ADDENDUM #4

INVITATION TO BID
Town of East Windsor
Community Center Alterations and Additions
28 Abbe Road
East Windsor, Connecticut

1. Regarding Addendum #3, see below subcontractor RFIs:
    a. Note indicates to eliminate the sprinkler system associated with the basement, however this includes the sprinkler main. Is the sprinkler system being eliminated from the entire project? **No. it will be relocated along the east side of the ground floor. TBD**
    b. If the sprinkler system is not being eliminated from the project, please advise on location of sprinkler main. Also, FP3 note indicates "Wet & Dry System to be designed and sized by contractor", where, if any, is the dry system? **There is no dry system.**
    c. With elimination of basement, advise on any size changes to the piers and footings.
2. Please clarify response to Addendum Walk Through RFI 2 regarding impact glazing.
3. Addendum #2 identifies the fire alarm panel as a Notifier. Does the town have an outside vendor/contractor who monitors and/or maintains the system? If so, who is the vendor/contractor?
4. Are the existing tile floors mud set or thin set? **Unknown, will need field verification.**
5. FP2 indicates connecting new toilet underground to existing. Advise on location and depth of existing line so that extents of slab removal can be determined. **Also please include slab repair detail. Will need field verification.**
6. What is the makeup of the existing exterior walls? **It varies.**
7. Regarding installation of 047305 Simulated Stone Veneer, are metal panels to be removed to accommodate installation of the stone veneer or will something be installed over the metal panels to accommodate installation. Please provide details. **Metal panels shall be removed prior to installation.**
8. AD1 indicates to reference MEPFP drawings for additional demolition notes. MEPFP drawings only make indications of connecting new to existing with no information on extents of existing that will need to be removed. Please provide Demo MEPFP drawings. **There are no specific mep demo drawings.**
9. Table of Contents list 013530, 088720, & 092123 however, these do not appear in the specifications. Please provide. **There is no Section 013530, see attached spec sections for 088720 & 099122.**
10. Drawings make reference to multiple Alternates however there is no specification or place on the bid form for alternates. Please advise if the work labeled as alternates is to be included or excluded from bid. **There are no alternates.**
11. Concrete slab on metal deck, drawings call for light weight and specs call for normal weight. Please clarify. **Basement has been deleted.**
12. Vapor barrier under concrete slabs specs call for 10 mil drawings call for 15 mil. Please clarify. **Use 10 mil vapor barrier**
13. Foundation waterproofing, drawings call liquid waterproofing and specs call for 60 mil sheet waterproofing. Please clarify. **Basement has been deleted.**
14. We cannot find the hardware specifications, please provide. **Pending**

15. Site Utilities stop 30' onto the property there is no "Site Utility Plan". Please provide. **There is no site utility plan available.**
16. Dwg A-6 East Elevation indicates to tie new rain leaders into existing underground system, there is no system shown on the civil drawing. Please Clarify. **There is an existing underground system in place and will be relocated for new addition.**
17. Structural dwg S-4 states see civil drawings regarding footing drains, no footing drains are indicated on the civil drawings. Please advise. **Basement has been deleted.**

END OF ADDENDUM #4

SECTION 08 71 00

DOOR HARDWARE

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Door hardware for doors specified in "Hardware Sets" and required by actual conditions. Include screws, bolts, expansion shields, electrified door hardware, and other devices for proper application of hardware.

B. Products supplied but not installed under this Section:
   1. Electrified hardware will be furnished under this Section but installed by the security contractor.
   2. Final replacement of cylinder cores shall be installed by Owner.

1.2 RELATED DIVISIONS

A. Division 08 - Openings.

B. Division 13 - Special Construction.

C. Division 26 - Electrical.

D. Division 28 - Fire Detection and Alarm.

1.3 REFERENCES

A. American National Standards Institute/Builders Hardware Manufacturers Association (ANSI):
   1. ANSI/BHMA A156.1 Butts & Hinges (2006).
   2. ANSI/BHMA A156.2 Bored & Preassembled Locks & Latches (2011).
   3. ANSI/BHMA A156.3 Exit Devices (2008).
   4. ANSI/BHMA A156.4 Door Controls - Closers (2008).
   5. ANSI/BHMA A156.5 Cylinders and Input Devices for Locks (2010).
   6. ANSI/BHMA A156.7 Template Hinge Dimensions (2009).
   7. ANSI/BHMA A156.8 Door Controls - Overhead Stops and Holders (2010).
   8. ANSI/BHMA A156.12 Interconnected Locks & Latches (2005).
   9. ANSI/BHMA A156.13 Mortise Locks & Latches (2005).
   10. ANSI/BHMA A156.15 Closer Holder Release Devices (2011).
   11. ANSI/BHMA A156.18 Materials & Finishes (2006).
   12. ANSI/BHMA A156.19 Power Assist & Low Energy Power Operated Doors (2007).
   13. ANSI/BHMA A156.21 Thresholds (2009).
   14. ANSI/BHMA A156.22 Door Gasketing Systems (2012).
   15. ANSI/BHMA A156.28 Keying Systems (2007).
   16. ANSI/BHMA A156.31 Electric Strikes (2007).
   17. ANSI/BHMA A156.115 Hardware Preparation in Steel Doors and Steel Frames (2006).
   18. ANSI/BHMA A156.115W Hardware Preparation in Wood Doors with Wood or Steel Frames (2006).
   19. ICC/ANSI A117.1 Standards for Accessible and Usable Buildings and Facilities 2003.

20. Americans with Disabilities Act Accessibility Guidelines (ADAAG).

B. (DHI):
1. DHI Publication - Keying Systems and Nomenclature (1989).
2. DHI Publication - Abbreviations and Symbols.
3. DHI Publication - Installation Guide for Doors and Hardware.
4. DHI Publication - Sequence and Format of Hardware Schedule (1996).

1.4 SUBMITTALS

A. Submit in accordance with Conditions of the Contract and provisions of Section 01 30 00 - Administrative Requirements.

B. Shop Drawings: Hardware schedule shall be organized in vertical format illustrated in DHI Publications Sequence and Formatting for the Hardware Schedule. Include abbreviations and symbols page according to DHI Publications Abbreviations and Symbols. Complete nomenclature of items required for each door opening as indicated.
1. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of hardware.
2. Architectural Hardware Consultant (AHC), as certified by DHI, who shall affix seal attesting to completeness and correctness, shall review hardware schedule prior to submittal.

C. Submit manufacturer's catalog sheet on design, grade and function of items listed in hardware schedule. Identify specific hardware item per sheet, provide index, and cover sheet.

D. Coordination: Distribute door hardware templates to related divisions within fourteen days of receiving approved door hardware submittals.

E. Electrified Hardware: Provide electrical information to include voltage, and amperage requirements for electrified door hardware and description of operation.
1. Description of operation for each electrified opening to include description of component functions including location, sequence of operation and interface with other building control systems.
2. Wiring Diagrams: Detail wiring for power, signal, and control system and differentiate between manufacturers installed and field installed wiring. Include the following:
   a. System schematic.
   b. Point to point wiring diagram.
   c. Riser diagram.
   d. Elevation of each door.
3. Detail interface between electrified door hardware and fire alarm, access control, security, and building control systems.

F. Upon door hardware submittal approval, provide for each electrified opening, three copies of point to point diagrams.

G. Maintenance Tool and Instructions: Furnish a complete set of specialized tools and maintenance instructions for Owner's continued adjustment, maintenance, removal and replacement of door hardware.

H. Closeout Submittals: Submit to Owner in a three-ring binder or CD if requested.
1. Warranties.
2. Maintenance and operating manual including list of maintenance tools.
3. Maintenance service agreement.

4. Record documents.
5. Copy of approved hardware schedule.
6. Copy of approved keying schedule with bitting list.
7. Door hardware supplier name, phone number and fax number.

1.5 QUALITY ASSURANCE

A. Electrified door hardware shall be Listed and Labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authority having jurisdiction.

B. Hardware supplier shall employ an Architectural Hardware Consultant (AHC) as certified by DHI and a member of the seal program who shall be available at reasonable times during course of work for Project hardware consultation.
   1. Electrified Door Hardware Supplier Qualifications: Experienced door hardware supplier who has completed projects with electrified door hardware similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

C. Door hardware shall conform to ICC/ANSI A117.1. Handles, Pulls, Latches, Locks and operating devices: Shape that is easy to grasp with one hand and does not require tight grasping, tight pinching, or twisting of the wrist.

D. Door hardware shall be certified to ANSI/BHMA standards as noted, participate and be listed in BHMA Certified Products Directory.

E. Within fourteen days of receipt of approved door hardware submittals contact Owner with representative from hardware supplier to establish a keying conference. Verify keyway, visual key identification, number of master keys and keys per lock. Provide keying system per Owner's instructions.

F. Installer Qualifications: Specialized in performing installation of this Section and shall have five years minimum documented experience.

G. Hardware listed in Par.: Hardware Schedule is intended to establish a type and grade.

1.6 DELIVERY, STORAGE AND HANDLING

A. Provide a clean, dry, and secure room for hardware delivered to Project but not yet installed.

B. Furnish hardware with each unit marked and numbered in accordance with the approved finish hardware schedule. Include door and item number for each type of hardware.

C. Pack each item complete with necessary parts and fasteners in manufacturer's original packaging.

D. Deliver permanent key, cores, access control credentials, software, and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to Owner shall be established at "Keying Conference."

E. Waste Management and Disposal: Separate waste materials for reuse or recycling in accordance with Division 1.

1.7 PROJECT CONDITIONS

A. 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.

1.8 WARRANTY

A. General Warranty: Owner may have under provisions of the Contract Documents and shall be in addition to and run concurrent with other warranties made by Contractor under requirements of the Contract documents.

B. Special Warranty: Warranties specified in this article shall not deprive the Owner of other rights. Contractor, hardware supplier, and hardware installer shall be responsible for servicing hardware and keying related problems.
   1. Ten years for manual door closers.
   2. Five years for mortise, auxiliary and bored locks.
   3. Five years for exit devices.
   4. Two years for electromechanical door hardware.

C. Products judged defective during the warranty period shall be replaced or repaired in accordance with the manufacturer's warranty at no cost to Owner. There is no warranty against defects due to improper installation, abuse, and failure to exercise normal maintenance.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Hager Companies, which is located at: 139 Victor St.; St. Louis, MO 63104; Toll Free Tel: 800-325-9995; Tel: 314-772-4400; Fax: 800-782-0149; Email: request info (bwilkins@hagerco.com); Web: http://www.hagerco.com

B. Substitutions: Permitted.

C. Requests for substitutions will be considered in accordance with the provisions of Section 01 60 00 - Product Requirements.

2.2 HINGES

A. Hinges, including electric hinges and self-closing hinges when scheduled, shall be of one manufacturer as listed for continuity of design and consideration of warranty and shall be certified and listed by the following:
   1. Butts and Hinges: ANSI/BHMA A156.1
   2. Template Hinge Dimensions: ANSI/BHMA A156.7
   3. Self-Closing Hinges: ANSI/BHMA 156.17

B. Butt Hinges:
   1. Hinge weight and size unless otherwise indicated in hardware sets:
      a. Doors up to 36 inches (914 mm) wide and up to 1-3/4 inches (44.5 mm) thick provide hinges with a minimum thickness of .134 inch (3.4 mm) and a minimum of 4-1/2 inches (114 mm) in height.
      b. Doors from 36 inches (914 mm) wide up to 42 inches (1067 mm) wide and up to 1-3/4 inches (44.5 mm) thick provide hinges with a minimum thickness of .145 inch (3.7 mm) and a minimum of 4-1/2 inches (114 mm) in height.
      c. Width of hinge is to be minimum required to clear surrounding trim.
   2. Base material unless otherwise indicated in hardware sets:
      a. Exterior Doors: 304 Stainless Steel, Brass or Bronze material.

b. Interior Doors: Steel material.
c. Stainless Steel ball bearing hinges shall have stainless steel ball bearings. Steel ball bearings are unacceptable.

3. Quantity of hinges per door unless otherwise stated in hardware sets:
   a. Doors 60 inches (1524 mm) up to 90 inches (2286 mm) in height provide 3 hinges.
4. Hinge design and options unless otherwise indicated in hardware sets:
   a. Hinges are to be of a square corner five-knuckle design, flat button tips and have ball bearings unless otherwise indicated in hardware sets.
   b. Out-swinging exterior and out-swinging access-controlled doors shall have non-removable pins (NRP) to prevent removal of pin while door is in closed position.
   c. When full width of opening is required, use hinges that are designed to swing door completely from opening when door is opened to 95 degrees.
   d. Electric Through Wire (ETW) to have appropriate number of wires to transfer power through door frame to door for proper connection of finish hardware and certified to handle an amperage rating of 3.5AMPS/continuous duty with 16.0AMPS/intermittent duty.
   e. Provide mortar boxes for frames that require any electrically modified hinges if not an integral part of frame.
   f. When shims are necessary to correct frame or door irregularities, provide metal shims only.
5. Acceptable Manufacturer:
   a. Hager Companies BB1279/BB1191 standard weight, BB1168/BB1199 heavy weight.

2.3 FLUSH BOLTS AND COORDINATORS

A. Flushbolts shall be of one manufacturer as listed for continuity of design and consideration of warranty. Manufacturer to be listed for Auxiliary Hardware: ANSI/BHMA A156.16

B. Labeled openings: Provide automatic or constant latching flush bolts per hardware schedule for inactive leaf of pairs of doors. Provide dust proof strikes for bottom bolt.

C. Non-Labeled openings: Provide two flush bolts for inactive leaf of pairs of doors per hardware schedule. Top bolt shall not be more than 78 inches (1981 mm) centerline from floor. Provide dust proof strike for bottom bolt.

D. Acceptable Manufacturer:
   1. Hager Companies 282D manual flush bolt, 292D/295W/296W auto flush bolt, 280X dust proof strike.

E. Coordinators: Provide for labeled pairs of doors with automatic flush bolts or with vertical rod exit device with a mortise-locking device per hardware schedule. Provide filler piece to extend full width of stop on frame. Provide mounting brackets for closers and special preparation for latches where applicable.

F. Acceptable Manufacturer:
   1. Hager Companies 297 coordinator, 297M bracket, 297N bracket for stops greater than 2-1/4 inches (57 mm).

2.4 FLUSHBOLTS FOR ALUMINUM DOORS

A. Provide two-point flushbolt for inactive leaf of pairs of doors with locked and

unlocked indicator. Match cylinder height of lock on active leaf with indictor. Provide stainless steel top and bottom bolts.

B. Acceptable Manufacturer:
   1. Adams Rite: MS1880.

2.5 ELECTRIC STRIKES

A. Provide for use with type of locks shown on hardware schedule. Manufacturer shall meet the following:
   1. ANSI/BHMA A156.31 Electric Strikes and Frame Mounted Actuators Grade 1.
   2. UL Tested 1500 lb (675 Kg) static strength.
   3. UL listed for Fire Doors and Frames where applicable.
   4. UL 1034 Burglary Resistance.
   5. UL10C.3H fire rated, 4 feet by 8 feet (1219 mm by 2438 mm) door.

B. Material and Design:
   1. To accept up to 3/4 inch (19 mm) latch bolt and 1 inch (25 mm) deadbolt.
   2. Field reversible, Fail Safe of Fail Secure
   3. Dual voltage 12/24 VDC.
   4. Tamper resistant, stainless steel corrosion resistance parts, and cast body and keeper.

C. Options:
   1. Latch Bolt Monitoring (LBM) Signals the door is closed and latched or unlatched and open.
   2. Door Secure Monitor (DSM) Door secure and unlocked monitoring.
   3. Deadbolt Monitoring (DBM) Signals deadbolt projected or retracted.
   4. Plug in buzzer (BUZZ) Indicates Fail Secure strike is energized and unlocked.
   5. Rectifier (RECT) Converts AC to DC

D. Acceptable Manufacturer:
   1. Hager Companies 2930 series.

2.6 LOCKS AND LATCHES (GRADE 1 CYLINDRICAL)

A. Locks and latches shall be of one manufacturer as listed for continuity of design and consideration of warranty. Product to be certified and listed by following:
   1. ANSI/BHMA A156.2 Series 4000 Certified to Grade 1.
   2. ANSI/BHMA A250.13 Certified for a minimum design load of 1150lbf (100psf) for single out swinging doors measuring 36 inches (914 mm) in width and 84 inches (2134 mm) in height and a minimum design load of 1150lbf (70psf) for out swinging single doors measuring 48 inches (1219 mm) in width and 84 inches (2134 mm) in height.
   3. UL/cUL Labeled and listed for functions up to 3 hours for single doors up to 48 inches (1219 mm) in width and up to 96 inches (2438 mm) in height.
   4. UL10C/UBC 7-2 Positive Pressure Rated.
   5. ICC/ANSI A117.1.

B. Lock and latch function numbers and descriptions of manufacturer's series as listed in hardware sets. Material and Design:
   1. Lock and Latch chassis to be Zinc dichromate for corrosion resistance.
   2. Keyed functions to be of a freewheeling design to help resists against vandalism.
   3. Non-handed, field reversible.
   4. Thru-bolt mounting with no exposed screws.
   5. Levers shall be Zinc cast and plated to match finish designation in hardware

sets.

6. Roses shall be of solid Brass or Stainless Steel material.

C. Latch and Strike:
   1. Stainless Steel latch bolt with minimum of 1/2 inch (13 mm) throw and deadlocking for keyed and exterior functions. Provide 3/4-inch (19 mm) latchbolt for pairs of fire rated doors where required by door manufacture. Standard backset to be 2-3/4 inches (70 mm) and faceplate shall be adjustable to accommodate a square edge door or a standard 1/8 inch (3 mm) beveled edge door.
   2. Strike is to fit a standard ANSI A115 prep measuring 1-1/4 inches (32 mm) by 4-7/8 inches (124 mm) with proper lip length to protect surrounding trim.
   3. Provide knurled levers on entry side of doors that are potentially dangerous to visually impaired persons.

D. Acceptable Manufacturer:
   1. Hager Companies: 3400 Series.

2.7 DEADBOLTS (GRADE 1)

A. Deadbolts shall be of one manufacturer as listed for continuity of design and consideration of warranty. Manufacturer to be certified by the following:
   1. Auxiliary Locks: ANSI/BHMA A156.5 Grade 1.
   2. UL/cUL listed for functions up to 3 hours for "A" label.
   3. UL10C/UBC 7-2 Positive Pressure Rated.

B. Deadbolt function numbers and descriptions of manufacturer's series as listed in hardware sets. Material and Design:
   1. Latch bolt 1 inch (25 mm) throw, material brass with concealed harden steel roller to prevent sawing or cutting.
   2. Freewheeling collar design to help resists against vandalism.
   3. Non-handed, field reversible.

C. Acceptable Manufacturer:
   1. Hager Companies: 3100 Series.

2.8 EXIT DEVICES (GRADE 1)

A. Shall be touch pad type, finish to match balance of door hardware. Exit Devices shall be of one manufacturer as listed for continuity of design and consideration of warranty. Manufacturer to be certified and or listed by the following:
   1. BHMA Certified ANSI A156.3 Grade 1.
   2. UL10B Neutral Pressure Rated.
   3. UL 305Listed for Panic Hardware.

B. Material and Design:
   1. Touch pad shall extend a minimum of one half-door width. Freewheeling lever design shall match design of locks levers. Exit device to mount flush with door.
   2. Latchbolts: Rim device - 3/4-inch (19 mm) throw, Pullman type with automatic dead-latching, stainless steel. Surface vertical rod device - Top 1/2-inch (13 mm) throw, Pullman type with automatic dead-latching, stainless steel. Bottom 1/2 inch (13 mm) throw, Pullman type, held retracted during door swing, stainless steel.

3. Fasteners: Wood screws, machine screws and thru-bolts.

C. Lock and Latch Functions: Function numbers and descriptions of manufacturer's series and lever styles indicated in door hardware sets.

D. Acceptable Manufacturer: Hager Companies, which is located at: 139 Victor St.; St. Louis, MO 63104; Toll Free Tel: 800-325-9995; Tel: 314-772-4400; Fax: 800-782-0149; Email: request info (bwilkins@hagerco.com); Web: http://www.hagerco.com
1. Hager Companies: 4500/4600 Series.

2.9 CYLINDERS AND KEYING

A. Cylinders shall be of one manufacturer as listed for continuity of design and consideration of warranty.

B. Standards: Manufacturer shall meet the following:
1. Auxiliary Locks: ANSI/BHMA A156.5
2. DHI Handbook "Keying systems and nomenclature" (1989)

C. Cylinders:
1. Manufacturer's standard tumbler type, seven-pin IC core and seven-pin conventional core supported by the Hager H1 keyway.
2. Shall be furnished with cams/tailpieces as required for locking device that is being furnished for project.

D. Keying:
1. Copy of Owners approved keying schedule shall be submitted to Owner and Architect with documentation of which keying conference was held and Owners sign-off.
2. Provide a bitting list to Owner of combinations as established, and expand to twenty five percent for future use or as directed by Owner.
3. Key into Owner's existing keying system if applicable.
4. Keys to be shipped to Owner's representative, individually tag per keying conference.
5. Provide visual key control identification on keys.
6. Provide interchangeable cores with construction cores as required per hardware schedule.
7. Single seven-pin key shall operate both conventional cores and SFIC small format interchangeable cores.

E. Acceptable Manufacturer: Hager Companies, which is located at: 139 Victor St.; St. Louis, MO 63104; Toll Free Tel: 800-325-9995; Tel: 314-772-4400; Fax: 800-782-0149; Email: request info (bwilkins@hagerco.com); Web: http://www.hagerco.com
1. Hager Companies: 3900 Series H1 keyway.

2.10 PUSH/PULL PLATES AND BARS

A. Push and pull plates shall be of one manufacturer as listed for continuity of design and consideration of warranty. Manufacturer to be certified by the following:
1. Architectural Door Trim: ANSI/BHMA A156.6.
2. Americans with Disabilities Act Accessibility Guidelines (ADAAG).

B. Push plates: .050 inch (1.3 mm) thick, square corner and beveled edges with counter sunk screw holes. Width and height as stated in hardware sets.
1. Acceptable Manufacturer:

a. Hager Companies: 30S.

C. Pull plates: .050 inch (1.3 mm) thick, square corner and beveled edges. Width and height as stated in hardware sets, 3/4 inch (19 mm) diameter pull, with clearance of 2-1/2 inches (64 mm) from face of door.
1. Acceptable Manufacturer:
a. Hager Companies: H33J.

D. Push Pull Bar Sets: 1 inch (25 mm) round bar stock with 2-1/2 inches (64 mm) clearances from face of door. Offset to be 3 inches (76 mm), 90-degree standard. Center to center size should be door width less 1 stile width.
1. Acceptable Manufacturer:
a. Hager Companies: H160D.

2.11 CLOSERS (CAST IRON BODY GRADE 1)

A. Shall be product of one manufacturer. Unless otherwise indicated on hardware schedule, comply with manufacturer's recommendation for size of closer, depending on width of door, frequency of use, atmospheric pressure, ADAAG requirements, and fire rating. Manufacturer to be certified and or listed by the following:
1. BHMA Certified ANSI A156.4 Grade 1.
2. ADA Compliant ANSI A117.1.
3. UL/cUL Listed up to 3 hours.
4. UL10C Positive Pressure Rated.
5. UL10B Neutral Pressure Rated.

B. Material and Design:
1. Provide cast iron non-handed bodies with full plastic covers.
2. Closers shall have separate staked adjustable valve screws for latch speed, sweep speed, and backcheck.
3. Provide Tri-Pack arms and brackets for regular arm, top jamb, and parallel arm mounting.
4. One-piece seamless steel spring tube sealed in hydraulic fluid.
5. Double heat-treated steel tempered springs.
6. Precision-machined heat-treated steel piston.
7. Triple heat-treated steel spindle.
8. Full rack and pinion operation.

C. Mounting:
1. Out swing doors shall have surface parallel arm mount closers except where noted on hardware schedule.
2. In swing doors shall have surface regular arm mount closers except where noted on hardware schedule.
3. Provide brackets and shoe supports for aluminum doors and frames to mount fifth screw.
4. Furnish drop plates where top rail conditions on door do not allow for mounting of closer and where backside of closer is exposed through glass.

D. Size closers in compliance with requirements for accessibility (ADDAG). Comply with following maximum opening force requirements. Interior hinged openings: 5.0 lb (2.25 Kg) Fire rated and exterior openings shall have minimum opening force allowable by authority having jurisdiction.

E. Fasteners: Provide self-reaming and self-tapping wood and machine screws and sex nuts and bolts for each closer.

F. Acceptable Manufacturer: Hager Companies, which is located at: 139 Victor St.; St.

Louis, MO 63104; Toll Free Tel: 800-325-9995; Tel: 314-772-4400; Fax: 800-782-0149; Email: request info (bwilkins@hagerco.com); Web: http://www.hagerco.com

1. Hager Companies: 5100 Series.

2.12 CLOSERS (ALUMINUM BODY GRADE 1)

A. Shall be product of one manufacturer. Unless otherwise indicated on hardware schedule, comply with manufacturer's recommendations for size of closer, depending on width of door, frequency of use, atmospheric pressure, ADAAG requirements, and fire rating. Manufacturer to be certified by the following:
   1. BHMA Certified ANSI A156.4 Grade 1.
   2. ADA Complaint ANSI A117.1.
   3. UL/cUL Listed up to 3 hours.
   4. UL10C Positive Pressure Rated.
   5. UL10B Neutral Pressure Rated.

B. Material and Design:
   1. Provide aluminum non-handed bodies with full plastic covers.
   2. Closer shall have separate staked adjustable valve screws for latch speed, sweep speed, and backcheck.
   3. Provide Tri-Pack arms and brackets for regular arm, top jamb, and parallel arm mounting.
   4. Double heat-treated steel, tempered springs.
   5. Precision machined, heat-treated steel piston.
   6. Triple heat-treated steel spindle.
   7. Full rack and pinion operation.

C. Mounting:
   1. Out swing doors shall have surface parallel arm mount closers except where noted on hardware schedule.
   2. In swing doors shall have surface regular arm mount closers except where noted on hardware schedule.
   3. Provide brackets and shoe supports for aluminum doors and frames to mount fifth screw.
   4. Furnish drop plates where top rail conditions on door do not allow for mounting of closer and where backside of closer is exposed through glass.

D. Size closers in compliance with requirements for accessibility (ADDAG). Comply with following maximum opening force requirements. Interior hinged openings: 5.0 lb (2.25 Kg) Fire rated and exterior openings shall have minimum opening force allowable by authority having jurisdiction.

E. Fasteners: Provide self-drilling and tapping wood screws, machine screws and sex nuts and bolts for each closer.

F. Acceptable Manufacturer: Hager Companies, which is located at: 139 Victor St.; St. Louis, MO 63104; Toll Free Tel: 800-325-9995; Tel: 314-772-4400; Fax: 800-782-0149; Email: request info (bwilkins@hagerco.com); Web: http://www.hagerco.com
   1. Hager Companies: 5200/5300 Series.

2.13 STOPS AND HOLDERS

A. Wall Stops: Provide door stops wherever necessary to prevent door or hardware from striking an adjacent partition or obstruction. Provide wall stops when possible. Door stops and holders mounted in concrete floor or masonry walls shall have

stainless steel machine screws and lead expansion shields. Manufacturer shall meet requirements for Auxiliary Hardware: ANSI/BHMA A156.16.

B. Acceptable Manufacturer:
   1. Hager Companies 232W convex, 236W concave.

C. Overhead Stops and Holders: Provide overhead stop and holders for doors that open against equipment, casework sidelights and other objects that would make wall stops/holders and floor stops/holders inappropriate. Provide sex bolt attachments for mineral core wood door applications.

D. Standards: Manufacturer shall be certified by the following: Overhead Stops and Holders: ANSI/BHMA A156.8 Grade 1.

E. Acceptable Manufacturer:
   1. Hager 7000 SRF Series, heavy duty surface, 7000 CON Series heavy duty concealed.

2.14 DOOR GASKETING AND WEATHERSTRIP

A. Provide continuous weatherstrip gasketing on exterior doors gasketing where indicated on hardware schedule. Provide non-corrosive fasteners for exterior applications.
   1. Perimeter gasketing: Apply to head and jamb, forming seal between door and frame.
   2. Meeting stile gasketing: Fasten to meeting stiles, forming seal when doors are in closed position.
   3. Door bottoms: Apply to bottom of door, forming seal with threshold or floor when door is in closed position.
   4. Sound Gasketing: Cutting or notching for stop mounted hardware not permitted.
   5. Drip Guard: Apply to exterior face of frame header. Lip length to extend 4 inches (102 mm) beyond width of door.

B. Standards: Manufacturer shall meet requirements for:
   1. Door Gasketing and Edge Seal Systems: ANSI/BHMA A156.22.

C. Acceptable Manufacturer: Hager Companies, which is located at: 139 Victor St.; St. Louis, MO 63104; Toll Free Tel: 800-325-9995; Tel: 314-772-4400; Fax: 800-782-0149; Email: request info (bwilkins@hagerco.com); Web: http://www.hagerco.com
   1. Perimeter Gasketing: Hager Companies: 721S/720 x 724, adhesive applied, 881S stop applied.
   2. Meeting Stile Weather-strip: Hager Companies: 872SN.
   3. Door Bottom Sweeps: Hager Companies: 750S.

2.15 THRESHOLDS

A. Set thresholds for exterior and acoustical openings in full bed of sealant with lead expansion shields and stainless-steel machine screws complying with requirements specified in Division 7 Section "Joint Sealants". Notched in field to fit frame by hardware installer. Refer to Drawings for special details. Manufacturer to be certified by the following:
   1. Thresholds: ANSI/BHMA A156.21.
   2. Americans with Disabilities Act Accessibility Guidelines (ADAAG).

B. Acceptable Manufacturer:

1. Hager Companies: 413S/520S.

2.16 SILENCERS

A. Where smoke, light, or weather seal are not required, provide three silencers per single door frame, two per double door frame and four per Dutch door frame. Manufacturer shall meet requirements for: Auxiliary Hardware: ANSI/BHMA A156.16.

B. Acceptable Manufacturer:
1. Hager Companies: 307D for hollow metal frame, 308D for wood frame.

2.17 SIGNAGE

A. Shall be of one manufacturer as listed for continuity of design and consideration of warranty. Manufacturer shall meet requirements for: Signage: ANSI/BHMA A156.16. Grade 2 Braille Translation conforming to section 4.3 requirements.

B. Materials and Design: Provide 0.125 inch (3 mm) thick plastic. Size of sign to be 6 inches by 8 inches (152 mm by 203 mm) fastened with double-sided pressure sensitive tape.

C. Acceptable Manufacturer:
1. Hager Companies: 365M/W, 368U.

2.18 FINISHES

A. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if within range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within range of approved Samples.

B. Comply with base material and finish requirements indicated by ANSI/BHMA A156.18 designations in hardware schedule.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire-rated door assembly construction, wall and floor construction, and other conditions affecting performance.

B. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install hardware per manufacturer's instructions and in compliance with the following as applicable:
1. NFPA 80; NFPA 105; ICC/ANSI A117.1; ANSI/BHMA A156.115 Hardware Preparation in Steel Doors and Steel Frames; ANSI/BHMA A156.115W Hardware Preparation in Wood Doors with Wood or Steel Frames; DHI Publication - Installation Guide for Doors and Hardware; UL10C/UBC7-2; Local building code.
2. Approved shop drawings.

3. Approved finish hardware schedule.

B. Do not install surface mounted items until finishes have been completed on substrates involved. Set unit level, plumb and true to line location. Adjust and reinforce attachment substrate as necessary for proper installation and operation.

3.3 FIELD QUALITY CONTROL

A. Material supplier to schedule final walk through to inspect hardware installation ten business days before final acceptance of Owner. Material supplier shall provide a written report detailing discrepancies of each opening to General Contractor within seven calendar days of walk through.

3.4 ADJUSTMENT, CLEANING AND DEMONSTRATING

A. Adjustment: Adjust and check each opening to ensure proper operation of each item of finish hardware. Replace items that cannot be adjusted to operate freely and smoothly or as intended for application at no cost to Owner.

B. Cleaning: Clean adjacent surfaces soiled by hardware installation. Clean finished hardware per manufacturer's instructions after final adjustments has been made. Replace items that cannot be cleaned to manufacturer's level of finish quality at no cost to Owner.

C. Demonstration: Conduct a training class for building maintenance personnel demonstrating the adjustment, operation of mechanical and electrical hardware. Special tools for finished hardware to be turned over and explained usage at this meeting.

3.5 PROTECTION

A. Leave manufacturer's protective film intact and provide proper protection for all other finish hardware items that do not have protective material from the manufacture until Owner accepts Project as complete.

3.6 HARDWARE SET SCHEDULE

A. Leave manufacturer's protective film intact and provide proper protection for all other finish hardware items that do not have protective material from the manufacture until Owner accepts Project as complete.

3.7 PROTECTION

A. Guide: Door hardware items have been placed in sets which are intended to be a guide of design, grade, quality, function, operation, performance, exposure, and like characteristics of door hardware, and may not be complete. Provide door hardware required to make each set complete and operational.

B. Hardware schedule does not reflect handing, backset, method of fastening and like characteristics of door hardware and door operation.

C. Review door hardware sets with door types, frames, sizes and details on drawings. Verify suitability and adaptability of items specified in relation to details and surrounding conditions.

END OF SECTION

SECTION 08 87 00
ARCHITECTURAL WINDOW FILMS

PART 1 - GENERAL 1.1 SECTION INCLUDES

A. Decorative Window Film

1.2 RELATED SECTIONS

Note: Delete any section below not relevant to this project; add others as required.

A. Section 08 50 00 – Windows: Windows to receive architectural window film

1.3 REFERENCES

A. ASTM International (ASTM)

1. ASTM E 903 - Standard Methods of Test for Solar Absorbance, Reflectance and Transmittance of Materials Using Integrating Spheres.
2. ASTM E 308 - Standard Recommended Practice for Spectrophotometry and Description of Color in CIE 1931 System.

1.4 SUBMITTALS

A. Manufacturer's Product Data for specified products.

B. Submit shop drawings showing layout, profiles, and product components, including dimensions, anchorage, and accessories.

C. Samples: 4 inch by 4 inch Samples of specified color and pattern for verification.

D. Submit operation and maintenance data for installed products, including precautions against harmful cleaning materials and methods.

E. Mock ups: as required

1.5 QUALITY ASSURANCE

A. Obtain all products in this section from a single Manufacturer with a minimum of 10 years' experience.

B. Installer: Installation shall be performed by a trained and qualified installer, specialized and experienced in the work required for this project. A list of experienced installation integrators is available at 3M.com/AMD or 3M Commercial Solutions Division at 1-888-650-3497.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver products in manufacturer's original, unopened, undamaged containers with identification labels intact.

B. Store products protected from weather, temperature, and other harmful conditions as recommended by supplier.

C. Product must remain in original plastic bag and boxes and have storage conditions as follows:

1. 40 °F – 90 °F (4 °C - 32 °C)
2. Out of direct sunlight
3. Clean dry area
4. Original container
5. Do not stack boxes over six (6) units high. Excessive weight can damage the film
6. Products are not recommended for interior applications where condensation consistently occurs.
7. Handle products in accordance with manufacturer's instructions.
8. Shelf life: 2 years

1.7 PROJECT/SITE CONDITIONS

A. Confirm appropriate substrate is suitable for mounting of glass finish components prior to start of installation.

B. Apply materials when environmental conditions are within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside the manufacturer's absolute limits. Application temperature range is 60 °F – 100 °F (16 °C – 38 °C).

C. Environmental Limitations: Do not install until spaces are enclosed and weatherproof, wet work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

1.8 WARRANTY

A. Manufacturer's Warranty: Submit manufacturer's standard warranty document by authorized manufacturer.

B. Standard Product Warranty: Refer to the applicable 3M Technical Data Sheet for product warranty.

1.9 EXTRA MATERIALS

A. Furnish 2 percent extra material at time of installation. Deliver in protective packaging for storage and label contents appropriately.

PART 2 - PRODUCTS 2.1 MANUFACTURER

A. 3M Company – Commercial Solutions Division [CSD]

3M Center, Building 0220-12-E-04
St. Paul, MN 55144-1000, USA
1-888-650-3497

2.2 MATERIAL STANDARD

A. Design based upon 3M™ CRYSTAL Glass Finishes

2.3 MATERIAL PROPERTIES

A. General: Glass finishes field-applied application to glass or plastic material as visual opaque or decorative film.

B. Film: Vinyl

C. Option to Electrocut (by other than Manufacturer)

D. Adhesive: Acrylic, Pressure Sensitive, Permanent

E. Liner: Silicone-coated Polyester

F. Thickness (Film and Adhesive without Liner):

1. Frosted - 4.7 mils (120 microns)

G. Fire Performance: Surface burning characteristics when tested in accordance with ASTM E84, Class A:

1. Flame Spread: 25 maximum.
2. Smoke Developed: 450 maximum.

2.4 OPTICAL PERFORMANCE

A. CRYSTAL Dusted Decorative / Privacy Glazing Film:

1. Ultraviolet Transmittance (ASTM E 903): 27 percent.
2. Visible Light Transmittance (ASTM E 903, ASTM E308): 85 percent.
3. Visible Light Reflectance (ASTM E 903): 79 percent.
4. Solar Heat Transmittance: 76 percent.
5. Solar Heat Reflectance: 7 percent.
6. Shading Coefficient at 90 Degrees (Normal Incidence) (ASTM E 903): 0.93.

B. CRYSTAL Frosted Decorative / Privacy Glazing Film:

1. Ultraviolet Transmittance (ASTM E 903): 20 percent.
2. Visible Light Transmittance (ASTM E 903, ASTM E308): 72 percent.
3. Visible Light Reflectance (ASTM E 903): 12 percent.
4. Solar Heat Transmittance: 64 percent.
5. Solar Heat Reflectance: 10 percent.
6. Shading Coefficient at 90 Degrees (Normal Incidence) (ASTM E 903): 0.82.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine substrate(s) for compliance. Do not proceed with installation until unsatisfactory conditions have been corrected.

B. Refer to the applicable 3M Technical Data Sheet to determine compatibility of finish to substrate.

C. Do not proceed with installation until unsatisfactory conditions have been corrected.

D. Responsibility for state of surfaces prior to installation to be pre-determined by installation specialist.

E. Scheduling of installation by Owner or its representative implies that substrate and conditions are prepared and ready for product installation per the recommendations of the installation specialist.

F. Proceeding with installation implies installer's acceptance of substrate and conditions.

3.2 SURFACE PREPARATION

A. Comply with all manufacturer's instructions for surface preparation.

B. Thoroughly clean substrate of substances that could impair the overlay's bond, including mold, mildew, oil, grease.

C. Re-clean surfaces with appropriate surface prep solvent and remove any haze or surface contamination. **3.3**

APPLICATION

A. Application must be performed by qualified installer.

B. Do not proceed with installation until all finishing work has been completed in and around the work area.

C. Verify pattern prior to material acquisition.

D. Comply with manufacturer's installation instructions applicable to products and applications indicated, except where more stringent requirements apply.

E. Install substrates with no gaps or overlaps. Form smooth, wrinkle-free, bubble-free surface for finished installation.

F. Remove air bubbles, wrinkles, blisters and other defects. Use approved procedures to prevent the formation of air bubbles, wrinkles, blisters and other defects.

G. Refer to the applicable 3M Installation Guide for additional details.

3.4 CLEANING AND PROTECTION

A. Use cleaning methods recommended by architectural surfacing manufacturer for applicable environment.

B. Protect completed glass finish during remainder of construction period.

C. Consult with authorized installation specialist for project specifics.

END OF SECTION
