SECTION 08 34 00

CUSTOM SINGLE PANEL HYDRAULIC OR ELECTRICALLY ACTUATED DOORS

Display hidden notes to specifier. (Don't know how? [Click Here](https://www.arcat.com/sd/display_hidden_notes.shtml))

*Copyright 2023 - 2025 ARCAT, Inc. - All rights reserved*

\*\* NOTE TO SPECIFIER \*\* HydAway Hydraulic Walls; hydraulic or electrically actuated   
This section is based on the products of HydAway Hydraulic Walls, which is located at:305 4th St., Suite BBrookings, SD 57006Tel: 844-933-1091Email: [request info (Sales@hydawaywalls.com)](https://arcat.com/rfi?action=email&company=HydAway%252BHydraulic%252BWalls&message=RE%253A%2520Spec%2520Question%2520(08340hhw)%253A%2520&coid=53904&spec=08340hhw&rep=&fax=)  
Web: <https://hydawaywalls.com>   
  
 [ [Click Here](https://arcat.com/company/hydaway-hydraulic-walls-53904) ] for additional information.  
  
My wife Patti and I have grown a sterling business reputation, thanks to our lifetime commitment to innovation, quality, and customer service. My welding shop started at Lake Benton, Minnesota in 1988, and we introduced the world's first production hydraulic door line in 1992.  
  
Our patented HydAway door and wall products have their hydraulic and electric components fully concealed when closed. These designs are state-of-the-art ADA compliant access solutions for residential and commercial applications.  
  
We realize that it isn't possible to provide personalized manufacturing, delivery, installation, and support for an entire continent from a single manufacturing site. We have built solid relationships with professional HydAway fabricators who share our customer-centered ideals. Instead of only one production facility, we have manufacturing and service locations across North America.  
  
Our business model is unique in the industry. Only HydAway offers single source accountability since every project stage is done locally. Our professional wall and door design capabilities are part of every new or retrofit HydAway project we're involved in.

1. GENERAL
   1. SECTION INCLUDES

\*\* NOTE TO SPECIFIER \*\* Delete items below not required for project.

* + 1. Custom designed single-panel hydraulic doors.
    2. Custom designed single-panel electrically actuated doors.
  1. RELATED SECTIONS

\*\* NOTE TO SPECIFIER \*\* Delete any sections below not relevant to this project; add others as required.

* + 1. Section 05 50 00 - Metal Fabrications. Door opening jamb and head members.
    2. Section 06 10 00 - Rough Carpentry. Door opening jamb and head members.
    3. Section 07 20 00 - Thermal Protection.
    4. Section 083116 - Access Panels and Frames. Access doors.
    5. Section 08 70 00 - Hardware.
    6. Section 09 70 00 - Wall Finishes.
    7. Section 09 91 23 - Interior Painting. Field painting.
    8. Division 16 - Electrical wiring and conduit, fuses, disconnect switches, connection of operator to power supply, installation of control station and wiring, and connection to alarm system.
  1. REFERENCES

\*\* NOTE TO SPECIFIER \*\* Delete references from the list below that are not actually required by the text of the edited section.

* + 1. ASTM International (ASTM):
       1. ASTM A36 - Standard Specification for Carbon Structural Steel.
       2. ASTM A500 - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
       3. ASTM E283/E283M - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
       4. ASTM E330/E330M - Standard Test Method for Structural
       5. Performance of Exterior Windows, Door, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.
       6. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference.
    2. American Society of Civil Engineers (ASCE):
       1. ASCE 7 - Minimum Design Loads for Buildings and Other Structures.
    3. American Welding Society (AWS).
    4. Hydraulics Institute (HI).
    5. International Building Code (IBC).
    6. Intertek - Independent Testing Agency
       1. Test Report No.: R9063.01-120-32 RD
          1. ASTM E283/E283M
          2. ASTM E330/E330M
          3. ASTM E331
    7. National Electric Code (NEC),
    8. National Fire Protection Association (NFPA).
  1. SUBMITTALS
     1. Submit under provisions of Section 01 30 00 - Administrative Requirements.
     2. Product Data:
        1. Manufacturer's data sheets on each product to be used.
        2. Preparation instructions and recommendations.
        3. Storage and handling requirements and recommendations.
        4. Typical installation methods.
     3. Shop Drawings: Include details of materials, construction, and finish. Include relationship with adjacent construction.
     4. Delegated-Design: For systems indicated by a Registered Professional Engineer, Certified and Licensed in the state or municipality the project is located.
        1. Details of fabrication of components.
        2. Signed and sealed design calculations for systems indicated used to determine load carrying capacities.
        3. Analysis Data: Signed and sealed.
        4. Sizing Methods and Calculations: Signed and sealed.
  2. QUALITY ASSURANCE
     1. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with a minimum five years documented experience.
     2. Installer Qualifications: Company specializing in performing Work of this section with minimum two years documented experience with projects of similar scope and complexity.
     3. Source Limitations: Provide each type of product from a single manufacturing source to ensure uniformity.
  3. DELEGATED DESIGN
     1. Engage a qualified professional engineer, as defined in Section 01 40 00 - Quality Requirements.
        1. Must be licensed in State or Municipality the project is located.
        2. Comply with performance requirements and design criteria.
  4. DELIVERY, STORAGE, AND HANDLING
     1. Store and handle in strict compliance with manufacturer's written instructions and recommendations.
     2. Protect from damage due to weather, excessive temperature, and construction operations.
  5. PROJECT CONDITIONS
     1. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.
  6. WARRANTY
     1. Manufacturer's standard limited warranty including seven (7) year warranty on materials and workmanship of the door structure and three (3) year warranty on electrical and hydraulic components.

1. PRODUCTS
   1. MANUFACTURERS
      1. Acceptable Manufacturer: HydAway Hydraulic Walls, which is located at:305 4th St., Suite BBrookings, SD 57006Tel: 844-933-1091Email: [request info (Sales@hydawaywalls.com)](https://arcat.com/rfi?action=email&company=HydAway%252BHydraulic%252BWalls&message=RE%253A%2520Spec%2520Question%2520(08340hhw)%253A%2520&coid=53904&spec=08340hhw&rep=&fax=);Web: <https://hydawaywalls.com>

\*\* NOTE TO SPECIFIER \*\* Delete one of the following two paragraphs; coordinate with requirements of Division 1 section on product options and substitutions.

* + 1. Substitutions: Not permitted.
    2. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.
  1. PERFORMANCE AND DESIGN REQUIREMENTS

\*\* NOTE TO SPECIFIER \*\* Wind load and Dead load are dependent upon location-specific geographic features, design wind speeds, risk category, and cladding and insulation weights.

* + 1. The Custom hydraulic door design is to comply with relevant IBC, NEC, and NFPA standards and relevant local codes governed by authorities having jurisdiction at the Project location. Where standards and local codes differ, the stricter is to apply.
    2. Typical Door Reaction Design Parameters:
       1. Wind Load:
          1. Wind Speed: Equal to \_\_\_\_ mph (\_\_\_\_kph).
          2. Wind Exposure: B.
          3. Wind Exposure: C.
          4. Wind Exposure: D.
          5. Risk Category: I.
          6. Risk Category: II.
          7. Risk Category: III.
          8. Risk Category: IV.
       2. Door Final Clear Opening Size: \_\_\_ ft (\_\_\_ mm) wide by \_\_\_ ft (\_\_\_ mm) tall.
       3. Door Manufacturer to provide specific door reaction design parameters including all anticipated cladding and insulation upon award of contract.
    3. Intertek - Independent Testing Agency Test Report No.: R9063.01-120-32 RD
       1. Static Pressure Air Infiltration at 1.57 psf: Passed. 0.10 cfm per sq ft.
       2. Static Pressure Air Infiltration at 6.24 psf: N/A. 0.21 cfm per sq ft.
       3. Static Pressure Water Resistance at 8 psf Fixed Operable Frames: N/A.
       4. Uniform Load Deflection: Passed.
  1. CUSTOM SINGLE PANEL DOORS
     1. Basis of Design: HydAway Hydraulic Door as designed and furnished by a licensed HydAway manufacturing location.
        1. Construction of Panel and Frame Sections:
           1. Framing:

Structural Steel Tubing: ASTM A500 minimum.

Structural Steel Flats, Bars, and Angles: ASTM A36 minimum.

Hinge Pins: ASTM 1144 Stress Proof or AISI 4140 Heat Treated.

* + - * 1. Frames: Structural steel tubing and other structural steel shapes.

Design to same loading requirements for live, dead and wind loads as the surrounding construction.

Maximum Spacing:

Between Vertical Members: 96 inches (2438 mm).

Between Horizontal Members: 96 inches (2438 mm).

* + - * 1. Panel Frame: Factory-welded at all joints and connections, with smooth welds minimum 1/4 inch (6 mm) thick.
        2. Frame and Panel System: Swinging door leaf panel mounted to manufactured door frame.

Door Leaf Panel: Not to be mounted directly to building header.

* + - * 1. Cane Bolts: On larger width doors, cane bolts may be added to inside of bottom door tube near door center adding strength at the door tube location.

If Severe or Abnormal Weather is Anticipated: Cane bolts are to engage by lowering bolt into a hole in the floor slab. This will aid in preventing building or door damage.

Normal Weather Conditions: Cane bolt may be left in the raised disengaged position.

Never operate door when cane bolts are in the lower engaged position.

* + - 1. Hinges: Silent, greaseless, efficient, with zero maintenance.
         1. Permanent Bronze Bushings: Teflon impregnated providing a greaseless solution to hinge lubrication.
         2. Hinge Pin: Yield Strength: 100,000 psi (689475.7 kPa).
      2. Factory-Supplied Upper Weather Stripping: Shipped with frame and door panel for field-install.
      3. Factory-Supplied Lower Weather Stripping: Installed on door panel before installation.

\*\* NOTE TO SPECIFIER \*\* Delete hydraulic actuation option not required.

* + 1. Hydraulic Actuation: Custom Single Panel Doors operated by hydraulic cylinders mechanically fastened to swinging door leaf and manufacturer's door frame.
       1. Two Hydraulic Cylinders: Open and close hydraulic door. Designed to carry required loads during operation, open position, and closed position.
          1. Internal Stops: Installed to prevent over-extension of cylinders, restricting system from opening or closing beyond its limits.
          2. Equipped with restrictors to control oil flow on the down cycle.
       2. System to Lock Closed: Hydraulic cylinders to provide a minimum of 1,000 lbf of total closing force.
       3. Hidden Cylinder Design: Doors up to 30 feet wide and 12 feet tall may be constructed such that the hydraulic cylinders are completely hidden when the hydraulic door is in the closed position, visible in the open position.

\*\* NOTE TO SPECIFIER \*\* Hydraulic doors will be powered by one or more of the following options. While these are the most common operating systems for a HydAway door there may be special circumstances that require a different operating system. Please contact your HydAway installer if you have additional questions regarding your operating system. Delete options not required.

* + - 1. Hydraulic Power Unit:

\*\* NOTE TO SPECIFIER \*\* Delete power option not required.

* + - * 1. Power: 1 HP.

110 VAC Single-Phase: Requires 20 Amp breaker.

Momentary Toggle Style Switch:

Push in desired direction according to labels; raise or lower.

Switch requires constant pressure to operate.

When pressure on switch is released, pump operation stops causing door to stop and stay at door's present position.

* + - * 1. Power: 3 HP.

230 VAC Single-Phase: Requires 30 Amp breaker.

Momentary Toggle Style Switch:

Push in desired direction according to labels; raise or lower.

Switch requires constant pressure to operate.

When pressure on switch is released, pump operation stops causing door to stop and stay at door's present position.

* + - * 1. Electric motor and pump are combined into one self-contained unit located adjacent to the door.

Fastened to Framing: Four, 1/4 inch (6 mm) lags.

* + - * 1. The Owner is responsible for providing electrical power connections for the pump unit.
        2. Electrical power installation is to meet federal, state, and local codes.
        3. Pre-wired and factory tested. Final hook-up by others.
        4. Controls: Wired for constant-hold operation to raise or lower the door.

Controls Height: 72 inches (1829 mm) or higher from finished floor.

* + - * 1. Hydraulic Oil: ISO 32 or ISO 22.
      1. Alternative Hydraulics: Allow door operation when electrical pump has lost power.
         1. Two Male Pioneer Style Hydraulic Connections: Pump side, adjacent to pump.
         2. Hydraulic Oil in Pump Reservoir: Must be compatible with equipment to operate door.
         3. Parker Couplers: Allow hook up to hydraulics under pressure.

\*\* NOTE TO SPECIFIER \*\* Delete electric actuation if not required.

* + 1. Electric Actuation: Custom Single Panel Doors operated by electric actuators mechanically fastened to swinging door leaf and manufacturer's door frame.
       1. Basis of Design: EasyE-60 by Bansbach Easylift of North America, Inc.

\*\* NOTE TO SPECIFIER \*\* Delete stroke length options not required.

* + - * 1. Stroke Length: 15-3/4 inches (400 mm) for Gear Ratio E.
        2. Stroke Length: 15-3/4 inches (400 mm) for Gear Ratio F.
        3. Stroke Length: 19-3/4 inches (500 mm) for Gear Ration E.
        4. Voltage: 24 Vdc
        5. Axial backlash: +/- (0.5 mm).
        6. General Length Tolerance: +/- (1 mm).
        7. IP66 rated for harsh environments.
        8. UL / EN60.601. Harsh Environment.
        9. Molex Mini-Fit Jr. 6 pin
        10. Operating Temperature Range: (-20 to 70 degrees C).
        11. Storage Temperature Range: (-40 to 70 degrees C).
        12. Cable: 1 m, 2x 0.65 sq mm (AWG19).
        13. Diameter: (4.8 mm)
        14. Finish: Powder coated steel. Color: Black.
        15. Finish: Stainless steel.

\*\* NOTE TO SPECIFIER \*\* Delete gear ratio option not required.

* + - * 1. Gear Ratio: E.

Maximum Load: 966.6 lbs (4300 N).

Speed: 28.3 inches per min (12 mm per sec) at maximum load.

* + - * 1. Gear Ratio: F.

Maximum Load: 1483.7 lbs (6600 N).

Speed: 18.8 inches per min (8 mm per sec) at maximum load.

* + 1. Finishes:
       1. System Frames and Panels: Powder coat finish.
       2. Exterior Field Finish: By others. Door Manufacturer is to approve finishing and application.
       3. Interior Field Finish: By others. Door Manufacturer is to approve finishing and application.

\*\* NOTE TO SPECIFIER \*\* The available accessories are optional. Delete options not required or delete the paragraph in its entirety.

* + 1. Available Accessories and Options:
       1. Walk-door framing.
       2. Window framing.
       3. Inside-facing bottom door tube.
       4. Secondary Bottom Door Seal: Foam core seal for climate-controlled facilities.
       5. Backup Operating System:
          1. Self-contained power unit mounted to a two wheeled cart.
          2. Requires 12 VDC deep cycle battery; group 27 recommended.
          3. Door Operation Pendant:

Push desired button on pendant to raise and lower door.

Pendant buttons require constant pressure to operate.

When button pressure is released, the pump stops causing the door to stop moving and stay at its present position.

* + - 1. Radio Remote Control System:
         1. Remote operates power unit motor by energizing internally wired relays.
         2. Two wireless transmitters standard.

Additional transmitters available.

* + - * 1. Shared power between power unit and remote system.
        2. Push desired button to raise and lower door.
        3. Operation of remote transmitter requires constant button pressure to operate.
        4. Small lights on remote will flash when sending a signal to receiver.
        5. When button pressure is released pump operation stops causing door to stop moving and stay at the door's present position.
        6. Remote control requires batteries.

Change out batteries and inspect remote yearly to prevent damage to remote.

* + - * 1. Should the remote not energize the motor verify that the motor has electrical power or replace the remote control batteries.
        2. If the batteries show signs of corrosion, change them out immediately to prevent damage to the transmitter.
      1. Cellular Phone Remote Control System:
         1. System functions on standalone Wi-Fi network isolated from Internet using a cellular phone app:

Plastic electrical enclosure mounted adjacent to pump:

Dimensions: 14 inches (356 mm) tall by 11 inches (279 mm) wide by 8 inches (203 mm) deep.

Electrical connections to power unit routed through flexible liquid tight conduit.

Shared power between power unit and remote system

Wi-Fi access point mounted to exterior of building adjacent to door on power unit side minimum 10 feet (3.048 m) above finished floor.

Ethernet cable routed from electrical enclosure to Wi-Fi access point.

* + - * 1. Wi-Fi signal operates power unit motor by energizing internally wired relays.
        2. Push desired button on cellular phone application to raise and lower door.
        3. Operation requires constant button pressure to operate.
        4. When button pressure is released pump operation stops causing door to stop moving and stay at door's present position.
      1. Powder Coat Paint Finish: Frame and door leaf panel.

\*\* NOTE TO SPECIFIER \*\* Check with the Manufacturer on lead times and availability for the following two finishes Delete options not required.

* + - 1. Battery Back-Up System: 24 VDC.
      2. Key Operation Switch:
         1. A key is required to open and close the door.
    1. Operation: Constant-contact momentary toggle switch or key switch operates hydraulic cylinders mounted to door. Hydraulic system extends and retracts hydraulic cylinders to open and close door.
    2. Operation: Constant-contact momentary toggle switch or key switch operates electric actuators mounted to door. The switch extends and retracts the electric actuators to open and close door.

\*\* NOTE TO SPECIFIER \*\* Sensors mount to the top corner or corners of the moving door leaf. Sensors move with the door and detect obstructions across entire door path. They use Laser Time-of-Flight technology and are rated for outdoor use. Sensors stop the door from continuing in the direction of a detected obstruction, but allows door travel in the reverse direction of the obstruction. Sensors interrupt current to the solenoid coils that shift the hydraulic directional control valve to raise or lower the door in order to stop the door. They do not stop the motor on the power unit, they stop oil flow to the cylinders in the direction of travel of the obstruction. Delete paragraph if not required or delete sensors not required.

* + 1. Collision Laser Sensors and Scanners:
       1. Basis of Design: LZR-Flatscan S as manufactured by BEA. A compact, single-curtain, laser-based sensor designed for use on automatic industrial doors, gates, and barriers. Ensures accurate object detection across 18 x 18 ft field. Capable of sensing people and vehicles, in indoor and outdoor environments.
          1. High resolution coverage with 400 spots and configurable object size detection according to the given application.
          2. Laser Sensor: CLASS 1 certified device according to IEC 60825-1.

Visible Laser Beams: CLASS 2, and automatically time out during normal operation.

* + - * 1. Compliance: IEC 60825-1, IEC 60950-1, IEC 61000-6-2, IEC 61000-6-3, and IEC 60529.
        2. Technology / Performance:

Technology: Laser sensor, time-of-flight measurement.

Detection Mode: Presence

Detection Range: 18 x 18 ft; 13-1/8 ft at 5 percent reflectivity

Opening Angle: 90 degrees.

Tilt Angles: &#177;3 degrees with accessory mounting bracket.

Emission Characteristics:

Output Pulse Power 25 W, Class 1: 905 nm wavelength.

Output CW power 0.95 mW, Cless 2 visible spot: 635 nm wavelength.

Angular Resolution: 0.23 degrees. 400 spots within 90 degrees.

LEDs: One Tri-Colored LED. Detection and output status.

Universal remote for controlling the sensor.

* + - * 1. Electrical:

Supply Voltage: 12 to 24 VDC. &#177;15 percent.

If only VAC power is available:

A 12 V transformer paired with a rectifier must be used.

01cvvnDo not use a 24V transformer and rectifier.

Power Consumption: 2.3 W or less. Peak Current: 1 A.

Response Time: 50 ms or less, plus output activation delay.

Output:

One opto (galvanic isolation - polarity free).

Switching Voltage: 42 VAC/VDC maximum.

Switching Current: 100 mA maximum.

One relay (free of potential contact).

Contact Voltage: 42 VAC/VDC maximum.

Contact Current: 1 A (resistive) maximum.

Switching Power: 30 W DC / 60 VAC maximum.

* + - * 1. Physical:

Housing: Metal enclosure.

Dimensions (LxHxD) 5 x 3-1/2 x 2 inches; without bracket.

Color: Black

Protection per IEC 60529: IP66.

Temperature Range When Powered: -22 to 140 degrees F (-30 to 60 degrees C)

Humidity: 0 to 95 percent non-condensing

Vibrations: Less than 2 G

* + - * 1. Required for installation.

Mounting bracket.

Universal remote control.

\*\* NOTE TO SPECIFIER \*\* BEA's LZR-S600 represents the largest detection field offered in our laser time-of-flight product portfolio. This sensor is ideal for perimeter security protection, industrial automation and large industrial door/gate applications that require a wide field of detection.

The LZR-s600 is housed in a NEMA 4 rated enclosure and can be installed in outdoor, industrial and other harsh environments. Three visible LED spots provide accurate reference points when adjusting the tilt angle. Parameter adjustments can be made with a BEA remote control. Delete if not required.

* + 1. Basis of Design: LZR-S600 as manufactured by BEA. A laser-based time-of-flight sensor. Provides four laser-based curtains offering a three dimensional presence detection zone.
       1. Reference Standards Compliance:
          1. RoHS: 2006 / 95 / EC: LVD; 2002 / 95 / EC.
          2. EM: 2004 / 108 / EC.
          3. EN 60529:2001; IEC 60825-1:2007 Laser Class 1 and 3R.
          4. EN 60950-1:2005.
          5. EN 61000-6-2:2005 EMC - Industrial level.
          6. EN 61000-6-3:2006 EMC - Commercial level.
       2. Technology: Laser sensor, time-of-flight measurement.
       3. Detection Mode: Motion / Presence (EN 12453 Typ. E)
       4. Detection Range: 82 x 82 ft maximum.
       5. Detection Plane: 4 curtains per sensor, curtain spread dependent on mounting height.
       6. Angular Resolution: 0.3516 degrees.
       7. Emission Characteristics:
          1. IR Laser:

Wavelength 905 nm; maximum output pulse power 75 W.

* + - * 1. Red Visible Laser:

Wavelength 650 nm; maximum output CW power 3 mW.

* + - 1. Supply Voltage: 10 to .35 VDC at sensor terminal.
      2. Peak Current at Power-On: 1.8 A; Max. 80 ms at 35 V.
      3. Power Consumption: 5 W or less.
      4. Response Time: Typical is 20 ms; maximum is 80 ms, plus output activation delay.
      5. Output: 2 electronic relays; galvanic isolated and polarity free.
         1. Max. Switching Voltage: 35 VDC / 24 VAC.
         2. Max. Switching Current: 80 mA, resistive.
      6. LED-Signal:
         1. One Blue LED: Status; Power-On.
         2. One Orange LED: Status; Error.
         3. Two Bi-colored LEDs: Detection/Output Status

Green: No detection. Red: Detection.

* + - 1. Housing Dimensions (WxHxD): 5 x 2-3/4 x 3.66 inches.
         1. Mounting Bracket adds 0.55 inches to Width
      2. Material: PC / ASA. Color: Black
      3. Mounting Bracket:
         1. Rotation Angle: +/- 5 degrees; lockable.
         2. Tilt Angle: +/- 3 degrees
      4. Protection per IEC 60529: IP65. NEMA 4.
      5. Temperature Range:
         1. When Powered: -22 to 140 degrees F (-30 to 60 degrees C).
         2. When Unpowered: 14 to 140 degrees F ( degrees C).
      6. Humidity: 0 to 95 percent non-condensing
      7. Vibrations: Less than 2 G
      8. Pollution of Front Screens: Maximum of 30 percent homogeneous.
      9. Required for installation.
         1. Mounting bracket.
         2. Universal remote control.

\*\* NOTE TO SPECIFIER \*\* The sensor is designed for the detection of people and vehicles, in both indoor and outdoor environments. Its detection accuracy makes this sensor ideal for high performance industrial doors, vehicle flow safety, perimeter protection and variety of applications. The LZR-I30 is housed in an NEMA 4 rated enclosure and can be installed in outdoor, industrial and other harsh environments. Three visible LED spots provide accurate reference points when adjusting the tilt angle. Parameter adjustments can be made with a BEA universal remote control.

* + 1. Basis of Design: LZR-I30 as manufactured by BEA. A laser-based time-of-flight sensor. Provides four laser-based curtains offering a three dimensional presence detection zone.
       1. Reference Standards Compliance:
          1. LVD: 2006 / 95 / EC.
          2. EMC: 2002 / 95 / EC: RoHS; 2004 / 108 / EC.
          3. MD: 2006 / 42 / EC.
          4. EN 12453:2000 chapter 5.1.1.6, chapter 5.5.1 Safety device E.
          5. EN 12978:2009.
          6. EN ISO 13849-1:2008 CAT2, Pl "d"; EN 60529:2001.
          7. IEC 60825-1:2007.
          8. EN 60950-1:2005.
          9. EN 61000-6-2:2005.
          10. EN 61000-6-3:2006.
          11. IEC 61496-1:2009.
          12. EN61496-3: 2008 ESPE Type 2.
          13. EN 62061:2005 SIL 2.
       2. Technology: Laser sensor, time-of-flight measurement.
       3. Detection Mode: Motion / Presence (EN 12453 Typ. E).
       4. Detection Range: 30 x 30 ft maximum.
       5. Remission Factor: Greater than 2 percent.
       6. Emission Characteristics:
          1. IR Laser:

Wavelength 905 nm; output power 0.10mW, Class 1.

* + - * 1. Red Visible Laser:

Wavelength 635 nm; output power 0.95 mW, Class 2.

* + - 1. Supply Voltage: 10 to 35 VDC at sensor terminal; to be operated from SELV compatible power supplies only.
      2. Peak Current at Power-On: 1.8 A; Max. 80 ms at 35 V.
      3. Power Consumption: 5 W or less.
      4. Response Time: Typical is 20 ms; maximum is 80 ms, plus output activation delay.
      5. Output: 2 electronic relays; galvanic isolated and polarity free.
         1. Max. Switching Voltage: 35 VDC / 24 VAC.
         2. Max. Switching Current: 80 mA, resistive.
      6. LED-Signal:
         1. One Blue LED: Status; Power-On.
         2. One Orange LED: Status; Error.
         3. Two Bi-colored LEDs: Detection/Output Status

Green: No detection. Red: Detection.

* + - 1. Housing Dimensions (WxHxD): 5 x 2-3/4 x 3-2/3 inches.
         1. Mounting Bracket adds 11/20 inches to Width
      2. Cable Length: 30 ft.
      3. Material: PC / ASA. Color: Black
      4. Mounting Bracket:
         1. Rotation Angle: +/- 5 degrees; lockable.
         2. Tilt Angle: +/- 3 degrees
      5. Protection: NEMA 4.
      6. Temperature Range:
         1. When Powered: -22 to 140 degrees F (-30 to 60 degrees C).
         2. When Unpowered: 14 to 140 degrees F ( degrees C).
      7. Humidity: 0 to 95 percent non-condensing
      8. Vibrations: Less than 2 G
      9. Pollution of Front Screens: Maximum of 30 percent homogeneous.
      10. Required for installation.
          1. Mounting bracket.
          2. Universal remote control.
      11. Accessories:
          1. Mounting Bracket Extension: 6 to 12 inches
          2. Mounting Bracket Extension: 20 to 26 inches
          3. Power Supply: UL/ULC Listed, 12 to 24 Vdc
          4. Power Supply: 100 to 240 Vac, 24 Vdc power supply.
          5. Power Supply: Plug-In, 242 Vdc 2A
          6. Harness: 30 ft, 8 conductor.

1. EXECUTION
   1. EXAMINATION
      1. Do not begin installation until substrates have been properly constructed and prepared.
      2. If substrate preparation is the responsibility of another installer, notify Architect in writing of unsatisfactory preparation before proceeding.
      3. Building rough opening jambs and header to be plumb and level within 1/4 inch (13 mm) from end to end.
      4. Foundation below door to be level and flat within 1/2 inch (13 mm) variation across door opening.
   2. PREPARATION
      1. Clean surfaces thoroughly prior to installation.
      2. No materials of any kind may protrude from building surface between manufacturer door frame and building structure (jambs, header).
   3. INSTALLATION
      1. Install in accordance with manufacturer's instructions, approved submittals, and in proper relationship with adjacent construction.
         1. Installation of custom designed hydraulic door completed by licensed door manufacturer personnel only.
         2. Wood Rough Opening: Door frame attached to building using wood lag screws.
         3. Concrete Rough Opening: Door frame attached to building jamb and header using concrete wedge, screw, or epoxy anchors.
         4. Steel Rough Opening: Door frame stitch welded to building jamb and header.
   4. FIELD QUALITY CONTROL
      1. Field Inspection: Coordinate field inspection in accordance with appropriate sections in Division 01.

\*\* NOTE TO SPECIFIER \*\* Include if manufacturer provides field quality control with onsite personnel for instruction or supervision of product installation, application, erection, or construction. Delete if not required.

* + 1. Manufacturer's Services: Coordinate manufacturer's services in accordance with appropriate sections in Division 01.
  1. CLEANING AND PROTECTION
     1. Clean products in accordance with the manufacturer's recommendations.
     2. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION