Office Use Only

COA Number: _____

Application Accepted as Complete: _____

HISTORIC DISTRICT BOARD OF REVIEW

DOWNTOWN SAVANNAH HISTORIC DISTRICT

Board Review Checklists for Certificate of Appropriateness Application

Additions

Per House Bill 493, detailed checklists of items required to be submitted for each type of project are supplemental to this application. Each item **must be checked off and a page number where the item is located must be noted** and included with the application**.** The applicant must sign the affidavit, at the end of the application and each required checklist, certifying that all required items are provided. If there are questions regarding items required for your specific project, contact staff for clarification prior to submitting the application.

Applications that do not provide documentation or required materials will be noted as incomplete and may result in delays in the Board or Staff's review of the application and/or denial of the request. Revisions made to the applications after the submittal deadline and prior to the Board hearing may be continued to the following month's hearing. The Board reserves the right to require additional information if it believes that the submission of such information is necessary to understand the nature of the intended activity.

ADDITIONS. Additions that are equal to or exceed the size of the existing building will be reviewed as new construction.

- ☐ **REQUIRED** Pre-Application Conference (Sec. 3.19.4.a. of the zoning ordinance):
  Date attended and with which staff member: Leah Michalik 9/7/2022
- ☐ Provide electronic payment receipt and indicate amount: $ 300.00
- ☐ Provide one (1) electronic copy of the entire submittal packet. (Email to historic@thempc.org with 15MB max)
- ☐ Page No. CVR: Written project description.
- ☐ Page No. NA: Written description of each Special Exception requested.
- ☐ Page No. 7/14/22: GDP (non-residential only) and SPR meeting date attended.
- ☐ Page No. CVR: Existing and proposed lot coverage percentages.
- ☐ Page No. HR0.1&0.2: Color photographs (subject building and context).
- ☐ Page No. HRD1&2: Demolition plans (floor plans and elevations) showing all areas and materials to be removed.
- ☐ Page No. HR0: Site Plan:
  - ☐ Adjacent buildings with setback dimensions.
  - ☐ Lot dimensions.
  - ☐ Property lines.
  - ☐ Streets, lanes, and sidewalk.
  - ☐ Curb cuts with width dimensions.
  - ☐ Garage apron locations.
  - ☐ Existing building and addition with dimensions and setbacks.
  - ☐ Fences (existing and proposed).
  - ☐ Electric meter locations.
  - ☐ Refuse storage area.
  - ☐ All ground and roof equipment including screening.

- ■ Page No. HHR1.0,1.2&: Floor Plans:
  - ■ Dimensions.
  - ■ Labeled interior spaces.
- ■ Page No. HR2: Roof Plan:
  - ■ Roof pitches.
  - ■ Equipment and screening.
- ■ Page No. HR3: Exterior Elevations:
  - ■ Adjacent buildings with height dimensions.
  - ■ Dimensioned floor-to-floor heights.
  - ■ Stoop heights.
  - ■ Height of parapet walls.
  - ■ Locations and dimensions of all windows, doors, and other openings.
  - ■ Porches, balconies, railings heights, and baluster spacing.
  - ■ Fences, equipment, etc. with dimensions.
  - ■ Roof equipment with screening heights and locations.
- ■ Page No. HR4&4.1: Wall Sections (minimum of two through the addition):
  - ■ Projections, window and door depths, off-sets, and opening recesses.
- ■ Page No. HR5: Sightline drawings of all additions from all adjacent public rights-of-way (streets and lanes).
- ■ Page No. 15-25: Specifications for each product.
- ■ Page No. 15-25: Physical material and color samples.
- ■ Page No. HR0: Historic images, plans, etc. for a restoration or reconstruction.

Affidavit Certifying Completeness of Application:

I hereby acknowledge that I understand the requirements listed above for what constitutes a complete application. I have checked off each box and included a page number where the item is located. I confirm that the requirements for a complete application have been met.

Signature: _____ **Date:** 9.15.2022

Office Use Only

COA Number: _____

Application Accepted as Complete: _____

HISTORIC DISTRICT BOARD OF REVIEW

DOWNTOWN SAVANNAH HISTORIC DISTRICT

Application for Certificate of Appropriateness

Per House Bill 493, detailed checklists of items required to be submitted for each type of project are supplemental to this application. Each item **must be checked off and a page number where the item is located must be noted** and included with the application**.** The applicant must sign the affidavit, at the end of the application and each required checklist, certifying that all required items are provided. If there are questions regarding items required for your specific project, contact staff for clarification prior to submitting the application.

Note: Applications that do not provide documentation or required materials will be noted as incomplete and may result in delays in the Board or Staff's review of the application and/or denial of the request. Revisions made to the applications after the submittal deadline and prior to the Board hearing may be continued to the following month's hearing. The Board reserves the right to require additional information if it believes that the submission of such information is necessary to understand the nature of the intended activity. **Email submissions to historic@thempc.org. Ensure the file size does not exceed 15 MB.** If Email is not available, contact the office for alternate arrangements.

Applicant Contact Information:

Name (Business & Contact Person): ROSE ARCHITECTS Kevin Rose

Address: 311 Maupas Ave City: Savannah

State: GA Zip: 31401 Phone: 912.308.4622 E-Mail: kevin@rosearch.co

Property Owner Contact Information:

Name: Matthew Lipman OTAMOT LAND, LLC

Address: 275 FORT ARGYLE ROAD City: Savannah

State: GA Zip: 31419 Phone: 239.229.6466 E-Mail: matt@otamotdevelopment.com

Official Correspondence: ■ Applicant ❑ Owner ❑ Other _____ (Check all that apply)

Property Information of Proposed Work: (PIN and Zoning information can be found at www.sagis.org.)

Address: 111 West Congress Street

PIN (Property Identification Number): 20004 36015 **Zoning**: D-CBD

Scope of Work: (Check all that apply.)

STAFF REVIEW:		**BOARD REVIEW:**	
■ Color Change	❑ Brick Repointing	■ Rehabilitation	❑ Illuminated Signs
■ Roof Repair/Replace	❑ Shutters	■ Alterations	❑ Fences
■ Awnings	■ Windows and/or Doors	■ Additions	❑ Demolition
❑ Stucco Repair	❑ Mechanical Screening	❑ New Construction (Part I)	❑ Relocation
❑ Non-Illuminated Signs		❑ New Construction (Part II)	
OTHER:		❑ New Construction (Accessory Building, Parts I and II)	
❑ Amendment to Previous COA Previous Case File Number:		❑ Special Exception(s) Requests	
❑ Other **(**Description): Contact staff for checklist requirements prior to submittal.		■ Variance Recommendation Requests	

2022 Historic District Board of Review Schedule: (Application deadline is 4 weeks before the scheduled meeting date.)

Application Deadline Dates, by 3:00 p.m.*	**Meeting Date at 1:00 p.m.:**
❑ Thursday, December 16, 2021	Wednesday, January 12, 2022
❑ January 13, 2022	February 9
❑ February 10	March 9
❑ March 16	April 13
❑ April 14	May 11
❑ May 12	June 8
❑ June 16	July 13
❑ July 14	August 10
❑ August 18	September 14
■ September 16	October 12
❑ October 13	November 19
❑ Friday, November 17	December 14
*** For petitions that were reviewed at the immediately prior meeting, the deadline is extended one (1) week.**	

Estimated Cost of the Proposed Work: $980,000

Filing Fee Schedule: (Fees shall be paid digitally at https://www.thempc.org/Application#gsc.tab=0)

Estimated Cost of Scope of Work	**Filing Fee**
❑ $0 - $2,500	$25.00
❑ $2,501- $5,000	$50.00
❑ $5,001- $25,000	$75.00
❑ $25,001- $50,000	$100.00
❑ $50,001- $100,000	$150.00
❑ $100,001- $500,000	$200.00
■ $500,001 - $1,000,000	$300.00
❑ $1,000,001 - $5,000,000	$500.00
❑ $5,000,001 - $10,000,000	$1,000.00
❑ Over $10,000,000	$1,500.00
Other	**Filing Fee**
❑ Variance Recommendation Request	$0.00
❑ Determination of Contributing Status	$0.00
❑ Special Exception Request	$1,000.00
❑ Special Exception – Church, Family Care Home, Family	$500.00
❑ Demolition of a Contributing Building	$500.00
❑ Appeal of Staff Decision	$250.00
❑ Amendment to previous COA	Estimated cost of scope of work of amendment
❑ After-the-Fact (Work completed without a COA)	Double the estimated cost of the scope of work

Affidavit Certifying Completeness of Application: I hereby acknowledge that I understand the requirements listed above for what constitutes a complete application. I have checked off each box and included a page number where the item is located. I confirm that the requirements for a complete application have been met.

Signature: _____ **Date:** 9.15.2022

Signature of Legal Owner or Authorized Agent: I have read and understand all the information enclosed in this application form. I hereby certify that I am the legal owner or authorized agent for the legal owner of the subject property.

Signature: _____ **Date:** 9.15.2022

DRAWING INDEX:

SHEET #	SHEET NAME	HDBR SET
HCVR	COVER SHEET	◄
HR0	SITE PLAN	◄
HR0.1	SITE ELEVATIONS	◄
HR0.2	FACADE CONTEXT	◄
HR1.0	BASEMENT PLAN	◄
HR1.1	FIRST FLOOR PLAN	◄
HR1.2	SECOND FLOOR PLAN	◄
HR2	ROOF PLAN	◄
HR3	EXTERIOR ELEVATIONS	◄
HR4	WALL SECTIONS	◄
HR4.1	WALL SECTIONS	◄
HR5	SITELINES / PERSPECTIVES	◄
HRD1	DEMO FLOOR PLANS	◄
HRD2	DEMO ELEVATIONS	◄

JAZZ CLUB

DRAWINGS PREPARED FOR:

MATTHEW LIPMAN OTAMOT LAND, LLC
275 FORT ARGYLE ROAD
SAVANNAH, GA 31419
PHONE: 239.229.6466
EMAIL: MATT@OTAMOTDEVELOPMENT.COM

TOTAL EXISTING LOT COVERAGE = 68%
TOTAL PROPOSED LOT COVERAGE = 96%

PROJECT TEAM

ROSE ARCHITECTS
311 MAUPAS AVE
SAVANNAH, GA 31401
KEVIN ROSE
PHONE: 912-484-5967
EMAIL: KEVIN@ROSEARCH.CO

PROJECT DESCRIPTION

IMPROVEMENTS TO AN EXISTING NON-CONTRIBUTIONG STRUCTURE IN THE HISTORIC DISTRICT OF SAVANNAH GEORGIA. IMPROVEMENTS INCLUDE RECONFIGURING OF THE INTERIOR SPACES, THE ADDITION OF A ROOF DECK & BAR AT THE SIDE OVER AN INDOOR/OUTDOOR OPERABLE PATIO.

SYMBOLS

Area Tag — Room name / 150 SF

Callout Head — 1 / A101 SIM

Centerline — ℄

Door Tag — 101

Grid Head — 0

Keynote Tag — ?

Level Head — Name / Elevation

North Arrow

Revision Tag — 1

Room Tag — **Room name** / 101

Room Tag w/ Area — **Room name** / 101 / 150 SF

Spot Elevation

Structural Beam System Tag — Beam Type @ Spacing

View Reference — 1 / A101

Window Tag — 1t

Wall Tag — 1i

Section Head — 1 / A101 SIM
- Indicates direction of drawing
- Indicates drawing number on sheet
- Indicates sheet number where drawn

Interior Elevation Marker — 1 Ref / A101
- Indicates direction of drawing
- Indicates drawing number on sheet

Exterior Elevation Marker — 1 Ref / A101
- Indicates sheet number where drawn

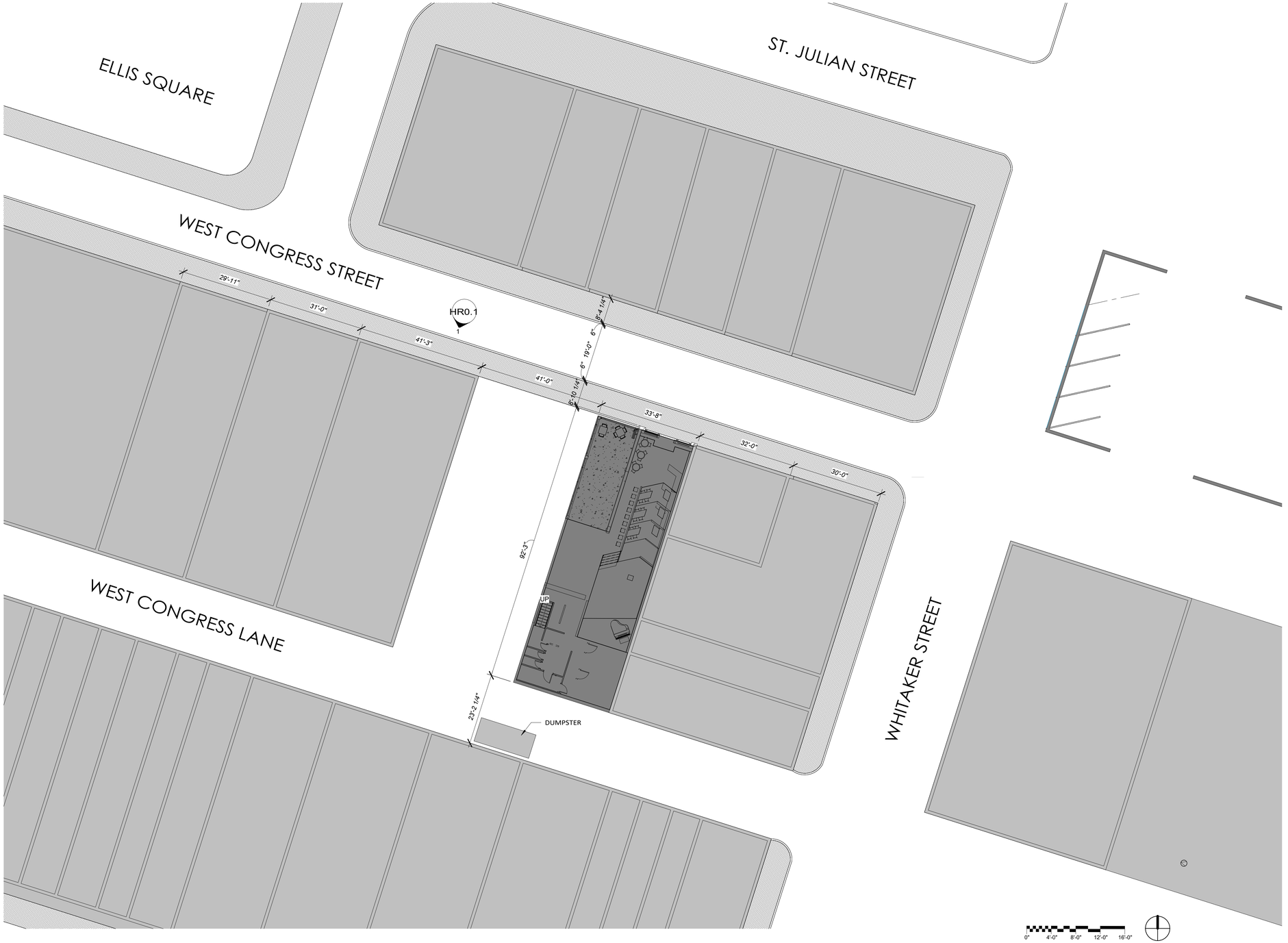
ROSE ARCHITECTS

JAZZ CLUB AND BAR
111 WEST CONGRESS STREET,
SAVANNAH, GA, 31401

COVER SHEET

JK
9/15/2022

HCVR



1 HR0 SITE PLAN
1/16" = 1'-0"

CONTEXT: CONGRESS STREET

ROSE ARCHITECTS

JAZZ CLUB AND BAR

111 WEST CONGRESS STREET,
SAVANNAH, GA, 31401

SITE PLAN

JK
9/15/2022

HR0

1 HR0.1 CONGRESS STREET SOUTH
1" = 10'-0"

CONTEXT PHOTOS:

CONGRESS FACING SOUTH

CONGRESS FACING NORTH

ROSE ARCHITECTS

JAZZ CLUB AND BAR

111 WEST CONGRESS STREET,
SAVANNAH, GA, 31401

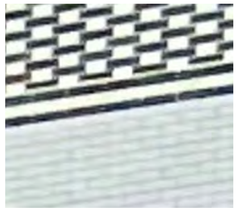
SITE ELEVATIONS

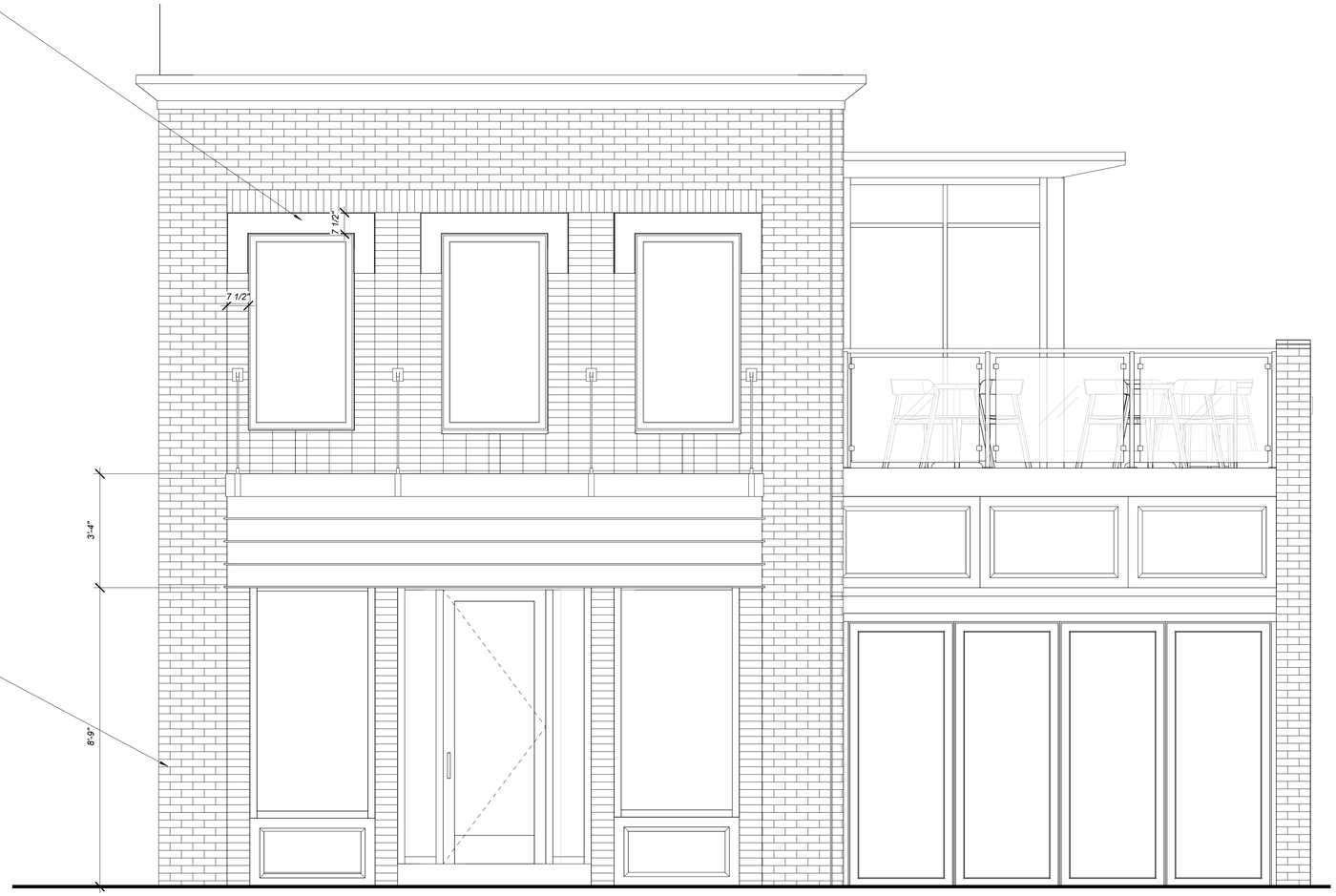
JK
9/15/2022

HR0.1

INTERPRETATION OF IRON HEADER
(SEEN ON MAJORITY OF FACADES ON SOUTH CONGRESS)

GLAZED BRICK
(SEEN ON FACADES IN IMMEDIATE AREA)



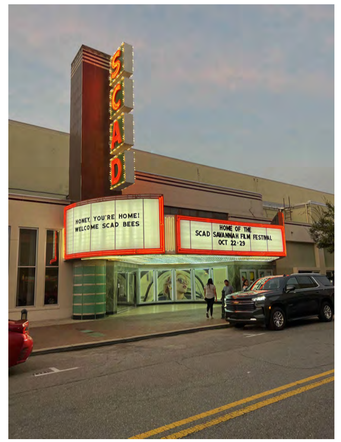


1 HR0.2 ELEVATION - CONTEXT STUDY
1/2" = 1'-0"

9'-8" TO BOTTOM OF MARQUEE

12'-0" TO BOTTOM OF MARQUEE

11'-6" TO BOTTOM OF MARQUEE



9'-1" TO BOTTOM OF MARQUEE

MARQUEE NOTE: ALL EXAMPLES OF MARQUEE ARE DIMENSIONALLY PROPORTIONATE TO HEIGHT AND WIDTH OF BUILDING FACADE AND SCALE OF BUILDING

ROSE ARCHITECTS

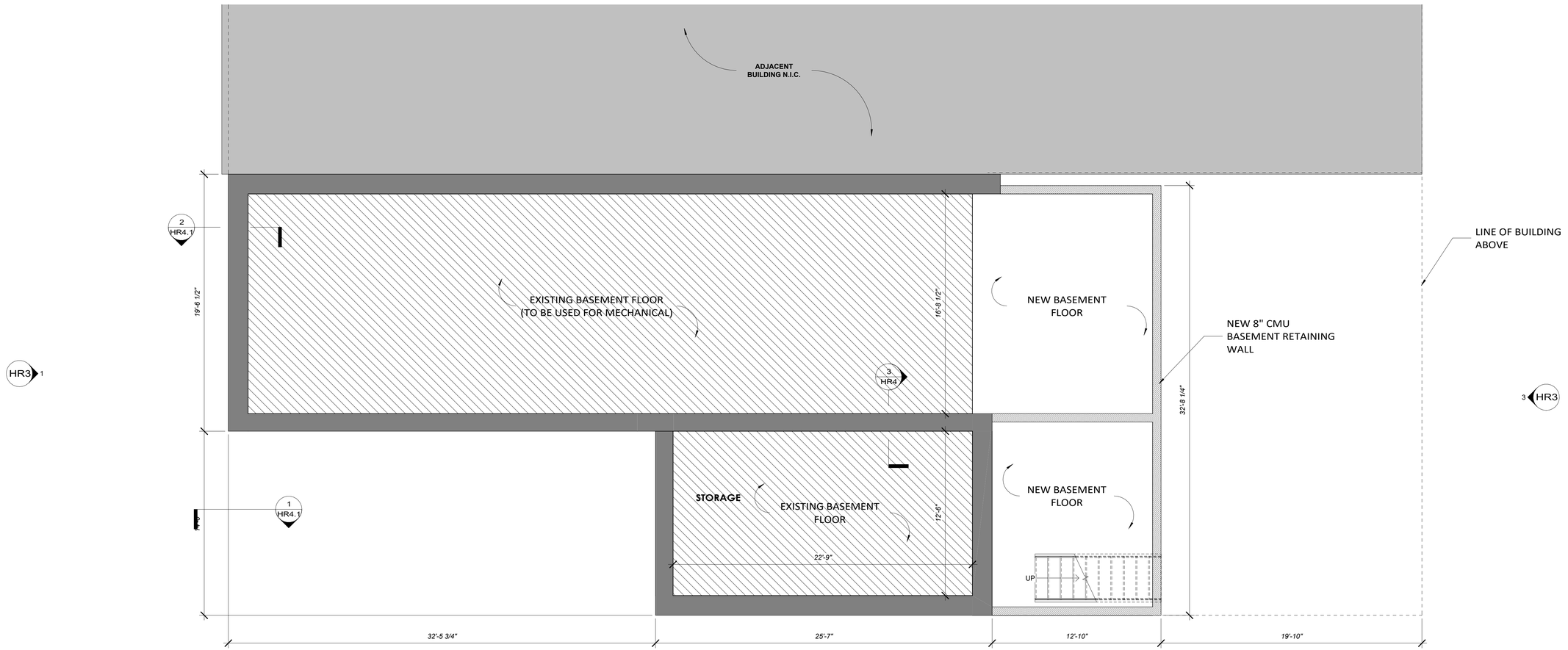
JAZZ CLUB AND BAR

111 WEST CONGRESS STREET,
SAVANNAH, GA, 31401

FACADE CONTEXT

JK
9/15/2022

HR0.2



1 HR1.0 BASEMENT FLOOR PLAN
1/4" = 1'-0"

ROSE ARCHITECTS

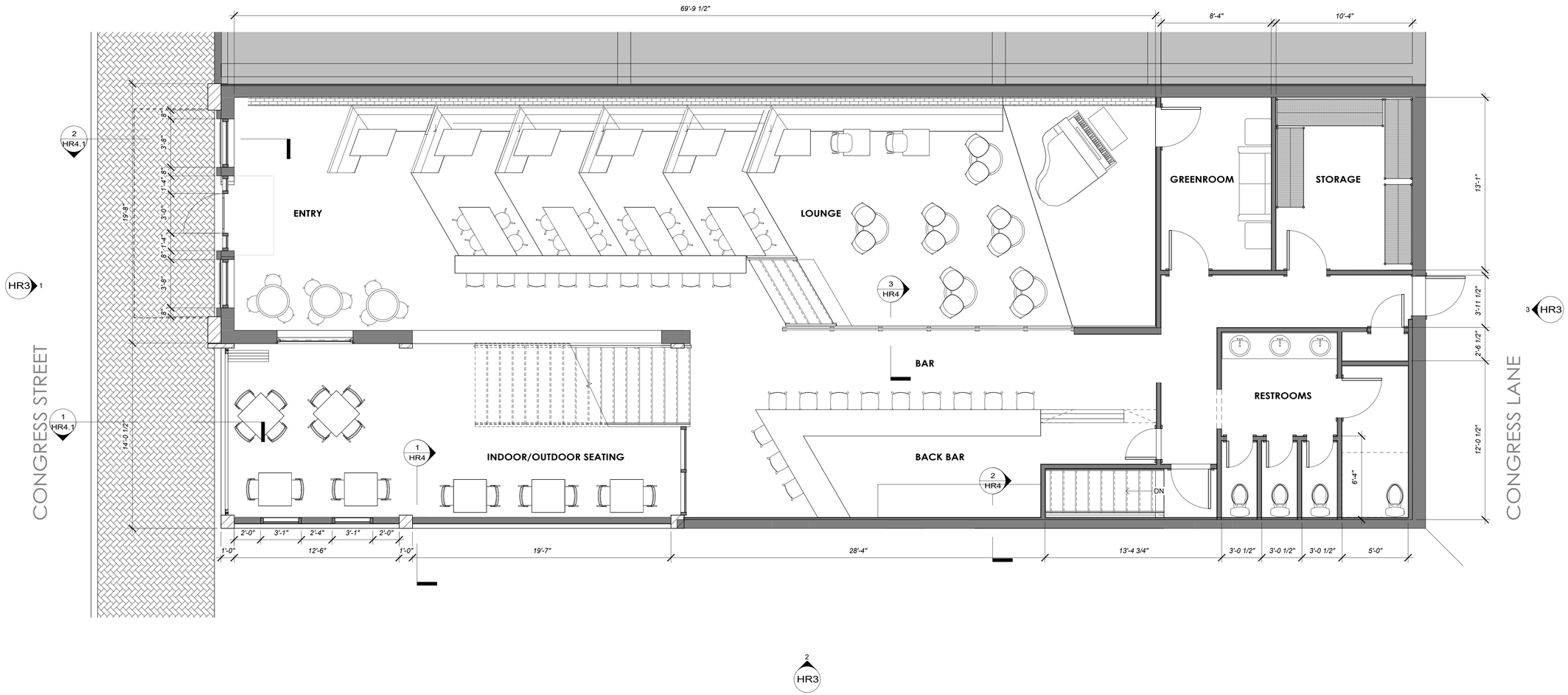
JAZZ CLUB AND BAR

111 WEST CONGRESS STREET,
SAVANNAH, GA, 31401

BASEMENT PLAN

JK
9/15/2022

HR1.0



1 HR1.1 FLOOR PLAN
1/4" = 1'-0"

ROSE ARCHITECTS

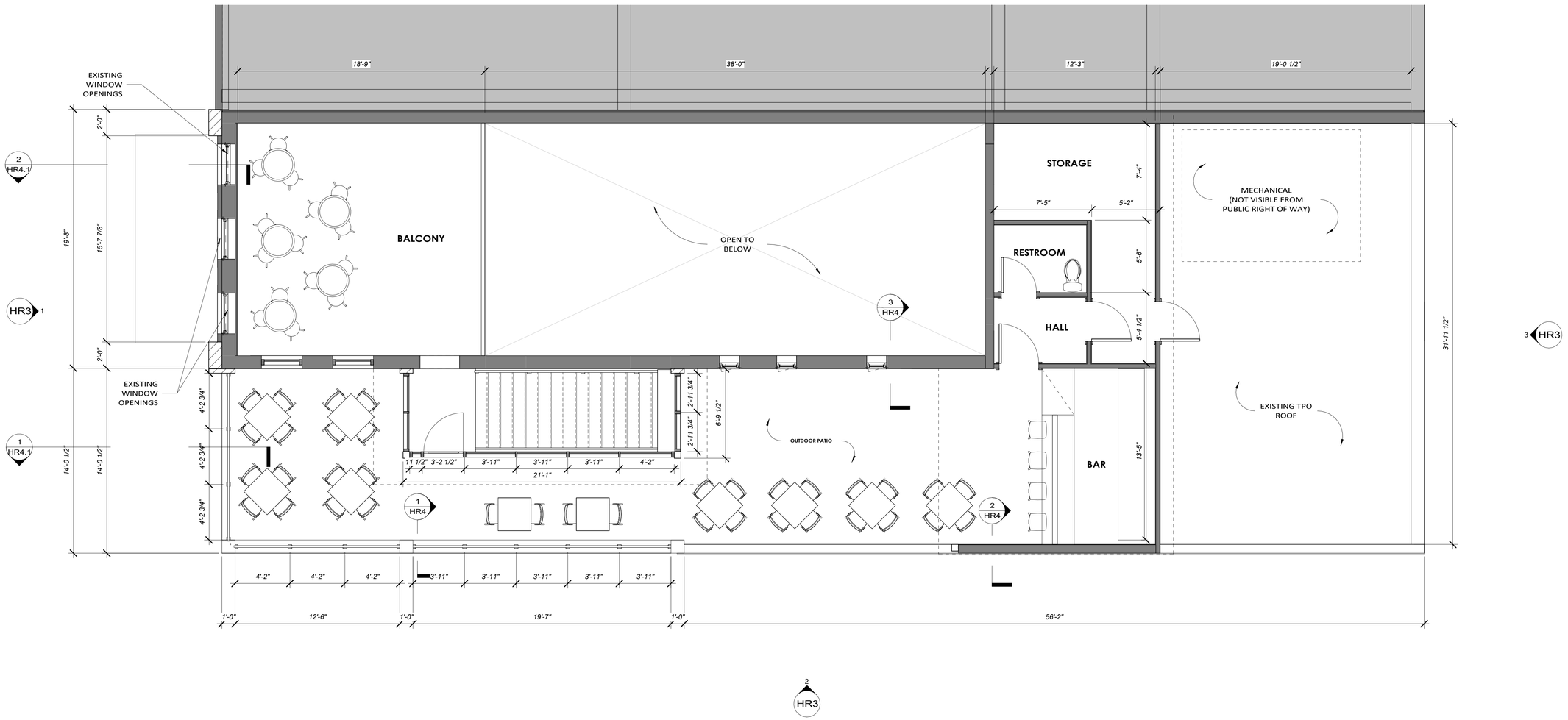
JAZZ CLUB AND BAR

111 WEST CONGRESS STREET,
SAVANNAH, GA, 31401

FIRST FLOOR PLAN

JK
9/15/2022

HR1.1



2
HR3

1 HR1.2 SECOND FLOOR
1/4" = 1'-0"

ROSE ARCHITECTS

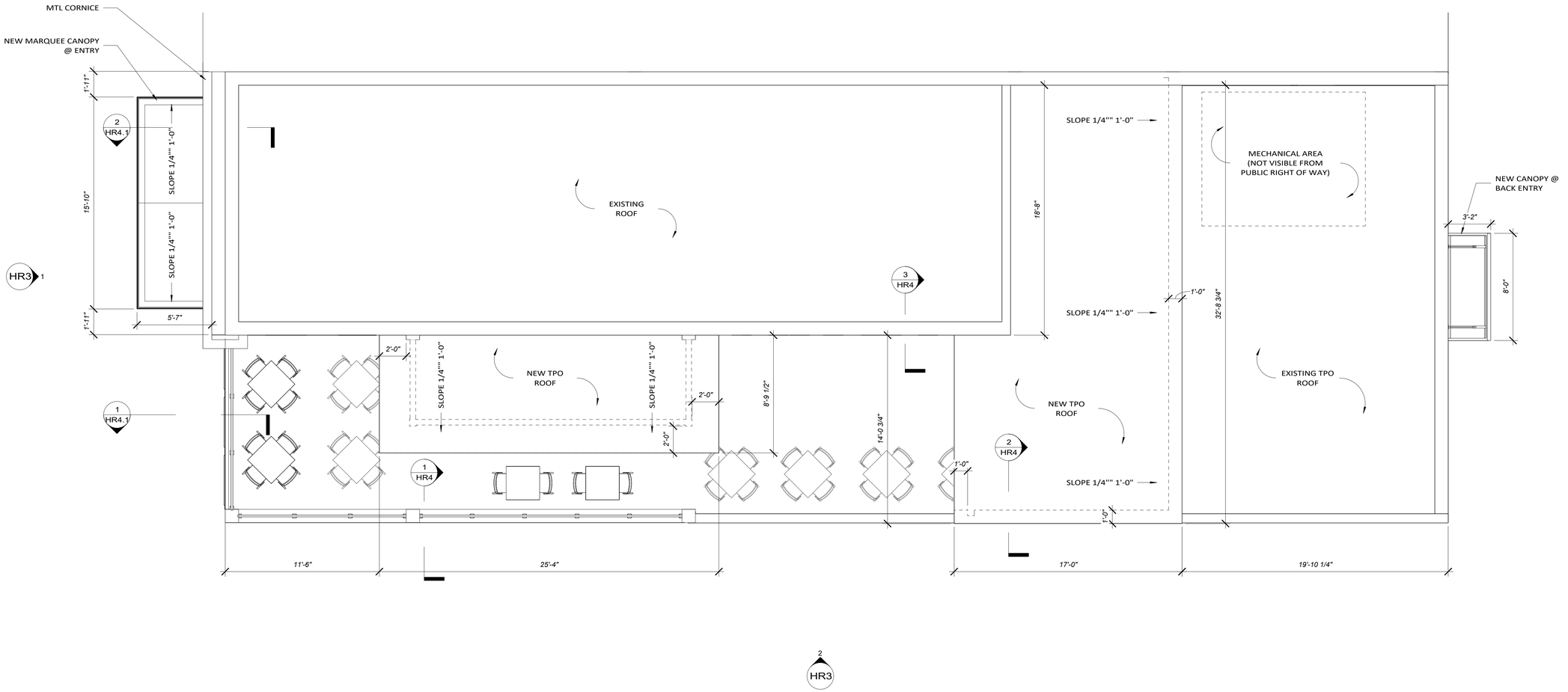
JAZZ CLUB AND BAR

111 WEST CONGRESS STREET,
SAVANNAH, GA, 31401

SECOND FLOOR PLAN

JK
9/15/2022

HR1.2



2
HR3

1 HR2 ROOF
1/4" = 1'-0"

HR0.2 1

ROSE ARCHITECTS

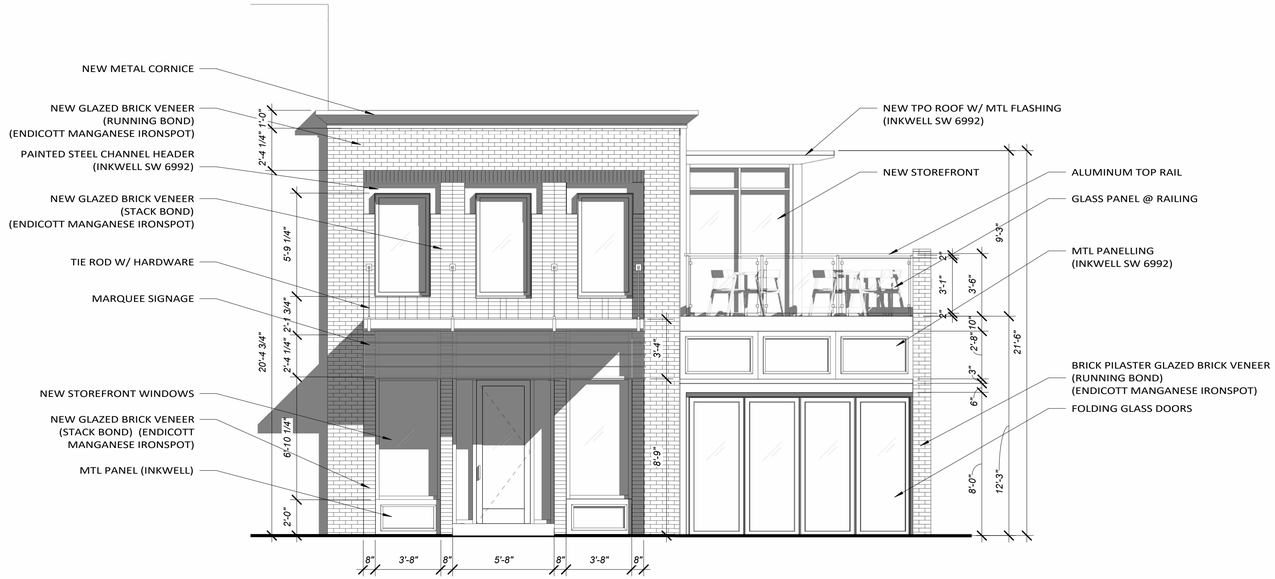
JAZZ CLUB AND BAR

111 WEST CONGRESS STREET,
SAVANNAH, GA. 31401

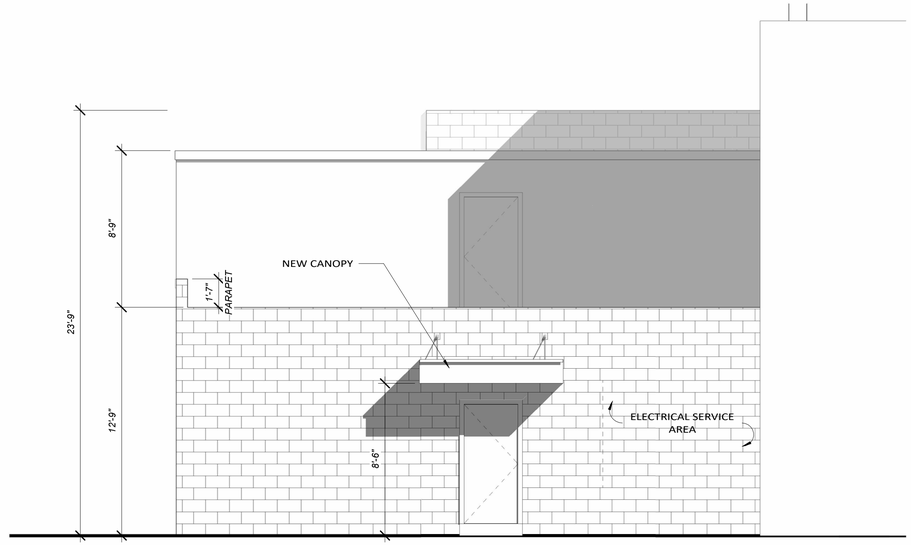
ROOF PLAN

JK
9/15/2022

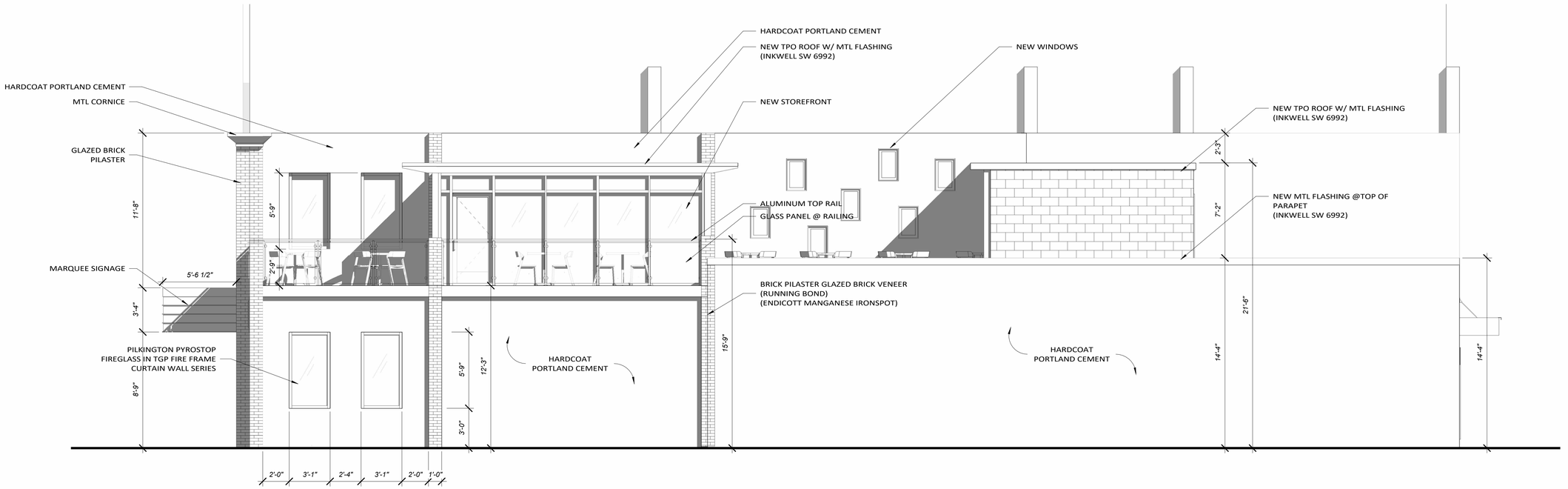
HR2



1 HR3 ELEVATION - NORTH - CONGRESS STREET
1/4" = 1'-0"



3 HR3 ELEVATION - SOUTH - REAR
1/4" = 1'-0"



2 HR3 ELEVATION - WEST - SIDE
1/4" = 1'-0"

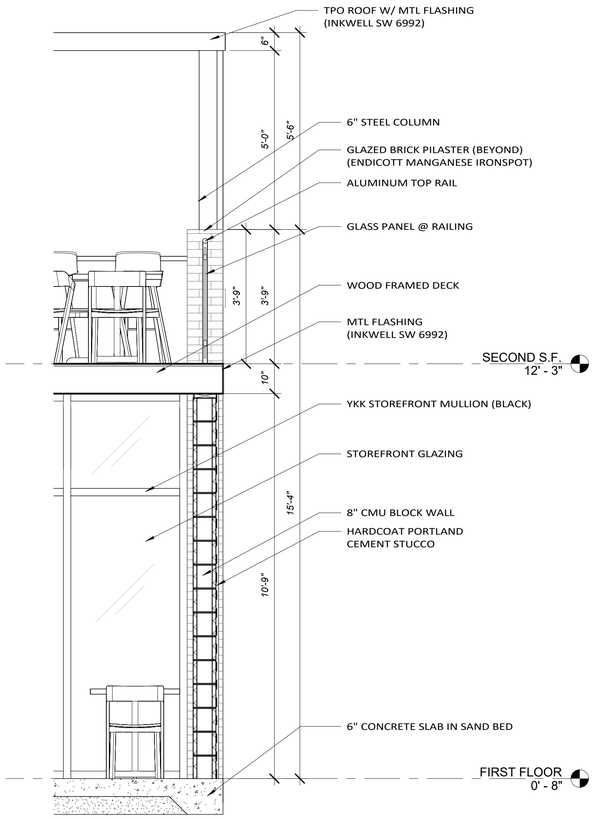
ROSE ARCHITECTS

JAZZ CLUB AND BAR

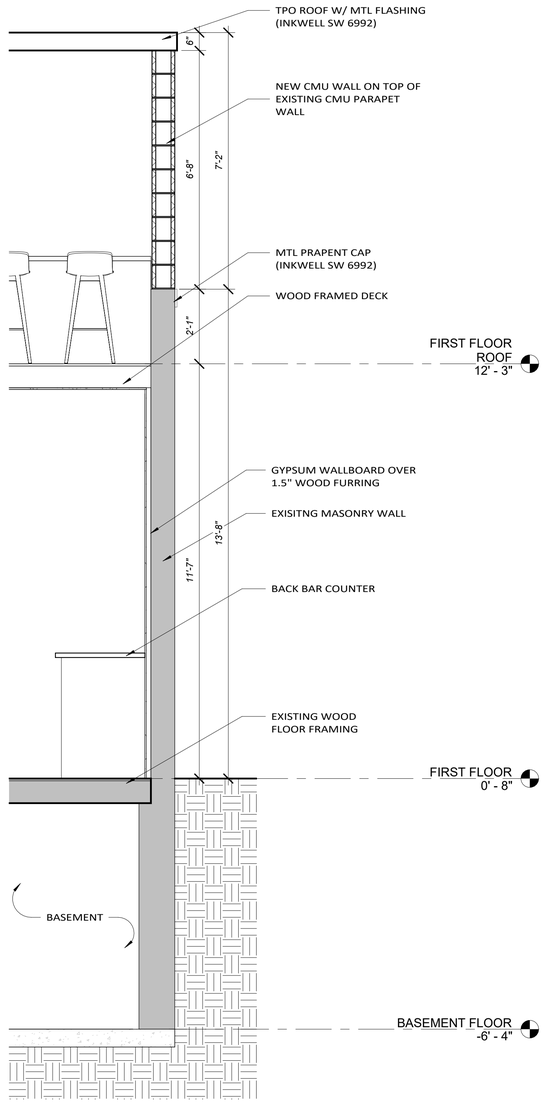
111 WEST CONGRESS STREET,
SAVANNAH, GA, 31401

EXTERIOR ELEVATIONS
JK
9/15/2022

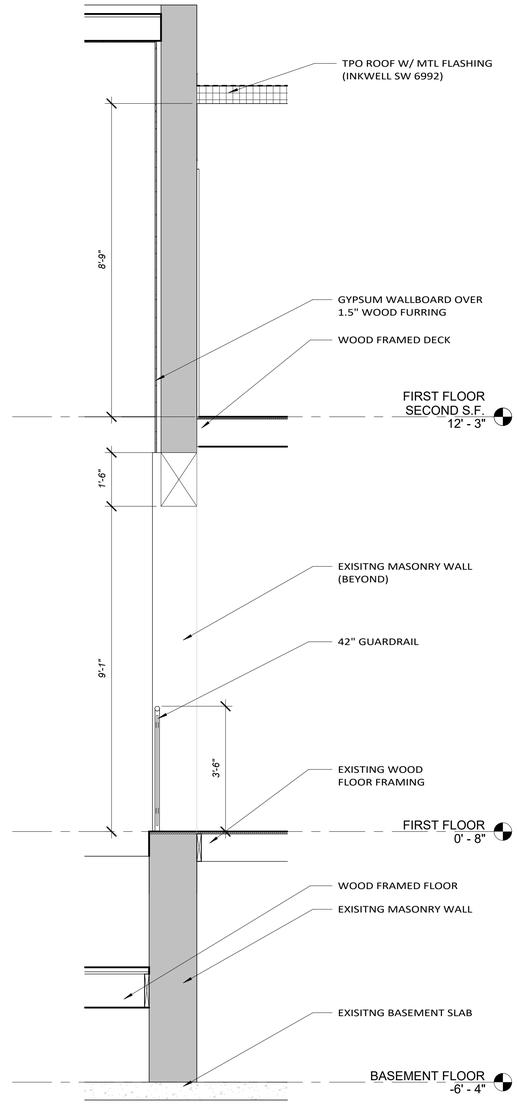
HR3



1 HR4 WALL SECTION 1
1/2" = 1'-0"



2 HR4 WALL SECTION 2
1/2" = 1'-0"



3 HR4 WALL SECTION 3
1/2" = 1'-0"

ROSE ARCHITECTS

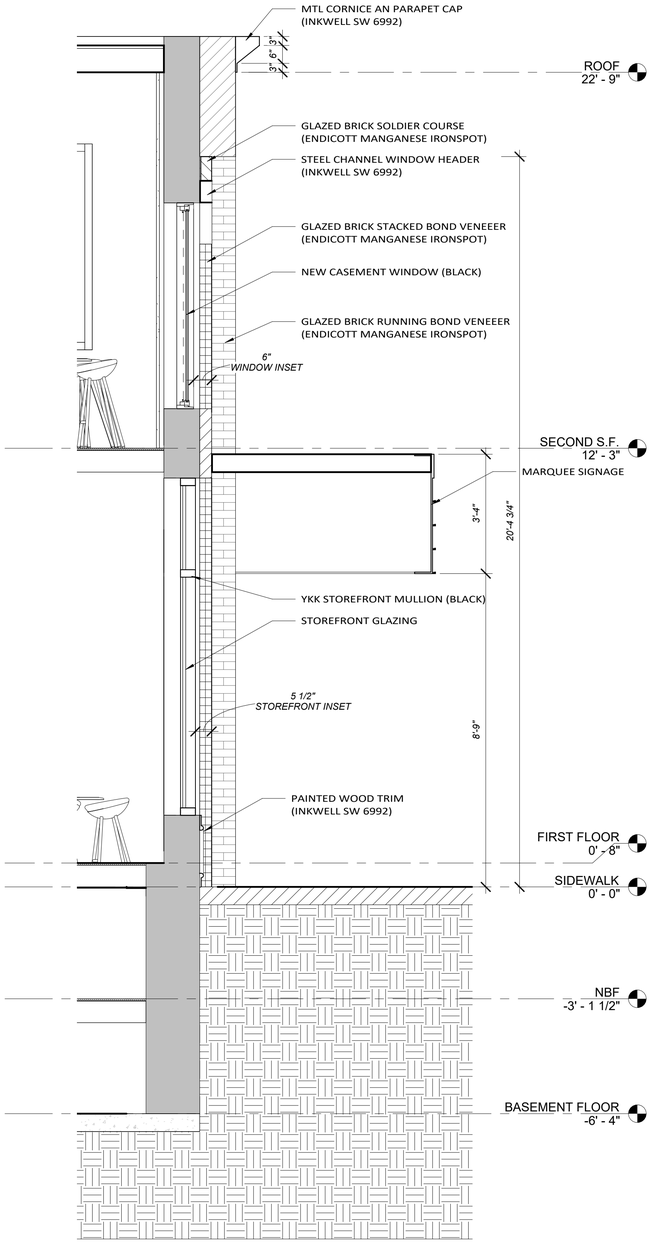
JAZZ CLUB AND BAR

111 WEST CONGRESS STREET,
SAVANNAH, GA, 31401

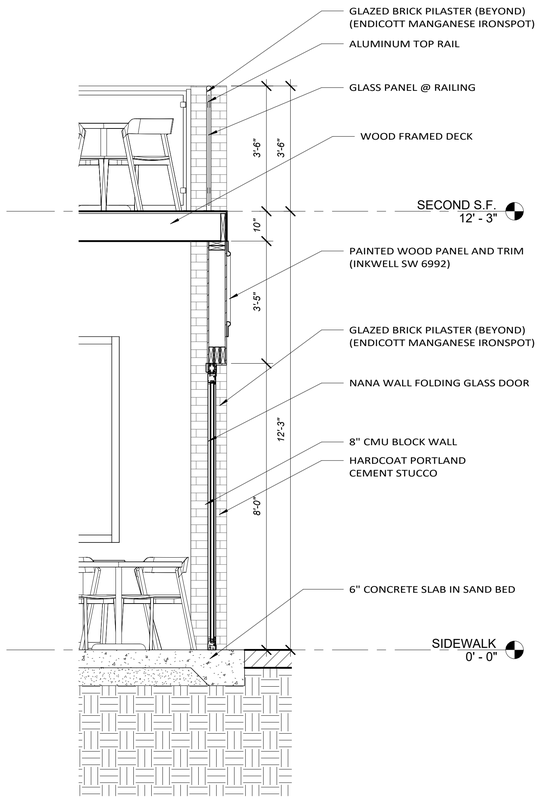
WALL SECTIONS

JK
9/15/2022

HR4



2 HR4.1 WALL SECTION 4
1/2" = 1'-0"



1 HR4.1 WALL SECTION 5
1/2" = 1'-0"

ROSE ARCHITECTS

JAZZ CLUB AND BAR

111 WEST CONGRESS STREET,
SAVANNAH, GA, 31401

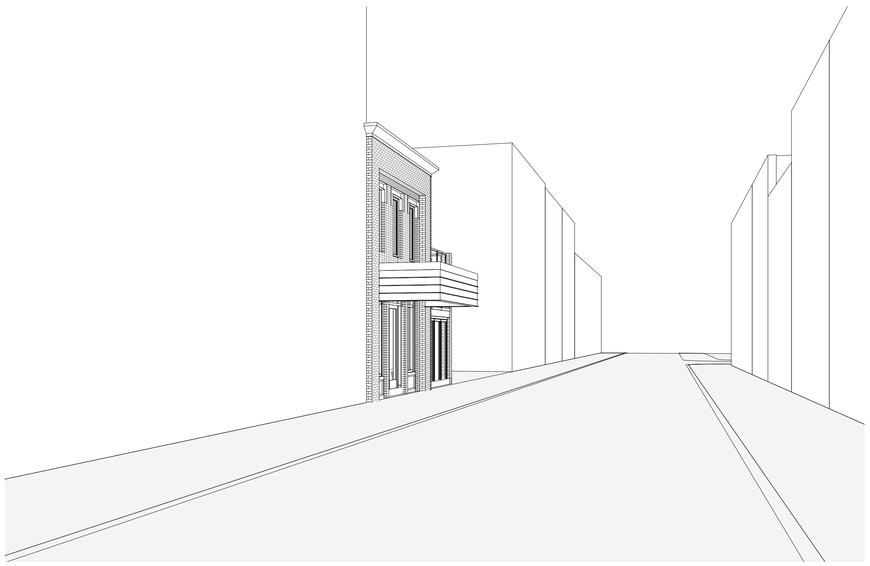
WALL SECTIONS

JK
9/15/2022

HR4.1

1 HR5 CONGRESS - SOUTHEAST FACING PERSPECTIVE 1

2 HR5 CONGRESS - SOUTHEAST FACING PERSPECTIVE 2



3 HR5 CONGRESS - SOUTHWEST FACING PERSPECTIVE 1

4 HR5 CONGRESS - SOUTHWEST FACING PERSPECTIVE 2

ROSE ARCHITECTS

JAZZ CLUB AND BAR

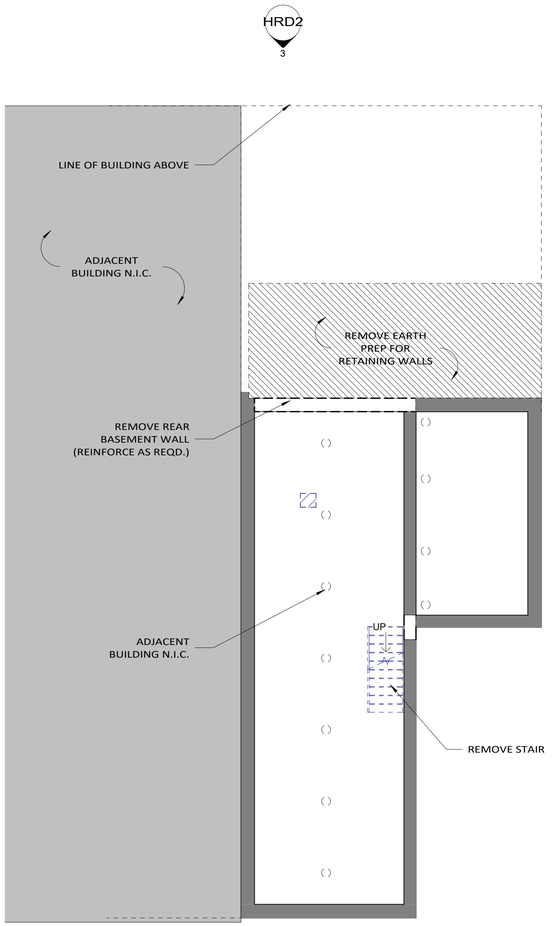
111 WEST CONGRESS STREET,
SAVANNAH, GA, 31401

SITELINES / PERSPECTIVES

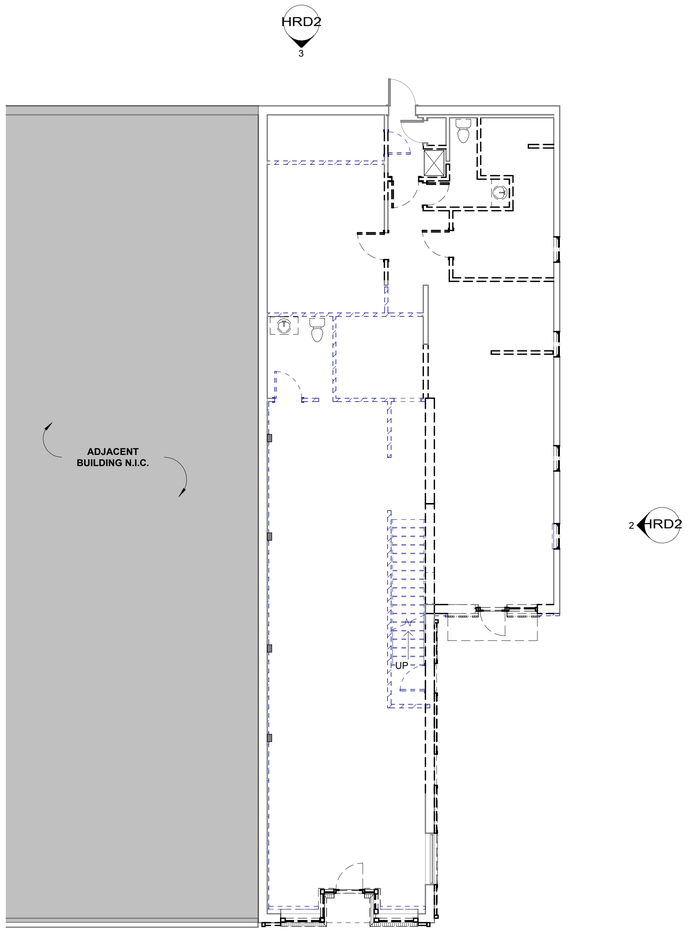
JK

9/15/2022

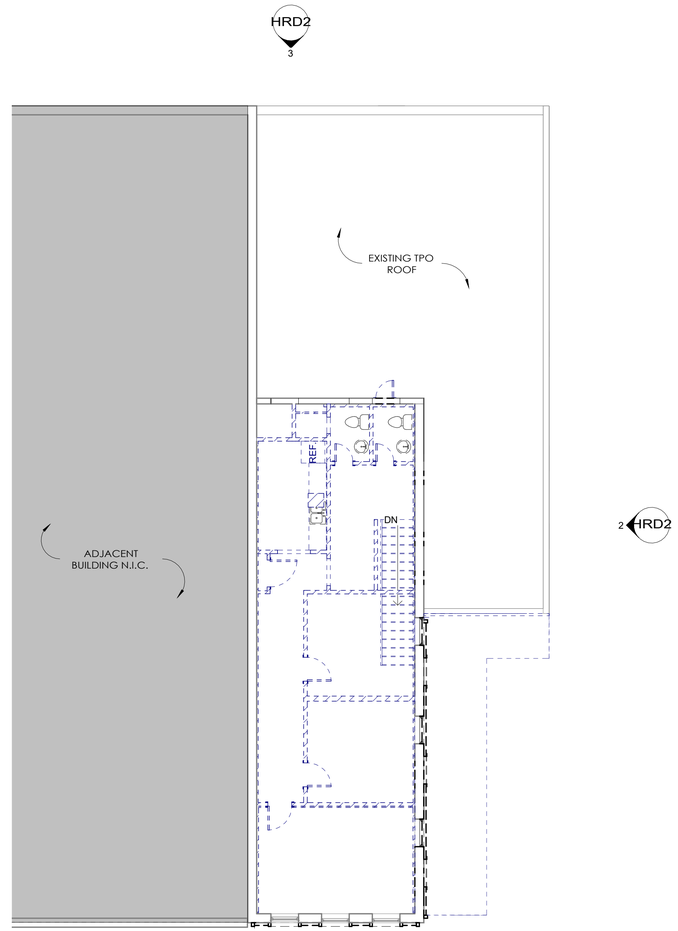
HR5



1 HRD1 DEMO PLAN - BASEMENT
1/8" = 1'-0"



2 HRD1 DEMO PLAN - FIRST FLOOR
1/8" = 1'-0"



3 HRD1 DEMO PLAN - SECOND FLOOR
1/8" = 1'-0"

GENERAL DEMO NOTES

1. ALL EXISTING CONDITIONS SHOWN ARE FOR REFERENCE ONLY AND ARE TO BE FIELD VERIFIED BY THE CONTRACTOR.

2. REMOVED MATERIALS, UNLESS NOTED OTHERWISE, BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE SITE IN ACCORDANCE WITH ALL APPLICABLE LAWS, CODES, AND REGULATIONS. VERIFY WITH OWNER

3. THE CONTRACTOR SHALL USE QUALIFIED, EXPERIENCED PERSONNEL FOR REMOVAL AND DEMOLITION OPERATIONS. REMOVAL AND DEMOLITION OPERATIONS SHALL BE PERFORMED IN A CAREFUL AND ORDERLY MANNER TO AVOID HAZARDS TO PERSONS, DAMAGE TO PROPERTY, AND THE SPREADING OF DUST AMD FLYING PARTICLES.

4. THE EXACT EXTENT OF DEMOLITION TO BE DONE SHALL BE VERIFIED AT THE SITE. DETERMINE THE NATURE AND EXTENT OF DEMOLITION THAT WILL BE NECCESARY BY COMPARING THE DRAWINGS WITH THE EXIST CONDITIONS.

5. THE CONTRACTOR IS FULLY RESPONSIBLE FOR THE MEANS AND METHODS OF DEMOLITION AND THE SAFETY OF THE EXIST STRUCTURE.

6. NO PORTIONS OF THE STRUCTURE SHALL BE PERMITTED TO FALL NOR SHALL ANY DEBRIS BE DROPPED EXCEPT BY METHODS WHICH WILL INSURE LIFE SAFETY AND OTHER INSURANCE.

7. DO NOT REMOVE MORE OF THE EXISTING STRUCTURE THAN NECESSARY. DO NOT DAMAGE, MAR, OR DEFACE THE REMAINING STRUCTURE OR MATERIALS TO BE REUSED.

8. THE CONTRACTOR SHALL PROVIDE SHORING IN ALL LOCATIONS WHERE EXIST CONSTRUCTION TO REMAIN WILL BE AFFECTED BY DEMOLITION.

DEMO LEGEND

- PORTION OF WALL TO REMAIN
- PORTION OF WALL TO BE REMOVED
- PORTION OF FLOOR TO BE REMOVED
- PORTION OF CEILING TO BE REMOVED

PROJECT DEMO NOTES

1. REMOVE ALL EXISTING FLOORING MATERIAL THROUGHOUT

ROSE ARCHITECTS

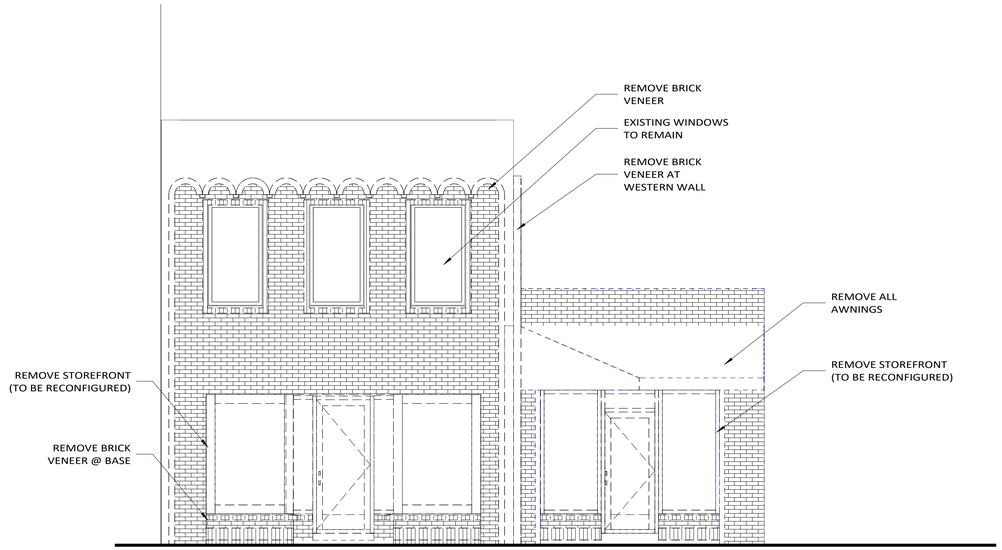
JAZZ CLUB AND BAR

111 WEST CONGRESS STREET,
SAVANNAH, GA, 31401

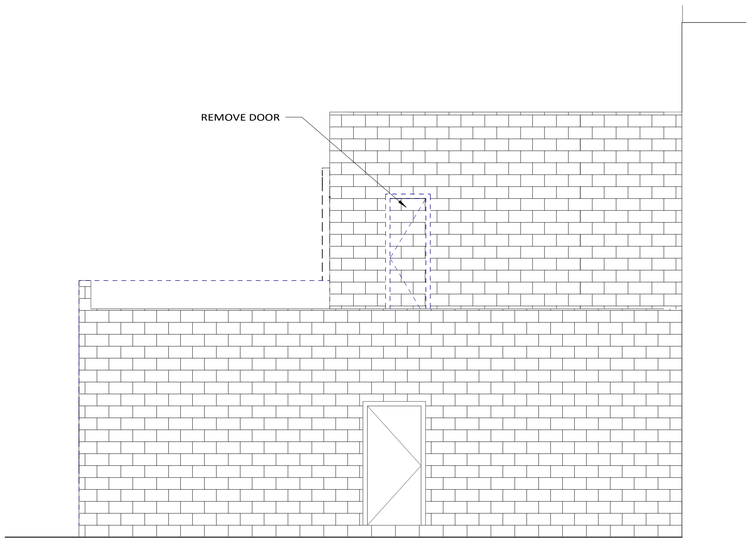
DEMO FLOOR PLANS

JK
9/15/2022

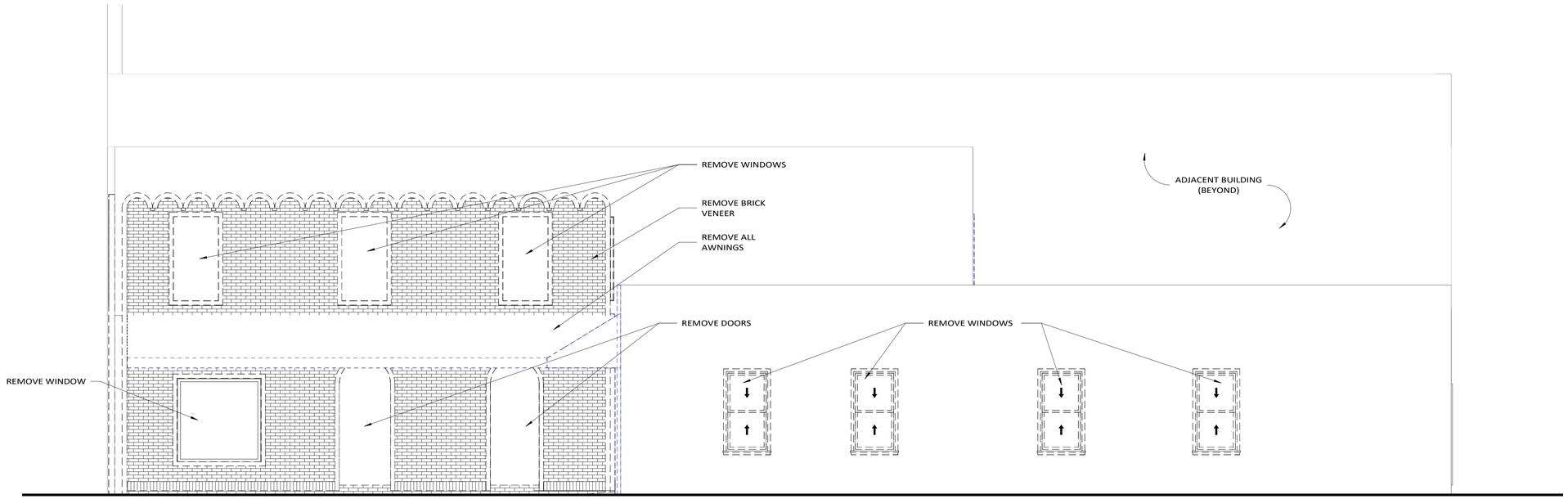
HRD1



1 HRD2 DEMO ELEVATION - NORTH FACADE
1/4" = 1'-0"



3 HRD2 DEMO ELEVATION - SOUTH LANE
1/4" = 1'-0"



2 HRD2 DEMO ELEVATION - WEST FACADE
1/4" = 1'-0"

GENERAL DEMO NOTES

NOTE:
1. ALL EXISTING CONDITIONS SHOWN ARE FOR REFERENCE ONLY AND ARE TO BE FIELD VERIFIED BY THE CONTRACTOR.

2. REMOVED MATERIALS, UNLESS NOTED OTHERWISE, BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE SITE IN ACCORDANCE WITH ALL APPLICABLE LAWS, CODES, AND REGULATIONS. VERIFY WITH OWNER

3. THE CONTRACTOR SHALL USE QUALIFIED, EXPERIENCED PERSONNEL FOR REMOVAL AND DEMOLITION OPERATIONS. REMOVAL AND DEMOLITION OPERATIONS SHALL BE PERFORMED IN A CAREFUL AND ORDERLY MANNER TO AVOID HAZARDS TO PERSONS, DAMAGE TO PROPERTY, AND THE SPREADING OF DUST AMD FLYING PARTICLES.

4. THE EXACT EXTENT OF DEMOLITION TO BE DONE SHALL BE VERIFIED AT THE SITE. DETERMINE THE NATURE AND EXTENT OF DEMOLITION THAT WILL BE NECCESARY BY COMPARING THE DRAWINGS WITH THE EXIST CONDITIONS.

5. THE CONTRACTOR IS FULLY RESPONSIBLE FOR THE MEANS AND METHODS OF DEMOLITION AND THE SAFETY OF THE EXIST STRUCTURE.

6. NO PORTIONS OF THE STRUCTURE SHALL BE PERMITTED TO FALL NOR SHALL ANY DEBRIS BE DROPPED EXCEPT BY METHODS WHICH WILL INSURE LIFE SAFETY AND OTHER INSURANCE.

7. DO NOT REMOVE MORE OF THE EXISTING STRUCTURE THAN NECESSARY. DO NOT DAMAGE, MAR, OR DEFACE THE REMAINING STRUCTURE OR MATERIALS TO BE REUSED.

8. THE CONTRACTOR SHALL PROVIDE SHORING IN ALL LOCATIONS WHERE EXIST CONSTRUCTION TO REMAIN WILL BE AFFECTED BY DEMOLITION.

DEMO LEGEND

- PORTION OF WALL TO REMAIN
- PORTION OF WALL TO BE REMOVED
- PORTION OF FLOOR TO BE REMOVED
- PORTION OF CEILING TO BE REMOVED

PROJECT DEMO NOTES

1. REMOVE ALL EXISTING FLOORING MATERIAL THROUGHOUT

ROSE ARCHITECTS

JAZZ CLUB AND BAR
111 WEST CONGRESS STREET,
SAVANNAH, GA, 31401

DEMO ELEVATIONS

JK
9/15/2022

HRD2

ROSE ARCHITECTS

9.15.2022

MPC Preservation Staff
Sent by e-mail

Attn: Leah Michalik

Re: 11 West Congress Street

Dear MPC Staff:

We are requesting a variance to allow us to meet the historic vertical dimensions prevalent on the 100 block of West Congress Street. The ordinance states that all Marquee signs shall be 10 feet or more from grade. We would like to align our Marquee to neighboring structures. Many historic Marquees in the Landmark District are below the 10 foot regulation, The Trustees Theatre on Broughton is nine feet from grade and the Historic Savannah Theatre is 9 foot eight above grade. We are proposing a Marquee eight foot nine above grade. Granting this request for variance would allow this building to blend better with the scale of its neighbors.

See the ordinance section below:

9.9.11 Signs Requiring Permits

Marquee Sign
A sign attached to the face of marquee not projecting above or below the face of the marquee. A marquee is a permanent roof-like structure that projects from the façade of a building over an entrance.
Standards:
One (1) such sign shall be permitted for each building façade with an entrance providing public access.
The lowest point of such sign shall not be less than 10 feet above the pedestrian walkway.
Such sign shall not exceed an area of one (1) square foot per linear foot of building frontage or 90 square feet, whichever is less.
Copy shall not be changed more than once every 24 hours.
Copy shall not be animated, revolve, flash or have running lights.
Where Permitted:
TN-1, TN-2, TC-1, TC-2, OI, B-N, B-C, I-L-T districts, for nonresidential uses

If you need additional information, please contact me.

Best wishes,

Kevin F. Rose AIA NCARB

BASE COAT SCRATCH & BROWN STUCCO

♦ The Pro's Choice Since 1936

Sakrete® Base Coat Scratch and Brown Stucco is a gray, blended, water resistant, portland/lime cement-based, material used for scratch and brown coat stucco work.

Features:

- Meets ASTM C926 Standard Specification for Application of Portland Cement-Based Plaster
- Preblend with sand requiring only the addition of water
- Can be used in a 3 coat system or 2 coat scratch and brown application
- Water resistant with a breathable finish

Use For:

- Concrete Block
- Vertical and overhead applications
- Scratch and Brown
- Applications over metal lath, welded or woven wire lath in accordance with ASTM C1063
- Brick or Stone

Yield/Water/Coverage:

Bag Size	Trowel Applied	Spray Applied	Water
80 lb (36.3 kg)	70 ft² (6.4 m²) at 1/8" (3.2 mm) thick or 35 ft² (3.2 m²) at 1/4" (6.4 mm) thick	60 ft² (5.5 m²) at 1/8" (3.2 mm) thick	1.5 gal (5.8 L)

NOTE: Yield and water are approximate. The yield above does not allow for waste and spillage. Coverage can vary depending upon texture, weather, method of application, workmanship and other conditions.

Color:

Gray

Preparation/Application:

For best results all material should be stored between 40°F (4°C) and 90°F (32°C).

1. Remove all unsound concrete, mortar, grease, oil, paint and other foreign materials that will inhibit performance.
2. When applying over a base coat, CMU (Concrete Masonry Unit) or other porous surfaces, dampen the surface first.
3. When applying over a smooth non-absorbent surface follow the provisions of ASTM C926 for surface treatment and the use of Sakrete Bonder & Fortifier or Sakrete Concrete Glue.
4. When used over old stucco, Sakrete Concrete Glue or Sakrete Bonder/ Fortifier is required.

Refer to:

- ASTM D4258 Surface Cleaning of Concrete before painting
- ASTM C926 Application of Portland Cement Plaster
- ACI 524R Guide to Portland Cement Plastering

Placement:

1. Apply a scratch and brown coat in accordance with ASTM C926 prior to application of the stucco.
2. Install to a minimum thickness in accordance with the standards referenced.
3. Finish according to the texture specified. Wood floats are preferred.
4. Over-floating the material can result in color variations, mottling and surface defects.
5. The air, mix & substrate temperatures should all be between 40°F (4°C) to 90°F (32°C).

Spray Application:

Note: The following information is offered as a guide only. Specific product, equipment, application conditions and user experience will influence proper application results. Consult with the equipment manufacturer for equipment handling techniques. Field Test material with equipment prior to starting project.

Spray an even, consistent coat, moving the nozzle with a steady, even motion, maintaining the same distance and angle from the wall.

Progressive Cavity Pump	Hose diameter & max length	Gun	Tip	Pressure at Pump	Pressure at Gun
2.5 L	1" to 1.5" (25.4 to 38.1 mm)	Pole	7/16" to 9/16" (11.1 to 14.3 mm)	300-400 psi (2.1-2.8 MPa)	Air compressor to furnish 50 psi (0.3 MPa)

Mixing:

1. Use clean tools and potable water. A mixer will help with uniformity.
2. Use approximately 1 1/2 gal (5.8 L) of water per 80 lb (36.3 kg) bag.
3. Place the water In the mixer, gradually adding the stucco to the mixing water and mix until material is wet and of a trowelable consistency (about 3 - 4 minutes).
4. Water and mixing time must be kept to a minimum and be consistent between batches. Inconsistent amounts of water from bag to bag will result in color variations on the wall.

BASE COAT SCRATCH & BROWN STUCCO

♦ The Pro's Choice Since 1936

5. Allow mixer to sit for 2 minutes, than remix for one minute. A small amount of water may be added at this time if mix is stiff.
6. Mix only quantities that can be applied within one hour.
7. If mixture becomes stiff and difficult to trowel, discard it. Do not re-temper. Re-tempering will seriously affect performance.
8. When used over porous substrates and/or during hot, dry weather replace 1/2 gallon of water with the Sakrete Bonder & Fortifier or prime with Sakrete Concrete Glue.

Note: Refer to applicable sections of the standards referenced. DO NOT re-temper. Re-tempering will seriously affect color. When using Sakrete Bonder & Fortifier, pre-dilute with water first before mixing with the stucco. The addition of Bonder & Fortifier improves bond, curing, reduces shrinkage cracks, improves color retention and helps reduce efflorescence.

Curing:

1. Proper curing is critical for sound results.
2. Protect newly applied substrates from rain for 24 hours. Protect from freezing for 24 hours after application.
3. Materials modified with Sakrete Bonder & Fortifier should be air cured, unless hot and/or drying winds or low humidity are present. Under such conditions if not modified, lightly fog spray.
4. Cure per American Concrete Institute 308-Standard Practice for Curing Concrete. As with all stucco, surface cracking may occur due to curing conditions, control joint configurations, over-watering, over-troweling or other conditions beyond the control of the manufacturers of Sakrete products.
5. Efflorescence is a naturally occurring phenomenon associated with portland cement based products. Elevated mineral content, salts, or other particulates can exacerbate this condition.

Precautions:

- DO NOT apply over substrates that are frozen.
- DO NOT apply if air or substrate temperature is below 40°F (4°C) or above 90°F (32°C).
- DO NOT apply when temperature is expected to fall below 40°F (4°C) within 48 hours.
- DO NOT over-water.
- DO NOT over-float material.
- DO NOT use high mineral content or salt water.
- DO NOT apply over painted, sealed or slick surfaces.

NOTE: Proper application and installation of all Sakrete products are the responsibility of the end user.

Safety:

READ and UNDERSTAND the Safety Data Sheet (SDS) before using this product. WARNING: Wear protective clothing and equipment. For emergency information, call CHEMTREC at 800-424-9300 or 703-527-3887 (outside USA).
KEEP OUT OF REACH OF CHILDREN.

Limited Product Warranty:

The manufacturer warrants that this product shall be of merchantable quality when used or applied in accordance with the manufacturer's instructions. This product is not warranted as suitable for any purpose other than the general purpose for which it is intended. This warranty runs for one (1) year from the dates the product is purchased. ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ON THIS PRODUCT IS LIMITED TO THE DURATION OF THIS WARRANTY. Liability under this warranty is limited to replacement or defective products or, at the manufacturer's option, refund of the purchase price. CONSEQUENTIAL AND INCIDENTAL DAMAGES ARE NOT RECOVERABLE UNDER THIS WARRANTY.

FINISH COAT STUCCO

♦ The Pro's Choice Since 1936

Sakrete® Finish Coat Stucco is a blended, decorative, water resistant, portland /lime cement-based, finish coat stucco for use as a decorative finish coat stucco for vertical and overhead application.

Features:

- Meets ASTM C926 Standard Specification for Application of Portland Cement-Based Plaster
- Preblend with sand requiring only the addition of water
- Can be used in a 3 coat system or 2 coat scratch and brown application
- Water resistant with a breathable finish

Use For:

- Concrete Block
- Vertical and overhead applications
- Scratch and Brown
- Applications over metal lath, welded or woven wire lath in accordance with ASTM C1063
- Brick or Stone

Yield/Water/Coverage:

Bag Size	Trowel Applied	Spray Applied	Water
80 lb (36.3 kg)	70 ft² (6.4 m²) at 1/8" (3.2 mm) thick or 35 ft² (3.2 m²) at 1/4" (6.4 mm) thick	60 ft² (5.5 m²) at 1/8" (3.2 mm) thick	1.5 gal (5.8 L)

NOTE: Yield and water are approximate. The yield above does not allow for waste and spillage. Coverage can vary depending upon texture, weather, method of application, workmanship and other conditions.

Color:

Gray or White

Preparation/Application:

For best results all material should be stored between 40°F (4°C) and 90°F (32°C).

1. Remove all unsound concrete, mortar, grease, oil, paint and other foreign materials that will inhibit performance.
2. When applying over a base coat, CMU (Concrete Masonry Unit) or other porous surfaces, dampen the surface first.
3. When applying over a smooth non-absorbent surface follow the provisions of ASTM C926 for surface treatment and the use of Sakrete Bonder & Fortifier or Sakrete Concrete Glue.
4. When used over old stucco, Sakrete Concrete Glue or Sakrete Bonder/ Fortifier is required.

Refer to:

- ASTM D4258 Surface Cleaning of Concrete before painting
- ASTM C926 Application of Portland Cement Plaster
- ACI 524R Guide to Portland Cement Plastering

Placement:

1. Apply a scratch and brown coat in accordance with ASTM C926 prior to application of the stucco.
2. Install to a minimum thickness in accordance with the standards referenced.
3. Finish according to the texture specified. Wood floats are preferred.
4. Over-floating the material can result in color variations, mottling and surface defects.
5. The air, mix & substrate temperatures should all be between 40°F (4°C) to 90°F (32°C).

Spray Application:

Note: The following information is offered as a guide only. Specific product, equipment, application conditions and user experience will influence proper application results. Consult with the equipment manufacturer for equipment handling techniques. Field Test material with equipment prior to starting project.

Spray an even, consistent coat, moving the nozzle with a steady, even motion, maintaining the same distance and angle from the wall.

Progressive Cavity Pump	Hose diameter & max length	Gun	Tip	Pressure at Pump	Pressure at Gun
2.5 L	1" to 1.5" (25.4 to 38.1 mm)	Pole	7/16" to 9/16" (11.1 to 14.3 mm)	300-400 psi (2.1-2.8 MPa)	Air compressor to furnish 50 psi (0.3 MPa)

Mixing:

1. Use clean tools and potable water. A mixer will help with uniformity.
2. Use approximately 1 1/2 gal (5.8 L) of water per 80 lb (36.3 kg) bag.
3. Place the water In the mixer, gradually adding the stucco to the mixing water and mix until material is wet and of a trowelable consistency (about 3 - 4 minutes).
4. Water and mixing time must be kept to a minimum and be consistent between batches. Inconsistent amounts of water from bag to bag will result in color variations on the wall.

5. Allow mixer to sit for 2 minutes, than remix for one minute. A small amount of water may be added at this time if mix is stiff.
6. Mix only quantities that can be applied within one hour.
7. If mixture becomes stiff and difficult to trowel, discard it. Do not re-temper. Re-tempering will seriously affect performance.
8. When used over porous substrates and/or during hot, dry weather replace 1/2 gallon of water with the Sakrete Bonder & Fortifier or prime with Sakrete Concrete Glue.

Note: Refer to applicable sections of the standards referenced. DO NOT re-temper. Re-tempering will seriously affect color. When using Sakrete Bonder & Fortifier, pre-dilute with water first before mixing with the stucco. The addition of Bonder & Fortifier improves bond, curing, reduces shrinkage cracks, improves color retention and helps reduce efflorescence.

Curing:

1. Proper curing is critical for sound results.
2. Protect newly applied substrates from rain for 24 hours. Protect from freezing for 24 hours after application.
3. Materials modified with Sakrete Bonder & Fortifier should be air cured, unless hot and/or drying winds or low humidity are present. Under such conditions if not modified, lightly fog spray.
4. Cure per American Concrete Institute 308-Standard Practice for Curing Concrete. As with all stucco, surface cracking may occur due to curing conditions, control joint configurations, over-watering, over-troweling or other conditions beyond the control of the manufacturers of Sakrete products.
5. Efflorescence is a naturally occurring phenomenon associated with portland cement based products. Elevated mineral content, salts, or other particulates can exacerbate this condition.

Precautions:

- DO NOT apply over substrates that are frozen.
- DO NOT apply if air or substrate temperature is below 40°F (4°C) or above 90°F (32°C).
- DO NOT apply when temperature is expected to fall below 40°F (4°C) within 48 hours.
- DO NOT over-water.
- DO NOT over-float material.
- DO NOT use high mineral content or salt water.
- DO NOT apply over painted, sealed or slick surfaces.

NOTE: Proper application and installation of all Sakrete products are the responsibility of the end user.

Safety:

READ and UNDERSTAND the Safety Data Sheet (SDS) before using this product. WARNING: Wear protective clothing and equipment. For emergency information, call CHEMTREC at 800-424-9300 or 703-527-3887 (outside USA).
KEEP OUT OF REACH OF CHILDREN.

Limited Product Warranty:

The manufacturer warrants that this product shall be of merchantable quality when used or applied in accordance with the manufacturer's instructions. This product is not warranted as suitable for any purpose other than the general purpose for which it is intended. This warranty runs for one (1) year from the dates the product is purchased. ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ON THIS PRODUCT IS LIMITED TO THE DURATION OF THIS WARRANTY. Liability under this warranty is limited to replacement or defective products or, at the manufacturer's option, refund of the purchase price. CONSEQUENTIAL AND INCIDENTAL DAMAGES ARE NOT RECOVERABLE UNDER THIS WARRANTY.

Stucco Color

CSI MASTERFORMAT SECTION NUMBER **08 41 13**
CSI MASTERFORMAT SECTION TITLE **ALUMINUM-FRAMED ENTRANCES & STOREFRONTS**
YKK AP PRODUCT SERIES **YKK AP YES 45 XT SERIES**

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Aluminum Storefront, including:
   1. YKK AP Series YES 45 XT Storefront System.
B. Related Sections:
   1. Sealants: Refer to Division 7 Joint Treatment Section for sealant requirements.
   2. Glass and Glazing: Refer to Division 8 Glass and Glazing Section for glass and glazing requirements.
   3. Single Source Requirement: All products listed below shall be by the same manufacturer.
      a. Section 08 32 13 Sliding Aluminum-Framed Glass Doors.
      b. Section 08 51 13 Aluminum Windows.
      c. Section 08 44 13 Glazed Aluminum Curtain Walls.
      d. Section 08 44 33 Sloped Glazing Assemblies.

1.02 SYSTEM PERFORMANCE DESCRIPTION

A. Performance Requirements: Provide aluminum storefront systems that comply with performance requirements indicated, as demonstrated by testing manufacturer's assemblies in accordance with test method indicated.
   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 at test pressure differential of: 10 PSF (479 Pa) (or when required, field tested in accordance with AAMA 503). 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:
         2) Negative Pressure:
      b. Interior Walls (Pressure Acting in Either Direction):
   4. Deflection: Maximum allowable deflection in any member when tested in accordance with ASTM E 330 with allowable stress in accordance with AA Specifications for Aluminum Structures.
      a. Without Horizontals: L/175 or 3/4" (19.1mm) maximum.
      b. With Horizontals: L/175 or L/240 + 1/4" (6.4mm) for spans greater than 13'-6" (4.1m) but less than 40'-0" (12.2m).
   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.
   6. Thermal Performance: When tested in accordance with AAMA 507, AAMA 1503, and NFRC 100:
      a. Condensation Resistance Factor (CRF_f): A minimum of 66 (with a CRF_g of 64.)
      b. Thermal Transmittance U Value: 0.36 BTU/HR/FT²/°F or less.

Note: Thermal Performance for the glazed system as a whole will be affected by the characteristics of the glass specified and percentage of vision area.

   7. Acoustical Performance: Acoustical Performance: When tested in accordance with AAMA 1801:
      a. Sound Transmission Class (STC) shall not be less than 32 for 1" standard insulating unit; 36 for laminated glazing.
      b. Outdoor–Indoor Transmission Class (OITC) shall not be less than 27 for 1" standard insulating unit; 30 for laminated glazing.

Note: Laminated glass based on 1" Insulated Glass Unit (1/8" / 0.030" PVB / 1/8", ½" air space, and ¼" annealed interior.)

1.03 SUBMITTALS

A. General: Prepare, review, approve, and submit specified submittals in accordance with "Conditions of the Contract" and Division 1 Submittals Sections. Product data, shop drawings, samples, and similar submittals are defined in "Conditions of the Contract."
B. Product Data: Submit product data for each type storefront series specified.
C. Substitutions: Whenever substitute products are to be considered, supporting technical data, samples, and test reports must be submitted ten (10) working days prior to bid date in order to make a valid comparison.
D. Shop Drawings: Submit shop drawings showing layout, profiles, and product components, including anchorage,

accessories, finish colors and textures.

E. Samples: Submit verification samples for colors on actual aluminum substrates indicating full color range expected in installed system.

F. Quality Assurance / Control Submittals:
   1. Test Reports: Submit certified test reports showing compliance with specified performance characteristics and physical properties.
   2. Installer Qualification Data: Submit installer qualification data.

G. Closeout Submittals:
   1. Warranty: Submit warranty documents specified herein.
   2. Project Record Documents: Submit project record documents for installed materials in accordance with Division 1 Project Closeout (Project Record Documents) Section.

1.04 QUALITY ASSURANCE

A. Qualifications:
   1. Installer Qualifications: Installer experienced (as determined by contractor) to perform work of this section who has specialized in the installation of work similar to that required for this project. If requested by Owner, submit reference list of completed projects.
   2. Manufacturer Qualifications: Manufacturer capable of providing field service representation during construction process.

B. Mock-Ups (Field Constructed): Install at project site a job mock-up using acceptable products and manufacturer approved installation methods. Obtain Owner's and Architect's acceptance of finish color, and workmanship standard.
   1. Mock-Up Size:
   2. Maintenance: Maintain mock-up during construction for workmanship comparison; remove and legally dispose of mock-up when no longer required.
   3. Incorporation: Mock-up may be incorporated into final construction upon Owner's approval.

C. Pre-Installation Meetings: Conduct pre-installation meeting to verify project requirements, substrate conditions, manufacturer's installation instructions, and manufacturer's warranty requirements.

1.05 PROJECT CONDITIONS / SITE CONDITIONS

A. Field Measurements: Verify actual measurements/openings by field measurements before fabrication; show recorded measurements on shop drawings. Coordinate field measurements, fabrication schedule with construction progress to avoid construction delays.

1.06 WARRANTY

A. Project Warranty: Refer to "Conditions of the Contract" for project warranty provisions.

B. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by an authorized company official.
   1. Warranty Period: Manufacturer’s one (1) year standard warranty commencing on the substantial date of completion for the project provided that the warranty, in no event, shall start later than six (6) months from the date of shipment by YKK AP America Inc.

EDITOR NOTE: Longer warranty periods are available at additional cost.

PART 2 PRODUCTS

2.01 MANUFACTURERS (Acceptable Manufacturers/Products)

A. Acceptable Manufacturers: YKK AP America Inc.
   270 Riverside Parkway, Suite 100
   Austell, GA 30168
   Telephone: (678) 838-6000; Fax: (678) 838-6001
   1. Storefront System: YKK AP YES 45 XT Storefront System.

B. Storefront Framing System:
   1. Description: Center set, exterior flush glazed; jambs and vertical mullions continuous; head, sill, intermediate horizontal attached by screw spline joinery.
   2. Components: Manufacturer's standard extruded aluminum mullions, 90 degree corner posts, entrance door framing, and indicated shapes.
   3. Dual Thermal Barrier: Provide dual continuous thermal barriers by means of poured and debridged pockets consisting of a two-part, chemically curing high density polyurethane which is bonded to the aluminum by YKK ThermaBond Plus®. Systems employing non-structural thermal barriers are not acceptable.

2.02 MATERIALS

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

B. Aluminum Sheet:

1. Anodized Finish: ASTM B 209 (ASTM B 209M), 5005-H14 Aluminum Alloy, 0.050" (1.27 mm) minimum thickness.
2. Painted Finish: ASTM B 209 (ASTM B 209M), 3003-H14 Aluminum Alloy, 0.080" (1.95 mm) minimum thickness.

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.

2.04 RELATED MATERIALS (Specified In Other Sections)

A. Glass: Refer to Division 8 Glass and Glazing Section for glass materials.

2.05 FABRICATION

A. Shop Assembly: Fabricate and assemble units with joints only at intersection of aluminum members with uniform hairline joints; rigidly secure, and sealed in accordance with manufacturer's recommendations.

1. Hardware: Drill and cut to template for hardware. Reinforce frames and door stiles to receive hardware in accordance with manufacturer's recommendations.
2. Welding: Conceal welds on aluminum members in accordance with AWS recommendations or methods recommended by manufacturer. Members showing welding bloom or discoloration on finish or material distortion will be rejected.

2.06 FINISHES AND COLORS

A. YKK AP America Anodized Plus® Finish:

CODEDESCRIPTION
YS1N* Clear Anodized Plus®
YH3N Champagne Anodized Plus®
YB1N Medium Bronze Anodized Plus®
YB5N* Dark Bronze Anodized Plus®
YK1N* Black Anodized Plus®
YW3N White Anodized Plus®
M Mill Finish

* Indicates standard finish usually carried as inventory.

Anodized Plus® is an advanced sealing technology that completely seals the anodic film yielding superior durability (See AAMA 612).

B. Anodized Finishing: Prepare aluminum surfaces for specified finish; apply shop finish in accordance with the following:

1. Anodic Coating: Electrolytic color coating followed by an organic seal applied in accordance with the requirements of AAMA 612. Aluminum extrusions shall be produced from quality controlled billets meeting AA-6063-T5.
   a. Exposed Surfaces shall be free of scratches and other serious blemishes.
   b. Extrusions shall be given a caustic etch followed by an anodic oxide treatment and then sealed with an organic coating applied with an electrodeposition process.
   c. The anodized coating shall comply with all of the requirements of AAMA 612: Voluntary Specifications, Performance Requirements and Test Procedures for Combined Coatings of Anodic Oxide and Transparent Organic Coatings on Architectural Aluminum. Testing shall demonstrate the ability of the finish to resist damage from mortar, salt spray, and chemicals commonly found on construction sites, and to resist the loss of color and gloss.
   d. Overall coating thickness for finishes shall be a minimum of 0.7 mils.
      2) CASS Corrosion Resistance Test, CASS 240/ASTM B368 Test Method.
      3) Other AAMA 2605 Performance Tests specified in these specifications, such as: 7.3 Dry Film Hardness; 7.8.2 Salt Spray Resistance; 7.9.1.2 Color Retention, South Florida; 7.9.1.4 Gloss Retention, South Florida.

C. High Performance Organic Coating Finish:
   1. 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.
   2. Colors: Selected by Architect from the following:
      a. Standard coating color charts.
      b. Custom coating color charts.
      c. Color Name and Number:
D. Finishes Testing:
   1. Apply 0.5% solution NaOh, sodium hydroxide, to small area of finished sample area; leave in place for sixty minutes; lightly wipe off NaOh; Do not clean area further.
   2. Submit samples with test area noted on each sample.

PART 3 EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS / RECOMMENDATIONS

A. Compliance: Comply with manufacturer's product data, including product technical bulletins, installation instructions, and product carton instructions. The latest installation manual is available at www.ykkap.com.

3.02 EXAMINATION

A. Site Verification of Conditions: Verify conditions (which have been previously installed under other sections) are acceptable for product installation in accordance with manufacturer's instructions.

3.03 PREPARATION

A. Adjacent Surfaces Protection: Protect adjacent work areas and finish surfaces from damage during product installation.
   1. Aluminum Surface Protection: Protect aluminum surfaces from contact with lime, mortar, cement, acids, and other harmful contaminants.

3.04 INSTALLATION

A. General: Install manufacturer's system in accordance with shop drawings, and within specified tolerances.
   1. Protect aluminum members in contact with masonry, steel, concrete, or dissimilar materials using nylon pads or bituminous coating.
   2. Shim and brace aluminum system before anchoring to structure.
   3. Provide sill flashing at exterior storefront systems. Extend extruded flashing continuous with splice joints; set in continuous beads of sealant.
   4. Verify storefront system allows water entering system to be collected in gutters and wept to exterior. Verify metal joints are sealed in accordance with manufacturers installation instructions.
   5. Locate expansion mullions where indicated on reviewed shop drawings.
   6. Seal metal to metal storefront system joints using sealant recommended by system manufacturer.

3.05 FIELD QUALITY CONTROL

A. Manufacturer's Field Services: Upon request, provide manufacturer's field service consisting of site visit for inspection of product installation in accordance with manufacturer's instructions.
B. Field Test: Conduct field test to determine watertightness of storefront system. Conduct test in accordance with AAMA 501.2.

3.06 ADJUSTING AND CLEANING

A. Adjusting: Adjust swing doors for operation in accordance with manufacturer's recommendations.
B. Cleaning: The General Contractor shall clean installed products in accordance with manufacturer's instructions prior to owner's acceptance, and remove construction debris from project site. Legally dispose of debris.
C. Protection: The General Contractor shall protect the installed product's finish surfaces from damage during construction.

END OF SECTION

SECTION 10 22 39

FOLDING GLASS PARTITIONS

SECTION 10 22 43

SLIDING GLASS PARTITIONS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes furnishing and installing a sliding-folding thermally broken, acoustically rated, aluminum-framed glass panel system that includes:

1. Aluminum framed panels.
2. Threshold.
3. Sliding-folding and locking hardware.
4. Sound gasketing.
5. Bionic Turtle® thermal break.
6. Multipurpose frame insert.
7. Panel Catch.
8. Glass and glazing.
9. Accessories as required for a complete working installation.

B. Related Documents and Sections: Contractor to examine Contract Documents for requirements that directly affect or are affected by Work of this Section. A list of those Documents and Sections include, but is not limited to, the following:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 General Requirements, Specification Sections, apply to this Section.
2. Section 06 10 00, Rough Carpentry: Wood framing R.O. and blocking.
3. Section 06 20 00, Finish Carpentry.
4. Section 07 90 00, Joint Protection.
5. Section 08 42 23, Glass Entrance Swing Doors.
6. Section 08 43 33, Thermally Broken Aluminum Framed Folding Glass Door: NanaWall NW Aluminum 840.
7. Section 08 43 33, Thermally Broken Aluminum Framed Folding Glass Storefront: NanaWall NW Aluminum 640.
8. Section 09 22 16, Non-Structural Metal Framing: Metal framing R.O. and reinforcement.

1.02 REFERENCES

A. Reference Standards in accordance with Division 01 and current editions from the following:

1. AAMA. American Architectural Manufacturers Association; www.aamanet.org
   a. AAMA 205-15, In-Plant Testing Guidelines for Manufacturers and Independent Laboratories.

b. AAMA 502, Voluntary Specification for Field Testing of Newly Installed Fenestration Products.
c. AAMA 611, Voluntary Specification for Anodized Architectural Aluminum.
d. AAMA 920-11, Specification for Operating Cycle Performance of Side-Hinged Door System.
e. AAMA 1304, Voluntary Specification of Forced Entry Resistance of Side-Hinged Door Systems.
f. AAMA 2604, Voluntary Specifications, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels.
g. AAMA/WDMA/CSA 101/I.S.2/A440-17, NAFS, North American Fenestration Standard Specification for Windows, Doors and Skylights.

2. ANSI. American National Standards Institute; www.ansi.org
   a. ANSI Z97.1, Safety Performance Specifications and Methods of Test for Safety Glazing Material Used in Buildings.
3. ASTM. ASTM International; www.astm.org
   a. ASTM C1036, Standard Specification for Flat Glass.
   b. ASTM C1048, Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass.
   c. ASTM E90-09, Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
   d. ASTM E413-16, Classification for Rating Sound Insulation.
   e. ASTM E2068-00 (2016), Standard Test Method for Determination of Operating Force of Sliding Windows and Doors.
   f. ASTM E987-88 (2017), Standard Test Methods for Deglazing Force of Fenestration Products.
   g. ASTM F842, Standard Test Methods for Measuring the Forced Entry Resistance of Sliding Door Assemblies, Excluding Glazing Impact.
4. Construction Products Directive (CPD), a legal mandate of the European Commission; http://ec.europa.eu/growth/single-market/european-standards/harmonised-standards/construction-products/index_en.htm
   a. CE Mark; http://ec.europa.eu/growth/single-market/ce-marking/index_en.htm
5. CPSC. Consumer Product Safety Commission; www.cpsc.gov
   a. CPSC 16CFR-1201, Safety Standard for Architectural Glazing Materials
6. CSA Group (Canadian Standards Association); www.csagroup.org/global/en/home
   a. CSA A440S1, The Canadian supplement to North American (NAFS) standards.
7. DIN. "Deutsches Institut für Normung" (German institute for standardization); www.en-standard.eu/din-standards
   a. DIN EN 1090, Manufacturing qualification for welding of supporting building components.
   b. DIN EN 1627, Pedestrian door sets, windows, curtain walling, grilles, and shutters – Burglar resistance – Requirements and classification.
   c. DIN EN 1630, Pedestrian door sets, windows, curtain walling, grilles, and shutters- Burglar resistance – Test method for the determination of resistance to manual burglary attempts.
   d. DIN EN ISO 717-1, Acoustics – Rating of sound insulation in buildings and building elements.

e. DIN EN ISO 9001, 2015 quality management system registration.

f. DIN EN ISO 10140-1, 2, 4 & 5, Airborne sound measurement.

g. DIN EN ISO 12400, Windows and pedestrian doors – Mechanical durability – Requirements and classification.

h. DIN EN ISO 14001, 2015 environmental management system registration.

8. EN Standards - Construction Materials and Building (European Standards); www.en-standard.eu/din-standards

a. CSN EN 1191, Windows and Pedestrian Doors - Mechanical Durability.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordination: Coordinate Folding Glass Partition system and framing R.O.

B. Pre-installation Meetings: See Section 01 30 00.

1.04 SUBMITTALS

A. For Contractor submittal procedures see Section 01 30 00.

B. Product Data: Submit manufacturer's printed product literature for each Folding Glass Partition system to be incorporated into the Work. Show performance test results and details of construction relative to materials, dimensions of individual components, profiles, and colors.

C. Product Drawings: Indicate Folding Glass Partition system component sizes, dimensions and framing R.O., configuration, swing panels, direction of swing, stacking layout, typical head jamb, side jambs and sill details, type of glazing material, handle height, and field measurements.

D. Certificates: Submit CE Mark certificate.

E. Manufacturers' Instructions: Submit Owner's Manual from manufacturer which includes installation instructions, operation, and maintenance data: Identify with project name, location and completion date, and type and size of unit installed.

~~NOTE: Delete the following Article if LEED is not applicable; edit to meet project LEED requirements.~~

~~F. Sustainable Design Submittals (USGBC LEED®): Refer to Section 01 81 15, LEED Design Requirements.~~

~~1. **LEED 2009** (v3) Credits. Complete online LEED forms and submit other required materials as follows:~~

~~a. Materials and Resources (MR) Credits:~~

~~1). MR Credit 1.1 (MRc1.1): Building Reuse - Maintain Existing Exterior Walls, Floors and Roof~~

~~2). MR Credit 1.2 (MRc1.2): Building Reuse - Maintain Existing Interior Nonstructural Elements~~

~~3). MR Credit 2 (MRc2): Construction Waste Management~~

~~NOTE: MR Credit 3 below can apply to reusing salvaged Folding Glass Partition.~~

~~4). MR Credit 3: Materials Reuse - 5% (MRc3.1) or 10% (MRc3.2)~~

~~b. Indoor Environmental Quality (EQ) Credits:~~

~~1). IEQ Credit 2 (IEQc2): Increased Ventilation - Case 2 - Naturally Ventilated Spaces~~

~~2). IEQ Credit 8.1 (IEQc8.1): Daylight & Views - Daylight 75% of Spaces~~

~~3). IEQ Credit 8.2 (IEQc8.2): Daylight & Views - Views for 90% of Spaces~~

~~4). IEQ Credit 9 (LEED for Schools - IEQc9): Enhanced Acoustical Performance~~

~~2. **LEED v4 for Interior Design and Construction** (ID&C) Credits. Complete online LEED forms and submit other required materials as follows:~~

a. Energy and Atmosphere (EA) Credits:

1). EA Credit 2 (EAc2): Optimize Energy Performance

b. Materials and Resources (MR) Credits:

NOTE: MR Credit 1 below can apply to reusing salvaged Folding Glass Partition.

1). MR Credit 1 (MRc1): Building Life-Cycle Impact Reduction; Option 3 - Building and Material Reuse

c. Indoor Environmental Quality (EQ) Credits:

1). EQ Credit 7 (EQc7): Daylight

2). EQ Credit 8 (EQc8): Quality Views

3). EQ Credit 9 (EQc9): Acoustic Performance

i. Submit calculations or measurements for occupant spaces to meet sound transmission class ratings between adjacent spaces and reverberation time requirements within a room.

G. LEED Closeout Documentation:

NOTE: Edit below to meet project LEED requirements.

1. **LEED 2009** (v3). Submit completed LEED™ submittal Worksheet Templates for the following credits:

a. MRc1.1, MRc1.2, MRc2, MRc3, MRc6, IEQc2, IEQc8.1, IEQc8.2, IEQc9

2. **LEED v4** (ID&C). Submit information and documentation to complete LEED™ Worksheet Templates for the following credits:

a. EAc2, MRc1, EQc7, EQc8, EQc9

1.05 QUALITY ASSURANCE

A. Regulatory Requirements: Folding Glass Partition to be CE Mark certified.

NOTE: The CE mark serves as verification that the product conforms with the essential requirements of the Construction Products Directive (CPD), a legal mandate of the European Commission. CE certified windows and doors provide building professionals with a uniform set of technical standards to evaluate and specify product performance with added assurance that NanaWall products are safe and fit for purpose.

B. Manufacturer Qualifications: Manufacturer capable of providing complete, precision built, engineered, pre-fitted units with a minimum thirty (30) years' experience in the sale of folding-sliding door systems for large openings in the North American market.

1. Manufacturer to have DIN EN ISO 9001: 2015 quality management system registration.
2. Manufacturer to have DIN EN ISO 14001: 2015 environmental management system registration.

C. Installer Qualifications: Installer experienced in the installation of manufacturer's products or other similar products for large openings. Installer to provide reference list of at least three (3) projects of similar scale and complexity successfully completed in the last three (3) years.

1. Installer to be trained and certified by manufacturer.

D. Single Source Responsibility: Furnish Folding Glass Partition system materials from one manufacturer for entire Project.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Comply with manufacturer's instructions and recommendations, Section 01 60 00 requirements, and as follows:

1. Deliver materials to job site in sealed, unopened cartons or crates.

a. Upon receipt, inspect the shipment to ensure it is complete, in good condition and meets project requirements.

2. Store material under cover in a clean and dry location, protecting units against weather and defacement or damage from construction activities, especially to the edges of panels.

1.07 FIELD CONDITIONS

A. Field Measurements: Contractor to field verify dimensions of rough openings (R.O.) and threshold depressions to receive sill. Mark field measurements on product drawings submittal.

1.08 WARRANTY

A. Manufacturer Warranty: Provide Folding Glass Partition system manufacturer's standard limited warranty as per manufacturer's published warranty document in force at time of purchase, subject to change, against defects in materials and workmanship.

1. Warranty Period beginning with the earliest of 120 days from Date of Delivery or Date of Substantial Completion:

a. Rollers and Glass Seal Failure: Ten (10) years

b. All Other Components: Ten (10) years

1). Exception: Five (5) years if NOT installed by manufacturer's specific system approved or certified trained installer.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Basis-of-Design Product by Manufacturer: **Generation 4 Folding Glass Walls** by **NanaWall NW Acoustical 645** (www.nanawall.com).

NANA WALL SYSTEMS, INC.
100 Meadow Creek Drive, Corte Madera, CA 94925
Toll Free (800) 873-5673
Telephone: (415) 383-3148
Fax: (415) 383-0312
Email: info@nanawall.com

1. Substitution Procedures: See Section 01 20 00: Submit completed and signed:

a. Document 00 43 25, Substitution Request Form (During Procurement)

b. Document 00 63 25, Substitution Request Form (During Construction)

2.02 PERFORMANCE / DESIGN CRITERIA

A. Performance Criteria: **Minimal Surface Mounted Flush Sill and Flush Sill – Inward Opening**

1. Air Infiltration (ASTM E283):

a. 0.12 cfm/ft^2 (0.61 L/s/m^2) at a static air pressure difference of 1.57 psf (75 Pa)

b. 0.30 cfm/ft^2 (1.52 L/s/m^2) at a static air pressure difference of 6.24 psf (300 Pa)

c. Canadian Air Infiltration/Exfiltration Level: A2

B. Performance Criteria: **Minimal Surface Mounted Flush Sill and Flush Sill – Outward Opening**

1. Air Infiltration (ASTM E283):

a. 0.12 cfm/ft^2 (0.61 L/s/m^2) at a static air pressure difference of 1.57 psf (75 Pa)

b. 0.28 cfm/ft^2 (1.50 L/s/m^2) at a static air pressure difference of 6.24 psf (300 Pa)

c. Canadian Air Infiltration/Exfiltration Level: A2

C. Performance Criteria:

1. Acoustic Performance STC (Rw)

NOTE: ~~Acoustical system STC and Rw ratings per ASTM E413 and DIN EN ISO 717-1 are from testing of full panel systems by an independent and accredited acoustical laboratory in accordance with DIN EN ISO 10140-1, 2, 4, & 5 test procedure and in general accordance with ASTM E90-09. A complete and unedited written test report is available upon request.~~

~~See manufacturer's latest published data regarding performance.~~

a. [System STC (Rw) 45 (45) and OITC 37 with head track recessed and 1-7/16 inch (36 mm) double IGU, 12 mm + 8 mm STC 48 enhanced laminated glass]

~~b. [System STC (Rw) 38 (38) and OITC 32 with 1-1/8 inch (28 mm) double IGU, 6 mm laminated + 6 mm tempered STC 39 glass]~~

~~c. [System STC (Rw) 33 (33) and OITC 27 with 15/16 inch (24 mm) double IGU, 4 mm + 4 mm STC 31 tempered glass]~~

NOTE: ~~Acoustical system STC (Rw) ratings below are engineer calculated interpolations based on the full panel systems testing with surface mounted flush sill and flush sill. Calculations of system STC (Rw) from other glazing STC is available on request.~~

~~d. [System STC (Rw) 45 (45) with head track recessed and 1-9/16 inch (40 mm) double IGU, 10 mm + 8 mm STC 48 enhanced laminated glass]~~

~~e. [System STC (Rw) 44 (44) and 1-9/16 inch (40 mm) double IGU, 10 mm + 8 mm STC 48 enhanced laminated glass]~~

~~f. [System STC (Rw) 44 (44) with head track recessed and 1-5/8 inch (42 mm) double IGU, 8 mm + 8 mm STC 47 enhanced laminated glass]~~

~~g. [System STC (Rw) 43 (43) and 1-5/8 inch (42 mm) double IGU, 8 mm + 8 mm STC 47 enhanced laminated glass]~~

~~h. [System STC (Rw) 43 (43) with head track recessed and 1-7/16 inch (36 mm) double IGU, 6 mm + 6 mm STC 45 enhanced laminated glass]~~

~~i. [System STC (Rw) 42 (42) with 1-7/16 inch (36 mm) double IGU, 6 mm + 6 mm STC 45 enhanced laminated glass]~~

~~j. [System STC (Rw) 40 (40) with 1-7/16 inch (36 mm) double IGU, 6 mm + 6 mm STC 42 laminated glass]~~

~~k. [System STC (Rw) 38 (38) with 1/2-inch (12 mm) STC 39 enhanced laminated glass]~~

~~l. [System STC (Rw) 37 (37) with 3/8-inch (10 mm) STC 38 enhanced laminated glass]~~

~~m. [System STC (Rw) 36 (36) with 1/4-inch (6 mm) STC 36 enhanced laminated glass]~~

~~n. [System STC (Rw) 35 (35) with 1/4-inch (6 mm) STC 35 laminated glass]~~

o. [System STC (Rw) 32 (32) with 1/4 inch (6 mm) STC 31 tempered glass]

2. Swing Panel - Operation / Cycling Performance (AAMA 920): 500,000 cycles
3. System - Life Cycle Performance (DIN EN 1191/12400): 20,000 cycles
4. Operating Force (ASTM E2068):
   a. Swing Panel: Open 1 lbf (2.8 N) & Close 1 lbf (3.9 N)
   b. Folding Panel:
      1). Initiate Motion - Open 4 lbf (20 N) & Close 3 lbf (15 N)
      2). Maintain Motion - Open 1 lbf (3 N) & Close 1 lbf (4 N)

NOTE: Forced entry testing results are only applicable for the test unit type of locking. See manufacturer's latest published data regarding performance.

5. Forced Entry (AAMA 1304, DIN EN 1191): Pass

6. Forced Entry Resistance (ASTM F842, AMMA 1304, CAWM 300): Meets Grade 40: +F2

NOTE: Retain Burglary Resistance subparagraph below when desired; this additional security option is available for an upcharge.

7. Unit Burglary Resistance: EN 1627-30, Class RC2/RC2N certified

D. ~~LEED Characteristics:~~

~~1. **LEED 2009 (v3)**~~

~~a. MRc1.2: *NanaWall* interior glass wall systems, not demolished in a renovation project, are reused in the same location.~~

~~b. MRc2: *NanaWall* cardboard shipping crates are made of 60% recycled material and are 100% recyclable.~~

~~c. MRc3: *NanaWall's* components easily disassemble and reassemble to "*Use as salvaged... or reused materials*."~~

~~d. IEQc2: *NanaWall* systems provide natural ventilation in the open position, assisting in the 90% required natural ventilation of occupied spaces of ASHRAE 62.1.~~

~~e. EQc8.1: *NanaWall* glass wall assembly borrowed light brings daylight deeper into the floor plate.~~

~~f. EQc8.2: *NanaWall* glass wall assemblies provide direct outdoor lines of sight.~~

~~g. IEQc9: (LEED for Schools): For gasketed *NanaWall* glass wall assemblies with glass units STC testing of up to 45 Db.~~

~~2. **LEED v4 for Interior Design and Construction (ID&C)**~~

~~a. EAc2: *NanaWall* systems using designed double IGU and thermally/ acoustically broken frames can provide significant energy performance.~~

~~b. MRc1: *NanaWall* can be easily disassembled for salvage and reuse.~~

~~c. EQc7: *NanaWall* glass wall assembly borrowed light brings daylight deeper into the floor plate.~~

~~d. EQc8: *NanaWall* glass wall assemblies provide direct outdoor lines of sight.~~

~~e. EQc9: *NanaWall* glass wall assemblies can contribute with system acoustic ratings of up to a 45 dB reduction.~~

E. Design Criteria:

1. Sizes and Configurations: As indicated by the Drawings for selected number and size of panels, location of swing and folding panels, and number of panels stacking to the left and to the right.
2. Unit Operation: Adjustable sliding and folding hardware with top and bottom tracks
3. Mounting Type: Floor track supported with upper guide track
4. Panel Configuration: Straight
5. Stack Storage Configuration:
   a. [Inswing type and stack storage inside jamb]
   ~~b. [Outswing type and stack storage outside jamb]~~
6. Sill Type:
   a. [Minimal surface mounted flush sill - ADA compliant]
   ~~b. [Flush sill - ADA compliant with high heel protector insert]~~
7. Panel Type: Hinged
   a. [~~With Entry/Egress panel hinged to side jamb. ~~]

b. [Without Entry/Egress panel hinged to side jamb.]

8. Panel Pairing Configuration: See drawings

a. [Bi-folding panels hinged to side jamb]

~~b. [Bi-folding panels unhinged FourFold or SixFold panel sets]~~

~~NOTE: Sizes and Configurations: https://www.nanawall.com/products/nw-acoustical-645/options~~

~~See manufacturer drawings for selected custom dimensions within maximum frame sizes possible as indicated in manufacturer's literature. Maximum sizes possible are based on weight of glazing selected.~~

~~See drawings for selected number of panels and configuration.~~

2.03 MATERIALS

A. Thermally Broken Aluminum Framed Folding Glass Description: Nominal frame stile width of 3-7/8 inch (99 mm) between folding panels, floor track supported system. Manufacturer's standard thermally broken frame and panel profiles, with head track, side jambs, sill and panels with dimensions as shown on Drawings.

1. Panels and Frame:

a. Panels:

1). Single lite.

~~NOTE: Single lite above is standard; other options below may require an upcharge.~~

~~Refer to manufacturer's size chart for glass panel sizes requiring the use of horizontal mullions.~~

~~2).~~ ~~[Multiple lites with horizontal mullion(s) at height(s) indicated from the bottom of the panel.]~~

~~3).~~ ~~[Single lite with simulated divided lites in pattern as shown on Drawings.]~~

4). Panel Size (W x H): As indicated.

NOTE: Maximum unit heights are dependent on the weight of glazing.

5). Rail Depth: 2-5/8 inch (67 mm)

6). Top Rail and Stile Width: 2-7/8 inch (73 mm)

7). Bottom Rail Width:

i. [2-5/8 inch (66 mm)]

ii. [Manufacturer's standard kick-plate of 10 inches (254 mm)]

b. Frame:

1). Thermally broken top track and side jambs with multipurpose frame insert to hide anchoring frame connections and conceal cable routing to security system by others. For long-term tight, consistent sealing, provide a lateral patented (Patent Number: US10683688B2) adjustment feature at the side jambs capable of adjustment of +/ - 3/16" (5 mm). Frame finish to match panel finish.

NOTE: Frame fasteners, attachment points and screw heads should be concealed by the multipurpose frame insert for enhanced aesthetics.

2). Frame Depth: 2-15/16 inch (74 mm)

3). Head Track Width:

i. [2-13/16 inch (72 mm) standard]

ii. [3-7/8 inch (99 mm) anti-tilt feature for unhinged FourFold and SixFold panel set configurations]

4). Side Jamb Width: 2 inches (51 mm)

5). Sill Finish:

i. [~~Clear anodized finish.~~]

ii. [Black anodized finish.]

2. Aluminum Extrusion: AlMgSi0.5 alloy, 6063-T5 (F-22 – European standard)

a. Thickness: 0.078 inch (2.0 mm) nominal

b. Acoustic Break: 1-1/4 inch (32 mm) wide specially designed and patented (Patent Number: US10550625B2) glass fiber reinforced (GFR) polyamide “Bionic Turtle®” for panels.

3. Aluminum Finish:

a. Inside and Outside;

1). [Same (one-color)]

~~2).~~ ~~[Different (two-tone)]~~

NOTE: Select finish type below, edit to requirements and delete items not used.

b. Anodized (AAMA 611):

~~1).~~ ~~[Clear]~~

~~2).~~ ~~[Dark Bronze]~~

3). [Black]

c. Powder Coat (AAMA 2604): Color as chosen from manufacturer's powder coating finish chart from

1). [Manufacturer's standard selection of 50 colors - matte.]

2). [~~Manufacturer's full RAL selection.~~]

~~i.~~ ~~[High Gloss]~~

ii. [Matte]

~~3).~~ ~~[Metallic as chosen from manufacturer’s eloxal tone steel effect DB finish chart]~~

~~4).~~ ~~[Custom finish.]~~

B. Glass and Glazing:

1. Safety Glazing: In compliance with ASTM C1036, ASTM C1048, ANSI Z97.1 and CPSC 16CFR 1201.

NOTE: Unlike wet glazing, NanaWall’s standard dry glazing method helps reduce instances of seal failure.

2. Manufacturer’s [~~**tempered**~~] [**laminated**] glass lites in [~~**single**~~] [**double**] insulated glazing units, dry glazed with glass stops on the inside.

NOTE: Select and edit glass type(s) to meet building code, acoustic, security, translucency, and other project requirements with other glass available from manufacturer.

Contact NanaWall for availability of other commercial glass types.

Glass pocket can accommodate glass from 1/4 inch (6 mm) monolithic to 1 3/4 inch (45 mm) double insulated glass.

For laminated glass, check with NanaWall the availability of Vanceva White Collection and other color interlayers.

a. Insulated Glass Unit (IGU) Lites:

1). 1-9/16 inch (40 mm) double IGU, 10 mm + 8 mm STC 48 enhanced laminated glass to achieve unit STC of 45 with head track recessed.

~~2).~~ ~~[1-9/16 inch (40 mm) double IGU, 10 mm + 8 mm STC 48 enhanced laminated glass to achieve unit of STC of 44.]~~

~~3).~~ ~~[1-5/8 inch (42 mm) double IGU, 8 mm + 8 mm STC 47 enhanced laminated glass to achieve unit STC of 44 with head track recessed.]~~

~~4).~~ ~~[1-5/8 inch (42 mm) double IGU, 8 mm + 8 mm STC 47 enhanced laminated glass to achieve unit STC of 43]~~

~~5).~~ ~~[1-7/16 inch (36 mm) double IGU, 6 mm + 6 mm STC 45 enhanced laminated glass to achieve unit STC of 43 with head track recessed]~~

~~6).~~ ~~[1-7/16 inch (36 mm) double IGU, 6 mm + 6 mm STC 45 enhanced laminated glass to achieve unit STC of 42]~~

~~7).~~ ~~[1-7/16 inch (36 mm) double IGU, 6 mm + 6 mm STC 42 laminated glass to achieve unit STC of 40]~~

~~b. IGU Fill: Air filled~~

c. Glass Spacers: Manufacturer's standard [**silver gray**] [**black**] finish.

d. Single Glass:

1). 1/2-inch (12 mm) STC 39 enhanced laminated glass to achieve unit STC of 38

2). [3/8-inch (10 mm) STC 38 enhanced laminated glass to achieve unit STC of 37]

3). [1/4-inch (6 mm) STC 36 enhanced laminated glass to achieve unit STC of 36]

4). [1/4-inch (6 mm) STC 35 laminated glass to achieve unit STC of 35]

5). [1/4-inch (6 mm) STC 31 tempered glass to achieve unit STC of 32]

e. Glass Lite Type:

1). Standard reduced iron

NOTE: Item below requires an upcharge.

~~2).~~ ~~[Low iron]~~

C. Locking Hardware and Handles:

NOTE: Select one of the below Main Entry Panel paragraphs WITH or WITHOUT Swing Panels, deleting all others. Edit to suit project requirements.

1. Main Entry Panel(s) for Models WITH a [**Pair of**] Swing Panel: Provide manufacturer's standard lever handles on the inside and outside, a lockset with lockable latch, multi-point locking with a dead bolt and rods at the top and bottom on primary panel only.

a. Locking:

1). Standard profile cylinder

2). Additional profile cylinders to be [**keyed alike**.] ~~[**keyed differently.**]~~

3). ~~[Adapter for Small Format Interchangeable Core (SFIC) by others]~~

b. Rods to be concealed and not edge mounted.

c. After turn of key or thumb turn, depression of handles withdraws latch.

d. Lifting of handles engages rods and turn of key or thumb turn engages deadbolt and operates lock.

e. Lever Handle - Finish:

1). ~~Brushed satin stainless steel~~

2). [Black titanium stainless steel]

NOTE: Handles above are standard; option below may require an upcharge.
Other compatible lever handle styles and finishes are available from other suppliers.

~~3). [Copper- nickel stainless steel antiviral and antimicrobial]~~

f. Secondary Swing Panel: Provide concealed two-point, edge locking.

2. Main Entry Panel(s) for Model WITH a Swing Panel: Prepped for commercial applications with a single motion locking operated by lever handles with locking with a US mortise cylinder that can accommodate 5 - 7 pin, SFIC, FSIC or LFIC cores.

NOTE: Non-standard locking options not tested for air/water/structural and forced entry.

a. Locking:

1). [Accurate 18L lever handle]

2). [~~Accurate 20L lever handle with return]~~

~~3). [Yale 8808-2 Series with Mortise Lock]~~

~~4). [L/LV9000 Series from Schlage with Mortise Lock]~~

~~5). [Schlage ND Series Mechanical lock]~~

b. Secondary Swing Panel: Provide concealed two-point, edge locking.

NOTE: Other compatible lever handle styles and finished are available from Accurate and other suppliers.

3. Main Entry Panel: Provide manufacturer's standard flat handle on inside only with concealed two-point locking hardware operated by 180° turn of handle.

NOTE: With the option above, the main entry panel is operable from inside only and that there is no latch.

4. ~~Main Entry Panel for Models WITH a Swing Panel: No hardware or locking provided by manufacturer; Field installed panic device by Section 08 71 00 prepped for commercial application.~~

~~a. Panic hardware:~~

~~1). [Von Duprin 33/35A Series Narrow Stile Rim Exit Device]~~

~~2). [Von Duprin 98/99 Series Rim Exit Device]~~

~~3). [DORMA 9700 Series Narrow Stile Rim Exit Device]~~

5. ~~Pairs of Folding Panels: Provide manufacturer's flat handles and concealed two-point locking hardware operated by 180° turn of handle between each pair. Face applied flush bolt locking NOT acceptable.~~

~~a. Flat Handle - Finish:~~

~~1). Brushed satin stainless steel~~

~~2). [Black titanium stainless steel]~~

~~NOTE: Handles above are standard; option below may require upcharge.~~

~~3). [Copper-nickel stainless steel antiviral and antimicrobial]~~

6. ~~Handle Height: 41-3/8 inch (105 cm) centered from bottom of panel or~~ as otherwise indicated.

7. Locking rods with standard end caps at the top and bottom. Rods to have a stroke of 15/16 inch (24 mm).

8. Burglary Resistance to be [**Standard**] [~~**Class RC2/ RC2N certified**]~~

9. Panel Catch: panel catch to hold swing panel to adjacent folding panel to prevent incorrect operation when moving the panel.

D. Sliding-Folding Hardware: Provide manufacturer's standard combination sliding and folding hardware with top and bottom tracks and threshold. All bottom rollers to be with sealed, self-lubricating, double ball bearing multi-rollers. Surface mounted hinges and bottom rollers NOT acceptable.

1. Bottom Rollers Carrying Capacity: 250 lb. (120 kg). Bottom rollers provided with two vertical stainless-steel wheels with double row of ball bearings and two horizontal polyamide wheels.

NOTE: Weight of panels borne by the bottom of the guide channel in the sill is NOT acceptable.

2. Vertical wheels with Gothic arch feature to ride on top of stainless-steel guide track covers over the full length of the sill track. Wheels riding on aluminum surfaces NOT acceptable.
3. Upper guide rollers with two horizontal polyamide guiding wheels. For configurations with unhinged FourFold and SixFold panel sets that can slide left or right, additional concealed, additional vertical tilt protection hardware.
4. Hinges and Rollers: [**Clear**] [**Black**] anodized aluminum with stainless steel security hinge pins and set-screws. Concealed panel alignment with a tight seal through the patented (Patent Number: US10711510B2) TwinX mechanism reinforced between panels. Double ball bearing stainless wheels rollers match hinge finish.
5. Spring-Loaded Pull Handle: For outswing units with larger panel sizes, a spring-loaded pull handle is supplied for ease of closing the system. The pull handle is located above the flat handle. When not in use, the handle lays flat against the adjacent panel and is supplied with bumpers to avoid metal-to-metal contact. Handles are stainless steel with the attachment to coordinate with the hinge hardware of the system.
    a. Pull Handle – Finish:
        1). Silver stainless steel
        2). [Black titanium stainless steel]

E. Sound Gasketing: Manufacturer's double layer EPDM between panels and EPDM gasket, Q-Ion gasket, or brush seal between panel and frame, or brush seals with a two-layer fiberglass reinforced polyamide fin attached at both inner and outer edge of bottom of door panels with a recessed sill or on frame for sealing between panels and between panel and frame.

NOTE: The manufacturer's sound gasketing is determined at the factory by the direction of swing, the panel configuration, and the type of locking.

F. Fasteners: Installation plates for connecting frame components made of stainless steel with sealing cushion to avoid thermal connectivity.

2.04 FABRICATION

A. Folding Glass Wall: Extruded aluminum frame and panel profiles, corner connectors and hinges, sliding and folding hardware, locking hardware and handles, glass and glazing and sound gasketing.

1. Each unit factory pre-assembled and shipped with complete system components and installation instructions.
2. Exposed work to be carefully matched to produce continuity of line and design with all joints.
3. No raw edges visible at joints.

2.05 ACCESSORIES

A. Provide sidelights, transoms, corner posts, or single or double doors as indicated.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examination and Acceptance of Conditions per Section 01 70 00 and as follows:

1. Carefully examine rough openings with Installer present, for compliance with requirements affecting Work performance.

a. Examine surfaces of openings and verify dimensions; verify rough openings are level, plumb, and square with no unevenness, bowing, or bumps on the floor; and other conditions as required by the manufacturer for readiness to receive Work.

b. Verify structural integrity of the header for deflection with live and dead loads limited to the lesser of L/720 of the span or 1/4 inch (6 mm). Provide structural support for lateral loads, and both wind load and eccentric load when the panels are stacked open.

NOTE: Prior to installing NanaWall, it is recommended that all building dead loads be applied to the header. Allow a reasonable amount of time for the dead load's effect on the header; only then can the building's live load be used to meet the above requirements of L/720 or 1/4 inch (6 mm). If this is not done, both dead and live loads need to be considered.

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

3.02 INSTALLATION

A. General: Install Folding Glass Partition system in accordance with the Drawings, approved submittals, manufacturer’s recommendations, and installation instructions, and as follows:

1. Properly seal around opening perimeter to reduce sound infiltration from surroundings.
2. Securely attach anchorage devices to rigidly fit frame in place, level, straight, plumb, and square. Install frame in proper elevation, plane, and location, and in proper alignment with other work.
3. Install panels, handles, lockset, gasketing and other accessories in accordance with manufacturer’s recommendations and instructions.

3.03 FIELD QUALITY CONTROL

A. Field Tests and Inspections per Section 01 40 00 of the following:

1. Verify the Folding Glass Partition system operates and functions properly. Adjust hardware for proper operation.

B. Non-Conforming Work: Repair or replace non-conforming work as directed by the Architect; see General and Supplementary Conditions, and Division 01, General Requirements.

3.04 CLEANING AND PROTECTION

A. Keep units closed and protect Folding Glass Partition installation against damage from construction activities.

B. Remove protective coatings and use manufacturer recommended methods to clean exposed surfaces.

END OF SECTION

SECTION 08 44 18 - GLAZED STEEL CURTAIN WALL- FIREFRAMES® CURTAIN WALL SERIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
1. Fire-rated curtain wall systems, including perimeter trims, stools, accessories, shims and anchors, and perimeter sealing of curtain wall framing.

B. Related Sections include the following:
1. Section 05 12 00 “Structural Steel Framing:” Steel attachment members
2. Section 05 50 00 “Metal Fabrications:” Steel attachment members inserts and anchors
3. Section 07 25 00 “Weather Barriers:” Perimeter air, water and vapor seal between the work of this section and adjacent construction
4. Section 07 62 00 “Sheet Metal Flashing and Trim” Flashing between this work and other work
5. Section 07 84 00 – “Firestopping” for perimeter fire-containment systems (safing insulation) field installed with steel fire-rated glazed curtain-wall systems.
6. Section 07 92 00 – “Joint Sealants” for installation of joint sealants installed with steel fire-rated glazed curtain-wall systems and for sealants to the extent not specified in this Section.
7. Section 08 11 00 – “Metal Doors and Frames” for fire-rated doors.
8. Section 08 43 13 – “Aluminum Entrance and Storefronts” for entrance [and storefront] systems installed with steel fire-rated glazed curtain-wall systems.
9. Section 08 71 00 – “Door Hardware” for door hardware not provided by this Section.
10. Section 08 41 23 – “Fire Rated Steel Framed Entrances – Fireframes Heat Barrier Series” for fire-rated doors.
11. Section 08 41 23 – “Fire Rated Glass and Framing Systems – Fireframes Designer Series” for fire-rated doors.

1.2 REFERENCES

A. American Architectural Manufacturers Association (AAMA)
1. AAMA 501.1-2005: Standard Test Method for Water Penetration of Windows, Curtain Walls, and Doors Using Dynamic Pressure
2. AAMA 501.2-2003: Quality Assurance and Diagnostic Water Leakage Field Check of Installed Storefronts, Curtain Walls, and Sloped Glazing Systems
3. AAMA 501.4-2000 (Revised 2001): Recommended Static Test Method for Evaluating Curtain Wall and Storefront Systems Subjected to Seismic and Wind Induced Interstory Drifts
4. AAMA 501.5-2005: Test Method for Thermal Cycling of Exterior Walls
5. AAMA 506-2000 (Revised 2003): Voluntary Specifications for Hurricane Impact and Cycle Testing of Fenestration Products
6. AAMA 1503-1998: Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections
7. AAMA 2603-2002 - Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels.
8. AAMA 2604-2005 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels.

9. AAMA 2605-2005 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.

B. American Society for Testing and Materials (ASTM):
   1. Fire safety related:
      a. ASTM E119: Methods for Fire Tests of Building Construction and Materials.
   2. Material related
      a. ASTM A 1008/A 1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength, Low Alloy, and High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable; 2007.
      b. ASTM A 1011/A 1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2006b.
   3. Exterior related
      a. ASTM E 283-04: Test Method for Determining the Rate of Air Leakage through Exterior Windows, Curtain Walls, and Doors under Specified Pressure Differences across the Specimen
      b. ASTM E 330-02: Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference Procedure A
      c. ASTM E 331-04: Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference
      d. ASTM E 783-02: Test Method for Field Measurement of Air Leakage through Installed Exterior Windows and Doors
      e. ASTM E 1105-00: Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform or Cyclic Static Air Pressure Difference
   4. Hurricane related
      a. ASTM E 1886-05: Test Method for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials
      b. ASTM E 1996-05: Specification for Performance of Exterior Windows, Curtain Walls, Doors and Impact Protective Systems Impacted by Windborne Debris in Hurricanes
   5. Sound related:
      a. ASTM E 90-04: Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements
      b. ASTM E 413-04: Standard Classification for Rating Sound Insulation

C. American Welding Society (AWS)
   1. AWS D1.3 - Structural Welding Code - Sheet Steel; 2007

D. Builders Hardware Manufacturers Association, Inc
   1. BHMA A156 - American National Standards for door hardware; 2006 (ANSI/BHMA A156).

E. Canadian Standards
   1. CAN/ULC-S101 Standard Test of Fire Endurance Tests of Building Construction and Materials
   2. CAN/ULC-S104 Standard Method of Fire Tests of Door Assemblies
   3. CAN/ULC-S106 Standard Method of Fire Tests of Window and Glass Block Assemblies

F. National Fire Protection Association (NFPA):
   1. NFPA 80: Fire Doors and Windows.
   2. NFPA 251: Fire Tests of Building Construction & Materials
   3. NFPA 252: Fire Tests of Door Assemblies

4. NFPA 257: Fire Test of Window Assemblies

G. Underwriters Laboratories, Inc. (UL):
1. UL 9: Fire Tests of Window Assemblies
2. UL 10 B: Fire Tests of Door Assemblies
3. UL 10 C: Positive Pressure Fire Tests of Window & Door Assemblies
4. UL 263: Fire tests of Building Construction and Materials
5. UL-752: Ratings of Bullet-Resistant Materials

H. American National Standards Institute (ANSI):
1. ANSI Z97.1: Standard for Safety Glazing Materials Used in Buildings

I. Consumer Product Safety Commission (CPSC):
1. CPSC 16 CFR 1201: Safety Standard for Architectural Glazing Materials

J. American Society of Civil Engineers (ASCE)
1. ASCE 7 – Minimum Design Loads for Buildings and Other Structures; 2005

1.3 DEFINITIONS

A. Manufacturer: A firm that produces primary glass, fabricated glass or framing as defined in referenced glazing publications.

1.4 SUBMITTALS

A. Submit in accordance with Section <**Insert Section #**>.

B. Product Data:
1. Technical Information: Submit latest edition of manufacturer's product data providing product descriptions, technical data, Underwriters Laboratories, Inc. listings and installation instructions.

C. Shop Drawings:
1. Include plans, elevations and details of product showing component dimensions; framed opening requirements, dimensions, tolerances, and attachment to structure

D. Sustainable Requirements:
1. Living Building Challenge Compliance: Compliant
1) I-13 Red List Declaration

E. Structural Calculations (optional):

1. Provide structural calculations sealed by a licensed professional engineer in the State in which the project is located; prepared in compliance with referenced documents and these specifications.

F. Samples. For following products:
1. Glass sample-as provided by manufacturer
2. Sample of frame

3. Verification of sample of selected finish

G. Glazing Schedule: Use same designations indicated on drawings for glazed openings in preparing a schedule listing glass types and thicknesses for each size opening and location.

H. Warranties: Submit manufacturer's warranty.

I. Certificates of compliance from glass and glazing materials manufacturers attesting that glass and glazing materials furnished for project comply with requirements.

1. Separate certification will not be required for glazing materials bearing manufacturer's permanent label designating type and thickness of glass, provided labels represent a quality control program involving a recognized certification agency or independent testing laboratory acceptable to authority having jurisdiction.

1.5 QUALITY ASSURANCE

A. Testing Agency Qualifications: Qualifications according to

1. International Accreditation Service for a Type A Third-Party Inspection Body (Field Services ICC-ES Third-Party Inspections Standard Operating Procedures, 00-BL-S0400 and S0401)
2. International Accreditation Service for Testing Body-Building Materials and Systems
    a. Fire Testing
        1) ASTM Standard E119
        2) CPSC Standard 16 CFR 1201
        3) NFPA Standards 251, 252, 257
        4) UL Standards 9, 10B, 10C, 1784, UL Subject 63
        5) BS 476; Part 22: 1987
        6) EN 1634-1
        7) CAN/ULC Standards S101, S104, S106

B. Environmental Qualifications

1. Living Building Challenge Compliant and Red List Approved
    a. Declare label (#AGN-0010)
    b. https://declare.living-future.org/products/technical-glass-products-fireframes-curtainwall-series and can be used for building projects seeking to achieve either the Living Building Challenge or LEED green building rating systems.

C. Installer Qualifications: An experienced installer who has completed glazing similar in material, design, and extent to that indicated for this Project; whose work has resulted in glass installations with a record of successful in-service performance; and who employs glass installers for this Project who are certified under the National Glass Association Glazier Certification Program as Level 2 (Senior Glaziers) or Level 3 (Master Glaziers).

D. Installer Qualifications: An experienced installer who has completed glazing similar in material, design, and extent to that indicated for Project and whose work has resulted in construction with a record of successful in-service performance.

E. Source Limitations for Glazing Accessories: Obtain glazing accessories from one source for each product and installation method indicated.

F. Fire-Rated Window Assemblies: Assemblies complying with NFPA 80 that are classified and labeled by UL, for fire ratings indicated, based on testing according to NFPA 257 and UL 9.

G. Fire-Rated Wall Assemblies: Assemblies complying with ASTM E119 that are classified and labeled by UL, for fire ratings indicated, based on testing in accordance with UL 263, ASTM E119.

H. Listing and Labels – Fire-Rated Assemblies: Under current follow-up service by Underwriters Laboratories® maintaining a current listing or certification. Label assemblies accordance with limits of manufacturer's listing.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store and handle under provisions specified by manufacturer.

1.7 PROJECT CONDITIONS

A. Obtain field measurements prior to fabrication of frame units. If field measurements will not be available in a timely manner, coordinate planned measurements with the work of other sections.
   1. Note whether field or planned dimensions were used in the creation of the shop drawings

B. Coordinate the work of this sections with others effected including but not limited to: other interior and /or exterior envelope components and door hardware beyond that provided by this section.

1.8 WARRANTY

A. Provide the Pilkington Pyrostop® and the Fireframes® Curtainwall Series standard five-year manufacturer warranty.

PART 2 - PRODUCTS

2.1 MANUFACTURERS (ACCEPTABLE MANUFACTURERS/PRODUCTS)

A. Manufacturer Glazing Material: "Pilkington Pyrostop®" fire-rated glazing as manufactured by the Pilkington Group and distributed by Technical Glass Products, 8107 Bracken Place SE, Snoqualmie, WA 98065 phone (800.426.0279) fax (425.396.8300) e-mail sales@fireglass.com, web site http://www.fireglass.com.

B. Frame System: Fireframes® Curtainwall Series fire-rated steel frame system as supplied by Technical Glass Products 8107 Bracken Place SE, Snoqualmie, WA 98065 phone (800.426.0279) fax (425.396.8300) e-mail sales@fireglass.com web site http://www.fireglass.com.

C. Substitutions: Substitutions for Glazing Material and Frame System not permitted.

2.2 PERFORMANCE REQUIREMENTS

A. System Description:
   1. Steel fire-rated glazed curtain wall system, outside glazed pressure plate, cover cap format.
   2. Face Widths Available:

a. 1 3/4-inch.
b. 2 3/8-inch wide.

3. Water Drainage:
4. System is vertically weeped. No joint plugs or weep holes at horizontal mullions. Horizontal gaskets are notched and received by vertical gaskets.

B. Structural Performance
1. Design and size the system to withstand structural forces placed upon it without damage or permanent set when tested in accordance with ASTM E330 using load 1.5 times the design wind loads and of 10 seconds in duration.
2. Positive wind load: [_____lbf/sq ft.][as indicated on the drawings]
3. Negative wind Load:[_____lbf/sq ft.][as indicated on the drawings]
4. Member deflection: Limit deflection of the edge of the glass normal to the plane of the glass to [flexure limit of glass][1/175 of the glass edge length or ¾ inch, whichever is less][of any framing member
5. Accommodate movement between storefront and adjoining systems

C. Air Infiltration: ASTM E 283; Air infiltration rate shall not exceed 0.06 cfm/ft^2 at a static air pressure differential of 6.24 psf.

D. Water Resistance, (static): ASTM E 331; No leakage at a static air pressure differential of 15 psf as defined in AAMA 501.

E. Water Resistance, (dynamic): AAMA 501.1; No leakage at an air pressure differential of 15 psf as defined in AAMA 501.

F. Thermal Movements: Provide steel fire-rated glazed curtain-wall systems that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
1. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

2.3 MATERIALS - GLASS

A. Fire Rated Glazing: Composed of multiple sheets of Pilkington “Optiwhite™” high visible light transmission glass laminated with an intumescent interlayer.

B. Impact Safety Resistance: ANSI Z97.1 and CPSC 16CFR1201 (Cat. I and II).

C. Adjust list of thicknesses below to suit Project -- these are listed in tabular form delete those columns not used.

D. Properties Interior Glazing

Property				
Fire Rating	120 minute			

Manufacturer's designation	120-104
Glazing type	IGU
Nominal Thickness	2-1/8 (54mm) [with 8 mm spacer, or 2-3/8" (60 mm) with 14 mm spacer]
Weight in lbs/sf	21.7
Daylight Transmission	75%
Sound Transmission Coefficient	46dB

E. Properties Exterior Glazing

Property	120 minute
Manufacturer's designation	120-262 120-362*
Glazing type	IGU
Nominal Thickness	2-3/8" (60mm) [with 14 mm spacer, or 2-1/8" (54 mm) with 8 mm spacer]
Weight in lbs/sf	22.1
Daylight Transmission	74%
	33-68%
Sound Transmission Coefficient	46dB

* Low-E product.

F. Exterior Grade: PVB inner layer installed toward exterior.

G. Logo: Each piece of fire-rated glazing shall be labeled with a permanent logo including name of product, manufacturer, testing laboratory (UL), fire rating period, safety glazing standards, and date of manufacture.

H. Glazing Accessories: Manufacturer's standard compression gaskets, spacers, setting blocks and other accessories necessary for a complete installation.

2.4 MATERIALS –STEEL FRAMING

A. Steel Curtainwall Framing System 120 min

1. Frame: [Steel]: profiled steel tubing permanently joined with steel bolts.
2. Insulation: Insulate framing system against effects of fire, smoke, and heat transfer from either side. Firmly pack perimeter of framing system to rough opening with mineral wool fire stop insulation or appropriately rated intumescent sealant

3. Fasteners: Type recommended by manufacturer
4. Glazing Gaskets, Compounds and tapes: Glaze Pilkington Pyrostop glass with approved EPDM glazing gaskets and pure silicone sealant
5. Steel Pressure Plates: Formed stainless steel pressure plate with dimensions recommended by manufacturer to securely hold glazing material in place.
6. Cover Caps: Formed extruded aluminum]

B. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.
   1. Extruded Bars, Rods, Shapes, and Tubes: ASTM B 221 (ASTM B 221M).

C. Steel Reinforcement: With manufacturer's standard corrosion-resistant primer complying with SSPC-PS Guide No. 12.00 applied immediately after surface preparation and pretreatment. Select surface preparation methods according to recommendations in SSPC-SP COM and prepare surfaces according to applicable SSPC standard.
   1. Structural Shapes, Plates, and Bars: ASTM A 36/A 36M Standard Specification for Carbon Structural Steel
   2. Cold-Rolled Sheet and Strip: ASTM A1008/A1008M Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Required Hardness, Solution Hardened, and Bake Hardenable
   3. Hot-Rolled Sheet and Strip: ASTM A1011/A1011M Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength

D. Brackets and Reinforcements: Manufacturer's standard high-strength materials with nonstaining, nonferrous shims for aligning system components.

E. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials.
   4. Where fasteners are subject to loosening or turn out from thermal and structural movements, wind loads, or vibration, use self-locking devices.
   5. Reinforce members as required to receive fastener threads.

F. Anchors: Three-way adjustable anchors that accommodate fabrication and installation tolerances in material and finish compatible with adjoining materials and recommended by manufacturer.
   1. Concrete and Masonry Inserts: Hot-dip galvanized cast-iron, malleable-iron, or steel inserts complying with ASTM A 123/A 123M or ASTM A 153/A 153M requirements.

G. Concealed Flashing: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding flashing compatible with adjacent materials.

2.5 ACCESSORIES

A. Exposed Fasteners: Use fasteners fabricated from Type 304 or Type 316 stainless steel.

B. Glazing Gaskets:
   1. Glazing gaskets for interior or exterior applications: ASTM C 864 (extruded EPDM rubber that provides for silicone adhesion) or ASTM C1115 Standard Specification for Dense Elastomeric Silicone Rubber Gaskets and Accessories (extruded silicone).

C. Intumescent Tape: As supplied by frame manufacturer.

D. Setting Blocks: ¼" Calcium silicate.

E. Perimeter Anchors: Steel or 316 Stainless steel when exposed.

F. Flashings: As recommended by manufacturer; same material and finish as cover caps.

G. Silicone Sealant: One-Part Low Modulus, neutral cure High Movement-Capable Sealant: Type S; Grade NS; Class 25 with additional movement capability of 100 percent in extension and 50 percent in compression (total 150 percent); Use (Exposure) NT; Uses (Substrates) M, G, A, and O as applicable. (Use-O joint substrates include: Metal factory-coated with a high-performance coating; galvanized steel; ceramic tile.)
   1. Available Products:
      a. Dow Corning 790, 795 - Dow Corning Corp.
      b. Momentive
      c. Tremco

H. Intumescent Caulk: Single component, latex-based, intumescent caulk designed to stop passage of fire, smoke, and fumes through fire-rated separations; permanently flexible after cure; will not support mold growth; flame spread/smoke developed 10/10.
   1. Available Products:
      a. 3M CP-25 WP+.

2.6 SLAG-WOOL-FIBER/ROCK-WOOL-FIBER INSULATION

A. Available Manufacturers:
   1. Fibrex Insulations Inc.
   2. Owens Corning
   3. Thermafiber
   4. Rockwool

B. Unfaced, Slag-Wool-Fiber/Rock-Wool-Fiber Board Insulation: ASTM C 612, maximum flame-spread and smoke-developed indexes of 15 and 0, respectively; passing ASTM E 136 for combustion characteristics; and of the following nominal density and thermal resistivity:
   1. Nominal density of 4 lb/cu. ft. (64 kg/cu. m), Types IA and IB, thermal resistivity of 4 deg F x h x sq. ft./Btu x in. at 75 deg F (27.7 K x m/W at 24 deg C).
   2. Fiber Color: Regular color, unless otherwise indicated.

2.7 FABRICATION

A. General:
   1. Fabricate components per manufacturer's installation instructions and with minimum clearances and shim spacing around perimeter of assembly yet enabling installation and dynamic movement of perimeter seal.
   2. Accurately fit and secure joints and corners. Make joints flush and weatherproof.
   3. Prepare components to receive anchor devices.
   4. Provide physical and thermal isolation of glazing from framing members.
   5. Provide internal guttering to drain water from joints and condensation occurring within glazing pocket.
   6. Fabricate anchors.
   7. Arrange fasteners and attachments to be concealed from view.

B. Guttered System Components:
1. Fabricate components to resist water penetration as follows:
a. Internal guttering system or other means to drain water passing joints, occurring within framing members, and moisture migrating within glazed steel curtain walls.
b. Pressure-equalized system, double barrier, or two lines of air and water resistance design with primary air and water barrier at interior side of glazing pocket.

2.8 POWDER COAT FINISHES

A. Finish after fabrication.

B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable. Noticeable variations in the same piece are not acceptable.

C. Interior and Exterior Steel Finishes (Note: this finish is suitable for exterior exposed portions of the wall systems, including extruded aluminum covers).
1. Powder-Coat Finish: Polyester Super Durable powder coating which meets AAMA 2604 for chalking and fading. Apply manufacturer's standard powder coating finish system applied to factory-assembled frames before shipping, complying with manufacturer's recommended instructions for surface preparation including pretreatment, application, and minimum dry film thickness.
2. Color and Gloss: [As indicated by manufacturer's designations] [Match Architect's sample] [As selected by Architect from manufacturer's full range].
3. Acceptable Manufacturers:
a. Tiger Drylac
b. Additional manufacturers as approved by TGP

2.9 ALUMINUM FINISHES

A. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.

B. Class II, Clear Anodic Finish: AA-M12C22A31 (Mechanical Finish: nonspecular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class II, clear coating 0.010 mm or thicker) complying with AAMA 611.

C. Class I, Clear Anodic Finish: AA-M12C22A41 (Mechanical Finish: nonspecular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, clear coating 0.018 mm or thicker) complying with AAMA 611.

D. Class II, Color Anodic Finish: AA-M12C22A32/A34 (Mechanical Finish: nonspecular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class II, integrally colored or electrolytically deposited color coating 0.010 mm or thicker) complying with AAMA 611.

E. Class I, Color Anodic Finish: AA-M12C22A42/A44 (Mechanical Finish: nonspecular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, integrally colored or electrolytically deposited color coating 0.018 mm or thicker) complying with AAMA 611.
1. Color: **Black**.

F. High-Performance Organic Finish (2-Coat Fluoropolymer): AA-C12C40R1x (Chemical Finish: cleaned with inhibited chemicals; Chemical Finish: conversion coating; Organic Coating: manufacturer's standard 2-coat, thermocured system consisting of specially formulated inhibitive primer and fluoropolymer color topcoat containing not less than 70 percent polyvinylidene fluoride resin by weight). Prepare, pretreat, and apply coating to exposed metal surfaces to comply with AAMA [**2604**] [**2605**] and with coating and resin manufacturers' written instructions.

G. High-Performance Organic Finish (3-Coat Fluoropolymer): AA-C12C40R1x (Chemical Finish: cleaned with inhibited chemicals; Chemical Finish: conversion coating; Organic Coating: manufacturer's standard 3-coat, thermocured system consisting of specially formulated inhibitive primer, fluoropolymer color coat, and clear fluoropolymer topcoat, with both color coat and clear topcoat containing not less than 70 percent polyvinylidene fluoride resin by weight). Prepare, pretreat, and apply coating to exposed metal surfaces to comply with AAMA 2605 and with coating and resin manufacturers' written instructions.
   1. Color and Gloss: As indicated by manufacturer's designations

PART 3 - EXECUTION

3.1 EXAMINATION

A. Site Verification of Conditions: Verify substrate conditions (which have been previously installed under other sections) are acceptable for product installation in accordance with manufacturer’s instructions. Verify openings are sized to receive curtain wall system and sill plate is level in accordance with manufacturer’s acceptable tolerances.

B. Notify Architect of any conditions which jeopardize the integrity of the proposed fire wall / door system.

C. Do not proceed until such conditions are corrected.

3.2 INSTALLATION

A. See Fireframes Curtainwall Series Installation Manual

3.3 PROTECTION AND CLEANING

A. Protect glass from damage immediately after installation by attaching crossed streamers to framing held away from the glass. Do not apply markers to the glass surface. Remove nonpermanent labels, and clean surfaces.
   1. Do not clean with astringent cleaners. Use a clean “grit free” cloth and a small amount of mild soap and water or mild detergent.
   2. Do not use any of the following:
      a. Steam jets
      b. Abrasives
      c. Strong acidic or alkaline detergents, or surface-reactive agents
      d. Detergents not recommended in writing by the manufacturer
      e. Do not use any detergent above 77 degrees F
      f. Organic solvents including but not limited to those containing ester, ketones, alcohols, aromatic compounds, glycol ether, or halogenated hydrocarbons.

g. Metal or hard parts of cleaning equipment must not touch the glass surface

B. Protect glass from contact with contaminating substances resulting from construction operations, including weld splatter. If, despite such protection, contaminating substances do come into contact with glass, remove them immediately as recommended by glass manufacturer.

C. Wash glass on both exposed surfaces in each area of Project not more than four days before date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended by glass manufacturer.

END OF SECTION 08900

SECTION 08 88 13 - FIRE-RATED GLASS – PILKINGTON PYROSTOP®

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Fire-rated glazing materials installed as vision lights in fire-rated doors.
   2. Fire-rated glazing materials installed as [sidelites] [transoms] [borrowed lites] in fire-rated frames and [wall applications].

B. Related Sections include the following:
   1. Section 08 11 00 “Metal Doors and Frames” for vision panels in interior doors and interior vision panel (borrowed lites) frames.
   2. Section 08 14 16 “Flush Wood Doors” for vision panels in interior doors.
   3. [Section 09 21 00 “Gypsum Board Assemblies” for gypsum board and metal stud framed area separation partition walls.]

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM):
   1. ASTM E 119: Fire Tests of Building Construction and Materials.

B. American National Standards Institute (ANSI):
   1. ANSI Z97.1: Standard for Safety Glazing Materials Used in Buildings

C. Consumer Product Safety Commission (CPSC):
   1. CPSC 16 CFR 1201: Safety Standard for Architectural Glazing Materials

D. Glass Association of North America (GANA):
   1. GANA – Glazing Manual.
   2. FGMA – Sealant Manual.

E. National Fire Protection Association (NFPA):
   1. NFPA 80: Fire Doors and Windows.

F. Underwriters Laboratories, Inc. (UL):
   1. UL 263: Fire tests of Building Construction and Materials

G. Standard Council of Canada:
   1. CAN/ULC-S101 Standard Test of Fire Endurance Tests of Building Construction and Materials
   2. CAN/ULC-S104 Standard Method of Fire Tests of Door Assemblies
   3. CAN/ULC-S106 Standard Method of Fire Tests of Window and Glass Block Assemblies

H. IBC 2018.

1.3 PERFORMANCE REQUIREMENTS

A. Fire-rated, clear and wireless glazing material for use in locations such as doors, sidelites, transoms, borrowed lites, and wall applications with fire rating requirements ranging from 45 minutes to 2 hours with required hose stream test; for use in interior and exterior applications.

B. Provides protection by reducing the radiant and conductive heat transfer

1.4 SUBMITTALS

A. Comply with requirements of Section 01 33 00

B. Product data: Submit manufacturer's technical data for each glazing material required, including installation and maintenance instructions.

C. Certificates of compliance from glass and glazing materials manufacturers attesting that glass and glazing materials furnished for project comply with requirements. Separate certification will not be required for glazing materials bearing manufacturer's permanent label designating type and thickness of glass, provided labels represent a quality control program involving a recognized certification agency or independent testing laboratory acceptable to authority having jurisdiction.

D. Product Test Listings: From UL indicating fire-rated glass complies with requirements, based on comprehensive testing of current product.

E. Samples: Submit, for verification purposes, approx. 8-inch by 10-inch sample for each type of glass indicated.

1.5 QUALITY ASSURANCE

A. Glazing Standards: FGMA Glazing Manual and Sealant Manual.

B. Fire Resistance Rated Glass: Each lite shall bear permanent, nonremovable label of UL certifying it for use in tested and rated fire resistive assemblies.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle materials under provisions of Section 01 60 00

B. Deliver materials to specified destination in manufacturer or distributor's packaging, undamaged, complete with installation instructions.

C. Pilkington Pyrostop® must not be exposed outside the range -40 degrees F to 120 degrees F (-40 degree C to +50 degrees C) during storage and transportation.

D. Store off ground, under cover, protected from weather and construction activities.

E. Do not expose the non-PVB side of glass to UV light.

F. Store sheets of glass vertically. DO NOT lean.

1.7 WARRANTY

A. Provide manufacturer's limited warranty under provision of section 01 78 00

PART 2 - PRODUCTS

2.1 FIRE-RATED GLAZING MATERIALS

A. Manufacturer: Pilkington Pyrostop® as manufactured by the Pilkington Group and distributed by Technical Glass Products, 8107 Bracken Place SE, Snoqualmie, WA 98065, voice (800.426.0279) fax (425.396.8300), e-mail sales@fireglass.com, Web site www.fireglass.com.

B. Composition: Composed of multiple sheets of "Optiwhite" high visible light transmission glass laminated with an intumescent interlayer. [Most configurations are available with a translucent interlayer for added obscurity and privacy.]

C. Properties:
1. Thickness: For Interior Use: [3/4", #45-200], [7/8", #60-101], [1-1/16" #60-201], [1-7/16, #90-102], [2-1/8", #120-104] [2-1/4", #120-106] [2-13/16", #120-401].
   a. For Exterior Use, Single Glazing: [3/4", #45-200], [1-1/16", #60-201], [1-9/16", #120-202].
   b. For Exterior Use, Insulated Glass Unit: [1-5/16", #45-260], [1-5/16", #45-360], [1-5/8", #60-261], [1-5/8", #60-361], [2-1/8" or 2-3/8", #120-262], [2-1/8" or 2-3/8", #120-362]
2. Weight: Varies with thickness (approximate range 9 to 22 lbs./sq. ft.).
3. Approximate Visible Transmission: Varies with thickness (approximate range 88 to 75 percent).
4. Fire-rating: Up to 2 hours.
5. Impact Safety Resistance: ANSI Z97.1 and CPSC 16CFR1201 (Cat. I and II).
6. STC Rating: Up to 46 dB.
7. Exterior Grade: PVB layer on exterior surface.

D. Permanently label each piece of Pilkington Pyrostop® with the appropriate marking.

E. Fire Rating – 60 Minutes and Greater: Fire rating classified and labeled by UL for fire rating scheduled at opening locations on drawings, when tested in accordance with ASTM E 119 and UL 263.

F. Substitutions: No substitutions allowed.

2.2 GLAZING COMPOUND FOR FIRE-RATED GLAZING MATERIALS

A. Glazing Tape: Closed cell polyvinyl chloride foam, coiled on release paper over adhesive on two sides, maximum water absorption by volume of 2 percent, designed for compression of 25 percent to effect an air and vapor seal.

B. Silicone Sealant: One-part neutral curing silicone, medium modulus sealant, Type S; Grade NS; Class 25 with additional movement capability of 50 percent in both extension and compression (total 100 percent); Use (Exposure) NT; Uses (Substrates) G, A, and O as applicable. Available Products:
1. Dow Corning 795 - Dow Corning Corp.
2. Silglaze-II 2800 - General Electric Co.
3. Spectrem 2 - Tremco Inc.

C. Setting Blocks: Hardwood or calcium silicate; glass width by 4 inches by 3/16 inch thick.

D. Spacers: Neoprene or other resilient blocks of 40 to 50 Shore A durometer hardness, adhesive-backed on one face only, tested for compatibility with specified glazing compound.

E. Cleaners, Primers, and Sealers: Type recommended by manufacturer of glass and gaskets.

2.3 FABRICATION

A. Fabricate glass and other glazing products in sizes required to glaze openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with recommendations of product manufacturer and referenced glazing standard as required to comply with system performance requirements.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine glass framing, with glazier present, for compliance with the following:
1. Manufacturing and installation tolerances, including those for size, squareness, offsets at corners.
2. Minimum required face or edge clearances.
3. Observable edge damage or face imperfections.

B. Do not proceed with glazing until unsatisfactory conditions have been corrected.

C. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings that are not firmly bonded to substrates.

3.2 INSTALLATION (GLAZING)

A. Comply with referenced GANA standards and instructions of manufacturers of glass, glazing sealants, and glazing compounds.

B. Protect glass from edge damage during handling and installation. Inspect glass during installation and discard pieces with edge damage that could affect glass performance.

C. Cut glazing tape to length and set against permanent stops, flush with sight lines to fit openings exactly, with stretch allowance during installation.

D. Place setting blocks located at quarter points of glass with edge block no more than 6-inches from corners.

E. Glaze vertically into labeled fire-rated metal frames or partition walls with the same fire rating as glass and push against tape for full contact at perimeter of pane or unit.

F. Place glazing tape on free perimeter of glazing in same manner described above.

G. Do not remove protective edge tape.

H. Install removable stop and secure without displacement of tape.

I. Do not pressure glaze.

FIRE RATED GLASS – PILKINGTON PYROSTOP®

J. Glaze exterior openings with PVB layer toward the exterior of the building.

K. Knife trim protruding tape.

L. Apply cap bead of silicone sealant along void between the stop and the glazing, to uniform line, with bevel to form watershed away from glass. Tool or wipe sealant surface smooth.

M. Provide minimum 3/16 inch edge clearance.

N. Install in vision panels in fire-rated doors to requirements of NFPA 80.

O. Install so that appropriate UL and Pilkington Pyrostop® markings remain permanently visible.

3.3 PROTECTION AND CLEANING

A. Protect glass from contact with contaminating substances resulting from construction operations. Remove any such substances by method approved by glass manufacturer.

B. Wash glass on both faces not more than four days prior to date scheduled for inspections intended to establish date of substantial completion. Wash glass by method recommended by glass manufacturer.

NOTE: SEE GLAZING SCHEDULE ON FOLLOWING TWO PAGES

3.4 GLAZING SCHEDULE

A. Interior Use:

Fire Rating	Manufacturer Designation	Supply Form	Thickness	Weight Approx.	U-Value	Daylight Trans. Approx. (%)	STC Rating Approx. (dB)	Assembly	Max. Exposed Area (Sq. In.)	Max. Width or Of Exposed Glazing (In.)	Max. Height Of Exposed Glazing (In.)
45 min.	45-200	Single Glazing	3/4" (19 mm)	9.22 lb / ft2 (45.00 kg / m2)	.86	86	40	Other than doors Door	4,500 3,724	95-1/4 41-5/8	95-1/4 89-3/4
60 min.	60-101	Single Glazing	7/8" (23 mm)	10.86 lb / ft2 (53.00 kg / m2)	.83	87	41	Other than doors Door	5,616 3,724	96 41-5/8	96 89-3/4
60 min.	60-201	Single Glazing	1-1/16" (27 mm)	12.90 lb / ft2 (63.00 kg / m2)	.83	86	44	Other than doors Door	7,442 3,724	96 41-5/8	118-1/4 89-3/4
90 min.	90-102	Single Glazing	1-7/16" (37 mm)	17.61 lb / ft2 (86.00 kg / m2)	.74	84	45	Other than doors Door	3,724 3,724	96 41-5/8	96 89-3/4
2 hr.	120-104	I.G. Units	2-1/8" (54 mm) [with 8 mm spacer, or 2-3/8" (60 mm) with 14 mm spacer]	21.71 lb / ft2 (106.00 kg / m2)	.44	75	46	Other than doors	3,730	111	111
2 hr.	120-106	I.G. Units	2-1/4" (57 mm)	22.94 lb / ft2 (112.00 kg / m2)	.42	75	46	Other than doors	3,730	111	111
2 hr.	120-401	I.G. Units	2-13/16" (72 mm)	30.72 lb / ft2 (150.00 kg / m2)	.46	73	45	Fireframes ClearFloor® System	2,372	47-1/4	50-3/8

B. Exterior Use:

Fire Rating	Manufacturer Designation	Supply Form	Thickness	Weight Approx.	U-Value	Daylight Trans. Approx. (%)	STC Rating Approx. (dB)	Assembly	Max. Exposed Area (Sq. In.)	Max. Width Of Exposed Glazing (In.)	or	Max. Height Of Exposed Glazing (In.)
45 min.	45-200	Single Glazing	3/4" (19 mm)	9.22 lb / ft2 (45.00 kg / m2)	.86	86	40	Other than doors Doors	4,500 3,724	95-1/4 41-5/8		95-1/4 89-3/4
45 min.	45-260	I.G. Units	1-5/16" (33 mm)	12.29 lb / ft2 (60.00 kg / m2)	.49	77	40	Other than doors Door	4,500 3,724	95-1/4 41-5/8		95-1/4 89-3/4
45 min.	45-360*	I.G. Units	1-5/16" (33 mm)	12.29 lb / ft2 (60.00 kg / m2)	.37-.39	59-71	40	Other than doors Doors	4,500 3,724	95-1/4 41-5/8		95-1/4 89-3/4
60 min.	60-201	Single Glazing	1-1/16" (27 mm)	12.90 lb / ft2 (63.00 kg / m2)	.83	86	44	Other than doors Door	7,442 3,724	96 41-5/8		118-1/8 89-3/4
60 min.	60-261	I.G. Units	1-5/8" (41 mm)	15.98 lb / ft2 (78.00 kg / m2)	.48	77	44	Other than doors Door	7,442 3,724	96 41-5/8		118-1/8 89-3/4
60 min.	60-361*	I.G. Units	1-5/8" (41 mm)	15.98 lb / ft2 (78.00 kg / m2)	.37-.39	59-70	44	Other than doors Door	7,442 3,724	96 41-5/8		118-1/8 89-3/4
90 min. -2 hr.	120-202	Single Glazing	1-9/16 (40 mm)	18.64 lb / ft2 (91.00 kg / m2)	.72	86	46	Door	3,724	41-5/8		89-3/4
90 min. -2 hr.	120-262	I.G. Units	2-3/8" (60 mm) [with 14 mm spacer, or 2-1/8" (54 mm) with 8 mm spacer]	21.71 lb / ft2 (106.00 kg / m2)	.44	74	46	Other than doors	3,730	111		111
90 min. - 2 hr.	120-362*	I.G. Units	2-3/8" (60 mm) [with 14 mm spacer, or 2-1/8" (54 mm) with 8 mm spacer]	21.71 lb / ft2 (106.00 kg / m2)	.35	33-68	46	Other than doors	3,730	111		111

Performance values vary for exterior I.G. units based upon the coating on surface #2. Coatings available are Eclipse Advantage Clear, Solar-E™ Solar Control Low-E and Energy Advantage Low-E. Length/thickness tolerances available upon request.

WHEN PROVIDED PROJECT-SPECIFIC CRITERIA (SUCH AS WIND LOAD, SEISMIC MOVEMENT, STRUCTURAL, AIR/WATER RESISTANCE, ETC.), TGP CAN VERIFY THE INTENDED FENESTRATION CONFIGURATION (GLASS AND FRAMING) WILL PERFORM TO MEET THOSE REQUIREMENTS. FOR APPROVED FRAMING SYSTEMS FOR USE WITH PILKINGTON PYROSTOP, VISIT FIREGLASS.COM OR CALL 800.426.0279.

END OF SECTION

SECTION 10 22 39

FOLDING GLASS PARTITIONS

SECTION 10 22 43

SLIDING GLASS PARTITIONS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes furnishing and installing a sliding-folding thermally broken, acoustically rated, aluminum-framed glass panel system that includes:

1. Aluminum framed panels.
2. Threshold.
3. Sliding-folding and locking hardware.
4. Sound gasketing.
5. Bionic Turtle® thermal break.
6. Multipurpose frame insert.
7. Panel Catch.
8. Glass and glazing.
9. Accessories as required for a complete working installation.

B. Related Documents and Sections: Contractor to examine Contract Documents for requirements that directly affect or are affected by Work of this Section. A list of those Documents and Sections include, but is not limited to, the following:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 General Requirements, Specification Sections, apply to this Section.
2. Section 06 10 00, Rough Carpentry: Wood framing R.O. and blocking.
3. Section 06 20 00, Finish Carpentry.
4. Section 07 90 00, Joint Protection.
5. Section 08 42 23, Glass Entrance Swing Doors.
6. Section 08 43 33, Thermally Broken Aluminum Framed Folding Glass Door: NanaWall NW Aluminum 840.
7. Section 08 43 33, Thermally Broken Aluminum Framed Folding Glass Storefront: NanaWall NW Aluminum 640.
8. Section 09 22 16, Non-Structural Metal Framing: Metal framing R.O. and reinforcement.

1.02 REFERENCES

A. Reference Standards in accordance with Division 01 and current editions from the following:

1. AAMA. American Architectural Manufacturers Association; www.aamanet.org
   a. AAMA 205-15, In-Plant Testing Guidelines for Manufacturers and Independent Laboratories.

b. AAMA 502, Voluntary Specification for Field Testing of Newly Installed Fenestration Products.
c. AAMA 611, Voluntary Specification for Anodized Architectural Aluminum.
d. AAMA 920-11, Specification for Operating Cycle Performance of Side-Hinged Door System.
e. AAMA 1304, Voluntary Specification of Forced Entry Resistance of Side-Hinged Door Systems.
f. AAMA 2604, Voluntary Specifications, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels.
g. AAMA/WDMA/CSA 101/I.S.2/A440-17, NAFS, North American Fenestration Standard Specification for Windows, Doors and Skylights.

2. ANSI. American National Standards Institute; www.ansi.org
   a. ANSI Z97.1, Safety Performance Specifications and Methods of Test for Safety Glazing Material Used in Buildings.
3. ASTM. ASTM International; www.astm.org
   a. ASTM C1036, Standard Specification for Flat Glass.
   b. ASTM C1048, Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass.
   c. ASTM E90-09, Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
   d. ASTM E413-16, Classification for Rating Sound Insulation.
   e. ASTM E2068-00 (2016), Standard Test Method for Determination of Operating Force of Sliding Windows and Doors.
   f. ASTM E987-88 (2017), Standard Test Methods for Deglazing Force of Fenestration Products.
   g. ASTM F842, Standard Test Methods for Measuring the Forced Entry Resistance of Sliding Door Assemblies, Excluding Glazing Impact.
4. Construction Products Directive (CPD), a legal mandate of the European Commission; http://ec.europa.eu/growth/single-market/european-standards/harmonised-standards/construction-products/index_en.htm
   a. CE Mark; http://ec.europa.eu/growth/single-market/ce-marking/index_en.htm
5. CPSC. Consumer Product Safety Commission; www.cpsc.gov
   a. CPSC 16CFR-1201, Safety Standard for Architectural Glazing Materials
6. CSA Group (Canadian Standards Association); www.csagroup.org/global/en/home
   a. CSA A440S1, The Canadian supplement to North American (NAFS) standards.
7. DIN. "Deutsches Institut für Normung" (German institute for standardization); www.en-standard.eu/din-standards
   a. DIN EN 1090, Manufacturing qualification for welding of supporting building components.
   b. DIN EN 1627, Pedestrian door sets, windows, curtain walling, grilles, and shutters – Burglar resistance – Requirements and classification.
   c. DIN EN 1630, Pedestrian door sets, windows, curtain walling, grilles, and shutters- Burglar resistance – Test method for the determination of resistance to manual burglary attempts.
   d. DIN EN ISO 717-1, Acoustics – Rating of sound insulation in buildings and building elements.

e. DIN EN ISO 9001, 2015 quality management system registration.

f. DIN EN ISO 10140-1, 2, 4 & 5, Airborne sound measurement.

g. DIN EN ISO 12400, Windows and pedestrian doors – Mechanical durability – Requirements and classification.

h. DIN EN ISO 14001, 2015 environmental management system registration.

8. EN Standards - Construction Materials and Building (European Standards); www.en-standard.eu/din-standards

a. CSN EN 1191, Windows and Pedestrian Doors - Mechanical Durability.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordination: Coordinate Folding Glass Partition system and framing R.O.

B. Pre-installation Meetings: See Section 01 30 00.

1.04 SUBMITTALS

A. For Contractor submittal procedures see Section 01 30 00.

B. Product Data: Submit manufacturer’s printed product literature for each Folding Glass Partition system to be incorporated into the Work. Show performance test results and details of construction relative to materials, dimensions of individual components, profiles, and colors.

C. Product Drawings: Indicate Folding Glass Partition system component sizes, dimensions and framing R.O., configuration, swing panels, direction of swing, stacking layout, typical head jamb, side jambs and sill details, type of glazing material, handle height, and field measurements.

D. Certificates: Submit CE Mark certificate.

E. Manufacturers' Instructions: Submit Owner’s Manual from manufacturer which includes installation instructions, operation, and maintenance data: Identify with project name, location and completion date, and type and size of unit installed.

NOTE: Delete the following Article if LEED is not applicable; edit to meet project LEED requirements.

F. Sustainable Design Submittals (USGBC LEED®): Refer to Section 01 81 15, LEED Design Requirements.

1. **LEED 2009** (v3) Credits. Complete online LEED forms and submit other required materials as follows:

a. Materials and Resources (MR) Credits:

1). MR Credit 1.1 (MRc1.1): Building Reuse - Maintain Existing Exterior Walls, Floors and Roof

2). MR Credit 1.2 (MRc1.2): Building Reuse - Maintain Existing Interior Nonstructural Elements

3). MR Credit 2 (MRc2): Construction Waste Management

NOTE: MR Credit 3 below can apply to reusing salvaged Folding Glass Partition.

4). MR Credit 3: Materials Reuse - 5% (MRc3.1) or 10% (MRc3.2)

b. Indoor Environmental Quality (EQ) Credits:

1). IEQ Credit 2 (IEQc2): Increased Ventilation - Case 2 – Naturally Ventilated Spaces

2). IEQ Credit 8.1 (IEQc8.1): Daylight & Views - Daylight 75% of Spaces

3). IEQ Credit 8.2 (IEQc8.2): Daylight & Views - Views for 90% of Spaces

4). IEQ Credit 9 (LEED for Schools - IEQc9): Enhanced Acoustical Performance

2. **LEED v4 for Interior Design and Construction** (ID&C) Credits. Complete online LEED forms and submit other required materials as follows:

a. Energy and Atmosphere (EA) Credits:
1). EA Credit 2 (EAc2): Optimize Energy Performance
b. Materials and Resources (MR) Credits:

NOTE: MR Credit 1 below can apply to reusing salvaged Folding Glass Partition.

1). MR Credit 1 (MRc1): Building Life-Cycle Impact Reduction; Option 3 - Building and Material Reuse
c. Indoor Environmental Quality (EQ) Credits:
1). EQ Credit 7 (EQc7): Daylight
2). EQ Credit 8 (EQc8): Quality Views
3). EQ Credit 9 (EQc9): Acoustic Performance
i. Submit calculations or measurements for occupant spaces to meet sound transmission class ratings between adjacent spaces and reverberation time requirements within a room.

G. LEED Closeout Documentation:

NOTE: Edit below to meet project LEED requirements.

1. **LEED 2009** (v3). Submit completed LEED™ submittal Worksheet Templates for the following credits:
a. MRc1.1, MRc1.2, MRc2, MRc3, MRc6, IEQc2, IEQc8.1, IEQc8.2, IEQc9
2. **LEED v4** (ID&C). Submit information and documentation to complete LEED™ Worksheet Templates for the following credits:
a. EAc2, MRc1, EQc7, EQc8, EQc9

1.05 QUALITY ASSURANCE

A. Regulatory Requirements: Folding Glass Partition to be CE Mark certified.

NOTE: The CE mark serves as verification that the product conforms with the essential requirements of the Construction Products Directive (CPD), a legal mandate of the European Commission. CE certified windows and doors provide building professionals with a uniform set of technical standards to evaluate and specify product performance with added assurance that NanaWall products are safe and fit for purpose.

B. Manufacturer Qualifications: Manufacturer capable of providing complete, precision built, engineered, pre-fitted units with a minimum thirty (30) years' experience in the sale of folding-sliding door systems for large openings in the North American market.
1. Manufacturer to have DIN EN ISO 9001: 2015 quality management system registration.
2. Manufacturer to have DIN EN ISO 14001: 2015 environmental management system registration.

C. Installer Qualifications: Installer experienced in the installation of manufacturer's products or other similar products for large openings. Installer to provide reference list of at least three (3) projects of similar scale and complexity successfully completed in the last three (3) years.
1. Installer to be trained and certified by manufacturer.

D. Single Source Responsibility: Furnish Folding Glass Partition system materials from one manufacturer for entire Project.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Comply with manufacturer's instructions and recommendations, Section 01 60 00 requirements, and as follows:
1. Deliver materials to job site in sealed, unopened cartons or crates.

a. Upon receipt, inspect the shipment to ensure it is complete, in good condition and meets project requirements.

2. Store material under cover in a clean and dry location, protecting units against weather and defacement or damage from construction activities, especially to the edges of panels.

1.07 FIELD CONDITIONS

A. Field Measurements: Contractor to field verify dimensions of rough openings (R.O.) and threshold depressions to receive sill. Mark field measurements on product drawings submittal.

1.08 WARRANTY

A. Manufacturer Warranty: Provide Folding Glass Partition system manufacturer's standard limited warranty as per manufacturer's published warranty document in force at time of purchase, subject to change, against defects in materials and workmanship.

1. Warranty Period beginning with the earliest of 120 days from Date of Delivery or Date of Substantial Completion:

a. Rollers and Glass Seal Failure: Ten (10) years

b. All Other Components: Ten (10) years

1). Exception: Five (5) years if NOT installed by manufacturer's specific system approved or certified trained installer.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Basis-of-Design Product by Manufacturer: **Generation 4 Folding Glass Walls** by **NanaWall NW Acoustical 645** (www.nanawall.com).

NANA WALL SYSTEMS, INC.
100 Meadow Creek Drive, Corte Madera, CA 94925
Toll Free (800) 873-5673
Telephone: (415) 383-3148
Fax: (415) 383-0312
Email: info@nanawall.com

1. Substitution Procedures: See Section 01 20 00: Submit completed and signed:

a. Document 00 43 25, Substitution Request Form (During Procurement)

b. Document 00 63 25, Substitution Request Form (During Construction)

2.02 PERFORMANCE / DESIGN CRITERIA

A. Performance Criteria: **Minimal Surface Mounted Flush Sill and Flush Sill – Inward Opening**

1. Air Infiltration (ASTM E283):

a. 0.12 cfm/ft^2 (0.61 L/s/m^2) at a static air pressure difference of 1.57 psf (75 Pa)

b. 0.30 cfm/ft^2 (1.52 L/s/m^2) at a static air pressure difference of 6.24 psf (300 Pa)

c. Canadian Air Infiltration/Exfiltration Level: A2

B. Performance Criteria: **Minimal Surface Mounted Flush Sill and Flush Sill – Outward Opening**

1. Air Infiltration (ASTM E283):

a. 0.12 cfm/ft^2 (0.61 L/s/m^2) at a static air pressure difference of 1.57 psf (75 Pa)

b. 0.28 cfm/ft^2 (1.50 L/s/m^2) at a static air pressure difference of 6.24 psf (300 Pa)

c. Canadian Air Infiltration/Exfiltration Level: A2

C. Performance Criteria:

1. Acoustic Performance STC (Rw)

NOTE: Acoustical system STC and Rw ratings per ASTM E413 and DIN EN ISO 717-1 are from testing of full panel systems by an independent and accredited acoustical laboratory in accordance with DIN EN ISO 10140-1, 2, 4, & 5 test procedure and in general accordance with ASTM E90-09. A complete and unedited written test report is available upon request.

See manufacturer's latest published data regarding performance.

a. [System STC (Rw) 45 (45) and OITC 37 with head track recessed and 1-7/16 inch (36 mm) double IGU, 12 mm + 8 mm STC 48 enhanced laminated glass]

b. [System STC (Rw) 38 (38) and OITC 32 with 1-1/8 inch (28 mm) double IGU, 6 mm laminated + 6 mm tempered STC 39 glass]

c. [System STC (Rw) 33 (33) and OITC 27 with 15/16 inch (24 mm) double IGU, 4 mm + 4 mm STC 31 tempered glass]

NOTE: Acoustical system STC (Rw) ratings below are engineer-calculated interpolations based on the full panel systems testing with surface mounted flush sill and flush sill. Calculations of system STC (Rw) from other glazing STC is available on request.

d. [System STC (Rw) 45 (45) with head track recessed and 1-9/16 inch (40 mm) double IGU, 10 mm + 8 mm STC 48 enhanced laminated glass]

e. [System STC (Rw) 44 (44) and 1-9/16 inch (40 mm) double IGU, 10 mm + 8 mm STC 48 enhanced laminated glass]

f. [System STC (Rw) 44 (44) with head track recessed and 1-5/8 inch (42 mm) double IGU, 8 mm + 8 mm STC 47 enhanced laminated glass]

g. [System STC (Rw) 43 (43) and 1-5/8 inch (42 mm) double IGU, 8 mm + 8 mm STC 47 enhanced laminated glass]

h. [System STC (Rw) 43 (43) with head track recessed and 1-7/16 inch (36 mm) double IGU, 6 mm + 6 mm STC 45 enhanced laminated glass]

i. [System STC (Rw) 42 (42) with 1-7/16 inch (36 mm) double IGU, 6 mm + 6 mm STC 45 enhanced laminated glass]

j. [System STC (Rw) 40 (40) with 1-7/16 inch (36 mm) double IGU, 6 mm + 6 mm STC 42 laminated glass]

k. [System STC (Rw) 38 (38) with 1/2-inch (12 mm) STC 39 enhanced laminated glass]

l. [System STC (Rw) 37 (37) with 3/8-inch (10 mm) STC 38 enhanced laminated glass]

m. [System STC (Rw) 36 (36) with 1/4-inch (6 mm) STC 36 enhanced laminated glass]

n. [System STC (Rw) 35 (35) with 1/4-inch (6 mm) STC 35 laminated glass]

o. [System STC (Rw) 32 (32) with 1/4 inch (6 mm) STC 31 tempered glass]

2. Swing Panel - Operation / Cycling Performance (AAMA 920): 500,000 cycles

3. System - Life Cycle Performance (DIN EN 1191/12400): 20,000 cycles

4. Operating Force (ASTM E2068):

a. Swing Panel: Open 1 lbf (2.8 N) & Close 1 lbf (3.9 N)

b. Folding Panel:

1). Initiate Motion - Open 4 lbf (20 N) & Close 3 lbf (15 N)

2). Maintain Motion - Open 1 lbf (3 N) & Close 1 lbf (4 N)

NOTE: Forced entry testing results are only applicable for the test unit type of locking. See manufacturer's latest published data regarding performance.

5. Forced Entry (AAMA 1304, DIN EN 1191): Pass

6. Forced Entry Resistance (ASTM F842, AMMA 1304, CAWM 300): Meets Grade 40: +F2

NOTE: Retain Burglary Resistance subparagraph below when desired; this additional security option is available for an upcharge.

7. Unit Burglary Resistance: EN 1627-30, Class RC2/RC2N certified

D. LEED Characteristics:

1. **LEED 2009 (v3)**
   a. MRc1.2: *NanaWall* interior glass wall systems, not demolished in a renovation project, are reused in the same location.
   b. MRc2: *NanaWall* cardboard shipping crates are made of 60% recycled material and are 100% recyclable.
   c. MRc3: *NanaWall's* components easily disassemble and reassemble to "*Use* as *salvaged... or reused materials*."
   d. IEQc2: *NanaWall* systems provide natural ventilation in the open position, assisting in the 90% required natural ventilation of occupied spaces of ASHRAE 62.1.
   e. EQc8.1: *NanaWall* glass wall assembly borrowed light brings daylight deeper into the floor plate.
   f. EQc8.2: *NanaWall* glass wall assemblies provide direct outdoor lines of sight.
   g. IEQc9: (LEED for Schools): For gasketed *NanaWall* glass wall assemblies with glass units STC testing of up to 45 Db.
2. **LEED v4 for Interior Design and Construction (ID&C)**
   a. EAc2: *NanaWall* systems using designed double IGU and thermally/ acoustically broken frames can provide significant energy performance.
   b. MRc1: *NanaWall* can be easily disassembled for salvage and reuse.
   c. EQc7: *NanaWall* glass wall assembly borrowed light brings daylight deeper into the floor plate.
   d. EQc8: *NanaWall* glass wall assemblies provide direct outdoor lines of sight.
   e. EQc9: *NanaWall* glass wall assemblies can contribute with system acoustic ratings of up to a 45-dB reduction.

E. Design Criteria:

1. Sizes and Configurations: As indicated by the Drawings for selected number and size of panels, location of swing and folding panels, and number of panels stacking to the left and to the right.
2. Unit Operation: Adjustable sliding and folding hardware with top and bottom tracks
3. Mounting Type: Floor track supported with upper guide track
4. Panel Configuration: Straight
5. Stack Storage Configuration:
   a. [Inswing type and stack storage inside jamb]
   b. [Outswing type and stack storage outside jamb]
6. Sill Type:
   a. [Minimal surface mounted flush sill - ADA compliant]
   b. [Flush sill - ADA compliant with high heel protector insert]
7. Panel Type: Hinged
   a. [With Entry/Egress panel hinged to side jamb.]

b. [Without Entry/Egress panel hinged to side jamb.]

8. Panel Pairing Configuration: See drawings

a. [Bi-folding panels hinged to side jamb]

b. [Bi-folding panels unhinged FourFold or SixFold panel sets]

NOTE: Sizes and Configurations: https://www.nanawall.com/products/nw-acoustical-645/options

See manufacturer drawings for selected custom dimensions within maximum frame sizes possible as indicated in manufacturer's literature. Maximum sizes possible are based on weight of glazing selected.

See drawings for selected number of panels and configuration.

2.03 MATERIALS

A. Thermally Broken Aluminum Framed Folding Glass Description: Nominal frame stile width of 3-7/8 inch (99 mm) between folding panels, floor track supported system. Manufacturer's standard thermally broken frame and panel profiles, with head track, side jambs, sill and panels with dimensions as shown on Drawings.

1. Panels and Frame:

a. Panels:

1). Single lite.

NOTE: Single lite above is standard; other options below may require an upcharge.

Refer to manufacturer's size chart for glass panel sizes requiring the use of horizontal mullions.

2). [Multiple lites with horizontal mullion(s) at height(s) indicated from the bottom of the panel.]

3). [Single lite with simulated divided lites in pattern as shown on Drawings.]

4). Panel Size (W x H): As indicated.

NOTE: Maximum unit heights are dependent on the weight of glazing.

5). Rail Depth: 2-5/8 inch (67 mm)

6). Top Rail and Stile Width: 2-7/8 inch (73 mm)

7). Bottom Rail Width:

i. [2-5/8 inch (66 mm)]

ii. [Manufacturer's standard kick-plate of 10 inches (254 mm)]

b. Frame:

1). Thermally broken top track and side jambs with multipurpose frame insert to hide anchoring frame connections and conceal cable routing to security system by others. For long-term tight, consistent sealing, provide a lateral patented (Patent Number: US10683688B2) adjustment feature at the side jambs capable of adjustment of +/ - 3/16" (5 mm). Frame finish to match panel finish.

NOTE: Frame fasteners, attachment points and screw heads should be concealed by the multipurpose frame insert for enhanced aesthetics.

2). Frame Depth: 2-15/16 inch (74 mm)

3). Head Track Width:

i. [2-13/16 inch (72 mm) standard]

ii. [3-7/8 inch (99 mm) anti-tilt feature for unhinged FourFold and SixFold panel set configurations]

4). Side Jamb Width: 2 inches (51 mm)

5). Sill Finish:

i. [Clear anodized finish.]

ii. [Black anodized finish.]

2. Aluminum Extrusion: AlMgSi0.5 alloy, 6063-T5 (F-22 – European standard)

a. Thickness: 0.078 inch (2.0 mm) nominal

b. Acoustic Break: 1-1/4 inch (32 mm) wide specially designed and patented (Patent Number: US10550625B2) glass fiber reinforced (GFR) polyamide “Bionic Turtle®” for panels.

3. Aluminum Finish:

a. Inside and Outside;

1). [Same (one-color)]

2). [Different (two-tone)]

NOTE: Select finish type below, edit to requirements and delete items not used.

b. Anodized (AAMA 611):

1). [Clear]

2). [Dark Bronze]

3). [Black]

c. Powder Coat (AAMA 2604): Color as chosen from manufacturer's powder coating finish chart from

1). [Manufacturer's standard selection of 50 colors - matte.]

2). [Manufacturer's full RAL selection.]

i. [High Gloss]

ii. [Matte]

3). [Metallic as chosen from manufacturer’s eloxal tone steel-effect DB finish chart]

4). [Custom finish.]

B. Glass and Glazing:

1. Safety Glazing: In compliance with ASTM C1036, ASTM C1048, ANSI Z97.1 and CPSC 16CFR 1201.

NOTE: Unlike wet glazing, NanaWall’s standard dry glazing method helps reduce instances of seal failure.

2. Manufacturer’s [**tempered**] [**laminated**] glass lites in [**single**] [**double**] insulated glazing units, dry glazed with glass stops on the inside.

NOTE: Select and edit glass type(s) to meet building code, acoustic, security, translucency, and other project requirements with other glass available from manufacturer.

Contact NanaWall for availability of other commercial glass types.

Glass pocket can accommodate glass from 1/4 inch (6 mm) monolithic to 1 3/4 inch (45 mm) double insulated glass.

For laminated glass, check with NanaWall the availability of Vanceva White Collection and other color interlayers.

a. Insulated Glass Unit (IGU) Lites:
   1). 1-9/16 inch (40 mm) double IGU, 10 mm + 8 mm STC 48 enhanced laminated glass to achieve unit STC of 45 with head track recessed.
   2). [1-9/16 inch (40 mm) double IGU, 10 mm + 8 mm STC 48 enhanced laminated glass to achieve unit of STC of 44.]
   3). [1-5/8 inch (42 mm) double IGU, 8 mm + 8 mm STC 47 enhanced laminated glass to achieve unit STC of 44 with head track recessed.]
   4). [1-5/8 inch (42 mm) double IGU, 8 mm + 8 mm STC 47 enhanced laminated glass to achieve unit STC of 43]
   5). [1 7/16 inch (36 mm) double IGU, 6 mm + 6 mm STC 45 enhanced laminated glass to achieve unit STC of 43 with head track recessed]
   6). [1-7/16 inch (36 mm) double IGU, 6 mm + 6 mm STC 45 enhanced laminated glass to achieve unit STC of 42]
   7). [1-7/16 inch (36 mm) double IGU, 6 mm + 6 mm STC 42 laminated glass to achieve unit STC of 40]

b. IGU Fill: Air filled

c. Glass Spacers: Manufacturer's standard [**silver gray**] [**black**] finish.

d. Single Glass:
   1). 1/2-inch (12 mm) STC 39 enhanced laminated glass to achieve unit STC of 38
   2). [3/8-inch (10 mm) STC 38 enhanced laminated glass to achieve unit STC of 37]
   3). [1/4-inch (6 mm) STC 36 enhanced laminated glass to achieve unit STC of 36]
   4). [1/4-inch (6 mm) STC 35 laminated glass to achieve unit STC of 35]
   5). [1/4-inch (6 mm) STC 31 tempered glass to achieve unit STC of 32]

e. Glass Lite Type:
   1). Standard reduced iron

NOTE: Item below requires an upcharge.

   2). [Low iron]

C. Locking Hardware and Handles:

NOTE: Select one of the below Main Entry Panel paragraphs WITH or WITHOUT Swing Panels, deleting all others. Edit to suit project requirements.

1. Main Entry Panel(s) for Models WITH a [**Pair of**] Swing Panel: Provide manufacturer's standard lever handles on the inside and outside, a lockset with lockable latch, multi-point locking with a dead bolt and rods at the top and bottom on primary panel only.
   a. Locking:
      1). Standard profile cylinder
      2). Additional profile cylinders to be [**keyed alike**.] [**keyed differently.**]
      3). [Adapter for Small Format Interchangeable Core (SFIC) by others]
   b. Rods to be concealed and not edge mounted.
   c. After turn of key or thumb turn, depression of handles withdraws latch.
   d. Lifting of handles engages rods and turn of key or thumb turn engages deadbolt and operates lock.
   e. Lever Handle - Finish:
      1). Brushed satin stainless steel

2). [Black titanium stainless steel]

NOTE: Handles above are standard; option below may require an upcharge.
Other compatible lever handle styles and finishes are available from other suppliers.

3). [Copper- nickel stainless steel antiviral and antimicrobial]

f. Secondary Swing Panel: Provide concealed two-point, edge locking.

2. Main Entry Panel(s) for Model WITH a Swing Panel: Prepped for commercial applications with a single motion locking operated by lever handles with locking with a US mortise cylinder that can accommodate 5 - 7 pin, SFIC, FSIC or LFIC cores.

NOTE: Non-standard locking options not tested for air/water/structural and forced entry.

a. Locking:

1). [Accurate 18L lever handle]

2). [Accurate 20L lever handle with return]

3). [Yale 8808-2 Series with Mortise Lock]

4). [L/LV9000 Series from Schlage with Mortise Lock]

5). [Schlage ND Series Mechanical lock]

b. Secondary Swing Panel: Provide concealed two-point, edge locking.

NOTE: Other compatible lever handle styles and finished are available from Accurate and other suppliers.

3. Main Entry Panel: Provide manufacturer's standard flat handle on inside only with concealed two-point locking hardware operated by 180° turn of handle.

NOTE: With the option above, the main entry panel is operable from inside only and that there is no latch.

4. Main Entry Panel for Models WITH a Swing Panel: No hardware or locking provided by manufacturer; Field installed panic device by Section 08 71 00 prepped for commercial application.

a. Panic hardware:

1). [Von Duprin 33/35A Series Narrow Stile Rim Exit Device]

2). [Von Duprin 98/99 Series Rim Exit Device]

3). [DORMA 9700 Series Narrow Stile Rim Exit Device]

5. Pairs of Folding Panels: Provide manufacturer's flat handles and concealed two-point locking hardware operated by 180° turn of handle between each pair. Face applied flush bolt locking NOT acceptable.

a. Flat Handle - Finish:

1). Brushed satin stainless steel

2). [Black titanium stainless steel]

NOTE: Handles above are standard; option below may require upcharge.

3). [Copper-nickel stainless steel antiviral and antimicrobial]

6. Handle Height: 41-3/8 inch (105 cm) centered from bottom of panel or as otherwise indicated.

7. Locking rods with standard end caps at the top and bottom. Rods to have a stroke of 15/16 inch (24 mm).

8. Burglary Resistance to be [**Standard**] [**Class RC2/ RC2N certified**]

9. Panel Catch: panel catch to hold swing panel to adjacent folding panel to prevent incorrect operation when moving the panel.

D. Sliding-Folding Hardware: Provide manufacturer's standard combination sliding and folding hardware with top and bottom tracks and threshold. All bottom rollers to be with sealed, self-lubricating, double ball bearing multi-rollers. Surface mounted hinges and bottom rollers NOT acceptable.

1. Bottom Rollers Carrying Capacity: 250 lb. (120 kg). Bottom rollers provided with two vertical stainless-steel wheels with double row of ball bearings and two horizontal polyamide wheels.

NOTE: Weight of panels borne by the bottom of the guide channel in the sill is NOT acceptable.

2. Vertical wheels with Gothic arch feature to ride on top of stainless-steel guide track covers over the full length of the sill track. Wheels riding on aluminum surfaces NOT acceptable.
3. Upper guide rollers with two horizontal polyamide guiding wheels. For configurations with unhinged FourFold and SixFold panel sets that can slide left or right, additional concealed, additional vertical tilt protection hardware.
4. Hinges and Rollers: [**Clear**] [**Black**] anodized aluminum with stainless steel security hinge pins and set-screws. Concealed panel alignment with a tight seal through the patented (Patent Number: US10711510B2) TwinX mechanism reinforced between panels. Double ball bearing stainless wheels rollers match hinge finish.
5. Spring-Loaded Pull Handle: For outswing units with larger panel sizes, a spring-loaded pull handle is supplied for ease of closing the system. The pull handle is located above the flat handle. When not in use, the handle lays flat against the adjacent panel and is supplied with bumpers to avoid metal-to-metal contact. Handles are stainless steel with the attachment to coordinate with the hinge hardware of the system.
    a. Pull Handle – Finish:
        1). Silver stainless steel
        2). [Black titanium stainless steel]

E. Sound Gasketing: Manufacturer's double layer EPDM between panels and EPDM gasket, Q-Ion gasket, or brush seal between panel and frame, or brush seals with a two-layer fiberglass reinforced polyamide fin attached at both inner and outer edge of bottom of door panels with a recessed sill or on frame for sealing between panels and between panel and frame.

NOTE: The manufacturer's sound gasketing is determined at the factory by the direction of swing, the panel configuration, and the type of locking.

F. Fasteners: Installation plates for connecting frame components made of stainless steel with sealing cushion to avoid thermal connectivity.

2.04 FABRICATION

A. Folding Glass Wall: Extruded aluminum frame and panel profiles, corner connectors and hinges, sliding and folding hardware, locking hardware and handles, glass and glazing and sound gasketing.

1. Each unit factory pre-assembled and shipped with complete system components and installation instructions.
2. Exposed work to be carefully matched to produce continuity of line and design with all joints.
3. No raw edges visible at joints.

2.05 ACCESSORIES

A. Provide sidelights, transoms, corner posts, or single or double doors as indicated.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examination and Acceptance of Conditions per Section 01 70 00 and as follows:

1. Carefully examine rough openings with Installer present, for compliance with requirements affecting Work performance.

a. Examine surfaces of openings and verify dimensions; verify rough openings are level, plumb, and square with no unevenness, bowing, or bumps on the floor; and other conditions as required by the manufacturer for readiness to receive Work.

b. Verify structural integrity of the header for deflection with live and dead loads limited to the lesser of L/720 of the span or 1/4 inch (6 mm). Provide structural support for lateral loads, and both wind load and eccentric load when the panels are stacked open.

NOTE: Prior to installing NanaWall, it is recommended that all building dead loads be applied to the header. Allow a reasonable amount of time for the dead load's effect on the header; only then can the building's live load be used to meet the above requirements of L/720 or 1/4 inch (6 mm). If this is not done, both dead and live loads need to be considered.

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

3.02 INSTALLATION

A. General: Install Folding Glass Partition system in accordance with the Drawings, approved submittals, manufacturer’s recommendations, and installation instructions, and as follows:

1. Properly seal around opening perimeter to reduce sound infiltration from surroundings.
2. Securely attach anchorage devices to rigidly fit frame in place, level, straight, plumb, and square. Install frame in proper elevation, plane, and location, and in proper alignment with other work.
3. Install panels, handles, lockset, gasketing and other accessories in accordance with manufacturer’s recommendations and instructions.

3.03 FIELD QUALITY CONTROL

A. Field Tests and Inspections per Section 01 40 00 of the following:

1. Verify the Folding Glass Partition system operates and functions properly. Adjust hardware for proper operation.

B. Non-Conforming Work: Repair or replace non-conforming work as directed by the Architect; see General and Supplementary Conditions, and Division 01, General Requirements.

3.04 CLEANING AND PROTECTION

A. Keep units closed and protect Folding Glass Partition installation against damage from construction activities.

B. Remove protective coatings and use manufacturer recommended methods to clean exposed surfaces.

END OF SECTION

SECTION 04 21 00

CLAY MASONRY UNITS

Display hidden notes to specifier. Click on your Paragraph Sign in Word on the tool bar.

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Face brick.

B. Hollow brick.

1.2 RELATED SECTIONS

A. Section 04 05 13 - Masonry Mortaring.

B. Section 04 05 19.13 - Continuous Joint Reinforcing.

C. Section 04 27 23 - Cavity Wall Unit Masonry.

1.3 REFERENCES

A. ASTM C 216 – Standard Specification for Facing Brick (Solid Masonry Units Made from Clay or Shale)

B. ASTM C270 – Standard Specification for Mortar for Unit Masonry

C.ASTM C 67 - Standard Test Methods for Sampling and Testing Brick and Structural Clay Tile.

1.4 SUBMITTALS

A. Submit under provisions of Section 01 30 00 - Administrative Requirements.

B. Product Data]: Manufacturer's catalog data, detail sheets, and specifications.

C. Selection Samples: For each product requiring color/texture selection, provide full size samples for final selection.

D. Verification Samples: For each product, provide two full-size units representing actual color and texture of products to be installed.

E. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
   1. Construct sample panel at location indicated or directed, and as follows:
      a. Size: 4 feet by 4 feet (1.2 m by 1.2 m).

b. Include all unit types and sizes to be used, and mortar joint treatment.
c. Obtain architect's acceptance of sample panel before beginning construction activities of this section.
d. Do not remove sample panel until construction activities of this section have been accepted by architect.

F. Submit detailed shop drawings and installation details for sculptured brick murals.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: All primary products specified in this section will be supplied by a single manufacturer with a minimum of ten years' experience.

B. Installer Qualifications: All products listed in this section are to be installed by a single installer with a minimum of five years demonstrated experience in installing products of the same type and scope as specified.

C. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
1. Construct sample panel at location indicated or directed, and as follows:
a. Size: 4 feet by 4 feet (1.2 m by 1.2 m).
b. Include all unit types and sizes to be used, and mortar joint treatment.
c. Obtain architect's acceptance of sample panel before beginning construction activities of this section.
d. Do not remove sample panel until construction activities of this section have been accepted by architect.

D. Certificates: Prior to delivery, submit to Architect/Engineer certificates attesting compliance with the applicable specifications for grades, types or classes included in these specifications.

E. Costs of Tests: Cost of tests shall be borne by the purchaser, unless tests indicate that units do not conform to the requirements of the specifications, in which case cost shall be borne by the seller.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Deliver products of this section in factory packaging with individual faces protected; keep dry.

C. Store and dispose of hazardous materials, and materials contaminated by hazardous materials, in accordance with requirements of local authorities having jurisdiction.

1.7 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.8 WARRANTY

A. At project closeout, provide to Owner or Owners Representative an executed copy of the manufacturer's standard limited warranty against manufacturing defect, outlining its terms, conditions, and exclusions from coverage.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Endicott Clay Products Co., which is located at: 57120 707th Rd.; Endicott, NE 68350; Tel: 402-729-3315; Fax: 402-729-5804; Email: request info (endicott@endicott.com); Web: http://www.endicott.com

B. Substitutions: Not permitted.

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

2.2 FACE BRICK

A. Face Brick: ASTM C 216 Grade: SW Type: FBX.
   1. Modular Size: 3-5/8 inches (92.1 mm) deep, 2-1/4 inches (57.2 mm) high, 7-5/8 inches (193.7 mm) long.
   2. Color: Manganese Ironspot.
   3. Edge: Square edge.

B. Face Brick: ASTM C 216 Grade: SW Type: FBS.
   1. Modular Size: 3-5/8 inches (92.1 mm) deep, 2-1/4 inches (57.2 mm) high, 7-5/8 inches (193.7 mm) long.
   1. Color: Manganese Ironspot.
   2. Texture: Square edge.
   3. HOLLOW BRICK UNITS

1.1 MORTAR

A. Mortar shall conform to ASTM C 270 under the guidelines provided in BIA Technical Notes #8 Series.

PART 2 EXECUTION

2.1 INSTALLATION

A. Install face brick in accordance with Brick Industry Association (BIA) guidelines and industry standards.

END OF SECTION

FACE BRICK - MANGANESE IRONSPOT

PROJECTS VIDEO

Smooth Texture

SHARE

VIEWRAIL

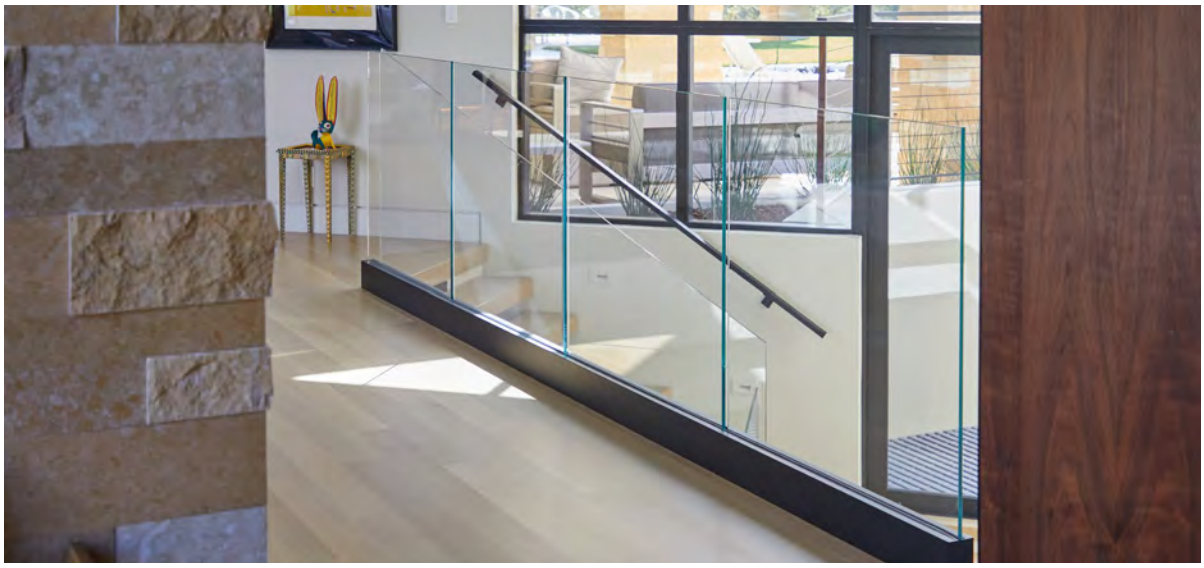
VIEWRAIL BASE RAIL

Base Rail System

Viewrail is America's leading producer of frameless glass systems. Base Rail is defined by strength, clean lines, and gorgeous views. To provide the greatest strength and durability, Viewrail's Base Rail channel is made from a solid piece of anodized aluminum. It is then finished with anodized aluminum covers, which are powder coated with our 2605 Platinum powder coat and finished off with a rubber seal around the glass. Base Rail is ICC approved, and passes all testing for interior or exterior IRC and IBC requirements.

When it comes to responsibly-made, thoroughly-tested frameless glass systems, there is no competition.

Viewrail Base Rail System



Tech Specifications

Material: 6061 Aluminum (Aircraft Grade)

Finishes: Aluminum: Custom powder coated to order

Height: Up to 42” Tall (System Height)

Standard Spacing: 1” Between Panels

Mount Type: Surface

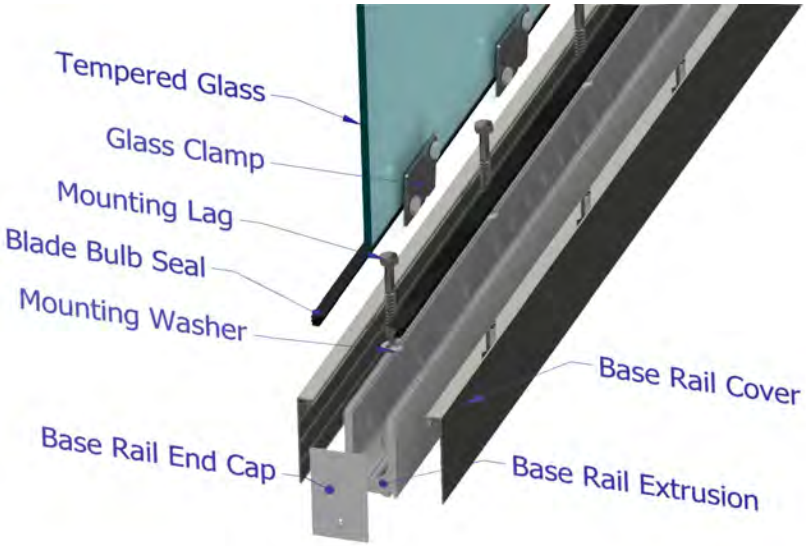
Composition: Extruded from Solid Aluminum

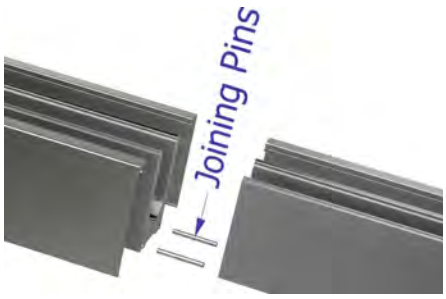
Infill Options: 1/2” Tempered or 9/16” Laminated Glass

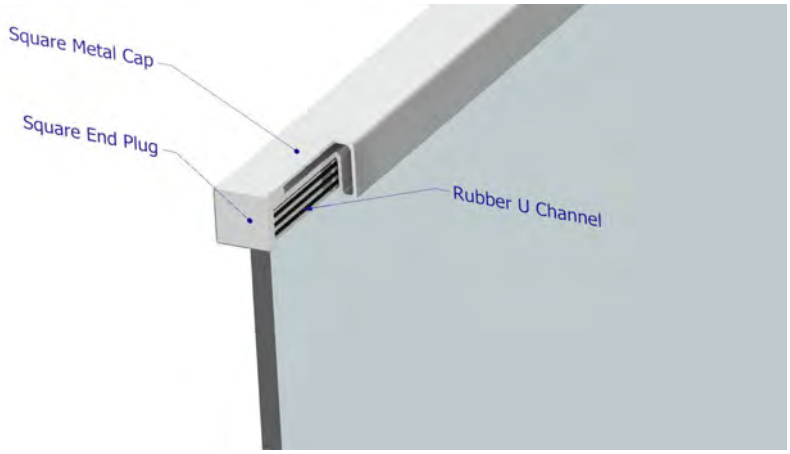
Compliance: *ICC, IBC International Building Code® (2015,2018,2021), IRC International Residential Code® (2015,2018,2021)*

Viewrail Base Rail System

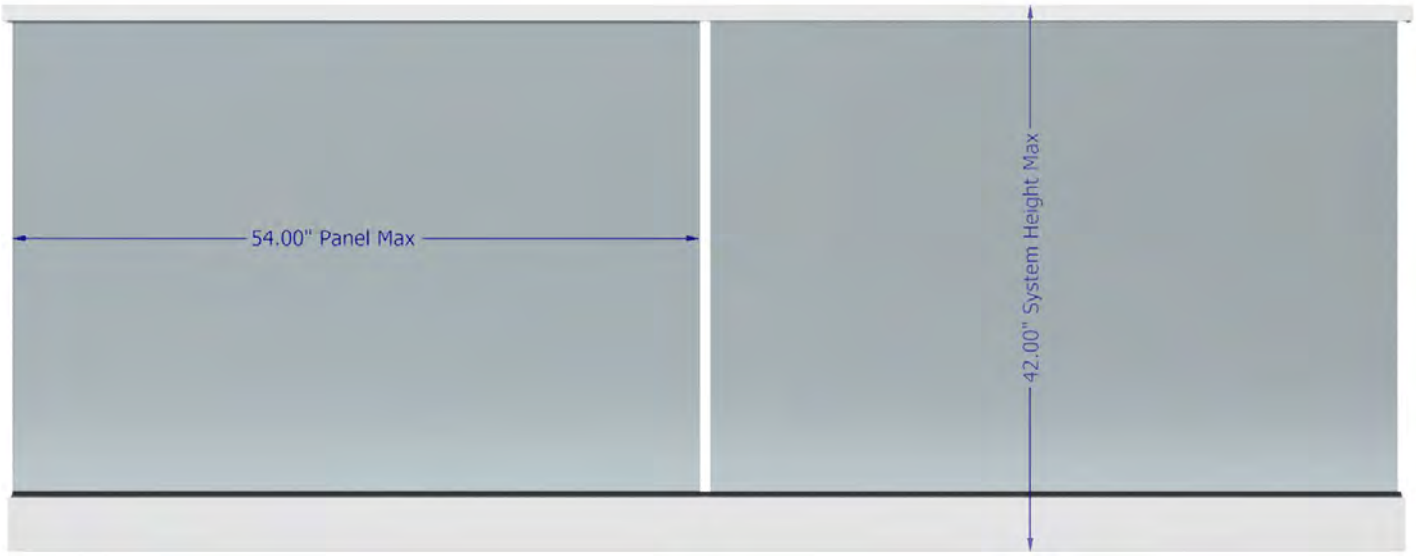
Product Components







Viewrail Base Rail System



Hardware Dimensions