



Transmittal

DATE November 24, 2020

TO Eric Rutledge, City of Sherwood
 Erika Palmer, City of Sherwood

FROM Shayna Rehberg and Joe Dills, Angelo Planning Group

RE **Willamette Water Supply System Water Treatment Plant (WTP)**
Land Use Application Supplemental Submittal

CC Dave Kraska, WWSP
 Christina Walter, WWSP
 Jill Chomycia and Meredith Jordan, WWSP
 Matthew Gribbins and Corianne Burnett, WWSP
 Marlys Mock and David Marciniak, WWSP
 Sarah Betz, Ethan Rosenthal, and Suzanne Carey, David Evans and Associates
 Tommy Brooks, Cable Huston

On behalf of the Willamette Water Supply Program (WWSP) and the Willamette Water Supply System (WWSS) Commission, Angelo Planning Group is providing the following materials as a supplement to the land use application package originally submitted for the WWSS Water Treatment Plant (WTP) on September 11, 2020.

- A. **Engineering Design Modification requests** – This submittal includes the following Engineering Design Modification requests to address design details for SW Orr Drive and SW 124th Avenue that the City of Sherwood, Washington County, and the applicant have addressed since the original submittal of the land use application package.

- Multi-use path on SW Orr Drive
- 3-foot landscape strip on SW 124th Avenue adjacent to existing retaining wall
- Public utility easement in the right-of-way on SW 124th Avenue adjacent to existing retaining wall

An Engineering Design Modification request for the multi-use path on SW 124th Avenue is also part of this submittal. That design detail was settled before the original land use application was submitted and is reflected in the narrative in the original submittal; the original submittal noted that the Engineering Design Modification request was forthcoming.

- B. **Supplemental code responses** – This submittal also includes supplemental development code responses addressing design details for SW Orr Drive and SW 124th Avenue that have been determined since the original land use application submittal. The supplemental responses are provided for code requirements in Chapter 16.106 (Transportation Facilities), Chapter 16.118 (Public and Private Utilities), and Chapter 16.142 (Parks, Trees and Open Spaces), and they address the following right-of-way design elements.

- Multi-use path on SW Orr Drive (multi-use path on SW 124th Avenue already addressed in originally submitted narrative)
 - 3-foot landscape strip on SW 124th Avenue adjacent to existing retaining wall
 - Street trees that possibly cannot be planted in 3-foot landscape strip on SW 124th Avenue adjacent to existing retaining wall
 - Public utility easement in the right-of-way on SW 124th Avenue adjacent to existing retaining wall
- C. **Cross sections** – Typical cross section drawings for SW Orr Drive and SW 124th Avenue are also included in this supplemental submittal.

Please contact us (Shayna Rehberg, 503-227-3678, srehberg@angeloplanning.com or Joe Dills, 503-224-8225, jdills@angeloplanning.com) if you have any questions or need additional information.

We appreciate your time and consideration.

Supplemental Code Responses

Chapter 16.106 - TRANSPORTATION FACILITIES

16.106.010 - Generally

A. Creation

Public streets shall be created in accordance with provisions of this Chapter. Except as otherwise provided, all street improvements and rights-of-way shall conform to standards for the City's functional street classification, as shown on the Transportation System Plan (TSP) Map (Figure 17) and other applicable City standards. The following table depicts the guidelines for the street characteristics.

Type of Street	Right of Way Width	Number of Lanes	Minimum Lane Width	On Street Parking Width	Bike Lane Width	Sidewalk Width	Landscape Strip (exclusive of Curb)	Median Width
Arterial	60-102'	2-5	12'	Limited	6 feet	6-8'	5'	14' if required
Collector	58-92'	2-3	11'	8' optional	6'	6-8'	5'	14' median turn lane

Response: The following narrative addresses the two public streets adjacent to the WTP site – SW Orr Drive (proposed) and SW 124th Avenue (existing).

SW Orr Drive

Following direction from City staff at a meeting held on October 8, 2020 and a subsequent meeting with City Engineering staff on November 4, 2020, the applicant understands the City's requirements for the SW Orr Drive cross section can be met if it consists of the elements and widths listed below and shown in the attached cross section. This cross section includes a multi-use path in place of sidewalks and bike lanes. The elements and widths as presented will continue to provide a 38-foot width to centerline and 76-foot wide right-of-way, as proposed in the original application submittal.

- 3 lanes and no on-street parking
- 14-foot median
- 13-foot travel lanes (11-foot lanes, each with 2-foot shy)
- 5-foot planting strip
- 12-foot multi-use path
- 1-foot clearance back of walk
- 76-foot right-of-way

Given the range of sidewalk widths presented in the table above, Section 16.106.060.B.1 clarifies the sidewalk requirements by stating that commercial industrial areas must have a minimum 8-foot wide sidewalk. A Transportation Facilities Modification in Section 16.106.020.E and an Engineering Design Modification (included with this supplemental application submittal) address providing multi-use paths on SW Orr Drive in place of sidewalks and bike lanes.

Therefore, this standard is met, with approval of the requested Transportation Facilities Modification and Engineering Design Modification.

SW 124th Avenue

County and City Engineering staff held a series of discussions in order to determine SW 124th Avenue half-street improvements that would balance existing standards, requirements approved for the TCC site to the north, and the road's physical context. The findings below stem primarily from a coordination meeting held on October 8, 2020. The right-of-way and frontage requirements that have been determined, include the following:

- 106-foot right-of-way (52 feet to centerline for the WTP half-street improvements; allows for 34 feet of roadway improvements and 18 feet of frontage improvements)
- 5-foot landscape strip (includes 0.5 feet for curb line)
- 12-foot multi-use path
- 1-foot clearance from back of walk

The right-of-way dimensions listed above are consistent with those proposed in the original application submittal, with a small update that the total right-of-way has been adjusted to account for 54 feet right-of-way that PGE is being required to dedicate on the east half of SW 124th Avenue.

The subject property for this application, at the time the application was deemed complete, extends south along SW 124th Avenue to a point where the WTP property diverges from the right-of-way, at which point it no longer abuts the right-of-way. At this point, there is an intervening sliver of land owned by Oregon Asphaltic Paving. The applicant understands the City's requirements for this section of SW 124th Avenue to be as described below.

- a. If, by December 31, 2020, the County is able to acquire the Oregon Asphaltic Paving property between the WTP property and 52-foot planned right-of-way for SW 124th Avenue, then the applicant will provide frontage improvements for the entire eastern length of the WTP site. If the County is not able to acquire the intervening property, the applicant will provide frontage improvements to the point where the WTP property line diverges from the edge of the 52-foot right-of-way for SW 124th Avenue.
- b. In the case that the County is able to acquire the property, the applicant will provide improvements for the length of the WTP site and a modification of the improvements listed

above will be needed adjacent to the existing retaining wall. These modifications were discussed and agreed to during the October 8, 2020 meeting, maintain 18 feet of frontage improvements, and are addressed under Transportation Facilities Modifications in Section 16.106.020.E:

- 3-foot landscape strip (2.5-foot landscape strip and 0.5-foot curb; instead of 5-foot landscape strip)
- 12-foot multi-use path
- 3-foot clearance from back of walk

Sheet B-026 (Existing Conditions Aerial – Area A) in Exhibit A of the original application submittal shows where the existing WTP property line diverges from the existing SW 124th Avenue right-of-way and the location of the existing retaining wall.

Therefore, the SW 124th Avenue cross section presented in this submittal will meet this standard, with approval of the requested Transportation Facilities Modification in Section 16.106.020.E and an Engineering Design Modification (included with this supplemental application submittal) for frontage improvements.

B. Street Naming

- 1. All streets created by subdivision or partition will be named prior to submission of the final plat.*
- 2. Any street created by a public dedication shall be named prior to or upon acceptance of the deed of dedication.*
- 3. An action to name an unnamed street in the City may be initiated by the Council or by a person filing a petition as described in this Section.*
- 4. All streets named shall conform to the general requirements as outlined in this Section.*
- 5. At the request of the owner(s), the City may approve a private street name and address. Private streets are subject to the same street name standards as are public streets. All private street signs will be provided at the owner(s) expense.*

C. Street Name Standards

D. Preferred Street Names

Response: SW Blake Street had been named in previous planning documents and confirmed by City staff. The City has requested changing the name to SW Orr Drive in honor of local and historical property owners. Therefore, this standard is met.

16.106.020 - Required Improvements

B. Existing Streets

Except as otherwise provided, when a development abuts an existing street, the improvements requirement shall apply to that portion of the street right-of-way located between the centerline of the right-of-way and the property line of the lot proposed for development. In no event shall a required street improvement for an existing street exceed a pavement width of thirty (30) feet.

Response: Except for a small portion on the southeastern side of the property, the east boundary of the WTP property abuts SW 124th Avenue, an existing street. The County has indicated that half-street roadway improvements are required where the WTP abuts the planned 52-foot right-of-way. Right-of-way dedication and half-street improvements for SW 124th Avenue include meeting County right-of-way requirements and City frontage improvement requirements (behind the curb). The County and City determined improvements to consist of the following:

- Right-of-way dedication (County): 52 feet (to centerline)
- Frontage improvements (City):
 - 5-foot planting strip (4.5-foot planting strip and 0.5-foot curb)
 - 12-foot multi-use path
 - 1-foot clearance from back of walk

In the case that the County is able to acquire the property between the WTP property and the 52-foot right-of-way dedication, the applicant will provide the improvements listed below, adjacent to the existing retaining wall. These improvement modifications were discussed and agreed to during the October 8, 2020 meeting and maintain 18 feet of frontage improvements.

- 3-foot landscape strip (2.5-foot landscape strip and 0.5-foot curb; instead of 5-foot landscape strip)
- 12-foot multi-use path
- 3-foot clearance from back of walk (instead of a 1-foot clearance)

Frontage improvements constructed to these specifications will require an Engineering Design Modification (attached with this supplemental application transmittal) and Transportation Facilities Modification, given existing standards for a 5-foot planting strip in Sections 16.106.010.A. As a note, a Transportation Facilities Modification request to modify the 8-foot sidewalk requirement to allow for the 12-foot multi-use path was included in the original application submittal.

Therefore, this standard is met, with approval of the requested Engineering Design Modification and Transportation Facilities Modification.

C. Proposed Streets

- 1. Except as otherwise provided, when a development includes or abuts a proposed street, in no event shall the required street improvement exceed a pavement width of forty (40) feet.*
- 2. Half Streets: When a half street is created, a minimum of 22 feet of driving surface shall be provided by the developer.*

Response: SW Orr Drive is a proposed street, consistent with the Sherwood TSP and other planning documents. The applicant has agreed to provide the full-street improvements. After consulting with the City (including meetings held on October 8, 2020 and November 4, 2020), these improvements have been determined to include a paved width of 40 feet, a 14-foot median, and two 13-foot travel lanes (each including 2 feet of shy distance). The two previously proposed 6-foot bike lanes and 8-foot sidewalks will be replaced by 12-foot multi-use paths on both sides of SW Orr Drive, behind the curbs and 5-foot landscape strips. See the cross section drawing included with this submittal. The multi-use paths are requested in a Transportation Facilities Modification in Section 16.106.020.E and an Engineering Design Modification included with this supplemental application submittal. Therefore, this standard is met, with approval of the requested Engineering Design Modification and Transportation Facilities Modification.

D. Extent of Improvements

- 1. Streets required pursuant to this Chapter shall be dedicated and improved consistent with Chapter 6 of the Community Development Plan, the TSP and applicable City specifications included in the City of Sherwood Construction Standards. Streets shall include curbs, sidewalks, catch basins, street lights, and street trees. Improvements shall also include any bikeways designated on the Transportation System Plan map. Applicant may be required to dedicate land for required public improvements only when the exaction is directly related to and roughly proportional to the impact of the development, pursuant to Section 16.106.090.*

Response: For SW Orr Drive, right-of-way dedications are to City standards. For SW 124th Avenue, right-of-way dedications and roadway improvements are to County standards and determinations (for right-of-way and roadway improvements) and City standards and determination (for frontage improvements). See the cross section drawings included with this submittal.

SW Orr Drive and SW 124th Avenue include the following required improvements:

- Curbs and pedestrian and bike facilities – Curbs and multi-use paths (in place of sidewalks and bike lanes) will be provided on SW Orr Drive and SW 124th Avenue. The multi-use paths will connect to paths adjacent to the TCC site to the north, via the proposed crosswalks and intersection improvements at SW 124th Avenue/SW Orr Drive. The multi-use paths will

integrate with a regional system of bicycle and pedestrian facilities and reflect direction from the City and County.

- Street trees – Street trees are proposed on SW Orr Drive and SW 124th Avenue. In the case that the County acquires the property between the WTP property and the 52-foot right-of-way dedication for SW 124th Avenue at the southeast corner of the WTP site, the applicant will provide improvements for this frontage. These improvements will include street trees, with the exception of a section of that frontage adjacent to the existing retaining wall, which will only accommodate a 3-foot landscape strip (2.5-foot landscape strip and 0.5-foot curb) and possibly shrub plantings instead of street trees.

Therefore, this standard is met, with approval of the requested Engineering Design Modifications and Transportation Facilities Modifications.

E. Transportation Facilities Modifications

1. *A modification to a standard contained within this Chapter and Section 16.58.010 and the standard cross sections contained in Chapter 8 of the adopted TSP may be granted in accordance with the procedures and criteria set out in this section.*

Response: Two modifications are proposed to transportation facility design standards established in Section 16.106.010.A, Section 16.106.060.B.1, and the TSP arterial cross sections for SW Orr Drive and SW 124th Avenue, in addition to the modification for SW 124th Avenue (multi-use path) requested in the original application submittal. The modifications are being requested in accordance with the procedures and criteria set out in this Section, as demonstrated in the following responses. Therefore, this standard is met.

2. *A modification request concerns a deviation from the general design standards for public facilities, in this Chapter, Section 16.58.010, or Chapter 8 in the adopted Transportation System Plan. The standards that may be modified include but are not limited to:*

- a. *Reduced sight distances.*
- b. *Vertical alignment.*
- c. *Horizontal alignment.*
- d. *Geometric design (length, width, bulb radius, etc.).*
- e. *Design speed.*
- f. *Crossroads.*
- g. *Access policy.*

- h. A proposed alternative design which provides a plan superior to these standards.*
- i. Low impact development.*
- j. Access Management Plans*

Response: These modification requests concern deviations from the general design standards for public facilities in this Chapter, namely geometric design (the presence and width of sidewalks, landscape strips, and bike lanes) established in Section 16.106.010.A and Section 16.106.060.B.1. The modification requests involve:

- expanding standard frontage improvements to provide a 12-foot multi-use path instead of a 8-foot sidewalk (and 6-foot bike lane) on SW Orr Drive; and
- if the County acquires a property at the southeast corner of the WTP site (in which case the applicant provides improvements on this frontage), adjusting the landscape strip (from 5 feet to 3 feet) adjacent to the existing retaining wall in order to accommodate the wall.

Therefore, this standard is met.

4. Criteria for Modification: Modifications may be granted when criterion 4a and any one of criteria 4b through 4e are met:

a. Consideration shall be given to public safety, durability, cost of maintenance, function, appearance, and other appropriate factors to advance the goals of the adopted Sherwood Comprehensive Plan and Transportation System Plan as a whole. Any modification shall be the minimum necessary to alleviate the hardship or disproportional impact.

Response: Regarding the multi-use path request on SW Orr Drive, the difference between an 8-foot sidewalk and 12-foot multi-use path is not expected to present any notable durability or cost of maintenance differences for that roadway. The modification will enhance public safety by providing a bicycle facility that is separated from roadway traffic. In terms of function, the 12-foot multi-use path presented in this submittal will better serve City pedestrian and bicycle goals, given that the larger size (width) and separation of multi-use paths from the roadway tend to be more attractive to pedestrians and bicyclists than sidewalks and bike lanes. The multi-use path will enhance the regional pedestrian and bicycle network by connecting to multi-use paths that will be developed on the SW 124th Avenue frontage of the TCC site to the north, on SW Tualatin-Sherwood Road, and on the SW 124th Avenue frontage of the PGE site to the east (in Tualatin).

Regarding the landscape strip on SW 124th Avenue, any potential impacts of the modification will be very limited given the modification applies to approximately 100 feet of a frontage that is more than 1,600 feet long. The modification should have no appreciable effects on safety because a landscape strip would still be provided, offering separation between the multi-use path and the roadway. Maintenance

costs should also not differ significantly; if anything, the smaller landscape strip will cost less to maintain. Durability and function will be maintained given the 3-foot width will still provide space for planting. It is possible that this section of landscape strip will not support street trees but it will support shrubs and other plantings, continuing the “green” of this corridor from the proposed street trees, landscaping, and preserved vegetation to the north and south along this roadway.

The requested modifications reflect the minimum area necessary in that they are part of cross sections that County and City staff agreed to in discussions including a meeting held on October 8, 2020.

Therefore, this standard is met.

b. Topography, right-of-way, existing construction or physical conditions, or other geographic conditions impose an unusual hardship on the applicant, and an equivalent alternative which can accomplish the same design purpose is available.

c. A minor change to a specification or standard is required to address a specific design or construction problem which, if not enacted, will result in an unusual hardship. Self-imposed hardships shall not be used as a reason to grant a modification request.

d. An alternative design is proposed which will provide a plan equal to or superior to the existing street standards.

e. Application of the standards of this chapter to the development would be grossly disproportional to the impacts created.

Response: Regarding the multi-use path on SW Orr Drive, this alternative design will provide a plan equal or superior to the existing street standards because the County and City have coordinated and deemed it to be an acceptable design to serve multi-modal mobility, safety, and connectivity objectives for this roadway and this part of the regional transportation network.

Regarding the landscape strip on SW 124th Avenue, the alternative design will provide a plan equal to the existing street standards and prevents disproportionate impacts given the following:

- the modification avoids the work, time, and cost of having to destroy a retaining wall that the County recently constructed; and
- the modification allows for important improvements, including: plantings in the landscape strip, a 12-foot multi-use path, back of walk clearance, and the same 52 feet of right-of-way dedication and 34 feet of in-road improvements.

Therefore, this standard is met.

16.106.060 - Sidewalks

A. Required Improvements

- 1. Except as otherwise provided, sidewalks shall be installed on both sides of a public street and in any special pedestrian way within new development.*

Response: Twelve-foot multi-use paths will be provided on SW Orr Drive and the west side of SW 124th Avenue in place of – and as an improvement on – sidewalks, as shown in the cross section drawings included in this submittal. The multi-use paths reflect direction from the City and County and are being formally requested through Engineering Design Modifications and Transportation Facilities Modifications in Section 16.016.020.E. An on-site sidewalk will still extend from SW Orr Drive into the WTP site, connecting to the site’s two public-facing features – the Administration Building and the viewing platform overlooking the forest surrounding the site’s large wetland. Therefore, this standard is met, with approval of the requested Engineering Design Modifications and Transportation Facilities Modifications.

- 2. For Highway 99W, arterials, or in special industrial districts, the City Manager or designee may approve a development without sidewalks if alternative pedestrian routes are available.*

Response: Twelve-foot multi-use paths are now proposed on both SW Orr Drive and SW 124th Avenue (adjacent to the WTP site). For the purposes of this code section, the multi-use paths serve the same purpose as sidewalks. Therefore, alternatives to sidewalks are not needed and this standard is not applicable.

B. Design Standards

1. Arterial and Collector Streets

Arterial and collector streets shall have minimum six (6) or eight (8) foot wide sidewalks/multi-use paths, located as required by this Code. Residential areas shall have a minimum of a six (6) foot wide sidewalk and commercial industrial areas shall have a minimum of an eight (8) foot wide sidewalk.

Response: Twelve-foot multi-use paths are proposed on SW Orr Drive and SW 124th Avenue, as requested in the Transportation Facilities Modification in Section 16.106.020.E and the Engineering Design Modification included in this supplemental application transmittal. Therefore, this standard is met, with approval of the requested Engineering Design Modification and Transportation Facilities Modification for SW Orr Drive.

Chapter 16.118 - PUBLIC AND PRIVATE UTILITIES*16.118.020 - Standard*

A. Installation of utilities shall be provided in public utility easements and shall be sized, constructed, located and installed consistent with this Code, and applicable utility company and City standards.

B. Public utility easements shall be a minimum of eight (8) feet in width unless a reduced width is specifically exempted by the City Engineer. An eight-foot wide public utility easement (PUE) shall be provided on private property along all public street frontages. This standard does not apply to developments within the Old Town Overlay.

Response: Utilities will be installed in public utility easements (PUEs), and PUEs at least 8 feet in width will be provided on the WTP property adjacent to the right-of-way for SW Orr Drive and SW 124th Avenue, as shown in the Site Utilities Plan Layout Area A drawing in the original application submittal (Exhibit A, Sheet B-144).

One modification of the requirement to provide the PUE on WTP property adjacent to the right-of-way is a request to provide an 8-foot PUE under the multi-use path and back of walk on the section of SW 124th Avenue adjacent to the existing retaining wall near the southeast corner of the WTP site, where the applicant will provide frontage improvements if the County acquires the property between the WTP property and the 52-foot right-of-way dedication for SW 124th Avenue. This section of potential frontage improvement modification is a small portion of the total SW 124th Avenue frontage – roughly 100 feet of a more than 1,600-foot-long frontage.

As noted in the Engineering Design Modification request included with this supplemental application submittal, there is no feasible way to provide the PUE outside of the road right-of-way without running it up a very steep slope or routing it under the existing retaining wall, which the County recently constructed as part of the SW 124th Avenue extension project. Locating the PUE under the retaining wall would require removal of the wall for utility installation, repair, or maintenance, which is highly costly and impractical as compared to disturbing some of the multi-use path and back of path (shoulder) for such work. City Engineering staff have been part of the discussions in which this modification was agreed upon, including the meeting between the County, City, and applicant held on October 8, 2020.

Therefore, this standard is met, with approval of the requested Engineering Design Modification.

Chapter 16.142 - PARKS, TREES AND OPEN SPACES*16.142.060 - Street Trees**A. Installation of Street Trees on New or Redeveloped Property.*

Trees are required to be planted to the following specifications along public streets abutting or within any new development or re-development. Planting of such trees shall be a condition of development approval. The City shall be subject to the same standards for any developments involving City-owned property, or when constructing or reconstructing City streets. After installing street trees, the property owner shall be responsible for maintaining the street trees on the owner's property or within the right-of-way adjacent to the owner's property.

1. Location: Trees shall be planted within the planter strip along a newly created or improved streets. In the event that a planter strip is not required or available, the trees shall be planted on private property within the front yard setback area or within public street right-of-way between front property lines and street curb lines or as required by the City.

Response: Street trees are proposed to be planted within the landscape strips along the new full street improvements of SW Orr Drive and half street improvements of SW 124th Avenue, with exceptions noted in the response for this code requirement in the original application submittal and probably for the section of the potential frontage adjacent to the existing retaining wall near the southeast corner of the WTP site. See Sheet B-026 (Existing Conditions Aerial – Area A) in Exhibit A of the original application submittal for the location of the existing retaining wall.

If the County acquires the property between the WTP property and the 52-foot right-of-way dedication for SW 124th Avenue, the applicant will provide improvements for this frontage, including street trees with an expected exception adjacent to the existing retaining wall, which will only accommodate a 3-foot landscape strip (2.5-foot landscape strip and 0.5-foot curb) and likely shrub plantings instead of street trees. This section of potential frontage improvement exception is a small portion of the total SW 124th Avenue frontage – roughly 100 feet of a more than 1,600-foot long frontage – and green (including proposed street trees, proposed landscaping, and existing vegetation) is abundant in this corridor to the north and south of this section. The 3-foot landscape strip is the subject of an Engineering Design Modification request included in this supplemental application submittal and has been discussed with City Engineering staff, agreed to at the meeting between the County, City, and applicant held on October 8, 2020.

Therefore, these standards are met, consistent with approval of the requested Engineering Design Modification regarding the landscape strip.

Engineering Design Modification Requests



Memorandum

*To: Bob Galati, P.E.
City Engineer, City of Sherwood*

From: Greg Lindstadt, CDM Smith

Date: November 16, 2020

Subject: Design Modification Request for Orr Drive Section

Location of Requested Design Modification

The future SW Orr Drive (formerly called SW Blake Street) from SW 124th Avenue to the western property edge of the Willamette Water Supply System (WWSS) Water Treatment Plant (WTP) Property (Tax Lot ID 2S128D001200).

Current Standards

SW Orr Drive (formerly called SW Blake Street) is classified as a collector street per the City TSP. The Engineering Pre-Application Comments from the January 10, 2019 meeting indicated that the Orr Drive section shall conform to the 3-lane road section without on-street parking standard (76-foot right-of-way-width). Standard collector street sections are shown on Drawing Number RD-3 of the City of Sherwood Engineering Manual (Attachment A) and consists of the following half-street section for a 3-lane section without parking:

Median / turn lane	7' wide (half of median / turn lane)
Vehicle lane	11' wide
Bike lane	6' wide
Landscape strip	5' wide
Sidewalk	8' wide
Space behind sidewalk	1' wide
Half-street right-of-way	38' wide (76' total road right-of-way width)

Note that Section 16.106.060.B.1 of the City of Sherwood Development Code clarifies the sidewalk requirements shown on Drawing number RD-3 by stating that commercial industrial areas must have a minimum 8-foot wide sidewalk.

Design Modification Being Requested

The following revised road section for SW Orr Drive is requested.

Median / turn lane	7' wide (half of median / turn lane)
--------------------	--------------------------------------

Design Modification Request for Orr Drive Section

November 16, 2020

Page 2

Vehicle lane	13' wide (11' wide vehicle lane with 2' shy distance)
Landscape strip	5' wide
Multi-use path	12' wide
Space behind sidewalk	1' wide
Half-street right-of-way	38' wide (76' total road right-of-way width)

In summary, a 13' wide vehicle lane and 12' wide multi-use path is requested in place of an 11' wide vehicle lane, 6' bike lane, and 8' wide sidewalk.

Existing Conditions

The existing WWSS WTP site is an undeveloped site, consisting of forested sections, existing wetlands and other sensitive areas, rock outcroppings, and a PGE easement which limits the development of the site. See Attachment B for WWSS WTP property encumbrances.

Result of Meeting Standards

The City's standard road section can be met. However, the City has requested the revised road section.

Proposed Design Modification

The following revised road section for SW Orr Drive be provided:

Median / turn lane	7' wide (half of median / turn lane)
Vehicle lane	13' wide (11' wide vehicle lane with 2' shy distance)
Landscape strip	5' wide
Multi-use path	12' wide
Space behind sidewalk	1' wide
Half-street right-of-way	38' wide (76' total road right-of-way width)

Reason Why Design Request Should be Approved

The revised SW Orr Drive section represents direction that the City gave to the applicant at a meeting held on October 8, 2020. It will provide a smooth transition from the 12' multi-use path on SW 124th Avenue to SW Orr Drive. The multi-use path on SW Orr Drive also moves bicycle traffic away from the vehicle travel lanes, which are likely to see large truck traffic to and from the future WTP and other industrial and employment uses that may develop along the extension of SW Orr Drive in the future.

Design Modification Request for Orr Drive Section
November 16, 2020
Page 3



11/16/2020

Design Engineer

Date

Craig Christensen, P.E. - City Project Manager

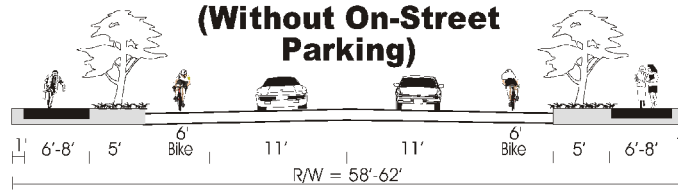
Date

- Approved
- Approved with Conditions (conditions below or on attached sheet)
- Denied

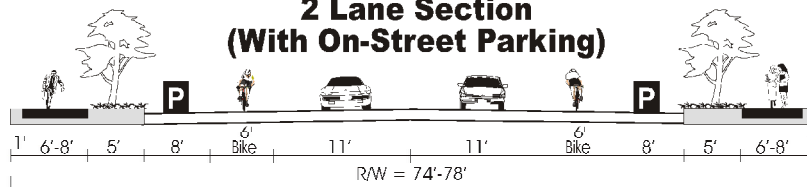
Bob Galati, P.E. - City Engineer

Date

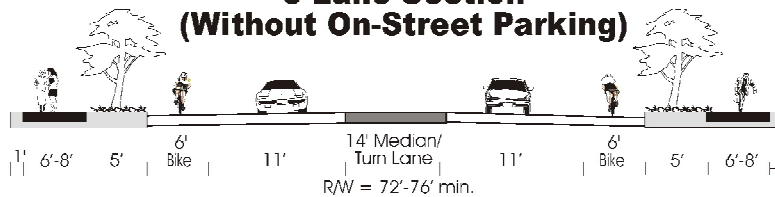
2 Lane Section (Without On-Street Parking)



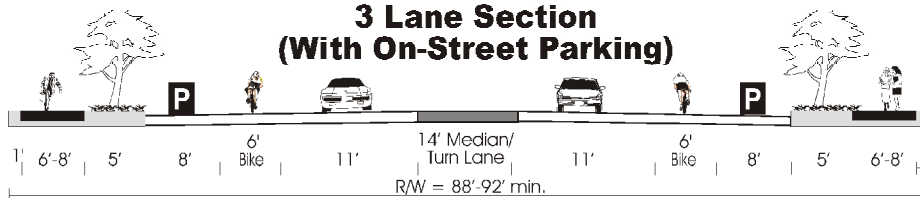
2 Lane Section (With On-Street Parking)



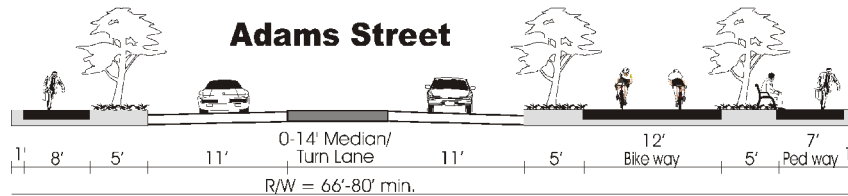
3 Lane Section (Without On-Street Parking)



3 Lane Section (With On-Street Parking)



Adams Street



A variance requires demonstration of hardship or other exceptional circumstances resulting from conditions of the property. variances must meet Sherwood Development Code and TPR criteria.

Collector Street Design Characteristics

P - On-street Parking Lane
(except at intersections)

Notes:

- In constrained conditions on collectors a minimum width of 10 feet may be considered (i.e. for intersection turn lanes). 14-feet is desirable for continuous two-way left turn lanes.
- 8 feet for residential streets, 6 feet in commercial/industrial areas.
- Turn lane warrants should be reviewed using Highway Research Record No. 211, NCHRP Report No. 279 or other updated/superseding reference.

Characteristic	Collectors
Vehicle Lane Widths (Turn Lane - 12-14 ft.) *1	11 ft.
On-Street Parking	8 ft.-Optional
Bicycle Lanes (minimums)	6 ft.
Sidewalks (minimums)	6-8 ft. *2
Landscape Strips	Required
Raised Medians	Optional (Required where 3-lane section used)
Neighborhood Traffic Management (NTM)	Under Special Conditions
Transit	Appropriate
Turn Lanes	When Warranted *3
Access Control	See Later Discussion



STANDARD DRAWING TITLE

DRAWING NUMBER

STANDARD COLLECTOR STREET SECTIONS

RD-3

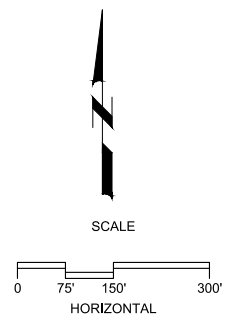
Any alteration of this drawing may not be associated in any way with the City of Sherwood Standard Drawings.

SCALE

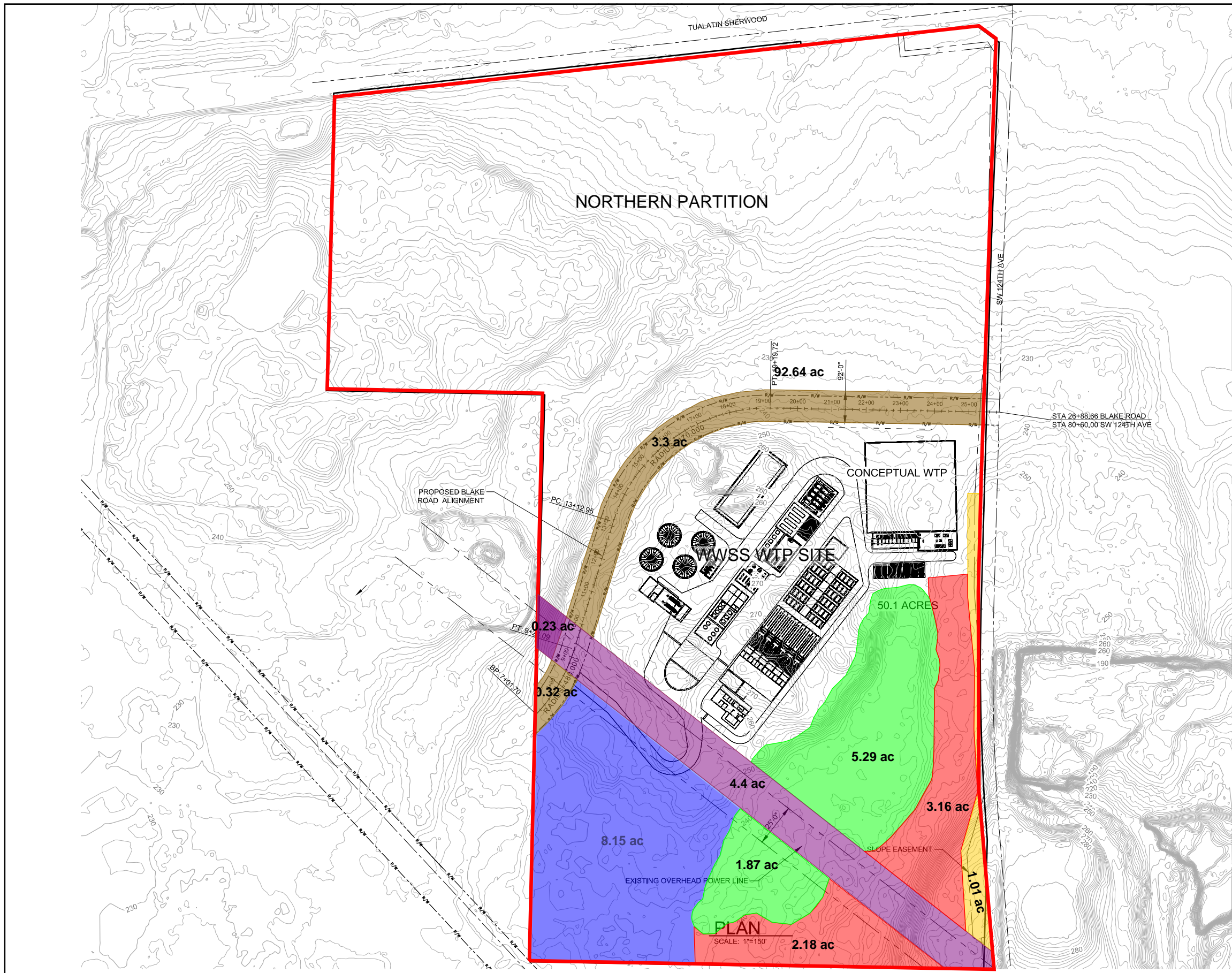
DATE

N.T.S.

JUL' 09



KEY	
	PROPERTY BOUNDARY
	BLAKE RD
	WETLAND
	PGE EASEMENT
	SLOPE EASEMENT
	PARTIALLY ISOLATED LAND
	SUBSTANTIALLY ISOLATED LAND





Memorandum

*To: Bob Galati, P.E.
City Engineer, City of Sherwood*

From: Greg Lindstadt, CDM Smith

Date: November 16, 2020

Subject: Design Modification Request for SW 124th Ave Multi-Use Path

Location of Requested Design Modification

SW 124th Avenue from the intersection with SW Orr Drive (formerly called SW Blake Street) to the point where the Willamette Water Supply System (WWSS) Water Treatment Plant (WTP) (Tax Lot ID 2S128D001200) property line diverges from the 52-foot right-of-way dedication or to a point adjacent to the WTP southern property line if Washington County acquires the intervening property by December 31, 2020.

Current Standards

SW 124th Avenue is classified as an arterial street per the City TSP.

The Engineering Pre-Application Comments from the April 10, 2020 meeting indicated that the ROW dedication requirements along SW 124th Avenue shall at a minimum comply with WACO requirements, although frontage improvements along SW 124th Avenue shall comply with City of Sherwood requirements.

The City's standard frontage improvements consist of the following:

Bike lane	6' wide
Landscape strip	5' wide
Sidewalk	8' wide
Space behind sidewalk	1' wide
Frontage improvements	20' wide total

Note that Section 16.106.060.B.1 of the City of Sherwood Development Code clarifies the sidewalk requirements shown on Drawing number RD-4 (Attachment A) by stating that commercial industrial areas must have a minimum 8-foot wide sidewalk.

An 8' PUE and 15' visual buffer are also required outside the road right-of-way dedication. These are allowed to overlap.

Design Modification Request for SW 124th Ave Multi-Use Path
 November 16, 2020
 Page 2

Design Modification Being Requested

The following modifications to the frontage improvements along 124th Avenue are requested.

Landscape strip	5' wide
Multi-use path	12' wide
Space behind multi-use path	1' wide
Frontage improvements	18' wide total

In summary, a 12' wide multi-use path is requested in place of a 6' wide bike lane and 8' wide sidewalk.

Existing Conditions

SW 124th Avenue currently consists of a 37' half-road section, with no landscape strip, bike path, or sidewalk.

The existing WWSS WTP site is an undeveloped site, consisting of forested sections, existing wetlands and other sensitive areas, rock outcroppings, and a PGE easement which limits the development of the site. See Attachment B for WWSS WTP property encumbrances.

Result of Meeting Standards

The City's standard frontage improvements can be met. However, the City has requested the revised frontage improvements utilizing the multi-use path.

Proposed Design Modification

The frontage improvements along 124th Avenue be provided as follows:

Landscape strip	5' wide
Multi-use path	12' wide
Space behind multi-use path	1' wide
Frontage improvements	18' wide total

Reason Why Design Request Should be Approved

The revised frontage improvements along SW 124th Avenue represent direction that the City and Washington County gave to the applicant at a meeting held on October 8, 2020. The improvements will be aligned with the multi-use path being provided by PGE on the east side of SW 124th Avenue.

Design Modification Request for SW 124th Ave Multi-Use Path
November 16, 2020
Page 3



11/16/2020

Design Engineer

Date

Craig Christensen, P.E. - City Project Manager

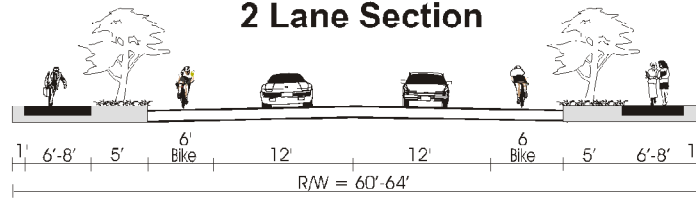
Date

- Approved
- Approved with Conditions (conditions below or on attached sheet)
- Denied

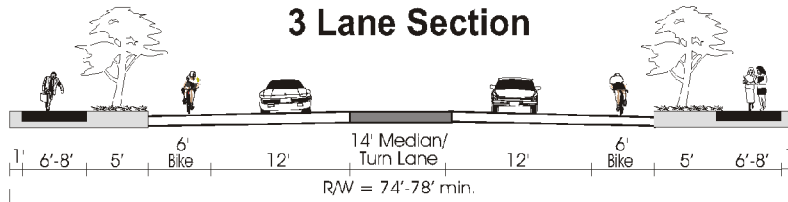
Bob Galati, P.E. - City Engineer

Date

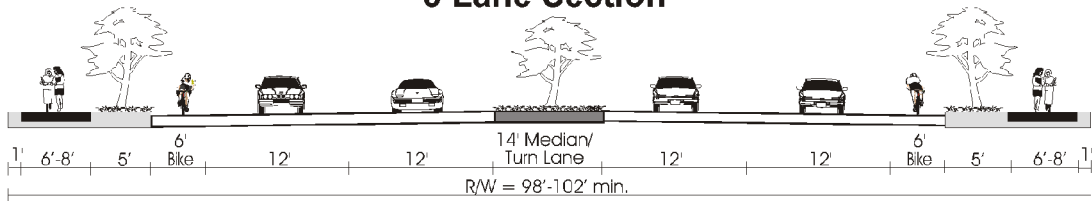
2 Lane Section



3 Lane Section

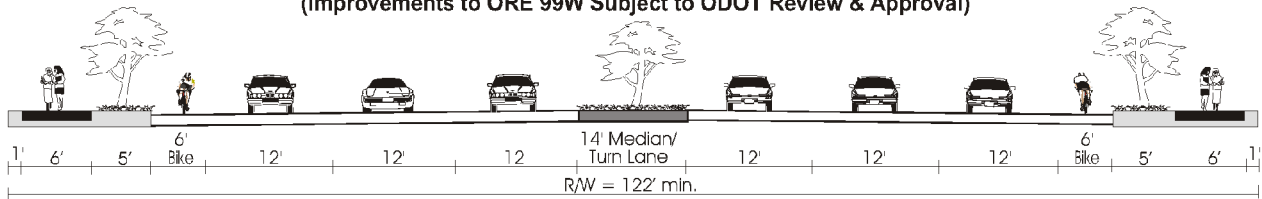


5 Lane Section



7 Lane Section

(Improvements to ORE 99W Subject to ODOT Review & Approval)



Arterial Street Design Characteristics

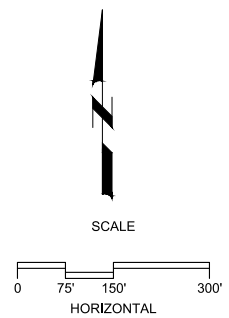
A variance requires demonstration of hardship or other exceptional circumstances resulting from conditions of the property. Variances must meet Sherwood Development Code and TPR criteria.

Characteristic	Arterials
Vehicle Lane Widths (Turn Lane - 12-14 ft.)	12 ft.
On-Street Parking	Only in (i.e. downtown) (8 ft.)
Bicycle Lanes (minimums)	6 ft.
Sidewalks (minimums)	6-8 ft. *1
Landscape Strips	Required
Raised Medians	Required
Neighborhood Traffic Management (NTM)	Prohibited
Transit	Appropriate
Turn Lanes	When Warranted *2
Access Control	See Later Discussion

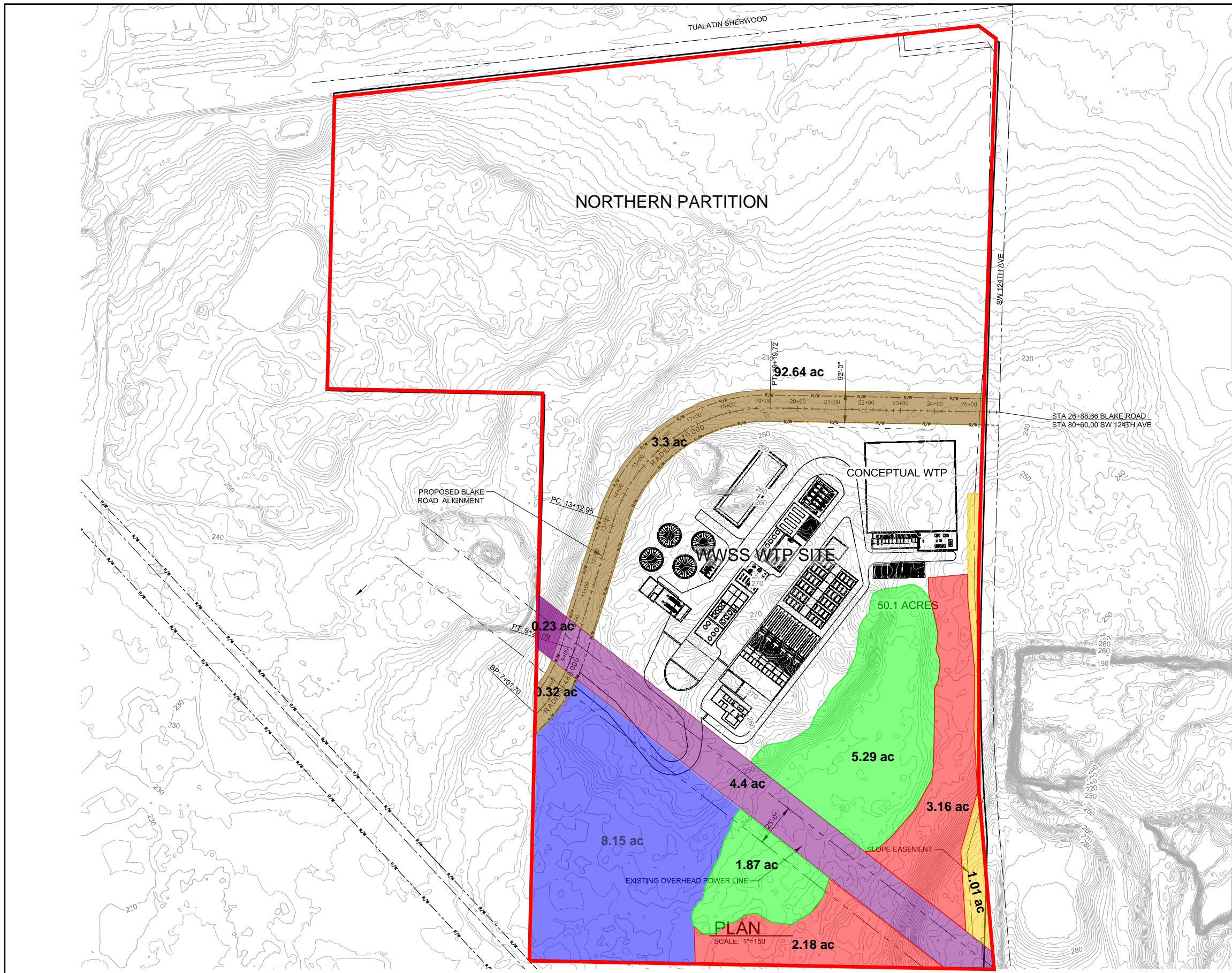
Notes:

1. 8 feet for residential streets, 6 feet in commercial/industrial areas.
2. Turn lane warrants should be reviewed using Highway Research Record No. 211, NCHRP Report No. 279 or other updated/superseding reference.

	STANDARD DRAWING TITLE	DRAWING NUMBER
	STANDARD ARTERIAL STREET SECTIONS	RD-4
	Any alteration of this drawing may not be associated in any way with the City of Sherwood Standard Drawings.	SCALE N.T.S.



KEY	
	PROPERTY BOUNDARY
	BLAKE RD
	WETLAND
	PGE EASEMENT
	SLOPE EASEMENT
	PARTIALLY ISOLATED LAND
	SUBSTANTIALLY ISOLATED LAND





Memorandum

*To: Bob Galati, P.E.
City Engineer, City of Sherwood*

From: Greg Lindstadt, CDM Smith

Date: November 16, 2020

Subject: Design Modification Request for SW 124th Ave Landscape Strip

Location of Requested Design Modification

SW 124th Avenue from the northern edge of the existing retaining wall to the southern property edge of the Willamette Water Supply System (WWSS) Water Treatment Plant (WTP) Property (Tax Lot ID 2S128D001200).

Current Standards

SW 124th Avenue is classified as an arterial street per the City TSP.

The Engineering Pre-Application Comments from the April 10, 2020 meeting indicated that the ROW dedication requirements along SW 124th Avenue shall at a minimum comply with WACO requirements, although frontage improvements along SW 124th Avenue shall comply with City of Sherwood requirements.

The City's standard frontage improvements consist of the following:

Bike lane	6' wide
Landscape strip	5' wide
Sidewalk	8' wide
Space behind sidewalk	1' wide
Frontage improvements	20' wide total

Note that Section 16.106.060.B.1 of the City of Sherwood Development Code clarifies the sidewalk requirements shown on Drawing number RD-4 (Attachment A) by stating that commercial industrial areas must have a minimum 8-foot wide sidewalk.

An 8' PUE and 15' visual buffer are also required outside the road right-of-way dedication. These are allowed to overlap.

Design Modification Being Requested

Design Modification Request for SW 124th Ave Landscape Strip
 November 16, 2020
 Page 2

The following modifications to the frontage improvements along 124th Avenue are requested in the area adjacent to the existing retaining wall if the County acquires the property between the WTP property and the 52-foot right-of-way dedication by December 31, 2020, in which case the applicant will provide half-street improvements on this frontage:

Landscape strip	3' wide
Multi-use path	12' wide
Space behind multi-use path	3' wide
Frontage improvements	18' wide total

In order to maintain the 52' right-of-way provided north of the existing retaining wall, the reduction in width of the landscape strip by 2' requires a corresponding increase in the distance behind the multi-use path by 2'.

In summary, a 3' landscape strip and 3' space behind the multi-use path is requested in place of a 5' wide landscape strip and 1' space behind the sidewalk.

Existing Conditions

SW 124th Avenue currently consists of a 37' half-road section, with no landscape strip, bike path, or sidewalk.

The existing WWSS WTP site is an undeveloped site, consisting of forested sections, existing wetlands and other sensitive areas, rock outcroppings, and a PGE easement which limits the development of the site. See Attachment B for WWSS WTP property encumbrances.

Result of Meeting Standards

In the area adjacent to an existing retaining wall located near the southeast property corner, the standard frontage improvements cannot be accommodated due to the location of the existing retaining wall in relation to the existing road centerline.

Proposed Design Modification

The frontage improvements along 124th Avenue adjacent to the existing retaining wall will be provided as follows:

Landscape strip	3' wide
Multi-use path	12' wide
Space behind multi-use path	3' wide
Frontage improvements	18' wide total

In the area adjacent to an existing retaining wall located near the southeast property corner, the landscape strip will be reduced to 3' wide and the space behind the multi-use path will be increased to 3' wide.


Reason Why Design Request Should be Approved

The revised frontage improvements along SW 124th Avenue represent direction that the City

Design Modification Request for SW 124th Ave Landscape Strip
November 16, 2020
Page 3

and Washington County gave to the applicant at a meeting held on October 8, 2020. The improvements will be aligned with the multi-use path being provided by PGE on the east side of SW 124th Avenue.

The proposed narrower planter strip and revised location of the PUE will allow the existing retaining wall, installed recently during the SW 124th Avenue extension project, to remain.



11/16/2020

Design Engineer

Date

Craig Christensen, P.E. - City Project Manager

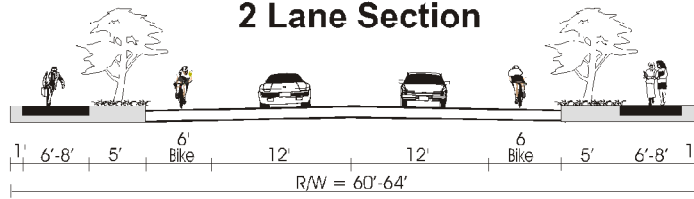
Date

- Approved
- Approved with Conditions (conditions below or on attached sheet)
- Denied

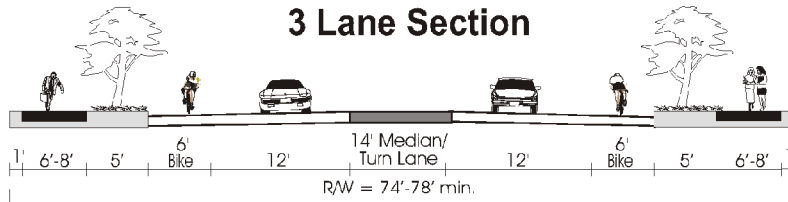
Bob Galati, P.E. - City Engineer

Date

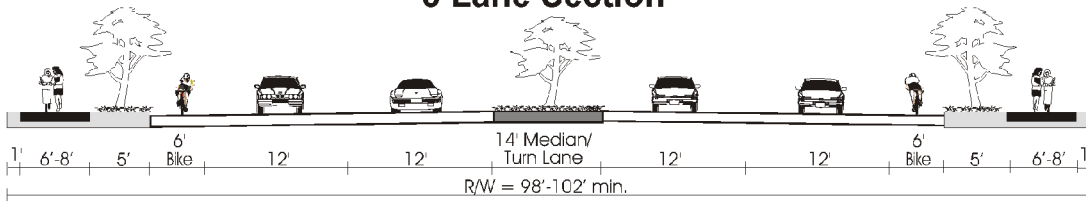
2 Lane Section



3 Lane Section

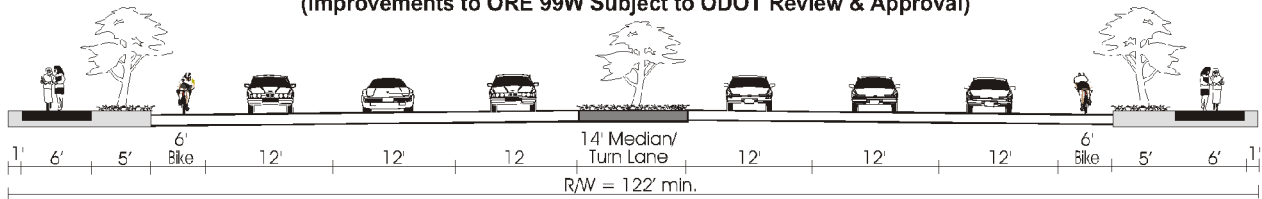


5 Lane Section



7 Lane Section

(Improvements to ORE 99W Subject to ODOT Review & Approval)



Arterial Street Design Characteristics

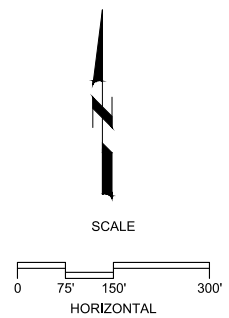
A variance requires demonstration of hardship or other exceptional circumstances resulting from conditions of the property. Variances must meet Sherwood Development Code and TPR criteria.

Characteristic	Arterials
Vehicle Lane Widths (Turn Lane - 12-14 ft.)	12 ft.
On-Street Parking	Only in (i.e. downtown) (8 ft.)
Bicycle Lanes (minimums)	6 ft.
Sidewalks (minimums)	6-8 ft. *1
Landscape Strips	Required
Raised Medians	Required
Neighborhood Traffic Management (NTM)	Prohibited
Transit	Appropriate
Turn Lanes	When Warranted *2
Access Control	See Later Discussion

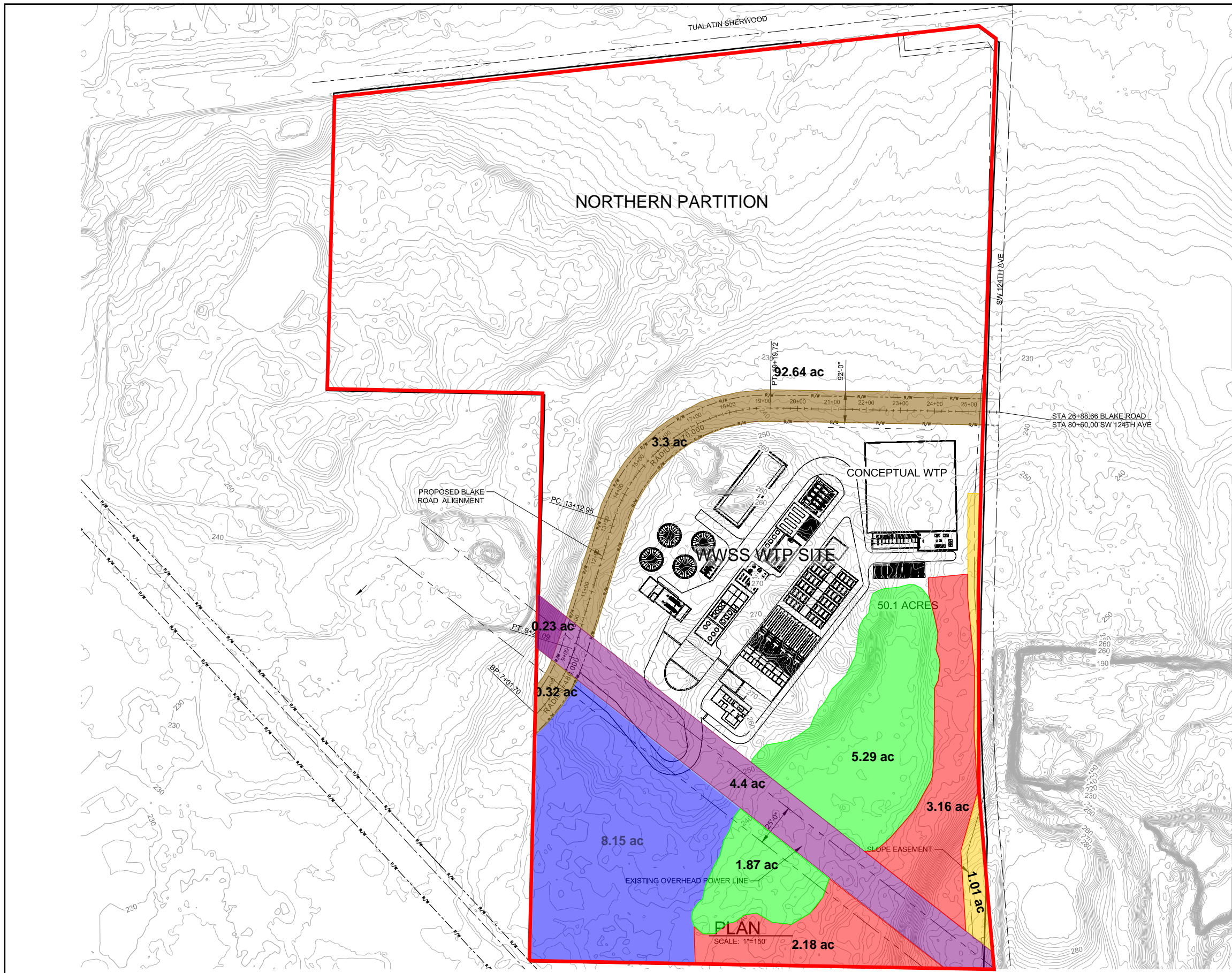
Notes:

1. 8 feet for residential streets, 6 feet in commercial/industrial areas.
2. Turn lane warrants should be reviewed using Highway Research Record No. 211, NCHRP Report No. 279 or other updated/superseding reference.

	STANDARD DRAWING TITLE	DRAWING NUMBER
	STANDARD ARTERIAL STREET SECTIONS	RD-4
	Any alteration of this drawing may not be associated in any way with the City of Sherwood Standard Drawings.	SCALE N.T.S.



KEY	
	PROPERTY BOUNDARY
	BLAKE RD
	WETLAND
	PGE EASEMENT
	SLOPE EASEMENT
	PARTIALLY ISOLATED LAND
	SUBSTANTIALLY ISOLATED LAND





Memorandum

*To: Bob Galati, P.E.
City Engineer, City of Sherwood*

From: Greg Lindstadt, CDM Smith

Date: November 16, 2020

Subject: Design Modification Request for SW 124th PUE in ROW

Location of Requested Design Modification

SW 124th Avenue from the northern edge of the existing retaining wall to the point adjacent to the southern property edge of the Willamette Water Supply System (WWSS) Water Treatment Plant (WTP) Property (Tax Lot ID 2S128D001200).

Current Standards

SW 124th Avenue is classified as an arterial street per the City TSP.

The Engineering Pre-Application Comments from the April 10, 2020 meeting indicated that the ROW dedication requirements along SW 124th Avenue shall at a minimum comply with WACO requirements, although frontage improvements along SW 124th Avenue shall comply with City of Sherwood requirements.

The City's standard frontage improvements consist of the following:

Bike lane	6' wide
Landscape strip	5' wide
Sidewalk	8' wide
Space behind sidewalk	1' wide
Frontage improvements	20' wide total

Note that Section 16.106.060.B.1 of the City of Sherwood Development Code clarifies the sidewalk requirements shown on Drawing number RD-4 (Attachment A) by stating that commercial industrial areas must have a minimum 8-foot wide sidewalk.

Per the Engineering Design Manual, Section 120.3(A), PUEs are required beyond the right-of-way. The development code, Section 16.118.020(B) also requires PUEs adjacent to (outside) the right-of-way. For the arterial, a 8' PUE and 15' visual buffer are required outside the road right-of-way dedication. These are allowed to overlap.

Design Modification Request for SW 124th Ave PUE in ROW
 November 16, 2020
 Page 2

Design Modification Being Requested

The following modifications to the frontage improvements along 124th Avenue are requested in the area adjacent to the existing retaining wall if the County acquires the property between the WTP property and the 52-foot right-of-way dedication by December 31, 2020, in which case the applicant will provide half-street improvements on this frontage:

Landscape strip	3' wide
Multi-use path	12' wide
Space behind multi-use path	3' wide
Frontage improvements	18' wide total

Due to the existing retaining wall, it is requested that the 8' wide PUE be allowed to run in the road right-of way under the multi-use path.

Existing Conditions

SW 124th Avenue currently consists of a 37' half-road section, with no landscape strip, bike path, or sidewalk.

The existing WWSS WTP site is an undeveloped site, consisting of forested sections, existing wetlands and other sensitive areas, rock outcroppings, and a PGE easement which limits the development of the site. See Attachment B for WWSS WTP property encumbrances.

Result of Meeting Standards

In the area adjacent to an existing retaining wall located near the southeast property corner, there is no way to provide the PUE outside of the road right-of-way without running it up the very steep slope or routing it under the existing retaining wall.

Proposed Design Modification

The frontage improvements along 124th Avenue adjacent to the existing retaining wall will be provided as follows:

Landscape strip	3' wide
Multi-use path	12' wide
Space behind the multi-use path	3' wide
Frontage improvements	18' wide total

In the area adjacent to an existing retaining wall located near the southeast property corner, the 8' wide PUE will run in the road right-of way under the multi-use path.

Reason Why Design Request Should be Approved

The revised frontage improvements along SW 124th Avenue represent direction that the City and Washington County gave to the applicant at a meeting held on October 8, 2020. The improvements will be aligned with the multi-use path being provided by PGE on the east side of SW 124th Avenue.

Design Modification Request for SW 124th Ave PUE in ROW
November 16, 2020
Page 3

The proposed narrower planter strip and revised location of the PUE will allow the existing retaining wall, installed recently during the SW 124th Avenue extension project, to remain.



11/16/2020

Design Engineer

Date

Craig Christensen, P.E. - City Project Manager

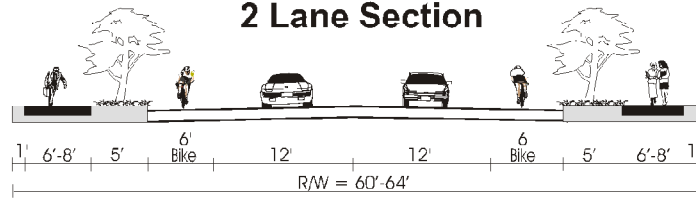
Date

- Approved
- Approved with Conditions (conditions below or on attached sheet)
- Denied

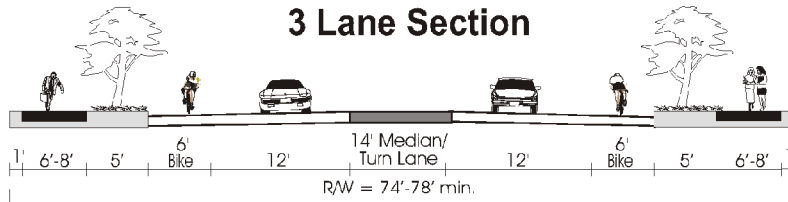
Bob Galati, P.E. - City Engineer

Date

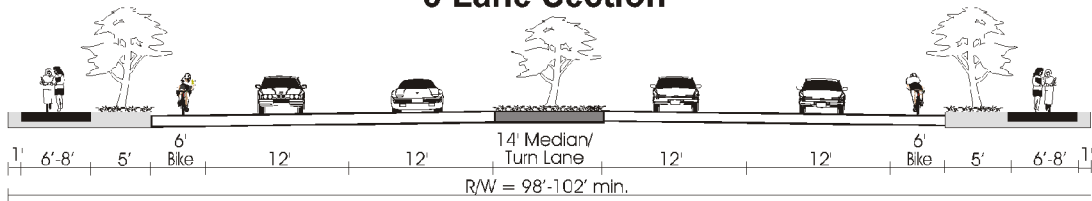
2 Lane Section



3 Lane Section

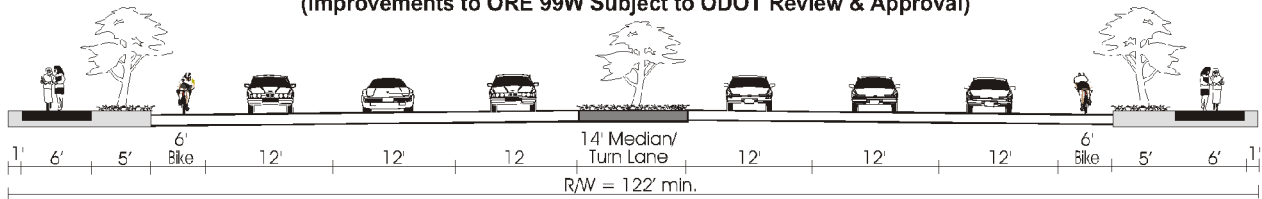


5 Lane Section



7 Lane Section

(Improvements to ORE 99W Subject to ODOT Review & Approval)



Arterial Street Design Characteristics

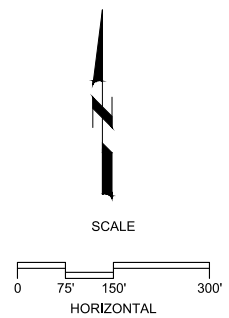
A variance requires demonstration of hardship or other exceptional circumstances resulting from conditions of the property. Variances must meet Sherwood Development Code and TPR criteria.

Characteristic	Arterials
Vehicle Lane Widths (Turn Lane - 12-14 ft.)	12 ft.
On-Street Parking	Only in (i.e. downtown) (8 ft.)
Bicycle Lanes (minimums)	6 ft.
Sidewalks (minimums)	6-8 ft. *1
Landscape Strips	Required
Raised Medians	Required
Neighborhood Traffic Management (NTM)	Prohibited
Transit	Appropriate
Turn Lanes	When Warranted *2
Access Control	See Later Discussion

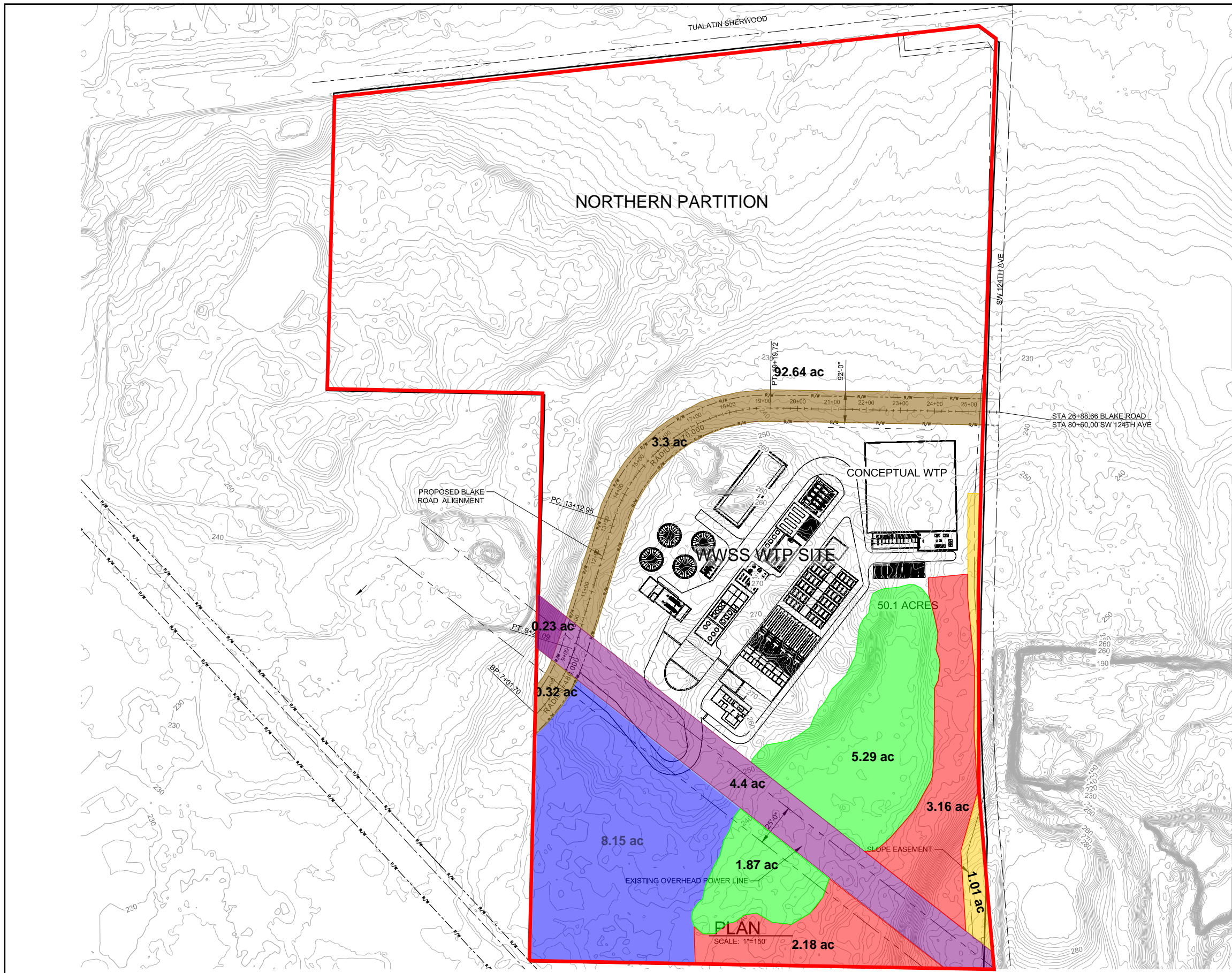
Notes:

1. 8 feet for residential streets, 6 feet in commercial/industrial areas.
2. Turn lane warrants should be reviewed using Highway Research Record No. 211, NCHRP Report No. 279 or other updated/superseding reference.

	STANDARD DRAWING TITLE	DRAWING NUMBER
	STANDARD ARTERIAL STREET SECTIONS	RD-4
	Any alteration of this drawing may not be associated in any way with the City of Sherwood Standard Drawings.	SCALE N.T.S.

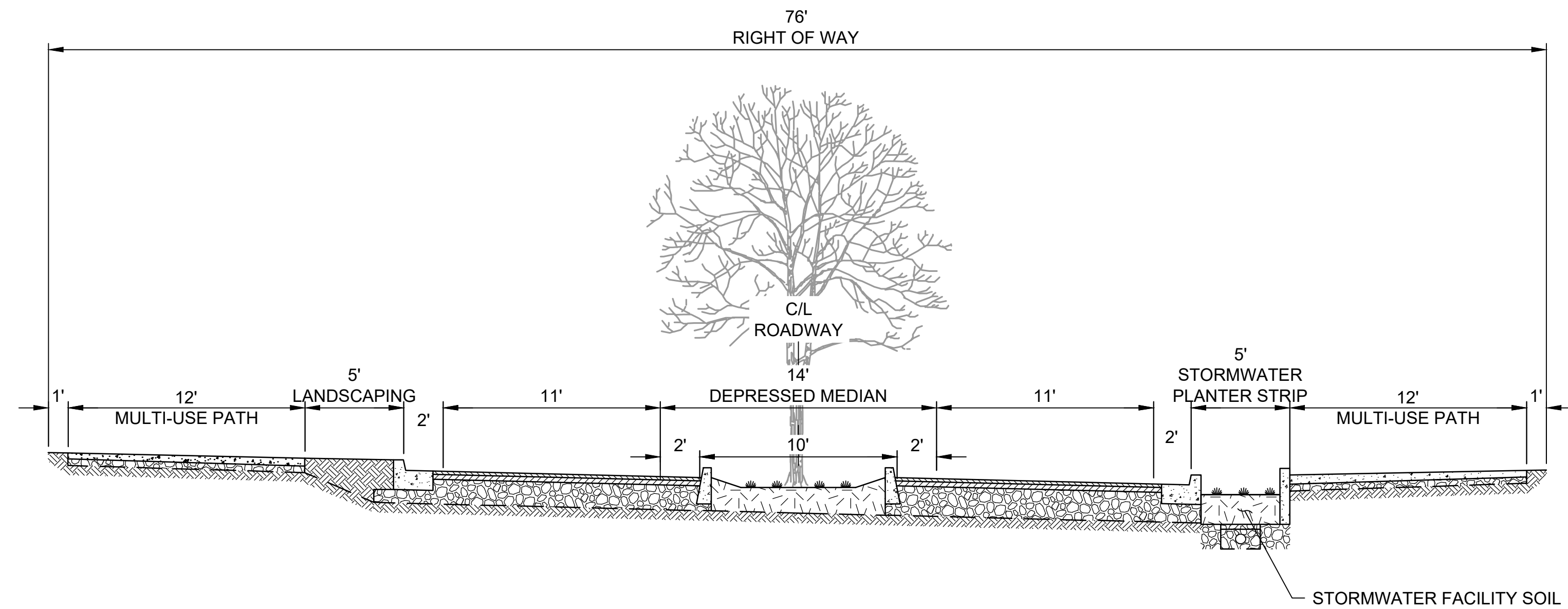


KEY	
	PROPERTY BOUNDARY
	BLAKE RD
	WETLAND
	PGE EASEMENT
	SLOPE EASEMENT
	PARTIALLY ISOLATED LAND
	SUBSTANTIALLY ISOLATED LAND



SW Orr Drive and SW 124th Avenue Typical Cross Sections

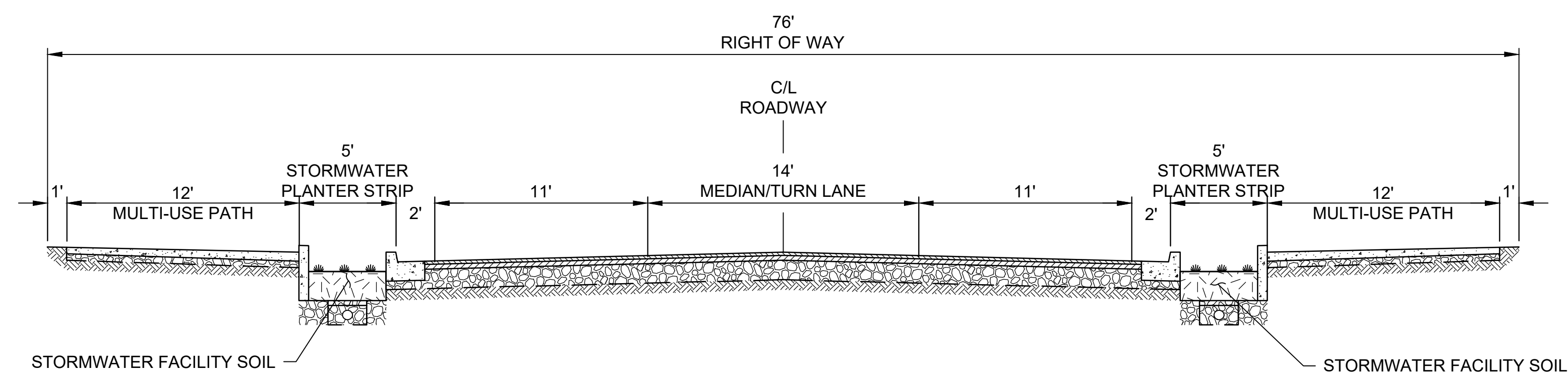
BY: NICK MCFADDIN
PLOT DATE: Wednesday, May 25, 2016 1:37:44 PM
DWG FILE: C:\csm\mcfaddin@murraysmith.us\d0274278\WTP1-03-GR-30001.dwg



SW ORR DRIVE WITH DEPRESSED MEDIAN (SUPERELEVATED)
SCALE: 1"=5'-0"

NOTES:

1. ONSITE STORMWATER FACILITIES, CURB AND GUTTER AND FENCING WHERE SHOWN ON PLANS.
2. CURB CUTS TO BE DETERMINED IN COORDINATION WITH STORMWATER DRAINAGE AND TREATMENT DESIGN.
3. SW ORR DRIVE DEPRESSED MEDIAN TO BE USED AS A STORMWATER PLANTER FROM STA 12+50± TO STA 19+50±.



SW ORR DRIVE WITH MEDIAN/LEFT TURN LANE (NORMAL CROWN)
SCALE: 1"=5'-0"

90% DESIGN - NOT FOR CONSTRUCTION

DSGN	C JAIN				
DR	M ESTEP				
CHK	NA				
APVD	NA	NO.	DATE	REVISION	BY

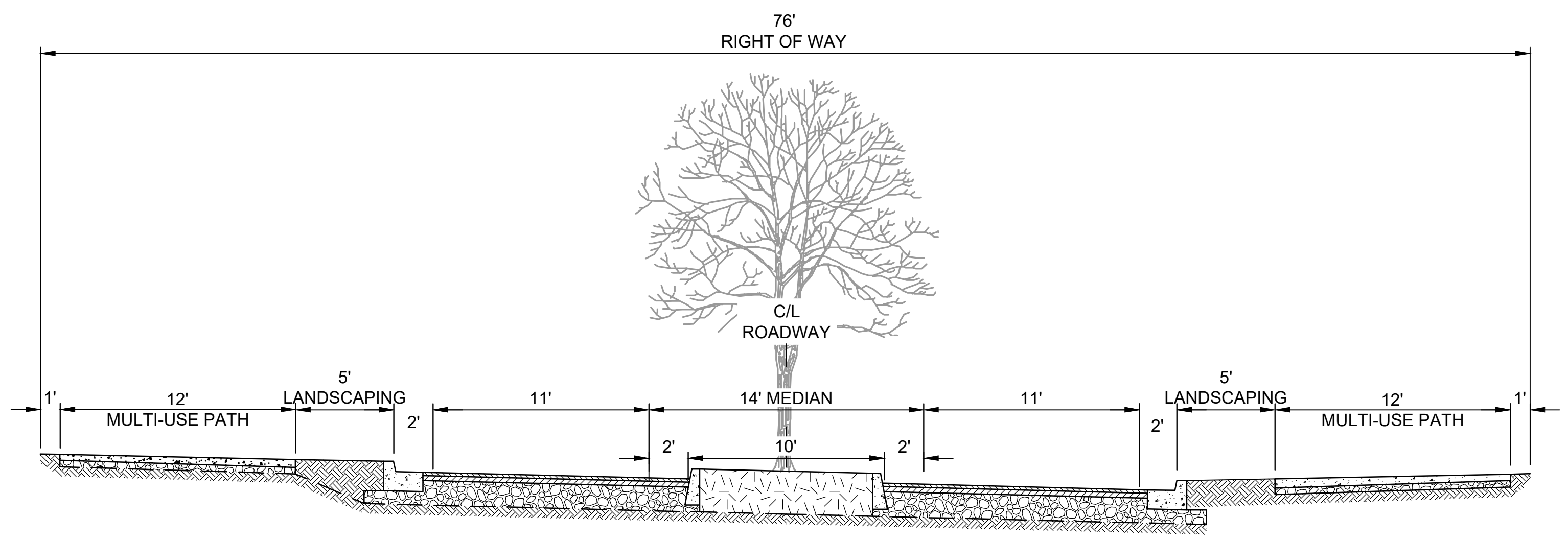
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.



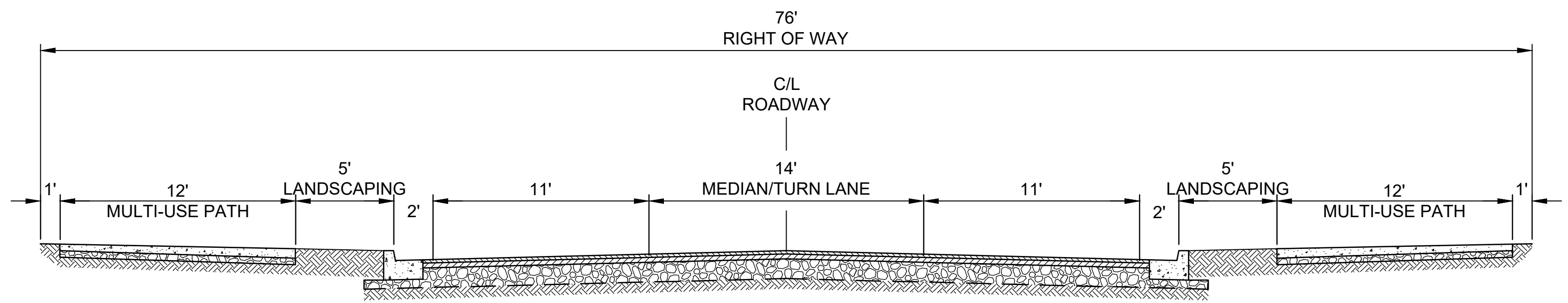
SITE GRADING
ROADWAY TYPICAL SECTIONS 1

SHEET	DWG 03-GR-30001
DATE	DECEMBER 2020
PROJ	WTP_1.0

BY: NICK MCFADDIN
PLOT DATE: Wednesday, May 25, 2016 1:37:44 PM
DWG FILE: C:\csm\mcfaddin@murraysmith.us\d0274278\WTP1-03-GR-30001.dwg



SW ORR DRIVE WITH RAISED MEDIAN (SUPERELEVATED)
SCALE: 1"=5'-0"



SW ORR DRIVE WITH MEDIAN/LEFT TURN LANE (NORMAL CROWN)
SCALE: 1"=5'-0"

90% DESIGN - NOT FOR CONSTRUCTION

DSGN	C JAIN				
DR	M ESTEP				
CHK	NA				
APVD	NA	NO.	DATE	REVISION	BY

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.



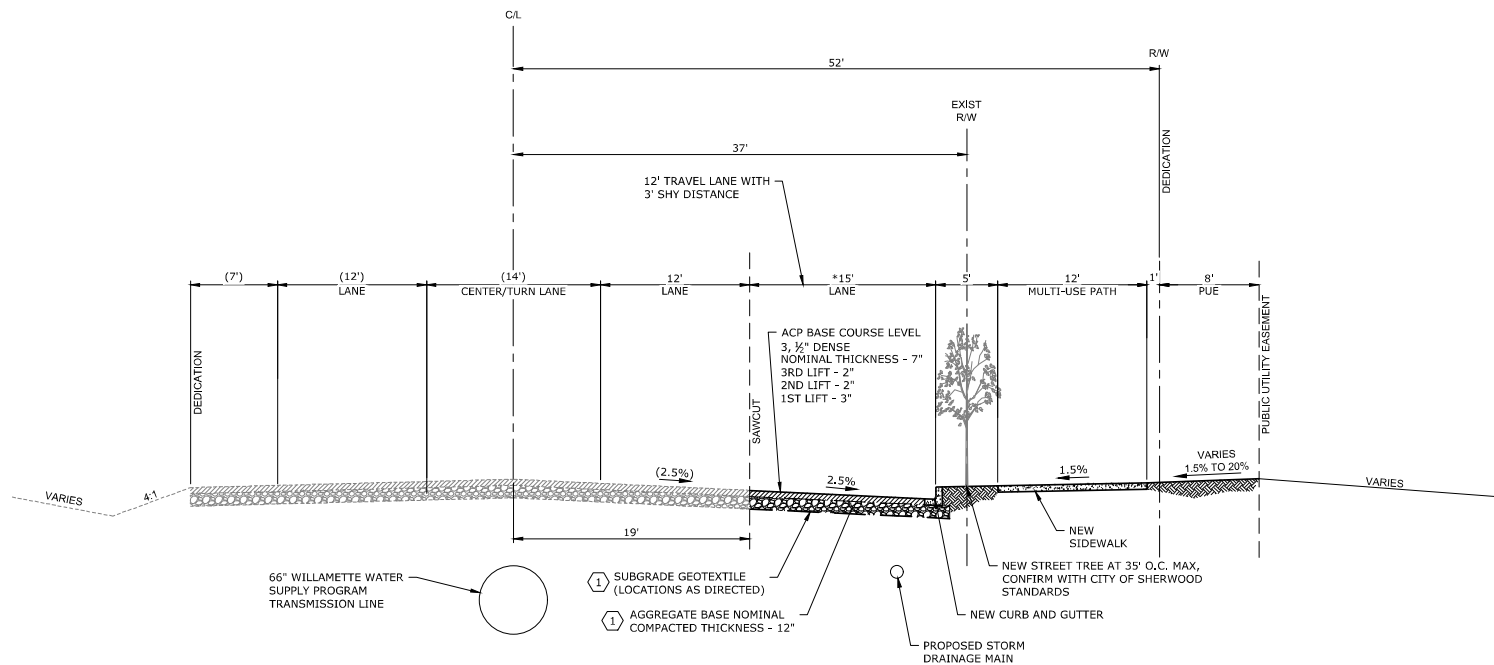
Willamette Water Supply
Our Reliable Water
WILLAMETTE WATER SUPPLY PROGRAM
WATER TREATMENT PLANT_1.0

CDM Smith
1220 SW Morrison Street, Suite 200
Portland, OR 97205
Tel: (503) 232-1800

SITE
GRADING
ROADWAY TYPICAL SECTIONS 1

SHEET	DWG 03-GR-30001
DATE	DECEMBER 2020
PROJ	WTP_1.0

G:\PDX_Projects\18-2281 - CDM_Smith_WWSP WTP\CAD\Figures\18-2281-OR-ROADS_124TH IMPROVEMENTS.dwg SECT 1 11/24/2020 9:20 AM NICK.MCFADDIN 23.0a (LMS Tech)



TYPICAL SECTION 1
SW 124TH AVENUE - HALF-STREET IMPROVEMENTS
 SOUTH OF ORR ROAD AND NORTH OF EXISTING RETAINING WALL
 (LOOKING SOUTH)

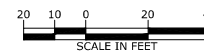
SHEET NOTES:

1. ASPHALT PAVEMENT SECTION SHALL MATCH EXISTING PAVEMENT SECTION CONSTRUCTED AS PART OF SW 124TH AVENUE EXTENSION. PROJECT NUMBER 100158.

2. COMPACTION OF THICK PAVEMENTS, WHERE A NOMINAL COMPACTED THICKNESS OF A COURSE OF ACP WILL BE LESS THAN 2 INCHES, MAY REQUIRE DENSITY TESTING AT THE DIRECTION OF WASHINGTON COUNTRY INSPECTION.

KEY NOTES:

1. IN LOCATIONS WHERE SUBGRADE SOILS ARE NOTE MACHINE COMPACTIBLE TO OPTIMUM MOISTURE CONTENT DUE TO WET WEATHER OR OTHER CIRCUMSTANCES, THE AGGREGATE BASE COURSE SHALL BE INCREASED TO 18 INCHES THICKNESS AND SHALL BE UNDERLAIN BY WOVEN GEOTEXTILE FABRIC.



Willamette Water Supply FIGURE 1A
Our Reliable Water
WWSP WTP-1.0

TYPICAL SECTION 1 NOV 2020
 18-2281

CDM Smith *murraysmith*