



# **Economic Development Industrial Corporation of Boston**

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## **WINDOW REPLACEMENT STANDARDS AND REQUIRED SUBMISSIONS FOR BUILDING 114 ARMY BASE STOREHOUSE**



Revised, August 27, 2012

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## **Introduction**

- A. These window standards are to be utilized by current and future EDIC tenants within the building formally known as the Army Base Storehouse or building 114, it is now known as the Boston Design Center, the Bronstein Center and 27 Drydock Avenue. The different management companies of the separate sections have expressed the need to replace many of the windows within this one building. This window standard established by the BRA/EDIC is intended to insure that the installation and quality of product purchased by these management companies conform to an industry standard. It is also necessary, that all windows installed throughout building 114 have continuity in design, visual appearance, and discrepancies between varying window installments are not evident. The BRA/EDIC's goal is to maintain the architectural and structural integrity of the building by requiring the size, shape, proportions and finish be identical with no visual discrepancy.
- B. The BRA/EDIC reserves the right to refuse approval of any window submission, which fails to meet these goals. No windows will be installed without prior written approval of the BRA/EDIC.
- C. All requirements listed herein and all applicable codes and/or testing agency whichever is greater shall govern the quality of windows.

## **General**

- A. All work performed must be performed according to the requirements set herein, and according to the best standards and practices of the trades involved. All installation methods shall comply with all City, State and federal statues and codes, including the Massachusetts State Building Code and subsequent Energy Code.
- B. The Tenant shall provide professionally stamped structural engineered design calculations and letter with shop drawings confirming the window is designed to withstand the design pressures. See structural engineer's requirements under Submittals.
- C. Do not commence removal of existing window units until new windows have been delivered to the site. The BRA/EDIC shall approve any temporary coverings and other protection against weather damage.
- D. The Tenant shall install one (1) complete window unit into the existing building for the BRA/EDIC's visual approval. The window shall be manufactured as approved by the BRA/EDIC, size shall be approximately size 16'x 10' and installed per approved specification and complete. The purpose of this inspection is to confirm that the window unit has been manufactured and installed in accordance with the approved submittals and achieves the BRA/EDIC's goal for continuity throughout the building.

- E. Make all necessary arrangements with the appropriate municipal authorities, and obtain all required approvals, before the operation of any cranes, placing any exterior barriers, signs, warning flashers, and similar items required to protect persons and property. Furnish, erect, and maintain in a safe condition, for the duration of the work, all temporary protection and warning items required to protect persons and property from accident, due to the operations required for the installation.
- F. After the removal of each existing window, blocking and other related items, thoroughly clean existing surfaces, remove all remaining existing caulking material therefrom, and scrape surfaces and proper abatement if required shall be executed. Paint all areas of the rough opening where required before installing new windows.
- G. All contractors engaged on the project must be fully insured (bodily injury, property damage, Workmen's Compensation, Builders All Risk, etc.) in accordance with the lease and/or the Tenant Guidelines.
- H. All construction methods and materials and/or improvements must conform to the Tenant Guidelines and/or lease conditions and shall be in accordance with the Latest editions of the Massachusetts State Building Code, City of Boston Building Code, Life Safety Code, OSHA, Underwriters Laboratory, the American Architectural Manufacturers Association and the Manufacturer's Standard for Quality Control, Installation and Operation.
- I. In accordance with EDIC Construction guidelines all proposed plans must be stamped by an Architect or Engineer registered in the Commonwealth of Massachusetts.
- J. It is expected that all contractors employed by the Tenant will work in harmony with other contractors currently working in the Marine Industrial Park and will follow the Boston Residents Job Policy for the construction trades employed.

**Windows Requirements:**

- A. The general appearance of the exterior of the window shall be a low profile or amount of protrusion from the face of the glazing shall be minimal and shall replicate the profile of the existing steel window system. The mullions shall have the same proportionate division on center as the existing steel system and shall maintain a uniform standard and division between structural frame and structural mullion.
- B. Aluminum windows shall conform to the Requirements of AAMA 101-97 classification HC 40 for "Heavy Commercial," AAMA 101-93 will not be acceptable.
- C. All principal frame, sash or fixed window sections shall be of special extruded aluminum shapes produced from Architectural Grade homogenized aluminum primary billet.

- D. Materials: Main frame and sash members shall be aluminum alloy 6063-T6. All extrusions shall have a nominal wall thickness of 0.125 inches, minimum.
- E. Thermal Break: The thermal break shall provide a continuous uninterrupted thermal break around the entire perimeter of the frame and all sash and shall not be bridged by metal conductors at any point.
- F. Thermal Barrier: The thermal barrier shall be poured-in-place, two part polyurethane. A non-structural thermal barrier is will not be acceptable.
- G. Weatherstripping: All weatherstripping shall be as recommended by the Manufacturer or approved equal.
- H. Operable Sash: The operable sash shall be of awning style and shall project out and shall pivot from the upper frame, the latching mechanism shall be at the lower frame. Provide adjustable opening restrictor devices for all operable sashes.
- I. Glazing: Exterior sash shall be factory glazed with 0.250 inch float glass. Interior sash shall be factory glazed with 0.250 inch float glass. All factory glazed units shall be wet glazed with a silicone backbed compound and an extruded aluminum glazing bead with vinyl gasket. The glazing shall be low E in accordance with the Massachusetts Energy Code.
- J. Finish: Clean all surfaces and remove surface blemishes, scratches, burrs, and tool work. Substrate preparation shall include cleaning, degreasing and chromate conversion coating. Finish shall be factory applied AA-M10-C41-R1X, high performance "organic" Kynar based PPG Duranar finish, in accordance with AAMA 605.2. Color shall be black. Finish shall be 25% gloss.
- K. Muntins: Muntins shall be surface applied muntin bars. The muntins shall have similar construction and same material and finish as the frames. Beveled at exterior surface.
- L. Bug Screens at the interior side of windows (Optional): Screen frame shall be extruded 6063-T6 aluminum alloy frames, with mitered or coped joints and concealed mechanical fasteners. Finish frame to match window units. Provide removable PVC spline-anchor concealing edge of screen frame. Provide frames covering all operable sash. Screen fabric shall be 18/18 mesh, 0.009 inch diameter coated aluminum wire complying with FSRR-w-365 type VII.
- M. Latch Poles: Provide a pole operated head latch which locks automatically when upper sash is in fully closed position. All poles shall match the specified hardware finish. The poles shall be 6'-0" long poles (one per room) with hooking devices compatible with locking hardware and with wall mounted pole holders.

### **Additional Requirements**

- A. Aluminum window units above shall be factory assembled with windows separated by 1/4" minimum thermal barrier. The windows shall be low profile to replicate the existing steel window system with the least sight lines as required by the structural engineers report, with surfaced applied muntin bar where shown, as manufactured by EFCO Corporation, Win Vent, Custom Window Company, Graham Window Company, Moduline Window Systems, Wausau Window systems or equal.
- B. Empty cavities behind the window frame shall be insulated with unfaced glass fiber batt insulation and cellulose insulation by Owens- Coming Fiberglass Corp., Certainteed, Manville Company or equal.
- C. Perimeter exterior sealant for joints between metal members furnished hereunder and dissimilar materials shall be a two-part, non-sag, urethane sealant, conforming to Federal Specification TT-S-227E, Type H, in color black, as manufactured by Tremco, Pecora, Vulkem or equal.
- D. Interior caulking material for joints between metal members furnished hereunder and dissimilar materials shall be Acrylic latex caulking material conforming to the standards set forth in ASTM C 834-76, in color black, as manufactured by Tremco, Pecora, Vulkem or equal.

### **Submittals – Required by the Tenant prior to construction:**

The following shall be submitted to the BRA/EDIC before construction commences. This submission is required before final written approval will be granted.

#### **A. Structural Engineer Report:**

- 1. A letter and calculations from a professional structural engineer registered in the Commonwealth of Massachusetts stating the compliance with the following:
- 2. The design factors regarding positive and negative pressures, on the building including corners, shall be calculated and certify that the Tenant's specified manufacturer's window meets the Unified load Structural tests in accordance with ASTM A331-97. The ASCE 7-88 shall be consulted. The wind speed factor used for these calculations shall be 110 mph. The Nature of Occupancy of the building is category I. Location is less than 100 miles from the Hurricane Oceanline.
- 3. Verify that the Tenant's specified fasteners and fastener spacing for the window installation meet the structural loading required. Fasteners shall be of sufficient strength to perform the function for which they are used. Fasteners shall be concealed as far as practical and heads shall be tamper-proof.

4. All requirements shall be submitted to the BRA/EDIC bearing the signature and professional stamp of the Tenant's structural engineer.

B. Other:

1. Final design appearance of the window proportions shall be submitted, including an elevation of the window or windows being replaced and a sections vertically and horizontally through the specified window.
2. Prior to the start of construction, all applicable permits must be obtained and copies of the permits submitted to BRA/EDIC at 10 Drydock Avenue.

C. Performance of Windows required by the Manufacturer:

The intent of this section is to establish a level of quality for windows and related items which will save energy, reduces sound transmission to the specified level, and provide the lowest cost to the Tenant over an extended life cycle. While this establishes a minimum performance standard, the specified requirements are in no way intended to restrict product designs, which will equal or offer superior performance to that which is specified herein.

D. Copies of Certifications:

1. Written and signed certification by an officer of the window manufacturer, from the window manufacturer stating that the windows, and all related items proposed to be furnished hereunder meet or exceed the materials and performance requirements specified and that the units and materials being proposed are identical to those tested by an AAMA Certified Laboratory in accordance with AAMA 101-97 Testing (AAMA 101-93 will not be accepted).
2. Copies of complete certified test reports on the windows to be furnished hereunder, performed by an independent and AAMA certified testing laboratory, verifying that the proposed windows and related items meet or exceed all performance requirements specified herein. Test results shall include the name and location of the testing laboratory; the date(s) on which the tests were performed; specific descriptions of the window units used in the tests; the various types of tests performed, the criteria and actual data for such tests, in accordance with ASTM, AAMA and other industry standards; and all other information as necessary to verify compliance with the specified requirements.
3. The Manufacturer shall also submit evidence of the Tenant's specified window shall pass the following performance tests.

- a) Uniform Load Structural Tests: This test shall be conducted in accordance with ASTM E331-97 for an exterior load specified by the Structural Engineer's report. At the conclusion of these tests, there shall be no breakage or failure to any part of the unit.
- b) Window Thermal Performance: When tested in accordance with AAMA-1503.1-98 on an exact size window size of 4'-0" x 6'-0", the thermal transmittance due to conduction (Uc) shall not exceed 0.58 when all sash are glazed with 1/4" - 1/4" clear monolithic glass.
- c) Condensation Resistance Factor (CRF): When tested in accordance with AAMA-1503.1-98 on an exact size window size of 4'-0" x 6'-0", the CRF shall not be less than 62 when all sash are glazed with 1/4" - 1/4" clear monolithic glass.
- d) Air Infiltration Test: Air infiltration shall not exceed 0.20 cfm per foot of sash perimeter with the sash in the closed and locked position under static pressure drop of 1.57 psf (equivalent to 25 mph wind velocity) when tested in accordance with ASTM-E283-97 on an exact window size of 5'-0" x 8'-0".
- e) Water Resistance Test: The glazed unit shall be mounted in its vertical position continuously supported around the outside perimeter. With the interior sash in a fully closed and locked position, and the exterior sash open, the window unit shall be subjected to Water Resistance Test in accordance with ASTM E547.97 on an exact window size of 5'-0" x 8'-0". When a positive static pressure of 8 pounds per square foot has been stabilized, 5 gallons of water per hour per square foot of window area shall be applied to the exterior face of the window for a period of 15 minutes. The same test with all four sash closed resulting in 12 pounds per square foot. No water shall pass the interior face of the window frame or penetrate into the area that would represent wall construction surrounding an installed window.
- f) Sound Transmission Loss Test: One complete window unit of a typical size and design to be used on this project and preglazed as specified herein, with 1/4" float glass in exterior sash and 1/4" float glass in interior sash, shall be tested for determination of its Sound Transmission Class (STC). With the interior and exterior sash closed and locked, sound transmission loss measurement shall be performed in accordance with the requirements of ASTM E90 and ASTM E413 current editions. The STC shall be not less than 32. No test shall be more than 3 years old.



- E. The manufacturer of the windows and related items shall furnish adequate evidence that the company is, and has been for not less than five consecutive years, regularly engaged in the manufacture of the type and quality of windows specified herein; and shall submit a listing of at least three (3) projects where said type and quality windows have been in place for at least two years.
- F. The installer of the windows shall furnish adequate evidence that the company is, and has been for not less than five consecutive years, regularly engaged in the installation of the type and quality of windows specified herein; and shall submit a listing of at least three (3) projects where said type and quality windows have been in place for at least two years.
- G. Literature: Manufacturer's product data sheets for windows, glass, sealant, factory finish system, and other manufactured materials in conjunction with the windows, including cleaning and maintenance procedures for pre-finished metal work, and glass.
- H. Shop Drawings: Shop Drawings shall include complete schedule of new aluminum windows, louver, and related items to be furnished hereunder. These drawings shall establish window identification and location and must show elevation of units, large size sections, thickness and gauges of metal, fastenings, part numbers and locations, type of finish, size, and spacing of anchors, method of glazing, insulation, method of caulking and sealing, mullion detail, hardware details and complete installation details, where applicable, coordinated to the actual condition and field dimensions of existing openings showing methods of anchorage and sealing to surrounding work.

**Submittals – Required by the Tenant at the end of construction:**

- A. Submit accurate As-Builts upon completion of the construction project. As-Built Drawings shall include the installation method and locations of window replacement. The submission shall also consist of a full set of reproducible vellums bearing a professional stamp of the architect and/or engineer registered in the Commonwealth of Massachusetts, dated and signed; also submit Autocad compatible electronic files.
- B. Copies of Warranties:
  - 1. Aluminum window manufacturer's written and signed warranty covering defects in workmanship and materials for a period of ten (10) years from the date of completion and acceptance of the Tenant. The warranty shall state that all parts used in the manufacture of the windows as herein specified for this project shall be available, for the ten year warranty period and that a number of replacement parts shall be kept in stock to facilitate any necessary repair in a timely manner. Repairs shall be determined in the required annual inspection by the manufacturer within the first 30 days after the end of the year as guaranteed in the warranty. A total minimum of ten inspections shall be performed. The warranty shall further state that the manufacturer will provide all labor required

at the job site to repair and/or replace defective materials as outlined herein at no cost to the Tenant.

C. Aluminum finish manufacturer's written guarantee against color fading, chipping, peeling, cracking, blistering or other defects in the finish material for a period of (10) years commencing on the date of completion and acceptance of the Contract.

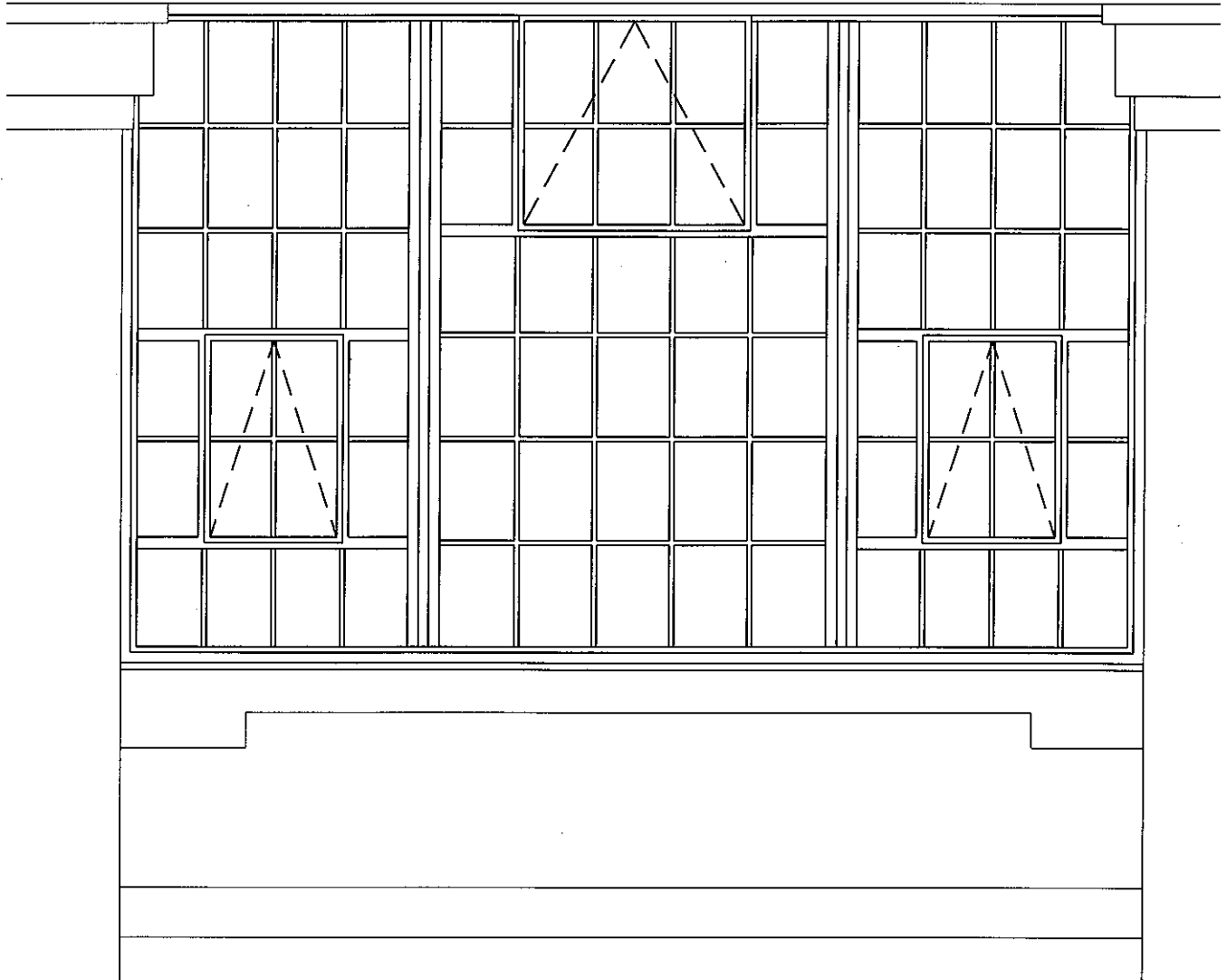
D. Contractors Submittals:

1. Contractor's written and signed warranty covering the installation for a period of two (2) years from the date of completion and acceptance of the Tenant. This warranty shall be covered by a surety bond, acceptable to the Tenant, and is intended to insure that the installation meets the standards for the two year period, and any corrective work to maintain the performance in the accord shall be performed by the Contractor at no additional cost to the Tenant.

### **Exhibits**

- SK-1 Typical Standard Window – Operable Sash - Floors 2 through 7
- SK-2 Typical Standard Window – Fixed – Floors 2 through 7
- SK-3 Typical Standard Window – Operable Sash – Floor 8
- SK-4 Typical Standard Window – Fixed – Floor 8
- SK-5 Typical Tower Window Type A – Operable Sash
- SK-6 Typical Tower Window Type A – Fixed
- SK-7 Typical Tower Window Type B – Fixed and Operable

END OF STANDARDS



**TYPICAL STANDARD WINDOW - OPERABLE SASH**  
**FLOORS 2 THROUGH 7**  
 NOT TO SCALE

## TENANT GUIDELINES

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 OF BOSTON**

**BRA/ENGINEERING & FACILITY MANAGEMENT DEPARTMENT**  
 22 DRYDOCK AVENUE, BOSTON, MASSACHUSETTS 02210  
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**STANDARD WINDOW DETAIL**

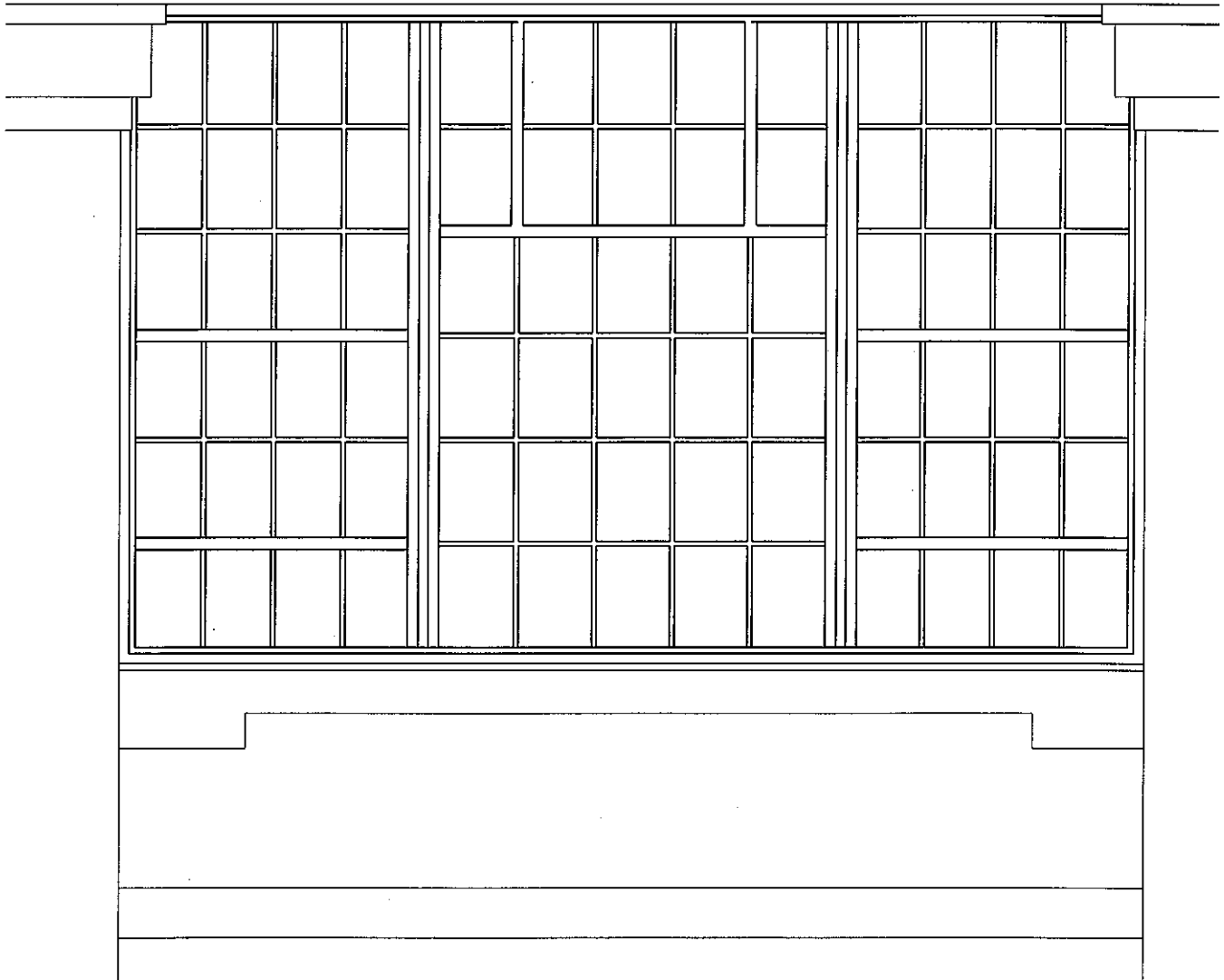
**MARINE INDUSTRIAL PARK**

DATE: APRIL 2012	SCALE: AS NOTED	FN:
APPRVD: L. MAMMOLI	DRN: M. CUMMING	

DWG. NO.

**SK-1**

SHEET OF



**TYPICAL STANDARD WINDOW - FIXED**  
**FLOORS 2 THROUGH 7**  
 NOT TO SCALE

# TENANT GUIDELINES

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 22 DRYDOCK AVENUE, BOSTON, MASSACHUSETTS 02210  
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**STANDARD WINDOW DETAIL**

**MARINE INDUSTRIAL PARK**

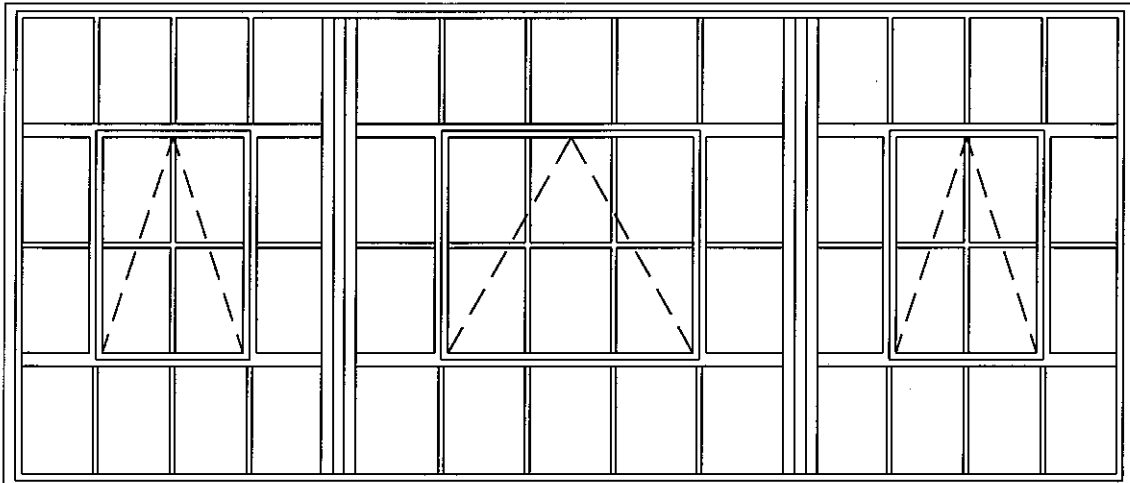
DATE: APRIL 2012 SCALE: AS NOTED FN:

APPRVD: L. MAMMOLI DRN: M. CUMMING

DWG. NO.

**SK-2**

SHEET OF



**TYPICAL STANDARD WINDOW - OPERABLE SASH**

**FLOOR 8**

NOT TO SCALE

**TENANT GUIDELINES**

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**STANDARD WINDOW DETAIL**

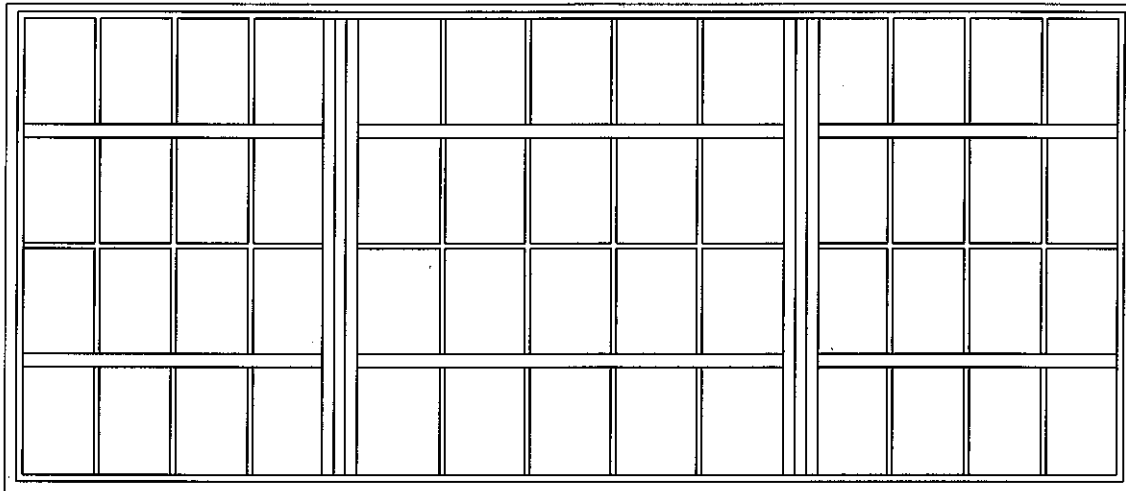
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DATE: APRIL 2012	SCALE: AS NOTED	FN:
APPRVD: L. MAMMOLI	DRN: M. CUMMING	

DWG. NO.

**SK-3**

**SHEET OF**



**TYPICAL STANDARD WINDOW - FIXED**  
**FLOORS 8**  
 NOT TO SCALE

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**STANDARD WINDOW DETAIL**

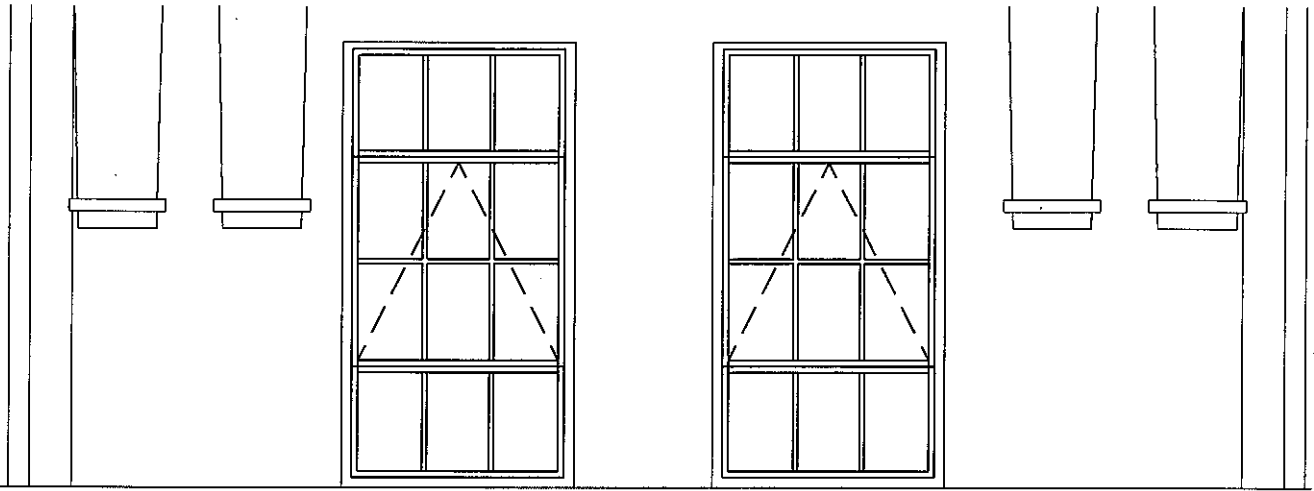
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DATE: APRIL 2012 SCALE: AS NOTED FN:  
 APPRVD: L. MAMMOLI DRN: M. CUMMING

DWG. NO.

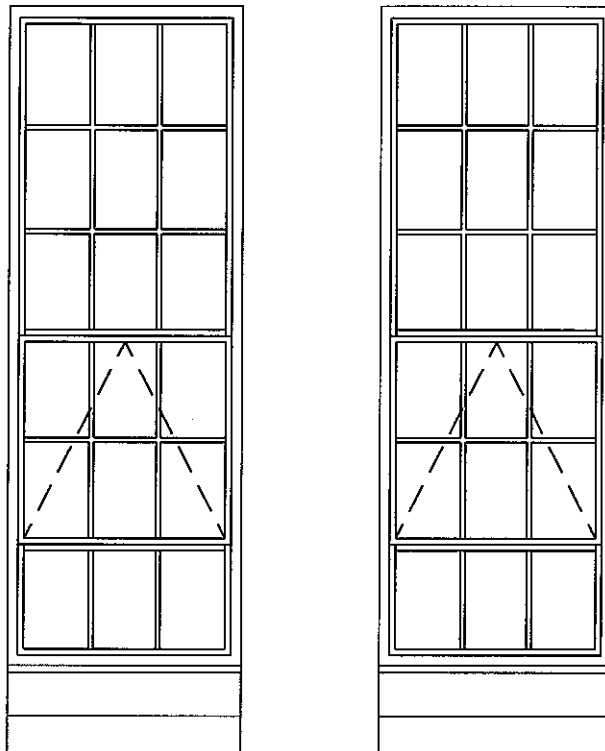
**SK-4**

**SHEET OF**



**TYPICAL TOWER WINDOW- TYPE A - OPERABLE SASH**

**FLOOR 8**  
NOT TO SCALE



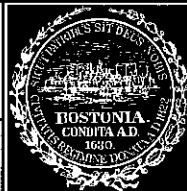
**TYPICAL TOWER WINDOW- TYPE A - OPERABLE SASH**

**FLOORS 2 THROUGH 7**  
NOT TO SCALE

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**STANDARD WINDOW DETAIL**

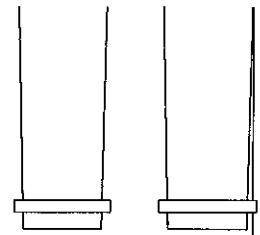
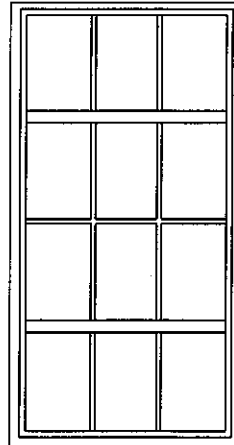
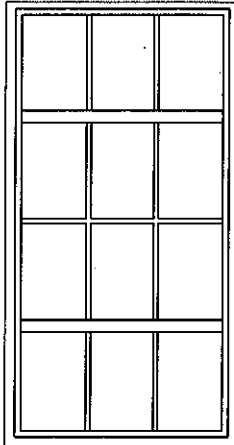
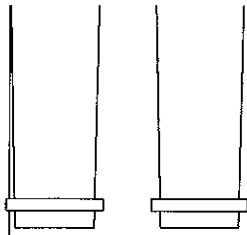
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DWG. NO.

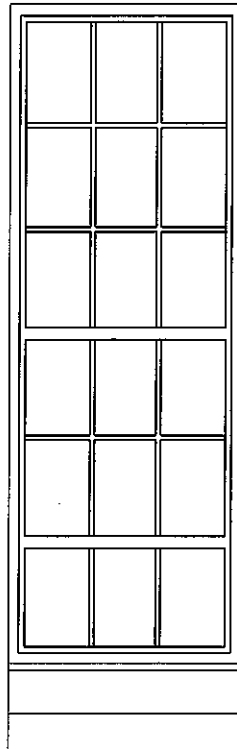
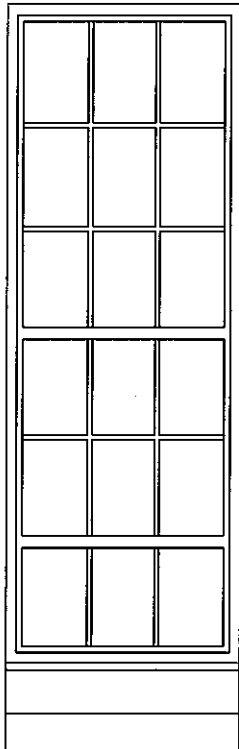
**SK-5**

SHEET OF



**TYPICAL TOWER WINDOW- TYPE A - FIXED**

**FLOOR 8**  
NOT TO SCALE



**TYPICAL TOWER WINDOW- TYPE A - FIXED**

**FLOORS 2 THROUGH 7**  
NOT TO SCALE

**TENANT GUIDELINES**

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**STANDARD WINDOW DETAIL**

**MARINE INDUSTRIAL PARK**

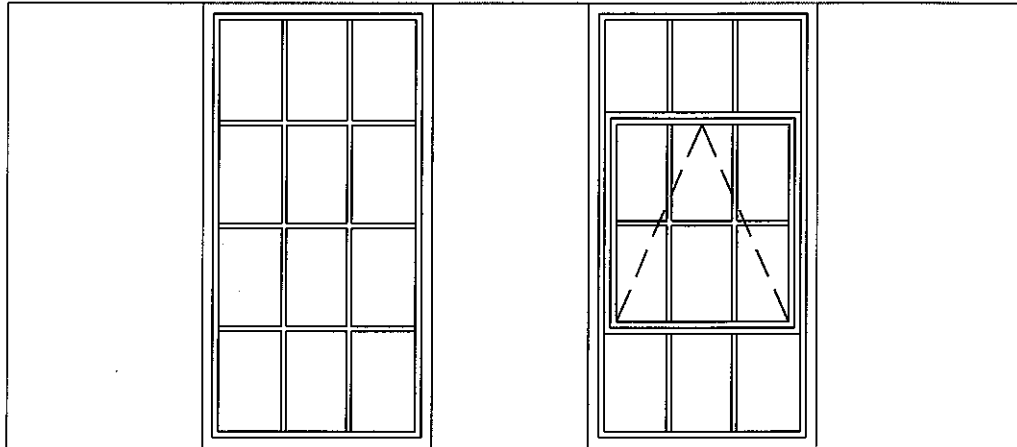
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APPRVD: L. MAMMOLI    DRN: M. CUMMING

DWG. NO.

**SK-6**

SHEET OF



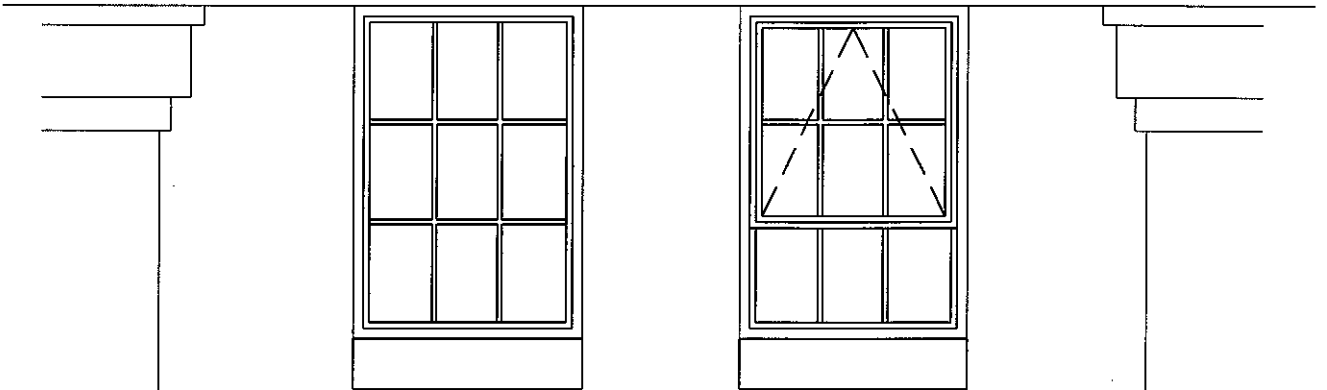


**FIXED**

**OPERABLE SASH**

**TYPICAL TOWER WINDOW- TYPE B**

**FLOOR 8**  
NOT TO SCALE



**FIXED**

**OPERABLE SASH**

**TYPICAL TOWER WINDOW- TYPE B**

**FLOORS 2 THROUGH 7**  
NOT TO SCALE

**TENANT GUIDELINES**

**BOSTON REDEVELOPMENT AUTHORITY/  
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OF BOSTON**



**STANDARD WINDOW DETAIL**

**MARINE INDUSTRIAL PARK**

DWG. NO.

**SK-7**

**BRA/EDIC ENGINEERING & FACILITY MANAGEMENT DEPARTMENT  
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DATE: APRIL 2012	SCALE: AS NOTED	FN:
APPRVD: L. MAMMOLI	DRN: M. CUMMING	

**SHEET OF**