

PROJECT NAME: Existing TSL Building
Service & Showroom Addition

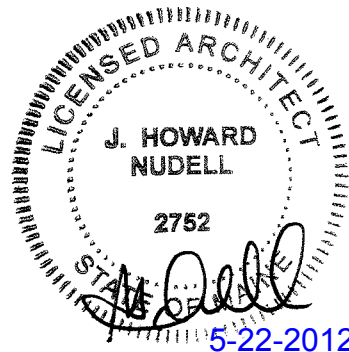
PROJECT LOCATION: 191 Riverside Street
Portland, Maine 04103

PROJECT NO: 2008-279 Service Addition
2008-279.03/2008-279.06 Showroom Addition

ARCHITECT: Nudell Architects
31690 W. Twelve Mile Rd
Farmington Hills, MI 48334

STRUCTURAL: Becker Structural Engineers, Inc.
75 York Street.
Portland, Maine 04101

CIVIL: Sebago Technics
One Chabot Street, P.O. Box 1339
Westbrook, Maine 04098-1339



ISSUED: PERMITS March 16, 2012
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SECTION 084110 – NANA WALL DOOR SYSTEM

PART 1 - GENERAL

1.01 SUMMARY:



- A. Section Includes: Engineered sliding/folding aluminum and glass door system, including aluminum frame, threshold, panels, sliding/folding and locking hardware, weather stripping, glass and glazing; designed to provide an opening glass wall, with sizes and configurations as shown on drawings and specified herein, NanaWall SL70, Thermally Broken Aluminum Framed Folding System as supplied by NANA WALL SYSTEMS, INC. Prep door for panic hardware or closers where applicable.



1.02 RELATED REQUIREMENTS:

- A. Division 8 Section 085113 – Aluminum Framing Systems
B. Division 8 Section 087100 - Door Hardware

1.03 REFERENCES:

- A. American Architectural Manufacturers Association (AAMA):
1. AAMA 611.98, Voluntary Specification for Anodized Architectural Aluminum.
 2. AAMA 2603.02, Voluntary Specifications, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels.
 3. AAMA 1304, Voluntary Specification for Forced Entry Resistance of Side-Hinged Door Systems.
- B. American National Standards Institute (ANSI):
1. ANSI Z97.1, Safety Performance Specifications and Methods of Test for Safety Glazing Material Used In Buildings.
- C. American Society for Testing and Materials (ASTM):
1. ASTM E 283, Test Method for Rate of Air Leakage through Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.
 2. ASTM E 330, Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.
- D. ASTM E 547, Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors by Cyclic Static Air Pressure Differential.4. ASTM E 331, Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference.
- E. Consumer Product Safety Commission (CPSC):
1. CPSC 16CFR-1201, Safety Standard for Architectural Glazing Materials.
- F. National Fenestration Rating Council (NFRC):
1. NFRC 100, Procedure for Determining Fenestration Product Thermal Materials.
 2. NFRC 200, Procedure for Determining Solar Heat Gain Coefficient.

1.04 SUBMITTALS:

- A. Detail Drawings: Indicate dimensioning, direction of swing, configuration, swing panels, typical head jamb, side jambs and sill details, type of glazing material, and handle height.
- B. Product Data: Manufacturer's literature including independently tested data listing performance criteria and Owner's Manual with installation instructions.
- C. Contract Closeout Submittal: Submit Owner's Manual from manufacturer. Identify with project name, location and completion date, type and size of unit installed.

1.05 QUALITY ASSURANCE:

- A. Manufacturer: Provide complete, precision built, engineered, pre-fitted unit by a single source manufacturer with at least 15 years experience in providing folding/sliding door systems for large openings in the North American market.
- B. Performance Requirements: Unit to comply with applicable manufacturer's independently certified testing results. Testing results include air infiltration in accordance with ASTM E 283, water penetration in accordance with ASTM E 547 and E 331, structural loading in accordance with ASTM E 330, and forced entry in accordance with AAMA 1304.
- C. Thermal Performance: Unit to comply with the U value, rated, certified and labeled or simulated in accordance with NFRC 100, shown in manufacturer's latest published data for the glazing and sill specified.
- D. Solar Heat Gain Coefficient: Unit to comply with the solar heat gain coefficient, simulated in accordance with NFRC 200, shown in manufacturer's latest published data for the glazing specified.
- E. Installer Qualifications: Installer shall be manufacturer's certified trained installer and experienced in the installation of manufacturer's products or other similar products for large openings. Installer to provide reference list of at least 3 projects of similar scale and complexity successfully completed in the last 3 years. Provide project names, locations, completion dates, names and telephone numbers of General Contractor and Owner's contact person.

1.06 WARRANTY:

- A. Provide manufacturer's standard warranty against defects in materials and workmanship.
- B. Warranty Period: Ten years for rollers and for seal failure of insulated glass supplied. For all other components, two year from date of delivery by manufacturer.

1.07 SITE CONDITIONS, DELIVERY, STORAGE AND HANDLING:

- A. In addition to general delivery, storage and handling requirements specified in Section 01600, comply with the following:
 - 1. Deliver materials to job site in sealed, unopened cartons or crates. Protect units from damage. Store material under cover, protected from weather and construction activities.

PART 2 - PRODUCTS

2.01 SUPPLIER:

A.	NANA WALL SYSTEMS, INC. 707 Redwood Hwy, Mill Valley, California	Manufactures Representative The Eisen Group
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94941 Toll Free: (800) 873-5673 Telephone: (415) 383-3148 Fax: (415) 383-0132 Website: www.nanawall.com Email: info@nanawallsystems.com	Andy Cook Telephone: 248-545-5609 570 E Nine Mile Road Ferndale, Mi 48220 Email: acook@eisengroup.com
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2.02 MATERIALS:

- A. Frame and Panels: From manufacturer's standard profiles, provide head jamb, side jambs, and panels with dimensions shown on drawings.
1. Provide panels with standard one lite
 2. Provide manufactures standard kick plate with height specified on drawings.
 3. Aluminum Extrusion: Extrusions with nominal thickness of .078" (2.0 mm). Alloy specified as AlMgSi0.5 with strength rated as 6063-T5 or F-22 (European standard). Anodized conforming to AAMA 611.98 or powder coated conforming to AAMA 2603.02.
 4. Thermally broken with a 3/4" to 15/16" wide Polyamide plastic reinforced with glass fibers. Polyamide plastic less than 3/4" wide or pour and de-bridge thermal break will not be accepted.
 5. Finish: Aluminum Clear Anodized – to match #14 Clear Anodized with a 5 year finish warranty.
- B. Glass: Match 1" insulated storefront from section 08 8000 glazing specification for glass type. All glass to comply with safety glazing requirements of ANSI Z97.1 and CPSC 16CFR 1201.
- C. Locking Hardware and Handles:



1. **On the main entry panel for Doors 104, 105, 106, and 108** for models with a swing panel, provide manufacturer's standard lever handles on the inside and outside, a Schlage compatible lock set with lockable latch, multi-point locking with dead bolt and rods at the top and bottom. Rods to be concealed and not edge mounted. Depression of handles withdraws latch. Lifting of handles engages rods and turn of key or thumb turn engages deadbolt and operates lock. Operation of lock set is by turn of key from the outside and with a thumbturn from the inside for an inward opening unit



2. ~~**On the main entry panel for Door 101** for models with a swing panel, no hardware or locking to be provided by the manufacture, but field installed panic device by others refer to section 08 7100.~~
3. On all other secondary panels and pairs of folding panels, provide manufacturer's removable custodial handles and concealed two point locking hardware operated by 180 degree turn of handle between each pair. Face applied flush bolt locking will not be allowed.
4. Powder coated flat handle finish: silver gray, RAL 9006 or closest match to panel finish. Nylon handle color: gray. Solid brass lever handle set finish: satin nickel.

3. Aluminum locking rods capped by fiber glass reinforced polyamide at top and bottom tracks. Rods to have a stroke of 15/16" (24 mm).
 4. Provide handle height centered at 41 3/8" from bottom of panel.
- D. Sliding/Folding Hardware: Provide manufacturer's standard combination sliding and folding hardware with top, bottom tracks and threshold. All running carriages to be with sealed, self-lubrication, ball bearing multi-rollers. Surface mounted hinges and running carriages will not be allowed. Weight of panels to be borne by the bottom of the track will not be allowed.
1. For each pair of folding panels, for floor mounted system, provide upper guide carriage and lower running carriage with two vertical stainless steel wheels and two horizontal wheels. The vertical wheels to ride on Type 304 stainless steel guide track covers over the full length of sill track and lie above the water run-off level. Carrying capacity of lower running carriage to be 440 lbs.
 2. Threshold: Provide matching, thermally broken low profile saddle sill
 3. Provide on all four corners of panels, thermally broken, die cast zinc multi-functional corner fittings with carriage connectors, hinges and hinge pins as required. Finish: Powder coated, closest match to finish of frame and panels.
 4. Adjustment: Provide system capable of specified amount of adjustments without removing panels from tracks, 3/16" (5 mm) in width per side jamb hinge.
- E. Other Components:
1. Weather stripping: Provide manufacturer's standard double layer EPDM or brush seals with a two layer polyamide fin at both the inner and outer edge of door panels or on frame for sealing between panels and between panel and frame.
 2. Provide tapered pins or machine screws for connecting frame components.

2.03 FABRICATION:

- A. Use extruded aluminum frame and panel profiles with male-female interlocking, corner connectors and hinges, sliding and folding hardware, locking hardware and handles, glass and glazing and weather stripping as specified herein to make a folding glass wall. Factory pre-assembles as is standard for manufacturer and ship with all components and installation instructions.
- B. Sizes and Configurations: See drawings for selected number of panels and configuration.

PART 3 - EXECUTION

3.01 ERECTION:

- A. Because of the large dimensions involved and the weight and movement of the panels, verify the structural integrity of the header such that the deflection with the live load is limited to the lesser of L/720 of the span and 1/4".
- B. Examine surfaces of openings and verify dimensions; verify rough openings are level, plumb, and square, with no unevenness, bowing, or bump on floor.
- C. Installation of units constitutes acceptance of existing conditions.

3.02 INSTALLATION:

- A. Install frame in accordance with manufacturer's recommendations and installation instructions. Properly flash and waterproof around the perimeter of the opening.
- B. Installer to provide appropriate anchorage devices and to securely and rigidly fit frame in place, absolutely level, straight, plumb and square. Install frame in proper elevation, plane and location, and in proper alignment with other work.
- C. If necessary, provide drain connections from lower track.
- D. Install panels, handles and lock set in accordance with manufacturer's recommendations and installation instructions.
- E. If necessary, adjust hardware for proper operation.

END OF SECTION - 084110

SECTION 087100 - DOOR HARDWARE

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Finish hardware for doors as specified and as listed in "Hardware Sets" and required by actual conditions.
 - 2. Include screws, special screws, bolts, special bolts, expansion shields, and other devices for proper application of hardware.
- B. Related Sections include the following:
 - 1. Division 8 Section 08110 "Steel Doors and Frames": Preparation for door Silencers and other hardware.
 - 2. Division 8 Section 08410 "Aluminum Framed Storefronts". Preparation for Door hardware.

1.2 GENERAL REQUIREMENTS

- A. Provide items, articles, materials, operations and methods listed, mentioned or Scheduled herein or on Drawings, in quantities as required to complete project. Provide hardware that functions properly. Prior to furnishing hardware, advise Architect of items that will not operate properly, are improper for conditions, or will not remain permanently anchored.

1.3 SUBMITTALS

- A. Hardware Schedule: Submit 5 copies of hardware schedule in vertical format for Purpose of preliminary review and acceptance. Schedules which do not comply will Be returned for correction before checking. Hardware schedule shall clearly indicate Architect's hardware set and manufacturer of each item proposed. List shall contain Hardware item, base metal, finish, hand, size, and type number.
 - 1. Provide 2 copies of illustrations from manufacturer's catalogs and data in Brochure form.
 - 2. Check specified hardware for suitability and adaptability to details and surrounding Conditions. Indicate unsuitable or incompatible items and proposed substitutions In hardware schedule.
 - 3. Provide listing of manufacturer's template numbers for each item of hardware in Hardware schedule.
 - 4. Furnish other Contractors and Subcontractors concerned with copies of final Approved hardware schedule. Submit necessary templates and schedules as soon As possible to hollow metal, wood door, and aluminum door fabricators in Accordance with schedule they require for fabrication.
 - 5. Samples: Lever design or finish sample: Provide 3 samples if requested by architect.
- B. Installation Instructions: Provide manufacturer's written installation and adjustment Instructions for finish hardware. Finish Hardware Schedule submittal to list installation Notes for each door closer and any other pertinent hardware component in each heading To assure proper understanding of hardware mountings and operation. Send installation Instructions to site with hardware.
- C. Templates: Submit templates and "reviewed Hardware Schedule" to door and frame Supplier and others as applicable to enable proper and accurate sizing and locations Of cutouts and reinforcing.

- D. Contract Closeout Submittals: Comply with Section 01700 including specific Requirements indicated.
1. Operating and maintenance manuals: Submit 3 sets containing the following:
 - A. Complete information in care, maintenance, and adjustment, and data on Repair and replacement parts, and information on preservation of finishes.
 - B. Catalog pages for each product.
 - C. Name, address, and phone number of local representative for each Manufacturer.
 - D. Parts list for each product.
 2. Copy of final approved hardware schedule, edited to reflect "As installed".
 3. Copy of final keying schedule.
 4. One complete set of special tools required for maintenance and adjustment of Hardware, including changing of cylinders.

1.4 QUALITY ASSURANCE

- A. Manufacturer: Obtain each type of hardware (ie. Latch and locksets, hinges, closers) From single manufacturer, although several may be indicated as offering products Complying with requirements.
- B. Supplier: Recognized architectural finish hardware supplier, with warehousing Facilities, who has been providing hardware for period of not less than 3 years, And who is, or who employs a certified architectural hardware consultant (AHC) Who is available, at reasonable times during course of work, for consultation About project's hardware requirements. Hardware schedule shall be prepared and Signed by a certified AHC.
- C. Installer: Firm with 3 years experience in installation of similar hardware to that Required for this project, including specific requirements indicated.
- D. Regulatory Label Requirements: Provide nationally recognized testing agency label or Stamp on hardware for labeled openings. Where UL requirements conflict with Drawings or specifications, hardware conforming to UL requirements shall be provided. Conflicts and proposed substitutions shall be clearly indicated in hardware schedule.
- E. Handicapped Requirements: Doors to stairs (other than exit stairs), loading platforms, Boiler rooms, stages and doors serving other hazardous locations shall have knurled Or other similar approved marking of door lever handles or cross bars in accordance With local building codes. Where indicated to comply with accessibility requirements, Comply with Americans with Disabilities Act (ADA), "Accessibility Guidelines for Buildings and Facilities (ADAAG).
- F. Pre-Installation Conference: Prior to the installation of hardware, manufacturer's Representatives for locksets, closers, and exit devices shall arrange and hold a jobsite Meeting to instruct the installing contractor's personnel on the proper installation of Their respective products. A letter of compliance, indicating when this meeting is held And who is in attendance, shall be sent to the Architect and Owner.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Deliver hardware to jobsite in manufacturer's original packaging, marked to correspond With approved hardware schedule. Do not deliver hardware until suitable locked Storage space is available. Check hardware against reviewed hardware schedule. Store hardware to protect against loss, theft, or damage.

- B. Deliver hardware required to be installed during fabrication of hollow metal, aluminum, Wood, or stainless steel doors prepaid to manufacturer.

1.6 WARRANTY

- A. Guarantee workmanship and material provided against defective manufacture. Repair Or replace defective workmanship and material appearing within period of one year after substantial completion.
- B. Provide the following factory warranties on hardware products against defects in Material and workmanship from date of occupancy of Project.

Hinges and Continuous Hinges: Life of the opening
Exit Devices: Five years Locksets: 7 Year
Closers: Ten Years
Balance of Finish Hardware: One Year

PART 2 - PRODUCTS

2.1 BUTTS AND HINGES

- A. Acceptable Manufacturers and Types:
- B. All hinges to conform to the following ANSI criteria: Standard weight hinges to ANSI/BHMA A156.1-1998 A2112 - (Brass/Bronze), A8112 (Steel) Heavy weight Hinges to ANSI/BHMA A156.1-1998 A2111 (Brass/Bronze), A8111 (Steel)

<u>Type</u>	<u>McKinney</u>	<u>Hager</u>
Type 1	TA2714	BB1279
Type 2	TA2314	BB1191
Type 3	T4A3386	BB1199
Type 4	T4A3786	BB1168

- C. Size:
 - 1. 2-1/4 inch Doors - 5 inch by 5 inch
 - 2. 1-3/4 inch Doors - up to 36" wide 4-1/2 inch by 4-1/2 inch
 - 3. 1-3/4 inch Doors - over 36" wide 5 inch by 4-1/2 inch
- D. Quantity:
 - 1. 2 - hinges per leaf for openings through 60 inches high.
 - 2. 1 - additional hinge per leaf for each additional 30 inches in height or fraction thereof.
- E. Drill 5/32 inch hole and use No. 12, 1-1/4 inch steel threaded to the head wood screws for hinges on wood doors.

2.2 CONTINUOUS HINGES

- A. Acceptable manufacturers:

<u>Pemko</u>	<u>McKinney</u>
CFM -HD	MCK 12 HD
CFM	MCK 12

- B. All continuous hinges shall be guaranteed for the life of the opening. Continuous Hinges with electrical thru wire features shall be industry certified to meet a minimum of 1 million cycles and carry a minimum of 3.5 amps at 24 volts per lead wire. Continuous hinges shall be serviceable and removable without de-mounting the door From the frame. Electric thru wire modification must be guaranteed for no less than Five years.

2.3 FLUSH BOLTS AND DUSTPROOF STRIKES

- A. Products to conform to BHMA L04081; ANSI 156.16 (manual flush bolts), and ANSI A156.3, Type 25 (automatic flush bolts).
- B. Acceptable Manufacturers and Models:

<u>McKinney</u>	<u>Rockwood</u>	<u>Door Controls</u>
FB01M	550	780
FB06M	1842	842NH
FB11W	557	942NH
DPS3	570	80

- C. Non-labeled Openings: Provide 2 flush bolts FB01M for inactive leaf of pairs of locked And latched doors. Locate centerline of top bolt not more than 78 inches from Finished floor. Provide dustproof strike DPS3 for bottom bolt.
- D. Labeled Openings: Provide automatic flush bolt set FB06M or FB06W, as applicable, for Inactive leaf or pairs of doors. Provide dustproof strike DPS3 for bottom bolt.

2.4 LOCKSETS - MORTISE

- A. Mortise locksets to conform to ANSI A156.13 Operational Grade 1 and security grade 1 Series 1000
- B. Acceptable Manufacturers and Series
 - Sargent 8200
 - Best 35H
 - Schlage 9000
- C. Trim 8200 LNJ
- D. Provide lock functions specified in Hardware Sets, with following provisions:

1. Cylinders: Manufacturer's to be 7 pin removable core series .
2. Backsets: 2-3/4 inches.
3. Strikes: Provide wrought boxes and strikes with proper lip length to protect trim But not to project more than 1/8 inch beyond trim, frame or inactive leaf. Where Required, provide open back strike and protected to allow practical and secure Operation.

2.5 EXIT DEVICES

- A. All exit devices shall be ANSI A156.3, Grade 1 Certified and shall be listed by Underwriters Laboratories and bear the UL label for life safety in full compliance with NFPA 80 and NFPA 101. Push rails shall be clad with satin stainless steel material and shall have matching end caps. Painted or anodized aluminum shall not be considered as acceptable. Lever trim shall be available in finishes and designs to match that of the specified locksets.

1) Specified Manufacturer: Adams Rite

- C. All exit devices shall be UL listed for panic. Exit devices for labeled doors shall be UL listed as "Fire Exit Hardware".
- D. Where lever trim is specified, provide lever design to match lockset levers.
- E. Provide cylinders for exit devices with locking trim and cylinder dogging.
- F. Provide cylinder dogging feature for non-rated exit devices.
- G. Provide keyed removable mullions, as specified in the Hardware Sets.
- H. Provide electrical functions and components to match those listed in the Hardware Sets.

2.6 KEYING

- A. Provide cylinders keyed to a Best Universal Lock high security system.
- B. Any future cylinders shall be Master keyed or Grand master keyed and keyed in groups To Owner's existing master key system. Factory master key with manufacturer Retaining permanent keying records.
- C. Keying Meeting: Owner representative, distributor representative and an Architect Representative must be present. Contact the Construction Manager to establish when And where keying conference will be held. A file copy of the Owner approved Keying schedule shall be submitted to the Owner and Architect. Confirm permanent Core type to be provided by Owner.
- D. Provide a visual key control identification on both the key and stamped on side of the Cylinder for any future cores. This identification will be in a D.H.I. nomenclature.

2.7 DOOR TRIM

- A. Acceptable Manufacturers and Types: Architectural door trim to conform to ANSI/BHMA A156.6

<u>McKinney</u>	<u>Hager</u>	<u>Rockwood</u>
DP503	31H	110-70B
PO55	60S	71F

- B. Push Plates: McKinney PO55 8 inches by 16 inch unless otherwise indicated. Where width of door stile prevents use of 6 inch wide plate, provide push plate one Inch less than width of stile but not less than 4 inches wide.
- C. Pulls: McKinney DP503, unless otherwise indicated.

Where required, mount back to back with push bars.

- D. Kick Plates and Mop Plates: Minimum of 0.050 inch thick, beveled 3 edges.
 - 1. At single doors provide width 1-1/2 inch less than door width on stop side for Kick plates and one inch less than door width on face side for mop plates.
 - 2. At pairs of doors provide width one inch less than door width on both sides.
 - 3. Height of kick plates to be 12 inches, unless otherwise indicated. Height of mop Plates to be 4" , unless otherwise indicated.

2.8 DOOR CLOSERS

- A. Acceptable Manufacturers and Types of Exposed Closers: Closers to conform to ANSI/BHMA A156.4, Grade 1
 - Sargent 351
 - L. C. N. 4400
 - Norton 8500
- B. Provide sized closers, adjustable to meet maximum opening force requirements Of ADA.
- C. Provide drop plates, brackets, or adapters for arms as required to suit details.
- D. Mount closers on room side of corridor doors, inside of exterior doors, and stair side Of stairway doors.
- E. Provide back-check for closers.
- F. Provide hold-open arms where indicated.
- G. Provide closers for doors as noted in Hardware Sets and, in addition, provide closers For labeled doors whether or not specifically noted in sets.
- H. Provide closers meeting the requirements of UBC 7-2 and UL 10C positive pressure Tests.

2.10 AUTOMATIC OPERATORS

- A. Acceptable Manufacturers and Types of Low Energy Operators: Low energy operators To conform to ANSI/BHMA A156.19 requirements and comply with UL listing for Fire rated assemblies. L.C.N.
- B. Operator units shall provide conventional door closer opening and closing forces Unless the power operator motor is activated by wall switch. Units shall have door Closer assembly with adjustable spring size, back check valve, sweep valve, latch valve, Speed control valve, and pressure adjustment valve to control door closing.
- C. Operator units shall have a three position selector mode switch that shall permit units to Be switched "ON" to monitor for function activation. "HO" for indefinite hold open Function, or "OFF" which shall deactivate all control functions but will allow standard Door operation by means of the internal mechanical closer.
- D. Low energy door operators shall have the following adjustments:
 - 1. Motor assist shall be adjustable from 0 to 30 seconds in 5 second increments.
 - 2. Door control shall be adjustable to provide compliance with the requirements of the Americans with Disabilities Act (ADA).
 - 3. Door closing force and back check shall be adjustable.

- 4. Motor start up delay.
- 5. Vestibule interface delay.
- 6. Electric lock delay.
- 7. Door hold open delay up to 30 seconds.

- E. Operator units shall have vestibule inputs to allow sequencing operation of two units.
- F. Operator units shall have a SPDT relay for interfacing with latching or locking devices.

2.11 OVERHEAD STOPS

- A. Acceptable Manufacturers and Types: Conform to ANSI/BHMA A156.8

<u>Sargent</u>	<u>Rixson</u>
690	1 Series
1530	10 Series
590	9 Series

- B. Provide sex bolt attachments for mineral core door application.

2.12 STOPS AND HOLDERS

- A. Acceptable Manufacturers and Types

Wall bumpers to conform to ANSI/BHMA A156.16, Type L02251
Floor stops to conform to ANSI/BHMA A156.16, Types L02141/L02161

<u>McKinney</u>	<u>Hager</u>	<u>Rockwood</u>
WS02	236W	409
FS01	241F	440
FS02	243F	442

- B. Provide 1212 Series floor stop as applicable, for each door leaf except where floor stops are specified otherwise in Hardware Sets, or where conditions require the use of an Overhead stop.
- C. Provide 55 Series overhead stops for doors that swing more than 140 degrees before striking a wall.

2.13 THRESHOLDS

- A. Acceptable Manufacturers: Pemko, Reese Enterprises, and National Guard Products. Thresholds to conform to ANSI/BHMA A156.21, Type J12100

<u>Pemko</u>	<u>Reese</u>	<u>McKinney</u>
171A	S205A	MCK171

- B. Where thresholds are specified in hardware groups, provide 171A thresholds unless detailed otherwise.
- C. Refer to drawings for special details. Provide accessories, shims and fasteners. Where thresholds occur at openings with one or more mullions, they shall be cut for the mullions and extended continuously for the entire opening.

2.14 WEATHERSTRIPPING

- A. Acceptable Manufacturers and Product: Weatherstripping to conform to ANSI/BHMA A156.22

	<u>Pemko</u>	<u>Reese</u>
Sweeps	18062	964
Jambs/ Head	2891	855D
Astragal	18041	804D
Drip Cap	346C	R201

- B. Where weatherstripping is specified in hardware sets, provide 2891 unless detailed Otherwise.
- C. Provide self-tapping fasteners for weatherstripping being applied to hollow metal Frames.
- D. Where sweeps are specified in hardware sets, provide 18062 unless detailed otherwise.

2.15 GASKETING

- A. Acceptable Manufacturers: Pemko, Reese Enterprises, and McKinney.
Refer to drawings for special details. Provide accessories, shims and fasteners.

<u>Pemko</u>	<u>Reese</u>
F771	F-897B

- B. Where smoke gasket is specified in hardware sets, provide f771 unless detailed Otherwise.
- C. Provide gaskets for 20-minute doors and doors designated for smoke and draft Control.
- D. Where frame applied intumescent seals are required by the manufacturer, provide Gaskets that comply with UBC 7-2 and UL 10C positive pressure tests.

2.16 KEY CABINET

- A. Basis-of-Design Product: Lund Deluxe Series 1200 wall type cabinet with one hook For each lock or cylinder plus at least 50 percent extra hooks.
- B. Comparable Manufacturers: Key Control or Telkee Inc.
- C. Provide each hook with one non-removable security key tag and one snap-on link Duplicate key tag.
- D. Provide tools, instruction sheets and accessories required to complete installation.
- E. Hardware Supplier to meet with Owner and help Owner to organize and place keys In key cabinet and complete index cards furnished with key system.

2.17 FASTENERS

- A. Including, but not limited to, wood or machine screws, bolts, nuts, anchors, etc. of Proper type, material, and finish required for installation of hardware.
- B. Use phillips head for exposed screws. Do not use aluminum screws to attach hardware.
- C. Provide self-tapping (TEC) screws for attachment of sweeps and stop-applied Weatherstripping.

2.18 TYPICAL FINISHES AND MATERIALS

- A. Finishes, unless otherwise specified:
 - 1. Butts: Outswinging Exterior Doors US32D (BHMA 630) Stainless Steel
 - 2. Butts: Interior Doors and Inswinging Exterior Doors US26D (BHMA 626) Satin Chrome
 - 3. Exit Devices: US32D (BHMA 630) Satin Stainless Steel
 - 4. Removable Mullions: US28 (BHMA 628) Anodized Aluminum
 - 5. Locks and Latches: US26D (BHMA 626) Satin Chrome
 - 6. Push Plates, Pulls and Push Bars: US32D (BHMA 630) Satin Stainless Steel
 - 7. Kick Plates, Armor Plates, and Edge Guards: US32D (BHMA 630) Satin Stainless Steel
 - 8. Overhead Stops and Holders: US26D (BHMA 626) Satin Chrome on Bronze
 - 9. Closers: Surface mounted. Sprayed Aluminum Lacquer.
 - 10. Miscellaneous Hardware: US32D (BHMA 630)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine doors, frames, and related items for conditions that would prevent the Proper application of finish hardware. Do not proceed until defects are corrected.

3.2 INSTALLATION

- A. Install finish hardware in accordance with reviewed hardware schedule and Manufacturer's printed instructions. Prefit hardware before finish is applied, remove And reinstall after finish is completed. Install hardware so that parts operate Smoothly, close tightly and do not rattle.
- B. Installation of hardware shall comply with NFPA 80 and NFPA 101 requirements
- C. Set units level, plumb and true to line and location. Adjust and reinforce attachment To substrate as necessary for proper installation and operation.
- D. Drill and countersink units which are not factory-prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standards.
- E. Set thresholds for exterior doors in full bed of butyl-rubber or polyisobutylene Mastic sealant, forming tight seal between threshold and surface to which set. Securely and permanently anchor thresholds, using countersunk non-ferrous Screws to match color of thresholds (stainless steel screws at aluminum thresholds).

- F. Lead Protection: Lead wrap hardware penetrating lead-lined doors. Levers and Roses to be lead lined. Apply kick and armor plates with 3M adhesive #1357, as Recommended by 3M Co., on lead-lined doors.

3.3 FIELD QUALITY CONTROL

- A. After installation has been completed, provide services of qualified hardware Consultant to check Project to determine proper application of finish hardware According to schedule. Also check operation and adjustment of hardware items.
- B. Adjust door control devices to compensate for final operation of heating and Ventilating equipment.

3.4 ADJUSTING AND CLEANING

- A. At final completion, hardware shall be left clean and free from disfigurement. Make Final adjustment to door closers and other items of hardware. Where hardware is Found defective repair or replace or otherwise correct as directed.
- B. Adjust door closers to meet opening force requirements of ADAAG.
- C. Final Adjustment: Wherever hardware installation is made more than one month prior To acceptance or occupancy of space or area, return to work during week prior to acceptance or occupancy, and make final check and adjustment of hardware items in Such space or area. Clean operating items as necessary to restore proper function And finish of hardware and doors.
- D. Instruct Owner's personnel in proper adjustment and maintenance of door hardware And hardware finishes.
- E. Clean adjacent surfaces soiled by hardware installation.
- F. Replace shortages and incorrect items with correct material at no additional cost to Owner.
- G. At completion of project, qualified factory representative shall inspect closer Installations. After this inspection, letter shall be sent to Architect reporting on Conditions, verifying that closers have been properly installed and adjusted.

3.5 PROTECTION

- A. Provide for proper protection of items of hardware until Owner accepts Project as Complete.

3.6 HARDWARE SETS

- A. Provide door hardware for each door to comply with requirements in this Section, Door hardware sets / groups indicated in door and frame schedule, and the Door Hardware Schedule listed in the Drawings.
- B. Refer to the Drawings for the door schedule for hardware set required at each door opening on the service addition.
- C. Door schedule for Showroom Addition as follows:

Hardware Schedule 2008-279.03 / 2008-279.06



Doors: **DELETED**



Doors: 104, 105, 106, 108

Hinge	Refer to Section 084110
Sargent Cylinder	10-6334
Pull	Refer to Section 084110
Dorma flush track Closer	8616 FT

Notes: Provide 5/16" spacer for door closer if required. Refer to section 084110 for additional information and hardware requirements. Coordinate with NanaWalls manufactures rep prior to ordering and installing Closer.



Doors: 102

8 Refer to Section 08 5113				
2 Push	8600 Matching End Caps-US32D	US32D	AD	
1 Cylinder	10-6334	US26D	SA	
2 Pull	RM202.	US32D	RO	
2 Concealed Overhead Holder/Stop	6- Series	652	RF	
2 Surface Closer	351 OZ	EN	SA	087100
2 Mounting Plate	351B	EN	SA	087100
1 Threshold	171AK		PE	
2 Door Sweep	29326CNB		PE	

Notes: Weatherstrip and astragal integral with aluminum frame and door assembly. Refer to section 08 5113 for additional items and requirements.



Doors: 103

8 Refer to Section 08 5113				
2 Push Rockwood	70c	US32D	RO	
2 Pull Rockwood	RM202	US32D	RO	
2 Concealed Overhead Holder/Stop	6- Series	652	RF	
2 Surface Closer	351 OZ	EN	SA	087100

2	Mounting Plate	351B	EN	SA	087100
1	Threshold	171AK		PE	
2	Door Sweep	29326CNB		PE	

Notes: Weatherstrip and astragal integral with aluminum frame and door assembly. Refer to section 08 5113 for additional items and requirements.

 **Set: SR-05**

Doors: 109

8 Refer to Section 08 5113

1	Push Rockwood	70c	US32D	RO	
1	Pull Rockwood	RM202	US32D	RO	
1	Concealed Overhead Holder/Stop	6- Series	652	RF	
1	Surface Closer	351 OZ	EN	SA	087100
1	Mounting Plate	351B	EN	SA	087100
1	Door Sweep	29326CNB		PE	

Notes: Refer to section 08 5113 for additional items and requirements.

 **Set: SR-06**

Doors: 101

1	Continuous Hinge	MCK 12 HD		MC	
1	Push Rockwood	70c	US32D	RO	
1	Cylinder	10-6334	US26D	SA	
1	Pull Rockwood	RM202	US32D	RO	
1	Concealed Overhead Holder/Stop	6- Series	652	RF	
1	Surface Closer	351 OZ	EN	SA	087100
1	Mounting Plate	351B	EN	SA	087100
1	Door Sweep	29326CNB		PE	

Notes: Refer to section 08 5113 for additional items and requirements.

 **Set: SR-07**

Doors: 107

Notes: Match existing hardware, finish to match new door.



SECTION 09 5900 - ACOUSTIC CEILING RESTORATION

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes:

1. Restoration of existing acoustical tile and grid ceiling system.

1.02 RELATED REQUIREMENTS

- A. Section 07 9005 – Joint Sealers: Acoustical Sealant.
- B. Section 09 5100 – Acoustical Ceilings

1.03 REFERENCES

- A. ASTM C 423-89: Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.
- B. ASTM C 523-68: Light Reflectance of Acoustical Materials by the Integrating Sphere Reflectometer.
- C. ASTM E 84-98: Surface Burning Characteristics of Building Materials.
- D. ASTM E 313-98: Standard Practice for Calculating Yellowness and Whiteness Indices from Instrumentally Measured Color Coordinates.
- E. ASTM E 795-83: Mounting Test Specimens during Sound Absorption Tests.

1.04 SYSTEM DESCRIPTION

A. Performance Requirements:

1. Products and treatment shall remove or hide existing discoloration, dirt, grime or grease on all similar tiles and provide a uniform appearance for a period of not less than 1 year after completion of work.
2. Prior to the arrival of the ceiling restoration applicator to the job site, the General Contractor shall be responsible for the following:
 - a. Coordination with ProCoat to schedule applicator's work on successive nights toward the end of the Project.
 - b. Coordination of work with related trades.
 - c. Receipt and storage of materials at Project site.
 - d. Replacement of broken, cracked, sagging or missing ceiling tiles.
 - e. Leveling the existing T-bar grid system wherever necessary.
 - f. Ensuring that there is a 24" unobstructed clearance below the ceiling; i.e., remove signage hanging from the ceiling, merchandise stacked within 24" of ceiling should be removed, etc.
 - g. Providing two packages or more of extra ceiling tiles to be coated by the Manufacturer and left for future use (attic stock).
3. The General Contractor shall assist the applicator in the shut down/turn on of HVAC before/after spraying.
4. The General Contractor shall provide on-site Contractor representative to complete walk-through when the application is completed and to sign off on the Application Service Report.

1.05 SUBMITTALS

- A. Submit under provisions of Section 01 3000:
 - 1. Product Data: Manufacturer's printed literature on each product to be used, including:
 - a. Preparation, instructions and recommendations.
 - b. Storage and handling requirements and recommendations.
 - c. Installation methods.
 - 2. Contract Closeout Submittals:
 - a. Operation and Maintenance: Maintenance data for installed products. Include methods for maintaining installed products and precautions against cleaning materials and methods detrimental to finishes and performance.

1.06 QUALITY ASSURANCE

- A. Management of the Ceiling Restoration Process by ProCoat Products, Inc. (PPI):
 - 1. PPI receives the purchase order for the project's ceiling restoration.
 - 2. PPI coordinates the project schedule with the client company or their General Contractor.
 - 3. PPI designates a trained ProCoat applicator to do the installation.
 - 4. PPI invoices the client upon satisfactory completion of the project and compensates the applicator.
 - 5. PPI guarantees the quality of the turnkey application service and maintains the warranty.
- B. Ceiling Restoration results in the maintenance or improvement of the surface's acoustical and fire retardant characteristics. And the quality of this performance is directly related to both the acoustical coating material utilized as well as the application procedure employed.
- C. Acoustical Coating: Any contractor that does not use ProCoat's turnkey installation service or who applies a product other than the one contained in this specification (Part 2: Products) without authorization by Owner, may be held responsible for the removal and replacement of the entire ceiling system with new materials.
- D. Applicator's Qualifications:
 - 1. Applicator is the subcontractor selected to perform the ceiling restoration work by PPI.
 - 2. Applicator shall have "preferred" or "certified" classification by PPI, Manufacturer.
 - 3. Applicator shall be experienced in application of specified materials sufficient to have earned a "preferred" or "certified" classification from the Manufacturer.
 - 4. Applicator shall be experienced in application of specified materials in occupied facilities.
 - 5. Applicator's Personnel: Employ persons trained for application of specified materials.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and protect products under provisions of Section 01600.
- B. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
- C. Storage:
 - 1. Store materials in a clean dry area in accordance with manufacturer's instructions.
 - 2. Keep containers sealed until ready for use.
 - 3. Keep from freezing.
 - 4. Minimum Storage Temperature: 55 degrees F.
- D. Handling: Protect materials during handling and application to prevent damage or contamination.

1.08 PROJECT/SITE CONDITIONS

- A. Environmental Conditions: 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 absolute limits.

B. Minimum Ambient Application Temperature: 55 degrees F.

1.09 SEQUENCING

- A. Pre-Restoration Meeting:
1. Convene a meeting 7 days before start of ceiling restoration.
 2. Require attendance of parties directly affecting work of this section, including Contractor, Construction Manager, applicator, and manufacturer's representative.
 3. Review protection, surface preparation, application, cleaning, and coordination with other work.

1.10 SCHEDULING

- A. Contact Manufacturer upon receipt of contract or notice to proceed from General Contractor:
1. Verify that ProCoat has received drawings and related information for the ceiling restoration work.
 2. Inform ProCoat of tentative date to commence ceiling restoration work.
- B. Notify Manufacturer a minimum of 3 weeks in advance of the scheduled date to commence ceiling restoration work.
- C. Schedule restoration work with operations of store, i.e., 24 hour stores should be advised that work will be completed at night but that sectioned-off areas will be closed to customers.

PART 2: PRODUCTS

2.01 MANUFACTURER

1. Acceptable Manufacturer:
 - a. ProCoat Products, Inc., 260 Centre Street, Suite D, Holbrook, MA 02343.
 - 1) Contact: Ken Woolf.
 - 2) Tel: (781) 767-2270.
 - 3) Fax: (781) 767-2271.
 - 4) Email: ken.woolf@procoat.com.

2.02 MATERIALS UTILIZED IN THE CEILING RESTORATION PROCESS

- A. ProCoustic Acoustical Tile and Ceiling Coating:
1. Sound Absorption, ASTM C 423 and E 795: Improve Noise Reduction Coefficient of tile from 0.55 to 0.60.
 2. Fire Rating, ASTM E 84: Class A flame spread
 - a. Flame Spread: Reduce from 25 to 15.
 - b. Smoke Developed: Reduce from 10 to 5.
 3. Light Reflectance, ASTM C 523: Improve reflectance of light of tile from 0.81 to 0.88.
 4. Combustion Toxicity: Test Pass.
 5. Aging, ASTM E 313: Acoustical tile coating has a higher Whiteness Index than:
 - a. New acoustical tile with high quality latex ceiling paint coating.
 - b. New acoustical tile with manufacturer's standard coating.
 6. Adhere to Grid: Does not cause tile to adhere to grid system after coating has dried.
 7. Physical Form: Smooth pourable liquid. Non-toxic.
 8. Primary Composition:
 - a. Vehicle: Vinyl acrylic resin.
 - b. Pigment: Titanium dioxide, calcium carbonate, silicate wetting and stabilizing agents, and water.

9. Weight: 10.6 pounds per gallon.
 10. Specific Gravity: 1.26.
 11. Viscosity: 70 to 75 Krebs at 75 degrees F.
 12. Solids: 40 percent plus or minus 1 percent.
 13. Color: White.
- B. Application rate to acoustical ceiling tiles, approximately 300 square feet per gallon, dependent on tile surface characteristics.
- C. ProCoat Grid Cleaning Solution:
1. Chemically compatible with acoustical tile coating.
 2. Does not leave a film to prevent acoustical tile coating from bonding to nonporous surfaces.
- D. ProCoat Acoustical Tile and Ceiling Cleaner:
1. Chemically compatible with acoustical tile coating.
 2. Does not leave contaminants that could bleed through and discolor acoustical tile coating.
 3. Odorless, biodegradable, and fabric safe.
 4. Does not contain caustic bleaches.

PART 3: EXECUTION

3.01 EXAMINATION

- A. Examine ceilings to receive restoration work. Notify Construction Manager if ceilings are not structurally sound* or if grid requires leveling. Do not begin application until unacceptable conditions have been corrected. * Note: "Structurally Sound" is considered dry, solid, whole, and flat.
- B. Determine if random tiles have been replaced with new ones, resulting in a "checkerboard" effect. Relocate the new tiles into one area so as to create as much uniformity of color as possible.

3.02 MANUFACTURER'S PREPARATION PROCEDURE

- A. Cover walls, floors, equipment, furnishings, merchandise, and other surfaces to be protected against dry-fall spray dust with plastic sheets or drop cloths. Where two pieces of plastic sheeting are overlapped, seal seam to prevent dry spray dust from passing through.
- B. Shut off HVAC system and cover intake grills/vents or other mechanical air movement equipment to prevent dust from being spread throughout building. Maintain shut down until excess dust has been removed from the area being treated.
- C. Mask light fixtures, sprinkler heads, smoke detectors, security lights, and other items to be protected against direct spray.
- D. Prepare surfaces in accordance with manufacturer's instructions
- E. Pre-treat ceiling water stains with a primer/sealer in aerosol.
- F. Apply grid cleaning solution to grids and other nonporous surfaces to be coated to remove dirt, oil, grease, nicotine, and other contaminants to ensure proper bonding of acoustical tile coating.
- G. Pre-treat tiles saturated with grease or nicotine with acoustical tile cleaner to prevent discoloration of acoustical tile coating.

3.03 MANUFACTURER'S APPLICATION PROCEDURE

- A. Apply acoustical tile coating in accordance with manufacturer's instructions at ceiling locations indicated on the drawings.
- B. Spray acoustical tile coating on acoustical ceiling tiles, exposed suspension grid system and air diffusers.
- C. Spray additional acoustical tiles to be placed in the storeroom for future use.

3.04 AREA CLEANING

- A. Remove protective plastic sheets, drop cloths and masking materials, and dispose of in containers provided by the General Contractor.
- B. Remove remaining spray dust from any fixtures, merchandise or equipment at the direction of Contractor's Project Manager.

3.05 PROTECTION

- A. Protect installed products until completion of Project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

SECTION 09 5100 - ACOUSTICAL CEILINGS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Suspended metal grid ceiling system.
- B. Acoustical units.



1.02 RELATED REQUIREMENTS

- A. Section 07 9005 - Joint Sealers: Acoustical sealant.
- B. Refer also to Section 097750 for Sanigrad II fiberglass ceiling system.
- C. Section 09 5900 – Acoustic Ceiling Restoration – MANDATORY BID ALTERNATE

1.03 REFERENCE STANDARDS

- A. ASTM C 635 - Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings; 2004.
- B. ASTM E 1264 - Standard Classification for Acoustical Ceiling Products; 2008.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate grid layout and related dimensioning.
- C. Product Data: Provide data on suspension system components.
- D. Samples: Submit two full size samples illustrating material and finish of acoustical units.
- E. Manufacturer's Installation Instructions: Indicate special procedures.

1.05 QUALITY ASSURANCE

- A. Suspension System Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.06 FIELD CONDITIONS

- A. Maintain uniform temperature of minimum 60 degrees F (16 degrees C), and maximum humidity of 40 percent prior to, during, and after acoustical unit installation.

PART 2 - PRODUCTS

2.01 ACOUSTICAL UNITS

- A. Manufacturers:
 - 1. Armstrong World Industries, Inc; www.armstrong.com.
 - 2. CertainTeed Corporation; www.certainteed.com.
 - 3. USG; www.usg.com.
 - 5. Substitutions: See Section 01 6000 - Product Requirements.
- B. Acoustical Units - General: ASTM E 1264, Class A.
- C. Acoustical Panels Type: See Drawings
 - 1. Size: as indicated on the drawings
 - 2. Light Reflectance: Not less than 0.90 percent, determined as specified in ASTM E 1264.
 - 3. NRC Range: Not less than 0.70, determined as specified in ASTM E 1264.
 - 4. Articulation Class: 180 determined as specified in ASTM E 1264.
 - 5. Ceiling Attenuation Class (CAC): Not less than 35, determined as specified in ASTM E 1264.
 - 6. Panel Edge: Square.

7. Surface Pattern: Perforated.
8. Surface Color: White.
9. Product: As specified on Drawings
10. Suspension System: Exposed grid Type As specified on Drawings.

2.02 SUSPENSION SYSTEM

- A. Manufacturers:
 1. Same as for acoustical units.
 2. Substitutions: See Section 01 6000 - Product Requirements.
- B. Suspension Systems - General: ASTM C 635; die cut and interlocking components, with stabilizer bars, clips, splices, perimeter moldings, and hold down clips as required.
- C. Exposed Steel Suspension System Type (As indicated on Drawings): Formed steel, commercial quality cold rolled; intermediate-duty.
 1. Profile: Tee; 15/16 inch (24 mm) wide face.
 2. Construction: Double web.
 3. Finish: White painted.

2.03 ACCESSORIES

- A. Support Channels and Hangers: Galvanized steel; size and type to suit application, seismic requirements, and ceiling system flatness requirement specified.
- B. Perimeter Moldings: Same material and finish as grid.
 1. At Exposed Grid: Provide L-shaped molding for mounting at same elevation as face of grid.
- C. Gypsum Board: Fire rated type; 5/8 inch (15 mm) thick, ends and edges square, paper faced.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify that layout of hangers will not interfere with other work.

3.02 INSTALLATION - SUSPENSION SYSTEM

- A. Rigidly secure system, including integral mechanical and electrical components, for maximum deflection of 1:360.
- B. Install after major above-ceiling work is complete. Coordinate the location of hangers with other work.
- C. Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.
- D. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers and related carrying channels to span the extra distance.
- E. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability.
- F. Support fixture loads using supplementary hangers located within 6 inches (150 mm) of each corner, or support components independently.
- G. Do not eccentrically load system or induce rotation of runners.
- H. Perimeter Molding: Install at intersection of ceiling and vertical surfaces and at junctions with other interruptions.
 1. Use longest practical lengths.

2. Overlap and rivet corners.

3.03 INSTALLATION - ACOUSTICAL UNITS

- A. Install acoustical units in accordance with manufacturer's instructions.
- B. Fit acoustical units in place, free from damaged edges or other defects detrimental to appearance and function.
- C. Fit border trim neatly against abutting surfaces.
- D. Install units after above-ceiling work is complete.
- E. Install acoustical units level, in uniform plane, and free from twist, warp, and dents.
- F. Cutting Acoustical Units:
 1. Make field cut edges of same profile as factory edges.

3.04 TOLERANCES

- A. Maximum Variation from Flat and Level Surface: 1/8 inch in 10 feet (3 mm in 3 m).
- B. Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: 2 degrees.

END OF SECTION