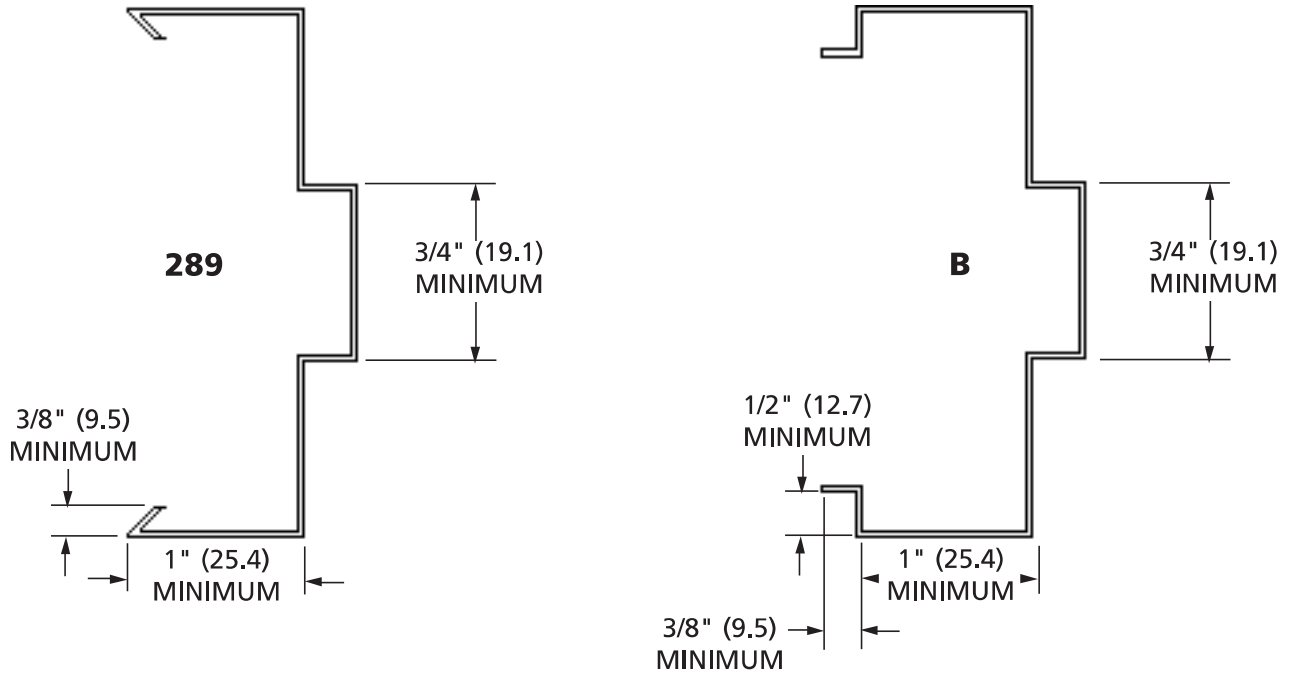




CONTACT FACTORY FOR CAPABILITIES



NOTE: FOR 12 GA. (2.6) CONTACT FACTORY



> Model 35H

YKK AP's ProTek® Impact Resistant and Blast Mitigating Entrances



YKK AP Hurricane & Blast Solutions

Protection You Can Count On

The industry's most durable hurricane impact / blast mitigation entrance system just got better. In addition to a comprehensive array of locking and hinging options, this product is now available with 1" laminated insulating glass. New mid rail and bottom rail options provide design flexibility for the specifier.

YKK AP has also addressed ongoing maintenance in abusive environments, such as schools and military bases. To reduce maintenance costs choose either rim panic exit devices combined with an impact rated aluminum removable mullion or single point locks paired with flush bolts on the inactive panel. These institutional grade entrance systems provide maximum security under the most demanding conditions without the need for steel reinforcing. They also integrates with YHS storefront and YHC curtain wall framing systems.

Model 35H entrances are Large and Small Missile Impact resistant tested as well as Blast Mitigation Tested. With the expansion of hardware and performance options, they are your single source for hurricane resistant, government, and DoD applications.

Product Benefits

- Large & Small Missile Impact – To 90 PSF
- Florida Product Approval – HVHZ
- Blast Mitigation Testing – ASTM F 1642 – Level 2
- YKK AP VersaJamb® Door Frame
- Water Performance – ASTM E 331 – 10.5 PSF



> Model 35H

YKK AP's ProTek® Impact Resistant and Blast Mitigating Entrances

Redesigned Glazing Pocket

Glazings for ¼" to 1" can be accommodated with a variety of glazing stops and gaskets.

Thermal Performance

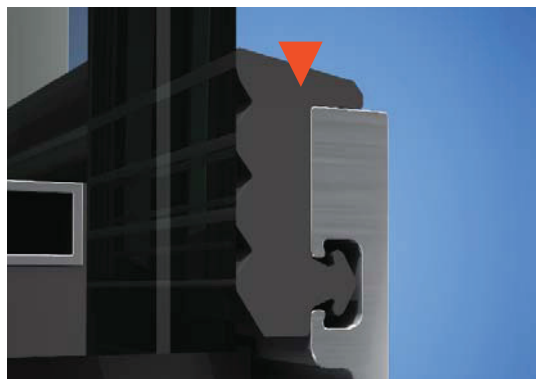
Improved thermal performance can be achieved with Insulating Glass. Entrances have been thermally tested utilizing insulated glass with 0.29 center of glass "U" factor.

Integral Muntins

For increased aesthetic possibilities Insulating Glass units can be ordered with internal muntins.

Glazing Options

For reduced installation labor, dry glaze solutions (to 90 PSF) are available. Wet and Dry Glaze options are available for both hurricane impact and blast mitigation.



Standard Entrances

- Singles: 3'-0" x 7'-0" & 3'-0" x 8'-0"
- Pairs: 6'-0" x 7'-0" & 6'-0" x 8'-0"
- Rixson Pivot, Butt Hung and Continuous Hinge
- Single and 3-Point Locks for Single Doors, 5-Point Locks for Pairs
- Rim and CVR Exit Devices

Custom Entrances

- Singles: Up to 4'-0" x 8'-0"
- Pairs: Up to 8'-0" x 8'-0"
- Pairs: Up to 7'-0" x 8'-0" with Rim Panic
- Standard and Custom Hardware

For additional information on architectural aluminum products offered by YKK AP America Inc. visit our web site at www.ykkap.com.



> YHS 50 FI

Impact Resistant and Blast Mitigation
Storefront System for Insulating Glass



YKK AP Hurricane & Blast Solutions

SYSTEM DESCRIPTION:

YHS 50 FI is a high performance storefront system designed for insulating glass 1" to 1-5/16" thick and tested to meet the most demanding conditions. With varied infill and components, YHS 50 FI can meet the requirements for Impact Resistance, Blast Mitigation or both. The system features the Model 35H entrance door with maximum-security dead bolts or optional exit devices for egress requirements.

OPTIONS & FEATURES:

- Large & Small Missile
 - ◆ Small Missile is Dry Glazed
 - ◆ Large Missile is Wet or Dry Glazed
- ASTM E 1886 / 1996, TAS 201 – 203
 - ◆ Tested to +/- 70 psf *
 - ◆ Florida State-Wide Product Approval
 - ◆ Approved for High Velocity Hurricane Zone
- Blast Mitigation
 - ◆ YHS 50 FI meets UFC 4-010-01 prescriptive standard in accordance with 2007 revisions.
 - ◆ Model 35H - "Low Hazard" per ASTM F 1642 Test @ 6 psi / 41 psi-ms

*Contact YKK AP Engineering for Job Specific Wind Load analysis at higher levels.



> YHS 50 FI

Impact Resistant and Blast Mitigation Storefront System Specifications

1.01 SUMMARY

- A. Section includes: Aluminum Storefront Systems
 - 1. YKK AP Series YHS 50 FI Impact Resistant Storefront System (Insulated Glazing)
- B. Related Sections:
 - 1. 08410 35H Impact Resistant Heavy Duty Swing Doors.
 - 2. Glass: Contact YKK AP for approved glass types.
 - 3. Glazing: Dow Corning® 995 Structural Silicone for large missile.

1.02 SYSTEM DESCRIPTION

- A. Performance Requirements: Provide aluminum storefront systems that comply with performance requirements indicated, as demonstrated by testing manufacturers assemblies in accordance with Florida Building Code Protocol TAS-201, TAS-202 and TAS-203.
 - 1. Air Infiltration: Completed storefront systems shall have 0.06 CFM/FT² (1.10 m³/h·m²) maximum allowable infiltration when tested in accordance with ASTM E 283 at differential static pressure of 6.24 psf (299 Pa).
 - 2. Water Infiltration: No uncontrolled water when tested in accordance with ASTM E 331 (or when required, field tested in accordance with AAMA 503) at test pressure differential of: 12 PSF (575 Pa). Fastener Heads must be seated and sealed against Sill Flashing on any fasteners that penetrate through the Sill Flashing.
 - 3. Wind Loads: Completed storefront system shall withstand wind pressure loads normal to wall plane indicated:
 - a. Exterior Walls:
 - 1) Positive Pressure: 70 psf.
 - 2) Negative Pressure: 70 psf.
 - 4. Deflection: Maximum allowable deflection in any member when tested in accordance with ASTM E 330 with allowable stress in accordance with AAMA Specifications for Aluminum Structures.
 - a. L/175 or 3/4" (19.1mm) maximum.
 - 5. Thermal Movement: Provide for thermal movement caused by 180 degrees F. (82.2 degrees C.) surface temperature, without causing buckling stresses on glass, joint seal failure, undue stress on structural elements, damaging loads on fasteners, reduction of performance, or detrimental effects.

2.01 MANUFACTURERS

- A. Acceptable Manufacturers: YKK AP America Inc.
 - 1. Storefront System: YKK AP YHS 50 FI Impact Resistant Storefront System.
- B. Storefront Framing Systems:
 - 1. Description: Center set, exterior flush glazed; jambs and vertical mullions continuous; head, sill, intermediate horizontal attached by screw spline joinery. Continuous and wept sill flashing.
 - 2. Components: Manufacturer's standard extruded aluminum mullions, entrance doors, framing, and indicated shapes, perimeter anchor fillers and steel reinforcing as required.
 - 3. Glazing: Manufacturer's standard glazing stops with EPDM glazing gaskets to prevent water infiltration at the exterior and Dow Corning 995 Structural Silicone Adhesive with fixed stops at the interior for large missile. EPDM interior gasket for small missile and non-impact applications.

2.02 MATERIALS

- A. Extrusions: ASTM B 221 (ASTM B 221M), 6063-T5 and 6063-T6 Aluminum Alloy.

2.03 ACCESSORIES

- A. Manufacturer's Standard Accessories:
 - 1. Fasteners: Zinc plated steel concealed fasteners; Hardened aluminum alloys or AISI 300 series stainless steel exposed fasteners.
 - 2. Glazing: Setting blocks, edge blocks, and spacers in accordance with ASTM C 864, shore durometer hardness as recommended by manufacturer; Glazing gaskets in accordance with ASTM C 864.
 - 3. 0.050 Aluminum Sill Flashing End Dams must have 3 point attachment.

2.06 FINISHES

- A. Anodic Coating: Electrolytic color coating followed by an organic seal applied in accordance with the requirements of AAMA 612.
- B. High Performance Organic Coating Finish: Type Factory applied two-coat 70% Kynar resin by Arkema or 70% Hylar resin by Solvay Solexis, fluoropolymer based coating system, Polyvinylidene Fluoride (PVF-2), applied in accordance with YKK AP procedures and meeting AAMA 2605 specifications.

For additional information on architectural aluminum products offered by YKK AP America Inc. visit our web site at www.ykkap.com.

Clad Ultimate Double Hung Magnum

| | |
|---|----|
| Unit Features..... | 1 |
| Egress and Vent Openings | 2 |
| Minimum and Maximum Guidelines, Certified Sizes and Ratings: Standard | 3 |
| Minimum and Maximum Guidelines, Certified Sizes and Ratings: Impact..... | 4 |
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| Section Details: Muled Direct Glaze with Interior Shade Option | 12 |
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Clad Ultimate Double Hung Magnum

Unit Features

Clad Ultimate Double Hung Magnum: CUDHM

Clad Ultimate Single Hung Magnum: CUSHM

Clad Ultimate Double Hung Magnum Picture: CUDHMP

Clad Ultimate Double Hung Magnum Transom: CUDHMT

Operating Hardware:

- Sash lock and keeper: surface mounted, open style crescent cam lock. Two locks on glass of 36" (914) and wider. Color: Satin Taupe.
 - Optional colors: Bronze, White, Brass, Antique Brass, Satin Chrome, Satin Nickel, and Oil Rubbed Bronze.
- Balance System: Spiral balance system, designed to balance sash from 10 lbs. to 130 lbs.
- Pivot pins two per sash made of stainless steel are used. Clutches two per sash designed to receive the pivot pin and are designed to support sash weight up to 130 lbs.
- Tilt latch provided for say tilting of the top sash inward, located at check rail.
- Optional Sash lift: same colors as offered in locks.
- Optional window opening control device field applied.

Optional Glass:

- 1" Tri-pane LoE-180™ outer piece and LoE-180™ inner piece with Argon
- 1" Tri-pane LoE-180™ outer piece and LoE-180™ inner piece with Krypton/Argon
- 1" Tri-pane LoE²272® outer piece and LoE²272® inner piece with Argon
- 1" Tri-pane LoE²272® outer piece and LoE²272® inner piece with Krypton/Argon
- 1" Tri-pane LoE 366® outer piece and LoE-180™ inner piece with Argon
- 1" Tri-pane LoE 366® outer piece and LoE-180™ inner piece with Krypton/Argon

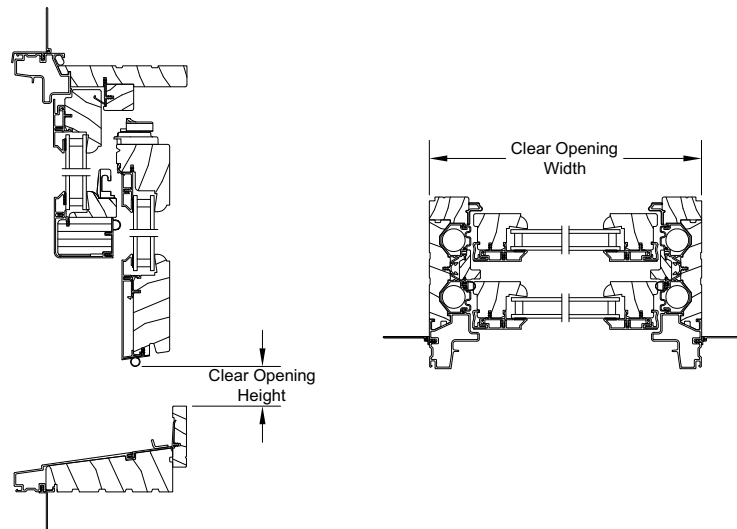
DP50 Performance Upgrade:

- Frame
 - IZ3 Frame
 - Sill brackets (2) added for bottom sash retention
 - Jamb screw installation used in combination with aluminum nailing fin
- Sash
 - Interlocking check rails
 - Over-molded tilt ear
- Glazing
 - Tempered glass

Egress and Vent Openings

Not to Scale

| Egress Conversions | | | |
|--|--|------------------------------|-------------------------------|
| Glass Size Width - 1 7/8" (48) = Egress Width Rough Opening Width - 4 1/2" (114) = Egress Width | | | |
| Glass Size Height | Rough Opening Height | Egress Height Std Sill Liner | Egress Height DP50 Sill Liner |
| 20" (508) to less than 28" (711) | 48 7/8" (1241) to less than 64 7/8" (1648) | 16 1/2" (419) | N/A |
| 28" (711) to less than 38" (965) | 64 7/8" (1648) to less than 84 7/8" (2156) | 24 1/2" (622) | N/A |
| 38" (965) to less than 49" (1245) | 84 7/8" (2156) to less than 106 7/8" (2715) | 34 1/2" (876) | 33 7/8" (860) |
| 49" (1245) to less than 60" (1524) | 106 7/8" (2715) to less than 128 7/8" (3273) | 45 1/2" (1156) | 44 7/8" (1140) |



NOTE: When utilizing the Interior Shade option, the egress width is reduced by 17/32" and the height is reduced by 5/32".

Minimum and Maximum Guidelines, Certified Sizes and Ratings: Standard

| Minimum and Maximum Guidelines | | | | | | | | | |
|--------------------------------|------------------|---------------|-------|------------|--------|-----------|--------|------------|--------|
| Unit Type | | Rough Opening | | | | | | | |
| | | Min Width | | Min Height | | Max Width | | Max Height | |
| | | in | mm | in | mm | in | mm | in | mm |
| CUDHM | Insulating Glass | 26 3/8 | (670) | 48 3/8 | (1229) | 60 3/8 | (1534) | 120 7/8 | (3070) |
| CUDHMT | Insulating Glass | 15 3/8 | (391) | 14 3/16 | (360) | 74 3/8 | (1889) | 27 7/8 | (708) |
| CUDHMP | Insulating Glass | 15 3/8 | (391) | 15 1/2 | (394) | 62 3/8 | (1584) | 104 7/8 | (2664) |

NOTE: Maximum Interior Shade width 72" (1829) and Maximum Interior Shade height 112 3/8" (2854)

| Product | Air Tested to psf | Water Tested to psf | Structural Tested to psf | Certification Rating | Design Pressure (DP) | Overall Width | | Overall Height | |
|--|-------------------|---------------------|--------------------------|----------------------|----------------------|---------------|--------|----------------|--------|
| | | | | | | in | mm | in | mm |
| Clad Ultimate Double Hung Magnum 5456 | 1.57 | 5.25 | 52.5 | LC-PG35-H | 35 | 59 3/8 | (1508) | 120 3/8 | (3058) |
| Clad Ultimate Double Hung Magnum 5456 High Performance | 1.57 | 7.52 | 75.24 | LC-PG50-H | 50 | 59 3/8 | (1508) | 120 3/8 | (3058) |
| Clad Ultimate Double Hung Magnum 5042 | 1.57 | 6.06 | 60.15 | CW-PG40-H | 40 | 55 3/8 | (1407) | 92 3/8 | (2346) |
| Clad Ultimate Double Hung Magnum 4848 | 1.57 | 7.5 | 75 | CW-PG50-H | 50 | 53 3/8 | (1356) | 104 3/8 | (2651) |
| Clad Ultimate Double Hung Magnum Picture | 1.57 | 10.5 | 75 | CW-PG50-FW | 50 | 61 3/8 | (1559) | 104 3/8 | (2651) |
| Clad Ultimate Double Hung Magnum Transom | 1.57 | 8.25 | 75 | LC-PG50-TR | 50 | 73 3/8 | (1864) | 27 3/8 | (695) |

Minimum and Maximum Guidelines, Certified Sizes and Ratings: Impact

| IZ3 Minimum and Maximum Guidelines | | | | | | | | | |
|------------------------------------|------------------|---------------|-------|------------|--------|-----------|--------|------------|--------|
| Unit Type | | Rough Opening | | | | | | | |
| | | Min Width | | Min Height | | Max Width | | Max Height | |
| | | in | mm | in | mm | in | mm | in | mm |
| CUDHM | Insulating Glass | 26 3/8 | (670) | 48 3/8 | (1229) | 54 3/8 | (1381) | 104 7/8 | (2664) |
| CUDHM | Insulating Glass | 26 3/8 | (670) | 48 3/8 | (1229) | 48 3/8 | (1229) | 120 7/8 | (3070) |

NOTE: Maximum Interior Shade width 72" (1829) and Maximum Interior Shade height 112 3/8" (2854)

| Product | Air Tested to psf | Water Tested to psf | Structural Tested to psf | Certification Rating | Design Pressure (DP) | Overall Width | | Overall Height | |
|---|-------------------|---------------------|--------------------------|----------------------|----------------------|---------------|--------|----------------|--------|
| | | | | | | in | mm | in | mm |
| Clad Ultimate Double Hung Magnum StormPlus IZ3 4256 | 1.57 | 7.5 | 75 | LC-PG50-H | +55/-65 | 47 3/8 | (1203) | 120 3/8 | (3058) |
| Clad Ultimate Double Hung Magnum StormPlus IZ3 4848 | 1.57 | 7.5 | 75 | LC-PG50-H | +55/-65 | 53 3/8 | (1356) | 104 3/8 | (2651) |

NOTE: Maximum sash weight is 130 lbs.

Measurement Conversions

| Clad Ultimate Double Hung Magnum | | | | | | |
|----------------------------------|---------------|-----------|-----------|--------|-----------|-----------|
| Unit Measurement | | Width | | Height | | |
| From | To | | | | | |
| Frame Size | | in | mm | | in | mm |
| OM of Frame | Rough Opening | + 1 | (25) | | + 1/2 | (13) |
| Masonry Opening | Rough Opening | -1/2 | (13) | | -1/4 | (06) |
| Masonry Opening w/BMC | Rough Opening | -2 1/8 | (54) | | -2 3/16 | (56) |
| Masonry Opening w/Flat Casing | Rough Opening | -5 1/2 | (140) | | -3 7/8 | (98) |
| Glass | | in | mm | | in | mm |
| Daylight Opening | Glass | + 1 1/16 | (27) | | + 1 1/16 | (27) |
| Screen | | in | mm | | in | mm |
| Rough Opening | OM of Screen | -3 1/16 | (78) | | -2 11/32 | (60) |
| Daylight Opening | OM of Screen | + 4 3/8 | (111) | × 2 | + 8 21/32 | (220) |
| Half Screen | | in | mm | | in | mm |
| OM of Frame | OM of Screen | -2 1/16 | (52) | + 2 | -3/16 | (05) |
| Daylight Opening | OM of Screen | + 4 3/8 | (111) | DLO | + 5 5/16 | (135) |

| Clad Ultimate Double Hung Magnum Transom | | | | | | |
|--|---------------|-----------|-----------|-----------|-----------|--|
| Unit Measurements | | Width | | Height | | |
| From | To | | | | | |
| Frame Size | | in | mm | in | mm | |
| OM of Frame | Rough Opening | + 1 | (25) | + 1/2 | (13) | |
| Masonry Opening | Rough Opening | -1/2 | (13) | -1/4 | (06) | |
| Masonry Opening w/BMC | Rough Opening | -2 1/8 | (54) | -2 3/16 | (56) | |
| Masonry Opening w/Flat Casing | Rough Opening | -5 1/2 | (140) | -3 7/8 | (98) | |
| Glass | | in | mm | in | mm | |
| Daylight Opening | Glass | + 1 1/16 | (27) | + 1 1/16 | (27) | |

Measurement Conversions

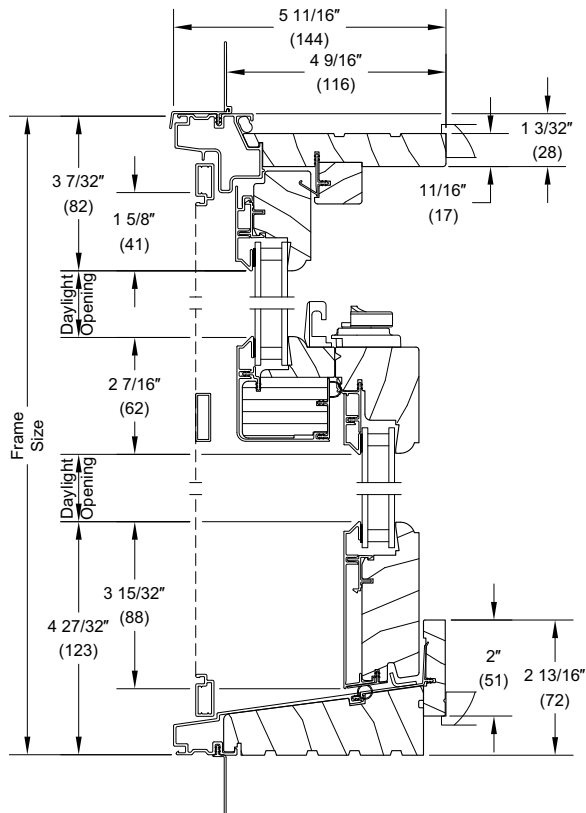
| Clad Ultimate Double Hung Magnum Picture | | | | | |
|--|---------------|----------|-------|----------|------|
| Unit Measurements | | Width | | Height | |
| From | To | | | | |
| Frame Size | | in | mm | in | mm |
| OM of Frame | Rough Opening | + 1 | (25) | + 1/2 | (13) |
| Masonry Opening | Rough Opening | -1/2 | (13) | -1/4 | (06) |
| Masonry Opening w/BMC | Rough Opening | -2 1/8 | (54) | -2 3/16 | (56) |
| Masonry Opening w/Flat Casing | Rough Opening | -5 1/2 | (140) | -3 7/8 | (98) |
| Glass | | in | mm | in | mm |
| Daylight Opening | Glass | + 1 3/16 | (30) | + 1 1/16 | (27) |

Clad Ultimate Double Hung Magnum

Section Details: Operating

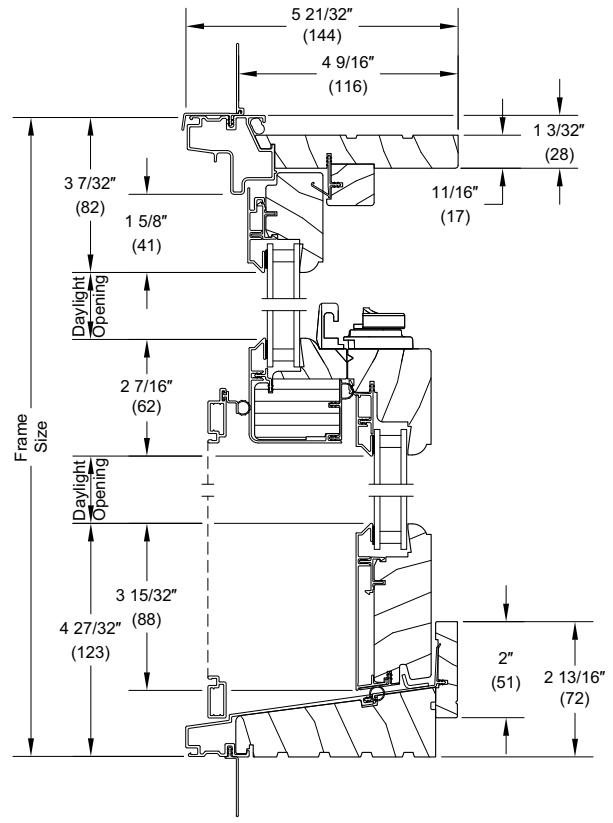
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Double Hung

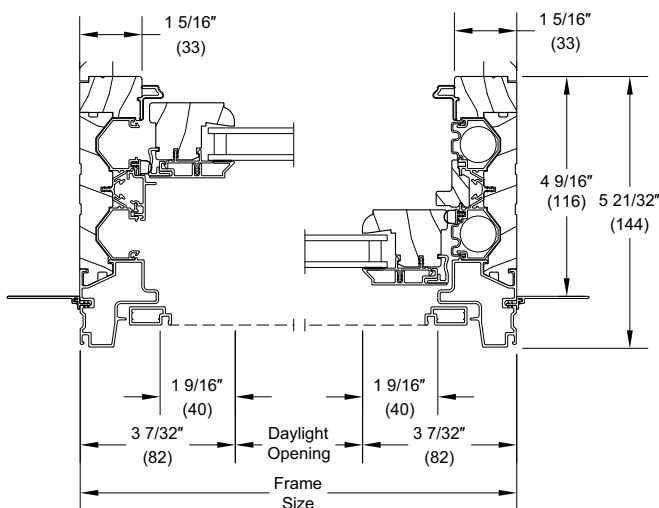


Head Jamb and Sill

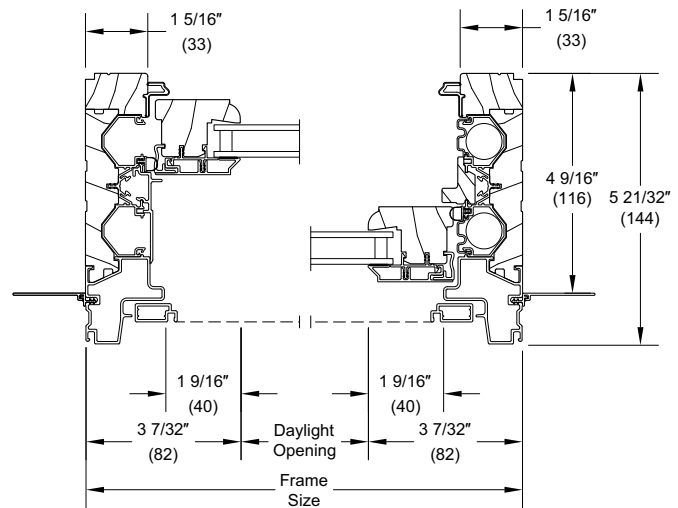
Single Hung



Head Jamb and Sill



Jamb



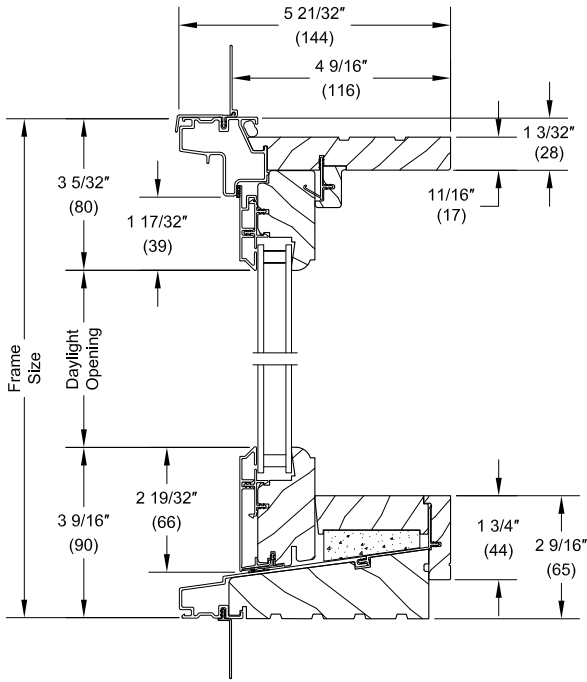
Jamb

Clad Ultimate Double Hung Magnum

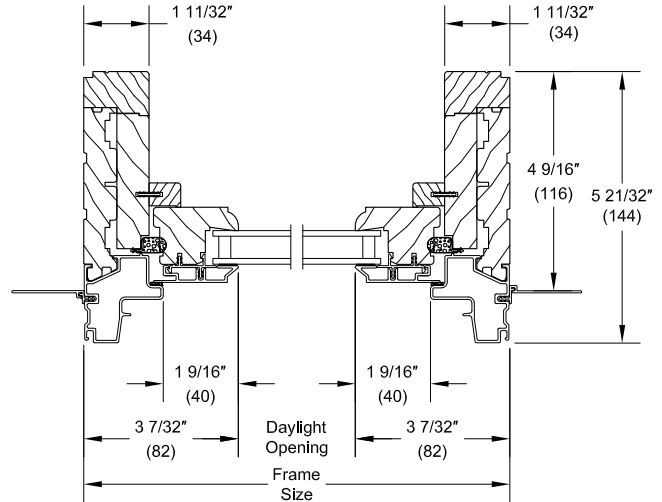
Section Details: Transom/Picture

Scale: 3" = 1' 0"

Transom

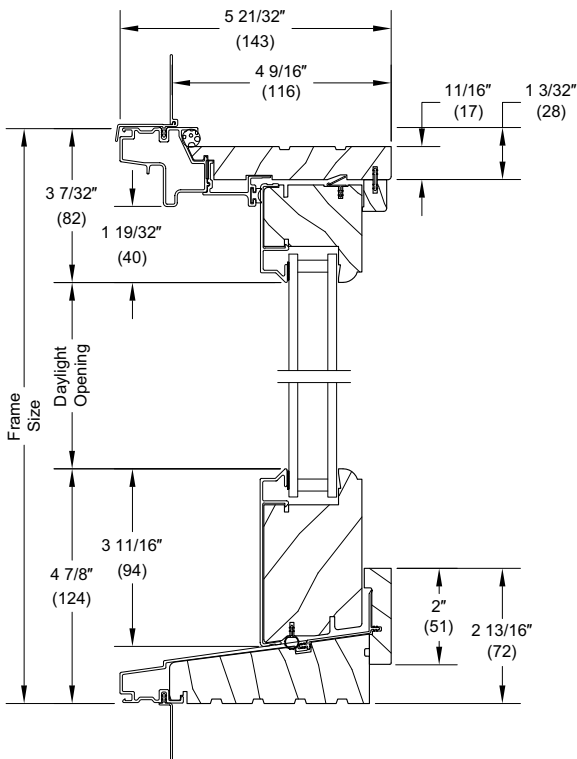


Head Jamb and Sill

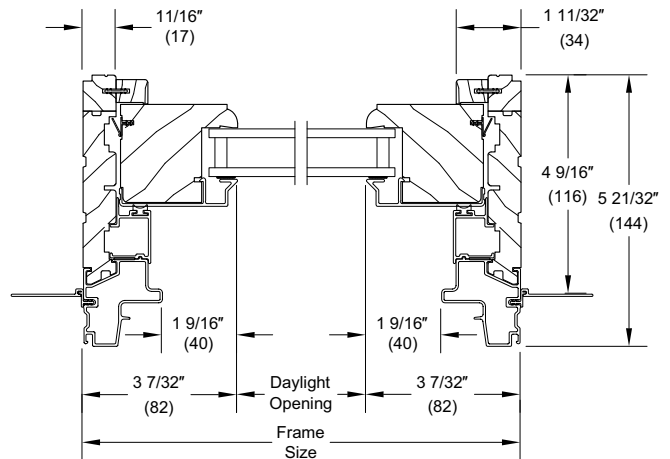


Jamb

2" Picture



Head Jamb and Sill

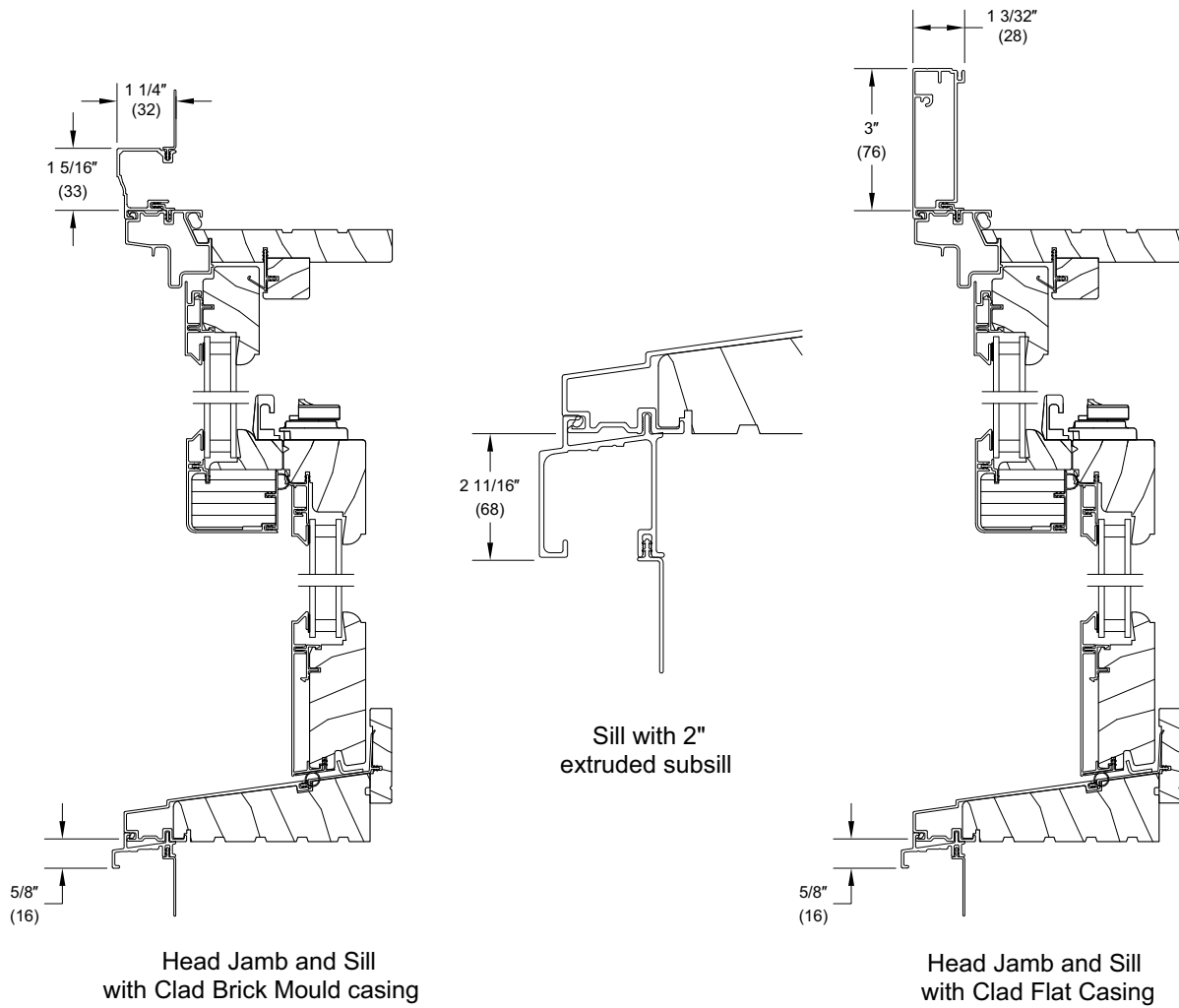


Jamb

Clad Ultimate Double Hung Magnum

Section Details: Casing Options

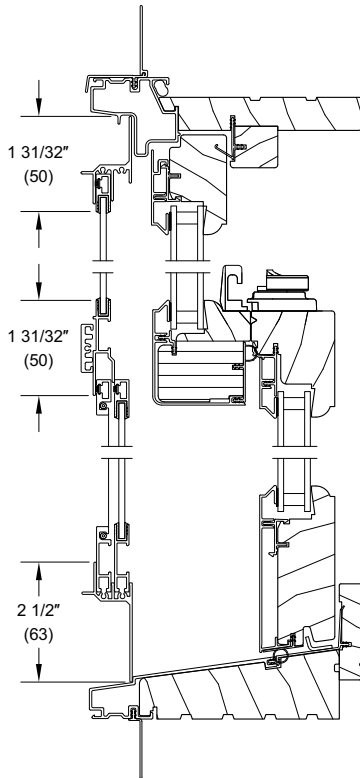
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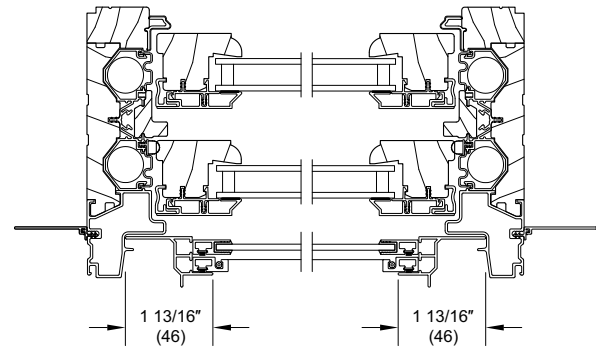
Clad Ultimate Double Hung Magnum

Section Details: Combination

Scale: 3" = 1' 0"



Head Jamb and Sill

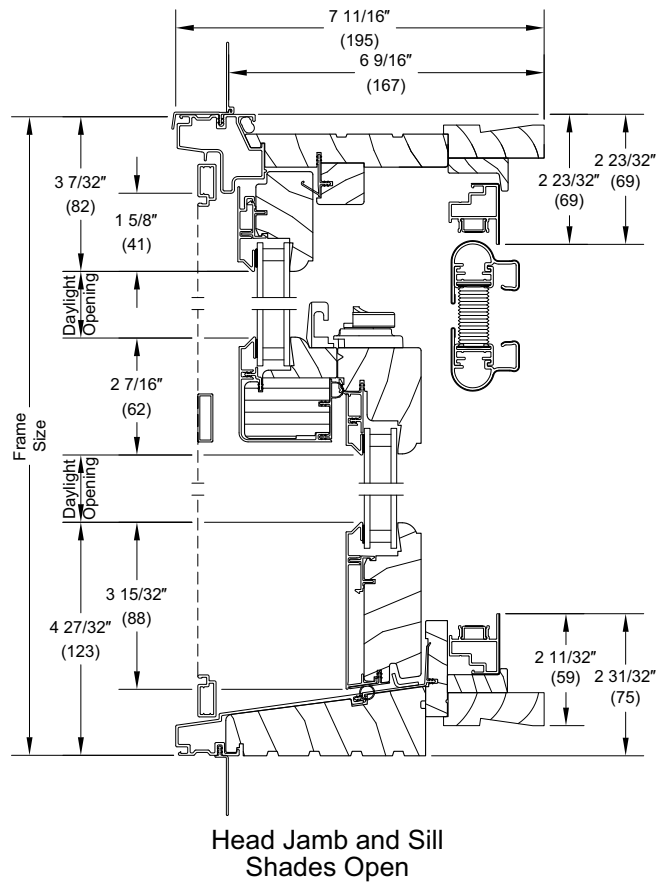
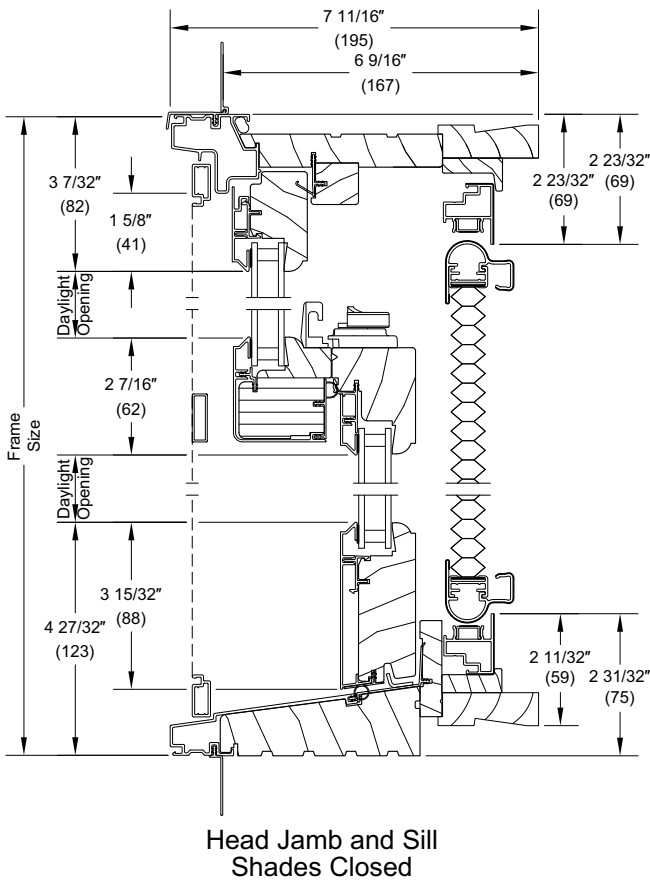
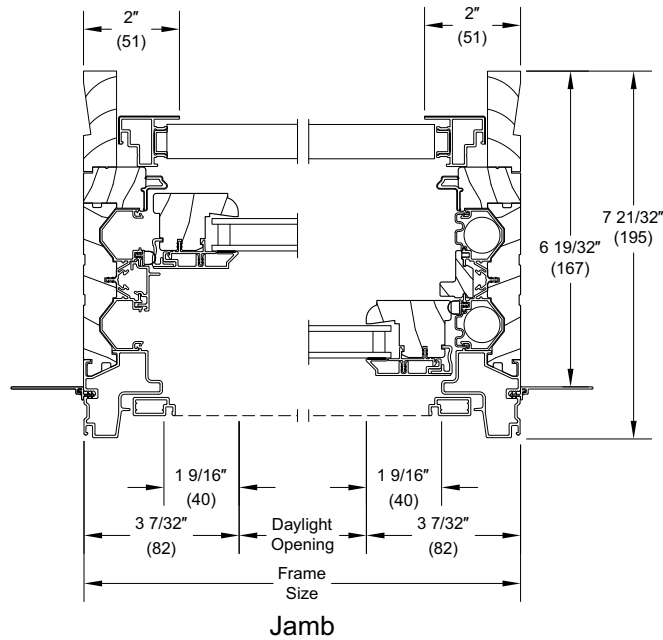


Jambs

Clad Ultimate Double Hung Magnum

Section Details: Interior Shade Option

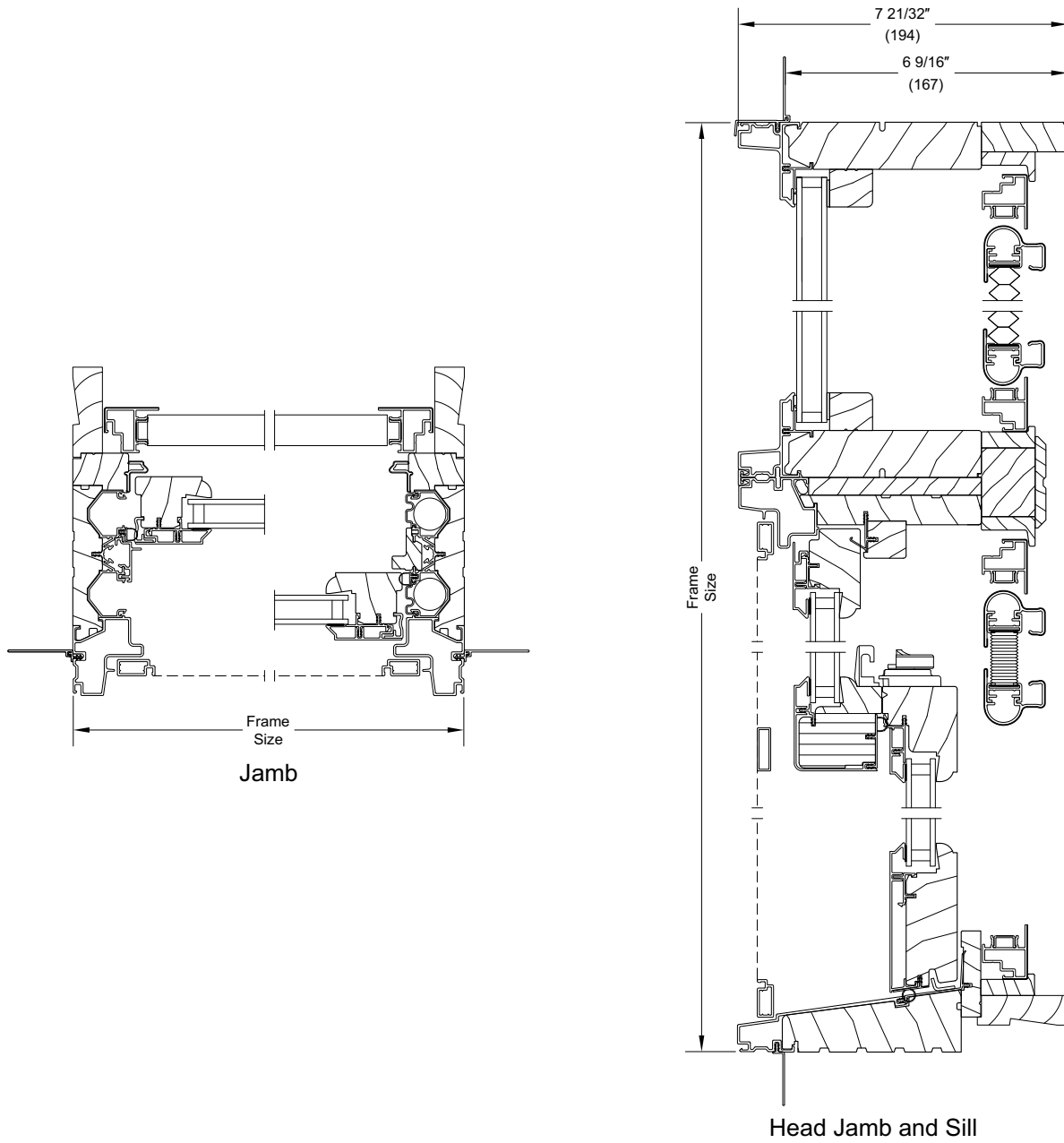
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Clad Ultimate Double Hung Magnum

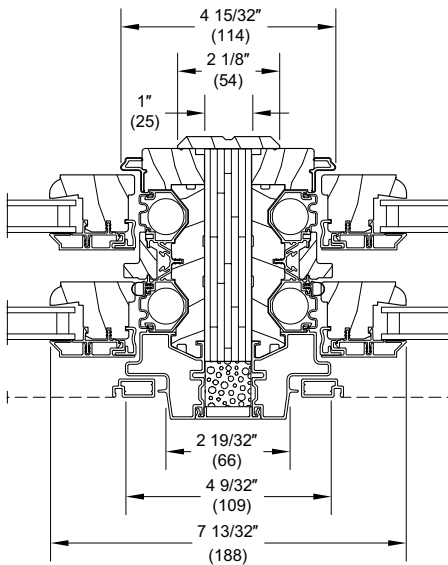
Section Details: Muller Direct Glaze with Interior Shade Option

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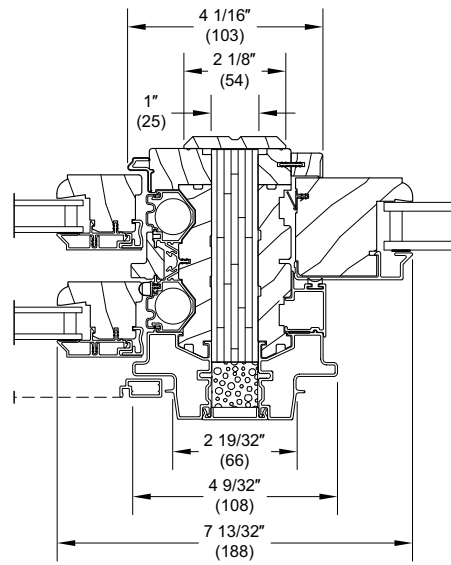


Section Details: Mullions

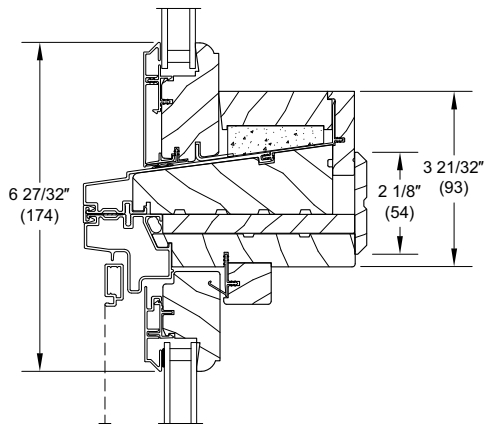
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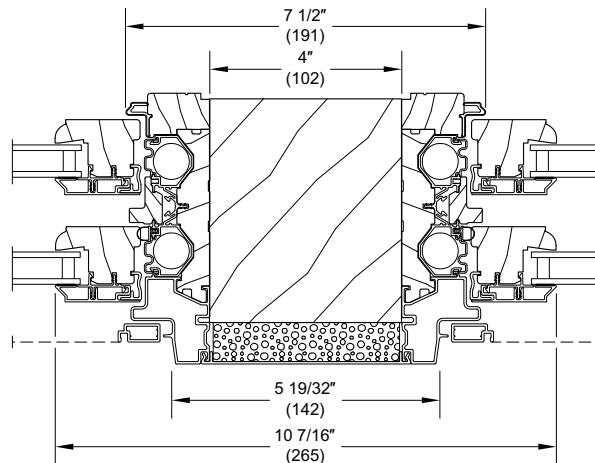
**1" Solid Space
Vertical Mullion
Operator/Operator**



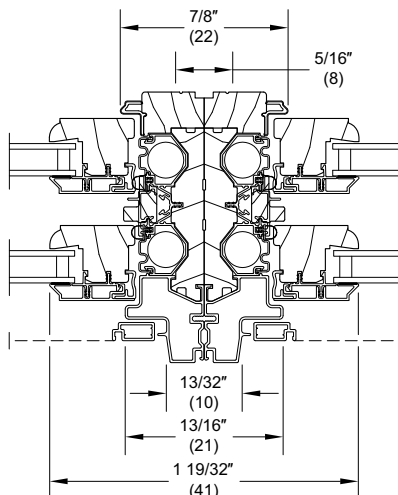
**1" Solid Space
Vertical Mullion
Operator/Picture**



**Horizontal Mullion
Transom/Operator**



**Vertical Mullion
Operator with 4" (102) Solid Space Mull**



**Vertical Mullion
Operator/Operator**

Clad Ultimate Double Hung Magnum

SECTION 09 25 23

LIME CEMENT RENDER AND SILICATE COATING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: The work specified in this Section includes a three coat application of lime cement render over paper-backed metal lath consisting of a base coat of render to fill the metal lath, an intermediate coat of render with a lightly embedded semi-rigid woven glass fiber mesh, and a top coat of render finished as directed followed with a treatment of lime remover. The Render assembly is protected with a two coat application of a decorative silicate coating finish. Specification includes limited surface preparation.

B. Related Sections: Related sections include the following:

PLACE RELATED SECTIONS BELOW. EXAMPLES INCLUDE:

1. Section 03 01 00 – Maintenance of Concrete
2. Section 04 01 00 – Maintenance of Masonry
3. Section 04 21 13 – Brick Masonry
4. Section 04 22 00 – Concrete Unit Masonry
5. Section 07 46 46 – Mineral Fiber-Cement Siding
6. Section 09 24 00 – Portland Cement Plastering
7. Section 09 25 23 – Lime Based Plastering
8. Section 09 25 33 – Lime Cement Based Plastering
9. Section 09 28 13 – Cementitious Backing Boards

1.2 REFERENCES

A. General: The publications listed below form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only.

B. Deutsches Institut für Normung (DIN), European Standard (EN), and International Organization for Standardization (ISO):

1. DIN V 18550, Plastering/rendering and plastering/rendering systems - Execution
2. DIN EN 998-1, Specification for mortar for masonry - Part 1: Rendering and plastering mortar; German version EN 998-1:2010
3. DIN EN ISO 7783-2, "Coating materials and coating systems for exterior masonry and concrete - Part 2: Determination and classification of water-vapour transmission rate (permeability)."
4. ASTM E 96, "Standard Test Methods for Water Vapor Transmission of Materials."
5. ASTM E 514, "Standard Test Method for Water Penetration and Leakage Through Masonry."
6. ASTM G 154, "Standard Practice for Operating Fluorescent Light Apparatus for UV Exposure of Nonmetallic Materials."
7. ASTM D 6886-12, "Standard Test Method for Determination of the Individual Volatile Organic Compounds (VOCs) in Air-Dry Coatings by Gas Chromatography."

1.3 DEFINITIONS

- A. Render: An exterior ready-to-use dry sacked stucco/plaster consisting of hydraulic lime, white cement, specification grade quartz sand, and very small mineral glass fibers.
- B. Base Render: The first layer of stucco/plaster applied to the substrate.
- C. Intermediate Render: The second layer of stucco/plaster applied to the substrate.
- D. Top Render: The third layer of stucco/plaster applied to the substrate.
- E. Mesh: A tightly woven mineral glass lattice mat for reinforcing the render to prevent cracks.
- F. Lime remover: A liquid silicic acid.
- G. Silicate coating base coat: The first applied coat of the silicate coating.
- H. Silicate coating, top coat: The second applied coat of the silicate coating.
- I. Dilution: A silicate based diluent.

1.4 SYSTEM DESCRIPTION

- A. A materials-compatible vapor permeable render system.
 - 1. Render System: A three layer application consisting of a 10 mm (3/8 inch) filling base layer, a 4 mm (3/16 inch) intermediate layer of a lime cement render with an embedded mineral glass fiber mesh placed in the upper two-thirds of the render layer, and a 3 mm (1/8 inch) top layer of render finished to match surrounding surfaces or as directed by the Architect. Total render thickness will be minimum 16 mm (5/8 inch).
 - 2. Lime Remover: A silicic acid based cleaner used to open sinter layers on rendered plaster surfaces and formed concrete to ensure they are absorbent. May be used to remove lime efflorescence from mineral surfaces.
 - 3. Apply onto supported 3/8 inch metal lath, over any sound mineral, concrete, or masonry surface, over sound synthetic resin stuccos, or sound synthetic resin paint coats.
 - 4. Silicate Coating: An incombustible two coat system with UV and alkaline resistant inorganic pigments in the specified color. Coatings penetrate the surface and in a chemical reaction with the substrate results in covalent bonds forming a hard amorphous microporous layer with extremely high vapor permeability that is unaffected by acids, UV exposure, or air-borne pollutants. Provides weathering protection without reducing substrate vapor permeability.

1.5 SUBMITTALS

- A. Product Data: Submit product data showing material proposed. Submit sufficient information to determine compliance with the Drawings and Specifications. Provide published documentation describing materials, characteristics, and limitations.
- B. Samples: Submit samples for verification purposes, fabrication techniques and workmanship.
- C. Manufacturer's Instructions: Submit manufacturer's instructions including technical data sheets, material safety data sheets, mixing instructions, application requirements, special procedures, and conditions requiring special attention.
- D. LEED Submittals: Submittals that are required to comply with requirements for LEED certification include the following:
 - 1. Low Emitting Materials: Submit certification by the manufacturer confirming that products (i.e., adhesives, sealants, paints, coatings, etc.) meet or exceed the volatile organic compound (VOC) limits set by specific agencies or other requirements. Clearly state VOC limits in the submittal.

1.6 QUALITY ASSURANCE

A. Qualifications:

1. Manufacturer Qualifications: Provide evidence that Manufacturer is a firm engaged in the manufacture of silicate coatings of types required, and whose products have been in satisfactory use in similar service for a minimum of ten years.
2. Applicator Qualifications: *(BELOW, KEEP ONE AND DELETE THE OTHER)*
 - a. Provide evidence Applicator is a firm having a minimum of three years of successful application experience with projects similar in type and scope to that required for this Project, and approved by the manufacturer.
 - b. Provide evidence Applicator is a firm having successful application of products within this specification with at least one project in the last 18 months similar in type and scope to that required for this Project, and approved by the manufacturer.

B. Mock-Ups: Prior to application of the work, fabricate and erect mock ups for each type of finish and application to verify selections made under sample submittals and to demonstrate aesthetic effects as well as qualities of materials and execution. Build mock ups to comply with the following requirements using materials indicated for final unit of work. Locate mock ups as directed by the Architect. Demonstrate the proposed range of aesthetic effects and workmanship to be expected in the completed work. Obtain the Architect's acceptance of mock ups before start of final unit of work.

1. Retain and maintain mock ups during construction in undisturbed condition as a standard for judging completed unit of work.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to the Project site in supplier's or manufacturer's original wrappings and containers, labeled with manufacturer's name, material and product brand name, and lot number, if any.
- B. Store materials in their original undamaged packages and containers inside a well-ventilated area protected from weather, moisture, soiling, extreme temperatures, and humidity.

1.8 PROJECT CONDITIONS

A. Environmental Requirements:

1. Substrate temperature must be between 41 °F (5 °C) and 86 °F (30 °C) at time of application and curing.
2. Do not apply when rain is expected, in high winds, or onto hot substrates.

1.9 WARRANTY

A. Product warranty from date of Substantial Completion:

1. Render is 1 year
2. Silicate coating is 15 years

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Basis of Design: Items specified are to establish a standard of quality for design, function, materials, compatibility, performance, warranty, and appearance. Equivalent products by listed manufacturers are acceptable. The Architect is the sole judge of the basis of what is equivalent.

B. KEIM Mineral Coatings of America, Inc., 10615 Texland Blvd. #600, Charlotte, North Carolina 28273. Telephone 704-588-4811. Email keim-info@keim.com.

2.2 MATERIALS

A. Base, Intermediate, and Top Render: Provide lime cement render meeting or conforming to:

1. Hydraulic lime cement render containing 0-1.3 mm quartz grains, hydrated lime, white cement, and very small mineral glass fibers.
2. 9 perms vapor permeable.
3. No VOC.
4. Manufactured to DIN EN 998-1 standard.
5. Strength category CS III and P II according to DIN V 18550.
6. Manufactured as sacked, ready-to-use dry aggregate; add only clean water.
7. Basis of Design: "KEIM Universalputz Standard Render", KEIM Mineral Coatings of America, Inc.

B. Mesh: Provide woven glass reinforcement mat meeting or conforming to:

1. Tightly woven 1 meter (39.37 inches) wide semi-rigid construction that maintains its shape against lateral stress
2. Mineral glass fiber 4mm x 4mm lattice mat allows 1.3 mm quartz sand grains and mineral fillers to move through the mat unrestricted for proper embedding.
3. Has printed, non-fading, non-dissolving four inch margin lines to assist placement and alignment, and maintain proper four inch overlap between strips.
4. Alkaline resistant, unaffected by high pH renders. Will not deteriorate over time.
5. No VOC.
6. Basis of Design: "KEIM Glass Fiber Mesh", KEIM Mineral Coatings of America, Inc.

C. Lime Remover: Provide a pretreatment and cleaning agent meeting or conforming to:

1. Fluorosilicic acid based.
2. Is diluted with water.
3. Upon application immediately reacts to form harmless compounds.
4. Transparent light pink color.
5. No VOC.
6. Basis of Design: "KEIM Lime Remover", KEIM Mineral Coatings of America, Inc.

D. Silicate Coating, Base Coat: Provide silicate based opaque coating meeting or conforming to:

1. DIN 18 363 2.4.1, manufacturing standard for silicate paint.
2. DIN EN 1504-2/2.2, Products and systems for the protection and repair of concrete structures/Surface protection systems for concrete.
3. DIN 4102-A2, non-flammable standard – will not burn.
4. ASTM E 96 Vapor Permeability – 83 perms.
5. ASTM G 154 Accelerated Weathering – no fading, cracking, peeling.
6. ASTM E 514 62-MPH Wind-Driven Rain Test – no water penetration.
7. With biocides.

8. Less than 1 gram per liter VOC (Volatile Organic Content).
 9. Basis of Design: "KEIM Royalan", KEIM Mineral Coatings of America, Inc.
- E. Silicate Coating, Top Coat: Provide silicate based opaque coating meeting or conforming to:
1. DIN 18 363 2.4.1, manufacturing standard for silicate paint.
 2. DIN EN 1504-2/2.2, Products and systems for the protection and repair of concrete structures/Surface protection systems for concrete.
 3. DIN 4102-A2, non-flammable standard – will not burn.
 4. ASTM E 96 Vapor Permeability – 83 perms.
 5. ASTM G 154 Accelerated Weathering – no fading, cracking, peeling.
 6. ASTM E 514 62-MPH Wind-Driven Rain Test – no water penetration.
 7. With biocides.
 8. Less than 1 gram per liter VOC (Volatile Organic Content).
 9. Basis of Design: "KEIM Royalan", KEIM Mineral Coatings of America, Inc.
- F. Dilution for Silicate Coating: Provide silicate dilution meeting or conforming to:
1. DIN 4102-A2, non-flammable standard – will not burn.
 2. ASTM E 96 Vapor Permeability – 83 perms.
 3. Less than 1 gram per liter VOC (Volatile Organic Content).
 4. Basis of Design: "KEIM Royalan Dilution", KEIM Mineral Coatings of America, Inc.

2.3 EQUIPMENT

A. Tools:

1. Render: Application by ordinary plastering tools.
2. Mesh: Application by ordinary plastering trowels.
3. Lime Remover: Apply by natural bristle façade brush, rinse off with garden hose.
4. Silicate Coating: Apply by natural bristle façade brush, professional roller, or professional airless spray equipment and back-roll as required for even distribution.

2.4 FINISHES

- A. Render: Finish as directed by Architect.
- B. Lime Remover: Leave surface clean from removed particles.
- C. Silicate Coating: Apply evenly to a smooth mineral matte finish without lap lines, voids, "holidays", or drips.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verification of Conditions: Confirm by examination the areas and conditions under which the work is to be applied for compliance with manufacturer's instructions. Do not proceed with the work until unsatisfactory conditions have been corrected.
1. Verify substrate is secure, sound, dry, and absorbent, and free of dirt, grease, salts, oil-based paints, release agents, curing agents, and other bond breakers.
 2. Verify substrate has no other pretreatments or priming materials applied.

3. Beginning of the work shall indicate acceptance of the areas and conditions as satisfactory by the Applicator.

3.2 PREPARATION

- A. Protection: Lay ground cloths and take measures as necessary to protect surfaces subject to contact by products specified by this Section.

3.3 APPLICATION

- A. Conform to reviewed product data, manufacturer's written instructions, and provisions of the Contract Documents.

- B. Plan the work properly.

1. Work to logical stopping points (corners, seams, architectural features, etc.).
2. Apply coatings maintaining a wet edge to desired finish as indicated in FINISHES Article.
3. Protect from wind and rain prior to, during, and for a minimum 24 hours after application.

- C. Base Render:

1. Ensure surface is free of dust and bond breakers.
2. Mix render with clean water using mixing paddle in drill motor. Allow to rest 5 minutes, and then stir to relax the batch. Over-mixing render will cause loss of strength. Render that has started to set may not be re-mixed.
3. Apply render to fill paper-backed metal lath to a minimum 10 mm (3/8 inch) layer thickness.
4. Cure minimum ten days before applying intermediate render.

- D. Intermediate Render:

1. Ensure surface is free of dust and bond breakers.
2. Do not pre-wet base render surface.
3. Precut mesh strips ensuring a 10 mm (4 inch) overlap of mesh strips. Window and door openings may be reinforced from corners outward with additional 1 meter (39.37 inches) wide by minimum 1 meter (39.37 inches) wide strips.
4. Mix render with clean water using mixing paddle in drill motor. Allow to rest 5 minutes, and then stir to relax the batch. Over-mixing render will cause loss of strength. Render that has started to set may not be re-mixed.
5. Apply over base render to a minimum 4 mm (3/16 inch) layer thickness.
6. Embed mesh in wet surface of intermediate render, the 4 x 4 mm lattice pattern will show through the surface when properly embedded. Do not allow the mesh to contact the base render substrate. Maintain minimum distance of 2 mm (slightly greater than 1/16 inch) above base render substrate.
7. Cure minimum 24 hours before applying top render.

- E. Top Render:

1. Ensure surface is free of dust and bond breakers.
2. Do not pre-wet intermediate render surface.
3. Mix render with clean water using mixing paddle in drill motor. Allow to rest 5 minutes, and then stir to relax the batch. Over-mixing render will cause loss of strength. Render that has started to set may not be re-mixed.

4. Apply to a minimum 3 mm (1/8 inch) layer thickness. Finish according to Section 2.4 FINISHES.
5. Cure minimum 10 days before application of silicate finish.
6. Cure minimum 3 days before application of lime remover.

F. Lime Remover:

1. Dilute 1:3 (1 part lime remover to 3 parts clean water) with clean water.
2. Apply to render/stucco surfaces from bottom working to the top. Reaction is immediate.
3. Rinse surfaces with clean water from bottom to top and down.

G. Silicate Coating:

1. Base Coat: Dilute silicate coating with maximum 20 percent dilution (25kg with 5 liters dilution). Stir well by hand or 600-800 RPM mixing equipment.
 - a. Apply base coat of diluted silicate coating.
 - b. Allow minimum 12 hours drying time.
2. Top Coat: Do not dilute. Stir well by hand or 600-800 RPM mixing equipment.
 - a. Apply top coat of undiluted silicate coating.

3.4 CLEANING

- A. Clean tools, spills, and accidental drips immediately with plenty of water.
- B. Leave applications clean and premises free from residue and debris from work of this Section.

END OF SECTION