MovingAhead

STREETS AND PLACES REIMAGINED

DRAFT FINAL Visual and Aesthetic Resources Technical Report

Lane Transit District
City of Eugene

In cooperation with
Lane Council of Governments
Lane County
Oregon Department of Transportation

July 7, 2017

DRAFT FINAL Visual and Aesthetic Resources Technical Report

MovingAhead Project

Prepared in accordance with the
National Environmental Policy Act of 1969, as amended 42 U.S.C. 4322
and the
Federal Transit Act of 1964, as amended 49 U.S.C. 1601 et seq.

July 7, 2017

Prepared for
Federal Transit Administration
Lane Transit District
City of Eugene

Prepared by
CH2M HILL, Inc.

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Acronyms, Abbreviations, and Terms

Acronyms and Abbreviations	Definitions
AA	Alternatives Analysis
ADA	Americans with Disabilities Act
API	area of potential impact
BAT	business access and transit
BMP	best management practice
BRT	Bus Rapid Transit
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulation
CH2M HILL, Inc.	CH2M
CIP	Capital Improvements Program
Draft Eugene TSP	*DRAFT Eugene 2035 Transportation System Plan* (City of Eugene, 2016a)
EmX	Emerald Express, Lane Transit District's Bus Rapid Transit System
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
FTN	Frequent Transit Network
I-5	Interstate 5
I-105	Interstate 105
ISA	International Society of Arboriculture
LCC	Lane Community College
LTD	Lane Transit District
Metro Plan	Eugene-Springfield Metropolitan Area General Plan
MPO	Metropolitan Planning Organization
NEPA	National Environmental Policy Act of 1969, as amended, 42 U.S.C. 4321-4347
PROS	Parks, Recreation, and Open Space
ROW	right of way
RTP	Regional Transportation Plan; *Regional Transportation Plan* (Central Lane MPO, 2011, December); The RTP includes the Financially Constrained Roadway Projects List
WEEE	West Eugene EmX Extension

Terms	Definitions
Charter Tree	A tree defined by the *Eugene Charter* (City of Eugene, 2002, updated 2008) as "… (a living, standing, woody plant having a trunk 25 inches in circumference at a point 4-½ feet above mean ground level at the base of the trunk) of at least fifty years of age within publicly owned rights of way for streets, roads, freeways, throughways, and thoroughfares and within those portions of the city which were in the incorporated boundaries of the city as of January 1, 1915, shall be designated historic street trees and recognized as objects of high historic value and significance in the history of the city and deserving of maintenance and protection." These trees have special historic importance to the City and require special processes be followed if their removal is proposed, including a public vote on the project proposing the removal.
Charter Tree Boundary	Defined by the *Eugene Charter* (City of Eugene, 2002, updated 2008) as "…those portions of the city which were in the incorporated boundaries of the city as of January 1, 1915." Trees within this boundary may, if they meet certain criteria, be granted the special title and protective status of a Charter Tree, defined above.
Heritage Tree	The *City of Eugene Urban Forest Management Plan* (City of Eugene Public Works Department Maintenance Division, 1992) defines "Heritage Trees" as: "Any tree of exceptional value to our community based on its size (relative to species), history, location, or species, or any combination of these criteria." Such a tree cannot be removed "except when otherwise necessary for the public health, safety, or welfare."
Landscape Tree	A living, standing, woody plant having a trunk that exists on private property.
Mitigation	A means to avoid, minimize, rectify, or reduce an impact, and in some cases, to compensate for an impact.
Visual Character	A term used to provide an objective description of a viewed landscape that considers and describes the various natural and human-built elements that can be seen.

Visual and Aesthetic Resources Summary

This Visual and Aesthetic Resources Technical Report presents results for the visual and aesthetic resources assessment for the Lane Transit District (LTD) and City of Eugene's MovingAhead Project in Eugene, Oregon. The purpose of the MovingAhead Project is to determine which high-capacity transit corridors identified in the adopted Emerald Express (EmX) System Plan, *Lane Transit District Long-Range Transit Plan* (LTD, 2014) and the Frequent Transit Network (FTN) are ready to advance to capital improvements programming in the near term. LTD and the City of Eugene (City) initiated the MovingAhead Project in 2014 to identify and examine alternatives for improving multimodal safety, mobility, and accessibility in key transit corridors in the City. A main theme of the City's vision is to concentrate new growth along and near the City's key transit corridors and core commercial areas while protecting neighborhoods and increasing access to services for everyone. LTD and the City are jointly conducting the project to facilitate a more streamlined and cost-efficient process through concurrent planning, environmental review, and design and construction of multiple corridors.

LTD and the City of Eugene examined multimodal transit alternatives in five key transit corridors identified in the *Draft Envision Eugene Comprehensive Plan* (Envision Eugene, 2016, July) and the *DRAFT Eugene 2035 Transportation System Plan* (City of Eugene, 2016a; Draft Eugene 2035 TSP), the region's highest growth centers, and Downtown Eugene:

- Highway 99 Corridor
- River Road Corridor
- 30th Avenue to Lane Community College (LCC) Corridor
- Coburg Road Corridor
- Martin Luther King, Jr. Boulevard Corridor

No-Build, Enhanced Corridor, and EmX Alternatives were developed for each corridor, except the Martin Luther King, Jr. Boulevard Corridor, for which only No-Build and Enhanced Corridor Alternatives were developed. Each proposed corridor location is shown on Figures S.1-1 and S.1-2 for the Enhanced Corridor Alternatives and the EmX Alternatives, respectively. The *MovingAhead Level 2 Definition of Alternatives* (CH2M HILL, Inc. [CH2M] et al., 2016) contains a detailed description of the project alternatives. The following is a summary of the project alternatives evaluated.

- The **No-Build Alternatives** serve as a reference point to gauge the benefits, costs, and effects of the Enhanced Corridor and EmX Alternatives in each corridor. Each No-Build Alternative is based on the projected conditions in 2035. Capital projects are derived from the financially constrained project lists in the Draft Eugene TSP, the Lane County Transportation System Plan (Lane County Public Works, Engineering Division Transportation Planning, 2004, update in progress), the Lane Transit District Capital Improvement Plan (LTD, 2015), and the Lane Transit District Long-Range Transit Plan (LTD, 2014).
- **Enhanced Corridor Alternatives** are intended to address the project's Purpose, Need, Goals, and Objectives without major transit capital investments, instead focusing on lower-cost capital improvements, operational improvements, and transit service refinements, including 15-minute service frequency. Features can include transit queue jumps (lanes for buses that allow the bus to "jump" ahead of other traffic at intersections using a separate signal phase), stop consolidation, and enhanced shelters. These features can improve reliability, reduce transit travel time, and increase passenger comfort, making transit service along the corridor more attractive.

Figure S.1-1. Enhanced Corridor Alternatives Overview

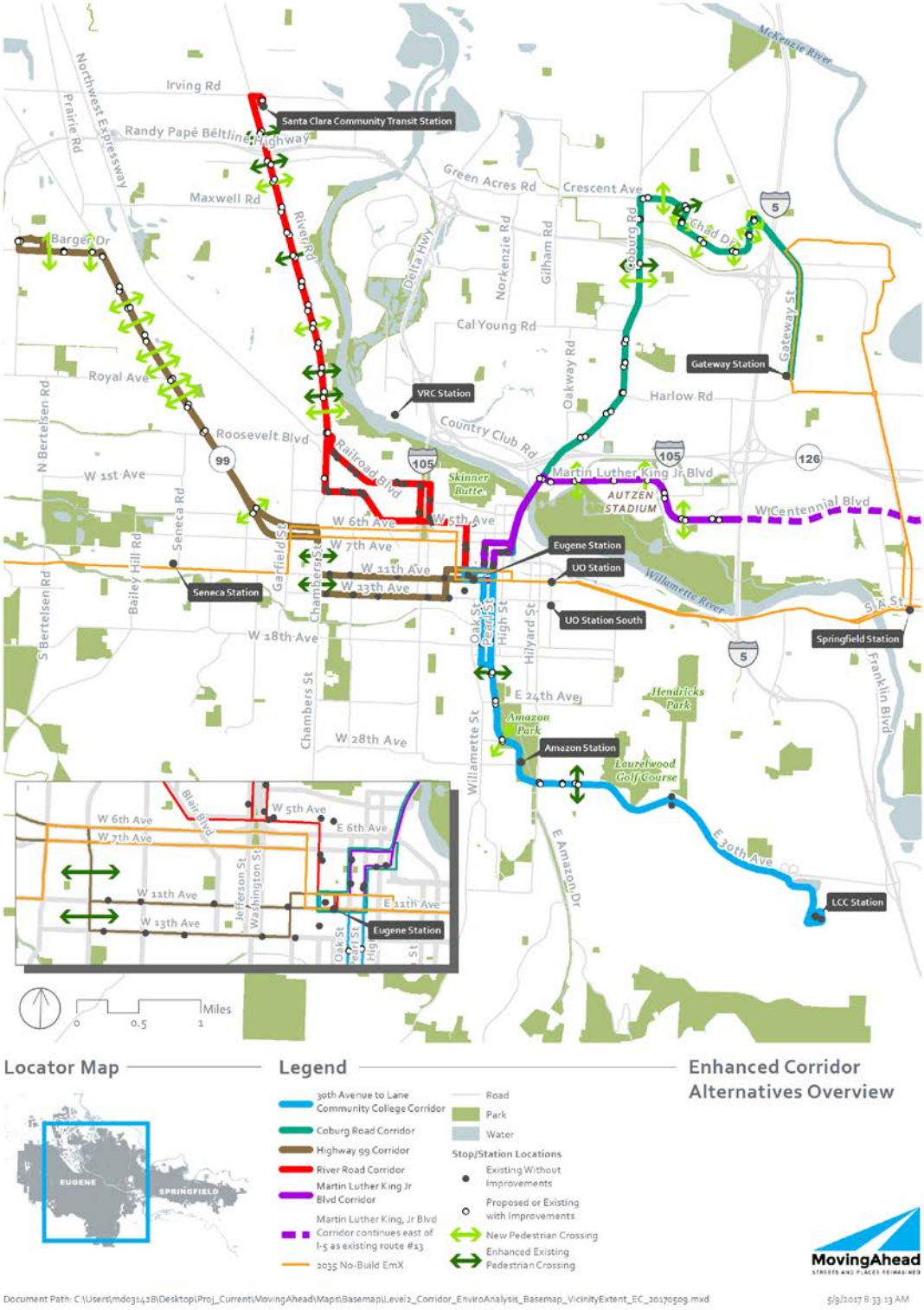
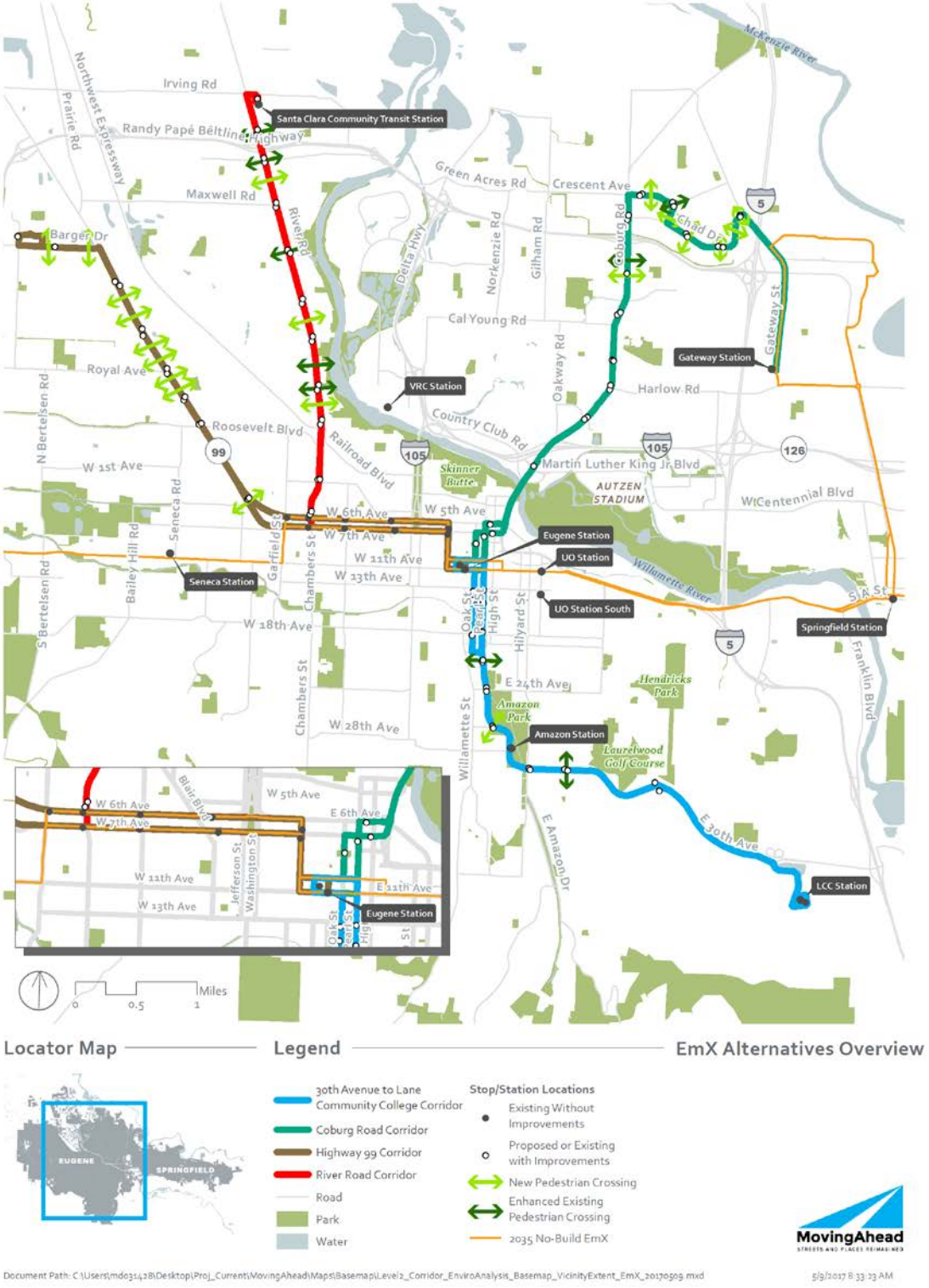


Figure S.1-2. EmX Alternatives Overview



- **EmX Alternatives** are characterized by sections of exclusive guideway, branded multi-door 60-foot-long bus rapid transit (BRT) vehicles, and enhanced stations with level boarding platforms instead of bus stops; off-board fare collection; transit signal priority; wider stop spacing; and 10-minute service frequencies. In general, EmX is a transit mode positioned between fixed-route bus service operating in mixed traffic and urban-rail service operating in a separate right of way. EmX service is intended to improve transit speed, reliability, and ridership.

Figure S.1-1 shows the proposed corridors for the Enhanced Corridor Alternatives and Figure S.1-2 shows the proposed corridors for the EmX Alternatives.

This report, prepared to support the MovingAhead Project Alternatives Analysis (AA), addresses potential adverse and beneficial effects that the project alternatives would have on visual and aesthetic resources. It describes how the proposed project alternatives would change the visual and aesthetic conditions of the five study corridors. It bases the assessments on how the alternatives would have potential adverse impacts to street and landscape trees (which are important visual and aesthetic resources in the area of potential impact [API]); how adverse impacts to street and landscape trees and introduced project components would impact the existing visual character of areas along the corridors; identifies potential mitigation measures to reduce impacts to visual and aesthetic resources; and describes beneficial effects to the visual and aesthetic conditions found along the corridors.

Tree Definitions

Street Tree: A living, standing, woody plant with a trunk that exists in the public right-of-way.

Landscape Tree: A living, standing, woody plant with a trunk that exists on private property.

This report was prepared in compliance with the National Environmental Policy Act (NEPA) and applicable state environmental policy legislation, as well as local and state planning and land use policies and design standards.

S.1. Affected Environment

The MovingAhead Project's five corridors and associated alternatives are primarily located within the City of Eugene, with a portion of the 30th Avenue to LCC Corridor located within unincorporated Lane County, and a portion of the Coburg Road Corridor located in the City of Springfield. All study corridors under consideration propose inbound and outbound transit service through Downtown Eugene to and from Eugene Station. Downtown Eugene has a more urban visual character than the portions of the study corridors that extend beyond the downtown core. The portions of Downtown Eugene the study corridors pass through are characterized by level terrain and a north-to-south and east-to-west grid pattern. Much of Downtown Eugene contains mature street and landscape trees, particularly areas that are within the 1915 city limits. Within this area, the study corridors are often lined with older residential and commercial buildings and mature street and landscape trees that form canopies over the streets in some locations. Large, mature trees and canopies along streets produce a very distinctive visual character.

The Highway 99 Corridor is typified by a variety of street and landscape trees and a mixture of land uses with a range of visual character types. The northern part of the corridor along Highway 99 and Barger Drive contains the area with the most residential visual character. Most of the remainder of the Highway 99 Corridor passes through areas with a mixture of land uses and visual character types such as

commercial, retail, and industrial. Street and landscape trees are relatively sparse along this portion of the corridor.

The portion of the River Road Corridor north of the Northwest Expressway is adjacent to areas with a largely residential visual character. Much of this section of River Road is lined with street and landscape trees. River Road also passes a number of commercial and retail land uses that typically consist of large utilitarian buildings set back from the road and surrounded by ample parking lots. These developments have a visual character typical of automobile-oriented commercial and retail establishments. South of the Northwest Expressway, River Road passes through industrial and commercial areas on its way to the western part of Downtown Eugene.

The 30th Avenue to LCC Corridor travels through areas with a mix of visual character types. From Downtown Eugene, it travels through Midtown, then along Amazon Parkway passing next to Amazon Park, continues east along E. 30th Avenue through a residential area, and passes through a largely forested undeveloped area on its way to LCC. Street trees beyond the downtown portion of the corridor are generally younger, smaller, and less pervasive than in Downtown Eugene.

Direct Adverse Impacts

Direct adverse impacts to medium and large trees were defined in the MovingAhead Street and Landscape Trees Technical Report as situations where street and landscape trees would be removed along a corridor and / or where construction damage to tree limbs and / or root systems might prove fatal to the trees. Direct adverse impacts to visual and aesthetic resources are defined as situations where medium and large trees would be removed and the removal would impact the visual character of adiacent

The Coburg Road Corridor is composed of a mix of land uses with a range of visual character types. The northern portion of the corridor tends to pass areas with newer commercial-retail character where street and landscape trees following the route are younger and smaller than in other parts of the corridor. South of Randy Papé Beltline, the corridor is typified by a mixture of land uses and visual character types as well as street tree conditions. Much of that part of the route passes areas with residential visual character that contain well established vegetation and adjacent street and landscape trees. Areas with commercial-retail visual character are scattered in this portion of the route and in the area north of Downtown Eugene. Street tree presence is sporadic.

The portion of the Martin Luther King, Jr. Boulevard Corridor east of Autzen Stadium contains areas with residential visual character that are generally lined with street and landscape trees. As the corridor continues west, it passes an area with a sports complex visual character. This area is lined with street and landscape trees that are younger and smaller than trees in other areas of the corridor. These younger street and landscape trees follow the corridor west of Autzen Stadium into an area with a commercial-retail visual character.

Impacts to views were not assessed in this technical report. Relevant laws, regulations, plans, and ordinances were reviewed to identify relevant views to consider in this impact analysis. Although the Eugene community places a high value on visual and aesthetic resources such as views of parks and landscape features including buttes (on the City's seal), forested hillsides, and rivers, there are no protected views, view corridors, or viewpoints in the project API. Most proposed multimodal project improvements would either be on the ground plane or would be of limited height (bus shelters and EmX stations for instance). These features would have a low likelihood of blocking views of features valued by viewers – even though none were identified in laws, regulations, plans, and ordinances. The one elevated proposed multimodal project improvement is the Trainsong Bridge, which would be located in

the Highway 99 Corridor and would be constructed under both build alternatives (the Enhanced Corridor and EmX Alternatives); the Trainsong Bridge would pass over railroad tracks and offer elevated views of the surrounding area.

S.2. Environmental Consequences

The following subsections summarize potential environmental consequences to visual and aesthetic resources as a result of the project alternatives. Sections 4 through 8 provide more detailed narratives, figures, and tables describing where street and landscape trees would be potentially removed and the impacts the removal would potentially have on visual character. These descriptions are organized by corridor (Highway 99, River Road, 30th Avenue to LCC, Coburg Road, and Martin Luther King, Jr. Boulevard) and by alternative (No-Build, Enhanced Corridor, and EmX).

The removal of medium and large street and landscape trees could impact the visual character of the portion of the corridors where the trees would be removed. The areas along each alternative where trees would likely be removed were quantified in terms of the potential (high, medium, or low) to remove medium and large trees. It is assumed there would be high potential to impact visual character in areas with a high potential to remove medium and large trees. It is assumed there would be a medium potential to impact visual character in areas with medium potential to remove medium and large street and landscape trees. It is assumed there would be low or no potential to impact visual character in situations with low or no potential to remove medium and large trees. The intensity of the impacts to visual character are therefore described as high (a high likelihood to impact visual character), moderate (a moderate likelihood to impact visual character), or low or no (low or no likelihood to impact visual character). Table S.3-1 summarizes and quantifies the narrated differences in impacts among alternatives.

S.2.1. Highway 99 Corridor

S.2.1.1. No-Build Alternative Impacts

No impacts to visual and aesthetic resources would be expected under the No-Build Alternative for the Highway 99 Corridor.

S.2.1.2. Impacts Common to All Build Alternatives

The Enhanced Corridor and EmX Alternatives follow separate alignments from Eugene Station to Garfield Street, but would have similar impacts to visual and aesthetic resources northwest of Garfield Street because both alternatives would require construction along the same portions of the Highway 99 Corridor. Both alternatives would require the removal of street and landscape trees, which would change the visual character of areas adjacent to them. Each alternative would also replant street and landscape trees that would be removed. In some locations, replanted trees would replace trees that are not on the City-approved species list, are over mature, are in poor health, or may require extensive maintenance. Removing these types of trees would produce long-term benefits to the visual and aesthetic character of the corridor by replacing them with trees that would be healthier, more visually consistent with the other street trees, and easier to maintain.

The two alternatives would introduce project components that would help visually unify the Highway 99 Corridor such as new sidewalks, bus stops, stations and associated landscaping, new and enhanced bicycle and pedestrian crossings, and the Trainsong Bridge.

S.2.1.3. Enhanced Corridor Alternative Impacts

The Enhanced Corridor Alternative would have high potential to remove medium and large street and landscape trees in scattered areas along 0.4 mile of the northern part of the corridor. Up to 14 medium and large trees would be removed from the northern portion of the corridor, most (9) would be in the vicinity of Cubit Street between Barger Drive and Wagner Street. Areas where there would be moderate potential to remove medium and large street and landscape trees, thus impacting visual character, would be scattered throughout 0.5 mile of the corridor.

Beneficial effects would include replacing trees that are not on the City-approved species list, are nearing their maximum lifespan, or are difficult to maintain. The replanted trees could contribute to a more unified appearing corridor, as could improvements such as nine new and eight enhanced bicycle and pedestrian crossings. The proposed Trainsong Bridge would add a vivid new element to the corridor and offer people elevated views of the surrounding area.

S.2.1.4. EmX Alternative Impacts

In the northern part of the corridor, the EmX Alternative would have high potential to remove medium and large street and landscape trees along approximately the same 0.4 mile section of the corridor as the Enhanced Corridor Alternative and moderate potential along the same 0.5 mile of scattered areas along the corridor. The EmX Alternative would remove up to 31 medium and large street trees and 7 to 9 landscape trees, with most being removed along Barger Road between Echo Hollow Road/Cubit Street and Empire Park Drive. This alternative would result in high and moderate potential impacts to the visual character of just less than 1.0 mile of areas scattered along the Highway 99 Corridor.

As under the Enhanced Corridor Alternative, the same benefits from replanting trees would apply to this alternative, as would benefits associated with the proposed Trainsong Bridge. The EmX Alternative would have 8 new and one enhanced bicycle and pedestrian crossings and 14 new EmX Stations, all of which would contribute to a more visually unified corridor.

S.2.2. River Road Corridor

S.2.2.1. No-Build Alternative Impacts

No impacts to visual and aesthetic resources would be expected under the No-Build Alternative for the River Road Corridor.

S.2.2.2. Impacts Common to All Build Alternatives

The primary capital improvements associated with the two alternatives with an effect on street and landscape trees and visual character along the River Road Corridor would be roadway widening and the construction of new bus stops and/or EmX stations. Where roadway widening would remove medium and large street and landscape trees, their removal could impact the visual character of River Road and areas adjacent to it.

The replanted trees would help visually unify the corridor by replacing existing trees that are not on the City-approved tree list, over mature, in poor health, or that require extensive maintenance. The construction of new bus stops and new EmX stations would introduce new structures to the River Road Corridor that would add visual interest and help further visually unify a corridor that is already fairly visually unified.

S.2.2.3. Enhanced Corridor Alternative Impacts

The Enhanced Corridor Alternative would have high potential to remove medium and large street and landscape trees found in scattered areas along 0.6 mile of the corridor and moderate potential along 0.5 mile. Up to 13 medium and large trees would be removed along River Road between Randy Pape Beltline and Santa Clara Avenue. The removal of trees would have high to moderate potential impacts to the visual character of scattered areas found along 1.1 miles of the River Road Corridor.

Beneficial effects would include replacing trees that are not be on the City-approved species list, are nearing their maximum lifespan, or are difficult to maintain. The replanted trees could contribute to a more unified appearing corridor. Other improvements such as three new and five enhanced bicycle and pedestrian crossings would somewhat improve visual unity along the corridor.

S.2.2.4. EmX Alternative Impacts

The EmX Alternative would have approximately 0.9 mile of high potential to remove medium and large trees along the River Road Corridor and 1.4 miles of moderate potential. Up to 118 medium and large street and landscape trees would be removed with this alternative. Areas where concentrations of trees would be potentially removed include; River Road between Randy Pape Beltline and Santa Clara Avenue (up to 19), River Road between Horn Lane and Maxwell Road (up to 33), and River Road between Hawthorne Avenue and Elkay Drive (up to 47). The removal of trees under the EmX Alternative would have high to moderate potential impacts to the visual character of scattered areas that would total 2.23 miles of the River Road Corridor.

As under the Enhanced Corridor Alternative, the same benefits from replanting trees would apply to this alternative. One new and five enhanced bicycle and pedestrian crossings and 20 new EmX Stations would improve visual unity along the corridor.

Indirect and cumulative effects include Identifying other locations to perform mitigation planting to offset the loss of trees in this area of the multi-use path proposed on River Road between Silver Lane and Division Avenue, which would preclude the replacement of displaced street and landscape trees along this stretch, resulting in a permanent loss of street and landscape trees in this area for a length of approximately 900 feet.

S.2.3. 30th Avenue to Lane Community College Corridor

S.2.3.1. No-Build Alternative Impacts

No impacts to visual and aesthetic resources would be expected under the No-Build Alternative for the 30th Avenue to LCC Corridor.

S.2.3.2. Impacts Common to All Build Alternatives

The primary capital improvements associated with the alternatives that would affect street and landscape trees and visual character would be roadway widening and the construction of new bus stops and/or EmX stations. In some locations, roadway widening would remove street and landscape trees.

Replanted trees would help visually unify the corridor by replacing existing trees that are not on the City-approved tree list, over mature, in poor health, or that require extensive maintenance. The construction of new bus stops and new EmX stations would introduce new structures to the River Road Corridor that would add visual interest and help further visually unify a corridor (particularly the EmX stations) that is already fairly visually unified.

S.2.3.3. Enhanced Corridor Alternative Impacts

The Enhanced Corridor Alternative would have high potential to remove medium and large trees in non-contiguous areas along approximately 0.5 mile of the corridor and moderate potential along 0.3 mile. Up to 58 medium and large trees would be removed along parts of the corridor, with up to 54 being located in Downtown Eugene. The removal of trees with the Enhanced Corridor Alternative would have high to moderate potential impacts to the visual character of 0.8 mile of areas scattered along the northern part of the corridor. No removal or large or medium street or landscape trees would be anticipated in the southern part of the corridor.

Beneficial effects would include replacing trees that are not on the City-approved species list, are nearing their maximum lifespan, or are difficult to maintain. The replanted trees could contribute to unifying the appearance of the corridor. In addition, one new bicycle and pedestrian crossings and two enhanced crossings would be constructed as would 11 new stops. These new features would help visually unify the 30th Avenue to LCC Corridor.

S.2.3.4. EmX Alternative Impacts

The EmX Alternative would have high potential impacts to remove medium and large street and landscape trees along 1.0 mile of scattered areas in the corridor and moderate potential along 0.7 mile. This alternative would remove up to 102 trees along the northern part of the corridor, 98 of which would be in Downtown Eugene. No removal or large or medium street or landscape trees would be anticipated in the southern part of the corridor. The trees that the EmX Alternative would remove would have high to moderate potential impacts to the visual character of scattered areas that would total 1.7 mile of the 30th Avenue to LCC Corridor.

Beneficial effects would include replacing trees that are not on the City-approved species list, are nearing their maximum lifespan, or are difficult to maintain. The replanted trees could contribute to a more unified appearing corridor. One new and 10 enhanced bicycle and pedestrian crossings would help visually unify the 30th Avenue to LCC Corridor as would 19 new EmX stations.

S.2.4. Coburg Road Corridor

S.2.4.1. No-Build Alternative Impacts

No impacts to visual and aesthetic resources would be expected under the No-Build Alternative for the Coburg Road Corridor.

S.2.4.2. Impacts Common to All Build Alternatives

The primary capital improvements associated with the two alternatives that would affect trees and visual character along the Coburg Road Corridor would be roadway widening and the construction of new bus stops and/or EmX stations. In some locations, roadway widening would remove street and landscape trees along Coburg Road and adjacent landscaping. The removal of trees could eliminate important visual and aesthetic resources along the corridor and influence the visual character of areas adjacent to it. Adjacent residents could have uninterrupted views of the changes if street and landscape trees and other landscaping would be removed. The construction of new bus stops and, particularly the construction of new EmX stations, would introduce new structures along the Coburg Road Corridor that would add visual interest and help further visually unify the corridor (particularly the EmX stations).

S.2.4.3. Enhanced Corridor Alternative Impacts

The Enhanced Corridor Alternative would have a high potential to remove medium and large trees found in scattered areas situated along 0.2 mile of the Coburg Road Corridor and a moderate potential along 0.9 mile. Potentially up to 9 medium and large trees (most on the southeast corner of Coburg Road and Pioneer Pike/Harlow Road) would be removed. The removal of trees from this alternative would have high to moderate potential impacts to the visual character of scattered areas along the corridor that would total 1.1 miles.

Beneficial effects would include replacing trees that are not on the City-approved species list, are nearing their maximum lifespan, or are difficult to maintain. The replanted trees could contribute to unifying the appearance of the corridor. In addition, seven new bicycle and pedestrian crossings and two enhanced crossings would be constructed as would 24 new stops. These new features would somewhat help visually unify the Coburg Road Corridor.

S.2.4.4. EmX Alternative Impacts

The EmX Alternative would have a high potential to remove medium and large trees from 1.2 miles of scattered areas along the Coburg Corridor and a moderate potential along 1.9 miles. Within these areas, up to 100 medium and large trees in downtown Eugene would be potentially removed. Areas in Downtown Eugene where concentrations of trees would be removed include W. and E. 6th Avenue between Charnelton and High Streets (up to 43), W. and E. 7th Street between Charnelton and High Streets (up to 29), Oak Street between E. 7th Avenue and Park Street (up to 6), Pearl Street between 6th and 8th Avenue (up to 12), and Pearl Street between E. Broadway and E. 11th Avenue (up to 10). Up to 49 trees outside of downtown Eugene would be potentially removed from scattered areas along the corridor Areas with concentrations of trees (over 5) would be removed include; Coburg Road between Willakenzie Road and Cal Young Road (up to 9), the southeast corner of Coburg Road and Pioneer Pike/Harlow Road (up to 19), and Coburg Road south of Tandy Turn (up to 11). Tree removal under this alternative would have high to moderate potential impacts to the visual character of scattered areas that would total 3.1 miles of the Coburg Road Corridor.

Beneficial effects would include replacing trees that are not on the City-approved species list, are nearing their maximum lifespan, or are difficult to maintain. The replanted trees could contribute to unifying the appearance of the corridor. In addition, seven new bicycle and pedestrian crossings and two enhanced crossings would be constructed as would 28 EmX stations. These new features would help visually unify the Coburg Road Corridor.

S.2.5. Martin Luther King, Jr. Boulevard Corridor

S.2.5.1. No-Build Alternative Impacts

No impacts to visual and aesthetic resources would be expected under the No-Build Alternative for the Martin Luther King, Jr. Boulevard Corridor.

S.2.5.2. Enhanced Corridor Alternative Impacts

The Enhanced Corridor Alternative would have high a potential to remove medium and large street and landscape trees along less than 0.1 mile of the corridor and a moderate potential along 0.5 mile. Up to 9 medium and large trees would be removed from the portion of the corridor along Martin Luther King Jr. Boulevard north of Kinsrow Avenue. The removal of trees would have high to moderate impacts to the visual character of scattered areas along 0.5 mile of the Martin Luther King, Jr. Boulevard Corridor.

Beneficial effects would include replacing trees that are not on the City-approved species list, are nearing their maximum lifespan, or are difficult to maintain. The replanted trees could contribute to unifying the appearance of the corridor.

S.3. Mitigation Options

With all build alternatives, in almost all locations, proposed sidewalks in areas where street trees would be impacted would be wide enough to incorporate a landscape strip into which new street trees could be planted. Where street tree removals would be required, long-term impacts would be mitigated through planting new trees; replacing all removed trees at a ratio of at least one tree planted for one tree removed or as otherwise required by *Eugene Code,* Sections 6.300 – 6.330; and coordinating with City Urban Forestry staff on the selection of tree species to be planted, their specific locations, and provision of adequate soil conditions per City standards. LTD would also engage operations personnel input to develop a tree palette that avoids other long-term operational obstacles, such as limbs that protrude into the roadway where busses travel or conflict with power infrastructure.

Where landscape tree removals would be required, long-term impacts would be mitigated through tree replanting or replacement as agreed to by the property owner. The City and LTD would coordinate with respective property owners on the selection of trees to be replanted or replaced.

The City and LTD would require the construction contractor to develop a Tree Protection Plan before construction. The plan would include, among other things, staging and scheduling practices that minimize the risk of harming trees close to the construction site. Implementing the plan would mitigate impacts related to construction activity. Best management practices for tree protection would be employed as specified through consultation with an ISA-certified project arborist, a landscaping professional, and City Urban Forestry staff.

Where a probability of potential tree impacts was identified in the *MovingAhead Street and Landscape Trees Technical Report* (CH2M, 2017), an ISA-certified project arborist should conduct a field assessment of potentially impacted trees to confirm the tree-classification status and submit to City Urban Forestry staff for review. If a Charter Tree would be subject to impact, the design would be refined to avoid this impact. This would most likely result in the minor adjustment of bus stop locations or movement/removal of proposed parking/loading pullouts within the proposed construction footprint of the 30th Avenue to LCC Corridor Enhanced Corridor Alternative.

S.4. Conclusions

All build alternatives would remove existing street and landscape trees along their routes and could create a situation where tree removal would change the existing visual character of nearby areas. The difference in the removal of trees and resulting changes to visual character between Enhanced Corridor Alternatives and the corresponding EmX Alternatives would vary by alternative. In general, the EmX Alternatives would have a larger construction footprint than the Enhanced Corridor Alternatives, and, in some locations, would remove more medium and large trees than the Enhanced Corridor Alternatives. The removal of more trees could result in changes to the visual character of more portions of the corridors. Because of the larger footprint, the EmX Alternatives would offer more opportunities to provide landscaping along portions of the corridors currently without landscaping than the Enhanced Corridor Alternatives (with its smaller construction footprint). The additional landscaping could enhance the visual character of portions of the corridors with no current landscaping. The EmX Alternatives would also have more project components, such as bicycle and pedestrian crossings and EmX stations, which would provide more visual unity along the corridor than the Enhanced Corridor Alternatives.

The Enhanced Corridor and EmX Alternatives would have a high potential of removing medium and large trees from scattered areas of the Highway 99 Corridor and would both total 0.4 mile. There would be a moderate potential of removing medium and large trees along 0.5 mile of both alternatives. The primary difference between the two alternatives would be that the Enhanced Corridor Alternative would potentially remove approximately 14 medium to large trees and the EmX Alternative would remove approximately 40 (see Table S.3-1). Both alternatives would have a high potential of changing the visual character of 0.4 mile of the corridor and a moderate potential to change visual character along 0.5 mile of the corridor. Replanted trees and new landscaping along with new and enhanced bicycle and pedestrian crossings associated with both alternatives would assist in visually unifying the Highway 99 Corridor, as would the 14 new stations of the EmX Alternative.

Along the River Road Corridor, the Enhanced Corridor Alternative would have a high potential of removing medium and large trees along 0.6 mile of the corridor, and the EmX Alternative would have a high potential along 0.9 mile. The Enhanced Corridor Alternative would have a moderate potential of removing medium and large trees along 0.5 mile of the corridor, and the EmX Alternative would have a moderate potential along 1.4 miles. The potential removal of medium to large trees would be quite different, with the Enhanced Corridor Alternative potentially removing approximately 13 trees and the EmX Alternative potentially removing approximately 118. The Enhanced Corridor Alternative would have a high potential to change visual character of 0.6 mile of the corridor, and the EmX Alternative would have a high potential to change visual character along 0.9 mile The Enhanced Corridor Alternative would have a moderate potential of changing the visual character of 0.5 mile of the corridor, and the EmX Alternative would have a moderate potential along 1.4 miles. Replanted trees and new landscaping along with new and enhanced bicycle and pedestrian crossings associated with both alternatives would assist in visually unifying the River Road Corridor, as would the 20 new stations of the EmX Alternative

Along the 30th Avenue to LCC Corridor, the Enhanced Corridor Alternative would have a high potential of removing medium and large trees along 0.5 mile of the corridor, and the EmX Alternative would have a high potential along 1.0 mile. The Enhanced Corridor Alternative would have a moderate potential of removing medium and large trees along 0.3 mile of the corridor, and the EmX Alternative would have a moderate potential along 0.7 mile. Up to approximately 58 medium to large trees (54 in Downtown Eugene) would be removed under the Enhanced Corridor Alternative and 102 (98 in Downtown Eugene) under the EmX Alternative. The Enhanced Corridor Alternative would have a high potential to change visual character of 0.5 mile of the corridor, and the EmX Alternative would have a high potential to change visual character along 1.0 mile. Replanted trees and new landscaping along with new and enhanced bicycle and pedestrian crossings associated with both alternatives would assist in visually unifying the 30th Avenue to LCC Corridor, as would the 19 new stations of the EmX Alternative.

The Coburg Road Corridor would see the largest differences in potential impacts between the two alternatives. The Enhanced Corridor Alternative would have a high potential of removing medium and large trees along 0.2 mile of the corridor, whereas the EmX Alternative would have a high potential along 1.2 miles. Areas with a moderate potential of removing medium and large trees would total 0.9 mile under the Enhanced Corridor Alternative and 1.9 mile under the EmX Alternative. Up to nine medium and large trees would be removed under the Enhanced Corridor Alternative and up to 100 trees (none in Downtown Eugene) would be removed under the EmX Alternative. The Enhanced Corridor Alternative would have a high potential of changing the visual character of 0.2 mile of the corridor and the EmX Alternative would have a high potential along 1.2 miles. Moderate potential changes to visual character would occur along 0.9 mile of the corridor with the Enhanced Corridor Alternative and 1.9 mile with the EmX Alternative. Replanted trees and new landscaping along with new and enhanced

bicycle and pedestrian crossings associated with both alternatives would assist in visually unifying the Coburg Road Corridor, as would the 28 new stations of the EmX Alternative.

Along the Martin Luther King, Jr. Boulevard Corridor, the Enhanced Corridor Alternative would have a high potential to remove medium and large trees along less than 0.1 mile of the corridor and moderate potential along 0.5 mile. Up to nine medium and large trees would be potentially removed. The alternative would have high potential to change the visual character of 0.1 mile of the corridor and moderate potential along 0.5 mile. Replanted trees and new landscaping along with new and enhanced bicycle and pedestrian crossings associated with the Enhanced Corridor Alternative would assist in visually unifying the Martin Luther King, Jr. Boulevard Corridor.

Table S.3-1. Summary of Environmental Consequences to Aesthetic and Visual Resources by Corridor and Alternative

Alternatives	No-Build Alternative	Enhanced Corridor Alternative	EmX Alternative
Highway 99 Corridor			
Long-Term Direct Impacts/Benefits	None	**Impacts** • 0.4 mile of high potential to remove medium and large street and landscape trees (trees), 0.5-mile moderate potential to remove trees. • 14 trees potentially removed. • 0.9 mile of high to moderate potential to change visual character of scattered areas along corridor. **Benefits** • Replanted trees could be selected to develop a more visually unified corridor. • 9 new and 8 enhanced bicycle and pedestrian crossings would assist in visually unifying the corridor. • The proposed Trainsong Bridge would add a new vivid visual element to the corridor and serve as an elevated viewing platform.	**Impacts** • 0.4 mile of high potential to remove trees, 0.5 mile of moderate potential to remove trees. • 40 trees potentially removed. • 0.9 mile of high to moderate potential change to visual character of scattered areas along corridor. **Benefits** • Replanted trees could be selected to develop a more visually unified corridor. • 8 new and 1 enhanced bicycle and pedestrian crossings would assist in visually unifying the corridor. • The proposed Trainsong Bridge would add a new vivid visual element to the corridor and serve as an elevated viewing platform. • 14 new EmX stations would be constructed, which would assist in visually unifying the corridor.
Indirect and Cumulative Effects	None	No significant indirect or cumulative effects.	No significant indirect or cumulative effects.
Temporary/Short-Term Construction-Related Impacts/Benefits	None	**Impacts** • Construction activities and equipment would temporarily alter the appearance of the corridor, particularly in areas where existing trees would need to be removed.	**Impacts** • Construction activities and equipment would temporarily alter the appearance of the corridor, particularly in areas where existing trees would need to be removed.
Potential Mitigation Measures	None	• Replace removed street trees in new sidewalk landscaping strips. • Replace all removed street trees at a ratio of at least one tree planted for one tree removed or as otherwise required by Eugene Code and coordinate with City Urban Forestry staff on tree species, planting locations, and soil conditions per City standards	• Replace removed street trees in new sidewalk landscaping strips. • Replace all removed street trees at a ratio of at least one tree planted for one tree removed or as otherwise required by Eugene Code and coordinate with City Urban Forestry staff on tree species, planting locations, and soil conditions per City standards

Table S.3-1. Summary of Environmental Consequences to Aesthetic and Visual Resources by Corridor and Alternative

Alternatives	No-Build Alternative	Enhanced Corridor Alternative	EmX Alternative
		• Replace removed landscape trees through coordination with individual property owners. • Develop a Tree Protection Plan before construction. • Classify large trees at Roosevelt Boulevard and on Barger Drive. Adjust design to avoid impacts to these large trees depending on classification during design refinement.	• Replace removed landscape trees through coordination with individual property owners. • Develop a Tree Protection Plan before construction. • Classify large trees at Roosevelt Boulevard and on Barger Drive. Adjust design to avoid impacts to these large trees depending on classification during design refinement.
Unavoidable Adverse Effects	None	None	None
River Road Corridor			
Long-Term Direct Impacts/Benefits	**Impacts** Trees along approximately 2 miles of the corridor (from Railroad Boulevard to Corliss Lane) that are not on the City-approved species list, are reaching their maximum life, and may need to be replaced with young, approved-species trees and would not likely be replaced without proposed project.	**Impacts** • Approximately 0.6 mile of high potential to remove trees, 0.5 mile of moderate potential to remove trees. • Up to 13 trees potentially removed. • 1.1 mile of high to moderate potential change to visual character of scattered areas along corridor. **Benefits** • Replanted trees could be selected to develop a more visually unified corridor. • Some trees that could be removed are not on the City-approved species list, are nearing their maximum lifespan, and are difficult to maintain – replacing these with approved species would be a positive benefit and could assist in visually unifying the corridor. • 3 new and 5 enhanced bicycle and pedestrian crossings would assist in visually unifying the corridor.	**Impacts** • Approximately 0.9 mile of high potential to remove trees, 1.4 mile of moderate potential to remove trees. • Up to 132 trees potentially removed. • 2.3 mile of high to moderate potential change to visual character of scattered areas along corridor. **Benefits** • Replanted trees could be selected to develop a more visually unified corridor. • Some trees that could be impacted are not on the City-approved species list, are nearing their maximum lifespan, and are difficult to maintain – replacing these with approved species would be a positive benefit and could assist in visually unifying the corridor. • 1 new and 5 enhanced bicycle and pedestrian crossings would assist in visually unifying the corridor. • 20 new EmX stations would be constructed, which would assist in visually unifying the corridor.
Indirect and Cumulative Effects	None	No significant indirect or cumulative effects.	• Identify other locations to perform mitigation planting to offset the loss of trees in this area of the multi-use path proposed on River Road between Silver Lane and Division Avenue, which would preclude the replacement of displaced street and landscape trees along this

Table S.3-1. Summary of Environmental Consequences to Aesthetic and Visual Resources by Corridor and Alternative

Alternatives	No-Build Alternative	Enhanced Corridor Alternative	EmX Alternative
			stretch, resulting in a permanent loss of street and landscape trees in this area for a length of approximately 900 feet.
Temporary/Short-Term Construction-Related Impacts/Benefits	None	**Impacts** • Excavation and heavy construction activities could potentially damage trees. • Construction activities and equipment would temporarily alter the appearance of the corridor, particularly in areas where existing medium and large street and landscape trees would need to be removed.	**Impacts** • Potential root zone impacts to existing street and landscape trees because of excavation for Business Access and Transit lane construction between Railroad Boulevard and Owosso Drive. • Excavation and heavy construction activities could potentially damage trees. • Construction activities and equipment would temporarily alter the appearance of the corridor, particularly in areas where existing trees would need to be removed.
Potential Mitigation Measures	None	• Replace removed street trees in new sidewalk landscaping strips. • Replace all removed street trees at a ratio of at least one tree planted for one tree removed or as otherwise required by Eugene Code and coordinate with City Urban Forestry staff on tree species, planting locations, and soil conditions per City standards • Replace removed landscape trees through coordination with individual property owners. • Develop a Tree Protection Plan before construction. • Classify any large trees potentially impacted. If a Charter Tree or Heritage Tree potentially would be impacted, the design would be refined to avoid this impact.	• Replace removed street trees in new sidewalk landscaping strips. • Replace all removed street trees at a ratio of at least one tree planted for one tree removed or as otherwise required by Eugene Code and coordinate with City Urban Forestry staff on tree species, planting locations, and soil conditions per City standards • Replace removed landscape trees through coordination with individual property owners. • Develop a Tree Protection Plan before construction. • Classify any large trees potentially impacted. If a Charter Tree or Heritage Tree potentially would be impacted, the design would be refined to avoid this impact. • Identify locations to provide mitigation planting for the 900 feet of lost landscaping area between Silver Lane and Division Avenue because of construction of the multi-use path.
Unavoidable Adverse Effects	None	None	None

Table S.3-1. Summary of Environmental Consequences to Aesthetic and Visual Resources by Corridor and Alternative

Alternatives	No-Build Alternative	Enhanced Corridor Alternative	EmX Alternative
30th Avenue to Lane Community College Corridor			
Long-Term Direct Impacts/Benefits	None	**Impacts** • Approximately 0.5 mile of high potential to remove trees, 0.3 mile of moderate potential to remove trees. • Up to 58 trees potentially removed (54 in Downtown Eugene). • 0.8 mile of high to moderate potential change to visual character of scattered areas along corridor. **Benefits** • Replanted trees could be selected to develop a more visually unified corridor. • 1 new and 2 enhanced bicycle and pedestrian crossings would assist in visually unifying the corridor	**Impacts** • Approximately 1.0 mile of high potential to remove trees, 0.7 mile of moderate potential to remove trees. • Up to 102 trees potentially removed (98 in Downtown Eugene). • 1.7 mile of high to moderate potential change to visual character of scattered areas along corridor. **Benefits** • Replanted trees could be selected to develop a more visually unified corridor. • 1 new and 10 enhanced bicycle and pedestrian crossings would assist in visually unifying the corridor. • 19 new EmX Stations would assist in visually unifying corridor.
Indirect and Cumulative Effects	None	**Impacts** • No significant indirect or cumulative effects.	**Impacts** • No significant indirect or cumulative effects.
Temporary/Short-Term Construction-Related Impacts/Benefits	None	**Impacts** • Excavation and heavy construction activities could potentially damage trees. • Construction activities and equipment would temporarily alter the appearance of the corridor, particularly in areas where existing trees would need to be removed.	**Impacts** • Excavation and heavy construction activities could potentially damage trees. • Construction activities and equipment would temporarily alter the appearance of the corridor, particularly in areas where existing trees would need to be removed.
Potential Mitigation Measures	None	• Replace removed street trees in new sidewalk landscaping strips. • Replace all removed street trees at a ratio of at least one tree planted for one tree removed or as otherwise required by Eugene Code and coordinate with City Urban Forestry staff on tree species, planting locations, and soil conditions per City standards	• Replace removed street trees in new sidewalk landscaping strips. • Replace all removed street trees at a ratio of at least one tree planted for one tree removed or as otherwise required by Eugene Code and coordinate with City Urban Forestry staff on tree species, planting locations, and soil conditions per City standards

Table S.3-1. Summary of Environmental Consequences to Aesthetic and Visual Resources by Corridor and Alternative

Alternatives	No-Build Alternative	Enhanced Corridor Alternative	EmX Alternative
		• Replace removed landscape trees through coordination with individual property owners. • Develop a Tree Protection Plan before construction. • Classify any large trees potentially impacted. If a Charter Tree or Heritage Tree potentially would be impacted, the design would be refined to avoid this impact. • Coordinate downtown impacts with other potential projects in the area and with City Urban Forestry staff.	• Replace removed landscape trees through coordination with individual property owners. • Develop a Tree Protection Plan before construction. • Classify any large trees potentially impacted. If a Charter Tree or Heritage Tree potentially would be impacted, the design would be refined to avoid this impact. • Coordinate downtown impacts with other potential projects in the area and with City Urban Forestry staff.
Unavoidable Adverse Effects	None	None	None
Coburg Road Corridor			
Long-Term Direct Impacts/Benefits	None	**Impacts** • Approximately 0.2 mile of high potential to remove trees, 0.9 mile of moderate potential to remove trees. • Up to 9 trees potentially removed. • 1.1 mile of high to moderate potential change to visual character. **Benefits** • Replanted trees could be selected to develop a more visually unified corridor. • 7 new and 2 enhanced bicycle and pedestrian crossings and 24 new bus stops would assist in visually unifying the corridor.	**Impacts** • Approximately 1.2 mile of high potential to remove trees, 1.9 mile of moderate potential to remove trees. • Up to 149 trees potentially removed. • 3.1 mile of high to moderate potential change to visual character. **Benefits** • Replanted trees could be selected to develop a more visually unified corridor. • 7 new and 2 enhanced bicycle and pedestrian crossings and 28 new EmX stations would assist in visually unifying the corridor.
Indirect and Cumulative Effects	None	**Impacts** • No significant indirect or cumulative effects.	**Impacts** • No significant indirect or cumulative effects.
Temporary/Short-Term Construction-Related Impacts/Benefits	None	**Impacts** • Excavation and heavy construction activities could potentially damage trees. • Construction activities and equipment would temporarily alter the appearance of the corridor, particularly in areas	**Impacts** • Large median street trees between the Ferry Street Bridge and Oakmont Way might potentially be impacted by construction adjacent to these trees to construct exclusive bus lanes. Excavation and heavy construction activities could potentially damage trees.

Table S.3-1. Summary of Environmental Consequences to Aesthetic and Visual Resources by Corridor and Alternative

Alternatives	No-Build Alternative	Enhanced Corridor Alternative	EmX Alternative
		where existing medium and large street and landscape trees would need to be removed.	• Construction activities and equipment would temporarily alter the appearance of the corridor, particularly in areas where existing trees would need to be removed.
Potential Mitigation Measures	None	• Replace removed street trees in new sidewalk landscaping strips. • Replace all removed street trees at a ratio of at least one tree planted for one tree removed or as otherwise required by Eugene Code and coordinate with City Urban Forestry staff on tree species, planting locations, and soil conditions per City standards • Replace removed landscape trees through coordination with individual property owners. • Develop a Tree Protection Plan before construction. • Classify any large trees potentially impacted. If a Charter Tree or Heritage Tree potentially would be impacted, the design would be refined to avoid this impact.	• Replace removed street trees in new sidewalk landscaping strips. • Replace all removed street trees at a ratio of at least one tree planted for one tree removed or as otherwise required by Eugene Code and coordinate with City Urban Forestry staff on tree species, planting locations, and soil conditions per City standards • Replace removed landscape trees through coordination with individual property owners. • Develop a Tree Protection Plan before construction. • Classify any large trees potentially impacted. If a Charter Tree or Heritage Tree potentially would be impacted, the design would be refined to avoid this impact. • Coordinate downtown impacts with other potential projects in the area and with City Urban Forestry staff.
Unavoidable Adverse Effects	None	None	None
Martin Luther King, Jr. Boulevard Corridor			
Long-Term Direct Impacts/Benefits	None	**Impacts** • Less than 0.1 mile of high potential to remove trees, 0.5 mile of moderate potential to remove trees. • Up to 9 trees potentially removed. • 0.1 mile high potential to change visual character and moderate potential along 0.5 mile. **Benefits** • Replanted trees could be selected to develop a more visually unified corridor.	Not applicable

Table S.3-1. Summary of Environmental Consequences to Aesthetic and Visual Resources by Corridor and Alternative

Alternatives	No-Build Alternative	Enhanced Corridor Alternative	EmX Alternative
Indirect and Cumulative Effects	None	No significant indirect or cumulative effects.	Not applicable
Temporary/Short-Term Construction-Related Impacts/Benefits	None	**Impacts** • Excavation and heavy construction activities could potentially damage trees. • Construction activities and equipment would temporarily alter the appearance of the corridor, particularly in areas where existing trees would need to be removed.	Not applicable
Potential Mitigation Measures	None	• Replace removed street trees in new sidewalk landscaping strips. • Replace all removed street trees at a ratio of at least one tree planted for one tree removed or as otherwise required by Eugene Code and coordinate with City Urban Forestry staff on tree species, planting locations, and soil conditions per City standards • Develop a Tree Protection Plan before construction. • Classify any large trees potentially impacted. If a Charter Tree or Heritage Tree potentially would be impacted, the design would be refined to avoid this impact.	Not applicable
Unavoidable Adverse Effects	None	None	Not applicable

1. Introduction

1.1. MovingAhead Technical Reports

A total of 20 technical reports have been prepared for the MovingAhead Project. The technical reports have been prepared to support the selection of preferred alternatives for the MovingAhead Project and subsequent environmental documentation. The technical reports assume that any corridors advanced for environmental review will require a documented categorical exclusion under the National Environmental Policy Act (NEPA). Any corridors requiring a higher level of environmental review would be supported by the technical evaluation but might not be fully covered by the technical evaluation.

Technical reports have been prepared for the following disciplines:

- Acquisitions and Displacements
- Air Quality
- Capital Cost Estimating
- Community Involvement, Agency and Tribal Coordination
- Community, Neighborhood, and Environmental Justice
- Cultural Resources
- Ecosystems (Biological, Fish Ecology, Threatened and Endangered Species, Wetlands and Waters of the U.S. and State)
- Energy and Sustainability
- Geology and Seismic
- Hazardous Materials
- Land Use and Prime Farmlands
- Noise and Vibration
- Operating and Maintenance Costs
- Parklands, Recreation Areas, and Section 6(f)
- Section 4(f)
- Street and Landscape Trees
- Transportation
- Utilities
- Visual and Aesthetic Resources
- Water Quality, Floodplain, and Hydrology

In general, each technical report includes the following information for identifying effects:

- Relevant laws and regulations
- Contacts and coordination
- Summary of data sources and analysis methods described in the *MovingAhead Environmental Disciplines Methods and Data Report* (CH2M HILL, Inc. [CH2M] et al., 2015)
- Affected environment
- Adverse and beneficial effects including short-term, direct, indirect and cumulative
- Mitigation measures
- Permits and approvals
- References

1.2. Visual and Aesthetic Resources Technical Report and Purpose

The purpose of this technical report is to present the results of the visual and aesthetic resources impact assessment for the MovingAhead corridor alternatives. To allow a comparison of potential impacts between the alternatives to be made, the Technical Report describes and compares how the alternatives would change the appearance and visual character of the corridors. It does this by quantitatively comparing potential impacts to street and landscape trees and describes how these changes impact the existing visual character of areas along the corridors. In addition, beneficial impacts to visual and aesthetic conditions along the corridors from the proposed alternatives are identified.

1.3. Discipline Experts

Table 1.3-1 identifies discipline experts who contributed to the preparation of this report. This table includes their areas of expertise, affiliated organizations, titles, and years of experience.

Table 1.3-1. Discipline Experts

Discipline	Technical Expert	Affiliated Organization	Title/Years of Experience
Visual and Aesthetic Resources	Mark Greenig	CH2M	Senior Planner/25 years
Editors			
	Scott Richman	CH2M	Senior Project Manager/24 years
	Lynda Wannamaker	Wannamaker Consulting	President/33 years
	Ryan Farncomb	CH2M	Senior Transportation Planner/7 years
	Hart Migdal	LTD	Associate Development Planner/3 years
	Zach Galloway	City of Eugene	Senior Planner/10 years

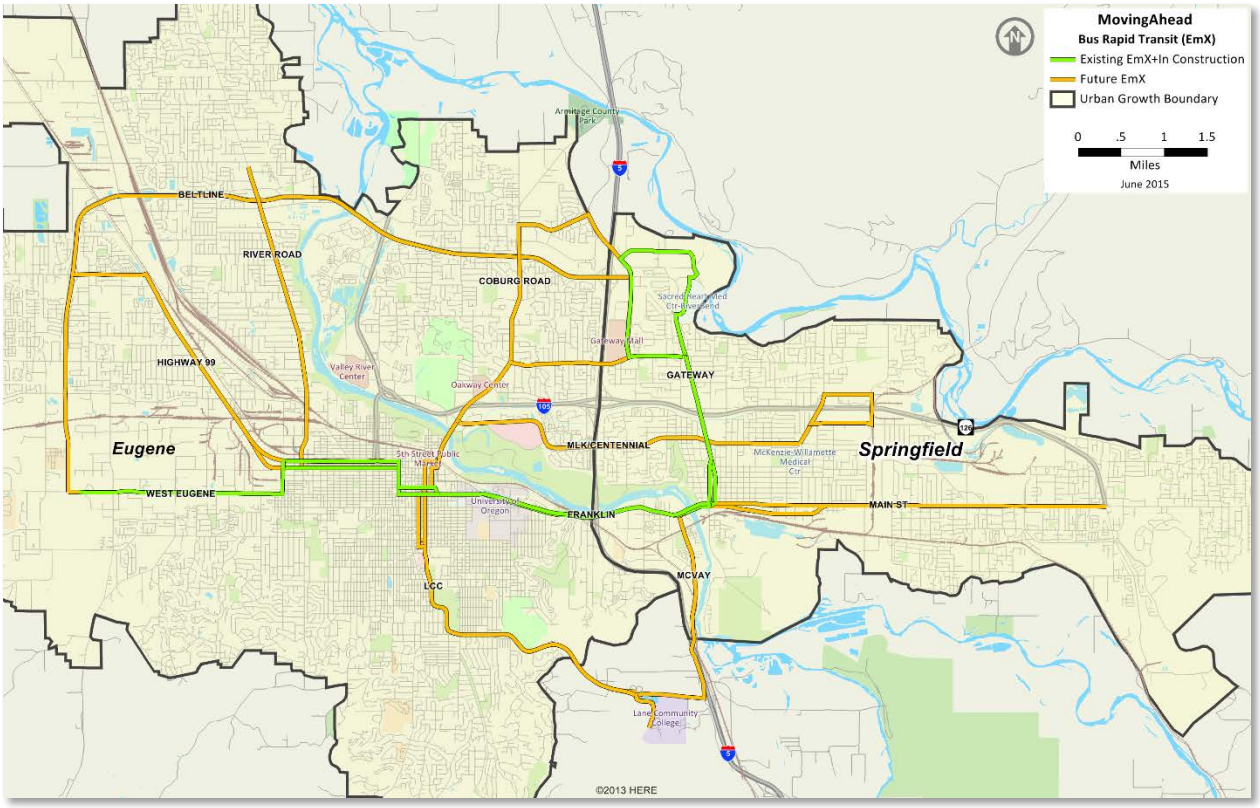
Source: MovingAhead Project Team. (2017).

1.4. Study Background

The purpose of the MovingAhead Project is to determine which high-capacity transit corridors identified in the adopted *Central Lane Metropolitan Planning Organization Regional Transportation Plan* (Lane Council of Governments [LCOG], 2011, December; RTP) and the *Lane Transit District Long Range Transit Plan* (Lane Transit District [LTD], 2014) as part of the Frequent Transit Network (FTN) are ready to advance to capital improvements programming in the near term. The study is being conducted jointly with the City of Eugene and LTD to facilitate a streamlined and cost-efficient process through concurrent planning, environmental review, and design and construction of multiple corridors. The study area includes Eugene and portions of unincorporated Lane County.

The *Lane Transit District Long-Range Transit Plan* (LTD, 2014) identifies the full Martin Luther King, Jr. Boulevard/Centennial Boulevard Corridor as a future part of the FTN. Initially, MovingAhead considered options on Centennial Boulevard to serve Springfield as part of this corridor. Because Springfield does not have the resources available to consider transit enhancements on Centennial Boulevard at this time, MovingAhead will only develop Emerald Express (EmX) and Enhanced Corridor Alternatives within Eugene. Figure 1.4-1 presents LTD's existing and future bus rapid transit (BRT) system.

Figure 1.4-1. Lane Transit District's Bus Rapid Transit (BRT) System



Source: LTD. (2015, Amended 2015, June).

1.5. Screening and Evaluation of Multimodal Options

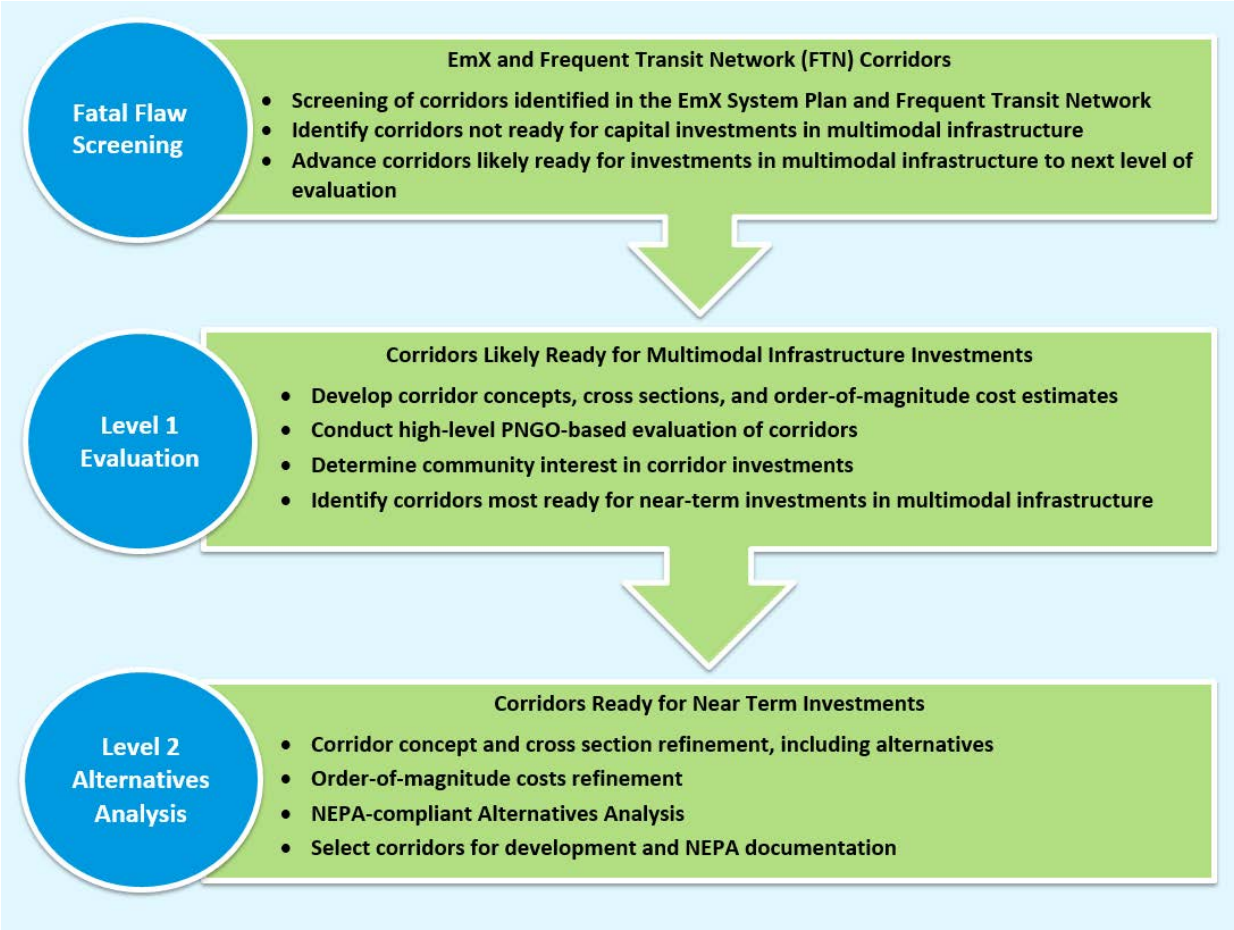
The MovingAhead Project process includes two phases. This first phase has three discrete but closely related tasks: identifying transit improvements; identifying improvements for bicyclists, pedestrians, and users of mobility devices; and preparing a NEPA-compliant evaluation of alternatives focused on the region's transportation system. Corridor options identified as part of the first phase were developed using multimodal cross sections that include variations on automobile, truck, and bus travel lanes; bicycle lanes; landscaping strips; and sidewalks. At the end of the first phase, the City of Eugene and LTD will select the corridors that are most ready for near-term capital improvements and prioritize improvements for funding. The selected corridors will be advanced to the second phase, which will focus on preparing NEPA environmental reviews (Documented Categorical Exclusions), and initiating the Federal Transit Administration (FTA) project development process.

1.5.1. Fatal Flaw Screening

The project team conducted a fatal flaw screening in February 2015 to identify which of the 10 corridors should not move forward to the Level 1 Screening Evaluation (Figure 1.5-1). This high-level evaluation used criteria based on MovingAhead's Purpose, Need, Goals, and Objectives (LTD, 2015, Amended 2015, June) and existing data to determine which corridors were not ready for capital investment in BRT or multimodal infrastructure in the next 10 years. The screening was conducted with local, regional, and state agency staff. Of the 10 corridors identified, the following three corridors were not advanced from

the fatal flaw screening to the Level 1 Screening Evaluation: 18th Avenue, Bob Straub Parkway, and Randy Papé Beltline Highway. Table 1.5-1 shows the results of the fatal flaw screening.

Figure 1.5-1. MovingAhead Phase 1 Steps



Source: Wannamaker Consulting. (2015).

Although originally advanced from the fatal flaw screening, the Main Street-McVay Highway Corridor was also not advanced to the Level 1 Screening Evaluation because the Springfield City Council (on May 18, 2015) and LTD Board (on May 20, 2015) determined that the corridor is ready to advance to a study to select a locally preferred transit solution. At the time (May 2015), the Main Street-McVay Highway Corridor was on a schedule ahead of the MovingAhead Project schedule. If the Main Street-McVay Highway Corridor study schedule is delayed and its progress coincides with this project, the corridor could be reincorporated back into MovingAhead.

The six remaining multimodal corridors were advanced to the Level 1 Screening Evaluation to determine how they compared with each other in meeting the Purpose, Need, Goals, and Objectives.

Table 1.5-1. Results of the Fatal Flaw Screening

Corridor	Advanced to Level 1	Consider Later
Highway 99	✓	
River Road	✓	
Randy Papé Beltline		✓
18th Avenue		✓
Coburg Road	✓	
Martin Luther King Jr. Boulevard/Centennial Boulevard	✓	
30th Avenue to Lane Community College	✓	
Main Street-McVay Highway	✓	
Valley River Center	✓	
Bob Straub Parkway		✓

Source: LTD and City of Eugene. (2015).

1.5.2. Level 1 Screening Evaluation

The Level 1 Screening Evaluation assessed how each corridor would perform according to the Purpose, Need, Goals, and Objectives of MovingAhead. The Level 1 Screening Evaluation used existing studies and readily available data to evaluate each corridor. Based on community input and technical analysis, the following corridors and alternatives were advanced from the Level 1 Screening Evaluation to the Level 2 Alternatives Analysis (AA) (Table 1.5-2):

Table 1.5-2. Corridors and Transit Alternatives Advanced to the Level 2 Alternatives Analysis

Corridor	No-Build	Enhanced Corridor	EmX
Highway 99	✓	✓	✓
River Road	✓	✓	✓
30th Avenue to Lane Community College	✓	✓	✓
Coburg Road	✓	✓	✓
Martin Luther King, Jr. Boulevard	✓	✓	

Source: CH2M. (2016).

- No-Build Alternatives: all corridors
- Enhanced Corridor and EmX Alternatives:
  - Highway 99 Corridor
  - River Road Corridor
  - 30th Avenue to Lane Community College (LCC) Corridor
  - Coburg Road Corridor

- Enhanced Corridor Alternative:
  - Martin Luther King Jr. Boulevard Corridor

The Valley River Center Corridor received the least public support during public outreach and was not carried forward to the Level 2 AA.

For a detailed discussion of alternatives and design options considered for each corridor, but not carried forward to the Level 2 AA, please refer to the *Alternatives and Design Options Considered but Eliminated Technical Memorandum* (CH2M, 2016).

1.5.3. Level 2 Alternatives Analysis

To guide the Level 2 AA, LTD prepared new ridership forecasts and related evaluation measures using the LCOG regional model. Base-year and future-year forecasts were prepared for corridor alternatives based upon updated inputs and transit networks specific to each corridor. The planning horizon year used for the Level 2 AA is 2035. The built and natural environments, transit operations, traffic, finance, historical resources, and other areas were also evaluated as part of the Level 2 AA. The findings from the Level 2 AA will aid LTD and the City of Eugene in determining how corridors should be prioritized for capital investments over the next 5 years. Selected corridors will be advanced to Phase 2.

1.6. Purpose and Need

The prioritization of capital investments in multimodal transit corridors is a powerful tool for implementing local and regional comprehensive land use and transportation plans, agency strategic plans, and other community planning documents. Capital investments in multimodal transit corridors can have a substantial impact on patterns of growth and development. By coordinating the timing of, and prioritizing the funding for, strategic multimodal capital investments, the MovingAhead Project (a multimodal transit corridor study) helps ensure that future development is consistent with our region's plans and vision.

The Purpose and Need Statement was refined based on public and agency input.

1.6.1. Purpose

The purpose of the MovingAhead Project is to:

- Develop a Capital Improvements Program that forecasts and matches projected revenues and capital needs over a 10-year period
  - Balance desired multimodal transit corridor improvements with the community's financial resources
  - Ensure the timely and coordinated construction of multimodal transit corridor infrastructure
  - Eliminate unanticipated, poorly planned, or unnecessary capital expenditures
- Identify the most economical means of financing multimodal transit corridor capital improvements
- Establish partnerships between LTD, City of Eugene, and other local agencies that prioritize multimodal transit infrastructure needs and promote interagency cooperation
- Ensure that multimodal transit corridor investments are consistent with local comprehensive land use and transportation plans

1.6.2. Need

The need for the MovingAhead Project is based on the following factors:

- LTD's and the region's commitment to implementing the region's vision for BRT in the next 20 years consistent with the RTP that provides the best level of transit service in a cost-effective and sustainable manner.
- Need for streamlined environmental reviews to leverage systemwide analysis.
- Need to build public support for implementation of the systemwide vision.
- Selection of the next EmX/FTN corridors is based on long-range operational and financial planning for LTD's service.

1.6.3. Goals and Objectives

Goal 1: Improve multimodal transit corridor service

Objective 1.1: Improve transit travel time and reliability
Objective 1.2: Provide convenient transit connections that minimize the need to transfer
Objective 1.3: Increase transit ridership and mode share in the corridor
Objective 1.4: Improve access for people walking and bicycling, and to transit
Objective 1.5: Improve the safety of pedestrians and bicyclists accessing transit, traveling in and along the corridor, and crossing the corridor

Goal 2: Meet current and future transit demand in a cost-effective and sustainable manner

Objective 2.1: Control the increase in transit operating cost to serve the corridor
Objective 2.2: Increase transit capacity to meet current and projected ridership demand
Objective 2.3: Implement corridor improvements that provide an acceptable return on investment
Objective 2.4: Implement corridor improvements that minimize impacts to the environment and, where possible, enhance the environment
Objective 2.5: Leverage funding opportunities to extend the amount of infrastructure to be constructed for the least amount of dollars

Goal 3: Support economic development, revitalization, and land use redevelopment opportunities for the corridor

Objective 3.1: Support development and redevelopment as planned in other adopted documents
Objective 3.2: Coordinate transit improvements with other planned and programmed pedestrian and bicycle projects
Objective 3.3: Coordinate transit improvements with other planned and programmed roadway projects
Objective 3.4: Minimize adverse impacts to existing businesses and industry
Objective 3.5: Support community vision for high capacity transit in each corridor
Objective 3.6: Improve transit operations on state facilities in a manner that is mutually beneficial to vehicular and freight traffic flow around transit stops and throughout the corridor
Objective 3.7: Improve transit operations in a manner that is mutually beneficial to vehicular traffic flow for emergency service vehicles

1.6.4. Evaluation Criteria

Evaluation criteria will be used during the Trade-off Analysis, which is part of the Level 2 AA, to aid in determining how well each of the corridor alternatives would meet the project's Purpose, Need, Goals, and Objectives. The evaluation criteria require a mix of quantitative data and qualitative assessment. The resulting data will be used to measure the effectiveness of each proposed corridor alternative and to assist in comparing and contrasting the alternatives and options. In Table 1.6-1, evaluation criteria are listed for each of the project's objectives. Some objectives have only one criterion for measuring effectiveness, while others require several criteria.

Table 1.6-1. Evaluation Criteria

Goals and Objectives		Evaluation Criteria
Goal 1: Improve multimodal transit corridor service		
Objective 1.1:	Improve transit travel time and reliability	• Round trip p.m. peak transit travel time between select origins and destinations • On-time performance (no more than 4 minutes late) of transit service
Objective 1.2:	Provide convenient transit connections that minimizes the need to transfer	• Number of transfers required between heavily used origin-destination pairs
Objective 1.3:	Increase transit ridership and mode share in the corridor	• Average weekday boardings on corridor routes • Transit mode share along the corridor • Population within 0.5 mile of transit stop • Employment within 0.5 mile of transit stop
Objective 1.4:	Improve access for people walking and bicycling, and to transit	• Connectivity to existing pedestrian facilities • Connectivity to existing bicycle facilities
Objective 1.5:	Improve the safety of pedestrians and bicyclists accessing transit, traveling in and along the corridor, and crossing the corridor	• Opportunity to provide a safe and comfortable environment for pedestrians and bicyclists in the corridor
Goal 2: Meet current and future transit demand in a cost-effective and sustainable manner		
Objective 2.1:	Control the increase in transit operating cost to serve the corridor	• Cost per trip • Impact on LTD operating cost • Cost to local taxpayers
Objective 2.2:	Increase transit capacity to meet current and projected ridership demand	• Capacity of transit service relative to the current and projected ridership
Objective 2.3:	Implement corridor improvements that provide an acceptable return on investment	• Benefit/cost assessment of planned improvements
Objective 2.4:	Implement corridor improvements that minimize impacts to the environment and, where possible, enhance the environment	• Results of screening-level assessment of environmental impacts of transit solutions
Objective 2.5:	Leverage funding opportunities to extend the amount of infrastructure to be constructed for the least amount of dollars	• Number and dollar amount of funding opportunities that could be leveraged • Meet the FTA's Small Starts funding requirements

Table 1.6-1. Evaluation Criteria

Goals and Objectives		Evaluation Criteria
Goal 3:	**Support economic development, revitalization and land use redevelopment opportunities for the corridor**	
Objective 3.1:	Support development and redevelopment as planned in other adopted documents	• Consistent with the BRT System Plan and FTN concept • Consistent with the *Regional Transportation System Plan* (Central Lane Metropolitan Planning Organization [MPO], 2007) • Consistent with local comprehensive land use plans
Objective 3.2:	Coordinate transit improvements with other planned and programmed pedestrian and bicycle projects	• Capability of transit improvement to coordinate with other planned and programmed pedestrian and bicycle projects identified in adopted plans and Capital Improvements Programs
Objective 3.3:	Coordinate transit improvements with other planned and programmed roadway projects	• Capability of transit improvement to coordinate with other planned and programmed roadway projects identified in adopted plans and Capital Improvements Programs
Objective 3.4:	Minimize adverse impacts to existing businesses and industry	• Impacts to businesses along the Corridor measured in number and total acres of properties acquired, parking displacements, and access impacts. • Impact on freight and delivery operations for Corridor businesses
Objective 3.5:	Support community vision for high capacity transit in corridor	• Community vision includes high capacity transit in corridor
Objective 3.6:	Improve transit operations on state facilities in a manner that is mutually beneficial to vehicular and freight traffic flow around transit stops and throughout the corridor	• Impact on current and future year intersection level of service (LOS) on state facilities • Impact on current and future year p.m. peak hour auto/truck travel times on state facilities
Objective 3.7:	Improve transit operations in a manner that is mutually beneficial to vehicular traffic flow for emergency service vehicles	• Qualitative assessment of potential impacts to emergency service vehicle traffic flow and access

Source: LTD and City of Eugene. (2015).

LOS = level of service

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2. Alternatives Considered

This section briefly reviews the major features of the alternatives considered in the Level 2 AA. For full details on each alternative and the five corridors described in this technical report – Highway 99, River Road, 30th Avenue to LCC, Coburg Road, and Martin Luther King, Jr. Boulevard – refer to the *MovingAhead Level 2 Definition of Alternatives* (CH2M et al., 2016). Each corridor location is shown on Figures 2.1-1 and 2.1-2 for the Enhanced Corridor Alternatives and the EmX Alternatives, respectively.

Figure 2.1-1. Enhanced Corridor Alternatives Overview

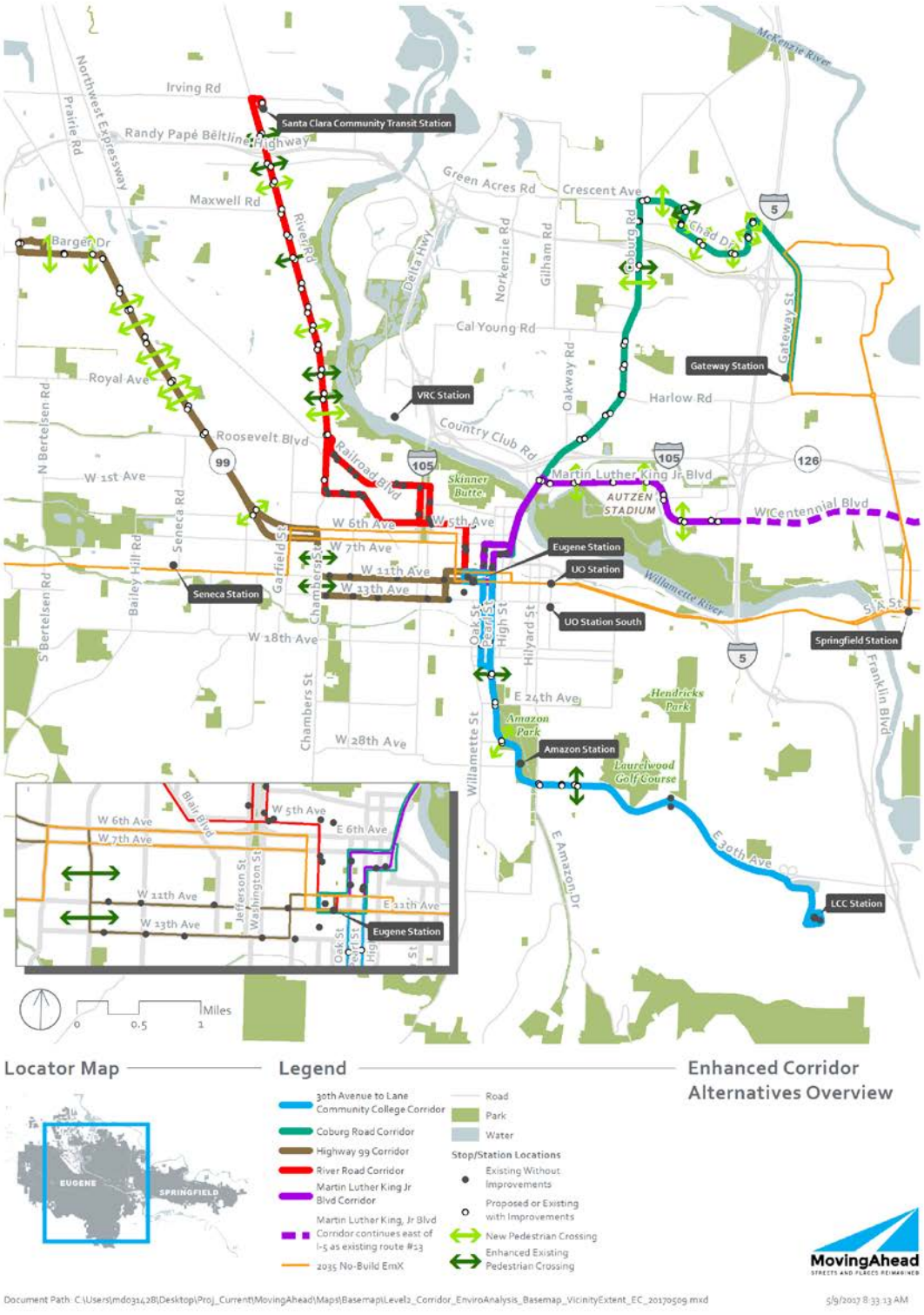
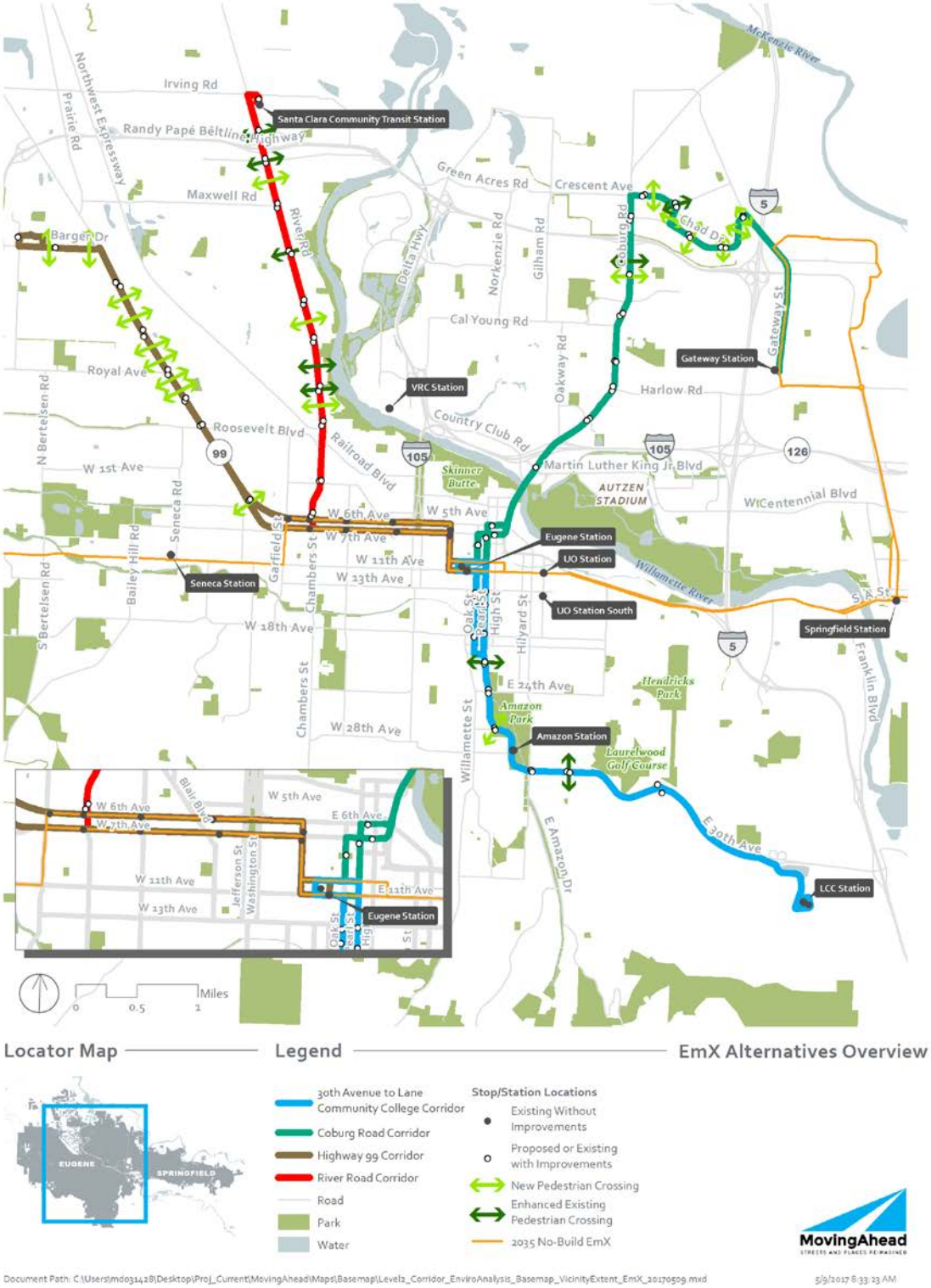


Figure 2.1-2. EmX Alternatives Overview



2.1. No-Build Alternative Transit Network

This section describes the No-Build Alternative transit network, which is based on projected conditions in the year 2035, the project's environmental forecast year. For each corridor, the No-Build Alternative serves as a reference point to gauge the benefits, costs, and effects of the build alternatives.

2.1.1. Capital Improvements

Under the No-Build Alternative, the following capital improvements are anticipated by 2035:

- **West Eugene EmX Extension**. Currently under construction, the West Eugene EmX Extension (WEEE) project and its associated capital improvements will be completed in 2017.
- **Santa Clara Community Transit Center**. The existing River Road Station is located at the southeast corner of the River Road/Randy Papé Beltline Highway interchange between the eastbound on-ramp and River Avenue. To meet growing demand and avoid the impacts of increasing congestion, LTD plans to relocate the River Road Station to a site north of the Randy Papé Beltline Highway at the southeast corner of River Road and Hunsaker Lane. Once relocated to the new site, the River Road Station would be renamed the Santa Clara Community Transit Center. This new transit center is planned to include a mix of uses including a park and ride lot, residential housing, community space, and commercial uses. The River Road Station relocation to the new site is anticipated to be completed by the end of 2018.
- **Main Street EmX Extension**. Included in the RTP and currently under study, the extension of the existing Franklin EmX line on Main Street from Springfield Station to Thurston Station and associated capital improvements (e.g., stations, bicycle and pedestrian facilities, and signal modifications) is anticipated to be completed within the 20-year planning horizon (2035). The No-Build Alternative transit network assumes EmX service on Main Street. However, the outcome of this study, and the ultimate improvements chosen, are uncertain at this time.
- **McVay Highway Enhanced Corridor**. Included in the RTP and currently under study, Enhanced Corridor service from Springfield Station on McVay Highway to LCC and associated capital improvements (e.g., improved stops, transit queue jumps, and improved bicycle and pedestrian crossings) is anticipated to be completed within the 20-year planning horizon (2035).

2.1.2. Transit Operations

The No-Build Alternatives for each corridor include changes to transit service anticipated as a result of the WEEE project, Main Street EmX Extension project, development of the Santa Clara Community Transit Center, and other changes to fixed route service. The following changes to the existing 2016 fixed route services are anticipated by 2035:

- Eliminated routes:
  - Route 11 (replaced by Main Street EmX service)
  - Route 32 (replaced by WEEE service)
  - Route 76 (replaced by WEEE service)
  - Route 85 (replaced by Enhanced Corridor service on the McVay Highway)
  - Route 43 (replaced by WEEE service)
- Other route modifications:
  - Add WEEE service (replaces Route 43 service on W. 11th Avenue) as extension of existing EmX service
  - Add Main Street EmX service from Springfield Station to Thurston Station
  - Add Route 2 with service from Barger Drive/Echo Hollow Road to Eugene Airport

  - Add Route 16 to connect north and south of Main Street with EmX service
  - Add Enhanced Corridor service on McVay Highway from Springfield Station to LCC (replaces Route 85)
  - Reroute Route 33 and extend to Amazon Parkway
  - Reroute Route 36 to extend north of W. 11th Avenue to Barger Drive (replaces Route 43)
  - Reroute Route 41 via Highway 99/Royal Avenue/W. 11th Avenue
  - Reroute Route 40 via Royal Avenue/Elmira Road/Roosevelt Boulevard/Chambers Street/W. 2nd Avenue/Oak and Pearl Streets
  - Add Route 44 paralleling Route 40 above to serve West Eugene
  - Reroute Route 55 to extend to Santa Clara Community Transit Center
  - Reroute Route 93 with service continuing to Eugene Station via Seneca Station and service terminating at the WEEE terminus
- Change in service frequencies:
  - Increase service on Route 24 from 30-minute peak frequencies to 15-minute peak frequencies
  - Increase service on Route 28 from approximately 30-minute peak frequencies (varying 20- to 30-minute intervals) to 15-minute peak frequencies
  - Increase service on Route 41 from 30- and 15-minute peak frequencies to 15-minute peak frequencies
  - Increase service on Route 51 from 60-minute off-peak frequencies to 30-minute off-peak frequencies
  - Increase service on Route 52 from 60-minute off-peak frequencies to 30-minute off-peak frequencies
  - Increase service on Route 66 from 30- and 15-minute weekday a.m. peak, off-peak, and p.m. peak frequencies to 15-minute weekday a.m. peak, off-peak, and p.m. peak frequencies
  - Increase service on Route 67 from approximately 30-minute weekday a.m. peak, off-peak, and p.m. peak frequencies to 15-minute weekday a.m. peak, off-peak, and p.m. peak frequencies
  - Increase service on Route 78 from approximately 60-minute frequencies from 8 a.m. to 6 p.m. to 30-minute weekday a.m. peak, off-peak, and p.m. peak frequencies
  - Increase service on Route 79x from 30-minute peak frequencies to 10-minute peak frequencies, and modify off peak frequencies to 15 minutes from between 10 and 30 minutes currently
  - Decrease a.m. peak service on Route 93 from 60-minute frequencies to 120-minute frequencies during a.m. peak hours, and increase from no service between Veneta and the WEEE terminus to 120-minute frequencies during p.m. peak hours (off-peak service is 120-minute frequencies between Veneta and the WEEE terminus)
  - Decrease a.m. peak service on Route 96 from 30-minute frequencies to 60-minute frequencies, and increase off-peak service from no service between 8:20 a.m. and 3:40 p.m. to 60-minute off-peak frequencies

Key transportation improvements specific to each corridor are described under each corridor's No-Build Alternative.

2.2. Enhanced Corridor Alternatives

Enhanced Corridor Alternatives are intended to address the project's Purpose, Need, Goals, and Objectives without major transit capital investments, instead focusing on lower-cost capital improvements, operational improvements, and transit service refinements. Features could include transit queue jumps (lanes for buses that allow the bus to "jump" ahead of other traffic at intersections using a separate signal phase), stop consolidation, enhanced shelters, and redesigned service to improve

cross-town connectivity. These features improve reliability, reduce transit travel time, and increase passenger comfort.

Enhanced Corridor service would run from 6:45 a.m. to 11:30 p.m. weekdays, 7 a.m. to 11 p.m. Saturdays, and 8 a.m. to 8 p.m. Sundays. Service frequencies are assumed to be 15 minutes during all periods.

2.3. EmX Alternatives

EmX (BRT) Alternatives are characterized by exclusive guideways (business access and transit lanes [BAT] or bus-only lanes); branded, multi-door 60-foot-long BRT vehicles; enhanced stations with level boarding platforms instead of stops; off-board fare collection; signal priority; wider stop spacing; and frequent and redesigned service to improve cross-town connectivity.

EmX service is assumed to run from 6:45 a.m. to 11:30 p.m. weekdays, 7 a.m. to 11 p.m. Saturdays, and 8 a.m. to 8 p.m. Sundays. Service frequencies are assumed to be 10 minutes during all periods.

2.4. Highway 99 Corridor

The Highway 99 Corridor begins at the Eugene Station, travels through downtown, then extends northwest along Highway 99 to Barger Drive, turning west at Barger Drive to terminate on Cubit Street north of the intersection of Barger Drive and Cubit Street east of the Randy Papé Beltline Highway. This corridor is approximately 10.5 round-trip miles.

2.4.1. No-Build Alternative

The Highway 99 Corridor No-Build Alternative includes existing roadway, bicycle, pedestrian, and transit facilities in the corridor, as well as planned improvements in the *DRAFT Eugene 2035 Transportation System Plan* (City of Eugene, 2016a; Draft Eugene 2035 TSP). The No-Build Alternative would not include capital improvements on Highway 99. As part of the Draft Eugene 2035 TSP, the following transportation improvements are planned along or adjacent to the corridor:

- Upgrade Bethel Drive, from Highway 99 to Roosevelt Boulevard, to a two-lane urban facility with sidewalks on both sides of the road, bicycle lanes, and planting strips
- Widen Barger Drive immediately west of the Randy Papé Beltline Highway interchange to include an additional travel lane in each direction
- Add a shared-use path on the west side of Highway 99 from Roosevelt Boulevard south to the intersection of W. 7th Avenue and Garfield Street (the section of this project from Roosevelt to W. 5th Avenue has been completed)
- Add bicycle lanes on Garfield Street from Roosevelt Boulevard south to W. 6th Avenue
- Add a bicycle lane on W. 6th Avenue from Garfield Street to W. 5th Avenue
- Complete the sidewalk network on Highway 99 from Roosevelt Boulevard south to Garfield Street
- Add a shared-use path on Roosevelt Boulevard from Maple Street to Highway 99
- Add a bicycle lane on Roosevelt Boulevard from Highway 99 east to railroad tracks

Under the No-Build Alternative, Highway 99 Corridor service would remain at 15-minute headways during peak periods and 30-minute headways during off-peak periods and evenings. Under the No-Build Alternative, a slight change is also made to Route 93, which would stop at the Pearl Buck Center in the absence of Route 44.

2.4.2. Enhanced Corridor Alternative

Capital improvements under the Highway 99 Corridor Enhanced Corridor Alternative would include enhanced bicycle and pedestrian crossings; improvements to existing bus stops and the construction of new stops; construction of queue jumps at some intersections; traffic signal reconstruction; construction of bus-only left turn lanes; and roadway widening at some locations in the corridor.

Existing conventional fixed-service routes would remain the same as with the No-Build Alternative, with the exception of the elimination of Route 41. Service west of WinCo would also remain the same or be improved.

2.4.3. EmX Alternative

The Highway 99 Corridor EmX Alternative would include creating BAT lanes on segments of W. 7th Avenue and Highway 99; reconstructing the Highway 99/Roosevelt Boulevard intersection (traffic signal, turn lanes, and queue jump); completing other intersection modifications in the corridor; roadway widening at some locations; and constructing nine new enhanced pedestrian and bicycle crossings, new sidewalks, and a pedestrian bridge across the railroad line from Highway 99 to the Trainsong neighborhood. Four existing bus stop locations would be improved to EmX stations, in addition to constructing new stations. Some existing EmX stations would be used for the Highway 99 Corridor EmX service.

Route 44 is a conventional service line added to this alternative only, providing coverage on 11th and 13th Avenues as well as service to the Pearl Buck Center on W. 1st Avenue, with 30-minute headways during all periods. This would be a decrease in service for the 11th and 13th Avenue corridors that currently have 15-minute peak service. Route 44 is primarily intended to replace conventional service lost with the removal of the existing Route 41. Route 41 would be replaced with the Highway 99 Corridor EmX service described in this alternative.

2.5. River Road Corridor

The River Road Corridor begins at the Eugene Transit Center, travels through downtown and then north to the Santa Clara Community Transit Center (intersection of Hunsaker Lane and River Road). This corridor is approximately 10.3 round-trip miles.

2.5.1. No-Build Alternative

The River Road Corridor No-Build Alternative would include existing roadway, bicycle, pedestrian, and transit facilities in the corridor, as well as planned improvements in the Draft Eugene 2035 TSP. There would be no additional major bus capital improvements under the No-Build Alternative.

As part of the Draft Eugene 2035 TSP, the following transportation improvements are planned adjacent to and along the River Road Corridor:

- Upgrade the Hunsaker Lane/Beaver Street intersection to urban collector standards, including two travel lanes, a center turn lane, bicycle lanes, sidewalks on both sides of the road, and planting strips from River Road to Division Avenue
- Provide bicycle boulevards on Ruby Avenue, Horn Lane, Arbor Drive, and Park Avenue
- Include sidewalks on Hunsaker Lane, Howard Avenue, and Hilliard Lane
- Provide protected bicycle lanes on River Road from the Northwest Expressway to Division Avenue

Under the No-Build Alternative, River Road Corridor service would remain at 30-minute headways for both Routes 51 and 52 (which together effectively provide 15-minute service during peak periods) and off-peak periods. After 6:15 p.m., there is no longer a combined 15-minute frequency, and headways return to 30 minutes.

2.5.2. Enhanced Corridor Alternative

Capital improvements constructed as part of the River Road Corridor Enhanced Corridor Alternative would include BAT lanes on River Road approaching the Randy Papé Beltline Highway and other roadway improvements, like traffic signal reconstruction at certain locations along the corridor. Improvements to existing bus stops and the construction of new stops would also occur.

Routes 51 and 52 would be eliminated, and Enhanced Corridor service for River Road includes a split alignment in order to serve portions covered by those routes at 30-minute headways. In this arrangement, the area from Railroad Boulevard to W. 1st Avenue is served by one Enhanced Corridor service as a replacement for the Route 51 service, while the area along Blair Boulevard and W. 2nd Avenue is served by the other alignment to replace service lost with removal of Route 52. Those alignments meet at Railroad Boulevard and River Road to serve the River Road Corridor with consistent 15-minute headways.

2.5.3. EmX Alternative

New construction under the River Road Corridor EmX Alternative would include lane repurposing on River Road for BAT lanes, constructing short sections of exclusive bus lanes near the Randy Papé Beltline Highway, reconstructing traffic signals and intersections at several locations, constructing new bicycle and pedestrian crossings, improving existing stops to EmX stations, and constructing new stations. Some existing EmX stations would be used with the River Road EmX service.

Transit service changes would also include modifying headways on Route 40 during the a.m. and p.m. peak hours to 15 minutes, developing a new Route 50 “River Road Connector” with 30-minute headways all day, and eliminating Routes 51, 52, and 55. These replacements ensure no loss in existing coverage or service.

2.6. 30th Avenue to Lane Community College Corridor

The 30th Avenue to LCC Corridor begins at Eugene Station and travels south along Pearl Street (outbound) to Amazon Parkway, then on E. 30th Avenue to its terminus at the LCC Station. The return trip travels on Oak Street (inbound), which is the northbound couplet to Pearl Street. This corridor is approximately 10.2 round-trip miles.

2.6.1. No-Build Alternative

The 30th Avenue to LCC Corridor No-Build Alternative would include existing roadway, bicycle, pedestrian, and transit facilities in the corridor, as well as planned improvements in the Draft Eugene 2035 TSP. There would be no additional major bus capital improvements to the 30th Avenue to LCC Corridor under the No-Build Alternative.

The Draft Eugene 2035 TSP identifies the following transportation improvements along or adjacent to the corridor:

- Bicycle boulevard on Alder Drive

For the portion of E. 30th Avenue in unincorporated Lane County, Lane County does not plan to improve bicycle facilities along the road.

Under the No-Build Alternative, 30th Avenue to LCC Corridor service would remain at 30-minute headways on Route 81. The Route 82 service would remain at 10-minute headways during the a.m. peak, 15-minute headways during off-peak periods, and 20-minute headways during the p.m. peak, with no weekend service.

2.6.2. Enhanced Corridor Alternative

Capital improvements as part of the 30th Avenue to LCC Corridor Enhanced Corridor Alternative would include the construction of new bus stops, capital improvements to some existing bus stops, a new traffic signal on Amazon Parkway at E. 20th Avenue, and new bike facilities on Oak and Pearl Streets.

Under the 30th Avenue to LCC Corridor Enhanced Corridor Alternative, service to LCC provided by Routes 81 and 82 would be eliminated and replaced by Enhanced Corridor service. The direct connection between LCC and the University of Oregon Station along Route 81 would be eliminated. It would be replaced by connecting the 30th Avenue to LCC Corridor Enhanced Corridor Alternative to the Franklin EmX line with a transfer at Eugene Station.

2.6.3. EmX Alternative

The 30th Avenue to LCC Corridor EmX Alternative would include repurposing parking and general-purpose lanes to BAT lanes on Oak and Pearl Streets, constructing queue jumps, extending E. 20th Avenue, adding a new traffic signal on Amazon Parkway, and adding a new cycle track on High Street. In addition to constructing new EmX stations, existing bus stops would be improved to EmX stations in certain locations.

Service to LCC provided by Routes 81 and 82 would be replaced with EmX service. The direct connection between LCC and the University of Oregon Station along Route 81 would be eliminated. It would be replaced by connecting the 30th Avenue to LCC Corridor EmX Alternative to the Franklin EmX line with a transfer at Eugene Station.

2.7. Coburg Road Corridor

The Coburg Road Corridor begins at Eugene Station and continues to Coburg Road using the Ferry Street Bridge. The corridor continues north on Coburg Road to Crescent Avenue, east on Crescent Avenue and Chad Drive to N. Game Farm Road, and south on N. Game Farm Road and Gateway Street to the existing Gateway Station at the Gateway Mall. Although service extends from N. Game Farm Road to the Gateway Station, capital improvements for the corridor terminate at Interstate 5 (I-5). This corridor is approximately 11.2 round-trip miles.

2.7.1. No-Build Alternative

The Coburg Road Corridor No-Build Alternative includes existing roadway, bicycle, pedestrian, and transit facilities in the corridor, as well as planned improvements in the Draft Eugene 2035 TSP. There would be no additional major transportation improvements to the Coburg Road Corridor under the No-Build Alternative.

Under the No-Build Alternative, the Coburg Road Corridor service would remain at 15-minute headways on Routes 66 and 67 at all weekday times, 30-minute headways on Saturdays, and 60-minute headways on Sundays.

2.7.2. Enhanced Corridor Alternative

The Coburg Road Corridor Enhanced Corridor Alternative would include new traffic signal construction, intersection reconstruction at several locations on Coburg Road, the addition of queue jumps, and the addition of BAT lanes south of the Interstate 105 (I-105) interchange. New crossings for bicyclists and pedestrians would be constructed. Existing bus stops would be improved and new stops would also be constructed.

Route 12 would be altered to serve Valley River Center and Marcola Road. A new route (Route 60) would be added to serve Valley River Center, and Routes 66 and 67 would be eliminated. This change would provide new service and coverage to the Cal Young neighborhood and along Hayden Bridge Way in Springfield. It would require current passengers along Harlow Road to transfer in order to get downtown.

2.7.3. EmX Alternative

Improvements to the corridor under the Coburg Road Corridor EmX Alternative would include construction of exclusive transit lanes at several locations on Coburg Road and intersection reconstruction at multiple locations. New bicycle and pedestrian crossings and EmX stations would be constructed, and some existing bus stops would be improved to EmX stations.

As in the Coburg Road Corridor Enhanced Corridor Alternative, Route 12 would be altered to serve Valley River Center and Marcola Road, and Route 60 would be added to serve Valley River Center, while Routes 66 and 67 would be eliminated. This change would provide new service and coverage to the Cal Young neighborhood and along Hayden Bridge Way in Springfield. It would require current passengers along Harlow Road to transfer in order to get downtown.

2.8. Martin Luther King, Jr. Boulevard Corridor

The Martin Luther King, Jr. Boulevard Corridor begins at Eugene Station and travels through downtown Eugene on Oak and Pearl Streets and on 7th and 8th Avenues. The corridor uses the Ferry Street Bridge to reach Martin Luther King, Jr. Boulevard and continues east on Martin Luther King, Jr. Boulevard past Autzen Stadium to Centennial Boulevard. Although transit service continues along Centennial Boulevard, capital improvements for the corridor terminate at I-5. The corridor is approximately 6.0 round-trip miles.

2.8.1. No-Build Alternative

The Martin Luther King, Jr. Boulevard Corridor No-Build Alternative includes existing roadway, bicycle, pedestrian, and transit facilities in the corridor, as well as planned improvements in the Draft Eugene 2035 TSP. The Draft Eugene 2035 TSP identifies the following transportation improvements along or adjacent to the Martin Luther King, Jr. Corridor:

- Add a center turn lane along sections of Martin Luther King, Jr. Boulevard from Club Road to Leo Harris Parkway

Under the No-Build Alternative, the Martin Luther King, Jr. Boulevard Corridor service would remain at 30-minute headways.

2.8.2. Enhanced Corridor Alternative

Capital improvements associated with the Martin Luther King, Jr. Boulevard Corridor Enhanced Corridor Alternative would include reconstructing traffic signals at the intersections of Coburg Road and Martin Luther King, Jr. Boulevard and of Martin Luther King, Jr. Boulevard and Centennial Loop; repurposing existing outside general-purpose lanes to BAT lanes on Martin Luther King, Jr. Boulevard; adding a new traffic signal at the intersection of Martin Luther King, Jr. Boulevard and Leo Harris Parkway; enhancing pedestrian crossings; constructing new bus stops; and improving existing bus stops. Existing Route 13 would be eliminated.

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3. Methods and Data

This section describes the analysis methodologies and data used for the visual and aesthetic resources evaluation for the MovingAhead Project.

3.1. Relevant Laws and Regulations

The following describe the federal, state, and local laws, regulations, plans, and guidelines used to evaluate the applicable requirements related to visual resources.

3.1.1. Federal

- **23 Code of Federal Regulation (CFR) Parts 750-752, Federal Highway Administration (FHWA), Highway Beautification.** These are the implementing regulations for the Highway Beautification Act of 1965, which was enacted to provide effective control of outdoor advertising and junkyards, protect public investment, promote the safety and recreational value of public travel, preserve natural beauty, and provide landscapes and roadside development reasonably necessary to accommodate the traveling public.
- **23 CFR 771, FHWA, *Environmental Impact and Related Procedures.*** These are the implementing regulations for environmental impacts and related policies and procedures for NEPA to ensure that environmental considerations, such as impacts related to aesthetics and visual quality, are given due weight in project decision-making.
- **40 CFR 1500-1508, Council on Environmental Quality (CEQ), *Regulations for Implementing NEPA.*** Under CEQ's implementing regulations, environmental analysis must consider impacts on urban quality, historic and cultural resources, and the built environment.
- ***Visual Impact Assessment for Highway Projects,* FHWA Pub. No. FHWA-HI-88-054.** This document provides guidelines and worksheets for assessing visual impacts for highway projects.
- **National Historic Preservation Act, Section 106, 16 U.S.C. 470f.** This act addresses the impacts of growth and development on the historic and cultural character of communities. Implementing regulations require that federal agencies consider the effects of all of their undertakings on historic properties and define criteria of adverse effect to include the "introduction of visual, audible, or atmospheric elements that are out of character with the property or alter its setting." 36 CFR 800.8

3.1.2. State

- **Oregon Statewide Planning Goal 5, Natural Resources, Scenic and Historic Areas, and Open Spaces.** Oregon's statewide planning goals provide the framework for planning within the state. Goal 5 provides guidelines for local governments to adopt programs to protect natural resources and conserve scenic, historic, and open space resources. The goal encourages local governments and state agencies to maintain inventories of scenic views and sites.
- **Oregon Administrative Rule 660 Division 23, Procedures and Requirements for Complying with Goal 5**. This division establishes procedures and criteria for inventorying and evaluating Goal 5 resources and for developing land use programs to conserve and protect significant scenic resources. It explains how local governments apply Goal 5 inventory, assessment (Environmental, Social, Economic, and Energy Consequences Analysis), and protection measures (such as scenic protection overlay zones) when conducting periodic review and when amending acknowledged comprehensive plans and land use regulations.

- **Oregon Department of Transportation, *Roadside Development Design Manual,* 2006.** This document provides guidance for assessing visual and aesthetic resource impacts and recommendations for landscaping and architectural treatments.

3.1.3. Local

- **City of Eugene Land Use Code (Chapter 9).** The land use code contains several directives related to scenery and/or views of natural features. It requires a visual study for proposed transmission towers. It does not contain directives related to views and scenery for transportation projects such as the proposed Project.
- ***Eugene-Springfield Metropolitan Area General Plan*.** The Eugene-Springfield Metropolitan Area General Plan (Metro Plan) is this metropolitan area's comprehensive plan. Metro Plan policies and the Metro Plan Diagram provide guidance on how land use, natural resources, public facilities, and the local economy should be developed, designed, and/or conserved over time, based on a broad range of citizen input. In essence, the Metro Plan contains the vision for the future of the Eugene-Springfield community. This plan contains goals, findings, policies, and resource elements that identity the value of views and scenery to the community, but do not identify specific visual and aesthetic resources such as views, scenic roadways, and viewpoints that can be used in this technical report to assist in impact assessment.
- ***City of Eugene Parks, Recreation, and Open Space (PROS) Comprehensive Plan*.** The PROS Comprehensive Plan identifies future needs for parks, open space, and recreation programs and services. This plan provides guidance for the city's approximately 2,900 acres of land in 130 parks, natural areas, and special use facilities and wide variety of recreational programs, special events, and services. Based on the identified needs, the PROS Comprehensive Plan proposes dozens of strategies for achieving the community's vision to improve parks, provide recreation opportunities, and protect natural resource values. The plan does not contain directives related to scenery or views related to transportation projects such as the proposed Project.
- ***Rivers to Ridges, Metropolitan Regional Parks and Open Space Study, Vision and Strategies* (2003).** This document provides a comprehensive vision and broader regional perspective for the metropolitan region's parks and open space planning. The document does not identify specific visual and aesthetic resources such as views, scenic roadways, and viewpoints that can be used in this technical report to assist in impact assessment.

3.1.3.1. Summary of Relevant Laws and Regulations

The review of relevant laws, regulations, plans, and ordinances did not disclose specific visual and aesthetic resources to consider for analyzing potential impacts from the proposed project. The Eugene community places a high value on visual and aesthetic resources such as parks and views of important scenic features such as buttes (on the City's seal), forested hillsides, and rivers. General policy statements in many of the reviewed documents encouraged and directed maintaining views of scenic features like these, but did not identify specific protected views or view corridors, viewpoints, or other scenic features that could be used to assist in impact evaluations. Even though specific scenic features were not identified, it would be very unlikely that views of valued scenic features would be compromised by the proposed project.

Examples of existing views of Spencer Butte, a local scenic feature, from roadways at varying distances are depicted in Figures 3.1-1 and 3.1-2. Because most of the proposed projects improvements would be along the ground plane, or of limited height (bus shelters, EmX stations, and traffic signals for instance), the likelihood of the improvements intruding upon, or blocking, views of valued scenic features would be low. The one elevated proposed project improvement would be the Trainsong Bridge in the

Highway 99 Corridor. The pedestrian/bicycle bridge would cross over rail lines (providing elevated views) and would not infringe on views of valued scenic features.

Figure 3.1-1. Coburg Road/Mill Street at East 6th Avenue Looking South (Spencer Butte in Distance)

Source: Tutt, Dan. (2016).

Generally, the removal of medium and large trees would potentially open up views of valued scenic features, at least until replanted trees approach the size and scale of the trees they would replace. Because of these findings, this technical report does not devote attention to describing existing views that could be opened, or would be impacted by the proposed project, because the likelihood of that occurring is remote.

Figure 3.1-2. Amazon Parkway at East 29th Avenue Looking South (Spencer Butte in Distance)

Source: Tutt, Dan. (2016).

3.2. Analysis Area

The analysis area, or API, for a visual and aesthetic impact assessment is called a viewshed. A viewshed is the aggregate landscape from which a proposed project can be viewed. Views to and from a proposed project tend to be reciprocal. A viewshed analysis area is delimited by topography, vegetation, and large objects in the built environment. The viewshed analysis area for each corridor selected for further analysis in the Level 2 AA has been determined primarily by the potential removal or addition of large features within the viewed landscape (i.e., large trees, signs, structures, widened roadways, and changes to sidewalks) that could have an impact on views to and from the project area and/or change the existing conditions of visual and aesthetic resources within the analysis area. The viewshed along the corridors assessed in this technical report are fairly constricted in many places by the presence of trees and buildings adjacent to or near the corridors. Visibility of the alternatives that would pass though the corridors is further complicated in many places by fairly flat terrain. In general, the analysis area for visual and aesthetic resources is considered to encompass an area from the centerline of the proposed corridor routes out to an area from between approximately 100 feet to 0.25 mile, depending on surrounding conditions.

3.3. Contacts and Coordination

3.3.1. Federal

No federal contacts requiring coordination that pertain to visual and aesthetic resource impacts of roadway facilities were identified.

3.3.2. State

No state contacts requiring coordination that pertain to visual and aesthetic impacts of roadway facilities were identified.

3.3.3. Local

The City of Eugene Planning and Development Department was contacted to establish if the City had identified specific viewpoints, view corridors, protected views in City plans, policies, or ordinances.

3.4. Level 1 Screening

No data were collected or analyzed for the Level 1 Screening.

3.5. Level 2 Alternatives Analysis

3.5.1. Data Collection

Data collection and assessment methods for the visual and aesthetics resource evaluation were generally based upon the FHWA visual and aesthetics assessment methodology. Technical Advisory TA-6640 (October 1987) provides the guidance for preparing and processing environmental documents for lands subject to Section 4(f) of the Department of Transportation Act of 1966, including visual impacts. The FHWA methodology is an accepted framework for describing and analyzing a transportation project's visual impacts, for developing the social and physical contexts for visual impact analyses, and for conducting due-diligence practices in support of the project's objectives to comply with policies, laws, and regulations related to protecting the visual and aesthetic environment. The FHWA methodology is most directly applicable for specific proposed projects, rather than for a Level 2 AA such as that done for this technical report. However, concepts from the FHWA methodology, particularly visual (or landscape) character, were useful for this Level 2 AA.

3.5.1.1. Views

Federal and state regulations, plans, and guidelines were consulted for policies and information related to views. Local land use plans, policies, and regulations were also reviewed for references related to views and other visual and aesthetic resources and concerns. City staff was consulted to determine if there were any key scenic resources and/or specific viewpoints along the corridors identified in the Draft Envision Eugene (Envision Eugene, 2016, July) or other local planning documents.

3.5.1.2. Trees

This technical report used data from the *MovingAhead Street and Landscape Trees Technical Report* (CH2M, 2017) related to areas where street and landscape trees would potentially be removed. The *Street and Landscape Trees Technical Report* (CH2M, 2017) contains descriptions of how data were collected for this resource. Existing digital and paper mapping along with GoogleEarth and GoogleEarth Streetview were also used to characterize existing conditions and assist in determining where impacts to trees might occur.

Tree Definitions

Street Tree: A living, standing, woody plant with a trunk that exists in the public right-of-way.

Landscape Tree: A living, standing, woody plant with a trunk that exists on private property.

3.5.1.3. Visual Character

Visual character was described by reviewing existing digital and paper mapping, reviewing GoogleEarth and GoogleEarth Streetview, and reviewing photographs taken along the corridors. These sources aided in identifying existing land use patterns, vegetation types and conditions, water bodies, structures, streets, highways, and topography – all factors that contribute to the visual character of the corridors.

3.5.2. General Methods

3.5.2.1. Identifying Existing Visual and Aesthetic Resources

Implementation of the alternatives could result in adverse impacts and beneficial effects to the visual and aesthetic resources found along the corridors. Visual and aesthetic resources encompass a wide variety of components and viewed objects. Visual resources potentially include a wide range of objects, and are typically described in terms of their visual character and visual quality. The focus of the assessment in this technical report was on identifying visual and aesthetic resources that would be the most useful to identify potential impacts and compare potential impacts associated with the corridors and alternatives. The types of visual and aesthetic resources used for this effort were street and landscape trees (due to their presence along the corridors and importance as visual and aesthetic resources in the Eugene community) and visual character. The following describes both resources.

Trees

Trees greatly contribute to the visual and aesthetic environment along much of the corridors. The number and size category of trees along the corridors potentially removed by the alternatives can be determined, thus potential impacts from the alternatives can be quantified. The *MovingAhead Street and Landscape Trees Technical Report* (CH2M, 2017) was used as the basis of describing existing conditions and assessing impacts to street and landscape trees associated with the alternatives. Section 3.4 of the *MovingAhead Street and Landscape Trees Technical Report* (CH2M, 2017) explains how medium and large size street and landscape trees were identified using geographic information systems data as part of the effort used to identify locations along the routes of the alternatives, especially in areas of high sensitivity where Charter Trees and Heritage Trees would be potentially located.

Charter Trees are a classification used by the City of Eugene to protect mature trees meeting certain criteria from road-widening projects. Because the City does not have an inventory of Charter Trees, staff identified areas along the alternative routes with street and landscape trees within the historic 1915 city boundary (in which the mature Charter Trees are potentially present) and overlaid the construction footprint of the alternatives on these areas containing street and landscape trees. Potential Charter

Trees were identified in the *MovingAhead Street and Landscape Trees Technical Report* (CH2M, 2017) so that the project alternatives could be designed to avoid impacting these trees.

Heritage Trees are described by the City as trees of exceptional community value based upon size (relative to species], history, location, or species, or any combination of these criteria. The same process used to identify areas where Charter Trees would potentially be located was used for Heritage Trees.

This process allowed identification of street and landscape trees located within the construction footprint of each alternative where potential impacts could occur. Once identified, the lineal feet of the area along the alternative could be estimated, the lineal feet of potentially removed trees for each alternative could be established, and the number of medium and large trees could be estimated. The lineal feet of the corridor used to determine impacts to street and landscape is the overall physical length of the corridor and accounts for potential impacts on both sides of the roadway as well as different one-way streets traveled in Downtown Eugene. It does not correspond to the round-trip distance either bus or EmX service would travel on a corridor.

Visual Character

Visual character includes attributes in the viewed landscape such as form, line, color, and texture. It is used to describe, not evaluate a landscape (i.e., these attributes are considered neither good nor bad). Changes in visual character can be described, and if compared with the response from viewers to the change, impact evaluations can be developed. Changes or impacts to visual character can be identified by how visually compatible a proposed project would be with the existing condition by using the following visual character attributes as descriptors:

- **Scale:** apparent size as it relates to the surroundings
- **Form:** visual mass or shape
- **Line:** edges or linear definition
- **Color:** reflective brightness (i.e., light and dark)
- **Texture:** surface coarseness
- **Dominance:** position, size, or contrast
- **Diversity:** a variety of visual patterns
- **Continuity:** uninterrupted flow of form, line, color, or textural pattern

Visual character is an important component of the visual and aesthetic environment. Project alternatives were examined to determine if they would change, or impact the visual character of portions of the corridors they would pass through. Because street and landscape trees are important visual and aesthetic resources and are found to varying degrees along all corridors, a change in the number of street and landscape trees could contribute to a change or impact to the visual character of the corridors. For instance, if a number of street and landscape trees along a “tree-lined” residential street were removed and there were no other trees near them, the visual character of the residential street could be changed and impacted. At the other end of the spectrum, removing small street and landscape trees near an area with an industrial visual character would not change or impact its visual character.

To establish the general visual character of the corridors, staff reviewed aerial photographs, land use maps, GoogleEarth, GoogleEarth Streetview, and photographs taken along the corridor (Appendix C). Using these tools allowed general descriptions of the existing visual character of the corridors to be developed. These descriptions are inherently somewhat subjective, and in some places with a great deal of mixed uses, somewhat challenging to describe. However, changes that could occur to the visual character of the corridors is an important factor to consider and was applied consistently to the

corridors based upon staff experience in visual impact assessment and land use planning. The general visual character types found along the corridors are described below, as are statements related to the importance of street and landscape trees to the character types.

- **Residential** – Most areas along the corridors with this character type are residential neighborhoods composed of single-family dwellings and multi-family developments. The residences typically have residential landscaping on their properties (including trees in many areas). Many have fences and walkways and driveways connecting to the adjacent sidewalk or street. Street trees (planted on public property) and landscape trees (planted on adjacent private properties) are found in many residential areas. Street and landscape trees are often considered important visual and aesthetic components that contribute to the character of residential areas.
- **Urban** – This is somewhat of a catch-all description that can be used to describe moderate to intensely developed areas that contain a mix of land uses (for this impact analysis, it includes commercial office and retail uses, government facilities, and dense residential areas) that contain a mixture of building sizes and types. Downtown Eugene is generally considered to have urban visual character. Street and landscape trees are often considered important visual and aesthetic components of urban areas. In the API, important mature trees are found within many parts of the historic (1915) city boundary.
- **Parks and Parkways** – Street trees lining streets near parks and parkways (landscaped boulevards) may be important visual and aesthetic components that can help identify the boundary of a park or the edges and route of a parkway. Where there are many adjacent trees (in some parks for instance), the presence of street and landscape trees along a parkway may be less noticeable and less important to visual character.
- **Industrial** – Where street and landscape trees have been planted on streets adjacent to industrial areas, they add attractive elements to the streetscape and can visually tie a corridor together. The trees may screen views into adjacent industrial areas. The presence of street and landscape trees adjacent to industrial areas may be less expected than in areas with other visual character types.
- **Commercial/Retail** – Where street and landscape trees have been planted, they add attractive elements to the streetscape to tie a corridor together and can make a commercial retail area more attractive and distinctive. Street and landscape trees may screen views into adjacent areas and sometimes are not wanted by retail businesses concerned that trees block views of their businesses or signs from potential customers traveling on abutting streets.
- **Sports Complex** – Street trees can define streets passing along or through these areas and add to the attractiveness of the area. Due to the large open spaces found in these areas, street and landscape trees may be important attractive elements.
- **Undeveloped/Natural** – The presence of street and landscape trees may not be as noticed in these areas if trees beyond the street are present.

3.6. Impact Assessment Approach

This Level 2 AA impact assessment considered the long-term, short-term, indirect, and cumulative adverse impacts of the proposed alternatives on the visual and aesthetic resources of the project corridors. Beneficial effects of the proposed alternatives are also described.

3.6.1. Direct Impacts

The potential removal of street and landscape trees along the corridors would be the most visible impact, and would have the greatest influence on potentially impacting visual character in the corridors.

Trees are considered major visual and aesthetic resources in the Eugene area. Therefore, the impact assessment approach used in this technical report began by examining where the alternatives would have a high or medium potential to remove medium and large street and landscape trees. Once areas along the corridors where medium and large trees would be potentially removed were determined, the likelihood of their removal changing or impacting the visual character of the portions of the corridors where the trees would be removed was assessed. To assist in this determination, the distances of potential medium and large street and landscape tree removal along the corridors for each alternative was obtained from the *MovingAhead Street and Landscape Trees Technical Report* (CH2M, 2017). Direct adverse impacts to medium and large trees were defined in the *MovingAhead Street and Landscape Trees Technical Report* as situations where street and landscape trees would be removed along a corridor and/or where construction damage to tree limbs and/or root systems might prove fatal to the trees. For this Technical Report, these areas were quantified for each alternative in terms of the alternative having a high or moderate potential to remove medium and large trees. Because it is assumed that the removal of medium and large street and landscape trees would potentially impact the character of areas along the alternatives, potential impacts to visual character in this Technical Report are characterized by identifying the distance of areas where there would be high and medium potential to remove medium and large trees. Where there would be a high potential to remove medium and large trees, it is assumed that there would be high potential to impact visual character. When there would be medium potential to remove medium and large street and landscape trees, it is assumed that there would be a medium potential to impact visual character. Situations where there would be low or no potential to remove medium and large trees would have low or no potential to impact visual character.

3.6.2. Short-Term Impacts

Short-term impacts to tree resources would occur when construction-related activities would potentially damage tree limbs and root systems, but not to the extent that the damage would be fatal to the trees and require their removal. These impacts were not quantified in the *MovingAhead Street and Landscape Trees Technical Report* (CH2M, 2017), but were identified in impact descriptions of each alternative. Where these types of short-term impacts would likely change the visual character of the proposed project corridors, they are noted.

3.6.3. Indirect Impacts

Future development in the area identified in regional and municipal plans and other proposals might result in additional impacts on trees in the API. Potential indirect impacts are described at a general level for the alternatives.

3.6.4. Cumulative Impacts

Cumulative impacts were described in qualitative terms based upon the likelihood that impacts associated with the proposed project and other proposed projects would change the visual character of the API. The cumulative impacts analysis focused on those impacts resulting from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of which agency or person undertakes such other actions. Cumulative impacts could result from individually minor but collectively significant actions that take place over time. Impacts on street and landscape trees could include the determination of net loss or gain of trees and tree canopy in conjunction with other projects throughout the region.

3.7. Mitigation Measures

Mitigation measures for potential significant adverse impacts were developed in coordination with other disciplines. Locations where impacts could occur and the degree and nature of the impact were identified. Possible mitigation options were identified for the API. Determination of appropriate mitigation measures would be closely coordinated with review agencies. Mitigation options considered included the following:

- Avoiding and minimizing impacts to mature and significant trees, where practicable
- Replacing removed trees to meet City replacement requirements in consultation with the City's Urban Forester and coordination with LTD operations personnel to develop a tree palette that accommodates EmX operational requirements
- Using interdisciplinary design teams to incorporate aesthetic considerations in designing project elements
- Identifying mitigation strategies with review agencies by reviewing photo simulations depicting impacts to existing structures, large trees, environmentally sensitive areas, and others
- Integrating facilities with area redevelopment plans
- Minimizing clearing for construction and operation
- Planting appropriate vegetation in and adjoining the project right of way (ROW)
- Using source shielding in exterior lighting
- Final mitigation measures to be included in the project would be made after LPA selection during the NEPA documentation and design refinement

4. Highway 99 Corridor

4.1. Affected Environment

The following subsections describe areas along the Highway 99 Corridor with concentrations of street and landscape trees and provide an abbreviated overview of the visual character of the corridor. Figure 4.1-1 depicts the routes of the Enhanced Corridor Alternative and the EmX Alternative through the Highway 99 Corridor as well as the locations of photographs of the corridor that are contained in Appendix C. The photographs in Appendix C illustrate existing visual and aesthetic resource conditions found along portions of the Highway 99 Corridor that alternatives would likely change.

All study corridors under consideration propose inbound and outbound transit service through Downtown Eugene to and from Eugene Station. Downtown Eugene has a more urban character than the other portions of the study corridors due to denser development patterns and a greater mix of building types and sizes. Mature street and landscape trees are present along portions of the study corridors in Downtown Eugene and in many areas have formed canopy cover over the streets.

4.1.1. Areas Containing Street and Landscape Trees

The greatest concentration of street and landscape trees along the Highway 99 Corridor is at its northwestern end along Barger Drive and Echo Hollow Road. Street and landscape trees along the older and more residential southern side of Barger Drive are larger, but fewer in number, than those found on the northern side. Properties north of Barger Drive and along Echo Hollow Road contain newer commercial and residential developments. Street and landscape trees and vegetation were planted in landscaped areas between the sidewalk and parking areas/buildings to the north.

Much of the route that follows Highway 99 passes areas with industrial and commercial/retail visual character. The industrial and commercial/retail areas along Highway 99 do not typically contain much landscaping. However, some properties do have adjacent street trees in planting strips between sidewalks and Highway 99, and, where and when they are present, the trees are fairly noticeable. Highway 99 contains a few planted medians with trees (most notably north of Roosevelt Boulevard) that add greenery and visual interest to several parts of the corridor. In general, there are not enough street and landscape trees and adjacent landscaping along the Highway 99 Corridor to provide much of a consistent visual edge to the road or to screen views into (and from) adjacent properties.

4.1.2. Visual Character

The two-lane Barger Drive has a residential and commercial/retail/institutional (church) visual character. The visual character of areas adjacent to Barger Drive is a combination of mature residential neighborhood, newer residential subdivisions (multi-family and single family), and new retail/commercial/institutional visual character. Echo Hollow Road contains newer retail/commercial developments. This portion of the corridor has the most unified appearance and character. Street and landscape trees and other landscaping provide a distinctive edge in most of this area that contributes to the visual character of the street and adjacent areas.

Figure 4.1-1. Highway 99 Corridor Alternatives Overview

The four-lane Highway 99 has an urban scale and visual character. Land uses along most of the highway are largely industrial or commercial (non-retail) in visual character and are characterized by extensive paved parking and storage areas and utilitarian buildings of various scales and materials generally set back from the highway. In locations where street and landscape trees were planted, their presence softens the industrial commercial visual character by adding a bit of green visual relief to the corridor. The groups of street and landscape trees scattered along the corridor somewhat block or filter views into the adjacent areas from Highway 99 and vice versa. The visual character of the corridor transitions to more retail and less industrial/commercial toward the southern end of Highway 99, but the same random street tree planting patterns continue. Appendix C contains photographs (#1 to #14) that depict existing visual and aesthetic resource conditions found along portions of the Highway 99 Corridor that alternatives would likely change.

4.2. Effects Common to Most or All Build Alternatives

The primary capital improvements associated with the build alternatives that would affect street and landscape trees and visual character are the removal of trees, roadway widening, the construction of new bus stops and/or EmX stations, and the construction of the Trainsong Bridge. The proposed capital improvements would primarily occur in the northern portion of the corridor, west of Garfield Street. The removal of trees would alter the visual character of some areas along the corridor, particularly residential areas near Barger Drive and would allow changes along Barger Drive to be seen by residents.

It would take a number of years for the replanted street and landscape trees to begin to acquire the size of the trees that would be removed. However, replanted trees would help visually unify the corridor by replacing existing street and landscape trees that are not on the City-approved tree list, are over mature, in poor health, or that require extensive maintenance. The construction of new Enhanced Corridor Alternative bus stops and new EmX stations would introduce new structures to the Highway 99 Corridor that would add visual interest and also help visually unify the corridor that, with the exception of the Barger Drive area, is not very visually unified. The new Trainsong Bridge, which would be part of both build alternatives, would add a new interesting visual element to part of the corridor and would serve as an elevated viewing platform. The addition of new bicycle and pedestrian crossings with both build alternatives would assist in visually unifying the corridor by introducing similar appearing facilities along the corridor.

4.3. Long-Term Direct Impacts

4.3.1. No-Build Alternative

No long-term direct impacts to street and landscape trees or visual character would be expected under the No-Build Alternative.

4.3.2. Enhanced Corridor Alternative

4.3.2.1. Areas Containing Street and Landscape Trees

The Enhanced Corridor Alternative for the Highway 99 Corridor would potentially remove street and landscape trees from a series of scattered areas on both sides of the corridor that would total approximately 3.2 miles of the route. The Enhanced Corridor Alternative would have high impact potential to medium and large street and landscape trees along scattered areas that would add up to approximately 0.4 mile of the corridor. Up to 14 medium and large trees would be removed from the

northern portion of the corridor, most (9) would be in the vicinity of Cubit Street between Barger Drive and Wagner Street. Areas that would be adjacent to the potential tree removal include residential developments, a church facility, and retail/commercial complexes. The Enhanced Corridor Alternative would have moderate potential to remove medium and large street trees in scattered areas along approximately 0.5 mile of the corridor. Most of these removals would be along sections of Barger Drive adjacent to residential and retail/commercial developments. The alternative would have low potential to remove medium and large street and landscape trees along approximately 2.3 miles of the 3.2 miles of the corridor where trees would be removed. The remaining 13.2 miles of the corridor would have no potential to remove medium and large street trees.

4.3.2.2. Visual Character

The removal of medium and large trees would impact the visual character of some adjacent areas. Areas where the removal of trees would potentially impact visual character are highlighted below.

- **High** = approximately 0.4 mile of scattered, non-contiguous areas with high potential to remove medium and large street and landscape trees would have a high potential to impact visual character. These areas of potential impacts primarily include residential uses and commercial areas along and near Barger Drive.
- **Moderate** = approximately 0.5 mile of non-contiguous areas with moderate potential to remove medium and large street and landscape trees would have a moderate potential of impacting visual character. These areas include residential areas near Barger Drive and Empire Park.
- **Low or no** = approximately 15.5 miles of non-contiguous areas along the Highway 99 Corridor where trees would be removed, but where there would be low or no potential to remove medium and large street and landscape trees, would have low or no potential to impact visual character.

Potential benefits of the Enhanced Corridor Alternative include:

- Replanted trees could be selected to develop a more visually unified corridor.
- 9 new and 8 enhanced bicycle and pedestrian crossings would assist in visually unifying the corridor.
- The proposed Trainsong Bridge would add a new vivid visual element to the corridor and serve as an elevated viewing platform.

4.3.3. EmX Alternative

4.3.3.1. Areas Containing Street and Landscape Trees

The EmX Alternative would have essentially the same high- and moderate potential to remove medium and large street and landscape trees along the same portions of the Highway 99 Corridor as the Enhanced Corridor Alternative. However, the EmX Alternative would remove up to 16 additional medium and large trees (up to 31 medium and large street trees, and up to 9 landscape trees). Most (22) of the removed trees would be along Barger Road between Echo Hollow Road/Cubit Street and Empire Park Drive. The EmX Alternative would have low potential to remove medium and large street trees along approximately 2.0 miles of the 2.9 miles of the alternative where street and landscape trees would be potentially removed. The remaining 12.7 miles of the corridor would have no potential to remove medium and large street trees.

4.3.3.2. Visual Character

The EmX Alternative would have the same potential high impact to visual character along the same approximately 0.4 mile of the corridor as the Enhanced Corridor Alternative. The additional 16 medium and

large street and landscape trees that would be removed compared to the Enhanced Corridor Alternative would amplify the impacts to visual character along Barger Road, Echo Hollow Road, and Cubit Street.

Potential benefits of the EmX Alternative include:

- Replanted trees could be selected to develop a more visually unified corridor.
- 8 new and 1 enhanced bicycle and pedestrian crossings would assist in visually unifying the corridor.
- The proposed Trainsong Bridge would add a new vivid visual element to the corridor and serve as an elevated viewing platform.
- 14 new EmX stations would be constructed, which would assist in visually unifying the corridor.

4.4. Indirect and Cumulative Effects

Future development in the area identified in regional and municipal plans and other reasonably foreseeable future actions may result in additional impacts to trees within the API. If the future actions reduce the number of medium and large street and landscape trees and impact visual character of areas where the trees would be removed, the proposed project could contribute to the cumulative impact. However, impacts could be mitigated by providing tree replacement as required by local regulations.

4.4.1. No-Build Alternative

No indirect or cumulative impacts to street and landscape trees or visual character would be expected under this alternative.

4.4.2. Enhanced Corridor Alternative

No significant indirect or cumulative effects related to existing street and landscape trees or visual character would be expected under the Enhanced Corridor Alternative. Removed trees would be replaced at a ratio of at least one tree planted for one tree removed, or as otherwise required by *Eugene Code,* Sections 6.300 – 6.330.

4.4.3. EmX Alternative

No indirect or cumulative impacts to street and landscape trees or visual character would be expected under this alternative. Although more street and landscape trees would potentially be removed under this alternative, replacing trees at a ratio of at least one tree planted for one tree removed combined with the range of capital improvements would assist in creating a more visually unified corridor.

4.5. Short-Term Construction-Related Impacts

Construction activities could affect trees beyond the direct impacts of roadway widening. Areas of street reconstruction would require excavation and compaction of new base materials where BAT lanes, concrete bus pads, and concrete intersection pads are proposed. Excavation could impact shallow root systems and affect tree health. Trees may also face potential damage from operation of heavy equipment and unintended collisions with lower branches. The presence of construction equipment, and light associated with construction, dust, and material storage along parts of the corridor would have minor short-term impacts on the existing character of the corridor.

4.5.1. No-Build Alternative

No short-term construction impacts to street and landscape trees or visual character would be expected under the No-Build Alternative.

4.5.2. Enhanced Corridor Alternative

Potential short-term construction related impacts from the removal of medium and large street and landscape trees along the corridor would be expected in some areas, particularly along Barger Drive and Highway 99 near the Roosevelt Boulevard intersection. During the design refinement phase, potentially impacted trees would be assessed by project staff including an International Society of Arboriculture (ISA)-certified project arborist to confirm their tree-classification status, their health, and any measures that could be employed to avoid and minimize potential impacts.

4.5.3. EmX Alternative

Most construction that involves significant excavation adjacent to street and landscape trees would be confined to intersections and station areas under the Highway 99 Corridor EmX Alternative. Restriping and overlay activities along Highway 99 generally would not be expected to result in excavation that would potentially impact root zones of street trees.

Potential short-term construction-related impacts to street trees would be expected at the following location:

- Highway 99 at Roosevelt Boulevard because of intersection widening and modifications. The existing median and its associated street and landscape trees on the northern side of the intersection would be preserved, but excavation would take place adjacent to them.

Potential short-term construction-related impacts to landscape trees would be expected at the following location:

- The northern side of Barger Drive where sidewalk construction would be adjacent to mature landscape trees on private property. Excavation and construction equipment might damage these trees or require that they be limbed.

During the design refinement phase, trees the project might potentially impact would be assessed to confirm their tree-classification status, their health, and any measures that could be employed to avoid and minimize potential impacts.

4.6. Potential Mitigation Measures

4.6.1. No-Build Alternative

No potential mitigation measures are required under the No-Build Alternative.

4.6.2. Common to All Build Alternatives

Under the Highway 99 Corridor build alternatives, proposed sidewalks in areas where street trees would be removed would be wide enough to incorporate a landscape strip into which new street trees could be planted. Where street tree removals would be required, long-term impacts would be mitigated through planting new trees; replacing all removed trees at a ratio of at least one tree planted for one

tree removed or as otherwise required by *Eugene Code,* Sections 6.300 – 6.330; and coordinating with the City Urban Forestry staff on the selection of tree species to be planted, their specific locations, and provision of adequate soil conditions per City standards. LTD would also engage operations personnel input to develop a tree palette that avoids other long-term operational obstacles, such as limbs that protrude into the roadway where busses travel or conflict with power infrastructure.

Where landscape tree removals would be required, long-term impacts would be mitigated through tree replanting or replacement as agreed to by the property owner. LTD and the City would coordinate with respective property owners on the selection of trees to be replanted or replaced.

LTD would require the construction contractor to develop a Tree Protection Plan before construction. The plan would include, among other things, staging and scheduling practices that minimize the risk of harming trees close to the construction site. Implementing the plan would mitigate impacts related to construction activity. Best management practices (BMPs) for tree protection would be employed as specified through consultation with an ISA-certified project arborist, a landscaping professional, and City Urban Forestry staff.

4.6.3. Enhanced Corridor Alternative

An ISA-certified project arborist and City Urban Forestry staff would need to further analyze the medium and large street trees at Roosevelt Boulevard and the medium and large landscape trees on Barger Drive to establish tree classification. If impacts to these or other street and landscape trees were determined to be significant, adjustment of bus stop locations and geometric features to preserve these trees would be explored in the design refinement phase of the Highway 99 Corridor Enhanced Corridor Alternative.

4.6.4. EmX Alternative

Where landscape tree removals would be required on Cubit Street and along Barger Drive, long-term impacts would be mitigated through tree replanting or replacement as agreed to by the property owner. LTD and the City would coordinate with respective property owners on the selection of trees to be replanted or replaced.

For the Highway 99 Corridor EmX Alternative, an ISA-certified project arborist and City Urban Forestry staff would need to further analyze the medium and large street trees at Roosevelt Boulevard and the medium and large landscape trees on Barger Drive to establish tree classification. If impacts to these or other street and landscape trees were determined to be significant, adjustments of station locations and geometric features to preserve these trees would be explored in the design refinement phase.

4.7. Permits and Approvals

Table 4.7-1 lists permits and approvals that may be required for tree removal in the Highway 99 Corridor.

Table 4.7-1. Highway 99 Corridor Alternatives Permits and Approvals

Permits and Approvals	No-Build Alternative	Enhanced Corridor Alternative	EmX Alternative
Street Tree Removal Permit (R-6305-C3)		✓	✓
Oregon Department of Transportation Plan Review and Permits		✓	✓

Source: City of Eugene. (2016b).

5. River Road Corridor

5.1. Affected Environment

The following subsections describe areas along the River Road Corridor with concentrations of street and landscape trees and provide an abbreviated overview of the visual character of corridor. Figure 5.1-1 depicts the routes of the Enhanced Corridor Alternative and the EmX Alternative through the River Road Corridor as well as the locations of photographs of the corridor that are contained in Appendix C. The photographs in Appendix C illustrate existing visual and aesthetic resource conditions found along portions of the River Road Corridor that alternatives would likely change.

5.1.1. Areas Containing Street and Landscape Trees

Street and landscape trees are quite common along the vast majority of the portion of River Road that the alternatives would follow. Numerous places along River Road have impressive canopies that line the edges of the road, sidewalks, and adjacent properties formed by street trees and adjacent landscape trees. The tree canopy continues east and west along many streets that intersect River Road, particularly north of the Northwest Expressway.

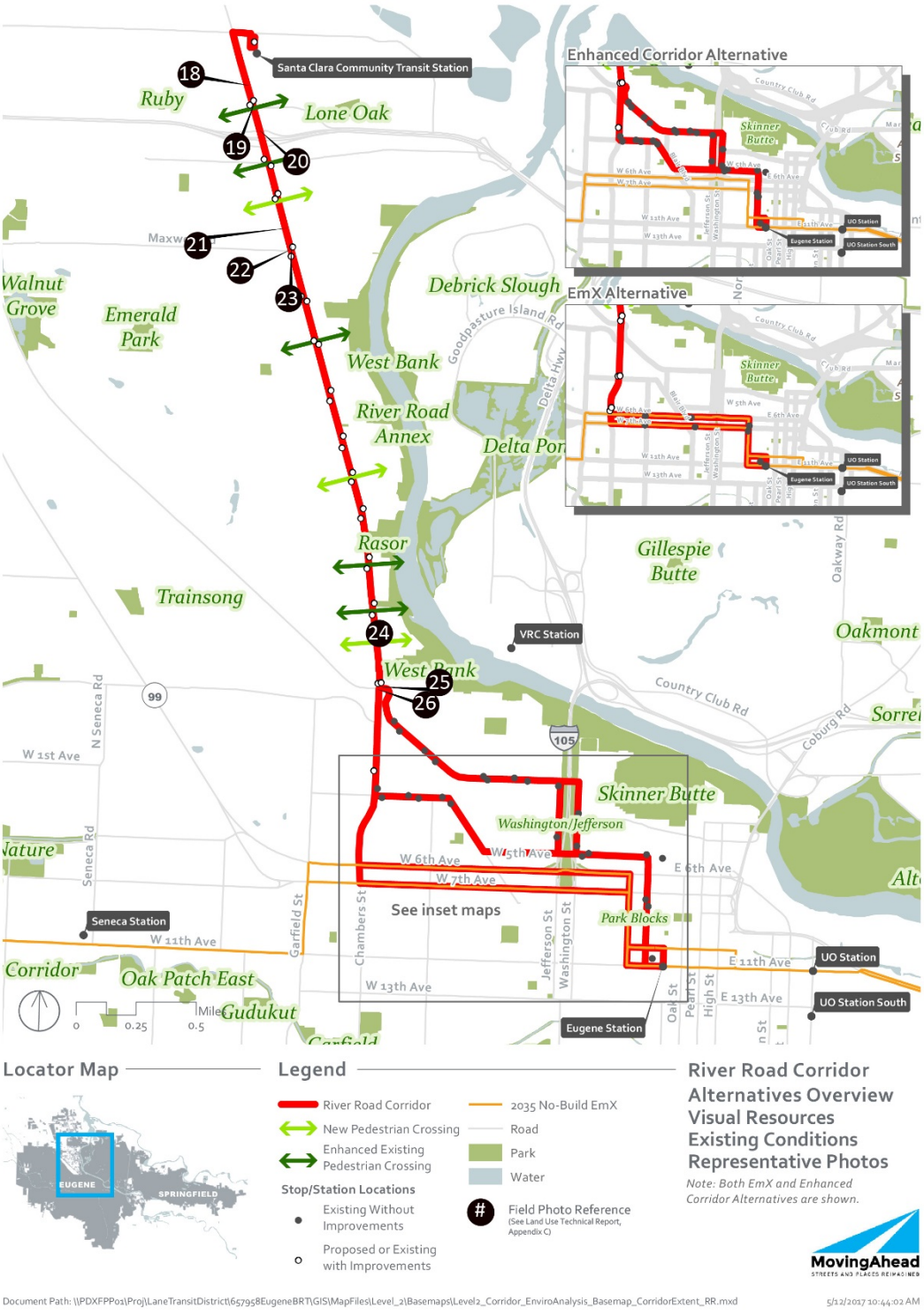
5.1.2. Visual Character

The four-lane River Road passes through an area with a generally residential visual character, which includes established residential neighborhoods composed of single-family dwellings and occasional multi-family developments. These areas have a strong residential visual character and trees along the route are an important unifying element. River Road also passes a number of commercial retail land uses that typically consist of large utilitarian buildings set back from the road and surrounded by ample parking lots. These developments have a visual character typical of automobile-oriented commercial retail establishments. South of the Northwest Expressway, River Road passes through industrial and commercial areas on its way to the western part of Downtown Eugene.

5.2. Effects Common to Most or All Build Alternatives

The primary capital improvements associated with the two alternatives with an effect on street and landscape trees and visual character would be roadway widening and the construction of new bus stops and/or EmX stations. Where roadway widening would remove medium and large street and landscape trees, their removal could impact the visual character of River Road and areas adjacent to it. Adjacent residents could have uninterrupted views of the changes if street and landscape trees and other landscaping would be removed. It would take a number of years for the replanted trees to begin to acquire the size of the street and landscape trees that would be removed. However, replanted trees would help visually unify the corridor by replacing existing trees not on the City-approved tree list, over mature, in poor health, or that require extensive maintenance. The construction of new bus stops and new EmX stations would introduce new structures to the River Road Corridor that would add visual interest and help further visually unify a corridor (particularly the EmX stations) that is already fairly visually unified.

Figure 5.1-1. River Road Corridor Alternatives Overview



5.3. Long-Term Direct Impacts

5.3.1. No-Build Alternative

Trees along approximately 2 miles of the corridor (from Railroad Boulevard to Corliss Lane) that are not on the City-approved species list, are reaching their maximum life, and may need to be replaced with young, approved-species trees and would not likely be replaced without proposed project. Existing street trees along this section of the corridor are cherry trees, which are not on the City Urban Forestry Department's list of approved species. Presently, these trees are in poor health, over mature, and require extensive maintenance. An adverse effect of the No-Build Alternative would result from leaving these trees in-place without replanting.

5.3.2. Enhanced Corridor Alternative

5.3.2.1. Areas Containing Street and Landscape Trees

This alternative would remove street and landscape trees from scattered areas along approximately 4.5 miles of River Road (of which 3.4 miles would have low impact potential to medium and large street and landscape trees). The Enhanced Corridor Alternative would have high potential to remove medium and large street and landscape trees along scattered areas that together would be located along approximately 0.6 mile of the corridor. Most areas where there would be a high and moderate potential to remove trees would be north of the Northwest Expressway and many would be adjacent to residential areas. Approximately 9 to 13 medium and large trees between Ruby and Santa Clara Avenues would be potentially removed with this alternative. In Downtown Eugene, there would be high potential to remove medium and large trees along approximately 300 feet of Chambers Street and moderate potential along approximately 400 feet of Chambers Street. The Enhanced Corridor Alternative would have moderate potential to remove medium and large street and landscape trees along approximately 0.5 mile of the corridor. The 3.4 miles of scattered areas with low removal potential to medium and large street trees would be located throughout the corridor, but more heavily concentrated south of the Northwest Expressway. The remaining 9.6 miles of the corridor would have no potential to remove medium and large street trees.

5.3.2.2. Visual Character

Likely impacts to visual character as the result of removing street and landscape trees are noted below.

- **High** = the areas with high potential to remove medium and large street and landscape trees would have a high likelihood of impacting the visual character of a series of areas along River Road that would total slightly less than 0.6 mile. These areas would include the portion of River Road between Ruby and Santa Clara Avenues and a small section of Chambers Street.
- **Moderate** = the non-contiguous areas along the River Road Corridor with moderate potential to remove medium and large trees and thus impact visual character would total somewhat less than 0.5 mile.
- **Low or No** = the 13 miles of scattered areas with low or no potential to remove medium and large trees and thus impact visual character.

Potential beneficial effects of the Enhanced Corridor Alternative include the following:

- Replanted trees could be selected to develop a more visually unified corridor.

- Some trees that could be removed are not on the City-approved species list, are nearing their maximum lifespan, and are difficult to maintain – replacing these with approved species would be a positive benefit and could assist in visually unifying the corridor.
- Three new and five enhanced bicycle and pedestrian crossings would assist in visually unifying the corridor.

5.3.3. EmX Alternative

5.3.3.1. Trees

The EmX Alternative would have high potential to remove medium and large street and landscape trees along the same general areas of the corridor as the Enhanced Corridor Alternative. The areas with moderate tree removal potential with this alternative would increase by 0.9 mile compared to the Enhanced Corridor Alternative, due to additional widening activities. Up to 118 medium and large street and landscape trees would be removed with this alternative. Areas where concentrations of trees would be potentially removed would include; River Road between Randy Pape Beltline and Santa Clara Avenue (up to 19), River Road between Horn Lane and Maxwell Road (up to 33), and River Road between Hawthorne Avenue and Elkay Drive (up to 47). The EmX Alternative would have 2.3 miles with low potential to remove street and landscape trees. The remaining 9.2 miles of the corridor would have no potential to remove medium and large street trees.

5.3.3.2. Visual Character

The EmX Alternative would have essentially the same high potential impact to visual character in the same areas as the Enhanced Corridor Alternative. The difference in potential impacts to visual character along River Road between the two alternatives would be fairly subtle. The EmX Alternative would change more of the appearance of the River Road street surface, its intersections, and its sidewalks than the Enhanced Corridor Alternative. Areas where the removal of trees would likely impact visual character are highlighted below.

- **High** = the removal of medium and large street and landscape trees in scattered areas along approximately 0.9 mile of the corridor with high potential to remove trees would have a high potential to impact visual character (much of which is residential).
- **Moderate** = the somewhat less than 1.4 miles of scattered areas (many of which are residential) with moderate potential to remove medium and large street and landscape trees would have a moderate potential to impact visual character.
- **Low or No** =the 11.5 miles of scattered areas along the corridor with low or no potential to remove medium and large street and landscape trees would have low or no potential to impact visual character.

Potential benefits of the EmX Alternative include the following:

- Replanted trees could be selected to develop a more visually unified corridor.
- Some trees that could be removed are not on the City-approved species list, are nearing their maximum lifespan, and are difficult to maintain – replacing these with approved species would be a positive benefit and could assist in visually unifying the corridor.

Three new and five enhanced bicycle and pedestrian crossings would assist in visually unifying the corridor.

5.4. Indirect and Cumulative Effects

5.4.1. No-Build Alternative

No indirect or cumulative impacts to street and landscape trees or visual character would be expected under the No-Build Alternative.

5.4.2. Enhanced Corridor Alternative

The Enhanced Corridor Alternative would produce no indirect or cumulative changes to street and landscape trees or visual character.

5.4.3. EmX Alternative

The multi-use path proposed on River Road between Silver Lane and Division Avenue would preclude the replacement of displaced street and landscape trees along this stretch, and would result in a permanent loss of significant street tree canopy in this area and impact the character of an area approximately 900 feet long. If this corridor is constructed in conjunction with other corridors, a careful assessment of the cumulative change to the age and quality of the street tree canopy in Eugene and potential changes to visual character must be conducted to determine if the level of impact is acceptable.

5.5. Short-Term Construction-Related Impacts

Construction activities could affect trees beyond the direct impacts of roadway widening. Areas of street reconstruction would require excavation and compaction of new base materials where BAT lanes, concrete bus pads, and concrete intersection pads are proposed. Excavation could impact shallow root systems and affect tree health. Trees may also face potential damage from operation of heavy equipment and unintended collisions with lower branches. The presence of construction equipment, and light associated with construction, dust, and material storage along parts of the corridor would have minor short-term impacts on the existing character of the corridor.

5.5.1. No-Build Alternative

Short-term construction-related impacts to medium and large street and landscape trees or visual character would not be expected under the No-Build Alternative.

5.5.2. Enhanced Corridor Alternative

No short-term construction-related impacts to medium and large street and landscape trees or visual character would be expected with this alternative.

5.5.3. EmX Alternative

There would be the potential for root-zone impacts on existing street and landscape trees, including some large trees, because of excavation for the construction of BAT lanes within the existing roadway on River Road between Railroad Boulevard and Owosso Drive. There could be some minor short-term impacts on street and landscape trees directly adjacent to station construction. City Urban Forestry staff identified these trees as cherry trees, which are not on the City's approved species list for street trees.

Presently, these trees are over mature, in poor health, and require extensive maintenance. They might require replacement in the long term, even if the proposed construction under the River Road Corridor EmX Alternative would not directly impact these trees.

5.6. Potential Mitigation Measures

5.6.1. No-Build Alternative

No potential mitigation measures are required under the No-Build Alternative.

5.6.2. Common to All Build Alternatives

Under the River Road Corridor build alternatives, proposed sidewalks in areas where street trees would be removed would be wide enough to incorporate a landscape strip into which new street trees could be planted. Where street tree removals would be required, long-term impacts would be mitigated through planting new trees; replacing all removed trees at a ratio of at least one tree planted for one tree removed or as otherwise required by *Eugene Code,* Sections 6.300 – 6.330; and coordinating with the City Urban Forestry staff on the selection of tree species to be planted, their specific locations, and provision of adequate soil conditions per City standards. As the replanted street trees would increase in size, the influence of the trees on the visual character of adjacent areas would increase. LTD would also engage operations personnel input to develop a tree palette that avoids other long-term operational obstacles, such as limbs that protrude into the roadway where busses travel or conflict with power infrastructure.

Where landscape tree removals would be required, long-term impacts would be mitigated through tree replanting or replacement as agreed to by the property owner. LTD and the City would coordinate with respective property owners on the selection of trees to be replanted or replaced. As with street trees, as the replanted landscape trees would increase in size, their influence on visual character would increase.

LTD would require the construction contractor to develop a Tree Protection Plan before construction. The plan would include, among other things, staging and scheduling practices that minimize the risk of harming trees close to the construction site. Implementing the plan would mitigate impacts related to construction activity. BMPs for tree protection would be employed as specified through consultation with an ISA-certified project arborist, a landscaping professional, and City Urban Forestry staff.

5.6.3. Enhanced Corridor Alternative

Where a probability of potential tree impacts was identified in the *MovingAhead Street and Landscape Trees Technical Report* (CH2M, 2017), an ISA-certified project arborist would conduct a field assessment of potentially impacted trees to confirm the tree-classification status and submit findings to City Urban Forestry staff for review. If a Charter Tree or Heritage Tree would be subject to potential impact, the design would be refined to avoid this impact. This would most likely result in the minor adjustment of bus stop locations within the proposed construction footprint of the River Road Corridor Enhanced Corridor Alternative.

5.6.4. EmX Alternative

Where a probability of potential tree impacts was identified in the *MovingAhead Street and Landscape Trees Technical Report* (CH2M, 2017), an ISA-certified project arborist would conduct a field assessment

of potentially impacted trees to confirm the tree-classification status and submit findings to City Urban Forestry staff for review. If a Charter Tree or Heritage Tree would be subject to potential impact, the design would be refined to avoid this impact. This would most likely result in the minor adjustment of station locations within the proposed construction footprint of the River Road Corridor EmX Alternative.

In addition, there would be a necessity to identify other locations to perform mitigation planting to offset the loss of trees in the area where the proposed multi-use path on River Road between Silver Lane and Division Avenue would be located. The presence of the path would preclude the replacement of displaced street and landscape trees along this stretch of the corridor, resulting in a permanent loss of street and landscape trees in this area for a length of approximately 900 feet.

5.7. Permits and Approvals

Table 5.7-1 lists permits and approvals that may be required for tree removal in the River Road Corridor.

Table 5.7-1. River Road Corridor Alternatives Permits and Approvals

Permits and Approvals	No-Build Alternative	Enhanced Corridor Alternative	EmX Alternative
Street Tree Removal Permit (R-6305-C3)		✓	✓

Source: City of Eugene. (2016b).

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6. 30th Avenue to Lane Community College Corridor Environmental Consequences

6.1. Affected Environment

The following subsections describe areas along the 30th Avenue to LCC Corridor with concentrations of street and landscape trees and provide an abbreviated overview of the visual character of the corridor. Figure 6.1-1 depicts the routes of the Enhanced Corridor Alternative and the EmX Alternative through the 30th Avenue to LCC Corridor as well as the locations of photographs of the corridor that are contained in Appendix C. The photographs in Appendix C illustrate existing visual and aesthetic resource conditions found along portions of the 30th Avenue to LCC Corridor that alternatives would likely change.

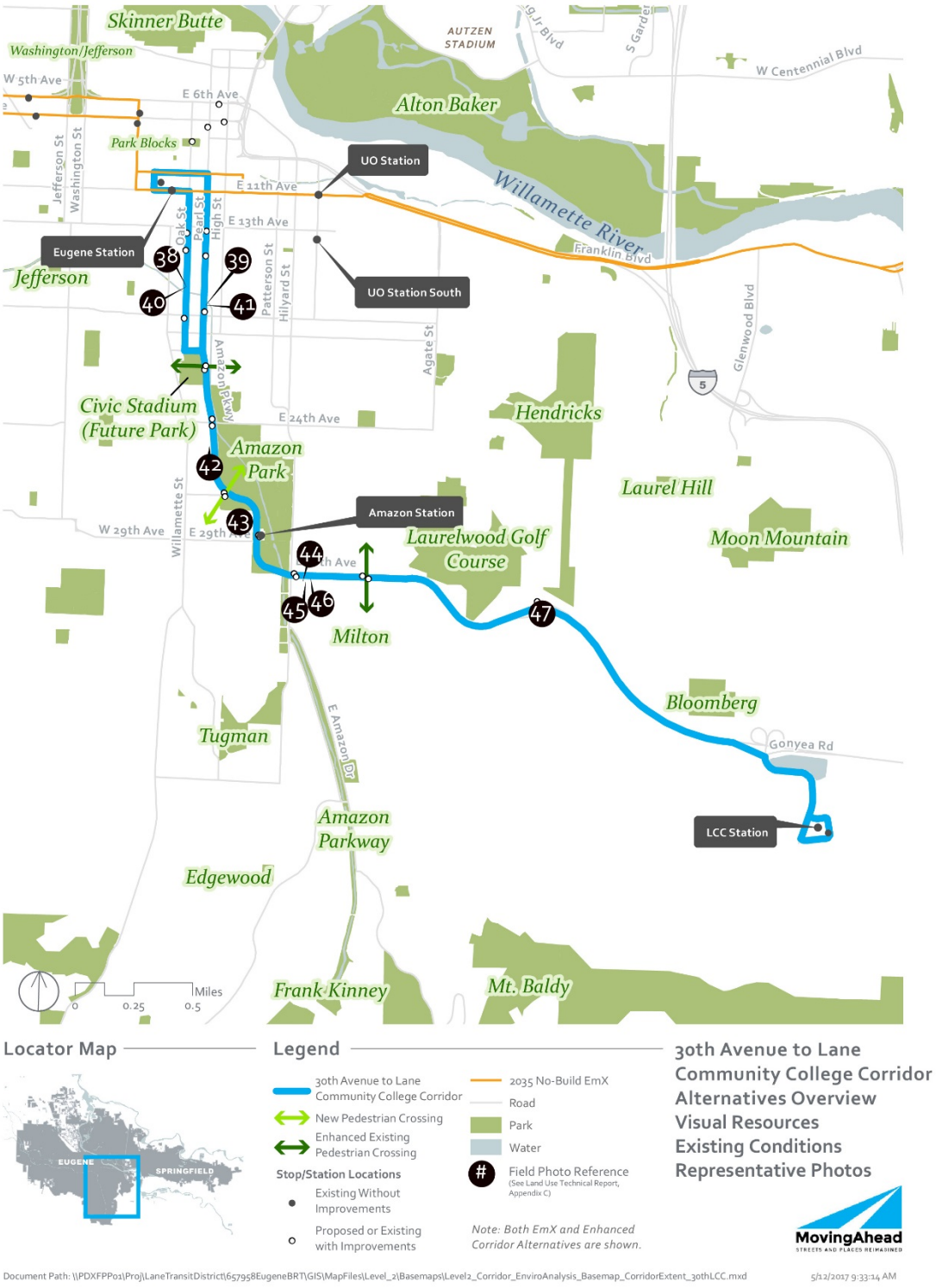
6.1.1. Street and Landscape Trees

The species and ages of street and landscape trees planted along the portion of the route that would pass through Downtown Eugene along Oak and Pearl Streets where changes to the roadway would occur and trees could be impacted are varied. Many medium and large street and landscape trees are mature and form wide and impressive canopies over streets, sidewalks, and adjacent properties in some areas. The portion of the proposed corridor that would connect Oak Street and Amazon Parkway would extend E. 20th Avenue eastward through the street's right-of-way. The right-of-way passes through the north end of a paved lot used for parking which has no landscape street trees. Street trees are found along parts of Amazon Parkway south of Civic Stadium and the western part of E. 30th Avenue. These street trees are not as old as most trees found downtown and generally do not form full canopies. Their generally younger ages reflect the later dates of development of the adjacent areas. The portion of the routes east of the residential area that E. 30th Avenue passes through to just west of LCC is primarily undeveloped and has an undeveloped/natural visual character. Trees on the heavily vegetated lands adjacent to most of the road in this area are a mix of coniferous and deciduous natives. There are few street and landscape trees within the road ROW and the ones that are present would likely not be affected by the project.

6.1.2. Visual Character

Street and landscape trees along the routes of the alternatives reflect and greatly influence the visual character of the adjacent areas. The mature trees found in much of the Downtown Eugene portion of the routes reflect the established urban visual character of Downtown Eugene. Trees planted along Amazon Parkway (and in a landscaped median) reinforce the parkway visual character of this portion of the route as it passes near Amazon Park before entering a residential area adjacent to E. 30th Avenue. The residential visual character of this part of E. 30th Avenue transitions to a largely undeveloped area with an undeveloped/natural visual character flanked by heavily forested areas that continues to LCC.

Figure 6.1-1. 30th Avenue to Lane Community College Corridor Alternatives Overview



6.2. Effects Common to Most or All Build Alternatives

The primary capital improvements associated with the alternatives that would affect street and landscape trees and visual character would be roadway widening and the construction of new bus stops and/or EmX stations. In some locations, roadway widening would remove street and landscape trees. The removal of street trees would be noticed in Downtown Eugene and to a lesser extent along the Amazon Parkway and the residential section of E. 30th Avenue. The improvements associated with the extension of E. 20th Street from Oak Street through a paved parking lot to Amazon Parkway would replace a portion of a paved parking lot with streetscape features that would add visual interest and assist in visually unifying the corridor. The construction of new bus stops, and particularly the construction of new EmX stations, would introduce new structures to Downtown Eugene and along the rest of the routes of both alternatives that would add visual interest and help visually unify the corridor (particularly the EmX stations). The new structures would have no impacts to views of Spencer Butte.

6.3. Long-Term Direct Impacts

6.3.1. No-Build Alternative

No significant long-term direct impacts to street and landscape trees or visual character would be expected under the No-Build Alternative.

6.3.2. Enhanced Corridor Alternative

6.3.2.1. Areas Containing Street and Landscape Trees

The Enhanced Corridor Alternative would potentially remove street and landscape trees from scattered areas along approximately 1 mile of the 30th Avenue to LCC Corridor. It would have high impact potential to medium and large street trees on approximately 0.5 mile of its route, many of which would be along Oak and Pearl Streets. Up to 58 medium and large street trees would be potentially removed by this alternative. The Enhanced Corridor Alternative would have moderate impact potential to street and landscape trees along parts of approximately 0.3 mile of the corridor along Oak and Pearl Streets and along a portion of E. 30th Avenue adjacent to the edge of Amazon Park. This alternative would remove trees along an additional approximately 0.2 mile of scattered areas where it would have low or no impact potential to medium and large street and landscape trees. The remaining 11.5 miles of the corridor would have no potential to remove medium and large street trees.

6.3.2.2. Visual Character

The Enhanced Corridor Alternative would have high impact potential to the visual character of approximately 0.5 mile of scattered areas along the corridor, much of which would be in Downtown Eugene. The removal of up to 58 medium and large street trees (up to 54 in Downtown Eugene) would impact visual character. The downtown areas where the street trees would be removed would still have an urban character, but the removal of the trees would impact the established urban character of these areas. Moderate impact potential to the existing character would also occur along approximately 0.3 mile of the corridor, some of which would be in Downtown Eugene. Moderate impact potential to the character of Amazon Parkway and the residential character of part of E. 30th Avenue would also occur as the result of tree removal. The majority of the approximately 11.7 miles of low impact potential to visual character would occur along Amazon Parkway adjacent to Amazon Park and the residential area

of E. 30th Avenue. Areas where the removal of trees would likely impact visual character are highlighted below.

- **High** = approximately 0.5 mile of scattered areas with urban and residential visual character be impacted to a high degree.
- **Moderate** = up to approximately 0.3 mile of widely scattered areas with urban, residential, parkway, and park visual character would be moderately impacted.
- **Low or No** = approximately 11.7 miles of scattered areas with residential, park, parkway, and commercial visual character would have low no impacts to medium and large street and landscape trees.

Potential beneficial effects of the Enhanced Corridor Alternative could include:

- Replanted trees could be selected to develop a more visually unified corridor.
- 1 new and 2 enhanced bicycle and pedestrian crossings would assist in visually unifying the corridor

6.3.3. EmX Alternative

6.3.3.1. Areas Containing Street and Landscape Trees

Although the EmX Alternative would have a footprint and high impact potential that would be similar to that of the Enhanced Corridor Alternative in Downtown Eugene, it would remove more medium and large street trees in Downtown Eugene than the Enhanced Corridor Alternative. Up to 102 medium and large street trees would be removed along approximately 1.0 mile of scattered areas where there is high impact potential. Up to 98 of these trees would be removed in Downtown Eugene. Moderate impact potential to medium and large street and landscape trees would occur along approximately 0.7 mile of scattered areas along the corridor in areas in that would include Downtown Eugene, Amazon Parkway, and the residential part of E. 30th Avenue. The majority of the approximately 1.1 mile of low impact potential to medium and large trees would occur in scattered areas along Amazon Parkway adjacent to Amazon Park and the residential area along E. 30th Avenue. The remaining 11.0 miles of the corridor would have no potential to remove medium and large street trees.

6.3.3.2. Visual Character

The EmX Alternative would have essentially the same high potential of impacts along 1.0 mile of areas containing medium and large trees as the Enhanced Corridor Alternative. However, by removing up to 44 more medium and large trees than the Enhanced Corridor Alternative, it would produce more contrast with adjacent areas and would detract more from the urban character of Downtown Eugene than the Enhanced Corridor Alternative would. The visual character of the urban, residential, and parkway areas along the route that would have moderate likelihood of impacts to street and landscape trees would have a moderate likelihood of being impacted. Areas where the removal of trees would likely impact visual character are highlighted below.

- **High** = approximately 1.0 mile of scattered areas with urban and residential visual character would be impacted to a high degree.
- **Moderate** = up to approximately 0.7 mile of scattered areas with urban, residential, parkway, and park visual character would be moderately impacted.
- **Low or No** = approximately 12.1 miles of scattered areas with residential, parkway, park, and commercial visual character would experience low or no impacts.

Potential beneficial effects of the EmX Alternative could include the following:

- Replanted trees could be selected to develop a more visually unified corridor.
- One new and 10 enhanced bicycle and pedestrian crossings would assist in visually unifying the corridor.
- 19 new EmX Stations would assist in visually unifying the corridor.

6.4. Indirect and Cumulative Effects

Future development in the area identified in regional and municipal plans and other reasonably foreseeable future actions may result in additional impacts to street and landscape trees in the API. If the number of street and landscape trees was substantially altered, there could be impacts on the visual character of adjacent areas, However, these impacts could be mitigated by providing tree replacement and landscaping around proposed improvements.

6.4.1. No-Build Alternative

No indirect or cumulative impacts to street and landscape trees or visual character would be expected under this alternative.

6.4.2. Enhanced Corridor Alternative

No significant indirect or cumulative effects related to existing medium and large street and landscape trees would be expected under the 30th Avenue to LCC Corridor Enhanced Corridor Alternative. In accordance with City statute and best practices, removed trees would be replaced at a ratio of at least one tree planted for one tree removed or as otherwise required by City code.

Particular attention would be paid to the potential long-term and short-term impacts on the medium and large street and landscape trees within the City's downtown core. Future iterations of the design would take into account any other potential projects affecting street and landscape trees in Downtown Eugene and be coordinated with the City Urban Forestry staff.

6.4.3. EmX Alternative

No significant indirect or cumulative effects related to existing medium and large street and landscape trees would be expected under the 30th Avenue to LCC Corridor EmX Alternative. In accordance with City statute and best practices, impacted trees would be replaced at a ratio of at least one tree planted for one tree removed or as otherwise required by City code.

Particular attention would be paid to the potential long-term and short-term impacts on medium and large street and landscape trees within the City's downtown core. Future iterations of the design would take into account other potential projects affecting street and landscape trees in Downtown Eugene and coordinated with the City Urban Forestry staff.

6.5. Short-Term Construction-Related Impacts

Construction activities could affect trees beyond the direct impacts of roadway widening. Areas of street reconstruction would require excavation and compaction of new base materials where BAT lanes, concrete bus pads, and concrete intersection pads are proposed. Excavation could impact shallow root systems and affect tree health. Trees may also face potential damage from operation of heavy equipment and unintended collisions with lower branches. The presence of construction equipment,

and light associated with construction, dust, and material storage along parts of the corridor would have minor short-term impacts on the existing character of the corridor.

6.5.1. No-Build Alternative

No indirect or cumulative impacts to medium and large street and landscape trees or visual character would be expected under this alternative.

6.5.2. Enhanced Corridor Alternative

Resurfacing activities associated with re-striping Oak and Pearl Streets and construction of new bus stops would be minimally impactful to existing medium and large street and landscape trees or visual character.

6.5.3. EmX Alternative

Excavation within the downtown core of Eugene along Oak and Pearl Streets to construct full-depth concrete BAT lanes could potentially impact medium and large street and landscape trees. While the excavation and construction activities would be confined to the existing roadway, construction activities would occur adjacent to these trees. The primary risks to the health of trees adjacent to construction would be impacts on branches and low-hanging features of the trees by construction equipment and inadvertent excavation into the root zones of trees whose roots have grown into the existing roadway. Mitigation strategies, which are covered in Section 6.6, should be followed diligently to reduce the risk of impact on trees in this area.

Construction of stations and sidewalk at the intersection of E. 27th Avenue and Amazon Parkway would be directly adjacent to an existing traffic island with two large trees. To avoid impacts, construction activities should carefully follow the mitigation plan identified in Section 6.6.

6.6. Potential Mitigation Measures

6.6.1. No-Build Alternative

No potential mitigation measures are required under the No-Build Alternative.

6.6.2. Common to All Build Alternatives

Under the 30th Avenue to LCC Corridor build alternatives, proposed sidewalks in areas where street trees would be removed would be wide enough to incorporate a landscape strip into which new street trees could be planted. Where street tree removals would be required, long-term impacts would be mitigated through planting new trees; replacing all removed trees at a ratio of at least one tree planted for one tree removed or as otherwise required by *Eugene Code,* Sections 6.300 – 6.330; and coordinating with City Urban Forestry staff on the selection of tree species to be planted, their specific locations, and provision of adequate soil conditions per City standards. LTD would also engage operations personnel input to develop a tree palette that avoids other long-term operational obstacles, such as limbs that protrude into the roadway where busses travel or conflict with power infrastructure.

Where landscape tree removals would be required, long-term impacts would be mitigated through tree replanting or replacement as agreed to by the property owner. LTD and the City would coordinate with respective property owners on the selection of trees to be replanted or replaced.

LTD would require the construction contractor to develop a Tree Protection Plan before construction. The plan would include, among other things, staging and scheduling practices that minimize the risk of harming trees close to the construction site. Implementing the plan would mitigate impacts related to construction activity. BMPs for tree protection would be employed as specified through consultation with an ISA-certified project arborist, a landscaping professional, and City Urban Forestry staff.

6.6.3. Enhanced Corridor Alternative

Where a probability of potential tree removal was identified in the *MovingAhead Street and Landscape Trees Technical Report* (CH2M, 2017), an ISA-certified project arborist would conduct a field assessment of potentially impacted trees to confirm the tree-classification status and submit to City Urban Forestry staff for review. If a Charter Tree would be subject to impact, the design would be refined to avoid this impact. This would most likely result in the minor adjustment of bus stop locations or movement/removal of proposed parking/loading pullouts within the proposed construction footprint of the 30th Avenue to LCC Corridor Enhanced Corridor Alternative.

6.6.4. EmX Alternative

Where a probability of potential tree removal was identified in the *MovingAhead Street and Landscape Trees Technical Report* (CH2M, 2017), an ISA-certified project arborist would conduct a field assessment of potentially removed trees to confirm the tree-classification status and submit to City Urban Forestry staff for review. If a Charter Tree would be subject to impact, the design would be refined to avoid this impact. This would most likely result in the minor adjustment of station locations or pavement design within the proposed construction footprint of the 30th Avenue to LCC Corridor EmX Alternative.

6.6.5. Permits and Approvals

Table 6.7-1 lists permits and approvals that may be required for tree removal in the 30th Avenue to LCC Corridor.

Table 6.7-1. 30th Avenue to Lane Community College Corridor Alternatives Permits and Approvals

Permits and Approvals	No-Build Alternative	Enhanced Corridor Alternative	EmX Alternative
Street Tree Removal Permit (R-6305-C3)		✓	✓

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7. Coburg Road Corridor Environmental Consequences

7.1. Affected Environment

The following subsections describe areas along the Coburg Road with concentrations of street and landscape trees and provide an abbreviated overview of the visual character of the corridor. Figure 7.1-1 depicts the routes of the Enhanced Corridor Alternative and the EmX Alternative through the Coburg Corridor as well as the locations of photographs of the corridor that are contained in Appendix C. The photographs in Appendix C illustrate existing visual and aesthetic resource conditions found along portions of the Coburg Corridor that alternatives would likely change.

7.1.1. Areas Containing Street and Landscape Trees

The greatest concentration of medium and large street and landscape trees along the Coburg Road Corridor is between State Highway 569 (south of) and Interstate 105 (I-105) (north of). This portion of the corridor passes by residential areas as well as a number of commercial/retail developments. The older residential areas typically have residences and yards close to Coburg Road and frequently contain mature landscaping and have mature street trees lining the street adjacent to the properties. Some commercial/retail developments along Coburg Road contain buildings that abut the road, while others have buildings set off of the road behind large parking areas. Street and landscape trees are sporadically found adjacent to these developments, as is landscaping in parking strips between sidewalks and the street, and in landscaping buffering adjacent parking lots. Commercial/residential areas along the corridor north of State Highway 569 have very similar street tree and landscaping patterns.

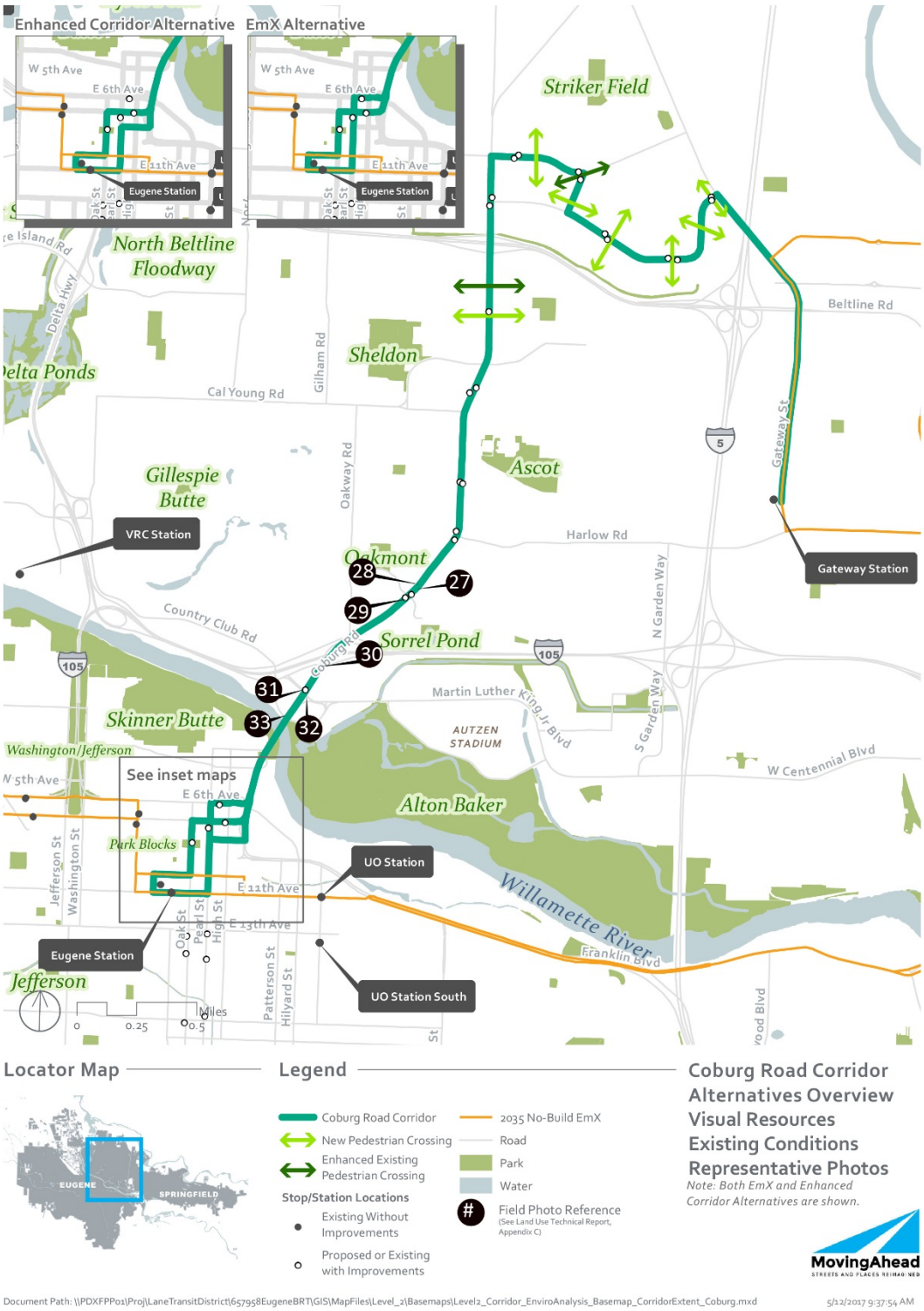
7.1.2. Visual Character

The visual character of the northern section of the Coburg Road Corridor is commercial/retail. As described above, this part of the corridor contains scattered street and landscape trees and some adjacent landscaping. The residential areas are a mixture of single and multi-family dwellings that present long stretches of areas along the corridor that have a residential visual character. Tall street and landscape trees provide a strong visual edge to this area and along with other landscaping, screen views from many of the residences of Coburg Road. From approximately Frontier Drive south to the end of the corridor, land use and visual character changes to commercial/retail and is similar in visual character to the northern section of the corridor.

7.2. Effects Common to Most or All Build Alternatives

The primary capital improvements associated with the two alternatives that would affect trees and visual character would be roadway widening and the construction of new bus stops and/or EmX stations. In some locations, roadway widening would remove street and landscape trees along Coburg Road and adjacent landscaping. The removal of trees could eliminate important visual and aesthetic resources along the corridor and influence the visual character of areas adjacent to it. Adjacent residents could have uninterrupted views of the changes if street and landscape trees and other landscaping would be removed. The construction of new bus stops and, particularly the construction of new EmX stations, would introduce new structures along the Coburg Road Corridor that would add visual interest and help further visually unify the corridor (particularly the EmX stations).

Figure 7.1-1. Coburg Road Corridor Alternatives Overview



7.3. Long-Term Direct Impacts

7.3.1. No-Build Alternative

No significant long-term direct impacts to medium and large street and landscape trees or visual character would be expected under the No-Build Alternative.

7.3.2. Enhanced Corridor Alternative

7.3.2.1. Areas Containing Street and Landscape Trees

This alternative would potentially remove trees along approximately 2.9 miles of the Coburg Road Corridor (of which 1.9 miles would have low removal potential to medium and large trees). The areas with high removal potential to medium and large street trees would be confined to approximately 0.2 mile where up to nine medium and large trees (most on the southeast corner of Coburg Road and Pioneer Pike/Harlow Road) would be potentially removed. Moderate potential for removal of medium and large street and landscape trees would occur along 0.9 mile of the corridor in widely scattered areas along the residential portion of the corridor and in the commercial/retail portion of the corridor north of I-105. The 1.9 miles of areas where there would be low potential for trees to be removed would be distributed in generally small areas along the Coburg Road Corridor. The remaining 8.3 miles of the corridor would have no potential to remove medium and large street trees.

7.3.2.2. Visual Character

Potential high impacts to visual character would occur along approximately 0.2 mile in Downtown Eugene. Other areas where tree removal would occur would have moderate to low or no potential to impact visual character. Areas where the removal of trees would likely impact visual character are highlighted below.

- **High** = approximately 0.2 mile of scattered areas in Downtown Eugene with urban visual character would be impacted to a high degree.
- **Moderate** = less than 0.9 mile in areas with residential visual character would be impacted to a moderate degree.
- **Low or No** = approximately 10.2 miles of scattered areas with residential and commercial/retail character with low or no impacts to medium and large street and landscape trees.

Beneficial effects of the Enhanced Corridor Alternative could include the following:

- Replanted trees could be selected to develop a more visually unified corridor.
- Seven new and two enhanced bicycle and pedestrian crossings and 24 new bus stops would assist in visually unifying the corridor.

7.3.3. EmX Alternative

7.3.3.1. Areas Containing Street and Landscape Trees

The EmX Alternative would have a high potential to remove medium and large street trees from scattered areas along approximately 1.2 miles of the Coburg Road Corridor. Approximately 98 to 100 street trees in Downtown Eugene would have a high potential of being removed by the EmX Alternative. Areas in Downtown Eugene where concentrations of trees would be removed include W. and E. 6th Avenue between Charnelton and High Streets (up to 43), W. and E. 7th Street between

Charnelton and High Streets (up to 29), Oak Street between E. 7th Avenue and Park Street (up to 6), Pearl Street between 6th and 8th Avenue (up to 12), and Pearl Street between E. Broadway and E. 11th Avenue (up to 10). Up to 49 trees outside of downtown Eugene would be potentially removed from scattered areas along the corridor Areas with concentrations of trees (over 5) would be removed include; Coburg Road between Willakenzie Rad and Cal Young Road (up to 9), the southeast corner of Coburg Road and Pioneer Pike – Harlow Road (up to 19), and Coburg Road south of Tandy Turn (up to 11). The EmX Alternative would have a moderate potential of removing medium and large street trees along 1.9 miles of the corridor in scattered areas generally adjacent to residential and commercial/retail areas. A total of 2.5 miles of scattered areas spread along the length of the corridor would have low potential of removing medium and large trees. The remaining 7.2 miles of the corridor would have no potential to remove medium and large street trees.

7.3.3.2. Visual Character

The EmX Alternative would have a greater likelihood of impacting the visual character to areas along the corridor than the Enhanced Corridor Alternative. Changes to the street for improvements such as BAT lanes, and changes on the sidewalk such as EmX stations, would produce a high potential of removing approximately 98 to 100 medium to large street trees along 1.2 miles of the corridor in Downtown Eugene and impacting visual character. The areas where there would be moderate and low or no impact potential to visual character would primarily occur near areas with commercial/retail commercial character.

Impacts

- **High** = 1.2 miles of scattered areas along the corridor in Downtown Eugene would have high potential for medium and large street tree removal and impacts to visual character.
- **Moderate** = 1.9 miles spread out along small segments (some of which have residential visual character) would have moderate potential for removing medium and large street trees and impacting visual character.
- **Low or No** = the low or no potential of removing medium and large street and landscape trees in scattered areas that would total 9.7 miles would result in low or no potential impacts to visual character.

Beneficial effects of the EmX Alternative could include the following:

- Replanted trees could be selected to develop a more visually unified corridor.
- Seven new and two enhanced bicycle and pedestrian crossings and 28 new EmX stations would assist in visually unifying the corridor.

7.4. Indirect and Cumulative Effects

Future development in the area identified in regional and municipal plans and other reasonably foreseeable future actions may result in additional impacts to trees in the API. If the number of street and landscape trees was substantially altered, the visual character of adjacent areas could be affected. However, impacts could be mitigated by providing tree replacement and landscaping around proposed improvements.

7.4.1. No-Build Alternative

No significant cumulative impacts to street and landscape trees and existing visual character would be expected under this alternative.

7.4.2. Enhanced Corridor Alternative

No significant indirect or cumulative effects related to existing medium and large street and landscape trees or visual character would be expected under the Enhanced Corridor Alternative. In accordance with City statute and best practices, removed trees would be replaced at a ratio of at least one tree planted for one tree removed or as otherwise required by City code.

7.4.3. EmX Alternative

No significant indirect or cumulative effects related to existing street and landscape trees or visual character would be expected under the EmX Alternative. In accordance with City statutes and best practices, removed trees would be replaced at a ratio of at least one tree planted for one tree removed or as otherwise required by City code. Particular attention would be paid to the potential long-term and short-term impacts on street and landscape trees within Downtown Eugene. Future iterations of the design would take into account other potential projects affecting street and landscape trees in Downtown Eugene and coordinated with City Urban Forestry staff.

7.5. Short-Term Construction-Related Impacts

Construction activities could affect trees beyond the direct impacts of roadway widening. Areas of street reconstruction would require excavation and compaction of new base materials where BAT lanes, concrete bus pads, and concrete intersection pads are proposed. Excavation could impact shallow root systems and affect tree health. Trees may also face potential damage from operation of heavy equipment and unintended collisions with lower branches. The presence of construction equipment, and light associated with construction, dust, and material storage along parts of the corridor would have minor short-term impacts on the existing character of the corridor.

7.5.1. No-Build Alternative

No significant short-term impacts to street and landscape trees or visual character would be expected under the No-Build Alternative.

7.5.2. Enhanced Corridor Alternative

Medium and large landscape trees on the southern side of the intersection between Coburg Road and Harlow Road could potentially incur short-term impacts because of intersection and ROW widening. Potential short-term impacts on street and landscape trees exist adjacent to proposed bus stop improvements because of sidewalk widening.

7.5.3. EmX Alternative

Short-term construction-related impacts to medium and large street and landscape trees in Downtown Eugene may occur because of proposed station construction and trenching for communications fiber. Excavation within the existing roadway on W. 6th Avenue and W. 7th Avenue for the construction of full-depth concrete BAT lanes might result in short-term construction impacts on the root zones of trees in Downtown Eugene.

Short-term construction-related impacts to medium and large trees would occur at the following locations:

- In the median of Coburg Road between Country Club Road and the Beltline Interchange because of construction activities directly adjacent to the median, including excavation for construction of concrete bus-exclusive lanes
- On the southern side of the intersection between Coburg Road and Harlow Road where sidewalk reconstruction associated with roadway and ROW widening for exclusive transit lanes would be directly adjacent to large mature landscape trees on private property

7.6. Potential Mitigation Measures

7.6.1. No-Build Alternative

No potential mitigation measures would be required under the Coburg Road Corridor No-Build Alternative.

7.6.2. Common to All Build Alternatives

Proposed sidewalks in areas where street trees would be removed would be wide enough to incorporate a landscape strip into which new street trees could be planted. Where street tree removals would be required, long-term impacts would be mitigated through planting new trees; replacing all removed trees at a ratio of at least one tree planted for one tree removed or as otherwise required by *Eugene Code,* Sections 6.300 – 6.330; and coordinating with the City Urban Forestry staff on the selection of tree species to be planted, their specific locations, and provision of adequate soil conditions per City standards. LTD would also engage operations personnel input to develop a tree palette that avoids other long-term operational obstacles, such as limbs that protrude into the roadway where busses travel or conflict with power infrastructure.

Where landscape tree removals would be required, long-term impacts would be mitigated through tree replanting or replacement as agreed to by the property owner. LTD and the City would coordinate with respective property owners on the selection of trees to be replanted or replaced.

LTD would require the construction contractor to develop a Tree Protection Plan before construction. The plan would include, among other things, staging and scheduling practices that minimize the risk of harming trees close to the construction site. Implementing the plan would mitigate impacts related to construction activity. BMPs for tree protection would be employed as specified through consultation with an ISA-certified project arborist, a landscaping professional, and City Urban Forestry staff.

7.6.3. Enhanced Corridor Alternative

Where a probability of potential tree removal was identified in the *MovingAhead Street and Landscape Trees Technical Report* (CH2M, 2017), an ISA-certified project arborist would conduct a field assessment of potentially removed trees to confirm the tree-classification status and submit to City Urban Forestry staff for review. If a Heritage Tree would be subject to impact, the design would be refined to avoid this impact. This would most likely result in the minor adjustment of station locations or pavement design within the proposed construction footprint of the Coburg Road Corridor Enhanced Corridor Alternative.

7.6.4. EmX Alternative

Where a probability of potential tree removal was identified in the *MovingAhead Street and Landscape Trees Technical Report* (CH2M, 2017), an ISA-certified project arborist would conduct a field assessment of potentially impacted trees to confirm the tree-classification status and submit to City Urban Forestry staff for review. If a Charter Tree or a Heritage Tree would be subject to impact, the design would be refined to avoid this impact. This would most likely result in the minor adjustment of station locations or pavement design within the proposed construction footprint of the Coburg Road Corridor EmX Alternative.

7.7. Permits and Approvals

Table 7.7-1 lists permits and approvals that may be required for tree removal in the Coburg Road Corridor.

Table 7.7-1. 30th Avenue to Lane Community College Corridor Alternatives Permits and Approvals

Permits and Approvals	No-Build Alternative	Enhanced Corridor Alternative	EmX Alternative
Street Tree Removal Permit (R-6305-C3)		✓	✓

Source: City of Eugene. (2016b).

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8. Martin Luther King, Jr. Boulevard Corridor Environmental Consequences

8.1. Affected Environment

The following subsections describe areas along the Martin Luther King, Jr. Boulevard Corridor with concentrations of street and landscape trees and provide an abbreviated overview of the visual character of the corridor. Figure 8.1-1 depicts the route of the Enhanced Corridor Alternative through the corridor as well as the locations of photographs of the corridor that are contained in Appendix C. The photographs in Appendix C illustrate existing visual and aesthetic resource conditions found along portions of the Martin Luther King, Jr. Boulevard Corridor that the Enhanced Corridor Alternative would likely change.

8.1.1. Areas Containing Street and Landscape Trees

The greatest concentration of medium and large street and landscape trees along this corridor are found in the residential area along Martin Luther King, Jr. Boulevard west of Autzen Stadium. This area has many mature street and landscape trees as well as landscaping on adjacent areas. Street and landscape trees as well as landscaping line most of the route as it passes through the area that contains Autzen Stadium and other athletic facilities. After leaving the stadium area, the route enters a commercial area where the primary trees are street and landscape trees and trees in parking lots.

8.1.2. Visual Character

This corridor passes through three distinct areas, each of which has a different visual character. The majority of the route passes through a residential area east of Autzen Stadium that is primarily composed of multi-family residential developments on the northern and eastern side of Martin Luther King, Jr. Boulevard, and single-family residences on the southern side. This area has a residential character that is reinforced by street and landscape trees and landscaping on most properties. The portion of the route that passes Autzen Stadium also passes other University of Oregon athletic facilities that line the southern side of the route and parking, sports fields, and government and non-government organization facilities along the northern side. The scale of structures and open spaces in this area is large and monumental. Street trees help define the boulevard and provide an entry to the stadium area. West of the stadium area, the route enters a commercial-retail area that includes automobile dealerships, retail stores, and large areas for parking.

8.2. Long-Term Direct Impacts

8.2.1. No-Build Alternative

No significant long-term direct impacts to medium and large street and landscape trees or visual character would be expected under the No-Build Alternative.

8.2.2. Enhanced Corridor Alternative

Proposed sidewalks in areas where street trees would be impacted would be wide enough to incorporate a landscape strip into which new street trees could be planted. Where street tree removals would be required, long-term impacts would be mitigated through planting new trees; replacing all removed trees at a ratio of at least one tree planted for one tree removed or as otherwise required by *Eugene Code,* Sections 6.300 – 6.330; and coordinating with the City Urban Forestry staff on the selection of tree species to be planted, their specific locations, and provision of adequate soil conditions per City standards.

8.2.2.1. Trees

This alternative would have high potential to remove medium and large street and landscape trees along approximately 110 feet of its route (less than 0.1 mile). Up to nine medium and large trees would be removed from the portion of the corridor along Martin Luther King Jr. Boulevard north of Kinsrow Avenue. It would have moderate potential to remove medium and large street and landscape trees along approximately 0.5 mile east and west of Autzen Stadium. Up to nine medium and large trees would be potentially removed. There would be approximately 1.6 miles of scattered areas where there would be low potential to remove medium and large trees. The remaining 5.4 miles of the corridor would have no potential to remove medium and large street trees.

Where landscape tree removals would be required, long-term impacts would be mitigated through tree replanting or replacement as agreed to by the property owner. LTD and the City would coordinate with respective property owners on the selection of trees to be replanted or replaced.

LTD would require the construction contractor to develop a Tree Protection Plan before construction. The plan would include, among other things, staging and scheduling practices that minimize the risk of harming trees close to the construction site. Implementing the plan would mitigate impacts related to construction activity. BMPs for tree protection would be employed as specified through consultation with an ISA-certified project arborist, a landscaping professional, and City Urban Forestry staff.

8.2.2.2. Visual Character

There would be less than 0.1 mile of potential high impact to visual character along the corridor as a result of removing medium and large street and landscape trees. Areas where there would be moderate potential for removing medium and large street and landscape trees adjacent to the residential portion of Martin Luther King, Jr. Boulevard west of Autzen Stadium would have moderate potential to impact visual character. The presence of many other nearby trees on adjacent properties would reduce impacts of tree removal on the residential visual character of most residential areas located along the corridor.

Impacts

- **High** = Less than 0.1 mile.
- **Moderate** = less than 0.5 mile of scattered areas east of Autzen Stadium adjacent to residential areas would be impacted to a moderate degree.
- **Low or No** = approximately 7.0 miles of commercial and retail areas would experience no or low impacts to visual character.

Beneficial effects of the Enhanced Corridor Alternative could include selecting trees to be replanted that would contribute to a more visually unified corridor.

Figure 8.1-1. Martin Luther King, Jr. Boulevard Corridor Alternatives Overview

8.3. Indirect and Cumulative Effects

Future development in the area identified in regional and municipal plans and other reasonably foreseeable future actions may result in additional impacts to trees in the API. If the tree canopy was substantially altered, project effects could occur across disciplines. The cooling and shading benefits of trees affect energy use. The removal of a healthy tree canopy affects visual quality and diminishes habitat for birds and animals. Trees also provide benefits by retaining water and minimizing the impact of stormwater runoff from impervious surfaces. However, all these impacts could be mitigated by providing tree replacement and landscaping around proposed improvements.

8.3.1. No-Build Alternative

No significant cumulative impacts to the existing street and landscape trees and visual character would be expected under this alternative.

8.3.2. Enhanced Corridor Alternative

No significant indirect or cumulative changes to street and landscape trees or the visual character of the areas along the route are expected under this alternative.

8.4. Short-Term Construction-Related Impacts

Construction activities could affect trees beyond the direct impacts of roadway widening. Areas of street reconstruction would require excavation and compaction of new base materials where BAT lanes, concrete bus pads, and concrete intersection pads are proposed. Excavation could impact shallow root systems and affect tree health. Trees may also face potential damage from operation of heavy equipment and unintended collisions with lower branches. The presence of construction equipment, light associated with construction, dust, and material storage along parts of the corridor would have minor short-term impacts on the existing character of the corridor.

8.4.1. No-Build Alternative

No significant short-term impacts to street and landscape trees or visual character would be expected under the No-Build Alternative.

8.4.2. Enhanced Corridor Alternative

Excavation for construction of BAT lanes within the existing roadway might potentially impact the root zone of adjacent and otherwise unaffected street and landscape trees from the intersection of Martin Luther King, Jr. Boulevard and Centennial Loop to the intersection of Martin Luther King, Jr. Boulevard and Marche Chase Drive. Additional short-term impacts might result from the construction of sidewalk improvements for bus stops adjacent to existing street and landscape trees. Many of the trees potentially impacted would be large, mature, healthy street and landscape trees. Of particular note are the stands of trees ranging from 700 feet northwest of the intersection of Kinsrow Avenue and Martin Luther King, Jr. Boulevard to the intersection of Martin Luther King, Jr. Boulevard and Leo Harris Parkway. Some trees in this large stand would have the potential to become Heritage Trees in the future, and all would provide one of the largest continuous healthy canopies in the project area.

8.5. Potential Mitigation Measures

8.5.1. No-Build Alternative

No potential mitigation measures would be required under the Martin Luther King, Jr. Boulevard Corridor No-Build Alternative.

8.5.2. Enhanced Corridor Alternative

Under the Martin Luther King, Jr. Boulevard Corridor Enhanced Corridor Alternative, proposed sidewalks in areas where street trees would be removed would be wide enough to incorporate a landscape strip into which new street trees could be planted. Where street tree removals would be required, long-term impacts would be mitigated through planting new trees; replacing all removed trees at a ratio of at least one tree planted for one tree removed or as otherwise required by *Eugene Code,* Sections 6.300 – 6.330; and coordinating with the City Urban Forestry staff on the selection of tree species to be planted, their specific locations, and provision of adequate soil conditions per City standards. LTD would also engage operations personnel input to develop a tree palette that avoids other long-term operational obstacles, such as limbs that protrude into the roadway where busses travel or conflict with power infrastructure.

Where landscape tree removals would be required, long-term impacts would be mitigated through tree replanting or replacement as agreed to by the property owner. LTD and the City would coordinate with respective property owners on the selection of trees to be replanted or replaced.

LTD would require the construction contractor to develop a Tree Protection Plan before construction. The plan would include, among other things, staging and scheduling practices that minimize the risk of harming trees close to the construction site. Implementing the plan would mitigate impacts related to construction activity. BMPs for tree protection would be employed as specified through consultation with an ISA-certified project arborist, a landscaping professional, and City Urban Forestry staff.

8.6. Permits and Approvals

Table 8.6-1 lists permits and approvals that may be required for tree removal in the Martin Luther King, Jr. Boulevard Corridor.

Table 8.6-1. Martin Luther King, Jr. Boulevard Corridor Alternatives Permits and Approvals

Permits and Approvals	No-Build Alternative	Enhanced Corridor Alternative
Street Tree Removal Permit (R-6305-C3)		✓

Source: City of Eugene. (2016b).

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9. References

Central Lane Metropolitan Planning Organization (MPO). (2011, December). *Regional Transportation Plan.* (RTP)

CH2M HILL, Inc. (CH2M). (2016). *MovingAhead Alternatives and Design Options Considered but Eliminated Technical Memorandum*.

CH2M HILL, Inc. (CH2M). (2017). *MovingAhead Street and Landscape Tree Technical Report*.

CH2M HILL, Inc. (CH2M), Environmental Science & Assessment, Heritage Research Associates, Michael Minor & Associates, and Wannamaker Consulting. (2015). *MovingAhead Environmental Disciplines Methods and Data Report*.

CH2M HILL, Inc. (CH2M), Wannamaker Consulting, DKS Associates (DKS), and John Parker Consulting. (2016). *MovingAhead Level 2 Definition of Alternatives*.

City of Eugene. (2002, updated 2008). *Eugene Charter*.

City of Eugene. (2002, updated 2008). *Eugene Charter*. "Appendix D: Trees Section." Chapter XIII, Section 52, Amendment II. pp.14-15.

City of Eugene. (2016a). *DRAFT Eugene 2035 Transportation System Plan*. (Draft Eugene 2035 TSP).

City of Eugene. (2016b). Eugene Code. Administrative Rule R-6.305 (Street Tree Removal Permit Program).

Envision Eugene. (2016, July). Draft Envision Eugene Comprehensive Plan. (Draft Envision Eugene). https://www.eugene-or.gov/3009/The-Envision-Eugene-Comprehensive-Plan and https://www.eugene-or.gov/760/Envision-Eugene.

Lane Council of Governments (LCOG), Lane County, Eugene, Springfield. (1987, as updated in 2015). Metro Plan, Eugene-Springfield Metropolitan Area General Plan. (Metro Plan). http://www.lcog.org/DocumentCenter/View/137.

Lane Transit District (LTD). (2014). *Lane Transit District Long-Range Transit Plan*.

Lane Transit District (LTD). (2015, Amended 2015, June). *Lane Transit District Capital Improvement Plan*. MovingAhead.

Lane Transit District (LTD) and City of Eugene. (2015). *MovingAhead Fatal Flaw Screening Technical Memorandum*.

Tutt, Dan. (2016). Photographs. Planning and Development Department, Lane Transit District.

Wannamaker Consulting. (2015). *MovingAhead Phase 1 Steps*.

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Appendix A: Glossary and Naming Conventions

This appendix includes a detailed list of acronyms, abbreviations, and technical terms used throughout this report. It also includes naming conventions used in the MovingAhead Project.

Acronyms and Abbreviations

Table A-1. Acronyms and Abbreviations

Acronyms and Abbreviations	Definitions
/H-RCP	Historic Structures or Sites Combine Zone
/WP	Waterside Protection
/WQ	Water Quality
°C	degree(s) Celsius
µg/L	microgram(s) per liter
µg/m^3	microgram(s) per cubic meter
AA	Alternatives Analysis
AAC	all aluminum conductor
AASHTO	American Association of State Highway and Transportation Officials
AAI	All Appropriate Inquiry
ACS	American Community Survey
ADA	Americans with Disabilities Act
AEO	Annual Energy Outlook
APE	Area of Potential Effect
API	Area of Potential Impact
approx.	approximately
ARTS	All Roads Transportation Safety Program
ATR	Automated Traffic Recording
BAT	business access and transit
BEST	Better Eugene Springfield Transit
BFE	Base Flood Elevation
BMP	best management practice
BPA	Bonneville Power Administration
BRT	bus rapid transit
Btu	British thermal unit
c	circa
CAA	Clean Air Act
CAFE	Corporate Average Fuel Economy
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980

Table A-1. Acronyms and Abbreviations

Acronyms and Abbreviations	Definitions
CERCLIS	Comprehensive Environmental Response Compensation and Liability Information System
CFR	Code of Federal Regulations
CFU	Colony-Forming Unit
CH2M	CH2M HILL, Inc.
CIG	Capital Investment Grant
CIP	Capital Improvements Program
City	City of Eugene
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
COGP	County Opportunity Grant Program
Corps	U.S. Army Corps of Engineers
CRL	Confirmed Release List
CSZ	Cascadia Subduction Zone
CTR	commute trip reduction
CWA	Clean Water Act
CY	cubic yard
dB	decibel
dBA	A-weighted decibel
DBE	Disadvantaged Business Enterprise
DEIS	Draft Environmental Impact Statement. Also referred to as Draft EIS.
DEQ	Oregon Department of Environmental Quality
DKS	DKS Associates
DLS	Donation Land Claim
DOE	Determination of Eligibility
DOGAMI	Oregon Department of Geology and Mineral Industries
DOT	Department of Transportation
Draft EIS	Draft Environmental Impact Statement. Also referred to as DEIS.
Draft Envision Eugene	*Draft Envision Eugene Community Vision* (Envision Eugene, 2016)
Draft Eugene 2035 TSP	*Draft Eugene 2035 Transportation System Plan* (City of Eugene, 2016a)
DSL	Oregon Department of State Lands
DU	dwelling unit
EA	Environmental Assessment or each
EC	City of Eugene Code
EC	eligible contributing

Table A-1. Acronyms and Abbreviations

Acronyms and Abbreviations	Definitions
EC	Enhanced Corridor Alternative (in some tables)
ECLA	*Eugene Comprehensive Lands Assessment* (ECONorthwest, 2010, June)
ECSI	Environmental Cleanup Site Information database (Oregon DEQ, 2016)
EFH	essential fish habitat
EIS	Environmental Impact Statement
EJ	Environmental Justice
EmX	Emerald Express, Lane Transit District's Bus Rapid Transit System
EmX	EmX Alternative (in some tables)
EOA	Equity and Opportunity Assessment
EPA	U. S. Environmental Protection Agency
ES	eligible significant
ES NR	eligible significant NRHP
ESA	Endangered Species Act or Environmental Site Assessment
ESH	essential indigenous anadromous salmonid habitat
ESU	Evolutionarily Significant Unit
EWEB	Eugene Water & Electric Board
FAST Act	Fixing America's Surface Transportation Act
FEIS	Final Environmental Impact Statement. Also referred to as Final EIS.
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act of 1974
Final EIS	Final Environmental Impact Statement. Also referred to as FEIS.
FOE	Finding of Effect
FPPA	Farmland Protection Policy Act, 7 U.S.C. 4201-4209 and 7 CFR 658
FRA	Federal Railroad Administration
ft	foot (feet)
ft^2	square foot (feet)
FTA	Federal Transit Administration
FTN	Frequent Transit Network
FY	fiscal year
GAN	Grant Anticipation Note
GARVEE	Grant Anticipation Revenue Vehicle
GHG	greenhouse gas
GIS	geographic information system
GLO	General Land Office
Heritage	Heritage Research Associates, Inc.

Table A-1. Acronyms and Abbreviations

Acronyms and Abbreviations	Definitions
HGM	Hydro-geomorphic
HMTA	Hazardous Materials Transport Act of 1975, with amendments in 1990 and 1994
HOV	high-occupancy vehicle
HPNW	Historic Preservation Northwest
I-5	Interstate 5
I-105	Interstate 105
IOF	Immediate Opportunity Fund
ISA	International Society of Arboriculture
ISTEA	Intermodal Surface Transportation Efficiency Act
kV	kilovolt(s)
LaneACT	Lane Area Commission on Transportation
LCC	Lane Community College
LCDC	Land Conservation and Development Commission
LCOG	Lane Council of Governments
Ldn	day-night sound level
LE	Listed Endangered
LEP	limited English proficiency
L_{eq}	equivalent sound level
LF	lineal foot (feet)
LGAC	Local Government Affairs Council
LGGP	Local Government Grant Program
LID	Local Improvement District
L_{max}	maximum sound level
L_{min}	minimum sound level
LNG	liquefied natural gas
LOS	level of service
LPA	Locally Preferred Alternative
LRAPA	Lane Regional Air Protection Agency
LRFP	LTD's Long-Range Financial Plan
LRT	Light Rail Transit
LRTP	LTD's Long-Range Transit Plan
LT	Listed Threatened
LTD	Lane Transit District
LUST	leaking underground storage tank
LWCF	Land and Water Conservation Fund
m	meter(s)

Table A-1. Acronyms and Abbreviations

Acronyms and Abbreviations	Definitions
MAP-21	Moving Ahead for Progress in the 21st Century
MBTA	Migratory Bird Treaty Act
Metro Plan	*Metro Plan, Eugene-Springfield Metropolitan Area General Plan* (LCOG et al., 1987, as updated on 2015, December 31)
mg/kg	milligram(s) per kilogram
MI	mile(s)
mL	milliliter(s)
MMA	Michael Minor and Associates, Inc.
MOA	Memorandum of Agreement
MOE	Measure of Effectiveness
MPC	Metropolitan Policy Committee
mpg	miles per gallon
mph	miles per hour
MPO	Metropolitan Planning Organization
MTIP	*Metropolitan Transportation Improvement Program Federal FY 2015 to Federal FY 2018* (Central Lane MPO, adopted 2014, October, as amended)
Mw	Earthquake moment magnitude
N/A	not applicable
NA	not applicable; no data available
NAAQS	National Ambient Air Quality Standards
NAC	Noise Abatement Criteria
NAVD88	North American Vertical Datum of 1988
ND	nodal development
NEPA	National Environmental Policy Act of 1969, as amended, 42 U.S.C. 4321-4347
NFA	no further action
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NO_2	nitrous dioxide
NO_x	nitrous oxides
NPDES	National Pollutant Discharge Elimination System
NPMS	National Pipeline Mapping System
NPS	Department of Interior's National Park Service
NR	Natural Resource
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NS	no standard established

Table A-1. Acronyms and Abbreviations

Acronyms and Abbreviations	Definitions
NW Natural	Northwest Natural
O_3	ozone
O&M	operations and maintenance
OAR	Oregon Administrative Rule
OARRA	Oregon Archaeological Records Remote Access
ODA	Oregon Department of Agriculture
ODEQ	Oregon Department of Environmental Quality
ODFW	Oregon Department of Fish and Wildlife
ODOE	Oregon Department of Energy
ODOT	Oregon Department of Transportation
OHP	Oregon Highway Plan
OPA	Oil Pollution Act of 1990
OPRD	Oregon Parks and Recreation Department
OR	Oregon
ORBIC	Oregon Biodiversity Information Center
ORS	Oregon Revised Statutes
OTIB	Oregon Transportation Infrastructure Bank
Pb	lead
PCB	polychlorinated biphenyl
PEM	Palustrine Emergent Wetland
PM	particulate matter
PM_{10}	particulate matter – 10 microns in diameter
$PM_{2.5}$	particulate matter – 2.5 microns in diameter
PMT	Project Management Team
ppb	parts per billion
PPE	personal protective equipment
ppm	parts per million
PROS	Parks, Recreation, and Open Space
PUC	Public Utilities Commission
Qls	landslide and debris avalanche deposits
Qtg	terrace and fan deposits
Qty	quantity
RCRA	Resource Conservation and Recovery Act of 1976
RFFA	reasonably foreseeable future action
ROW	right of way
RRFB	Rectangular Rapid Flash Beacon

Table A-1. Acronyms and Abbreviations

Acronyms and Abbreviations	Definitions
RTP	*Central Lane Metropolitan Planning Organization Regional Transportation Plan* (LCOG, adopted 2007, November; 2011, December). (The RTP includes the Financially Constrained Roadway Projects List)
SARA	Superfund Amendments and Reauthorization Act of 1986
SARA III	Emergency Planning and Community Right to Know Act of 1986; part of the SARA amendments
SC	sensitive critical
SCC	Standard Cost Categories
SCORP	Statewide Comprehensive Outdoor Recreation Plan
SDC	Systems Development Charge
SDWA	Safe Drinking Water Act
sec	second(s)
Section 4(f)	Section 4(f) of the Department of Transportation Act of 1966
Section 6(f)	Section 6(f) of the LWCF Act of 1965
Section 106	Section 106 of the National Historic Preservation Act of 1966 (36 CFR 800.5)
SF	square foot (feet)
SHPO	Oregon State Historic Preservation Office
SIP	State Implementation Plan
SMU	Species Management Unit
SO_2	sulfur dioxide
SOC	species of concern
SSGA	Small Starts Construction Grant Agreement
STA	Special Transportation Area
STIP	Statewide Transportation Improvement Program
SV	Sensitive Vulnerable
SY	square yard(s)
TAP	Transportation Alternatives Program
TAZ	transportation analysis zone
TCE	Temporary Construction Easement
TD	transit-oriented development
TDM	Transportation Demand Management
TEA-21	Transportation Equity Act for the 21st Century
Teoe	siliciclastic marine sedimentary rocks
TESCP	Temporary Erosion and Sediment Control Plan
TIF	Tax Increment Financing
TIP	Transportation Improvement Program
TMDL	total maximum daily load

Table A-1. Acronyms and Abbreviations

Acronyms and Abbreviations	Definitions
TOD	transit-oriented development
TPAU	Department of Transportation – Transportation Planning Analysis Unit
TPR	Transportation Planning Rule
TransPlan	*Eugene-Springfield Transportation System Plan* (City of Eugene et al., adopted 2002, July)
TRB	Transportation Research Board
TSI	Transportation System Improvement
TSM	Transportation System Management
TSP	Transportation System Plan
UGB	Urban Growth Boundary
UMTA	Urban Mass Transit Administration
Uniform Act	Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, 42 U.S.C. 4601 et. seq., 49 CFR Part 24
URA	Urban Renewal Area
U.S.C.	United States Code
USDOT	U.S. Department of Transportation
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UST	underground storage tank
v/c	volume-to-capacity
VHT	vehicle hours traveled
VMT	vehicle miles traveled
VOC	volatile organic compound
WEEE	West Eugene EmX Extension
WEG	wind erodibility group
yd^2	square yard(s)
yd^3	cubic yard(s)
YOE	year of expenditure

Terms

Table A-2. Terms

Terms	Definitions
Accessibility	The extent to which facilities are barrier-free and useable for all persons with or without disabilities.
Action	An "action," a federal term, is the construction or reconstruction, including associated activities, of a transportation facility. For the purposes of this Handbook, the terms "project," "proposal," and "action" are used interchangeably unless otherwise specified. An action may be categorized as a "categorical exclusion" or a "major federal action."
Agricultural/Forest/Natural Resource	AG, EFU-25, EFU-30, EFU-40, F-1, F-2, and NR
Alignment	Alignment is the street or corridor that the transit project would be located within.
Alternative Fuels	Low-polluting fuels which are used to propel a vehicle instead of high-sulfur diesel or gasoline. Examples include methanol, ethanol, propane or compressed natural gas, liquid natural gas, low-sulfur or "clean" diesel and electricity.
Alternatives Analysis (AA)	The process of evaluating the costs, benefits, and impacts of a range of transportation alternatives designed to address mobility problems and other locally-defined objectives in a defined transportation corridor, and for determining which particular investment strategy should be advanced for more focused study and development. The Alternatives Analysis (AA) process provides a foundation for effective decision making.
Area of Potential Effect	A term used in Section 106 to describe the area in which historic resources may be affected by a federal undertaking.
Area of Potential Impact	An assessment's Area of Potential Impact for the project is defined separately for each discipline.
Auxiliary Lanes	Lanes designed to improve safety and reduce congestion by accommodating cars and trucks entering or exiting the highway or roadway, and reducing conflicting weaving and merging movements.
Base Fare	The price charged to one adult for one transit ride; excludes transfer charges, and reduced fares.
Base Period	The period between the morning and evening peak periods when transit service is generally scheduled on a constant interval. Also known as "off-peak period."
Boarding	Boarding is a term used in transit to account for passengers of public transit systems. One person getting on a transit vehicle equals one boarding. In many cases, individuals will have to transfer to an additional transit vehicle to reach their destination and may well use transit for the return trip. Therefore, a single rider may account for several transit boardings in one day.
Bus Phase	An exclusive traffic signal phase for buses and/or BRT vehicles.
Bus Rapid Transit (BRT)	A transit mode that combines the quality of rail transit and the flexibility of buses. It can operate on bus lanes, high-occupancy vehicle (HOV) lanes, expressways, or ordinary streets. The vehicles are designed to allow rapid passenger loading and unloading, with more doors than ordinary buses.

Table A-2. Terms

Terms	Definitions
Business Access and Transit (BAT) Lane	In general, a BAT lane is a concrete lane, separated from general-purpose lanes by a paint stripe and signage. A BAT lane provides Bus Rapid Transit (BRT) priority operations, but general-purpose traffic is allowed to travel within the lane to make a turn into or out of a driveway or at an intersecting street. However, only the BRT vehicle is allowed to use the lane to cross an intersecting street.
Busway	Exclusive freeway lane for buses and carpools.
Capital Improvements Program (CIP)	A CIP is a short-range plan, usually 4 to 10 years, which identifies capital projects and equipment purchases, provides a planning schedule, and identifies options for funding projects in the program.
Categorical Exclusion (CE)	A CE means a category of actions that do not individually or cumulatively have a significant effect on the human environment and for which, therefore, neither an environmental assessment nor an environmental impact statement is required.
Chambers Special Area Zone	S-C
Charter Tree	A tree defined by the Eugene Charter (City of Eugene, 2002, updated 2008) as "…(a living, standing, woody plant having a trunk 25 inches in circumference at a point 4-½ feet above mean ground level at the base of the trunk) of at least fifty years of age within publicly owned rights of way for streets, roads, freeways, throughways, and thoroughfares and within those portions of the city which were in the incorporated boundaries of the city as of January 1, 1915, shall be designated historic street trees and recognized as objects of high historic value and significance in the history of the city and deserving of maintenance and protection." These trees have special historic importance to the City and require special processes be followed if their removal is proposed, including a public vote on the project proposing the removal.
Charter Tree Boundary	Defined by the Eugene Charter (City of Eugene, 2002, updated 2008) as "…those portions of the city which were in the incorporated boundaries of the city as of January 1, 1915." Trees within this boundary may, if they meet certain criteria, be granted the special title and protective status of a Charter Tree, defined above.
City of Eugene Zoning Classifications	Industrial (I-2 and I-3), Commercial (C-3), Mixed-Use (C-1, C-2, GO, S-C, S-CN, S-DR, S-DW, S-E, S-F, S-HB, S-JW, S-RN, S-W, and S-WS), Single-Family Residential (R-1), Multi-Family Residential (R-2 and R-3), Institution (PL and PRO), Agricultural/Forest/Natural Resource (AG, EFU-25, EFU-30, EFU-40, F-1, F-2, and NR), Office (E-1 and E-2), Special Area Zone (Non-Mixed Use) (S-H and S-RP), Downtown Westside Special Area Zone (S-DW), Chambers Special Area Zone (S-C)
Clean Air Act Amendments of 1990	The comprehensive federal legislation that establishes criteria for attaining and maintaining the federal standards for allowable concentrations and exposure limits for various air pollutants; the act also provides emission standards for specific vehicles and fuels.
Collector Streets	Collector streets provide a balance of both access and circulation within and between residential and commercial/industrial areas. Collectors differ from arterials in that they provide more of a citywide circulation function, do not require as extensive control of access, and are located in residential neighborhoods, distributing trips from the neighborhood and local street system.
Commercial	C-3

Table A-2. Terms

Terms	Definitions
Commuter Rail	Commuter rail is a transit mode that is a multiple car electric or diesel propelled train. It is typically used for local, longer-distance travel between a central city and adjacent suburbs, and can operate alongside existing freight or passenger rail lines or in exclusive rights of way.
Compressed Natural Gas (CNG)	An alternative fuel; compressed natural gas stored under high pressure. CNG vapor is lighter than air.
Conformity	The ongoing process that ensures the planning for highway and transit systems, as a whole and over the long term, is consistent with the state air quality plans for attaining and maintaining health-based air quality standards; conformity is determined by metropolitan planning organizations (MPOs) and the U.S. Department of Transportation (U.S. DOT), and is based on whether transportation plans and programs meet the provisions of a State Implementation Plan.
Congestion Mitigation and Air Quality (CMAQ)	Federal funds available for either transit or highway projects that contribute significantly to reducing automobile emissions, which cause air pollution.
Cooperating Agency	Regulations that implement the National Environmental Policy Act define a cooperating agency as any federal agency, other than a lead agency, which has jurisdiction by law or special expertise with respect to any environmental impact involved in a proposal (or a reasonable alternative) for legislation or other major federal action significantly affecting the quality of the human environment.
Coordination Plan	Required under Moving Ahead for Progress in the 21st Century (MAP-21), the coordination plan contains procedures aimed at achieving consensus among all parties in the initial phase of environmental review and to pre-empt disagreements that can create delays later on in a project.
Corridor	A broad geographical band that follows a general directional flow connecting major sources of trips that may contain a number of streets, highways, and transit route alignments.
Corridor Transit Service Characteristics	The amount of transit service provided in each corridor, measured by daily vehicle hours traveled, daily vehicle miles traveled, and daily place-miles of service.
Demand Responsive	Non-fixed-route service utilizing vans or buses with passengers boarding and alighting at pre-arranged times at any location within the system's service area. Also called “Dial-a-Ride.”
Diesel Multiple Unit (DMU)	Each unit carries passengers and can be self-powered by a diesel motor; no engine unit is required.
Documented Categorical Exclusion (DCE)	A DCE means a group of actions that may also qualify as Categorical Exclusions (CEs) if it can be demonstrated that the context in which the action is taken warrants a CE exclusion; i.e., that no significant environmental impact will occur. Thus, these actions are referred to as DCEs. Such actions require some National Environmental Policy Act documentation, but not an Environmental Assessment or a full-scale Environmental Impact Statement. DCEs documentation must demonstrate that, in the context(s) in which these actions are to be performed, they will have no significant environmental impact or that such impacts will be mitigated.

Table A-2. Terms

Terms	Definitions
Downtown Westside Special Area Zone	S-DW
Draft Environmental Impact Statement (DEIS)	The DEIS is the document that details the results of the detailed analysis of all of the projects alternatives. The DEIS contains all information learned about the impacts of a project and alternatives.
Earmark	A federal budgetary term that refers to the specific designation by Congress that part of a more general lump-sum appropriation be used for a particular project; the earmark can be designated as a minimum and/or maximum dollar amount.
Effects	Effects include ecological, aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative. Effects may also include those resulting from actions that may have both beneficial and detrimental effects, even if on balance the agency believes that the effect will be beneficial. Effects include: (1) direct effects that are caused by the action and occur at the same time and place, and (2) indirect effects that are caused by the action and are later in time or farther removed in distance but are still reasonably foreseeable. Indirect effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use; population density or growth rate; and related effects on air and water and other natural systems, including ecosystems (40 CFR 1508.8).
Electrical Multiple Unit (EMU)	The EMU is heavier than a light rail vehicle, but it is powered in the same way by an overhead electrical system.
EmX	Lane Transit District's Bus Rapid Transit System, pronounced "MX," short for Emerald Express.
Environmental Assessment (EA)	A report subject to the requirements of the National Environmental Policy Act (NEPA) demonstrating that an Environmental Impact Statement (EIS) is not needed for a specific set of actions. The EA can lead to a Finding of No Significant Impact (FONSI).
Environmental Impact Statement (EIS)	A comprehensive study of likely environmental impacts resulting from major federally-assisted projects; EISsare required by the National Environmental Policy Act.
Environmental Justice	A formal federal policy on environmental justice was established in February 1994 with Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations." There are three fundamental environmental justice principles: • To avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority populations and low-income populations. • To ensure the full and fair participation by all potentially affected communities in the transportation decision-making process. • To prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations.
Envision Eugene	The City of Eugene's Comprehensive Plan (latest draft or as adopted). Envision Eugene includes a determination of the best way to accommodate the community's projected needs over the next 20 years.

Table A-2. Terms

Terms	Definitions
Evaluation Criteria	Evaluation criteria are the factors used to determine how well each of the proposed multimodal alternatives would meet the project's Goals and Objectives. The Evaluation Criteria require a mix of quantitative data and qualitative assessment. The resulting data are used to measure the effectiveness of proposed multimodal alternatives and to assist in comparing and contrasting each of the alternatives to select a preferred alternative.
Exclusive Right of Way	A roadway or other facility that can only be used by buses or other transit vehicles.
Fatal Flaw Screening	The purpose of a Fatal Flaw Screening is to identify alternatives that will not work for one reason or another (e.g., environmental, economic, community). By using a Fatal Flaw Screening process to eliminate alternatives that are not likely to be viable, a project can avoid wasting time or money studying options that are not viable and focus on alternatives and solutions that have the greatest probability of meeting the community's needs (e.g., environmentally acceptable, economically efficient, implementable).
Finding of No Significant Impact (FONSI)	A document prepared by a federal agency showing why a proposed action would not have a significant impact on the environment and thus would not require preparation of an Environmental Impact Statement (EIS). A FONSI is based on the results of an Environmental Assessment (EA).
Fixed Guideway System	A system of vehicles that can operate only on its own guideway constructed for that purpose (e.g., rapid rail, light rail). Federal usage in funding legislation also includes exclusive right of way bus operations, trolley coaches, and ferryboats as "fixed guideway" transit.
Fixed Route	Service provided on a repetitive, fixed-schedule basis along a specific route with vehicles stopping to pick up and deliver passengers at set stops and stations; each fixed-route trip serves the same origins and destinations, unlike demand responsive and taxicabs.
Geographic Information System (GIS)	A data management software tool that enables data to be displayed geographically (i.e., as maps).
Goals and Objectives	Goals and objectives define the project's desired outcome and reflect community values. Goals and objectives build from the project's Purpose and Need Statement. • Goals are overarching principles that guide decision making. Goals are broad statements. • Objectives define strategies or implementation steps to attain the goals. Unlike goals, objectives are specific and measurable.
Guideway	A transit right of way separated from general purpose vehicles.
Headway	Time interval between vehicles passing the same point while moving in the same direction on a particular route.

Table A-2. Terms

Terms	Definitions
Heritage Tree	The C*ity of Eugene Urban Forest Management Plan* (City of Eugene Public Works Department Maintenance Division, 1992) defines "Heritage Trees" as: "Any tree of exceptional value to our community based on its size (relative to species), history, location, or species, or any combination of these criteria." Such a tree cannot be removed "except when otherwise necessary for the public health, safety, or welfare."
Hydrology	Refers to the flow of water including its volume, where it drains, and how quickly it flows.
Impacts	A term to describe the positive or negative effects upon the natural or built environments as a result of an action (i.e., project).
In-vehicle Travel Time	The amount of time it takes for a transit vehicle to travel between an origin and a destination.
In-vehicle Walk and Wait Travel Time	The amount of in-vehicle travel time plus time spent walking to transit, initial wait time, transfer wait time (if any), and time walking from transit to the destination.
Independent Utility	A project or section of a larger project that would be a usable and reasonable expenditure even if no other projects or sections of a larger project were built and/or improved.
Industrial	I-2 and I-3
Institution	PL and PRO
Intergovernmental Agreement	A legal pact authorized by state law between two or more units of government, in which the parties contract for, or agree on, the performance of a specific activity through either mutual or delegated provision.
Intermodal	Those issues or activities that involve or affect more than one mode of transportation, including transportation connections, choices, cooperation, and coordination of various modes. Also known as "multimodal."
Jefferson Westside Special Area Zone	S-JW
Joint Development	Ventures undertaken by the public and private sectors for development of land around transit stations or stops.
Key Transit Corridors	Key Transit Corridors are mapped in Envision Eugene and are anticipated to be significant transit corridors for the City and the region
Kiss & Ride	A place where commuters are driven and dropped off at a station to board a public transportation vehicle.
Land and Water Conservation Fund (LWCF) Act of 1965	16 U.S.C. 4601-4 et seq. The Land and Water Conservation Fund (LWCF) State Assistance Program was established by the LWCF Act of 1965 to stimulate a nationwide action program to assist in preserving, developing, and providing assurance to all citizens of the United States (of present and future generations) such quality and quantity of outdoor recreation resources as may be available, necessary, and desirable for individual active participation. The program provides matching grants to states and through states to local units of government, for the acquisition and development of public outdoor recreation sites and facilities.
Landscape Tree	A living, standing, woody plant having a trunk that exists on private property.

Table A-2. Terms

Terms	Definitions
Lane Regional Air Protection Agency (LRAPA)	LRAPA is responsible for achieving and maintain clean air in Lane County using a combination of regulatory and non-regulatory methods
Layover Time	Time built into a schedule between arrival at the end of a route and the departure for the return trip, used for the recovery of delays and preparation for the return trip.
Lead Agency	The organization that contracts and administers a study. For transit projects, FTA would typically fill this role. The lead agency has the final say about the project's purpose and need, range of alternatives to be considered, and other procedural matters.
Level of Detail	The amount of data collected, and the scale, scope, extent, and degree to which item-by-item particulars and refinements of specific points are necessary or desirable in carrying out a study.
Level of Service (LOS)	LOS is a measure used by traffic engineers to determine the effectiveness of elements of transportation infrastructure. LOS is most commonly used to analyze highways, but the concept has also been applied to intersections, transit, and water supply.
Light Rail Transit (LRT)	Steel wheel/steel rail transit constructed on city streets, semi-private right of way, or exclusive private right of way. Formerly known as "streetcar" or "trolley car" service, LRT's major advantage is operation in mixed street traffic at grade. LRT vehicles can be coupled into trains, which require only one operator and often are used to provide express service.
Limited (or Controlled) Access	Restricted entry to a transportation facility based upon facility congestion levels or operational condition. For example, a limited access roadway normally would not allow direct entry or exit to private driveways or fields from said roadway.
Liquefaction	A phenomenon associated with earthquakes in which sandy to silty, water saturated soils behave like fluids. As seismic waves pass through saturated soil, the structure of the soil distorts, and spaces between soil particles collapse, causing ground failure.
Liquefied Natural Gas (LNG)	An alternative fuel; a natural gas cooled to below its boiling point of 260 degrees Fahrenheit so that it becomes a liquid; stored in a vacuum bottle-type container at very low temperatures and under moderate pressure. LNG vapor is lighter than air.
Local Streets	Local streets have the sole function of providing direct access to adjacent land. Local streets are deliberately designed to discourage through-traffic movements.
Locally Preferred Alternative (LPA)	The LPA is the alternative selected through the Alternatives Analysis process completed prior to or concurrent with National Environmental Policy Act analysis. This term is also used to describe the proposed action that is being considered for New Starts or Small Starts funds.
Low-Income Persons	Those whose median household income is at or below the Department of Health and Human Services poverty guidelines. For a four-person household with two related children, the poverty threshold is $24,300 (year 2016 dollars).

Table A-2. Terms

Terms	Definitions
Maintenance area	An air quality designation for a geographic area in which levels of a criteria air pollutant meet the health-based primary standard (national ambient air quality standard, or NAAQS) for the pollutant. An area may have on acceptable level for one criteria air pollutant, but may have unacceptable levels for others. Maintenance/attainment areas are defined using federal pollutant limits set by EPA.
Maintenance facility	A facility along a corridor used to clean, inspect, repair and maintain bus vehicles, as well as to store them when they are not in use.
Major Arterial	Major arterial streets should serve to interconnect the roadway system of a city. These streets link major commercial, residential, industrial, and institutional areas. Major arterial streets are typically spaced about one mile apart to assure accessibility and reduce the incidence of traffic using collectors or local streets for through traffic in lieu of a well-placed arterial street. Access control, such as raised center medians, is a key feature of an arterial route. Arterials are typically multiple miles in length.
Major Investment Study (MIS)	An alternatives analysis study process for proposed transportation investments in which a wide range of alternatives is examined to produce a smaller set of alternatives that best meet project transportation needs. The purpose of the study is to provide a framework for developing a package of potential solutions that can then be further analyzed during an Environmental Impact Statement process.
Metro Plan Designations	Commercial, Commercial/Mixed Use, Government and Education, Heavy Industrial, High Density Residential/Mixed-Use, High Density Residential, Light-Medium Industrial, Low Density Residential, Medium Density Residential, Medium Density Residential/Mixed-Use, Mixed-Use, Parks and Open Space, Major Retail Center, Campus Industrial, University Research
Metropolitan Planning Organization (MPO)	The organization designated by local elected officials as being responsible for carrying out the urban transportation and other planning processes for an area.
Minimum Operable Segment	A stand-alone portion of the alternative alignment that has independent utility, allowed by FTA to be considered as interim termini for a project. A minimum operable segment (MOS) provides flexibility to initiate a project with available funding while pursuing additional funding to complete the remainder of the project.
Minor Arterial	A minor arterial street system should interconnect with and augment the urban major arterial system and provide service to trips of moderate length at a somewhat lower level of travel mobility than major arterials. This system also distributes travel to geographic areas smaller than those identified with the higher system. The minor arterial street system includes facilities that allow more access and offer a lower traffic mobility. Such facilities may carry local bus routes and provide for community trips, but ideally should not be located through residential neighborhoods.

Table A-2. Terms

Terms	Definitions
Minority	A person who is one or more of the following: • Black: a person having origins in any of the black racial groups of Africa • Hispanic or Latino: a person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race • Asian American: a person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent • American Indian and Alaskan Native: a person having origins in any of the original people of North America, South America (including Central America), and who maintains cultural identification through tribal affiliation or community recognition • Native Hawaiian and Other Pacific Islander: a person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands
Mitigation	A means to avoid, minimize, rectify, or reduce an impact, and in some cases, to compensate for an impact.
Mixed-Use	C-1, C-2, GO, S-C, S-CN, S-DR, S-DW, S-E, S-F, S-HB, S-JW, S-RN, S-W, and S-WS
Modal Split	A term that describes how many people use different forms of transportation. Frequently used to describe the percentage of people using private automobiles as opposed to the percentage using public transportation, walking, or biking. Modal split can also be used to describe travelers using other modes of transportation. In freight transportation, modal split may be measured in mass.
Mode	A particular form or method of travel distinguished by vehicle type, operation technology, and right-of-way separation from other traffic.
Moving Ahead for Progress in the 21st Century (MAP-21)	Moving Ahead for Progress in the 21st Century (MAP-21) was signed by President Obama on July 6, 2012, reauthorizing surface transportation programs through FY 2014. It includes new and revised program guidance and regulations with planning requirements related to public participation, publication, and environmental considerations.
MovingAhead Project	The City of Eugene and LTD are working with regional partners and the community to determine which improvements are needed on some of our most important transportation corridors for people using transit, and facilities for people walking and biking. MovingAhead will prioritize transit, walking, and biking projects along these corridors so that they can be funded and built in the near-term. The project will focus on creating active, vibrant places that serve the community and accommodate future growth. During Phase 1, currently underway, the community will weigh in on preferred transportation solutions for each corridor and help prioritize corridors for implementation. When thinking about these important streets, LTD and the City of Eugene refer to them as corridors because several streets may work as a system to serve transportation needs.
Multi-Family Residential	R-2 and R-3
Multimodal	Multimodal refers to various modes. For the MovingAhead project, multimodal refers to Corridors that support various transportation modes including vehicles, buses, walking and cycling.

Table A-2. Terms

Terms	Definitions
National Environmental Policy Act of 1969 (NEPA)	A comprehensive federal law requiring analysis of the environmental impacts of federal actions such as the approval of grants; also requiring preparation of an Environmental Impact Statement for every major federal action significantly affecting the quality of the human environment.
New Starts	Federal funding granted under Section 3(i) of the Federal Transit Act. These discretionary funds are made available for construction of a new fixed guideway system or extension of any existing fixed guideway system, based on cost-effectiveness, alternatives analysis results, and the degree of local financial commitment.
No Action or No-Build Alternative	An alternative that is used as the basis to measure the impacts and benefits of the other alternative(s) in an environmental assessment or other National Environmental Policy Act action. The No-Build Alternative consists of the existing conditions, plus any improvements that have been identified in the Statewide Transportation Improvement Program.
Nonattainment Area	Any geographic region of the United States that the U.S. Environmental Protection Agency (EPA) has designated as not attaining the federal air quality standards for one or more air pollutants, such as ozone and carbon monoxide.
Notice of Intent	A federal announcement, printed in the *Federal Register*, advising interested parties that an Environmental Impact Statement will be prepared and circulated for a given project
Off-Peak Period	Non-rush periods of the day when travel activity is generally lower and less transit service is scheduled. Also called "base period."
Office	E-1 and E-2
Oregon Statewide Comprehensive Outdoor Recreation Plan (SCORP)	The 2013-2017 Oregon Statewide Comprehensive Outdoor Recreation Plan (SCORP), entitled *Ensuring Oregon's Outdoor Legacy* (OPRD, No Date), constitutes Oregon's basic 5-year plan for outdoor recreation. The plan guides the use of LWCF funds that come into the state; provides guidance for other OPRD-administered grant programs; and provides recommendations to guide federal, state, and local units of government, as well as the private sector, in making policy and planning decisions.
Park and Ride	Designated parking areas for automobile drivers who then board transit vehicles from these locations.
Participating Agency	A federal or non-federal agency that may have an interest in the project. These agencies are identified and contacted early-on in the project with an invitation to participate in the process. This is a broader category than "cooperating agency" (see Cooperating Agency).
Passenger Miles	The total number of miles traveled by passengers on transit vehicles; determined by multiplying the number of unlinked passenger trips times the average length of their trips.
Peak Hour	The hour of the day in which the maximum demand for transportation service is experienced (refers to private automobiles and transit vehicles).
Peak Period	Morning and afternoon time periods when transit riding is heaviest.
Peak/Base Ratio	The number of vehicles operated in passenger service during the peak period divided by the number operated during the base period.

Table A-2. Terms

Terms	Definitions
Place-miles	Place-miles refers to the total carrying capacity (seated and standing) of each bus and is calculated by multiplying vehicle capacity of each bus by the number of service miles traveled each day. Place-miles highlight differences among alternatives caused by a different mix of vehicles and levels of service.
Preferred Alternative	An alternative that includes a major capital improvement project to address the problem under investigation. As part of the decision-making process, the Preferred Alternative is compared against the No Action or No-Build Alternative from the standpoints of transportation performance, environmental consequences, cost-effectiveness, and funding considerations.
Purpose and Need	The project Purpose and Need provides a framework for developing and screening alternatives. The purpose is a broad statement of the project's transportation objectives. The need is a detailed explanation of existing conditions that need to be changed or problems that need to be fixed.
Queuing	Occurs when traffic lanes cannot fit all the vehicles trying to use them, or if the line at an intersection extends into an upstream intersection.
Record of Decision (ROD)	A decision made by FTA as to whether the project sponsor receives federal funding for a project. The Record of Decision follows the Draft EIS and Final EIS.
Regulatory Agency	An agency empowered to issue or deny permits.
Resource Agency	A federal or state agency or commission that has jurisdictional responsibilities for the management of a resource such as plants, animals, water, or historic sites.
Revenue Hours	Hours of transit service available for carrying paying riders.
Ridership	The number of people using a public transportation system in a given time period.
Ridesharing	A form of transportation, other than public transit, in which more than one person shares the use of the vehicle, such as a van or car, to make a trip. Also known as "carpooling" or "vanpooling."
Right of Way	Publicly owned land that can be acquired and used for transportation purposes.
Safe, Accountable, Flexible, Efficient Transportation Equity Act (SAFETEA-LU)	SAFETEA-LU was passed by Congress July 29, 2005, and signed by the President August 10, 2005. Includes new and revised program guidance and regulations (approximately 15 rulemakings) with planning requirements related to public participation, publication, and environmental considerations. SAFETEA-LU covers FY 2005 through FY 2009 with a total authorization of $45.3 billion.
Scoping	A formal coordination process used to determine the scope of the project and the major issues likely to be related to the proposed action (i.e., project).
Screening Criteria	Criteria used to compare alternatives.
Section 4(f) of the Department of Transportation Act of 1966	23 U.S.C. 138 and 49 U.S.C. 303. Parks are subject to evaluation in the context of Section 4(f) of the Department of Transportation Act of 1966, which governs the use of publicly-owned/open to the public park and recreation lands, government-owned wildlife lands, and historic resources.
Section 4(f) resources	(i) any publicly owned land in a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance, or (ii) any land from a historic site of national, state, or local significance

Table A-2. Terms

Terms	Definitions
Section 6(f) of the LWCF Act of 1965	The LWCF's most important tool for ensuring long-term stewardship is its "conversion protection" requirement. Section 6(f)(3) strongly discourages conversions of state and local park, and recreational facilities to other uses. Conversion of property acquired or developed with assistance under the program requires approval of the Department of Interior's National Park Service (NPS) and substitution of other recreational properties of at least equal fair market value, and of reasonably equivalent usefulness and location.
Section 106	Section 106 of the National Historic Preservation Act of 1966 requires that federal agencies take into account the effect of government-funded construction projects on property that is included in, or eligible for inclusion in, the NRHP.
Shuttle	A public or private vehicle that travels back and forth over a particular route, especially a short route or one that provides connections between transportation systems, employment centers, etc.
Single-Family Residential	R-1
Special Area Zone (Non-Mixed Use)	S-H and S-RP
Springfield 2030	Currently underway, this update to the City of Springfield's Comprehensive Plan will guide and support attainment of the community's livability and economic prosperity goals and redevelopment priorities.
Springfield Transportation System Plan (TSP)	The City of Springfield's Transportation System Plan looks at how the transportation system is currently used and how it should change to meet the long-term (20-year) needs of the City of Springfield's residents, businesses, and visitors. The Plan, which identifies improvements for all modes of transportation, will serve as the City of Springfield's portion of the Regional Transportation System Plan prepared by Lane Council of Governments (LCOG). It was prepared in coordination with Oregon Department of Transportation, LCOG, and the Oregon Department of Land Conservation and Development. The TSP was adopted March 11, 2014.
State Implementation Plan (SIP)	A state plan mandated by the Clean Air Act Amendments of 1990 that contains procedures to monitor, control, maintain, and enforce compliance with national standards for air quality.
Strategy	An intended action or series of actions which when implemented achieves the stated goal.
Street Tree	A living, standing, woody plant having a trunk that exists in the public right of way.
Study Area	The area within which evaluation of impacts is conducted. The study area for particular resources will vary based on the decisions being made and the type of resource(s) being evaluated.
Throughput	The number of users being served at any time by the transportation system.
Title VI	This Title declares it to be the policy of the United States that discrimination on the ground of race, color, or national origin shall not occur in connection with programs and activities receiving federal financial assistance and authorizes and directs the appropriate federal departments and agencies to take action to carry out this policy.

Table A-2. Terms

Terms	Definitions
Transit Oriented Development (TOD) or Nodal Development	A strategy to build transit ridership, while discouraging sprawl, improving air quality and helping to coordinate a new type of community for residents. TODs are compact, mixed-use developments situated at or around transit stops. Sometimes referred to as Transit Oriented Communities, or Transit Villages.
Transit System	An organization (public or private) providing local or regional multi-occupancy-vehicle passenger service. Organizations that provide service under contract to another agency are generally not counted as separate systems.
Transitway	A Bus Rapid Transit (BRT) priority lane generally with a concrete lane, with or without concrete tracks with grass-strip divider, and a curb separation, traversable by general-purpose vehicles at signalized intersections.
Transportation Demand Management (TDM)	Strategies to attempt to reduce peak period automobile trips by encouraging the use of high occupancy modes through commuter assistance, parking incentives, and work policies that alter the demand for travel in a defined area in terms of the total volume of traffic, the use of alternative modes of travel, and the distribution of travel over different times of the day.
Transportation Improvement Program (TIP)	A program of intermodal transportation projects, to be implemented over several years, growing out of the planning process and designed to improve transportation in a community. This program is required as a condition of a locality receiving federal transit and highway grants.
Travel Shed	Synonymous with “corridor” (see Corridor). A subarea in which multiple transportation facilities are experiencing congestion, safety, or other problems.
urban plaza	An urban plaza is a place that can be used for socializing, relaxation, and/or events.
v/c ratio	Used as a principal measure of congestion. The “v” represents the volume or the number of vehicles that are using the roadway at any particular period. The “c” represents the capacity of a roadway at its adopted level of service (LOS). If the volume exceeds the capacity of the roadway (volume divided by capacity exceeds 1.00), congestion exists.
Vehicle Hours of Delay	Cumulative delay experiences by transit vehicles during high traffic periods.
Water Quality	Refers to the characteristics of the water, such as its temperature and oxygen levels, how clear it is, and whether it contains pollutants.
Whiteaker Special Area Zone	S-W

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Appendix B: Construction Activities

General Construction Methods

The following section describes how construction of the Locally Preferred Alternative (LPA) would likely be staged and sequenced. This description is based on Lane Transit District's (LTD's) experience with the Franklin, Gateway, and West Eugene EmX Corridors. The final plan for construction methods, sequencing, and staging will be determined in coordination with the contractor and permitting authorities.

Utility work will generally be completed before the transportation infrastructure is constructed. Utility work, often conducted by local utility companies, occurs separately from project-related construction. After completing required utility relocation and other preparatory site work, the contractor will begin with construction of new transit lanes, bike lanes, sidewalks, and any other "flatwork." The contractor will modify existing signals or construct new traffic signals as part of this work. In some cases, the contractor may construct the signal footings but install signal arms after initial work is complete. Flatwork for stations, including curbs, ramps, and station footings, will be completed as the work progresses along the alignment. Streets and street segments will be restored to normal operations after this work is complete. The contractor is expected to progress approximately two blocks every 2 weeks, with additional time required – up to 2 weeks – for each enhanced stop or EmX station. Additional time will be required at intersections that require new or substantially modified traffic signals. The construction sequencing will be determined through coordination between the contractor and local residents, businesses, and property owners regarding construction scheduling preferences. It is expected that, for each major segment, the work would start at one end of the segment and progress to the other end of the segment. All flatwork is expected to be completed in two construction seasons.

Stations will be fabricated during the second construction season and installed during the subsequent (final) construction season, along with landscaping, fare machines, real-time passenger information, enhanced stop or EmX station amenities, and other similar items.

The contractor and LTD will coordinate closely with the Oregon Department of Transportation (ODOT) and with the City of Eugene (as appropriate to the jurisdiction) on traffic control. Depending on the segment, ODOT or the City will review and approve traffic plans for construction.

On streets with multiple lanes in each direction (or multiple lanes in one direction for one-way streets), at least one lane of traffic will be open at all times. Flaggers will coordinate travel at intersections and other points of congestion, as necessary. On streets with a single lane, it may be necessary to close one direction of traffic for certain periods. In those situations, flaggers will be used to manage the traffic flow safely. The contractor and LTD will also coordinate with businesses to ensure that the project maintains access for patrons and deliveries.

Coordination with Businesses and Residents

LTD's Franklin, Gateway, and West Eugene EmX projects demonstrated LTD's commitment to communicating with impacted businesses, residences, and travelers, both before and during construction. As with those projects, LTD will contact all businesses and residents along the alignment well before construction begins to solicit local concerns, issues, and scheduling preferences. Businesses and residents will also be able to communicate with the contractor and LTD during construction. LTD's construction liaison will provide e-mail updates and serve as an ongoing point of contact to address

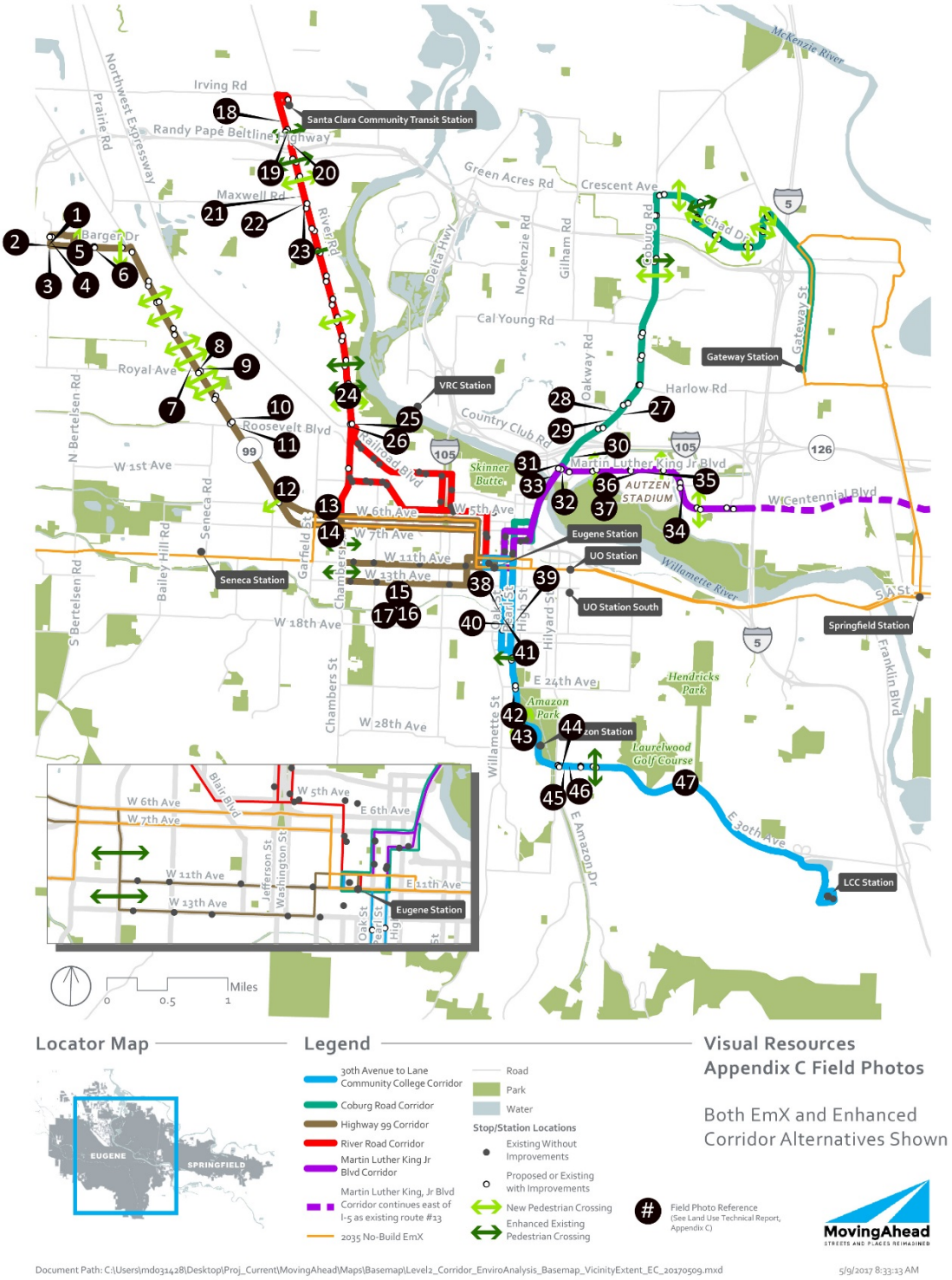
concerns and to provide information to affected businesses, residents, and other interested persons. LTD will provide a 24-hour hotline to quickly address construction concerns from businesses and residences.

LTD will also work to enhance activity at businesses affected by construction. This can be done through attractive signage, direct communications with the public (e.g., direct mail and advertising), and community events (e.g., street fairs). These techniques succeeded in keeping business areas active during previous EmX projects.

Appendix C: Existing Conditions Examples Along the Study Corridors

This appendix contains photographs that show existing conditions along the corridors. Figure C-1 indicates the locations where photographs were taken. The following photographs correspond to the numbers shown on the figure.

Figure C-1. Existing Conditions and the Alternatives and Locations of Representative Photographs



Highway 99 Corridor

Photo 1. North side of Barger Road, at Cubit Street, looking southwest

Photo 2. North side of Barger Road, at Cubit Street, looking east

Photo 3. Southwest side of Cubit Street, north of Barger Road, looking north

Photo 4. East side of Cubit Street, north of Barger Road, looking northwest

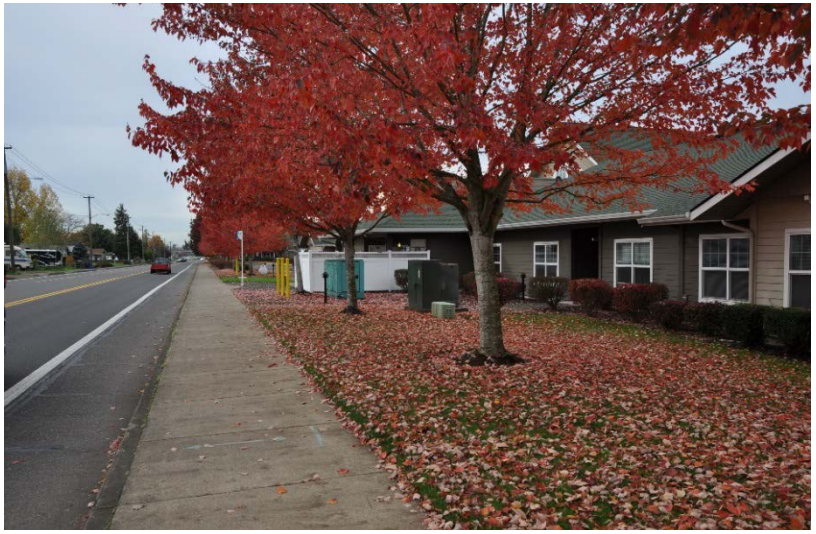


Photo 5. North side of Barger Street, west of Clarey Street, looking west

Photo 6. South side of Barger Street, west of Clarey Street, looking northwest

Photo 7. Highway 99, north of Royal Avenue, looking northwest

Photo 8. East side of Highway 99, north of Royal Avenue, looking southwest

Photo 9. East side of Highway 99, north of Royal Avenue, looking west

Photo 10. East side of Highway 99, at Roosevelt Boulevard, looking west

Photo 11. East side of Highway 99, at Roosevelt Boulevard, looking northwest

Photo 12. West 6th Avenue, at West 5th Avenue, looking south

Photo 13. South side of West 6th Avenue, at Grant Street, looking northwest

Photo 14. West 7th Avenue, at Grant Street, looking east

Area South of Downtown Eugene that is Part of the Highway 99 Enhanced Corridor Alternative

Photo 15. North side of West 13th Avenue, east of Adams Street, looking west

Photo 16. West 13th Avenue, west of Adams Street, looking west

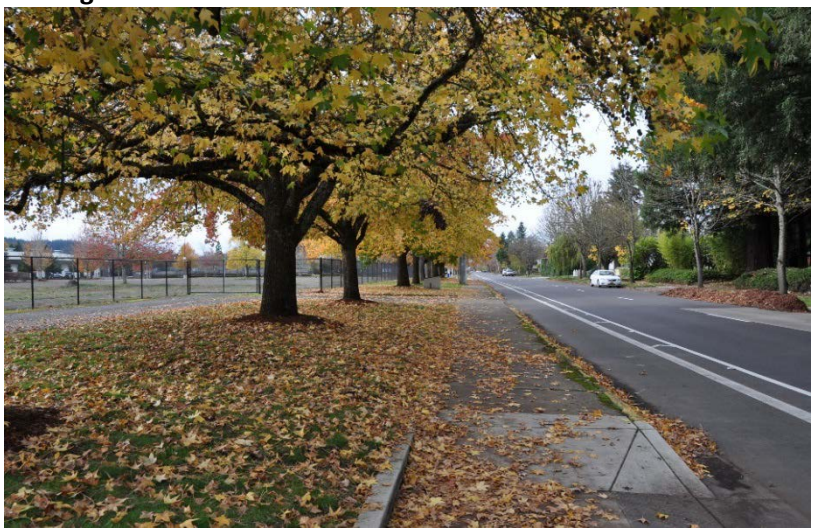


Photo 17. South side of West 13th Avenue, west of Adams Street, looking west

River Road Corridor

Photo 18. East side of River Road, at Santa Clara Avenue, looking north

Photo 19. West side of River Road, north of Division Avenue, looking north

Photo 20. East side of River Road north, of Randy Papé Beltline Highway, looking north

Photo 21. West side of River Road, south of Hamilton Avenue, looking northeast

Photo 22. East side of River Road, north of Maxwell Road, looking west

Photo 23. West side of River Road, at Maxwell Road, looking north

Photo 24. West side of River Road, at Holeman Avenue, looking north

Photo 25. West side of River Road, at NW Expressway, looking west

Photo 26. West side of Chambers Street, south of NW Expressway, looking northwest

Coburg Road Corridor

Photo 27. Coburg Road, at Oakmont Way, looking northwest

Photo 28. Coburg Road, at Oakmont Way, looking northeast

Photo 29. Coburg Road, south of Oakmont Way, looking northeast

Photo 30. Coburg Road, north of Martin Luther King, Jr. Boulevard, looking west

Photo 31. West side of Coburg Road, at Martin Luther King, Jr. Boulevard, looking northeast

Photo 32. East side of Coburg Road, at Martin Luther King, Jr. Boulevard, looking northeast

Photo 33. West side of Coburg Road, south of Martin Luther King, Jr. Boulevard, looking northeast

Martin Luther King, Jr. Boulevard Corridor

Photo 34. Martin Luther King, Jr. Boulevard, at Kinsrow Avenue, looking north

Photo 35. Martin Luther King, Jr. Boulevard, at Autzen Stadium, looking west

Photo 36. South side of Martin Luther King, Jr. Boulevard, near Autzen Stadium, looking east

Photo 37. North side of Martin Luther King, Jr. Boulevard, near Autzen Stadium, looking east

30th Avenue to Lane Community College Corridor

Photo 38. East side of Oak Street, north of East 16th Avenue, looking south

Photo 39. Oak Street, at East 16th Avenue, looking northwest

Photo 40. West side of Pearl Street, at East 17th Avenue, looking northeast

Photo 41. East side of Pearl Street, at East 17th Avenue, looking south

Photo 42. West side of Amazon Parkway, at East 25th Avenue, looking north (High Street on left)

Photo 43. Amazon Parkway, at East 27th Avenue, looking northwest

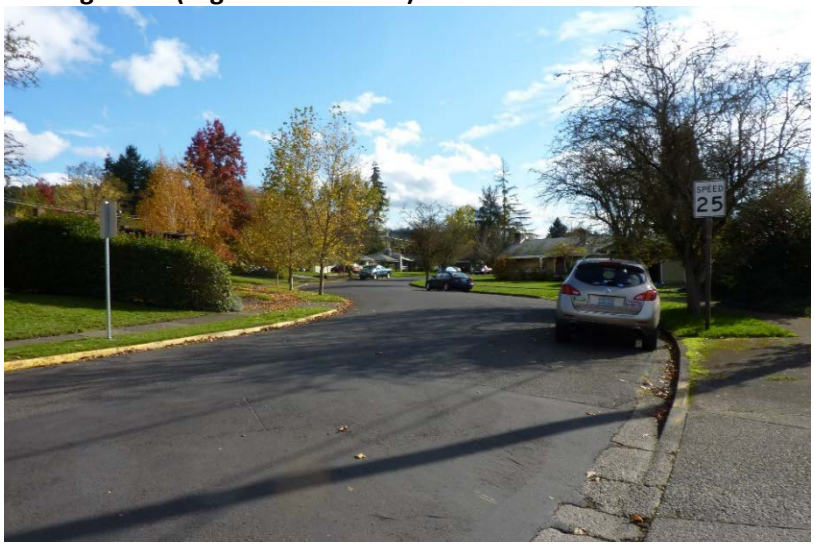


Photo 44. South side of East 30th Avenue, at Alder Street, looking south

Photo 45. East 30th Avenue, at Alder Street, looking north

Photo 46. East 30th Avenue, at Kincaid Street, looking north

Photo 47. East 30th Avenue, at Spring Boulevard, looking west