MILWAUKIE
Dogwood City of the West

To: **Planning Commission**

Through: **Katie Mangle, Planning Director**

From: **Susan P Shanks, Senior Planner**

Date: **November 1, 2011 for November 8, 2011 Public Hearing**

Subject: **File:** MOD-11-01, WQR-11-04

Applicant: TriMet[1]

Owner(s): TriMet, North Clackamas Parks and Recreation District, and various private property owners along the trail alignment

Location: Trolley Trail alignment in the City of Milwaukie between River Rd and Park Ave on tax lots 1S1E36CC02101, 02100, 01900, 01800, 01700, 00901, 00300, 05100, and 05300; 1S1E36CD02400; and 2S1E01BA10100

NDA: Island Station

ACTION REQUESTED

Approve applications **MOD-11-01 and WQR-11-04** with the recommended Findings and Conditions of Approval found in Attachments 1 and 2. This action would modify the location and design of the Trolley Trail and approve a water quality resource mitigation plan.

BACKGROUND INFORMATION

The Trolley Trail was previously approved by the City as a Community Service Use (CSU) in 2009 within the historic trolley corridor that runs roughly adjacent to the current alignment of McLoughlin Blvd between Milwaukie and Gladstone. Passenger service via streetcar operated in this corridor between Portland and Oregon City from 1893 until 1958, followed by freight rail service which operated until 1968. The railway was abandoned after 1968 and most of the rails and ties have since been removed.

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[1] TriMet is empowered to initiate the application pursuant to Milwaukie Municipal Code (MMC) Subsection 19.1001.6.A because it has statutory rights of eminent domain. TriMet is in the process of purchasing the lots listed under Project Location and/or acquiring the necessary easements from these owners to construct the trail.

Metro and the North Clackamas Parks and Recreation District (NCPRD) purchased the historic trolley corridor in 2001 for the purpose of creating a multi-use recreational trail between Milwaukie and Gladstone. During this time, Metro and TriMet were evaluating light rail alignments in the same general area, and, in 2008, TriMet obtained a land use final order (LUFO) from Metro to locate the new Portland Milwaukie Light Rail (PMLR) alignment immediately adjacent to the historic trolley corridor between River Rd and Park Ave. When NCPRD obtained land use approvals from the City in 2009 to construct the trail, it was with the understanding that the final trail design and location would likely need to be modified between River Rd and Park Ave to accommodate light rail.

TriMet proposes to modify the original Trolley Trail approval to ensure the continuation of the trail through this area and to accommodate the PMLR alignment along McLoughlin Blvd. The proposed modification to the alignment does not substantially alter the location of the trail at the City or regional level. It also does not change how the trail connects to other trail sections to the north and south.

A. Site and Vicinity

The Trolley Trail site for purposes of this application consists of the following tax lots: 1S1E36CC02101, 02100, 01900, 01800, 01700, 00901, 00300, 05100, and 05300; 1S1E36CD02400; and 2S1E01BA10100. The site includes a portion of the historic trolley corridor that runs roughly adjacent to McLoughlin Blvd between Milwaukie and Gladstone. The site also includes eight additional tax lots under private ownership to the west of the previously approved trail alignment.

B. Zoning Designation

The site has a base zone designation of Residential Zone R-5. A portion of the site on tax lots 1S1E36CC00901 and 00300 (near Wren St and McLoughlin Blvd) contains an unmapped water feature that meets the definition for a protected water feature. As such, this area is subject to the City's water quality resource regulations.

C. Comprehensive Plan Designation

The site has a land use designation of Moderate Density (MD). The Transportation System Plan, which is an ancillary document to the Comprehensive Plan, includes the Trolley Trail on the Pedestrian Master Plan (Figure 5-1) and Bicycle Master Plan (Figure 6-2).

D. Land Use History

The Trolley Trail was previously approved by the City as a Community Service Use (CSU) in 2009 (Land Use File CSU-08-03). Since this portion of the trail has not yet been constructed, the applicant's modification request is being processed as a Modification to an Existing Approval rather than a new CSU application or a modification to an existing CSU. Since the applicant seeks to modify an existing approval, only those portions of the trail that are proposed to be modified between River Rd and Park Ave are subject to review.[2]

[2] The modification request includes all trail improvements in the City of Milwaukie that lie between the light rail safety fencing to the east and the outer edge of the slope easements being acquired by TriMet for trail construction to the west. Light rail improvements in this area, which include everything on either side of the modified Trolley Trail alignment under review, are not part of this land use review. Sound walls, for example, that are located on or to the west of the slope easements for the trail are not part of this review, as they are in response to light rail impacts not trail modifications.

The applicant proposes to modify the original Trolley Trail approval both to ensure the continuation of the trail through this area and to accommodate the PMLR alignment along McLoughlin Blvd. The PMLR alignment has an existing land use approval that was issued by Metro in 2008. This land use final order (LUFO) was made pursuant to House Bill 3478 (1996), which provides for the review and siting of regional transportation facilities through local jurisdictions. The City's review of the proposed trail modifications are not directly encumbered by the 2008 LUFO. However, the proposed trail modifications are a direct result of the approved rail alignment since a portion of the Trolley Trail property was identified in the PMLR Final Environmental Impact Statement as being needed for the light rail project. As such, the City cannot condition the approval of the trail modifications in such a way as to prevent the implementation of the 2008 LUFO.

E. Proposal

The modification proposal includes the following elements. See Attachment 3A for more detailed information about the proposed location and design for the trail, including lighting and landscaping plans.

- A trail alignment shift to the west resulting in impacts to eight tax lots under private ownership, five of which are in residential use.
- Changes to the grade along the western side of the trail that require the construction of retaining walls and safety fencing or walls.
- Changes to the existing vegetation on both sides of the trail as a result of both the trail alignment shift to the west and the light rail construction to the east.
- The introduction of pedestrian-scale lighting along the trail between Park Ave and River Rd.

The proposal results in the following impacts to the unmapped water quality resource (WQR) area near Wren St and McLoughlin Blvd.

- Removal of 13 trees.
- Temporary disturbance to 1,820 sq ft of WQR area.
- Permanent impacts to 2,010 sq ft of WQR area.

The applicant proposes the following mitigation actions for the temporary and permanent impacts to the WQR area. See Attachments 3B and 3C for the applicant's mitigation plan and WQR report respectively.

- Plant 15 trees.
- Restore areas temporarily impacted by trail and light rail construction with appropriate native plants pursuant to applicable WQR standards.
- Mitigate for areas permanently impacted by the trail and light rail at a 1:1 replacement ratio within the WQR area and above the ordinary high water level.
- Remove invasive and nonnative species from within the construction limits and the mitigation area.
- Monitor and maintain plantings for five years with a target survival rate of 80%.

The proposal requires approval of the following applications by the Planning Commission.

- **Modification to an Existing Approval (MOD-11-01)**

  The Trolley Trail was previously approved by the City as a Community Service Use (CSU) in 2009. Since this portion of the trail has not yet been constructed, the applicant's modification request requires review as a Modification to an Existing Approval rather than as a new CSU application or a modification to an existing CSU.

- **Water Quality Resource (WQR-11-04)**

  The trail and light rail alignments through this area will have temporary and permanent impacts to an unmapped water quality resource area. Impacts to this area require review and natural resource mitigation.

KEY ISSUES

Summary

Staff has identified the following two key issues for the Planning Commission's deliberation. Aspects of the proposal not discussed here are addressed in the Findings (see Attachment 1) because they require less analysis and discretion.

1. **Do the benefits of the proposed trail modifications outweigh the potential adverse impacts?**
2. **Are the impacts to the water quality resource (WQR) unavoidable and are they adequately mitigated by the mitigation plan?**

Analysis

Key Issue #1: Do the benefits of the proposed trail modifications outweigh the potential adverse impacts?

The Trolley Trail was originally approved by the City as a Community Service Use (CSU) in 2009. In order to modify the original approval, the Planning Commission must find that the proposed modification will continue to meet all applicable approval criteria upon which the original approval was based. In this case, the original approval was based upon finding, amongst other things, that the benefits of the trail outweighed its potential impacts.

The following public benefits were identified in the original approval:

- Improves an existing public facility
- Expands the local network of safe non-motorized facilities
- Provides a public recreational amenity
- Improves local and regional connectivity
- Encourages alternative transportation modes
- Has the potential to reduce single-occupancy vehicle trips
- Implements the Transportation System Plan

The modified trail alignment and design has the same public benefits as the previously approved trail alignment and design. The width of the trail and the trail shoulders are not

proposed to change. The access points to the trail from the west are also not proposed to change. The addition of trail lighting between River Rd and Park Ave has the added benefit of providing a safer travel experience for pedestrians and cyclists during nighttime hours. Finally, impacts to an unnamed and ecologically degraded protected water feature near Wren St and McLoughlin Blvd enables the City to require natural resource mitigation for these impacts. The applicant's proposed mitigation plan will significantly improve the ecological functioning of this area, and, as such, is a benefit of the modified trail alignment.

The addition of retaining walls and the large scale removal of vegetation along the trail have the potential to negatively change the character of the area. However, staff believes that the change, while dramatic, is not necessarily an adverse impact. Where vegetation is proposed for removal, the applicant proposes new vegetation. Given that much of the understory in this area contains invasive and nonnative plants, wholesale removal and revegetation of this area could be considered a benefit. Additionally, the applicant proposes to preserve the large giant sequoia near Sparrow St and McLoughlin Blvd by designing the trail around it. Different trail designs were evaluated in an effort to preserve three other giant sequoias further to the north; however, none were determined to be practicable. The three sequoias near Wren St are proposed for removal in order to avoid: (1) shifting the trail further into the adjacent water quality resource area to the west, and (2) adding a second jog in the trail so close to the one planned around the large sequoia at Sparrow St, as jogs in the trail negatively affect sight lines and bicyclist safety and comfort.

Where retaining walls are needed due to topography, the applicant proposes to acquire additional land behind the retaining walls (through purchase or easement) to provide a buffer of landscaping between the trail and the adjacent properties to the west. Large retaining walls include vertical reveals, vine plantings, and tiers to soften hard edges and add visual interest at the pedestrian level. The addition of retaining walls and landscape buffers also serve to more clearly define the western edge of the trail site than the previously approved alignment. This has the added benefit of reducing the likelihood of intentional or inadvertent trespassing onto private property by trail users. The applicant has provided landscaping and tree mitigation plans that illustrate the proposed landscaping and wall treatments, and staff recommends conditions of approval to ensure that these plans are implemented as proposed.

The following potential impacts were identified in the original approval:

- Improvements to the trail are expected to increase users of the trail. This increase in use may impact the privacy of private property owners adjacent to the trail. It may also result in trespassing.

The modified trail alignment and design has the following additional potential impacts:

- The applicant is acquiring and demolishing the residences on five properties in the City of Milwaukie to accommodate the proposed trail alignment. On the one hand, this represents a significant disruption and inconvenience for these residents. On the other hand, once these homes are demolished, they are no longer impacted by the trail. If they were ever redeveloped, future development would have the opportunity to minimize any trail impacts through home and site design.
- The addition of trail lighting has the potential to introduce new lighting impacts where none existed before. Staff recommends a condition of approval to avoid this potentiality.
- Shifting the trail alignment to the west results in temporary and permanent impacts to an unnamed protected water feature near Wren St and McLoughlin Blvd. The applicant proposes to mitigate for these impacts and has submitted the appropriate analysis and

mitigation plan. The applicant's mitigation plan is expected to result in substantial ecological improvements to this area. Staff recommends conditions of approval to ensure the successful implementation of the proposed mitigation.

Given that the impacts identified in the original approval have, to some extent, been addressed and new potential impacts can be effectively mitigated, staff believes that the benefits of the modified trail outweigh the potential impacts caused by the proposed modifications.

Key Issue #2: Are the impacts to the water quality resource (WQR) unavoidable and are they adequately mitigated by the mitigation plan?

Placement of the light rail and trail alignments through this area is constrained by McLoughlin Blvd on the east and steep slopes and residentially-zoned properties on the west. Other rail alignments were evaluated but none were advanced. They were considered either nonpracticable or more impactful to the trail, McLoughlin Blvd, or nearby residential properties. Other trail alignments and trail supports were considered within the area left remaining on the west side of the light rail alignment, but none had fewer impacts on the WQR area and/or were considered appropriate by the North Clackamas Parks and Recreation District.

The trail is located as far away from the WQR area as possible while maintaining a minimum acceptable distance from the light rail alignment. A reduction in the width of the trail at this location was considered neither safe nor desirable by the North Clackamas Parks and Recreation District, but a retaining wall is proposed at this location in order to reduce the amount of fill and disturbance within the WQR area. The proposed retaining wall is located above ordinary high water and over an existing culvert.

The applicant's mitigation plan was reviewed by ESA Northwest Biological Resources. ESA was retained by the City at the applicant's expense to provide independent technical review of the applicant's WQR analysis and mitigation plan. Other than the classification of the protected water feature as a secondary protected feature, ESA determined that: (1) the applicant's analysis was reasonably complete and accurate, (2) the mitigation plan met code requirements, and (3) the mitigation plantings were suitable for the site and would improve local ecological functions. Both ESA and the City disagree with the applicant's classification of the protected water feature as a secondary protected feature based on information from local property owners and multiple field observations in late summer. Both ESA and the City believe that the unmapped feature is a primary protected water feature since it appears to have year-round flow.

The applicant has since agreed to modify the WQR boundary and mitigation plan accordingly. Staff believes that the application can be effectively conditioned to address this issue and that the mitigation plan will adequately mitigate for the impacts caused by the proposed trail alignment.

CONCLUSIONS

Staff recommendation to the Planning Commission:

Approve the Modification to an Existing Approval and Water Quality Resource applications for the location and design of the Trolley Trail between River Rd and Park Ave with the recommended findings and conditions of approval in Attachments 1 and 2.

Key conditions of approval:

- Demonstrate that the addition of trail lighting does not impact any properties in the City of Milwaukie on the west side of the trail not permanently acquired by TriMet for construction of the trail or the light rail project.
- Revise the water quality resource area boundary and associated mitigation plan to reflect its classification as a primary protected water feature.

CODE AUTHORITY AND DECISION-MAKING PROCESS

The application is subject to the Interim Implementation Memo for Metro Title 13 Habitat Conservation Areas and the following provisions of the Milwaukie Zoning Ordinance, which is Title 19 of the Milwaukie Municipal Code (MMC):

- Section 19.303 – Residential Zone R-5
- Section 19.402 – Water Quality Resources
- Section 19.904 – Community Service Uses
- Section 19.909 – Modifications to Existing Approvals
- Chapter 19.1000 – Review Procedures (specifically Section 19.1001 General Provisions and Section 19.1006 Type III Review)

The Commission has 3 decision-making options as follows:

1. Approve applications **MOD-11-01 and WQR-11-04** with the recommended Findings and Conditions of Approval.
2. Approve applications **MOD-11-01 and WQR-11-04** with modified Findings and Conditions of Approval. Any modifications must be read into the record.
3. Continue the hearing to November 22, 2011.

   (The final decision on this application, including any appeals to City Council, must be made by January 18, 2012 in accordance with the Oregon Revised Statutes and the Milwaukie Zoning Ordinance. Unless the applicant extends the time period within which the City must make a decision, a hearing continuation beyond November 22, 2011 is not feasible.)

Both applications are subject to Type III review by the Planning Commission at a public hearing. In Type III reviews, the Planning Commission assesses both applications against all applicable provisions of the Milwaukie Zoning Ordinance and evaluates testimony and evidence received at the public hearing.

COMMENTS

The application was referred for comment to the following City departments and agencies: City of Milwaukie Engineering, Building, and Community Development Departments; Clackamas County Fire District #1; and, North Clackamas Parks and Recreation District.

There were also forwarded to the Island Station Neighborhood District Association, and public copies were made available at City Hall, Ledding Library, and the Planning Department. Key sections of the application were posted on the Planning Department website. Additionally, the Community Services Department broadly advertised the PC's public hearing on the application

at various public forums, such as the Milwaukie Farmers Market, and through direct e-mailings and the City's PMLR project website.

The two written comments on the application that were received by the City on or before October 24, 2011 are included in Attachment 4. Any additional comments received after this date but before the November 8, 2011 public hearing will be brought to the hearing.

Summary of Written Comments:

- **Gary Michael (Island Station Resident):** *Likes trail design.*
- **Jo Anne Bird (Island Station Resident):** *Objects to the removal of the sequoias located near the WQR area; encourages the use of native plants throughout the trail alignment and not just in WQR area; and is not sure if it's a good idea to replace all the big leaf maples in the WQR area with western red cedars.*

ATTACHMENTS

Attachments are provided only to the Planning Commission unless noted as being attached. All material is available for viewing upon request.

1. Recommended Findings in Support of Approval (attached)
2. Recommended Conditions of Approval (attached)
3. Applicant's Narrative and Supporting Documentation date stamped September 20, 2011 by the Planning Department.

   A. Exhibits D1–7, P1–2, P5, P7–8, P11–13, P16–20, P28–31 Trolley Trail Location and Design Illustrations and Plans (attached)

   B. Exhibits P32–P33 Mitigation Site Plan (attached)

   C. Exhibit TR1 Trolley Trail WQR Report (attached)
4. Comments Received (attached)
5. Exhibits List (attached)

Recommended Findings in Support of Approval

1. The applicant, TriMet, submitted two land use applications (the "application") for approval of modifications to a portion of the Trolley Trail between River Rd and Park Ave as part of the Portland Milwaukie Light Rail (PMLR) project. The application requests approval for trail design and water quality resource mitigation. TriMet is empowered to initiate the application pursuant to Milwaukie Municipal Code (MMC) Subsection 19.1001.6.A because it has statutory rights of eminent domain. The application has been assigned the following file numbers and consists of the following application types:

   - **MOD-11-01: Modification to Existing Approval**
   - **WQR-11-04: Water Quality Resource**

2. The location and design of the trail was previously approved by the City as a Community Service Use (CSU) in 2009 (Land Use File CSU-08-03). Since this portion of the trail has not yet been constructed, the applicant's modification request is being processed as a Modification to an Existing Approval rather than a new CSU application or a modification to an existing CSU. Since the applicant seeks to modify an existing approval, only those portions of the trail that are proposed to be modified between River Rd and Park Ave are subject to review. The modification request includes all trail improvements in the City of Milwaukie that lie between the light rail safety fencing to the east and the outer edge of the slope easements being acquired by TriMet for trail construction to the west. Light rail improvements in this area, which include everything on either side of the modified Trolley Trail alignment under review, are not part of this land use review. Sound walls, for example, that are located on or to the west of the slope easements for the trail are not part of this review, as they are in response to light rail impacts not trail modifications.

3. The application is being processed as a major modification to an existing approval pursuant to MMC Subsection 19.909.3.A.3.a because the Planning Director determined that the modifications being proposed have different or more impacts than the original Trolley Trail proposal.

4. The applicant proposes to modify the original Trolley Trail approval to ensure the continuation of the trail through this area and to accommodate the PMLR alignment along McLoughlin Blvd. The PMLR alignment has an existing land use approval that was issued by Metro in 2008.[1] This land use final order (LUFO) was made pursuant to House Bill 3478 (1996), which provides for the review and siting of regional transportation facilities through local jurisdictions. The City's review of the proposed trail modifications are not directly encumbered by the 2008 LUFO. However, the proposed trail modifications are a direct result of the approved rail alignment since a portion of the Trolley Trail property was identified in the PMLR Final Environmental Impact Statement as being needed for the light rail project. As such, the City cannot condition the approval of the trail modifications in such a way as to prevent the implementation of the 2008 LUFO.

5. The Trolley Trail site for purposes of this application consists of the following tax lots: 1S1E36CC02101, 02100, 01900, 01800, 01700, 00901, 00300, 05100, and 05300; 1S1E36CD02400; and 2S1E01BA10100. TriMet has eminent domain authority and is in the process of purchasing the lots listed above and/or acquiring the necessary

[1] Metro Resolution No. 08-3964 entitled 2008 South/North Land Use Final Order (LUFO) Amendment.

easements to construct the trail.

6. The Trolley Trail site has a base zone designation of Residential Zone R-5. A portion of the site on tax lots 1S1E36CC00901 and 00300 (near Wren St and McLoughlin Blvd) contains an unmapped water feature that meets the definition for a protected water feature pursuant to MMC table 19.402.9.A. As such, this area is subject to the City's water quality resource (WQR) regulations.

7. The application is further subject to Development Review at or before the time of development permit submittal pursuant to MMC Section 19.906. The purpose of Development Review is to ensure compliance with applicable standards and conditions of approval through an efficient review process that effectively coordinates the City's land use and development permit review functions.

8. The modification proposal includes the following elements:

   - A trail alignment shift to the west resulting in impacts to six tax lots under private ownership, five of which are in residential use.
   - Changes to the grade along the western side of the trail that require the construction of retaining walls and safety fencing or walls.
   - Changes to the existing vegetation on both sides of the trail as a result of both the trail alignment shift to the west and the light rail construction to the east.
   - The introduction of pedestrian-scale lighting along the trail between Park Ave and River Rd.

9. The proposal results in the following WQR impacts:

   - Removal of 13 trees.
   - Temporary disturbance to 1,820 sq ft of WQR area.
   - Permanent impacts to 2,010 sq ft of WQR area.

10. The applicant proposes the following mitigation plan:

    - Plant 15 trees.
    - Restore areas temporarily impacted by trail and light rail construction with appropriate native plants pursuant to applicable WQR standards.
    - Mitigate for areas permanently impacted by the trail and light rail at a 1:1 replacement ratio within the WQR area and above the ordinary high water level.
    - Remove invasive and nonnative species from within the construction limits and the mitigation area.
    - Monitor and maintain plantings for five years with a target survival rate of 80%.

11. The applicant's mitigation plan was reviewed by ESA Northwest Biological Resources. ESA was retained by the City at the applicant's expense to provide independent technical review of the applicant's WQR analysis and mitigation plan. Other than the classification of the protected water feature as a secondary protected feature, ESA determined that: (1) the applicant's analysis was reasonably complete and accurate, (2) the mitigation plan met code requirements, and (3) the mitigation plantings were suitable for the site and would improve local ecological functions. Both ESA and the City

disagree with the applicant's classification of the protected water feature as a secondary protected feature based on information from local property owners and multiple field observations in late summer. Both ESA and the City believe that the unmapped feature is a primary protected water feature since it appears to have year-round flow.

12. The application was submitted on August 8, 2011. It was initially deemed incomplete by the City on September 7, 2011. The applicant revised and resubmitted the application on September 20, 2011 and requested that the application be deemed complete on that date. The City deemed the application complete on September 20, 2011, and now has until January 18, 2012 to issue a final decision on the application.

13. The Planning Commission (PC) evaluated the application at a public hearing on November 8, 2011 pursuant to MMC Section 19.1006 Type III Review. The November 8 PC public hearing on the application was properly noticed through direct mailings and sign postings pursuant to MMC Subsection 19.1006.3 Type III Public Notice.

14. The application was referred for comment to the following City departments and agencies: City of Milwaukie Engineering, Building, and Community Development Departments; Clackamas County Fire District #1; North Clackamas Parks and Recreation District. It was also forwarded to the Island Station Neighborhood District Association, and public copies were made available at City Hall, Ledding Library, and the Planning Department. Additionally, the Community Services Department broadly advertised the PC's public hearing on the application at various public forums, such as the Milwaukie Farmers Market, and through direct e-mailings and the City's PMLR project website.

    Two written comments were received by the City from Island Station residents prior to October 17, 2011. All written comments are summarized in and/or attached to the November 8, 2011 PC staff report.

15. The application is subject to the Interim Implementation Memo for Metro Title 13 Habitat Conservation Areas and the following provisions of the Milwaukie Zoning Ordinance, which is Title 19 of the Milwaukie Municipal Code (MMC):

    - Section 19.303 – Residential Zone R-5
    - Section 19.402 – Water Quality Resources
    - Section 19.904 – Community Service Uses
    - Section 19.909 – Modifications to Existing Approvals
    - Chapter 19.1000 – Review Procedures (specifically Section 19.1001 General Provisions and Section 19.1006 Type III Review)

    Provisions not addressed in these findings are found to be not applicable to the decision on the application.

16. **MODIFICATION TO AN EXISTING APPROVAL:** MMC Subsection 19.909.4.B contains the approval criteria for Modification (MOD) applications. An application for a MOD application shall be approved if the following criteria are met.

    A. The proposed modification complies with all applicable development standards and requirements, except as modified by the original approval.

    Applicable standards are as follows:

    1. Metro Title 13, which the City began implementing May 29, 2009, requires a Construction Management Plan (CMP) and Map Verification for all

development within 100 feet of a mapped habitat conservation area (HCA) pursuant to Sections 5 and 9 respectively.[2] No other provisions of Title 13 apply since no development is proposed within an HCA. The applicant does not dispute the need for map verification or a CMP. Both of these requirements can be fulfilled during the development phase of the project and are appropriate as conditions of approval. As conditioned, this standard will be met.

2. Subsection 19.303.H requires that a minimum of 25% of the site be landscaped. The applicant is proposing to retain approximately 70% of the site in landscaping. This standard is met.

3. Subsection 19.904.9.A requires the applicant to provide all utilities, streets, or other improvements necessary for the trail. The original proposal avoided impacts to the Sparrow St and 26th Ave intersection. The proposed modification to shift the alignment to the west encroaches into this intersection. More detailed information is needed to ensure that sufficient right-of-way width will continue to exist to accommodate full street improvements at this location in the future. If this is not the case, right-of-way dedication may be required. As conditioned, this standard will be met.

4. Subsection 19.904.9.F requires that all trail lighting shall be designed to avoid glare on adjacent residential uses and public streets.

   Light rail will be located to the east of the trail. Residentially-zoned properties are located to the west of the trail. Pedestrian-scale lighting for the trail is proposed on the east side of the trail to minimize impacts on residences to the west. The proposed lights are mounted on 14-foot poles and are designed to shine downwards on the trail rather than outwards. Plantings and retaining walls between the trail and the residences to the west are expected to further minimize any lighting impacts on residences. Approval of the application has been conditioned to ensure that no increase in foot candle readings occurs on these properties (as measured from top of bank) as a result of trail lighting. As conditioned, this standard will be met.

5. Subsection 19.904.9.G requires that, where possible, the hours and levels of operation of the trail shall be adjusted to make it compatible with adjacent uses.

   As originally approved, the Trolley Trail is a transportation facility that is intended to be available for use every day and at all hours of the day, though most use is expected during daylight hours. To the east, the trail is adjacent to two other transportation facilities, namely the future light rail alignment and McLoughlin Blvd, which is continuously in use. To the west, the trail is separated by topography and landscaping from most of the adjacent residential properties. Similar to a lit public sidewalk, the addition of lighting along the trail is not expected to substantially change how the trail is used but will allow for safer pedestrian and bike travel during nighttime hours. No adjustments are necessary to make the trail compatible with adjacent uses. This standard is met.

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[2] The original Trolley Trail application was submitted prior to City's implementation of Metro Title 13 and was not subject to these standards.

6. Subsection 19.402.10 contains standards for development on property that contains protected water quality resource (WQR) areas. The standards in this subsection pertain to the development phase of the project and are appropriate as conditions of approval. A summary of these standards is as follows:

   - The water quality resource area shall be restored and maintained in accordance with the approved mitigation plan and the specifications in MMC Table 19.402.9.E WQR Area Requirements.
   - Existing vegetation shall be protected and left in place wherever practicable. Work areas shall be carefully located and marked to reduce potential damage to the water quality resource area. Where existing vegetation has been removed, the site shall be revegetated as soon as practicable.
   - Prior to construction the water quality resource area shall be flagged, fenced or otherwise marked and shall remain undisturbed except as may be allowed by this decision. Such markings shall be maintained until construction is complete.
   - Appropriate site preparation and construction practices shall be followed to prevent erosion, pollution, sedimentation, or drainage of hazardous materials to the water quality resource area.
   - Stormwater facilities that encroach more than 25 feet into the outside boundary of the WQR require the addition of area to the WQR area on the site equal in size to the area of encroachment.
   - Lights must be placed and hooded so that they do not shine directly into the water quality resource areas wherever practicable. Lights must provide the minimum level of lighting necessary for safe development operations and limited water quality resource area impacts.
   - Storm water flows as a result of the proposed development within and to water quality resource areas shall not exceed pre-development flows. Storm water outfalls shall be appropriately designed to avoid erosion to stream banks or water quality resource area slopes.

As conditioned, the Planning Commission finds that all of these standards will be met and that this approval criterion will therefore be met.

B. The proposed modification will continue to meet all applicable approval criteria upon which the original approval was based.

The Trolley Trail was originally approved by the City as a Community Service Use (CSU) in 2009. MMC Subsection 19.904.4 contains the applicable approval criteria for CSU applications.

1. The building setback, height limitation, and off-street parking and similar requirements governing the size and location of development in the underlying zone are met. Where a specific standard is not proposed in the CSU, the standards of the underlying zone are met.

   No buildings or parking areas are proposed. The underlying zone landscape standard will be met.

The Planning Commission finds that this criterion is met.

2. Specific standards for the proposed uses as found in Subsections 19.904.7-11 are met.

   Applicable standards are addressed above under Findings 15.A.3, 4, and 5.

   As conditioned, the Planning Commission finds that this criterion is met.

3. The hours and levels of operation of the proposed use are reasonably compatible with surrounding uses.

   As described in more detail in Finding 15.A.5 above, the trail is a transportation facility immediately adjacent to other existing or planned transportation facilities and separated from adjacent residential uses by retaining walls and landscaping. As such, the hours and levels of operation of the trail are reasonably compatible with surrounding uses.

   The Planning Commission finds that this criterion is met.

4. The public benefits of the proposed use are greater than the negative impacts, if any, on the neighborhood.

   The underlying approval for the Trolley Trail found that the overall public benefits of the trail outweighed its potential impacts. The following public benefits were identified in the original approval:

   - Improves an existing public facility
   - Expands the local network of safe non-motorized facilities
   - Provides a public recreational amenity
   - Improves local and regional connectivity
   - Encourages alternative transportation modes
   - Has the potential to reduce single-occupancy vehicle trips
   - Implements the Transportation System Plan

   The modified trail alignment and design has the same public benefits as the previously approved trail alignment and design. The width of the trail and the trail shoulders are not proposed to change. The access points to the trail from the west are also not proposed to change. The addition of trail lighting between River Rd and Park Ave has the added benefit of providing a safer travel experience for pedestrians and cyclists during nighttime hours. Finally, impacts to an unnamed and ecologically degraded protected water feature near Wren St and McLoughlin Blvd enables the City to require natural resource mitigation for these impacts. The applicant's proposed mitigation plan will significantly improve the ecological functioning of this area, and, as such, is a benefit of the modified trail alignment.

   The addition of retaining walls and the large scale removal of vegetation along the trail have the potential to negatively change the character of the area. However, the Planning Commission finds that the change, while dramatic, is not necessarily an adverse impact. Where vegetation is proposed for removal, the applicant proposes new vegetation. Given that much of the

understory in this area contains invasive and nonnative plants, wholesale removal and revegetation of this area could be considered a benefit. Additionally, the applicant proposes to preserve the large giant sequoia near Sparrow St and McLoughlin Blvd by designing the trail around it. Different trail designs were evaluated in an effort to preserve three other giant sequoias further to the north; however, none were determined to be practicable. The three sequoias near Wren St are proposed for removal in order to avoid: (1) shifting the trail further into the adjacent water quality resource area to the west, and (2) adding a second jog in the trail so close to the one planned around the large sequoia at Sparrow St, as jogs in the trail negatively affect sight lines and bicyclist safety and comfort.

Where retaining walls are needed, the applicant proposes to acquire additional land behind the retaining walls (through purchase or easement) to provide a buffer of landscaping between the trail and the adjacent properties to the west. Large retaining walls include vertical reveals, vine plantings, and tiers to soften hard edges and add visual interest at the pedestrian level. The addition of retaining walls and landscape buffers also serve to more clearly define the western edge of the trail site than the previously approved alignment. This has the added benefit of reducing the likelihood of intentional or inadvertent trespassing onto private property by trail users.

The applicant has provided landscaping plans and a tree mitigation plan that illustrate the proposed landscaping and wall treatments. The application has been conditioned to ensure that these plans are implemented as proposed.

The following potential impacts were identified in the original approval:

- Improvements to the trail are expected to increase users of the trail. This increase in use may impact the privacy of private property owners adjacent to the trail. It may also result in trespassing.

The modified trail alignment and design has the following additional potential impacts:

- The applicant is acquiring and demolishing the residences on five properties in the City of Milwaukie to accommodate the proposed trail alignment. On the one hand, this represents a significant disruption and inconvenience for these residents. On the other hand, once these homes are demolished, they are no longer impacted by the trail. If they were ever redeveloped, future development would have the opportunity to minimize any trail impacts through home and site design.
- The addition of trail lighting has the potential to introduce new lighting impacts where none existed before. The application has been conditioned to avoid this potentiality.
- Shifting the trail alignment to the west results in temporary and permanent impacts to an unnamed protected water feature near Wren St and McLoughlin Blvd. The applicant proposes to mitigate for these impacts and has submitted the appropriate analysis and mitigation plan. The applicant's mitigation plan is expected to result in substantial ecological improvements to this area. The application has been conditioned to ensure the successful implementation of the proposed mitigation.

Given that the impacts identified in the original approval have, to some extent, been addressed and new potential impacts can be effectively mitigated, the Planning Commission finds that the public benefits outweigh the potential impacts from the proposed Trolley Trail modification. As conditioned, this criterion will be met.

5. The location is appropriate for the type of use proposed.

   The trail alignment was established over 110 years ago as a transportation facility, first as a streetcar line and later as a freight rail line. The proposed modification to the alignment does not substantially alter the location of the trail at the City or regional level. It also does not change how the trail connects to other trail sections to the north and south. As such, the location of the modified trail is appropriate for the proposed use.

   The Planning Commission finds that this criterion is met.

17. **WATER QUALITY RESOURCE:** MMC Subsection 19.402.9 contains the application requirements for development in water quality resource (WQR) areas.

The applicant submitted the required WQR materials and analysis for impacts to the unnamed stream on the west side of the Trolley Trail on tax lots 1S1E36CC00901 and 00300 near Wren St and McLoughlin Blvd. Refer to Table 1 below for detailed findings pertaining to the applicant's alternatives analysis and mitigation plan, which are required per MMC Subsection 19.402.9.G and I respectively.

As conditioned, the Planning Commission finds that no practicable alternative exists to the trail alignment and that light rail alignment location has already been approved; that disturbance to the WQR area is limited to the area necessary to accommodate the trail and light rail alignments; and that the mitigation plan proposed by the applicant for impacts to the WQR area caused by the trail and light rail alignments is adequate.

A. Application Requirements

Walkways, bike paths, and roads along or across water quality resource areas, such as the Trolley Trail, are subject to Type III review pursuant to MMC Subsection 19.402.7. The applicant submitted most of the required information for Type III review, a summary of which is provided below.

- A topographic map of the site with contour intervals of five (5) feet or less showing a delineation of the water quality resource area and all wetlands.
- The location of all existing natural features including, but not limited to, all trees of a caliper greater than six (6) inches diameter at breast height (DBH).
- The location of all wetlands.
- An inventory and location of existing debris and noxious materials.
- An inventory of vegetation, including percentage ground and canopy coverage.
- An assessment of the existing condition of the water quality resource area.

The applicant provided a site plan that shows the water quality resource area boundary based on its classification as a secondary protected water feature. The Planning Commission finds that the water feature is a primary protected water

feature. The boundary for a primary protected water features is measured 50 feet back from top of bank when the slopes around the water feature are in excess of 25% for less than 150 feet. As a result, the water quality resource boundary for this water feature is wider than what is shown on the applicant's site plan and needs to be redrawn.

Additionally, MMC Subsection 19.402.9.K requires payment of all adopted fees. The applicant paid the required water quality resource application fee and technical report review deposit. The deposit is meant to cover the City's expenses related to the hiring of a consultant with the appropriate technical expertise to review the applicant's water quality resource study.

As conditioned, the Planning Commission finds that the water quality resource application requirements will be met.

18. Pursuant to Subsection 19.1001.7.E, the decision on this land use application shall expire and become void within the time periods specified in Subsection 19.1001.7.E.1 unless the review authority specifies a different expiration time period as allowed by Subsection 19.1001.7.E.2. Given the size, complexity, and phased nature of the proposal, the Planning Commission finds that it is appropriate to extend the time period within which the applicant must obtain development permits from 2 years to 4 years, and within which the applicant must pass all final inspections from 4 years to 6 years, from the date of the land use decision on this application.

Table 1: Water Quality Resource Findings

MMC Subsection 19.402.9.G – ALTERNATIVES ANALYSIS An alternatives analysis shall be included in the application that demonstrates the following.		
	Requirement	**Findings**
1.	**No practicable alternatives to the requested development exist that will not disturb the Water Quality Resource Area.**	Placement of the light rail and trail alignments in this area are constrained by McLoughlin Blvd on the east and steep slopes and residentially-zoned properties on the west. Other rail alignments were evaluated but none were considered practicable, e.g. placement of light rail on the east side of McLoughlin Blvd and on the west side of the trail. Other trail alignments and trail supports were considered but none had fewer impacts on the WQR area and/or were considered appropriate by the North Clackamas Parks and Recreation District. *This requirement is met.*
2.	**Development in the Water Quality Resource Area has been limited to the area necessary to allow for the proposed use.**	The trail is located as far away from the WQR area as possible while maintaining a minimum acceptable distance from the light rail alignment. A reduction in the width of the trail at this location was considered neither safe nor desirable by the North Clackamas Parks and Recreation District, but a retaining wall is proposed at this location in order to reduce the amount of fill and disturbance within the WQR area. *This requirement is met.*

3.	**The Water Quality Resource Area can be restored to an equal or better condition in accordance with Table 19.402.9.E.**	The current condition of the WQR area is degraded. A mitigation plan has been developed to compensate for the unavoidable impacts to this area pursuant to Table 19.402.9.E. The proposed mitigation plan will improve the current conditions and put the area on a trajectory toward providing better water quality function and habitat values. Specific elements of the plan include: • Restoration of all WQR areas temporarily impacted by trail and light rail construction with appropriate native plants. • Mitigation for all WQR areas permanently impacted by the trail and light rail alignments at approximately a 1:1 replacement ratio within the WQR area and above the ordinary high water level. • Removal of invasive and nonnative species from within the construction limits and the mitigation area. • Monitoring and maintenance of plantings for five years with a target survival rate of 80%. The mitigation plan would benefit from the following refinements to ensure protection of existing trees to be retained and 100% ground coverage at the end of the monitoring period as required by Table 19.402.9.E: • Show which tress are proposed to be retained with a note about protecting these trees in place to ensure that they are not adversely affected during construction or mitigation. • Consider adding a “ground cover and herbaceous species” list to the plant schedule, moving both sword fern and low Oregon grape to this list and adding another 1-gallon herbaceous species like fringe-cup (Tellima grandiflora) to this list. (Fringe cup is a good competitor against invasive plants, tolerates drought, and has a high transplant success rate.) • Revise the shrub density to reflect the removal of sword fern and low Oregon grape from the shrub layer, and add additional shrubs as needed to achieve a shrub planting density of at least 6 ft on center. Existing shrubs to be retained can be included in the shrub planting density calculation. The approval of the application has been conditioned to ensure the mitigation plan is implemented as proposed and as altered by these findings. *As conditioned, this requirement will be met.*
4.	**An explanation of the rationale behind choosing the alternative selected, including how adverse impacts to**	Placement of the light rail and trail alignments in this area is constrained by McLoughlin Blvd on the east and steep slopes and residentially-zoned properties on the west. Other rail alignments were evaluated but none were advanced. They were considered either nonpracticable or more impactful to the trail, McLoughlin Blvd,

	resource areas will be avoided and/or minimized.	or nearby residential properties. Other trail alignments and trail supports were considered within the area left remaining on the west side of the light rail alignment, but none had fewer impacts on the WQR area and/or were considered appropriate by the North Clackamas Parks and Recreation District. The trail is located as far away from the WQR area as possible while maintaining a minimum acceptable distance from the light rail alignment. A reduction in the width of the trail at this location was considered neither safe nor desirable by the North Clackamas Parks and Recreation District, but a retaining wall is proposed at this location in order to reduce the amount of fill and disturbance within the WQR area. The proposed retaining wall is located above ordinary high water and over an existing culvert. *This requirement is met.*
MMC Subsection 19.402.9.I – MITIGATION PLAN A mitigation plan shall be included in the application that includes the following information.		
1.	**A description of adverse impacts that will be caused as a result of development.**	The proposed trail and light rail alignments will have the following adverse impacts: • Temporary disturbance to 1,820 sq ft of WQR area • Permanent impacts to 2,010 sq ft of WQR area • Removal of 13 trees greater than 6 inches in diameter at breast height (DBH) Short-term impacts include a slight reduction in the shading of the WQR area and the loss of tree canopy habitat after trees are removed. These impacts will gradually diminish over time as the mitigation plantings mature. More information is needed to ensure that the WQR area will not be adversely affected by the proposed stormwater plan for this area by piping or otherwise diverting water that would naturally feed this protected water feature. *As conditioned, this requirement will be met.*
2.	**An explanation of how adverse impacts to resource areas will be avoided, minimized, and/or mitigated in accordance with, but not limited to, Table 19.402.9.E.**	An explanation of how adverse impacts to the WQR area will be avoided, minimized, and/or mitigated is included under Subsections 19.402.9.G.3 and 4 above. *This requirement is met.*
3.	**A list of all responsible parties including, but not limited to, the owner,**	TriMet is the principal party responsible for work on the trail at this location. Additional detailed information will be made available to the City prior to construction as specific construction contracts are

	applicant, contractor, or other persons responsible for work on the development site.	executed. *This requirement is met.*
4.	**A map showing where the specific mitigation activities will occur.**	The required map has been provided. *This requirement is met.*
5.	**An implementation schedule, including timeline for construction, mitigation, mitigation maintenance, monitoring, reporting, and a contingency plan. All in-stream work in fish-bearing streams shall be done in accordance with the Oregon Department of Fish and Wildlife in-stream timing schedule.**	No in-water is proposed. Bareroot plant materials will be planted between December 1 and February 28th following the completion of heavy construction. TriMet will monitor and maintain the site for five years after the initial planting. Maintenance will include providing mulch rings around trees and shrubs, watering, and weeding as necessary to allow the native plant community to mature to a self-sustaining condition. The target survival rate of plantings is 80%. If plant mortality exceeds 20% of the original planting quantities at any time during the five year period, TriMet will replace with new plants to achieve an overall 80% survival rate. TriMet will submit an annual report to the Planning Director documenting the survival of the trees and shrubs on the mitigation site for a period of five years. The approval of the application has been conditioned to ensure the mitigation plan is implemented as proposed and as altered by these findings. *As conditioned, this requirement will be met.*

Recommended Conditions of Approval

1. The plans submitted to the City of Milwaukie for modification of the Trolley Trail shall be in substantial conformance with the plans reviewed by the Planning Commission (PC) that were date stamped by the City on September 20, 2011. The plans shall be modified only as described in these conditions of approval or through a future land use application or formal modification process. Plan elements not proposed or approved for modification shall substantially conform to the underlying Trolley Trail approval (Land Use File: CSU-08-03).

   (Note: Any plan set changes proposed by the applicant or Planning Commission during or as a result of the land use review process shall be reflected in these conditions of approval prior to adoption by the Planning Commission.)

2. The development permit submission for the modification of the Trolley Trail shall include a detailed written and/or graphic description of any plan changes that are not part of these conditions of approval or that were not specified by the final decision-making authority.

3. The development permit submission for the modification of the Trolley Trail shall include the following items to demonstrate conformance with the Modification to an Existing Approval criteria. Development permits shall not be issued until the Planning Director is satisfied that the following conditions of approval are met.

   A. Provide a cross section design for the intersection at Sparrow St and 26th Ave that shows that there is sufficient right-of-way width to accommodate full street improvements at this location in the future. Acquire and dedicate property to the right-of-way if necessary.

   B. Update the landscaping plan to include tree quantities that are substantially consistent with the proposed Tree Mitigation Site Plan (Exhibit D7).

   C. Demonstrate that the addition of trail lighting does not increase the foot candle readings (as measured from top of bank) for any properties in the City of Milwaukie on the west side of the trail that are not permanently acquired by TriMet for construction of the trail or the light rail project. Documentation can take the form of a photometric study with pre- and post-construction foot candle readings or a written report by an electrical engineer. Provide additional fencing or screening as needed to meet this criterion.

4. The development permit submission for the modification of the Trolley Trail shall include the following items to demonstrate conformance with the Water Quality Resource area regulations. Development permits shall not be issued until the Planning Director is satisfied that the following conditions of approval are met.

   A. Provide the following application materials:

      1) A topographic map of the site with contour intervals of five (5) feet or less showing a delineation of the water quality resource area, including all wetlands, that is consistent with Milwaukie Municipal Code (MMC) Table 19.402.9.A for a primary protected water feature with slopes greater than 25% for less than 150 ft.

      2) Provide a wetland delineation report for any identified wetlands within the

WQR area.

B. Provide a technical memo that describes how the stormwater plan for this area does not adversely affect the WQR area by piping or otherwise diverting water that would naturally feed this protected water feature.

C. Revise the mitigation plan as follows:

1) Expand the required vegetated buffer around the protected water feature to reflect its classification as a primary protected water feature.

2) Adjust the plant schedule to ensure 100% ground coverage in the mitigation area at the end of the monitoring period. Consider adding a “ground cover and herbaceous species” list to the plant schedule, moving both sword fern and low Oregon grape to this list and adding another 1-gallon herbaceous species like fringe-cup (Tellima grandiflora) to this list. (Fringe cup is a good competitor against invasive plants, tolerates drought, and has a high transplant success rate.) Revise the shrub density to reflect the removal of sword fern and low Oregon grape from the shrub layer, and add additional shrubs as needed to achieve a shrub planting density of at least 6 ft on center. Existing shrubs to be retained can be included in the shrub planting density calculation.

3) Show existing trees to be retained and include a note about protecting these trees in place.

5. The development permit submission for the modification of the Trolley Trail shall include the following items to demonstrate conformance with Milwaukie Public Works Standards. Development permits shall not be issued until the Engineering Director has reviewed and approved the following items.

A. Submit a storm water management plan prepared by a qualified professional engineer that conforms to Section 2 – Stormwater Design Standards of the City of Milwaukie Public Works Standards. All stormwater from the Trolley Trail and its associated retaining walls shall be treated and infiltrated on private property unless otherwise approved by the Engineering Director.

1) The storm water management plan shall demonstrate that the post-development runoff does not exceed pre-development runoff, including any existing storm water management facilities serving the development site.

2) The storm water management plan shall demonstrate compliance with water quality standards in accordance with the City of Portland Stormwater Management Manual.

B. In the event the storm management system contains underground injection control devices, the applicant shall submit proof of acceptance of the storm system design from the Department of Environmental Quality. The storm water management plan must also be designed to meet water quality resource development standards contained in MMC Subsection 19.402.10, specifically:

1) Storm water flows as a result of the proposed development within and to water quality resource areas shall not exceed pre-development flows.

2) Storm water outfalls shall be appropriately designed to avoid erosion to stream banks or water quality resource area slopes.

6. Prior to commencement of any earth disturbing activities, the applicant shall:

A. Submit a Construction Management Plan pursuant to Metro Title 13 Section 5.

B. Submit the map verification information identified in Metro Title 13 Section 9.F.1.

C. Obtain an erosion control permit pursuant to MMC Title 16 Erosion Control.

D. Flag, fence, or otherwise mark the extent of the construction limits.

E. Flag, fence, or otherwise mark the water quality resource area not proposed to be disturbed pursuant to MMC Subsection 19.402.10. The water quality resource area must be identified in the field by a qualified professional.

7. During site development, the applicant shall:

A. Limit development activity to 7 a.m. to 7 p.m. Monday through Friday and 8 a.m. to 5 p.m. Saturday and Sunday pursuant to MMC Subsection 8.08.070.I.

B. Safeguard the water quality resource area pursuant to MMC Subsection 19.402.10 as follows:

1) All site development activities shall conform to the Construction Management Plan.

2) Protection fencing shall be maintained around areas not proposed to be disturbed until site development is complete. Trees shall not be used as anchors to stabilize construction equipment or activities.

3) Appropriate site preparation and construction practices shall be followed to prevent erosion, pollution, sedimentation, or drainage of hazardous materials to the water quality resource area.

4) Native soils disturbed during development shall not be removed from the site.

5) The water quality resource area shall be re-vegetated per the approved mitigation plan and as soon as practicable after the approved development activity in the resource area is complete.

8. Prior to final inspection of the modification of the Trolley Trail, the applicant shall complete the following items to the satisfaction of the Planning Director:

A. Restore and improve the water quality resource area per the approved mitigation plan prepared by Vigil Agrimis and subsequently modified by these conditions of approval pursuant to MMC Subsection 19.402.10.A. Submit a letter from the project's natural resource consultant attesting that all required restoration and mitigation work has been completed in conformance with the approved mitigation plan.

9. Prior to final inspection of the modification of the Trolley Trail, the applicant shall complete the following items to the satisfaction of the Engineering Director:

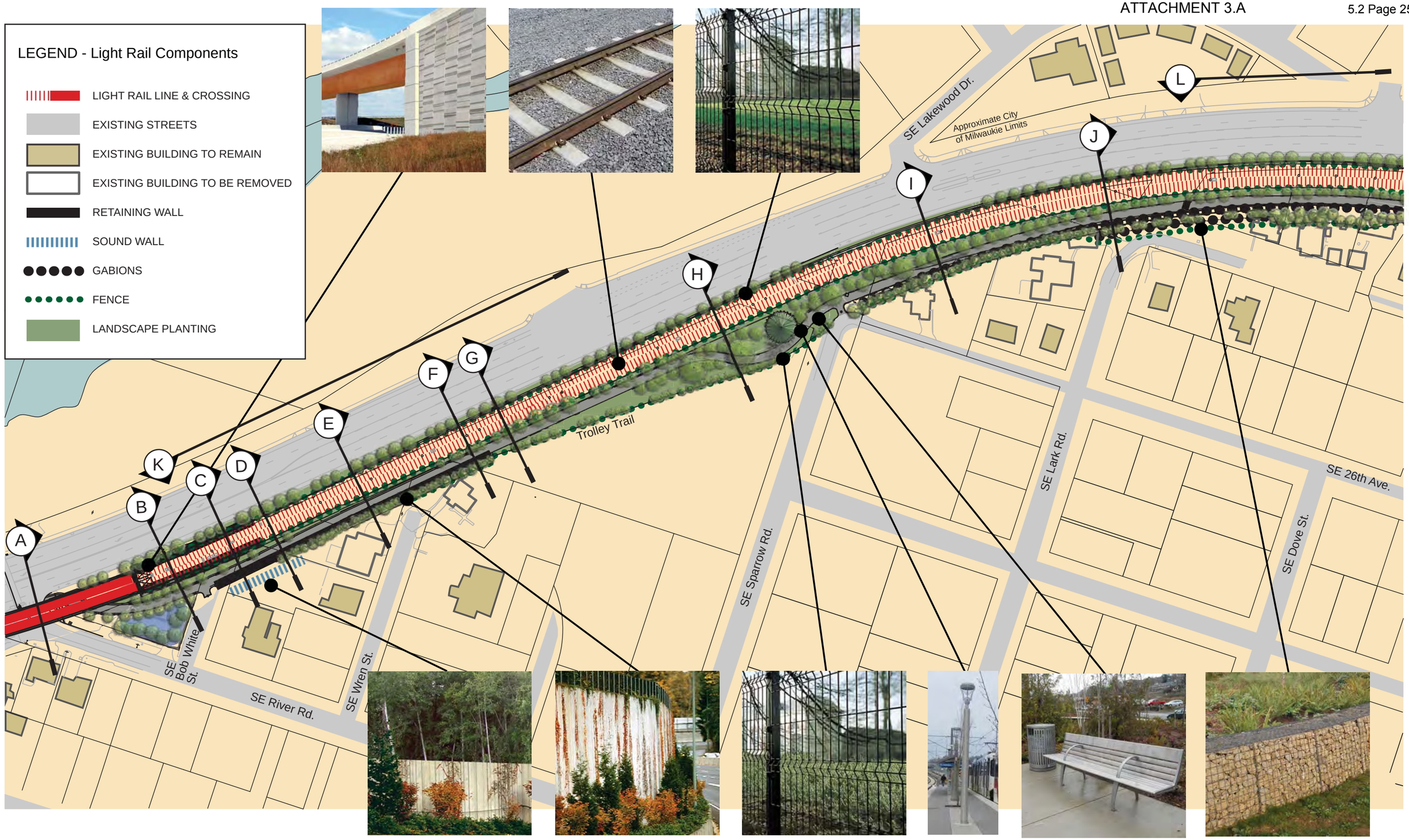
A. Construct a private storm management system to accommodate stormwater runoff from the trail and retaining walls. The private storm management system shall be constructed according to the approved storm water management plan.

10. Ongoing conditions of approval:

A. Maintain and monitor the water quality resource area plantings for five years per the approved mitigation plan prepared by Vigil Agrimis and subsequently modified by these conditions of approval. Provide a copy of the annual

monitoring report to the City of Milwaukie Planning Director no later than the end of each calendar year during the five years in which the plantings are monitored.

B. Pursuant to Subsection 19.1001.7.E.2, the time period within which the applicant must obtain development permits for the Trolley Trail is extended from 2 years to 4 years, and the time period within which the applicant must pass all final inspections is extended from 4 years to 6 years, from the date of the land use decision on this application.



Trolley Trail

N

0′ 30′ 60′ 120′

Scale: 1″ = 60′-0″

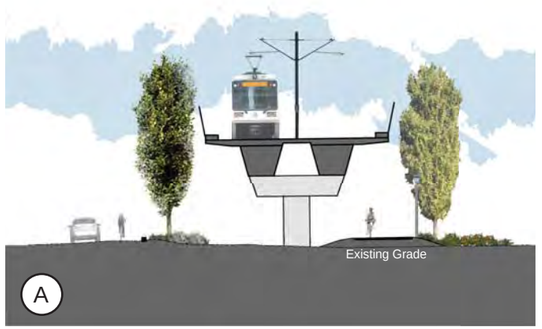
PORTLAND-MILWAUKIE LIGHT RAIL PROJECT · TRIMET · CLACKAMAS COUNTY · DAVID EVANS AND ASSOCIATES INC. · waterleaf architecture, interiors & planning · GREENWORKS

Exhibit D1

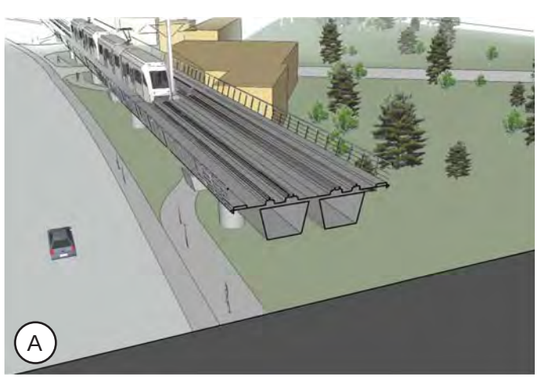
Mayer/Reed

Existing Conditions

Sections of Proposed Conditions



3-D Views of Proposed Conditions



Trolley Trail - Existing and Proposed Conditions

Exhibit D2

Mayer/Reed

Existing Conditions

Sections of Proposed Conditions

3-D Views of Proposed Conditions

Trolley Trail - Existing and Proposed Conditions

Exhibit D3

Mayer/Reed

Existing Conditions

3-D View of Proposed Conditions

Sections of Proposed Conditions

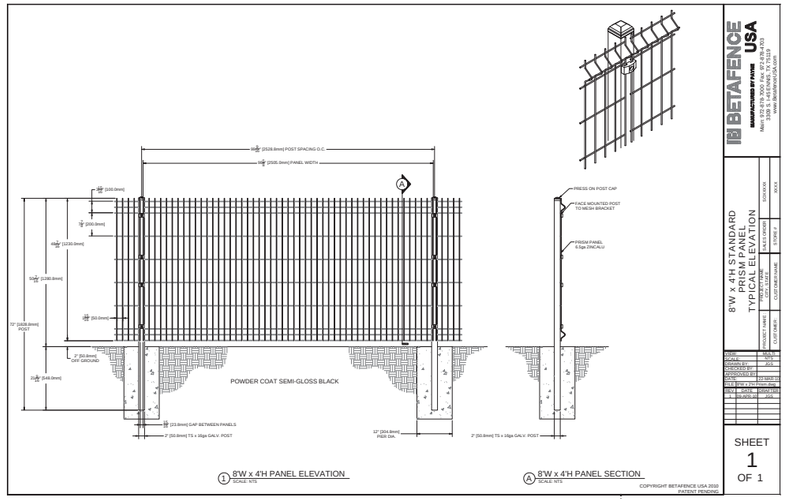
Elevation of Proposed Conditions

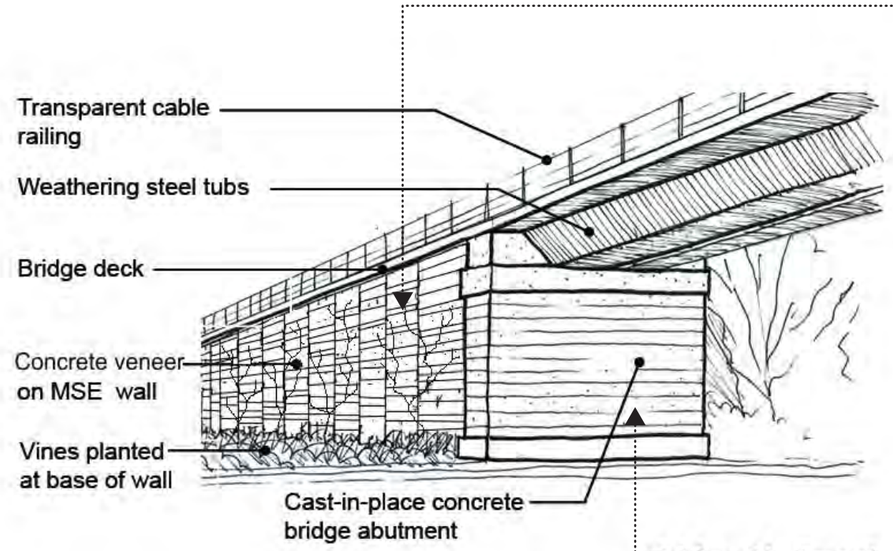
Elevation of Proposed Conditions

Trolley Trail - Existing and Proposed Conditions

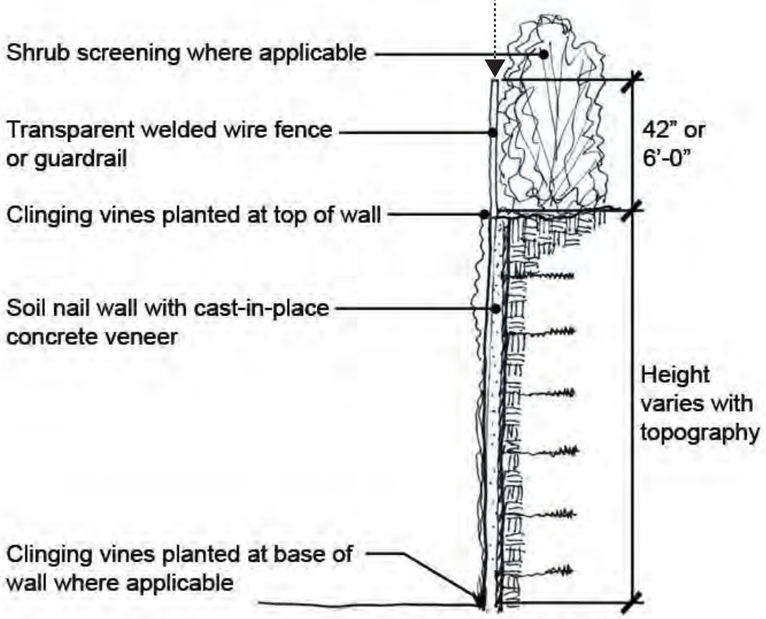
Exhibit D4

Mayer/Reed

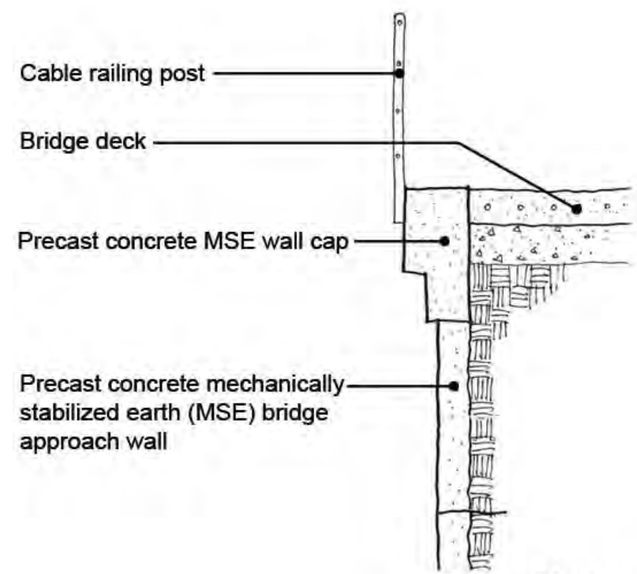




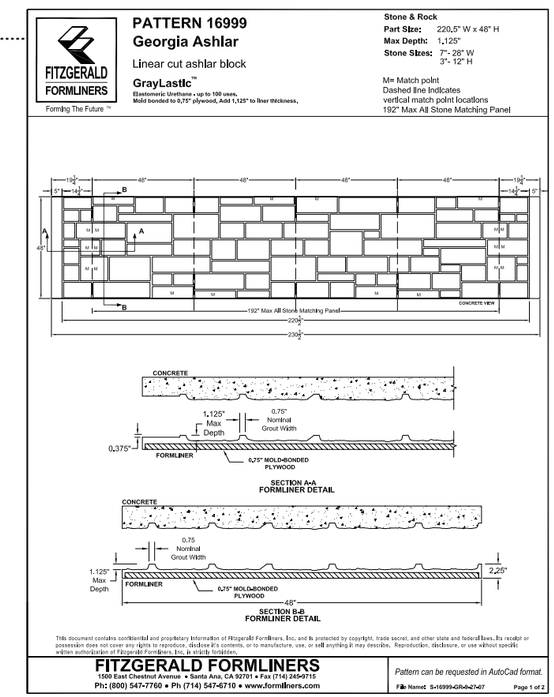
Bridge Abutment

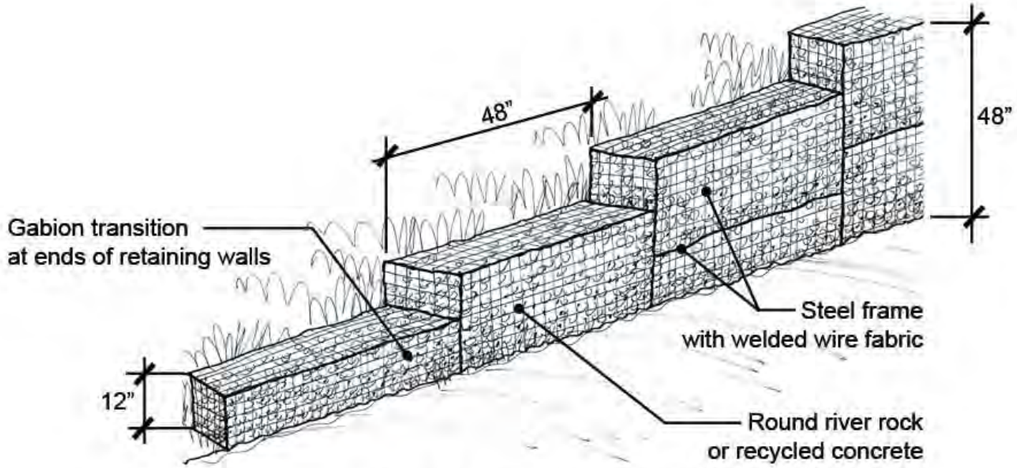


Tall Soil Nail Wall

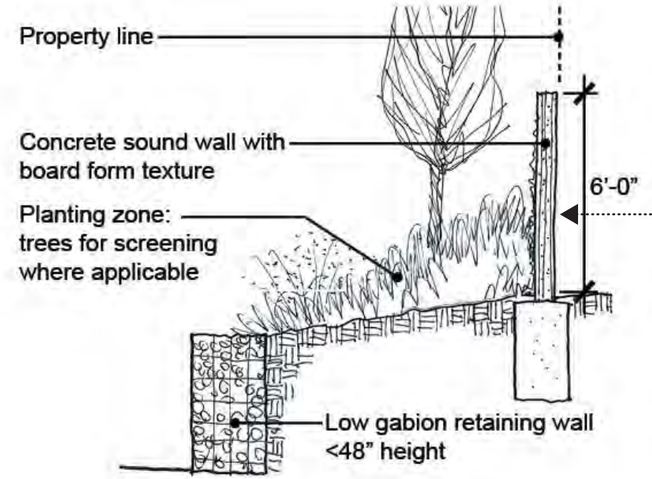


Bridge Abutment MSE Wall Cap

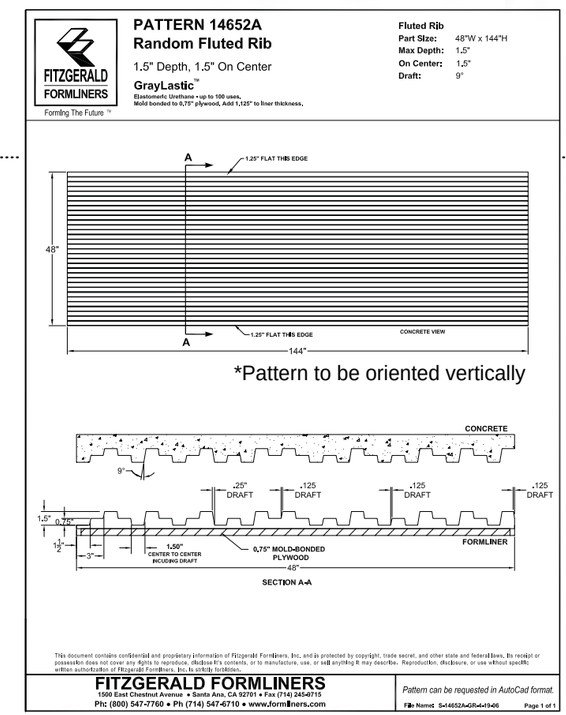




Low Gabion Retaining Wall < 48" Height



Sound Wall and
Low Gabion Retaining Wall

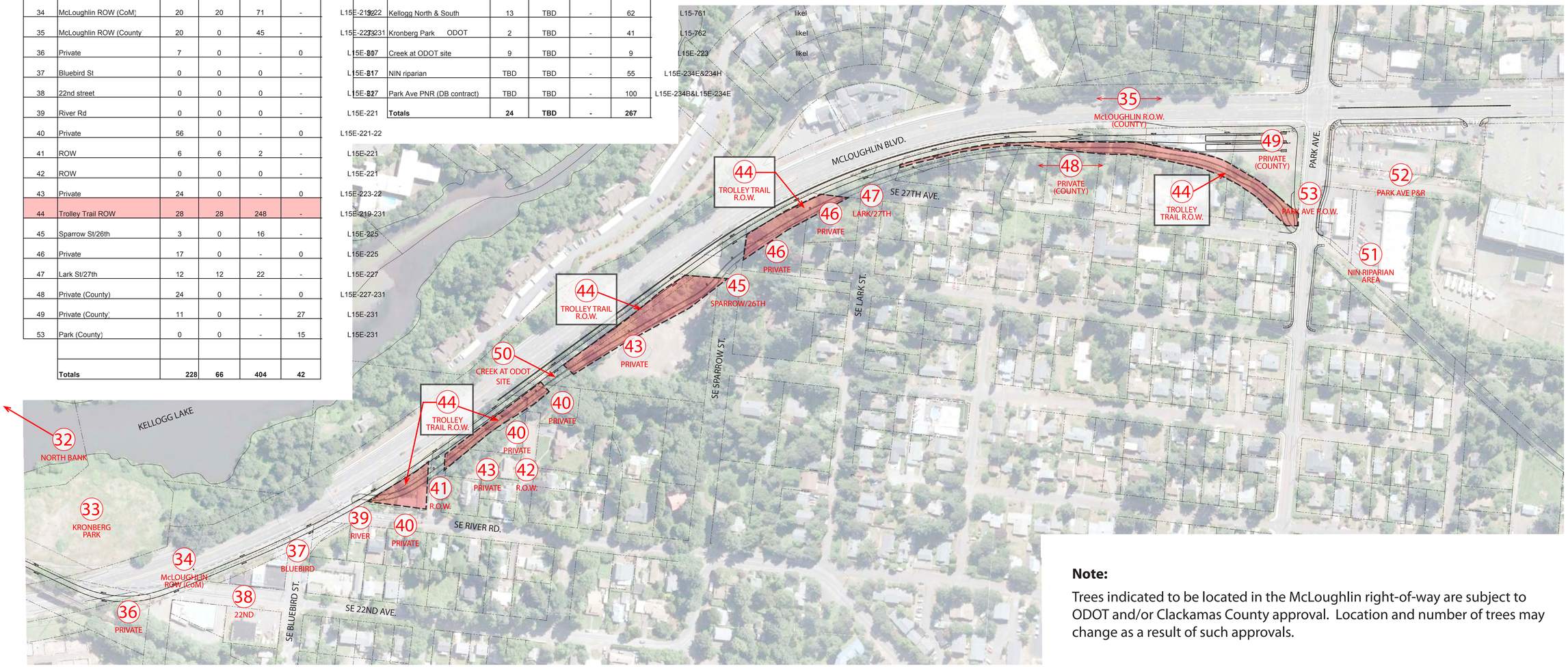


TROLLEY TRAL

ID #	Location	Trees removed	Required mitigation	ROW Trees Proposed	Other Trees proposed
34	McLoughlin ROW (CoM)	20	20	71	-
35	McLoughlin ROW (County	20	0	45	-
36	Private	7	0	-	0
37	Bluebird St	0	0	0	-
38	22nd street	0	0	0	-
39	River Rd	0	0	0	-
40	Private	56	0	-	0
41	ROW	6	6	2	-
42	ROW	0	0	0	-
43	Private	24	0	-	0
44	Trolley Trail ROW	28	28	248	-
45	Sparrow St/26th	3	0	16	-
46	Private	17	0	-	0
47	Lark St/27th	12	12	22	-
48	Private (County)	24	0	-	0
49	Private (County)	11	0	-	27
53	Park (County)	0	0	-	15
	Totals	**228**	**66**	**404**	**42**

ENVIRONMENTAL AREAS

ID #	Location	Trees removed	Required per HCA mitigation	Street Tree Proposed	Other Trees proposed
222	Kellogg North & South	13	TBD	-	62
231	Kronberg Park ODOT	2	TBD	-	41
207	Creek at ODOT site	9	TBD	-	9
217	NIN riparian	TBD	TBD	-	55
227	Park Ave PNR (DB contract)	TBD	TBD	-	100
	Totals	**24**	**TBD**	**-**	**267**



Note:

Trees indicated to be located in the McLoughlin right-of-way are subject to ODOT and/or Clackamas County approval. Location and number of trees may change as a result of such approvals.

Tree Mitigation Plan

N

0' 60' 120' 240'

Scale: 1" =120'-0"

PORTLAND-MILWAUKIE LIGHT RAIL PROJECT

TRIMET

MILWAUKIE, OREGON FOUNDED 1847

CLACKAMAS COUNTY

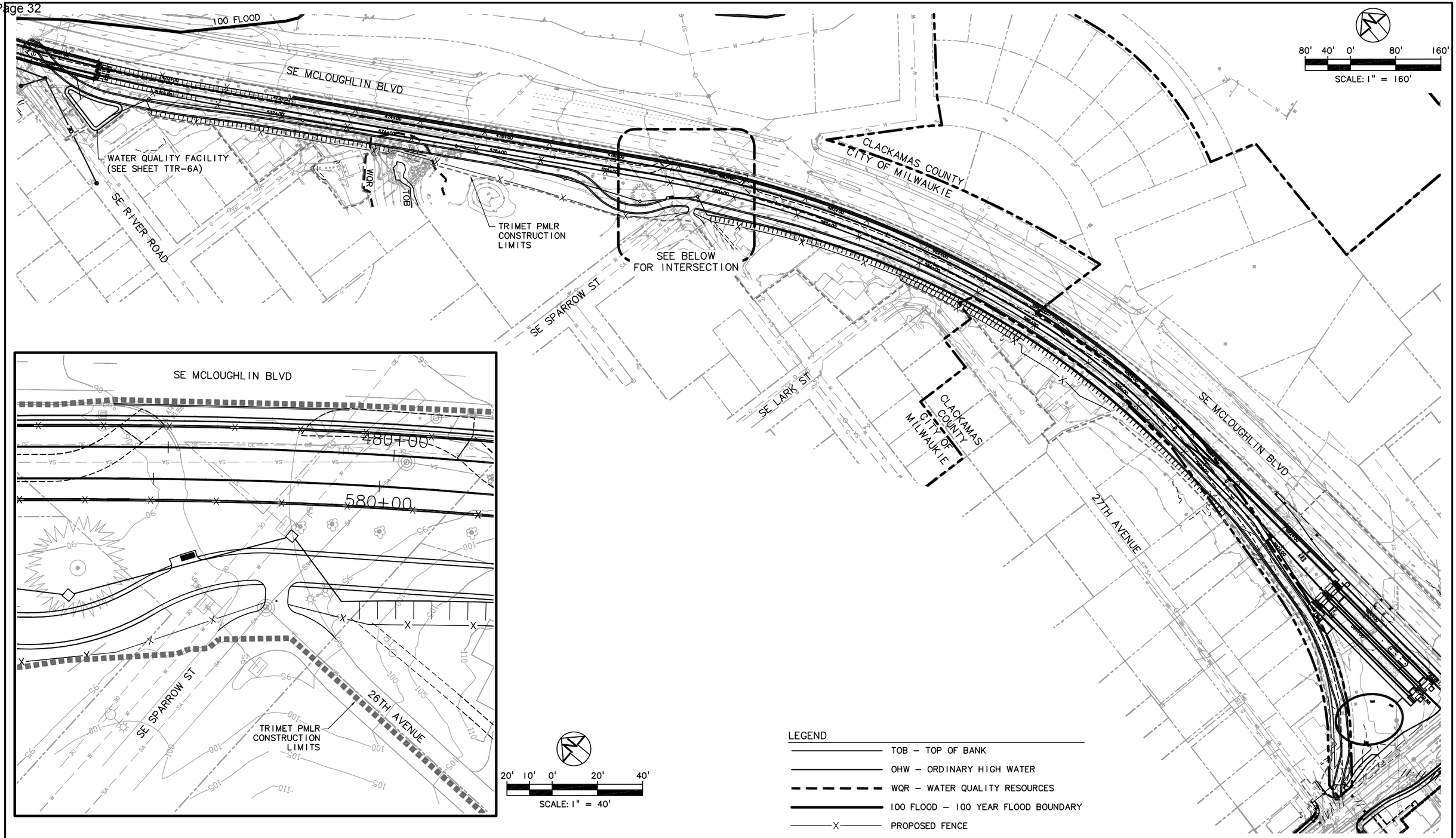
WATERLEAF

DAVID EVANS AND ASSOCIATES INC.

GREENWORKS

Exhibit D7

Mayer/Reed



NO.	DATE	BY / CHK.	APPD.	REVISIONS

IML DESIGNED	07-07-11 DATE
JTH DRAWN	07-07-11 DATE
MJH CHECKED	DATE
APPROVED	DATE

TRI-COUNTY METROPOLITAN TRANSPORTATION DISTRICT OF OREGON

DAVID EVANS AND ASSOCIATES INC.

TRIMET CAPITAL PROJECTS AND FACILITIES DIVISION
710 N.E. HOLLADAY STREET
PORTLAND, OREGON 97232

SUBMITTED: | DATE: | APPROVED: | DATE:

PORTLAND TO MILWAUKIE LRT
EAST SEGMENT
Exhibit P1
LAND USE PERMIT
TROLLEY TRAIL PATH
PROPOSED DEVELOPMENT SITE PLAN

SCALE:	DRAWING NO.:	CONTRACT NO.:	SHEET NO.:
1" = 160'	TTR-2A	RH100544JB	

P:\T\TMTX0000127\0400CAD\Permits\Land Use Permit\3-Trolley Trail\TTR-2A.dwg Sep. 13, 2011 – 1:47 PM edita k boguslawski
Plot Date:9/13/2011 3:26 PM_edita k boguslawski

NO.	DATE	BY	CHK.	APPD.	REVISIONS

IML DESIGNED	07-07-11 DATE
JTH DRAWN	07-07-11 DATE
MJH CHECKED	DATE
APPROVED	DATE

TRI-COUNTY METROPOLITAN TRANSPORTATION DISTRICT OF OREGON

DAVID EVANS AND ASSOCIATES INC.

TRIMET CAPITAL PROJECTS AND FACILITIES DIVISION
710 N.E. HOLLADAY STREET
PORTLAND, OREGON 97232

SUBMITTED: DATE: APPROVED: DATE:

PORTLAND TO MILWAUKIE LRT
EAST SEGMENT
LAND USE PERMIT
TROLLEY TRAIL PATH
PROPOSED DEVELOPMENT SITE PLAN

Exhibit P2

SCALE:	DRAWING NO.:	CONTRACT NO.:	SHEET NO.:
1" = 160'	TTR-2B	RH100544JB	

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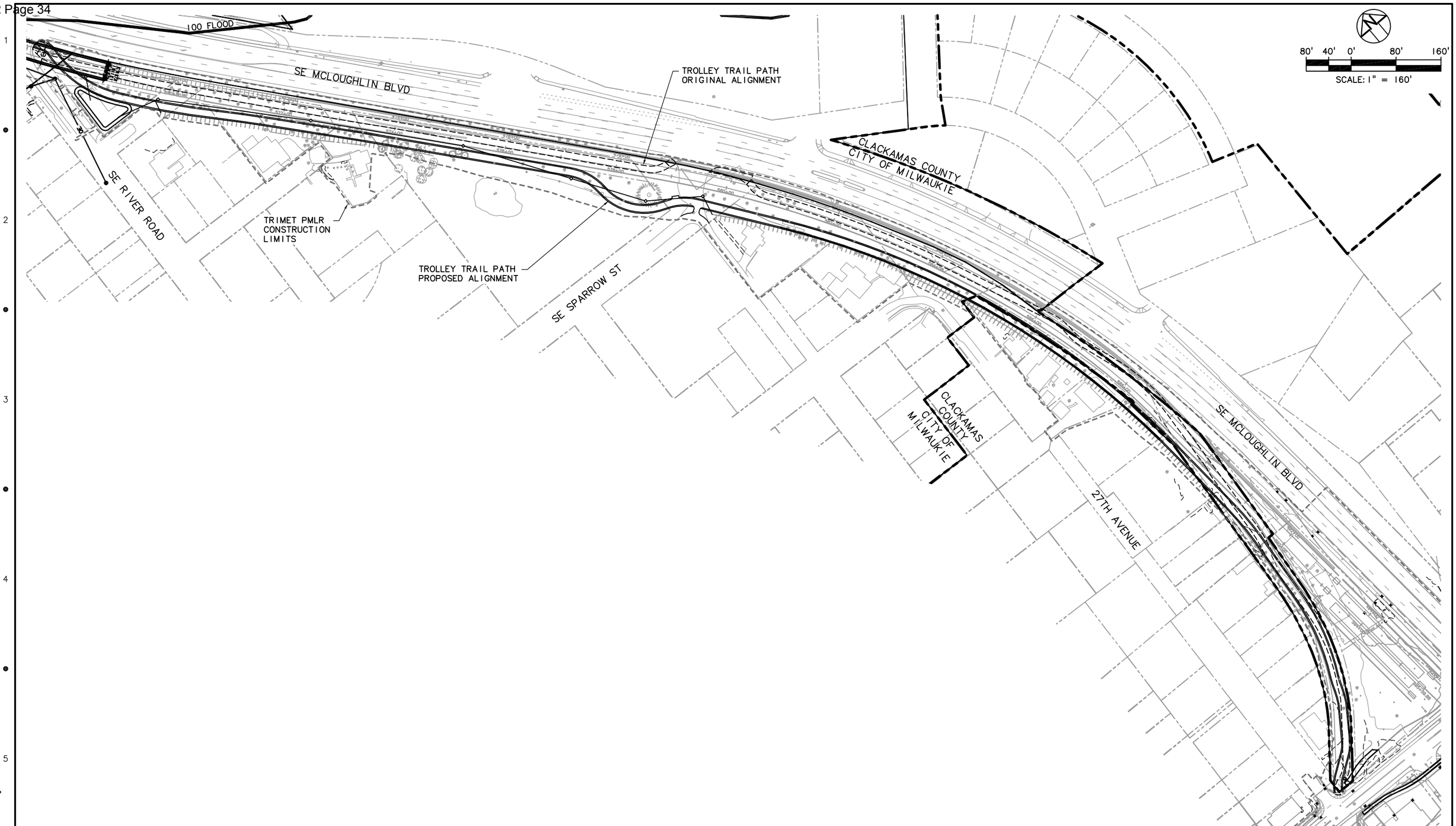
Plot Date:9/13/2011 3:26 PM_edits k boguslowski



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Plot Date:9/13/2011 3:27 PM_edita k boguslowski

NO.	DATE	BY / CHK.	APPD.	REVISIONS

IML DESIGNED	07-07-11 DATE
JTH DRAWN	07-07-11 DATE
MJH CHECKED	DATE
APPROVED	DATE

TRI-COUNTY METROPOLITAN TRANSPORTATION DISTRICT OF OREGON

DAVID EVANS AND ASSOCIATES INC.

TRIMET CAPITAL PROJECTS AND FACILITIES DIVISION
710 N.E. HOLLADAY STREET
PORTLAND, OREGON 97232

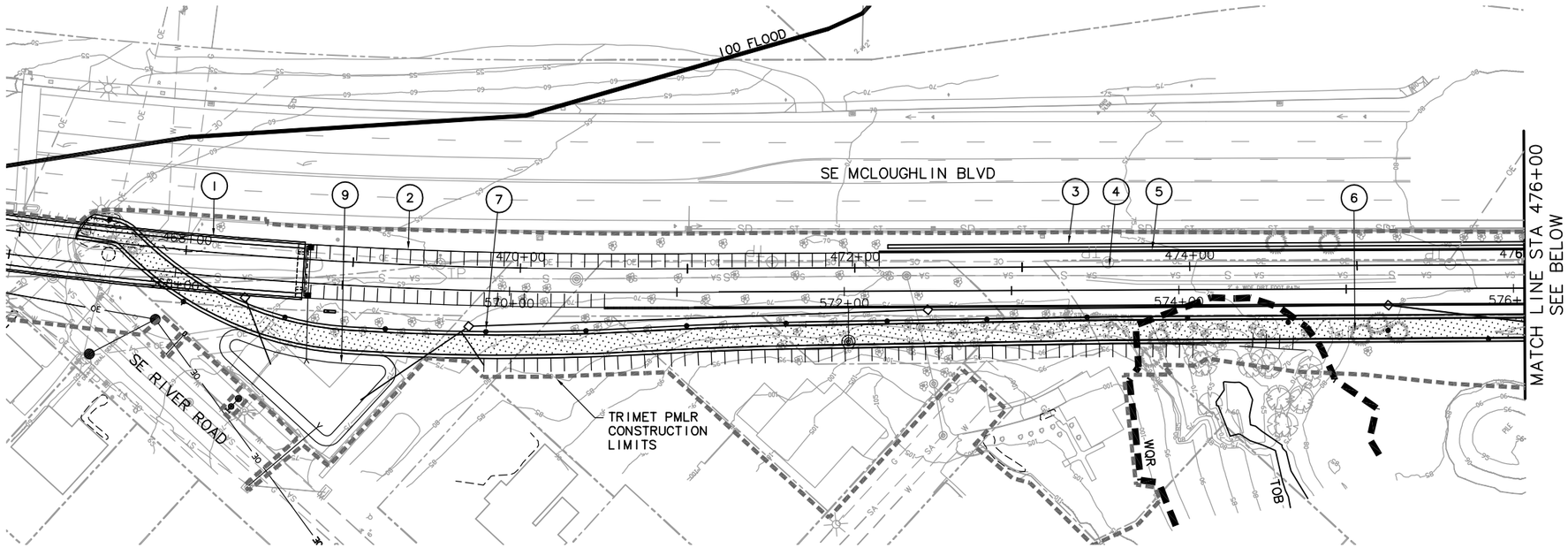
SUBMITTED: | DATE: | APPROVED: | DATE:

PORTLAND TO MILWAUKIE LRT
EAST SEGMENT

Exhibit P5

LAND USE PERMIT
TROLLEY TRAIL PATH
PROPOSED & ORIGINAL PATH SITE PLAN

SCALE:	DRAWING NO.:	CONTRACT NO.:	SHEET NO.:
1" = 160'	TTR-4B	RH100544JB	

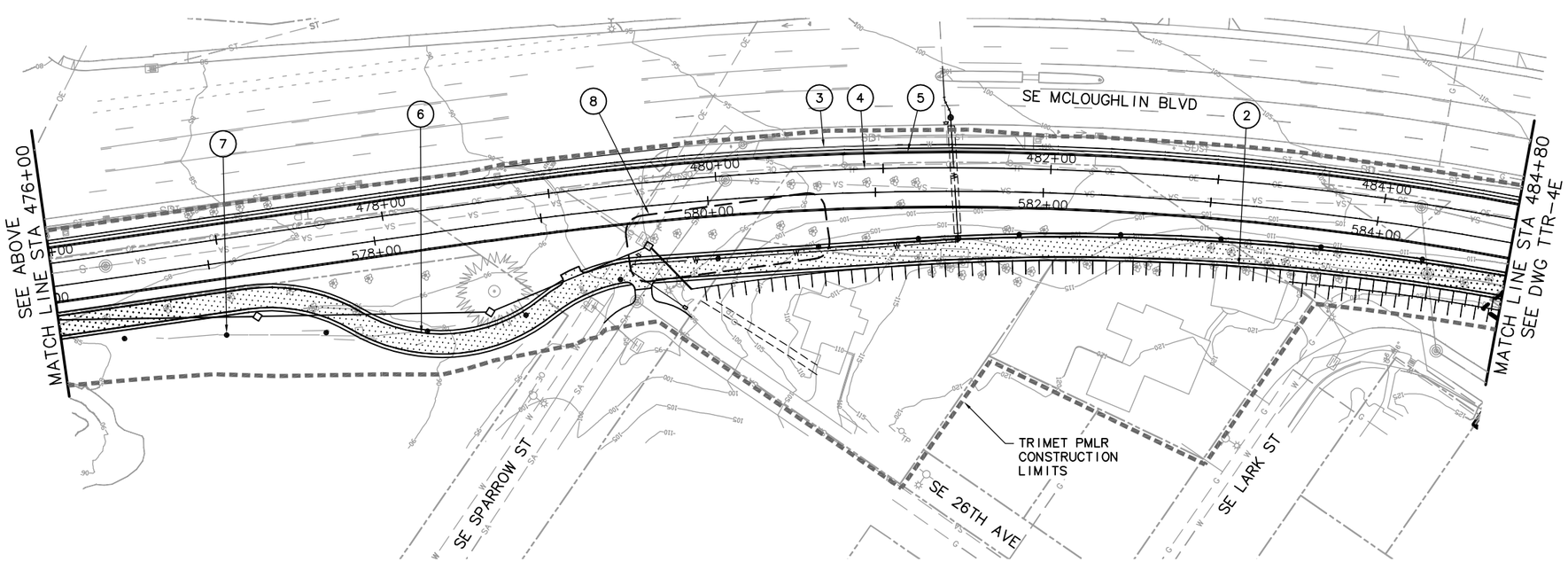


40' 20' 0' 40' 80'

SCALE: 1" = 80'

ARCH & CIVIL KEY NOTES

1. KELLOGG BRANCH STRUCTURE
2. RETAINING WALL
3. HIGHWAY BARRIER
4. TRACK CENTERLINE
5. TRACK BALLAST CURB
6. TROLLEY TRAIL PATH (PMLR)
7. TROLLEY TRAIL LIGHTING
8. TREES TO BE REMOVED THAT WERE IDENTIFIED IN EARLIER APPROVED PLAN AS RETAINED
9. STORM WATER FACILITY



40' 20' 0' 40' 80'

SCALE: 1" = 80'

NO.	DATE	BY / CHK.	APPD.	REVISIONS

IML	DESIGNED	06-20-11 DATE
JTH	DRAWN	06-20-11 DATE
MJH	CHECKED	06-25-11 DATE
	APPROVED	DATE

TRI-COUNTY METROPOLITAN TRANSPORTATION DISTRICT OF OREGON

DAVID EVANS AND ASSOCIATES INC.

TRIMET CAPITAL PROJECTS AND FACILITIES DIVISION
710 N.E. HOLLADAY STREET
PORTLAND, OREGON 97232

SUBMITTED: | DATE: | APPROVED: | DATE:

PORTLAND TO MILWAUKIE LRT
EAST SEGMENT

Exhibit P7

LAND USE PERMIT
TROLLEY TRAIL PATH
PROPOSED DEVELOPMENT ARCH & CIVIL SITE PLAN 1 OF 2

SCALE:	DRAWING NO.:	CONTRACT NO.:	SHEET NO.:
1" = 80'	TTR-4D	RH100544JB	

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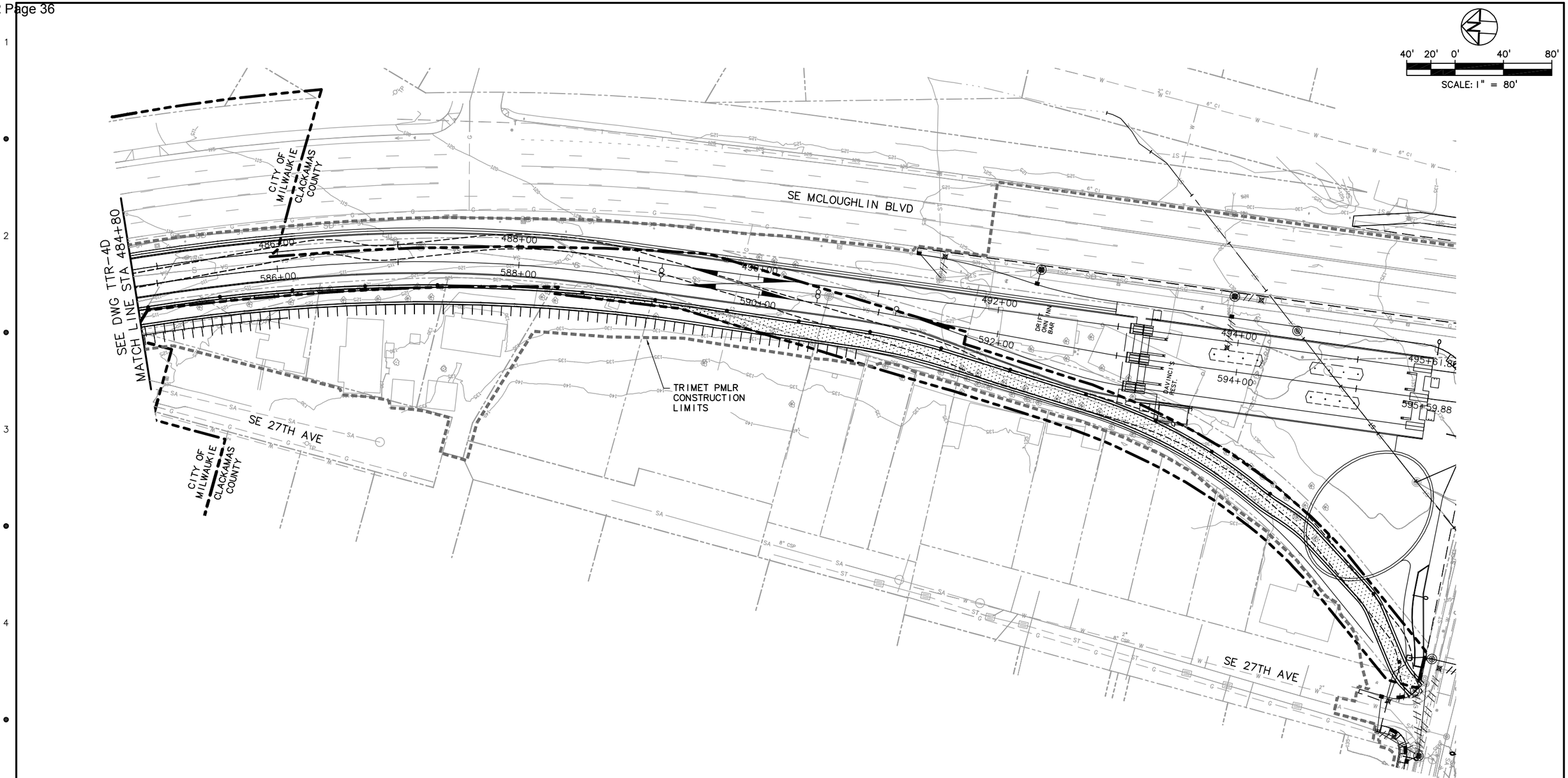

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NO.	DATE	BY / CHK.	APPD.	REVISIONS

IML DESIGNED	06-20-11 DATE
JTH DRAWN	06-20-11 DATE
MJH CHECKED	06-25-11 DATE
APPROVED	DATE

TRI-COUNTY METROPOLITAN TRANSPORTATION DISTRICT OF OREGON

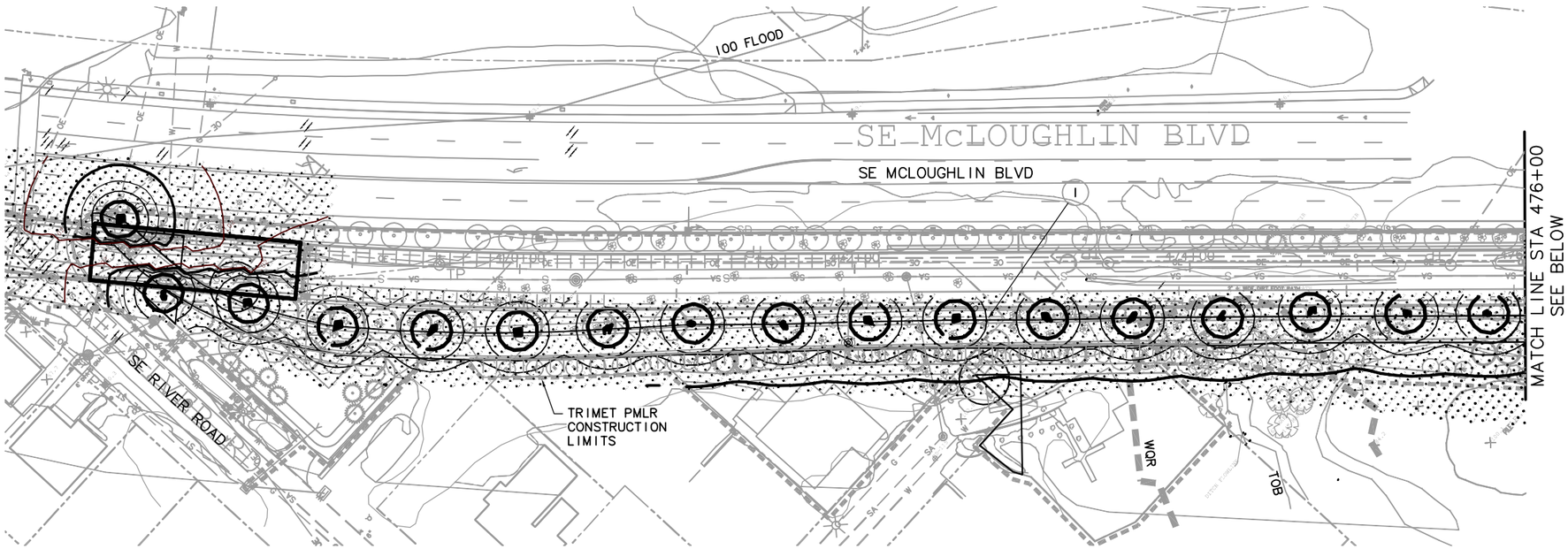
DAVID EVANS AND ASSOCIATES INC.

TRIMET CAPITAL PROJECTS AND FACILITIES DIVISION
710 N.E. HOLLADAY STREET
PORTLAND, OREGON 97232

SUBMITTED: DATE: APPROVED: DATE:

PORTLAND TO MILWAUKIE LRT
EAST SEGMENT
Exhibit P8
LAND USE PERMIT
TROLLEY TRAIL PATH
PROPOSED DEVELOPMENT ARCH & CIVIL SITE PLAN 2 OF 2

SCALE:	DRAWING NO.:	CONTRACT NO.:	SHEET NO.:
1" = 80'	TTR-4E	RH100544JB	

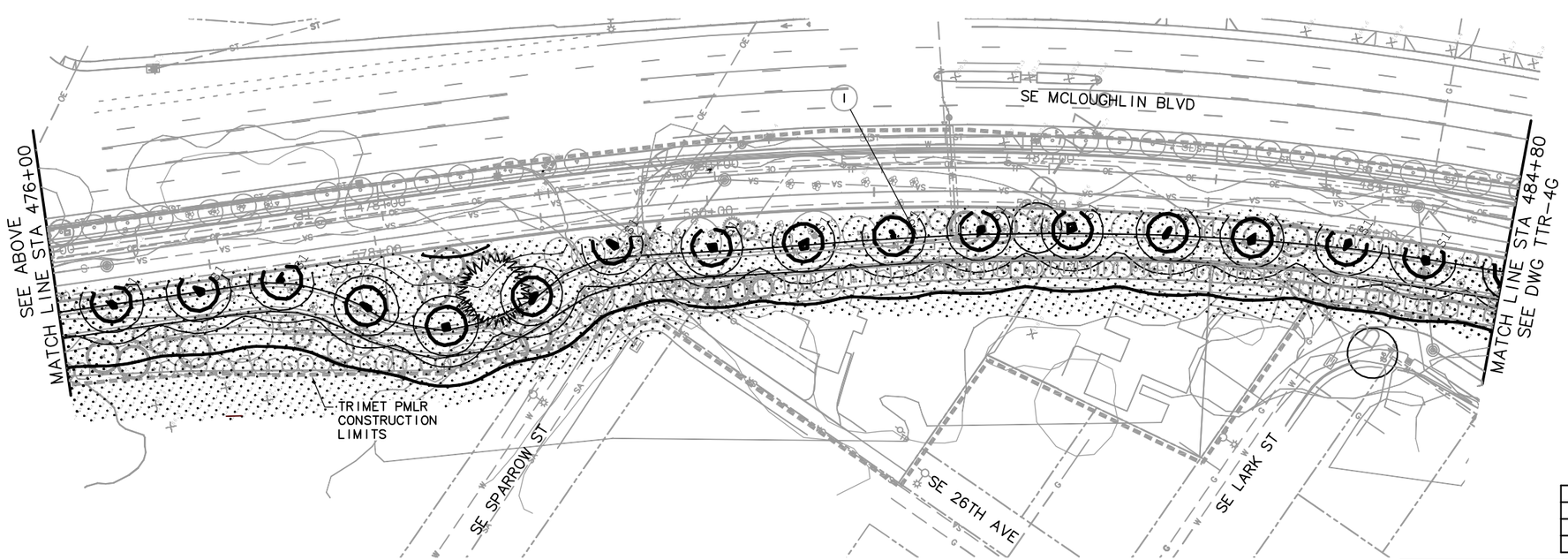


40' 20' 0' 40' 80'

SCALE: 1" = 80'

LIGHTING KEY NOTES

1 TRAIL LIGHTING, TYP



40' 20' 0' 40' 80'

SCALE: 1" = 80'

Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
CalcPts	Illuminance	Fc	0.38	1.6	0.0	N.A.	N.A.
Trolley Trail	Illuminance	Fc	0.66	1.6	0.0	N.A.	N.A.

Luminaire Schedule									
Symbol	Qty	Label	Arrangement	Total Lamp Lumens	LLF	Description	LLD	LDD	BF
●	56	S1	SINGLE	6000	0.763	Kim SRS5F5_85IF-A31_5	0.930	0.820	1.000

NO.	DATE	BY / CHK.	APPD.	REVISIONS

IML DESIGNED	06-20-11 DATE
JTH DRAWN	06-20-11 DATE
MJH CHECKED	06-25-11 DATE
APPROVED	DATE

TRI-COUNTY METROPOLITAN TRANSPORTATION DISTRICT OF OREGON

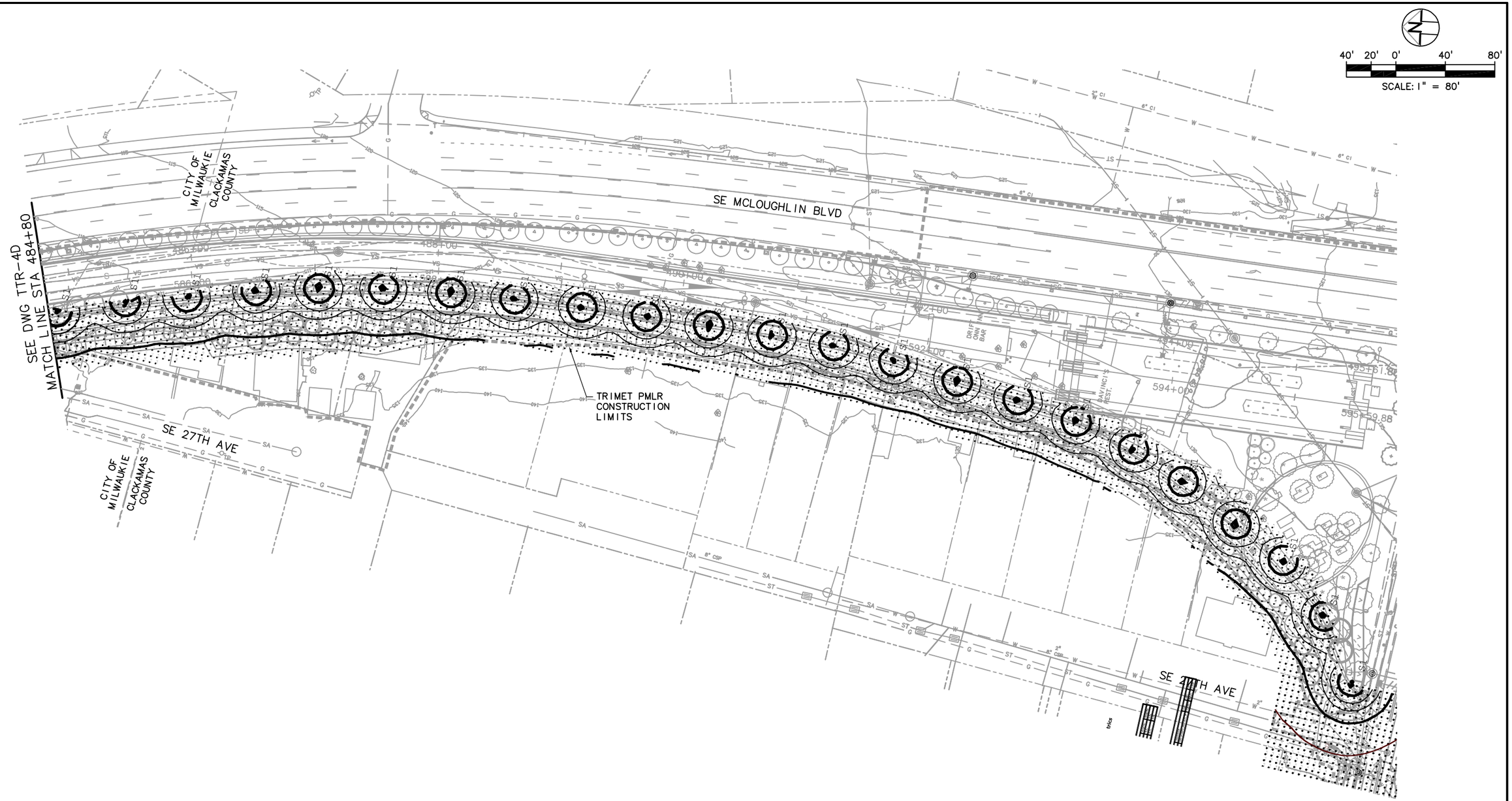
TRI MET CAPITAL PROJECTS AND FACILITIES DIVISION
710 N.E. HOLLADAY STREET
PORTLAND, OREGON 97232

SUBMITTED: DATE: APPROVED: DATE:

PORTLAND TO MILWAUKIE LRT
EAST SEGMENT Exhibit P11
LAND USE PERMIT
TROLLEY TRAIL PATH
PROPOSED DEVELOPMENT LIGHTING SITE PLAN 1 OF 2

SCALE: 1" = 80' | DRAWING NO.: TTR-4G | CONTRACT NO.: RH100544JB | SHEET NO.:

P:\T\TMTX00000127\04000AD\Permits\Land Use Permit\3-Trolley Trail\TTR-4G.dwg Sep. 15, 2011 - 10:03 AM edita k boguslowski
Plot Date:9/15/2011 10:14 AM_edita k boguslowski



Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
CalcPts	Illuminance	Fc	0.38	1.6	0.0	N.A.	N.A.
Trolley Trail	Illuminance	Fc	0.66	1.6	0.0	N.A.	N.A.

Luminaire Schedule									
Symbol	Qty	Label	Arrangement	Total Lamp Lumens	LLF	Description	LLD	LDD	BF
●	56	S1	SINGLE	6000	0.763	Kim SRS5F5_85IF-A31_5	0.930	0.820	1.000

NO.	DATE	BY / CHK.	APPD.	REVISIONS

IML	DESIGNED	06-20-11 DATE
JTH	DRAWN	06-20-11 DATE
MJH	CHECKED	06-25-11 DATE
	APPROVED	DATE

TRI-COUNTY METROPOLITAN TRANSPORTATION DISTRICT OF OREGON

TRIMET CAPITAL PROJECTS AND FACILITIES DIVISION
710 N.E. HOLLADAY STREET
PORTLAND, OREGON 97232

SUBMITTED: | DATE: | APPROVED: | DATE:

PORTLAND TO MILWAUKIE LRT
EAST SEGMENT Exhibit P12
LAND USE PERMIT
TROLLEY TRAIL PATH
PROPOSED DEVELOPMENT LIGHTING SITE PLAN 2 OF 2

SCALE:	DRAWING NO.:	CONTRACT NO.:	SHEET NO.:
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Plot Date:9/15/2011 10:35 AM_edita k boguslawski

KIM LIGHTING

Solitaire™ SRS5

Induction Fluorescent, White Acrylic Lens / Die-Cast Aluminum Top

revision 10/1/08 • srs5.pdf

Type: SA3 / SA4
Job: PMLR - TRANSIT STATIONS
Catalog number:

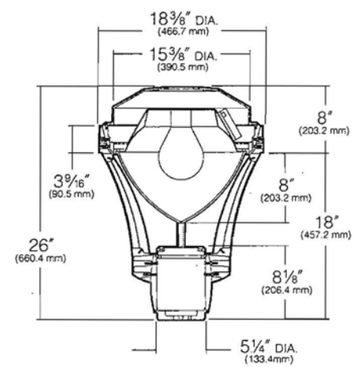
/ SRS5F5 / / /

Mtg. · Fixture — See page 2 | Electrical Module — See page 3 | Finish | Options — See pages 4 - 5

Approvals:

Date:
Page: 1 of 5

Specifications



Top: Lamp and reflector are accessible by loosening four stainless steel captive screws. Die-Cast, low copper (<0.6% Cu) aluminum alloy.

Lens: White high-temperature acrylic.

Reflector Ring: Die-Cast, low copper (<0.6% Cu) aluminum alloy sealed with one-piece silicone gaskets.

Arms: Die-Cast, low copper (<0.6% Cu) aluminum alloy with sealed wireway channels.

Ballast Chamber: Die-Cast, low copper (<0.6% Cu) aluminum alloy with removable cover for access to mounting hardware for head and ballast removal. Sealed with one-piece silicone gaskets. Mounted by one of the following pole attachment means:

- **FM** - Flush Mounting by means of an expansion device activated by a single bolt within the splice compartment. Pole must have a plain-cut top. Standard pole size is 4" O.D. (Other pole adapter sizes available; contact Kim representative.)
- **PT** - Pole Tenon mounting by means of a cast aluminum adapter containing four recessed ⅜" stainless steel allen head set screws. Pole must have a 2" pipe-size tenon (2⅜" O.D. x 4½" minimum length). Pole tenon must be field drilled at one set screw location to secure against fixture rotation.

Vertical Lamp Reflector Module (F5): One-piece Specular Alzak® aluminum shell. Reflector module hooks in and out of the housing by no-tool release hinges and secures to the housing flange by a quick-disconnect plug. Reflectors are factory pre-wired with a quick-disconnect plug.

Electrical Module: All electrical components are UL and CSA recognized, mounted on a single bracket and factory pre-wired with quick-disconnect plugs. A complete HF generator and Induction Lamp system is furnished mounted to the aluminum plate inside housing. Induction Lamp system is high power factor rated for -4°F, starting.

Finish: Super TGIC thermoset polyester powder coat paint, 2.5 mil nominal thickness, applied over a titanated zirconium conversion coating; 2500 hour salt spray test endurance rating. Standard colors are Black, Dark Bronze, Light Gray, Stealth Gray™, Platinum Silver, or White. Custom colors are available.

CAUTION: Fixtures must be grounded in accordance with national, state, and/or local codes. Failute to do so may result in serious personal injury.

NOTE: 14' HIGH POLE, TYPICAL

Listings and Ratings			
UL cUL 1598[1]	4G Vibration[2]	IP66 Rated	25C Ambient

[1]Suitable for wet locations.
[2]5K Cycle Tested
KIM LIGHTING RESERVES THE RIGHT TO CHANGE SPECIFICATIONS WITHOUT NOTICE.

HUBBELL LIGHTING, INC.

U.S. Patent D444,584

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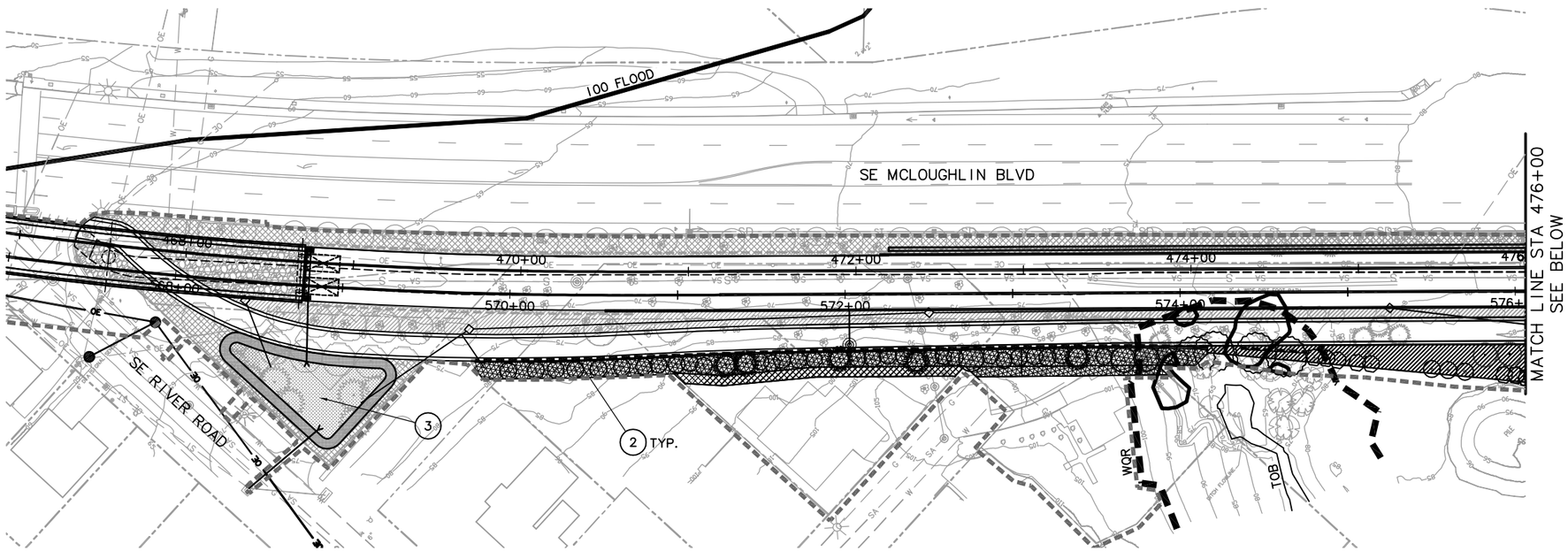


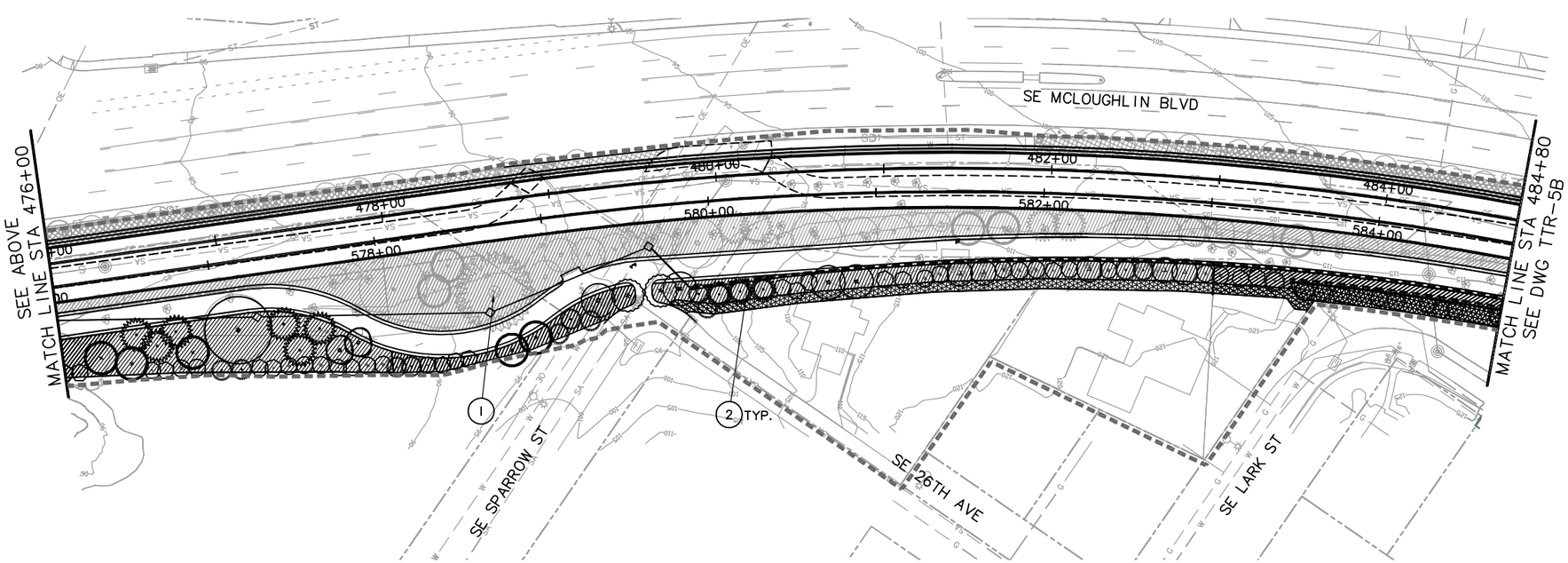
40' 20' 0' 40' 80'
SCALE: 1" = 80'

NOTES

1. SEE SHEETS TTR-5C, TTR-5D AND TTR-5E FOR LANDSCAPE NOTES AND LEGENDS.

PLANTING KEY NOTES

1. PRESERVE EXISTING TREE – PRIOR TO CONSTRUCTION, INSTALL 4' HEIGHT ORANGE PLASTIC CONSTRUCTION FENCING AROUND EXISTING TREES AS INDICATED ON PLANS. TREE PROTECTION FENCING SHALL BE LOCATED AROUND EACH TREE AT THE DRIPLINE, OR AT 8' DIAMETER MINIMUM. SECURE FENCING TO STEEL POSTS PLACED 6' O.C. WITH PLASTIC TIES. REFER TO SPECIFICATION SECTION 02231 FOR TREE PROTECTION.
2. VINE PLANTING AT WALL – REFER TO DETAIL 1, SHEET TTR-5C FOR VINE PLANTING DETAIL.
3. WATER QUALITY BASIN – REFER TO CIVIL DRAWINGS. PLACE 2" DEPTH OF ½"–¾" ROUNDED RIVER ROCK MULCH TO ZONE 'A' PLANTING AREAS, PLACE 2" DEPTH BARK MULCH TO ZONE 'B' PLANTING AREAS UNLESS OTHERWISE INDICATED ON PLANS.



40' 20' 0' 40' 80'
SCALE: 1" = 80'

NO.	DATE	BY / CHK.	APPD.	REVISIONS

SK DESIGNED	05-03-11 DATE
CM/AP DRAWN	05-03-11 DATE
RT CHECKED	05-17-11 DATE
APPROVED	DATE

TRI-COUNTY METROPOLITAN TRANSPORTATION DISTRICT OF OREGON

GREENWORKS

DAVID EVANS AND ASSOCIATES INC.

TRIMET CAPITAL PROJECTS AND FACILITIES DIVISION
710 N.E. HOLLADAY STREET
PORTLAND, OREGON 97232

SUBMITTED: | DATE: | APPROVED: | DATE:

PORTLAND TO MILWAUKIE LRT
EAST SEGMENT
Exhibit P16
LAND USE PERMIT
TROLLEY TRAIL PATH
PROPOSED LANDSCAPE SITE PLAN

SCALE:	DRAWING NO.:	CONTRACT NO.:	SHEET NO.:
AS SHOWN	TTR-5C	RH100544JB	

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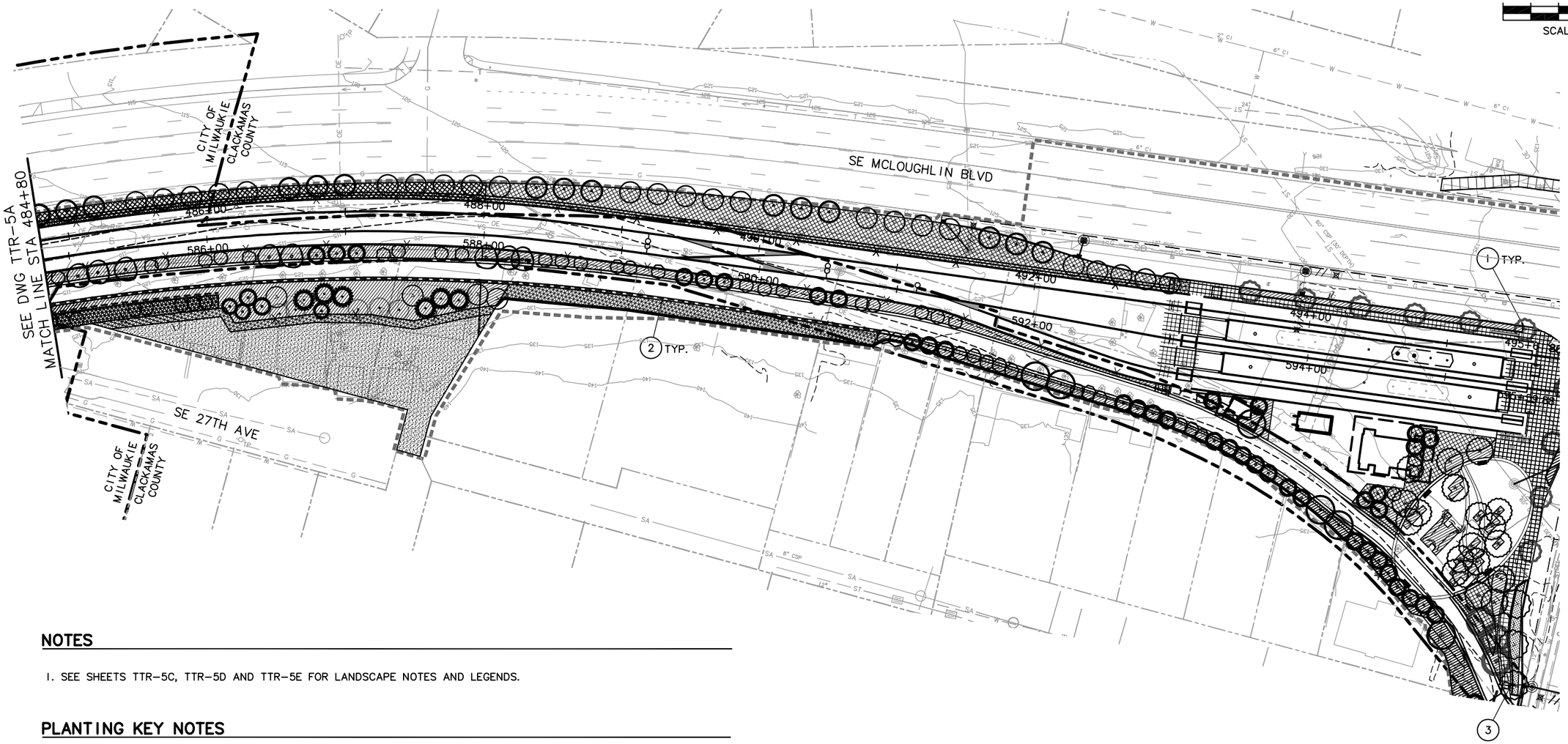
Plot Date:9/13/2011 3:30 PM_edita k boguslawski



NOTES

1. SEE SHEETS TTR-5C, TTR-5D AND TTR-5E FOR LANDSCAPE NOTES AND LEGENDS.

PLANTING KEY NOTES

(1) STREET TREE IN TREE WELL WITH TREE GRATE – REFER TO TRIMET DIRECTIVE DRAWING 5, SHEET LTM301 FOR TREE STAKING AND PLANTING. REFER TO DETAIL 4, SHEET L15E-300 FOR ROOT BARRIER DETAIL. INSTALL TREE GRATE AND ROOTBALL ANCHOR SYSTEM AT LOCATIONS INDICATED ON PLANS. REFER TO ARCH DRAWINGS FOR TREE GRATE DETAILS. REFER TO DETAIL 5, SHEET L15E-300 FOR ROOTBALL ANCHOR SYSTEM DETAIL.

(2) VINE PLANTING AT WALL – REFER TO DETAIL 1, SHEET L15E-300 FOR VINE PLANTING DETAIL.

(3) STORMWATER PLANTER – REFER TO CIVIL DRAWINGS. PLACE 2" DEPTH OF $\frac{1}{2}$"– $\frac{3}{4}$" ROUNDED RIVER ROCK MULCH THROUGHOUT FACILITY UNLESS OTHERWISE INDICATED ON PLANS.

NO.	DATE	BY / CHK.	APPD.	REVISIONS

IML	DESIGNED	06-20-11 DATE
JTH	DRAWN	06-20-11 DATE
MJH	CHECKED	06-25-11 DATE
	APPROVED	DATE

TRI-COUNTY METROPOLITAN TRANSPORTATION DISTRICT OF OREGON

GREENWORKS

DAVID EVANS AND ASSOCIATES INC.

TRIMET CAPITAL PROJECTS AND FACILITIES DIVISION
710 N.E. HOLLADAY STREET
PORTLAND, OREGON 97232

SUBMITTED: DATE: APPROVED: DATE:

PORTLAND TO MILWAUKIE LRT
EAST SEGMENT
LAND USE PERMIT
TROLLEY TRAIL PATH
PROPOSED LANDSCAPE SITE PLAN

Exhibit P17

SCALE:	DRAWING NO.:	CONTRACT NO.:	SHEET NO.:
1" = 80'	TTR-5D	RH100544JB	

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Plot Date:9/13/2011 3:30 PM_edita k boguslawski

GENERAL PLANTING NOTES

1. REFER TO DRAWING NOS. L15E-002 THROUGH L15E-006 AND L15E-102 FOR PLANTING LEGENDS AND QUANTITIES.
2. REFER TO DRAWING L15E-007 FOR PLANTING SHEET LAYOUT INDEX.
3. REFER TO DRAWING NOS. L15E-300, L15E-301, AND TRIMET DIRECTIVE DRAWINGS LTM301 AND LTM302 FOR LANDSCAPE DETAILS.
4. NUMBERS IN CIRCLES ((XX)) REFER TO PLANTING KEY NOTES. NUMBERS IN HEXAGONS ⟨⟨XX⟩⟩ REFER TO PLANTING SHEET NOTES.
5. REFER TO SPECIFICATION SECTION 02231 FOR TREE PROTECTION.
6. REFER TO SPECIFICATION SECTION 02950 FOR LANDSCAPE PLANTINGS.
7. CONTRACTOR SHALL PROVIDE TOPSOIL, SOIL AMENDMENTS, AND MULCH IN ACCORDANCE WITH THE DETAILS AND SPECIFICATIONS AS PART OF THE CONSTRUCTION DOCUMENTATION PACKAGE. 12" DEPTH TOPSOIL IS REQUIRED FOR ALL SHRUB AND TREE PLANTING AREAS (EXCEPT FOR STORMWATER FACILITIES), AND 6" DEPTH TOPSOIL IS REQUIRED FOR ALL SEEDED AREAS. REFER TO CIVIL DRAWINGS FOR TOPSOIL DEPTHS IN ALL STORMWATER FACILITIES.
8. ALL PLANTS SHALL BE INSTALLED IN ACCORDANCE WITH THE DETAILS AND SPECIFICATIONS PROVIDED AS PART OF THE CONSTRUCTION DOCUMENT PACKAGE.
9. QUANTITIES ARE LISTED FOR THE CONTRACTOR'S CONVENIENCE ONLY. ALL COUNTS MUST BE VERIFIED BY THE CONTRACTOR PRIOR TO INSTALLATION. IN THE CASE OF A DISCREPANCY BETWEEN THE LEGEND AND THE PLAN, PLANTS INDICATED ON THE PLAN SHALL SUPERCEDE QUANTITIES LISTED IN THE LEGEND.
10. INSTALL AND MAINTAIN TREES FURNISHED BY TRIMET ("OWNER-FURNISHED TREES"). SEE PLANTING LEGENDS FOR SPECIES AND QUANTITIES THAT WILL BE PROVIDED. COORDINATE DELIVERY AND RECEIPT THROUGH RESIDENT ENGINEER (RE).
11. CONTRACTOR SHALL VERIFY EXACT LOCATIONS AND ROUTING OF EXISTING UNDERGROUND UTILITIES PRIOR TO STARTING EXCAVATION. REPAIR ONLY DAMAGE TO EXISTING PIPES, UTILITIES, OR RELATED FACILITIES AT THE CONTRACTOR'S EXPENSE IN A MANNER APPROVED BY THE ENGINEER.
12. ADJUST PLANT LOCATIONS SO THAT VEGETATION DOES NOT CONFLICT WITH ABOVE-GROUND UTILITIES, OR WITH TRAFFIC SIGHT LINES, SIGNS, OR OTHER APPURTENANCES.
13. PRESERVE, PROTECT, AND MAINTAIN ALL IMPROVEMENTS WITHIN WORK AREAS, INCLUDING EXISTING TREES AND VEGETATION. THOROUGHLY CLEAN ALL IMPROVEMENTS AFTER COMPLETION OF WORK.
14. PROVIDE 12" ROOT BARRIER WHERE TREES ARE WITHIN 6' OF PAVED SURFACES, CURBS, OR WALLS, AND IN ALL TREE WELLS, UNLESS OTHERWISE REQUIRED BY APPLICABLE JURISDICTIONS, OR AS INDICATED ON PLANS. REFER TO DETAIL 4, SHEET L15E-300.
15. ALL TREES TO BE BALLED AND BURLAPPED (B&B), UNLESS OTHERWISE INDICATED IN LEGEND OR IN DRAWINGS.
16. REFER TO DEMOLITION DRAWINGS FOR TREES TO BE REMOVED.

TREE PLANTING LEGEND

BOTANICAL NAME	COMMON NAME	INSTALL SIZE
Acer circinatum	VINE MAPLE	7'-8',MULTI-STEM, 3 STEM MIN.
Acer macrophyllum	BIG LEAF MAPLE	3"CAL.
Acer rubrum 'Armstrong'	ARMSTRONG MAPLE	3" CAL.
Acer rubrum 'Bowhall'	BOWHALL MAPLE	3" CAL.
Acer rubrum 'Scarsen'	SCARLET SENTINEL MAPLE	4" CAL.
Arbutus menziesii	PACIFIC MADRONE	3" CAL.
Arbutus unedo 'compacta'	COMPACT STRAWBERRY TREE	15 GAL.
Alnus rubra	RED ALDER	3" CAL.
Amelanchier laevis 'JFS-Arb' PP 15304	SPRING FLURRY SERVICEBERRY	3" CAL.
Betula jacquemontii	JACQUEMONTII BIRCH	3" CAL.
Cornus nuttalli	WESTERN FLOWERING DOGWOOD	3" CAL.
Fagus sylvatica 'Fastigiata'	FASTIGIATE BEECH	4" CAL.
Fraxinus latifolia	OREGON ASH	3" CAL.
Myrica californica	PACIFIC WAX MYRTLE	6'-8' HT.
Nyssa sylvatica	BLACK TUPELO	3 1/2" CAL.
Prunus emarginata	BITTER CHERRY	2 1/2" CAL.
Prunus virginiana	CHOKECHERRY	3" CAL.
Prunus sargentii 'Columnaris'	COLUMNAR SARGENT CHERRY	3 1/2" CAL.
Pinus contorta	SHORE PINE	10-16' HT.
Pseudotsuga menziesii	DOUGLAS FIR	10-16' HT.
Thuja plicata	WESTERN RED CEDAR	10-16' HT.
Thuja plicata 'Fastigiata'	HOGAN CEDAR	10-16' HT.

EXISTING CONIFER TREE TO BE PRESERVED AND PROTECTED
SEE SPECIFICATIONS

NO.	DATE	BY	CHK.	APPD.	REVISIONS

SK DESIGNED 05-03-11 DATE
CM/AP DRAWN 05-03-11 DATE
RT CHECKED 05-17-11 DATE
APPROVED DATE

TRI-COUNTY METROPOLITAN TRANSPORTATION DISTRICT OF OREGON

GREENWORKS
DAVID EVANS AND ASSOCIATES INC.
TRIMET CAPITAL PROJECTS AND FACILITIES DIVISION
710 N.E. HOLLADAY STREET
PORTLAND, OREGON 97232

SUBMITTED: DATE: APPROVED: DATE:

PORTLAND TO MILWAUKIE LRT
EAST SEGMENT
LAND USE PERMIT
TROLLEY TRAIL PATH
LANDSCAPE NOTES AND LEGEND

Exhibit P18

SCALE: AS SHOWN | DRAWING NO.: TTR-5E | CONTRACT NO.: RH100544JB | SHEET NO.:

P:\T\TMTX00001127\04000AD\Permits\Land Use Permit\3-Trolley Trail\TTR-5E.dwg Sep. 13, 2011 - 2:27 PM edita k boguslawski
Plot Date:9/13/2011 3:31 PM_edita k boguslawski

MASTER SHRUB/GROUNDCOVER LEGEND

TYPE 1: LOW PLANTING (3"–8" HT.)

NOTES:

	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	PERCENTAGE
	Arctostaphylos uva–ursi Fragaria chiloensis Native and Naturalized Species	KINNICKINNICK BEACH STRAWBERRY	1 GAL.	12" O.C.	50%
FORBS/ GRASSES	Native and Naturalized Species		1 GAL.	12" O.C.	50%

TYPE 2: MEDIUM PLANTING (8"–30" HT.)

NOTES:

	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	PERCENTAGE
SHRUBS	Symphoricarpos mollis Cornus sericea 'Kelseyi' Gaultheria shallon Mahonia repens Mahonia nervosa Spiraea betulifolia 'Tor' Other Native and Naturalized Species	CREEPING SNOWBERRY KELSEY DOGWOOD SALAL CREEPING OREGON GRAPE CASCADE OREGON GRAPE BIRCH–LEAF SPIREA	3 GAL. 1 GAL.	3' O.C. 2' O.C.	25% 35%
FORBS/ GRASSES	Deschampsia caespitosa Festuca californica Helictotrichon sempervirens Other Native and Naturalized Species	TUFTED HAIR GRASS CALIFORNIA FESCUE BLUE OAT GRASS	1 GAL.	2' O.C.	40%

TYPE 4: TALL PLANTING (30"+ HT.)

NOTES:

	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	PERCENTAGE
SHRUBS	Arctostaphylos columbiana Cornus stolonifera Holodiscus discolor Mahonia aquifolium Ribes sanguineum Rhododendron macrophyllum Rosa nutkana Umbellularia californica Vaccinium ovatum Other Native and Naturalized Species	HAIRY MANZANITA RED TWIG DOGWOOD OCEANSPRAY TALL OREGON GRAPE RED FLOWERING CURRANT PACIFIC RHODODENDRON NOOTKA ROSE OREGON MYRTLE EVERGREEN HUCKLEBERRY	5 GAL.	4' O.C.	50%

NO.	DATE	BY / CHK.	APPD.	REVISIONS

SK DESIGNED	05–03–11 DATE
CM/AP DRAWN	05–03–11 DATE
RT CHECKED	05–17–11 DATE
APPROVED	DATE

TRI–COUNTY METROPOLITAN TRANSPORTATION DISTRICT OF OREGON

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DAVID EVANS AND ASSOCIATES INC.

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710 N.E. HOLLADAY STREET
PORTLAND, OREGON 97232

SUBMITTED: | DATE: | APPROVED: | DATE:

PORTLAND TO MILWAUKIE LRT
EAST SEGMENT
LAND USE PERMIT
TROLLEY TRAIL PATH
LANDSCAPE NOTES AND LEGEND

Exhibit P19

SCALE: AS SHOWN | DRAWING NO.: TTR–5F | CONTRACT NO.: RH100544JB | SHEET NO.:

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Plot Date:9/13/2011 3:31 PM_edita k boguslawski

MASTER SHRUB/GROUNDCOVER LEGEND

TYPE 5: STORMWATER (ZONE A)

NOTES: PLANTINGS TO BE INSTALLED IN BOTTOM OF STORMWATER FACILITIES ONLY UNLESS OTHERWISE INDICATED ON PLANS. APPLY SEED MIX ONLY WHERE INDICATED ON PLANS.

	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	PERCENTAGE
FORBS/ GRASSES	Camassia leichtlini	GREAT CAMAS	1 GAL.	12" O.C.	100%
	Camassia quamash	COMMON CAMAS			
	Carex obnupta	SLOUGH SEDGE			
	Carex testacea	NEW ZEALAND ORANGE SEDGE			
	Deschampsia cespitosa	TUFTED HAIR GRASS			
	Iris tenax	OREGON IRIS			
	Juncus patens 'Elk Blue'	SPREADING RUSH			
	Juncus effusus	COMMON RUSH			
	Juncus tenuis	SLENDER RUSH			
	Scirpus microcarpus	SMALL-FRUITED BULRUSH			
	Sisyrinchium bellum	BLUE-EYED GRASS			
	Triteleia hyacinthina	WILD HYACINTH			

	BOTANICAL NAME	COMMON NAME	% PLS	APPLICATION RATE
WATER QUALITY SEED MIX	Hordeum brachyantherum	MEADOW BARLEY	25%	2 LBS./1,000SF
	Danthonia californica	CALIFORNIA OAT-GRASS	15%	
	Elymus glaucus	BLUE WILD RYE	10%	
	Bromus carinatus	CALIFORNIA BROME	10%	
	Festuca romerii	ROEMER'S FESCUE	10%	
	Deschampsia cespitosa	TUFTED HAIRGRASS	10%	
	Agrostis exarata	SPIKE BENTGRASS	10%	
	Alopecurus geniculatus	WATER FOXTAIL	5%	
	Deschampsia elongata	SLENDER HAIRGRASS	5%	

TYPE 6: STORMWATER (ZONE B)

NOTES: PLANTINGS TO BE INSTALLED ON SIDE SLOPES OF STORMWATER FACILITIES ONLY UNLESS OTHERWISE INDICATED ON PLANS.

	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	PERCENTAGE
SHRUBS	Spirea douglasii	DOUGLAS SPIREA	3 GAL.	2' O.C.	60%
	Cornus sericea 'kelseyii'	KELSEY DOGWOOD			
	Spiraea betulifolia 'Tor'	BIRCH-LEAF SPIREA			
	Other Native or Naturalized Species				
FORBS/ GRASSES	Camassia leichtlini	GREAT CAMAS	1 GAL.	12" O.C.	40%
	Camassia quamash	COMMON CAMAS			
	Deschampsia cespitosa	TUFTED HAIR GRASS			
	Polystichum munitum	SWORD FERN			

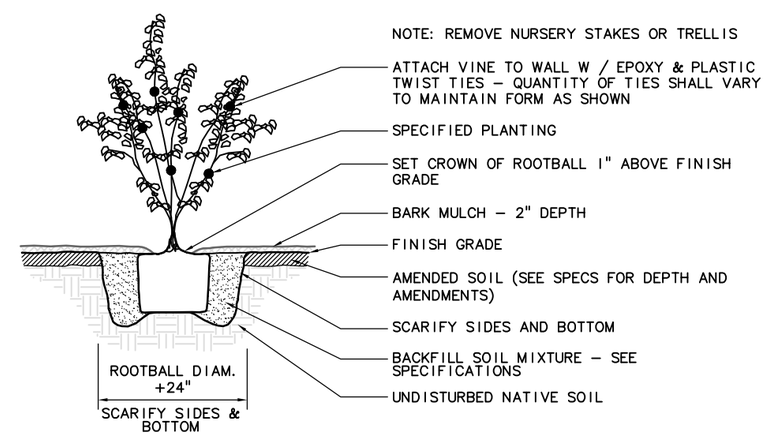
STONE COBBLE – 6-8" ROUNDED RIVER ROCK, 12" DEPTH;
PLACE GEOTEXTILE FABRIC BETWEEN SUBGRADE AND ROCK

VINE PLANTINGS – 2 GAL. CONT., SPACED 24" O.C., REFER TO DETAIL THIS SHEET.
PARTHENOCISSUS TRICUSPIDATA BOSTON IVY

TYPE 8: SEEDING

NOTES:

	BOTANICAL NAME	COMMON NAME	% PLS	APPLICATION RATE
PERMANENT SEED MIX	Bromus carinatus	CALIFORNIA BROME	17.5%	2 LBS./ 1,000 SF
	Hordeum brachyantherum	MEADOW BARLEY	17.5%	
	Festuca rubra rubra	NATIVE RED FESCUE	9%	
	Lotus unifloiolatus	SPANISH CLOVER	2.5%	
	Deschampsia caespitosa	TUFTED HAIRGRASS	1.5%	
	Achillea millefolium	YARROW	1%	
	Agrostis exerata	SPIKE BENTGRASS	1%	



VINE PLANTING
SCALE: 1/2"=1'-0"

1

NO.	DATE	BY CHK.	APPD.	REVISIONS

SK DESIGNED	05-03-11 DATE	
CM/AP DRAWN	05-03-11 DATE	
RT CHECKED	05-17-11 DATE	
APPROVED	DATE	

TRI-COUNTY METROPOLITAN TRANSPORTATION DISTRICT OF OREGON

GREENWORKS

DAVID EVANS AND ASSOCIATES INC.

TRIMET CAPITAL PROJECTS AND FACILITIES DIVISION
710 N.E. HOLLADAY STREET
PORTLAND, OREGON 97232

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PORTLAND TO MILWAUKIE LRT
EAST SEGMENT
LAND USE PERMIT
TROLLEY TRAIL PATH
LANDSCAPE NOTES AND LEGEND

Exhibit P20

SCALE:	DRAWING NO.:	CONTRACT NO.:	SHEET NO.:
AS SHOWN	TTR-5G	RH100544JB	

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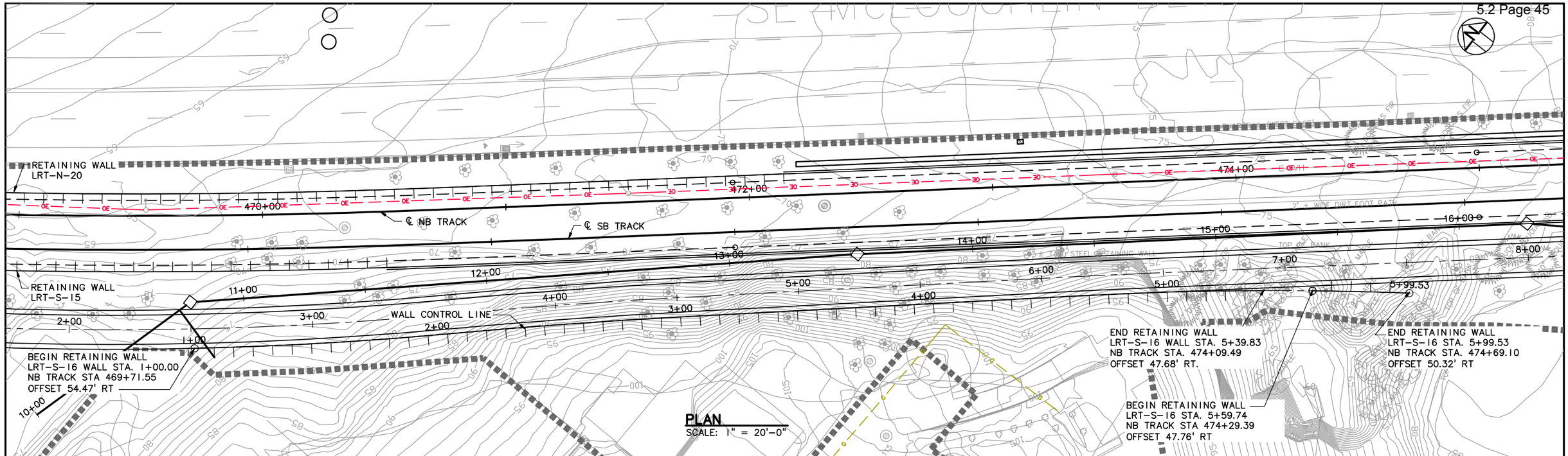
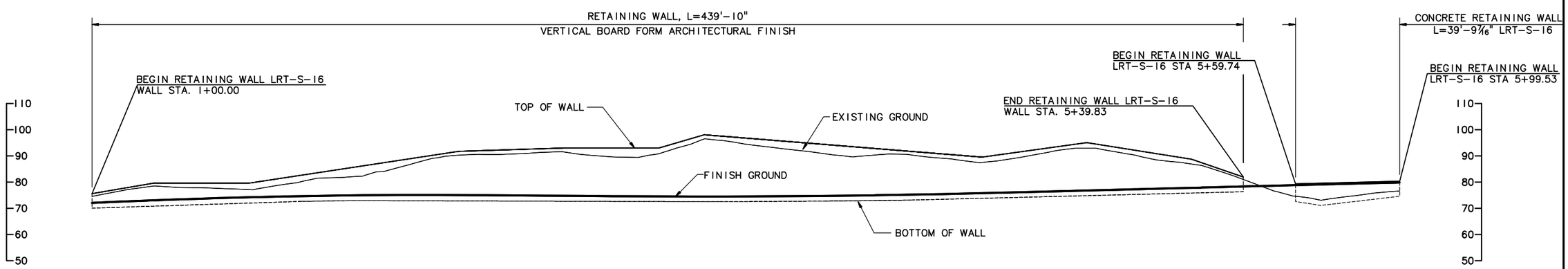
Plot Date:9/13/2011 3:31 PM_edita k boguslawski



PLAN
SCALE: 1" = 20'-0"

GENERAL NOTES:

1. WALL CONTROL LINE IS THE BACK FACE OF WALL AT TOP OF BALLAST, UNLESS NOTED OTHERWISE.



ELEVATION
SCALE: 1" = 20'-0"

NOTE:

ALL HORIZONTAL DIMENSIONS MEASURED ALONG WALL CONTROL LINE

NO.	DATE	BY / CHK.	APPD.	REVISIONS

GAP DESIGNED	4/27/11 DATE
JJC DRAWN	5/4/11 DATE
TMS CHECKED	5/22/11 DATE
. APPROVED	.. DATE

TRI-COUNTY METROPOLITAN TRANSPORTATION DISTRICT OF OREGON

DAVID EVANS AND ASSOCIATES INC.

TRI MET — CAPITAL PROJECTS AND FACILITIES DIVISION, 710 N.E. HOLLADAY STREET, PORTLAND, OREGON 97232

SUBMITTED: | DATE: | APPROVED: | DATE:

PORTLAND TO MILWAUKIE LRT
EAST SEGMENT Exhibit P28
STRUCTURAL
MILWAUKIE – RETAINING WALLS
PLAN AND ELEVATION – LRT-S-16

SCALE:	DRAWING NO.:	CONTRACT NO.:	SHEET NO.:
AS NOTED	S15E-819	RH100544JB	

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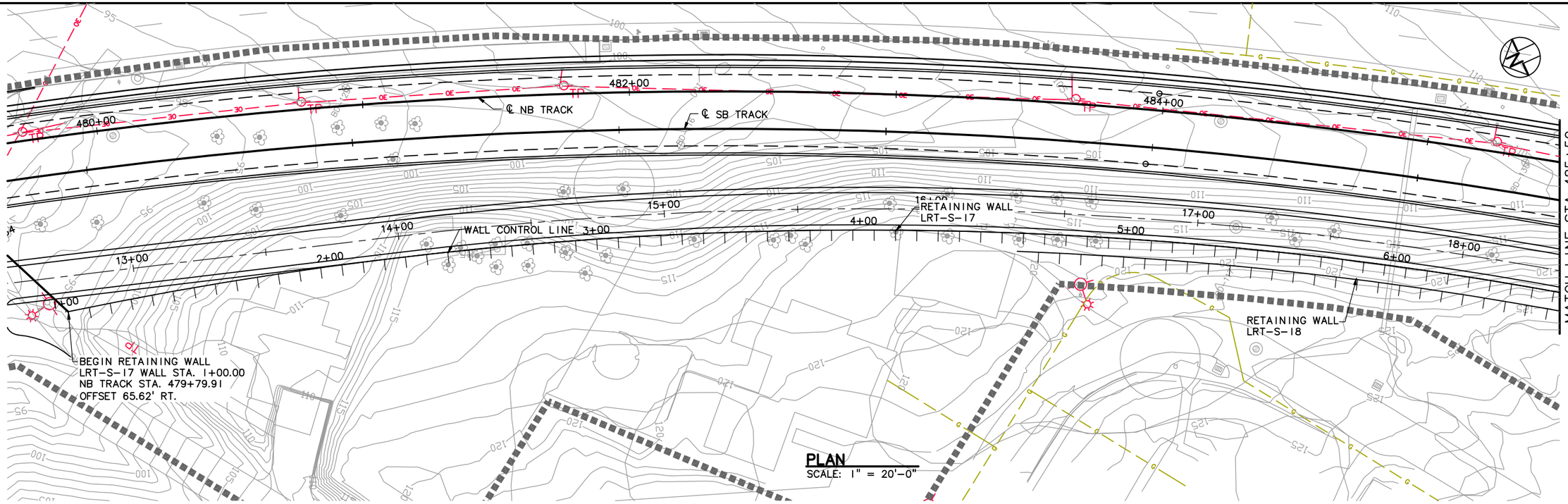
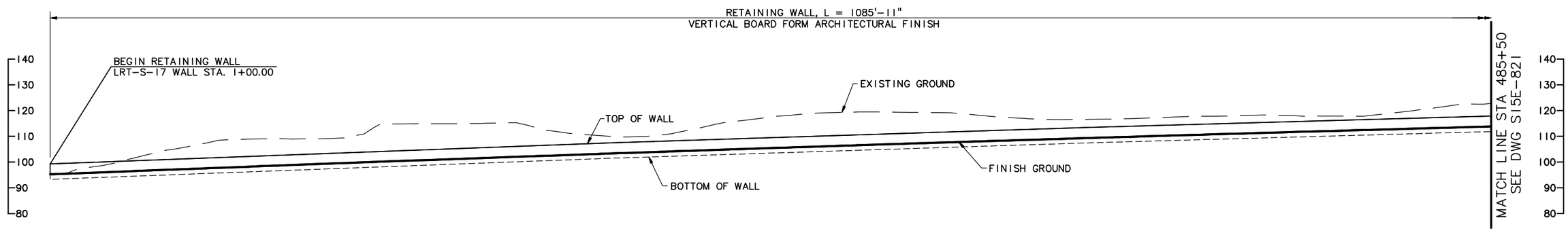
Plot Date:9/13/2011 3:34 PM_edita k boguslowski



PLAN
SCALE: 1" = 20'-0"

GENERAL NOTES:

1. WALL CONTROL LINE IS THE BACK FACE OF WALL AT TOP OF BALLAST, UNLESS NOTED OTHERWISE.



ELEVATION
SCALE: 1" = 20'-0"

NOTE:
ALL HORIZONTAL DIMENSIONS MEASURED ALONG WALL CONTROL LINE

NO.	DATE	BY / CHK.	APPD.	REVISIONS

GAP DESIGNED	4/27/11 DATE
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TRI-COUNTY METROPOLITAN TRANSPORTATION DISTRICT OF OREGON

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PORTLAND TO MILWAUKIE LRT
EAST SEGMENT Exhibit P29
STRUCTURAL
MILWAUKIE – RETAINING WALLS
PLAN AND ELEVATION – LRT-S-17 – 1 OF 2

SCALE:	DRAWING NO.:	CONTRACT NO.:	SHEET NO.:
AS NOTED	S15E-820	RH100544JB	

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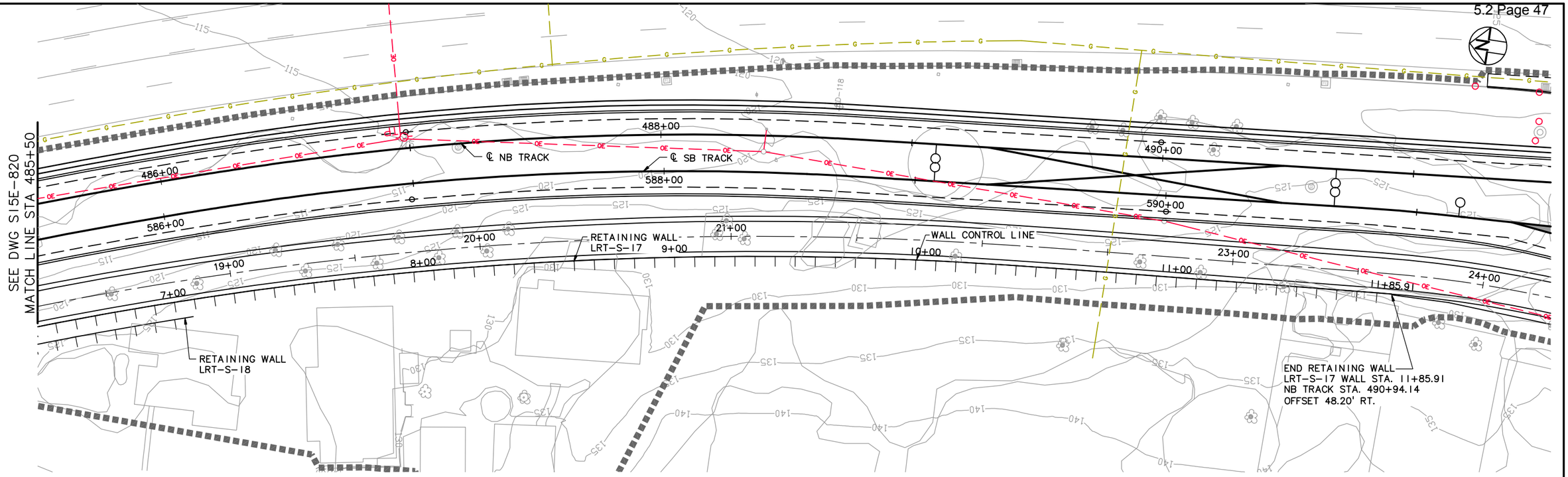
Plot Date:9/13/2011 3:34 PM_edits k boguslowski

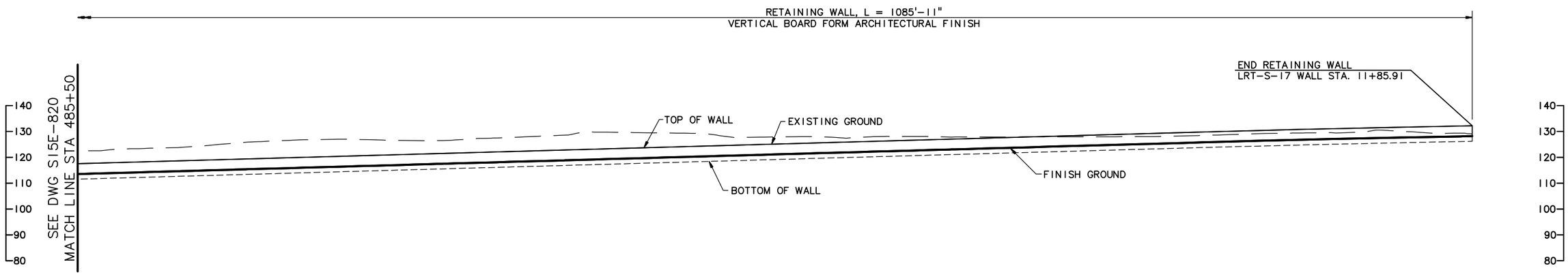


GENERAL NOTES:

1. WALL CONTROL LINE IS THE BACK FACE OF WALL AT TOP OF BALLAST, UNLESS NOTED OTHERWISE.

PLAN

SCALE: 1" = 20'-0"



ELEVATION

SCALE: 1" = 20'-0"

NOTE:

ALL HORIZONTAL DIMENSIONS MEASURED ALONG WALL CONTROL LINE

NO.	DATE	BY / CHK.	APPD.	REVISIONS

GAP DESIGNED	4/27/11 DATE
JJC DRAWN	5/4/11 DATE
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PORTLAND TO MILWAUKIE LRT
EAST SEGMENT
Exhibit P30
STRUCTURAL
MILWAUKIE – RETAINING WALLS
PLAN AND ELEVATION – LRT-S-17 – 2 OF 2

SCALE:	DRAWING NO.:	CONTRACT NO.:	SHEET NO.:
AS NOTED	S15E-821	RH100544JB	

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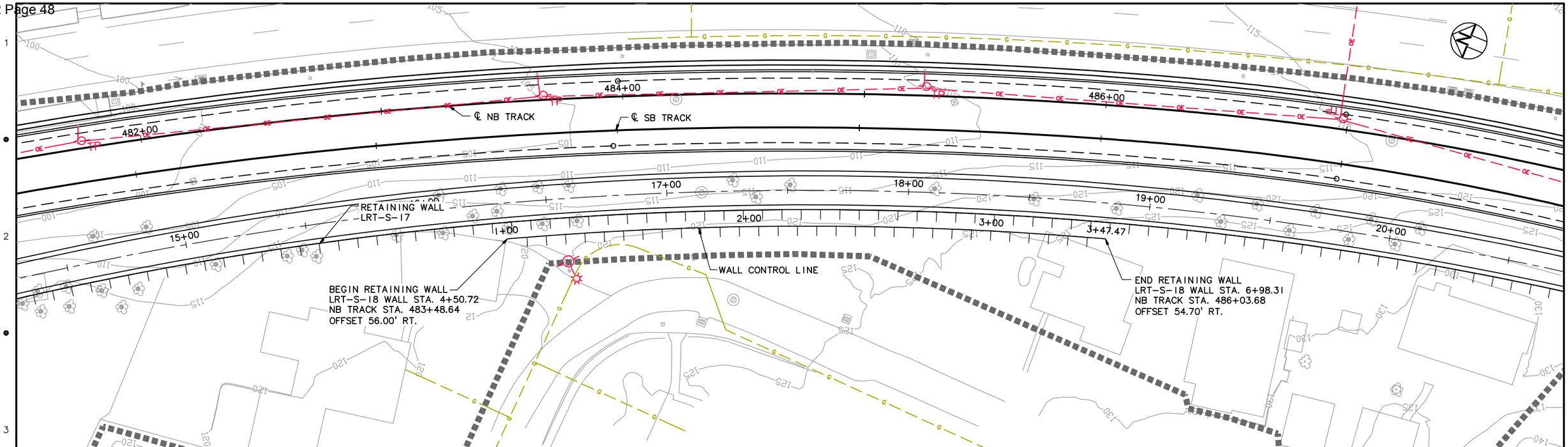
Plot Date:9/13/2011 3:35 PM_edita k boguslowski

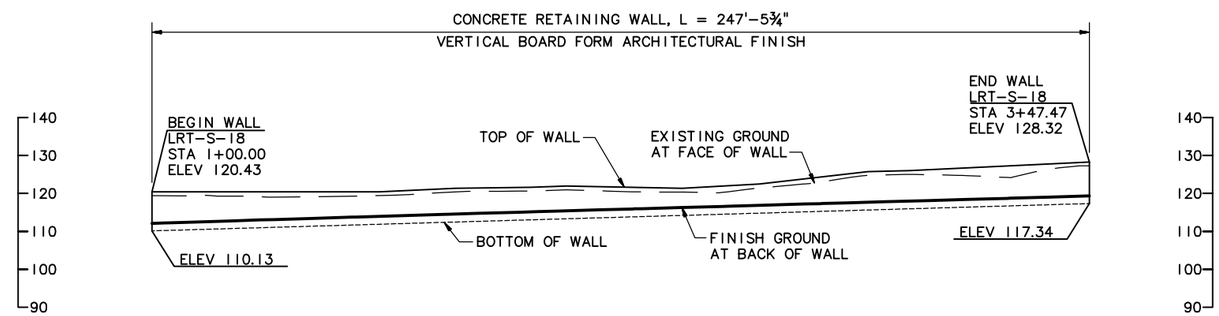


GENERAL NOTES:

1. WALL CONTROL LINE IS THE BACK FACE OF WALL AT TOP OF BALLAST, UNLESS NOTED OTHERWISE.

PLAN

SCALE: 1" = 20'-0"



ELEVATION

SCALE: 1" = 20'-0"

NOTE:

ALL HORIZONTAL DIMENSIONS MEASURED ALONG WALL CONTROL LINE

NO.	DATE	BY / CHK.	APPD.	REVISIONS

GAP DESIGNED	4/27/11 DATE
JJC DRAWN	5/4/11 DATE
TMS CHECKED	5/22/11 DATE
. APPROVED	.. DATE

TRI-COUNTY METROPOLITAN TRANSPORTATION DISTRICT OF OREGON

DAVID EVANS AND ASSOCIATES INC.

TRIMET CAPITAL PROJECTS AND FACILITIES DIVISION
710 N.E. HOLLADAY STREET
PORTLAND, OREGON 97232

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PORTLAND TO MILWAUKIE LRT
EAST SEGMENT Exhibit P31
STRUCTURAL
MILWAUKIE – RETAINING WALLS
PLAN AND ELEVATION – LRT-S-18

SCALE:	DRAWING NO.:	CONTRACT NO.:	SHEET NO.:
AS NOTED	S15E-822	RH100544JB	

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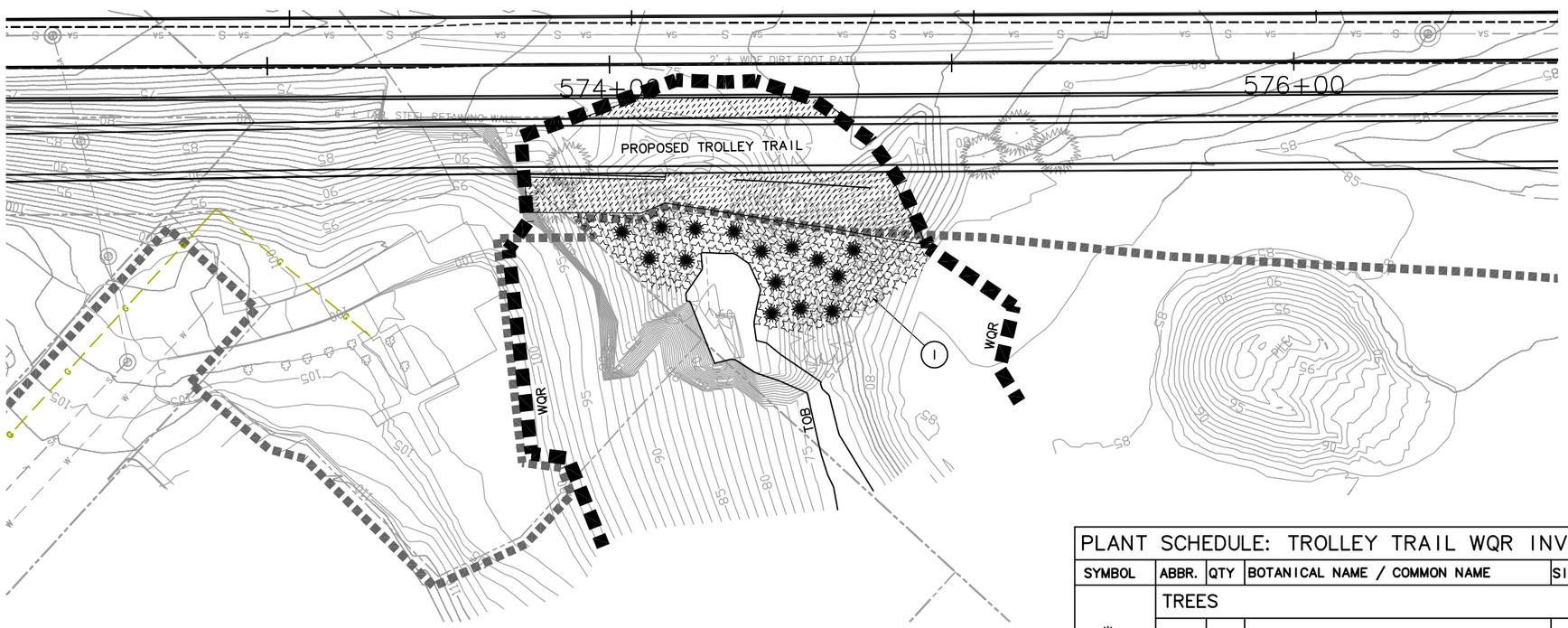
Plot Date:9/13/2011 3:35 PM_edits k boguslowski



40' 20' 0' 40' 80'
SCALE: 1" = 40'

BOTANICAL NAME	COMMON NAME	SIZE	SPACING
Deschampsia cespitosa	TUFTED HAIRGRASS	1 GAL.	2' O.C.

PLANT SCHEDULE: TROLLEY TRAIL WQR INVASIVE REMOVAL AND REPLANT

SYMBOL	ABBR.	QTY	BOTANICAL NAME / COMMON NAME	SIZE	CONDITION	SPACING	NOTES
	TREES						
	THPL	1	Thuja plicata – Western redcedar	4' HT.	B&B	as shown	
	SHRUBS						
	MANE	15	Mahonia nervosa – low Oregon grape	18–24" HT.	Bareroot	4' o.c.	clusters of 5
	OECE	20	Oemleria cerasiformis – indian plum	18–24" HT.	Bareroot	4' o.c.	scattered
	POMU	50	Polystichum munitum – sword fern	1 gal.	container	4' o.c.	scattered
	RUPA	15	Rubus parviflorus – thimbleberry	18–24" HT.	Bareroot	4' o.c.	clusters of 5
	SARA	10	Sambucus racemosa – red elderberry	18–24" HT.	Bareroot	4' o.c.	scattered
	SYAL	20	Symphoricarpos albus – common snowberry	18–24" HT.	Bareroot	4' o.c.	clusters of 5
	SEED						

Agrostis exarata– spike bentgrass	0.14 lbs	APPLICATION RATE:
Deschampsia elongata– slender hairgrass	0.56 lbs	Pounds of Pure Live Seed (PLS) PER ACRE
Glyceria elata– Western mannagrass	0.34 lbs	
	1.04 lbs	Total PLS per acre

NOTE: PROVIDE MULCH RING AT EACH TREE AND SHRUB. MULCH RING SHALL BE 18" DIAMETER AND 2" DEPTH.

(1) REMOVE ALL NON–NATIVE INVASIVE PLANT SPECIES WITHIN HATCHED AREA WITH HAND TOOLS ONLY. PLANT NATIVE TREES, SHRUBS AND SEED PER PLANT SCHEDULE SHOWN ON THIS SHEET.

NO.	DATE	BY CHK.	APPD.	REVISIONS

SAR DESIGNED 08–02–11 DATE
SAR DRAWN 08–02–11 DATE
EES CHECKED DATE
APPROVED DATE

TRI–COUNTY METROPOLITAN TRANSPORTATION DISTRICT OF OREGON

VIGIL AGRIMIS design professionals
DAVID EVANS AND ASSOCIATES INC.
TRI MET CAPITAL PROJECTS AND FACILITIES DIVISION 710 N.E. HOLLADAY STREET PORTLAND, OREGON 97232

SUBMITTED: DATE: APPROVED: DATE:

PORTLAND TO MILWAUKIE LRT
EAST SEGMENT
LAND USE PERMIT
TROLLEY TRAIL PATH
MITIGATION SITE PLAN

Exhibit P32

SCALE: AS SHOWN | DRAWING NO.: TTR–7A | CONTRACT NO.: RH100544JB | SHEET NO.:

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Plot Date:9/13/2011 3:32 PM_edita k boguslawski

20' 10' 0' 20' 40'
SCALE: 1" = 40'

Trolley Trail Tree Removal Inventory

Overstory				
Tree #	**DBH (inches)**	**Latin name**	**Common name**	**Native?**
N/A	30	*Pseudotsuga menziesii*	Douglas-fir	Y
N/A	30	*Pseudotsuga menziesii*	Douglas-fir	Y
N/A	10 (2)	*Acer macrophyllum*	bigleaf maple	Y
N/A	10	*Acer macrophyllum*	bigleaf maple	Y
N/A	10	*Acer macrophyllum*	bigleaf maple	Y
N/A	10	*Acer macrophyllum*	bigleaf maple	Y
N/A	10	*Acer macrophyllum*	bigleaf maple	Y
N/A	12	*Acer macrophyllum*	bigleaf maple	Y
N/A	12	*Acer macrophyllum*	bigleaf maple	Y
N/A	12	*Acer macrophyllum*	bigleaf maple	Y
N/A	14	*Acer macrophyllum*	bigleaf maple	Y
N/A	18	*Acer macrophyllum*	bigleaf maple	Y
N/A	30	*Acer macrophyllum*	bigleaf maple	Y

LEGEND

TOB – TOP OF BANK

WQR – WATER QUALITY RESOURCES

X INDICATES TREE BEING REMOVED

NO.	DATE	BY / CHK.	APPD.	REVISIONS

SAR DESIGNED 08-02-11 DATE
SAR DRAWN 08-02-11 DATE
EES CHECKED DATE
APPROVED DATE

TRI-COUNTY METROPOLITAN TRANSPORTATION DISTRICT OF OREGON

VIGIL AGRIMIS design professionals
DAVID EVANS AND ASSOCIATES INC.
TRIMET CAPITAL PROJECTS AND FACILITIES DIVISION 710 N.E. HOLLADAY STREET PORTLAND, OREGON 97232

SUBMITTED: DATE: APPROVED: DATE:

PORTLAND TO MILWAUKIE LRT
EAST SEGMENT Exhibit P33
LAND USE PERMIT
TROLLEY TRAIL PATH
PROPOSED TREE REMOVAL AT WQR PLAN

SCALE: AS SHOWN | DRAWING NO.: TTR-4F | CONTRACT NO.: RH100544JB | SHEET NO.:

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Plot Date:9/13/2011 3:28 PM_edita k boguslawski

Portland to Milwaukie Light Rail Project

Water Quality Resource Area Report

Trolley Trail

City of Milwaukie, Oregon

Submitted to:

City of Milwaukie
10722 SE Main Street
Milwaukie, Oregon 97222

Applicant:

TriMet
4012 SE 17th Ave
Portland, Oregon 97202

Prepared by:

VIGIL AGRIMIS
design professionals

819 SE Morrison Street, Suite 310
Portland, OR 97214

Revised September 13, 2011

Portland Milwaukie Light Rail Project
Trolley Trail WQR Report

TABLE OF CONTENTS

1.0 Introduction 2
2.0 Executive summary 2
3.0 Methodology 3
4.0 Water quality resource Areas 3
4.1 Secondary Protected Water Features Existing Condition 3
4.2 WQR Vegetated Corridors 4
5.0 Summary of Impacts 5
5.1 Water Quality Resources Impacts 5
5.2 Alternatives Analysis 6
5.3 Avoidance and Minimization of Impacts 7
6.0 Mitigation 7
6.1 Responsible Party 9
7.0 Preparers and Contributors 9

Appendix A. Site Photos
Appendix B. Mitigation Plan

1.0 INTRODUCTION

The Trolley Trail was designed to run along a historic rail corridor once used by a streetcar line that operated between Portland and Oregon City. When rail service ended in 1968, the idea of turning the corridor into a multi-use trail was initiated by a group of local citizens. In 2001, North Clackamas Parks and Recreation District (NCPRD) and Metro acquired a 6-mile stretch of the historic rail corridor between downtown Milwaukie and Gladstone. The Trolley Trail was originally reviewed and approved by the Planning Commission in cases CSU-08-03, WG-08-02, and DR-08-02. That case approved an alignment between Milwaukie and Gladstone.

The Trolley trail decisions of 2008 anticipated the design and proximate location of the Portland Milwaukie Light Rail line, specifically identifying certain elements of the Trail alignment that could be modified without additional review as the Rail alignment design evolved. Other elements, if modified, were identified as specifically requiring review.

In assessing the Rail alignment, a water source was found that has been identified as a new water resource that meets the applicability criteria for a Water Quality Resource Review. The site is located in Section 36, Township 1 south, and Range 1 east. The study area for this report will occur on taxlots 901 and 300.

The site includes portions of an unnamed drainage that flows via culvert under SE Mcloughlin to the northeast into Kellogg Lake. The drainage is a Secondary Water Feature as defined by the City of Milwaukie's Water Resource Regulations (Milwaukie Municipal Code 19.322). Drawings in the permitting package show the extent of the Water Quality Resource (WQR) and associated vegetated corridors.

2.0 EXECUTIVE SUMMARY

The main points of this report are summarized as follows:

- The realigned Trolley Trail will cross an unnamed drainage located in Section 36, Township 1 south, and Range 1 east on taxlots 901 and 300.
- The unnamed drainage is a Secondary Protected Water Feature as defined by the City of Milwaukie's Water Resource Regulations (Milwaukie Municipal Code 19.402).
- The WQR and associated vegetated corridor was delineated in the field. The vegetated corridor is 50 feet wide as measured from ordinary high water (OHW) and top of bank (TOB), which are in the same location.
- The vegetated corridor is currently in degraded condition.
- The project will be located above an existing culvert and no impacts will occur below OHW.
- Development in the WQR Area has been limited to the area necessary for construction and placement of the Portland Milwaukie Light Rail line, Trolley Trail, and associated facilities.

- Development of the light rail tracks and Trolley Trail will result in 2,010 sq. ft. of permanent impacts and 1,820 sq ft of temporary impacts to the WQR vegetated corridor.
- The project will remove 13 trees that are 6 inches or greater diameter at breast height (DBH) within the construction limits of the WQR vegetated corridor.
- A mitigation plan has been developed that meets 19.402.9.E. To mitigation for the construction impacts, all non-native and invasive plants will be removed from within the construction limits and an additional 2,000 sq. ft. area in the drainage. The area where non-native vegetation is removed from within the drainage will planted with an appropriate native understory that will improve thermal regulation, water quality, and wildlife habitat value.

3.0 METHODOLOGY

Vigil-Agrimis, Inc. has prepared this WQR Report to evaluate the existing condition, assess potential impacts from the proposed development, and develop a mitigation plan that would compensate for impacts to water quality and habitat resources as required in Section 19.402.

The OHW of the unammed tributary was mapped by the design team and using topographic maps and site visits. Table 19.402.9.A was used to determine the WQR boundaries.

Two site visits, on June 16, 2011, and July 1, 2011, were conducted to accurately map existing vegetation and the overall resource condition. Additionally, the location of existing natural features (wetlands, additional water sources, rock outcroppings, etc.) and trees larger than 6 inches DBH were determined in the field as required by Municipal Code Section 19.402.9(B). The limits of the resources on the site are shown in the figures included in the permitting package. These figures also show the locations of the existing trees that are 6 inches DBH or greater.

4.0 WATER QUALITY RESOURCE AREAS

The City of Milwaukie's Water Quality Resource Area Regulations include vegetated corridors and the adjacent water features, including Primary Protected Water Features and Secondary Protected Water Features. No Primary Protected Water Features are present on this site. Sections 4.1 and 4.2, below, provide descriptions of the on-site Secondary Protected Water Features and associated vegetated corridors, respectively.

4.1 Secondary Protected Water Features Existing Condition

As described in Table 1 of the MMC 19.402, Secondary Protected Water Features include intermittent streams draining 50-100 acres. The unnamed intermittent drainage was determined to be a secondary protected water feature due to the drainage size and that the drainage was dry on both site visits (conducted June 16, 2011, and July 1, 2001). This relatively small resource is not depicted on WQR Map 3. The source of the drainage is unknown, but the

drainage is conveyed through a culvert under McLoughlin Blvd and eventually discharges into Kellogg Lake.

The slope from the OHW exceeds 25%. The area within the construction limits is a steep fill slope between the culvert inlet and the road grade for SE McLoughlin Rd.

4.2 WQR Vegetated Corridors

As described in Table 1 of the MMC 19.402, Secondary Protected Water Features have an associated vegetated corridor of 15 to 50 feet wide depending on the slopes adjacent to the resource. The site has slopes steeper than 25% extending outward from the OHW. Because of the steep slopes, the WQR's vegetated corridor has been mapped extending 50 feet outward from the OHW.

The overstory includes native trees, and the shrub layer includes a mix of native and non-native species. The overall tree canopy cover is approximately 100% with bigleaf maple (*Acer macrophyllum*) as the dominant species. Total shrub cover is approximately 62% with Indian-plum (*Oemleria cerasiformis*) and invasive cherry laurel (*Prunus laurocerasus*) as the dominant two species, but there is significant coverage of the invasive Armenian blackberry (*Rubus armeniacus*) and English hawthorn (*Crataegous mongyna*). The WQR vegetated corridor on the study site is overrun by non-native invasive groundcover plants. The groundcover is 95% and is dominated by English ivy (*Hedera helix*). The percent coverage of the representative trees, shrubs, and groundcovers is detailed in the Table 1 below.

Table 1 –WQR Assessment, Trolley Trail

Botanical Name	Common Name	Percent Cover	Native?
TREES (total coverage = 100%)			
Acer macrophyllum	bigleaf maple	85%	Yes
Pseudotsuga menziesii	Douglas-fir	10%	Yes
SHRUBS (total coverage = 62%)			
Crataegus monogyna	English hawthorn	3%	No
Oemleria cerastiformis	indian-plum	20%	Yes
Prunus laurocerasus	cherry-laurel	20%	No
Rubus armeniacus	Armenian blackberry	3%	No
Rubus spectabilis	salmonberry	12%	Yes
Sambucus racemosa	red elderberry	4%	Yes
GROUNDCOVER (total coverage = 100%)			
A variety of non-native vines and herbaceous plants comprise 95% of the groundcover layer, with the native sword fern covering 5% of the site. The non-native vines include English ivy and traveller's joy. Additional non-native herbaceous species include cleavers, herb-robert, and Fendler's waterleaf.			

The vegetated corridor is in degraded condition per Table 19.402.9.E. While the overstory is primarily native, the shrub and groundcover layers contain large portions of invasive species. English ivy has grown to cover the trunks of most overstory trees. The ecological function of

this area is low, and it is a population source for the spread of very aggressive non-native groundcover plant species. Non-native invasive species in the WQR include cherry-laurel, English hawthorn, Armenian blackberry, English ivy, traveller's joy, cleavers (*Galium aparine*), Fendler's waterleaf (*Hydrophyllum fendleri*) and herb-robert (*Geranium robertianum*).

5.0 SUMMARY OF IMPACTS

The Portland-Milwaukie light rail will be located east of Trolley Trail and west of SE McLoughlin Blvd. bounded by SE Park Ave. to the south and SE River Rd. to the north. The vegetated corridor associated with a secondary WQR is located within the work limits approximately in the middle of this project stretch. Construction of the line will require grading within the WQR vegetated corridor, including a new retaining wall. The design also calls for the formalization of Trolley Trail with paving and stormwater management swales between the trail and light rail line. The new development will occur over the existing culvert, above the OHW. The area within the work limit line is a steep fill slope between the culvert inlet and the road grade for SE McLoughlin Rd.

Stormwater from the trail will sheet flow to the adjacent vegetated area which will be planted with vegetation suitable for stormwater treatment. Stormwater from the light rail line will be collected and directed to a stormwater facility just south of SE River Rd.

The new light rail alignment and associated construction will create a total of 25 acres of impervious surface, by replacing existing and adding new impervious surface. However, the project will also convert 1.03 acres of existing impervious surface to open space and 8.33 acres to pervious track ballast. Therefore, the net impervious surface gain is 15.6 acres, of which only 10.8 acres will be impervious surface where there will be automobiles or other pollutant sources. Stormwater runoff from these surfaces will still undergo treatment and will improve existing treatment across the project alignment.

In addition to stormwater treatment improvements, the construction of a light rail system, including a pedestrian/bike/bus bridge, will reduce vehicle miles traveled, vehicle-hours of delay, and vehicle hours traveled, and is therefore expected to decrease roadway pollutant inputs to project waterways over the long term. The completion of the Portland-Milwaukie Light Rail Project is expected to improve the overall long-term water quality and hydrological regime of receiving waters within the action area.

5.1 Water Quality Resources Impacts

The proposed grading will place fill in the ravine over the existing culvert but outside of the bank full area. A retaining wall will be used to reduce the amount of fill needed and the disturbance to the WQR vegetated corridor. The fill will create a new environment that will be more suited to upland species than riparian species.

The WQR and associated vegetated corridor within the construction limits is 3,830 sq. ft. The project will temporarily disturb 1,820 sq ft of vegetated corridor, and permanently impact 2,010 sq ft.

There are 13 trees within the WQR vegetated corridor, that are > 6 inches DBH, that will need to be removed from the construction limits. Trees to be removed are summarized in Table 2 and shown on the figures in the permit application. Three of these trees need to be removed for the trail. It is not possible to move the alignment of the trail to miss these trees. The remaining trees need to be removed for the retaining wall. These trees are located at the top of the drainage. Removal of these trees will result in a loss of canopy cover along the edge.

Table 2. Trees To Be Removed In the WQR Vegetated Corridor

# Trees Removed	DBH (inches)	Latin name	Common Name
2	30	*Pseudotsuga menziesii*	Douglas fir
5	10	*Acer macrophyllum*	Big-leaf maple
3	12	*Acer macrophyllum*	Big-leaf maple
1	14	*Acer macrophyllum*	Big-leaf maple
1	18	*Acer macrophyllum*	Big-leaf maple
1	30	*Acer macrophyllum*	Big-leaf maple

5.2 Alternatives Analysis

After public review and extensive analysis through the National Environmental Policy Act process and agency coordination, the governing bodies of the project sponsors, including the City of Portland, City of Milwaukie, Multnomah County, Clackamas County, Metro and TriMet, have agreed upon the overall project described and analyzed in the Final Environmental Impact Statement (FEIS, Metro July 2010) and other documents. The proposed alignment was selected based on balancing its transit benefits with environmental, construction, social and economic impacts.

Along the west side of SE McLoughlin Boulevard, the light rail project would use a portion of an old streetcar right-of-way that was purchased by Metro and the North Clackamas Parks and Recreation District for the development of the Trolley Trail, a six-mile regional multi-use path that is to extend from downtown Milwaukie to Gladstone. Light rail would operate between the trail and SE McLoughlin Boulevard. As the light rail and the trail approach SE Park Avenue, light rail leaves the Trolley Tail alignment to stay along SE McLoughlin Boulevard, while the trail continues to follow the old streetcar right-of-way to the west and continues south to Gladstone.

Placing the light rail alignment to the east on McLoughlin Boulevard would have resulted in traffic delays for motor vehicles and for light rail vehicles, negating the benefits of exclusive light rail guideways. Placing the alignment to the west of the Trolley Trail would have directly impacted the Trolley Trail project, rendering this pedestrian project inoperable. It would have also resulted in much higher costs of acquisitions of private land, engineering constraints due to steep slopes, and conflict between the light rail alignment and the Trolley Trail as they would

have crossed each other two times. These alternatives were not advanced because there were determined to be impracticable.

The construction limits have been reduced to the extent practicable. Moving the trail closer to the tracks would result in an unpleasant and unsafe environment for people using the trail, as it would result a minor fence barrier between what will be a well-travelled pedestrian path and the rail. Moving the trail closer to the rail lines would also take the trail out-of-direction, as well as break the continuity of the six foot buffer/barrier that has been agreed to between TriMet and the North Clackamas Parks and Recreation District. The light rail line and trail are located directly adjacent to McLoughlin Blvd.

5.3 Avoidance and Minimization of Impacts

The construction limits have been reduced to the extent practicable. The light rail line and trail are located directly adjacent to McLoughlin Blvd. There is no in-water work associated with this WQR area. A retaining wall will be used to reduce the footprint through the WQR vegetated corridor. A stormwater swale will be constructed between the Trail and the light rail. The remaining trail easement will be planted with appropriate trail landscaping that provides a safe and pedestrian friendly environment. While the light rail and trail do cross the unnamed stream and associated vegetated corridor, it is done in a manner that reduces impacts while allowing for the enjoyment of the resource. The project is planned in an area of the WQR that does not have wetlands, debris, or noxious materials that would make restoration more difficult.

A work plan has been devised that limits the area of impact as much as possible. Work areas will be clearly marked in the field and existing native vegetation along and outside of the construction limits will be protected and left in place. Site preparation and construction practices shall be followed that prevent drainage of hazardous materials or erosion, pollution, or sedimentation to the WQR area.

A retaining wall will be used to reduce the development through the WQR vegetated corridor. The design of this retaining wall has not occurred yet, but the general location and size are shown on the plans (included in the application package). The retaining wall will reduce the amount of trees that need to be cleared and the amount of fill required on the hill slope. Without the retaining wall, fill limits would extend further down into the drainage and require more trees to be removed.

6.0 MITIGATION

The proposed mitigation plan includes the removal of non-native species in the drainage, as outlined on the planting plans (see Appendix B). The non-native vegetation will be removed using hand tools in a 2,000 sq. ft. area. This area is proportional to the area of permanent impact to the WQR vegetated corridor. The area will be planted with an appropriate native shrub layer. The proposed plants were selected because they are shade tolerate and establish quickly so they will outcompete the non-natives and prevent them from becoming re-established. Non-native vegetation will also be removed from within the construction limits along the trail and rail.

To mitigate for the removal of the 13 trees, 15 western red cedars will be planted in the understory where the non-native vegetation will be removed. Western red cedar is the next successional tree to replace big-leaf maple. By planting the western red cedar, the drainage has been given an ecological boost in developing the next tree canopy after the big-leaf maple trees start to die out. The resulting canopy will be denser and provide more shading than currently exists.

The goal of the mitigation plans is to allow the development of a thriving, multi-storied riparian native plant community in an area currently overrun by non-native and invasive weedy species. This is a unique opportunity to augment the overall current condition habitat quality, function and value. Plant species have been carefully selected to thrive in the microclimates of this site. The planting plan provides a dense planting of robust native species that have proven to work well on restoration sites. A broad spectrum of species has been selected so that as habitat conditions evolve over time there is a mix of plants able to capitalize on emerging conditions. Proposed plantings have been designed to achieve 100% surface coverage. In addition, stormwater facility plantings will occur in the stormwater treatment facilities along the trail. The stormwater facility is outside, but on the edge of the WQR vegetated corridor.

To restore water quality functions, native trees, shrubs and groundcovers will be re-established on a portion of the drainage. By re-establishing a dense native plant community, water flowing through the area will be slowed down, allowing sediment to settle out instead of entering the adjacent stream. Revegetation, especially on the steep slopes like those in the project area, will bind the soil and reduce erosion.

To restore thermal regulation function, trees (15) and shrubs (120) will be planted within the drainage. Maximum shade will be provided by a closed canopy and a 100% surface coverage. The inclusion of evergreen trees and tall shrubs will help provide shade to the small creek.

To restore wildlife function, the density and species diversity of vegetation will be greatly increased over current conditions. The proposed plantings will provide an undisturbed corridor of vegetation along the water resource to provide wildlife with food, protective cover and access to the water. The mitigation plan includes the use of varying mature heights and forms to increase habitat structure.

The site will be permanently revegetated during the first planting season following the completion of construction. Temporary irrigation will be used to help establish plants adjacent to the trail. TriMet will monitor and maintain the site for five years after the initial planting. Maintenance will include providing mulch rings around trees and shrubs, watering, and weeding as necessary to allow the native plant community to mature to a self-sustaining condition. The target survival rate of plantings is 80%. If plant mortality exceeds 20% of the original planting quantities at any time during the five year period the owner will replace with new plants to achieve an overall 80% survival rate. For a period of five years, TriMet will submit an annual report to the Planning Director documenting the survival of the trees and shrubs on the mitigation site.

6.1 Responsible Party

The Applicant will be responsible for the implementation of the mitigation plan as outlined in this document. Contact information for the Applicant is as follows:

Tri-County Metropolitan Transit District of Oregon
Attn: Leah Robbins
710 NE Holladay Street
Portland, Oregon 97232

7.0 PREPARERS AND CONTRIBUTORS

This report and mitigation design was prepared by the following staff from Vigil-Agrimis, Inc:

- Susan Cunningham, Sr. Biologist
- Steven Roelof, RLA
- Susie Mattke-Robinson, RLIT
- Ryan Makie, PE
- Nathan Dasler, EIT

Project design information and alternatives analysis was provided by:

- David Evans and Associates, Inc.,
- KLK Consulting, Inc.
- GreenWorks, PC

Appendix A
Site Photos

Trolley Trail WQR Report

Photo 1 - General area of impact for unnamed drainage, looking north

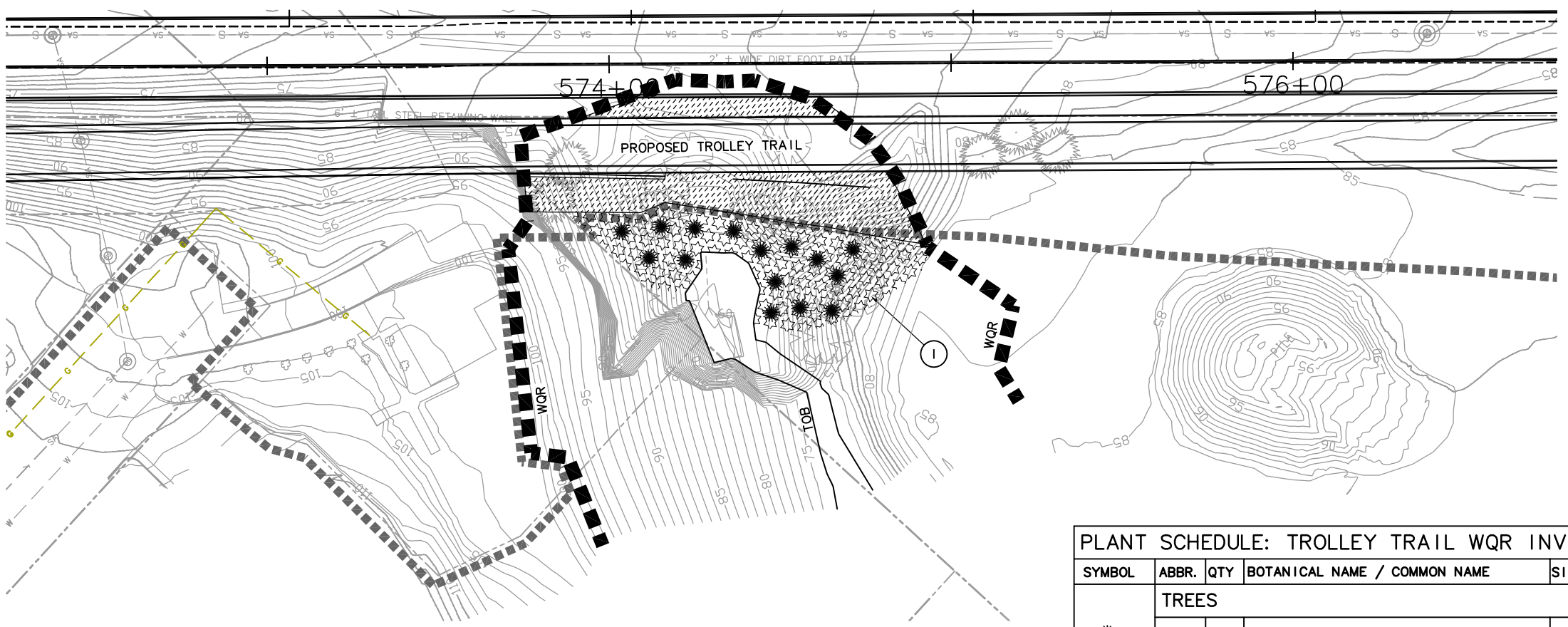
Photo 2 - Unnamed drainage, looking northwest from taxlot 300

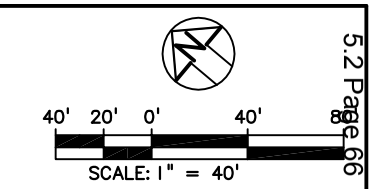
Photo 3 – Unnamed drainage, looking southeast from taxlot 901

Photo 4 – Unnamed drainage, looking northeast toward McLoughlin Blvd. (culvert buried in bottom left)

Photo 5 – Existing Trolley Trail adjacent to McLoughlin Blvd. and unnamed drainage, looking south

Appendix B
Mitigation Plans
Trolley Trail WQR Report





BOTANICAL NAME	COMMON NAME	SIZE	SPACING
Deschampsia cespitosa	TUFTED HAIRGRASS	1 GAL.	2' O.C.

PLANT SCHEDULE: TROLLEY TRAIL WQR INVASIVE REMOVAL AND REPLANT

SYMBOL	ABBR.	QTY	BOTANICAL NAME / COMMON NAME	SIZE	CONDITION	SPACING	NOTES
	TREES						
	THPL	1	Thuja plicata – Western redcedar	4' HT.	B&B	as shown	
	SHRUBS						
	MANE	15	Mahonia nervosa – low Oregon grape	18–24" HT.	Bareroot	4' o.c.	clusters of 5
	OECE	20	Oemleria cerasiformis – indian plum	18–24" HT.	Bareroot	4' o.c.	scattered
	POMU	50	Polystichum munitum – sword fern	1 gal.	container	4' o.c.	scattered
	RUPA	15	Rubus parviflorus – thimbleberry	18–24" HT.	Bareroot	4' o.c.	clusters of 5
	SARA	10	Sambucus racemosa – red elderberry	18–24" HT.	Bareroot	4' o.c.	scattered
	SYAL	20	Symphoricarpos albus – common snowberry	18–24" HT.	Bareroot	4' o.c.	clusters of 5
	SEED						

Agrostis exarata– spike bentgrass	0.14 lbs	APPLICATION RATE:
Deschampsia elongata– slender hairgrass	0.56 lbs	Pounds of Pure Live Seed (PLS) PER ACRE
Glyceria elata– Western mannagrass	0.34 lbs	
	1.04 lbs	Total PLS per acre

NOTE: PROVIDE MULCH RING AT EACH TREE AND SHRUB. MULCH RING SHALL BE 18" DIAMETER AND 2" DEPTH.

(1) REMOVE ALL NON–NATIVE INVASIVE PLANT SPECIES WITHIN HATCHED AREA WITH HAND TOOLS ONLY. PLANT NATIVE TREES, SHRUBS AND SEED PER PLANT SCHEDULE SHOWN ON THIS SHEET.

NO.	DATE	BY / CHK.	APPD.	REVISIONS

SAR DESIGNED 08–02–11 DATE
SAR DRAWN 08–02–11 DATE
EES CHECKED DATE
APPROVED DATE

TRI–COUNTY METROPOLITAN TRANSPORTATION DISTRICT OF OREGON

VIGIL AGRIMIS design professionals
DAVID EVANS AND ASSOCIATES INC.
TRI MET CAPITAL PROJECTS AND FACILITIES DIVISION 710 N.E. HOLLADAY STREET PORTLAND, OREGON 97232

SUBMITTED: DATE: APPROVED: DATE:

PORTLAND TO MILWAUKIE LRT
EAST SEGMENT
LAND USE PERMIT
TROLLEY TRAIL PATH
MITIGATION SITE PLAN

SCALE: AS SHOWN | DRAWING NO.: TTR–7A | CONTRACT NO.: RH100544JB | SHEET NO.:

Exhibit TR1

P:\T\TMTX00001127\04000AD\Permits\Land Use Permit\3–Trolley Trail\TTR–7A.dwg Sep. 13, 2011 – 7:28 AM jeff hammond
Plot Date:9/13/2011 7:39 AM_jeff hammond

From: Gary Michael <garymic@gmail.com>
Sent: Thursday, October 06, 2011 9:17 AM
To: Shanks, Susan
Subject: Trolley Trail and Bridge Application Referrals

Hi, Susan!
I got the packets as a member of the neighborhood LUC. I saw nothing I could pick at on the Trolley Trail. I like the bridge design. It will be the best light rail bridge in the system. I take issue, however, with the attempt to make concrete walls look like stone. I have always hated such fakery. Concrete is a perfectly good material, and there are form liners which create patterns and texture without resorting to fakery. I'll be out of the country Oct. 7- 22 so I'll miss the Open House on Residential Standards. I'm interested and will check the City web site.
Gary Michael

--
garymic@gmail.com
www.garylmichaelart.com

From: Jo Anne <evenstar@hevanet.com>
Sent: Sunday, October 16, 2011 8:32 PM
To: Shanks, Susan
Subject: Comments on the applications

Hello Susan --

Here are my comments about the permit application for the Trolley Trail. I did not study the submissions for the PMLR line. They are my personal comments as I asked for input from the neighborhood, but got none. I think the volume of material is a little daunting.

I object to the removal of the three sequoias located north of the current WQR area. This is supposed to be to maintain sight lines. I would think trying to keep a *few* of the big trees in the area intact would greatly improve the 'sights' of the area. I'd like to find a way to keep them.

I would also encourage the use of native plants all along the Trolley Trail, not just in the WQR are. I find the use of Boston Ivy particularly troubling.

I studied a tiny piece of the submissions in detail, sadly all that time would allow. I focused on the 'unnamed drainage' area as I live on that same creek (and, yes, it does run year around -- we've been here for over 25 years and it's never gone completely dry). Thank you for having it promoted to a primary drainage area.

The most trouble I have with the submissions are the lack of attention to detail. I'm not a botanist by any means, but on Page 4 (Section 4.2 WQR Vegetated Corridors) they list 'cleavers' as a non-native herbaceous species. I looked on the Portland Plant List and found cleavers (Gallium
aparine) listed as a native plant. They're a pain when they stick to
everything, but native. This is *one* tiny example. In another place they
say acer macrophyllum is Douglas Fir (exhibit E3). In another place they show 15 trees to be planted on the drawing and list 'QTY 1' in the inventory (Exhibit P32) I'd like to make sure that whoever is double checking this goes over their plant eradication and planting with a fine toothed comb.
I'm also not sure it's a good idea to remove the huge big leaf maple in the area (acer macrophyllum) and mitigate them with four foot tall western red cedars because 'that's the next step for the forest anyway'.

I also couldn't find any hard evidence for how big the walls in the area will be or what they will look like.

I would encourage anyone looking at this application to spend some time on the Cascades Trail at the Oregon Zoo. We were there today with our Grandchildren and I took a couple of pictures of the 'walls' going down the steep side of the canyon that forms the trail. They are planted with all native species, are irregular, have moss growing on them and look wonderful.

I wish I had more time and stomach to spend on this. Sorry if this letter sounds disjointed.

Thank you.

Amities,

Jo Anne Bird
Chair, ISNDA

Exhibits List for Land Use Files MOD-11-01 and WQR-11-04
Trolley Trail Modification

The following documents are part of the official record for this application as of Nov 2, 2011:

1. Application
   - A. Submittal forms date stamped Aug 8, 2011 (land use application forms, property owner authorization, submittal requirements form, fee receipt)
   - B. Responses to code standards and criteria (initial submission date stamped Aug 8, 2011; final submission date stamped Sep 20, 2011)
   - C. Water quality resource report (initial submission date stamped Aug 8, 2011; final submission date stamped Sep 20, 2011)
   - D. Site plans (initial submission date stamped Aug 8, 2011; final submission date stamped Sep 20, 2011)
     - i) Existing site conditions
     - ii) Proposed site conditions
     - iii) Illustrative drawings
   - E. Letter requesting application be deemed complete (Sep 20, 2011)
   - F. Additional technical report deposit fee receipt date stamped Sep 20, 2011
   - G. Revised application materials date stamped Oct 26, 2011
   - H. Hearing notice affidavit of sign posting
2. Notification information
   - A. Application referral dated Sep 23, 2011 (Referral sent to City Hall, Ledding Library, Milwaukie Planning Department, Milwaukie Engineering Department, Milwaukie Building Official, Milwaukie Light Rail Coordinator, Clackamas County Fire District #1, North Clackamas Parks and Recreation District, Planning Commission, and Chair and Land Use Committee for Island Station Neighborhood District Association)
   - B. Hearing notice dated Oct 19, 2011 (Notice sent to property owners and occupants of properties within 300 ft of development site)
   - C. Hearing notice affidavit (Oct 19, 2011)
   - D. Hearing notice sign locations map
3. Materials from City Planning Staff
   - A. Application submittal requirements memo (Jun 27, 2011)
   - B. Letter deeming application incomplete (Sep 7, 2011)
   - C. Letter deeming application complete (Sep 27, 2011)
   - D. Staff Report (Nov 2, 2011 for Nov 8, 2011 Public Hearing)
   - E. Cover memo for applicant’s revised application materials (Nov 2, 2011)
   - F. Power point presentation for Nov 8, 2011 public hearing

4. Materials from City Consultant (ESA Northwest Biological Resources)
    A. Scope of work (Sep 2011)
    B. Peer review memo (Oct 20, 2011)
5. Comments received
    A. Milwaukie Engineering Department (Zach Weigel)
    B. Island Station resident (Jo Anne Bird)
    C. Island Station resident (Gary Michael)
6. Public comments received at Nov 8, 2011 public hearing
    A. Sign-in sheet from hearing

MILWAUKIE
Dogwood City of the West

To: **Planning Commission**

Through: **Katie Mangle, Planning Director**

From: **Susan P Shanks, Senior Planner**

Date: **November 1, 2011 for November 8, 2011 Public Hearing**

Subject: **Proposed Revised Exhibits for Nov 8 Hearing**

Project: Trolley Trail Modifications

File: MOD-11-01 and WQR-11-04

Applicant: TriMet

ACTION REQUESTED

None. The applicant has revised aspects of their Trolley Trail modification proposal. The revised exhibits should be considered within the context of the complete **MOD-11-01** and **WQR-11-04** application, which is discussed and included under separate cover.

BACKGROUND INFORMATION

The applicant has submitted a revised WQR report, lighting plan, and landscape plan. See Attachment 1 for revised exhibits as detailed below:

- **WQR Report** (with related Mitigation Site Plan & Tree Removal Plan):
  Exhibit TR1 and Exhibits P32-P33
- **Lighting Plan**: Exhibits P9-P13
- **Landscape Plan**: Exhibits P14-P20

The proposed revisions are not reflected in the Nov 8, 2011 staff report due to the lateness of the submittal.

Staff offers the following comments on the proposed revised exhibits.

1. The applicant is proposing to revise the WQR report and related mitigation and tree removal plans based on staff direction. The applicant originally classified the unnamed water feature near Wren St and McLoughlin Blvd as a secondary protected water feature. However, City

staff and the City's natural resource consultant disagreed with this classification based on information from local property owners and multiple field observations in late summer and asserted that this water feature should be classified as a primary protected water feature. The applicant has submitted a revised WQR report and related mitigation and tree removal plans that reflect the City's classification of this feature as a primary protected water feature.

The proposed revisions do not change the location of the trail or light rail alignments in this area; however, they do add an additional 40 to 50 feet of width to the WQR buffer as a result of the change in classification. This increase in total WQR area results in a theoretical increase in the extent of the project's impacts in this area. This, in turn, results in the requirement for additional mitigation due to the increased impacts. In other words, the proposed revisions result in the addition of approximately 13,620-square-feet of mitigation (for a total of 17,440 sq ft of mitigation) in this area.

The net effect of the proposed revisions is as follows:

- 8,690 sq ft of additional permanent impacts
- 4,330 sq ft of additional temporary impacts
- 13,620 sq ft of additional mitigation
- 33 additional trees

Staff recommends that the Planning Commission accept the WQR revisions proposed by the applicant. Minor changes to the recommended findings and conditions of approval are needed if the Planning Commission accepts these revisions. Staff will provide these at the Nov 8, 2011 hearing for Planning Commission consideration.

2. The applicant is proposing to revise the lighting plan based on recent energy efficient lighting research. The applicant proposes to use LED lamps instead of induction fluorescent lamps to provide more uniform lighting on the trail, reduce the number of light fixtures, and reduce energy costs.

   Staff recommends that the Planning Commission accept the lighting revisions proposed by the applicant. No changes to the recommended findings and conditions of approval are needed if the Planning Commission accepts these revisions.

3. The applicant is proposing to revise the landscape plan based on additional conversations with the North Clackamas Parks and Recreation District. The applicant proposes to use an eco-lawn seed mix instead of low ground cover and shrub plantings on either side of the trail to reduce water usage and maintenance costs. North Clackamas Parks and Recreation prefers this landscaping treatment.

   Staff has not had sufficient time to evaluate the proposed landscape plan revisions. Minor changes to the recommended findings and conditions of approval may be needed if the Planning Commission accepts these revisions. Staff will provide additional comments and any proposed changes to the recommended findings and conditions of approval at the Nov 8, 2011 hearing for Planning Commission consideration.

ATTACHMENTS

Attachments are provided only to the Planning Commission unless noted as being attached. All material is available for viewing upon request.

1. Applicant's Proposed Revised Exhibits dated Oct 26, 2011 (attached)

CONSULTING, LLC
906 NW 23RD AVENUE • PORTLAND OREGON 97210
503.227.5000

Memo

To: City of Milwaukie Planning Commission

Cc: Katie Mangle, Susan Shanks, City of Milwaukie Planning Department

From: Jeff Joslin

Date: October 26, 2011

Re: **Portland Milwaukie Light Rail Revised Submission**

INTRODUCTION

Attached are a number of substitution Exhibits for the Trolley Trail reviews. Also included Is a revised Exhibit Lists for the review set. I will first describe those exhibits to be exchanged, and then will address the way in which they clarify and/or enhance the respective application.

TROLLEY TRAIL DRAWING SUBSTITUTIONS

Please substitute Exhibit TR1 with the provided Exhibits TR1

Please substitute Exhibits P9 through P20 with provided Exhibits P9 through P20B

Please substitute Exhibits P32 and P33 with provided Exhibits P32 and P33

Note: revised exhibit list provided to substitute for earlier list, as the exhibit descriptions and numbers have changed.

Exhibit TR1, Exhibits P32 and P33

Nature of Changes

Over the course of review, it was determined that the Trolley Trail WQR was not a secondary resource, but a primary, requiring an expanded area to be subject to mitigation enhancements.

Relationship to the approval criteria

The determination that the resource is primary has expanded the area required to be mitigated. This additional mitigation has been introduced, and has been determined to meet all associated approval criteria. As the resulting enhancements have been provided over an expanded area, the result is a net benefit to the project, the Trail, and the resource than the initial proposed approach.

Exhibits P9 through P13

Nature of Changes

Since the initial application, a new lighting fixture has been identified that has a number of advantages over that earlier included. The new fixture has a similar appearance to that earlier provided, but is a light emitting diode (l.e.d.) fixture. The l.e.d. lamp is highly efficient, minimizes light spill to adjacent projects, and allows for a greater spacing between fixtures.

Relationship to the approval criteria

There are a number of criteria that speak to lighting. As the fixture is similarly appearing, less-impacting, and more efficient, it better meets all associated criteria.

Exhibits P16 through P20B

Nature of Changes

The previous landscape design for the trolley trail showed the application of low shrub/groundcover planting through all planting areas on both sides of the proposed pathway. The extent of shrub/ground cover planting has been reduced and modified to be seeded ground cover. Areas that are proposed to be seeded are now an eco-lawn seed mix preferred by North Clackamas Parks and Recreation. This seed mix is drought tolerant, stays green throughout the year and does not require regular mowing, thereby reducing maintenance costs.

Low shrub/ground covers, or 'accent planting nodes', have been maintained in the design at four strategic locations in order to enhance users' experience. These accent planting nodes are located at the northern end to provide a gateway onto the trolley trail near River Road, at Bobwhite Street, at the midpoint of the trail where users can access the trail from Sparrow Street, and around the Park Avenue Station Area.

Relationship to the approval criteria

The amount of landscaping provided is as great or greater than that earlier proposed. As per the earlier proposal, the landscaping is placed to maximally enhance the Trail experience. The design ensures nearby residents are appropriately screened from the trail, while maintaining open sight lines from McLoughlin and the LRT into the trail to maximize safety and security. The revisions better meet the applicable criteria in a number of respects:

- The plantings are more attuned to North Clackamas Parks and Recreation, which will result in greater continuity with other Trail experiences, and will facilitate maintenance.
- The provided plantings are a more refined and richer mix, which will enhance their environmental and experiential contribution.
- The manner in which the plantings emphasizes the Trail experience at places of transition and significance will enhance the overall quality of the experience.

CONCLUSION

We're grateful for the opportunity to provide you this additional information, and look forward to your review. We're also appreciative of Staff's effort to continue to work with us through this period, in order to forward to you these changes that further enhance the proposal, and advance it's consistency with the applicable approval criteria.

PORTLAND-MILWAUKIE
LIGHT RAIL PROJECT

TROLLEY TRAIL
EXHIBITS LIST

Reviews for which exhibit list applies:

MODIFICATION OF THE EXISTING DECISION for approval of a
COMMUNITY SERVICE USE REVIEW
WATER QUALITY RESOURCE REVIEW

EXHIBIT NAME	Sht. #	Ex. #	MOD	WQR
BACKGROUND				
Application Authorization		B1		
Pre Application Notes		B2		
TECHNICAL REPORTS				
WQR and HCA Report Trolley Trail		TR1		
OVERVIEW				
Vicinity/Location Map		O1		
Zoning Overlays		O2		
Review Areas/Extents		O3		
Review Extents		O4		
Elements Subject to Modification Review		O5		

EXHIBIT NAME	Sht. #	Ex. #	MOD	WQR
ILLUSTRATIVE DRAWINGS				
Trolley Trail Site Plan And Components		D1		
Trolley Trail 1 Of 3 Sections And Views		D2		
Trolley Trail 2 Of 3 Sections And Views		D3		
Trolley Trail 3 Of 3 Sections And Views		D4		
Details: Abutment & Walls & Fences		D5		
Details Walls		D6		
Tree Mitigation Site Plan		D7		
EXISTING CONDITIONS				
Existing Conditions Plan with Topography	TTR-1A	E1		
Existing Conditions Site Plan w/o Topography	TTR-1A	E2		
Existing Conditions Site Plan & Tree Inventory	TTR-1B	E3		
Existing Conditions Site Plan 1 of 2	TTR-1C	E4		
Existing Conditions Site Plan 2 of 2	TTR-1D	E5		
PROPOSED				
Proposed Development Site Plan Key	TTR-2A	P1		
Proposed Development Affected Properties Plan	TTR-2B	P2		
Impervious Area Site Plan	TTR-3A	P3		
Vegetative Worksheet Site Plan	TTR-3A	P4		
Original & Proposed Trail Site Plan	TTR-4A	P5		
Architectural and Civil Site Plan Key	TTR-4B	P6		
Architectural and Civil Site Plan 1 of 2	TTR-4C	P7		
Architectural and Civil Site Plan 2 of 2	TTR-4D	P8		

Lighting Plan and Schedule 1 of 2	TTR-4E	**P9**		
Lighting Plan and Schedule 2 of 2	TTR-4F	**P10**		
Lighting Photometric Plan 1 of 2	TTR-4G	**P11**		
Lighting Photometric Plan 2 of 2	TTR-4H	**P12**		
Lighting Fixture Specification		**P13**		
Landscape Detailed Plan	TTR-5A	**P14**		
Landscape Detailed Plan	TTR-5B	**P15**		
Landscape Detailed Plan	TTR-5C	**P16**		
Landscape Detailed Plan	TTR-5D	**P17**		
Landscape Detailed Plan	TTR-5E	**P18**		
Landscape Detailed Plan	TTR-5F	**P19**		
Landscape Notes and Legend 1 of 2	TTR-5G	**P20 A**		
Landscape Notes and Legend 2 of 2	TTR-5H	**P20 B**		
Stormwater Site Plan	TTR-6A	**P21**		
Stormwater Site Plan 1 of 2	TTR-6B	**P22**		
Stormwater Site Plan 2 of 2	TTR-6C	**P23**		
Construction Management Plan Area	TTR-8A	**P24**		
Grading and Erosion Control Plan	C15E-1219	**P25**		
Grading and Erosion Control Plan	C15E-1223	**P26**		
Grading and Erosion Control Plan	C15E-1227	**P27**		
Retaining Walls Plan and Elevation	C15E-819	**P28**		
Retaining Walls Plan and Elevation	C15E-820	**P29**		
Retaining Walls Plan and Elevation	C15E-821	**P30**		
Retaining Walls Plan and Elevation	C15E-822	**P31**		
WQR Mitigation Site Plan	TTR-7A	**P32**		
WQR Tree Removal Site Plan	TTR-4F	**P33**		

Portland to Milwaukie Light Rail Project

Water Quality Resource Area Report

Trolley Trail

City of Milwaukie, Oregon

Submitted to:

City of Milwaukie
10722 SE Main Street
Milwaukie, Oregon 97222

Applicant:

TriMet
4012 SE 17th Ave
Portland, Oregon 97202

Prepared by:

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819 SE Morrison Street, Suite 310
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Revised October 13, 2011

Portland Milwaukie Light Rail Project
Trolley Trail WQR Report

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1.0 INTRODUCTION

The Trolley Trail was designed to run along a historic rail corridor once used by a streetcar line that operated between Portland and Oregon City. When rail service ended in 1968, the idea of turning the corridor into a multi-use trail was initiated by a group of local citizens. In 2001, North Clackamas Parks and Recreation District (NCPRD) and Metro acquired a 6-mile stretch of the historic rail corridor between downtown Milwaukie and Gladstone. The Trolley Trail was originally reviewed and approved by the Planning Commission in cases CSU-08-03, WG-08-02, and DR-08-02. That case approved an alignment between Milwaukie and Gladstone.

The Trolley trail decisions of 2008 anticipated the design and proximate location of the Portland Milwaukie Light Rail line, specifically identifying certain elements of the Trail alignment that could be modified without additional review as the Rail alignment design evolved. Other elements, if modified, were identified as specifically requiring review.

In assessing the Rail alignment, a water source was found that has been identified as a new water resource that meets the applicability criteria for a Water Quality Resource Review. The site is located in Section 36, Township 1 south, and Range 1 east. The study area for this report will occur on taxlots 901 and 300.

The site includes portions of an unnamed drainage that flows via culvert under SE Mcloughlin to the northeast into Kellogg Lake. The drainage is a Primary Water Feature as defined by the City of Milwaukie's Water Resource Regulations (Milwaukie Municipal Code 19.322). Drawings in the permitting package show the extent of the Water Quality Resource (WQR) and associated vegetated corridors.

2.0 EXECUTIVE SUMMARY

The main points of this report are summarized as follows:

- The realigned Trolley Trail will cross an unnamed drainage located in Section 36, Township 1 south, and Range 1 east on taxlots 901 and 300.
- The unnamed drainage is a Primary Protected Water Feature as defined by the City of Milwaukie's Water Resource Regulations (Milwaukie Municipal Code 19.402).
- The slopes adjacent to the drainage are >25% for less than 150 feet. The width of the vegetated corridor extends 50 feet from the top of the ravine (where there is a very clear break in >25% slope).
- Wetlands are located at the bottom of the ravine. A wetland delineation was conducted to delineate wetland boundaries.
- The vegetated corridor is currently in degraded condition.
- The project will be located above an existing culvert and no impacts will occur below the bank full level or within wetland.

- Development in the WQR Area has been limited to the area necessary for construction and placement of the Portland Milwaukie Light Rail line, Trolley Trail, and associated facilities.
- Development of the light rail tracks and Trolley Trail will result in 10,700 sq. ft. of permanent impacts and 6,150 sq ft of temporary impacts to the WQR vegetated corridor.
- The project will remove 18 trees that are 6 inches or greater diameter at breast height (DBH) within the construction limits of the WQR vegetated corridor.
- A mitigation plan has been developed that meets 19.402.9.E. A mitigation plan has been developed that will compensate for adverse impacts caused by the project. The mitigation plan will enhance 6,240 sq. ft. of the ravine and create 5,050 sq. ft. of new upland forest within the WQR. The plantings will improve thermal regulation, water quality, and wildlife habitat value within the WQR.

3.0 METHODOLOGY

Vigil-Agrimis, Inc. has prepared this WQR Report to evaluate the existing condition, assess potential impacts from the proposed development, and develop a mitigation plan that would compensate for impacts to water quality and habitat resources as required in Section 19.402.

The bank full elevation of the unnamed tributary was mapped by the design team and using topographic maps and site visits. Table 19.402.9.A was used to determine the WQR boundaries.

Three site visits, on June 16, 2011, July 1, 2011, and October 10, 2011, were conducted to delineate wetland boundaries, accurately map existing vegetation, and assess the overall resource condition. Additionally, the location of existing natural features (wetlands, additional water sources, rock outcroppings, etc.) and trees larger than 6 inches DBH were determined in the field as required by Municipal Code Section 19.402.9(B). The limits of the resources on the site are shown in the figures included in the permitting package. These figures also show the locations of the existing trees that are 6 inches DBH or greater.

4.0 WATER QUALITY RESOURCE AREAS

The City of Milwaukie's Water Quality Resource Area Regulations include vegetated corridors and the adjacent water features, including Primary Protected Water Features and Secondary Protected Water Features. The drainage is considered a Primary Protected Water Features. Sections 4.1 and 4.2, below, provide descriptions of the on-site Primary Protected Water Features and associated vegetated corridors, respectively.

4.1 Primary Protected Water Features Existing Condition

As described in Table 1 of the MMC 19.402, Primary Protected Water Features include all perennial streams and streams draining greater than 100 acres, Title 3 wetlands, and natural

lakes and springs. This relatively small resource is not depicted on WQR Map 3. The source of the drainage is assumed to be fed by springs. The drainage is conveyed through a culvert under McLoughlin Blvd and eventually discharges into Kellogg Lake.

The wetland occupies a small flat area at the bottom of the ravine adjacent to the drainage. The wetland is bounded by adjacent natural slopes to the north, south and west. To the east it is bounded by fill material placed historically to support the trolley tracks. The soil is disturbed. Rounded river rock (4 to 6 inches in diameter) covers much of the area and extends up the slope to the trolley trail alignment. There is a layer of sandy clay 1- to 2-feet thick on top of the river rock in the wetland. This was likely placed here but may also be the result of a large erosive event at some point in the past. In locations adjacent to the small stream this material is being eroded exposing the rock layer.

The stream is incised up to 2 feet and the entrance to the culvert under the trolley trail and McLaughlin is buried under 2 to 3 feet of soil. Water flows underground to reach the culvert which is exposed due to a small cave in. The rock appears to create a less pervious layer below this sandy clay that holds water close to the surface. There was evidence of hydrology and hydric soils in the wetland.

The vegetation is also disturbed. English ivy (*Hedera helix*) covers the ground in upland areas and extends into the wetland around the edges. The remainder of the wetland has no vegetation.

The slope adjacent to the wetland boundary exceeds 25%. There is also evidence of dumping on the slopes including garbage, tires and slabs of concrete. There is a clear break in slope at the top of the ravine.

4.2 WQR Vegetated Corridors

As described in Table 1 of the MMC 19.402, Primary Protected Water Features have an associated vegetated corridor of 50 to 200 feet wide depending on the slopes adjacent to the resource. The slopes adjacent to the resource are >25% for less than 150 feet. The vegetated corridor was mapped at the top of the ravine (where there is a clear break in >25% slope) plus 50 feet.

The overstory includes native trees, and the shrub layer includes a mix of native and non-native species. The overall tree canopy cover is approximately 100% with bigleaf maple (*Acer macrophyllum*) as the dominant species. Total shrub cover is approximately 62% with Indian-plum (*Oemleria cerasiformis*) and invasive cherry laurel (*Prunus laurocerasus*) as the dominant two species, but there is significant coverage of the invasive Armenian blackberry (*Rubus armeniacus*) and English hawthorn (*Crataegous mongyna*). The WQR vegetated corridor on the study site is overrun by non-native invasive groundcover plants. The groundcover is 95% and is dominated by English ivy. The percent coverage of the representative trees, shrubs, and groundcovers is detailed in the Table 1 below.

Table 1 –WQR Assessment, Trolley Trail

Botanical Name	Common Name	Percent Cover	Native?
TREES (total coverage = 100%)			
Acer macrophyllum	bigleaf maple	85%	Yes
Pseudotsuga menziesii	Douglas-fir	10%	Yes
SHRUBS (total coverage = 62%)			
Crataegus monogyna	English hawthorn	3%	No
Oemleria cerastiformis	indian-plum	20%	Yes
Prunus laurocerasus	cherry-laurel	20%	No
Rubus armeniacus	Armenian blackberry	3%	No
Rubus spectabilis	salmonberry	12%	Yes
Sambucus racemosa	red elderberry	4%	Yes
GROUNDCOVER (total coverage = 100%)			
A variety of non-native vines and herbaceous plants comprise 95% of the groundcover layer, with the native sword fern covering 5% of the site. The non-native vines include English ivy and traveller's joy. Additional non-native herbaceous species include cleavers, herb-robert, and Fendler's waterleaf.			

The vegetated corridor is in degraded condition per Table 19.402.9.E. While the overstory is primarily native, the shrub and groundcover layers contain large portions of invasive species. English ivy has grown to cover the trunks of most overstory trees. The ecological function of this area is low, and it is a population source for the spread of very aggressive non-native groundcover plant species. Non-native invasive species in the WQR include cherry-laurel, English hawthorn, Armenian blackberry, English ivy, traveller's joy, cleavers (*Galium aparine*), Fendler's waterleaf (*Hydrophyllum fendleri*) and herb-robert (*Geranium robertianum*).

5.0 SUMMARY OF IMPACTS

The Portland-Milwaukie light rail will be located east of Trolley Trail and west of SE McLoughlin Blvd. bounded by SE Park Ave. to the south and SE River Rd. to the north. The vegetated corridor associated with a WQR is located within the work limits approximately in the middle of this project stretch. Construction of the line will require grading within the WQR vegetated corridor, including a new retaining wall. The design also calls for the formalization of Trolley Trail with paving and stormwater management swales between the trail and light rail line. The new development will occur over the existing culvert, outside of the bank full width of the drainage and wetland. The area within the work limit line is a steep fill slope between the culvert inlet and the road grade for SE McLoughlin Rd.

Stormwater from the trail will sheet flow to the adjacent vegetated area which will be planted with vegetation suitable for stormwater treatment. Stormwater from the light rail line will be collected and directed to a stormwater facility just south of SE River Rd.

The new light rail alignment and associated construction will create a total of 25 acres of impervious surface, by replacing existing and adding new impervious surface. However, the

project will also convert 1.03 acres of existing impervious surface to open space and 8.33 acres to pervious track ballast. Therefore, the net impervious surface gain is 15.6 acres, of which only 10.8 acres will be impervious surface where there will be automobiles or other pollutant sources. Stormwater runoff from these surfaces will still undergo treatment and will improve existing treatment across the project alignment.

In addition to stormwater treatment improvements, the construction of a light rail system will reduce vehicle miles traveled, vehicle-hours of delay, and vehicle hours traveled, and is therefore expected to decrease roadway pollutant inputs to project waterways over the long term. The completion of the Portland-Milwaukie Light Rail Project is expected to improve the overall long-term water quality and hydrological regime of receiving waters within the action area.

5.1 Water Quality Resources Impacts

The proposed grading will place fill in the ravine over the existing culvert but outside of the wetland area. A retaining wall will be used to reduce the amount of fill needed and the disturbance to the WQR vegetated corridor. At station 7+00, the retaining wall is at its maximum fill height of approximately 14 to 16 feet. Twenty feet to the north, the Trolley Trail is at grade and no wall is required. Another 20 feet to the north, the Trolley Trail is approximately 14 feet lower than the existing grade which will require a cut wall. From Station 7+00, the fill wall continues to the south for about 70 feet and gradually tapers down in height.

The complex surface elevations (going from cut slope to fill slope) made it difficult to move the alignment of the Trail and Rail line. In the cut section, the wall will be a soil nail wall, for the fill section it will most likely be a tieback wall or a cantilever soldier pile wall. The wall will have a concrete fascia. The fill will create a new environment that will be more suited to upland species than riparian species.

The WQR and associated vegetated corridor within the construction limits is 22,700 sq. ft. The project will temporarily disturb 6,150 sq ft of vegetated corridor, and permanently impact 10,700 sq ft.

There are 18 trees > 6 inches DBH within the WQR vegetated corridor that will need to be removed. Trees to be removed are summarized in Table 2 and shown on the figure in Appendix B. The surface elevations make it not possible to move the alignment of the trail to miss these trees. These trees are located at the top of the drainage. Removal of these trees will result in a loss of canopy cover along the edge.

Table 2. Trees To Be Removed In the WQR Vegetated Corridor

# Trees Removed	DBH (inches)	Latin name	Common Name
1	42	*Sequoiadendrum giganteum*	Giant sequoia
1	40	*Sequoiadendrum giganteum*	Giant sequoia
1	38	*Sequoiadendrum giganteum*	Giant sequoia
1	32	*Pseudotsuga menziesii*	Douglas fir
1	30	*Acer macrophyllum*	Big-leaf maple
2	30	*Pseudotsuga menziesii*	Douglas fir
1	19	*Pseudotsuga menziesii*	Douglas fir
1	18	*Acer macrophyllum*	Big-leaf maple
1	14	*Acer macrophyllum*	Big-leaf maple
3	12	*Acer macrophyllum*	Big-leaf maple
5	10	*Acer macrophyllum*	Big-leaf maple

5.2 Alternatives Analysis

After public review and extensive analysis through the National Environmental Policy Act process and agency coordination, the governing bodies of the project sponsors, including the City of Portland, City of Milwaukie, Multnomah County, Clackamas County, Metro and TriMet, have agreed upon the overall project described and analyzed in the Final Environmental Impact Statement (FEIS, Metro July 2010) and other documents. The proposed alignment was selected based on balancing its transit benefits with environmental, construction, social and economic impacts.

Along the west side of SE McLoughlin Boulevard, the light rail project would use a portion of an old streetcar right-of-way that was purchased by Metro and the North Clackamas Parks and Recreation District for the development of the Trolley Trail, a six-mile regional multi-use path that is to extend from downtown Milwaukie to Gladstone. Light rail would operate between the trail and SE McLoughlin Boulevard. As the light rail and the trail approach SE Park Avenue, light rail leaves the Trolley Tail alignment to stay along SE McLoughlin Boulevard, while the trail continues to follow the old streetcar right-of-way to the west and continues south to Gladstone.

Placing the light rail alignment to the east on McLoughlin Boulevard would have resulted in traffic delays for motor vehicles and for light rail vehicles, negating the benefits of exclusive light rail guideways. Placing the alignment to the west of the Trolley Trail would have directly impacted the Trolley Trail project, rendering this pedestrian project inoperable. It would have also resulted in much higher costs of acquisitions of private land, engineering constraints due to steep slopes, and conflict between the light rail alignment and the Trolley Trail as they would have crossed each other two times. These alternatives were not advanced because there were determined to be impracticable.

The construction limits have been reduced to the extent practicable. Moving the trail closer to the tracks would result in an unpleasant and unsafe environment for people using the trail, as it would result a minor fence barrier between what will be a well-travelled pedestrian path and the rail. Moving the trail closer to the rail lines would also take the trail out-of-direction, as well as break the continuity of the six foot buffer/barrier that has been agreed to between TriMet and the North Clackamas Parks and Recreation District. The light rail line and trail are located directly adjacent to McLoughlin Blvd.

5.3 Avoidance and Minimization of Impacts

The construction limits have been reduced to the extent practicable. The light rail line and trail are located directly adjacent to McLoughlin Blvd. There is no in-water work associated within this WQR area. A retaining wall will be used to reduce the footprint through the WQR vegetated corridor. A stormwater swale will be constructed between the Trail and the light rail. The remaining trail easement will be planted with appropriate trail landscaping that provides a safe and pedestrian friendly environment. While the light rail and trail do cross through the WQR area, it is done in a manner that reduces impacts while allowing for the enjoyment of the resource.

A work plan has been devised that limits the area of impact as much as possible. Work areas will be clearly marked in the field and existing native vegetation along and outside of the construction limits will be protected and left in place. Site preparation and construction practices shall be followed that prevent drainage of hazardous materials or erosion, pollution, or sedimentation to the WQR area.

A retaining wall will be used to reduce the development through the WQR vegetated corridor. The general location of the retaining wall is shown on the plans (included in the application package). The retaining wall will reduce the amount of trees that need to be cleared and the amount of fill required on the hill slope. Without the retaining wall, fill limits would extend further down into the drainage and requiring a greater area of impact to the drainage and more trees to be removed.

6.0 MITIGATION

To compensate for impacts, a mitigation plan has been developed that includes enhancing the water quality, wildlife habitat, and thermal regulation of the drainage. The goal of the mitigation plans is to enhance the development of a thriving, multi-storied riparian native plant community in an area currently overrun by non-native and invasive weedy species. Plant species have been carefully selected to thrive in the microclimates of this site. The planting plan provides a dense planting of robust native species that have proven to work well on restoration sites. A broad spectrum of species has been selected so that as habitat conditions evolve over time there is a mix of plants able to capitalize on emerging conditions. Proposed plantings have been designed to achieve 100% surface coverage. The mitigation plan meets the requirements of 19.402.9.I.

The mitigation contains three different landscape treatments: revegetation of areas temporarily disturbed by construction; creation of new Good Condition vegetated corridor by demolition of existing development and planting with a native forested plant community; and enhancement of the habitat within the drainage. The mitigation planting is proportional to the impact area.

- **Treatment 1 – Temporarily Disturbed Areas.** Two different native shrub communities will be planted in the areas temporarily disturbed by construction. The stromwater swale (to be constructed between the Trolley Trail and the Rail line will be planted with tufted hairgrass (*Deschampsia cespitosa*). Between the Rail line and McLoughlin Blvd., will be planted with creeping Oregon grape (*Mahonia repens*). Both areas will be planted to achieve 100% surface coverage. Non-native vegetation will also be removed from within the construction limits along the trail and rail.
- **Treatment 2 – Creation of Upland Forest**. TriMet has purchased a property that contains a residential house. The house will be demolished, and the portion of the property within the WQR (5,050 sq. ft.) will be planted with an upland plant community. The proposed plants have been selected because they establish quickly and represent an appropriate native transition community.
- **Treatment 3 – Enhancement of Ravine**. In the ravine, non-native plants will be removed, as outlined on the planting plans (see Appendix C). The non-native vegetation will be removed using hand tools in a 6,240 sq. ft. area. The area will be planted with 28 western red cedar trees and an appropriate native shrub layer. Western red cedar (*Thuja plicata*) is the next successional tree to replace big-leaf maple. By planting the western red cedar, the drainage has been given an ecological boost in developing the next tree canopy after the big-leaf maple trees start to die out. The resulting canopy will be denser and provide more shading than currently exists. The proposed plants were selected because they are shade tolerate and establish quickly so they will outcompete the non-natives and prevent them from becoming re-established.

To mitigate for the removal of the 18 trees, 48 trees will be planted. The mitigation design includes 20 western red cedars to be planted in the ravine and seven Douglas fir (*Pseudotsuga menziesii*), six cascara (*Thamnus purshiana*), five big-leaf maple trees, and two western red cedars to be planted in the upland area. In addition, 900 shrubs will be planted in the mitigation area. This dense planting will increase the thermal regulation function of the WQR. The inclusion of evergreen trees and tall shrubs will help provide shade to the wetland and drainage. Maximum shade will be provided by a closed canopy and a 100% surface coverage.

To restore water quality functions, native trees, shrubs and groundcovers will be re-established in a portion of the drainage. In addition, a 5,050 will be restored to native upland forest. By re-establishing a dense native plant community, water flowing through the area will be slowed down, allowing sediment to settle out instead of entering the adjacent stream. Revegetation, especially on the steep slopes like those in the project area, will bind the soil and reduce erosion.

To restore wildlife function, the density and species diversity of vegetation will be greatly increased over current conditions. The proposed plantings will provide an undisturbed corridor of vegetation along the water resource to provide wildlife with food, protective cover and access to the water. The mitigation plan includes the use of varying mature heights and forms to increase habitat structure.

The site will be permanently revegetated during the first planting season following the completion of construction. Temporary irrigation will be used to help establish plants adjacent to the trail. TriMet will monitor and maintain the site for five years after the initial planting. Maintenance will include providing mulch rings around trees and shrubs, watering, and weeding as necessary to allow the native plant community to mature to a self-sustaining condition. The target survival rate of plantings is 80%. If plant mortality exceeds 20% of the original planting quantities at any time during the five year period the owner will replace with new plants to achieve an overall 80% survival rate. For a period of five years, TriMet will submit an annual report to the Planning Director documenting the survival of the trees and shrubs on the mitigation site.

6.1 Responsible Party

The Applicant will be responsible for the implementation of the mitigation plan as outlined in this document. Contact information for the Applicant is as follows:

Tri-County Metropolitan Transit District of Oregon
Attn: Leah Robbins
710 NE Holladay Street
Portland, Oregon 97232

7.0 PREPARERS AND CONTRIBUTORS

This report and mitigation design was prepared by the following staff from Vigil-Agrimis, Inc:

- Susan Cunningham, Sr. Biologist
- Steven Roelof, RLA
- Susie Mattke-Robinson, RLIT
- Ryan Makie, PE
- Nathan Dasler, EIT

Project design information and alternatives analysis was provided by:

- David Evans and Associates, Inc.,
- KLK Consulting, Inc.
- GreenWorks, PC

Appendix A
Site Photos

Trolley Trail WQR Report

Photo 1 - General area of impact for unnamed drainage, looking north

Photo 2 - Unnamed drainage, looking northwest from taxlot 300

Photo 3 – Unnamed drainage, looking southeast from taxlot 901

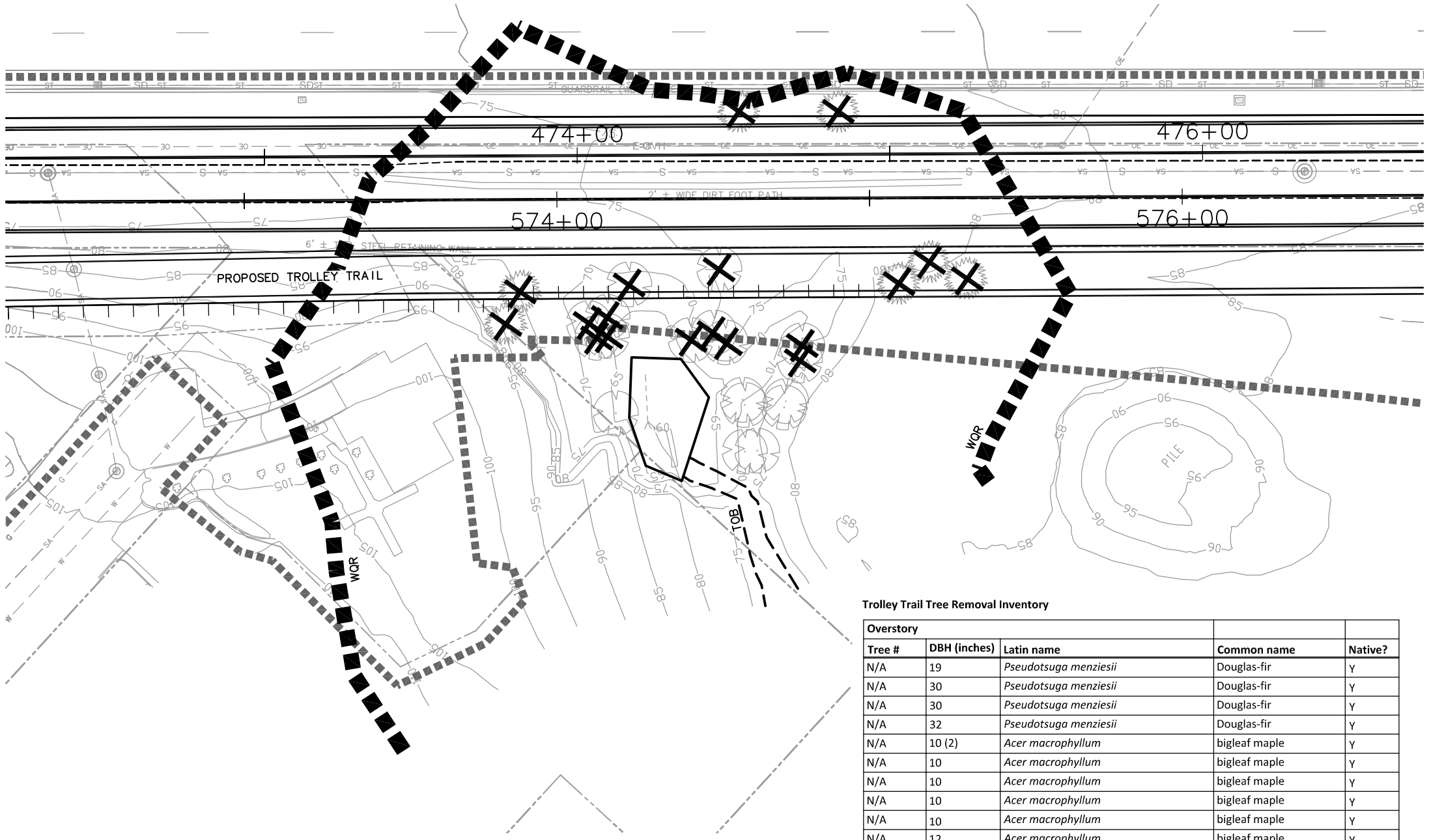
Photo 4 – Unnamed drainage, looking northeast toward McLoughlin Blvd. (culvert buried in bottom left)

Photo 5 – Existing Trolley Trail adjacent to McLoughlin Blvd. and unnamed drainage, looking south

Photo 6. Wetland at bottom of ravine.

Appendix B
Tree Removal

Trolley Trail WQR Report



20' 10' 0' 20' 40'
SCALE: 1" = 40'

Trolley Trail Tree Removal Inventory

Overstory				
Tree #	**DBH (inches)**	**Latin name**	**Common name**	**Native?**
N/A	19	*Pseudotsuga menziesii*	Douglas-fir	Y
N/A	30	*Pseudotsuga menziesii*	Douglas-fir	Y
N/A	30	*Pseudotsuga menziesii*	Douglas-fir	Y
N/A	32	*Pseudotsuga menziesii*	Douglas-fir	Y
N/A	10 (2)	*Acer macrophyllum*	bigleaf maple	Y
N/A	10	*Acer macrophyllum*	bigleaf maple	Y
N/A	10	*Acer macrophyllum*	bigleaf maple	Y
N/A	10	*Acer macrophyllum*	bigleaf maple	Y
N/A	10	*Acer macrophyllum*	bigleaf maple	Y
N/A	12	*Acer macrophyllum*	bigleaf maple	Y
N/A	12	*Acer macrophyllum*	bigleaf maple	Y
N/A	12	*Acer macrophyllum*	bigleaf maple	Y
N/A	14	*Acer macrophyllum*	bigleaf maple	Y
N/A	18	*Acer macrophyllum*	bigleaf maple	Y
N/A	30	*Acer macrophyllum*	bigleaf maple	Y
N/A	38	*Sequoiadendron giganteum*	giant sequoia	N
N/A	40	*Sequoiadendron giganteum*	giant sequoia	N
N/A	42	*Sequoiadendron giganteum*	giant sequoia	N

LEGEND

TOB – TOP OF BANK

WQR – WATER QUALITY RESOURCES

X INDICATES TREE BEING REMOVED

NO.	DATE	BY / CHK.	APPD.	REVISIONS

SAR DESIGNED 08-02-11 DATE
SAR DRAWN 08-02-11 DATE
EES CHECKED DATE
APPROVED DATE

TRI-COUNTY METROPOLITAN TRANSPORTATION DISTRICT OF OREGON

VIGIL AGRIMIS design professionals
DAVID EVANS AND ASSOCIATES INC.
TRIMET CAPITAL PROJECTS AND FACILITIES DIVISION
710 N.E. HOLLADAY STREET
PORTLAND, OREGON 97232

SUBMITTED: DATE: APPROVED: DATE:

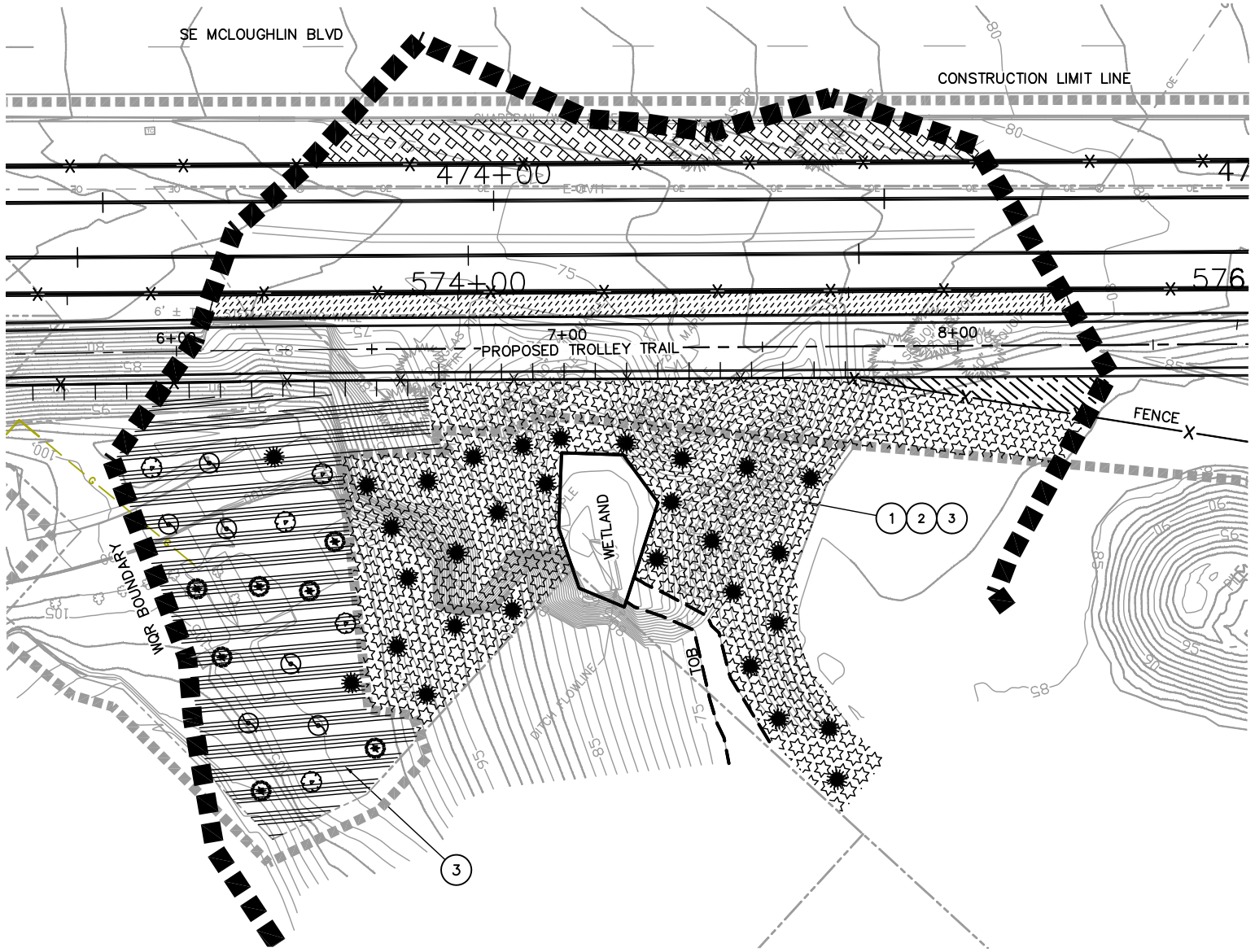
PORTLAND TO MILWAUKIE LRT
EAST SEGMENT
LAND USE PERMIT
TROLLEY TRAIL PATH
PROPOSED TREE REMOVAL AT WQR PLAN

SCALE: AS SHOWN | DRAWING NO.: TTR-4F | CONTRACT NO.: RH100544JB | SHEET NO.:

P:\T\TMTX00000127\0400CAD\Permits\Land Use Permit\3-Trolley Trail\TTR-4F.dwg Oct. 14, 2011 – 11:52 AM jeff hammond
Plot Date: 10/14/2011 3:51 PM_jeff hammond

Appendix C
Mitigation Plans

Trolley Trail WQR Report



20' 10' 0' 20' 40'
SCALE: 1" = 20'

PLANT SCHEDULE: TROLLEY TRAIL WQR PLANTING TYPE 1

SYMBOL	ABBR.	QTY	BOTANICAL NAME / COMMON NAME	SIZE	CONDITION	SPACING	NOTES
	TREES						
	THPL	28	Thuja plicata – Western redcedar	4' HT.	B&B	as shown	
	SHRUBS						
	MANE	50	Mahonia nervosa – low Oregon grape	18–24" HT.	Bareroot	4' o.c.	clusters of 5
	OECE	40	Oemleria cerasiformis – indian plum	18–24" HT.	Bareroot	4' o.c.	scattered
	POMU	300	Polystichum munitum – sword fern	1 gal.	container	4' o.c.	scattered
	RUPA	40	Rubus parviflorus – thimbleberry	18–24" HT.	Bareroot	4' o.c.	clusters of 5
	SARA	20	Sambucus racemosa – red elderberry	18–24" HT.	Bareroot	4' o.c.	scattered
	SYAL	90	Symphoricarpos albus – common snowberry	18–24" HT.	Bareroot	4' o.c.	clusters of 5

SEED

Agrostis exarata– spike bentgrass	0.14 lbs	APPLICATION RATE:
Deschampsia elongata– slender hairgrass	0.56 lbs	Pounds of Pure Live Seed (PLS) PER ACRE
Glyceria elata– Western mannagrass	0.34 lbs	
	1.04 lbs	Total PLS per acre

NOTE: PROVIDE MULCH RING AT EACH TREE AND SHRUB. MULCH RING SHALL BE 18" DIAMETER AND 2" DEPTH.

PLANT SCHEDULE: TROLLEY TRAIL WQR PLANTING TYPE 2

SYMBOL	ABBR.	QTY	BOTANICAL NAME / COMMON NAME	SIZE	CONDITION	SPACING	NOTES
	TREES						
	ACMA	5	Acer macrophyllum – big leaf maple	4' HT.	B&B	10' o.c.	
	PSME	7	Pseudotsuga menziesii – Douglas–fir	4' HT.	B&B	10' o.c.	
	RHPU	6	Rhamnus purshiana – cascara	4' HT.	B&B	10' o.c.	
	THPL	2	Thuja plicata – Western redcedar	4' HT.	B&B	as shown	
	SHRUBS						
	ACCI	10	Acer circinatum – vine maple	18–24" HT.	Bareroot	4' o.c.	
	AMAL	10	Amelanchier alnifolia – serviceberry	18–24" HT.	Bareroot	4' o.c.	
	COCO	15	Corylus cornuta – beaked hazelnut	18–24" HT.	Bareroot	4' o.c.	
	MAAQ	20	Mahonia aquifolium – tall Oregon grape	18–24" HT.	Bareroot	4' o.c.	
	MANE	40	Mahonia nervosa – low Oregon grape	18–24" HT.	Bareroot	4' o.c.	clusters of 5
	OECE	20	Oemleria cerasiformis – indian plum	18–24" HT.	Bareroot	4' o.c.	scattered
	POMU	150	Polystichum munitum – sword fern	1 gal.	container	4' o.c.	scattered
	RUPA	30	Rubus parviflorus – thimbleberry	18–24" HT.	Bareroot	4' o.c.	clusters of 5
	SARA	15	Sambucus racemosa – red elderberry	18–24" HT.	Bareroot	4' o.c.	scattered
	SYAL	50	Symphoricarpos albus – common snowberry	18–24" HT.	Bareroot	4' o.c.	clusters of 5

SEED

Agrostis exarata– spike bentgrass	0.14 lbs	APPLICATION RATE:
Deschampsia elongata– slender hairgrass	0.56 lbs	Pounds of Pure Live Seed (PLS) PER ACRE
Glyceria elata– Western mannagrass	0.34 lbs	
	1.04 lbs	Total PLS per acre

NOTE: PROVIDE MULCH RING AT EACH TREE AND SHRUB. MULCH RING SHALL BE 18" DIAMETER AND 2" DEPTH.

BOTANICAL NAME	COMMON NAME	SIZE	SPACING
Deschampsia cespitosa	TUFTED HAIRGRASS	1 GAL.	2' O.C.

BOTANICAL NAME	COMMON NAME	SIZE	SPACING
Mahonia repens	CREEPING MAHONIA	1 GAL.	30" O.C.

BOTANICAL NAME	COMMON NAME	SIZE	SPACING
Mahonia nervosa	LOW OREGON GRAPE	1 GAL.	3' O.C.
Polystichum munitum	SWORD FERN	1 GAL.	3' O.C.

KEYED NOTES:

1. CONTRACTOR SHALL USE HAND TOOLS ONLY TO CLEAR ALL ENGLISH IVY, CHERRY LAUREL, AND CLEMATIS FROM THE HATCHED AREA. CONTRACTOR SHALL DISPOSE OF REMOVED MATERIAL AT A LEGAL OFF–SITE LOCATION.
2. IMMEDIATELY AFTER CLEARING THE AREA, THE CONTRACTOR SHALL REPLANT WITH TREES, SHRUBS, AND SEED PER PLANT SCHEDULE ON THIS SHEET.
3. AFTER PLANTING, CONTRACTOR SHALL SPREAD CLEAN STRAW MULCH OVER ENTIRE PLANTING AREA. NEW PLANTINGS SHALL NOT BE DAMAGED BY MULCH APPLICATION. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EROSION CONTROL METHODS AND MATERIALS. EXTENDED WET WEATHER CONDITIONS MAY REQUIRE MAINTENANCE AND/OR REPLACEMENT OF EROSION CONTROL MATERIALS.

SAR DESIGNED	08–02–11 DATE	
SAR DRAWN	08–02–11 DATE	
EES CHECKED	DATE	
APPROVED	DATE	

TRI–COUNTY METROPOLITAN TRANSPORTATION DISTRICT OF OREGON

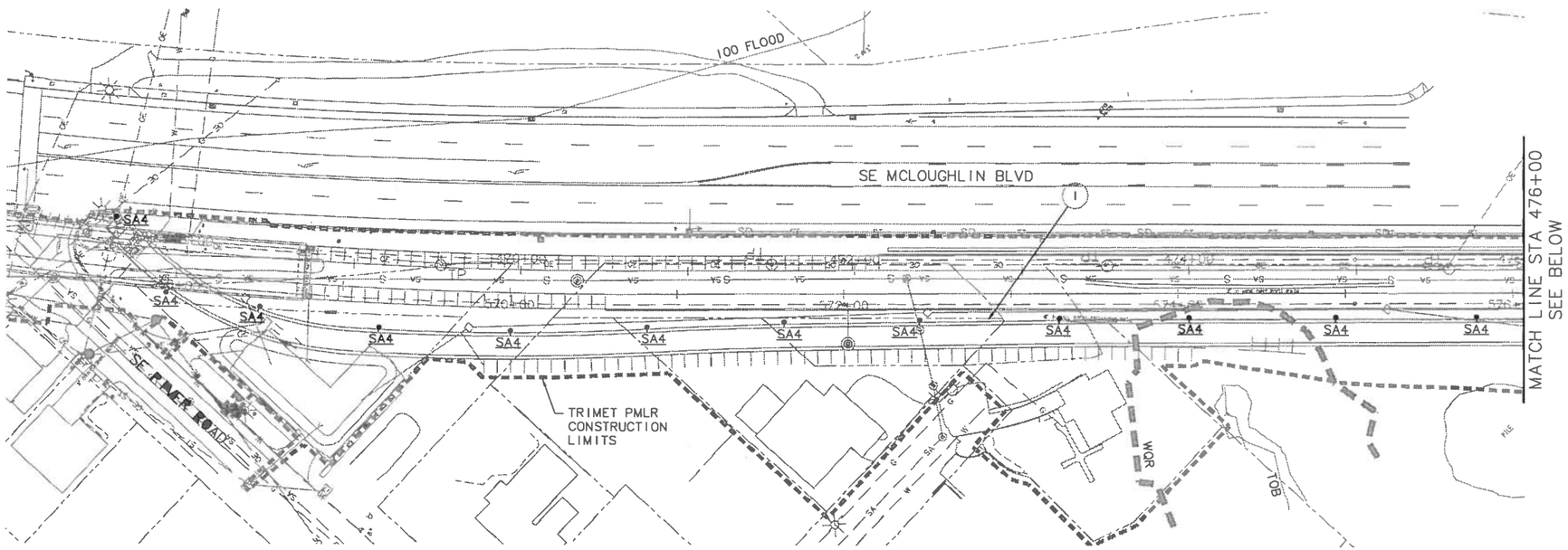
VIGIL AGRIMIS design professionals
DAVID EVANS AND ASSOCIATES INC.
TRIMET CAPITAL PROJECTS AND FACILITIES DIVISION
710 N.E. HOLLADAY STREET
PORTLAND, OREGON 97232

SUBMITTED: | DATE: | APPROVED: | DATE:

PORTLAND TO MILWAUKIE LRT
EAST SEGMENT
LAND USE PERMIT
TROLLEY TRAIL PATH
MITIGATION SITE PLAN

SCALE:	DRAWING NO.:	CONTRACT NO.:	SHEET NO.:
AS SHOWN	TTR–7A	RH100544JB	

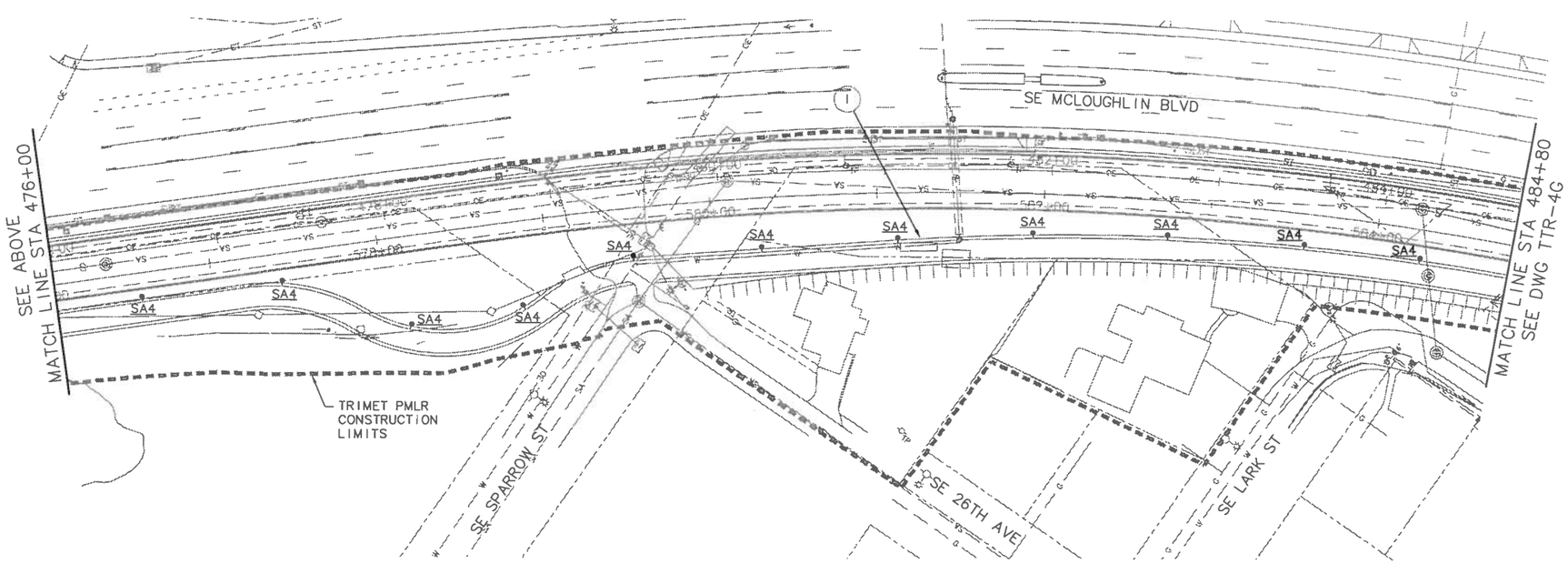
Y:\DEAXX008\CAD\LAND USE PERMIT\TTR–7A.dwg Oct. 13, 2011 – 2:02 PM steve roelof
Plot Date:10/13/2011 2:08 PM_steve roelof



40' 20' 0' 40' 80'
SCALE: 1" = 80'

LIGHTING KEY NOTES

(1) TRAIL LIGHTING, TYP



40' 20' 0' 40' 80'
SCALE: 1" = 80'

NO.	DATE	BY / CHK.	APPO.	REVISIONS

IML DESIGNED	06-20-11 DATE
JTH DRAWN	06-20-11 DATE
MJH CHECKED	06-25-11 DATE
APPROVED	DATE

TRI-COUNTY METROPOLITAN TRANSPORTATION DISTRICT OF OREGON

LTK Engineering Services — REYES ENGINEERING — PASSION CREATIVITY SUSTAINABILITY

TRIMET — CAPITAL PROJECTS AND FACILITIES DIVISION, 710 N.E. HOLLADAY STREET, PORTLAND, OREGON 97232

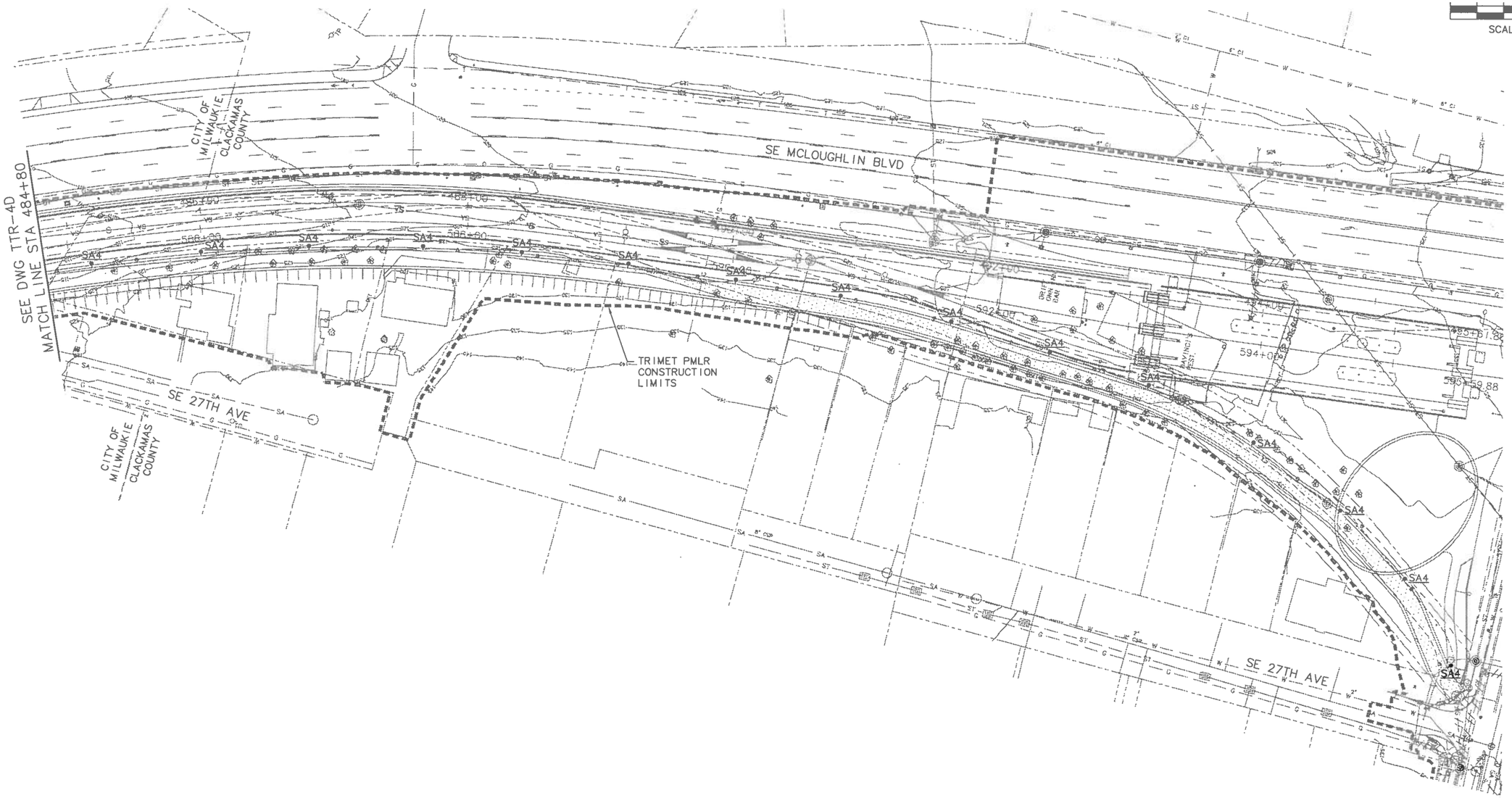
SUBMITTED: DATE: APPROVED: DATE:

PORTLAND TO MILWAUKIE LRT
EAST SEGMENT
LAND USE PERMIT
TROLLEY TRAIL PATH
PROPOSED DEVELOPMENT LIGHTING SITE PLAN 1 OF 2

Exhibit P9

SCALE:	DRAWING NO.:	CONTRACT NO.:	SHEET NO.:
1" = 80'	TTR-4J	RH100544JB	

P:\Projects\2011\11003 TriMet LTK PMLR Stations\Drawings\Current Drawings\2011-10-17_Trolley Trail Lighting_To Jeff Joslin\TTR-4K.dwg, 10/18/2011 9:26:27 AM, parragas



NO.	DATE	BY / CHK.	APPD.	REVISIONS

JML DESIGNED	06-20-11 DATE
JTH DRAWN	06-20-11 DATE
MJH CHECKED	06-25-11 DATE
APPROVED	DATE

TRI-COUNTY METROPOLITAN TRANSPORTATION DISTRICT OF OREGON

LTK Engineering Services

REYES ENGINEERING — PASSION CREATIVITY SUSTAINABILITY

TRIMET — CAPITAL PROJECTS AND FACILITIES DIVISION, 710 N.E. HOLLADAY STREET, PORTLAND, OREGON 97232

SUBMITTED: DATE: APPROVED: DATE:

PORTLAND TO MILWAUKIE LRT
EAST SEGMENT
LAND USE PERMIT
TROLLEY TRAIL PATH
PROPOSED DEVELOPMENT LIGHTING SITE PLAN 2 OF 2

Exhibit P10

SCALE:	DRAWING NO.:	CONTRACT NO.:	SHEET NO.:
1" = 80'	TTR-4K	RH100544JB	

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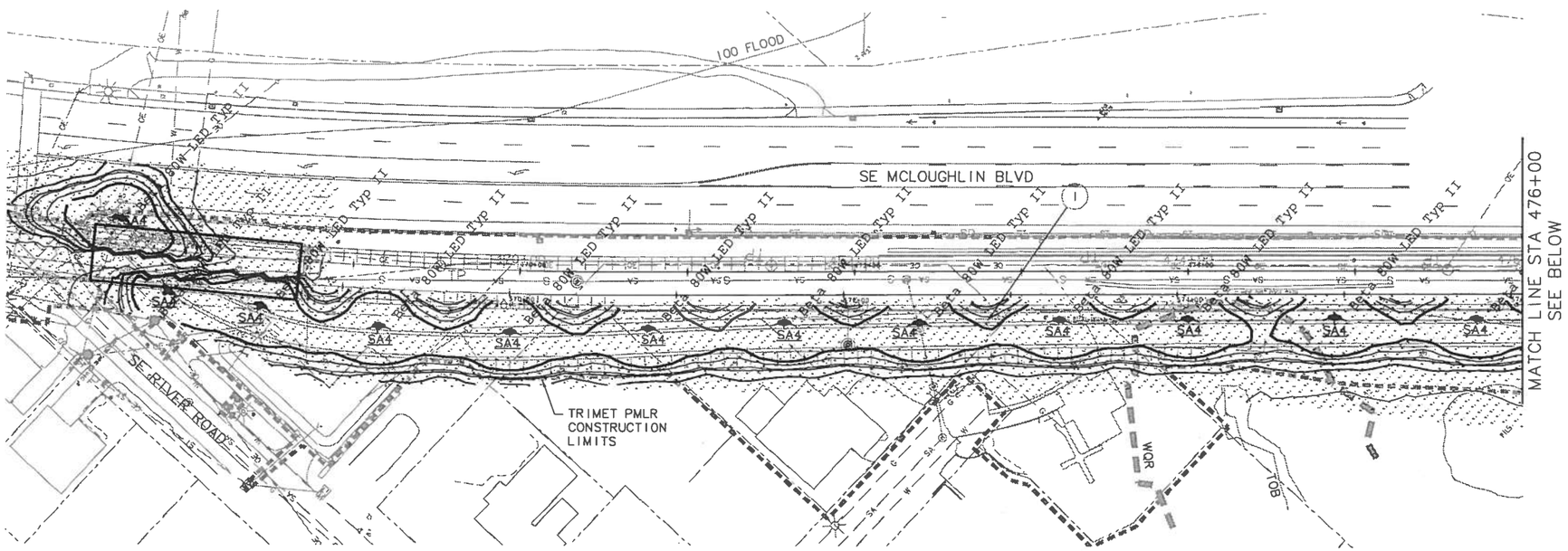
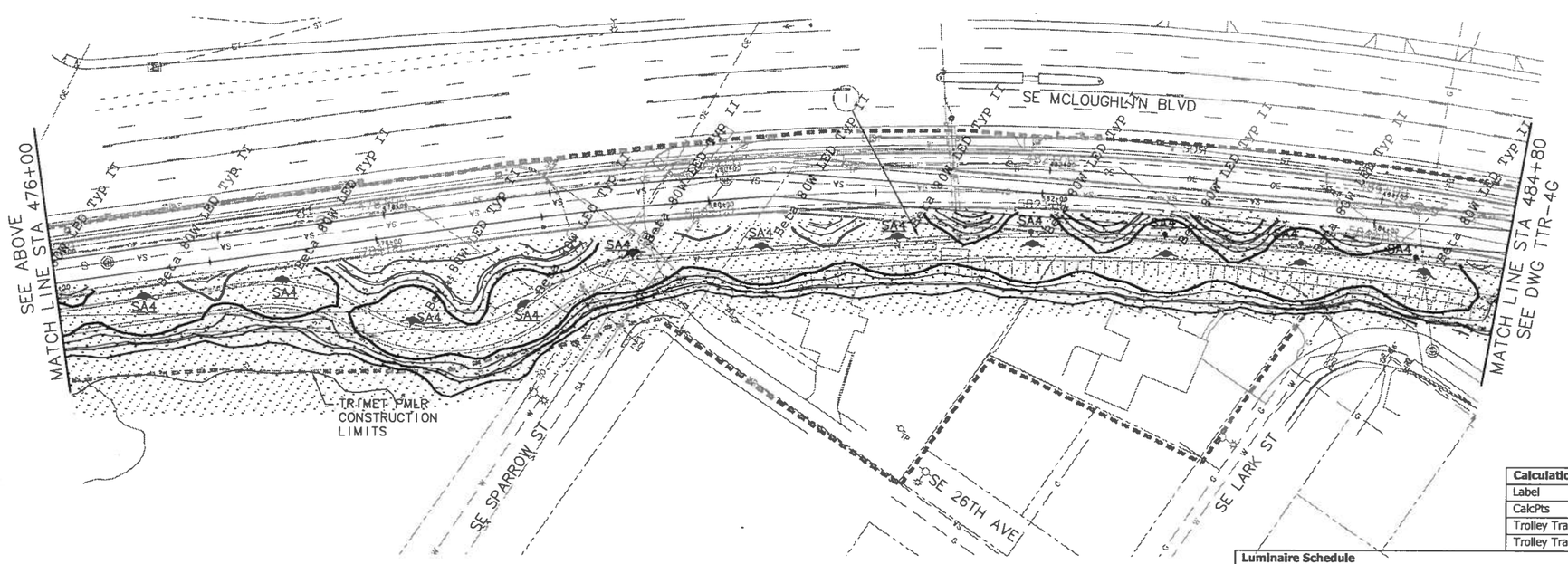


40' 20' 0' 40' 80'
SCALE: 1" = 80'

LIGHTING KEY NOTES

(1) TRAIL LIGHTING, TYP



40' 20' 0' 40' 80'
SCALE: 1" = 80'

Trolley Trail
80 foot spacing
Illuminance (Fc)
Average = 2.29
Maximum = 4.6
Minimum = 0.5
Avg/Min Ratio = 4.58
Max/Min Ratio = 9.20

Calculation Summary

Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
CalcPts	Illuminance	Fc	1.00	4.6	0.0	N.A.	N.A.
Trolley Trail	Illuminance	Fc	2.25	4.2	0.0	N.A.	N.A.
Trolley Trail	Illuminance	Fc	2.29	4.6	0.5	4.58	9.20

Luminaire Schedule

Symbol	Qty	Label	Arrangement	Total Lamp Lumens	LLF	Description	LLD	LDD	BF
-	38	Beta 80W L	SINGLE	N.A.	1.000	BetaLED ARE-EDR-2M-80-C-2	1.000	1.000	1.000

NO.	DATE	BY / CHK.	APPD.	REVISIONS

IML DESIGNED	06-20-11 DATE
JTH DRAWN	06-20-11 DATE
MJH CHECKED	06-25-11 DATE
APPROVED	DATE

TRI-COUNTY METROPOLITAN TRANSPORTATION DISTRICT OF OREGON

TRIMET CAPITAL PROJECTS AND FACILITIES DIVISION
710 N.E. HOLLADAY STREET
PORTLAND, OREGON 97232

SUBMITTED: DATE: APPROVED: DATE:

PORTLAND TO MILWAUKIE LRT
EAST SEGMENT
LAND USE PERMIT
TROLLEY TRAIL PATH
PROPOSED DEVELOPMENT LIGHTING SITE PLAN 1 OF 2

Exhibit P11

SCALE:	DRAWING NO.:	CONTRACT NO.:	SHEET NO.:
1" = 80'	TTR-4G	RH100544JB	

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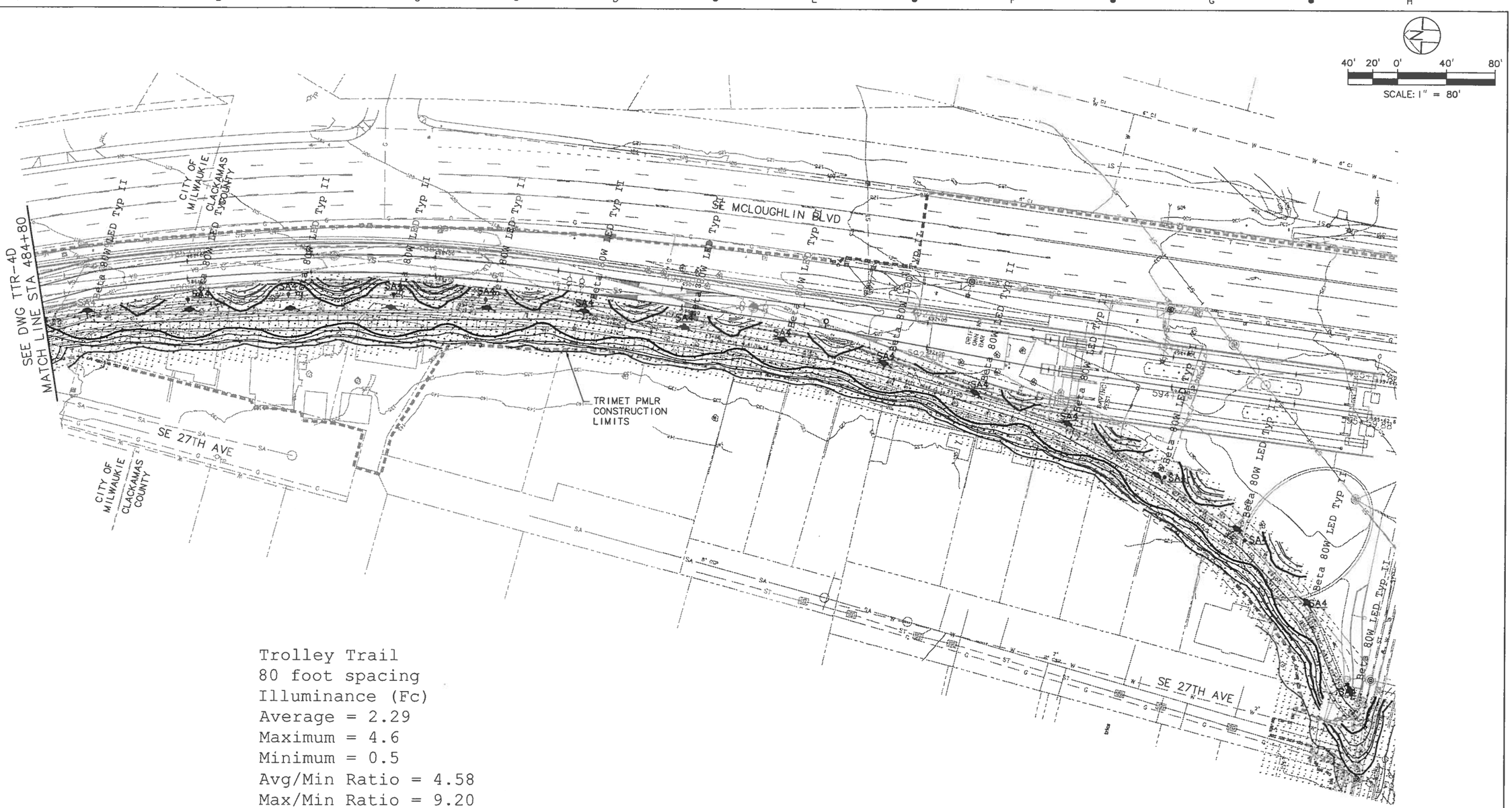

Trolley Trail
80 foot spacing
Illuminance (Fc)
Average = 2.29
Maximum = 4.6
Minimum = 0.5
Avg/Min Ratio = 4.58
Max/Min Ratio = 9.20

Calculation Summary

Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
CalcPts	Illuminance	Fc	1.00	4.6	0.0	N.A.	N.A.
Trolley Trail	Illuminance	Fc	2.25	4.2	0.0	N.A.	N.A.
Trolley Trail	Illuminance	Fc	2.29	4.6	0.5	4.58	9.20

Luminaire Schedule

Symbol	Qty	Label	Arrangement	Total Lamp Lumens	LLF	Description	LLD	LDD	BF
-	38	Beta 80W L	SINGLE	N.A.	1.000	BetaLED ARE-EDR-2M-80-C-2	1.000	1.000	1.000

NO.	DATE	BY / CHK.	APPD.	REVISIONS

IML — DESIGNED — 06-20-11 DATE
JTH — DRAWN — 06-20-11 DATE
MJH — CHECKED — 06-25-11 DATE
APPROVED — DATE

TRI-COUNTY METROPOLITAN TRANSPORTATION DISTRICT OF OREGON

TRIMET — CAPITAL PROJECTS AND FACILITIES DIVISION, 710 N.E. HOLLADAY STREET, PORTLAND, OREGON 97232

SUBMITTED: | DATE: | APPROVED: | DATE:

PORTLAND TO MILWAUKIE LRT
EAST SEGMENT
LAND USE PERMIT
TROLLEY TRAIL PATH
PROPOSED DEVELOPMENT LIGHTING SITE PLAN 2 OF 2

Exhibit P12

SCALE: 1" = 80' | DRAWING NO.: TTR-4H | CONTRACT NO.: RH100544JB | SHEET NO.:

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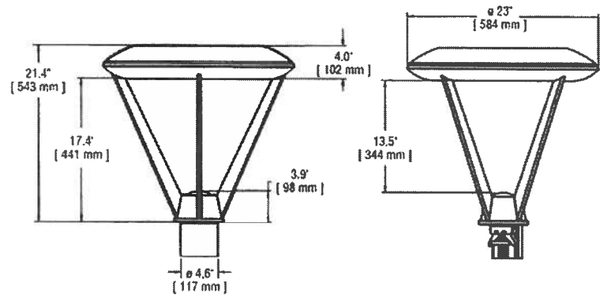
ARE-EDR-5M-R5 THE EDGE® LED Round Area Light – Type V Medium

Rev. Date: 11/10/10

BetaLED Catalog #: ARE - EDR - 5M - R5 - - C - - - -



Notes:

Product	Family	Optic	Mounting	# of LEDs (x 10)	LED Series	Voltage	Color Options	Factory-Installed Options
								Please type additional options in manually on the lines provided above.
ARE	EDR	5M[1]	R5[2]	☐04[3]	C	☐ UL Universal 120–277V	☐ SV Silver	☐ 43K 4300K Color Temperature[4]
				☐06[3]		☐ UH Universal 347–480V	☐ BK Black	☐ 525 525mA Drive Current[5,6]
				☐08[3]		☐ 12 120V	☐ BZ Bronze	☐ DIM5 0–10V Dimming (525mA maximum)[7,8]
				☐10[3]		☐ 24 240V	☐ PB Platinum Bronze	☐ F Fuse[9,10]
				☐12		☐ 27 277V	☐ WH White	☐ HL Hi/Low (175/350/525, dual circuit input)[11]
						☐ 34 347V		☐ TL Two-Level (175/525 w/ integrated sensor control)[11,12]
								☐ TL2 Two-Level (0/350 w/ integrated sensor control)[11,12]
								☐ TL3 Two-Level (0/525 w/ integrated sensor control)[11,12]

Footnotes

1. IESNA Type V Medium distribution
2. Spider mount, center direct fis inside 5" round pole
3. Consist of multiple 20 LED light bars. 40, 60, 80, and 100 LED units use blanks as needed in place of populated light bars
4. Color temperature per fixture: minimum 70 CRI
5. Driver operates at 525mA instead of the standard 350mA providing a higher lumen output and a shorter life
6. Available on fixtures with 40–120 LEDs; maximum 60 LEDs with UH voltage
7. Control by others
8. Refer to dimming spec sheet for availability and additional information
9. When code dictates fusing use time delay fuse
10. Not available when UH voltage is selected
11. Refer to multi-level spec sheet for availability and additional information
12. Recommended maximum pole height is 10'; consult factory for pole heighis greater than 10'

LED PERFORMANCE SPECS

# of LEDs	Initial Delivered Lumens – Type V Medium @ 6000K	B	U	G (Rating***)	Initial Delivered Lumens – Type V Medium @ 4300K	B	U	G (Rating***)	System Watts 120–277V	Total Current @ 120V	Total Current @ 230V	Total Current @ 277V	System Watts 347–480V*	Total Current @ 347V	Total Current @ 480V	L_{70} Hours** @ 25° C (77° F)
350mA (Standard) Fixture Operating at 25° C (77° F)																
40[3]	3,586 (04)	2	1	1	3,145 (04)	2	1	1	49	0.41	0.23	0.20	51	0.15	0.12	105,000
60[3]	5,379 (06)	3	1	1	4,718 (06)	3	1	1	71	0.60	0.32	0.28	74	0.22	0.17	105,000
80[3]	7,172(08)	3	1	2	6,291 (08)	3	1	1	93	0.78	0.41	0.35	96	0.28	0.21	105,000
100[3]	8,965 (10)	3	2	2	7,863 (10)	3	2	2	116	0.98	0.52	0.43	119	0.35	0.26	105,000
120	10,758 (12)	4	2	2	9,436 (12)	4	2	2	139	1.17	0.61	0.52	141	0.41	0.30	105,000
525mA Fixture Operating at 25° C (77° F)																
40[3]	4,662 (04)	3	1	1	4,089 (04)	3	1	1	69	0.58	0.31	0.27	75	0.22	0.19	61,000
60[3]	6,993 (06)	3	1	2	6,133 (06)	3	1	1	110	0.92	0.49	0.41	116	0.33	0.27	61,000
80[3]	9,324 (08)	4	2	2	8,178 (08)	3	2	2	138	1.16	0.62	0.54	145	0.42	0.32	61,000
100[3]	11,655 (10)	4	2	2	10,222 (10)	4	2	2	177	1.49	0.79	0.68	186	0.53	0.40	61,000
120	13,986 (12)	4	2	2	12,267 (12)	4	2	2	217	1.82	0.96	0.81	226	0.65	0.48	61,000

* Utilizes magnetic step-down transformer when 525mA drive current or multi-level options are selected

** For recommended lumen depreciation data see TD-13

*** For more information on the IES BUG (Backlight-Uplight-Glare) Rating visit www.iesna.org/PDF/Erratas/TM-15-07BugRatingsAddendum.pdf

NOTE: All data subject to change without notice.

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Made in the U.S.A. of U.S. and imported parts.
Meets Buy American requirements within the ARRA.

ARE-EDR-5M-R5 THE EDGE® LED Round Area Light – Type V Medium Rev. Date: 11/10/10

General Description

Slim, low profile design minimizes wind load requirements. Fixture housing is rugged cast aluminum with integral, weather-tight LED driver compartments, spun aluminum vented cover and high performance aluminum heatsinks. Post top mounting consists of precision machined, extruded aluminum arms (4) mounted to weather tight cast lower hub with center bolt direct mount system for 5" round poles. Direct mount system provides clean hardware-less outer appearance. Five year limited warranty on fixture.

Electrical

Modular design accommodates varied lighting output from high power, white, 6000K (+/- 500K per full fixture), minimum 70 CRI, long life LED sources. 120–277V 50/60 Hz, Class 1 LED drivers are standard. 347–480V 50/60 Hz driver is optional. LED drivers have power factor >90% and THD <20% of full load. Units provided with integral 10kV surge suppression protection standard. Surge protection tested in accordance with IEEE C62.41.2 and ANSI standard 62.41.2.

Testing & Compliance

UL listed in the U.S. and Canada for wet locations. Consult factory for CE Certified products. RoHS compliant. International Dark-Sky Association approved.

Finish

Exclusive Colorfast DeltaGuard© finish features an E-Coat epoxy primer with an ultra-durable silver powder topcoat, providing excellent resistance to corrosion, ultraviolet degradation and abrasion. Bronze, black, white and platinum bronze powder topcoats are also available. The finish is covered by our 10 year limited warranty.

Fixture and finish are endurance tested to withstand 5,000 hours of elevated ambient salt fog conditions as defined in ASTM Standard B 117.

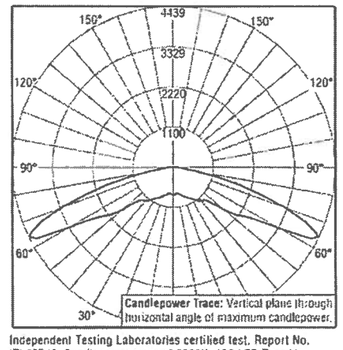
Patents

U.S. and international patents granted and pending. BetaLED is a division of Ruud Lighting, Inc. For a listing of Ruud Lighting, Inc. patents, visit www.uspto.gov.

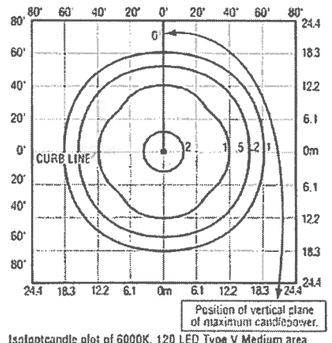
Field-Installed Accessories

Bird Spikes
☐ XA-BRDSPK

Photometrics



Independent Testing Laboratories certified test, Report No. ITL63746. Candlepower trace of 6000K, 120 LED Type V Medium area luminaire with 11,013 initial delivered lumens operating at 350mA. All published luminaire photometric testing performed to IESNA LM-79-08 standards.



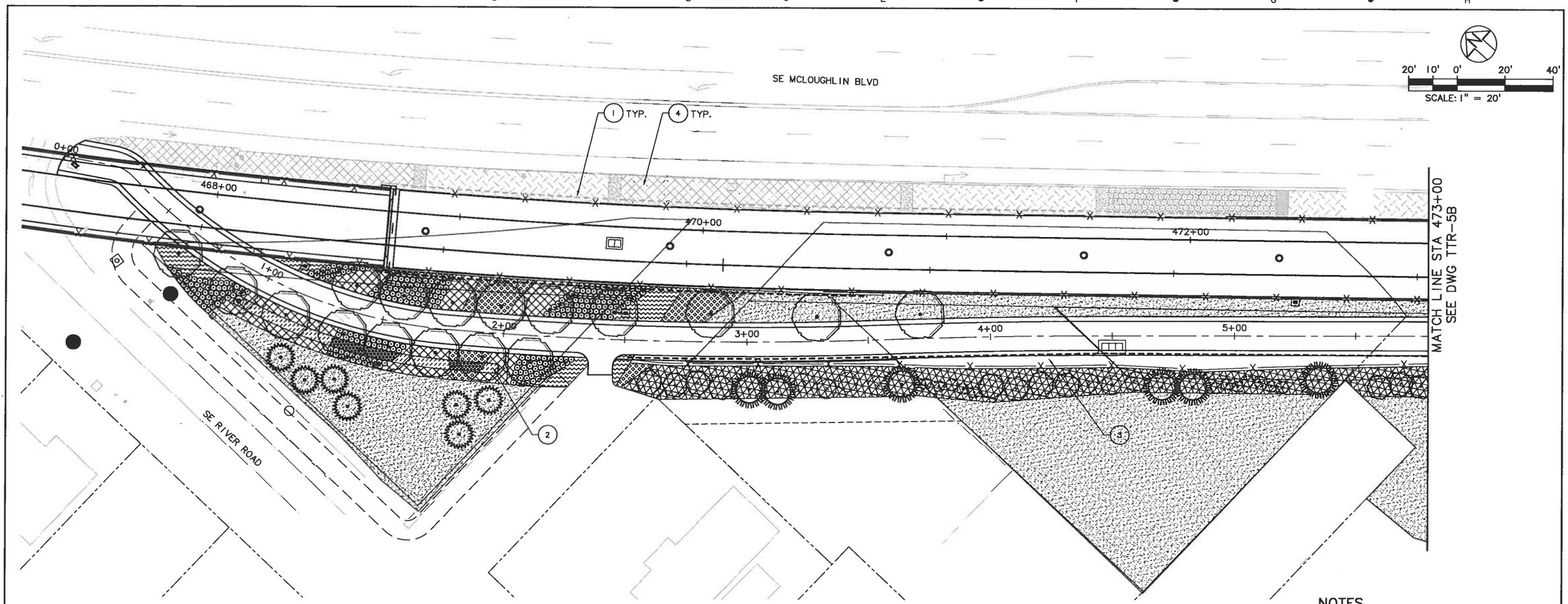
Isofootcandle plot of 6000K, 120 LED Type V Medium area luminaire at 25' A.F.G. Luminaire with 10,758 initial delivered lumens operating at 350mA. Initial FC at grade.

THE EDGE® EPA & Weight Calculations

# of LEDs	Approximate Weight 120–277V[1]	Post Top
Post Top Mount		
40	39.7 lbs.	1.10
60	40.9 lbs.	1.10
80	42.6 lbs.	1.10
100	43.7 lbs.	1.10
120	45.3 lbs.	1.10

1. Add 5 lbs. for transformer in 347–480V fixtures when 525mA drive current or multi-level options are selected

Exhibit P13



NOTES

1. SEE SHEETS TTR-5G AND TTR-5H FOR LANDSCAPE NOTES AND LEGENDS.

PLANTING KEY NOTES

1. VINE PLANTING AT WALL
2. WATER QUALITY BASIN – REFER TO CIVIL DRAWINGS. PLACE 2"DEPTH OF 1/2"–"3/4" ROUNDED RIVER ROCK MULCH TO ZONE 'A' PLANTING AREAS, PLACE 2"DEPTH BARK MULCH TO ZONE 'B' PLANTING AREAS UNLESS OTHERWISE INDICATED ON PLANS.
3. RETAINING WALL
4. SCREENED BACK PLANTING AREAS ARE OUTSIDE OF LAND USE REVIEW.

SK DESIGNED	05-03-11 DATE	
CM/AP DRAWN	10-19-11 DATE	
RT CHECKED	11-04-11 DATE	
APPROVED	DATE	

TRI-COUNTY METROPOLITAN TRANSPORTATION DISTRICT OF OREGON

GREENWORKS

DAVID EVANS AND ASSOCIATES INC.

TRIMET CAPITAL PROJECTS AND FACILITIES DIVISION
710 N.E. HOLLADAY STREET
PORTLAND, OREGON 97232

SUBMITTED: | DATE: | APPROVED: | DATE:

PORTLAND TO MILWAUKIE LRT
EAST SEGMENT
LAND USE PERMIT
TROLLEY TRAIL PATH
PROPOSED LANDSCAPE SITE PLAN

Exhibit P14

SCALE:	DRAWING NO.:	CONTRACT NO.:	SHEET NO.:
1"=20'	TTR-5A	RH100544JB	

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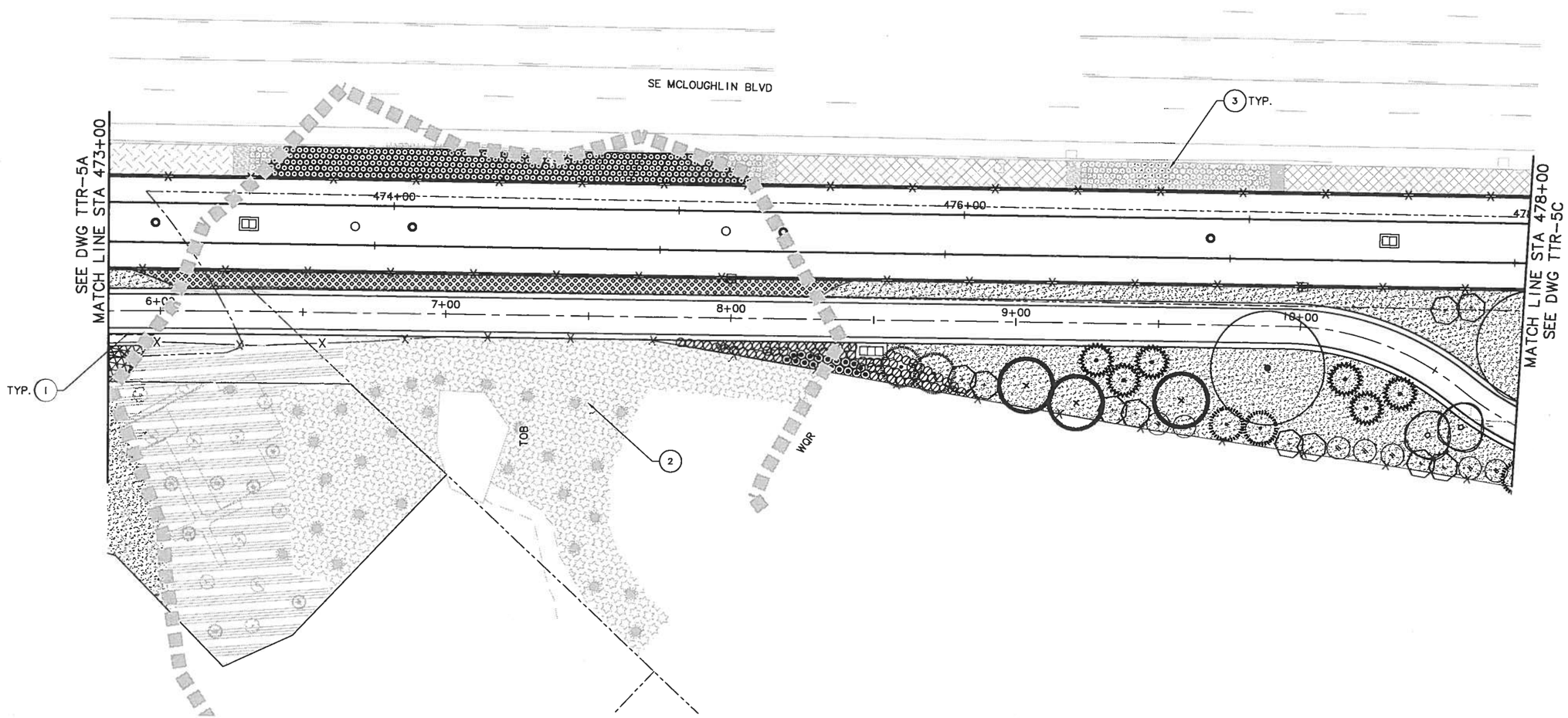
Plot Date: 10/20/2011 12:18 PM_alexandra perove



20' 10' 0' 20' 40'
SCALE: 1" = 20'

NOTES

1. SEE SHEETS TTR-5G AND TTR-5H FOR LANDSCAPE NOTES AND LEGENDS.

PLANTING KEY NOTES

1. VINE PLANTING AT WALL
2. REFER TO SHEET TTR-7A FOR PLANTING IN WQR.
3. SCREENED BACK PLANTING AREAS ARE OUTSIDE OF LAND USE REVIEW.

SK DESIGNED	05-03-11 DATE	
CM/AP DRAWN	10-19-11 DATE	
RT CHECKED	11-04-11 DATE	
APPROVED	DATE	

TRI-COUNTY METROPOLITAN TRANSPORTATION DISTRICT OF OREGON

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EAST SEGMENT
LAND USE PERMIT
TROLLEY TRAIL PATH
PROPOSED LANDSCAPE SITE PLAN

Exhibit P15

SCALE:	DRAWING NO.:	CONTRACT NO.:	SHEET NO.:
1"=20'	TTR-5B	RH100544JB	

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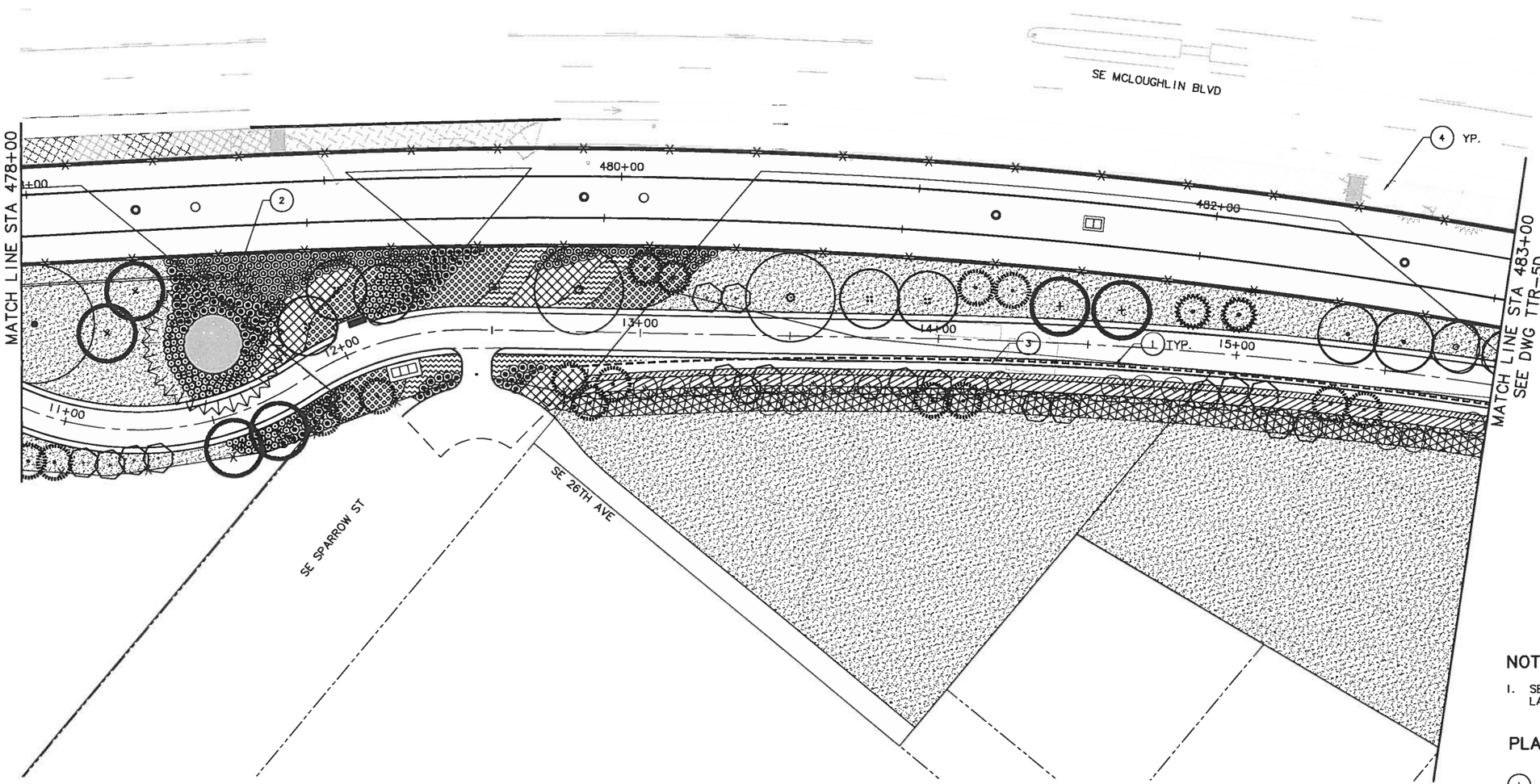

20' 10' 0' 20' 40'
SCALE: 1" = 20'

NOTES

1. SEE SHEETS TTR-5G AND TTR-5H FOR LANDSCAPE NOTES AND LEGENDS.

PLANTING KEY NOTES

(1) VINE PLANTING AT WALL

(2) PRESERVE EXISTING TREE – PRIOR TO CONSTRUCTION, INSTALL 4' HEIGHT ORANGE PLASTIC CONSTRUCTION FENCING AROUND EXISTING TREES AS INDICATED ON PLANS. TREE PROTECTION FENCING SHALL BE LOCATED AROUND EACH TREE AT THE DRIPLINE, OR AT 8' DIAMETER MINIMUM. SECURE FENCING TO STEEL POSTS PLACED 6'O.C. WITH PLASTIC TIES. REFER TO SPECIFICATION SECTION 02231 FOR TREE PROTECTION.

(3) RETAINING WALL

(4) SCREENED BACK PLANTING AREAS ARE OUTSIDE OF LAND USE REVIEW.

SK DESIGNED	05-03-11 DATE	
CM/AP DRAWN	10-19-11 DATE	
RT CHECKED	11-04-11 DATE	
APPROVED	DATE	

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LAND USE PERMIT
TROLLEY TRAIL PATH
PROPOSED LANDSCAPE SITE PLAN

Exhibit P16

SCALE:	DRAWING NO.:	CONTRACT NO.:	SHEET NO.:
1"=20'	TTR-5C	RH100544JB	

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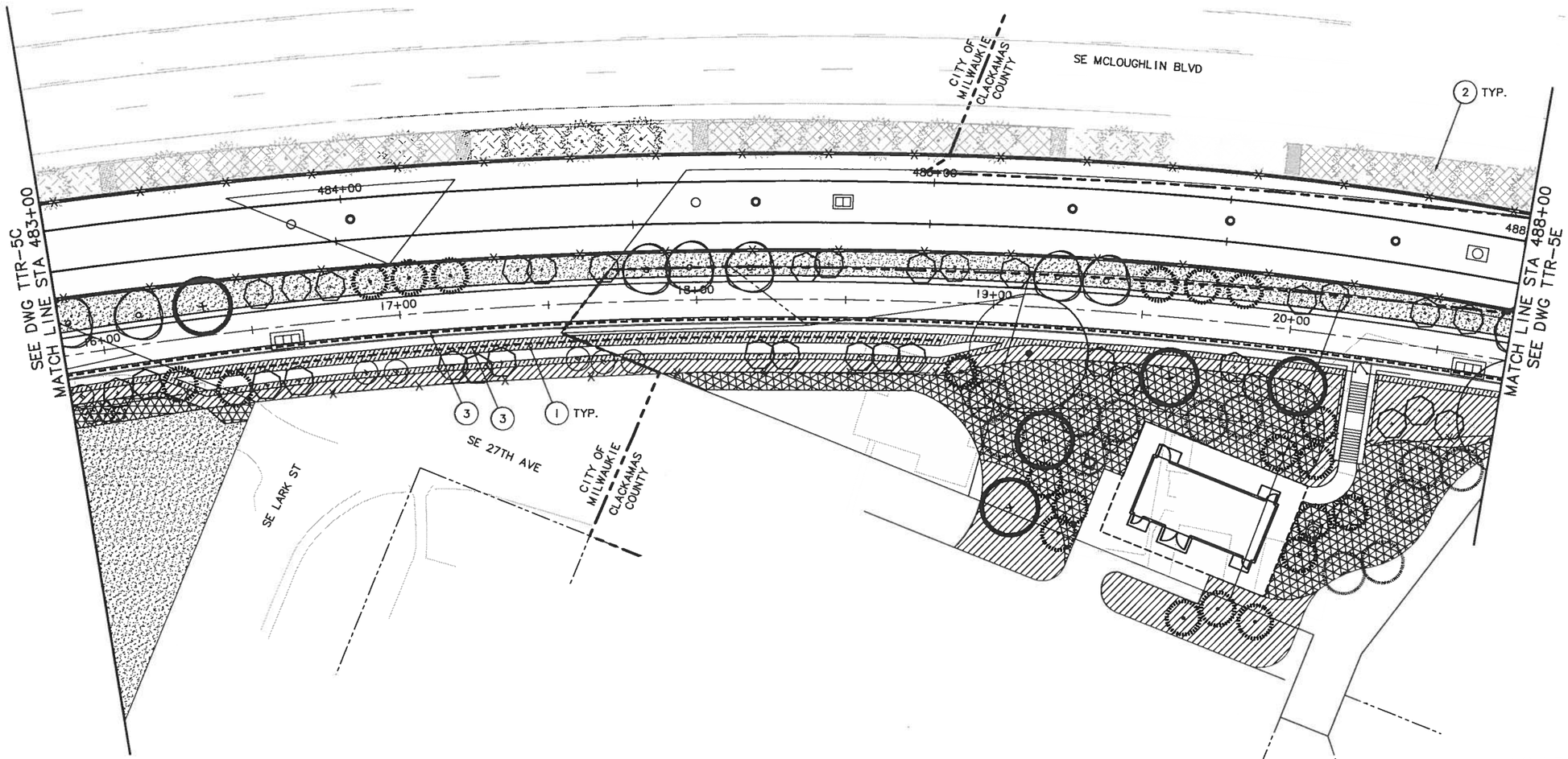

20' 10' 0' 20' 40'
SCALE: 1" = 20'

NOTES

1. SEE SHEETS TTR-5G AND TTR-5H FOR LANDSCAPE NOTES AND LEGENDS.

PLANTING KEY NOTES

1. VINE PLANTING AT WALL
2. SCREENED BACK PLANTING AREAS ARE OUTSIDE OF LAND USE REVIEW
3. RETAINING WALL

SK DESIGNED	05-03-11 DATE	
CM/AP DRAWN	10-19-11 DATE	
RT CHECKED	11-04-11 DATE	
APPROVED	DATE	

TRI-COUNTY METROPOLITAN TRANSPORTATION DISTRICT OF OREGON

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EAST SEGMENT
LAND USE PERMIT
TROLLEY TRAIL PATH
PROPOSED LANDSCAPE SITE PLAN

Exhibit P17

SCALE:	DRAWING NO.:	CONTRACT NO.:	SHEET NO.:
1"=20'	TTR-5D	RH100544JB	

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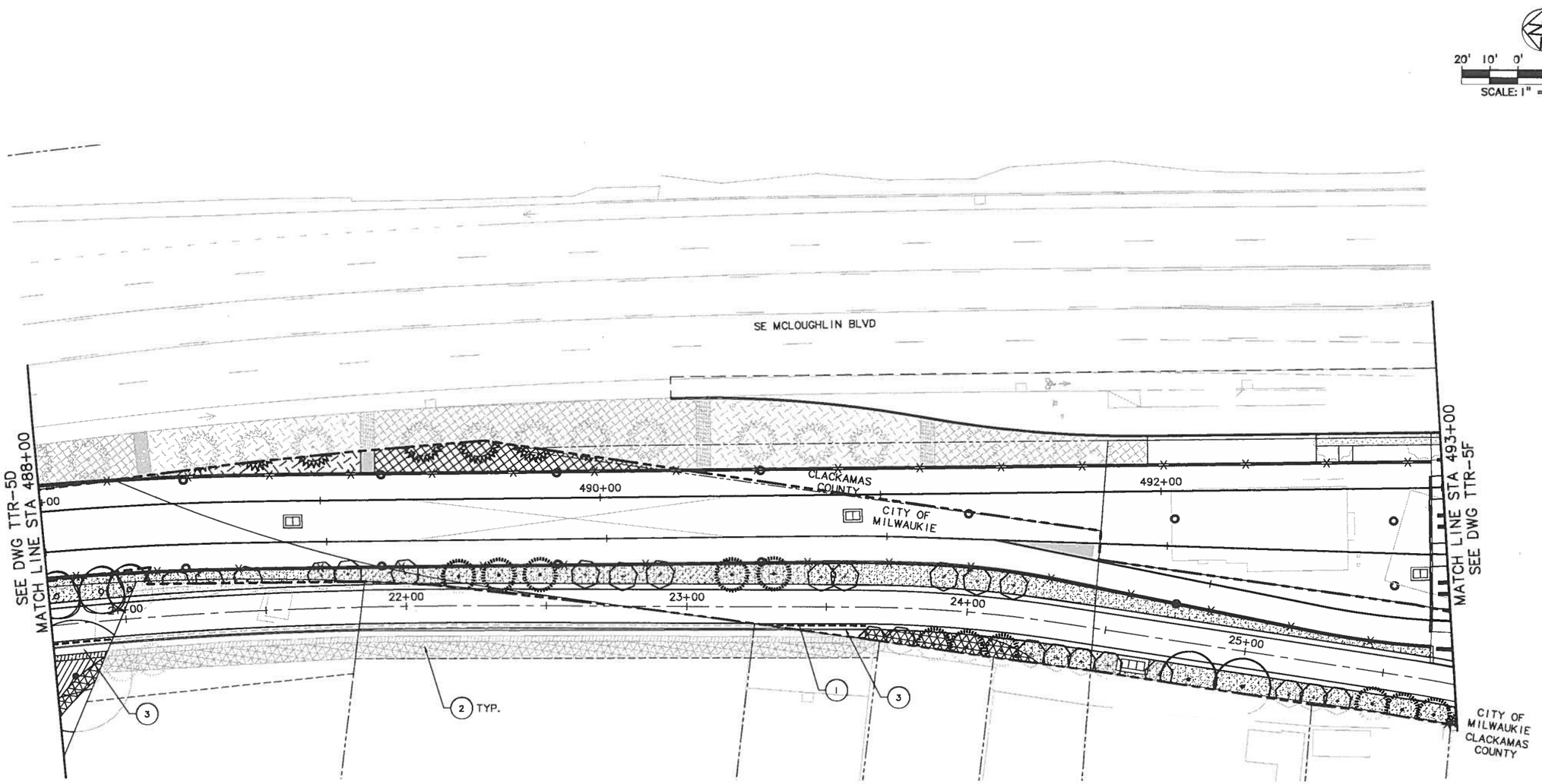

NOTES

1. SEE SHEETS TTR-5G AND TTR-5H FOR LANDSCAPE NOTES AND LEGENDS.

PLANTING KEY NOTES

1. VINE PLANTING AT WALL
2. SCREENED BACK PLANTING AREAS ARE OUTSIDE OF LAND USE REVIEW.
3. RETAINING WALL

SK DESIGNED	05-03-11 DATE	
CM/AP DRAWN	10-19-11 DATE	
RT CHECKED	11-04-11 DATE	
APPROVED	DATE	

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EAST SEGMENT
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PROPOSED LANDSCAPE SITE PLAN

Exhibit P18

SCALE:	DRAWING NO.:	CONTRACT NO.:	SHEET NO.:
1"=20'	TTR-5E	RH100544JB	

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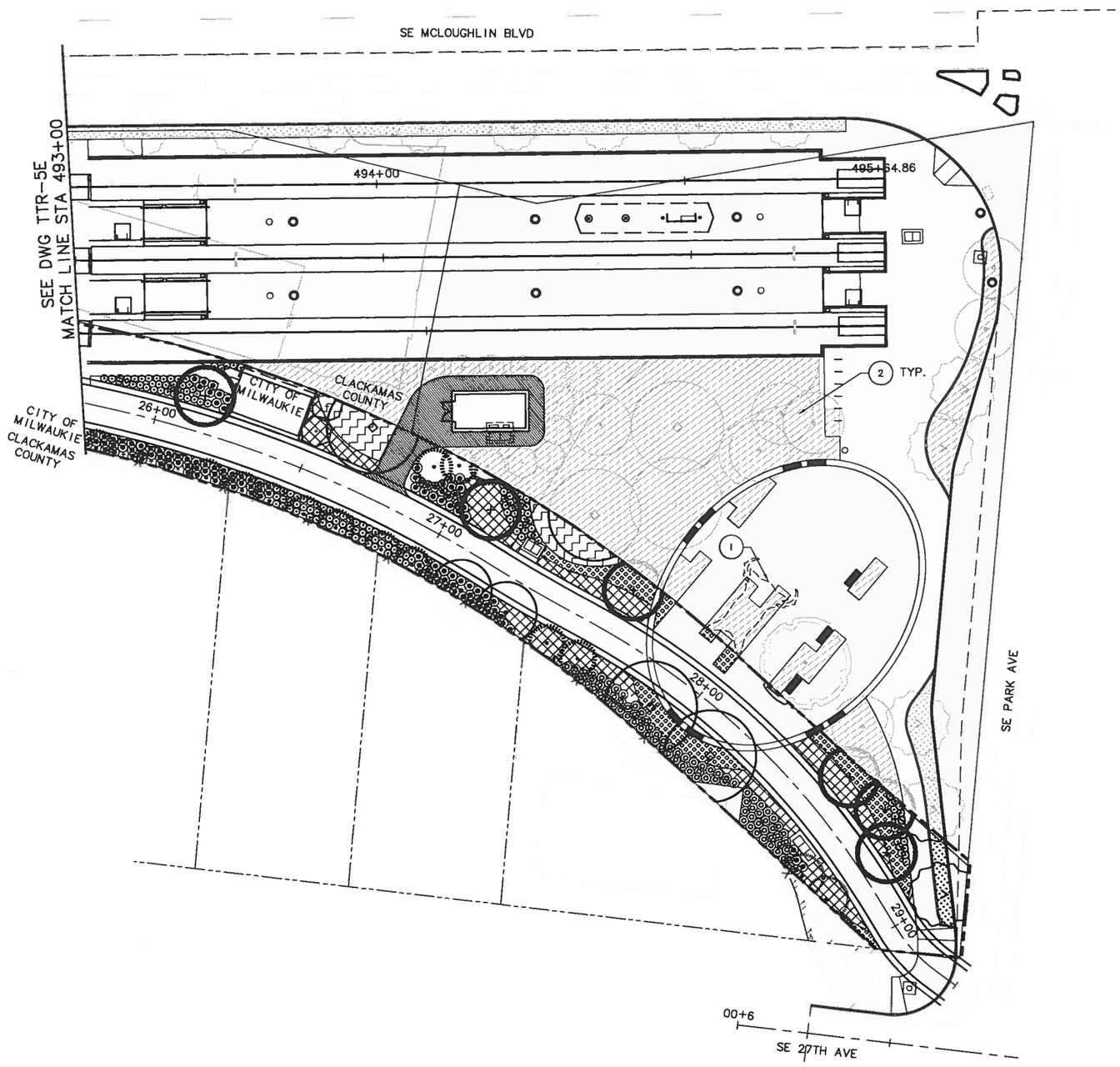

20' 10' 0' 20' 40'
SCALE: 1" = 20'

NOTES

1. SEE SHEETS TTR-5G AND TTR-5H FOR LANDSCAPE NOTES AND LEGENDS.

PLANTING KEY NOTES

1. OWNER-PROVIDED ARTWORK
2. SCREENED BACK PLANTING AREAS ARE OUTSIDE OF LAND USE REVIEW.

SK DESIGNED	05-03-11 DATE
CM/AP DRAWN	10-19-11 DATE
RT CHECKED	11-04-11 DATE
APPROVED	DATE

TRI-COUNTY METROPOLITAN TRANSPORTATION DISTRICT OF OREGON

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EAST SEGMENT
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PROPOSED LANDSCAPE PLAN

Exhibit P19

SCALE:	DRAWING NO.:	CONTRACT NO.:	SHEET NO.:
1"=20'	TTR-5F	RH100544JB	

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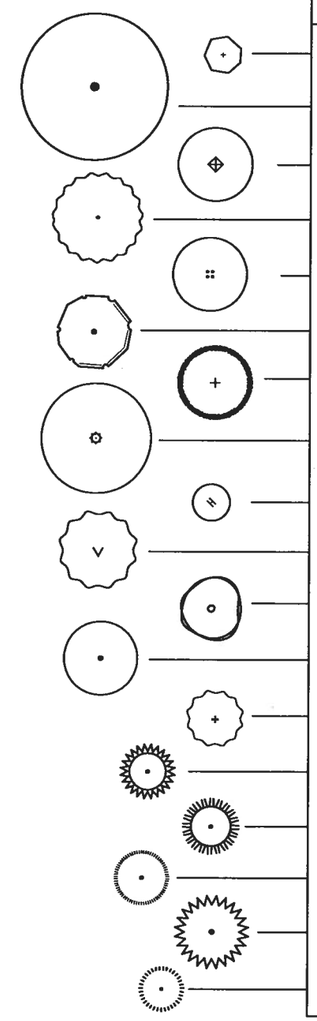
Plot Date: 10/20/2011 12:27 PM_alexandra perove

GENERAL PLANTING NOTES

1. REFER TO DRAWING NOS. L15E-002 THROUGH L15E-006 AND L15E-102 FOR PLANTING LEGENDS AND QUANTITIES.
2. REFER TO DRAWING L15E-007 FOR PLANTING SHEET LAYOUT INDEX.
3. REFER TO DRAWING NOS. L15E-300, L15E-301, AND TRIMET DIRECTIVE DRAWINGS LTM301 AND LTM302 FOR LANDSCAPE DETAILS.
4. NUMBERS IN CIRCLES ((XX)) REFER TO PLANTING KEY NOTES. NUMBERS IN HEXAGONS ⟨(XX)⟩ REFER TO PLANTING SHEET NOTES.
5. REFER TO SPECIFICATION SECTION 02231 FOR TREE PROTECTION.
6. REFER TO SPECIFICATION SECTION 02950 FOR LANDSCAPE PLANTINGS.
7. CONTRACTOR SHALL PROVIDE TOPSOIL, SOIL AMENDMENTS, AND MULCH IN ACCORDANCE WITH THE DETAILS AND SPECIFICATIONS AS PART OF THE CONSTRUCTION DOCUMENTATION PACKAGE. 12" DEPTH TOPSOIL IS REQUIRED FOR ALL SHRUB AND TREE PLANTING AREAS (EXCEPT FOR STORMWATER FACILITIES), AND 6" DEPTH TOPSOIL IS REQUIRED FOR ALL SEEDED AREAS. REFER TO CIVIL DRAWINGS FOR TOPSOIL DEPTHS IN ALL STORMWATER FACILITIES.
8. ALL PLANTS SHALL BE INSTALLED IN ACCORDANCE WITH THE DETAILS AND SPECIFICATIONS PROVIDED AS PART OF THE CONSTRUCTION DOCUMENT PACKAGE.
9. QUANTITIES ARE LISTED FOR THE CONTRACTOR'S CONVENIENCE ONLY. ALL COUNTS MUST BE VERIFIED BY THE CONTRACTOR PRIOR TO INSTALLATION. IN THE CASE OF A DISCREPANCY BETWEEN THE LEGEND AND THE PLAN, PLANTS INDICATED ON THE PLAN SHALL SUPERCEDE QUANTITIES LISTED IN THE LEGEND.
10. INSTALL AND MAINTAIN TREES FURNISHED BY TRIMET ("OWNER-FURNISHED TREES"). SEE PLANTING LEGENDS FOR SPECIES AND QUANTITIES THAT WILL BE PROVIDED. COORDINATE DELIVERY AND RECEIPT THROUGH RESIDENT ENGINEER (RE).
11. CONTRACTOR SHALL VERIFY EXACT LOCATIONS AND ROUTING OF EXISTING UNDERGROUND UTILITIES PRIOR TO STARTING EXCAVATION. REPAIR ONLY DAMAGE TO EXISTING PIPES, UTILITIES, OR RELATED FACILITIES AT THE CONTRACTOR'S EXPENSE IN A MANNER APPROVED BY THE ENGINEER.
12. ADJUST PLANT LOCATIONS SO THAT VEGETATION DOES NOT CONFLICT WITH ABOVE-GROUND UTILITIES, OR WITH TRAFFIC SIGHT LINES, SIGNS, OR OTHER APPURTENANCES.
13. PRESERVE, PROTECT, AND MAINTAIN ALL IMPROVEMENTS WITHIN WORK AREAS, INCLUDING EXISTING TREES AND VEGETATION. THOROUGHLY CLEAN ALL IMPROVEMENTS AFTER COMPLETION OF WORK.
14. PROVIDE 12" ROOT BARRIER WHERE TREES ARE WITHIN 6' OF PAVED SURFACES, CURBS, OR WALLS, AND IN ALL TREE WELLS, UNLESS OTHERWISE REQUIRED BY APPLICABLE JURISDICTIONS, OR AS INDICATED ON PLANS. REFER TO DETAIL 4, SHEET L15E-300.
15. ALL TREES TO BE BALLED AND BURLAPPED (B&B), UNLESS OTHERWISE INDICATED IN LEGEND OR IN DRAWINGS.
16. REFER TO DEMOLITION DRAWINGS FOR TREES TO BE REMOVED.
17. PROVIDE 5' DIAMETER BARK MULCH RING AT 2"DEPTH AROUND ALL TREES LOCATED IN SEEDED AREAS.

TREE PLANTING LEGEND



BOTANICAL NAME	COMMON NAME	INSTALL SIZE
Acer circinatum	VINE MAPLE	7'-8',MULTI-STEM, 3 STEM MIN.
Acer macrophyllum	BIG LEAF MAPLE	2 1/2" CAL.
Arbutus menziesii	PACIFIC MADRONE	2 1/2" CAL.
Alnus rubra	RED ALDER	2 1/2" CAL.
Amelanchier laevis 'JFS-Arb' PP 15304	SPRING FLURRY SERVICEBERRY	2 1/2" CAL.
Betula platyphylla 'fargo' pp10963	DAKOTA PINNACLE BIRCH	2 1/2" CAL.
Cornus nuttalli	WESTERN FLOWERING DOGWOOD	2 1/2" CAL.
Fraxinus latifolia	OREGON ASH	2 1/2" CAL.
Myrica californica	PACIFIC WAX MYRTLE	6'-8' HT.
Nyssa sylvatica	BLACK TUPELO	2 1/2" CAL.
Prunus emarginata	BITTER CHERRY	2 1/2" CAL.
Prunus virginiana	CHOKECHERRY	2 1/2" CAL.
Prunus sargentii 'columnaris'	COLUMNAR SARGENT CHERRY	2 1/2" CAL.
Calocedrus decurrens	INCENSE CEDAR	10-16' HT.
Pinus contorta	SHORE PINE	10-16' HT.
Pseudotsuga menziesii	DOUGLAS FIR	10-16' HT.
Thuja plicata	WESTERN RED CEDAR	10-16' HT.
Thuja plicata 'Fastigiata'	HOGAN CEDAR	10-16' HT.

SK DESIGNED	05-03-11 DATE	
CM/AP DRAWN	05-03-11 DATE	
RT CHECKED	05-17-11 DATE	
APPROVED	DATE	

TRI-COUNTY METROPOLITAN TRANSPORTATION DISTRICT OF OREGON

GREENWORKS

DAVID EVANS AND ASSOCIATES INC.

TRIMET CAPITAL PROJECTS AND FACILITIES DIVISION
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TROLLEY TRAIL PATH
LANDSCAPE NOTES AND LEGEND

Exhibit P20-A

SCALE:	DRAWING NO.:	CONTRACT NO.:	SHEET NO.:
AS SHOWN	TTR-5G	RH100544JB	

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Plot Date: 10/14/2011 6:59 PM shawn kummer

MASTER SHRUB/GROUNDCOVER LEGEND

DECIDUOUS SHRUBS

BOTANICAL NAME	COMMON NAME	INSTALL SIZE	SPACING
Cornus sericea 'Kelseyi'	DWARF REDTWIG DOGWOOD	1 GAL.	24" O.C.

EVERGREEN SHRUBS

BOTANICAL NAME	COMMON NAME	INSTALL SIZE	SPACING
Mahonia aquifolium	OREGON GRAPE	2 GAL.	AS SHOWN
Mahonia aquifolium 'Compacta'	COMPACT OREGON GRAPE	2 GAL.	AS SHOWN
Mahonia nervosa	LONGLEAF NERVOSA	2 GAL.	AS SHOWN
Mahonia repens	CREEEPING MAHONIA	2 GAL.	AS SHOWN
Rhododendron macrophyllum	PACIFIC RHODODENDRON	5 GAL.	AS SHOWN
Polystichum munitum	WESTERN SWORD FERN	1 GAL.	AS SHOWN
Mahonia nervosa	CASCADE BARBERRY	1 GAL	AS SHOWN
Buxus microphylla 'Baby Gem'	BABY GEM BOXWOOD	1 GAL.	24"O.C.

GRASSES / PERENNIALS / GROUNDCOVERS

BOTANICAL NAME	COMMON NAME	INSTALL SIZE	SPACING
Arctostaphylos uva-ursi	KINNICKINNICK	1 GAL.	24" O.C.
Helictotricon sempervirens	BLUE OAT GRASS	1 GAL.	20" O.C.
Juncus patens	SPREADING RUSH	1 GAL.	12" O.C.
Juncus effusus	COMMON RUSH	1 GAL.	12" O.C.
Deschampsia cespitosa	TUFTED HAIR GRASS	1 GAL.	12" O.C.

TYPE 1: MEDIUM HT. PLANTING (24"-36")

NOTES: LOCATED AT TOPS OF RETAINING WALLS

	BOTANICAL NAME	COMMON NAME
	Mahonia repens	CREEPING MAHONIA
	Mahonia aquifolium 'compacta'	COMPACT OREGON GRAPE
	Polystichum munitum	SWORD FERN
	Deschampsia cespitosa	TUFTED HAIR GRASS

TYPE 2: SCREEN PLANTING (30" + HT.)

NOTES: LOCATED AT TOPS OF RETAINING WALLS

	BOTANICAL NAME	COMMON NAME
SHRUBS	Vaccinium ovatum	EVERGREEN HUCKLEBERRY
	Arbutus unedo 'compacta'	COMPACT STRAWBERRY TREE
	Mahonia aquifolium	OREGON GRAPE
	Rhododendron macrophyllum	PACIFIC RHODODENDRON
	Poylstichum munitum	SWORD FERN
	Ceanothus thyrsiflorus 'Victoria'	VICTORIA CALIFORNIA LILAC

SEED MIXES

TYPE	APPLICATION RATE
PDX ECOLOGY MIX BY HOBBS & HOPKINS	
Dwarf Perennial Rye Grass	
Hard Fescue	
Yarrow	2 LBS./1,000 SF
Micro Clover	
Strawberry Clover	
Sweet Alyssum	

LANDSCAPE MATERIALS

TYPE
BARK MULCH

VINE PLANTINGS - 2 GAL. CONT., SPACED 12" O.C. REFER TO DETAIL THIS SHEET.
PARTHENOCISSUS TRICUSPIDATA BOSTON IVY

LIMITS OF CONSTRUCTION

SK DESIGNED	05-03-11 DATE	
CM/AP DRAWN	05-03-11 DATE	
RT CHECKED	05-17-11 DATE	
APPROVED	DATE	

TRI-COUNTY METROPOLITAN TRANSPORTATION DISTRICT OF OREGON

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LANDSCAPE NOTES AND LEGEND

Exhibit P20-B

SCALE:	DRAWING NO.:	CONTRACT NO.:	SHEET NO.:
AS SHOWN	TTR-5H	RH100544JB	

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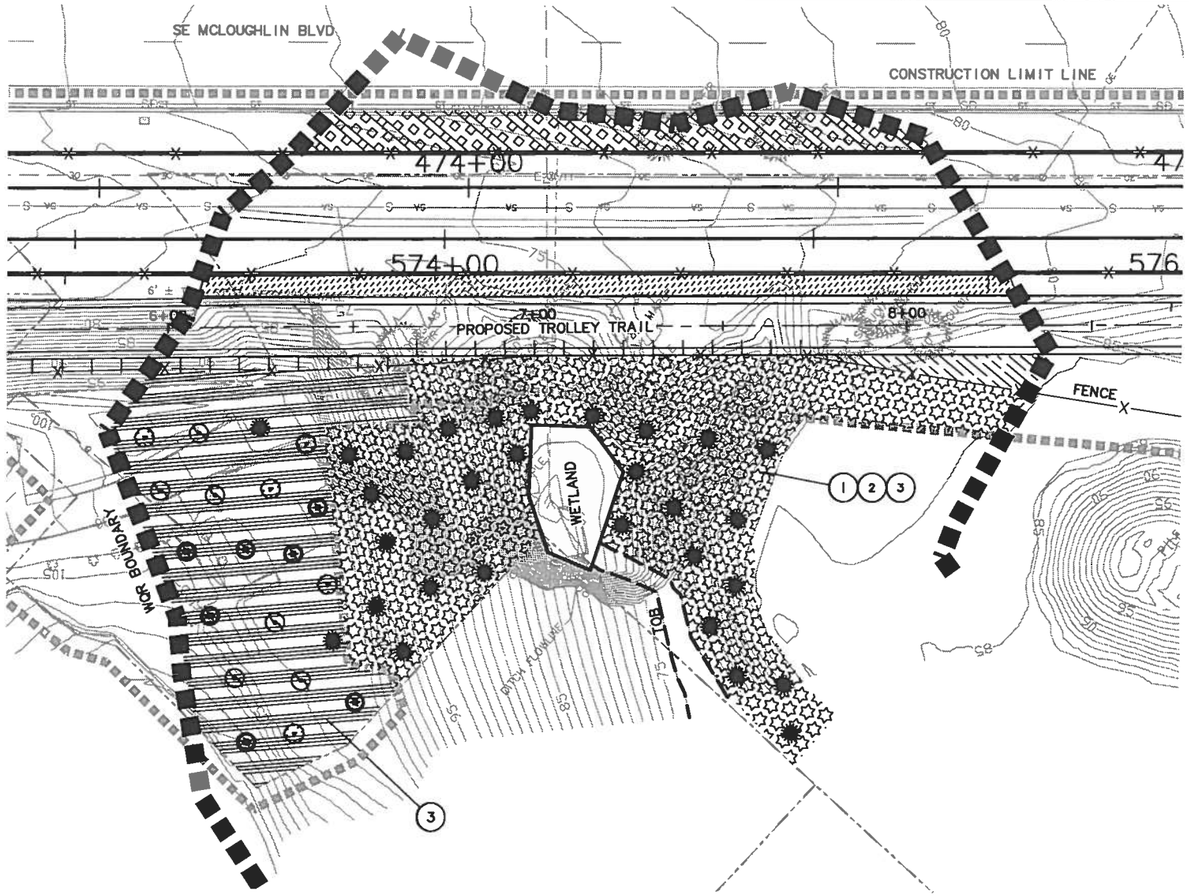
Plot Date: 10/14/2011 6:58 PM shawn kummer



20' 10' 0' 20' 40'
SCALE: 1" = 20'

PLANT SCHEDULE: TROLLEY TRAIL WQR PLANTING TYPE 1							
SYMBOL	ABBR.	QTY	BOTANICAL NAME / COMMON NAME	SIZE	CONDITION	SPACING	NOTES
	TREES						
	THPL	28	Thuja plicata – Western redcedar	4' HT.	B&B	as shown	
	SHRUBS						
	MANE	50	Mahonia nervosa – low Oregon grape	18–24" HT.	Bareroot	4' o.c.	clusters of 5
	OECE	40	Oemleria cerasiformis – indian plum	18–24" HT.	Bareroot	4' o.c.	scattered
	POMU	300	Polystichum munitum – sword fern	1 gal.	container	4' o.c.	scattered
	RUPA	40	Rubus parviflorus – thimbleberry	18–24" HT.	Bareroot	4' o.c.	clusters of 5
	SARA	20	Sambucus racemosa – red elderberry	18–24" HT.	Bareroot	4' o.c.	scattered
	SYAL	90	Symphoricarpos albus – common snowberry	18–24" HT.	Bareroot	4' o.c.	clusters of 5
	SEED						
	Agrostis exarata– spike bentgrass			0.14 lbs	APPLICATION RATE:		
	Deschampsia elongata– slender hairgrass			0.56 lbs	Pounds of Pure Live Seed (PLS) PER ACRE		
	Glyceria elata– Western mannagrass			0.34 lbs			
				1.04 lbs	Total PLS per acre		

NOTE: PROVIDE MULCH RING AT EACH TREE AND SHRUB. MULCH RING SHALL BE 18" DIAMETER AND 2" DEPTH.

PLANT SCHEDULE: TROLLEY TRAIL WQR PLANTING TYPE 2							
SYMBOL	ABBR.	QTY	BOTANICAL NAME / COMMON NAME	SIZE	CONDITION	SPACING	NOTES
	TREES						
	ACMA	5	Acer macrophyllum – big leaf maple	4' HT.	B&B	10' o.c.	
	PSME	7	Pseudotsuga menziesii – Douglas–fir	4' HT.	B&B	10' o.c.	
	RHPU	6	Rhamnus purshiana – cascara	4' HT.	B&B	10' o.c.	
	THPL	2	Thuja plicata – Western redcedar	4' HT.	B&B	as shown	
	SHRUBS						
	ACCI	10	Acer circinatum – vine maple	18–24" HT.	Bareroot	4' o.c.	
	AMAL	10	Amelanchier alnifolia – serviceberry	18–24" HT.	Bareroot	4' o.c.	
	COCO	15	Corylus cornuta – beaked hazelnut	18–24" HT.	Bareroot	4' o.c.	
	MAAQ	20	Mahonia aquifolium – tall Oregon grape	18–24" HT.	Bareroot	4' o.c.	
	MANE	40	Mahonia nervosa – low Oregon grape	18–24" HT.	Bareroot	4' o.c.	clusters of 5
	OECE	20	Oemleria cerasiformis – indian plum	18–24" HT.	Bareroot	4' o.c.	scattered
	POMU	150	Polystichum munitum – sword fern	1 gal.	container	4' o.c.	scattered
	RUPA	30	Rubus parviflorus – thimbleberry	18–24" HT.	Bareroot	4' o.c.	clusters of 5
	SARA	15	Sambucus racemosa – red elderberry	18–24" HT.	Bareroot	4' o.c.	scattered
	SYAL	50	Symphoricarpos albus – common snowberry	18–24" HT.	Bareroot	4' o.c.	clusters of 5
	SEED						
	Agrostis exarata– spike bentgrass			0.14 lbs	APPLICATION RATE:		
	Deschampsia elongata– slender hairgrass			0.56 lbs	Pounds of Pure Live Seed (PLS) PER ACRE		
	Glyceria elata– Western mannagrass			0.34 lbs			
				1.04 lbs	Total PLS per acre		

NOTE: PROVIDE MULCH RING AT EACH TREE AND SHRUB. MULCH RING SHALL BE 18" DIAMETER AND 2" DEPTH.

BOTANICAL NAME	COMMON NAME	SIZE	SPACING
Deschampsia cespitosa	TUFTED HAIRGRASS	1 GAL.	2' O.C.

BOTANICAL NAME	COMMON NAME	SIZE	SPACING
Mahonia repens	CREEPING MAHONIA	1 GAL.	30" O.C.

BOTANICAL NAME	COMMON NAME	SIZE	SPACING
Mahonia nervosa	LOW OREGON GRAPE	1 GAL.	3' O.C.
Polystichum munitum	SWORD FERN	1 GAL.	3' O.C.

KEYED NOTES:

1. CONTRACTOR SHALL USE HAND TOOLS ONLY TO CLEAR ALL ENGLISH IVY, CHERRY LAUREL, AND CLEMATIS FROM THE HATCHED AREA. CONTRACTOR SHALL DISPOSE OF REMOVED MATERIAL AT A LEGAL OFF–SITE LOCATION.
2. IMMEDIATELY AFTER CLEARING THE AREA, THE CONTRACTOR SHALL REPLANT WITH TREES, SHRUBS, AND SEED PER PLANT SCHEDULE ON THIS SHEET.
3. AFTER PLANTING, CONTRACTOR SHALL SPREAD CLEAN STRAW MULCH OVER ENTIRE PLANTING AREA. NEW PLANTINGS SHALL NOT BE DAMAGED BY MULCH APPLICATION. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EROSION CONTROL METHODS AND MATERIALS. EXTENDED WET WEATHER CONDITIONS MAY REQUIRE MAINTENANCE AND/OR REPLACEMENT OF EROSION CONTROL MATERIALS.

NO.	DATE	BY / CHK.	APPD.	REVISIONS

SAR DESIGNED 08-02-11 DATE
SAR DRAWN 08-02-11 DATE
EES CHECKED DATE
APPROVED DATE

TRI–COUNTY METROPOLITAN TRANSPORTATION DISTRICT OF OREGON

VIGIL AGRIMIS design professionals
DAVID EVANS AND ASSOCIATES INC.
TRI MET CAPITAL PROJECTS AND FACILITIES DIVISION 710 N.E. HOLLADAY STREET PORTLAND, OREGON 97232

SUBMITTED: DATE: APPROVED: DATE:

PORTLAND TO MILWAUKIE LRT
EAST SEGMENT
LAND USE PERMIT
TROLLEY TRAIL PATH
MITIGATION SITE PLAN

Exhibit P32

SCALE: AS SHOWN | DRAWING NO.: TTR–7A | CONTRACT NO.: RH100544JB | SHEET NO.:

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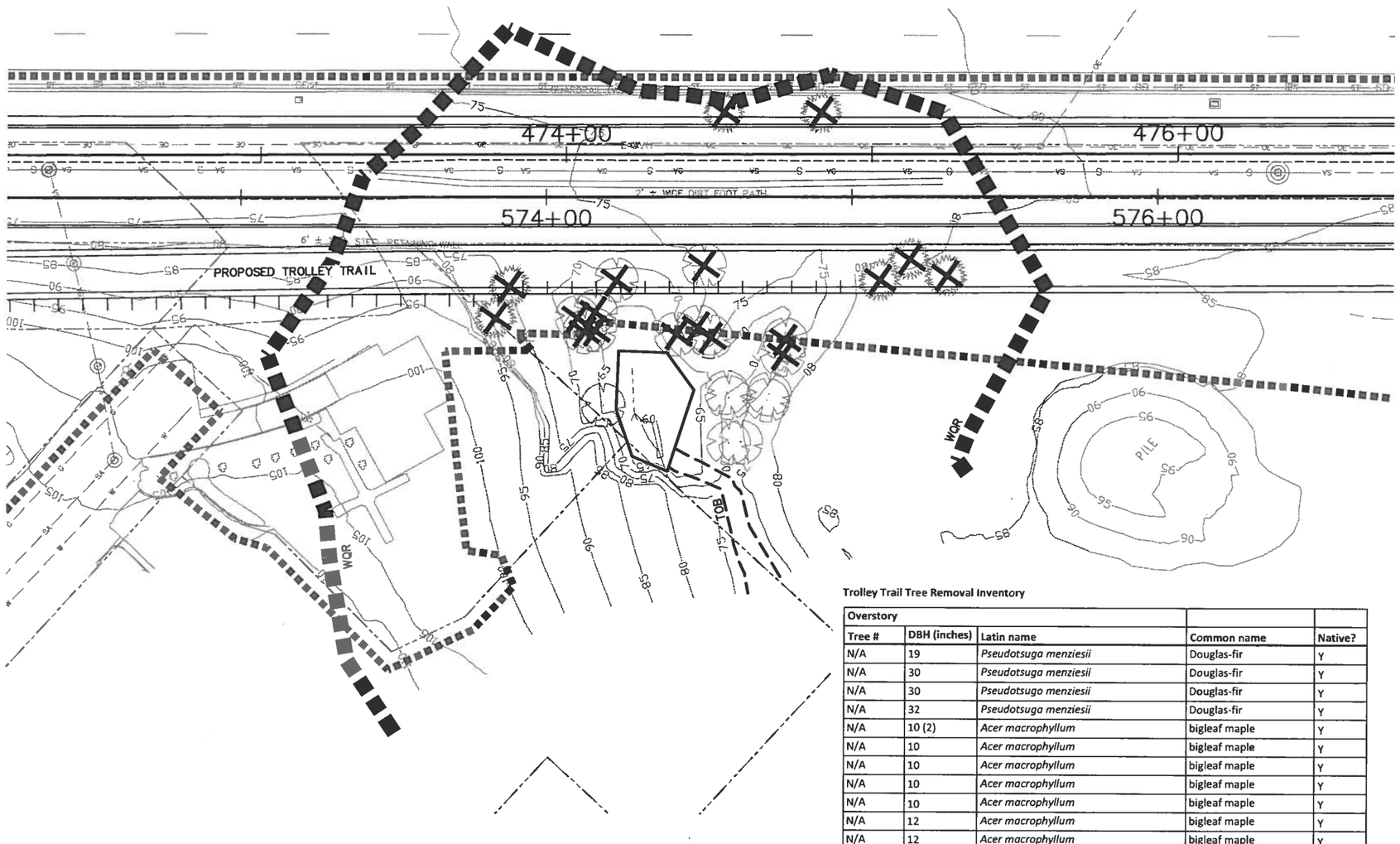
Plot Date:10/14/2011 1:24 PM_jeff hammond



20' 10' 0' 20' 40'
SCALE: 1" = 40'

Trolley Trail Tree Removal Inventory

Overstory				
Tree #	DBH (inches)	Latin name	Common name	Native?
N/A	19	*Pseudotsuga menziesii*	Douglas-fir	Y
N/A	30	*Pseudotsuga menziesii*	Douglas-fir	Y
N/A	30	*Pseudotsuga menziesii*	Douglas-fir	Y
N/A	32	*Pseudotsuga menziesii*	Douglas-fir	Y
N/A	10 (2)	*Acer macrophyllum*	bigleaf maple	Y
N/A	10	*Acer macrophyllum*	bigleaf maple	Y
N/A	10	*Acer macrophyllum*	bigleaf maple	Y
N/A	10	*Acer macrophyllum*	bigleaf maple	Y
N/A	10	*Acer macrophyllum*	bigleaf maple	Y
N/A	12	*Acer macrophyllum*	bigleaf maple	Y
N/A	12	*Acer macrophyllum*	bigleaf maple	Y
N/A	12	*Acer macrophyllum*	bigleaf maple	Y
N/A	14	*Acer macrophyllum*	bigleaf maple	Y
N/A	18	*Acer macrophyllum*	bigleaf maple	Y
N/A	30	*Acer macrophyllum*	bigleaf maple	Y
N/A	38	*Sequoiadendron giganteum*	giant sequoia	N
N/A	40	*Sequoiadendron giganteum*	giant sequoia	N
N/A	42	*Sequoiadendron giganteum*	giant sequoia	N

LEGEND

TOB – TOP OF BANK

WQR – WATER QUALITY RESOURCES

X INDICATES TREE BEING REMOVED

NO.	DATE	BY	CHK.	APPD.	REVISIONS

SAR DESIGNED 08-02-11 DATE
SAR DRAWN 08-02-11 DATE
EES CHECKED DATE
APPROVED DATE

TRI-COUNTY METROPOLITAN TRANSPORTATION DISTRICT OF OREGON

VIGIL AGRIMIS design professionals
DAVID EVANS AND ASSOCIATES INC.
TRIMET CAPITAL PROJECTS AND FACILITIES DIVISION 710 N.E. HOLLADAY STREET PORTLAND, OREGON 97232

SUBMITTED: DATE: APPROVED: DATE:

PORTLAND TO MILWAUKIE LRT
EAST SEGMENT
LAND USE PERMIT
TROLLEY TRAIL PATH
PROPOSED TREE REMOVAL AT WQR PLAN

Exhibit P33

SCALE: AS SHOWN | DRAWING NO.: TTR-4F | CONTRACT NO.: RH100544JB | SHEET NO.:

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Plot Date:10/14/2011 3:51 PM_jeff hammond