



## *Equipment Shelters*



## Index

General Information . . . . .	694
Structural Options . . . . .	696
Architectural Options . . . . .	697
Electrical Systems . . . . .	699
Grounding/Lightning Protection Systems . . . . .	700
Heating, Ventilating and Air Conditioning (HVAC) Systems . . . . .	700
Cable Ladder and Wireways . . . . .	701
Safety/Security Options . . . . .	701



## General Information

### *When You Select an Andrew Concrete Equipment 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.



Newnan, Georgia



Sacramento, California



Burlington, Kansas

### *Andrew Leads the Industry*

Andrew leads the industry again with our satellite shelter manufacturing facilities. Only Andrew offers the flexibility, time and cost savings of regionalized shelter manufacturing locations. Keep your projects on schedule when your fully integrated shelters are shipped from our satellite facilities.

### *Three Manufacturing Locations to Serve You*

Our shelter headquarters in Newnan, Georgia serves the Eastern and Midwest communications markets with world-class, state-of-the-art manufacturing techniques and equipment. Production capabilities of this facility are supplemented by our satellite facilities in Sacramento, California serving the West Coast and Midwest markets and our newest Burlington, Kansas operation serving the Midwest, Eastern, and Western markets.

We invite you to visit our headquarters in Newnan to see how Andrew offers you a total solution for your communication shelter needs.

### *Budget Savings*

#### **Custom design at pre-engineered prices**

The Andrew 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.

Andrew also provides typical foundation design recommendations at no additional charge.

#### **Schedule Savings**

Andrew 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 Andrew to pre-equip your shelter also provides an extra measure of security.



**Codes, Regulations and Zoning**

Andrew 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 Andrew shelter. In addition to standard exposed aggregate facades, Andrew shelters can be delivered with fractured fin, lap siding, brick, wood panel, slump stone, or broom finishes.

**Fast Coordination for Multisite Systems**

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

**Turnkey Solution**

For a turnkey solution, Andrew 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 Product Line for your upcoming projects to take advantage of this cost efficient option.

**Highly Secure**

**Tested Structural Integrity**

Andrew concrete shelters provide secure protection for your equipment. They are fabricated with 4-inch panels of lightweight, structural reinforced concrete, making them fire, bullet, and vandal resistant. The result is an ultrasecure space for your electronic equipment, providing you and your customers with the assurance of constant on-air service.

The step-joint design makes Andrew 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 also can be provided by equipping your shelter with suitable grounding systems.



Andrew shelters are quickly and easily off-loaded. They also allow more flexibility when selecting crane size because they're so light.

**Virtually Maintenance Free**

The sealed-joint construction of an Andrew 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.

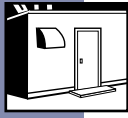
**Safe and Sure Delivery**

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.

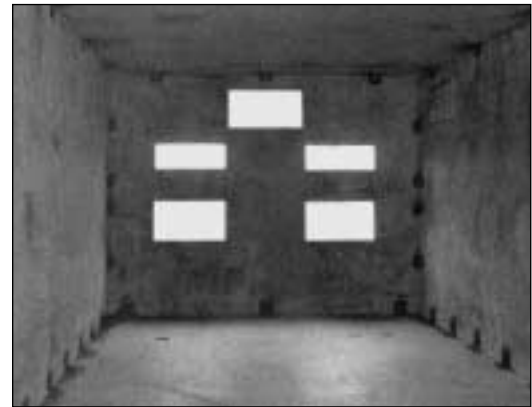
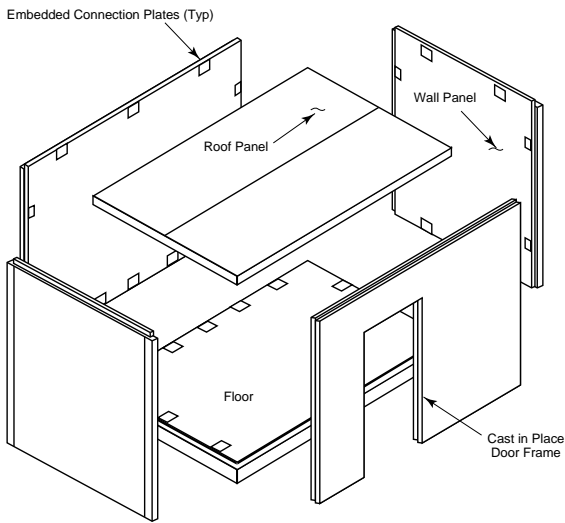
**Andrew Added Value**

After-sale support - 24 hours a day/7days a week

Our after-sales support service includes 24-hour telephone assistance. The Customer Support Center can be reached toll-free at **1-800-255-1479**.



## Structural Options



Panel connection plates embedded into the panels of assembled shell.

### Shelter Construction Details

**Roof Panels.** The roof is a flat panel of reinforced concrete 4 inches thick, with a 1/8-inch per foot pitch for drainage. Reinforcement consists of #4 rebar and welded wire fabric (WWF) throughout. The roof panels of an Andrew concrete equipment shelter will resist penetration from falling objects, such as a block of ice weighing up to 100 pounds dropped from a height of 200 feet.

**Wall Panels.** The walls are flat panels of reinforced concrete 4 inches thick. Reinforcement consists of #4 rebar and welded wire fabric (WWF). Each wall has a 2-hour fire rating and a 30.06 bullet resistance in accordance with UL752-LEVEL IV. Door frames are cast into the concrete wall panels to prevent vandalism and water leakage around the frames.

**Insulated Floor Panel.** The floor is a 6-inch deep ribbed slab of reinforced concrete. The transverse ribs are spaced every 30 inches maximum, on center. Reinforcement consists of #6 rebar through each rib and around the edges of the panel. The floor deck is reinforced with welded wire fabric (WWF).

**Panel Connections.** Headed stud connection plates are cast into the roof, wall, and floor panels and are welded together after panel alignment.

**Weatherproofing.** All wall panels are protected by the use of an acrylic concrete sealer that resists/inhibits water absorption and freeze/thaw damage. Shelters are fabricated by using solid, one-piece panels with no seams. All joints between panels (wall-to-ceiling, wall-to-wall, and wall-to-floor) are sealed with an expanded foam sealant tape. Additionally, horizontal joints feature a step-joint, and vertical joints are caulked with urethane sealant.

All doorways include a step-joint threshold and a drip cap over the top of the jamb to prevent water from entering the shelter.

**Earthquake-Resistant.** Andrew shelters, with the proper foundation and four tie-down locations, offer protection from damage caused by earthquakes. Andrew shelters meet the requirements of the Seismic Zone 4 classification, the most stringent structural standard specified for buildings located in areas subject to frequent and major seismic activity.

### Foundations

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

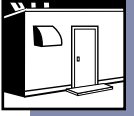
### Structural Openings

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.

### Basic Shelter Sizes

The basic shelter is 10 feet, 4 inches in height and is available in the following widths and lengths:

Widths	x	Lengths
6	x	8 ft
8	x	10, 12, 14, 16, 18, 20, 22, 24, and 26 ft
10	x	12, 14, 16, 18, 20, 22, 24, 26, and 28 ft
11-1/2	x	12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, and 36 ft



### *Architectural Considerations*

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

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

- Uniform Building Code (UBC)
- 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.

Andrew is a recognized, certified shelter manufacturer and meets or exceeds the toughest state certification standards. To facilitate state approval of specific installations,



Andrew submits shelter design drawings that are 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 Andrew 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.



## Architectural Options



### *Shelter Aesthetics*

**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 doors are available for Andrew concrete shelters.

### *Interior Options*

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

**Insulation with Paneling.** Shelter insulation reduces heating and air conditioning operating costs. Two standard levels of insulation are available. Each consists of foam 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-inch mopboard at floor. The standard, unfinished shelter has an R value of 2.

**Floor Tile.** Andrew 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.



### *The Andrew Electrical System*

Andrew shelters have an electrical system that is specifically tailored to your requirements. Andrew 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 Andrew, 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*





## Grounding/Lightning Protection Systems



Grounding Systems

Andrew 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 Andrew engineering staff can provide such systems with a variety of options to increase lightning protection and electromagnetic interference attenuation.



Surge Arrestors

The interior-mounted surge arrester 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.

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## HVAC Systems



Exerior Wall Units

Andrew 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 shelter's 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.

## Cable Ladder and Wireway Safety/Security Options



The cable ladder and wireway offer flexibility and maximum labor efficiency for field-wired circuits. The Andrew 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. The wireway features hinged side covers that provide the convenience of lay-in installation of conductors throughout the run.

The security and safety options available for Andrew 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.



Cable Ladder



66 Punch Block

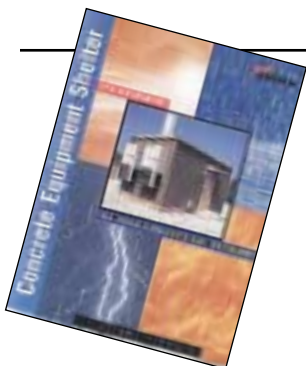


Smoke Alarm



### *Your 10-year guarantee from Andrew*

All Andrew shelters include this 10-year guarantee: We will repair or replace your shelter at the option of Andrew Corporation at no cost to you if its structural integrity fails when used within the specified loads and conditions. For complete details on the Andrew Corporation Ten-Year Limited Concrete Shelter Warranty, contact the Shelter Product Line at (770) 251-8777 and request Bulletin 1545. Andrew shelters for international applications may carry a different warranty.



### *For More Information*

Our "Concrete Equipment Shelter" planner, Bulletin 1520E, provides all the information you need to design a shelter.