ELEMATIC® Hollow-core Plank
Introduction

The purpose of this product manual is to provide assistance in selecting and detailing precast concrete hollow-core plank manufactured by Oldcastle Precast.

The load tables presented herein are intended as a guide only. Final design is determined by our engineering department based on information presented in the final plans and specifications. Loading information including SDL, LL, snow drift, and non-uniform concentrated & line loads more than 1.0 kip or 0.100 klf should be stated by the project structural engineer of record (SER). Lateral loading requirements from wind and seismic analysis can be specified in the form of including our standard connection details, or by stating floor diaphragm shear forces in klf on the structural plans. For additional design assistance, please contact us at 800-523-3747 and ask for our engineering dept.

Although care has been taken to provide the most accurate data possible, Oldcastle Precast, Inc. does not assume responsibility for errors and omissions.

Manufacturing Process

Elematic® is a machine extruded, precast, prestressed hollow-core plank. The planks are manufactured on 500-foot-long steel beds in standard widths of 48 inches and thickness of: 8, 10, 12 and 16 inches. High strength prestressing strands are cast into the planks at the spacing and location required for the given span, loading and fire cover conditions. Oldcastle Precast plants are capable of extruding up to 12,000 SF of precast plank every day to meet project schedules. The planks are cut to length for each project using a diamond-blade saw. After the planks are cut, they are removed from the casting beds and placed into storage, and ready for shipment.

All Elematic materials equal or exceed the requirements of applicable ASTM specifications. Our concrete mix is designed to have release strengths of 3,000 psi or 3,500 psi, and a 28-day compressive strength of 5,000 psi. For sustainability, our concrete mix has been fine tuned to use less cement to lower our carbon footprint, but fly ash is not added.

The prestressing strands are uncoated, seven wire, low relaxation with a minimum ultimate strength of 270 ksi. Our manufacturing capabilities also include: longitudinal and skew cuts to fit any building shape, adding top strands for cantilever designs, cast-in bottom 6"x4" embed plates for welded connections to steel structures, cast-in top plates for curtain wall and relieving angle attachments, column notches, side grout pockets for rebar connections to shear walls, top slots for field grouting of hollow-cores needed for rebar connections and additional shear capacity, and plant cast weep holes.

Be sure to discuss your project scope with your Oldcastle sales representative in detail as each project should dictate which details are required for design and constructability.

Delivery & Installation

Oldcastle hollow-core plants are located in Selkirk, NY (near Albany, NY) and in Edgewood, MD (near Baltimore, MD). Our precast hollow-core planks are shipped by truck/trailer to the crane on site (generally less than 300 miles from our plants). Oldcastle Precast's project team will coordinate overall schedule, erection sequence, safety plans, and other project parameters with each customer to ensure on-time delivery.

Our project scope can include installation and grouting by Oldcastle’s experienced and PCI certified field crews; or FOB delivery only for installation by the general contractor and his/her erector. The erector will install the precast planks in accordance with PCI tolerances which include occasional cutting and trimming of the concrete to adjust for product and field tolerances, and interference with steel connections not shown on contract & shop drawings. However, it is the responsibility of the project design team and general contractor to provide information to Oldcastle Precast to have as many factory cuts and notches as possible. Grouting material consists of 1:3 cement-sand grout with a minimum 28-day strength of 2,500 psi placed in all plank joints, and sometimes also at perimeter joints. Higher grout strengths of 4,000 psi is used on CFS load bearing metal stud and Girder-Slab shallow steel beam structures.

Field grout is delivered by ready mix truck and placed by crane bucket and grout brooms, or by grout pump. Pre-packaged non-shrink grout is not used in hollow-core plank grouting.

Load Table Design Criteria

The tables herein list allowable live loads in pounds per square foot (PSF) for uniformly distributed loading. Non-uniform loading conditions resulting from point loads, line loads, openings and cantilevers require special design consideration. The SER should specify the required uniform and special loading on the structural drawings. Oldcastle Precast engineering will perform all engineering analysis and submit PE stamped calculations to the GC/Architect/SER for review and approval prior to fabrication.

Load Table values are calculated in accordance with ACI 318-11 design standard and comply with L/360 deflection limits. Load tables are based on a plank concrete strength of 5,000 psi.

Tables for topped sections are based on a topping strength of 3,500 psi and minimum thickness of 2 inches.

Plank self-weight and 2” concrete composite topping are both included, and do not need to be added to your design loads to compare to these load tables.

See “Notes” section in the load tables for other helpful design tips on using our load tables. It is possible to exceed the values in these load tables.
tables by approximately 10% if the area in question is adjacent to side wall or beam support, or shorter spans.

For initial design, the following span to depth ratios (L/D) can be used to determine maximum spans and hollow-core plank thickness:

<table>
<thead>
<tr>
<th>Maximum Span to Depth Ratio</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential Loading of 20 SDL + 40 LL</td>
<td>48</td>
</tr>
<tr>
<td>Residential Loading with masonry partitions</td>
<td>35</td>
</tr>
<tr>
<td>Common/Assembly Loading of 10 SDL + 100 LL</td>
<td>42</td>
</tr>
</tbody>
</table>

### Plank Design Considerations

The following items will affect the selection of appropriate plank sizes and should be carefully reviewed by the Architect/Engineer (SER = structural engineer of record) while developing the plans and specifications for a project:

#### Loading Conditions

- Specify all uniform loading requirements on structural drawings.
- Specify snow drift loads per ASCE-7 on the roof plan.
- The SER should specify plank connection details and/or diaphragm shear forces resulting from wind and seismic lateral analysis; and retained earth if present.
- Identify line and point loads resulting from masonry partition walls, face brick, posts, mansards, RTUs, mechanical equipment, etc.
- In general, the plank floor system can be designed for MEP openings and small skylights less than 4'-0" wide.
- Larger openings such as elevator shafts, stair shafts, and MEP shafts larger than 4'-0" wide will require additional structural support for the precast planks.

#### Topping

- Specify whether or not concrete topping is to be composite. Composite action requires the topping to be bonded to the top surface of the plank. Oldcastle Precast’s standard is to provide a longitudinal machine drag rake finish on the top of the precast planks to provide an intentionally roughened finish for improved bonding with the composite topping.
- "Topped" load tables are calculated with a maximum horizontal shear stress of 80 psi between the top of the precast plank and the bottom of the topping.
- Topping separated by a vapor barrier or insulation is non-composite and must be considered a superimposed dead load.
- Large cambers resulting from heavy loads will affect the quantity of topping, assuming a level floor is required. 1-1/2" of composite topping at mid-span is minimal, and additional thickness at the ends of the plank may be required to maintain level floor elevations.

### Camber

- Camber is inherent in all prestressed products. It is the result of the eccentric prestress force required to resist design loads, and cannot be designed in, out, or to an exact number. The amount of camber will depend upon the design loads, span and thickness of plank. Planks stored in the yard for more than 4 weeks, usually due to construction schedule changes, will experience more camber growth.
- Adjacent plank of dissimilar length or dissimilar strand pattern will have inherent camber differences.
- Camber can be approximated as 0.3% of the span and must be taken into account when specifying concrete topping thickness. For example, if 2-1/2" concrete topping thickness is specified, a minimum topping thickness of 1-1/2" is still achieved with a maximum plank camber of 1" at mid-span.
- The approximate short term camber loss from 30 psf live load is 1/4”. This value can be used as a guide for curtain wall connection design to the perimeter edge of the precast plank. The precast plank will revert back to full camber once the live load is gone.
- The approximate long term camber loss from material shrinkage & creep is 1/8” in 5 years and 1/4” in 20 years.

### Fire Rating

Fire rating specifications are as important as all other design parameters. Plank rating requirements are determined by the Architect or Structural Engineer of Record (SER), who is also responsible for establishing the fire rating criteria for the total project.

Four methods generally used for determining precast hollow core plank fire-resistant ratings are:

2. Underwriters Laboratories Fire Resistance Ratings
3. NYC OTCR approved product & manufacturer certification (New York City only)
4. Rational analysis as defined by PCI MNL 124, "Design for Fire Resistance of Precast Concrete"

### International Building Code “IBC” Fire Ratings

The ICC-IBC code prescribes fire ratings to any precast hollow-core plank section. Since 2000, the ICC-IBC code has replaced the BOCA, SBC and UBC model codes in all 50 states. The two criteria that are measured to determine the fire rating are:

1. Equivalent concrete thickness – 4.6” is required for 2 hrs
2. Bottom strand cover – ¾” cover is required for 2 hrs (restrained condition)

### Underwriters Laboratories Fire Resistance Ratings

Prior to codes including prescriptive fire-endurance rating methods, fire tests provided the primary source of ratings classifications. While some plank sections were fire tested, others can be evaluated by UL from similar existing UL ratings.
The table lists the UL ratings available with Elematic plank. Note that these ratings are dependent upon whether or not the ends of the planks are restrained. Determination of the restraint must be made by the Architect or the Structural Engineer of Record (SER), as it is primarily a function of the support structure.

### New York City OTCR Product Approval

For projects within New York City, the NYC Dept. of Building requires the precast hollow-core manufacturing plant to be pre-approved by the Office of Technical Certification & Research (OTCR). Historically, this certification was known as the MEA certification (Material & Equipment Acceptance) prior to the 2008 NYC Building Code. Oldcastle Precast has been a NYC approved precast hollow-core plank manufacturer since the early 1970s.

### Fire Ratings by Rational Analysis

PCI MNL 124 defines the “rational analysis” method for determining the fire resistance rating of precast/ prestressed members. It is useful to use when a fire resistance rating cannot be obtained by any of the three previous methods. Actual practice has shown that this method is very conservative and that the span of the hollow-core plank will have to be reduced (approx. 10% to 20%) to achieve the same fire resistance rating from both IBC and UL.

In using this method, the reduced strength of the prestressed strands at elevated temperatures is determined and the resulting moment capacities are compared to that required for service loads. Strand temperatures are based on the amount of concrete cover and the standard fire exposure as defined by the time-temperature relationship specified in ASTM E119. Fire ratings will also be improved if the plank assembly is restrained against thermal expansion. It should be noted that the only universally accepted definition of full restraint is an interior bay of a multi-bay building.

### Thermal “R” Values

Concrete is a dense material, and as a result, is not a good insulating material. On occasion, a designer who needs the thermal “R” value of precast concrete hollow-core planks, can reference the table below.

Although there is some improvement for filling the plank hollow-cores with foam insulation, the losses from thermal bridging of the concrete webs greatly reduces the effectiveness of the added insulation. There is also a cost premium and longer lead time associated with adding foam insulation. A much more economical design option is to specify 1'-3" of batt insulation (widely available in 15" rolls) installed into the cores at areas of high potential heat loss, in the field by the general contractor.

### Sound Ratings

The following tables contain values for the Sound Transmission Class (STC) and the Impact Insulations Class (IIC) of various floor systems utilizing Elematic precast hollow-core plank.

### Sound Transmission Class (STC)

The values for the Sound Transmission Class were determined by testing in accordance with ASTM E90. The STC is a measure (in decibels) of the ease at which air-borne sound is transmitted through a floor system. The density and mass of precast concrete planks is ideal for achieving larger STC values, which indicate greater sound insulation.
Impact Insulation Class (IIC)

The values for the Impact Insulation Class (IIC) were determined by tests which were in accordance with ASTM ES492. Impact Insulation Class is the resistance to impact noise transmission and is mostly influenced by the finish material applied on top of the precast planks. A soft material such as carpeting will achieve the best IIC ratings. As with STC, the higher IIC values are more desirable. Note that IIC testing is typically done by the finish material manufacturer on 6" solid concrete slabs. These test values can be used on other slab thickness and precast hollow-core planks since the effect of the mass of the underlying slab is negligible for impact noise absorption.

Sustainability

It is recognized that the production of cement is a high contributor of CO2 in industry. In 2013, a joint LCA study conducted by the Precast Concrete Institute (PCI), Canadian Prestressed Concrete Institute (CPCI), and the National Precast Concrete Association (NPCA) confirmed this and also gave our industry a benchmark for future improvements. The following sustainable practices are already in place to manufacture, deliver and install our Elematic® hollow-core planks:

- Use the lowest cement content in manufacturing while still achieving consistent concrete strengths.
- Although fly ash can be added to divert the fly ash waste from landfills, we cannot replace any more cement from our optimized concrete mix.
- Advance machine extrusion technology casts Elematic® hollow-core planks with 44%-52% less concrete compared to the equivalent thickness solid concrete slab.
- Proven prestressing technology since the 1960s with ASTM A416 steel strands with 270 ksi yield strength (4.5X stronger than conventional rebar) increases our maximum span by approx. 75% more than continuous design CIP solid concrete slabs of the same thickness which results in less framing elements such as columns, beams, and bearing walls.
- Steel casting beds provide the most consistent smooth bottom finish without any other additional forming waste (ie. no wood).
- Both radiant heating in our casting beds and natural curing are used depending on the season to achieve proper curing with the lowest energy use. Steam curing is not used.
- All our concrete constituent materials including cement, limestone aggregates, and sand; are extracted from nearby sources well within the 500 miles LEED criteria.
- All water is pumped from on site wells, reducing the demand on the local municipal water supply.
- Waste precast hollow-core plank in our yard is crushed and separated in our yard. The crushed concrete is used for clean fill material by local road contractors and land owners. All scrap steel is delivered to recycling centers.
- On the job site, multiple planks can sometimes be picked to reduce the overall erection time to shorten the overall construction schedule and minimize noise pollution. Up to 10,000 sf of Elematic® hollow-core planks can be installed in a single day.

Oldcastle Precast continues to search for more future sustainable practices.

### Impact Insulation Class (IIC)

<table>
<thead>
<tr>
<th>Types of Floor Systems</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>8&quot; Hollow-core Plank</td>
<td>28</td>
</tr>
<tr>
<td>8&quot; Hollow-core Plank + ½&quot; wood block flooring adhered directly</td>
<td>47</td>
</tr>
<tr>
<td>8&quot; Hollow-core Plank + VCT, (ex. Armstrong)</td>
<td>47-56</td>
</tr>
<tr>
<td>8&quot; Hollow-core Plank + quarry tile w/reinforced mortar bed with 0.4” nylon &amp; carbon black spinneret matting</td>
<td>54</td>
</tr>
<tr>
<td>8&quot; Hollow-core Plank + pad &amp; carpet</td>
<td>73</td>
</tr>
<tr>
<td>Add Acoustical Ceiling</td>
<td>+6</td>
</tr>
</tbody>
</table>

### Sound Transmission Class (STC)

<table>
<thead>
<tr>
<th>Systems</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>8&quot; Elematic®</td>
<td>51</td>
</tr>
<tr>
<td>8&quot; Elematic® + 2&quot; Topping</td>
<td>54</td>
</tr>
<tr>
<td>H8&quot; Heavy Elematic®</td>
<td>51</td>
</tr>
<tr>
<td>H8&quot; Heavy Elematic® + 2&quot; Topping</td>
<td>55</td>
</tr>
<tr>
<td>H10&quot; Heavy Elematic®</td>
<td>53</td>
</tr>
<tr>
<td>H10&quot; Heavy Elematic® + 2&quot; Topping</td>
<td>56</td>
</tr>
<tr>
<td>12&quot; Elematic®</td>
<td>54</td>
</tr>
<tr>
<td>12&quot; Elematic® + 2&quot; Topping</td>
<td>57</td>
</tr>
<tr>
<td>16&quot; Elematic®</td>
<td>56</td>
</tr>
<tr>
<td>16&quot; Elematic® + 2&quot; Topping</td>
<td>59</td>
</tr>
</tbody>
</table>
1. GENERAL

1.01 Description

A. Work Included:
   1. These specifications cover manufacture, transportation and erection of precast, prestressed, concrete, hollow-core plank, including grouting of joints between adjacent units.

B. Related Work Specified Elsewhere:
   2. Cast-in-Place Concrete: Section________
   3. Architectural Precast Concrete: Section________
   4. Precast Structural Concrete: Section ________
   5. Underlayments (Floor and/or Roof Leveling): Section_______
   6. Caulking and Sealants: Section ________
   7. Small Holes for Mechanical/Plumbing: Section ________
   8. Cast-in-Place Embedments: Section________
   9. Steel Bearing Lintels: Section __________
   10. Insulation in Plank Cores: Section ________

1.02 Quality Assurance

A. Manufacturer Qualifications: The precast concrete manufacturing plant shall be certified by the Prestressed Concrete Institute (PCI) Plant Certification Program prior to the start of production. Manufacturer shall be certified in category C2. The manufacturer shall retain a registered structural engineer to certify that manufacturing is in accordance with design requirements; or
   The manufacturer shall, at his expense, meet the following requirements:
   1. The basis of inspection shall be the Prestressed Concrete Institute’s “Manual for Quality Control for Plants and Production of Precast and Prestressed Concrete Products”, MNL-116, and the criteria for acceptance shall be the same as the Plant Certification Program.

B. Erector Qualifications: PCI Qualified and regularly engaged for at least 5 years in the erection of precast structural concrete similar to the requirements of this project. Retain a registered structural engineer to certify that erection is in accordance with design requirements.

C. Welder Qualifications: In accordance with AWS D1.1.

D. Testing: In general compliance with applicable provisions of Prestressed Concrete Institute MNL-116, “Manual for Quality Control for Plants and Production of Precast Prestressed Concrete Products”.

E. Requirements of Regulatory Agencies: All local codes plus the following specifications, standards and codes are a part of these specifications:
   1. ACI 318 – Building Code Requirements for Reinforced Concrete;
   2. AWS D1.1 – Structural Welding Code-Steel;
   3. AWS D1.4 – Structural Welding Code-Reinforcing Steel;
   4. ASTM Specifications – As referred to in Part 2-Products, of this Specification.
1.03 Submittals and Design

A. Shop Drawings:
   1. Erection Drawings
      Plans locating and defining all hollow-core planks furnished by the manufacturer, with all major openings shown.
      a. Sections and details showing connections, weld plates, edge conditions and support conditions of the hollow-core plank units.
      b. All dead, live and other applicable loads used in the design.
      c. Fire rating.

B. Approvals:
   1. Submit _______ copies of erection drawings for approval prior to fabrication. Fabrication not to proceed prior to receipt of approved drawings.

C. Product Design Criteria:
   1. Loadings for design
      a. Initial handling and erection stresses.
      b. All dead and live loads as specified on the contract documents.
      c. All other loads specified for hollow-core plank where applicable.
   2. Fire rating shall be ______ hour(s).
   3. Design steel plank support headers when such headers are determined necessary by the manufacturer’s engineer.
   4. Design calculations shall be performed by an engineer, registered in the state that the project is located in, and experienced in precast prestressed concrete design. Design calculations to be submitted for approval upon request.
   5. Design shall be in accordance with ACI 318 and applicable codes.

D. Permissible Design Deviations:
   1. Design deviations will be permitted only after the Architect/Engineer’s written approval of the manufacturer’s proposed design supported by complete design calculations and drawings.
   2. Design deviations shall provide an installation equivalent to the basic intent without incurring additional cost to the owner.

E. Test Reports: Test reports on concrete and other materials shall be submitted upon request.

2. PRODUCTS

2.01 Materials

A. Portland Cement:
   1. ASTM C150 – Type I or III.

B. Admixtures:

C. Aggregates:
   1. ASTM C33 or C330

D. Water: Potable or free from foreign materials in amounts harmful to concrete and embedded steel.

E. Reinforcing Steel:
   1. Bars:
      Deformed Billet Steel: ASTM A615
      Deformed Rail Steel: ASTM A616
      Deformed Axle Steel: ASTM A617
      Deformed Low Alloy Steel: ASTM A706
   2. Wire: Cold Drawn Steel: ASTM A82.

F. Prestressing Strand:
   1. Uncoated, 7-Wire, Low Lax strand: ASTM A416 (including supplement) – Grade 250K or 270K.
G. Welded Studs: In accordance with AWS D1.1.
H. Structural Steel Plates and Shapes: ASTM A36.
I. Grout:
   1. Cement grout: Grout shall be a mixture of not less than one part portland cement to three parts fine sand, and the consistency shall be such that joints can be completely filled but without seepage over adjacent surfaces. The grout shall achieve a minimum 28-day compressive strength of 2,000 psi. Any grout that seeps from the joint shall be completely removed before it hardens.
J. Bearings Strips:
   1. Plastic: Multi-monomer plastic strips shall be non-leaching and support construction loads with no visible overall expansion.

2.02 Concrete Mixes
A. 28-day compressive strength: Minimum of 5,000 psi
B. Release strength: Minimum of 3,000 psi
C. Use of calcium chloride or admixtures containing chlorides is not permitted.

2.03 Manufacture
A. Hollow-core plank shall be machine cast in 48-inch widths under the trade name Elematic® as manufactured by Oldcastle Precast Building Systems.
B. Manufacturing procedures and tolerances shall be in general compliance with PCI MNL 116.
C. Openings: Manufacturer shall provide for rectangular openings 10 inches or larger on all sides and as clearly shown on the architectural and structural drawings. They shall be located by the trade requiring them and then field cut. Round and small openings (less than 10 inches) shall be drilled or cut by the respective trades after grouting. Openings requiring cutting of prestressing strand shall be approved by the precast plank manufacturer before drilling or cutting.
D. Finishes: Bottom surface shall be flat and uniform as resulting from an extrusion process, without major chips, spalls and imperfections. Top surface shall be machine troweled.
E. Patching: Will be acceptable providing the structural adequacy of the hollow core unit is not impaired.

3. EXECUTION
3.01 Product Delivery, Storage and Handling
A. Delivery and Handling:
   1. Hollow-core plank shall be lifted and supported during manufacturing, stockpiling, transporting and erection operations only at the lifting or supporting points designated by the manufacturer.
   2. Transportation, site handling and erection shall be performed by qualified personnel with acceptable equipment and methods.
B. Storage:
   1. Store all units off ground on firm, level surfaces with dunnage placed at bearing points.
   2. Place stored units so that identification marks are discernible.
   3. Separate stacked units by dunnage across full width of each plank.

3.02 Erection
A. Site Access: Erection access suitable for cranes and trucks to move unassisted from public roads to all crane working areas as required by erector, or otherwise indicated herein, will be provided and maintained by the general contractor. Obstructing wires shall be shielded or removed and, when applicable, snow removal and winter heat will be provided by the general contractor.
B. Preparation: The general contractor shall be responsible for:
   1. Providing true, level, bearing surfaces on all field-placed bearing walls and other field placed supporting members. Masonry wall bearing surfaces shall be bond beams with properly filled and cured concrete.
   2. All pipes, stacks, conduits and other such items shall be stubbed off at a level lower than the bearing plane until after the planks are set. Masonry, concrete or steel shall not be installed above plank-bearing surface until after the plank is in place.
C. Installation: Installation of hollow-core slab units shall be performed by the manufacturer. Members shall be lifted with slings at points determined by the manufacturer. Bearing strips shall be set where required. Grout keys shall be filled.
Openings shall be field cut only after grout has cured, unless authorized by the manufacturer’s engineer.

D. Alignment: Members shall be properly aligned. Variations between adjacent members shall be reasonably leveled out by jacking, bolting or any other feasible method as recommended by the manufacturer.

3.03 Field Welding
A. Field welding is to be done by qualified welders using equipment and materials compatible to the base material.

3.04 Attachments and Small Holes
A. Subject to approval of the Architect/Engineer, hollow-core plank units may be drilled or “shot” provided no contact is made with the prestressing steel. Round holes and those less than 8 inches on any side shall be drilled or cut by the respective trades. Should spalling occur, it shall be repaired by the trade doing the drilling, shooting or cutting.

3.05 Clean up
A. Remove rubbish and debris resulting from hollow-core plank work from premises upon completion.

3.06 Safety
A. The general contractor will provide and maintain all safety barricades, rebar caps and opening covers required for plank in accordance with current industry safety standards.
**Production & Erection Tolerances:**

**Product Tolerances: Hollow-core Slabs**

a = Length .................................................................................................................. ±1/2 in.
b = Width .................................................................................................................. ±1/4 in.
c = Depth .................................................................................................................. ±1/4 in.
d = Top flange thickness
   Top flange area defined by the actual measured value of average \(d \times b\) shall not be less than 85% of the nominal area calculated by \(d_{nom} \times b_{nom}\).
d_{nom} = Bottom flange thickness
   Bottom flange area defined by the actual measured value of average \(d_{nom} \times b\) shall not be less than 85% of the nominal area calculated by \(d_{nom} \times b_{nom}\).
e = Web thickness
The total cumulative web thickness defined by the actual measured value \(\sum e\) shall not be less than 85% of the nominal cumulative thickness calculated by \(\sum e_{nom}\).
f = Blockout location ................................................................................................. ±2 in.
g = Flange angle ......................................................................................................... ±1/4 in. per 12 in., ±1/2 in. max.
h = Variation from specified end squareness or skew ................................................ ±1/2 in.
i = Sweep (variation from straight line parallel to centerline of member) ...................... ±1/4 in.
j = Center of gravity of strand group
The CG of the strand group relative to the top of the plank shall be within ±1/4 in. of the nominal strand group CG. The position of any individual plank shall be with ±1/2 in. of nominal vertical position and ±1/4 in. of nominal horizontal position and shall have a minimum cover of ±1/4 in.
k = Position of plates .................................................................................................... ±2 in.
l = Tipping and flushness of plates ............................................................................ ±1/4 in.
m = Local smoothness ................................................................................................ ±1/4 in in 10 ft.
(Does not apply to top deck surface left rough to receive a topping or to visually concealed surfaces)
Bottom flange area defined by the actual measured values of average \(d_{nom} \times b\) shall not be less than 85% of the nominal area calculated by \(d_{nom} \times b_{nom}\).
dt = Top flange thickness
n = Applications requiring close control of differential camber between adjacent members of the same design should be discussed in detail with the producer to determine applicable tolerances.

**Erection Tolerances: Hollow-core Floor & Roof Members**

a = Plan location from building grid datum .................................................................. ±1 in.
a_{1} = Plan location from centerline of steel .................................................................. ±1 in.
b = Top elevation from nominal elevation at member ends
   Covered with topping ................................................................................................ ±1/4 in.
   Untopped floor ........................................................................................................... ±1/4 in.
   Untopped roof ............................................................................................................ ±1/4 in.
c = Maximum misalignment of matching edges
   (both topped and untopped construction) .................................................................. ±1 in.
d = Joint width
   0 to 40 ft. member length ......................................................................................... ±1/2 in.
   41 to 60 ft. member length ......................................................................................... ±1/4 in.
   61 ft. plus ................................................................................................................ ±1 in.
e = Differential top elevation at erection
   Covered with topping ................................................................................................ ±1/4 in.
   Untopped floor ........................................................................................................... ±1/4 in.
   Untopped roof ............................................................................................................ ±1/4 in.
   f = Bearing length (span direction) ........................................................................... ±1/4 in.
g = Differential bottom elevation of exposed hollow-core slabs
   Covered with topping ................................................................................................ ±1/4 in.
1 For precast concrete erected on a steel frame building, this tolerance takes precedence over tolerance on dimension "a".
2 It may be necessary to feather the edges to ±1/4 in. to properly apply some roof membranes.
3 This is a setting tolerance and should not be confused with structural performance requirements set by the architect/engineer.
4 Untopped installation will require a larger tolerance here.
ELEMATIC® Hollow-core Plank

E8” X 48” SECTION
WITH NO TOPPING

UNIFORMLY DISTRIBUTED LIVE LOAD CAPACITY IN PSF

<table>
<thead>
<tr>
<th>Plank Designation</th>
<th>7-Wire 270 Lbsax P/S Strand</th>
<th>P/S Strand Area Sq.in.</th>
<th>Ultimate Bending Moment, DIn Kip ft</th>
<th>ÏVow Kip ft</th>
</tr>
</thead>
<tbody>
<tr>
<td>200805 [5] 1/2&quot;Ø</td>
<td>0.765</td>
<td>21.95</td>
<td>2.90</td>
<td>441</td>
</tr>
<tr>
<td>200807 [7] 1/2&quot;Ø</td>
<td>1.071</td>
<td>29.11</td>
<td>2.80</td>
<td>471</td>
</tr>
</tbody>
</table>

CLEAR SPAN IN FEET

F(Example: IF YOU NEED 10 DL + 100 LL, LOOK FOR TABLE VALUE > 110 PSF (Plank Self Weight Is Already Included)

NOTES:
1. Design Standard: ACI 318-2011
2. Plank self weight and concrete composite topping are both included and do not need to be added to your design loads.
3. Table values comply with L/360 deflection limits.
4. For combined SDL & LL, your effective required loading is (1.2/1.6)*SDL + LL
5. For 100 psf corridor loading, 15 psf usually can be distributed to adjacent planks and check for 85 psf in load table.
6. Camber can be approximated as 0.3% of the span and must be taken into account when specifying concrete topping thickness. Topping thickness will be minimum at L/2 where camber is highest.
7. For special non-uniform loading conditions, consult Oldcastle Precast.
8. In residential buildings, add 15± psf to your total uniform loading to account for MEP openings.

Plank self weight is 54 psf

\[ f'c = 5,000 \text{ psi} \quad f'ci = 3,000 \text{ psi} \quad Area = 207 \text{ in.}^2 \]
\[ f'pu = 270, 000 \text{ psi} \quad lc = 1,580 \text{ in.}^4 \quad bw = 10.0 \text{ in.} \]
NOTES:

1. Design Standard: ACI 318-2011
2. Plank self weight and concrete composite topping are both included and do not need to be added to your design loads.
3. Table values comply with L/360 deflection limits.
4. For combined SDL & LL, your effective required loading is (1.2/1.6)*SDL + LL
5. For 100 psf corridor loading, 15 psf usually can be distributed to adjacent planks and check for 85 psf in load table.
6. Camber can be approximated as 0.3% of the span and must be taken into account when specifying concrete topping thickness. Topping thickness will be minimum at L/2 where camber is highest.
7. For special non-uniform loading conditions, consult Oldcastle Precast.
8. In residential buildings, add 15± psf to your total uniform loading to account for MEP openings.
NOTES:

1. Design Standard: ACI 318-2011
2. Plank self weight and concrete composite topping are both included and do not need to be added to your design loads.
3. Table values comply with L/360 deflection limits.
4. For combined SDL & LL, your effective required loading is (1.2/1.6)*SDL + LL
5. For 100 psf corridor loading, 15 psf usually can be distributed to adjacent planks and check for 85 psf in load table.
6. Camber can be approximated as 0.3% of the span and must be taken into account when specifying concrete topping thickness. Topping thickness will be minimum at L/2 where camber is highest.
7. For special non-uniform loading conditions, consult Oldcastle Precast.
8. In residential buildings, add 15± psf to your total uniform loading to account for MEP openings.
ELEMATIC® Hollow-core Plank

H8" X 48" SECTION
WITH 2" TOPPING (3500 PSI)

UNIFORMLY DISTRIBUTED LIVE LOAD CAPACITY IN PSF

<table>
<thead>
<tr>
<th>Plank Designation</th>
<th>7-Wire 270 Latax P/S Strand</th>
<th>P/S Strand Area Sq. in.</th>
<th>Ultimate Bending Moment, BM/Pf, Kip/ft</th>
<th>@Vbw</th>
<th>CLEAR SPAN IN FEET</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32</td>
</tr>
<tr>
<td>300880ST</td>
<td>[5] 1/2&quot;</td>
<td>0.765</td>
<td>28.76</td>
<td>5.27</td>
<td>759 677 610 555 506 443 390 346 308 278 248 225 206 182 158 137 118 101 85 71 59</td>
</tr>
<tr>
<td>300880TT</td>
<td>[7] 1/2&quot;</td>
<td>1.071</td>
<td>38.55</td>
<td>5.27</td>
<td>792 707 638 590 531 469 432 409 365 327 284 266 241 219 201 183 168 148 129 114 99 86 74</td>
</tr>
</tbody>
</table>

FOR EXAMPLE: IF YOU NEED 10 DL + 100 LL, LOOK FOR TABLE VALUE > 110 PSF. (PLANK SELF WEIGHT IS ALREADY INCLUDED)

NOTES:

1. Design Standard: ACI 318-2011
2. Plank self weight and concrete composite topping are both included and do not need to be added to your design loads.
3. Table values comply with L/360 deflection limits.
4. For combined SDL & LL, your effective required loading is (1.2/1.6)*SDL + LL
5. For 100 psf corridor loading, 15 psf usually can be distributed to adjacent planks and check for 85 psf in load table.
6. Camber can be approximated as 0.3% of the span and must be taken into account when specifying concrete topping thickness. Topping thickness will be minimum at L/2 where camber is highest.
7. For special non-uniform loading conditions, consult Oldcastle Precast.
8. In residential buildings, add 15± psf to your total uniform loading to account for MEP openings.

Plank self weight with 2" topping is 60 + 25 = 85 psf

f’c = 5,000 psi     f’ci = 3,000 psi     Area = 230 in.²
f’pu = 270, 000 psi lc = 3,143 in.⁴     bw = 13.77 in.
H10" X 48" SECTION
WITH NO TOPPING

UNIFORMLY DISTRIBUTED LIVE LOAD CAPACITY IN PSF

<table>
<thead>
<tr>
<th>Plank Designation</th>
<th>7-Wire Strand</th>
<th>P/S Strand Area Sq. in.</th>
<th>Ultimate Bending Moment, MNkip/Ft</th>
<th>P/View Kip/Ft</th>
<th>CLEAR SPAN IN FEET</th>
</tr>
</thead>
<tbody>
<tr>
<td>3010800</td>
<td>[8] 1/2&quot;Ø</td>
<td>0.918</td>
<td>35.13</td>
<td>5.47</td>
<td>15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38</td>
</tr>
<tr>
<td>3010800</td>
<td>[8] 1/2&quot;Ø</td>
<td>1.224</td>
<td>45.13</td>
<td>5.47</td>
<td>564 515 460 413 373 333 308 282 259 238 220 204 189 176 164 153 144 132 120 110 100 92 83 75 67</td>
</tr>
</tbody>
</table>

FOR EXAMPLE: IF YOU NEED 10 DL + 100 LL, LOOK FOR TABLE VALUE > 110 PSF (PLANK SELF WEIGHT IS ALREADY INCLUDED)

NOTES:

1. Design Standard: ACI 318-2011
2. Plank self weight and concrete composite topping are both included and do not need to be added to your design loads.
3. Table values comply with L/360 deflection limits.
4. For combined SDL & LL, your effective required loading is (1.2/1.6)*SDL + LL
5. For 100 psf corridor loading, 15 psf usually can be distributed to adjacent planks and check for 85 psf in load table.
6. Camber can be approximated as 0.3% of the span and must be taken into account when specifying concrete topping thickness. Topping thickness will be minimum at L/2 where camber is highest.
7. For special non-uniform loading conditions, consult Oldcastle Precast.
8. In residential buildings, add 15± psf to your total uniform loading to account for MEP openings.

Plank self weight is 71 psf

\[ f'c = 5,000 \text{ psi} \quad f'ci = 3,000 \text{ psi} \quad f'pu = 270,000 \text{ psi} \quad lc = 3,080 \text{ in}^2 \quad \text{Area} = 271 \text{ in}^2 \quad \text{bw} = 14.29 \text{ in.} \]
H10” X 48” SECTION
WITH 2” TOPPING (3500 PSI)

UNIFORMLY DISTRIBUTED LIVE LOAD CAPACITY IN PSF

NOTES:

1. Design Standard: ACI 318-2011
2. Plank self weight and concrete composite topping are both included and do not need to be added to your design loads.
3. Table values comply with L/360 deflection limits.
4. For combined SDL & LL, your effective required loading is (1.2/1.6)*SDL + LL
5. For 100 psf corridor loading, 15 psf usually can be distributed to adjacent planks and check for 85 psf in load table.
6. Camber can be approximated as 0.3% of the span and must be taken into account when specifying concrete topping thickness. Topping thickness will be minimum at L/2 where camber is highest.
7. For special non-uniform loading conditions, consult Oldcastle Precast.
8. In residential buildings, add 15± psf to your total uniform loading to account for MEP openings.

Plank self weight with 2” topping is 71 + 25 = 96 psf

f’c = 5,000 psi  f’ci = 3,000 psi  Area = 271 in.²
f’pu = 270, 000 psi  lc= 5,263 in.³  bw = 14.29 in.
**ELEMATIC® Hollow-core Plank**

**N12" X 48" SECTION WITH NO TOPPING**

### UNIFORMLY DISTRIBUTED LIVE LOAD CAPACITY IN PSF

<table>
<thead>
<tr>
<th>Plank Designation</th>
<th>7-Wire 270 Ldax P/S Strand</th>
<th>P/S Strand Area Sq. in.</th>
<th>Ultimate Bending Moment Min.kip/ft</th>
<th>ØVaw Kip/ft</th>
<th>CLEAR SPAN IN FEET</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012005</td>
<td>0.765</td>
<td>32.74</td>
<td>6.76</td>
<td>384</td>
<td>20</td>
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<tr>
<td>2012007</td>
<td>1.071</td>
<td>51.25</td>
<td>6.76</td>
<td>422</td>
<td>20</td>
</tr>
<tr>
<td>2012008</td>
<td>1.224</td>
<td>57.73</td>
<td>6.76</td>
<td>448</td>
<td>20</td>
</tr>
<tr>
<td>2012009</td>
<td>1.377</td>
<td>63.93</td>
<td>6.76</td>
<td>474</td>
<td>20</td>
</tr>
</tbody>
</table>

**FOR EXAMPLE: IF YOU NEED 10 DL + 100 LL, LOOK FOR TABLE VALUE > 110 PSF. (PLANK SELF WEIGHT IS ALREADY INCLUDED)**

### NOTES:

1. Design Standard: ACI 318-2011
2. Plank self weight and concrete composite topping are both included and do not need to be added to your design loads.
3. Table values comply with L/360 deflection limits.
4. For combined SDL & LL, your effective required loading is (1.2/1.6)*SDL + LL
5. For 100 psf corridor loading, 15 psf usually can be distributed to adjacent planks and check for 85 psf in load table.
6. Camber can be approximated as 0.3% of the span and must be taken into account when specifying concrete topping thickness. Topping thickness will be minimum at L/2 where camber is highest.
7. For special non-uniform loading conditions, consult Oldcastle Precast.
8. In residential buildings, add 15± psf to your total uniform loading to account for MEP openings.

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>f’c</td>
<td>5,000 psi</td>
</tr>
<tr>
<td>f’ci</td>
<td>3,000 psi</td>
</tr>
<tr>
<td>f’pu</td>
<td>270,000 psi</td>
</tr>
<tr>
<td>lc</td>
<td>5,246 in.²</td>
</tr>
<tr>
<td>bw</td>
<td>14.25 in.</td>
</tr>
<tr>
<td>Area</td>
<td>307 in.²</td>
</tr>
</tbody>
</table>

Plank self weight is 80 psf
**ELEMATIC® Hollow-core Plank**

**N12" X 48" SECTION**  
**WITH 2" TOPPING (3500 PSI)**

**UNIFORMLY DISTRIBUTED LIVE LOAD CAPACITY IN PSF**

<table>
<thead>
<tr>
<th>Plank Designation</th>
<th>Z-Wire 270 Lbf/gf P/S Strand</th>
<th>P/S Strand Area Sq. in.</th>
<th>Ultimate Bending Moment, Kip-ft/Ft</th>
<th>( f'c = 5,000 \text{ psi} )</th>
<th>( f'ci = 3,000 \text{ psi} )</th>
<th>( f'pu = 270,000 \text{ psi} )</th>
<th>( Ic = 8,393 \text{ in.}^4 )</th>
<th>( \text{Area} = 307 \text{ in.}^2 )</th>
<th>( bw = 14.25 \text{ in.} )</th>
<th>( \text{Plank self weight with 2&quot; topping is 80 + 25 = 105 psf} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012605T</td>
<td>[5] 1/2&quot;Ø</td>
<td>0.765</td>
<td>4.45</td>
<td>6.10</td>
<td>428</td>
<td>399</td>
<td>334</td>
<td>307</td>
<td>278</td>
<td>251</td>
</tr>
<tr>
<td>2012607T</td>
<td>[7] 1/2&quot;Ø</td>
<td>1.071</td>
<td>8.10</td>
<td>514</td>
<td>467</td>
<td>426</td>
<td>390</td>
<td>358</td>
<td>330</td>
<td>304</td>
</tr>
<tr>
<td>2012608T</td>
<td>[8] 1/2&quot;Ø</td>
<td>1.224</td>
<td>10.19</td>
<td>547</td>
<td>499</td>
<td>455</td>
<td>417</td>
<td>382</td>
<td>352</td>
<td>325</td>
</tr>
<tr>
<td>2012609T</td>
<td>[9] 1/2&quot;Ø</td>
<td>1.377</td>
<td>12.20</td>
<td>547</td>
<td>513</td>
<td>482</td>
<td>441</td>
<td>405</td>
<td>373</td>
<td>344</td>
</tr>
</tbody>
</table>

**FOR EXAMPLE:** If you need 100 psf of L/360 deflection, look for table value > 110 psf (plank self weight is already included).  

**NOTES:**  
1. Design Standard: ACI 318-2011  
2. Plank self weight and concrete composite topping are both included and do not need to be added to your design loads.  
3. Table values comply with L/360 deflection limits.  
4. For combined SDL & LL, your effective required loading is \((1.2/1.6) \times SDL + LL\).  
5. For 100 psf corridor loading, 15 psf usually can be distributed to adjacent planks and check for 85 psf in load table.  
6. Camber can be approximated as 0.3% of the span and must be taken into account when specifying concrete topping thickness. Topping thickness will be minimum at L/2 where camber is highest.  
7. For special non-uniform loading conditions, consult Oldcastle Precast.  
8. In residential buildings, add 15± psf to your total uniform loading to account for MEP openings.  
### ELEMATIC® Hollow-core Plank

**E16" X 48" SECTION WITH NO TOPPING**

**ELEMATIC® Hollow-core Plank**

**UNIFORMLY DISTRIBUTED LIVE LOAD CAPACITY IN PSF**

<table>
<thead>
<tr>
<th>Plank Designation</th>
<th>7'-Wide Strand P/S Strand Area Sq. in.</th>
<th>Ultimate Bending Moment, Min. Kip/ft</th>
<th>( V_{cw} ) Kip/ft</th>
<th>CLEAR SPAN IN FEET</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016607</td>
<td>[7] 1/2&quot; 270 Lb/strand</td>
<td>1.071</td>
<td>7.47</td>
<td>30</td>
</tr>
<tr>
<td>2016609</td>
<td>[9] 1/2&quot; 270 Lb/strand</td>
<td>1.377</td>
<td>7.47</td>
<td>34</td>
</tr>
</tbody>
</table>

FOR EXAMPLE: IF YOU NEED 10 DL + 100 LL, LOOK FOR TABLE VALUE > 110 PSF (PLANK SELF WEIGHT IS ALREADY INCLUDED)

### NOTES:

1. Design Standard: ACI 318-2011
2. Plank self weight and concrete composite topping are both included and do not need to be added to your design loads.
3. Table values comply with L/360 deflection limits.
4. For combined SDL & LL, your effective required loading is \( \frac{1.2}{1.6} \) SDL + LL
5. For 100 psf corridor loading, 15 psf usually can be distributed to adjacent planks and check for 85 psf in load table.
6. Camber can be approximated as 0.3% of the span and must be taken into account when specifying concrete topping thickness. Topping thickness will be minimum at L/2 where camber is highest.
7. For special non-uniform loading conditions, consult Oldcastle Precast.
8. In residential buildings, add 15± psf to your total uniform loading to account for MEP openings.

### Plank self weight is 95 psf

\[ f'c = 5,000 \text{ psi} \quad f'ci = 3,000 \text{ psi} \quad f'pu = 270,000 \text{ psi} \]

\[ c_i = 11,339 \text{ in.}^2 \quad l_c = 11,339 \text{ in.}^4 \]

Area = 365 in.²

bw = 11.3 in.
E16” X 48” SECTION
WITH 2” TOPPING (3500 PSI)

UNIFORMLY DISTRIBUTED LIVE LOAD CAPACITY IN PSF

<table>
<thead>
<tr>
<th>Plank Designation</th>
<th>Z-Wire 270 Lbf/sq in.</th>
<th>P/S Strand Area Sq. in.</th>
<th>Ultimate Bending Moment, Kip-ft/ft</th>
<th>Clear Span in Feet</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.071</td>
<td>82.30</td>
<td>6.52</td>
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</tr>
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<td>2016607T</td>
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<td>1.377</td>
<td>103.34</td>
<td>8.52</td>
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<td>1.983</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

FOR EXAMPLE: IF YOU NEED 10 DL + 100 LL, LOOK FOR TABLE VALUE > 110 PSF (PLANK SELF WEIGHT IS ALREADY INCLUDED)

NOTES:

1. Design Standard: ACI 318-2011
2. Plank self weight and concrete composite topping are both included and do not need to be added to your design loads.
3. Table values comply with L/360 deflection limits.
4. For combined SDL & LL, your effective required loading is (1.2/1.6)*SDL + LL
5. For 100 psf corridor loading, 15 psf usually can be distributed to adjacent planks and check for 85 psf in load table.
6. Camber can be approximated as 0.3% of the span and must be taken into account when specifying concrete topping thickness. Topping thickness will be minimum at L/2 where camber is highest.
7. For special non-uniform loading conditions, consult Oldcastle Precast.
8. In residential buildings, add 15± psf to your total uniform loading to account for MEP openings.

Plank self weight with 2” topping is 95 + 25 = 120 psf

f’c = 5,000 psi  f’ci = 3,000 psi  Area = 365 in.²
f’pu = 270,000 psi  lc = 16,346 in.⁴  bw = 11.3 in.
Elematic® Hollow-core Plank Details

E1.0 Foundation Bearing (Residential)

WALL REINFORCING (NOT BY OBS)
PERIMETER JT 1.3 GROUT (F'c9 = 3000 PSI)
1×8×2 MOROLATH BRG PAD
3" BRG
CIP FOUNDATION WALL
1′-6"

NOTES
1. WALL REINFORCING (NOT BY OBS)
2. PERIMETER JT 1.3 GROUT (F'c9 = 3000 PSI)
3. 1×8×2 MOROLATH BRG PAD
4. 3" BRG
5. CIP FOUNDATION WALL
6. 1′-6"

E2.0 Foundation Side Lap (Residential)

WALL REINFORCING (NOT BY OBS)
PERIMETER JT 1.3 GROUT (F'c9 = 3000 PSI)
1×8×2 MOROLATH BRG PAD
3" BRG
CIP FOUNDATION WALL
1′-0"

NOTES
1. WALL REINFORCING (NOT BY OBS)
2. PERIMETER JT 1.3 GROUT (F'c9 = 3000 PSI)
3. 1×8×2 MOROLATH BRG PAD
4. 3" BRG
5. CIP FOUNDATION WALL
6. 1′-0"

E3.0 Foundation Bearing (1)

WALL REINFORCING (NOT BY OBS)
LATERAL BAR AT 90°
1×8×2 MOROLATH BRG PAD
A4 RENT BAR GRouted INTO KEYWAY @ 4′-0" O/C CAN ADD BARS FOR 2′-8" O/C
RIGID INSULATION
CIP FOUNDATION WALL
1′-2"

NOTES
1. WALL REINFORCING (NOT BY OBS)
2. LATERAL BAR AT 90°
3. 1×8×2 MOROLATH BRG PAD
4. A4 RENT BAR GRouted INTO KEYWAY @ 4′-0" O/C CAN ADD BARS FOR 2′-8" O/C
5. RIGID INSULATION
6. CIP FOUNDATION WALL
7. 1′-2"

E4.0 Foundation Side Lap (1)

WALL REINFORCING (NOT BY OBS)
LATERAL BAR AT 90°
1×8×2 MOROLATH BRG PAD
A4 RENT BAR GRouted INTO KEYWAY @ 4′-0" O/C CAN ADD BARS FOR 2′-8" O/C
RIGID INSULATION
CIP FOUNDATION WALL
1′-2"

NOTES
1. WALL REINFORCING (NOT BY OBS)
2. LATERAL BAR AT 90°
3. 1×8×2 MOROLATH BRG PAD
4. A4 RENT BAR GRouted INTO KEYWAY @ 4′-0" O/C CAN ADD BARS FOR 2′-8" O/C
5. RIGID INSULATION
6. CIP FOUNDATION WALL
7. 1′-2"

E5.0 Foundation Bearing (2)

E6.0 Foundation Side Lap (2)
Elematic® Hollow-core Plank Details

E7.0 Exterior Bearing (Typ. Flr.)

- Butt joint 1.5 Grout ($F'g = 3000$ psi)
- Longitudinal bar as required
- 3/4" x 3/8" T.E. Rod grouted into keyway @ 4'-0" O.C.
- 1/8" x 2" Korolath BRG PAD
- Fill top course solid not by obs
- Wall reinforcing not by obs

3" BRG for 8" CMU
3 1/2" BRG for 10" CMU
4 1/2" BRG for 12" CMU

E8.0 Exterior Bearing (Roof)

- Butt joint 1.5 Grout ($F'g = 3000$ psi)
- Longitudinal bar as required
- 3/4" x 3/8" T.E. Rod grouted into keyway @ 4'-0" O.C.
- 1/8" x 2" Korolath BRG PAD
- Fill top course solid not by obs
- Wall reinforcing not by obs

3" BRG for 8" CMU
3 1/2" BRG for 10" CMU
4 1/2" BRG for 12" CMU

E9.0 Interior Bearing

- Perimeter 1.5 Grout ($F'g = 3000$ psi)
- Longitudinal bar as required
- Fill top course solid not by obs
- Wall reinforcing not by obs

1" MIN. LAP RECOMMENDED (varies with bldg layout)

E10.0 Interior Bearing (Roof)

- Perimeter 1.5 Grout ($F'g = 3000$ psi)
- Longitudinal bar as required
- Fill top course solid not by obs
- Wall reinforcing not by obs

1" MIN. LAP RECOMMENDED (varies with bldg layout)

E11.0 Exterior Side Lap

- Fill top course solid not by obs
- Wall reinforcing not by obs

E12.0 Exterior Side Lap (Roof)

- Fill top course solid not by obs
- Wall reinforcing not by obs
Elematic® Hollow-core Plank Details

**E13.0 Interior Shear Wall**

- **Bay Window Wall**
  - Exterior finish to bypass plank end
- **Insulation by Others**
- **Cantilever Length Varies**
  - 4'-0" Max. for 8" Plank
  - 3'-0" Max. for 10" Plank
  - 6'-0" Max. for 12" Plank

**E14.0 Interior Change of Direction**

- **Roofing Material Not Shown for Clarity**
- **4" x 1-1/4" Dowel Drill & Grout in Keyways #86/4" O.C. After Plank Erection**
- **4" U-Bar Grouted into Pockets @ 4'-0" O.C.**

**E15.0 Cantilever Plank for Bay Windows**

- **Steel Shim at Each Connection**
- **Welded Connection Designed by OBS Eng.**
- **Solid Plank Core at Connections**
- **Drip Edge**
- **Cantilever Length Varies**
  - 5'-0" Max. for T = 5'
  - 6'-0" Max. for T = 6'
  - 7'-0" Max. for T = 7'

**E16.0 Small Side Plank Roof Overhang**

- **Plank Camber Hidden by Finish Materials**
- **Wall Reinforcing Not by OBS**
- **1" Min. Lap Recommended**

**E17.0 Cantilever Solid Slab Balconies at Plank End**

- **3" BRG**
- **1/8" x 2" KOROLATH BRG PAD**
- **Fill Top Course Solid Not by OBS**

**E18.0 Integral Side Cantilever Balconies**

- **Plank Camber Hidden by Finish Materials**
- **Wall Reinforcing Not by OBS**
- **1" Min. Lap Recommended**

Varieties with OBS Layout

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Elematic® Hollow-core Plank Details

**E19.0 End Bearing on Steel**
- Show edge of precast "EQP" on plans
- Support angle at perimeter columns not by GBS
- Jumper plates as req'd max camber at midspan
- Butt joint 1:3 grout (f'ct = 3000 psi)

**E20.0 Interior Bearing on Steel**
- Side weld plates @ 4'-0" O/C
- Jumper plates as req'd max camber at midspan
- Butt joint 1:3 grout (f'ct = 3000 psi)

**E21.0 Exterior Side Lap on Steel**
- #4 Bent bar grouted into keyway @ 45° O/C
- Butt joint 1:3 grout (f'ct = 3000 psi)
- Plank camber hidden by finish materials

**E22.0 Interior Side Lap on Steel**
- 1" CLR for 1/2" THK ANGLES
- 1 1/2" CLR for 3/4" THK ANGLES
- Butt joint 1:3 grout (f'ct = 3000 psi)

**E23.0 Interior Change of Direction on WF**
- (1) Weld plate @ 4'-3" O/C
- Plank camber hidden by finish materials
- 1/2" min. lap

**E24.0 Change of Direction on Angles**
- 4" min. ANGLE LEG
Elematic® Hollow-core Plank Details

**E25.0 Angle Support at Corridors < 7'-0" Wide**

**E26.0 Interior Bearing on Upset Steel (3)**

**E27.0 Interior Bearing on Upset Steel (1)**

**E28.0 Interior Bearing on Upset Steel (2)**

**E29.0 End Bearing on Upset Steel**

**E30.0 Cantilever Plank for Bay Windows**

 NOTE: DO NOT WELD BOTH ENDS OF THE SAME PLANK IF RESTRAINT IS EXCESSIVE. WELDING ALTERNATING PLANKS WILL STILL PROVIDE LATERAL BEAM BRACING.
Elematic® Hollow-core Plank Details

**E43.0 Exterior Bypass Side on Metal Stud**

- 8” Min. Grout
- 4000 PSI Grout Cont. Along DBG
- 3” Bracing (2” Min.)
- #4 x 2”-3” @ 2”-4” C/C

**E44.0 Exterior Side Lap on Metal Stud**

- 8” Min. Grout
- 4000 PSI Grout Cont. Along DBG
- 3” Bracing (2” Min.)

**E45.0 Girder-Slab System (Reinforced Core)**

- Butt Joint 1:3 Grout (F’c’ = 3000 PSI)
- Longitudinal Bar as Required
- 1/8” x 2” KOROLATH Bracing Pad
- Flare Top of CP Wall
- 3” Bracing

**E46.0 Girder-Slab System (Un-reinforced Core)**

- Butt Joint 1:3 Grout (F’c’ = 3000 PSI)
- Longitudinal Bar as Required
- 1/8” x 2” KOROLATH Bracing Pad
- 3” Bracing

**E47.0 Interior Bearing on 6” ICF Wall**

- Plank Cannot Bear on EPS Insulation

**E48.0 Interior Bearing on 8” ICF Wall**

- Plank Cannot Bear on EPS Insulation
Elematic® Hollow-core Plank Details

E49.0 Exterior Bearing on 6” ICF Wall

E50.0 Exterior Bearing on 8” ICF Wall

E51.0 Header Support at Large Opening

E52.0 Plank Header Types

E53.0 Field Saw Cut Openings > 3'-0”

E54.0 Rigid Diaphr. w/ Long. Shear > 2.88 KLF
Elematic® Hollow-core Plank Details

E55.0 #4 U-Bars at Different Plank Thk

- Plant cast top plate as req'd for design
- 1. Fencing posts
2. Large hanger posts > 8 ft tall
3. Solar panel array tie down
4. Temp. fall arrest posts

E56.0 #4 U-Bars at Elevation Step

- Selkirk plant (Chamfer JT)
- Edgewood plant (Radius JT)

E57.0 Roof Plank w/ Large Top Plates

- Railing (not by obs)
- Pipe sleeve w/ (2) #4 x 2'-9" (coordinate with railing sub)
- Fill core solid in plant or field

E58.0 Variations by Manufacturing Location

- 4" MIN.
- 2'-9"

E59.0 Railing Post Attachment at Plank End

- 4" MIN.

E60.0 Railing Post Attachment at Plank Side

- 4" MIN.
Elematic® Hollow-core Plank Details

E61.0 Sample Brick Relieving Angle (Plank Side)

E62.0 Brick Relieving Angle (Mason. Plank End)

E63.0 Brick Relieving Angle (Mason. Plank Side)

E64.0 Brick Relieving Angle (Steel Plank End)

E65.0 Brick Relieving Angle (Steel Plank Side)

E66.0 Brick Relieving Angle (Met. Stud Plank End)
Elematic® Hollow-core Plank Details

E73.0 Top of Precast Stair at PC Landing

- 1/2" SOLID LAND
- 3 3/4" SOLID LAND
- SHIM AS REQUIRED
- 4 1/2"

E74.0 Bottom of Precast Stair at PC Landing

- 5 1/2" THROAT AT HALF FLIGHT
- 7" THROAT AT FULL FLIGHT
- SHIM AS REQUIRED BY ERECTOR

E75.0 Precast Stair at Ground Slab

- MB C20 3/4" COIL INSERT & 3/4" COIL HMD X 0'-5"
- DRILLED & GROUTED INTO FLOOR SLAB BY ERECTOR
- 1/3" GROUT BY ERECTOR
- SHIM AS REQUIRED BY ERECTOR

E76.0 Floor Landing End Bearing

- 6" SOLID LAND
- 1/8"x2" KOROLATH BRG PAD
- WALL REINF. B.O.
- 3" BRG FOR 6" CMU
- 3 1/2" BRG FOR 10" CMU
- 4 1/2" BRG FOR 12" CMU

E77.0 Floor & Mid-Landing Back Side Lap

- FLOOR LANDING
- MID-LANDING
- 2" LAP
- 1" CLR

E78.0 Mid-Landing Support Angle

- 2" CLR
- 8" SOLID LAND
- HILTI 3/4" HAS @ 10" O.C. OR AS REQ'D BY OBS ENG.
- EMBED PLT 8"x4"x2"8"
- 6 3/4" EMBED
- 2 3/4" 1/2" X MID-LANDING WIDTH

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Market Segments

Oldcastle Precast Building Systems’ product offering has grown tremendously since the company was founded more than 50 years ago. Now you’ll find precast homes that look no different than brick buildings from the turn-of-the-century. There are smart classrooms that make learning much easier, thanks to the quiet acoustics, pest and chemical resistance of precast concrete. And in every market segment we serve, new ideas are becoming a reality all the time.

Multi-family residential
- Apartments
- Assisted Living
- College Dormitories
- Condominiums
- Military Barracks/Quarters
- Mixed Use
- Nursing Homes

Hospitality
- Hotels/Motel(s)

Educations
- Academic Institutions
- Classroom Buildings

Industrial
- Warehouse / Distribution Centers

Precast University
We developed our Lunch and Learn seminars to create an opportunity for architects, engineers and students to learn more about precast concrete principles and usage, earn accredited AIA/CES learning units and enjoy a complimentary lunch along with a plant tour. For schedule information, please visit: oldcastleprecast.com/region/building-systems-division

Committed to the Environment

The products that we manufacture are inherently durable and we’re committed to focusing on innovations that make them even more so. In addition to creating products that last, we challenge ourselves to develop innovative strategies for improving environmental performance.

We’re particularly proud to be involved with numerous LEED-certified projects and look forward to many more to come. We are one of the few precast companies in the U.S. with a LEED-accredited professional on staff to assist customers with their green building designs.

Committed to the Environment
With four locations across the Northeast and Mid-Atlantic regions, we’re able to support a wide variety of groups in our community. In addition to financial contributions, we volunteer our time building homes for those in need through Habitat for Humanity and by giving the students of West Point Engineering Program the opportunity to have their bridge designs manufactured for a national competition.

We Proudly Support
- American Cancer Society®
- Boy Scouts of America
- Civil Air Patrol
- Emergency Medical Technician Volunteers
- Habitat for Humanity®
- Regional Food Bank
- Special Olympics
- West Point Engineering Program
**Oldcastle Precast**
A division of CRH and Oldcastle, Oldcastle Precast is the leading manufacturer of precast concrete and composites in the U.S. With more than 5,000 employees at over 80 locations nationwide, our work has won awards for safety, quality and customer service.

**Ordering Information**
For specific product information please visit [oldcastleprecast.com/region/building-systems-division](http://oldcastleprecast.com/region/building-systems-division) or call (800) 523-3747 to reach our team of experts.

**Manufacturing Locations**
- Baltimore, MD
- South Bethlehem, NY
Serving the Northeast to Mid-Atlantic regions.

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