



## METRO - I. Regional Mobility Corridors Application

### General project information

1. Project name: **NE/SE Twenties Bikeway**
2. 2035 RTP Project Number: **10230**
3. Lead Agency (i.e., responsible for match) **Portland Office of Transportation**
4. Agency contact:
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  - b. Title: Transportation Planning Division Manager
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### Project costs

#### A. Funding request summary

	Regional Flexible Funds	Local	Other	Total
Project development*	\$44,850	\$5,150		\$50,000
Final Design & Engineering	\$214,450	\$24,550		\$239,000
Right-of-way	0	0		0
Construction	\$1,838,550	\$210,450		\$2,049,000
<b>Total</b>	<b>\$2,097,850</b>	<b>\$240,150</b>		<b>\$2,338,000</b>

\*Applications to fund project development only may have unknown costs in future project phases and are not required to submit this information.

### Project description

#### A. Street or facility name with termini or project boundaries (listed from east to west or north to south):

The Twenties Bikeway is a proposed bicycle facility running north-to-south parallel to the Interstate 5 and Highway 99E Regional Mobility Corridors. The project proposes development of a bike boulevard and bike lanes along this bikeway corridor in the 2000 blocks of east Portland starting at the north-end on NE 27<sup>th</sup> Ave. south of the existing bike lanes on NE Lombard Street. The route jogs to 29<sup>th</sup> Ave. at Ainsworth and

continues south on NE 29<sup>th</sup> Ave. with short jogs along NE Regents Dr. and NE Edgehill Pl. before reaching NE Knott, where it jogs to NE 28<sup>th</sup> Ave. The route continues along 28<sup>th</sup> Ave., across the Banfield (I-84), to SE Madison, where it jogs briefly to 27<sup>th</sup> Ave. The route jogs east again on SE Stephens to NE 26<sup>th</sup> Ave. before reaching existing bike lanes south of SE Woodward. The project also fills the southernmost gap south of SE Bybee on SE 27<sup>th</sup> Ave., Crystal Springs Blvd and SE 44<sup>th</sup> Ave., where it connects to existing bike lanes on Harney Drive and further south to the Springwater Corridor Trail.

**B. Brief physical description with main project features and project attributes:**

The Twenties Bikeway corridor serves a “community connector” function as identified in the Regional Bikeway System, i.e. a longer route connecting town centers, main streets, station areas, industrial areas and other regional attractions to the regional bikeway system. The fact that the project spans the breadth of the city and that these roadways will operate with a priority for bicyclists, will make the route more attractive to the roughly 78,000 residents in census tracts within half a mile of the proposed bikeway. The route will enable cyclists to travel both north-south, as well as, connect to the established east-west bikeways.

The Twenties Bikeway is a 9.2-mile corridor, of which 2.3 miles currently exist as bicycle lanes. Of the remaining 6.9 miles, 5.5 miles are to be developed with bicycle boulevard treatments and 1.4 miles are to be striped with bicycle lanes. Bicycle lane and travel lane widths will be striped on roadways according to regional and city street design guidelines. The bicycle boulevard segments will incorporate the full spectrum of treatments the city has applied to its existing bicycle boulevards, as well as new treatments not yet implemented in Portland, but successfully employed elsewhere. These treatments are outlined below in Item H.

**C. Please provide the following (add additional sheets where necessary):**

**i. GIS shapefile(s) following the guidelines provided in Section IV: Instructions and Application Forms (Item # 6)**

GIS shapefiles for the Twenties Bikeway project have been submitted with the application in accordance with established guidelines.

**ii. Concept Plan for the project area**

The Twenties Bikeway corridor almost completely bisects the city north to south covering more than nine miles of roadway and cutting across 10 neighborhoods. The Portland Office of Transportation has developed a project concept siting appropriate crossing treatments (curb extensions, medians, signals, etc) and boulevard treatments to calm traffic, including queuing treatments/pinch-points that incorporate green street features and allow bicycle and pedestrian passage. The City originally identified the Twenties Bikeways as part of the citywide bikeway network adopted in the Bicycle Master Plan (1996).

**iii. Critical dimensions, including existing and proposed widths of sidewalks, planting strips or tree wells, bike lanes, motor vehicle travel lanes, and shared-use paths.**

Design practices and standards for bikeways are outlined in the Design and Engineering Guidelines of the City’s adopted Bicycle Master Plan. The guidelines recommend development of bicycle lanes on streets where traffic volumes approach the threshold of 3,000 average daily traffic. Due to the motor vehicle volumes and street classification of NE/SE 28<sup>th</sup> Ave between NE Broadway and SE Stark, this

segment will be striped with bicycle lanes. The travel-way width of the street segment between NE Broadway and NE Halsey is 30 feet, and parking is allowed in portions (on west side) of this segment. The travel-way width between NE Halsey and SE Stark is 36 feet, and parking is allowed along the both sides for much of this street segment. The following tables illustrate the cross-sections for those segments along the Twenties Bikeway corridor to be developed as bicycle lanes.

NE 28 <sup>th</sup> Ave: <b>Broadway to Halsey</b> – Total ROW: 50'										
Status	Side-walk	Planting Strip	Parking	Shoulder/ bike lane	Travel Lane	Travel Lane	Shoulder/ bike lane	Parking	Planting Strip	Side-walk
<b>Proposed</b>	10	0		5	10	10	5		4	6
<b>Existing</b>	10	0	8		11	11			4	6

NE 28 <sup>th</sup> Ave: <b>Halsey to Holladay</b> – Total ROW: 60'										
Status	Side-walk	Planting Strip	Parking	Bike lane	Travel Lane	Travel Lane	Bike lane	Parking	Planting Strip	Side-walk
<b>Proposed</b>	6	6	7	4.5	10	10	4.5		6	6
<b>Existing</b>	6	6	7		11	11		7	6	6

NE 28 <sup>th</sup> Ave: <b>Holladay to Sandy</b> – Total ROW: 63'										
Status	Side-walk	Planting Strip	Parking	Bike lane	Travel Lane	Travel Lane	Bike lane	Parking	Planting Strip	Side-walk
<b>Proposed</b>	15		7	4.5	10	10	4.5		6	6
<b>Existing</b>	15		7		11	11		7	6	6

NE 28 <sup>th</sup> Ave: <b>Sandy to Davis</b> – Total ROW: 60'										
Status	Side-walk	Planting Strip	Parking	Bike lane	Travel Lane	Travel Lane	Bike lane	Parking	Planting Strip	Side-walk
<b>Proposed</b>	6	6	7	4.5	10	10	4.5		6	6
<b>Existing</b>	6	6	7		11	11		7	6	6

NE 28 <sup>th</sup> Ave: <b>Davis to Burnside</b> – Total ROW: 62'										
Status	Side-walk	Planting Strip	Parking	Shoulder/ bike lane	Travel Lane	Travel Lane	Shoulder/ bike lane	Parking	Planting Strip	Side-walk
<b>Proposed</b>	12			5.5	10	10	5.5	7		12
<b>Existing</b>	12		8		11	11		8		12

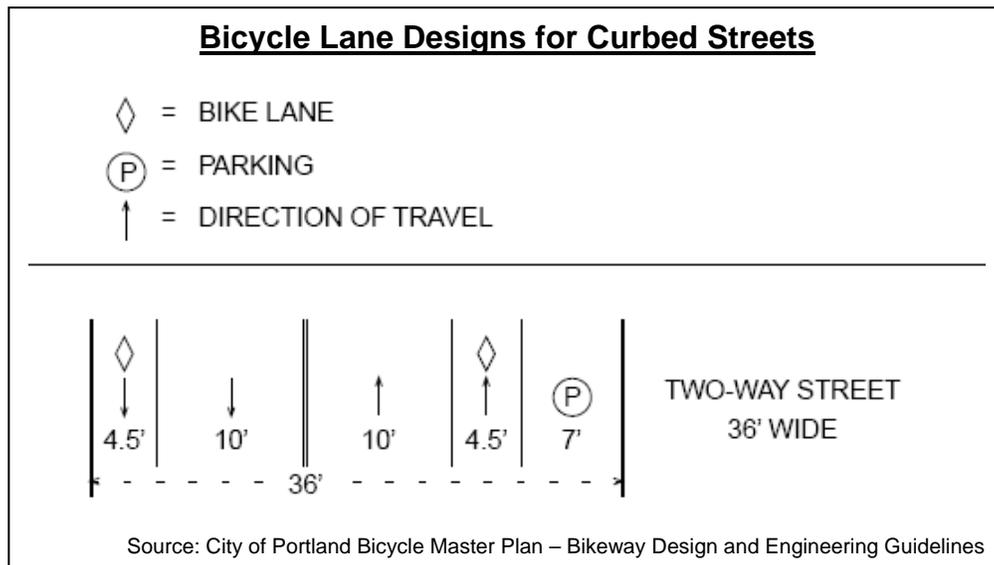
NE 28 <sup>th</sup> Ave: <b>Burnside to Stark</b> – Total ROW: 60'										
Status	Side-walk	Planting Strip	Parking	Shoulder/ bike lane	Travel Lane	Travel Lane	Shoulder/ bike lane	Parking	Planting Strip	Side-walk
<b>Proposed</b>	6	6	7	4.5	10	10	4.5		6	6
<b>Existing</b>	6	6	7		11	11		7	6	6

**iv. Right-of way dimensions, including existing and proposed widths: indicate on document what level of survey work, if any, has been completed.**

As shown in the tables above, existing right-of-way widths along NE/SE 28<sup>th</sup> Ave between NE Broadway and SE Stark range from 50 to 63-foot wide. The proposed project will work within the existing right-of-way to provide bike lanes where called for along the Twenties Bikeway. Given the intensity of commercial and residential uses near these segments, alternative treatments may need to be considered if parking removal is not deemed economically feasible. If there is inadequate space to install bicycle lanes, effective shared-lane treatments (such as shared-lane markings on NE/SE 28<sup>th</sup> Ave. or use of parallel routes developed as boulevards) will be considered, rather than widening the right-of-way.

**v. Dimensions may be shown in plan view or cross-sections included in the concept plan or on a separate sheet.**

The figure below shows the typical cross-section with the recommended widths of bike lanes, travel lanes and parking on a two-way 36-foot wide roadway.



**D. Explain how the project addresses a gap or deficiency on a facility in a mobility corridor.**

The City of Portland’s bikeway network has many established east-west bikeways, but relatively few bikeways that run north-south. The east-west routes provide good connections to the Central City and its employment, retail, and commercial centers. There is currently a 2-mile gap between the north-south routes of Vancouver-Williams bikeway (running in the “0” block of east Portland) and the “Forties” Bikeway (running in the upper 3000 and lower 4000 blocks of east Portland). City policy call for bikeways to be developed with no more than a 0.5-mile spacing. Developing this bikeway in the 2000 blocks will begin to fill a significant gap in bicycle access to connect multi-modal, mixed-use, industrial and employment areas.

The Twenties Bikeway project will address significant deficiencies along the corridor to prioritize bicycle movements on the route and at crossings of major arterial/collector streets. In addition to giving bicyclists priority on the street using a range of bike

boulevard engineering tools, the project will also eliminate crossing barriers to enhance safety and comfort. These crossing treatments will also facilitate pedestrian movements.

**E. Road and bridge capacity projects only: Submit traffic analysis and complete congestion management process measures in “design elements” section of this application.** n/a

**F. Identify any underserved population and/or environmental justice community served by the proposed project and how the project benefits that population.**

Filling this gap in the bikeway network will provide significant transportation benefits for underserved residents living in the neighborhoods adjacent to the Twenties Bikeway corridor. The bikeway will provide environmental justice populations with a mobility choice that is less expensive than nearly any other means of transportation. This project will benefit approximately 78,000 residents (2000 US Census) within the 17 census tracts served by the bikeway. Eight of these census tracts have more than the regional average population of minority residents. One census tract (36.02), comprising four block groups, has more than 2.5 times the minority population as the regional average. Four of the 17 tracts have more than 2.5 times the regional average of Black residents. All but five (i.e. 12 total) tracts, have greater than the regional average of low-income residents.

**G. Please provide documentation or description of safety issues in the project area, how the project addresses the safety issue through project design and how the proposed design has mitigated any negative impacts on other modes.**

The Twenties Bikeway corridor segments that will be striped with bicycle lanes have daily traffic volumes of up to 8,000 vehicles and 85th percentile speeds as high as 34 mph. City guidelines call for bike lane striping on streets with traffic volumes of 3,000 vehicles per day or greater. There are also segments targeted for development as bike boulevards where 85<sup>th</sup> percentile speeds are in the upper 20s and lower 30s. These are not acceptable conditions for bikeways developed as bike boulevards. The proposed treatments on boulevard segments will result in reductions in both motor vehicle speeds and volumes. On all bicycle boulevard segments, a full range of techniques will be designed to create world-class, low-traffic volume/speed bicycle boulevards.

Conditions will be evaluated on proposed bike boulevard segments to determine where traffic calming is needed in order to bring speeds to desirable levels. Techniques designed to provide priority to bicycles will be used on the corridor. This will include way-finding markings and signing (already implemented across the city as part of Portland's Bikeway Network Signing project), as well as bike boulevard markings. Other design elements on bike boulevards will include queuing street treatments (such as chicanes, neckdowns or chokers) or traffic diverters (such as semi-diverters, median barriers, etc.) that allow unimpeded passage for bicyclists and pedestrians. The City will use bicycle-pedestrian signals, bicycle boxes and other arterial crossing treatments (such as curb extensions, median refuges, bike center-turn lanes) at crucial intersections in order to give cyclists priority at signalized arterial crossings. Specific treatments will depend on the characteristics of each crossing.

## **Regional Mobility Corridors – design elements**

The following checklist items are street design elements that are appropriate and desirable in regional mobility corridors. Trail projects should use the *Trails Only* checklists (items F-G). Bicycle Boulevard projects should use the *Bicycle Boulevards Only* checklists (items H-I). All other projects should use items A – E. No more than 15 total points will be awarded.

### **On-street Facilities (Items A - E)**

#### **C. Bike Facilities (up to 4 pts)**

**\*Add bike lanes (on or parallel street) (2 pts)**

As part of this project, 1.4 miles will be striped with bicycle lanes. Bicycle lane and travel lane widths will be striped on roadways according to City of Portland guidelines. There are existing bike lanes on 2.3 miles of the Twenties Bikeway between SE Woodward and SE Bybee.

**Bike boulevard treatment (local street parallel to mobility corridor) (4 pts)**

The Twenties Bikeway project will develop 5.5 miles of the route with bicycle boulevard treatments as described in Item H.

### **Bicycle Boulevards Only (Items H - I)**

#### **H. Bicycle Boulevard Features (12 pts)**

**Add missing curb ramps**

The project will add curb ramps to facilitate pedestrian movements at any intersection where curb extensions are installed as a crossing treatment or where a “neck down” design is used to discourage through traffic.

**Add ped crossing where spacing >330 feet**

Most of the tools used to facilitate bicycle crossings of arterial streets are also identified in the City’s Pedestrian Design Guide as pedestrian crossing improvements, including ped-signals, curb extensions, refuge islands and marked crosswalks. Specific crossing treatments to facilitate both bicycle and pedestrian crossings will be installed at necessary intersections based on the characteristics of each crossing.

**Colored bike lanes / advanced stop lines / bike boxes**

In 2008, the city began implementing an innovative plan to improve safety and easy bicycle crossings by installing green bicycle boxes at 14 difficult intersections, none are located on the Twenties Bikeway. The city plans to expand use of bicycle boxes as a priority bicycle treatment at signalized crossings and will evaluate crossings on this corridor to address the need to improve visibility of cyclists, help cyclists make turning movements or clear the intersection during a green signal phase, or reduce bicycle/car conflicts.

**Bike signal detection / signal heads**

Existing or potential signalized intersections will be investigated for needed ped-bike activated loop detectors or push buttons. Intersections necessitating new bicycle-pedestrian signals will receive loop detectors and bicycle signal heads, such as the

innovative HAWK (high-intensity activated walk) signal, which has successfully been installed on the “Forties” bikeway at E. Burnside.

**Bike priority signage**

All bicycle boulevards on the Twenties Bikeway Corridor will receive bike boulevard pavement markings and bikeway signage. Pavement markings (“bike dots”) are white, one-foot diameter circles containing the image of a bicycle. The City is also developing a large bicycle boulevard stencil that will be adopted for wide spread use when the project is funded.

**Wayfinding signage**

Destination signs will be placed along the full length of the Twenties Bikeway (in accordance with the City’s comprehensive bikeway signing system) at intersections and key decision points to inform cyclists of significant destinations to which different bikeways will lead them. “Bike dots” are placed on all bike boulevards to make these routes as recognizable to cyclists as those with bike lanes, and a directional arrow will be added to guide cyclists through occasional boulevard jogs.

**All arterial/collector street crossings include bike-friendly crossings (i.e. refuge islands, signals)**

All arterial/collector street crossings will be bicycle-friendly employing the full range of crossing treatments identified in the City’s Bikeway Guidelines, such as ped-bike signals, curb extensions, refuge islands, marked crosswalk, as well as, innovative treatments being considered as part of the Bicycle Master Plan update process.

**Auto speed reduction via traffic calming**

Conditions along the corridor will be evaluated to determine where new/additional traffic calming measures are needed to bring speeds to desirable levels. The broad range of auto speed reduction treatments will be considered including traditional measures (e.g. speed bumps/tables or speed reader boards) and innovative measures (e.g. as chicanes, neck-downs or chokers).

**Auto diversion devices**

Conditions on some of the most popular bicycle boulevards in the city were created as the result of traffic diversion employed to reduce the level of cut-through auto traffic. Traffic diverters, such as semi-diverters and median barriers, are considered a tool of last resort; however, where auto diversion is necessary to provide satisfactory bicycling conditions passage for cyclists and pedestrians will remain unimpeded.

**Intersection lighting exists or is provided throughout**

The entire project will be constructed on improved public streets which conform to the city’s lighting standards.

**Cross-street signage/visibility improvements at intersections (i.e. corner parking restrictions, added warning signage)**

Curb extensions, which are proposed along the Twenties route, are one of the most effective tools for enhancing the visibility of cyclists where bicycle boulevards intersect with arterial/collectors treats. They are also good way to reduce the crossing distance and improve crossing safety.

- Priority at all local street/driveway crossings (i.e. relocating stop signs)**  
It is standard practice in Portland to turn stop signs towards intersecting traffic on bicycle boulevards so bicyclists can ride without interruption (as directed in the City's Bikeway Design and Engineering Guidelines – Pt.I, C3.). Stops signs on the Twenties bicycle boulevards will be oriented to favor movement along the boulevard where determined feasible by traffic engineers.

**I. Improvements on Arterial Parallel to Bicycle Boulevard (5 pts)**

- Any element from Item B (1 pt)**  
The crossing treatments planned for this corridor will facilitate pedestrian movements at the intersection and connections to parallel arterial/collector/local streets. These crossing treatments are consistent with the City's Pedestrian Design Guide, including signals, curb extensions, refuge islands and marked crosswalks.
- Either element with asterisk (\*) from Item C (1 pt)**  
Elements are described above under Item C and H.

## **Qualitative considerations**

**1. Past regional commitment:** There are no past regional commitments to this project.

### **2. Linked to other significant project**

There are four related transportation projects that are have either been developed, funded or undergone extensive planning: Sandy Boulevard Resurfacing and Streetscape Project, Hawthorne Boulevard Project, Division Streetscape Project, and Clinton Street Bicycle Boulevard Enhancement Safety Project.

By filling this significant gap in the network of north-south bikeways, the proposed project will provide access for residents of adjacent neighborhoods to well-established east-west bikeways that intersect with the Twenties corridor. The project will leverage benefits of the established intersecting bikeways, namely Lombard Bike Lanes, Tillamook Bike Blvd, Glisan Bike Lanes, Ankeny Bike Blvd, Salmon-Taylor Bike Blvd, Lincoln-Harrison Bikeway, Clinton-Woodward Bikeway, Gladstone Bike Lanes, Steele Bike Lanes, Woodstock Bike Lanes, Harney Bike Lanes, Springwater Corridor Trail.

### **3. Multi-modal benefit**

Improvement of the Twenties Bikeway will significantly enhance the multi-modal characteristics of this entire corridor. Pedestrians will benefit from all proposed arterial crossing treatments, including signalized and marked crossings and curb extensions to reduce the crossing distance. The traffic calming measure proposed along the route will benefit both pedestrians and overall neighborhood livability.

**4. Overmatch:** The is no proposed local project funding beyond the minimum required.

### **5. Affordable housing/safe school**

As outlined earlier, this project will provide residents in key environmental justice communities adjacent to the corridor with an affordable, safe and efficient means of transportation. Twelve of the 17 adjacent census tracts have greater than the regional average of low-income residents.

The Twenties Bikeway project will provide a safe route for children, families and school staff to bicycle to local schools while reducing traffic, promoting health and contributing to a cleaner environment. The Twenties Bikeway passes within one-half mile of following 19 schools, including 11 elementary schools, three middle schools, three high schools, and two colleges.

<b>Elementary Schools</b>	<b>Middle School</b>	<b>High Schools</b>	<b>Colleges</b>
Alameda, Ardenwald, Columbia Academy, Duniway, Edwards, Faubion, Grout, Hollyrood, Madeleine, Sunnyside, Vernon	Da Vinci, Fernwood, Hosford	Central Catholic, Cleveland, Grant	Concordia, Reed

### **6. Economic impact/jobs benefit**

The Twenties Bikeway corridor connects several places identified as strategic areas in the Regional 2040 Growth Concept, including main streets, corridors, station communities and industrial areas. The bikeway corridor intersects with nine main streets, including important commercial streets such as NE Alberta, NE Broadway, SE Hawthorne and SE Division. The project runs along five and crosses 16 designated 2040 corridors, which serve as key transportation routes for people and goods. In addition, the bikeway will connect to industrial areas, such as the Brooklyn Yard, and future station communities along the Portland-Milwaukie light rail line. One notable benefit of increased bicycling is that money that residents save by bicycling can be spent in the local economy.