

# Concrete Equipment Shelters



**Oldcastle** Precast®

**PLANNER**



**Turnkey Package Solution**  
**Pre Assembled Precast Concrete Components**



**High Performance Shelters**  
**for Any Type of Equipment**

Oldcastle Precast Shelter Solutions

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## Budget Savings

Oldcastle Precast's computer aided design system means that your custom requirements can be quickly and economically incorporated into our standard, pre-engineered shelters. Standard wall and door openings can be easily modified to interface with site conditions.

### ***Eliminate extras during on-site construction***

You receive shelter drawings stamped by a Registered Professional Engineer, eliminating the costs and coordination problems of outside engineers, contractors, and other vendors required for on-site construction. Oldcastle Precast also provides typical foundation design recommendations at no additional charge.



## Schedule Savings

Oldcastle Precast equips your shelters at the factory, minimizing on-site installation time and costs for electrical systems, environmental control systems, and even customer-supplied electronics. All systems are fully tested at our factory and arrive completely assembled and ready for use. Using Oldcastle Precast to pre-equip your shelter also provides an extra measure of security.

### ***Codes, regulations and zoning***

Oldcastle Precast shelters arrive at your site compliant with state regulations and national codes. The expense and delay in modifying the appearance of your shelter to meet local zoning regulations can be minimized with an Oldcastle Precast shelter. In addition to standard exposed aggregate facades, Oldcastle Precast shelters can be delivered with fractured fin, lap siding, brick, wood panel, slump stone, or broom finishes.

### ***Fast coordination for multi-site systems***

Your specifications are incorporated into each shelter at our factory. We coordinate manufacturing, equipping, and delivery so that shelter fabrication, customer site acquisition, and site preparation occur in parallel.

### ***Turnkey solution***

For a turnkey solution, Oldcastle Precast can efficiently install your batteries, battery chargers, UPS equipment, and radio racks at our facility. Radio racks can be installed by our technicians at our factory to save you time, coordination, and expense of on-site installations. We can then perform the final clean and pack to ensure that your shelter arrives on site in excellent condition and ready to turn on. Contact our Shelter Solutions Product Line for your upcoming projects to take advantage of this cost efficient option.

## When You Select An Oldcastle Precast Concrete Shelter

- ***You decrease installation time.***
- ***You prevent scheduling conflicts.***
- ***You minimize installation costs.***
- ***You receive consistent quality.***
- ***You decrease operating expenses over the life of your system.***
- ***You safeguard your valuable electronic equipment.***
- ***You guarantee the success of your project now and in the future.***
- ***Your customers enjoy reliable, uninterrupted service.***



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## Add the Value of Oldcastle Precast

For over 60 years, Oldcastle Precast has provided first-quality, high-performance, cost-effective products and service to the electronic communications industry.

When you choose Oldcastle Precast, you can be sure of continuous, dependable service from a global leader.

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## Highly Secure

### *Tested Structural Integrity*

Oldcastle Precast concrete shelters provide secure protection for your equipment. Each shelter is built with structural reinforced concrete, making them fire, bullet, and vandal resistant. The result is an ultra secure space for your electronic equipment, providing you and your customers the assurance of constant on-air service.

The step-joint design makes Oldcastle Precast shelters weather-proof. Each panel joint is constructed to channel water away from the building and your equipment.

In addition, our in-house concrete batch-testing equipment offers immediate results to verify the structural integrity of each shelter. The shelter's construction protects your operations from interruptions due to gale-force winds or seismic disturbances.

Protection from lightning can also be provided by equipping your shelter with suitable grounding systems.

### *Virtually Maintenance Free*

The sealed-joint construction of an Oldcastle Precast shelter makes it virtually maintenance free. Positive compression seals make exterior doors weather resistant and keeps your sensitive equipment in a secure environment.

With the selection of interior climate control components, damage to your valuable equipment from temperature extremes and excessive humidity can be avoided, safeguarding operations and revenues for years to come.

## Oldcastle Precast Added Value

### Your 10-year guarantee from Oldcastle Precast

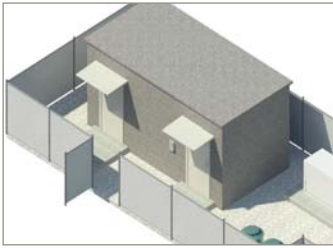
All Oldcastle Precast shelters include this 10-year guarantee: We will repair or replace your shelter at the option of Oldcastle Precast at no cost to you if its structural integrity fails when used within the specified loads and conditions. Warranties on equipment or other items not manufactured by Oldcastle Precast will be passed through originating company.

### *Safe and Sure Delivery*

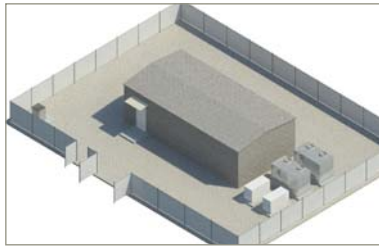
To ensure that your shelter arrives on schedule, our transportation department carefully reviews each state's weight and dimensional restrictions, along with permit and escort requirements. Each shelter also includes cast-in-place lifting points to facilitate off-loading and positioning.



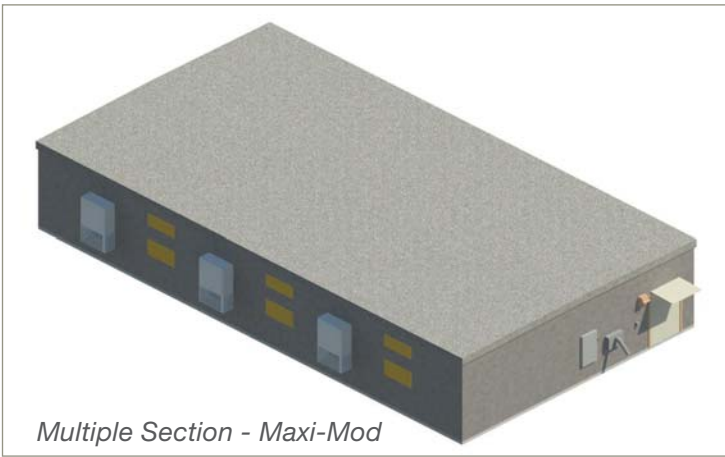
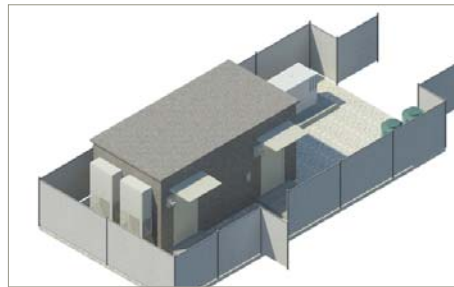
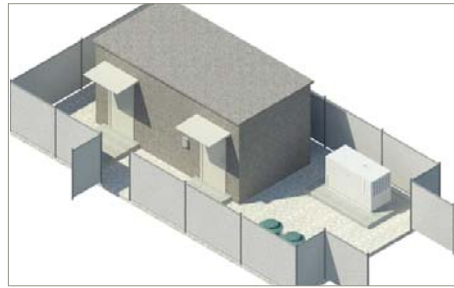
## Single Piece Shelters



Single Piece



Double Wide

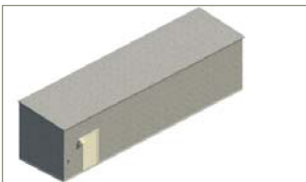


Multiple Section - Maxi-Mod

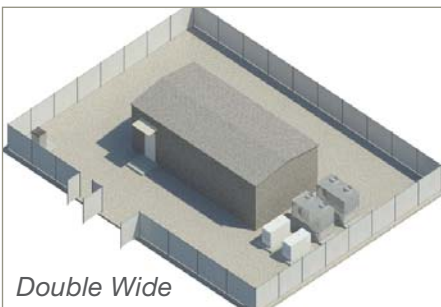
## Double Wide Shelters



Double Wide Section 1



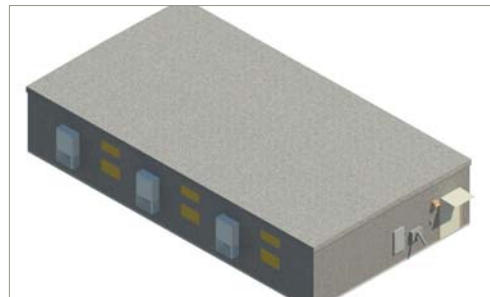
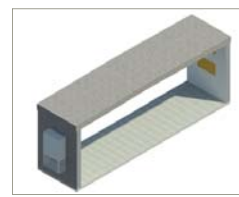
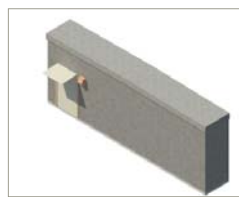
Double Wide Section 2



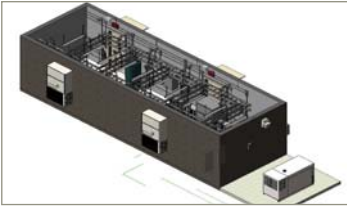
Double Wide



## Multi-Section - Maxi-Mod Shelters

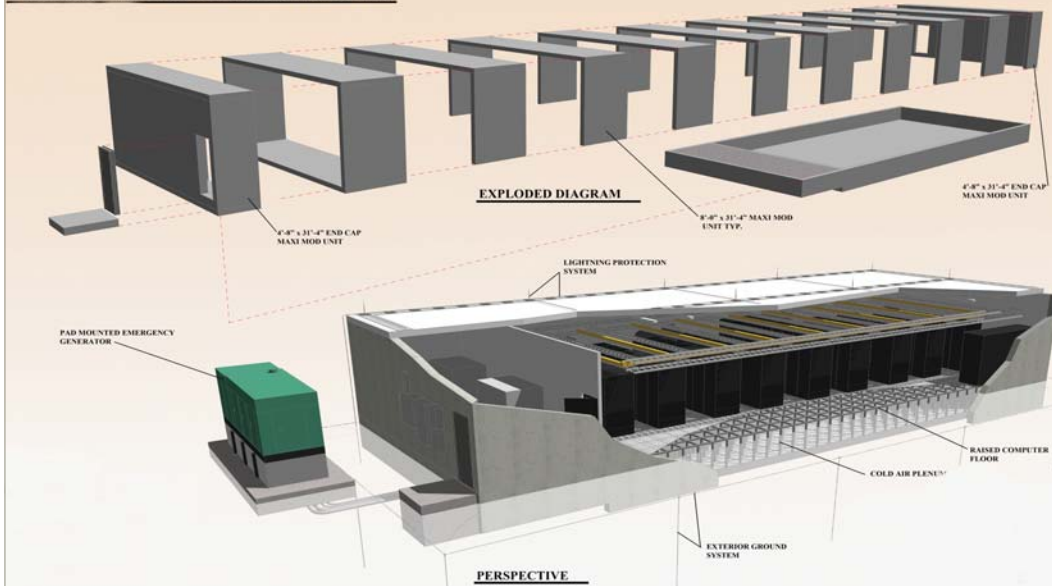


## Shelter Interiors



## Data Center Precast Module Layout

## PRECAST MODULAR DATA CENTER



## Section 1

# Planning Your Oldcastle Precast Shelter

### *Introduction*

The Oldcastle Precast Shelter Planner provides you with all the information you need to design a shelter. It saves you the time and expense of hiring or soliciting information from outside architects, engineers, contractors, vendors, and other professionals.

Oldcastle Precast also has a typical shelter specification that can be provided upon request. This valuable document is the first step in developing a comprehensive shelter specification.

## Oldcastle Precast Shelter Planner Contents

The Oldcastle Precast Shelter Planner contains product descriptions and specifications for standard Oldcastle Precast concrete shelters, larger multi-module shelters and accessories.

This Introduction contains a system diagram and blank layout illustration to assist you in planning your shelter design. The comprehensive Shelter Diagram illustrates a fully accessorized shelter. The blank Shelter Layout on page 8 is provided so you can prepare a graphic model of your shelter as its design evolves.

The Planner Worksheet found on pages 7 through 11 guide you through the component options available and allows you to establish a running list of shelter components. The numbers in the Shelter Diagram are keyed to the Worksheet description list.

The Product Information section starting on page 12 lists each category of shelter options, system components, and accessories. Each is keyed to the Planner Worksheet and Shelter Diagram, your road map to the concrete equipment shelter you need.

### ***How to Start Designing Your Shelter***

To begin designing your shelter, fill in the basic information on page 7 of the Planner Worksheet, complete the Shelter Layout illustration on page 8. Then starting with item 1, Structural Options (pg 9), fill in the blanks for each required item on the Worksheet and continue through the worksheet.

When you have completed the Planner Worksheet, you will have specified a complete shelter, including the accessories your application requires.



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## Before You Begin

Three items must be addressed to ensure the successful, cost effective delivery of your prefabricated shelter.

1. Transportation
  2. Off-Loading
  3. Site Access
- 

### ***1. Transportation***

While completing the Shelter Layout, consider how the shelter width will affect your transportation costs. The total width is the basic width dimension plus any exterior sidewall-mounted equipment or accessories, like door handles. Where practical, locate air conditioners, generator receptacles, and other exterior mounted equipment on the end walls if they cannot be easily removed for shipping. Door canopies and vent hoods can easily be removed for shipping.

Widths of less than 8' 6" are considered normal and require few permits, if any. Widths of 8' 6" to 11' 11" require wide-load permits, with travel limited to day-light hours, Monday through Friday only. Widths of 12' 0" and wider may require additional permits and escorts (front and rear) with limited travel hours. To minimize transportation costs, Oldcastle Precast offers an 11' 6" wide shelter. This width reduces transportation costs by eliminating expensive escorts in most situations and small exterior devices such as doorknobs can typically remain attached to the shelter.

### ***2. Off-loading***

By design, Oldcastle Precast shelters feature a multi-point lifting scheme that reduces off-loading costs and the risk of shelter damage. This lifting scheme, used on all Oldcastle Precast shelters, allows the use of only one spreader bar instead of the more common 3-bar configuration required by some shelter types.

### ***3. Site Access***

To ensure a successful delivery, attention must be given to narrow roads, bridge restrictions, small site entries, inadequate turnarounds, steep inclines, soft surfaces, overhead obstructions, and crane availability.

You may choose to handle the transportation, off-loading, and site setup yourself, or Oldcastle Precast can economically provide these services. Oldcastle Precast is experienced with the details involved in transporting, off-loading, and setup services.



# Please Read Before You Begin

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*Please print or type*

## About Your Company

Company Name: \_\_\_\_\_

Street Address: \_\_\_\_\_

City, State, Zip Code: \_\_\_\_\_

Your Name: \_\_\_\_\_ Title: \_\_\_\_\_

Business Telephone: ( ) \_\_\_\_\_ Fax: ( ) \_\_\_\_\_

E-mail Address: \_\_\_\_\_

## About the End User (if applicable)

Customer Name: \_\_\_\_\_

Customer System Name: \_\_\_\_\_

Application: \_\_\_\_\_

Site Name: \_\_\_\_\_

Site Street Address: \_\_\_\_\_

City, State, Zip Code: \_\_\_\_\_

Business Telephone: ( ) \_\_\_\_\_ Fax: ( ) \_\_\_\_\_

E-mail Address: \_\_\_\_\_

## Technical Contact

Company Name: \_\_\_\_\_

Name: \_\_\_\_\_

Business Telephone: ( ) \_\_\_\_\_ Fax: ( ) \_\_\_\_\_

E-mail Address: \_\_\_\_\_

Complete the information on this page about your company, the site(s) for which you are planning a shelter installation, and the individuals who should be contacted if additional technical information is required. Then, starting with Item 1 (Structural Options) on page 9, fill in the quantity for each item you need in your shelter design. Refer to Product Information Section 2 for product descriptions. The reference page appears next to the description on each Planner Worksheet.

Use the Shelter Diagram on page 8 as a reference to help visualize the typical components you select. Sketch the approximate component location on the Shelter Layout.

For a firm quotation, send the photocopies of your completed worksheets and sketch to:

Oldcastle Precast Shelter Solutions  
200 Keystone Drive  
Telford, PA 18969 or  
e-mail to: [john.albert@oldcastle.com](mailto:john.albert@oldcastle.com)

fax to: (215) 453.3605

If you need assistance, call our shelter solutions specialist at:  
215.257.2255

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## Shelter Diagram

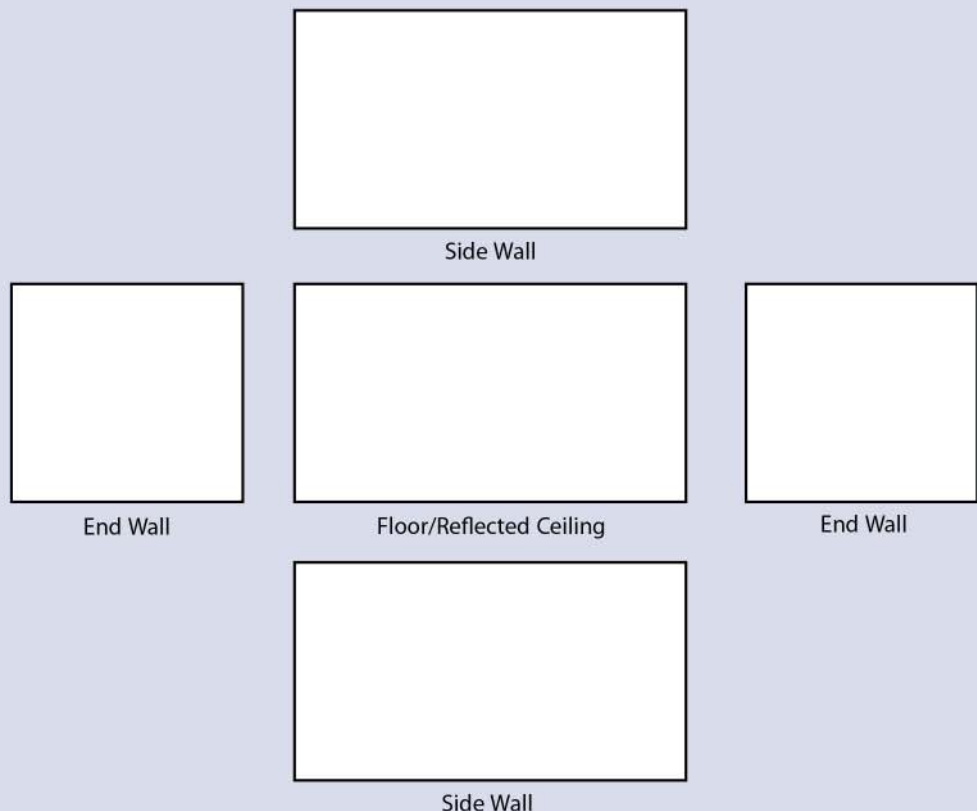
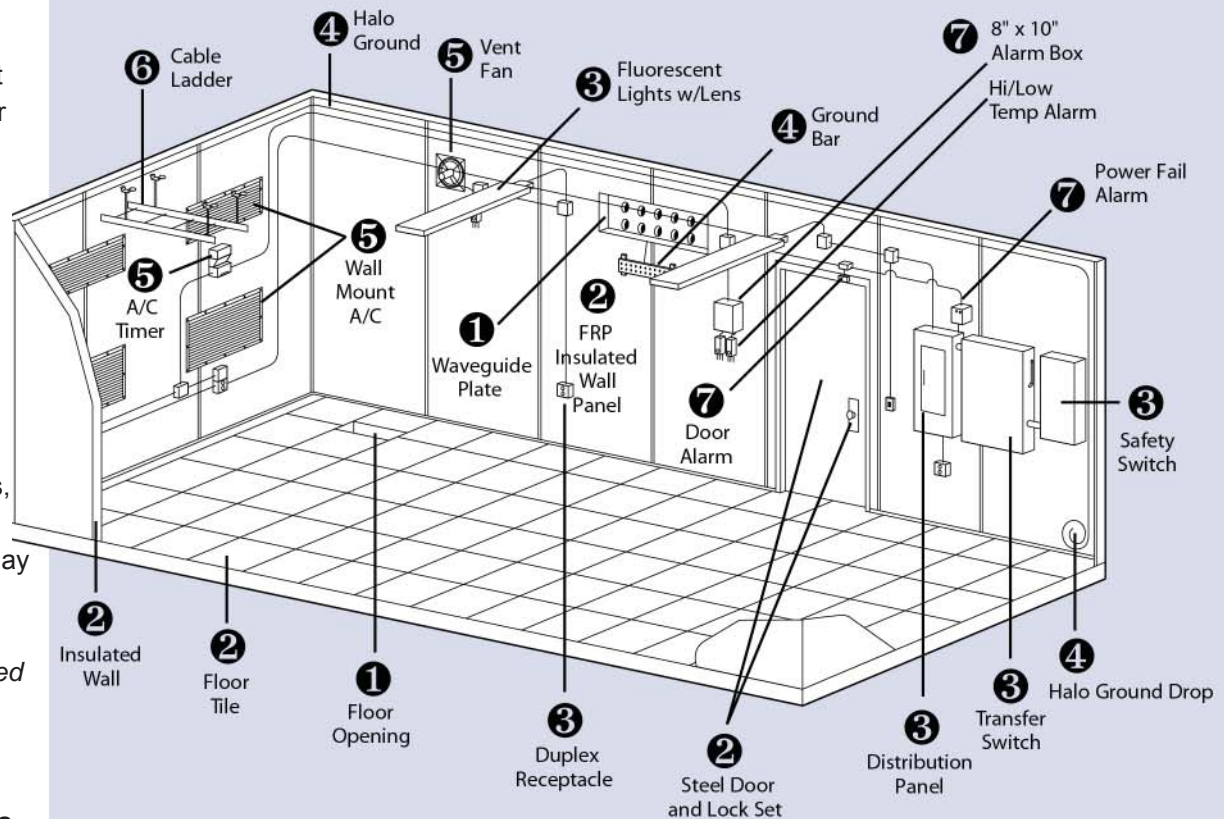
Each item pictured is keyed to one of the eight categories in the Planner Worksheet beginning on page 9 and the product descriptions in the Product Information section beginning on page 12. Some of the products listed in the shelter planner are illustrated. The size, equipment specifications, and configurations of the shelter you design may vary.

*The eight categories listed in this planner are:*

1. Structural Options
2. Architectural Options
3. Electrical Systems
4. Grounding/Lightning Protection Systems
5. HVAC Systems
6. Cable Ladder and Wireway
7. Safety/Security Options

## Shelter Layout

As you select your equipment and accessories, sketch each component on the blank layout to indicate its approximate location. Specify the relative component dimensions where applicable.



Description	Planner Page	Quantity
<b>1. Structural Options</b>		
Shelter Size, ____' ____" W x ____' ____" L x ____' ____" H (O.D. x O.D. x O.D. nominal)	5	_____
<b>Structural Openings</b>		
Waveguide Feed-thru Plate _____" no. of ports _____	9	_____
Floor Cable Entry Slot	9	_____
PVC Sleeve Opening	9	_____
Additional Rectangular Openings	9	_____
Blank Waveguide Plate	9	_____
<b>2. Architectural Options</b>		
Exterior Finish* _____	10	_____
Steel Door, _____" W x _____" H	11	_____
Bullet-Resistant Door <input type="checkbox"/> SP5A/.44 Magnum or <input type="checkbox"/> HPR/30.06	11	_____
<b>Door Accessories</b>		
Lock Guard (pick plate)	11	_____
Hydraulic Door Closure	11	_____
Door Canopy, _____" W x _____" H	11	_____
<b>Interior Options</b>		
Insulation, w/FRP Finish <input type="checkbox"/> R-13 or <input type="checkbox"/> R-24	12	_____
Floor Tile	12	_____
Partition Walls, _____" W x _____" H	12	_____
Partition Wall Doors, _____" W x _____" H	12	_____
Folding Wall Desk, 16" x 20"	12	_____
<b>3. Electrical Systems</b>		
<b>Basic Electrical Systems</b>		
Basic Single-phase, <input type="checkbox"/> 100A or <input type="checkbox"/> 200A	13	_____
Basic Three-phase, <input type="checkbox"/> 100A or <input type="checkbox"/> 200A	13	_____
Optional Bolt-on Panel	13	_____
<b>Electrical Accessories</b>		
Generator Receptacles <input type="checkbox"/> 100A or <input type="checkbox"/> 200A, <input type="checkbox"/> 1Ø or <input type="checkbox"/> 3Ø ____ Pole/ ____ Wire Mfg/Model No. _____	14	_____
Generator Mating Plug <input type="checkbox"/> 100A or <input type="checkbox"/> 200A, <input type="checkbox"/> 1Ø or <input type="checkbox"/> 3Ø	14	_____
GFCI Receptacles	14	_____
Additional Duplex Receptacle, 20A/120V	14	_____
Additional Quadplex Receptacle, 20A/120V	14	_____
Rectifier Circuits _____Amps _____Volts	14	_____
Additional Circuit Breakers (specify rating / quantity)		
Amp/Qty Amp/Qty		
120V, 1-pole _____/_____	14	_____
240V, 2-pole _____/_____	14	_____
240V, 3-pole _____/_____	14	_____

A. Ss value and/or Location  
(coordinates or zip code at minimum).

B. The basic wind speed.

C. Roof snow loading.

D. Roof live/equipment

E. Floor live/equipment load

F. Bullet rating.

G. Flood load.

H. Special load.

## Equipment Selection

For a firm quotation, send the photocopies of your completed worksheets and sketch to:

Oldcastle Precast  
Shelter Solutions  
200 Keystone Drive  
Telford, PA 18969

or

e-mail to: [john.albert@oldcastle.com](mailto:john.albert@oldcastle.com)

fax to: (215) 453.3605

If you need assistance, call our shelter solutions specialist at:  
215.257.2255

\* Exposed aggregate finish is standard with the basic panel shelter. Optional exterior finishes are available and can be quoted upon request.

For a firm quotation, send the photocopies of your completed worksheets and sketch to:

Oldcastle Precast  
Shelter Solutions  
200 Keystone Drive  
Telford, PA 18969  
or

e-mail to: john.albert@oldcastle.com

fax to: (215) 453.3605

If you need assistance, call our shelter solutions specialist at:  
215.257.2255

Description	Planner Page	Quantity
<b>Lighting Systems</b>		
Additional Fluorescent, 4 ft, two tubes	15	_____
Exterior Light Fixture w/cover		_____
<input type="checkbox"/> HPS or <input type="checkbox"/> Incandescent	15	_____
Photocell	15	_____
Motion Sensor	15	_____
Timer, <input type="checkbox"/> 60 min or <input type="checkbox"/> 12 hr	15	_____
Emergency Lighting, 7.5 watt w/battery	15	_____
Emergency Lighting, 7.5 watt w/battery and exit sign	15	_____
<b>Switches and Disconnects</b>		
Manual Safety Switch (Disconnect)		
<input type="checkbox"/> 100A or <input type="checkbox"/> 200A, <input type="checkbox"/> 1Ø or <input type="checkbox"/> 3Ø		
<input type="checkbox"/> Fused <input type="checkbox"/> Breaker <input type="checkbox"/> Interior <input type="checkbox"/> Exterior	15	_____
Manual Transfer Switch		
<input type="checkbox"/> 100A or <input type="checkbox"/> 200A, <input type="checkbox"/> 1Ø or <input type="checkbox"/> 3Ø	15	_____
<b>4. Grounding/Lightning Protection Systems</b>		
<b>Grounding System</b>		
Ground Bar System	16	_____
Halo Ground System	16	_____
Ground Drop (equipment)	16	_____
<input type="checkbox"/> Door and Frame		
<input type="checkbox"/> Cable Ladder		
<input type="checkbox"/> Service Boxes, ac		
<input type="checkbox"/> A/C Grills		
<input type="checkbox"/> Wireway		
<input type="checkbox"/> All metal objects larger than 4" x 4" boxes		
External Ground Drop	16	_____
Ground Bar, 1/4" x 4" x 20"	16	_____
1/4" x 4" x 30"	16	_____
Motorola R56 Grounding Option <input type="checkbox"/>		
<b>Surge Arrestor</b>		
Primary <input type="checkbox"/> Alarms, <input type="checkbox"/> 1Ø or <input type="checkbox"/> 3Ø	17	_____
Secondary	17	_____
Mfg/Model no. _____ (if specific is required)		
<b>5. HVAC Systems</b>		
<b>Air Conditioning and Accessories</b>		
Wall Unit _____ BTUH <input type="checkbox"/> 1Ø or <input type="checkbox"/> 3Ø	18-19	_____
w/ _____ kW heat strip	18	_____
or w/ economizer and _____ kW heat strip	18	_____
Lead/Lag Controller	18	_____
Heat/Cool/Auto Thermostat	18	_____
<b>Heating Systems</b>		
Fan Forced Air Heater, _____ Watts	20	_____
Electric Baseboard, _____ Watts	20	_____
<b>Ventilation Systems</b>		
Fan Ventilation System, _____ CFM	20	_____
Economy/Emergency Thermostat	20	_____



## Description

Planner  
Page

Quantity

## 6. Cable Ladder and Wireway

## Cable Ladder

Cable Ladder, 6" W x ____' L, Gold Chromate	21	_____
Cable Ladder, 12" W x ____' L, Gold Chromate	21	_____
Cable Ladder, 18" W x ____' L, Gold Chromate	21	_____
Cable Ladder, 24" W x ____' L, Gold Chromate	21	_____

☐ Optional Gray Painted Finish

Cable Ladder Junction Tees	21	_____
----------------------------	----	-------

## Wireway

4" x 4", 10' section	21	_____
4" x 4", 5' section	21	_____
4" x 4", 1' section	21	_____
4" x 4", 90° elbow	21	_____
4" x 4", tee section	21	_____
4" x 4", closing plates	21	_____

## 7. Safety/Security Options

## Alarm Systems

Terminal Cabinet w/66 Punch Block	21	_____
Smoke Alarm	21	_____
Humidity Alarm <input type="checkbox"/> High <input type="checkbox"/> Low	21	_____
Mounting / Telco Board	21	_____
High-temp Alarm	22	_____
Low-temp Alarm	22	_____
Open-door Alarm	22	_____
Power-failure Alarm <input type="checkbox"/> 1Ø or <input type="checkbox"/> 3Ø	22	_____
A/C Failure Alarm	22	_____

## Safety/First Aid

Battery Room Safety Kit	22	_____
Emergency Eyewash Station	22	_____
First Aid Center	22	_____
Hand Held Fire Extinguisher, _____ Type, _____ lb	22	_____
Automatic Fire Suppression System	22	_____

## 8. Additional Items

(items specifically required by customer)

Model Number	Description	Quantity
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Transportation and Additional  
Services Check ListShelter delivery, off-loading, set up,  
and installation supervision are also  
available.

	Oldcastle Precast	Customer
Transportation by :	<input type="checkbox"/>	<input type="checkbox"/>

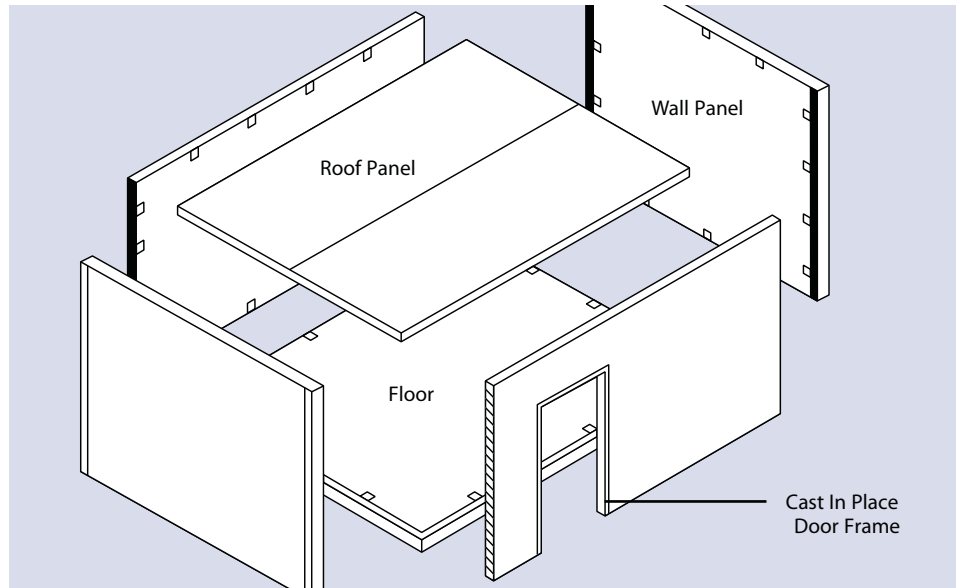
Off-loading:	<input type="checkbox"/>	<input type="checkbox"/>
--------------	--------------------------	--------------------------

Site set up:	<input type="checkbox"/>	<input type="checkbox"/>
--------------	--------------------------	--------------------------

Current drawings and specifications  
can be furnished at time of proposal  
and order.

## Section 2

# Shelter Product Information



## 1. Structural Options

### Reinforced Concrete Shelters

“RCS” or Reinforced Concrete Shelters come in single piece or double wide designs. RCS shelters are a panelized design which are cast as 4 separate walls, roof, and floor. The panels are then welded together and weather-proofed to form a heavy duty concrete shelter. They are available in sizes from 8'x8' up to 16' x 42' as a single piece and up to 24' x 42' as a double wide. Standard exterior finish is exposed aggregate painted brown with tan trim.

Standard design loads :

- 90 mph - 150 mph Wind Load
- 60 psf - 150 psf Roof Loading
- 200 psf - 300 psf Floor Loading
- UL752 Level 4 Bullet Resistant walls standard
- 2 Hour Fire Rating
- 50% G Seismic Rating

For those special cases where additional loads are required we offer:

- Increased wind loads up to 250 mph
- Tornado resistant, FEMA 361 designs
- Increased roof & floor loadings are available upon request
- High seismic ratings are available up to 300%G for those areas subject to frequent or major seismic activity
- Special exterior finishes are available to meet those special zoning requirements

\* Custom Sizes are Available

### ***Monolithic Concrete Shelters***

Monolithic concrete shelters are cast as a single piece shell which is then welded to a floor or roof to form a complete shelter. The advantages to monolithic casting are they have fewer building seams with fewer connections.

MONO shelters are cast in size specific molds and are available in the following sizes:

- |             |  |
|-------------|--|
| • MONO711   | Interior Dims: 6'-0"W x 10'-4"L x 9'-0"H   |
| • MONO11520 | Interior Dims: 10'-10"W x 19'-4"L x 9'-2"H |
| • MONO11528 | Interior Dims: 10'-10"W x 27'-4"L x 9'-2"H |
| • MONO1215  | Interior Dims: 11'-0"W x 14'-0"L x 9'-7"H  |
| • MONO1221  | Interior Dims: 11'-0"W x 20'-0"L x 9'-7"H  |
| • MONO1227  | Interior Dims: 11'-0"W x 26'-0"L x 9'-7"H  |

Standard design loads :

- 129mph Wind Load
- 65psf Roof Loading
- 250psf Floor Loading
- 50% G Seismic Rating



*\* Custom Sizes are Available*



### ***Maxi-Mod Expandable Concrete Shelters***

Maxi-mod concrete shelters are cast as monolithic rings which are delivered and erected on site to form one large concrete shelter. Each individual ring is 8' x 30' with 4' end rings which are capped off by a slab wall. This allows a high degree of flexibility in the size of the finished shelter. Sizes range from 30' x 24' and up. Some of the benefits of Maxi-mod shelters are increased speed of deployment and expandability if additional space is needed in the future.



Standard design loads :

- 110mph Wind Load, increased wind load up to 150mph available upon request
- 65psf Roof Loading
- 250psf Floor Loading
- 50% G Seismic Rating, increased seismic rating up to 300%G available upon request



*\* Custom Sizes are Available*





**Waveguide/Feed-Thru Plate**

### ***Foundations***

Foundation design recommendations are provided, at no charge, upon request for each Oldcastle Precast concrete shelter. We offer recommendations for 6-inch thick slab and grade beam foundation designs.

### ***Structural Openings***

All openings for the options you order are cast into the shelter panels at the time of manufacture and are included in the price. Steel rebar is added to strengthen the perimeter of each opening.

**Waveguide / Feed-Thru Plate** – Each feed-thru plate contains 4-inch or 5-inch diameter openings. Feed-thru plates are supplied with blank caps for all openings. The price includes the rectangular opening in the shelter and the installation of the feed-thru plate on the exterior. Other size openings are available.

<b>Size of Port, inches</b>	<b>Port Configuration, (rows x columns)</b>	<b>Number of Ports</b>
4	1 x 4	4
4	2 x 4	8
4	2 x 5	10
4	3 x 4	12
4	4 x 4	16
4	3 x 6	18

**Floor Cable Entry Slot** – An opening up to 24 by 48 inches and cast into the concrete floor is available to accept buried cable. Special entry slots are also available.

**PVC Sleeve Opening** – A PVC sleeve, up to 6 inches in diameter, can be cast into the concrete panels to provide additional openings. Typical uses are entries for ground wires, telephone T-1 interface, fiber optic cables, or cables to exterior electrical equipment.

**Additional Rectangular Openings** – Additional rectangular openings in sizes up to 36 x 36 inches are available. Rectangular openings are provided for each device specified, i.e., fans, louvers, air conditioners, and waveguide ports.

**Blank Waveguide** – Additional waveguide rectangular openings can be provided with each shelter allowing for site versatility. When additional openings are requested, a blank waveguide plate can be requested to secure the opening. The plate will mirror the waveguide/feed-thru plate size and attachments, allowing for quick repositioning to meet unplanned site layout.

## 2. Architectural Options

### *Architectural Considerations*

Oldcastle Precast shelters meet or exceed specified state and nationally recognized building codes, minimizing the expense of modifications required to obtain your permits.

The basic Oldcastle Precast shelter complies with the following list of building codes. Oldcastle Precast can also provide designs to accommodate nonstandard structural or code-specific requirements.

- Uniform Building Code (UBC)
- Industrialized Building Code (IBC)
- Building Officials and Code Administrators (BOCA)
- Standard Building Code (SBCCI)
- American Concrete Institute (ACI)
- American National Standard Institute (ANSI)
- American Standard Testing Materials (ASTM)
- National Fire Protection Association (NFPA)
- Ohio Basic Building Code (OBBC)
- National Electrical Code (NEC)

Careful selection of optional architectural details of the shelter may simplify the zoning and installation permit processes.

Attractive textures in exposed aggregate, fractured fin, lap siding, brick, broom, wood panel, or slump stone can be provided to promote community acceptance of your shelter. Exterior door frames are cast in place as the wall panels are manufactured. Standard doors are equipped with security hinges and non removable pins. High-security lock options are also available. Security screens can also be cast in place to prevent entry through ventilation openings.

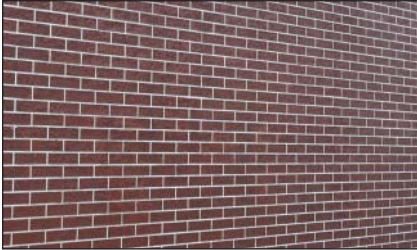
### *State Laws and Regulations*

More and more states are now regulating, by law, the transportable equipment shelter industry. Failure to adhere to these laws can result in fines to the building owner and manufacturer, or worse, the removal of non approved buildings by the state or local jurisdictions.

Oldcastle Precast is a recognized, certified shelter manufacturer and meets or exceeds the toughest state certification standards. To facilitate state approval of specific installations, Oldcastle Precast submits shelter design drawings, stamped by a registered professional engineer, along with any necessary forms and fees to the appropriate state agency. Each building goes through an extensive quality control inspection process and may also receive additional inspections by either state inspectors or their third party agency inspectors.

All shelters produced for these states are clearly labeled as approved units per the specific state laws. These steps by Oldcastle Precast will ensure that your permit process goes smoothly and will also eliminate the risk of fines or other unpleasant consequences for using unapproved building systems.

## Shelter Aesthetics



Brick Finishes

**Exterior Finishes** – An exposed aggregate finish is standard with the basic shelter. The aggregate is an integral part of the concrete mix when the shelter panel is poured—not glued or seeded to the surface. This provides the strength and durability of solid concrete. The optional exterior finishes available are:

- fractured fin
- slump stone
- wood panel
- lap siding
- brick
- broom finish

**Exterior Paint/Sealer** – A variety of exterior paint options are available when an optional exterior finish is specified. The paints are made specifically for concrete. In addition to enhancing the appearance of the shelter, painting protects the concrete from weather.

## Door Types

Standard steel doors and optional bullet-resistant, aluminum and FRP fiberglass doors are available for Oldcastle Precast concrete shelters.

**Standard Steel Doors** – The standard door is 3' x 7', made from 16-gauge steel. It includes a 14-gauge frame that is cast into the concrete wall, a 2-inch drip cap, a door stop with a "hold open" latch, a dead bolt lockset, pull handles, weather stripping, an aluminum threshold, and chrome plated brass hinges with non removable pins. Doors are rust-resistant and painted with a corrosion-inhibiting cocoa paint that is free of lead and chrome. Other door sizes and fire ratings are available; however, they may affect shelter delivery schedules.

**Bullet-Resistant Doors.** The typical bullet-resistant door is made from 16-gauge steel and is reinforced with additional armor plate. The doors are tested to the handgun rating (UL752-Level III) and resist penetration from .44 Magnum handgun fire. A (UL752-Level IV) High Power Rifle rating that resists penetration from a 30.06 is also available. Bullet-resistant doors require longer lead times than standard doors, which may affect delivery of your shelter.

### Ordering Information for Doors:

Description	Width, inches	Height, inches
Standard Door	36	84
Standard Door	42	84
Bullet Resistant/Level III/.44 Magnum	36	84
Bullet Resistant/Level IV/30.06	36	84



Standard Steel Door

## Door Accessories

Mortise locks, lock guards, and hydraulic door closures are available as options for Oldcastle Precast concrete shelters.

**Lock Guard (Pick Plate)** – Discourages vandalism of latch bolt or dead bolt.

**Hydraulic Door Closure** – Suitable for doors up to 44-inches wide. Listed by Underwriters' Laboratories, Inc. for use on fire doors. Swings 180 degrees.



Door Canopy

**Door Canopy** – All standard doors come equipped with a 2-inch drip cap. Larger door canopies can be specified to provide increased protection against the weather. Canopies are sheet aluminum and painted to match the door.

### ***Interior Options***

A variety of insulation, flooring, partition walls, and workbenches are available for your Oldcastle Precast concrete shelter.

**Insulation with Paneling** – Shelter insulation reduces heating and air conditioning operating costs. Two standard levels of insulation are available. Each consists of board insulation with an attractive finish layer of 1/2-inch thick (minimum) wood panel that is coated with fiberglass reinforced plastic (FRP). The FRP coating provides a durable, scratch resistant finish. All seams are finished with trim and 4" mopboard at floor. The standard, non-insulated shelter has an R value of 2.

**Floor Tile** – Oldcastle Precast offers a 12" square gray vinyl composition tile, 1/8 inch thick, that meets federal specifications SS-T-312B(1), Type IV, composition 1, as the standard floor tile. Other colors are available upon request. Tile is applied directly to the concrete floor.

**Partition Walls and Doors** – A two-room shelter can be created by using optional partition walls and doors. You can separate, for example, the generator and the electronic equipment. Walls are 2 x 4 stud construction, 24 inches on center, with 1/2-inch FRP-covered wood panels. One and two-hour fire construction are available. All seams are trimmed. Partition wall doors are 1-3/8 inch hollow core and include hardware, passage knob, and white painted finish.



**Interior Options Standard Steel Door**



### 3. Electrical Systems

#### *The Oldcastle Precast Electrical System*

Oldcastle Precast shelters have an electrical system that is specifically tailored to your requirements. Oldcastle Precast uses only standard, commercially available components for the ultimate in reliability and ease of equipment connection. Your system is designed to meet National Electrical Code (NEC).

When your shelter's electrical system is installed by Oldcastle Precast , you:

- *Ensure a custom-designed system at pre-engineered prices*
- *Safeguard your personnel*
- *Provide for all necessary grounding to protect the investment in your equipment*
- *Ensure expedited permit approval*
- *Get trouble-free, factory installation and testing to minimize the expense of on-site technicians*



#### **Basic Electrical Systems**

- *The basic electrical system consists of either 100-amp or 200-amp, 120/240-volt, single-phase service or 100-amp or 200-amp, 120/208-volt three-phase service. Oldcastle Precast can also provide custom electric service sizes.*

*Each system includes:*

- *One 16-circuit load center with a 100-amp main breaker and 8-space snap-in circuit breakers or a 40-circuit load center with a 200-amp main breaker and 8-space snap-in circuit breakers.*
- *Interior fluorescent light fixtures with prismatic lenses (4-feet long) with two 32-watt bulbs and a 120-volt/20-amp switch. (quantity based on building size).*
- *Duplex convenience receptacles. (120 volt/20 amp), (approximately every 4 feet along wall).*

## Electrical Accessories



**Generator Receptacle**

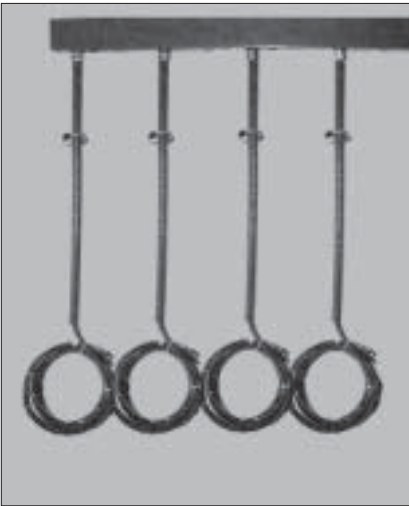
**Generator Receptacles** – Auxiliary generator receptacles are typically mounted on the shelter exterior for hookup of mobile generators. A mating plug is required to ensure compatibility with the selected generator receptacle, if the generator supplier does not provide the corresponding mating plug. Reverse service generator receptacles are provided to meet OSHA requirements.

**Ground Fault Interrupt (GFCI) Receptacle** – The 20-amp 120V ground fault interrupt is an exterior or interior surface-mounted 3-wire grounded circuit that can be used as a convenience outlet with ground fault circuit breaker protection. *Nationally recognized codes require all exterior receptacles to have GFI protection.*

**Additional Receptacles** – If required, select additional receptacles not supplied with the basic electrical system (see page 17):

- Duplex, 20-amp, 120V
- Quadplex, 20-amp, 120V

**Rectifier Circuits.** Rectifier circuits can be provided. The circuits are pigtailed from a junction box or wireway with sealtight flex conduit allowing final connection by others. Specify quantity, amperage, and voltage.



**Rectifier Circuits**

**Additional Circuit Breakers** – The basic electrical system includes 8-space circuit breakers. These circuit breakers are for the devices specified, i.e., lights, receptacles, AC, etc. Additional spare circuit breakers are available. One-pole circuit breakers require one position and two-pole circuit breakers require two positions in the load center. A 3-pole circuit breaker requires three positions (for 3-phase panels only). Specify additional circuit breakers on the worksheet.

## Lighting Systems

**Additional Interior Fluorescent Light Fixtures** – If required, additional 4-foot fixtures with two 32-watt bulbs in addition to those provided. (See Page 10.)

**Exterior Light with Cover and Interior Switch** – Please specify type from the following:

- 70-watt High Pressure Sodium (HPS) Exterior Light with Photocell and vandal-resistant lens.
- 100 watt Incandescent Exterior Light with vandal resistant lens and photocell.

**Motion Sensor** – For external lighting (cannot be used with HPS fixture).

**Timer** – Interior wall-mounted timer switches can be used to control interior lighting, exterior lighting, or ventilation controls. 60-minute and 12-hour cycle times are available (please specify). This will replace the interior switch.

**Emergency Lighting Unit with Exit Sign** – Includes two 7.5-watt high output lamps, lead-calcium rechargeable battery, pilot light, test light, and exit sign. Operation and recharging of the battery are automatic. Final connection to battery is done on site by customer.



**Interior Lights**



**Interior Light with Wire Guards**



**Incandescent Exterior Light**



**Emergency Lighting Unit**



**Manual Transfer Switch**

### Switches and Disconnects

#### Manual Safety Switches (Disconnect) –

A single-throw, general-duty, manual safety switch is mounted on the interior wall. It is designed to protect specific equipment. Specify amperage, phase, interior, exterior, fuse, or breaker type.

#### Manual Transfer Switches –

A double-throw manual transfer switch is designed to transfer from commercial power to an alternate power source and is mounted on the interior wall. Specify amperage and phase requirements.

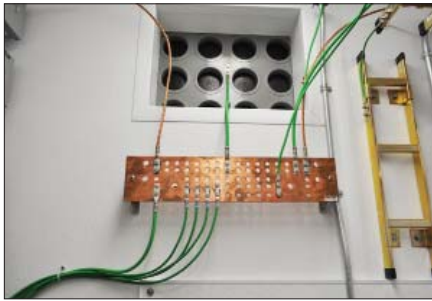


## 4. Grounding/Lightning Protection Systems

### *Grounding Systems*



**Ground Bar**



**Halo Grounding System**

Oldcastle Precast equipment shelter grounding systems are designed according to particular customer needs and applications. While the halo grounding system can serve the minimum needs of most installations, certain sites may require a more rigorous system due to increase lightning susceptibility. The Oldcastle Precast engineering staff can provide such systems with a variety of options to increase lightning protection and electromagnetic interference attenuation, including Motorola R-56 Grounding.

Oldcastle Precast can provide three internal ground systems with varying degrees of protection. All ground splices use a double crimp CTAP and two hole lugs with No-OX-1D for termination.

**Ground Bar System** – The ground bar system consists of a 1/4" x 4" x 20" copper ground bar located approximately six inches below the waveguide entry plate (internal and/or external) and a single #2 AWG solid tinned copper drop for exterior connection. All exterior drop ground wiring is bare #2 solid tinned copper wire unless otherwise specified. All drops penetrate the walls at 45° to minimize bends.

**Halo Ground System** – The halo ground system consists of a continuous run of green, insulated #2 stranded copper wire mounted around the perimeter of the interior wall just below the ceiling. A 1/4" x 4" x 20" copper ground bar is located just below the waveguide entry plate (internal). A green #2 stranded copper jumper is used to bond the ground bar to the halo ring by way of an omni directional connection.

The halo grounding system, supplied with each shelter, includes five external ground drops of #2 solid tinned copper for exterior connections. These external drops are omni directional, connected and located at each corner of the shelter and at the copper ground bar.

All exterior drop ground wiring is bare #2 solid tinned copper wire unless otherwise specified. All interior grounding is green #2 stranded. All drops penetrate the walls at 45° to minimize bends.

**Ground Drop (Equipment)** – A green #6 green stranded copper ground wire can be attached to any or all equipment as desired and bonded to the ground system or ground bar by way of directional grounding. Please specify degree of protection.

**External Ground Drop** – An omni directional bare #2 solid tinned copper ground wire attached to the ground system is installed for external ground connection. The drop consists of an 8-foot pigtail through a 1-inch PVC penetration, located just above the floor at a 45° angle. One is provided with ground bar system and five are provided with halo ground system.

**Ground Bar** – A wall mounted, insulated solid copper ground bar used for multiple ground tie points is available. Specify size.



## Surge Arrestors

The interior-mounted surge arrestor is designed to protect against transients caused by lightning or power switching surges. It is wired on the line side before the main breaker unless otherwise specified by the manufacturer or customer.

Primary and secondary arrestors are available. Primary arrestors protect the building's electrical components. Primary arrestors can include alarm contacts to signal when surge protection is lost. Secondary arrestors protect individual branch circuits. Visual inspection is required to determine whether the arrestor must be replaced following a surge.

**Primary Arrestor (Single Phase)** – 120/240V, 3- or 4-wire arrestor. Standard surge arrestor features current capacity of 65 kVA peak, automatic reset and replaceable individual arrestor modules. Arrestor has life expectancy of 2000 (minimum) peak surges. Specify manufacturer and model number, if known.

**Primary Arrestor (Three Phase)** – 120/208V arrestor. Standard surge arrestor features current capacity of 65 kVA peak, automatic reset, and replaceable individual arrestor modules. Arrestor has life expectancy of 2000 (minimum) peak surges. Specify manufacturer and model number, if known.

**Primary Arrestor with Alarms (Single Phase)** – 120/240V, 3- or 4-wire arrestor. Standard surge arrestor features current capacity of 65 kVA peak, automatic reset, and replaceable individual arrestor modules. Two relays are included for remote alarm. Arrestor has life expectancy of 2000 (minimum) peak surges. Specify manufacturer and model number, if known.

**Primary Arrestor with Alarms (Three Phase)** – 208V arrestor. Standard surge arrestor features current capacity of 65 kVA peak, automatic reset, and replaceable individual arrestor modules. Three relays are included for remote alarm. Arrestor has life expectancy of 2000 (minimum) peak surges. Specify manufacturer and model number, if known.

**Secondary Arrestor** – 120V, 2-wire arrestor. Surge capacity of 15 kVA peak. One-piece replaceable design.

**Secondary Arrestor** – 240V, 3-wire arrestor. Surge capacity of 15 kVA peak. One-piece replaceable design.

**Motorola R-56** approved surge suppressors also available.



Surge Arrestor

## 5. HVAC Systems

Oldcastle Precast offers a variety of standard, field-proven HVAC components. This selection allows you to customize the shelter's equipment configuration according to the level of protection you choose to optimize the shelters' environment.

### *Environmental Considerations*

Installing an HVAC system that is tailored to your requirements ensures you of the most cost effective management of temperature and humidity. An effective HVAC system can extend the service life of your electronic equipment. A fully redundant air conditioning system, for example, offers unmatched reliability, lowers maintenance costs, and improves system life. Pre-installed HVAC systems are fully tested and provide fast field commissioning and reliable operation.

### *Air Conditioning and Accessories*

**Wall Units** – Oldcastle Precast offers exterior-mounted vertical wall units. The BTUH rating of the units supplied with your shelter may vary slightly from those listed on the next page.

The vertical wall-mounted air conditioners are specifically designed as energy efficient, space saving units ideally suited for telecommunications shelters. Each air conditioner offers optimal environmental control at a minimum cost without utilizing outside ground space or indoor working space. Each unit includes power wiring and supply/return grilles. Wall-mounted units feature an adjustable time delay that prevents the system from sustaining compressor damage or failure when the system is turned on prematurely following a power failure.

Low-ambient operation is also a standard feature that provides for continuous equipment cooling and dehumidification and ensures safe air conditioner operation even when outside temperatures fall to 0°F. The wall mount unit is provided with a full one-year labor and material warranty.

Specified wall-mount air conditioning units are equipped with electric, forced-air resistive heating strips that supply necessary forced-air heating into the building. Heat pump units are available when required by energy code.

**Economizer Package** – The economizer package utilizes both outside air and refrigerated inside air to maintain a constant, preset temperature inside the building. The package consists of a damper motor, mixed-air sensor, potentiometer relay, and enthalpy controller. This system is recommended when increased operating efficiency and increased life expectancy of the compressor unit is desired.

**Lead/Lag Controller** – This controller ensures equal wear on redundant vertical wall mounted air conditioning units by switching the lead unit according to a pre-programmed setting.

**Heat/Cool/Auto Thermostat** – The heat/cool/auto thermostat is typically used for one-unit applications. The thermostat allows the automatic transfer from heat to cool as ambient temperature dictates.



Exterior Wall Units



Lead/Lag Controller

### Ordering Information for Wall-Mounted Air Conditioners (208/230V)

BTUH	Phase	Option
12,000	1	Basic unit / w/built-in 2.2 kW heat strip / w/built-in economizer pkg and 2.2 kW heat strip
24,000	1	Basic unit / w/built-in 4 kW heat strip / w/built-in economizer pkg and 4 kW heat strip
36,000	1	Basic unit / w/built-in 5 kW heat strip / w/built-in economizer pkg and 5 kW heat strip
48,000	1	Basic unit / w/built-in 5 kW heat strip / w/built-in economizer pkg and 5 kW heat strip
60,000	1	Basic unit / w/built-in 5 kW heat strip / w/built-in economizer pkg and 5 kW heat strip
36,000	3	Basic unit / w/built-in 9 kW heat strip / w/built-in economizer pkg and 9 kW heat strip
48,000	3	Basic unit / w/built-in 9 kW heat strip / w/built-in economizer pkg and 9 kW heat strip
60,000	3	Basic unit / w/built-in 9 kW heat strip / w/built-in economizer pkg and 9 kW heat strip

## Heating Systems



Fan-Forced Air Heater

**Fan Forced-Air Heater** – The electric fan-forced air heater directs air toward the center of the room for even heating.

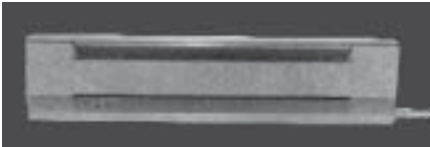
### Ordering Information for Fan Forced-Air Heaters

Watts	BTUH
1500	5,120
3000	7,677
4000	13,652

**Electric Baseboard Heaters** – The electric baseboard heaters listed below have convection-fin element design for maximum air circulation. Heat is radiated away from the wall into the room. They require about one linear foot of wall space for each 250 watts of output.

### Ordering Information for Electric Baseboard Heaters

Watts	BTUH
500	120 Vac 1,706
750	120 Vac 2,559
1000	120 Vac 3,412
1000	240 Vac 3,412



Electric Baseboard Heater

## Ventilation Systems



Fan Ventilation System

**Fan Ventilation System** – The Oldcastle Precast ventilation system is a highly dependable, low maintenance system. This system includes one exhaust fan with an aluminum gravity shutter in a sleeve assembly and one motorized intake louver. The ventilation system may be temperature or time controlled. Rain hoods for both intake and exhaust are included.

### Ordering Information for Ventilation Systems

Capacity
650 CFM fan
1000 CFM fan

**Economy/Emergency Thermostat** – An adjustable remote bulb thermostat is available to prevent simultaneous operation of the air conditioner and ventilation system, as dictated by outside temperature, and energize the ventilation system during high interior temperature conditions.

## 6. Cable Ladder and Wireway

The cable ladder and wireway offer flexibility and maximum labor efficiency for field-wired circuits. The Oldcastle Precast enclosed wireway is UL listed and conforms to the National Electrical Manufacturers Association (NEMA) Type 1 requirements.

All cable ladder layouts must be grounded per the National Electric Code (NEC), Section 250-75 (please see page 22). The wireway features hinged side covers that provide the convenience of lay-in installation of conductors throughout the run.

### **Cable Ladder**

Widths of 6, 12, 18, and 24 inches are available and are finished with electroplated gold chromate. Wall and ceiling brackets are included in the pricing. If your layout includes 90° junctions, order a junction tee for each one. Optional gray painted finish cable ladder can be provided throughout by specifying. Please specify total linear feet needed for each width.

**Cable Ladder Junction Tees** – Specify one tee at each 90° junction of cable ladder.

### **Wireway**

The wireway encloses wiring runs such as rectifier drops. It is fabricated from 16-gauge steel and is protected with a coating of epoxy paint. Specify quantity for each.

## 7. Safety/Security Options

The security and safety options available for Oldcastle Precast concrete shelters provide protection for both your equipment and operating personnel. Remote alarm systems provide operations personnel located at off-site monitoring stations with instantaneous notification of unusual or hazardous conditions. Fire suppression systems and personnel safety equipment minimize damage to operational components and the risk of injury.

### **Alarm Systems**

Oldcastle Precast alarms include wiring from the alarm device to the alarm terminal cabinet. All circuits are labeled in the cabinet. Factory testing is performed where applicable.

**Terminal Cabinet with 66 Punch Block** – Provides a centralized wiring location for up to 25 alarms (66 punch block); 12" H x 8" W x 4" D.

**Smoke Alarm** – A dual chamber ionization detector mounted on a 4" x 4" junction box. Detector is listed by Underwriters' Laboratories, Inc., 120 Vac.

**Humidity Alarm** – Adjustable from 20% to 80% relative humidity. SPDT switch can be wired normally open (N/O) or normally closed (N/C) for either a high or low humidity alarm. Can also be used as a humidity controller.

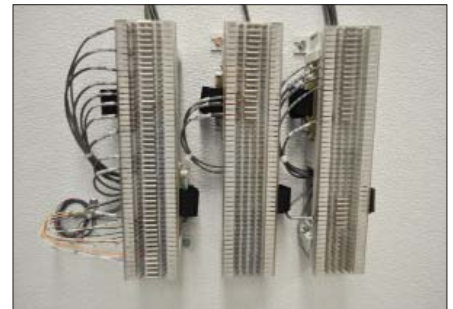
**Mounting/Telco Board** – A separate panel used for installation of alarm components. Consists of a 4' x 8' x 1/2" wood panel that is coated with fiberglass reinforced plastic (FRP) and screwed to the interior wall. Panel is white with edge trim. Most components can be mounted directly to the standard FRP panel interior.



**Cable Ladder**



**Cable Ladder Junction Tee**



**66 Punch Block**

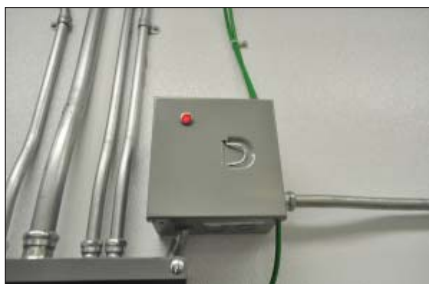


**Smoke Alarm**





**Open-Door Alarm**



**Power-Failure Alarm**



**Emergency First-Aid/Eyewash**



**Hand-Held Fire Extinguisher**

**High Temperature Alarm** – Adjustable 110° to 30° F. SPDT thermostat can be wired normally open (N/O) or normally closed (N/C).

**Low Temperature Alarm** – Adjustable 30° to 110° F. SPDT thermostat can be wired normally open (N/O) or normally closed (N/C).

**Open-Door Alarm** – Dry alarm contacts for steel door. Can be wired normally open (N/O) or normally closed (N/C).

**Power-Failure Alarm** – Red neon light indicates normal power conditions. Dry alarm contacts. Can be wired normally open (N/O) or normally closed (N/C).

**AC Failure Alarm** – Dry alarm contacts for wall mount air conditioner indicating high head pressure (N/O).

### ***Safety/First Aid***

**Battery Room Safety Kit** – Contains rubber gloves, apron, baking soda, goggles and eyewash bottle. Highly recommended for wet cell battery rooms.

**Emergency Eyewash Station** – Ideal for enclosed battery installations. Contains unfilled eyewash bottles. One or two bottle stations available.

**First Aid Center** – Specifically designed for communications equipment installations. Housed in cabinet. Contains a variety of gauze bandages, adhesive bandages, eye dressing packets, iodine wipes, ammonia inhalants, burn cream, and insect sting wipes.

**Hand-Held Fire Extinguisher** – Fire extinguishers are available as carbon dioxide or dry chemical.

### **Ordering Information for Hand-Held Fire Extinguishers**

Description	Weight, lb
Carbon Dioxide	5
Carbon Dioxide	10
Dry Chemical	5
Dry Chemical	10

**Automatic Fire Suppression System** – Automatic fire suppression systems can be engineered and designed for your specific application. Contact our Shelter Solution Specialist for more information, if required.





### ***Oldcastle Precast***

Oldcastle Precast is the leading manufacturer of precast concrete, polymer concrete, and plastic products in the United States. With a nationwide network of facilities, our products are always close at hand. Our employees are committed to upholding core values of reliability, quality, and service in revolutionary ways. Our attention to detail exceeds the expectations of customers from some of the largest companies in the U.S., across a spectrum of industries.

**Sales & Service**  
**888-9 Oldcastle**  
**(888-965-3227)**

[oldcastleprecast.com](http://oldcastleprecast.com)

All designs, specifications and availability of products and services presented in this bulletin are subject to change without notice.