HOLLOWCORE
FLOOR & ROOF SOLUTIONS 2025

AMRIZE

BUILD YOUR AMBITION

Certified by CPCQA to CSA Standards

CERTIFIED QA PLANT

CONCRETE HOLLOWCORE SOLUTIONS

Hollowcore thin slab products enhance construction efficiency by providing long spans, which speeds up installation and reduces the overall building height, leading to substantial material savings. The slabs' continuous voids lower weight and costs while providing space to conceal electrical and mechanical systems. This design optimizes structural performance, simplifies integration, and streamlines the construction process.

Amrize's prestressed Hollowcore slabs are an excellent choice for commercial, industrial, institutional, and residential buildings that demand superior sound insulation and fire resistance. They are particularly well-suited for applications such as hotels, high-end condominiums, schools, and residential structures including homes and garages.

Engaging Amrize Precast early in the design process allows clients to maximize the aesthetic appeal, functionality, and cost efficiency of precast components. This collaborative approach ensures that design objectives are met while optimizing project timelines and budgets.

BENEFITS AND FEATURES:

Proven Strength:

- Highly durable and built to withstand heavy loads and harsh conditions.
- Cost-effective with long-term performance, minimizing lifecycle costs.
- Low-maintenance, reducing repair and upkeep expenses over time.

In-House Engineering & Installation:

- Full-service support from design to installation, ensuring seamless project execution.
- Customizable to meet diverse span, load, and structural requirements.
- Precision-engineered for structural integrity and performance.
- Streamlined coordination reduces project timelines and minimizes risk.

Readily Available:

- Continuous production in controlled environment guarantees consistent quality and supply.
- Manufactured year-round to meet tight construction schedules.

Design Flexibility:

- Compatible with a variety of building types – from high-rise condos to industrial facilities.
- Allows for long, open spans, maximizing interior design possibilities.
- Supports concealed electrical, plumbing, and mechanical systems, enhancing aethetics.

Sustainability:

- Pecast production reduces material waste and on-site emissions.
- Energy-efficient manufacturing with a focus on sustainable building practices.
- Contributes to LEED credits and green building certifications.

Enhanced Fire Resistance:

- Provides superior fire protection, adding safety and security to the structure.
- Ideal for applications where fire rating and compartmentalization are critical.

Noise Reduction:

- Natural sound barrier properties create quieter environments between floors.
- Ideal for residential, hospitality, and institutional applications.

Fire Resistance of hollowcore slabs

Amrize Hollowcore slabs provide exceptional fire resistance, a critical factor in the safety and longevity of buildings. The natural property of concrete makes Hollowcore an ideal choice for structures where fire safety is paramount, such as multi-family residential buildings, hotels, schools, and healthcare facilities.

Proven Fire Performance

Hollowcore slabs have undergone rigorous testing to ensure compliance with fire safety standards. Their fire resistance is evaluated using CAN/ULC S101-04 – Standard Methods of Fire Endurance Tests of Building Construction Materials, the recognized benchmark for fire testing in Canada. This standard simulates real fire conditions to assess how precast elements perform under extreme heat and load-bearing scenarios.

Enhanced Structural Integrity

In the event of a fire, Hollowcore slabs helps maintain structural stability, reducing the risk of collapse and allowing more time for safe evacuation and fire suppression. This feature not only protects occupants but also limits potential damage to the structure, minimizing repair and rebuilding costs.

Additional Benefits of Fire-Resistant Precast Concrete:

- Compliance with Building Codes: Meets national and regional fire safety requirements, ensuring smooth project approval and permitting.
- Insurance Benefits: Structures with proven fire-resistant materials may qualify for lower insurance premiums.
- Increased Market Appeal: Fire-resistant buildings are more attractive to developers and tenants due to their enhanced safety profile.

	203mm (8") Hollowcore		250mm (10") Hollowcore		305mm (12") Hollowcore	
Topping Option (Type S Concrete)	Equivalent Thickness (mm)	Fire Endurance (hours)	Equivalent Thickness (mm)	Fire Endurance (hours)	Equivalent Thickness (mm)	Fire Endurance (hours)
No Topping	106	1.25	128	2	150	2.75
13mm Cementitious Topping	119	1.75	141	2.25	163	3.25
38mm Cementitious Topping	144	2.5	166	3.25	188	4

Sound Insulation Ratings

- Amrize Hollowcore slabs provide superior acoustical performance, making them an effective solution for reducing sound transmission and impact noise between floors. Compared to lightweight joist floor systems, Hollowcore offers enhanced sound insulation, contributing to quieter, more comfortable living and working environments.
- Mandatory sound insulation requirements between adjoining dwellings are generally specified in building codes and equivalent regulations. For example: City of Vancouver Building By-Law 6164, requires a Apparent Sound Transmission Class (ASTC) of 50 for all residential suites. It has been shown by extensive research that the STC rating of various components is related to the surface density of the materials.
- Class (IIC) is derived from ASTM Standard Method E492, "Laboratory Measurements of Impact Sound Transmission Through Floor Ceiling Assemblies Using the Tapping Machine.". Improving IIC rating can be accomplished through impact absorbing surfaces covering the Hollowcore.

	203mm (8") Hollowcore		
Assembly Normal Density Concrete	Mass (kg/m2)	ASTC	IIC
Slab Only	293	55	23
Hollowcore Plus Carpet & Pad	298	55	72

For more information see CPCI Metric Design Manual, 4-th Edition, Chapter 6-21

Precast hollowcore Cross Section

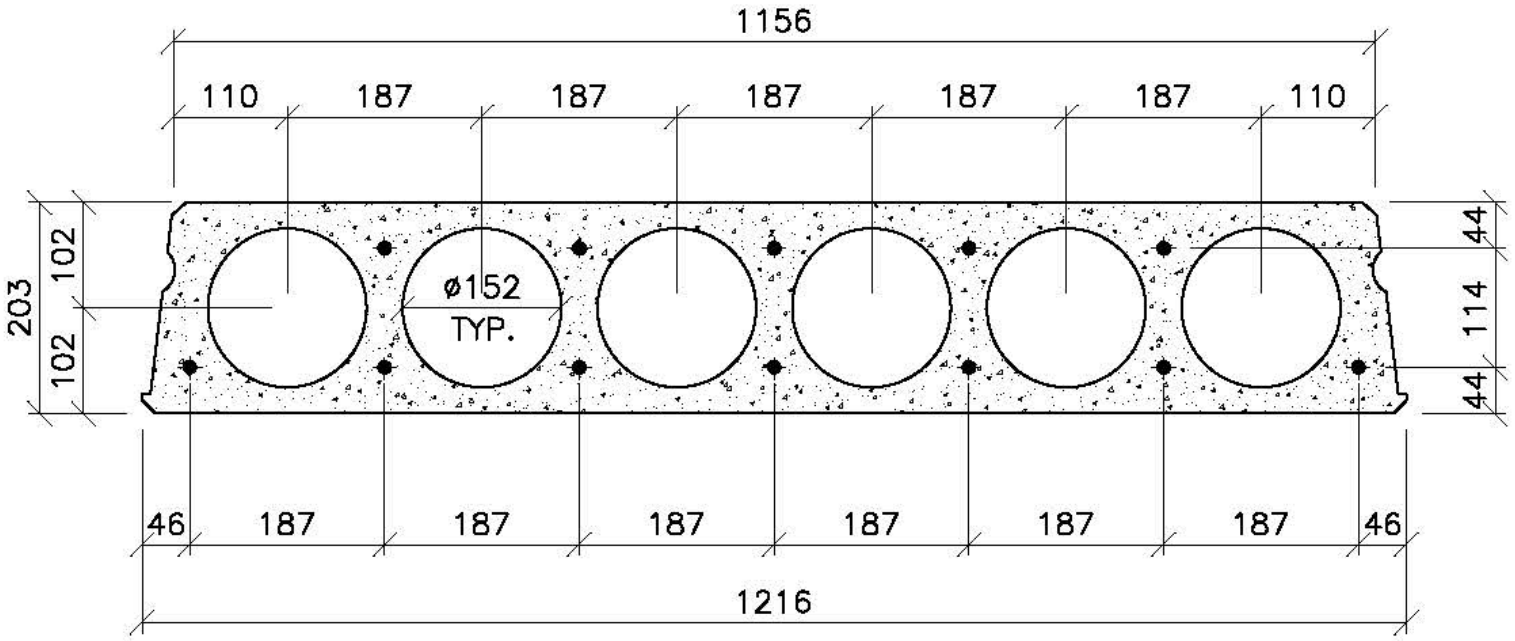
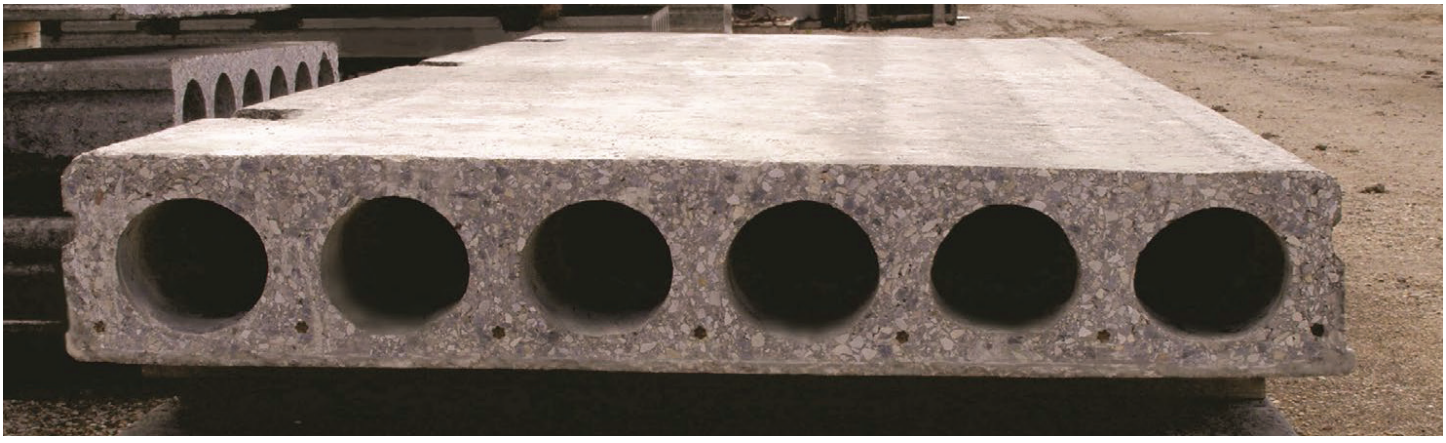


Figure 1 - 203 Deep x 1200 Wide Hollowcore Panel

Slab Section and Material Properties 8" Hollowcore (203 x 1220)

Net Area	**130,000 mm^2**	**Strength of Concrete**	**45 MPa**
Moment of Inertia Centroid	**663 x 10^6 mm^4**	Strength at Release Unit	25 MPa
From Slab Bottom Section	**100 mm**	**Weight of Concrete**	**2400 kg/m^3**
Modulus, Top Section	**6440 x 10^3 mm^3**	Ultimate Steel Strength	1860 MPa
Modulus, Bottom	**6630 x 10^3 mm^3**	**Strand Jacking Stress**	**1302 MPa**
V/S Ratio	**46.5 mm**	Strand Type	Low Relaxation
Self-Weight (May Vary)	**2.49 kN/m^2**		

The above properties may vary. Please contact Amrize for other sections, material properties and structural information.



Precast hollowcore Cross Section

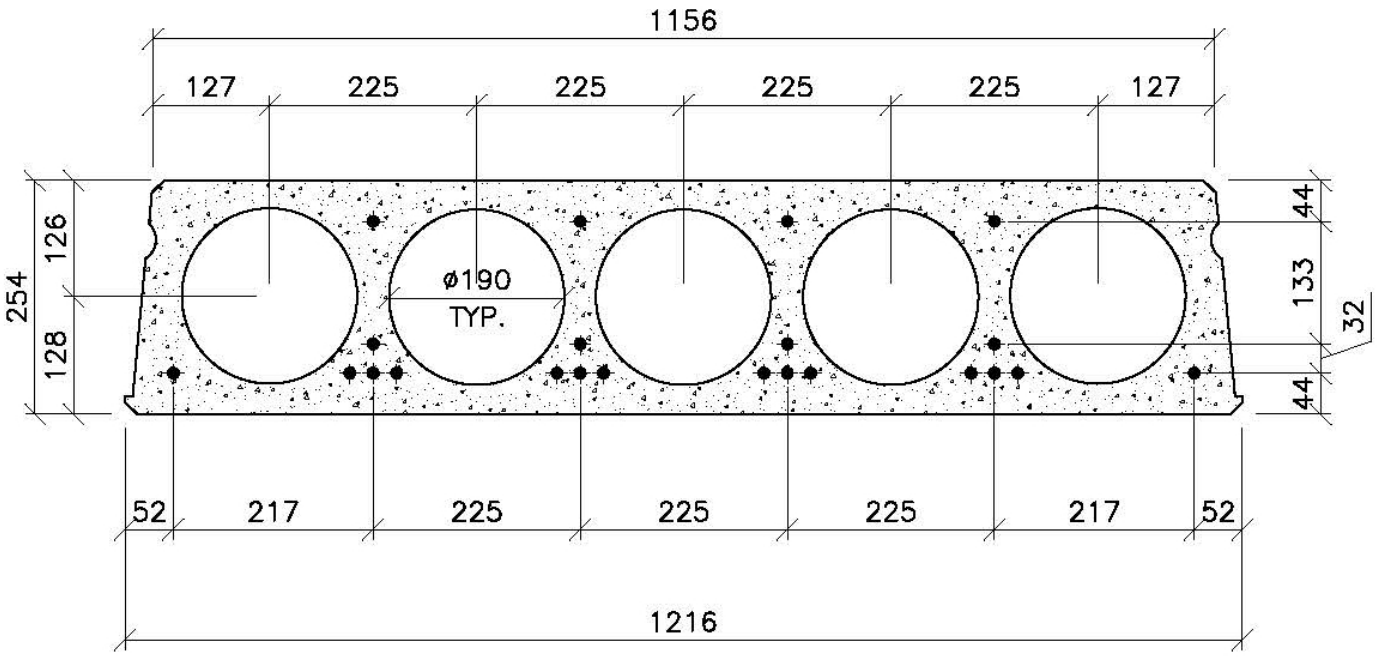


Figure 1 - 254 Deep x 1200 Wide Hollowcore Panel

Slab Section and Material Properties 10" Hollowcore (254 x 1200)

Net Area	156,000 mm^2	Strength of Concrete	45 MPa
Moment of Inertia Centroid	1280 x 10^6 mm^4	Strength at Release	25 MPa
From Slab Bottom Section	125 mm	Unit Weight of Concrete	2400 kg/m^3
Modulus, Top Section	9440 x 10^3 mm^3	Ultimate Steel Strength	1860 MPa
Modulus, Bottom	10200 x 10^3 mm^3	Strand Jacking Stress	1302 MPa
V/S Ratio	54.1 mm	Strand Type	Low Relaxation
Self-Weight (May Vary)	3.02 kN/m^2		

The above properties may vary. Please contact Amrize for other sections, material properties and structural information.

Concrete Hollowcore Solutions

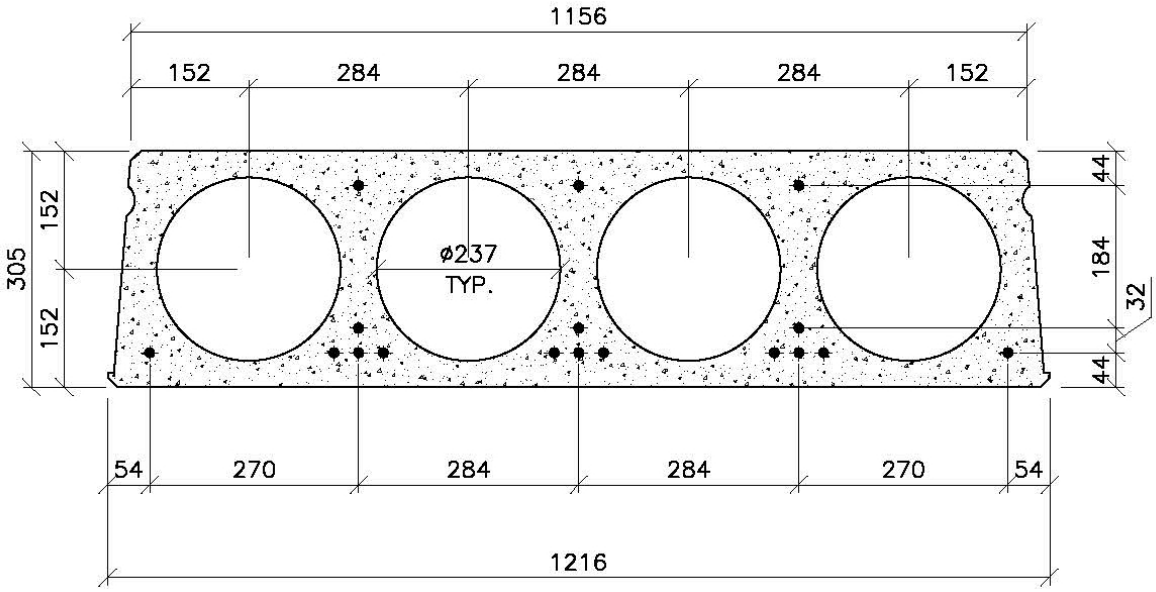


Figure 2 - 305 Deep x 1200 Wide Hollowcore Panel

Slab Section and Material Properties 12" Hollowcore (305 x 1220)

Net Area	183,000 mm^2	Strength of Concrete	45 MPa
Moment of Inertia	2160 x 10^6 mm^4	Strength at Release	25 MPa
Centroid From Slab Bottom	150 mm	Unit Weight of Concrete	2400 kg/m^3
Section Modulus, Top	13900 x 10^3 mm^3	Ultimate Steel Strength	1860 MPa
Section Modulus, Bottom	14300 x 10^3 mm^3	Strand Jacking Stress	1302 MPa
V/S Ratio	61.2 mm	Strand Type	Low Relaxation
Self-Weight (May Vary)	3.55 kN/m^2		

The above properties may vary. Please contact Amrize for other sections, material properties and structural information.

Tables Of Superimposed Service Load (kN/m2) - No Topping

HOLLOW CORE 203 x 1220 (8"HC)

Strand Code	Span [m]												
	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11
1	7.7	6.0	4.8	3.8	3.0								
2	10.1	8.0	6.4	5.2	4.2	3.4							
3	12.3	9.9	8.0	6.5	5.4	4.4	3.7	3.0					
4	14.5	11.7	9.5	7.8	6.5	5.4	4.5	3.8	3.2				
5	16.1	13.0	10.6	8.8	7.3	6.1	5.1	4.3	3.7	3.1			
6		14.3	11.7	9.7	8.1	6.8	5.8	4.9	4.1	3.5	3.0		
7			12.8	10.6	8.9	7.5	6.4	5.4	4.6	3.9	3.4		
8				11.5	9.6	8.1	6.9	5.9	5.1	4.4	3.7	3.2	
9					10.3	8.7	7.5	6.4	5.5	4.7	4.1	3.5	3.0
10					11.0	9.3	8.0	6.8	5.9	5.1	4.4	3.8	3.3
11						9.9	8.4	7.2	6.3	5.4	4.7	4.1	3.6

HOLLOW CORE 254 x 1220 (10" HC)

Strand Code	Span [m]																	
	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	11.5	12	12.5	13	13.5	14	14.5
16	14.2	12.4	10.4	8.8	7.4	6.3	5.4	4.6	3.9	3.3								
17		13.0	11.8	11.3	9.6	8.3	7.1	6.1	5.3	4.6	4.0	3.5	3.0					
18					10.2	9.3	8.0	7.0	6.1	5.3	4.6	4.0	3.5	3.0				
19							9.0	8.1	7.1	6.2	5.4	4.8	4.2	3.7	3.2			
20									7.6	7.1	7.0	6.2	5.5	4.9	4.4	3.9	3.5	3.1
21												6.7	6.0	5.3	4.7	4.2	3.8	3.4
22												6.5	5.8	5.1	4.6	4.1	3.6	3.2
23													6.4	5.7	5.1	4.5	4.1	3.6

HOLLOW CORE 305 x 1220 (12" HC)

Strand Code	Span [m]																			
	7	7.5	8	8.5	9	9.5	10	10.5	11	11.5	12	12.5	13	13.5	14	14.5	15	15.5	16	16.5
12	14.4	13.2	12.2	11.3	10.6	9.9	9.2	8.7	8.2	7.3	6.4	5.7	5.1	4.5	4.0	3.5	3.1			
13										8.1	7.2	6.4	5.7	5.1	4.6	4.1	3.6	3.2		
14												7.1	6.3	5.7	5.1	4.6	4.1	3.6	3.2	
15													6.8	6.1	5.5	4.9	4.4	4.0	3.6	3.2

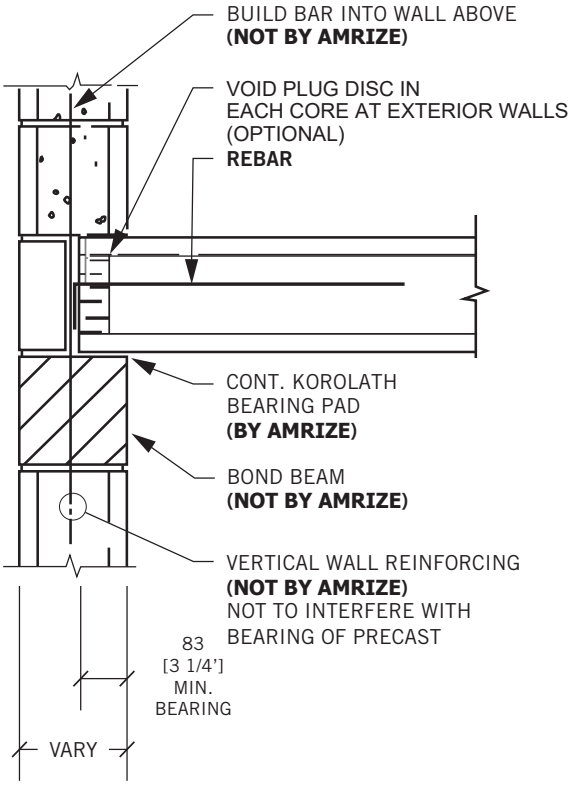
Table of Superimposed Service Loads* (kN/m^2)

*(Superimposed Loads Include 1.2 kN/m^2 Dead Load. Remainder is Live Load)

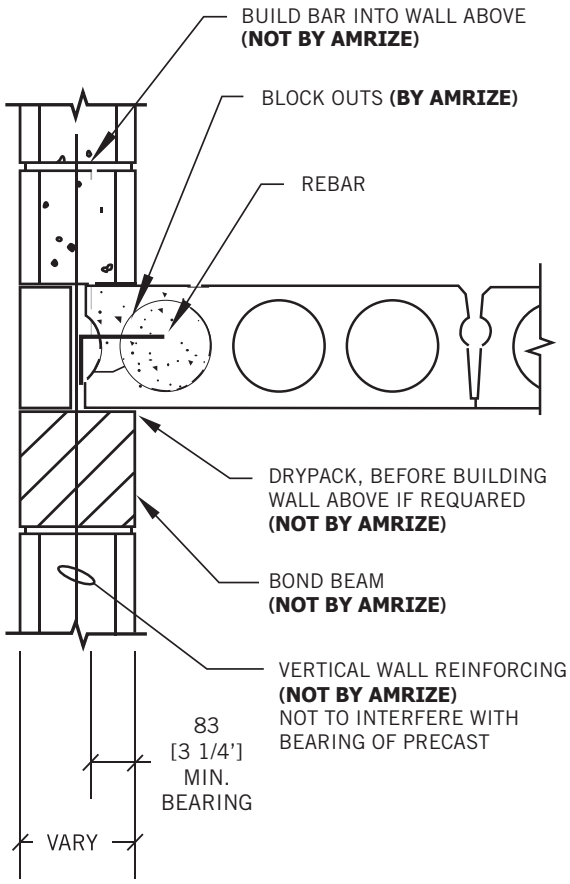
- Loads shown above are uniformly distributed, superimposed not factored.
- Openings, point or line loads, snow drifts, etc. should be considered in design and are not included in the table above.
- CPCI and National Building Code latest revision governs.
- Doesn't include any allowance for strands cut.
- The information above is for guideline purposes - accurate analysis must be carried out to determine panel's design.
- Panel resistance to shear and flexural torsion must be calculated before using the data above.

Connection Details

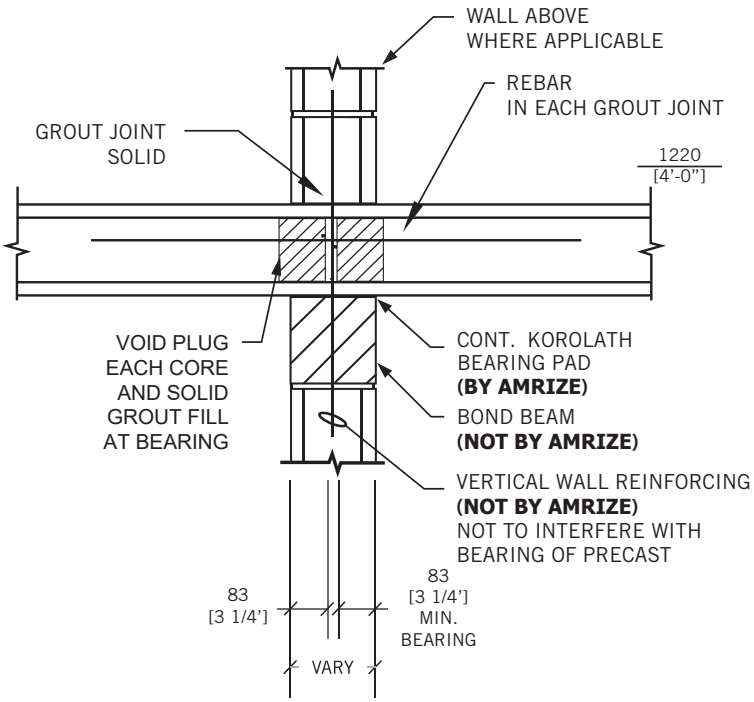
All connection illustrations below are used for conceptual design only.



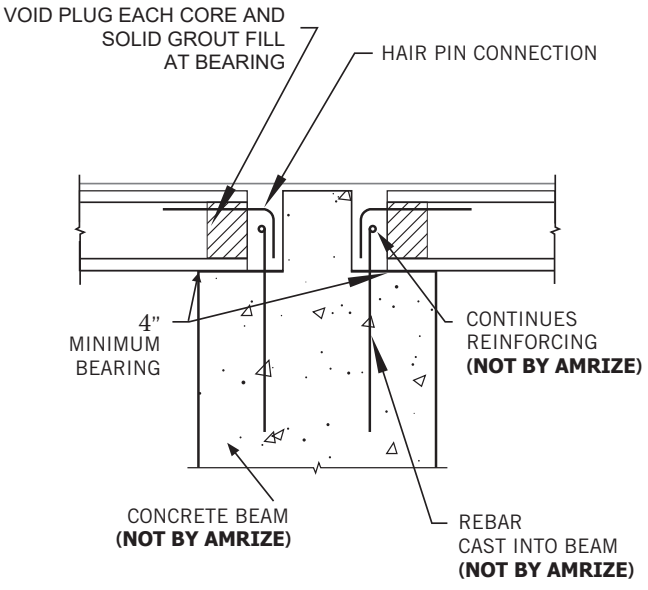
End Bearing On Block - Half Bearing
(Scale - N.T.S.)



Side Bearing On Block - Half Bearing - Tie
Up (Scale - N.T.S.)



End Bearing On Block - Abutting - Tie
Across (Scale - N.T.S.)



Precast Slab Bearing On Concrete Beam

Connection Details

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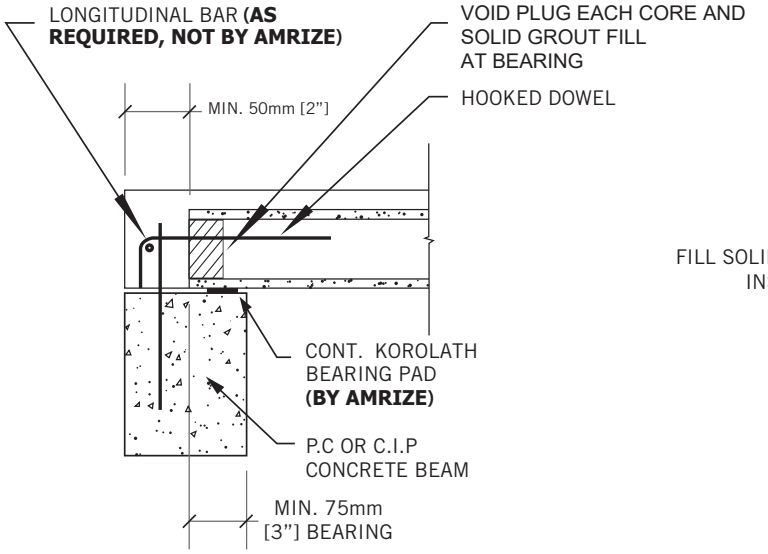
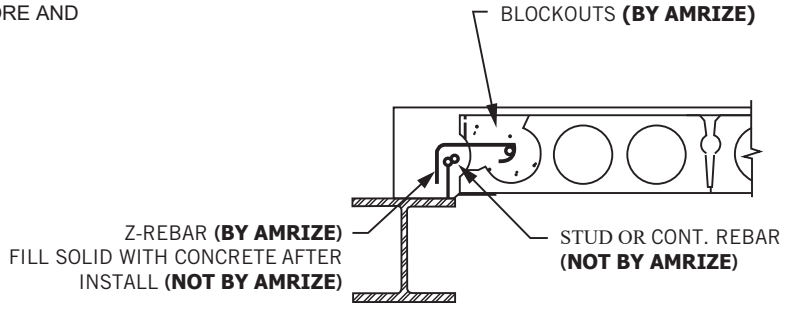
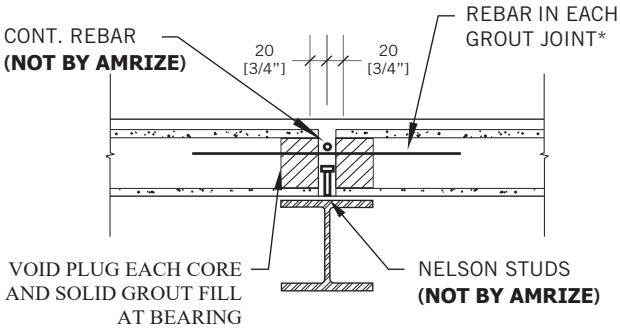


End Bearing On P.C. OR C.I.P. Concrete Beam (Scale - N.T.S.)

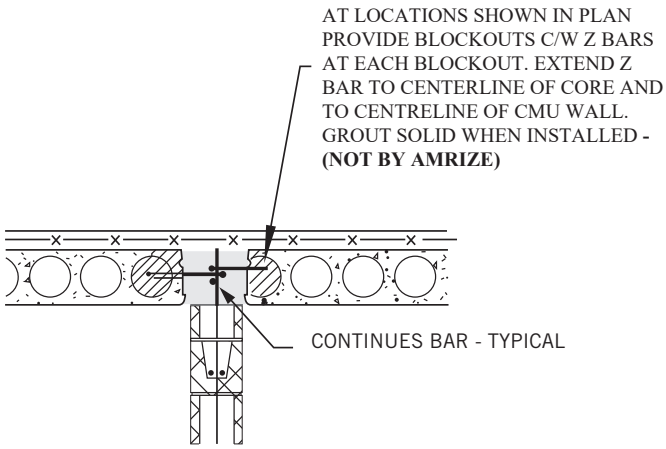


Side Bearing On Beam - Half Bearing (Scale - N.T.S.)

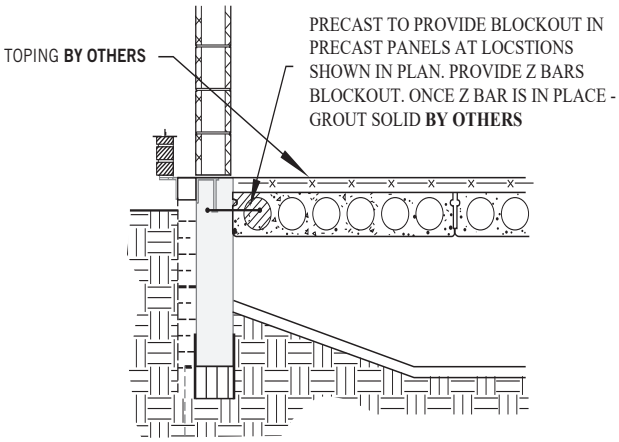


* WHERE JOINTS NOT UNTENURED PROVIDE HOOKED DOWELS

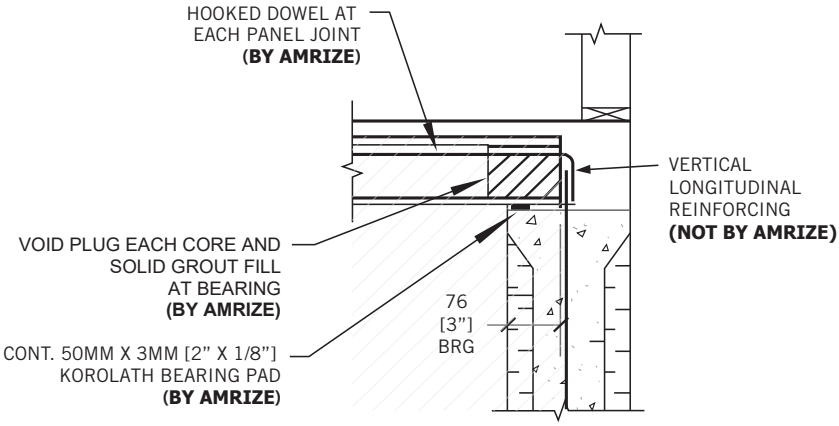
End Bearing On Beam (Scale - N.T.S.)



Interior Hollowcore Parallel to CMU (Scale - N.T.S.)



Grade Beam - Parallel to Hollowcore (Scale - N.T.S.)



Masonry / ICF Foundation (Scale - N.T.S.)

**All connections shown are to be used for conceptual design only.

Connection Details

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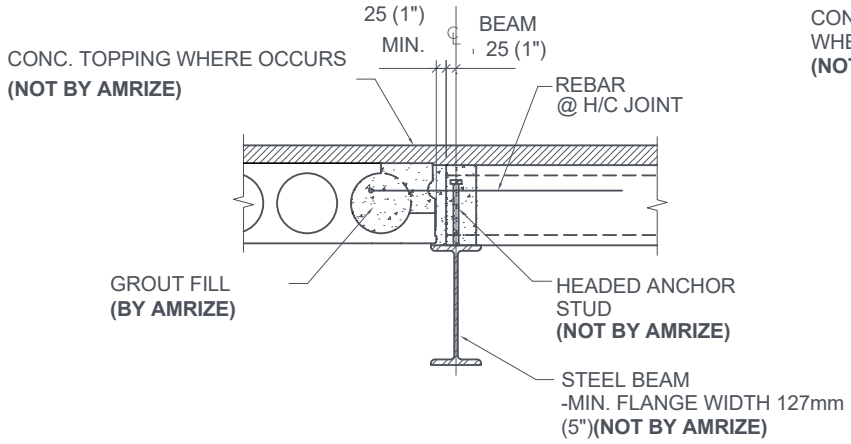
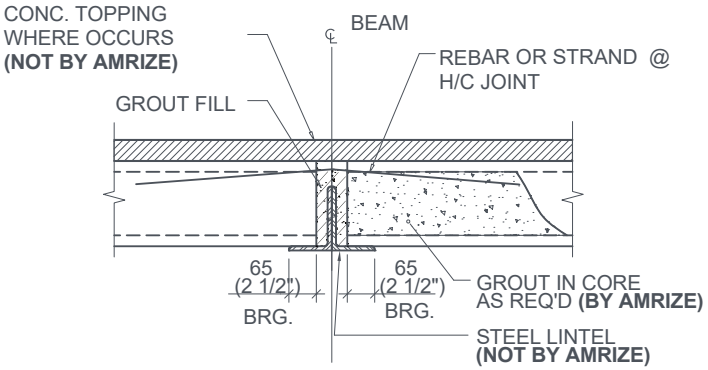


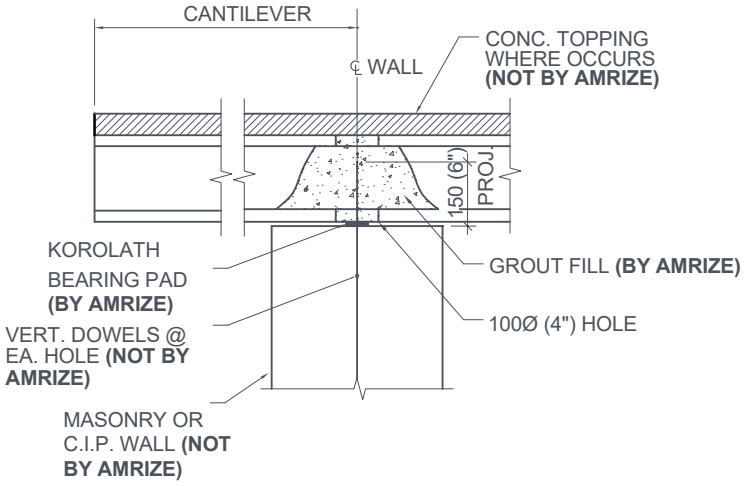
Side To End On Steel Beam

(Scale - N.T.S.)

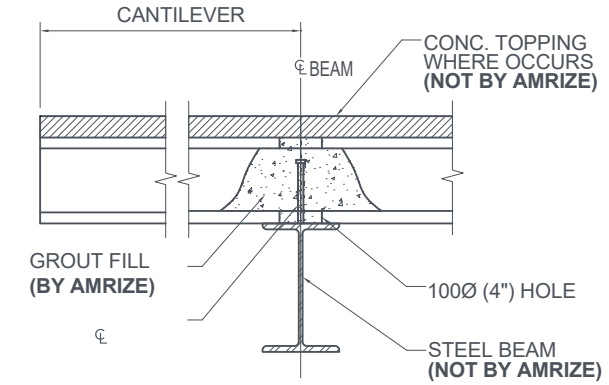


NOTE: Where joints do not line up grout bar into adjecent core.

Bearing On Steel Lintel (Scale - N.T.S)

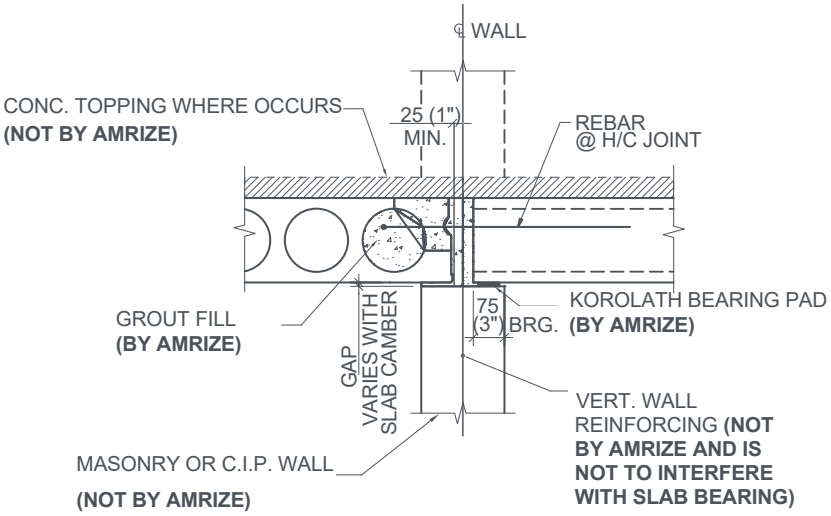


Cantilever Over Wall (Scale - N.T.S.)



HEADED ANCHOR STUD WELDED TO BEAM
(NOT BY AMRIZE, DESIGNED BY STRUCTURAL CONSULTANT)

Cantilever Over Steel Beam (Scale - N.T.S.)



End to End On Wall (Scale - N.T.S.)

**All connections shown are to be used for conceptual design only.

Hollowcore Installation Guidelines

Please follow the following procedures for hollowcore installation process:

Organization

- Be sure to inform Amrize of the sequence of installation prior to hollowcore production in order to ensure that slabs are produced and stockpiled in the appropriate order.

Before Requesting Site Delivery

- Clarify that the site dimensions and details are in accordance with Amrize drawings. Always read Amrize drawings in conjunction with architectural and structural drawings.
- Ensure that bearing surfaces are smooth, flat and level and that they are within ± 6mm over 6m.
- Be sure that all the other materials that are required for the installation process of the hollowcore are available.
- Obtain a record of approval of the stability of the supporting structure from the engineer.

Delivery Notice

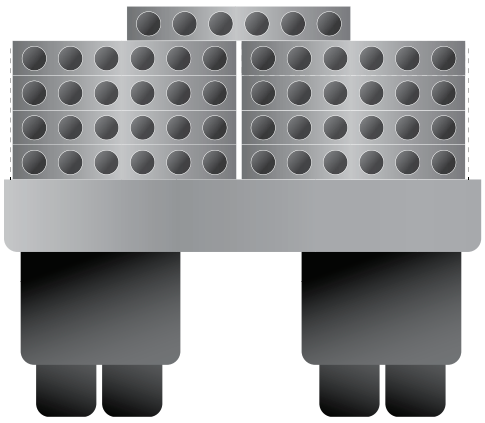
- Always provide seven (7) working days delivery notice to the shipper.

Transportation

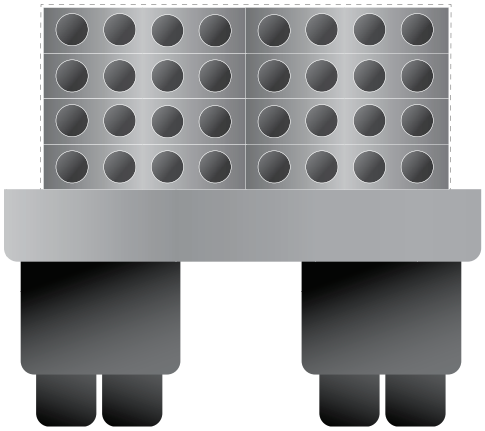
- The diagram below illustrates the maximum loading pattern on high-bed trailers.
- Loads may also be governed by legal trailer capacity and slab geometry.
- Offloading sequence may differ slightly from the shipping list due to the slab geometry.
- Irregular slabs are placed on top of the load.
- Prior to unloading, the installer should inspect each shipment.
- Any damage not specifically reported on delivery slips and/or not reported to the project engineer becomes the responsibility of the installer.
- Stockpiling at the site may be necessary - use full width 4"x4" dunnage placed on stable level ground. Separate the slab with full width 2"x4" dunnage.

Load Illustrations

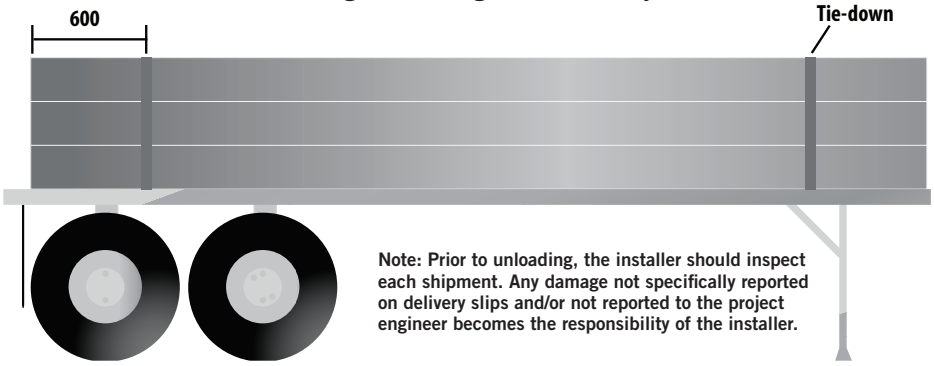
203mm Hollowcore



254 / 305mm Hollowcore



Dunnage to be aligned accurately



Note: Prior to unloading, the installer should inspect each shipment. Any damage not specifically reported on delivery slips and/or not reported to the project engineer becomes the responsibility of the installer.

- Keep the dunnage accurately aligned from slab to slab.

Installation

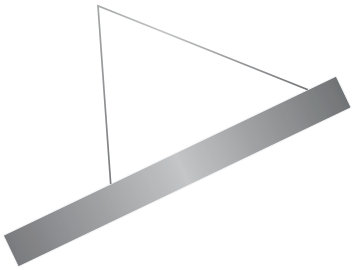
- Hollowcore slabs are to be located and installed in accordance with Amrize drawings.
- Minimum end bearing is 75mm unless specified otherwise on drawings.
- Keep slab joint widths uniform.

Hoisting

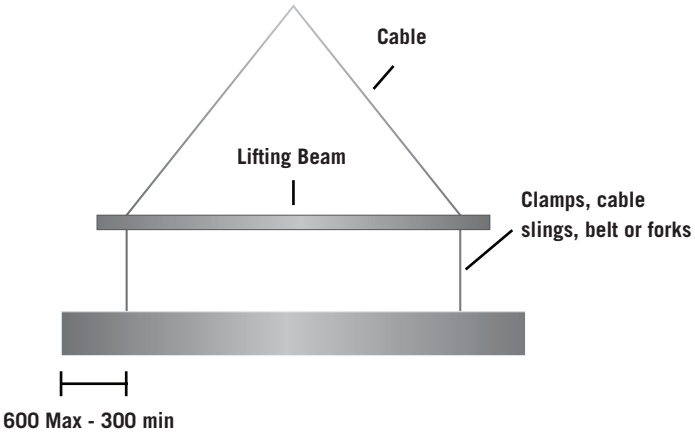
- Use lifting devices (clamps, belts, chokers, forks) of adequate capacity with a minimum safety factor of 5:1.
- Clamps should be used only with a spreader bar. The slab shall be lifted with lines vertical. If this cannot be accomplished, then belts or chokers should be used instead of clamps.
- On slabs less than 4 feet wide, use belts or chokers; do not use clamps.
- Balance load to avoid slipping and to eliminate twist on clamps or belts.
- When using clamps, ensure that the clamp edges fit properly against the sound concrete grooves inside the slab, after the crane has taken the load but before hoisting.
- Blocking for stockpile is in the same locations as lifting.
- Refer to shop tickets for slab weight.
- Hoist only one slab at a time.
- Always use safety slings when hoisting with clamps or forks.
- Never use hollowcore as a platform for hoisting people or materials.
- Never hoist slabs by hooking into cores.
- Never turn slabs on edge or upside-down.
- Never put hands in cores or between slabs.
- Handle only from top surface or with lifting gear.
- For special conditions or safety concerns, contact Amrize before hoisting.

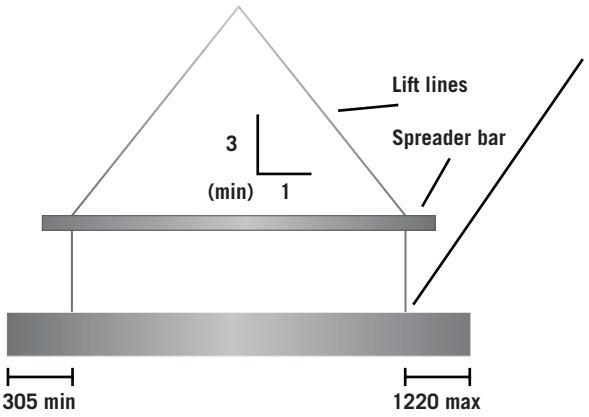
Proper Installation

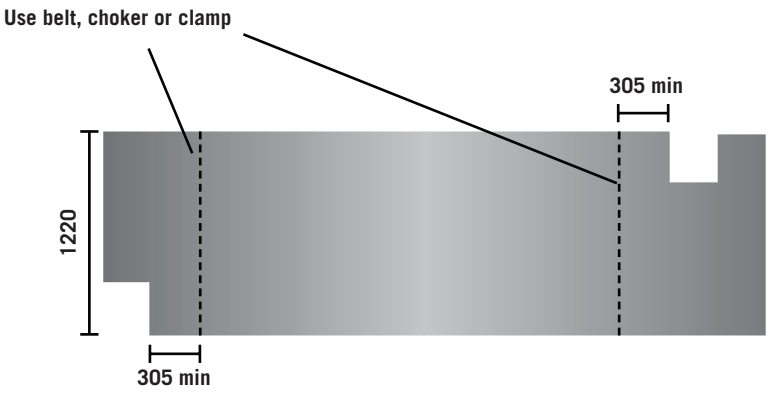
Incorrect Hoisting



Correct Hoisting







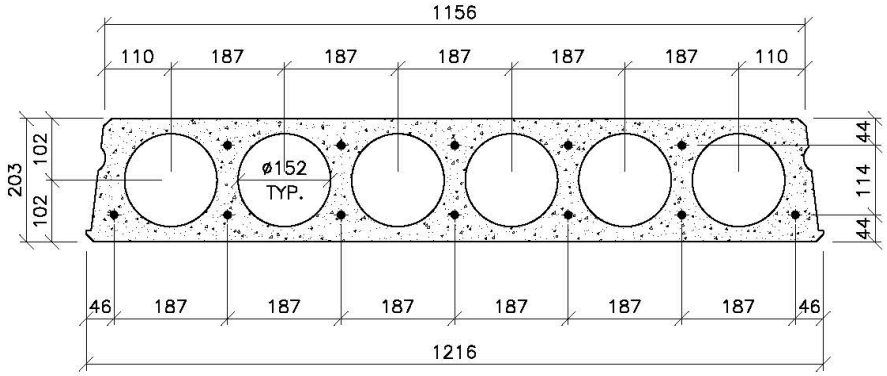
Grouting

- Remove all debris from joints.
- Grouting materials - unless specified otherwise, they consist of a sand/ cement mix. Minimum 28 days strength is 25MPa with an air content of 3% to 6%.
- Camber may occur in hollowcore slabs and will vary with slab age, span, reinforcing and loading conditions.
- Differential camber can be minimized by shoring slabs prior to grouting.
- Cold weather grouting procedures are to be in accordance with CSA A23.1. Until the grout has reached adequate strength, full load capacity may not be assumed.

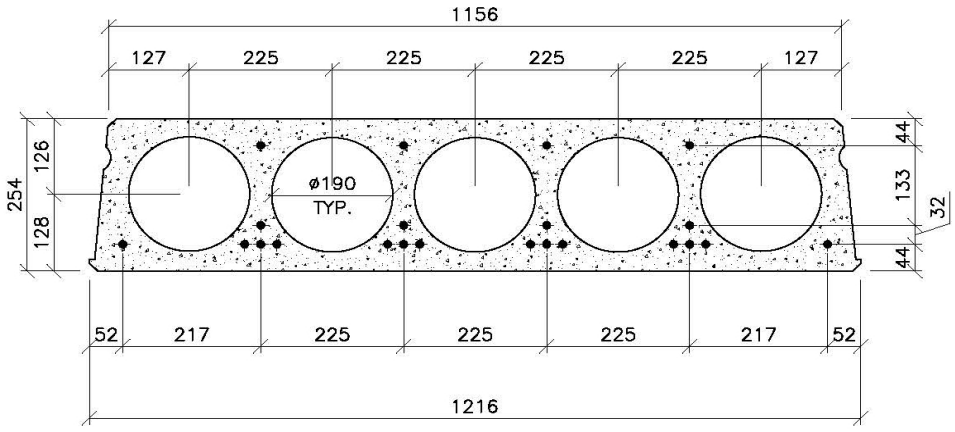
Field Cut Openings

- Round holes are cut in the locations specified and the maximum sizes are shown on the diagrams below that may be cut in the field.
- Approval must be obtained from Amrize if:
  1. More than 3 holes are to be placed across the slab in one location through the core space.
  2. The holes are larger than shown in the diagrams.
  3. The holes are within 1/5 of the slab length measured from the bearing point.
  4. Webs must be cut to accommodate openings.
- Core-drilling is recommended for all the holes.

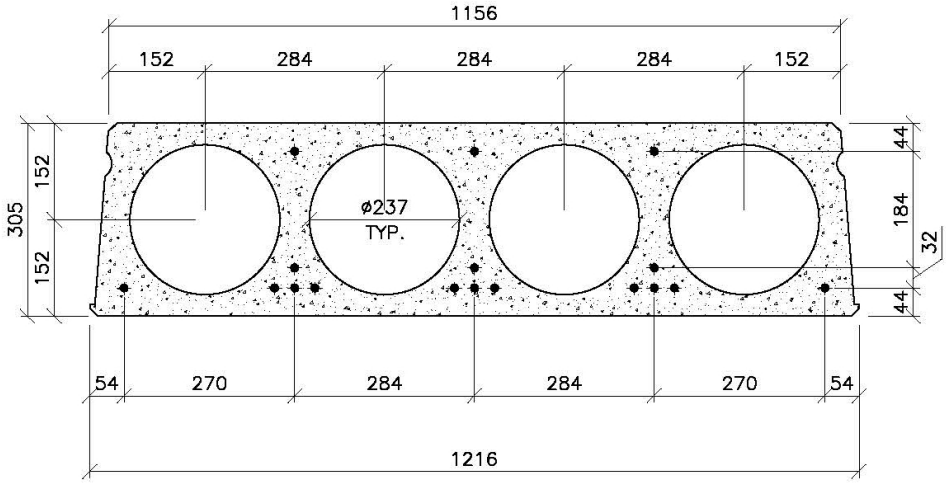
203mm (8") Hollowcore

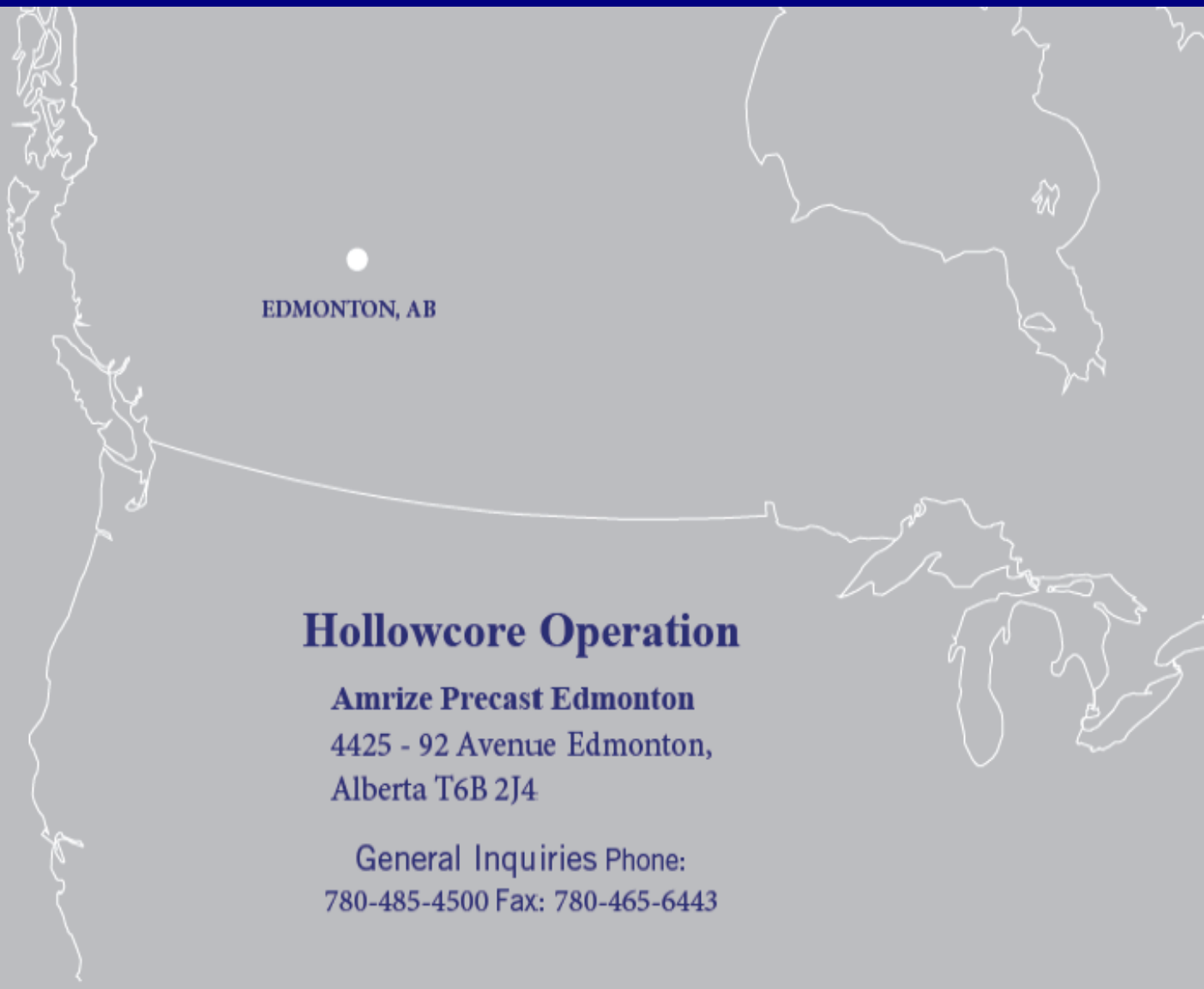


254mm (10") Hollowcore



305mm (12") Hollowcore





Hollowcore Operation

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Amrize is building North America, as the partner of choice for professional builders with advanced branded solutions from foundation to rooftop. With over 1,000 sites and a highly efficient distribution network, we deliver for our customers in every U.S. State and Canadian province. Our 19,000 teammates uniquely serve every construction market from infrastructure, commercial and residential to new build, repair and refurbishment.

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