 FOR LINTEL REINFORCING.
3. PROVIDE 600x600 (24"x24") HORIZONTAL L BARS EXTERIOR FACE AT CORNERS AT SAME SIZE AND SPACING AS HORIZONTAL BARS INSIDE FACE.

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FIGURE 3.

INTEGRASPEC® BASEMENT WALL / WOOD STUD FIRST, SECOND & THIRD FLOOR WALL, WITH WOOD, VINYL OR ALUMINUM SIDING

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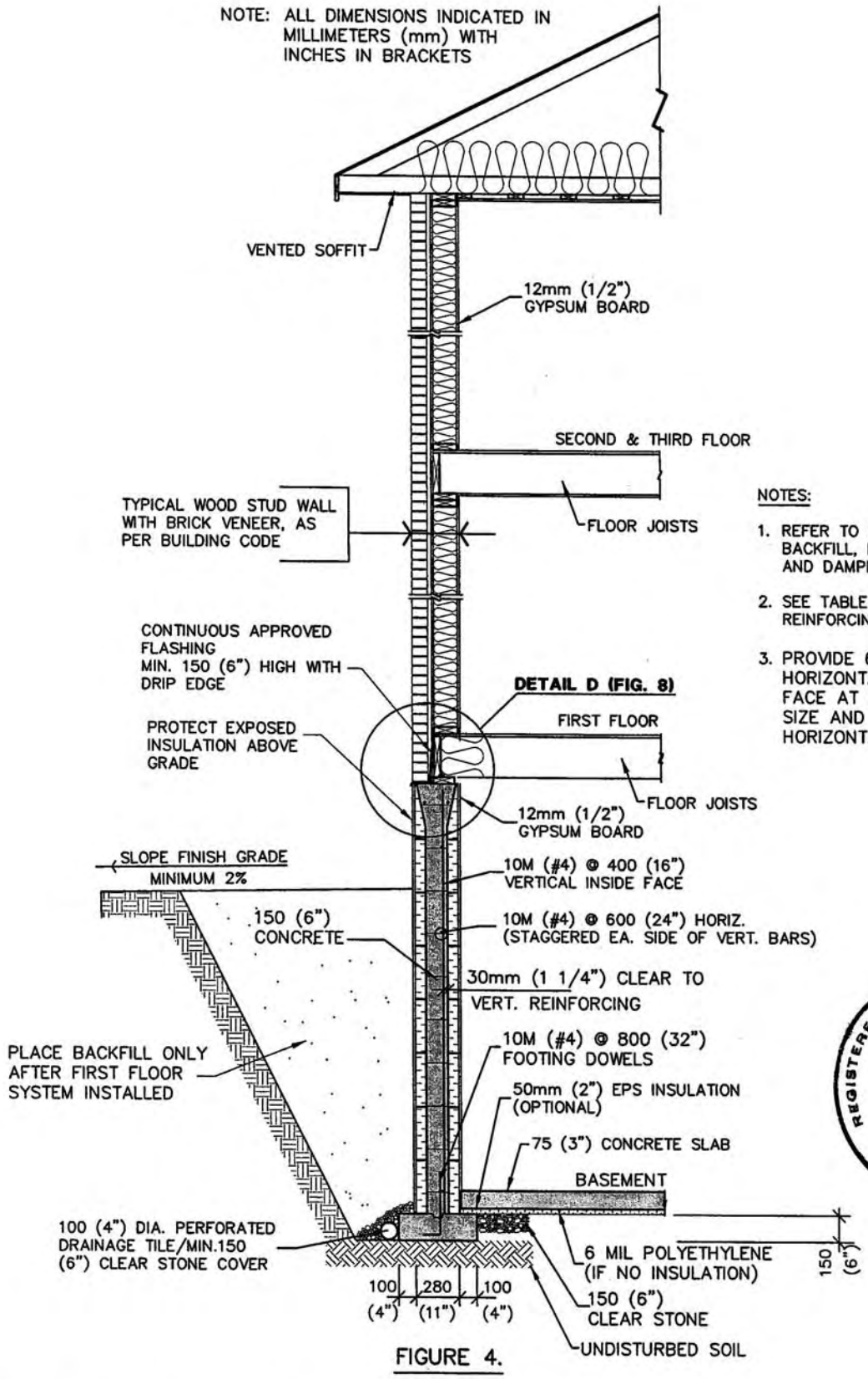

NOTES:

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3. PROVIDE 600x600 (24"x24") HORIZONTAL L BARS EXTERIOR FACE AT CORNERS AT SAME SIZE AND SPACING AS HORIZONTAL BARS INSIDE FACE.

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FIGURE 4.

INTEGRASPEC® BASEMENT WALL / WOOD STUD
FIRST, SECOND & THIRD FLOOR WALL, WITH BRICK VENEER

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75 Albert Street, Ottawa, Ontario

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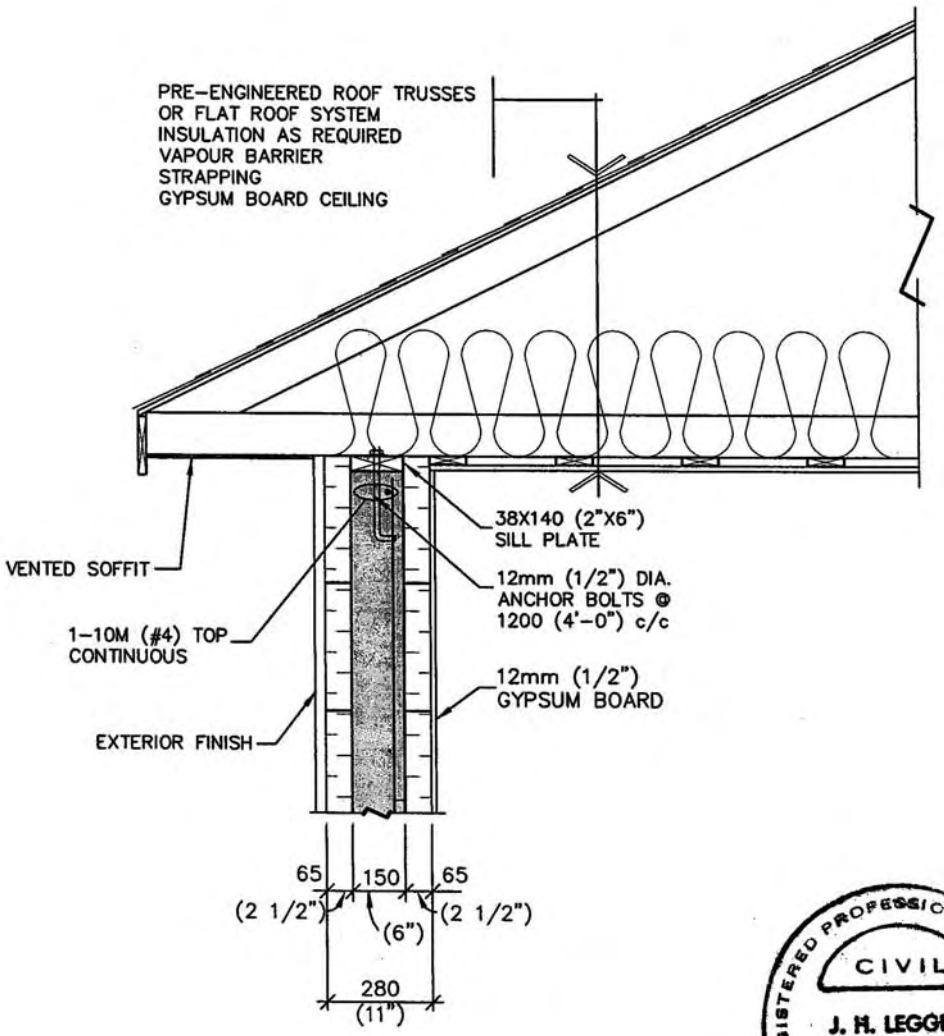

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FIGURE 5.

INTEGRASPEC® WALL DETAIL A
TOP PLATE / EAVE / ROOF TRUSS

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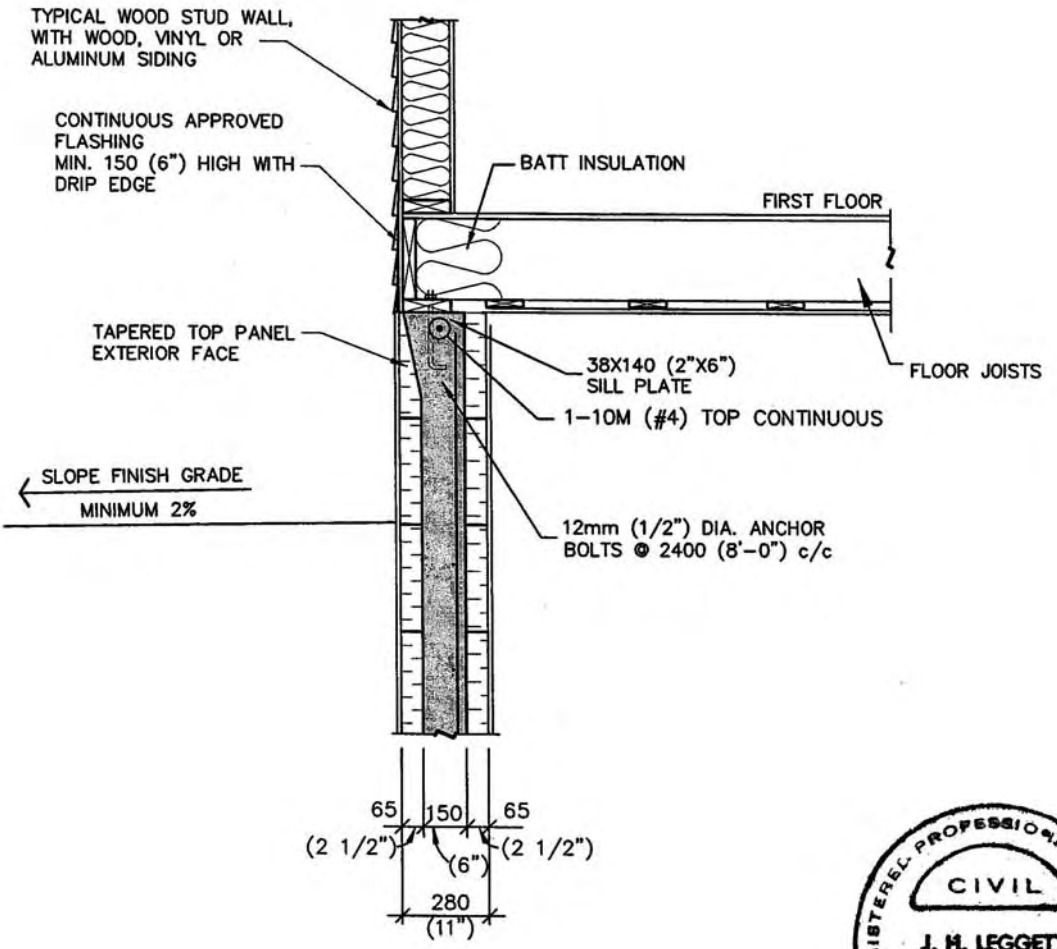

FIGURE 7.

INTEGRASPEC® WALL DETAIL C / FLOOR PLATE

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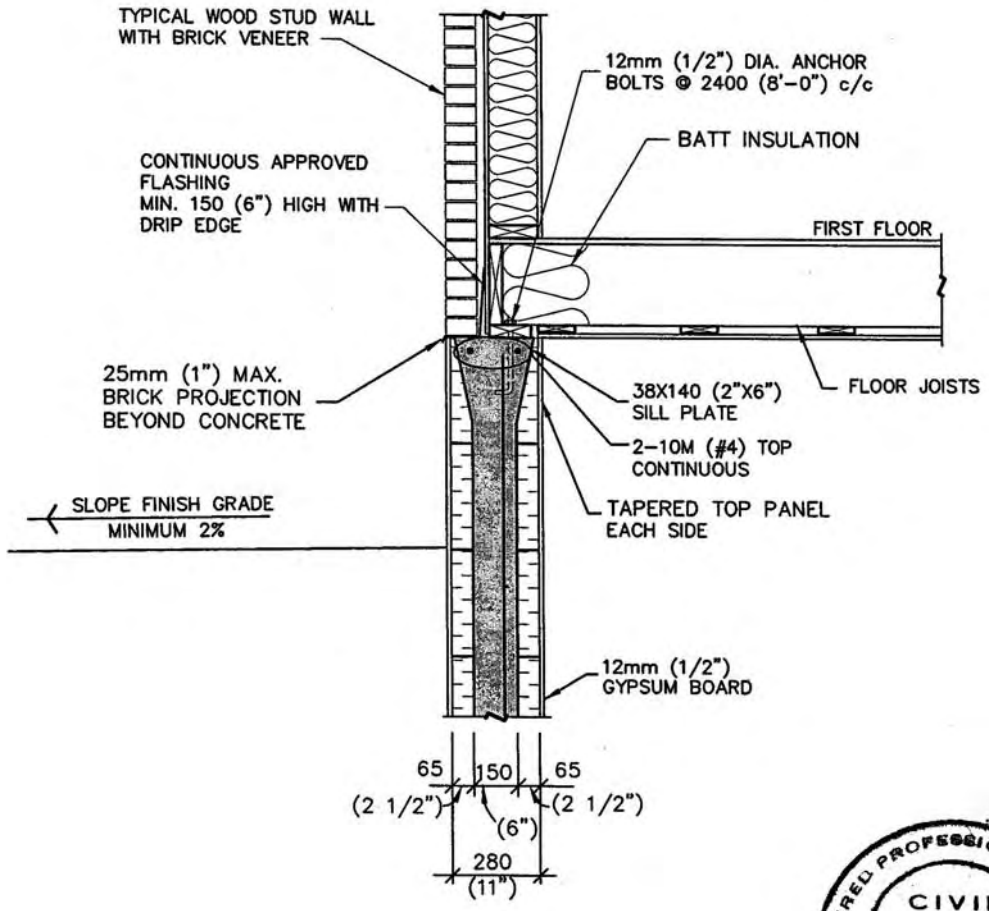

FIGURE 8.

INTEGRASPEC® WALL DETAIL D / FLOOR PLATE

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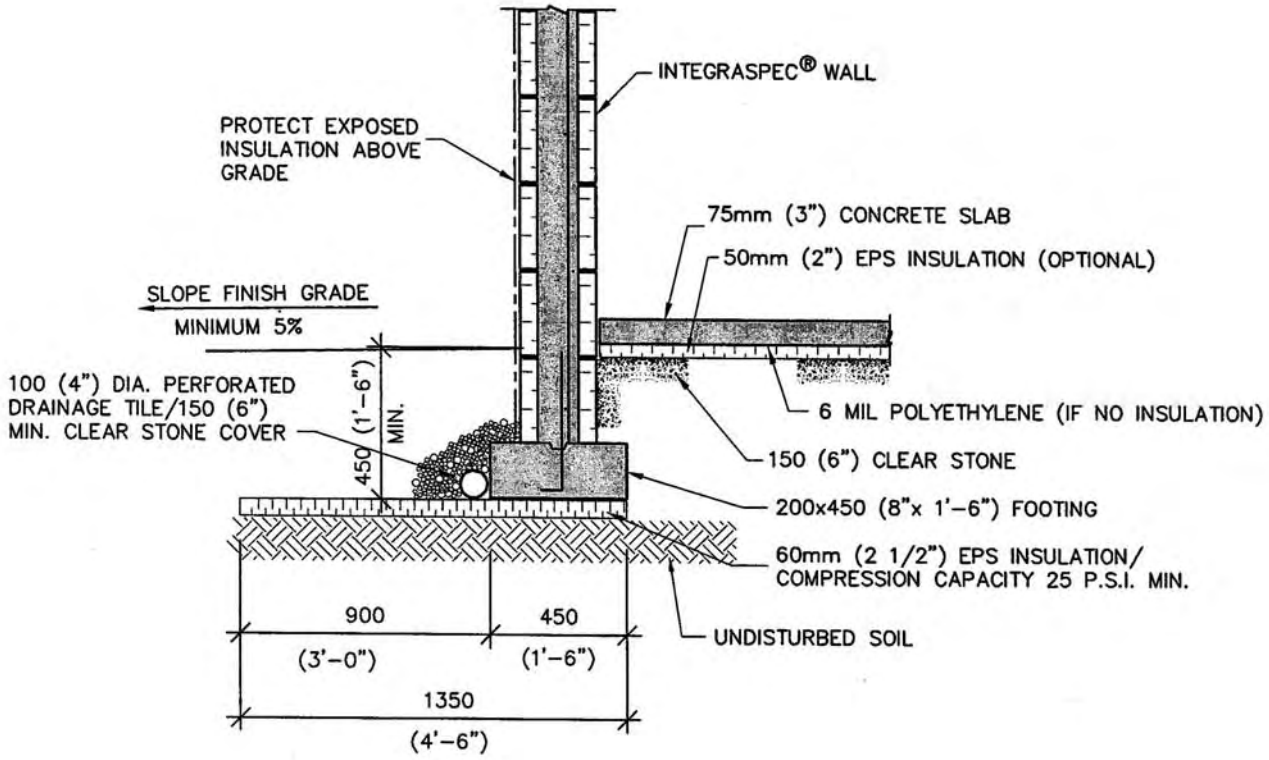

FIGURE 9.

INTEGRASPEC® WALL / SHALLOW FOOTING DETAIL

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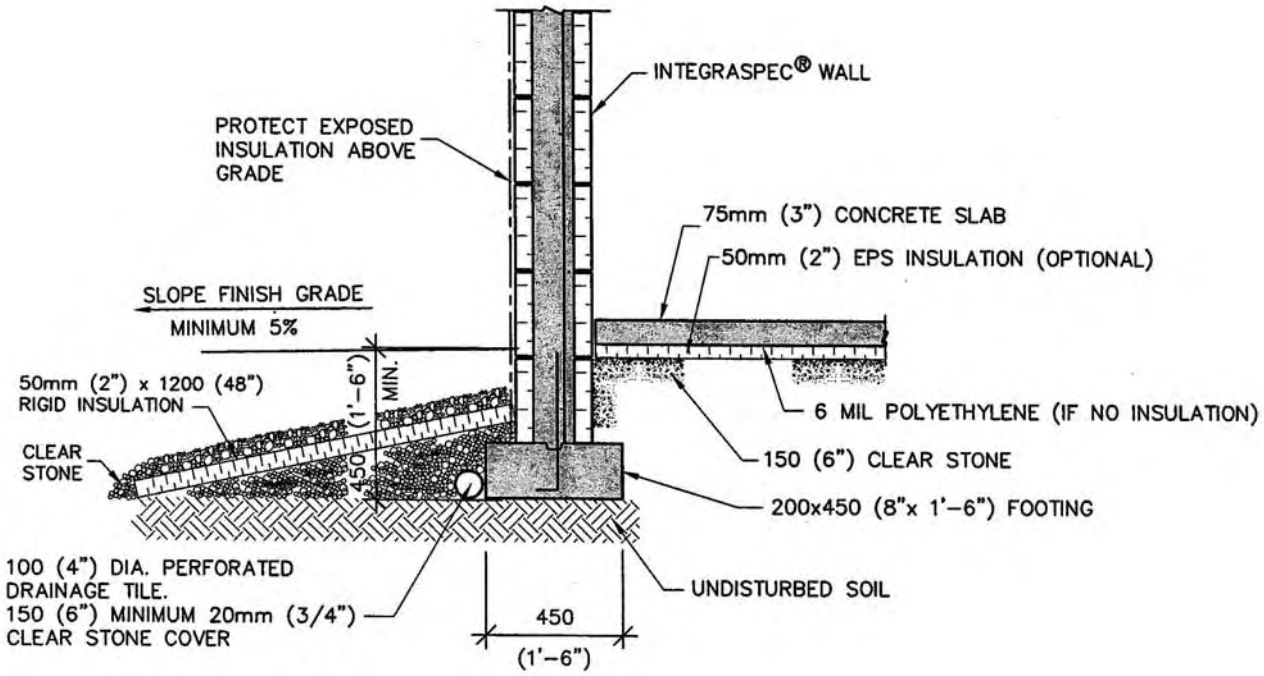

FIGURE 9a.

INTEGRASPEC® WALL / ALTERNATE SHALLOW FOOTING DETAIL

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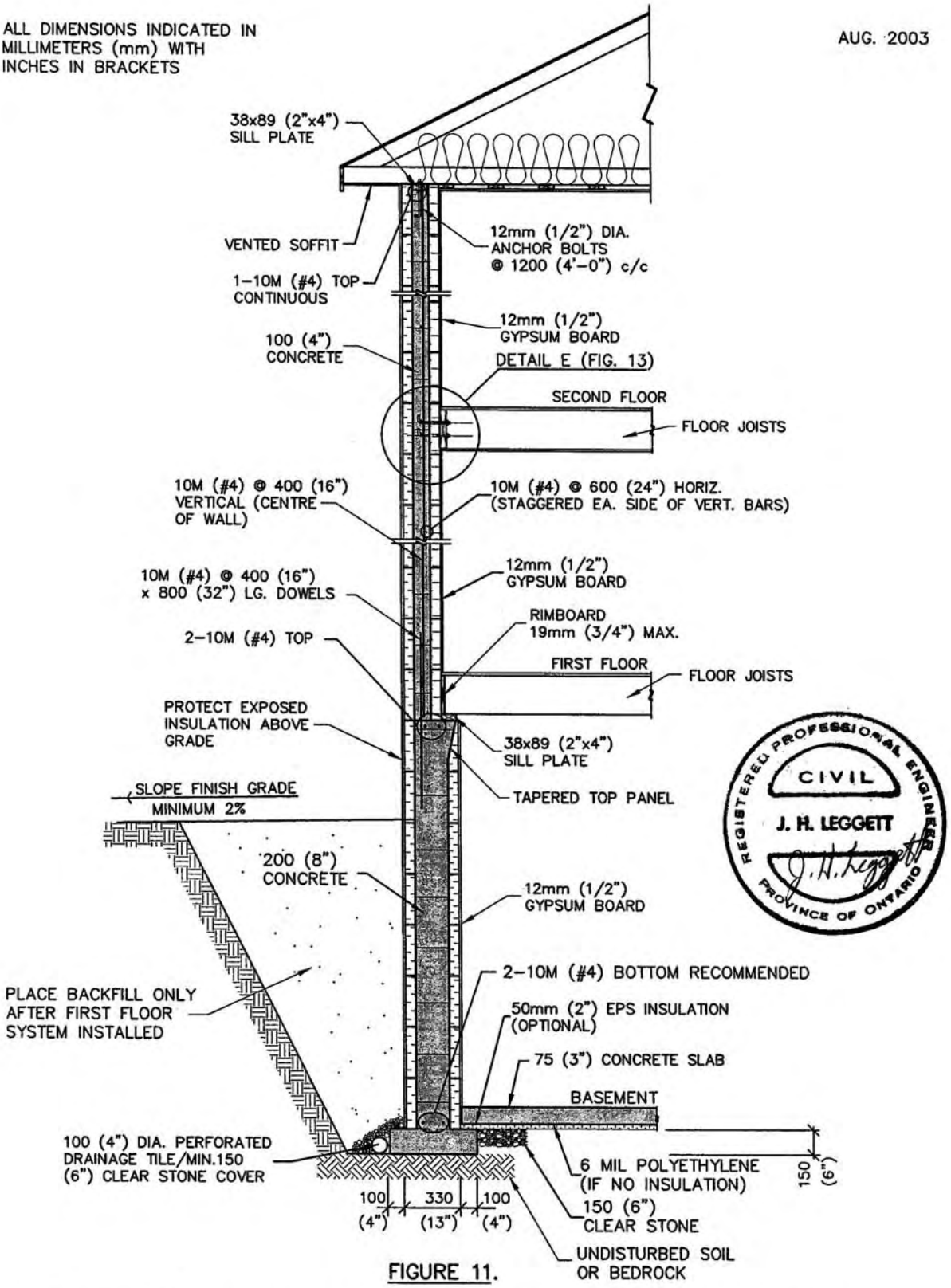

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FIGURE 11.

INTEGRASPEC® BASEMENT, FIRST AND SECOND FLOOR WALL WITH WOOD, VINYL, ALUMINUM SIDING OR STUCCO

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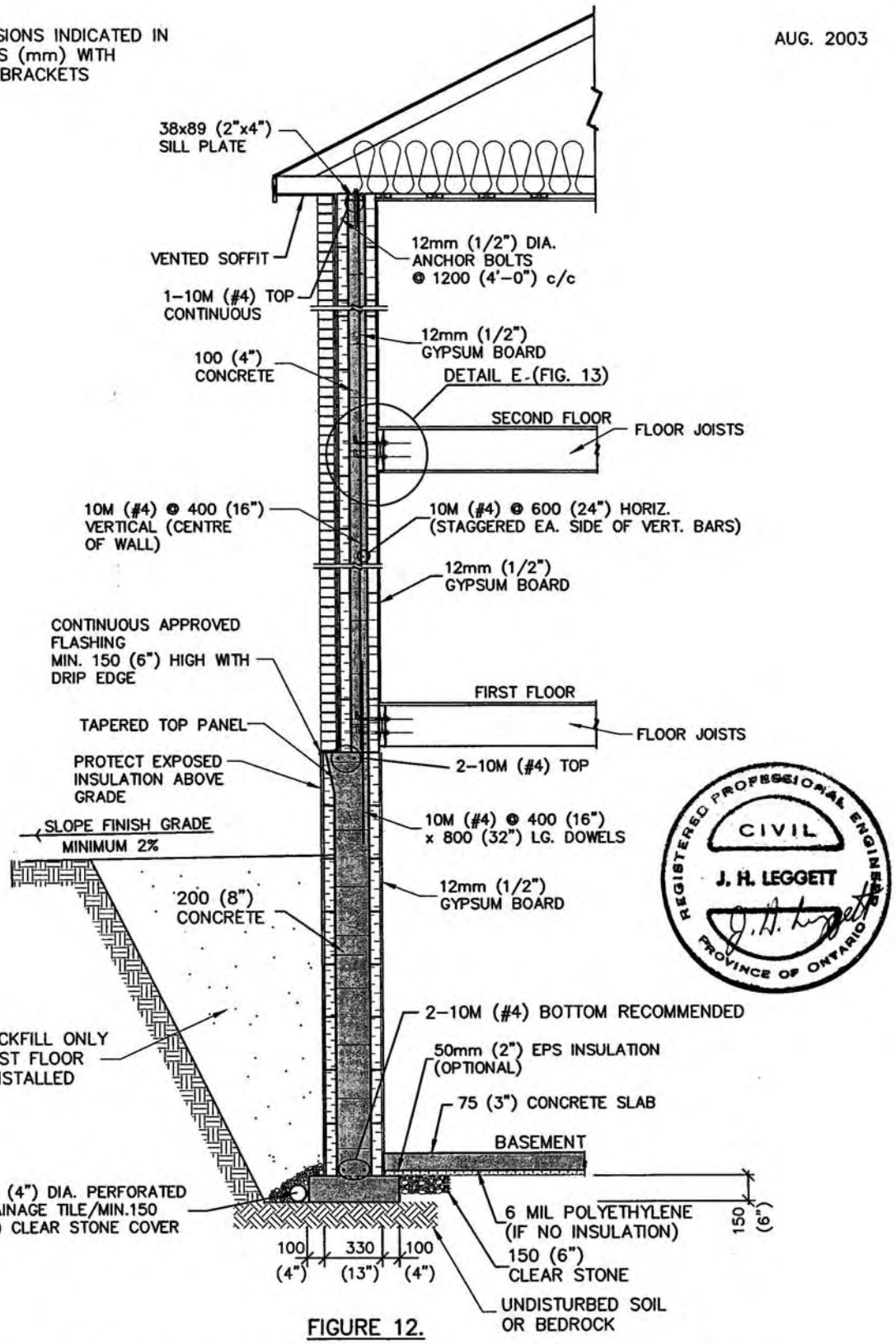

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FIGURE 12.

INTEGRASPEC® BASEMENT, FIRST AND SECOND FLOOR WALL WITH BRICK VENEER

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NOTE: ALL DIMENSIONS INDICATED IN MILLIMETERS (mm) WITH INCHES IN BRACKETS

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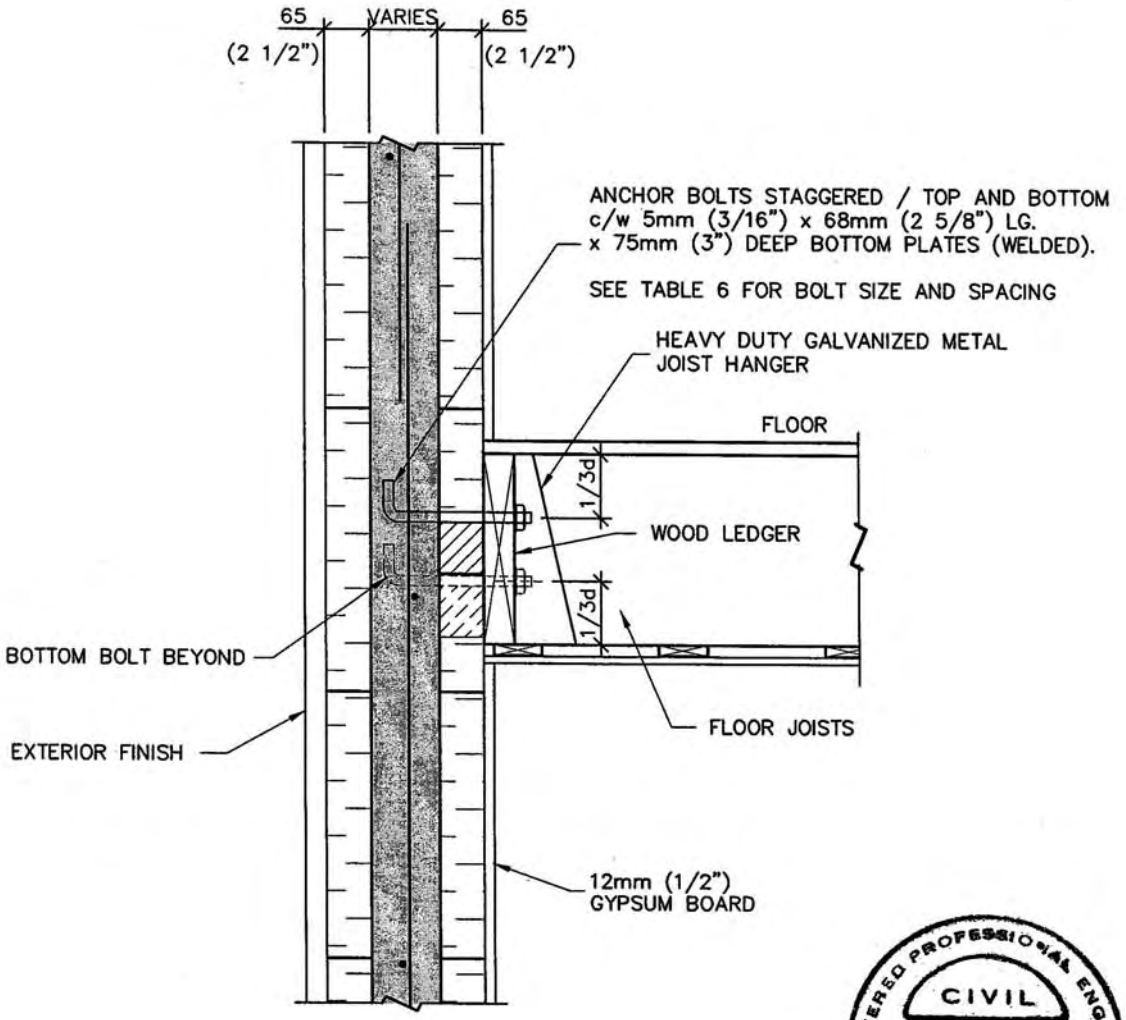

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FIGURE 13.

INTEGRASPEC® WALL DETAIL E
WOOD RIM LEDGER/FLOOR JOIST SUPPORT DETAIL

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NOTE: ALL DIMENSIONS INDICATED IN MILLIMETERS (mm) WITH INCHES IN BRACKETS

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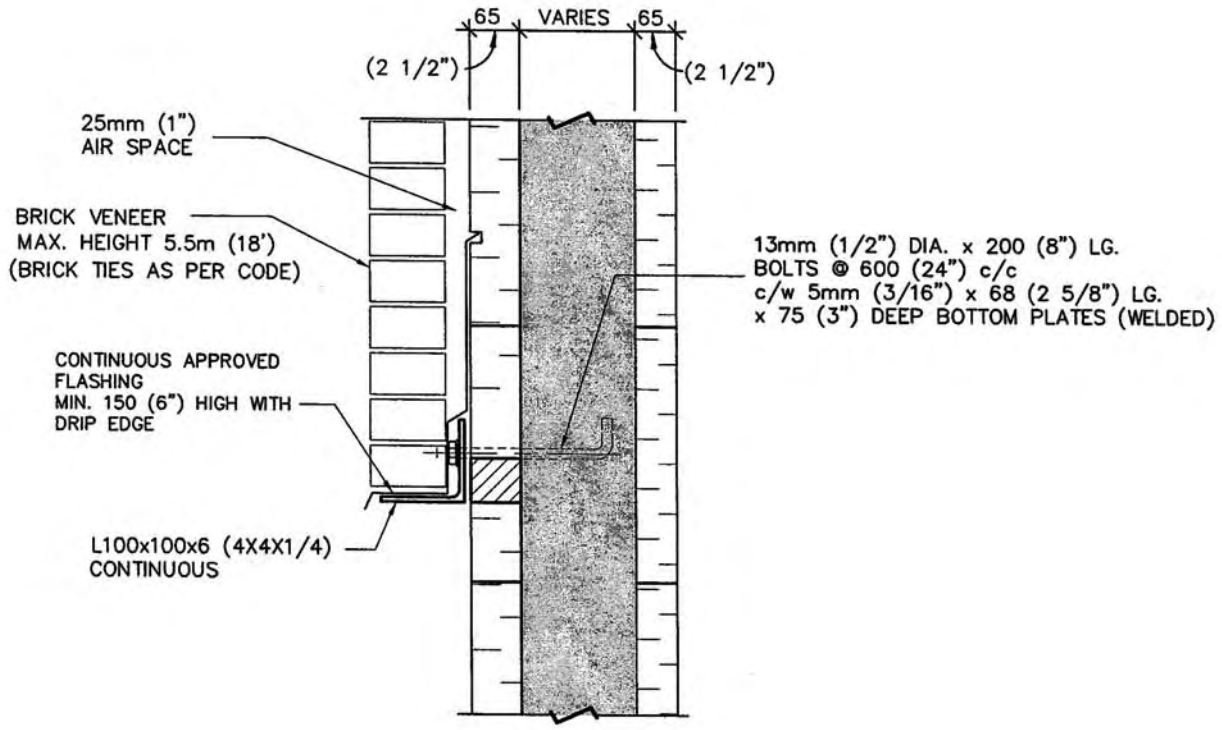

FIGURE 15.

INTEGRASPEC® WALL / BRICK SUPPORT ANGLE DETAIL

ANGLE LEG MAY BE TURNED UP (AS SHOWN) OR DOWN

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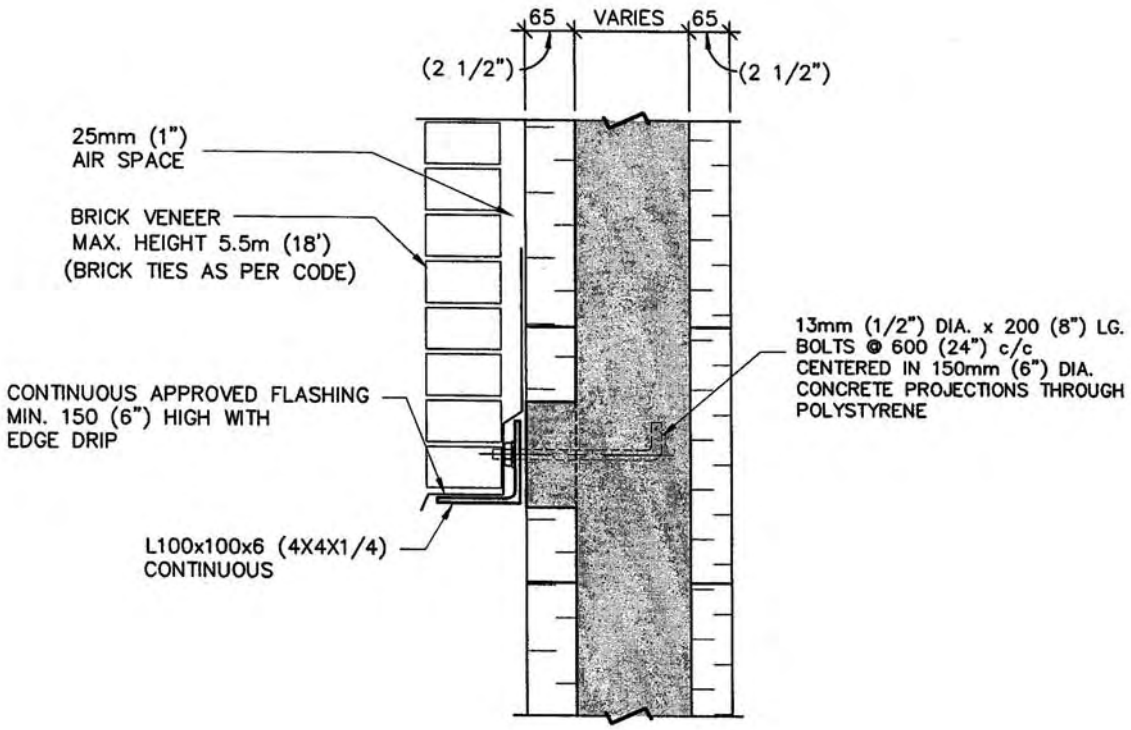

FIGURE 15a

INTEGRASPEC® WALL / ALTERNATIVE BRICK SUPPORT ANGLE DETAIL

ANGLE LEG MAY BE TURNED UP (AS SHOWN) OR DOWN

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Table 6 Anchor Bolts vs. Joist Span Table

BOLT SIZE	JOIST SPAN	BOLT SPACING
1/2" (13mm)	UP TO 6'-0" (1.8m)	32" (800mm)
1/2" (13mm)	6'-1" TO 8'-0" (1.8m TO 2.4m)	24" (600mm)
1/2" (13mm)	8'-1' to 12'-0" (2.4m TO 3.6m)	16" (400mm)
1/2" (13mm)	12'-1" to 16'-0" (3.6m TO 4.8m)	12" (300mm)
1/2" (13mm)	16'-1" TO 23'-11" (4.8m TO 7.2m)	8" (200mm)
2x1/2" (13mm)	UP TO 9'-7" (3.0m)	32" (800mm)
2x1/2" (13mm)	9'-8" TO 12'-9" (3.0m TO 4.0m)	24" (600mm)
2x1/2" (13mm)	12'-10" TO 19'-2" (4.0m TO 5.8m)	16" (400mm)
2x1/2" (13mm)	19'-3" TO 25'-7" (5.8m TO 7.8m)	12" (300mm)
2x1/2" (13mm)	25'-8" TO 38'-3" (7.8m TO 11.6m)	8" (200mm)
5/8" (16mm)	UP TO 7'-7" (2.3m)	32" (800mm)
5/8" (16mm)	7'-8" TO 10'-1" (2.3m TO 3.1m)	24" (600mm)
5/8" (16mm)	10'-2" TO 15'-2" (3.1m TO 4.6m)	16" (400mm)
5/8" (16mm)	15'-3" TO 20'-2" (4.6m TO 6.2m)	12" (300mm)
5/8" (16mm)	20'-3" TO 30'-2" (6.2m TO 9.2m)	8" (200mm)

Notes:

1. Table to be read in conjunction with Figure 13.
2. Bolts shall be 8" (200 mm) minimum long, excluding hook.
3. Table is based on a specified live load of 40 PSF (1.9 kPa) and a specified dead load of 10 PSF (0.5 kPa).
4. Joist span is clear span between supports.

Adjeleian Allen Rubeli
Consulting Engineers
75 Albert Street, Ottawa, Ontario

NOTE: ALL DIMENSIONS INDICATED IN MILLIMETERS (mm) WITH INCHES IN BRACKETS

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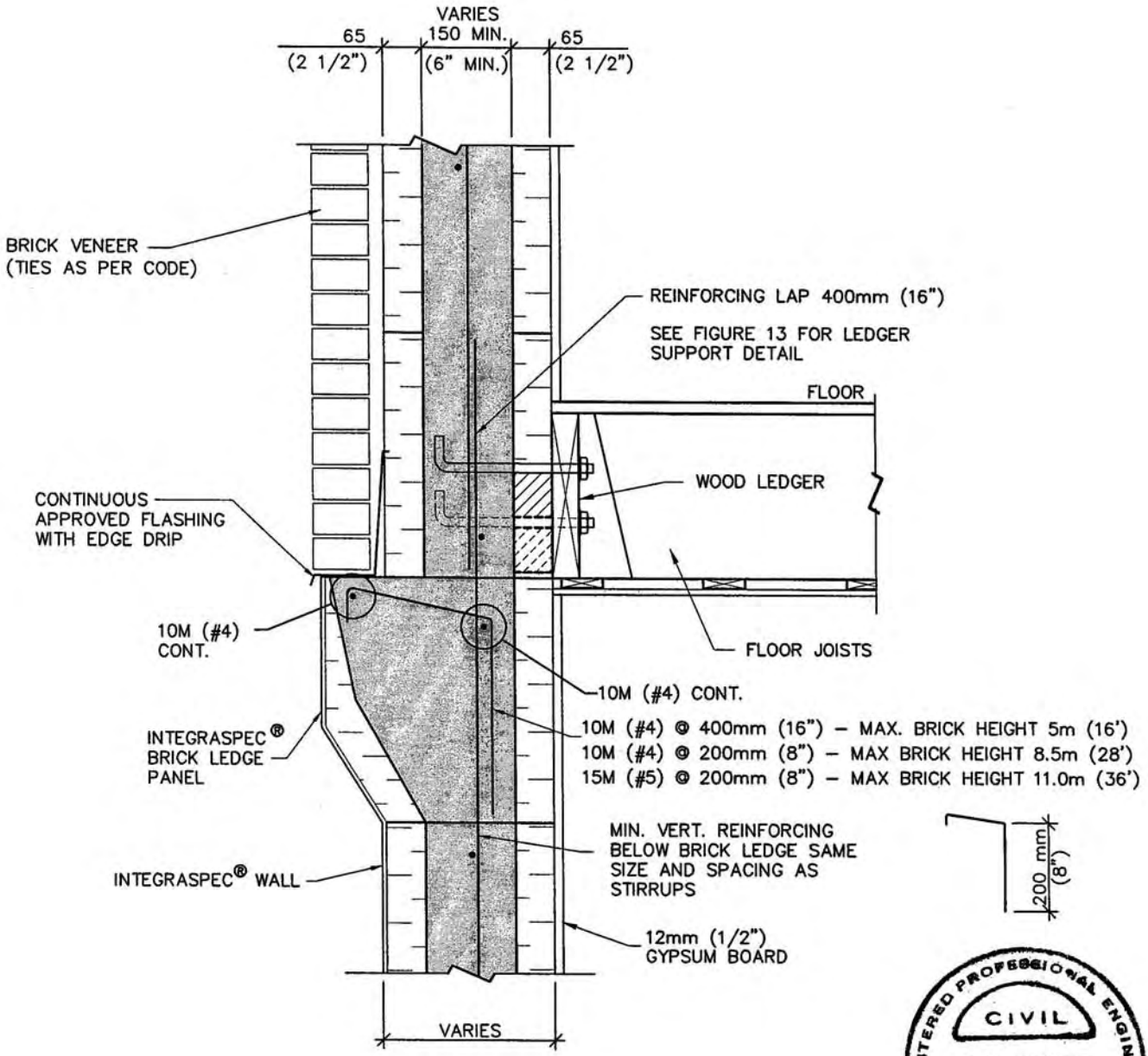

FIGURE 14.

INTEGRASPEC® WALL TYPICAL BRICK LEDGE DETAIL

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Table 7

4" (100mm) Lintel Table

Single Storey or Top
Floor of 2 or 3 Storey

Lintel Height (H) in. (mm)	Bottom Bar	Maximum Lintel Span (Ls)			
		Composite Snow Load - kPa (P.S.F.)			
		1.0 (21)	1.5 (31)	2.0 (42)	2.5 (52)
10 (250)	10M (#4)	4'–11" (1.50m)	4'–5" (1.35m)	4'–0" (1.22m)	3'–9" (1.15m)
12 (300)	10M (#4)	5'–6" (1.68m)	4'–11" (1.50m)	4'–6" (1.37m)	4–2" (1.27m)
16 (400)	10M (#4)	6'–6" (1.98m)	5'–10" (1.78m)	5'–4" (1.63m)	4'–11" (1.50m)
10 (250)	15M (#5)	7'–1" (2.16m)	6'–4" (1.93m)	5'–9" (1.76m)	5'–4" (1.63m)
12 (300)	15M (#5)	7'–10" (2.39m)	7'–0" (2.14m)	6'–5" (1.96m)	5'–11" (1.81m)
16 (400)	15M (#5)	9'–3" (2.82m)	8'–3" (2.52m)	7'–7" (2.31m)	7'–0" (2.14m)
20 (500)	15M (#5)	10'–5" (3.18m)	9'–4" (2.85m)	8'–7" (2.62m)	7'–11" (2.42m)
24 (600)	15M (#5)	11'–5" (3.48m)	10'–3" (3.13m)	9'–5" (2.87m)	8'–9" (2.67m)

Notes

1. Design Criteria

   Maximum roof span = 40 ft. (12.2m) plus 2 ft. (0.6m) eave
   Roof snow load as per table
   Roof dead load = 12 P.S.F. (0.6 kPa)
   Attic live load = 10 P.S.F. (0.5 kPa)

2. Concrete strength f'c = 20 MPa (3000 P.S.I.)
3. Reinforcing steel CSA G30.18 deformed (Fy = 400 MPa/ 60 K.S.I.)
4. All lintels shall have 1–10M (#4) bar top in addition to bottom bar specified.
5. Lintels supporting beam and girder truss point loads shall be designed by a professional engineer.
6. Design to CSA A23.3–94
7. For lintels beyond the scope of Tables 7, 8, and 9, a wood or steel beam may be used, which shall have a minimum bearing of 6" (150 mm) each side of opening, and shall be designed by a professional engineer.

REGISTERED PROFESSIONAL ENGINEER
CIVIL
J. H. LEGGETT
PROVINCE OF ONTARIO

Project:			
INTEGRASPEC® ICF WALL SYSTEM	4" (100mm) LINTEL TABLE	Drawn: A.A.	Project No. 1635–32
	Adjeleian Allen Rubeli Limited Consulting Engineers 75 Albert Street, Suite 1005, Ottawa, Ontario	Scale: AS NOTED	Drawing S7
		Date: AUG. 2003	

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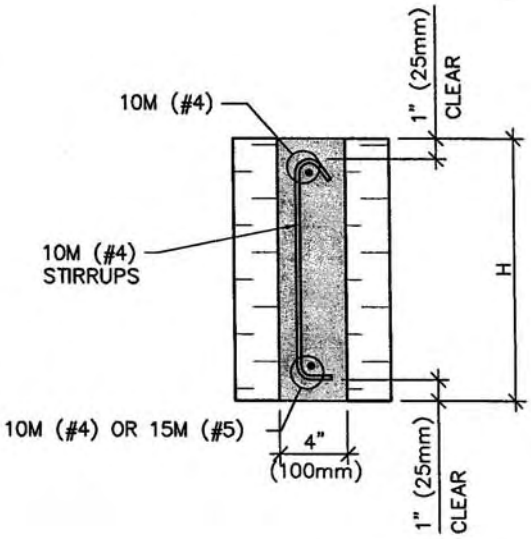
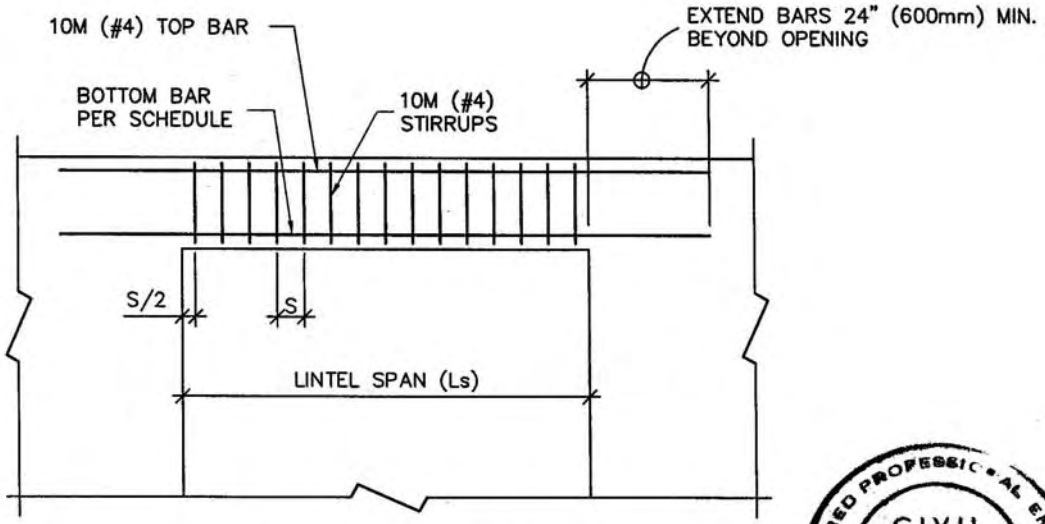
Lintel Height H in. (mm)	Stirrup Spacing S in. (mm)
10 (250)	5 1/2 (140)
12 (300)	7 (175)
16 (400)	9 3/4 (240)
20 (500)	12 1/2 (300)
24 (600)	15 1/2 (380)

No stirrups required where lintel span Ls is less than 3'–0" (900mm)

STIRRUP SPACING



TYPICAL LINTEL



LINTEL ELEVATION

REGISTERED PROFESSIONAL ENGINEER
CIVIL
J. H. LEGGETT
PROVINCE OF ONTARIO

Project: **INTEGRASPEC®** ICF WALL SYSTEM	4" (100mm) LINTEL TABLE	Drawn: A.A.	Project No. 1635–32
	Adjeleian Allen Rubeli Limited Consulting Engineers 75 Albert Street, Suite 1005, Ottawa, Ontario	Scale: AS NOTED	Drawing S7a
		Date: AUG. 2003	

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Table 8

4" (100mm) Lintel Table

Lower Floor of 2 Storey or
Middle Floor of 3 Storey

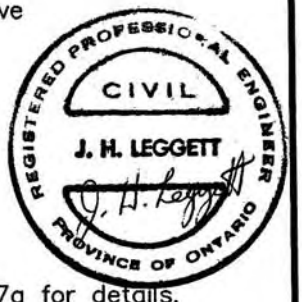
Floor Span ft. (m)	Lintel Height (H) in. (mm)	Bottom Bar	Maximum Lintel Span (Ls)			
			Composite Snow Load - kPa (P.S.F.)			
			1.0 (21)	1.5 (31)	2.0 (42)	2.5 (52)
16'-0" (4.88m) 50% of floor span supported by lintel	10 (250)	10M (#4)	4'-2" (1.28m)	4'-0" (1.23m)	3'-11" (1.19m)	3'-9" (1.14m)
	12 (300)	10M (#4)	4'-9" (1.44m)	4'-7" (1.39m)	4'-5" (1.34m)	4-3" (1.29m)
	16 (400)	10M (#4)	5'-8" (1.72m)	5'-5" (1.65m)	5'-3" (1.59m)	5'-1" (1.54m)
	10 (250)	15M (#5)	5'-8" (1.74m)	5'-6" (1.68m)	5'-3" (1.61m)	5'-1" (1.56m)
	12 (300)	15M (#5)	6'-6" (1.98m)	6'-3" (1.91m)	6'-0" (1.84m)	5'-10" (1.78m)
	16 (400)	15M (#5)	7'-10" (2.39m)	7'-7" (2.30m)	7'-3" (2.22m)	7'-0" (2.14m)
	20 (500)	15M (#5)	8'-11" (2.73m)	8'-8" (2.63m)	8'-4' (2.54m)	8'-0" (2.45m)
	24 (600)	15M (#5)	9'-11" (3.03m)	9'-7" (2.92m)	9'-3" (2.82m)	8'-11" (2.72m)
24'-0" (7.32m) 50% of floor span supported by lintel	10 (250)	10M (#4)	3'-10" (1.16m)	3'-8" (1.11m)	3'-6" (1.06m)	3'-4" (1.02m)
	12 (300)	10M (#4)	4'-4" (1.31m)	4'-1" (1.25m)	3'-11" (1.20m)	3'-9" (1.15m)
	16 (400)	10M (#4)	5'-1" (1.56m)	4'-11" (1.49m)	4'-8" (1.43m)	4'-6" (1.38m)
	10 (250)	15M (#5)	5'-2" (1.58m)	4'-11" (1.51m)	4'-9" (1.45m)	4'-7" (1.39m)
	12 (300)	15M (#5)	5'-11" (1.80m)	5'-8" (1.72m)	5'-5" (1.65m)	5'-3" (1.59m)
	16 (400)	15M (#5)	7'-2" (2.18m)	6'-10" (2.08m)	6'-6" (1.99m)	6'-4" (1.92m)
	20 (500)	15M (#5)	8'-2" (2.49m)	7'-10" (2.38m)	7'-6" (2.28m)	7'-3" (2.20m)
	24 (600)	15M (#5)	9'-1" (2.77m)	8'-8" (2.64m)	8'-4" (2.54m)	8'-0" (2.44m)

Notes

1. Design Criteria

   Maximum roof span = 40 ft. (12.2m) plus 2 ft. (0.6m) eave
   Roof snow load as per table
   Roof dead load = 12 P.S.F. (0.6 kPa)
   Attic live load = 10 P.S.F. (0.5 kPa)

   Total floor span = 16 ft. and 24 ft. (4.88m and 7.32m)
   Floor live load = 40 P.S.F. (1.9 kPa)
   Floor dead load = 10 P.S.F. (0.5 kPa)
   Floor to floor height = 9 ft. (2.75m)



2. Refer to drawing S7 for additional notes and to drawing S7a for details.

Project:			
INTEGRASPEC® ICF WALL SYSTEM	4" (100mm) LINTEL TABLE	Drawn: A.A.	Project No. 1635-32
	Adjeleian Allen Rubeli Limited Consulting Engineers 75 Albert Street, Suite 1005, Ottawa, Ontario	Scale: AS NOTED	Drawing S8
		Date: AUG. 2003	

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Table 9

4" (100mm) Lintel Table
Bottom Floor of 3 Storey

Floor Span ft. (m)	Lintel Height (H) in. (mm)	Bottom Bar	Maximum Lintel Span (Ls)			
			Composite Snow Load - kPa (P.S.F.)			
			1.0 (21)	1.5 (31)	2.0 (42)	2.5 (52)
16'-0" (4.88m) 50% of floor span supported by lintel	10 (250)	10M (#4)	3'-2" (0.98m)	3'-1" (0.95m)	3'-1" (0.93m)	3'-0" (0.91m)
	12 (300)	10M (#4)	3'-7" (1.10m)	3'-6" (1.08m)	3'-5" (1.05m)	3'-5" (1.03m)
	16 (400)	10M (#4)	4'-4" (1.32m)	4'-3" (1.29m)	4'-2" (1.26m)	4'-0" (1.23m)
	10 (250)	15M (#5)	4'-4" (1.33m)	4'-3" (1.30m)	4'-2" (1.27m)	4'-1" (1.24m)
	12 (300)	15M (#5)	5'-0" (1.52m)	4'-10" (1.48m)	4'-9" (1.45m)	4'-8" (1.42m)
	16 (400)	15M (#5)	6'-0" (1.84m)	5'-11" (1.80m)	5'-9" (1.75m)	5'-8" (1.72m)
	20 (500)	15M (#5)	6'-11" (2.11m)	6'-9" (2.06m)	6'-7" (2.01m)	6'-6" (1.97m)
	24 (600)	15M (#5)	7'-8" (2.35m)	7'-6" (2.29m)	7'-4" (2.24m)	7'-2" (2.19m)
24'-0" (7.32m) 50% of floor span supported by lintel	10 (250)	10M (#4)	2'-11" (0.90m)	2'-10" (0.87m)	2'-9" (0.85m)	2'-8" (0.82m)
	12 (300)	10M (#4)	3'-4" (1.02m)	3'-3" (0.99m)	3'-2" (0.96m)	3'-1" (0.93m)
	16 (400)	10M (#4)	4'-0" (1.22m)	3'-10" (1.18m)	3'-9" (1.15m)	3'-8" (1.12m)
	10 (250)	15M (#5)	4'-0" (1.23m)	3'-11" (1.19m)	3'-10" (1.16m)	3'-8" (1.13m)
	12 (300)	15M (#5)	4'-7" (1.40m)	4'-6" (1.36m)	4'-4" (1.32m)	4'-3" (1.29m)
	16 (400)	15M (#5)	5'-7" (1.70m)	5'-5" (1.65m)	5'-3" (1.61m)	5'-1" (1.56m)
	20 (500)	15M (#5)	6'-5" (1.95m)	6'-2" (1.89m)	6'-0" (1.84m)	5'-11" (1.80m)
	24 (600)	15M (#5)	7'-1" (2.17m)	6'-11" (2.11m)	6'-9" (2.05m)	6'-7" (2.00m)

Notes

1. See drawings S7, S7a and S8 for notes and details.

REGISTERED PROFESSIONAL ENGINEER
CIVIL
J. H. LEGGETT
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Project: **INTEGRASPEC®** **ICF WALL SYSTEM**	4" (100mm) LINTEL TABLE	Drawn: A.A.	Project No. 1635-32
	Adjeleian Allen Rubeli Limited Consulting Engineers 75 Albert Street, Suite 1005, Ottawa, Ontario	Scale: AS NOTED	Drawing S9
		Date: AUG. 2003	

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