**Minnesota Department of Transportation**

**Office of Environmental Services**
Mail Stop 620
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greg.mathis@state.mn.us

April 22, 2015

Sarah Beimers
State Historic Preservation Office
Minnesota Historical Society
345 Kellogg Blvd. W.
St. Paul, MN 55102

RE: Southwest Light Rail Transit Project, Hennepin County, Minnesota; consultation on project effects, SHPO #2009-0080

Dear Ms. Beimers,

We are writing to continue our consultation regarding the Southwest Light Rail Transit (LRT) Project (Project). Following standard practice, all Section 106 consulting parties for this Project are copied on this letter.

In our letter of February 3, 2015, we notified your office that the Minnesota Department of Transportation Cultural Resources Unit (MnDOT CRU), per authority delegated by the Federal Transit Administration (FTA), would be holding a series of meetings with consulting parties, FTA, and the Project sponsor, the Metropolitan Council (MC), to consider and resolve adverse effects on historic properties. The first of these meetings was held on February 6, 2015, and focused on effects from the proposed crossing over Kenilworth Lagoon. Another meeting was held on February 24, 2015, and focused on effects to other historic properties along the Project corridor. Thank you for participating in these meetings and for the comments you provided. Per our previous communication, we are holding the next meeting at 11:00 a.m. today at:

Southwest Light Rail Project Office
6465 Wayzata Boulevard, Suite 500
St. Louis Park, MN

The meeting today will cover the following:

1. Mitigation for the Project's adverse effect on Archaeological Sites 21HE0436 and 21HE0437

   Construction of the Project will result in the destruction of these two National Register eligible archaeological sites. As mitigation, the Project has previously proposed completion of a Phase III data recovery of both sites and the incorporation of interpretation of these sites into the design of the Royalston Station. The current consultation will focus on comments provided by the City of Minneapolis on March 5, 2015 (letter attached), which requested consideration of alternative mitigation measures. The goal for this consultation is to resolve the adverse effect by identifying all mitigation that will be required for 21HE0436 and 21HE0437, which will be incorporated in the Project's Memorandum of Agreement.

2. Continue consultation on the design of the new crossing over the Kenilworth Lagoon element of the Grand Rounds Historic District

   The Project has developed several new crossing configurations for its crossing over Kenilworth Lagoon. These new configuration address comments received from consulting parties in response to the materials presented at the February 6, 2015 consultation meeting (attached). They also reflect continued communication between the Project and the Minneapolis Park and Recreation Board (MPRB) per a Memorandum of Understanding (MOU) entered into between the MPRB and MC on March 12, 2015 (MOU attached).

   To facilitate the discussion on the revised crossing configurations, the following materials are included with this submittal:

- Table: "Bridge Design Concepts and Configurations Considered." This table provides dimensions to use for comparing the present structures, the concepts presented in November 2014, and the new crossing configurations.
- Plan views, section views, profile views (elevations), and sketches of the revised crossing configurations: 4A, 4B, 4C, and 4B-Skew. These materials also show where the topography of the Kenilworth Lagoon will be altered through removal of existing soil, and by the construction of new structures and placement of new fill for each configuration.

3. Updates on several studies that are being done to support making final effects determinations for several historic properties

We request that you please provide comments on the enclosed materials by May 27, 2015.

Sincerely,

Greg Mathis
MnDOT Cultural Resources Unit

Enclosures: Letter from the Minnesota State Historic Preservation Office to MnDOT CRU, dated 3/9/2015
Letter from the City of Minneapolis to MnDOT CRU, dated 3/5/2015
Letter from the MPRB to MnDOT CRU, dated 3/5/2015
Letter from the Kenwood Isles Area Association to MnDOT CRU, dated 3/2/2015
Letter from the Kenwood Isles Area Association to MnDOT CRU, dated 3/23/2015
Letter from the Cedar-Isles-Dean Neighborhood Association to MnDOT CRU, dated 3/24/2015
SWLRT Section 106 Consultation 2/06/2015 meeting notes – final
SWLRT Section 106 Consultation 2/24/2015 meeting notes – draft
Memorandum of Understanding (between the MPRB and MC, dated 3/12/2015)
Table, "Bridge Design Concepts and Configurations Considered"
Kenilworth Lagoon/Channel Revised Bridge Design Configurations: 4A, 4B, 4C, and 4B-Skew"

cc: Bill Wheeler, Federal Transit Administration
Maya Sarna, Federal Transit Administration
Amy Zaref, Federal Transit Administration
Melissa Jenny, United States Army Corps of Engineers
Brad Johnson, United States Army Corps of Engineers
Nani Jacobson, Metropolitan Council
David Jaeger, Hennepin County
John Doan, Hennepin County
Kim Zlimen, Hennepin County
Lori Creamer, City of Eden Prairie
Regina Rojas, City of Eden Prairie
Nancy Anderson, City of Hopkins
Brian Schaffer, City of Minneapolis
John Byers, City of Minneapolis
Elise Durbin, City of Minnetonka
Meg McMonigal, City of St. Louis Park
Jennifer Ringold, Minneapolis Park and Recreation Board
Bill Walker, Three Rivers Park District
Kathy Low, Kenwood Isles Area Association
Craig Westgate, Cedar-Isles-Dean Neighborhood Association
Tamara Ludt, Preservation Design Works

## Section 106 Consulting Party Comments Received on 2/3/15 Package

*In order by date*

3/2/15, Kenwood-Isles Area Association
3/5/15, Minneapolis Park and Recreation Board
3/9/15, Minnesota State Historic Preservation Office
3/23/15, Kenwood-Isles Area Association
3/24/15, Cedar-Isles-Dean Neighborhood Association



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2 March 2015

Greg Mathis
Minnesota Department of Transportation
Office of Environmental Services
Cultural Resources Unit
Mailstop 620
395 John Ireland Boulevard
St. Paul, Minnesota 55155
greg.mathis@state.mn.us

RE: Kenwood Isles Area Association (KIAA) Comments on February 6, 2015 Consultation on Potential Effects of Southwest Light Rail Transit Project, SHPO #2009-0080

Dear Mr. Mathis:

Thank you for the opportunity to review the materials provided to Sarah Beimers of the Minnesota State Historic Preservation Office and to participate in the February 6, 2015 consultant meeting about the Kenilworth Lagoon Crossing for the Southwest Light Rail Transit Project. The Kenwood Isles Area Association (KIAA) has the following comments on the materials:

In addition to previously-expressed agreement with the Minneapolis Park and Recreation Board, MnDOT and SHPO about the adverse effects of SWLRT on the Kenilworth Lagoon area, KIAA reiterates our concern about the impact of SWLRT construction, including the Kenilworth Lagoon crossing, on the Lagoon and the historic properties of which it is part, as well as the other historic properties in Kenwood. It is not clear to us whether the noise and vibration studies account for increased truck and construction equipment traffic and operation and the resulting potential impacts on historic resources. If they do not, KIAA requests the preparation of a construction protection plan that incorporates guidance offered by the National Park Service in Preservation Tech Note #3: Protecting a Historic Structure during Adjacent Construction.

Again, thank you for the opportunity to review these materials and to participate in future consultation for the Section 106 review of the Southwest Light Rail Transit Project.

Sincerely,

Katherine Low
Kenwood Isles Area Association

cc: Kenwood Isles Area Association
Cedar Isles Dean Neighborhood Association
Minneapolis Park and Recreation Board
Sarah Beimers, Minnesota State Historic Preservation Office
Tamara Halvorsen Ludt, Preservation Design Works

**Minneapolis**
*City of Lakes*

**Community Planning & Economic Development**
105 5th Avenue S, Suite 200
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March 5, 2015

Greg Mathis
Minnesota Department of Transportation- Cultural Resources Unit
395 John Ireland Boulevard
St. Paul, MN 55155

**RE: Southwest Light Rail Transit Project, Hennepin County; Minnesota; Comments from February 6, 2015 consultation on potential effects. (SHPO#2009-0080)**

Dear Mr. Mathis,

Thank you for providing the materials included in your February 6, 2015 transmittal and February 24, 2015 submittal and facilitating the consultation meetings on February 6th and 24th. The City of Minneapolis CPED Long Range Planning Division submits the following comments on behalf the Minneapolis HPC, a consulting party to the Section 106 review.

CPED-Long Range Planning comments on the preliminary determinations of effect are organized in a manner consistent with the organization presented in the matrix of effect analysis and next steps entitled "Southwest Light Rail Transit Project: Section 106 Consultation of Determination of Effect on Historic Properties, including avoidance, minimization and mitigation of adverse effects." Update 2/24/2015.

**Section 1 Properties: "Historic Properties with Final Determination of Effect"**
CPED-Long Range Planning agrees with the analysis of effects, preliminary determinations and associated actions, as well as identified next steps for the Minneapolis properties:

- St. Paul, Minneapolis & Manitoba RR/Great Northern Rwy. Historic District
- Osseo Branch of the St. Paul, Minneapolis & Manitoba RR Historic District
- Minneapolis Warehouse Historic District

**Site 21HE0436 and Site 21HE0437:** CPED Long Range Planning agrees with the analysis of effects, preliminary determinations and associated actions listed in the document. Regarding the next steps, CPED-Long Range Planning would like further consultation and discussion regarding the integration of interpretation into the design of the Royalston Station based on the results of the Phase II data recovery. We believe a better understanding of results of the recovery is required prior to committing solely to integrated interpretation at the Royalston Station. We believe interpretation should be considered and discussed, but not necessarily be the sole mitigation measure listed or

considered in the Section 106 agreement. The integration of interpretation into the design of the station is generally a good idea. However, given that the Phase II work may not be completed until after the Station Area Art and Station design is well advanced could result in interpretation that is less integrated and more of an afterthought. CPED Long Range Planning believes there may be more meaningful alternative mitigation measures that should be considered.

**Section 2 Properties: Historic Properties Discussed with Consulting Parties (11/24/14)**

CPED-Long Range Planning agrees with the analysis of effects, preliminary determinations and associated actions, as well as identified next steps and proposed agreement measures for the following Minneapolis properties:

- Minikahda Country Club
- Lake Calhoun (Grand Rounds)
- Cedar Lake Parkway (Grand Rounds)
- Mahalia & Zacharia Saveland House
- Site 21HE0409
- Kenwood Parkway Residential Historic District
- Kenwood Parkway (Grand Rounds)
- Frank & Julia Shaw House
- Kenwood Park (Grand Rounds)
- Kenwood Water Tower
- Mac Martin House
- Dunwoody Institute

**Section 3 Properties: Historic Properties Requiring Continued Consultation on Minimization and Mitigation- Related to Crossing of the Kenilworth Crossing.**

CPED-Long Range Planning agrees with the analysis of effects, preliminary determinations and associated actions, as well as identified next steps and proposed agreement measures for the following Minneapolis properties:

- Kenilworth Lagoon
- Cedar Lake
- Park Board Bridge #4
- Lake of the Isles Parkway
- Lake of the Isles
- Lake of the Isles Historic District
- Grand Rounds Historic District

**Potential Kenilworth Corridor Channel Bridge Concepts**

CPED-Long Range Planning appreciated the opportunity to have a more detailed presentation on the various bridge design concepts. While we appreciate the additional insight that was provided on the engineering and architecture of the various options we do not believe we've had a thorough enough conversation regarding how the various designs meet the SOI Standards and minimize impacts to the properties listed in the table. At this time, we do not endorse any of the design options that have been presented for the bridge. We look forward to future consultation regarding the design of the bridges to avoid, minimize and/or mitigate adverse effects on the properties identified in Section 3.

Thank you again for the opportunity comment.

Sincerely,

Brian Schaffer
Principal City Planner, AICP
City of Minneapolis- CPED-Long Range Planning
105 5th Avenue South, Suite 200
Minneapolis, MN 55415
Phone: (612) 673-2670
**brian.schaffer@minneapolismn.gov**

cc: Sarah Beimers. MN SHPO (via email)
Jack Byers, CPED-Long Range Planning (via email)

**Minneapolis**
**Park & Recreation Board**

*Administrative Offices*
2117 West River Road
Minneapolis, MN 55411-2227

*Operations Center*
3800 Bryant Avenue South
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5 March 2015

Greg Mathis
Southwest Project Office
Park Place West Building, Suite 500
6465 Wayzata Boulevard
St. Louis Park, Minnesota 55426

RE: **Comments on Section 106 elements**
**Southwest Light Rail Project**

Dear Mr. Mathis:

The Minneapolis Park & Recreation Board (MPRB) appreciates the opportunity to offer comments on elements of the Southwest Light Rail Transit (SWLRT) Project related to the Section 106 review. Comments addressed by this letter focus on the Kenilworth Channel and impacts of the SWLRT project on the Grand Rounds, both of which fall under the jurisdiction of the MPRB.

The context of the Kenilworth Channel and the Kenilworth Corridor is complex in that both were constructed features that have acquired their present character with time. The MPRB desires that the current character be perpetuated as much as possible recognizing the significant work required to implement the project. In defining a desired character, elements including LRT-related infrastructure, bridges over the channel, existing channel structures, and vegetation become important. In the ways these elements are considered, it is the experience of channel and corridor users along with views into the Kenilworth Corridor from Cedar Lake Parkway that becomes significant. As new elements are introduced to the settings of the channel or corridor, the MPRB desires they be authentic to their period of introduction and not mimic existing elements, historic or otherwise.

*LRT-related infrastructure in the Kenilworth Corridor*
The MPRB understands the introduction of SWLRT results in new elements being introduced to the corridor and desires these features to be designed to pose as minimal a change in the corridor as possible. As a result, a tunnel portal (for example) would be a designed element, but not become a feature. As a designed element, its profile would match as closely as possible surrounding grade and protective barriers would be as minimalist as possible while meeting SPO design criteria. Any portions of the portal above surrounding grade would be minimized to reduce its visual mass. Details of the design would focus on simplicity and authenticity to the materials used, with no ornamentation or application of faux materials. While MPRB understands the portal has not been designed, we anticipate it to be a minor visual element and as much of a background element as possible, especially

when viewed from Cedar Lake Parkway. Screening with landscape materials may be beneficial, but the MPRB would not consider landscape materials to be a strategy that, on its own, would satisfy our desires to reduce the impact of the portal.

Other LRT-related and supporting elements may pose visual impacts, but are likely less able to be changed due to their function. The MPRB desires that other LRT-related infrastructure, such as trackside control equipment, be placed to limit their visual impact, with vegetative screening used to further reduce their visual impact. Should those elements need to be secured, MRPB prefers simple, not ornamental, fencing materials that limits their visual presence. As mentioned for the tunnel portal, we would not consider landscape screening to be a strategy that reduces impacts.

For the MPRB, views into the Kenilworth Corridor from Cedar Lake Parkway are significant. Minimizing the sense of change resulting from the introduction of LRT should be the goal, with the primary impacts being visual. Where new introductions are made, their design should clearly reflect their function, their placement should be strategized to limit their prominence, and screening, if used, should not introduce new or unnecessary elements to the view.

*Bridges over the Kenilworth Channel*
The design of bridges spanning the Kenilworth Channel is the subject of a Memorandum of Understanding approved by the MPRB Board of Commissioners on 4 March 2015 and proposed for consideration by the Metropolitan Council on 11 March 2015. The memorandum includes a document describing the schedule and principles of a collaborative design process aimed at developing a range of bridge design concepts. As of the date of this letter, that process has been initiated. It is expected that bridge concepts resulting from that process will be assessed for alignment with requirements of the Section 106 process.

In reaching agreement with the Metropolitan Council through the Memorandum of Understanding approved by its Board of Commissioners on 4 March 2015, the MPRB aims to create a bridge that is of its own time, with materials that are used authentically, and most important, results in a bridge design inspired by the experience of those who might engage it. Accordingly, bridge designs may be generated following these conceptual design principles:

a) Bridges are defined primarily by structural design requirements, and considering, at a minimum:
   - Separation of freight, LRT, and trail bridges
   - Exploration of pier and deck configurations aimed at reducing piers in the channel while maintaining desired vertical clearances in the channel
   - Use of other structure types based on structural requirements (loading, deflection)

b) Bridges are defined primarily by the context of the channel and its users, and considering, at a minimum:
   - User-focused experience with few or no penetrations of the channel
   - Elimination of roosts on the underside of the bridge or piers
   - Minimization of continuous deck expanse in order to bring more light to channel

c) Bridges are defined primarily by the context of the Grand Rounds, and considering, at a minimum:
   - Reference to other bridges in the Chain of Lakes Regional Park, using the form, scale, materials, color, and details to influence the design without mimicry

- Creation of a contrast with historical channel elements (WPA walls) to clearly separate the newly introduced structures from those elements currently considered contributing to its historic nature
- Recognition that there was no trail bridge at this location, that the railroad bridge that was constructed does not match other nearby railroad bridges, and that new bridges may not need to reference those other structures

d) Bridges are defined primarily by their relationships to one another, and considering, at a minimum:
   - Creation of a series of bridges all based on the same structural system, style, mass, and detail (no distinction by use)
   - Establishment of freight and rail bridges based on the same structural system, style, mass, and detail, with a trail bridge employing a different structural system, style, mass, and detail (distinction by use)
   - Creation of a "family" of structures, focused on coherency but allowing each to be different based on structure type and use

The MPRB engaged a consulting team to consider alternatives to a bridge crossing of the Kenilworth Channel and to assess the impacts of bridge and tunnel crossings. The consultant's report[1] includes a section on historic assessment that references the visions of early park commissioners for bridges in what was to become the Chain of Lakes:

> *It took many decades for the [Minneapolis park] system to be built out. An early priority was the Chain of Lakes. In a series of construction campaigns, the lakes were dredged, the shores planted, and parkways established in the late nineteenth and early twentieth centuries. Some of the lakes were linked with manmade canals, equalizing differences in elevation. Creation of the canals made it necessary to erect bridges for pedestrians, vehicles, and trains. The park commissioners hoped that these bridges would be "of a permanent, modern and durable construction, preferably reinforced concrete with attractive facing. They should be ornamental in design and in keeping and harmony with the landscape." Railroad companies, however, were reluctant to invest in aesthetics, which sometimes delayed commitments for long-term solutions to their crossings.*

In assessing the impacts of channel crossing alternatives, the MPRB consultant report further states, in part:

> *Developing an appropriate design for the proposed bridges over the Kenilworth Channel presents a challenge. When the park commissioner[s] created the channel in the early twentieth century, they hoped that ornamental bridges would span the waterway. That is not, however, what happened. If the original railroad bridge and Bridge No. 6 had survived, they would be considered contributing parts of the Grand Rounds Historic District, despite the fact that their appearance disappointed contemporaries. Because these bridges have been replaced with newer structures, they have been determined to be non-contributing to the district. The design and*

[1] Appendix I – Historical Impacts to a report related to an investigation of Kenilworth Channel Alternatives, prepared by Brierley Associates for the Minneapolis Park & Recreation Board; Memorandum to Jim Herbert, Barr Engineering from Charlene Roise, Hess, Roise and Company, Historical Consultants; Kenilworth Channel Alternatives Assessment: Historical Impacts; dated February 23, 2015

*materials that would be most sympathetic to the historical pattern would be a timber-trestle structure. This, however, would be the most damaging to the setting and feeling of the Grand Rounds and Lake of the Isles Residential Historic Districts and Bridge No. 4.*

The consultant's report finally states:

*If the channel is bridged, the design of the structures should be a balance between minimizing the structure's size and minimizing its visibility. Hence, a long span—as opposed to a trestle—will be the least intrusive for those using the channel, helping to counter the expanded covered length of the channel by opening up its width. At the same time, for those viewing the bridge's elevations, the design should blend with its naturalistic setting rather than take inspiration from the ornamental bridges that were historically installed in other locations.*

Importantly, the MPRB, as stated in its consultant's report excerpted above, does not desire an object drawn from another time and placed in this location.

The MPRB is working with Southwest Project Office staff to clarify or confirm dimensions and key relationships intended for nearby bridges and to establish parameters for "benches" on at least one side of the channel that would allow for pedestrian passage under the new bridges. A similar "bench" might be considered to allow for terrestrial species movement along the banks of the channel and under the new bridges. It is intended that those dimensions and relationships be used as a guide for the design of these new bridges, much as they were used as criteria in a design competition for the bridges

*Existing Kenilworth Channel structures*

The MPRB values the history of the channel and believes the structures originally constructed to retain its banks should be perpetuated, even though they have degraded with time. If resources were less limited for the MPRB, restoration of these structures would be more of a priority, as it has been for more visually prominent walls and bank structures in nearby waterways, particularly at the Lagoon between Lake Calhoun and Lake of the Isles. To the extent the structures along the Kenilworth Channel are disturbed by construction activities related to SWLRT, the MPRB desires repair or replacement to match as closely as practicable the originally constructed structures. If repair or replacement is not practicable, the MPRB desires new structures be implemented using modern materials and methods, and following as closely as practicable the lines, elevations, and dimensions of the existing (or originally constructed) bank structures in order to clearly distinguish the historic presence and integrity of the existing walls.

The MPRB does not desire the patterns, materials, or details of these bank structures to be used in other parts of a designed improvements of the channel or corridor, unless a clear relationship in intent and need can be demonstrated between the bank structures and any similar new element.

*Corridor and channel vegetation*

Though time, the channel has come to include open lawn areas reaching to its banks and volunteer vegetation that has assumed a more naturalized condition. In the area of the SWLRT crossing, the pattern of naturalized bank vegetation, with clear vegetative density relative to the open qualities of the channel itself, becomes a character-defining feature. For the trail corridor, similar qualities of naturalized edges become important, especially when contrasted with the generally open conditions along the corridor between Cedar Lake Parkway and the Kenilworth Channel. In both cases, it's a landscape organized only to the extent that vegetated edges contrast strongly with the open qualities of

the corridor or channel. The vegetation is naturalized, not ornamental, and the clearly defined edges between vegetated and non-vegetated areas reinforce the linear qualities of the corridor and channel as recreational passages.

Where construction activities disturb or disrupt the landscape along the channel or the corridor, the MPRB would prefer restoration that eliminates invasive species but perpetuates a clear and naturalized edge using species native to the Kenilworth area.

It's important to note that no plans have been defined for the corridor or channel landscape, but the MPRB understands the Southwest Project Office has or will engage a Kenilworth Landscape Design Consultant to develop plans for corridor's landscape. The MPRB has been invited to participate in guiding that design process. As those plans evolve, the opportunities for a more planned landscape might suggest patterns other than those described above take precedence; while the MPRB believes it is important to retain the natural setting of the channel in order to perpetuate its quietude and serenity, the landscape of the corridor may evolve to result in a more definitive and place-related landscape, instead of the more volunteer-based landscape evidenced in the corridor today.

The MPRB appreciates the opportunity to comment on the designed elements of the SWLRT project, especially as it impacts upon parks and park resources under our jurisdiction. Please feel free to contact me should you have any questions.

Sincerely,

**Minneapolis Park & Recreation Board**

Michael Schroeder
*Assistant Superintendent for Planning Services*

Minnesota
Historical Society

**STATE HISTORIC PRESERVATION OFFICE**



March 9, 2015

Mr. Greg Mathis
MnDOT Cultural Resources Unit
395 John Ireland Boulevard, Mail Stop 620
St. Paul, MN 55155-1899

RE: Southwest Light Rail Transit Project
Multiple Communities, Hennepin County
SHPO Number: 2009-0080

Dear Mr. Mathis:

We are continuing consultation on the above project which is being reviewed pursuant to the responsibilities given the State Historic Preservation Officer by the National Historic Preservation Act of 1966 and implementing federal regulations at 36 CFR 800, and to the responsibilities given the Minnesota Historical Society by the Minnesota Historic Sites Act and the Minnesota Field Archaeology Act.

Thank you for providing an update regarding final determinations of effect which are anticipated to be made by the Federal Transit Administration (FTA) prior to publishing the Supplemental Draft Environmental Impact Statement. It is also our understanding that a draft Section 106 agreement document will be included in the Final Environmental Impact Statement. We agree that the proposal for ongoing, regular meetings with all identified consulting parties, as outlined in your February 3rd correspondence is appropriate, and we look forward to participating in these meetings.

As you know, the first of such meetings was held recently on February 6th and this discussion was primarily focused on the new light rail crossing structure which is proposed to be constructed over the Kenilworth Lagoon/Channel which is a contributing element to the Grand Rounds Historic District, a property that has previously been determined eligible for listing in the National Register of Historic Places. At this point, we feel that the designs presented thus far provide a starting point upon which we will continue consultation seeking ways to avoid, minimize, or mitigate potential adverse effects to the historic property.

We look forward to continuing consultation regarding the design of this new crossing structure.

If you have any questions or concerns regarding this comment letter, please feel free to contact me at 651-259-3456 or sarah.beimers@mnhs.org.

Sincerely,

Sarah J. Beimers

Sarah Beimers, Manager
Government Programs & Compliance

23 March 2015

Greg Mathis
Minnesota Department of Transportation
Office of Environmental Services
Cultural Resources Unit
Mailstop 620
395 John Ireland Boulevard
St. Paul, Minnesota 55155
greg.mathis@state.mn.us

RE: Kenwood Isles Area Association (KIAA) Comments on 24 February 2015 Consultation on Potential Effects of Southwest Light Rail Transit Project, SHPO #2009-0080

Dear Mr. Mathis:

Thank you for the opportunity to participate in the February 24, 2015 consultant meeting and to review the revised provided at that meeting. The Kenwood Isles Area Association (KIAA) has the following comments on the materials:

1. KIAA agrees that light from the trains will not adversely impact Kenwood's historic resources.

2. *Grand Rounds Historic District (GRHD) (XX-PRK-001)*: KIAA agrees with the preliminary determination of Adverse Effect for the Grand Rounds Historic District and would like to stress a very important point made by the SHPO during recent consultants' meetings—an adverse effect to a historic resource in a district is an adverse effect that impacts the entire district. KIAA looks forward to continuing consultation on the Grand Rounds Historic District.

3. *Kenwood Parkway Residential Historic District (HE-MPC-18059)*: The updated "Section 106 Determination of Effects on Historic Properties" table states that noise analysis results indicate that "most of this district is outside the limits of noise impacts," and that "a few residences near the northern end will be assessed for noise impact..." KIAA looks forward to continuing consultation and expresses concern on the following issues:
    a. KIAA remains concerned that auditory impacts from train operation, traffic, and project construction will adversely impact this resource. National Register of Historic Places (NRHP) criteria include an assessment of integrity with regard to "setting" and "feeling." These qualities are less tangible than those of "design" or "workmanship," but are no less important. Audible intrusion may alter the physical environment of Kenwood's historic resources and the sounds associated with modern rail infrastructure may alter the characteristics that make the district eligible for the NRHP.
    b. KIAA would like to stress that an adverse effect on a contributing element of a district is considered an adverse effect to the entire district.
    c. KIAA will review the noise and vibration analysis for construction upon completion.
    d. KIAA is concerned that increased traffic and changes in traffic and parking

patterns will alter the integrity of setting and feeling of the Kenwood Parkway Residential Historic District. KIAA will review the traffic analysis upon completion.

e. KIAA would like more details on what will be included in the "project-wide construction plan."

4. *Kenwood Parkway (HE-MPC-01796):* KIAA agrees that "the provision of access routes to [Penn] station from Kenwood Parkway (including the existing trail from the foot of Kenwood Hill along the south side of I-394, and potential additional routes as illustrated by the conceptual trail in the Southwest Corridor Investment Framework report) may result in...indirect visual effects resulting from the changes to its setting..." KIAA looks forward to continuing consultation and expresses concern on the following issues:
    a. Kenwood Parkway is eligible for the NRHP as a contributing element of the Grand Rounds Historic District under Criterion A and C for "community planning and development," "entertainment/recreation," and "landscape architecture." KIAA is concerned that auditory impacts from train operation and project construction and the "changes to its setting" identified in the determination of effects on historic properties table will adversely affect the integrity of setting, feeling, and design that make Kenwood Parkway eligible for the NRHP.
    b. KIAA will review the noise and vibration analysis for short-term impacts when complete.
    c. KIAA is concerned that increased traffic and changes in traffic and parking patterns will alter the integrity of setting and feeling that make Kenwood Parkway eligible for the NRHP. KIAA will review the traffic analysis when complete.
    d. KIAA would like more details on what will be included in the "project-wide construction plan."

5. *Kenwood Park (HE-MPC-1797):* KIAA agrees that potential changes to traffic and parking patterns as a result of the operation of the 21st Street Station may impact Kenwood Park. KIAA looks forward to continuing consultation.
    a. Kenwood Park is eligible for the NRHP as a contributing element of the Grand Rounds Historic District under Criterion A and C for "community planning and development," "entertainment/recreation," and "landscape architecture." KIAA is concerned that auditory impacts and changes in traffic and parking patterns will adversely affect the integrity of setting and feeling that make Kenwood Park eligible for the NRHP.
    b. KIAA will review the noise and vibration analysis for short-term impacts when complete.
    c. KIAA will review the traffic analysis when complete.
    d. KIAA would like more details on what will be included in the "project-wide construction plan."

6. *Kenilworth Lagoon (HE-MPC-1822):* KIAA agrees with the finding of adverse effect on the Kenilworth Lagoon/Channel and looks forward to continued consultation on the design of the crossing and bridge and the following:
    a. In addition to the adverse effects already identified, KIAA is concerned that the sounds associated with modern rail infrastructure will alter the

characteristics of "community planning and development," "entertainment and recreation," and "landscape architecture" that make the lagoon eligible for NRHP designation.

b. KIAA is pleased to see that "a construction plan that identifies measures to be taken during construction to protect Kenilworth Lagoon elements and other historic properties in the vicinity to ensure that they are not disturbed by any project related activities (including construction related vibration, storage yards, and staging areas.)" We ask that "construction related traffic" be identified as a specific "project related" activity. Further, KIAA understands "other historic properties in the vicinity" to include the Kenwood Water Tower and all of the historic resources listed above.

KIAA would like to propose landscaping throughout the Kenilworth Corridor as one means of mitigating the adverse impact of noise on Kenwood's historic properties. We look forward to continuing consultation on this means of mitigation.

Thank you for continuing to work to answer KIAA's questions regarding traffic and noise impacts and for the opportunity to review these materials and to participate in future consultation for the Section 106 review of the Southwest Light Rail Transit Project.

Sincerely,

Katherine Low
Kenwood Isles Area Association

KL/thl

cc: Kenwood Isles Area Association
Cedar Isles Dean Neighborhood Association
Minneapolis Park and Recreation Board
Sarah Beimers, Minnesota State Historic Preservation Office

24 March 2015

Greg Mathis
Minnesota Department of Transportation
Office of Environmental Services
Cultural Resources Unit
Mailstop 620
395 John Ireland Boulevard
St. Paul, Minnesota 55155
greg.mathis@state.mn.us

RE: Cedar-Isles-Dean Neighborhood Association (CIDNA) Comments on 24 February 2015 Consultation on Potential Effects of Southwest Light Rail Transit Project, SHPO #2009-0080

Dear Mr. Mathis:

Thank you for the opportunity to participate in the February 24, 2015 consultant meeting for the Southwest Light Rail Transit Project and to review the Section 106 materials provided at that meeting. The Cedar-Isles-Dean Neighborhood Association (CIDNA) has the following comments on the materials:

Section 106 Consultation on Determination of Effects on Historic Properties Table (Updated 2/24/2015)

1) *Cedar Lake Parkway (eligible, contributing) HE-MPC-1833*: No adverse effect is indicated based on preliminary engineering plans for a shallow tunnel requiring reconstruction of part of the parkway, as well as the potential introduction of operational auditory effects of LRT trains entering and existing the shallow tunnel. CIDNA does not concur with this preliminary determination of no adverse effect. Cedar Lake Parkway is considered eligible for the National Register of Places under Criteria A and C for community planning and development, entertainment and recreation, and landscape architecture. The integrity of these areas of significance will likely be adversely effected by the introduction of the light rail project: additional signage could alter the design, the traffic going in and out of the tunnel could alter the feeling, the exits could alter the setting, rendering Cedar Lake Parkway ineligible for listing. CIDNA will continue to consult on the design with the intent of achieving a final determination of no adverse effect.
    a. CIDNA concurs with concerns raised by MPRB in consultation letters dated 5/16/2014 and 12/12/2014 regarding the long-term noise and visual intrusion at this intersection and its impacts on adjacent parkland.
    b. CIDNA would like to better understand how the requirements of the 'quiet zone' will be upheld during and after construction.
    c. CIDNA welcomes the opportunity to continue consultation on this intersection, including reviewing and commenting on 60% and 90% design plans.

2) *Kenilworth Lagoon (eligible, contributing) HE-MPC-1822*: Both direct and indirect adverse effects are indicated based on preliminary engineering plans. CIDNA will continue to consult on the design of the new light rail, freight rail, and trail bridges over the lagoon, destruction to part of the contributing WPA retaining wall, and introduction of operational noise.
    a. CIDNA plans to review and comment on the forthcoming noise analysis for operation if it is determined that Kenilworth is a noise sensitive receptor.
    b. CIDNA plans to review and comment on the forthcoming construction protection plan that identifies measures to be taken during construction to protect the Kenilworth Lagoon.
    c. CIDNA plans to continue consultation regarding the design of the bridge and other project elements to minimize visual effects on the resource.
    d. CIDNA looks forward to continued consultation on measures to minimize and mitigate adverse direct and indirect effects.

3) *Cedar Lake (contributing element to Grand Rounds Historic District) HE-MPC-1820*: No adverse effect is indicated based on preliminary engineering plans. CIDNA does not concur with this preliminary determination of no adverse effect. Cedar Lake Parkway is considered eligible for the National Register of Places under Criteria A and C for community planning and development, entertainment and recreation, and landscape architecture. The integrity of these areas of significance will likely be adversely effected by the introduction of the light rail project: the setting and feeling of South Beach, in particular, are likely to be adversely impacted. CIDNA will continue to consult on the design of the new bridges over the Kenilworth Lagoon and trail improvements from 21st Street to East Cedar Beach.
    a. CIDNA plans to review and comment on the forthcoming analysis of construction and operational noise impacts that will be documented in the FEIS, should Cedar Lake be determined a noise sensitive receptor.
    b. CIDNA looks forward to continued consultation during the design of the project elements near Cedar Lake to minimize visual effects to its setting, critical to the integrity of this resource.

4) *Park Board Bridge #4 (contributing element to Grand Rounds Historic District) HE-MPC-6901*: No adverse effect is indicated based on preliminary engineering plans. CIDNA agrees with the SHPO's concerns regarding this resource, specifically that a "sensitive" design for the crossing at the Kenilworth Channel does not necessarily indicate "no adverse effect" as the views, and therefore the historical setting, from Park Bridge #4, are still altered. CIDNA will continue to consult on the design of the new bridges over Kenilworth Lagoon to avoid adverse effects on this resource.
    a. CIDNA looks forward to continued consultation regarding the design of the Kenilworth Crossing and other project elements to avoid visual effects on the bridge.

5) *Lake of the Isles Parkway (eligible, contributing) HE-MPC-1825*: No adverse effect is indicated based on preliminary engineering plans. CIDNA will continue to consult on the design of the new bridges over Kenilworth Lagoon to avoid adverse effect on this resource.
    a. CIDNA looks forward to continued consultation during the design of Kenilworth Crossing to avoid adverse visual effects to the setting of Lake of the Isles Parkway.

6) *Lake of the Isles (eligible contributing) HE-MPC-1824*: No adverse effect is indicated based on preliminary engineering plans. CIDNA will continue to consult on the design of the new bridges over Kenilworth Lagoon to avoid adverse effect on this resource
    a. CIDNA looks forward to continued consultation during the design of Kenilworth Crossing to avoid adverse effect on Lake of the Isles.

7) *Lake of the Isles Residential Historic District (eligible) HE-MPC-9860*: No adverse effect is indicated based on preliminary engineering plans. CIDNA will continue to consult on the design of the new Kenilworth Lagoon crossing to avoid adverse effect to the historic district's visual character and setting, as well as to avoid adverse changes in noise and traffic patterns in the district.
    a. CIDNA looks forward to continued consultation during the design of Kenilworth Crossing to avoid adverse effect on the portion of the historic district within the APE.

8) *Grand Rounds Historic District (GRHD) (eligible) HE-PRK-001*: Both direct and indirect adverse effects are indicated based on preliminary engineering plans. CIDNA will continue to consult on the design and construction of new project elements in the historic district, destruction of distinctive features, spaces and spatial relationships within the Kenilworth Lagoon, and alteration of distinctive features, spaces and spatial relationships. Additionally, CIDNA will continue to consult on permanent changes to the historic district's visual character and setting, as well as the introduction of new features that may or may not be compatible with the GRHD with regard to size, scale, proportion, massing, materials and aesthetic character.
    a. CIDNA plans to review the forthcoming noise and vibration analysis for construction.
    b. CIDNA plans to review the forthcoming noise and vibration analysis for the project's construction, should the GRHD be determined a noise sensitive receptor.
    c. CIDNA plans to review the forthcoming traffic analysis that will be completed as part of the FEIS.
    d. CIDNA concurs with the statements made by SHPO representative Sarah Beimers at the 2/24/2015 consultant meeting asserting that an adverse effect on any contributing historic resource within a district is effectively an adverse effect on the district as a whole.

In addition to the items listed above, CIDNA looks forward to the opportunity to review and comment on the project-wide construction protection plan.

Again, thank you for the opportunity to review these materials and to participate in future consultation for the Section 106 review.

Best regards,

Craig Westgate
Cedar-Isles-Dean Neighborhood Association

Cc: Cedar-Isles-Dean Neighborhood Association
Kenwood Isles Area Association
Minneapolis Park and Recreation Board
Sarah Beimers, Minnesota State Historic Preservation Office
Tamara Halvorsen Ludt, Preservation Design Works

**Meeting Title:** SWLRT Section 106 Consultation - Meeting Notes

**Date:** 2/06/2015 **Time:** 9:30 am **Duration:** 2.0 hrs

**Location:** Southwest LRT Project Office , Conference Room A
6465 Wayzata Boulevard, Suite 500
St Louis Park, MN 55426

**Meeting called by:** Greg Mathis, MnDOT Cultural Resources Unit (CRU)

**Attendees:**
SHPO: Sarah Beimers
Eden Prairie: Regina Rojas
Hopkins: Nancy Anderson
Minneapolis: Brian Schaffer
St. Louis Park: Meg McMonigal
MPRB: Jennifer Ringold, Michael Schroeder, Renay Leone
KIAA: Kathy Low, Tamara Ludt
CIDNA: Craig Westgate
HC: Dave Jaeger, Kim Zlimen
SPO: Nani Jacobson, Jim Alexander, Caroline Miller, Dan Pfeiffer, Sophia Ginis, Mark Bishop, Leon Skiles, Ryan Kronzer
FTA (phone): Amy Zaref, Maya Sarna

**Purpose of Meeting:** Meeting with consulting parties to continue Section 106 consultation process

| **--- Agenda & Discussion** | |
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| 1. | Welcome & Introductions |
| 2. | Project Update<br>• Nani Jacobson from SPO provided a project update on the scope of the project and an updated timeline. In 2016, the Final EIS and Full Funding Grant Agreement will be completed, with construction beginning in 2017. The Southwest LRT is anticipated to begin passenger operations in 2019. |

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| 3. | Section 106 Update<br>• Greg Mathis from MnDOT CRU explained the steps of the Section 106 process and referenced the handout provided to meeting attendees that explains the process in more detail. He introduced the new consulting parties Hennepin County (as of December 2014) and Cedar Isles Dean Neighborhood Association (CIDNA) (as of February 2015).<br>• Greg acknowledged the receipt of comments from consulting parties on the November 2014 package and meeting. MnDOT CRU will consider all comments received, but in order to get through all of the material needed to consult upon, this meeting will focus on the Kenilworth Lagoon and the next meeting will focus on comments received on corridor-wide effects. More frequent meetings will be held in Q1 to get through this. The draft Section 106 agreement will be included in the Final EIS and the executed agreement will be part of the ROD.<br>**Action: Respond to corridor-wide comments in a separate consultation meeting** |
| 4. | Kenilworth Lagoon<br>• Greg first showed a map of the Kenilworth Lagoon area and the historic properties potentially affected by a new crossing over the lagoon. This includes both Grand Rounds features and the Lake of the Isles Residential Historic District.<br>• Crossing Options<br>o Greg introduced three crossing options *(see Table 1 and KW Crossing options plans from 2/3/15 consultation package):*<br>▪ Metropolitan Council adopted scope: at-grade LRT crossing (Option 1)<br>▪ Shallow cut-and-cover LRT tunnel under the channel (Option 2)<br>▪ MPRB (Minneapolis Park and Recreation Board) proposal: "jacked box" LRT tunnel under the channel (Option 3)<br>o Mark Bishop from SPO presented the engineering plans for Options 1 and 2, describing the construction sequencing for bridge removal, replacement, and tunnel construction for Option 2.<br>o Michael Schroeder from MPRB explained the "jacked box" tunnel for Option 3. He described the construction techniques of using launching pit and receiving pit to install the jacked box. Winches would pull the box through the ground and a cutting edge on the front would help guide it into place. On the interior, soil would be excavated as it gets installed. Soil would remain intact around the box during construction and the channel would not be closed during the jacked box construction.<br>o Nani asked if removal/replacement of the existing bridges is needed under Option 3.<br>▪ Michael responded that the freight bridge and trail bridge would be removed and reconstructed to align with the project's current alignment. The reconstructed bridges could also be moved over the tunnel.<br>o Sarah Beimers from the Minnesota State Historic Preservation Office (SHPO) asked if the SPO had considered effects on deeply buried deposits during |

archaeological survey work in the area (e.g. for deep bore tunnel).

- Greg responded that it wasn't specifically addressed at the time of survey since a tunnel was not part of conceptual engineering during the DEIS, but MnDOT CRU could look at models to see if there was potential for deeply buried deposits. Michael also responded that MPRB didn't think there were any concerns with deeply buried deposits from discussions with their cultural resources staff, but haven't surveyed it.

- Bridge Design Concepts *(see Table 3 and bridge design concepts plans from 2/3/15 consultation package)*
  - Greg introduced revised bridge design concepts that are based on input received at the November 24, 2014 meeting. All three original concepts (Arched Pier, Thin Deck and Steel Pier) are included in Table 3 as presented in November 2014 (4 span, 3 pier concepts), new 5 span, 4 pier concepts, and one 7 span, 6 pier Steel Pier concept.
  - Ryan Kronzer from SPO noted that all of the concepts have pier overlaps. He presented the three revised 5 span concepts: Arched Pier, Steel Pier, and Thin Deck.
  - Michael asked why the structure depth ("total bridge thickness without railing") grew between the original Steel Pier and the revised Steel Pier concepts when the span lengths shortened? It went from 3'2" to 3'10" in Table 3, Bridge Design Concepts.
    - Mark verified that that 3'2" was an error in Table 3 and will be corrected for a future version - it should be 3'10".
  - Michael asked about bridge requirements for a trail bridge vs. an LRT bridge. Was there any consideration of load bearing requirements for different bridges, or consideration given to creating separate bridges in order to let light in between structures?
    - Mark responded that the combined LRT/trail bridge was designed with regard to the alignment off of the channel, ROW clearance, and safety considerations. The trail bridge is approximately 20' wide at a minimum, and the combined LRT/trail bridge is approximately 53.5' wide. Separation of the combined bridge could be done, but further study of the impacts to ROW would be needed, and how it would affect the alignment approaching the channel. The ROW clearance is minimal.
    - Michael responded that separated bridges would let more light in under the bridge and that there could be a different structure type for LRT. For example, because of less load bearing requirements, the trail bridge could eliminate pier penetrations and have different configurations of piers in the water.
    - Mark responded that this could potentially change the continuity of the structures and that SPO would need to look at how to design a structure with fewer spans.

- Sarah asked about the metric on Table 3 for the deck+parapet+beams and if it included railing heights.
  - SPO responded that it does not.
- Michael asked whether a gap would be possible between the LRT and trail bridge in the combined scenario?
  - Mark responded that it is possible, but the way it is currently designed allows emergency vehicles to access both LRT and the trail from the space between the bridges.
- Ryan introduced the one 7 span option for the Steel Pier only, which was the result of comments received during the November 2014 consultation. Michael asked what the advantage of the 7 span bridge configuration is?
  - Greg responded that it was developed in response to comments received to consider a replacement structure that was similar in design to the existing trestles, with same number of spans, but in a new, compatible material. Nani responded that it is not necessarily recommended.
  - Jennifer Ringold from MPRB commented that this is follow through from November comments.
- Michael asked if SPO had considered a hybrid bridge with a thinner deck over the water for more clearance and thicker spans on the ends?
  - Mark responded that SPO did not consider a hybrid bridge.
- Michael asked if there was possibility to use a different deck?
  - Mark responded that all are slab construction, which is about as thin as possible.
- Sarah commented that there is a large variation between bridge concepts in terms of abutments, wing walls, heights, grade changes, retaining walls, etc. She requested that SPO provide a summary of these aspects to better understand the differences between the concepts.
  - Greg responded that they will connect after the meeting to make sure SPO can address all of the specifics Sarah is concerned about and can provide these materials for an upcoming consultation meeting.

  **Action: Provide a summary of different technical aspects of bridge concepts to better understand differences between concepts.**
- Ryan presented a railing study that was completed in response to November 2014 consultation comments. The railing study was completed for both the Steel Pier and Thin Deck concepts. *(see railing study sketches from 2/3/15 consultation package).*

- Discussion of Effects
  - Measures to minimize or mitigate adverse effects *(see Table 2 from 2/3/15 consultation package)*
  - Greg presented Table 2: Kenilworth Lagoon/Channel Crossing Options Effects Assessment. The first part of the table addresses “temporary effects” during construction. Sarah asked about effects due to traffic on residential streets and

adjacent neighborhoods. She also commented that this could fit into the row of "coordinating construction hours in accordance with local permits."

- Mark responded that construction will be in a constrained area, but need to still determine access points, which will be confirmed as project planning advances.

- Michael commented on the Table 2 discussion of effects bundles all of the options as having the same temporary effects. He commented that the "closing of the channel during construction of the new crossing" would be different for each option. For example, the jacked box would be intermittent closures, but the cut-and-cover option would be a longer term closure of the channel.
- Sarah asked if staging areas would be included in the temporary effects assessment (e.g. effects from vibration, construction equipment/cranes).
  - Mark responded that construction will be within the corridor. Nani explained that the Draft EIS had some temporary acquisitions for construction staging areas, but the current plans have staging areas mostly within the ROW. These will be addressed in a construction monitoring plan, which will be a part of the Section 106 Agreement.
- Greg explained that traffic and construction impacts can be discussed at a future meeting since they are a corridor-wide discussion.
- Sarah commented that the construction in the lagoon area is unique and should be discussed on its own.
- Nani commented that Cedar Lake Parkway will be the main access point for construction and will be obtaining construction permits to do work in the area.
- Mark commented that the construction requirements are different for each option and bridge design concept.

  **Action: Address construction staging plan in Kenilworth Channel/Lagoon area.**
- Kathy Low from Kenwood Isles Area Association (KIAA) asked if the noise and vibration study covered both construction and built scenarios.
  - Nani responded that it is only covers the built scenario now, but a short term construction noise analysis will be in the Final EIS.
- Jennifer commented that the "minimization" measures in Table 2 should be differentiated by the different crossing options.
- Craig Westgate from Cedar Isles Dean Neighborhood Association (CIDNA) asked that SPO add seasonal construction impacts as well to the temporary effects portion of Table 2.
- Greg presented the "permanent effects" section of Table 2.
- Jennifer asked a clarifying question about the way the sentence was worded for the cut-and-cover and jacked box options as extending 42.5' into the middle section of the lagoon.
  - Greg responded that the 42.5' includes both clear space and space covered

by bridges. Jennifer commented that this is misleading, since the entire 42.5' will not be covered by bridges, therefore recommends rewording sentence to state the western boundary where the freight bridge ends is 42.5'. Or have two rows: one that states freight rail only western boundary, and one that states total amount of width.

- Greg referenced the width of the Lake Street bridge as a point of comparison for crossing width. Michael disagreed that the Lake Street bridge is a fair comparison due to its difference in depth, configuration, and context.
- Craig asked if the design (at-grade LRT option) could create open air between the bridges since there are a lot of shadows in the current concepts.
  - Mark responded that the width is currently set for minimum distance between bridges. SPO could potentially create open space, but would need to look into restrictions. Nani noted that the revised bridge design concepts shown today were created based on feedback from the November 2014 consultation and the revised concepts create more open space between the banks and water level (due to longer structure lengths).
- Greg ended the overview discussion looking for concurrence from consulting parties that all crossing options have an adverse effect on the lagoon. Nobody spoke, but nodded in agreement.
- Sarah stated that in the Section 106 process we must remember that an adverse effect to a contributing feature (KW lagoon) is also an adverse effect on the entire district itself (Grand Rounds Historic District). In the Table 2 effects assessment, it needs to be stated that the channel is a piece of the larger effect to the district, so it should also mention the Grand Rounds.
- Kathy asked Sarah how the Section 106 process weighs a noise impact versus an impact to the WPA retaining walls?
  - Sarah responded that the entire project needs to be considered. If the project is in a tunnel option (Option 2), then there is risk to losing the WPA retaining walls, and there will be visual impact from rebuilding bridges, but noise will be minimized. If the project is at grade, then the impact to the WPA retaining walls can be minimized, but the visual and noise effects may still impact the resource. In any of the options, there will be an adverse effect scenario.
- Sarah asked about the long term tunnel maintenance/reconstruction plan.
  - Mark responded that it is built for 75-year lifespan.
- Brian Schaffer from the City of Minneapolis asked where the jacked box portals would be located.
  - Michael responded that it would be east of alignment and then connect with the SPO proposed tunnel south of the Kenilworth crossing. In terms of depth, it is about 3 feet deeper than the shallow cut-and-cover option. The jacked box tunnel would be about 10 feet below the floor of the channel while a shallow cut-and-cover would be 7 feet below the waterway. The

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| | jacked box tunnel is currently following the same alignment as the SPO proposed options. |
| 5. | Next Steps<br>• Public involvement<br>  ○ Nani presented public involvement opportunities for the Section 106 process that will be integrated into other public involvement activities in 2015.<br>• Upcoming meeting schedule<br>  ○ Nani proposed establishing a bi-weekly meeting schedule for Q1, beginning with two dates: February 24 and March 17. Maya Sarna from FTA noted that she may not be able to attend on March 17, so the second meeting date may get rescheduled.<br>  ○ February 24<br>  ▪ Corridor-wide discussion of effects<br>  ▪ Section 106 Agreement overview<br>  ○ March 17 – to be rescheduled<br>  ▪ Discuss comments received on Kenilworth Lagoon |

| | **ACTION ITEMS:** | **PERSON RESPONSIBLE:** | **DEADLINE:** |
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| 1 | Provide corridor-wide discussion in future meeting | CRU/SPO | Q1/Q2 2015 |
| 2 | Provide information on technical aspects of bridge design | SPO | Q1/Q2 2015 |
| 3 | Provide construction staging plan for Kenilworth Channel/Lagoon area | SPO | As part of 106 agreement development |

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| **Meeting Title:** | SWLRT Section 106 Consultation – Meeting Notes |
| **Date:** | 2/24/2015 **Time:** 1:00 pm **Duration:** 1.5 hrs |
| **Location:** | Southwest LRT Project Office , Conference Room A<br>6465 Wayzata Boulevard, Suite 500<br>St Louis Park, MN 55426 |
| **Meeting called by:** | Greg Mathis, MnDOT Cultural Resources Unit (CRU) |
| **Attendees:** | SHPO: Sarah Beimers<br>Eden Prairie: Regina Rojas<br>Hopkins: Nancy Anderson<br>St. Louis Park: Meg McMonigal<br>MPRB: Jennifer Ringold, Michael Schroeder<br>KIAA: Kathy Lowe, Casie Moen<br>CIDNA: Craig Westgate<br>SPO: Caroline Miller, Dan Pfeiffer, Sophia Ginis, Mark Bishop, Leon Skiles, Jenny Bring<br>FTA (phone): Amy Zaref |
| **Purpose of Meeting:** | Meeting with consulting parties to continue Section 106 consultation. |

**AGENDA & DISCUSSION:**

1. Welcome and Introductions

2. Approval of 2/6/2015 consultation meeting notes
   - Greg Mathis asked if there were any comments from reviewing meeting notes. None of the consulting parties provided comments. Greg asked for any comments on the materials sent to the consulting within a day or two of this meeting.

3. Section 106 Agreement Overview
   - Greg presented the difference between a Memorandum of Agreement (MOA) and a Programmatic Agreement (PA), described the different components of a Section 106 agreement, and explained how Section 106 agreements are executed and the roles of signatories. He also presented the signatories for the Southwest Light Rail Transit (SWLRT) project Section 106 agreement:
     - Signatories: Federal Transit Administration (FTA), United States Army Corps of

Engineers (USACE), Minnesota State Historic Preservation Office (SHPO), and the Advisory Council on Historic Preservation (ACHP) if it chooses to participate
    - Invited signatories: Metropolitan Council , and possibly Hennepin County
    - Concurring parties: all other entities participating in this meeting, including local governments, neighborhood groups, and property owners
- Sarah Beimers from the Minnesota State Historic Preservation Office (SHPO) commented that the Area of Potential Effect (APE) will also be documented in the 106 Agreement.
- Greg responded that the project intends to include the draft Section 106 Agreement (including the APE documentation as SHPO mentioned) in the FEIS, and a final, executed agreement as an attachment to the ROD.
- Greg provided the Central Corridor (Green Line) Programmatic Agreement as an example of a Section 106 Agreement and provided a link to the Advisory Council on Historic Preservation (ACHP) website for further information on Section 106 agreements. No further questions or comments were made on this topic. SPO and MnDOT CRU will continue discussion on the Section 106 Agreement at a future meeting.

4. Discussion on effects to historic properties - Corridor-wide
    - Greg presented a revised draft Determination of Effects on Historic Properties table (effects table). Both a redlined and clean version were provided so consulting parties can see the changes that occurred from when it was last shared in the November 2014 consultation package.
    - Greg explained that the effects table has been revised to include additional information: summary of comments received from the consulting parties, responses from SPO/FTA/MnDOT CRU, and next steps (work in progress). The effects table includes three sections as was the November version. There were no comments on Section 1 historic properties. Discussion related to historic properties in Sections 2 & 3 of the effects table are summarized below:
    - Chicago, Milwaukee & St. Paul R.R. Depot
        - Meg McMonigal from the City of St. Louis Park asked when the signal bungalow location will be determined
            - Mark Bishop from SPO responded that design refinements to this area, including the signal bungalow location, will come through the consultation process and are under discussion as part of the advanced design process.
        - Meg agrees with proposal in effects table to move the signal bungalow further west to minimize effect on the depot and the next steps for measures to incorporate in the Section 106 agreement.
        - No further consultation required other than how mitigation is addressed in the Section 106 agreement
    - Peavey-Haglin Experimental Concrete Grain Elevator
        - SHPO commented that FTA needs to consult with the National Park Service (NPS) and possibly the ACHP because this property is a National Historic Landmark (NHL);

there are special provisions in NHPA (Section 101) and in 36 CFR 800.10 regarding NHL's that need to be addressed.

  - **Action: MnDOT CRU/FTA will look into this and follow up with SHPO**

- Minikahda Club
  - Greg explained that after the 11/24/2014 consultation meeting the Project re-visited the design of the pedestrian crossing to consider ways to avoid and minimization impacts, resulting in design changes that avoid the adverse effect, resulting in a determination of no adverse effect. All agreed with the no adverse effect determination with continued consultation
  - Craig Westgate from the Cedar-Isles-Dean Neighborhood Association (CIDNA) expressed concerned that the revised design creates a longer crosswalk
  - SHPO asked that the project submit changes as a formal submittal to SHPO for concurrence.
    - Greg confirmed that these changes would be included in a future formal submittal to the SHPO.
  - **Action: Submit changes for Minikahda Club to SHPO for formal review as part of FTA's effect determination.**
  - Meg asked if the City of Minneapolis was represented at the meeting today. Greg responded that the City of Minneapolis representatives, Brian Schaffer and Jack Byers, had conflicts and were not able to attend

    **Action: Project will mail them copies of the meeting materials**
  - Mark noted that Paul Miller from City of Minneapolis Public Works and other City staff have approved the updated design plan
- No further consultation required other than how mitigation is addressed in the Section 106 agreement Lake Calhoun (Grand Rounds Historic District [GRHD] element)
  - CIDNA, SHPO and Minneapolis Park and Recreation Board (MPRB) representatives discussed the West Lake Multi-Modal Study that is being scoped for the West Lake Station (study area includes Minikahda Club and Lake Calhoun). They are concerned about pedestrian accessibility and safe access to the Lake Calhoun Playing Fields. Concern is related to increased vehicular traffic.
  - Craig asked why the pedestrian access at Minikahda Club was redesigned, without addressing all pedestrian access for the Lake Calhoun area. Mark Bishop responded that the Memorandum of Understanding (MOU) with Minneapolis defined specific intersection improvements, but that the multi-modal traffic study would identify other areas that were not included in the MOU.

    **Action: Provide update on scope for the Minneapolis lead West Lake Street Station multi-modal traffic study**
  - Jennifer Ringold from MPRB the stated that the MPRB needs to review the scope of the multi-modal traffic study before providing further comments regarding their concerns about traffic and parking. They will include comments in their comments due on 3/5/15.
  - Craig expressed concerned about parking and pedestrian access in the whole area,

which needs to be addressed. Greg responded that this is beyond Section 106, which is focused on historic properties, but is something that would be addressed in the NEPA process and documentation.

- Lake Calhoun will require further discussion and consultation

- Cedar Lake Parkway (GRHD element)
  - In response to the MPRB concern about retaining the current quiet zone status, Greg explained that the LRT will be in a tunnel and, therefore, not present any noise issues at the parkway.
  - Jennifer expressed concerned about post construction, operational quiet zone for freight.
    - Mark responded that this has been discussed with FRA and FRA is okay with it retaining its quiet zone status. This area is currently a quiet zone. SPO is coordinating with FRA and city on continuation of current quiet zone after construction. This is not a specific 106 issue, but our engineers did respond to questions during this meeting and are working closely with FRA This issue will be documented as part of the NEPA process.
    - **Action: MPRB requests documentation that quiet zone will be in place post construction.**

    **Action: Provide FRA documentation that quiet zone status will remain at Cedar Lake Parkway after construction**
  - Jennifer and Michael Schroeder from the MPRB expressed concern about the appearance of the tunnel portals since they have not yet been designed and agrees with provisions proposed for the Section 106 agreement to consult on design of tunnel portals and to design the portals in accordance with the *Secretary of the Interior's Standards* (SOI's Standards). This would address their concerns.
  - Further consultation on design of the portals will be included in discussion of how mitigation is addressed in the Section 106 Agreement.

- Neils House
  - Kathy Lowe from the Kenwood-Isles Area Association (KIAA) commented on traffic impacts, parking, and safety disrupting setting. Kathy stated that there are planned to be 1,600 daily riders at this station and is concerned with how riders will get to the station and where they will park
  - Kathy asked about timing of traffic analysis results and how this corresponds with publishing of the FEIS.
  - Kathy requested results of traffic analysis prior to determination of effect.
    - Greg replied that the traffic analysis will be included in the FEIS. This will be discussed during future meetings when the study will be completed.

    **Action: SPO to provide update on traffic analysis when completed**
  - Greg asked KIAA to clarify a comment in its 12/10/14 letter about effects on historic properties from light emitted from LRT trains during operations. Kathy responded that the comment was made by another person within KIAA. She will follow up with

others at KIAA and provide a response in their comments
    - KIAA asked that construction vibration analysis be done before final determination of effect is made.
    - Sarah commented that continued consultation is needed on the Neils House due to unresolved issues about effects of traffic and noise and vibration on setting.
    - Will need further consultation on results of traffic and noise and vibration analyses.
- Saveland House
    - Kathy expressed similar comments about effects to the historic district as those raised for the Neils House
    - SHPO commented that Neils House and Saveland House need further consultation to address remaining questions on effects to these properties.
    - Will need further consultation on results of traffic and noise and vibration analyses.
- Kenwood Parkway Residential Historic District and Kenwood Parkway (also a GRHD element)
    - Kathy expressed similar comments about effects to the historic district as those raised for the Neils House
    - Greg noted that the noise analysis is being completed for the Project and will be documented as part of the NEPA process. This will be a point of further discussion in future consultation meetings as well. Greg noted that Kenwood Parkway itself is not a noise sensitive receptor.
    - Kathy agreed that the parkway itself is not a noise sensitive receptor, but wants operations noise analysis for the historic district completed before a final determination of effect is made
    - Kathy expressed concern about traffic along Kenwood Parkway and impacts to Kenwood Park pedestrian access
    - Will need further consultation on results of traffic and noise and vibration analyses.
- Shaw House
    - Kathy expressed the same comments about effects on the Shaw House as those expressed for the Neils House
    - Will need further consultation on results of traffic and noise and vibration analyses.
- Kenwood Park (GRHD element)
    - Kathy expressed concerns about the safety of pedestrians trying to access the park and about disruption of park-like setting from increased traffic and parking during operation
    - Kathy stated that KIAA wants to see traffic analysis and vibration impacts for construction before final determination of effect is made.
    - Will need further consultation on results of noise and vibration analyses.
- Kenwood Water Tower (GRHD element)
    - Kathy requested information about the traffic analysis during operation and vibration impacts for construction before final determination of effect is made. Greg responded

that traffic analysis for operation and vibration impacts for construction is being analyzed as part of the NEPA process and will be provided to the consulting parties.
    - Will need further consultation on results of traffic and noise and vibration analyses.
- Cedar Lake (GRHD element)
    - Jennifer commented that the updated effects table does a good job of breaking down the issues and stated that MPRB's main concern is noise and wants to continue consultation once noise category is determined
- Will need further consultation on results of traffic and noise and vibration analyses. Grand Rounds Historic District
    - Greg explained that the Grand Rounds Historic District has a preliminary determination of adverse effect based on the preliminary adverse effect for the Kenilworth Lagoon/Channel.
    - Grand Rounds Historic District will require further discussion and consultation regarding the effects of the new crossing over the Kenilworth Lagoon/Channel and how to assess effects on individual elements of the district.
- Park Board Bridge No. 4, Lake of the Isles Parkway, Lake of the Isles (GRHD element)
    - Greg stated that the effects table has been updated for these properties with a determinations of "no adverse effect" Craig commented that CIDNA would like to see the design of the new crossing over Kenilworth Lagoon before agreeing with a no adverse effect determination
    - **Action: Bring bride design to a future Consultation Meeting**
    - Sarah commented that an adverse effect to an element of the GRHD constitutes an adverse effect to the entire historic district. It is not possible to make a determination of "no adverse effect" on these individual/contributing elements due to their setting. Sarah noted that an adverse effect to a small part of a district constitutes an adverse effect on the entire district. Sarah suggested that it may be easier to consider GRHD as a whole instead of by individual elements and address direct and indirect effects; noting that the direct effect is to Kenilworth Lagoon and indirect effects are to the rest of the properties.
        - Greg stated we will continue this discussion as part of consultation process.
    - Grand Rounds Historic District will require further discussion and consultation regarding the effects of the new crossing over the Kenilworth Lagoon/Channel and how to assess effects on individual elements of the district.

5. Next Steps
    - Anticipated upcoming meeting schedule
        - March 24, 1:00pm
            - Continue consultation on Kenilworth Lagoon/Channel crossing
        - April 14
            - MPRB stated that they have a conflict on 4/14, but could meet the week

prior or week after

- Nelrae Succio (Hennepin County) mentioned that the week after would have conflicts with a FTA PMOC meeting on 4/21

| **ACTION ITEMS:** | **PERSON RESPONSIBLE:** | **DEADLINE:** |
|---|---|---|
| Submit revised plans for Minikahda Club to SHPO | SPO/CRU | prior to final effect determination |
| Review consultation requirements for National Historic Landmarks | SPO/FTA | May 2015 |
| Mail copies of the consultation meeting materials to consulting parties who could not attend | SPO | Complete - 3/2/15 |
| Provide FRA documentation of quiet zone at Cedar Lake Parkway after construction | SPO/FTA | prior to final effect determination |
| Provide updates on analyses when available:<br>• traffic analysis for construction and operations<br>• noise and vibration analysis for construction and operations, including update on noise categories for historic properties | SPO/FTA | April 2015 - prior to final effect determination |
| Provide scope for West Lake Street Station multi-modal traffic study being lead by Mpls | SPO/Mpls | prior to final effect determination |

# MEMORANDUM OF UNDERSTANDING

This Memorandum of Understanding is between the Minneapolis Park & Recreation Board (MPRB) and the Metropolitan Council as of March 12, 2015.

**WHEREAS,**

1. The Metropolitan Council has authority under Minnesota Statutes section 473.399 to 473.3999 to plan, design, acquire, construct and equip light rail transit (LRT) facilities in the seven-county metropolitan area, as defined in Minnesota Statutes section 473.121, subdivision 2. Further, the Metropolitan Council has authority under Minnesota Statutes section 473.405, subdivision 4, and other applicable statutes, to engineer, construct, equip, and operate transit systems projects, including LRT, in the metropolitan area.

2. The Metropolitan Council is developing the Southwest Light Rail Transit (SWLRT) Project, a proposed approximately 15.8 mile extension of the METRO Green Line, which would operate from downtown Minneapolis to Eden Prairie.

3. The Metropolitan Council is working cooperatively with the Hennepin County Regional Rail Authority (HCRRA) on the Bottineau Light Rail Transit (BLRT) Project, a proposed approximately 13 mile extension of the METRO Blue Line, which would operate from downtown Minneapolis to Brooklyn Park.

4. The MPRB is responsible for maintaining and developing the Minneapolis Park system to meet the needs of Minneapolis citizens and is the official with jurisdiction relating to Section 4(f) for park and recreational areas within its jurisdiction.

5. LRT projects involve numerous statutory and regulatory processes and coordination or engagement between multiple government units or other entities. The Parties discussed these processes with respect to property owners of park and recreation areas. A summary of those discussions is attached as Attachment A. Attachment B is a visual representation of the coordination of these activities.

6. The SWLRT Project's current scope and budget include the use of bridges to cross the Kenilworth Channel for freight rail, LRT and the Kenilworth Trail. The Parties discussed process and design considerations in the event the final design utilizes a bridge crossing. These process and design considerations are set forth in Attachment C.

**NOW THEREFORE**, the Parties set forth their understandings as follows:

1. The Metropolitan Council agrees to the terms and processes outlined in Attachments A and B with respect to park and recreation areas under the jurisdiction of the MPRB.

2. The Metropolitan Council and the MPRB agree to the Kenilworth Channel Crossing Process and Design Considerations for Bridge Concepts as outlined in Attachment C.

3. Nothing in this MOU shall be construed as limiting or affecting the legal authorities of the Parties, or as requiring the Parties to perform beyond their respective authorities.

4. The Parties acknowledge that the planning and construction of any LRT project will require numerous federal, state, and local processes, approvals and funding commitments. The SWLRT Project is currently in the Project Development phase of the federal New Starts program and a substantial amount of design, engineering, environmental review, and funding commitments must occur before construction can begin. Any LRT project cannot proceed without the issuance of the Record of Decision by the FTA and funding of the Project, including the Full Funding Grant Agreement from the FTA.

5. Nothing in this MOU shall require the Metropolitan Council or the MPRB to take any action or make any decision that will prejudice or compromise any processes required under state or federal environmental or other laws or regulations. This MOU further does not limit the alternatives or mitigative measures that the Metropolitan Council may undertake in the development and construction of any LRT project.

**MINNEAPOLIS PARK & RECREATION BOARD**

By _____

Its: President Liz Wielinski

By _____

Its: Secretary

Date 3/31/2015

**METROPOLITAN COUNCIL**

By _____

Its: Regional Administrator

Date 3/20/2015

Approved as to form:

_____

Attorney 4/1/15

**Attachment A**
**LRT Project Coordination**
**Park and Recreation Areas**

Attachment B outlines critical coordination opportunities and process changes that will be implemented by the Metropolitan Council with property owners of park and recreation areas. These processes are designed to support the protection of park and recreation areas by fully integrating consideration of these important resources into project development, engineering and construction processes and activities. This includes exercising full authority under the National Environmental Policy Act of 1969 (NEPA), the Minnesota Environmental Policy Act (MEPA) and Section 4(f) of the Department of Transportation Act of 1966. Specifically, these coordination opportunities ensure the protection of park and recreation areas are addressed early under these processes and continue through the construction of the LRT project. The exhibit identifies five new coordination opportunities and process changes (see below) that will be incorporated into the appropriate Metropolitan Council's LRT Project Office Procedures. The Metropolitan Council agrees to update these administrative procedures effective March 12, 2015.

Coordination Opportunities and Process Changes

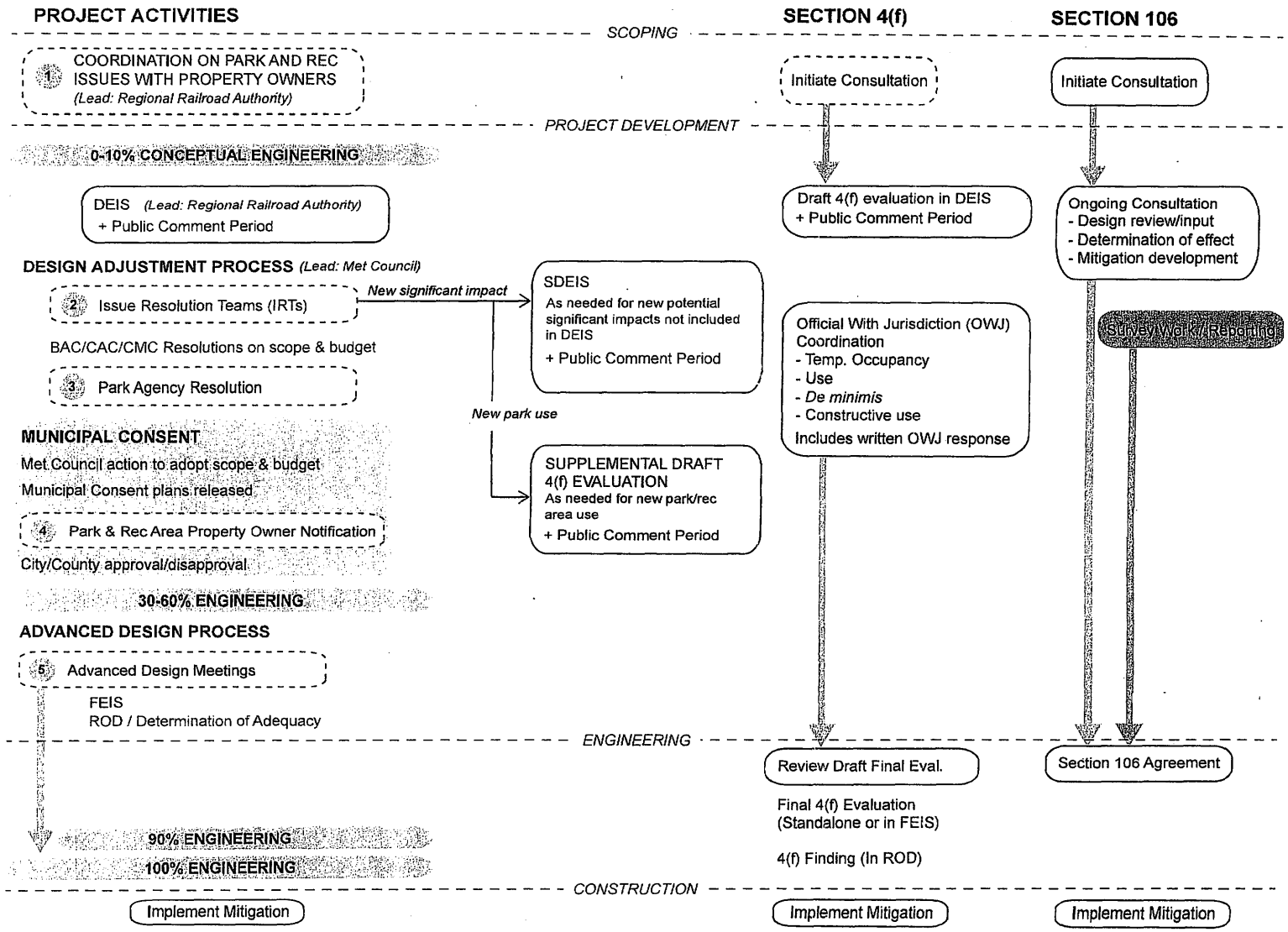
1. Scoping and Planning Engagement: In accordance with NEPA and Section 4(f) requirements, the lead project agency(ies) will work with park and recreation area property owners to identify park properties and conduct a preliminary review of potential impacts to parks and Section 4(f) avoidance and mitigation alternatives during the scoping and planning process. Since this element of the process would likely be led by the responsible regional railroad authority, the Metropolitan Council will coordinate with the regional railroad authority to address issues and concerns for park properties during the scoping process and review the Scoping Report and/or applicable planning documentation on park and recreation areas when it assumes responsibility for the project.
2. Park and Recreation Area Issue Resolution Team (IRT): In addition to other identified IRTs, there will be an IRT specifically focused on park and recreation areas within the project study area. The IRT will be comprised of property owners of those park and recreation areas in the project study area. The purpose of the IRT will be to incorporate the protection of park properties and the Draft Section 4(f) Evaluation into the design adjustment process. The IRT process will also include other applicable topics that would involve affected park properties, including but not limited to design adjustments, Section 106 status, Section 4(f) status, NEPA/MEPA status, Municipal Consent Plans, and 30% design plans.
3. Park and Recreation Area Property Owner Resolution: Prior to the Metropolitan Council action to adopt the scope and budget initiating the Municipal Consent process, the park and recreation area property owner may take a resolution indicating its position on the project scope and budget.
4. Park and Recreation Area Property Owner Notification of Changes: If, during the Municipal Consent process, the Metropolitan Council, city , town, or county propose a substantial change to the preliminary design plans for a park or recreation area, the Metropolitan Council will notify

the park and recreation area property owner of the proposed change and identify the next steps and timeframe in the Municipal Consent process, thereby allowing the property owner to provide input to the Council, city, town, or county.

5. Advanced Design Meetings: Park and recreation area property owners will have the opportunity to participate in the advanced design process including design coordination on project elements that impact park and recreation areas, as well as conducting 60% and 90% design plan reviews.

# Attachment B: LRT Project Coordination

Parks and Recreation Areas




## COORDINATION OPPORTUNITIES

Existing | New

1. *SCOPING ENGAGEMENT*
   *Identify park properties and preliminary review of park impacts*

2. *PARK AND REC AREA ISSUE RESOLUTION TEAM (IRT)*
   *In addition to regular IRTs, to incorporate park properties and draft 4(f) evaluation into design adjustment process (w/ park owners and project office)*

   *IRT presentations as requested by stakeholders:*
   - *design adjustments*
   - *106 status*
   - *4(f) status*
   - *NEPA status*
   - *Municipal Consent plans*
   - *30% plans*

3. *PARK AGENCY RESOLUTION*
   *On park and recreation area impacts based on current design*

4. *PARK AND REC AREA PROPERTY OWNER NOTIFICATION*
   *Notice of any changes to municipal consent plans that may impact park and rec areas*

5. *ADVANCED DESIGN MEETINGS*
   *Address park properties in design process (with park owners and project office) including:*
   - *design coordination*
   - *60% plan review*
   - *90% plan review*

**ACRONYMS:**

DEIS: Draft Environmental Impact Statement
FEIS: Final Environmental Impact Statement
OWJ: Official With Jurisdiction
ROD: Record of Decision
SDEIS: Supplemental Draft Environmental Impact Statement

**Attachment C**
**Kenilworth Channel Crossing**
**Process and Design Considerations for Bridge Concepts**

20 February 2015

***Overview***

To aid in advancing the design of bridge concepts for the crossing of the Kenilworth Channel, this document frames a process of collaboration between the Southwest LRT Project Office (SPO) and the Minneapolis Park and Recreation Board (MPRB) and outlines a set of parameters intended to guide further exploration of bridge concepts beginning with a conceptual perspective and eventually arriving at a mutually supportable design.

In describing both a process to follow as well as design principles, it is understood there is work that *has been accomplished* and additional work that will continue using the design principles outlined in this attachment. The goals of this effort are to:

- encourage collaboration between SPO and MPRB in defining design directions that satisfy concerns raised by MPRB in its review of the SWLRT alignment in the area of the Kenilworth Channel;
- incorporate strategies or features in the design of a bridge that respond to findings of MPRB's study of channel crossing concepts; and
- allow for the eventual implementation of bridge crossings of the channel for freight rail, light rail, and the Kenilworth Trail in ways that maintain the feasibility, budget and schedule of the SWLRT project.

In pursuing a process focused on design, SPO and MPRB recognize the effort to be more aspirational than prescriptive. Steps of the design process may focus on history, user experience, environmental context, or structure relationships in varying ways.

***Process***

The process pursued in the design of the bridges recognizes concurrent and ongoing required reviews facilitated by SPO and other project design work in the same corridor, some of which may influence bridge designs as a result of proximity to the Kenilworth Channel. Bridge design activities will be coordinated to align with existing schedules established by SPO for Section 4(f) and Section 106, and the Kenilworth Landscape Design Consultant activities. Schedules for those processes will be defined separately from this document.

Bridge concepts and design refinements will be presented by SPO as a part of meetings that address topics related to the Kenilworth corridor or areas near the Kenilworth Channel that are influenced by the alignment of SWLRT. For these efforts, MPRB staff may participate in presentations to support the design.

SPO and MPRB commit the resources of key staff to effect the process of creating a supportable bridge design.

***Design Milestones***

Work related to bridge design will begin immediately and be pursued according to the following schedule (note that reviews noted above will be required as a part of the schedule described below; note also that the term "bridge," as used in the following table, may apply to any configuration of single or multiple bridges required for the channel crossing):

| Task | Milestone | Responsible Party | Anticipate Schedule |
|---|---|---|---|
| 1 | Establish design criteria, environmental mitigation strategies, and concept directions (narrative descriptions) | SPO/MPRB | Q1 2015 |
| 2 | Review and finalize design criteria, environmental mitigation strategies, and narrative concepts; compare to directions from previous bridge design work | SPO/MPRB | |
| 3 | Explore initial design directions based on narrative concepts | SPO | |
| 4 | Develop a range of bridge design concepts | SPO | |
| 5 | Update MPRB Board of Commissioners on bridge design process; gain input on preferred directions | SPO/MPRB | |
| 6 | Coordinate with ongoing Section 4(f), Section 106 and Kenilworth Landscape Design Consultant activities | SPO | Ongoing |
| 6 | Select a preferred bridge design direction | MPRB | |
| 7 | Develop 60 percent bridge design documents | SPO | |
| 8 | Conduct 60 percent formal reviews | MPRB | Q3 2015 |
| 9 | Develop 90 percent bridge design documents | SPO | |
| 10 | Conduct 90 percent formal reviews | MPRB | Q1 2016 |
| 11 | Complete final bridge design | SPO | Q2 2016 |

The tasks described will be pursued collaboratively to the extent practicable, with production work related to concept documentation, design refinements, and presentation materials being the primary responsibility of SPO with coordination and review by MPRB.

***Design Principles***

The design of the bridge crossing may introduce forms other than those defined in previously shared bridge design concepts. The process should result in distinct bridge concepts that can be assessed for their ability to resolve impacts identified by MPRB in its process of studying tunnel alternatives. [1]

The bridge designs may follow the following conceptual design principles:

a) Bridges are defined primarily by structural design requirements, and considering, at a minimum:
    a. Separation of freight, LRT, and trail bridges
    b. Exploration of pier and deck configurations aimed at reducing piers in the channel while maintaining desired vertical clearances in the channel
    c. Use of other structure types based on structural requirements (loading, deflection)
b) Bridges are defined primarily by the context of the channel and its users, and considering, at a minimum:
    a. User-focused experience with few or no penetrations of the channel
    b. Elimination of roosts on the underside of the bridge or piers
    c. Minimization of continuous deck expanse in order to bring more light to channel
c) Bridges are defined primarily by the context of the Grand Rounds, and considering, at a minimum:
    a. Reference to other bridges in the Chain of Lakes Regional Park, using the form, scale, materials, color, and details to influence the design without mimicry
    b. Creation of a contrast with historical channel elements (WPA walls) to clearly separate the newly introduced structures from those elements currently considered contributing to its historic nature
    c. Recognition that there was no trail bridge at this location, that the railroad bridge that was constructed does not match other nearby railroad bridges, and that new bridges may not need to reference those other structures
d) Bridges are defined primarily by their relationships to one another, and considering, at a minimum:
    a. Creation of a series of bridges all based on the same structural system, style, mass, and detail (no distinction by use)
    b. Establishment of freight and rail bridges based on the same structural system, style, mass, and detail, with a trail bridge employing a different structural system, style, mass, and detail (distinction by use)
    c. Creation of a "family" of structures, focused on coherency but allowing each to be different based on structure type and use

Through the Section 106 consultation process, directions for bridge form, configuration, and details have been proposed and may be incorporated into the conceptual design principles described above, including:

a) Related to Bridge Concepts:

---

[1] The MPRB undertook a study of the channel crossing and determined visual quality and noise as the MPRB's highest priorities for consideration in the design of the bridge.

   a. Design investigation in coordination with Section 106 process and Secretary of Interior Standards
   b. Tested with structural engineering

b) Aesthetic Considerations
   a. Space for banks between abutments and water
   b. Symmetry
   c. Consistency of elevations: curbs, railings and fencing

c) Summary of Consulting Party input (Nov. 2014)
   a. Maximize natural light between bridges
   b. Importance of bank engagement: vegetation restoration and bank walls; bridge abutments and retaining wall
   c. Create more space for skiers and kayakers
   d. Natural materials, dark colors
   e. Utilitarian, non-ornamental
   f. Re-interpretation of existing bridge
   g. Modern construction techniques

Designs shall demonstrate the relationship to the concepts framed (or as refined through the process) through illustrations and supporting narrative descriptions and be augmented by precedent images or other information supportive of the concept.

# Bridge Design Concepts and Configurations Considered

| | | Concepts Presented in November 2014 | | | Bridge Configurations - April 2015 | | | |
|---|---|---|---|---|---|---|---|---|
| **Bridge Concept / Configuration** | **Existing Trail/ Freight Bridge:** Timber Pile (7 span) | **Concept 1A:** Arched Pier<br>2 Bridge - (4 span) | **Concept 1B:** Steel Pier<br>2 Bridge - (4 span) | **Concept 1C:** Thin Deck<br>2 Bridge - (4 span) | **Configuration 4A:**<br>3 Bridge | **Configuration 4B:**<br>3 Bridge | **Configuration 4C:**<br>3 Bridge | **Configuration 4B-Skew:**<br>3 Bridge |
| **Total No. of Piers** | 6 | 3 | | | Freight - 4<br>LRT - 2<br>Trail - 0 | Freight - 2<br>LRT - 2<br>Trail - 0 | Freight - 2<br>LRT - 2<br>Trail - 0 | Freight - 2<br>LRT - 2<br>Trail - 0 |
| **No. of Piers at water level** | 4 | 3 | | | Freight - 2<br>LRT - 2<br>Trail - 0 | Freight - 2<br>LRT - 0<br>Trail - 0 | Freight - 2<br>LRT - 1<br>Trail - 0 | Freight - 2<br>LRT - 0<br>Trail - 0 |
| **Individual Span Length (Centerline to Centerline)** | Varies 12'-9" to 13'-11" | 14' & 29' | 14' & 29' | 23' & 25' | Freight - 25' and 34'<br>LRT - 33' & 34'<br>Trail - 100' | Freight - 35' and 50'<br>LRT - 22.5' & 75'<br>Trail - 110' | Freight - 35' and 50'<br>LRT - 30' & 65'<br>Trail - 110' | Freight - 35' and 50'<br>LRT - 22.5' & 75'<br>Trail - 108' |
| **Clearance Between Piers** | +/-11'-5" | 12' & 25' | 13'-3" & 27'-6" (LRT),<br>12'-6" & 26'-0" (FRT) | 21'-9" & 22'-6" (LRT),<br>20'-10" & 20'-8" (FRT) | TBD | TBD | TBD | TBD |
| **Pier Width** | Single Row 14"-16" Dia. | 4' | Single Row 18" Dia. (LRT),<br>Double Row 18" Dia. (FRT) | 2'-6" (LRT),<br>4'-4" (FRT) | TBD | TBD | TBD | TBD |
| **Bridge Length (Abutment-to-Abutment)** | 96' | 86' | 86' | 96' | Freight - 134'<br>LRT - 100'<br>Trail - 100' | Freight - 120'<br>LRT - 120'<br>Trail - 110' | Freight - 120'<br>LRT - 115'<br>Trail - 110' | Freight - 120'<br>LRT - 120'<br>Trail - 108' |
| **Pier Cap (Width x Depth)** | 14" SQ. | 4'-0" x 2'-6" | 3'-6" x 3'-0" (LRT),<br>4'-0" x 3'-0" (FRT) | N/A (LRT),<br>4'-4" x 3'-0" (FRT) | TBD | TBD | TBD | TBD |
| **Total Bridge Thickness without Railing (Parapet+Deck+Beams)** | +/- 5' | 4'-0" | 3'-2" | 1'-8" | Freight - 2'-3" & 3'-0"<br>LRT - 1'-6" & 2'-0"<br>Trail - TBD | Freight - 3'-0" & 4'-9"<br>LRT-25' span: 1'-3" & 1'-8",<br>75' span: 3'-3" & 4'-4"<br>Trail - TBD | Freight - 3'-0" & 4'-9"<br>LRT-30' span: 1'-6" & 2'-0",<br>65' span: 2'-9" & 3'-8"<br>Trail - TBD | Freight - 3'-0" & 4'-9"<br>LRT-25' span: 1'-3" & 1'-8",<br>75' span: 3'-3" & 4'-4"<br>Trail - TBD |
| **Vertical Clearance** | 14' | 14' | 14' | 14' | Freight - 13.4'<br>LRT - 14.4' & 13.9'<br>Trail - TBD | Freight - 11.7'<br>LRT - 12.7' & 11.6'<br>Trail - TBD | Freight - 11.7'<br>LRT - 13.1' & 12.2'<br>Trail - TBD | Freight - 11.7'<br>LRT - 12.7' & 11.6'<br>Trail - TBD |
| **Trail Bridge Width** | 22'-0" | 53'-6" | | | 22'-6" | | | |
| **LRT Bridge Width** | N/A | | | | 32'-6" | | | |
| **Freight Rail Bridge Width** | 23'-0" | 20'-4" | | | 20'-4" | | | |
| **Total Width of Bridges** | 45'-0" | 74' | | | 75'-4" | | | |
| **Open Space Between Freight & LRT Bridge** | N/A | 8'-7" | | | 6'-7" | | | |
| **Open Space Between LRT & Trail Bridge** | N/A | N/A | | | 5'-0" | | | 5'-0" Min<br>14'-0" Max |
| **Total Width of Bridges + Clear Space Between Bridges** | 45' | 82' | | | 87'-0" | | | 87'-0" Min<br>96'-0" Max |

DRAFT - WORK IN PROCESS

MPRB ROW
EXISTING WPA WALL
MPRB ROW
RETAINING WALL
EXISTING ROW
EXISTING ROW
℄ FREIGHT–KENILWORTH
134.0'
25.0'
25.0'
34.0'
25.0'
25.0'
RETAINING WALL
331+00
332+00
333+00
BNSF
RETAINING WALL/ 6.0' CRASH WALL
BALLAST CURB
100.0'
33.0'
34.0'
33.0'
FREIGHT BRIDGE
RETAINING WALL
℄ TRACK 1
1801+00
HISTORIC RESOURCE LIMITS
1802+00
1803+00
POTENTIAL FUTURE WALK
HISTORIC RESOURCE LIMITS
EXISTING ROW
℄ TRACK 2
2801+00
2802+00
2803+00
BALLAST CURB
LRT BRIDGE
BALLAST CURB
RETAINING WALL
HCRRA
TRAIL BRIDGE
16' TRAIL (KENILWORTH TRAIL)
EXISTING ROW
100.0'
6.0'
EXISTING TIMBER PIER (TYP)
EXISTING WPA WALL
EDGE OF WATER
MPRB ROW
MPRB ROW
EXISTING ROW
EXISTING WPA WALL

LEGEND

- LIMITS OF DISTURBANCE
- WPA WALLS WITHIN PROJECT LIMITS – POTENTIAL REMOVAL
- PROPOSED STRUCTURE

DRAFT-WORK IN PROCESS

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SOUTHWEST
Green Line LRT Extension

# SOUTHWEST LIGHT RAIL

LAGOON/CHANNEL BRIDGE - LAYOUT CONFIGURATION 4A

Rev 0
04/22/2015

NORTH
0 5 10 20
SCALE

METROPOLITAN COUNCIL

AECOM
Kimley»Horn

MPRB ROW
EXISTING WPA WALL
MPRB ROW
EXISTING ROW
RETAINING WALL
EXISTING ROW
RETAINING WALL
℄ FREIGHT–KENILWORTH
120.0'
35.0'
50.0'
35.0'
331+00
332+00
333+00
FREIGHT BRIDGE
BNSF
RETAINING WALL/
6.0' CRASH WALL
BALLAST CURB
120.0'
75.0'
22.5'
22.5'
RETAINING WALL
℄ TRACK 1
1801+00
HISTORIC
RESOURCE
LIMITS
1802+00
1803+00
POTENTIAL
FUTURE WALK
HISTORIC
RESOURCE
LIMITS
EXISTING
ROW
℄ TRACK 2
2801+00
2802+00
2803+00
LRT BRIDGE
BALLAST CURB
BALLAST CURB
RETAINING WALL
HCRRA
TRAIL BRIDGE
16' TRAIL
(KENILWORTH TRAIL)
EXISTING
ROW
110.0'
6.0'
EXISTING TIMBER PIER
(TYP)
EXISTING WPA WALL
EDGE OF WATER
MPRB ROW
MPRB ROW
EXISTING
ROW
EXISTING WPA WALL

LEGEND

- LIMITS OF DISTURBANCE
- WPA WALLS WITHIN PROJECT LIMITS – POTENTIAL REMOVAL
- PROPOSED STRUCTURE

DRAFT-WORK IN PROCESS

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SOUTHWEST
Green Line LRT Extension

# SOUTHWEST LIGHT RAIL

LAGOON/CHANNEL BRIDGE - LAYOUT CONFIGURATION 4B

Rev 0
04/22/2015

NORTH
0 5 10 20

METROPOLITAN COUNCIL

AECOM
Kimley»Horn

MPRB ROW
EXISTING WPA WALL
MPRB ROW
EXISTING ROW
EXISTING ROW
RETAINING WALL
℄ FREIGHT–KENILWORTH
120.0'
35.0'
50.0'
35.0'
RETAINING WALL
331+00
332+00
333+00
RETAINING WALL/
6.0' CRASH WALL
BALLAST CURB
BNSF
HISTORIC
RESOURCE
LIMITS
115.0'
30.0'
65.0'
20.0'
FREIGHT BRIDGE
RETAINING WALL
℄ TRACK 1
1801+00
1802+00
1803+00
EXISTING
ROW
POTENTIAL
FUTURE
WALK
HISTORIC
RESOURCE
LIMITS
℄ TRACK 2
2801+00
2802+00
2803+00
BALLAST CURB
LRT BRIDGE
BALLAST CURB
RETAINING WALL
HCRRA
TRAIL BRIDGE
16' TRAIL
(KENILWORTH TRAIL)
EXISTING
ROW
6.0'
110.0'
EXISTING TIMBER PIER
(TYP)
EXISTING WPA WALL
EDGE OF WATER
MPRB ROW
MPRB ROW
EXISTING
ROW
EXISTING WPA WALL

LEGEND

- LIMITS OF DISTURBANCE
- WPA WALLS WITHIN PROJECT LIMITS – POTENTIAL REMOVAL
- PROPOSED STRUCTURE

DRAFT-WORK IN PROCESS

Apr. 21 2015 07:39 am V:\3400_ADC\CAD\SEGMENT E3\EXHIBITS\CHANNEL BRIDGE\E3-CIV-BRIDGE-ADM-CONCEPT_C.dwg By: BunderCC

SOUTHWEST
Green Line LRT Extension

# SOUTHWEST LIGHT RAIL

LAGOON/CHANNEL BRIDGE - LAYOUT CONFIGURATION 4C

Rev 0
04/22/2015

NORTH
0 5 10 20

METROPOLITAN COUNCIL

AECOM
Kimley»Horn

MPRB ROW
EXISTING WPA WALL
MPRB ROW
EXISTING ROW
RETAINING WALL
EXISTING ROW
120.0'
35.0'
50.0'
35.0'
RETAINING WALL
℄ FREIGHT–KENILWORTH
331+00
332+00
333+00
FREIGHT BRIDGE
BNSF
RETAINING WALL/
6.0' CRASH WALL
BALLAST CURB
120.0'
22.5'
75.0'
22.5'
RETAINING WALL
℄ TRACK 1
1801+00
HISTORIC
RESOURCE
LIMITS
1802+00
1803+00
POTENTIAL
FUTURE WALK
HISTORIC
RESOURCE
LIMITS
EXISTING
ROW
℄ TRACK 2
LRT BRIDGE
2801+00
2802+00
2803+00
BALLAST CURB
5.0'
BALLAST CURB
14.0'
RETAINING WALL
HCRRA
TRAIL BRIDGE
16' TRAIL
(KENILWORTH TRAIL)
EXISTING
ROW
108.0'
6.0'
EXISTING TIMBER PIER
(TYP)
EXISTING WPA WALL
EDGE OF WATER
EXISTING
ROW
MPRB ROW
MPRB ROW
EXISTING WPA WALL

LEGEND

- LIMITS OF DISTURBANCE
- WPA WALLS WITHIN PROJECT LIMITS – POTENTIAL REMOVAL
- PROPOSED STRUCTURE

DRAFT-WORK IN PROCESS

# SOUTHWEST LIGHT RAIL

LAGOON/CHANNEL BRIDGE - LAYOUT CONFIGURATION 4B - SKEWED TRAIL BRIDGE

Rev 0
04/22/2015

NORTH
0 5 10 20

SOUTHWEST Green Line LRT Extension
METROPOLITAN COUNCIL
AECOM Kimley»Horn

Apr, 21 2015 07:41 am v:\3400_ADC\CAD\SEGMENT E3\EXHIBITS\CHANNEL BRIDGE\E3-CIV-BRIDGE-ADM-CONCEPT_4B_SKEWED.dwg By: BunderCC

DRAFT - WORK IN PROCESS

SOUTHWEST
Green Line LRT Extension

METROPOLITAN COUNCIL

# KENILWORTH CORRIDOR

VIEW FROM EAST

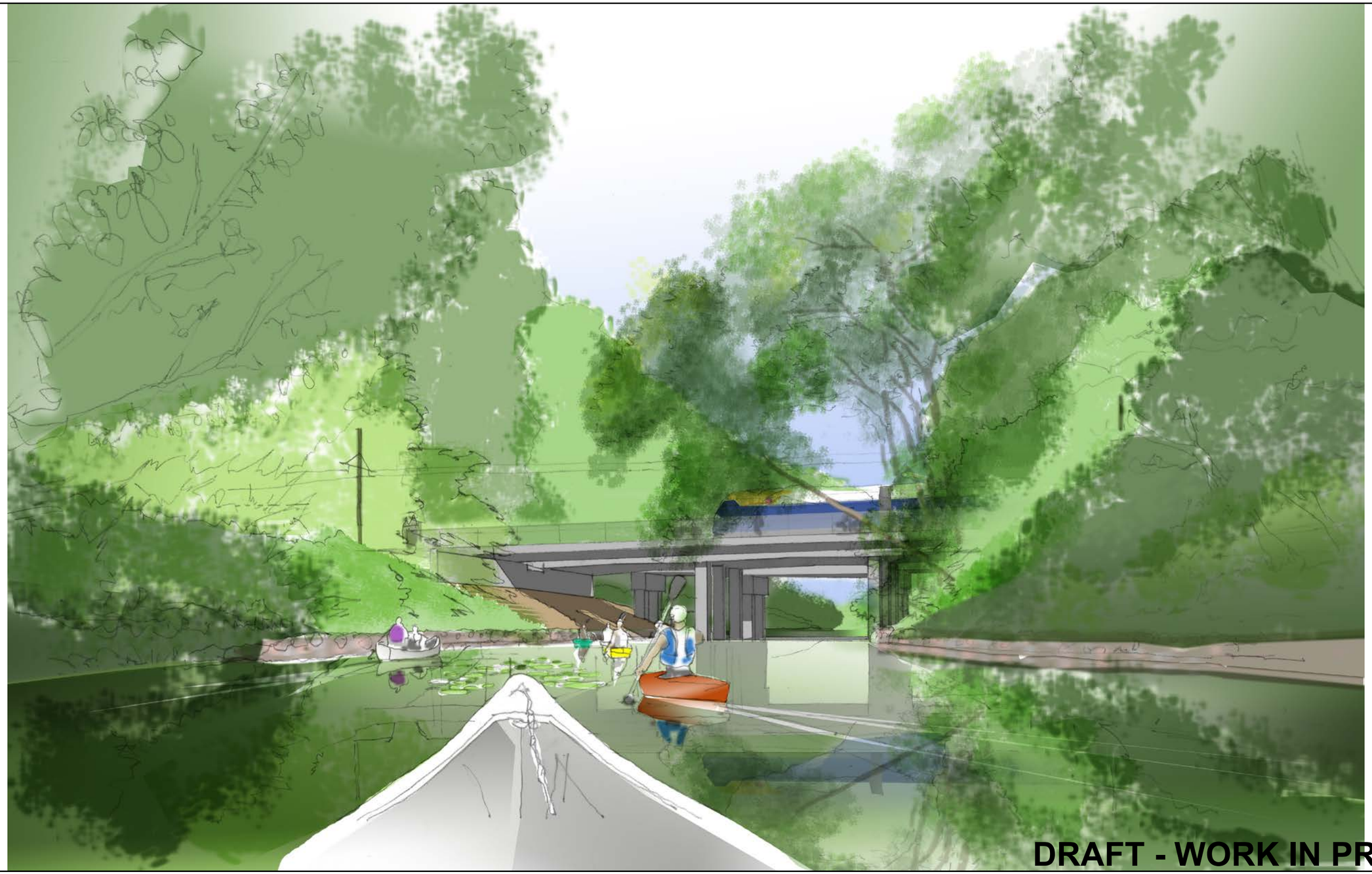
APRIL 2015

AECOM

Kimley»Horn

miller dunwiddie ARCHITECTURE

SNOW KREILICH ARCHITECTS



DRAFT - WORK IN PROCESS

SOUTHWEST
Green Line LRT Extension

METROPOLITAN COUNCIL

# KENILWORTH CORRIDOR

CONFIGURATION 4A - VIEW FROM EAST

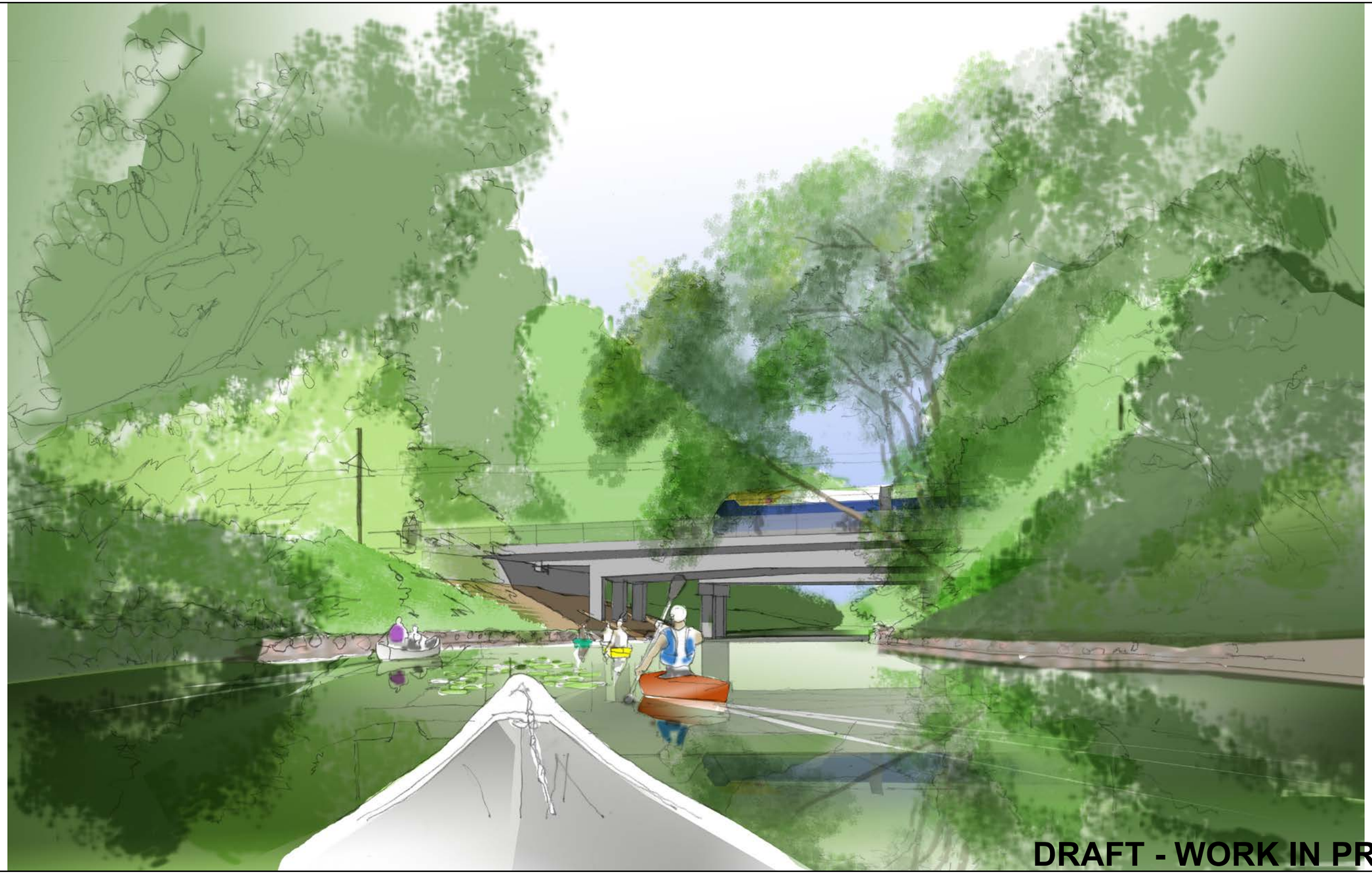
APRIL 2015

AECOM

miller dunwiddie ARCHITECTURE

Kimley»Horn

SNOW KREILICH ARCHITECTS



DRAFT - WORK IN PROCESS

SOUTHWEST
Green Line LRT Extension

METROPOLITAN COUNCIL

# KENILWORTH CORRIDOR

CONFIGURATION 4B - VIEW FROM EAST

APRIL 2015

AECOM

miller dunwiddie ARCHITECTURE

Kimley»Horn

SNOW KREILICH ARCHITECTS

DRAFT - WORK IN PROCESS

SOUTHWEST
Green Line LRT Extension

METROPOLITAN COUNCIL

# KENILWORTH CORRIDOR

VIEW FROM WEST

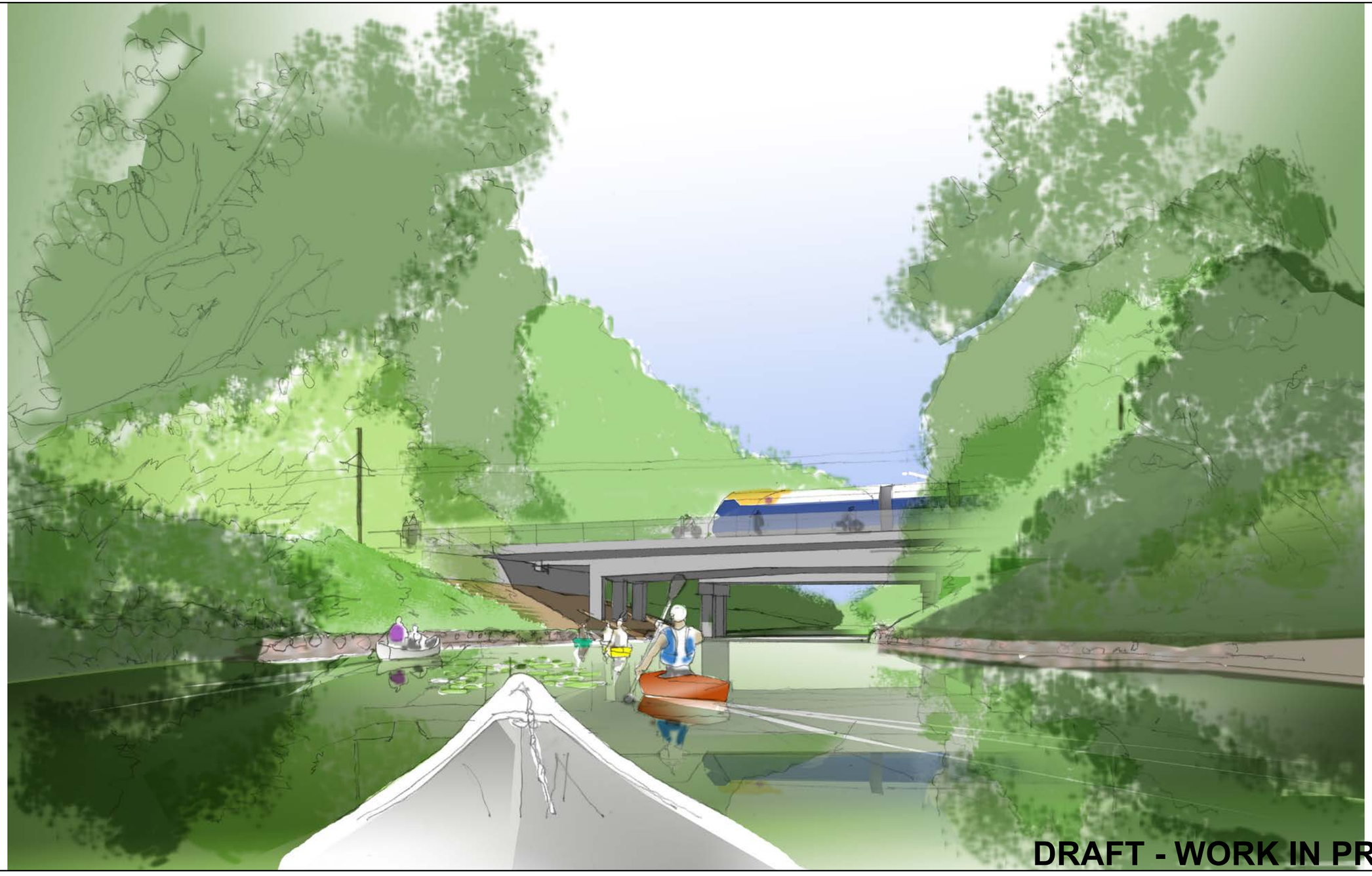
APRIL 2015

AECOM

miller dunwiddie
ARCHITECTURE

Kimley»Horn

SNOW KREILICH ARCHITECTS



DRAFT - WORK IN PROCESS

SOUTHWEST
Green Line LRT Extension

METROPOLITAN COUNCIL

# KENILWORTH CORRIDOR

VIEW FROM WEST

APRIL 2015

AECOM

miller dunwiddie
ARCHITECTURE

Kimley»Horn

SNOW KREILICH ARCHITECTS

DRAFT - WORK IN PROCESS

SOUTHWEST
Green Line LRT Extension

METROPOLITAN COUNCIL

# KENILWORTH CORRIDOR

VIEW FROM WEST

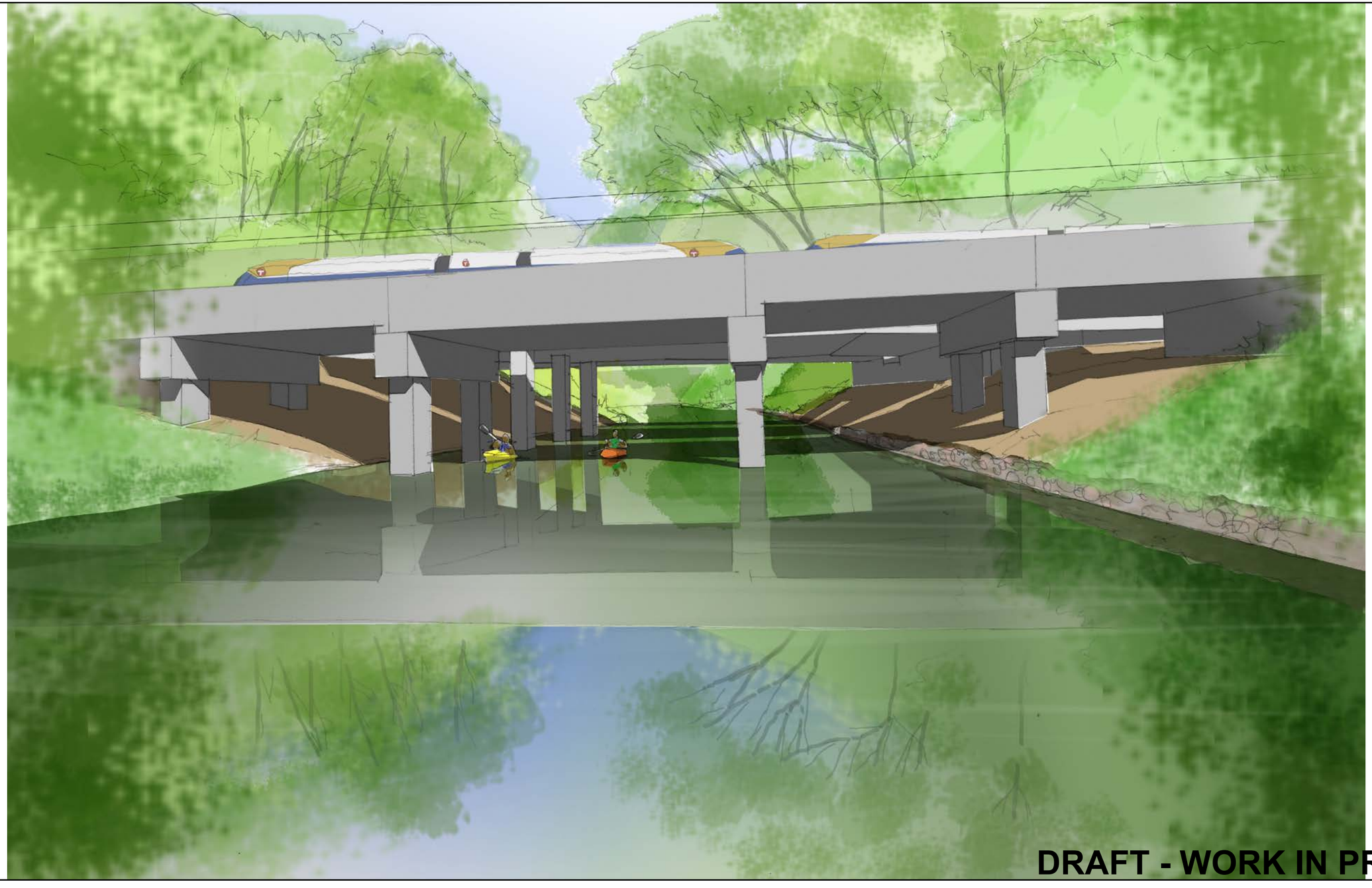
APRIL 2015

AECOM

Kimley»Horn

miller dunwiddie
ARCHITECTURE

SNOW KREILICH ARCHITECTS



DRAFT - WORK IN PROCESS

SOUTHWEST
Green Line LRT Extension

METROPOLITAN COUNCIL

# KENILWORTH CORRIDOR

CONFIGURATION 4C - VIEW FROM WEST

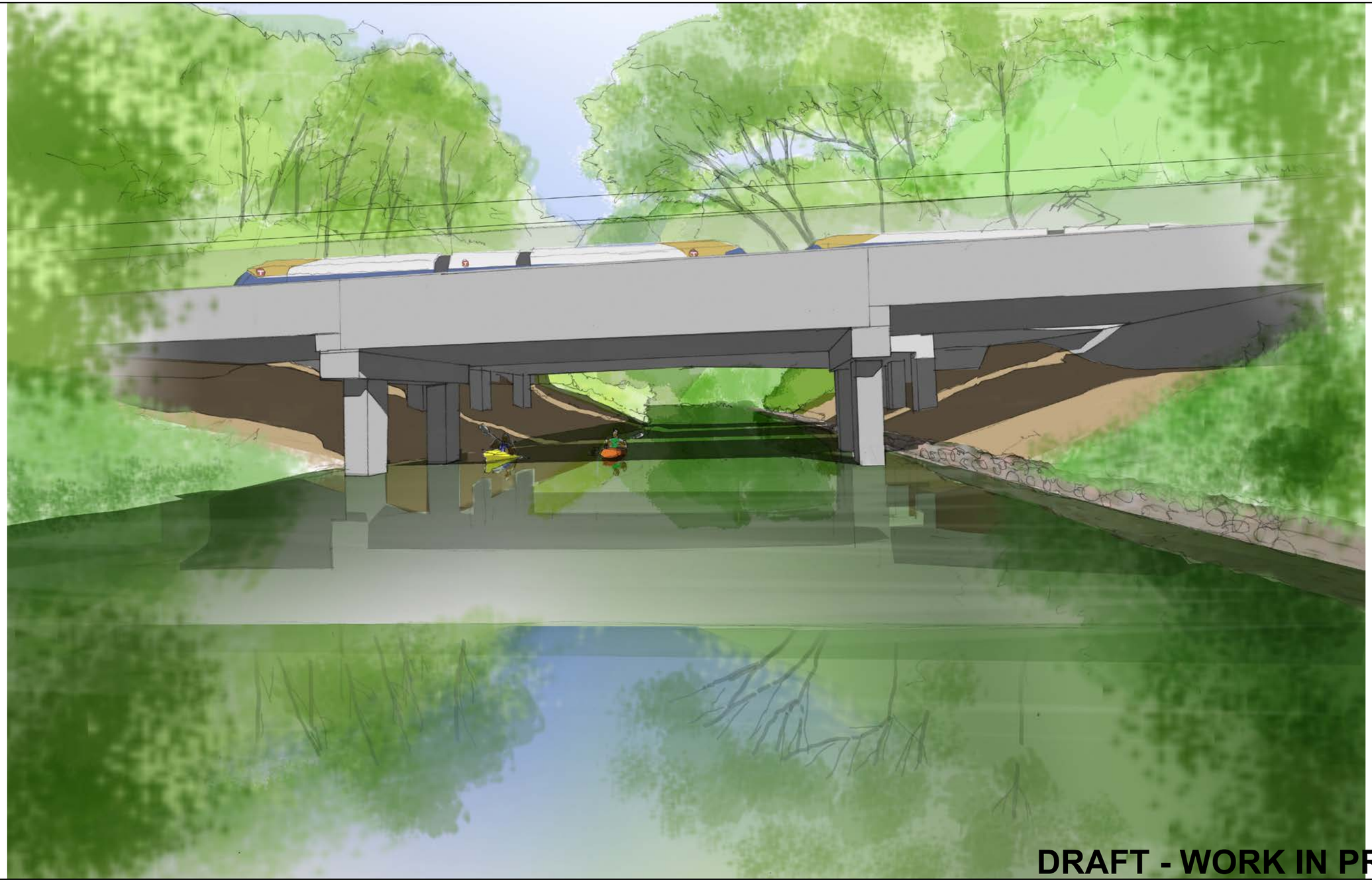
APRIL 2015

AECOM

Kimley»Horn

miller dunwiddie
ARCHITECTURE

SNOW KREILICH ARCHITECTS



DRAFT - WORK IN PROCESS

SOUTHWEST
Green Line LRT Extension

METROPOLITAN COUNCIL

# KENILWORTH CORRIDOR

CONFIGURATION 4C - VIEW FROM WEST

APRIL 2015

AECOM

Kimley»Horn

miller dunwiddie ARCHITECTURE

SNOW KREILICH ARCHITECTS

**DRAFT - WORK IN PROCESS**

SOUTHWEST Green Line LRT Extension

METROPOLITAN COUNCIL

# KENILWORTH CORRIDOR

CONFIGURATION 4C - VIEW FROM WEST

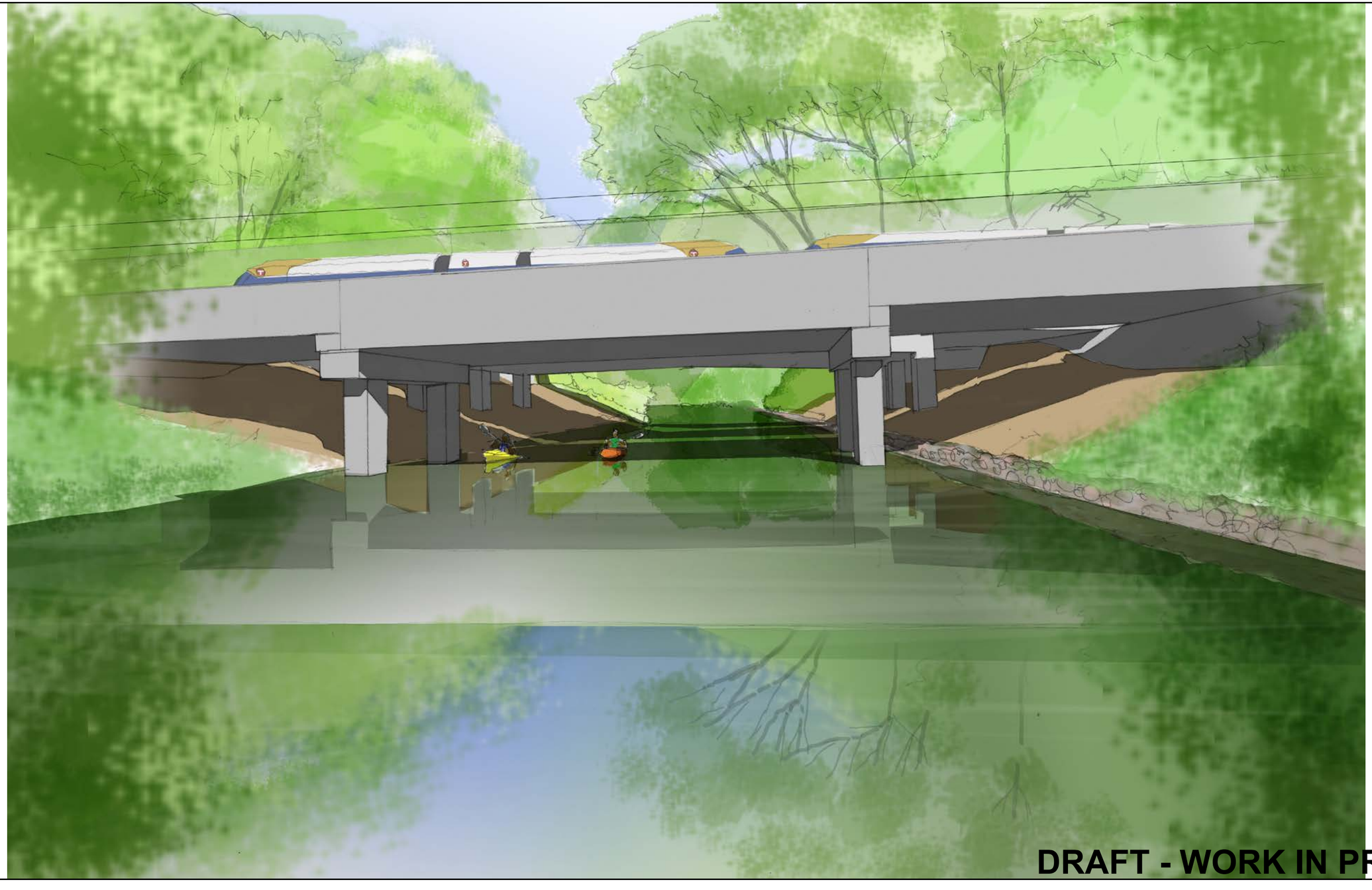
APRIL 2015

AECOM

Kimley»Horn

miller dunwiddie ARCHITECTURE

SNOW KREILICH ARCHITECTS



DRAFT - WORK IN PROCESS

SOUTHWEST
Green Line LRT Extension

METROPOLITAN COUNCIL

# KENILWORTH CORRIDOR

CONFIGURATION 4B SKEW - VIEW FROM WEST

APRIL 2015

AECOM

Kimley»Horn

miller dunwiddie
ARCHITECTURE

SNOW KREILICH ARCHITECTS

SOUTHWEST
Green Line LRT Extension

# SOUTHWEST LIGHT RAIL

LAGOON/CHANNEL BRIDGE - CONFIGURATION 4A

Rev 0
04/22/2015

NORTH
0 10 20 40
SCALE

METROPOLITAN COUNCIL

AECOM
Kimley»Horn

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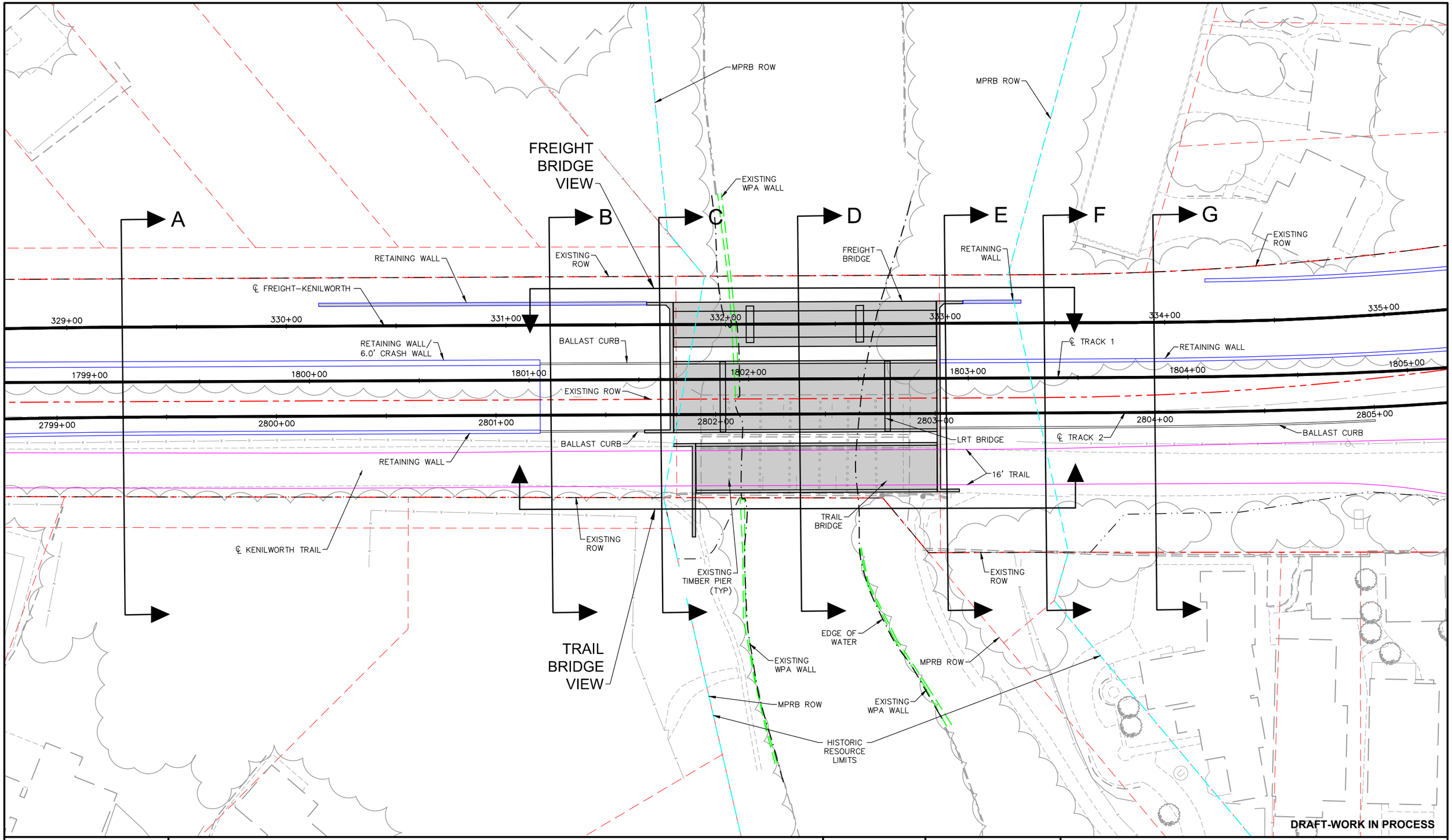


SOUTHWEST Green Line LRT Extension

# SOUTHWEST LIGHT RAIL

LAGOON/CHANNEL BRIDGE - CONFIGURATION 4B

Rev 0
04/22/2015

NORTH
0 10 20 40

METROPOLITAN COUNCIL

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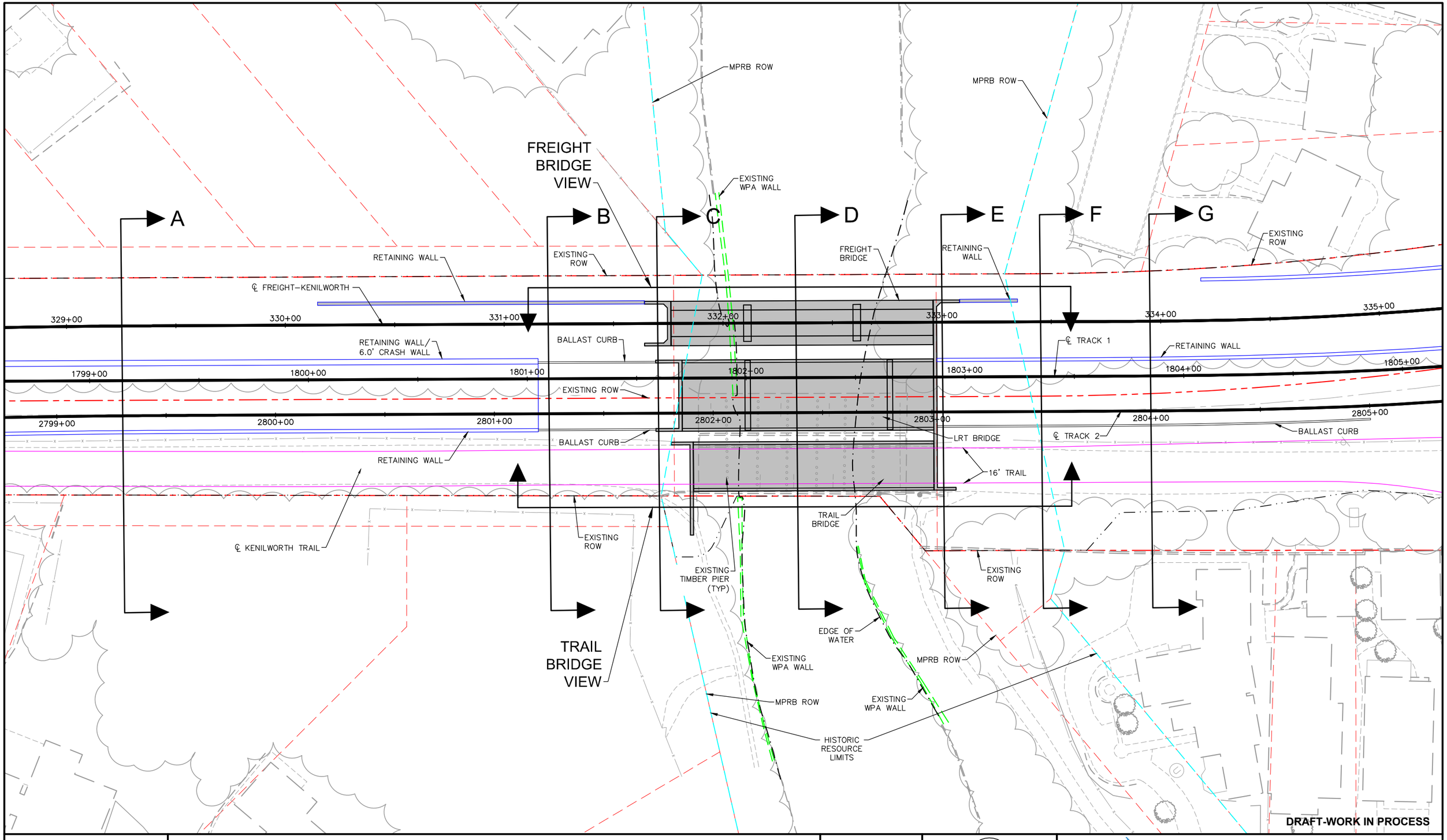


# SOUTHWEST LIGHT RAIL

LAGOON/CHANNEL BRIDGE - CONFIGURATION 4C

Rev 0
04/22/2015

NORTH
0 10 20 40

SOUTHWEST Green Line LRT Extension

METROPOLITAN COUNCIL

AECOM Kimley»Horn

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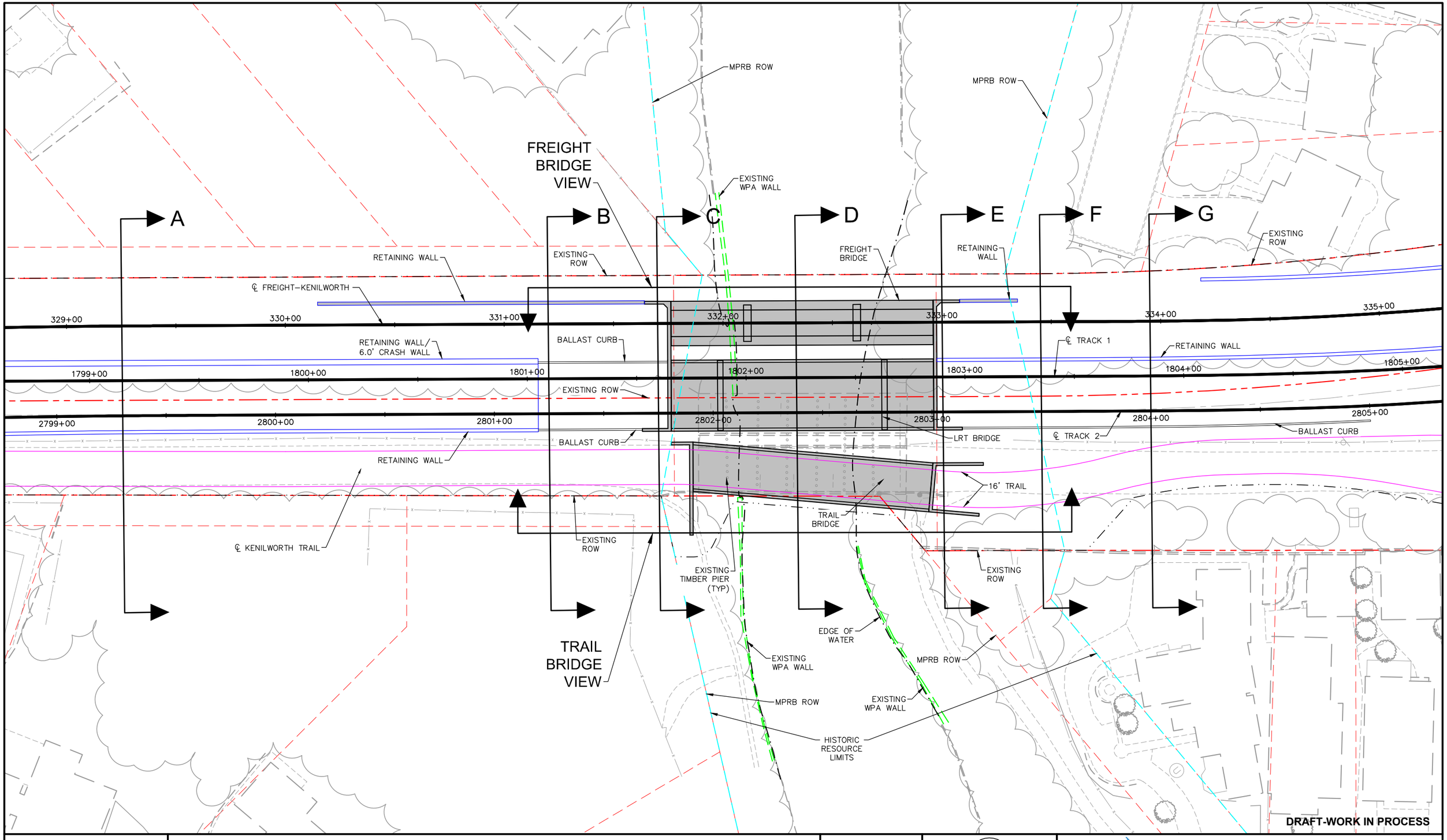


# SOUTHWEST LIGHT RAIL

LAGOON/CHANNEL BRIDGE - CONFIGURATION 4B - SKEW

Rev 0
04/22/2015

NORTH
0 10 20 40

SOUTHWEST Green Line LRT Extension

METROPOLITAN COUNCIL

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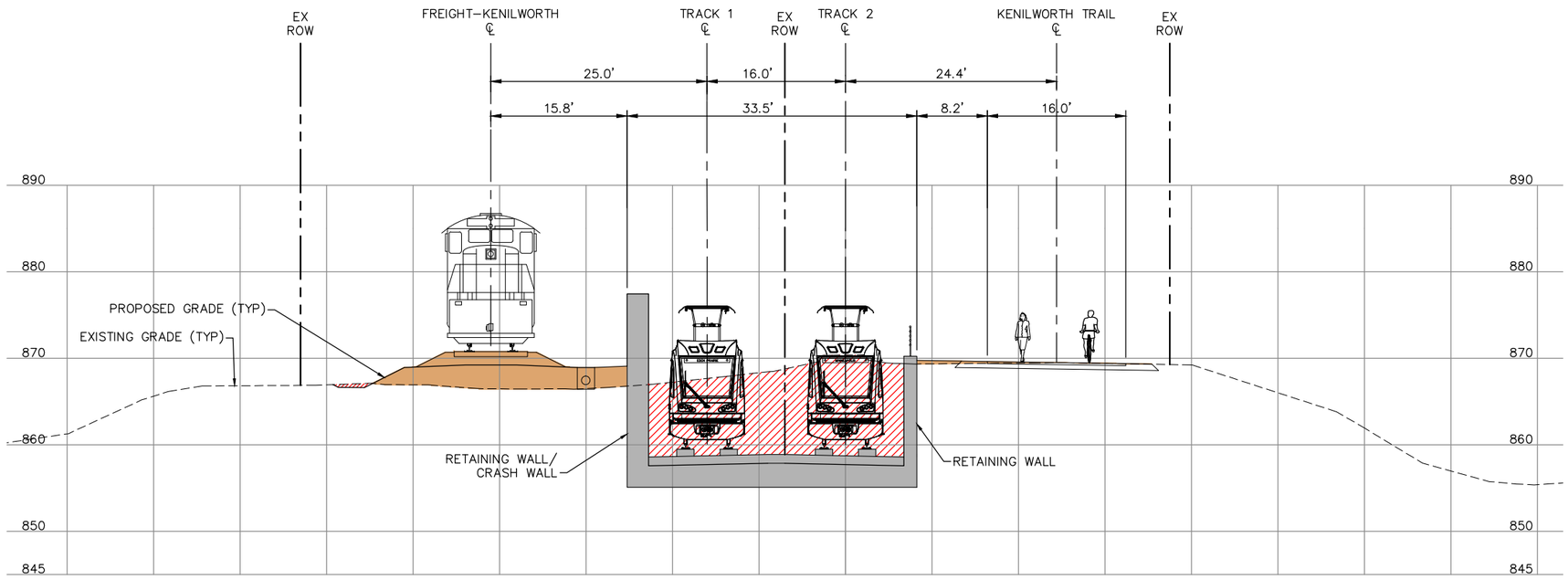



| COLOR LEGEND |
|---|
| EXISTING GROUND CUT |
| PROPOSED FILL |
| PROPOSED STRUCTURE |

DRAFT-WORK IN PROCESS

SOUTHWEST Green Line LRT Extension

# SOUTHWEST LIGHT RAIL

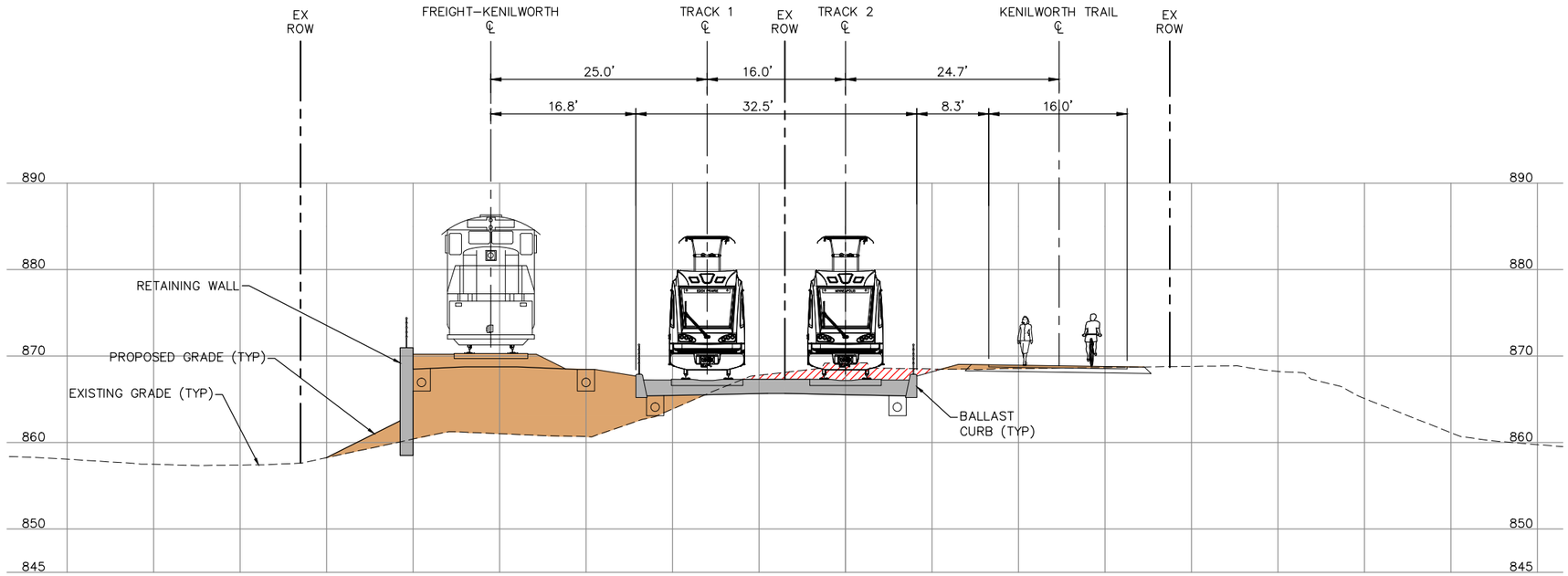
CONFIGURATION - ALL
SECTION A - STATION 2799+50

Rev 0
04/22/2015

0 4 8 16
SCALE

METROPOLITAN COUNCIL

AECOM Kimley»Horn




| COLOR LEGEND |
|---|
| EXISTING GROUND CUT |
| PROPOSED FILL |
| PROPOSED STRUCTURE |

**DRAFT-WORK IN PROCESS**

SOUTHWEST Green Line LRT Extension

# SOUTHWEST LIGHT RAIL

CONFIGURATION - ALL
SECTION B - STATION 2801+25

Rev 0
04/22/2015

0 4 8 16
SCALE

METROPOLITAN COUNCIL

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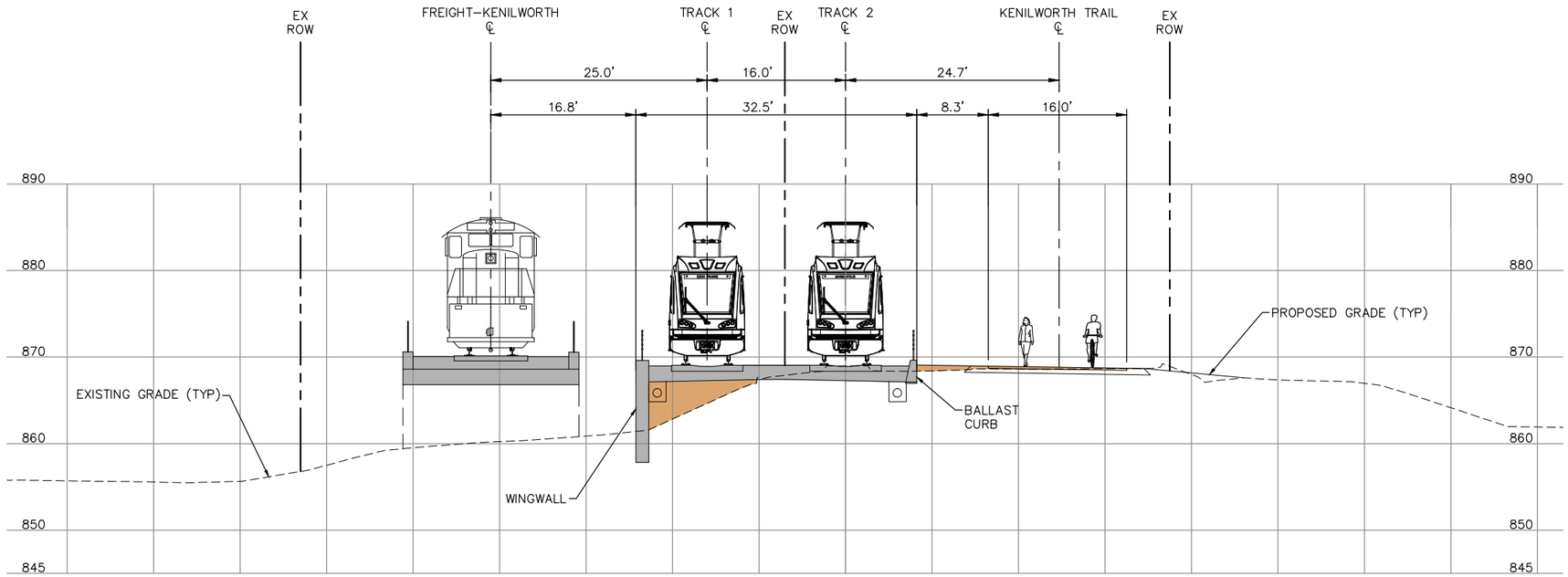



| COLOR LEGEND |
| --- |
| EXISTING GROUND CUT |
| PROPOSED FILL |
| PROPOSED STRUCTURE |

DRAFT-WORK IN PROCESS

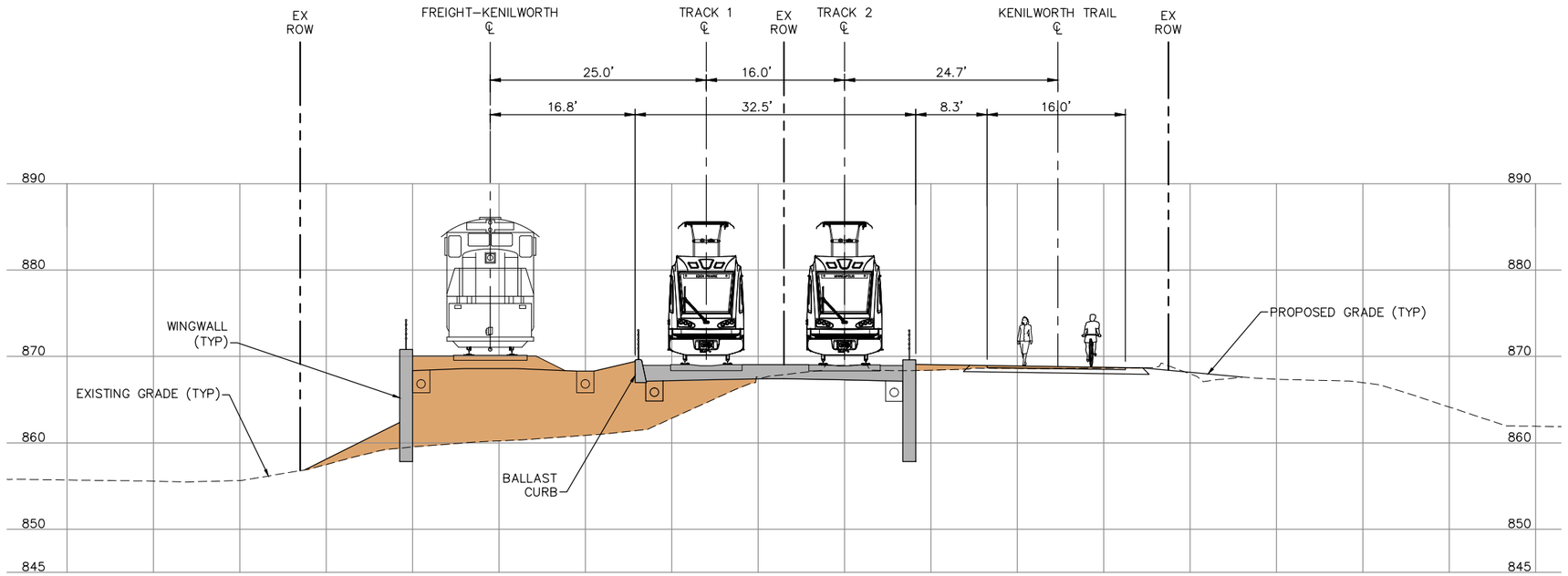
# SOUTHWEST LIGHT RAIL

CONFIGURATION - 4A
SECTION C - STATION 2801+80

Rev 0
04/22/2015

0 4 8 16
SCALE

SOUTHWEST Green Line LRT Extension
METROPOLITAN COUNCIL
AECOM Kimley»Horn




| COLOR LEGEND |
|---|
| EXISTING GROUND CUT |
| PROPOSED FILL |
| PROPOSED STRUCTURE |

DRAFT-WORK IN PROCESS

SOUTHWEST Green Line LRT Extension

# SOUTHWEST LIGHT RAIL

CONFIGURATION - 4B
CONFIGURATION - 4B - SKEW
SECTION C - STATION 2801+75

Rev 0
04/22/2015

0 # # ## SCALE

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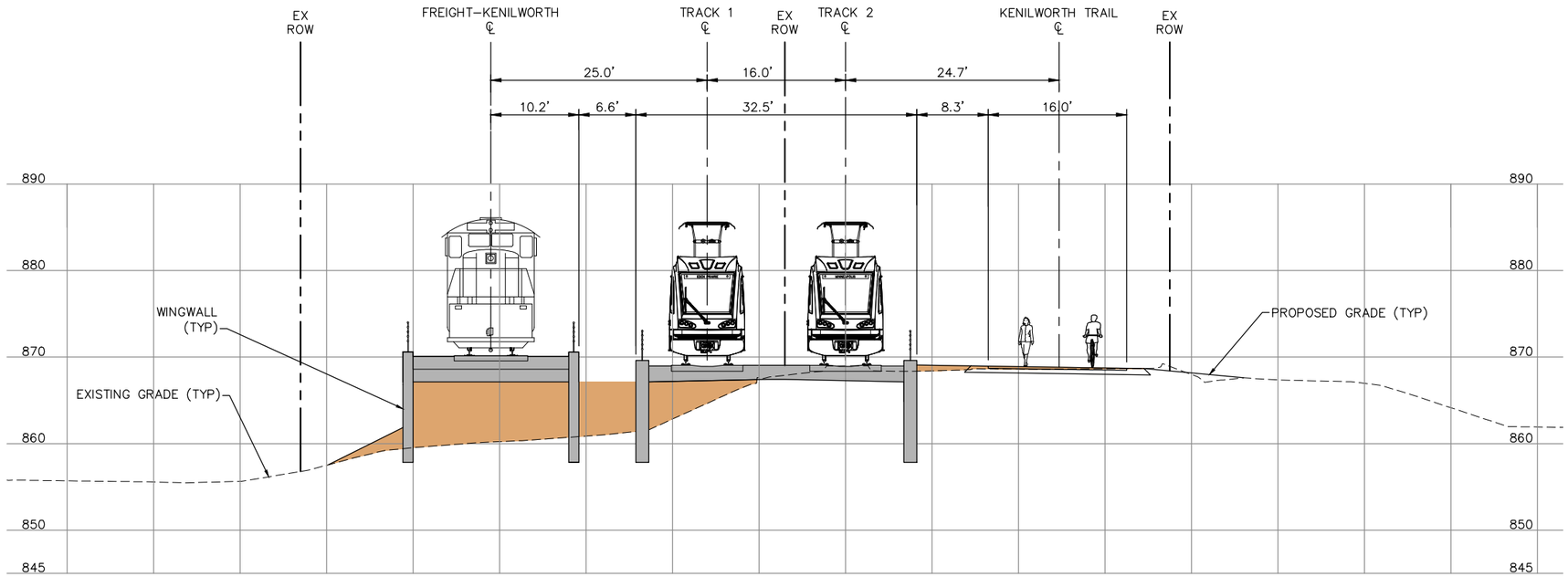


| COLOR LEGEND |
|---|
| EXISTING GROUND CUT |
| PROPOSED FILL |
| PROPOSED STRUCTURE |

DRAFT-WORK IN PROCESS

SOUTHWEST Green Line LRT Extension

# SOUTHWEST LIGHT RAIL

CONFIGURATION - 4C
SECTION C - STATION 2801+75

Rev 0
04/22/2015

0 # # ##
SCALE

METROPOLITAN COUNCIL

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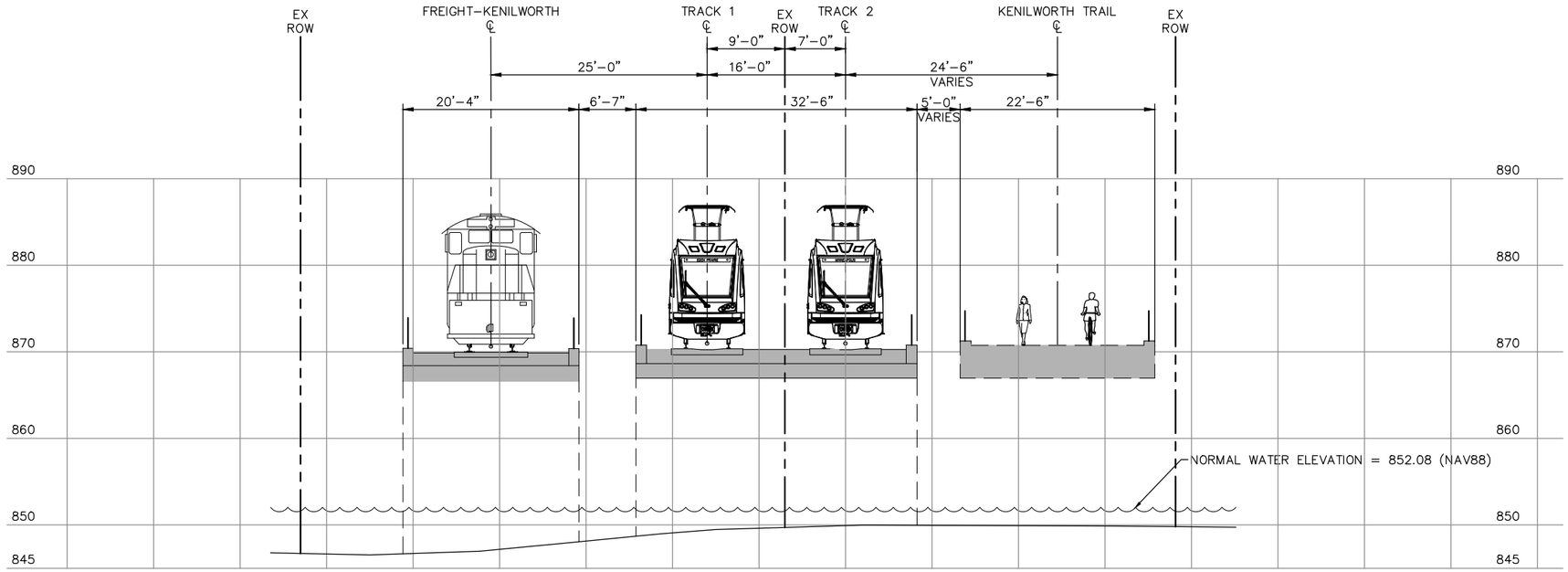


| COLOR LEGEND |
| --- |
| EXISTING GROUND CUT |
| PROPOSED FILL |
| PROPOSED STRUCTURE |

DRAFT-WORK IN PROCESS

# SOUTHWEST LIGHT RAIL

CONFIGURATION - ALL
SECTION D - STATION 2802+38

Rev 0
04/22/2015

0 4 8 16
SCALE

SOUTHWEST Green Line LRT Extension

METROPOLITAN COUNCIL

AECOM Kimley»Horn

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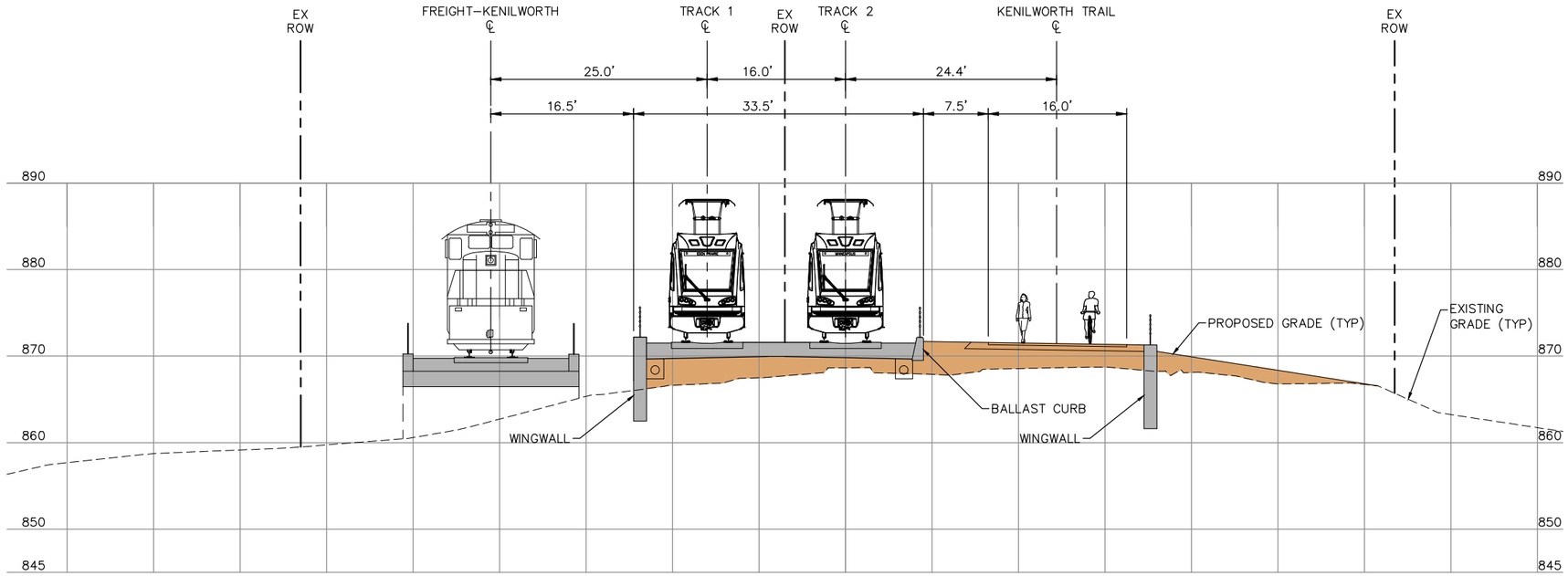


| COLOR LEGEND |
|---|
| EXISTING GROUND CUT |
| PROPOSED FILL |
| PROPOSED STRUCTURE |

**DRAFT-WORK IN PROCESS**

SOUTHWEST Green Line LRT Extension

# SOUTHWEST LIGHT RAIL

CONFIGURATION - 4A
SECTION E - STATION 2803+00

Rev 0
04/22/2015

0 4 8 16
SCALE

METROPOLITAN COUNCIL

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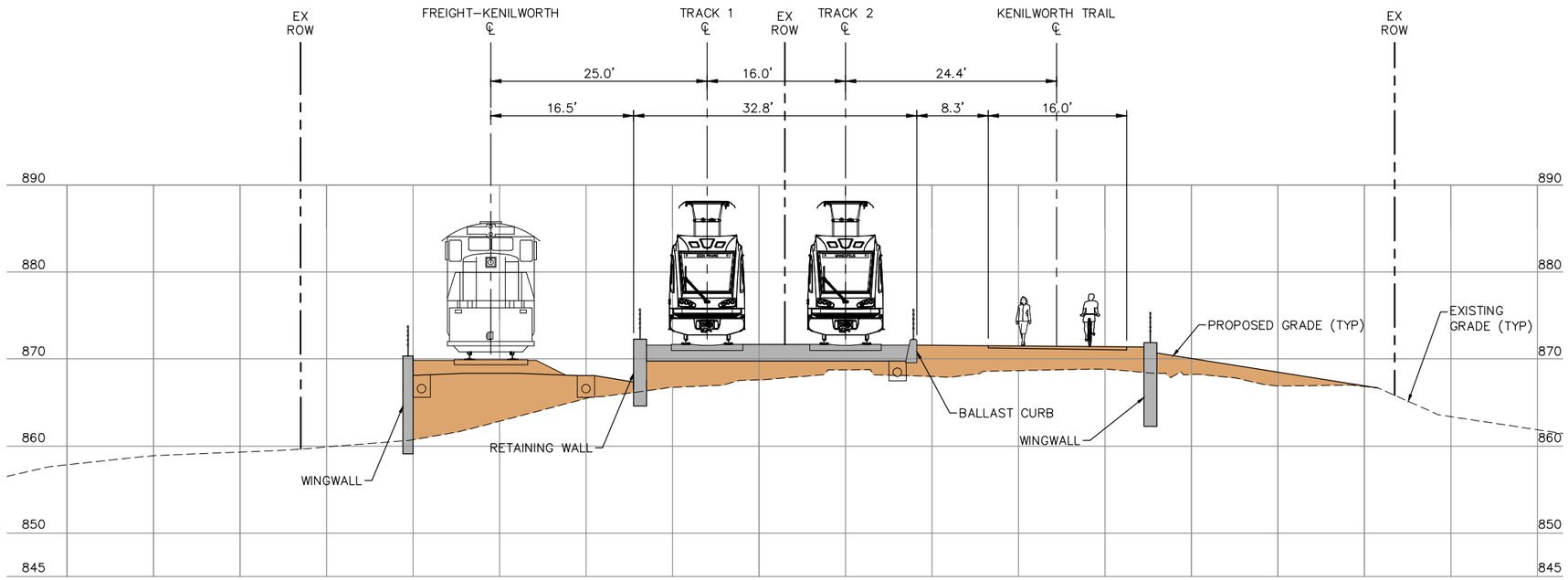


| COLOR LEGEND |
|---|
| EXISTING GROUND CUT |
| PROPOSED FILL |
| PROPOSED STRUCTURE |

**DRAFT-WORK IN PROCESS**

# SOUTHWEST LIGHT RAIL

CONFIGURATION - 4B
SECTION E - STATION 2803+05

Rev 0
04/22/2015

SCALE 0 # # ##

SOUTHWEST Green Line LRT Extension

METROPOLITAN COUNCIL

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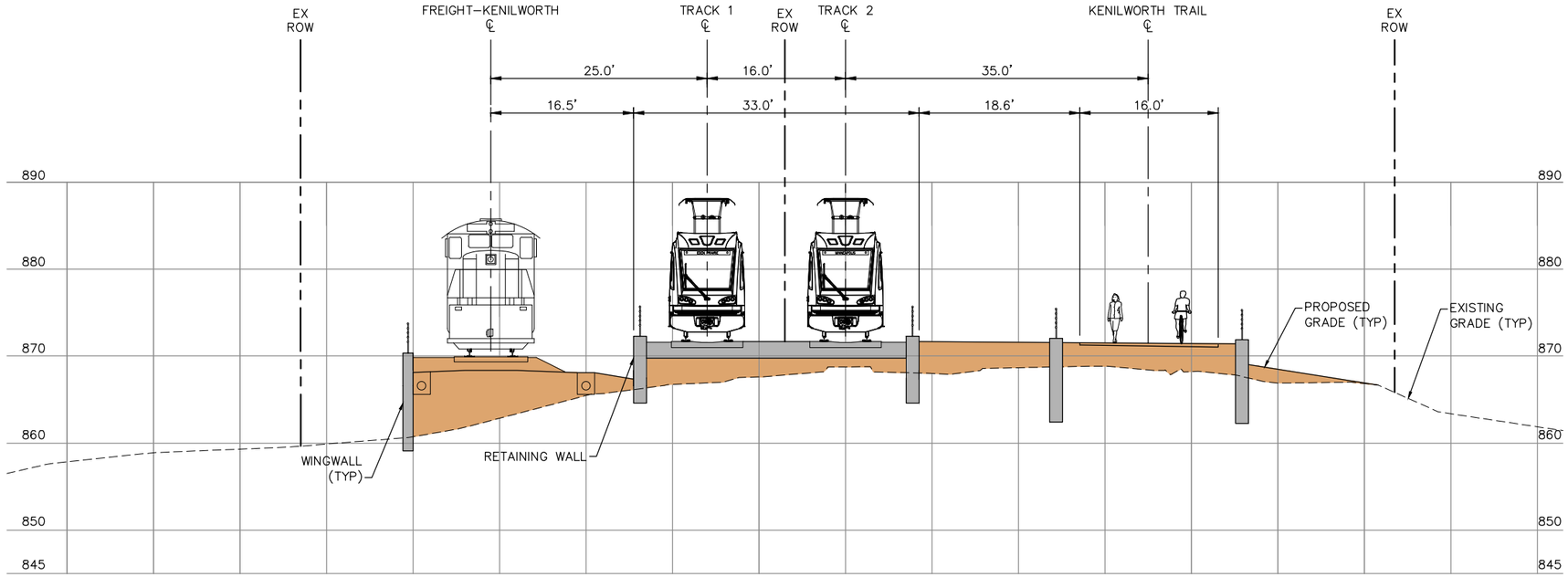



| COLOR LEGEND |
| --- |
| EXISTING GROUND CUT |
| PROPOSED FILL |
| PROPOSED STRUCTURE |

DRAFT-WORK IN PROCESS

SOUTHWEST Green Line LRT Extension

# SOUTHWEST LIGHT RAIL

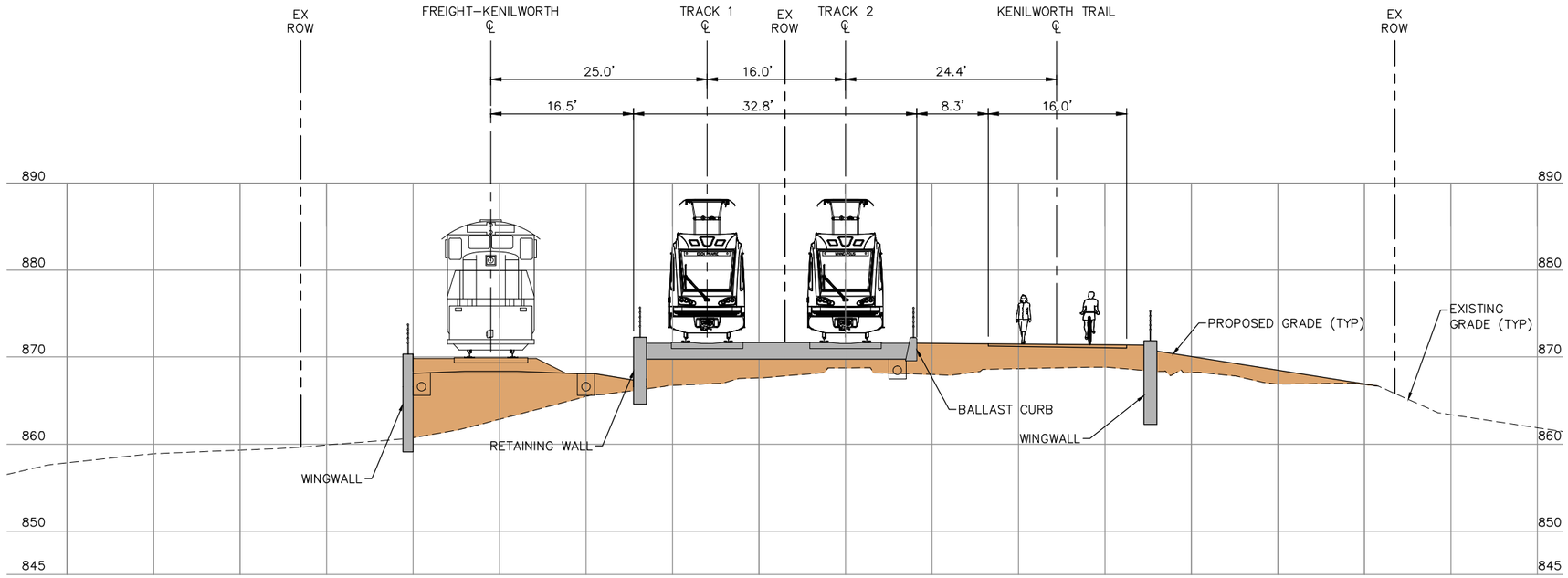
CONFIGURATION - 4B - SKEW
SECTION E - STATION 2803+05

Rev 0
04/22/2015

0 # # ##
SCALE

METROPOLITAN COUNCIL

AECOM Kimley»Horn




| COLOR LEGEND |
| --- |
| EXISTING GROUND CUT |
| PROPOSED FILL |
| PROPOSED STRUCTURE |

DRAFT-WORK IN PROCESS

SOUTHWEST Green Line LRT Extension

# SOUTHWEST LIGHT RAIL

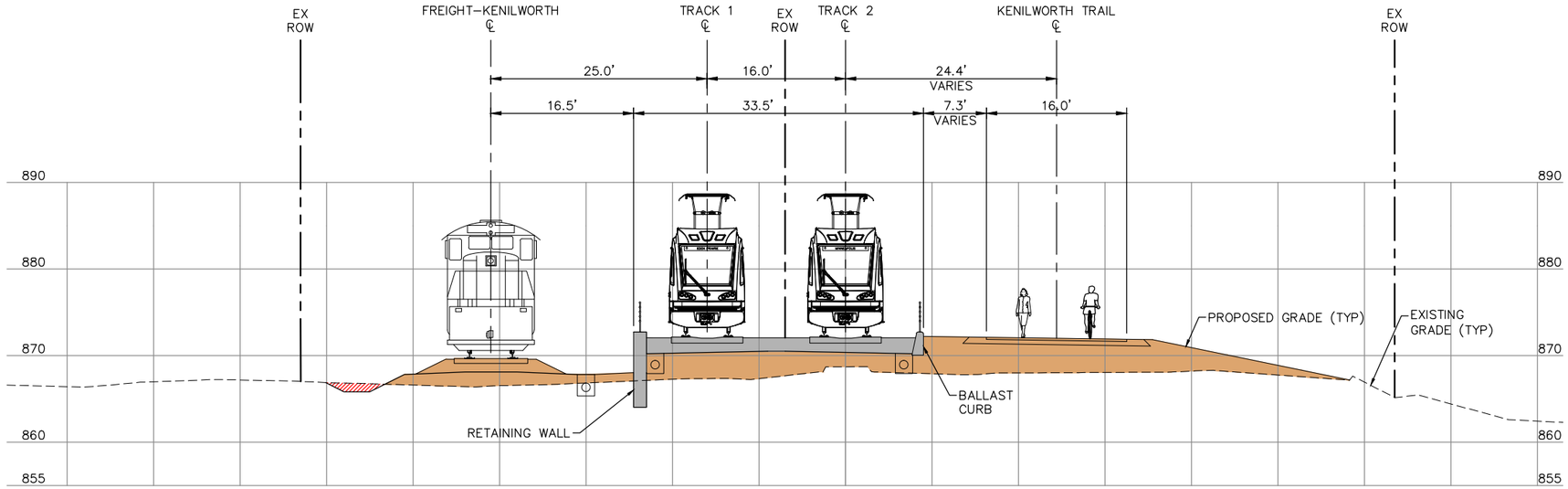
CONFIGURATION - 4C
SECTION E - STATION 2803+05

Rev 0
04/22/2015

0 # # ##
SCALE

METROPOLITAN COUNCIL

AECOM Kimley»Horn




| COLOR LEGEND |
|---|
| EXISTING GROUND CUT |
| PROPOSED FILL |
| PROPOSED STRUCTURE |

**DRAFT-WORK IN PROCESS**

SOUTHWEST Green Line LRT Extension

# SOUTHWEST LIGHT RAIL

CONFIGURATION - ALL
SECTION F - STATION 2803+50

Rev 0
04/22/2015

0 4 8 16
SCALE

METROPOLITAN COUNCIL

AECOM Kimley»Horn

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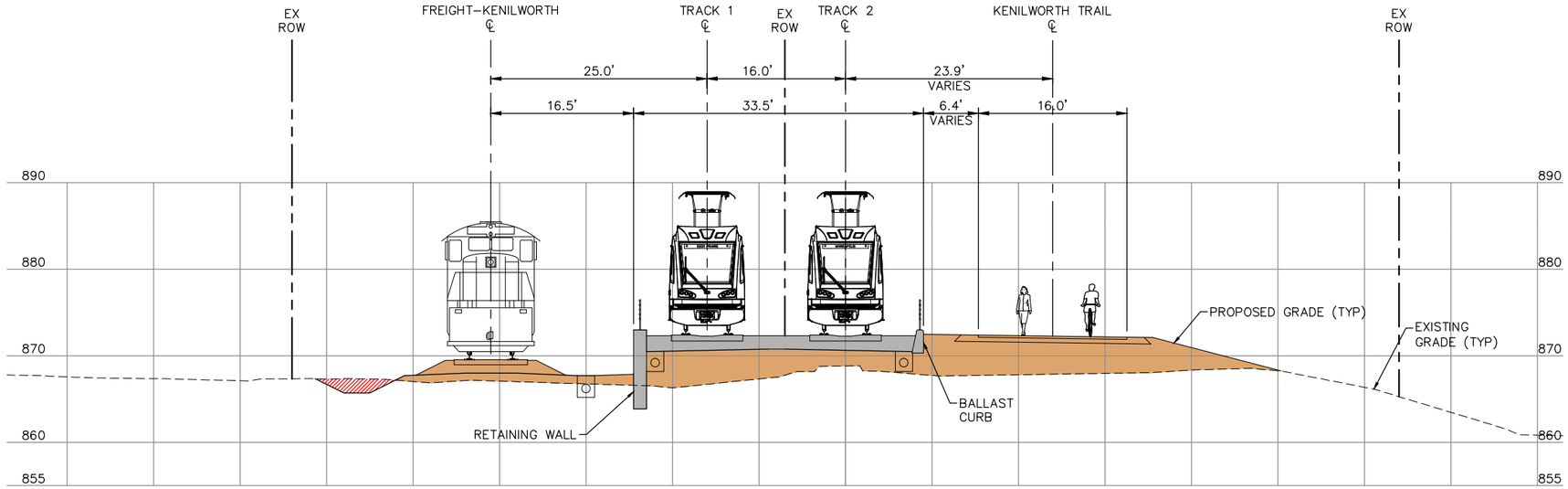


| COLOR LEGEND |
|---|
| EXISTING GROUND CUT |
| PROPOSED FILL |
| PROPOSED STRUCTURE |

DRAFT-WORK IN PROCESS

SOUTHWEST Green Line LRT Extension

# SOUTHWEST LIGHT RAIL

CONFIGURATION - ALL
SECTION G - STATION 2804+00

Rev 0
04/22/2015

0 4 8 16
SCALE

METROPOLITAN COUNCIL

AECOM Kimley»Horn

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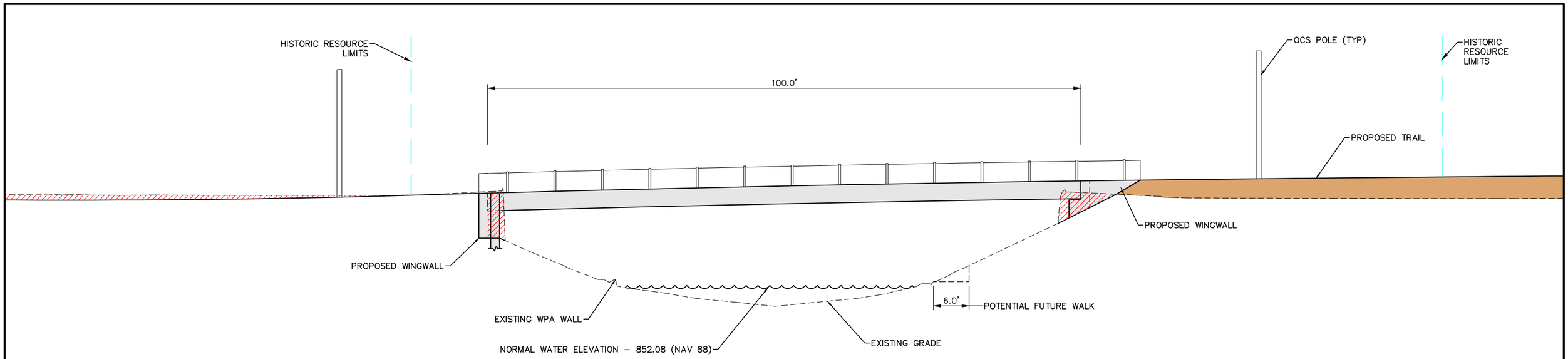
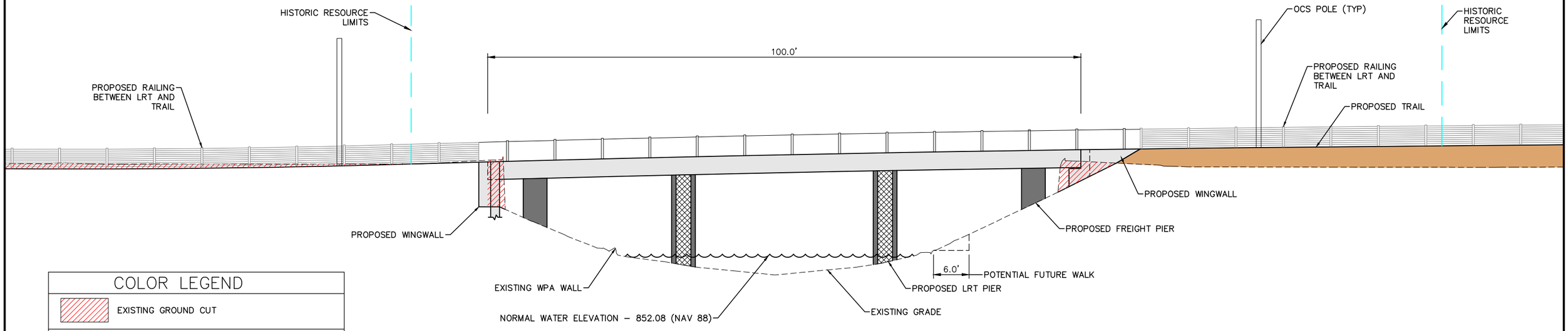



TRAIL PROFILE VIEW – WITHOUT LRT & FREIGHT BRIDGE SHOWN




COLOR LEGEND

- EXISTING GROUND CUT
- PROPOSED FILL
- PROPOSED TRAIL BRIDGE
- PROPOSED LRT BRIDGE
- PROPOSED FREIGHT BRIDGE

TRAIL PROFILE VIEW – LRT & FREIGHT BRIDGE SHOWN

**DRAFT-WORK IN PROCESS**

SOUTHWEST Green Line LRT Extension

# SOUTHWEST LIGHT RAIL

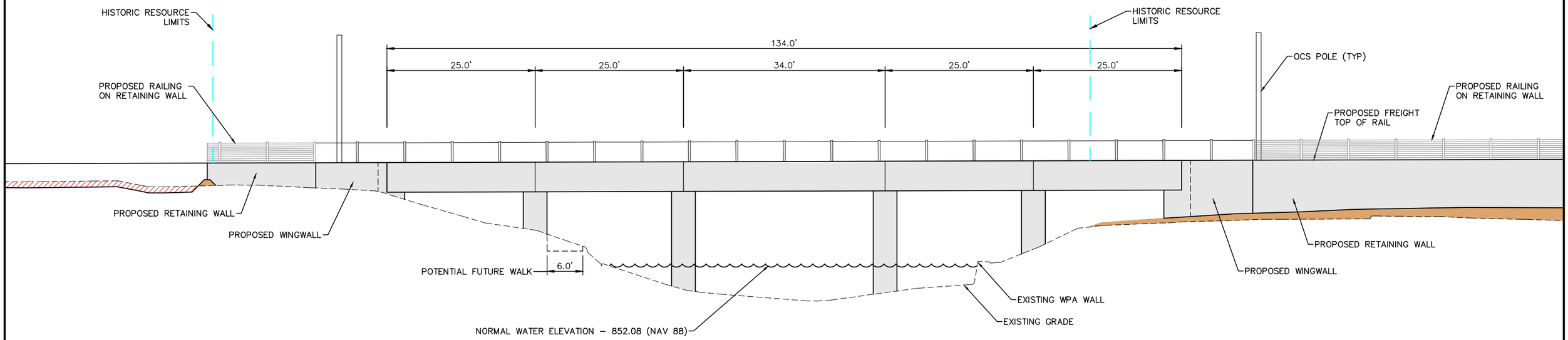
LAGOON/CHANNEL BRIDGE - CONFIGURATION 4A
TRAIL BRIDGE VIEW

Rev 0
04/22/2015

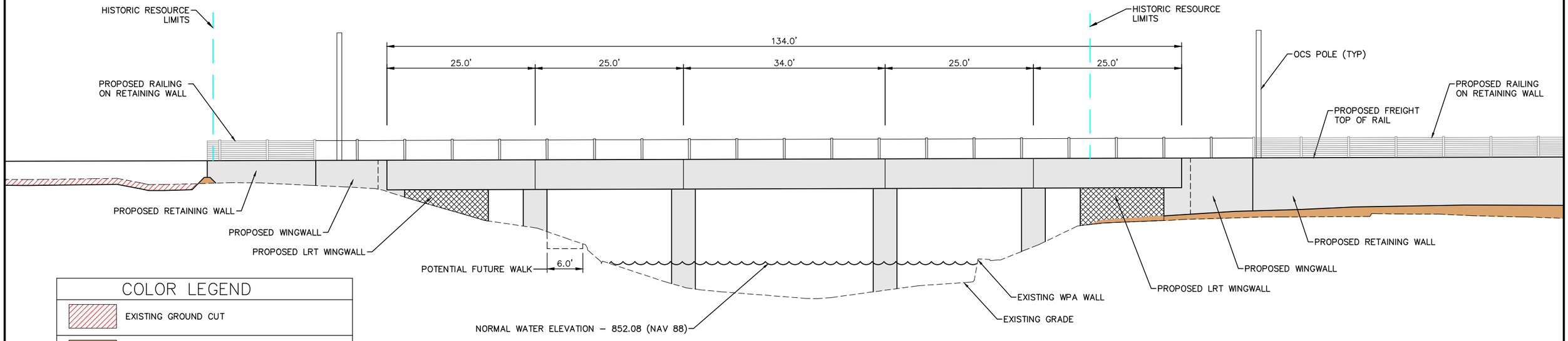
0 4 8 16

METROPOLITAN COUNCIL

AECOM Kimley»Horn




FREIGHT PROFILE VIEW – WITHOUT LRT & TRAIL BRIDGE SHOWN




FREIGHT PROFILE VIEW – LRT & TRAIL BRIDGE SHOWN

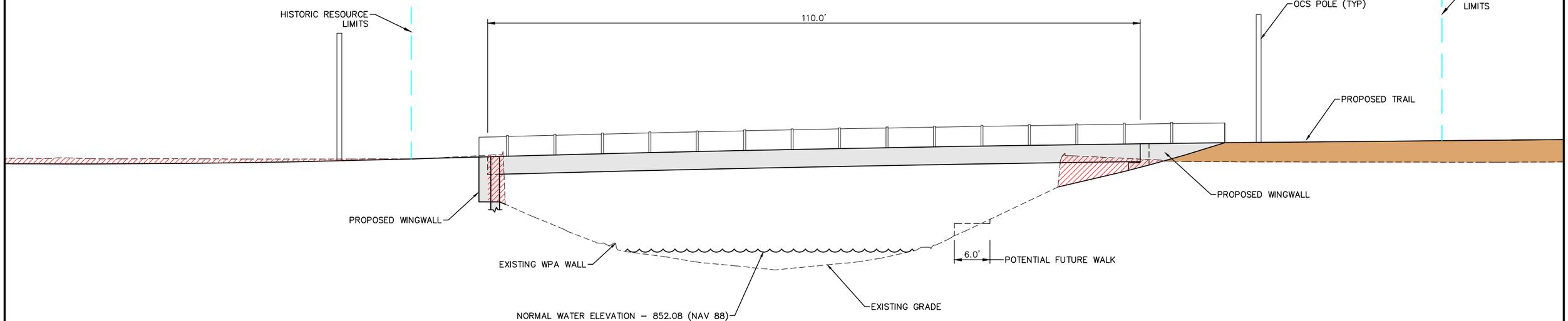
**DRAFT-WORK IN PROCESS**

# SOUTHWEST LIGHT RAIL

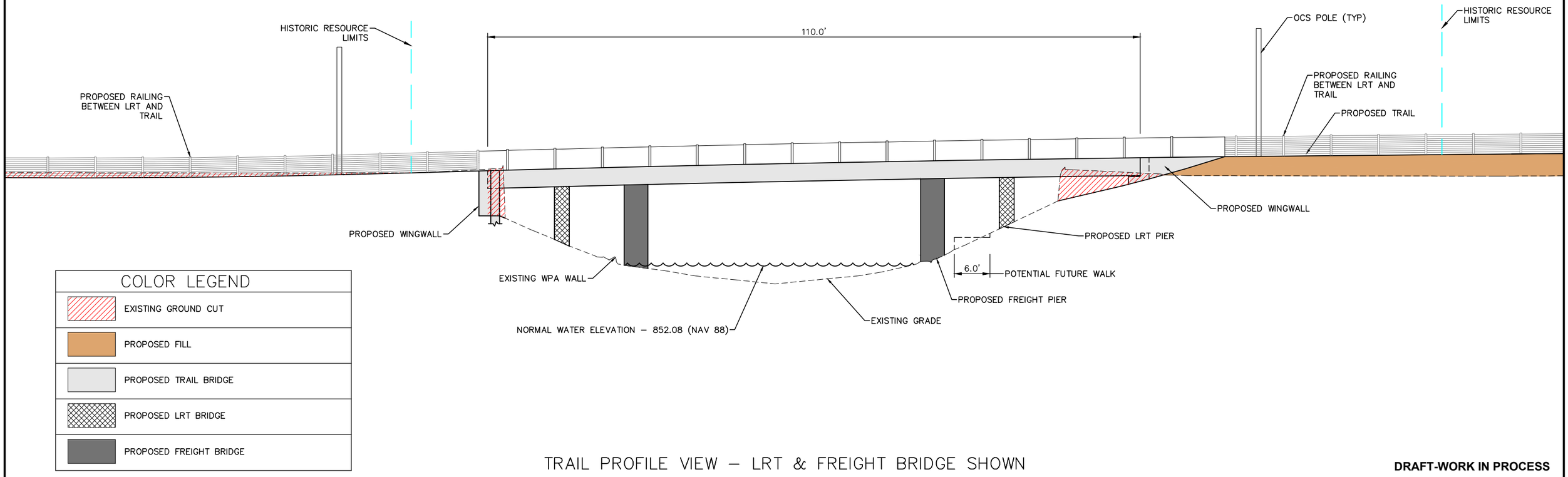
LAGOON/CHANNEL BRIDGE - CONFIGURATION 4A
FREIGHT BRIDGE VIEW

Rev 0
04/22/2015

0 4 8 16




TRAIL PROFILE VIEW – WITHOUT LRT & FREIGHT BRIDGE SHOWN




COLOR LEGEND

- EXISTING GROUND CUT
- PROPOSED FILL
- PROPOSED TRAIL BRIDGE
- PROPOSED LRT BRIDGE
- PROPOSED FREIGHT BRIDGE

TRAIL PROFILE VIEW – LRT & FREIGHT BRIDGE SHOWN

**DRAFT-WORK IN PROCESS**

SOUTHWEST Green Line LRT Extension

# SOUTHWEST LIGHT RAIL

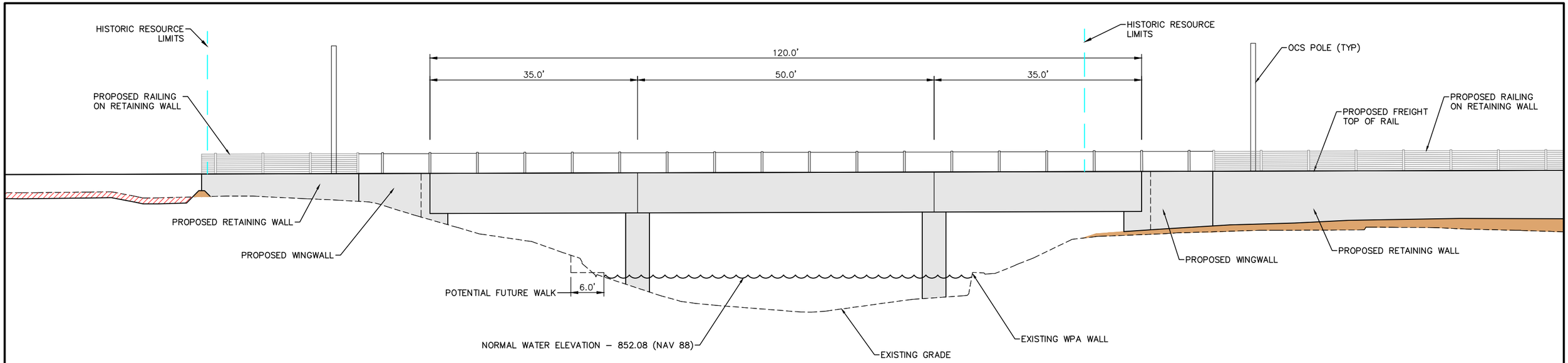
LAGOON/CHANNEL BRIDGE - CONFIGURATION 4B
CONFIGURATION 4B - SKEW
TRAIL BRIDGE VIEW

Rev 0
04/22/2015

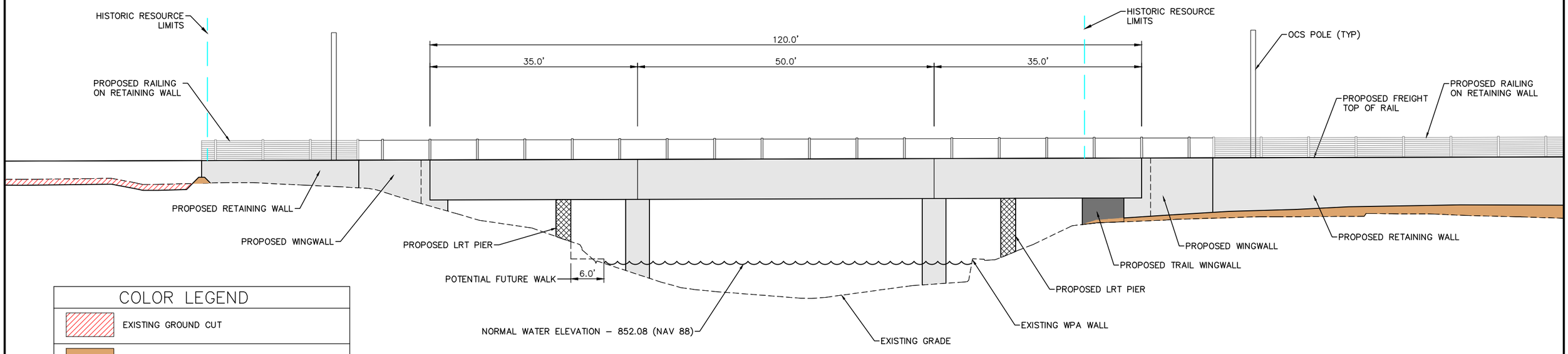
0 4 8 16

METROPOLITAN COUNCIL

AECOM Kimley»Horn




FREIGHT PROFILE VIEW – WITHOUT LRT & TRAIL BRIDGE SHOWN




COLOR LEGEND

- EXISTING GROUND CUT
- PROPOSED FILL
- PROPOSED FREIGHT BRIDGE
- PROPOSED LRT BRIDGE
- PROPOSED TRAIL BRIDGE

FREIGHT PROFILE VIEW – LRT & TRAIL BRIDGE SHOWN

**DRAFT-WORK IN PROCESS**

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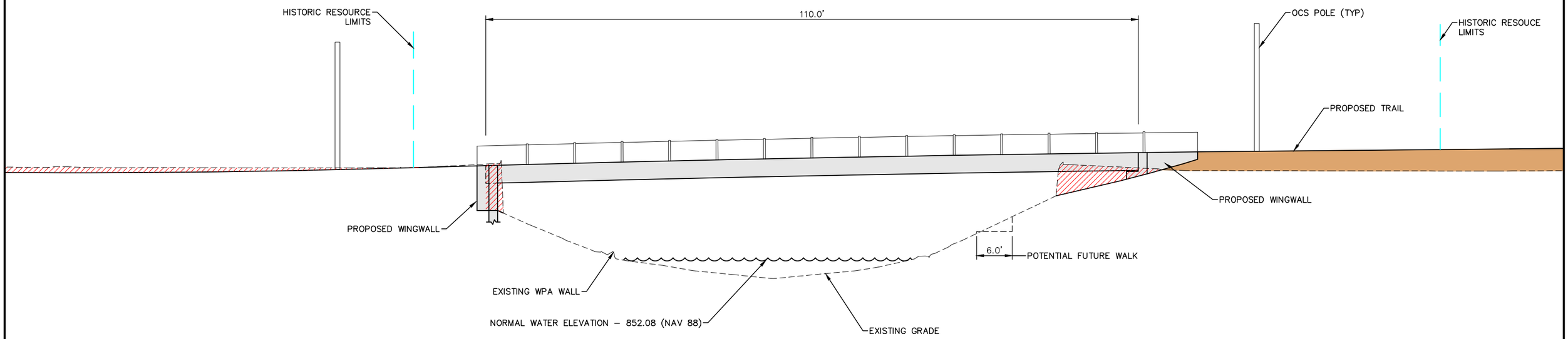
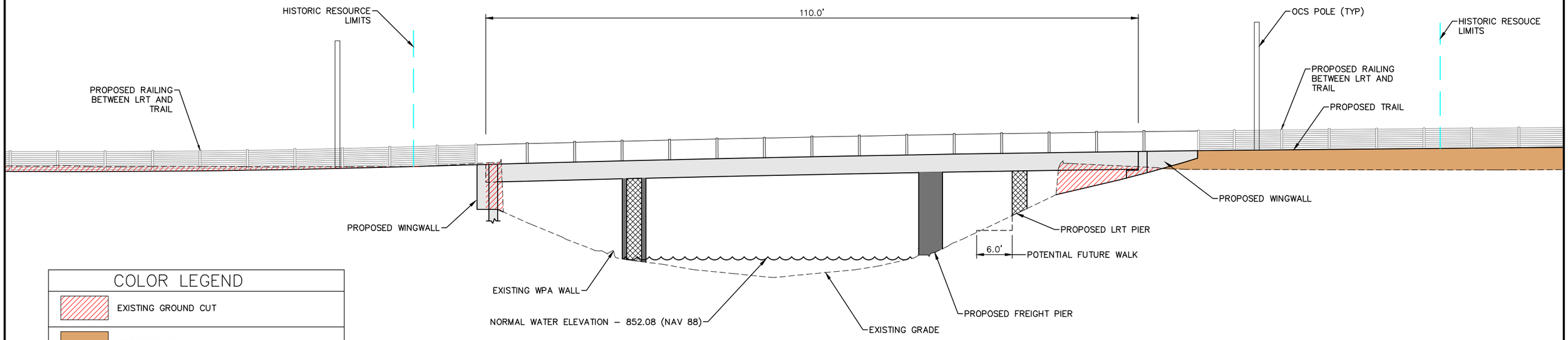



TRAIL PROFILE VIEW – WITHOUT LRT & FREIGHT BRIDGE SHOWN




| COLOR LEGEND |
|---|
| EXISTING GROUND CUT |
| PROPOSED FILL |
| PROPOSED TRAIL BRIDGE |
| PROPOSED LRT BRIDGE |
| PROPOSED FREIGHT BRIDGE |

TRAIL PROFILE VIEW – LRT & FREIGHT BRIDGE SHOWN

**DRAFT-WORK IN PROCESS**

SOUTHWEST Green Line LRT Extension

# SOUTHWEST LIGHT RAIL

LAGOON/CHANNEL BRIDGE - CONFIGURATION 4C
TRAIL BRIDGE VIEW

Rev 0
04/22/2015

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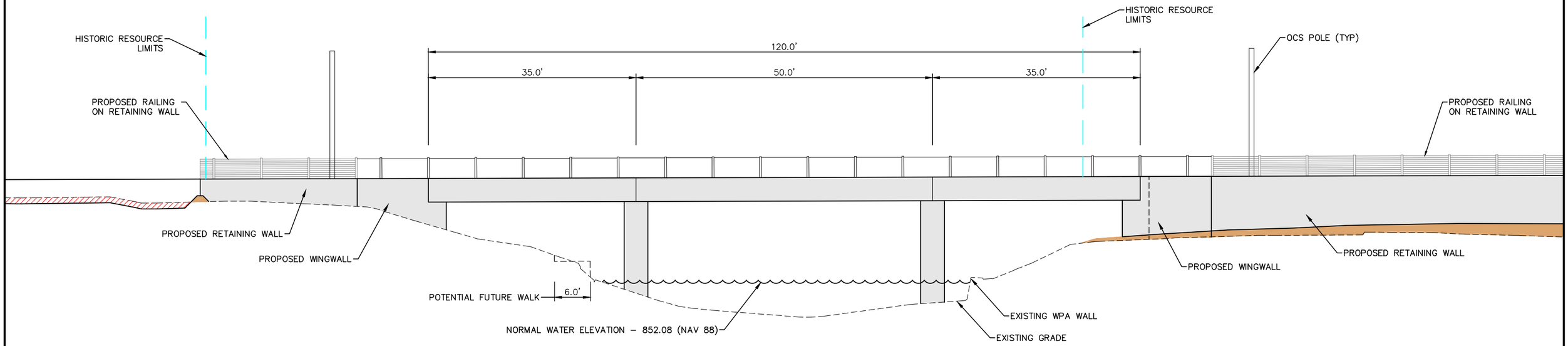
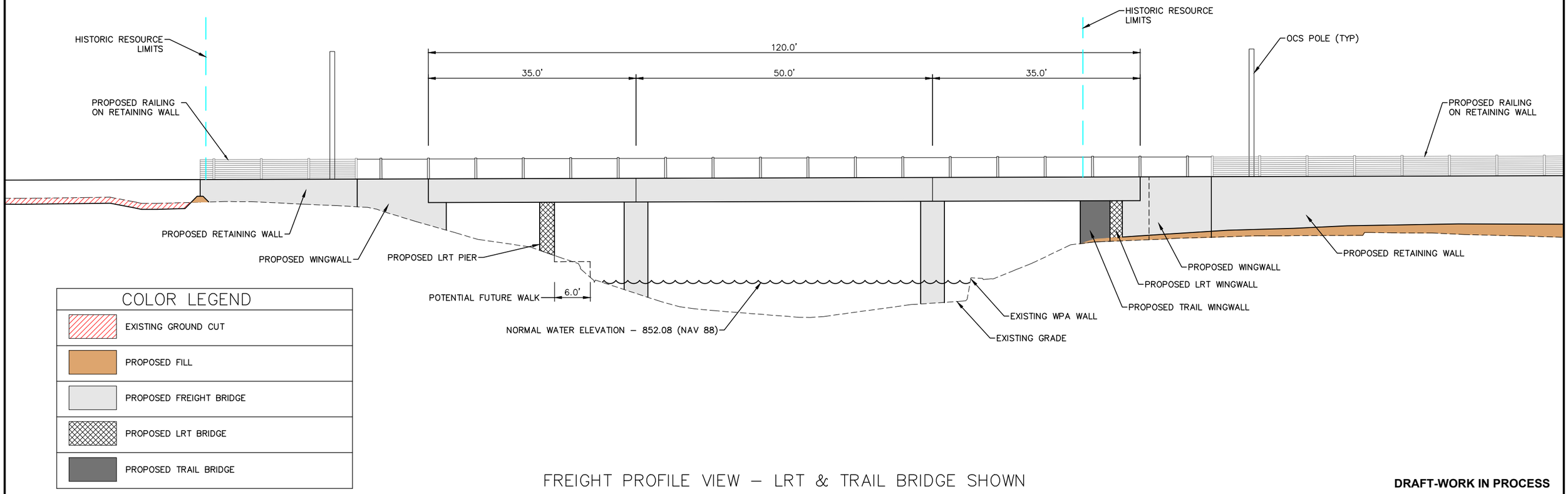



FREIGHT PROFILE VIEW – WITHOUT LRT & TRAIL BRIDGE SHOWN




FREIGHT PROFILE VIEW – LRT & TRAIL BRIDGE SHOWN

**DRAFT-WORK IN PROCESS**

SOUTHWEST Green Line LRT Extension

# SOUTHWEST LIGHT RAIL

LAGOON/CHANNEL BRIDGE - CONFIGURATION 4C
FREIGHT BRIDGE VIEW

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