

# Station Design Competition

## East-West Bus Rapid Transit

### 1. Introduction

The City of Madison is designing a bus rapid transit system between East and West Madison. BRT improvements will consist of new buses and stations, fast and direct service with limited stops, bus lanes and transit signal priority, and a branded identity to help people use and understand the system.

The BRT stations are intended to have a unified look and feel with premium transit features like raised platforms, real-time signs, seating, ticketing, and other features common in light rail and BRT stations. Example BRT stations from other US cities are shown below. Metro Transit hosted a design competition open to the public with a substantial cash prize. The design competition is intended help people connect with the project and provide direct input, while also rewarding Metro with many diverse architectural station concepts at a very modest cost.



Typical BRT stations – Richmond, VA

Participants were given the following station parameters:

- Structure construction cost of no more than \$300,000 each
- Station length of 60 feet
- Station configurations:
  - Some center, with bus arrivals on both sides, width 12-18 feet
  - Some curbside, with bus arrivals on one side, width 10-12 feet
- Ramp length into station: 15 feet
- Station components:
  - 14-inch raised concrete platform
  - Roof covering entire platform
  - Fare kiosk
  - Seating
  - Real-time arrival sign
  - Electronics cabinet to support networking equipment
  - Overhead radiant heater (optional)
  - Signage indicating the BRT and wayfinding functions – but no other words or symbols

## 2. Submissions and Screening

Metro Transit received 61 submissions. The first round of screening eliminated 10 submissions. These submissions either did not provide enough detail for staff to understand the intent about materials or overall design aesthetic, or did not submit the necessary paperwork.

A second round of screening was conducted to determine the buildability and overall practicality of the remaining designs. The target budget of the shelter and basic BRT station components was \$300,000. Remaining designs were sent to professional architects at AECOM. The architects were allowed considerable leeway in interpreting the drawings and allowed to assume structural modifications could be made as long as they didn't violate the basic intent of the submission. For example, many designs contained green roofs – while it is unlikely that green roofs will be practical, submissions with green roofs were not rejected if the design could be built without the green roof. 28 submissions were eliminated based on this analysis.

The remaining 23 submissions were given random 4-digit serial numbers in order to protect the anonymity of the designer.

## 3. Review and Input

The 23 qualifying submissions were posted to a website where the public could review and comment. Station designs were evaluated based on the following criteria:

- Enhancing goals of overall BRT system (transit quality, comfort, reliability)
- Aesthetic appeal
- Uniquely recognizable as Madison's BRT
- Structural flexibility to conform to different platform sizes
- Conformity to surrounding historic buildings
- Non-structural components that can be customized for neighborhood context
- Safety & accessibility

The 23 submissions were posted to Metro's website where the public could comment on each of them. Metro received about 2,600 comments, or an average of 113 comments per submission.

Further, outreach for comments was extended to several bodies and organizations:

- University of Wisconsin Transportation staff
- City of Madison Preservation Planning

Comments on each design are summarized in Appendix A.

## 4. Finalists

Three finalists below are recommended for consideration to win the cash prize. Excerpts from the contributors' descriptions of their designs and materials are included. These top three finalists were chosen by a staff review team that ranked each of the 23 screened submissions based on the criteria above while considering input received from stakeholders and the public.

The Madison Urban Design Commission (UDC) will ultimately make the final determination of the winners. Staff recommends the following, which are detailed below:

- Winner: #1286
- 2<sup>nd</sup> Place: #2813
- 3<sup>rd</sup> Place: #5791



The Arbor Terrace station concept, presented here for consideration, is inspired by Madison community values. Among those included for focus are a commitment to environmental conservation, expression through arts and crafts, and the celebration of distinctive neighborhoods. As a key piece of civic architecture, with units distributed citywide, a station design inspired by the values of its people will harmonize with varied settings ranging from residential boulevards to our energetic college campuses and rising urban avenues.

The Arbor Terrace concept station is intended to employ simple construction methods with component parts that can be mass-produced to fit various station configurations. The central supports are intended to be steel columns with a crossbeam that includes integrated programmable RGB LED down-lighting to colorfully illuminate a resin skylight. The column structure supports an aluminum canopy and green roof. The green roof is intended to use a wildflower tray system and to drain water towards the wind shelter end of the station and scupper off to a rain garden below. The underside of the canopy features woodgrain aluminum soffit and integrated warm-white LED lighting strips.

The platform and ramp are intended to be paved with plank style concrete pavers to provide a luxurious feel to the station interior. Integrated planter boxes and the seating bench are envisioned to be precast polished concrete. Bench seating and windscreens may be plain sawn white oak planking of intentionally varying widths. Windows in the wind shelter are designed as glass.



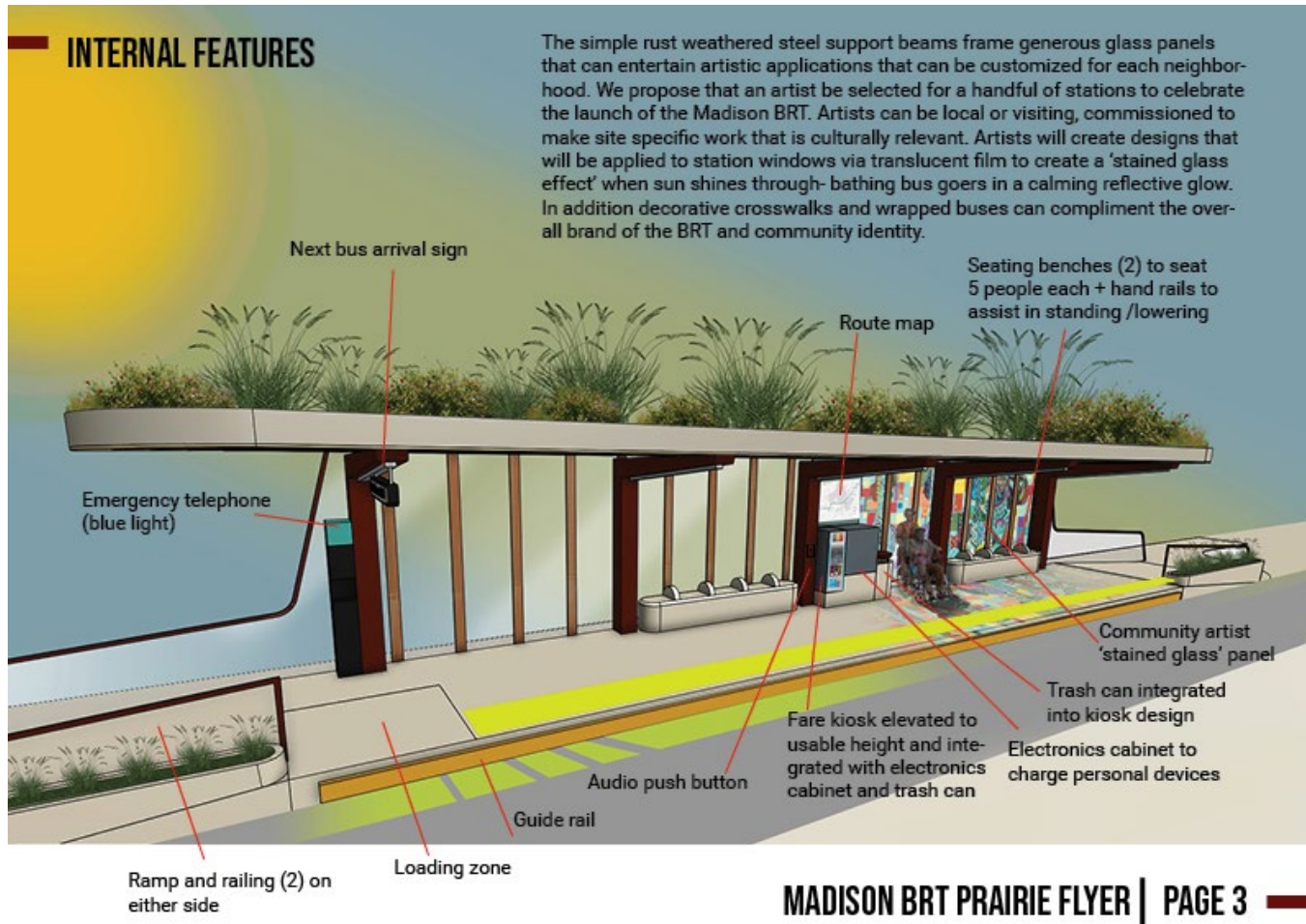




The Curbside and Center Station designs are composed of sloped standing seam metal roofs with cedar plank underside decking. Steel post columns are placed 96" on center. Surface mounted light fixtures attach to the underside of the steel beams. The Curbside Station shows durable perforated metal partitions offer some protection from the elements while allowing transparency to the interior of the station. The white metal panel core on both designs hosts the fare kiosk monitor, real time arrival monitor and route wayfinding monitor. Ventilation is located on the backside of each core panel. Open-face downspouts on the Curbside Station design allow rainwater run-off to collect in the station rain garden. A drainage channel dividing the sloped and flat portion of the Curbside Station roof collects water and drains run-off to a larger rain garden bookending the station.





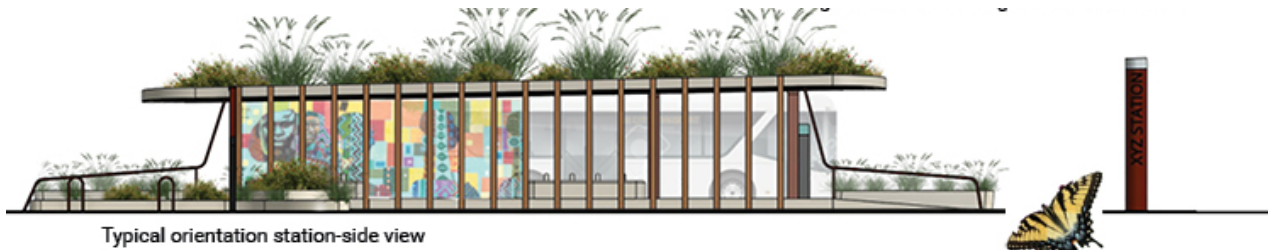


The Prairie Flyer is a BRT station concept that combines simple, tested and proven design construction with familiar materials such as steel, timber, glass and flora. The Prairie Flyer is meant over time to nestle within existing greened city landscape and coax other city public space that surrounds it over time to become more nurturing, cathartic, and greened. Aside from the Prairie Flyer's aesthetics, its prime functionality is to dignify people with an affordable, reliable, and importantly an accessible transportation service for all ages and abilities. Like a real complex prairie ecosystem, the Prairie Flyer Station's flex space is intended to become its own microcosm. The station's green roofs aid in flood prevention, keep residents cool, and filter air. The windshield doubles as vendor space, and the generous framed glass panels can accommodate site specific artistic expressions. Additionally we have considered space to compliment the City of Madison's multimodal portfolio. Flex space for B-Cycle stations and standard bike parking, or even micro mobility. The descriptions above are fully aimed at meeting the top priorities expressed by Madisonians during previous public involvement sessions compiled in a report by Metro Transit.

#### Materials

- Cantilever Steel Beams (Roof Supports and optional vertical signage)
- Non corrosive sheet metal roof (roof is a trough)
- Plantings for on the ground rain garden
- Treated Southern Yellow Pine
- Toughened glazing panels or pieces (for windshield)
- Cast concrete for seating and aluminum arm rests
- Recessed lighting







In a homage to natural Wisconsin landscapes prairies grasses and native flowers are planted in the rain garden and living roof to promote waste water management and attract beneficial (and beautiful) pollinating butterflies.



## Appendix A. Feedback Summary

0560	
	<p><b>Likes</b></p> <ul style="list-style-type: none"> <li>• Simple, sleek design</li> <li>• Ample bike parking/ incorporation of Bcycle</li> <li>• Good visibility</li> </ul> <p><b>Dislikes</b></p> <ul style="list-style-type: none"> <li>• Lack of shelter from weather</li> <li>• A bit plain and too industrial</li> <li>• No center station design shown</li> </ul> <p><b>Construction Comments</b></p> <ul style="list-style-type: none"> <li>• Needs internal downspouts and connections to storm drain.</li> <li>• Seating would need to be adapted for wheelchairs.</li> </ul>

1286	
<p>CENTER-MEDIAN BOARDING PLATFORM</p> 	<p><b>Likes</b></p> <ul style="list-style-type: none"> <li>• Attractive design – inviting, pretty, fits into Madison. Reminiscent of Madison Public Library architecture</li> <li>• Customizable with art options</li> <li>• Good accessibility</li> <li>• Nice mix of materials</li> </ul> <p><b>Dislikes</b></p> <ul style="list-style-type: none"> <li>• Greenery/skylight and overall design must be maintained or design's luster is lost</li> <li>• Needs more seating</li> <li>• Needs more shelter from elements</li> <li>• Potential visibility issue</li> <li>• Green roof maintenance is higher than other roof systems.</li> </ul> <p><b>Construction Comments</b></p> <ul style="list-style-type: none"> <li>• Complex roof will challenge budget. Cantilevered green roof end may need additional support</li> </ul>

## 1889



### Likes

- Simple, functional design. Has just what it is needed
- Good visibility

### Dislikes

- Plain design – not a lot of unique features
- Signage is insufficient

### Construction Comments

- Roof structure needs more development; may need an internal downspout and tie-in to storm drainage.

## 1894



### Likes

- Unique design

### Dislikes

- Heavy design - obstruct views and makes for potential safety issue
- Flat roof is bad for winter weather
- Mix of concrete, wood materials is unappealing.
- Wood finishes are more expensive to maintain than other finishes

### Construction Comments

- Buildable with glulam and cross-laminated timber systems.
- May need gutters, downspouts & storm drain connection.



## 1904



### Likes

- Nice, open air layout
- Good amount of seating

### Dislikes

- Roof design is problematic for weather and drainage.
- Modern design seems uninviting
- Not complementary to Madison
- Not a great fit for historic context
- Accessibility is an issue
- Structure not well suited for changing platform sizes
- Amount of glass may challenge budget

### Construction Comments

- '+' shaped steel may have to extend to edges of roof plate, or roof plate built as rigid frame.
- Middle height section cantilevers may require additional support steel.

## 1926



### Likes

- Natural wood and stone design is nice

### Dislikes

- Lack of shelter from weather
- Not complementary to Madison
- Looks like a park shelter
- Wood finishes are more expensive to maintain than other finishes

### Construction Comments

- Steel 'y' shapes would be best.
- Rain Garden at end could receive rain water runoff, but quantity of water may require different material. Alternatively, center steel and columns could be detailed to house downspouts.
- Purlins may be needed between 'Y' shapes to support wood roof.

## 2140



### Likes

- Green roof is sustainable and nice
- Enclosed shelter from weather
- Lots of seating

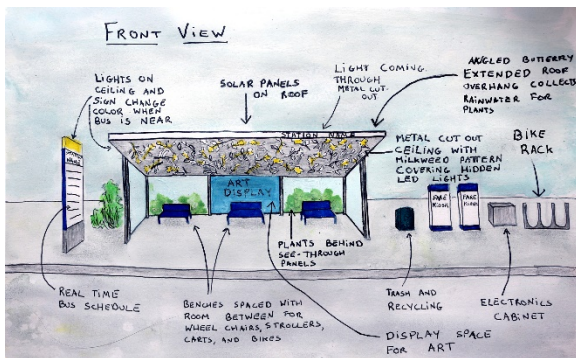
### Dislikes

- Very busy – a lot going on.
- Will be hard to keep clean and maintained (broken/ clean glass, chairs, people sleeping, etc.)
- No bicycle features
- Seems very tall
- Obstruct views
- Green roofs are higher maintenance than other roof systems.

### Construction Comments

- Overall height, clerestory, green roof could challenge budget, but solvable.
- Cantilever roof excessive, but column(s) would not damage concept.
- Constructible if the columns are added to support the green roof ends.

## 2701



### Likes

- Cool lighting feature
- Art opportunities
- Solar panels
- Simple shape

### Dislikes

- Too simple; Normal bus shelter with a lighting feature
- Design is not cohesive

### Construction Comments

- Structure and details need to be resolved still.
- Solar may challenge budget.
- Cantilever may be too far.



## 2813



### Likes

- Utilitarian, clean design
- Looks like a transit station destination
- Good visibility, see through screens/walls are good for safety
- Can visualize in many areas of town
- Looks very affordable

### Dislikes

- Plain, not many unique features
- Needs more protection from weather

### Construction Comments

- Structure appears too light, but very feasible.
- May need additional structure to support cantilever ends.

## 3605



### Likes

- Inclusion of real time information signs
- Nice use of natural materials

### Dislikes

- Needs more protection from weather/wind
- Design is too narrow
- Materials may not last long/ need a lot of maintenance
- Low visibility
- Materials would not fit with UW Campus
- Wood finishes are higher maintenance costs

### Construction Comments

- Needs cable stays to reinforce wood columns/beams
- Needs gutter, downspouts and connections to storm drains

## 4851



### Likes

- Simple, sleek design
- Warm materials
- Easy maintenance

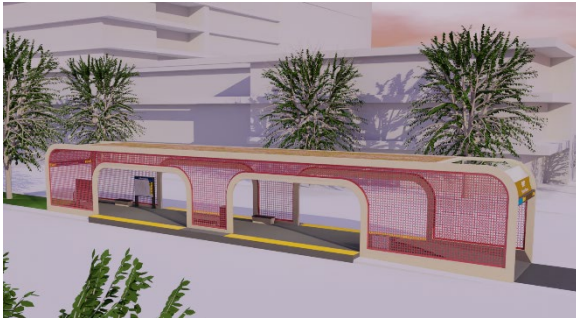
### Dislikes

- The use of sandstone
- Plain, not many unique features
- Lacking amenities
- White/ light colors
- Does not appropriately leave room for all doors of the bus

### Construction Comments

- Need larger size of structural members, but plausible.
- May need gutters, downspouts and connection to storm drain

## 4915



### Likes

- Covered and sheltered from weather
- Identifiable as transit

### Dislikes

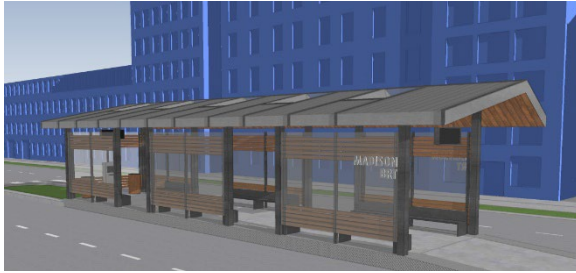
- Too retro, colors are flashy
- Doesn't look like Madison or midwest
- Design would not work well in cold weather.
- Not a great fit for historic context

### Construction Comments

- Needs additional vertical structure along length & interconnecting outside arch to inside arch
- Needs internal gutters & downspouts tied to storm drains
- Mesh material needs to be durable and sustainable



## 5311



### Likes

- Simple, utilitarian
- Great protection from the weather

### Dislikes

- Simple, not many unique features
- Needs more green elements
- Not accessible
- Massive
- Obscure sightlines
- Bus must pull into exact spot of loading/unloading
- Wood finishes are more expensive to maintain

### Construction Comments

- Could introduce internal gutters to manage rainwater.

## 5315



### Likes

- Open-air
- Something new/ different for Madison, stands out, interesting

### Dislikes

- Heavy, large design – encourage graffiti?
- Not enough shelter from weather
- Looks commercial (gas station, bank)
- Not a great fit for historic context

### Construction Comments

- Frequency of vertical structure needs to increase.
- May need to use standard size metal panels instead for budget.
- May require internal downspouts and connection to storm drain.
- Constructible if vertical supports are improved.
- Significant foundation required

5369



**Likes**

- Natural materials
- Design fits Madison aesthetic
- Frank Lloyd Wright inspired

**Dislikes**

- Not enough amenities
- Design would only work in certain parts of town
- Maintenance, longevity of materials and design.
- Design does not fit Madison aesthetic
- Focused on architecture – transit and functionality is secondary
- Doubtful to meet budget as is
- Wood finishes are expensive to maintain

**Construction Comments**

- Finished ceiling and steel ceiling enhancements may challenge budget
- May need internal gutters, downspouts and connection to storm drain
- Significant foundations required

5791



**Likes**

- Lots of amenities
- Green elements – roof/solar
- Place making, somewhere that is a destination, where you want to be.

**Dislikes**

- Roof unrealistic/ high maintenance
- Unfriendly benches
- Windscreens block bus doors
- Living roof will challenge budget
- Wood finishes more expensive to maintain

**Construction Comments**

- Frequency/location/orientation of rusted steel supports inconsistent between renderings, but achievable.
- Unclear what 'wall' treatment is intended behind seating.
- Cantilevered green roof can be structurally challenging

## 6143



### Likes

- Whimsical
- Natural

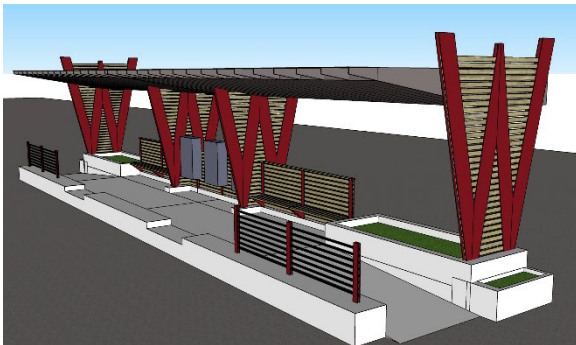
### Dislikes

- Too open
- Trees are high maintenance/ impractical
- Circle seating – design and limits accessibility
- Wide/ massive
- Looks like a park or zoo shelter

### Construction Comments

- Structure not defined, but simple form allows easy introduction
- Not sure what tree elements are
- Probably needs more structural columns
- Needs gutters, downspouts & storm drain connection

## 7014



### Likes

- Very plausible design

### Dislikes

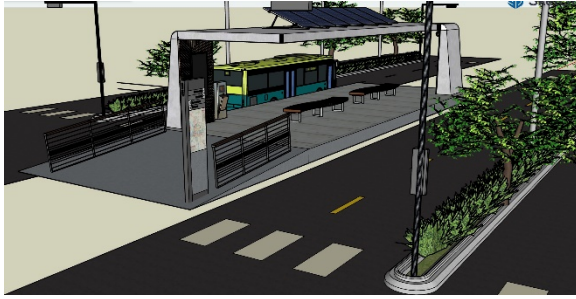
- Design is cliché
- Doesn't fit UW branding
- Not a great fit for historic context
- Not enough seating
- Little protection from weather
- Not scalable
- Wood finishes are more expensive to maintain

### Construction Comments

- Needs gutters, downspouts and storm drain connections.



## 8037



### Likes

- Solar panels
- Good accessibility
- Simple

### Dislikes

- Little shelter
- Heavy, grey design
- Too simple

### Construction Comments

- Spans too far for cantilever without additional columns
- Thickness of roof would change, affecting design intent
- May require internal downspouts and storm drain connection
- Constructible if the additional corner columns are added
- Substantial foundation

## 8472



### Likes

- Very unique

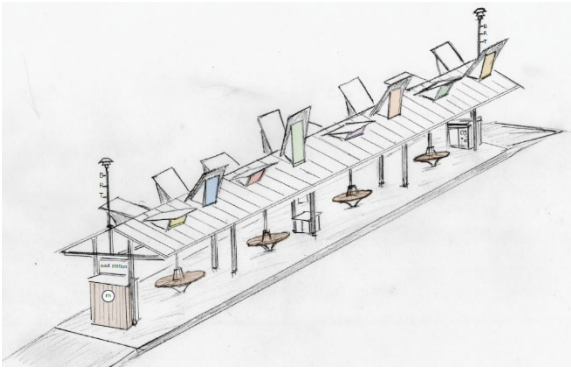
### Dislikes

- Too unique
- Lacks any shelter
- Looks like a subway entrance, not BRT
- Dangerous - encourages people to climb up the roof
- Low ceiling clearance on one end
- Wood finish may have a higher maintenance cost than other finishes.

### Construction Comments

- Relationship of glulam to vertical support in 'w\_Raingarden' picture confusing - meant to shed water from concave shape to sidewalk?
- Depending on highway transport regulations, could be prefab off-site and transported.
- Patron level screenings would need to be sustainable and durable.
- Need downspouts and connections to storm drain.

9663



**Likes**

- Fun idea

**Dislikes**

- Roof too complex
- Design is too busy
- Not a great fit for historic context

**Construction Comments**

- Simple form, structure not fully resolved but plausible.
- 'Portholes' will be challenging to detail.
- May need gutters, downspouts and connection to storm drain.

9689



**Likes**

- Practical
- Identifiable as transit

**Dislikes**

- Dated. Reminiscent of our current transfer stations. Blue color goes out of style quick
- Find this is any big city
- Not a great fit for historic context
- Design is top heavy
- Little protection from elements

**Construction Comments**

- Open roof has potential for bird roosting/nesting
- Could create echoing

## 9911



### Likes

- Indoor/ outdoor feature is cool.
- Green aspects – roof/solar
- Roof design

### Dislikes

- More amenities and design
- Color scheme is too busy
- Flow to buses and entering platform looks difficult
- Green roof may challenge budget and is higher maintenance item.

### Construction Comments

- Roof thickness may change but does not change design intent.
- Cantilevered ends with green roof add to the structure requirements.
- Significant foundations may be required.
- Overall budget challenging, but could be doable with modifications.