MICHIGAN

DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

FOR

**WINDOWS AND DOORS**

BRG:JST 1 of 14 APPR:JAT:DBP:10-26-22

**a. Description.** This work consists of replacing the windows and doors on the bridge operator house and machinery rooms in accordance with the standard specifications, as specified herein, and as shown on the plans. This work includes standard solid-metal steel doors, standard solid metal steel frames, hot-rolled steel frames, and steel frame doors with lites.

Coordinate the work in this special provision with the work in the following special provisions:

● Special Provision for Glass and Glazing

● Special Provision for Joint Sealants

● Special Provision for Bascule Bridge Operator House Rehabilitation

● Special Provision for Door Hardware

1. Submittals.

A. Product Data. Include construction details, material descriptions, core descriptions, label compliance, fire-resistance rating, and finishes for each type of steel door and frame specified.

B. Shop Drawings. In addition to requirements below, provide a schedule of standard steel doors and frames using same reference numbers for details and openings as those on drawings:

(1) Elevations of each door design.

(2) Details of doors, including vertical and horizontal edge details.

(3) Frame details for each frame type, including dimensioned profiles.

(4) Details and locations of reinforcement and preparations for hardware.

(5) Details of each different wall opening condition.

(6) Details of anchorages, accessories, joints, and connections.

(7) Details of glazing frames and stops showing glazing.

C. Qualification Data. For installer.

2. Quality Assurance.

A. Installer Qualifications. An employer of workers trained and approved by manufacturer.

B. Source Limitations. Obtain standard steel doors and frames through one source from a single manufacturer.

C. Preinstallation Conference. Conduct conference at project site to comply with requirements of this special provision and the project plans.

D. Manufacturers are required to have not less than 10 years of experience in the fabrication of heavy intermediate steel doors and be a member of the Steel Window Institute (SWI).

E. Allowable tolerances. Size dimensions +1/16 inch.

(1) Coastal finishing process must meet or exceed the following applicable designations:

(a) Acid Pickling. *SSCP-SP8*

(b) Hot Dip Galvanize. *ASTM A123/A123M*

(c) Adhesion. *ASTM D3359*, no less

(d) Hardness. *ASTM D3363* (pencil), H minimum

(e) Salt Spray. *ASTM B117*, passes 3000 hours

(f) Humidity. *ASTM D2247*, 3000 hours, few #8 blisters

(g) Impact Resistance (3 millimeter (mm)). *ASTM D2794*, no loss.

(h) Color Retention. *ASTM D2244*, 5 year less than or equal to 5 delta E.

(i) Chalk Resistance. *ASTM D4214*, #8 rating.

(j) Gloss Retention. *ASTM D523*, greater than or equal to 30 percent retention.

(2) Upon request the door manufacturer must provide a test report from a qualified independent U.S. testing laboratory regularly engaged in testing doors to verify that products conform to test requirements as specified.

3. Delivery, Storage, and Handling.

A. Deliver doors and frames palletized, wrapped, or crated to provide protection during transit and project-site storage. Do not use non-vented plastic. Provide additional protection to prevent damage to finish of factory-finished doors and frames.

B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.

C. Store doors and frames under cover at Project site. Place units in a vertical position with heads up, spaced by blocking, on minimum 4-inch-high wood blocking. Avoid using non-vented plastic or canvas shelters that could create a humidity chamber. If wrappers on doors become wet, remove cartons immediately. Provide minimum 1/4-inch space between each stacked door to permit air circulation.

4. Project Conditions. Verify openings by field measurements before fabrication and indicate measurements on shop drawings.

A. Established Dimensions. Where field measurements cannot be made without delaying the work, establish opening dimensions and proceed with fabricating standard steel frames without field measurements. Coordinate wall construction to ensure that actual opening dimensions correspond to established dimensions.

5. Coordination. Coordinate installation of anchorages for standard steel frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver these items to project site in time for installation.

**b. Materials.**

1. Manufacturers.

A. Available Manufacturers. Subject to compliance with requirements, manufacturers offering products that may be incorporated into the work include, but are not limited to, the following:

(1) Amweld Building Products, LLC.

(2) Ceco Door Products; an ASSA ABLOY Group Company.

(3) CURRIES Company; an ASSA ABLOY Group Company.

(4) Mesker Door Inc.

(5) Pioneer Industries, Inc.

(6) Republic Builders Products Company.

(7) Hope’s Windows, Inc.

B. Contractor must submit any product not specified a minimum 10 days before the installation to the Engineer in order for product to be considered for approval. The Engineer will notify Contractor, in writing, of decision to accept or reject request.

2. Materials.

A. Cold-Rolled Steel Sheet. *ASTM A1008/A1008M*, Commercial Steel (CS), Type B; suitable for exposed applications.

B. Hot-Rolled Steel Sheet. *ASTM A1011/A1011M*, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.

C. Metallic-Coated Steel Sheet. *ASTM A653/A653M*, Commercial Steel (CS), Type B; with minimum A40 zinc-iron-alloy (galvannealed) coating designation.

D. Supports and Anchors. After fabricating, galvanize units to be built into exterior walls in accordance with *ASTM A153/A153M*, Class B.

E. Inserts, Bolts, and Fasteners. Provide items to be built into exterior walls, hot-dip galvanized in accordance with *ASTM A153/A153M*.

F. Powder-Actuated Fasteners in Concrete. Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching standard steel door frames of type indicated.

G. Grout. Comply with *ASTM C476*, 3,000 psi with a slump of 4 inches for standard steel door frames built into concrete or masonry, as measured in accordance with *ASTM C143/C143M*.

H. Glazing. Comply with requirements of the Special Provision for Glass and Glazing.

I. Bituminous Coating. Cold-applied asphalt mastic, SSPC-Paint 12, compounded for 15-mil dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

3. Standard Steel Doors.

A. General. Provide doors of design indicated, not less than thickness indicated; fabricated with smooth surfaces, without visible joints or seams on exposed faces, unless otherwise indicated. Comply with *ANSI A250.8*.

(1) Design. Flush panel.

(2) Core Construction. Manufacturer's standard kraft-paper honeycomb, polystyrene, polyurethane, mineral-board, or vertical steel-stiffener core that produces doors.

(a) Thermal-Rated (Insulated) Exterior Doors. Where indicated, provide doors fabricated with thermal-resistance value (R-value) of not less than 4.0  F by height (h) by square feet (sq)(ft)/British thermal units (Btu) when tested in accordance with *ASTM C1363*.

(3) Top and Bottom Edges. Closed with flush or inverted 0.042-inch-thick end closures or channels of same material as face sheets.

(4) Tolerances. Comply with *Steel Door Institute*, *SDI 117*, "Manufacturing Tolerances for Standard Steel Doors and Frames."

B. Exterior Doors. Doors are required to be manufactured from 12 gauge hot-rolled galvanized steel.

(1) Ensure heavy intermediate triple weather-stripped doors are manufactured from solid hot-rolled steel profiles with thermal isolator.

(a) Profiles made from steel with flanges rolled integrally at the mill.

(b) Perimeter frames and ventilator profiles must have glazing rebates providing an unobstructed glazing surface of at least 5/8 inch.

(c) Ensure glazing rebate surfaces are perpendicular to the web or stem of the profile. Applied glazing rebate extensions and rebate surfaces that are tapered are prohibited.

(d) Combined weight of frame and door composite profiles are required to be a minimum of 4.10 pounds per lineal foot. Frame composite profile alone must not weigh less than 2.10 pounds per lineal foot.

(e) Ensure all steel profiles are a minimum of 1¾ inches in depth.

(f) The solid hot-rolled steel door profile must have integral groove located at the exterior bedding contact for the reception of weatherstripping.

(g) Ensure kick panels are of composite construction.

(h) Ensure lockbox and lock stile are of composite construction.

(i) The isolated composite frame is required to provide two additional bedding contacts of weatherstripping to complete triple weatherstripping.

(2) Ensure thermal isolators are composite profile with a minimum wall thickness of 0.080 inches.

(3) Ensure glazing beads are composite profile with a minimum wall thickness of 0.080 inches.

(4) Ensure weatherstripping is extruded vinyl, ethylene propylene diene terpolymer (EPDM) closed cell sponge, flexible silicone or polyethylene clad urethane foam.

(5) Ensure all screws furnished by manufacturer for hardware, trim, covers, anchoring, weather bars, water dams, screens, etc. are non-ferrous brass or stainless steel. Ensure glazing bead retainer screws are plated steel.

(6) Coastal finishing.

C. Interior Doors. Face sheets fabricated from cold-rolled steel sheet, unless otherwise indicated to comply with exterior door requirements. Provide doors complying with requirements indicated below by referencing *ANSI A250.8* for level and model and *ANSI A250.4* for physical endurance level:

(1) Level 2 and Physical Performance Level B (Heavy Duty), Model 2 (Seamless), 1¾ inches thick.

(2) 18 gauge, fixed blade louver size as indicated on the drawings.

D. Hardware Reinforcement. Fabricate reinforcement plates from same material as door face sheets to comply with the following minimum sizes:

(1) Hinges. Minimum 0.123 inch thick by 1½ inches wide by 6 inches longer than hinge, secured by not less than 6 spot welds.

(2) Pivots. Minimum 0.167 inch thick by 1½ inches wide by 6 inches longer than hinge, secured by not less than 6 spot welds.

(3) Lock Face. Closers, and Concealed Holders. Minimum 0.067 inch thick.

(4) All Other Surface-Mounted Hardware. Minimum 0.067 inch thick.

E. Fabricate concealed stiffeners and hardware reinforcement from either cold- or hot-rolled steel sheet.

4. Standard Steel Frames.

A. General. Comply with ANSI A250.8 and with details indicated for type and profile.

B. Exterior Frames. Fabricated from 12 gauge hot-rolled galvanized steel.

(1) Ensure perimeter frame corners are coped and fully welded for maximum strength and weather tightness with face welds dressed smooth.

(2) Ensure head and jamb door stops are an integral portion of the frame with a 5/8 inch high rebate.

(3) Ensure all steel profiles are a minimum of 1¾ inches in depth.

(4) Ensure exterior frames are manufactured from solid hot-rolled steel profiles with thermal isolator.

C. Interior Frames. Fabricated from cold-rolled steel sheet, unless otherwise indicated to comply with exterior frame requirements.

(1) Fabricate frames with mitered or coped and welded face corners and seamless face joints.

(2) Frames for Level 2 Steel Doors. 0.053-inch-thick steel sheet.

D. Hardware Reinforcement. Fabricate reinforcement plates from same material as frames to comply with the following minimum sizes:

(1) Hinges. Minimum 0.123 inch thick by 1½ inches wide by 6 inches longer than hinge, secured by not less than 6 spot welds.

(2) Pivots. Minimum 0.167 inch thick by 1½ inches wide by 6 inches longer than hinge, secured by not less than 6 spot welds.

(3) Lock Face, Flush Bolts, Closers, and Concealed Holders. Minimum 0.067 inch thick.

(4) All Other Surface-Mounted Hardware. Minimum 0.067 inch thick.

E. Supports and Anchors. Fabricated from electrolytic zinc-coated or metallic-coated steel sheet.

F. Jamb Anchors.

(1) Masonry Type. Adjustable strap-and-stirrup or T-shaped anchors to suit frame size, not less than 0.042 inch thick, with corrugated or perforated straps not less than 2 inches wide by 10 inches long; or wire anchors not less than 0.177 inch thick.

(2) Stud-Wall Type. Designed to engage stud, welded to back of frames; not less than 0.042 inch thick.

(3) Postinstalled Expansion Type for In-Place Concrete or Masonry. Minimum 3/8-inch-diameter bolts with expansion shields or inserts. Provide pipe spacer from frame to wall, with throat reinforcement plate, welded to frame at each anchor location.

G. Floor Anchors. Formed from same material as frames, not less than 0.042 inch thick, and as follows:

(1) Monolithic Concrete Slabs. Clip-type anchors, with two holes to receive fasteners.

(2) Separate Topping Concrete Slabs. Adjustable-type anchors with extension clips, allowing not less than 2-inch height adjustment. Terminate bottom of frames at finish floor surface.

F. Fabricate concealed stiffeners and hardware reinforcement from either cold- or hot-rolled steel sheet.

5. Stops and Moldings.

A. Moldings for Glazed Lites in Doors. Minimum 0.032 inch thick, fabricated from same material as door face sheet in which they are installed.

B. Fixed Frame Moldings. Formed integral with standard steel frames, minimum 5/8 inch high, unless otherwise indicated.

C. Loose Stops for Glazed Lites in Frames. Minimum 0.032 inch thick, fabricated from same material as frames in which they are installed.

6. Fabrication.

A. General. Fabricate standard steel doors and frames to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for thickness of metal. Where practical, fit and assemble units in manufacturer's plant. To ensure proper assembly at project site, clearly identify work that cannot be permanently factory assembled before shipment.

(1) Exterior Hot-Rolled Steel Doors and Frames.

(a) Ensure corners of frame and doors are mitered or coped then solidly welded. Ensure exposed and contact surfaces are finished smooth flush with the adjacent surfaces. Ensure all exterior rail bar and muntin joints are face welded and ground smooth.

(b) Thermal Isolators. Ensure corners are miter cut and gusseted into frame form. Bond thermal isolator frames to solid hot-rolled steel door frame.

(c) Weatherstrip. All doors must receive continuous triple weatherstripping that must also be applied to the interior and exterior contact surfaces of the frame and door profiles.

B. Standard Steel Doors.

(1) Exterior Doors. Provide weep-hole openings in bottom of exterior doors to permit moisture to escape. Seal joints in top edges of doors against water penetration.

(2) Glazed Lites. Factory cut openings in doors.

C. Standard Steel Frames. Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.

(1) Welded Frames. Weld flush face joints continuously; grind, fill, dress, and make smooth, flush, and invisible.

(2) Sidelight and Transom Bar Frames. Provide closed tubular members with no visible face seams or joints; fabricated from same material as door frame. Fasten members at crossings and to jambs by butt welding.

(3) Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners, unless otherwise indicated.

(4) Plaster Guards. Weld guards to frame at back of hardware mortises in frames installed in concrete or masonry.

(5) Where installed in masonry, leave vertical mullions in frames open at top for grouting.

(6) Floor Anchors. Weld anchors to bottom of jambs and mullions with at least four spot welds per anchor.

(7) Jamb Anchors. Provide number and spacing of anchors as follows:

(a) Masonry Type. Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches on center (o.c.) and as follows:

(i) Two anchors per jamb up to 60 inches in height.

(ii) Three anchors per jamb from 60 to 90 inches in height.

(iii) Four anchors per jamb from 90 to 120 inches in height.

(iv) Four anchors per jamb plus 1 additional anchor per jamb for each 24 inches or fraction thereof more than 120 inches in height.

(b) Stud-Wall Type. Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:

(c) Three anchors per jamb up to 60 inches in height.

(d) Four anchors per jamb from 60 to 90 inches in height.

(e) Five anchors per jamb from 90 to 96 inches in height.

(f) Five anchors per jamb plus 1 additional anchor per jamb for each 24 inches or fraction there of more than 96 inches in height.

(g) Two anchors per head for frames more than 42 inches wide and mounted in metal-stud partitions.

(h) Compression Type. Not less than two anchors in each jamb.

(i) Post-installed Expansion Type. Locate anchors not more than 6 inches from top and bottom of frame. Space anchors not more than 26 inches o.c.

(8) Door Silencers. Except on weather-stripped doors, drill stops to receive door silencers as follows. Provide plastic plugs to keep holes clear during construction.

(a) Single-Door Frames. Drill stop in strike jamb to receive three door silencers.

(b) Double-Door Frames. Drill stop in head jamb to receive two door silencers.

D. Hardware Preparation. Factory prepare standard steel doors and frames to receive templated mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping, in accordance with the Door Hardware Schedule and templates furnished as specified in the Special Provision for Door Hardware.

(1) Reinforce doors and frames to receive non-templated mortised and surface-mounted door hardware.

(2) Comply with applicable requirements in *ANSI A250.6* and *ANSI/DHI A115* Series specifications for door and frame preparation for hardware. Locate hardware as indicated on shop drawings or, if not indicated, in accordance with *ANSI A250.8*.

E. Stops and Moldings. Provide stops and moldings around glazed lites where indicated. Form corners of stops and moldings with butted or mitered hairline joints.

(1) Single Glazed Lites. Provide fixed stops and moldings welded on secure side of door or frame.

(2) Multiple Glazed Lites. Provide fixed and removable stops and moldings such that each glazed lite is capable of being removed independently.

(3) Provide fixed frame moldings on outside of exterior and on secure side of interior doors and frames.

(4) Provide loose stops and moldings on inside of doors and frames.

(5) Coordinate rabbet width between fixed and removable stops with type of glazing and type of installation indicated.

7. Steel Finishes.

A. General. Comply with *National Association of Architectural Metal Manufacturers (NAAMM's) "Metal Finishes Manual for Architectural and Metal Products"* for recommendations for applying and designating finishes. Finish standard steel door and frames after assembly.

B. Metallic-Coated Steel Surface Preparation. Clean surfaces with nonpetroleum solvent so surfaces are free of oil and other contaminants. After cleaning, apply a conversion coating suited to the organic coating to be applied over it. Clean welds, mechanical connections, and abraded areas, and apply galvanizing repair paint specified below to comply with *ASTM A780/A780M*.

(1) Galvanizing Repair Paint. High-zinc-dust-content paint for regalvanizing welds in steel, complying with *SSPC-Paint 20*.

C. Steel Surface Preparation. Clean surfaces to comply with *SSPC-SP 1*, *"Solvent Cleaning"*; remove dirt, oil, grease, or other contaminants that could impair paint bond. Remove mill scale and rust, if present, from uncoated steel; comply with *SSPC-SP 3*, *"Power Tool Cleaning,"* or *SSPC-SP 6/NACE No. 3*, *"Commercial Blast Cleaning."*

D. Coastal Finishing. Manufactured coastal grade finish on all exterior doors and frames. Overall process is required to provide full documented compliance with the following criteria (as applicable):

(1) Acid Pickling. *SSCP-SP8*.

(2) Hot Dip Galvanize. *ASTM A123/A123M*.

(3) Adhesion. *ASTM D3359*, no loss.

(4) Hardness. *ASTM D3363* (pencil), H minimum

(5) Salt Spray. *ASTM B117*, passes 3000 hours.

(6) Humidity. *ASTM D2247*, 3000 hours, few #8 blisters.

(7) Salt Spay (Fog). *ASTM B117*.

(8) Pull Off Strength of Coating. *ASTM D4541*.

**c. Construction.**

1. Examination.

A. Examine substrates, areas, and conditions, with installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of standard steel doors and frames.

(1) Examine roughing-in for embedded and built-in anchors to verify actual locations of standard steel frame connections before frame installation.

(2) Proceed with installation only after unsatisfactory conditions have been corrected.

2. Preparation.

A. Remove welded-in shipping spreaders installed at factory.

B. Prior to installation and with installation spreaders in place, adjust and securely brace standard steel door frames for squareness, alignment, twist, and plumb to the following tolerances:

(1) Squareness. Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.

(2) Alignment. Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.

(3) Twist. Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.

(4) Plumbness. Plus or minus 1/16 inch, measured at jambs on a perpendicular line from head to floor.

C. Drill and tap doors and frames to receive non-templated mortised and surface-mounted door hardware.

3. Installation.

A. General. Provide doors and frames of sizes, thicknesses, and designs indicated. Install standard steel doors and frames plumb, rigid, properly aligned, and securely fastened in place; comply with drawings and manufacturer's written instructions.

B. Standard Steel Frames. Install standard steel frames for doors, sidelights, transoms, borrowed lights and other openings, of size and profile indicated. Comply with ANSI A250.11.

(1) Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces, leaving surfaces smooth and undamaged.

(a) Where frames are fabricated in sections due to shipping or handling limitations, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces.

(b) Install frames with removable glazing stops located on secure side of opening.

(c) Install door silencers in frames before grouting.

(d) Remove temporary braces necessary for installation only after frames have been properly set and secured.

(e) Check plumb, squareness, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.

(f) Apply bituminous coating to backs of frames that are filled with mortar, and grout.

(2) Floor Anchors. Provide floor anchors for each jamb and mullion that extends to floor and secure with post-installed expansion anchors.

(a) Floor anchors may be set with powder-actuated fasteners instead of post-installed expansion anchors if so indicated and approved on shop drawings.

(3) Metal-Stud Partitions. Solidly pack mineral-fiber insulation behind frames.

(4) Masonry Walls. Coordinate installation of frames to allow for solidly filling space between frames and masonry with mortar.

(5) In-Place Concrete or Masonry Construction. Secure frames in place with post-installed expansion anchors. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.

(6) In-Place Gypsum Board Partitions. Secure frames in place with post-installed expansion anchors through floor anchors at each jamb. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.

(7) Ceiling Struts. Extend struts vertically from top of frame at each jamb to supporting construction above unless frame is anchored to masonry or to other structural support at each jamb. Bend top of struts to provide flush contact for securing to supporting construction above. Provide adjustable wedged or bolted anchorage to frame jamb members.

(8) Installation Tolerances. Adjust standard steel door frames for squareness, alignment, twist, and plumb to the following tolerances:

(a) Squareness. Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.

(b) Alignment. Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.

(c) Twist. Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.

(d) Plumbness. Plus or minus 1/16 inch, measured at jambs at floor.

C. Standard Steel Doors. Fit doors accurately in frames, within clearances specified below. Shim, as necessary.

(1) Non-Fire-Rated Standard Steel Doors:

(a) Jambs and Head. 1/8 inch plus or minus 1/16 inch.

(b) Between Edges of Pairs of Doors. 1/8 inch plus or minus 1/16 inch.

(c) Between Bottom of Door and Top of Threshold. Maximum 3/8 inch.

(d) Between Bottom of Door and Top of Finish Floor (No Threshold). Maximum 3/4 inch.

D. Glazing. Comply with installation requirements in the Special Provision for Glass and Glazing and with standard steel door and frame manufacturer's written instructions. Secure stops with countersunk flat- or oval-head machine screws spaced uniformly not more than 9 inches o.c., and not more than 2 inches o.c. from each corner.

4. Adjusting and Cleaning.

A. Final Adjustments. Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including standard steel doors or frames that are warped, bowed, or otherwise unacceptable to the Engineer.

B. Clean grout and other bonding material off standard steel doors and frames immediately after installation.

C. Prime-Coat Touchup. Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying primer.

**d. Measurement and Payment.** The completed work, as described, will be measured as a lump sum and paid for at the contract price using the following pay item:

**Pay Item Pay Unit**

Windows and Doors (Structure Identification) Lump Sum

**Windows and Doors (Structure Identification)** includes the removal of existing doors, door frames, windows, and window frames. Fabricating, furnishing and erecting door frames, doors, door hardware, window frames, windows, window glazing, door sealant, and window sealant.