Appendix A: Design and Access Improvements by Street

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Proposed Cross-Sections by Street

The following cross-sections show proposed improvements to the Project Study Area by street, as indicated in the map shown in Map A-1. Subsequent refinement of these concepts, including consideration of the urban design and place-making elements outlined above, should occur during future phases of work, as these designs move from initial concepts toward recommended designs.

In order to sustainably manage stormwater, filtration planters are proposed along all streets where sufficient right-of-way exists (a minimum of 4 feet is necessary in order to provide a stormwater planter where on-street parking is not provided, while a minimum of 7 feet is required where on-street parking is located adjacent to the sidewalk). As noted above, planters along local streets are proposed to be more natural in character, while stormwater planters along key streets are more urban.

Note that because industrial activities will continue within the study area into the future, most of the conceptual cross sections provide 12-foot travel and turn lanes (where provided) in order to facilitate freight movement within the district.

"Key" Streets

Main Street (all segments)

As discussed in Section 4 of the Plan, Main Street is one of the two key gateway connections into the study area, serving as the primary vehicular, pedestrian, and bicycle access into the district from Downtown Milwaukie. Furthermore, Main Street spans almost the entire north / south length of the study area, thereby functioning as an organizing element within the district. As such, the conceptual cross section is intended to beautify and celebrate Main Street as a "key street" and to create a sense of entry as one moves into the site from downtown. All of the conceptual cross sections for Main Street therefore provide signature landscaping, wider sidewalks, and more "urban" stormwater planters, as described above. A multi-use path is also proposed, which would allow for a high quality bicycle and pedestrian connection between Tacoma Station, downtown Milwaukie, and connections on Mailwell Drive. Note that in order to accommodate truck turning, mountable curbs may need to be provided at key intersections.

The right-of way available on Main Street varies considerably, particularly north and south of Milport Road. The conceptual cross sections for each of these segments of Main Street (from south to north) are as follows:

- **Main Street South of Milport Road:** Right-of-way on Main Street is constrained south of Milport Road, with a typical cross section of 39 feet. Figure A-1 illustrates a conceptual cross section for Main Street south of Milport Road using the existing 39 feet of right-of-way. The cross section includes 2 feet of shy distance from the existing jersey barrier, and provides 13 feet for a multi-use path and optional narrow landscape strip (up to 4 feet). When opportunities arise for expanding right-of-way through redevelopment of fronting properties or other methods, the preferred cross section for this section of Main Street would include 42 feet of right-of-way with a 4-foot planting strip and a 12-foot multi-use path.

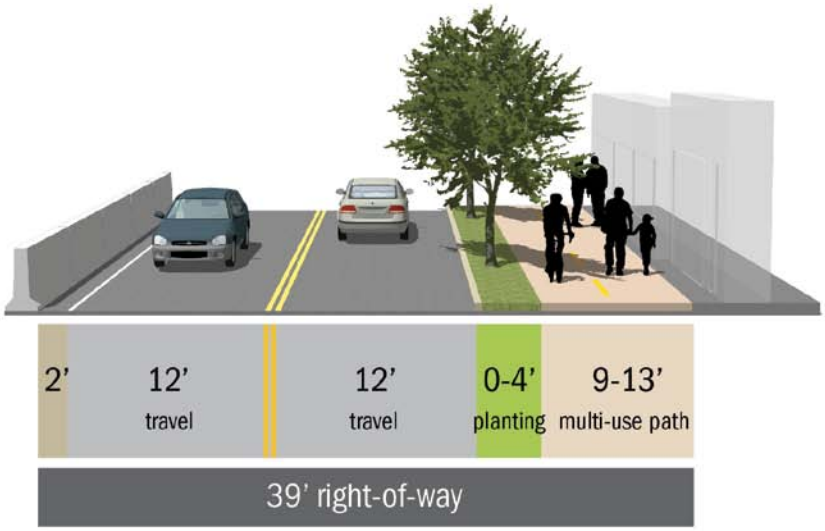


Figure A-1. Conceptual Cross-Section for Main Street – South of Beta Street within existing right-of-way (looking north)

- **Main Street Milport to Beta Street:** North of Milport Road, approximately 45 feet of right-of-way is available east of the existing jersey barrier of McLoughlin Boulevard, which is not proposed to be narrowed. For this section of Main Street, the conceptual cross section (shown in Figure A-2) allows 7 feet for intermittent on-street parking with landscaped bulbouts (ideally designed to capture stormwater).

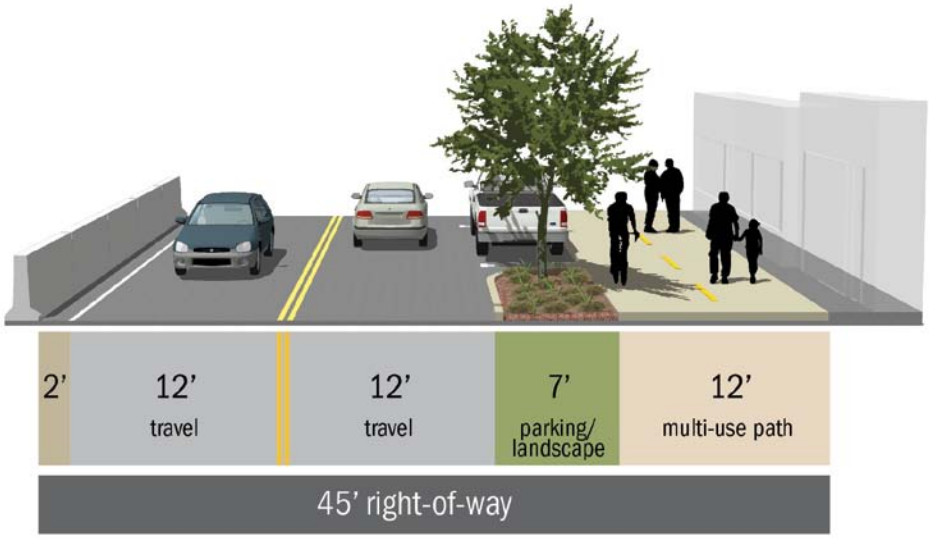


Figure A-2. Conceptual Cross-Section for Main Street – Milport Road to Beta Street within existing right-of-way (looking north)

- **Main Street North of Beta Street: North of Beta Street, right-of-way on Main Street varies between 53 feet and 60 feet.** Figure A-3 illustrates that this allows for a six- to eight-foot sidewalk with special paving, a 7-foot planting strip on the east side of the street with intermittent parking, and 0-7 feet of on-street parking on the west side of the street with landscaped bulbouts (ideally designed to capture stormwater). When opportunities arise for expanding right-of-way through redevelopment of fronting properties or other methods, the preferred cross section for this area of Main Street would include the full 60 feet of right-of-way.

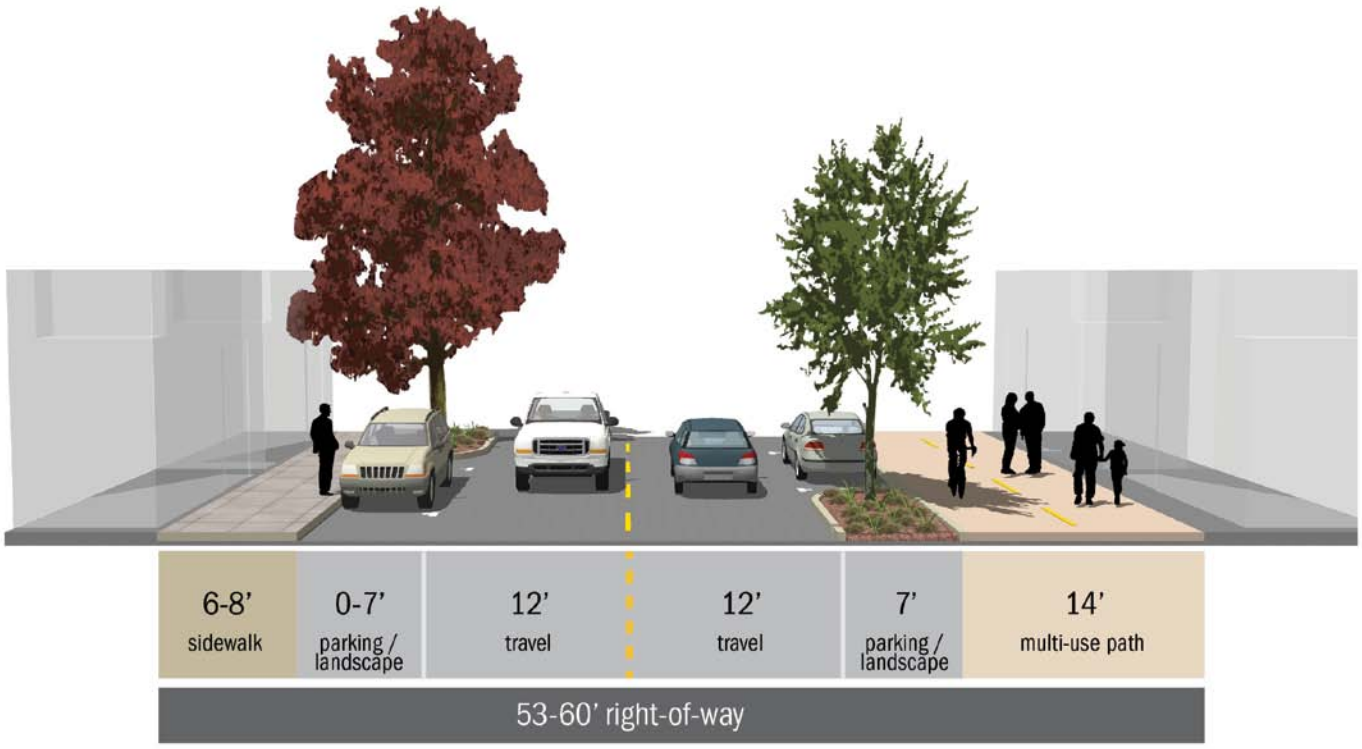


Figure A-3. Conceptual Cross-Section for Main Street – North of Beta Street within existing right-of-way (looking north)

Ochoco Street

Like Main Street, Ochoco Street is a "key street" within the district. Accordingly, the conceptual cross sections for Ochoco Street reflect the urban design, "place-making" treatments described in the previous section. The signature trees, special sidewalk paving, and urban landscaping treatments provided along Main Street are repeated along Ochoco Street, helping to create a true "gateway" experience as one enters the site from McLoughlin Boulevard.

- **Ochoco Street West of Main Street:** West of Main Street, Ochoco Street retains its existing three vehicular travel lanes, as the westbound approach to the McLoughlin Boulevard/Ochoco Street intersection requires a separate right turn lane to maintain operations. This accounts for 36 feet of the existing 54 feet of right-of way. The remaining right of way allows for 5-foot sidewalks and a 4-foot landscaping zone, within which signature trees are provided within grated tree wells. Note that the existing 54 feet of right-of-way does not allow for wider sidewalks or stormwater planters (Figure A-4).

- **Ochoco Street East of Main Street:** East of Main Street, 45 feet of right-of-way is currently available. This allows for two 12-foot travel lanes, 5-foot sidewalks, and a 5.5 feet landscaping zone, within which constructed stormwater planters are provided (Figure A-5). When opportunities arise for expanding right-

of-way through redevelopment of fronting properties or other methods, the preferred cross section for this part of Ochoco Street would include 52 feet of right-of-way with 8-foot sidewalks and 6-foot planting strips (a minimum sidewalk width of 8-feet is recommended along “key streets”).

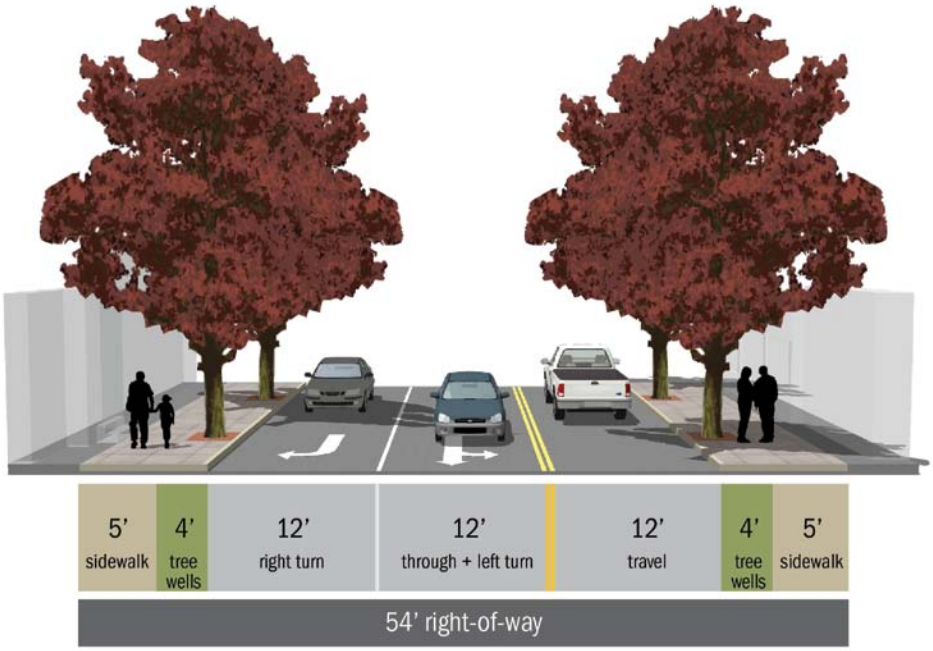


Figure A-4. Conceptual Cross-Section for Ochoco Street – West of Main Street within existing right-of-way (looking east)

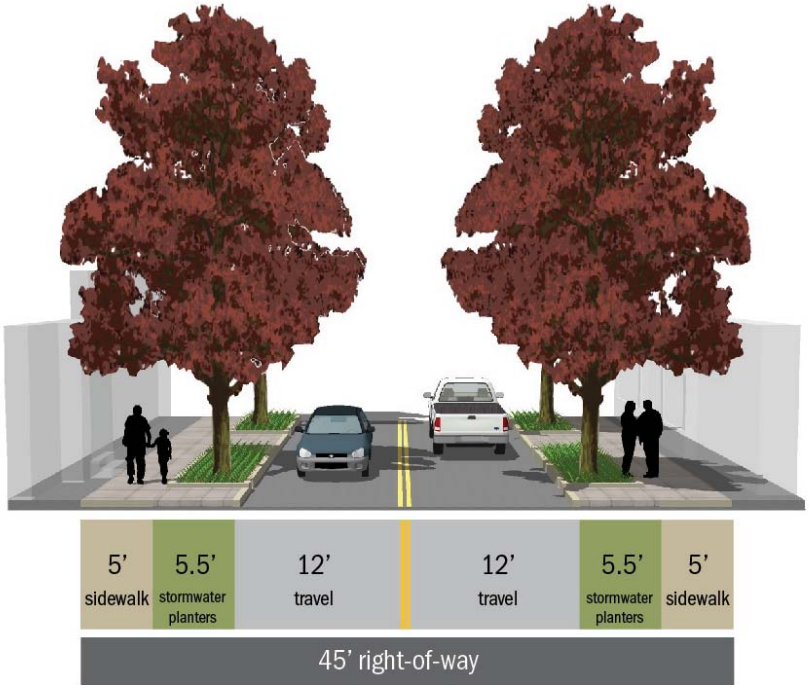


Figure A-5. Conceptual Cross-Section for Ochoco Street – East of Main Street within existing right-of-way (looking east)

Special Streetscape Treatments for Key Streets

The following urban design "place-making" elements should be considered for Main and Ochoco Streets as street design transitions from the initial concepts to recommended designs:[1]

- **Signature landscaping:** While street trees are proposed throughout the district, the conceptual cross sections for Main and Ochoco Streets suggest that a large, colorful, signature tree be used to emphasize the special nature of these two streets where available right-of-way and other conditions allow for it. Signature tree species to consider could include Scarlet Oaks or non-fruiting cherry trees. The notable color and larger size of these species can help create visual emphasis along the primary gateways into the district, thereby "announcing" one's entrance into the site.
- **Special paving:** The conceptual cross sections for Main and Ochoco Streets suggest that special paving might be used within the sidewalks and planting strips to highlight the key role of these two streets. While sidewalks for local streets within the District may be constructed of concrete, sidewalks along Main and Ochoco Streets could be comprised of special pavers or stamped concrete.
- **"Urban" landscaping treatments:** In order to create a more "urban" treatment along Main and Ochoco Streets, the conceptual cross sections suggest that "constructed" stormwater planters be provided. These types of planters are illustrated in the photographs in Figure A-6, and are typically designed with concrete edges and separated by hardscape to allow for pedestrian egress. Where street trees are provided along the key streets independent of stormwater planters, tree grates are provided to establish a more "urban" feel.
- **Street furniture and lighting:** While it is not within the scope of this project to recommend specific street furnishings or lighting treatments, it is suggested that future work in this arena focus on Main and Ochoco Streets when considering the location and style of furnishings. Such furnishings could include benches, water fountains, pedestrian scale street lighting, newspaper boxes, wayfinding signage, and public art.
- **Gateway signage:** As stated above, both Main and Ochoco Streets serve as important gateways into the site. As such, there may be an opportunity to provide monument gateway signage and/or signature public art at the entrances into the site at Ochoco Street and McLoughlin Boulevard and along Main Street just north of the Highway 224 overpass, announcing one's entrance into the district.

1 If ODOT continues to own and maintain Ochoco and Main Street, elements such as tree species, special pavers or stamped concrete, and stormwater planters would need to be approved by ODOT.

Figure A-6. Examples of constructed stormwater planters, as proposed for key streets

Local Streets

All local streets within the study area are proposed to be improved and/or formalized to provide sidewalks (or multi-modal paths), landscaping, and where right-of-way permits, on-street parking. These streets will provide comfortable, safe, and attractive pedestrian facilities throughout the study area. However, in order to create a sense of distinction, local streets will not receive the same high level of urban design emphasis as the "key streets." The conceptual cross sections suggest that street trees will be slightly smaller, and sidewalks slightly narrower (5 feet instead of 8 feet) and comprised of concrete rather than special pavers. Stormwater catchment planters are provided along local streets where right-of-way permits, however, in order to create a sense of distinction between local streets and more "urban" key streets, planters along local streets are proposed to be more natural in character.

Figure A-7. Examples of linear stormwater swales, as proposed for Local Streets

Local Streets (60' Right of Way)

Based on the right-of-way width currently available on Hanna Harvester Drive, Stubb Street, and Beta Street, a 60-foot cross section was developed to provide for movement of heavy trucks within a 40-foot roadway, as well as improve the pedestrian environment. The cross section is intended to match the existing frontage on the north side of the street at the eastern end, which features a sidewalk and landscaped buffer totaling ten feet. Note that a minimum of 6 feet is needed to provide stormwater swales adjacent to on-street parking (4 feet for the planter, plus a 2-foot disembarkment zone).

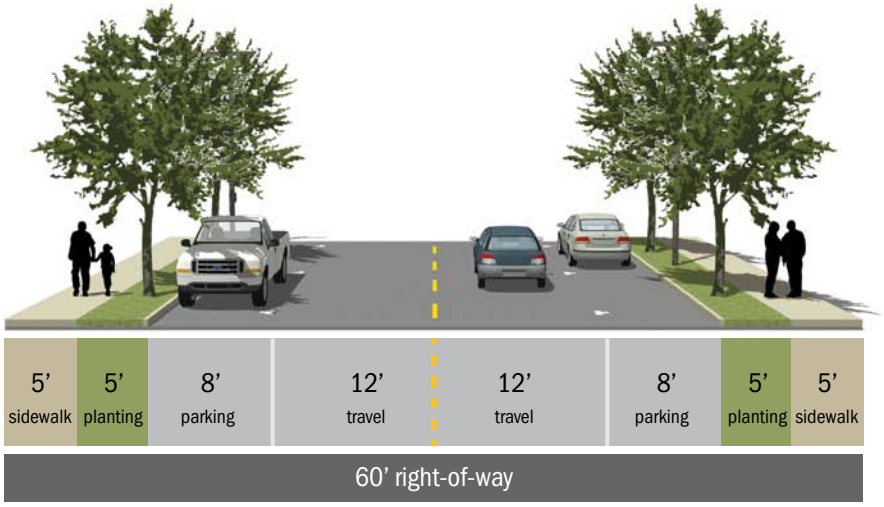


Figure A-8. Proposed Conceptual Cross-Section for Local Streets with a 60' right of way

Local Streets (40' Right of Way)

Portions of Moores Street and 25th Avenue in the study area have about 40 feet of right-of-way, providing enough space for two eleven-foot travel lanes with landscaped buffers and sidewalks on each side, with no parallel parking. Because these streets are expected to retain their Local classification, no separate bike facilities are provided. Because no on-street parking is provided along these streets, a stormwater swale is shown within the landscape zone. However, a minimum of 4 feet is typically necessary in order to provide a stormwater planter. Where the right-of-way narrows to 40 feet, a stormwater planter may not be feasible.

Figure A-9. Proposed Conceptual Cross-Section for Local Streets with a 40' right of way

Mailwell Drive

Mailwell Drive provides an important connection between proposed multimodal facilities on Main Street and two proposed facilities to the east: a new grade-separated bicycle/pedestrian connection to Olsen Street or Kelvin Street, and a new multi-use path connection south to Harrison Street at 26th Avenue. To complete a high quality bicycle/pedestrian network, the Mailwell Drive cross section includes a 14-foot multi-use path on the north side of the street.

In order to allow for continuous vehicular parking between the building and the street (as requested by local property owners and as currently practiced in this area), the cross section does not provide on-street parking or a landscape buffer on the southern side of the street. An 8-foot furnishing zone is provided on the north side of the street, which allows for a 6-foot stormwater planter and a 2-foot disembarkment zone for the adjacent on-street parallel parking.

Where truck movements need to be accommodated, 40-feet of roadway would need to be provided. In these areas, the continuous access would be eliminated and the 8-foot stormwater planter reallocated to on-street parking in order to provide the necessary 40 feet. When opportunities arise to reconfigure Mailwell Drive and expand right-of-way through redevelopment of fronting properties, the preferred cross section would not include continuous access with head-in parking. Instead, the south side of the roadway would include a 12-foot travel lane, a four-foot planting strip, and a five-foot sidewalk, which would be an expansion of right-of-way to 63 feet.

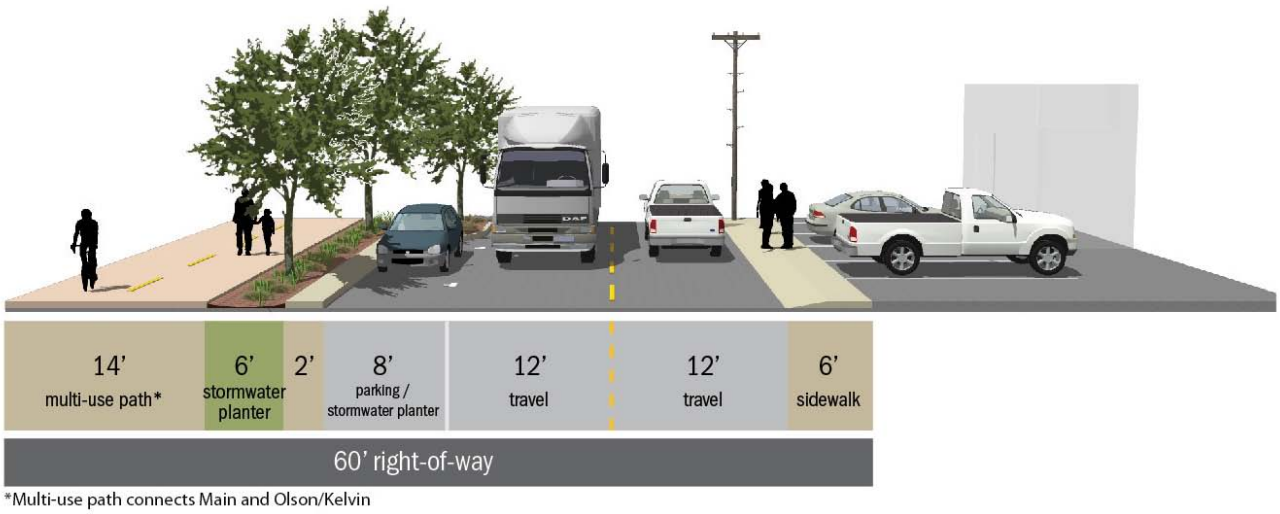


Figure A-10. Conceptual Cross-Section for Mailwell Drive with continuous access (looking east)

Stubb Street

Like Mailwell Drive, the north side of Stubb Street currently provides continuous access to on-site parking located between the building and the street. The cross section retains this continuous access (as requested by local property owners) by not providing on-street parking or landscaping along the northern side of the street (Figure A-12). On-street parking is provided along the southern side of the street, along with an 8-foot sidewalk and 10 foot landscape zone (comprised of an 8-foot stormwater swale and 2-foot disembarkment zone). When opportunities arise to reconfigure Stubb Street and expand right-of-way through redevelopment of fronting properties, the preferred cross section would not include continuous access with head-in parking. Instead, the north side of the roadway would include a 12-foot travel lane, a 4-foot planting strip, and a 5-foot sidewalk, which would be an expansion of right-of-way to 59 feet.

Where truck movements need to be accommodated, 40-feet of roadway would need to be provided. In these areas, the continuous access would be eliminated and 8 feet of the landscape zone reallocated to on-street parking on the north side of the street in order to provide the necessary 40 feet.

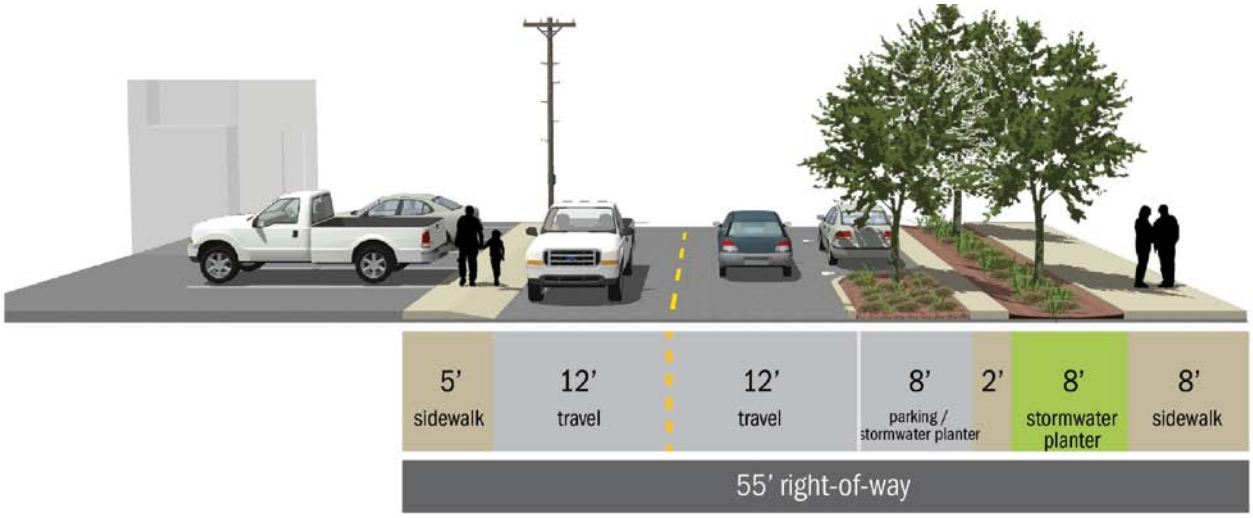


Figure A-11. Conceptual Cross-Section for Stubb Street with continuous access (looking east)

General Industrial

This cross section is included to illustrate the minimum elements needed for an industrial access street (other than Mailwell Drive or Hanna Harvester Drive) in the area: 40 feet of roadway, and five-foot sidewalks with five feet of landscaping on each side. Note that a minimum of 6 feet is needed to provide stormwater swales adjacent to on-street parking (4 feet for the planter, plus a 2-foot disembarkment zone). When opportunities arise to utilize on-street parking areas for stormwater treatment, pockets of on-street parking areas may be utilized for a stormwater planter.

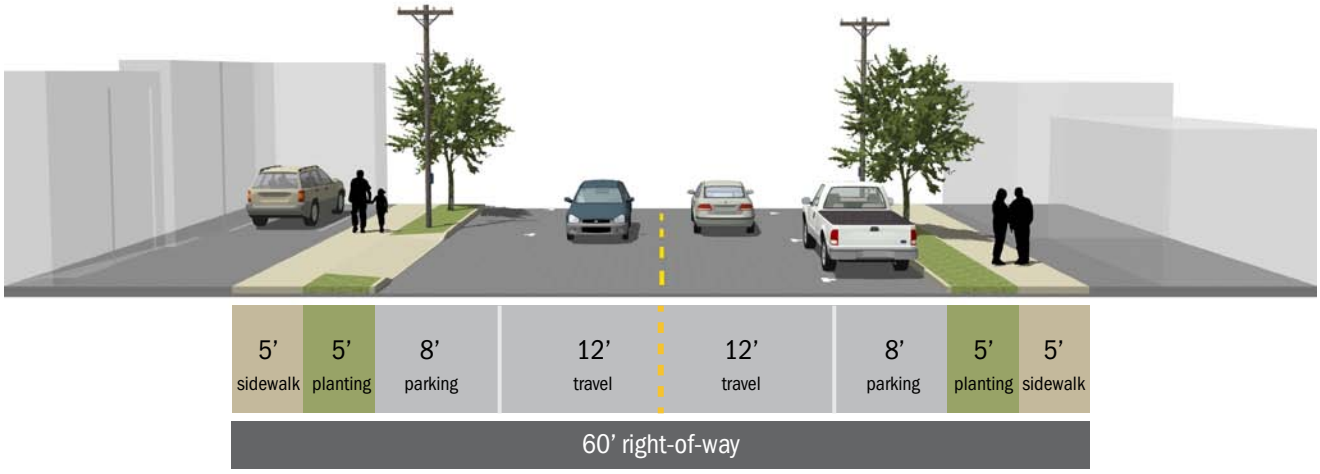
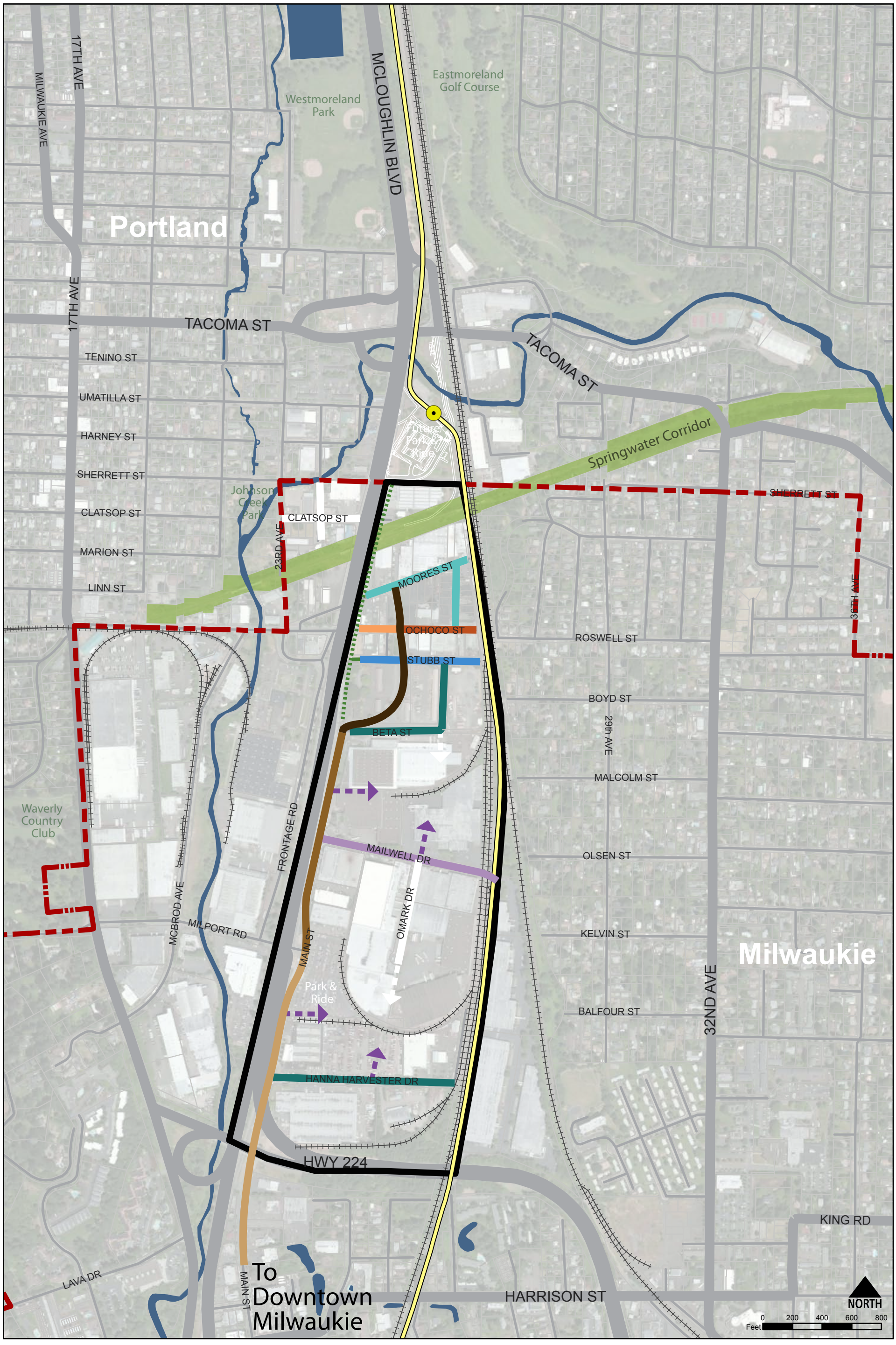


Figure A-12. Proposed Conceptual Cross-Section for General Industrial Streets South of Mailwell Drive

Map A-1: Street Cross-Section Location Key



Tacoma Station Area Plan

STREET CROSS-SECTION LOCATION KEY

SERA 25 OCTOBER 2012

- Project Study Area
- Station Area (1/2 mile radius)
- City Boundary
- LRT Station
- LRT Alignment
- Main Street (north of Beta)
- Main Street (Beta to Milport)
- Main Street (south of Milport)
- Local Streets (40-42' ROW)
- Local Streets (60' ROW)
- Ochoco (east of Main)
- Ochoco (west of Main)
- Mailwell
- Stubb
- General Industrial Streets

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Appendix B: Future Traffic Conditions Analysis Memorandum

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DRAFT MEMORANDUM

DATE: January 16, 2013

TO: Matt Hastie, AICP, Angelo Planning Group

FROM: Chris Maciejewski, P.E., PTOE, DKS Associates
Ray Delahanty, AICP, DKS Associates

SUBJECT: **Tacoma Station Area Plan**
Preferred Redevelopment Scenario Trip Generation Analysis (for Task 5)
P12071-000-005

Potential Impacts to Transportation Facilities and Capacity

In order to determine whether the preferred redevelopment scenario is likely to create more demands on the transportation system than the existing zoning, a trip generation analysis was conducted. Table 1 shows the estimated leasable square feet assumed, by land use, for the existing zoning and the preferred scenario. Note that both scenarios are broken out into subareas, and the analysis now includes an additional area to the west of McLoughlin Boulevard (Subarea 1). Subarea 3 is divided into two parts (3a and 3b) to account for the fact that the area north of Stubb Street (3a) is closer to the LRT station and can be considered a Station Area under Metro's Urban Growth Management Functional Plan, while the part south of Stubb Street (3b) is too far from the LRT station to be considered a Station Area in that context. This distinction affects the assumptions for trip generation, as described below.

Table 1: Estimated Leasable Square Feet by Land Use and Subarea (1,000 SF)

Existing Land Use	Subarea 1	Subarea 2	Subarea 3a	Subarea 3b	Subarea 4	TOTAL
Industrial	24.8	6.0	24.0	33.5	199.3	287.6
Office	66.7	16.0	64.8	90.3	536.7	774.5
Retail	7.4	1.8	7.2	10.0	59.5	85.9
TOTAL	98.9	23.8	96.0	133.8	795.5	1148.0
Preferred Scenario						
Industrial	25.3	0	35.8	42.0	199.3	301.9
Office	25.3	11.3	40.9	48.0	536.7	662.3
Retail	10.1	21.0	20.4	24.0	59.5	135.2
TOTAL	60.7	32.3	97.1	114.0	795.5	1099.4
Residential (dwelling units)	63	0	8	11	0	82

The following ITE codes were used for estimating reasonable worst-case trip generation for each of the land uses. Trip rates reflect the p.m. peak hour of adjacent street traffic, including General Office, for which the peak hour of the trip generator coincides with the peak hour of adjacent street traffic.

- Industrial. ITE Code 110, Light Industrial, 0.97 p.m. peak hour trips per 1,000 square feet (KSF)
- Office (including Station Area). ITE Code 710, General Office, 1.49 p.m. peak hour trips per KSF
- Retail. Split between two uses. ITE Code 932, Sit-Down Restaurant, 11.15 p.m. peak hour trips per KSF; ITE Code 492, Health/Fitness Club, 3.53 p.m. peak hour trips per KSF
- Residential. ITE Code 221, Low-Rise Apartment, 0.58 p.m. peak hour trips per dwelling unit
- Subarea 2 (Pendleton Site) Retail. ITE Code 820, Shopping Center, 3.71 p.m. peak hour trips per KSF

The General Office (710) use meets the ITE guidelines for using the given fitted curve equation rather than specific trip generation rates. The equation for Code 710 was applied to the total leasable office space in the study area, and then the trips derived from the equation were allocated proportionately back to the subareas. All other land uses relied on rates per 1,000 square feet or dwelling unit. For the Sit-Down Restaurant (932) Shopping Center (820) uses, it is appropriate to apply a reduction for "pass-by" trips (trips attracting motorists who are already on the street). The pass-by reduction applied for code 932 is 43%, and for code 820 it is 34%.

Additionally, a 30% reduction from ITE rates for trips generated north of Stubb Street was included for the Preferred Scenario, given certain conditions in Metro's Urban Growth Management Functional Plan being met for Station Areas. This resulted in an a reduction of 44 trips from Subarea 1, 19 trips from Subarea 2, and 56 trips from Subarea 3A, for total reduction of 119 trips. Final trip generation totals are shown in Table 2, below.

Table 2: Trip Generation Estimates (PM Peak Hour)

Existing Land Use	Subarea 1	Subarea 2	Subarea 3a	Subarea 3b	Subarea 4	TOTAL
Light Industrial (110)	24	6	23	33	193	279
General Office (710)	99	20	80	112	665	976
Sit-Down Restaurant (932)	24	6	23	32	189	273
Health/Fitness Club (492)	13	3	13	18	105	152
TOTAL	160	34	139	194	1152	1680
Preferred Scenario	Subarea 1	Subarea 2	Subarea 3a	Subarea 3b	Subarea 4	TOTAL
Light Industrial (110)	18	0	25	41	193	277
General Office (710)	27	10	36	60	667	800
Sit-Down Restaurant (932)	22	0	46	76	190	334
Health/Fitness Club (492)	13	0	25	42	105	185
Shopping Center (820)	0	36	0	0	0	36
Low-Rise Apartment (221)	26	0	4	6	0	36
TOTAL	106	46	136	225	1155	1668

The reasonable worst case of land uses for the Preferred Scenario generates 12 fewer trips than the existing Manufacturing zoning. The Preferred Scenario includes more retail, which typically yields high trip generation, but this is offset by new residential uses and less office than in the existing zoning, along with the 30% trip reduction.

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Appendix C: Proposed Transportation Project Details

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The numbers in the list below correspond to the numbers shown on Map C-1.

1. **Improvements to Main Street to fill gaps in bicycle/pedestrian facilities and enhance the connection to downtown Milwaukie.** A bicycle and pedestrian path, ranging from nine to 13 feet in width is proposed for the east side of Main Street, with sidewalks on the west side of the street where right-of-way allows. Changes may also include removing or relocating some on-street parking. See cross-sections in Appendix A.

2. **Bicycle/pedestrian connection from the eastern neighborhoods to the Station Area across the railroad tracks (underpass or overpass) at approximately Kelvin or Olsen Streets.** Coming from the east, users would go from the proposed new crossing to the existing private at-grade crossing over the western set of railroad tracks at Mailwell Drive. They could then access the light rail transit (LRT) station via existing and potential new local streets (Mailwell, Main, Moores and McLoughlin). This would also provide improved access to the downtown for residents via Main Street.

3. **Improvements to access at the Springwater Corridor are recommended to facilitate the connection from the west end of Sherrett Street to the trail**. This is related to item #16, and improvements include paving the existing gravel pathway that people currently use to access the trail, as well as possibly providing additional signage at Sherrett/29th to direct people to this connection and the trail.

4. **Potential pedestrian overcrossings of McLoughlin Boulevard at Milport Road.** A potential overcrossing is shown at Milport Road – a location where existing at-grade pedestrian and bicycle crossings of the road are currently very challenging.. This potentially represents an alternative to at-grade crossing improvements. An overcrossing at this location would significantly improve pedestrian access to the project area. However, it likely would be extremely expensive ($2 million or more based on similar crossings constructed elsewhere) and would be challenging to design and locate, given the amount of space needed to meet accessibility requirements.

5. **Improved existing connection from the Springwater Corridor to the Pendleton site/station area.** This is an improved connection from the area south of the Springwater Corridor to the light rail transit (LRT) station. The first option (5A) assumes a new pathway from the north end of Main Street to the Springwater Corridor, then connecting to the new pathway to connect from the Corridor to the LRT station. The second option (5B) would be to widen and improve the existing sidewalk/pathway adjacent to McLoughlin Blvd. under the Springwater Corridor. The third option (5C) would be to create a tunnel under the Springwater Corridor going directly north from Main Street to the LRT station.

6. **Stairs/improved connection from the Springwater Corridor to the LRT station** (south side of Pendleton site as shown in Figure C-1 below, identified as staircase #1 and #2 and related improvements). The city of Portland continues to pursue potential funding for this project element through a Transportation Enhancement grant.

Figure C-1. Planned Improvements from Springwater Corridor to Light Rail Station

7 **Possible stairway/improved connection from the Springwater Corridor to McLoughlin Boulevard from west.** This is a companion stairway to #6 noted above, and is shown in Figure C-1 (identified as Staircase #3).

8 **Pedestrian/bicycle safety/crossing improvements at Ochoco Street and Milport Road intersections with McLoughlin Boulevard**, with specific design options to be identified at a later date. An overcrossing structure could be considered at Milport Road.

9 **Truck signage improvements at the Ochoco Street intersection.** Additional signage and enhanced circulation and /or geometric improvements are recommended to improve truck operations in this location and improve queuing conditions along McLoughlin Boulevard that can result if southbound truck traffic does not access Ochoco Street properly.

10 **Planned safety improvements at the Tacoma Street interchange (on/off ramp improvements).** These are part of a planned ODOT re-striping project scheduled for summer of 2012 that will change lane configurations on southbound SE McLoughlin Boulevard near the Tacoma Street interchange. It will shift the start of the third southbound travel lane so it begins at the Tacoma Street on-ramp rather than at Nehalem Street, allowing a dedicated lane for drivers entering McLoughlin Boulevard from the Tacoma Street ramp. The project will also add a raised pedestrian refuge island at the southbound Tacoma Street ramp.

11 **New bicycle/pedestrian connection**. This project represents a bicycle/pedestrian bridge over Johnson Creek to improve access into this relatively isolated portion of the study area. In combination with a new access from this area to the Springwater Corridor trail, this would significantly improve access to surrounding areas for people living and working in this area and also would provide another connection to the LRT station and study area from the neighborhood to the northwest.

12 **Additional local street connections to improve connectivity in the Project Study Area.** If larger blocks in the southern portion of the area are redeveloped in the future, additional local street connections would be recommended or required to break up large blocks and improve local access and connectivity. Future block lengths associated with residential, commercial or office use are recommended to be 250-530 feet, consistent with existing city standards. Block sizes for industrial uses may be larger (e.g., 600-1,200 feet), given the need to accommodate larger industrial users and associated infrastructure (e.g., rail lines and spurs).

13 **Potential future Portland Bicycle Share station and car share spaces at LRT station**. Development of a Bicycle Share station has been discussed for the LRT station. TriMet also could work with local car share companies (e.g., Zipcar or Car2Go) to provide car share spots to encourage use of bicycle and car sharing among LRT station users and surrounding residents.

14 **Local street improvements to Stubb, Beta, and Ochoco Streets, and Hanna Harvester and Mailwell Drives to demarcate pedestrian, bicycle, truck and auto circulation and parking areas**, improving safety while maintaining freight operations. Cross-sections for these streets are in Appendix A.

15 **Improved bicycle/pedestrian connections from and within the neighborhood to the west along Ochoco Street and Milport Road**. This could include filling gaps in the sidewalk system on one or both sides of these streets and possibly adding dedicated bicycle lanes if right-of-way is available.

16 **Connection from the SE 29th Avenue bicycle route to Springwater Corridor.** Currently, 29th Avenue from Sherrett to Balfour is a designated "Shared Roadway Low Traffic" for bike travel.

17 **Bicycle/pedestrian connection between McLoughlin Boulevard and the west end of Stubb Street.** Currently, Stubb Street ends just east of McLoughlin Boulevard A short pathway could be provided across the vacant area between the west end of Stubb Street and the proposed multi-use path along this section of McLoughlin Boulevard. This would provide parallel routes on both Main Street and McLoughlin Boulevard to the north to access the LRT station, further enhancing bicycle and pedestrian connectivity in the area. No crossing of McLoughlin Boulevard is proposed at this location.

18 **Potential pedestrian overcrossings of McLoughlin Boulevard at Umatilla Street.** A potential overcrossing is shown at Umatilla Street – a location where there currently is no existing at-grade pedestrian and bicycle crossings. An overcrossing at this location would improve pedestrian access to the future LRT station and reduce out-of-direction travel for people walking to the LRT station from areas to the north (as an alternative to using the Springwater Corridor or the Tacoma Street overpass to access the station). However, similar to project #4, this project likely would be extremely expensive ($2 million or more based on similar crossings constructed elsewhere) and would be challenging to design and locate, given the amount of space needed to meet accessibility requirements."

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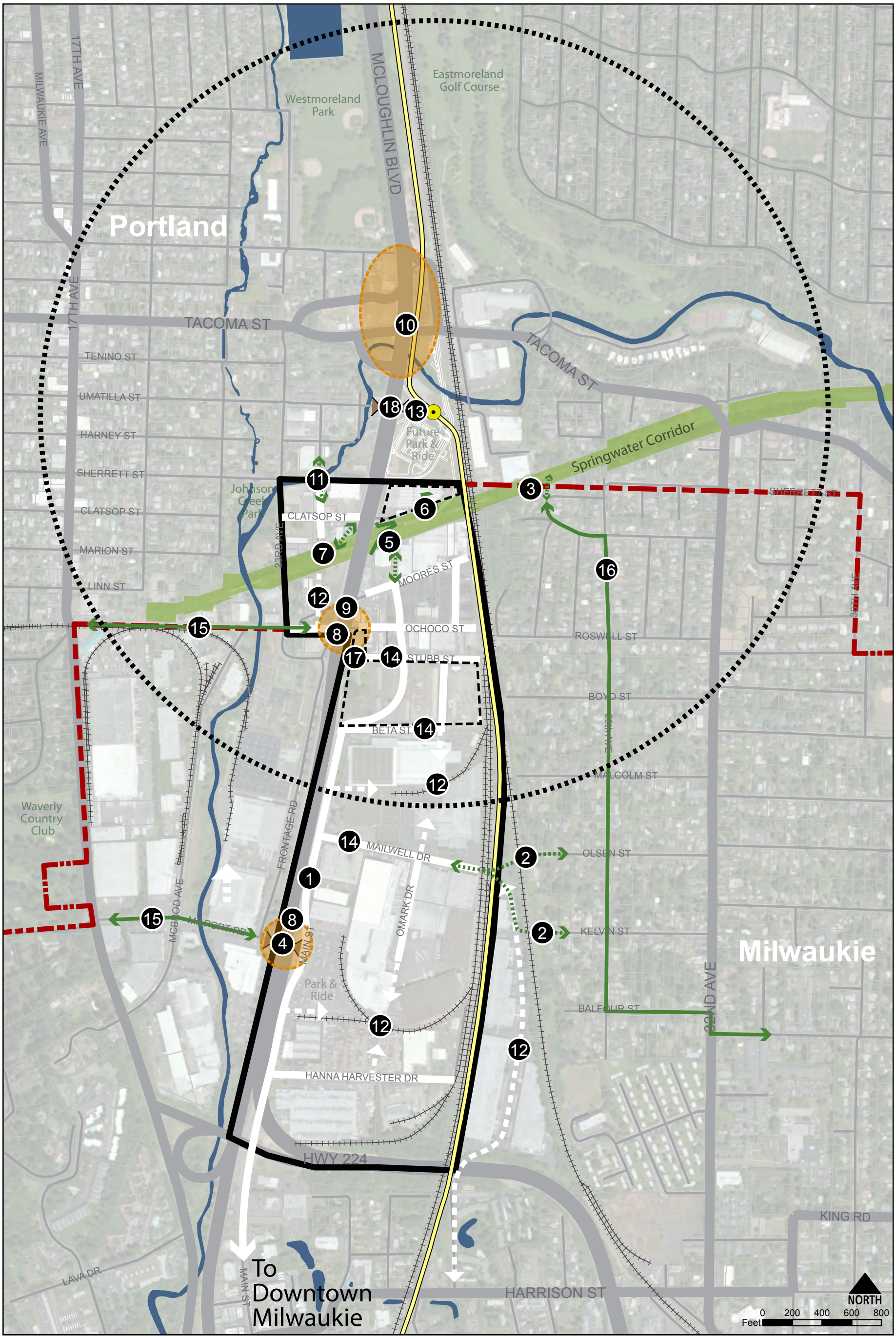
Map C-1: Proposed Transportation Improvements



Station Area Transportation Improvements
TACOMA STATION AREA PLAN

4 February 2013

- Study Area Streets
- New Street Connections
- Bike / Ped Improvements
- New Bike / Ped Connections
- Intersection Improvements
- Project Study Area
- Station Area (1/2 mile radius)
- City Boundary
- LRT Station
- LRT Alignment

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Appendix D: Redevelopment Scenario Evaluation Matrix

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Following is a table summarizing the results of an evaluation of three redevelopment scenarios that were prepared and evaluated during a previous phase of the Tacoma Station Area planning project. Evaluation Criteria also were developed during an earlier phase of the effort. This evaluation was used to inform and help develop a preferred plan for the Tacoma Station Area which is described in the body of the Plan.

Goal	Evaluation Measure	Scenario 1 Large civic/ entertainment use	Scenario 2 Intensive employment use	Scenario 3 Modest land use changes
Land Use	**LU-1:** The Plan allows existing industrial uses to continue with minimal disruption – e.g., preserves rail spurs and maintains or improves freight access, land use flexibility, and predictability in permitting. (Relative Ranking of Alternatives)	★ ★	★ ★	★ ★ ★
		• Major events could cause traffic disruptions affecting freight operations • Realignment of northern portion of Main Street would affect freight access from Ochoco Street	• Typical commute period traffic would have some impact on freight operations, but would be fairly predictable • Represents most significant traffic impacts of all scenarios	• Largely maintains current industrial uses
		• Most transportation improvements would enhance access for businesses, workers (all scenarios)		
	LU-2: The Plan facilitates transit-supportive development, including development intensity, land use mix, and building or site design, pedestrian-orientation and connectivity. (Relative Ranking of Alternatives)	★ ★	★ ★	★
		• People often take transit to major events; however usage would be low between events	• Land use mix would be supportive of transit use • Potential degree of redevelopment offers highest potential to fund bike, pedestrian improvements & building and site design proposals	• Represents least transit supportive land use mix • Limited redevelopment potential would reduce potential for funding transportation improvements
		• Proposed transportation improvements would enhance bicycle, pedestrian connectivity (all scenarios)		
	LU-3: The Plan allows new employment uses at densities of 45 persons per acre, consistent with Metro Functional Plan Title 6, Sections 3.07.610 – 3.07.640. (Yes/No)	✓	✓	✘
		• Limited areas would be zoned for employment uses at relatively high densities	• New zone would allow more intense employment uses	• Limited changes to zoning would not allow significantly higher employment density
	LU-4: The Plan results in a net increase in the number of employees at buildout, based on proposed zoning, including high-paying jobs. (Relative Ranking of Alternatives)	★	★ ★ ★	★ ★
		• Large scale civic use would introduce a moderate number of service jobs, which are typically not high-paying, while displacing some industrial jobs that typically are high-paying	• Focus is on office and flex uses, which are typically denser than industrial uses and include high-paying jobs	• Introduction of some amenities would add a limited number of new jobs, mostly in the service sector (typically not high-paying), while retaining existing industrial jobs

Goal	Evaluation Measure	Scenario 1 Large civic/ entertainment use	Scenario 2 Intensive employment use	Scenario 3 Modest land use changes
Land Use	**LU-5:** The Plan accommodates large-scale redevelopment, where applicable. (Relative Ranking of Alternatives)	★★★ • Large scale civic use would accommodate large-scale redevelopment, other supporting uses	★★ • Represents most significant level of redevelopment in terms of transition to higher intensity uses	★ • Assumes relatively minimal change in character or intensity of development
	LU-6: The Plan provides for land uses and/or other amenities that would benefit future workers and residents in the area. (Relative Ranking of Alternatives)	★★★ • Civic uses and associated commercial services and gathering would benefit workers, residents	★★★ • Commercial services, new residents, more intensive redevelopment would create market for beneficial services, amenities	★ • Continued pattern of development, employment would create fewer new services, amenities or attractions for workers, residents
	LU-7: The Plan provides for a mix of feasible uses, based on market analysis. (Relative Ranking of Alternatives)	★★ • Potentially feasible in long term per team market analysis • Local development experts say creating a destination in area would be challenging and could adversely impact downtown	★★ • Potentially feasible in long term per team market analysis • Local development experts indicate level of development very challenging and level of development may not generate funding for needed public improvements	★★★ • Most feasible based on previous and current market analyses
	LU-8: The Plan is generally supported by study area property owners. (Relative Ranking of Alternatives)	★★ • Mixture of support and concern expressed by property owners in advisory committee, public meetings	★★ • Mixture of support and concern expressed by property owners in advisory committee, public meetings	★★★ • Most property owners indicate area viable for continued industrial use with no plans for change in short to medium term (next 5-20 years)
	LU-9: Potential redevelopment costs are reasonable based on the professional opinion of a market analyst and feedback from property owners. (Relative Ranking of Alternatives)	★★ • Ratio of potential level of redevelopment to cost of improvements likely lower than for Scenario 2, but higher than for Scenario 3	★★★ • Ratio of potential level of redevelopment to cost of improvements likely to be highest of three scenarios	★ • Ratio of potential level of redevelopment to cost of improvements likely to be lowest of three scenarios
		• Unable to quantify further at this time; may further evaluate in subsequent tasks		

Goal	Evaluation Measure	Scenario 1 Large civic/ entertainment use	Scenario 2 Intensive employment use	Scenario 3 Modest land use changes
Transportation	**T-1:** The Plan improves connections to and between the station, the Springwater Trail, the Ardenwald & Sellwood Moreland neighborhoods, and downtown Milwaukie. (Relative Ranking of Alternatives)	★	★★★	★★
		• Large civic/ entertainment facility on Opportunity Site B will decrease connectivity through the site	• Redevelopment of Opportunity Site B will provide a new street connection and new bike/ped paths through the site	• Renovation of part of Opportunity Site B will provide new pedestrian connections on part of the site
		• All three scenarios include the same set of new and improved connections to adjacent areas outside of Opportunity Site B		
	T-2: At Plan buildout, projected pedestrian and bicycle mode share is significantly increased through transit-supportive development and design, safe and convenient access and supportive amenities.* (Relative Ranking of Alternatives)	★★	★★★	★
		• Increased density of office and commercial uses is expected to improve non-motor vehicle mode share somewhat	• Diverse mix of uses near Tacoma Station is expected to boost pedestrian and bicycle mode share the most among alternatives	• Minimal change in zoning does not promote an increase in the pedestrian/bicycle mode share
	T-3: At Plan buildout, the number of motor vehicle trips on OR 99E does not exceed the "worst case" vehicle trip projection under existing zoning and/ or mitigates those increases to ensure compliance with the Oregon Transportation Planning Rule. (Yes/No)	✘	✘	✘
		• All scenarios are estimated to increase vehicle trips compared to existing zoning • Zoning ordinance amendments and small operational improvements may be used to mitigate impacts and will be explored in preparing a draft Station Area Plan.		
	T-4: The duration of congestion on OR 99E, is lower than for other alternatives. (Relative Ranking of Alternatives)	★★★	★★★	★★★
		• Under all three scenarios, OR 99E north of Ochoco Street does not exceed roadway capacity at any hour of the day		
	T-5: The Plan is not predicated on ODOT making motor vehicle capacity improvements to OR 99E. (Yes/No)	✓	✓	✓
		• Traffic mitigations can be addressed either through down-zoning in the study area south of Mailwell Drive, or with smaller operational improvements on 99E (not mainline capacity improvements)		

Goal	Evaluation Measure	Scenario 1 Large civic/ entertainment use	Scenario 2 Intensive employment use	Scenario 3 Modest land use changes
Transportation	**T-6:** The total vehicle miles traveled generated within the study area is lower than for other alternatives.* (Relative Ranking of Alternatives)	★★★	★	★★
		• Scenario 1 generates the fewest VMT (23,151) in the PM peak hour due to the sporadic nature of traffic generated at Opportunity Site B	• Scenario 2 generates the most VMT (24,693) in the PM peak hour due to the most intensive set of land uses	• Scenario 3 generates the second most VMT (23,881) in the PM peak hour
	T-7: As applicable, the Plan (or portion of Plan) potentially complies with the definition of a Multimodal Mixed Use Area, under the Transportation Planning Rule. (Yes/No/NA)	N/A	✓	N/A
		• Would not meet residential use and density requirements; MMA would not be recommended	• Scenario incorporates residential use on west side of McLoughlin Boulevard which would meet MMA requirements in combination with other recommendations	• Would not meet residential use and density requirements; MMA would not be recommended
	T-8: The Plan includes transportation safety improvements which can reasonably be expected to mitigate the causes of accidents described in crash history data and to address Tacoma interchange queuing per TPR 0060(10). (Yes/No)	N/A	N/A	N/A
		• The Plan is not expected to result in new vehicle trips on the interchange sufficient to degrade safety at the Tacoma Street interchange.		
	T-9: The Plan provides for needed local street network improvements within the plan area, including improvements for parking and freight access. (Yes/No)	✓	✓	✓
		• All scenarios propose improvements to the local street network and street cross sections, including better-defined parking areas and appropriate turning radii for freight		
Overall	Best meets project criteria (Relative Ranking of Alternatives)	★★	★★★	★
		• Average relative ranking = 2.1 • 4 pass, 1 fail, 1 N/A	• Average relative ranking = 2.6 • 5 pass, 1 fail	• Average relative ranking = 1.9 • 3 pass, 2 fail, 1 N/A

** This evaluation measure is part of the Sustainable Transportation Analysis & Rating Systems (STARS). The STARS rating system informs the transportation planning process by establishing clear sustainability goals and providing quantitative measurements for comparing outcomes.*

Appendix E: Transportation Project Cost Estimate Details

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Milwaukie Tacoma Station Area Plan
Cost Estimate Summary

1) Changes to cross section on Main Street
Distance = 4000 ft
Width= 45 (avg) ft

Project Description:

	UNITS		UNIT COSTS		ESTIMATED COST
Remove Pavement	180000	SF	$ 0.33	$	59,400
Clear & Grub	0	SF	$ 0.05	$	-
Remove Curb	5500	LF	$ 10.00	$	55,000
Remove Sidewalk	32000	SF	$ 1.50	$	48,000
Grading	0	SF	$ 1.25	$	-
Pavement	104000	SF	$ 8.00	$	832,000
Pavement Elevated/Subgrade	0	SF	$ 150.00	$	-
Sidewalk	52000	SF	$ 4.00	$	208,000
Curb and gutter	5500	LF	$ 14.00	$	77,000
Landscaping	5500	LF	$ 12.00	$	66,000
Wall	0	LF	$ 120.00	$	-
Lighting	5500	LF	$ 60.00	$	330,000
Full Drainage	0	LF	$ 100.00	$	-
Drainage Modifications	5500	LF	$ 25.00	$	137,500
Driveway Adjustments	0	Driveways	$ 2,000.00	$	-
Roundabouts	0	EA	$500,000	$	-
Traffic Signals	0	Unit	$ 300,000.00	$	-
Signing and Striping	0	EA	$ 500.00	$	-
Signing and Striping	4000	LF	$ 3.00	$	12,000
SUBTOTAL				$	1,824,900
Traffic Control			5%	$	91,245
Mobiliization			10%	$	182,490
Design/Administration/Management			15%	$	273,735
Contingency			25%	$	456,225
Project Development			5%	$	91,245
Sales Tax			0.0%	$	-
Right Of Way	0	SF	$ 20.00	$	-
			PROJECT COST:	**$**	**2,919,840**
				$	**2,920,000**

Notes: High contingencies are due to uncertainty regarding storm drainage/utility needs.
Storm drain base cost = $75.00/LF, assumes storm drain connections only at $28.00/LF.
These issues should be further resolved in project development. Assumes no ROW costs.
Note: Costs are for constant 2012 dollars; annual adjustments are necessary to address inflation to get to year of construction project estimates (presently 3 to 4 % per year is adequate)

***DKS** Associates*
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Milwaukie Tacoma Station Area Plan
Cost Estimate Summary

Project Name:	"Bike/Ped Connection from Eastern Neighborhoods"				
Project Number*:	2				
Date	12/28/2012				
Prepared by:	Alta Planning + Design				
Item	**Comments**	**Quantity**	**Units**	**Unit Cost**	**Total**
Bike/ped undercrossing		600	LF	$4,000.00	$2,400,000
Grading		150	SY	$10.00	$1,500
Excavation		150	SY	$16.00	$2,400
Clearing and grubbing		400	SF	$0.50	$200
Erosion controls	Both sides, length of project	800	LF	$1.50	$1,200
Catch basin		10	EA	$1,500.00	$15,000
Path lighting	Ped height lighting	600	LF	$125.00	$75,000
		Total Estimated Construction Cost			***$ 2,495,300***
Multipliers (expressed as a proportion of the construction cost)**					
Design/Administration (15%)					$ 374,295
Contingency (25%)					$ 623,825
Mobilization (10%)					$ 249,530
Traffic Control (5%)					$ 124,765
Project Development (5%)					$ 124,765
			Multipliers Total		***$ 1,497,180***
				GRAND TOTAL***	**$ 3,992,480**

* Project numbers gleaned from the TSAP Redevelopment Scenarios Evaluation Report, pages 20-22.

** Note: "Zero" values indicate non-applicable multipliers.

*** Construction cost plus multipliers.

Milwaukie Tacoma Station Area Plan
Cost Estimate Summary

Project Name:	"Improved Connection between Springwater Trail and Sherrett Street"				
Project Number*:	3				
Date	12/28/2012				
Prepared by:	Alta Planning + Design				
Item	**Comments**	**Quantity**	**Units**	**Unit Cost**	**Total**
Shared use path	12' wide asphalt	125	LF	$108.00	$13,500
Erosion controls	Both sides, length of project	250	LF	$1.50	$375
Topsoil shoulders	2' wide, each side of path	500	CF	$1.85	$925
		Total Estimated Construction Cost			***$ 14,800***
Multipliers (expressed as a proportion of the construction cost)**					
Design/Administration (15%)					$ 2,220
Contingency (25%)					$ 3,700
Mobilization (10%)					$ 1,480
Traffic Control (5%)					$ 740
Project Development (5%)					$ 740
			Multipliers Total		***$ 8,880***
				GRAND TOTAL***	**$ 23,680**

* Project numbers gleaned from the TSAP Redevelopment Scenarios Evaluation Report, pages 20-22.

** Note: "Zero" values indicate non-applicable multipliers.

*** Construction cost plus multipliers.

4) **Pedestrian bridge over 99E at Milport Road**

Project Description:

		LOW			HIGH	
	UNITS	**UNIT COSTS**		**ESTIMATED COST**	**UNIT COSTS**	**ESTIMATED COST**
Pedestrian bridge	1 EA	$ 1,200,000.00	$	1,200,000	$ 1,400,000.00	$ 1,400,000
SUBTOTAL			$	1,200,000		$ 1,400,000
Traffic Control		5%	$	60,000	5%	$ 70,000
Mobiliization		10%	$	120,000	10%	$ 140,000
Design/Administration/Management		15%	$	180,000	15%	$ 210,000
Contingency		25%	$	300,000	25%	$ 350,000
Project Development		5%	$	60,000	5%	$ 70,000
Sales Tax		0.0%	$	-	0.0%	$ -
PROJECT COST:			**$**	**1,920,000**		**$ 2,240,000**
			$	**1,920,000** rounded		**$ 2,240,000**

DKS *Associates*
2/7/2013 10:29

Note: Pedestrian bridge cost based on similar bridge over 99E for the Springwater Corridor project in the City of Milwaukie
Source - Gail Curtis, ODOT

Milwaukie Tacoma Station Area Plan
Cost Estimate Summary

Project Name:	"Improve Existing Connection from Springwater to Pendleton Site"				
Project Number*:	5A				
Date	12/28/2012				
Prepared by:	Alta Planning + Design				
Item	**Comments**	**Quantity**	**Units**	**Unit Cost**	**Total**
Shared use path (ramp, north side)	10' wide asphalt	550	LF	$90.00	$49,500
Shared use path (ramp, south side)	10' wide asphalt	550	LF	$90.00	$49,500
Retaining Wall		1,100	LF	$120.00	$132,000
Grading		1,100	SY	$10.00	$11,000
Erosion controls	Both sides, length of project	1,100	LF	$1.50	$1,650
Sedimentation controls	Hay bales	1,100	LF	$7.15	$7,865
Topsoil shoulders	2' wide, each side of path	2,200	CF	$1.85	$4,070
Path lighting	Ped height lighting	1,100	LF	$125.00	$137,500
		Total Estimated Construction Cost			***$ 393,085***
Multipliers (expressed as a proportion of the construction cost)**					
Design/Administration (15%)					$ 58,963
Contingency (25%)					$ 98,271
Mobilization (10%)					$ 39,309
Traffic Control (5%)					$ 19,654
Project Development (5%)					$ 19,654
			Multipliers Total		***$ 235,851***
				GRAND TOTAL*	**$ 628,936**

* Project numbers gleaned from the TSAP Redevelopment Scenarios Evaluation Report, pages 20-22.

** Note: "Zero" values indicate non-applicable multipliers.

*** Construction cost plus multipliers.

Milwaukie Tacoma Station Area Plan
Cost Estimate Summary

5B) Bike/ped connection along 99E under Springwater

Distance = ft

Project Description:

	UNITS		UNIT COSTS		ESTIMATED COST
Remove Pavement	0	SF	$ 0.33	$	-
Clear & Grub	5000	SF	$ 0.05	$	250
Remove Curb	0	LF	$ 10.00	$	-
Remove Sidewalk	2400	SF	$ 1.50	$	3,600
Grading	5000	SF	$ 1.25	$	6,250
Pavement	0	SF	$ 8.00	$	-
Pavement Elevated/Subgrade	0	SF	$ 150.00	$	-
Sidewalk	2400	SF	$ 4.00	$	9,600
Curb and gutter	0	LF	$ 14.00	$	-
Landscaping	200	LF	$ 12.00	$	2,400
Wall	200	LF	$ 120.00	$	24,000
Lighting	50	LF	$ 60.00	$	3,000
Full Drainage	0	LF	$ 100.00	$	-
Drainage Modifications	200	LF	$ 25.00	$	5,000
Driveway Adjustments	0	Driveways	$ 2,000.00	$	-
Roundabouts	0	EA	$500,000	$	-
Traffic Signals	0	Unit	$ 300,000.00	$	-
Signing and Striping	2	EA	$ 500.00	$	1,000
Signing and Striping	0	LF	$ 3.00	$	-
SUBTOTAL				$	55,100
Traffic Control			5%	$	2,755
Mobiliization			10%	$	5,510
Design/Administration/Management			15%	$	8,265
Contingency			50%	$	27,550
Project Development			5%	$	2,755
Sales Tax			0.0%	$	-
Right Of Way	0	SF	$ 20.00	$	-
PROJECT COST:				**$**	**101,935**
			rounded	**$**	**100,000**

Notes: High contingencies are due to uncertainty regarding storm drainage/utility needs.
Storm drain base cost = $75.00/LF, assumes storm drain connections only at $28.00/LF.
These issues should be further resolved in project development. Assumes no ROW costs.
Note: Costs are for constant 2005 dollars; annual adjustments are necessary to address inflation to get to year of construction project estimates (presently 3 to 4 % per year is adequate)

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Milwaukie Tacoma Station Area Plan
Cost Estimate Summary

Project Name:	"Bike/Ped Connection under Springwater Trail"				
Project Number*:	5C				
Date	12/28/2012				
Prepared by:	Alta Planning + Design				
Item	**Comments**	**Quantity**	**Units**	**Unit Cost**	**Total**
Bike/ped undercrossing		175	LF	$4,000.00	$700,000
Grading		300	SY	$10.00	$3,000
Excavation		300	SY	$16.00	$4,800
Clearing and grubbing		400	SF	$0.50	$200
Erosion controls	Both sides, length of project	800	LF	$1.50	$1,200
Catch basin		10	EA	$1,500.00	$15,000
Path lighting	Ped height lighting	200	LF	$125.00	$25,000
		Total Estimated Construction Cost			***$ 749,200***
Multipliers (expressed as a proportion of the construction cost)**					
Design/Administration (15%)					$ 112,380
Contingency (25%)					$ 187,300
Mobilization (10%)					$ 74,920
Traffic Control (5%)					$ 37,460
Project Development (5%)					$ 37,460
			Multipliers Total		***$ 449,520***
				GRAND TOTAL*	**$ 1,198,720**

* Project numbers gleaned from the TSAP Redevelopment Scenarios Evaluation Report, pages 20-22.

** Note: "Zero" values indicate non-applicable multipliers.

*** Construction cost plus multipliers.

Cost Estimate Summary

6) Stairway to Station
Distance = ft

Project Description:

	UNITS		UNIT COSTS		ESTIMATED COST
Remove Pavement	0	SF	$	0.33	$ -
Clear & Grub	1000	SF	$	0.05	$ 50
Remove Curb	0	LF	$	10.00	$ -
Remove Sidewalk	500	SF	$	1.50	$ 750
Grading	1000	SF	$	1.25	$ 1,250
Pavement	0	SF	$	8.00	$ -
Pavement Elevated/Subgrade	0	SF	$	150.00	$ -
Sidewalk	2000	SF	$	4.00	$ 8,000
Curb and gutter	100	LF	$	14.00	$ 1,400
Landscaping	100	LF	$	12.00	$ 1,200
Wall	100	LF	$	120.00	$ 12,000
Lighting	100	LF	$	60.00	$ 6,000
Full Drainage	100	LF	$	100.00	$ 10,000
Drainage Modifications	0	LF	$	25.00	$ -
Driveway Adjustments	0	Driveways	$	2,000.00	$ -
Roundabouts	0	EA		$500,000	$ -
Traffic Signals	0	Unit	$	300,000.00	$ -
Signing and Striping	2	EA	$	500.00	$ 1,000
Signing and Striping	0	LF	$	3.00	$ -
SUBTOTAL					$ 41,650
Traffic Control				5%	$ 2,083
Mobiliization				10%	$ 4,165
Design/Administration/Management				15%	$ 6,248
Contingency				50%	$ 20,825
Project Development				5%	$ 2,083
Sales Tax				0.0%	$ -
Right Of Way	0	SF	$	20.00	$ -

PROJECT COST:		**$ 77,053**
	rounded	**$ 75,000**

Notes: High contingencies are due to uncertainty regarding storm drainage/utility needs.
Storm drain base cost = $75.00/LF, assumes storm drain connections only at $28.00/LF.
These issues should be further resolved in project development. Assumes no ROW costs.
Note: Costs are for constant 2012 dollars; annual adjustments are necessary to address inflation to get to year of construction project estimates (presently 3 to 4 % per year is adequate)

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Milwaukie Tacoma Station Area Plan
Cost Estimate Summary

7) Stairway

Distance = ft

Project Description:

	UNITS		UNIT COSTS		ESTIMATED COST	
Remove Pavement	0	SF	$	0.33	$	-
Clear & Grub	0	SF	$	0.05	$	-
Remove Curb	0	LF	$	10.00	$	-
Remove Sidewalk	0	SF	$	1.50	$	-
Grading	0	SF	$	1.25	$	-
Pavement	0	SF	$	8.00	$	-
Pavement Elevated/Subgrade	0	SF	$	150.00	$	-
Sidewalk	0	SF	$	4.00	$	-
Curb and gutter	0	LF	$	14.00	$	-
Landscaping	0	LF	$	12.00	$	-
Wall	0	LF	$	120.00	$	-
Lighting	0	LF	$	60.00	$	-
Full Drainage	0	LF	$	100.00	$	-
Drainage Modifications	0	LF	$	25.00	$	-
Driveway Adjustments	0	Driveways	$	2,000.00	$	-
Roundabouts	0	EA		$500,000	$	-
Traffic Signals	0	Unit	$	300,000.00	$	-
Signing and Striping	0	EA	$	500.00	$	-
Signing and Striping	0	LF	$	3.00	$	-
SUBTOTAL					$	-
Traffic Control				5%	$	-
Mobiliization				10%	$	-
Design/Administration/Management				15%	$	-
Contingency				25%	$	-
Project Development				5%	$	-
Sales Tax				0.0%	$	-
Right Of Way	0	SF	$	20.00	$	-
PROJECT COST:					**$**	**500,000**
			rouded		**$**	**500,000**

Notes: High contingencies are due to uncertainty regarding storm drainage/utility needs.
Storm drain base cost = $75.00/LF, assumes storm drain connections only at $28.00/LF.
These issues should be further resolved in project development. Assumes no ROW costs.
Note: Costs are for constant 2012 dollars; annual adjustments are necessary to address inflation to get to year of construction project estimates (presently 3 to 4 % per year is adequate)

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Milwaukie Tacoma Station Area Plan
Cost Estimate Summary

8) Intersection improvements @ Ochoco/McLoughlin & Milport/McLoughlin

Project Description:

		LOW			HIGH	
	UNITS	**UNIT COSTS**	**ESTIMATED COST**		**UNIT COSTS**	**ESTIMATED COST**
Add SBLT @ Ochoco	1 EA	$ 2,400,000.00	$ 2,400,000		$ 4,200,000.00	$ 4,200,000
Flatten NW corner @ Ochoco	1 EA	$ 1,600,000.00	$ 1,600,000		$ 1,700,000.00	$ 1,700,000
Both modifications @ Ochoco	1 EA	$ 3,400,000.00	$ 3,400,000		$ 5,200,000.00	$ 5,200,000
Remove Pavement	0 SF	$ 0.33	$ -		$ 0.33	$ -
Clear & Grub	0 SF	$ 0.05	$ -		$ 0.05	$ -
Remove Curb	0 LF	$ 10.00	$ -		$ 10.00	$ -
Remove Sidewalk	0 SF	$ 1.50	$ -		$ 1.50	$ -
Grading	0 SF	$ 1.25	$ -		$ 1.25	$ -
Pavement	0 SF	$ 8.00	$ -		$ 8.00	$ -
Pavement Elevated/Subgrade	0 SF	$ 150.00	$ -		$ 150.00	$ -
Sidewalk	0 SF	$ 4.00	$ -		$ 4.00	$ -
Curb and gutter	0 LF	$ 14.00	$ -		$ 14.00	$ -
Landscaping	0 LF	$ 12.00	$ -		$ 12.00	$ -
Wall	0 LF	$ 120.00	$ -		$ 120.00	$ -
Lighting	0 LF	$ 60.00	$ -		$ 60.00	$ -
Full Drainage	0 LF	$ 100.00	$ -		$ 100.00	$ -
Drainage Modifications	0 LF	$ 25.00	$ -		$ 25.00	$ -
Driveway Adjustments	0 Driveways	$ 2,000.00	$ -		$ 2,000.00	$ -
Roundabouts	0 EA	$500,000	$ -		$500,000	$ -
Traffic Signals	0 Unit	$ 300,000.00	$ -		$ 300,000.00	$ -
Signing and Striping	0 EA	$ 500.00	$ -		$ 500.00	$ -
Signing and Striping	0 LF	$ 3.00	$ -		$ 3.00	$ -
SUBTOTAL			$ 3,400,000			$ 5,200,000
Traffic Control		5%	$ 170,000		5%	$ 260,000
Mobiliization		10%	$ 340,000		10%	$ 520,000
Design/Administration/Management		15%	$ 510,000		15%	$ 780,000
Contingency		25%	$ 850,000		25%	$ 1,300,000
Project Development		5%	$ 170,000		5%	$ 260,000
Sales Tax		0.0%	$ -		0.0%	$ -
Right Of Way	0 SF	$ 20.00	$ -		$ 20.00	$ -
PROJECT COST:			**$ 5,440,000**			**$ 8,320,000**
			$ 5,440,000	rounded		**$ 8,320,000**

Notes: High contingencies are due to uncertainty regarding storm drainage/utility needs.
Storm drain base cost = $75.00/LF, assumes storm drain connections only at $28.00/LF.
These issues should be further resolved in project development. Assumes no ROW costs.
Note: Costs are for constant 2012 dollars; annual adjustments are necessary to address inflation to get to year of construction project estimates (presently 3 to 4 % per year is adequate)

***DKS** Associates*
2/7/2013 10:29

Milwaukie Tacoma Station Area Plan
Cost Estimate Summary

9) Truck signage improvements @ Ochoco/McLoughlin

Project Description:

	UNITS		UNIT COSTS		ESTIMATED COST	
Remove Pavement	0	SF	$	0.33	$	-
Clear & Grub	0	SF	$	0.05	$	-
Remove Curb	0	LF	$	10.00	$	-
Remove Sidewalk	0	SF	$	1.50	$	-
Grading	0	SF	$	1.25	$	-
Pavement	0	SF	$	8.00	$	-
Pavement Elevated/Subgrade	0	SF	$	150.00	$	-
Sidewalk	0	SF	$	4.00	$	-
Curb and gutter	0	LF	$	14.00	$	-
Landscaping	0	LF	$	12.00	$	-
Wall	0	LF	$	120.00	$	-
Lighting	0	LF	$	60.00	$	-
Full Drainage	0	LF	$	100.00	$	-
Drainage Modifications	0	LF	$	25.00	$	-
Driveway Adjustments	0	Driveways	$	2,000.00	$	-
Roundabouts	0	EA		$500,000	$	-
Traffic Signals	0	Unit	$	300,000.00	$	-
Signing and Striping	0	EA	$	500.00	$	-
Signing and Striping	0	LF	$	3.00	$	-
SUBTOTAL					$	-
Traffic Control				5%	$	-
Mobiliization				10%	$	-
Design/Administration/Management				15%	$	-
Contingency				25%	$	-
Project Development				5%	$	-
Sales Tax				0.0%	$	-
Right Of Way	0	SF	$	20.00	$	-
PROJECT COST:					**$**	**15,000**
				rounded	**$**	**15,000**

Notes: High contingencies are due to uncertainty regarding storm drainage/utility needs.
Storm drain base cost = $75.00/LF, assumes storm drain connections only at $28.00/LF.
These issues should be further resolved in project development. Assumes no ROW costs.
Note: Costs are for constant 2012 dollars; annual adjustments are necessary to address inflation to get to year of construction project estimates (presently 3 to 4 % per year is adequate)

DKS *Associates*
2/7/2013 10:29

Milwaukie Tacoma Station Area Plan
Cost Estimate Summary

Project Name:	"New Bike/Ped Connection over Johnson Creek"				
Project Number*:	11				
Date	12/28/2012				
Prepared by:	Alta Planning + Design				
Item	**Comments**	**Quantity**	**Units**	**Unit Cost**	**Total**
Bike/ped overcrossing	Bridge over Johnson Creek	75	LF	$3,500.00	$262,500
Shared use path	12' wide asphalt (south of creek)	100	LF	$108.00	$10,800
Clearing and grubbing		100	SF	$0.50	$50
Topsoil shoulders	2' wide, each side of path	200	CF	$1.85	$370
		Total Estimated Construction Cost			***$ 273,720***
Multipliers (expressed as a proportion of the construction cost)**					
Design/Administration (15%)					$ 41,058
Contingency (25%)					$ 68,430
Mobilization (10%)					$ 27,372
Traffic Control (5%)					$ 13,686
Project Development (5%)					$ 13,686
			Multipliers Total		***$ 164,232***
				GRAND TOTAL***	**$ 437,952**

* Project numbers gleaned from the TSAP Redevelopment Scenarios Evaluation Report, pages 20-22.

** Note: "Zero" values indicate non-applicable multipliers.

*** Construction cost plus multipliers.

Milwaukie Tacoma Station Area Plan
Cost Estimate Summary

12) Local street connections

Distance = ft

Project Description:

	UNITS		UNIT COSTS		ESTIMATED COST	
Remove Pavement	180000	SF	$	0.33	$	59,400
Clear & Grub	0	SF	$	0.05	$	-
Remove Curb	0	LF	$	10.00	$	-
Remove Sidewalk	0	SF	$	1.50	$	-
Grading	180000	SF	$	1.25	$	225,000
Pavement	126000	SF	$	8.00	$	1,008,000
Pavement Elevated/Subgrade	0	SF	$	150.00	$	-
Sidewalk	43200	SF	$	4.00	$	172,800
Curb and gutter	7200	LF	$	14.00	$	100,800
Landscaping	7200	LF	$	12.00	$	86,400
Wall	0	LF	$	120.00	$	-
Lighting	7200	LF	$	60.00	$	432,000
Full Drainage	7200	LF	$	100.00	$	720,000
Drainage Modifications	0	LF	$	25.00	$	-
Driveway Adjustments	4	Driveways	$	2,000.00	$	8,000
Roundabouts	0	EA		$500,000	$	-
Traffic Signals	0	Unit	$	300,000.00	$	-
Signing and Striping	5	EA	$	500.00	$	2,500
Signing and Striping	3600	LF	$	3.00	$	10,800
SUBTOTAL					$	2,825,700
Traffic Control				5%	$	141,285
Mobiliization				10%	$	282,570
Design/Administration/Management				15%	$	423,855
Contingency				25%	$	706,425
Project Development				5%	$	141,285
Sales Tax				0.0%	$	-
Right Of Way	180000	SF	$	20.00	$	3,600,000

PROJECT COST:		**$ 8,121,120**
	rounded	**$ 8,120,000**

Notes: High contingencies are due to uncertainty regarding storm drainage/utility needs.
Storm drain base cost = $75.00/LF, assumes storm drain connections only at $28.00/LF.
These issues should be further resolved in project development. Assumes no ROW costs.
Note: Costs are for constant 2012 dollars; annual adjustments are necessary to address inflation to get to year of construction project estimates (presently 3 to 4 % per year is adequate)

DKS *Associates*

2/7/2013 10:29

Milwaukie Tacoma Station Area Plan
Cost Estimate Summary

Project Name:	"Future Bike Share Station and Car Share Spaces"				
Project Number*:	13				
Date	12/28/2012				
Prepared by:	Alta Planning + Design				
Item	**Comments**	**Quantity**	**Units**	**Unit Cost**	**Total**
Bike share station	6 bikes, 11 docks	1	EA	$45,000.00	$45,000
Car share parking stalls signage	Assumes 4 car share parking spaces	4	EA	$300.00	$1,200
		Total Estimated Construction Cost			***$ 46,200***
Multipliers (expressed as a proportion of the construction cost)**					
Design/Administration (15%)					$ 6,930
Contingency (25%)					$ 11,550
Mobilization (10%)					$ 4,620
Traffic Control (5%)					$ -
Project Development (5%)					$ 2,310
			Multipliers Total		***$ 25,410***
				GRAND TOTAL***	**$ 71,610**

* Project numbers gleaned from the TSAP Redevelopment Scenarios Evaluation Report, pages 20-22.

** Note: "Zero" values indicate non-applicable multipliers.

*** Construction cost plus multipliers.

Milwaukie Tacoma Station Area Plan
Cost Estimate Summary

14) Changes in cross-section for local streets

Distance = ft

Project Description:

	UNITS		UNIT COSTS		ESTIMATED COST	
Remove Pavement	255250	SF	$	0.33	$	84,233
Clear & Grub	255250	SF	$	0.05	$	12,763
Remove Curb	8900	LF	$	10.00	$	89,000
Remove Sidewalk	255250	SF	$	1.50	$	382,875
Grading	0	SF	$	1.25	$	-
Pavement	178675	SF	$	8.00	$	1,429,400
Pavement Elevated/Subgrade	0	SF	$	150.00	$	-
Sidewalk	51050	SF	$	4.00	$	204,200
Curb and gutter	8900	LF	$	14.00	$	124,600
Landscaping	8900	LF	$	12.00	$	106,800
Wall	0	LF	$	120.00	$	-
Lighting	8900	LF	$	60.00	$	534,000
Full Drainage	0	LF	$	100.00	$	-
Drainage Modifications	8900	LF	$	25.00	$	222,500
Driveway Adjustments	40	Driveways	$	2,000.00	$	80,000
Roundabouts	0	EA		$500,000	$	-
Traffic Signals	0	Unit	$	300,000.00	$	-
Signing and Striping	0	EA	$	500.00	$	-
Signing and Striping	8900	LF	$	3.00	$	26,700
SUBTOTAL					$	3,297,070
Traffic Control				5%	$	164,854
Mobiliization				10%	$	329,707
Design/Administration/Management				15%	$	494,561
Contingency				25%	$	824,268
Project Development				5%	$	164,854
Sales Tax				0.0%	$	-
Right Of Way	0	SF	$	20.00	$	-

PROJECT COST:	**$**	**5,275,312**
rounded	**$**	**5,275,000**

Notes: High contingencies are due to uncertainty regarding storm drainage/utility needs.
Storm drain base cost = $75.00/LF, assumes storm drain connections only at $28.00/LF.
These issues should be further resolved in project development. Assumes no ROW costs.
Note: Costs are for constant 2012 dollars; annual adjustments are necessary to address inflation to get to year of construction project estimates (presently 3 to 4 % per year is adequate)

DKS *Associates*

2/7/2013 10:29

Milwaukie Tacoma Station Area Plan
Cost Estimate Summary

Project Name:	"Improve Bike/Ped Connections along Ochoco Street and Milport Road"
Project Number*:	15
Date	12/28/2012
Prepared by:	Alta Planning + Design

Item	Comments	Quantity	Units	Unit Cost	Total
Concrete curb and gutter	North side of Ochoco	800	LF	$30.00	$24,000
Sidewalk	North side of Ochoco (6' wide)	800	LF	$48.00	$38,400
Storm sewer pipe	North side of Ochoco	800	LF	$50.00	$40,000
Storm manhole	North side of Ochoco	2	EA	$2,500.00	$5,000
Catch basin	North side of Ochoco	2	EA	$1,500.00	$3,000
Concrete curb and gutter	South side of Milport	1,200	LF	$30.00	$36,000
Sidewalk	South side of Milport	1,200	LF	$48.00	$57,600
Storm sewer pipe	South side of Milport (6' wide)	1,200	LF	$50.00	$60,000
Storm manhole	South side of Milport	4	EA	$2,500.00	$10,000
Catch basin	South side of Milport	4	EA	$1,500.00	$6,000
Curb ramp	South side of Milport	4	EA	$2,500.00	$10,000
Prefabricated bridge	South side of Milport (over Johnson Cr.)	1	EA	$35,000.00	$35,000
		Total Estimated Construction Cost			***$ 325,000***
Multipliers (expressed as a proportion of the construction cost)**					
Design/Administration (15%)					$ 48,750
Contingency (25%)					$ 81,250
Mobilization (10%)					$ 32,500
Traffic Control (5%)					$ 16,250
Project Development (5%)					$ 16,250
				Multipliers Total	***$ 195,000***
				GRAND TOTAL***	**$ 520,000**

* Project numbers gleaned from the TSAP Redevelopment Scenarios Evaluation Report, pages 20-22.

** Note: "Zero" values indicate non-applicable multipliers.

*** Construction cost plus multipliers.

Milwaukie Tacoma Station Area Plan
Cost Estimate Summary

Project Name:	"Connection from SE 29th Ave. to Springwater Corridor"				
Project Number*:	16				
Date	12/28/2012				
Prepared by:	Alta Planning + Design				
Item	**Comments**	**Quantity**	**Units**	**Unit Cost**	**Total**
Regulatory signs	Every 400', each direction	22	EA	$300.00	$6,600
Pavement markings	Every 200', each direction, thermo.	45	EA	$200.00	$9,000
Turn stop signs	8 signs per mile (4 intersections)	8	EA	$150.00	$1,200
Speed humps	Every 800'	6	EA	$2,000.00	$12,000
					$0
Note: Improvements apply to segments of Van Water, 29th, and Balfour between Sherrett and 32nd					$0
Note: corridor is 4,500' long					$0
		Total Estimated Construction Cost			***$ 28,800***
Multipliers (expressed as a proportion of the construction cost)**					
Design/Administration (15%)					$ 4,320
Contingency (25%)					$ 7,200
Mobilization (10%)					$ 2,880
Traffic Control (5%)					$ 1,440
Project Development (5%)					$ 1,440
			Multipliers Total		***$ 17,280***
				GRAND TOTAL***	**$ 46,080**

* Project numbers gleaned from the TSAP Redevelopment Scenarios Evaluation Report, pages 20-22.

** Note: "Zero" values indicate non-applicable multipliers.

*** Construction cost plus multipliers.

Milwaukie Tacoma Station Area Plan
Cost Estimate Summary

Project Name:	"Bike/Ped Connection between McLoughlin Boulevard and Stubb Street"				
Project Number*:	17				
Date	12/28/2012				
Prepared by:	Alta Planning + Design				
Item	**Comments**	**Quantity**	**Units**	**Unit Cost**	**Total**
Shared use path	12' wide asphalt	80	LF	$108.00	$8,640
Curb ramp	Connection to Stubb Street	1	EA	$2,500.00	$2,500
		Total Estimated Construction Cost			***$ 11,140***
Multipliers (expressed as a proportion of the construction cost)**					
Design/Administration (15%)					$ 1,671
Contingency (50%)					$ 5,570
Mobilization (10%)					$ 1,114
Traffic Control (5%)					$ -
Project Development (5%)					$ 557
			Multipliers Total		***$ 8,912***
				GRAND TOTAL***	**$ 20,052**

* Project numbers gleaned from the TSAP Redevelopment Scenarios Evaluation Report, pages 20-22.

** Note: "Zero" values indicate non-applicable multipliers.

*** Construction cost plus multipliers.

18) **Pedestrian bridge over 99E at Umatilla Street**

Project Description:

		LOW			HIGH		
	UNITS	**UNIT COSTS**		**ESTIMATED COST**	**UNIT COSTS**		**ESTIMATED COST**
Pedestrian bridge	1 EA	$ 1,200,000.00		$ 1,200,000	$ 1,400,000.00		$ 1,400,000
SUBTOTAL				$ 1,200,000			$ 1,400,000
Traffic Control			5%	$ 60,000		5%	$ 70,000
Mobiliization			10%	$ 120,000		10%	$ 140,000
Design/Administration/Management			15%	$ 180,000		15%	$ 210,000
Contingency			25%	$ 300,000		25%	$ 350,000
Project Development			5%	$ 60,000		5%	$ 70,000
Sales Tax			0.0%	$ -		0.0%	$ -
PROJECT COST:				**$ 1,920,000**			**$ 2,240,000**
				$ 1,920,000 rounded			**$ 2,240,000**

DKS *Associates*
2/7/2013 10:29

Note: Pedestrian bridge cost based on similar bridge over 99E for the Springwater Corridor project in the City of Milwaukie
Source - Gail Curtis, ODOT

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Appendix F: Draft Amendments to Manufacturing (M) Zone

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MEMORANDUM

DATE: May 7, 2012

TO: Milwaukie Tacoma Station Area Plan Project Management Team

FROM: Matt Hastie, Angelo Planning Group
Serah Breakstone, Angelo Planning Group

SUBJECT: **Tacoma Station Area Plan**
DRAFT Manufacturing Zone Revisions

The purpose of this memorandum is to recommend revisions to Milwaukie's Manufacturing (M) zone in order to address existing deficiencies and support implementation of the Tacoma Station Area Plan (Plan). Land within the Plan study area is currently zoned for manufacturing uses under Section 19.309 of the city's zoning code. Land use analyses[1] conducted for the study area in 2002 and 2011 concluded that manufacturing uses, including flexible industrial space and office uses, remain the most appropriate uses for the study area. However, the city has identified several issues with its existing manufacturing zone that make it difficult to implement and present barriers to efficiently regulating and developing the area. Those issues are described in a 2009 code audit[2] and are briefly summarized below:

- The M zone lists uses that are permitted, permitted conditionally, or prohibited. Clear definitions or descriptions of those uses are not provided which makes it difficult for staff to determine if a use is allowed or to make a "similar use" determination for those uses that are not listed.
- The M zone lacks clear and objective development standards intended to preserve the zone primarily for industrial uses.
- The zone requires that combined uses provide at least ten employees per net acre but there is no guidance for calculating or monitoring/enforcing that standard.
- Size limitations for retail space currently only apply to areas within the Title 4 "Employment Area" boundary, which is limited in its scope.

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[1] *Land Use Analysis for Milwaukie's North Industrial Area*, Hobson Ferrarini Associates, November 2002 and *SE McLoughlin Best Use Study*, Kidder Mathews, July 2011.

[2] *Milwaukie Code Evaluation Report*, Angelo Planning Group, July 2009.

Recommended amendments to the Manufacturing zone are presented in Attachment A of this memorandum and are intended to address the issues described above. Those recommended amendments include:

- A list of use categories that are allowed either outright or conditionally in the Manufacturing zone. Categories are defined and examples of uses in each category are provided. Some of the use categories on the recommended list may allow uses that wouldn't be allowed under current code; city staff will need to carefully review the list to ensure it is suitable.

- Retail and office uses are only allowed as accessory uses to the primary uses allowed in the Manufacturing district. The recommended language contains size limitations on retail and office space that do not exist in the current code.

- Recommended amendments include new development standards to regulate outdoor storage uses, location of parking and loading areas, external effects, and mechanical equipment. In addition, a reference to the supplemental development standards in Chapter 19.500 is included.

- A placeholder is included for the density standard (10 employees per acre). If the city decides to keep this standard, additional language will be needed to clarify how the standard is applied, defined, and enforced.

- The transition area review requirement is recommended for deletion and will be replaced by the transition standards in Chapter 19.504.6.

Addition of the Tacoma light rail station to this area presents an opportunity to implement some new standards that will promote an active station area community and encourage redevelopment. Subsequent tasks in this project will evaluate additional code amendments needed to achieve the goals and objectives of the Plan. The assumption at this point is that the study area will continue to be zoned for manufacturing; however, some additional standards and requirements may be needed to further support the Plan. Those additional standards may include an overlay zone to implement specific design standards and allow additional uses for the Plan area, especially the opportunity sites.

The recommended code amendments in Attachment A are shown in <u>underline</u> for new text and ~~strikethrough~~ for deleted text.

Attachment A
Recommended Code Amendments

Municipal Code Title 19 Zoning

CHAPTER 19.300 BASE ZONES

19.309 MANUFACTURING ZONE M

Statement of Purpose. The purpose of this manufacturing zone is to promote clean, employee-intensive industries which may also include related accessory uses, such as commercial and office uses, which serve the industrial area.

19.309.1 ~~Permitted Uses~~ Use Categories

The categories of land uses that are permitted in the Manufacturing Zone are listed in Table 19.309.1. Permitted uses are designated with a "P". A "C" in this table indicates a use that may be permitted as a conditional use in conformance with Chapter 19.905. An "L" indicates a use that is permitted outright with certain limitations as described in Section 19.309.X.

All uses must comply with the land use district standards of this section and all other applicable requirements of the Zoning Code. If it is unclear whether or not a proposed use is allowed under the use categories, city staff will make a Director determination about the use in conformance with Chapter 19.903.

[NEW TABLE]

Use Category	Status
A. Construction: Contractors and Related Businesses. This category comprises businesses whose primary activity is performing specific building or other construction related work. Examples of contractors are residential and nonresidential building construction, utility/civil engineering construction, specialty trade contractors, and moving companies. Examples of related businesses are engineering, architectural and surveying services and which often take place in office-type buildings.	P
B. Manufacturing. Manufacturing comprises establishments engaged in the mechanical, physical, or chemical transformation of materials, substances, or components into new products, including the assembly of components parts. Examples of manufacturing include alternative energy development, biosciences, food and beverage processing, software and electronics production, fabrication of metal products, products made from manufactured glass, products made from rubber, plastic or resin, converted paper and cardboard products, and microchip fabrication.	P
C. Wholesale Trade. Wholesale Trade comprises establishments engaged in selling / and or distributing merchandise to retailers; to industrial, commercial, or professional business users; or to other wholesalers, generally without transformation, and rendering services incidental to the sale of merchandise. Wholesalers sell merchandise to other businesses, not the general public, and normally operate from a warehouse or office and are not intended for walk-in traffic.	P

D. Transportation/Distribution (Trucking and Rail). This category provides for transportation of cargo using motor vehicles or rail spurs and may include loading docks, temporary outdoor storage, and fleet parking. Goods are generally distributed to other firms or the final customer and are often associated with warehousing and storage facilities.	P
E. Warehousing and Storage. These industries are primarily engaged in operating warehousing and storage facilities for general merchandise, refrigerated goods, and other products and materials that have been manufactured and are generally being stored in anticipation for delivery to final customer. May provide a range of logistical services including labeling, packaging, price marking and ticketing, and transportation arrangement. Mini-storage facilities are not considered industrial warehousing and storage and are not permitted in the Manufacturing district.	P
F. Information Services. Information services are establishments engaged in the producing and distributing information and cultural products; providing the means to transmit or distribute these products as well as data or communications; or processing data. Examples include publishing industries including book, periodical and software publishing; computer systems design; internet web search services; internet service providers; video and motion picture industries; computer data storage services; optical scanning and imaging services, and processing financial transactions such as credit card transactions and payroll processing services. These businesses primarily serve other industries and generate few general public customer visits per day.	P
G. Trade or commercial schools. Establishments whose primarily purpose are to provide training to meet industrial needs and often lead to job-specific certification. Examples of this use category are electronic equipment repair training, truck driving school, welding, and operation and repair of industrial machinery and other industrial skills.	P
H. Accessory Uses. This category includes uses that are primarily intended to support and serve other allowed uses in the Manufacturing Zone. Accessory uses are divided into three sub-categories: (1) General accessory uses. This category includes uses that are necessary in order to effectively operate an allowed use in the Manufacturing district. General accessory uses include outdoor storage, docks, rail spur or lead lines, employee facilities, repair facilities, and truck fleet parking and maintenance areas. (2) Administration and support in office buildings. This category includes uses in office-type buildings that are accessory to an industrial use; establishments which administer, oversee, and manage companies; which manage financial assets and securities; research and design; laboratories and testing facilities; provide document preparation and other industrial support services; including corporate offices, company	L

business offices, call centers, and other office type uses that primarily serve other industries and do not generate a significant number of daily customer visits. See Section 19.309.5.A. (3) Retail commercial and professional services. The sales of goods and materials and of professional services intended to serve employees and customers of the industrial area. Examples of retail commercial include restaurants, storefronts, mini-marts, factory outlet stores and office supplies. Examples of professional services that cater to employees and customers include bank branches, financial, insurance, real estate, legal, medical and dental offices. See Section 19.309.5.B.	
I. Exclusive Heavy Industrial Uses. Uses exclusive to the HI are those sites which are primarily rock crushing facilities; natural resource extraction; aggregate storage and distribution facilities; and concrete and/or asphalt batch plants. See Section 19.309.4.A.	C
J. Waste Management. Businesses that provide garbage and recycling hauling, sorting and transferring, including fleet parking and maintenance.	P
K. Miscellaneous Industrial. Firms involved in large scale repair and servicing of industrial, business or consumer electronic equipment, machinery and related equipment, products, or by-products. Examples include welding shops; machine shops; tool, electric motor, industrial instruments repair; sales, repair, storage, salvage or wrecking of heavy machinery, metal and building materials; towing and vehicle storage; auto and truck salvage and wrecking; heavy truck servicing and repair; tire retreading or recapping; exterminators including chemical mixing or storage and fleet storage and maintenance; janitorial and building maintenance services that include storage of materials and fleet storage and maintenance; fuel oil distributors; solid fuel yards; and large scale laundry, dry-cleaning and carpet cleaning plants. Few customers, particularly not general public daily customers, come to the site.	P
L. High-Impact Commercial Use. A high impact commercial use is a use that generates substantial traffic, noise, light, irregular hours, or other potential impact on the community. Examples include, but are not limited to: drinking establishments, commercial recreation, adult entertainment businesses, theaters, hotels, and motels. See Section 19.309.4.B.	C

~~Permitted uses are limited to industrial uses meeting the following criteria:~~

~~A. Any combination of manufacturing, office, and/or commercial uses are allowed when at least 25% of the total project involves an industrial use as described under Subsection 19.309.1.B. The combined uses shall provide at least 10 employees per net acre.~~

~~B. A use which involves the collection and assembly of durable goods, warehousing of goods, transshipment of goods from other sources, and/or the assembly of goods from products which have been processed elsewhere, general manufacturing, and production.~~

~~C. Commercial and office uses which are accessory to the industrial use(s). Such uses may include gymnasium, health club, secretarial services, sandwich deli, small restaurant, and retail/wholesale commercial use and showroom.~~

~~D. May produce small amounts of noise, dust, vibration, or glare, but may not produce off-site impacts that create a nuisance, as defined by DEQ or the City Noise Ordinance.~~

~~E. Has access to a collector or arterial street.~~

~~F. A permitted use may require outside storage areas. These storage areas shall be screened with a sight-obscuring fence or dense plantings from any adjoining residential uses or public streets.~~

~~G. Warehouse use which is accessory to an industrial use.~~

19.309.2 Preexisting Uses and Developments

Notwithstanding the provisions of Chapter 19.800 Nonconforming Uses and Development, prohibited uses and structures located in any mapped "employment" or "industrial" area, as shown on the Milwaukie Comprehensive Plan Title 4 Lands Map, that were lawfully in existence prior to May 6, 1999, ~~and would be impacted by amendments prohibiting retail uses in excess of 60,000 sq ft,~~ are considered to be approved uses and structures for the purposes of this section. If such a preexisting use or development is damaged or destroyed by fire, earthquake, or other natural force, then the use will retain its preexisting status under this provision, so long as it is substantially reestablished within 3 years of the date of the loss.

Notwithstanding the provisions of Chapter 19.800 Nonconforming Uses and Development, prohibited uses and structures located in any mapped "industrial" area, as shown on the Milwaukie Comprehensive Plan Title 4 Lands Map, that were lawfully in existence prior to March 17, 2009, may continue and expand to add up to 20% more floor area and 10% more land area than exists on the above-stated date. This expansion requires a conditional use review.

19.309.3 Prohibited Uses

A. Any use which has a primary function of storing, utilizing, or manufacturing explosive materials or other hazardous material as defined by the Uniform Fire Code, Article 80;

B. New residential construction, churches, public schools;

~~C. Retail uses greater than 60,000 sq ft gross floor area per building or business are prohibited on all lots included in mapped "Employment" or "Industrial" areas as shown on Milwaukie Comprehensive Plan Title 4 Lands Map, April 6, 1999.~~

~~D. All lots included in mapped "Industrial" areas, as shown on Milwaukie Comprehensive Plan Title 4 Lands Map, April 6, 1999, carry the following additional restrictions:~~

~~1. Individual retail trade uses greater than 5,000 sq ft gross floor area per building or business are prohibited.~~

~~2. Multiple retail trade uses that occupy more than 20,000 sq ft gross floor area are prohibited, whether in a single building or in multiple buildings within the same project.~~

~~3. Facilities whose primary purpose is to provide training to meet industrial needs are exempted from this prohibition.~~

19.309.4 Standards for Conditional Uses

The following standards apply to those uses listed as conditional (C) in Table 19.309.1.

A. ~~Natural Resource Extraction~~ Exclusive Heavy Industrial Uses

1. Open pit and gravel excavating or processing shall not be permitted nearer than 50 ft to the boundary of an adjoining property line, unless written consent of the owner of such property is first obtained. Excavating or processing shall not be permitted closer than 30 ft to the right-of-way line of an existing platted street or an existing public utility right-of-way.
2. An open pit or sand and gravel operation shall be enclosed by a fence suitable to prevent unauthorized access.
3. A rock crusher, washer, or sorter shall not be located nearer than 500 ft to a residential or commercial zone. Surface mining equipment and necessary access roads shall be constructed, maintained, and operated in such a manner as to eliminate, as far as is practicable, noise, vibration, or dust which is injurious or substantially annoying to persons living in the vicinity.

B. High-Impact Commercial Uses

When considering a high-impact commercial use, the Commission shall consider the following:

1. Nearness to dwellings, churches, hospitals, or other uses which require a quiet environment;
2. Building entrances, lighting, exterior signs, and other features which could generate or be conducive to noise or other disturbance for adjoining uses;
3. Parking vehicles and pedestrian access and circulation could contribute to noise or attract habitual assembly or unruly persons;
4. Hours of operation;
5. In addition to consideration of the above with respect to building and site design, the Planning Commission may attach conditions or standards of performance and impact, and methods for monitoring and evaluating these, to ensure that such establishments do not become unduly or unnecessarily disruptive.
6. In addition, when considering an adult entertainment business, the following criteria shall be used:

   a. The proposed location of an adult entertainment business shall not be within 500 ft of an existing or previously approved adult entertainment business or within 500 ft of either a public park, a church, a day-care

center, a primary, elementary, junior high, or high school, or any residentially zoned property.

b. ~~both of which distances~~ Distances shall be measured in a straight line, without regard to intervening structures, between the closest structural wall of the adult entertainment business and either the closest property line of the impacted property or the closest structural wall of any pre-existing or previously approved adult entertainment business.

19.309.5 Standards for Limited Uses

The following standards apply to those uses listed as limited (L) in Table 19.309.1.

A. Administration and support in office buildings. Only administrative and support offices which are related to the operation of a manufacturing use on the property are permitted in the Manufacturing zone. No greater than 20% of the floor area of a building may be used for administrative office space.

B. Retail commercial and professional services. In order to ensure that these uses are primarily intended to serve the needs of workers and customers in the immediate area, the following standards apply:

1. The total gross leasable square footage of an individual retail or professional service use shall not exceed 5,000 square feet. Multiple retail or professional service uses shall not exceed 20,000 square feet cumulative gross leasable square footage within the same development project. For the purposes of this section a development project is defined as:

   a. A single building with less than 50,000 square feet of gross floor area that does not share common development features (such as access, parking, or utilities) with another building that has less than 50,000 square feet of gross floor area, whether or not the second building is located on the same or a different parcel or lot; or

   b. Multiple buildings, each with less than 50,000 square feet of gross floor area, that share common development features (such as access, parking, or utilities), whether or not the buildings are located on the same or a different parcel or lot; or

   c. A single building with 50,000 square feet or more of gross floor area.

2. Retail and professional services uses shall not be permitted in a stand-alone building. They must be included within a building whose primary purpose is for an allowed manufacturing use.

~~**19.309.5 Site Development Requirements**~~

19.309.6 Development Standards for All Uses

The following development standards apply to all uses in the Manufacturing district.

A. Setbacks

Front: 20 ft

Side: None*

Corner side yard: 10 ft

Rear: None*

* Except when abutting a residential district, in which case the setback shall match the abutting property.

B. Height. 45 ft

C. Parking and loading. See Chapter 19.600.

D. Landscaping

15% landscaping of the site is required. A variety of trees, shrubbery, and ground cover is encouraged. Street trees are required along street frontages and within parking lots to help delineate entrances, provide shade, and permeable areas for storm water runoff. A bond or a financial guarantee of performance will be required.

E. Site access. All sites shall have access to a collector or arterial street. Each site shall have one ~~1~~ curb cut (45 ft maximum) per 150 ft of street frontage.

~~F. Transition Area~~

~~Industrial development adjacent to and within 120 ft of areas zoned for residential uses is subject to Type I or II review per Section 19.906 Development Review. The following characteristics will be considered:~~

~~1. Noise~~

~~2. Lighting~~

~~3. Hours of operation~~

~~4. Delivery and shipping~~

~~5. Height of structure~~

~~6. Distance to residential zone boundary~~

~~The review authority may attach conditions to reduce any potentially adverse impacts to residential properties.~~

G. Transportation requirements and standards. As specified in Chapter 19.700.

H. Uses shall provide a minimum of 10 employees per acre.

I. Outdoor uses shall be screened as follows:

1. All outdoor storage areas shall be screen from adjacent properties by a six-foot high sight-obscuring fence or wall.

2 All screened or walled outdoor use and storage areas which abut a public street shall be set back a minimum of 25 feet from the property line(s). Within that setback area trees and evergreen shrubs shall be planted. The plants shall be of such a variety and arranged to allow only minimum gaps between foliage of mature trees and plants within four years of planting.

J. Parking, loading and unloading areas shall be located as follows:

1. Parking, loading and unloading areas shall not be located within a required setback.

2. No loading or unloading facilities shall be located adjacent to lands designated for residential uses or a residential community service if there is an alternative location of adequate size on the subject site.

K. External effects. The potential external effects of manufacturing uses shall be minimized as follows:

1. The emission of air pollutants or odorous gasses and changes in temperature detectable by the human senses without the aid of instruments at any point beyond the property line is prohibited.

2. Electrical disturbances which interfere with the normal operation of equipment or instruments on adjacent properties are prohibited.

3. Except for exterior lighting, operations producing heat or glare shall be conducted entirely within an enclosed building.

4. Loud, unnecessary, or unusual noise or dust that endangers health, peace or safety or creates off-site impacts or nuisance as defined by DEQ or the City Noise Ordinance is prohibited.

L. Roof mounted mechanical equipment such as ventilators and ducts for buildings located adjacent to residential districts, arterial streets or transit streets shall be contained within a completely enclosed structure that may include louvers, latticework, or other similar features.

M. Chapter 19.500, Supplementary Development Regulations contains additional standards that may apply.

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Appendix G: Outline - Draft Tacoma Station Area Overlay Zone

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[NOTE: THE LANGUAGE IN THE OVERLAY ASSUMES THAT THE RECOMMENDED AMENDMENTS TO THE M ZONE, AS DESCRIBED IN APPENDIX F, ARE ADOPTED.]

CHAPTER 19.400 OVERLAY ZONES AND SPECIAL AREAS

19.406 TACOMA STATION AREA OVERLAY ZONE

19.406.1 Purpose statement. Describes the primary intent of the overlay and refers back to the Station Area Plan document. Includes some language about the intended character, mix of uses, and transit-supportive elements.

19.406.2 Applicability. States that the standards and requirements in this section apply within the Tacoma Station Area Overlay Zone boundary as shown in the associated map from the Station Area Plan. For clarity, the map should be included in this section as a reference figure.

19.406.3 General Provisions. Contains general language that applies to the entire overlay zone, as follows:

A. *Consistency with base zone.* Statement that the requirements (permitted uses, development standards, etc.) of the base Manufacturing zone apply in the overlay unless otherwise noted in this section.

B. *Language that addresses the issue of non-conforming uses.* The city is evaluating different approaches to addressing the issue of non-conforming situations that may be created by adoption of the overlay zone.

C. *Additional development standards (beyond what's required in the base zone) that apply to the entire overlay area, if appropriate.*

D. *Statement that transportation requirements and standards as provided in Chapter 19.700 apply.* Include reference to street design cross sections in the Station Area Plan.

E. *Transition area standards to ensure compatibility with such a broad mix of allowed uses.* The existing transition area standards in Section 19.504.6 may be sufficient to address transitions in the overlay zone. If not, some clear and objective standards could be added here to strengthen or expand on the existing standards.

F. *Parking requirements.* This section will either reference the parking requirements in Chapter 19.600 or will list parking requirements specific to the overlay zone. Parking options are being evaluated by the city per the discussion in Section 5 Implementation of the Station Area Plan.

G. *Review process.* All new or expanded/modified development in the overlay will be processed through Type I or Type II Development Review consistent with Chapter 19.906.

19.406.4 Overlay Subareas. Establishes the intent for dividing the station area into subareas and generally describes the four subareas. Refer again to figure that shows the subarea boundaries.

19.406.5 Subarea 1: Pendleton Mills site.

A. *Subarea boundary.* Subarea 1 is the Pendleton Woolen Mills site located north of Springwater Corridor

B. *Subarea characteristics/intent.* Describes the intended character and mix of land uses for the subarea: combination of retail and commercial uses catering to light rail users.

C. *Permitted uses.* Same as Subarea 3 except as follows:

1. Office can be stand-alone with no limits on size and does not need to be accessory to manufacturing or other general employment use

2. Multifamily and above-ground residential allowed outright instead of conditionally

3. The amount and type of manufacturing uses allowed in this subarea will be limited to smaller, light manufacturing uses that will be more compatible with commercial, office and retail uses.

D. *Development and design standards.* Same as Subarea 3.

19.406.6 Subarea 2: West of McLoughlin.

A. *Subarea boundary.* Subarea 2 is the smaller area of land surrounding Springwater Corridor west of McLoughlin Blvd.

B. *Subarea characteristics/intent.* Describes the intended character and mix of land uses for the subarea: a mix of employment and residential uses, including live/work and possibly other types of residences.

C. *Permitted uses.* Same as Subarea 1 except as follows:

1. Allow townhouse-style residential development, with or without ground-floor work/commercial/retail spaces.

2. Allow a detached home associated with a commercial or manufacturing use, similar to ADU, as a detached live/work unit.

3. The amount and type of manufacturing uses allowed in this subarea will be limited to smaller, light manufacturing uses that will be more compatible with commercial, office and retail uses.

D. *Development and design standards.* Same as Subarea 3 except include standards for townhouse same as or similar to existing rowhouse standards in Section 19.505.5.

19.406.7 Subarea 3: Mixed Employment.

A. *Subarea boundary.* Subarea 3 is the area between Beta Street and Springwater Corridor.

B. *Subarea characteristics/intent.* Describes the intended character and mix of land uses for the subarea: more intensified mixed employment district, primarily office, light manufacturing, research and development, or other general employment uses with retail/commercial located along McLoughlin Boulevard and Main Street; allow potential for institutional (e.g., vocational education or training) uses.

C. *Permitted uses.* Same as those permitted by the base zone, except as noted below:

1. Retail and commercial uses can be stand-alone uses (they do not need to be accessory uses as per the base zone). Office uses must still be accessory to a manufacturing or other general employment use.

2. No limitation on the size or amount of retail/commercial uses. Limits may still apply to office uses.

3. Multi-family residential (stand-alone building) and second-story residential (above a ground floor commercial or office use) allowed as a conditional use or with deed restrictions or other mechanism to reduce potential for conflicts between residential and non-residential uses.

4. Development standards for manufacturing uses will be the standards of the base zone plus additional standards similar to those in the Business Industrial zone (Section 19.310.6).

D. *Development standards for non-manufacturing uses.* Non-manufacturing uses shall comply with the standards of the base zone except as indicated below:

1. Minimum and maximum density, for residential development only.

2. Street frontage requirements

3. Minimum lot size for residential development only

4. FAR 0.3:1 minimum and 2:1 maximum (same as Downtown Commercial)

5. Building height, if different from base zone.

6. Minimum setbacks. Front: 0 feet, side and rear: 0 feet unless abutting a residential use (then 10 feet). Possible front setback maximum of 10-20 feet along Main Street.

7. Building orientation and entrances. Orient buildings to public streets/sidewalks, connect main entrances directly with sidewalks. Building entrances should provide weather protection (awnings or recessed entrance).

8. Building signage. Signage should be pedestrian-oriented (blade, awning, building or projecting signs) especially where buildings are transitioning from industrial to commercial/ retail.

9. Ground floor window/door requirement. ***[would not apply to stand-alone multifamily building; instead would apply existing city design standards for multi-family development to those uses]***

(i) 40-60% of the ground-floor street wall area must consist of openings; i.e., windows or glazed doors would vary for manufacturing or other general employment uses

(ii) Clear glazing is required for ground-floor windows

(iii) Doors and/or primary entrances must be located on the street-facing wall

10. Parking, see Chapter 19.600. Surface parking lots not allowed within 50 feet of Main Street. Parking not allowed between a building front and the street.

11. Landscaping, if different from base zone (15%). (For comparison, the Downtown Commercial landscaping requirement is 10%)

12. Design standards for stand-alone multifamily development; see Section 19.505.3, Design Standards for Multifamily Housing.

13. Design standards for walls facing streets, use same standards as Section 19.304.6 Design Standards (from Downtown Commercial zone).

14. Design standards for windows, use same standards as Section 19.304.6 Design Standards (from Downtown Commercial zone).

15. Design standards for roofs, use same standards as Section 19.304.6 Design Standards (from Downtown Commercial zone).

19.406.8 Subarea 4: Manufacturing.

A. *Subarea boundary.* Subarea 4 is the area south of Beta Street.

B. *Subarea characteristics/intent.* Describes the intended character and mix of land uses for the subarea: primarily a manufacturing or general employment district with some flexibility in terms of non-manufacturing uses and promoting higher employment densities.

C. *Permitted uses.* Generally, permitted uses in this subarea will include those uses permitted in the base Manufacturing zone. Depending on the type of amendments (if any) that are made to the permitted use lists in the Manufacturing zone itself, this section may include some additional flexibility for non-manufacturing uses to occur, including allowing small scale retail or other commercial uses as primary uses (with size or other limitations).

D. *Development standards.* Development standards for manufacturing uses will be the standards of the base zone plus additional standards similar to those in the Business Industrial zone (Section 19.310.6). The city is evaluating whether or not to apply additional standards (similar to subarea 3) to non-manufacturing uses in this subarea.