

**AGENDA**  
**BIRMINGHAM HISTORIC DISTRICT COMMISSION MEETING**  
**MUNICIPAL BUILDING-COMMISSION ROOM-151 MARTIN STREET**  
**WEDNESDAY – AUGUST 21, 2019**  
**\*\*\*\*\* 7:00 PM\*\*\*\*\***

- 1) Roll Call**
- 2) Approval of the HDC Minutes of August 7<sup>th</sup>, 2019**
- 3) Courtesy Review**
  - A. 300 W. Merrill - Baldwin Library, Youth Room Addition**
- 4) Historic Design Review**
- 5) Sign Review**
- 6) Study Session**
- 7) Miscellaneous Business and Communication**
  - A. Staff Reports**
    - 1. Administrative Sign Approvals**
    - 2. Administrative Approvals**
- 8) Adjournment**

Notice: Individuals requiring accommodations, such as interpreter services for effective participation in this meeting should contact the City Clerk's Office at [\(248\) 530-1880](tel:2485301880) at least on day in advance of the public meeting.

Las personas que requieren alojamiento, tales como servicios de interpretación, la participación efectiva en esta reunión deben ponerse en contacto con la Oficina del Secretario Municipal al [\(248\) 530-1880](tel:2485301880) por lo menos el día antes de la reunión pública. (Title VI of the Civil Rights Act of 1964).

**A PERSON DESIGNATED WITH THE AUTHORITY TO MAKE DECISIONS**  
**MUST BE PRESENT AT THE MEETING.**

**HISTORIC DISTRICT COMMISSION**  
**MINUTES OF AUGUST 7, 2019**  
Municipal Building Commission Room  
151 Martin, Birmingham, Michigan

Minutes of the regular meeting of the Historic District Commission ("HDC") held Wednesday, August 7, 2019. Chairman John Henke called the meeting to order at 7:00 p.m.

**1) ROLLCALL**

**Present:** Chairman John Henke, Board Members Doug Burley, Gigi Debbrecht, Natalia Dukas, Patricia Lang; Alternate Member Dulce Fuller

**Absent:** Vice-Chairman Keith Deyer, Board Member Michael Willoughby, Alternate Member Kevin Filthaut, Student Representative Klea Ahmet

**Administration:** Jana Ecker, Planning Director  
Laura Eichenhorn, Transcriptionist

**08-18-19**

**2) APPROVAL OF MINUTES**

**HDC Minutes of March 20, 2019 and April 17, 2019**

**Motion by Ms. Debbrecht**

**Seconded by Ms. Lang to approve the HDC Minutes of March 20, 2019 and April 17, 2019 as presented.**

**Motion carried, 6-0.**

VOICE VOTE

Yeas: Debbrecht, Lang, Fuller, Henke, Burley, Dukas

Nays: None

**08-19-19**

**3) PUBLIC HEARING**

None.

**08-20-19**

**4) HISTORIC DESIGN REVIEW**

None.

**08-21-19**

**5) SIGN REVIEW**

**A. 154 Maple -- ABC Vintage**

Planning Director Ecker presented the item.

Paul Deters, owner of Metro Signs and Lighting, was present on behalf of the petitioner. He told Chairman Henke he was unsure whether the applicant planned to put any additional signage on the frontage.

Chairman Henke stated he was comfortable with the brightness of the sign given the relatively small sign size proposed.

The HDC concurred that any signage for this applicant, in addition to the presently proposed signage, would require another HDC review. The HDC decided this due to the bold color scheme of the signage and the fact that approximately 12 square feet of signage would still be available to the applicant after approval of the current request.

Mr. Deters confirmed he understood.

**Motion by Ms. Fuller**

**Seconded by Mr. Burley to approve the sign for 154 Maple -- ABC Vintage as presented, with the stipulation that administrative approval would not be available for a similarly-designed sign if the applicant chose to use the remainder of their signage allotment.**

Chairman Henke clarified that there would be another fee if the applicant were to return for more signage. In addition, if the applicant were to apply for more signage, the currently approved signage could be affected by that consideration.

**Motion carried, 6-0.**

**VOICE VOTE**

Yeas: Fuller, Burley, Debbrecht, Lang, Henke, Dukas

Nays: None

**08-22-19**

**6) Study Session**

None.

**08-23-19**

**7) Miscellaneous Business and Communication**

**A. Staff Reports**

**1. Administrative Sign Approvals**

**2. Administrative Approvals**

Chairman Henke asked why 539 Bates Street received administrative approval for a change in chimney facade and trim.

Planning Director Ecker said she would return to the HDC with an answer.

**3. Demolitions (March, April, May, June, July)**

Included in agenda packet.

**08-24-19**

**ADJOURNMENT**

No further business being evident, the board motioned to adjourn the meeting at 7:15 p.m.

Jana Ecker  
Planning Director

DRAFT



## **MEMORANDUM**

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**Planning Department**

**DATE:** August 12, 2019

**TO:** Historic District Commission

**FROM:** Jana Ecker, Planning Director

**SUBJECT:** 300 W. Merrill – Baldwin Library

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Please be advised that the architects for the addition to the Baldwin Library will be at the meeting on August 21, 2019 to discuss different glazing options for the glass proposed. When last before you, clear glass was included on the plans, however some issues have arisen with regards to the proposed VLT values of the original glass selected. The input of the Historic District Commission is needed and then the matter will go back to the City Commission for a final decision on the glazing.

To: Birmingham Historic District Commission

From: Doug Koschik, Baldwin Public Library Director

Date: August 15, 2019

Subject: Exterior glazing for the Youth Room expansion and renovation project

In 2018 and early 2019, the Baldwin Public Library Youth Room expansion and renovation project was reviewed and approved by the Planning Board, Historic District Commission, City Commission, and various City departments. The City Commission approved the issuance of an RFP for construction in February 2019 and approved a contract with The Dailey Company in June. The City has issued a building permit to Dailey, and Dailey began work on August 15.

Recently, issues have arisen over the visible light transmission (VLT) values of the glass originally selected for the project. Therefore, it was decided to seek the input of the Planning Board and Historic District Commission, and then take the matter to the City Commission for a final decision.

The glass that LZG Architects chose for the project is Guardian SNX 62/27. It has a VLT of 62%, which is lower than the 80% required by the City ordinance for the “O” and “B” districts. The only commercially available glass identified by LZG that meets the City’s VLT standard is Guardian Clear 1”. While Guardian Clear is superior to Guardian SNX 62/27 in terms of VLT, it has both a much higher Solar Heat Gain Coefficient (SHGC) and a much higher U value. This means that Guardian Clear would require additional cooling and heating capacity. While Guardian SNX 62/27 would allow the Library to use its existing HVAC system, Guardian Clear would require the purchase of extra cooling and heating equipment as well as added ongoing electric and gas expenditures. In addition, LZG believes that Guardian Clear would lead to greater fading of the Youth Room’s books, furniture, and carpeting.

The Library already uses Guardian SNX 62/27 in its Adult Services Department, on the west side of the building—which was renovated in 2016-17. If Guardian Clear is used in the Youth Room, it would result in two different types of glass being used in the building’s additions. The Library has received only compliments about the Guardian SNX 62/27 glass used in Adult Services. People have said that it provides good views from the exterior into the interior, and vice versa.

The Library needs a decision on the glass as soon as possible so that the project, which has a scheduled completion date of spring 2020, is not delayed. It would prefer to use the originally specified glass—Guardian SNX 62/27. The Library believes that Guardian SNX 62/27 would give the Youth Room façade a high level of transparency and a better interface with Shain Park, Martin Street, and Merrill Street, just as that very glass achieved those effects on the west side of the building. The Library would also prefer to save the additional cooling and heating equipment costs that the alternative glass—Guardian Clear—would require. The added costs would handicap the Library, which is already facing a \$250,000 overage in project expenses, compared to pre-bid estimates. In addition, the ongoing additional electrical and gas expenditures that Guardian Clear would require would burden the Library well into the future and increase the Library’s carbon footprint.

At its August 14, 2019 meeting, the Planning Board reached a unanimous consensus to let the Library use Guardian SNX 62/27. After the Historic District Commission makes its decision, the matter will go to the City Commission for consideration at its September 16 meeting.



Luckenbach | Ziegelman | Gardner Architects

## Baldwin Public Library Youth Services - Expansion/Renovation

Planning Board Review: August 14, 2019  
Historic District Review: August 21, 2019

**Project:** Baldwin Public Library – Youth Services Expansion/Renovation (BPL 2)  
**Date:** August 14 / August 21, 2019  
**To:** City of Birmingham Planning Board + Historic District Commission  
**Subject:** Exterior Glass Enclosure System / Windows  
Courtesy Review Discussion Outline

**Project / Owner**

Baldwin Public Library – City of Birmingham  
Zoning: -PP (Public Property) Article 02 / Section 2.01  
Use: -C (Community Use)

**BPL – Youth Library Review / Approval Timeline**

Project reviewed and endorsed by the Planning Board in October of 2018.  
Project reviewed and endorsed by the Historical Design Review Board  
Project reviewed and approved by the City Commission.  
Project reviewed and approved by City Building, Engineering & Planning Departments – Feb 2019

**Glass/Window Standards**

Per the published Zoning Ordinance:

- Window Standards (WN) Article 04 / Section 4.90 WN-01  
Applicable to the following districts: O1, O2, P (Parking), B1, B2, B2a, B3, B4, MX, TZ3
- WN Standards do not apply to the PP district. See Appendix 2

Per the published Zoning Ordinance for adjacent areas/districts: O1, O2, P (Parking), B1, B2, B2a, B3, B4, MX, TZ3 **(but Not Applicable to PP -Public Property District):**

-No less than 70% of the ground floor facade between 1' & 8' above grade shall be clear glass panels and doorways

-Glass areas shall be clear or slightly tinted

-BPL Glass is clear with a Low E coating

Per the new glass Ordinance 2246 (not published on line, enacted July 2017). Defines clear glazing as glass and other transparent elements of building facades with a minimum visible light transmittance of 80%. Lightly tinted is defined as glazing as glass and other transparent elements of building facades with a minimum visible light transmittance of 70%.

1” Clear insulated glass VLT: Guardian = 80% / Vitro = 79% (which would not meet the Ordinance)

Additional Development Standards:

- Essential Services (ES-01)
- Temporary Use (TU-02)
- Utility (UT-01)
- (See Attached Appendix 1)
- Note: No Window Standards in the Published Ordinance for the PP District**



## **Make up of Commercial Insulated Glass including BPL-2 Youth Expansion Curtain Wall Glass**

-1" insulated CLEAR glass consisting of 1/4" clear glass + 1/2" space + 1/4" clear glass.

-From outside to inside, there are four (4) glass surfaces, #1, #2, #3, #4.

See diagram on Appendix 3.

## **Discussion of Low E (Low Emmissivity) Glass Coatings**

-Low E coatings is a microscopically thin coating applied to window glass. Window glass can be clear or tinted. BPL windows are clear glass panels.

-The Low E coating minimizes the amount of UV (ultra violet / long wave solar radiation) and IR (infrared or short wave solar radiation) that passes through the glass

-The Low E coating reflects outside exterior heat passing through the glass during warm temperatures

-The Low E coating helps retain heat inside during cold temperatures.

A Low E coating does somewhat reduce the Visual Light Transmittance (VLT), but also greatly reduces the Solar Heat Gain Coefficient (SHGC) of the glass. The lower the SHGC, the more energy efficient the glass is.

## **BPL 2 Glass Options – Comparative Analysis\***

Glass Option	VLT	SHGC	U Value (1/R)	R	Exterior (ELR) Light Reflectance
1" Clear Glass (no tinting/no coating)	80%	.74	.47	2.12	15%**
<u>Guardian Clear 1" Existing HVAC DOES NOT have sufficient capacity to cool building using this glass*****</u>					
1" Clear Glass w/ Low E Coating "A"	68%	.38	.29	3.41	11%
<u>Guardian SN 68 Existing HVAC DOES NOT have sufficient capacity to cool building using this glass*****</u>					
1" Clear Glass w/ Low E Coating "C"	70%	.39	.29	3.41	11%
<u>Vitro Solarban 60 Existing HVAC DOES NOT have sufficient capacity to cool building using this glass*****</u>					
1" Clear Glass*** w/ Low E Coating "B"	62%	.27	.29	3.41	11%
<u>Guardian SNX 62/27 Existing HVAC DOES have sufficient capacity to cool building using this glass*****</u>					
1" Clear Glass**** w/ Low E Coating "D"	64%	.27	.28	3.57	12%
<u>Vitro Solarban 70XL Existing HVAC DOES have sufficient capacity to cool building using this glass*****</u>					

\*Values Based on BPL 2 Glass Comparative Analysis (See Appendix 4)

Vitro Architectural Glass Solarban 60 Chart (See Appendix 5)

Vitro Architectural Glass Solarban 70XL Chart (See Appendix 6)

\*\*Note: Although clear glass without a Low E coatings has a higher VLT than glass with a Low E coating, because it has a higher Exterior Light Reflectance (ELR = 15%), therefore during daylight it is actually more difficult to see through than clear glass with a Low E coating (ELR = 11%). (See Appendix 4.1).

\*\*\*Preferred and Project Specified Glass Selection

\*\*\*\*Similar performance specifications to Glass "B". Awaiting Cost Estimate from Contractor

\*\*\*\*\*See Appendix 9

## **GLASS REFLECTANCE VALUES – RELATIONSHIP TO VISABILITY THROUGH GLASS\*\***

-Clear glass without a Low E coating has a higher VLT (Visual Light Transmission) than clear glass with a Low E coating

-Clear Glass without a Low E coating:	ELR (Exterior Light Reflectance)	= 15%
-Clear Glass with a Low E coating:	ELR (Exterior Light Reflectance)	= 11%

-During daylight hours it is actually more difficult to see through than Clear Glass without Low E (ELR=15%) than it is to see through Clear Glass with Low E coating (ELR = 11%), because there is greater light reflectivity off from the outer glass surface of the 100% clear insulated glass unit. (See Chart Appendix 4.1)

## **BPL 2 - Energy Usage and HVAC Implications**

Per Peter Basso & Associates, Mechanical / Electrical Engineers Analysis

-Glass with a SHGC (Solar Heat Gain Coefficient) of .37 or lower can work with the existing system.  
-Glass with greater than SHGC of .37, BPL 2 will be short on cooling capacity and will require upgrades to the current system. Using glass with a SHGC of .39 or higher is slightly worse than the prescriptive energy code (Michigan Energy Code) allows.

Per Guardian Industries Glazing Scenarios Concerning Energy Costs related to glass make up:

-Clear Glass without a Low E coating will account for **16.5% more annual electricity consumption** than the Clear Glass with the preferred SNX 62/27 low E coating.  
-Clear Glass alone will account for more than **20% more in annual natural gas consumption** than the Clear Glass with the preferred SNX 62/27 low E coating and will require significant upgrades to the existing HVAC system if used. (See Appendix 7).

## **BPL: A Civic Building (in the PP District) with different Site & Building Conditions. Form and Function differ significantly from typical “street frontage” buildings in the “O” and “B” Districts**

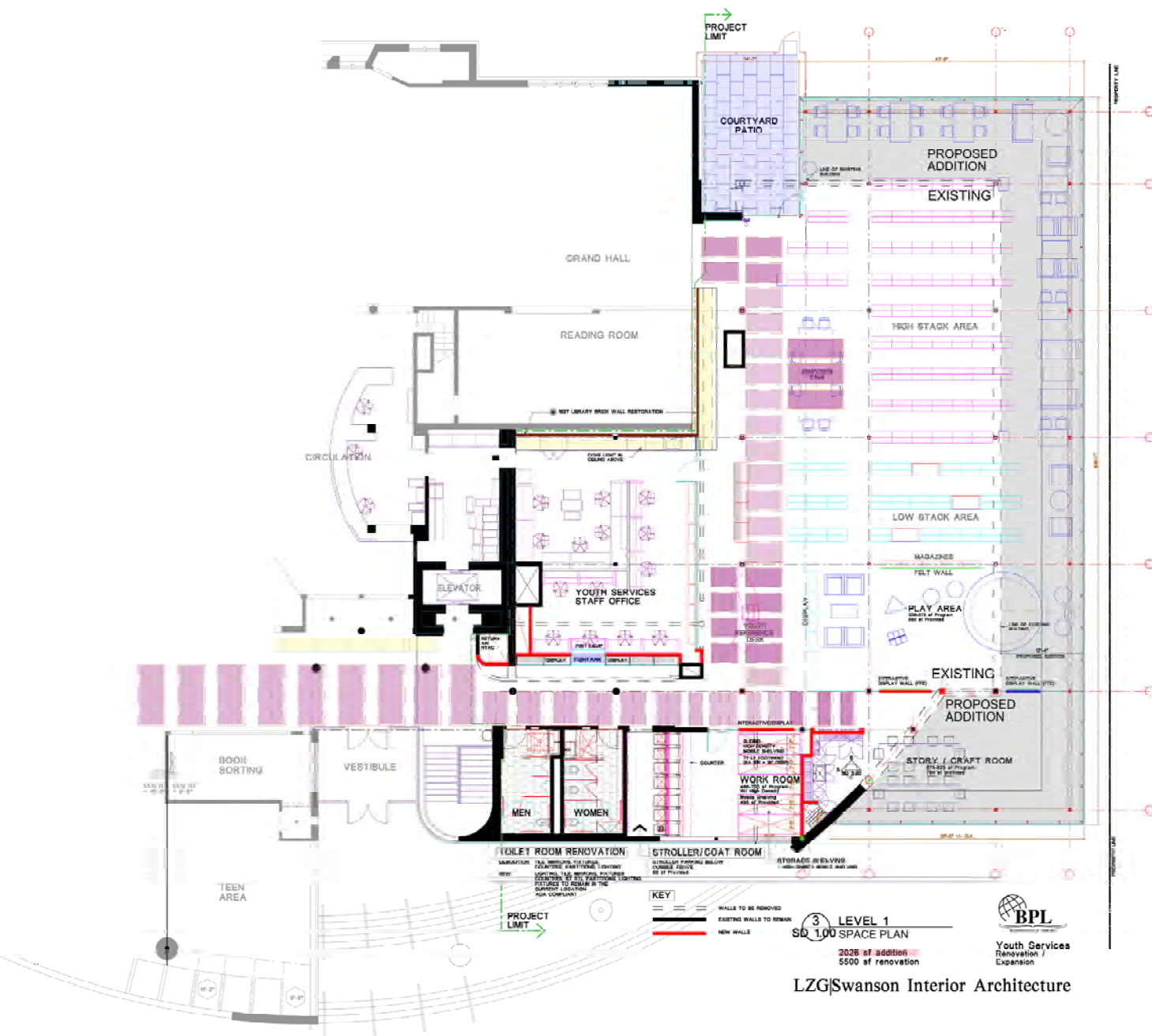
The existing Baldwin Library is a Civic Building, solely occupying an entire city block bordered by Martin Street to the North, Bates Street to the East, Merrill Street to the South and Chester Street to the East. At no place on the site does any part of the existing library or proposed Youth Library Expansion extend to the N, S, E or W lot lines of the site (as called for in the current zoning ordinance for the Downtown Overlay District in the O & B Zoning Districts. As such, the library structure does not comply with many, if any site and building related aspects of the current zoning ordinance for those Districts. It is an “island unto itself”. If located in the O or B Districts, the library building would be an existing “grandfathered”, non-conforming structure. However, the Library Building is a Civic Building located in the PP District with different building and site standards.

As currently situated, the Youth Library is 30' + feet from the North property line, 5' + from the East property line and 45' + from the South property line. The existing main level floor elevation varies from 5 to 7 feet above the adjacent sidewalks. The proposed window sill elevations vary between 5.5' to 7.5' above the public walkways (See Appendices 8 & 9), thus view of and though the glass are above the average pedestrian's eye level and only a small portion of the 1' to 8' clear glass requirement (per the O & B District requirements / not applicable to the PP Zoning District) along the street are at eye level per requirements for the B & O Zoning Districts. Although the concept for the “all glass pavilion” is to be as clear as possible, visually open and inviting to the public from the outside, environmental responsibility and restraint have been carefully considered and incorporated into the exterior glazing selection. Of primary consideration along with glass clarity is to utilize the existing library HVAC heating and cooling equipment without requiring any major costly upgrades and/or modifications to the system, to be energy conscious and above all to insure patron and staff comfort.



City of Birmingham Civic Center Area  
Zoning District - PP

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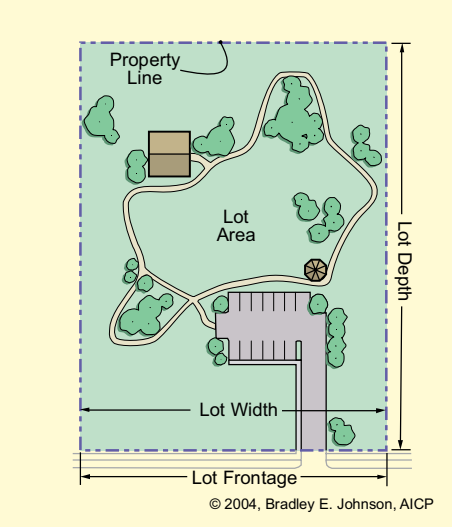
### 2.01 PP (Public Property) District Intent, Permitted Uses, and Special Uses

District Intent	Permitted Uses	Other Use Regulations
<p>A district intent is not available for this zoning district.</p>	<p><b>Institutional Permitted Uses</b></p> <ul style="list-style-type: none"> <li>• auditorium</li> <li>• cemetery</li> <li>• <u>essential service</u></li> <li>• <u>government office</u></li> <li>• government use</li> <li>• parking facility - off-street</li> <li>• <u>school</u> - private</li> <li>• <u>school</u> - public</li> </ul> <p><b>Recreational Permitted Uses</b></p> <ul style="list-style-type: none"> <li>• <u>park</u></li> <li>• <u>swimming pool</u> - public</li> </ul> <p><b>Other Permitted Uses</b></p> <ul style="list-style-type: none"> <li>• water tower</li> <li>• well</li> <li>• any use permitted in an adjacent district*</li> </ul> <p>* = Use Specific Standards in Section 5.01 Apply</p>	<p><b>Accessory Permitted Uses</b></p> <ul style="list-style-type: none"> <li>• There are no accessory permitted uses permitted in this zoning district.</li> </ul> <p><b>Uses Requiring a Special Land Use Permit</b></p> <ul style="list-style-type: none"> <li>• There are no special land uses permitted in this zoning district.</li> </ul> <p>* = Use Specific Standards in Section 5.01 Apply</p>



# PP District

## 2.02 PP (Public Property) District Development Standards



**Minimum Lot Area:**

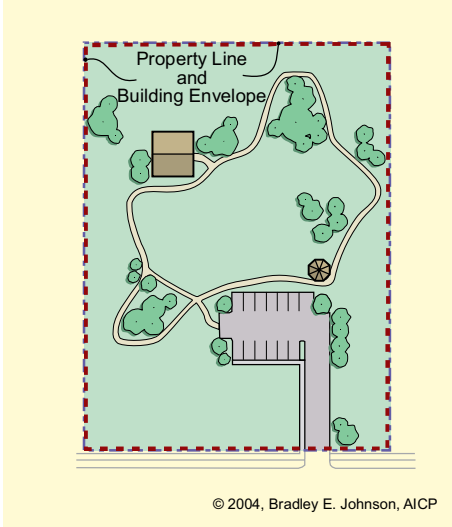
- n/a

**Minimum Open Space:**

- n/a

**Maximum Lot Coverage:**

- n/a



**Minimum Front Yard Setback:**

- n/a

**Minimum Rear Yard Setback:**

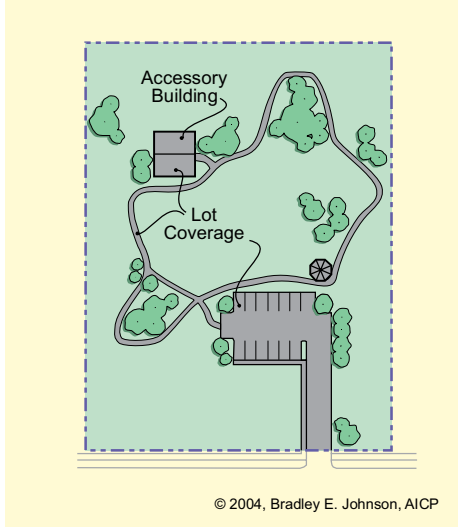
- n/a

**Minimum Combined Front and Rear Setback:**

- n/a

**Minimum Side Yard Setback:**

- n/a

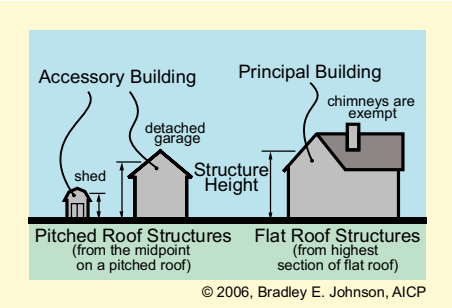


**Minimum Floor Area Per Unit:**

- n/a

**Maximum Total Floor Area:**

- n/a



**Maximum Building Height:**

- n/a

### Additional Development Standards that Apply

- Essential Services (ES)**
- ES-01..... Page 4-7
- Temporary Use (TU)**
- TU-02..... Page 4-50
- Utility (UT)**
- UT-01..... Page 4-52

### 4.90 WN-01

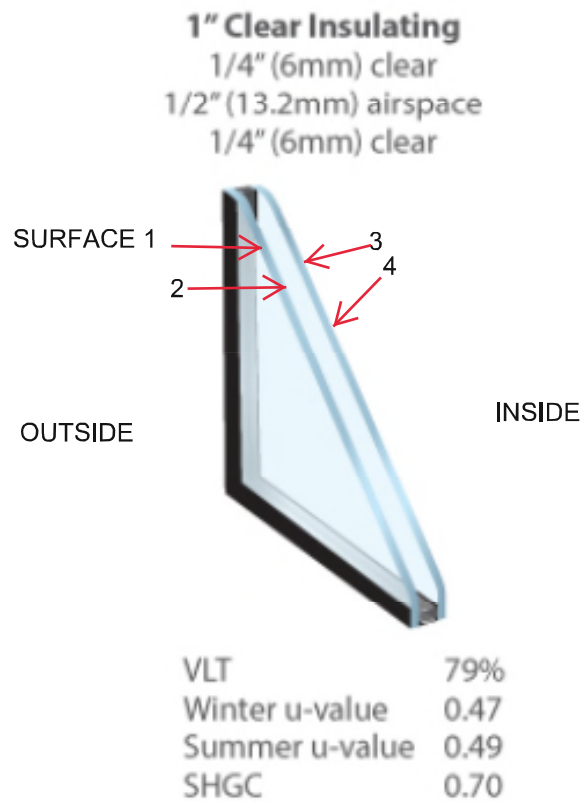
This Window Standards section applies to the following districts:

01 02 P B1 B2 B2B B3 B4 MX TZ3

The following window standards apply on the front façade and any façade facing a street, plaza, park or parking area:

- A. Storefront/Ground Floor Windows: Ground floors shall be designed with storefronts that have windows, doorways and signage, which are integrally designed. The following standards apply:
  1. No less than 70% of the storefront/ground floor façade between 1 and 8 feet above grade shall be clear glass panels and doorway.
  2. Glass areas on storefronts shall be clear, or lightly tinted in neutral colors. Mirrored glass is prohibited.
  3. Required window areas shall be either pedestrian entrances, windows that allow views into retail space, working areas or lobbies. Display windows set into the wall may be approved by the Planning Board.
  4. Windows shall not be blocked with opaque materials or furniture, products, signs, blank walls or the back of shelving units.
  5. The bottom of the window shall be no more than 3 feet above the adjacent exterior grade.
  6. Blank walls of longer than 20 feet shall not face a public street.
- B. Upper Story Windows: Openings above the first story shall be a maximum of 50% of the total façade area. Windows shall be vertical in proportion.

# APPENDIX 3



## BPL 2: GLASS COMPARATIVE ANALYSIS

Make-up Name	Glass 1 & Coating	Glass 2 & Coating	Visible Light			Solar Energy			Thermal Properties	
			Transmittance	Reflectance		Transmittance	Reflectance	Solar Heat Gain Coefficient (SHGC)	U-Value	
				Visible ( $\tau_v$ %)	$\rho_v$ % out	$\rho_v$ % in			Winter Night (Btu/hr-ft <sup>2</sup> -F)	Summer Day (Btu/hr-ft <sup>2</sup> -F)
CLEAR GLASS	Clear (North America)	Clear (North America)	80	15	15	67	13	0.74	0.47	0.50
SN 68 LOW E	SunGuard <sup>®</sup> SN 68 (North America) on Clear (North America)	Clear (North America)	68	11	12	33	33	0.38	0.29	0.28
SunGuard SNX 62/27	SunGuard <sup>®</sup> SNX 62/27 (North America) on Clear (North America)	Clear (North America)	62	11	12	23	39	0.27	0.29	0.27

Calculation Standard: NFRC 2010

### CLEAR GLASS

\*\*\*TEMPERED GLASS

Outdoors

GLASS 1	Clear (North America)		#1 -----
	Thickness = 1/4" = 6mm		#2 -----
GAP 1		100% Air, 1/2" = 12.7 mm	
GLASS 2	Clear (North America)		#3 -----
	Thickness = 1/4" = 6mm		#4 -----

Total Unit (Nominal) = 1 in      Slope = 90°

Estimated Nominal Glazing Weight: 5.75 lb/ft<sup>2</sup>

Indoors

### SN 68 LOW E

Outdoors

GLASS 1	Clear (North America)		#1 -----
	Thickness = 1/4" = 6mm		#2 SunGuard <sup>®</sup> SN 68 (North America)
GAP 1		100% Air, 1/2" = 12.7 mm	
GLASS 2	Clear (North America)		#3 -----
	Thickness = 1/4" = 6mm		#4 -----

Total Unit (Nominal) = 1 in      Slope = 90°

Estimated Nominal Glazing Weight: 5.75 lb/ft<sup>2</sup>

Indoors

## APPENDIX 4.1

Make-up Name	Visible Light				Ultraviolet		Solar Energy			Thermal Properties		Light to Solar Gain (LSG)	Thermal Stress (COG) °F/C
	Transmittance	Reflectance		Color Rendering Index (R <sub>a</sub> )	Trans UV (τ <sub>uv</sub> %)	T <sub>dw</sub> (T <sub>dw</sub> %)	Reflectance	Solar Heat Gain Coefficient (SHGC)	Shading Coefficient (sc)	U-Value			
		Visible (τ <sub>v</sub> %)	ρ <sub>v</sub> % out							ρ <sub>v</sub> % in	Winter Night (Btu/hr·ft²·F)		
Default Make-up 01 CLEAR GLASS	80	15	15	96.9	51	72	13	0.74	0.85	0.47	0.50	1.09	Go
Default Make-up 02 CLEAR W/ LOW E (SNX 62/27)	62	11	12	93.0	6	39	39	0.27	0.31	0.29	0.27	2.31	Go

Calculation Standard: NFRC 2010

### Default Make-up 01

#### Outdoors

GLASS 1	Clear (North America)		#1 ----
	Thickness = 1/4" = 6mm		#2 ----
GAP 1		100% Air, 1/2" = 12.7 mm	
GLASS 2	Clear (North America)		#3 ----
	Thickness = 1/4" = 6mm		#4 ----
Total Unit (Nominal) = 1 in		Slope = 90°	
Estimated Nominal Glazing Weight: 5.75 lb/ft²			

#### Indoors

### Default Make-up 02

#### Outdoors

GLASS 1	Clear (North America)		#1 -----
	Thickness = 1/4" = 6mm		#2 SunGuard® SNX 62/27 (North America)
GAP 1		100% Air, 1/2" = 12.7 mm	
GLASS 2	Clear (North America)		#3 -----
	Thickness = 1/4" = 6mm		#4 -----
Total Unit (Nominal) = 1 in			Slope = 90°
Estimated Nominal Glazing Weight: 5.75 lb/ft²			

#### Indoors

### Important Notes

Calculations and terms in this report are based on NFRC 2010. The performance values shown above represent nominal values for the center of glass with no spacer system or framing.

#### Laminated products:

It is not guaranteed that modeled laminated configurations will be compliant with relevant laminated safety regulations unless specifically declared for Guardian products. It is the user's sole responsibility to assess if the final laminated product should be certified according to relevant standards and ensure compliance with laminated safety regulations.

## Solarban® 60 Glass

### Fabrication and Availability

**Solarban® 60** glass is available exclusively through the **Vitro Certified™** Network. **Vitro Certified™** Fabricators can meet tight construction deadlines and accelerate the delivery of replacement glass before, during and after construction. **Solarban® 60** glass is manufactured using the sputter-coating process and is available for annealed, laminated, heat-strengthened and tempered applications.

### Request Samples

To obtain samples of any Vitro Glass product, call **1-855-VTRO-GLS (877-6457)** or visit [samples.vitroglazings.com](http://samples.vitroglazings.com).

#### Insulating Glass Unit Performance Comparisons | 1-inch (25mm) units with 1/2-inch (13mm) airspace and two 1/4-inch (6mm) lites

Outdoor Lite: Coating if Any (Surface) Glass	Glass Type + Indoor Lite: Coating if Any (Surface) Glass	Visible Light Transmittance (VLT)	Visible Light Reflectance		(BTU/hr·ft²·°F) NFRC U-Value		Solar Heat Gain Coefficient (SHGC)	Light to Solar Gain (LSG)
			Exterior %	Interior %	Winter Nighttime	Winter Argon		

#### Solarban® 60 Solar Control Low-E Glass

Solarban® 60 (2) Clear + Clear	70	11	12	0.29	0.24	0.39	1.79
Solarban® 60 (2) Starphire® + Starphire®	74	11	12	0.29	0.24	0.41	1.80
Solarban® 60 (2) Solexia® + Clear	61	9	12	0.29	0.24	0.32	1.91
Solarban® 60 (2) Atlantica® + Clear	53	8	11	0.29	0.24	0.27	1.96
Solarban® 60 (2) Azuria® + Clear	54	8	11	0.29	0.24	0.28	1.93
Solarban® 60 (2) Solarblue® + Clear	45	7	11	0.29	0.24	0.28	1.61
Solarban® 60 (2) Pacifica® + Clear	34	6	10	0.29	0.24	0.22	1.55
Solarban® 60 (2) Solarbronze® + Clear	42	7	11	0.29	0.24	0.28	1.50
Solarban® 60 (2) Optigray® + Clear	50	8	11	0.29	0.24	0.30	1.67
Solarban® 60 (2) Solargray® + Clear	35	6	10	0.29	0.24	0.25	1.40
Solexia® + Solarban® 60 (3) Clear	61	10	10	0.29	0.24	0.37	1.65
Atlantica® + Solarban® 60 (3) Clear	53	9	10	0.29	0.24	0.31	1.71
Azuria® + Solarban® 60 (3) Clear	54	9	10	0.29	0.24	0.31	1.74
Solarblue® + Solarban® 60 (3) Clear	45	7	9	0.29	0.24	0.33	1.36
Pacifica® + Solarban® 60 (3) Clear	34	6	9	0.29	0.24	0.25	1.36
Solarbronze® + Solarban® 60 (3) Clear	42	7	9	0.29	0.24	0.32	1.31
Optigray® + Solarban® 60 (3) Clear	50	8	9	0.29	0.24	0.35	1.43
Solargray® + Solarban® 60 (3) Clear	35	7	9	0.29	0.24	0.29	1.21
GraylitE II + Solarban® 60 (3) Clear	7	4	8	0.29	0.24	0.13	0.54

#### Vistacool® and Solarcool® with Solarban® 60 Solar Control Low-E (3)\*

Vistacool® (2) Azuria® + Solarban® 60 (3) Clear	42	20	24	0.29	0.24	0.26	1.62
Vistacool® (2) Pacifica® + Solarban® 60 (3) Clear	26	11	23	0.29	0.24	0.21	1.24
Solarcool® (2) Solexia® + Solarban® 60 (3) Clear	24	24	29	0.29	0.24	0.19	1.26
Solarcool® (2) Azuria® + Solarban® 60 (3) Clear	21	19	29	0.29	0.24	0.17	1.24
Solarcool® (2) Solarblue® + Solarban® 60 (3) Clear	17	14	29	0.29	0.24	0.18	0.94
Solarcool® (2) Pacifica® + Solarban® 60 (3) Clear	13	10	29	0.29	0.24	0.15	0.87
Solarcool® (2) Solarbronze® + Solarban® 60 (3) Clear	17	14	29	0.29	0.24	0.18	0.94
Solarcool® (2) Solargray® + Solarban® 60 (3) Clear	14	11	29	0.29	0.24	0.17	0.82

\* Data based on using Starphire® glass for both interior and exterior lites.

All performance data calculated using LBNL Window 7.3 software and represents center of glass performance data. For detailed information on the methodologies used to calculate the aesthetic and performance values in this table, please visit [www.pgideas.com](http://www.pgideas.com) or request our Architectural Glass Catalog.

For more information about **Solarban® 60** low-e glass and other **Cradle to Cradle Certified™** architectural glasses by Vitro Glass, visit [vitroglazings.com](http://vitroglazings.com), or call **1-855-VTRO-GLS (877-6457)**.

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02/19 (7135)



## Solarban® 70XL Glass

## Fabrication and Availability

Solarban® 70XL glass is available exclusively through the Vitro Certified™ Network. Vitro Certified™ Fabricators can meet tight construction deadlines and accelerate the delivery of replacement glass before, during and after construction.

Solarban® 70XL glass is manufactured using the sputter-coating process and is available for annealed, heat-strengthened and tempered applications.

## Additional Resources

Solarban® 70XL glass is Cradle to Cradle Certified™. For more information or to obtain samples of any Vitro Glass product, call **1-855-VTRO-GLS (887-6457)** or visit **vitroglazings.com**.

Vitro Architectural Glass is the first U.S. float glass manufacturer to have its products recognized by the Cradle to Cradle Certified™ program, and offers more C2C-certified architectural glasses than any other float glass manufacturer.

## Insulating Glass Unit Performance Comparisons | 1-inch (25mm) units with 1/2-inch (13mm) airspace and two 1/4-inch (6mm) lites

Outdoor Lite: Coating if Any (Surface) Glass	Glass Type + Indoor Lite: Coating if Any (Surface) Glass	Visible Light Transmittance (VLT)	Visible Light Reflectance		(BTU/hr·ft²·°F) NFRC U-Value		Solar Heat Gain Coefficient (SHGC)	Light to Solar Gain (LSG)
			Exterior %	Interior %	Winter Nighttime	Winter Argon		

## Solarban® 70XL Solar Control Low-E Glass

Solarban® 70XL (2) + Clear	64	12	13	0.28	0.24	0.27	2.37
Solarban® 70XL (2) Solexia® + Clear	58	10	13	0.28	0.24	0.27	2.15
Solarban® 70XL (2) Atlantica® + Clear	51	9	12	0.28	0.24	0.24	2.13
Solarban® 70XL (2) Azuria® + Clear	52	9	12	0.28	0.24	0.25	2.08
Solarban® 70XL (2) Solarblue® + Clear	42	8	12	0.28	0.24	0.23	1.83
Solarban® 70XL (2) Pacifica® + Clear	32	6	12	0.28	0.24	0.19	1.68
Solarban® 70XL (2) Solarbronze® + Clear	40	7	12	0.28	0.24	0.21	1.90
Solarban® 70XL (2) Optigray® + Clear	47	8	12	0.28	0.24	0.24	1.96
Solarban® 70XL (2) Solargray® + Clear	34	6	12	0.28	0.24	0.20	1.70
Solexia® + Solarban® 70XL (3) Clear	56	11	12	0.28	0.24	0.32	1.75
Atlantica® + Solarban® 70XL (3) Clear	49	10	11	0.28	0.24	0.28	1.75
Azuria® + Solarban® 70XL (3) Clear	49	9	11	0.28	0.24	0.29	1.69
Solarblue® + Solarban® 70XL (3) Clear	40	8	11	0.28	0.24	0.27	1.48
Pacifica® + Solarban® 70XL (3) Clear	31	6	10	0.28	0.24	0.22	1.41
Solarbronze® + Solarban® 70XL (3) Clear	38	8	11	0.28	0.24	0.26	1.46
Optigray® + Solarban® 70XL (3) Clear	45	9	11	0.28	0.24	0.29	1.55
Solargray® + Solarban® 70XL (3) Clear	32	7	11	0.28	0.24	0.24	1.33
Graylite® II + Solarban® 70XL (3) Clear	6	4	10	0.28	0.24	0.11	0.55

## Vistacool® and Solarcool® with Solarban® 70XL Solar Control Low-E (3)\*

Vistacool® (2) Azuria® + Solarban® 70XL (3)	38	21	23	0.28	0.24	0.24	1.58
Vistacool® (2) Pacifica® + Solarban® 70XL (3)	24	11	22	0.28	0.24	0.19	1.26
Solarcool® (2) Solexia® + Solarban® 70XL (3)	22	24	27	0.28	0.24	0.17	1.29
Solarcool® (2) Azuria® + Solarban® 70XL (3)	19	19	27	0.28	0.24	0.15	1.27
Solarcool® (2) Solarblue® + Solarban® 70XL (3)	16	14	27	0.28	0.24	0.15	1.07
Solarcool® (2) Pacifica® + Solarban® 70XL (3)	12	10	27	0.28	0.24	0.13	0.92
Solarcool® (2) Solarbronze® + Solarban® 70XL (3)	15	14	27	0.28	0.24	0.15	1.00
Solarcool® (2) Solargray® + Solarban® 70XL (3)	13	11	27	0.28	0.24	0.14	0.93

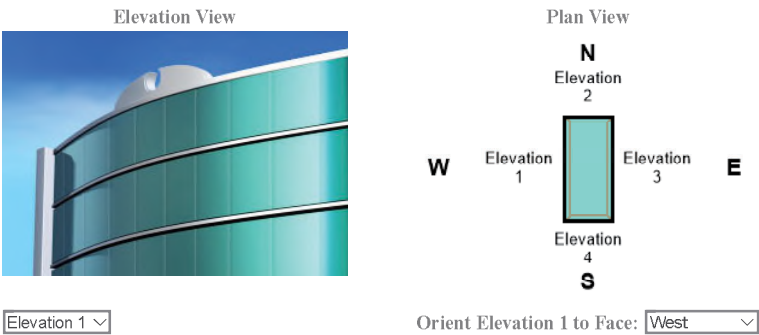
\*Solarban® 70XL glass for annealed applications is applied to Starphire® glass, heat treated applications will require either clear or Starphire® glass depending on manufacturing process.

All performance data calculated using LBNL Window 7.3 software, except European U-value, which is calculated using WinDat version 3.0.1 software. For detailed information on the methodologies used to calculate the aesthetic and performance values in this table, please visit [vitroglazings.com](http://vitroglazings.com) or request our Architectural Glass Catalog.

For more information about Solarban® low-e glass and other Cradle to Cradle Certified™ architectural glasses by Vitro Glass, visit [vitroglazings.com](http://vitroglazings.com), or call **1-855-VTRO-GLS (887-6457)**.



# APPENDIX 7



## Glazing Scenarios

Name: **Glazing Scenario 03** (edit)  
Override Building Settings: None

	Elevation 1	Elevation 2	Elevation 3	Elevation 4
	<input type="checkbox"/> CLEAR GLASS	Same As Elevation 1	Same As Elevation 1	Same As Elevation 1
Glass Make-up Cost (USD/ft²):	<input type="text" value="0.00"/>	Same As Elevation 1	Same As Elevation 1	Same As Elevation 1

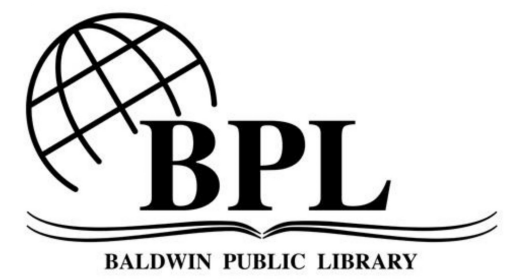
[Calculate](#) [Add New Glazing Scenario](#) [Copy Glazing Scenario](#)

Results Comparison Payback Graphs Report							
Baseline Glazing Scenario: Glazing Scenario 03							
Comparison Glazing Scenario: Glazing Scenario 01							
	Total Annual Energy Cost (USD)	Annual Electricity Cost (USD)	Annual Gas Cost (USD)	Annual Electricity Consumption (kWh)	Annual Gas Consumption (Therm)	Peak Electricity Demand (W)	CO <sub>2</sub> Emissions (kg)
Glazing Scenario 03	CLEAR10,853	9,673	1,180	94,018	1,377	35,100	70,298
Glazing Scenario 01	SNX-L 9,107	8,160	946	78,570	1,105	28,900	58,505
SAVINGS	1,746	1,513	233	15,448 16 1/2% DELTA	272 20% DELTA	6,200	11,793
Display values as: Total building							



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### EXTERIOR ELEVATIONS

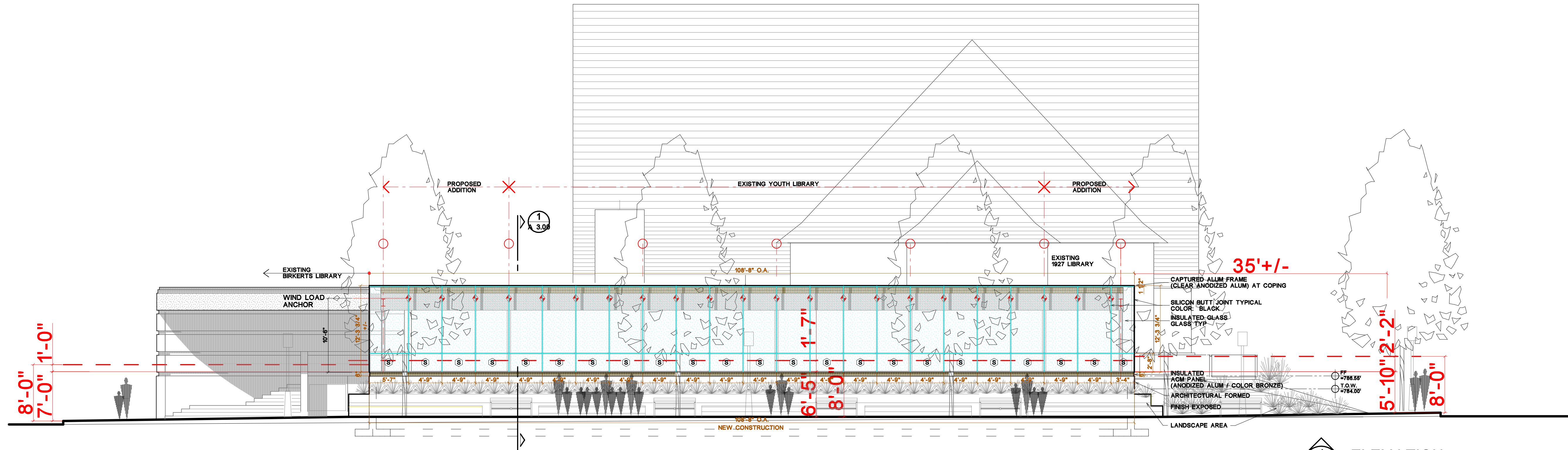
DATE  
DEC 20, 2018  
FEB 12, 2019

PERMIT REVIEW  
RFP REVIEW

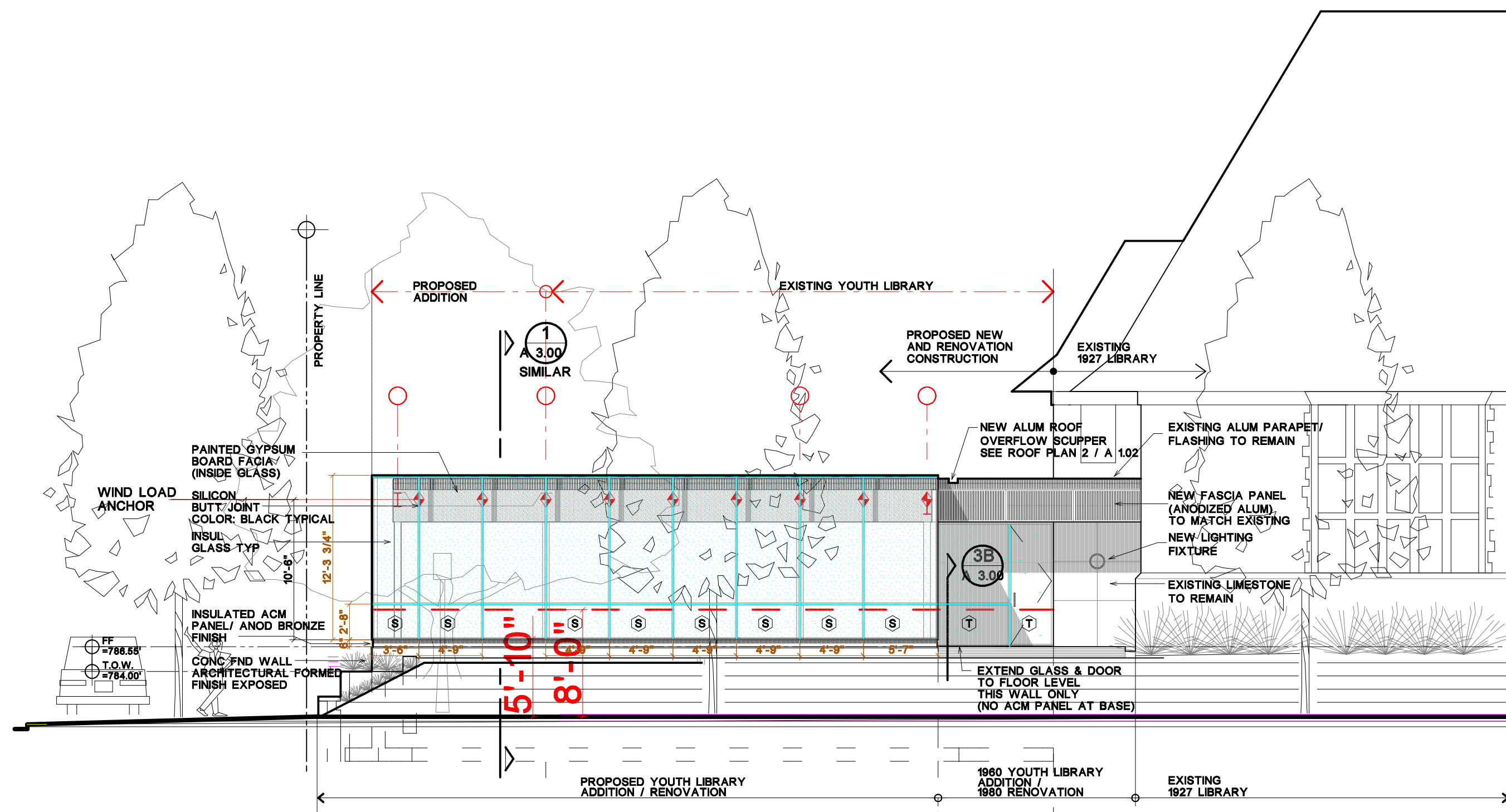
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3017

Sheet Number

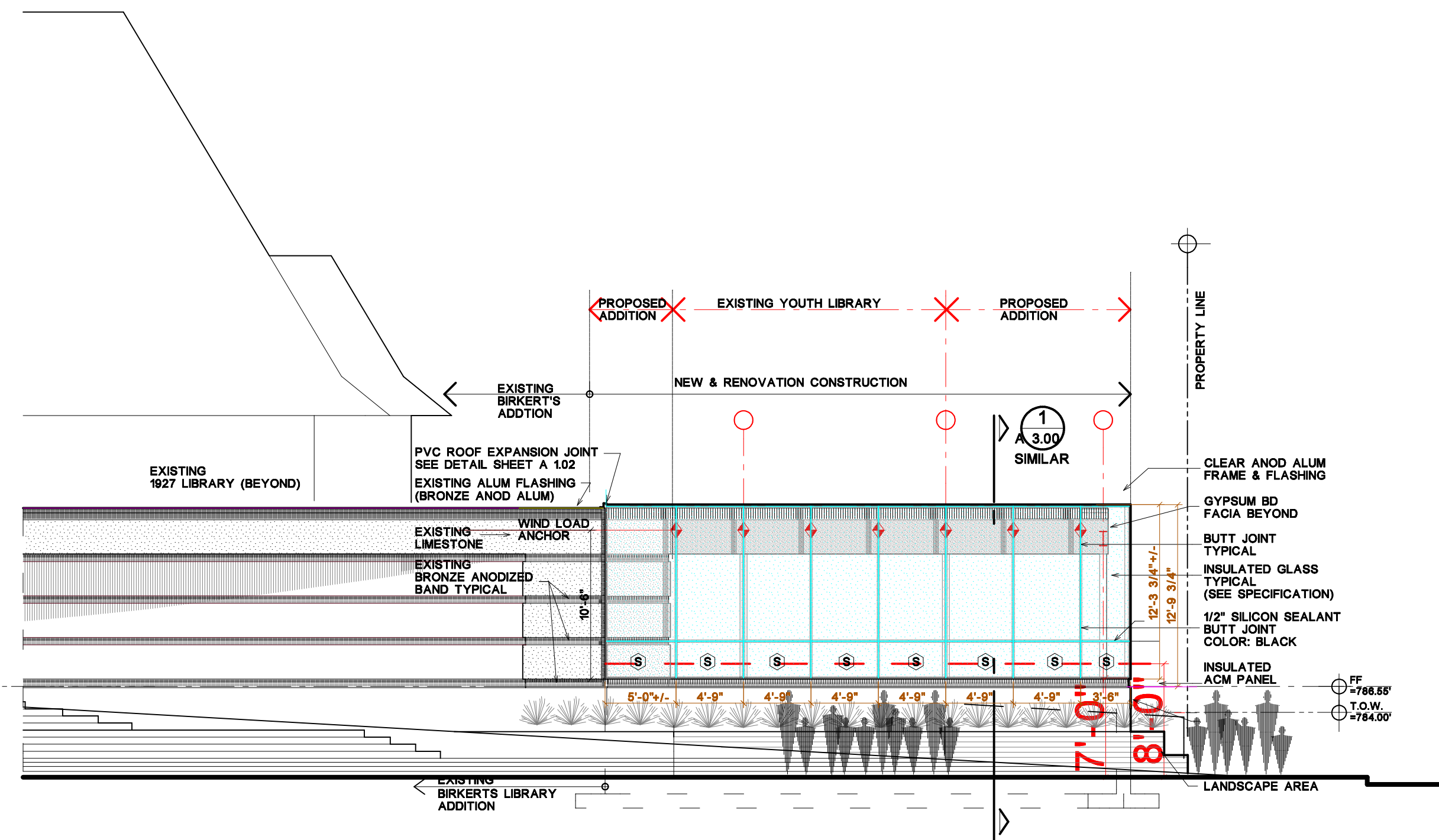
A 2.00



1  
A 2.00  
ELEVATION  
EAST  
1/8" = 1'-0"



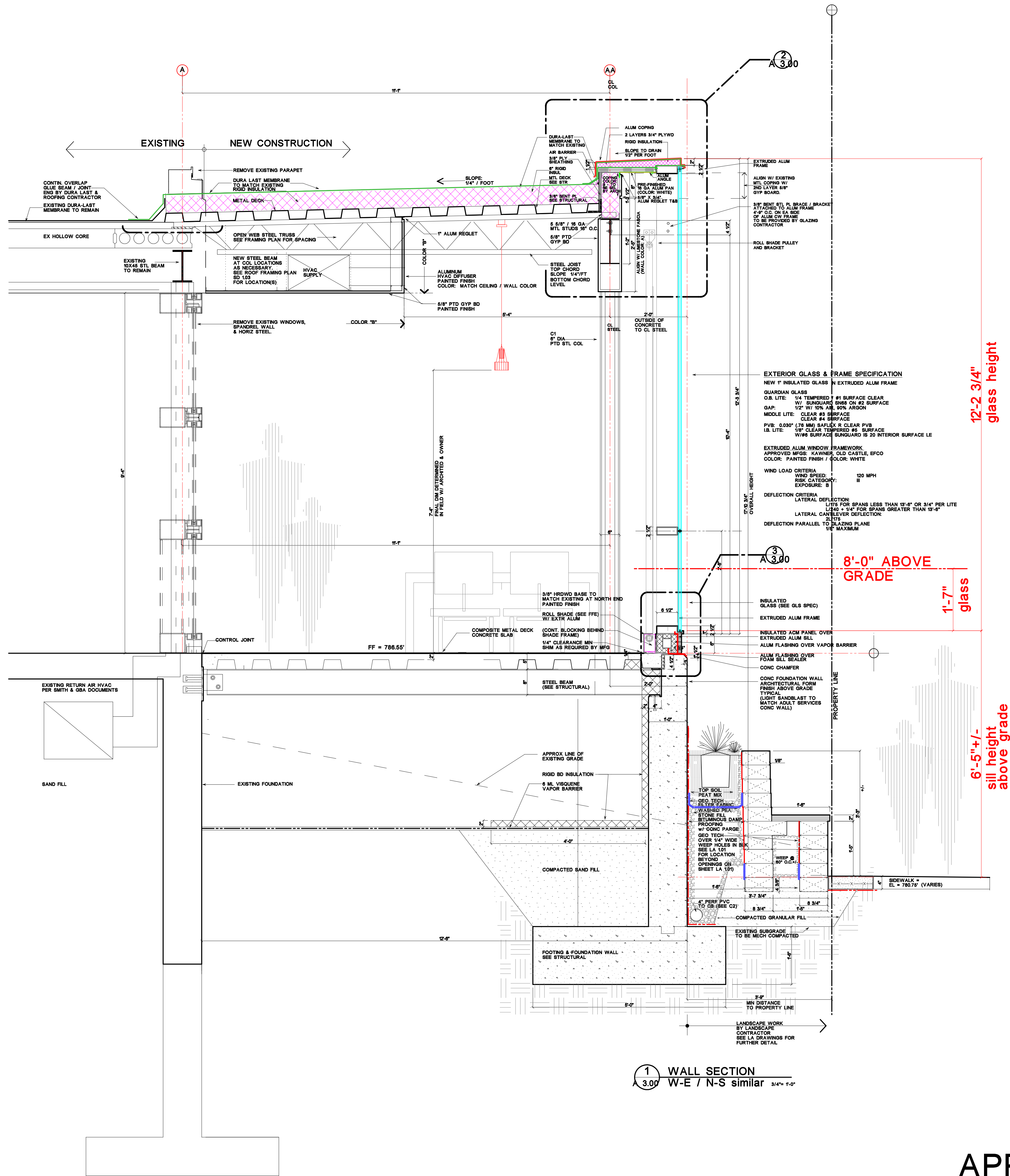
2  
A 2.00  
ELEVATION  
NORTH  
1/8" = 1'-0"



5  
A 2.00  
ELEVATION  
SOUTH  
1/8" = 1'-0"

## APPENDIX 8.1





Seal

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Ziegelman  
Gardner  
Architects  
PLLC**

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**WALL SECTION**

DATE  
DEC 20, 2018  
FEB 12, 2019

PERMIT REVIEW  
RFP REVIEW

Project Number  
3017

Sheet Number

**A 3.00**

APPENDIX 9

GUARDIAN SNX- 62/27				VITRO GLASS - SOLARBAN 60 LOW E ON CLEAR		USING EXIST'G HVAC: GLASS PERFORMANCE REQ		CLEAR GLASS with 80% VLT	
Glass U = 0.20, SC = 0.29 (SHGC = 0.25)				Glass U = 0.29, SC = 0.49 (SHGC = 0.39)		Glass U = 0.29, SC = 0.42 (SHGC = 0.37)		Glass U = 0.47, SC = 0.85 (SHGC = 0.74)	
VLT = 62%				VLT = 70%	Exterior Light Reflectance = 11%			VLT = 80%	Exterior Light Reflectance = 15%
ZONE	CFM Required	CFM Supplied	CFM Transferred	ZONE	CFM Required	ZONE	CFM Required	ZONE	CFM Required
Children East	2963	990	1973	Children East	4757	Children East	4135	Children East	8002
Children North	549	440	109	Children North	803	Children North	726	Children North	1269
Children Internal	3136	5300	-2082	Children Internal	3136	Children Internal	3136	Children Internal	3136
Staff	983	983	0	Staff	983	Staff	983	Staff	983
Work	295	295	0	Work	295	Work	295	Work	295
TOTAL from VV-B + AHU-6	7926			TOTAL from AC-1 + AHU-6	9974	TOTAL from AC-1 + AHU-6	9275	TOTAL from AC-1 + AHU-6	13685

EXISTING HVAC CAPACITY

Max CFM Avail VV-B	1430
Max CFM Avail AHU-6	7800
TOTAL CFM Avail	9230

COLOR KEY

	= Sufficient Capacity
	= Insufficient Capacity